

# EMC TEST REPORT



Report No.: 17071016-FCC-E

Supersede Report No: N/A

|                                                                                                                                      |                                                                        |  |
|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--|
| Applicant                                                                                                                            | HONG KONG IPRO TECHNOLOGY CO.,LIMITED                                  |  |
| Product Name                                                                                                                         | Smart Phone                                                            |  |
| Model No.                                                                                                                            | MEGA2                                                                  |  |
| Serial No.                                                                                                                           | N/A                                                                    |  |
| Test Standard                                                                                                                        | FCC Part 15 Subpart B Class B:2016, ANSI C63.4: 2014                   |  |
| Test Date                                                                                                                            | September 28 to October 18, 2017                                       |  |
| Issue Date                                                                                                                           | October 19, 2017                                                       |  |
| Test Result                                                                                                                          | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |  |
| Equipment complied with the specification <input checked="" type="checkbox"/>                                                        |                                                                        |  |
| Equipment did not comply with the specification <input type="checkbox"/>                                                             |                                                                        |  |
| <i>Evans He</i>                                                                                                                      | <i>David Huang</i>                                                     |  |
| Evans He<br>Test Engineer                                                                                                            | David Huang<br>Checked By                                              |  |
| This test report may be reproduced in full only<br>Test result presented in this test report is applicable to the tested sample only |                                                                        |  |

Issued by:

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## Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

### Accreditations for Conformity Assessment

| Country/Region | Scope                              |
|----------------|------------------------------------|
| USA            | EMC, RF/Wireless, SAR, Telecom     |
| Canada         | EMC, RF/Wireless, SAR, Telecom     |
| Taiwan         | EMC, RF, Telecom, SAR, Safety      |
| Hong Kong      | RF/Wireless, SAR, Telecom          |
| Australia      | EMC, RF, Telecom, SAR, Safety      |
| Korea          | EMI, EMS, RF, SAR, Telecom, Safety |
| Japan          | EMI, RF/Wireless, SAR, Telecom     |
| Singapore      | EMC, RF, SAR, Telecom              |
| Europe         | EMC, RF, SAR, Telecom, Safety      |

|             |                |
|-------------|----------------|
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## 1. Report Revision History

| Report No.     | Report Version | Description | Issue Date       |
|----------------|----------------|-------------|------------------|
| 17071016-FCC-E | NONE           | Original    | October 19, 2017 |
|                |                |             |                  |
|                |                |             |                  |
|                |                |             |                  |
|                |                |             |                  |
|                |                |             |                  |
|                |                |             |                  |

## 2. Customer information

|                  |                                                                          |
|------------------|--------------------------------------------------------------------------|
| Applicant Name   | HONG KONG IPRO TECHNOLOGY CO.,LIMITED                                    |
| Applicant Add    | FLAT/RM A3, 9/F SILVERCORP INT TOWER 707-713 NATHAN RD MONGKOK, HONGKONG |
| Manufacturer     | HONG KONG IPRO TECHNOLOGY CO.,LIMITED                                    |
| Manufacturer Add | FLAT/RM A3, 9/F SILVERCORP INT TOWER 707-713 NATHAN RD MONGKOK, HONGKONG |

## 3. Test site information

|                                     |                                                                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Lab performing tests                | SIEMIC (Shenzhen-China) LABORATORIES                                                                                                         |
| Lab Address                         | Zone A, Floor 1, Building 2 Wan Ye Long Technology Park<br>South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China<br>518108 |
| FCC Test Site No.                   | 535293                                                                                                                                       |
| IC Test Site No.                    | 4842E-1                                                                                                                                      |
| Test Software of Radiated Emission  | Radiated Emission Program-To Shenzhen v2.0                                                                                                   |
| Test Software of Conducted Emission | EZ-EMC(ver.lcp-03A1)                                                                                                                         |

|             |                |
|-------------|----------------|
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#### 4. Equipment under Test (EUT) Information

Description of EUT: Smart Phone

Main Model: MEGA2

Serial Model: N/A

|               |                            |
|---------------|----------------------------|
| Antenna Gain: | GSM850: -2.0dBi            |
|               | PCS1900: -1.0dBi           |
|               | UMTS-FDD Band V: 1.5dBi    |
|               | UMTS-FDD Band II: 1.5dBi   |
|               | Bluetooth/BLE/WIFI: 2.0dBi |
|               | GPS: 2.0dBi                |

Antenna Type: PIFA antenna

|              |                                 |
|--------------|---------------------------------|
| Input Power: | Adapter:                        |
|              | Model: MEGA2                    |
|              | Input: AC100-240V~50/60Hz, 0.3A |
|              | Output: DC 5.0V,2000mA          |
|              | Battery:                        |
|              | Spec: 3.8V, 2550mAh, 9.69Wh     |

Equipment Category : JBP

|                     |                                       |
|---------------------|---------------------------------------|
| Type of Modulation: | GSM / GPRS: GMSK                      |
|                     | EGPRS: GMSK                           |
|                     | UMTS-FDD: QPSK                        |
|                     | 802.11b/g/n: DSSS, OFDM               |
|                     | Bluetooth: GFSK, $\pi/4$ DQPSK, 8DPSK |
|                     | BLE: GFSK                             |
|                     | GPS: BPSK                             |

RF Operating Frequency (ies):

- GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz
- PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz
- UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz
- UMTS-FDD Band II TX: 1852.4 ~ 1907.6 MHz;  
RX: 1932.4 ~ 1987.6 MHz
- WIFI: 802.11b/g/n(20M): 2412-2462 MHz

WIFI: 802.11n(40M): 2422-2452 MHz

Bluetooth& BLE: 2402-2480 MHz

GPS: 1575.42 MHz

GSM 850: 124CH

PCS1900: 299CH

UMTS-FDD Band V: 102CH

UMTS-FDD Band II: 277CH

Number of Channels:

WIFI :802.11b/g/n(20M): 11CH

WIFI :802.11n(40M): 7CH

Bluetooth: 79CH

BLE: 40CH

GPS:1CH

Port:

USB Port, Earphone Port

Trade Name :

IPRO

FCC ID:

PQ4IPROMEGA2

GPRS/ EGPRS Multi-slot class

8/10/11/12

Date EUT received:

September 26, 2017

Test Date(s):

September 28 to October 18, 2017

## 5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

| FCC Rules                 | Description of Test               | Result     |
|---------------------------|-----------------------------------|------------|
| §15.107; ANSI C63.4: 2014 | AC Power Line Conducted Emissions | Compliance |
| §15.109; ANSI C63.4: 2014 | Radiated Emissions                | Compliance |

### Measurement Uncertainty

| Parameter                                           | Uncertainty |
|-----------------------------------------------------|-------------|
| AC Power Line Conducted Emissions<br>(150kHz~30MHz) | ±3.11dB     |
| Radiated Emission(30MHz~1GHz)                       | ±5.12dB     |
| Radiated Emission(1GHz~6GHz)                        | ±5.34dB     |

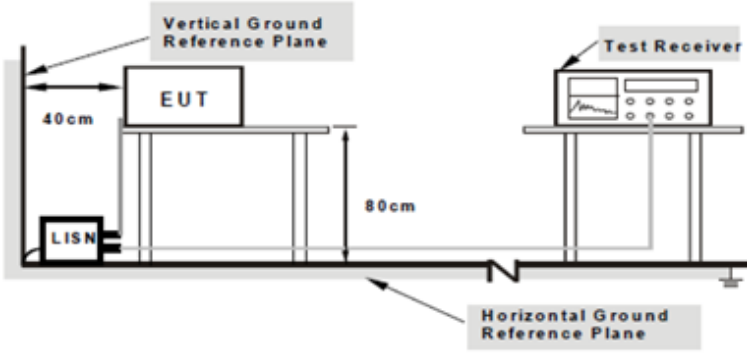
## 6. Measurements, Examination And Derived Results

### 6.1 AC Power Line Conducted Emissions

|                      |                    |
|----------------------|--------------------|
| Temperature          | 23 °C              |
| Relative Humidity    | 51%                |
| Atmospheric Pressure | 1020mbar           |
| Test date :          | September 30, 2017 |
| Tested By :          | Evans He           |

#### Requirement(s):

| Spec         | Item | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Applicable                                                                            |                           |              |  |    |         |            |         |         |         |    |    |        |    |    |
|--------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------|--------------|--|----|---------|------------|---------|---------|---------|----|----|--------|----|----|
| 47CFR§15.107 | a)   | For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu] H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges. |  |                           |              |  |    |         |            |         |         |         |    |    |        |    |    |
|              |      | <table><tr><th rowspan="2">Frequency ranges<br/>(MHz)</th><th colspan="2">Limit (dBµV)</th></tr><tr><th>QP</th><th>Average</th></tr><tr><td>0.15 ~ 0.5</td><td>66 – 56</td><td>56 – 46</td></tr><tr><td>0.5 ~ 5</td><td>56</td><td>46</td></tr><tr><td>5 ~ 30</td><td>60</td><td>50</td></tr></table>                                                                                                                                                                      |                                                                                       | Frequency ranges<br>(MHz) | Limit (dBµV) |  | QP | Average | 0.15 ~ 0.5 | 66 – 56 | 56 – 46 | 0.5 ~ 5 | 56 | 46 | 5 ~ 30 | 60 | 50 |
|              |      | Frequency ranges<br>(MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                       |                           | Limit (dBµV) |  |    |         |            |         |         |         |    |    |        |    |    |
|              |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       | QP                        | Average      |  |    |         |            |         |         |         |    |    |        |    |    |
|              |      | 0.15 ~ 0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                       | 66 – 56                   | 56 – 46      |  |    |         |            |         |         |         |    |    |        |    |    |
|              |      | 0.5 ~ 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       | 56                        | 46           |  |    |         |            |         |         |         |    |    |        |    |    |
| 5 ~ 30       | 60   | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                       |                           |              |  |    |         |            |         |         |         |    |    |        |    |    |

|            |                                                                                                                                                                                                                                                                       |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Setup |  <p>Note: 1.Support units were connected to second LISN.<br/>2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.</p> |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                                                                                                                                                                                                                    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Procedure | <ol style="list-style-type: none"> <li>The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.</li> <li>The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.</li> </ol> |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | 3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.<br>4. All other supporting equipment were powered separately from another main supply.<br>5. The EUT was switched on and allowed to warm up to its normal operating condition.<br>6. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.<br>7. High peaks, relative to the limit line, The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz.<br>8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power). |
| Remark |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

|               |          |
|---------------|----------|
| Test Mode 1 : | USB Mode |
|---------------|----------|

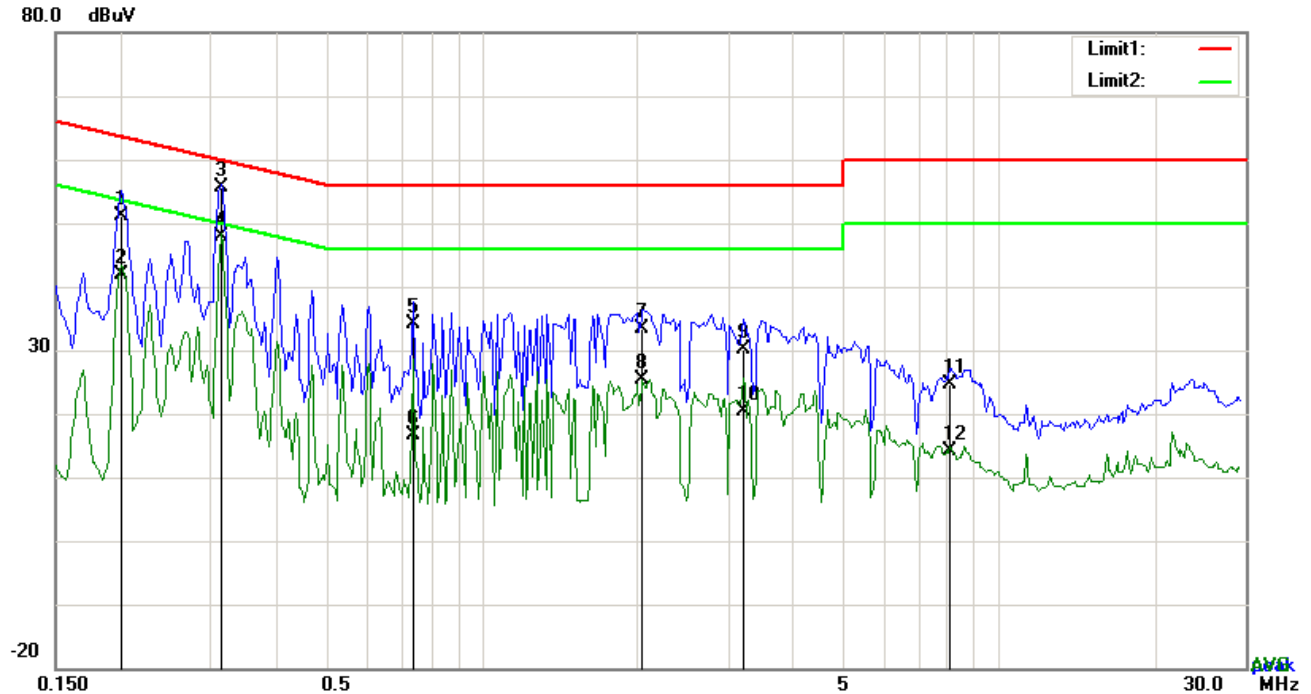
|               |          |
|---------------|----------|
| Test Mode 2 : | MP4 Mode |
|---------------|----------|

|               |             |
|---------------|-------------|
| Test Mode 3 : | Camera Mode |
|---------------|-------------|

|               |         |
|---------------|---------|
| Test Mode 4 : | FM Mode |
|---------------|---------|

All modes were investigated. The results below show only the worst case

**Test Mode 1 : USB Mode**

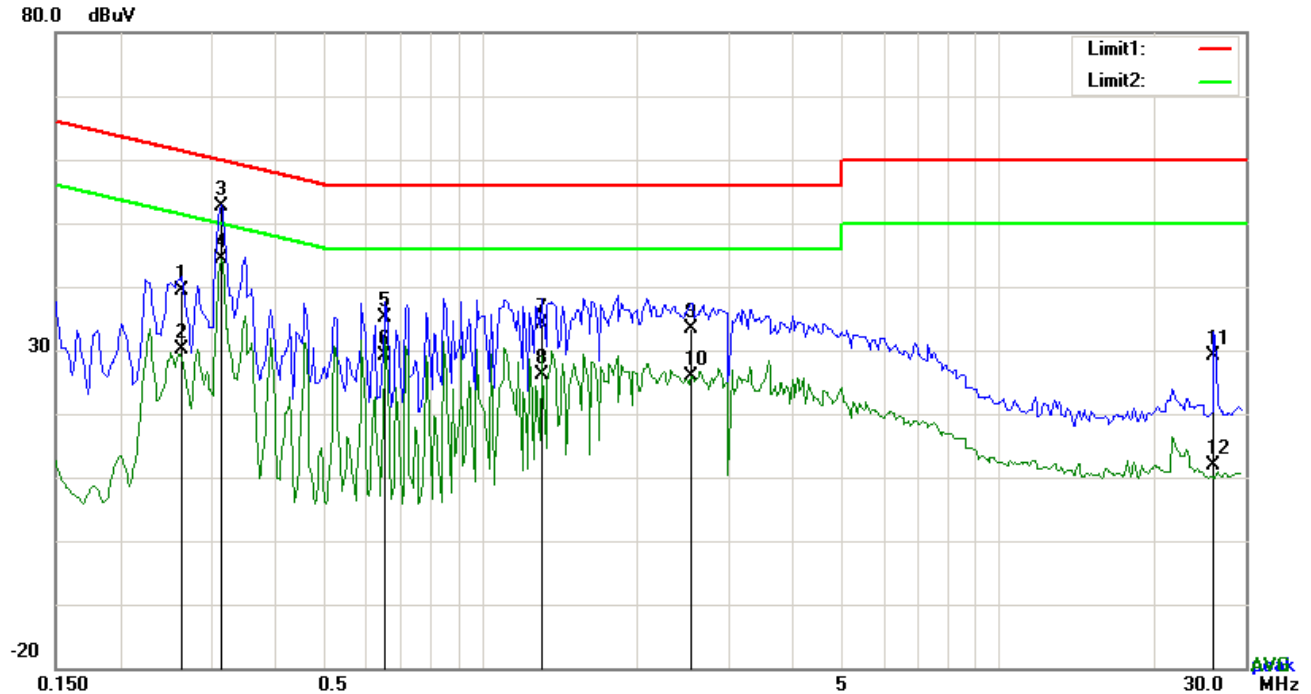


**Test Data**

**Phase Line Plot at 120Vac, 60Hz**

| No. | P/L | Frequency | Reading | Detector | Corrected | Result | Limit  | Margin |
|-----|-----|-----------|---------|----------|-----------|--------|--------|--------|
|     |     | (MHz)     | (dBuV)  |          | (dB)      | (dBuV) | (dBuV) | (dB)   |
| 1   | L1  | 0.2007    | 41.14   | QP       | 10.03     | 51.17  | 63.58  | -12.41 |
| 2   | L1  | 0.2007    | 31.90   | AVG      | 10.03     | 41.93  | 53.58  | -11.65 |
| 3   | L1  | 0.3138    | 45.67   | QP       | 10.03     | 55.70  | 59.87  | -4.17  |
| 4   | L1  | 0.3138    | 37.86   | AVG      | 10.03     | 47.89  | 49.87  | -1.98  |
| 5   | L1  | 0.7389    | 24.10   | QP       | 10.03     | 34.13  | 56.00  | -21.87 |
| 6   | L1  | 0.7389    | 6.61    | AVG      | 10.03     | 16.64  | 46.00  | -29.36 |
| 7   | L1  | 2.0454    | 23.34   | QP       | 10.04     | 33.38  | 56.00  | -22.62 |
| 8   | L1  | 2.0454    | 15.40   | AVG      | 10.04     | 25.44  | 46.00  | -20.56 |
| 9   | L1  | 3.2184    | 20.12   | QP       | 10.06     | 30.18  | 56.00  | -25.82 |
| 10  | L1  | 3.2184    | 10.34   | AVG      | 10.06     | 20.40  | 46.00  | -25.60 |
| 11  | L1  | 8.0388    | 14.59   | QP       | 10.12     | 24.71  | 60.00  | -35.29 |
| 12  | L1  | 8.0388    | 3.94    | AVG      | 10.12     | 14.06  | 50.00  | -35.94 |

**Test Mode 1 : USB Mode**

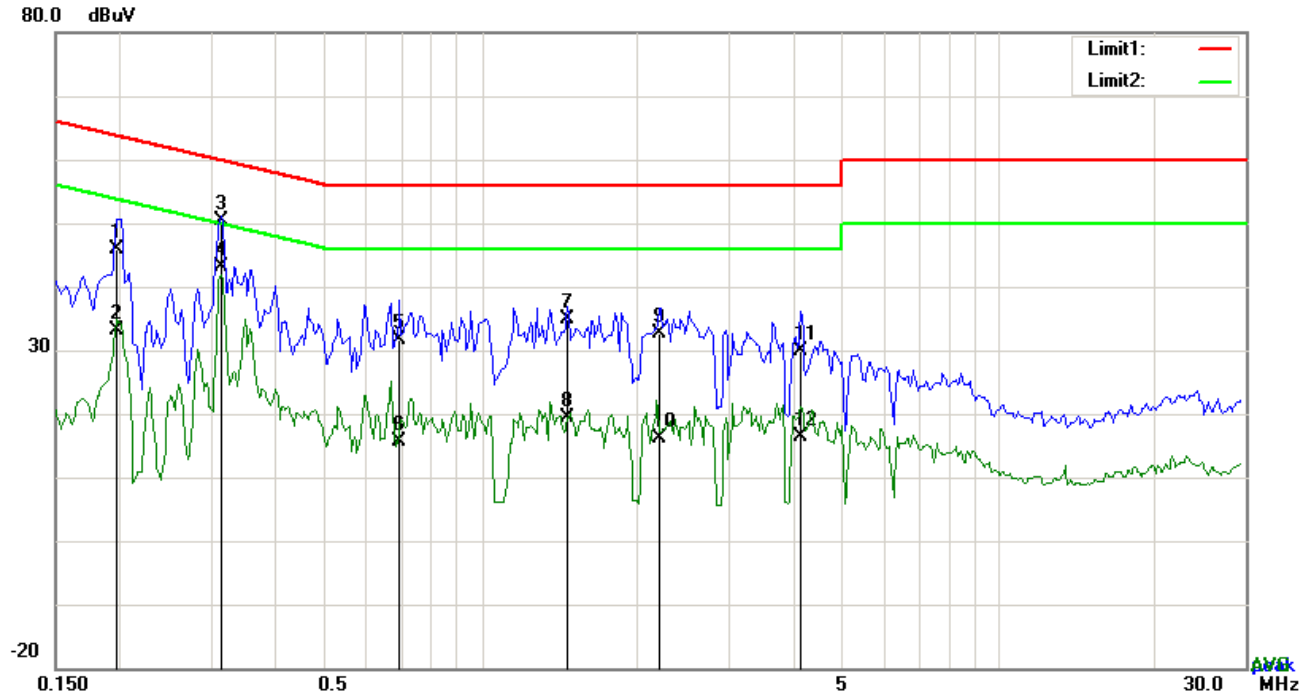


**Test Data**

**Phase Neutral Plot at 120Vac, 60Hz**

| No. | P/L | Frequency | Reading | Detector | Corrected | Result | Limit  | Margin |
|-----|-----|-----------|---------|----------|-----------|--------|--------|--------|
|     |     | (MHz)     | (dBuV)  |          | (dB)      | (dBuV) | (dBuV) | (dB)   |
| 1   | N   | 0.2631    | 29.25   | QP       | 10.02     | 39.27  | 61.33  | -22.06 |
| 2   | N   | 0.2631    | 20.18   | AVG      | 10.02     | 30.20  | 51.33  | -21.13 |
| 3   | N   | 0.3138    | 42.49   | QP       | 10.02     | 52.51  | 59.87  | -7.36  |
| 4   | N   | 0.3138    | 34.41   | AVG      | 10.02     | 44.43  | 49.87  | -5.44  |
| 5   | N   | 0.6531    | 25.11   | QP       | 10.02     | 35.13  | 56.00  | -20.87 |
| 6   | N   | 0.6531    | 19.02   | AVG      | 10.02     | 29.04  | 46.00  | -16.96 |
| 7   | N   | 1.3044    | 24.10   | QP       | 10.03     | 34.13  | 56.00  | -21.87 |
| 8   | N   | 1.3044    | 16.09   | AVG      | 10.03     | 26.12  | 46.00  | -19.88 |
| 9   | N   | 2.5524    | 23.39   | QP       | 10.05     | 33.44  | 56.00  | -22.56 |
| 10  | N   | 2.5524    | 15.79   | AVG      | 10.05     | 25.84  | 46.00  | -20.16 |
| 11  | N   | 26.1192   | 18.86   | QP       | 10.36     | 29.22  | 60.00  | -30.78 |
| 12  | N   | 26.1192   | 1.42    | AVG      | 10.36     | 11.78  | 50.00  | -38.22 |

**Test Mode 1 : USB Mode**

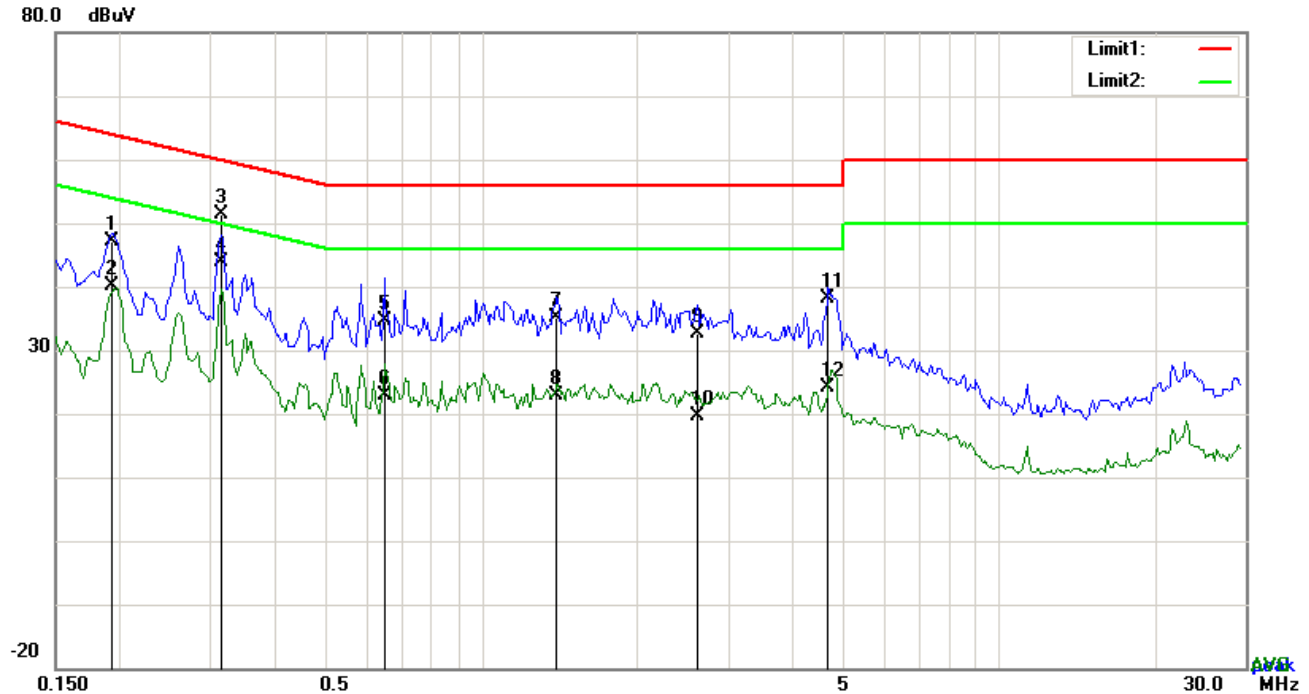


**Test Data**

**Phase Line Plot at 240Vac, 60Hz**

| No. | P/L | Frequency | Reading | Detector | Corrected | Result | Limit  | Margin |
|-----|-----|-----------|---------|----------|-----------|--------|--------|--------|
|     |     | (MHz)     | (dBuV)  |          | (dB}      | (dBuV) | (dBuV) | (dB)   |
| 1   | L1  | 0.1968    | 35.79   | QP       | 10.03     | 45.82  | 63.74  | -17.92 |
| 2   | L1  | 0.1968    | 23.15   | AVG      | 10.03     | 33.18  | 53.74  | -20.56 |
| 3   | L1  | 0.3138    | 40.37   | QP       | 10.03     | 50.40  | 59.87  | -9.47  |
| 4   | L1  | 0.3138    | 33.03   | AVG      | 10.03     | 43.06  | 49.87  | -6.81  |
| 5   | L1  | 0.6960    | 21.56   | QP       | 10.03     | 31.59  | 56.00  | -24.41 |
| 6   | L1  | 0.6960    | 5.71    | AVG      | 10.03     | 15.74  | 46.00  | -30.26 |
| 7   | L1  | 1.4682    | 24.80   | QP       | 10.04     | 34.84  | 56.00  | -21.16 |
| 8   | L1  | 1.4682    | 9.24    | AVG      | 10.04     | 19.28  | 46.00  | -26.72 |
| 9   | L1  | 2.2131    | 22.47   | QP       | 10.05     | 32.52  | 56.00  | -23.48 |
| 10  | L1  | 2.2131    | 6.20    | AVG      | 10.05     | 16.25  | 46.00  | -29.75 |
| 11  | L1  | 4.1544    | 19.81   | QP       | 10.07     | 29.88  | 56.00  | -26.12 |
| 12  | L1  | 4.1544    | 6.24    | AVG      | 10.07     | 16.31  | 46.00  | -29.69 |

## Test Mode 1 : USB Mode



### Test Data

#### Phase Neutral Plot at 240Vac, 60Hz

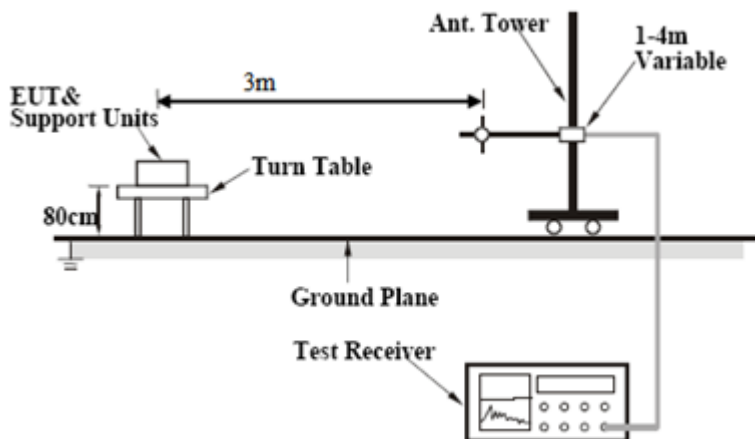
| No. | P/L | Frequency | Reading | Detector | Corrected | Result | Limit  | Margin |
|-----|-----|-----------|---------|----------|-----------|--------|--------|--------|
|     |     | (MHz)     | (dBuV)  |          | (dB}      | (dBuV) | (dBuV) | (dB)   |
| 1   | N   | 0.1929    | 37.18   | QP       | 10.03     | 47.21  | 63.91  | -16.70 |
| 2   | N   | 0.1929    | 30.11   | AVG      | 10.03     | 40.14  | 53.91  | -13.77 |
| 3   | N   | 0.3138    | 41.40   | QP       | 10.03     | 51.43  | 59.87  | -8.44  |
| 4   | N   | 0.3138    | 33.95   | AVG      | 10.03     | 43.98  | 49.87  | -5.89  |
| 5   | N   | 0.6492    | 24.70   | QP       | 10.03     | 34.73  | 56.00  | -21.27 |
| 6   | N   | 0.6492    | 12.75   | AVG      | 10.03     | 22.78  | 46.00  | -23.22 |
| 7   | N   | 1.4019    | 25.07   | QP       | 10.04     | 35.11  | 56.00  | -20.89 |
| 8   | N   | 1.4019    | 12.85   | AVG      | 10.04     | 22.89  | 46.00  | -23.11 |
| 9   | N   | 2.6109    | 22.47   | QP       | 10.05     | 32.52  | 56.00  | -23.48 |
| 10  | N   | 2.6109    | 9.47    | AVG      | 10.05     | 19.52  | 46.00  | -26.48 |
| 11  | N   | 4.6887    | 27.95   | QP       | 10.08     | 38.03  | 56.00  | -17.97 |
| 12  | N   | 4.6887    | 13.95   | AVG      | 10.08     | 24.03  | 46.00  | -21.97 |

## 6.2 Radiated Emissions

|                      |                    |
|----------------------|--------------------|
| Temperature          | 23 °C              |
| Relative Humidity    | 51%                |
| Atmospheric Pressure | 1020mbar           |
| Test date :          | September 30, 2017 |
| Tested By :          | Evans He           |

### Requirement(s):

| Spec            | Item | Requirement                                                                                                                                                                                                                                                                                                                                   | Applicable                                                                            |                       |
|-----------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------|
| 47CFR§15.109(d) | a)   | Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges |  |                       |
|                 |      | Frequency range (MHz)                                                                                                                                                                                                                                                                                                                         |                                                                                       | Field Strength (µV/m) |
|                 |      | 30 – 88                                                                                                                                                                                                                                                                                                                                       |                                                                                       | 100                   |
|                 |      | 88 – 216                                                                                                                                                                                                                                                                                                                                      |                                                                                       | 150                   |
|                 |      | 216 - 960                                                                                                                                                                                                                                                                                                                                     |                                                                                       | 200                   |
|                 |      | Above 960                                                                                                                                                                                                                                                                                                                                     |                                                                                       | 500                   |

|            |                                                                                      |
|------------|--------------------------------------------------------------------------------------|
| Test Setup |  |
|------------|--------------------------------------------------------------------------------------|

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Procedure | <ol style="list-style-type: none"> <li>The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: <ol style="list-style-type: none"> <li>Vertical or horizontal polarization (whichever gave the higher emission level</li> </ol> </li> </ol> |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | <p>over a full rotation of the EUT) was chosen.</p> <p>b. The EUT was then rotated to the direction that gave the maximum emission.</p> <p>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</p> <p>3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi Peak detection at frequency below 1GHz.</p> <p>4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz.</p> <p>The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth with Peak detection for Average Measurement as below at frequency above 1GHz.</p> <p>■ 1 kHz (Duty cycle &lt; 98%) □ 10 Hz (Duty cycle &gt; 98%)</p> <p>5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</p> |
| Remark |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

|               |          |
|---------------|----------|
| Test Mode 1 : | USB Mode |
|---------------|----------|

|               |          |
|---------------|----------|
| Test Mode 2 : | MP4 Mode |
|---------------|----------|

|               |             |
|---------------|-------------|
| Test Mode 3 : | Camera Mode |
|---------------|-------------|

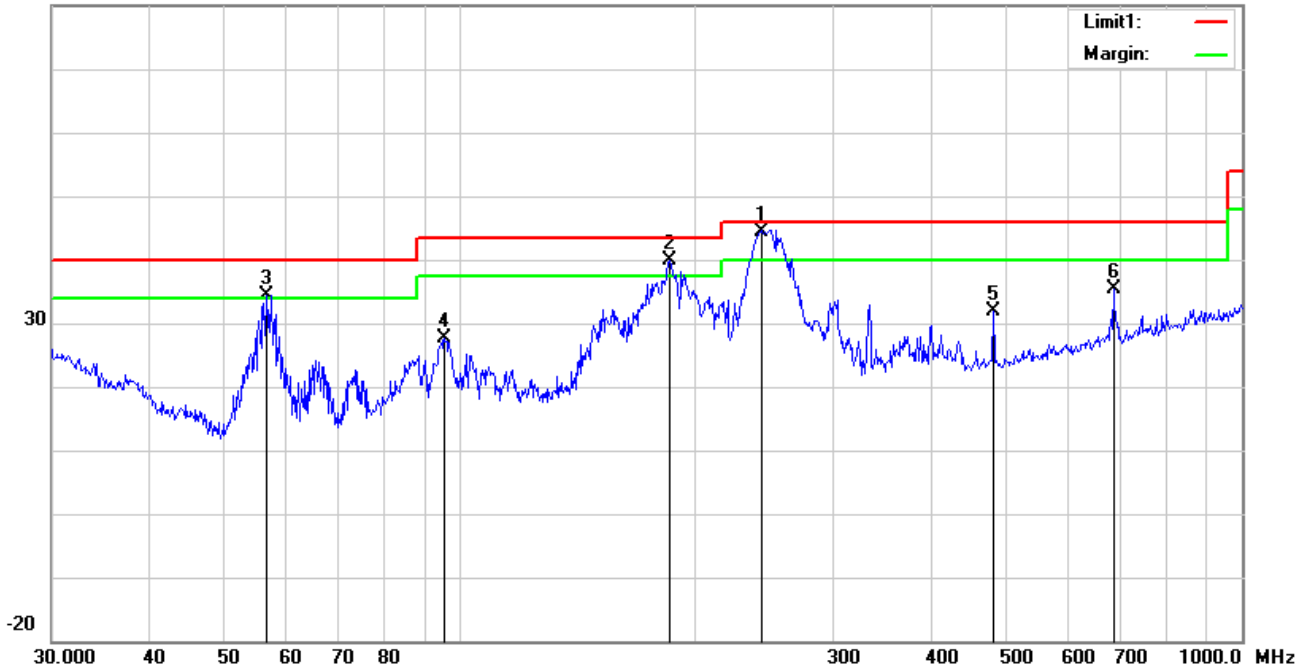
|               |         |
|---------------|---------|
| Test Mode 4 : | FM Mode |
|---------------|---------|

All modes were investigated. The results below show only the worst case

**Test Mode 1 : USB Mode**

**Below 1GHz**

80.0 dBuV/m

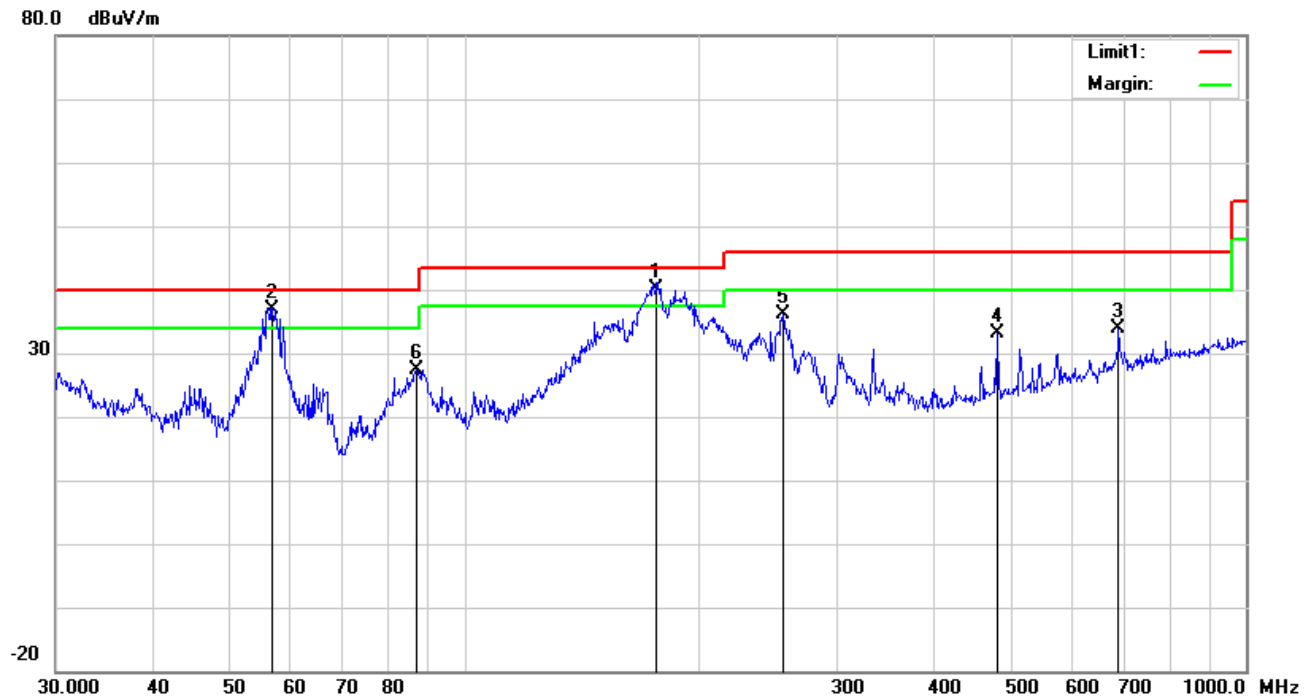


**Test Data**

**Horizontal Polarity Plot @3m**

| No. | P/L | Frequency<br>(MHz) | Reading<br>(dBuV/m) | Detector | Ant_F<br>(dB/m) | PA_G<br>(dB) | Cab_L<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) |
|-----|-----|--------------------|---------------------|----------|-----------------|--------------|---------------|--------------------|-------------------|----------------|----------------|---------------|
| 1   | H   | 242.5253           | 53.42               | QP       | 11.50           | 22.30        | 1.68          | 44.30              | 46.00             | -1.70          | 100            | 247           |
| 2   | H   | 185.1379           | 49.31               | QP       | 11.28           | 22.28        | 1.45          | 39.76              | 43.50             | -3.74          | 100            | 32            |
| 3   | H   | 56.5929            | 48.34               | QP       | 7.67            | 22.40        | 0.77          | 34.38              | 40.00             | -5.62          | 100            | 82            |
| 4   | H   | 95.4270            | 39.64               | peak     | 9.30            | 22.32        | 1.00          | 27.62              | 43.50             | -15.88         | 100            | 47            |
| 5   | H   | 480.5276           | 34.06               | peak     | 17.31           | 21.85        | 2.31          | 31.83              | 46.00             | -14.17         | 100            | 106           |
| 6   | H   | 684.7454           | 34.17               | peak     | 20.03           | 21.39        | 2.57          | 35.38              | 46.00             | -10.62         | 100            | 195           |

## Below 1GHz



## Test Data

### Vertical Polarity Plot @3m

| No. | P/L | Frequency | Reading  | Detector | Ant_F  | PA_G  | Cab_L | Result   | Limit    | Margin | Height | Degree |
|-----|-----|-----------|----------|----------|--------|-------|-------|----------|----------|--------|--------|--------|
|     |     | (MHz)     | (dBuV/m) |          | (dB/m) | (dB)  | (dB)  | (dBuV/m) | (dBuV/m) | (dB)   | (cm)   | (°)    |
| 1   | V   | 176.2686  | 49.75    | QP       | 11.30  | 22.25 | 1.36  | 40.16    | 43.50    | -3.34  | 100    | 119    |
| 2   | V   | 56.7917   | 50.83    | QP       | 7.65   | 22.40 | 0.77  | 36.85    | 40.00    | -3.15  | 100    | 357    |
| 3   | V   | 687.1507  | 32.70    | peak     | 20.06  | 21.39 | 2.56  | 33.93    | 46.00    | -12.07 | 100    | 195    |
| 4   | V   | 480.5276  | 35.42    | peak     | 17.31  | 21.85 | 2.31  | 33.19    | 46.00    | -12.81 | 100    | 168    |
| 5   | V   | 255.6231  | 44.98    | peak     | 11.65  | 22.29 | 1.71  | 36.05    | 46.00    | -9.95  | 100    | 108    |
| 6   | V   | 86.8068   | 40.88    | peak     | 7.87   | 22.35 | 1.03  | 27.43    | 40.00    | -12.57 | 100    | 162    |

### *Above 1GHz*

| Frequency<br>(MHz) | Read_level<br>(dBμV/m) | Azimuth | Height<br>(cm) | Polarity<br>(H/V) | Level<br>(dBμV/m) | Factors<br>(dB) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector<br>(PK/AV) |
|--------------------|------------------------|---------|----------------|-------------------|-------------------|-----------------|-------------------|----------------|---------------------|
| 1347.5             | 67.46                  | 124     | 100            | V                 | -19.14            | 48.32           | 74                | -25.68         | PK                  |
| 1642.9             | 63.68                  | 32      | 100            | V                 | -17.51            | 46.17           | 74                | -27.83         | PK                  |
| 2150.3             | 58.16                  | 105     | 100            | V                 | -14.64            | 43.52           | 74                | -30.48         | PK                  |
| 1426.8             | 64.06                  | 249     | 100            | H                 | -18.95            | 45.11           | 74                | -28.89         | PK                  |
| 1759.7             | 59.57                  | 99      | 100            | H                 | -16.76            | 42.81           | 74                | -31.19         | PK                  |
| 2364.5             | 57.74                  | 175     | 100            | H                 | -14.17            | 43.57           | 74                | -30.43         | PK                  |

*Note1: The highest frequency of the EUT is 2480 MHz, so the testing has been conformed to  $5 \times 2480 \text{ MHz} = 12,400 \text{ MHz}$ .*

*Note2: The frequency that above 3GHz is mainly from the environment noise.*

*Note3: The AV measurement performed, more than 20dB below limit so AV test data was not presented.*

## Annex A. TEST INSTRUMENT

| Instrument                              | Model    | Serial #   | Cal Date   | Cal Due    | In use                              |
|-----------------------------------------|----------|------------|------------|------------|-------------------------------------|
| <b>AC Line Conducted Emissions</b>      |          |            |            |            |                                     |
| EMI test receiver                       | ESCS30   | 8471241027 | 09/15/2017 | 09/14/2018 | <input checked="" type="checkbox"/> |
| Line Impedance Stabilization Network    | LI-125A  | 191106     | 09/23/2017 | 09/22/2018 | <input checked="" type="checkbox"/> |
| Line Impedance Stabilization Network    | LI-125A  | 191107     | 09/23/2017 | 09/22/2018 | <input checked="" type="checkbox"/> |
| ISN                                     | ISN T800 | 34373      | 09/23/2017 | 09/22/2018 | <input type="checkbox"/>            |
| Transient Limiter                       | LIT-153  | 531118     | 08/30/2017 | 08/29/2018 | <input checked="" type="checkbox"/> |
| <b>Radiated Emissions</b>               |          |            |            |            |                                     |
| EMI test receiver                       | ESL6     | 100262     | 09/15/2017 | 09/14/2018 | <input checked="" type="checkbox"/> |
| OPT 010 AMPLIFIER<br>(0.1-1300MHz)      | 8447E    | 2727A02430 | 08/30/2017 | 08/29/2018 | <input checked="" type="checkbox"/> |
| Microwave Preamplifier<br>(1 ~ 26.5GHz) | 8449B    | 3008A02402 | 03/23/2017 | 03/22/2018 | <input checked="" type="checkbox"/> |
| Bilog Antenna<br>(30MHz~6GHz)           | JB6      | A110712    | 09/19/2017 | 09/18/2018 | <input checked="" type="checkbox"/> |
| Double Ridge Horn Antenna               | AH-118   | 71259      | 09/22/2017 | 09/21/2018 | <input checked="" type="checkbox"/> |

## Annex B. EUT And Test Setup Photographs

### Annex B.i. Photograph: EUT External Photo

Whole Package View



Adapter - Label View



EUT - Front View



EUT - Rear View 1



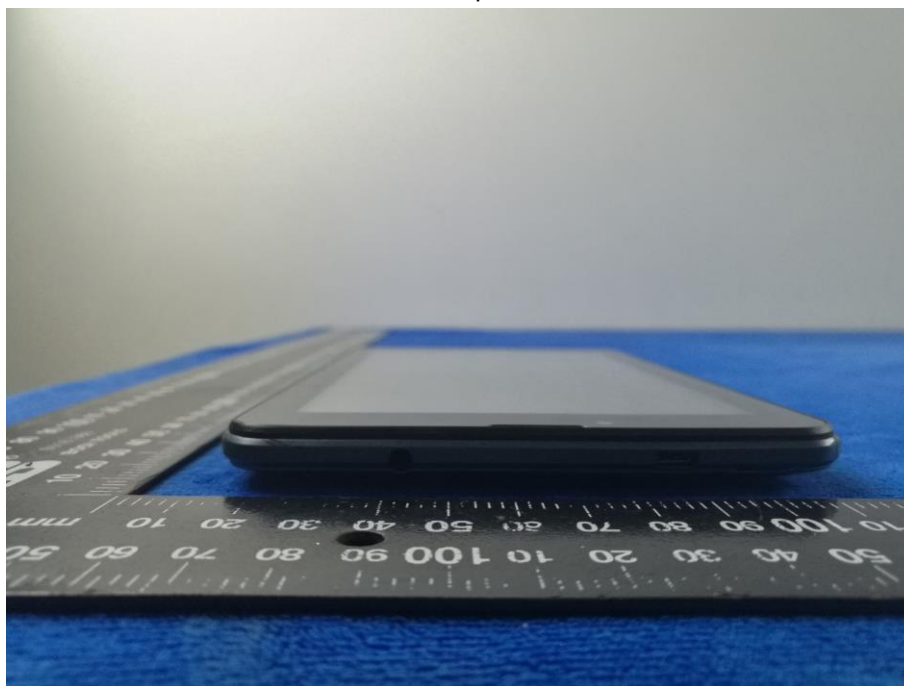
EUT - Rear View 2



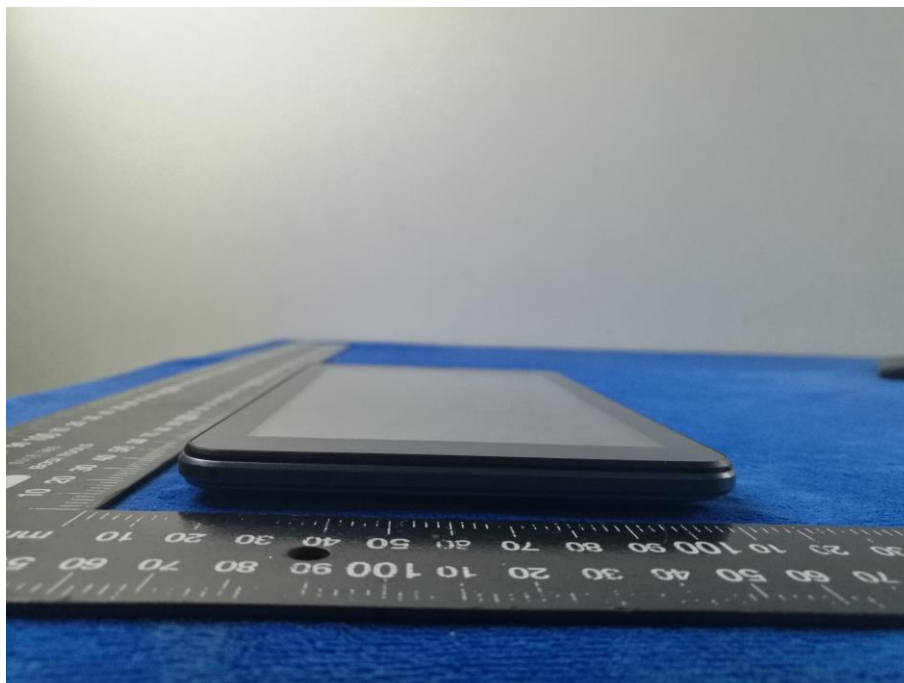
EUT - Rear View 3



EUT - Top View



EUT - Bottom View



EUT - Left View

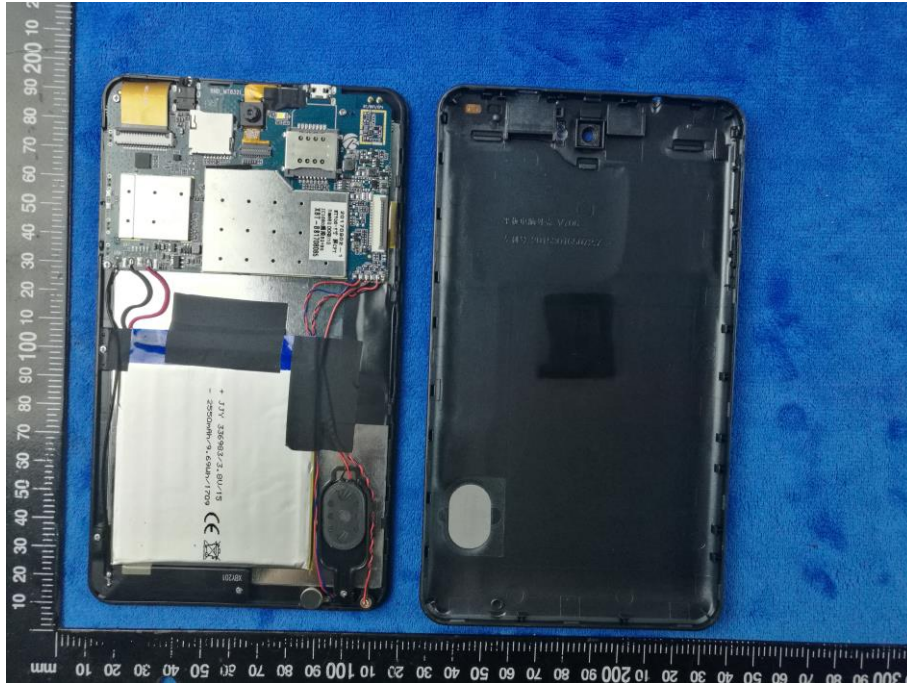


EUT - Right View



**Annex B.ii. Photograph: EUT Internal Photo**

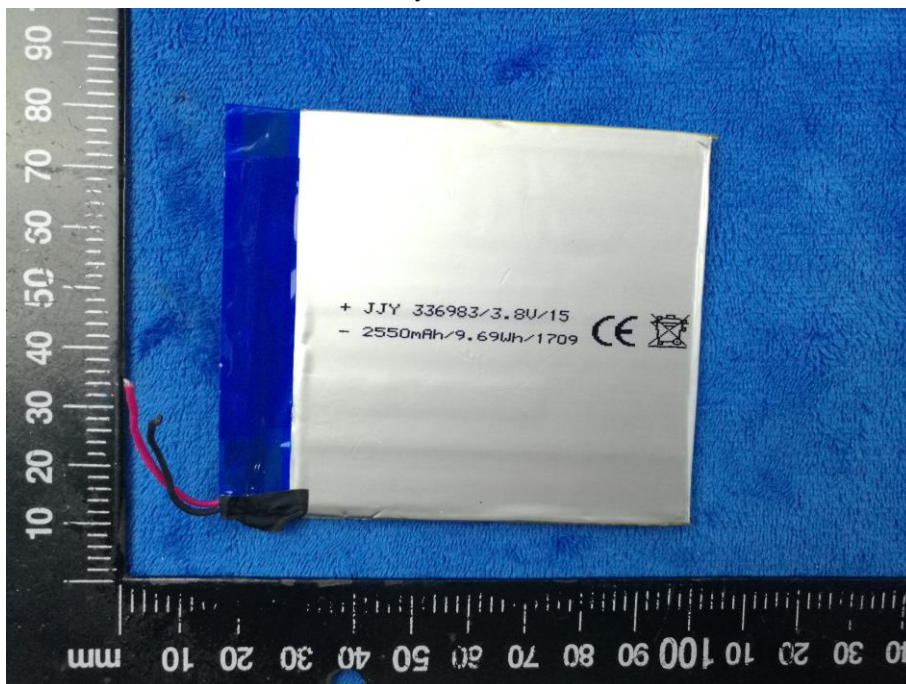
Cover Off - Top View 1



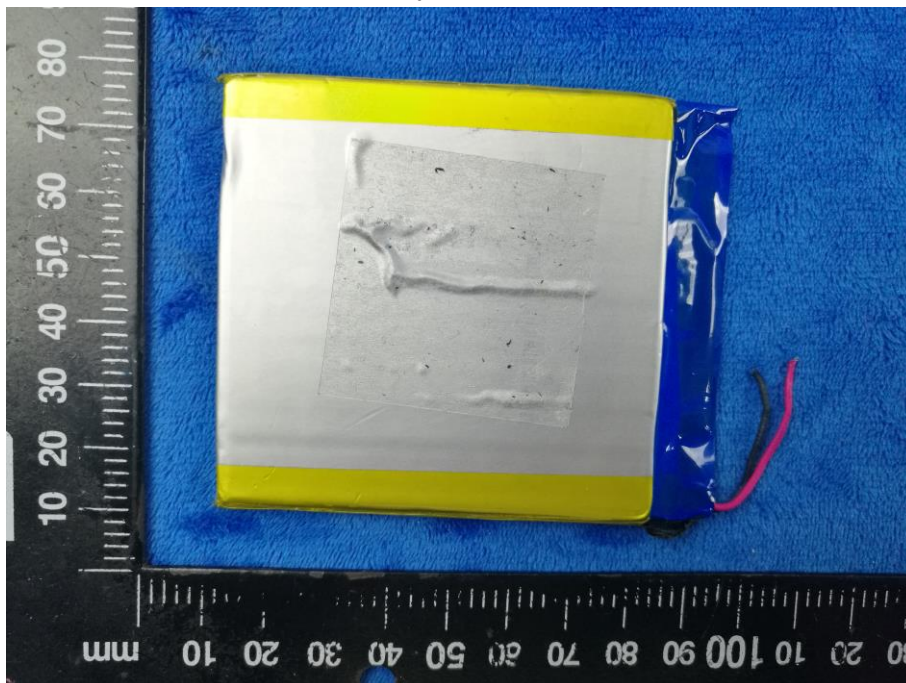
Cover Off - Top View 2



Battery - Front View

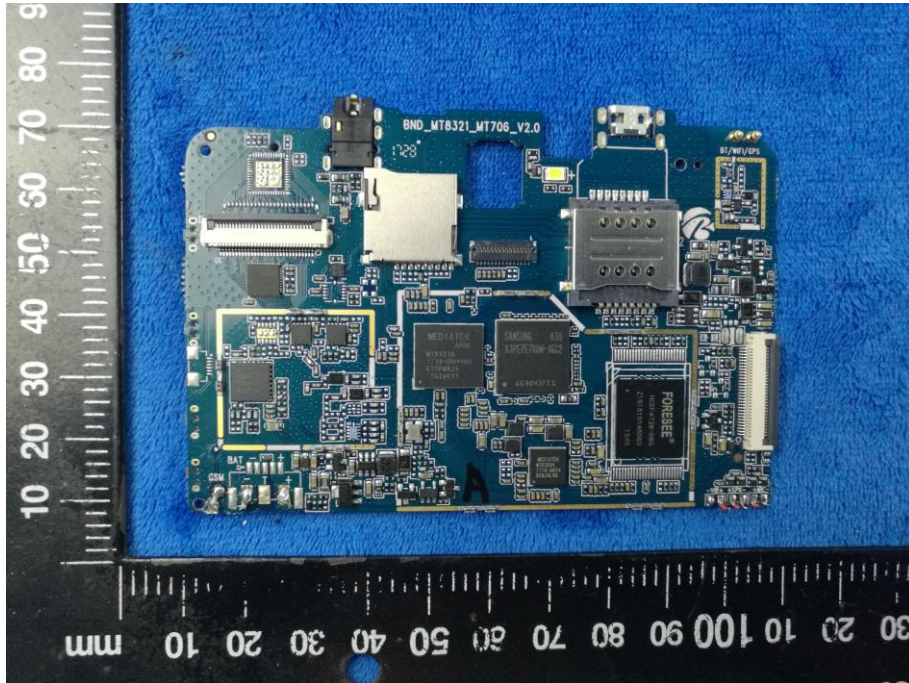


Battery - Rear View

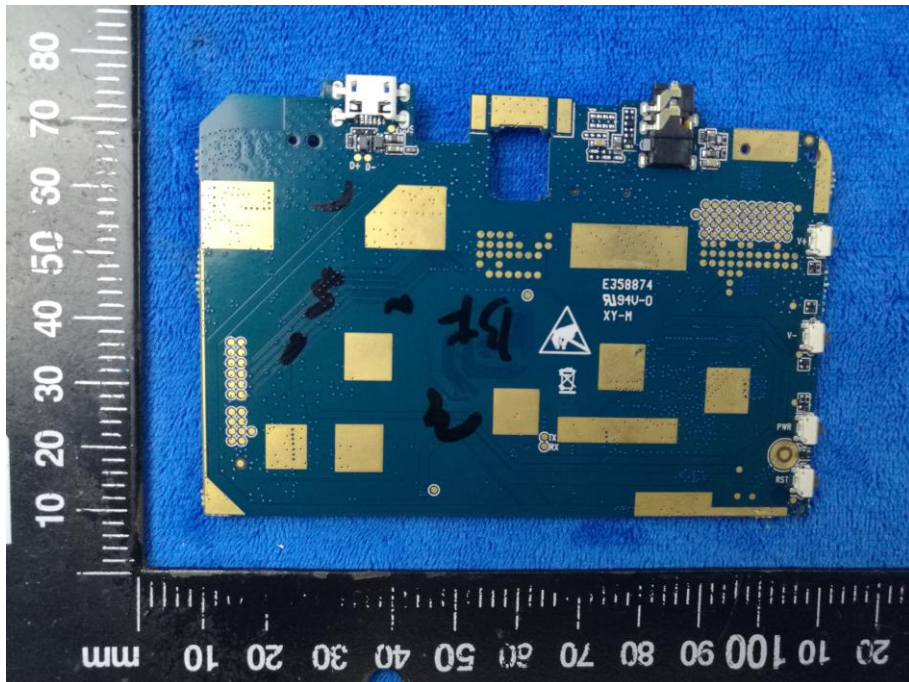




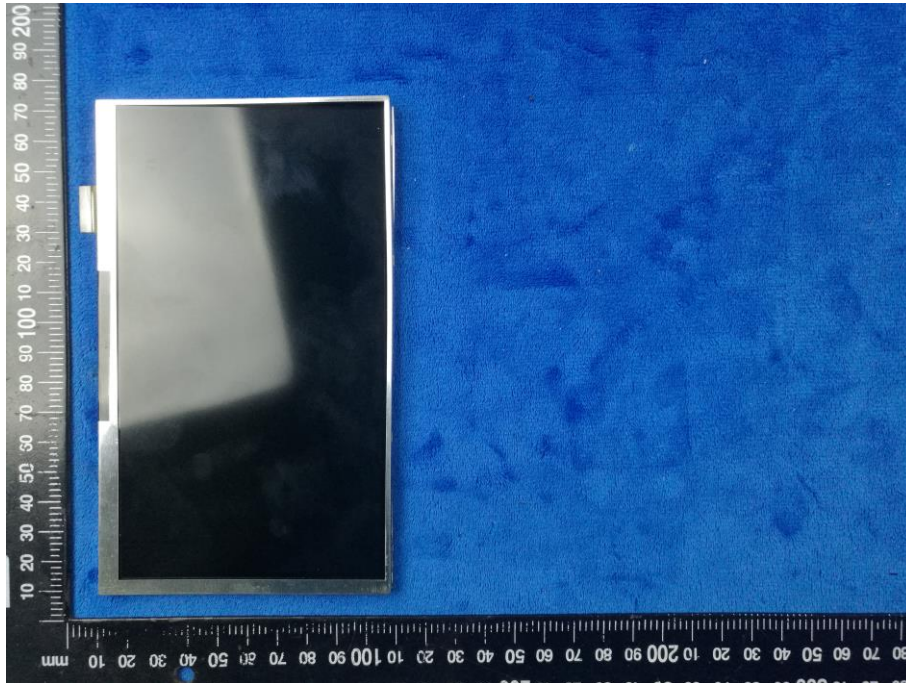
Mainboard without Shielding – Front View



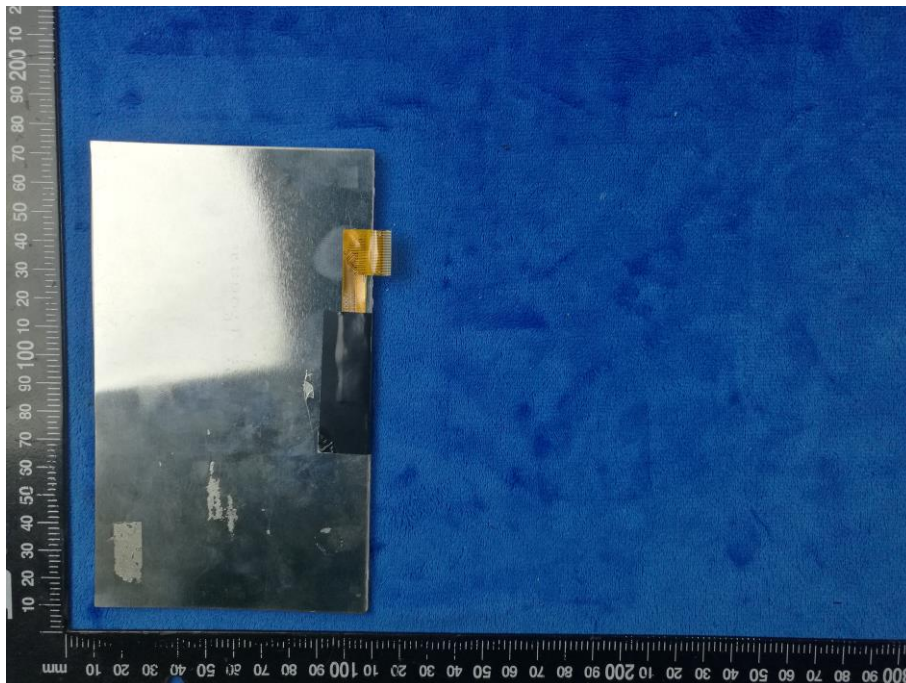
Mainboard without Shielding – Rear View



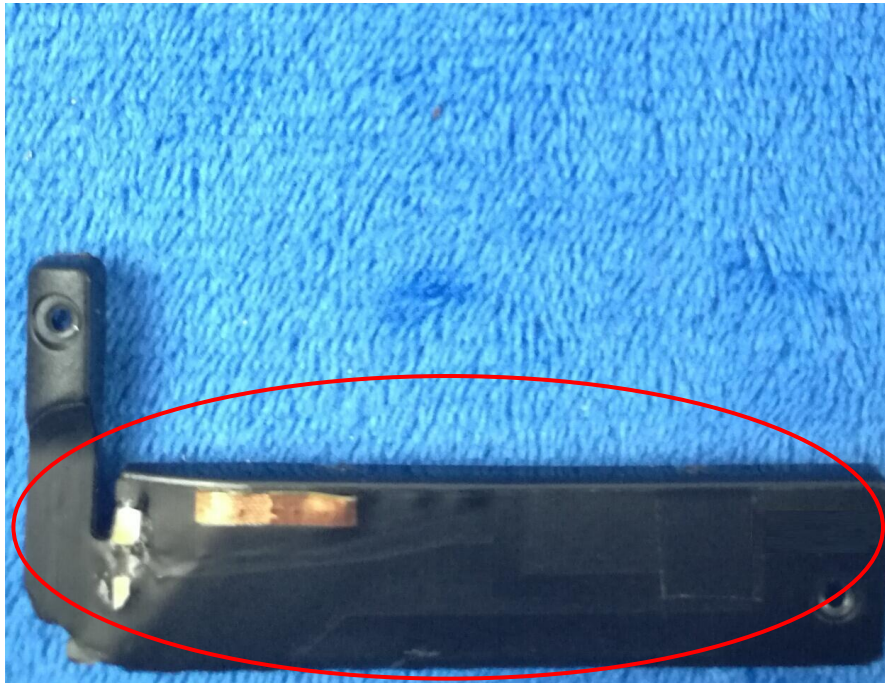
LCD – Front View



LCD – Rear View



GSM/PCS/UMTS-FDD - Antenna View



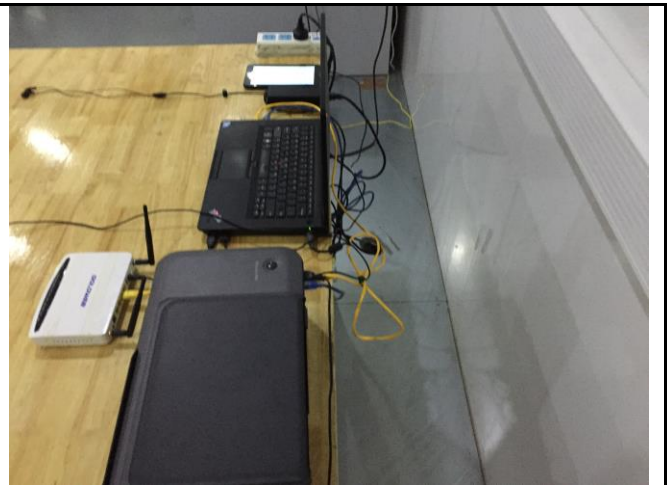
WIFI/BT/BLE/GPS - Antenna View



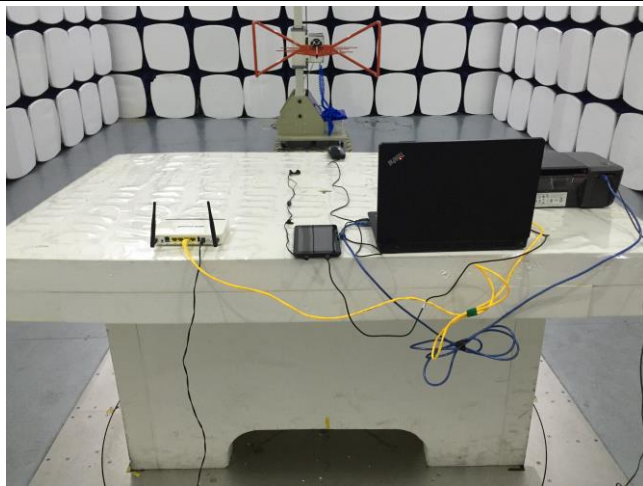
**Annex B.iii. Photograph: Test Setup Photo**



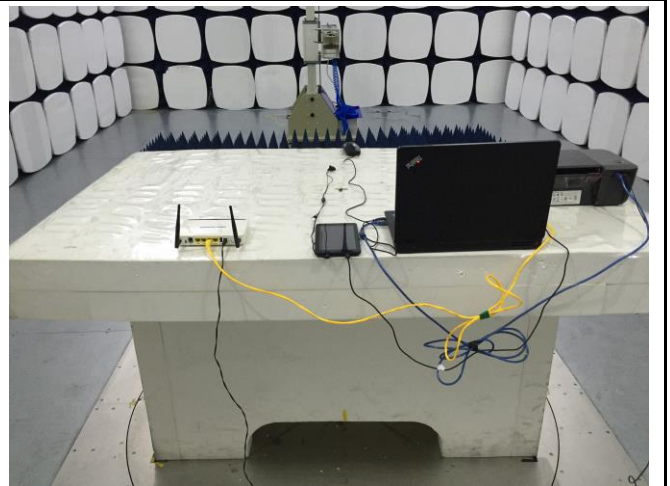
Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup – Side View



Radiated Emissions Test Setup Below 1GHz

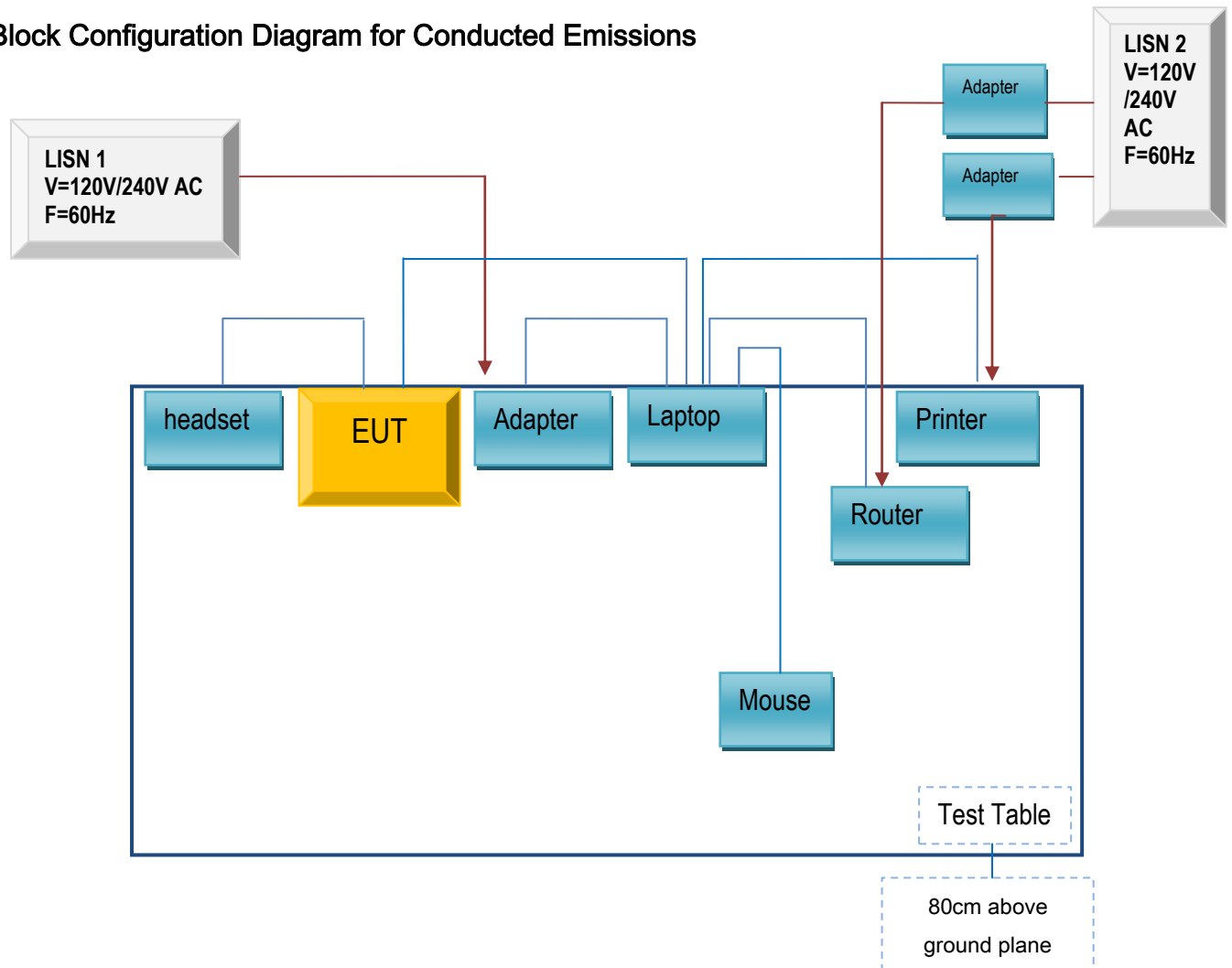


Radiated Emissions Test Setup Above 1GHz

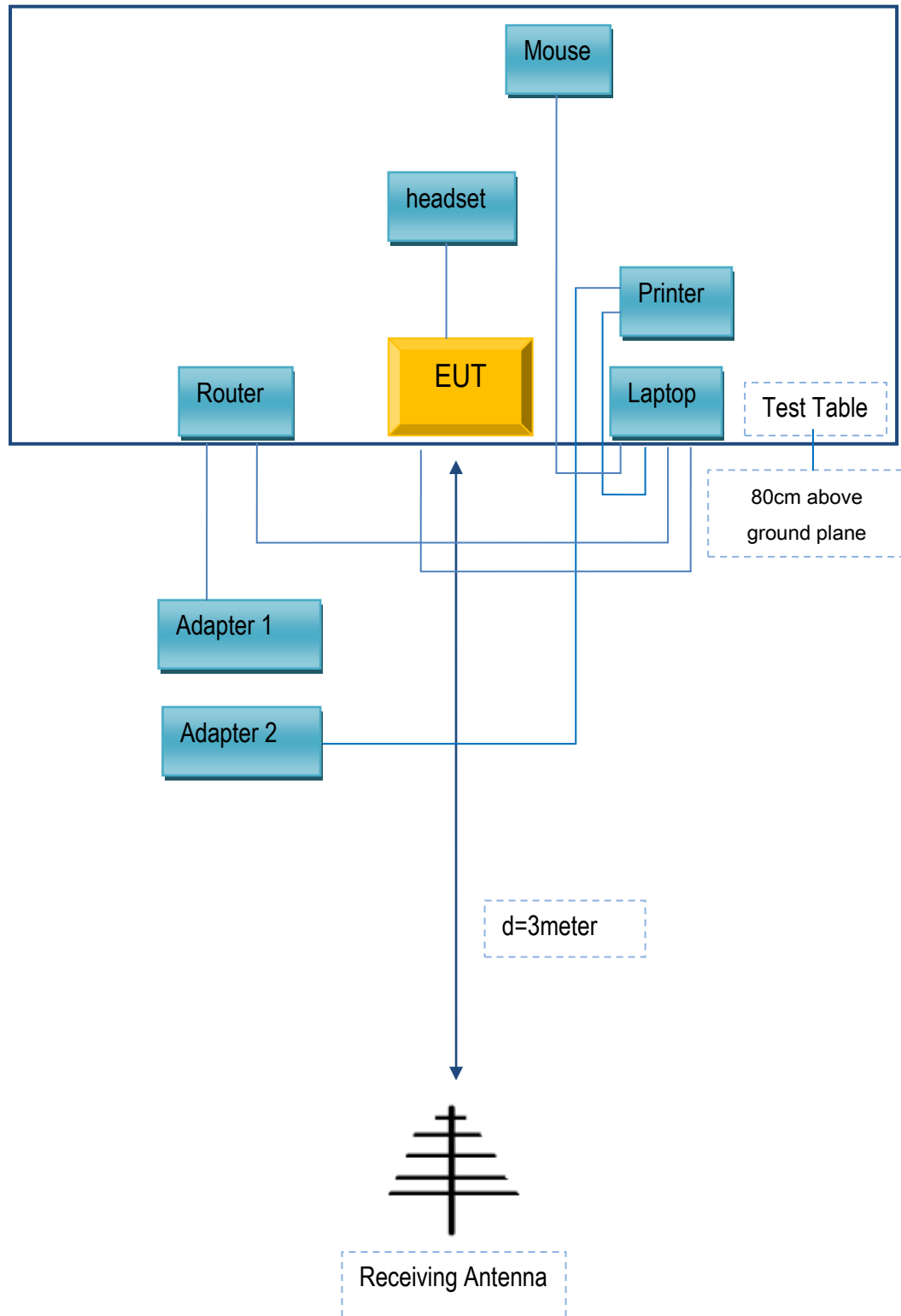
## Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

### Annex C.ii. TEST SET UP BLOCK

#### Block Configuration Diagram for Conducted Emissions



## Block Configuration Diagram for Radiated Emissions



## **Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION**

The following is a description of supporting equipment and details of cables used with the EUT.

### **Supporting Equipment:**

| Manufacturer | Equipment Description | Model      | Serial No     |
|--------------|-----------------------|------------|---------------|
| Lenovo       | Laptop                | E40        | LR-1EHRX      |
| GOLDWEB      | Router                | R102       | 1202032094    |
| Lenovo       | AC Adapter            | 42T4416    | 21D9JU        |
| HP           | Printer               | VCVRA-1003 | CN36M19JWX    |
| DELL         | Mouse                 | E100       | 912NMTUT41481 |
| BULL         | Socket                | GN-403     | GN201203      |
| SAMSUNG      | headset               | HS330      | N/A           |

### **Supporting Cable:**

| Cable type          | Shield Type  | Ferrite Core | Length | Serial No    |
|---------------------|--------------|--------------|--------|--------------|
| USB Cable           | Un-shielding | No           | 2m     | JX120051274  |
| USB Cable           | Un-shielding | No           | 2m     | CBA3000AH0C1 |
| RJ45 Cable          | Un-shielding | No           | 2m     | KX156327541  |
| Router Power cable  | Un-shielding | No           | 2m     | 13274630Z    |
| Printer Power cable | Un-shielding | No           | 2m     | 127581031    |
| Power Cable         | Un-shielding | No           | 0.8m   | GT211032     |

## Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see the attachment

## Annex E. DECLARATION OF SIMILARITY

N/A