



ESTADO DO ESPÍRITO SANTO  
SECRETARIA DE ESTADO DA FAZENDA

Certidão Negativa de Débitos para com a Fazenda Pública Estadual - MOD. 2

Certidão Nº 20250000492775

Identificação do Requerente: CNPJ Nº 01.425.676/0003-51

Certificamos que, até a presente data, não existe débito contra o portador do Cadastro de Pessoa Jurídica acima especificado, ficando ressalvada à Fazenda Pública Estadual o direito de cobrar quaisquer dívidas que venham a ser apuradas.

Certidão emitida via Sistema Eletrônico de Processamento de Dados, nos termos do Regulamento do ICMS/ES, aprovado pelo Decreto nº 1.090-R, de 25 de outubro de 2002.

Certidão emitida em **27/03/2025**, válida até **25/06/2025**.

A autenticidade deste documento poderá ser confirmada via internet por meio do endereço **www.sefaz.es.gov.br** ou em qualquer Agência da Receita Estadual.

Vitória, 27/03/2025.

Autenticação eletrônica: **001F.813D.1D70.8317**





**PREFEITURA MUNICIPAL DA SERRA**  
**Secretaria Municipal da Fazenda**

CEP: 29176-439 - RUA MAESTRO ANTONIO CICERO, N° 111 CACAROCA Serra ES

## **Certidão Negativa de Débitos**

N° da Certidão: 12001992/2025

Data Geração: **15/05/2025**

Data Validade: 15/07/2025

**CERTIFICAMOS**, que não constam em nome do sujeito passivo identificado, nesta data, débitos com a Fazenda Pública Municipal, ressalvando o direito do município de cobrar quaisquer débitos que vierem a ser conhecidos e apurados após a expedição.

Essa certidão com base no art. 178 da Lei 3833, de 29 de dezembro de 2011, Código Tributário Municipal (CTM).

### **Identificação**

CRC **8287523** Crc Original: 8287523 Situação: Ativo  
Razão Social/Nome **ATHENAS AUTOMAÇÃO LTDA**  
CNPJ / CPF **01.425.676/0003-51**  
Inscrição Estadual/RG **083083120**  
Endereço **29164-140 - ROD ES-010, 2594 KM 2.60;QUADRA CHA;LOTE 343;SALA B46**  
Bairro **JARDIM LIMOEIRO** Cidade **SERRA** Estado **ES**

Serra, Quinta-feira, 15 de Maio de 2025

N° da Certidão: 12001992/2025

Inscrição: 8287523

Tanto a veracidade da informação quanto a manutenção da condição de não devedor poderá ser verificada na seguinte página da Internet:

<http://www.serra.es.gov.br/>

**ATENÇÃO:** Qualquer rasura ou emenda **INVALIDARÁ** este documento.



**PREFEITURA MUNICIPAL DA SERRA**  
**Secretaria Municipal da Fazenda**

CEP: 29176-439 - RUA MAESTRO ANTONIO CICERO, N° 111 CACAROCA Serra ES

## **Certidão Negativa de Débitos**

N° da Certidão: 12000324/2025

Data Geração: **12/05/2025**

Data Validade: 12/07/2025

**CERTIFICAMOS**, que não constam em nome do sujeito passivo identificado, nesta data, débitos com a Fazenda Pública Municipal, ressalvando o direito do município de cobrar quaisquer débitos que vierem a ser conhecidos e apurados após a expedição.

Essa certidão com base no art. 178 da Lei 3833, de 29 de dezembro de 2011, Código Tributário Municipal (CTM).

### **Identificação**

Ccm **4665066** InscrMunicipal **4665066** Situação: **Ativo**  
Razão Social **ATHENAS AUTOMAÇÃO LTDA**  
CNPJ / CPF **01.425.676/0003-51**  
Inscrição Estadual/RG **083083120**  
Endereço **29164-140 - ROD ES-010, 2594 KM 2.60;QUADRA CHA;LOTE 343;SALA B46**  
Bairro **JARDIM LIMOEIRO** Cidade **SERRA** Estado **ES**

Serra, Quinta-feira, 15 de Maio de 2025

N° da Certidão: 12000324/2025

Inscrição: 4665066

Tanto a veracidade da informação quanto a manutenção da condição de não devedor poderá ser verificada na seguinte página da Internet:

<http://www.serra.es.gov.br/>

**ATENÇÃO:** Qualquer rasura ou emenda **INVALIDARÁ** este documento.



**PREFEITURA MUNICIPAL DA SERRA**  
**Secretaria Municipal da Fazenda**

CEP: 29176-439 - RUA MAESTRO ANTONIO CICERO, N° 111 CACAROCA Serra ES

## **Certidão Negativa de Débitos**

N° da Certidão: 12002853/2025

Data Geração: **19/05/2025**

Data Validade: 19/07/2025

**CERTIFICAMOS**, que não constam em nome do sujeito passivo identificado, nesta data, débitos com a Fazenda Pública Municipal, ressalvando o direito do município de cobrar quaisquer débitos que vierem a ser conhecidos e apurados após a expedição.

Essa certidão com base no art. 178 da Lei 3833, de 29 de dezembro de 2011, Código Tributário Municipal (CTM).

### **Identificação**

Inscrição **009.5.023.0205.003** IdFísico **14881209** Situação: **Ativo**  
Responsável **ORLA HOLDING E PARTICIPAÇÕES LTDA - CNPJ/CPF 17.367.078/0001-41**  
Local do Imóvel **29164-140 - ROD ES-010, 2594 VESTIARIO/GUARITA/LAZER/RESERVATORIO-KM 2,60**  
Bairro/Loteamento **JARDIM LIMOEIRO** Quadra: **CHA** Lote: **343**

Serra, Segunda-feira, 19 de Maio de 2025

N° da Certidão: 12002853/2025

Inscrição: 14881209

Tanto a veracidade da informação quanto a manutenção da condição de não devedor poderá ser verificada na seguinte página da Internet:

<http://www.serra.es.gov.br/>

**ATENÇÃO:** Qualquer rasura ou emenda **INVALIDARÁ** este documento.





PODER JUDICIÁRIO  
JUSTIÇA DO TRABALHO

## **CERTIDÃO NEGATIVA DE DÉBITOS TRABALHISTAS**

Nome: ATHENAS AUTOMACAO LTDA (MATRIZ E FILIAIS)

CNPJ: 01.425.676/0003-51

Certidão nº: 17470935/2025

Expedição: 27/03/2025, às 09:22:31

Validade: 23/09/2025 - 180 (cento e oitenta) dias, contados da data de sua expedição.

Certifica-se que **ATHENAS AUTOMACAO LTDA (MATRIZ E FILIAIS)**, inscrito(a) no CNPJ sob o nº **01.425.676/0003-51**, **NÃO CONSTA** como inadimplente no Banco Nacional de Devedores Trabalhistas.

Certidão emitida com base nos arts. 642-A e 883-A da Consolidação das Leis do Trabalho, acrescentados pelas Leis ns.º 12.440/2011 e 13.467/2017, e no Ato 01/2022 da CGJT, de 21 de janeiro de 2022. Os dados constantes desta Certidão são de responsabilidade dos Tribunais do Trabalho.

No caso de pessoa jurídica, a Certidão atesta a empresa em relação a todos os seus estabelecimentos, agências ou filiais.

A aceitação desta certidão condiciona-se à verificação de sua autenticidade no portal do Tribunal Superior do Trabalho na Internet (<http://www.tst.jus.br>).

Certidão emitida gratuitamente.

### **INFORMAÇÃO IMPORTANTE**

Do Banco Nacional de Devedores Trabalhistas constam os dados necessários à identificação das pessoas naturais e jurídicas inadimplentes perante a Justiça do Trabalho quanto às obrigações estabelecidas em sentença condenatória transitada em julgado ou em acordos judiciais trabalhistas, inclusive no concernente aos recolhimentos previdenciários, a honorários, a custas, a emolumentos ou a recolhimentos determinados em lei; ou decorrentes de execução de acordos firmados perante o Ministério Público do Trabalho, Comissão de Conciliação Prévia ou demais títulos que, por disposição legal, contiver força executiva.



PODER JUDICIÁRIO  
TRIBUNAL DE JUSTIÇA DO ESTADO DO ESPÍRITO SANTO  
R. Des. Homero Mafra, 60 Enseada do Suá, Vitória - ES | CEP: 29.050-275 | Tel: (27) 3334-2000.

## **CERTIDÃO NEGATIVA DE PRIMEIRA INSTÂNCIA NATUREZA DE RECUPERAÇÃO JUDICIAL E EXTRAJUDICIAL (FALÊNCIA E CONCORDATA)**

### Dados da Certidão

**Razão Social:** ATHENAS AUTOMACAO LTDA

**CNPJ:** 01.425.676/0003-51

**Data de Expedição:** 10/06/2025 09:27:46

**Validade:** 30 DIAS

**Nº da Certidão:** \* 2024702045 \*

-- ENDEREÇO --

**Município:** SERRA

**Bairro:** JARDIM LIMOEIRO

**Logradouro:** ROD ES-010

**Número:** 2594

**Complemento:** KM 2.60 QUADRACHA LOTE 343 SALAB46

**CEP:** 29.164-140

-- CONTATO --

**Email:** - NÃO INFORMADO -

**Telefone Fixo:** - NÃO INFORMADO -

**Telefone Celular:** - NÃO INFORMADO -

**CERTIFICA** que, consultando a base de dados do Sistema de Gerenciamento de Processos do Poder Judiciário do Estado do Espírito Santo (E-Jud, SIEP, PROJUDI e PJe) até a presente data e hora, **NADA CONSTA** contra o solicitante .

### Observações

- Certidão expedida gratuitamente através da Internet;
- Os dados do(a) solicitante acima informados são de sua responsabilidade, devendo a titularidade ser conferida pelo interessado e/ou destinatário;
- O prazo de validade desta certidão é de 30 (trinta) dias, contados da data da expedição, conforme disposto no art. 467 do Código de Normas da Corregedoria Geral da Justiça. Após essa data será necessária a emissão de uma nova certidão;
- A autenticidade desta certidão poderá ser confirmada na página do Tribunal de Justiça do Estado do Espírito Santo - [www.tjes.jus.br](http://www.tjes.jus.br) -, utilizando o número da certidão acima identificado;
- Em relação as comarcas da entrância especial (Vitória/Vila Velha/Cariacica/Serra/Viana), as ações de: execução fiscal estadual, falência e recuperação judicial, e auditoria militar, tramitam, apenas, no juízo de Vitória;
- As ações de natureza cível abrangem inclusive aquelas que tramitam nas varas de Órfãos e Sucessões (Tutela, Curatela, Interdição,...), Juizado Especial Cível, Juizado Especial da Fazenda Pública, Execução Fiscal e Execução Patrimonial (observado o item e);
- As ações de natureza criminal abrangem, dentre outras: as de auditoria militar e de juizados especiais criminais;
- As matérias atinentes as varas de família e infância e juventude são objeto de certidão específica;
- A base de dados do sistema de gerenciamento processual (1ª INSTÂNCIA: eJUD, SIEP, PROJUDI, PJe-1G; 2ª INSTÂNCIA: Sistema de Segunda Instância, PJe-2G) contém o registro de todos os processos distribuídos no Judiciário do Estado do Espírito Santo, com exceção do SEEU;
- A certidão negativa referente ao Sistema Eletrônico de Execução Unificado – SEEU deverá ser requerida ao Cartório do Ofício de Distribuidor da Comarca, conforme Ato Normativo Conjunto nº. 009/2021.



ESTADO DO RIO GRANDE DO SUL  
**PODER JUDICIÁRIO**

**CERTIDÃO JUDICIAL CÍVEL NEGATIVA**

À vista dos registros constantes nos sistemas de Informática do Poder Judiciário do Estado do Rio Grande do Sul é expedida a presente certidão por não constar distribuição de ação falimentar, concordatária, recuperação judicial e extrajudicial em tramitação contra a seguinte parte interessada:

**ATHENAS AUTOMACAO LTDA**, CNPJ 01425676000190, Endereço - RUA BUARQUE DE MACEDO, 439 BAIRRO SAO GERALDO PORTO ALEGRE/RS CEP.: 90.230-250.

13 de maio de 2025, às 10:32:04

**OBSERVAÇÕES:**

A aceitação desta certidão está condicionada à conferência dos dados da parte interessada contra aqueles constantes no seu documento de identificação, bem como à verificação de sua validade no site do Tribunal de Justiça do Estado do Rio Grande do Sul na Internet, endereço <http://www.tjrs.jus.br>, menu Processos e Serviços / Serviços Processuais / Emissão de Antecedentes e Certidões, informando o seguinte código de controle: **21472efda2f152721f3df492bcf527b5**


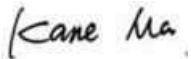
Importante: Esta certidão possui validade de 90 dias a partir da data de sua emissão.



Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 62368-1</b> <b>Audio/video, information and communication technology equipment</b> <b>Part 1: Safety requirements</b>	
Report Number .....	E302338-A7135-CB-1
Date of issue .....	2024-01-08
Total number of pages .....	107
Name of Testing Laboratory preparing the Report .....	UL-CCIC Company Limited
Applicant's name .....	Lenovo Japan LLC
Address .....	Minatomirai Center Building 21F 3-6-1 Minatomirai, Nishi-ku, Yokohama-shi, Kanagawa 220-0012, Japan
<b>Test specification:</b>	
Standard .....	IEC 62368-1: 2018
Test procedure .....	CB Scheme
Non-standard test method .....	N/A
TRF template used .....	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. ....	IEC62368_1E
Test Report Form(s) Originator ....	UL(US)
Master TRF .....	Dated 2022-04-14
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If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.	
<b>This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.</b>	
<b>General disclaimer:</b>	
The test results presented in this report relate only to the object tested.	
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory.	
The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

<b>Test Item Description</b> .....	Notebook Computer	
<b>Trade Mark(s)</b> .....	Lenovo	
<b>Manufacturer</b> .....	Lenovo PC HK Limited 23/F, Lincoln House, Taikoo Place, 979 King's Road, Quarry Bay, Hong Kong, P.R.China	
<b>Model/Type reference</b> .....	TP00148Dxxxxxxx, ThinkPad E14 Gen 6xxxxxxx, 21M3xxxxxxx, 21M4xxxxxxx (The "x" in the model name can be 0 to 9, A to Z, a to z, any symbol or blank for marketing use only.)	
<b>Ratings</b> .....	(optional) 20Vdc, 3.25A	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/> <b>CB Testing Laboratory:</b>		
<b>Testing location/ address</b> .....	UL-CCIC Company Limited No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China	
<b>Tested by (name, function, signature)..... :</b>	Bill Xue / Project Handler	
<b>Approved by (name, function, signature) .. :</b>	Kane Ma / Reviewer	
<b>Testing procedure: CTF Stage 1:</b>		
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature)..... :</b>		
<b>Approved by (name, function, signature) .. :</b>		
<b>Testing procedure: CTF Stage 2:</b>		
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature)..... :</b>		
<b>Witnessed by (name, function, signature) . :</b>		
<b>Approved by (name, function, signature) .. :</b>		
<b>Testing procedure: CTF Stage 3:</b>		
<b>Testing procedure: CTF Stage 4:</b>		
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature)..... :</b>		
<b>Witnessed by (name, function, signature) . :</b>		

Approved by (name, function, signature) .. :		
Supervised by (name, function, signature) :		

**List of Attachments (including a total number of pages in each attachment):**

National Differences (49 pages)

Enclosures (60 pages)

**Summary of testing:****Tests performed (name of test and test clause):**

4.4.3.2, T.4 – STEADY FORCE TEST, 100 N

4.4.3.3, T.7 – DROP TEST

4.4.3.8, T.8 – STRESS RELIEF TEST

B.2.5 – INPUT TEST: SINGLE PHASE

B.2.6, 5.4.1.4, 6.3, 9.3, B.1.5 – NORMAL  
OPERATING CONDITIONS TEMPERATURE  
MEASUREMENTB.3 – SIMULATED ABNORMAL OPERATING  
CONDITIONS

B.4 – SIMULATED SINGLE FAULT CONDITIONS

M.3.2 – PROTECTION CIRCUITS FOR  
BATTERIESM.4.2 – PORTABLE SECONDARY LITHIUM  
BATTERY CHARGING SAFEGUARDSM.4.4, T.7 – DROP TEST OF EQUIPMENT  
CONTAINING A SECONDARY LITHIUM  
BATTERY

Q.1 – LIMITED POWER SOURCE

**Testing Location:****CBTL: UL-CCIC Company Limited****No. 2, Chengwan Road, Suzhou Industrial Park,  
Suzhou 215122, China****Summary of compliance with National Differences (List of countries addressed):**Australia - AU, New Zealand - NZ, China - CN, EU Group Differences, Japan - JP, Saudi Arabia - SA,  
Singapore - SG, United States of America - US, Canada - CA☒ **The product fulfils the requirements of AS/NZS 62368.1:2022;**

EN IEC 62368-1:2020+A11:2020; BS EN IEC 62368-1:2020 + A11:2020;

GB 4943.1-2022;

Special National Conditions for Singapore;

CSA/UL 62368-1:2019;

J62368-1 (2020);

National standard SASO-IEC 62368-1:2020

**Use of uncertainty of measurement for decisions on conformity (decision rule) :**

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

**Information on uncertainty of measurement:**

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE. IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.



**Copy of marking plate:**

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Note: The above markings are the minimum requirements required by the safety lab. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

<b>Test item particulars:</b>	
Product group	end product
Classification of use by	Ordinary person Children likely to be present
Supply Connection	not mains connected: ES1
Supply tolerance	None
Supply connection – type	not directly connected to the mains
Considered current rating of protective device	N/A
Equipment mobility	transportable
Over voltage category (OVC)	No direct connection to mains
Class of equipment	Class III
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified Tma (°C)	35.0
IP protection class	IPX0
Power systems	--
Altitude during operation (m)	up to 3048 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	Configuration A: 1.26 Configuration: A 1.24
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object .....	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)
<b>Testing:</b>	
Date of receipt of test item .....	2023-11-14
Date (s) of performance of tests .....	2023-11-20 to 2023-12-15
<b>General remarks:</b>	
<p>"(See Enclosure #)" refers to additional information appended to the report.          "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:</b>	

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....

☒ **Yes**☐ **Not applicable**

**When differences exist; they shall be identified in the General product information section.**

<b>Name and address of factory (ies) .....</b>	<b>LCFC (HeFei) Electronics Technology Co., Ltd</b> No. 3188-1 Yungu Road (Comprehensive Bonded Zone), Hefei Economic & Technological Development Area, HEFEI ANHUI 230601, CHINA
	Lenovo (India) Private Limited 19/1A & 19/2A, CUDDALORE MAIN ROAD, EDAYARPALAYAM VILLAGE, THAVALAKUPPAM PUDUCHERRY -605007 INDIA
	Lenovo (Shanghai) Electronics Technology Co., Ltd. Section 304-305, Building No. 4, # 222, Meiyue Road, China (Shanghai) Pilot Free Trade Zone, Shanghai 200131, China
	Lenovo US Fulfillment Center L L C 6540 Franz Warner Parkway Whitsett, NC 27377, USA
	NEC Personal Computers, Ltd 6-80, Shimohanazawa 2-Chome, Yonezawa-shi, Yamagata 992-8520, Japan
	LENOVO INFORMATION PRODUCTS (SHENZHEN) CO., LTD 2F, NO.1 Plant , Lenovo Innovation Park, Lidu Road, Loucun Community, Xinhua Street, Guangming District , Shenzhen, Guangdong, China
	PLANT 2 - SANSEI EVA PERÓN 97 - USHUAIA - NOBLEX S.A, TIERRA DEL FUEGO, ARGENTINA
	Lenovo Centro Tecnológico S de RL de CV Apodaca Technology Park Boulevard Escobedo #316 Apodaca, Nuevo Leon, Mexico C.P. 66600.
	Lenovo Centro Tecnológico S de RL de CV Boulevard Escobedo #318 Apodaca Technology Park, CP 66627 APODACA NL, MEXICO
	LENOVO TECNOLOGIA (BRASIL) LTDA Estrada Municipal Jose Costa de Mesquita, 200, Modulos 5 a 10, Chacara Alvorada, INDAIATUBA SP 13337-200, BRAZIL
	MOTOROLA (WUHAN) MOBILITY TECHNOLOGIES COMMUNICATION CO LTD

	<p>NO.19, Gaoxin 4Th Rd, East Lake High-Tech Zone, WUHAN HUBEI 430205, CHINA</p> <p>GUANGXI SANCHUANG TECHNOLOGY CO LTD The Second Floor of Plant C01, Plant C02, Plant C03 and Plant D03 Guangxi Sannuo Smart Industrial Park, No.3, Gaoke Road, Beihai Industrial Park, BEIHAI GUANGXI 536000, CHINA</p> <p>Hefei LCFC Electronics Trading Co.,Ltd. The western part of 3rd Floor in Building B, Yunhai Road Industrial Park, No. 176, Yun'er Road, Hefei Economic and Technological Development Area, Hefei Anhui 230601, China</p> <p>Hefei Jingzhuo Photoelectric Co., Ltd. The northern part of 1st Floor and the eastern part of 3rd Floor in Building B, Yunhai Road Industrial Park, No. 176, Yun'er Road, Hefei Economic Development Zone, Hefei Anhui 230601, China</p>
<b>General product information and other remarks:</b>	
<p><b>Product Description</b></p> <p>The unit is a Class III Notebook Computer classified as Information Technology Equipment (I.T.E). It consists of 14 inch LCD panel with LED backlight, Solid-State Drive (SSD) (optional), speaker, battery pack and mainboard. All electronic components are mounted on PWB, accompanied with USB type A port, USB type C connector, HDMI connector, Combo audio jack, RJ45 port (Optional), IR LED module of camera (Optional) and housed within plastic/metal enclosure and secured together by screws. It is supplied by certified external power adapter. The unit has two configurations, which are similar to each other except for material of D cover, configuration A has metal D cover, configuration B has plastic D cover.</p>	
<p><b>Model Differences</b></p> <p>All models are identical to each other except model designation.</p>	
<p><b>Additional Information</b></p> <p>Max. normal load:</p> <p>Condition A: The unit operated continuously with max brightness of LCD, max. volume of speaker, operated with burn-in tests, turn on Bluetooth and charged fully discharged battery pack supplied by adapter (20Vdc/3.25A). Type-C Port-2 (On MB Left) loaded 5V/3A, USB3.0 Port-1(On MB AOU) loaded 5V/2.1A, USB3.0 Port-1(On DB) loaded 5V/0.9A.</p> <p>Condition B: The unit operated continuously with max brightness of LCD, max. volume of speaker, operated with burn-in tests, turn on Bluetooth and which is supplied by fully charged battery. Type-C Port-1 and Type-C Port-2 (On MB Left) loaded 5V/1.5A, USB3.0 Port-1(On MB AOU) loaded 5V/2.1A, USB3.0 Port-1(On DB) loaded 5V/0.9A.</p> <p>Condition C: The unit operated continuously with max brightness of LCD, max. volume of speaker, operated with burn-in tests, turn on Bluetooth and charged fully discharged battery pack supplied by another type C adapter(20Vdc/3.25A). Type-C Port-1 (On MB Left) loaded 5V/3.0A, USB3.0 Port-1(On MB AOU) loaded 5V/2.1A, USB3.0 Port-1(On DB) loaded 5V/0.9A.</p>	

All batteries listed in this report as below:

No.1 SIMPLO TECHNOLOGY CO LTD/L22M3PG4 complies with IEC 62133-2:2017, CB ref Certificate No.: JPTUV-141342.

No.2 SUNWODA ELECTRONIC CO.,LTD. /L22D3PG4 complies with IEC 62133-2:2017, CB ref Certificate No.: JPTUV-142061.

No.3 Shanghai BYD Company Limited/ L22B3PG4 complies with IEC 62133-2:2017, CB ref Certificate No.: DK-135621-UL.

No.4 ZHUHAI COSMX BATTERY CO., LTD./L22X3PG4 complies with IEC 62133-2:2017, CB ref Certificate No.: JPTUV-141803.

No.5 SIMPLO TECHNOLOGY CO LTD/L23M3PG2: complies with IEC 62133-2:2017, CB ref Certificate No.: DK-145274-UL.

No.6 SUNWODA ELECTRONIC CO.,LTD./L23D3PG2: complies with IEC 62133-2:2017, CB ref Certificate No.: JPTUV-153564.

No.7 Shanghai BYD Company Limited/L23B3PG2: complies with IEC 62133-2:2017, CB ref Certificate No.: DK-146415-UL.

No.8 Zhuhai CosMX Power JinWan Subsidiary Co., Ltd./L23X3PG2: complies with IEC 62133-2:2017, CB ref Certificate No.: JPTUV-152952-A1.

A cover: LCD cover;

B cover: LCD bezel, panel;

C cover: Keyboard, palm rest, touch pad etc.;

D cover: Bottom cover.

#### Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 35°C
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS) : All output ports.
- The Risk Group of a lamp or lamp system (including LEDs) is : Exempt
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: External power supply output	Ordinary	--	--	--
ES1: Internal circuits	Ordinary	--	--	--
ES1: Interconnection connectors	Ordinary	--	--	--
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 <sup>st</sup> S	2 <sup>nd</sup> S
PS3: Internal circuit	Components	Clause 6.3	Clause 6.4.5	Clause 6.4.6
PS3: Internal circuit	Internal material	Clause 6.3	Clause 6.4.5	Clause 6.4.6
PS3: Internal circuit	Internal wiring	Clause 6.3	Clause 6.5	--
PS3: Internal circuit	Internal connector	Clause 6.3	Clause 6.4.5	Clause 6.4.6
PS2: All output terminals	Interconnecting connectors	Clause 6.3	Clause 6.4.5	--
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
Internal Battery Pack	Ordinary	--	--	See Annex M
RTC battery	Ordinary	--	--	See Annex M
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Equipment mass	Ordinary	--	--	--
MS1: Plastic moving fan	Ordinary	--	--	--
MS1: Sharp edges and corners	Ordinary	--	--	--
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: Enclosure	Ordinary	--	--	--
TS3: Internal parts / components (exclude A cover)	Ordinary	--	--	Enclosure
10	Radiation			
Class and Energy Source	Body Part	Safeguards		

(e.g. RS1: PMP sound output)	(e.g., Ordinary)	B	S	R
RS1: LED Backlight	Ordinary	--	--	--
RS1: LED Indicator	Ordinary	--	--	--
RS1: IR LED module of camera (Optional)	Ordinary	--	--	--
Supplementary Information:				
<p>“B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard</p> <p>(1) See attached energy source diagram for additional details.</p> <p>(2) “N” – Normal Condition; “A” – Abnormal Condition; “S” Single Fault</p>				



**ENERGY SOURCE DIAGRAM**

**Optional.** Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings

☐ **ES**    ☐ **PS**    ☐ **MS**    ☐ **TS**    ☐ **RS**

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>GENERAL REQUIREMENTS</b>		Pass
4.1.1	Acceptance of materials, components and subassemblies	Components and subassemblies that comply with IEC 60950-1/IEC62368-1 are accepted without further evaluation other than to give consideration to the appropriate use.	Pass
4.1.2	Use of components		Pass
4.1.3	Equipment design and construction		Pass
4.1.4	Specified ambient temperature for outdoor use (°C) .....:		N/A
4.1.5	Constructions and components not specifically covered		N/A
4.1.8	Liquids and liquid filled components (LFC)		N/A
4.1.15	Markings and instructions	(See Annex F)	Pass
4.4.3	Safeguard robustness		Pass
4.4.3.1	General		Pass
4.4.3.2	Steady force tests	(See Annex T.4, T.5)	Pass
4.4.3.3	Drop tests	(See Annex T.7)	Pass
4.4.3.4	Impact tests		N/A
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests	Laminated Glass	N/A
4.4.3.7	Glass fixation tests	Except for PS3, no other class 3 energy source	N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests	(See Annex T.8)	Pass
4.4.3.9	Air comprising a safeguard		N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness	Except for PS3, no class 3 energy source is accessible, and all safeguards are effective.	Pass
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks	(See Annex K)	N/A
<b>4.5</b>	<b>Explosion</b>		Pass
4.5.1	General	(See Annex M for batteries)	Pass

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.5.2	No explosion during normal/abnormal operating condition	(See Clause B.2, B.3)	Pass
	No harm by explosion during single fault conditions	(See Clause B.4)	Pass
<b>4.6</b>	<b>Fixing of conductors</b>		N/A
	Fix conductors not to defeat a safeguard		N/A
	Compliance is checked by test..... :		N/A
<b>4.7</b>	<b>Equipment for direct insertion into mains socket-outlets</b>		N/A
4.7.2	Mains plug part complies with relevant standard .. :		N/A
4.7.3	Torque (Nm) ..... :		N/A
<b>4.8</b>	<b>Equipment containing coin/button cell batteries</b>		N/A
4.8.1	General	Coin battery can not be touched by children.	N/A
4.8.2	Instructional safeguard ..... :		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
<b>4.9</b>	<b>Likelihood of fire or shock due to entry of conductive object</b>		Pass
<b>4.10</b>	<b>Component requirements</b>		N/A
4.10.1	Disconnect Device		N/A
4.10.2	Switches and relays		N/A
<b>5</b>	<b>ELECTRICALLY-CAUSED INJURY</b>		Pass
<b>5.2</b>	<b>Classification and limits of electrical energy sources</b>		Pass
5.2.2	ES1, ES2 and ES3 limits		N/A
5.2.2.2	Steady-state voltage and current limits ..... :		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.3	Capacitance limits .....		N/A
5.2.2.4	Single pulse limits .....		N/A
5.2.2.5	Limits for repetitive pulses .....		N/A
5.2.2.6	Ringling signals		N/A
5.2.2.7	Audio signals		N/A
<b>5.3</b>	<b>Protection against electrical energy sources</b>		Pass
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		Pass
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		N/A
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements		N/A
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V) .....	(See appended table 5.4.9)	N/A
5.3.2.2 b)	Air gap – distance (mm) .....		N/A
5.3.2.3	Compliance		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
<b>5.4</b>	<b>Insulation materials and requirements</b>		N/A
5.4.1.2	Properties of insulating material	Functional insulation only.	N/A
5.4.1.3	Material is non-hygroscopic		N/A
5.4.1.4	Maximum operating temperature for insulating materials .....		N/A
5.4.1.5	Pollution degrees .....		N/A
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage .....	(See appended table 5.4.1.8)	N/A
5.4.1.9	Insulating surfaces		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat test.....:		N/A
5.4.1.10.3	Ball pressure test .....		N/A
5.4.2	Clearances		N/A
5.4.2.1	General requirements		N/A
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance		N/A
	Temporary overvoltage .....		—
5.4.2.3	Procedure 2 for determining clearance		N/A
5.4.2.3.2.2	a.c. mains transient voltage .....		—
5.4.2.3.2.3	d.c. mains transient voltage .....		—
5.4.2.3.2.4	External circuit transient voltage.....:		—
5.4.2.3.2.5	Transient voltage determined by measurement .....		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test .....		N/A
5.4.2.5	Multiplication factors for clearances and test voltages .....		N/A
5.4.2.6	Clearance measurement .....		N/A
5.4.3	Creepage distances		N/A
5.4.3.1	General		N/A
5.4.3.3	Material group .....		—
5.4.3.4	Creepage distances measurement .....		N/A
5.4.4	Solid insulation		N/A
5.4.4.1	General requirements		N/A
5.4.4.2	Minimum distance through insulation .....		N/A
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of layers (pcs) .....		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs) .....		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material .....		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz, $E_P$ , $K_R$ , $d$ , $V_{PW}$ (V) .....		N/A
	Alternative by electric strength test, tested voltage (V), $K_R$ .....		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (M $\Omega$ ) .....		N/A
	Electric strength test .....		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		N/A
	Relative humidity (%), temperature (°C), duration (h) .....		—
5.4.9	Electric strength test		N/A
5.4.9.1	Test procedure for type test of solid insulation .....		N/A
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test .....		N/A
5.4.10.2.3	Steady-state test .....		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.10.3	Verification for insulation breakdown for impulse test .....		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage $U_{op}$ (V) .....		—
	Nominal voltage $U_{peak}$ (V) .....		—
	Max increase due to variation $\Delta U_{sp}$ .....		—
	Max increase due to ageing $\Delta U_{sa}$ .....		—
5.4.11.3	Test method and compliance .....		N/A
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid .....		N/A
5.4.12.3	Compatibility of an insulating liquid .....		N/A
5.4.12.4	Container for insulating liquid .....		N/A
<b>5.5</b>	<b>Components as safeguards</b>		Pass
5.5.1	General	See clause G.	Pass
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector .....		N/A
5.5.3	Transformers		N/A
5.5.4	Optocouplers		N/A
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPDs		N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable .....		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA) .....		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>5.6</b>	<b>Protective conductor</b>		N/A
5.6.2	Requirement for protective conductors		N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm <sup>2</sup> ) ..... :		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm <sup>2</sup> ). ..... :		—
5.6.4.2	Protective current rating (A)..... :		N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm) ..... :		N/A
	Terminal size for connecting protective bonding conductors (mm) ..... :		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective bonding system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method ..... :		N/A
5.6.6.3	Resistance ( $\Omega$ ) or voltage drop..... :		N/A
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm <sup>2</sup> )..... :		N/A
	Class II with functional earthing marking ..... :		N/A
	Appliance inlet cl & cr (mm) ..... :		N/A
<b>5.7</b>	<b>Prospective touch voltage, touch current and protective conductor current</b>		N/A
5.7.2	Measuring devices and networks		N/A
5.7.2.1	Measurement of touch current		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.2.2	Measurement of voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		N/A
5.7.4	Unearthed accessible parts .....		N/A
5.7.5	Earthed accessible conductive parts .....		N/A
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA) .....		N/A
	Instructional Safeguard.....		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA).....		N/A
	b) Equipment connected to unearthed external circuits, current (mA).....		N/A
<b>5.8</b>	<b>Backfeed safeguard in battery backed up supplies</b>		N/A
	Mains terminal ES .....		N/A
	Air gap (mm).....		N/A

<b>6</b>	<b>ELECTRICALLY- CAUSED FIRE</b>		Pass
<b>6.2</b>	<b>Classification of PS and PIS</b>		Pass
6.2.2	Power source circuit classifications .....	(See appended table Q.1)	Pass
6.2.3	Classification of potential ignition sources		Pass
6.2.3.1	Arcing PIS .....	All internal circuits are not considered as arcing PIS. They are supplied by external power supply whose open voltage is less than 50V.	N/A
6.2.3.2	Resistive PIS .....	All internal circuits of PS3 circuits are considered as resistive PIS.	Pass
<b>6.3</b>	<b>Safeguards against fire under normal operating and abnormal operating conditions</b>		Pass

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials..... :	(See appended table B.1.5 and B.3)	Pass
	Combustible materials outside fire enclosure ..... :	Combustible materials outside fire enclosure are at least HB.	Pass
<b>6.4</b>	<b>Safeguards against fire under single fault conditions</b>		Pass
6.4.1	Safeguard method	Control fire spread method used.	Pass
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions..... :	(See appended table B.4)	N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits		Pass
6.4.5.2	Supplementary safeguards	(See appended tables 4.1.2 and Annex G) - Printed boards are rated minimum V-1. - All components and combustible materials other than small parts are either rated at least V-2 or mounted on material with rating minimum V-1.	Pass
6.4.6	Control of fire spread in PS3 circuits	(See appended tables 4.1.2 and Annex G) - Printed boards are rated minimum V-1. - All components and combustible materials other than small parts are either rated at least V-2 or mounted on material with rating minimum V-1. - Wire insulation and tubing complied with clause 6.5. - Fire enclosure rated V-0 and metal is provided.	Pass
6.4.7	Separation of combustible materials from a PIS		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		Pass
6.4.8.2	Fire enclosure and fire barrier material properties		Pass
6.4.8.2.1	Requirements for a fire barrier		Pass
6.4.8.2.2	Requirements for a fire enclosure		Pass
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		Pass
6.4.8.3.1	Fire enclosure and fire barrier openings		Pass
6.4.8.3.2	Fire barrier dimensions		Pass
6.4.8.3.3	Top openings and properties		Pass
	Openings dimensions (mm)..... :	see 6.4.8.3.4	Pass
6.4.8.3.4	Bottom openings and properties		Pass
	Openings dimensions (mm)..... :	Dimension refer to enclosure 04-01 and 04-02 for details	Pass
	Flammability tests for the bottom of a fire enclosure	(See Clause S.3)	N/A
	Instructional Safeguard..... :		N/A
6.4.8.3.5	Side openings and properties		Pass
	Openings dimensions (mm)..... :	Dimension refer to enclosure 04-01 and 04-02 for details	Pass
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating..... :	Fire enclosure is made of plastic rated V-0 and metal.	Pass
6.4.9	Flammability of insulating liquid..... :		N/A
<b>6.5</b>	<b>Internal and external wiring</b>		Pass
6.5.1	General requirements	Internal wirings or external wirings with VW-1 rating are considered to meet IEC TS 60695-11-21 requirements.	Pass
6.5.2	Requirements for interconnection to building wiring..... :	(See Annex Q.)	Pass
6.5.3	Internal wiring size (mm <sup>2</sup> ) for socket-outlets..... :		N/A
<b>6.6</b>	<b>Safeguards against fire due to the connection to additional equipment</b>		Pass

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>7</b>	<b>INJURY CAUSED BY HAZARDOUS SUBSTANCES</b>		Pass
<b>7.2</b>	<b>Reduction of exposure to hazardous substances</b>		N/A
<b>7.3</b>	<b>Ozone exposure</b>		N/A
<b>7.4</b>	<b>Use of personal safeguards or personal protective equipment (PPE)</b>		N/A
	Personal safeguards and instructions .....		—
<b>7.5</b>	<b>Use of instructional safeguards and instructions</b>		N/A
	Instructional safeguard (ISO 7010).....		—
<b>7.6</b>	<b>Batteries and their protection circuits</b>		Pass
<b>8</b>	<b>MECHANICALLY-CAUSED INJURY</b>		Pass
<b>8.2</b>	<b>Mechanical energy source classifications</b>		Pass
<b>8.3</b>	<b>Safeguards against mechanical energy sources</b>		Pass
<b>8.4</b>	<b>Safeguards against parts with sharp edges and corners</b>		N/A
8.4.1	Safeguards		N/A
	Instructional Safeguard .....		N/A
8.4.2	Sharp edges or corners		N/A
<b>8.5</b>	<b>Safeguards against moving parts</b>		N/A
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts	MS1 fan assembled.	N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard.....		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m).....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Space between end point and nearest fixed mechanical part (mm) .....		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly .....		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts.....		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N).....		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps		N/A
	Explosion test .....		N/A
8.5.5.3	Glass particles dimensions (mm) .....		N/A
<b>8.6</b>	<b>Stability of equipment</b>		N/A
8.6.1	General		N/A
	Instructional safeguard.....		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test.....		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm).....		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test .....		N/A
<b>8.7</b>	<b>Equipment mounted to wall, ceiling or other structure</b>		N/A
8.7.1	Mount means type.....		N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N).....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test 2, number of attachment points and test force (N) .....		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm) .....		N/A
<b>8.8</b>	<b>Handles strength</b>		N/A
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles .....		—
	Force applied (N) .....		—
<b>8.9</b>	<b>Wheels or casters attachment requirements</b>		N/A
8.9.2	Pull test		N/A
<b>8.10</b>	<b>Carts, stands and similar carriers</b>		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions .....		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N) .....		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N) .....		—
8.10.6	Thermoplastic temperature stability		N/A
<b>8.11</b>	<b>Mounting means for slide-rail mounted equipment (SRME)</b>		N/A
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard .....		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied .....		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
<b>8.12</b>	<b>Telescoping or rod antennas</b>		N/A
	Button/ball diameter (mm) .....		—

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Clause	Requirement + Test	Result - Remark	Verdict
<b>9</b>	<b>THERMAL BURN INJURY</b>		Pass
<b>9.2</b>	<b>Thermal energy source classifications</b>		Pass
<b>9.3</b>	<b>Touch temperature limits</b>		Pass
9.3.1	Touch temperatures of accessible parts .....	(See appended table B.2.6, 5.4.1.4, 6.3, 9.2)	Pass
9.3.2	Test method and compliance		Pass
<b>9.4</b>	<b>Safeguards against thermal energy sources</b>		Pass
<b>9.5</b>	<b>Requirements for safeguards</b>		Pass
9.5.1	Equipment safeguard	Enclosure provided.	Pass
9.5.2	Instructional safeguard.....		N/A
<b>9.6</b>	<b>Requirements for wireless power transmitters</b>		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance .....		N/A
<b>10</b>	<b>RADIATION</b>		Pass
<b>10.2</b>	<b>Radiation energy source classification</b>		Pass
10.2.1	General classification	RS1: LED backlight. The optical radiation is broadband visible and the luminance of the panel does not exceed 10000 cd/m <sup>2</sup> . RS1: Led indicator. Indicator LEDs are low power for indication only. RS1: IR LED module of camera. IR LED module of camera is complied with IEC 62471:2006	Pass
	Lasers .....		—
	Lamps and lamp systems .....		—
	Image projectors .....		—
	X-Ray .....		—
	Personal music player .....		—
<b>10.3</b>	<b>Safeguards against laser radiation</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The standard(s) equipment containing laser(s) comply .....		N/A
<b>10.4</b>	<b>Safeguards against optical radiation from lamps and lamp systems (including LED types)</b>		N/A
10.4.1	General requirements		N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location .....		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure .....		N/A
10.4.3	Instructional safeguard .....		N/A
<b>10.5</b>	<b>Safeguards against X-radiation</b>		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons .....		—
10.5.3	Maximum radiation (pA/kg) .....	(See appended table B.3, B.4)	—
<b>10.6</b>	<b>Safeguards against acoustic energy sources</b>		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$ , dB(A) .....		N/A
	Unweighted RMS output voltage (mV) .....		N/A
	Digital output signal (dBFS) .....		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30) .....		N/A
	Warning for MEL $\geq 100$ dB(A) .....		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards.....		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV)..... :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$ , dB(A) .....:		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$ , dB(A) .....:		N/A

<b>B</b>	<b>NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS</b>		Pass
<b>B.1</b>	<b>General</b>		Pass
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	Pass
<b>B.2</b>	<b>Normal operating conditions</b>		Pass
B.2.1	General requirements ..... :	(See Test Item Particulars and appended test tables)	Pass
	Audio Amplifiers and equipment with audio amplifiers ..... :		N/A
B.2.3	Supply voltage and tolerances	Not directly connected to mains. No tolerance is considered.	Pass
B.2.5	Input test ..... :	(See appended table B.2.5)	Pass
<b>B.3</b>	<b>Simulated abnormal operating conditions</b>		Pass
B.3.1	General		N/A
B.3.2	Covering of ventilation openings	(See appended table B.3)	Pass
	Instructional safeguard ..... :		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals	(See appended table B.3)	Pass
B.3.6	Reverse battery polarity	The RTC battery and battery pack are designed not to be replaced by reversed polarity.	N/A
B.3.7	Audio amplifier abnormal operating conditions		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions..... :	(See appended table B.3, B.4)	Pass
<b>B.4</b>	<b>Simulated single fault conditions</b>		Pass
B.4.1	General		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test	(See appended table B.4)	Pass
B.4.4	Functional insulation		N/A
B.4.4.1	Short circuit of clearances for functional insulation		N/A
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnection of passive components		N/A
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions ..... :	(See appended table B.3, B.4)	Pass
B.4.9	Battery charging and discharging under single fault conditions	See Annex M	Pass
<b>C</b>	<b>UV RADIATION</b>		N/A
<b>C.1</b>	<b>Protection of materials in equipment from UV radiation</b>		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
<b>C.2</b>	<b>UV light conditioning test</b>		N/A
C.2.1	Test apparatus..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
<b>D</b>	<b>TEST GENERATORS</b>		N/A
<b>D.1</b>	<b>Impulse test generators</b>		N/A
<b>D.2</b>	<b>Antenna interface test generator</b>		N/A
<b>D.3</b>	<b>Electronic pulse generator</b>		N/A
<b>E</b>	<b>TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS</b>		N/A
<b>E.1</b>	<b>Electrical energy source classification for audio signals</b>		N/A
	Maximum non-clipped output power (W)..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Rated load impedance ( $\Omega$ ) .....		—
	Open-circuit output voltage (V) .....		—
	Instructional safeguard .....	See Clause F.5	—
<b>E.2</b>	<b>Audio amplifier normal operating conditions</b>		N/A
	Audio signal source type .....		—
	Audio output power (W) .....		—
	Audio output voltage (V) .....		—
	Rated load impedance ( $\Omega$ ) .....		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A
<b>F</b>	<b>EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS</b>		Pass
<b>F.1</b>	<b>General</b>		Pass
	Language .....	English	—
<b>F.2</b>	<b>Letter symbols and graphical symbols</b>		Pass
F.2.1	Letter symbols according to IEC60027-1	Letter symbols comply with IEC 60027-1.	Pass
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific	Graphic symbols comply with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010.	Pass
<b>F.3</b>	<b>Equipment markings</b>		Pass
F.3.1	Equipment marking locations	Outside back enclosure.	Pass
F.3.2	Equipment identification markings		Pass
F.3.2.1	Manufacturer identification .....	Lenovo	Pass
F.3.2.2	Model identification .....	See "Models and Ratings".	Pass
F.3.3	Equipment rating markings		Pass
F.3.3.1	Equipment with direct connection to mains		N/A
F.3.3.2	Equipment without direct connection to mains		Pass
F.3.3.3	Nature of the supply voltage .....	DC symbol IEC 60417 No. 5031 provided.	Pass
F.3.3.4	Rated voltage .....	20Vdc (Optional)	Pass
F.3.3.5	Rated frequency .....	Not connected to mains.	Pass
F.3.3.6	Rated current or rated power .....	3.25A (Optional)	Pass

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		Pass
F.3.5.1	Mains appliance outlet and socket-outlet markings ..... :		N/A
F.3.5.2	Switch position identification marking ..... :		N/A
F.3.5.3	Replacement fuse identification and rating markings ..... :		N/A
	Instructional safeguards for neutral fuse ..... :		N/A
F.3.5.4	Replacement battery identification marking..... :	See enclosure 06-01.	Pass
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		N/A
F.3.6.1	Class I equipment		N/A
F.3.6.1.1	Protective earthing conductor terminal ..... :		N/A
F.3.6.1.2	Protective bonding conductor terminals ..... :		N/A
F.3.6.2	Equipment class marking..... :		N/A
F.3.6.3	Functional earthing terminal marking ..... :		N/A
F.3.7	Equipment IP rating marking ..... :		N/A
F.3.8	External power supply output marking ..... :		N/A
F.3.9	Durability, legibility and permanence of marking		Pass
F.3.10	Test for permanence of markings	All markings provided are UL Recognized Component labels suitable for surface, and they are considered to meet the durability test.	Pass
<b>F.4</b>	<b>Instructions</b>		Pass
	a) Information prior to installation and initial use		Pass
	b) Equipment for use in locations where children not likely to be present		N/A
	c) Instructions for installation and interconnection		Pass
	d) Equipment intended for use only in restricted access area		N/A
	e) Equipment intended to be fastened in place		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	f) Instructions for audio equipment terminals		N/A
	g) Protective earthing used as a safeguard		N/A
	h) Protective conductor current exceeding ES2 limits		N/A
	i) Graphic symbols used on equipment		Pass
	j) Permanently connected equipment not provided with all-pole mains switch		N/A
	k) Replaceable components or modules providing safeguard function		N/A
	l) Equipment containing insulating liquid		N/A
	m) Installation instructions for outdoor equipment		N/A
<b>F.5</b>	Instructional safeguards		Pass
<b>G</b>	<b>COMPONENTS</b>		Pass
<b>G.1</b>	<b>Switches</b>		N/A
G.1.1	General		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
<b>G.2</b>	<b>Relays</b>		N/A
G.2.1	Requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
<b>G.3</b>	<b>Protective devices</b>		Pass
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors	See appended table 4.1.2.	Pass
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions .....		N/A
<b>G.4</b>	<b>Connectors</b>		Pass
G.4.1	Spacings		N/A
G.4.2	Mains connector configuration.....		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		Pass
<b>G.5</b>	<b>Wound components</b>		Pass
G.5.1	Wire insulation in wound components		N/A
G.5.1.2	Protection against mechanical stress		N/A
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle).....		—
	Test temperature (°C) .....		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		N/A
G.5.3.1	Compliance method.....		N/A
	Position .....		N/A
	Method of protection .....		N/A
G.5.3.2	Insulation		N/A
	Protection from displacement of windings .....		—
G.5.3.3	Transformer overload tests		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding temperatures		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter ..... :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors	Certified DC fan used.	Pass
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature ..... :		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
<b>G.6</b>	<b>Wire Insulation</b>		N/A
G.6.1	General		N/A
G.6.2	Enamelled winding wire insulation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>G.7</b>	<b>Mains supply cords</b>		N/A
G.7.1	General requirements		N/A
	Type .....		—
G.7.2	Cross sectional area (mm <sup>2</sup> or AWG) .....		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N) .....		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) .....		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, <i>D</i> (mm) .....		—
	Radius of curvature after test (mm) .....		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
<b>G.8</b>	<b>Varistors</b>		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
<b>G.9</b>	<b>Integrated circuit (IC) current limiters</b>		Pass
G.9.1	Requirements		Pass



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Clause	Requirement + Test	Result - Remark	Verdict
	IC limiter output current (max. 5A)..... :	see table 4.1.2	—
	Manufacturers' defined drift ..... :	certified IC used (see table 4.1.2 for details)	—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
<b>G.10</b>	<b>Resistors</b>		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
<b>G.11</b>	<b>Capacitors and RC units</b>		N/A
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
<b>G.12</b>	<b>Optocouplers</b>		N/A
	Optocouplers comply with IEC 60747-5-5 with specifics		N/A
	Type test voltage $V_{ini,a}$ ..... :		—
	Routine test voltage, $V_{ini,b}$ ..... :		—
<b>G.13</b>	<b>Printed boards</b>		Pass
G.13.1	General requirements		Pass
G.13.2	Uncoated printed boards		Pass
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation ..... :		N/A
	Number of insulation layers (pcs) ..... :		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.13.6.2	Test method and compliance		N/A
<b>G.14</b>	<b>Coating on components terminals</b>		N/A
G.14.1	Requirements .....		N/A
<b>G.15</b>	<b>Pressurized liquid filled components</b>		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
<b>G.16</b>	<b>IC including capacitor discharge function (ICX)</b>		N/A
G.16.1	Condition for fault tested is not required		N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on .....		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test..... :		—
G.16.3	Capacitor discharge test .....		N/A
<b>H</b>	<b>CRITERIA FOR TELEPHONE RINGING SIGNALS</b>		N/A
<b>H.1</b>	<b>General</b>		N/A
<b>H.2</b>	<b>Method A</b>		N/A
<b>H.3</b>	<b>Method B</b>		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz) .....		—
H.3.1.2	Voltage (V) .....		—

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Clause	Requirement + Test	Result - Remark	Verdict
H.3.1.3	Cadence; time (s) and voltage (V) .....		—
H.3.1.4	Single fault current (mA): .....		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V).....		N/A
<b>J</b>	<b>INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION</b>		N/A
<b>J.1</b>	<b>General</b>		N/A
	Winding wire insulation .....		—
	Solid round winding wire, diameter (mm) .....		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm <sup>2</sup> ) .....		N/A
<b>J.2/J.3</b>	Tests and Manufacturing	(See separate test report)	—
<b>K</b>	<b>SAFETY INTERLOCKS</b>		N/A
<b>K.1</b>	<b>General requirements</b>		N/A
	Instructional safeguard .....		N/A
<b>K.2</b>	<b>Components of safety interlock safeguard mechanism</b>		N/A
<b>K.3</b>	<b>Inadvertent change of operating mode</b>		N/A
<b>K.4</b>	<b>Interlock safeguard override</b>		N/A
<b>K.5</b>	<b>Fail-safe</b>		N/A
K.5.1	Under single fault condition		N/A
<b>K.6</b>	<b>Mechanically operated safety interlocks</b>		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance .....		N/A
<b>K.7</b>	<b>Interlock circuit isolation</b>		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm).....		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm).....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test before and after the test of K.7.2..... :		N/A
K.7.2	Overload test, Current (A)..... :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
<b>L</b>	<b>DISCONNECT DEVICES</b>		N/A
<b>L.1</b>	<b>General requirements</b>		N/A
<b>L.2</b>	<b>Permanently connected equipment</b>		N/A
<b>L.3</b>	<b>Parts that remain energized</b>		N/A
<b>L.4</b>	<b>Single-phase equipment</b>		N/A
<b>L.5</b>	<b>Three-phase equipment</b>		N/A
<b>L.6</b>	<b>Switches as disconnect devices</b>		N/A
<b>L.7</b>	<b>Plugs as disconnect devices</b>		N/A
<b>L.8</b>	<b>Multiple power sources</b>		N/A
	Instructional safeguard .....		N/A
<b>M</b>	<b>EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS</b>		Pass
<b>M.1</b>	<b>General requirements</b>		Pass
<b>M.2</b>	<b>Safety of batteries and their cells</b>		Pass
M.2.1	Batteries and their cells comply with relevant IEC standards .....	Rechargeable battery or battery pack comply with IEC 62133-2, UL 2054, UL/IEC 62368-1	Pass
<b>M.3</b>	<b>Protection circuits for batteries provided within the equipment</b>		Pass
M.3.1	Requirements		Pass
M.3.2	Test method		Pass
	Overcharging of a rechargeable battery	Certified battery were used. See appended table M.	Pass
	Excessive discharging	Certified battery were used. See appended table M.	Pass
	Unintentional charging of a non-rechargeable battery	Considered, battery pack is provided special shape connector for prevent reverse polarity or reverse charging.	Pass

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Clause	Requirement + Test	Result - Remark	Verdict
	Reverse charging of a rechargeable battery	Considered, battery pack is provided special shape connector for prevent reverse polarity or reverse charging.	Pass
M.3.3	Compliance	(See appended table M.3)	Pass
<b>M.4</b>	<b>Additional safeguards for equipment containing a portable secondary lithium battery</b>		Pass
M.4.1	General		Pass
M.4.2	Charging safeguards		Pass
M.4.2.1	Requirements		Pass
M.4.2.2	Compliance..... :	(See appended table M.4.2)	Pass
M.4.3	Fire enclosure ..... :	Internal battery pack is enclosed by fire enclosure.	Pass
M.4.4	Drop test of equipment containing a secondary lithium battery		Pass
M.4.4.2	Preparation and procedure for the drop test		Pass
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): ..... :	Dropped from 1m height. The voltage difference did not exceed 5% during the following 24 hour period.	Pass
M.4.4.4	Check of the charge/discharge function	Three complete discharge and charge cycles.	Pass
M.4.4.5	Charge / discharge cycle test	No fire or explosion.	Pass
M.4.4.6	Compliance		Pass
<b>M.5</b>	<b>Risk of burn due to short-circuit during carrying</b>		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
<b>M.6</b>	<b>Safeguards against short-circuits</b>		Pass
M.6.1	External and internal faults	Evaluated in UL/IEC 62368-1 recognized battery reports.	Pass
M.6.2	Compliance		N/A
<b>M.7</b>	<b>Risk of explosion from lead acid and NiCd batteries</b>		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate ..... :		N/A
M.7.2	Test method and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Minimum air flow rate, $Q$ (m <sup>3</sup> /h) .....		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%) .....		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate .....		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%) .....		N/A
M.7.4	Marking .....		N/A
<b>M.8</b>	<b>Protection against internal ignition from external spark sources of batteries with aqueous electrolyte</b>		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume $V_2$ (m <sup>3</sup> /s) .....		—
M.8.2.3	Correction factors .....		—
M.8.2.4	Calculation of distance $d$ (mm) .....		—
<b>M.9</b>	<b>Preventing electrolyte spillage</b>		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
<b>M.10</b>	<b>Instructions to prevent reasonably foreseeable misuse</b>		Pass
	Instructional safeguard .....	Refer to Enclosures 06-01.	Pass
<b>N</b>	<b>ELECTROCHEMICAL POTENTIALS</b>		N/A
	Material(s) used .....	Pollution degree considered	—
<b>O</b>	<b>MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES</b>		N/A
	Value of $X$ (mm) .....		—
<b>P</b>	<b>SAFEGUARDS AGAINST CONDUCTIVE OBJECTS</b>		Pass
<b>P.1</b>	<b>General</b>		Pass
<b>P.2</b>	<b>Safeguards against entry or consequences of entry of a foreign object</b>		Pass
P.2.1	General		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
P.2.2	Safeguards against entry of a foreign object		Pass
	Location and Dimensions (mm) ..... :	Dimension refer to enclosure 04-01 and 04-02 for details	—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts ..... :		N/A
P.2.3.2	Consequence of entry test..... :		N/A
<b>P.3</b>	<b>Safeguards against spillage of internal liquids</b>		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
<b>P.4</b>	<b>Metallized coatings and adhesives securing parts</b>		Pass
P.4.1	General		N/A
P.4.2	Tests		Pass
	Conditioning, T <sub>c</sub> (°C) ..... :	100	—
	Duration (weeks)..... :	one week	—
<b>Q</b>	<b>CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING</b>		Pass
<b>Q.1</b>	<b>Limited power sources</b>		Pass
Q.1.1	Requirements		Pass
	a) Inherently limited output	see appended table Annex Q.1	Pass
	b) Impedance limited output	see appended table Annex Q.1	Pass
	c) Regulating network limited output	see appended table Annex Q.1	Pass
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9	see appended table 4.1.2.	Pass
Q.1.2	Test method and compliance ..... :	see appended table Annex Q.1	N/A
	Current rating of overcurrent protective device (A) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>Q.2</b>	<b>Test for external circuits – paired conductor cable</b>		N/A
	Maximum output current (A) .....		N/A
	Current limiting method.....		—
<b>R</b>	<b>LIMITED SHORT CIRCUIT TEST</b>		N/A
<b>R.1</b>	<b>General</b>		N/A
<b>R.2</b>	<b>Test setup</b>		N/A
	Overcurrent protective device for test.....		—
<b>R.3</b>	<b>Test method</b>		N/A
	Cord/cable used for test.....		—
<b>R.4</b>	<b>Compliance</b>		N/A
<b>S</b>	<b>TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		N/A
<b>S.1</b>	<b>Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W</b>		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
<b>S.2</b>	<b>Flammability test for fire enclosure and fire barrier integrity</b>		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
<b>S.3</b>	<b>Flammability test for the bottom of a fire enclosure</b>		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples .....		—
	Wall thickness (mm) .....		—
<b>S.4</b>	<b>Flammability classification of materials</b>		N/A



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Clause	Requirement + Test		Verdict
<b>S.5</b>	<b>Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W</b>		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
<b>T</b>	<b>MECHANICAL STRENGTH TESTS</b>		Pass
<b>T.1</b>	<b>General</b>		Pass
<b>T.2</b>	<b>Steady force test, 10 N .....</b>		N/A
<b>T.3</b>	<b>Steady force test, 30 N .....</b>		N/A
<b>T.4</b>	<b>Steady force test, 100 N .....</b>	(See appended table T.2, T.3, T.4, T.5)	Pass
<b>T.5</b>	<b>Steady force test, 250 N .....</b>		N/A
<b>T.6</b>	<b>Enclosure impact test</b>		N/A
	Fall test		N/A
	Swing test		N/A
<b>T.7</b>	<b>Drop test .....</b>	(See appended table T.7)	Pass
<b>T.8</b>	<b>Stress relief test.....</b>	(See appended table T.8)	Pass
<b>T.9</b>	<b>Glass Impact Test .....</b>	(See appended table T.9)	N/A
<b>T.10</b>	<b>Glass fragmentation test</b>		N/A
	Number of particles counted.....		N/A
<b>T.11</b>	<b>Test for telescoping or rod antennas</b>		N/A
	Torque value (Nm) .....		N/A
<b>U</b>	<b>MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION</b>		N/A
<b>U.1</b>	<b>General</b>		N/A
	Instructional safeguard .....		N/A
<b>U.2</b>	<b>Test method and compliance for non-intrinsically protected CRTs</b>		N/A
<b>U.3</b>	<b>Protective screen</b>		N/A
<b>V</b>	<b>DETERMINATION OF ACCESSIBLE PARTS</b>		Pass
<b>V.1</b>	<b>Accessible parts of equipment</b>		Pass
<b>V.1.1</b>	General	Figure V.1 & V.2 used	Pass
<b>V.1.2</b>	Surfaces and openings tested with jointed test probes		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
V.1.3	Openings tested with straight unjointed test probes		Pass
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
<b>V.2</b>	<b>Accessible part criterion</b>		Pass
<b>X</b>	<b>ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)</b>		N/A
	Clearance .....		N/A
<b>Y</b>	<b>CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES</b>		N/A
<b>Y.1</b>	<b>General</b>		N/A
<b>Y.2</b>	<b>Resistance to UV radiation</b>		N/A
<b>Y.3</b>	<b>Resistance to corrosion</b>		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by..... :		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure .....		N/A
Y.3.5	Compliance		N/A
<b>Y.4</b>	<b>Gaskets</b>		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods .....		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
<b>Y.5</b>	<b>Protection of equipment within an outdoor enclosure</b>		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 .....		N/A
Y.5.3	Water spray test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
<b>Y.6</b>	<b>Mechanical strength of enclosures</b>		N/A
Y.6.1	General		N/A
Y.6.2	Impact test ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

<b>5.2</b>	<b>TABLE: Classification of electrical energy sources</b>						N/A
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type <sup>1)</sup>	Additional Info <sup>2)</sup>	
		Normal			SS		
		Abnormal			SS		
		Single fault – SC/OC			SS		
		Normal		--	CP		
		Abnormal		--	CP		
		Single fault – SC/OC		--	CP		
		Normal			SP		
		Abnormal			SP		
		Single fault – SC/OC			SP		
		Normal			RP		
		Abnormal			RP		
		Single fault – SC/OC			RP		
Supplementary information:							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc.							
2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							

<b>5.4.1.8</b>	<b>TABLE: Working voltage measurement</b>				N/A
Location		RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments
Supplementary information:					

<b>5.4.1.10.2</b>	<b>TABLE: Vicat softening temperature of thermoplastics</b>				N/A
Method .....					—
Object/ Part No./Material	Manufacturer/trademark		Thickness (mm)	T softening (°C)	

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics					N/A
Allowed impression diameter (mm) ..... :				≤ 2 mm		—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)		Impression diameter (mm)	
Supplementary information:						

<b>5.4.2, 5.4.3</b>	<b>TABLE: Minimum Clearances/Creepage distance</b>							N/A
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U <sub>rms</sub> (V)	Freq <sup>1)</sup> (kHz)	Required cl (mm)	cl (mm)	E.S. <sup>2)</sup> (V)	Required cr (mm)	cr (mm)
Supplementary information:								
1) Only for frequency above 30 kHz 2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)								
Note 1: Only for frequency above 30 kHz Note 2: See table 5.4.2.4 if this is based on electric strength test Note 3: Provide Material Group								

<b>5.4.4.2</b>	<b>TABLE: Minimum distance through insulation</b>				N/A
Distance through insulation (DTI) at/of:	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)	
Supplementary information:					

<b>5.4.4.9</b>	<b>TABLE: Solid insulation at frequencies &gt;30 kHz</b>					N/A
Insulation material	E <sub>P</sub>	Frequency (kHz)	K <sub>R</sub>	Thickness d (mm)	Insulation	V <sub>PW</sub> (Vpk)
Supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

<b>5.4.9</b>	<b>TABLE: Electric strength tests</b>			N/A
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No	
Functional:	--	--	--	
Basic/supplementary:	--	--	--	
Reinforced:	--	--	--	
Routine Tests:	--	--	--	
Supplementary information:				

<b>5.5.2.2</b>	<b>TABLE: Stored discharge on capacitors</b>					N/A
Location	Supply Voltage (V)	Operating and fault condition <sup>1)</sup>	Switch position	Measured voltage (Vpk)	ES Class	
Supplementary information:						
X-capacitors installed for testing are: [ ] bleeding resistor rating: [ ] ICX: Notes: A. Test Location: Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth B. Operating condition abbreviations: N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition						

<b>5.6.6</b>	<b>TABLE: Resistance of protective conductors and terminations</b>				N/A
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Supplementary information:					

<b>5.7.4</b>	<b>TABLE: Unearthed accessible parts</b>				N/A
--------------	--	--	--	--	-----

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Clause	Requirement + Test		Result - Remark			Verdict
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V <sub>rms</sub> or V <sub>pk</sub> )	Current (A <sub>rms</sub> or A <sub>pk</sub> )	Freq. (Hz)	
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

5.7.5	TABLE: Earthed accessible conductive part			N/A
Supply voltage (V) .....				—
Phase(s) .....	[ ] Single Phase; [ ] Three Phase; [ ] Delta; [ ] Wye			
Power Distribution System .....	[ ] TN    [ ] TT    [ ] IT			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
	1			
	2*			
	3			
	4			
	5			
	6			
	8			
Supplementary Information:				
Notes:				
[1] Supply voltage is the anticipated maximum Touch Voltage				
[2] Earthed neutral conductor [Voltage differences less than 1% or more]				
[3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3				
[4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.				
[5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.				

<b>5.8</b>	<b>TABLE: Backfeed safeguard in battery backed up supplies</b>					N/A
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
Supplementary information:						
Abbreviation: SC= short circuit, OC= open circuit						

<b>6.2.2</b>	<b>TABLE: Power source circuit classifications</b>	N/A
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Clause	Requirement + Test	Result - Remark	Verdict

Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power <sup>1)</sup> (W)	Time (S)	PS class
					3	
		--	--	--	5	
					3	
		--	--	--	5	

Supplementary information:

Abbreviation: SC= short circuit; OC= open circuit

1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.

6.2.3.1	TABLE: Determination of Arcing PIS				N/A
Location		Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
Supplementary information:					
An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (Vp) and normal operating condition rms current (Irms) is greater than 15.					

6.2.3.2	Table: Determination of Resistive PIS			N/A
Location		Operating and fault condition	Dissipate power (W)	Resistive PIS? Yes/No
Supplementary Information:				
Abbreviation: SC= short circuit; OC= open circuit				

8.5.5	TABLE: High Pressure Lamp				N/A
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No?	
Manufacturer: Cat no.:					
Supplementary information:					

<b>9.6</b>	<b>TABLE: Temperature measurements for wireless power transmitters</b>			N/A
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Clause	Requirement + Test				Result - Remark		Verdict	
Supply voltage (V) ..... :								—
Max. transmit power of transmitter (W) ..... :								—
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm	
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)
Supplementary information:								

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements				Pass
Supply voltage (V) .....:	See Below	See Below	See Below	See Below	—
Ambient temperature during test $T_{amb}$ (°C).....:	--	--	--	--	—
Maximum measured temperature T of part/at:	T (°C)				Allowed $T_{max}$ (°C)
D Cover Plastic Normal Condition	--	--	--	--	--
With battery Model L22D3PG4/L23M3PG2	Condition B L22D3PG 4	Condition B L22D3PG 4	Condition B L23M3PG 2	Condition B L23M3PG 2	--
1.PCB near DC Jack	36.4	50.0	39.2	52.9	105
2.PCB near CPU	45.1	58.7	46.8	60.5	105
3.RTC battery	36.7	50.3	45.2	58.9	100
4.Battery Pack	44.7	58.3	48.4	62.1	100
5.Heatsink	48.0	61.6	50.9	64.6	--
6.Internal plastic enclosure near CPU	42.4	56.0	46.2	59.9	80
7.Internal plastic enclosure near SSD	40.9	54.5	44.7	58.4	80
8.Internal plastic enclosure near battery	40.8	54.4	42.1	55.8	80
Ambient	21.4	35.0	21.3	35.0	--
Touch temperature	--	--	--	--	--
9.Button	25.7	29.3	26.7	30.4	60
10.Panel	31.4	35.0	31.7	35.4	56
11.Touch pad	30.9	34.5	34.8	38.5	48
12.Palm rest	33.6	37.2	36.8	40.5	48

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Clause	Requirement + Test		Result - Remark		Verdict
13.Enclosure outside between data port and keyboard	32.9	36.5	34.8	38.5	60
14.Keyboard	33.0	36.6	34.5	38.2	48
15.Enclosure outside (A cover)	23.6	27.2	24.0	27.7	51
16.Plastic enclosure outside near CPU	35.2	38.8	38.9	42.6	60
17.Plastic enclosure outside near SSD	32.1	35.7	34.7	38.4	60
18.Plastic enclosure outside near battery	35.1	38.7	37.8	41.5	60
Ambient	21.4	25.0	21.3	25.0	--
D Cover Metal Normal Condition	--	--	--	--	--
With battery Model L22M3PG4 /L23X3PG2	47Wh Condition A L22M3PG 4	47Wh Condition A L22M3PG 4	57Wh Condition A L23X3PG 2	57Wh Condition A L23X3PG 2	--
1.PCB near DC Jack	46.4	58.9	46.6	60.2	105
2.PCB near CPU	53.6	66.1	53.7	67.3	105
3.RTC battery	29.7	42.2	31.4	45.0	100
4.Battery Pack	31.4	43.9	33.1	46.7	100
5.Heatsink	47.9	60.4	49.0	62.6	--
6.Internal plastic enclosure near CPU	42.7	55.2	45.9	59.5	80
7.Internal plastic enclosure near SSD	42.1	54.6	43.7	57.3	80
8.Internal plastic enclosure near battery	31.0	43.5	33.3	46.9	80
Ambient	22.5	35.0	21.4	35.0	--
Touch temperature	--	--	--	--	--
9.Button	27.0	29.5	28.3	31.9	60
10.Panel	32.3	34.8	34.8	38.4	56
11.Touch pad	29.0	31.5	29.8	33.4	48
12.Palm rest	34.9	37.4	35.3	38.9	48
13.Enclosure outside between data port and keyboard	37.9	40.4	37.3	40.9	60
14.Keyboard	37.9	40.4	37.3	40.9	48
15.Enclosure outside (A cover)	25.1	27.6	24.0	27.6	51
16.Metal enclosure outside near CPU	39.3	41.8	42.9	46.5	51
17.Metal enclosure outside near SSD	35.0	37.5	37.1	40.7	51
18.Metal enclosure outside near battery	32.8	35.3	35.3	38.9	51
Ambient	22.5	25.0	21.4	25.0	--
D Cover Plastic	--	--	--	--	--

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Normal Condition					
With battery Model L22M3PG4 /L23X3PG2	47Wh Condition A L22M3PG 4	47Wh Condition A L22M3PG 4	57Wh Condition A L23X3PG 2	57Wh Condition A L23X3PG 2	--
1.PCB near DC Jack	44.3	55.5	43.4	57.1	105
2.PCB near CPU	54.3	65.5	54.1	67.8	105
3.RTC battery	28.6	39.8	28.0	41.7	100
4.Battery Pack	30.4	41.6	29.4	43.1	100
5.Heatsink	49.4	60.6	49.3	63.0	--
6.Internal plastic enclosure near CPU	48.4	59.6	48.3	62.0	80
7.Internal plastic enclosure near SSD	48.6	59.8	47.7	61.4	80
8.Internal plastic enclosure near battery	28.5	39.7	27.8	41.5	80
Ambient	23.8	35.0	21.3	35.0	--
Touch temperature	--	--	--	--	--
9.Button	26.9	28.1	27.4	31.1	60
10.Panel	31.3	32.5	30.3	34.0	56
11.Touch pad	28.6	29.8	28.2	31.9	48
12.Palm rest	34.9	36.1	35.2	38.9	48
13.Enclosure outside between data port and keyboard	35.9	37.1	35.5	39.2	60
14.Keyboard	37.7	38.9	37.8	41.5	48
15.Enclosure outside (A cover)	24.1	25.3	23.6	27.3	51
16.Plastic enclosure outside near CPU	43.1	44.3	42.2	45.9	60
17.Plastic enclosure outside near SSD	34.2	35.4	33.4	37.1	60
18.Plastic enclosure outside near battery	29.4	30.6	27.9	31.6	60
Ambient	23.8	25.0	21.3	25.0	--
D Cover Metal Normal Condition	--	--	--	--	--
With battery Model L22D3PG4/L23M3PG2	Condition B L22D3PG 4	Condition B L22D3PG 4	Condition B L23M3PG 2	Condition B L23M3PG 2	--
1.PCB near DC Jack	42.2	54.4	42.0	55.0	105
2.PCB near CPU	49.6	61.8	50.7	63.7	105
3.RTC battery	39.7	51.9	42.8	55.8	100
4.Battery Pack	45.0	57.2	47.9	60.9	100
5.Heatsink	49.1	61.3	49.6	62.6	--

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
6.Internal metal enclosure near CPU	43.6	55.8	44.3	57.3	80
7.Internal metal enclosure near SSD	45.5	57.7	46.1	59.1	80
8.Internal metal enclosure near battery	37.6	49.8	41.3	54.3	80
Ambient	22.8	35.0	22	35.0	--
Touch temperature	--	--	--	--	--
9.Button	28.7	30.9	29.6	32.6	60
10.Panel	33.8	36.0	35.1	38.1	56
11.Touch pad	33.4	35.6	34.7	37.7	48
12.Palm rest	36.4	38.6	37.3	40.3	48
13.Enclosure outside between data port and keyboard	37.0	39.2	36.4	39.4	60
14.Keyboard	35.8	38.0	35.8	38.8	48
15.Enclosure outside (A cover)	25.6	27.8	24.9	27.9	51
16.Metal enclosure outside near CPU	39.9	42.1	40.9	43.9	51
17.Metal enclosure outside near SSD	38.5	40.7	39.9	42.9	51
18.Metal enclosure outside near battery	36.6	38.8	39.2	42.2	51
Ambient	22.8	25.0	22	25.0	--
Abnormal Condition: Block openings D Cover Plastic	--	--	--	--	--
With battery Model L23X3PG2/ L23M3PG2	Condition A L23X3PG 2	Condition A L23X3PG 2	Condition B L23M3PG 2	Condition B L23M3PG 2	--
1.PCB near DC Jack	45.7	59.2	45.3	58.8	300
2.PCB near CPU	62.3	75.8	58.1	71.6	300
3.RTC battery	29.6	43.1	46.2	59.7	100
4.Battery Pack	32.6	46.1	52.0	65.5	100
5.Heatsink	60.1	73.6	55.3	68.8	--
6.Internal plastic enclosure near CPU	57.2	70.7	54.0	67.5	300
7.Internal plastic enclosure near SSD	47.8	61.3	55.2	68.7	300
8.Internal plastic enclosure near battery	31.2	44.7	48.6	62.1	300
Ambient	21.5	35.0	21.5	35.0	--
Touch temperature	--	--	--	--	--
9.Button	33.7	37.2	32.5	36	70
10.Panel	32.7	36.2	32.2	35.7	66
11.Touch pad	28.7	32.2	36.8	40.3	58
12.Palm rest	36.1	39.6	41.7	45.2	58

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
13.Enclosure outside between data port and keyboard	38.9	42.4	39.8	43.3	70
14.Keyboard	43.8	47.3	40.8	44.3	58
15.enclosure outside (A cover)	27.1	30.6	28.1	31.6	70
16.Plastic enclosure outside near CPU	49.7	53.2	47.7	51.2	70
17.Plastic enclosure outside near SSD	35.5	39.0	42.6	46.1	70
18.Plastic enclosure outside near battery	34.1	37.6	43.2	46.7	70
Ambient	21.5	25.0	21.5	25.0	--
Abnormal Condition: USB overload D Cover Plastic	Condition A L23X3PG 2	Condition A L23X3PG 2	Condition B L23M3PG 2	Condition B L23M3PG 2	--
With battery Model	--	--	--	--	--
1.PCB near DC Jack	45.5	57.0	43.5	55.9	300
2.PCB near CPU	67.2	78.7	50.1	62.5	300
3.RTC battery	32.3	43.8	51.0	63.4	100
4.Battery Pack	35.0	46.5	53.0	65.4	100
5.Heatsink	65.7	77.2	46.5	58.9	--
6.Internal plastic enclosure near CPU	61.6	73.1	44.8	57.2	300
7.Internal plastic enclosure near SSD	46.8	58.3	49.2	61.6	300
8.Internal plastic enclosure near battery	32.9	44.4	46.7	59.1	300
Ambient	23.5	35.0	22.6	35.0	--
Touch temperature	--	--	--	--	--
9.Button	30.1	31.6	27.0	29.4	70
10.Panel	40.8	42.3	33.2	35.6	66
11.Touch pad	29.8	31.3	39.0	41.4	58
12.Palm rest	37.1	38.6	41.7	44.1	58
13.Enclosure outside between data port and keyboard	41.1	42.6	41.6	44.0	70
14.Keyboard	43.8	45.3	38.7	41.1	58
15.enclosure outside (A cover)	29.5	31.0	28.2	30.6	70
16.Plastic enclosure outside near CPU	45.4	46.9	37.2	39.6	70
17.Plastic enclosure outside near SSD	34.9	36.4	36.7	39.1	70
18.Plastic enclosure outside near battery	33.4	34.9	39.8	42.2	70
Ambient	23.5	25.0	22.6	25.0	--
Abnormal Condition: JUC1 overload D Cover Plastic	Condition A	Condition A	Condition B	Condition B	--

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Clause	Requirement + Test		Result - Remark		Verdict
	L23X3PG 2	L23X3PG 2	L23M3PG 2	L23M3PG 2	
With battery Model	--	--	--	--	--
1.PCB near DC Jack	47.1	58.3	41.2	53.4	300
2.PCB near CPU	66.8	78.0	50.9	63.1	300
3.RTC battery	32.7	43.9	52.6	64.8	100
4.Battery Pack	35.4	46.6	63.2	75.4	100
5.Heatsink	66.7	77.9	49.7	61.9	--
6.Internal plastic enclosure near CPU	62.7	73.9	47.2	59.4	300
7.Internal plastic enclosure near SSD	48.9	60.1	46.7	58.9	300
8.Internal plastic enclosure near battery	33.5	44.7	58.4	70.6	300
Ambient	23.8	35.0	22.8	35.0	--
Touch temperature	--	--	--	--	--
9.Button	29.9	31.1	28.7	30.9	70
10.Panel	42.2	43.4	35.6	37.8	66
11.Touch pad	29.6	30.8	42.8	45.0	58
12.Palm rest	36.9	38.1	43.2	45.4	58
13.Enclosure outside between data port and keyboard	40.6	41.8	37.2	39.4	70
14.Keyboard	44.2	45.4	38.1	40.3	58
15.enclosure outside (A cover)	31.2	32.4	27.0	29.2	70
16.Plastic enclosure outside near CPU	46.3	47.5	39.9	42.1	70
17.Plastic enclosure outside near SSD	33.6	34.8	37.8	40.0	70
18.Plastic enclosure outside near battery	34.6	35.8	47.9	50.1	70
Ambient	23.8	25.0	22.8	25.0	--
Abnormal Condition: JUC2 overload D Cover Plastic	Condition A L23X3PG 2	Condition A L23X3PG 2	Condition B L23M3PG 2	Condition B L23M3PG 2	--
With battery Model	--	--	--	--	--
1.PCB near DC Jack	49.3	59.5	42.0	54.3	300
2.PCB near CPU	67.5	77.7	45.2	57.5	300
3.RTC battery	32.4	42.6	49.5	61.8	100
4.Battery Pack	35.3	45.5	56.8	69.1	100
5.Heatsink	67.8	78.0	47.1	59.4	--
6.Internal plastic enclosure near CPU	63.7	73.9	43.2	55.5	300
7.Internal plastic enclosure near SSD	49.8	60.0	43.4	55.7	300

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Clause	Requirement + Test		Result - Remark		Verdict
8.Internal plastic enclosure near battery	33.5	43.7	51.7	64.0	300
Ambient	24.8	35.0	22.7	35.0	--
Touch temperature	--	--	--	--	--
9.Button	30.4	30.6	27.2	29.5	70
10.Panel	40.7	40.9	33.4	35.7	66
11.Touch pad	29.9	30.1	38.4	40.7	58
12.Palm rest	37.4	37.6	39.9	42.2	58
13.Enclosure outside between data port and keyboard	39.6	39.8	35.3	37.6	70
14.Keyboard	43.9	44.1	37.3	39.6	58
15.enclosure outside (A cover)	31.7	31.9	27.5	29.8	70
16.Plastic enclosure outside near CPU	46.8	47.0	37.0	39.3	70
17.Plastic enclosure outside near SSD	34.5	34.7	35.5	37.8	70
18.Plastic enclosure outside near battery	34.8	35.0	43.2	45.5	70
Ambient	24.8	25.0	22.7	25.0	--
SF Condition: DC Fan Stalled D Cover Plastic	--	--	Condition B L23M3PG 2	Condition B L23M3PG 2	--
With battery Model	--	--	--	--	--
1.PCB near DC Jack	--	--	48.7	61.6	--
2.PCB near CPU	--	--	73.0	85.9	--
3.RTC battery	--	--	56.1	69.0	100
4.Battery Pack	--	--	58.5	71.4	100
5.Heatsink	--	--	76.7	89.6	--
6.Internal plastic enclosure near CPU	--	--	73.5	86.4	--
7.Internal plastic enclosure near SSD	--	--	58.9	71.8	--
8.Internal plastic enclosure near battery	--	--	57.6	70.5	--
Ambient	--	--	22.1	35.0	--
Touch temperature	--	--	--	--	--
9.Button	--	--	32.1	35.0	70
10.Panel	--	--	30.2	33.1	66
11.Touch pad	--	--	43.5	46.4	58
12.Palm rest	--	--	47.2	50.1	58
13.Enclosure outside between data port and keyboard	--	--	44.2	47.1	70
14.Keyboard	--	--	45.6	48.5	58

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
15. enclosure outside (A cover)	--	--	26.7	29.6	70
16. Plastic enclosure outside near CPU	--	--	59.2	62.1	70
17. Plastic enclosure outside near SSD	--	--	47.9	50.8	70
18. Plastic enclosure outside near battery	--	--	48.4	51.3	70
Ambient	--	--	22.1	25.0	--
Abnormal Condition: 2 TypeC charge together D Cover Plastic	Condition A L23X3PG 2	Condition A L23X3PG 2	--	--	--
With battery Model	--	--	--	--	--
1. PCB near DC Jack	41.4	56.2	--	--	300
2. PCB near CPU	66.3	81.1	--	--	300
3. RTC battery	29.0	43.8	--	--	100
4. Battery Pack	29.6	44.4	--	--	100
5. Heatsink	65.8	80.6	--	--	--
6. Internal plastic enclosure near CPU	60.4	75.2	--	--	300
7. Internal plastic enclosure near SSD	46.2	61.0	--	--	300
8. Internal plastic enclosure near battery	29.6	44.4	--	--	300
Ambient	20.2	35.0	--	--	--
Touch temperature	--	--	--	--	--
9. Button	30.3	35.1	--	--	70
10. Panel	40.7	45.5	--	--	66
11. Touch pad	28.8	33.6	--	--	58
12. Palm rest	37.5	42.3	--	--	58
13. Enclosure outside between data port and keyboard	35.8	40.6	--	--	70
14. Keyboard	41.9	46.7	--	--	58
15. enclosure outside (A cover)	28.1	32.9	--	--	70
16. Plastic enclosure outside near CPU	45.8	50.6	--	--	70
17. Plastic enclosure outside near SSD	32.8	37.6	--	--	70
18. Plastic enclosure outside near battery	32.5	37.3	--	--	70
Ambient	20.2	25	--	--	--
Abnormal Condition: Block openings D Cover Metal	Condition A L23X3PG 2	Condition A L23X3PG 2	Condition B L23M3PG 2	Condition B L23M3PG 2	--
With battery Model	--	--	--	--	--
1. PCB near DC Jack	50.8	61.5	43.7	55.8	300



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Clause	Requirement + Test		Result - Remark		Verdict
2.PCB near CPU	58.9	69.6	55.7	67.8	300
3.RTC battery	36.0	46.7	44.4	56.5	100
4.Battery Pack	34.3	45.0	46.9	59.0	100
5.Heatsink	54.4	65.1	54.0	66.1	--
6.Internal metal enclosure near CPU	33.6	44.3	33.0	45.1	300
7.Internal metal enclosure near SSD	37.9	48.6	35.6	47.7	300
8.Internal metal enclosure near battery	33.0	43.7	36.7	48.8	300
Ambient	24.3	35.0	22.9	35.0	--
Touch temperature	--	--	--	--	--
9.Button	39.1	39.8	40.1	42.2	70
10.Panel	43.9	44.6	37.9	40.0	66
11.Touch pad	43.7	44.4	40.0	42.1	58
12.Palm rest	30.1	30.8	28.7	30.8	58
13.Enclosure outside between data port and keyboard	50.4	51.1	48.0	50.1	70
14.Keyboard	49.4	50.1	46.6	48.7	58
15.enclosure outside (A cover)	35.7	36.4	42.9	45.0	61
16.Metal enclosure outside near CPU	47.1	47.8	44.5	46.6	61
17.Metal enclosure outside near SSD	41.9	42.6	41.5	43.6	61
18.Metal enclosure outside near battery	38.1	38.8	41.8	43.9	61
Ambient	24.3	25.0	22.9	25.0	--
Abnormal Condition: USB overload D Cover Metal	Condition A L23X3PG 2	Condition A L23X3PG 2	Condition B L23M3PG 2	Condition B L23M3PG 2	--
With battery Model	--	--	--	--	--
1.PCB near DC Jack	47.2	61.3	44.7	58.8	300
2.PCB near CPU	62.2	76.3	48.4	62.5	300
3.RTC battery	31.9	46.0	49.3	63.4	100
4.Battery Pack	34.5	48.6	54.1	68.2	100
5.Heatsink	58.6	72.7	48.7	62.8	--
6.Internal plastic enclosure near CPU	27.8	41.9	30.2	44.3	300
7.Internal plastic enclosure near SSD	35.8	49.9	33.8	47.9	300
8.Internal plastic enclosure near battery	29.1	43.2	38.4	52.5	300
Ambient	20.9	35.0	20.9	35.0	--
Touch temperature	--	--	--	--	--
9.Button	36.0	40.1	41.7	45.8	70

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
10.Panel	42.8	46.9	40.9	45.0	66
11.Touch pad	40.7	44.8	37.7	41.8	58
12.Palm rest	29.2	33.3	27.1	31.2	58
13.Enclosure outside between data port and keyboard	46.9	51.0	43.0	47.1	70
14.Keyboard	44.8	48.9	49.0	53.1	58
15.enclosure outside (A cover)	34.6	38.7	46.7	50.8	61
16.Metal enclosure outside near CPU	42.7	46.8	41.4	45.5	61
17.Metal enclosure outside near SSD	35.9	40.0	42.7	46.8	61
18.Metal enclosure outside near battery	37.0	41.1	43.4	47.5	61
Ambient	20.9	25.0	20.9	25.0	--
Abnormal Condition: JUC1 overload D Cover Metal	Condition A L23X3PG 2	Condition A L23X3PG 2	Condition B L23M3PG 2	Condition B L23M3PG 2	--
With battery Model	--	--	--	--	--
1.PCB near DC Jack	49.7	62.0	45.5	58.3	300
2.PCB near CPU	66.6	78.9	49.0	61.8	300
3.RTC battery	37.5	49.8	52.9	65.7	100
4.Battery Pack	39.7	52.0	54.9	67.7	100
5.Heatsink	63.3	75.6	50.5	63.3	--
6.Internal plastic enclosure near CPU	32.8	45.1	30.1	42.9	300
7.Internal plastic enclosure near SSD	45.4	57.7	34.3	47.1	300
8.Internal plastic enclosure near battery	34.6	46.9	40.5	53.3	300
Ambient	22.7	35.0	22.2	35.0	--
Touch temperature	--	--	--	--	--
9.Button	43.3	45.6	42.8	45.6	70
10.Panel	46.8	49.1	43.1	45.9	66
11.Touch pad	48.0	50.3	38.5	41.3	58
12.Palm rest	31.2	33.5	27.6	30.4	58
13.Enclosure outside between data port and keyboard	52.0	54.3	43.6	46.4	70
14.Keyboard	48.1	50.4	48.3	51.1	58
15.enclosure outside (A cover)	39.6	41.9	47.2	50.0	61
16.Metal enclosure outside near CPU	48.1	50.4	42.0	44.8	61
17.Metal enclosure outside near SSD	39.9	42.2	43.1	45.9	61
18.Metal enclosure outside near battery	42.1	44.4	43.8	46.6	61

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Ambient	22.7	25.0	22.2	25.0	--
Abnormal Condition: JUC2 overload D Cover Metal	Condition A L23X3PG 2	Condition A L23X3PG 2	Condition B L23M3PG 2	Condition B L23M3PG 2	--
With battery Model	--	--	--	--	--
1.PCB near DC Jack	50.7	62.9	47.2	60.6	300
2.PCB near CPU	67.2	79.4	49.3	62.7	300
3.RTC battery	36.1	48.3	50.7	64.1	100
4.Battery Pack	39.6	51.8	49.1	62.5	100
5.Heatsink	64.1	76.3	57.3	70.7	--
6.Internal plastic enclosure near CPU	33.9	46.1	29.4	42.8	300
7.Internal plastic enclosure near SSD	49.6	61.8	32.8	46.2	300
8.Internal plastic enclosure near battery	34.1	46.3	41.1	54.5	300
Ambient	22.8	35.0	21.6	35.0	--
Touch temperature	--	--	--	--	--
9.Button	41.0	43.2	45.5	48.9	70
10.Panel	43.1	45.3	39.9	43.3	66
11.Touch pad	45.0	47.2	41.6	45.0	58
12.Palm rest	29.1	31.3	27.0	30.4	58
13.Enclosure outside between data port and keyboard	52.4	54.6	44.0	47.4	70
14.Keyboard	47.8	50.0	48.1	51.5	58
15.enclosure outside (A cover)	39.6	41.8	45.6	49.0	61
16.Metal enclosure outside near CPU	48.5	50.7	42.2	45.6	61
17.Metal enclosure outside near SSD	39.6	41.8	42.9	46.3	61
18.Metal enclosure outside near battery	42.3	44.5	42.5	45.9	61
Ambient	22.8	25.0	21.6	25.0	--
SF Condition: DC Fan Stalled D Cover Metal	Condition A L23X3PG 2	Condition A L23X3PG 2	Condition B L23M3PG 2	Condition B L23M3PG 2	--
With battery Model	--	--	--	--	--
1.PCB near DC Jack	53.4	65.9	49.5	63.9	--
2.PCB near CPU	69.1	81.6	74.6	89.0	--
3.RTC battery	37.2	49.7	53.8	68.2	100
4.Battery Pack	40.7	53.2	55.1	69.5	100
5.Heatsink	70.1	82.6	78.9	93.3	--

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
6.Internal plastic enclosure near CPU	34.8	47.3	36.6	51.0	--
7.Internal plastic enclosure near SSD	31.5	44.0	32.5	46.9	--
8.Internal plastic enclosure near battery	34.9	47.4	41.0	55.4	--
Ambient	22.5	35.0	20.6	35.0	--
Touch temperature	--	--	--	--	--
9.Button	40.9	43.4	46.3	50.7	70
10.Panel	45.7	48.2	44.8	49.2	66
11.Touch pad	44.1	46.6	44.8	49.2	58
12.Palm rest	27.0	29.5	26.3	30.7	58
13.Enclosure outside between data port and keyboard	58.0	60.5	60.8	65.2	70
14.Keyboard	54.8	57.3	55.5	59.9	58
15.enclosure outside (A cover)	40.4	42.9	52.3	56.7	61
16.Metal enclosure outside near CPU	53.2	55.7	54.8	59.2	61
17.Metal enclosure outside near SSD	45.2	47.7	49.2	53.6	61
18.Metal enclosure outside near battery	42.6	45.1	49.9	54.3	61
Ambient	22.5	25.0	20.6	25.0	--
Abnormal Condition: 2 TypeC charge together D Cover Metal	Condition A L23X3PG 2	Condition A L23X3PG 2	--	--	--
With battery Model	--	--	--	--	--
1.PCB near DC Jack	46.8	61.8	--	--	300
2.PCB near CPU	68.4	83.4	--	--	300
3.RTC battery	34.6	49.6	--	--	100
4.Battery Pack	36.8	51.8	--	--	100
5.Heatsink	66.9	81.9	--	--	--
6.Internal plastic enclosure near CPU	54.8	69.8	--	--	300
7.Internal plastic enclosure near SSD	50.9	65.9	--	--	300
8.Internal plastic enclosure near battery	38.4	53.4	--	--	300
Ambient	20.0	35.0	--	--	--
Touch temperature	--	--	--	--	--
9.Button	32.0	37.0	--	--	70
10.Panel	39.9	44.9	--	--	66
11.Touch pad	31.0	36.0	--	--	58
12.Palm rest	37.1	42.1	--	--	58

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
13.Enclosure outside between data port and keyboard	37.9	42.9	--	--	--	--	70
14.Keyboard	40.2	45.2	--	--	--	--	58
15.enclosure outside (A cover)	24.7	29.7	--	--	--	--	61
16.Metal enclosure outside near CPU	50.7	55.7	--	--	--	--	61
17.Metal enclosure outside near SSD	42.0	47.0	--	--	--	--	61
18.Metal enclosure outside near battery	41.4	46.4	--	--	--	--	61
Ambient	20.0	25.0	--	--	--	--	--
Temperature T of winding:	t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class
Supplementary information:							
<p>T<sub>amb</sub> = The thermal steady state temperature measurement of the ambient air.</p> <p>T = The thermal steady state temperature measurement.</p> <p>T<sub>max</sub> = The limit of the thermal steady state temperature measurement.</p> <p>The batteries and adapter tested were considered to representative the others based on the Input tests in this evaluation and the Heating tests in battery certification.</p> <p>Note 1: T<sub>ma</sub> should be considered as directed by applicable requirement</p> <p>Note 2: T<sub>ma</sub> is not included in assessment of Touch Temperatures (Clause 9)</p> <p>The batteries tested were considered to representative the others based on the Input tests in this evaluation and the Heating tests in battery certification.</p> <p>All tests were conduct with DC Fan: ASIA VITAL COMPONENTS CO LTD, model BAPD0806R5HY014.</p> <p>Touch time for Bottom cover see encolsure 07-02</p>							

B.2.5		TABLE: Input test						Pass
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
--	--	--	--	--	--	--	--	Tested with battery pack L22M3PG4
20Vd c	--	3.14	3.25	62.5	--	--	--	Condition A measured between adapter and notebook
11.70 Vdc	--	4.42	--	51.7	70	--	--	Condition B measured between mainboard and battery
12.45 Vdc	--	4.52	5.021	56.3	--	--	--	Condition A measured between mainboard and

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
								battery, sleep mode, no load.
20Vd c	--	3.15	3.25	62.5	--	--	--	Condition C measured between adapter and notebook
--	--	--	--	--	--	--	--	Tested with battery pack L22D3PG4
20Vd c	--	3.15	3.25	62.5	--	--	--	Condition A measured between adapter and notebook
11.81 Vdc	--	4.43	8.333	52.3	75	--	--	Condition B measured between mainboard and battery
11.55 Vdc	--	4.48	4.598	51.7	--	--	--	Condition A measured between mainboard and battery, sleep mode, no load.
20Vd c	--	3.15	3.25	62.6	--	--	--	Condition C measured between adapter and notebook
--	--	--	--	--	--	--	--	Tested with battery pack L22B3PG4
20Vd c	--	3.15	3.25	62.5	--	--	--	Condition A measured between adapter and notebook
11.96 Vdc	--	4.33	6.234	51.8	--	--	--	Condition B measured between mainboard and battery
11.50 Vdc	--	4.66	5.014	53.6	--	--	--	Condition A measured between mainboard and battery, sleep mode, no load.
20Vd c	--	3.15	3.25	62.5	--	--	--	Condition C measured between adapter and notebook
--	--	--	--	--	--	--	--	Tested with battery pack L22X3PG4

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
20Vd c	--	3.15	3.25	62.53	--	--	--	Condition A measured between adapter and notebook
11.7 Vdc	--	4.41	8.93	51.6	75	--	--	Condition B measured between mainboard and battery
11.52 Vdc	--	4.62	5.137	53.2	--	--	--	Condition A measured between mainboard and battery, sleep mode, no load.
20Vd c	--	3.15	3.25	62.6	--	--	--	Condition C measured between adapter and notebook
--	--	--	--	--	--	--	--	Tested with battery pack L23M3PG2
20Vd c	--	3.15	3.25	62.5	--	--	--	Condition A measured between adapter and notebook
11.93 Vdc	--	4.36	--	52.0	96	--	--	Condition B measured between mainboard and battery
11.61 Vdc	--	4.70	5.265	54.6	--	--	--	Condition A measured between mainboard and battery, sleep mode, no load.
20Vd c	--	3.15	3.25	62.5	--	--	--	Condition C measured between adapter and notebook
--	--	--	--	--	--	--	--	Tested with battery pack L23D3PG2
20Vd c	--	3.15	3.25	62.5	--	--	--	Condition A measured between adapter and notebook
11.81 Vdc	--	4.31	10	50.9	--	--	--	Condition B measured between mainboard and battery

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
11.49 Vdc	--	4.73	5.02	54.3	--	--	--	Condition A measured between mainboard and battery, sleep mode, no load.
20Vdc	--	3.15	3.25	62.5	--	--	--	Condition C measured between adapter and notebook
--	--	--	--	--	--	--	--	Tested with battery pack L23B3PG2
20Vdc	--	3.15	3.25	62.5	--	--	--	Condition A measured between adapter and notebook
12.0 Vdc	--	4.31	--	51.7	90	--	--	Condition B measured between mainboard and battery
11.51 Vdc	--	4.64	5.988	53.4	--	--	--	Condition A measured between mainboard and battery, sleep mode, no load.
20Vdc	--	3.15	3.25	62.5	--	--	--	Condition C measured between adapter and notebook
--	--	--	--	--	--	--	--	Tested with battery pack L23X3PG2
20Vdc	--	3.15	3.25	62.6	--	--	--	Condition A measured between adapter and notebook
11.95 Vdc	--	4.3	10.4	51.4	90	--	--	Condition B measured between mainboard and battery
11.48 Vdc	--	4.77	5.926	54.8	--	--	--	Condition A measured between mainboard and battery, sleep mode, no load.
20Vdc	--	3.15	3.25	62.6	--	--	--	Condition C



IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
							measured between adapter and notebook
Supplementary information:							
Equipment may be have rated current or rated power or both. Both should be measured							

B.3, B.4		TABLE: Abnormal operating and fault condition tests					Pass
Ambient temperature $T_{amb}$ (°C) .....					See below, or See table 5.4.1.4, 6.3.2, 9.0, B.2.6		—
Power source for EUT: Manufacturer, model/type, output rating .:					ACBEL POLYTECH INC., ADLX65YAC2E, 20Vdc/3.25A		—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
--	--	--	--	--	--	D Cover Plastic With battery Model: Condition A L23X3PG2/Condition B L23M3PG2	
Openings	Block	20Vdc	1h10min	--	--	Unit operated normally. Cheesecloth remained intact. Tissue paper remained intact. NF.	
Openings	Block	Battery discharge(Vdc)	1h32min	--	--	Unit operated normally. Cheesecloth remained intact. Tissue paper remained intact. NF.	
USB 3.0 (JUA2 &JUA1)	overload	20Vdc	2h18min	--	--	Unit operated normally. USB3.0 JUA1 additional overload form 2.1A to 2.52A and then 2.55A shut down. USB3.0 JUA2 additional overload form 0.9A to 2.2 A and then 2.25A shut down. Type-C JUC1 :3.0A Cheesecloth remained intact. Tissue paper remained intact. NF.	
USB 3.0 (JUA2 &JUA1)	overload	Battery discharge(Vdc)	1h16min	--	--	Unit operated normally. USB 3.0 JUA1 overload to 2.52A. USB 3.0 JUA2 overload to 2.20A.	

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
						Type-C JUC1 :1.50A Type-C JUC2 :1.50A Cheesecloth remained intact. Tissue paper remained intact. NF.
Type C port-1 (JUC1)	overload	20Vdc	2h05min	--	--	Unit operated normally. USB3.0 JUA1 :2.1A USB3.0 JUA2 :0.9A Type-C JUC1 : additional overload form 3.0A to 3.5A and then 3.51A shut down. Cheesecloth remained intact. Tissue paper remained intact. NF.
Type C port-1 (JUC1)	overload	Battery discharge(Vdc)	1h27min	--	--	Unit operated normally. USB 3.0 JUA1 :2.1A USB 3.0 JUA2 :0.9A Type-C JUC1 :3.50A Type-C JUC2 :3.0A Cheesecloth remained intact. Tissue paper remained intact. NF.
Type C port-2 (JUC2)	overload	20Vdc	2h09min	--	--	Unit operated normally. USB3.0 JUA1 :2.1A USB3.0 JUA2 :0.9A Type-C JUC2 : additional overload form 3.0A to 3.5A and then 3.52A shut down. Cheesecloth remained intact. Tissue paper remained intact. NF.
Type C port-2 (JUC2)	overload	Battery discharge(Vdc)	1h11min	--	--	Unit operated normally. USB 3.0 JUA1 :2.1A USB 3.0 JUA2 :0.9A Type-C JUC1 :3.0A Type-C JUC2 :3.50A Cheesecloth remained intact. Tissue paper remained intact. NF.

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Clause	Requirement + Test			Result - Remark		Verdict
Two Type C Charge together	2 Type C Charge together	20Vdc	43min	--	--	Unit operated normally. USB 3.0 JUA1 :2.1A USB 3.0 JUA2 :0.9A Cheesecloth remained intact. Tissue paper remained intact. NF.
--	--	--	--	--	--	D Cover Metal With battery Model: Condition A L23X3PG2/Condition B L23M3PG2
Openings	Block	20Vdc	1h58min	--	--	I'm involved in a Noise reduction improvement for server testing
Openings	Block	Battery discharge(Vdc)	1h27min	--	--	I'm involved in a Noise reduction improvement for server testing
USB 3.0 (JUA2 &JUA1)	overload	20Vdc	2h16min	--	--	Unit operated normally. USB3.0 JUA1 additional overload form 2.1A to 2.52A and then 2.55A shut down. USB3.0 JUA2 additional overload form 0.9A to 2.2 A and then 2.25A shut down. Type-C JUC1 :3.0A Cheesecloth remained intact. Tissue paper remained intact. NF.
USB 3.0 (JUA2 &JUA1)	overload	Battery discharge(Vdc)	1h24min	--	--	Unit operated normally. USB 3.0 JUA1 overload to 2.52A. USB 3.0 JUA2 overload to 2.20A. Type-C JUC1 :1.50A Type-C JUC2 :1.50A Cheesecloth remained intact. Tissue paper remained intact. NF.
Type C port-1 (JUC1)	overload	20Vdc	2h37min	--	--	Unit operated normally. USB3.0 JUA1 :2.1A USB3.0 JUA2 :0.9A Type-C JUC1 : additional overload form 3.0A to 3.5A and then 3.51A shut down. Cheesecloth remained intact. Tissue paper remained intact.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
						NF.
Type C port-1 (JUC1)	overload	Battery discharge(Vdc)	1h18min	--	--	Unit operated normally. USB 3.0 JUA1 :2.1A USB 3.0 JUA2 :0.9A Type-C JUC1 :3.50A Type-C JUC2 :3.0A Cheesecloth remained intact. Tissue paper remained intact. NF.
Type C port-2 (JUC2)	overload	20Vdc	2h31min			Unit operated normally. USB3.0 JUA1 :2.1A USB3.0 JUA2 :0.9A Type-C JUC2 : additional overload form 3.0A to 3.5A and then 3.52A shut down. Cheesecloth remained intact. Tissue paper remained intact. NF.
Type C port-2 (JUC2)	overload	Battery discharge(Vdc)	1h26min	--	--	Unit operated normally. USB 3.0 JUA1 :2.1A USB 3.0 JUA2 :0.9A Type-C JUC1 :3.0A Type-C JUC2 :3.50A Cheesecloth remained intact. Tissue paper remained intact. NF.
Two Type C Charge together	2 Type C Charge together	20Vdc	1h29min	--	--	Unit operated normally. USB 3.0 JUA1 :2.1A USB 3.0 JUA2 :0.9A Cheesecloth remained intact. Tissue paper remained intact. NF.
--	--	--	--	--	--	D Cover Plastic With battery Model: Condition A L23X3PG2/Condition B L23M3PG2
DC fan	Stalled	20Vdc	5mins	--	--	After starting Burin test ,unit shutdown immediately. Cheesecloth remained intact.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
						Tissue paper remained intact. NF.
DC fan	Stalled	Battery discharge	1h38min	--	--	Unit operated normally. Cheesecloth remained intact. Tissue paper remained intact. NF.
--	--	--	--	--	--	D Cover Metal With battery Model: Condition A L23X3PG2/Condition B L23M3PG2
DC fan	Stalled	20Vdc	1h22min	--	--	Unit operated normally. Cheesecloth remained intact. Tissue paper remained intact. NF.
DC fan	Stalled	Battery discharge	2h08min	--	--	Unit operated normally. Cheesecloth remained intact. Tissue paper remained intact. NF.
Supplementary information:						
<p>Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column "Abnormal/Fault." Specify if test condition by indicating "Abnormal" then the condition for a Clause B.3 test or "Single Fault" then the condition for Clause B.4.</p> <p>The batteries tested were considered to representative the others based on the Input tests in this evaluation and the Heating tests in battery certification.</p> <p>NF - No Flame</p> <p>All tests were conduct with DC Fan: ASIA VITAL COMPONENTS CO LTD, model BAPD0806R5HY014.</p>						

M.3	TABLE: Protection circuits for batteries provided within the equipment					Pass
Is it possible to install the battery in a reverse polarity position? ..... :				No		—
Equipment Specification	Charging					
	Voltage (V)			Current (A)		
	20Vdc			3.25		
Manufacturer/type	Battery specification					
	Non-rechargeable batteries		Rechargeable batteries			
			Charging			

IEC 62368-1							
Clause	Requirement + Test			Result - Remark		Verdict	
	Discharging current (A)	Unintentional charging current (A)	Voltage (V)	Current (A)	Discharging current (A)	Reverse charging current (A)	
SIMPLO TECHNOLOGY CO LTD/L22M3PG4	--	--	13.2Vdc	5.281A	70W	--	
SUNWODA ELECTRONIC CO.,LTD. /L22D3PG4	--	--	13.2Vdc	4.598A	8.333A	--	
Shanghai BYD Company Limited/ L22B3PG4	--	--	13.2Vdc	5.014A	6.234A	--	
ZHUHAI COSMX BATTERY CO., LTD./L22X3PG4	--	--	13.2Vdc	5.137A	75W/ 8.93A	--	
SIMPLO TECHNOLOGY CO LTD/ L23M3PG2	--	--	13.2Vdc	6.115A	96W	--	
SUNWODA ELECTRONIC CO.,LTD./ L23D3PG2	--	--	13.2Vdc	6.127A	96W	--	
Shanghai BYD Company Limited/ L23B3PG2	--	--	13.2Vdc	6.048A	96W	--	
Zhuhai CosMX Battery Co., Ltd./ L23X3PG2	--	--	13.2Vdc	6.156A	96W	--	
TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION/CR2016	--	0.01	--	--	--	--	
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C) .....				100			
Component No.	Fault condition	Charge/ discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
SIMPLO TECHNOLOGY CO LTD/L22M3PG4	Normal	Charge mode	1)	1)	0	12.62Vdc	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLOGY CO LTD/L22M3PG4	Normal	Discharge mode	1)	1)	4.42	11.70Vdc	Battery remains intact, NL, NS, NE, NF

IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
SIMPLO TECHNOLOGY CO LTD/L22M3PG4	PU4801 Pin 1 to pin 22 shorted	Charge mode	1)	1)	0	12.62Vdc	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLOGY CO LTD/L22M3PG4	PR4810 shorted	Charge mode	1)	1)	0	12.62Vdc	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLOGY CO LTD/L22M3PG4	PQ4803 pin 5 to pin 1 shorted	Discharge mode	1)	1)	4.31	11.57Vdc	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLOGY CO LTD/L22M3PG4	PR4810 shorted	Discharge mode	1)	1)	4.31	11.62Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./L22D3PG4	Normal	Charge mode	1)	1)	0	12.57Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./L22D3PG4	Normal	Discharge mode	1)	1)	4.43	11.81Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./L22D3PG4	PU4801 Pin 1 to pin 22 shorted	Charge mode	1)	1)	0	12.57Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./L22D3PG4	PR4810 shorted	Charge mode	1)	1)	0	12.57Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./L22D3PG4	PQ4803 pin 5 to pin 1 shorted	Discharge mode	1)	1)	4.21	12.05Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./L22D3PG4	PR4810 shorted	Discharge mode	1)	1)	4.08	12.04Vdc	Battery remains intact, NL, NS, NE, NF

IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
Shanghai BYD Company Limited/ L22B3PG4	Normal	Charge mode	1)	1)	0	12.51Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L22B3PG4	Normal	Discharge mode	1)	1)	4.33	11.96Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L22B3PG4	PU4801 Pin 1 to pin 22 shorted	Charge mode	1)	1)	0	12.51Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L22B3PG4	PR4810 shorted	Charge mode	1)	1)	0	12.51Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L22B3PG4	PQ4803 pin 5 to pin 1 shorted	Discharge mode	1)	1)	4.24	11.79Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L22B3PG4	PR4810 shorted	Discharge mode	1)	1)	4.20	11.95Vdc	Battery remains intact, NL, NS, NE, NF
ZHUHAI COSMX BATTERY CO., LTD./L22X3 PG4	Normal	Charge mode	1)	1)	0	12.46Vdc	Battery remains intact, NL, NS, NE, NF
ZHUHAI COSMX BATTERY CO., LTD./L22X3 PG4	Normal	Discharge mode	1)	1)	4.41	11.70Vdc	Battery remains intact, NL, NS, NE, NF



IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
ZHUHAI COSMX BATTERY CO., LTD./L22X3 PG4	PU4801 Pin 1 to pin 22 shorted	Charge mode	1)	1)	0	12.46Vd c	Battery remains intact, NL, NS, NE, NF
ZHUHAI COSMX BATTERY CO., LTD./L22X3 PG4	PR4810 shorted	Charge mode	1)	1)	0	12.46Vd c	Battery remains intact, NL, NS, NE, NF
ZHUHAI COSMX BATTERY CO., LTD./L22X3 PG4	PQ4803 pin 5 to pin 1 shorted	Discharge mode	1)	1)	4.26	11.74Vd c	Battery remains intact, NL, NS, NE, NF
ZHUHAI COSMX BATTERY CO., LTD./L22X3 PG4	PR4810 shorted	Discharge mode	1)	1)	4.2	11.88Vd c	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLO GY CO LTD/ L23M3PG2	Normal	Charge mode	1)	1)	0	12.58Vd c	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLO GY CO LTD/ L23M3PG2	Normal	Discharge mode	1)	1)	4.36	11.93Vd c	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLO GY CO LTD/ L23M3PG2	PU4801 Pin 1 to pin 22 shorted	Charge mode	1)	1)	0	12.58Vd c	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLO GY CO LTD/ L23M3PG2	PR4810 shorted	Charge mode	1)	1)	0	12.58Vd c	Battery remains intact, NL, NS, NE, NF
SIMPLO TECHNOLO GY CO LTD/ L23M3PG2	PQ4803 pin 5 to pin 1 shorted	Discharge mode	1)	1)	3.96	12.1Vdc	Battery remains intact, NL, NS, NE, NF

IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
SIMPLO TECHNOLOGY CO LTD/ L23M3PG2	PR4810 shorted	Discharge mode	1)	1)	3.99	11.95Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./ L23D3PG2	Normal	Charge mode	1)	1)	0	12.43Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./ L23D3PG2	Normal	Discharge mode	1)	1)	4.31	11.81Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./ L23D3PG2	PU4801 Pin 1 to pin 22 shorted	Charge mode	1)	1)	0	12.43Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./ L23D3PG2	PR4810 shorted	Charge mode	1)	1)	0	12.43Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./ L23D3PG2	PQ4803 pin 5 to pin 1 shorted	Discharge mode	1)	1)	4.28	11.71Vdc	Battery remains intact, NL, NS, NE, NF
SUNWODA ELECTRONIC CO.,LTD./ L23D3PG2	PR4810 shorted	Discharge mode	1)	1)	4.17	11.51Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L23B3PG2	Normal	Charge mode	1)	1)	0	12.47Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L23B3PG2	Normal	Discharge mode	1)	1)	4.31	12.0Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L23B3PG2	PU4801 Pin 1 to pin 22 shorted	Charge mode	1)	1)	0	12.47Vdc	Battery remains intact, NL, NS, NE, NF

IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
Shanghai BYD Company Limited/ L23B3PG2	PR4810 shorted	Charge mode	1)	1)	0	12.47Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L23B3PG2	PQ4803 pin 5 to pin 1 shorted	Discharge mode	1)	1)	4.26	11.78Vdc	Battery remains intact, NL, NS, NE, NF
Shanghai BYD Company Limited/ L23B3PG2	PR4810 shorted	Discharge mode	1)	1)	4.29	11.63Vdc	Battery remains intact, NL, NS, NE, NF
Zhuhai CosMX Battery Co., Ltd./ L23X3PG2	Normal	Charge mode	1)	1)	0	12.52Vdc	Battery remains intact, NL, NS, NE, NF
Zhuhai CosMX Battery Co., Ltd./ L23X3PG2	Normal	Discharge mode	1)	1)	4.3	11.95Vdc	Battery remains intact, NL, NS, NE, NF
Zhuhai CosMX Battery Co., Ltd./ L23X3PG2	PU4801 Pin 1 to pin 22 shorted	Charge mode	1)	1)	0	12.50Vdc	Battery remains intact, NL, NS, NE, NF
Zhuhai CosMX Battery Co., Ltd./ L23X3PG2	PR4810 shorted	Charge mode	1)	1)	0	12.50Vdc	Battery remains intact, NL, NS, NE, NF
Zhuhai CosMX Battery Co., Ltd./ L23X3PG2	PQ4803 pin 5 to pin 1 shorted	Discharge mode	1)	1)	4.18	11.99Vdc	Battery remains intact, NL, NS, NE, NF
Zhuhai CosMX Battery Co.,	PR4810 shorted	Discharge mode	1)	1)	4.25	11.81Vdc	Battery remains intact, NL, NS, NE, NF

IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
Ltd./L23X3PG2							
TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION/CR2016	Normal	Unintentional charging	2)	2)	0A	--	Battery remains intact, NL, NS, NE, NF
TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION/CR2016	R1 shorted	Unintentional charging	2)	2)	0A	--	Battery remains intact, NL, NS, NE, NF
TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORPORATION/CR2016	D2 pin1 to pin3 shorted	Unintentional charging	2)	2)	0.32mA	--	Battery remains intact, NL, NS, NE, NF
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							
1) The battery pack complied with the requirement of annex M of IEC 62368-1.							
2) RTC battery complied with the requirement of UL1642.							

<b>M.4.2</b>	<b>TABLE: Charging safeguards for equipment containing a secondary lithium battery</b>					Pass
Maximum specified charging voltage (V) .....					See M.3	—
Maximum specified charging current (A) .....					See M.3	—
Highest specified charging temperature (°C) .....					See comments	
Lowest specified charging temperature (°C) .....					See comments	
Battery manufacturer/type	Operating and fault condition	Measurement			Observation	
		Charging voltage (V)	Charging current (A)	Temp. (°C)		
Battery L22M3PG4	Normal	13.19Vdc	4.57A	38.5gree C at ambient	Charge normally.	

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	
				22.7 degree C;	The charge current & battery temperature is in spec.
Battery L22M3PG4	Abnormal	--	--	--	Sample highest temperature stop charge at: 62.4 degree C. Sample lowest temperature stop charge at: 0.6 degree C.
Battery L22M3PG4	Single fault – SC/OC (PU4801 Pin 1 to pin 22 shorted )	10.68Vdc	0	--	Unit stop charging immediately. Charging LED is kept on.
Battery L22M3PG4	Single fault – SC/OC (PR4810 shorted)	11.85Vdc	4.77A	33.7 degree C at ambient 20.1 degree C;	Charge normally. Max charge voltage & max charge current & temperature is in spec.
Battery L22D3PG4	Normal	13.17Vdc	4.78A	37.7 degree C at ambient 22.7 degree C;	Charge normally. The charge current & battery temperature is in spec.
Battery L22M3PG4	Abnormal	--	--	--	Sample highest temperature stop charge at: 59.9 degree C. Sample lowest temperature stop charge at: 1.8 degree C.
Battery L22M3PG4	Single fault – SC/OC (PU4801 Pin 1 to pin 22 shorted )	10.92Vdc	0	--	Unit stop charging immediately. Charging LED is kept on.
Battery L22M3PG4	Single fault – SC/OC (PR4810 shorted)	12.05Vdc	4.64A	32.7 degree C at ambient 20.1 degree C;	Charge normally. Max charge voltage & max charge current & temperature is in spec.
Battery L22B3PG4	Normal	13.20Vdc	4.73A	33.3 degree C at ambient 22.7 degree C;	Charge normally. The charge current & battery temperature is in spec.
Battery L22M3PG4	Abnormal	--	--	--	Sample highest temperature stop charge at: 61.0 degree C.

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
					Sample lowest temperature stop charge at: - 2.7 degree C.
Battery L22M3PG4	Single fault – SC/OC (PU4801 Pin 1 to pin 22 shorted )	10.60Vdc	0	--	Unit stop charging immediately. Charging LED is kept on.
Battery L22M3PG4	Single fault – SC/OC (PR4810 shorted)	11.70Vdc	4.81A	34.8 degree C at ambient 20.1 degree C;	Charge normally. Max charge voltage & max charge current & temperature is in spec.
Battery L22X3PG4	Normal	13.19Vdc	4.65A	36.5 degree C at ambient 22.7 degree C;	Charge normally. The charge current & battery temperature is in spec.
Battery L22M3PG4	Abnormal	--	--	--	Sample highest temperature stop charge at: 62.6degree C. Sample lowest temperature stop charge at: 1.8 degree C.
Battery L22M3PG4	Single fault – SC/OC (PU4801 Pin 1 to pin 22 shorted )	10.60Vdc	0	--	Unit stop charging immediately. Charging LED is kept on.
Battery L22M3PG4	Single fault – SC/OC (PR4810 shorted)	11.62Vdc	4.90A	34.4 degree C at ambient 20.1 degree C;	Charge normally. Max charge voltage & max charge current & temperature is in spec.
Battery L23M3PG2	Normal	13.15Vdc	4.88A	31.6 degree C at ambient 22.9 degree C;	Charge normally. The charge current & battery temperature is in spec.
Battery L22M3PG4	Abnormal	--	--	--	Sample highest temperature stop charge at: 62.6degree C. Sample lowest temperature stop charge at: 0.9 degree C.

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Battery L22M3PG4	Single fault – SC/OC (PU4801 Pin 1 to pin 22 shorted )	10.65Vdc	0	--	Unit stop charging immediately. Charging LED is kept on.
Battery L22M3PG4	Single fault – SC/OC (PR4810 shorted)	11.75Vdc	4.86A	29.7 degree C at ambient 21.3 degree C;	Charge normally. Max charge voltage & max charge current & temperature is in spec.
Battery L23D3PG2	Normal	13.19Vdc	4.85A	38.4 degree C at ambient 22.9 degree C;	Charge normally. The charge current & battery temperature is in spec.
Battery L22M3PG4	Abnormal	--	--	--	Sample highest temperature stop charge at: 59.4 degree C. Sample lowest temperature stop charge at: 0 degree C.
Battery L22M3PG4	Single fault – SC/OC (PU4801 Pin 1 to pin 22 shorted )	20.01Vdc	0	--	Unit stop charging immediately. Charging LED is kept on.
Battery L22M3PG4	Single fault – SC/OC (PR4810 shorted)	11.70Vdc	4.86A	32.6 degree C at ambient 21.1 degree C;	Charge normally. Max charge voltage & max charge current & temperature is in spec.
Battery L23B3PG2	Normal	13.17Vdc	4.85A	37.9 degree C at ambient 22.9 degree C;	Charge normally. The charge current & battery temperature is in spec.
Battery L22M3PG4	Abnormal	--	--	--	Sample highest temperature stop charge at: 60.5 degree C. Sample lowest temperature stop charge at: - 0.7 degree C.
Battery L22M3PG4	Single fault – SC/OC	10.58Vdc	0	--	Unit stop charging immediately. Charging LED is kept on.

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	(PU4801 Pin 1 to pin 22 shorted )				
Battery L22M3PG4	Single fault – SC/OC (PR4810 shorted)	11.63Vdc	4.91A	35.0 degree C at ambient 21.2 degree C;	Charge normally. Max charge voltage & max charge current & temperature is in spec.
Battery L23X3PG2	Normal	13.18Vdc	4.92A	37.2 degree C at ambient 22.9 degree C;	Charge normally. The charge current & battery temperature is in spec.
Battery L22M3PG4	Abnormal	--	--	--	Sample highest temperature stop charge at: 61.1 degree C. Sample lowest temperature stop charge at: -1.4 degree C.
Battery L22M3PG4	Single fault – SC/OC (PU4801 Pin 1 to pin 22 shorted )	10.68Vdc	0	--	Unit stop charging immediately. Charging LED is kept on.
Battery L22M3PG4	Single fault – SC/OC (PR4810 shorted)	11.68Vdc	4.95A	36.2 degree C at ambient 21.2 degree C;	Charge normally. Max charge voltage & max charge current & temperature is in spec.
Supplementary information:					
<p>Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature</p> <p>L22M3PG4- highest/lowest charge temperature: 60±3 degree C, -1±3 degree C  L22D3PG4- highest/lowest charge temperature: 60±3 degree C, -1±3 degree C  L22B3PG4- highest/lowest charge temperature: 60±3 degree C, 0±3 degree C  L22X3PG4- highest/lowest charge temperature: 60±3 degree C, -2±3 degree C  L23M3PG2- highest/lowest charge temperature: 60±3 degree C, -1±3 degree C  L23D3PG2- highest/lowest charge temperature: 60±3 degree C, -1±3 degree C  L23B3PG2- highest/lowest charge temperature: 60±3 degree C, 0±3 degree C  L23X3PG2- highest/lowest charge temperature: 60±3 degree C, 0±3 degree C</p>					

Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)	Pass
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IEC 62368-1							
Clause	Requirement + Test			Result - Remark		Verdict	
Output Circuit	Condition	U <sub>oc</sub> (V)	Time (s)	I <sub>sc</sub> (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
Type A (JUA1) (Pin 1 to GND)	Normal	5.11Vdc	5	3.5	8	14.03	100
Type A (JUA1) (Other pins to GND)	Normal	0	5	0	8	0	100
Type A (JUA2) (Pin 1 to GND)	Normal	5.11Vdc	5	3.5	8	13.94	100
Type A (JUA2) (Other pins to GND)	Normal	0	5	0	8	0	100
Type C (JUC1) (A4, A9, B4, B9 to GND)	Normal	5.17Vdc	5	3.49	8	13.17	100
Type C (JUC1) (other pins to GND)	Normal	0	5	0	8	0	100
Type C (JUC2) (A4, A9, B4, B9 to GND)	Normal	5.17Vdc	5	3.50	8	13.18	100
Type C (JUC2) (other pins to GND)	Normal	0	5	0	8	0	100
HDMI port (JHDMI1) (Pin 18 to GND)	Normal	5.11Vdc	60	1.6	8	6.65	100
HDMI port (JHDMI1) (Pin 15,16 to GND)	Normal	5.07Vdc	60	0	8	0	100
HDMI port (JHDMI1)	Normal	0	60	0	8	0	100

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
(Other pins to GND)							
Combo audio jack (JHP4)	Normal	0	60	0	8	0	100
RJ45	Normal	0	60	0	8	0	100
Supplementary Information:							
SC=Short circuit, OC=Open circuit							
All protective components for data ports refer to table 4.1.2.							

<b>T.2, T.3, T.4, T.5</b>	<b>TABLE: Steady force test</b>						Pass
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation	
Top enclosure around keyboard	Plastic	1)	30 mm circular plane	100	5	Except for PS3, class3 energy sources did not become accessible, and all other safeguards remain effective	
Side enclosure	Plastic	1)	30 mm circular plane	100	5	Except for PS3, class3 energy sources did not become accessible, and all other safeguards remain effective	
Bottom enclosure	Metal/Plastic	1)	30 mm circular plane	100	5	Except for PS3, class3 energy sources did not become accessible, and all other safeguards remain effective	
Supplementary information:							
1)see table 4.1.2 for details							

T.6, T.9	TABLE: Impact test					N/A
Location/Part		Material	Thickness (mm)	Height (mm)	Observation	
Supplementary information:						

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

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<b>T.7</b>	<b>TABLE: Drop test</b>				Pass
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Top enclosure around keyboard	Plastic	1)	1000	Except for PS3, class3 energy sources did not become accessible, and all other safeguards remain effective	
Side enclosure	Plastic	1)	1000	Except for PS3, class3 energy sources did not become accessible, and all other safeguards remain effective	
Bottom enclosure	Metal/Plastic	1)	1000	Except for PS3, class3 energy sources did not become accessible, and all other safeguards remain effective	
Supplementary information:					
1)see table 4.1.2 for details					

<b>T.8</b>	<b>TABLE: Stress relief test</b>				Pass
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Plastic enclosure	plastic*	*	70	7	except for PS3, no class 3 energy sources become accessible to an ordinary person, and all other safeguards remain effective
Plastic bottom cover	plastic*	*	70	7	except for PS3, no class 3 energy sources become accessible to an ordinary person, and all other safeguards remain effective
Supplementary information:					
*see table 4.1.2 for details					

<b>X</b>	<b>TABLE: Alternative method for determining minimum clearances distances</b>			N/A
Clearance distanced between:	Peak of working voltage (V)	Required cl (mm)	Measured cl (mm)	

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Supplementary information:			

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: Critical components information					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>	
01. AC/DC Adapter (Optional)	ACBEL POLYTECH INC.	ADLX65YAC2E	Input: 100-240V~, 1.8A, 50-60Hz Output: 20.0V DC 3.25A 65.0W / 15.0V DC 3.0A / 9.0V DC 3.0A / 5.0V DC 3.0A 15.0W Tma: 40°C, Altitude: 5000m	IEC 62368-1 (ed.2),EN 62368- 1: 2014/A11:2017 , IEC 62368- 1:2018,EN IEC 62368-1:2020, EN IEC 62368- 1:2020/A11: 2020 UL 62368-1	UL , CB by Nemko (NO123867 for IEC 62368- 1:2014); CB by Nemko (NO123794 for IEC 62368- 1:2018)	
01a. AC/DC Adapter (Alternate) (Optional)	ACBEL POLYTECH INC.	ADLX65YAC3E	Input: 100-240V~ 1.8A 50-60Hz Output: 20.0V DC 3.25A 65.0W / 15.0V DC 3.0A / 9.0V DC 3.0A / 5.0V DC 3.0A 15.0W Tma: 40°C, Altitude: 5000m	IEC 62368-1 (ed.2),EN 62368- 1: 2014/A11:2017 , IEC 62368- 1:2018,EN IEC 62368-1:2020, EN IEC 62368- 1:2020/A11: 2020 UL 62368-1	UL , CB by Nemko (NO123886 for IEC 62368- 1:2014); CB by Nemko ( NO123885 for IEC 62368- 1:2018)	
01b. AC/DC Adapter (Alternate) (Optional)	Chicony Power Technology Co Ltd.	ADLX65YCC2E	Input: 100-240V~, 1.8A, 50-60Hz Output: 5.0Vdc 3.0A 15.0W / 9Vdc 3A / 15Vdc 3A / 20.0Vdc 3.25A 65.0W Tma: 40°C, Altitude: 5000m	IEC 62368-1 (ed.2),EN 62368- 1: 2014/A11:2017 , IEC 62368- 1:2018,EN IEC 62368-1:2020, EN IEC 62368- 1:2020/A11: 2020 UL 62368-1	UL , CB by Nemko (DK- 131873-UL for IEC 62368- 1:2014); CB by Nemko ( DK-131831- UL for IEC 62368- 1:2018)	
01c. AC/DC Adapter (Alternate) (Optional)	Chicony Power Technology Co Ltd.	ADLX65YCC3E	Input: 100-240V~, 1.8A, 50-60Hz Output: 5.0Vdc 3.0A 15.0W / 9Vdc 3A / 15Vdc 3A / 20.0Vdc 3.25A 65.0W Tma: 40°C, Altitude: 5000m	IEC 62368-1 (ed.2),EN 62368- 1: 2014/A11:2017 , IEC 62368- 1:2018,EN IEC 62368-1:2020, EN IEC 62368- 1:2020/A11: 2020 UL 62368-1	UL , CB by Nemko (DK- 131868-UL for IEC 62368- 1:2014); CB by Nemko ( DK-131825- UL for IEC	

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
					62368-1:2018)
01d. AC/DC Adapter (Alternate) (Optional)	Delta Electronics, Inc.	ADLX65YDC3E	Input : AC 100-240V; 50-60Hz; 1.8A; Class I, Output: DC 20.0V; 3.25A; 65.0W or 15.0V; 3.0A or 9.0V; 3.0A, or 5.0V; 3.0A; 15.0W Tma: 40°C, Altitude: 5000m	IEC 62368-1 (ed.2), EN 62368-1: 2014/A11:2017, IEC 62368-1:2018, EN IEC 62368-1:2020, EN IEC 62368-1:2020/A11: 2020 UL 62368-1	UL, CB by TUVRH (JPTUV-140047-A1 for IEC 62368-1:2014); CB by TUVRH (JPTUV-139978 for IEC 62368-1:2018)
01e. AC/DC Adapter (Alternate) (Optional)	Delta Electronics, Inc.	ADLX65YDC2E	Input : AC 100-240V; 50-60Hz; 1.8A; Class II, Output: DC 20.0V; 3.25A; 65.0W or 15.0V; 3.0A or 9.0V; 3.0A, or 5.0V; 3.0A; 15.0W Tma: 40°C, Altitude: 5000m	IEC 62368-1 (ed.2), EN 62368-1: 2014/A11:2017, IEC 62368-1:2018, EN IEC 62368-1:2020, EN IEC 62368-1:2020/A11: 2020 UL 62368-1	UL, CB by TUVRH (JPTUV-140258-A1 for IEC 62368-1:2014); CB by TUVRH (JPTUV-139994 for IEC 62368-1:2018)
01f. AC/DC Adapter (Alternate) (Optional)	Lite-On Technology Corporation	ADLX65YLC2E	Input : AC 100-240V; 50-60Hz; 1.8A; Class II, Output: DC 20.0V; 3.25A; 65.0W, 15.0V; 3.0A, 9.0V; 3.0A, 5.0V; 3.0A; 15.0W Tma: 40°C, Altitude: 5000m	IEC 62368-1 (ed.2), EN 62368-1: 2014/A11:2017, IEC 62368-1:2018, EN IEC 62368-1:2020, EN IEC 62368-1:2020/A11: 2020 UL 62368-1	UL, CB by TUVRH (JPTUV-140640 for IEC 62368-1:2014); CB by TUVRH (JPTUV-140756 for IEC 62368-1:2018)
01g. AC/DC Adapter (Alternate) (Optional)	Lite-On Technology Corporation	ADLX65YLC3E	Input : AC 100-240V; 50-60Hz; 1.8A; Class I, Output: DC 20.0V; 3.25A; 65.0W, 15.0V; 3.0A, 9.0V;	IEC 62368-1:2018, EN IEC 62368-1:2020, EN IEC 62368-1:2020/A11: 2020 UL 62368-1	UL, CB by TUVRH (JPTUV-139969 for IEC 62368-1:2018)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
			3.0A, 5.0V; 3.0A; 15.0W Tma: 40°C, Altitude: 5000m		
01h. AC/DC Adapter (Alternate) (Optional)	ACBEL POLYTECH INC.	ADLX65UAGU2 A, ADLX65UAGC2 A, ADLX65UAGE2 A, ADLX65UAGK2 A	I/P: 100-240V~, 1.8A, 50-60Hz O/P: 20.0Vdc, 3.25A Max. 65.0W, Class II, Tma: 40°C, Altitude: 5000m	IEC 62368-1: 2014 (Second Edition), UL 62368-1	UL , CB by Nemko (NO113168/ M1 for IEC 62368-1)
01i. AC/DC Adapter (Alternate) (Optional)	Chicony Power Technology Co., Ltd	ADLX65UCGU2 A, ADLX65UCGE2 A, ADLX65UCGC2 A, ADLX65UCGK2 A, ADLX65UCGG2 A, ADLX65UCGA2 A, ADLX65UCGB2 A, ADLX65UCGR2 A, ADLX65UCGI2 A	I/P: 100-240V~, 1.8A, 50-60Hz O/P: 20.0Vdc, 3.25A Max. 65.0W, Class II, Tma: 40°C, Altitude: 5000m	IEC 62368-1: 2014 (Second Edition), IEC 62368-1: 2018 (Third Edition), UL 62368-1	UL , CB by TUVRh (JPTUV- 109472-M3 for IEC62368- 1:2014), (JPTUV- 109395-M3 for IEC60950- 1) CB by Demko (DK-115729- M1-UL for IEC62368- 1:2018)
01j. AC/DC Adapter (Alternate) (Optional)	Delta Electronics, Inc.	ADLX65UDGC2 A, ADLX65UDGE2 A, ADLX65UDGU2 A, ADLX65UDGK2 A	I/P: 100-240V~, 1.8A, 50-60Hz O/P: 20.0Vdc, 3.25A, 65.0W, Class II, Tma: 40°C, Altitude: 5000m	IEC 62368-1: 2014 (Second Edition), EN 62368-1: 2014+A11: 2017, IEC 60950-1: 2005, AM1: 2009, AM2: 2013	UL , CB by TUVRh (JPTUV- 130152- A1/M2 for IEC62368- 1:2014, JPTUV- 125171-M3 for IEC62368- 1:2018, JPTUV-

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
					130028-A1/M2 for IEC60950-1)
01k. AC/DC Adapter (Alternate) (Optional)	Lite-On Technology Corporation	ADLX65ULGC2 A, ADLX65ULGU2 A, ADLX65ULGE2 A, ADLX65ULGK2 A, ADLX65ULGG2 A, ADLX65ULGB2 A, ADLX65ULGI2A , ADLX65ULGR2 A, ADLX65ULGA2 A	Input : AC 100-240V; 50-60Hz; 1.8A; Class II, Output: DC 5.0V; 3.0A; 15.0W, 9.0V; 3.0A, 15.0V; 3.0A, , DC 20.0V; 3.25A; 65.0W Tma: 40°C, Altitude: 5000m	IEC 62368-1: 2014 (Second Edition), EN 62368-1: 2014+A11: 2017, IEC 62368-1: 2018, EN IEC 62368-1: 2020+A11: 2020, IEC 60950-1: 2005, AM1: 2009, AM2: 2013	UL , CB by TUVRh (JPTUV-132131-M2 for IEC62368-1:2014, JPTUV-140507 for IEC62368-1:2018, JPTUV-132255-M2 for IEC60950-1)
01l. AC/DC Adapter (For rating 20V/3.25A used) (Alternate) (Optional)	Interchangeable	Interchangeable	O/P: 20Vdc minimum 3.25A, Tma: 35 degree C, Altitude: 3048m.	IEC 60950-1: 2005,AMD1:2009, AMD2:2013, EN 60950-1:2006+A11:2009 +A1:2010+A12:2011+A2:2013, IEC 62368-1:2014, EN 62368-1:2014+A11:2017, IEC 62368-1:2018, EN IEC 62368-1:2020+A11:2020, BS EN IEC 62368-1: 2020 + A11:2020,UL 62368-1	UL , CB by NCB
02. Enclosure Material	--	--	See below for details	--	-- , --



IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
02-01. Enclosure Material for top cover	--	--	Aluminium, thickness 0.8mm min.	--	-- , --
02-02. Enclosure Material for LCD bezel	COVESTRO DEUTSCHLAND AG [PC RESINS]	FR3040 W +, FR3040 W + RE + – Material designations may be followed by a six digit numerical code denoting color.	V-0, thickness 0.8mm min., 80 degree C.	UL 94, UL 746C	UL , --
02-03. Enclosure Material for top side around keyboard	COVESTRO DEUTSCHLAND AG [PC RESINS]	FR3021+ + - Material designations may be followed by a six digit numerical code denoting color.	V-0, thickness 1.2mm min., 85 degree C.	UL 94, UL 746C	UL , --
02-03a. Enclosure Material for top side around keyboard (Alternate)	LG CHEM LTD	LUPOY GN5151RFA, LUPOY GN5151RFL	V-0,thickness 1.2mm min., 85 degree C.	UL 94, UL 746C	UL , --
02-03b. Enclosure Material for top side around keyboard (Alternate)	LOTTE CHEMICAL CORPORATION	NH-1150HH	V-0,thickness 1.2mm min., 85 degree C.	UL 94, UL 746C	UL , --
02-04. Enclosure Material for bottom case	COVESTRO DEUTSCHLAND AG [PC RESINS]	FR3021+ + - Material designations may be followed by a six digit numerical code denoting color.	V-0, thickness 1.2mm min., 85 degree C	UL 94, UL 746C	UL , --

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
02-04a. Enclosure Material for bottom case (Alternate)	LG CHEM LTD	LUPOY GN5151RFA, LUPOY GN5151RFL	V-0,thickness 1.2mm min., 85 degree C	UL 94, UL 746C	UL , --
02-04b. Enclosure Material for bottom case (Alternate)	LOTTE CHEMICAL CORPORATION	NH-1150HH	V-0,thickness 1.2mm min., 85 degree C	UL 94, UL 746C	UL , --
02-04c. Enclosure Material for bottom case (Alternate)	--	--	Aluminium, thickness 0.8mm min.	--	-- , --
02-05. Metalized coating (Optional)	Interchangeable	Interchangeable	For bottom case material " COVESTRO DEUTSCHLAND AG [PC RESINS]", type " FR3021+" or " LG CHEM LTD ", type " LUPOY GN5151RFA, LUPOY GN5151RFL " or " LOTTE CHEMICAL CORPORATION ", type " NH-1150HH ".	UL 746C	UL , --
02-06. Openings for plastic enclosure	--	--	See Enclosure 04- 01 for detailed dimension.	--	-- , --
02-07. Openings for metal enclosure	--	--	See Enclosure 04- 02 for detailed dimension.	--	-- , --
03. Solid State Drive (Optional)	Samsung Electronics Co., Ltd.	MZ-2*****, MZ-N*****, MZ-H*****, MZ-J*****,	Rated 3.3Vdc, 4.8A max.	IEC 62368-1: 2018, EN 62368- 1:2014+A11:2017.	UL , CB by TUV (JPTUV- 097719-M1)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
		MZ-K***** MZ-A***** MZ-1***** MZ-V***** MZ-F***** MZ-S***** MZ-M***** MZ-9***** (* can be 0-9, A-Z or blank or slash or dash)			
03a. Solid State Drive (Optional) (Alternate)	Interchangeable	Interchangeable	Rated 3.3Vdc, 4.8A max.	UL60950-1, IEC/EN 60950- 1, IEC 62368-1	UL , CB BY NCB
04. Battery Pack	SIMPLO TECHNOLOGY CO LTD	L22M3PG4	11.31Vdc, 4156mAh / 47Wh, 4068mAh / 46Wh	UL 60950-1, UL 2054, IEC 62368- 1, IEC 62133-2	UL , CB by UL: (DK- 134472-UL for IEC 62368- 1:2018) (JPTUV- 141342 for IEC 62133-2)
04a. Battery Pack (Alternate)	SUNWODA ELECTRONIC CO.,LTD.	L22D3PG4	11.31Vdc, Rated: 4068mAh, 46Wh/ Typical: 4156mAh, 47Wh	UL 60950-1, UL 2054, IEC 62368- 1, IEC 62133-2	UL , CB by TUVRh: (JPTUV- 142508 for IEC 62368- 1:2014) (JPTUV- 142061 for IEC 62133-2)
04b. Battery Pack (Alternate)	Shanghai BYD Company Limited	L22B3PG4	11.31Vdc, 4068mAh	UL 60950-1, UL 2054, IEC 62368- 1:2014, IEC 62133:2012, IEC 62133-2: 2017	UL , CB by UL: ( DK- 135778-UL for IEC 62368- 1:2018) (DK- 135621-UL for IEC 62133-2)

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
04c. Battery Pack (Alternate)	ZHUHAI COSMX BATTERY CO., LTD.	L22X3PG4	11.31Vdc, Typical Capacity: 4156mAh/47Wh, Rated Capacity: 4068mAh/46Wh	UL 60950-1, UL 2054, IEC 62368- 1, IEC 62133-2	UL , CB by UL: (DK- 135120-UL for IEC 62368- 1:2018) (JPTUV- 141803 for IEC 62133-2)
04d. Battery Pack (Alternate)	SIMPLO TECHNOLOGY CO LTD	L23M3PG2	11.31Vdc, 5040mAh / 4995mAh (57Wh)	IEC 62368- 1:2018, IEC 62133-2:2017, IEC 62133- 2:2017/AMD1:202 1 UL2054, UL 62368-1	UL , UL , CB by UL: (DK- 145345-UL for IEC 62368- 1:2018) (DK- 145274-UL for IEC 62133-2)
04e. Battery Pack (Alternate)	ZHEJIANG SUNWODA ELECTRONIC CO.,LTD.	L23D3PG2	11.31Vdc, Rated: 4995mAh, Typical: 5040mAh	IEC 60950- 1:2005+A1+A2, IEC 62368- 1:2014, IEC 62133- 2:2017/AMD:2021 , UL 62368-1, UL 2054,	UL , UL , CB by TUVRh: (JPTUV- 153672 for IEC 62368- 1:2014) (JPTUV- 153564 for IEC 62133-2)
04f. Battery Pack (Alternate)	Shanghai BYD Company Limited	L23B3PG2	11.31Vdc, 4995mAh	UL 62368-1, UL 2054, IEC 62368- 1, IEC 62133- 2:2017, IEC 62133- 2:2017/AMD1:202 1	UL , UL , CB by UL: (DK- 146540-UL for IEC 62368- 1:2018) (DK- 146415-UL for IEC 62133-2)
04g. Battery Pack (Alternate)	Zhuhai CosMX Power JinWan Subsidiary Co., Ltd.	L23X3PG2	11.31V, Typical Capacity: 5040mAh, Rated Capacity: 4995mAh	UL 2054, IEC 62368-1:2018, , IEC 62133- 2:2017, IEC 62133- 2:2017/AMD1:202 1	UL , UL , CB by UL: (DK- 147065-UL for IEC 62368- 1:2018) (JPTUV-

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
					152952-A1 for IEC 62133-2)
05. DC Fan	ASIA VITAL COMPONENTS CO LTD	BAPD0806Z5H V("Z" can be B or R; "V" can be ABCD where A,B,C,D may be A-Z,0-9,or "-" or blank)	5Vdc, 0.5A, 2.48CFM min.	EN 62368- 1:2014/A11:2017, UL507	UL , CB by TUV (B 025730 0977 Rev. 07)
05a. DC Fan (Alternate)	Toshiba Home Technology Corp.	M-286C-XX (XX: Rev. No. for modification not related to safety aspects, blank or any numbers(up to 2 digits)	5Vdc, 0.36A, 3.0CFM min.	EN 62368- 1:2014/A11:2017, UL507	UL , CB by TUV(B 025909 0089 Rev.02)
06. LCD Panel	Interchangeable	Interchangeable	14 inch, TFT-LCD, LED back-light	UL/IEC/EN 60950-1, UL/IEC/EN 62368-1	UL , CB by NCB
06a. LCD Panel (Alternate)	--	--	14 inch, TFT-LCD, LED back-light	--	-- , --
06a-01. Internal Plastic Materials	Interchangeable	Interchangeable	V-2 minimum.	UL 94, UL 746C	UL , --
06a-02. PWB	Interchangeable	Interchangeable	V-1 minimum, 105 degree C.		UL , --
07. Internal Plastic Materials	Interchangeable	Interchangeable	V-2 minimum.	UL 94, UL 746C	UL , --
08. Speakers (two Provided)	--	--	Each Rated 4.0±15% ohm min, 2.5 Watts max.	--	-- , --
09. Mainboard	--	--	See below	--	-- , --

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
09-01. RTC battery	Interchangeable	CR2032 or CR2032* or CR2032+ or CR2032 (l)* or CR2032 (j)(k), CR2016 or CR2016+ or CR2016* or CR- 2016* or CR2016(j)(k)	3.0Vdc, Max Abnormal Charging Current 10 mA	UL 1642	UL , --
09-02. Power Distribution Switch (UU601,U0302) for USB Port use	SILERGY CORP	SY6288xyyyyy( x = A, B, C, D or E; yyyyy = 0-9, A-Z or blank)	I/P: 2.5Vdc to 5.5Vdc (for all models)O/P: SY6288A, SY6288B: 5.5Vdc max., 1.6A max.SY6288C, SY6288D: 5.5Vdc max., 4.4A max.SY6288E: 5.5Vdc, 4.43A max.	IEC 60950- 1:2005+A1+A2,E N 60950-1: 2006 / A11: 2009 / A1: 2010 / A12: 2011 / A2:2013, UL 2367	UL , CB by TUV(JPTUV- 058243-M1)
09-02a. Power Distribution Switch (UU601,U0302) for USB Port use (Alternate)	Global Mixed-mode Technology Inc.	G517FX1X2X3 X4X1 = 1, 2, 3 or 4X2 = T1, TB, TO, TP, U5, P8 or TMX3 = 1, 2 or 3X4 =U or D	Input Voltage: 2.7- 5.5Vdc Output Continuous Rating: 2.1A,Output Current Limit: 2.2- 3.0A	IEC 60950- 1:2005+A1+A2,E N 60950-1: 2006 / A11: 2009 / A1: 2010 / A12: 2011 / A2:2013, UL 2367	UL , CB by TUV (JPTUV- 080887)
09-02b. Power Distribution Switch (UU601,U0302) for USB Port use (Alternate)	TEXAS INSTRUMENTS INC	SN1408009RTE , SN1702001, TPS2547, TPS2544, TPS2546, TPS2545, TPS2543Additio nal suffixes after the model number designate the type of integrated circuit package,	Input Voltage: 4.5Vdc to 5.5Vdc Output Continuous Rating: 2.5A. Output Current Limit:3.1A	IEC 60950-1 (ed.2);am2,EN 60950-1: 2006 / A11: 2009 / A1: 2010 / A12: 2011 / A2: 2013, UL 2367	UL , CB by UL (US- 29689-M1- UL)

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
		integrated circuit lead types or other features that are considered not to affect the functionality of the device.			
09-02c. Power Distribution Switch (UU601,U0302) for USB Port use (Alternate)	DIODES INC	PI5USB25wwxy yyEz Series, where ww is 44 or 46 x is blank, A, AQ, H, J, or Q yyy is ZH or ZHD for packaging type E is Pb-free z is blank or X	Input Voltage:4.5Vdc to 5.5Vdc Continuous Rating: 30mA to 2.5A. Current Limit: 100mA to 3.18A	IEC 62368- 1:2014, UL 2367	UL , CB by UL (US- 38136-UL)
09-02d. Power Distribution Switch (UU601,U0302) for USB Port use (Alternate)	Guangdong Cellwise Microelectronics Co., Ltd.	CW3046AAAQ, CW3046CAAQ, CW3046CABQ, CW3046CACQ, CW3048AAAQ, CW3048BAAQ, CW3048CAAQ, CW3048CACQ, HP3048BAAQ, HP3048CAAQ, HP3048CACQ	Input Voltage: VBUS_IN = 4.5 – 5.5 Vdc  Output Continuous Rating: VBUS_OUT = 0.18 – 2.8 A  Current Limit Rating: VBUS_OUT = 0.275 – 3.17 A	IEC 62368- 1:2018, UL 2367	UL , CB by UL (DK- 118162-M1- UL)
09-02e. Power Distribution Switch (UU601,U0302) for USB Port use (Alternate)	JOULWATT TECHNOLOGY CO LIMITED	JW7115SA- 2SOTA#TRPBF , JW7115SA- 2TSOTA#TRPB F	Vin: 2.7-5.5Vdc, Vout: 2.7-5.5Vdc, Iout: 2.0-2.4A	IEC 62368- 1:2014, UL 2367	UL , CB by UL (DK- 83242-M1- UL)
09-02f. Power Distribution Switch	Global Mixed-mode Technology Inc.	G*509**X1X2X3 X4X5 (*=Nil or an alphabet	DC 2.7V - 5.5V; 3A Max.; Class III	IEC 62368- 1:2018, UL 2367	UL , CB by TUV (JPTUV- 126218-M1)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
(UU601,U0302) for USB Port use (Alternate)		from A to Z;*=N,S, H, or L;X1=02,05,10,1 5,20,25,30,1S,2 S,3S,3A, X2=D,N,R or L;X3=T7,T1,TO, TB,TP,P8 or TR;X4=1,2, or 3; X5=U,D,G or C)			
09-03. Power Distribution Switch (UU1,UU2) for Type-C Port use	Texas Instruments Incorporated	SN1905003, SN2101023, SN2006003, SN1810003, SN1905004, SN2101026, SN2006001, SN2001024, SN2011059, SN2001022, SN2001029, SN2011061, SN2011060, SN2001026, SN2011035, SN2103033, SN2001023, TPS65993, SN2101019, SN2101013, SN2101027, SN1905008, SN2011062, SN1905002, SN2001027, SN2011058, SN2010021, SN2011052, SN1905007, SN1905001, SN1810004, TPS65994, SN2101015,	Output Continuous Rating: PA_VBUS, PB_VBUS: 0.9 to 3.0A PA_CC1, PA_CC2, PB_CC1, PB_CC2*: 0.315A Output Current Limit: PA_VBUS, PB_VBUS: 1.36 to 3.78A PA_CC1, PA_CC2, PB_CC1, PB_CC2: 0.47 to 0.66A *Only 1 path within a pair are active at one time. Maximum Ambient: 65°C SN2001025, SN2006001, SN2006002, SN2006003, and TPS65994 with alternate Insulated Housing at Maximum Ambi ent: 85°C	EN IEC 62368- 1:2020, EN IEC 62368- 1:2020/A11:2020 , IEC 62368- 1:2018	UL , UL , CB by UL US (US-39640- M1-UL)



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
		SN2001021, SN1905006, SN2006002, SN1908005, SN2101012, SN2001028, SN2011063, SN2101011, SN2001025, SN2101014, SN1905005, SN2112025, SN2112029, SN2112033, SN2112038, SN2206023, SN2206024, SN2206025, SN2206026, SN2206027, SN2206028, SN2206029, SN2206030, SN2206031, SN2011034, may be followed by additional characters that do not affect the safety features of the device			
09-03a. Power Distribution Switch (UU1,UU2) for Type-C Port use (Alternate)	TEXAS INSTRUMENTS INCORPORATED	TPS66021,TPS 66020-may be preceded by 'P', may be followed by additional characters that do not affect the safety features of the device	Input Voltage: 4.9 - 5.5 Vdc Output Continuous Rating: 1.5 - 3.0 A Output Current Limit: 1.87 - 3.7 A	UL 2367,IEC 62368-1:2014	UL , CB by UL US (US- 34369-UL)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
09-04. Polyswitch PTC for HDMI port use(Alternate)	Littelfuse Inc.	1206L110THX XXXXXX. X stands for A to Z, 0 to 9 or blank; Y stands for A to Z, 0 to 9, or blank	8Vdclh=1.1A, Isc=2.2A, CA= 1(93.9), 2, 3, 4, Tmoa=85 degree C	IEC/EN 60738- 1:2006 IEC/EN 60738-1:2008, UL1434, EN 60730-1	UL , UL , TUV (R50119118)
09-04a. Polyswitch PTC for HDMI port use(Alternate)	Bourns Inc.	MF-NSMF050	13.2Vdc, Ih=0.5A,Isc=1A, CA= 1(88),2, 3, 4 Tmoa=85degree C.	EN 60730- 1:2000,UL 1434	UL , UL , TUV (R 02057213)
09-04b. Polyswitch PTC for HDMI port use(Alternate)	Dongguan TLC Electronic Technology Co., Ltd.	TLC- NSMD100(x)	6Vdc, Ih=1A, Isc=2A, CA= 1(106.7), 2, 3, 4. Tmoa=85 degree C	EN 60738- 1:2006+A1EN 60738-1- 1:2008UL 1434, EN 60730-1	UL , UL , TUV (R 50306075)
09-04c. Polyswitch PTC for HDMI port use(Alternate)	BOURNS ELECTRONICS (TAIWAN) LTD	MF-NSMF110	Vmax = 6Vdc, Ih=1.1A, Isc=2.2A, CA=3, Tmoa=85 degree C	EN 60738- 1:2006+A1EN 60738-1- 1:2008UL 1434, EN 60730-1	UL , UL , TUV (R 02057213)
10. PWB for touch pad	Interchangeable	Interchangeable	V-0 or better, min. 105 degree C.	UL 796	UL , --
11. Connectors and Receptacles (ES1 Circuits)	Interchangeable	Interchangeable	Copper alloy pins housed in bodies of plastic rated V-2 minimum.	UL 94, UL 746C	UL , --
11a. Connectors and Receptacles ES1 Circuits) (Alternate)	Interchangeable	Interchangeable	--	UL 1977	UL , --
12. Internal wiring (ES1 Circuits except wifi wire)	Interchangeable	Interchangeable	Marked VW-1, Minimum 30V, 60 degree C.	UL 758	UL , --

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
13. Interconnecting Cable (Optional)	Interchangeable	Interchangeable	Detachable, minimum 60 degree C, 30V minimum, maximum 3.05m long, suitable for external use, marked VW-1.	UL 758	UL , --
13a. Interconnecting Cable (Optional) (Alternate)	Interchangeable	Interchangeable	Suitable for external use. Type CMP, CMR, CMG, or CM.  For type CMX, or CMUC, maximum 3.05m long.	UL 444	UL , --
14. Keycaps, plungers and housing, keyboard assembly	Interchangeable	Interchangeable	Min. HB	UL 94	UL , --
15. All PWBs except touch pad	Interchangeable	Interchangeable	V-1 or better, min. 105 degree C.	UL 796	UL , --
16. Label	Interchangeable	Interchangeable	60 degree C if max. surface temperature not specified.	UL 969	UL , --
16a. Label (Alternate)	--	--	Molded as part of enclosure, Hot stamping, laser etching or silk screened.	--	-- , --
17. Flexible Printed Wiring	Interchangeable	Interchangeable	V-2 or VTM-2 minimum when no components mounted on surface.	UL 94, UL 746C	UL , --
17a. Flexible Printed Wiring (Alternate)	Interchangeable	Interchangeable	V-2 or VTM-2 minimum when no components mounted on surface.	UL 94, UL 746E	UL , --

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
17b. Flexible Printed Wiring (Alternate)	Interchangeable	Interchangeable	Rated V-2 or VTM-2 minimum, when no components mounted on surface; If components mounted on surface, it should be V-1 or VTM-1.	UL 796, UL 796F	UL , --
18. Heatsink	--	--	Copper and aluminum, Refer to Enclosure 04-03 & 04-06.	--	-- , --
20. Mesh for speaker opening	CHENGDU KANGLONGXIN PLASTICS CO LTD	KLX FRPC-1860, KLX FRPC-1860B	VTM-0, thickness 0.125-0.193 mm, 80 degree C. See Enclosure 04-05 for detailed dimension.	UL94, UL 746C	UL , --
20-01. Adhesive for speaker mesh	JIANGSU SIDIKE NEW MATERIALS SCIENCE & TECHNOLOGY CO LTD	DS-5	--	--	-- , --
22. IR LED module (Optional)	Liteon OPTO Technology (CZ) Ltd.	LTE-R28206S-NE8, LTE-R28206S-NE8-XX, LTE-R28206S-YE8 , LTE-R28206S-YE8-XX ("XX" means different customer numbers)	Comply IEC 62471 exempt group	IEC 62471:2006	-- , CB by SGS (Certificate No.: BE-34640)
22a. IR LED module of camera (Optional)(Alternate)	Liteon OPTO Technology (CZ) Ltd.	LTE-R28206AS-Q, LTE-R28206AS-Y , LTE-R28206AS-Q-XX, LTE-R28206AS-Y-XX ("XX" means different customer numbers)	Comply IEC 62471 exempt group	IEC 62471:2006	-- , CB by SGS (Certificate No.: BE-33598/M1)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
		different customer numbers)			
22b. IR LED module of camera (Optional)(Alterna te)	Liteon OPTO Technology (CZ) Ltd.	LTE-R28206S- ME8-XX,LTE- R28206S- ME8,LTE- R28206S-KE8- XX,LTE- R28206S- KE8,LTE- R28206S,LTE- 10L470-M6- XX,LTE- 10L370-M5- XX,LTE- R273090X-M5- XX ("XX" means different customers)	Comply IEC 62471 exempt group	IEC 62471:2006	-- , CB by SGS (Certificate No.: BE- 36784/M2)
22c. IR LED module of camera (Optional)(Alterna te)	LITE-ON OPTO TECHNOLOGY(Ch angzhou)Ltd.	LTE-R28205T- ME8, LTE- R28205T-ME8- XX, LTE- R28205T-ME8- XX, (where "X" can be used as "A-Z", or "0-9" or blank for different customers)	Comply IEC 62471 exempt group	IEC 62471:2006	-- , CB by UL (Certificate NO. : DK- 118238-UL)

Supplementary information:

- 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.
- 2) Description line content is optional. Main line description needs to clearly detail the component used for testing.
- 3) The CBTL has verified the component information.
- 4) License available upon request.

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>

## **Enclosure**

### **National Differences**

Australia / New Zealand

China

EU Group and National Differences

Japan

Saudi Arabia

Singapore

USA / Canada

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1</b> (AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment)	
Differences according to .....	AS/NZS 62368.1:2022
TRF template used: .....	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No. ....	AU_NZ_ND_IEC62368_1E
Attachment Originator .....	JAS-ANZ
Master Attachment .....	2022-07-01
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	National Differences		
<b>Appendix ZZ</b>	Variations to IEC 62368-1:2018 (ED. 3.0) for Australia and New Zealand		Pass
<b>ZZ1 Scope</b>	This Appendix lists the normative variations to IEC 62368-1:2018 (ED. 3.0)		Pass
<b>ZZ2 Variations</b>	The following modifications are required for Australian/New Zealand conditions:		Pass
<b>2</b>	After the first paragraph, <i>add</i> the following: The Australian or Australian/New Zealand Standards listed below are modified adoptions of, or not equivalent to, the IEC normative references and are required for the application of this Standard. All references in the source text to those IEC normative references shall be replaced by references to the corresponding Australian or Australian/New Zealand Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably -AS/NZS 3112, <i>Approval and test specification—Plugs and socket-outlets</i> -AS/NZS 3123, <i>Approval and test specification—Plugs, socket-outlets and couplers for general industrial application</i> -AS/NZS 3191, <i>Electric flexible cords</i> -AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i> -IEC 60086-2 <i>Primary batteries — Part 2: Physical and electrical specifications</i> -AS/NZS 60065, <i>Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)</i> -AS/NZS 60320.1, <i>Appliance couplers for household and similar general purposes,</i>		Pass



IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p><i>Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)</i></p> <p><i>-AS/NZS 60320.2.2, Appliance couplers for household and similar general purposes</i></p> <p><i>Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)</i></p> <p><i>-AS/NZS 60695.2.11, Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products</i></p> <p><i>-AS/NZS 60695.11.5, Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</i></p> <p><i>-AS/NZS 60695.11.10, Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods</i></p> <p><i>-AS/NZS 60884.1, Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i></p> <p><i>-AS/NZS 60950.1, Information technology equipment—Safety, Part 1: General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)</i></p> <p><i>IEC 61032:1997, Protection of persons and equipment by enclosures—Probes for verification</i></p> <p><i>-AS/NZS 61558.1, Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 3, MOD)</i></p> <p><i>-AS/NZS 61558.2.16, Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.</i></p>		
<b>4.7.2</b>	<p><b>Requirements</b></p> <p><i>Delete the text of the second paragraph and replace with the following:</i></p> <p>Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet conforming to AS/NZS 3112, shall conform to the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets. Conformity is checked by inspection and, if necessary, by the tests in AS/NZS 3112.</p> <p>NOTE: Equipment with plug portions for use in countries other than Australia and New Zealand will need to conform to other countries' requirements</p> <p>Note Additional AS/NZS 3112 Appendix J, TRF is appended to end of this TRF.</p>		N/A

IEC 62368_1E ATTACHMENT																							
Clause	Requirement + Test	Result - Remark		Verdict																			
4.7.3	<b>Compliance Criteria</b> <i>Delete</i> this clause			N/A																			
4.8.1	<b>General</b> After second list, <i>add</i> the following: NOTE: Refer to the Consumer Goods (Products Containing Button/Coin Batteries) Safety Standard 2020 and Consumer Goods (Products Containing Button/Coin Batteries) Information Standard 2020 for more information on button cell batteries in Australia..			N/A																			
5.4.10.2.1	<b>General</b> <i>Delete</i> the first paragraph and <i>replace</i> with the following: In Australia, the separation is checked by the test given in both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test given in either 5.4.10.2.2 or 5.4.10.2.3..			N/A																			
Table 28	<i>Delete</i> Table 28 and <i>replace</i> with the following: <table><tr><th rowspan="2">Parts</th><th colspan="2">Impulse test</th><th colspan="2">Steady state test</th></tr><tr><th>New Zealand</th><th>Australia</th><th>New Zealand</th><th>Australia</th></tr><tr><td>Parts indicated in Clause 5.4.10.1 a) *</td><td>2.5 kV</td><td>7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment.</td><td>1.5 kV</td><td>3 kV</td></tr><tr><td>Parts indicated in Clause 5.4.10.1 b) and c) *</td><td colspan="2">1.5 kV *</td><td>1.0 kV</td><td>1.5 kV</td></tr></table> <p>* Surge suppressors shall not be removed. * Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment. * During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT.</p>			Parts	Impulse test		Steady state test		New Zealand	Australia	New Zealand	Australia	Parts indicated in Clause 5.4.10.1 a) *	2.5 kV	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment.	1.5 kV	3 kV	Parts indicated in Clause 5.4.10.1 b) and c) *	1.5 kV *		1.0 kV	1.5 kV	N/A
Parts	Impulse test		Steady state test																				
	New Zealand	Australia	New Zealand	Australia																			
Parts indicated in Clause 5.4.10.1 a) *	2.5 kV	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment.	1.5 kV	3 kV																			
Parts indicated in Clause 5.4.10.1 b) and c) *	1.5 kV *		1.0 kV	1.5 kV																			
5.4.10.2.2	<i>Delete</i> “NOTE” and <i>replace</i> with “NOTE 1”. After NOTE 1, <i>add</i> the following: NOTE 2: For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 3: For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.			N/A																			
5.4.10.2.3	<i>Delete</i> “NOTE” and <i>replace</i> with “NOTE 1”. After NOTE 1, <i>add</i> the following: NOTE 2: For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 3: The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.			N/A																			
6	<b>Electrically-caused fire</b>																						
6.6	After Clause 6.6, <i>add</i> the new Clauses 6.201 as follows: <b>6.201 External power supplies, docking stations and other similar devices</b> (see special national conditions)			N/A																			
8.6	<b>Stability of equipment</b>																						

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Table 36</b>	Footnote <sup>a</sup> , after first sentence, <i>add</i> the following: Equipment having displays with moving images shall include “television sets and display devices”.		N/A
<b>8.6.1</b>	After Clause 8.6.1 <i>add</i> the following new clauses: <b>8.6.201 Restraining Device fixing point</b> (see special national conditions) <b>8.6.202 Restraining device</b> (see special national conditions)		N/A
<b>Annex F Paragraph F.3.3.4</b>	<b>Rated Voltage</b> <i>Delete</i> “NOTE” and <i>replace</i> with NOTE1” After NOTE 1, <i>add</i> the following Equipment that is intended for connection to the supply mains in Australia and New Zealand shall be marked with: (a) A rated voltage of: <ul style="list-style-type: none"> <li>• 230 V for single phase equipment</li> <li>• 400 V for poly phase equipment</li> </ul> Or (b) A rated voltage range that includes: <ul style="list-style-type: none"> <li>• 230 V for single phase equipment</li> <li>• 400 V for poly phase equipment</li> </ul> NOTE 2: equipment that is not rated as above is not suitable for direct connection to the supply mains in Australia or new Zealand.		N/A
<b>Annex F.3.3.5</b>	After the list, <i>add</i> the following Equipment that is intended for connection to supply mains in Australia or New Zealand shall be marked with a rated frequency of 50 Hz or a rated frequency range or nominal value which includes 50Hz		N/A
<b>Annex F.3.8</b>	After “The DC output of an external power supply”, insert “or docking stations and other similar external devices”		N/A
<b>Annex G Paragraph G.4.2</b>	<b>Mains connectors</b> 1 After “IEC 60320”, insert “or AS/NZS 60320 series”. 2 After “IEC 60906-1”, insert “or AS/NZS 3123” 3 <i>After</i> first paragraph <i>add</i> the following: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.		N/A
<b>Paragraph G.5.3.1</b>	<b>Transformers, General</b> 1 Third dashed point <i>replace</i> ‘IEC 61558-1 and the relevant parts of IEC 61558-2’ with ‘AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2’		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	2 Fourth dashed point <i>replace</i> 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.		
<b>Annex G.7.1</b>	<b>Mains supply cords, General</b> Fourth dashed paragraph, <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
<b>Table G.7</b>	<b>Sizes of conductors</b> 1 First column, second row, <i>delete</i> "6" and <i>replace</i> with "7.5" 2 Second column, second row, <i>delete</i> '0,75' and <i>replace</i> with '0.75 <sup>b</sup> 3 <i>Delete</i> NOTE 1. 4 <i>Replace</i> 'NOTE 2' with 'NOTE:'. 5 <i>Delete</i> 'Footnote b' and <i>replace</i> with the following: <sup>b</sup> This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm <sup>2</sup> three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 Footnote c <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' 7 Footnote d <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
<b>Annex M M 2.1</b>	<i>Add</i> "IEC 60086-2" to the list		N/A
<b>Annex M Paragraph M.3.2</b>	<b>Test method</b> <i>Delete</i> "NOTE" and <i>replace</i> with "NOTE 1" After NOTE 1 <i>add</i> the following: NOTE 2: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of ES1 may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.		N/A
	<b>Special national conditions (if any)</b>		
<b>6.201</b>	<b>External power supplies, docking stations and other similar devices</b> For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage— (a) at all ES1 outlets or connectors shall not increase by more than 10 % of the output rated voltage under normal operating conditions, measured after 3 s of introducing a single fault condition and		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>after 3 s of introducing abnormal operating conditions; and</p> <p>(b) of a USB outlet or connector shall not increase by more than 3 V or 10 % of the output rated voltage under normal operating conditions, whichever is higher, measured after 3 seconds of introducing a single fault condition and after 3 s of introducing abnormal operating conditions</p> <p>For equipment with multiple rated voltages at the output, the requirements apply with the equipment configured for each output rated voltage in turn</p> <p>NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries. The 3 s measurement delay is based on IEC document 108/742/INF, <i>TC 108, Standards Interpretation Panel Question 15 — Output voltage</i>, in relation to similar requirements in IEC 62368-3:2017.</p> <p>Conformity shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single fault conditions of Annex B.4.</p>		
8.6.201	<p><b>Restraining device fixing point</b></p> <p>Freestanding-capable MS2 and MS3 television sets and display devices shall be provided with a fixing point to facilitate the anchoring of the equipment from toppling</p> <p>The fixing point shall conform to Clause 8.7 where the fixing point uses a wall, ceiling or other structure mount. Alternatively, the fixing point shall be capable of withstanding a pull equal to the mass of the equipment in all directions without damage</p> <p>Instructions for installation or instructions for use shall be provided to specify correct use of the fixing point</p>		N/A
8.6.202	<p><b>Restraining device</b></p> <p>MS2 and MS3 television sets and display devices shall be provided with a restraining device and associated hardware to attach to the television set or display device.</p> <p>The restraining device shall be capable of withstanding a pull equal to the mass of the equipment in all directions.</p>		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Instructions for installation or instructions for use shall be provided to specify correct use of the fixing point		

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>AS_NZS_3112:2017_+A1:2021 Appendix J</b> <b>AUSTRALIAN / NEW ZEALAND NATIONAL DIFFERENCES</b> <b>(Approval and test specification—Plugs and socket-outlets)</b>			
<b>Differences according to</b> ..... AS_NZS_3112:2017_Amendment 1:2021_Appendix J			
<b>TRF template used:</b> ..... IEC EE OD-2020-F3, Ed. 1.1			
<b>Attachment Form No.</b> ..... AS_NZS_3112:2017_Appendix J			
<b>Attachment Originator</b> ..... JAS-ANZ			
<b>Master Attachment</b> ..... 2022-06			
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	<b>Note: AS/NZS 3112 is NOT covered by IECEE Accreditation for Testing / Reporting</b> <b>Please State Laboratory Accreditation for this Standard</b>		
	Accreditation		
	Accreditation Stamp		

J1 SCOPE	<p>General: This Appendix specifies additional dimensional and constructional requirements for detachable plug portions, or equipment incorporating integral supply pins or equipment incorporating detachable plug portions.</p> <p>This Appendix shall be read in conjunction with Section 2 of this Standard.</p> <p>For the purposes of this Appendix, where the term ‘plug’ is used in Section 2 it shall be taken to mean the plug portion of equipment or the detachable plug portion.</p> <p>The equipment shall comply with the relevant product Standard. The tests and requirements specified in this Appendix are in addition to any test and requirements of the relevant product Standard for the equipment.</p> <p>(AS/NZS 3112:2017/A1:2021)</p>	N/A
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IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1</b> <b>CHINA NATIONAL DIFFERENCES</b> <b>(Audio/video, information and communication technology equipment -Part 1: Safety requirements)</b>	
Differences according to .....	GB 4943.1-2022
TRF template used: .....	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No. ....	CN_ND_IEC62368_1E
Attachment Originator .....	CQC
Master Attachment .....	Dated 2022-12-01
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	National Differences		
4.1.2	<b>Use of components</b> Add a paragraph: A component used shall comply with related requirements corresponding altitude of the equipment.		N/A
4.11	Add clause 4.11,as follows: Protection in PRIMARY CIRCUITS against overcurrent short-circuits and earth faults shall be provided as an integral part of the equipment except the device shall meet the all requirement of Fault conditions.  If pluggable equipment type B or permanently connected equipment depends on protective devices outside the equipment for protection, this shall be stated in the installation instructions of the equipment, with requirements for short-circuit protection, over-current protection ,or both if necessary.		N/A
5.3.2.2	<b>Contact requirements</b> Amend the 2 <sup>nd</sup> paragraph of table 8 to be: For equipment intended to be used at altitude of 2000m to 5000m, the values in this table are multiplied by the multiplication factor corresponding altitude of 5000m.		N/A
5.4.2.5	<b>Multiplication factors for altitudes higher than 2 000 m above sea level</b> Amend the 1 <sup>st</sup> paragraph to be: For equipment to be operated at more than 2000 m above sea level and up to 5000m above sea level, the minimum CLEARANCE in tables 10,11 and 14,and resistance test voltages required in table 15, shall meet the		N/A



IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>requirements of 5000 m above sea level, This is multiplied by the multiplication factor corresponding altitude of 5000m in table 16.</p> <p>For equipment to be used at equal or less than 2000 m above sea level, the minimum CLEARANCE in tables 10, 11 and 14, and resistance test voltages required in table 15, shall meet the requirements of 2000 m above sea level. This is multiplied by the multiplication factor corresponding altitude of 2000m in table 16.</p> <p>Delete note 2 of Clause 5.4.2.5.</p>		
5.4.5.1	<p><b>General</b></p> <p>Delete the 2<sup>nd</sup> paragraph of Clause 5.4.5.1: This test does not apply to equipment where one antenna terminal on the equipment is connected to earth in accordance with 5.6.7.</p> <p>Add the following:</p> <p>The Insulation resistance between CATV antenna coaxial sockets and protective earth of apparatus shall comply with BASIC INSULATION. If it's possible that CLASS II apparatus with CATV antenna coaxial sockets connect with protective earth of another CLASS I apparatus by other terminals, the insulation resistance between them shall comply with BASIC INSULATION as well.</p> <p>If antenna cable separated from the protective earth before connection to the apparatus, there is no requirements of Insulation resistance between them but F.4 requirements shall be meet.</p> <p>Delete "NOTE" of Clause 5.4.5.1</p>		N/A
5.4.8	<p><b>Humidity conditioning</b></p> <p>Amend clause 5.4.8 as follows :</p> <p>The humidity conditioning is conducted for 120 h in a cabinet or room containing air with ambient temperature (40±2) °C and a relative humidity of (93±3)%. During this conditioning, the component or subassembly is not energized.</p> <p>For equipment not to be operated at tropical climatic conditions, humidity conditioning is conducted for 48 h in a cabinet or room containing air with a relative humidity of (93±3) %. The temperature of the air, at all places where samples can be located, is maintained within 2 °C of any convenient value between</p>		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>20 °C and 30 °C such that condensation does not occur.</p> <p>Add note: For equipment to be operated at 2000 m - 5000m above sea level, assessment and requirement of humidity conditioning for Insulation material properties are considered. Pre-processing conditions and requirements below 2000m can be used until additional data is available.</p>		
6.4.9 Y.4.3	Delete references to ASTM and NEMA.		N/A
6.5.1	<p><b>General requirements</b></p> <p>Delete the text of the Note “Wire complying with UL 2556 VW-1 is considered to comply with these requirements”.</p>		N/A
F.1	<p>Amend the second paragraph of annex F.1 to be:</p> <p>Unless symbols are used or otherwise specified,</p> <p>safety related equipment markings, instructions, and instructional safeguards shall be in normative Chinese.</p>		N/A
F.2.2	<p>After the first paragraph of annex F.2.2 ,add the following:</p> <p>For apparatus intended to be used at altitude not exceeding 2000m, a warning label containing the following or a similar appropriate wording or a symbol shown below shall fixed to the equipment at readily visible place.</p> <p>"Only used at altitude not exceeding 2000m."</p>  <p>For apparatus intended to be used in not-tropical climate regions, a warning label containing the following or a similar appropriate wording or a symbol shown below shall fixed to the equipment at readily visible place.</p> <p>"Only used in not-tropical climate regions."</p>  <p>If only symbol used, the explanation of the symbol shall be contained in the instruction manual.</p> <p>The statements above shall be given in a language acceptable to the regions where the apparatus is intended to be used.</p>		N/A
F.3.3.4	<p>After the last paragraph, Added:</p> <p>…for single rated voltage, “220 V” or three-phase “380V” shall be marked only. For a</p>		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	rating voltage range, 220 V or three-phase 380V shall be covered. For multiple rated voltages, one of them shall be 220 V or three-phase 380V and which default setting from manufacture shall be 220 V or three-phase 380V as well.		
F.3.3.5	After the last paragraph, Added: Rated frequency shall be 50Hz or frequency range shall cover 50Hz.		N/A
F.4	<b>Instructions</b> Added: – For apparatus incorporating antenna coaxial sockets which is non-separated with CATV network, a warning wording or a similar shall be given in the instruction manual: “A CATV cable intended to be connected to apparatus shall be separated with the protective earth of the apparatus, otherwise fire hazard might be caused.”		N/A
F.5	<b>Instructional safeguards</b> In table F.2 , change 230V to 220V, change 400Y/230V 3Ø to 380 Y/220 V 3Ø		N/A
G.4.2	Amend clause G.4.2 as follows : Plugs connected to the MAINS in apparatus shall comply with GB/T 1002,GB/T 1003,GB/T 2099.1 or GB/T11918 (All parts) series. Appliance coupler shall comply with GB/T 17465 (All parts) series or GB/T 11918 (All parts) series.		N/A
	<b>Special national conditions (if any)</b>		
<b>0.12</b>	Add clause 0.12 Description of relevant information.		Pass
1	GB 4943.1-2022 applies to equipment used at altitudes not exceeding 5000m above sea level, For apparatus intended to be used at altitude not exceeding 2000m, The requirements can be appropriately reduced, but warning instructions shall be provided.. Revise the sixth paragraph of 1 as: In addition to specified by the manufacturer, this document assumes a maximum altitude of 5000m		N/A
B.2.6.1	Amend T <sub>ma</sub> as follows: T <sub>ma</sub> is the maximum ambient temperature permitted by the manufacturer's specification, or 35 °C, whichever is greater.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Add note 1: For equipment not to be operated at tropical climatic conditions, <math>T_{ma}</math> is the maximum ambient temperature permitted by the manufacturer's specification, or 25 °C, whichever is greater.</p> <p>Add note 2: For equipment to be operated at 2000m-5000m above sea level, its temperature test conditions and temperature limits are under consideration. temperature test conditions and temperature limits below 2000m can be used until additional data is available.</p>		
<b>Annex Z (normative)</b>	Added annex Z: Instructions of the new safety warning labels.		N/A
<b>Annex AA (informative)</b>	Added annex AA: Illustration relative to safety explanation in normative Chinese, Tibetan, Mongolian, Zhuang Language and Uighur.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> (Audio/video, information and communication technology equipment - Part 1: Safety requirements)	
<b>Differences according to</b> .....	EN IEC 62368-1:2020+A11:2020
<b>Attachment Form No.</b> .....	EU_GD_IEC62368_1E
<b>Attachment Originator</b> .....	UL(Demko)
<b>Master Attachment</b> .....	2021-02-04
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>		
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018.  Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed "Z".		
	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		
<b>1</b>	<b>Modification to Clause 3 .</b>		
<b>3.3.19</b>	<b>Sound exposure</b> <i>Replace 3.3.19 of IEC 62368-1 with the following definitions:</i>		Pass
<b>3.3.19.1</b>	<b>momentary exposure level, MEL</b> metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2.  Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.		Pass
<b>3.3.19.3</b>	<b>sound exposure, E</b>  A-weighted sound pressure ( $p$ ) squared and integrated over a stated period of time, $T$  Note 1 to entry: The SI unit is Pa <sup>2</sup> s.		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
	$E = \int_0^T p(t)^2 dt$		
3.3.19.4	<p><b>sound exposure level, SEL</b></p> <p>logarithmic measure of sound exposure relative to a reference value, <math>E_0</math>, typically the 1 kHz threshold of hearing in humans.</p> <p>Note 1 to entry: <i>SEL</i> is measured as A-weighted levels in dB.</p> $SEL = 10 \lg \left( \frac{E}{E_0} \right) \text{ dB}$ <p>Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.</p>		Pass
3.3.19.5	<p><b>digital signal level relative to full scale, dBFS</b></p> <p>levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused</p> <p>Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.</p>		Pass
2	<b>Modification to Clause 10</b>		
10.6	<p><b>Safeguards against acoustic energy sources</b></p> <p>Replace 10.6 of IEC 62368-1 with the following:</p>		N/A
10.6.1.1	<p><b>Introduction</b></p> <p><b>Safeguard</b> requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an <b>ordinary person</b>, that:</p> <ul style="list-style-type: none"> <li>– is designed to allow the user to listen to audio or audiovisual content / material; and</li> <li>– uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and</li> </ul>		N/A



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	<p>– has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.).</p> <p>EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment.</p> <p>Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3.</p> <p>NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360.</p> <p>NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible.</p> <p>Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only. The requirements do not apply to:</p> <ul style="list-style-type: none"> <li>– professional equipment;</li> </ul> <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p> <ul style="list-style-type: none"> <li>– hearing aid equipment and other devices for assistive listening;</li> <li>– the following type of analogue personal music players: <ul style="list-style-type: none"> <li>• long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and</li> <li>• cassette player/recorder;</li> </ul> </li> </ul> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>– a player while connected to an external amplifier that does not allow the user to walk around</p>		

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	<p>while in use.</p> <p>For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply.</p> <p>The relevant requirements are given in EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.</p>		
10.6.1.2	<p><b>Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz</b></p> <p>The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz).</p> <p>For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body mounted devices, attention is drawn to EN 50360 and EN 50566.</p>		N/A
10.6.2	<b>Classification of devices without the capacity to estimate sound dose</b>		N/A
10.6.2.1	<p><b>General</b></p> <p>This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3.</p> <p>For classifying the acoustic output <math>LA_{eq,T}</math>, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period.</p> <p>For music where the average sound pressure (long term <math>LA_{eq,T}</math>) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, <math>T</math> becomes the duration of the song.</p> <p>NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term <math>LA_{eq,T}</math>) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning does not need to be</p>		N/A



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	given as long as the average sound pressure of the song does not exceed the required limit. For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB.		
<b>10.6.2.2</b>	<b>RS1 limits (to be superseded, see 10.6.3.2)</b>  RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be $\leq 85$ dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be $\leq 27$ mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2.		N/A
<b>10.6.2.3</b>	<b>RS2 limits (to be superseded, see 10.6.3.3)</b>  RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the $L_{Aeq,T}$ acoustic output shall be $\leq 100$ dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be $\leq 150$ mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1.		N/A
<b>10.6.2.4</b>	<b>RS3 limits</b>  RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>10.6.3</b>	<b>Classification of devices (new)</b>		N/A
<b>10.6.3.1</b>	<b>General</b>  Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.		N/A
<b>10.6.3.2</b>	<b>RS1 limits (new)</b>  RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be $\leq 80$ dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be $\leq 15$ mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
<b>10.6.3.3</b>	<b>RS2 limits (new)</b>  RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be $\leq 80$ dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be $\leq 15$ mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
<b>10.6.4</b>	<b>Requirements for maximum sound exposure</b>		N/A
<b>10.6.4.1</b>	<b>Measurement methods</b>		N/A

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	<p>All volume controls shall be turned to maximum during tests.</p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.</p>		
10.6.4.2	<p><b>Protection of persons</b></p> <p>Except as given below, protection requirements for parts <b>accessible to ordinary persons, instructed persons and skilled persons</b> are given in 4.3.</p> <p>NOTE 1 Volume control is not considered a <b>safeguard</b>.</p> <p>Between RS2 and an <b>ordinary person</b>, the <b>basic safeguard</b> may be replaced by an <b>instructional safeguard</b> in accordance with Clause F.5, except that the <b>instructional safeguard</b> shall be placed on the equipment, or on the packaging, or in the instruction manual.</p> <p>Alternatively, the <b>instructional safeguard</b> may be given through the equipment display during use.</p> <p>The elements of the <b>instructional safeguard</b> shall be as follows:</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>– element 1a: the symbol , IEC 60417-6044 (2011-01)</li> <li>– element 2: “High sound pressure” or equivalent wording</li> <li>– element 3: “Hearing damage risk” or equivalent wording</li> <li>– element 4: “Do not listen at high volume levels for long periods.” or equivalent wording</li> </ul> <p>An <b>equipment safeguard</b> shall prevent exposure of an <b>ordinary person</b> to an RS2 source without intentional physical action from the <b>ordinary person</b> and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off.</p> <p>The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time.</p>		N/A

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	<p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off.</p> <p>A <b>skilled person</b> shall not be unintentionally exposed to RS3.</p>		
<b>10.6.5</b>	<b>Requirements for dose-based systems</b>		N/A
<b>10.6.5.1</b>	<p><b>General requirements</b></p> <p>Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause.</p> <p>The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration.</p> <p>The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.</p>		N/A
<b>10.6.5.2</b>	<p><b>Dose-based warning and requirements</b></p> <p>When a dose of 100 % <i>CSD</i> is reached, and at least at every 100 % further increase of <i>CSD</i>, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1.</p> <p>The warning shall at least clearly indicate that listening above 100 % <i>CSD</i> leads to the risk of hearing damage or loss.</p>		N/A
<b>10.6.5.3</b>	<p><b>Exposure-based requirements</b></p> <p>With only dose-based requirements, cause and effect could be far separated in time, defying the</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at.</p> <p>The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3.</p> <p>The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster.</p> <p>Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface.</p> <p>NOTE In case the source is known not to be music (or test signal), the EL may be disabled.</p>		
<b>10.6.6</b>	<b>Requirements for listening devices (headphones, earphones, etc.)</b>		N/A
<b>10.6.6.1</b>	<p><b>Corded listening devices with analogue input</b></p> <p>With 94 dB LAeq acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be <math>\geq 75</math> mV.</p> <p>NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.</p>		N/A
<b>10.6.6.2</b>	<p><b>Corded listening devices with digital input</b></p> <p>With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the LAeq,T acoustic output of the listening device shall be <math>\leq 100</math> dB with an input signal of -10 dBFS.</p>		N/A

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Clause	Requirement + Test			Result - Remark		Verdict
10.6.6.3	<b>Cordless listening devices</b>  In cordless mode, – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq,T}$ acoustic output of the listening device shall be $\leq 100$ dB with an input signal of -10 dBFS.					N/A
10.6.6.4	<b>Measurement method</b>  <i>Measurements shall be made in accordance with EN 50332-2 as applicable.</i>					N/A
3	<b>Modification to the whole document</b>					
	<b>Delete</b> all the “country” notes in the reference document according to the following list:					
	0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2
	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2
	5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3
	5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note
	5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note
	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4
	5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2
	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2
	<del>10.6.4</del>	Note 3	F.3.3.6	Note 3	Y.4.1	Note
	Y.4.5	Note				
4	<b>Modification to Clause 1</b>					
1	<b>Add</b> the following note:					Pass

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Clause	Requirement + Test	Result - Remark	Verdict
	<i>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</i>		
<b>5</b>	<b>Modification to 4.Z1</b>		
<b>4.Z1</b>	<p><b>Add the following new subclause after 4.9:</b></p> <p>To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. <b>mains</b>, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for <b>pluggable equipment type B</b> or <b>permanently connected equipment</b>, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for <b>pluggable equipment type A</b> the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N/A
<b>6</b>	<b>Modification to 5.4.2.3.2.4</b>		
<b>5.4.2.3.2.4</b>	<p><b>Add the following to the end of this subclause:</b></p> <p>The requirement for interconnection with <b>external circuit</b> is in addition given in EN 50491-3:2009.</p>		N/A
<b>7</b>	<b>Modification to 10.2.1</b>		
<b>10.2.1</b>	<p>Add the following to c) and d) in table 39:</p> <p>For additional requirements, see 10.5.1.</p>		N/A
<b>8</b>	<b>Modification to 10.5.1</b>		
<b>10.5.1</b>	<p><b>Add the following after the first paragraph:</b></p> <p>For RS 1 compliance is checked by measurement under the following conditions:</p> <p>In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict																																
	<p>internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.</p> <p>NOTE Z1 Soldered joints and paint lockings are examples of adequate locking.</p> <p>The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus.</p> <p>Moreover, the measurement shall be made under fault conditions causing an increase of the high voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.</p> <p>For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.</p> <p>NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.</p>																																		
9	Modification to G.7.1																																		
G.7.1	<p><b>Add the following note:</b></p> <p>NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.</p>		N/A																																
10	Modification to Bibliography																																		
	<p><b>Add the following notes for the standards indicated:</b></p> <table><tr><td>IEC 60130-9</td><td>NOTE Harmonized as EN 60130-9.</td></tr><tr><td>IEC 60269-2</td><td>NOTE Harmonized as HD 60269-2.</td></tr><tr><td>IEC 60309-1</td><td>NOTE Harmonized as EN 60309-1.</td></tr><tr><td>IEC 60364</td><td>NOTE some parts harmonized in HD 384/HD 60364 series.</td></tr><tr><td>IEC 60601-2-4</td><td>NOTE Harmonized as EN 60601-2-4.</td></tr><tr><td>IEC 60664-5</td><td>NOTE Harmonized as EN 60664-5.</td></tr><tr><td>IEC 61032:1997</td><td>NOTE Harmonized as EN 61032:1998 (not modified).</td></tr><tr><td>IEC 61508-1</td><td>NOTE Harmonized as EN 61508-1.</td></tr><tr><td>IEC 61558-2-1</td><td>NOTE Harmonized as EN 61558-2-1.</td></tr><tr><td>IEC 61558-2-4</td><td>NOTE Harmonized as EN 61558-2-4.</td></tr><tr><td>IEC 61558-2-6</td><td>NOTE Harmonized as EN 61558-2-6.</td></tr><tr><td>IEC 61643-1</td><td>NOTE Harmonized as EN 61643-1.</td></tr><tr><td>IEC 61643-21</td><td>NOTE Harmonized as EN 61643-21.</td></tr><tr><td>IEC 61643-311</td><td>NOTE Harmonized as EN 61643-311.</td></tr><tr><td>IEC 61643-321</td><td>NOTE Harmonized as EN 61643-321.</td></tr><tr><td>IEC 61643-331</td><td>NOTE Harmonized as EN 61643-331.</td></tr></table>		IEC 60130-9	NOTE Harmonized as EN 60130-9.	IEC 60269-2	NOTE Harmonized as HD 60269-2.	IEC 60309-1	NOTE Harmonized as EN 60309-1.	IEC 60364	NOTE some parts harmonized in HD 384/HD 60364 series.	IEC 60601-2-4	NOTE Harmonized as EN 60601-2-4.	IEC 60664-5	NOTE Harmonized as EN 60664-5.	IEC 61032:1997	NOTE Harmonized as EN 61032:1998 (not modified).	IEC 61508-1	NOTE Harmonized as EN 61508-1.	IEC 61558-2-1	NOTE Harmonized as EN 61558-2-1.	IEC 61558-2-4	NOTE Harmonized as EN 61558-2-4.	IEC 61558-2-6	NOTE Harmonized as EN 61558-2-6.	IEC 61643-1	NOTE Harmonized as EN 61643-1.	IEC 61643-21	NOTE Harmonized as EN 61643-21.	IEC 61643-311	NOTE Harmonized as EN 61643-311.	IEC 61643-321	NOTE Harmonized as EN 61643-321.	IEC 61643-331	NOTE Harmonized as EN 61643-331.	
IEC 60130-9	NOTE Harmonized as EN 60130-9.																																		
IEC 60269-2	NOTE Harmonized as HD 60269-2.																																		
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IEC 61032:1997	NOTE Harmonized as EN 61032:1998 (not modified).																																		
IEC 61508-1	NOTE Harmonized as EN 61508-1.																																		
IEC 61558-2-1	NOTE Harmonized as EN 61558-2-1.																																		
IEC 61558-2-4	NOTE Harmonized as EN 61558-2-4.																																		
IEC 61558-2-6	NOTE Harmonized as EN 61558-2-6.																																		
IEC 61643-1	NOTE Harmonized as EN 61643-1.																																		
IEC 61643-21	NOTE Harmonized as EN 61643-21.																																		
IEC 61643-311	NOTE Harmonized as EN 61643-311.																																		
IEC 61643-321	NOTE Harmonized as EN 61643-321.																																		
IEC 61643-331	NOTE Harmonized as EN 61643-331.																																		
11	ADDITION OF ANNEXES																																		



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Clause	Requirement + Test	Result - Remark	Verdict
<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>		
<b>4.1.15</b>	<p><b>Denmark, Finland, Norway and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p><b>Class I pluggable equipment type A</b> intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and <b>accessible</b> parts, have a marking stating that the equipment shall be connected to an earthed <b>mains</b> socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In <b>Denmark</b>: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord."</p> <p>In <b>Finland</b>: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In <b>Norway</b>: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In <b>Sweden</b>: "Apparaten skall anslutas till jordat uttag"</p>		N/A
<b>4.7.3</b>	<p><b>United Kingdom</b></p> <p>To the end of the subclause the following is added:</p> <p>The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex</p>		N/A
<b>5.2.2.2</b>	<p><b>Denmark</b></p> <p>After the 2nd paragraph add the following:</p> <p>A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>		N/A
<b>5.4.11.1 and Annex G</b>	<p><b>Finland and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> </ul>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<ul style="list-style-type: none"> <li>one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV),</li> </ul> <p>and</p> <ul style="list-style-type: none"> <li>is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11;</li> <li>the additional testing shall be performed on all the test specimens as described in EN 60384-14;</li> </ul> <p>the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</p>		
5.5.2.1	<p><b>Norway</b></p> <p>After the 3rd paragraph the following is added:</p> <p>Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p>		N/A
5.5.6	<p><b>Finland, Norway and Sweden</b></p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>To the end of the subclause the following is added:</p> <p>Resistors used as <b>basic safeguard</b> or bridging <b>basic insulation</b> in <b>class I pluggable equipment type A</b> shall comply with G.10.1 and the test of G.10.2.</p>		
5.6.1	<p><b>Denmark</b></p> <p><b>Add</b> to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.</p>		N/A
5.6.4.2.1	<p><b>Ireland and United Kingdom</b></p> <p>After the indent for <b>pluggable equipment type A</b>, the following is added: – the <b>protective current rating</b> is taken to be 13 A, this being the largest rating of fuse used in the <b>mains</b> plug.</p>		N/A
5.6.4.2.1	<p><b>France</b></p> <p>After the indent for <b>pluggable equipment type A</b>, the following is added: – in certain cases, the <b>protective current rating</b> of the circuit supplied from the mains is taken as 20 A instead of 16 A.</p>		N/A
5.6.5.1	<p>To the second paragraph the following is added:</p> <p>The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm<sup>2</sup> to 1,5 mm<sup>2</sup> in cross-sectional area.</p>		N/A
5.6.8	<p><b>Norway</b></p> <p>To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as <b>class I equipment</b>. See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.</p>		N/A
5.7.6	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added:</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The installation instruction shall be affixed to the equipment if the <b>protective conductor current</b> exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		
<b>5.7.6.2</b>	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .</p>		N/A
<b>5.7.7.1</b>	<p><b>Norway and Sweden</b></p> <p>To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>“Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)”</p> <p>NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>utstyr – og er tilkople et koaksialbasert kabel-TV nett, kan forårsake brannfare.</p> <p>For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.”</p> <p>Translation to Swedish:            ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.</p>		
<b>8.5.4.2.3</b>	<p><b>United Kingdom</b></p> <p>Add the following after the 2<sup>nd</sup> dash bullet in 3<sup>rd</sup> paragraph:</p> <p>An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.</p>		N/A
<b>B.3.1 and B.4</b>	<p><b>Ireland and United Kingdom</b></p> <p>The following is applicable:</p> <p>To protect against excessive currents and short-circuits in the primary circuit of <b>direct plug-in equipment</b>, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the <b>direct plug-in equipment</b>, until the requirements of Annexes B.3.1 and B.4 are met</p>		N/A
<b>G.4.2</b>	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added:</p> <p>Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a polyphase</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a.</p> <p>Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p> <p>Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a</p> <p><i>Justification:</i> Heavy Current Regulations, Section 6c</p>		
<b>G.4.2</b>	<p><b>United Kingdom</b></p> <p>To the end of the subclause the following is added:</p> <p>The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p>		N/A
<b>G.7.1</b>	<p><b>United Kingdom</b></p> <p>To the first paragraph the following is added:</p> <p>Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
<b>G.7.1</b>	<p><b>Ireland</b></p> <p>To the first paragraph the following is added:</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard		
<b>G.7.2</b>	<b>Ireland and United Kingdom</b>  To the first paragraph the following is added:  A power supply cord with a conductor of 1,25 mm <sup>2</sup> is allowed for equipment which is rated over 10 A and up to and including 13 A.		N/A
<b>ZC</b>	<b>ANNEX ZC, NATIONAL DEVIATIONS (EN)</b>		
<b>10.5.2</b>	<b>Germany</b>  The following requirement applies:  For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking.  <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.  <b>NOTE</b> Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: <a href="http://www.ptb.de">http://www.ptb.de</a>		N/A
<b>ZD</b>	<b>IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)</b>		

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Clause	Requirement + Test	Result - Remark	Verdict
	Type of flexible cord	Code designations	
		IEC	CENELEC
	<b>PVC insulated cords</b>		
	Flat twin tinsel cord	60227 IEC 41	H03VH-Y
	Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
	Ordinary polyvinyl chloride sheathed flexible cord	60227 IEC 53	H05VV-F H05VVH2-F
	<b>Rubber insulated cords</b>		
	Braided cord	60245 IEC 51	H03RT-F
	Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
	Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
	Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
	<b>Cords having high flexibility</b>		
	Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
	Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
	Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H
	<b>Cords insulated and sheathed with halogen-free thermoplastic compounds</b>		
	Light halogen-free thermoplastic insulated and sheathed flexible cords		H03Z1Z1-F H03Z1Z1H2-F
	Ordinary halogen-free thermoplastic insulated and sheathed flexible cords		H05Z1Z1-F H05Z1Z1H2-F



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Clause	Requirement + Test	Result - Remark	Verdict

<p align="center"><b>ATTACHMENT TO TEST REPORT</b>  <b>IEC 62368-1:2018</b>  <b>JAPAN NATIONAL DIFFERENCES</b>  Audio/video, information and communication technology equipment – Part 1: Safety requirements</p>			
<b>Differences according to</b> .....: J62368-1(2023)			
<b>TRF template used</b> .....: IECEE OD-2020-F3:2022, Ed. 1.2			
<b>Attachment Form No.</b> .....: JP_ND_IEC62368_1E			
<b>Attachment Originator</b> .....: UL Solutions (JP)			
<b>Master Attachment</b> .....: Dated 2023-05-12			
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	National Differences		
4.1.2	Where the component, or a characteristic of a component, is a safeguard or a part of a safeguard, components shall comply with the requirements of this document or, where specified in a requirements clause, with the safety aspects of the relevant JIS component standards or IEC component standards, or components shall have properties equivalent to or better than these.		N/A
5.6.1	Mains socket-outlet and interconnection coupler shall comply with Clause G.4.2A if they are incorporated as part of the equipment.		N/A
5.6.2.1	<p>Connection for protective conductor of class 0I equipment provided with instructional safeguard in accordance with Clause F.3.6.1A is considered to make earlier and break later than supply connection.</p> <p>Mains plug having a lead wire for protective earthing connection of class 0I equipment shall comply with all of the following:</p> <ul style="list-style-type: none"> <li>– Not to be used for equipment having a rated voltage of 150 V or more</li> <li>– Clip is not used for the earthing connection of the lead wire.</li> <li>– The lead wire for earthing is at least 10 cm long</li> </ul> <p>If class 0I equipment provides an independent main protective earthing terminal and is intended to be</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	installed by ordinary person, earthing wire shall be provided in the package of the equipment.		
5.6.2.2	Internal earthing conductor of the cord set that is covered by the sheath of mains cord and is formed together with mains plug and appliance connector need not be green-and-yellow.		N/A
5.6.3	In case of class 0I equipment using power supply cord having two conductors (no earthing conductor), the conductor of protective earthing lead wire shall comply with either of the following:  – use of annealed copper wire with 1.6 mm diameter or corrosion-inhibiting metal wire having size and strength that are equivalent to or more than the above copper wire  – single core cord or single core cable with 1.25 mm <sup>2</sup> or more cross-sectional area		N/A
5.7.3	For class 0I equipment that is provided with mains socket-outlet in the configuration as specified in JIS C 8282 series, JIS C 8300 or JIS C 8303, or that is provided with mains appliance outlet as specified in JIS C 8283 series for the purpose of interconnection, the measurement is conducted on the system of the interconnected equipment having a single connection to the mains.		N/A
5.7.5	In case of class 0I equipment, touch current shall not exceed 1.41 mA peak or for sinusoidal wave, 1.0 mA r.m.s. when measured using the network specified in Figure 4 of IEC 60990:2016.		N/A
6.4.3.2	A fuse complying with JIS C 6575 series or a fuse having equivalent characteristics shall open within 1 s.  A fuse having time/current characteristics other than those specified in IEC 60127 shall be tested with the characteristics taken into account. In case of Class A fuse of JIS C 6575, replace “2.1 times” by “1.35 times” and in case of Class B fuse of JIS C 6575, replace “2.1 times” by “1.6 times”.		N/A
8.5.4.3.1	Only three-phase stationary equipment rated more than AC 200 V can be considered as being for use in locations where children are not likely to be present, when complying with Clause F.4.		N/A
8.5.4.3.2	For equipment installed where children may be present, an instructional safeguard shall be provided by easily understandable wording in accordance with Clause F.5, except that element 3 is optional.		N/A
8.5.4.3.4	The media destruction device is tested according to Clause V.1.2 with applicable jointed test probes to		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	the opening. And then the wedge probe per Figure V.4 shall not contact any moving part.		
8.5.4.3.5	<p>The wedge probe of Figure V.4 and applicable jointed test probes specified in Clause V.1.2 shall not contact any moving part.</p> <p>Instructional safeguard shall not be used instead of equipment safeguard for preventing access to hazardous moving parts.</p>		N/A
F.3.5.1	<p>When the mains socket-outlet is configured in accordance with JIS C 8282 series, JIS C 8300 or JIS C 8303, the assigned current or power shall be marked. If the voltage of the socket-outlet is the same as the mains voltage, the voltage need not be marked.</p> <p>Instructional safeguard of Class 0I equipment shall be provided with an instructional safeguard in accordance with Clause F.5 when a mains socket-outlet as specified in JIS C 8282 series, JIS C 8300 or JIS C 8303 to which class I equipment can be connected is provided in accordance with Clause G.4.2A except for the cases where the socket-outlet is accessible only to skilled persons.</p>		N/A
F.3.5.3	If the fuse is necessary for the safeguard function, the symbols indicating pre-arcing time-current characteristic shall be included.		N/A
F.3.6.1A	<p>Marking for class 0I equipment</p> <p>The requirements of Clauses F.3.6.1.1 and F.3.6.1.2 shall be applied to class 0I equipment.</p> <p>For class 0I equipment, a marking of instructions shall be provided regarding the earthing connection.</p> <p>In addition to the above, for class 0I equipment, an instruction to connect earthing before and disconnect earthing after the connection of supply conductors shall be marked on the visible place of the main body or shall be in the text of an accompanying document.</p>		N/A
F.3.6.2	Symbols, IEC 60417-5172 (2003-02) or IEC 60417-6092 (2011-10), shall not be used for class I equipment or class 0I equipment.		N/A
F.3.8A	<p>Attention marking for aging deterioration of CRT television</p> <p>Year of manufacture, standard usage period by design according to JIS C 9921-5 and cautionary statement for possible risks of aging deterioration when used beyond the specified period shall be</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	marked on CRT television except for industrial use CRT television.		
F.4	<p>For audio equipment with terminals classified as ES3 in accordance with Table E.1, and for other equipment with terminals marked in accordance with F.3.6.1 and F.3.6.1A, the instructions shall require that the external wiring connected to these terminals shall be installed by a skilled person, or shall be connected by means of ready-made leads or cords that are constructed in a way that would prevent contact with any ES3 circuit.</p> <p>For class 0I equipment provided with independent main protective earthing terminal, where the cord for the protective earthing connection is not provided in the package of the equipment, if the protective earthing connection is made by instructed person or skilled person, the suitable installation instruction for the protective earthing connection shall be provided.</p>		N/A
G.3.2.1	The thermal link when tested as a separate component, shall comply with the requirements of JIS C 6691 or have properties equivalent to or better than that.		N/A
G.3.4	<p>Except for devices covered by Clause G.3.5, overcurrent protective devices used as a safeguard shall comply with the applicable JIS or IEC standard in accordance with 4.1.2 or shall have equivalent or better properties.</p> <p>Such a protective device shall have adequate breaking (rupturing) capacity to interrupt the maximum fault current (including short-circuit current) that can flow.</p>		N/A
G.4.1	This requirement does not apply to connectors covered in Clauses G.4.2 and G.4.2A.		N/A
G.4.2	<p>Mains connectors, mains plugs and socket-outlets shall comply with JIS C 8283 series, JIS C 8285, IEC 60309 series, JIS C 8282 series, JIS C 8300, JIS C 8303, or have equivalent or better properties.</p> <p>A power supply cord set provided with appliance connector that can fit appliance inlet complying with JIS C 8283-1 shall comply with JIS C 8286.</p> <p>Construction shall prevent mechanical stress not to transmit to the soldering part of appliance inlet terminal.</p> <p>When an equipment is rated not more than 125 V and all of the following are met, Type C14 and C18 appliance inlet complying with JIS C 8283-3 can be considered as rated 15 A.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>– The temperature of appliance inlet does not exceed the value specified in JIS C 8283-1 under the most unfavourable normal operating condition as specified in Clause B.2.1.</p> <p>– "Use only designated cord set attached in this equipment" or equivalent text is described in the operating instruction. If the cord set is not provided in the package of the equipment, suitable information regarding to the cord set is described in the operating instruction.</p>		
G.4.2A	Mains socket-outlet and interconnection coupler provided with the class II, class I and class 0I equipment respectively		N/A
G.7.1	A mains supply cord need not include the protective earthing conductor for class 0I equipment provided with independent protective earthing conductor.		N/A
G.7.2 Table G.7	Cross-sectional area of equipment rated up to and including 3 A shall be 0.75 mm <sup>2</sup> .		N/A
G.7.6.1 Table G.9	<p>The cross-sectional area of mains cords according to JIS C 3010 may comply with relevant Japanese wiring regulation.</p> <p>For cables other than those complying with JIS C 3662 series or JIS C 3663 series, the terminals shall be suitable for the size of the intended cables.</p>		N/A

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<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1:2018</b> <b>SAUDI ARABIA NATIONAL DIFFERENCES</b> <b>(Audio/video, information and communication technology equipment Part 1: Safety requirements)</b>	
<b>Differences according to</b> .....	National standard SASO-IEC 62368-1:2020
<b>TRF template used:</b> .....	IECEE OD-2020-F3, Ed. 1.1
<b>Attachment Form No.</b> .....	SA_ND_IEC62368_1E
<b>Attachment Originator</b> .....	SASO
<b>Master Attachment</b> .....	2022-12-22
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	<b>National Differences</b>		
	Plugs used for pluggable equipment comply with standard SASO-2203.		N/A
--	<b>Frequency (Hz)</b>		
	60 Hz		N/A
--	<b>Rated voltage (V)</b>		
	Single phase 230 V Three phase 400 V		N/A

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1</b> <b>SINGAPORE NATIONAL DIFFERENCES</b> Audio/video, information and communication technology equipment - Part 1: Safety requirements	
<b>Differences according to.....:</b>	Special National Conditions
<b>TRF template used: .....</b>	IECEE OD-2020-F3, Ed. 1.1
<b>Attachment Form No. ....:</b>	SG_ND_IEC62368_1E
<b>Attachment Originator .....</b>	Intertek Testing Services (Singapore) Pte Ltd
<b>Master Attachment .....</b>	2022-07-08
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	National Differences		
	Not Applicable		N/A
Chapter 4.2	<b>Special national conditions (if any)</b> Controlled goods under the Consumer Protection (Safety Requirements) Registration Scheme (CPS) are required to be tested to additional requirements stipulated by the Consumer Product Safety Office (CPSO) of Enterprise Singapore in Chapter 7 of the CPS information booklet.  The CPS information booklet is updated on an ongoing basis. At the point of testing, refer to the latest copy of the CPS information booklet for the minimum edition of standard to apply for testing of products under the CPS scheme and any new requirements.  Link to CPS information booklet: <a href="https://www.consumerproductsafety.gov.sg/files/cps-info-booklet.pdf">https://www.consumerproductsafety.gov.sg/files/cps-info-booklet.pdf</a>		P
<u>Clause</u> 1	All appliances must be tested to 230 VAC, 50 Hz.		N/A
4	Appliance fitted with voltage selector shall be tested as follows: Connect appliance to 230 VAC mains with voltage selector switch to settings not suitable for operation at 230 VAC.		N/A
5	All appliances (with tropical test requirements in applicable Standards) shall comply with the tropical condition test as stated in the relevant IEC Standards.		N/A

IEC62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
7	All Class I appliances must be fitted with 3-pin mains plugs that are registered with the CPSO.		N/A
8	a) All Class II appliances must be fitted with 2-pin mains plug complying with EN 50075. b) Class II appliances that are fitted with 3-pin mains plugs must use plugs that are registered with the CPSO.		N/A
9	Detachable power cord set must be listed in the test report critical component list.		N/A
14	AC Adaptor incorporated with 13A socket-outlet to be tested to additional tests clauses 13, 17 and 18 of SS 145 Part 3: 2020.		N/A
15	Supplier who is supplying AC adaptors with detachable interchangeable plug pins must include with its products, written instructions to inform customer on the type of detachable interchangeable plug pins that are approved and suitable to use in Singapore. These instructions are to be submitted to the Conformity Assessment Body for verification when applying for Certificate of Conformity.		N/A
16	For AC Adaptors supplied together with Personal Mobility Devices: <ol style="list-style-type: none"> <li>1. Registered Supplier to declare the model of the AC adaptor that is to be used with/ bundled together with the PMDs;</li> <li>2. Registered Supplier to provide valid IEC 60950-1 or IEC 62368-1 test reports for certification and registration of the declared AC adaptor under the CPS scheme; and</li> <li>3. Registered Supplier to provide the UL 2272 test report as supporting document, showing that the listed AC adaptor in the UL 2272 test report is the model declared to be used with/ bundled together with the PMDs.</li> </ol>		N/A
18	CD/ DVD ROMs (used in personal computers) to have test certificate showing that CD/DVD ROM drive has complied with IEC 60825- 1.		N/A
19	Modem card incorporated in the personal computer must be tested at set level (sub-clauses 5.1 & 6 of IEC 60950) or at component level.		N/A
20	Powerline Ethernet Adaptor incorporated with 13A socket-outlet, to be tested to additional test clauses 13, 17 & 18 of SS 145 Part 3: 2020.		N/A
	Other additional requirements which may be included in Chapter 7 of the information booklet in ongoing basis at the time of testing.		N/A



IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1</b> <b>U.S.A. AND CANADA NATIONAL DIFFERENCES</b> (Audio/video, information and communication technology equipment – Part 1: Safety requirements)	
<b>Differences according to.....:</b>	CSA/UL 62368-1:2019
<b>TRF template used.....:</b>	IECEE OD-2020-F3, Ed. 1.1
<b>Attachment Form No.....:</b>	US_CA_ND_IEC62368_1E
<b>Attachment Originator.....:</b>	UL(US)
<b>Master Attachment.....:</b>	Dated 2022-03-04
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<b>IEC 62368-1 - US and Canadian National Differences</b> <b>Special National Conditions based on Regulations and Other National Differences</b>			
1 (1DV.1) (1.3)	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.		N/A
1 (1DV.2.1)	This standard includes additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. See Annex DVB.		N/A
1 (1DV.2.2)	This standard includes additional requirements for equipment intended for mounting under cabinets. See Annex DVC.		N/A
1 (1DV.2.3)	IEC 62368-3 clause 5 for DC power transfer at ES1 or ES2 voltage levels is considered informative. IEC 62368-3 clause 6 for remote power feeding telecommunication (RFT) circuits is considered normative (see ITU K.50). Alternatively, equipment with RFT circuits are given in either UL 2391 or CSA/UL 60950-21. RFT-C circuits are not permitted unless the RFT-C circuit complies with RFT-V limits ( $\leq 200V$ per conductor to earth).		N/A
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
1 (1DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A
4.1 (4.1.17)	For lengths exceeding 3.05 m, external interconnecting cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.		Pass
	For lengths 3.05 m or less, external interconnecting cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		Pass
4.6 (4.6.2)	Wire-wrap terminals have special construction and performance requirements.		N/A
4.8 (4.8.3, 4.8.4.5, 4.8.5)	Coin / button cell batteries have modified special construction and performance requirements.		N/A
5.4.2.3.2 (5.4.2.3.2.1)	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the equipment are required to comply with the appropriate NEC and CEC requirements.		N/A
5.5.9	Receptacles, rated 125-V, single phase, 15- or 20-A accessible to either ordinary, instructed, or skilled persons are required to be provided with GFCI Protection for Personnel if the equipment containing the receptacles is installed outdoors. The protection devices are required to comply with UL 943, and CAN/CSA C22.2 No.144.		N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.7, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment.		N/A
5.7.8 (5.7.8.1)	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure is required to comply with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.9)	Output terminals provided for supply of other equipment, except mains supply, are required to be marked with a maximum rating or reference to equipment permitted to be connected.		Pass
Annex F (F.3.7)	Outdoor Enclosures are required to be classified and marked in accordance with UL 50 or 50E, or CAN/CSA C22.2 No. 94.1 or 94.2.		N/A
Annex G (G.7)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		N/A
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
	Power supply cords for outdoor equipment are required to be suitable outdoor use type as required by Section 400.4 of the NEC and Rule 4-012 of the CEC, i.e., marked "W."		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 V <sub>peak</sub> or 60 V <sub>d.c.</sub> , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
Annex Q (Q.3)	Equipment with paired conductor and/or coax communications cables/wiring connected to building wiring are required to have special voltage, current, power and marking requirements.		N/A
Annex DVA (1)	Equipment that is designed such that it may be powered from a separate electrical service, is required to meet applicable requirements for service equipment for control and protection of services and their installation and complies with Article 230 of the National Electrical Code (NEC), NFPA 70 and Section 6 of the Canadian Electrical Code, Part I, CSA C22.1.		N/A
	Equipment intended for use in spaces used for environmental air (plenums) are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m <sup>3</sup> (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. and Canadian Regulations.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
	Storage batteries and battery management equipment, other than associated with lead-acid batteries, and including battery backup systems that are not an integral part of stationary AV and ICT equipment, such as provided in separate cabinets, are required to be certified (listed) to the appropriate standard(s) for such storage batteries and equipment.		N/A
Annex DVA (5.6)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.		N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m <sup>2</sup> (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a minimum flammability classification of V-1.		N/A
Annex DVA (10.3)	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5)	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (F.3.3.4)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or that are lower than the "Normal Operating Condition" in Table 2 of CAN/CSA C22.2 No. 235."		N/A
Annex DVA (F.3.3.6)	Equipment identified for ITE (computer) room installation is required to be marked with the rated current.		N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position, where mounted in an enclosure, vertically mounted disconnect switches and circuit breakers with vertical operating means extending outside the enclosure are required to indicate in a location visible when accessing the external operating means whether the switch or circuit breaker is in the open (off) or closed (on) position.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A
	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-400 and 10-612.		N/A
Annex DVA (G.4.3)	Interconnection of units by conductors supplied by a limited power source, or a Class 2 circuit defined in the NEC/CEC may have field wiring connections other than specified in DVH.3, such as wire-wrap and crimp-on types, if the limited power source and Class 2 circuits are separated from all other circuits by barriers, routing or fixing.		N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
Annex DVA (G.7)	Flexible cords used outdoors are required to have the suffix “W” marked on the flexible cord.		N/A
Annex DVA (M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	If applicable per NEC 725.121(C), some limited power sources supplied from AV/ICT equipment are required to have a label indicating the maximum voltage and rated current output per conductor for each connection point. Where multiple connection points have the same rating, a single label is permitted to be used.		N/A
	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1 are required to be marked with the voltage rating and “Class 2” or equivalent. The marking is located adjacent to the terminals and visible during wiring.		N/A
	Applicable parts of Chapter 8 of the NEC, and Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		N/A
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	installation in general patient care areas of health care facilities.		
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These equipment and components include: appliance couplers, attachment plugs, battery backup systems, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, modular data centers, power supply cords, some power distribution equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		Pass
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.		N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are required to be in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.2.1)	For safe and reliable connection to a mains, permanently connected equipment is to be provided.		N/A
Annex DVH (DVH.2.2)	Additional considerations for D.C. mains.		N/A
Annex DVH (DVH.3.2.1)	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified.		N/A
Annex DVH (DVH.3.2.3)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm <sup>2</sup> ).		N/A
Annex DVH (DVH.3.2.4)	All associated mains supply terminals are located in proximity to each other and to the main protective earthing terminal, if any.		N/A
Annex DVH (DVH.3.2.5)	Terminals are located, guarded or insulated so that, should a strand of a conductor escape when the conductor is fitted, there is no likelihood of accidental contact between such a strand and accessible conductive parts or unearthed conductive parts separated from accessible conductive parts by supplementary insulation only.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH.3.3)	When field connection to an external circuit is via wires (example, free conductors), the wires are not smaller than 18 AWG (0.82 mm <sup>2</sup> ) and the free length of the wire inside an outlet box or wiring compartment is 150 mm or more.		N/A
Annex DVH (DVH.3.4)	Size of protective earthing conductors and terminals	(See sub-clause 5.6.5)	N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH.4.1)	Wire bending space		N/A
Annex DVH (DVH.4.2)	Volume of wiring compartment		N/A
Annex DVH (DVH.4.3)	Separation of circuits		N/A
Annex DVH (DVH.5)	Equipment markings and instructional safeguards		N/A
Annex DVH (DVH.5.1)	Identification of protective earthing terminal		N/A
Annex DVH (DVH.5.2)	Identification of terminal for earthed conductor (neutral)		N/A
Annex DVH (DVH.5.3)	Identification of terminals for aluminium conductors		N/A
Annex DVH (DVH.5.4)	Wire temperature ratings		N/A
Annex DVH (DVH.5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

## Enclosures

**Enclosures**

Type	Supplement Id	Description
Photographs	03-01	Photos
Diagrams	04-01	Opening dimension for plastic D cover
Diagrams	04-02	Opening dimension for metal D cover
Diagrams	04-05	Heatsink spec
Diagrams	04-08	Mesh dimension for speaker opening
Manuals	06-01	Manual
Miscellaneous	07-02	Touch time for Bottom cover
Miscellaneous	07-04	MFR declaration



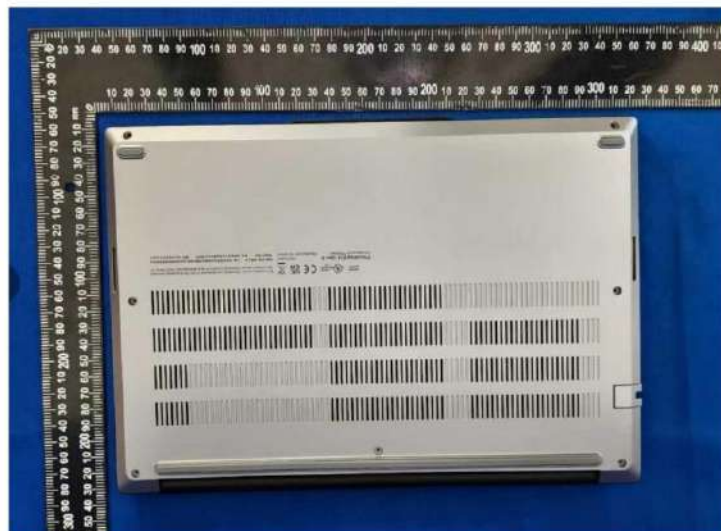
Enclosures

Photographs ID 03-01

Overall view



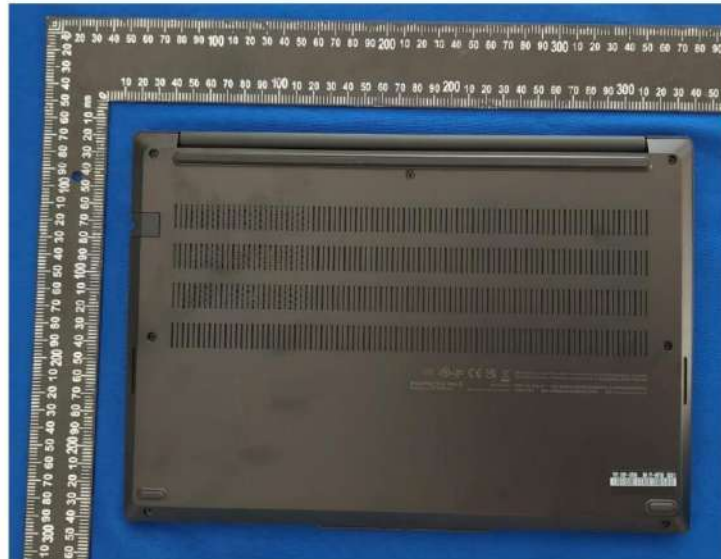
Bottom view of plastic D Cover



Enclosures

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Bottom view of metal D Cover



Data port view-01



Enclosures

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Data port view-02



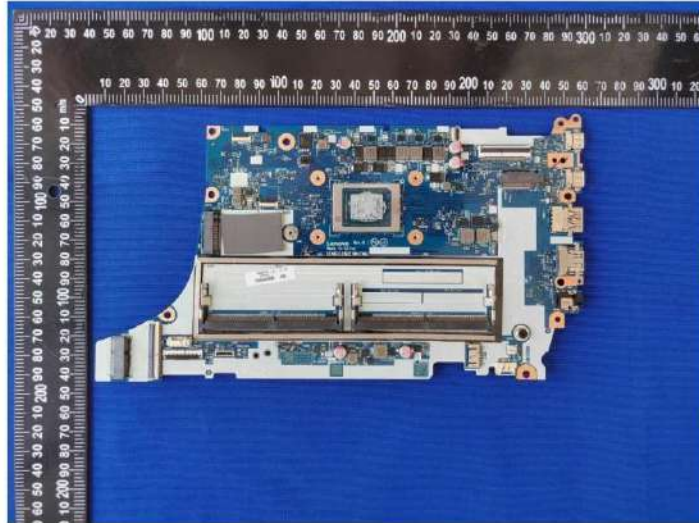
Internal view



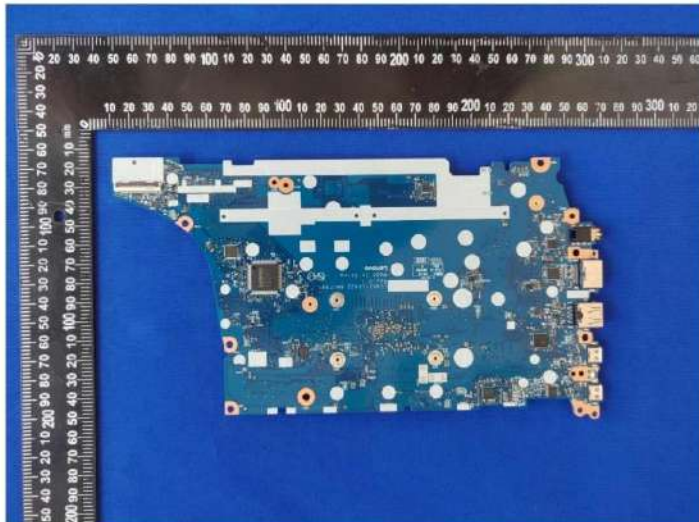
Enclosures

Photographs ID 03-01

Top view of mainboard

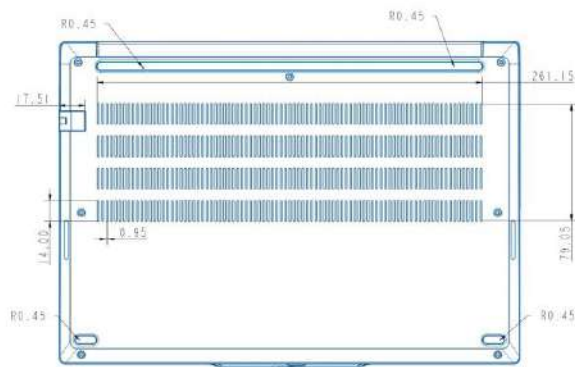


Bottom view of mainboard



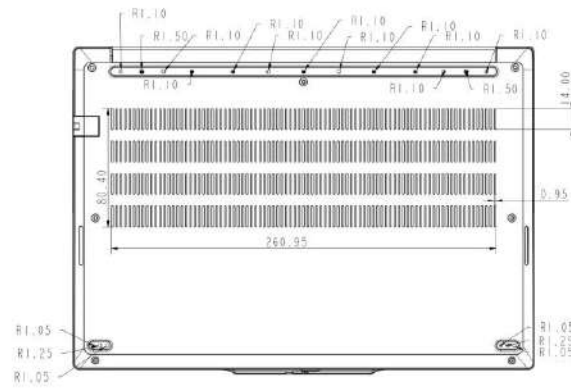
## Enclosures

Diagrams ID 04-01



## Enclosures

Diagrams ID 04-02



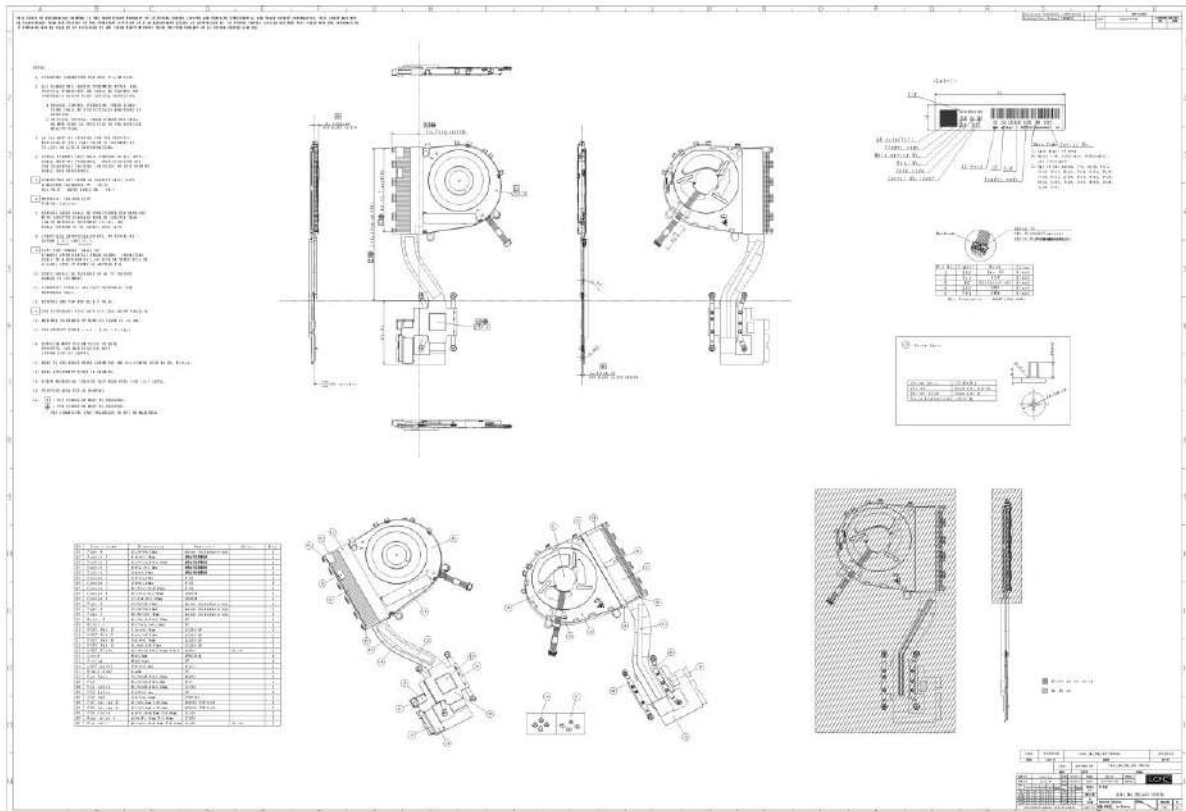
Enclosures

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## Enclosures

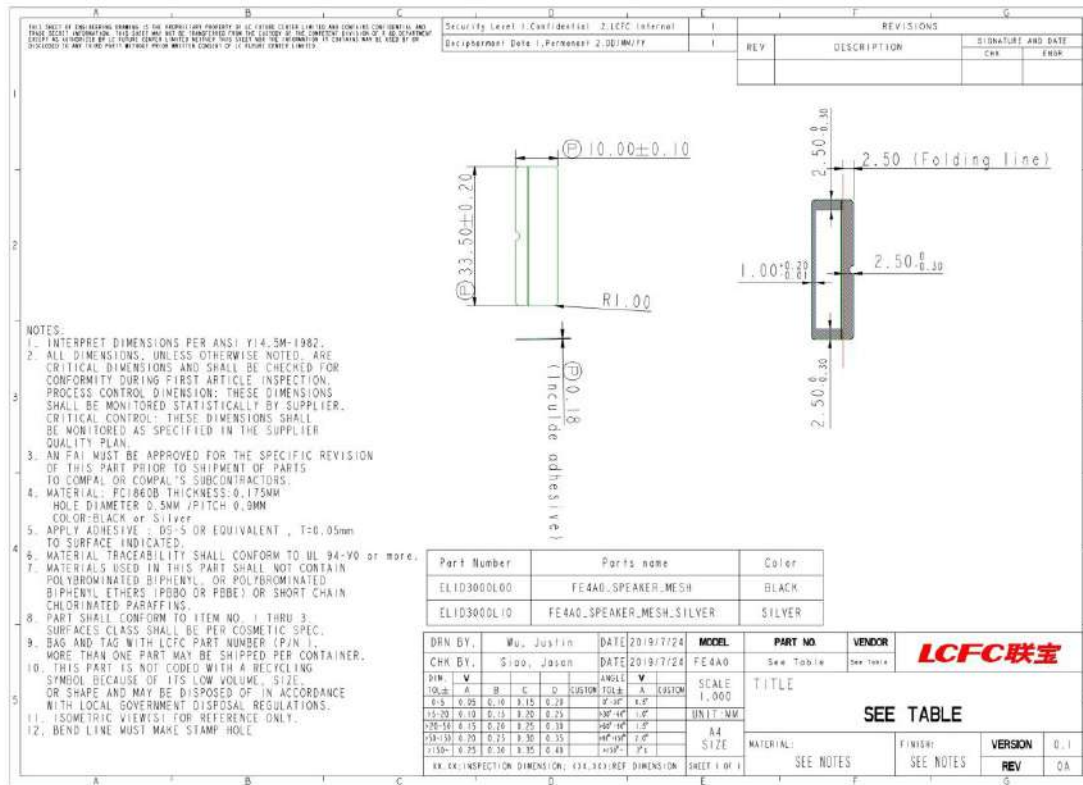
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## Enclosures

## Diagrams ID 04-08



## Generic Safety and Compliance Notices



Enclosures

Manuals ID 06-01

**Read this first**

- These notices provide safety and compliance information about Lenovo notebook computers, tablets, desktop computers, and workstations. Depending on the model, some information might not be applicable to your product. For additional legal notices, refer to *User Guide* of your product at <https://support.lenovo.com>.
- Documentation content is subject to change without notice. To get the latest documentation, go to <https://pcsupport.lenovo.com>.

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## Enclosures

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## Enclosures

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## Chapter 1. Important safety information

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### Safety notices

This information can help you safely use your computer. Follow and retain all information included with your computer. The information in this document does not alter the terms of your purchase agreement or the Limited Warranty. For more information, go to:

- [https://www.lenovo.com/warranty/lw\\_02](https://www.lenovo.com/warranty/lw_02)
- <https://pcsupport.lenovo.com/warrantylookup>

Customer safety is important. Our products are developed to be safe and effective. However, personal computers are electronic devices. Power cords, power adapters, and other features can create potential safety risks that can result in physical injury or property damage, especially if misused. To reduce these risks, follow the instructions included with your product, observe all warnings on the product and in the operating instructions, and review the information included in this document carefully. By carefully following the information contained in this document and provided with your product, you can help protect yourself from hazards and create a safer computer work environment. If the computer is used in a manner not specified by the manufacturer, the protection provided by the computer may be impaired.


**Note:** This information includes references to power adapters and batteries. In addition, some products (such as speakers and monitors) ship with external power adapters. If you have such a product, this information applies to your product. In addition, computer products contain a coin-sized internal battery that provides power to the system clock even when the computer is unplugged, so the battery safety information applies to all computer products.

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### Important information about using your computer (for notebook computers)

Ensure that you follow the important tips given here to get the most use and enjoyment out of your computer. Failure to do so might lead to discomfort or injury, or cause the computer to fail.

#### Protect yourself from the heat that your computer generates.

	<p>When your computer is turned on or the battery is charging, the base, the palm rest, and some other parts may become hot. The temperature they reach depends on the amount of system activity and the level of charge in the battery.</p> <p>Extended contact with your body, even through clothing, could cause discomfort or even a skin burn.</p> <ul style="list-style-type: none"><li>• Avoid keeping your hands, your lap, or any other part of your body in contact with a hot section of the computer for any extended time. For selected notebook computers, refer to <i>User Guide</i> for the recommended contact time at <a href="https://support.lenovo.com">https://support.lenovo.com</a>.</li><li>• Periodically take your hands away from the keyboard by lifting your hands from the palm rest.</li></ul>
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## Enclosures

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**Protect yourself from the heat generated by the ac power adapter.**

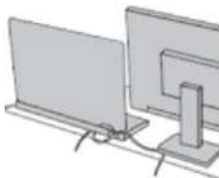
When the ac power adapter is connected to an electrical outlet and your computer, it generates heat.

Extended contact with your body, even through clothing, may cause a skin burn.

- Do not place the ac power adapter in contact with any part of your body while it is in use.
- Never use it to warm your body.
- Do not wrap the cords around the ac power adapter while in use.

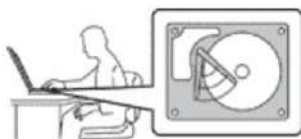
**Prevent your computer from getting wet.**

To avoid spills and the danger of electrical shock, keep liquids away from your computer.

**Protect the cables from being damaged.**

Applying strong force to cables may damage or break them.

Route communication lines, or the cables of an ac power adapter, a mouse, a keyboard, a printer, or any other electronic device, so that they cannot be walked on, tripped over, pinched by your computer or other objects, or in any way subject to treatment that could interfere with the operation of your computer.

**Protect your computer and data when moving it.**

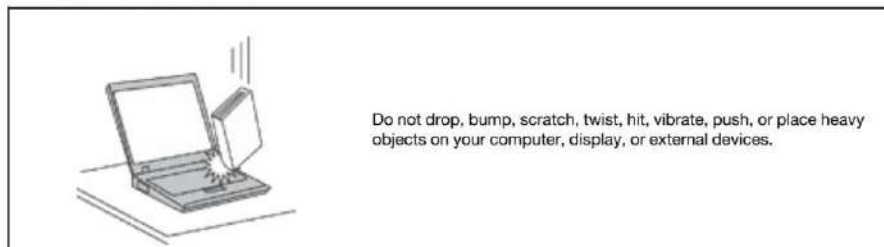
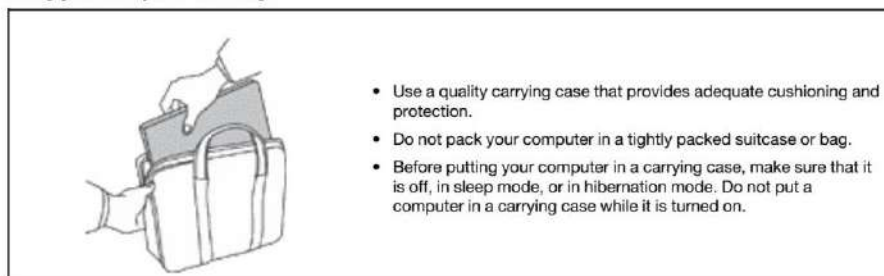
Before moving a computer equipped with a storage drive, do one of the following:

- Turn it off.
- Put it in sleep mode.
- Put it in hibernation mode.

This helps to prevent damage to the computer, and possible loss of data.

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**Handle your computer gently.****Carry your computer carefully.****Conditions that require immediate action**

Products can become damaged due to misuse or neglect. Some product damage is serious enough that the product should not be used again until it has been inspected and, if necessary, repaired by an authorized servicer.

As with any electronic device, pay close attention to the product when it is turned on.

On very rare occasions, you might notice an odor or see a puff of smoke or sparks vent from your product. You might also hear sounds like popping, cracking, or hissing. These might merely mean that an internal electronic component has failed in a safe and controlled manner. Or, they might indicate a potential safety issue. Do not take risks or attempt to diagnose the situation yourself. Contact the Customer Support Center for further guidance. For a list of Service and Support phone numbers, see the following Web site:

<https://pcsupport.lenovo.com/supportphonenumberlist>

Frequently inspect your computer and its components for damage, wear, or signs of danger. If you have any question about the condition of a component, do not use the product. Contact the Customer Support Center or the product manufacturer for instructions on how to inspect the product and have it repaired, if necessary.

In the unlikely event that you notice any of the following conditions, or if you have any safety concerns with your product, stop using the product and unplug it from the power source and telecommunication lines until you can speak to the Customer Support Center for further guidance.



## Enclosures

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- Power cords, plugs, power adapters, extension cords, surge protectors, or power supplies that are cracked, broken, or damaged.
- Signs of overheating, smoke, sparks, or fire.
- Damage to a battery (such as cracks, dents, or creases), discharge from a battery, or a buildup of foreign substances on the battery.
- A cracking, hissing, or popping sound, or strong odor that comes from the product.
- Signs that liquid has been spilled or an object has fallen onto the computer product, the power cord, or power adapter.
- The computer product, power cord, or power adapter has been exposed to water.
- The product has been dropped or damaged in any way.
- The product does not operate normally when you follow the operating instructions.

**Note:** If you notice these conditions with a product (such as an extension cord) that is not manufactured for or by Lenovo, stop using that product until you can contact the product manufacturer for further instructions, or until you get a suitable replacement.

---

## Service and upgrades

Do not attempt to service a product yourself unless instructed to do so by the Customer Support Center or your documentation. Only use a Service Provider who is approved to repair your particular product.

**Note:** Some computer parts can be upgraded or replaced by the customer. Upgrades typically are referred to as options. Replacement parts approved for customer installation are referred to as Customer Replaceable Units, or CRUs. Lenovo provides documentation with instructions when it is appropriate for customers to install options or replace CRUs. You must closely follow all instructions when installing or replacing parts. The Off state of a power indicator does not necessarily mean that voltage levels inside a product are zero. Before you remove the covers from a product equipped with a power cord, always ensure that the power is turned off and that the product is unplugged from any power source. If you have any questions or concerns, contact the Customer Support Center.

Although there are no moving parts in your computer after the power cord has been disconnected, the following warnings are required for your safety.



Keep fingers and other parts of your body away from hazardous, moving parts. If you suffer an injury, seek medical care immediately.



Do not touch hot surface of hot components inside the computer. During operation, some components become hot enough to burn the skin. Before you open the computer cover, turn off the computer, disconnect power, and wait approximately 10 minutes for the components to cool.



After replacing a CRU, reinstall all protective covers, including the computer cover, before connecting power and operating the computer. This action is important to help prevent unexpected electrical shock and help ensure the containment of an unexpected fire that could happen under extremely rare conditions.

## Enclosures

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When replacing CRUs, be cautious of sharp edges or corners that might cause injury. If you suffer an injury, seek medical care immediately.

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**Power cord notice (for desktop computers and workstations)**

**Note:** The power cord and adapter provided with this product are intended to be used with this product only. Do not use them with any other products.

For your safety, Lenovo provides a power cord with a grounded attachment plug to use with this product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

Power cords provided by Lenovo in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 10 amperes, 125 volts.

For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 10 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

Power cords provided by Lenovo for a specific country or region are usually available only in that country or region.

For units intended to be operated in Germany: The power cords must be safety approved. For Germany, it must be H05VV-F, 3G, 0.75 mm<sup>2</sup>, or better. For other countries, the suitable types must be used accordingly.

For units intended to be operated in Denmark: Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

For units intended to be operated in Norway, Sweden, Finland: Use a cord set with a two-prong attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

If you intend to use your PC in a country or region that is different from your ordering location, please purchase an additional Lenovo power cord for the country or region where the PC will be used. Refer to the power cord guide provided in our Web site, <https://pcsupport.lenovo.com>, for details. Some countries and regions support multiple voltages, so make sure you order the appropriate power cord for the intended voltage.

## Enclosures

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**Power cords and power adapters**

Use only the power cords and power adapters supplied by the product manufacturer.

The power cords shall be safety approved. For Germany, it shall be H03VV-F, 3G, 0.75 mm<sup>2</sup>, or better. For other countries, the suitable types shall be used accordingly.

Never wrap a power cord around a power adapter or other object. Doing so can stress the cord in ways that can cause the cord to fray, crack, or crimp. This can present a safety hazard.

Always route power cords so that they will not be walked on, tripped over, or pinched by objects.

Protect power cords and power adapters from liquids. For instance, do not leave your power cord or power adapter near sinks, tubs, toilets, or on floors that are cleaned with liquid cleansers. Liquids can cause a short circuit, particularly if the power cord or power adapter has been stressed by misuse. Liquids also can cause gradual corrosion of power cord terminals and/or the connector terminals on a power adapter, which can eventually result in overheating.

Ensure that all power cord connectors are securely and completely plugged into receptacles.

Do not use any power adapter that shows corrosion at the ac input pins or shows signs of overheating (such as deformed plastic) at the ac input pins or anywhere on the power adapter.

Do not use any power cords where the electrical contacts on either end show signs of corrosion or overheating or where the power cord appears to have been damaged in any way.

To prevent possible overheating, do not cover the power adapter with clothing or other objects when the power adapter is plugged into an electrical outlet.

---

**Extension cords and related devices**

Ensure that extension cords, surge protectors, uninterruptible power supplies, and power strips that you use are rated to handle the electrical requirements of the product. Never overload these devices. If power strips are used, the load should not exceed the power strip input rating. Consult an electrician for more information if you have questions about power loads, power requirements, and input ratings.

## Enclosures

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**Plugs and outlets**

If a receptacle (power outlet) that you intend to use with your computer equipment appears to be damaged or corroded, do not use the outlet until it is replaced by a qualified electrician.

Do not bend or modify the plug. If the plug is damaged, contact the manufacturer to obtain a replacement.

Do not share an electrical outlet with other home or commercial appliances that draw large amounts of electricity; otherwise, unstable voltage might damage your computer, data, or attached devices.

Some products are equipped with a three-pronged plug. This plug fits only into a grounded electrical outlet. This is a safety feature. Do not defeat this safety feature by trying to insert it into a non-grounded outlet. If you cannot insert the plug into the outlet, contact an electrician for an approved outlet adapter or to replace the outlet with one that enables this safety feature. Never overload an electrical outlet. The overall system load should not exceed 80 percent of the branch circuit rating. Consult an electrician for more information if you have questions about power loads and branch circuit ratings.

Be sure that the power outlet you are using is properly wired, easily accessible, and located close to the equipment. Do not fully extend power cords in a way that will stress the cords.

Be sure that the power outlet provides the correct voltage and current for the product you are installing.

Carefully connect and disconnect the equipment from the electrical outlet.

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**Power supply statement**

Never remove the cover on a power supply or any part that has the following label attached.



Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

---

**External devices****CAUTION:**

Do not connect or disconnect any external device cables other than Universal Serial Bus (USB) and 1394 cables while the computer power is on; otherwise, you might damage your computer. To avoid possible damage to attached devices, wait at least five seconds after the computer is shut down to disconnect external devices.



## Enclosures

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**General battery notice (for notebook computers and tablets)**

Batteries supplied by Lenovo for use with your product have been tested for compatibility and should only be replaced with approved parts. A battery other than the one specified by Lenovo, or a disassembled or modified battery is not covered by the warranty.

Battery abuse or mishandling can cause overheating, liquid leakage, or an explosion. To avoid possible injury:

- Do not open, disassemble, or service any battery.
- Do not crush or puncture the battery.
- Do not short-circuit the battery, or expose it to water or other liquids.
- Keep the battery away from children.
- Keep the battery away from fire.

Stop using the battery if it is damaged, or if you notice any discharge or the buildup of foreign materials on the battery leads.

Store the rechargeable batteries or products containing the rechargeable batteries at room temperature, charged to approximately 30 to 50% of capacity. We recommend that the batteries be charged about once per year to prevent overdischarge.

Do not put the battery in trash that is disposed of in landfills. When disposing of the battery, comply with local ordinances or regulations.

---

**Notice for removable rechargeable battery (for selected notebook computers)**

Only recharge the battery strictly according to instructions included in the product documentation.

If the battery is incorrectly replaced, there is danger of an explosion. The battery contains a small amount of harmful substances.

## Enclosures

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**Notice for built-in rechargeable battery (for selected notebook computers and tablets)**

Do not attempt to remove or replace the built-in rechargeable battery. Replacement of the battery must be done by a Lenovo-authorized repair facility or technician.

Only recharge the battery strictly according to instructions included in the product documentation.

The Lenovo-authorized repair facilities or technicians recycle Lenovo batteries according to local laws and regulations.

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**Lithium coin-cell battery notice (for selected models)**

Danger of explosion if battery is incorrectly replaced.

If the coin-cell battery is not a CRU, do not attempt to replace the coin-cell battery. Replacement of the battery must be done by a Lenovo-authorized repair facility or technician.

The Lenovo-authorized repair facilities or technicians recycle Lenovo batteries according to local laws and regulations.



When replacing the lithium coin-cell battery, use only the same type or equivalent type that is recommended by the manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of. Swallowing the lithium coin-cell battery will cause choking or severe internal burns in just two hours and might even result in death.

Keep batteries away from children. If the lithium coin-cell battery is swallowed or placed inside any part of the body, seek medical care immediately.

**Do not:**

- Throw or immerse into water
- Heat to more than 100 °C (212°F)
- Repair or disassemble
- Leave in an extremely low air pressure environment
- Leave in an extremely high-temperature environment
- Crush, puncture, cut, or incinerate

Dispose of the battery as required by local ordinances or regulations.

The following statement applies to users in the state of California, U.S.A.

## Enclosures

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## California Perchlorate Information:

Products containing manganese dioxide lithium coin-cell batteries may contain perchlorate.

Perchlorate Material - special handling may apply, see <https://www.dtsc.ca.gov/hazardouswaste/perchlorate/>.

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**Heat and product ventilation (for desktop computers and workstations)**

Computers, power adapters, and many accessories can generate heat when turned on and when batteries are charging. Always follow these basic precautions:

- Do not leave your computer, power adapter, or accessories in contact with your lap or any part of your body for an extended period when the products are functioning or when the battery is charging. Your computer, power adapter, and many accessories produce some heat during normal operation. Extended contact with the body could cause discomfort or, potentially, a skin burn.
- Do not charge the battery or operate your computer, power adapter, or accessories near flammable materials or in explosive environments.
- Ventilation slots, fans, and heat sinks are provided with the product for safety, comfort, and reliable operation. These features might inadvertently become blocked by placing the product on a bed, sofa, carpet, or other flexible surface. Never block, cover, or disable these features.

Inspect your desktop computer for dust accumulation at least once every three months. Before inspecting your computer, turn off the power and unplug the computer's power cord from the electrical outlet; then remove any dust from vents and perforations in the bezel. If you notice external dust accumulation, then examine and remove dust from the inside of the computer including heat sink inlet fins, power supply vents, and fans. Always turn off and unplug the computer before opening the cover. If possible, avoid operating your computer within two feet of high-traffic areas. If you must operate your computer in or near a high-traffic area, inspect and, if necessary, clean your computer more frequently.

For your safety and to maintain optimum computer performance, always follow these basic precautions with your desktop computer:

- Keep the cover closed whenever the computer is plugged in.
- Regularly inspect the outside of the computer for dust accumulation.
- Remove dust from vents and any perforations in the bezel. More frequent cleanings might be required for computers in dusty or high-traffic areas.
- Do not restrict or block any ventilation openings.
- Do not store or operate your computer inside furniture, as this might increase the risk of overheating.
- Airflow temperatures into the computer should not exceed 35°C (95°F).
- Do not install air filtration devices. They may interfere with proper cooling.

## Enclosures

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**Heat and product ventilation (for notebook computers and tablets)****DANGER**

Computers, ac power adapters, and many accessories can generate heat when turned on and when batteries are charging. Notebook computers can generate a significant amount of heat due to their compact size. Always follow these basic precautions:

- When your computer is turned on or the battery is charging, the base, the palm rest, and some other parts may become hot. Avoid keeping your hands, your lap, or any other part of your body in contact with a hot section of the computer for any extended length of time. When you use the keyboard, avoid keeping your palms on the palm rest for a prolonged period of time. Your computer generates some heat during normal operation. The amount of heat depends on the amount of system activity and the battery charge level. Extended contact with your body, even through clothing, could cause discomfort or even a skin burn. Periodically take breaks from using the keyboard by lifting your hands from the palm rest; and be careful not to use the keyboard for any extended length of time.
- Do not operate your computer or charge the battery near flammable materials or in explosive environments.
- Ventilation slots, fans and/or heat sinks are provided with the product for safety, comfort, and reliable operation. These features might inadvertently become blocked by placing the product on a bed, sofa, carpet, or other flexible surface. Never block, cover, or disable these features.
- When the ac power adapter is connected to an electrical outlet and your computer, it generates heat. Do not place the adapter in contact with any part of your body while using it. Never use the ac power adapter to warm your body. Extended contact with your body, even through clothing, may cause a skin burn.

For your safety, always follow these basic precautions with your computer:

- Keep the cover closed whenever the computer is plugged in.
- Regularly inspect the outside of the computer for dust accumulation.
- Remove dust from vents and any perforations in the bezel. More frequent cleanings might be required for computers in dusty or high-traffic areas.
- Do not restrict or block any ventilation openings.
- Do not operate your computer inside furniture, as this might increase the risk of overheating.
- Airflow temperatures into the computer should not exceed 35°C (95°F).



## Enclosures

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**Electrical current safety information**

Electric current from power, telephone, and communication cables is hazardous.

**To avoid a shock hazard:**

- Do not use your computer during a lightning storm.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet.
- Connect properly wired outlets to any equipment that will be attached to this product.
- Whenever possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, battery, and all the cables before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Do not use your computer until all internal parts enclosures are fastened into place. Never use the computer when internal parts and circuits are exposed.



Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

**To connect:**

1. Turn everything OFF.
2. First, attach all cables to devices.
3. Attach signal cables to connectors.
4. Attach power cords to outlets.
5. Turn devices ON.

**To disconnect:**

1. Turn everything OFF.
2. First, remove power cords from outlets.
3. Remove signal cables from connectors.
4. Remove all cables from devices.

The power cord must be disconnected from the wall outlet or receptacle before installing all other electrical cables connected to the computer.

The power cord may be reconnected to the wall outlet or receptacle only after all other electrical cables have been connected to the computer.



During electrical storms, do not perform any replacement and do not connect the telephone cable to or disconnect it from the telephone outlet on the wall.

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**Laser safety information (for selected models)****CAUTION:**

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

**DANGER**

Some laser products contain an embedded Class 3B laser diode. Note the following:  
Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

---

**Liquid crystal display (LCD) notice (for desktop computers and workstations)****DANGER**

To avoid shock hazards:

- Do not remove the covers.
- Do not operate this product unless the stand is attached.
- Do not connect or disconnect this product during an electrical storm.
- The power cord plug must be connected to a properly wired and grounded power outlet.
- Any equipment to which this product will be attached must also be connected to properly wired and grounded power outlets.
- To isolate the monitor from the electrical supply, you must remove the plug from the power outlet. The power outlet should be easily accessible.

**Handling:**

- If your monitor weighs more than 18 kg (39.68 lb), we recommend that it be moved or lifted by two people.

**Product disposal (TFT monitors):**

- The fluorescent lamp in the liquid crystal display contains mercury; dispose according to local, state, or federal laws.

**Battery warnings:**

- Risk of explosion if battery is replaced by an incorrect type.
- Dispose of used batteries according to the instructions.

---

**Liquid crystal display (LCD) notice (for notebook computers and tablets)****CAUTION:**

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The liquid crystal display (LCD) is made of glass, and rough handling or dropping the computer can cause the LCD to break. If the LCD breaks and the internal fluid gets into your eyes or on your hands, immediately wash the affected areas with water for at least 15 minutes; if any symptoms are present after washing, get medical care.

**Note:** For products with mercury-containing fluorescent lamps (for example, non-LED), the fluorescent lamp in the liquid crystal display (LCD) contains mercury; dispose of according to local, state, or federal laws.

---

**Use earphones, headphones, or a headset**

- If your computer has both a headphone connector and an audio line-out connector, always use the headphone connector for earphones, headphones, or a headset. However, the headphone connector does not support the microphone of the headset.
- If your computer has both a headset connector and an audio line-out connector, always use the headset connector for earphones, headphones, or a headset.



Excessive sound pressure from earphones and headphones can cause hearing loss. Adjustment of the equalizer to maximum increases the earphone and headphone output voltage and the sound pressure level. Therefore, to protect your hearing, adjust the equalizer to an appropriate level.

Excessive use of headphones or earphones for a long period of time at high volume can be dangerous if the output of the headphone or earphone connectors do not comply with specifications of EN 50332-2. The headphone output connector of your computer complies with EN 50332-2 Sub clause 7. This specification limits the computer's maximum wide band true RMS output voltage to 150 mV. To help protect against hearing loss, ensure that the headphones or earphones you use also comply with EN 50332-2 (Clause 7 Limits) or a wide band characteristic voltage of 75 mV. Using headphones that do not comply with EN 50332-2 can be dangerous due to excessive sound pressure levels.

If your Lenovo computer came with headphones or earphones in the package, as a set, the combination of the headphones or earphones and the computer already complies with the specifications of EN 50332-1. If different headphones or earphones are used, ensure that they comply with EN 50332-1 (Clause 6.5 Limitation Values). Using headphones that do not comply with EN 50332-1 can be dangerous due to excessive sound pressure levels.

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**Choking hazard notice**

CHOKING HAZARD – Product contains small parts.

Keep away from children under three years.

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**Plastic bag notice****DANGER**

Plastic bags can be dangerous. Keep plastic bags away from babies and children to avoid danger of suffocation.

---

**Glass parts notice****CAUTION:**

Some parts of your product may be made of glass. This glass could break if the product is dropped on a hard surface or receives a substantial impact. If glass breaks, do not touch or attempt to remove it. Stop using your product until the glass is replaced by trained service personnel.

---

**Computer placement notices**

Inappropriate computer placement might cause harm to children.

- Place the computer on a sturdy piece of low-rise furniture or furniture that has been anchored.
- Do not place the computer at the edge of the furniture.
- Keep the computer cables out of the reach of children.
- Some items, such as toys, might attract children. Keep such items away from the computer.

Supervise children in rooms where the above safety instructions cannot be fully implemented.

---

**Hazardous energy statement (for desktop computers and workstations)****DANGER**

Disconnect all power cords from electrical outlets before removing the computer cover or any part that has the above label attached.

DO NOT disassemble components that have the above label attached. There are no serviceable parts inside these components.

Your product is designed for safe use. However, hazardous voltage, current, and energy levels are present inside any component that has this label attached. Disassembling of these components might cause fire or might even result in death. If you suspect a problem with one of these parts, contact a service technician.

**CAUTION:**

Bright Light, possible skin or eye damage. Disconnect power before servicing.

**CAUTION:**

## Enclosures

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**Infrared Light, possible skin or eye damage. Disconnect power before servicing.**

---

**Tip-over hazard prevention notice (for desktop computers and workstations)**

The computer may cause harm to children if it is not located in an appropriate place. Follow the tips below to protect children from harm caused by the computer tipping over:

- Place the computers or monitors on sturdy furniture with a low base or furniture that has been anchored. Push the computers or monitors as far from the edge of the furniture as possible.
- Keep remote controls, toys, and other items that might attract children away from the computers or monitors
- Keep the computer or monitor cables out the reach of the children.
- Supervise children in rooms where these safety tips have not been followed.

**CAUTION:**

**Some parts of your product may be made of glass. This glass could break if the product is dropped on a hard surface or receives a substantial impact. If glass breaks, do not touch it or attempt to remove it. Stop using your product until the glass is replaced by trained service personnel.**

---

**Static electricity prevention**

Static electricity, although harmless to you, can seriously damage computer components and options. Improper handling of static-sensitive parts can damage the part. When you unpack an option or CRU, do not open the static-protective package containing the part until the instructions direct you to install it.

When you handle options or CRUs, or perform any work inside the computer, take the following precautions to avoid static-electricity damage:

- Limit your movement. Movement can cause static electricity to build up around you.
- Always handle components carefully. Handle adapters, memory modules, and other circuit boards by the edges. Never touch exposed circuitry.
- Prevent others from touching components.
- When you install a static-sensitive option or CRU, touch the static-protective packaging containing the part to a metal expansion-slot cover or other unpainted metal surface on the computer for at least two seconds. This reduces static electricity in the package and your body.
- When possible, remove the static-sensitive part from the static-protective packaging and install the part without setting it down. When this is not possible, place the static-protective packaging on a smooth, level surface and place the part on it.
- Do not place the part on the computer cover or other metal surface.

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**Cleaning and maintenance (for desktop computers and workstations)**

With appropriate care and maintenance, your computer will serve you reliably. The following topics offer information to help you keep your computer working with best performance.

**Basic maintenance tips**

Here are some basic points about keeping your computer functioning properly:

- Keep the computer in a clean, dry environment. Ensure that the computer rests on a flat, steady surface.
- Do not cover any of air vents. These air vents provide airflow to keep the computer from overheating.

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- Keep electrical appliances such as an electric fan, radio, high-powered speakers, air conditioner, and microwave oven away from your computer because the strong magnetic fields generated by these appliances can damage the monitor and data on the storage drive.
- Keep food and drinks away from all parts of the computer. Food particles and spills might make the keyboard and mouse stick and unusable.
- Do not get the power switches or other controls wet. Moisture can damage these parts and cause an electrical hazard.
- Always disconnect a power cord by grasping the plug instead of the cord.
- Keep the computer software, device drivers, and operating system up-to-date.
- Empty your recycle bin on a regular basis.
- Clean out your Inbox, Sent Items, and Deleted Items folders in your e-mail application on a regular basis.
- Clean up files and free up storage drive space and memory space occasionally to prevent performance problems.
- Keep a log book. Entries might include major software or hardware changes, device-driver updates, intermittent problems and what you did to resolve them, and other issues you might have experienced. The cause of a problem might be change in hardware, change in software, or any other actions that might have taken place. A log book can help you or a Lenovo technician determine the cause of a problem.
- Back up your data on the storage drive regularly. You can restore the storage drive from a backup.
- Create a recovery medium as early as possible. You can use the recovery medium to recover your operating system.
- Get the most up-to-date operating system update patches, software programs, and device drivers.

**Maintenance tips about moving the computer**

Before moving the computer, take the following precautions:

1. Back up your data on the storage drive.
2. Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.
3. If you saved the original shipping cartons and packing materials, use them to pack the units. If you are using different cartons, cushion the units to avoid damage.

When you move the computer to another country or region, you must take local electrical standards into consideration. If the local electrical outlet style is different from the type you are currently using, contact the Lenovo Customer Support Center to purchase either an electrical plug adapter or a new power cord.

**Clean your computer****CAUTION:**

**Remove any media from the drives and turn off all connected devices and the computer. Then, disconnect all power cords from electrical outlets and disconnect all cables that are connected to the computer.**

It is a good practice to clean your computer periodically to protect the surfaces and ensure trouble-free operation.

**Clean the computer surface:** Wipe it with a lint-free cloth dampened in mild soap and water. Avoid applying liquids directly to the surface.

**Clean the keyboard:** Wipe the keys one by one with a lint-free cloth dampened in mild soap and water. If you wipe several keys at a time, the cloth might hook onto an adjacent key and possibly damage it. Avoid



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spraying cleaner directly onto the keyboard. To remove any crumbs or dust from beneath the keys, you can use a camera blower with a brush or use cool air from a hair dryer.

**Clean the computer screen:** Scratches, oil, dust, chemicals, and ultraviolet light can affect the performance of your computer screen. Use a dry, soft lint-free cloth to wipe the screen gently. If you see a scratchlike mark on your screen, it might be a stain. Wipe or dust the stain gently with a soft, dry cloth. If the stain remains, moisten a soft, lint-free cloth with water or eyeglass cleaner, but do not apply liquids directly to your computer screen. Ensure that the computer screen is dry before closing it.

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**Cleaning and maintenance (for notebook computers and tablets)**

With appropriate care and maintenance, your computer will serve you reliably. The following topics offer information to help you keep your computer working with best performance.

**Basic maintenance tips**

Here are some basic points about keeping your computer functioning properly:

- If possible, place your computer in a well-ventilated and dry area without direct exposure to sunshine.
- Store packing materials safely out of the reach of children to prevent the risk of suffocation from plastic bags.
- Keep your computer away from magnets, activated cellular phones, electrical appliances, or speakers (more than 13 cm or 5 inches).
- Avoid subjecting your computer to extreme temperatures (below 5°C/41°F or above 35°C/95°F).
- Avoid placing any objects (including paper) between the display and the keyboard or the palm rest.
- Computer display might be designed to be opened and used at a certain angle. Do not open the display with force. Otherwise, the computer hinge might get damaged.
- Do not turn your computer over when the ac power adapter is plugged in, otherwise, it could break the adapter plug.
- Before moving your computer, be sure to remove any media, turn off attached devices, and disconnect cords and cables.
- When picking up your open computer, hold it by the bottom. Do not pick up or hold your computer by the display.
- Only an authorized Lenovo repair technician should disassemble and repair your computer.
- Do not modify or tape the latches to keep the display open or closed.
- Avoid directly exposing your computer and peripherals to the air from an appliance that can produce negative ions. Wherever possible, ground your computer to facilitate safe electrostatic discharge.

**Clean your computer**

It is a good practice to clean your computer periodically to protect the surfaces and ensure trouble-free operation.

**Clean the computer cover:** Wipe it with a lint-free cloth dampened in mild soap and water. Avoid applying liquids directly to the cover.

**Clean the keyboard:** Wipe the keys one by one with a lint-free cloth dampened in mild soap and water. If you wipe several keys at a time, the cloth might hook onto an adjacent key and possibly damage it. Avoid spraying cleaner directly onto the keyboard. To remove any crumbs or dust from beneath the keys, you can use a camera blower with a brush or use cool air from a hair dryer.

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**Clean the computer screen:** Scratches, oil, dust, chemicals, and ultraviolet light can affect the performance of your computer screen. Use a dry, soft lint-free cloth to wipe the screen gently. If you see a scratchlike mark on your screen, it might be a stain. Wipe or dust the stain gently with a soft, dry cloth. If the stain remains, moisten a soft, lint-free cloth with water or eyeglass cleaner, but do not apply liquids directly to your computer screen. Ensure that the computer screen is dry before closing it.



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## Chapter 2. Compliance information

This chapter provides radio frequency compliance statements, electromagnetic emission notices and environmental information about Lenovo products.

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### Radio frequency compliance statements

Computer models equipped with wireless communications comply with the radio frequency and safety standards of any country or region in which it has been approved for wireless use.

Besides this document, ensure that you read the *Regulatory Notice* for your country or region before using the wireless devices contained in your computer. The *Regulatory Notice* contains specific regulatory information about these wireless devices. To access the latest *Regulatory Notice*, go to <https://support.lenovo.com>.

### Wireless-related information

This topic provides wireless-related information about Lenovo products.

#### Wireless interoperability

Wireless-LAN card is designed to be interoperable with any wireless-LAN product that is based on Direct Sequence Spread Spectrum (DSSS), Complementary Code Keying (CCK), and/or Orthogonal Frequency Division Multiplexing (OFDM) radio technology, and is compliant to:

- The 802.11b/g Standard, 802.11a/b/g, 802.11n, 802.11ax, or 802.11ac on wireless-LANs, as defined by the Institute of Electrical and Electronics Engineers.
- The Wireless Fidelity (Wi-Fi®) certification as defined by the Wi-Fi Alliance®.

#### Notes:

- Some models may not support 802.11ax, depending on your wireless configurations.
- For some countries or regions, use of 802.11ax may be disabled according to your local regulations.

#### Usage environment and your health

This computer contains integrated wireless cards that operate within the guidelines identified by radio frequency (RF) safety standards and recommendations; therefore, Lenovo believes that this product is safe for use by consumers. These standards and recommendations reflect the consensus of the worldwide scientific community, and result from deliberations of panels and committees of scientists, who continually review and interpret the extensive research literature.

In some situations or environments, the use of wireless devices might be restricted by the proprietor of a building or responsible representatives of an organization. For example, these situations and areas might include the following:

- On board of airplanes, in hospitals or near petrol stations, blasting areas (with electro-explosive devices), medical implants or body-worn electronic medical devices, such as pace makers.
- In any other environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the policy that applies to the use of wireless devices in a specific area (such as an airport or hospital), you are encouraged to ask for authorization to use a wireless device prior to turning on the computer.

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**European Union (EU) / United Kingdom (UK) — Radio Equipment Compliance**

EU Contact: Lenovo (Slovakia), Landererova 12, 811 09 Bratislava, Slovakia



UK contact: Lenovo, Redwood, Crockford Lane, Basingstoke, RG24 8WQ, UK.

This product is in conformity with all the requirements and essential norms that apply to EU Council Radio Equipment Directive 2014/53/EU on the approximation of the laws of the Member States, as well as the UK Radio Equipment Regulations SI 2017 No. 1206, relating to radio equipment.

The full text of the system EU declaration of conformity is available at:  
<https://www.lenovo.com/us/en/compliance/eu-doc>

The full text of the system UK declaration of conformity is available at:  
<https://www.lenovo.com/us/en/compliance/uk-doc>

Lenovo cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the installation of option cards from other manufacturers. This product has been tested and found to comply with the limits for Class B equipment according to European and UK compliance standards. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with certified communication devices.

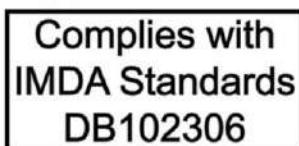
**Brazil**

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

This equipment is not protected against harmful interference and may not cause interference with duly authorized systems.

**Mexico**

**Advertencia:** En Mexico la operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

**Singapore**

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**Electromagnetic emission notices****Federal Communications Commission (FCC) Supplier's Declaration of Conformity****Notes:**

- The statements below regarding FCC are only valid for products that are shipping to the United States.
- Refer to the product label information to identify the specific model name and number of your product.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Lenovo is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:  
Lenovo (United States) Incorporated  
7001 Development Drive  
Morrisville, NC 27560  
Email: FCC@lenovo.com

**Industry Canada compliance statement**

CAN ICES-003(B)/NMB-003(B)

**European Union (EU) / United Kingdom (UK) — Electromagnetic Compatibility Compliance**

This product is in conformity with the protection requirements of EU Council Directive 2014/30/EU on the approximation of the laws of the Member States, as well as UK SI 2016 No. 1091 with amendments, relating to the electromagnetic compatibility limits for Class B equipment. These Class B requirements are intended to offer adequate protection to broadcast services within residential environments.

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**German Class B compliance statement***Hinweis zur Einhaltung der Klasse B zur elektromagnetischen Verträglichkeit*

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie zur elektromagnetischen Verträglichkeit Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der Klasse B der Norm gemäß Richtlinie.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der Lenovo empfohlene Kabel angeschlossen werden. Lenovo übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der Lenovo verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der Lenovo gesteckt/eingebaut werden.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln, EMVG vom 20. Juli 2007 (früher Gesetz über die elektromagnetische Verträglichkeit von Geräten), bzw. der EU Richtlinie 2014/30/EU, der EU Richtlinie 2014/53/EU Artikel 3.1b), für Geräte der Klasse B.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung nach Paragraf 5 des EMVG ist die Lenovo (Deutschland) GmbH, Meitnerstr. 9, D-70563 Stuttgart.

**Japan VCCI Class B compliance statement**

この装置は、クラスB機器です。この装置は、住宅環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。  
取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

**Japan compliance statement for products which connect to the power mains with rated current less than or equal to 20 A per phase**

日本の定格電流が 20A/相 以下の機器に対する高調波電流規制  
高調波電流規格 JIS C 61000-3-2 適合品

**Japan notice for ac power cord**

The ac power cord shipped with your product can be used only for this specific product. Do not use the ac power cord for other devices.

本製品およびオプションに電源コード・セットが付属する場合は、それぞれ専用のものになっていますので他の電気機器には使用しないでください。

**Environmental information**

This section provides environmental, recycling, and RoHS information of countries and regions about Lenovo products.

**Recycling and environmental information**

Lenovo encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Lenovo offers a variety of programs and services to assist equipment owners in recycling their IT products. For information about recycling Lenovo products, go to:

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<https://www.lenovo.com/recycling>

The latest environmental information about our products is available at:

<https://www.lenovo.com/ecodeclaration>

**Important battery recycling and WEEE information**

Take back and recycling information for WEEE and batteries/accumulators in the European Union and the United Kingdom



The crossed-out wheeled bin marking applies only to countries with WEEE and batteries waste regulations including the European Union (EU), and United Kingdom (UK).

Appliances and batteries/accumulators are labeled in accordance with local regulations concerning waste electrical and electronic equipment (WEEE) and waste batteries and waste accumulators. These regulations determine the framework for the return and recycling of used appliances and used batteries/accumulators as applicable within each geography. This label is applied to various products to indicate that the product is not to be thrown away, but rather put in the established collection systems for reclaiming these end of life products.

The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium).

Users of electrical and electronic equipment (EEE) and users of batteries/accumulators with the crossed-out wheeled bin marking must not dispose of end of life products as unsorted municipal waste, but use the collection framework available to them for the return, recycle, and recovery of WEEE and waste batteries/accumulators and to minimize any potential effects of EEE and batteries on the environment and human health due to the presence of hazardous substances.

Lenovo electrical and electronic equipment (EEE) may contain parts and components, which at end-of-life might qualify as hazardous waste.

EEE and waste electrical and electronic equipment (WEEE) can be delivered free of charge to the place of sale or any distributor that sells electrical and electronic equipment of the same nature and function as the used EEE or WEEE.

Before placing electrical and electronic equipment (EEE) in the waste collection stream or in waste collection facilities, the end user of equipment containing batteries and/or accumulators must remove those batteries and accumulators for separate collection.

Dispose of lithium batteries and battery packs from Lenovo products:

A coin-cell type lithium battery might be installed inside your Lenovo product. You can find details about the battery in the product documentation. If the battery needs to be replaced, contact your place of purchase or contact Lenovo for service. If you need to dispose of a lithium battery, insulate it with vinyl tape, contact your place of purchase or a waste-disposal operator, and follow their instructions.

Your Lenovo device might contain a lithium-ion battery pack or a nickel metal hydride battery pack. You can find details on the battery pack in the product documentation. If you need to dispose of a battery pack, insulate it with vinyl tape, contact Lenovo sales, service, or your place of purchase, or a waste-disposal



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operator, and follow their instructions. You also can refer to the instructions provided in the user guide for your product.

For proper collection and treatment, go to:

<https://www.lenovo.com/environment>

For additional WEEE information, go to:

<https://www.lenovo.com/recycling>

**WEEE information for Hungary**

Lenovo, as a producer, bears the cost incurred in connection with the fulfillment of Lenovo's obligations under Hungary Law No. 197/2014 (VIII.1.) subsections (1)-(5) of section 12.

**EU ErP (EcoDesign) Directive (2009/125/EC) - external power adapters (Regulation (EU) 2019/1782), Ecodesign for Energy-Related Products Regulations 2010 - UK SI 2010 No. 2617 (Ext PSU), SI 2020 No. 485 (Ntwk Standby), SI 2014 No. 1290 as amended**

Lenovo products are compliant with the EU EcoDesign (ErP) Directive and UK EcoDesign for Energy-related Products Regulations. Refer to the following for details. For EU, refer to the system declaration <https://www.lenovo.com/us/en/compliance/eu-doc>, and for UK refer to the system declaration <https://www.lenovo.com/us/en/compliance/uk-doc>.

**Japan recycling statements****Collect and recycle a disused Lenovo computer or monitor**

If you are a company employee and need to dispose of a Lenovo computer or monitor that is the property of the company, you must do so in accordance with the Law for Promotion of Effective Utilization of Resources. Computers and monitors are categorized as industrial waste and should be properly disposed of by an industrial waste disposal contractor certified by a local government. In accordance with the Law for Promotion of Effective Utilization of Resources, Lenovo Japan provides, through its PC Collecting and Recycling Services, for the collecting, reuse, and recycling of disused computers and monitors. For details, visit the Lenovo Web site at:

<https://www.lenovo.com/recycling/japan>

Pursuant to the Law for Promotion of Effective Utilization of Resources, the collecting and recycling of home-used computers and monitors by the manufacturer was begun on October 1, 2003. This service is provided free of charge for home-used computers sold after October 1, 2003. For details, go to:

<https://www.lenovo.com/recycling/japan>

**Dispose of Lenovo computer components**

Some Lenovo computer products sold in Japan may have components that contain heavy metals or other environmental sensitive substances. To properly dispose of disused components, such as a printed circuit board or drive, use the methods described above for collecting and recycling a disused computer or monitor.

**Dispose of disused lithium batteries from Lenovo computers**

A button-shaped lithium battery is installed inside your Lenovo computer to provide power to the computer clock while the computer is off or disconnected from the main power source. If you need to replace it with a

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new one, contact your place of purchase or contact Lenovo for service. If you need to dispose of a disused lithium battery, insulate it with vinyl tape, contact your place of purchase or an industrial-waste-disposal operator, and follow their instructions.

Disposal of a lithium battery must comply with local ordinances and regulations.

**Dispose of a disused battery from Lenovo notebook computers**

Your Lenovo notebook computer has a lithium ion battery or a nickel metal hydride battery. If you are a company employee who uses a Lenovo notebook computer and need to dispose of a battery, contact the proper person in Lenovo sales, service, or marketing, and follow that person's instructions. You also can refer to the instructions at:

<https://www.lenovo.com/jp/ja/environment/recycle/battery/>

If you use a Lenovo notebook computer at home and need to dispose of a battery, you must comply with local ordinances and regulations. You also can refer to the instructions at:

<https://www.lenovo.com/jp/ja/environment/recycle/battery/>

**Recycling information for Brazil**

*Declarações de Reciclagem no Brasil*

*Descarte de um Produto Lenovo Fora de Uso*

Equipamentos elétricos e eletrônicos não devem ser descartados em lixo comum, mas enviados à pontos de coleta, autorizados pelo fabricante do produto para que sejam encaminhados e processados por empresas especializadas no manuseio de resíduos industriais, devidamente certificadas pelos órgãos ambientais, de acordo com a legislação local.

A Lenovo possui um canal específico para auxiliá-lo no descarte desses produtos. Caso você possua um produto Lenovo em situação de descarte, ligue para o nosso SAC ou encaminhe um e-mail para: [reciclar@lenovo.com](mailto:reciclar@lenovo.com), informando o modelo, número de série e cidade, a fim de enviarmos as instruções para o correto descarte do seu produto Lenovo.

**Recycling information for mainland China**

《废弃电器电子产品回收处理管理条例》提示性说明

联想鼓励拥有联想品牌产品的用户当不再需要此类产品时，遵守国家废弃电器电子产品回收处理相关法律法规，将其交给当地具有国家认可的回收处理资质的厂商进行回收处理。更多回收服务信息，请点击进入<http://support.lenovo.com.cn/activity/551.htm>

**Battery recycling information for Taiwan**

廢電池請回收



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**Battery recycling information for the United States and Canada (for selected models)****US & Canada Only****Restriction of Hazardous Substances (RoHS) Directive of countries and regions**

The latest environmental information about Lenovo products is available at:

<https://www.lenovo.com/ecodeclaration>

**European Union (EU) / United Kingdom (UK) RoHS**

This Lenovo product, with included parts (cables, cords, and so on) meets the requirements of EU Directive 2011/65/EU (as amended by Directive 2015/863/EU) and UK SI 2012 No. 3032 on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("RoHS recast" or "RoHS 2").

For more information about Lenovo worldwide compliance on RoHS, go to:

<https://www.lenovo.com/rohs-communication>

**Turkish WEEE/RoHS****Türkiye AEEE yönetmeliğine Uygunluk Beyanı**

Bu Lenovo ürünü, T.C. Çevre ve Şehircilik Bakanlığı'nın "Atık Elektrikli ve Elektronik Eşyaların Kontrolü Yönetmeliğine (AEEE)" uygundur.

AEEE yönetmeliğine Uygundur.

**Ukraine RoHS**

Цим підтверджуємо, що продукція Леново відповідає вимогам нормативних актів України, які обмежують вміст небезпечних речовин

**India RoHS**

RoHS compliant as per E-Waste (Management) Rules.

**Mainland China RoHS (for desktop computers)**

The information in the following table is applicable to products manufactured on or after January 1, 2015 for sale in the People's Republic of China.

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产品中有害物质的名称及含量

部件名称	有害物质					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板组件*	X	0	0	0	0	0
硬盘	X	0	0	0	0	0
光驱	X	0	0	0	0	0
内存	X	0	0	0	0	0
电脑I/O 附件	X	0	0	0	0	0
电源	X	0	0	0	0	0
键盘	X	0	0	0	0	0
鼠标	X	0	0	0	0	0
机箱/附件	X	0	0	0	0	0
液晶面板	X	0	0	0	0	0
电池	X	0	0	0	0	0

本表格依据 SJ/T 11364 的规定编制。  
0：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。  
X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。  
注：表中标记“X”的部件，皆因全球技术发展水平限制而无法实现有害物质的替代。  
印刷电路板组件\*：包括印刷电路板及其零部件、电容和连接器。  
根据型号的不同，可能不会含有以上的所有部件，请以实际购买机型为准。



在中华人民共和国境内销售的电子信息产品必须标识此标志，标志内的数字代表在正常使用状态下的产品的环保使用期限。

中国大陆 RoHS 合格评定制度标识

依照《电器电子产品有害物质限制使用合格评定制度实施安排》，《绿色产品标识使用管理办法》以及市场监管总局关于明确电器电子产品有害物质限制使用合格评定制度“供方符合性标志”的公告中对于合格评定标识的相关要求，联想公司针对纳入《电器电子产品有害物质限制使用达标管理目录》内的产品，使用自我声明的合格评定方式，并使用如下合格评定标识：



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Mainland China RoHS (for workstations)  
产品中有害物质的名称及含量

部件名称	有害物质					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板组件*	X	O	O	O	O	O
硬盘	X	O	O	O	O	O
光驱	X	O	O	O	O	O
内存	X	O	O	O	O	O
电脑I/O 附件	X	O	O	O	O	O
电源	X	O	O	O	O	O
键盘	X	O	O	O	O	O
鼠标	X	O	O	O	O	O
机箱/ 附件	X	O	O	O	O	O
电池	X	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制。  
O：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。  
X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。  
注：表中标记“X”的部件，皆因全球技术发展水平限制而无法实现有害物质的替代。  
印刷电路板组件\*：包括印刷电路板及其零部件、电容和连接器  
根据型号的不同，可能不会含有以上的所有部件，请以实际购买机型为准



在中华人民共和国境内销售的电子信息产品必须标识此标志，标志内的数字代表在正常使用状态下的产品的环保使用期限

Mainland China RoHS (for notebook computers and tablets)

The information in the following table is applicable to products manufactured on or after January 1, 2015 for sale in the People's Republic of China.

产品中有害物质的名称及含量						
部件名称	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板组件*	X	0	0	0	0	0
硬盘	X	0	0	0	0	0
光源	X	0	0	0	0	0
LCD 面板 (LED 背光源)	X	0	0	0	0	0
键盘	X	0	0	0	0	0
内存	X	0	0	0	0	0
电池	X	0	0	0	0	0
电源适配器	X	0	0	0	0	0
底壳、顶盖和扬声器	X	0	0	0	0	0
<p>注： 本表依据SJ/T 11364的规定编制。 0：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572标准规定的限量要求以下。 X：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572标准规定的限量要求。标有“X”的部件，皆因全球技术发展水平限制而无法实现有害物质的替代。 * 印刷电路板组件包括印刷电路板及其零部件、电容和连接器等。</p> <p>图示：  在中华人民共和国境内销售的电子信息产品上将印有“环保使用期限”（EUP）符号。圆圈中的数字代表产品的正常环保使用期限。</p>						

Supplier's declaration of conformity label for mainland China RoHS

依照《电器电子产品有害物质限制使用合格评定制度实施安排》，《绿色产品标识使用管理办法》以及市场监管总局关于明确电器电子产品有害物质限制使用合格评定制度“供方符合性标志”的公告中对于合格评定标识的相关要求，联想公司 针对纳入《电器电子产品有害物质限制使用达标管理目录》内的产品，使用自我声明的合格评定方式，并使用如下合格评定标识：



## Enclosures

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## Taiwan RoHS (for desktop computers)

## 臺灣 RoHS - 個人電腦

單元	限用物質及其化學符號					
	鉛 (Pb)	汞 (Hg)	鎘 (Cd)	六價鉻 (Cr <sup>6+</sup> )	多溴聯苯 (PBB)	多溴二苯醚 (PBDE)
印刷電路板組件	—	○	○	○	○	○
硬碟	—	○	○	○	○	○
光碟機(選配件)	—	○	○	○	○	○
記憶體	—	○	○	○	○	○
電源供應器	—	○	○	○	○	○
鍵盤(選配件)	—	○	○	○	○	○
滑鼠(選配件)	—	○	○	○	○	○
機殼	—	○	○	○	○	○
配件(電源線)	—	○	○	○	○	○
散熱模組	—	○	○	○	○	○

備考1. “超出0.1 wt %”及“超出0.01 wt %”係指限用物質之百分比含量超出百分比含量基準值。

備考2. “○”係指該項限用物質之百分比含量未超出百分比含量基準值。

備考3. “—”係指該項限用物質為排除項目。

## 臺灣 RoHS - 一體機

單元	限用物質及其化學符號					
	鉛 (Pb)	汞 (Hg)	鎘 (Cd)	六價鉻 (Cr <sup>6+</sup> )	多溴聯苯 (PBB)	多溴二苯醚 (PBDE)
印刷電路板組件	—	○	○	○	○	○
硬碟	—	○	○	○	○	○
光碟機(選配件)	—	○	○	○	○	○
記憶體	—	○	○	○	○	○
電腦I/O配件	—	○	○	○	○	○
電源供應器	—	○	○	○	○	○
鍵盤(選配件)	—	○	○	○	○	○
滑鼠(選配件)	—	○	○	○	○	○
機殼	—	○	○	○	○	○
螢幕	—	○	○	○	○	○
配件(電源線)	—	○	○	○	○	○
散熱模組	—	○	○	○	○	○

備考1. “超出0.1 wt %”及“超出0.01 wt %”係指限用物質之百分比含量超出百分比含量基準值。

備考2. “○”係指該項限用物質之百分比含量未超出百分比含量基準值。

備考3. “—”係指該項限用物質為排除項目。

Taiwan RoHS (for workstations)

單元	限用物質及其化學符號					
	鉛 (Pb)	汞 (Hg)	鎘 (Cd)	六價鉻 (Cr <sup>6+</sup> )	多溴聯苯 (PBB)	多溴二苯醚 (PBDE)
印刷電路板組件	—	○	○	○	○	○
硬碟	—	○	○	○	○	○
光碟機(選配件)	—	○	○	○	○	○
記憶體	—	○	○	○	○	○
電源供應器	—	○	○	○	○	○
鍵盤(選配件)	—	○	○	○	○	○
滑鼠(選配件)	—	○	○	○	○	○
機殼	—	○	○	○	○	○
配件(電源線)	—	○	○	○	○	○
散熱模組	—	○	○	○	○	○

備考1. “超出0.1 wt %”及“超出0.01 wt %”係指限用物質之百分比含量超出百分比含量基準值。

備考2. “○”係指該項限用物質之百分比含量未超出百分比含量基準值。

備考3. “—”係指該項限用物質為排除項目。

Taiwan RoHS (for notebook computers and tablets)

單元Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr <sup>6+</sup> )	多溴聯苯 Polybrominate d biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
印刷電路板組件	—	○	○	○	○	○
儲存裝置	—	○	○	○	○	○
顯示螢幕	—	○	○	○	○	○
輸入裝置	—	○	○	○	○	○
電源設備	—	○	○	○	○	○
外殼	—	○	○	○	○	○
機械組件	—	○	○	○	○	○
配件	—	○	○	○	○	○

備考1. “超出0.1 wt %”及“超出0.01 wt %”係指限用物質之百分比含量超出百分比含量基準值。  
Note 1: “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2. “○”係指該項限用物質之百分比含量未超出百分比含量基準值。  
Note 2: “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3. “—”係指該項限用物質為排除項目。  
Note 3: The “—” indicates that the restricted substance corresponds to the exemption.

單元說明	
單元	說明
儲存裝置	泛指硬碟機、固態硬碟、記憶體等
輸入裝置	泛指鍵盤、觸控板、攝影機、麥克風等
機械組件	泛指風扇、散熱器、喇叭、光碟機（選配）等
配件	泛指觸控筆（選配）、耳機（選配）、外接式光碟機（選配）、轉接線（選配）、滑鼠（選配）等

## Enclosures

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**ENERGY STAR model information**

ENERGY STAR® is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy aimed at saving money and protecting the environment through energy efficient products and practices.

Lenovo is proud to offer products with the ENERGY STAR certified designation. Lenovo computers, if carry an ENERGY STAR mark, have been designed and tested to conform to the ENERGY STAR program requirements for computers as prescribed by the U.S. Environmental Protection Agency. For a certified computer, an ENERGY STAR mark may be affixed to the product, the product packaging, or displayed electronically on the E-label screen or the power settings interface.

By using ENERGY STAR compliant products and taking advantage of the power management features of your computer, you reduce the consumption of electricity. Reduced electrical consumption contributes to potential financial savings, a cleaner environment, and the reduction of greenhouse gas emissions. For more information about ENERGY STAR, go to <https://www.energystar.gov>.

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**Other compliance information**

This section provides other compliance information of countries and regions about Lenovo products.

**Eye comfort (for desktop computers and workstations)**

The property of the display in combination with following notes result in reduced eye fatigue and increased comfort.

For tips on how to minimize visual fatigue, please go to <https://www.lenovo.com/us/en/safecomp/> to visit "Minimizing Visual Fatigue".

**Remote control (for selected desktop computers and workstations)****CAUTION:**

Do not use rechargeable batteries in this device.

**Export classification notice**

This product is subject to the United States Export Administration Regulations (EAR) and has an Export Classification Control Number (ECCN) of 5A992.c. It can be re-exported except to any of the embargoed countries in the EAR E1 country list.

**Lenovo product service information for Taiwan**

委製商/進口商名稱: 荷蘭商聯想股份有限公司台灣分公司  
進口商地址: 臺北市中山區樂群三路128號16樓  
進口商電話: 0800-000-702 (代表號)

**Taiwan precautionary vision statement**

警語: 使用過度恐傷害視力

## Enclosures

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## 注意事項：

- 使用30分鐘請休息10分鐘。
- 未滿2歲幼兒不看螢幕，2歲以上每天看螢幕不要超過1小時。

**Keyboard and mouse compliance statement for Taiwan (for desktop computers and workstations)**

本產品隨貨附已取得經濟部標準檢驗局認可之PS/2或USB的鍵盤與滑鼠一組

**Supplemental information for the Eurasian Union (for selected models)**

Назначение	персональный компьютер для личного и служебного использования, для передачи данных, с поддержкой различных профилей подключения (Wi-Fi, Bluetooth и пр.).
Изготовитель	Леново ПЦ ХК Лимитед, 23/Ф Линколн Хаус, Тайку Плейс 979 Кингз Роуд, Куарри Бэй, Гонконг (Lenovo PC HK Limited, 23/F Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong)
Страна производства	Китай
Наименование и местонахождение уполномоченного изготовителем лица	ООО «Леново (Восточная Европа/Азия)» 143401, Московская область, г. Красногорск, бульвар Строителей, дом 4, корпус 1, помещение VII, тел. +7 495 645 83 38, факс +7 495 645 78 77.
Импортер	Наименование, адрес импортера и информация для связи с ним указаны на этикетке* на упаковке продукции.  *Согласно ГОСТ 2.601-2013 «Единая система конструкторской документации. Эксплуатационные документы», пункт 5.1, подпункт 5.1.2, этикетка является видом эксплуатационных документов.
Дата изготовления (месяц и год)	Указана на этикетке* на упаковке продукции, в графе Date (дата указана в формате год-месяц-дата). Для получения более подробной информации посетите веб-сайт: <a href="https://support.lenovo.com">https://support.lenovo.com</a>
Единый знак обращения на рынке стран Таможенного союза	

**Brazil audio notice**

Ouvir sons com mais de 85 decibéis por longos períodos pode provocar danos ao sistema auditivo.

**Korea radio frequency compliance statement**

무선설비 전파 혼신 (사용주파수 2400~2483.5, 5725~5825 무선제품해당)

해당 무선설비가 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없음

**SAR 정보**

본 장치는 전파 노출에 대한 가이드라인을 충족합니다.

본 장치는 무선 송수신기입니다. 본 장치는 국제 가이드라인으로 권장되는 전파 노출에 대한 제한을 초과하지 않도록 설계되었습니다. 장치 액세서리 및 최신 부품을 사용할 경우 SAR 값이 달라질 수 있습니다. SAR 값은 국가 보고 및 테스트 요구 사항과 네트워크 대역에 따라 다를 수 있습니다. 본 장치는 사람의 신체에서 20mm 이상의 거리에서 사용할 수 있습니다.



## Enclosures

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**Regulatory labels**

Depending on your country or region, you can find the government-required regulatory information through one of the following methods:

- On a physical label attached to the outside of your computer shipping carton
- On a physical label attached to your computer
- Through an electronic-label screen (E-label screen) preinstalled on your computer

To access the E-label screen, restart the computer. When the logo screen is displayed, press F9, or tap the prompt to enter the Startup Interrupt menu and the Regulatory Information option subsequently.

**Korean E-label notice (for selected models)**

이 제품은 전자적 표시(e-labelling)가 되어있습니다.

Enclosures

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## Appendix A. TCO Certified

Selected models are TCO Certified and bear the TCO Certified logo.

**Note:** TCO Certified is an international third-party sustainability certification for IT products. For details, go to <https://www.lenovo.com/us/en/compliance/tco>.

Enclosures

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## Enclosures

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## Appendix B. Accessibility and ergonomic information

This chapter provides information about accessibility and ergonomics.

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### Accessibility information

Lenovo is committed to providing users who have hearing, vision, and mobility limitations with greater access to information and technology. You can get the most up-to-date accessibility information from <https://www.lenovo.com/accessibility>.

If you need additional support with the accessibility features, go to <https://pcsupport.lenovo.com/supportphonelist> to find the support phone numbers for your country or region.

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### Ergonomic information

Good ergonomic practice is important to get the most from your personal computer and to avoid discomfort. Arrange your workplace and the equipment you use to suit your individual needs and the kind of work that you perform. In addition, use healthy work habits to maximize your performance and comfort when using your computer.

Working in the virtual office might mean adapting to frequent changes in your environment. Adapting to the surrounding light sources, active seating, and the placement of your computer hardware, can help you improve your performance and achieve greater comfort.

This example shows someone in a conventional setting. Even when not in such a setting, you can follow many of these tips. Develop good habits, and they will serve you well.



**General posture:** Make minor modifications in your working posture to deter the onset of discomfort caused by long periods of working in the same position. Frequent short breaks from your work also help to prevent minor discomfort associated with your working posture.

**Display:** Position the display to maintain a comfortable viewing distance of 510 mm to 760 mm (20 inches to 30 inches). Avoid glare or reflections on the display from overhead lighting or outside sources of light. Keep the display screen clean and set the brightness to levels that enable you to see the screen clearly. Press the brightness control keys to adjust display brightness.

**Head position:** Keep your head and neck in a comfortable and neutral (vertical, or upright) position.

**Chair:** Use a chair that gives you good back support and seat height adjustment. Use chair adjustments to best suit your comfort posture.

## Enclosures

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**Arm and hand position:** If available, use chair arm rests or an area on your working surface to provide weight support for your arms. Keep your forearms, wrists, and hands in a relaxed and neutral (horizontal) position. Type with a soft touch without pounding the keys.

**Leg position:** Keep your thighs parallel to the floor and your feet flat on the floor or on a footrest.

**What if you are traveling?**

It might not be possible to observe the best ergonomic practices when you are using your computer while on the move or in a casual setting. Regardless of the setting, try to observe as many of the tips as possible. Sitting properly and using adequate lighting, for example, helps you maintain desirable levels of comfort and performance. If your work area is not in an office setting, ensure to take special note of employing active sitting and taking work breaks. Many product solutions are available to help you modify and expand your computer to best suit your needs. You can find some of these options at <https://www.lenovo.com/accessories>. Explore your options for docking solutions and external products that provide the adjustability and features that you want.

**Questions about vision?**

The visual display screens of notebook computers are designed to meet the highest standards. These visual display screens provide you with clear, crisp images and large, bright displays that are easy to see, yet easy on the eyes. Any concentrated and sustained visual activity can be tiring. If you have questions on eye fatigue or visual discomfort, consult a vision-care specialist for advice.

## Enclosures

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## Appendix C. Notices and trademarks

### Notices

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Morrisville, NC 27560  
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Attention: Lenovo Director of Licensing*

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## Enclosures

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**Avoid constant body contact with specific hot sections**

**CAUTION:**

When the computer is operating, it should be placed on a hard and flat surface with its bottom area not in contact with user's bare skin. Under normal operating conditions, the temperature of the bottom surface will remain within an acceptable range as defined in IEC 62368-1, but such temperatures can still be high enough to cause discomfort or harm to the user if directly touched for over one minute at a time. As such, it is recommended that users avoid prolonged direct contact with the bottom of the computer.

## Enclosures

Miscellaneous ID 07-04

Manufacturer declaration

We, Lenovo PC HK Limited, declare that the submitted product(s) is/are representative for the model(s) listed below and that each factory listed manufacture identical product(s):

1	<b>LCFC (HeFei) Electronics Technology Co., Ltd</b> No. 3188-1 Yungu Road (Comprehensive Bonded Zone), Hefei Economic & Technological Development Area, HEFEI ANHUI 230601, CHINA
2	<b>Lenovo (India) Private Limited</b> 19/1A & 19/2A, CUDDALORE MAIN ROAD, EDAYARPALAYAM VILLAGE, THAVALAKUPPAM PUDUCHERRY -605007 INDIA
3	<b>Lenovo (Shanghai) Electronics Technology Co., Ltd.</b> Section 304-305, Building No. 4, # 222, Meiyue Road, China (Shanghai) Pilot Free Trade Zone, Shanghai 200131, China
4	<b>Lenovo US Fulfillment Center L L C</b> 6540 Franz Warner Parkway Whitsett, NC 27377, USA
5	<b>NEC Personal Computers, Ltd</b> 6-80, Shimohanazawa 2-Chome, Yonezawa-shi, Yamagata 992-8520, Japan
6	<b>LENOVO INFORMATION PRODUCTS (SHENZHEN) CO., LTD</b> 2F, NO.1 Plant, Lenovo Innovation Park, Lidu Road, Loucun Community, Xinhua Street, Guangming District, Shenzhen, Guangdong, China
7	<b>PLANT 2 - SANSEI</b> EVA PERÓN 97 - USHUAIA - NOBLEX S.A, TIERRA DEL FUEGO, ARGENTINA
8	<b>Lenovo Centro Tecnológico S de RL de CV</b> Apodaca Technology Park Boulevard Escobedo #316 Apodaca, Nuevo Leon, Mexico C.P. 66600.
9	<b>Lenovo Centro Tecnológico S de RL de CV</b> Boulevard Escobedo #318 Apodaca Technology Park, CP 66627 APODACA NL, MEXICO
10	<b>LENOVO TECNOLOGIA (BRASIL) LTDA</b> Estrada Municipal Jose Costa de Mesquita, 200, Modulos 5 a 10, Chacara Alvorada, INDAIATUBA SP 13337-200, BRAZIL
11	<b>MOTOROLA (WUHAN) MOBILITY TECHNOLOGIES COMMUNICATION CO LTD</b> NO.19, Gaoxin 4Th Rd, East Lake High-Tech Zone, WUHAN HUBEI 430205, CHINA
12	<b>GUANGXI SANCHUANG TECHNOLOGY CO LTD</b> The Second Floor of Plant C01, Plant C02, Plant C03 and Plant D03 Guangxi Sannuo Smart Industrial Park, No.3, Gaoke Road, Beihai Industrial Park, BEIHAI GUANGXI 536000, CHINA
13	<b>Hefei LCFC Electronics Trading Co.,Ltd.</b> The western part of 3rd Floor in Building B, Yunhai Road Industrial Park, No. 176, Yun'er Road, Hefei Economic and Technological Development Area, Hefei Anhui 230601, China
14	<b>Hefei Jingzhuo Photoelectric Co., Ltd.</b> The northern part of 1st Floor and the eastern part of 3rd Floor in Building B, Yunhai Road Industrial Park, No. 176, Yun'er Road, Hefei Economic Development Zone, Hefei Anhui 230601, China

Statement issued by:

Manufacturer name: Lenovo PC HK Limited

Address: 23/F, Lincoln House, Taikoo Place, 979 King's Road, Quarry Bay, Hong Kong, P.R. China

Name &amp; title: Rachel.lv / Safety engineer

Signature:

Date:

2022-08-19



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Fax: +1.503.644.6708  
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# EMC Test Report

Product Name : Notebook Computer  
Model No. : ThinkPad E14 Gen 6xxxxxxx,  
21M3xxxxxxx, 21M4xxxxxxx, TP00148Dxxxxxxx  
(“x” =0-9, a-z, A-Z, any symbol or blank is for marketing use only,  
with no impact on EMC compliance of product.)

Applicant : Lenovo Japan LLC  
Address : Minatomirai Center Building 21F 3-6-1 Minatomirai, Nishi-ku,  
Yokohama-shi Kanagawa 220-0012 Japan

Date of Receipt : January 11, 2024  
Test Data : January 12, 2024~ January 23, 2024  
Issued Date : February 04, 2024  
Report Number : 2390097R-RF-CE-P01V01

The test results presented in this report relate only to the object tested.

This report is not used for social proof in China (or Mainland China) market.

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, it is not necessary to calculate the uncertainty associated with the measurement result.

This report shall not be reproduced, except in full, without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.

Issued Date : February 04, 2024  
Report Number : 2390097R-RF-CE-P01V01

Product Name : Notebook Computer

Applicant : Lenovo Japan LLC

Address : Minatomirai Center Building 21F 3-6-1 Minatomirai, Nishi-ku, Yokohama-shi  
Kanagawa 220-0012 Japan

Manufacturer : Lenovo PC HK Limited

Address : 23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, HongKong,  
P.R. China

Factory 1) : LCFC (HeFei) Electronics Technology Co., Ltd

Address : No. 3188-1 Yungu Road, (Comprehensive Bonded Zone), Hefei Economic &  
Technological Development Area, HEFEI ANHUI 230601, CHINA

Factory 2) : Lenovo (India) Private Limited

Address : 19/1A & 19/2A, CUDDALORE MAIN ROAD, EDAYARPALAYAMVILLAGE,  
THAVALAKUPPAMPUDUCHERRY -605007 INDIA

Factory 3) : Lenovo (Shanghai) Electronics Technology Co., Ltd.

Address : Section 304-305, Building No. 4, # 222, Meiyue Road, China (Shanghai)  
Pilot Free Trade Zone, Shanghai 200131, China

Factory 4) : Lenovo US Fulfillment Center L L C

Address : 6540 Franz Warner Parkway Whitsett, NC 27377, USA

Factory 5) : NEC Personal Computers, Ltd

Address : 6-80, Shimohanazawa 2-Chome, Yonezawa-shi, Yamagata 992-8520, Japan

Factory 6) : LENOVO INFORMATION PRODUCTS (SHENZHEN) CO., LTD

Address : 2F, NO.1 Plant, Lenovo Innovation Park, Lidu Road, Loucun Community,  
Xinhu Street, Guangming District, Shenzhen, Guangdong, China

Factory 7) : PLANT 2 - SANSEI

Address : EVA PERÓN 97 - USHUAIA - NOBLEX S.A, TIERRA DEL FUEGO,  
ARGENTINA

Factory 8) : Lenovo Centro Tecnológico S de RL de CV

Address : Apodaca Technology Park Boulevard Escobedo #316 Apodaca, Nuevo  
Leon, Mexico C.P. 66600.

Factory 9) : Lenovo Centro Tecnológico S de RL de CV

Address : Boulevard Escobedo #318 Apodaca Technology Park, CP 66627 APODACA  
NL, MEXICO

Factory 10) : LENOVO TECNOLOGIA (BRASIL) LTDA

Address : Estrada Municipal Jose Costa de Mesquita, 200, Modulos 5 a 10, Chacara  
Alvorada, INDAIATUBA SP 13337-200, BRAZIL

Factory 11) : MOTOROLA (WUHAN) MOBILITY TECHNOLOGIES COMMUNICATION  
CO LTD

Address : NO.19 Gaoxin 4Th Rd, East Lake High-Tech Zone, WUHAN HUBEI 430205,  
CHINA

Factory 12) : GUANGXI SANCHUANG TECHNOLOGY CO LTD

Address : The Second Floor of Plant C01, Plant C02, Plant C03 and Plant D03  
Guangxi Sannuo Smart Industrial Park, No.3, Gaoke Road, Beihai Industrial  
Park, BEIHAI GUANGXI 536000, CHINA




Factory 13) : Hefei LCFC Electronics Trading Co., Ltd.  
Address : The western part of 3rd Floor in Building B, Yunhai Road Industrial Park, No. 176, Yun'er Road, Hefei Economic and Technological Development Area, Hefei Anhui 230601, China

Factory 14) : Hefei Jingzhuo Photoelectric Co., Ltd.  
Address : The northern part of 1st Floor and the eastern part of 3rd Floor in Building B, Yunhai Road Industrial Park, No. 176, Yun'er Road, Hefei Economic Development Zone, Hefei Anhui 230601, China

Model No. : ThinkPad E14 Gen 6xxxxxxx,  
21M3xxxxxxx, 21M4xxxxxxx, TP00148Dxxxxxxx  
("x" =0-9, a-z, A-Z, any symbol or blank is for marketing use only, with no impact on EMC compliance of product.)

Brand Name : Lenovo  
EUT Voltage : 20 Vdc, 3.25A (Via Adapter)  
Test Voltage : 230 Vac, 50 Hz; 100 Vac, 50 Hz; 240 Vac, 50 Hz  
Applicable : ETSI EN 301 489-1 V2.2.3 (2019-11)  
Standard : ETSI EN 301 489-3 V2.3.2 (2023-01)  
ETSI EN 301 489-17 V3.2.4 (2020-09)

Test Result : Complied  
Performed : DEKRA Testing and Certification (Suzhou) Co., Ltd.  
Location : No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China

Reviewed By :   
\_\_\_\_\_  
(Project Engineer: Sue Cai)

Approved By :   
\_\_\_\_\_  
(Manager: Star Wang)

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### Document History

Report Number	Date	Description
2390097R-RF-CE-P01V01	February 04, 2024	First Release

## 1 General Information

### 1.1 EUT Description

Product Name	Notebook Computer
Trade Name	Lenovo
Model No.	ThinkPad E14 Gen 6xxxxxxx, 21M3xxxxxxx, 21M4xxxxxxx, TP00148Dxxxxxxx (“x” =0-9, a-z, A-Z, any symbol or blank is for marketing use only, with no impact on EMC compliance of product.)
Power Rating	#1 For Adapter: I/P:100-240 Vac, 1.8 A, 50-60 Hz O/P:20 Vdc, 3.25 A, 65 W #2 For Battery: 3 cells, 47 Wh #3 For Battery: 3 cells, 57 Wh
Classification of EUT	Class B
Highest Internal Frequency (Fx)	6.425 GHz
RF Module (WLAN)	Realtek/RTL8852BE
	Mediatek/MT7921
	Mediatek/MT7922A22M
	Realtek/RTL8852CE

Note 1: The EUT information is from customer declaration.

Note 2: The difference between each model is only for different marketing required. The test sample model is ThinkPad E14 Gen 6.

Note 3: The ethernet port's maximum transmission rate is 1000 Mbps.

Key Part List			
Item	Vendor	Model	Description
CPU	AMD	R3 7335U	3.0 GHz
		R5 7535U	2.9 GHz
		R7 7735U	2.7 GHz
		R5 7535HS	3.3 GHz
		R7 7735HS	3.2 GHz
M/B	LCFC	NM-F941	---
D/B	LCFC	NS-F941	---
DRAM	DDR5	8GB/16GB/32GB/64GB	---
M.2 SSD	Samsung		256 GB, 2242
	Kioxia		
	UnionMem		
	Hynix		
	Samsung		512 GB, 2242
	Kioxia		
	UnionMem		
	Hynix		
	Samsung		1 TB, 2242
	Kioxia		
	UnionMem		
	Hynix		
	Samsung		1 TB, 2280
	Hynix		
LCD	BOE	NV140DRM-N62	14",2240*1400
	AUO	B140QAN05.0	
	INX	N140ACA-GT1	
	BOE	NV140WUM-N43	14",1920*1200
	AUO	B140UAN03.2	
	INX	N140JCA-EEL	
	BOE	NV140WUM-T02	
	IVO	R140NW4D R5	
	CSOT	MNE007QS3-2	
Adapter	Delta	ADLX65YDC3E	20 Vdc, 3.25 A, 65 W
	Liteon	ADLX65YLC3E	
	Chicony	ADLX65YCC3E	
	Acbel	ADLX65YAC3E	
	Delta	ADLX65YDC2E	
	Liteon	ADLX65YLC2E	
	Chicony	ADLX65YCC2E	
	Acbel	ADLX65YAC2E	

Battery	Simplo	L22M3PG4	3 cells, 47 Wh
	Sunwoda	L22D3PG4	
	BYD	L22B3PG4	
	CosMX	L22X3PG4	
	Simplo	L23M3PG2	3 cells, 57 Wh
	Sunwoda	L23D3PG2	
	BYD	L23B3PG2	
	CosMX	L23X3PG2	
WLAN	Realtek	RTL8852BE	---
	Mediatek	MT7921	---
	Mediatek	MT7922A22M	---
	Realtek	RTL8852CE	---
Camera	Bison	BNLW19KSE	---
	Azurewave	AM-3SE54B6	---
	AVC	HA2-FN220B	---
	Chicony	CNFNH11	---
	Chicony	CKFNF11	---
	LVI	ABF207N3	---
	Bison	BNLWUDKBN	---
	Chicony	CKFNF10	---
	LVI	ABF205N3	---
	Bison	BNM6U6VE8	---
	AVC	HAA-A1F9D5	---

## 1.2 I/O ports information of EUT

The I/O ports of EUT are listed below:

No.	Position	I/O Port Type	Quantity
1	Left	USB-C Power Port	1
2	Left	USB-C Port	1
3	Left	USB-A Port (Always on)	1
4	Left	HDMI Port	1
5	Left	Combo audio jack Port	1
6	Right	USB-A Port	1
7	Right	Ethernet Port	1

### 1.3 Mode of Operation

The EUT was estimated to assemble **fifteen** configurations in accordance with the key parts listed in section 1.1. EUT with configurations (**Mode 1-15**) were pre-scanned for conducted emission and radiated emission test items. Finally, the worst **Mode 2,3,6,8** was re-measured with worst test resolution for all the test items, and the results were recorded in this report. All configurations are listed as below.

Item	Vendor	Model	Test Mode									
			1	2	3	4	5	6	7	8	9	10
CPU	AMD	R3 7335U	V					V				
		R5 7535U		V					V			
		R7 7735U			V							V
		R5 7535HS				V						
		R7 7735HS					V			V	V	
M/B	LCFC	NM-F941	V	V	V	V	V	V	V	V	V	V
D/B	LCFC	NS-F941	V	V	V	V	V	V	V	V	V	V
DRAM	DDR5	8GB/16GB/32GB/64GB	V	V	V	V	V	V	V	V	V	V
M.2 SSD	Samsung	256 GB, 2242										
	Kioxia	256 GB, 2242										
	UnionMem	256 GB, 2242			V		V					
	Hynix	256 GB, 2242	V									
	Samsung	512 GB, 2242		V								
	Kioxia	512 GB, 2242										
	UnionMem	512 GB, 2242							V	V	V	
	Hynix	512 GB, 2242						V				
	Samsung	1 TB, 2242				V						
	Kioxia	1 TB, 2242										
	UnionMem	1 TB, 2242										V
	Hynix	1 TB, 2242						V				
	Samsung	1 TB, 2280										V
	Hynix	1 TB, 2280										
LCD	BOE	NV140DRM-N62						V				
	AUO	B140QAN05.0							V			
	INX	N140ACA-GT1										V
	BOE	NV140WUM-N43	V									
	AUO	B140UAN03.2			V							
	INX	N140JCA-EEL					V					
	BOE	NV140WUM-T02		V								
	IVO	R140NW4D R5				V						
	CSOT	MNE007QS3-2								V	V	



Adapter	Delta	ADLX65YDC3E	V							V	V	
	Liteon	ADLX65YLC3E					V					
	Chicony	ADLX65YCC3E				V		V				V
	Acbel	ADLX65YAC3E		V	V				V			
	Delta	ADLX65YDC2E										
	Liteon	ADLX65YLC2E										
	Chicony	ADLX65YCC2E										
	Acbel	ADLX65YAC2E										
Battery	Simplo	L22M3PG4	V									
	Sunwoda	L22D3PG4			V							
	BYD	L22B3PG4					V					
	CosMX	L22X3PG4								V	V	
	Simplo	L23M3PG2		V								V
	Sunwoda	L23D3PG2				V						
	BYD	L23B3PG2					V					
	CosMX	L23X3PG2						V				
WLAN	Realtek	RTL8852BE	V		V		V					
	Mediatek	MT7921					V	V				
	Mediatek	MT7922A22M		V		V						
	Realtek	RTL8852CE								V	V	V
Camera	Bison	BNLW19KSE	V									
	Azurewave	AM-3SE54B6										
	AVC	HA2-FN220B										V
	Chicony	CNFNH11			V							
	Chicony	CKFNF11					V					
	LVI	ABF207N3					V					
	Bison	BNLWUDKBN		V		V						
	Chicony	CKFNF10								V	V	
	LVI	ABF205N3										
	Bison	BNM6U6VE8						V				
	AVC	HAA-A1F9D5										

Item	Vendor	Model	Test Mode									
			11	12	13	14	15					
CPU	AMD	R3 7335U										
		R5 7535U										
		R7 7735U	V	V	V	V	V					
		R5 7535HS										
		R7 7735HS										
M/B	LCFC	NM-F941	V	V	V	V	V					
D/B	LCFC	NS-F941	V	V	V	V	V					
DRAM	DDR5	8GB/16GB/32GB/64GB	V	V	V	V	V					

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	Realtek	RTL8852CE	V	V	V	V	V							
Camera	Bison	BNLW19KSE												
	Azurewave	AM-3SE54B6	V											
	AVC	HA2-FN220B												
	Chicony	CNFNH11												
	Chicony	CKFNF11												
	LVI	ABF207N3												
	Bison	BNLWUDKBN												
	Chicony	CKFNF10												
	LVI	ABF205N3		V										
	Bison	BNM6U6VE8												
	AVC	HAA-A1F9D5			V	V	V							

Final Test Mode	
Emission	Mode 2: Transmission Data by Mediatek/MT7922A22M
	Mode 3: Transmission Data by Realtek/RTL8852BE
	Mode 6: Transmission Data by Mediatek/MT7921
	Mode 8: Transmission Data by Realtek/RTL8852CE
Immunity	Mode 2: Transmission Data by Mediatek/MT7922A22M
	Mode 3: Transmission Data by Realtek/RTL8852BE
	Mode 6: Transmission Data by Mediatek/MT7921
	Mode 8: Transmission Data by Realtek/RTL8852CE

## 1.4 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

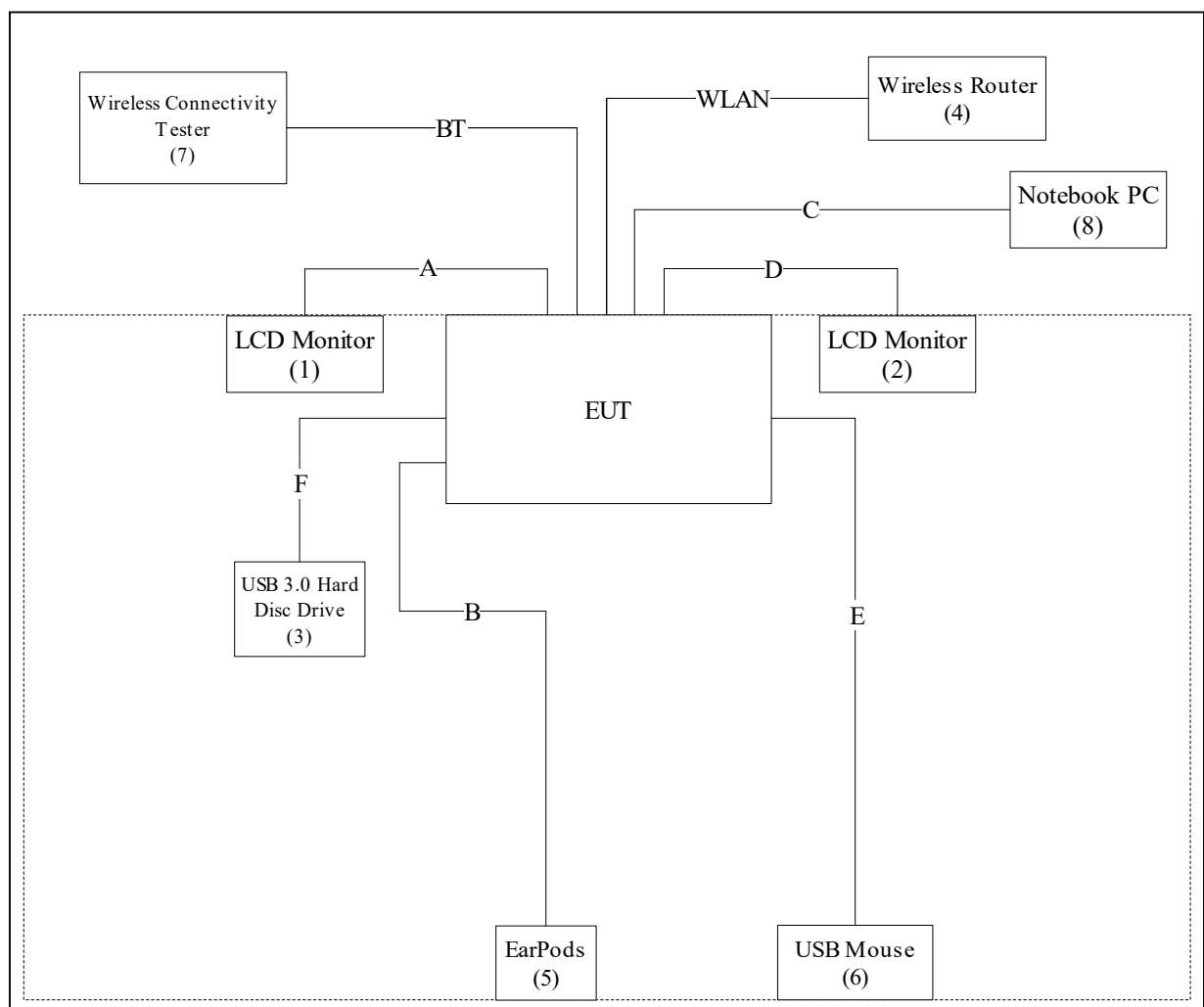
Mode 2, 3, 6, 8:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	LCD Monitor	DELL	P2715Q	CN-040FHF-WS20Q-7CB-BQ3L	Non-Shielded, 1.8m
2	LCD Monitor	ASUS	PA279	N6LMTF040450	Non-Shielded, 1.8m
3	USB 3.0 Hard Disc Drive	LACIE	RUGU3M2	NL3GDCBD	Power by EUT
4	Wireless Router	ASUS	GT-AXE110000	N/A	Power by Adapter
5	EarPods	Apple	MD827FE/A	DTY2323453K8	Power by EUT
6	USB Mouse	Lenovo	MOGOUO	DA36101415066138	Power by EUT
7	Wireless Connectivity Tester	R&S	CMW 270	102593	Non-Shielded, 1.8m
8	Notebook PC	Dell	G00329	2LKN2F35658022911	Power by Adapter

## 1.5 Configuration of Tested System

Mode 2, 3, 6, 8:

Connection Diagram



Signal Cable Type		Signal Cable Description
A	USB Type-C Cable	Shielded, 1.5 m
B	Microphone & Earphone Cable	Non-Shielded, 1.5 m
C	Ethernet Cable	Non-Shielded, >10 m
D	HDMI Cable	Shielded, 1.5 m
E	USB Mouse Cable	Shielded, 1.8 m
F	USB Cable	Shielded, 0.3 m

## 1.6 EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	During the test, the interface cables and equipment positions were varied according to standard.
4	The EUT exercise program (Burn in 9.0+Colorbar (ITU-R BT 471-1)) used during radiated and conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use).
5	The EUT connected to wireless router by WLAN.
6	The EUT connected to CMW 270 by BT.
7	USB-C Power Port: connected to adapter, HDD, Load or LCD Monitor.
8	USB-C Port: connected to adapter, HDD, Load or LCD Monitor.
9	USB-A Port (Always on): connected to HDD, Load or USB Mouse.
10	USB-A Port: connected to HDD, Load or USB Mouse.
11	HDMI Port: connected to the LCD Monitor.
12	Ethernet Port: connected to Notebook PC and transmit data by ping test and tfgen.exe
13	Combo audio jack Port: connected to the earphone.
14	Start testing.

## 2 Technical Test

### 2.1 Summary of Test Result

#### Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

Emission			
Performed Item	Normative References	Test Result	Remark
Conducted Emission	EN 55032:2015+A11:2020	Pass	---
Asymmetric mode conducted emissions	EN 55032:2015+A11:2020	Pass	---
Radiated Emission	EN 55032:2015+A11:2020	Pass	---
Harmonic current emissions	EN IEC 61000-3-2:2019+A1:2021	Pass	---
Voltage fluctuations and flicker	EN 61000-3-3:2013/A2:2021	Pass	---
Supplementary information:			

Immunity			
Performed Test Item	Normative References	Test Result	Remark
Electrostatic discharge	EN 61000-4-2:2009	Pass	---
Radio-frequency electromagnetic field	EN IEC 61000-4-3:2020	Pass	---
Electrical fast transients	EN 61000-4-4:2012	Pass	---
Surges	EN 61000-4-5:2014+A1:2017	Pass	---
Radio-frequency continuous conducted	EN 61000-4-6:2014/AC:2015	Pass	---
Voltage dips and interruptions	EN IEC 61000-4-11:2020	Pass	---
Transients and surges	ISO 7637-2:2011	N/A	see 1)
Supplementary information:			
1) The EUT is not used in the vehicular environment, so it needs not to perform this test item.			

## 2.2 List of Test Equipment

### Conducted Emission / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100906	2023.08.26	2024.08.25
Two-Line V-Network	R&S	ENV216	101189	2023.08.27	2024.08.26
Two-Line V-Network	R&S	ENV216	101044	2023.11.08	2024.11.07
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2023.05.14	2024.05.13
Coaxial Cable	Suhner	RG 223	TR1-C1	2023.05.14	2024.05.13
Wireless Connectivity Tester	R&S	CMW 270	102593	2023.05.20	2024.05.19
Temperature/Humidity Meter	RTS	RTS-8S	EMC01	2023.05.19	2024.05.18
Software	Quietek	EMI_V3	V3.0.0	N/A	N/A

### Asymmetric mode conducted emissions/ TR1

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100906	2023.08.26	2024.08.25
Two-Line V-Network	R&S	ENV216	101189	2023.08.27	2024.08.26
Two-Line V-Network	R&S	ENV216	101044	2023.11.08	2024.11.07
Impedance Stabilization Network	Teseq GmbH	ISN T800	57318	2024.1.20	2025.1.19
Impedance Stabilization Network	Teseq GmbH	ISN T8-Cat6	29680	2024.1.20	2025.1.19
Impedance Stabilization Network	Teseq GmbH	ISN ST08	31281	2023.09.13	2024.09.12
50ohm Termination	Xinghu	N/A	N/A	2023.02.24	2024.02.23
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2023.05.14	2024.05.13
Coaxial Cable	Suhner	RG 223	TR1-C1	2023.05.14	2024.05.13
Temperature/Humidity Meter	RTS	RTS-8S	EMC01	2023.05.19	2024.05.18
Software	Quietek	EMI_V3	V3.0.0	N/A	N/A

### Radiated Emission / AC1

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100175	2023.05.20	2024.05.19
EMI Test Receiver	R&S	ESCI	100726	2023.08.26	2024.08.25
Preamplifier	Quietek	AP-025C	CHM-0511006	2023.05.14	2024.05.13
Preamplifier	Quietek	AP-025C	CHM-0503006	2023.05.14	2024.05.13
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9168	01100	2023.06.18	2024.06.17
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9168	01099	2023.03.19	2024.03.18
Coaxial Cable	Huber+Suhner	RG 214_U	AC1-L	2023.05.21	2024.05.20
Coaxial Cable	Huber+Suhner	RG 214_U	AC1-R	2023.05.21	2024.05.20
Temperature/Humidity Meter	RTS	RTS-8S	AC1-TH	2023.05.19	2024.05.18
Software	Quietek	EMI_V3	V3.0.0	N/A	N/A

### Radiated Emission / AC2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
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EMI Test Receiver	R&S	ESR7	101668	2023.02.04	2024.02.03
Bilog Antenna	Teseq GmbH	CBL6112B	2933	2023.08.19	2024.08.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2023.05.21	2024.05.20
Temperature/Humidity Meter	RTS	RTS-8S	AC2-TH	2023.05.19	2024.05.18
Software	Quietek	EMI_V3	V3.0.0	N/A	N/A

## Radiated Emission / AC3

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100176	2023.05.20	2024.05.19
Bilog Antenna	Teseq GmbH	CBL6112B	2931	2023.05.26	2024.05.25
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC3-C	2023.05.21	2024.05.20
Temperature/Humidity Meter	RTS	RTS-8S	EMC04	2023.05.19	2024.05.18
Software	Quietek	EMI_V3	V3.0.0	N/A	N/A

## Radiated Emission / AC5

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
MXA Signal Analyzer	Keysight	N9020B	MY60112218	2023.11.08	2024.11.07
Pre-Amplifier	SKET	LNPA_0118G-45	SK2021090101	2023.05.14	2024.05.13
DRG Horn Antenna	ETS-Lindgren	3117	00167055	2023.09.16	2024.09.15
Coaxial Cable	Rosenberger	LA1-C011-1000	0523	2023.05.21	2024.05.20
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2023.05.31	2024.05.30
Pre-Amplifier	ChengYi	EMC184045SE	980263	2023.07.09	2024.07.08
Coaxial Cable	ROSENBERGER	LA1-C011-2000/3000	AC5-40G-2	2023.05.21	2024.05.20
Temperature/Humidity Meter	RTS	RTS-8S	AC5-TH	2023.05.19	2024.05.18
Software	Quietek	EMI_V3	V3.0.0	N/A	N/A

## Conducted differential voltage emissions / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100906	2023.08.26	2024.08.25
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2023.05.14	2024.05.13
Coaxial Cable	Suhner	RG 223	TR1-C1	2023.05.14	2024.05.13
Power Divider	Agilent	11636A	10149	2023.12.04	2024.12.03
Temperature/Humidity Meter	RTS	RTS-8S	EMC01	2023.05.19	2024.05.18
Software	Quietek	EMI_V3	V3.0.0	N/A	N/A

## Harmonic current emissions / TR20

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
Proflin 2145 Harmonics & Flicker and power line immunity test system	Teseq GmbH	Proflin 2145	1736A02510, 1646A, 01490, 1736A02428, 1736A00944, A41547	2023.08.26	2024.08.25
Temperature/Humidity	RTS	RTS-8S	HB05-TH	2023.05.19	2024.05.18

Meter					
Software	Teseq GmbH	WIN2105	V2.22	N/A	N/A

## Voltage fluctuations and flicker / TR20

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
Proflin 2145 Harmonics & Flicker and power line immunity test system	Teseq GmbH	Proflin 2145	1736A02510, 1646A, 01490, 1736A02428, 1736A00944, A41547	2023.08.26	2024.08.25
Temperature/Humidity Meter	RTS	RTS-8S	HB05-TH	2023.05.19	2024.05.18
Software	Teseq GmbH	WIN2105	V2.22	N/A	N/A

## Electrostatic discharge / TR21

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
ESD Simulator	EM TEST	Dito	P2143257357	2023.02.16	2024.02.15
ESD Simulator	EM TEST	NSG 438A	237	2023.05.22	2024.05.21
Barometer	Boji	DYM3	02251	2023.03.11	2024.03.10
Temperature/Humidity Meter	RTS	RTS-8S	TR3-TH	2023.05.19	2024.05.18

## Radio-frequency electromagnetic field / AC4

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
Signal Generator	R&S	SMB100A	114728	2023.05.14	2024.05.13
Power Meter	R&S	NRP2	106362	2023.05.20	2024.05.19
Power Sensor	R&S	NRP6A	101411	2023.05.14	2024.05.13
Power Sensor	R&S	NRP6B	101412	2023.05.14	2024.05.13
RF Switch	R&S	OPS120	101944	N/A	N/A
Power Amplifier	R&S	BBA150 BC500	102912	N/A	N/A
Power Amplifier	R&S	BBA150 D200	102889	N/A	N/A
Power Amplifier	R&S	BBA150 E200	102890	N/A	N/A
LOG Antenna	R&S	HL046E	100257	N/A	N/A
Bilog Antenna	Schaffner	CBL6141A	4278	N/A	N/A
Field Probe	AR	FL7006/KIT	350261	2023.03.17	2024.03.16
Audio Analyzer	R&S	UPV	101198	2023.03.04	2024.03.03
Sound Calibration	B&K	4231	3026849	2023.07.10	2024.07.09
Amplifier	MegaSig	PM0043	11403040020 20009	2023.07.20	2024.07.19
Microphone	MegaSig	MA802L	200512010	2023.03.09	2024.03.08
Temperature/Humidity Meter	RTS	RTS-8S	AC4-TH	2023.05.19	2024.05.18
Software	R&S	EMC 32	V10.40.10	N/A	N/A

## Electrical fast transients / TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
Immunity Test System	EMC PARTNER	IMU-MGE	109937-1582	2023.02.25	2024.02.24
EFT clamp	EMC PARTNER	CN-EFT1000	103468-1923	2023.02.25	2024.02.24

Temperature/Humidity Meter	RTS	RTS-8S	TR2-TH	2023.05.19	2024.05.18
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## Surges / TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
Immunity Test System	EMC PARTNER	IMU-MGE	109937-1582	2023.02.25	2024.02.24
Signal Line Coupling Network	EMC PARTNER	CDN-UTP8 ED3	106326-1615	2023.02.25	2024.02.24
Temperature/Humidity Meter	RTS	RTS-8S	TR2-TH	2023.05.19	2024.05.18

## Radio-frequency continuous conducted / TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
RF-Generator	Teseq GmbH	NSG 4070B-80	43711	2023.05.14	2024.05.13
Attenuation	Woken	/	0080CN1006H	2023.03.15	2024.03.14
Coupling / Decoupling Network	TESEQ	CDN M016	59050	2023.05.14	2024.05.13
Coupling / Decoupling Network	TESEQ	CDN M016	59047	2023.05.14	2024.05.13
Coupling / Decoupling Network	Teseq GmbH	CDN T8-10	43764	2023.03.04	2024.03.03
EM Clamp	Schaffner	KEMZ 801	21041	2023.07.05	2024.07.04
Temperature/Humidity Meter	Ruitesi	RTS-8S	TR2-TH	2023.05.19	2024.05.18
Audio Analyzer	R&S	UPV	101198	2023.03.04	2024.03.03
Sound Calibration	B&K	4231	3026849	2023.07.10	2024.07.09
Amplifier	MegaSig	PM0043	1140304002020009	2023.07.20	2024.07.19
Microphone	MegaSig	MA802L	200512010	2023.03.09	2024.03.08

## Voltage dips and interruptions/TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Date	Cali. Due Date
Immunity Test System	EMC PARTNER	IMU-MGE	109937-1582	2023.02.25	2024.02.24
Temperature/Humidity Meter	Ruitesi	RTS-8S	TR2-TH	2023.05.19	2024.05.18

## 2.3 Measurement Uncertainty

Conducted disturbance voltage – AC&DC power port(s) / TR1
<p>The maximum measurement uncertainty is evaluated as:</p> <p>Mains: 9 kHz~30 MHz: 3.05 dB</p>
Conducted disturbance voltage – Wired network port(s) / TR1
<p>The maximum measurement uncertainty is evaluated as:</p> <p>ISN T800: 150 kHz~30 MHz: 3.54 dB</p> <p>ISN T8-Cat6: 150 kHz~30 MHz: 3.54 dB</p> <p>ISN ST08: 150 kHz~30 MHz: 4.06 dB</p>
Conducted disturbance voltage –Antenna port(s) / TR1
<p>The maximum measurement uncertainty is evaluated as:</p> <p>30 MHz-2150 MHz: 4.0 dB</p>
Radiated emission / AC1
<p>The maximum measurement uncertainty is evaluated as:</p> <p>Horizontal: 30 MHz~200 MHz: 4.82 dB</p> <p>200 MHz~1 GHz: 4.38 dB</p> <p>Vertical: 30 MHz~200 MHz: 5.14 dB</p> <p>200 MHz~1 GHz: 4.38 dB</p>
Radiated emission / AC2
<p>The maximum measurement uncertainty is evaluated as:</p> <p>Horizontal: 30 MHz~200 MHz: 4.70 dB</p> <p>200 MHz~1 GHz: 4.36 dB</p> <p>Vertical: 30 MHz~200 MHz: 4.92 dB</p> <p>200 MHz~1 GHz: 4.30 dB</p>
Radiated emission / AC3
<p>The maximum measurement uncertainty is evaluated as:</p> <p>Horizontal: 30 MHz~300 MHz: 4.59 dB</p> <p>300 MHz~1 GHz: 4.13 dB</p> <p>Vertical: 30 MHz~300 MHz: 4.81 dB</p>

300 MHz~1 GHz: 4.15 dB
Radiated emission / AC5
<p>The maximum measurement uncertainty is evaluated as:</p> <p>Horizontal: 1 GHz~18 GHz: 5.20 dB</p> <p>Vertical: 1 GHz~18 GHz: 5.35 dB</p>
Harmonic current emissions / TR20
The maximum measurement uncertainty is evaluated as: 2.10 %.
Voltage fluctuation and flicker / TR20
The maximum measurement uncertainty is evaluated as: 1.80 %.
Electrostatic discharge / TR21
<p>The maximum measurement uncertainty is evaluated as Rise Time: 6.4 %,</p> <p>Peak Current: 6 %, Current at 30 ns: 6 %, Current at 60 ns: 6 %.</p>
Radio frequency electromagnetic field / AC4
The maximum measurement uncertainty is evaluated as 80 MHz-6 GHz:1.48 dB.
Electrical fast transients / TR2
The maximum measurement uncertainty is evaluated as Voltage: 4 %, Time: 2 %.
Surges / TR2
The maximum measurement uncertainty is evaluated as Voltage: 4 %, Time: 2 %.
Radio-frequency continuous conducted / TR2
The maximum measurement uncertainty is evaluated as CDN: 1.52 dB, EM Clamp: 1.92 dB.
Voltage dips and interruptions / TR2
The maximum measurement uncertainty is evaluated as Voltage: 4 %, Time: 2 %.
Transients and surges / TR11
<p>The maximum measurement uncertainty is evaluated as Voltage: Us: 2.04 %, tr: 2.12 %, td:</p> <p>2.28 %</p>

## 2.4 Performance Criteria

The performance criteria are used to take a decision on whether a radio equipment passes or fails immunity tests.

For the purpose of the present document four categories of performance criteria apply:

- Performance criteria for continuous phenomena applied to transmitters and receivers
- Performance criteria for transient phenomena applied to transmitters and receivers
- Performance criteria for equipment which does not provide a continuous communication link
- Performance criteria for ancillary equipment tested on a stand alone basis

Normally, the performance criteria depend on the type of radio equipment. Thus, the present document only contains general performance criteria commonly used for the assessment of radio equipment. More specific and product-related performance criteria for a dedicated type of radio equipment may be found in the part of ETSI EN 301 489 series [i.13] dealing with the particular type of radio equipment.

### **(1) Performance criteria for continuous phenomena applied to transmitters and receivers**

If no further details are given in the relevant part of ETSI EN 301 489 series [i.13] dealing with the particular type of radio equipment, the following general performance criteria for continuous phenomena shall apply.

During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

### **(2) Performance criteria for transient phenomena applied to transmitters and receivers**

If no further details are given in the relevant part of ETSI EN 301 489 series [i.13] dealing with the particular type of radio equipment, the following general performance criteria for transient phenomena shall apply.

For surges applied to symmetrically operated wired network ports intended to be connected directly to outdoor lines the following criteria applies:

- For products with only one symmetrical port intended for connection to outdoor lines, loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A SW reboot is not allowed. Information stored in non-volatile memory, or protected by a Battery backup, shall not be lost.

- For products with more than one symmetrical port intended for connection to outdoor lines, loss of function on the port under test is allowed, provided the function is self-recoverable. A SW reboot is not allowed. Information stored in non-volatile memory, or protected by a Battery backup, shall not be lost.

For all other ports the following applies:

- After the test, the equipment shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the equipment is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.
- During the EMC exposure to an electromagnetic phenomenon, a degradation of performance is, however, allowed. No change of the actual mode of operation (e.g. unintended transmission) or stored data is allowed.
- If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

### **(3) Performance criteria for equipment which does not provide a continuous communication link**

For radio equipment which does not provide a continuous communication link, the performance criteria described in clauses 6.1 and 6.2 are not appropriate, in these cases the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses 6.1 and 6.2.

### **(4) Performance criteria for ancillary equipment tested on a stand alone basis**

If ancillary equipment is intended to be tested on a stand alone basis, the performance criteria described in clauses 6.1 and 6.2 are not appropriate, in these cases the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses 6.1 and 6.2.

**General performance criteria**

The performance criteria are:

- performance criteria A for immunity tests with phenomena of a continuous nature;
- performance criteria B for immunity tests with phenomena of a transient nature;
- performance criteria C for immunity tests with Power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following clauses.

**Performance criteria for Continuous phenomena applied to Transmitters (CT)**

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

**Performance criteria for Transient phenomena applied to Transmitters (TT)**

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

**Performance criteria for Continuous phenomena applied to Receivers (CR)**

The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

**Performance criteria for Transient phenomena applied to Receivers (TR)**

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration for which performance criteria C shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.



Performance criteria		
Criteria	During Test	After test
A	Shall operate as intended (see note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (see note 3) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (see note 2) Shall be no unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (see note 3) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (see note 3)

NOTE 1: Operate as intended during the test allows a level of degradation not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2: Degradation of performance during the test is understood as degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 3: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.



Limits of conducted emission for DC Power input/output ports		
Frequency range MHz	Limits dB(μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
NOTE 1: The lower limit shall apply at the transition frequencies. NOTE 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		
Equipment intended to be used in telecommunication centres only		
Frequency range MHz	Limits dB(μV)	
	Quasi-peak	Average
0.15 to 0.50	79	66
0.50 to 30	73	60
NOTE: The lower limit shall apply at the transition frequency.		

Limits of conducted emission for DC Power input/output ports

### 3.4 Test Procedure

The EUT and simulators are connected to the main Power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main Power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

(Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.

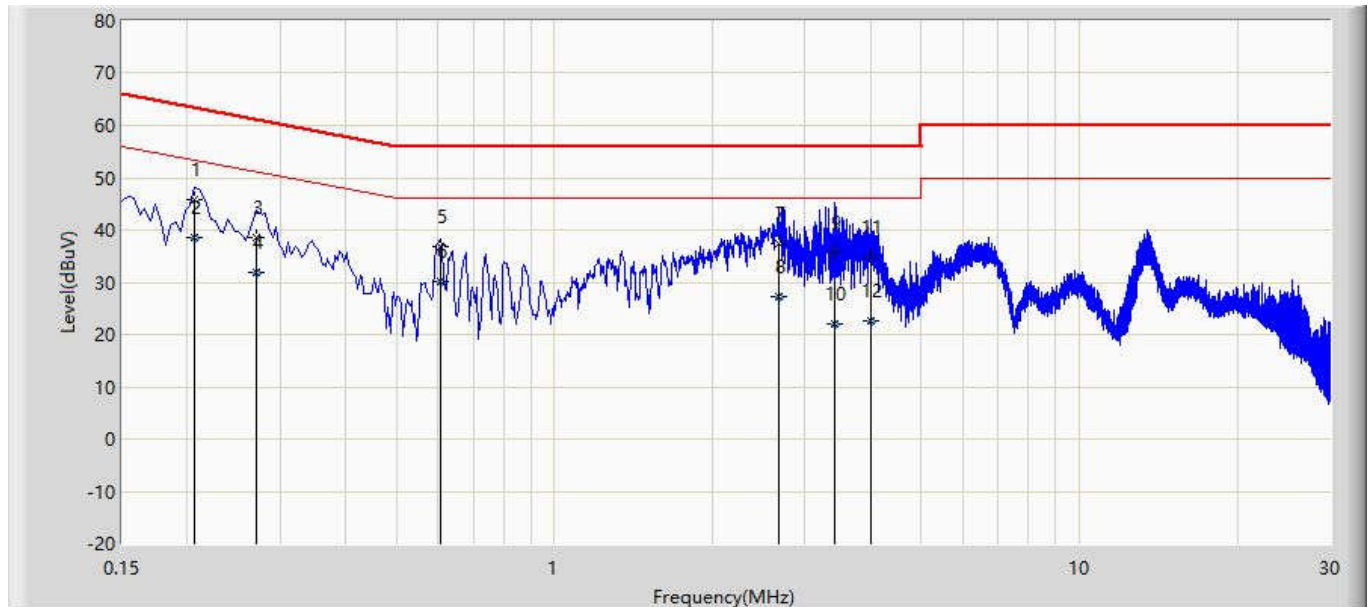
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 3.5 Deviation from Test Standard

No deviation

### 3.6 Test Result

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_Mains_Class B	Margin: 0
Probe: ENV216_101189(0.009-30MHz)	Polarity: Line
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 2	

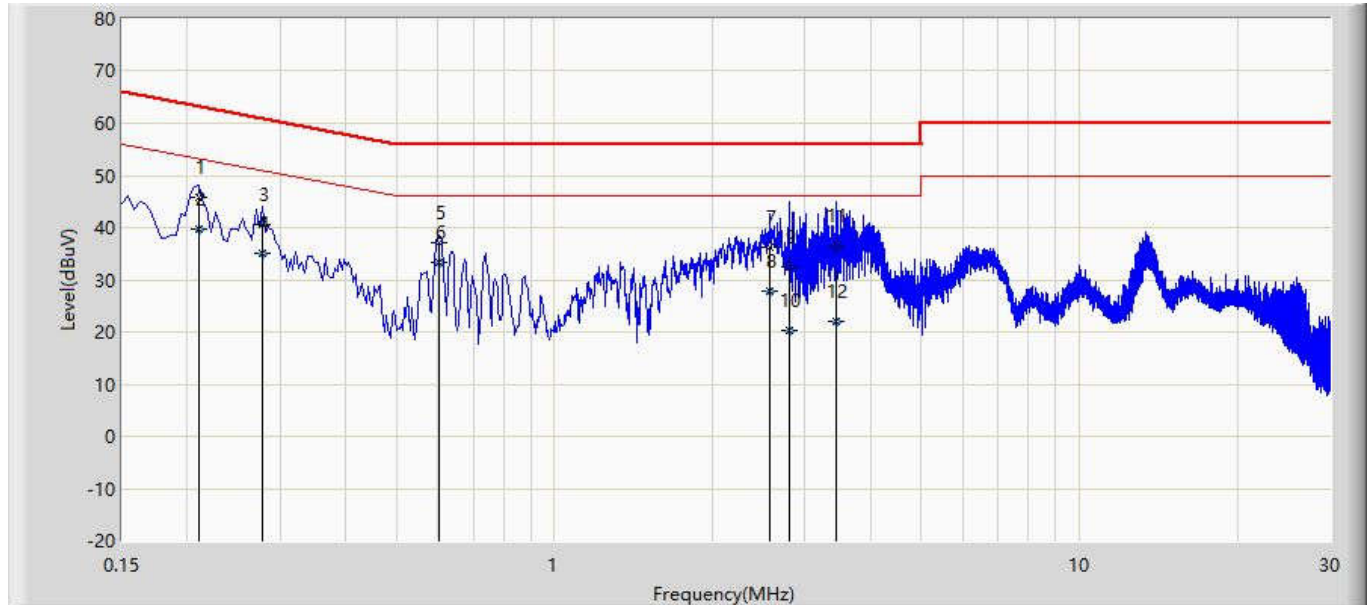


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.206	45.901	36.277	-17.465	63.365	9.560	0.063	0.000	QP
2	*	0.206	38.488	28.865	-14.877	53.365	9.560	0.063	0.000	AV
3		0.270	38.612	28.986	-22.506	61.118	9.560	0.066	0.000	QP
4		0.270	31.857	22.231	-19.261	51.118	9.560	0.066	0.000	AV
5		0.606	36.754	27.112	-19.246	56.000	9.560	0.081	0.000	QP
6		0.606	30.273	20.632	-15.727	46.000	9.560	0.081	0.000	AV
7		2.666	37.445	27.734	-18.555	56.000	9.570	0.141	0.000	QP
8		2.666	27.271	17.559	-18.729	46.000	9.570	0.141	0.000	AV
9		3.418	35.733	26.004	-20.267	56.000	9.572	0.156	0.000	QP
10		3.418	22.152	12.423	-23.848	46.000	9.572	0.156	0.000	AV
11		4.010	34.726	24.986	-21.274	56.000	9.575	0.165	0.000	QP
12		4.010	22.733	12.993	-23.267	46.000	9.575	0.165	0.000	AV

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_Mains_Class B	Margin: 0
Probe: ENV216_101189(0.009-30MHz)	Polarity: Neutral
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 2	

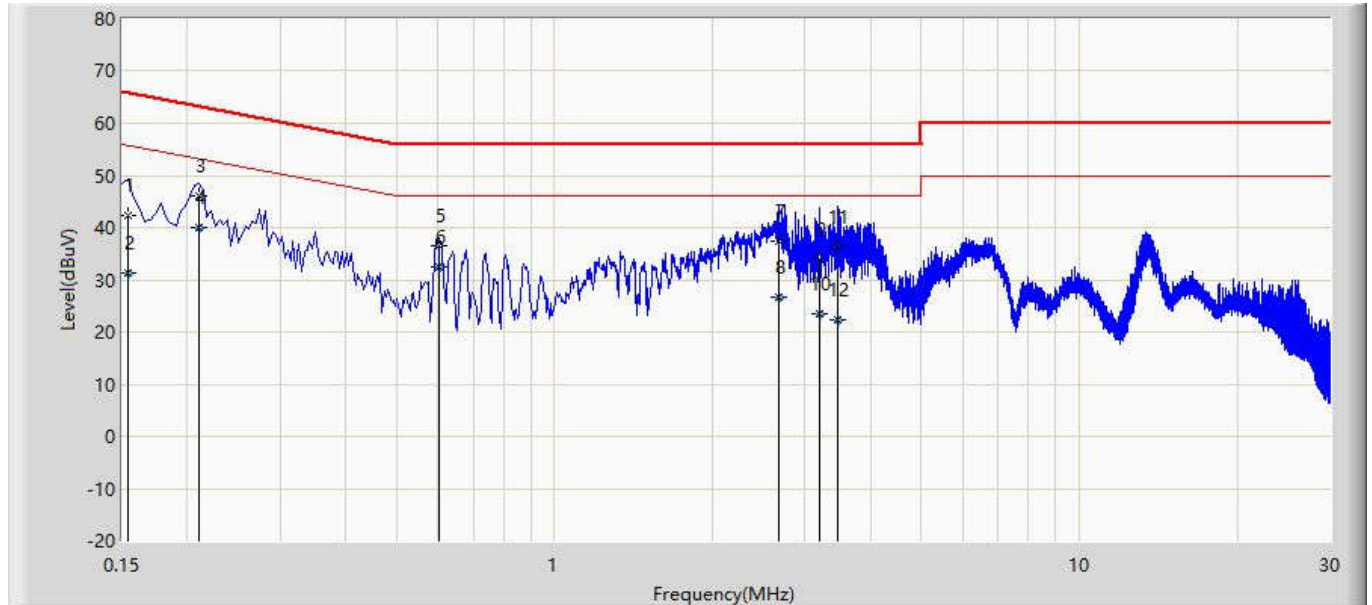


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.210	45.801	36.168	-17.404	63.205	9.570	0.063	0.000	QP
2		0.210	39.815	30.182	-13.390	53.205	9.570	0.063	0.000	AV
3		0.278	40.679	31.043	-20.197	60.875	9.570	0.066	0.000	QP
4		0.278	35.214	25.577	-15.662	50.875	9.570	0.066	0.000	AV
5		0.602	37.115	27.464	-18.885	56.000	9.570	0.081	0.000	QP
6	*	0.602	33.231	23.580	-12.769	46.000	9.570	0.081	0.000	AV
7		2.570	36.305	26.590	-19.695	56.000	9.576	0.139	0.000	QP
8		2.570	27.915	18.200	-18.085	46.000	9.576	0.139	0.000	AV
9		2.802	32.550	22.827	-23.450	56.000	9.578	0.145	0.000	QP
10		2.802	20.227	10.504	-25.773	46.000	9.578	0.145	0.000	AV
11		3.434	36.642	26.903	-19.358	56.000	9.582	0.157	0.000	QP
12		3.434	21.980	12.241	-24.020	46.000	9.582	0.157	0.000	AV

**Note:**

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_Mains_Class B	Margin: 0
Probe: ENV216_101189(0.009-30MHz)	Polarity: Line
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 3	

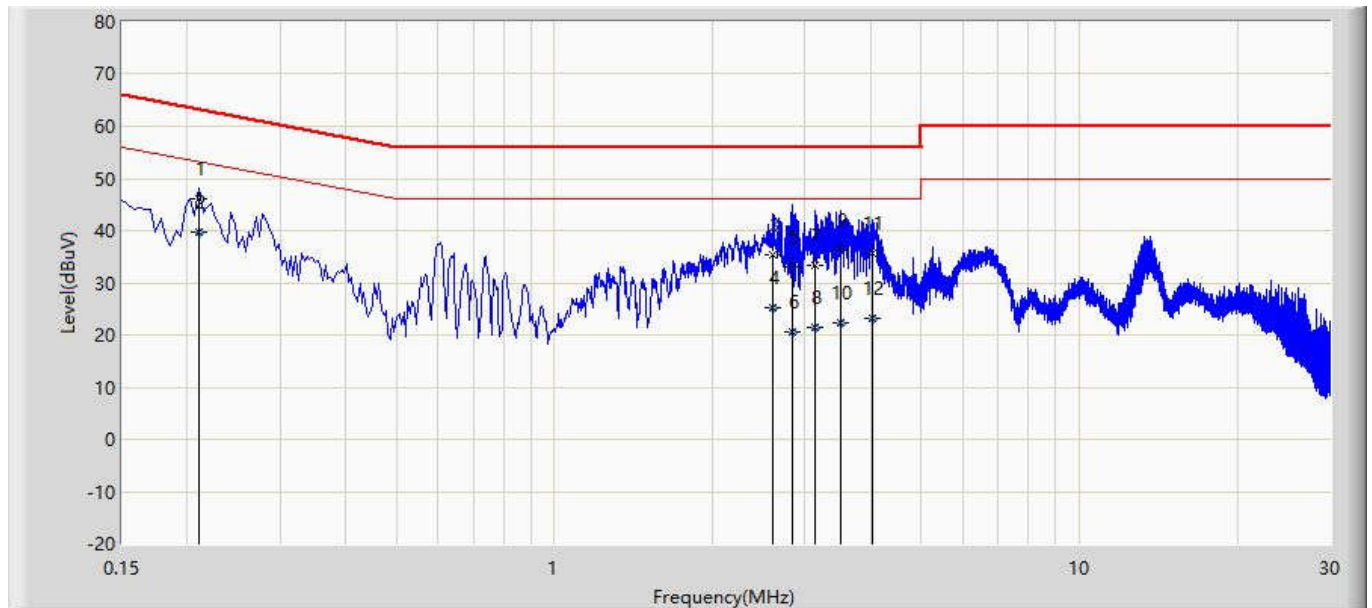


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.154	42.301	32.676	-23.481	65.781	9.564	0.060	0.000	QP
2		0.154	31.247	21.622	-24.535	55.781	9.564	0.060	0.000	AV
3		0.210	46.221	36.598	-16.984	63.205	9.560	0.063	0.000	QP
4	*	0.210	39.925	30.301	-13.281	53.205	9.560	0.063	0.000	AV
5		0.602	36.407	26.766	-19.593	56.000	9.560	0.081	0.000	QP
6		0.602	32.479	22.838	-13.521	46.000	9.560	0.081	0.000	AV
7		2.670	37.327	27.616	-18.673	56.000	9.570	0.141	0.000	QP
8		2.670	26.539	16.828	-19.461	46.000	9.570	0.141	0.000	AV
9		3.194	33.919	24.195	-22.081	56.000	9.571	0.153	0.000	QP
10		3.194	23.615	13.891	-22.385	46.000	9.571	0.153	0.000	AV
11		3.466	36.092	26.363	-19.908	56.000	9.572	0.157	0.000	QP
12		3.466	22.461	12.732	-23.539	46.000	9.572	0.157	0.000	AV

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_Mains_Class B	Margin: 0
Probe: ENV216_101189(0.009-30MHz)	Polarity: Neutral
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 3	



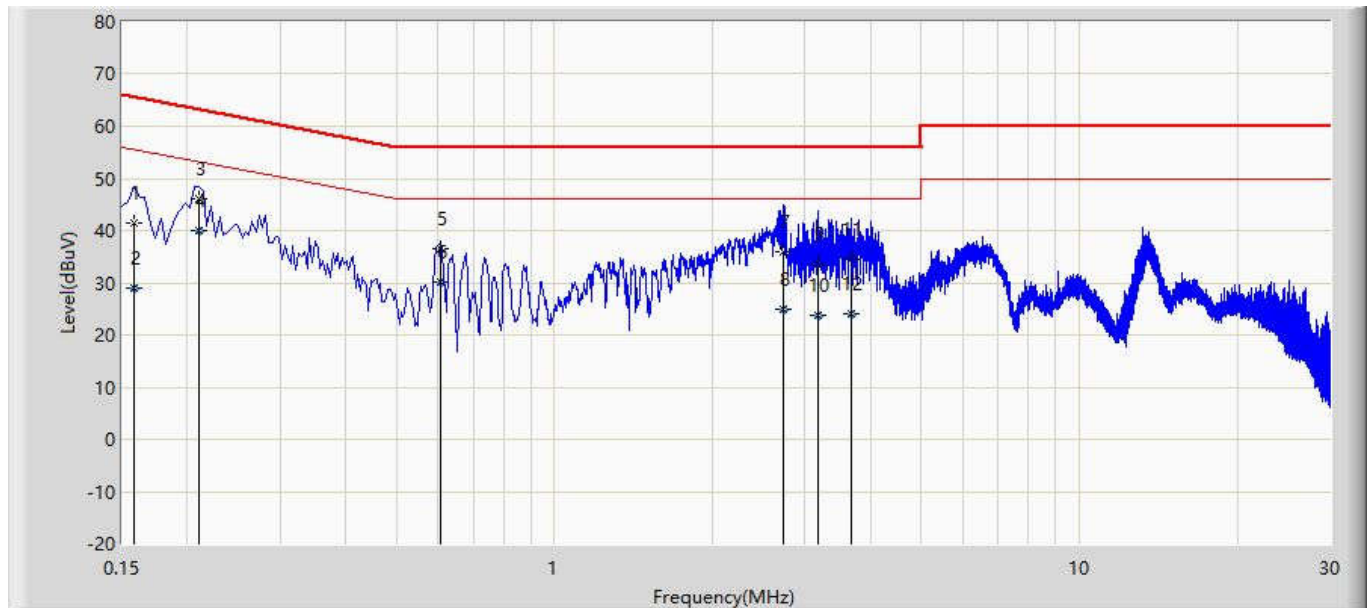
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.210	46.074	36.441	-17.132	63.205	9.570	0.063	0.000	QP
2	*	0.210	39.816	30.183	-13.389	53.205	9.570	0.063	0.000	AV
3		2.606	35.250	25.534	-20.750	56.000	9.576	0.140	0.000	QP
4		2.606	25.080	15.364	-20.920	46.000	9.576	0.140	0.000	AV
5		2.830	33.089	23.365	-22.911	56.000	9.578	0.146	0.000	QP
6		2.830	20.591	10.867	-25.409	46.000	9.578	0.146	0.000	AV
7		3.126	33.439	23.706	-22.561	56.000	9.581	0.152	0.000	QP
8		3.126	21.426	11.693	-24.574	46.000	9.581	0.152	0.000	AV
9		3.506	36.217	26.477	-19.783	56.000	9.583	0.157	0.000	QP
10		3.506	22.458	12.718	-23.542	46.000	9.583	0.157	0.000	AV
11		4.026	35.725	25.975	-20.275	56.000	9.585	0.165	0.000	QP
12		4.026	23.095	13.345	-22.905	46.000	9.585	0.165	0.000	AV

**Note:**

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).



Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_Mains_Class B	Margin: 0
Probe: ENV216_101189(0.009-30MHz)	Polarity: Line
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 6	

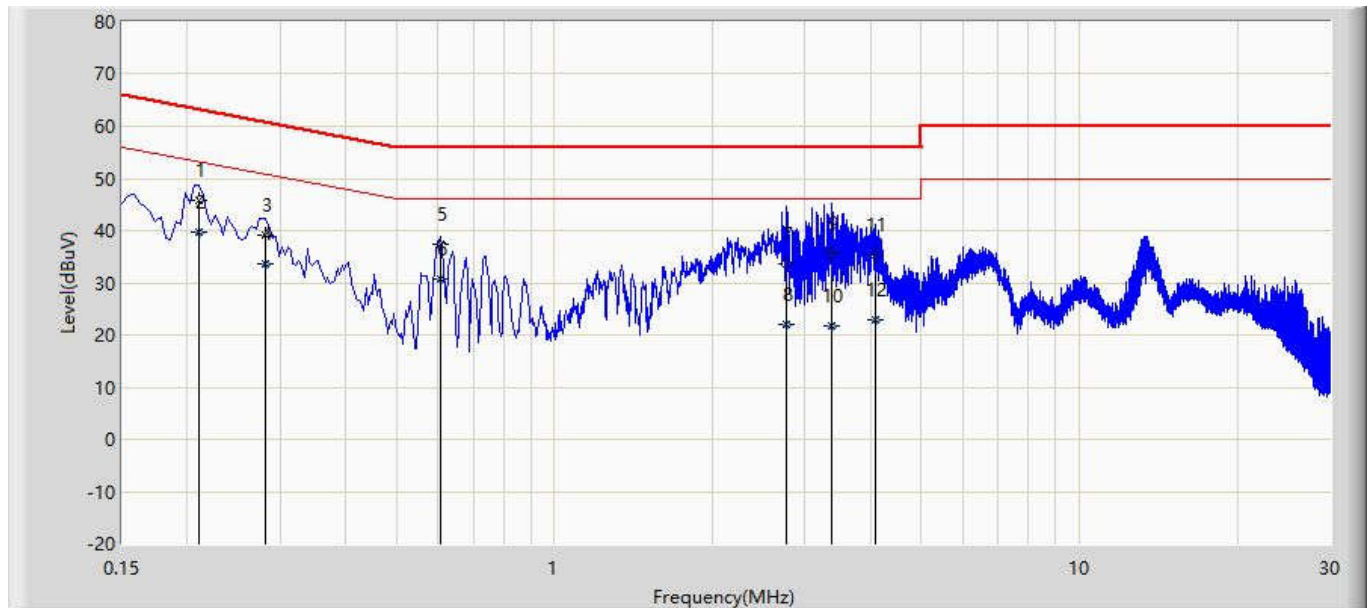


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.158	41.366	31.742	-24.202	65.568	9.564	0.060	0.000	QP
2		0.158	29.128	19.504	-26.440	55.568	9.564	0.060	0.000	AV
3		0.210	46.121	36.497	-17.085	63.205	9.560	0.063	0.000	QP
4	*	0.210	39.885	30.262	-13.320	53.205	9.560	0.063	0.000	AV
5		0.606	36.554	26.913	-19.446	56.000	9.560	0.081	0.000	QP
6		0.606	30.176	20.535	-15.824	46.000	9.560	0.081	0.000	AV
7		2.726	35.888	26.175	-20.112	56.000	9.570	0.143	0.000	QP
8		2.726	24.922	15.208	-21.078	46.000	9.570	0.143	0.000	AV
9		3.182	33.751	24.027	-22.249	56.000	9.571	0.153	0.000	QP
10		3.182	23.677	13.954	-22.323	46.000	9.571	0.153	0.000	AV
11		3.678	34.355	24.621	-21.645	56.000	9.573	0.160	0.000	QP
12		3.678	24.128	14.394	-21.872	46.000	9.573	0.160	0.000	AV

**Note:**

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_Mains_Class B	Margin: 0
Probe: ENV216_101189(0.009-30MHz)	Polarity: Neutral
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 6	

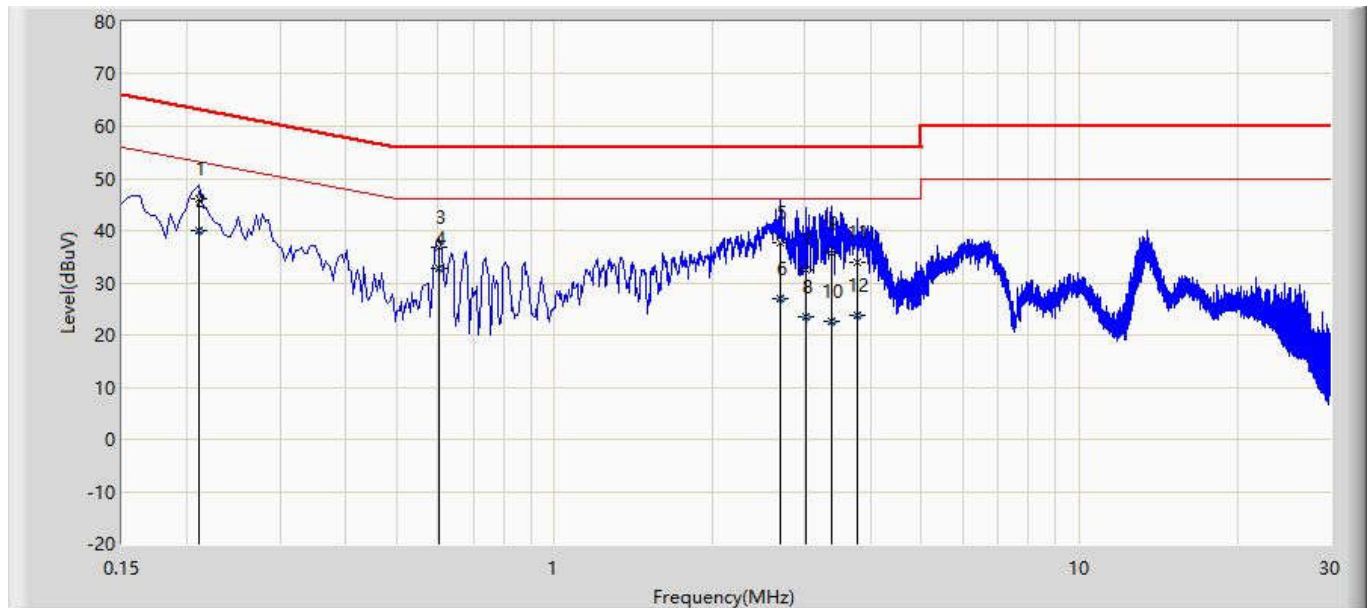


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.210	45.784	36.151	-17.421	63.205	9.570	0.063	0.000	QP
2	*	0.210	39.834	30.201	-13.371	53.205	9.570	0.063	0.000	AV
3		0.282	39.015	29.379	-21.742	60.757	9.570	0.066	0.000	QP
4		0.282	33.763	24.127	-16.993	50.757	9.570	0.066	0.000	AV
5		0.606	37.249	27.598	-18.751	56.000	9.570	0.081	0.000	QP
6		0.606	30.769	21.118	-15.231	46.000	9.570	0.081	0.000	AV
7		2.770	33.497	23.775	-22.503	56.000	9.578	0.144	0.000	QP
8		2.770	21.996	12.274	-24.004	46.000	9.578	0.144	0.000	AV
9		3.374	35.726	25.988	-20.274	56.000	9.582	0.156	0.000	QP
10		3.374	21.672	11.934	-24.328	46.000	9.582	0.156	0.000	AV
11		4.074	35.476	25.725	-20.524	56.000	9.585	0.166	0.000	QP
12		4.074	22.855	13.104	-23.145	46.000	9.585	0.166	0.000	AV

## Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_Mains_Class B	Margin: 0
Probe: ENV216_101189(0.009-30MHz)	Polarity: Line
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 8	

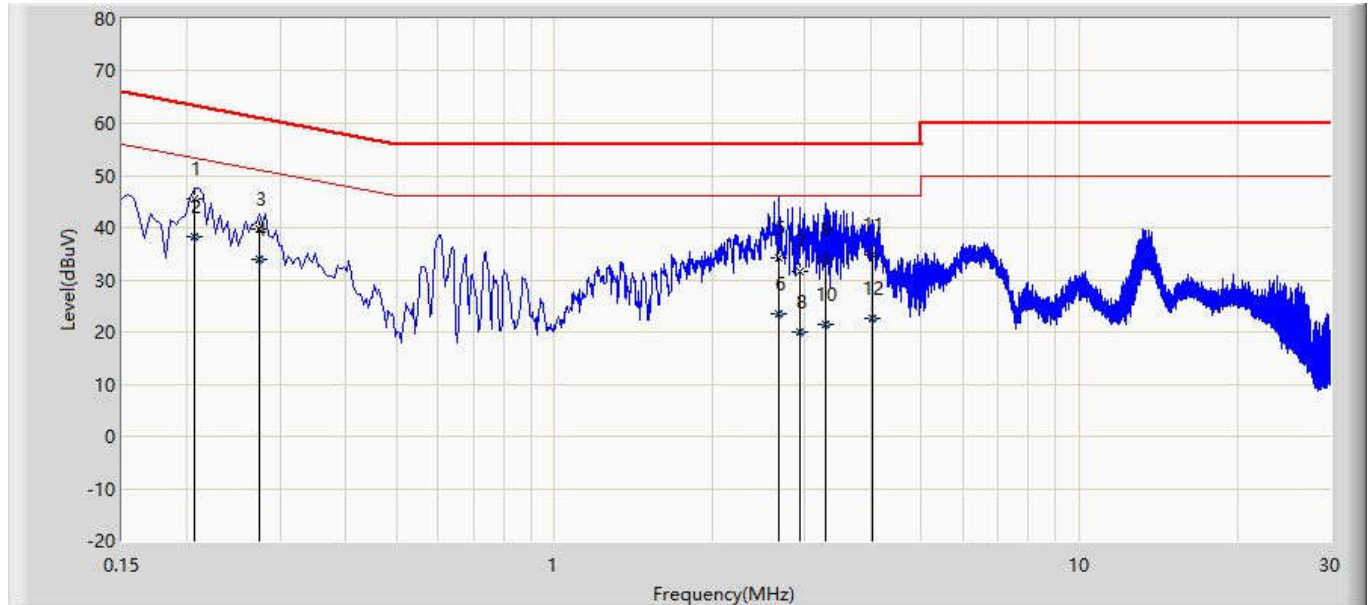


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.210	45.991	36.368	-17.214	63.205	9.560	0.063	0.000	QP
2		0.210	39.941	30.318	-13.264	53.205	9.560	0.063	0.000	AV
3		0.602	36.802	27.161	-19.198	56.000	9.560	0.081	0.000	QP
4	*	0.602	32.889	23.248	-13.111	46.000	9.560	0.081	0.000	AV
5		2.686	37.645	27.933	-18.355	56.000	9.570	0.142	0.000	QP
6		2.686	26.882	17.170	-19.118	46.000	9.570	0.142	0.000	AV
7		3.018	32.591	22.871	-23.409	56.000	9.570	0.150	0.000	QP
8		3.018	23.390	13.670	-22.610	46.000	9.570	0.150	0.000	AV
9		3.366	35.615	25.888	-20.385	56.000	9.572	0.156	0.000	QP
10		3.366	22.615	12.887	-23.385	46.000	9.572	0.156	0.000	AV
11		3.766	33.892	24.157	-22.108	56.000	9.574	0.161	0.000	QP
12		3.766	23.869	14.134	-22.131	46.000	9.574	0.161	0.000	AV

## Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_Mains_Class B	Margin: 0
Probe: ENV216_101189(0.009-30MHz)	Polarity: Neutral
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 8	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.206	45.484	35.852	-17.881	63.365	9.570	0.063	0.000	QP
2	*	0.206	38.376	28.743	-14.989	53.365	9.570	0.063	0.000	AV
3		0.274	39.640	30.004	-21.356	60.996	9.570	0.066	0.000	QP
4		0.274	33.893	24.256	-17.103	50.996	9.570	0.066	0.000	AV
5		2.678	34.334	24.615	-21.666	56.000	9.577	0.142	0.000	QP
6		2.678	23.374	13.655	-22.626	46.000	9.577	0.142	0.000	AV
7		2.938	31.727	21.999	-24.273	56.000	9.579	0.148	0.000	QP
8		2.938	19.966	10.239	-26.034	46.000	9.579	0.148	0.000	AV
9		3.282	34.050	24.315	-21.950	56.000	9.581	0.154	0.000	QP
10		3.282	21.387	11.652	-24.613	46.000	9.581	0.154	0.000	AV
11		4.026	34.869	25.119	-21.131	56.000	9.585	0.165	0.000	QP
12		4.026	22.577	12.827	-23.423	46.000	9.585	0.165	0.000	AV

## Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

### 3.7 Test Photograph

Test Mode: Mode 2,3,6,8

Description: Front View of Conducted emission Test Setup



Test Mode: Mode 2,3,6,8

Description: Side View of Conducted emission Test Setup







Equipment intended to be used in telecommunication centres only				
Frequency range MHz	Voltage Limits dB(μV)		Current limits dB(μA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 to 0.50	97 to 87	84 to 74	53 to 43	40 to 30
0.50 to 30	87	74	43	30

NOTE 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

NOTE 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is  $20 \log_{10} 150 / I = 44\text{dB}$ ).

#### 4.4 Test Procedure

Telecommunication Port:

The mains voltage shall be supplied to the EUT via the LISN when the measurement of telecommunication port is performed. The common mode disturbances at the telecommunication port shall be connected to the ISN, which is 150 ohm impedance.

Both alternative cables are tested related to the LCL requested. The measurement range is from 150kHz to 30MHz. The bandwidth of measurement is set to 9kHz.

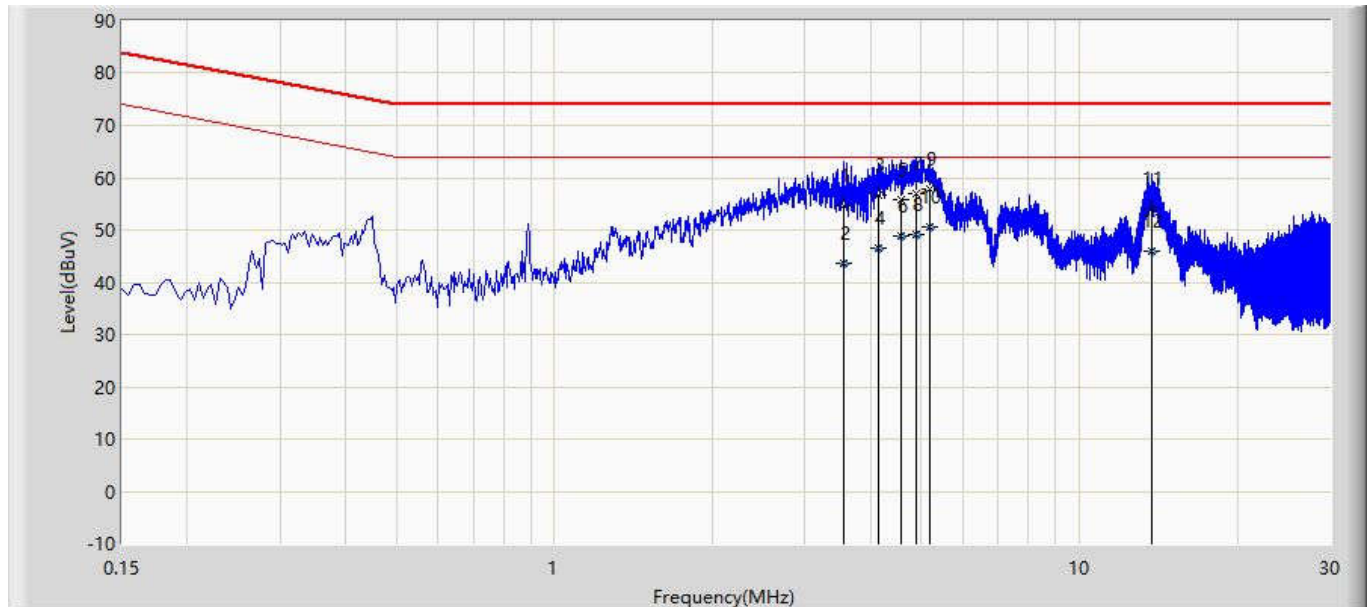
The 75dB LCL ISN is used for cat. 6 cable, the 65dB LCL ISN is used for cat. 5 cable, 55dB LCL ISN is used for cat. 5e.

#### 4.5 Deviation from Test Standard

No deviation.

#### 4.6 Test Result

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_ISN (Voltage)_Class B	Margin: 0
Probe: ISN-T800_57318(0.15-30MHz)	Polarity:
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 2-LAN:1000 Mbps	



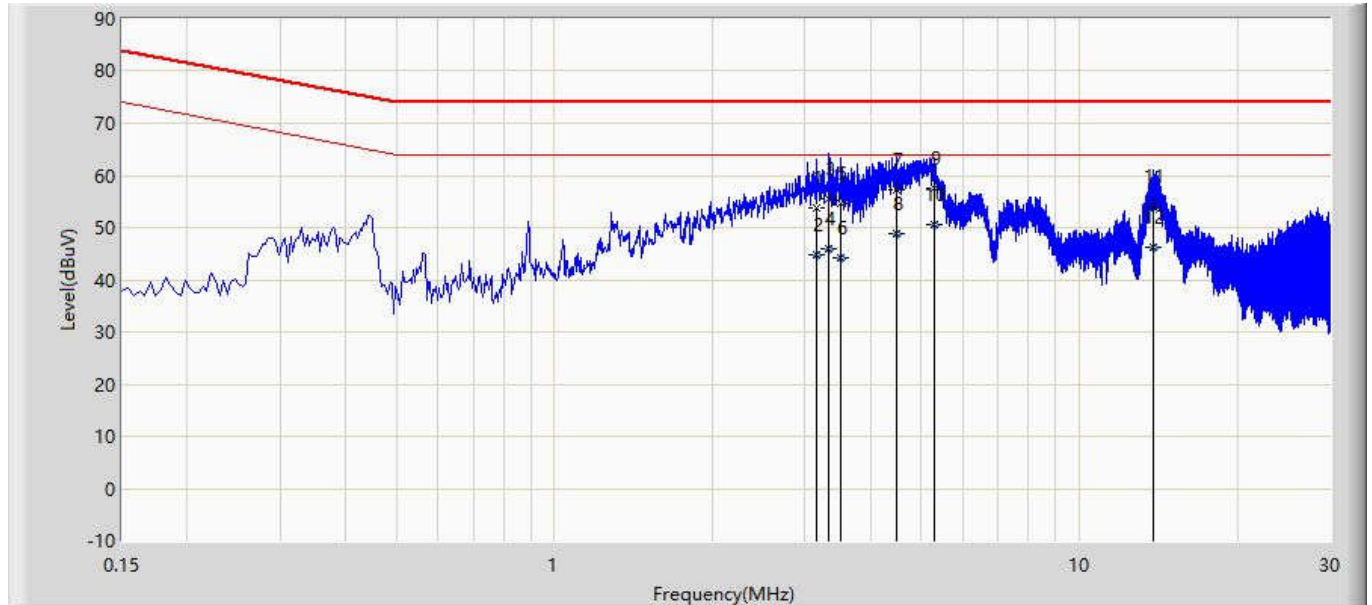
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		3.566	54.505	44.998	-19.495	74.000	9.349	0.158	0.000	QP
2		3.566	43.530	34.023	-20.470	64.000	9.349	0.158	0.000	AV
3		4.130	56.600	47.095	-17.400	74.000	9.338	0.167	0.000	QP
4		4.130	46.555	37.051	-17.445	64.000	9.338	0.167	0.000	AV
5		4.574	55.819	46.317	-18.181	74.000	9.329	0.174	0.000	QP
6		4.574	48.763	39.260	-15.237	64.000	9.329	0.174	0.000	AV
7		4.882	57.023	47.523	-16.977	74.000	9.322	0.178	0.000	QP
8		4.882	49.117	39.617	-14.883	64.000	9.322	0.178	0.000	AV
9		5.182	57.894	48.393	-16.106	74.000	9.318	0.183	0.000	QP
10	*	5.182	50.621	41.120	-13.379	64.000	9.318	0.183	0.000	AV
11		13.726	54.143	44.569	-19.857	74.000	9.290	0.284	0.000	QP
12		13.726	46.030	36.456	-17.970	64.000	9.290	0.284	0.000	AV

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).



Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_ISN (Voltage)_Class B	Margin: 0
Probe: ISN-T800_57318(0.15-30MHz)	Polarity:
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 3-LAN:1000 Mbps	

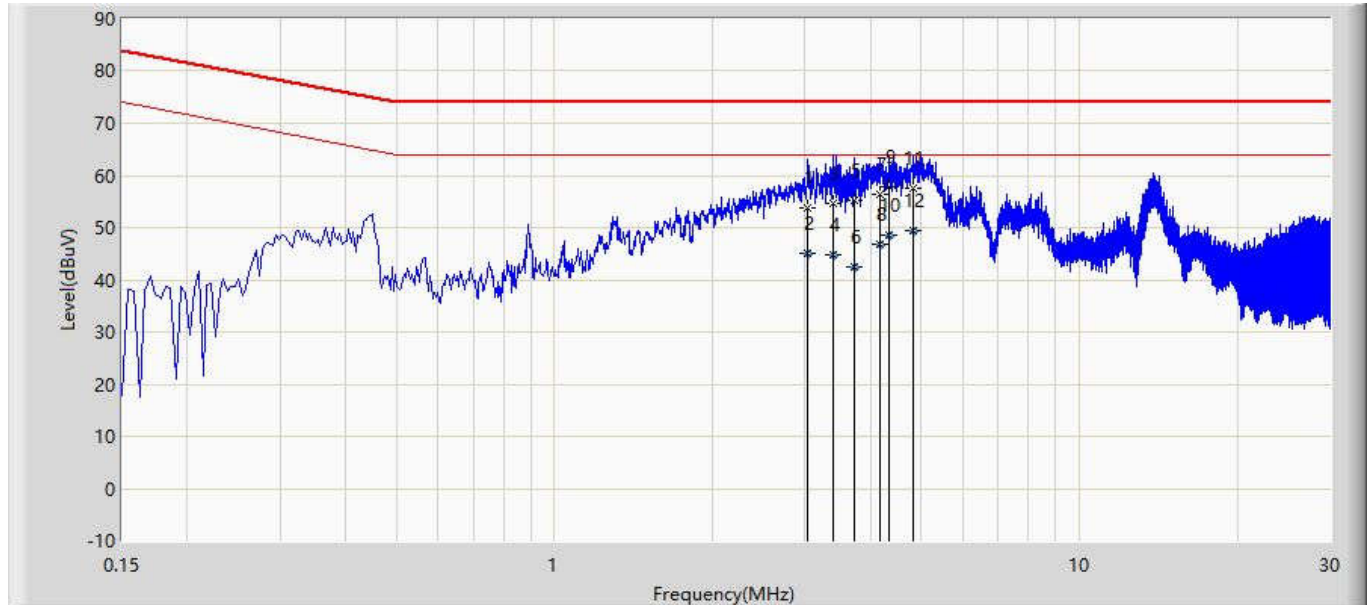


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		3.150	53.714	44.205	-20.286	74.000	9.357	0.152	0.000	QP
2		3.150	44.780	35.271	-19.220	64.000	9.357	0.152	0.000	AV
3		3.322	55.583	46.074	-18.417	74.000	9.354	0.155	0.000	QP
4		3.322	45.975	36.466	-18.025	64.000	9.354	0.155	0.000	AV
5		3.518	54.654	45.146	-19.346	74.000	9.350	0.158	0.000	QP
6		3.518	44.222	34.714	-19.778	64.000	9.350	0.158	0.000	AV
7		4.478	57.169	47.667	-16.831	74.000	9.330	0.172	0.000	QP
8		4.478	48.882	39.380	-15.118	64.000	9.330	0.172	0.000	AV
9		5.274	57.528	48.028	-16.472	74.000	9.317	0.184	0.000	QP
10	*	5.274	50.610	41.109	-13.390	64.000	9.317	0.184	0.000	AV
11		13.866	54.110	44.536	-19.890	74.000	9.290	0.284	0.000	QP
12		13.866	46.319	36.745	-17.681	64.000	9.290	0.284	0.000	AV

**Note:**

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_ISN (Voltage)_Class B	Margin: 0
Probe: ISN-T800_57318(0.15-30MHz)	Polarity:
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 6-LAN:1000 Mbps	

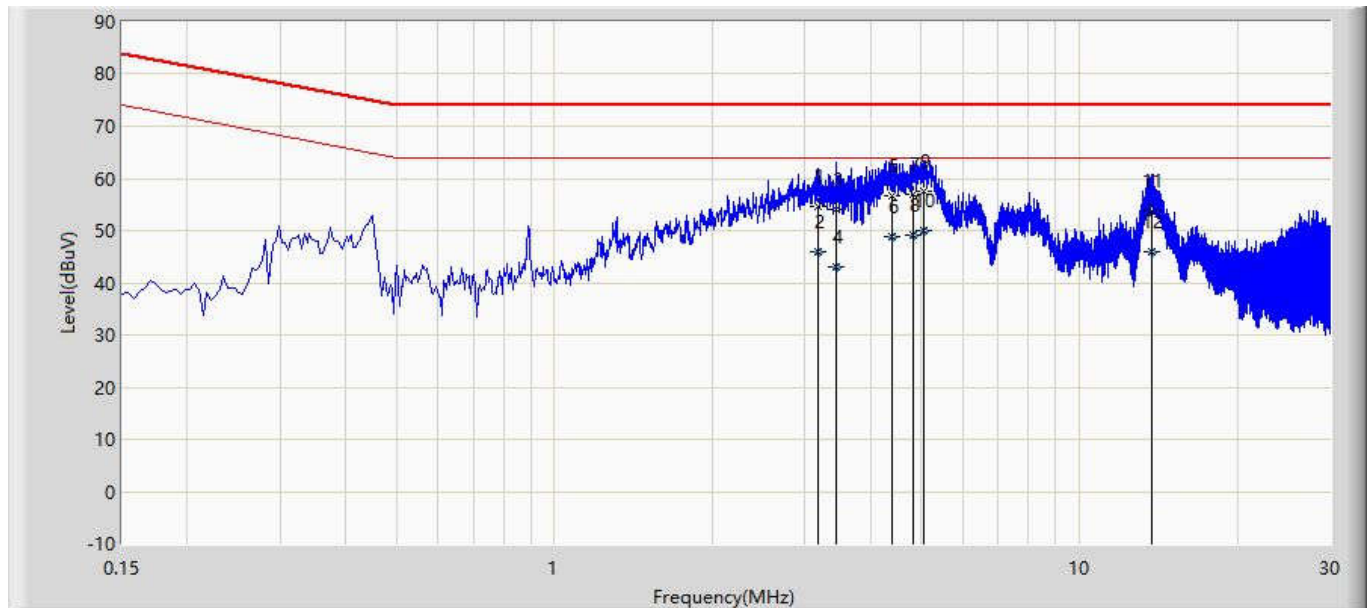


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		3.042	53.835	44.325	-20.165	74.000	9.359	0.151	0.000	QP
2		3.042	45.112	35.602	-18.888	64.000	9.359	0.151	0.000	AV
3		3.390	54.568	45.059	-19.432	74.000	9.352	0.156	0.000	QP
4		3.390	44.724	35.216	-19.276	64.000	9.352	0.156	0.000	AV
5		3.726	55.153	45.646	-18.847	74.000	9.345	0.161	0.000	QP
6		3.726	42.581	33.075	-21.419	64.000	9.345	0.161	0.000	AV
7		4.158	56.391	46.887	-17.609	74.000	9.337	0.167	0.000	QP
8		4.158	46.847	37.343	-17.153	64.000	9.337	0.167	0.000	AV
9		4.334	57.700	48.197	-16.300	74.000	9.333	0.170	0.000	QP
10		4.334	48.417	38.914	-15.583	64.000	9.333	0.170	0.000	AV
11		4.826	57.420	47.919	-16.580	74.000	9.323	0.178	0.000	QP
12	*	4.826	49.528	40.027	-14.472	64.000	9.323	0.178	0.000	AV

## Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: TR1	Time: 2024/01/12
Limit: EN 55032_CE_ISN (Voltage)_Class B	Margin: 0
Probe: ISN-T800_57318(0.15-30MHz)	Polarity:
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 8-LAN:1000 Mbps	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		3.178	54.775	45.266	-19.225	74.000	9.357	0.152	0.000	QP
2		3.178	45.911	36.402	-18.089	64.000	9.357	0.152	0.000	AV
3		3.438	54.050	44.542	-19.950	74.000	9.351	0.157	0.000	QP
4		3.438	43.140	33.632	-20.860	64.000	9.351	0.157	0.000	AV
5		4.406	56.769	47.266	-17.231	74.000	9.332	0.171	0.000	QP
6		4.406	48.819	39.316	-15.181	64.000	9.332	0.171	0.000	AV
7		4.818	57.092	47.591	-16.908	74.000	9.324	0.177	0.000	QP
8		4.818	49.178	39.677	-14.822	64.000	9.324	0.177	0.000	AV
9		5.054	57.472	47.971	-16.528	74.000	9.320	0.181	0.000	QP
10	*	5.054	50.006	40.505	-13.994	64.000	9.320	0.181	0.000	AV
11		13.758	53.707	44.133	-20.293	74.000	9.290	0.284	0.000	QP
12		13.758	46.023	36.449	-17.977	64.000	9.290	0.284	0.000	AV

**Note:**

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

#### 4.7 Test Photograph

Test Mode: Mode 2,3,6,8

Description: Front View of ISN Test Setup



Test Mode: Mode 2,3,6,8

Description: Side View of ISN Test Setup

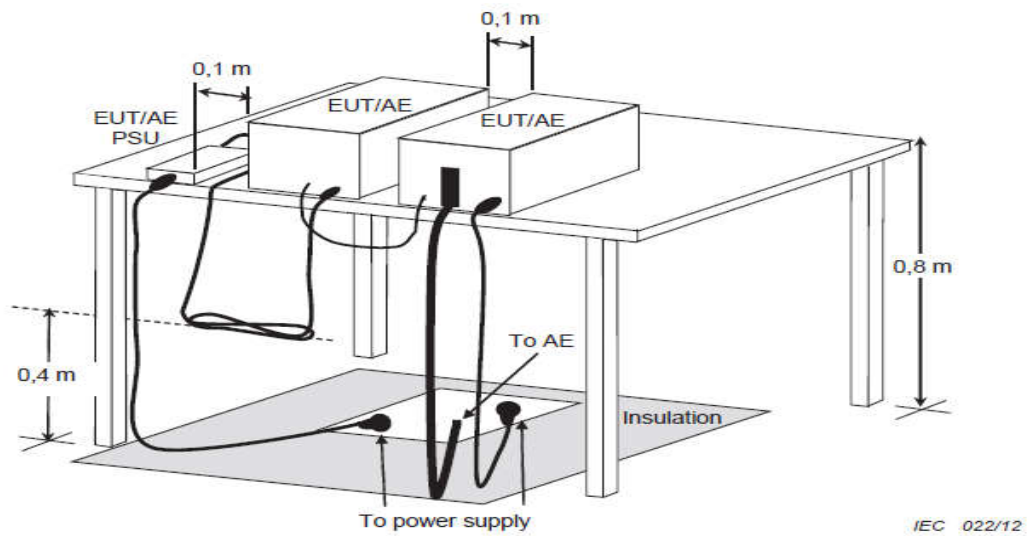


## 5 Radiated emission

### 5.1 Test Specification

According to EMC Standard: EN 55032:2015+A11:2020

### 5.2 Test Setup



### 5.3 Limit

#### Limits below 1GHz

Limits for radiated emission at a measuring distance of 10m	
Frequency range MHz	Quasi-peak limits dB(μV/m)
30 to 230	30
230 to 1000	37
NOTE 1: The lower limit shall apply at the transition frequency.	
NOTE 2: Additional provisions may be required for cases where interference occurs.	

#### Limits above 1GHz

Limits for radiated emission at a measuring distance of 3m		
Frequency range GHz	Average limit dB(μV/m)	Peak-peak dB(μV/m)
1 to 3	50	70
3 to 6	54	74
NOTE: The lower limit applies at transition frequency.		
Ancillary equipment intended to be used in telecommunication centres only		
Frequency range GHz	Average limit dB(μV/m)	Peak-peak dB(μV/m)
1 to 3	56	76
3 to 6	60	80
NOTE: The lower limit applies at transition frequency.		

## 5.4 Test Procedure

The EUT and its simulators are placed on a turntable which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3/10 meters.

The antenna move up and down between 1 meter and 4 meters to find out the maximum emission level.

All cable leaving the table-top EUT for a connection outside the test site (for example, mains cable, telephone lines, connections to auxiliary equipment located outside the test area) shall be fitted with ferrite clamps placed on the floor at the point where the cable reached the floor. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

Radiated emissions were investigated over the frequency range from 30MHz to 1GHz using a receiver bandwidth of 120kHz and above 1GHz using a receiver bandwidth of 1MHz.

30MHz to 1GHz Radiated was performed at an antenna to EUT distance of 10 meters.

Above 1GHz Radiated was performed at an antenna to EUT distance of 3 meters.

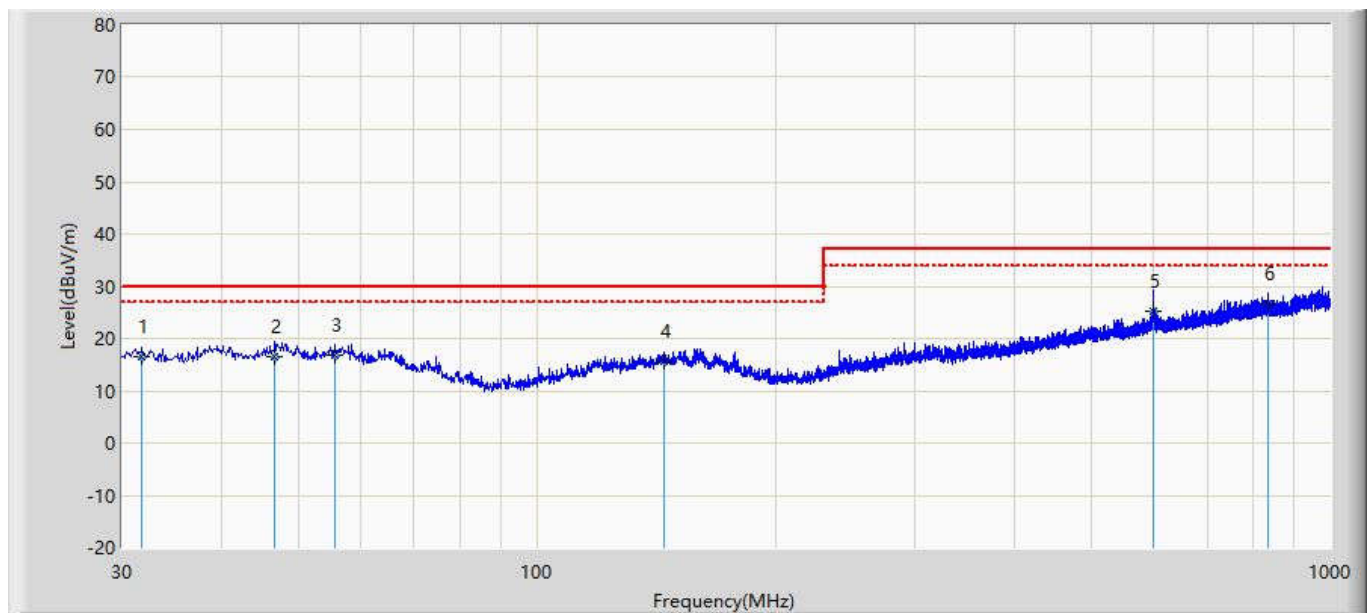
## 5.5 Deviation from Test Standard

No deviation.



## 5.6 Test Result

Engineer: Lawrence Wang	
Site: AC1	Time: 2024/01/15
Limit: EN 55032_RE (10m)_Class B	Margin: 3
Probe: VULB9168_01099(30-1000MHz)	Polarity: Horizontal
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 2	



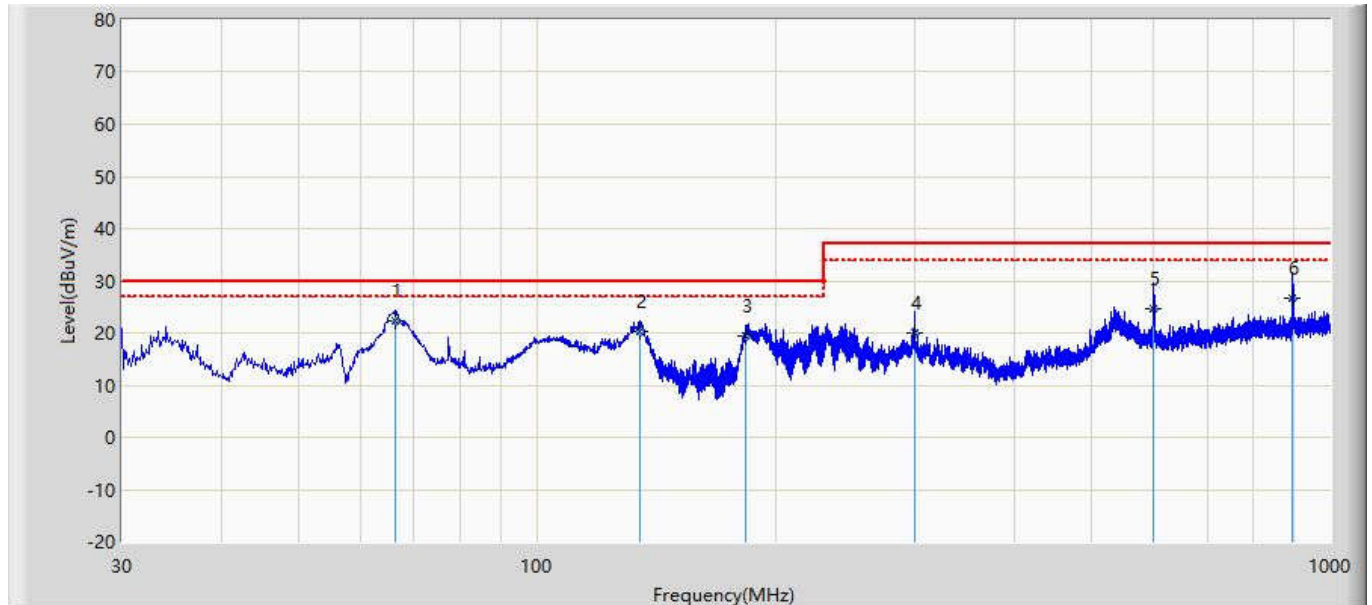
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		31.819	16.384	24.500	-13.616	30.000	12.376	1.005	21.497	163	331	QP
2		46.732	16.484	23.100	-13.516	30.000	13.632	1.228	21.476	208	211	QP
3		55.584	16.766	23.400	-13.234	30.000	13.471	1.358	21.464	375	297	QP
4		144.460	15.516	21.700	-14.484	30.000	12.906	2.266	21.356	256	74	QP
5		599.633	25.241	20.300	-11.759	37.000	20.054	5.188	20.301	179	200	QP
6	*	835.706	26.605	17.300	-10.395	37.000	22.722	6.347	19.764	326	227	QP

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).



Engineer: Lawrence Wang	
Site: AC1	Time: 2024/01/15
Limit: EN 55032_RE (10m)_Class B	Margin: 3
Probe: VULB9168_01100(30-1000MHz)	Polarity: Vertical
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 2	

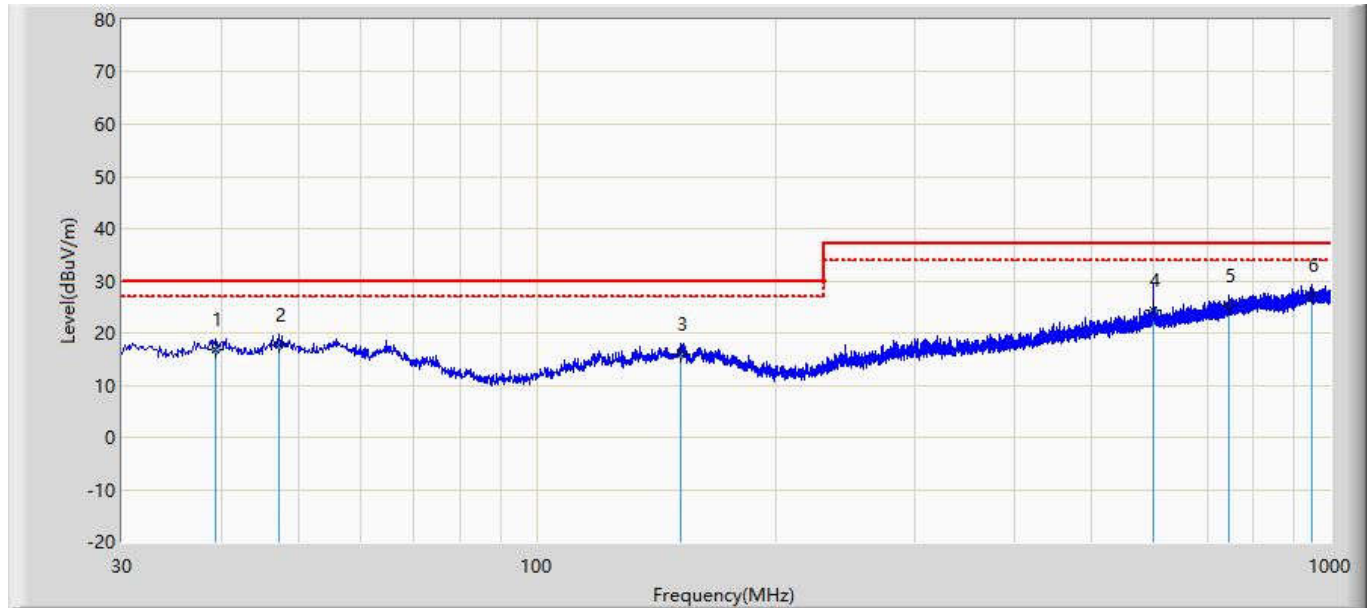


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	66.375	22.364	41.500	-7.636	30.000	12.149	1.679	32.964	156	172	QP
2		134.881	20.149	38.700	-9.851	30.000	12.268	2.445	33.265	115	10	QP
3		183.503	19.476	38.300	-10.524	30.000	11.466	2.927	33.217	154	204	QP
4		299.660	20.014	35.700	-16.986	37.000	13.438	3.877	33.001	365	138	QP
5		598.662	24.607	31.400	-12.393	37.000	19.719	5.792	32.304	236	182	QP
6		897.422	26.656	27.100	-10.344	37.000	23.266	7.397	31.108	398	194	QP

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: AC1	Time: 2024/01/15
Limit: EN 55032_RE (10m)_Class B	Margin: 3
Probe: VULB9168_01099(30-1000MHz)	Polarity: Horizontal
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 3	

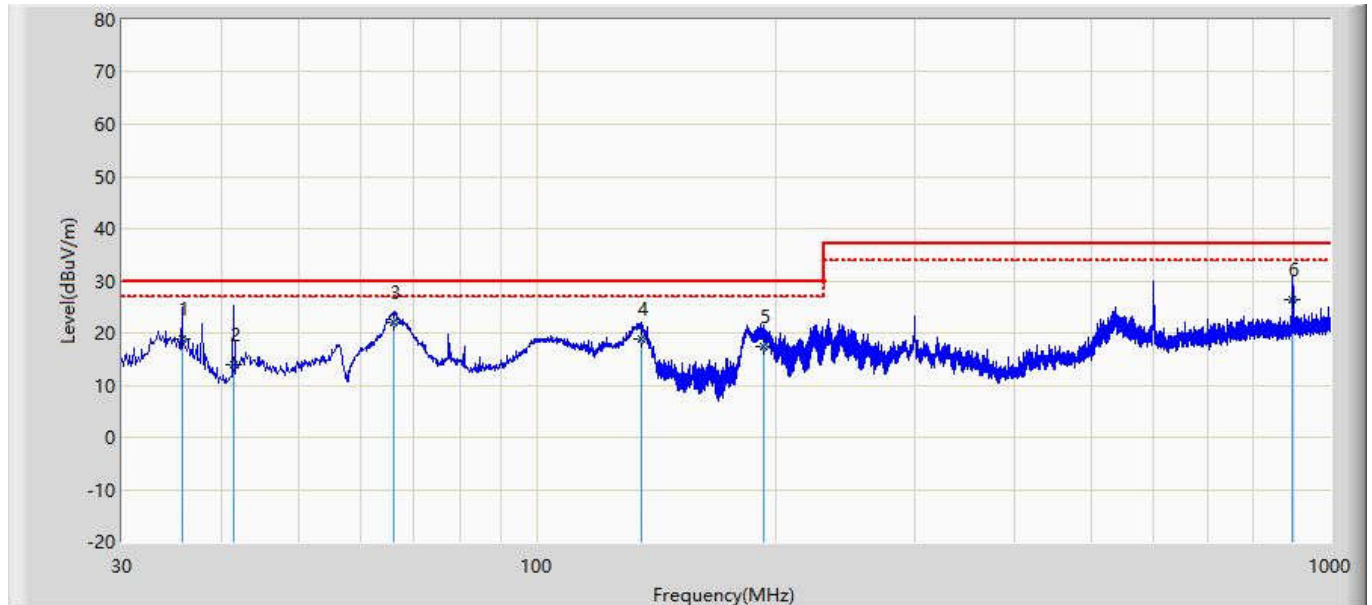


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		39.336	16.696	23.900	-13.304	30.000	13.172	1.111	21.487	212	256	QP
2		47.339	17.608	24.200	-12.392	30.000	13.646	1.237	21.475	160	133	QP
3		151.614	15.800	21.600	-14.200	30.000	13.220	2.329	21.349	284	3	QP
4		598.420	24.492	19.600	-12.508	37.000	20.016	5.181	20.305	188	332	QP
5		745.860	25.224	17.300	-11.776	37.000	21.907	5.925	19.908	156	170	QP
6	*	948.347	27.131	15.900	-9.869	37.000	24.035	6.848	19.651	307	1	QP

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: AC1	Time: 2024/01/15
Limit: EN 55032_RE (10m)_Class B	Margin: 3
Probe: VULB9168_01100(30-1000MHz)	Polarity: Vertical
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 3	

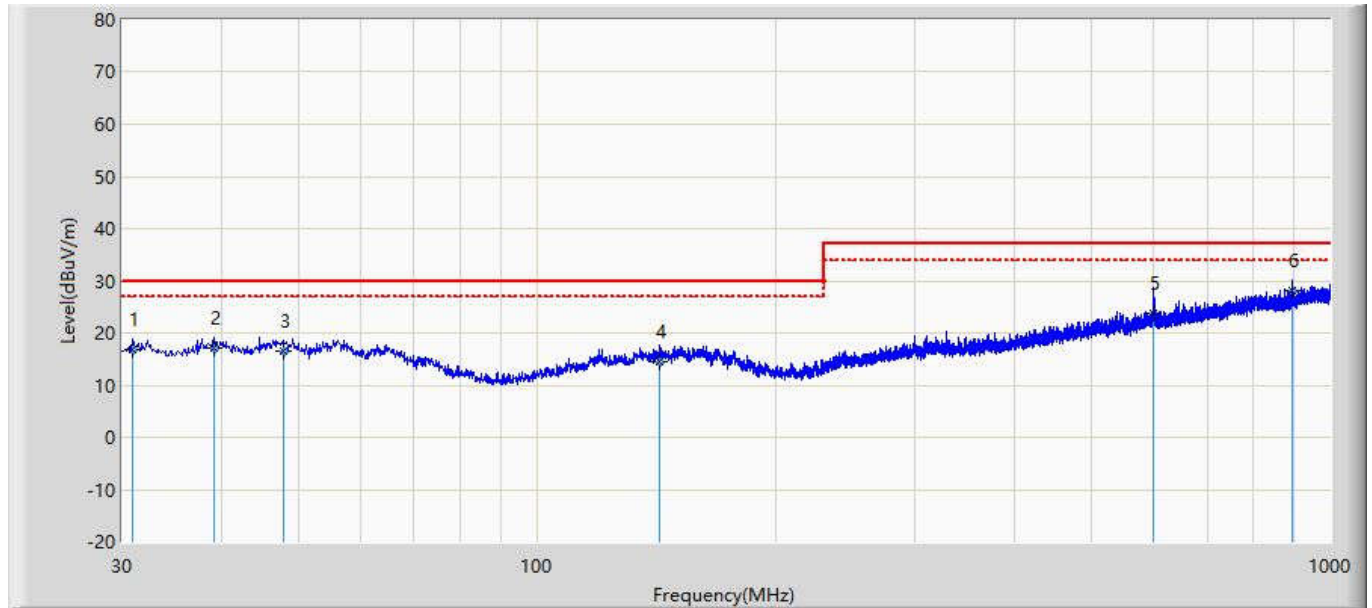


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		35.699	18.786	37.600	-11.214	30.000	12.646	1.197	32.657	355	136	QP
2		41.519	13.996	32.100	-16.004	30.000	13.317	1.294	32.715	122	281	QP
3	*	66.132	22.002	41.100	-7.998	30.000	12.188	1.675	32.961	339	333	QP
4		135.336	18.892	37.400	-11.108	30.000	12.307	2.450	33.264	194	0	QP
5		193.202	17.411	37.200	-12.589	30.000	10.395	3.022	33.207	304	265	QP
6		898.150	26.471	26.900	-10.529	37.000	23.276	7.401	31.106	159	130	QP

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: AC1	Time: 2024/01/15
Limit: EN 55032_RE (10m)_Class B	Margin: 3
Probe: VULB9168_01099(30-1000MHz)	Polarity: Horizontal
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 6	

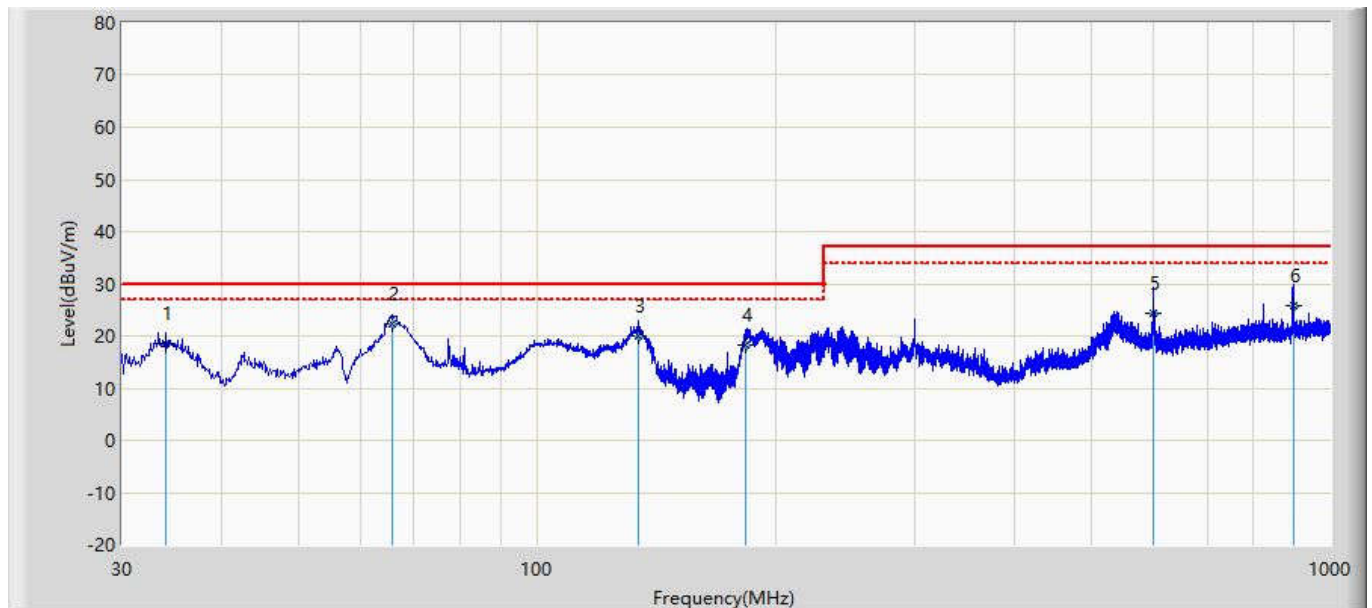


No	Mark	Frequency (MHz)	Measure Level (dBUV/m)	Reading Level (dBUV)	Over Limit (dB)	Limit (dBUV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		30.970	16.861	25.100	-13.139	30.000	12.266	0.994	21.499	314	56	QP
2		39.215	17.183	24.400	-12.817	30.000	13.161	1.109	21.487	236	241	QP
3		47.945	16.633	23.200	-13.367	30.000	13.661	1.247	21.474	294	41	QP
4		142.884	14.618	20.900	-15.382	30.000	12.823	2.251	21.357	134	66	QP
5		599.511	23.737	18.800	-13.263	37.000	20.051	5.188	20.302	107	69	QP
6	*	897.544	28.065	18.100	-8.935	37.000	23.048	6.620	19.703	374	187	QP

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: AC1	Time: 2024/01/15
Limit: EN 55032_RE (10m)_Class B	Margin: 3
Probe: VULB9168_01100(30-1000MHz)	Polarity: Vertical
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 6	

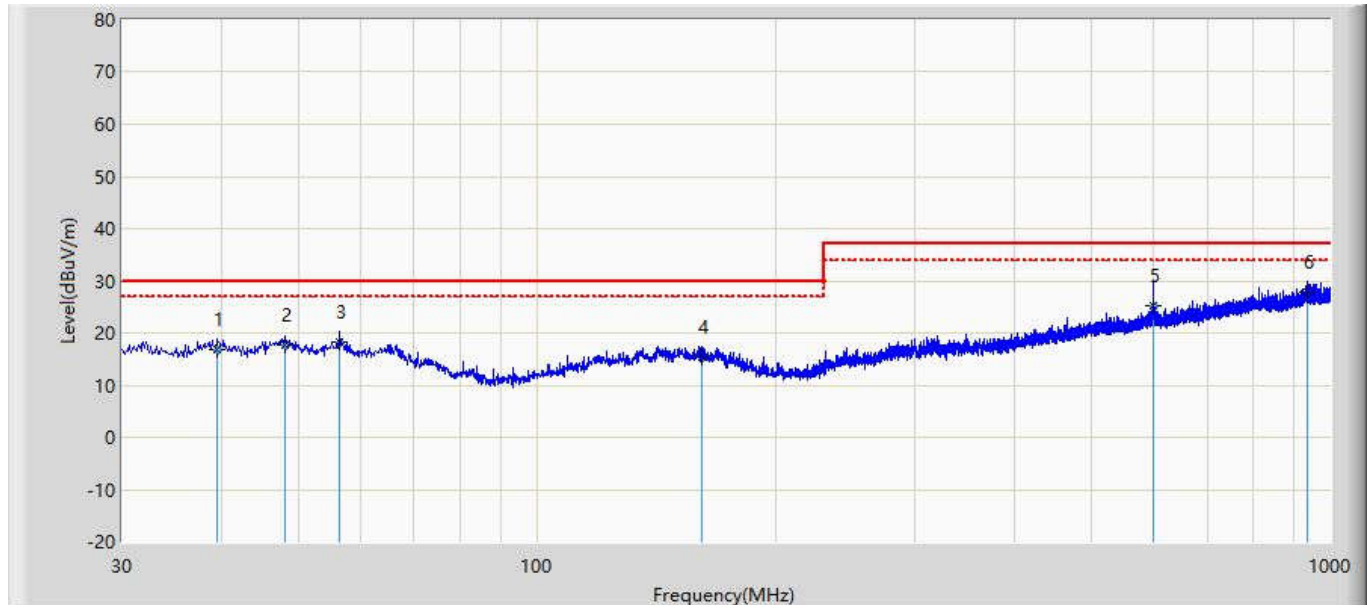


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		34.123	18.500	37.500	-11.500	30.000	12.471	1.170	32.641	350	194	QP
2	*	65.647	22.176	41.200	-7.824	30.000	12.263	1.669	32.956	339	322	QP
3		134.033	19.864	38.500	-10.136	30.000	12.193	2.437	33.266	107	195	QP
4		183.503	18.276	37.100	-11.724	30.000	11.466	2.927	33.217	386	153	QP
5		598.299	24.295	31.100	-12.705	37.000	19.710	5.790	32.305	379	49	QP
6		899.484	25.699	26.100	-11.301	37.000	23.294	7.408	31.102	334	306	QP

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: AC1	Time: 2024/01/15
Limit: EN 55032_RE (10m)_Class B	Margin: 3
Probe: VULB9168_01099(30-1000MHz)	Polarity: Horizontal
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 8	

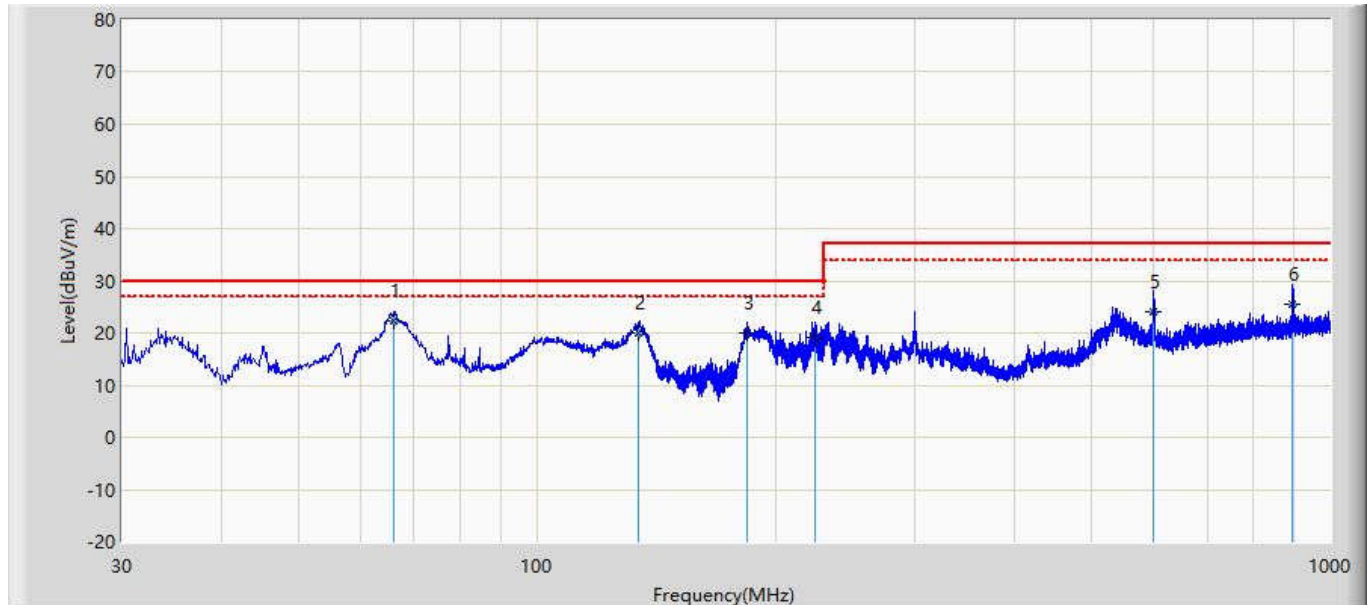


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		39.579	16.921	24.100	-13.079	30.000	13.193	1.114	21.486	147	92	QP
2		48.066	17.538	24.100	-12.462	30.000	13.663	1.249	21.474	315	69	QP
3		56.432	18.208	24.900	-11.792	30.000	13.400	1.370	21.463	398	264	QP
4		161.193	15.439	21.100	-14.561	30.000	13.264	2.414	21.339	161	86	QP
5		598.541	25.097	20.200	-11.903	37.000	20.020	5.182	20.305	369	7	QP
6	*	936.101	27.754	16.700	-9.246	37.000	23.925	6.792	19.664	258	276	QP

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lawrence Wang	
Site: AC1	Time: 2024/01/15
Limit: EN 55032_RE (10m)_Class B	Margin: 3
Probe: VULB9168_01100(30-1000MHz)	Polarity: Vertical
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 8	



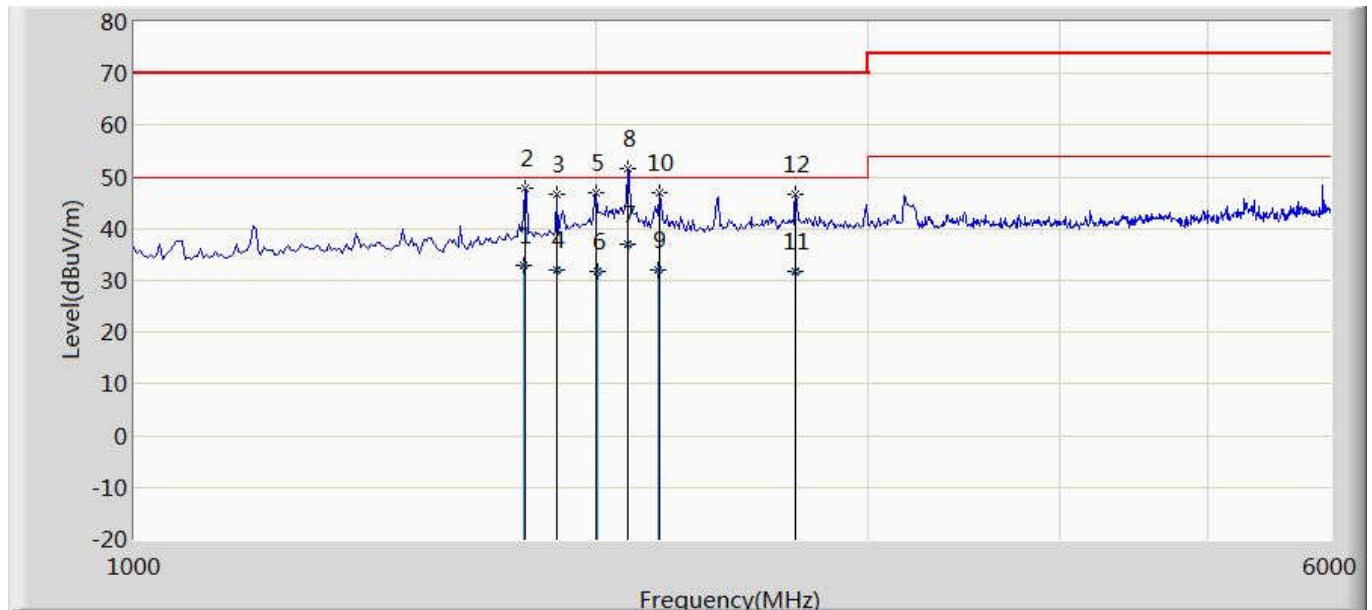
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	66.132	22.202	41.300	-7.798	30.000	12.188	1.675	32.961	147	171	QP
2		134.518	20.013	38.600	-9.987	30.000	12.236	2.442	33.265	136	62	QP
3		184.351	19.983	38.900	-10.017	30.000	11.363	2.935	33.216	345	101	QP
4		224.121	19.062	38.900	-10.938	30.000	10.033	3.281	33.152	325	338	QP
5		599.269	24.026	30.800	-12.974	37.000	19.733	5.795	32.302	194	198	QP
6		898.150	25.471	25.900	-11.529	37.000	23.276	7.401	31.106	238	22	QP

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).



Engineer: Jim Fu	
Site: AC5	Time: 2024/01/17
Limit: EN 55032_RE(3m)_Class B	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Notebook Computer	Power: 110 Vac, 60 Hz
Note: Mode 2	



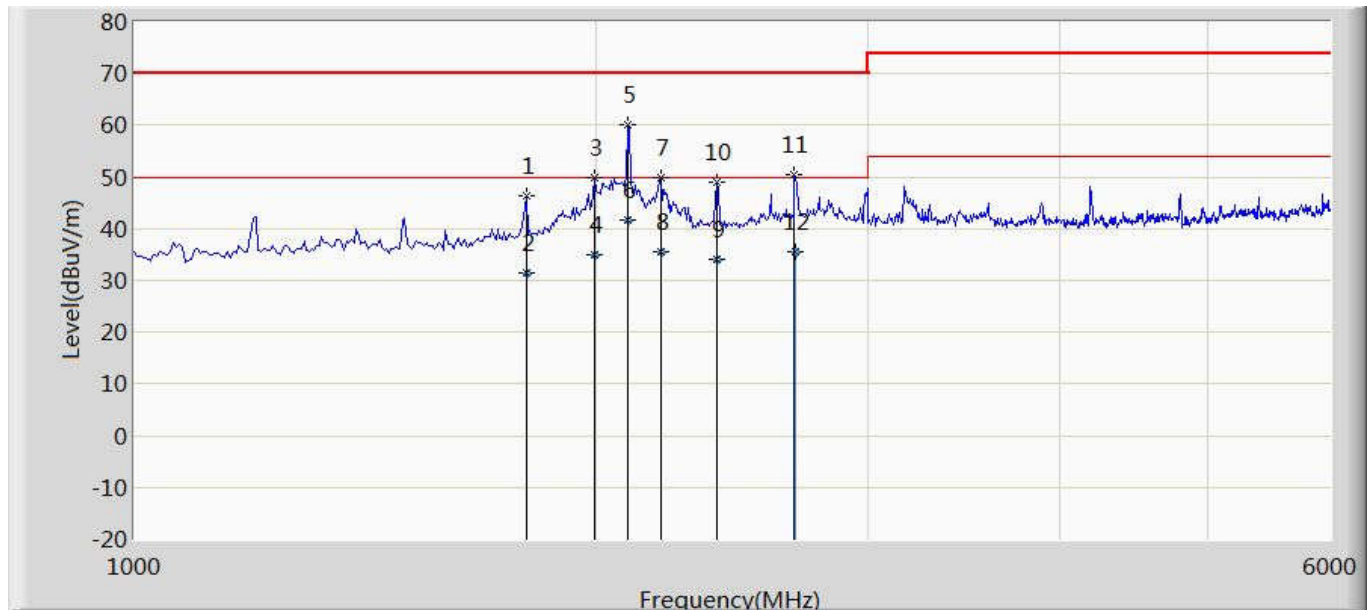
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		1794.360	32.848	52.300	-17.152	50.000	30.699	4.567	54.718	212	272	AV
2		1795.000	47.893	67.333	-22.107	70.000	30.708	4.570	54.718	212	272	PK
3		1885.000	46.632	65.457	-23.368	70.000	31.171	4.759	54.754	150	307	PK
4		1885.560	32.099	50.920	-17.901	50.000	31.173	4.760	54.755	150	307	AV
5		2000.000	46.911	65.548	-23.089	70.000	31.562	4.600	54.799	295	148	PK
6		2000.560	31.835	50.470	-18.165	50.000	31.563	4.601	54.799	295	148	AV
7	*	2094.565	37.121	55.490	-12.879	50.000	31.558	4.874	54.800	188	316	AV
8		2095.000	51.719	70.091	-18.281	70.000	31.557	4.870	54.800	188	316	PK
9		2194.565	32.074	50.380	-17.926	50.000	31.426	5.068	54.800	280	111	AV
10		2195.000	47.054	65.355	-22.946	70.000	31.426	5.073	54.800	280	111	PK
11		2694.500	31.652	48.630	-18.348	50.000	32.577	5.245	54.800	337	320	AV
12		2695.000	46.791	63.778	-23.209	70.000	32.576	5.236	54.800	337	320	PK

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).



Engineer: Jim Fu	
Site: AC5	Time: 2024/01/17
Limit: EN 55032_RE(3m)_Class B	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Notebook Computer	Power: 110 Vac, 60 Hz
Note: Mode 2	



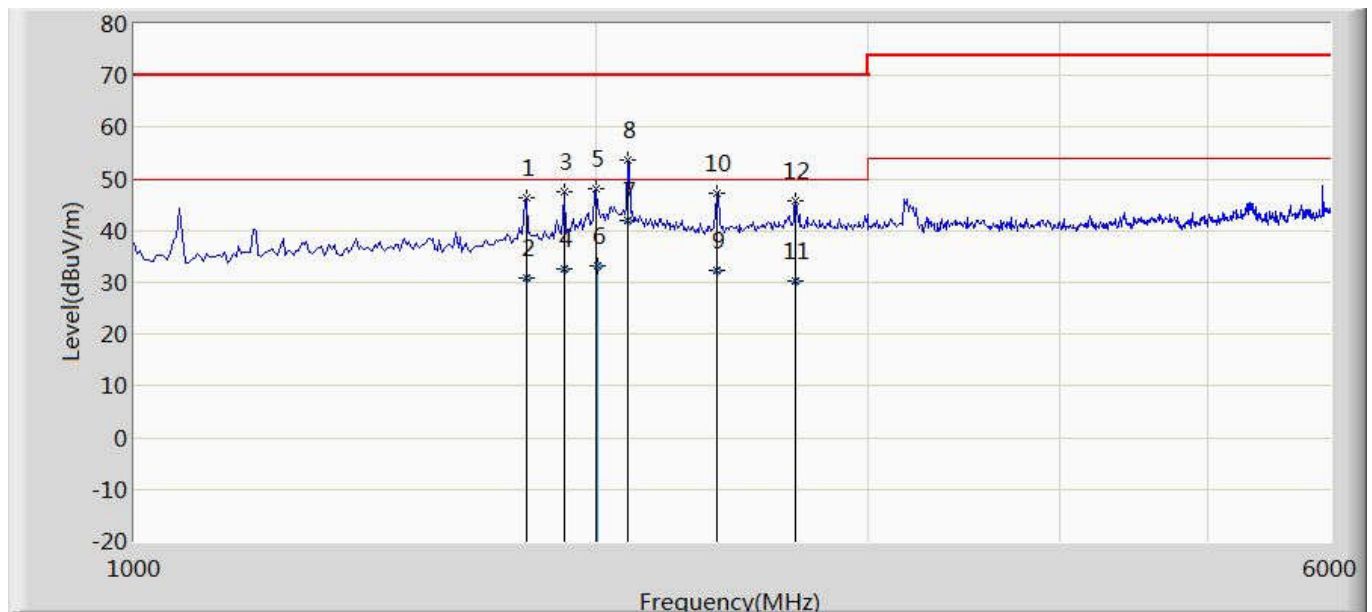
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		1800.000	46.469	65.813	-23.531	70.000	30.771	4.605	54.720	153	47	PK
2		1800.564	31.547	50.880	-18.453	50.000	30.774	4.613	54.721	153	47	AV
3		1995.000	49.847	68.499	-20.153	70.000	31.548	4.596	54.797	400	8	PK
4		1995.510	35.039	53.690	-14.961	50.000	31.550	4.597	54.797	400	8	AV
5		2095.000	60.128	78.500	-9.872	70.000	31.557	4.870	54.800	335	166	PK
6	*	2096.540	41.713	60.100	-8.287	50.000	31.556	4.857	54.800	335	166	AV
7		2200.000	49.890	68.130	-20.110	70.000	31.426	5.134	54.800	216	47	PK
8		2200.690	35.529	53.760	-14.471	50.000	31.426	5.142	54.800	216	47	AV
9		2394.565	33.948	51.380	-16.052	50.000	32.000	5.368	54.800	277	337	AV
10		2395.000	48.900	66.333	-21.100	70.000	32.002	5.365	54.800	277	337	PK
11		2690.000	50.486	67.381	-19.514	70.000	32.583	5.322	54.800	240	76	PK
12		2691.500	35.557	52.480	-14.443	50.000	32.581	5.296	54.800	240	76	AV

Note:

1. " \* ", means this data is the worst emission level.

2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Jim Fu	
Site: AC5	Time: 2024/01/17
Limit: EN 55032_RE(3m)_Class B	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 3	

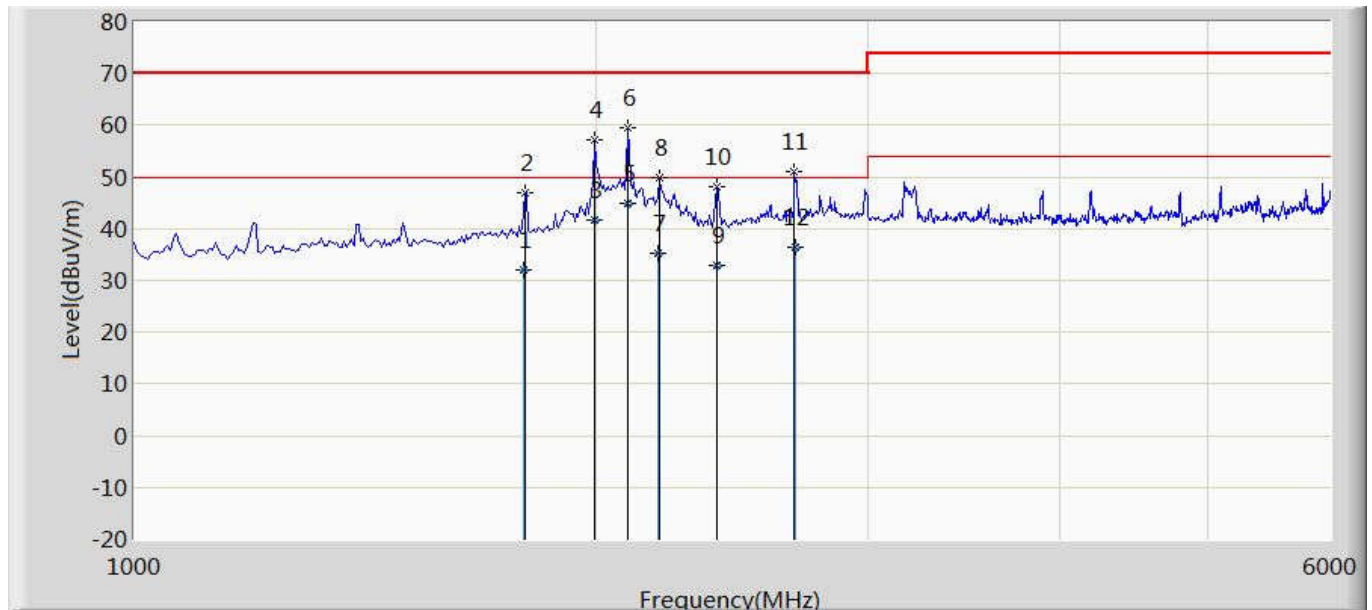


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		1800.000	46.429	65.773	-23.571	70.000	30.771	4.605	54.720	259	212	PK
2		1800.265	30.761	50.100	-19.239	50.000	30.773	4.609	54.720	259	212	AV
3		1905.000	47.539	66.312	-22.461	70.000	31.256	4.733	54.762	374	201	PK
4		1906.560	32.591	51.380	-17.409	50.000	31.261	4.712	54.762	374	201	AV
5		2000.000	48.121	66.758	-21.879	70.000	31.562	4.600	54.799	204	179	PK
6		2000.654	33.105	51.740	-16.895	50.000	31.564	4.601	54.799	204	179	AV
7	*	2094.560	42.012	60.380	-7.988	50.000	31.558	4.874	54.800	194	103	AV
8		2095.000	53.828	72.200	-16.172	70.000	31.557	4.870	54.800	194	103	PK
9		2394.560	32.248	49.680	-17.752	50.000	32.000	5.368	54.800	241	151	AV
10		2395.000	47.344	64.777	-22.656	70.000	32.002	5.365	54.800	241	151	PK
11		2694.540	30.231	47.210	-19.769	50.000	32.577	5.244	54.800	289	6	AV
12		2695.000	45.685	62.672	-24.315	70.000	32.576	5.236	54.800	289	6	PK

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Jim Fu	
Site: AC5	Time: 2024/01/17
Limit: EN 55032_RE(3m)_Class B	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 3	

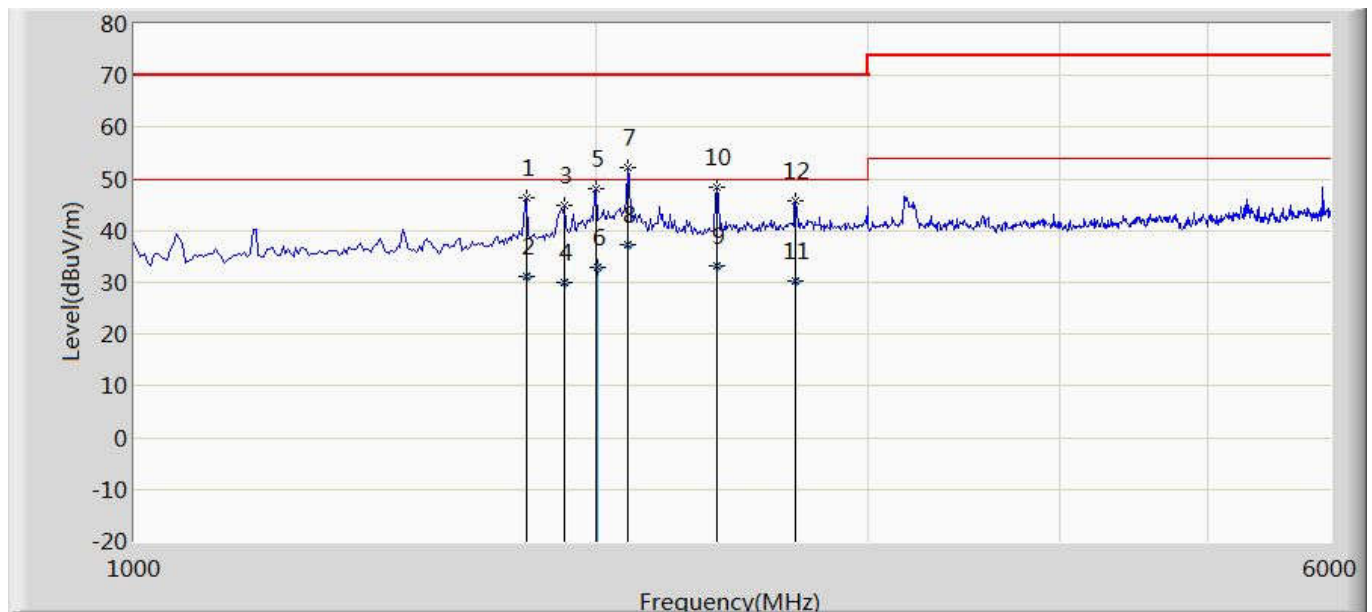


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		1794.560	31.921	51.370	-18.079	50.000	30.701	4.568	54.718	287	16	AV
2		1795.000	46.864	66.304	-23.136	70.000	30.708	4.570	54.718	287	16	PK
3		1994.650	41.677	60.330	-8.323	50.000	31.547	4.596	54.797	186	69	AV
4		1995.000	57.067	75.719	-12.933	70.000	31.548	4.596	54.797	186	69	PK
5	*	2094.565	44.841	63.210	-5.159	50.000	31.558	4.874	54.800	335	187	AV
6		2095.000	59.668	78.040	-10.332	70.000	31.557	4.870	54.800	335	187	PK
7		2194.260	35.310	53.620	-14.690	50.000	31.426	5.064	54.800	390	270	AV
8		2195.000	49.883	68.184	-20.117	70.000	31.426	5.073	54.800	390	270	PK
9		2394.260	33.039	50.470	-16.961	50.000	31.999	5.370	54.800	203	309	AV
10		2395.000	48.160	65.593	-21.840	70.000	32.002	5.365	54.800	203	309	PK
11		2690.000	51.136	68.031	-18.864	70.000	32.583	5.322	54.800	226	158	PK
12		2691.650	36.385	53.310	-13.615	50.000	32.581	5.294	54.800	226	158	AV

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Jim Fu	
Site: AC5	Time: 2024/01/17
Limit: EN 55032_RE(3m)_Class B	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 6	

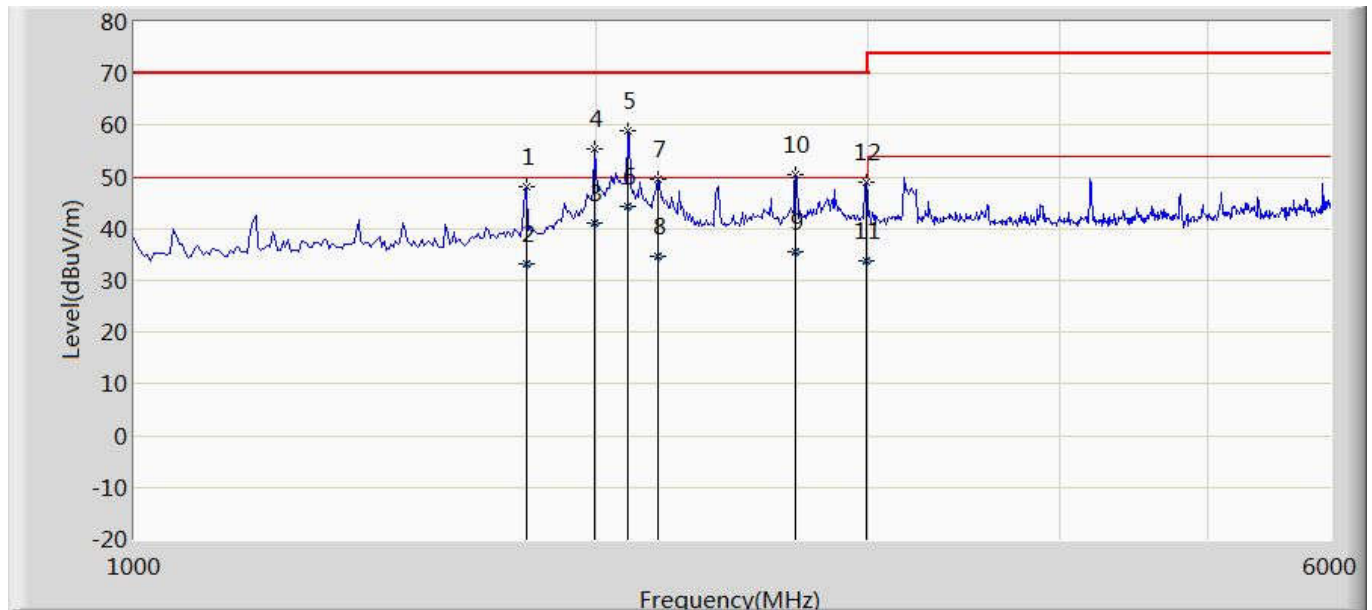


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		1800.000	46.324	65.668	-23.676	70.000	30.771	4.605	54.720	372	32	PK
2		1800.640	31.278	50.610	-18.722	50.000	30.774	4.614	54.721	372	32	AV
3		1905.000	44.851	63.624	-25.149	70.000	31.256	4.733	54.762	139	9	PK
4		1905.260	29.894	48.670	-20.106	50.000	31.257	4.729	54.762	139	9	AV
5		2000.000	47.984	66.621	-22.016	70.000	31.562	4.600	54.799	288	83	PK
6		2000.565	32.995	51.630	-17.005	50.000	31.563	4.601	54.799	288	83	AV
7		2095.000	52.200	70.572	-17.800	70.000	31.557	4.870	54.800	124	189	PK
8	*	2096.565	37.333	55.720	-12.667	50.000	31.556	4.857	54.800	124	189	AV
9		2394.650	33.288	50.720	-16.712	50.000	32.001	5.367	54.800	227	292	AV
10		2395.000	48.308	65.741	-21.692	70.000	32.002	5.365	54.800	227	292	PK
11		2694.560	30.321	47.300	-19.679	50.000	32.577	5.244	54.800	303	13	AV
12		2695.000	45.762	62.749	-24.238	70.000	32.576	5.236	54.800	303	13	PK

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Jim Fu	
Site: AC5	Time: 2024/01/17
Limit: EN 55032_RE(3m)_Class B	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 6	

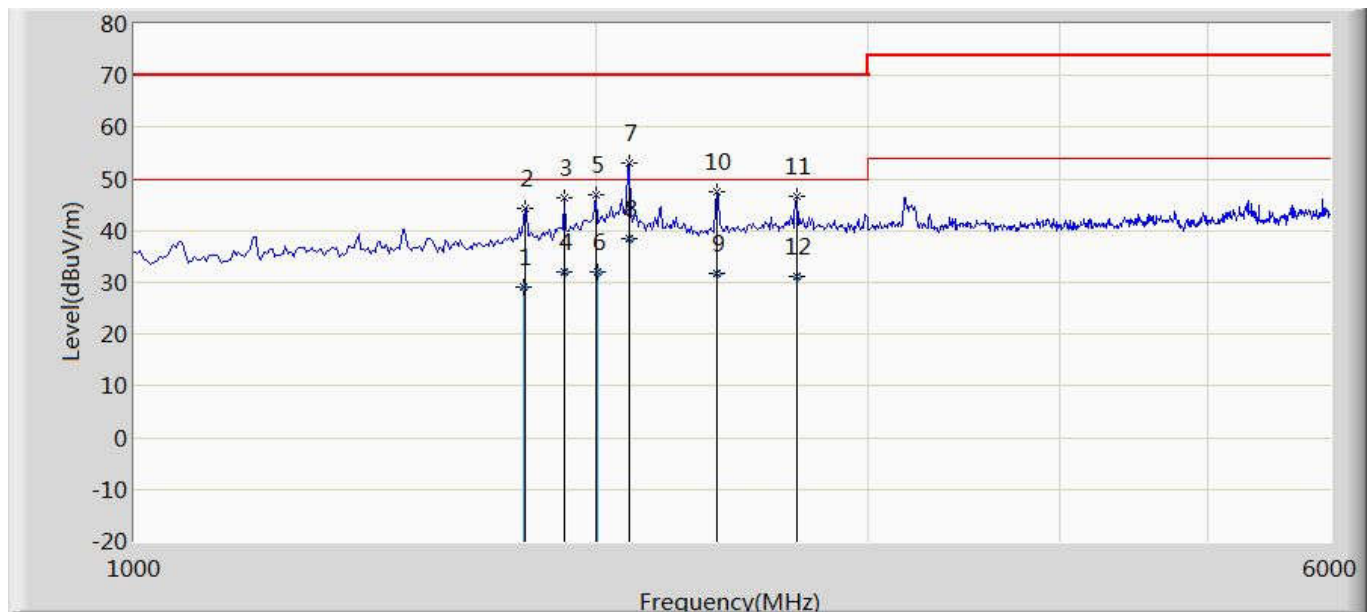


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		1800.000	48.141	67.485	-21.859	70.000	30.771	4.605	54.720	261	197	PK
2		1800.260	33.131	52.470	-16.869	50.000	30.773	4.609	54.720	261	197	AV
3		1994.560	40.976	59.630	-9.024	50.000	31.547	4.596	54.797	230	209	AV
4		1995.000	55.557	74.209	-14.443	70.000	31.548	4.596	54.797	230	209	PK
5		2095.000	59.079	77.451	-10.921	70.000	31.557	4.870	54.800	130	163	PK
6	*	2096.260	44.456	62.840	-5.544	50.000	31.557	4.859	54.800	130	163	AV
7		2190.000	49.695	68.057	-20.305	70.000	31.425	5.013	54.800	320	72	PK
8		2191.260	34.753	53.100	-15.247	50.000	31.425	5.028	54.800	320	72	AV
9		2694.560	35.491	52.470	-14.509	50.000	32.577	5.244	54.800	118	140	AV
10		2695.000	50.512	67.499	-19.488	70.000	32.576	5.236	54.800	118	140	PK
11		2994.230	33.942	50.380	-16.058	50.000	32.661	5.701	54.799	275	166	AV
12		2995.000	48.880	65.315	-21.120	70.000	32.663	5.701	54.799	275	166	PK

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Jim Fu	
Site: AC5	Time: 2024/01/17
Limit: EN 55032_RE(3m)_Class B	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 8	

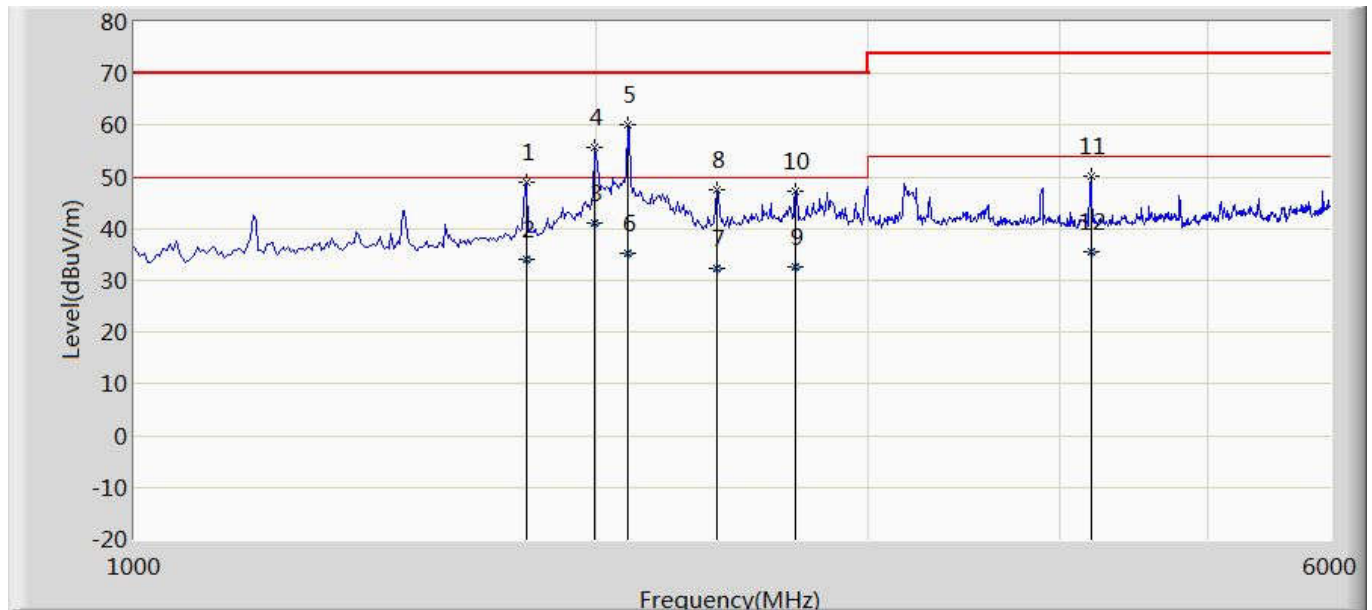


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		1794.560	29.181	48.630	-20.819	50.000	30.701	4.568	54.718	352	289	AV
2		1795.000	44.340	63.780	-25.660	70.000	30.708	4.570	54.718	352	289	PK
3		1905.000	46.460	65.233	-23.540	70.000	31.256	4.733	54.762	274	5	PK
4		1906.560	31.961	50.750	-18.039	50.000	31.261	4.712	54.762	274	5	AV
5		2000.000	46.816	65.453	-23.184	70.000	31.562	4.600	54.799	165	157	PK
6		2000.651	31.995	50.630	-18.005	50.000	31.564	4.601	54.799	165	157	AV
7		2100.000	53.086	71.504	-16.914	70.000	31.555	4.827	54.800	122	295	PK
8	*	2101.560	38.418	56.850	-11.582	50.000	31.554	4.814	54.800	122	295	AV
9		2394.560	31.868	49.300	-18.132	50.000	32.000	5.368	54.800	194	195	AV
10		2395.000	47.496	64.929	-22.504	70.000	32.002	5.365	54.800	194	195	PK
11		2700.000	46.692	63.772	-23.308	70.000	32.570	5.150	54.800	379	283	PK
12		2700.230	31.123	48.200	-18.877	50.000	32.569	5.153	54.800	379	283	AV

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Jim Fu	
Site: AC5	Time: 2024/01/17
Limit: EN 55032_RE(3m)_Class B	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Notebook Computer	Power: 230 Vac, 50 Hz
Note: Mode 8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		1800.000	49.047	68.391	-20.953	70.000	30.771	4.605	54.720	266	200	PK
2		1800.260	34.031	53.370	-15.969	50.000	30.773	4.609	54.720	266	200	AV
3	*	1994.560	40.976	59.630	-9.024	50.000	31.547	4.596	54.797	189	32	AV
4		1995.000	55.657	74.309	-14.343	70.000	31.548	4.596	54.797	189	32	PK
5		2095.000	60.154	78.526	-9.846	70.000	31.557	4.870	54.800	333	243	PK
6		2096.550	35.193	53.580	-14.807	50.000	31.556	4.857	54.800	333	243	AV
7		2394.260	32.379	49.810	-17.621	50.000	31.999	5.370	54.800	173	87	AV
8		2395.000	47.498	64.931	-22.502	70.000	32.002	5.365	54.800	173	87	PK
9		2694.260	32.696	49.670	-17.304	50.000	32.577	5.249	54.800	171	191	AV
10		2695.000	47.259	64.246	-22.741	70.000	32.576	5.236	54.800	171	191	PK
11		4195.000	50.313	64.481	-23.687	74.000	33.380	6.816	54.364	239	283	PK
12		4196.560	35.432	49.580	-18.568	54.000	33.382	6.833	54.363	239	283	AV

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).



## 5.7 Test Photograph

Test Mode: Mode 2,3,6,8

Description: Front View of Radiated Emission Test Setup (Below 1 GHz)



Test Mode: Mode 2,3,6,8

Description: Rear View of Radiated Emission Test Setup (Below 1 GHz)





Test Mode: Mode 2,3,6,8

Description: Front View of Radiated Emission Test Setup (Above 1 GHz)



Test Mode: Mode 2,3,6,8

Description: Rear View of Radiated Emission Test Setup (Above 1 GHz)

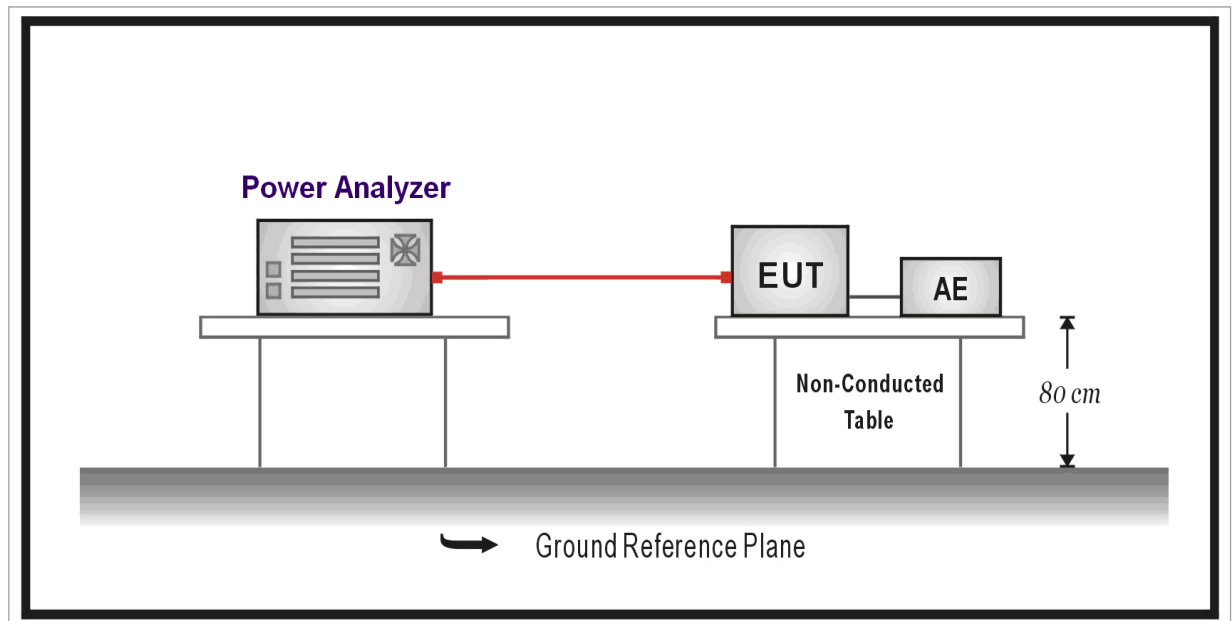


## 6 Harmonic current emissions

### 6.1 Test Specification

According to EMC Standard: EN IEC 61000-3-2:2019+A1:2021

### 6.2 Test Setup



### 6.3 Limit

(a) Limits of Class A Harmonics Currents

Harmonics Order $n$	Maximum Permissible harmonic current $A$	Harmonics Order $n$	Maximum Permissible harmonic current $A$
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	$8 \leq n \leq 40$	$0.23 * 8/n$
11	0.33		
13	0.21		
$15 \leq n \leq 39$	$0.15 * 15/n$		

## (b) Limits of Class B Harmonics Currents

For Class B equipment, the harmonic of the input current shall not exceed the maximum permissible values given in table that is the limit of Class A multiplied by a factor of 1.5.

## (c) Limits of Class C Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current Expressed as a percentage of the input current at the fundamental frequency %
2	2
3	$30 \cdot \lambda^*$
5	10
7	7
9	5
$11 \leq n \leq 39$ (odd harmonics only)	3
* $\lambda$ is the circuit Power factor	

## (d) Limits of Class D Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current per watt mA/W	Maximum Permissible harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
$11 \leq n \leq 39$ (odd harmonics only)	$3.85/n$	See limit of Class A

#### **6.4 Test Procedure**

The EUT is supplied in series with Power analyzer from a Power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.98 times and 1.02 times shall be performed.

#### **6.5 Deviation from Test Standard**

No deviation.

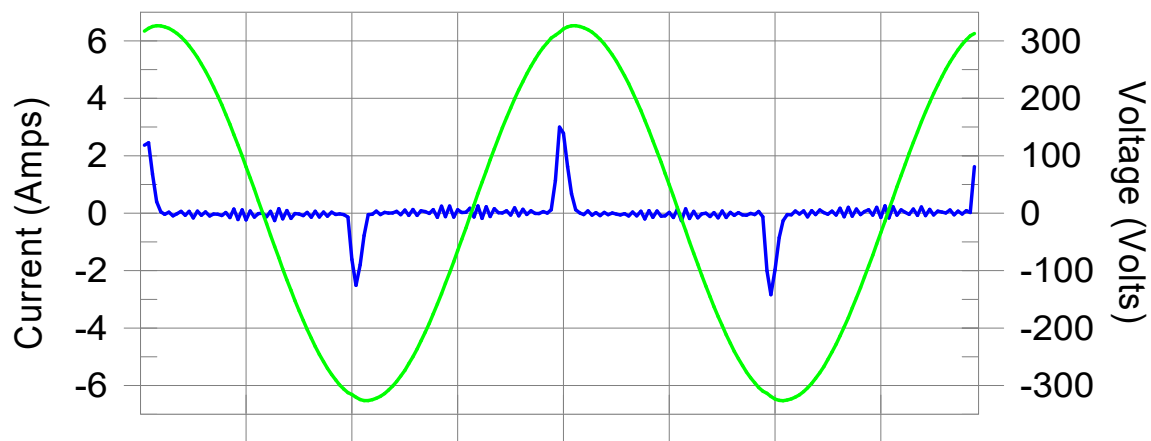
## 6.6 Test Result

Test Site	TR20	Date of Test	2024.01.23
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	24 °C	Humidity	45% RH
Barometric Pressure	1032 mbar	Test Engineer	Tony Guo
Test Mode	Mode 2		

Test Result: Pass

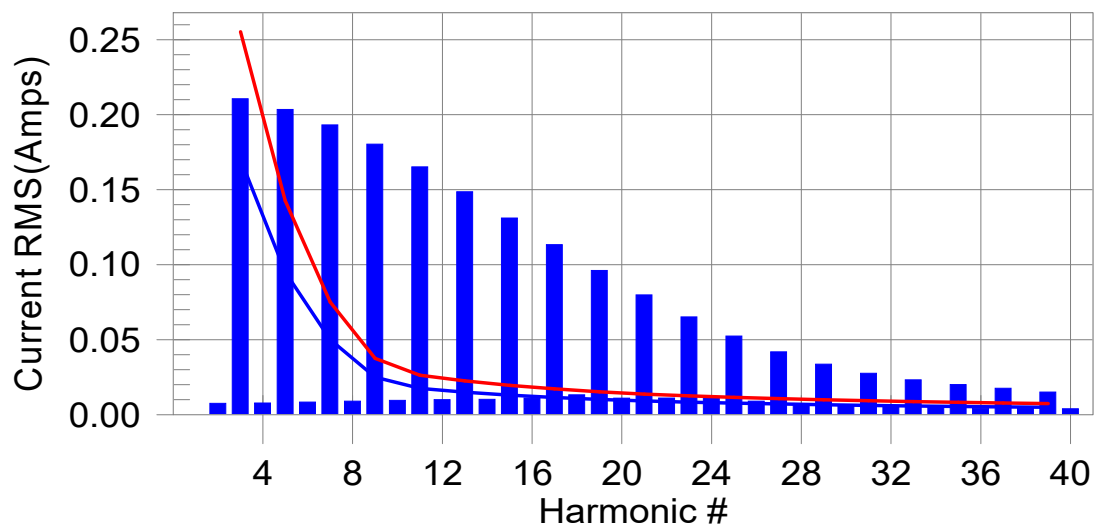
Source qualification: Normal

### Current & voltage waveforms



### Harmonics and Class D limit line

### European Limits



Test result: Pass Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit.

Test Result: Pass  
THC(A): 0.514

Source qualification: Normal  
I-THD(%): 225.8  
POHC(A): 0.136

POHC Limit(A): 0.022

Highest parameter values during test:

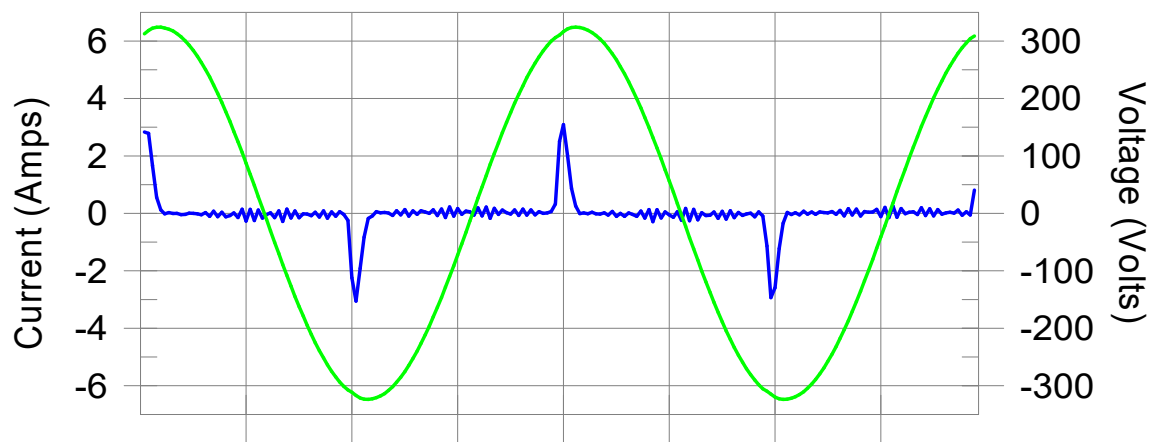
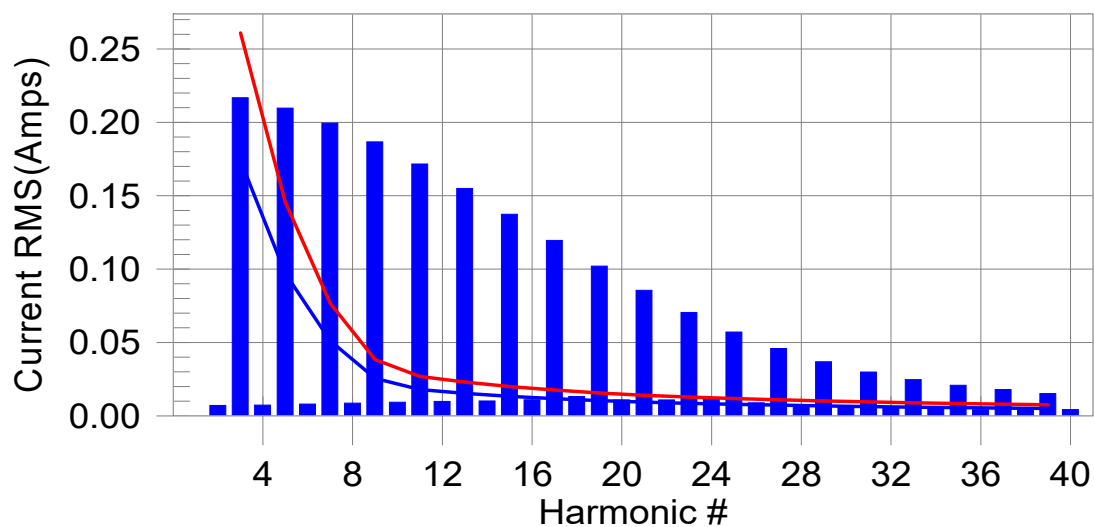
V_RMS (Volts):	230.202	Frequency(Hz):	50.00
I_Peak (Amps):	3.226	I_RMS (Amps):	0.581
I_Fund (Amps):	0.228	Crest Factor:	5.667
Power (Watts):	50.1	Power Factor:	0.381

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.008	0.000	N/A	0.010	0.000	N/A	Pass
3	0.211	0.170	N/A	0.213	0.255	N/A	Pass
4	0.008	0.000	N/A	0.012	0.000	N/A	Pass
5	0.204	0.095	N/A	0.206	0.143	N/A	Pass
6	0.008	0.000	N/A	0.013	0.000	N/A	Pass
7	0.193	0.050	N/A	0.195	0.075	N/A	Pass
8	0.009	0.000	N/A	0.013	0.000	N/A	Pass
9	0.180	0.025	N/A	0.182	0.038	N/A	Pass
10	0.010	0.000	N/A	0.014	0.000	N/A	Pass
11	0.165	0.018	N/A	0.167	0.026	N/A	Pass
12	0.010	0.000	N/A	0.014	0.000	N/A	Pass
13	0.149	0.015	N/A	0.150	0.023	N/A	Pass
14	0.010	0.000	N/A	0.015	0.000	N/A	Pass
15	0.131	0.013	N/A	0.132	0.020	N/A	Pass
16	0.011	0.000	N/A	0.016	0.000	N/A	Pass
17	0.113	0.012	N/A	0.114	0.017	N/A	Pass
18	0.013	0.000	N/A	0.017	0.000	N/A	Pass
19	0.096	0.010	N/A	0.097	0.015	N/A	Pass
20	0.011	0.000	N/A	0.015	0.000	N/A	Pass
21	0.080	0.009	N/A	0.081	0.014	N/A	Pass
22	0.011	0.000	N/A	0.015	0.000	N/A	Pass
23	0.065	0.008	N/A	0.066	0.013	N/A	Pass
24	0.012	0.000	N/A	0.016	0.000	N/A	Pass
25	0.052	0.008	N/A	0.053	0.012	N/A	Pass
26	0.009	0.000	N/A	0.012	0.000	N/A	Pass
27	0.042	0.007	N/A	0.043	0.011	N/A	Pass
28	0.007	0.000	N/A	0.010	0.000	N/A	Pass
29	0.034	0.007	N/A	0.034	0.010	N/A	Pass
30	0.006	0.000	N/A	0.009	0.000	N/A	Pass
31	0.028	0.006	N/A	0.028	0.009	N/A	Pass
32	0.005	0.000	N/A	0.007	0.000	N/A	Pass
33	0.023	0.006	N/A	0.024	0.009	N/A	Pass
34	0.005	0.000	N/A	0.007	0.000	N/A	Pass
35	0.020	0.006	N/A	0.021	0.008	N/A	Pass
36	0.004	0.000	N/A	0.006	0.000	N/A	Pass
37	0.018	0.005	N/A	0.018	0.008	N/A	Pass
38	0.004	0.000	N/A	0.006	0.000	N/A	Pass
39	0.015	0.005	N/A	0.015	0.007	N/A	Pass
40	0.004	0.000	N/A	0.006	0.000	N/A	Pass

1. Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

2. According to EN IEC 61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.

Test Site	TR20	Date of Test	2024.01.23
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	24 °C	Humidity	45% RH
Barometric Pressure	1032 mbar	Test Engineer	Tony Guo
Test Mode	Mode 3		

**Test Result: Pass****Source qualification: Normal****Current & voltage waveforms****Harmonics and Class D limit line****European Limits****Test result: Pass Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit.**

Test Result: Pass

Source qualification: Normal

THC(A): 0.535

I-THD(%): 228.1

POHC(A): 0.147

POHC Limit(A): 0.022

Highest parameter values during test:

V\_RMS (Volts): 228.601

Frequency(Hz): 50.00

I\_Peak (Amps): 3.259

I\_RMS (Amps): 0.602

I\_Fund (Amps): 0.234

Crest Factor: 5.570

Power (Watts): 51.2

Power Factor: 0.378

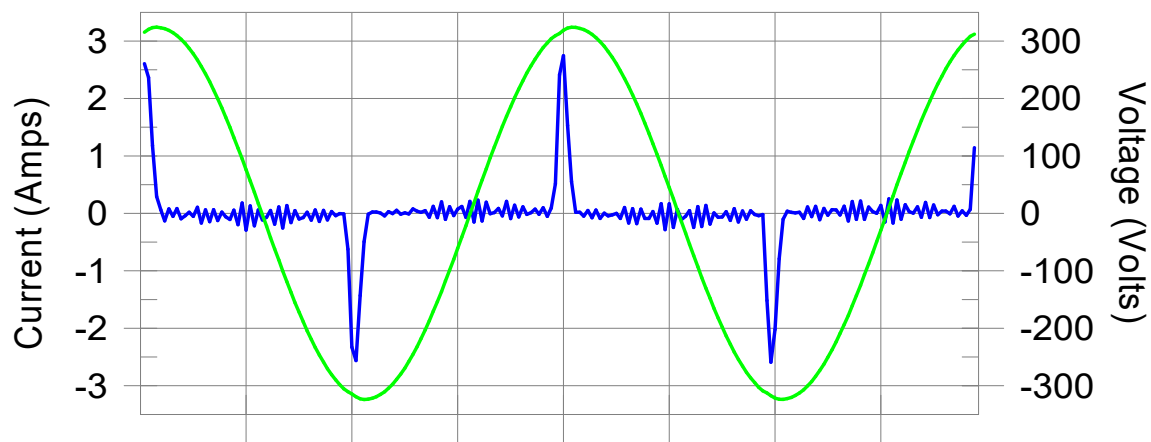
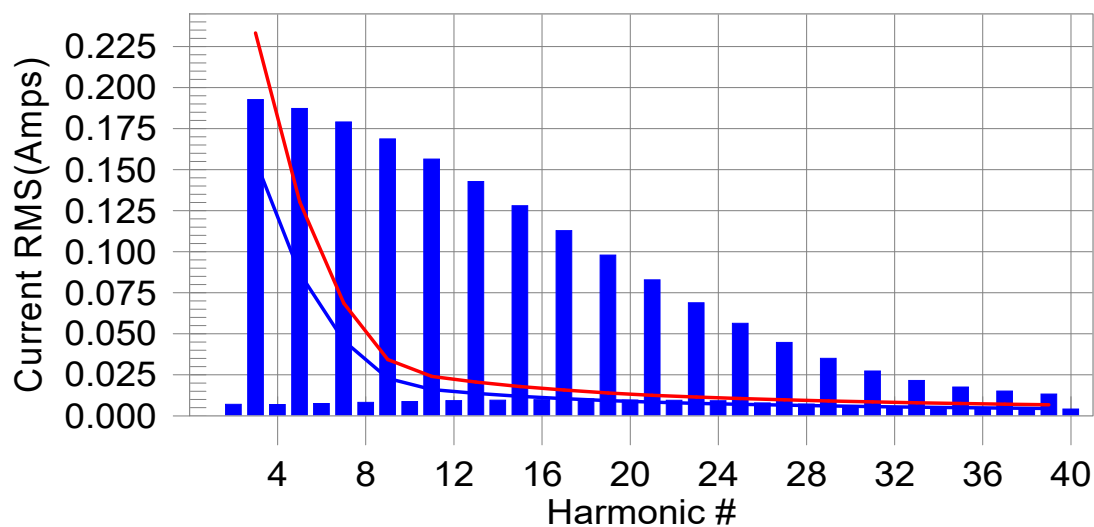
Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.007	0.000	N/A	0.009	0.000	N/A	Pass
3	0.217	0.174	N/A	0.220	0.261	N/A	Pass
4	0.007	0.000	N/A	0.011	0.000	N/A	Pass
5	0.210	0.097	N/A	0.212	0.146	N/A	Pass
6	0.008	0.000	N/A	0.012	0.000	N/A	Pass
7	0.200	0.051	N/A	0.202	0.077	N/A	Pass
8	0.009	0.000	N/A	0.012	0.000	N/A	Pass
9	0.187	0.026	N/A	0.189	0.038	N/A	Pass
10	0.009	0.000	N/A	0.013	0.000	N/A	Pass
11	0.172	0.018	N/A	0.173	0.027	N/A	Pass
12	0.010	0.000	N/A	0.014	0.000	N/A	Pass
13	0.155	0.015	N/A	0.156	0.023	N/A	Pass
14	0.010	0.000	N/A	0.014	0.000	N/A	Pass
15	0.137	0.013	N/A	0.138	0.020	N/A	Pass
16	0.011	0.000	N/A	0.015	0.000	N/A	Pass
17	0.120	0.012	N/A	0.120	0.018	N/A	Pass
18	0.013	0.000	N/A	0.017	0.000	N/A	Pass
19	0.102	0.010	N/A	0.103	0.016	N/A	Pass
20	0.011	0.000	N/A	0.015	0.000	N/A	Pass
21	0.086	0.009	N/A	0.086	0.014	N/A	Pass
22	0.011	0.000	N/A	0.014	0.000	N/A	Pass
23	0.070	0.009	N/A	0.071	0.013	N/A	Pass
24	0.012	0.000	N/A	0.015	0.000	N/A	Pass
25	0.057	0.008	N/A	0.059	0.012	N/A	Pass
26	0.009	0.000	N/A	0.012	0.000	N/A	Pass
27	0.046	0.007	N/A	0.047	0.011	N/A	Pass
28	0.007	0.000	N/A	0.010	0.000	N/A	Pass
29	0.037	0.007	N/A	0.039	0.010	N/A	Pass
30	0.006	0.000	N/A	0.009	0.000	N/A	Pass
31	0.030	0.006	N/A	0.030	0.010	N/A	Pass
32	0.005	0.000	N/A	0.008	0.000	N/A	Pass
33	0.025	0.006	N/A	0.025	0.009	N/A	Pass
34	0.005	0.000	N/A	0.007	0.000	N/A	Pass
35	0.021	0.006	N/A	0.021	0.008	N/A	Pass
36	0.004	0.000	N/A	0.006	0.000	N/A	Pass
37	0.018	0.005	N/A	0.018	0.008	N/A	Pass
38	0.004	0.000	N/A	0.006	0.000	N/A	Pass
39	0.015	0.005	N/A	0.016	0.008	N/A	Pass
40	0.004	0.000	N/A	0.006	0.000	N/A	Pass

1. Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

2. According to EN IEC 61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.



Test Site	TR20	Date of Test	2024.01.23
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	24 °C	Humidity	45% RH
Barometric Pressure	1032 mbar	Test Engineer	Tony Guo
Test Mode	Mode 6		

**Test Result: Pass****Source qualification: Normal****Current & voltage waveforms****Harmonics and Class D limit line****European Limits****Test result: Pass Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit.**

Test Result: Pass  
THC(A): 0.487

Source qualification: Normal  
I-THD(%): 232.5 POHC(A): 0.141

POHC Limit(A): 0.020

Highest parameter values during test:

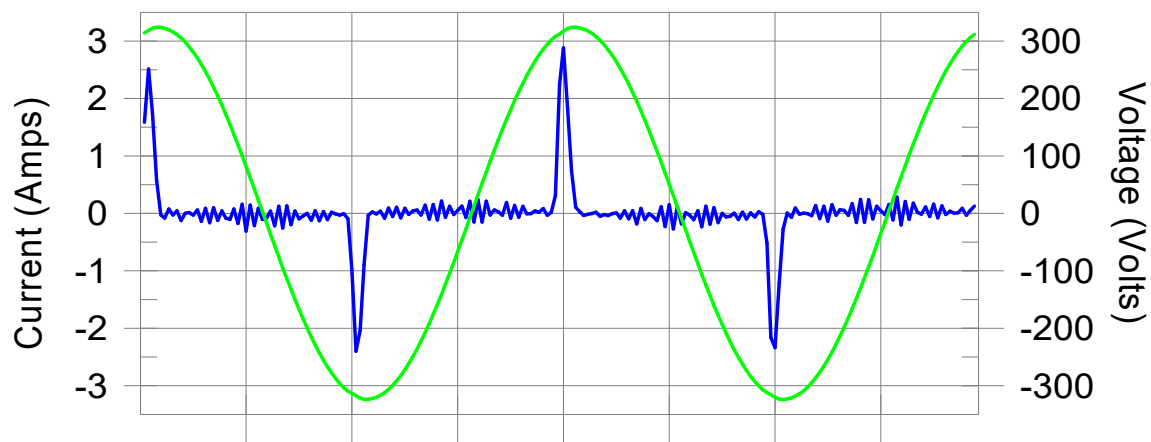
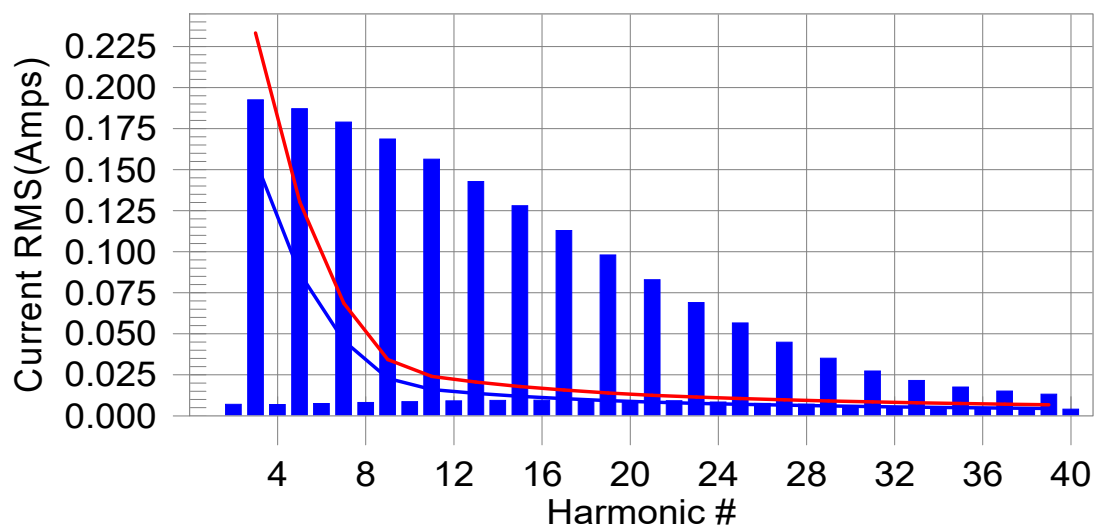
V_RMS (Volts):	228.595	Frequency(Hz):	50.00
I_Peak (Amps):	2.957	I_RMS (Amps):	0.548
I_Fund (Amps):	0.210	Crest Factor:	5.514
Power (Watts):	45.7	Power Factor:	0.369

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.007	0.000	N/A	0.008	0.000	N/A	Pass
3	0.193	0.156	N/A	0.196	0.233	N/A	Pass
4	0.007	0.000	N/A	0.008	0.000	N/A	Pass
5	0.187	0.087	N/A	0.190	0.130	N/A	Pass
6	0.008	0.000	N/A	0.008	0.000	N/A	Pass
7	0.179	0.046	N/A	0.182	0.069	N/A	Pass
8	0.008	0.000	N/A	0.009	0.000	N/A	Pass
9	0.169	0.023	N/A	0.171	0.034	N/A	Pass
10	0.009	0.000	N/A	0.010	0.000	N/A	Pass
11	0.156	0.016	N/A	0.158	0.024	N/A	Pass
12	0.009	0.000	N/A	0.010	0.000	N/A	Pass
13	0.143	0.014	N/A	0.144	0.021	N/A	Pass
14	0.010	0.000	N/A	0.010	0.000	N/A	Pass
15	0.128	0.012	N/A	0.129	0.018	N/A	Pass
16	0.010	0.000	N/A	0.011	0.000	N/A	Pass
17	0.113	0.011	N/A	0.114	0.016	N/A	Pass
18	0.010	0.000	N/A	0.013	0.000	N/A	Pass
19	0.098	0.009	N/A	0.103	0.014	N/A	Pass
20	0.010	0.000	N/A	0.011	0.000	N/A	Pass
21	0.083	0.008	N/A	0.085	0.013	N/A	Pass
22	0.010	0.000	N/A	0.011	0.000	N/A	Pass
23	0.069	0.008	N/A	0.070	0.011	N/A	Pass
24	0.009	0.000	N/A	0.012	0.000	N/A	Pass
25	0.056	0.007	N/A	0.058	0.011	N/A	Pass
26	0.008	0.000	N/A	0.010	0.000	N/A	Pass
27	0.045	0.007	N/A	0.046	0.010	N/A	Pass
28	0.007	0.000	N/A	0.008	0.000	N/A	Pass
29	0.035	0.006	N/A	0.035	0.009	N/A	Pass
30	0.006	0.000	N/A	0.007	0.000	N/A	Pass
31	0.027	0.006	N/A	0.028	0.009	N/A	Pass
32	0.005	0.000	N/A	0.006	0.000	N/A	Pass
33	0.022	0.005	N/A	0.022	0.008	N/A	Pass
34	0.005	0.000	N/A	0.006	0.000	N/A	Pass
35	0.018	0.005	N/A	0.018	0.008	N/A	Pass
36	0.004	0.000	N/A	0.005	0.000	N/A	Pass
37	0.015	0.005	N/A	0.016	0.007	N/A	Pass
38	0.004	0.000	N/A	0.005	0.000	N/A	Pass
39	0.013	0.005	N/A	0.014	0.007	N/A	Pass
40	0.004	0.000	N/A	0.005	0.000	N/A	Pass

1. Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

2. According to EN IEC 61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.

Test Site	TR20	Date of Test	2024.01.23
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	24 °C	Humidity	45% RH
Barometric Pressure	1032 mbar	Test Engineer	Tony Guo
Test Mode	Mode 8		

**Test Result: Pass****Source qualification: Normal****Current & voltage waveforms****Harmonics and Class D limit line****European Limits****Test result: Pass Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit.**

Test Result: Pass

Source qualification: Normal

THC(A): 0.487

I-THD(%): 232.4

POHC(A): 0.142

POHC Limit(A): 0.020

Highest parameter values during test:

V\_RMS (Volts): 228.610

Frequency(Hz): 50.00

I\_Peak (Amps): 3.007

I\_RMS (Amps): 0.549

I\_Fund (Amps): 0.210

Crest Factor: 5.873

Power (Watts): 45.7

Power Factor: 0.369

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.007	0.000	N/A	0.008	0.000	N/A	Pass
3	0.193	0.156	N/A	0.196	0.233	N/A	Pass
4	0.007	0.000	N/A	0.009	0.000	N/A	Pass
5	0.187	0.087	N/A	0.190	0.130	N/A	Pass
6	0.008	0.000	N/A	0.010	0.000	N/A	Pass
7	0.179	0.046	N/A	0.182	0.069	N/A	Pass
8	0.008	0.000	N/A	0.011	0.000	N/A	Pass
9	0.169	0.023	N/A	0.171	0.034	N/A	Pass
10	0.009	0.000	N/A	0.012	0.000	N/A	Pass
11	0.156	0.016	N/A	0.159	0.024	N/A	Pass
12	0.009	0.000	N/A	0.012	0.000	N/A	Pass
13	0.143	0.014	N/A	0.145	0.021	N/A	Pass
14	0.009	0.000	N/A	0.013	0.000	N/A	Pass
15	0.128	0.012	N/A	0.130	0.018	N/A	Pass
16	0.010	0.000	N/A	0.013	0.000	N/A	Pass
17	0.113	0.011	N/A	0.114	0.016	N/A	Pass
18	0.010	0.000	N/A	0.013	0.000	N/A	Pass
19	0.098	0.009	N/A	0.100	0.014	N/A	Pass
20	0.009	0.000	N/A	0.012	0.000	N/A	Pass
21	0.083	0.008	N/A	0.084	0.013	N/A	Pass
22	0.009	0.000	N/A	0.012	0.000	N/A	Pass
23	0.069	0.008	N/A	0.070	0.011	N/A	Pass
24	0.008	0.000	N/A	0.011	0.000	N/A	Pass
25	0.057	0.007	N/A	0.059	0.011	N/A	Pass
26	0.008	0.000	N/A	0.010	0.000	N/A	Pass
27	0.045	0.007	N/A	0.045	0.010	N/A	Pass
28	0.007	0.000	N/A	0.009	0.000	N/A	Pass
29	0.035	0.006	N/A	0.035	0.009	N/A	Pass
30	0.006	0.000	N/A	0.007	0.000	N/A	Pass
31	0.027	0.006	N/A	0.028	0.009	N/A	Pass
32	0.005	0.000	N/A	0.006	0.000	N/A	Pass
33	0.022	0.005	N/A	0.022	0.008	N/A	Pass
34	0.005	0.000	N/A	0.006	0.000	N/A	Pass
35	0.018	0.005	N/A	0.018	0.008	N/A	Pass
36	0.004	0.000	N/A	0.005	0.000	N/A	Pass
37	0.015	0.005	N/A	0.016	0.007	N/A	Pass
38	0.004	0.000	N/A	0.005	0.000	N/A	Pass
39	0.013	0.005	N/A	0.014	0.007	N/A	Pass
40	0.004	0.000	N/A	0.005	0.000	N/A	Pass

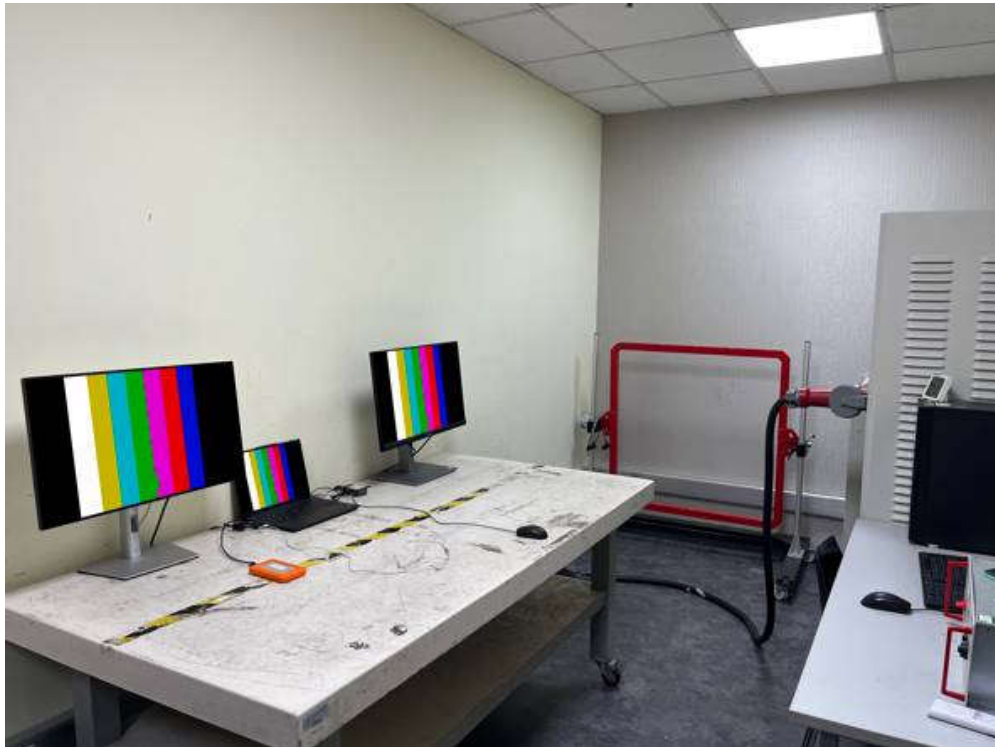
1. Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

2. According to EN IEC 61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.

## 6.7 Test Photograph

Test Mode: Mode 2,3,6,8

Description: Harmonic current emissions Test Setup

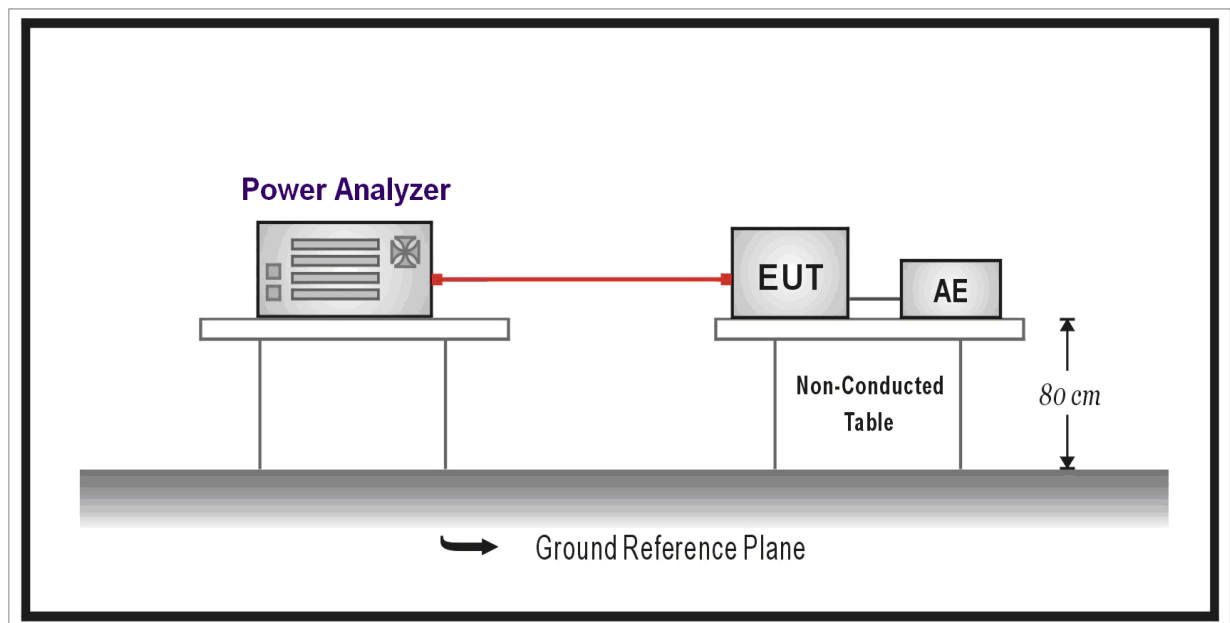


## 7 Voltage fluctuations and flicker

### 7.1 Test Specification

According to EMC Standard: EN 61000-3-3:2013/A2:2021

### 7.2 Test Setup



### 7.3 Limit

The following limits apply:

- the value of  $P_{st}$  shall not be greater than 1.0;
- the value of  $P_{it}$  shall not be greater than 0.65;
- $T_{max}$ , the accumulated time value of  $d(t)$  with a deviation exceeding 3,3 % during a single voltage change at the EUT terminals, shall not exceed 500 ms;
- the maximum relative voltage change,  $d_{max}$ , shall not exceed;
  - a) 4% without additional conditions.
  - b) 6% for equipment which is:
    - switched manually, or
    - switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a Power supply interruption.

NOTE: The cycling frequency will be further limited by the  $P_{st}$  and  $P_{it}$  limit.

For example: a  $d_{max}$  of 6% producing a rectangular voltage change characteristic twice per hour

will give a  $P_{lt}$  of about 0.65.

c) 7% for equipment which is:

- attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a Power supply interruption.

$P_{st}$  and  $P_{1t}$  requirements shall not be applied to voltage changes caused by manual switching.

#### **7.4 Test Procedure**

The EUT is supplied in series with Power analyzer from a Power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.98 times and 1.02 times shall be performed.

#### **7.5 Deviation from Test Standard**

No deviation.

## 7.6 Test Result

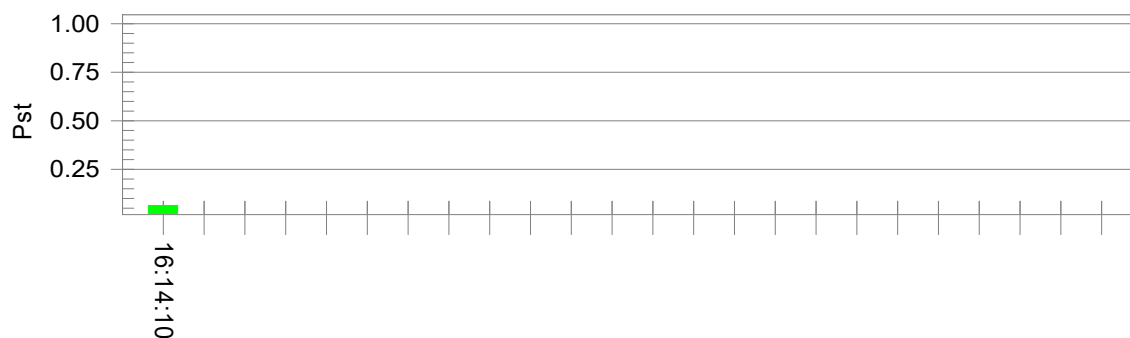
Test Site	TR20	Date of Test	2024.01.23
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	24 °C	Humidity	45% RH
Barometric Pressure	1032 mbar	Test Engineer	Jim Fu
Test Mode	Mode 2		

Test Result: Pass

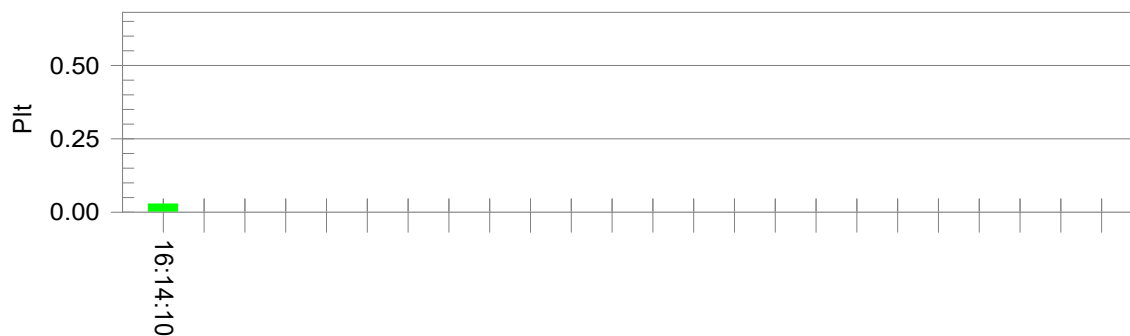
Status: Test Completed

### Pst<sub>i</sub> and limit line

### European Limits



### Plt and limit line

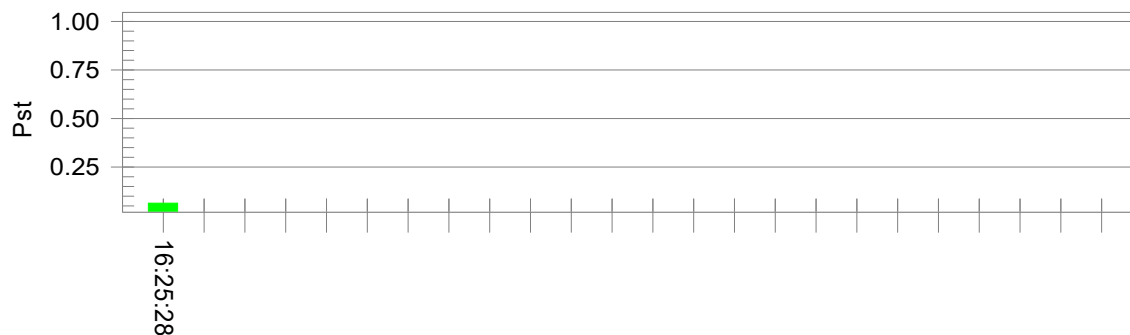
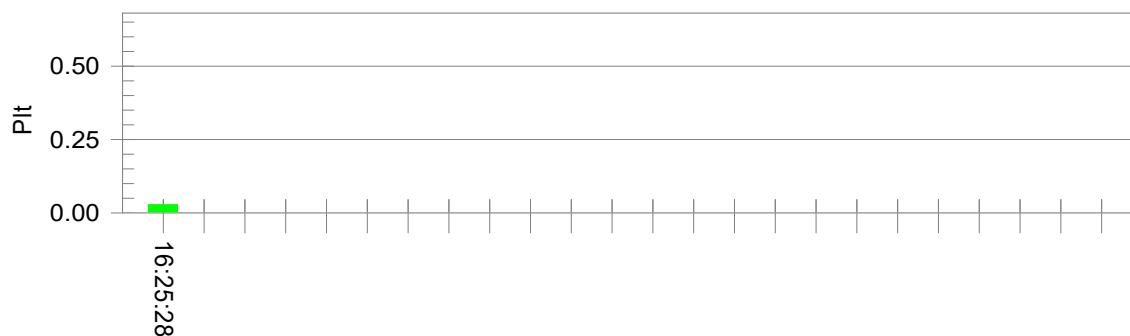


### Parameter values recorded during the test:

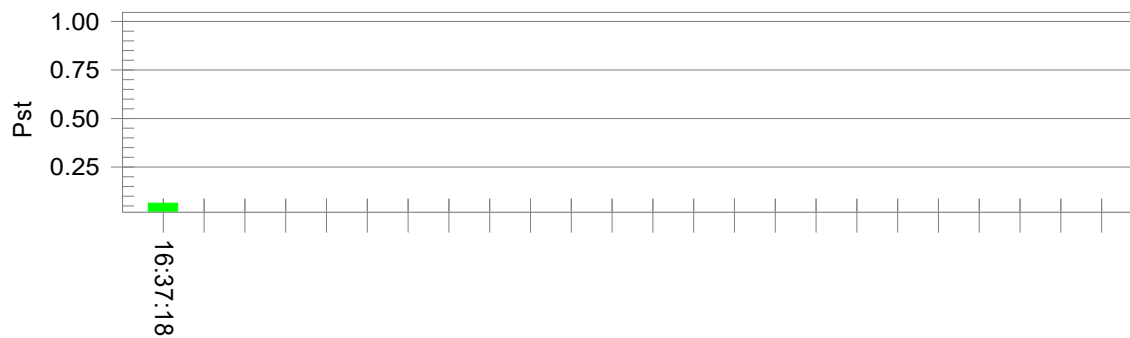
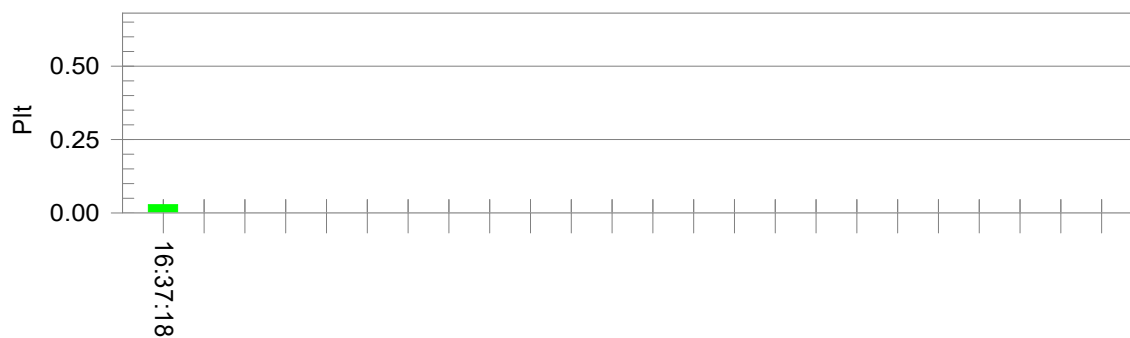
Vrms at the end of test (Volt):	228.43	Test limit (mS):	500.0	Pass
T-max (mS):	0.0	Test limit (%):	3.30	Pass
Highest dc (%):	0.00	Test limit (%):	4.00	Pass
Highest dmax (%):	0.07	Test limit:	1.000	Pass
Highest Pst (10 min. period):	0.064	Test limit:	0.650	Pass
Highest Plt (2 hr. period):	0.028			



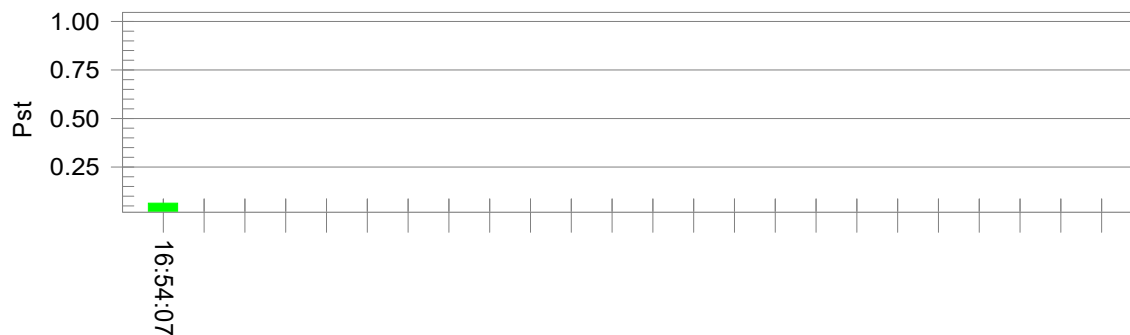
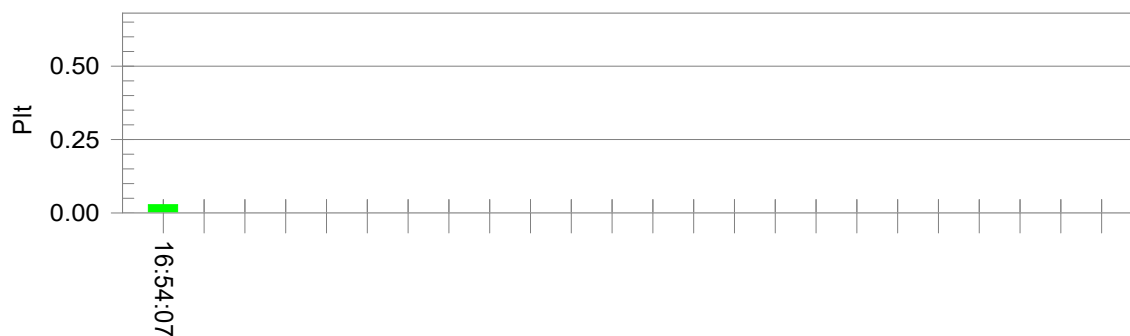
Test Site	TR20	Date of Test	2024.01.23
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	24 °C	Humidity	45% RH
Barometric Pressure	1032 mbar	Test Engineer	Jim Fu
Test Mode	Mode 3		

**Test Result: Pass****Status: Test Completed****Pst<sub>i</sub> and limit line****European Limits****Plt and limit line****Parameter values recorded during the test:****Vrms at the end of test (Volt): 228.51****T-max (mS): 0.0****Highest dc (%): 0.00****Highest dmax (%): -0.06****Highest Pst (10 min. period): 0.064****Highest Plt (2 hr. period): 0.028****Test limit (mS): 500.0 Pass****Test limit (%): 3.30 Pass****Test limit (%): 4.00 Pass****Test limit: 1.000 Pass****Test limit: 0.650 Pass**

Test Site	TR20	Date of Test	2024.01.23
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	24 °C	Humidity	45% RH
Barometric Pressure	1032 mbar	Test Engineer	Jim Fu
Test Mode	Mode 6		

**Test Result: Pass****Status: Test Completed****Pst<sub>i</sub> and limit line****European Limits****Plt and limit line****Parameter values recorded during the test:****Vrms at the end of test (Volt): 228.49****T-max (mS): 0.0****Highest dc (%): 0.00****Highest dmax (%): 0.08****Highest Pst (10 min. period): 0.064****Highest Plt (2 hr. period): 0.028****Test limit (mS): 500.0 Pass****Test limit (%): 3.30 Pass****Test limit (%): 4.00 Pass****Test limit: 1.000 Pass****Test limit: 0.650 Pass**

Test Site	TR20	Date of Test	2024.01.23
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	24 °C	Humidity	45% RH
Barometric Pressure	1032 mbar	Test Engineer	Jim Fu
Test Mode	Mode 8		

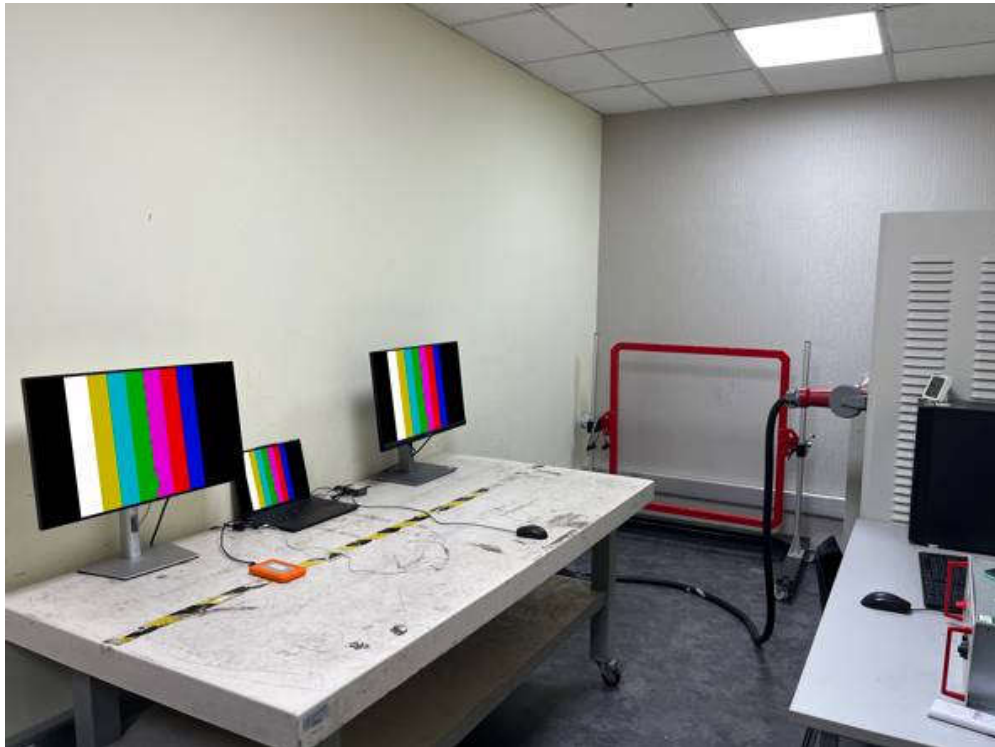
**Test Result: Pass****Status: Test Completed****Pst<sub>i</sub> and limit line****European Limits****Plt and limit line****Parameter values recorded during the test:**

Vrms at the end of test (Volt):	228.60	Test limit (mS):	500.0	Pass
T-max (mS):	0.0	Test limit (%):	3.30	Pass
Highest dc (%):	0.00	Test limit (%):	4.00	Pass
Highest dmax (%):	-0.05	Test limit:	1.000	Pass
Highest Pst (10 min. period):	0.064	Test limit:	0.650	Pass
Highest Plt (2 hr. period):	0.028			

## 7.7 Test Photograph

Test Mode: Mode 2,3,6,8

Description: Voltage fluctuations and flicker Test Setup

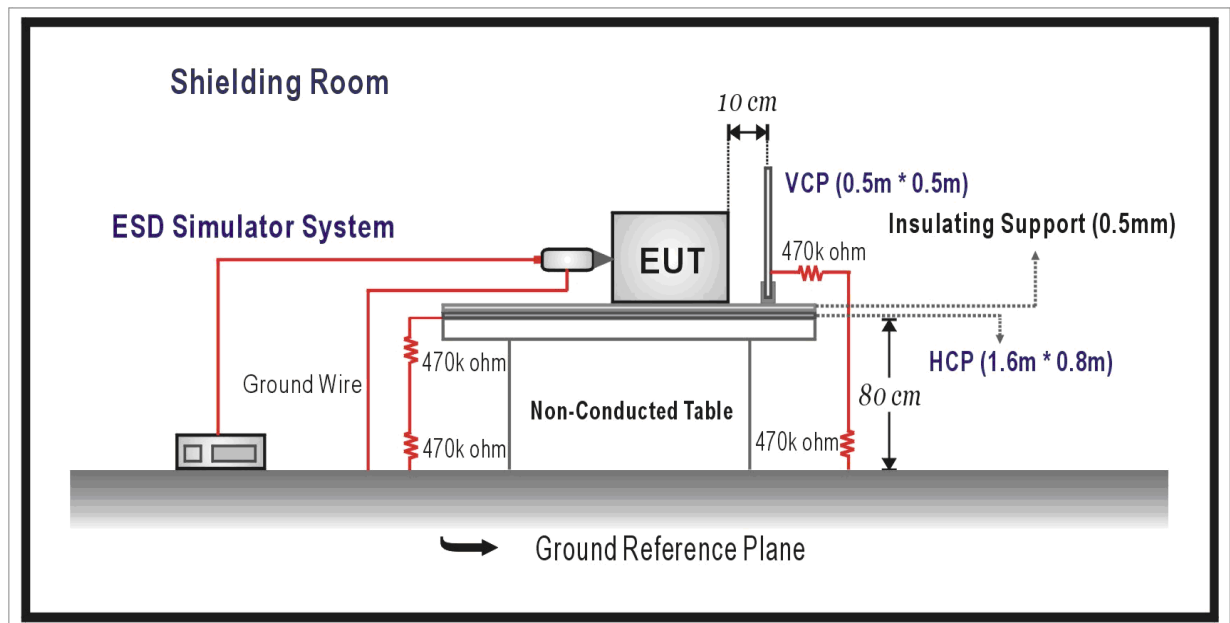


## 8 Electrostatic discharge

### 8.1 Test Specification

According to EMC Standard: EN 61000-4-2:2009

### 8.2 Test Setup



### 8.3 Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Enclosure port			
Electrostatic discharge	±4 (Contact discharge)	kV	B
	±8 (Air discharge)	kV	

### 8.4 Test Procedure

#### **Direct application of discharges to the EUT:**

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

#### **Indirect application of discharges to the EUT:**

##### Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

##### Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

### 8.5 Deviation from Test Standard

No deviation.

## 8.6 Test Result

Test Site	TR21	Date of Test	2024.01.22
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	21 °C	Humidity	42% RH
Barometric Pressure	1032 mbar	Test Engineer	Tony Guo
Test Mode	Mode 2,3,6,8		

Air Discharge								
Test Location	Test Level						Observation	Result
	+2 kV	-2 kV	+4 kV	-4 kV	+8 kV	-8 kV		
1	A	A	A	A	A	A	Note 1	Pass
2	A	A	A	A	A	A	Note 1	Pass
3	A	A	A	A	A	A	Note 1	Pass
4	A	A	A	A	A	A	Note 1	Pass
5	A	A	A	A	A	A	Note 1	Pass
6	A	A	A	A	A	A	Note 1	Pass
7	A	A	A	A	A	A	Note 1	Pass
8	A	A	A	A	A	A	Note 1	Pass
9	A	A	A	A	A	A	Note 1	Pass
10	A	A	A	A	A	A	Note 1	Pass
11	A	A	A	A	A	A	Note 1	Pass
12	A	A	A	A	A	A	Note 1	Pass
13	A	A	A	A	A	A	Note 1	Pass
14	A	A	A	A	A	A	Note 1	Pass
15	A	A	A	A	A	A	Note 1	Pass
16	A	A	A	A	A	A	Note 1	Pass
17	A	A	A	A	A	A	Note 1	Pass
18	A	A	A	A	A	A	Note 1	Pass
19	A	A	A	A	A	A	Note 1	Pass
20	A	A	A	A	A	A	Note 1	Pass
21	A	A	A	A	A	A	Note 1	Pass
22	A	A	A	A	A	A	Note 1	Pass
23	A	A	A	A	A	A	Note 1	Pass
24	A	A	A	A	A	A	Note 1	Pass
25	A	A	A	A	A	A	Note 1	Pass
26	A	A	A	A	A	A	Note 1	Pass
27	A	A	A	A	A	A	Note 1	Pass

28	A	A	A	A	A	A	Note 1	Pass
29	A	A	A	A	A	A	Note 1	Pass
30	A	A	A	A	A	A	Note 1	Pass
31	A	A	A	A	A	A	Note 1	Pass
32	A	A	A	A	A	A	Note 1	Pass
33	A	A	A	A	A	A	Note 1	Pass
34	A	A	A	A	A	A	Note 1	Pass
35	A	A	A	A	A	A	Note 1	Pass
36	A	A	A	A	A	A	Note 1	Pass
37	A	A	A	A	A	A	Note 1	Pass
38	A	A	A	A	A	A	Note 1	Pass
39	A	A	A	A	A	A	Note 1	Pass
40	A	A	A	A	A	A	Note 1	Pass
41	A	A	A	A	A	A	Note 1	Pass
42	A	A	A	A	A	A	Note 1	Pass
43	A	A	A	A	A	A	Note 1	Pass
44	A	A	A	A	A	A	Note 1	Pass
45	A	A	A	A	A	A	Note 1	Pass
46	A	A	A	A	A	A	Note 1	Pass
47	A	A	A	A	A	A	Note 1	Pass
48	A	A	A	A	A	A	Note 1	Pass
49	A	A	A	A	A	A	Note 1	Pass
50	A	A	A	A	A	A	Note 1	Pass
51	A	A	A	A	A	A	Note 1	Pass
52	A	A	A	A	A	A	Note 1	Pass
53	A	A	A	A	A	A	Note 1	Pass
54	A	A	A	A	A	A	Note 1	Pass

Contact Discharge						
Test Location	Test Level				Observation	Result
	+2 kV	-2 kV	+4 kV	-4 kV		
55	A	A	A	A	Note 1	Pass
56	A	A	A	A	Note 1	Pass
57	A	A	A	A	Note 1	Pass
58	A	A	A	A	Note 1	Pass
59	A	A	A	A	Note 1	Pass
60	A	A	A	A	Note 1	Pass



61	A	A	A	A	Note 1	Pass
----	---	---	---	---	--------	------

Horizontal Coupling						
Test Location	Test Level				Observation	Result
	+2 kV	-2 kV	+4 kV	-4 kV		
Front	A	A	A	A	Note 1	Pass
Rear	A	A	A	A	Note 1	Pass
Left	A	A	A	A	Note 1	Pass
Right	A	A	A	A	Note 1	Pass

Vertical Coupling						
Test Location	Test Level				Observation	Result
	+2 kV	-2 kV	+4 kV	-4 kV		
Front	A	A	A	A	Note 1	Pass
Rear	A	A	A	A	Note 1	Pass
Left	A	A	A	A	Note 1	Pass
Right	A	A	A	A	Note 1	Pass

Note 1: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

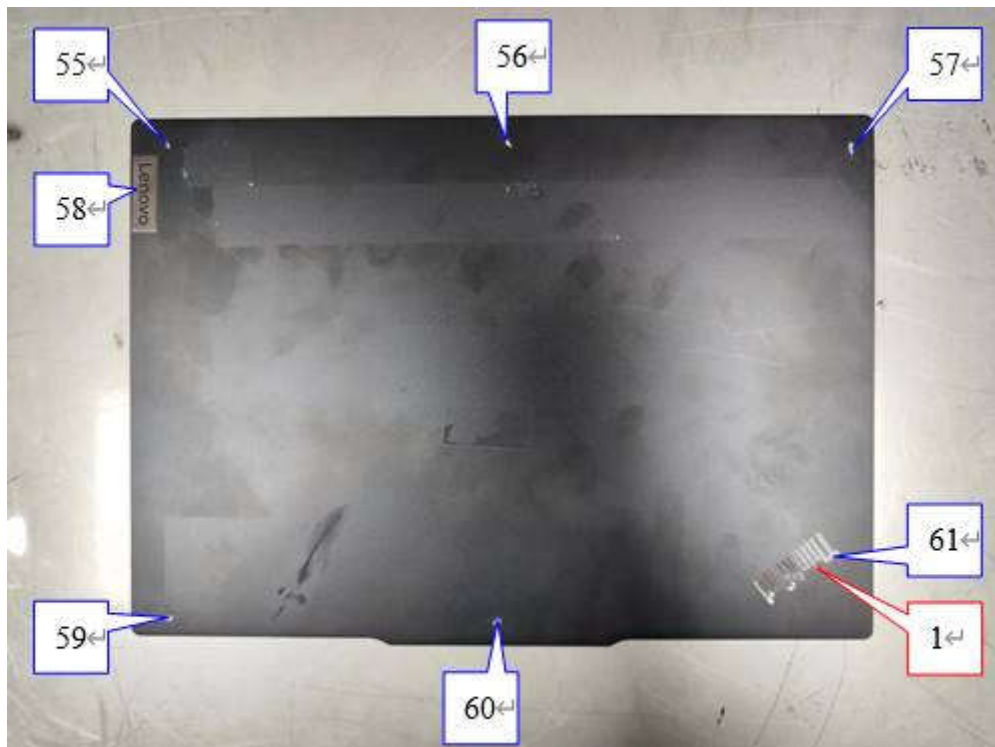
## 8.7 Test Photograph

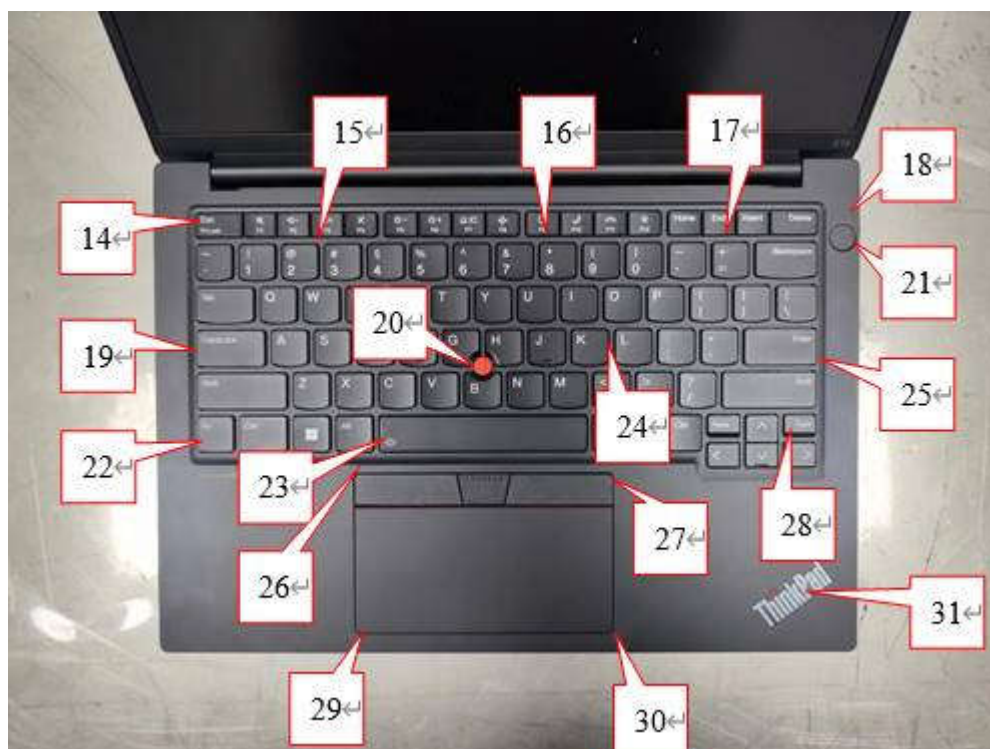
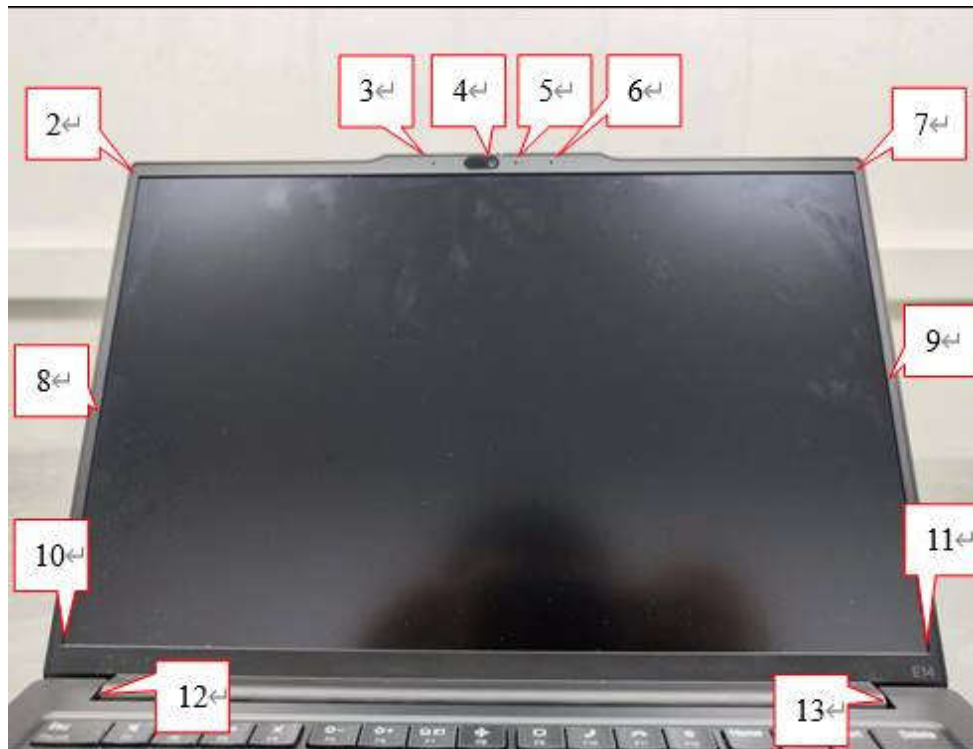
Test Mode: Mode 2,3,6,8

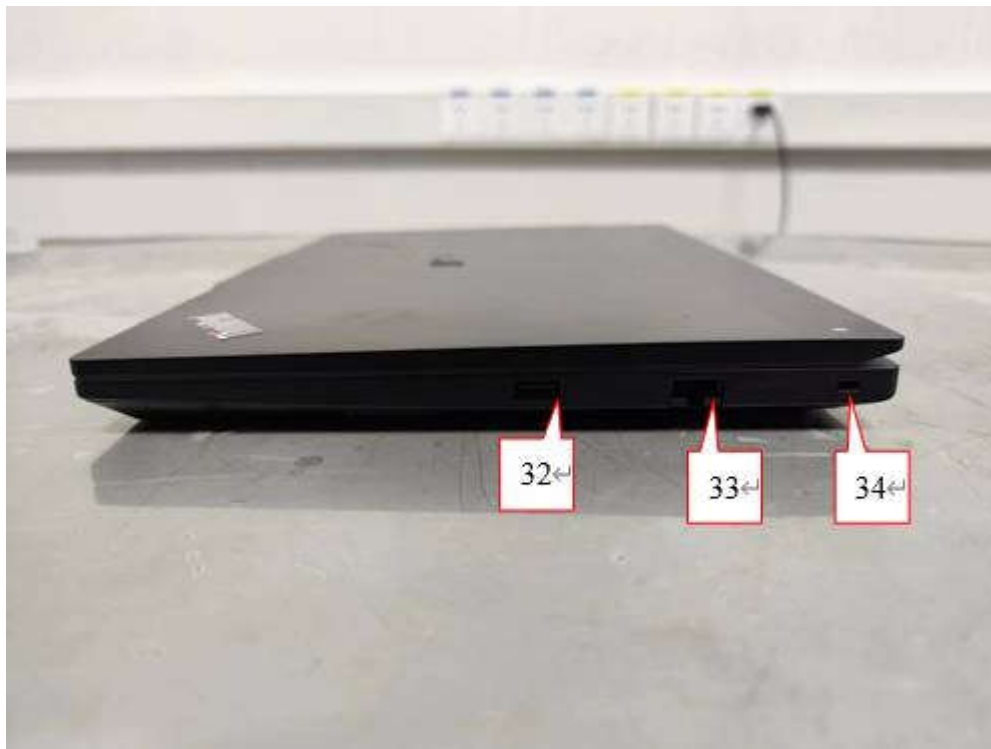
Description: Electrostatic discharge Test Setup

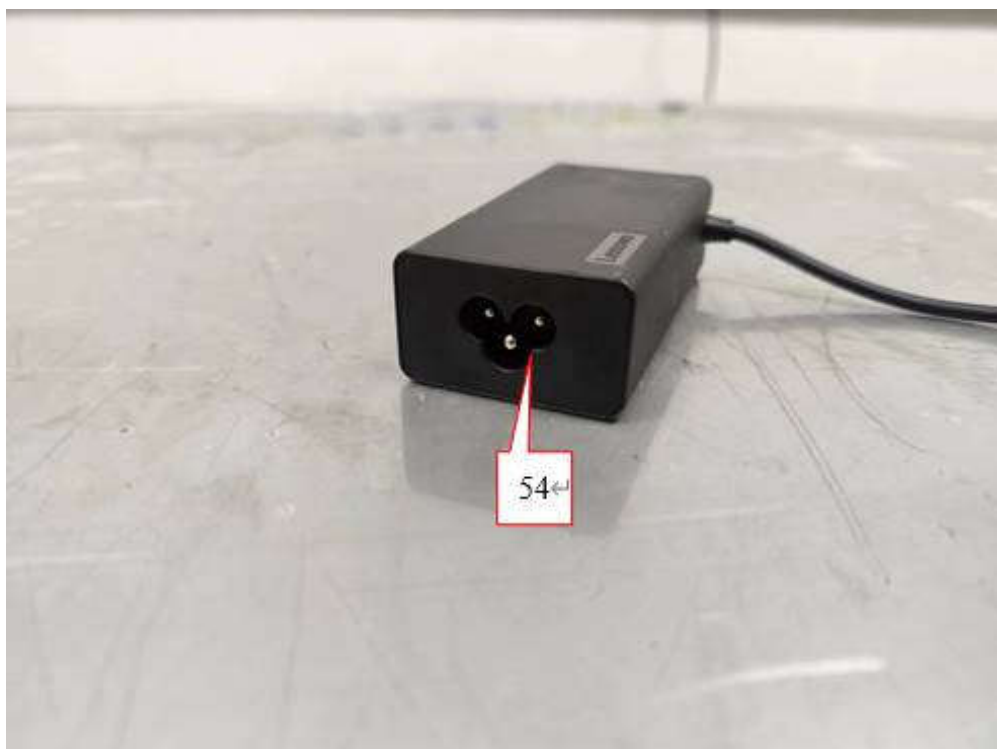
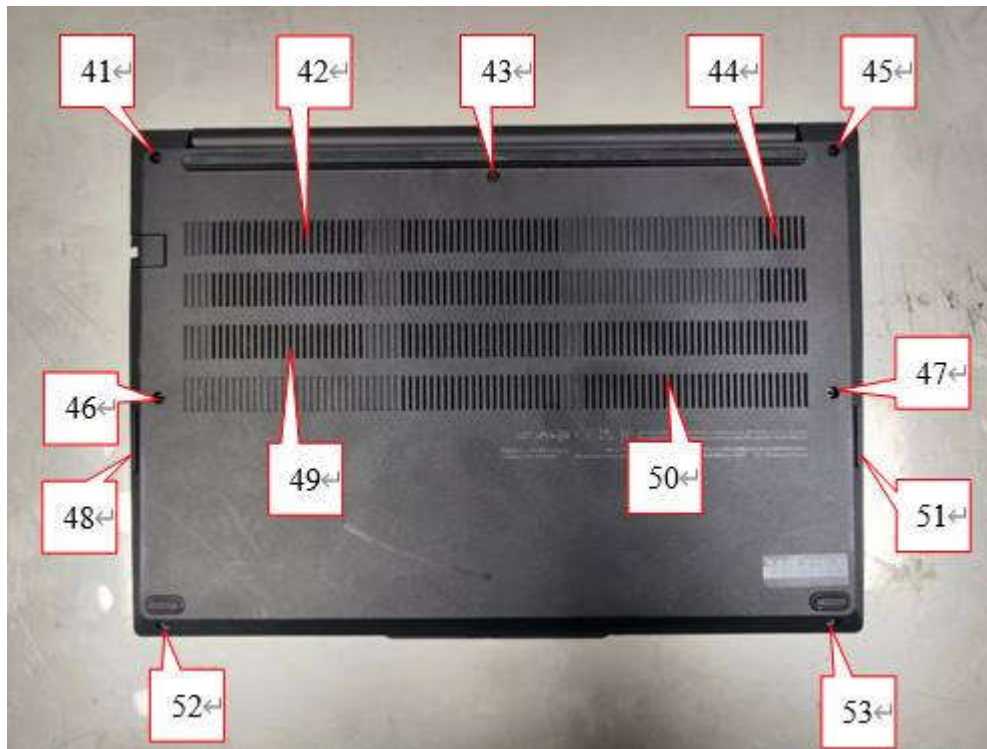


Electrostatic discharge Test Location







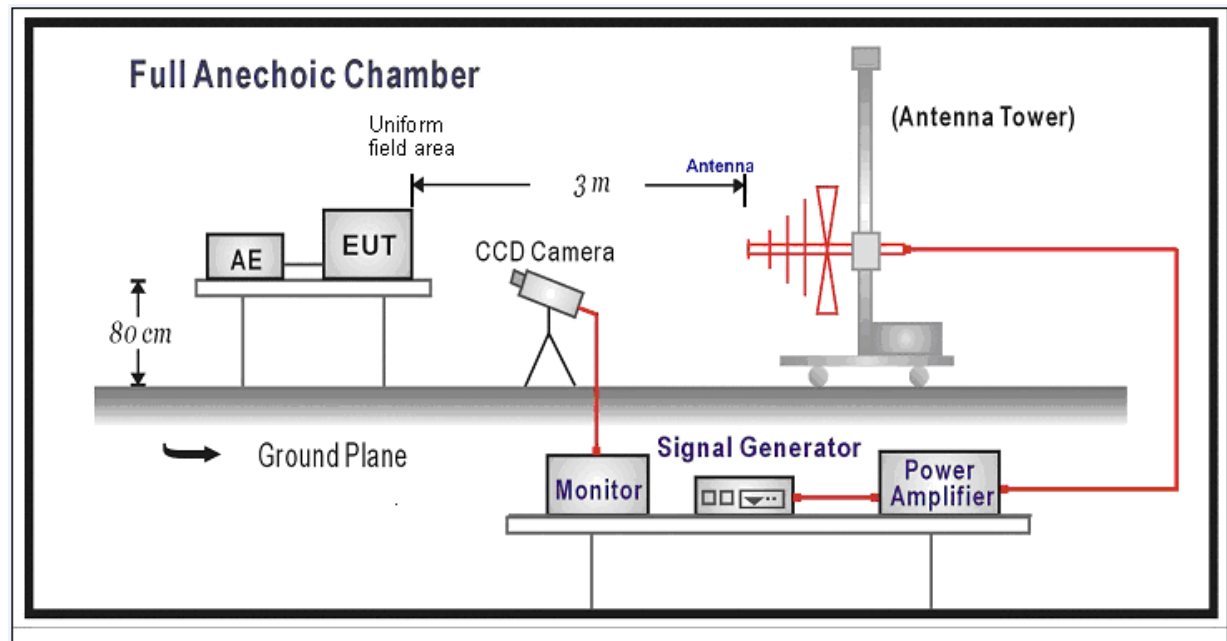


## 9 Radio frequency electromagnetic field

### 9.1 Test Specification

According to EMC Standard: EN IEC 61000-4-3:2020

### 9.2 Test Setup



### 9.3 Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Enclosure port			
Radio frequency electromagnetic field	80 – 6000	MHz	A
	3	V/m (unmodulated, r.m.s)	
	80	% AM (1kHz)	
NOTE 1: If the wanted signal is modulated at 1000Hz, then an audio signal of 400Hz shall be used.			
NOTE 2: The test shall be performed over the frequency range 80MHz to 6000MHz with the exception of the exclusion band for transmitters, receivers and duplex transceivers [see clause 4 of ETSI EN 301 489-3 V2.3.2 (2023-01)], as appropriate.			

The frequencies on which the transmitter part of the EUT is intended to operate shall be excluded from radiated emission measurements when performed in transmit mode of operation.

There shall be no frequency exclusion band applied to emission measurements of the receiver part of transceivers or the stand alone receiver under test, and/or associated ancillary equipment.

The exclusion band for immunity testing of equipment operating in the 2,4 GHz band shall be:

- lower limit of exclusion band = lowest allocated band edge frequency -120 MHz, i.e. 2 280 MHz.
- upper limit of exclusion band = highest allocated band edge frequency +120 MHz, i.e. 2 603,5MHz.

The exclusion band for immunity testing of equipment operating in the 5 GHz Wi-Fi band shall be:

- lower limit of exclusion band = lowest allocated band edge frequency -270 MHz, i.e. 4 880 MHz;
- upper limit of exclusion band = highest allocated band edge frequency +270 MHz, i.e. 5 995 MHz.

The exclusion band for immunity testing of equipment operating in the 5,8 GHz band shall be:

- lower limit of exclusion band = lowest allocated band edge frequency -270 MHz, i.e. 5 455 MHz;
- as the immunity requirements have an upper frequency range of 6 GHz and any upper edge exclusion band would be greater than this for the 5,8 GHz band. The above frequency shall also be regarded as the upper end of the test range.

NOTE: These receiver exclusion band ranges align with the relevant blocking test ranges.



## 9.4 Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.

In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3V/m
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	80 - 6000MHz,
4	Dwell Time	3 Seconds
5.	Frequency Step Size $\Delta f$	1%

## 9.5 Deviation from Test Standard

No deviation.



## 9.6 Test Result

Test Site	TR2	Date of Test	2024.01.20
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	23 °C	Humidity	44% RH
Barometric Pressure	1032 mbar	Test Engineer	Lawrence Wang
Test Mode	Mode 2,3,6,8		

Frequency (MHz)	Polarity	Position	Field Strength (V/m)	Test Result Criterion	Observation	Result
80-6000	H+V	Front+ Rear Left+ Right	3	A	Note 1&2	Pass

Note 1: The exclusion bands which defined in EN301489 series standards were excluded during the test.

Note 2: During the test no loss of performance was observed. PER less than or equal to 10 %. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

## 9.7 Test Photograph

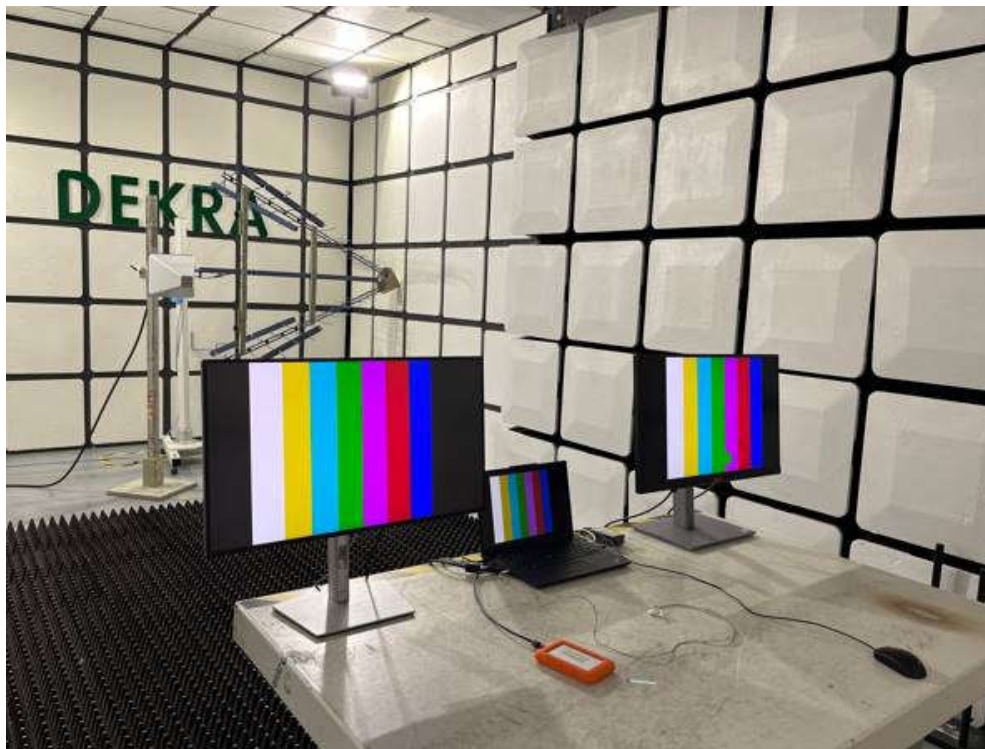
Test Mode: Mode 2,3,6,8

Description: Radio frequency electromagnetic field Test Setup (Below 1 GHz)



Test Mode: Mode 2,3,6,8

Description: Radio frequency electromagnetic field Test Setup (Above 1 GHz)

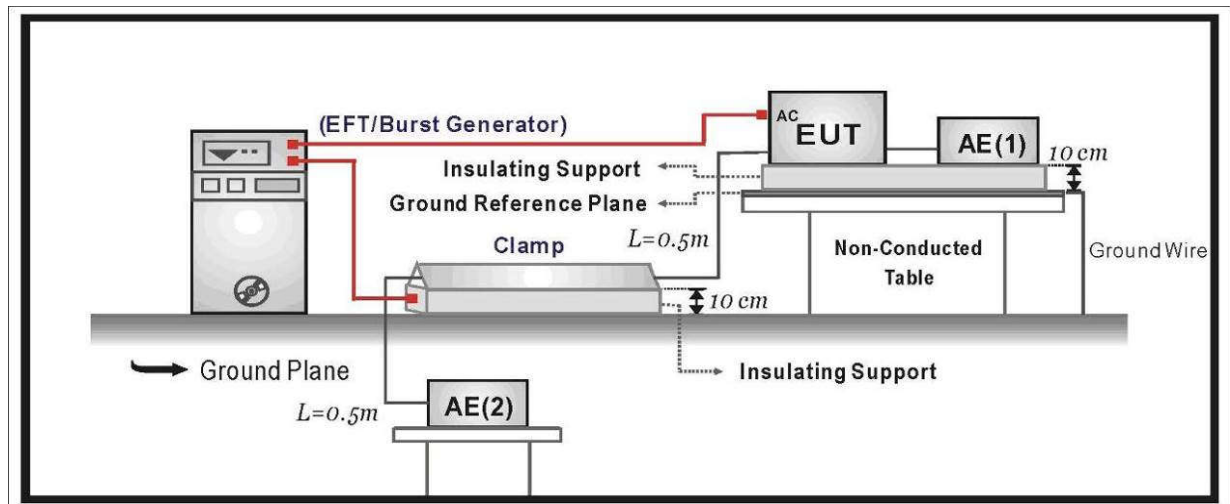


## 10 Fast transients common mode

### 10.1 Test Specification

According to EMC Standard: EN 61000-4-4:2012

### 10.2 Test Setup



### 10.3 Limit

Environmental phenomenon	Test specification	Units	Performance criterion
AC mains Power input ports			
Fast transients common mode	±1.0	kV (peak)	B
	5/50	Tr/Th ns	
	5	Repetition frequency (kHz)	
DC Power input ports (See Note)			
Fast transients common mode	±0.5	kV (peak)	B
	5/50	Tr/Th ns	
	5	Repetition frequency (kHz)	
Signal ports, telecommunication ports, and control ports (See Note)			
Fast transients common mode	±0.5	kV (peak)	B
	5/50	Tr/Th ns	
	5	Repetition frequency (kHz)	
NOTE: This test shall be additionally performed on signal ports, telecommunication ports, control ports, and DC Power ports, of radio equipment and associated ancillary equipment, if the cables may be longer than 3m.			

## 10.4 Test Procedure

The EUT is placed on a table that is 0.8-meter height. A ground reference plane is placed on the table and uses a  $(0,1 \pm 0,01)$  m insulation between the EUT and ground reference plane.

The minimum area of the ground reference plane is 0.8m\*1m, and 0.65mm (copper or aluminium of 0,25 mm minimum thickness) thick min, and projected beyond the EUT by at least 0.1m on all sides.

### **For AC mains Power input ports and DC Power input ports:**

The EUT is connected to the Power mains through a coupling device that directly couples the EFT/B interference signal.

Each of the line conductors is impressed with burst noise for 1 minute.

The length of the Power lines between the coupling device and the EUT is  $(0,5 - 0/+0,1)$ m for tabletop equipment testing.

### **For signal ports, telecommunication ports, and control ports:**

The EFT interference signal is through a coupling clamp device couple to the signal of the EUT with burst noise for 1 minute.

The length of the signal lines between the coupling device and the EUT is  $(0,5 - 0/+0,1)$ m for tabletop equipment testing.

## 10.5 Deviation from Test Standard

No deviation.

## 10.6 Test Result

Test Site	TR2	Date of Test	2024.01.22
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	22 °C	Humidity	41% RH
Barometric Pressure	1032 mbar	Test Engineer	Koala Yu
Test Mode	Mode 2,3,6,8		

Input ac. power ports (Tr/Th: 5/50 ns, Repetition Frequency: 5 kHz)							
Inject Line	Polarity	Test Level (kV)	Test Duration (second)	Inject Method	Test Result Criterion	Observation	Result
L	+	1	60	Direct	A	Note 1	Pass
L	-	1	60	Direct	A	Note 1	Pass
N	+	1	60	Direct	A	Note 1	Pass
N	-	1	60	Direct	A	Note 1	Pass
PE	+	1	60	Direct	A	Note 1	Pass
PE	-	1	60	Direct	A	Note 1	Pass
L+N	+	1	60	Direct	A	Note 1	Pass
L+N	-	1	60	Direct	A	Note 1	Pass
L+PE	+	1	60	Direct	A	Note 1	Pass
L+PE	-	1	60	Direct	A	Note 1	Pass
N+PE	+	1	60	Direct	A	Note 1	Pass
N+PE	-	1	60	Direct	A	Note 1	Pass
L+N+PE	+	1	60	Direct	A	Note 1	Pass
L+N+PE	-	1	60	Direct	A	Note 1	Pass
Signal ports and telecommunication ports (Tr/Th: 5/50ns, Repetition Frequency: 5kHz)							
Inject Line	Polarity	Test Level (kV)	Test Duration (second)	Inject Method	Test Result Criterion	Observation	Result
LAN	+	0.5	60	Clamp	A	Note 1	Pass
LAN	-	0.5	60	Clamp	A	Note 1	Pass

Note 1: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

## 10.7 Test Photograph

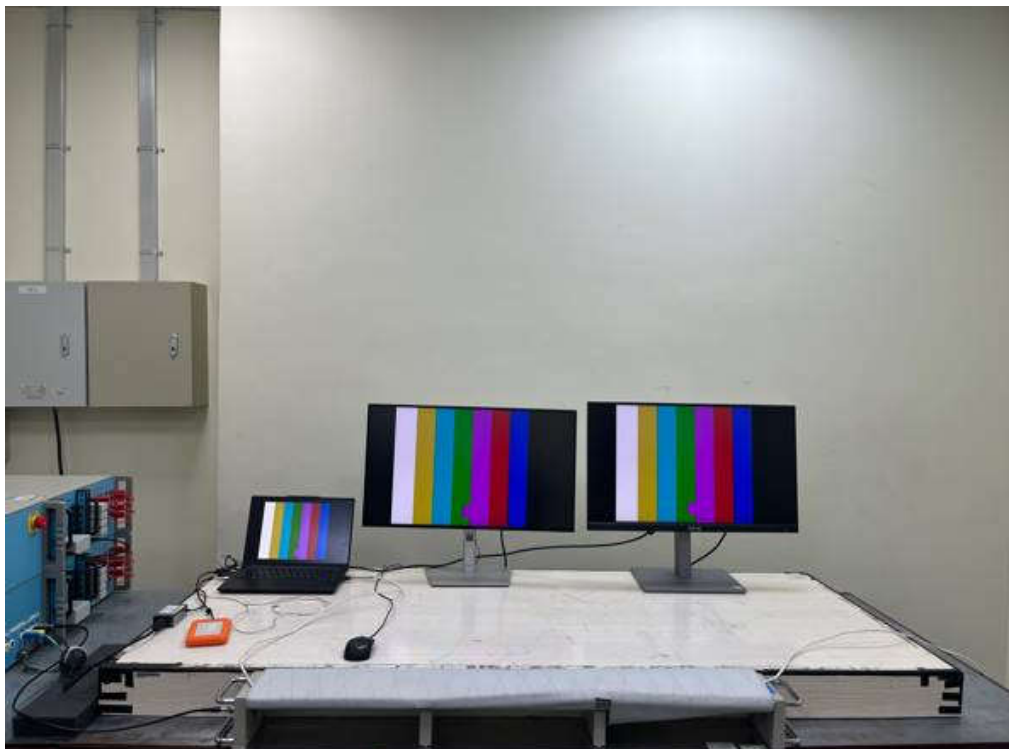
Test Mode: Mode 2,3,6,8

Description: Electrical fast transients Test Setup (Input ac. power ports)



Test Mode: Mode 2,3,6,8

Description: Electrical fast transients Test Setup (LAN port)



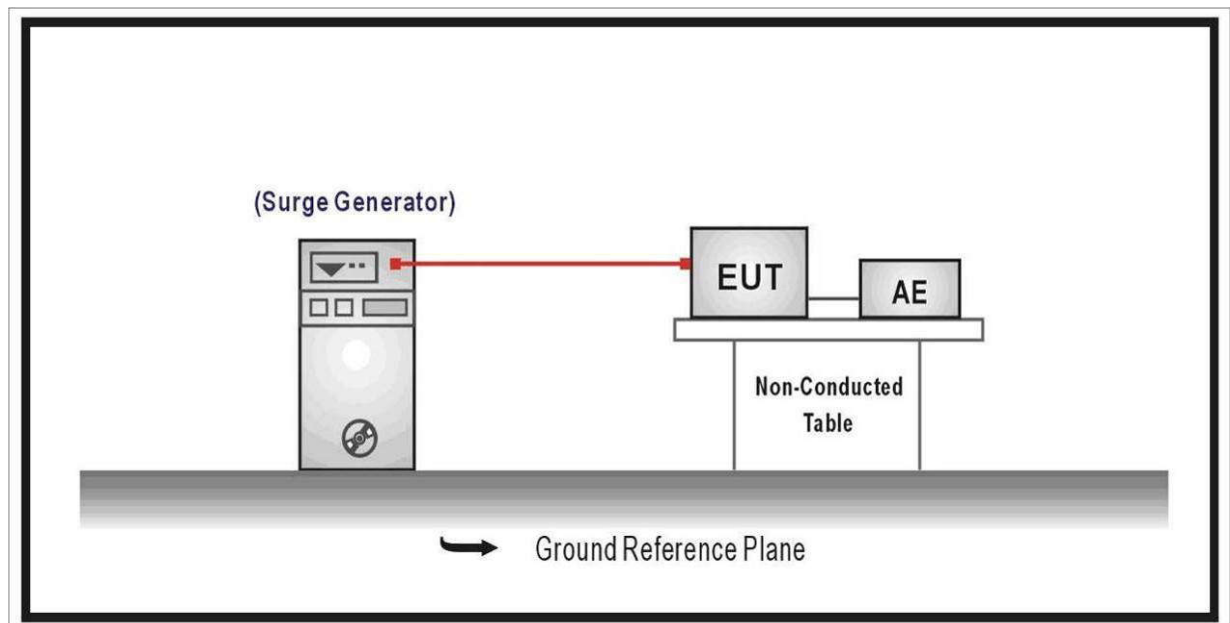


## 11 Surges

### 11.1 Test Specification

According to EMC Standard: EN 61000-4-5:2014+A1:2017

### 11.2 Test Setup



### 11.3 Limit

Environmental phenomenon	Test specification	Units	Performance criterion
AC mains Power input ports (See Note 1)			
Surges	1.2/50 (8/20) 1 line to line 2 line to ground	Tr/Th us kV (peak) kV (peak)	B
Telecommunication ports directly connected to outdoor cables (See Note 1 and 2)			
Surges	1.2/50 (8/20) 1 line to ground	Tr/Th us kV (peak)	B
Telecommunication ports directly connected to indoor cables (See Note 1 and 3)			
Surges	1.2/50 (8/20) 0.5 line to ground	Tr/Th us kV (peak)	B
NOTE 1: Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no test shall be required.			
NOTE 2: In telecom centers 1kV line to ground and 0.5kV line to line shall be used.			
NOTE 3: The test level for telecommunication ports, intended to be connected to indoor cables (longer than 30m) shall be 0.5kV line to ground.			

## 11.4 Test Procedure

The EUT is placed on a table that is 0.8 meter above a metal ground plane measured 1m\*1m minimum and 0.65mm thick minimum and projected beyond the EUT by at least 0.1m on all sides. The length of Power cord between the coupling device and the EUT shall be 2m or less.

### **For AC mains Power input ports:**

The EUT is connected to the Power mains through a coupling device that directly couples the surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0°, 90°, 180°, 270° and the peak value of the a.c. voltage wave. (Positive and negative)

Each of Line to Earth and Line to Line is impressed with a sequence of five surge voltages with interval of 1 minute.

### **For telecommunication ports:**

The signal line of EUT is connected to coupling and decoupling network that directly couples the surge interference signal.

Only Line to ground is impressed with a sequence of five surge voltages with interval of 1 minute.

## 11.5 Deviation from Test Standard

No deviation.



## 11.6 Test Result

Test Site	TR2	Date of Test	2024.01.22
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	22 °C	Humidity	41% RH
Barometric Pressure	1032 mbar	Test Engineer	Koala Yu
Test Mode	Mode 2,3,6,8		

Input a.c. power ports [Tr/Th: 1.2/50 us (8/20 us)]							
Inject Line	Polarity	Angle (degree)	Test Level (kV)	Test Interval (second)	Test Result Criterion	Observation	Result
L+N	+	0	0.5/1	60	A	Note 1	Pass
L+N	-	0	0.5/1	60	A	Note 1	Pass
L+N	+	90	0.5/1	60	A	Note 1	Pass
L+N	-	90	0.5/1	60	A	Note 1	Pass
L+N	+	180	0.5/1	60	A	Note 1	Pass
L+N	-	180	0.5/1	60	A	Note 1	Pass
L+N	+	270	0.5/1	60	A	Note 1	Pass
L+N	-	270	0.5/1	60	A	Note 1	Pass
L+PE	+	0	0.5/1/2	60	A	Note 1	Pass
L+PE	-	0	0.5/1/2	60	A	Note 1	Pass
L+PE	+	90	0.5/1/2	60	A	Note 1	Pass
L+PE	-	90	0.5/1/2	60	A	Note 1	Pass
L+PE	+	180	0.5/1/2	60	A	Note 1	Pass
L+PE	-	180	0.5/1/2	60	A	Note 1	Pass
L+PE	+	270	0.5/1/2	60	A	Note 1	Pass
L+PE	-	270	0.5/1/2	60	A	Note 1	Pass
N+PE	+	0	0.5/1/2	60	A	Note 1	Pass
N+PE	-	0	0.5/1/2	60	A	Note 1	Pass
N+PE	+	90	0.5/1/2	60	A	Note 1	Pass
N+PE	-	90	0.5/1/2	60	A	Note 1	Pass
N+PE	+	180	0.5/1/2	60	A	Note 1	Pass
N+PE	-	180	0.5/1/2	60	A	Note 1	Pass
N+PE	+	270	0.5/1/2	60	A	Note 1	Pass
N+PE	-	270	0.5/1/2	60	A	Note 1	Pass
Signal ports and telecommunication ports [Tr/Th: 10/700us (5/320us)]							
Inject	Polarity	Angle	Test Level	Test Interval	Test Result	Observation	Result

Line		(degree)	(kV)	(second)	Criterion		
LAN	+	N/A	0.5/1	60	A	Note 1	Pass
LAN	-	N/A	0.5/1	60	A	Note 1	Pass

Note 1: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

### 11.7 Test Photograph

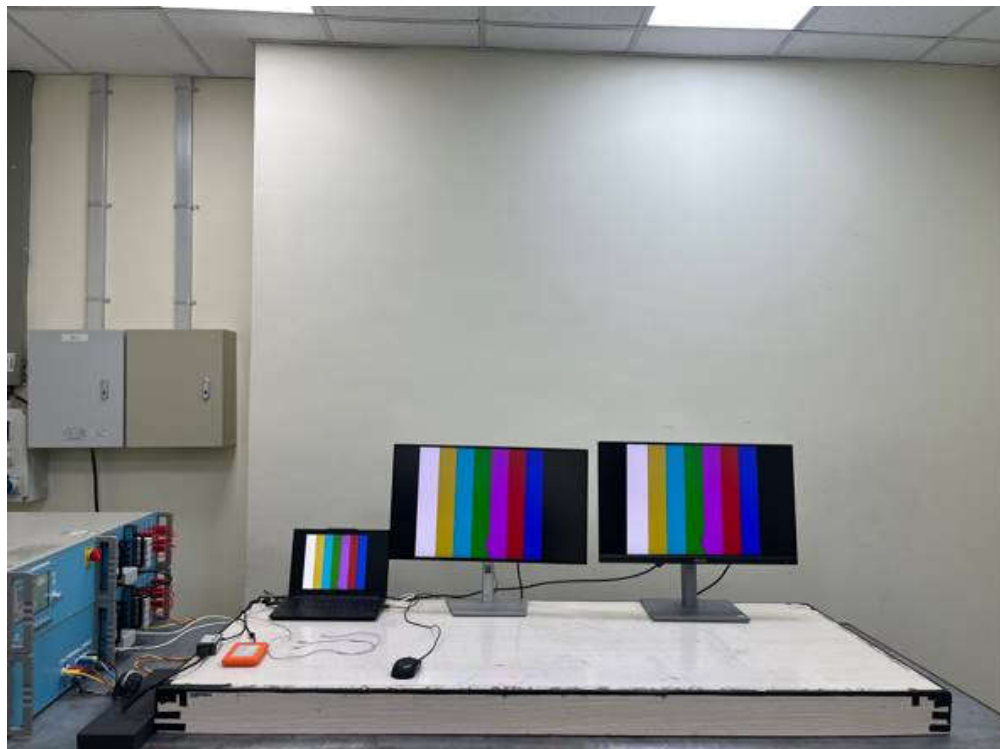
Test Mode: Mode 2,3,6,8

Description: Surges Test Setup (AC mains Power input ports)



Test Mode: Mode 2,3,6,8

Description: Surges Test Setup (LAN port)



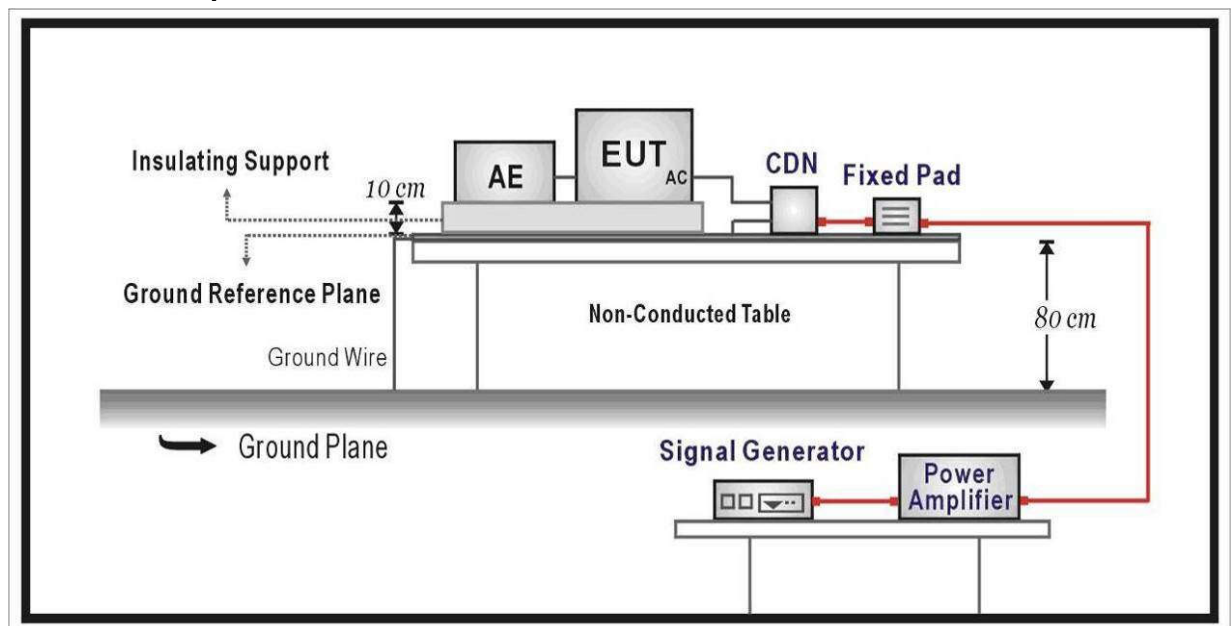
## 12 Radio frequency common mode

### 12.1 Test Specification

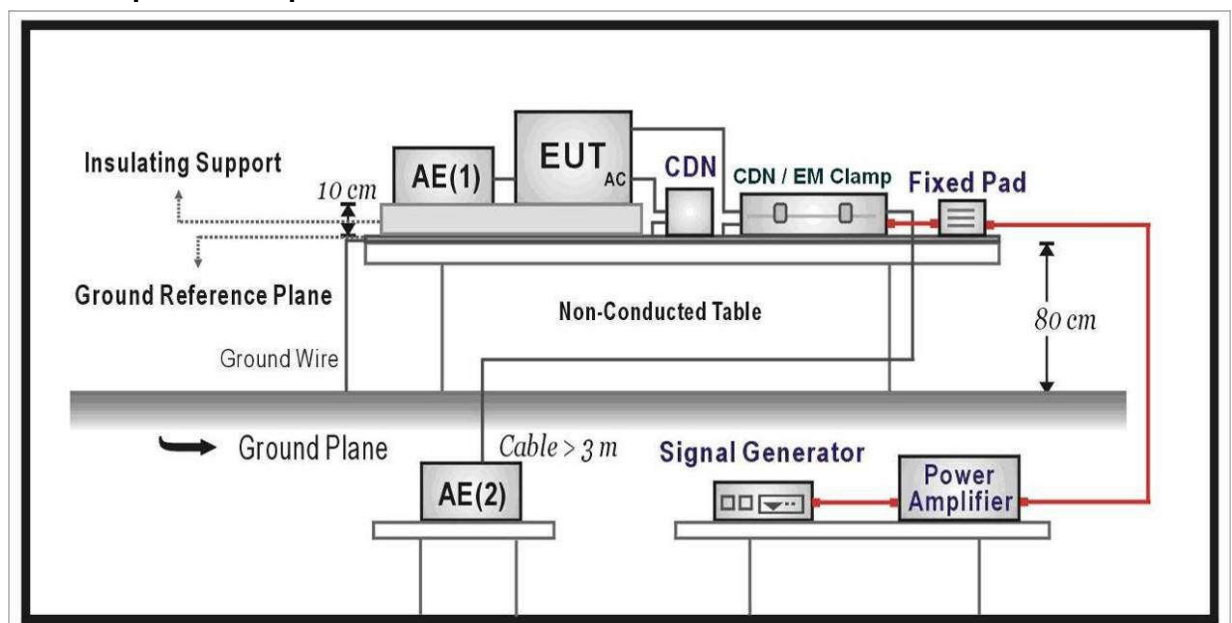
According to EMC Standard: EN 61000-4-6:2014/AC:2015

### 12.2 Test Setup

#### CDN Test Setup



#### EM Clamp Test Setup



### 12.3 Limit

Environmental phenomenon	Test specification	Units	Performance criterion
AC mains Power ports (See Note 1 and 2)			
Radio frequency common mode	0.15 - 80	MHz	A
	3	V (unmodulated, r.m.s)	
	80	% AM (1kHz)	
DC Power ports (See Note 1, 2 and 3)			
Radio frequency common mode	0.15 - 80	MHz	A
	3	V (unmodulated, r.m.s)	
	80	% AM (1kHz)	
Signal ports, telecommunication ports, and control ports (See Note 1, 2 and 3)			
Radio frequency common mode	0.15 - 80	MHz	A
	3	V (unmodulated, r.m.s)	
	80	% AM (1kHz)	
NOTE 1: If the wanted signal is modulated at 1000Hz, then an audio signal of 400Hz shall be used. NOTE 2: The test shall be performed over the frequency range 150kHz to 80MHz with the exception of the exclusion band for transmitters, and for receivers and duplex transceivers [see clause 4 of EN 301 489-1 V2.2.0 (2017-03)]. NOTE 3: This test shall be additionally performed on signal ports, telecommunication ports, control ports, and DC Power ports, of radio equipment and associated ancillary equipment, if the cables may be longer than 3m.			

## 12.4 Test Procedure

The EUT is placed on a table that is 0.8 meter height, and a ground reference plane on the table, EUT is placed upon table and use a  $0,1\text{ m} \pm 0,05\text{ m}$  insulation between the EUT and ground reference plane. Where coupling and/or decoupling devices are required, they shall be located between 0,1 m and 0,3 m from the EUT. This distance is to be measured horizontally from the projection of the EUT on to the reference ground plane to the coupling and/or decoupling device.

### For AC mains Power ports and DC Power ports:

The EUT is connected to the Power mains through a coupling and decoupling network for Power supply lines. And directly couples the disturbances signal into EUT.

Used CDN-M2 for two wires or CDN-M3 for three wires.

### For signal ports, telecommunication ports, and control ports:

The disturbance signal is through a coupling and decoupling network (CDN) or EM-clamp device couples to the signal and telecommunication lines of the EUT.

	Condition of Test	Remarks
1.	Field Strength	3V
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	0.15 - 80MHz
4.	Dwell Time	3 Seconds
5.	Frequency Step Size $\Delta f$	1%

## 12.5 Deviation from Test Standard

No deviation.

## 12.6 Test Result

Test Site	TR2	Date of Test	2024.01.22
EUT	Notebook Computer	Test Voltage	230 Vac, 50 Hz
Temperature	22 °C	Humidity	41% RH
Barometric Pressure	1032 mbar	Test Engineer	Koala Yu
Test Mode	Mode 2,3,6,8		

Frequency (MHz)	Inject Voltage (V)	Inject Ports	Inject Method	Test Result Criterion	Observation	Result
0.15-80	3	AC Mains	CDN	A	Note 1	Pass
0.15-80	3	LAN	CDN	A	Note 1	Pass

Note 1: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

## 12.7 Test Photograph

Test Mode: Mode 2,3,6,8

Description: Radio frequency common mode Test Setup (AC mains Power ports)



Test Mode: Mode 2,3,6,8

Description: Continuous induced RF disturbances Test Setup (LAN port)



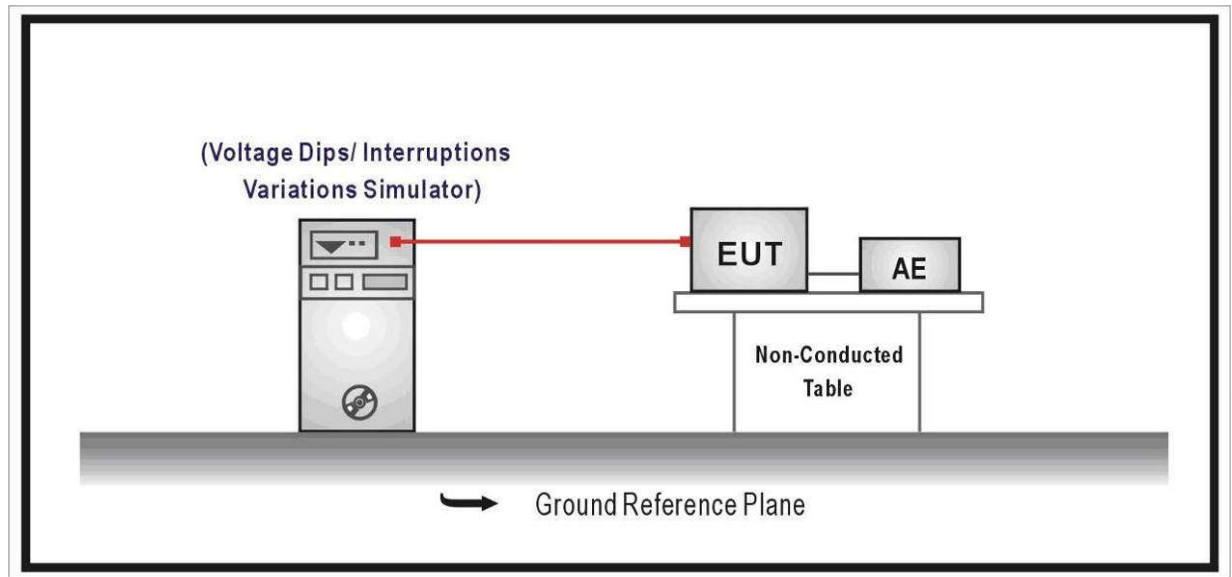


## 13 Voltage dips and interruptions

### 13.1 Test Specification

According to EMC Standard: EN IEC 61000-4-11:2020

### 13.2 Test Setup



### 13.3 Limit

Environmental phenomenon	Test specification	Units	Performance criterion
AC mains Power input ports			
Voltage dips	0 0.5	% residual cycle	B
	0 1	% residual cycle	B
	70 25	% residual cycle	B
Voltage interruptions	0 250	% residual cycle	C
NOTE: Changes to occur at 0 degree crossover point of the voltage waveform.			

### 13.4 Test Procedure

The EUT is placed on a table which is 0.8 meter above a metal ground plane measured 1m\*1m minimum, and 0.65mm thick minimum, and projected beyond the EUT by at least 0.1m on all sides. The Power cord shall be used the shortest Power cord as specified by the manufacturer.

For voltage dips and interruptions test:

The selection of test voltage is based on the rated Power range. If the operation range is large than 20% of lower Power range, both end of specified voltage shall be tested. Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the Power mains through a coupling device that directly couples to the voltage dips and interruption generator.

### 13.5 Deviation from Test Standard

No deviation.

### 13.6 Test Result

Test Site	TR2	Date of Test	2024.01.22
EUT	Notebook Computer	Test Voltage	100 Vac, 50 Hz
Temperature	22 °C	Humidity	41% RH
Barometric Pressure	1032 mbar	Test Engineer	Koala Yu
Test Mode	Mode 2,3,6,8		

Voltage % Reduction	Test Duration (period)	Complied to Criteria	Observation	Result
0	0.5	A	Note 1	Pass
0	1	A	Note 1	Pass
70	25	A	Note 1	Pass
0	250	B	Note 2	Pass

Note 1: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

Note 2: The power consumption of EUT has changed from adapter to battery during the test, but self-recoverable after the test.

Test Site	TR2	Date of Test	2024.01.22
EUT	Notebook Computer	Test Voltage	240 Vac, 50 Hz
Temperature	22 °C	Humidity	41% RH
Barometric Pressure	1032 mbar	Test Engineer	Koala Yu
Test Mode	Mode 2,3,6,8		

Voltage % Reduction	Test Duration (period)	Complied to Criteria	Observation	Result
0	0.5	A	Note 1	Pass
0	1	A	Note 1	Pass
70	25	A	Note 1	Pass
0	250	B	Note 2	Pass

Note 1: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

Note 2: The power consumption of EUT has changed from adapter to battery during the test, but self-recoverable after the test.

### 13.7 Test Photograph

Test Mode: Mode 2,3,6,8

Description: Voltage dips and interruptions Test Setup

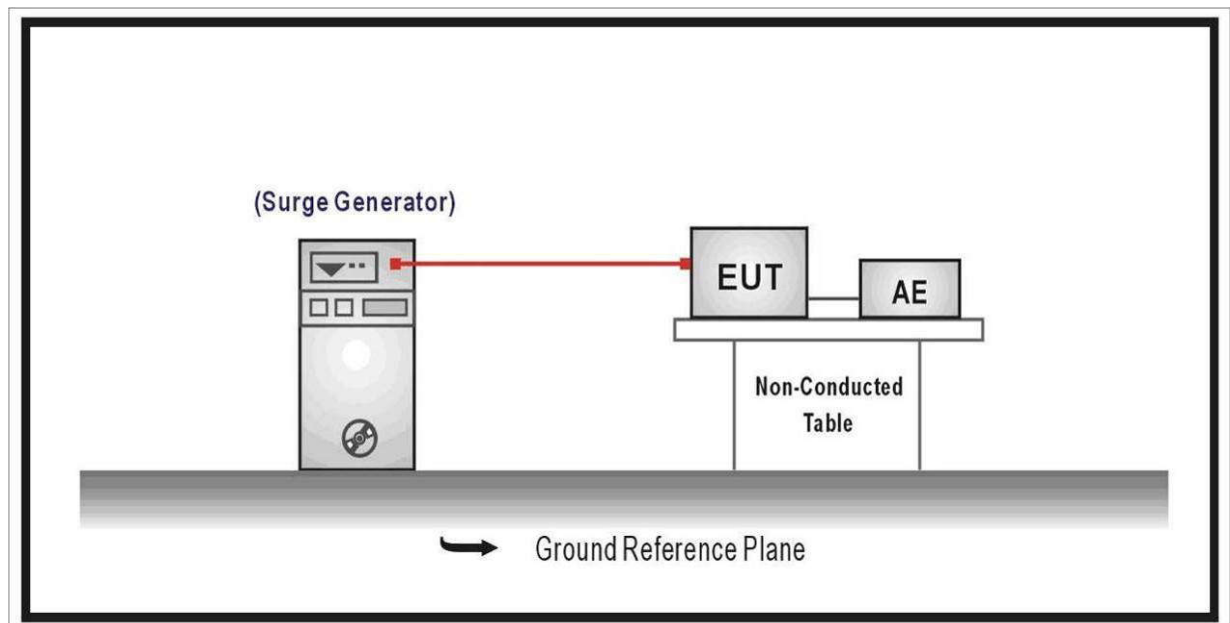


## 14 Transients and surges

### 14.1 Test Specification

According to EMC Standard: ISO 7637-2:2011

### 14.2 Test Setup



### 14.3 Limit

EUT applying pulses 1, 2a, 2b, 3a, 3b, using immunity test level III. For the purpose of EMC testing it is sufficient to apply pulses 1, 2a, 10 times each, and apply the test pulses 3a and 3b for 20 minutes each.

### 14.4 Test Procedure

#### Test requirements for 12V DC Powered equipment:

Where the manufacturer in his installation documentation requires the radio equipment to have a direct connection to the 12V main vehicle Battery the requirements in a) shall apply.

Where the manufacturer does not require the radio equipment to have a direct connection to the 12V main vehicle Battery the requirements in a) and b) shall apply:

Pulse 3a and 3b, level II, with the test time reduced to 5 min for each;

Pulse 4, level II, 5 pulses, with the characteristics as follows:

$V_s = -5V$ ;  $V_a = -2.5V$ ;  $t_6 = 25ms$ ;  $t_7 = 50ms$ ;  $t_8 = 5s$ ;  $t_f = 5ms$ ; pulse cycle time: 60s

Pulse, level II:  $t_1 = 2.5s$ ; 10 pulses;

Pulse 2, level II:  $t_1 = 2.5\text{s}$ ; 10 pulses;

Pulse 7, 5 pulses.

Where the manufacturer declares that the radio equipment requires a direct connection to the main vehicle Battery, and therefore the tests in accordance with the requirements b) are not carried out, this shall be stated in the test report.

#### **Test requirements for 24V DC Powered equipment:**

Where the manufacturer in his installation documentation requires the radio equipment to have a direct connection to the 24 V main vehicle Battery the requirements in (1) shall apply.

Where the manufacturer does not require the radio equipment to have a direct connection to the 24 V main vehicle Battery the requirements in (1) and (2) shall apply:

(1) Pulse 3a and 3b, level II, with the test time reduced to 5 min for each;

Pulse 4, level II, 5 pulses, with the characteristics as follows:

$V_s = -10\text{V}$ ;  $V_a = -5\text{V}$ ;  $t_6 = 25\text{ms}$ ;  $t_7 = 50\text{ms}$ ;  $t_8 = 5\text{s}$ ;  $t_f = 10\text{ms}$ ; pulse cycle time: 60s

(2) Pulse 1a, level II:  $t_1 = 2.5\text{s}$ ;  $R_i = 25\Omega$ ; 10 pulses;

Pulse 2b, level II:  $t_1 = 2.5\text{s}$ ;  $R_i = 100\Omega$ ; 10 pulses;

Pulse 2, 10 pulses.

Where the manufacturer declares that the radio equipment requires a direct connection to the main vehicle Battery, and therefore the tests in accordance with the requirements d) are not carried out, this shall be stated in the test report.

Radio and ancillary equipment designed to operate at both DC Power voltages shall be tested in both configurations.

### **14.5 Deviation from Test Standard**

No deviation.

### **14.6 Test Result**

The EUT is not used in the vehicular environment, so it needs not to perform this test item.

## 15 Attachment

### EUT Photograph

(1) EUT Photo



(2) EUT Photo (AL)





(3) EUT Photo (ABS)



(4) EUT Photo





(5) EUT Photo



(6) EUT Photo



(7) EUT Photo



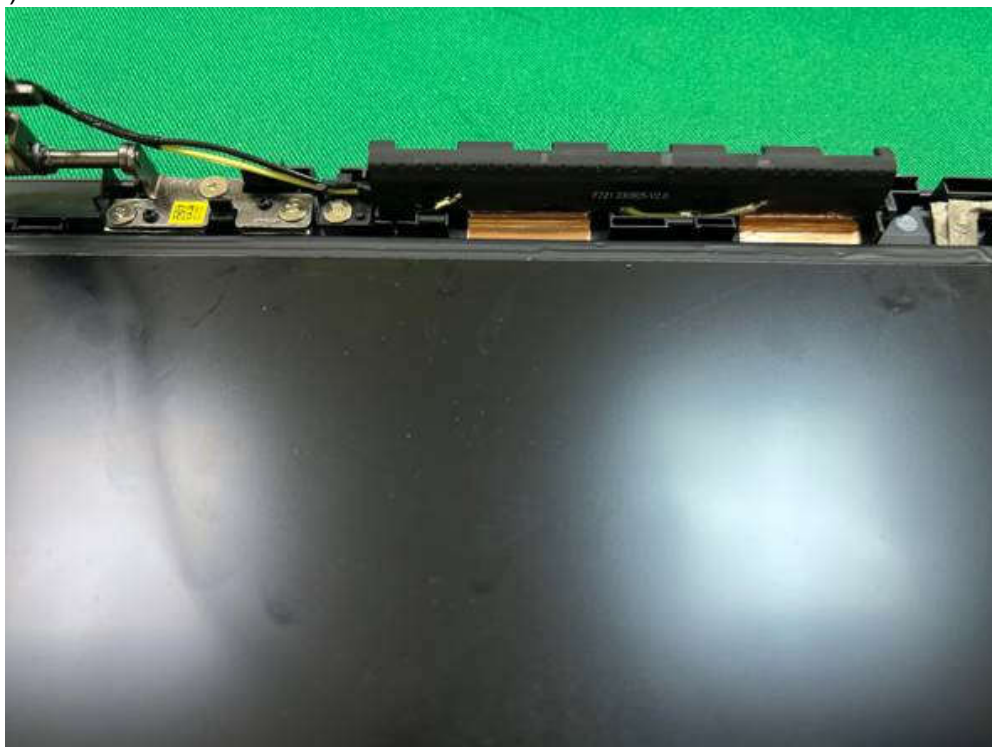
(8) EUT Photo



(9) EUT Photo



(10) EUT Photo





(11) EUT Photo WLAN (Realtek/RTL8852BE)



(12) EUT Photo WLAN (Realtek/RTL8852BE)



(13) EUT Photo WLAN (Realtek/RTL8852BE)



(14) EUT Photo WLAN (Mediatek/MT7921)



(15) EUT Photo WLAN (Mediatek/MT7921)



(16) EUT Photo WLAN (Mediatek/MT7921)



(17) EUT Photo WLAN (Mediatek/MT7922A22M)



(18) EUT Photo WLAN (Mediatek/MT7922A22M)





(19) EUT Photo WLAN (Mediatek/MT7922A22M)



(20) EUT Photo WLAN (Realtek/RTL8852CE)





(21) EUT Photo WLAN (Realtek/RTL8852CE)



(22) EUT Photo WLAN (Realtek/RTL8852CE)



— The End —

**À**  
**COMPANHIA DE PROCESSAMENTO DE DADOS DO MUNICÍPIO DE PORTO ALEGRE –**  
**PROCEMPA**

**DECLARAÇÃO CONJUNTA**  
**(Anexo III)**

A empresa **ATHENAS AUTOMAÇÃO LTDA**, inscrita no CNPJ nº 01.425.676/0003-51, sediada na ROD ES-010, 2594, KM 2.60 QUADRACHA LOTE 343 SALA B46, Jardim Limoeiro, Serra/ES, por intermédio do seu representante legal, Sr. André Felipe Henkin, portador da carteira de identidade nº 6026394376, expedida pelo(a) SJS/II RS, e CPF nº 418.019.540-20, DECLARA, de acordo com o art. 38, I a VIII, da Lei 13.303/2016 e, sob as penas da Lei, para fins de participação na **LICITAÇÃO ELETRÔNICA 19/25**, que:

1. Não possui administrador ou sócio detentor de mais de 5% (cinco por cento) do capital social que seja diretor ou empregado da empresa pública ou sociedade de economia mista contratante;
2. Não se encontra suspensa pela empresa pública ou sociedade de economia mista;
3. Não foi declarada inidônea pela União, por Estado, pelo Distrito Federal ou pela unidade federativa a que está vinculada a empresa pública ou sociedade de economia mista, enquanto perdurarem os efeitos da sanção;
4. Não é constituída por sócio de empresa suspensa, impedida ou declarada inidônea;
5. Não possui administrador que seja sócio de empresa suspensa, impedida ou declarada inidônea;
6. Não é constituída por sócio que tenha sido sócio ou administrador de empresa suspensa, impedida ou declarada inidônea, no período dos fatos que deram ensejo à sanção;
7. Não possui administrador que tenha sido sócio ou administrador de empresa suspensa, impedida ou declarada inidônea, no período dos fatos que deram ensejo à sanção;
8. Não possui, nos seus quadros de diretoria, pessoa que participou, em razão de vínculo de mesma natureza, de empresa declarada inidônea.
9. Não possui, nos seus quadros de diretoria, pessoa que tenha relação de parentesco, até o terceiro grau civil, com:
  - a) dirigente ou empregado da PROCEMPA cujas atribuições envolvam a atuação na área responsável pela licitação ou contratação;
  - b) autoridade do ente público a que a PROCEMPA esteja vinculada.

10. Não é constituída por sócio ou administrador que tenha terminado seu prazo de gestão ou rompido seu vínculo com a PROCEMPA há menos de 6 (seis) meses.

**DECLARA** que não realizou doação em dinheiro, ou bem estimável em dinheiro, para partido político ou campanha eleitoral de candidato a cargo eletivo, a contar do dia 02 de outubro de 2015.

**DECLARA** que não está sob efeito de uma Declaração de Inidoneidade para contratar com a Administração Direta ou Indireta do Município, bem como que comunicará qualquer fato ou evento superveniente à entrega dos documentos da habilitação que venha alterar a atual situação quanto à capacidade jurídica, técnica, regularidade fiscal e idoneidade econômico-financeira.

**DECLARA**, cumprindo o disposto no inciso XXXIII, art. 7º, da Constituição Federal, que não emprega menor de dezoito anos em trabalho noturno, perigoso ou insalubre e não emprega menor de dezesseis anos, assim como assume o compromisso de declarar a superveniência de qualquer fato impeditivo à sua habilitação.

( ) Ressalva: emprega menor, a partir de quatorze anos, na condição de aprendiz (se for o caso).

Por ser a expressão da verdade, assumindo inteira responsabilidade pela declaração acima sob as penas da lei, assino para que produza seus efeitos legais.

ANDRE FELIPE  
HENKIN:418019  
54020

Assinado de forma  
digital por ANDRE FELIPE  
HENKIN:41801954020  
Dados: 2025.06.12  
09:04:02 -03'00'

Porto Alegre – RS, 12 de junho de 2025.

**ATHENAS AUTOMAÇÃO LTDA**  
André Felipe Henkin



## REPÚBLICA FEDERATIVA DO BRASIL

## CADASTRO NACIONAL DA PESSOA JURÍDICA

NÚMERO DE INSCRIÇÃO <b>01.425.676/0003-51</b> FILIAL	COMPROVANTE DE INSCRIÇÃO E DE SITUAÇÃO CADASTRAL	DATA DE ABERTURA <b>07/11/2014</b>
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NOME EMPRESARIAL <b>ATHENAS AUTOMACAO LTDA</b>
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TÍTULO DO ESTABELECIMENTO (NOME DE FANTASIA) *****	PORTE <b>DEMAIS</b>
---	------------------------

CÓDIGO E DESCRIÇÃO DA ATIVIDADE ECONÔMICA PRINCIPAL <b>47.51-2-01 - Comércio varejista especializado de equipamentos e suprimentos de informática</b>
--

CÓDIGO E DESCRIÇÃO DAS ATIVIDADES ECONÔMICAS SECUNDÁRIAS <b>46.51-6-01 - Comércio atacadista de equipamentos de informática</b> <b>46.51-6-02 - Comércio atacadista de suprimentos para informática</b> <b>47.53-9-00 - Comércio varejista especializado de eletrodomésticos e equipamentos de áudio e vídeo</b> <b>46.49-4-01 - Comércio atacadista de equipamentos elétricos de uso pessoal e doméstico</b> <b>47.89-0-07 - Comércio varejista de equipamentos para escritório</b> <b>46.69-9-99 - Comércio atacadista de outras máquinas e equipamentos não especificados anteriormente; partes e peças</b> <b>47.52-1-00 - Comércio varejista especializado de equipamentos de telefonia e comunicação</b> <b>46.52-4-00 - Comércio atacadista de componentes eletrônicos e equipamentos de telefonia e comunicação</b> <b>47.89-0-99 - Comércio varejista de outros produtos não especificados anteriormente</b> <b>46.65-6-00 - Comércio atacadista de máquinas e equipamentos para uso comercial; partes e peças</b> <b>95.11-8-00 - Reparação e manutenção de computadores e de equipamentos periféricos</b> <b>77.33-1-00 - Aluguel de máquinas e equipamentos para escritórios</b> <b>77.39-0-99 - Aluguel de outras máquinas e equipamentos comerciais e industriais não especificados anteriormente, sem operador</b> <b>46.14-1-00 - Representantes comerciais e agentes do comércio de máquinas, equipamentos, embarcações e aeronaves</b> <b>46.15-0-00 - Representantes comerciais e agentes do comércio de eletrodomésticos, móveis e artigos de uso doméstico</b>
--

CÓDIGO E DESCRIÇÃO DA NATUREZA JURÍDICA <b>206-2 - Sociedade Empresária Limitada</b>
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LOGRADOURO <b>ROD ES-010</b>	NÚMERO <b>2594</b>	COMPLEMENTO <b>KM 2.60 QUADRACHA LOTE 343 SALA B46</b>
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CEP <b>29.164-140</b>	BAIRRO/DISTRITO <b>JARDIM LIMOEIRO</b>	MUNICÍPIO <b>SERRA</b>	UF <b>ES</b>
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ENDEREÇO ELETRÔNICO <b>ANDRE@ATHENAS.INF.BR</b>	TELEFONE <b>(51) 3363-4800</b>
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ENTE FEDERATIVO RESPONSÁVEL (EFR) *****
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SITUAÇÃO CADASTRAL <b>ATIVA</b>	DATA DA SITUAÇÃO CADASTRAL <b>07/11/2014</b>
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MOTIVO DE SITUAÇÃO CADASTRAL
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SITUAÇÃO ESPECIAL *****	DATA DA SITUAÇÃO ESPECIAL *****
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Aprovado pela Instrução Normativa RFB nº 2.119, de 06 de dezembro de 2022.

Emitido no dia **06/05/2025** às **11:34:49** (data e hora de Brasília).

Página: 1/1



**MINISTÉRIO DA FAZENDA**  
**Secretaria da Receita Federal do Brasil**  
**Procuradoria-Geral da Fazenda Nacional**

**CERTIDÃO POSITIVA COM EFEITOS DE NEGATIVA DE DÉBITOS RELATIVOS AOS TRIBUTOS  
FEDERAIS E À DÍVIDA ATIVA DA UNIÃO**

**Nome: ATHENAS AUTOMACAO LTDA**  
**CNPJ: 01.425.676/0001-90**

Ressalvado o direito de a Fazenda Nacional cobrar e inscrever quaisquer dívidas de responsabilidade do sujeito passivo acima identificado que vierem a ser apuradas, é certificado que:

1. constam débitos administrados pela Secretaria da Receita Federal do Brasil (RFB) com exigibilidade suspensa nos termos do art. 151 da Lei nº 5.172, de 25 de outubro de 1966 - Código Tributário Nacional (CTN), ou objeto de decisão judicial que determina sua desconsideração para fins de certificação da regularidade fiscal, ou ainda não vencidos; e
2. não constam inscrições em Dívida Ativa da União (DAU) na Procuradoria-Geral da Fazenda Nacional (PGFN).

Conforme disposto nos arts. 205 e 206 do CTN, este documento tem os mesmos efeitos da certidão negativa.

Esta certidão é válida para o estabelecimento matriz e suas filiais e, no caso de ente federativo, para todos os órgãos e fundos públicos da administração direta a ele vinculados. Refere-se à situação do sujeito passivo no âmbito da RFB e da PGFN e abrange inclusive as contribuições sociais previstas nas alíneas 'a' a 'd' do parágrafo único do art. 11 da Lei nº 8.212, de 24 de julho de 1991.

A aceitação desta certidão está condicionada à verificação de sua autenticidade na Internet, nos endereços <<http://rfb.gov.br>> ou <<http://www.pgfn.gov.br>>.

Certidão emitida gratuitamente com base na Portaria Conjunta RFB/PGFN nº 1.751, de 2/10/2014.

Emitida às 09:06:23 do dia 27/03/2025 <hora e data de Brasília>.

Válida até 23/09/2025.

Código de controle da certidão: **0860.823E.3540.78DA**

Qualquer rasura ou emenda invalidará este documento.

[Voltar](#)[Imprimir](#)

## **Certificado de Regularidade do FGTS - CRF**

**Inscrição:** 01.425.676/0003-51  
**Razão Social:** ATHENAS AUTOMACAO LTDA  
**Endereço:** ROD ES-010 KM 260 QD CHA SB46 2594 SALA B 46 / JARDIM LIMOEIRO / SERRA / ES / 29164-140

A Caixa Econômica Federal, no uso da atribuição que lhe confere o Art. 7, da Lei 8.036, de 11 de maio de 1990, certifica que, nesta data, a empresa acima identificada encontra-se em situação regular perante o Fundo de Garantia do Tempo de Serviço - FGTS.

O presente Certificado não servirá de prova contra cobrança de quaisquer débitos referentes a contribuições e/ou encargos devidos, decorrentes das obrigações com o FGTS.

**Validade:** 07/06/2025 a 06/07/2025

**Certificação Número:** 2025060703420641588870

Informação obtida em 09/06/2025 09:09:43

A utilização deste Certificado para os fins previstos em Lei esta condicionada a verificação de autenticidade no site da Caixa:  
**[www.caixa.gov.br](http://www.caixa.gov.br)**