



## **FCC 47 CFR PART 95**

# **TEST REPORT**

*For*

**Applicant : Aervoe Industries, Inc**

**Address : 1100 Mark circle, Gardnerville, NV89410, USA**

**Product Name : Walkie Talkie**

**Model Name : 7910**

**Brand Name : **

**FCC ID : YT9-7910**

**Report No. : MOST100902F1**

**Date of Issue : October 15, 2010**

**Issued by : Most Technology Service Co., Ltd.**

**Address : No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park,  
Nanshan, Shenzhen, Guangdong, China**

**Tel : 86-755-8617 0306**


**Fax : 86-755-8617 0310**

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## 1. TEST RESULT CERTIFICATION

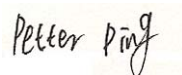
|                              |  |
|------------------------------|--|
| <b>Applicant Name:</b>       | Aervoe Industries, Inc   |
| <b>Address:</b>              | 1100 Mark circle, Gardnerville, NV89410, USA   |
| <b>Manufacturer Name:</b>    | SINORISE TECHNOLOGY (SHENZHEN) CO.,LTD   |
| <b>Address:</b>              | Zhida Industry Park, Longping West Road, Longgang District , Shen Zhen, GuangDong, P.R.C |
| <b>Brand Name:</b>           |         |
| <b>Equipment Under Test:</b> | Walkie Talkie  |
| <b>Model Number:</b>         | 7910   |
| <b>FCC ID:</b>               | YT9-7910   |
| <b>Test Standard</b>         | FCC 47 CFR Part 95   |
| <b>File Number:</b>          | MOST100902F1   |
| <b>Date of Test:</b>         | September 21, 2010 – October 15, 2010  |

***We (MOST) hereby certify that:***

The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI TIA 603:2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 95.

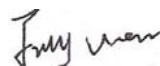
The test results of this report relate only to the tested sample identified in this report.

**Tested By:**



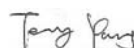
Petter Ping / Test Engineer October 15, 2010

**Checked By:**



July Wen / Quality Engineer October 15, 2010

**Authorized By:**




Terry Yang / General Manager October 15, 2010

## 2. Technical Information

Note: the following data is based on the information by the applicant.

### 2.1 EUT Description

|   |  |
|---|--|
| <b>Product</b>                              | Walkie Talkie  |
| <b>Brand Name</b>                           |   |
| <b>Model Number</b>                         | 7910   |
| <b>Series Model Name:</b>                   | N/A  |
| <b>Series Model Difference description:</b> | N/A  |
| <b>Power Supply:</b>                        | DC 3.7V Supplied by Adapter AC 100-240V,50Hz/60Hz, 0.5A  |
| <b>Frequency Range:</b>                     | 462.5625 MHz-467.7125 MHz  |
| <b>Modulation Technique:</b>                | FM   |
| <b>Channel Spacing:</b>                     | 12.5KHz  |
| <b>Channel Number:</b>                      | 14<br>(462.5625MHz, 462.5875MHz, 462.6125MHz, 462.6375MHz, 462.6625 MHz, 462.6875MHz, 462.7125MHz, 467.5625MHz, 467.5875MHz, 467.6125 MHz, 467.6375MHz,467.6625MHz, 467.6875MHz,467.7125MHz) |
| <b>Antenna Gain:</b>                        | 1.0 dBi  |
| <b>Temperature Range:</b>                   | -20°C-50°C   |

**Note:**

1. This submittal(s) (test report) is intended for FCC ID: YT9-7910 filing to comply with the FCC Part 95, Subpart B Rules.
2. Please refer to Appendix B for the photographs of the EUT. For more details, please refer to the User's manual of the EUT.

## 2.2 Objective

The tests documented in this report were performed in accordance with ANSI TIA 603:2004 and FCC CFR 47 Rules Part 95 Subpart B.

## 2.3 Test Standards and Results

The EUT has been tested according to FCC CFR 47:

- Part 2: Frequency Allocations and Radio Treaty Matters: General Rules and Regulations (10-1-05 Edition)
- Part 95: Personal Radio Services

**Test items and the results are as bellow:**

| No | Test Type                           | Para. Number      | Limit           | Result |
|----|-------------------------------------|-------------------|-----------------|--------|
| 1  | Power and Antenna High Limits       | 2.1046; Part 95 B | Refer to 95 B   | PASS   |
| 2  | Modulation Characteristic           | 2.1047; Part 95 B | Refer to 95 B   | PASS   |
| 3  | Occupied Bandwidth                  | 2.1049; Part 95 B | Refer to 95 B   | PASS   |
| 4  | Emission Mask                       | 2.1053; Part 95 B | Refer to 95 B   | PASS   |
| 5  | Frequency Stability vs. Temperature | 2.1055; Part 95 B | Refer to 95 B   | PASS   |
| 6  | Frequency Stability vs. Voltage     | 2.1055; Part 95 B | Refer to 95 B   | PASS   |
| 7  | Transmitter Frequency Behavior      | 95 B              | Refer to 95 B   | PASS   |
| 8  | Lined conducted emission            | 15.109            | Refer to 15.109 | PASS   |
|    |                                     |                   |                 |        |

### 3. Details of Test

#### 3.1 Identification of the Responsible Testing Laboratory

|          |  |
|----------|--|
| Company: | Most Technology Service Co., Ltd   |
| Address: | No.5, Nangshan 2nd Rd., North Hi-Tech Industrial park ,Nanshan, Shenzhen, Guangdong ,China |

#### 3.2 Identification of the Responsible Testing Location

|              |   |
|--------------|---|
| Test Site:   | Most Technology Service Co., Ltd  |
| Address:     | No.5, Nangshan 2nd Rd., North Hi-Tech Industrial park ,Nanshan, Shenzhen, Guangdong ,China  |
| Description: | <p>There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2003/ANSI TIA 603:2004 and CISPR 16 requirements.</p> <p>The <b>FCC</b> Registration Number is <b>490827</b>.</p> <p>The <b>CNAS</b> Registration Number is <b>CNAS L3573</b>.</p> |

### 3.3 List of Test Equipments

| No. | Equipment                      | Manufacturer    | Model No.     | S/N             | Calibration date | Calibration due date |
|-----|--------------------------------|-----------------|---------------|-----------------|------------------|----------------------|
| 1   | Test Receiver                  | Rohde & Schwarz | ESCI          | 100492          | 2010/03/14       | 2011/03/14           |
| 2   | L.I.S.N.                       | Rohde & Schwarz | ENV216        | 100093          | 2010/03/14       | 2011/03/14           |
| 3   | Coaxial Switch                 | Anritsu Corp    | MP59B         | 6200283933      | 2010/03/14       | 2011/03/14           |
| 4   | Terminator                     | Hubersuhner     | 50Ω           | No.1            | 2010/03/14       | 2011/03/14           |
| 5   | RF Cable                       | SchwarzBeck     | N/A           | No.1            | 2010/03/14       | 2011/03/14           |
| 6   | Test Receiver                  | Rohde & Schwarz | ESPI          | 101202          | 2010/03/14       | 2011/03/14           |
| 7   | Bilog Antenna                  | Sunol           | JB3           | A121206         | 2010/03/14       | 2011/03/14           |
| 8   | Test Antenna - Horn            | Schwarzbeck     | BBHA 9120C    | --              | 2010/03/14       | 2011/03/14           |
| 9   | Test Antenna - LOOP            | Schwarzbeck     | VULB 9163     | --              | 2010/03/14       | 2011/03/14           |
| 10  | Cable                          | Resenberger     | N/A           | NO.1            | 2010/03/14       | 2011/03/14           |
| 11  | Cable                          | SchwarzBeck     | N/A           | NO.2            | 2010/03/14       | 2011/03/14           |
| 12  | Cable                          | SchwarzBeck     | N/A           | NO.3            | 2010/03/14       | 2011/03/14           |
| 13  | DC Power Filter                | DuoJi           | DL2×30B       | N/A             | 2010/03/14       | 2011/03/14           |
| 14  | Single Phase Power Line Filter | DuoJi           | FNF 202B30    | N/A             | 2010/03/14       | 2011/03/14           |
| 15  | 3 Phase Power Line Filter      | DuoJi           | FNF 402B30    | N/A             | 2010/03/14       | 2011/03/14           |
| 16  | Spectrum Analyzer              | Agilent         | 4408B         | MY41440460      | 2010/03/14       | 2011/03/14           |
| 17  | Absorbing Clamp                | Luthi           | MDS21         | 3635            | 2010/03/14       | 2011/03/14           |
| 18  | Coaxial Switch                 | Anritsu Corp    | MP59B         | 6200283933      | 2010/03/14       | 2011/03/14           |
| 19  | AC Power Source                | Kikusui         | AC40MA        | LM003232        | 2010/03/14       | 2011/03/14           |
| 20  | Test Analyzer                  | Kikusui         | KHA1000       | LM003720        | 2010/03/14       | 2011/03/14           |
| 21  | Line Impedence Network         | Kikusui         | LIN40MA-PCR-L | LM002352        | 2010/03/14       | 2011/03/14           |
| 22  | ESD Tester                     | Kikusui         | KES4021       | LM003537        | 2010/03/14       | 2011/03/14           |
| 23  | EMC PRO System                 | EM Test         | UCS-500-M4    | V064810202<br>6 | 2010/03/14       | 2011/03/14           |

|    |                                      |                   |                |            |            |            |
|----|--------------------------------------|-------------------|----------------|------------|------------|------------|
| 24 | Signal Generator                     | IFR               | 2032           | 203002/100 | 2010/03/14 | 2011/03/14 |
| 25 | Amplifier                            | A&R               | 150W1000       | 301584     | 2010/03/14 | 2011/03/14 |
| 26 | CDN                                  | FCC               | FCC-801-M2-25  | 47         | 2010/03/14 | 2011/03/14 |
| 27 | CDN                                  | FCC               | FCC-801-M3-25  | 107        | 2010/03/14 | 2011/03/14 |
| 28 | EM Injection Clamp                   | FCC               | F-203I-23mm    | 403        | 2010/03/14 | 2011/03/14 |
| 29 | RF Cable                             | MIYAZAKI          | N/A            | No.1/No.2  | 2010/03/14 | 2011/03/14 |
| 30 | Universal Radio Communication Tester | ROHDE&SCHWARZ     | CMU200         | 0304789    | 2010/03/14 | 2011/03/14 |
| 31 | Telecommunication Antenna            | European Antennas | PSA 75301R/170 | 0304213    | 2010/03/14 | 2011/03/14 |
| 32 | Temperature Chamber                  | Guangzhou Gongwen | GDS-250        | N/A        | 2010/03/14 | 2011/03/14 |

### 3.4 Environmental Conditions

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

- Temperature: 15-35°C
- Humidity: 30-60%
- Atmospheric pressure: 86-106 k Pa

### 3.5 Configuration of Tested System



### 3.6 Equipment Used in Tested System

| Item | Equipment  | Mfr/Brand | Model/Type No. | Identifier | Series No. | Note |
|------|------------|-----------|----------------|------------|------------|------|
| 1    | AC Adapter | N/A       | KZ0600600      | FCC DOC    | N/A        | EUT  |
|      |            |           |                |            |            |      |
|      |            |           |                |            |            |      |
|      |            |           |                |            |            |      |
|      |            |           |                |            |            |      |
|      |            |           |                |            |            |      |



## **4. Test Methodology**

### **4.1 General Test Procedures**

#### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirement in Section 13.1.4.1 of ANSI TIA 603:2004. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

#### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI TIA 603:2004.

### **4.2 Description of Test Modes**

The EUT has been tested under normal operating condition.

Two channels (The top channel and the bottom channel) are chosen for testing.

### 4.3 FCC Part 15.205 Restricted Bands of Operations

- (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138             | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.7 - 156.9         | 2655 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 322 - 335.4           | 3600 - 4400     | ( <sup>2</sup> ) |
| 13.36 - 13.41              |                       |                 |                  |

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

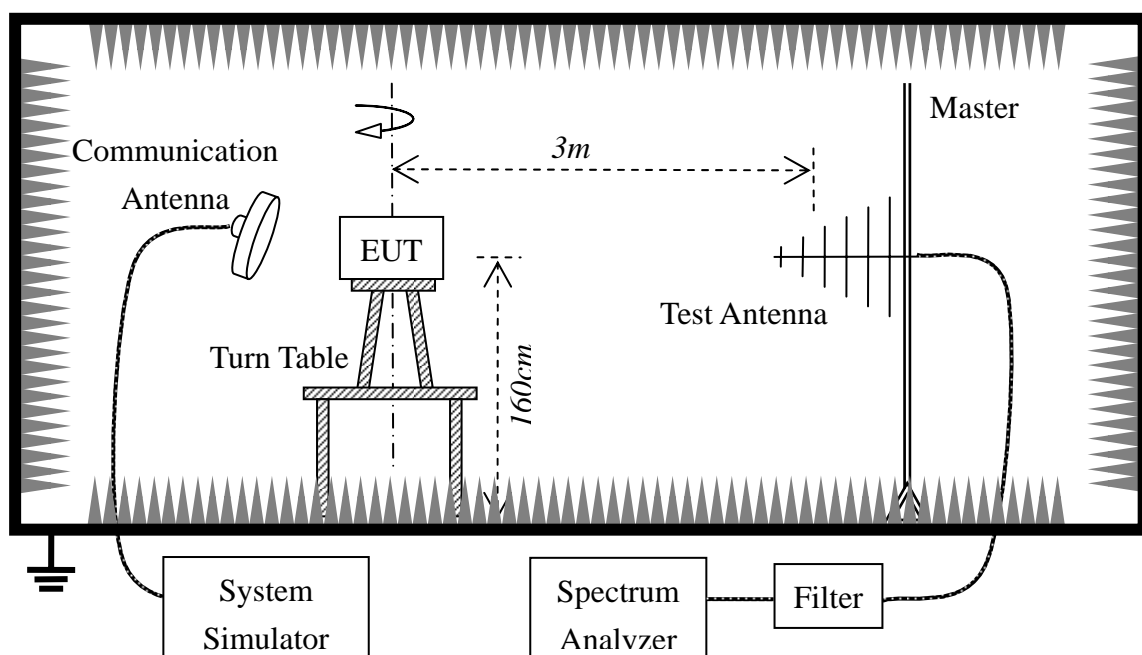
## 5. FCC Part 95 Requirements

### 5.1 Power and Antenna High Limits

#### LIMIT

Maximum ERP is dependent upon the station's antenna HAAT and required service area.

#### TEST CONFIGURATION



Plot 5.1.1

#### TEST PROCEDURE

1. On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
2. The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
3. The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

4. The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
6. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
8. The maximum signal level detected by the measuring receiver shall be noted.
9. The measurement shall be repeated with the test antenna set to horizontal polarization.
10. Replace the antenna with a proper Antenna (substitution antenna).
11. The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
12. The substitution antenna shall be connected to a calibrated signal generator.
13. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
14. The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
15. The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
16. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
17. The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

**TEST RESULTS**

| Chan | Freq.    | Antenna  | Reading | S.G   | Cable Loss | AntennaGain | E.R.P |
|------|----------|----------|---------|-------|------------|-------------|-------|
|      | (MHz)    | Polarity | (dBm)   | (dBm) | (dB)       | (dB)        | (mW)  |
| Low  | 462.5625 | V        | 5.16    | 29.8  | 5.59       | 1.11        | 25.36 |
|      | 462.5625 | H        | 5.03    | 29.6  | 5.59       | 1.11        | 25.09 |
| High | 467.7125 | V        | 5.39    | 30.4  | 5.62       | 1.12        | 25.90 |
|      | 467.7125 | H        | 5.56    | 29.8  | 5.62       | 1.12        | 25.25 |

**Note:**

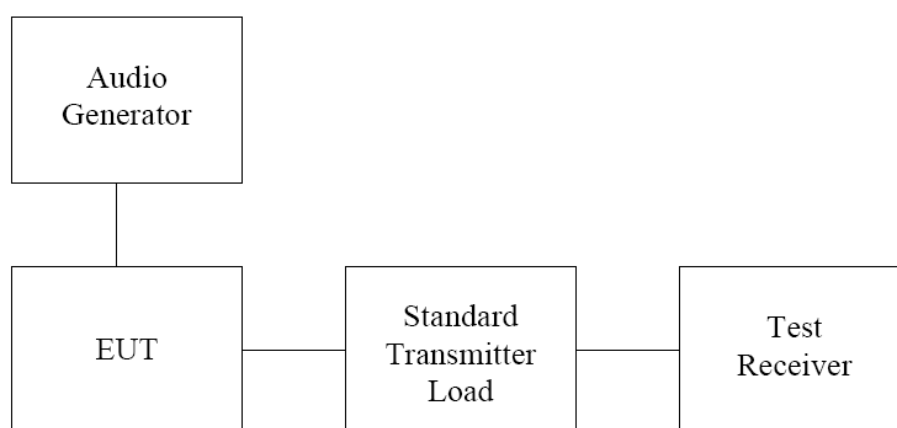
E.R.P(dBm) = SG output power (dBm) – Cable losses (dB) + Antenna gain (dB)

## 5.2 Modulation Characteristic

### LIMIT

According to CFR 47 section 2.1047 a, for Voice modulation communication equipment, the frequency response of the audio modulation circuit over a range of 100 to 5000 Hz shall be measured.

### TEST CONFIGURATION



### TEST PROCEDURE

Modulation limits is the transmitter circuit's ability to limit the transmitter from producing deviations in excess of rated system deviation.

The audio signal generator is connected to the audio input of the EUT with its full rating.

The modulation response is measured at certain modulation frequencies, related to 1000 Hz reference signal.

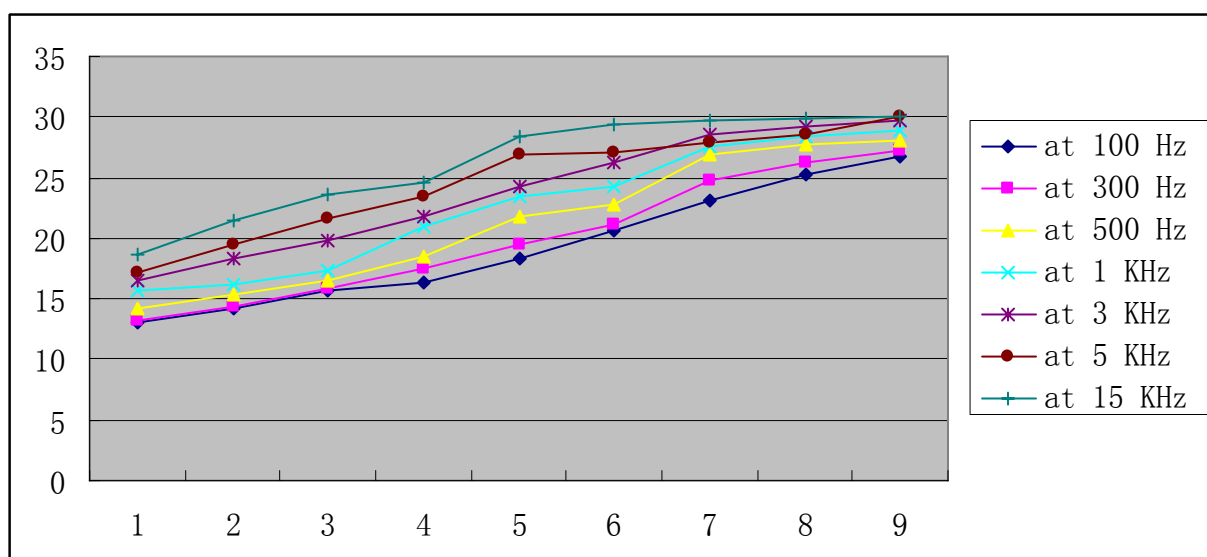
Tests are performed for positive and negative modulation.

## TEST RESULTS

A). Modulation Limit:

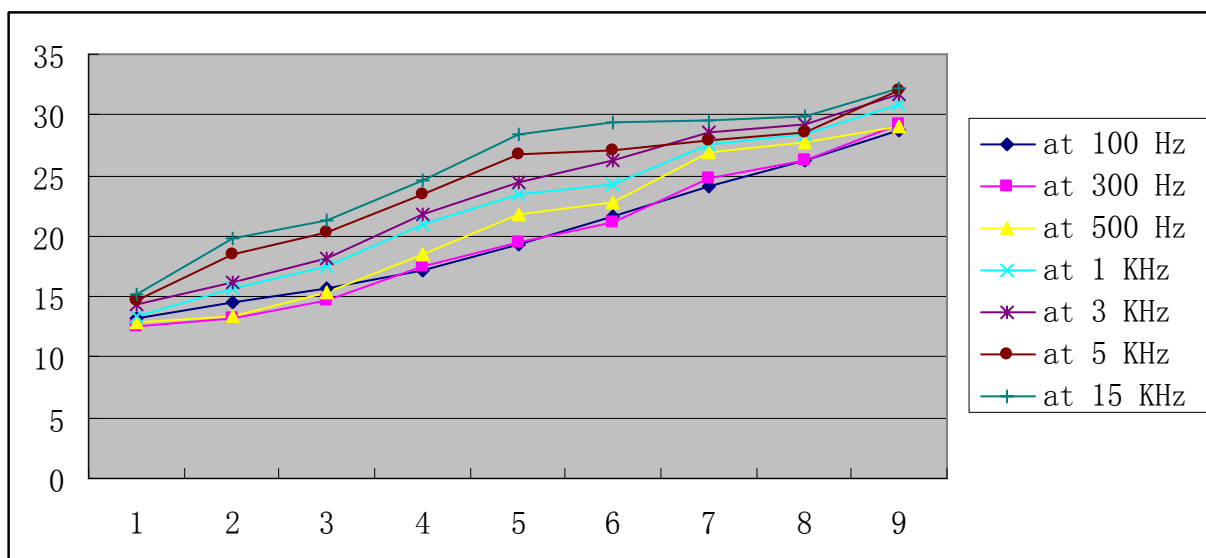
The Low Channel (462.5625 MHz)

| Modulation Level (dB) | Peak Frequency Deviation |           |           |          |          |          |              |
|-----------------------|--------------------------|-----------|-----------|----------|----------|----------|--------------|
|                       | at 100 Hz                | at 300 Hz | at 500 Hz | at 1 KHz | at 3 KHz | at 5 KHz | at 15 KHz    |
| -20                   | 14.21                    | 14.23     | 15.34     | 15.43    | 14.74    | 15.52    | 15.95        |
| -15                   | 15.03                    | 15.21     | 16.86     | 16.25    | 17.23    | 18.16    | 20.18        |
| -10                   | 16.12                    | 16.48     | 18.55     | 18.94    | 19.89    | 22.66    | 24.93        |
| -5                    | 17.64                    | 17.93     | 19.75     | 21.26    | 22.36    | 26.60    | 28.15        |
| 0                     | 19.10                    | 20.11     | 22.06     | 23.60    | 26.64    | 29.42    | 31.03        |
| +5                    | 20.22                    | 22.16     | 24.40     | 25.42    | 31.87    | 32.60    | 33.71        |
| +10                   | 23.15                    | 24.03     | 25.59     | 27.12    | 33.16    | 33.31    | 34.25        |
| +15                   | 25.76                    | 26.32     | 28.68     | 29.09    | 33.58    | 33.46    | <b>35.63</b> |
| +20                   | 28.01                    | 29.13     | 30.74     | 31.56    | 33.79    | 33.72    | 35.12        |



## The High Channel (467.7125 MHz)

| Modulation<br>Level<br>(dB) | Peak Frequency Deviation |           |           |          |          |          |              |
|-----------------------------|--------------------------|-----------|-----------|----------|----------|----------|--------------|
|                             | at 100 Hz                | at 300 Hz | at 500 Hz | at 1 KHz | at 3 KHz | at 5 KHz | at 15 KHz    |
| -20                         | 13.20                    | 12.52     | 12.85     | 13.34    | 14.36    | 14.72    | 15.26        |
| -15                         | 14.41                    | 13.13     | 13.35     | 15.65    | 16.26    | 18.45    | 19.74        |
| -10                         | 15.64                    | 14.76     | 15.32     | 17.52    | 18.21    | 20.24    | 21.35        |
| -5                          | 17.22                    | 17.53     | 18.47     | 20.93    | 21.74    | 23.42    | 24.54        |
| 0                           | 19.33                    | 19.54     | 21.72     | 23.45    | 24.37    | 26.84    | 28.35        |
| +5                          | 21.58                    | 21.18     | 22.86     | 24.36    | 26.34    | 27.13    | 29.36        |
| +10                         | 24.13                    | 24.69     | 26.94     | 27.64    | 28.63    | 27.91    | 29.61        |
| +15                         | 26.25                    | 26.26     | 27.73     | 28.45    | 29.15    | 28.54    | 29.82        |
| +20                         | 28.76                    | 29.18     | 29.10     | 30.86    | 31.72    | 32.05    | <b>32.18</b> |





## B). Audio Frequency Response:

## The Low Channel (462.5625 MHz)

| Frequency (Hz) | Deviation (KHz) |
|----------------|-----------------|
| 100            | 0.505           |
| 200            | 1.650           |
| 300            | 2.012           |
| 400            | 2.041           |
| 500            | 2.040           |
| 600            | 2.033           |
| 700            | 2.031           |
| 800            | 1.957           |
| 900            | 1.983           |
| 1000           | 1.926           |
| 1200           | 1.933           |
| 1400           | 1.945           |
| 1600           | <b>1.955</b>    |
| 1800           | 1.691           |
| 2000           | 1.417           |
| 2200           | 1.137           |
| 2400           | 0.919           |
| 2600           | 0.732           |
| 2800           | 0.586           |
| 3000           | 0.472           |
| 3500           | 0.380           |
| 4000           | 0.193           |
| 4500           | 0.143           |
| 5000           | 0.106           |
| 5500           | 0.081           |
| 6000           | 1.691           |
| 6500           | 1.417           |
| 7000           | 1.137           |
| 8500           | 0.919           |
| 10000          | 0.732           |

## The High Channel (467.7125 MHz)

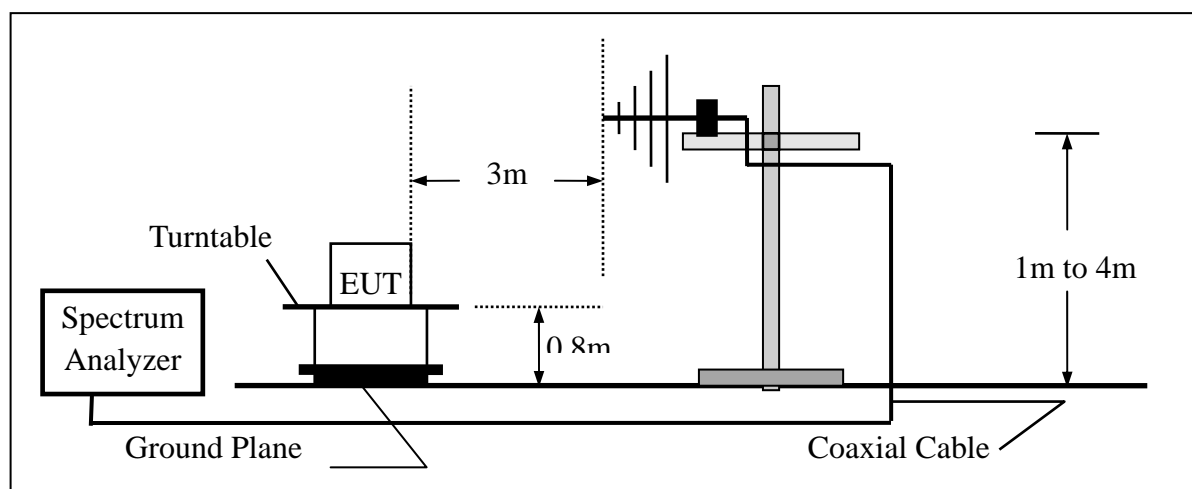
| Frequency (Hz) | Deviation (KHz) |
|----------------|-----------------|
| 100            | 0.531           |
| 200            | 1.585           |
| 300            | 2.004           |
| 400            | 2.056           |
| 500            | 2.065           |
| 600            | 2.040           |
| 700            | 2.026           |
| 800            | 1.926           |
| 900            | 1.903           |
| 1000           | 1.945           |
| 1200           | <b>1.982</b>    |
| 1400           | 1.961           |
| 1600           | 1.930           |
| 1800           | 1.756           |
| 2000           | 1.525           |
| 2200           | 1.269           |
| 2400           | 0.951           |
| 2600           | 0.765           |
| 2800           | 0.645           |
| 3000           | 0.521           |
| 3500           | 0.485           |
| 4000           | 0.216           |
| 4500           | 0.185           |
| 5000           | 0.124           |
| 5500           | 0.113           |
| 6000           | 1.325           |
| 6500           | 1.209           |
| 7000           | 1.186           |
| 8500           | 1.103           |
| 10000          | 0.985           |

### 5.3 Occupied Bandwidth

#### LIMIT

For other types of emissions, the maximum authorized bandwidth shall not be more than that normally authorized for voice operations.

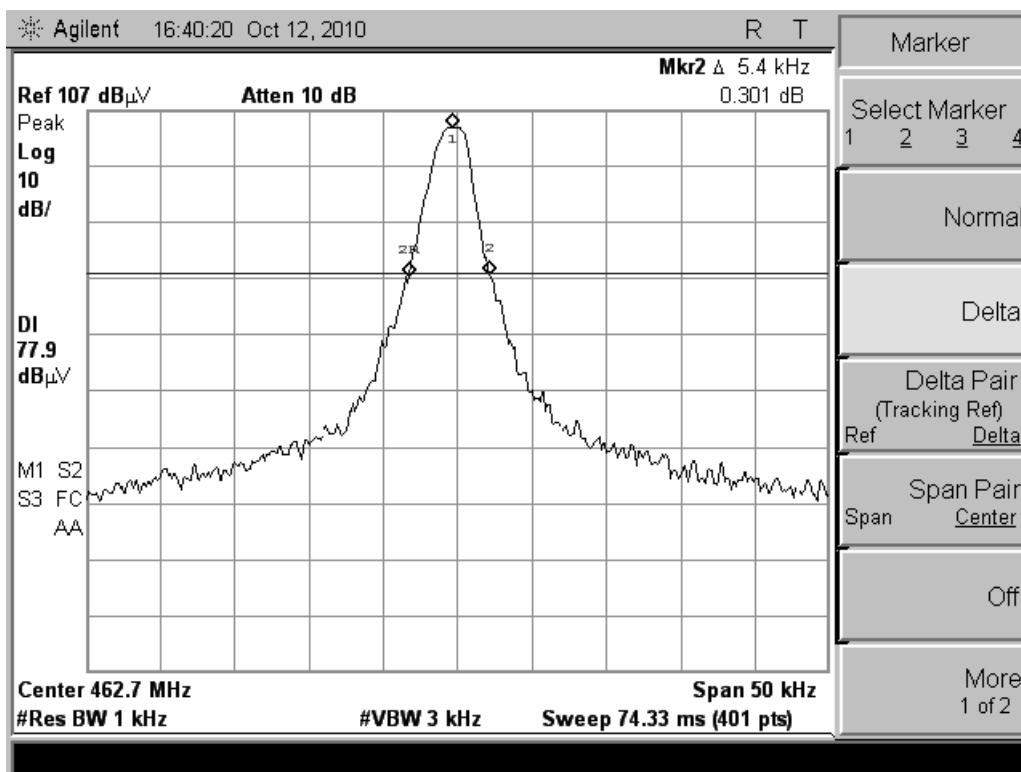
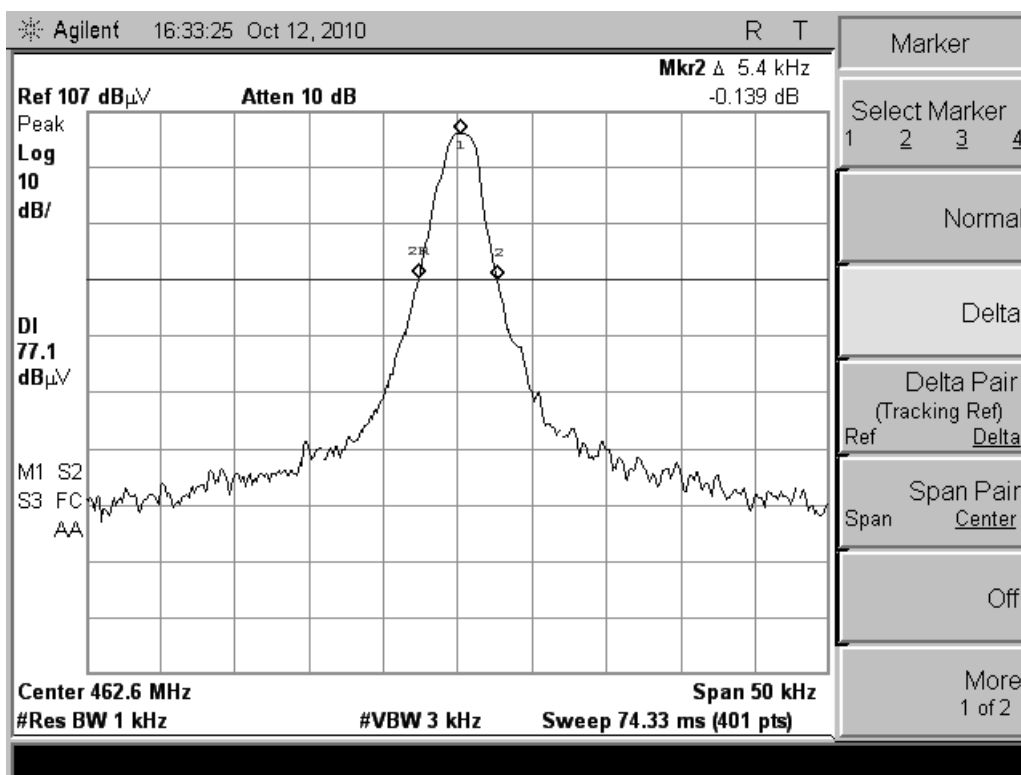
#### TEST CONFIGURATION



#### TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Set SPA center frequency=fundamental frequency, RBW=1 KHz, VBW=3 KHz, Span=50 KHz.
4. Set SPA max. Hold. Mark peak, -26dB.

## TEST RESULTS



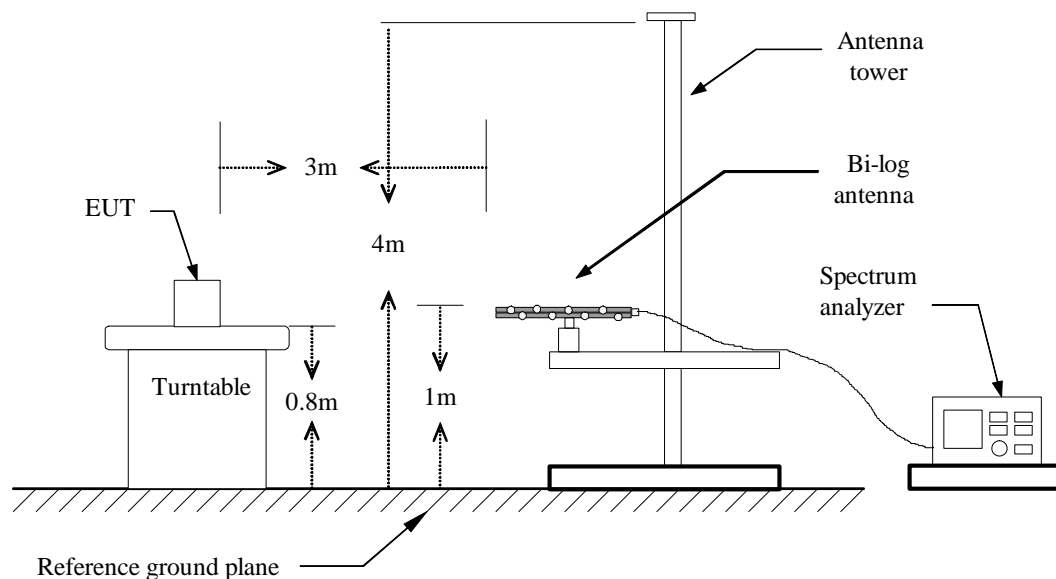
## 5.4 Emission Mask

### LIMIT

The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (1) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;
- (2) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;
- (3) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least  $43 + 10 \log_{10} \text{ (mean output power in watts) dB}$ ;

### TEST CONFIGURATION



## **TEST PROCEDURE**

1. On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
2. The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
3. The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4. The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
6. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
8. The maximum signal level detected by the measuring receiver shall be noted.
9. The measurement shall be repeated with the test antenna set to horizontal polarization.
10. Replace the antenna with a proper Antenna (substitution antenna).
11. The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
12. The substitution antenna shall be connected to a calibrated signal generator.
13. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
14. The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
15. The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
16. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
17. The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

## **TEST RESULTS**

### **The Unwanted Radiated Emission**

The Low Channel (462.5625 MHz)

| Frequency (MHz) | Reading level (dBuv) | Antenna Polarization | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dB) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|----------------------|----------------------|------------|-----------------|---------------|----------------------|-------------|-------------|
| 925.13          | 23.35                | V                    | -18.59     | 10.82           | 8.49          | -20.92               | -13         | -7.92       |
| 1387.65         | 25.61                | V                    | -21.86     | 14.09           | 9.64          | -26.31               | -13         | -13.31      |
| Other           | --                   | V                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | V                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              |                      |                      |            |                 |               |                      |             |             |
| 925.13          | 20.23                | H                    | -23.13     | 10.82           | 8.49          | -25.46               | -13         | -12.46      |
| 1387.65         | 23.19                | H                    | -25.73     | 14.09           | 9.64          | -30.18               | -13         | -17.18      |
| Other           | --                   | H                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              |                      |                      |            |                 |               |                      |             |             |
| --              |                      |                      |            |                 |               |                      |             |             |

#### *Notes:*

- (1) "--" in the table above means that the emissions are too small to be measured and are at least 10 dB below the limit.
- (2)  $Emission\ Level = S.G\ output\ power(dBm) - Cable\ loss(db) + Antenna\ Gain(dBi)$

## The High Channel (467.7125 MHz)

| Frequency (MHz) | Reading level (dBuv) | Antenna Polarization | S.G. (dBm) | Cable loss (dB) | Ant.Gain (dB) | Emission level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|----------------------|----------------------|------------|-----------------|---------------|----------------------|-------------|-------------|
| 935.425         | 24.21                | V                    | -18.90     | 10.92           | 8.73          | -21.09               | -13         | -8.09       |
| 1403.138        | 25.36                | V                    | -22.96     | 14.21           | 9.71          | -27.46               | -13         | -11.46      |
| Other           | --                   | V                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | V                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | V                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | V                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | --                   | --         | --              | --            | --                   | --          | --          |
| --              | --                   | --                   | --         | --              | --            | --                   | --          | --          |
| 935.425         | 26.42                | H                    | -24.03     | 10.92           | 8.73          | -26.22               | -13         | -13.22      |
| 1403.138        | 27.15                | H                    | -27.19     | 14.21           | 9.71          | -31.69               | -13         | -18.69      |
| Other           | --                   | H                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | H                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | H                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | H                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | H                    | --         | --              | --            | --                   | -13         | > 10 dB     |
| --              | --                   | --                   | --         | --              | --            | --                   | --          | --          |

## Notes:

(1) "--" in the table above means that the emissions are too small to be measured and are at least 10 dB below the limit.

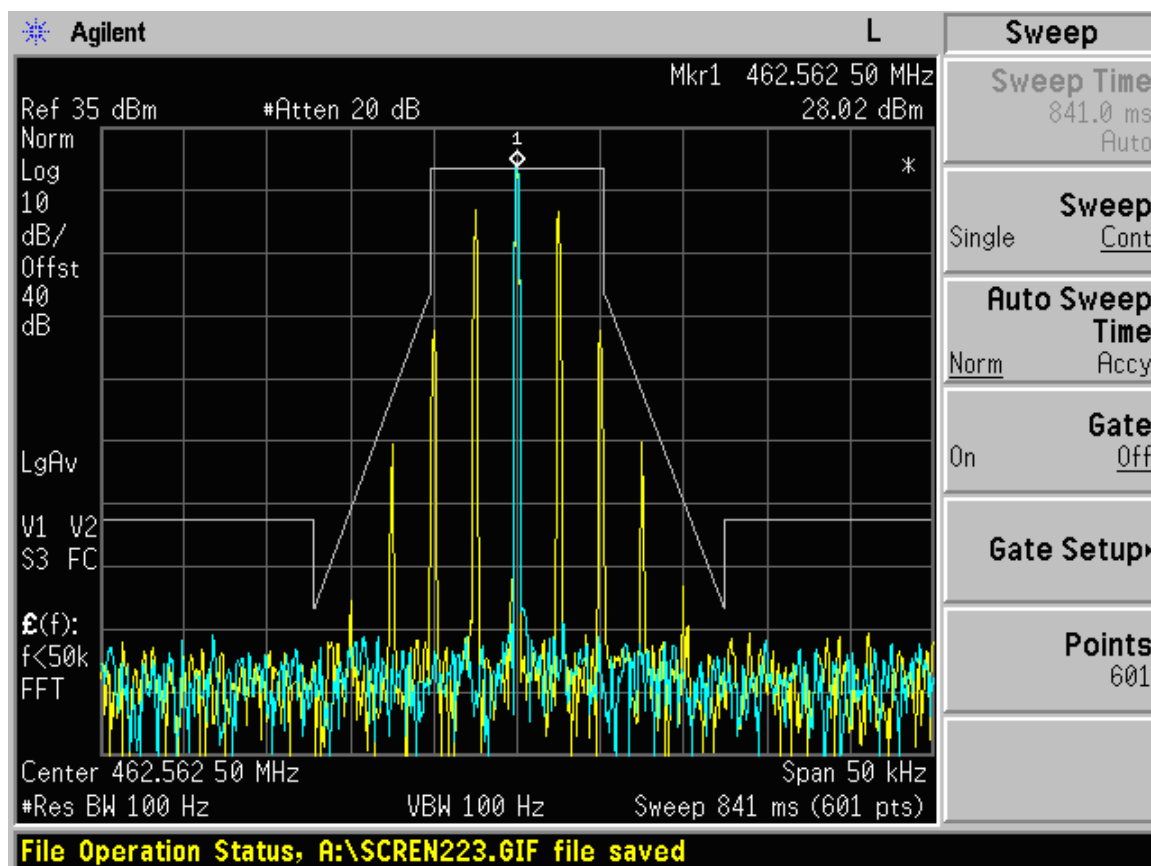
(2) Emission Level=S.G ourput power(dBm)-Cable loss(db)+Antenna Gain(dBi)

|                               |  |
|-------------------------------|--|
| Maximum Transmitter Power (P) | 25.68 dBm  |
| Require attenuation           | $43+10\log_{10} (7.38) = 38.68 \text{ dB}$       |
| Emission Limits               | $P-[43+10\log_{10} (0.00014)] = -13 \text{ dBm}$ |



**Emission Mask:**

The Low Channel (462.5625 MHz)



## 5.5 Frequency Stability vs. Temperature

### LIMIT

- a). According to FCC Part 2 Section 2.1055(a)(1), the frequency stability shall be measured with variation of ambient temperature from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  centigrade.
- b). According to FCC Part 2 Section 2.1055(d) (1), vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
- c). According to FCC Part 95 Section B, mobile stations designed to operate with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm( 0.00025%).

### TEST PROCEDURE

The EUT power was supplied by AC110V and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. The DC leads and the RF output cable, exited the chamber through an opening made for that purpose.

After the temperature stabilized the frequency output was recorded form the counter.

### RESULTS

The Low Channel (462.5625 MHz)

| Temperature<br>( $^{\circ}\text{C}$ ) | Frequency Error<br>( K Hz) | Frequency Error<br>( %) | Frequency Error<br>(ppm) | Limit<br>( %) |
|---------------------------------------|----------------------------|-------------------------|--------------------------|---------------|
| -30                                   | -0.805                     | -0.000174               | -1.74                    | 0.00025       |
| -20                                   | -0.552                     | -0.000119               | -1.19                    | 0.00025       |
| -10                                   | -0.659                     | -0.000142               | -1.42                    | 0.00025       |
| 0                                     | -0.524                     | -0.000113               | -1.13                    | 0.00025       |
| 10                                    | 0.255                      | 0.000055                | 0.55                     | 0.00025       |
| 20                                    | 0.590                      | 0.000128                | 1.28                     | 0.00025       |
| 30                                    | -0.155                     | -0.000076               | -0.76                    | 0.00025       |
| 40                                    | -0.621                     | -0.000134               | -1.34                    | 0.00025       |
| 50                                    | -0.579                     | -0.000125               | -1.25                    | 0.00025       |

The High Channel (467.7125 MHz)

| Temperature<br>(°C) | Frequency Error<br>( K Hz) | Frequency Error<br>( %) | Frequency Error<br>(ppm) | Limit<br>( %) |
|---------------------|----------------------------|-------------------------|--------------------------|---------------|
| -30                 | -0.586                     | -0.000125               | -1.25                    | 0.00025       |
| -20                 | -0.614                     | -0.000133               | -1.33                    | 0.00025       |
| -10                 | 0.482                      | 0.000104                | 1.04                     | 0.00025       |
| 0                   | 0.315                      | 0.000068                | 0.68                     | 0.00025       |
| 10                  | 0.229                      | 0.000050                | 0.50                     | 0.00025       |
| 20                  | 0.355                      | 0.000077                | 0.77                     | 0.00025       |
| 30                  | -0.421                     | -0.000091               | -0.91                    | 0.00025       |
| 40                  | -0.565                     | -0.000122               | -1.22                    | 0.00025       |
| 50                  | -0.713                     | -0.000154               | -1.54                    | 0.00025       |

## 5.6 Frequency Stability vs. Voltage

### LIMIT

- a). According to FCC Part 2 Section 2.1055(a)(1), the frequency stability shall be measured with variation of ambient temperature from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  centigrade.
- b). According to FCC Part 2 Section 2.1055(d) (1), vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
- c). According to FCC Part 95 Section B, for output power  $> 2\text{Watts}$ , the limits is 2.5 ppm (0.00025%).

### TEST PROCEDURE

An external variable AC power supply was connected to the EUT.

For hand carried, The AC power equipment primary supply voltage was reduced to the end point as specified by the manufacturer. The output frequency was recorded for highest and lowest voltage.

### RESULTS

The Low Channel (462.5625 MHz)

| Voltage (V) | Frequency Error (Hz) | Frequency Error (%) | Frequency Error (ppm) | Limit (%) |
|-------------|----------------------|---------------------|-----------------------|-----------|
| 93.5        | 805                  | 0.000172            | 1.72                  | 0.00025   |
| 110.0       | 665                  | 0.000144            | 1.44                  | 0.00025   |
| 126.5       | 545                  | 0.000118            | 1.18                  | 0.00025   |

The High Channel (467.7125 MHz)

| Voltage (V) | Frequency Error (Hz) | Frequency Error (%) | Frequency Error (ppm) | Limit (%) |
|-------------|----------------------|---------------------|-----------------------|-----------|
| 93.5        | 750                  | 0.000160            | 1.60                  | 0.00025   |
| 110.0       | 485                  | 0.000105            | 1.05                  | 0.00025   |
| 126.5       | 865                  | 0.000187            | 1.87                  | 0.00025   |

## 5.7 Transmitter Frequency Behavior

### Provisions Applicable

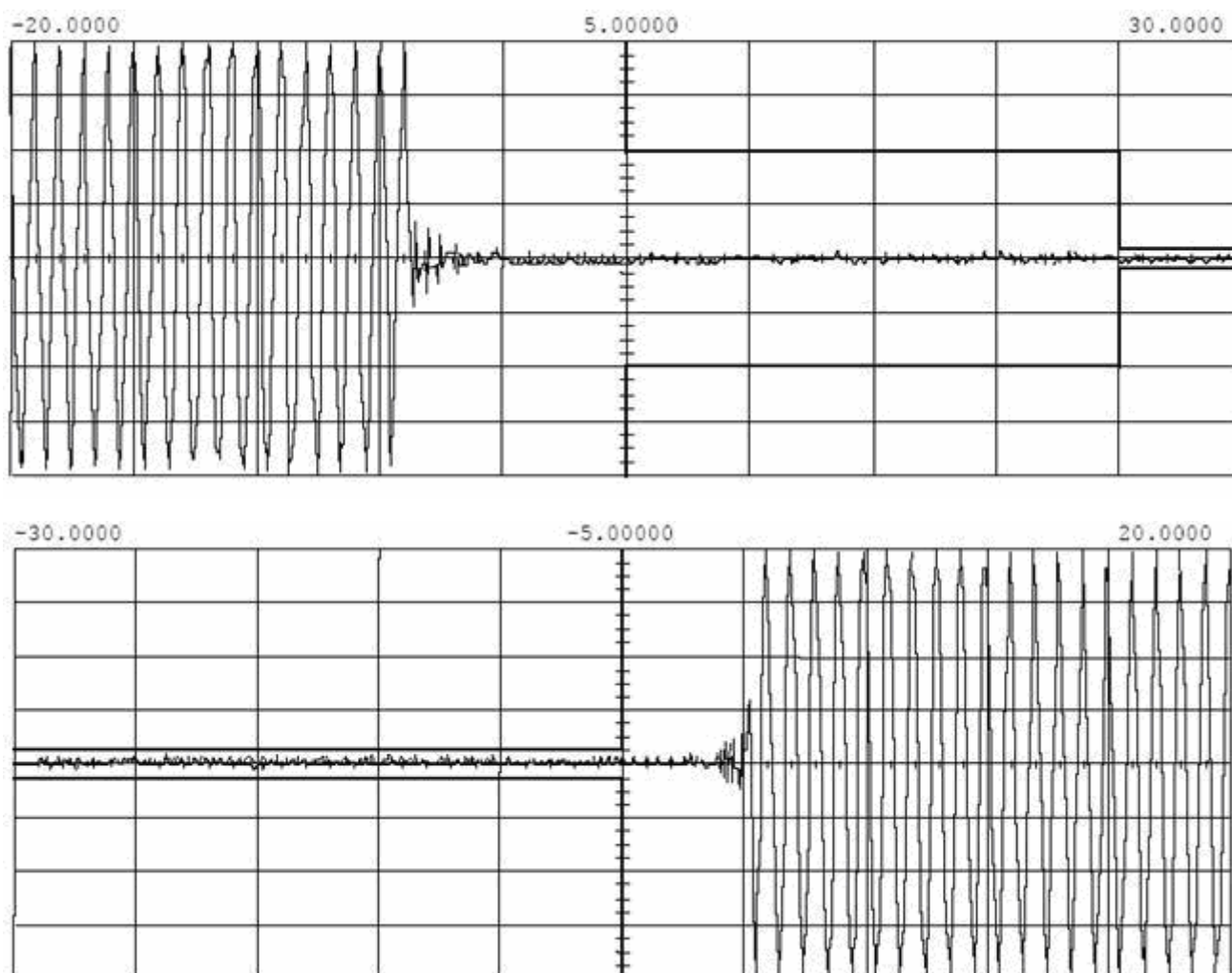
Section 95 B

### TEST PROCEDURE

TIA/EIA-603 2.2.19

### RESULTS

Please refer to the test plot.



*No non-compliance noted*

**Conclusion: PASS**

## 5.8 LINE CONDUCTED EMISSION TEST

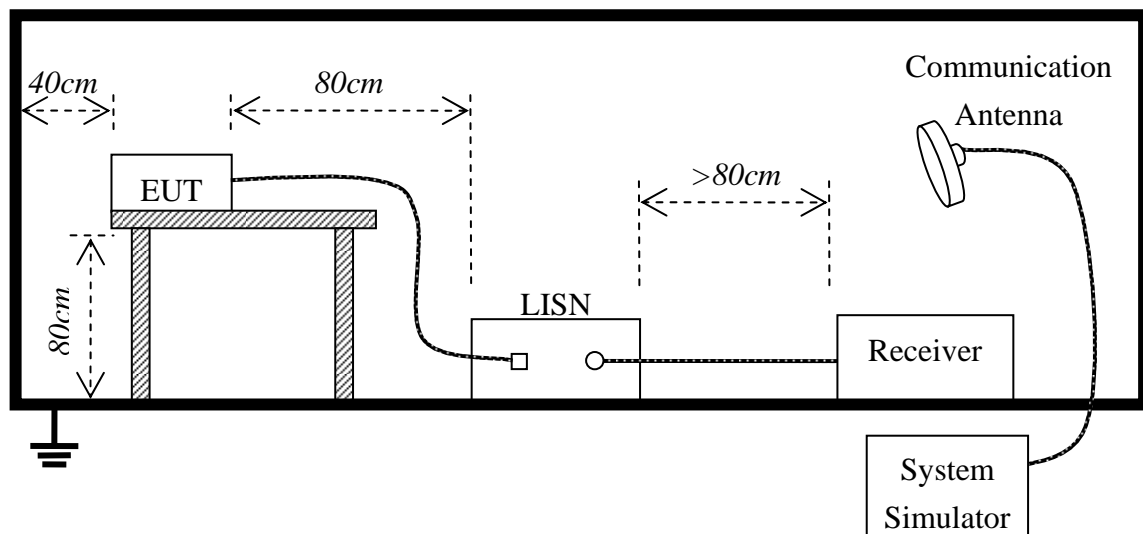
### LIMITS OF LINE CONDUCTED EMISSION TEST

| Frequency     | Maximum RF Line Voltage |                |
|---------------|-------------------------|----------------|
|               | Q.P.( dBuV)             | Average( dBuV) |
| 150kHz-500kHz | 66-56                   | 56-46          |
| 500kHz-5MHz   | 56                      | 46             |
| 5MHz-30MHz    | 60                      | 50             |

**\*\*Note:** 1. the lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

### BLOCK DIAGRAM OF TEST SETUP



## **PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST**

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When 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 FCC Part 15 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per FCC Part 15.
- 3) All I/O cables were positioned to simulate typical actual usage as per FCC Part 15.
- 4) The EUT received 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 power from a second LISN supplying power of AC 120V/60Hz, 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 30 MHz for emissions in each of the test modes.
- 8) During the above scans, the emissions were maximized by cable manipulation.
- 9) The following test mode(s) were scanned during the preliminary test:

| Preliminary Conducted Emission Test |            |                  |          |                                     |
|-------------------------------------|------------|------------------|----------|-------------------------------------|
| Frequency Range Investigated        |            | 150KHz TO 30 MHz |          |                                     |
| Mode of operation                   | Date       | Report No.       | Data#    | Worst Mode                          |
| TX Mode                             | 2010-09-14 | MOST100902F1     | 1_(L, N) | <input checked="" type="checkbox"/> |
| Standby Mode                        | 2010-09-14 | MOST100902F1     | 2_(L, N) |                                     |
| Flash Light Mode                    | 2010-09-14 | MOST100902F1     | 3_(L, N) |                                     |

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

## **FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST**

EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.

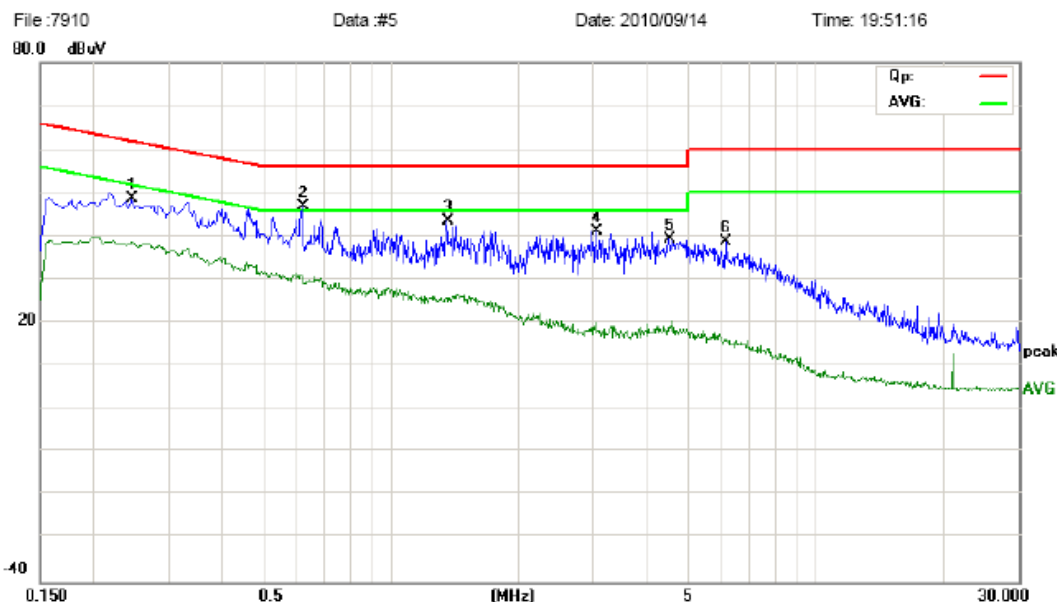
The test data of the worst case condition(s) was reported on the Summary Data page.

## TEST RESULT OF LINE CONDUCTED EMISSION TEST



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park  
Guangdong, China  
Tel: 0755-86170306 Fax: 0755-86170310

### Conducted Emission Measurement



Site site #1

Phase: L1

Temperature: 26

Limit: FCC Part15 B Class B QP

Power: AC 120V/60Hz

Humidity: 60 %

EUT: Walkie Talkie

M/N: 7910

Mode: TX Mode

Note:

| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   |     | 0.2460       | 36.90                    | 11.69                   | 48.59                    | 61.89         | -13.30     | peak     |         |
| 2   | *   | 0.6180       | 36.76                    | 10.00                   | 46.76                    | 56.00         | -9.24      | peak     |         |
| 3   |     | 1.3540       | 33.77                    | 9.65                    | 43.42                    | 56.00         | -12.58     | peak     |         |
| 4   |     | 3.0260       | 31.25                    | 10.03                   | 41.28                    | 56.00         | -14.72     | peak     |         |
| 5   |     | 4.5220       | 27.88                    | 11.52                   | 39.40                    | 56.00         | -16.60     | peak     |         |
| 6   |     | 6.1380       | 27.41                    | 11.32                   | 38.73                    | 60.00         | -21.27     | peak     |         |

\*:Maximum data x:Over limit !:over margin





Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park  
Guangdong, China  
Tel: 0755-86170306 Fax: 0755-86170310

### Conducted Emission Measurement

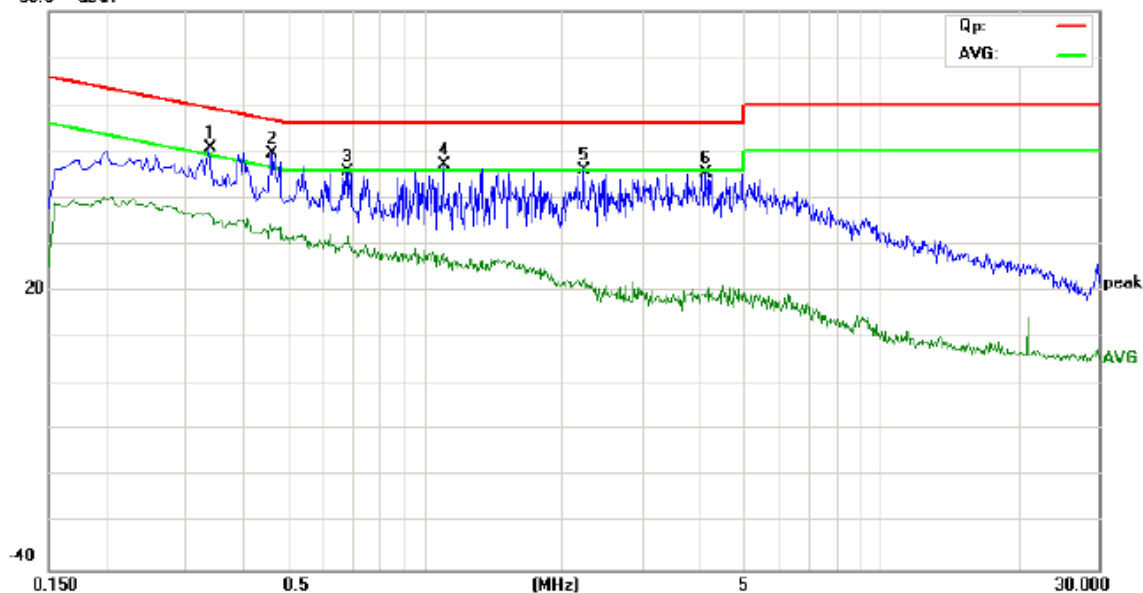
File: 7910

Data: #6

Date: 2010/09/14

Time: 19:53:21

90.0 dBuV



Site site #1

Phase: L1

Temperature: 26

Limit: FCC Part15 B Class B QP

Power: AC 120V/60Hz

Humidity: 60 %

EUT: Walkie Talkie

M/N: 7910

Mode: TX Mode

Note:

| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   |     | 0.3380       | 39.68                    | 11.08                   | 50.76                    | 59.25         | -8.49      | peak     |         |
| 2   | *   | 0.4620       | 39.39                    | 10.25                   | 49.64                    | 56.66         | -7.02      | peak     |         |
| 3   |     | 0.6740       | 35.79                    | 10.00                   | 45.79                    | 56.00         | -10.21     | peak     |         |
| 4   |     | 1.1020       | 37.30                    | 9.90                    | 47.20                    | 56.00         | -8.80      | peak     |         |
| 5   |     | 2.2260       | 36.85                    | 9.23                    | 46.08                    | 56.00         | -9.92      | peak     |         |
| 6   |     | 4.1180       | 34.22                    | 11.12                   | 45.34                    | 56.00         | -10.66     | peak     |         |

\*:Maximum data x:Over limit !:over margin

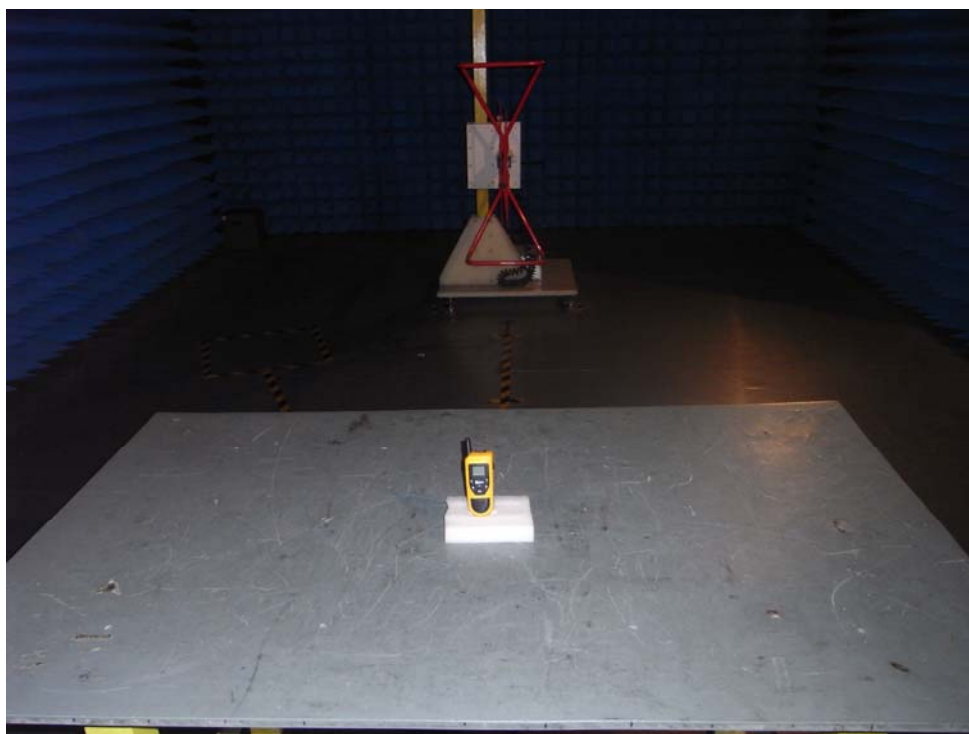
## **Annex A**

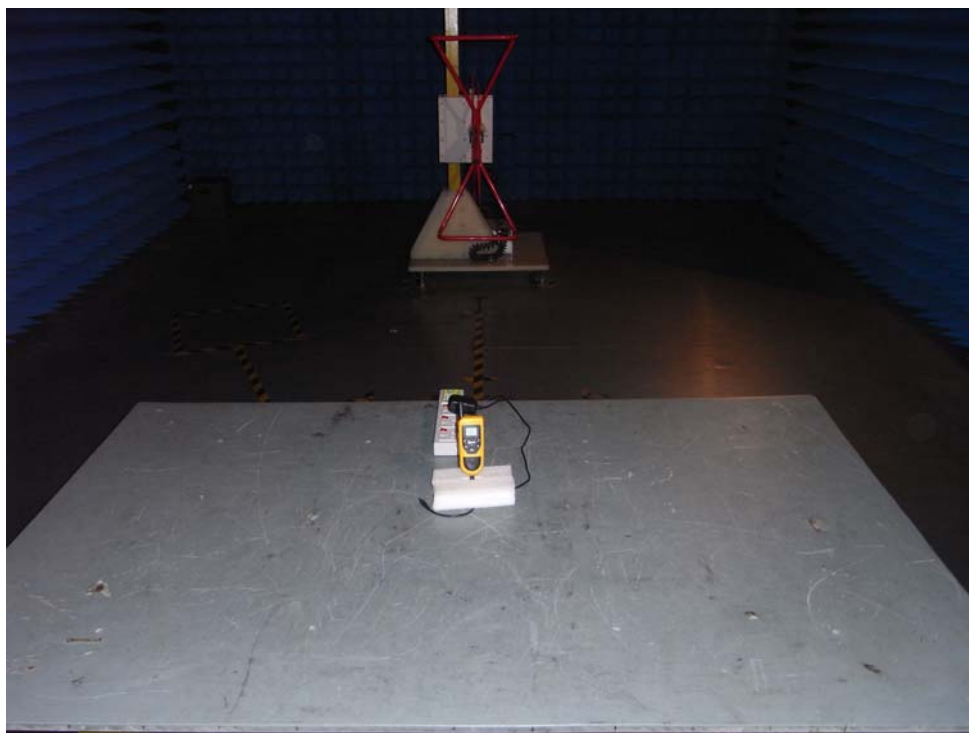
### **Photographs of the Test Setup**

Conducted Emission Setup Photo



Radio Emission Setup Photo





## **Annex B**

### **Photographs of the EUT**

FRONT VIEW OF SAMPLE



BACK VIEW OF SAMPLE



LEFT VIEW OF SAMPLE



RIGHT VIEW OF SAMPLE



UP VIEW OF SAMPLE



DOWN VIEW OF SAMPLE





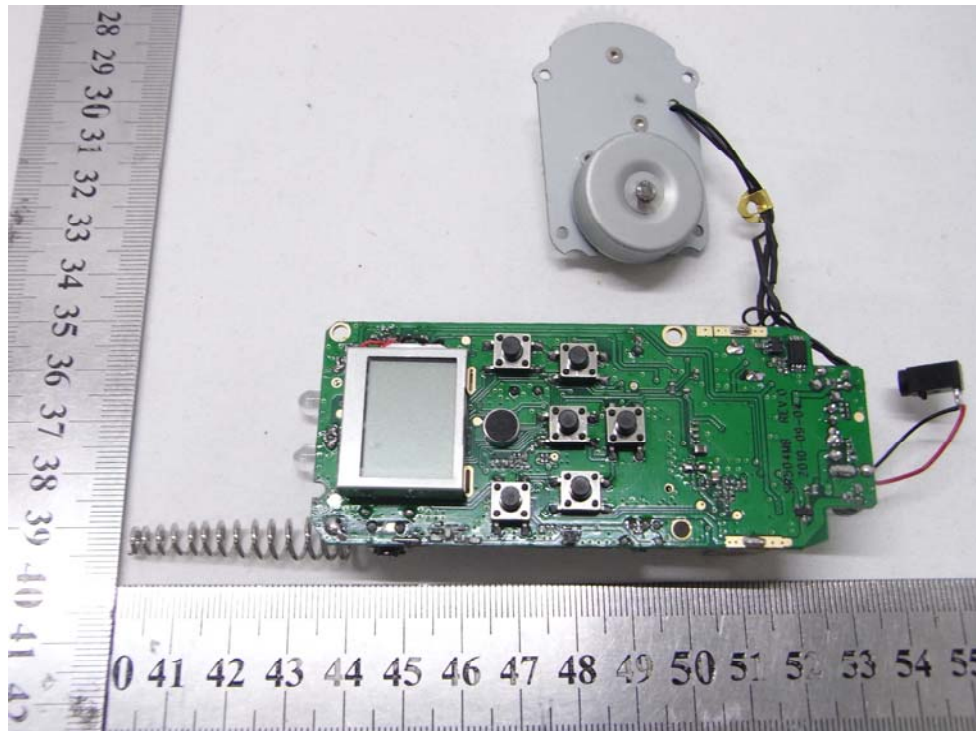
PHOTO OF ADAPTER



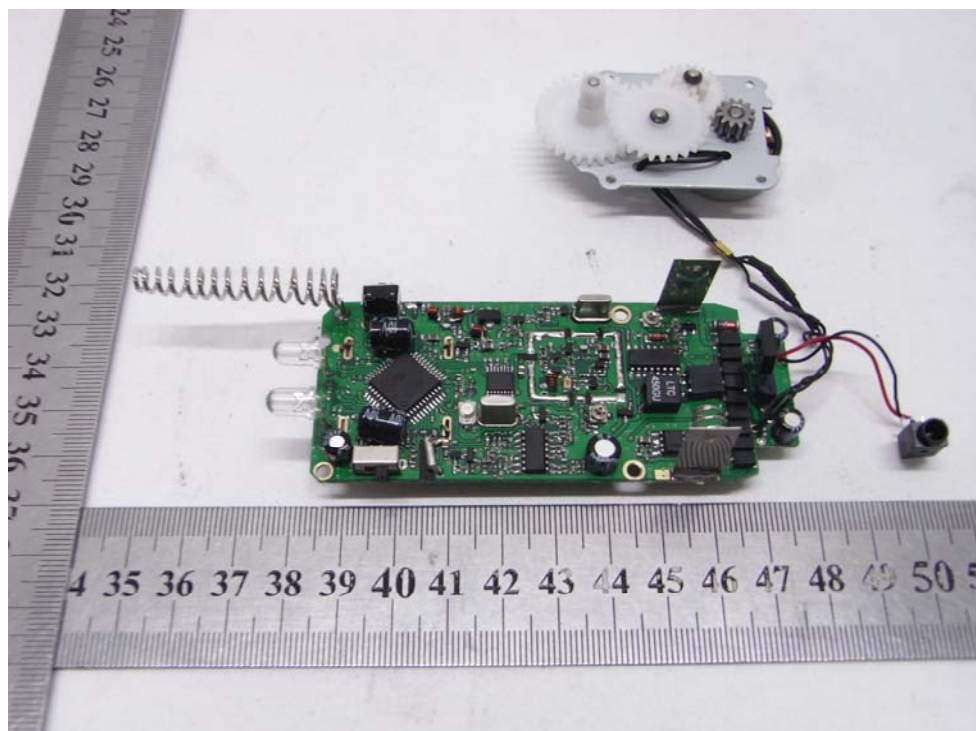
PHOTO OF THE ENTIRE SAMPLE



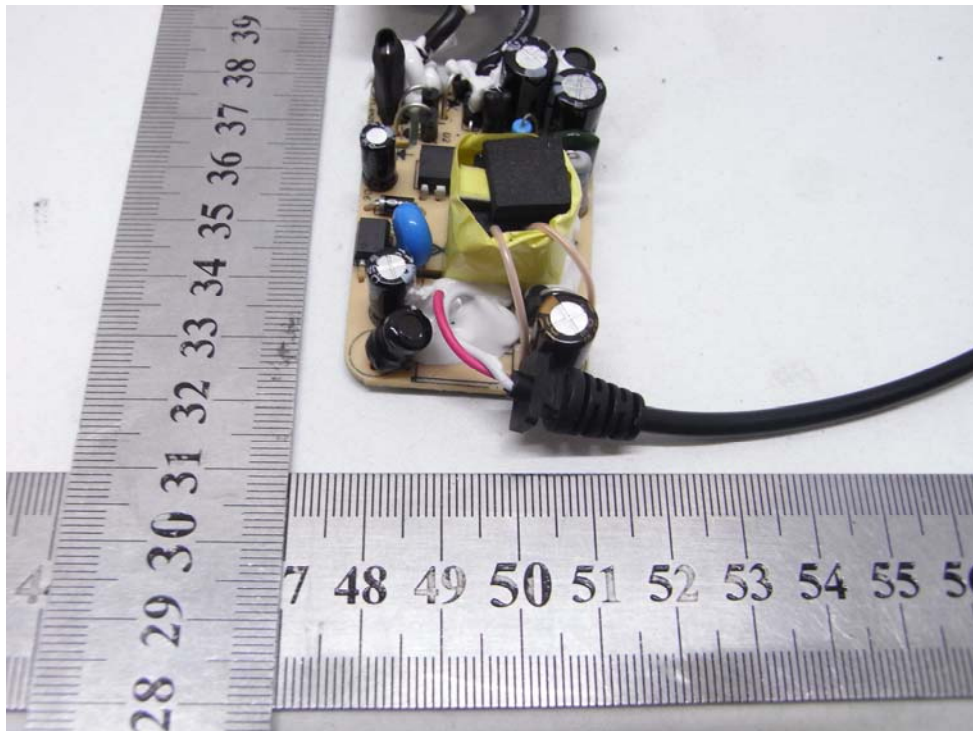
INTERNAL PHOTO OF SAMPLE



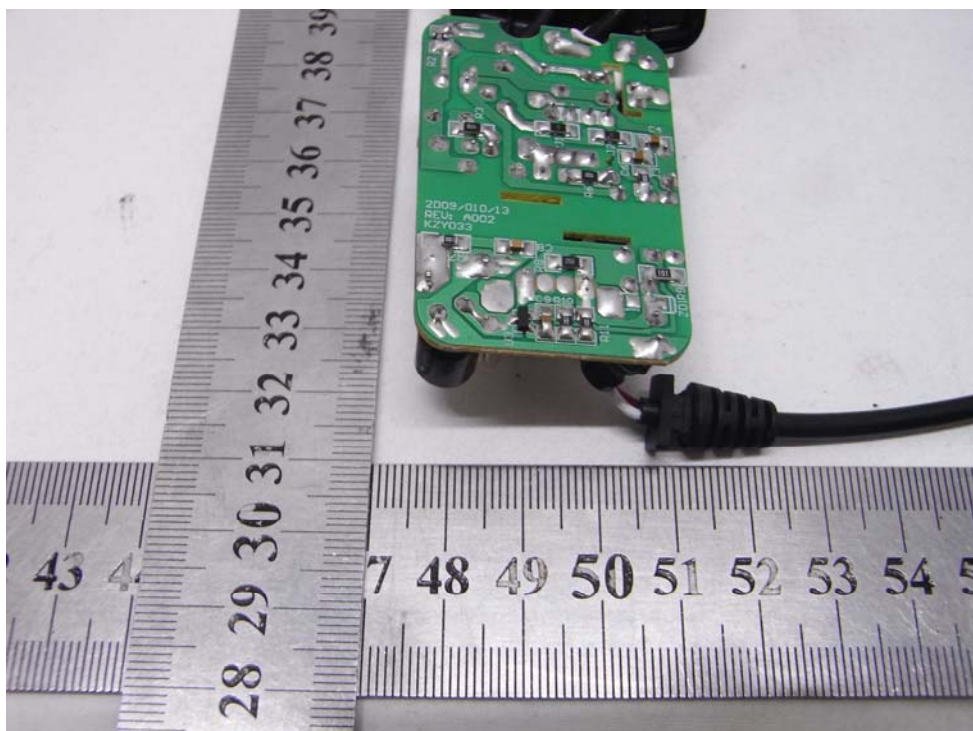
INTERNAL PHOTO OF SAMPLE



INTERNAL PHOTO OF ADAPTER-1



INTERNAL PHOTO OF ADAPTER-2



\*\*\* End of the Reports\*\*\*