**Shenzhen Huatongwei International Inspection Co., Ltd.**
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone:86-755-26748019 Fax:86-755-26748089 http://www.szhtw.com.cn

# FCC REPORT

| | | |
|---|---|---|
| **Report Reference No. ..... :** | **TRE1509010405** | R/C…….: 44681 |
| **FCC ID ..... :** | **2AF54-COMPLEX11T** | |
| **Applicant's name ..... :** | **FY International LLC.** | |
| Address.....: | 548 Donald St. Ste. 3, Bedford, NH 03110 USA | |
| Manufacturer.....: | Shenzhen AlldoCube Technology & Science Co., Ltd | |
| Address.....: | Building No.1,Sunwang Industrial Park, Xiahenglang Dalang, Longhua District,Shenzhen, China | |
| **Test item description ..... :** | **2 In 1 Tablet PC** | |
| Trade Mark .....: | Cytrix | |
| Model/Type reference.....: | Complex 11t | |
| Listed Model(s) .....: | i8 | |
| **Standard ..... :** | **47 CFR FCC Part 15 Subpart B - Unintentional Radiators**<br>**ANSI C63.4: 2009** | |
| Date of receipt of test sample……..: | Sept 28, 2015 | |
| Date of testing……: | Sept 29, 2015-Oct 22, 2015 | |
| Date of issue……..: | Oct 22, 2015 | |
| **Result……..:** | **Pass** | |

| | | |
|---|---|---|
| Compiled by<br>( position+printed name+signature)..: | File administrators Shayne Zhu | Shayne Zhu |
| Supervised by<br>( position+printed name+signature)..: | Project Engineer Cary Luo | Cary Luo |
| Approved by<br>( position+printed name+signature)..: | RF Manager Hans Hu | Hans Hu |

| | |
|---|---|
| **Testing Laboratory Name ..... :** | **Shenzhen Huatongwei International Inspection Co., Ltd** |
| Address.....: | Bldg3, Hongfa Hi-tech Industrial Park, Genyu Road, Shenzhen, China |

# Contents

# 1 . TEST STANDARDS AND TEST DESCRIPTION

## 1.1. Test Standards

The tests were performed according to following standards:

47 CFR FCC Part 15 Subpart B - Unintentional Radiators

ANSI C63.4: 2009 – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the
Range of 9 kHz to 40GHz

# 2 . SUMMARY

## 2.1. Client Information

| | |
|---|---|
| Applicant: | FY International LLC. |
| Address: | 548 Donald St. Ste. 3, Bedford, NH 03110 USA |
| Manufacturer: | Shenzhen AlldoCube Technology & Science Co., Ltd |
| Address: | Building No.1,Sunwang Industrial Park, Xiahenglang Dalang, Longhua District,Shenzhen, China |

## 2.2. Product Description

| | |
|---|---|
| Name of EUT | 2 In 1 Tablet PC |
| Trade Mark: | Cytrix |
| Model No.: | Complex 11t |
| Listed Model(s): | i8 |
| Power supply: | DC 7.4V From internal battery |
| Adapter information: | Model name:FJ-SW1202000N<br>Input:100-240Va.c.~50/60Hz,0.6Amax<br>Output:12Vd.c., 2000mA |

## 2.3. EUT operation mode

| Test mode | USB Playing | SD Card Playing | Camera | USB Downloading |
|---|---|---|---|---|
| 1 | ■ | | | |
| 2 | | ■ | | |
| 3 | | | ■ | |
| 4 | | | | ■ |

Note:
1.■ is operation mode.
2. Pre-scan above all test mode, found mode 4 which it was worse case mode.

## 2.4. EUT configuration

**The following peripheral devices and interface cables were connected during the measurement:**

● - supplied by the manufacturer

○ - supplied by the lab

| | | | |
|---|---|---|---|
| ○ | Power Cable | Length (m) : | / |
| | | Shield : | / |
| | | Detachable : | / |
| ○ | Multimeter | Manufacturer : | / |
| | | Model No. : | / |

# 3. TEST ENVIRONMENT

## 3.1. Address of the test laboratory

Laboratory:Shenzhen Huatongwei International Inspection Co., Ltd. (Gongming)
Address: Bldg3, Hongfa Hi-tech Industrial Park, Genyu Road, Shenzhen, China
Phone: 86-755-26748019 Fax: 86-755-26748089

## 3.2. Test Facility

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

**CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

**A2LA-Lab Cert. No. 2243.01**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept 30, 2015.

**FCC-Registration No.: 662850**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date Jul. 01, 2012, valid time is until Jun. 01, 2015.

**FCC-Registration No.: 317478**

Shenzhen Huatongwei International Inspection Co., Ltd. (Gongming EMC Laboratory) has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 317478, Renewal date July 18, 2014, valid time is until July. 18, 2017.

**IC-Registration No.: 5377A**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.

**IC-Registration No.: 5377B**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. (Gongming EMC Laboratory) has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on September 3, 2014, valid time is until September 3, 2017.

**ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

**VCCI**

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.:R-2484. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 29, 2015.
Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2013. Valid time is until Dec. 23, 2016.
Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.
Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

**DNV**

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups

according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

## 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 950-1050mbar

## 3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

| Test | Range | Measurement Uncertainty | Notes |
|---|---|---|---|
| Radiated Emission | 30~1000MHz | 4.24 dB | (1) |
| Radiated Emission | 1~18GHz | 5.16 dB | (1) |
| Radiated Emission | 18-40GHz | 5.54 dB | (1) |
| Conducted Disturbance | 0.15~30MHz | 3.39 dB | (1) |

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 3.5. Equipments Used during the Test

| Conducted Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | EMI TEST RECEIVER | Rohde & Schwarz | ESCI | 100106 | 2014/11/1 |
| 2 | ARTIFICIAL MAINS | Rohde & Schwarz | ESH2-Z5 | 100028 | 2014/11/1 |
| 3 | PULSE LIMITER | Rohde & Schwarz | ESHSZ2 | 100044 | 2014/11/1 |
| 4 | EMI TEST SOFTWARE | Rohde & Schwarz | ES-K1 | N/A | N/A |

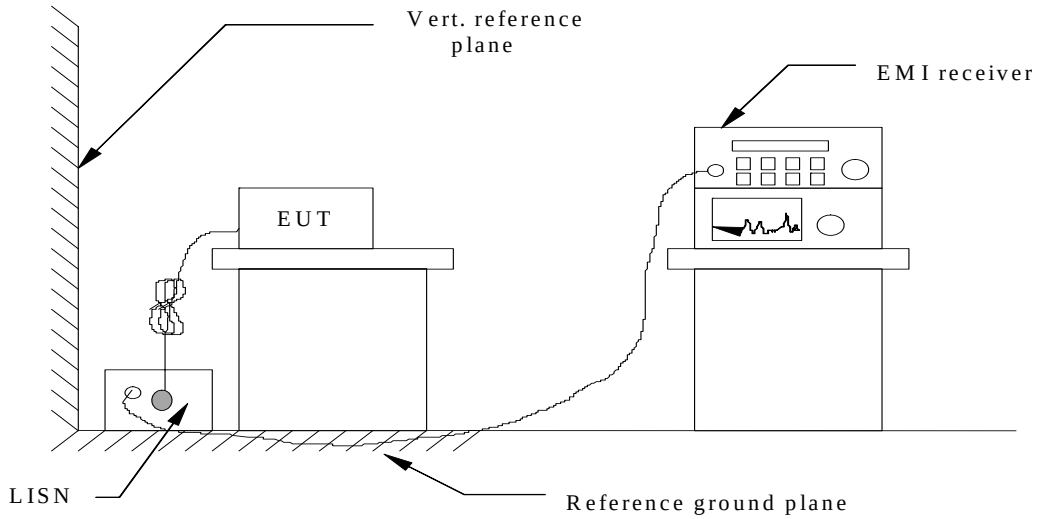
| Radiated Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | ULTRA-BROADBAND ANTENNA | ShwarzBeck | VULB9163 | 538 | 2014/11/1 |
| 2 | EMI TEST RECEIVER | Rohde & Schwarz | ESI 26 | 100009 | 2014/11/1 |
| 3 | EMI TEST Software | Audix | E3 | N/A | N/A |
| 4 | TURNTABLE | MATURO | TT2.0 | ---- | N/A |
| 5 | ANTENNA MAST | MATURO | TAM-4.0-P | ---- | N/A |
| 6 | EMI TEST Software | Rohde & Schwarz | ESK1 | N/A | N/A |
| 7 | ULTRA-BROADBAND ANTENNA | Rohde&Schwarz | HL562 | 100015 | 2014/11/1 |
| 8 | Amplifer | Sonoma | 310N | E009-13 | 2014/11/1 |
| 9 | JS amplifer | Rohde & Schwarz | JS4-00101800-28-5A | F201504 | 2014/11/1 |
| 11 | TURNTABLE | ETS | 2088 | 2149 | N/A |
| 12 | ANTENNA MAST | ETS | 2075 | 2346 | N/A |
| 13 | HORN ANTENNA | Rohde&Schwarz | HF906 | 100039 | 2014/11/1 |

The calibration interval was one year.

# 4. TEST CONDITIONS AND RESULTS

## 4.1. Conducted Emissions Test

**TEST CONFIGURATION**




**TEST PROCEDURE**

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2009.
2. Support equipment, if needed, was placed as per ANSI C63.4-2009.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2009.
4. The EUT received DC 5.0 from USB powered from AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

**CONDUCTED POWER LINE EMISSION LIMIT**

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following：

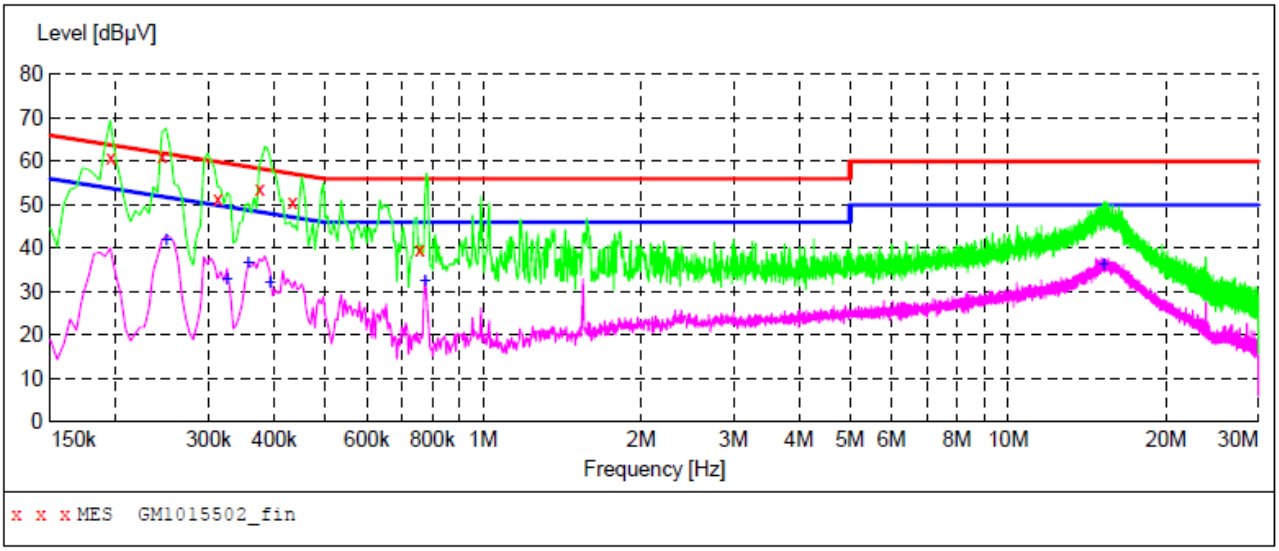
| Frequency (MHz) | Maximum RF Line Voltage (dBμV) | | | |
|---|---|---|---|---|
| | CLASS A | | CLASS B | |
| | Q.P. | Ave. | Q.P. | Ave. |
| 0.15 - 0.50 | 79 | 66 | 66-56* | 56-46* |
| 0.50 - 5.00 | 73 | 60 | 56 | 46 |
| 5.00 - 30.0 | 73 | 60 | 60 | 50 |

* Decreasing linearly with the logarithm of the frequency

**TEST RESULTS**

☒**Passed** ☐ **Not Applicable**

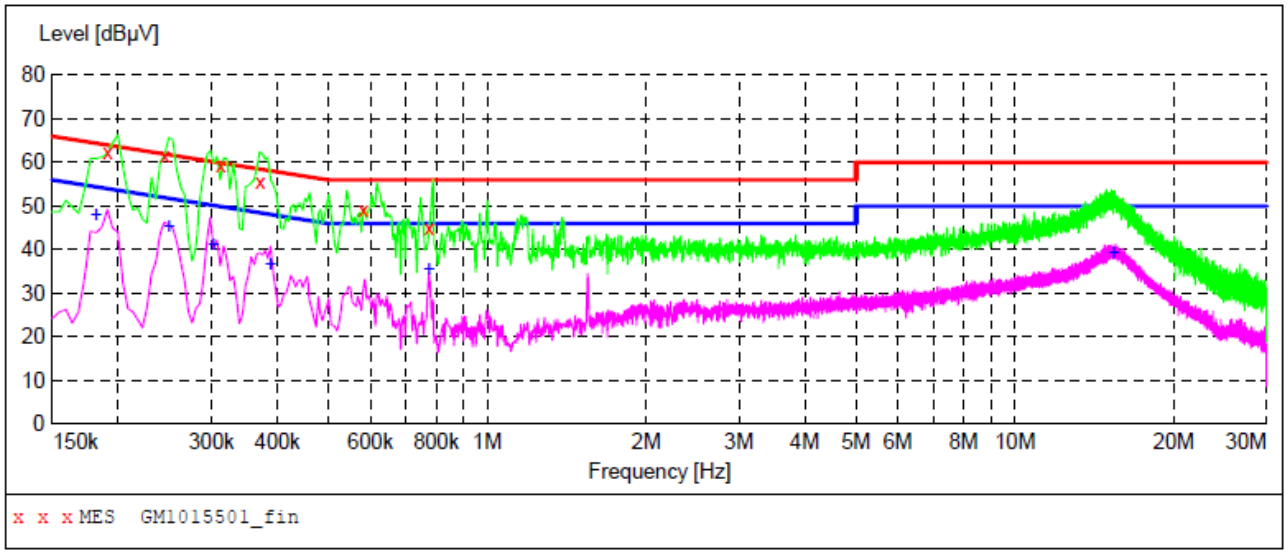
mode 4:
N:




| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.195000 | 61.00 | 10.2 | 64 | 2.8 | QP | N | GND |
| 0.244500 | 59.40 | 10.2 | 62 | 2.6 | QP | N | GND |
| 0.312000 | 51.30 | 10.2 | 60 | 8.6 | QP | N | GND |
| 0.375000 | 53.50 | 10.2 | 58 | 4.9 | QP | N | GND |
| 0.433500 | 50.50 | 10.2 | 57 | 6.7 | QP | N | GND |
| 0.757500 | 39.70 | 10.2 | 56 | 16.3 | QP | N | GND |

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.249000 | 41.90 | 10.2 | 52 | 9.9 | AV | N | GND |
| 0.325500 | 32.90 | 10.2 | 50 | 16.7 | AV | N | GND |
| 0.357000 | 36.80 | 10.2 | 49 | 12.0 | AV | N | GND |
| 0.393000 | 32.20 | 10.2 | 48 | 15.8 | AV | N | GND |
| 0.775500 | 32.40 | 10.2 | 46 | 13.6 | AV | N | GND |
| 15.198000 | 36.30 | 10.8 | 50 | 13.7 | AV | N | GND |

L1:



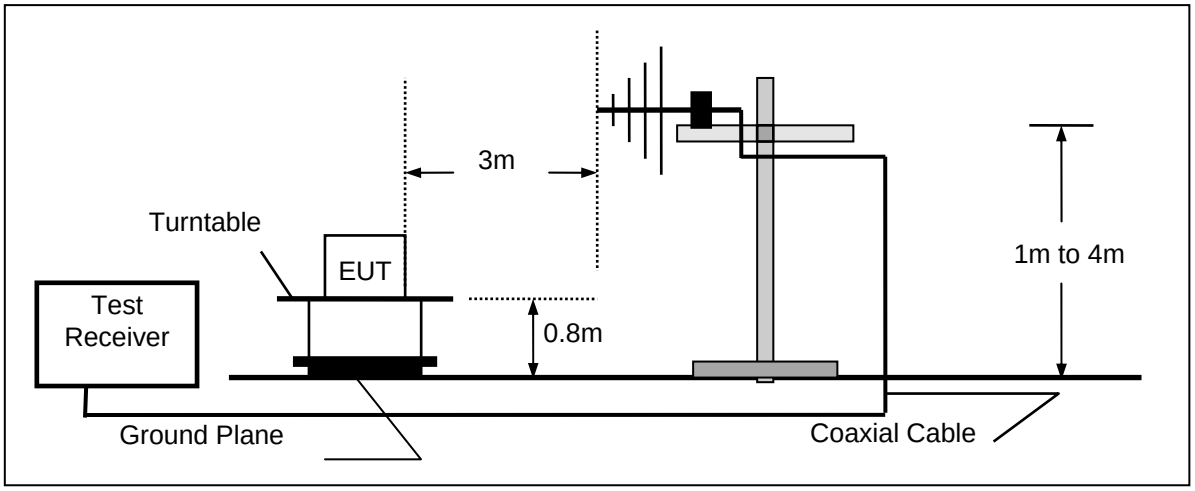

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.190500 | 62.20 | 10.2 | 64 | 1.8 | QP | L1 | GND |
| 0.244500 | 59.60 | 10.2 | 62 | 2.4 | QP | L1 | GND |
| 0.312000 | 57.40 | 10.2 | 60 | 2.6 | QP | L1 | GND |
| 0.370500 | 55.40 | 10.2 | 59 | 3.1 | QP | L1 | GND |
| 0.582000 | 49.20 | 10.2 | 56 | 6.8 | QP | L1 | GND |
| 0.775500 | 45.10 | 10.2 | 56 | 10.9 | QP | L1 | GND |

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.181500 | 48.00 | 10.2 | 54 | 6.4 | AV | L1 | GND |
| 0.249000 | 45.30 | 10.2 | 52 | 6.5 | AV | L1 | GND |
| 0.303000 | 41.10 | 10.2 | 50 | 9.1 | AV | L1 | GND |
| 0.388500 | 36.60 | 10.2 | 48 | 11.5 | AV | L1 | GND |
| 0.775500 | 35.60 | 10.2 | 46 | 10.4 | AV | L1 | GND |
| 15.400500 | 39.30 | 10.8 | 50 | 10.7 | AV | L1 | GND |

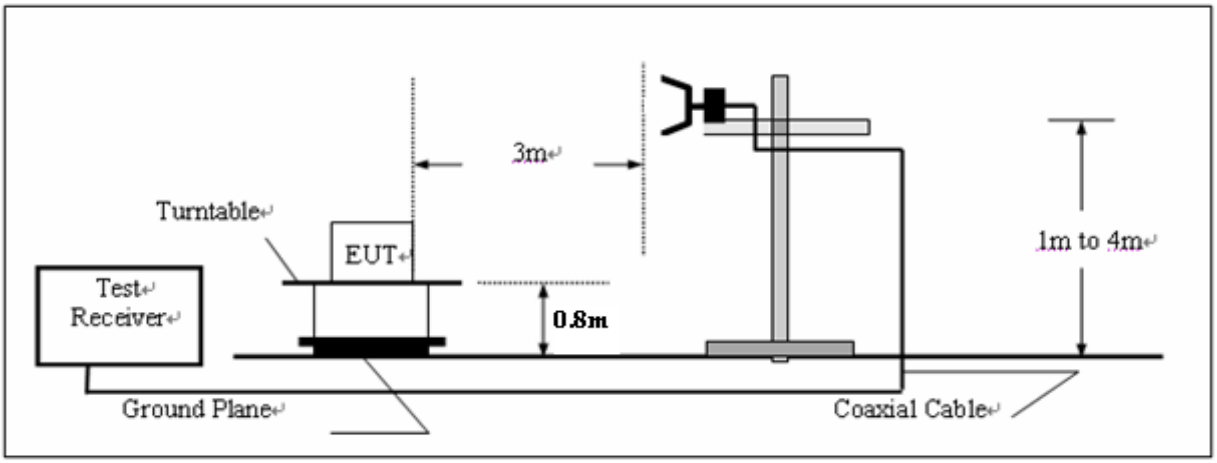
## 4.2. Radiated Emission Test

**TEST CONFIGURATION**

a) Radiated Emission Test Set-Up, Frequency below 1000MHz




b) Radiated Emission Test Set-Up, Frequency above 1000MHz




**TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The maximum operation frequency was 512MHz, the radiated emission test frequency from 30MHz to 18GHz.

## FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

**FS = RA + AF + CL - AG**

| | |
|---|---|
| Where FS = Field Strength | CL = Cable Attenuation Factor (Cable Loss) |
| RA = Reading Amplitude | AG = Amplifier Gain |
| AF = Antenna Factor | |

For example

| Frequency (MHz) | FS (dBμV/m) | RA (dBμV/m) | AF (dB) | CL (dB) | AG (dB) | Transd (dB) |
|---|---|---|---|---|---|---|
| 300.00 | 40 | 58.1 | 12.2 | 1.6 | 31.90 | -18.1 |

Transd=AF +CL-AG

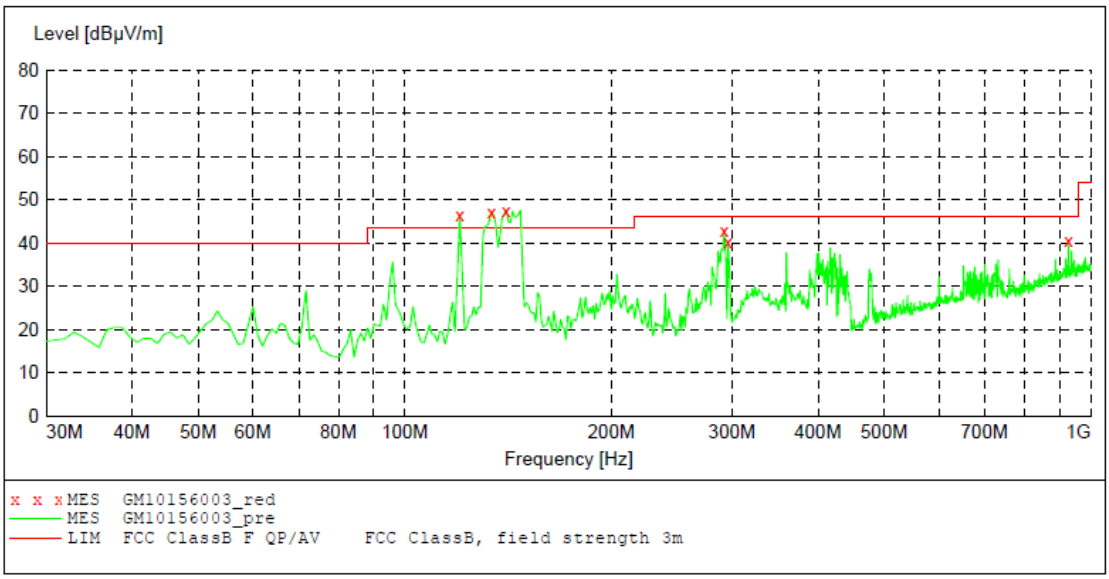
## RADIATION LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

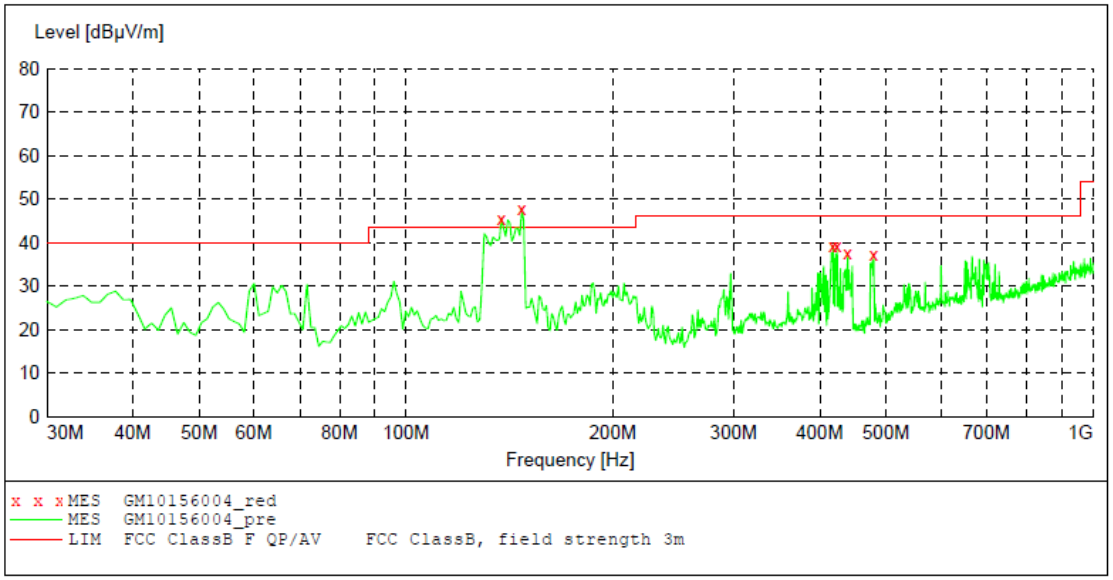
| Frequency (MHz) | Distance (Meters) | Radiated (dBμV/m) | Radiated (μV/m) |
|---|---|---|---|
| 30-88 | 3 | 40.0 | 100 |
| 88-216 | 3 | 43.5 | 150 |
| 216-960 | 3 | 46.0 | 200 |
| Above 960 | 3 | 54.0 | 500 |

**TEST RESULTS**

mode 4:



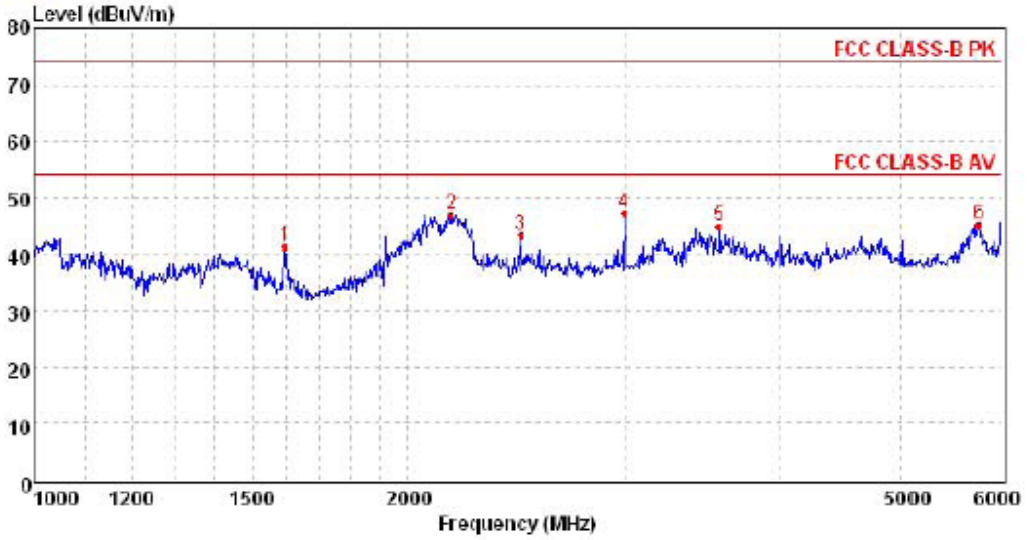

| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 120.210000 | 40.40 | -15.9 | 43.5 | 3.1 | QP | 300.0 | 160.00 | HORIZONTAL |
| 133.790000 | 40.00 | -17.6 | 43.5 | 3.5 | QP | 300.0 | 14.00 | HORIZONTAL |
| 140.580000 | 49.40 | -18.2 | 43.5 | 4.1 | QP | 300.0 | 160.00 | HORIZONTAL |
| 291.900000 | 42.70 | -14.0 | 46.0 | 3.3 | QP | 100.0 | 191.00 | HORIZONTAL |
| 295.780000 | 40.30 | -13.9 | 46.0 | 5.7 | QP | 100.0 | 310.00 | HORIZONTAL |
| 927.250000 | 40.40 | 3.2 | 46.0 | 5.6 | QP | 100.0 | 310.00 | HORIZONTAL |




| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 137.670000 | 39.40 | -18.0 | 43.5 | 4.1 | QP | 100.0 | 269.00 | VERTICAL |
| 147.370000 | 38.20 | -18.0 | 43.5 | 5.3 | QP | 100.0 | 196.00 | VERTICAL |
| 418.000000 | 39.30 | -10.1 | 46.0 | 6.7 | QP | 100.0 | 168.00 | VERTICAL |
| 423.820000 | 39.20 | -9.9 | 46.0 | 6.8 | QP | 100.0 | 168.00 | VERTICAL |
| 439.340000 | 37.50 | -9.3 | 46.0 | 8.5 | QP | 100.0 | 143.00 | VERTICAL |
| 479.110000 | 37.30 | -8.0 | 46.0 | 8.7 | QP | 100.0 | 168.00 | VERTICAL |

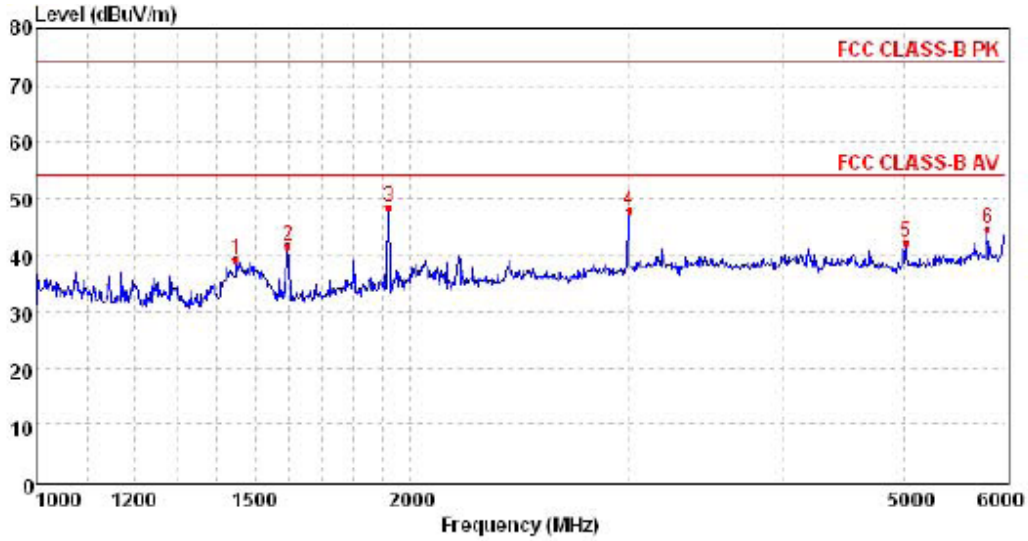
Above 1GHz

HORIZONTAL




| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1593.38 | 47.92 | 24.99 | 5.39 | 36.92 | 41.38 | 74.00 | -32.62 | Peak |
| 2 | 2168.51 | 51.21 | 26.75 | 6.45 | 37.40 | 47.01 | 74.00 | -26.99 | Peak |
| 3 | 2467.11 | 46.38 | 27.78 | 6.93 | 37.63 | 43.46 | 74.00 | -30.54 | Peak |
| 4 | 2988.48 | 48.69 | 28.49 | 8.15 | 37.98 | 47.35 | 74.00 | -26.65 | Peak |
| 5 | 3562.13 | 45.20 | 28.82 | 8.77 | 37.99 | 44.80 | 74.00 | -29.20 | Peak |
| 6 | 5747.46 | 40.71 | 32.80 | 9.69 | 38.08 | 45.12 | 74.00 | -28.88 | Peak |

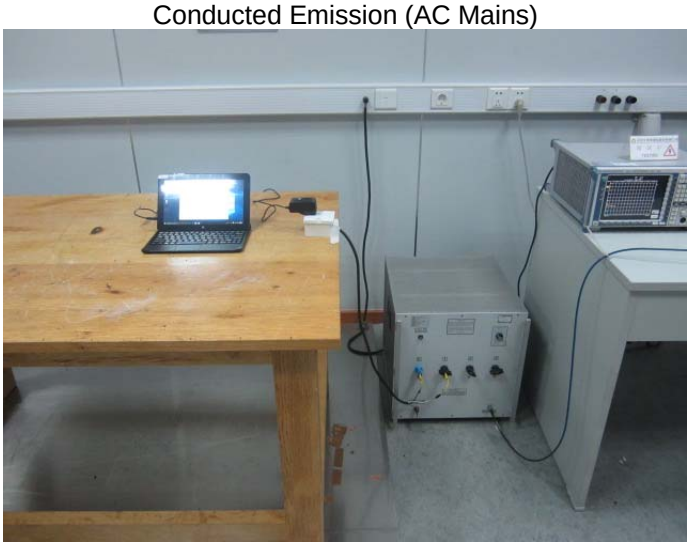
VERTICAL



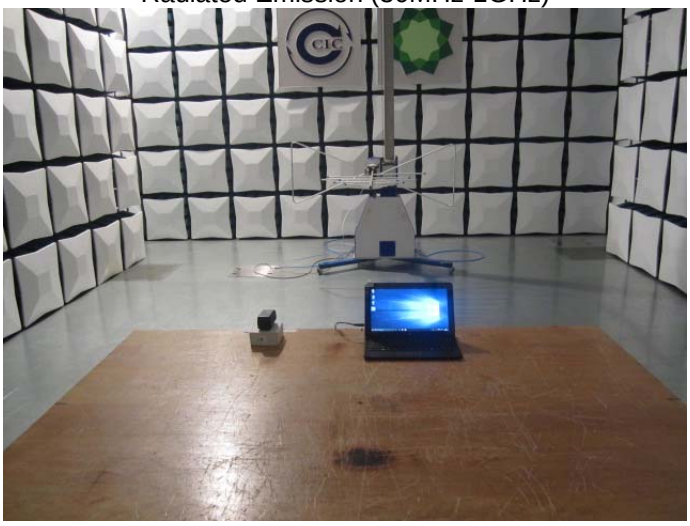

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1449.03 | 46.28 | 24.66 | 5.08 | 36.78 | 39.24 | 74.00 | -34.76 | Peak |
| 2 | 1593.38 | 48.18 | 24.99 | 5.39 | 36.92 | 41.64 | 74.00 | -32.36 | Peak |
| 3 | 1919.76 | 53.72 | 25.90 | 6.02 | 37.19 | 48.45 | 74.00 | -25.55 | Peak |
| 4 | 2999.21 | 49.07 | 28.50 | 8.17 | 37.99 | 47.75 | 74.00 | -26.25 | Peak |
| 5 | 5006.77 | 40.33 | 31.20 | 9.34 | 38.65 | 42.22 | 74.00 | -31.78 | Peak |
| 6 | 5799.18 | 40.16 | 32.88 | 9.71 | 38.04 | 44.71 | 74.00 | -29.29 | Peak |

# 5. Test Setup Photos of the EUT

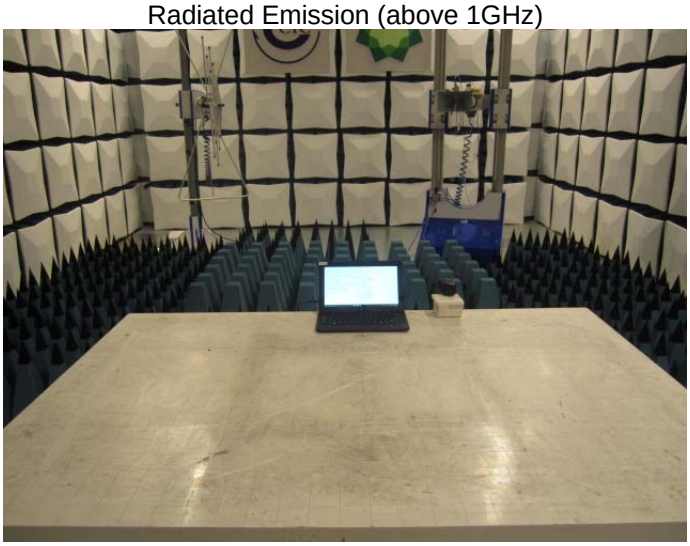
Conducted Emission (AC Mains)



Radiated Emission (30MHz-1GHz)



Radiated Emission (above 1GHz)



# 6. External and Internal Photos of the EUT

Reference to Test Report TRE1509010401.

.....End of Report.....