

# TEST REPORT

**Applicant:** Shenzhen Huafurui Technology Co., Ltd.

**Address of Applicant:** Unit 1401 &1402, 14/F, Jinqi zhigu mansion (No. 4 building of Chongwen Garden), Crossing of the Liuxian street and Tangling road, Taoyuan street, Nanshan district, Shenzhen, P.R. China

**Equipment Under Test (EUT)**

Product Name: Smartphone

Model No.: C20

Trade mark: CUBOT

**Applicable standards:** EN 55032:2015  
EN 55035:2017  
EN 61000-3-2:2014, EN 61000-3-3:2013

**Date of sample receipt:** 17 Aug., 2020

**Date of Test:** 17 Aug., to 22 Sep., 2020

**Date of report issue:** 23 Sep., 2020

**Test Result:** PASS\*

\* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 2014/30/EU are considered.



Bruce Zhang  
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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## 2 Version

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | 23 Sep., 2020 | Original    |
|             |               |             |
|             |               |             |
|             |               |             |
|             |               |             |

Tested by: Mike.ou  
Test Engineer

Date: 23 Sep., 2020

Reviewed by: Winner Zhang  
Mike.ou  
Project Engineer

Date: 23 Sep., 2020

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## 4 Test Summary

| Test                                                                                                                    | Test Requirement | Test Method                          | Class / Severity                                                                                                                               | Result |
|-------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Radiated Emission                                                                                                       | EN 55032         | EN 55032                             | Class B                                                                                                                                        | PASS   |
| Conducted Emission                                                                                                      | EN 55032         | EN 55032                             | Class B                                                                                                                                        | PASS   |
| Harmonic Emission                                                                                                       | EN 61000-3-2     | EN 61000-3-2                         | N/A                                                                                                                                            | N/A    |
| Flicker Emission                                                                                                        | EN61000-3-3      | EN61000-3-3                          | Clause 5 of<br>EN 61000-3-3                                                                                                                    | N/A    |
| ESD                                                                                                                     | EN 55035         | EN61000-4-2:2009                     | Contact $\pm 4$ Kv<br>Air $\pm 8$ kV                                                                                                           | PASS   |
| Continuous RF<br>electromagnetic<br>radiated field<br>disturbances                                                      | EN 55035         | EN61000-4-3:<br>2006+A1:2007+A2:2010 | 80MHz-1000MHz,<br>1800MHz,2600MHz,<br>3500MHz, 5000MHz:<br>3Vrms (emf), 80%, 1kHz<br>Amp. Mod.<br>Audio output function:<br>80MHz-1000MHz: 0dB | PASS   |
| Electrical Fast<br>Transients (EFT)                                                                                     | EN 55035         | EN61000-4-4:2012                     | AC $\pm 1.0$ kV                                                                                                                                | PASS   |
| Surge                                                                                                                   | EN 55035         | EN 61000-4-5:<br>2014+A1:2017        | Line-line: $\pm 1$ kV<br>Line-earth: $\pm 2$ kV                                                                                                | PASS   |
| Continuousinduced<br>RF disturbances                                                                                    | EN 55035         | EN61000-4-6:<br>2014+AC:2015         | 0.15-10MHz:3V<br>10-30MHz:3-1V<br>30-80MHz:1V<br>80%, 1kHz, AM<br>Audio output function:<br>0.15MHz-30MHz: -20dB,<br>30MHz-80MHz: -10dB        | PASS   |
| Power frequency<br>magnetic field                                                                                       | EN 55035         | EN 61000-4-8:2010                    | 50/60 Hz<br>1A/m                                                                                                                               | PASS   |
| Voltage Dips and<br>Interruptions                                                                                       | EN 55035         | EN61000-4-11:<br>2004+A1:2017        | 0 % $U_T^*$ for 0.5per<br>0 % $U_T^*$ for 250per<br>70 % $U_T^*$ for 25per                                                                     | PASS   |
| <b>Remark:</b><br>1. $U_T$ is the nominal supply voltage.<br>2. Pass: Meet the requirements.<br>3. N/A: not applicable. |                  |                                      |                                                                                                                                                |        |

## 5 General Information

### 5.1 Client Information

|                        |                                                                                                                                                                                          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant:             | Shenzhen Huafurui Technology Co., Ltd.                                                                                                                                                   |
| Address:               | Unit 1401 &1402, 14/F, Jinqi zhigu mansion (No. 4 building of Chongwen Garden), Crossing of the Liuxian street and Tangling road, Taoyuan street, Nanshan district, Shenzhen, P.R. China |
| Manufacturer/ Factory: | Shenzhen Huafurui Technology Co., Ltd.                                                                                                                                                   |
| Address:               | Unit 1401 &1402, 14/F, Jinqi zhigu mansion (No. 4 building of Chongwen Garden), Crossing of the Liuxian street and Tangling road, Taoyuan street, Nanshan district, Shenzhen, P.R. China |

### 5.2 General Description of E.U.T.

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Product Name:     | Smartphone                                                                            |
| Model No.:        | C20                                                                                   |
| Hardware version: | V956_MB_V2.0_20200427                                                                 |
| Software version: | CUBOT_C20_A025C_V01_20200731                                                          |
| Power supply:     | Rechargeable Li-ion Battery DC3.85V/4200mAh                                           |
| AC adapter:       | Model No.:HJ-0502000W2-EU<br>Input: AC100-240V, 50/60Hz 0.3A<br>Output: DC 5.0V, 2.0A |

### 5.3 Test mode and voltage and test samples plans

|                        |                                                                                                                                                                     |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chargingand Recording: | Keep the EUT in Charging and Recordingmode                                                                                                                          |
| Charging and Playing:  | Keep the EUT in Charging and Playing mode                                                                                                                           |
| PC mode:               | USB cable to PC(Data exchange) mode                                                                                                                                 |
| FM mode:               | Keep the EUT in FM Receivemode (Pre-scan 87.5MHz, 98MHz and 108MHz of the receive frequency, found 98MHz of the receive frequency was worse case mode)              |
| Test voltage:          | AC 230V/50Hz                                                                                                                                                        |
| Remark:                | 1. During the test, pre-scan 120Vac/60Hz and 230Vac/50Hz of the Power supply, found 230Vac/50Hz was worse case mode.<br>2. The report only reflects the worst mode. |

### 5.4 Description of Support Units

| Manufacturer | Description | Model             | S/N        | FCC ID/DoC |
|--------------|-------------|-------------------|------------|------------|
| DELL         | PC          | OPTIPLEX7070      | 2J8XSZ2    | DoC        |
| DELL         | MONITOR     | SE2018HR          | 3M7QPY2    | DoC        |
| DELL         | KEYBOARD    | KB216d            | N/A        | DoC        |
| DELL         | MOUSE       | MS116t1           | N/A        | DoC        |
| HP           | Printer     | HP LaserJet P1007 | VNFP409729 | DoC        |

## 5.5 Measurement Uncertainty

| Parameter                           | Expanded Uncertainty (Confidence of 95%) |
|-------------------------------------|------------------------------------------|
| Conducted Emission (9kHz ~ 30MHz)   | ±1.60 dB                                 |
| Radiated Emission (9kHz ~ 30MHz)    | ±3.12 dB                                 |
| Radiated Emission (30MHz ~ 1000MHz) | ±4.32 dB                                 |
| Radiated Emission (1GHz ~ 18GHz)    | ±5.16 dB                                 |
| Radiated Emission (18GHz ~ 26.5GHz) | ±3.20 dB                                 |

## 5.6 Description of Cable Used

| CableType          | Description | Length | From | To         |
|--------------------|-------------|--------|------|------------|
| Detached USB Cable | Shielding   | 1.0m   | EUT  | PC/Adapter |

## 5.7 Laboratory Facility

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

● **FCC- Designation No.: CN1211**

Shenzhen ZhongjianNanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of Shenzhen ZhongjianNanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

## 5.8 Laboratory Location

Shenzhen ZhongjianNanfang Testing Co.,Ltd.

Address: No.110~116, Building B, Jinyuan Business Building, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

## 5.9 Monitoring of EUT for the Immunity Test

|         |                                |
|---------|--------------------------------|
| Visual: | Monitored the display of EUT   |
| Sound:  | Monitored the sound of EUT     |
| Other:  | Monitored the data link of EUT |

## 5.10 Test Instruments list

| Radiated Emission: |                 |               |                   |                      |                          |
|--------------------|-----------------|---------------|-------------------|----------------------|--------------------------|
| Test Equipment     | Manufacturer    | Model No.     | Serial No.        | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| 3m SAC             | SAEMC           | 9m*6m*6m      | 966               | 07-22-2020           | 07-21-2021               |
| BiConiLog Antenna  | SCHWARZBECK     | VULB9163      | 497               | 03-07-2020           | 03-06-2021               |
| Horn Antenna       | SCHWARZBECK     | BBHA9120D     | 916               | 03-07-2020           | 03-06-2021               |
| EMI Test Software  | AUDIX           | E3            | Version:6.110919b |                      |                          |
| Pre-amplifier      | HP              | 8447D         | 2944A09358        | 03-07-2020           | 03-06-2021               |
| Pre-amplifier      | CD              | PAP-1G18      | 11804             | 03-07-2020           | 03-06-2021               |
| Spectrum analyzer  | Rohde & Schwarz | FSP30         | 101454            | 03-05-2020           | 03-04-2021               |
| EMI Test Receiver  | Rohde & Schwarz | ESRP7         | 101070            | 03-05-2020           | 03-04-2021               |
| Simulated Station  | Anritsu         | MT8820C       | 6201026545        | 03-05-2020           | 03-04-2021               |
| Cable              | ZDECL           | Z108-NJ-NJ-81 | 1608458           | 03-07-2020           | 03-06-2021               |
| Cable              | MICRO-COAX      | MFR64639      | K10742-5          | 03-07-2020           | 03-06-2021               |
| Cable              | SUHNER          | SUCOFLEX100   | 58193/4PE         | 03-07-2020           | 03-06-2021               |

| Conducted Emission: |                 |            |                   |                      |                          |
|---------------------|-----------------|------------|-------------------|----------------------|--------------------------|
| Test Equipment      | Manufacturer    | Model No.  | Serial No.        | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| EMI Test Receiver   | Rohde & Schwarz | ESCI       | 101189            | 03-05-2020           | 03-04-2021               |
| Pulse Limiter       | SCHWARZBECK     | OSRAM 2306 | 9731              | 03-05-2020           | 03-04-2021               |
| LISN                | CHASE           | MN2050D    | 1447              | 03-05-2020           | 03-04-2021               |
| LISN                | Rohde & Schwarz | ESH3-Z5    | 8438621/010       | 07-21-2020           | 07-20-2021               |
| ISN                 | Schwarzbeck     | CAT3 8158  | #96               | 03-05-2020           | 03-04-2021               |
| ISN                 | Schwarzbeck     | CAT5 8158  | #166              | 03-05-2020           | 03-04-2021               |
| ISN                 | Schwarzbeck     | NTFM 8158  | #126              | 03-05-2020           | 03-04-2021               |
| Cable               | HP              | 10503A     | N/A               | 03-05-2020           | 03-04-2021               |
| EMI Test Software   | AUDIX           | E3         | Version:6.110919b |                      |                          |

| ESD:           |              |           |            |                      |                          |
|----------------|--------------|-----------|------------|----------------------|--------------------------|
| Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| ESD Simulator  | Haefely      | ONYX30    | 183900     | 03-17-2020           | 03-16-2021               |

| Surge:            |              |            |             |                      |                          |
|-------------------|--------------|------------|-------------|----------------------|--------------------------|
| Test Equipment    | Manufacturer | Model No.  | Serial No.  | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| Surge test system | Prima        | SUG61005BG | PR160951341 | 11-18-2019           | 11-17-2020               |
| Surge test system | Prima        | SUG10/700G | PR161151381 | 11-18-2019           | 11-17-2020               |

| EFT:            |              |            |            |                      |                          |
|-----------------|--------------|------------|------------|----------------------|--------------------------|
| Test Equipment  | Manufacturer | Model No.  | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| EFT test system | Prima        | EFT61004AG | PR16084621 | 11-18-2019           | 11-17-2020               |
| Coupling clamp  | Prima        | /          | CCIS0189   | 11-18-2019           | 11-17-2020               |

| PFMF:                                    |              |            |            |                      |                          |
|------------------------------------------|--------------|------------|------------|----------------------|--------------------------|
| Test Equipment                           | Manufacturer | Model No.  | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| Power frequency magnetic field generator | Prima        | PFM61008TG | PR16088206 | 11-18-2019           | 11-17-2020               |

| Voltage dips and Interruption:            |              |            |            |                      |                          |
|-------------------------------------------|--------------|------------|------------|----------------------|--------------------------|
| Test Equipment                            | Manufacturer | Model No.  | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| Voltage dips and Interruption test system | Prima        | DRP61011AG | PR16076343 | 11-18-2019           | 11-17-2020               |

| Continuous induced RF disturbances |                 |           |               |                      |                          |
|------------------------------------|-----------------|-----------|---------------|----------------------|--------------------------|
| Test Equipment                     | Manufacturer    | Model No. | Serial No.    | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| Conducted Disturbance Test system  | SCHLODER        | CDG6000   | 126B1445/2016 | 03-05-2020           | 03-04-2021               |
| Coupling/Decoupling Network        | SCHLODER        | CDN-M2+3  | A2210417/2016 | 03-05-2020           | 03-04-2021               |
| EM Clamp                           | SCHLODER        | EMCL-20   | 132A1281/2016 | 03-05-2020           | 03-04-2021               |
| Nexus Conduituining Amplifier      | B&K             | 2690      | 3003552       | N/A                  | N/A                      |
| MUTH Simulator                     | B&K             | 4227      | N/A           | N/A                  | N/A                      |
| Sound Level Calibrator             | B&K             | 4231      | N/A           | N/A                  | N/A                      |
| Audio Analyzer                     | Rohde & Schwarz | UPL 16    | 100150        | 03-05-2020           | 03-04-2021               |

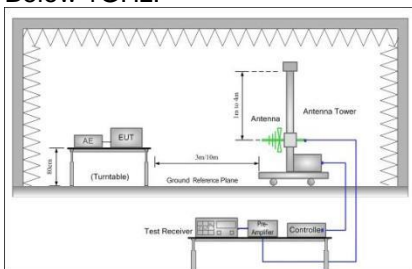
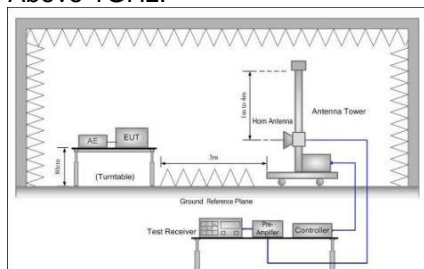
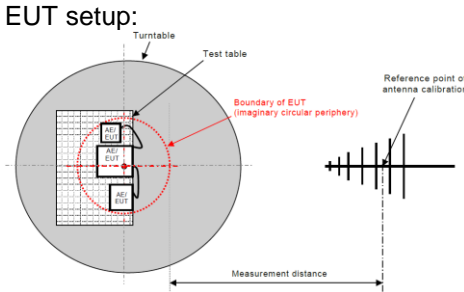
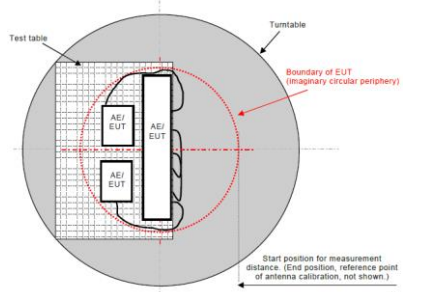
| Continuous RF electromagnetic radiated field disturbances |                    |              |              |                      |                          |
|-----------------------------------------------------------|--------------------|--------------|--------------|----------------------|--------------------------|
| Test Equipment                                            | Manufacturer       | Model No.    | Serial No.   | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| Signal Generator                                          | Rohde & Schwarz    | SMR27        | 1104.002.20  | 03-05-2020           | 03-04-2021               |
| RF Amplifier 80M-1GHz                                     | Amplifier Research | AR 150W1000  | 115243       | 03-05-2020           | 03-04-2021               |
| RF Amplifier 1GHz-4.2GHz                                  | Amplifier Research | AR 25S1G4AM1 | 145863       | 03-05-2020           | 03-04-2021               |
| RF Amplifier 4GHz-6GHz                                    | Amplifier Research | 35S4G8A      | 247443       | 03-05-2020           | 03-04-2021               |
| Power Meter                                               | Rohde & Schwarz    | NRVS         | 1020.1809.02 | 03-05-2020           | 03-04-2021               |
| Power Sensor                                              | Rohde & Schwarz    | URV5-Z2      | N/A          | 03-05-2020           | 03-04-2021               |
| Power Sensor                                              | Rohde & Schwarz    | URV5-Z2      | 3654         | 03-05-2020           | 03-04-2021               |
| Software EMC32                                            | Rohde & Schwarz    | EMC32-S      | 7412         | N/A                  | N/A                      |
| Log-periodic Antenna                                      | Amplifier Research | AT1080       | 6987         | 03-05-2020           | 03-04-2021               |
| Antenna Tripod                                            | Amplifier Research | TP1000A      | 3003552      | N/A                  | N/A                      |
| High Gain Horn Antenna                                    | Amplifier Research | AT4002A      | N/A          | 03-05-2020           | 03-04-2021               |
| Nexus Conduituining Amplifier                             | B&K                | 2690         | N/A          | N/A                  | N/A                      |
| MUTH Simulator                                            | B&K                | 4227         | 100150       | N/A                  | N/A                      |
| Sound Level Calibrator                                    | B&K                | 4231         | 1104.002.20  | N/A                  | N/A                      |
| Audio Analyzer                                            | Rohde & Schwarz    | UPL 16       | 115243       | 03-05-2020           | 03-04-2021               |



## 6 Test Results

### 6.1 EMI (Emission)

#### 6.1.1 Radiated Emission

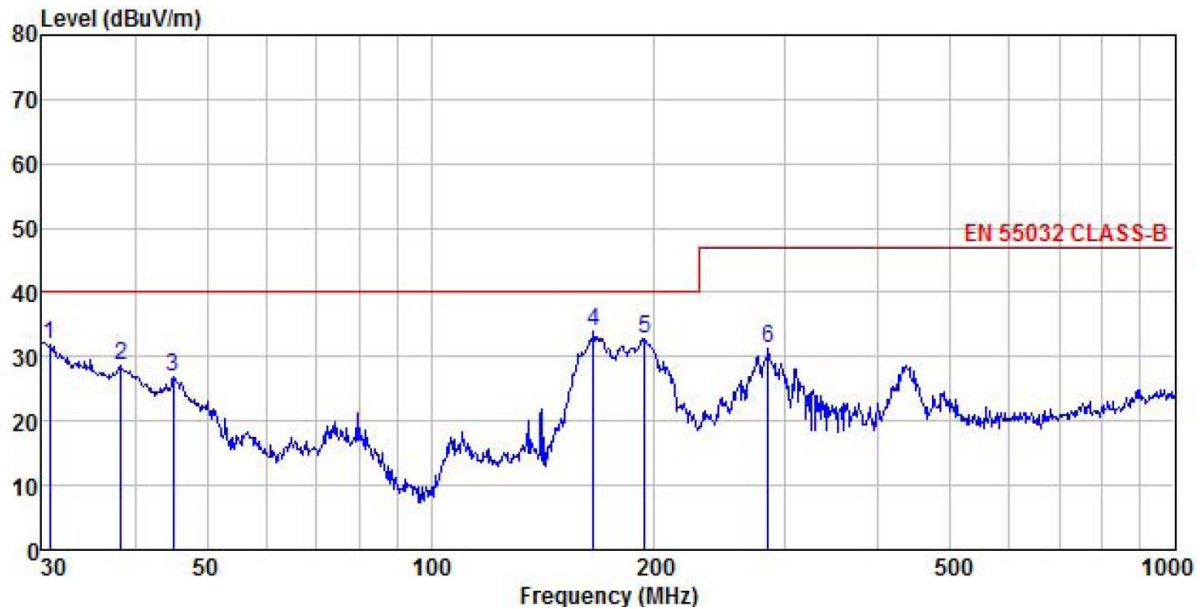
|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |           |          |          |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|----------|----------|
| Test Requirement:                                                                     | EN55032                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |           |          |          |
| Test Method:                                                                          | EN55032                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |           |          |          |
| TestFrequency Range:                                                                  | 30MHz to 6GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |           |          |          |
| TestDistance:                                                                         | 3m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |           |          |          |
| Receiver setup:                                                                       | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Detector           | RBW       | VBW      | Remark   |
|                                                                                       | 30MHz-1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Quasi-peak         | 100kHz    | 300kHz   | QP Value |
|                                                                                       | Above 1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Peak               | 1MHz      | 3MHz     | PK Value |
|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Average            | 1MHz      | 3MHz     | AV Value |
| ITE Limit:                                                                            | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Limit (dBuV/m @3m) |           |          | Remark   |
|                                                                                       | 30MHz-230MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 40.0               |           |          | QP Value |
|                                                                                       | 230MHz-1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 47.0               |           |          | QP Value |
|                                                                                       | 1GHz-3GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 50.0               |           |          | AV Value |
|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 70.0               |           |          | PK Value |
|                                                                                       | 3GHz-6GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 54.0               |           |          | AV Value |
| 74.0                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    | PK Value  |          |          |
| FM Receiver limit:                                                                    | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Limit (dBuV/m @3m) |           | Remark   |          |
|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Fundamental        | Harmonics |          |          |
|                                                                                       | 30MHz-230MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 60                 | 52        | QP Value |          |
|                                                                                       | 230MHz-300MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    | 52        | QP Value |          |
|                                                                                       | 300MHz-1000MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    | 56        | QP Value |          |
| Test setup:                                                                           | Below 1GHz:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |           |          |          |
|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |           |          |          |
|                                                                                       | Above 1GHz:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |           |          |          |
|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |           |          |          |
| EUT setup:                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |           |          |          |
|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |           |          |          |
|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |           |          |          |
| Test Procedure:                                                                       | <p><b>30MHz to 1GHz:</b></p> <ol style="list-style-type: none"><li>1. The radiated emissions test was conducted in a semi-anechoic chamber.</li><li>2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.</li><li>3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.</li><li>4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were</li></ol> |                    |           |          |          |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>performed for both horizontal and vertical antenna polarization.</p> <p><b>Above 1GHz:</b></p> <ol style="list-style-type: none"><li>1. The radiated emissions test was conducted in a fully-anechoic chamber.</li><li>2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.</li><li>3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT.</li><li>4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.</li></ol> |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test Mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Test Results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## Measurement Data:

## Below 1GHz:

|                 |                |                |                           |
|-----------------|----------------|----------------|---------------------------|
| Product Name:   | Smartphone     | Product Model: | C20                       |
| Test By:        | Mike           | Test mode:     | Charging & Recording mode |
| Test Frequency: | 30 MHz ~ 1 GHz | Polarization:  | Vertical                  |
| Test Voltage:   | AC 230/50Hz    | Environment:   | Temp: 24°C Humi: 57%      |

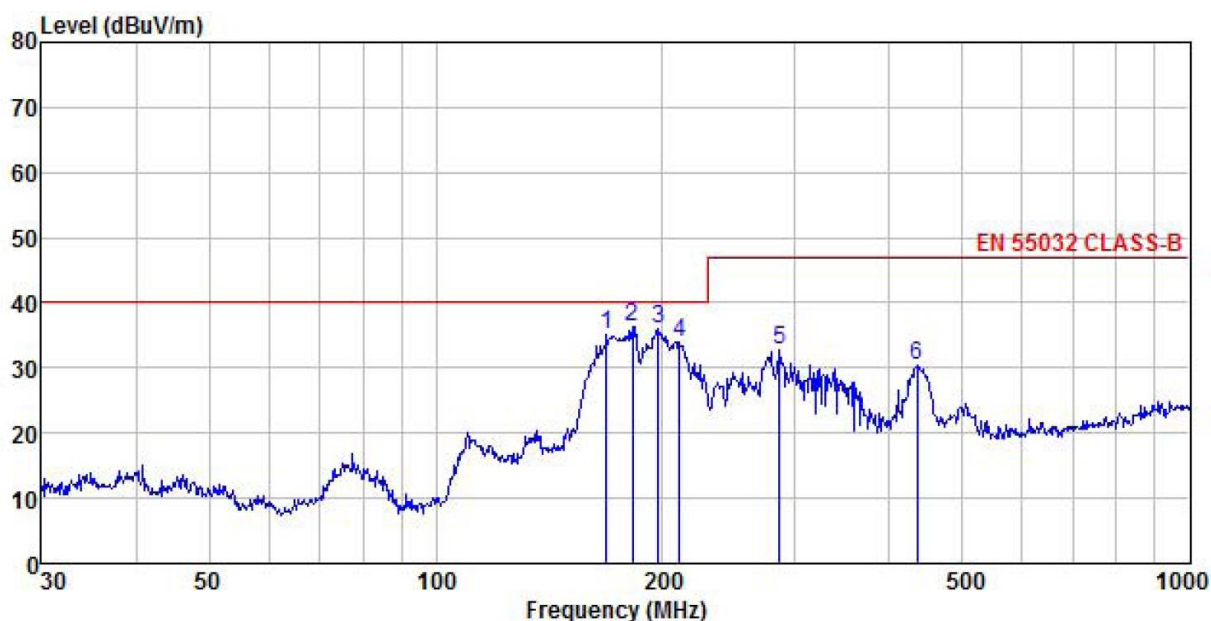


|   | Freq    | Read Level | Antenna Factor | Cable Loss | Aux Factor | Preamp Factor | Level  | Limit  | Over   | Remark |
|---|---------|------------|----------------|------------|------------|---------------|--------|--------|--------|--------|
|   | MHz     | dBuV       | dB/m           | dB         | dB         | dB            | dBuV/m | dBuV/m | dB     |        |
| 1 | 30.745  | 49.62      | 11.93          | 0.39       | 0.00       | 29.98         | 31.96  | 40.00  | -8.04  | QP     |
| 2 | 38.346  | 45.46      | 12.74          | 0.35       | 0.00       | 29.92         | 28.63  | 40.00  | -11.37 | QP     |
| 3 | 45.058  | 43.30      | 12.90          | 0.38       | 0.00       | 29.86         | 26.72  | 40.00  | -13.28 | QP     |
| 4 | 165.487 | 46.76      | 15.70          | 0.64       | 0.00       | 29.09         | 34.01  | 40.00  | -5.99  | QP     |
| 5 | 193.773 | 43.19      | 17.70          | 0.71       | 0.00       | 28.87         | 32.73  | 40.00  | -7.27  | QP     |
| 6 | 283.979 | 40.35      | 18.64          | 0.84       | 0.00       | 28.48         | 31.35  | 47.00  | -15.65 | QP     |

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The Aux Factor is a notch filter switch box loss, this item is not used.

|                 |                |                |                           |
|-----------------|----------------|----------------|---------------------------|
| Product Name:   | Smartphone     | Product Model: | C20                       |
| Test By:        | Mike           | Test mode:     | Charging & Recording mode |
| Test Frequency: | 30 MHz ~ 1 GHz | Polarization:  | Horizontal                |
| Test Voltage:   | AC 230/50Hz    | Environment:   | Temp: 24℃ Humi: 57%       |



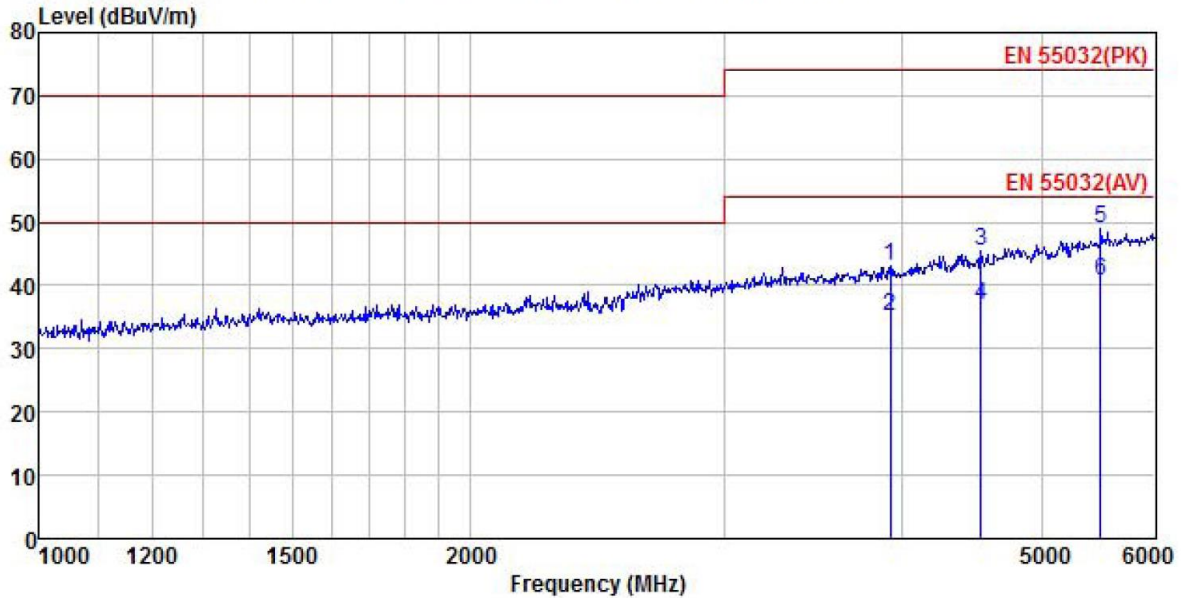
|   | Freq    | Read Level | Antenna Factor | Cable Loss | Aux Factor | Preamp Factor | Level  | Limit Line | Over Limit | Remark |
|---|---------|------------|----------------|------------|------------|---------------|--------|------------|------------|--------|
|   | MHz     | dBuV       | dB/m           | dB         | dB         | dB            | dBuV/m | dBuV/m     | dB         |        |
| 1 | 168.414 | 47.29      | 16.20          | 0.65       | 0.00       | 29.06         | 35.08  | 40.00      | -4.92      | QP     |
| 2 | 182.559 | 47.55      | 17.05          | 0.69       | 0.00       | 28.95         | 36.34  | 40.00      | -3.66      | QP     |
| 3 | 197.200 | 46.26      | 18.01          | 0.71       | 0.00       | 28.85         | 36.13  | 40.00      | -3.87      | QP     |
| 4 | 210.786 | 43.76      | 18.35          | 0.73       | 0.00       | 28.76         | 34.08  | 40.00      | -5.92      | QP     |
| 5 | 285.978 | 41.74      | 18.65          | 0.85       | 0.00       | 28.47         | 32.77  | 47.00      | -14.23     | QP     |
| 6 | 435.590 | 39.08      | 19.17          | 1.03       | 0.00       | 28.85         | 30.43  | 47.00      | -16.57     | QP     |

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The Aux Factor is a notch filter switch box loss, this item is not used.

**Above 1GHz:**

|                        |               |                       |                           |
|------------------------|---------------|-----------------------|---------------------------|
| <b>Product Name:</b>   | Smartphone    | <b>Product Model:</b> | C20                       |
| <b>Test By:</b>        | Mike          | <b>Test mode:</b>     | Charging & Recording mode |
| <b>Test Frequency:</b> | 1 GHz ~ 6 GHz | <b>Polarization:</b>  | Vertical                  |
| <b>Test Voltage:</b>   | AC 230/50Hz   | <b>Environment:</b>   | Temp: 24℃ Humi: 57%       |



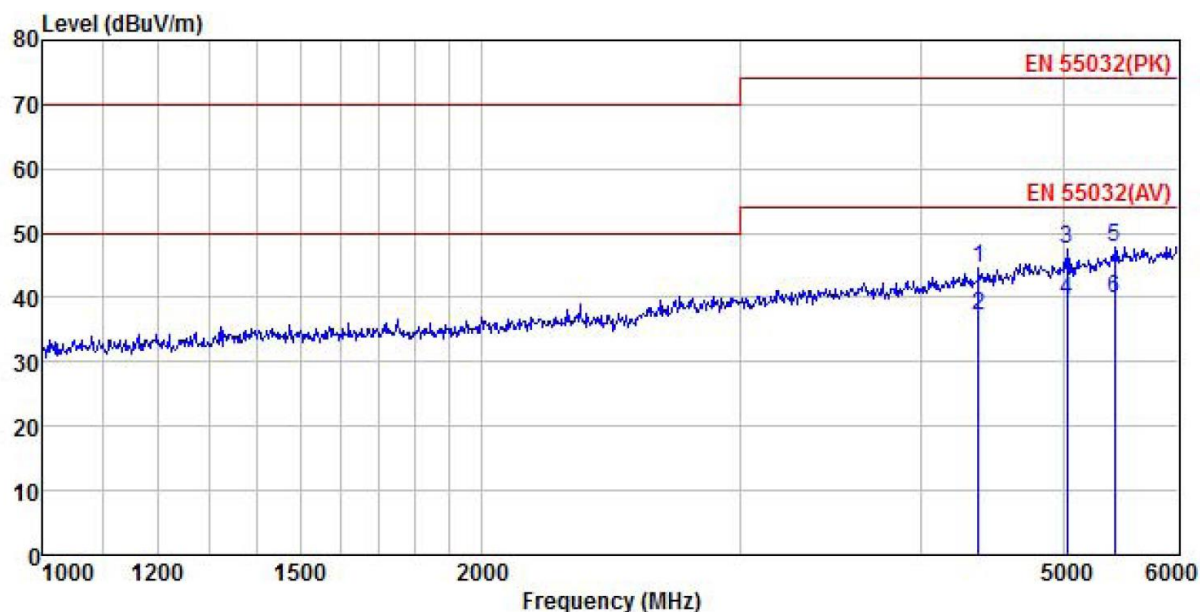
|   | Freq     | ReadAntenna | Cable  | Aux  | Preamp | Level  | Limit  | Over   |                |
|---|----------|-------------|--------|------|--------|--------|--------|--------|----------------|
|   | MHz      | Level       | Factor | Loss | Factor | Factor | Line   | Limit  | Remark         |
|   |          | dBuV        | dB/m   | dB   | dB     | dB     | dBuV/m | dBuV/m | dB             |
| 1 | 3924.004 | 47.68       | 29.21  | 5.70 | 2.20   | 41.80  | 42.99  | 74.00  | -31.01 Peak    |
| 2 | 3924.004 | 39.96       | 29.21  | 5.70 | 2.20   | 41.80  | 35.27  | 54.00  | -18.73 Average |
| 3 | 4536.905 | 48.93       | 30.19  | 6.16 | 2.37   | 42.08  | 45.57  | 74.00  | -28.43 Peak    |
| 4 | 4536.905 | 40.25       | 30.19  | 6.16 | 2.37   | 42.08  | 36.89  | 54.00  | -17.11 Average |
| 5 | 5495.685 | 48.89       | 32.30  | 7.00 | 2.65   | 41.83  | 49.01  | 74.00  | -24.99 Peak    |
| 6 | 5495.685 | 40.50       | 32.30  | 7.00 | 2.65   | 41.83  | 40.62  | 54.00  | -13.38 Average |

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss + Aux Factor – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.



|                 |               |                |                           |
|-----------------|---------------|----------------|---------------------------|
| Product Name:   | Smartphone    | Product Model: | C20                       |
| Test By:        | Mike          | Test mode:     | Charging & Recording mode |
| Test Frequency: | 1 GHz ~ 6 GHz | Polarization:  | Horizontal                |
| Test Voltage:   | AC 230/50Hz   | Environment:   | Temp: 24℃ Humi: 57%       |



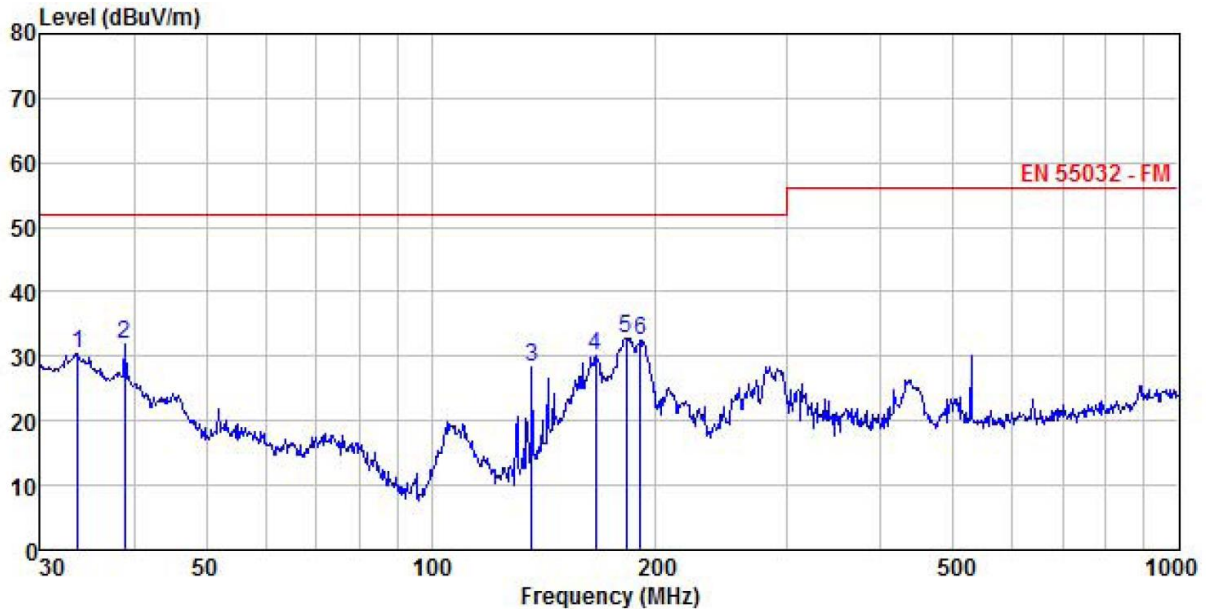
|   | Freq     | ReadAntenna | Cable | Aux  | Preamp | Level | Limit  | Over   | Remark         |
|---|----------|-------------|-------|------|--------|-------|--------|--------|----------------|
|   | MHz      | dBuV        | dB/m  | dB   | dB     | dB    | dBuV/m | dBuV/m | dB             |
| 1 | 4377.203 | 48.29       | 29.92 | 6.05 | 2.32   | 41.95 | 44.63  | 74.00  | -29.37 Peak    |
| 2 | 4377.203 | 40.79       | 29.92 | 6.05 | 2.32   | 41.95 | 37.13  | 54.00  | -16.87 Average |
| 3 | 5033.759 | 48.99       | 31.27 | 6.59 | 2.51   | 41.89 | 47.47  | 74.00  | -26.53 Peak    |
| 4 | 5033.759 | 40.95       | 31.27 | 6.59 | 2.51   | 41.89 | 39.43  | 54.00  | -14.57 Average |
| 5 | 5427.187 | 48.06       | 32.13 | 6.93 | 2.64   | 41.86 | 47.90  | 74.00  | -26.10 Peak    |
| 6 | 5427.187 | 40.06       | 32.13 | 6.93 | 2.64   | 41.86 | 39.90  | 54.00  | -14.10 Average |

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss + Aux Factor – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

## Below 1GHz:

|                 |                |                |                      |
|-----------------|----------------|----------------|----------------------|
| Product Name:   | Smartphone     | Product Model: | C20                  |
| Test By:        | Mike           | Test mode:     | FM mode              |
| Test Frequency: | 30 MHz ~ 1 GHz | Polarization:  | Vertical             |
| Test Voltage:   | AC 230/50Hz    | Environment:   | Temp: 24°C Humi: 57% |

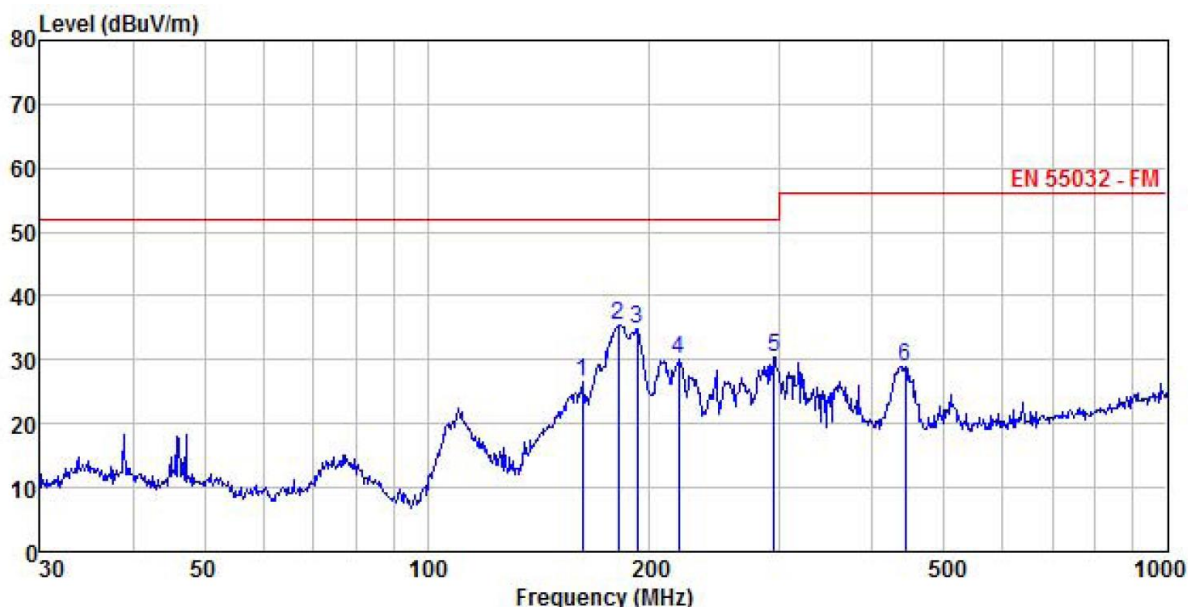


|   | Freq    | Read  | Antenna | Cable | Aux    | Preamp | Level  | Limit  | Over   | Remark |
|---|---------|-------|---------|-------|--------|--------|--------|--------|--------|--------|
|   | MHz     | Level | Factor  | Loss  | Factor | Factor | Level  | Line   | Limit  |        |
|   |         | dBuV  | dB/m    | dB    |        | dB     | dBuV/m | dBuV/m | dB     |        |
| 1 | 33.680  | 47.47 | 12.40   | 0.36  | 0.00   | 29.96  | 30.27  | 52.00  | -21.73 | QP     |
| 2 | 38.888  | 48.75 | 12.76   | 0.35  | 0.00   | 29.91  | 31.95  | 52.00  | -20.05 | QP     |
| 3 | 136.460 | 43.47 | 13.59   | 0.60  | 0.00   | 29.29  | 28.37  | 52.00  | -23.63 | QP     |
| 4 | 166.068 | 42.72 | 15.80   | 0.65  | 0.00   | 29.08  | 30.09  | 52.00  | -21.91 | QP     |
| 5 | 182.559 | 44.01 | 17.05   | 0.69  | 0.00   | 28.95  | 32.80  | 52.00  | -19.20 | QP     |
| 6 | 190.405 | 43.21 | 17.45   | 0.70  | 0.00   | 28.90  | 32.46  | 52.00  | -19.54 | QP     |

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The Aux Factor is a notch filter switch box loss, this item is not used.

|                 |                |                |                     |
|-----------------|----------------|----------------|---------------------|
| Product Name:   | Smartphone     | Product Model: | C20                 |
| Test By:        | Mike           | Test mode:     | FM mode             |
| Test Frequency: | 30 MHz ~ 1 GHz | Polarization:  | Horizontal          |
| Test Voltage:   | AC 230/50Hz    | Environment:   | Temp: 24℃ Humi: 57% |



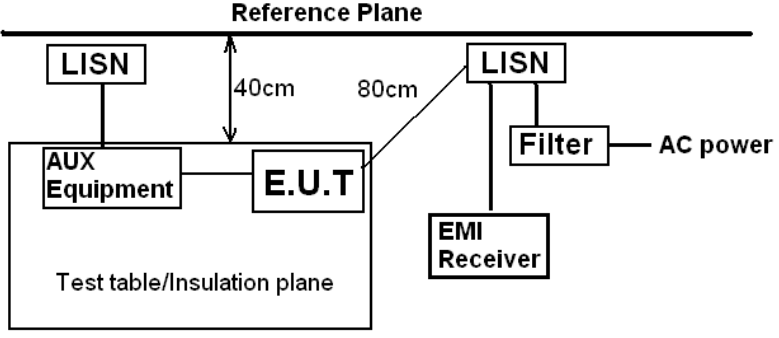
|   | Freq    | Read Level | Antenna Factor | Cable Loss | Aux Factor | Preamplifier Factor | Level  | Limit  | Over Limit | Remark |
|---|---------|------------|----------------|------------|------------|---------------------|--------|--------|------------|--------|
|   | MHz     | dBuV       | dB/m           | dB         | dB         | dB                  | dBuV/m | dBuV/m | dB         |        |
| 1 | 162.041 | 39.42      | 15.54          | 0.64       | 0.00       | 29.12               | 26.48  | 52.00  | -25.52     | QP     |
| 2 | 181.283 | 46.74      | 16.98          | 0.68       | 0.00       | 28.96               | 35.44  | 52.00  | -16.56     | QP     |
| 3 | 192.419 | 45.45      | 17.60          | 0.71       | 0.00       | 28.88               | 34.88  | 52.00  | -17.12     | QP     |
| 4 | 219.075 | 39.70      | 18.38          | 0.74       | 0.00       | 28.71               | 30.11  | 52.00  | -21.89     | QP     |
| 5 | 294.114 | 39.40      | 18.68          | 0.85       | 0.00       | 28.46               | 30.47  | 52.00  | -21.53     | QP     |
| 6 | 443.294 | 37.58      | 19.19          | 1.04       | 0.00       | 28.86               | 28.95  | 56.00  | -27.05     | QP     |

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The Aux Factor is a notch filter switch box loss, this item is not used.

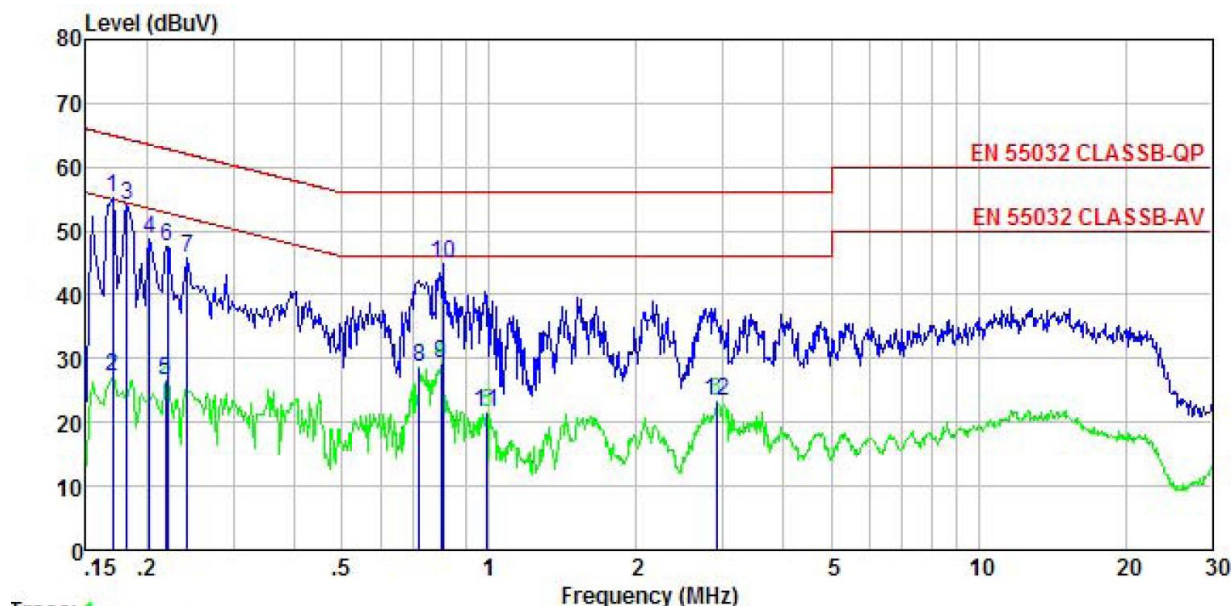


## 6.1.2 Conducted Emission

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |           |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| Test Requirement:                                | EN 55032                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |           |
| Test Method:                                     | EN 55032                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |           |
| TestFrequencyRange:                              | 150kHz to 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |           |
| Class / Severity: Class B                        | Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |           |
| Receiver setup:                                  | RBW=9kHz, VBW=30kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |           |
| Limit:                                           | Frequency range (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Limit (dBuV) |           |
|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Quasi-peak   | Average   |
|                                                  | 0.15-0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 66 to 56*    | 56 to 46* |
|                                                  | 0.5-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 56           | 46        |
|                                                  | 5-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 60           | 50        |
| * Decreases with the logarithm of the frequency. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |           |
| Test setup:                                      |  <p>Remark:<br/> E.U.T: Equipment Under Test<br/> LISN: Line Impedance Stabilization Network<br/> Test table height=0.8m</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |           |
| Test procedure                                   | <p>The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). Which provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to EN55032 Class B on conducted measurement.</p> |              |           |
| Test Instruments:                                | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |           |
| Test Instruments:                                | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |           |
| Test Mode:                                       | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |           |

## Measurement Data:

|                 |                  |                |                           |
|-----------------|------------------|----------------|---------------------------|
| Product name:   | Smartphone       | Product model: | C20                       |
| Test by:        | Mike             | Test mode:     | Charging & Recording mode |
| Test frequency: | 150 kHz ~ 30 MHz | Phase:         | Line                      |
| Test voltage:   | AC 230 V/50 Hz   | Environment:   | Temp: 22.5°C Humi: 55%    |

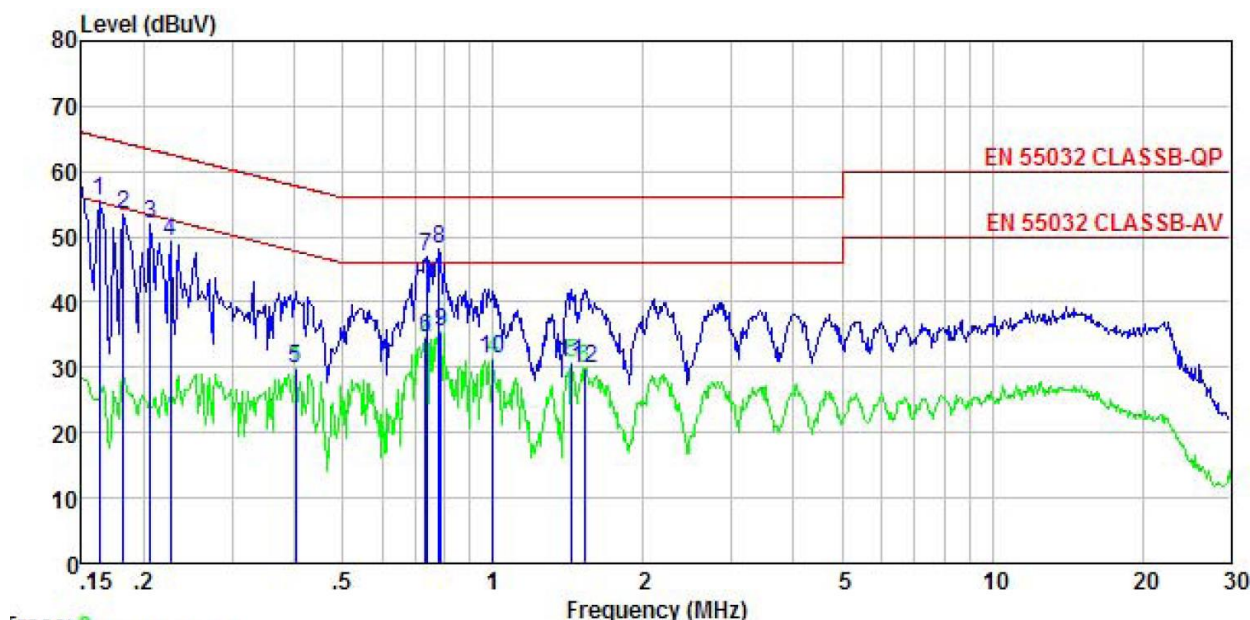


|    | Freq  | Read Level | LISN Factor | Cable Loss | Aux Factor | Level | Limit Line | Over Limit | Remark  |
|----|-------|------------|-------------|------------|------------|-------|------------|------------|---------|
|    | MHz   | dBuV       | dB          | dB         | dB         | dBuV  | dBuV       | dB         |         |
| 1  | 0.170 | 45.00      | -0.58       | 10.77      | -0.10      | 55.09 | 64.94      | -9.85      | QP      |
| 2  | 0.170 | 17.05      | -0.58       | 10.77      | -0.10      | 27.14 | 54.94      | -27.80     | Average |
| 3  | 0.182 | 44.05      | -0.58       | 10.77      | -0.12      | 54.12 | 64.42      | -10.30     | QP      |
| 4  | 0.202 | 38.71      | -0.59       | 10.76      | -0.16      | 48.72 | 63.54      | -14.82     | QP      |
| 5  | 0.219 | 16.63      | -0.58       | 10.76      | -0.18      | 26.63 | 52.88      | -26.25     | Average |
| 6  | 0.220 | 37.39      | -0.58       | 10.76      | -0.18      | 47.39 | 62.83      | -15.44     | QP      |
| 7  | 0.242 | 35.78      | -0.57       | 10.75      | -0.21      | 45.75 | 62.04      | -16.29     | QP      |
| 8  | 0.720 | 18.86      | -0.54       | 10.78      | -0.34      | 28.76 | 46.00      | -17.24     | Average |
| 9  | 0.796 | 19.00      | -0.56       | 10.81      | -0.09      | 29.16 | 46.00      | -16.84     | Average |
| 10 | 0.804 | 34.64      | -0.56       | 10.81      | -0.07      | 44.82 | 56.00      | -11.18     | QP      |
| 11 | 0.989 | 10.84      | -0.62       | 10.87      | 0.42       | 21.51 | 46.00      | -24.49     | Average |
| 12 | 2.915 | 13.12      | -0.43       | 10.92      | -0.22      | 23.39 | 46.00      | -22.61     | Average |

## Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss + Aux Factor.

|                 |                  |                |                           |
|-----------------|------------------|----------------|---------------------------|
| Product name:   | Smartphone       | Product model: | C20                       |
| Test by:        | Mike             | Test mode:     | Charging & Recording mode |
| Test frequency: | 150 kHz ~ 30 MHz | Phase:         | Neutral                   |
| Test voltage:   | AC 230 V/50 Hz   | Environment:   | Temp: 22.5°C Humi: 55%    |



|    | Freq  | Read  | LISN   | Cable | Aux    | Level | Limit | Over   | Remark  |
|----|-------|-------|--------|-------|--------|-------|-------|--------|---------|
|    | MHz   | Level | Factor | Loss  | Factor | dBuV  | Line  | Limit  |         |
|    |       | dBuV  | dB     | dB    | dB     | dBuV  | dBuV  | dB     |         |
| 1  | 0.162 | 45.28 | -0.68  | 10.77 | 0.01   | 55.38 | 65.34 | -9.96  | QP      |
| 2  | 0.182 | 43.44 | -0.68  | 10.77 | 0.00   | 53.53 | 64.42 | -10.89 | QP      |
| 3  | 0.206 | 41.99 | -0.67  | 10.76 | 0.00   | 52.08 | 63.36 | -11.28 | QP      |
| 4  | 0.226 | 39.28 | -0.67  | 10.75 | 0.00   | 49.36 | 62.61 | -13.25 | QP      |
| 5  | 0.402 | 19.85 | -0.63  | 10.72 | -0.06  | 29.88 | 47.81 | -17.93 | Average |
| 6  | 0.731 | 24.45 | -0.64  | 10.78 | 0.04   | 34.63 | 46.00 | -11.37 | Average |
| 7  | 0.735 | 36.72 | -0.65  | 10.79 | 0.05   | 46.91 | 56.00 | -9.09  | QP      |
| 8  | 0.779 | 37.92 | -0.65  | 10.80 | 0.05   | 48.12 | 56.00 | -7.88  | QP      |
| 9  | 0.788 | 25.34 | -0.65  | 10.81 | 0.05   | 35.55 | 46.00 | -10.45 | Average |
| 10 | 1.000 | 20.88 | -0.68  | 10.87 | 0.08   | 31.15 | 46.00 | -14.85 | Average |
| 11 | 1.441 | 20.34 | -0.70  | 10.92 | 0.13   | 30.69 | 46.00 | -15.31 | Average |
| 12 | 1.527 | 19.59 | -0.70  | 10.93 | 0.14   | 29.96 | 46.00 | -16.04 | Average |

## Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss + Aux Factor.

**6.1.3 Harmonics Test Result**

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | EN 61000-3-2                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Test Method:      | N/A: See Remark Below                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark            | <p>There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2. For further details, please refer to Clause 7, Note 1 of EN 61000-3-2 which states:</p> <p>“For the following categories of equipment limits are not specified in this edition of the standard.</p> <p>Note 1: Equipment with a rated power of 75W or less, other than lighting equipment.”</p> |

**6.1.4 Flicker Test Result**

|                   |                                                                                                                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | EN 61000-3-3                                                                                                                                                                        |
| Test Method:      | EN 61000-3-3                                                                                                                                                                        |
| Remark:           | <p>As the section 6.1 of EN 6100-3-3, “Devices and Equipment that do(with the utmost probability) not generate relevant voltage fluctuations or flicker need not to be tested”.</p> |

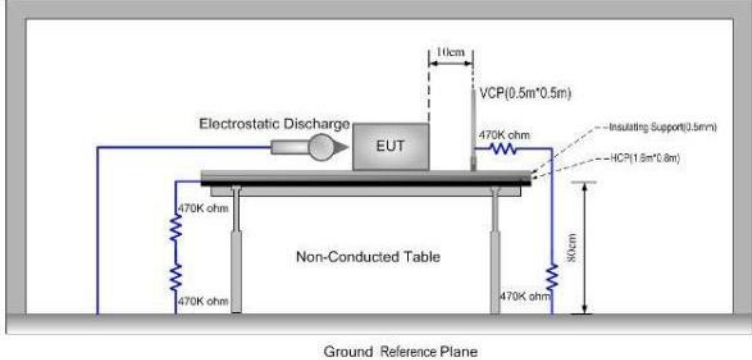
## 6.2 EMS (Immunity)

### 6.2.1 Performance Criteria Description in EN 55035

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Criterion A: | 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 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.                                                                                                                                                                                                                                    |
| Criterion B: | <p>After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena 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.</p> <p>During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.</p> <p>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.</p> |
| Criterion C: | <p>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.</p> <p>Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



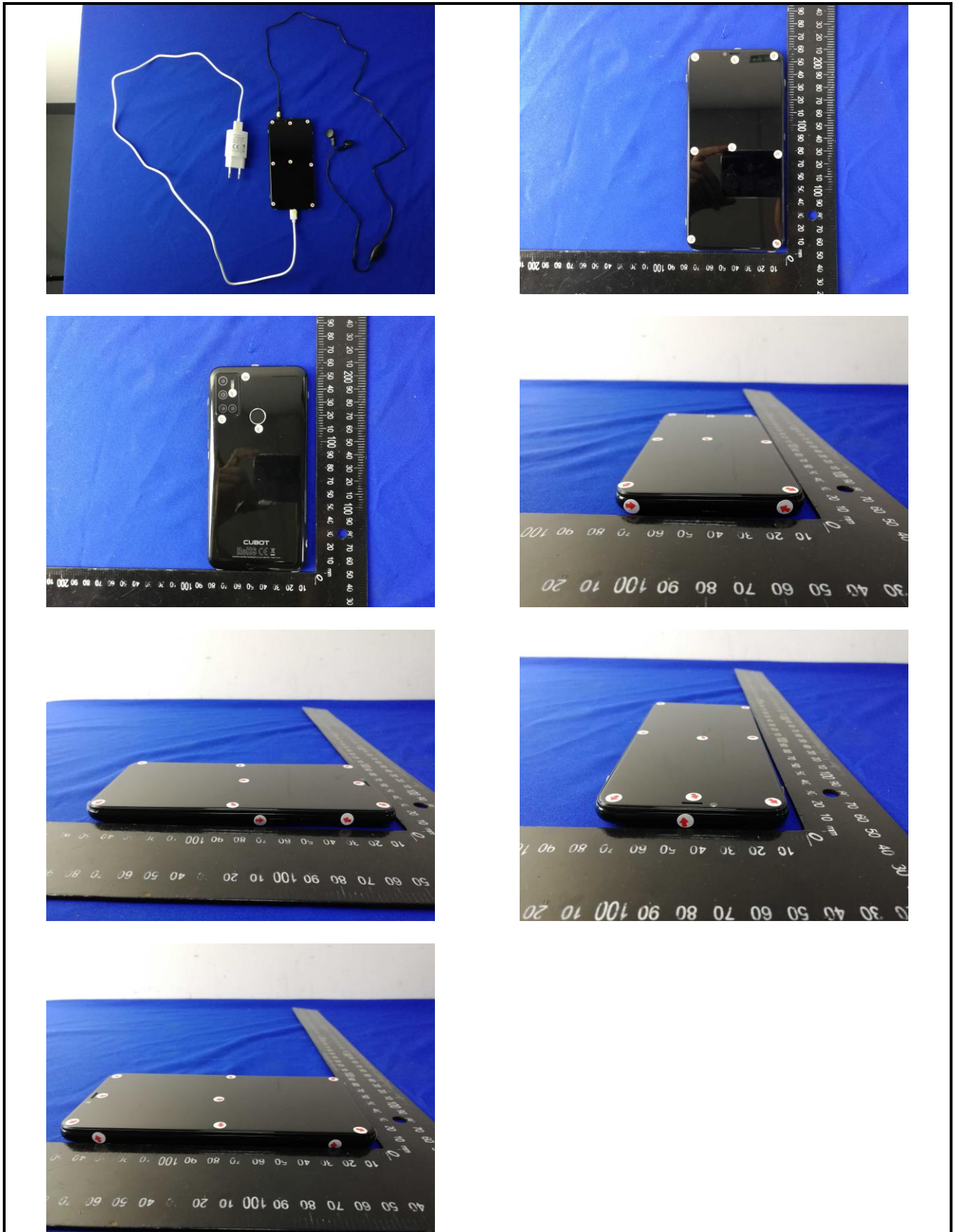
## 6.2.2 Electrostatic Discharge

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:    | EN 55035                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test Method:         | EN61000-4-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Discharge Voltage:   | Contact Discharge, HCP and VCP: $\pm 2\text{kV}$ , $\pm 4\text{kV}$ ,<br>Air Discharge: $\pm 2\text{kV}$ , $\pm 4\text{kV}$ , $\pm 8\text{kV}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Polarity:            | Positive & Negative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Number of Discharge: | Contact Discharge: Minimum 25 times at each test point,<br>Air Discharge: Minimum 10 times at each test point.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Discharge Mode:      | Single Discharge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Discharge Period:    | 1 second minimum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Testsetup:           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Test Procedure:      | <p><b>1) Air discharge:</b><br/>The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure was repeated until all the air discharge completed</p> <p><b>2) Contact discharge:</b><br/>The test was applied on conductive surfaces of EUT. the generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated.</p> <p><b>3) Indirect discharge for horizontal coupling plane</b><br/>At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge. Consideration should be given to exposing all sides of the EUT.</p> <p><b>4) Indirect discharge for vertical coupling plane</b><br/>At least 10 single discharges were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.</p> |
| Testenvironment:     | Temp.: 26°C    Humid.: 54%    Press.: 101kPa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test Instruments:    | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Test mode:           | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test results:        | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Measurement Record:

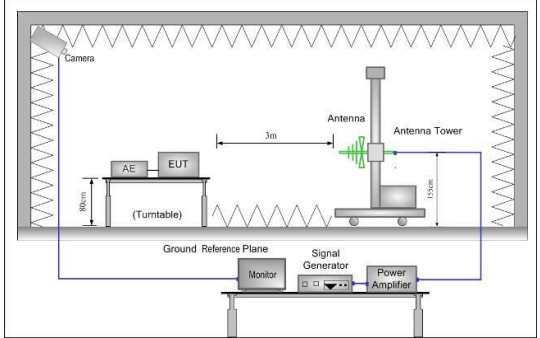
|                                                              |                                                 |                   |                                      |        |
|--------------------------------------------------------------|-------------------------------------------------|-------------------|--------------------------------------|--------|
| Test mode:                                                   | Charging & Recording mode                       |                   |                                      |        |
| Test points:                                                 | I: Please refer to red arrows as below plots    |                   |                                      |        |
|                                                              | II:Please refer to yellow arrows as below plots |                   |                                      |        |
| Direct discharge                                             |                                                 |                   |                                      |        |
| Discharge Voltage (KV)                                       | Type of discharge                               | Test points       | Observations (Performance Criterion) | Result |
| ± 2, ± 4                                                     | Contact                                         | II                | A                                    | Pass   |
| ± 2, ± 4,± 8                                                 | Air                                             | I                 | A                                    | Pass   |
| Indirect discharge                                           |                                                 |                   |                                      |        |
| Discharge Voltage (KV)                                       | Type of discharge                               | Test points       | Observation Performance              | Result |
| ± 2, ± 4                                                     | HCP-Bottom/Top/ Front/Back/Left/Right           | Edge of the HCP   | A                                    | Pass   |
| ± 2, ± 4                                                     | VCP-Front/Back /Left/Right                      | Center of the VCP | A                                    | Pass   |
| Remark:                                                      |                                                 |                   |                                      |        |
| 1. A: No degradation in performance of the EUT was observed. |                                                 |                   |                                      |        |
| 2. Red arrow: Air discharge test points.                     |                                                 |                   |                                      |        |
| 3. Yellow arrow: Contact discharge test points.              |                                                 |                   |                                      |        |

ESD Test points as below:





## 6.2.3 Continuous RF electromagnetic radiated field disturbances

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | EN 55035                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Method:           | EN61000-4-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Frequency range:       | Swept test:80MHz to 1GHz<br>Spot test: 1800MHz,2600MHz,3500MHz,5000MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Level:            | 3V/m<br>Audio output function: 80MHz-1000MHz: 0dB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Modulation:            | 80%, 1kHz Amplitude Modulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Performance Criterion: | Criteria A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test setup:            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test Procedure:        | <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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).</li> <li>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 1 % of the preceding frequency value.</li> <li>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 5 s.</li> <li>6. The test normally was performed with the generating antenna facing each side of the EUT.</li> <li>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.</li> <li>8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.</li> </ol> |
| Test environment:      | Temp.: 25°C Humid.: 52% Press.: 1012mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Instruments:      | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test mode:             | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Test results:          | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**Measurement Record:**

Test mode: Charging &amp; Recording mode

Continuous RF electromagnetic radiated field disturbances swept test

| Frequency                                                                    | Level | Modulation                                                           | Antenna Polarization | EUT Face | Observations (Performance Criterion) | Result |
|------------------------------------------------------------------------------|-------|----------------------------------------------------------------------|----------------------|----------|--------------------------------------|--------|
| 80 MHz-1 GHz                                                                 | 3 V/m | 1 kHz,<br>80 % Amp. Mod,<br>1 % increment,<br>dwell<br>time=5seconds | V                    | Front    | A                                    | Pass   |
|                                                                              |       |                                                                      | H                    |          | A                                    | Pass   |
|                                                                              |       |                                                                      | V                    | Rear     | A                                    | Pass   |
|                                                                              |       |                                                                      | H                    |          | A                                    | Pass   |
|                                                                              |       |                                                                      | V                    | Left     | A                                    | Pass   |
|                                                                              |       |                                                                      | H                    |          | A                                    | Pass   |
|                                                                              |       |                                                                      | V                    | Right    | A                                    | Pass   |
|                                                                              |       |                                                                      | H                    |          | A                                    | Pass   |
|                                                                              |       |                                                                      | V                    | Top      | A                                    | Pass   |
|                                                                              |       |                                                                      | H                    |          | A                                    | Pass   |
|                                                                              |       |                                                                      | V                    | Bottom   | A                                    | Pass   |
|                                                                              |       |                                                                      | H                    |          | A                                    | Pass   |
| Remarks:<br>A: No degradation in the performance of the E.U.T. was observed. |       |                                                                      |                      |          |                                      |        |

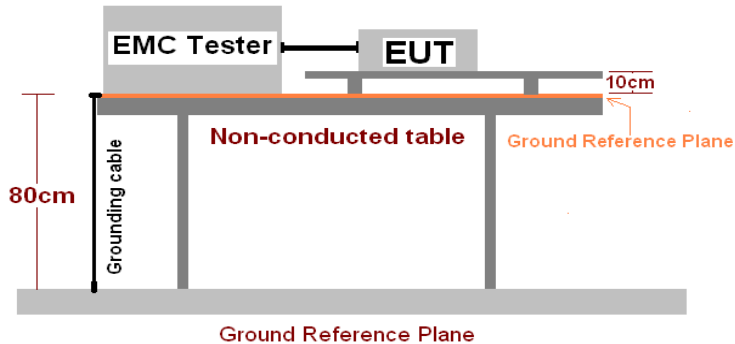
Continuous RF electromagnetic radiated field disturbances spot test

| Frequency<br>(+/-1%)                                                         | Level | Modulation                                                           | Antenna<br>Polarization | EUT Face | Observations<br>(Performance<br>Criterion) | Result |
|------------------------------------------------------------------------------|-------|----------------------------------------------------------------------|-------------------------|----------|--------------------------------------------|--------|
| 1800MHz,<br>2600MHz,<br>3500MHz,<br>5000MHz                                  | 3V/m  | 1 kHz,<br>80 % Amp. Mod,<br>1 % increment,<br>dwell<br>time=5seconds | V                       | Front    | A                                          | Pass   |
|                                                                              |       |                                                                      | H                       |          | A                                          | Pass   |
|                                                                              |       |                                                                      | V                       | Rear     | A                                          | Pass   |
|                                                                              |       |                                                                      | H                       |          | A                                          | Pass   |
|                                                                              |       |                                                                      | V                       | Left     | A                                          | Pass   |
|                                                                              |       |                                                                      | H                       |          | A                                          | Pass   |
|                                                                              |       |                                                                      | V                       | Right    | A                                          | Pass   |
|                                                                              |       |                                                                      | H                       |          | A                                          | Pass   |
|                                                                              |       |                                                                      | V                       | Top      | A                                          | Pass   |
|                                                                              |       |                                                                      | H                       |          | A                                          | Pass   |
|                                                                              |       |                                                                      | V                       | Bottom   | A                                          | Pass   |
|                                                                              |       |                                                                      | H                       |          | A                                          | Pass   |
| Remarks:<br>A: No degradation in the performance of the E.U.T. was observed. |       |                                                                      |                         |          |                                            |        |

Audio output function:

| Frequency                                                                    | Interference Ratio Level (dB) | Antenna Polarization | Observations (Performance Criterion) | Result |
|------------------------------------------------------------------------------|-------------------------------|----------------------|--------------------------------------|--------|
| 80MHz-1000MHz                                                                | 0                             | H                    | A                                    | Pass   |
|                                                                              |                               | V                    | A                                    | Pass   |
| Remarks:<br>A: No degradation in the performance of the E.U.T. was observed. |                               |                      |                                      |        |

## 6.2.4 Electrical Fast Transients

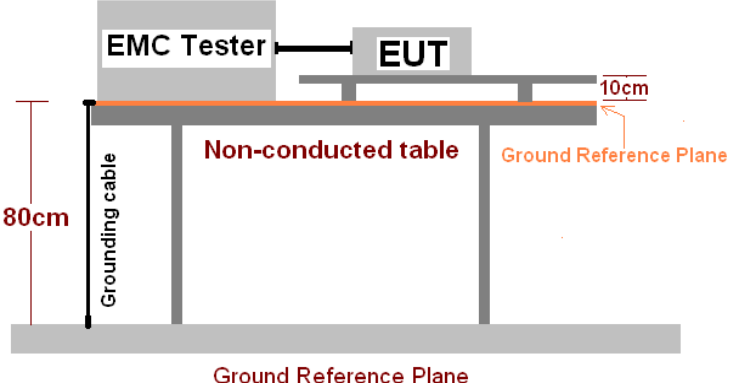
|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |         |     |         |          |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------|-----|---------|----------|
| Test Requirement:      | EN 55035                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |         |     |         |          |
| Test Method:           | EN61000-4-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |         |     |         |          |
| Test Level:            | 1.0kV on AC port                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |         |     |         |          |
| Polarity:              | Positive & Negative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |         |     |         |          |
| Repetition Frequency:  | 5kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |         |     |         |          |
| Burst Duration:        | 15ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |         |     |         |          |
| Burst Period:          | 300ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |         |     |         |          |
| Test Duration:         | 2 minute per level & polarity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |         |     |         |          |
| Performance Criterion: | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |         |     |         |          |
| Test setup:            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |         |     |         |          |
| Test Procedure:        | <p>The EUT and its simulators were placed on the ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane was project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane was more than 0.5m. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables.</p> <p><b>Test on Signal Ports, Telecommunication Ports and Control Ports:</b><br/>The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 2 minutes.</p> <p><b>Test on power supply ports:</b><br/>The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal. Each of the Line and Neutral conductors is impressed with burst noise for 2 minutes. The length of the signal and power lines between the coupling device and the EUT is 0.5m</p> |      |         |     |         |          |
| Test environment:      | Temp.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 25°C | Humid.: | 63% | Press.: | 1050mbar |
| Test Instruments:      | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |         |     |         |          |
| Test mode:             | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |         |     |         |          |
| Test results:          | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |         |     |         |          |

**Measurement Record:**

Test mode: Charging &amp; Recording mode

| Lead under Test                                                                           | Level ( $\pm$ kV) | Coupling<br>Direct/Clamp | Observations<br>(Performance Criterion) | Result |
|-------------------------------------------------------------------------------------------|-------------------|--------------------------|-----------------------------------------|--------|
| L                                                                                         | $\pm 1.0$         | Direct                   | A                                       | Pass   |
| N                                                                                         | $\pm 1.0$         | Direct                   | A                                       | Pass   |
| L-N                                                                                       | $\pm 1.0$         | Direct                   | A                                       | Pass   |
| <i>Remark:</i><br><i>A: No degradation in the performance of the E.U.T. was observed.</i> |                   |                          |                                         |        |

## 6.2.5 Surge

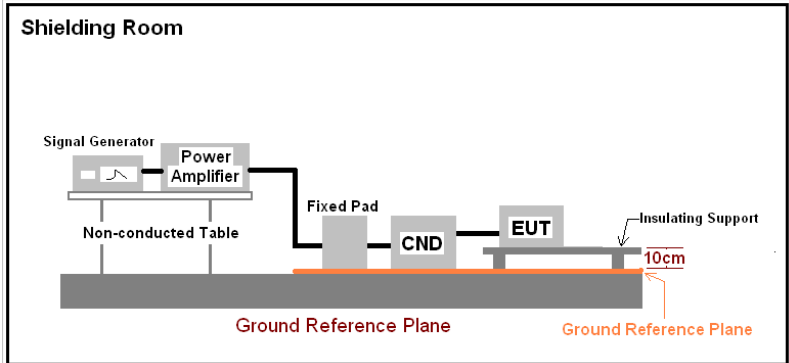
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |         |     |         |          |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------|-----|---------|----------|
| Test Requirement:           | EN 55035                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |         |     |         |          |
| Test Method:                | EN61000-4-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |         |     |         |          |
| Test Level:                 | $\pm 1$ kV Live to Neutral: Differential mode<br>$\pm 2$ kV Live to Earth or Neutral to Earth: Common mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |         |     |         |          |
| Polarity:                   | Positive & Negative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |         |     |         |          |
| Generator source impedance: | 2 $\Omega$ (line-line coupling)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |         |     |         |          |
| Test Interval:              | 60s between each surge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |         |     |         |          |
| No. of surges:              | 5 positive, 5 negative at 0°, 90°, 180°, 270°.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |         |     |         |          |
| Performance Criterion:      | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |         |     |         |          |
| Test setup:                 |  <p>The diagram illustrates the test setup. An EMC Tester and an EUT (Equipment Under Test) are positioned on a non-conducted table. The table is 80cm high. A grounding cable is connected to the table. The EUT is 10cm above the ground reference plane. The table is also 80cm high.</p>                                                                                                                                                                                                                                |      |         |     |         |          |
| Test Procedure:             | <ol style="list-style-type: none"> <li>1) For line-to-line coupling mode, provide a 1kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points, and for active line / neutral lines to ground are same except test level is 2kV.</li> <li>2) At least 5 positive and 5 negative (polarity) tests with a maximum 1/minrepetition rate are applied during test.</li> <li>3) Different phase angles are done individually.</li> <li>4) Record the EUT operating situation during compliance test and decide the EUTimmunity criterion for above each test.</li> </ol> |      |         |     |         |          |
| Test environment:           | Temp.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 26°C | Humid.: | 53% | Press.: | 1012mbar |
| Test Instruments:           | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |         |     |         |          |
| Test mode:                  | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |         |     |         |          |
| Test results:               | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |         |     |         |          |

**Measurement Record:**

Test mode: Charging &amp; Recording mode

| Location                                                                                                    | Level(kV) | Pulse No | Surge Interval | Phase(deg) | Observations<br>(Performance Criterion) | Result |
|-------------------------------------------------------------------------------------------------------------|-----------|----------|----------------|------------|-----------------------------------------|--------|
| L-N                                                                                                         | ± 1       | 5        | 60s            | 0°         | A                                       | Pass   |
|                                                                                                             |           |          |                | 90°        | A                                       | Pass   |
|                                                                                                             |           |          |                | 180°       | A                                       | Pass   |
|                                                                                                             |           |          |                | 270°       | A                                       | Pass   |
| Remark:<br>A: During the test, The EUT works normal, and after the test, the function of the EUT is normal. |           |          |                |            |                                         |        |

### 6.2.6 Continuous induced RF disturbances

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |         |     |         |          |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------|-----|---------|----------|
| Test Requirement:      | EN 55035                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |         |     |         |          |
| Test Method:           | EN61000-4-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |         |     |         |          |
| Frequency range:       | 0.15MHz to 80MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |         |     |         |          |
| Test Level:            | 0.15-10MHz:3V<br>10-30MHz:3-1V<br>30-80MHz:1V<br>Audio output function: 0.15MHz-30MHz: -20dB, 30MHz-80MHz: -10dB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |         |     |         |          |
| Modulation:            | 80%, 1kHz Amplitude Modulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |         |     |         |          |
| Performance Criterion: | Criteria A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |         |     |         |          |
| Test setup:            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |         |     |         |          |
| Test Procedure:        | <ol style="list-style-type: none"> <li>1) Let the EUT work in test mode and test it.</li> <li>2) The EUT are placed on an insulating support 0.1m high above a groundreference plane. CDN (coupling and decoupling device) is placed on theground plane about 0.3m from EUT. Cables between CDN and EUT are asshort as possible, and their height above the ground reference plane shall bebetween 30 and 50 mm (where possible).</li> <li>3) The disturbance signal described below is injected to EUT through CDN.</li> <li>4) The EUT operates within its operational mode(s) under intended climaticconditions after power on.</li> <li>5) The frequency range is swept from 0.150MHz to 80MHz using 3V signal level,and with the disturbance signal 80% amplitude modulated with a 1 kHz sinewave.</li> <li>6) The rate of sweep shall not exceed <math>1.5 \times 10^{-3}</math> decades/s. Where the frequency isswept incrementally; the step size shall not exceed 1% of the start andthereafter 1% of the preceding frequency value.</li> <li>7) Recording the EUT operating situation during compliance testing and decidethe EUT immunity criterion.</li> </ol> |      |         |     |         |          |
| Test environment:      | Temp.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 24°C | Humid.: | 51% | Press.: | 1012mbar |
| Test Instruments:      | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |         |     |         |          |
| Test mode:             | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |         |     |         |          |
| Test results:          | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |         |     |         |          |

**Measurement Record:**

Test mode: Charging &amp; Recording mode

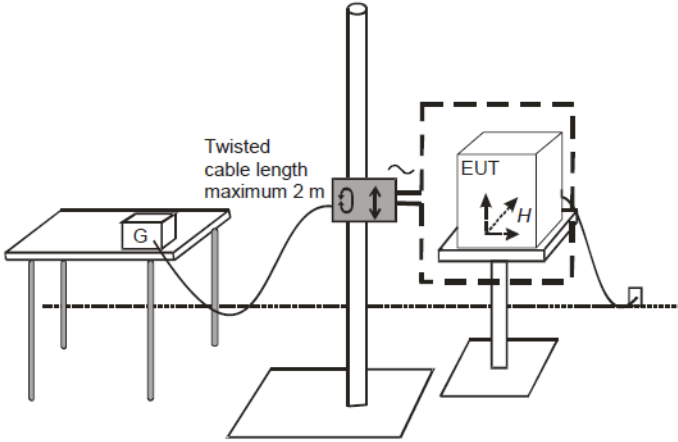
| Frequency                                       | Injected Position | Test Level | Modulation          | Step Size | Dwell Time | Observations (Performance Criterion) | Result |
|-------------------------------------------------|-------------------|------------|---------------------|-----------|------------|--------------------------------------|--------|
| 150kHz to 10MHz                                 | AC Main           | 3V         | 80%, 1kHz Amp. Mod. | 1%        | 2s         | A                                    | Pass   |
| 10MHz to 30MHz                                  |                   | 3V to1V    |                     |           |            | A                                    | Pass   |
| 30MHz to 80MHz                                  |                   | 1V         |                     |           |            | A                                    | Pass   |
| Remark:<br>A: No loss of function was observed. |                   |            |                     |           |            |                                      |        |

Audio output function:

| Frequency                                              | Interference Ratio Level (dB) | Observations (Performance Criterion) | Result |
|--------------------------------------------------------|-------------------------------|--------------------------------------|--------|
| 0.15MHz-30MHz                                          | -20                           | A                                    | Pass   |
| 30MHz-80MHz                                            | -10                           | A                                    | Pass   |
| <i>Remark:</i><br>A: No loss of function was observed. |                               |                                      |        |



## 6.2.7 Power frequency magnetic field

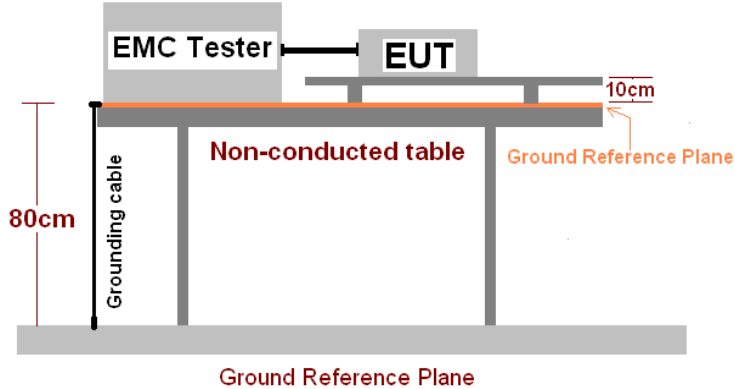
|                        |                                                                                                                                                                                                                                                                                         |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | EN 55035                                                                                                                                                                                                                                                                                |
| Test Method:           | EN61000-4-8                                                                                                                                                                                                                                                                             |
| Test Frequency:        | 50/60 Hz                                                                                                                                                                                                                                                                                |
| Test Level:            | 1 A/m                                                                                                                                                                                                                                                                                   |
| Performance Criterion: | Criteria A                                                                                                                                                                                                                                                                              |
| Test setup:            |                                                                                                                                                                                                       |
| Test Procedure:        | <p>The EUT place center of the test magnetic field coils.</p> <p>The plane of the inductive coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.</p> <p>The signal generator generates a magnetic field of 1A/m for testing.</p> |
| Test environment:      | Temp.: 24°C Humid.: 51% Press.: 1012mbar                                                                                                                                                                                                                                                |
| Test Instruments:      | Refer to section 5.10 for details                                                                                                                                                                                                                                                       |
| Test mode:             | Refer to section 5.3 for details                                                                                                                                                                                                                                                        |
| Test results:          | Passed                                                                                                                                                                                                                                                                                  |

## Measurement Record:

Test mode: Charging &amp; Recording mode

| Test Frequency (Hz)                             | Test Level (A/m) | Observations (Performance Criterion) | Result |
|-------------------------------------------------|------------------|--------------------------------------|--------|
| 50                                              | 1                | A                                    | Pass   |
| 60                                              | 1                | A                                    | Pass   |
| Remark:<br>A: No loss of function was observed. |                  |                                      |        |

### 6.2.8 Voltage Dips and Voltage Interruptions

|                              |                                                                                                                                                                                                                                                                             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:            | EN 55035                                                                                                                                                                                                                                                                    |
| Test Method:                 | EN61000-4-11                                                                                                                                                                                                                                                                |
| Test Level:                  | 0% of VT(Supply Voltage) for 0.5 period<br>70% of VT(Supply Voltage) for 25 period<br>0% of VT(Supply Voltage) for 250 period                                                                                                                                               |
| No. of Dips / Interruptions: | 3 per Level                                                                                                                                                                                                                                                                 |
| Performance Criterion:       | >95% VD, 0.5 period----Performance criterion: B<br>30% VD, 25 period----Performance criterion: C<br>>95% VI, 250 period----Performance criterion: C                                                                                                                         |
| Test setup:                  |                                                                                                                                                                                           |
| Test Procedure:              | <ol style="list-style-type: none"> <li>1) The EUT and test generator were setup as shown on above setup photo.</li> <li>2) The interruptions are introduced at selected phase angles with specified duration.</li> <li>3) Record any degradation of performance.</li> </ol> |
| Test environment:            | Temp.: 25°C Humid.: 63% Press.: 1050mbar                                                                                                                                                                                                                                    |
| Test Instruments:            | Refer to section 5.10 for details                                                                                                                                                                                                                                           |
| Test mode:                   | Refer to section 5.3 for details                                                                                                                                                                                                                                            |
| Test results:                | Passed                                                                                                                                                                                                                                                                      |

#### Measurement Record:

Test mode: Charging & Recording mode

| Test Level % $U_T$ | Duration (Periods) | Phase angle         | No of dropout | Time between dropout | Observations (Performance Criterion) | Result |
|--------------------|--------------------|---------------------|---------------|----------------------|--------------------------------------|--------|
| 0                  | 0.5                | 0°, 90°, 180°, 270° | 3             | 10ms                 | A                                    | Pass   |
| 70                 | 25                 | 0°, 90°, 180°, 270° | 3             | 500ms                | A                                    | Pass   |
| 0                  | 250                | 0°, 90°, 180°, 270° | 3             | 5000ms               | B                                    | Pass   |

Remark:

A: No loss of function was observed.

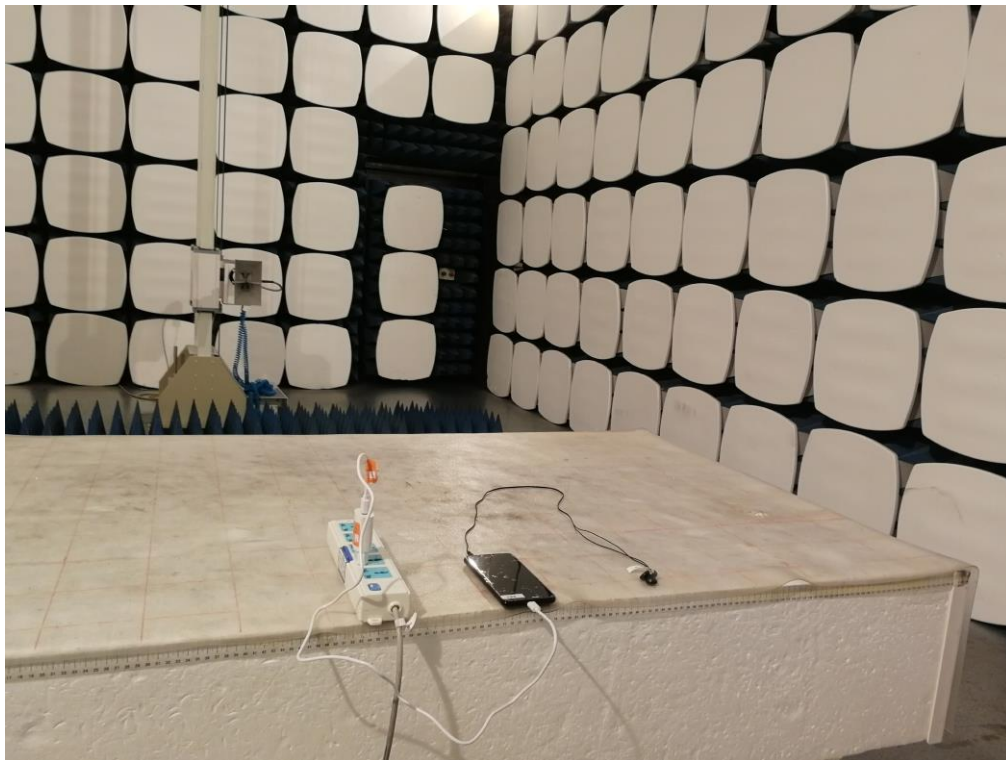
B: After the test, the equipment can operate as intended without operator intervention. No loss of function was observed.

## 7 Test Setup Photo

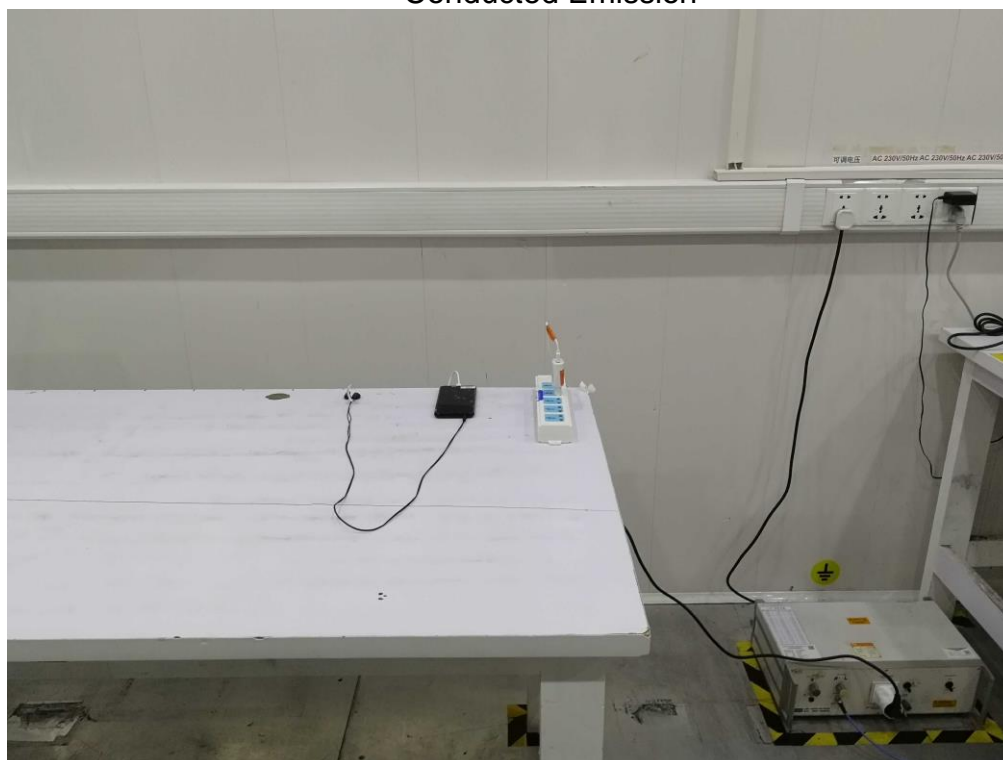
Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



## Conducted Emission

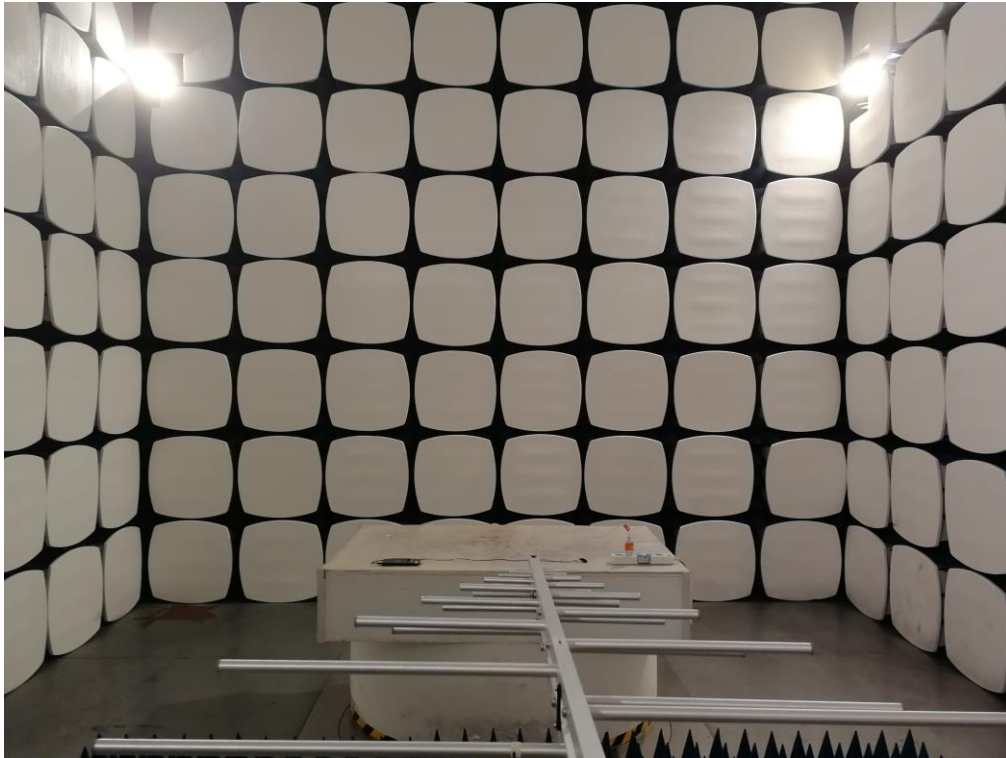


## ESD

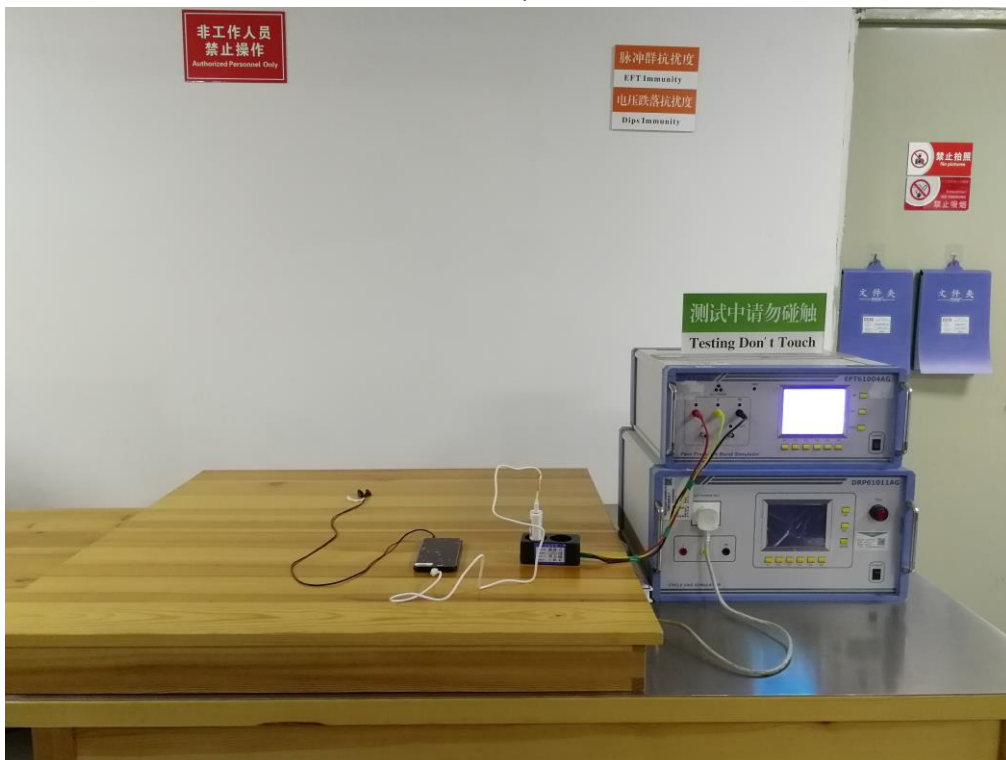




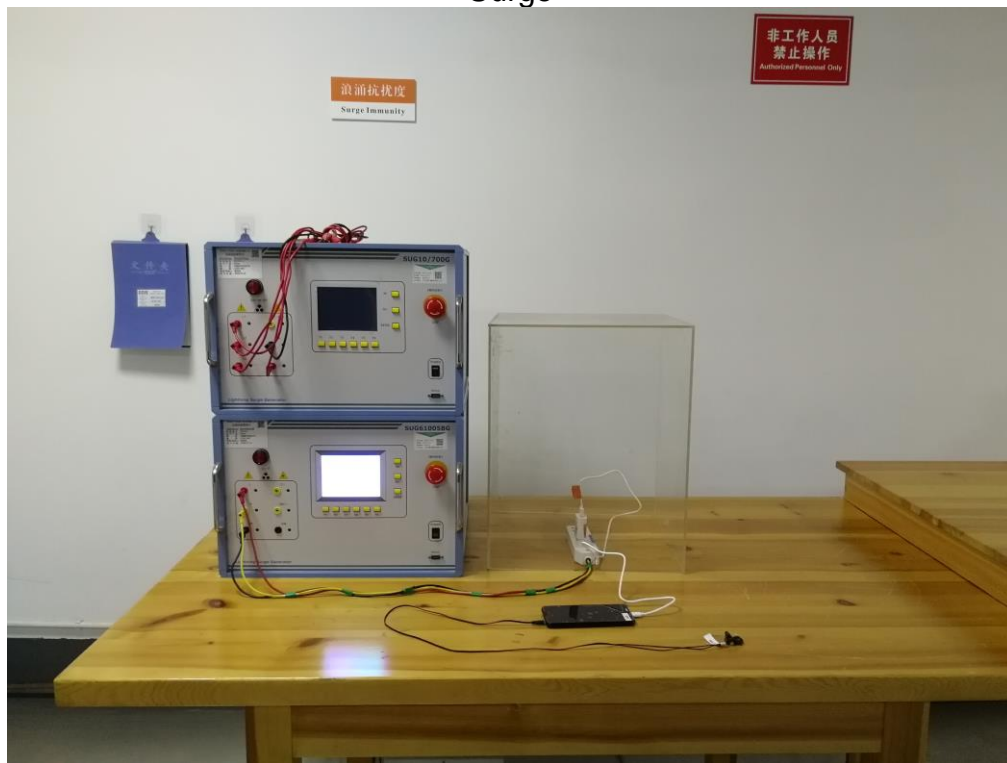
R/S



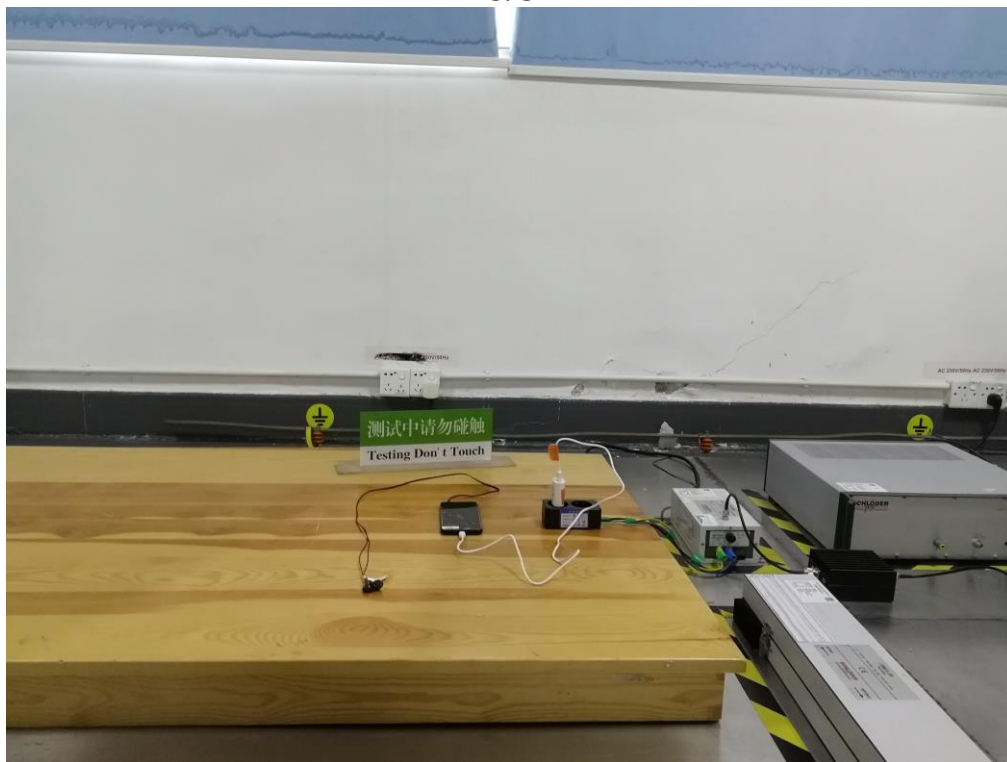
EFT/B



Surge



C/S



PFMF



V-dips



## **8 EUT Constructional Details**

Reference to the test report No. CCISE200804401

-----End of report-----