



47 CFR PART 15 SUBPART B

TEST REPORT

of

GPS TRACKER

Model Name: GT100
Brand Name: QUECTEL
Report No.: SH10010037E01
FCC ID: XMR-16182010002

prepared for

Quectel Wireless Solutions Co.,Ltd
Room 801, Building E, No. 4618 Yishan Road, Shanghai, China, 201103



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LAB CODE 20081223-00

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## TABLE OF CONTENTS

|            |   |           |
|------------|---|-----------|
| <b>1.</b>  | <b>TEST CERTIFICATION</b> .....                     | <b>3</b>  |
| <b>2.</b>  | <b>GENERAL INFORMATION</b> .....                    | <b>4</b>  |
| <b>2.1</b> | <b>EUT Description</b> .....                        | <b>4</b>  |
| <b>2.2</b> | <b>Test Standards and Results</b> .....             | <b>5</b>  |
| <b>2.3</b> | <b>Facilities and Accreditations</b> .....          | <b>6</b>  |
| 2.3.1      | Facilities .....                                    | 6         |
| 2.3.2      | Test Environment Conditions.....                    | 6         |
| <b>3.</b>  | <b>TEST CONDITIONS SETTING</b> .....                | <b>7</b>  |
| <b>3.1</b> | <b>GSM Test Mode</b> .....                          | <b>7</b>  |
| <b>3.2</b> | <b>Test Setup and Equipments List</b> .....         | <b>8</b>  |
| 3.2.1      | Conducted Emission.....                             | 8         |
| 3.2.2      | Radiated Emission.....                              | 9         |
| <b>4.</b>  | <b>47 CFR Part 15B Requirements</b> .....           | <b>10</b> |
| <b>4.1</b> | <b>Conducted Emission</b> .....                     | <b>10</b> |
| 4.1.1      | Requirement .....                                   | 10        |
| 4.1.2      | Test Description .....                              | 10        |
| 4.1.3      | Test Result.....                                    | 10        |
| <b>4.2</b> | <b>Radiated Emission</b> .....                      | <b>13</b> |
| 4.2.1      | Requirement.....                                    | 13        |
| 4.2.2      | Test Description .....                              | 13        |
| 4.2.3      | Test Result.....                                    | 14        |
|            | <b>ANNEX I : PHOTOGRAPH OF THE TEST SETUP</b> ..... | <b>16</b> |
|            | <b>ANNEX II: PHOTOGRAPH OF THE EUT</b> .....        | <b>17</b> |

## 1. TEST CERTIFICATION

Equipment under Test: GPS TRACKER

Brand Name: QUECTEL

Model Name: GT100

FCC ID: XMR-16182010002

Applicant: Quectel Wireless Solutions Co.,Ltd  
Room 801,Building E,No 1618 Yishan Road,  
Shanghai,China,201103

Manufacturer: Quectel Wireless Solutions Co.,Ltd  
Room 801,Building E,No 1618 Yishan Road,  
Shanghai,China,201103

Test Standards: 47 CFR Part 15 Subpart B

Test Date(s): Jan,25 2010 –Feb, 1, 2010

Test Result: PASS

### \* We Hereby Certify That:

The equipment under test was tested by Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

Tested by: Huangyunlong Dated: 2010.2.3  
Huangyunlong

Reviewed by: Zhang Jun Dated: 2010.2.3  
Zhang Jun

Approved by: Su Feng Dated: 2010.2.3  
Su Feng







## 2.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

| No. | Identity                            | Document Title          |
|-----|-------------------------------------|-------------------------|
| 1   | 47 CFR Part 15<br>(10-1-05 Edition) | Radio Frequency Devices |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section | Description        | Result |
|-----|---------|--------------------|--------|
| 1   | 15.107  | Conducted Emission | PASS   |
| 2   | 15.109  | Radiated Emission  | PASS   |

## 2.3 Facilities and Accreditations

### 2.3.1 Facilities

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Laboratories (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen 518055 CHINA. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

### 2.3.2 Test Environment Conditions

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

|                             |         |
|-----------------------------|---------|
| Temperature (°C):           | 20 - 25 |
| Relative Humidity (%):      | 40 - 60 |
| Atmospheric Pressure (kPa): | 960     |

### 3. TEST CONDITIONS SETTING

#### 3.1 GSM Test Mode

1. During the measurement, the GSM radio is working. The test modes of the EUT are showed as below:

(1) Traffic operating mode

The EUT configuration of the emission tests is EUT + Battery + Charger.

A communication link was established between the EUT and a System Simulator (SS). The EUT operated at GSM 850MHz mid ARFCN (190) and maximum output power (level 5).

(2) The second test mode (GPRS)

The EUT configuration of the emission tests is EUT + Battery + Charger.

In this test mode, a GPRS link was established between the EUT and a System Simulator (SS); data was transmitted between EUT and System Simulator (SS), and maintained during the measurement. the EUT operated at GPRS 900 mid ARFCN (62) and maximum output power (level 5) 1down 4 up , and operated at GPRS 1800 mid ARFCN (698) and maximum output power (level 0) 1 down 4 up.

(3) Idle operating mode

The EUT configuration of the emission tests is EUT + Battery + Charger.

The EUT was registered to the base station simulator but no call was set up.

(4) The PC test mode

The EUT configuration of the emission test is EUT + Battery + USB+PC

In this test mode ,a Data transmitted was established between the EUT and PC,

Data was transmitted between EUT and PC ,and maintained during the measurement.

Note: All test modes are performed, only the worst cases are recorded in this report.

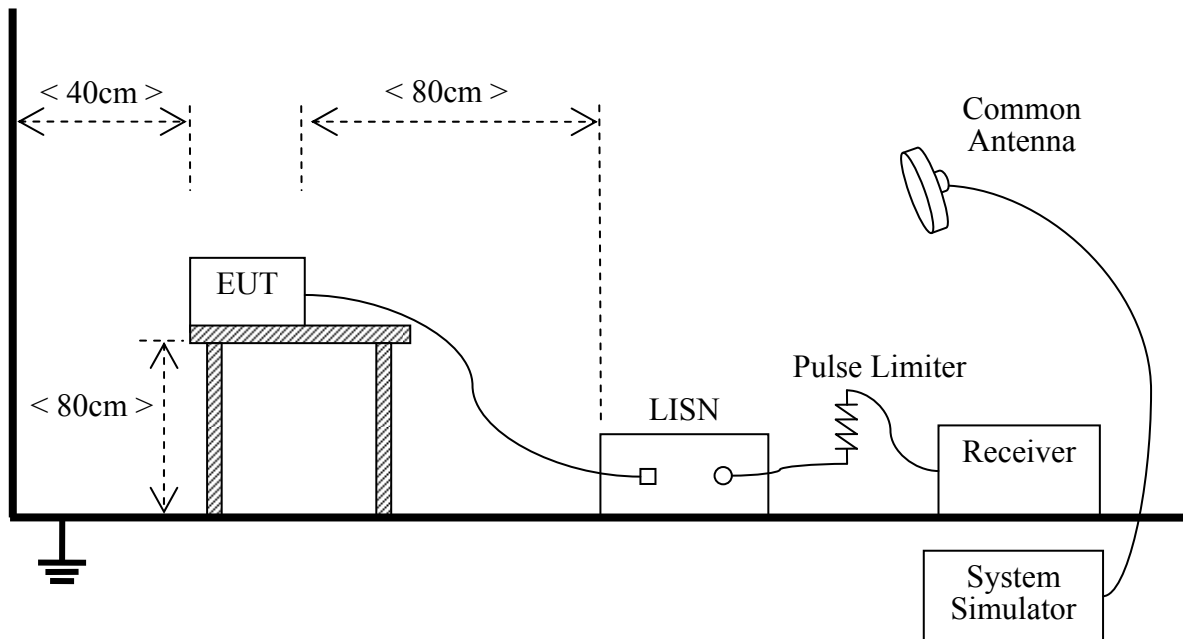
Note: In the Conducted Emission, the worst cases are operated at GSM 850

Note: In the Radiated Emission, the worst cases are operated at GSM 850

### 3.2 Test Setup and Equipments List

#### 3.2.1 Conducted Emission

##### A. Test Setup:



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides  $50\Omega/50\mu\text{H}$  of coupling impedance for the measuring instrument. The Common Antenna is used for the call between the EUT and the System Simulator (SS). A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

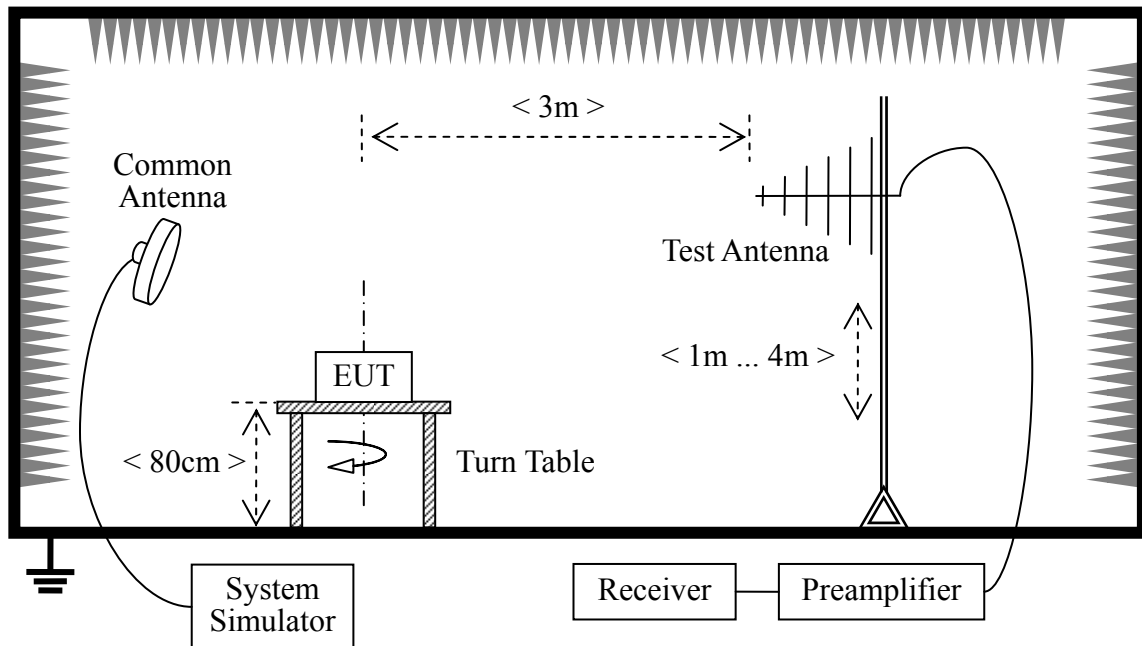
##### B. Equipments List:

| Description       | Manufacturer  | Model  | Serial No. | Cal. Date | Cal. Due |
|-------------------|---------------|--------|------------|-----------|----------|
| Receiver          | Rohde&Schwarz | ESCI3  | 100666     | 2009.10   | 1year    |
| LISN              | Rohde&Schwarz | ENV216 | 812744     | 2009.10   | 1year    |
| System Simulator  | Rohde&Schwarz | CMU200 | 105571     | 2009.10   | 1year    |
| Personal Computer | Lenovo        | (n.a.) | (n.a.)     | (n.a.)    | (n.a.)   |



### 3.2.2 Radiated Emission

#### C. Test Setup:



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower. The Common Antenna is used for the call between the EUT and the System Simulator (SS).

#### D. Equipments List:

| Description           | Manufacturer   | Model    | Serial No. | Cal. Date | Cal. Due |
|-----------------------|----------------|----------|------------|-----------|----------|
| Receiver              | Rohde&Schwarz  | ESCI3    | 100666     | 2009.10   | 1year    |
| Full-Anechoic Chamber | ETS • LINDGREN | 9m*6m*6m | (n.a.)     | 2009.10   | 1year    |
| Test Antenna - Bi-Log | Rohde&Schwarz  | HL562    | 100385     | 2009.10   | 1year    |
| System Simulator      | Rohde&Schwarz  | CMU200   | 105571     | 2009.10   | 1year    |
| Personal Computer     | Lenovo         | (n.a.)   | (n.a.)     | (n.a.)    | (n.a.)   |

## 4. 47 CFR Part 15B Requirements

### 4.1 Conducted Emission

#### 4.1.1 Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

| Frequency range (MHz) | Conducted Limit (dB $\mu$ V) |          |
|-----------------------|------------------------------|----------|
|                       | Quai-peak                    | Average  |
| 0.15 - 0.50           | 66 to 56                     | 56 to 46 |
| 0.50 - 5              | 56                           | 46       |
| 0.50 - 30             | 60                           | 50       |

NOTE:

- The limit subjects to the Class B digital device.
- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

#### 4.1.2 Test Description

See section 2.3.1 of this report.

#### 4.1.3 Test Result

The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

##### GSM Test Mode

##### (1) Traffic operating mode

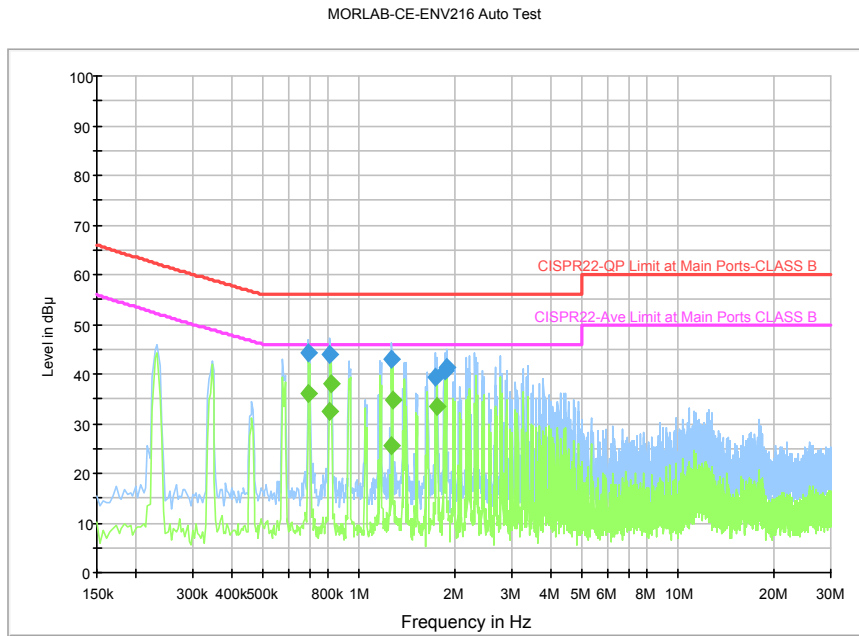
The EUT configuration of the emission tests is EUT + Battery + Charger.

A communication link was established between the EUT and a System Simulator (SS). The EUT operated at GSM 850MHz mid ARFCN (190) and maximum output power (level 5).

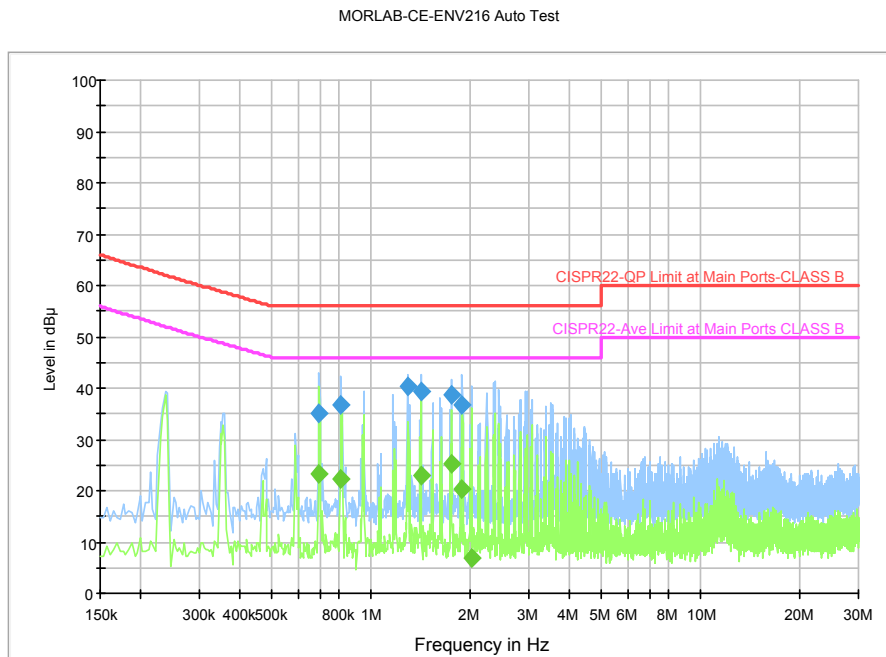
**A. Test Verdict Recorded for Suspicious Points:**

| No. | @Frequency (MHz) | Measured Emission Level (dB $\mu$ V) |      |      |       | Limit (dB $\mu$ V) |      | Verdict |
|-----|------------------|--------------------------------------|------|------|-------|--------------------|------|---------|
|     |                  | PK                                   | QP   | AV   | Phase | QP                 | AV   |         |
| 1   | 0.691031         | 46.1                                 | 44.4 | 36.0 | L     | 56.0               | 46.0 | PASS    |
| 2   | 0.806700         | 46.4                                 | 44.0 | 32.4 | L     | 56.0               | 46.0 | PASS    |
| 3   | 1.258181         | 45.4                                 | 42.9 | 25.5 | L     | 56.0               | 46.0 | PASS    |
| 4   | 1.724588         | 43.6                                 | 39.2 | 33.3 | L     | 56.0               | 46.0 | PASS    |
| 5   | 1.843988         | 43.2                                 | 40.6 | 34.1 | L     | 56.0               | 46.0 | PASS    |
| 6   | 1.870106         | 45.0                                 | 41.5 | 33.3 | L     | 56.0               | 46.0 | PASS    |
| 7   | 0.691031         | 43.8                                 | 34.9 | 23.2 | N     | 56.0               | 46.0 | PASS    |
| 8   | 0.806700         | 43.1                                 | 36.8 | 22.5 | N     | 56.0               | 46.0 | PASS    |
| 9   | 1.280569         | 43.0                                 | 40.4 | 23.1 | N     | 56.0               | 46.0 | PASS    |
| 10  | 1.411162         | 43.0                                 | 39.3 | 25.2 | N     | 56.0               | 46.0 | PASS    |
| 11  | 1.746975         | 42.1                                 | 38.6 | 20.4 | N     | 56.0               | 46.0 | PASS    |
| 12  | 1.885031         | 43.3                                 | 36.6 | 20.3 | N     | 56.0               | 46.0 | PASS    |

**B. Test Plot:**



(Plot A: L Phase)



(Plot B: N Phase)

## 4.2 Radiated Emission

### 4.2.1 Requirement

According to FCC section 15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Frequency range (MHz) | Field Strength  |                          |
|-----------------------|-----------------|--------------------------|
|                       | $\mu\text{V/m}$ | $\text{dB}\mu\text{V/m}$ |
| 30 - 88               | 100             | 40                       |
| 88 - 216              | 150             | 43.5                     |
| 216 - 960             | 200             | 46                       |
| Above 960             | 500             | 54                       |

NOTE:

- Field Strength ( $\text{dB}\mu\text{V/m}$ ) =  $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$ .
- In the emission tables above, the tighter limit applies at the band edges.

### 4.2.2 Test Description

See section 2.3.2 of this report.

### 4.2.3 Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

#### GSM Test Mode

##### (1) Traffic operating mode

The EUT configuration of the emission tests is EUT + Battery + Charger.

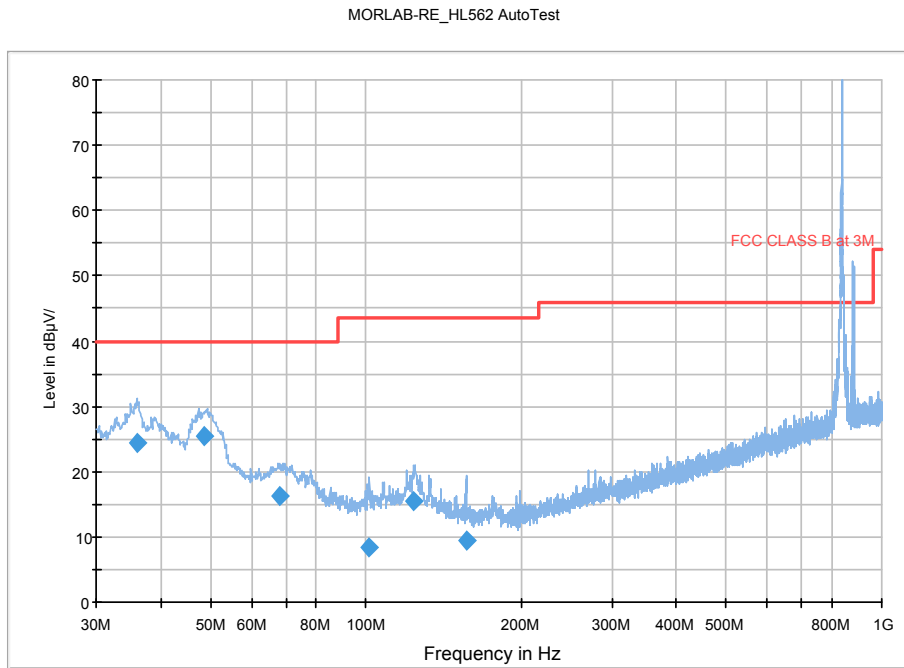
A communication link was established between the EUT and a System Simulator (SS). The EUT operated at GSM 850MHz mid ARFCN (190) and maximum output power (level 5).

#### A. Test Verdict Recorded for Suspicious Points:

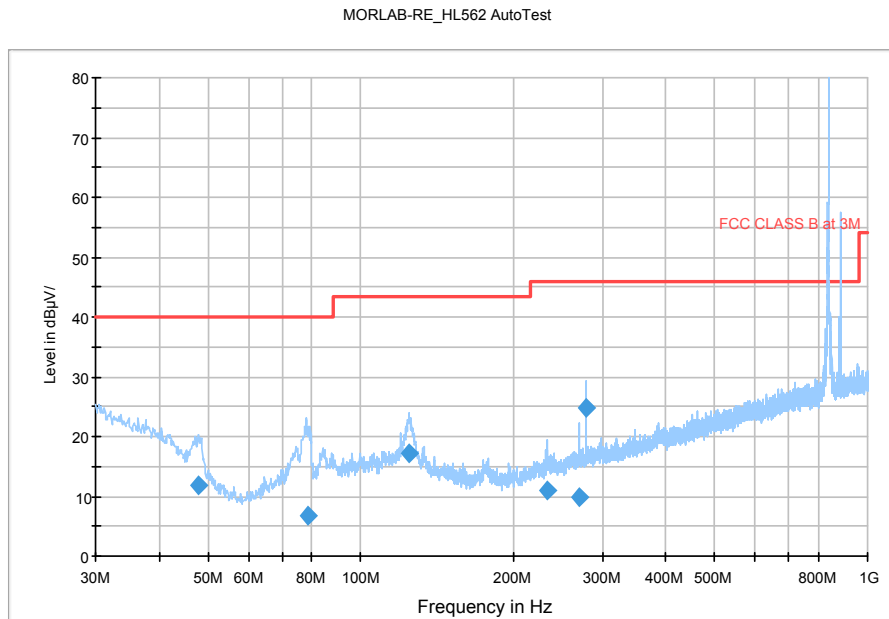
| No. | @Frequency (MHz) | Emission Level (dB $\mu$ V/m) |      |                      | Quasi-Peak Limit (dB $\mu$ V/m) | Result |
|-----|------------------|-------------------------------|------|----------------------|---------------------------------|--------|
|     |                  | PK                            | QP   | Antenna Polarization |                                 |        |
| 1   | 35.941250        | 31.2                          | 24.5 | Vertical             | 40.0                            | PASS   |
| 2   | 48.551250        | 30.0                          | 25.5 | Vertical             | 40.0                            | PASS   |
| 3   | 68.193750        | 23.3                          | 16.3 | Vertical             | 40.0                            | PASS   |
| 4   | 101.658750       | 18.9                          | 8.4  | Vertical             | 43.5                            | PASS   |
| 5   | 124.090000       | 22.1                          | 15.5 | Vertical             | 43.5                            | PASS   |
| 6   | 156.221250       | 19.8                          | 9.5  | Vertical             | 43.5                            | PASS   |
| 7   | 47.945000        | 20.0                          | 11.9 | Horizontal           | 40.0                            | PASS   |
| 8   | 78.621250        | 23.1                          | 6.7  | Horizontal           | 40.0                            | PASS   |
| 9   | 124.453750       | 28.2                          | 17.3 | Horizontal           | 43.5                            | PASS   |
| 10  | 232.972500       | 19.5                          | 10.9 | Horizontal           | 46.0                            | PASS   |
| 11  | 269.953750       | 23.7                          | 10.0 | Horizontal           | 46.0                            | PASS   |
| 12  | 279.168750       | 29.8                          | 24.8 | Horizontal           | 46.0                            | PASS   |

**B. Test Plot:**

Note: Following is the plots for emission measurement; please note that marked spikes with circle should be ignored because they are MS and SS carrier frequency.



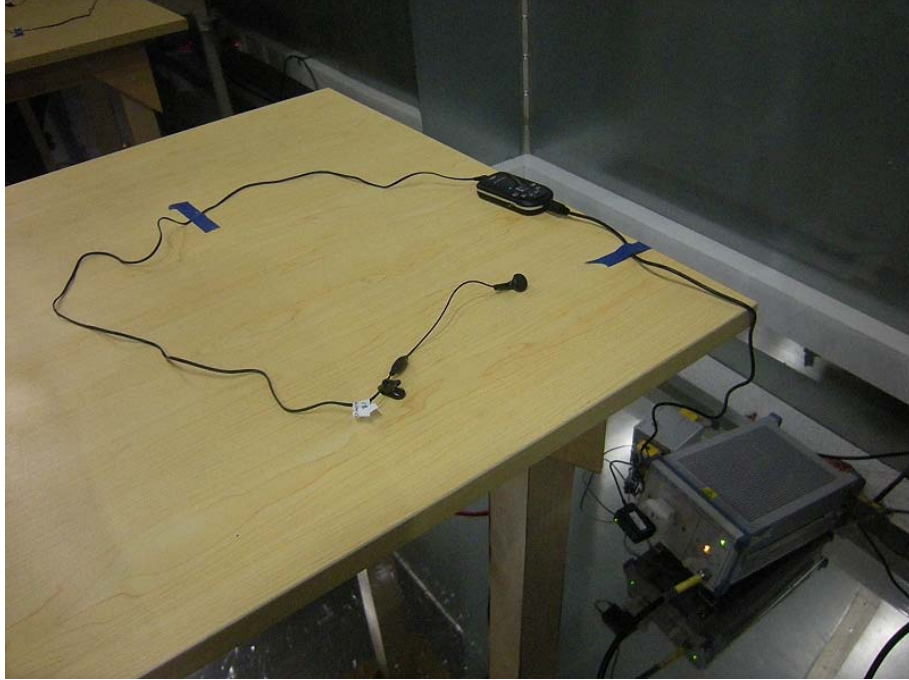
(Plot A: Test Antenna Vertical)



(Plot B: Test Antenna Horizontal)

## ANNEX I : PHOTOGRAPH OF THE TEST SETUP

### 1.CONDUCTED EMISSION TEST



### 2.RADIATED EMISSION TEST





## ANNEX II: PHOTOGRAPH OF THE EUT

### 1. Appearance of the MS



## 2. Appearance of the Charge



## 3. Appearance of the Cable and Earphone





**\*\* END OF REPORT \*\***