# FCC / Certification Test Report

**EverPro Technologies Company Ltd.**

**EverPro SuperTT Dongle**

**Model：EPU3D02NNXM**

**REPORT# 14WB0528021F Rev 0**
**FCC ID: 2ACI6-EPU3D-001**

**June.17, 2014**

Prepared for:

**EverPro Technologies Company Ltd.**

**4# Guanshan Er Road, Wuhan 430073 P, R, China**

Prepared by:

**WASHINGTON TECHNOLOGY INTERNATIONAL LIMITED**

This report applies only to the sample evaluated prior to the preparation date stated above.
This report must be copied in its entirety, including all technical documents

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FCC ID: 2ACI6-EPU3D-001

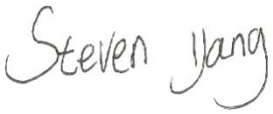
**WLL REPORT# 14WB0528021F Rev 0**

**June.17, 2014**

Prepared by:

Henry guo

Reviewed by:



Steven yang

# Abstract

This report has been prepared on behalf of EverPro Technologies Company Ltd. to document compliance with the limits for a digital device required under Part 15B of the FCC Rules and Regulations This Industrial scientific and medical equipment (FCC) Test Report documents the test configuration and test results for the EverPro Technologies Company Ltd. EverPro SuperTT Dongle. Testing was performed on TA Beijing Limited has been accepted by the FCC, the FCC Registration Number is 413514.

The EverPro Technologies Company Ltd. EverPro SuperTT Dongle complies with the requirements for a Part 15B Class B personal computers and peripherals device.

| Revision History | Reason | Date |
|---|---|---|
| Rev 0 | Initial Release | **June.17, 2014** |
| | | |

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# 1 Introduction

## 1.1 Compliance Statement

The EverPro Technologies Company Ltd. EverPro SuperTT Dongle complied with the requirements for a personal computers and peripherals device under Part 15B of the FCC Rules and Regulations

## 1.2 Test Scope Summary

Tests for radiated and conducted emissions were performed. All measurements were performed according to the 2009 version of ANSI C63.4. The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation.

| Test Specification | Specific Description | Date Completed | Result | Test location | Modifications (Y/N) |
|---|---|---|---|---|---|
| CFR47 Part 15B | Conducted Emissions at the Mains Port | June.13, 2014 | Complied | TA Beijing Limited | N |
| CFR47 Part 15B | Radiated Emissions | June.13, 2014 | Complied | TA Beijing Limited | N |

## 1.3 Contract Information

Customer: EverPro Technologies Company Ltd.

4# Guanshan Er Road, Wuhan 430073 P, R, China

Abbreviations

| | |
|---|---|
| **A** | **A**mpere |
| **ac** | **a**lternating **c**urrent |
| **AM** | Amplitude Modulation |
| **Amps** | **Amp**ere**s** |
| **b/s** | **b**its per **s**econd |
| **BW** | **B**and**W**idth |
| **CE** | **C**onducted **E**mission |
| **cm** | **c**enti**m**eter |
| **CW** | **C**ontinuous **W**ave |
| **dB** | **d**eci**B**el |
| **dc** | **d**irect **c**urrent |
| **EMI** | **E**lectro**m**agnetic **I**nterference |
| **EUT** | **E**quipment **U**nder **T**est |
| **FM** | **F**requency **M**odulation |
| **G** | **g**iga - prefix for $10^9$ multiplier |
| **Hz** | **H**ertz |
| **IF** | **I**ntermediate **F**requency |
| **k** | **k**ilo - prefix for $10^3$ multiplier |
| **LISN** | **L**ine **I**mpedance **S**tabilization **N**etwork |
| **M** | **M**ega - prefix for $10^6$ multiplier |
| **m** | **m**eter |
| **µ** | **m**icro - prefix for $10^{-6}$ multiplier |
| **NB** | **N**arrow**b**and |
| **QP** | **Q**uasi-**P**eak |
| **RE** | **R**adiated **E**missions |
| **RF** | **R**adio **F**requency |
| **rms** | **r**oot-**m**ean-**s**quare |
| **SN** | **S**erial **N**umber |
| **S/A** | **S**pectrum **A**nalyzer |
| **V** | **V**olt |

# 2 Equipment Under Test

## 2.1 EUT Identification

The results obtained relate only to the item(s) tested.

**Table 1: Overview of EverPro SuperTT Dongle, Equipment Under Test**

| | |
|---|---|
| **Model(s) Tested:** | EPU3D02ARSM |
| **EUT Specifications:** | In the tests the primary power was provided by AC 120V/60Hz |
| **Test Date(s):** | June.13, 2014 |

## 2.2 EUT Description

Product Name: EverPro SuperTT Dongle

Model No. : EPU3D02ARSM

EUT Rated Voltage: AC 120V/60Hz

EUT highest working frequency: 2.5GHz

## 2.3 Test Configuration

The EverPro Technologies Company Ltd. EverPro SuperTT Dongle, Equipment Under Test (EUT), was operated from AC adaptor.

The EverPro SuperTT Dongle was configured as below:

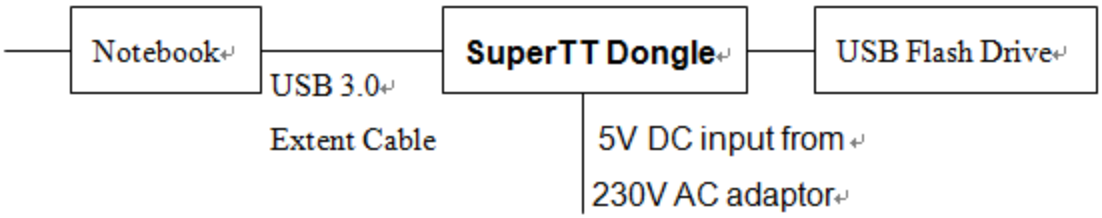



**Figure 1: Test Configuration**

## 2.4 Equipment Configuration

The EUT was set up as outlined in Figure 1. The EUT was comprised of the following equipment. (All Modules, PCBs, etc. listed were considered as part of the EUT, as tested.)

**Table 2: Equipment Configuration**

| Slot # | Name / Description | Model Number | Part Number | Serial Number | Revision |
|---|---|---|---|---|---|
| 1. | EverPro SuperTT Dongle | EPU3D02ARSM | / | / | / |

## 2.5 Interface Cables

**Table 3: Interface Cables**

| Port Identification | Connector Type | Cable Length | Shielded (Y/N) | Termination Point |
|---|---|---|---|---|
| USB3.0 Extent Cable | USB 3.0 | 0.5m | N | Between EUT and AE |

## 2.6 Support Equipment

| | Description | Manufacturer | Model | Serial Number | Approved type |
|---|---|---|---|---|---|
| 1 | Notebook | Lenovo | B490 | WB13103812 | DOC |
| 2 | Power Adapter | Shenzhen Nalin Elec. Tech. CO., LTD. | NLD200050T1A | / | Verification |
| 3 | USB disk | Kingston | DataTraveler 100 G3 | / | DOC |

## 2.7 Testing Algorithm

The EverPro SuperTT Dongle was operated continuously by normal operating conditions.

During the testing, we verified the notebook connected with EUT both by a general USB 3.0 extent cable and by a USB 3.0-Fiber-USB 3.0 cable, the test result are all pass.

## 2.8 Test Location

Name: TA Beijing Limited

FCC Registration Number: 413514.

Address: Building B-4,No.1, JingHai 3rd Road, BDA East ParK, Beijing 100176, China

## 2.9 EUT Modification

N/A

## 2.10 Measurements

### *2.10.1 Measurement Method*

All measurements herein were performed according to the 2009 version of ANSI C63.4. The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation. Calibration checks are made periodically to verify proper performance of the measuring instrumentation.

## 2.11 Measurement Uncertainty

All results reported herein relate only to the equipment tested. The basis for uncertainty calculation uses ANSI/NCSL Z540-2-1997 with a type B evaluation of the standard uncertainty. Elements contributing to the standard uncertainty are combined using the method described in Equation 1 to arrive at the total standard uncertainty. The standard uncertainty is multiplied by the coverage factor to determine the expanded uncertainty which is generally accepted for use in commercial, industrial, and regulatory applications and when health and safety are concerned (see Equation 2). A coverage factor was selected to yield a 95% confidence in the uncertainty estimation.

**Equation 1: Standard Uncertainty**

$$u_c = \pm\sqrt{\frac{a^2}{div_a{}^2} + \frac{b^2}{div_b{}^2} + \frac{c^2}{div_c{}^2} + .....}$$

where $u_c$ = standard uncertainty

a, b, c,.. = individual uncertainty elements

$div_{a,\ b,\ c}$ = the individual uncertainty element divisor based on the probability distribution

divisor = 1.732 for rectangular distribution

divisor = 2 for normal distribution

divisor = 1.414 for trapezoid distribution

**Equation 2: Expanded Uncertainty**

$$U = ku_c$$

where U = expanded uncertainty

k = coverage factor

$k \leq 2$ for 95% coverage (ANSI/NCSL Z540-2 Annex G)

$u_c$ = standard uncertainty

The measurement uncertainty complies with the maximum allowed uncertainty from CISPR 16-4-2. Measurement uncertainty is not used to adjust the measurements to determine compliance. The expanded uncertainty values for the various scopes in the WLL accreditation are provided in Table 4 below.

**Table 4: Expanded Uncertainty List**

| Scope | Standard(s) | Band | Expanded Uncertainty |
|---|---|---|---|
| Uncertainty for Conduction emission test | FCC Part 15 | 9 KHz-150 KHz | 3.62dB |
| | | 150 KHz-30 MHz | 3.20dB |
| Uncertainty for Radiation Emission test in 3m chamber | FCC Part 15 | 30MHz-1GHz | 4.84dB |
| | | 1GHz-3GHz | 4.7dB |
| | | 3GHz-6GHz | 4.4dB |

# 3 Test Results

## 3.1 Conducted Emissions

### *3.1.1 Requirements*

Test Arrangement: Table Top

Compliance Standard: FCC Part 15B

| Frequency of emission (MHz) | Conducted limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

### *3.1.2 Test Equipment*

| Item | Equipment Description | Model | Serial Num | Calibration Period | Calibration Due Date | Calibrated By | Manufacturer |
|---|---|---|---|---|---|---|---|
| 1 | EMI Receiver | ESIB26 | 100301 | 1 year | 2015/3/27 | TMC | R&S |
| 2 | LISN | ENV216 | 101094 | 1year | 2015/3/27 | TMC | R&S |

### *3.1.3 Test Procedure*

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #1). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#2).Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2009 on conducted Emission test.

The bandwidth of the R&S Test Receiver ESHS20 was set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

### *3.1.4 Test Data*

The EUT EverPro SuperTT Dongle complied with the Conducted Emissions requirements. Table 5 provides the test results for Conducted Emissions.

**Test Engineer(s):** Han Min

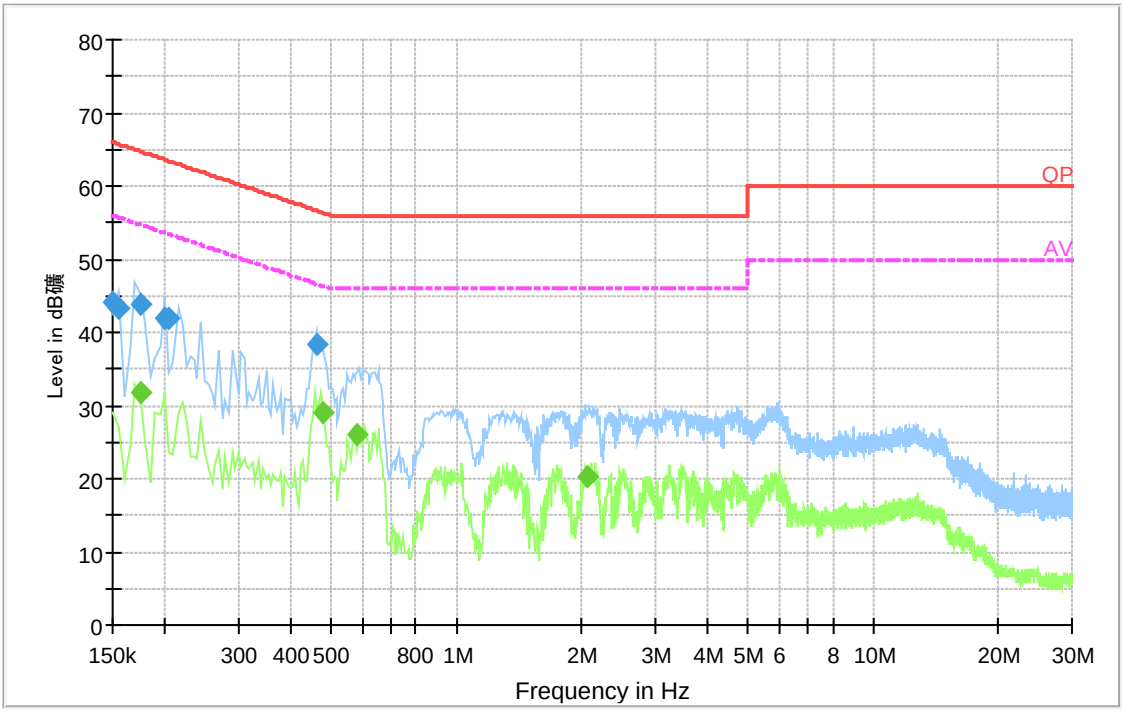
**Test Date(s):** Jun.13, 2014

**Test Location:** TA Beijing Limited

## Table 5: Conducted Emissions Test Data

**L**

ENV216 Main Voltage Class B_L




## Final Result 1

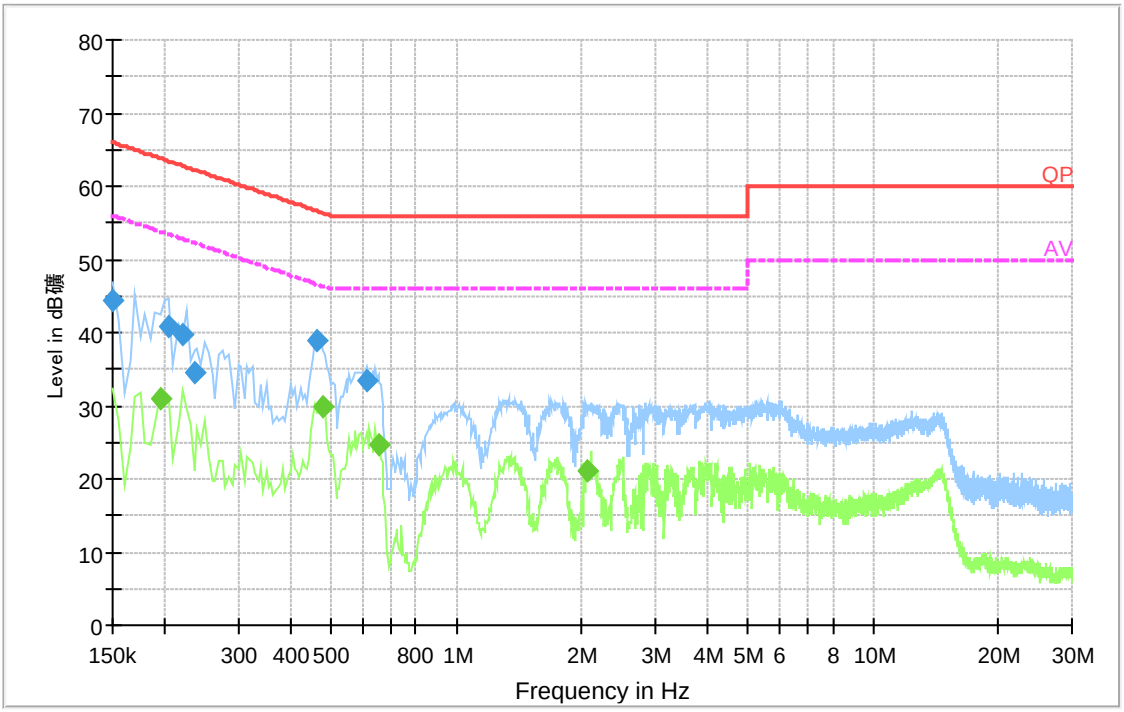
| Frequency (MHz) | QuasiPeak (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|---|---|---|
| 0.150000 | 44.1 | 1000.0 | 0.200 | On | L1 | 10.0 | 21.9 | 66.0 |
| 0.155000 | 43.2 | 15000.0 | 9.000 | On | L1 | 10.1 | 22.5 | 65.7 |
| 0.175000 | 43.8 | 15000.0 | 9.000 | On | L1 | 10.2 | 20.9 | 64.7 |
| 0.200000 | 42.0 | 15000.0 | 9.000 | On | L1 | 9.9 | 21.6 | 63.6 |
| 0.205000 | 41.8 | 15000.0 | 9.000 | On | L1 | 9.9 | 21.6 | 63.4 |
| 0.465000 | 38.3 | 15000.0 | 9.000 | On | L1 | 10.1 | 18.3 | 56.6 |

## Final Result 2

| Frequency (MHz) | Average (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|---|---|---|
| 0.175000 | 31.7 | 15000.0 | 9.000 | On | L1 | 10.2 | 23.1 | 54.7 |
| 0.480000 | 29.0 | 15000.0 | 9.000 | On | L1 | 10.1 | 17.3 | 46.3 |
| 0.580000 | 25.9 | 15000.0 | 9.000 | On | L1 | 10.1 | 20.1 | 46.0 |
| 2.065000 | 20.2 | 15000.0 | 9.000 | On | L1 | 9.8 | 25.8 | 46.0 |

## N

ENV216 Main Voltage Class B_N




## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|---|---|---|
| 0.150000 | 44.4 | 1000.0 | 0.200 | On | N | 10.2 | 21.6 | 66.0 |
| 0.205000 | 40.9 | 15000.0 | 9.000 | On | N | 9.9 | 22.5 | 63.4 |
| 0.220000 | 39.7 | 15000.0 | 9.000 | On | N | 9.9 | 23.2 | 62.8 |
| 0.235000 | 34.6 | 15000.0 | 9.000 | On | N | 9.9 | 27.7 | 62.3 |
| 0.465000 | 39.0 | 15000.0 | 9.000 | On | N | 10.1 | 17.6 | 56.6 |
| 0.610000 | 33.5 | 15000.0 | 9.000 | On | N | 10.0 | 22.5 | 56.0 |

## Final Result 2

| Frequency (MHz) | Average (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|---|---|---|---|---|---|---|---|---|
| 0.195000 | 31.0 | 15000.0 | 9.000 | On | N | 10.0 | 22.8 | 53.8 |
| 0.480000 | 29.8 | 15000.0 | 9.000 | On | N | 10.1 | 16.5 | 46.3 |
| 0.650000 | 24.7 | 15000.0 | 9.000 | On | N | 10.0 | 21.3 | 46.0 |
| 2.070000 | 21.0 | 15000.0 | 9.000 | On | N | 9.8 | 25.0 | 46.0 |

## 3.2 Radiated Emissions

### *3.2.1 Requirements*

Test Arrangement: Table Top

Compliance Standard: FCC Part 15B

| Test Limits（Class B） | | | | |
|---|---|---|---|---|
| Frequency of Emission (MHz) | Radiated Limit | | | |
| | Unit(μV/m) | | Unit(dBμV/m) | |
| 30-88 | 100 | | 40 | |
| 88-216 | 150 | | 43.5 | |
| 216-960 | 200 | | 46 | |
| Above 960 | 500 | | 54 | |
| Above 1000 | AV | PK | AV | PK |
| | 500 | 5000 | 54 | 74 |

### *3.2.2 Test Equipment*

For frequency range 30MHz~3GHz (At Anechoic Chamber)

| Item | Equipment Description | Model | Serial Num | Calibration Period | Calibration Due Date | Calibrated By | Manufacturer |
|---|---|---|---|---|---|---|---|
| 1 | EMI Receiver | ESIB26 | 100301 | 1 year | 2015/3/27 | TMC | R&S |
| 2 | BiLog Antenna | HL562 | 100488 | 3 years | 2015/2/15 | NIM | R&S |
| 3 | 30MHz~3GHz Pre-amplifier | SCU03 | 10005 | \ | \ | \ | R&S |
| 4 | Filters Array | TS-Filt | \ | \ | \ | \ | R&S |
| 5 | Switches Array | TS-RSP | 100241 | \ | \ | \ | R&S |
| 6 | Multi-Device Controller | 2090 | 00049393 | \ | \ | \ | ETS-Lindgren |

For frequency range 3 – 13GHz (At Anechoic Chamber)

| Item | Equipment Description | Model | Serial Num | Calibration Period | Calibration Due Date | Calibrated By | Manufacturer |
|---|---|---|---|---|---|---|---|
| 1 | EMI Receiver | ESIB26 | 100301 | 1 year | 2015/3/27 | TMC | R&S |
| 2 | Double Ridge Guide Horn Antenna | EMCO 3117 | 00056645 | 3 years | 2015/2/15 | NIM | ETS-Lindgren |
| 3 | 3GHz~18GHz Pre-amplifier | AFS42-00101800-25-S-42 | 1078388 | \ | \ | \ | R&S |
| 4 | Filters Array | TS-Filt | \ | \ | \ | \ | R&S |
| 5 | Switches Array | TS-RSP | 100241 | \ | \ | \ | R&S |
| 6 | Multi-Device Controller | 2090 | 00049393 | \ | \ | \ | ETS-Lindgren |

### *3.2.3 Test Procedure*

The requirements of FCC Part 15B call for the EUT to be placed on an 80 cm(100cm for 9kHz-30MHz) high 1 X 1.5 meters non-conductive motorized turntable for radiated testing on a 3-meter chamber. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. Bi-conical and log periodic broadband antennas were mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna was varied between 1 and 4 meters. The output of the antenna was connected to the input of the spectrum analyzer and the emissions in the frequency range of 9 KHz to 1 GHz were measured. The peripherals were placed on the table in accordance with ANSI C63.4-2003. Cables were varied in position to produce maximum emissions. Both the horizontal and vertical field components were measured.

The output from the antenna was connected, via a preamplifier, to the input of the spectrum analyzer. The detector function was set to quasi-peak or peak, as appropriate. Above 1GHz average measurement are recorded. The measurement bandwidth of the spectrum analyzer system was set to at least 120 kHz, with all post-detector filtering no less than 10 times the measurement bandwidth. Frequencies above 1GHz were performed using a measurement bandwidth of 1MHz with a video bandwidth setting of 10 Hz for the average measurement.

### *3.2.4 Radiated Data Reduction and Reporting*

To convert the raw spectrum analyzer radiated data into a form that can be compared with the FCC limits, it is necessary to account for various calibration factors that are supplied with the antennas and other measurement accessories. These factors are included into the antenna factor (AF) column of the table and in the cable factor (CF) column of the table. The AF (in dB/m) and the CF (in dB) is algebraically added to the raw Spectrum Analyzer Voltage in dBµV to obtain the Radiated Electric Field in dBµV/m. This logarithm amplitude is converted to a linear amplitude, then compared to the FCC limit. Example:

Spectrum Analyzer Voltage: VdBµV

Antenna Correction Factor: dB/m

Electric Field: EdBµV/m = V dBµV + AFdB/m + CFdB - *GdB*

To convert to linear units of measure: EdBV/m/20 Inv log

### *3.2.5 Test Data*

The EUT Hair removal & rejuvenation instrument complied with the Radiated Emissions requirements. Table 6 provides the test results for radiated emissions.

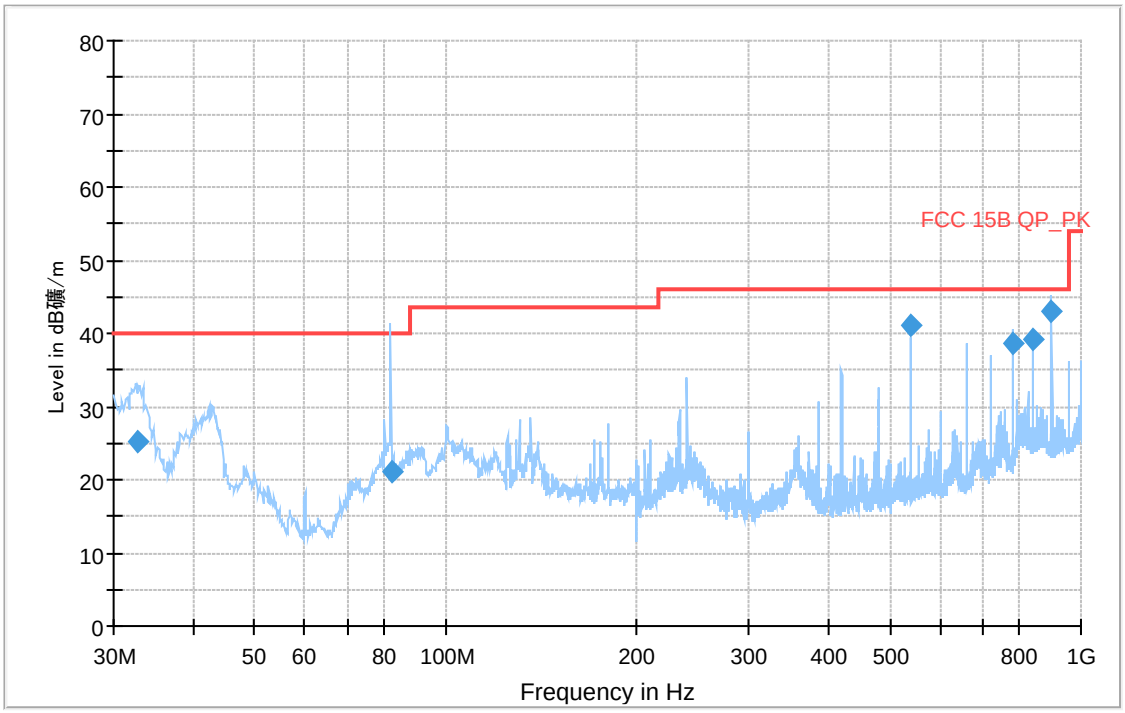
**Test Engineer(s):** Han Min

**Test Date(s):** Jun.13, 2014

**Test Location:** TA Beijing Limited

## Table 6: Radiated Emission Test Data

30MHz – 1GHz

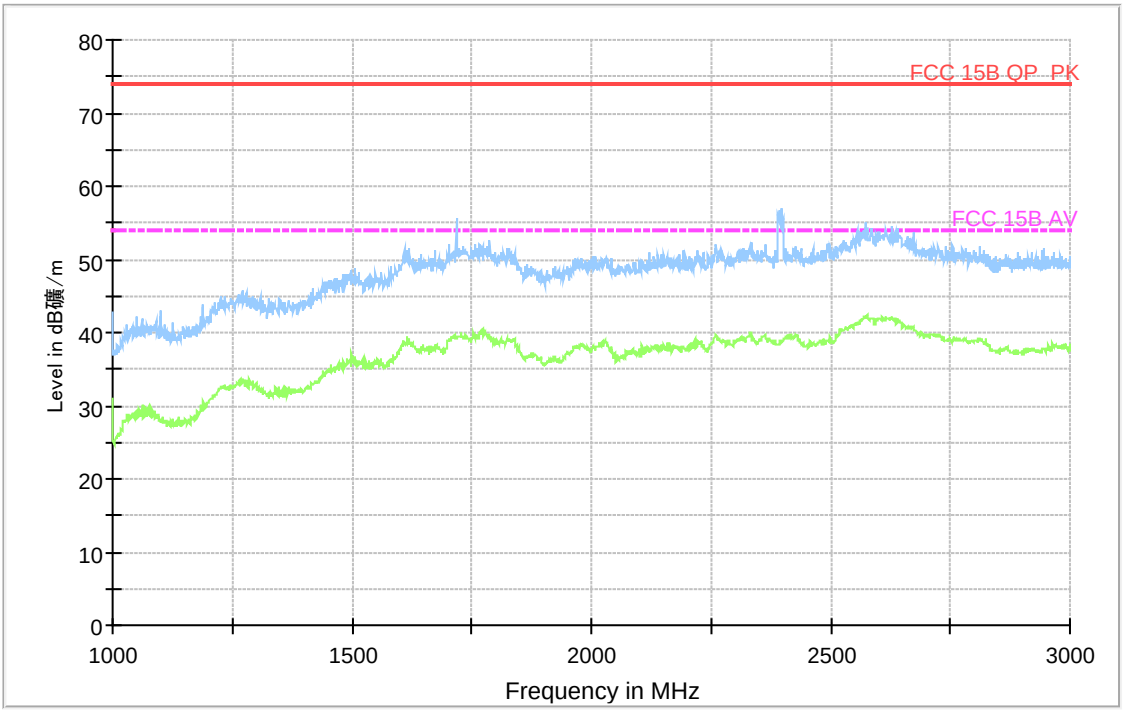



## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|---|---|---|---|---|---|---|---|---|---|
| 32.685050 | 25.3 | 15000.0 | 120.000 | 100.0 | V | 276.0 | -18.3 | 14.70 | 40.00 |
| 82.303808 | 21.0 | 15000.0 | 120.000 | 100.0 | V | 78.0 | -27.1 | 19.00 | 40.00 |
| 539.850160 | 41.0 | 15000.0 | 120.000 | 100.0 | V | -11.0 | -16.8 | 5.00 | 46.00 |
| 780.029920 | 38.7 | 15000.0 | 120.000 | 100.0 | H | 129.0 | -12.9 | 7.30 | 46.00 |
| 840.009760 | 39.1 | 15000.0 | 120.000 | 100.0 | H | 61.0 | -11.2 | 6.90 | 46.00 |
| 900.040000 | 43.1 | 15000.0 | 120.000 | 100.0 | H | 79.0 | -10.3 | 2.90 | 46.00 |

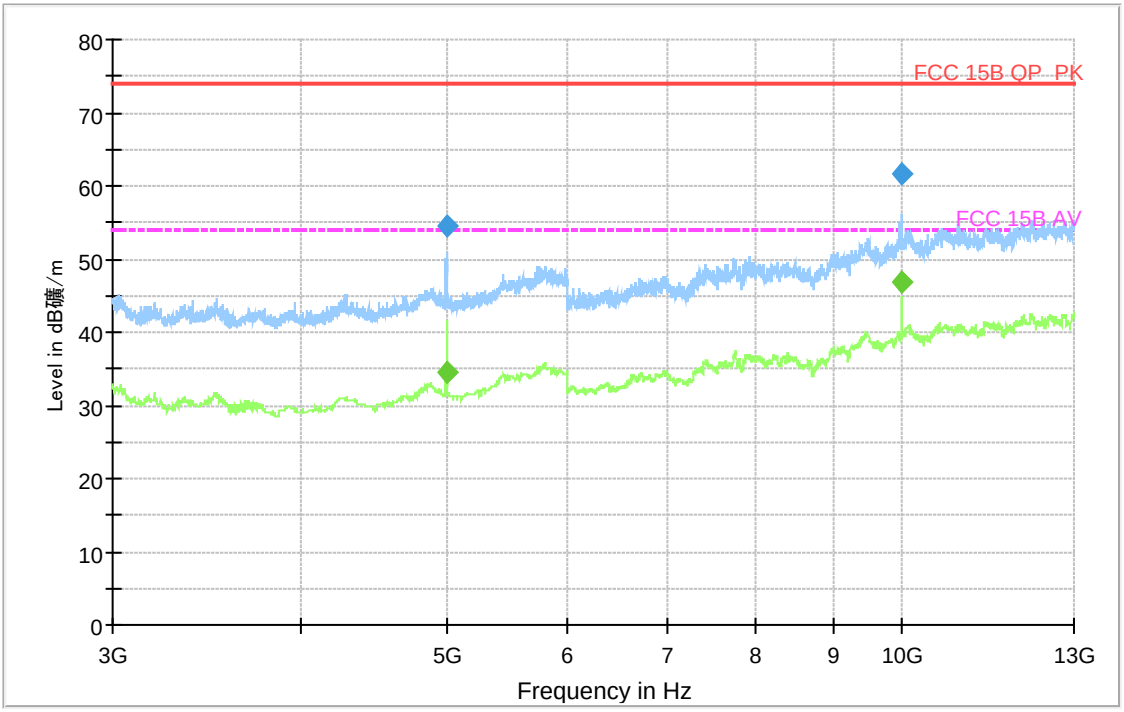
## 1 – 3GHz

FCC 15B ABS




## 3 – 13GHz

FCC 15B ABS



# Final Result 1

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|---|---|---|---|---|---|---|---|---|---|
| 4999.498597 | 54.6 | 1000.0 | 1000.000 | 200.0 | V | 202.0 | 2.8 | 19.40 | 74.00 |
| 9998.100000 | 61.7 | 1000.0 | 1000.000 | 100.0 | V | 292.0 | 20.3 | 12.30 | 74.00 |

# Final Result 2

| Frequency (MHz) | Average (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|---|---|---|---|---|---|---|---|---|---|
| 4999.298597 | 34.6 | 1000.0 | 1000.000 | 100.0 | V | 180.0 | 2.8 | 19.40 | 54.00 |
| 10000.000000 | 47.0 | 1000.0 | 1000.000 | 100.0 | V | 270.0 | 20.4 | 7.00 | 54.00 |

# 4 Information to User

The following warning or similar statement shall be provided in a conspicuous location in the operator's manual so that the user of a digital device is aware of its interference potential. Additional information about corrective measures may also be provided to the user at the manufacturer's option.

**NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:**

**Reorient or relocate the receiving antenna**

**Increase the separation between the equipment and receiver**

**Connect the equipment into an outlet on a circuit different from that to which the receiver is connected**

**Consult the dealer or an experienced radio/TV technician for help**

The instruction manual for a digital device that is separately marketed shall also include sufficient information to insure that the complete system is capable of complying with the requirements for a digital device. The manual should also caution the user that changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. Finally, the manual should instruct the user to use any special accessories, i.e. shielded cables, necessary for compliance with the standards.

In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required above may be included in the manual in that alternative form, provided that the user can be reasonably expected to have the capability to access information in that form.

----------The End----------