



# EMC Test Report

## For

**Applicant Name:** SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD  
202, Building A2, Silicon Valley Power Intelligent Terminal Industrial  
**Address:** Park, No. 20, Dafu Industrial Zone, Kukeng Community, Guanlan  
Street, Longhua District, Shenzhen China  
**EUT Name:** Smart Phone  
**Brand Name:** OUKITEL  
**Model Number:** WP32  
**Series Model Number:** Refer to section 2

## Issued By

**Company Name:** BTF Testing Lab (Shenzhen) Co., Ltd.  
F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park,  
**Address:** Tantou Community, Songgang Street, Bao'an District, Shenzhen,  
China

**Report Number:** BTF230913E00501  
EN 55032:2015+A1:2020  
**Test Standards:** EN 61000-3-3:2013+A2:2021  
EN 55035:2017+A11:2020

**Test Conclusion:** Pass  
**Test Date:** 2023-09-13 to 2023-10-06  
**Date of Issue:** 2023-10-07

**Prepared By:**

Elma.Yang

elma.yang / Project Engineer

**Date:**

2023-10-07

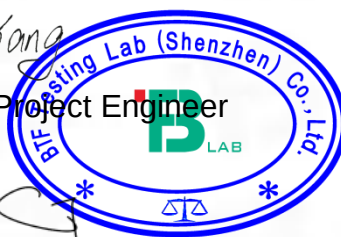
**Approved By:**

Ryan.CJ

Ryan.CJ / EMC Manager

**Date:**

2023-10-07



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Test Report Number: BTF230913E00501

| Revision History                                                                          |            |                   |
|-------------------------------------------------------------------------------------------|------------|-------------------|
| Version                                                                                   | Issue Date | Revisions Content |
| R_V0                                                                                      | 2023-10-07 | Original          |
|                                                                                           |            |                   |
| <i>Note: Once the revision has been made, then previous versions reports are invalid.</i> |            |                   |

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## 1 Introduction

### 1.1 Identification of Testing Laboratory

|               |                                                                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Company Name: | BTF Testing Lab (Shenzhen) Co., Ltd.                                                                                                |
| Address:      | F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China |
| Phone Number: | +86-0755-23146130                                                                                                                   |
| Fax Number:   | +86-0755-23146130                                                                                                                   |

### 1.2 Identification of the Responsible Testing Location

|               |                                                                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Company Name: | BTF Testing Lab (Shenzhen) Co., Ltd.                                                                                                |
| Address:      | F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China |
| Phone Number: | +86-0755-23146130                                                                                                                   |
| Fax Number:   | +86-0755-23146130                                                                                                                   |

### 1.3 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

## 2 Product Information

### 2.1 Application Information

|               |                                                                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Company Name: | SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD                                                                                                                                 |
| Address:      | 202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No. 20, Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen China |

### 2.2 Manufacturer Information

|               |                                                                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Company Name: | SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD                                                                                                                                 |
| Address:      | 202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No. 20, Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen China |

### 2.3 Factory Information

|               |                                                                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Company Name: | SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD                                                                                                                                 |
| Address:      | 202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No. 20, Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen China |

### 2.4 General Description of Equipment under Test (EUT)

|                                            |                                                            |
|--------------------------------------------|------------------------------------------------------------|
| EUT Name:                                  | Smart Phone                                                |
| Test Model Number:                         | WP32                                                       |
| Series Model Number:                       | WP32 S, WP32 Pro, WP32 TITAN                               |
| Description of Model name differentiation: | Only the model name is different, the others are the same. |

### 2.5 Technical Information

|                |                                                                |
|----------------|----------------------------------------------------------------|
| Power Supply:  | DC 5V from adapter                                             |
| Power Adaptor: | Input: 100-240V~50/60Hz 0.35A Max.<br>Output: 5.0V= 2.0A 10.0W |

### 3 Summary of Test Results

#### 3.1 Test Standards

The tests were performed according to following standards:

**EN 55032:2015+A1:2020:** Electromagnetic compatibility of multimedia equipment - Emission requirements

**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  $\leq 16A$  per phase and not subject to conditional connection

**EN 55035:2017+A11:2020:** Electromagnetic compatibility of multimedia equipment - Immunity requirements.

#### 3.2 Uncertainty of Test

| Item                                | Measurement Uncertainty                                     |
|-------------------------------------|-------------------------------------------------------------|
| Conducted Emission (150 kHz-30 MHz) | $\pm 2.64\text{dB}$                                         |
| Radiated Emissions (30M - 1GHz)     | $\pm 4.12\text{dB}$                                         |
| Radiated Emissions (above 1GHz)     | 1-6GHz: $\pm 3.94\text{dB}$<br>6-18GHz: $\pm 4.16\text{dB}$ |
| Voltage Flicker                     | $\pm 5.88\%$                                                |

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

#### 3.3 Summary of Test Result

| Item                                                                       | Standard                  | Requirement                                                                                                              | Result |
|----------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------|--------|
| Conducted emissions from AC mains power ports (150kHz-30MHz)               | EN 55032:2015+A1:2020     | Class B                                                                                                                  | Pass   |
| Radiated emissions (30MHz-1GHz)                                            | EN 55032:2015+A1:2020     | Class B                                                                                                                  | Pass   |
| Radiated emissions (above 1GHz)                                            | EN 55032:2015+A1:2020     | Class B                                                                                                                  | Pass   |
| Voltage fluctuations and flicker                                           | EN 61000-3-3:2013+A2:2021 | EN 61000-3-3, Clause 4                                                                                                   | Pass   |
| Electrostatic discharges                                                   | EN 55035:2017+A11:2020    | Contact Discharge: $\pm 4\text{kV}$<br>Air Discharge: $\pm 8\text{kV}$                                                   | Pass   |
| RF electromagnetic field disturbances                                      | EN 55035:2017+A11:2020    | 3V/m, 80%, 1kHz Amp. Mod.                                                                                                | Pass   |
| Electrical fast transients / burst for AC mains power ports                | EN 55035:2017+A11:2020    | 1kV; 5/50ns Tr/Th; 5kHz Repetition Frequency                                                                             | Pass   |
| Surges for AC mains power ports                                            | EN 55035:2017+A11:2020    | 1.2/50 $\mu\text{s}$ Tr/Td; 1kV Line to Line                                                                             | Pass   |
| Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz) | EN 55035:2017+A11:2020    | 0.15 to 10MHz 3Vrms (emf), 10 to 30MHz 3V to 1Vrms(emf), 30 to 80MHz 1Vrms(emf), 80%, 1kHz Amp. Mod.                     | Pass   |
| Voltage dips and interruptions                                             | EN 55035:2017+A11:2020    | <5% residual voltage for 0.5 periods: B, 70% residual voltage for 25 periods: C, <5% residual voltage for 250 periods: C | Pass   |

## 4 Test Configuration

### 4.1 Test Equipment List

| Conducted emissions from AC mains power ports (150kHz-30MHz) |               |             |              |            |              |
|--------------------------------------------------------------|---------------|-------------|--------------|------------|--------------|
| Equipment                                                    | Manufacturer  | Model No    | Inventory No | Cal Date   | Cal Due Date |
| Pulse Limiter                                                | SCHWARZBECK   | VTSD 9561-F | 00953        | 2022-11-24 | 2023-11-23   |
| Coaxial Switcher                                             | SCHWARZBECK   | CX210       | CX210        | 2022-11-24 | 2023-11-23   |
| V-LISN                                                       | SCHWARZBECK   | NSLK 8127   | 01073        | 2022-11-24 | 2023-11-23   |
| LISN                                                         | AFJ           | LS16/110VAC | 16010020076  | 2023-02-23 | 2024-02-22   |
| EMI Receiver                                                 | ROHDE&SCHWARZ | ESCI3       | 101422       | 2022-11-24 | 2023-11-23   |

| Radiated emissions (30MHz-1GHz) |               |                 |              |            |              |
|---------------------------------|---------------|-----------------|--------------|------------|--------------|
| Radiated emissions (above 1GHz) |               |                 |              |            |              |
| Equipment                       | Manufacturer  | Model No        | Inventory No | Cal Date   | Cal Due Date |
| Coaxial cable Multiflex 141     | Schwarzbeck   | N/SMA 0.5m      | 517386       | 2023-03-24 | 2024-03-23   |
| Preamplifier                    | SCHWARZBECK   | BBV9744         | 00246        | 2022-11-24 | 2023-11-23   |
| RE Cable                        | REBES Talent  | UF1-SMASMAM-10m | 21101566     | 2022-11-24 | 2023-11-23   |
| RE Cable                        | REBES Talent  | UF2-NMNM-10m    | 21101570     | 2022-11-24 | 2023-11-23   |
| RE Cable                        | REBES Talent  | UF1-SMASMAM-1m  | 21101568     | 2022-11-24 | 2023-11-23   |
| RE Cable                        | REBES Talent  | UF2-NMNM-1m     | 21101576     | 2022-11-24 | 2023-11-23   |
| RE Cable                        | REBES Talent  | UF2-NMNM-2.5m   | 21101573     | 2022-11-24 | 2023-11-23   |
| POSITIONAL CONTROLLER           | SKET          | PCI-GPIB        | /            | /          | /            |
| Horn Antenna                    | SCHWARZBECK   | BBHA9170        | 01157        | 2021-11-28 | 2023-11-27   |
| EMI TEST RECEIVER               | ROHDE&SCHWARZ | ESCI7           | 101032       | 2022-11-24 | 2023-11-23   |
| SIGNAL ANALYZER                 | ROHDE&SCHWARZ | FSQ40           | 100010       | 2022-11-24 | 2023-11-23   |
| POSITIONAL CONTROLLER           | SKET          | PCI-GPIB        | /            | /          | /            |
| Broadband Preamplifier          | SCHWARZBECK   | BBV9718D        | 00008        | 2023-03-24 | 2024-03-23   |
| Horn Antenna                    | SCHWARZBECK   | BBHA9120D       | 2597         | 2022-05-22 | 2024-05-21   |
| EZ EMC                          | Frad          | FA-03A2 RE+     | /            | /          | /            |
| POSITIONAL CONTROLLER           | SKET          | PCI-GPIB        | /            | /          | /            |
| Log periodic antenna            | SCHWARZBECK   | VULB 9168       | 01328        | 2021-11-28 | 2023-11-27   |

| Voltage fluctuations and flicker |              |          |              |            |              |
|----------------------------------|--------------|----------|--------------|------------|--------------|
| Equipment                        | Manufacturer | Model No | Inventory No | Cal Date   | Cal Due Date |
| Harmonic and Flicker system      | ZES ZIMMER   | HAF5000S | 930670       | 2022-11-28 | 2023-11-27   |

| Electrostatic discharges |              |          |              |            |              |
|--------------------------|--------------|----------|--------------|------------|--------------|
| Equipment                | Manufacturer | Model No | Inventory No | Cal Date   | Cal Due Date |
| ESD Generator            | Prima        | PESD6030 | PR210823683  | 2022-11-24 | 2023-11-23   |



| RF electromagnetic field disturbances |              |                 |              |            |              |
|---------------------------------------|--------------|-----------------|--------------|------------|--------------|
| Equipment                             | Manufacturer | Model No        | Inventory No | Cal Date   | Cal Due Date |
| Field Probe                           | Narda        | EP-601          | 811ZX01057   | 2023-07-03 | 2024-07-02   |
| Antenna                               | SKET         | STLP9129_Plus   | /            | /          | /            |
| Amplifier                             | SKET         | HAP_03G06G-80W  | 202004044    | 2023-07-03 | 2024-07-02   |
| Amplifier                             | SKET         | HAP_01G03G-75W  | 202104180    | 2023-07-03 | 2024-07-02   |
| Amplifier                             | SKET         | HAP_80M01G-250W | /            | 2023-02-24 | 2024-02-23   |
| USB Power Sensor                      | Agilent      | U2001A          | MZ54330012   | 2023-02-24 | 2024-02-23   |
| USB Power sensor                      | Agilent      | U2000A          | MY53410013   | 2023-02-24 | 2024-02-23   |
| Signal Generator                      | Agilent      | N5181A          | MY50141997   | 2022-12-06 | 2023-12-05   |

| Electrical fast transients / burst for AC mains power ports |              |               |              |            |              |
|-------------------------------------------------------------|--------------|---------------|--------------|------------|--------------|
| Equipment                                                   | Manufacturer | Model No      | Inventory No | Cal Date   | Cal Due Date |
| Coupling clamp                                              | Prima        | EFT-CLAMP     | EFT-327      | 2022-11-24 | 2023-11-23   |
| EFT Generator                                               | Prima        | PEFT6030-3816 | PR210343256  | 2022-11-24 | 2023-11-23   |

| Surges for AC mains power ports |              |               |              |            |              |
|---------------------------------|--------------|---------------|--------------|------------|--------------|
| Equipment                       | Manufacturer | Model No      | Inventory No | Cal Date   | Cal Due Date |
| Isolation transformer           | Prima        | JMB-2KVA      | LL-PLM2125   | 2022-11-24 | 2023-11-23   |
| Surge Generator                 | Prima        | PSUG6010-2216 | PR210955342  | 2022-11-24 | 2023-11-23   |

| Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz) |              |              |              |            |              |
|----------------------------------------------------------------------------|--------------|--------------|--------------|------------|--------------|
| Equipment                                                                  | Manufacturer | Model No     | Inventory No | Cal Date   | Cal Due Date |
| CDN coupling                                                               | Prima        | CRF-CDN-M316 | PR210881049  | 2022-11-24 | 2023-11-23   |
| CDN coupling                                                               | Prima        | CRF-CDN-M216 | PR210881044  | 2022-11-24 | 2023-11-23   |
| 6DB ATTENUATOR                                                             | Prima        | 50W DC-3GHZ  | T2A-50-6-3-N | 2023-03-24 | 2024-03-23   |
| Rf conduction immunity test system                                         | Prima        | CRF61006A    | PR210681042  | 2022-11-24 | 2023-11-23   |

| Voltage dips and interruptions |              |          |              |            |              |
|--------------------------------|--------------|----------|--------------|------------|--------------|
| Equipment                      | Manufacturer | Model No | Inventory No | Cal Date   | Cal Due Date |
| Dips Generator                 | Prima        | PDIP6010 | PR20076499   | 2022-11-24 | 2023-11-23   |

## 4.2 Test Auxiliary Equipment

The EUT was tested as an independent device.

## 4.3 Test Modes

| No. | Test Modes | Description                |
|-----|------------|----------------------------|
| 1   | TM1        | Charging + Video play      |
| 2   | TM2        | Charging + Video recording |
| 3   | TM3        | Date transmission          |

## 5 Emission Test Results (EMI)

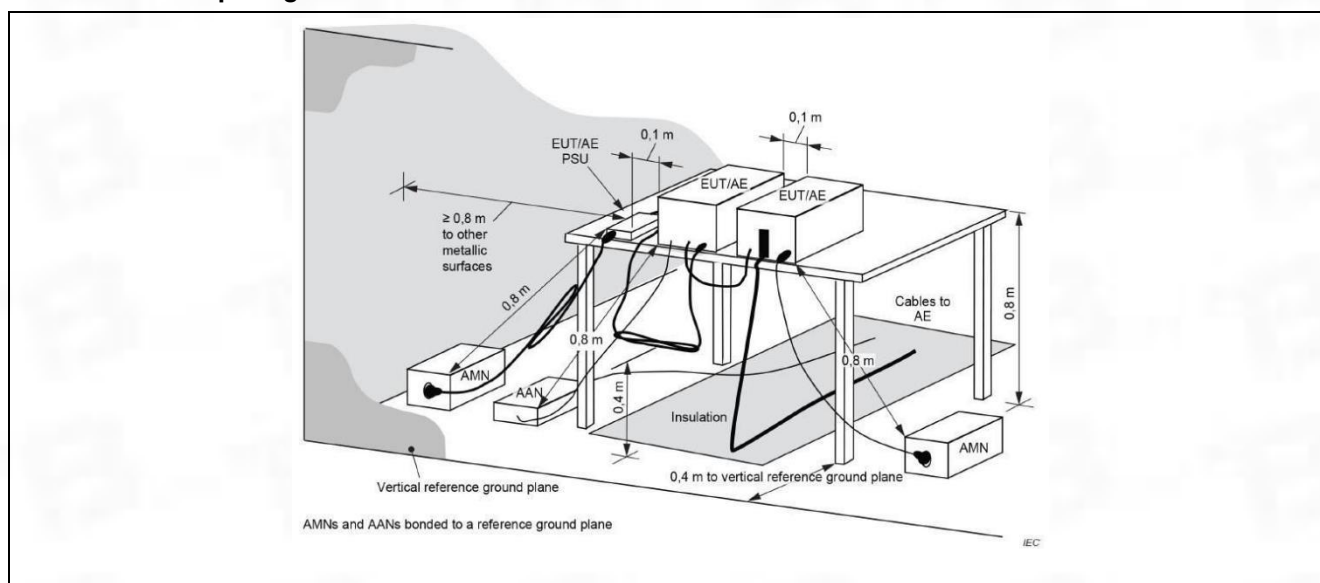
## 5.1 Conducted emissions from AC mains power ports (150kHz-30MHz)

|                   |                                                                                                                                                                                                                                                           |                                                              |                        |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------|
| Test Requirement: | Class B                                                                                                                                                                                                                                                   |                                                              |                        |
| Test Method:      | Clause 7 of CISPR 16-2-1:2014/AMD1:2017                                                                                                                                                                                                                   |                                                              |                        |
| Test Limit:       | <b>Frequency Range</b>                                                                                                                                                                                                                                    | <b>Limit (Quasi-Peak)</b>                                    | <b>Limit (Average)</b> |
|                   | 0.15MHz to 0.5MHz                                                                                                                                                                                                                                         | 66dB(μV) to 56dB(μV)                                         | 56dB(μV) to 46dB(μV)   |
|                   | 0.5MHz to 5MHz                                                                                                                                                                                                                                            | 56dB(μV)                                                     | 46dB(μV)               |
|                   | 5MHz to 30MHz                                                                                                                                                                                                                                             | 60dB(μV)                                                     | 50dB(μV)               |
|                   | Detector:                                                                                                                                                                                                                                                 | Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz |                        |
| Procedure:        | <p>An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.</p> <p>Remark: <math>Level = Read\ Level + Cable\ Loss + LISN\ Factor</math></p> |                                                              |                        |

### 5.1.1 E.U.T. Operation:

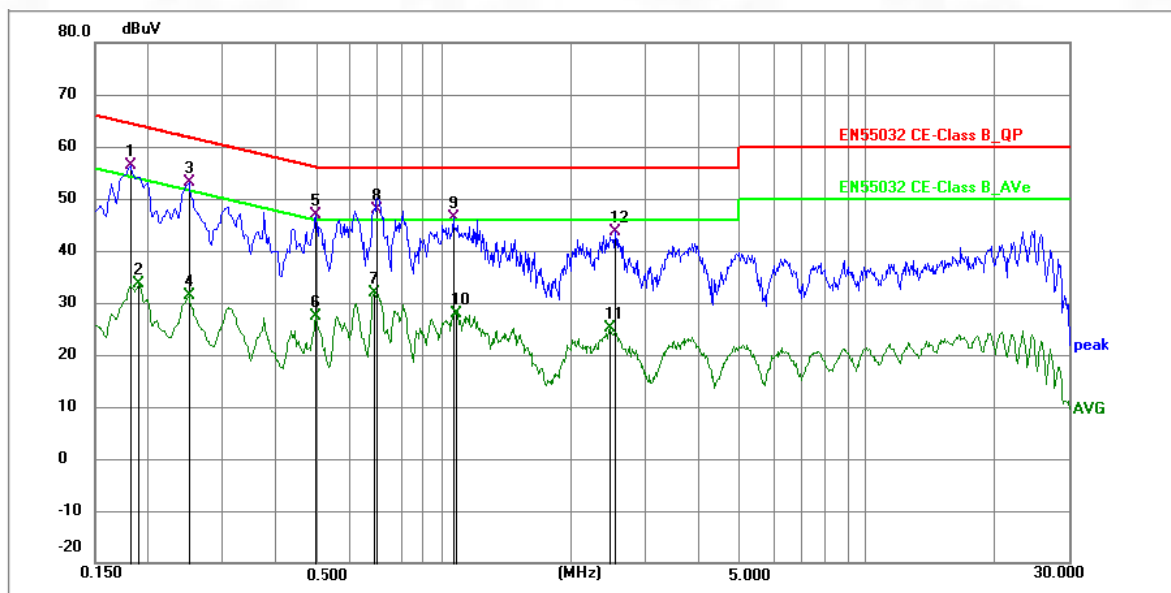
|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 25.2 °C   |
| Humidity:              | 53.4 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 5.1.2 Test Setup Diagram:



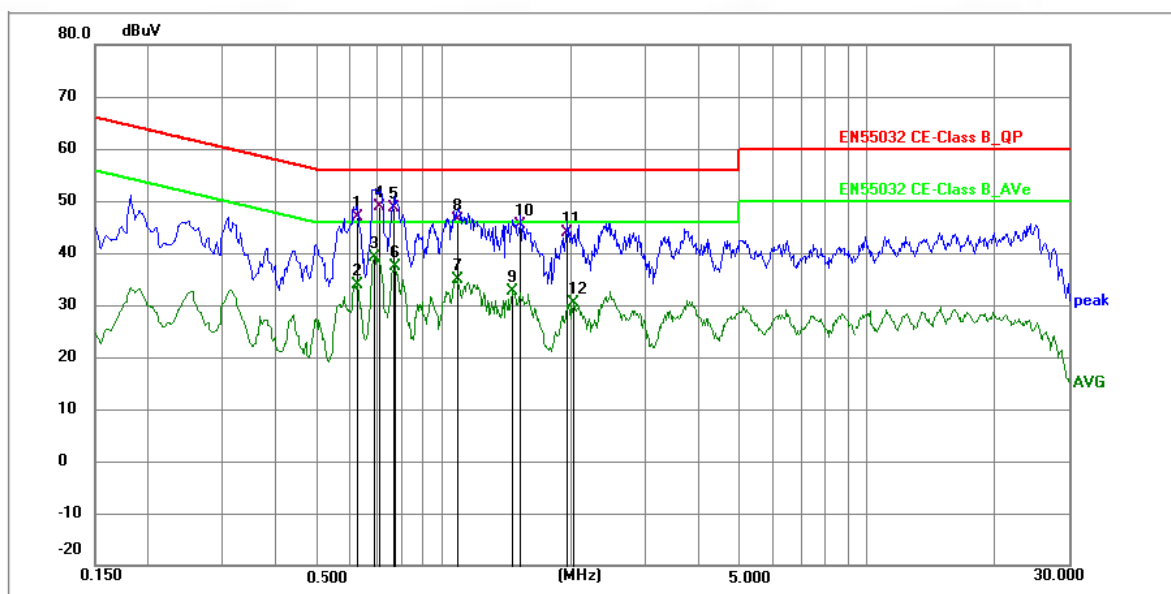
### 5.1.3 Test Data:

TM1 / Line: Line



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|--------|
| 1   | 0.1814          | 45.76          | 10.57       | 56.33        | 64.42        | -8.09       | QP       | P   |        |
| 2   | 0.1903          | 23.12          | 10.58       | 33.70        | 54.02        | -20.32      | AVG      | P   |        |
| 3   | 0.2490          | 42.42          | 10.59       | 53.01        | 61.79        | -8.78       | QP       | P   |        |
| 4   | 0.2490          | 20.68          | 10.59       | 31.27        | 51.79        | -20.52      | AVG      | P   |        |
| 5   | 0.4964          | 36.32          | 10.61       | 46.93        | 56.06        | -9.13       | QP       | P   |        |
| 6   | 0.4964          | 16.75          | 10.61       | 27.36        | 46.06        | -18.70      | AVG      | P   |        |
| 7   | 0.6854          | 21.23          | 10.72       | 31.95        | 46.00        | -14.05      | AVG      | P   |        |
| 8 * | 0.6990          | 37.27          | 10.73       | 48.00        | 56.00        | -8.00       | QP       | P   |        |
| 9   | 1.0590          | 35.55          | 10.77       | 46.32        | 56.00        | -9.68       | QP       | P   |        |
| 10  | 1.0725          | 17.17          | 10.77       | 27.94        | 46.00        | -18.06      | AVG      | P   |        |
| 11  | 2.4720          | 14.35          | 10.70       | 25.05        | 46.00        | -20.95      | AVG      | P   |        |
| 12  | 2.5485          | 33.03          | 10.70       | 43.73        | 56.00        | -12.27      | QP       | P   |        |

TM1 / Line: Neutral



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|--------|
| 1   | 0.6270          | 36.32          | 10.68       | 47.00        | 56.00        | -9.00       | QP       | P   |        |
| 2   | 0.6270          | 23.16          | 10.68       | 33.84        | 46.00        | -12.16      | AVG      | P   |        |
| 3 * | 0.6854          | 28.50          | 10.72       | 39.22        | 46.00        | -6.78       | AVG      | P   |        |
| 4   | 0.7080          | 38.07          | 10.73       | 48.80        | 56.00        | -7.20       | QP       | P   |        |
| 5   | 0.7664          | 37.96          | 10.74       | 48.70        | 56.00        | -7.30       | QP       | P   |        |
| 6   | 0.7710          | 26.52          | 10.74       | 37.26        | 46.00        | -8.74       | AVG      | P   |        |
| 7   | 1.0814          | 24.04          | 10.77       | 34.81        | 46.00        | -11.19      | AVG      | P   |        |
| 8   | 1.0859          | 35.73          | 10.77       | 46.50        | 56.00        | -9.50       | QP       | P   |        |
| 9   | 1.4595          | 21.84          | 10.74       | 32.58        | 46.00        | -13.42      | AVG      | P   |        |
| 10  | 1.5224          | 34.67          | 10.73       | 45.40        | 56.00        | -10.60      | QP       | P   |        |
| 11  | 1.9680          | 33.31          | 10.69       | 44.00        | 56.00        | -12.00      | QP       | P   |        |
| 12  | 2.0264          | 19.63          | 10.69       | 30.32        | 46.00        | -15.68      | AVG      | P   |        |

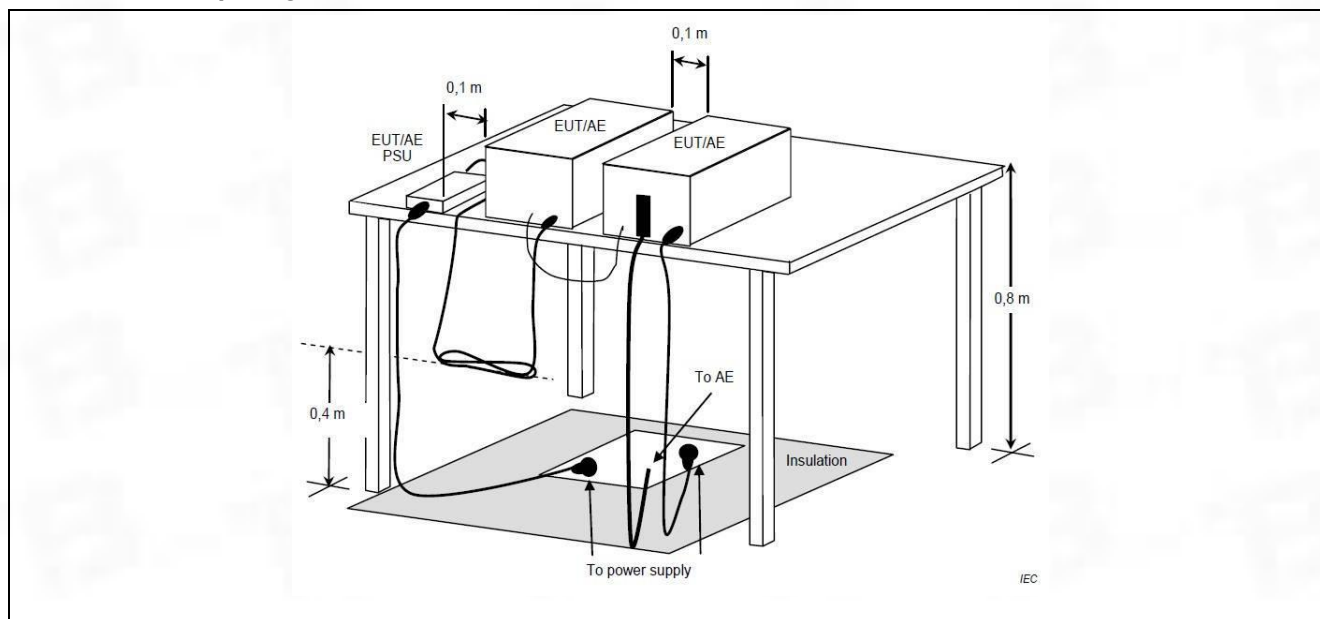
## 5.2 Radiated emissions (30MHz-1GHz)

|                   |                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                        |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------|
| Test Requirement: | Class B                                                                                                                                                                                                                                                                                                                                                                                                |                         |                        |
| Test Method:      | Clause 7.3 of CISPR 16-2-3:2016                                                                                                                                                                                                                                                                                                                                                                        |                         |                        |
| Test Limit:       | Frequency (MHz)                                                                                                                                                                                                                                                                                                                                                                                        | Limit [dB(uV/m) at 10m] | Limit [dB(uV/m) at 3m] |
|                   | 30 to 230                                                                                                                                                                                                                                                                                                                                                                                              | 30                      | 40                     |
|                   | 230 to 1000                                                                                                                                                                                                                                                                                                                                                                                            | 37                      | 47                     |
| Procedure:        | Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz<br>An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.<br>Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor |                         |                        |

### 5.2.1 E.U.T. Operation:

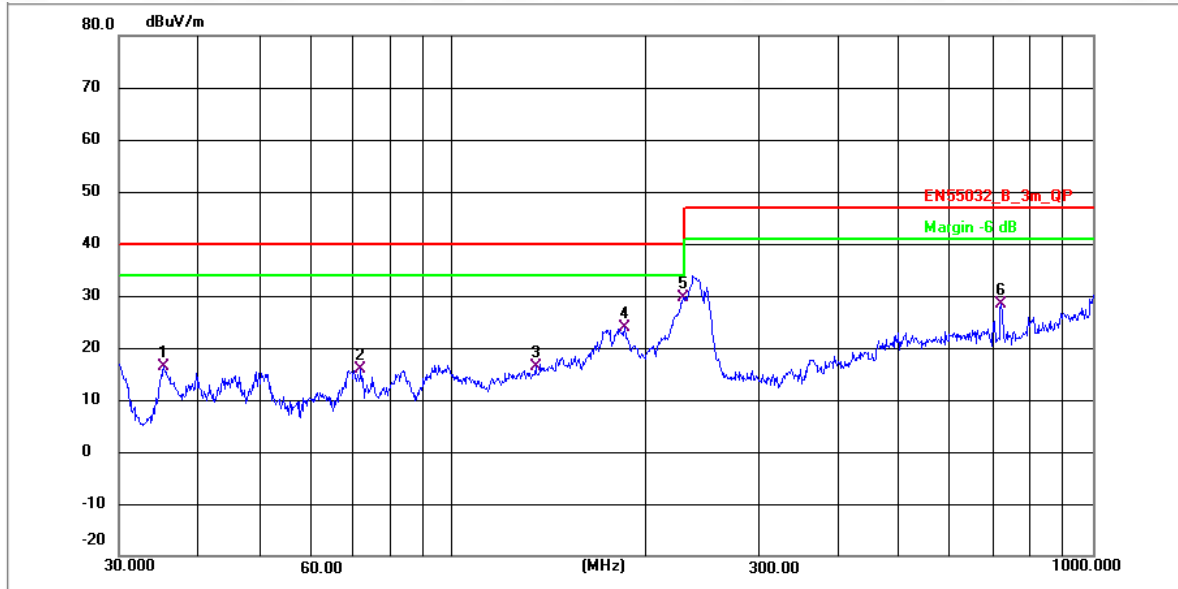
|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 23 °C     |
| Humidity:              | 49.1 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 5.2.2 Test Setup Diagram:



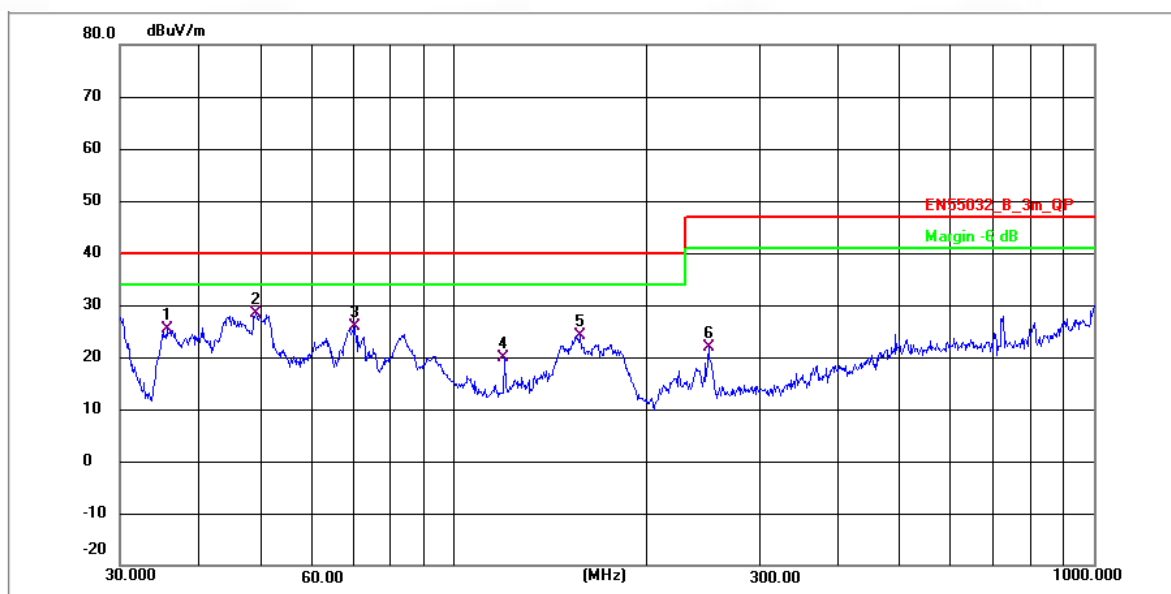
### 5.2.3 Test Data:

TM1 / Polarization: Horizontal



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|
| 1   | 35.3130         | 34.75          | -18.47        | 16.28          | 40.00          | -23.72      | QP       | P   |
| 2   | 71.8320         | 33.99          | -18.08        | 15.91          | 40.00          | -24.09      | QP       | P   |
| 3   | 134.7953        | 44.42          | -27.92        | 16.50          | 40.00          | -23.50      | QP       | P   |
| 4   | 185.7882        | 51.27          | -27.46        | 23.81          | 40.00          | -16.19      | QP       | P   |
| 5 * | 229.2931        | 55.59          | -26.05        | 29.54          | 40.00          | -10.46      | QP       | P   |
| 6   | 721.7259        | 51.98          | -23.68        | 28.30          | 47.00          | -18.70      | QP       | P   |

TM1 / Polarization: Vertical



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|
| 1   | 35.4993         | 45.95          | -20.62        | 25.33          | 40.00          | -14.67      | QP       | P   |
| 2 * | 49.0145         | 48.72          | -20.34        | 28.38          | 40.00          | -11.62      | QP       | P   |
| 3   | 70.0903         | 45.83          | -19.99        | 25.84          | 40.00          | -14.16      | QP       | P   |
| 4   | 120.0659        | 47.89          | -28.05        | 19.84          | 40.00          | -20.16      | QP       | P   |
| 5   | 157.5588        | 51.86          | -27.71        | 24.15          | 40.00          | -15.85      | QP       | P   |
| 6   | 249.8627        | 47.71          | -25.85        | 21.86          | 47.00          | -25.14      | QP       | P   |



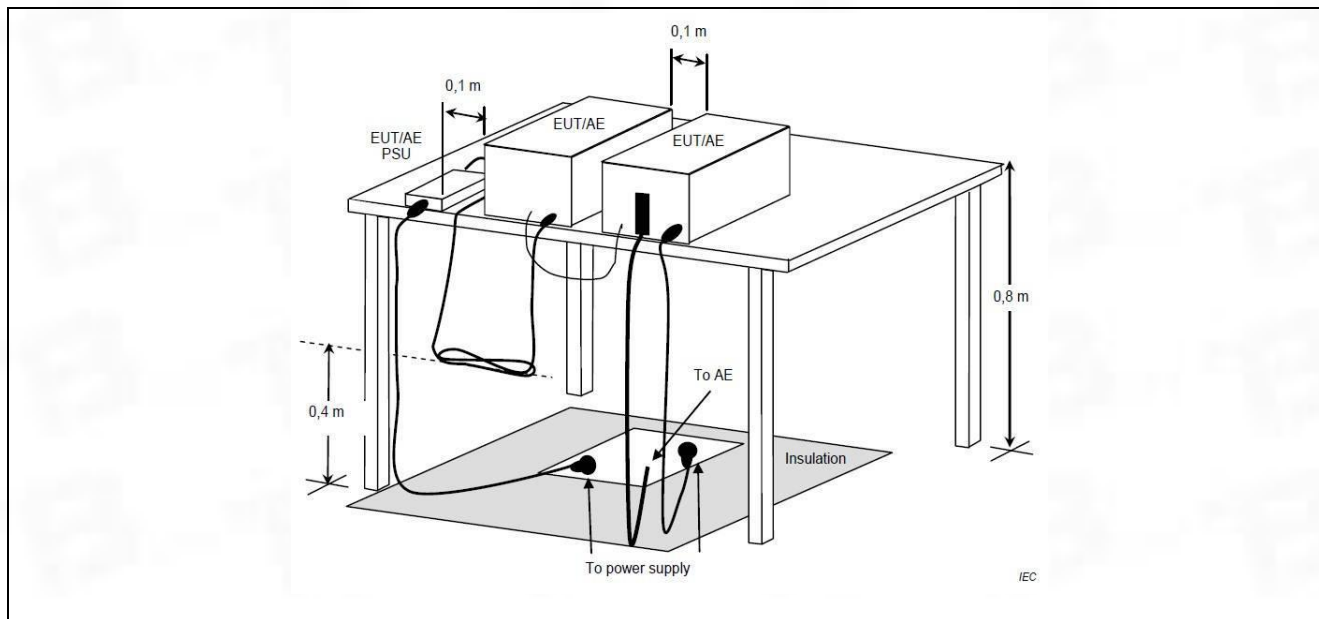
### 5.3 Radiated emissions (above 1GHz)

|                   |                                                                                                                                                                                                                                                                                                                    |                       |                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|
| Test Requirement: | Class B                                                                                                                                                                                                                                                                                                            |                       |                |
| Test Method:      | Clause 7.6 of CISPR 16-2-3:2016                                                                                                                                                                                                                                                                                    |                       |                |
| Test Limit:       | <b>Frequency (MHz)</b>                                                                                                                                                                                                                                                                                             | <b>Limit (dBuV/m)</b> |                |
|                   |                                                                                                                                                                                                                                                                                                                    | <b>Peak</b>           | <b>Average</b> |
|                   | 1000 to 6000                                                                                                                                                                                                                                                                                                       | 74                    | 54             |
|                   | Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000MHz to 6000MHz                                                                                                                                                                                                                                      |                       |                |
| Procedure:        | An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.<br>Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor |                       |                |

#### 5.3.1 E.U.T. Operation:

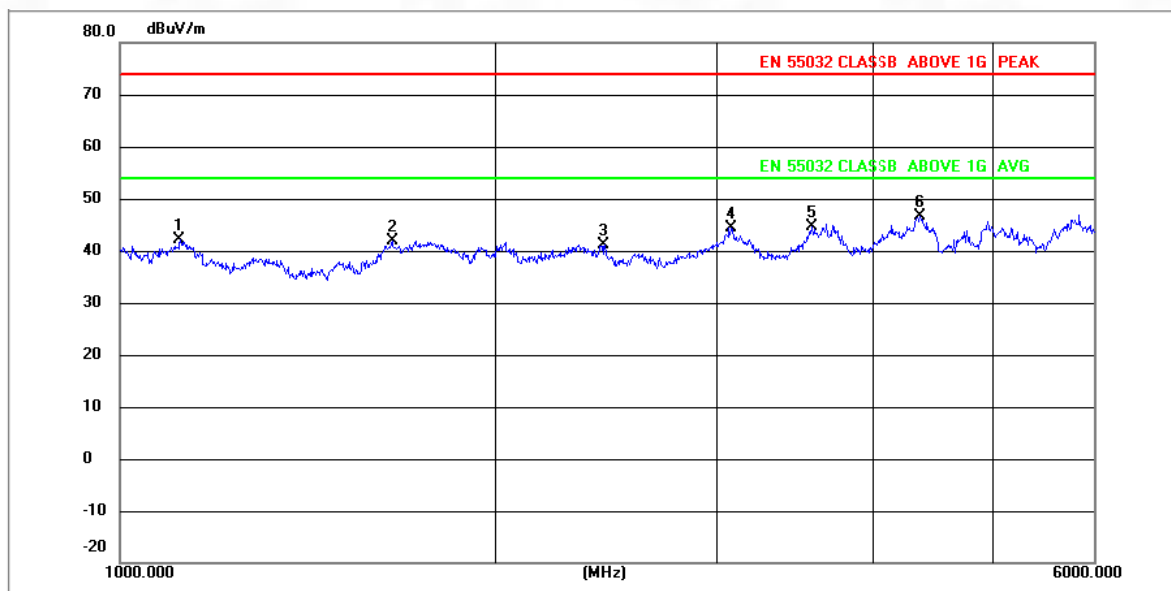
|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 23 °C     |
| Humidity:              | 49.1 %    |
| Atmospheric Pressure:  | 1010 mbar |

#### 5.3.2 Test Setup Diagram:



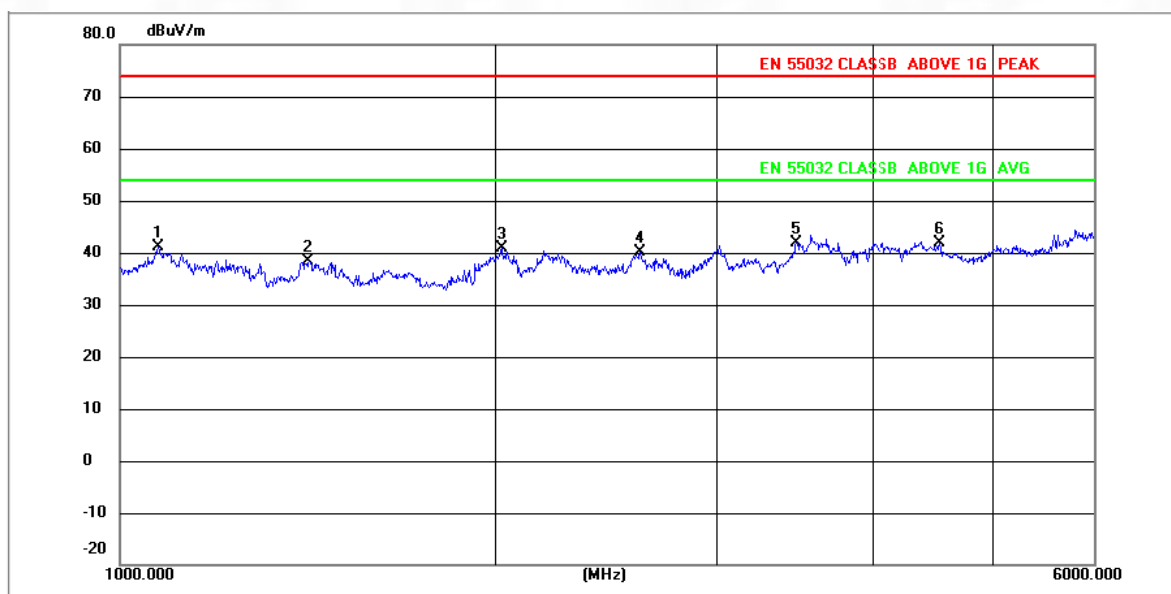
### 5.3.3 Test Data:

TM1 / Polarization: Horizontal



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|
| 1   | 1119.097        | 71.84          | -29.63        | 42.21          | 74.00          | -31.79      | peak     | P   |
| 2   | 1652.995        | 73.38          | -31.47        | 41.91          | 74.00          | -32.09      | peak     | P   |
| 3   | 2442.915        | 71.56          | -30.43        | 41.13          | 74.00          | -32.87      | peak     | P   |
| 4   | 3076.497        | 73.74          | -29.44        | 44.30          | 74.00          | -29.70      | peak     | P   |
| 5   | 3574.273        | 73.56          | -29.04        | 44.52          | 74.00          | -29.48      | peak     | P   |
| 6 * | 4363.890        | 75.41          | -28.84        | 46.57          | 74.00          | -27.43      | peak     | P   |

TM1 / Polarization: Vertical



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|
| 1   | 1072.955        | 70.43          | -29.38        | 41.05          | 74.00          | -32.95      | peak     | P   |
| 2   | 1417.190        | 69.53          | -31.25        | 38.28          | 74.00          | -35.72      | peak     | P   |
| 3   | 2021.426        | 71.78          | -30.90        | 40.88          | 74.00          | -33.12      | peak     | P   |
| 4   | 2603.818        | 70.24          | -30.20        | 40.04          | 74.00          | -33.96      | peak     | P   |
| 5 * | 3471.394        | 71.03          | -29.09        | 41.94          | 74.00          | -32.06      | peak     | P   |
| 6   | 4528.783        | 70.59          | -28.71        | 41.88          | 74.00          | -32.12      | peak     | P   |

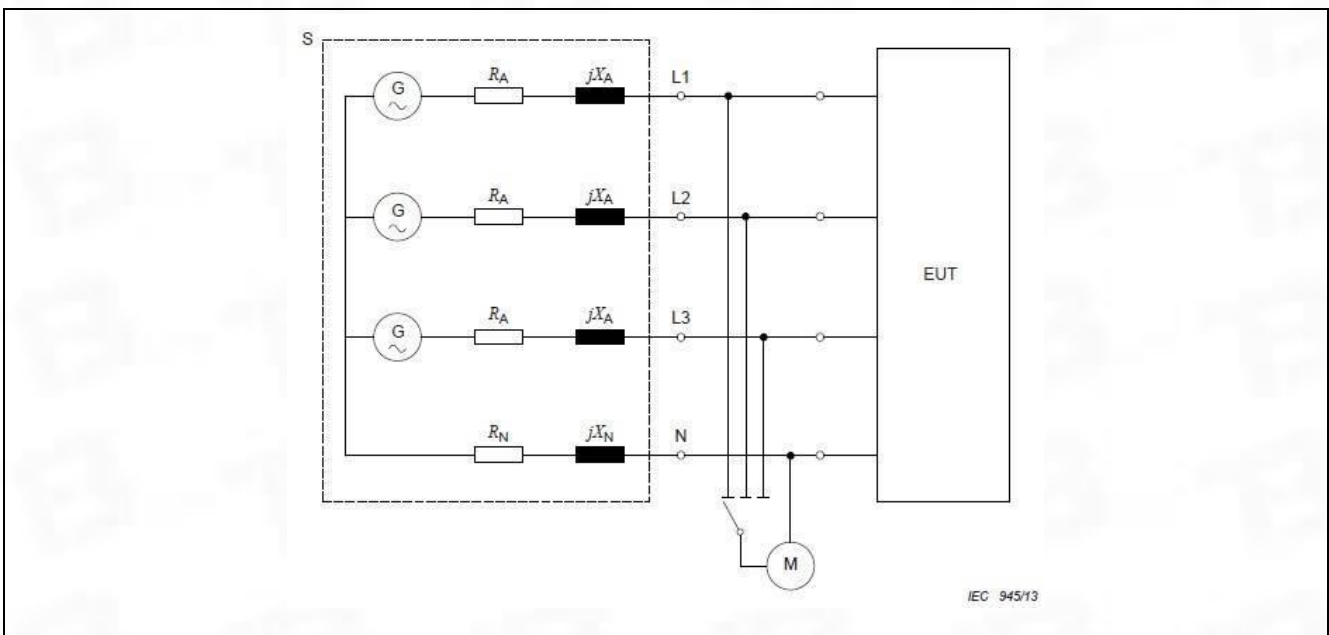
## 5.4 Voltage fluctuations and flicker

|                   |                           |
|-------------------|---------------------------|
| Test Requirement: | EN 61000-3-3, Clause 4    |
| Test Method:      | EN 61000-3-3:2013+A2:2021 |
| Test Limit:       | EN 61000-3-3, Clause 5    |

### 5.4.1 E.U.T. Operation:

|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 25.2 °C   |
| Humidity:              | 53.4 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 5.4.2 Test Setup Diagram:



### 5.4.3 Test Data:

## Result Overview

| Test Name      | Test Result | Average   | Maximum   | Minimum   | Last      | Limit | Limit Usage | Info               |
|----------------|-------------|-----------|-----------|-----------|-----------|-------|-------------|--------------------|
| dc Test [L1]   | OK          | 0         | 0         | 0         | 0         | 3.3   |             |                    |
| dmax Test [L1] | OK          | 0.306438  | 0.311863  | 0         | 0.311863  | 4     | 7.8 %       | 0.31 % ≤<br>4.00 % |
| Pst Test [L1]  | OK          | 0.0697268 | 0.0697269 | 0.0697269 | 0.0697269 | 1     | 7.0 %       | 0.070 ≤<br>1.000   |
| tmax Test [L1] | OK          | 0         | 0         | 0         | 0         | 0.5   |             |                    |

## 6 Immunity Test Results (EMS)

### General Performance Criteria

#### Performance Criteria 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 Criteria 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 Criteria 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.

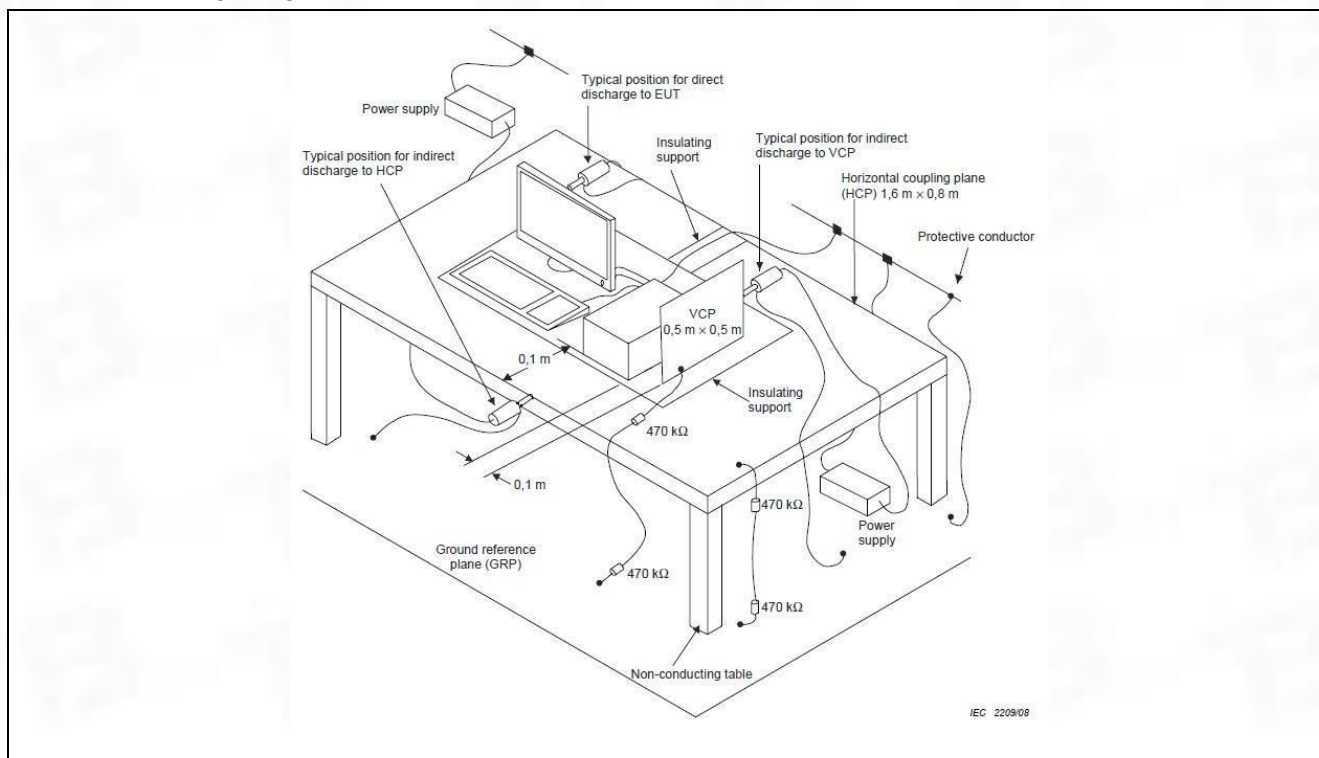
## 6.1 Electrostatic discharges

|                       |                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:     | Contact Discharge: +/- 4kV<br>Air Discharge: +/- 8kV                                                                                                                  |
| Test Method:          | EN 61000-4-2: 2009                                                                                                                                                    |
| Procedure:            | Discharge Impedance: 330Ω/150pF<br>Number of Discharge: Minimum 10 times at each test point<br>Discharge Mode: Single Discharge<br>Discharge Period: 1 second minimum |
| Performance Criteria: | B                                                                                                                                                                     |

### 6.1.1 E.U.T. Operation:

|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 25.2 °C   |
| Humidity:              | 53.4 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 6.1.2 Test Setup Diagram:



### 6.1.3 Test Data:

| Discharge type      | Volt (kV) | Polarity | Test Point     | Result/<br>Observations |
|---------------------|-----------|----------|----------------|-------------------------|
| Air discharge       | 8         | +        | Refer to note1 | A                       |
| Air discharge       | 8         | -        | Refer to note1 | A                       |
| Contact discharge   | 4         | +        | Refer to note1 | N/A                     |
| Contact discharge   | 4         | -        | Refer to note1 | N/A                     |
| Horizontal Coupling | 4         | +        | Refer to note1 | A                       |
| Horizontal Coupling | 4         | -        | Refer to note1 | A                       |
| Vertical Coupling   | 4         | +        | Refer to note1 | A                       |
| Vertical Coupling   | 4         | -        | Refer to note1 | A                       |

Note1:

Test Points:

Air discharge: Red Arrow  
Contact discharge: Yellow Arrow  
Horizontal / Vertical Coupling: All sides

A: No degradation in the performance of the EUT was observed.





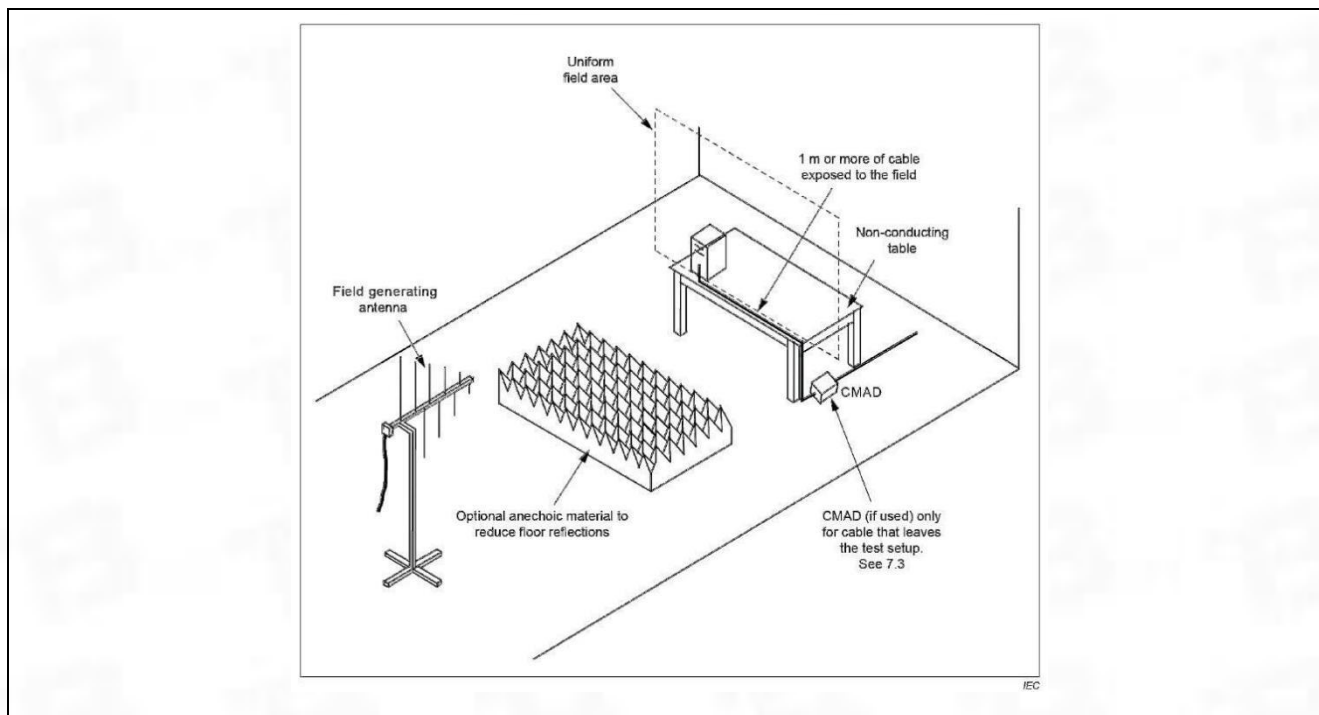
## 6.2 RF electromagnetic field disturbances

|                       |                                                                                                                                                                   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:     | 3V/m, 80%, 1kHz Amp. Mod.                                                                                                                                         |
| Test Method:          | EN IEC 61000-4-3: 2020                                                                                                                                            |
| Procedure:            | Frequency Range: 80MHz to 1GHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz<br>Antenna Polarisation: Vertical and Horizontal<br>Modulation: 1kHz,80% Amp. Mod,1% increment |
| Performance Criteria: | A                                                                                                                                                                 |

### 6.2.1 E.U.T. Operation:

|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 25.2 °C   |
| Humidity:              | 53.4 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 6.2.2 Test Setup Diagram:



### 6.2.3 Test Data:

| Frequency  | Field Strength (V/m) | EUT face | Dwell time | Result/ Observations |
|------------|----------------------|----------|------------|----------------------|
| 80MHz-1GHz | 3                    | Front    | 3s         | A                    |
| 80MHz-1GHz | 3                    | Back     | 3s         | A                    |
| 80MHz-1GHz | 3                    | Left     | 3s         | A                    |
| 80MHz-1GHz | 3                    | Right    | 3s         | A                    |
| 80MHz-1GHz | 3                    | Top      | 3s         | A                    |
| 80MHz-1GHz | 3                    | Bottom   | 3s         | A                    |
| 1800MHz    | 3                    | Front    | 3s         | A                    |
| 1800MHz    | 3                    | Back     | 3s         | A                    |
| 1800MHz    | 3                    | Left     | 3s         | A                    |
| 1800MHz    | 3                    | Right    | 3s         | A                    |
| 1800MHz    | 3                    | Top      | 3s         | A                    |
| 1800MHz    | 3                    | Bottom   | 3s         | A                    |
| 2600MHz    | 3                    | Front    | 3s         | A                    |
| 2600MHz    | 3                    | Back     | 3s         | A                    |
| 2600MHz    | 3                    | Left     | 3s         | A                    |
| 2600MHz    | 3                    | Right    | 3s         | A                    |
| 2600MHz    | 3                    | Top      | 3s         | A                    |
| 2600MHz    | 3                    | Bottom   | 3s         | A                    |
| 3500MHz    | 3                    | Front    | 3s         | A                    |
| 3500MHz    | 3                    | Back     | 3s         | A                    |
| 3500MHz    | 3                    | Left     | 3s         | A                    |
| 3500MHz    | 3                    | Right    | 3s         | A                    |
| 3500MHz    | 3                    | Top      | 3s         | A                    |
| 3500MHz    | 3                    | Bottom   | 3s         | A                    |
| 5000MHz    | 3                    | Front    | 3s         | A                    |
| 5000MHz    | 3                    | Back     | 3s         | A                    |
| 5000MHz    | 3                    | Left     | 3s         | A                    |
| 5000MHz    | 3                    | Right    | 3s         | A                    |
| 5000MHz    | 3                    | Top      | 3s         | A                    |
| 5000MHz    | 3                    | Bottom   | 3s         | A                    |

A: No degradation in the performance of the EUT was observed.

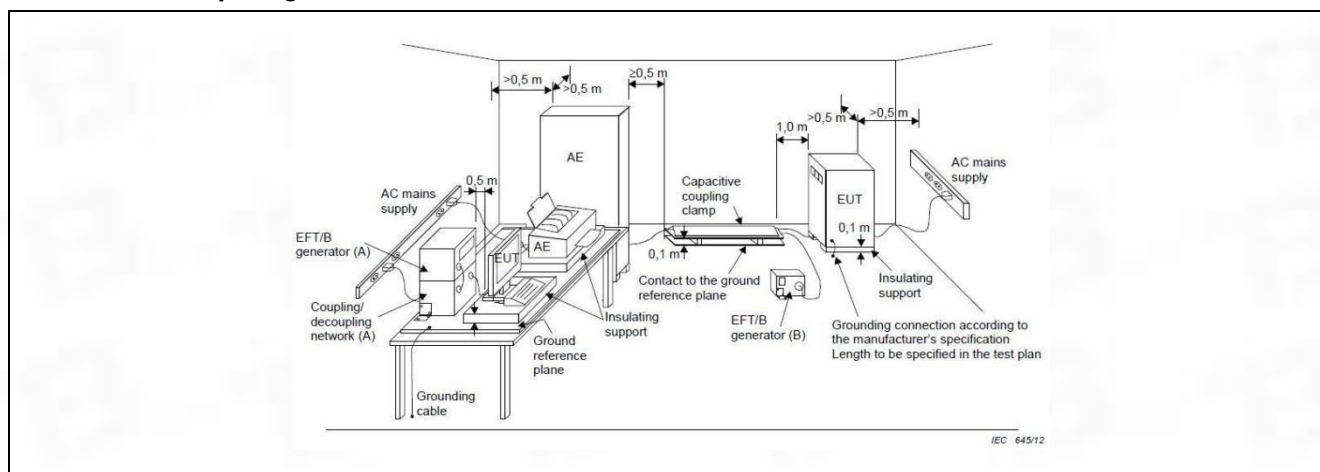
### 6.3 Electrical fast transients / burst for AC mains power ports

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Test Requirement:     | 1kV; 5/50ns Tr/Th; 5kHz Repetition Frequency                                                      |
| Test Method:          | EN 61000-4-4: 2012                                                                                |
| Procedure:            | Repetition Frequency: 5kHz<br>Burst Period: 300ms<br>Test Duration: 2 minute per level & polarity |
| Performance Criteria: | B                                                                                                 |

### 6.3.1 E.U.T. Operation:

|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 25.2 °C   |
| Humidity:              | 53.4 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 6.3.2 Test Setup Diagram:



### 6.3.3 Test Data:

| Port          | Volt (kV) | Polarity | CDN/ Clamp | Result/<br>Observations |
|---------------|-----------|----------|------------|-------------------------|
| AC power port | 1         | +        | CDN        | A                       |
| AC power port | 1         | -        | CDN        | A                       |

A: No degradation in the performance of the EUT was observed.

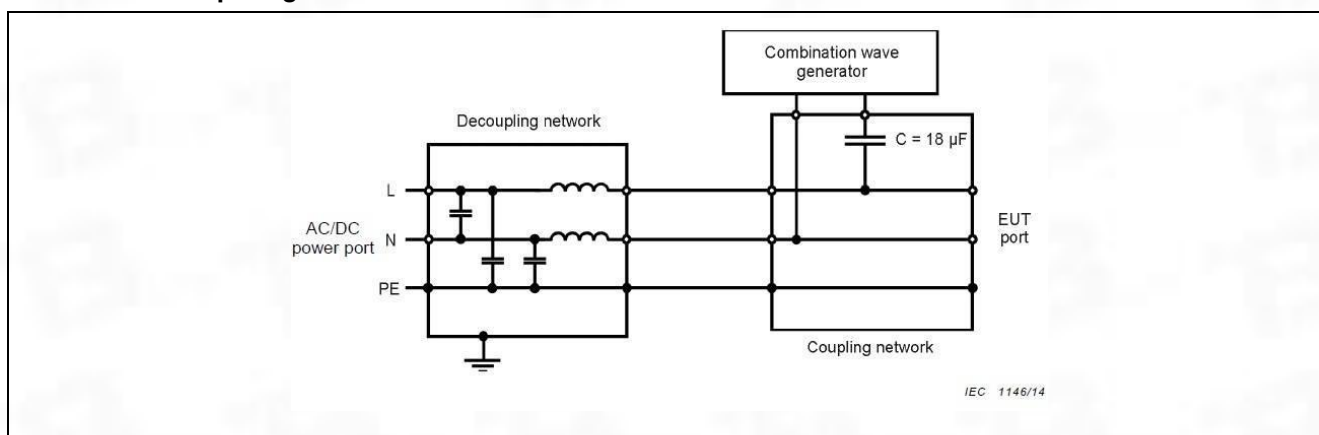
## 6.4 Surges for AC mains power ports

|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| Test Requirement:     | 1.2/50 $\mu$ s Tr/Td; 1kV Line to Line                                                 |
| Test Method:          | EN 61000-4-5: 2014 +A1: 2017                                                           |
| Procedure:            | Interval: 60s between each surge<br>No. of surges: 5 positive, 5 negative at 90°, 270° |
| Performance Criteria: | B                                                                                      |

### 6.4.1 E.U.T. Operation:

|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 25.2 °C   |
| Humidity:              | 53.4 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 6.4.2 Test Setup Diagram:



### 6.4.3 Test Data:

| Port | Volt (kV) | Polarity | Phase(degree) | Result/<br>Observations |
|------|-----------|----------|---------------|-------------------------|
| L-N  | 1         | +        | 90°           | A                       |
| L-N  | 1         | -        | 270°          | A                       |

A: No degradation in the performance of the EUT was observed.

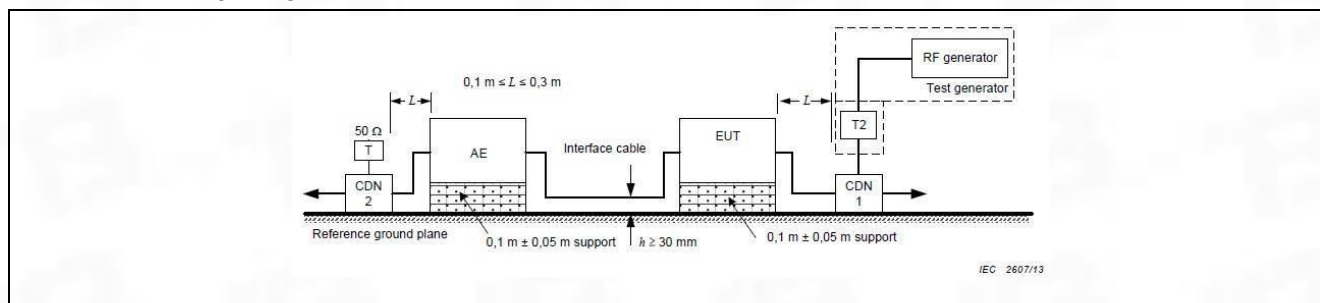
## 6.5 Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)

|                       |                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------|
| Test Requirement:     | 0,15 to 10MHz 3Vrms (emf),<br>10 to 30MHz 3V to 1Vrms(emf),<br>30 to 80MHz 1Vrms(emf),<br>80%,1kHz Amp. Mod. |
| Test Method:          | EN 61000-4-6: 2014                                                                                           |
| Procedure:            | Frequency Range: 0.15MHz to 80MHz<br>Modulation: 80%, 1kHz Amplitude Modulation<br>Step Size: 1%             |
| Performance Criteria: | A                                                                                                            |

### 6.5.1 E.U.T. Operation:

|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 25.1 °C   |
| Humidity:              | 47.6 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 6.5.2 Test Setup Diagram:



### 6.5.3 Test Data:

| Port          | Strength (Vrms)                  | CDN/Clamp | Dwell time | Result/<br>Observations |
|---------------|----------------------------------|-----------|------------|-------------------------|
| AC power port | 3(0.15MHz-10MHz)                 | CDN       | 3s         | A                       |
| AC power port | 3 to<br>1(10MHz-30MHz,<br>Lines) | CDN       | 3s         | A                       |
| AC power port | 1(30MHz-80MHz)                   | CDN       | 3s         | A                       |

A: No degradation in the performance of the EUT was observed.

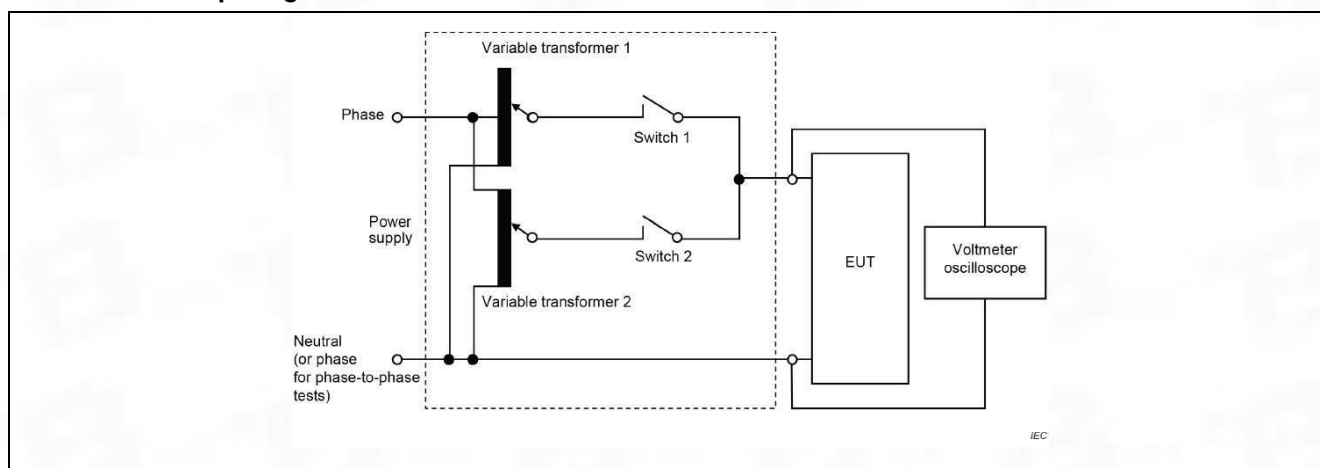
## 6.6 Voltage dips and interruptions

|                       |                                                                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:     | <5% residual voltage for 0.5 periods<br>70% residual voltage for 25 periods<br><5% residual voltage for 250 periods                                                                       |
| Test Method:          | EN IEC 61000-4-11:2020                                                                                                                                                                    |
| Procedure:            | <5% residual voltage for 0.5 period<br>70% residual voltage for 25 period<br><5% residual voltage for 250 period<br>No. of Dips / Interruptions: 3 per Level<br>Time between dropout: 10s |
| Performance Criteria: | B, C                                                                                                                                                                                      |

### 6.6.1 E.U.T. Operation:

|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Temperature:           | 25.1 °C   |
| Humidity:              | 47.6 %    |
| Atmospheric Pressure:  | 1010 mbar |

### 6.6.2 Test Setup Diagram:



### 6.6.3 Test Data:

| Level %UT | Phase (degree) | Duration   | No. of Dips/<br>Interruptions | Result/<br>Observations |
|-----------|----------------|------------|-------------------------------|-------------------------|
| 0         | 0°             | 0.5 Cycles | 3                             | A                       |
| 0         | 0°             | 250 Cycles | 3                             | A                       |
| 70        | 0°             | 25 Cycles  | 3                             | A                       |

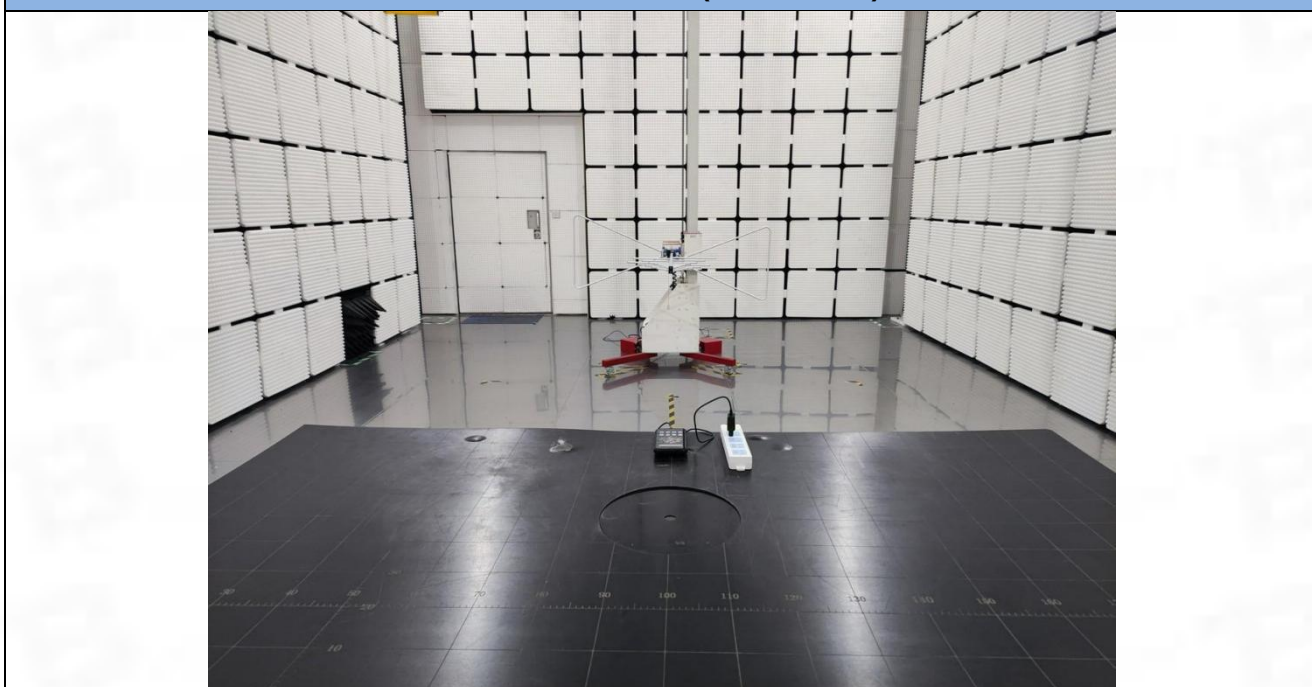
A: No degradation in the performance of the EUT was observed.

## 7 Test Setup Photos

Conducted emissions from AC mains power ports (150kHz-30MHz)

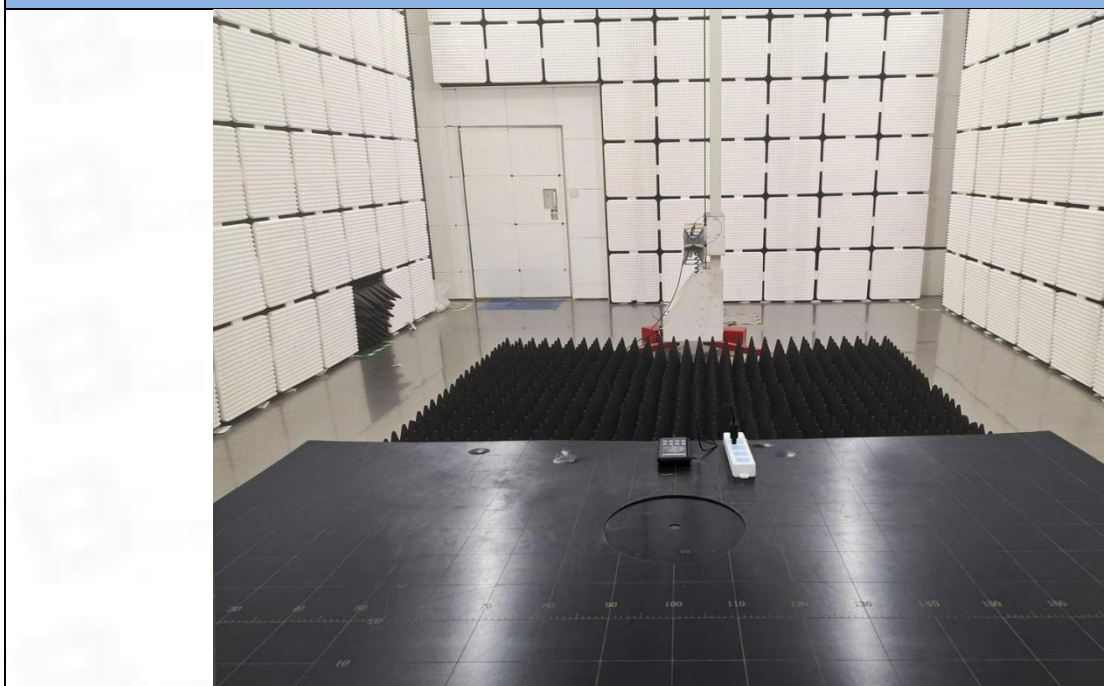


Radiated emissions (30MHz-1GHz)





### Radiated emissions (above 1GHz)

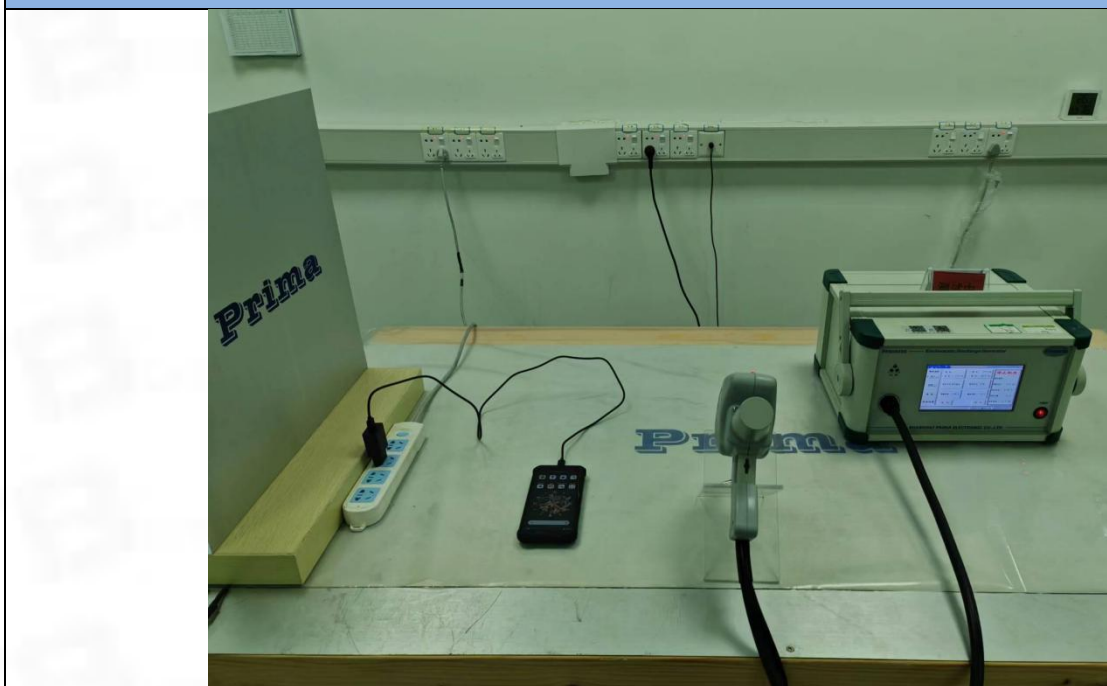


### Voltage fluctuations and flicker

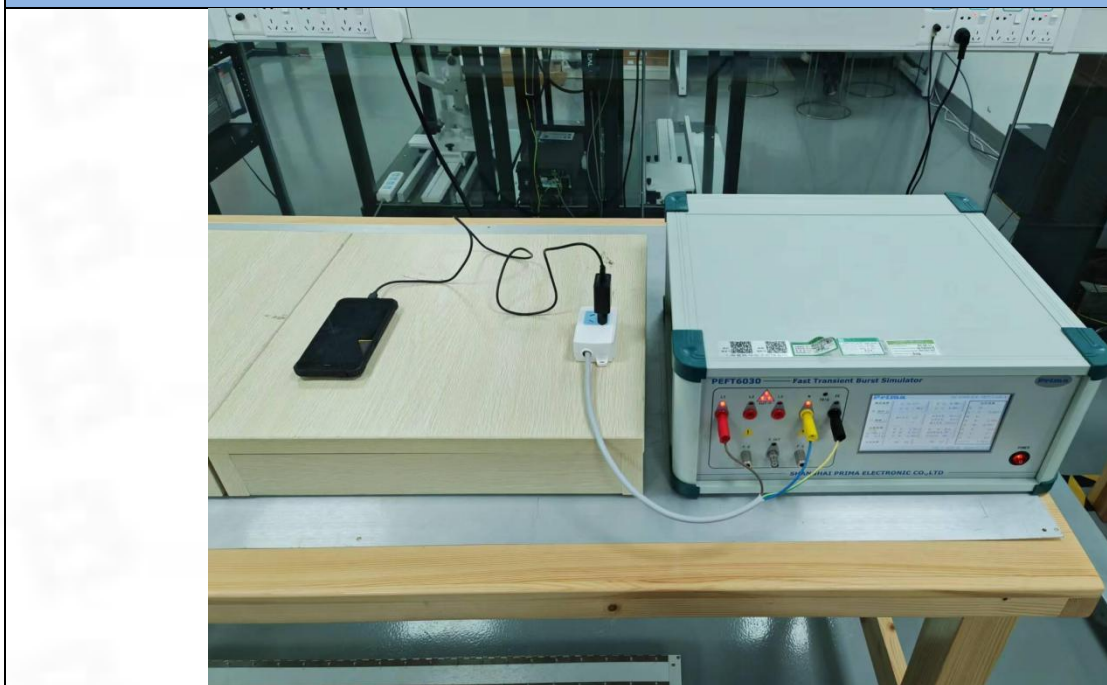




## Electrostatic discharges



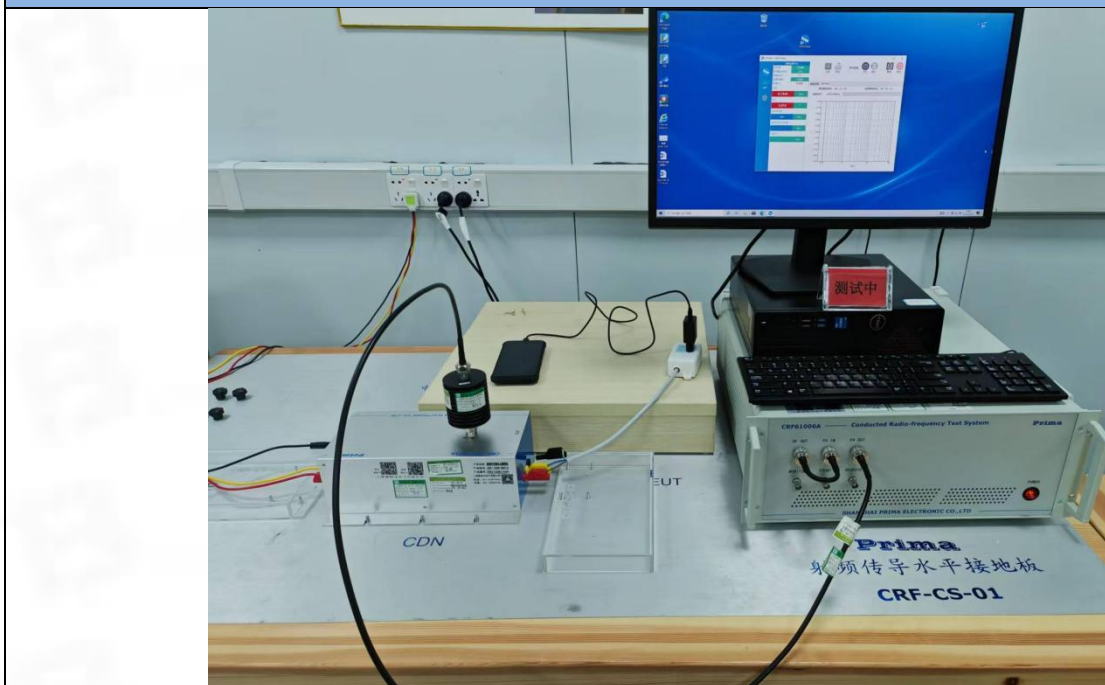
## Electrical fast transients / burst for AC mains power ports



### Surges for AC mains power ports



### Continuous induced RF disturbances for AC mains power ports (150kHz-80MHz)

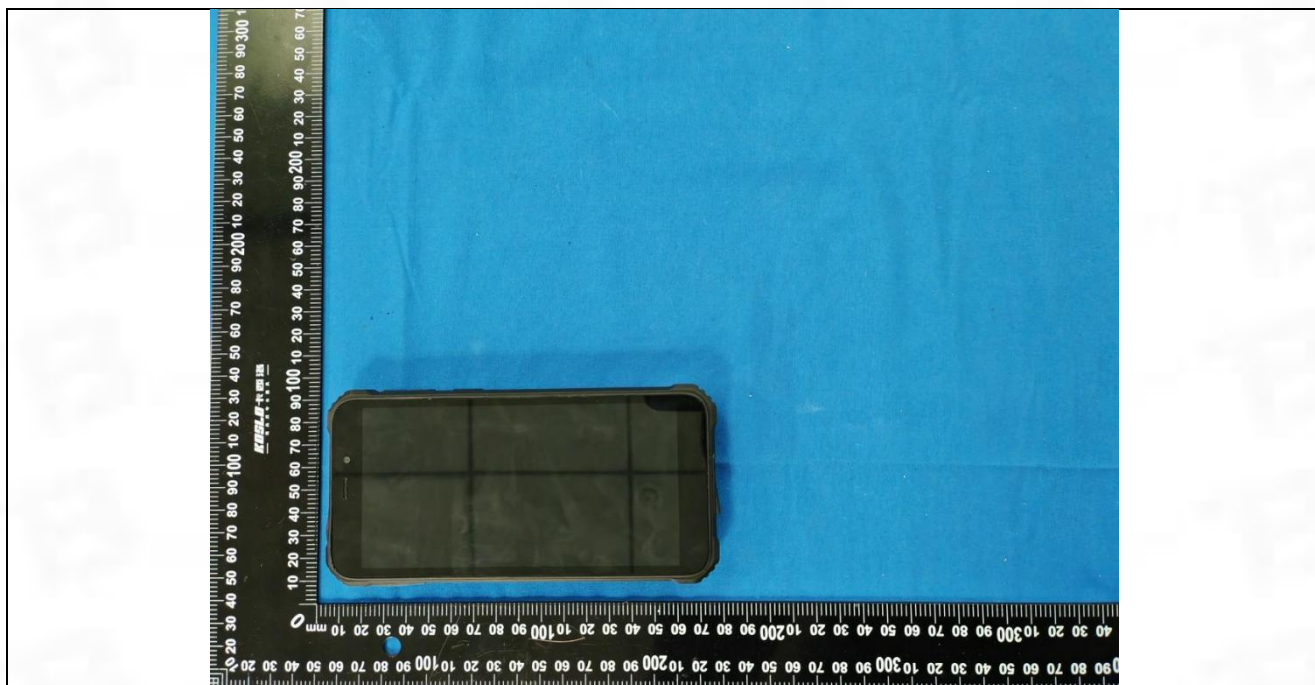
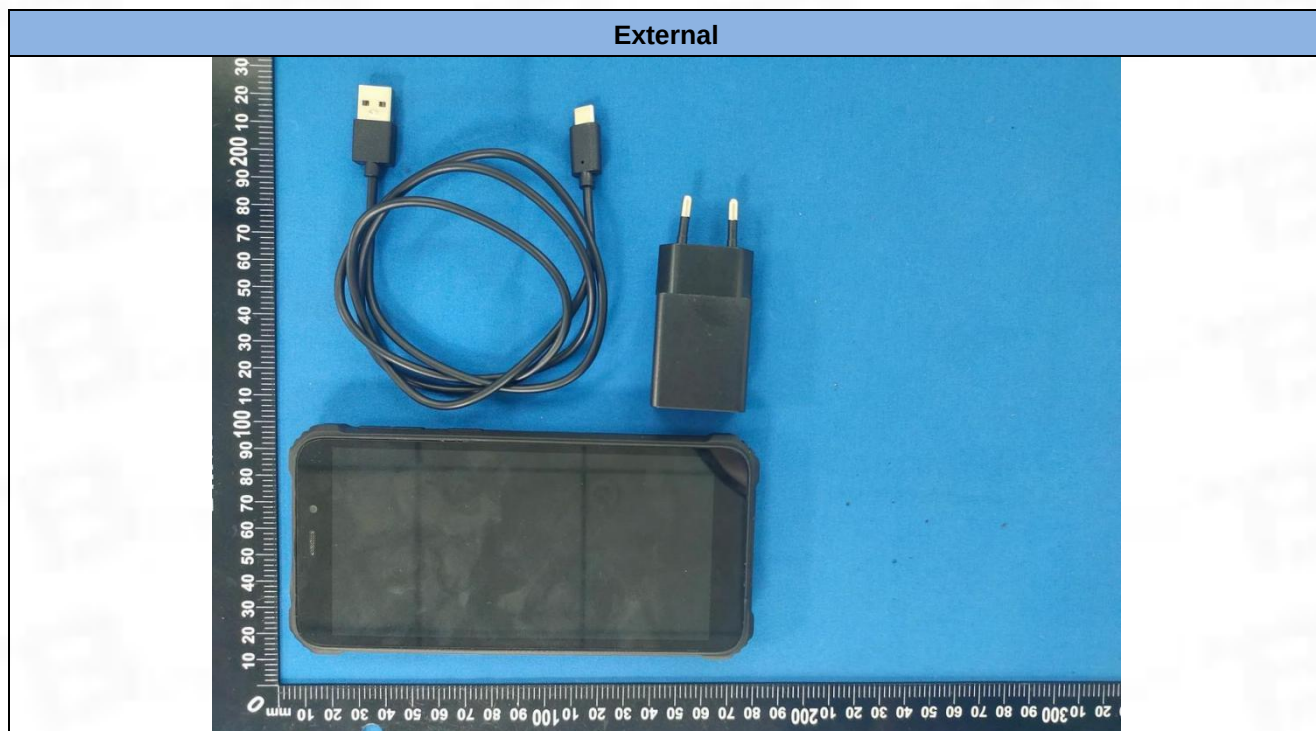


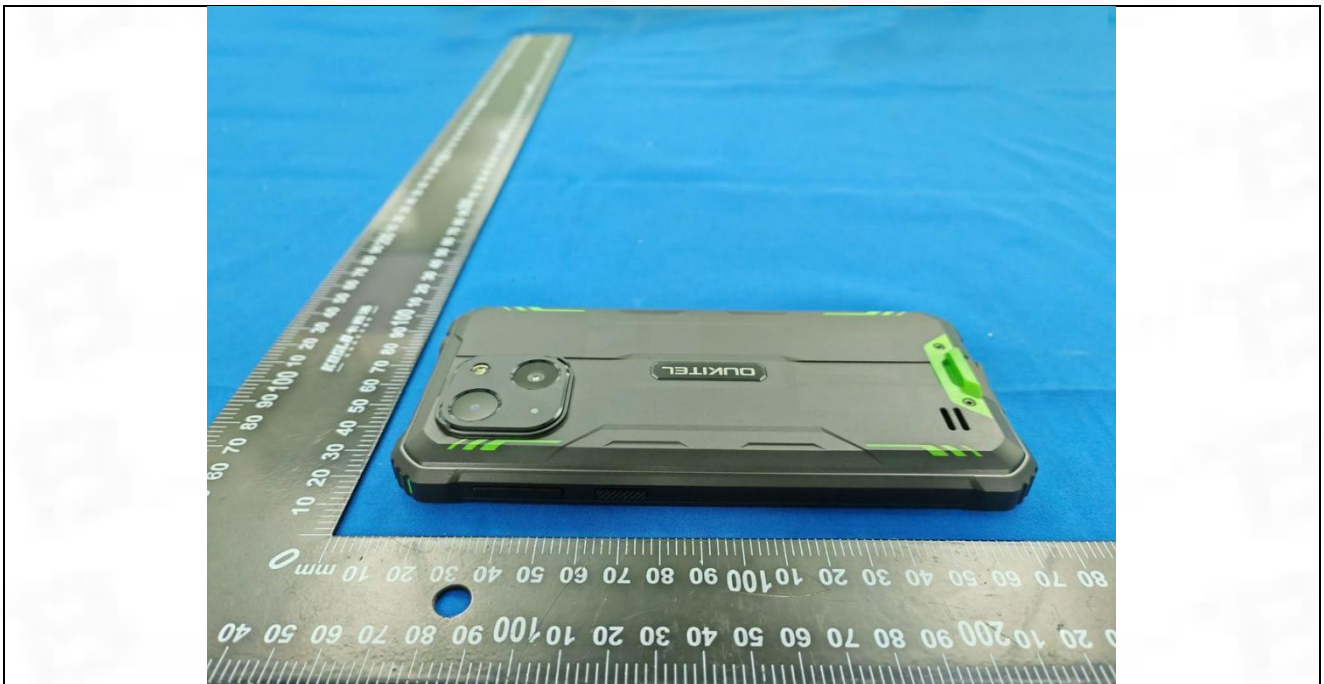
Voltage dips and interruptions





## 8 EUT Constructional Details (EUT Photos)







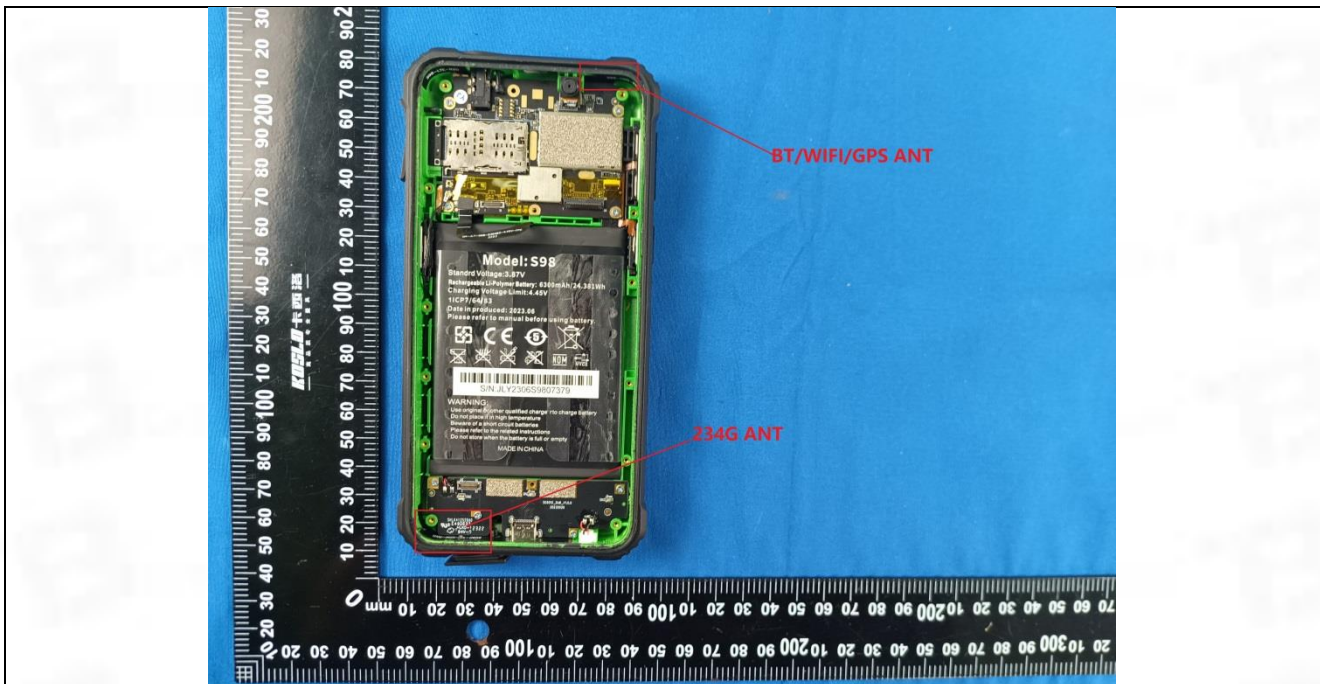




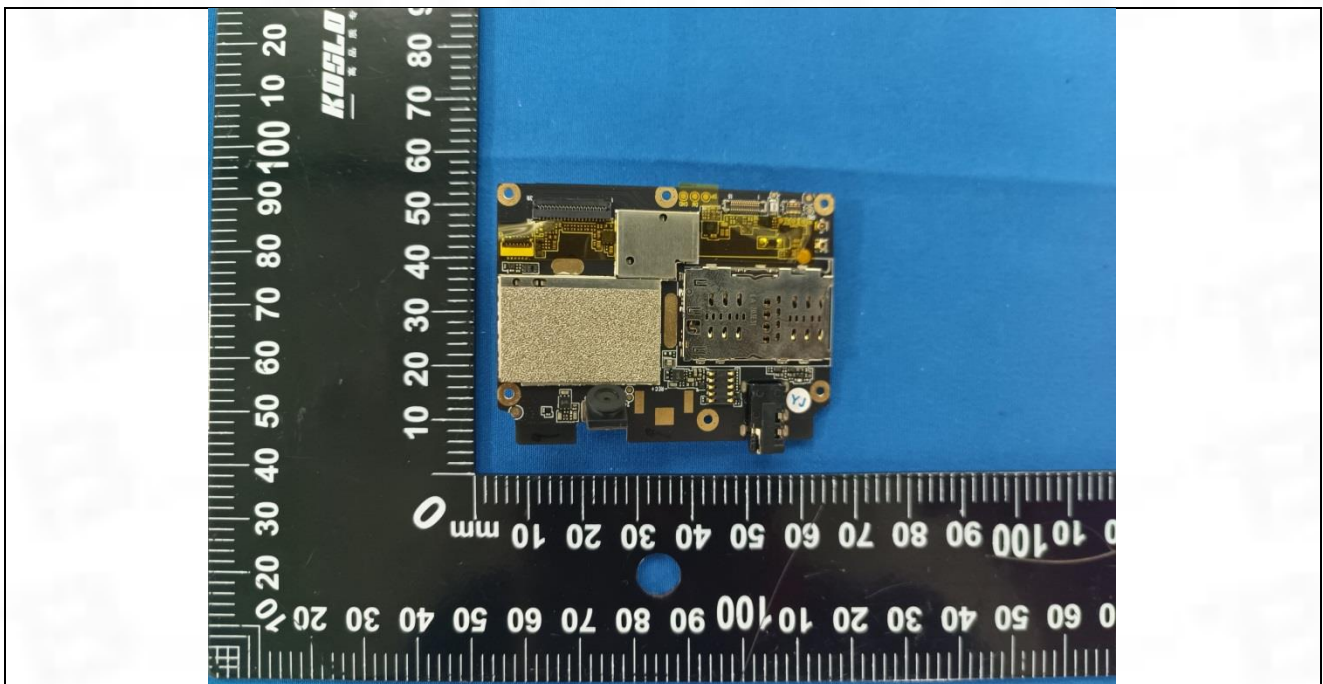
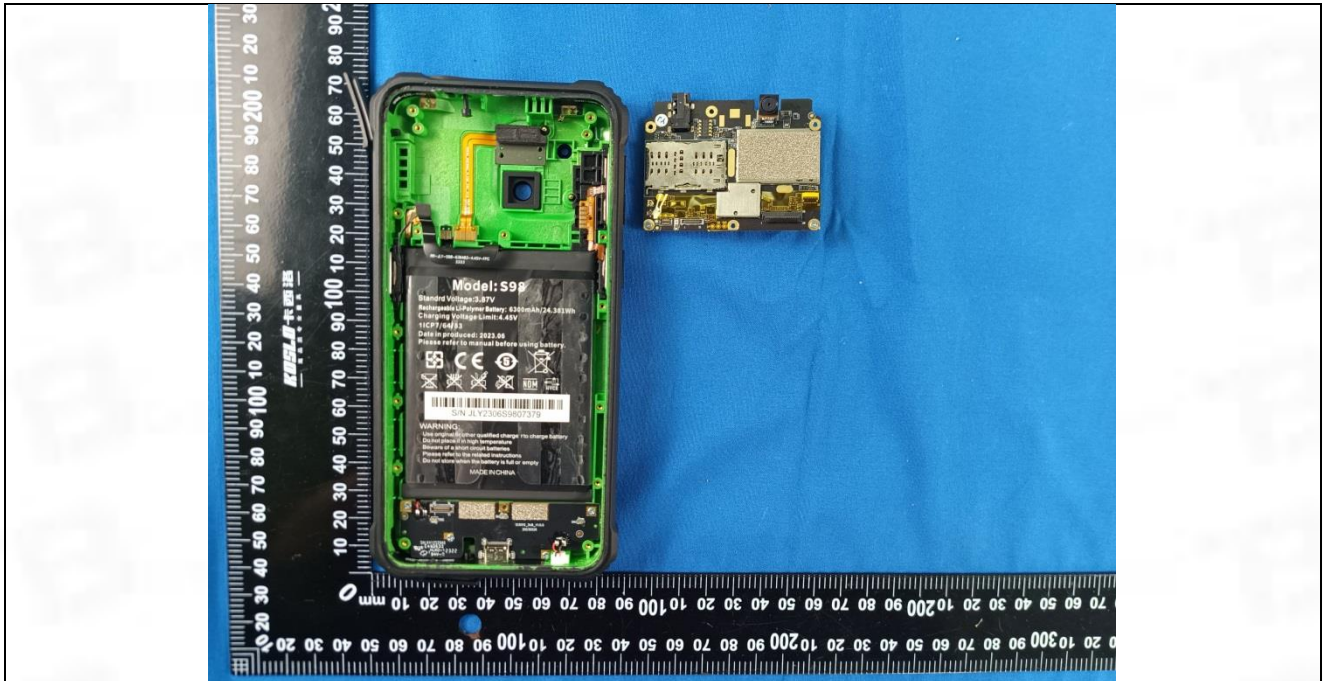


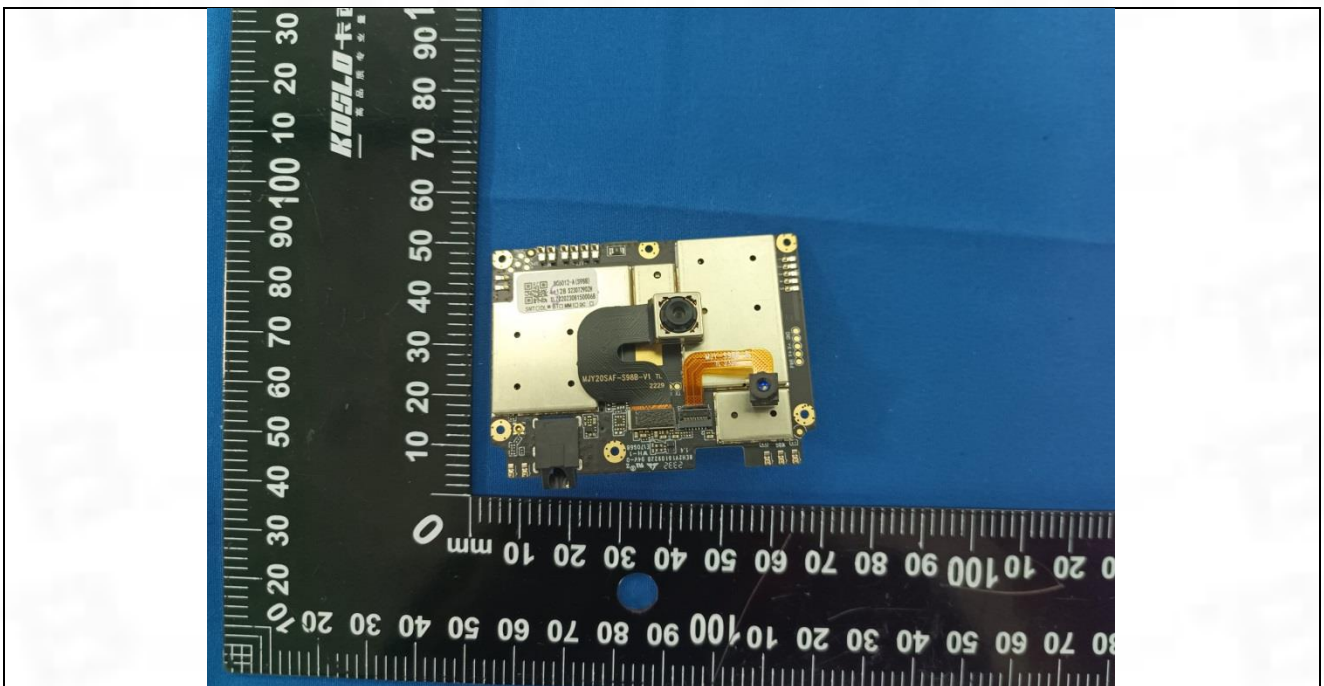
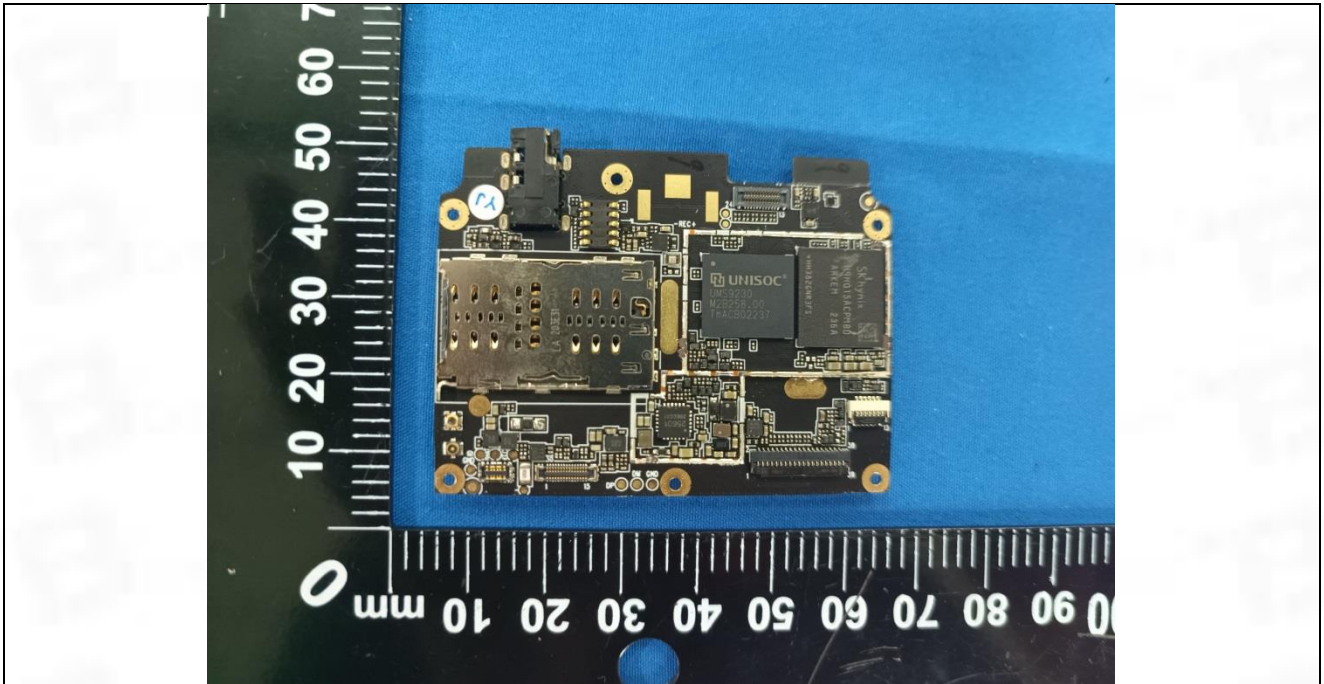
Internal



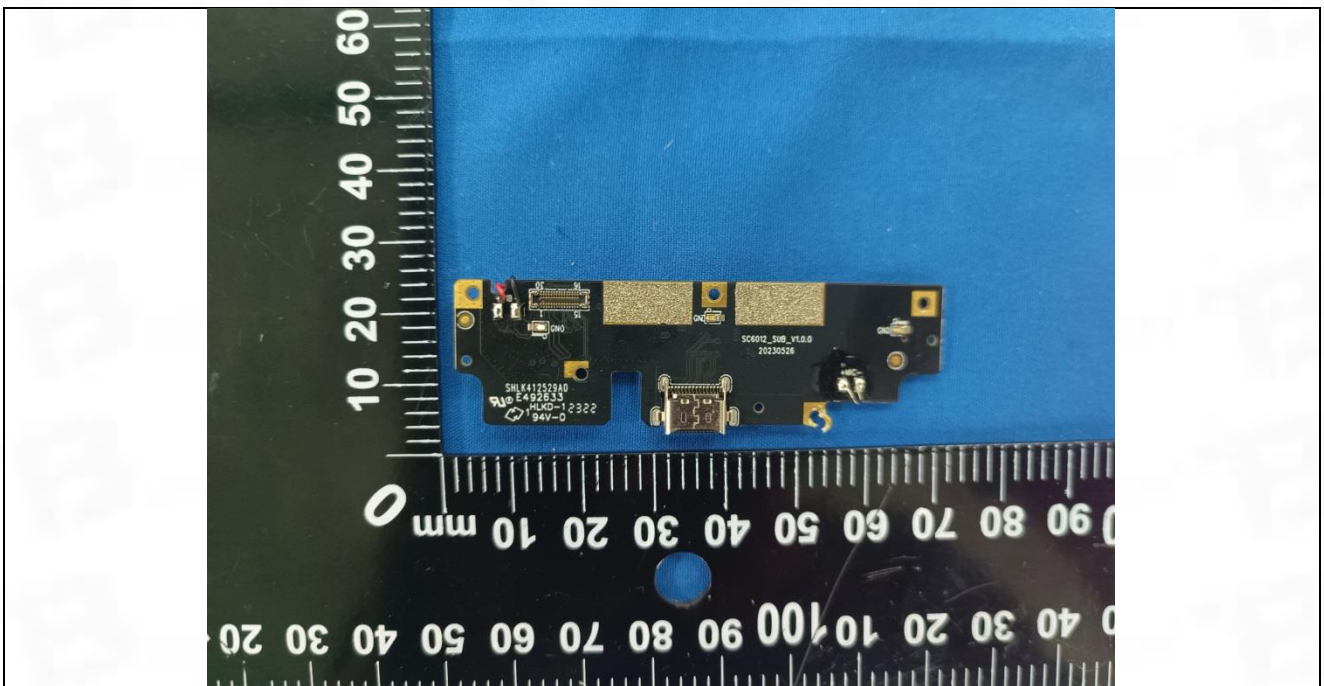
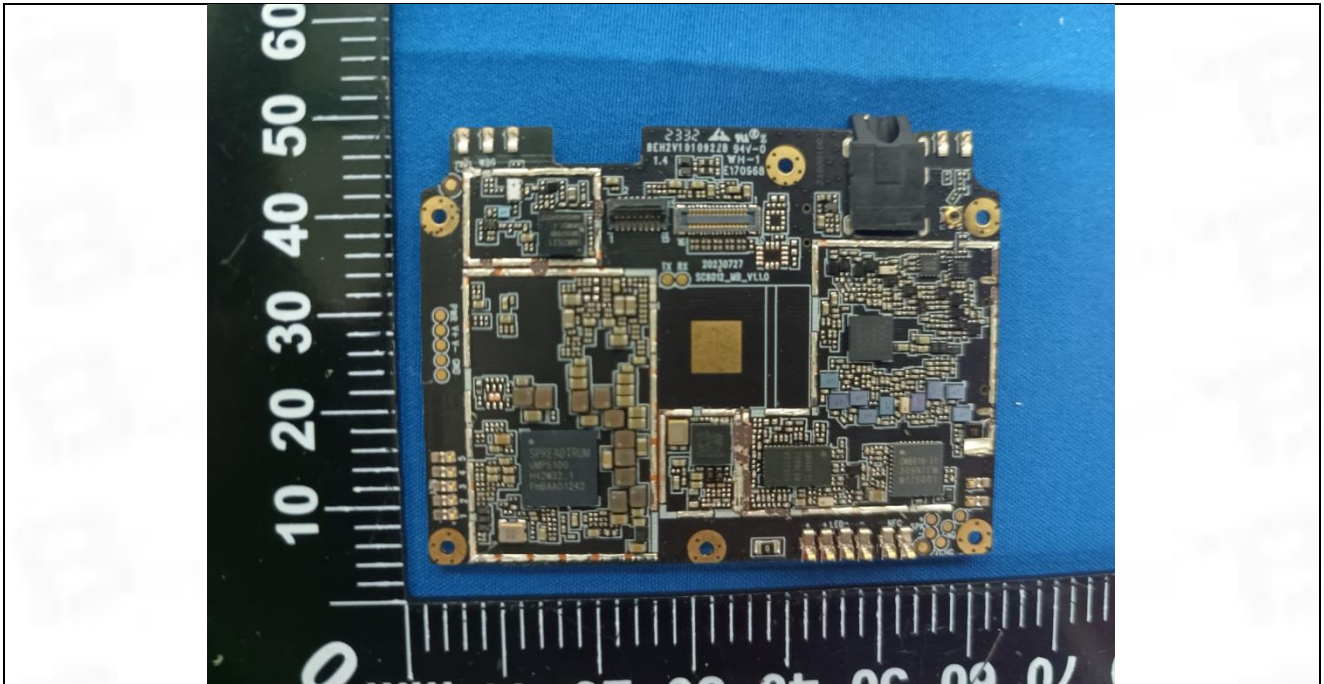


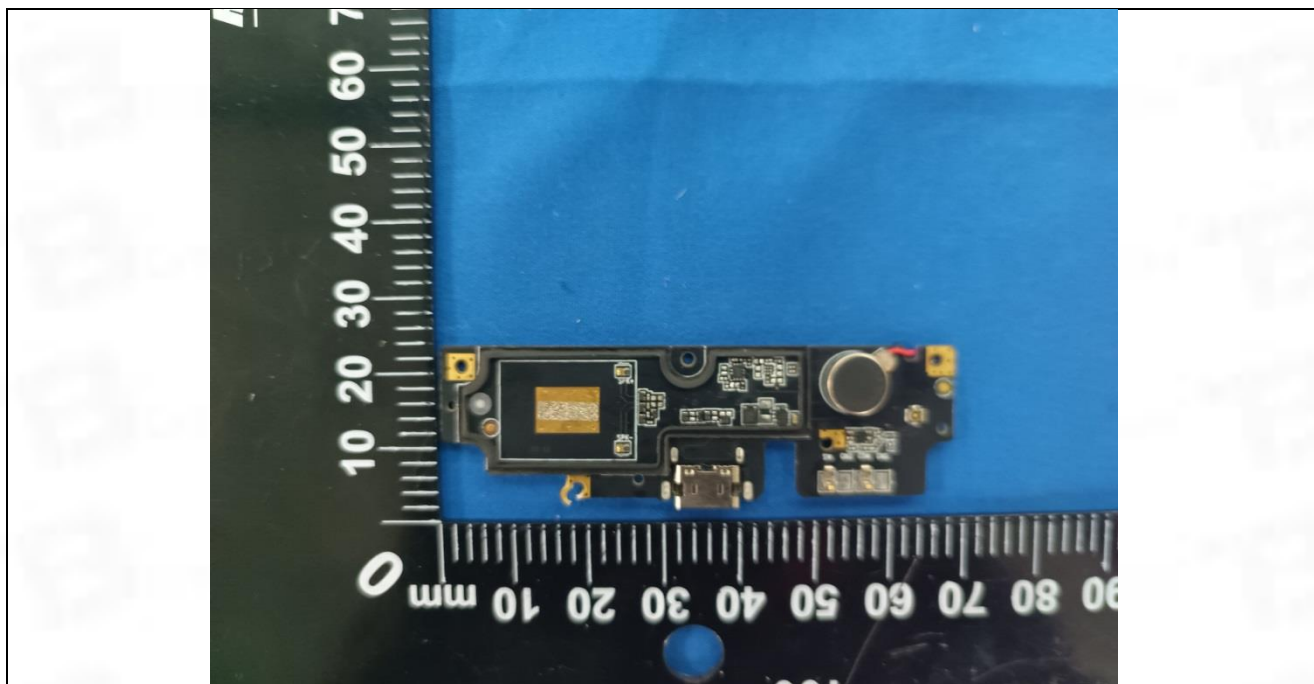
















Test Report Number: BTF230913E00501



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**-- END OF REPORT --**