# FCC Report

| | | |
|---|---|---|
| **Application Purpose** | : | Original grant |
| **Applicant Name:** | : | HUNG WAI PRODUCTS LIMITED |
| **FCC ID** | : | 2AB6Z-MS-W10 |
| **Equipment Type** | : | 8 inch Windows OS Tablet |
| **Model Name** | : | DT080-MS-W10 |
| **Report Number** | : | FCC17060478A-4 |
| **Standard(S)** | : | FCC Part 15 Subpart B |
| **Date Of Receipt** | : | June 09, 2017 |
| **Date Of Issue** | : | July 01, 2017 |

**Test By** : Dekun Liu

*(Dekun Liu)*

**Reviewed By** : Sol Qin

*(Sol Qin)*

**Authorized by** :

*(Michal Ling)*

**Prepared by** : **QTC Certification & Testing Co., Ltd.**
2nd Floor,Bl Building,Fengyeyuan Industrial Plant,, Liuxian 2st. Road, Xin'an Street, Bao'an District,,Shenzhen,518000
**Registration Number: 588523**

**REPORT REVISE RECORD**

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|---|---|---|---|---|
| V1.0 | / | July 01, 2017 | Valid | Original Report |

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# 1. GENERAL INFORMATION

| | |
|---|---|
| Test Model | DT080-MS-W10 |
| Applicant | HUNG WAI PRODUCTS LIMITED |
| Address | Unit 11, 12/F., New Commerce Centre, 19 On Sum Street, Shatin, Hong Kong |
| Manufacturer | HUNG WAI ELECTRONICS (HUIZHOU) LTD |
| Address | 3rd floor, NO. 1, Minfeng Road, Huinan High and New Technology Industry Park, Huiao Avenue, Huizhou City, Guangdong |
| Equipment Type | 8 inch Windows OS Tablet |
| Brand Name | **N/A** |
| Hardware | V02 |
| Software | CSR1.0.12 |
| Adapter Information: | Adapter: PS12F120K1000UD<br>Input: AC 100~240V 50/60Hz 0.35A<br>Output: DC 12V⎓1000mA |
| Battery information: | Li-Polymer Battery : 266177YL<br>Voltage: 3.7V Capacity: 1000mAh<br>Limited Charge Voltage: 4.2V |
| Data of receipt | June 01, 2017 |
| Date of test | June 20, 2017 to July 01, 2017 |
| Deviation | None |
| Condition of Test Sample | Normal |

**We hereby certify that:**

The above equipment was tested by QTC Certification & Testing Co., Ltd.
2nd Floor,Bl Building,Fengyeyuan Industrial Plant,, Liuxian 2st. Road, Xin'an Street, Bao'an District,,Shenzhen,518000
Registration Number: 588523

The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C 63.4:2014. The sample tested as described in this report is in compliance with the FCC Rules Part15 Subpart B.

The test results of this report relate only to the tested sample identified in this report.

# 2. TEST DESCRIPTION

## 2.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

| No. | Item | Uncertainty |
|---|---|---|
| 1 | Conducted Emission Test | ±3.2dB |
| 2 | RF power, conducted | ±0.16dB |
| 3 | Spurious emissions, conducted | ±0.21dB |
| 4 | All emissions, radiated(<1G) | ±4.7dB |
| 5 | All emissions, radiated(>1G) | ±4.7dB |
| 6 | Temperature | ±0.5°C |
| 7 | Humidity | ±2% |

## 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

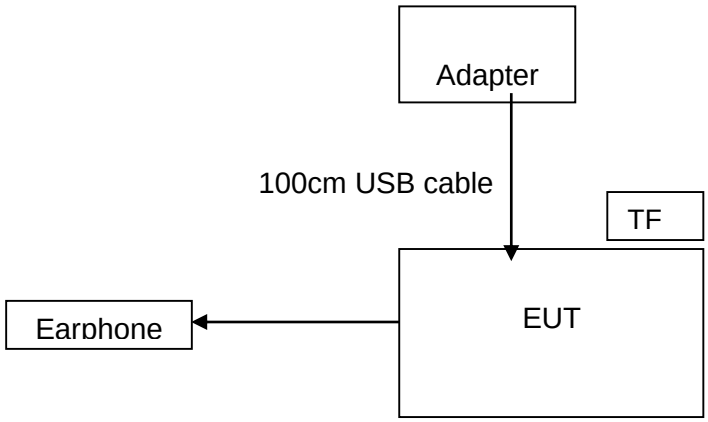
| Pretest Mode | Description |
|---|---|
| Model 1 | Video Playing |
| Mode 2 | Exchange data with computer |

| **For Conducted Emission** | |
|---|---|
| Final Test Mode | Test with Keyboard and Mouse |
| Model 1 | Video Playing |
| Mode 2 | Exchange data with computer |

| **For Radiated Emission** | |
|---|---|
| Final Test Mode | Test with Keyboard and Mouse |
| Model 1 | Video Playing |
| Mode 2 | Exchange data with computer |

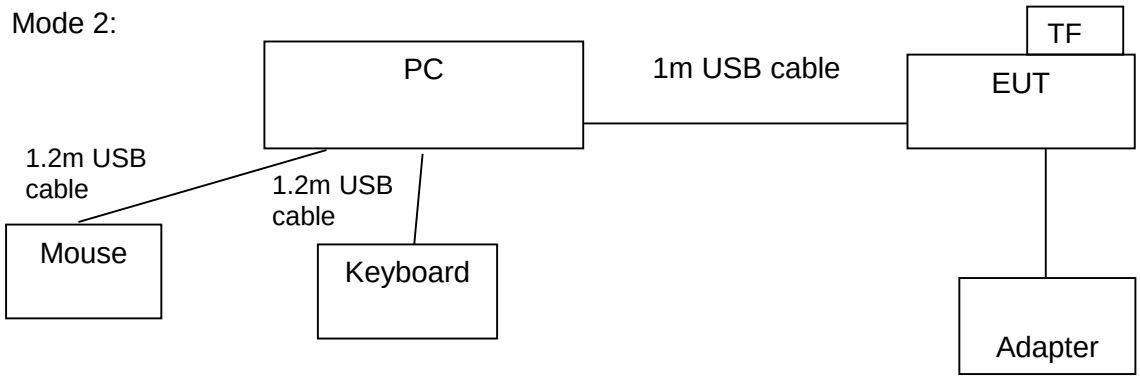
## 2.3 CONFIGURATION OF SYSTEM UNDER TEST

Mode 1:




(EUT: 8 inch Windows OS Tablet)

Mode 2:




(EUT: 8 inch Windows OS Tablet)

| I/O Port of EUT | | | |
|---|---|---|---|
| **I/O Port Type** | **Q'TY** | **Cable** | **Tested with** |
| Power | 1 | 1m USB cable, unshielded | 1 |
| Earphone | 1 | 1m USB cable, unshielded | 1 |

## 2.4 DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|---|---|---|---|---|---|
| 1 | Adapter | / | PS12F120K1000UD | / | / |
| 2 | Keyboard | HP | SK-2880 | 435302-AA- | / |
| 3 | Mouse | DELL | MS111-1 | / | / |

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

# 3. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15 , Subpart B | | | |
|---|---|---|---|
| Standard Section | Test Item | Judgment | Remark |
| 15.107 | CONDUCTED EMISSION | PASS | |
| 15.109 | RADIATED EMISSION | PASS | |

NOTE:

(1)” N/A” denotes test is not applicable in this test report.

# 4. MEASUREMENT INSTRUMENTS

| Kind of Equipment | Manufacturer | Type No. | Serial No. | Last Calibrated | Calibrated until |
|---|---|---|---|---|---|
| ESCI Test Receiver | R&S | ESCI | 100005 | 08/19/2016 | 08/18/2017 |
| LISN | AFJ | LS16 | 16010222119 | 08/19/2016 | 08/18/2017 |
| LISN(EUT) | Mestec | AN3016 | 04/10040 | 08/19/2016 | 08/18/2017 |
| pre-amplifier | CDSI | PAP-1G18-38 | -- | 08/19/2016 | 08/18/2017 |
| System Controller | CT | SC100 | - | 08/19/2016 | 08/18/2017 |
| Bi-log Antenna | Chase | CBL6111C | 2576 | 08/19/2016 | 08/18/2017 |
| Spectrum analyzer | R&S | FSU26 | 200409 | 08/19/2016 | 08/18/2017 |
| Horn Antenna | SCHWARZBECK | 9120D | 1141 | 08/19/2016 | 08/18/2017 |
| Bi-log Antenna | SCHWAREBECK | VULB9163 | 9163/340 | 08/19/2016 | 08/18/2017 |
| Pre Amplifier | H.P. | HP8447E | 2945A02715 | 10/13/2016 | 10/12/2017 |
| 9*6*6 Anechoic | -- | -- | -- | 08/21/2016 | 08/20/2017 |

# 5. EMC EMISSION TEST

## 5.1 CONDUCTED EMISSION MEASUREMENT

### 5.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

| FREQUENCY (MHz) | Class A (dBuV) | | Class B (dBuV) | | Standard |
|---|---|---|---|---|---|
| | Quasi-peak | Average | Quasi-peak | Average | |
| 0.15 -0.5 | 79.00 | 66.00 | 66 - 56 * | 56 - 46 * | FCC |
| 0.50 -5.0 | 73.00 | 60.00 | 56.00 | 46.00 | FCC |
| 5.0 -30.0 | 73.00 | 60.00 | 60.00 | 50.00 | FCC |

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

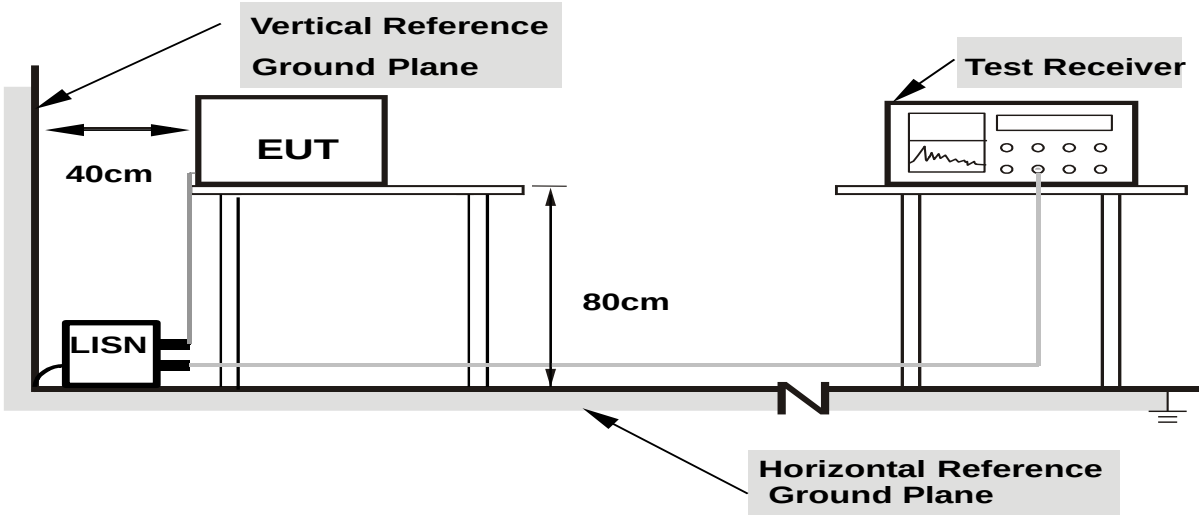
**5.1.2 TEST PROCEDURE**

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the
cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

**5.1.3 DEVIATION FROM TEST STANDARD**

No deviation

**5.1.4 TEST SETUP**




**Note: 1.Support units were connected to second LISN.**
**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

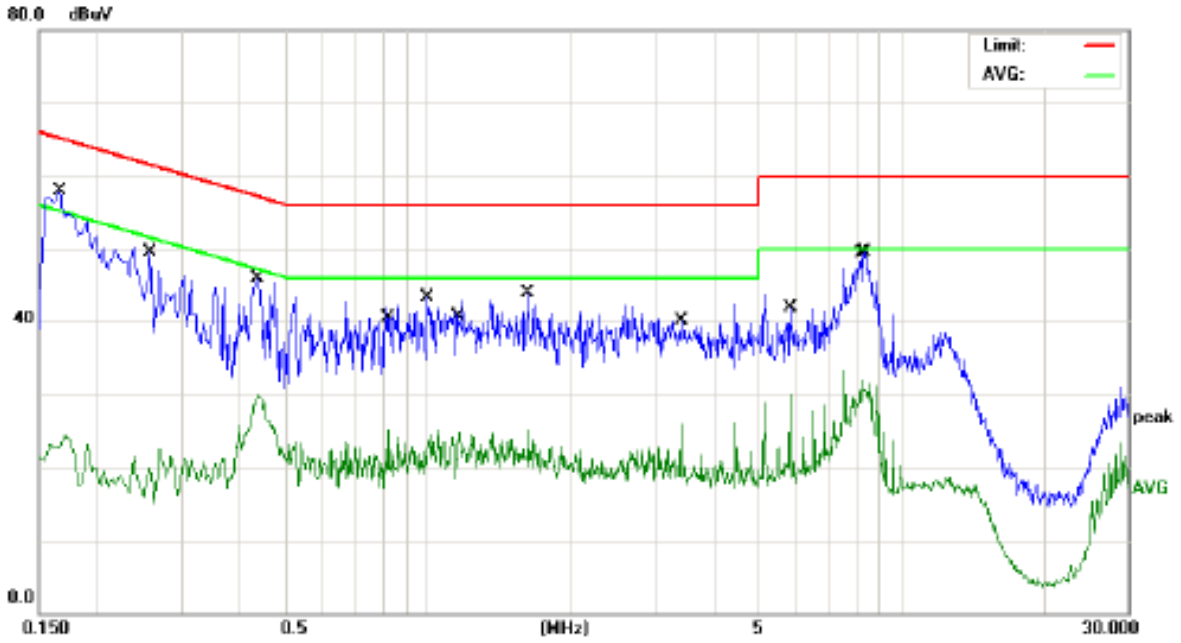
**5.1.5 EUT OPERATING CONDITIONS**

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

**5.1.6 TEST RESULTS**

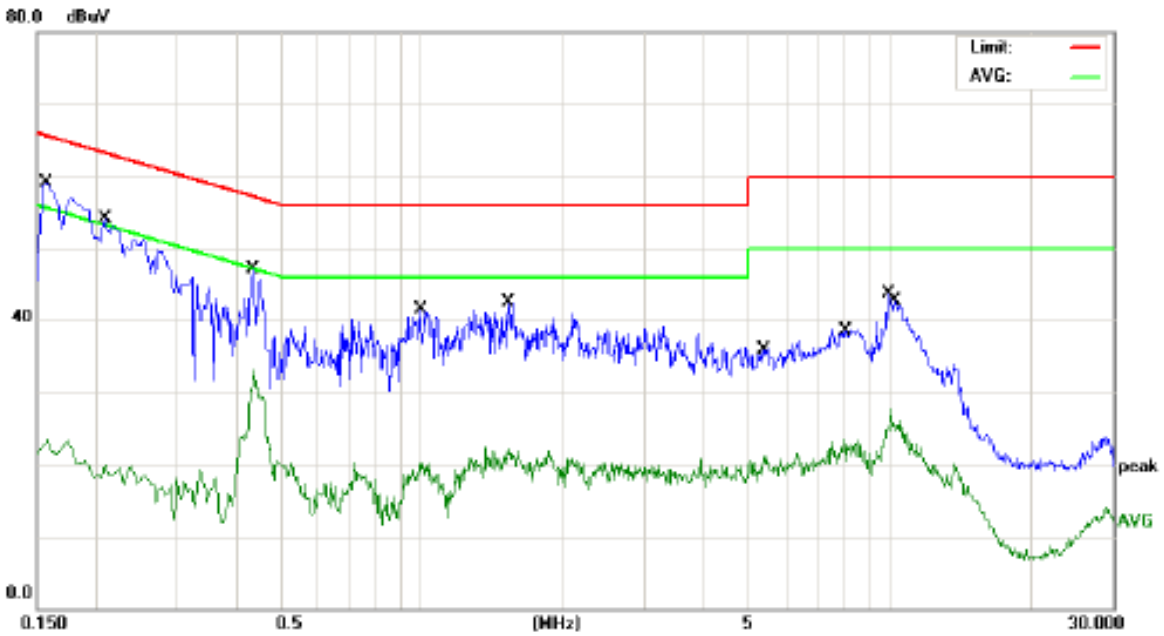
| EUT | 8 inch Windows OS Tablet | Model Name | DT080-MS-W10 |
|---|---|---|---|
| Temperature | 26 ℃ | Relative Humidity | 54% |
| Pressure | 1010hPa | Phase | L |
| Test Date | June 26, 2017 | Test Mode | Mode 2 |

Note：All modes ,only the worst case is presented in this report .




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | * | 0.1660 | 46.16 | 11.68 | 57.84 | 65.15 | -7.31 | QP |
| 2 | | 0.2580 | 38.40 | 11.12 | 49.52 | 61.49 | -11.97 | QP |
| 3 | | 0.4340 | 34.93 | 10.90 | 45.83 | 57.18 | -11.35 | QP |
| 4 | | 0.4380 | 18.66 | 10.89 | 29.55 | 47.10 | -17.55 | AVG |
| 5 | | 0.8260 | 14.38 | 10.71 | 25.09 | 46.00 | -20.91 | AVG |
| 6 | | 0.9980 | 32.67 | 10.63 | 43.30 | 56.00 | -12.70 | QP |
| 7 | | 1.1620 | 14.23 | 10.62 | 24.85 | 46.00 | -21.15 | AVG |
| 8 | | 1.6220 | 33.22 | 10.60 | 43.82 | 56.00 | -12.18 | QP |
| 9 | | 3.4220 | 15.44 | 10.56 | 26.00 | 46.00 | -20.00 | AVG |
| 10 | | 5.8180 | 19.48 | 10.54 | 30.02 | 50.00 | -19.98 | AVG |
| 11 | | 8.2100 | 21.29 | 10.57 | 31.86 | 50.00 | -18.14 | AVG |
| 12 | | 8.3620 | 38.85 | 10.57 | 49.42 | 60.00 | -10.58 | QP |

| EUT | 8 inch Windows OS Tablet | Model Name | DT080-MS-W10 |
|---|---|---|---|
| Temperature | 26 ℃ | Relative Humidity | 54% |
| Pressure | 1010hPa | Phase | N |
| Test Date | June 26, 2017 | Test Mode | Mode 2 |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | C |
| 1 | * | 0.1580 | 47.30 | 11.79 | 59.09 | 65.56 | -6.47 | QP | |
| 2 | | 0.1582 | 11.53 | 11.79 | 23.32 | 55.55 | -32.23 | AVG | |
| 3 | | 0.2100 | 42.81 | 11.19 | 54.00 | 63.20 | -9.20 | QP | |
| 4 | | 0.4340 | 36.21 | 10.90 | 47.11 | 57.18 | -10.07 | QP | |
| 5 | | 0.4380 | 22.23 | 10.89 | 33.12 | 47.10 | -13.98 | AVG | |
| 6 | | 0.9900 | 30.92 | 10.63 | 41.55 | 56.00 | -14.45 | QP | |
| 7 | | 1.5300 | 31.96 | 10.60 | 42.56 | 56.00 | -13.44 | QP | |
| 8 | | 1.5300 | 11.42 | 10.60 | 22.02 | 46.00 | -23.98 | AVG | |
| 9 | | 5.3780 | 10.55 | 10.54 | 21.09 | 50.00 | -28.91 | AVG | |
| 10 | | 8.0060 | 12.86 | 10.58 | 23.44 | 50.00 | -26.56 | AVG | |
| 11 | | 10.0380 | 17.03 | 10.59 | 27.62 | 50.00 | -22.38 | AVG | |
| 12 | | 10.2260 | 32.19 | 10.59 | 42.78 | 60.00 | -17.22 | QP | |

## 5.2 RADIATED EMISSION MEASUREMENT

### 5.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

The field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 24000/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Limit (dBuV/m) (at 3M) | |
|---|---|---|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

Notes:

(1) The limit for radiated test was performed according to FCC PART 15B.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RB / VB (emission in restricted band) | 1 MHz / 1 MHz for Peak, 1 MHz / 1Hz for Average |

| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

### 5.2.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

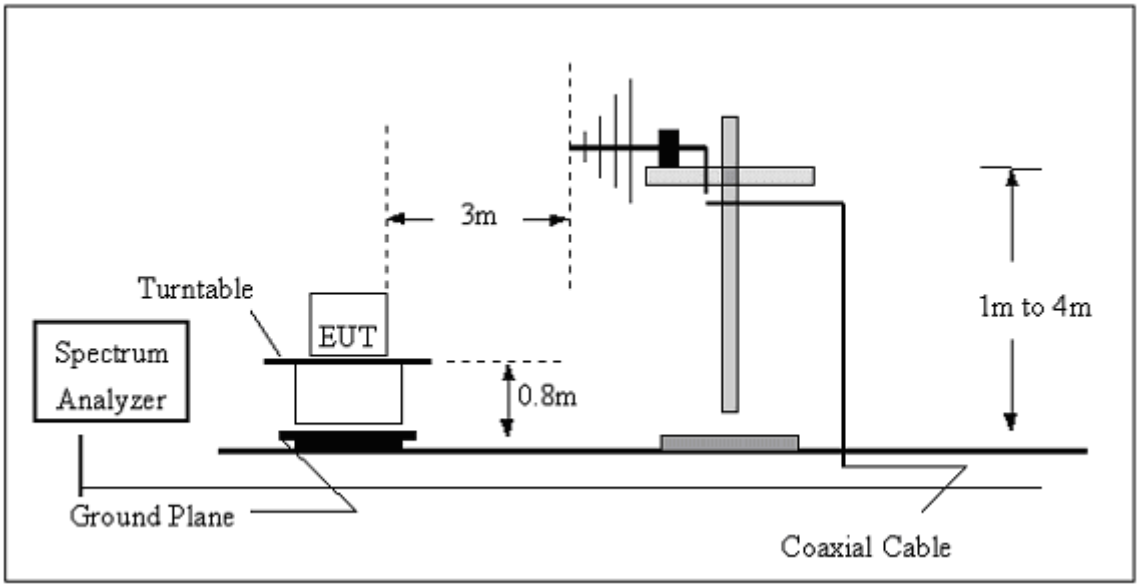
***Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported***

**5.2.3 DEVIATION FROM TEST STANDARD**

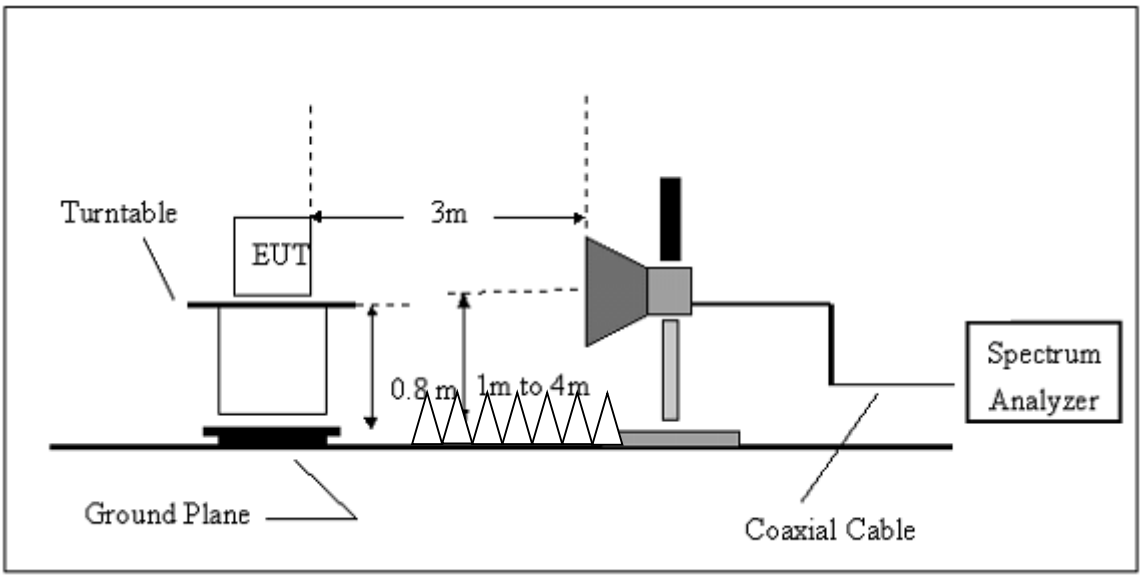
No deviation

**5.2.4 TEST SETUP**

（A）Radiated Emission Test-Up Frequency 30MHz~1GHz




（B）Radiated Emission Test-Up Frequency Above 1GHz



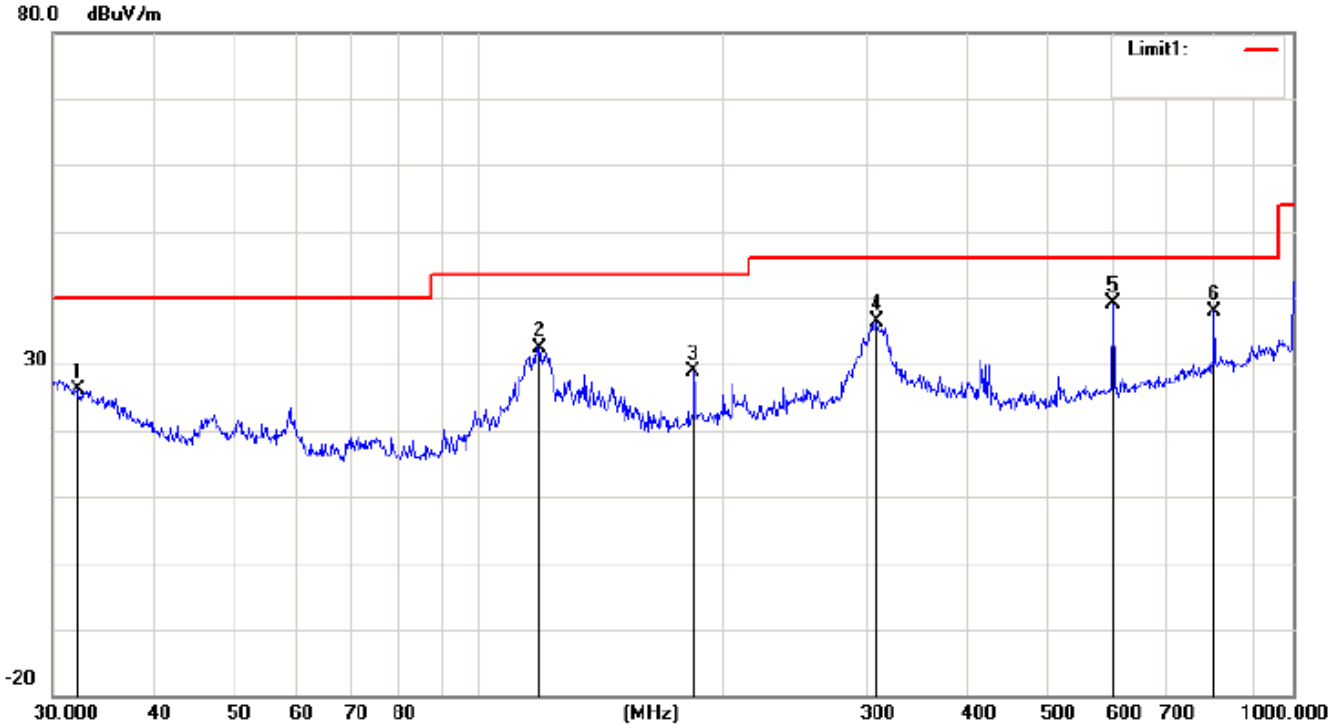

**5.2.5 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**5.2.5.1 TEST RESULTS (BETWEEN 30M – 1000 MHZ)**

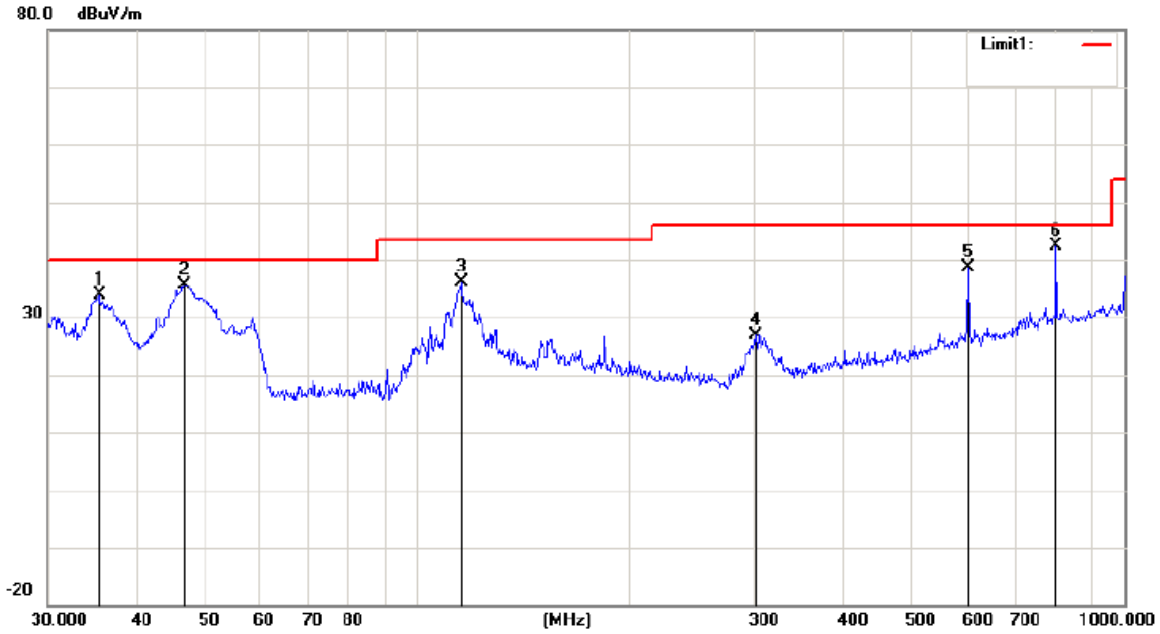
| EUT | 8 inch Windows OS Tablet | Model Name | DT080-MS-W10 |
|---|---|---|---|
| Temperature | 20 ℃ | Relative Humidity | 48% |
| Pressure | 1010 hPa | Polarization : | Horizontal |
| Test Mode | Mode 3 | Test Date | June 26, 2017 |

Note：All modes ,only the worst case is presented in this report .




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 32.1795 | 24.11 | 2.03 | 26.14 | 40.00 | -13.86 | QP |
| 2 | | 119.0180 | 34.77 | -2.41 | 32.36 | 43.50 | -11.14 | QP |
| 3 | | 183.8440 | 34.03 | -5.25 | 28.78 | 43.50 | -14.72 | QP |
| 4 | | 308.9126 | 40.90 | -4.47 | 36.43 | 46.00 | -9.57 | QP |
| 5 | * | 601.4265 | 38.11 | 1.04 | 39.15 | 46.00 | -6.85 | QP |
| 6 | | 801.7863 | 33.65 | 4.29 | 37.94 | 46.00 | -8.06 | QP |

| EUT | 8 inch Windows OS Tablet | Model Name | DT080-MS-W10 |
|---|---|---|---|
| Temperature | 20 ℃ | Relative Humidity | 48% |
| Pressure | 1010 hPa | Polarization : | Vertical |
| Test Mode | Mode 3 | Test Date | June 26, 2017 |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 35.4993 | 33.99 | -0.23 | 33.76 | 40.00 | -6.24 | QP |
| 2 | | 46.8303 | 43.20 | -7.56 | 35.64 | 40.00 | -4.36 | QP |
| 3 | | 115.3205 | 38.94 | -2.74 | 36.20 | 43.50 | -7.30 | QP |
| 4 | | 301.4224 | 32.48 | -5.54 | 26.94 | 46.00 | -19.06 | QP |
| 5 | | 601.4265 | 37.47 | 1.04 | 38.51 | 46.00 | -7.49 | QP |
| 6 | * | 801.7863 | 38.15 | 4.29 | 42.44 | 46.00 | -3.56 | QP |

**5.2.5.2 TEST RESULTS (1GHZ TO 25GHZ)**

| EUT | 8 inch Windows OS Tablet | Model Name | DT080-MS-W10 |
|---|---|---|---|
| Temperature | 20 ℃ | Relative Humidity | 48% |
| Pressure | 1010 hPa | Test Mode | Mode 2 |
| Test Date | June 26, 2017 | | |

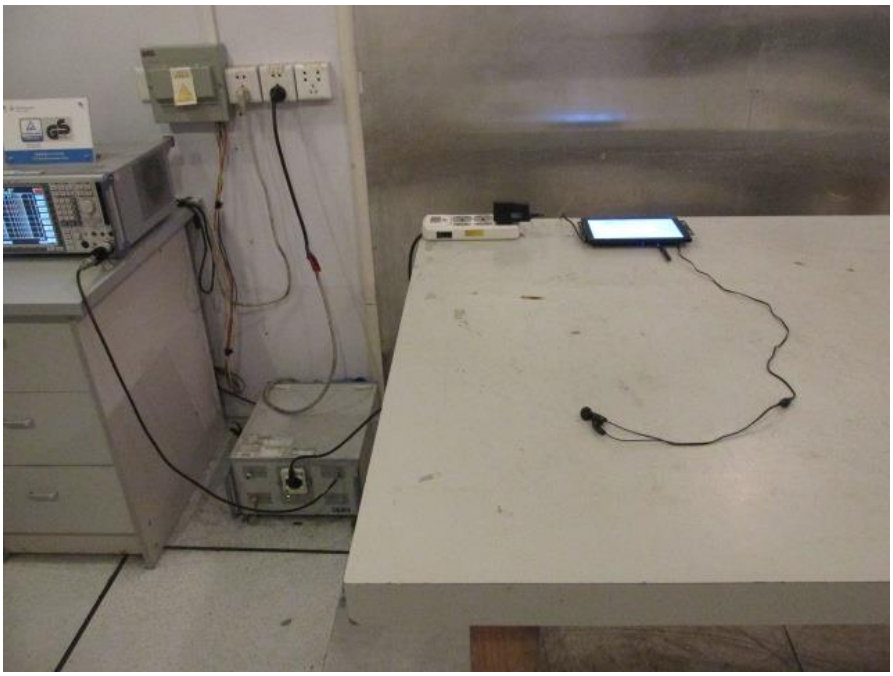
| Freq. (MHz) | Ant. Pol. | Emission Level(dBuV) | | Limit 3m(dBuV/m) | | Over(dB) | |
|---|---|---|---|---|---|---|---|
| | H/V | PK | AV | PK | AV | PK | AV |
| 1632.45 | V | 59.67 | 39.01 | 74 | 54 | -14.33 | -14.99 |
| 2829.27 | V | 59.51 | 40.10 | 74 | 54 | -14.49 | -13.90 |
| 1684.52 | H | 59.26 | 40.88 | 74 | 54 | -14.74 | -13.12 |
| 2831.6 | H | 58.64 | 39.64 | 74 | 54 | -15.36 | -14.36 |

Remark:
All emissions not reported were more than 20dB below the specified limit or in the noise floor.
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
All the x/y/z orientation has been investigated, and only worst case is presented in this report.

All modes ,only the worst case is presented in this report .

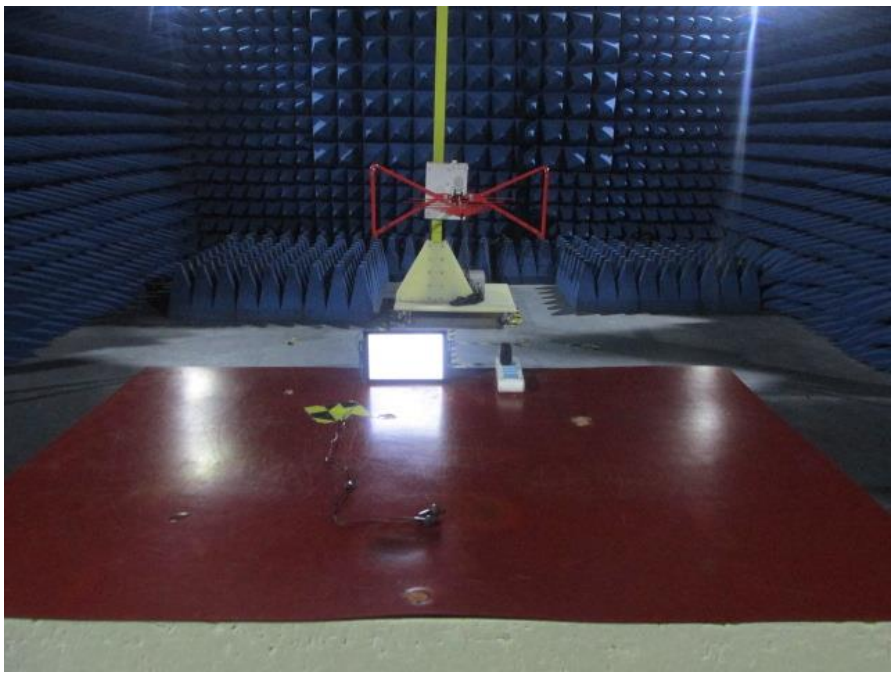
# 6. EUT TEST PHOTO

CONDUCTED EMISSION TEST

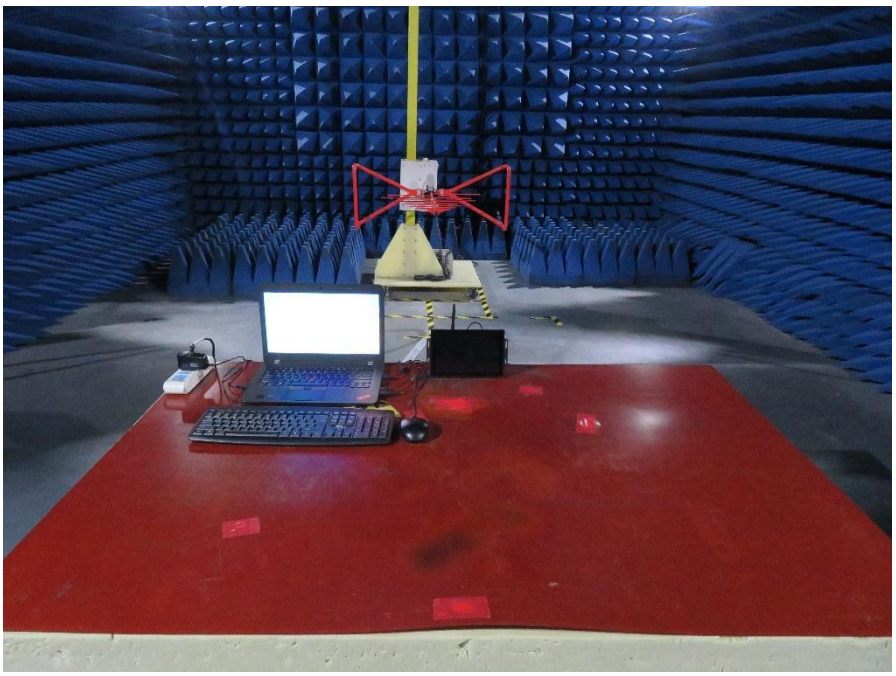


CONDUCTED EMISSION TEST

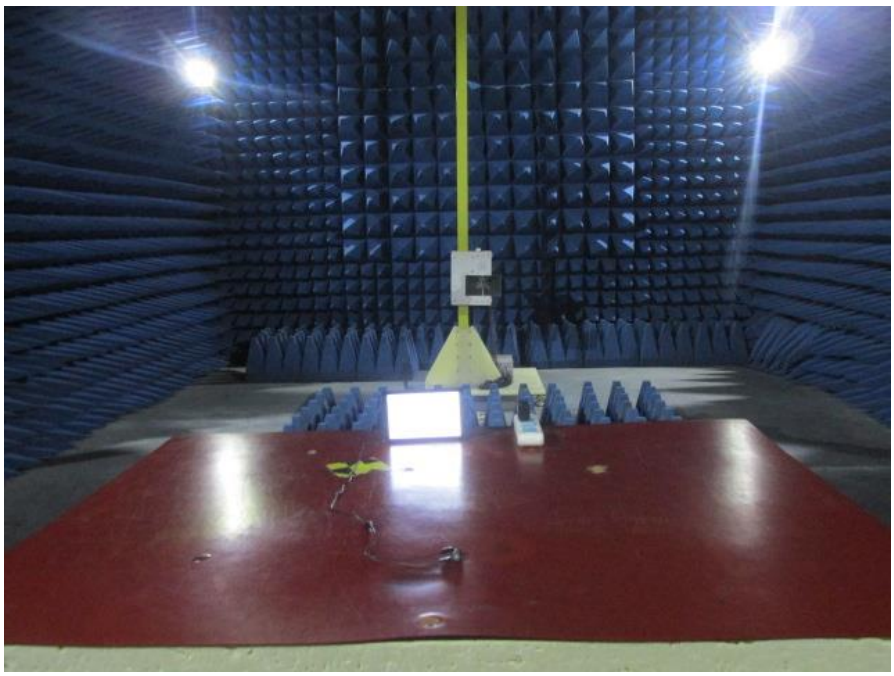
RADIATED EMISSION TEST



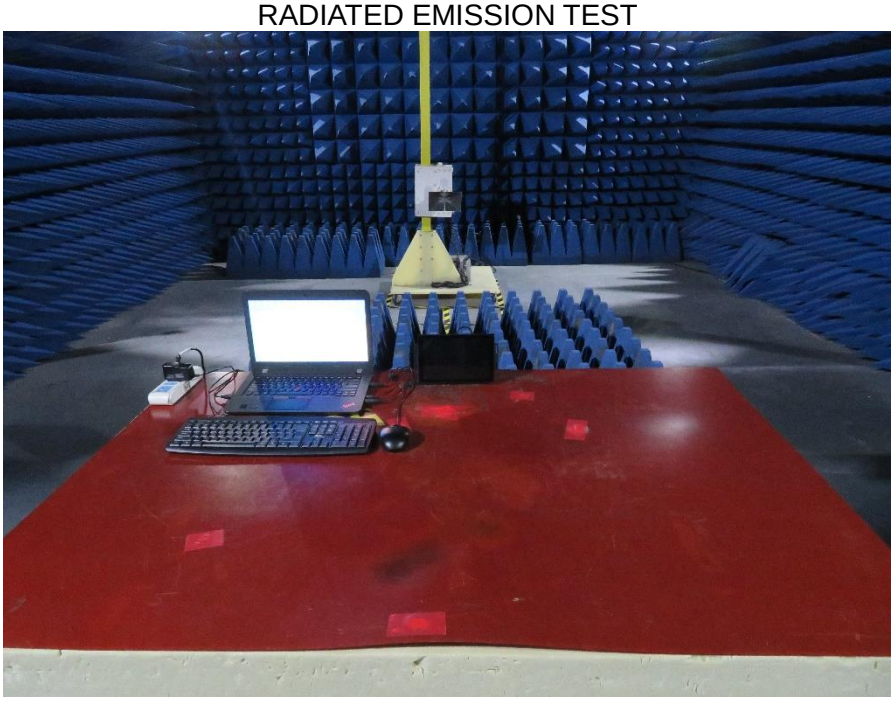
RADIATED EMISSION TEST



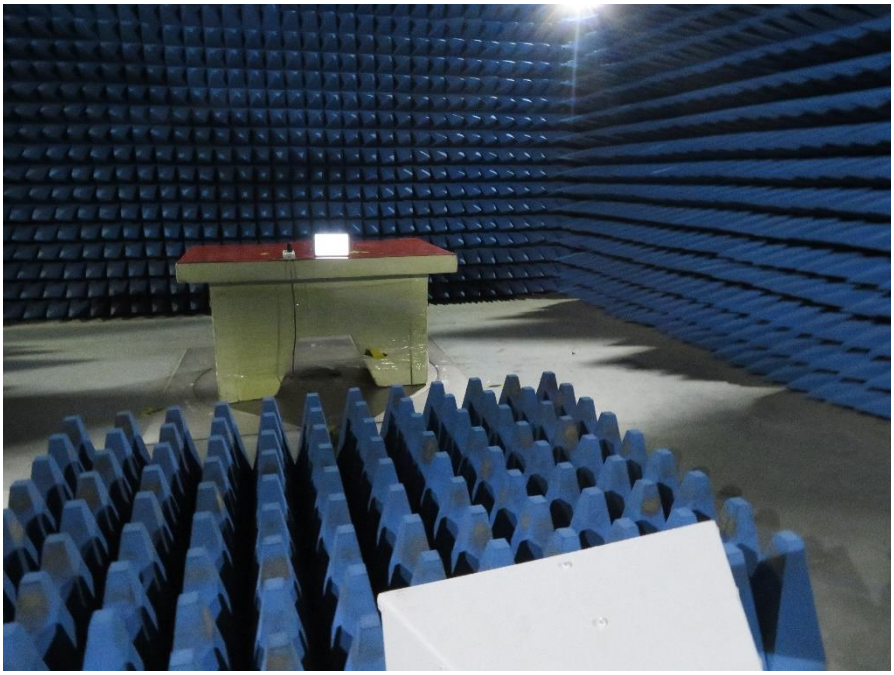
RADIATED EMISSION TEST



RADIATED EMISSION TEST



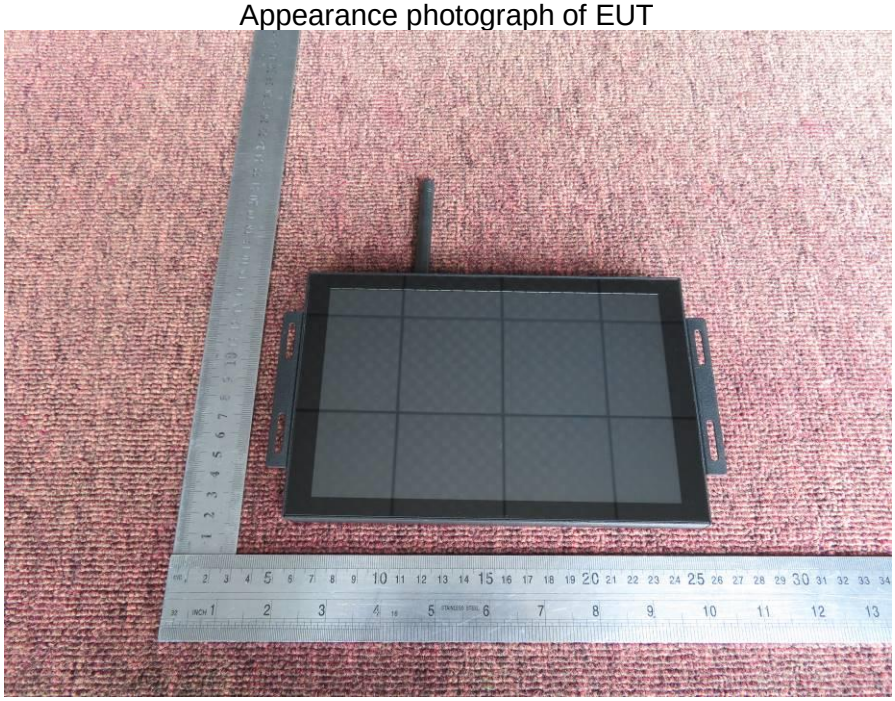
RADIATED EMISSION TEST



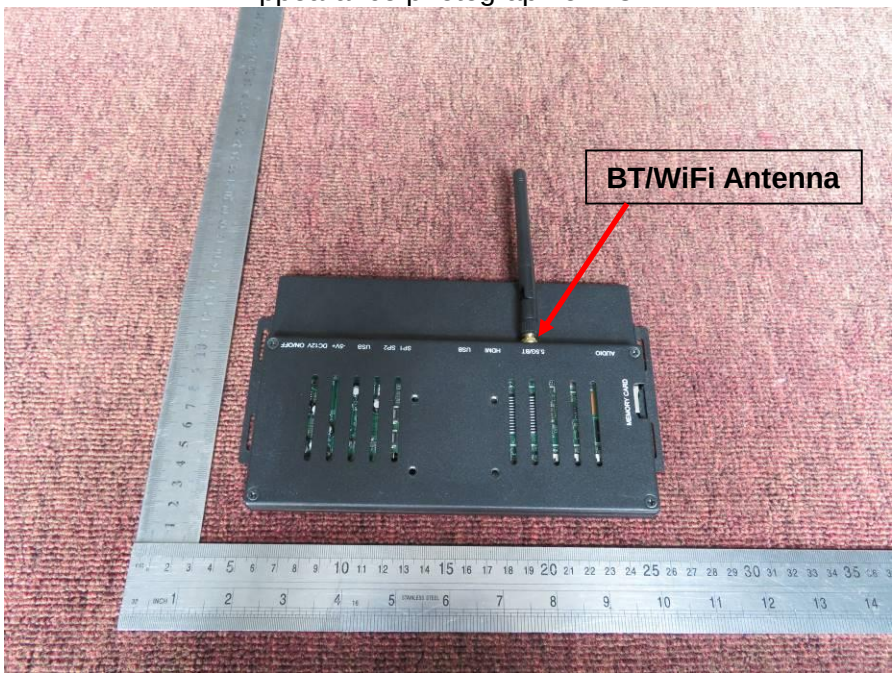
# 7. PHOTOGRAPHS OF EUT

Appearance photograph of EUT

Appearance photograph of EUT

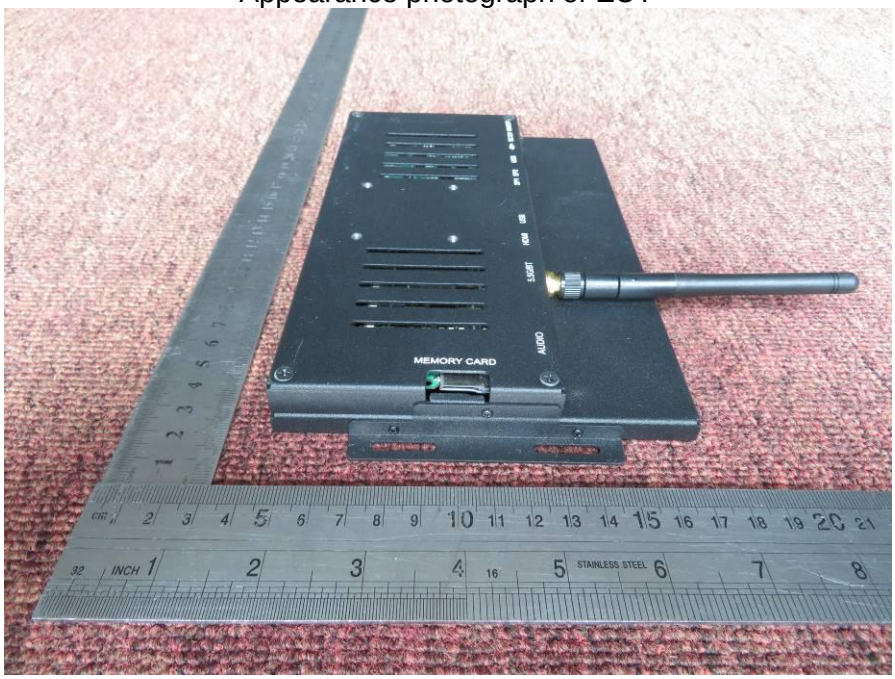


Appearance photograph of EUT




Appearance photograph of EUT

Appearance photograph of EUT

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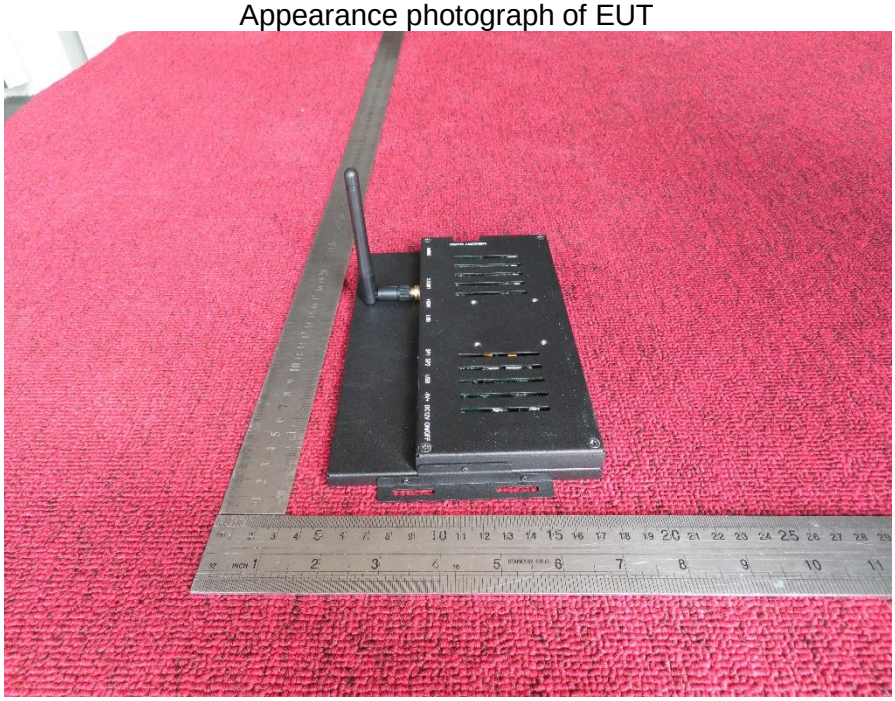
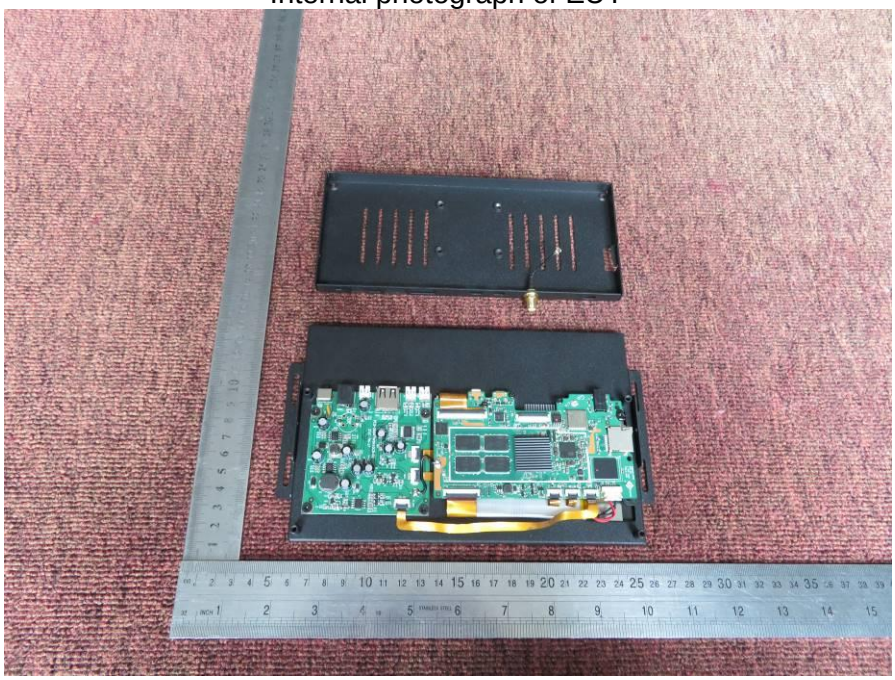


Appearance photograph of EUT

Appearance photograph of EUT

Internal photograph of EUT



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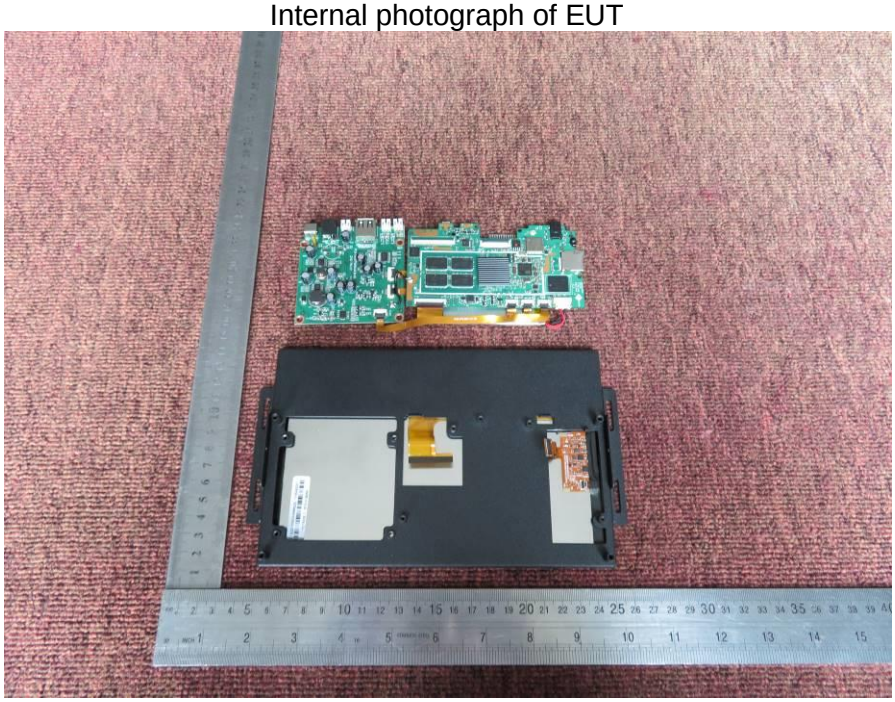

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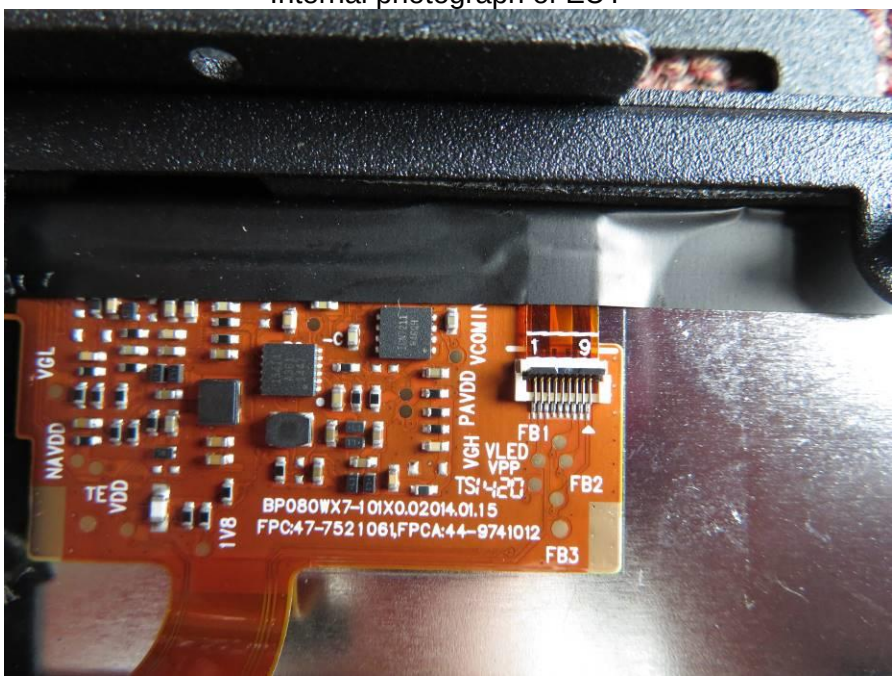


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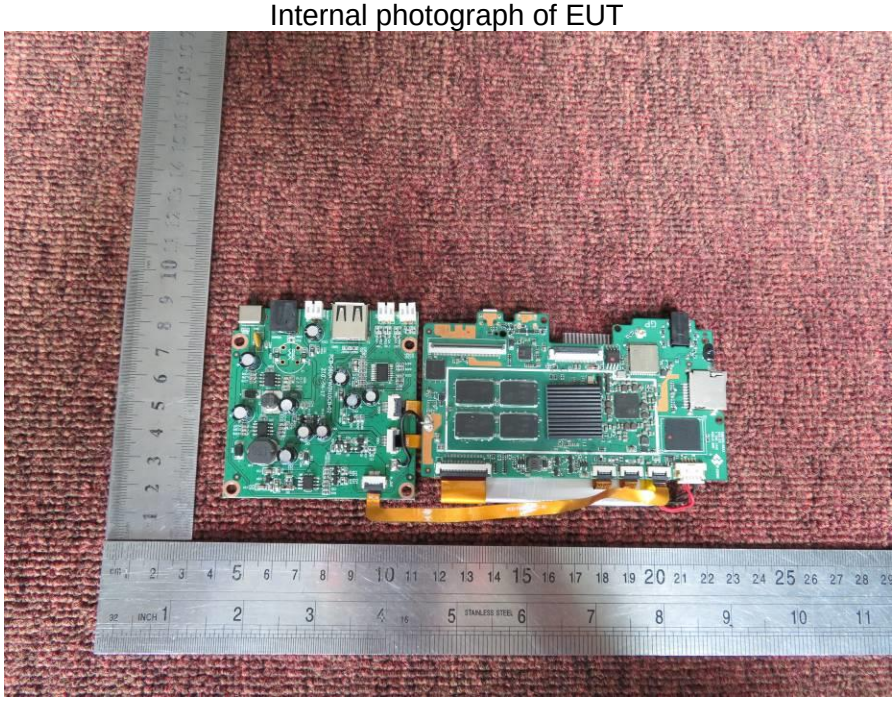

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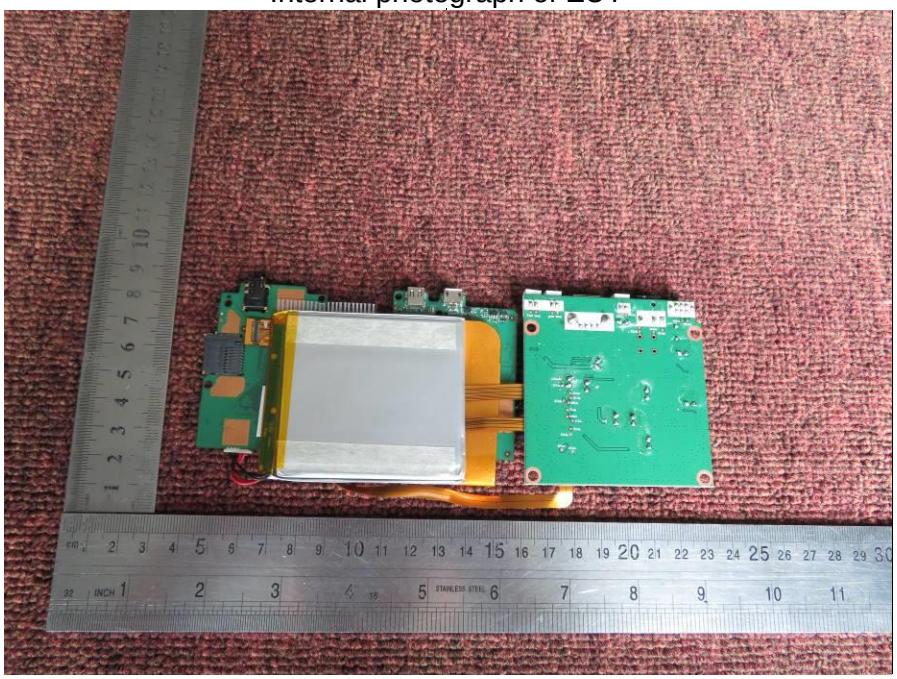

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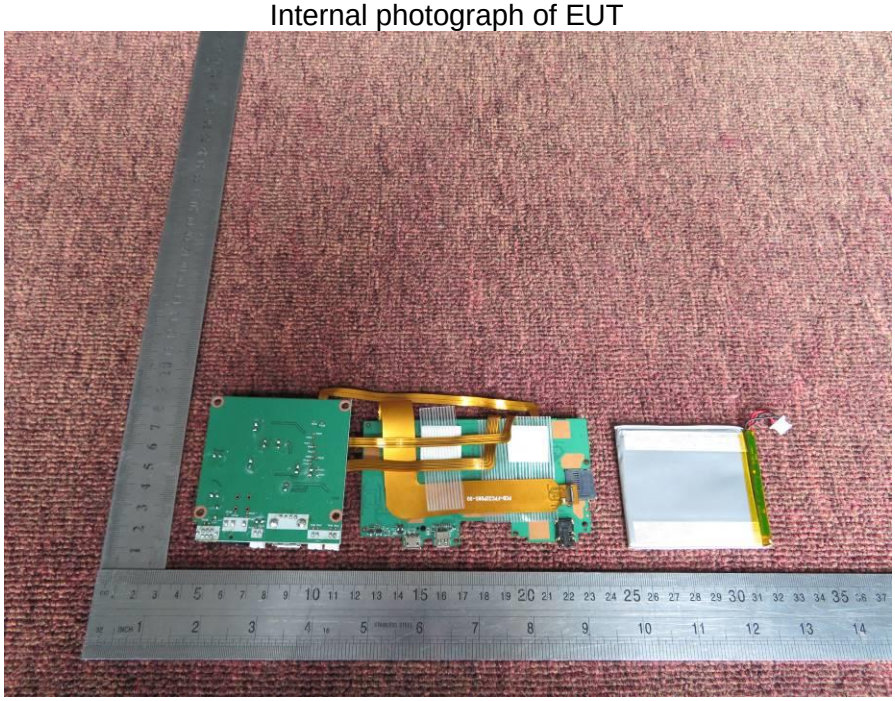

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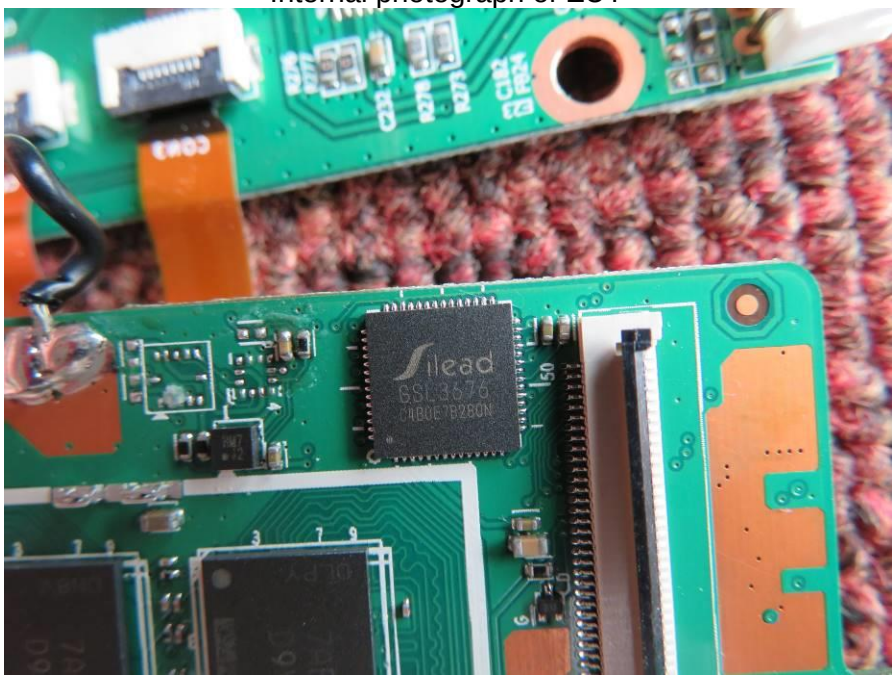


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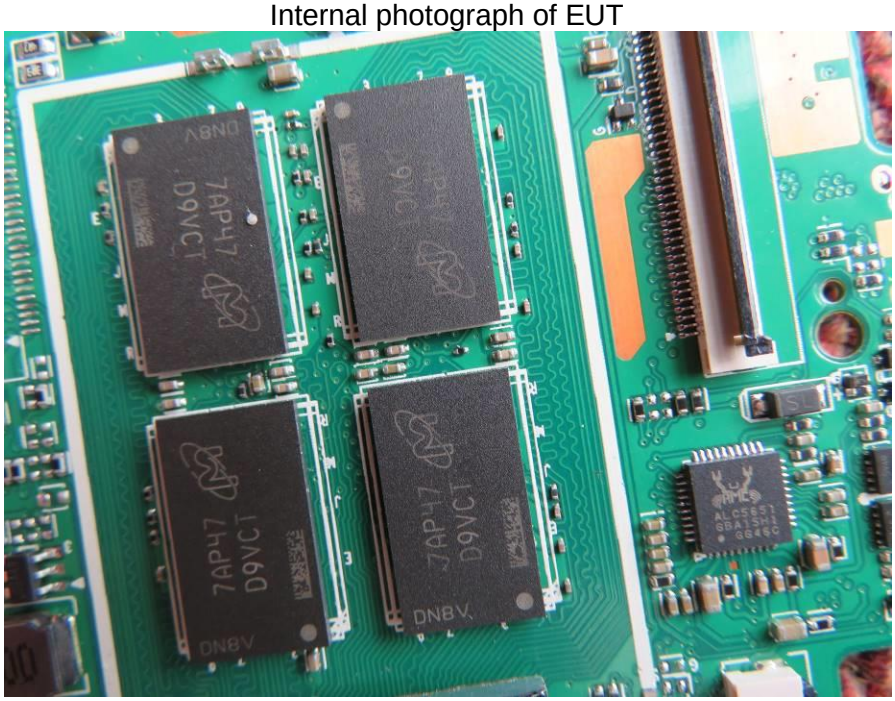

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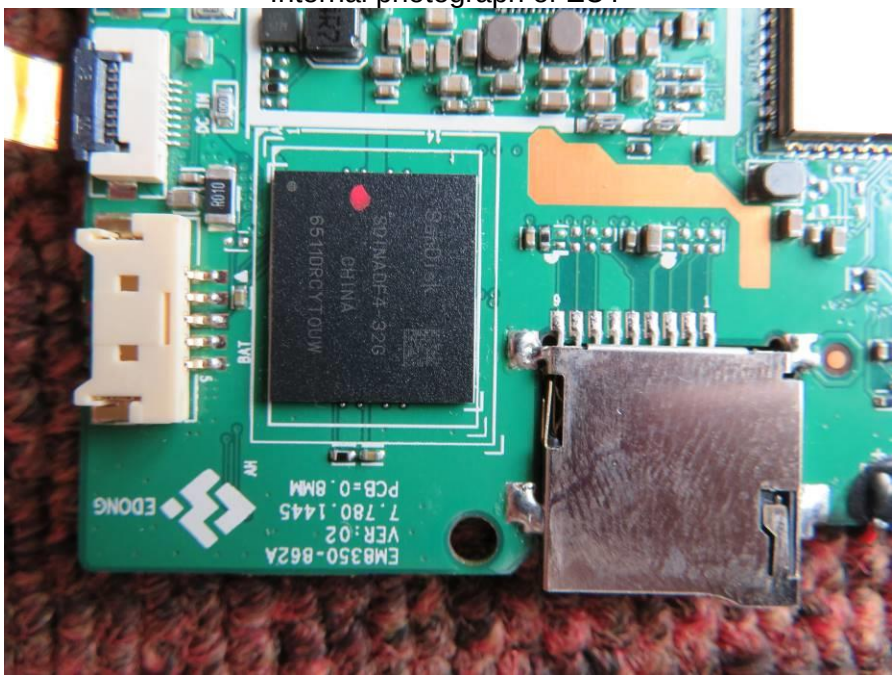


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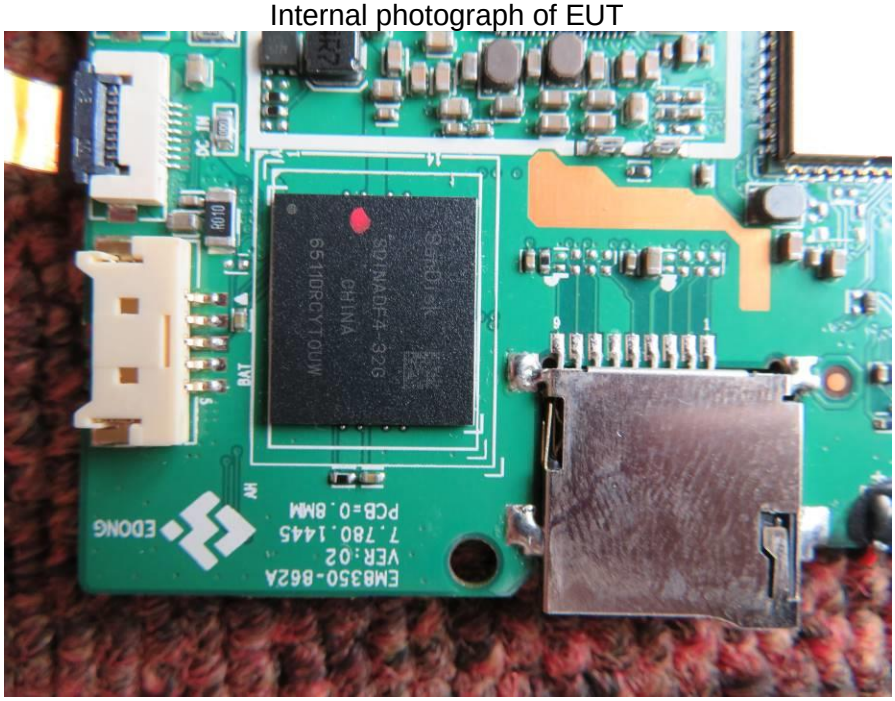

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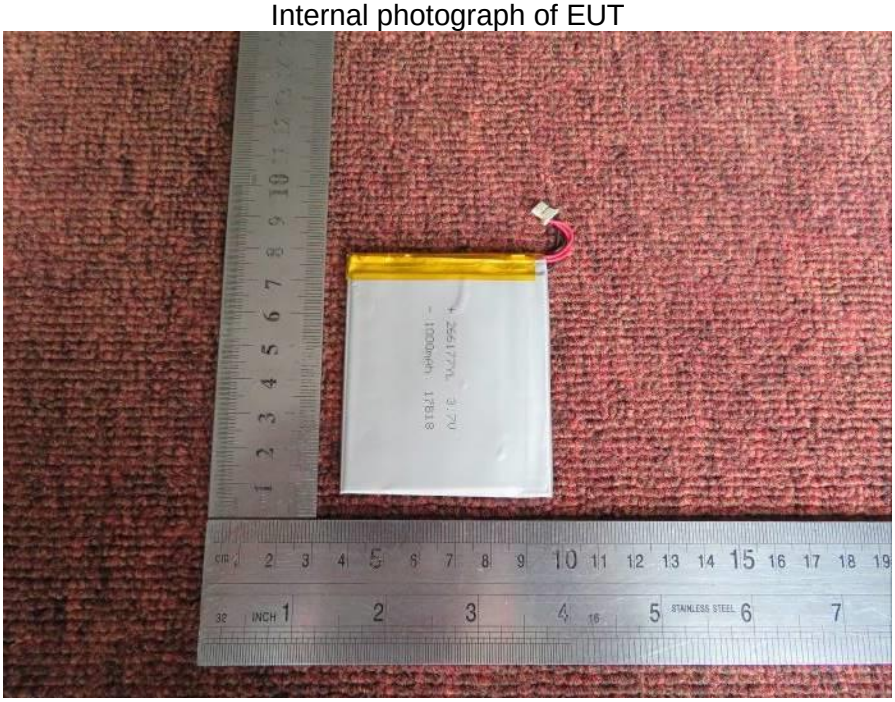

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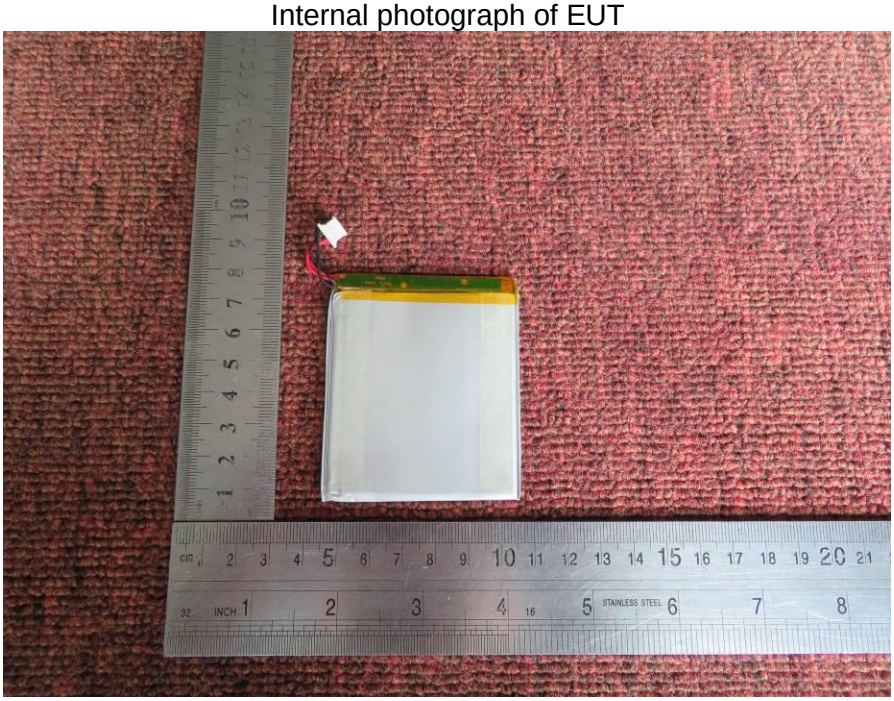

**---END OF REPORT---**