



TEST REPORT

Product Name: LCD Monitor

Trade Mark: AOC

Model No.: C27G4ZXE

Add. Model No.: **C27G4*****

Report Number: 24041810931EMC-1

Test Standards:

EN 55032:2015, EN 55032:2015/A11:2020, EN 55032:2015/A1:2020,
CISPR 32:2015+AMD1:2019,

BS EN 55032:2015, BS EN 55032:2015+A1:2020, BS EN 55032:2015+A11:2020,

AS/NZS CISPR 32:2015+A1:2020, EN 55035:2017, EN 55035:2017/A11:2020,

BS EN 55035:2017, BS EN 55035:2017+A11:2020, CISPR 35:2016,

EN 61000-3-2:2014, EN IEC 61000-3-2:2019/A1:2021,

BS EN 61000-3-2:2014, BS EN IEC 61000-3-2:2019+A1:2021,

EN 61000-3-3:2013, EN 61000-3-3:2013/A1:2019, EN 61000-3-3:2013/A2:2021,

BS EN 61000-3-3:2013, BS EN 61000-3-3:2013+A1:2019, BS EN 61000-3-3:2013+A2:2021,

(IEC 61000-4-2:2008, IEC 61000-4-3:2020, IEC 61000-4-4:2012,

IEC 61000-4-5:2014+AMD1:2017, IEC 61000-4-6:2013, IEC 61000-4-8:2009,

IEC 61000-4-11:2020/COR2:2022)

Test Result: PASS

Date of Issue: May 17, 2024

Prepared for:

TPV Electronics (Fujian) Co., Ltd.

**Rongqiao Economic and Technological Development Zone, Fuqing
City, Fujian Province, P.R. China**

Prepared by:

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Version

| Version No. | Date | Description |
|-------------|--------------|-------------|
| V1.0 | May 17, 2024 | Original |

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

| | |
|-----------------------|--|
| Applicant: | TPV Electronics (Fujian) Co., Ltd. |
| Address of Applicant: | Rongqiao Economic and Technological Development Zone, Fuqing City, Fujian Province, P.R. China |

1.2 EUT INFORMATION

1.2.1 General Description of EUT

| | |
|-----------------------------|--|
| Product Name: | LCD Monitor |
| Model No.: | C27G4ZXE |
| Add. Model No.: | **C27G4***** |
| Trade Mark: | AOC |
| Rated Voltage: | 100-240V~50/60Hz, 1.5A |
| Classification of MME: | Class B |
| Highest Internal Frequency: | 594 MHz |
| I/O Port: | 1 x AC input Port; 2 x HDMI input Ports; 1 x DP Port; 1 x Audio Out Port; |
| Sample Received Date : | April 18, 2024 |
| Sample Tested Date : | April 18, 2024 to April 28, 2024 |

Note: The additional model **C27G4***** is identical with the test model C27G4ZXE except the model number for marketing purpose.

Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

1.2.2 Description of Accessories**HDMI Cable**

| | |
|---------------------|--------------------------|
| Description: | HDMI Cable |
| Cable Type: | Shielded without ferrite |
| Length: | 1.5Meter/1.8Meter |

USB 3.0 Cable

| | |
|---------------------|--------------------------|
| Description: | USB 3.0 Cable |
| Cable Type: | Shielded without ferrite |
| Length: | 1.5Meter/1.8Meter |

DP Cable

| | |
|---------------------|--------------------------|
| Description: | HDMI Cable |
| Cable Type: | Shielded without ferrite |
| Length: | 1.5Meter/1.8Meter |

AC Power Cord

| | |
|---------------------|----------------------------|
| Description: | AC Power Cord |
| Cable Type: | Unshielded without ferrite |
| Length: | 1.5Meter/1.8Meter |

1.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a LCD Monitor, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

EN 55032:2015, EN 55032:2015/A11:2020, EN 55032:2015/A1:2020,
CISPR 32:2015+AMD1:2019,
BS EN 55032:2015, BS EN 55032:2015+A1:2020, BS EN 55032:2015+A11:2020,
AS/NZS CISPR 32:2015+A1:2020, EN 55035:2017, EN 55035:2017/A11:2020,
BS EN 55035:2017, BS EN 55035:2017+A11:2020, CISPR 35:2016,
EN 61000-3-2:2014, EN IEC 61000-3-2:2019/A1:2021,
BS EN 61000-3-2:2014, BS EN IEC 61000-3-2:2019+A1:2021,
EN 61000-3-3:2013, EN 61000-3-3:2013/A1:2019, EN 61000-3-3:2013/A2:2021,
BS EN 61000-3-3:2013, BS EN 61000-3-3:2013+A1:2019, BS EN 61000-3-3:2013+A2:2021,
(IEC 61000-4-2:2008, IEC 61000-4-3:2020, IEC 61000-4-4:2012,
IEC 61000-4-5:2014+AMD1:2017, IEC 61000-4-6:2013, IEC 61000-4-8:2009,
IEC 61000-4-11:2020/COR2:2022)

All test items have been performed and recorded as per the above standards

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

| Description | Manufacturer | Model No. | Serial Number | Supplied by |
|-----------------|--------------|-----------|---------------|-------------|
| PC | DELL | XPS8900 | 2015AP3055 | UnionTrust |
| keyboard | DELL | KB212-B | CN-0N291F-715 | UnionTrust |
| mouse | DELL | MS111 | CN-011D3V-738 | UnionTrust |
| DVD Player | GIEC | BDP-G4305 | N/A | UnionTrust |
| PC work station | DELL | 5820 | BEC20190001 | UnionTrust |
| Earphone | N/A | QTER01JY | N/A | UnionTrust |
| Dummy load | N/A | E214887 | N/A | UnionTrust |

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Telephone: +86 (0) 755 2823 0888

Fax: +86 (0) 755 2823 0886

Tests were sub-contracted. [Radiated Emission (10 m) and Power frequency magnetic field]

GRG Metrology & Test Group Co., Ltd.

Address: No. 1301 Guanguang Road, Xinlan Community, Guanlan Street, Longhua District, Shenzhen, 518110, People's Republic of China

Telephone: 86-028-86496515

Shenzhen UnionTrust Quality and Technology Co., Ltd.

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1.6 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

- **Shenzhen UnionTrust Quality and Technology Co., Ltd.**

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories

CAB identifier: CN0032

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

- **GRG Metrology & Test Group Co., Ltd.**

A2LA-Lab Certificate No.: 2861.01

CNAS-Lab Code: L0446

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.10 MEASUREMENT UNCERTAINTY

| No. | Item | Measurement Uncertainty |
|-----|----------------------------------|-------------------------|
| 1 | Conducted emission 9kHz-150kHz | ±3.2 dB |
| 2 | Conducted emission 150kHz-30MHz | ±2.7 dB |
| 3 | Radiated emission 30MHz-1GHz | ± 4.6 dB |
| 4 | Radiated emission 1GHz-18GHz | ± 4.4 dB |
| 5 | Harmonic current emissions | ±1.4% |
| 6 | Voltage fluctuations and flicker | ±1.4% |

Remark: 95% Confidence Levels, k=2.

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2. TEST SUMMARY

| Test Item | | Test Requirement | Test Method | Limits | Results |
|---|--|---|---|---|-----------------|
| Radiated Emissions | for class A equipment | EN 55032:2015/A1 1:2020 Clause 5 | EN 55032:2015/A1 1:2020 Clause 6 | Table A2, A3 | N/A (Note 1, 2) |
| | for class B equipment | | | Table A4, A5 | PASS |
| | for FM receivers | | | Table A6 | N/A (Note 1, 3) |
| | for outdoor units of home satellite receiving systems | | | Table A7 | N/A (Note 1, 4) |
| Conducted Emissions | for conducted emissions from the AC mains power ports of Class A equipment | EN 55032:2015/A1 1:2020 Clause 5 | EN 55032:2015/A1 1:2020 Clause 6 | Table A9 | N/A (Note 1, 2) |
| | for conducted emissions from the AC mains power ports of Class B equipment | | | Table A10 | PASS |
| | for asymmetric mode conducted emissions from Class A equipment | | | Table A11 | N/A (Note 1, 2) |
| | for asymmetric mode conducted emissions from Class B equipment | | | Table A12 | N/A (Note 1, 5) |
| | for conducted differential voltage emissions from Class B equipment | | | Table A13 | N/A (Note 1, 6) |
| Harmonic Current Emissions | | EN IEC 61000-3-2: 2019/A1:2021 Clause 6 | EN IEC 61000-3-2: 2019/A1:2021 Clause 6 | EN IEC 61000-3-2: 2019/A1:2021 Clause 7 | PASS |
| Voltage Fluctuations and Flicker | | EN 61000-3-3: 2013/A2:2021 Clause 4 | EN 61000-3-3: 2013/A2:2021 Clause 4 | EN 61000-3-3: 2013/A2:2021 Clause 5 | PASS |
| Note: <ol style="list-style-type: none"> 1) N/A: In the whole report not application. 2) The EUT is Class B equipment. 3) Applicable only to FM receivers, the EUT does not support FM receivers. 4) The EUT not belong to satellite receiving systems. 5) The cables used in this EUT are all less than 3 meters. 6) The EUT does not support the TV broadcast receiver tuner ports with an accessible connector, RF modulator output ports and FM broadcast receiver tuner ports with an accessible connector. | | | | | |

➤ For EN 55035:2017/A11:2020

| Part 1: Immunity requirements for enclosure ports | | | |
|--|--|--------------------|---------|
| Test Item | Test Requirement (EN 55035:2017/A11:2020) | Test Method | Results |
| Power frequency magnetic field | Table Clause 1.1 | IEC 61000-4-8:2009 | PASS |
| Continuous RF electromagnetic field disturbances, swept test and spot test | Table Clause 1.2 Table Clause 1.3 | IEC 61000-4-3:2020 | PASS |
| Electrostatic Discharge (ESD) | Table Clause 1.4 | IEC 61000-4-2:2008 | PASS |

| Part 2: Immunity requirements for AC mains power ports | | | |
|--|--|-------------------------------|---------|
| Test Item | Test Requirement (EN 55035:2017/A11:2020) | Test Method | Results |
| Continuous induced RF disturbances | Table Clause 4.1 | IEC 61000-4-6:2013 | PASS |
| Voltage dips and Voltage interruptions | Table Clause 4.2 Table Clause 4.3 | IEC 61000-4-11:2020/COR2:2022 | PASS |
| Surges | Table Clause 4.4 | IEC 61000-4-5:2014+AMD1:2017 | PASS |
| Electrical fast transients/burst | Table Clause 4.5 | IEC 61000-4-4:2012 | PASS |

| Part 3: Immunity requirements for DC network power ports | | | |
|--|--|------------------------------|-----------------|
| Test Item | Test Requirement (EN 55035:2017/A11:2020) | Test Method | Results |
| Continuous induced RF disturbances | Table Clause 3.1 | IEC 61000-4-6:2013 | N/A (Note 1, 2) |
| Surges | Table Clause 3.2 | IEC 61000-4-5:2014+AMD1:2017 | N/A (Note 1, 2) |
| Electrical fast transients/burst | Table Clause 3.3 | IEC 61000-4-4:2012 | N/A (Note 1, 2) |

Note:

- 1) N/A: In this whole report not application.
- 2) This EUT does not support the DC wired network ports capability.

| Part 4: Immunity requirements for analogue/digital data ports | | | |
|---|--|-------------------------------------|-----------------|
| Test Item | Test Requirement (EN 55035:2017/A11:2020) | Test Method | Results |
| Continuous induced RF disturbances | Table Clause 2.1 | IEC 61000-4-6:2013 | N/A (Note 1, 3) |
| Broadband impulse noise disturbances, repetitive | Table Clause 2.2 | EN 55035:2017/A11:2020 Clause 4.2.7 | N/A (Note 1, 2) |
| Broadband impulse noise disturbances, isolated | Table Clause 2.3 | EN 55035:2017/A11:2020 Clause 4.2.7 | N/A (Note 1, 2) |
| Surges | Table Clause 2.4 | IEC 61000-4-5:2014+AMD1:2017 | N/A (Note 1, 3) |
| Electrical fast transients/burst | Table Clause 2.5 | IEC 61000-4-4:2012 | N/A (Note 1, 3) |

Note:

- 1) N/A: In this whole report not application.
- 2) Applicable only to CPE xDSL ports, all burst durations. This EUT does not support the ports capability.
- 3) The cables used in this EUT are all less than 3 meters.

3. EQUIPMENT LIST

| Radiated Emission (3m) Test Equipment List | | | | | | |
|--|--|--------------|------------|----------------------------|-------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date | Cal. Due date |
| <input checked="" type="checkbox"/> | 3m SAC | ETS-LINDGREN | 3M | Euroshiedpn-CT001270-1317 | 11-Nov-2023 | 10-Nov-2026 |
| <input checked="" type="checkbox"/> | Receiver | R&S | ESIB26 | 100114 | 27-Oct-2023 | 26-Oct-2024 |
| <input type="checkbox"/> | Broadband Antenna | ETS-LINDGREN | 3142E | 00201566 | 30-Oct-2023 | 29-Oct-2024 |
| <input type="checkbox"/> | 6dB Attenuator | Talent | RA6A5-N-18 | 18103001 | 30-Oct-2023 | 29-Oct-2024 |
| <input type="checkbox"/> | Preamplifier | HP | 8447F | 2805A02960 | 31-Oct-2023 | 30-Oct-2024 |
| <input checked="" type="checkbox"/> | Double-Ridged Waveguide Horn Antenna (Pre-amplifier) | ETS-LINDGREN | 3117-PA | 00201541 | 1-Apr-2023 | 31-Mar-2025 |
| <input checked="" type="checkbox"/> | Pre-amplifier | ETS-LINDGREN | 00118385 | 00201874 | 1-Apr-2024 | 31-Mar-2025 |
| <input checked="" type="checkbox"/> | Multi device Controller | ETS-LINDGREN | 7006-001 | 00160105 | N/A | N/A |
| <input checked="" type="checkbox"/> | Test Software | Audix | e3 | Software Version: 9.160323 | | |

| Conducted Emission Test | | | | | | |
|-------------------------------------|---------------|--------------|----------------|---------------------------------|-------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date | Cal. Due date |
| <input checked="" type="checkbox"/> | LISN | R&S | ESH2-Z5 | 860014/024 | 27-Oct-2023 | 26-Oct-2024 |
| <input checked="" type="checkbox"/> | LISN | ETS-Lindgren | 3816/2SH | 00201088 | 27-Oct-2023 | 26-Oct-2024 |
| <input checked="" type="checkbox"/> | Receiver | R&S | ESR7 | 101181 | 27-Oct-2023 | 26-Oct-2024 |
| <input checked="" type="checkbox"/> | Pulse Limiter | R&S | ESH3-Z2 | 0357.8810.54 | 27-Oct-2023 | 26-Oct-2024 |
| <input checked="" type="checkbox"/> | ISN | Schwarzbeck | NTFM 8158 8158 | NTFM 8158 0113 | 27-Oct-2023 | 26-Oct-2024 |
| <input checked="" type="checkbox"/> | Test Software | EZ-EMC | EZ-CON | Software Version: EMC-CON 3A1.1 | | |

| Harmonic Current Emissions & Voltage Fluctuations and Flicker Test | | | | | | |
|--|---------------------------|------------------------|-----------------|--------------------------|-------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date | Cal. Due date |
| <input checked="" type="checkbox"/> | 5KVA AC POWER SOURCE | California instruments | 5001iX+CT S-411 | 56178 | 29-Mar-2024 | 28-Mar-2025 |
| <input checked="" type="checkbox"/> | Flicker & Harmonic Tester | California instruments | PACS-1 | 72333 | 29-Mar-2024 | 28-Mar-2025 |
| <input checked="" type="checkbox"/> | Test Software | California instruments | CTS 4 | Software Version: 4.29.0 | | |

| Electrostatic Discharge Test | | | | | | |
|-------------------------------------|---------------|--------------|-----------|---------------|------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date | Cal. Due date |
| <input checked="" type="checkbox"/> | ESD Simulator | TESEQ | NSG438 | 634 | 3-Nov-2023 | 2-Nov-2024 |

| Fast transients common mode & Surges Test (AC Port) | | | | | | |
|---|---------------------------|--------------|-----------|---------------|-------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date | Cal. Due date |
| <input checked="" type="checkbox"/> | NSG 3040 EMC test system | TESESQ | NSG 3040 | 2101 | 31-Oct-2023 | 30-Oct-2024 |
| <input checked="" type="checkbox"/> | Capacitive coupling clamp | HTEC | H3C | 155103 | 29-Dec-2023 | 28-Dec-2024 |

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| RF common mode 0.15 MHz to 80 MHz Test | | | | | | |
|--|-----------------------------|-----------------|------------------|-------------------------------------|-------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date | Cal. Due date |
| ☒ | Conducted Immunity System | Schloder | CDG 6000-75 | 126B1367 | 27-Oct-2023 | 26-Oct-2024 |
| ☒ | Coupling/Decoupling network | Schloder | CDN M2+M3-16 | A2210363 | 31-Oct-2023 | 30-Oct-2024 |
| ☒ | 6dB Attenuator | Schloder | CDG60100 | 201411010018 | 31-Oct-2023 | 30-Oct-2024 |
| ☒ | EM-Clamp | Schloder | EMCL-20 | 132A1245 | 31-Oct-2023 | 30-Oct-2024 |
| ☒ | Audio Test System | Audio Precision | ATS-1 | ATS1-41075 | 29-Mar-2024 | 28-Mar-2025 |
| ☒ | Test Software | Dr. Hubert GmbH | IEC/EN610 00-4-6 | Software Version: 1.2.0(25.03.2013) | | |
| ☒ | Test Software | HTEC | CS5045 | Software Version: 2.01 | | |

| Voltage dips and interruptions Test | | | | | | |
|-------------------------------------|--|--------------|-----------|---------------|-------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date | Cal. Due date |
| ☒ | Voltage dips and variation test system | NTEC | HPFS 161P | 161503 | 31-Oct-2023 | 30-Oct-2024 |
| ☒ | Voltage Interruption Simulator with Step Simulator | NTEC | HV1P16 | 161504 | 31-Oct-2023 | 30-Oct-2024 |

| RF electromagnetic field Test | | | | | | |
|-------------------------------|--|--|---------------|-----------------------------|-------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date | Cal. Due date |
| ☒ | 3m SAC | ETS-LINDGREN | 3m | Euroshiedpn-C T001270-1317 | 11-Nov-2023 | 10-Nov-2026 |
| ☒ | Audio Test System | Audio Precision | ATS-1 | ATS1-41075 | 29-Mar-2024 | 28-Mar-2025 |
| ☒ | Log Periodic Antenna | Schwarzbeck | VUSLP 9111E | 00041 | 17-Apr-2022 | 16-Apr-2025 |
| ☒ | Stacked Logarithmic-Periodic Broadband Antenna | Schwarzbeck | STLP 9149 | 00706 | 17-Apr-2022 | 16-Apr-2025 |
| ☒ | Electric field probe | Frankonia | EFS-100 | 711ZX00424 | 2-Apr-2024 | 1-Apr-2025 |
| ☒ | RF Amplifier | HTEC | HPA 0810-250 | MPA2003056 | 29-Mar-2024 | 28-Mar-2025 |
| ☒ | RF Amplifier | HTEC | HPA 1060-75 | MPA2003057 | 29-Mar-2024 | 28-Mar-2025 |
| ☒ | Audio conditioner | HTEC | PM_AB/C 35 | 2020051002 | 29-Oct-2023 | 26-Oct-2024 |
| ☒ | Microphone | HTEC | FFMP_AB T/C35 | 2020051001 | 01-Nov-2023 | 31-Oct-2024 |
| ☒ | MXG Analog Signal Generator | Agilent | N5181A | MY47070613 | 29-Mar-2024 | 28-Mar-2025 |
| ☒ | EPM-P Series Power Meter | Agilent | E4417A | MY45100705 | 29-Mar-2024 | 28-Mar-2025 |
| ☒ | Peak and Avg Power Sensor | Agilent | E9323A | MY44420776 | 29-Mar-2024 | 28-Mar-2025 |
| ☒ | Peak and Avg Power Sensor | Agilent | E9323A | US40410105 | 29-Mar-2024 | 28-Mar-2025 |
| ☒ | Shielding box | SKET | ABSB_AB T/C35 | N/A | N/A | N/A |
| ☒ | Test Software | Suzhou Keleto Electronics Technology Co.,Ltd | EMC-S | Software Version: V1.4.0.57 | | |

| PFMF Test Equipment List | | | | | | |
|-------------------------------------|-----------------------|--------------|-----------|---------------------------|---------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. Due date | Cal. Interval |
| <input checked="" type="checkbox"/> | Power supply | SCHAFFNER | NSG1007 | 54789 | Nov. 17, 2024 | 1 year |
| <input checked="" type="checkbox"/> | PFMF Generator | SCHAFFNER | INA2141 | 6003 | Jul. 14, 2024 | 1 year |
| <input checked="" type="checkbox"/> | PFMF Magnetic antenna | SCHAFFNER | INA-702 | 711-1115 | Jul. 14, 2024 | 1 year |
| <input checked="" type="checkbox"/> | Test software | TESEQ | Win2120 | Software Version: Ver6.00 | | |

| Radiated Emission (10m SAC) Test Equipment List | | | | | | |
|---|-------------------|---------------|------------------|---------------|---------------|---------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. Due date | Cal. Interval |
| <input checked="" type="checkbox"/> | 10m SAC | Taihe Mao rui | 17.2mX12.1mX8.5m | N/A | 2024-08-22 | 3 year |
| <input checked="" type="checkbox"/> | EMI Test Receiver | R&S | ESR7 | 10244 | 2024-08-11 | 1 year |
| <input checked="" type="checkbox"/> | EMI Test Receiver | R&S | ESCI | 100145 | 2024-09-08 | 1 year |
| <input checked="" type="checkbox"/> | Bilog Antenna | TESEQ | CBL6143A | 26039 | 2024-07-17 | 1 year |
| <input type="checkbox"/> | Bilog Antenna | TESEQ | CBL6143A | 32399 | 2024-08-28 | 1 year |
| <input checked="" type="checkbox"/> | Preamplifier | EMEC | EM330 | 100425 | 2024-12-29 | 1 year |
| <input checked="" type="checkbox"/> | Test Software | EZ | CCS-03A1 | N/A | N/A | N/A |

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

| Environment Parameter | Selected Values During Tests | | |
|---|------------------------------|----------------------------|--|
| Test Condition | Ambient | | |
| | Temperature (°C) | Voltage | Relative Humidity (%) |
| NT/NV | +15 to +35 | 1. 110~60Hz 2. 230~50Hz | 20 to 75 (Except Electrostatic Discharge is 30 to 60) |
| Remark: 1) NV: Normal Voltage; NT: Normal Temperature | | | |

4.1.2 Record of Normal Environment and Test Sample

| Test Item | Temp. (°C) | Relative Humidity (%) | Pressure (kPa) | Sample No. | Tested by |
|-----------------------------------|------------|-----------------------|----------------|-----------------------|--------------|
| Radiated Emission(3m) | 25.1 | 58.9 | 100.1 | S202404183207-ZJA01/1 | Bowie Zhang |
| Radiated Emission(10m) | 23.7 | 55 | 100 | | Wang Xinyuan |
| Conducted Emission | 23.0 | 68.5 | 99.2 | | Linson Xie |
| Voltage Fluctuations and Flicker | 25.1 | 68 | 99.9 | | Lucas Ouyang |
| RF electromagnetic field | 24.2 | 55.9 | 100.1 | | Yana Zeng |
| Electrostatic Discharge | 24.1 | 57 | 99.9 | | Lucas Ouyang |
| Fast transients, common mode | 25.1 | 68 | 99.9 | | |
| RF common mode 0.15 MHz to 80 MHz | 25.1 | 68 | 99.9 | | |
| Voltage dips and interruptions | 25.1 | 68 | 99.9 | | |
| Surges | 25.1 | 68 | 99.9 | | |
| Power frequency magnetic field | 26.2 | 56 | 100.2 | | |

4.2 TEST MODES

| Test Modes | | | | | | | | | |
|------------|---|--------------------------------|-------------------------------|----------------------|-----------|------------------|-----------|----------------|------------------|
| No. | Test Voltage | Input ports | Input source | Cable Length (Meter) | Pattern | Resolution | Rotatio | Stand Position | Audio |
| 1 | 230V~50Hz | HDMI 1 | PC | 1.8 | H Pattern | 800*600@60Hz | Landscape | UP | With Earphone |
| 2 | | | PC | 1.8 | H Pattern | 1920*1080@60Hz | Landscape | UP | With Earphone |
| 3 | | | PC | 1.8 | H Pattern | 1920*1080@240Hz | Landscape | UP | With Earphone |
| 4 | | | PC | 1.8 | BT 471-1 | 1920*1080@240Hz | Landscape | UP | Without Earphone |
| 5* | | | PC | 1.8 | BT 471-1 | 1920*1080 @240Hz | Landscape | UP | With Earphone |
| 6 | | | PC | 1.5 | H Pattern | 1920*1080@240Hz | Landscape | UP | Without Earphone |
| 7 | | | DVD | 1.8 | BT 471-1 | -- | Landscape | UP | With Earphone |
| 8 | | | DVD | 1.5 | BT 471-1 | -- | Landscape | UP | Without Earphone |
| 9 | | HDMI 2 | Worst case from Test mode 1~8 | | | | | | |
| 10 | | DP 1 | PC | 1.8 | BT 471-1 | 800*600@60Hz | Landscape | UP | With Earphone |
| 11 | | | PC | 1.8 | BT 471-1 | 1920*1080@60Hz | Landscape | UP | With Earphone |
| 12 | | | PC | 1.8 | BT 471-1 | 1920*1080@280Hz | Landscape | UP | With Earphone |
| 13 | | | PC | 1.5 | BT 471-1 | 1920*1080@280Hz | Landscape | UP | Without Earphone |
| 14 | Worst case from Test mode 1~13 with 1.5m Power Cord | | | | | | Landscape | Down | With Earphone |
| 15 | 110V~60Hz | Worst case from Test mode 1~14 | | | | | | | |

Note:

- 1) ***Means the worst test mode.
- 2) All test modes are performed at maximum brightness, contrast, and volume.

5. PERFORMANCE CRITERIA

5.1 FOR EN 55035:2017/A11:2020

➤ <General>

General performance criteria are defined in 8.2, 8.3 and 8.4. These criteria shall be used during the testing of primary functions where no relevant annex is applicable.

When assessing the impact of a disturbance on a function, the assessment should take into consideration the function's performance prior to the application of the disturbance and only identify as failures those changes in performance that are a result of the disturbance.

➤ <Performance criterion A>

The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

➤ <Performance criterion B>

During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.

After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

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

➤ <Performance criterion C>

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 reboot or re-start operation is allowed.

Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

➤ PERFORMANCE CRITERION FOR OTHERS FUNCTION

| Function | Performance criterion |
|--------------------------------------|--|
| Broadcast reception function | Refer to Annex A.4 of EN 55035:2017/A11:2020 |
| Print function | Refer to Annex B.3 of EN 55035:2017/A11:2020 |
| Scan function | Refer to Annex C.3 of EN 55035:2017/A11:2020 |
| Display and display output functions | Refer to Annex D.3 of EN 55035:2017/A11:2020 |
| Musical tone generating function | Refer to Annex E.3 of EN 55035:2017/A11:2020 |
| Networking functions | Refer to Annex F.3.3 & F.4 of EN 55035:2017/A11:2020 |
| Audio output function | Refer to Annex G.7 of EN 55035:2017/A11:2020 |
| Telephony function | Refer to Annex H.7 of EN 55035:2017/A11:2020 |

6. EMC REQUIREMENTS SPECIFICATION

6.1 REFERENCE DOCUMENTS FOR TESTING

EN 61000-3-2:2014, EN IEC 61000-3-2:2019/A1:2021,

BS EN 61000-3-2:2014, BS EN IEC 61000-3-2:2019+A1:2021,

Electromagnetic compatibility (EMC) Part 3-2: Limits — Limits for harmonic current emissions (equipment input current \leq 16 A per phase)

EN 61000-3-3:2013, EN 61000-3-3:2013/A1:2019, EN 61000-3-3:2013/A2:2021,

BS EN 61000-3-3:2013, BS EN 61000-3-3:2013+A1:2019, BS EN 61000-3-3:2013+A2:2021,

Electromagnetic compatibility (EMC) Part 3-3: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current \leq 16 A per phase and not subject to conditional connection

EN 55032:2015, EN 55032:2015/A11:2020, EN 55032:2015/A1:2020,

CISPR 32:2015+AMD1:2019, AS/NZS CISPR 32:2015+A1:2020,

BS EN 55032:2015, BS EN 55032:2015+A1:2020, BS EN 55032:2015+A11:2020

Electromagnetic compatibility of multimedia equipment - Emission Requirements

EN 55035:2017, EN 55035:2017/A11:2020,

BS EN 55035:2017, BS EN 55035:2017+A11:2020, CISPR 35:2016,

Electromagnetic compatibility of multimedia equipment - Immunity requirements

IEC 61000-4-2:2008

Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test

IEC 61000-4-3:2020

Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test

IEC 61000-4-4:2012

Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test

IEC 61000-4-5:2014+AMD1:2017

Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test

IEC 61000-4-6:2013

Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields

IEC 61000-4-8:2009

Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test

IEC 61000-4-11:2020

Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests

6.2 EMC EMISSION

6.2.1 Radiated Emission

Test Requirement: EN 55032:2015/A11:2020 Clause 5

Test Method: EN 55032:2015/A11:2020 Clause 6

Receiver Setup:

| Frequency: (f) (MHz) | Detector type | Measurement receiver bandwidth | |
|-------------------------|---------------|--------------------------------|---------|
| | | RBW | VBW |
| 30 ≤ f ≤ 1 000 | Quasi Peak | 120 kHz | 300 kHz |
| f ≥ 1000 | Peak | 1 MHz | 3 MHz |
| | Average | 1 MHz | 3 MHz |

Measured frequency range

Table 1 – Required highest frequency for radiated measurement

| Highest internal frequency (Fx) | Highest measured frequency |
|------------------------------------|---------------------------------|
| Fx ≤ 108 MHz | 1 GHz |
| 108 MHz < Fx ≤ 500 MHz | 2 GHz |
| 500 MHz < Fx ≤ 1 GHz | 5 GHz |
| Fx > 1 GHz | 5 × Fx up to a maximum of 6 GHz |

NOTE 1 For FM and TV broadcast receivers, Fx is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.

NOTE 2 Fx is defined in 3.1.18.

NOTE 3 For outdoor units of home satellite receiving systems highest measured frequency shall be 18 GHz.

Limit:

Class B

Table A.4 – Requirements for radiated emissions at frequencies up to 1 GHz for class B equipment

| Table clause | Frequency range (MHz) | Measurement receiver bandwidth | | | Class B limits dB(µV/m) |
|--------------|--------------------------|--------------------------------|---------------|------------------------------|----------------------------|
| | | Facility (see Table A.1) | Distance m | Detector type / bandwidth | |
| A4.1 | 30 to 230 | OATS/SAC | 10 | Quasi Peak / 120 kHz | 30 |
| | 230 to 1 000 | | | | 37 |
| A4.2 | 30 to 230 | OATS/SAC | 3 | Quasi Peak / 120 kHz | 40 |
| | 230 to 1 000 | | | | 47 |
| A4.3 | 30 to 230 | FAR | 10 | Quasi Peak / 120 kHz | 32 to 25 |
| | 230 to 1 000 | | | | 32 |
| A4.4 | 30 to 230 | FAR | 3 | Quasi Peak / 120 kHz | 42 to 35 |
| | 230 to 1 000 | | | | 42 |

Apply only table clause A4.1 or A4.2 or A4.3 or A4.4 across the entire frequency range.

These requirements are not applicable to the local oscillator and harmonics frequencies of equipment covered by Table A.6.

Table A.5 – Requirements for radiated emissions at frequencies above 1 GHz for class B equipment

| Table clause | Frequency range (MHz) | Measurement receiver bandwidth | | | Class B limits dB(µV/m) |
|--------------|--------------------------|--------------------------------|---------------|------------------------------|----------------------------|
| | | Facility (see Table A.1) | Distance m | Detector type / bandwidth | |
| A5.1 | 1 000 to 3 000 | FSOATS | 3 | Average / 1 MHz | 50 |
| | 3 000 to 6 000 | | | | 54 |
| A5.2 | 1 000 to 3 000 | FSOATS | 3 | Peak / 1 MHz | 70 |
| | 3 000 to 6 000 | | | | 74 |

Apply A5.1 and A5.2 across the frequency range from 1 000 MHz to the highest required frequency of measurement derived from Table 1.

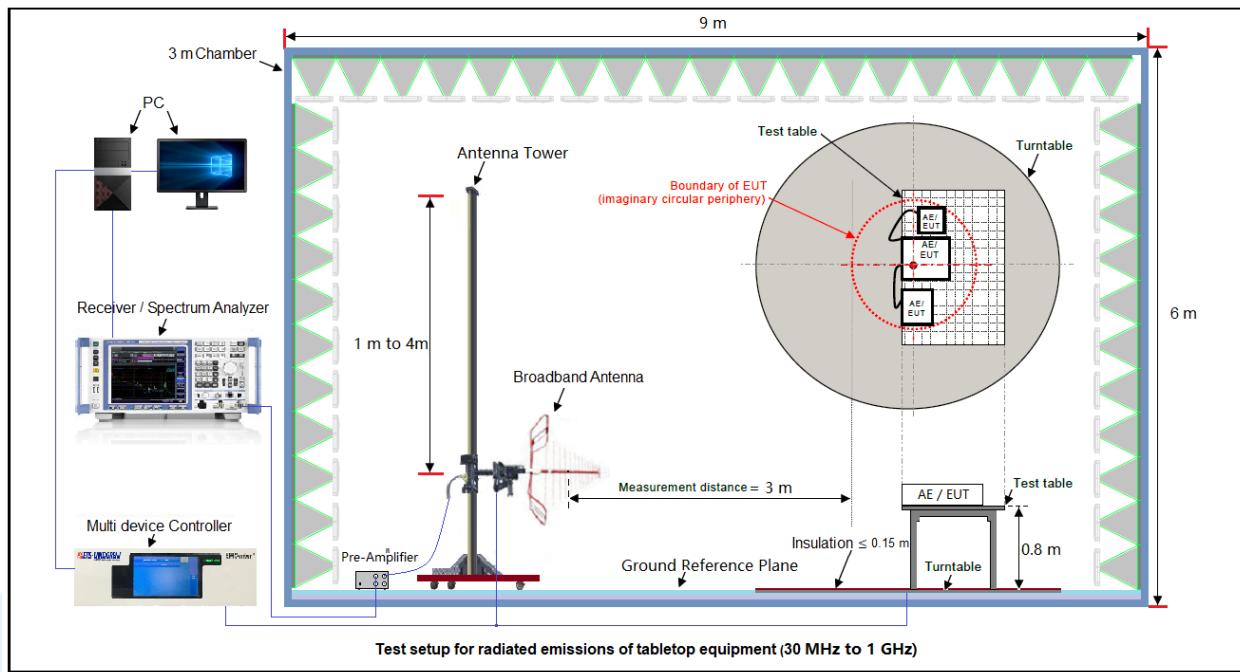
Test Setup:
Test setup for radiated emissions of tabletop equipment


Figure 1. 30 MHz to 1 GHz @3 Meter test distance

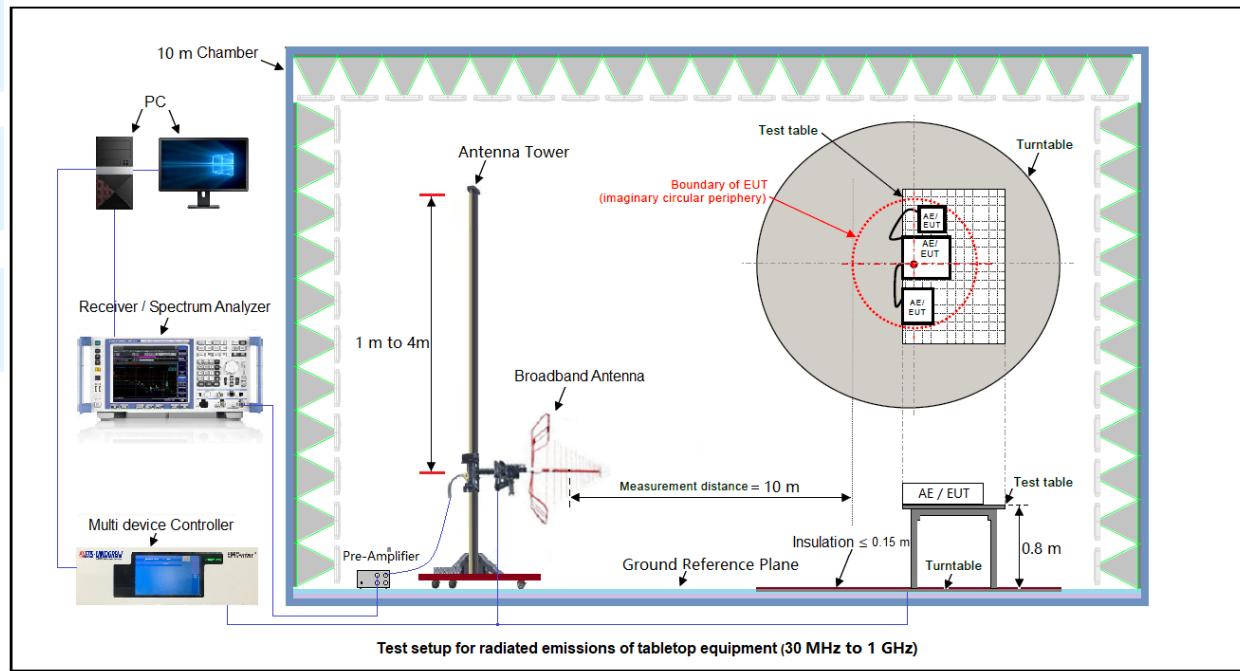


Figure 1. 30 MHz to 1 GHz @10 Meter test distance

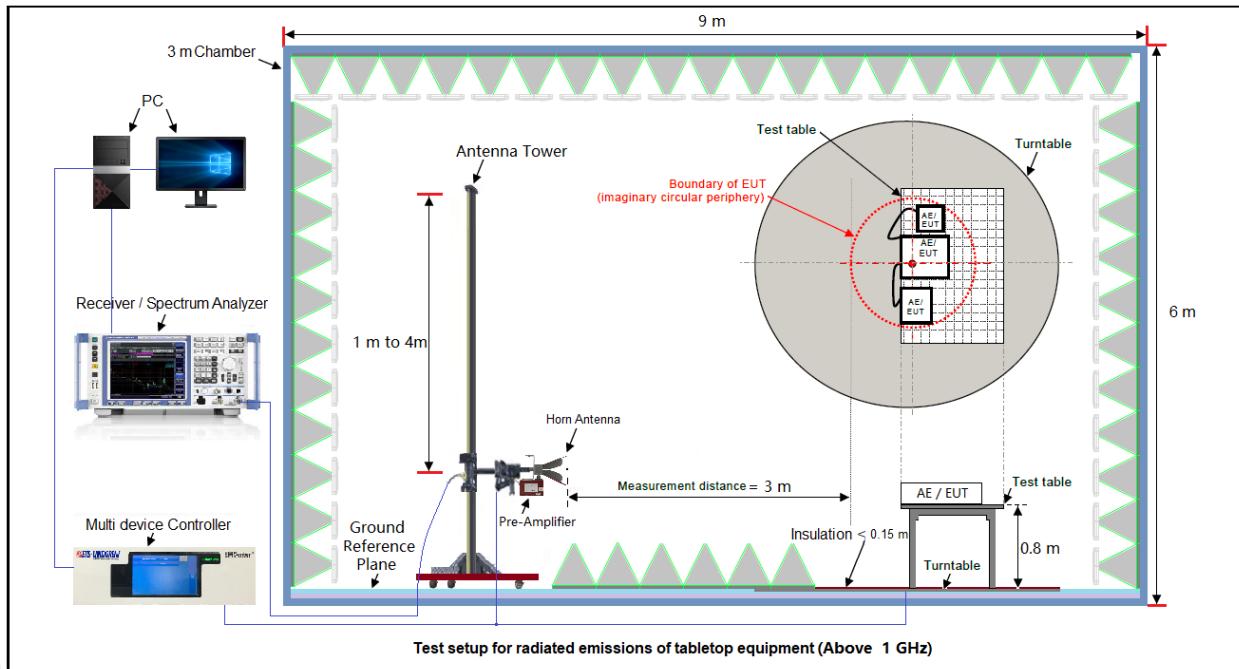


Figure 2. Above 1 GHz

Test Procedures:

1. From 30 MHz to 1GHz test procedure as below:

- 1) The radiated emissions were tested in a semi-anechoic chamber.
- 2) The Product was placed on the non-conductive turntable 0.8 m or 0.1 m above the ground at a chamber.
- 3) Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- 4) For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

2. Above 1GHz test procedure as below:

- 1) The radiated emissions were tested in a fully Anechoic Chamber.
- 2) Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- 3) For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

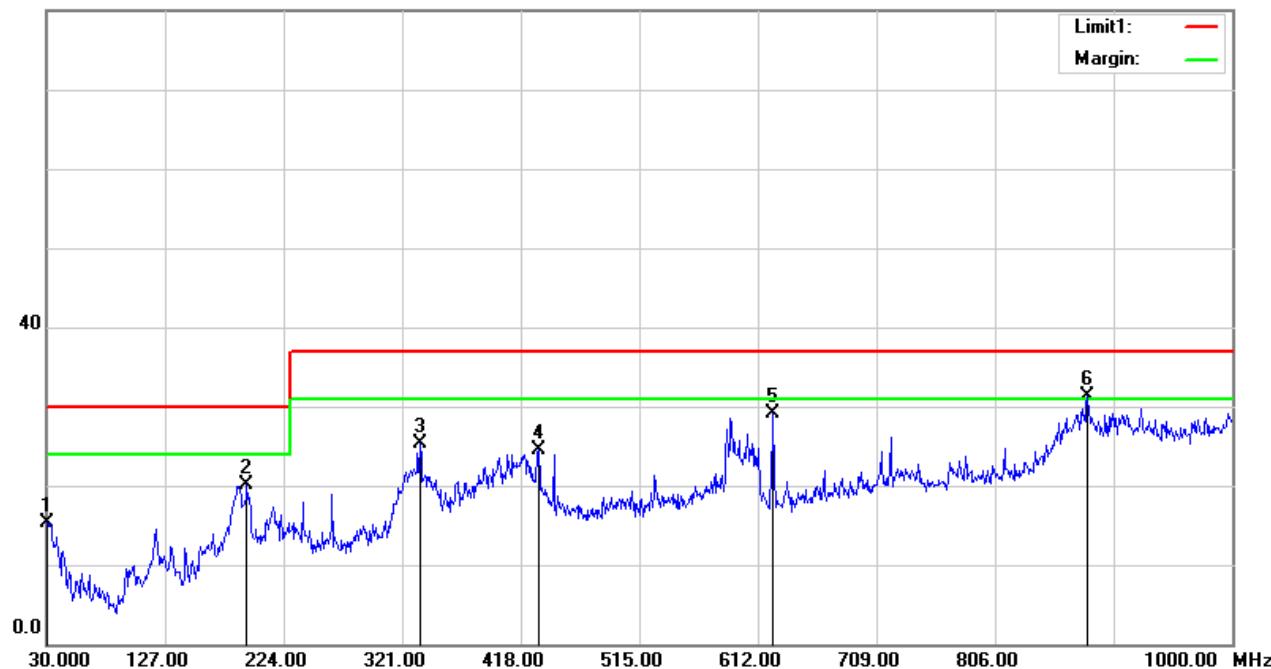
The worst measurement data as follows:

Below 1GHz(Quasi Peak): 10 Meter test distance

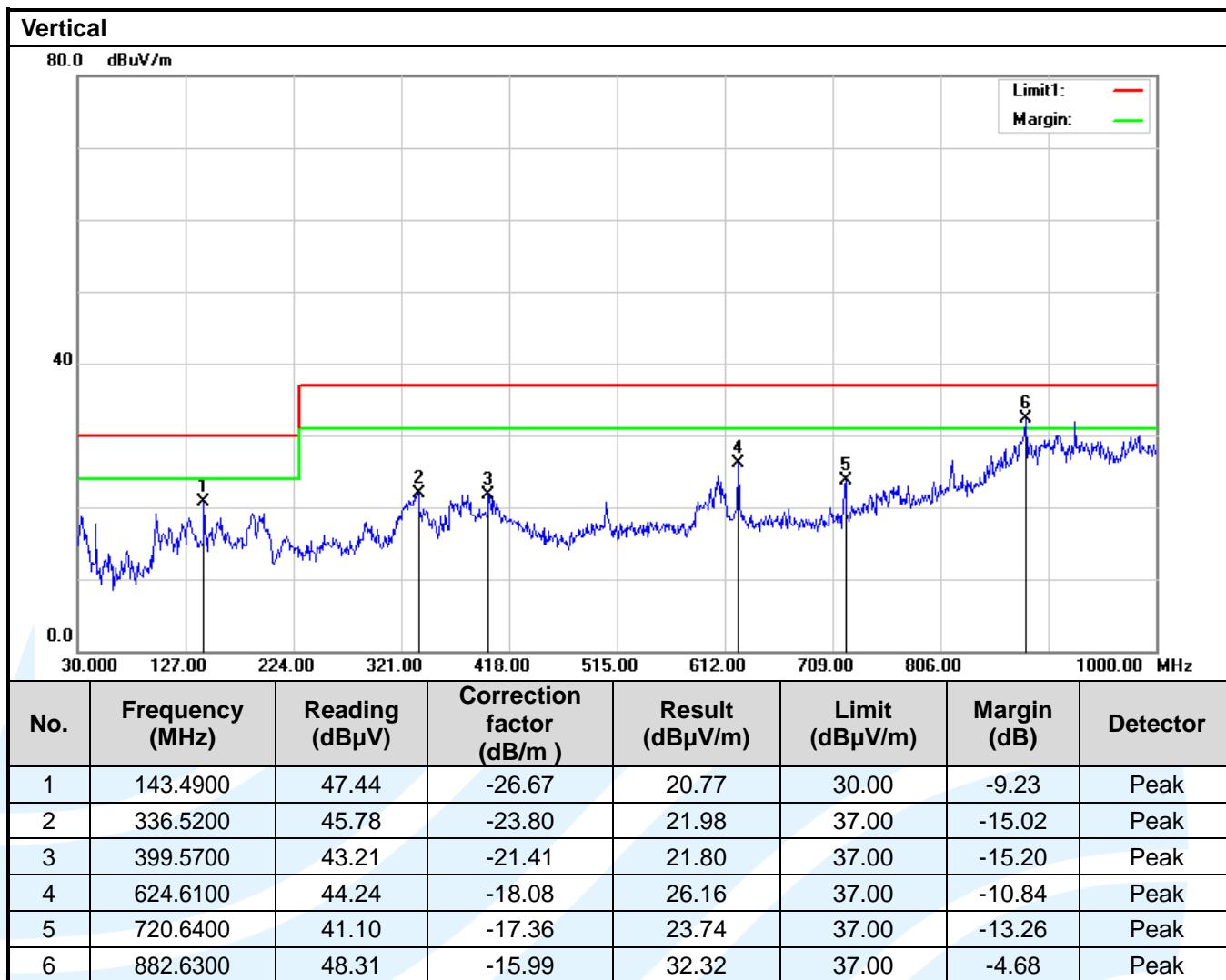
Test Mode5

Horizontal

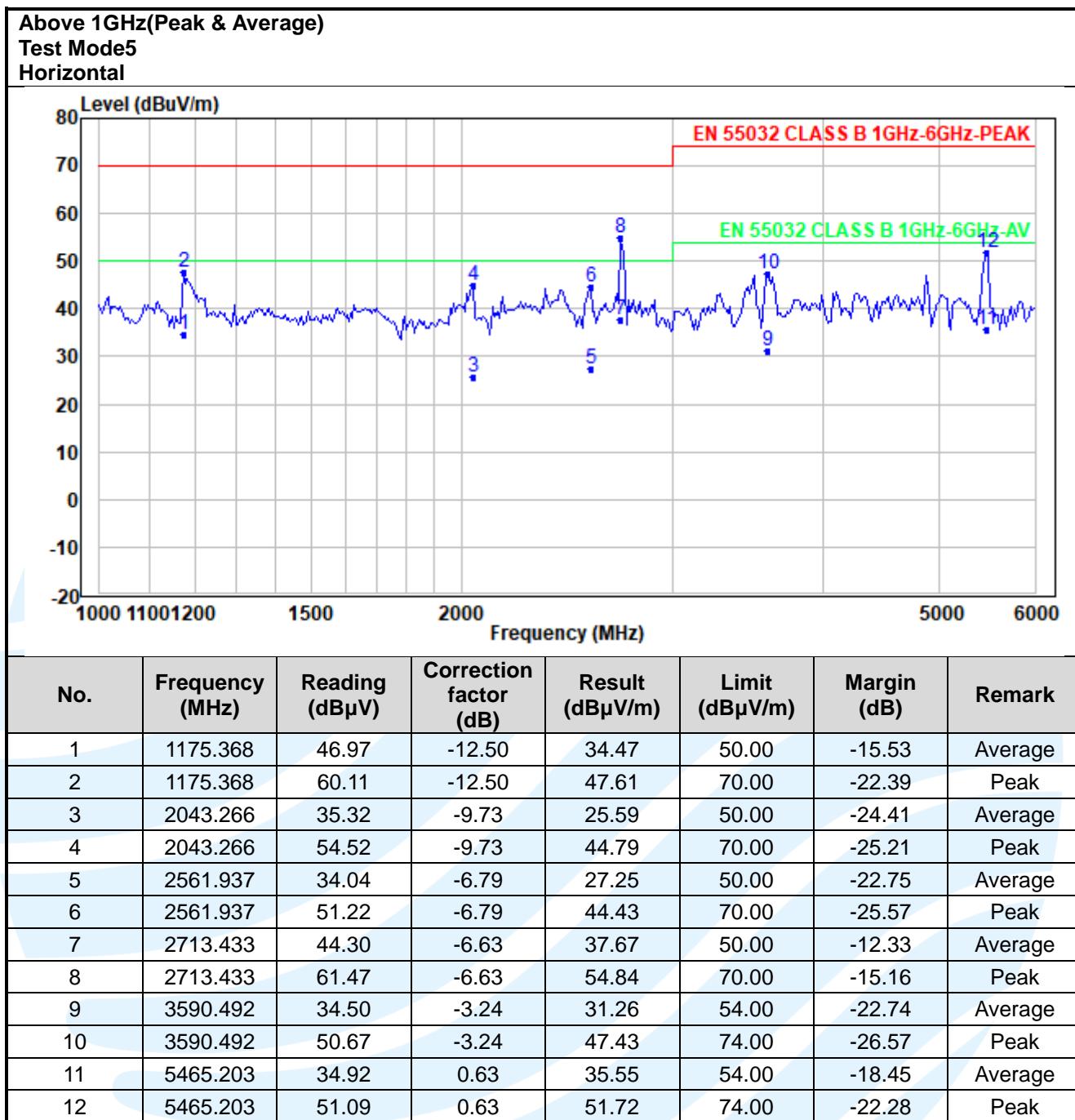
80.0 dB μ V/m

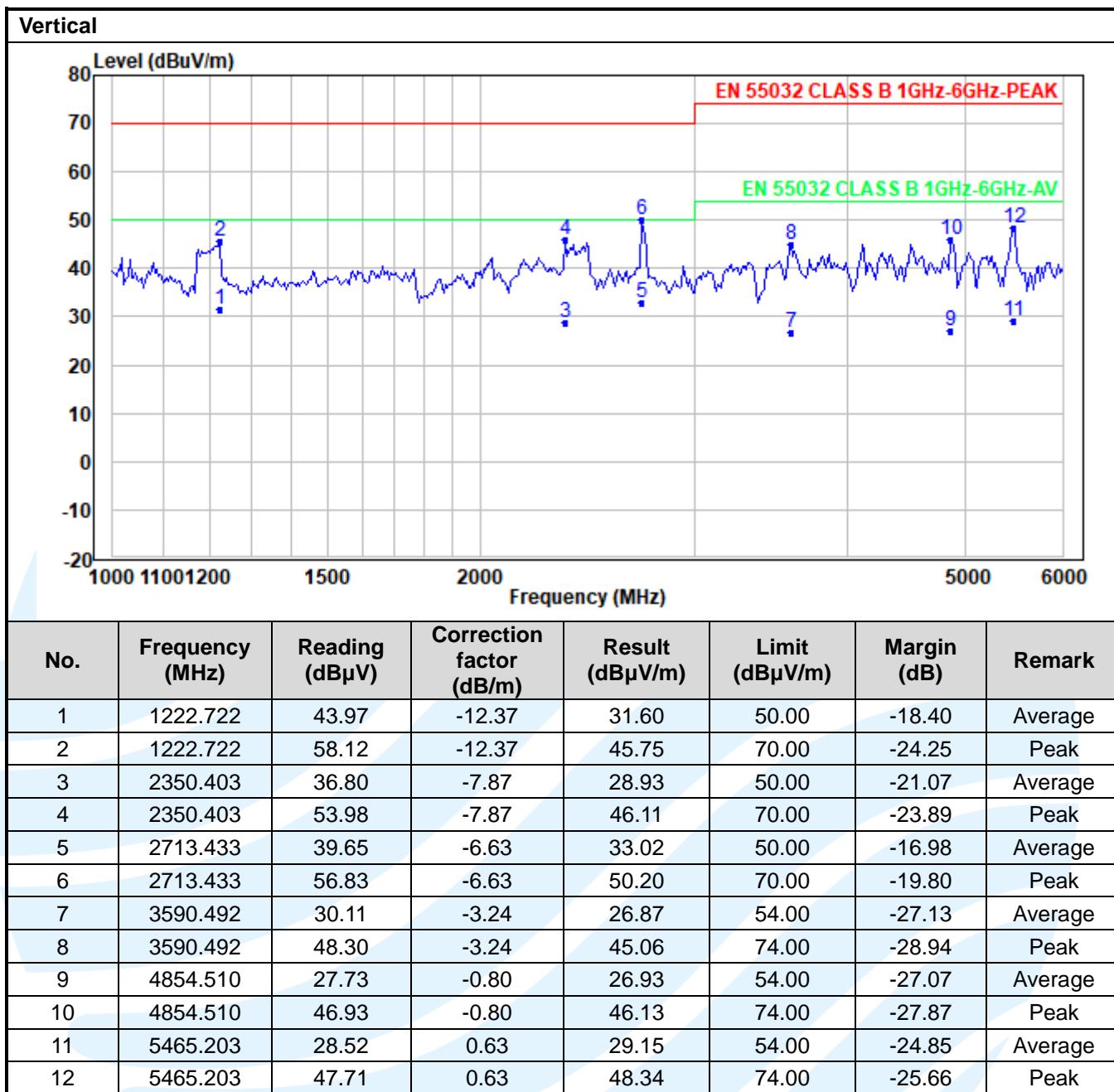


| No. | Frequency (MHz) | Reading (dB μ V) | Correction factor (dB/m) | Result (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Detector |
|-----|-----------------|----------------------|--------------------------|-----------------------|----------------------|-------------|----------|
| 1 | 30.9700 | 33.15 | -17.83 | 15.32 | 30.00 | -14.68 | Peak |
| 2 | 193.9300 | 47.55 | -27.50 | 20.05 | 30.00 | -9.95 | Peak |
| 3 | 335.5500 | 49.13 | -23.82 | 25.31 | 37.00 | -11.69 | Peak |
| 4 | 432.5500 | 45.37 | -20.92 | 24.45 | 37.00 | -12.55 | Peak |
| 5 | 624.6100 | 47.26 | -18.08 | 29.18 | 37.00 | -7.82 | Peak |
| 6 | 881.6600 | 47.20 | -15.98 | 31.22 | 37.00 | -5.78 | Peak |



Remark: The testing of Radiated Emissions @10 Meter test distance was performed in GRG Metrology & Test Group Co., Ltd.




Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit
4. All possible modes of operation were investigated, and testing at two nominal voltages of 230V~50Hz and 110V~60Hz, only the worst case emissions reported.

6.2.2 Conducted Emission (AC mains power ports)

Test Requirement: EN 55032:2015/A11:2020 Clause 5

Test Method: EN 55032:2015/A11:2020 Clause 6

Limit:

Class B

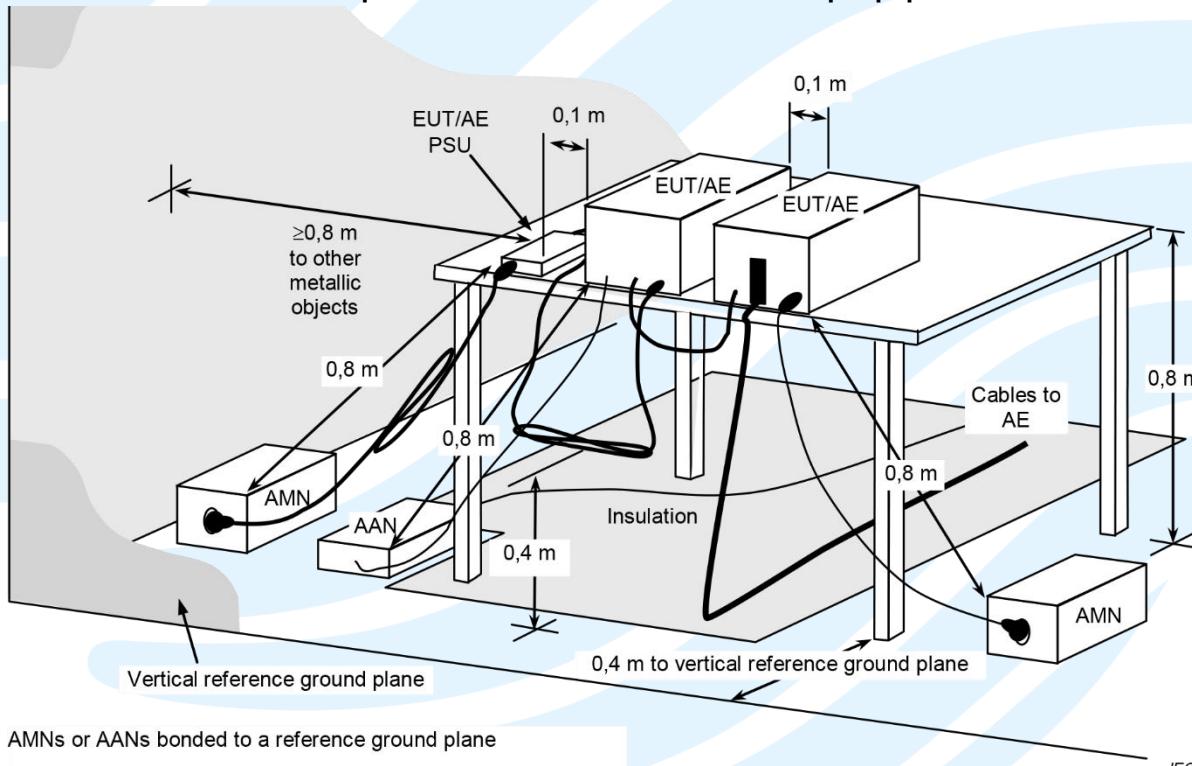
Table A.10 – Requirements for conducted emissions from the AC mains power ports of Class B equipment

| Table clause | Frequency range (MHz) | Coupling device (see Table A.8) | Detector type / bandwidth | Class B limits dB(µV) |
|--------------|-----------------------|---------------------------------|---------------------------|-----------------------|
| A10.1 | 0.15 to 0.5 | AMN | Quasi Peak / kHz | 66 to 56 |
| | 0.5 to 5 | | | 56 |
| | 5 to 30 | | | 60 |
| A10.1 | 0.15 to 0.5 | AMN | Average / 9 kHz | 56 to 46 |
| | 0.5 to 5 | | | 46 |
| | 5 to 30 | | | 50 |

Apply A10.1 and A10.2 across the entire frequency range.

Test Setup:

Test setup for conducted emissions of tabletop equipment



Test Procedures:

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The table top EUT was placed upon a non-metallic table 0.8 m or 0.1 m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m or 0.1 m from the boundary of the unit under test

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E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-EMC-EN55032-V1.2

and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

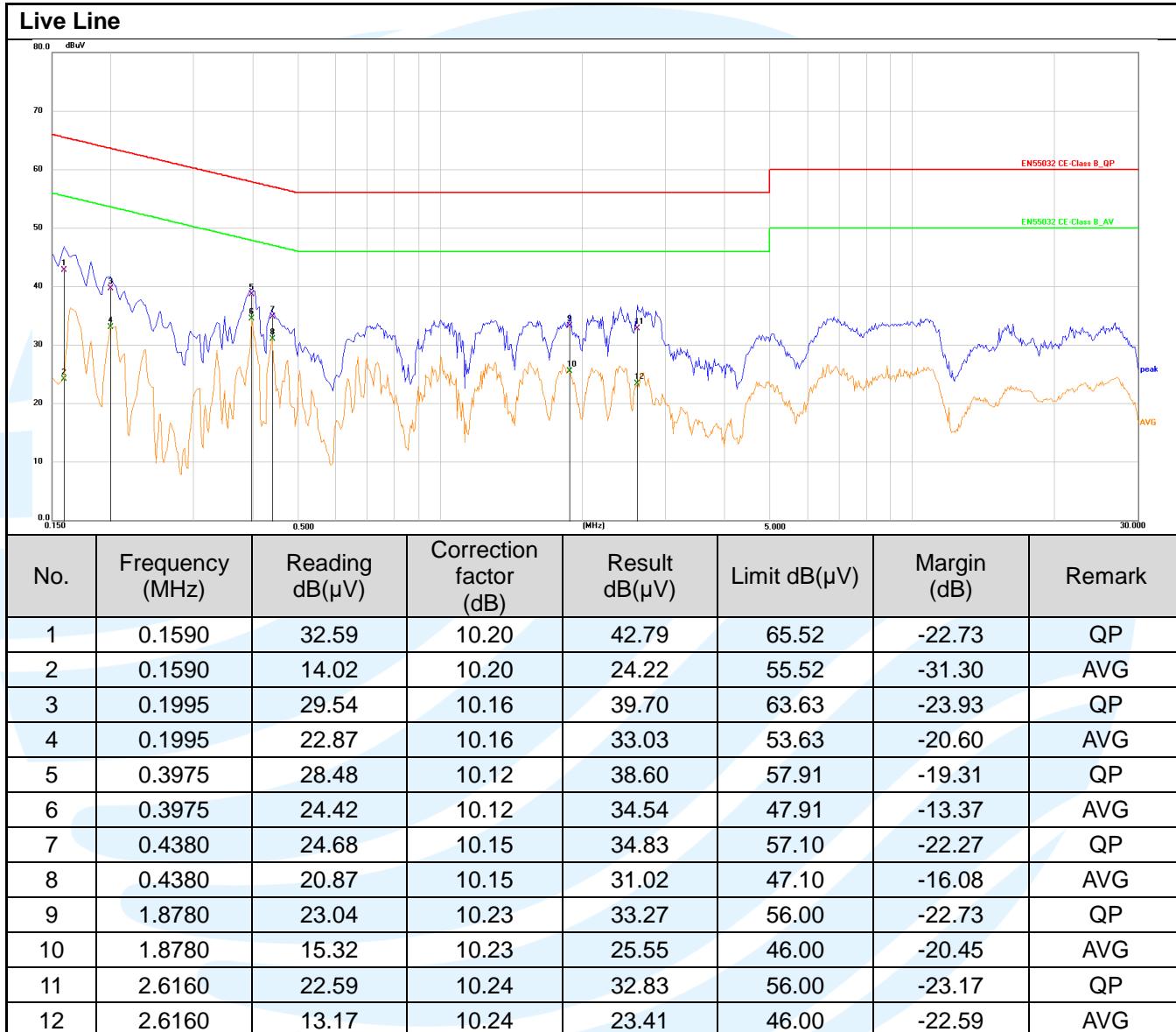
Equipment Used: Refer to section 3 for details.

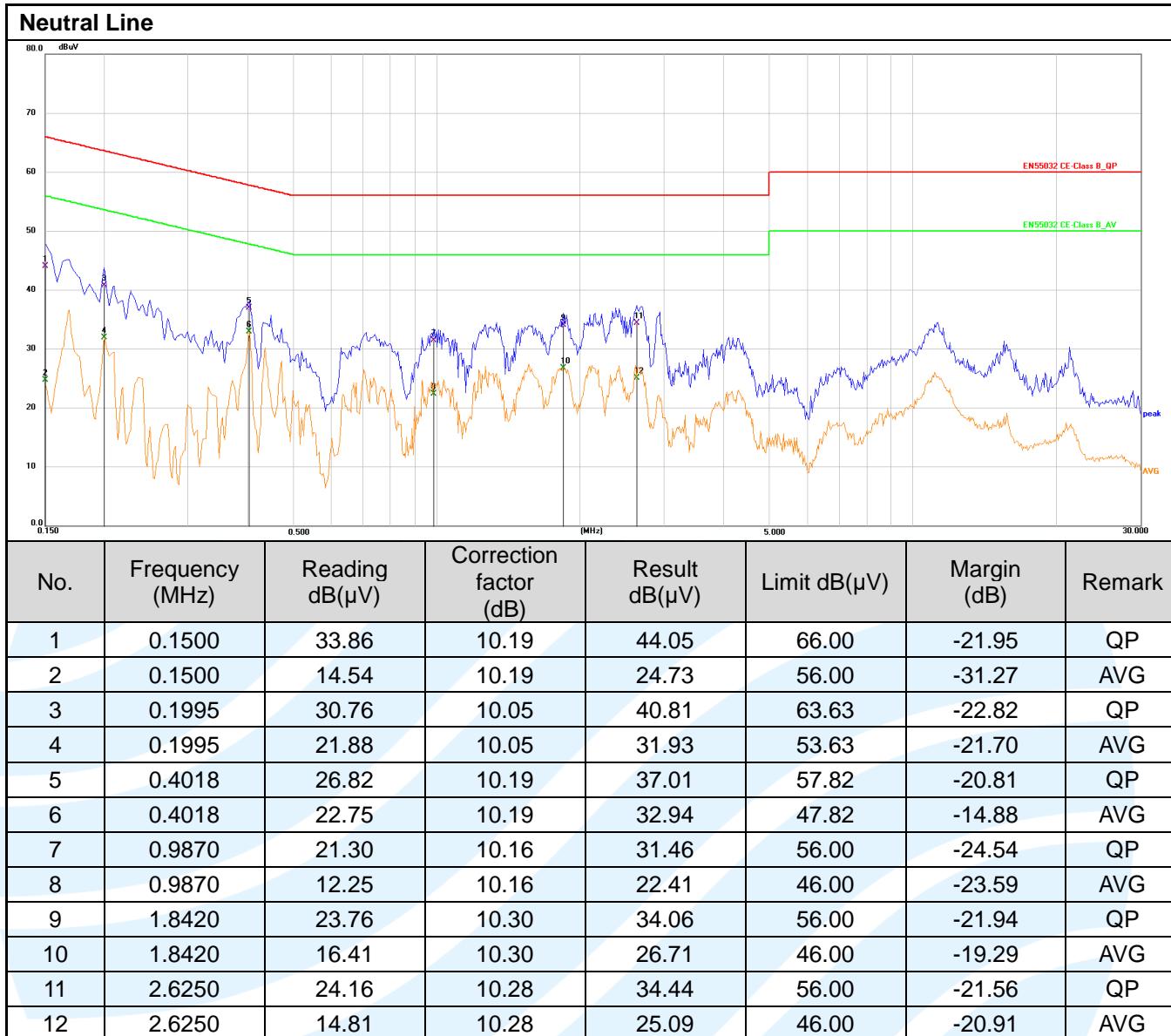
Test Result: Pass

The worst measurement data as follows:

Quasi Peak and Average:

Test Mode5





Remark:

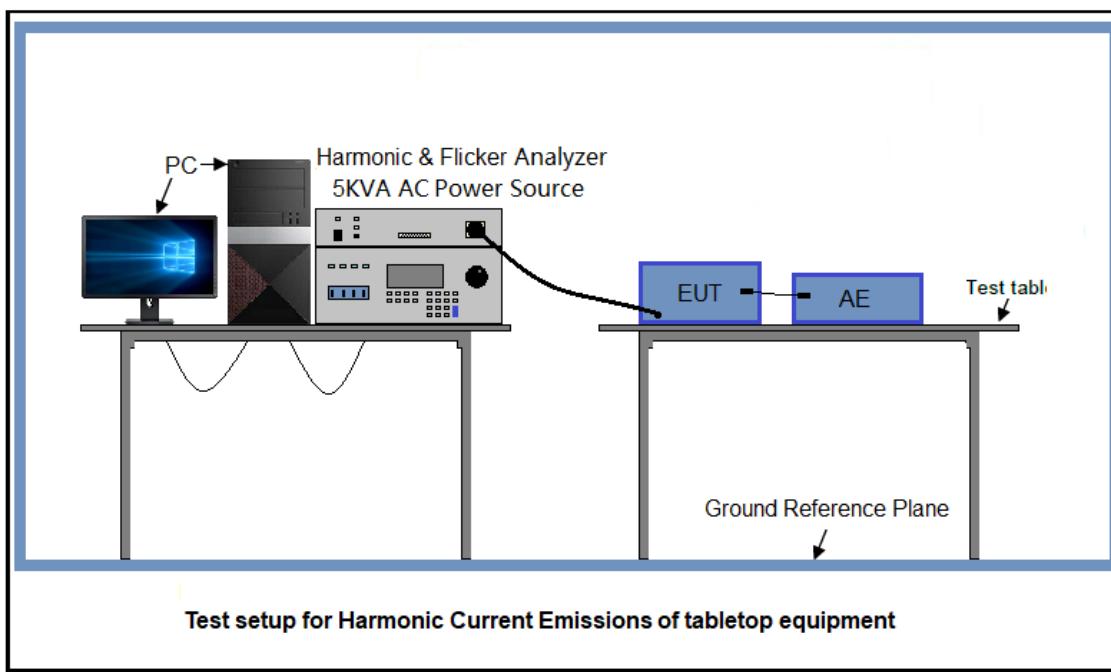
1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result - Limit
4. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.
5. All possible modes of operation were investigated, and testing at two nominal voltages of 230V~50Hz and 110V~60Hz, only the worst case emissions reported.

6.2.3 Harmonic Current Emissions

Test Requirement: EN IEC 61000-3-2:2019/A1:2021 Clause 6

Test Method: The appropriate requirements of EN 61000-3-2/A1 for harmonic current emission apply for equipment covered by the scope of the present document with an input current up to and including 16A per phase. For equipment with an input current of greater than 16A per phase EN 61000-3-12 applies.

Test Setup:



Equipment Used: Refer to section 3 for details.

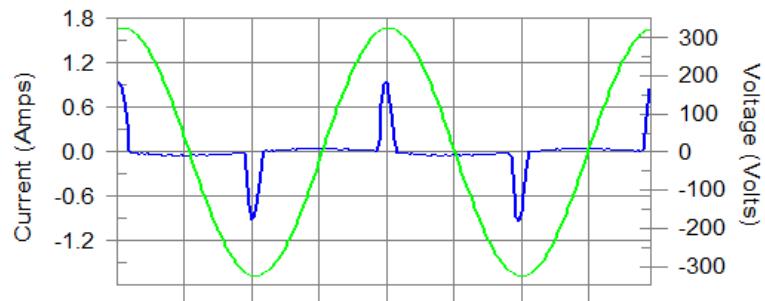
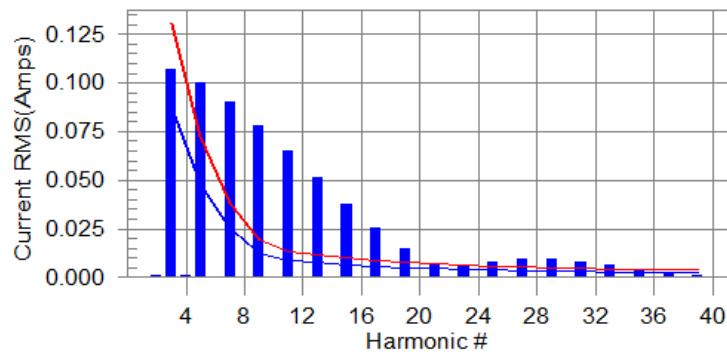
Test Result: pass

The worst measurement data as follows:

Harmonics – Class-D per IEC 61000-3-2:2018/AMD1:2020(Run time)

EUT: C27G4ZXE
 Test category: Class-D (European limits)
 Test date: 2024/4/27 Start time: 16:33:42 End time: 16:36:24
 Test duration (min): 2.5 Data file name: H-000385.cts_data
 Comment: Modes 5
 Customer: 24041810931

Test Result: N/L Source qualification: Normal

Current & voltage waveforms

Harmonics and Class D limit line European Limits


Test result: N/L Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit

Current Test Result Summary (Run time)

EUT: C27G4ZXE
Test category: Class-D (European limits)
Test date: 2024/4/27 Start time: 16:33:42 End time: 16:36:24
Test duration (min): 2.5 Data file name: H-000385.cts_data
Comment: Modes 1
Customer: 24041810931

Test Result: N/L Source qualification: Normal.
THC(A): 0.213 I-THD(%): 181.1 POHC(A): 0.021 POHC Limit(A): 0.011

Highest parameter values during test:

V_RMS (Volts): 230.45 Frequency(Hz): 50.00
I_Peak (Amps): 0.961 I_RMS (Amps): 0.245
I_Fund (Amps): 0.118 Crest Factor: 3.937
Power (Watts): 25.6 Power Factor: 0.458

| Harm# | Harms(avg) | 100%Limit | %of Limit | Harms(max) | 150%Limit | %of Limit | Status |
|-------|------------|-----------|-----------|------------|-----------|-----------|--------|
| 2 | 0.001 | 0.000 | N/A | 0.002 | 0.000 | N/A | N/L |
| 3 | 0.107 | 0.087 | N/A | 0.109 | 0.131 | N/A | N/L |
| 4 | 0.001 | 0.000 | N/A | 0.001 | 0.000 | N/A | N/L |
| 5 | 0.100 | 0.049 | N/A | 0.101 | 0.073 | N/A | N/L |
| 6 | 0.001 | 0.000 | N/A | 0.001 | 0.000 | N/A | N/L |
| 7 | 0.090 | 0.026 | N/A | 0.091 | 0.038 | N/A | N/L |
| 8 | 0.000 | 0.000 | N/A | 0.001 | 0.000 | N/A | N/L |
| 9 | 0.078 | 0.013 | N/A | 0.079 | 0.019 | N/A | N/L |
| 10 | 0.000 | 0.000 | N/A | 0.001 | 0.000 | N/A | N/L |
| 11 | 0.065 | 0.009 | N/A | 0.066 | 0.013 | N/A | N/L |
| 12 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 13 | 0.051 | 0.008 | N/A | 0.052 | 0.012 | N/A | N/L |
| 14 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 15 | 0.038 | 0.007 | N/A | 0.039 | 0.010 | N/A | N/L |
| 16 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 17 | 0.026 | 0.006 | N/A | 0.027 | 0.009 | N/A | N/L |
| 18 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 19 | 0.015 | 0.005 | N/A | 0.016 | 0.008 | N/A | N/L |
| 20 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 21 | 0.008 | 0.005 | N/A | 0.008 | 0.007 | N/A | N/L |
| 22 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 23 | 0.005 | 0.004 | N/A | 0.005 | 0.006 | N/A | N/L |
| 24 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 25 | 0.008 | 0.004 | N/A | 0.008 | 0.006 | N/A | N/L |
| 26 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 27 | 0.009 | 0.004 | N/A | 0.009 | 0.005 | N/A | N/L |
| 28 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 29 | 0.009 | 0.003 | N/A | 0.009 | 0.005 | N/A | N/L |
| 30 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 31 | 0.008 | 0.003 | N/A | 0.009 | 0.005 | N/A | N/L |
| 32 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 33 | 0.006 | 0.003 | N/A | 0.007 | 0.004 | N/A | N/L |
| 34 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 35 | 0.004 | 0.003 | N/A | 0.004 | 0.004 | N/A | N/L |
| 36 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 37 | 0.002 | 0.003 | N/A | 0.002 | 0.004 | N/A | N/L |
| 38 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |
| 39 | 0.001 | 0.003 | N/A | 0.002 | 0.004 | N/A | N/L |
| 40 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | N/L |

Note: The EUT power level is below 75.0 Watts and therefore has no defined limits.

Voltage Source Verification Data (Run time)

EUT: C27G4ZXE
Test category: Class-D (European limits)
Test date: 2024/4/27 Start time: 16:33:42
Test duration (min): 2.5 Data file name: H-000385.cts_data
Comment: Modes 1
Customer: 24041810931

Tested by: Lucas
Test Margin: 100
End time: 16:36:24

Test Result: N/L Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 230.45 Frequency(Hz): 50.00
Peak (Amps): 0.961 I RMS (Amps): 0.245
Fund (Amps): 0.118 Crest Factor: 3.937
Power (Watts): 25.6 Power Factor: 0.458

| Harm# | Harmonics V-rms | Limit V-rms | % of Limit | Status |
|-------|-----------------|-------------|------------|--------|
| 2 | 0.144 | 0.461 | 31.31 | OK |
| 3 | 0.636 | 2.074 | 30.66 | OK |
| 4 | 0.081 | 0.461 | 17.69 | OK |
| 5 | 0.033 | 0.922 | 3.53 | OK |
| 6 | 0.032 | 0.461 | 7.01 | OK |
| 7 | 0.050 | 0.691 | 7.30 | OK |
| 8 | 0.019 | 0.461 | 4.16 | OK |
| 9 | 0.024 | 0.461 | 5.16 | OK |
| 10 | 0.018 | 0.461 | 3.91 | OK |
| 11 | 0.045 | 0.230 | 19.66 | OK |
| 12 | 0.016 | 0.230 | 6.75 | OK |
| 13 | 0.038 | 0.230 | 16.33 | OK |
| 14 | 0.022 | 0.230 | 9.74 | OK |
| 15 | 0.032 | 0.230 | 13.94 | OK |
| 16 | 0.027 | 0.230 | 11.75 | OK |
| 17 | 0.018 | 0.230 | 7.64 | OK |
| 18 | 0.025 | 0.230 | 10.84 | OK |
| 19 | 0.021 | 0.230 | 9.18 | OK |
| 20 | 0.016 | 0.230 | 6.91 | OK |
| 21 | 0.003 | 0.230 | 1.35 | OK |
| 22 | 0.009 | 0.230 | 3.90 | OK |
| 23 | 0.008 | 0.230 | 3.48 | OK |
| 24 | 0.004 | 0.230 | 1.80 | OK |
| 25 | 0.011 | 0.230 | 4.56 | OK |
| 26 | 0.012 | 0.230 | 5.18 | OK |
| 27 | 0.011 | 0.230 | 4.64 | OK |
| 28 | 0.007 | 0.230 | 2.96 | OK |
| 29 | 0.017 | 0.230 | 7.35 | OK |
| 30 | 0.003 | 0.230 | 1.50 | OK |
| 31 | 0.012 | 0.230 | 5.00 | OK |
| 32 | 0.007 | 0.230 | 2.88 | OK |
| 33 | 0.013 | 0.230 | 5.62 | OK |
| 34 | 0.006 | 0.230 | 2.51 | OK |
| 35 | 0.006 | 0.230 | 2.62 | OK |
| 36 | 0.005 | 0.230 | 2.29 | OK |
| 37 | 0.008 | 0.230 | 3.58 | OK |
| 38 | 0.006 | 0.230 | 2.43 | OK |
| 39 | 0.008 | 0.230 | 3.64 | OK |
| 40 | 0.009 | 0.230 | 3.69 | OK |

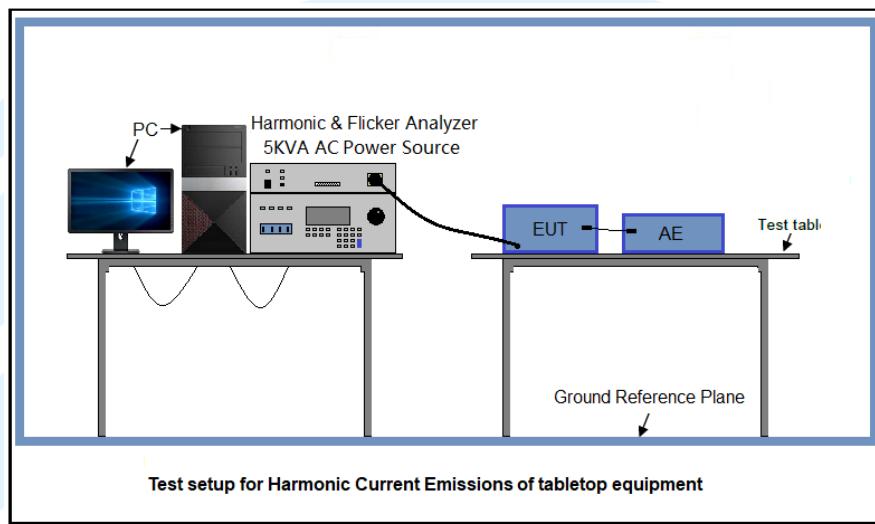
6.2.4 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013/A2:2021 Clause 4

Test Method: The appropriate requirements of EN 61000-3-3 for voltage fluctuations and flicker apply for equipment covered by the scope of the present document with an input current up to and including 16A per phase, if no conditional connection is needed. Where a conditional connection is required then the requirements of EN 61000-3-11 [12] shall apply.

For equipment with an input current of greater than 16A up to and including 75A per phase EN 61000-3-11 applies.

Test Setup:



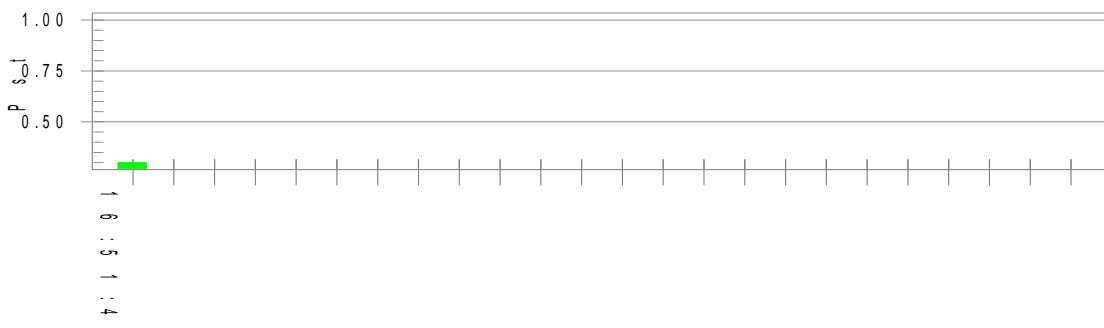
Equipment Used: Refer to section 3 for details.

Test Result: Pass

The worst measurement data as follows: Test Mode 6

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

| | Result | Test Limit |
|----------------------|--------|------------|
| dt > 3.3 % (ms) | 0 | 500.0 |
| dc (%) | 0.00 | 3.30 |
| dmax (%) | 0.00 | 4.00 |
| Pst (10 min. period) | 0.300 | 1.000 |
| Pit (2 hr. period) | N/A | 0.650 |



6.3 IMMUNITY (ENCLOSURE PORTS)

6.3.1 RF electromagnetic field

Test Requirement: EN 55035:2017/A11:2020 Table Clause 1.2, Table Clause 1.3

Test Method: The test method shall be in accordance with EN 61000-4-3

Criterion Required: performance criteria A

Frequency range: swept test: 80 MHz to 1 000 MHz

spot test: 1 800 MHz, 2 600 MHz, 3 500 MHz, 5 000 MHz

Test Level: Level 2: 3 V/m(measured unmodulated)

Modulation: 1 kHz Sine wave, 80 % Amp. Modulation, audio signal of 400 Hz

Frequency Step: 1 % increment

Dwell time: 1 seconds

Polarity Antenna: Horizontal and vertical

Test Setup:

Test setup for Continuous RF electromagnetic field disturbances, swept test and spot test of tabletop equipment

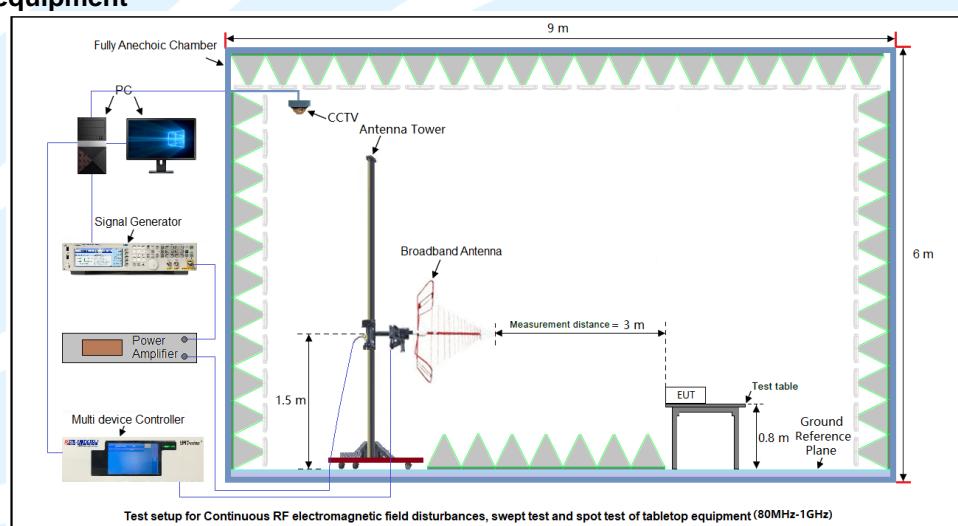


Figure 1. 80 MHz to 1 GHz

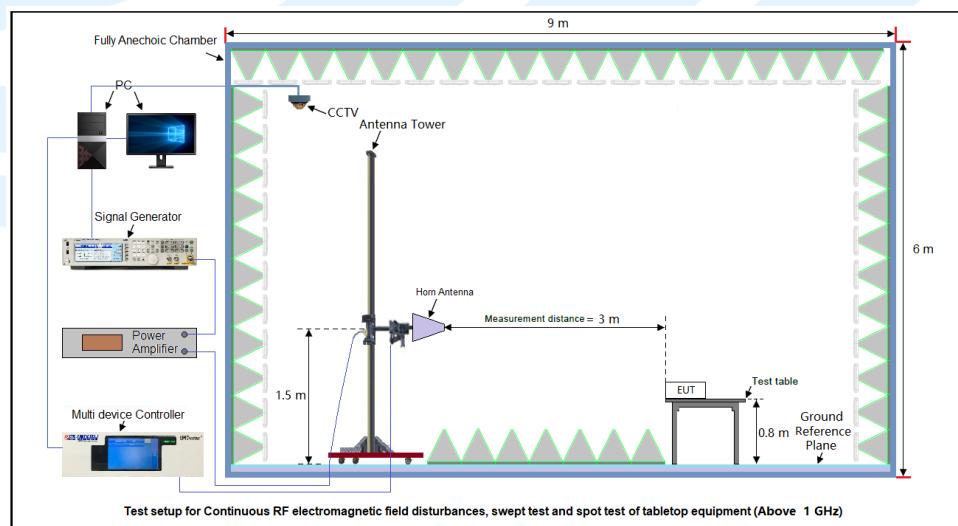
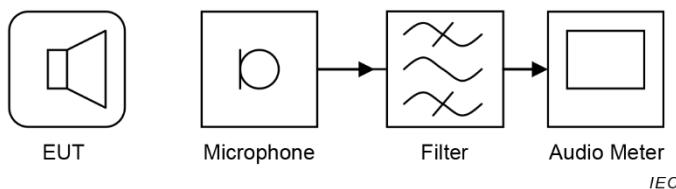


Figure 2. Above 1 GHz

Test setup for acoustic measurements


Test Procedures:

- 1) For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items.
- 2) If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length.
- 3) The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area).
- 4) The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceed 10 % of the preceding frequency value.
- 5) The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0.5 s.
- 6) The test normally was performed with the generating antenna facing each side of the EUT.
- 7) The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally.
- 8) The EUT was performed in a configuration to actual installation conditions, a video camera and/or an audio monitor were used to monitor the performance of the EUT.

Equipment Used: Refer to section 3 for details.

Test Result: See below table.

| EUT Face | Frequency | Level | Result (Pursuant to EN 55035 Criterion A) |
|----------|--|-------|--|
| Front | Swept test: 80 MHz to 1 000 MHz Spot test: 1.8 GHz, 2.6 GHz, 3.5 GHz, 5.0 GHz | 3 V/m | A |
| Back | | | A |
| Left | | | A |
| Right | | | A |
| Top | | | A |
| Under | | | A |

Observation:

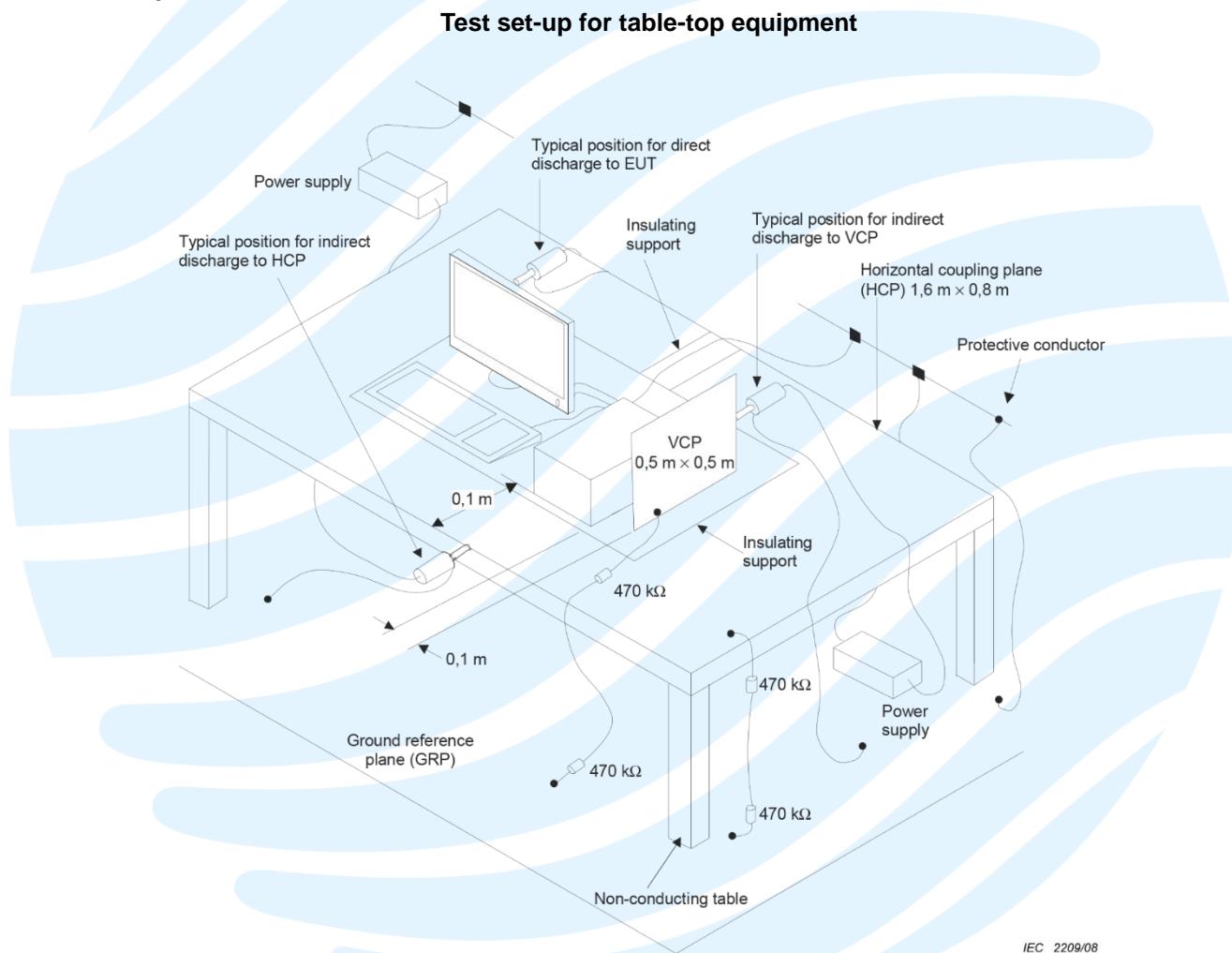
No observable change.
 The audio output signal level was monitored during test and was found to be at least 20dB less than the reference level recorded before the start of the test.

Conclusion: The EUT met the requirements of the standard.

6.3.2 Electrostatic Discharge

| | |
|-----------------------------|--|
| Test Requirement: | EN 55035:2017/A11:2020 Table Clause 1.4 |
| Test Method: | The test method shall be in accordance with EN 61000-4-2 |
| Criterion Required: | performance criteria B |
| Discharge Impedance: | 330 Ω / 150 pF |
| Polarity: | Positive & Negative |
| Number of Discharge: | Minimum 10 times at each test point |
| Discharge Mode: | Single Discharge |
| Discharge Period: | 1 second minimum |
| Test Level: | Contact discharge: Level 2, ± 4 kV |
| | Air discharge: Level 3, ± 8 kV |

Test Setup:



Test Procedures:

- 1) Electrostatic discharges shall be applied only to points and surfaces of the EUT which are expected to be touched during normal operation, including user access operations specified in the user manual, for example cleaning or adding consumables when the EUT is powered. The application of discharges to the contacts of open connectors is not required.
When applying direct discharges to a portable or handheld battery- powered EUT with a display screen, it may not be possible to observe the screen for a given EUT orientation. If observation of the screen is necessary during this test, the EUT may be mounted vertically using non - metallic supports.
- 2) The EUT was put on a 0.8m high wooden table for table-top equipment or 0.1m high for floor standing equipment standing on the ground reference plane (GRP).

- 3) A horizontal coupling plane(HCP) 1.6m by 0.8m in size was placed on the table, and the EUT with its cables were isolated from the HCP by an insulating support thick than 0.5mm. The VCP 0.5m by 0.5m in size & HCP were constructed from the same material type & think mess as that of the GRP, and connected to the GRP via a 470kΩ resistor at each end. The distance between EUT and any of the other metallic surface excepted the GRP, HCP and VCP was greater than 1m.
- 4) During the contact discharges, the tip of the discharge electrode was touch the EUT before the discharge switch is operated. During the air discharges, the round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT.
- 5) After each discharge, the ESD generator was removed from the EUT, the generator was then retriggered for a new single discharge. For ungrounded product, a discharge cable with two resistances was used after each discharge to remove remnant electrostatic voltage. 10 times of each polarity single discharge were applied to HCP and VCP.

Equipment Used: Refer to section 3 for details.

Test Result: See below table.

| Discharge Type | Applied Voltage | Pulse No. | Result (Pursuant to EN55035 Criterion B) | | |
|------------------------|-----------------|--------------------|---|---|------------------------------|
| Contact Discharge | ± 4 kV | 10 for every level | <input type="checkbox"/> A | <input checked="" type="checkbox"/> B (see phenomena) | <input type="checkbox"/> N/A |
| Air Discharge | ± 8 kV | 10 for every level | <input checked="" type="checkbox"/> A | <input type="checkbox"/> B (see phenomena) | <input type="checkbox"/> N/A |
| Indirect HCP Discharge | ± 4 kV | 10 for every level | <input checked="" type="checkbox"/> A | <input type="checkbox"/> B (see phenomena) | <input type="checkbox"/> N/A |
| Indirect VCP Discharge | ± 4 kV | 10 for every level | <input checked="" type="checkbox"/> A | <input type="checkbox"/> B (see phenomena) | <input type="checkbox"/> N/A |

Remark:

N/A: Not applicable

Observation:

No observable change.

During the experiment, the following phenomena occurred:

During the test, Contact Discharge on the HDMI1, the EUT screen flashes. After the test is automatically restored.

Conclusion: The EUT met the requirements of the standard.

6.3.3 Power frequency magnetic field

Test Requirement: EN 55035:2017/A11:2020 Table Clause 1.1

Test Method: The test method shall be in accordance with IEC 61000-4-8

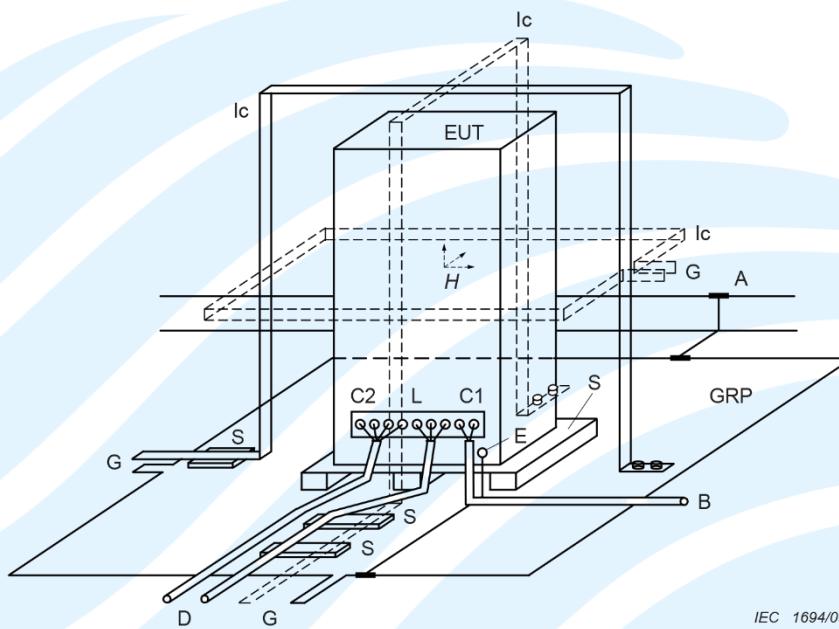
Criterion Required: A

Frequency: 50 or 60

Test Level: Level 2: 1 A/m (rms)

Test Setup:

Test setup for floor-standing equipment



Components

GRP Ground plane

A Safety earth

S Insulating support

EUT Equipment under test

Ic Inductive coil

E Earth terminal

C1 Power supply circuit

C2 Signal circuit

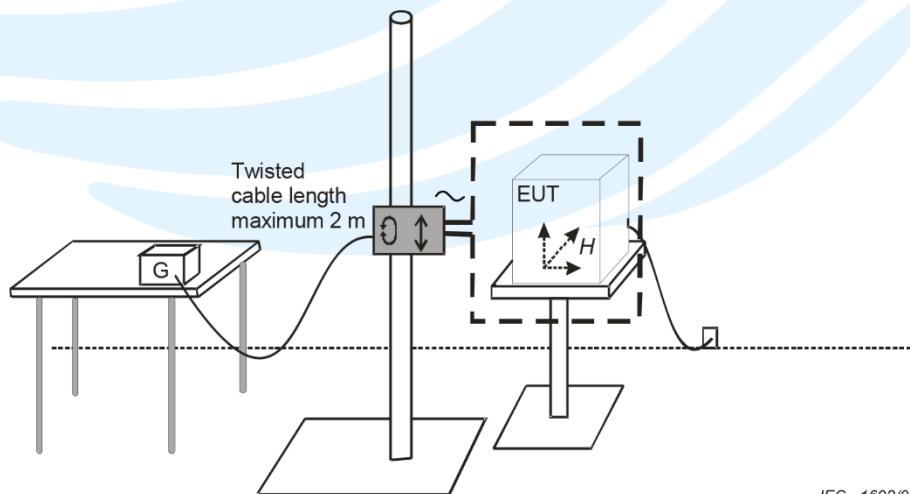
L Communication line

B To power supply source

D To signal source, simulator

G To the test generator

Test set-up for table-top equipment



Test Procedures:

- 1) The Product and support units were located on a table, 0.8m away from ground floor.
- 2) The Product is configured and connected to satisfy its functional requirements. It shall be place on the GRP with the interposition of a 0.1m thickness insulating support (e.g. dry wood)
- 3) Setting the parameter of tests and then perform the test software of test simulator.
- 4) The induction coil shall enclose the Product placed at its centre.

Equipment Used: Refer to section 3 for details.**Test Result:** See below table.

| Direction | Field Strength (A/m) | Duration (Min) | Result (Pursuant to EN55035 Criterion A) |
|-----------|----------------------|-----------------|--|
| X axis | 1 | 1 | A |
| Y axis | 1 | 1 | A |
| Z axis | 1 | 1 | A |

Observation: No observable change.**Conclusion:** The EUT met the requirements of the standard.**Remark:** The testing of Power frequency magnetic field was performed in GRG Metrology & Test Group Co., Ltd.

6.4 IMMUNITY (AC MAINS POWER PORTS)

6.4.1 Electrical fast transients/burst

Test Requirement: EN 55035:2017/A11:2020 Table Clause 4.5

Test Method: The test method shall be in accordance with EN 61000-4-4.

Criterion Required: performance criteria B

Test Port : AC mains power port

Polarity: Positive & Negative

Test Level and Repetition Frequency:

- The test level for AC mains power

Impulse Wave shape: 5/50 ns

Impulse Wave shape: 5/50 ns
Burst Duration: 15ms

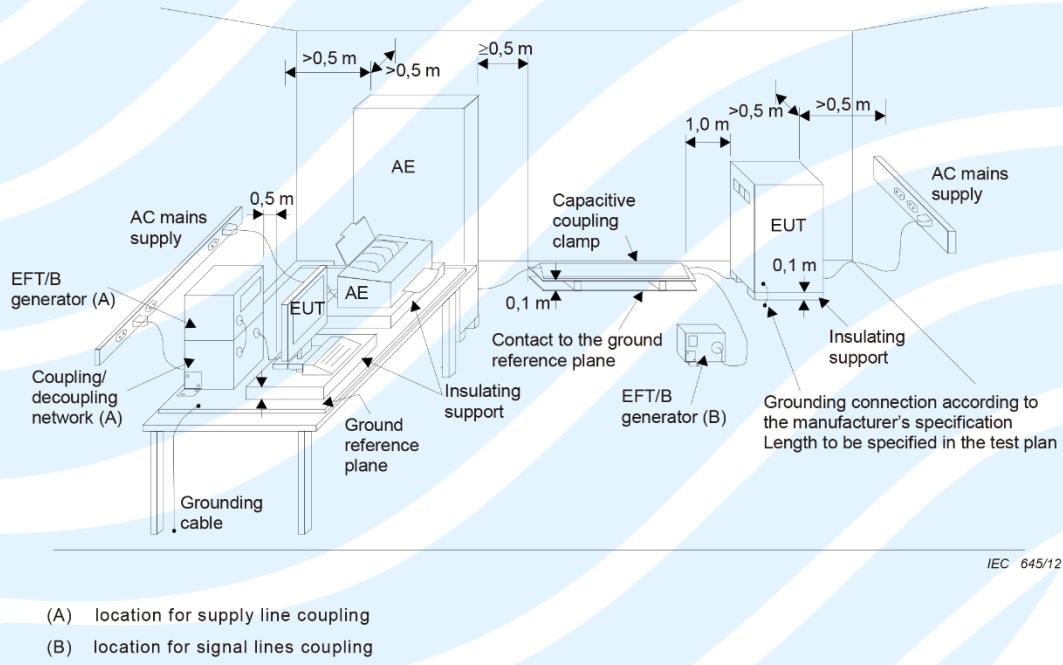
Burst Duration: 15ms

Burst Period: 300ms

Test Duration: 2 minute per level & polarity

Test Setup:

Test set-up for table-top equipment



Test Procedures:

- 1) The EUT was placed on a ground reference plane(GRP) insulated by an insulating support 0.1m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
- 2) The GRP shall project beyond the EUT and the clamp by at least 0.1m on all sides. The distance between the EUT and any other of the metallic surface except the GRP was greater than 0.5m. All cables to the EUT was placed on the insulation support 0.1m above GRP. A cable not subject to EFT was routed as far as possible from cable under test to minimize the coupling between the cables.
- 3) The length of signal and power cable between the EUT and EFT generator was 0.5m. If the cable is a non-detachable supply cable more than 0.5m, the excess length of this cable shall be folded to avoid a flat coil and situated at a distance of 0.1m above the GRP.
- 4) The EUT was conducted the below specified test voltages for line and neutral or line, neutral and earth simultaneously (for Wired network, single, control and DC port line with capacitive coupling clamp), 120 seconds duration. If the equipment contains identical ports, only one was tested; multicomputer cables, such as a 50-pair Wired network cable, were tested as a single cable. Cables did not be split or divided into groups of conductors for this test; interface ports, which were intended by the manufacturer to be connected to data cables not longer than 3 m, did not be tested.

Equipment Used: Refer to section 3 for details.

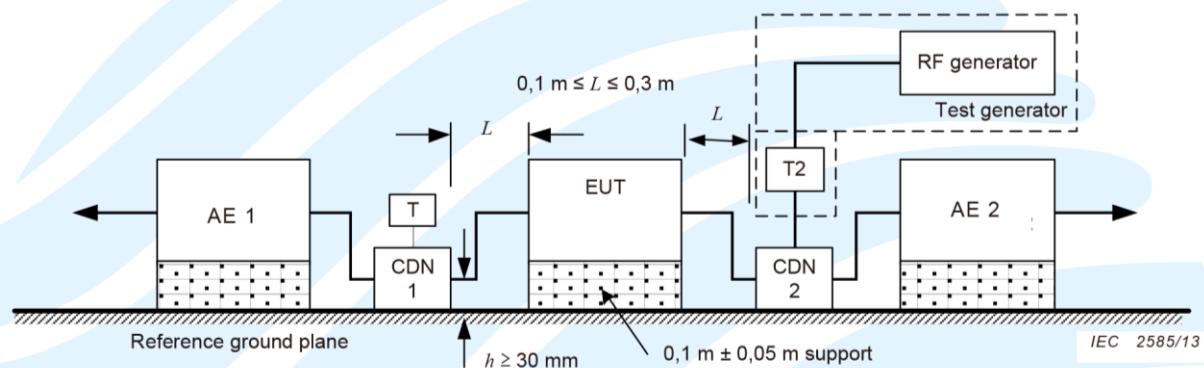
Test Result: See below table.

| Test Ports | Test Level | Result (Pursuant to EN 55035 Criterion B) | |
|--|--------------------|--|--|
| | | <input checked="" type="checkbox"/> A | <input type="checkbox"/> B (see phenomena) |
| AC mains power ports | ± 0.5 kV, ± 1.0 kV | | |
| Observation: | | | |
| <input checked="" type="checkbox"/> No observable change. <input type="checkbox"/> During the experiment, the following phenomena occurred: | | | |

Conclusion: The EUT met the requirements of the standard.

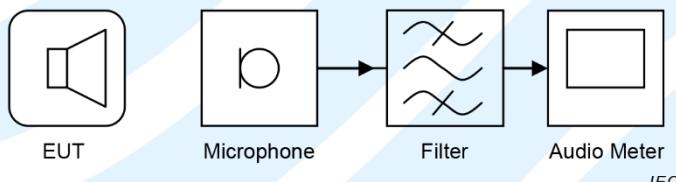
6.4.2 Continuous induced RF disturbances

| | |
|----------------------------|--|
| Test Requirement: | EN 55035:2017/A11:2020 Table Clause 4.1 |
| Test Method: | The test method shall be in accordance with EN 61000-4-6 |
| Criterion Required: | performance criteria A |
| Test Level: | 0.15 MHz to 10 MHz: 3 V (r.m.s) 10 MHz to 30 MHz: 3 to 1 V (r.m.s) 30 MHz to 80 MHz: 1 V (r.m.s) |
| Modulation: | 80%, 1kHz Amplitude Modulation |
| Step Size: | 1% increment |
| Dwell Time: | 1s |
| Test Setup: | |



Schematic setup for immunity test used for CDN

Test setup for acoustic measurements



Test Procedures:

- 1) The Product and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
- 2) The frequency range is swept from 150 kHz to 80MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- 1) The dwell time at each frequency shall be not less than the time necessary for the Product to be able to respond.

Equipment Used: Refer to section 3 for details.

Test Result: See below table.

| Test Ports | Frequency | Test Level | Result (Pursuant to EN 55035 Criterion A) |
|---|--------------------|------------|--|
| AC mains power ports | 0.15 MHz to 10 MHz | 3 V | A |
| | 10 MHz to 30 MHz | 3 to 1 V | A |
| | 30 MHz to 80 MHz | 1 V | A |
| Observation: <input type="checkbox"/> No observable change. <input checked="" type="checkbox"/> The audio output signal level was monitored during test and was found to be at least 20dB less than the reference level recorded before the start of the test. | | | |
| Conclusion: The EUT met the requirements of the standard. | | | |

6.4.3 Voltage dips and Voltage interruptions

Test Requirement: EN 55035:2017/A11:2020 Table Clause 4.2/ 4.3

Test Method: The test method shall be in accordance with EN 61000-4-11

| | | |
|----------------------------|---------------|-----------------------------|
| Criterion Required: | Voltage dips | performance criteria B or C |
| | interruptions | performance criteria C |

Test Port : AC mains power port

>95 % reduction: 0,5 period

Test Level: >30 % reduction: 25 period for 50Hz / 30 period for 60Hz

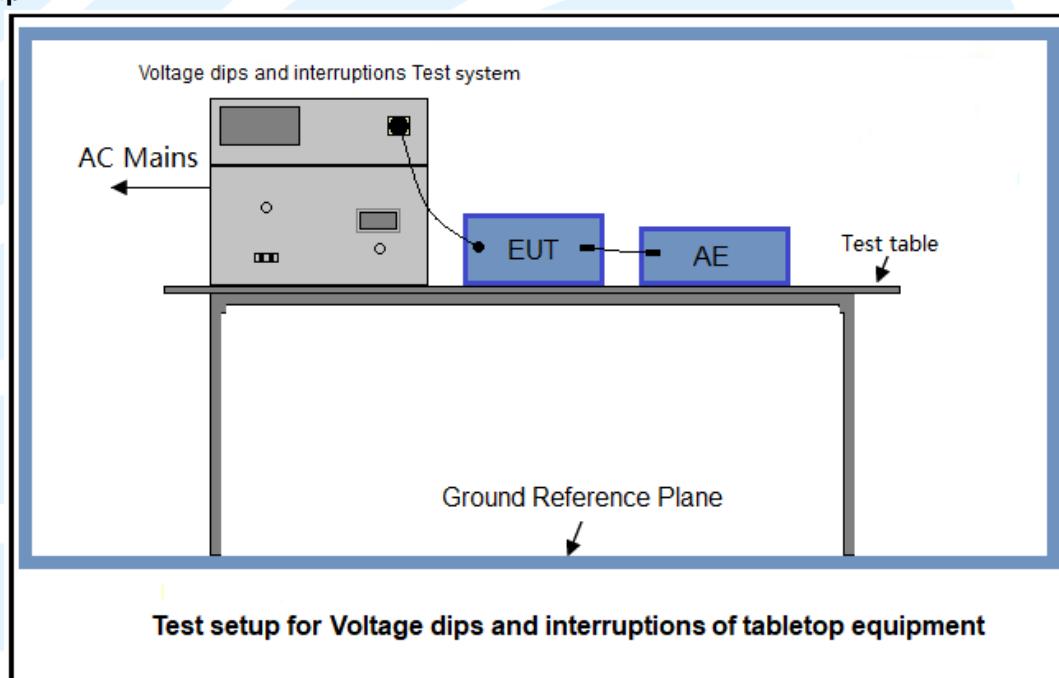
>95 % reduction: 250 period for 50Hz / 300 period for 60Hz

No. of Dips / Interruptions: 3 per Level

Interval between Event: Minimum 10 seconds

Phase Angle: 0°/45°/90°/135°/180°/225°/270°/315°

Test Setup:



Test Procedures:

- 1) The EUT was placed on a ground reference plane(GRP) insulated by an insulating support 0.1 m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
- 2) The test was performed with the EUT connected to the test generator with the shortest power supply cable as specified by the EUT manufacturer.
- 3) The EUT was tested for each selected combination of test level and duration with a sequence of three dips /interruptions with intervals of 10 s minimum. Each representative mode of operation was tested.
- 4) For EUT with more than one power cord, each power cord was tested individually.

Equipment Used: Refer to section 3 for details.

Test Result: See below table.

| Test Condition | | Result (Pursuant to EN 55035 Criterion B or C) | | | |
|-------------------|--------------------------------|--|--|---------------------------------------|---|
| Test Level in %UT | Period | Meet Criterion B | | Meet Criterion C | |
| 0 | 0.5 | <input checked="" type="checkbox"/> A | <input type="checkbox"/> B (see phenomena) | N/A | |
| 70 | 25 for 50 Hz 30 for 60 Hz | N/A | | <input checked="" type="checkbox"/> A | <input type="checkbox"/> B (see phenomena) |
| 0 | 250 for 50 Hz 300 for 60 Hz | N/A | | <input type="checkbox"/> A | <input checked="" type="checkbox"/> B (see phenomena) |

Remark:
N/A: Not applicable

Observation:

No observable change.
 During the experiment, the following phenomena occurred:
The EUT turned off at 0%UT test level with 250/300 cycles (at 230V~50Hz/110V~60Hz) duration and it could auto resume to normal after the test.

Conclusion: The EUT met the requirements of the standard.

6.4.4 Surges

| | |
|----------------------------|--|
| Test Requirement: | EN 55035:2017/A11:2020 Table Clause 4.4 |
| Test Method: | The test method shall be in accordance with EN 61000-4-5 |
| Criterion Required: | performance criteria B |
| Wave Shape: | for AC mains power and DC network power ports 1.2/50 (8/20) μ s |
| Test Level: | for AC mains power ports: 2 kV line to ground, and 1 kV line to line |
| Polarity: | Positive & Negative |
| Interval: | 60s between each surge |
| No. of Surges: | 5 positive at 90°, 5 negative at 270° |
| Test Setup: | |

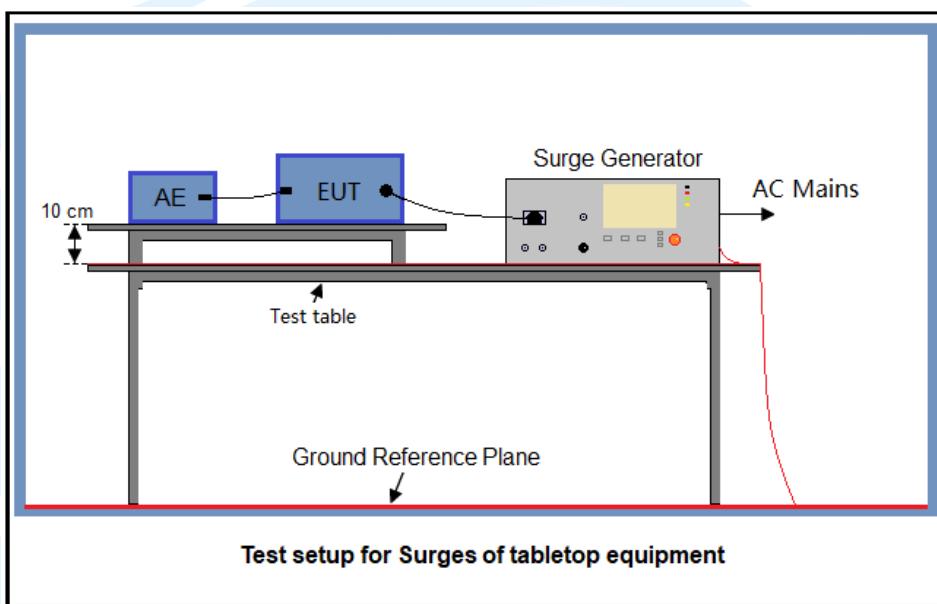


Figure 1. For AC port

Test Procedures:

Test Procedure:

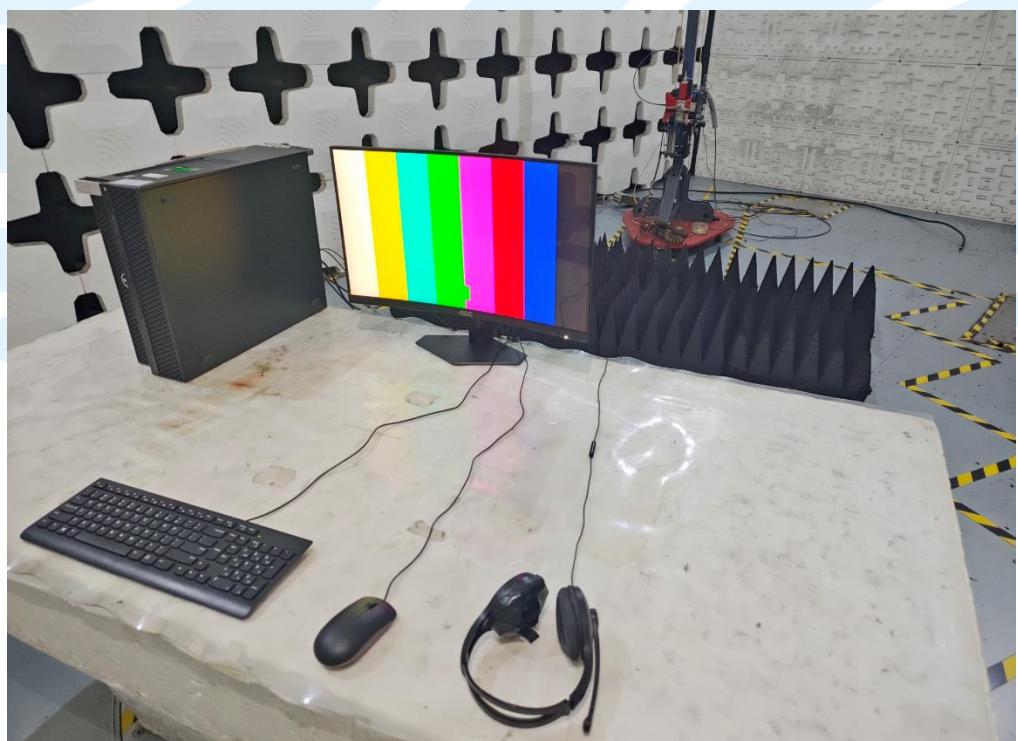
- 1) The EUT was placed on a ground reference plane(GRP) insulated by an insulating support 0.1 m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
- 2) The 1.2/50 μ s surge was to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks were required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines and to provide sufficient decoupling impedance to the surge wave so that the specified wave may be applied on the lines under test.
- 3) The power cord between the EUT and the coupling/decoupling network was not exceed 2 m in length. The interconnection line between the EUT and the coupling/ decoupling network shall not exceed 2 m in length.
- 4) The EUT was conducted 0.5 kV and 1 kV test voltage for line to line and line to neutral and conducted 0.5 kV, 1 kV and 2 kV test voltage for line to earth and neutral to earth, five positive pulses and five negative pulses each at 90°, 270° for a.c. power ports and five positive pulses and five negative surge pulses for d.c. power ports, The test levels were applied on the EUT with a 2 Ω generator source impedance for power supply terminals and 12 Ω output impedance for interconnection lines. The tests were done at repetition rate one per minute.

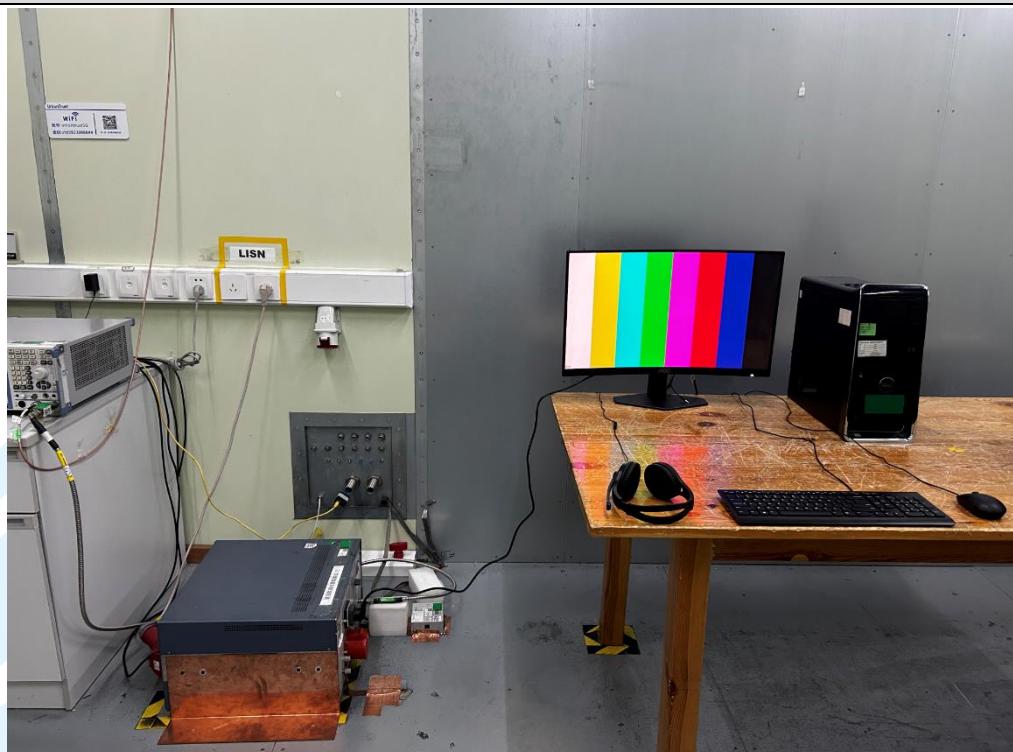
Equipment Used: Refer to section 3 for details.

Test Result: See below table.

| For AC mains power port | | | |
|---|--------------|--|--|
| Test Ports | Level | Result (Pursuant to EN 55035 Criterion B) | |
| Line to line | ± 1.0 kV | <input checked="" type="checkbox"/> A | <input type="checkbox"/> B (see phenomena) |
| Lines to ground | ± 2.0 kV | <input checked="" type="checkbox"/> A | <input type="checkbox"/> B (see phenomena) |
| Remark: N/A: Not applicable | | | |
| Observation: <input checked="" type="checkbox"/> No observable change. <input type="checkbox"/> During the experiment, the following phenomena occurred: | | | |
| Conclusion: The EUT met the requirements of the standard. | | | |

7. PHOTOGRAPHS OF TEST SETUP

Radiated emission Test Setup (30MHz~1GHz) 10 Meter test distance**Radiated emission Test Setup (Above 1GHz)**

Conducted Emission (AC port) Test Setup**Harmonic & Flicker Test Setup**

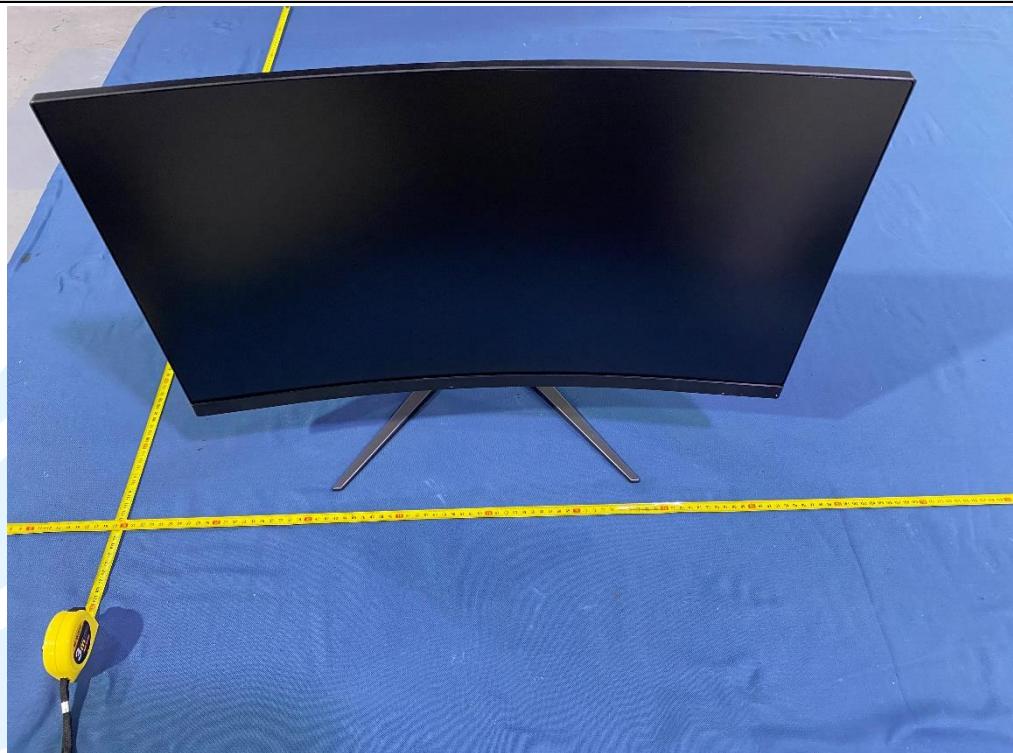
Electrostatic Discharge Test Setup**Fast Transients, Common mode / Surge Test Setup (AC Port) Test Setup**

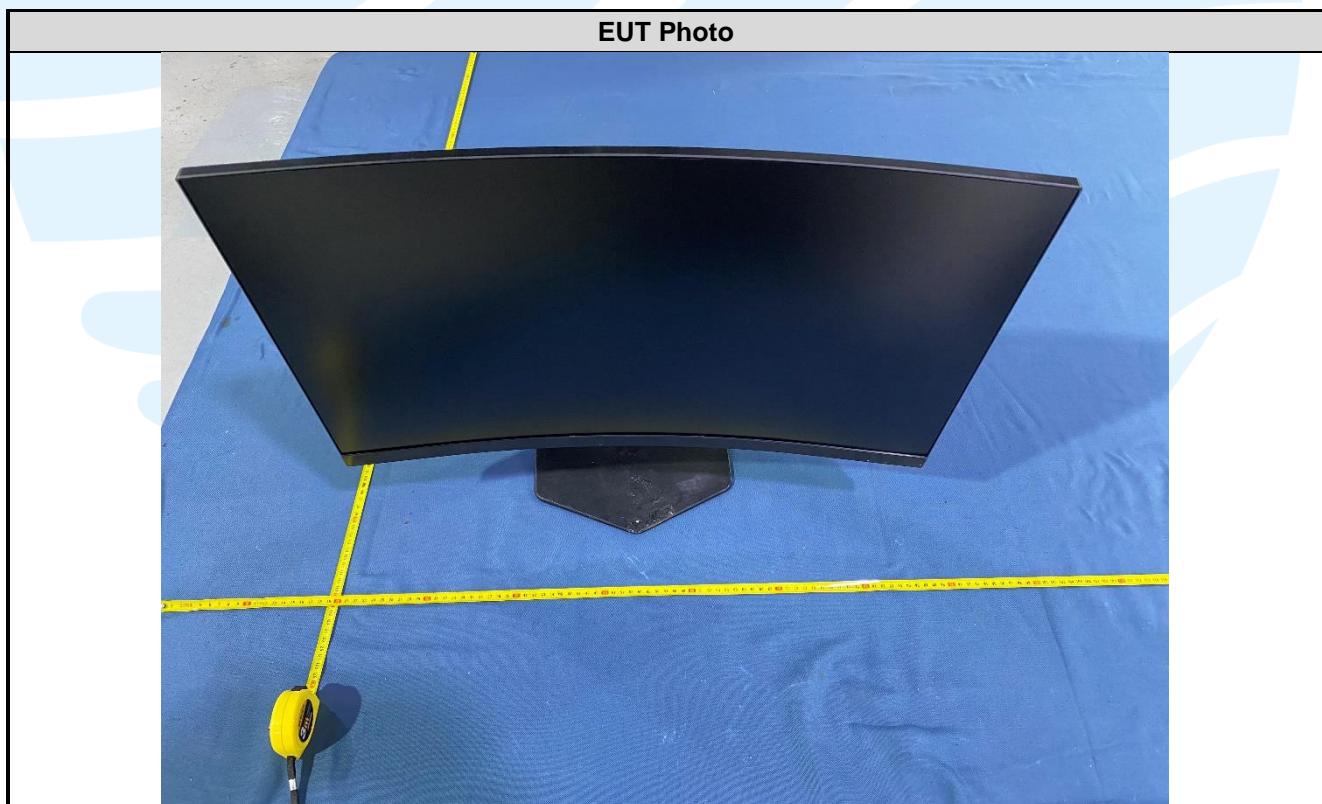
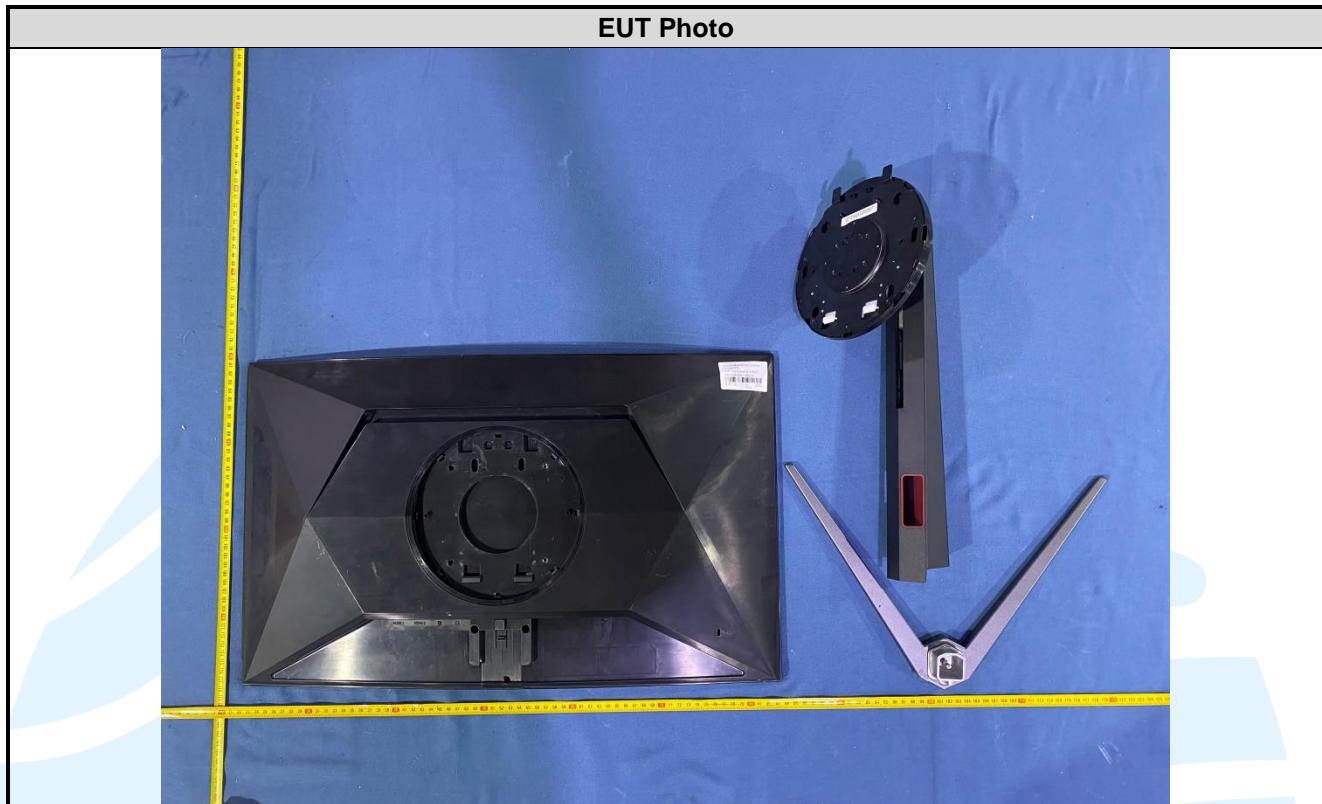
RF electromagnetic field Test Setup

Radio frequency, common mode (AC Port) Test Setup**Power frequency magnetic field Test Setup**

Voltage dips and interruptions Test Setup

8. PHOTOGRAPHS OF EUT

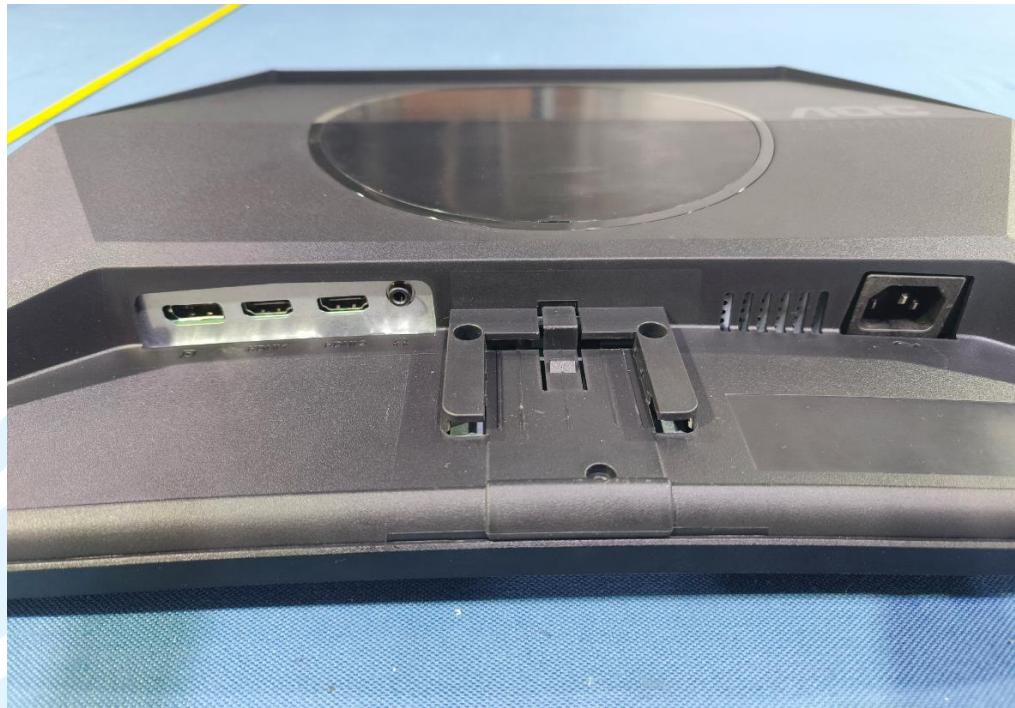
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*** End of Report ***

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