



Report No.:SZ12030070E02



# FCC TEST REPORT

Issued to

**Brightstar Corp**

For

**GSM Telephone**

Model Name: Avvio 199S/ Avvio 299S  
Trade Name: Avvio  
Brand Name: Avvio  
FCC ID: WVBAX99S  
Test Rule: 47 CFR Part 15 Subpart B  
Test date: March 20, 2012 – April 10, 2012  
Issue date: April 19, 2012

By

**Shenzhen Morlab Communication Technology Co., Ltd.**



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CTIA Authorized Test Lab  
LAB CODE 20081223-90

IEEE 1725

OTA

OFTA

電訊管理局



GCF  
Official Observer of  
Global Certification Forum

Bluetooth  
BQTF

FCC  
Reg. No.  
741109

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## TABLE OF CONTENTS

|            |  |           |
|------------|--|-----------|
| <b>1.</b>  | <b>GENERAL INFORMATION .....</b>           | <b>3</b>  |
| <b>1.1</b> | <b>EUT Description .....</b>               | <b>3</b>  |
| <b>1.2</b> | <b>Test Standards and Results .....</b>    | <b>4</b>  |
| <b>1.3</b> | <b>Facilities and Accreditations .....</b> | <b>5</b>  |
| 1.3.1      | Facilities .....                           | 5         |
| 1.3.2      | Test Environment Conditions.....           | 5         |
| 1.3.3      | Measurement Uncertainty .....              | 5         |
| <b>2.</b>  | <b>TEST CONDITIONS SETTING.....</b>        | <b>6</b>  |
| <b>2.1</b> | <b>Test Mode .....</b>                     | <b>6</b>  |
| <b>2.2</b> | <b>Test Setup and Equipments List.....</b> | <b>7</b>  |
| 2.2.1      | Conducted Emission.....                    | 7         |
| 2.2.2      | Radiated Emission.....                     | 8         |
| <b>3.</b>  | <b>47 CFR PART 15B REQUIREMENTS .....</b>  | <b>10</b> |
| <b>3.1</b> | <b>Conducted Emission .....</b>            | <b>10</b> |
| 3.1.1      | Requirement .....                          | 10        |
| 3.1.2      | Test Description .....                     | 10        |
| 3.1.3      | Test Result .....                          | 10        |
| <b>3.2</b> | <b>Radiated Emission .....</b>             | <b>12</b> |
| 3.2.1      | Requirement .....                          | 12        |
| 3.2.2      | Test Description .....                     | 12        |
| 3.2.3      | Test Result .....                          | 12        |

| Change History |                |                   |
|----------------|----------------|-------------------|
| Issue          | Date           | Reason for change |
| 1.0            | April 19, 2012 | First edition     |
|                |                |                   |
|                |                |                   |

## 1. GENERAL INFORMATION

### 1.1 EUT Description

EUT Type ..... Mobile Phone  
Serial No. .... (n.a., marked #1 by test site)  
Hardware Version..... 2212-1-10  
Software Version ..... TECO\_G65\_V001\_20120223\_ENG\_POR\_SPA  
Applicant..... Brightstar Corp  
9725 NW 117th Avenue, #300 Miami, FL 33178  
Manufacturer..... SHENZHEN UNITED TIME TECHNOLOGY CO.,LTD.  
Room 1001 Microprofit Building, 6 Gaoxin South Road, High-Tech  
Park, Nanshan District, Shenzhen, P.R. China  
Power supply..... Battery  
Brand Name: Avvio  
Serial No.: (n.a. marked #1 by test site)  
Capacitance: 800mAh  
Rated Voltage: 3.7V  
Charge Limit: 4.2V

#### NOTE:

*Note 1:* The EUT is a Dual-SIM-Card and Simultaneous-Dual-GSM Mobile Phone, it supports GSM 850MHz, 900MHz, 1800MHz, 1900MHz bands.

*Note 2:* For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

## 1.2 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>(10-1-09 Edition) | Radio Frequency Devices |

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

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

NOTE: The tests were performed according to the method of measurements prescribed in ANSI C63.4 2009.

## 1.3 Facilities and Accreditations

### 1.3.1 Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at 3/F, Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055 P. R. 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.

### 1.3.2 Test Environment Conditions

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

|                             |          |
|-----------------------------|----------|
| Temperature (°C):           | 15 - 35  |
| Relative Humidity (%):      | 30 - 60  |
| Atmospheric Pressure (kPa): | 86 - 106 |

### 1.3.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

|                                    |                    |
|------------------------------------|--------------------|
| Uncertainty of Conducted Emission: | $\pm 1.8\text{dB}$ |
| Uncertainty of Radiated Emission:  | $\pm 3.1\text{dB}$ |

## 2. TEST CONDITIONS SETTING

### 2.1 Test Mode

- (1) The first test mode (USB)

The EUT configuration of the emission tests is TransFlash Card + EUT + Battery + PC.

In this test mode, the EUT with a TransFlash Card embedded is connected with a PC via a mini-USB cable<sup>Note 2</sup> supplied by applicant. During the measurement, a communication link was established between the EUT and a System Simulator (SS), simultaneity, the data is transmitting between the PC and the TransFlash Card of the EUT.

NOTE:

1. All test modes are performed, only the worst cases are recorded in this report.
2. Please refer to the EUT external photos for the special USB cable.

## 2.2 Test Setup and Equipments List

### 2.2.1 Conducted Emission

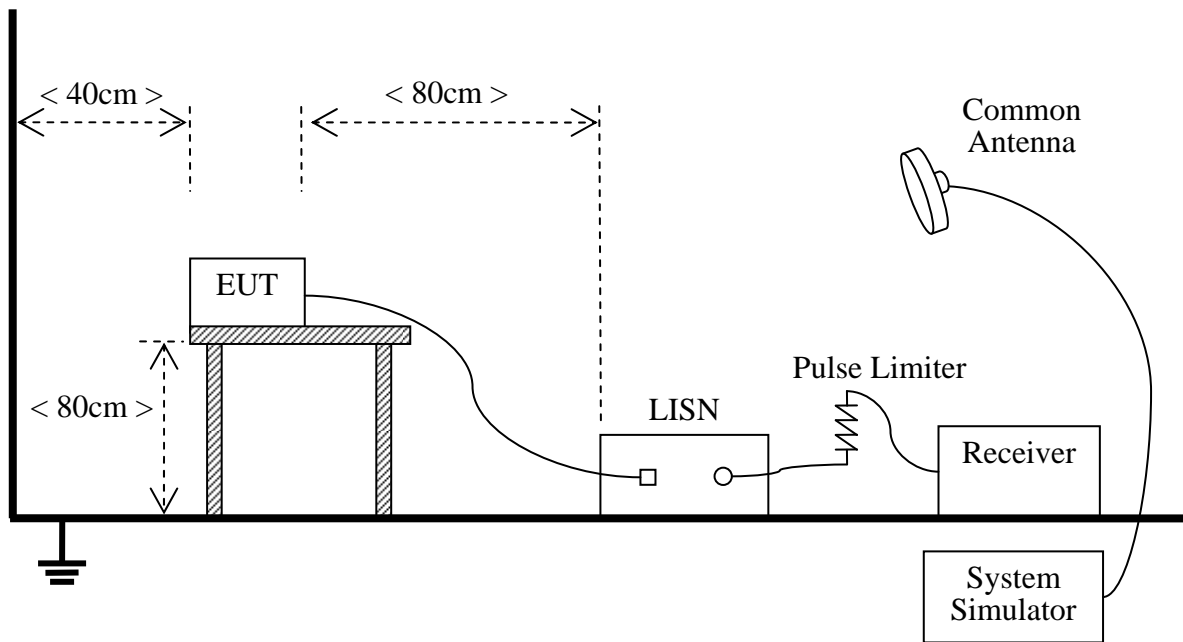
#### A. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2009 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

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

#### B. Test Setup:



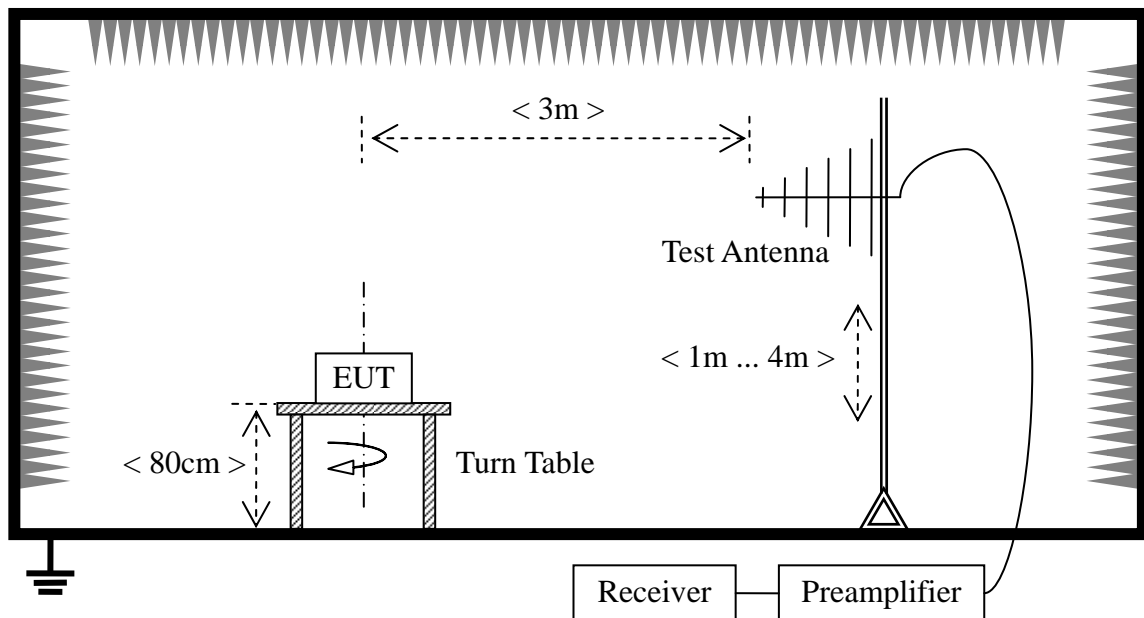
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. The Common Antenna 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.

#### C. Equipments List:

| Description          | Manufacturer | Model       | Serial No. | Cal. Date |
|----------------------|--------------|-------------|------------|-----------|
| Receiver             | Agilent      | E7405A      | US44210471 | 2011.05   |
| LISN                 | Schwarzbeck  | NSLK 8127   | 812744     | 2011.05   |
| Pulse Limiter (20dB) | Schwarzbeck  | VTSD 9561-D | 9391       | (n.a.)    |
| System Simulator     | Agilent      | E5515C      | GB43130131 | 2011.05   |
| Personal Computer    | IBM          | IBM_T20     | (n.a.)     | (n.a.)    |
| Bluetooth-Headset    | Nokia        | HS-36W      | (n.a.)     | (n.a.)    |
| T-Flash Card         | SanDisk      | 256MB       | (n.a.)     | (n.a.)    |

## 2.2.2 Radiated Emission

### A. 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.

### B. Equipments List:

| Description           | Manufacturer | Model      | Serial No. | Cal. Date |
|-----------------------|--------------|------------|------------|-----------|
| Receiver              | Agilent      | E7405A     | US44210471 | 2011.05   |
| Semi-Anechoic Chamber | Albatross    | 9m*6m*6m   | (n.a.)     | 2011.05   |
| Test Antenna - Bi-Log | Schwarzbeck  | VULB 9163  | 9163-274   | 2011.05   |
| Test Antenna - Horn   | Schwarzbeck  | BBHA 9120C | 9120C-384  | 2011.05   |





| Description        | Manufacturer | Model   | Serial No. | Cal.<br>Date |
|--------------------|--------------|---------|------------|--------------|
| Test Antenna -Loop | R&S          | HFH2-Z6 | 100231     | 2011.05      |
| Personal Computer  | IBM          | IBM_T20 | (n.a)      | (n.a.)       |

### 3. 47 CFR PART 15B REQUIREMENTS

#### 3.1 Conducted Emission

##### 3.1.1 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) |          |
|-----------------------|------------------------------|----------|
|                       | Quasi-peak                   | Average  |
| 0.15 - 0.50           | 66 to 56                     | 56 to 46 |
| 0.50 - 5              | 56                           | 46       |
| 5 - 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.

##### 3.1.2 Test Description

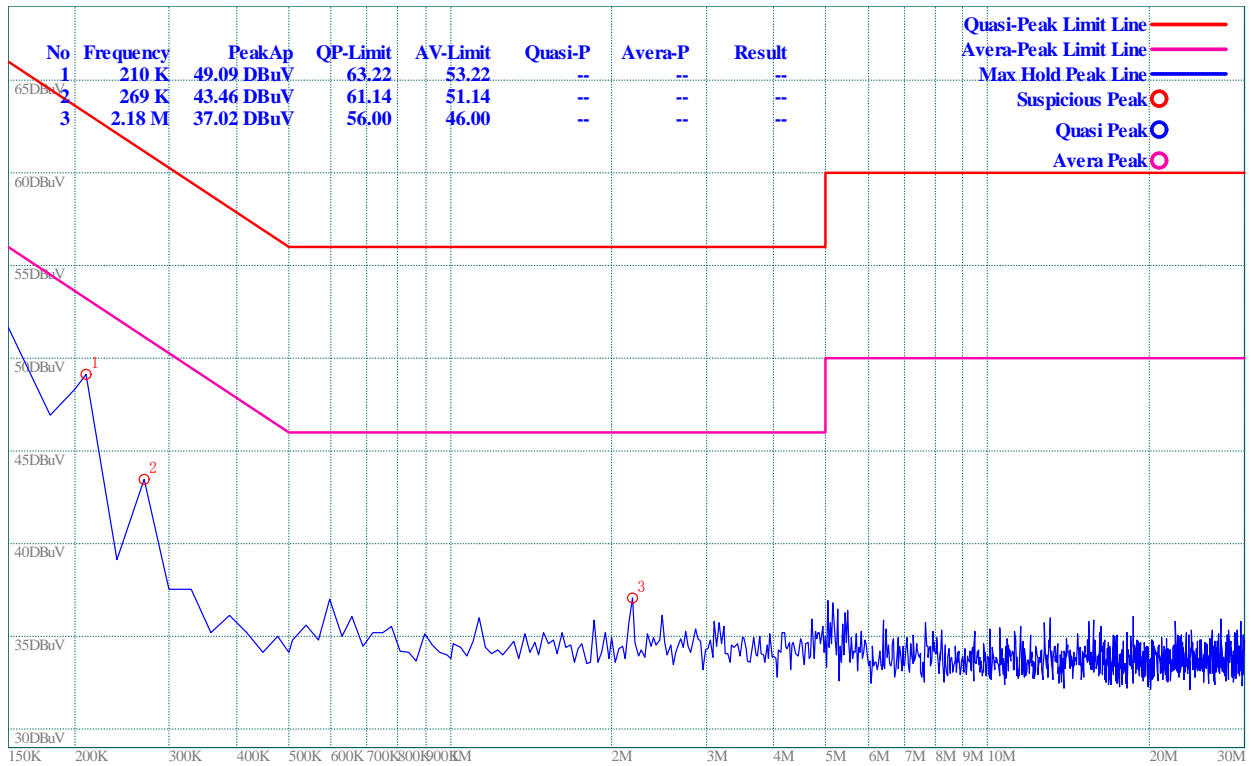
See section 2.2.1 of this report.

##### 3.1.3 Test Result

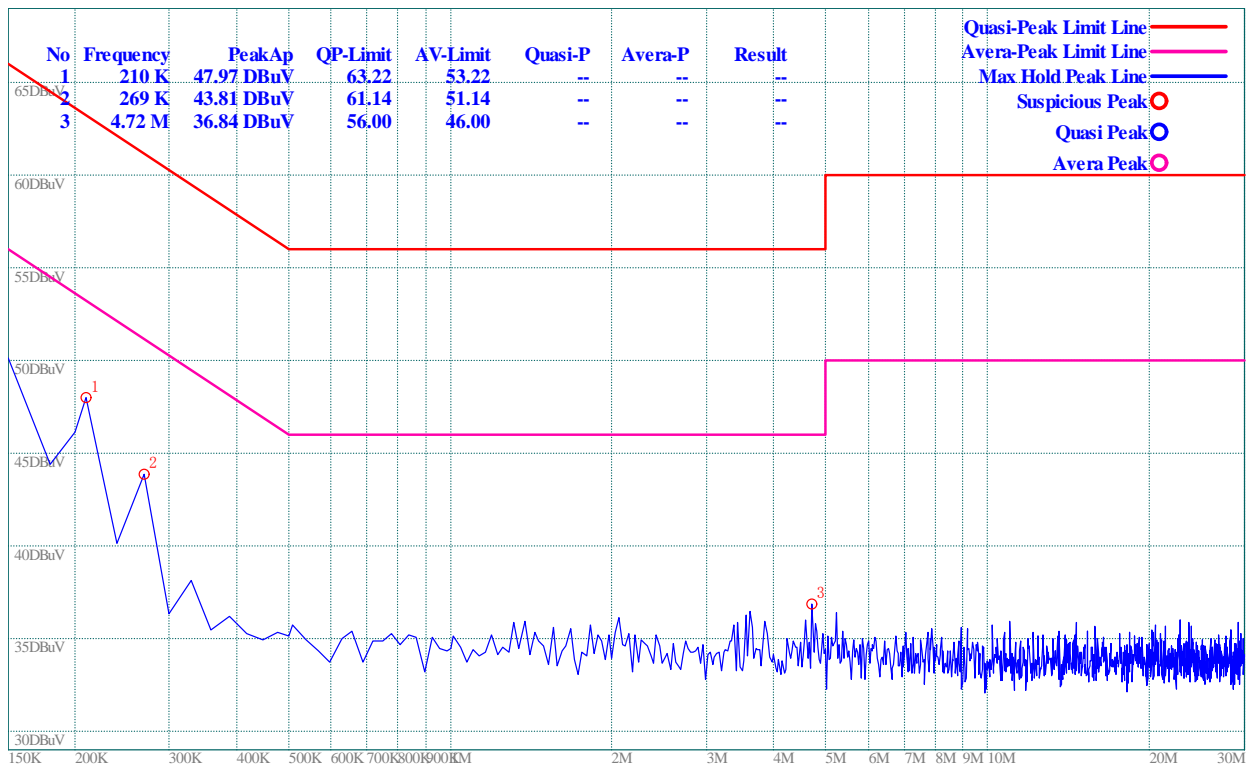
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines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

###### 3.1.3.1 Test Mode

###### A. Test Plot and Suspicious Points:



(Plot A: L Phase)



(Plot B: N Phase)

**Test Result :PASS**

## 3.2 Radiated Emission

### 3.2.1 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       |      | Field Strength Limitation at 3m Measurement Dist |                                  |
|-----------------------|----------------------|------|--|----------------------------------|
|                       | $\mu\text{V/m}$      | Dist | ( $\mu\text{V/m}$ )                              | ( $\text{dBuV/m}$ )              |
| 0.009 - 0.490         | $2400/F(\text{KHz})$ | 300m | $10000 * 2400/F(\text{KHz})$                     | $20\log 2400/F(\text{KHz}) + 80$ |
| 0.490 - 1.705         | $2400/F(\text{KHz})$ | 30m  | $100 * 2400/F(\text{KHz})$                       | $20\log 2400/F(\text{KHz}) + 40$ |
| 1.705 - 30.00         | 30                   | 30m  | $100 * 30$                                       | $20\log 30 + 40$                 |
| 30.0 - 88.0           | 100                  | 3m   | 100  | $20\log 100$                     |
| 88.0 - 216.0          | 150                  | 3m   | 150  | $20\log 150$                     |
| 216.0 - 960.0         | 200                  | 3m   | 200  | $20\log 200$                     |
| Above 960.0           | 500                  | 3m   | 500  | $20\log 500$                     |

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Note:

- 1) The tighter limit shall apply at the boundary between two frequency range.
- 2) Limitation expressed in  $\text{dBuV/m}$  is calculated by  $20\log \text{Emission Level}(\mu\text{V/m})$ .
- 3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of  $Ld1 = Ld2 * (d2/d1)^2$ .

Example:

F.S Limit at 30m distance is  $30\mu\text{V/m}$ , then F.S Limitation at 3m distance is adjusted as

$$Ld1 = L1 = 30\mu\text{V/m} * (10)^2 = 100 * 30\mu\text{V/m}$$

### 3.2.2 Test Description

Refer section 2.1 of this report.

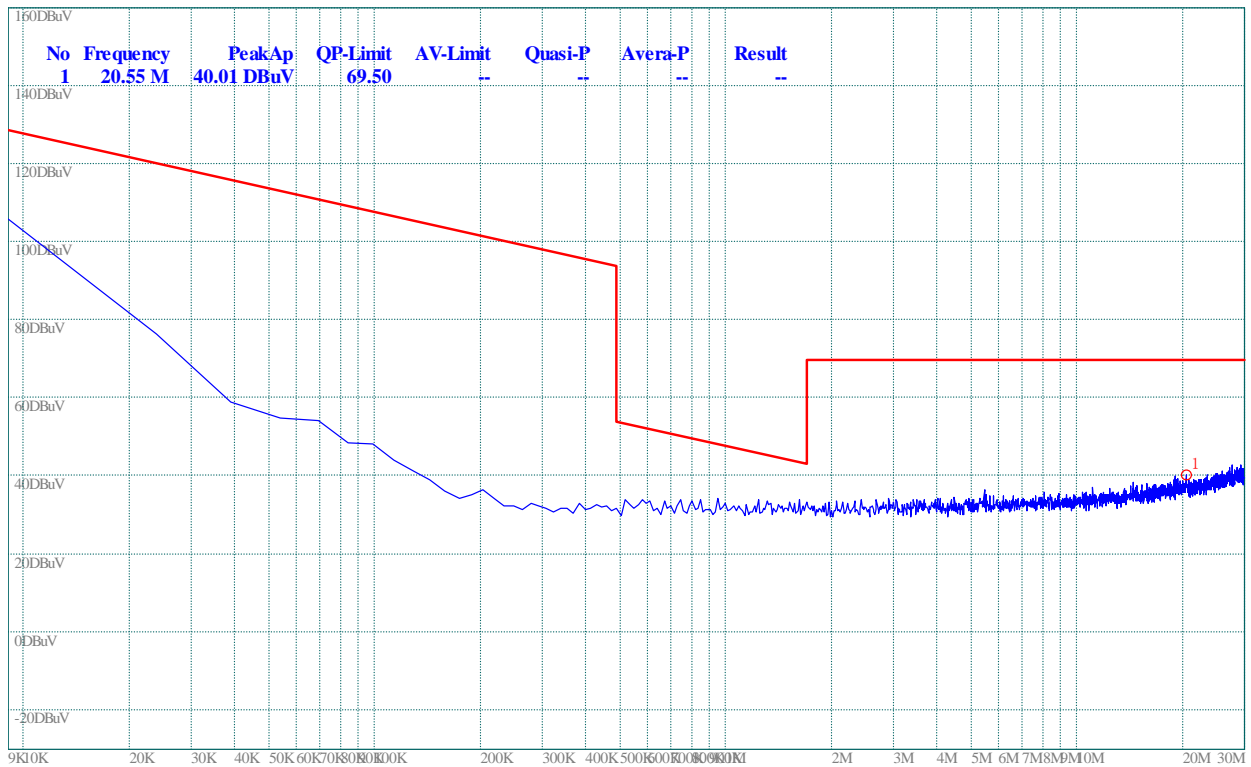
### 3.2.3 Test Result

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

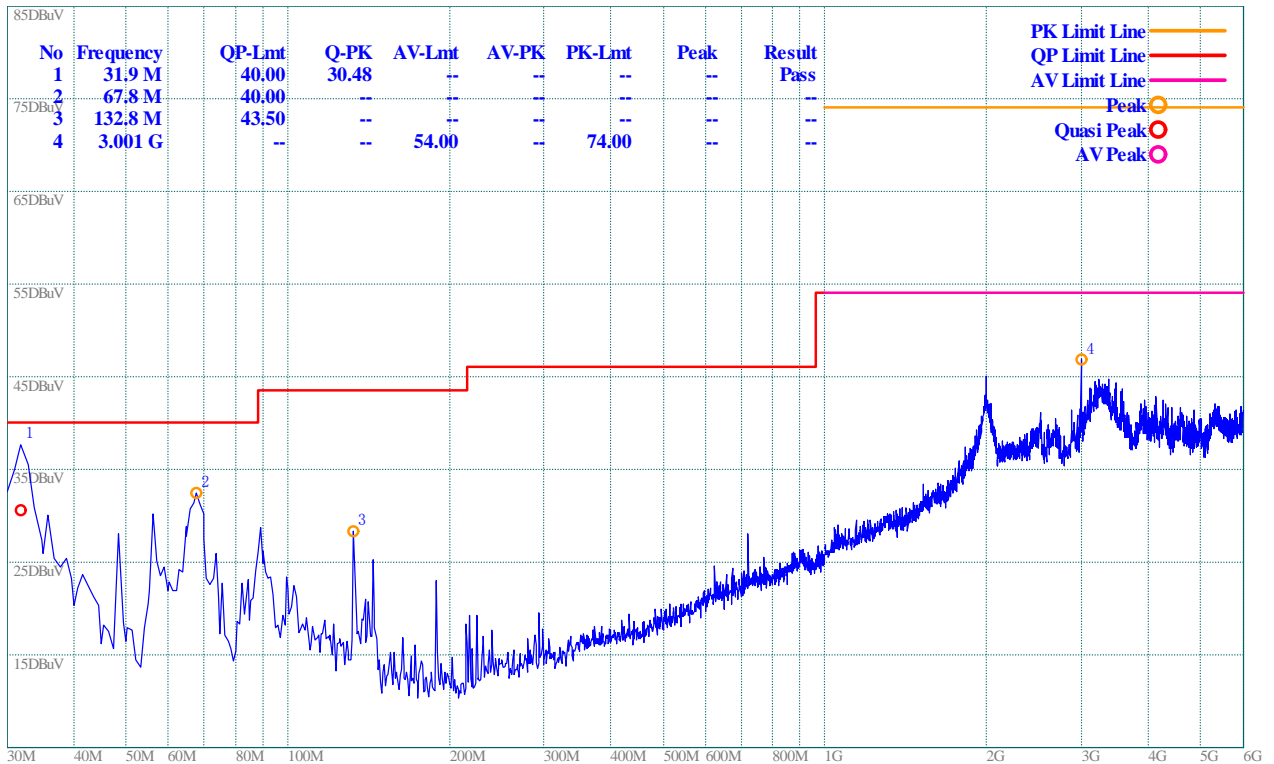
QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

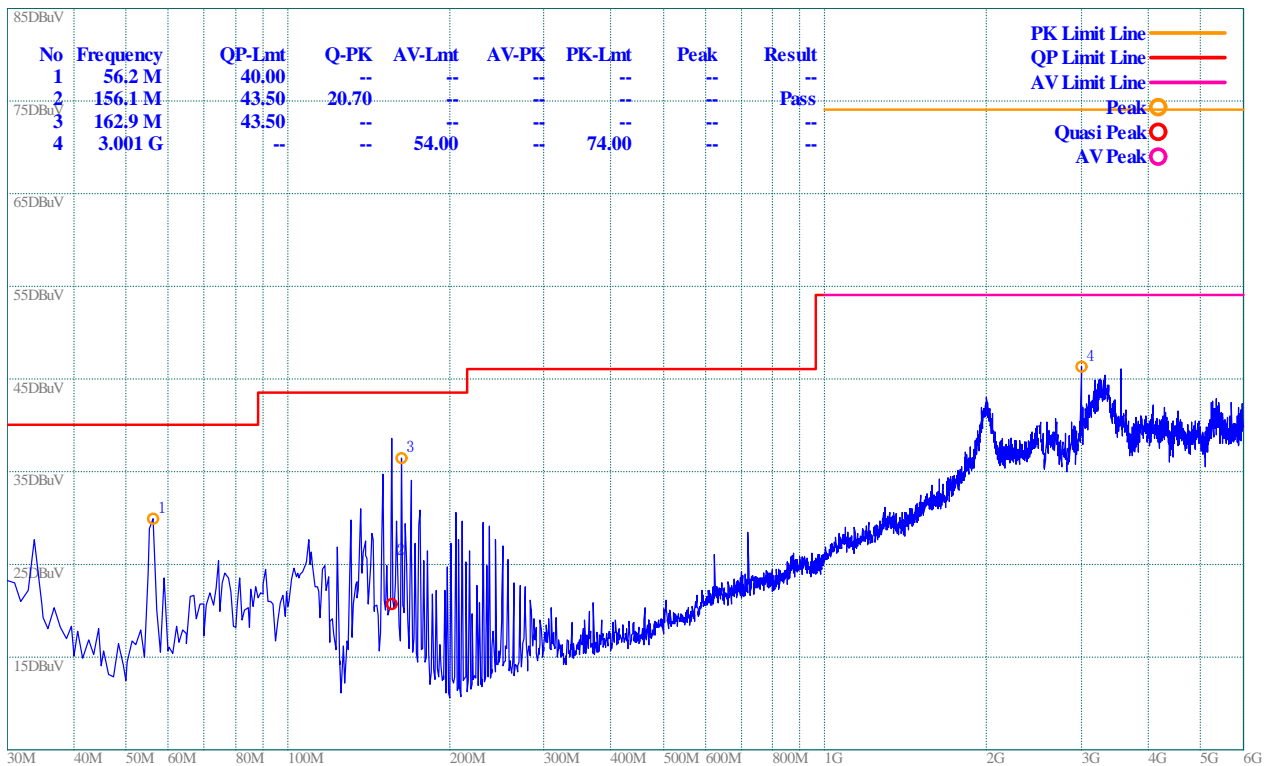
#### A. Test Plots and Suspicious Points:



(Plot A: 9K – 30M)



(Plot A: Test Antenna Vertical)



(Plot B: Test Antenna Horizontal)

**Test Result: PASS**

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