

# **FCC PART 74 TEST REPORT**

## **FCC ID:I4S-EM100**

**Product :** IN EAR MONITOR Stereo Transmitter

**Trade Name :** N/A

**Model Name :** EM-100

**Serial Model :** N/A

**Report No. :** ISOT15080132E

### **Prepared for**

Peavey Electronics Corporation

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### **Prepared by**

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**TEST RESULT CERTIFICATION****Applicant's name** ..... Peavey Electronics Corporation

Address ..... 5022 Hartley Peavey Drive, Meridian, Mississippi, United States 39305

**Manufacture's Name**... Shenzhen Uniwisdom Technologies Co., Ltd.

Address ..... Bldg.91-94 3rd Industrial Zone, Lisonglang, GongmingTown, Bao'an District, Shenzhen, P.R.China

**Product description**

Product name ..... IN EAR MONITOR Stereo Transmitter

Model and/or type ..... EM-100  
reference .....

Serial Model ..... N/A

**Standards** ..... FCC Part 74 Subpart H, section 74.861 (2014-10)

Test procedure ..... TIA/EIA-603C:2004

This device described above has been tested by ISOKEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC/IC requirements. And it is applicable only to the tested sample identified in the report.

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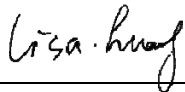
**Date of Test** .....

Date (s) of performance of tests .....: 26 Aug. 2015 ~24 Dec. 2015

Date of Issue.....: 24 Dec. 2015

Test Result.....: **Pass**

Compiled by:



Lisa Huang/ Project Engineer

Approved by:



Richard Chen/ Manager

## ※ ※ Revision History ※ ※

| REV.     | REPORT NO.    | Page Revised    | ISSUED DATE   | Contents                                                              |
|----------|---------------|-----------------|---------------|-----------------------------------------------------------------------|
| Original | ISOT15080132E | N/A             | 20 Sept. 2015 | N/A                                                                   |
| 01       | ISOT15080132E | P17,P20~P24     | 24 Dec. 2015  | Update the<br>RADIATED<br>EMISSION<br>MEASUREMENT.                    |
| 02       | ISOT15080132E | P16,P17,P52,P53 | 30 Dec. 2015  | Update the<br>CONDUCTED<br>EMISSION<br>MEASUREMENT<br>and test photo. |

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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC CFR47 Part 74                |                                         |          |        |
|----------------------------------|-----------------------------------------|----------|--------|
| Standard Section                 | Test Item                               | Judgment | Remark |
| 74.861(e)(1)(ii)                 | RF Output Power                         | PASS     |        |
| 2.1047(a)<br>RSS-210 section 4.1 | Modulation Characteristics              | PASS     |        |
| 2.1049(c)(1)                     | Occupied Bandwidth                      | PASS     |        |
| 2.1053 & 74.861(e)(6)            | Radiated Emissions                      | PASS     |        |
| 2.1051                           | Spurious emissions at antenna terminals | PASS     |        |
| 2.1055(a)(1)                     | Frequencies Stability                   | PASS     |        |

### NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

(2) FCC 15.207 does not apply to Licensed Transmitters subject to Part 74.

**1.1 TEST FACILITY**

Shenzhen ISOTek Standards Technical Services Co.,Ltd.

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FCC Registration No.: 918037; IC Registration Number:20400-1

**1.2 MEASUREMENT UNCERTAINTY**

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %** .

| No. | Item                         | Uncertainty               |
|-----|------------------------------|---------------------------|
| 1   | Conducted Emission Test      | $\pm 1.38\text{dB}$       |
| 2   | RF power,conducted           | $\pm 0.16\text{dB}$       |
| 3   | Spurious emissions,conducted | $\pm 0.21\text{dB}$       |
| 4   | All emissions,radiated(<1G)  | $\pm 4.68\text{dB}$       |
| 5   | All emissions,radiated(>1G)  | $\pm 4.89\text{dB}$       |
| 6   | Temperature                  | $\pm 0.5^{\circ}\text{C}$ |
| 7   | Humidity                     | $\pm 2\%$                 |

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                          |                                                                                |                    |
|--------------------------|--------------------------------------------------------------------------------|--------------------|
| Equipment                | IN EAR MONITOR Stereo Transmitter                                              |                    |
| Trade Name               | N/A                                                                            |                    |
| Model Name               | EM-100                                                                         |                    |
| Serial Model             | N/A                                                                            |                    |
| Model Difference         | N/A                                                                            |                    |
| Product Description      | The EUT is a IN EAR MONITOR Stereo Transmitter                                 |                    |
|                          | Operation Frequency:                                                           | 565.05~589.8 MHz   |
|                          | Modulation Type:                                                               | FM                 |
|                          | Number Of Channel                                                              | 100 CH             |
|                          | Antenna Designation:                                                           | Please see Note 2. |
|                          | Antenna Gain (dBi)                                                             | 1.5dBi             |
| Channel List             | Please refer to the Note 2.                                                    |                    |
| Power Source             | AC120 V                                                                        |                    |
| Adapter                  | Input: 120-240V AC, 1.5A 50/60Hz<br>Output: 12V $\overline{\text{---}}$ , 1.0A |                    |
| Battery                  | N/A                                                                            |                    |
| Connecting I/O Port(s)   | Please refer to the User's Manual                                              |                    |
| Product Hardware Version | REV:02                                                                         |                    |
| Product Software Version | REV:01                                                                         |                    |

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.

Table for Filed Antenna

| Ant | Brand | Model Name | Antenna Type     | Connector | Gain (dBi) | NOTE    |
|-----|-------|------------|------------------|-----------|------------|---------|
| A   | N/A   | N/A        | monopole Antenna | N/A       | 1.5        | Antenna |



## 3. Frequency list

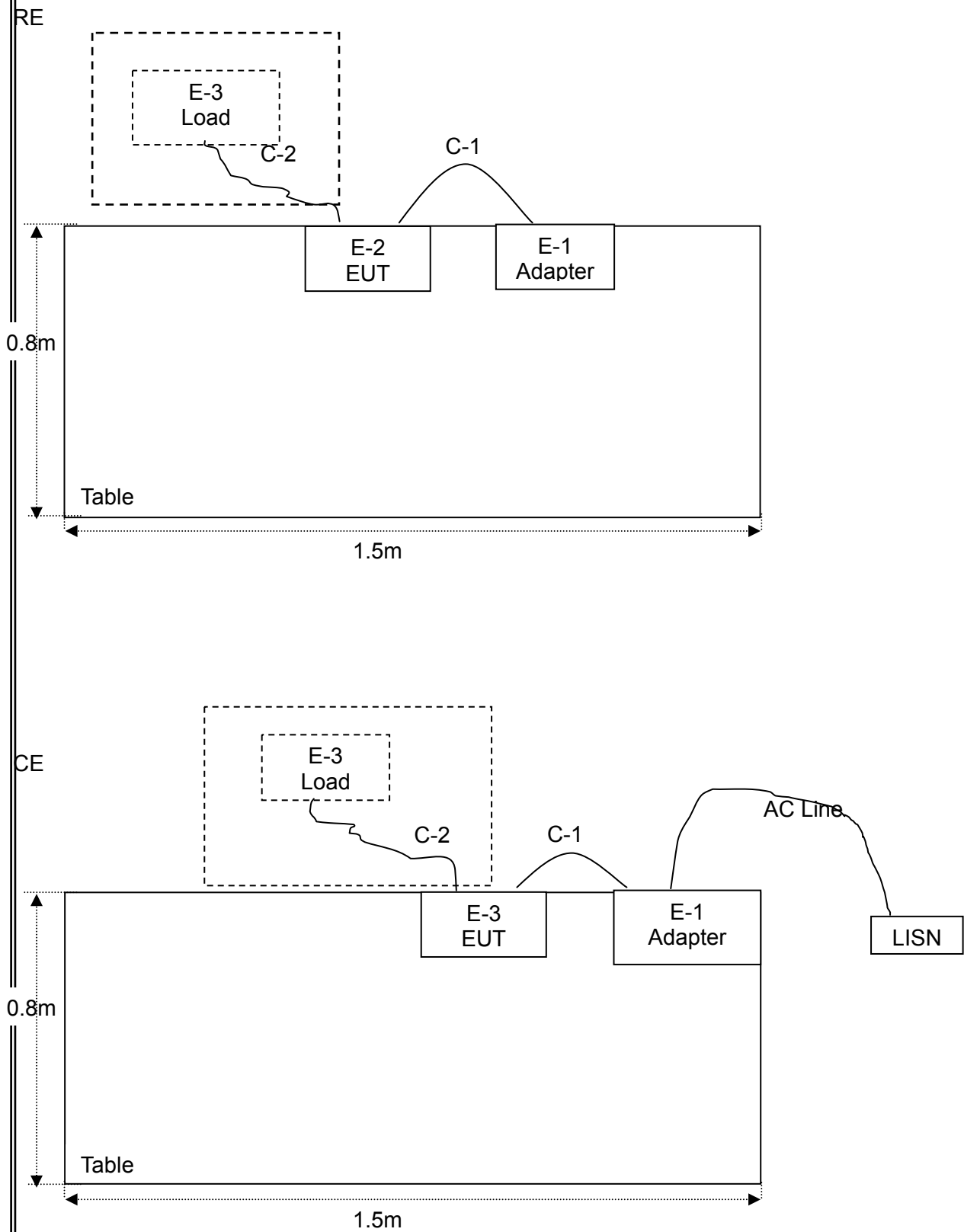
| Channel | Frequency<br>( MHz ) | Channel | Frequency<br>( MHz ) | Channel | Frequency<br>( MHz ) |
|---------|----------------------|---------|----------------------|---------|----------------------|
| CH001   | 565.050              | CH036   | 573.800              | CH071   | 582.550              |
| CH002   | 565.300              | CH037   | 574.050              | CH072   | 582.800              |
| CH003   | 565.550              | CH038   | 574.300              | CH073   | 583.050              |
| CH004   | 565.800              | CH039   | 574.550              | CH074   | 583.300              |
| CH005   | 566.050              | CH040   | 574.800              | CH075   | 583.550              |
| CH006   | 566.300              | CH041   | 575.050              | CH076   | 583.800              |
| CH007   | 566.550              | CH042   | 575.300              | CH077   | 584.050              |
| CH008   | 566.800              | CH043   | 575.550              | CH078   | 584.300              |
| CH009   | 567.050              | CH044   | 575.800              | CH079   | 584.550              |
| CH010   | 567.300              | CH045   | 576.050              | CH080   | 584.800              |
| CH011   | 567.550              | CH046   | 576.300              | CH081   | 585.050              |
| CH012   | 567.800              | CH047   | 576.550              | CH082   | 585.300              |
| CH013   | 568.050              | CH048   | 576.800              | CH083   | 585.550              |
| CH014   | 568.300              | CH049   | 577.050              | CH084   | 585.800              |
| CH015   | 568.550              | CH050   | 577.300              | CH085   | 586.050              |
| CH016   | 568.800              | CH051   | 577.550              | CH086   | 586.300              |
| CH017   | 569.050              | CH052   | 577.800              | CH087   | 586.550              |
| CH018   | 569.300              | CH053   | 578.050              | CH088   | 586.800              |
| CH019   | 569.550              | CH054   | 578.300              | CH089   | 587.050              |
| CH020   | 569.800              | CH055   | 578.550              | CH090   | 587.300              |
| CH021   | 570.050              | CH056   | 578.800              | CH091   | 587.550              |
| CH022   | 570.300              | CH057   | 579.050              | CH092   | 587.800              |
| CH023   | 570.550              | CH058   | 579.300              | CH093   | 588.050              |
| CH024   | 570.800              | CH059   | 579.550              | CH094   | 588.300              |
| CH025   | 571.050              | CH060   | 579.800              | CH095   | 588.550              |
| CH026   | 571.300              | CH061   | 580.050              | CH096   | 588.800              |
| CH027   | 571.550              | CH062   | 580.300              | CH097   | 589.050              |
| CH028   | 571.800              | CH063   | 580.550              | CH098   | 589.300              |
| CH029   | 572.050              | CH064   | 580.800              | CH099   | 589.550              |
| CH030   | 572.300              | CH065   | 581.050              | CH100   | 589.800              |
| CH031   | 572.550              | CH066   | 581.300              | --      | --                   |
| CH032   | 572.800              | CH067   | 581.550              | --      | --                   |
| CH033   | 573.050              | CH068   | 581.800              | --      | --                   |
| CH034   | 573.300              | CH069   | 582.050              | --      | --                   |
| CH035   | 573.550              | CH070   | 582.300              | --      | --                   |

## 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| For Conducted Emission |                 |
|------------------------|-----------------|
| Test Mode              | Description     |
| Mode 1                 | keeping tx mode |
|                        |                 |
|                        |                 |
|                        |                 |

| For Radiated Emission&other conducted test |             |
|--------------------------------------------|-------------|
| Test Mode                                  | Description |
| Mode 1                                     | CH 1        |
| Mode 2                                     | CH 50       |
| Mode 3                                     | CH 100      |

**2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED**

**2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment                         | Brand | Model/Type No.  | Series No. | Note |
|------|-----------------------------------|-------|-----------------|------------|------|
| E-1  | IN EAR MONITOR Stereo Transmitter | N/A   | EM-100          | N/A        | EUT  |
| E-2  | Adapter                           | N/A   | SW12-12001000-W |            |      |
| E-3  | Load                              | N/A   | N/A             |            |      |
|      |                                   |       |                 |            |      |
|      |                                   |       |                 |            |      |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| C-1  | NO            | NO           | 1.75m  |      |
| C-2  | NO            | NO           | 1.0m   |      |
|      |               |              |        |      |
|      |               |              |        |      |
|      |               |              |        |      |

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

**2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS****Radiation & other conducted test equipment**

| Item | Kind of Equipment       | Manufacturer   | Type No.  | Serial No.   | Last calibration | Calibrated until | Calibration period |
|------|-------------------------|----------------|-----------|--------------|------------------|------------------|--------------------|
| 1    | Spectrum Analyzer       | Agilent        | E4446A    | US44300451   | 2015.07.06       | 2016.07.05       | 1 year             |
| 2    | EMI Test Receiver       | R&S            | ESCI      | 101165       | 2015.07.06       | 2016.07.05       | 1 year             |
| 3    | RF Communication Tester | HP             | HP8920A   | 3438A05201   | 2015.05.04       | 2016.05.03       | 1 year             |
| 4    | Bilog Antenna           | Schwarzbeck    | VULB 9168 | VULB9168-438 | 2015.07.06       | 2016.07.05       | 1 year             |
| 5    | Bilog Antenna           | Schwarzbeck    | VULB 9168 | VULB9168-439 | 2015.07.06       | 2016.07.05       | 1 year             |
| 6    | Horn Antenna            | Schwarzbeck    | BBHA 9170 | 9170-182     | 2015.07.06       | 2016.07.05       | 1 year             |
| 7    | Horn Antenna            | Schwarzbeck    | BBHA 9170 | 9170-181     | 2015.07.06       | 2016.07.05       | 1 year             |
| 8    | SIGNAL GENERATOR        | AGILENT        | E4438C    | 878743       | 2015.05.04       | 2016.05.03       | 1 year             |
| 9    | Amplifier               | Schwarzbeck    | BBV9743   | 9743-019     | 2015.07.06       | 2016.07.05       | 1 year             |
| 10   | Test Cable Below 1GHz   | ATM            | R-01      | 3564         | 2015.07.06       | 2016.07.05       | 1 year             |
| 11   | Test Cable Above 1GHz   | ATM            | R-02      | 3565         | 2015.07.06       | 2016.07.05       | 1 year             |
|      | Test Cable              | ATM            | R-03      | 5623         | 2014.07.06       | 2015.07.05       | 1 year             |
| 12   | Horn Antenna            | Sunol Sciences | DRH-118   | A052604      | 2015.07.06       | 2016.07.05       | 1 year             |
| 13   | Horn Antenna            | Sunol Sciences | DRH-118   | A052605      | 2015.07.06       | 2016.07.05       | 1 year             |

### 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

##### 3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

| FREQUENCY (MHz) | Class A (dBuV) |         | Class B (dBuV) |           | Standard |
|-----------------|----------------|---------|----------------|-----------|----------|
|                 | Quasi-peak     | Average | Quasi-peak     | Average   |          |
| 0.15 -0.5       | 79.00          | 66.00   | 66 - 56 *      | 56 - 46 * | CISPR    |
| 0.50 -5.0       | 73.00          | 60.00   | 56.00          | 46.00     | CISPR    |
| 5.0 -30.0       | 73.00          | 60.00   | 60.00          | 50.00     | CISPR    |

|           |       |       |           |           |     |
|-----------|-------|-------|-----------|-----------|-----|
| 0.15 -0.5 | 79.00 | 66.00 | 66 - 56 * | 56 - 46 * | FCC |
| 0.50 -5.0 | 73.00 | 60.00 | 56.00     | 46.00     | FCC |
| 5.0 -30.0 | 73.00 | 60.00 | 60.00     | 50.00     | FCC |

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

| Receiver Parameters | Setting  |
|---------------------|----------|
| Attenuation         | 10 dB    |
| Start Frequency     | 0.15 MHz |
| Stop Frequency      | 30 MHz   |
| IF Bandwidth        | 9 kHz    |

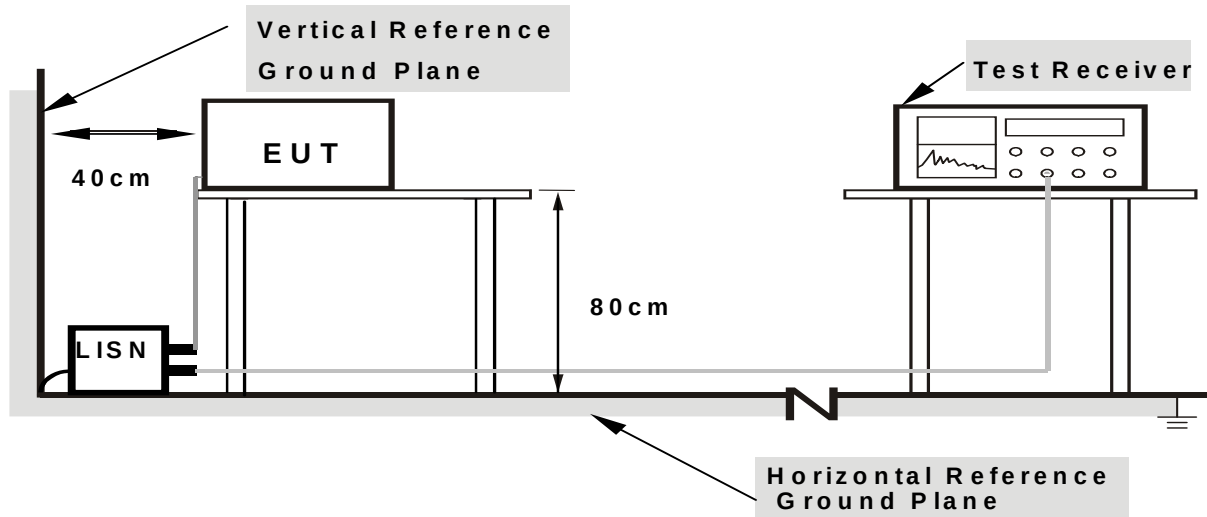
### 3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 3.1.3 DEVIATION FROM TEST STANDARD

No deviation

### 3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

### 3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

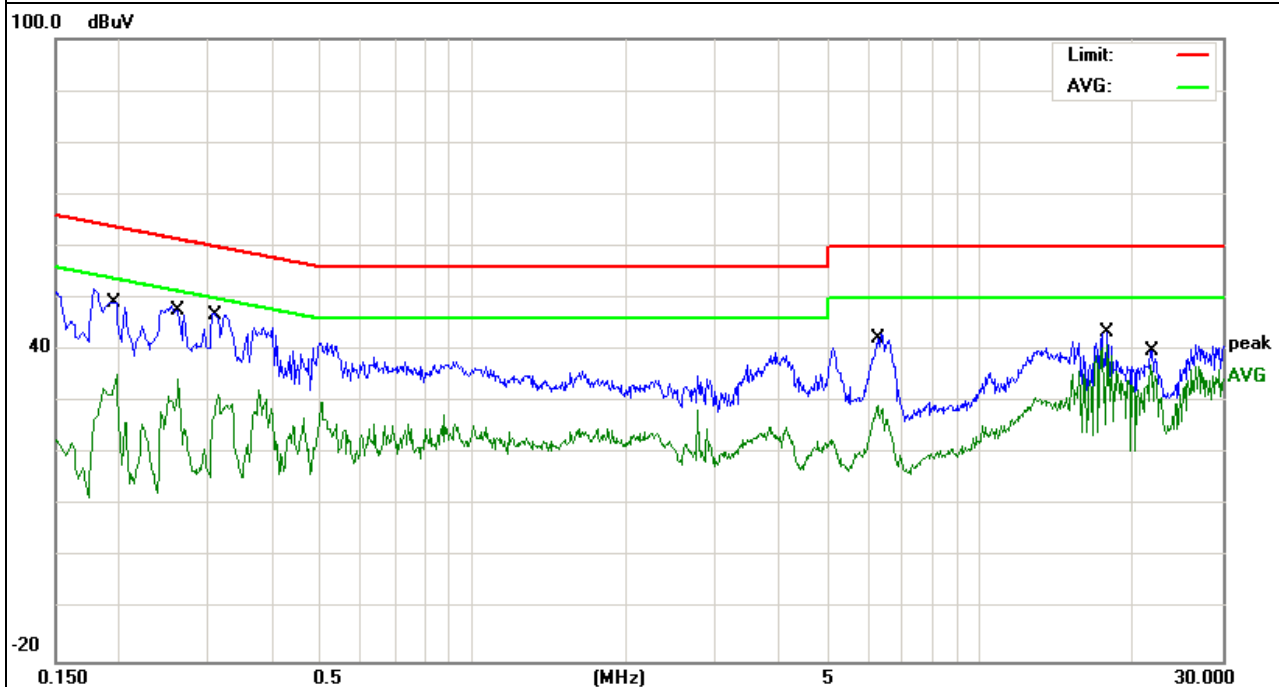
**3.1.6 TEST RESULTS**

|                |                                   |                     |            |
|----------------|-----------------------------------|---------------------|------------|
| EUT :          | IN EAR MONITOR Stereo Transmitter | Model Name. :       | EM-100     |
| Temperature :  | 26 °C                             | Relative Humidity : | 56%        |
| Pressure :     | Mode 1                            | Phase :             | L          |
| Test Voltage : | AC 120V/60Hz                      | Test Date :         | 2015-09-10 |

| Frequency | Reading Level | Correct Factor | Measure-ment | Limits | Margin | Remark |
|-----------|---------------|----------------|--------------|--------|--------|--------|
| (MHz)     | (dBμV)        | (dB)           | (dBμV)       | (dBμV) | (dB)   |        |
| 0.1980    | 39.72         | 9.51           | 49.23        | 63.69  | -14.46 | QP     |
| 0.1980    | 25.81         | 9.51           | 35.32        | 53.69  | -18.37 | AVG    |
| 0.2620    | 38.90         | 9.51           | 48.41        | 61.36  | -12.95 | QP     |
| 0.2620    | 24.91         | 9.51           | 34.42        | 51.36  | -16.94 | AVG    |
| 0.3140    | 37.64         | 9.51           | 47.15        | 59.86  | -12.71 | QP     |
| 0.3140    | 22.07         | 9.51           | 31.58        | 49.86  | -18.28 | AVG    |
| 6.2659    | 33.41         | 9.64           | 43.05        | 60.00  | -16.95 | QP     |
| 6.2659    | 19.56         | 9.64           | 29.20        | 50.00  | -20.80 | AVG    |
| 17.7819   | 33.33         | 10.02          | 43.35        | 60.00  | -16.65 | QP     |
| 17.7819   | 30.98         | 10.02          | 41.00        | 50.00  | -9.00  | AVG    |
| 21.6700   | 29.63         | 10.21          | 39.84        | 60.00  | -20.16 | QP     |
| 21.6700   | 26.80         | 10.21          | 37.01        | 50.00  | -12.99 | AVG    |
| 0.1980    | 39.72         | 9.51           | 49.23        | 63.69  | -14.46 | QP     |
| 0.1980    | 25.81         | 9.51           | 35.32        | 53.69  | -18.37 | AVG    |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



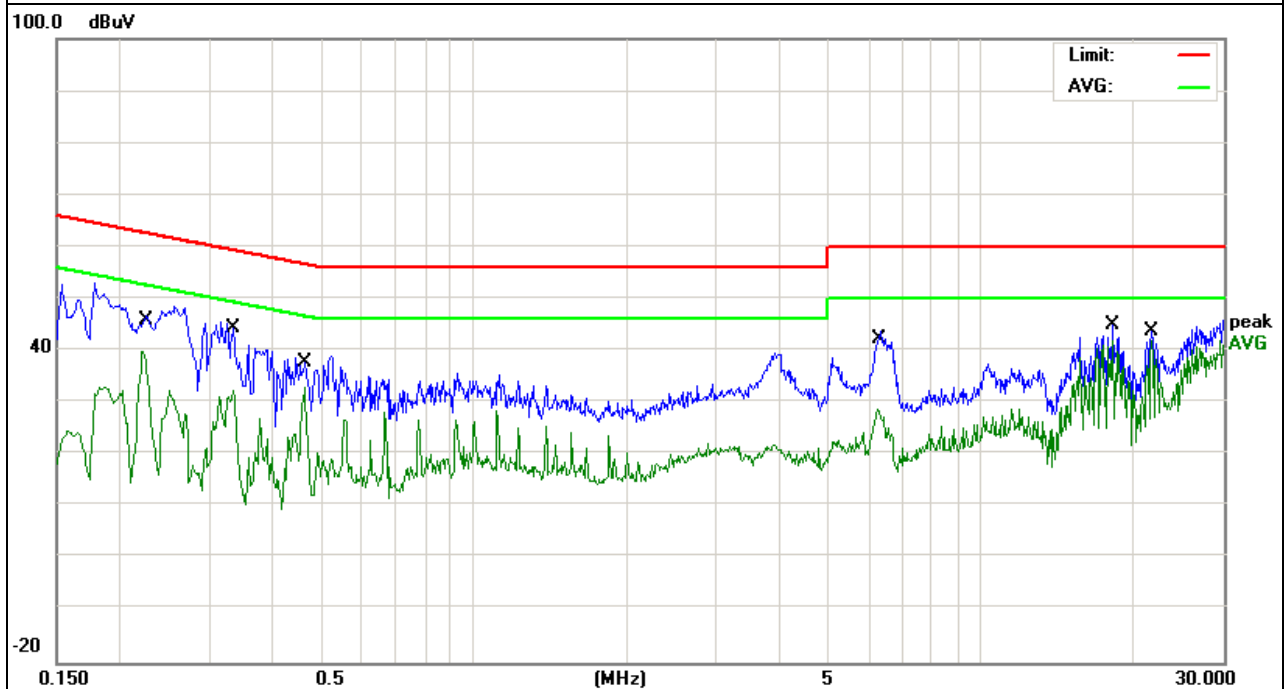


|                |                                   |                     |            |
|----------------|-----------------------------------|---------------------|------------|
| EUT :          | IN EAR MONITOR Stereo Transmitter | Model Name. :       | EM-100     |
| Temperature :  | 26 °C                             | Relative Humidity : | 54%        |
| Pressure :     | 1010hPa                           | Test Date :         | 2015-09-10 |
| Test Mode :    | Mode 1                            | Phase :             | N          |
| Test Voltage : | AC 120V/60Hz                      |                     |            |

| Frequency | Reading Level | Correct Factor | Measure-ment | Limits | Margin | Remark |
|-----------|---------------|----------------|--------------|--------|--------|--------|
| (MHz)     | (dBμV)        | (dB)           | (dBμV)       | (dBμV) | (dB)   |        |
| 0.2220    | 37.16         | 9.49           | 46.65        | 62.74  | -16.09 | QP     |
| 0.2220    | 30.37         | 9.49           | 39.86        | 52.74  | -12.88 | AVG    |
| 0.3339    | 36.09         | 9.50           | 45.59        | 59.35  | -13.76 | QP     |
| 0.3339    | 22.86         | 9.50           | 32.36        | 49.35  | -16.99 | AVG    |
| 0.4620    | 29.05         | 9.51           | 38.56        | 56.66  | -18.10 | QP     |
| 0.4620    | 23.47         | 9.51           | 32.98        | 46.66  | -13.68 | AVG    |
| 6.2419    | 34.10         | 9.64           | 43.74        | 60.00  | -16.26 | QP     |
| 6.2419    | 18.96         | 9.64           | 28.60        | 50.00  | -21.40 | AVG    |
| 18.2219   | 34.76         | 10.13          | 44.89        | 60.00  | -15.11 | QP     |
| 18.2219   | 31.69         | 10.13          | 41.82        | 50.00  | -8.18  | AVG    |
| 21.6700   | 33.60         | 10.26          | 43.86        | 60.00  | -16.14 | QP     |
| 21.6700   | 31.58         | 10.26          | 41.84        | 50.00  | -8.16  | AVG    |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



## **3.2 RADIATED EMISSION MEASUREMENT**

### **3.2.1 TEST REQUIREMENT:** FCC CFR47 Part 2 Section 2.1053

**TEST METHOD:** Based on TIA/EIA-603-D-2010

According to FCC §74.861 (e) (6) (iii):

According to Part 74.861 (e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (i) 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.
- (ii) 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.
- (iii) on any frequency removed from the operating frequency by more than 250 percent up to and the authorized bandwidth shall be attenuated below the un-modulated carrier by at least  $43 + 10 \log$  (output power in watts)dB.

### **Test Procedure**

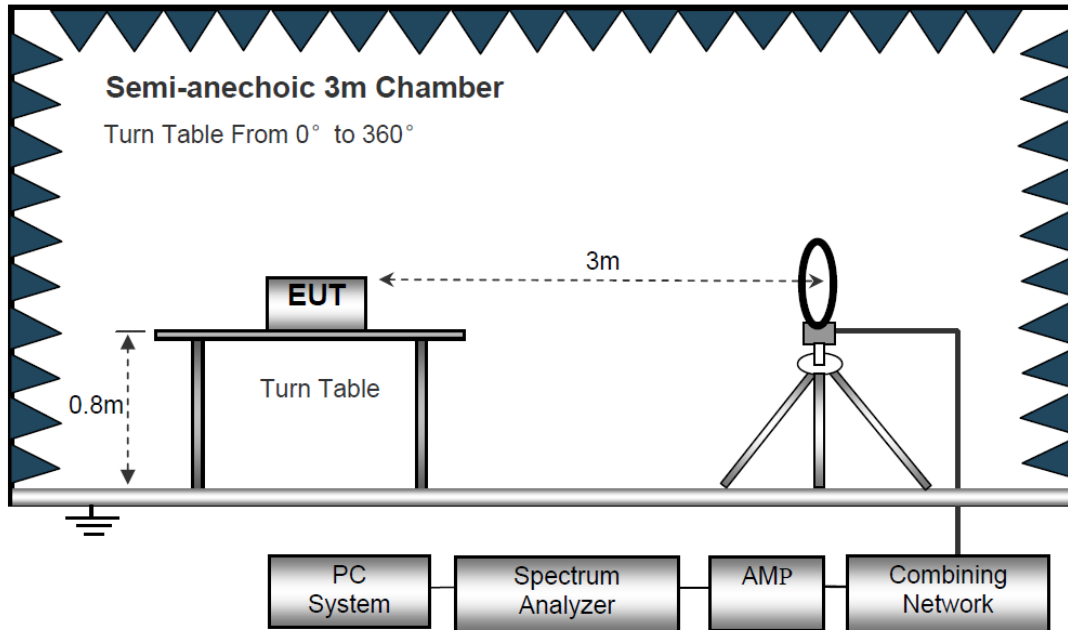
Details to see ANSI/TIA-603-D 2010 section 2.2.12.

### **3.2.2 DEVIATION FROM TEST STANDARD**

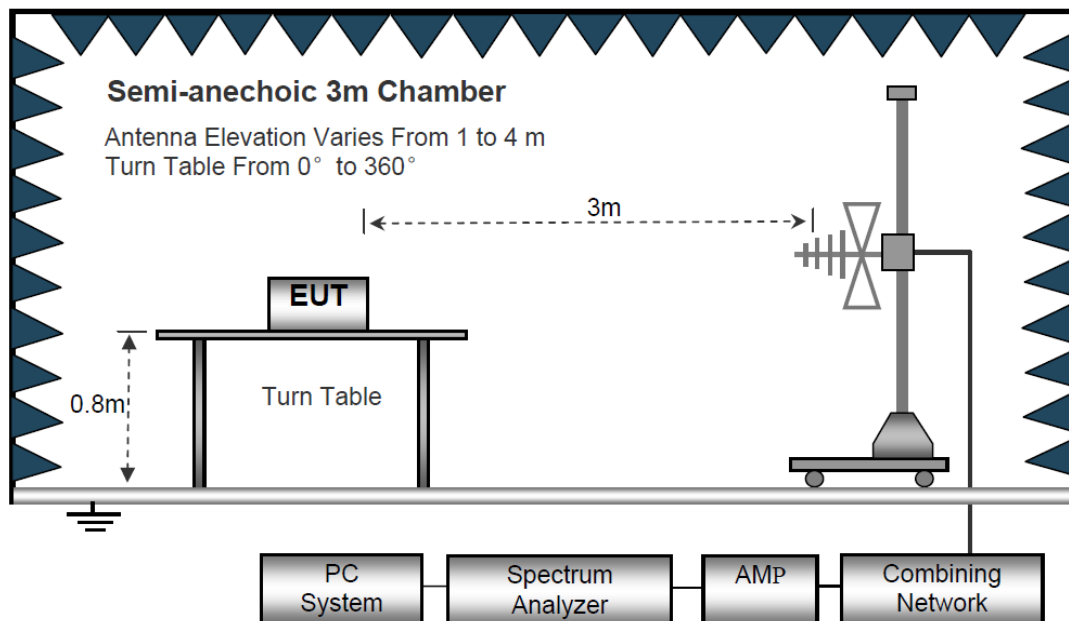
No deviation

### 3.2.3 TEST SETUP

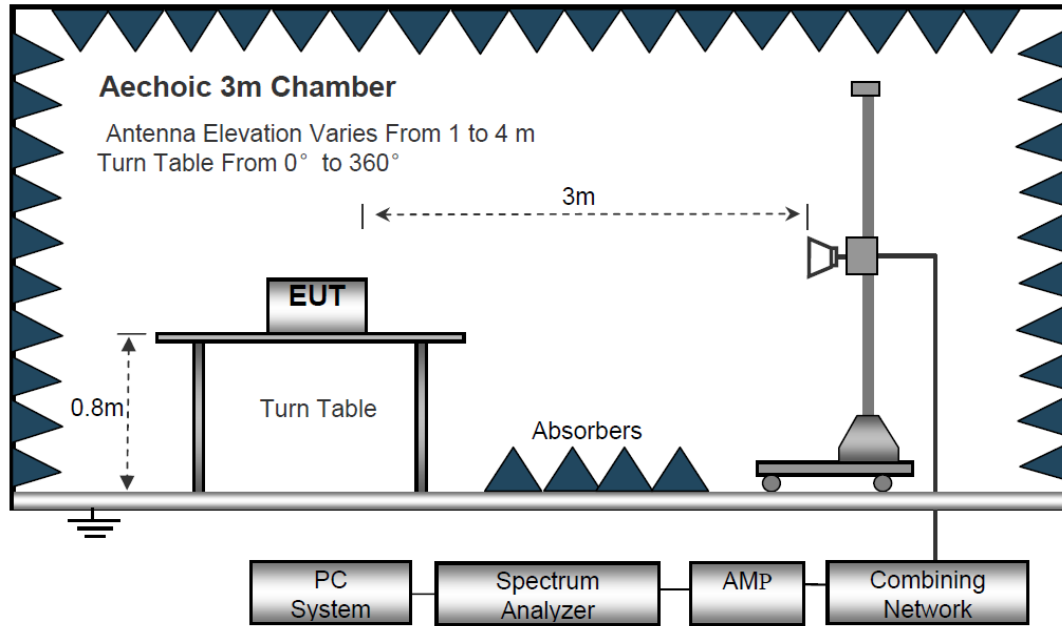
#### (A) Radiated Emission Test-Up Frequency Below 30MHz



#### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz



## (C) Radiated Emission Test-Up Frequency Above 1GHz

**3.2.4 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**3.2.5 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)**

|              |                                   |                    |              |
|--------------|-----------------------------------|--------------------|--------------|
| EUT:         | IN EAR MONITOR Stereo Transmitter | Model Name. :      | EM-100       |
| Temperature: | 20 °C                             | Relative Humidity: | 48%          |
| Pressure:    | 1010 hPa                          | Test Voltage :     | AC 120V/60Hz |
| Test Mode :  | TX                                | Polarization :     | --           |

| Freq. | Reading  | Limit    | Margin | State |
|-------|----------|----------|--------|-------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB)   | P/F   |
| --    | --       | --       | --     | PASS  |
| --    | --       | --       | --     | PASS  |

**NOTE:**

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance/test distance})(\text{dB})$ ;

Limit line = specific limits(dBuv) + distance extrapolation factor.

### 3.2.6 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

|               |                                   |                     |              |
|---------------|-----------------------------------|---------------------|--------------|
| EUT :         | IN EAR MONITOR Stereo Transmitter | Model Name :        | EM-100       |
| Temperature : | 20 °C                             | Relative Humidity : | 48%          |
| Pressure:     | 1010 hPa                          | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX                                |                     |              |

| Polar<br>(H/V)                                                               | Frequency | Meter<br>Reading | Factor | Emission<br>Level | Limits | Margin | Remark |
|------------------------------------------------------------------------------|-----------|------------------|--------|-------------------|--------|--------|--------|
|                                                                              | (MHz)     | (dBuV)           | (dB)   | (dBm)             | (dBm)  | (dB)   |        |
| CH 1                                                                         |           |                  |        |                   |        |        |        |
| V                                                                            | 54.1614   | -58.22           | 19.79  | -38.43            | -13    | -25.43 | peak   |
| V                                                                            | 164.3413  | -61.38           | 23.01  | -38.37            | -13    | -25.37 | peak   |
| V                                                                            | 232.1940  | -51.09           | 18.38  | -32.71            | -13    | -19.71 | peak   |
| V                                                                            | 472.4167  | -55.84           | 24.06  | -31.78            | -13    | -18.78 | peak   |
| V                                                                            | 795.8552  | -67.71           | 31.47  | -36.24            | -13    | -23.24 | peak   |
| H                                                                            | 244.2658  | -57.72           | 24.02  | -33.7             | -13    | -20.7  | peak   |
| H                                                                            | 421.1574  | -66.92           | 29.09  | -37.83            | -13    | -24.83 | peak   |
| H                                                                            | 709.1133  | -68.72           | 33.73  | -34.99            | -13    | -21.99 | peak   |
| H                                                                            | 84.1434   | -59.31           | 19.82  | -39.49            | -13    | -26.49 | peak   |
| H                                                                            | 931.1661  | -71.31           | 39.54  | -31.77            | -13    | -18.77 | peak   |
| CH 50                                                                        |           |                  |        |                   |        |        |        |
| V                                                                            | 117.1411  | -60.89           | 22.88  | -38.01            | -13    | -25.01 | peak   |
| V                                                                            | 166.6982  | -59.23           | 24.95  | -34.28            | -13    | -21.28 | peak   |
| V                                                                            | 244.7641  | -60.11           | 22.99  | -37.12            | -13    | -24.12 | peak   |
| V                                                                            | 412.7273  | -61.33           | 29.84  | -31.49            | -13    | -18.49 | peak   |
| V                                                                            | 705.7207  | -70.32           | 35.18  | -35.14            | -13    | -22.14 | peak   |
| H                                                                            | 62.1243   | -60.48           | 26.93  | -33.55            | -13    | -20.55 | peak   |
| H                                                                            | 94.7023   | -60.16           | 19.21  | -40.95            | -13    | -27.95 | peak   |
| H                                                                            | 163.7147  | -59.52           | 24.96  | -34.56            | -13    | -21.56 | peak   |
| H                                                                            | 257.5407  | -59.13           | 23.69  | -35.44            | -13    | -22.44 | peak   |
| H                                                                            | 376.3158  | -60.89           | 28.43  | -32.46            | -13    | -19.46 | peak   |
| H                                                                            | 474.7997  | -64.53           | 31.38  | -33.15            | -13    | -20.15 | peak   |
| CH 100                                                                       |           |                  |        |                   |        |        |        |
| V                                                                            | 120.0093  | -59.69           | 21.59  | -38.1             | -13    | -25.1  | peak   |
| V                                                                            | 272.1564  | -60.72           | 18.43  | -42.29            | -13    | -29.29 | peak   |
| V                                                                            | 367.4942  | -67.75           | 27.28  | -40.47            | -13    | -27.47 | peak   |
| V                                                                            | 419.6415  | -70.52           | 24.11  | -46.41            | -13    | -33.41 | peak   |
| V                                                                            | 585.4771  | -71.89           | 34.68  | -37.21            | -13    | -24.21 | peak   |
| H                                                                            | 82.01754  | -63.72           | 27.23  | -36.49            | -13    | -23.49 | peak   |
| H                                                                            | 334.1471  | -70.37           | 32.32  | -38.05            | -13    | -25.05 | peak   |
| H                                                                            | 437.6687  | -77.43           | 36.94  | -40.49            | -13    | -27.49 | peak   |
| H                                                                            | 586.2946  | -71.62           | 29.14  | -42.48            | -13    | -29.48 | peak   |
| H                                                                            | 726.8159  | -75.21           | 33.78  | -41.43            | -13    | -28.43 | peak   |
| Remark: Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit |           |                  |        |                   |        |        |        |

|               |                                   |                     |              |
|---------------|-----------------------------------|---------------------|--------------|
| EUT :         | IN EAR MONITOR Stereo Transmitter | Model Name :        | EM-100       |
| Temperature : | 20 °C                             | Relative Humidity : | 48%          |
| Pressure:     | 1010 hPa                          | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX                                |                     |              |

| Polar<br>(H/V)                                                               | Frequency | Meter<br>Reading | Factor | Emission<br>Level | Limits | Margin | Detector<br>Type |
|------------------------------------------------------------------------------|-----------|------------------|--------|-------------------|--------|--------|------------------|
|                                                                              | (MHz)     | (dBm)            | (dB)   | (dBm)             | (dBm)  | (dB)   |                  |
| CH 1                                                                         |           |                  |        |                   |        |        |                  |
| V                                                                            | 1130.142  | -42.71           | -3.22  | -45.93            | -13    | -32.93 | peak             |
| V                                                                            | 1695.156  | -41.71           | -2.44  | -44.15            | -13    | -31.15 | peak             |
| V                                                                            | 2260.222  | -43.33           | 1.27   | -42.06            | -13    | -29.06 | peak             |
| H                                                                            | 1130.134  | -41.31           | -3.29  | -44.6             | -13    | -31.6  | peak             |
| H                                                                            | 1695.156  | -37.55           | -2.67  | -40.22            | -13    | -27.22 | peak             |
| H                                                                            | 2260.239  | -41.15           | 1.24   | -39.91            | -13    | -26.91 | peak             |
| CH 50                                                                        |           |                  |        |                   |        |        |                  |
| V                                                                            | 1154.639  | -47.64           | -3.33  | -50.97            | -13    | -37.97 | peak             |
| V                                                                            | 1731.965  | -45.23           | 1.08   | -44.15            | -13    | -31.15 | peak             |
| V                                                                            | 2309.287  | -48.03           | 1.09   | -46.94            | -13    | -33.94 | peak             |
| H                                                                            | 1154.659  | -47.09           | -2.86  | -49.95            | -13    | -36.95 | peak             |
| H                                                                            | 1731.946  | -44.52           | 0.81   | -43.71            | -13    | -30.71 | peak             |
| H                                                                            | 2309.245  | -46.98           | 0.81   | -46.17            | -13    | -33.17 | peak             |
| CH 100                                                                       |           |                  |        |                   |        |        |                  |
| V                                                                            | 1179.631  | -40.62           | -2.63  | -43.25            | -13    | -30.25 | peak             |
| V                                                                            | 1769.425  | -42.97           | 0.79   | -42.18            | -13    | -29.18 | peak             |
| V                                                                            | 2359.232  | -45.75           | 1.16   | -44.59            | -13    | -31.59 | peak             |
| H                                                                            | 1179.626  | -43.49           | -2.27  | -45.76            | -13    | -32.76 | peak             |
| H                                                                            | 1769.453  | -43.72           | 0.86   | -42.86            | -13    | -29.86 | peak             |
| H                                                                            | 2359.232  | -46.93           | 0.86   | -46.07            | -13    | -33.07 | peak             |
| Remark: Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit |           |                  |        |                   |        |        |                  |

## 4. RF OUTPUT POWER

### 4.1 APPLIED PROCEDURES / LIMIT

Test requirement: FCC CFR47 Part 74 Section 74.861(e)(1)(ii),

Test method: Based on TIA/EIA-603-D-2010

Limit: According to Part 74.861(e)(1)(ii), the output power shall not exceed 250mW (23.98 dBm).

#### 4.1.1 TEST PROCEDURE

The maximum peak output power was measured with a spectrum analyzer connected to the antenna terminal (conducted measurement) while EUT was operating in normal situation.

#### 4.1.2 TEST SETUP



#### 4.1.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

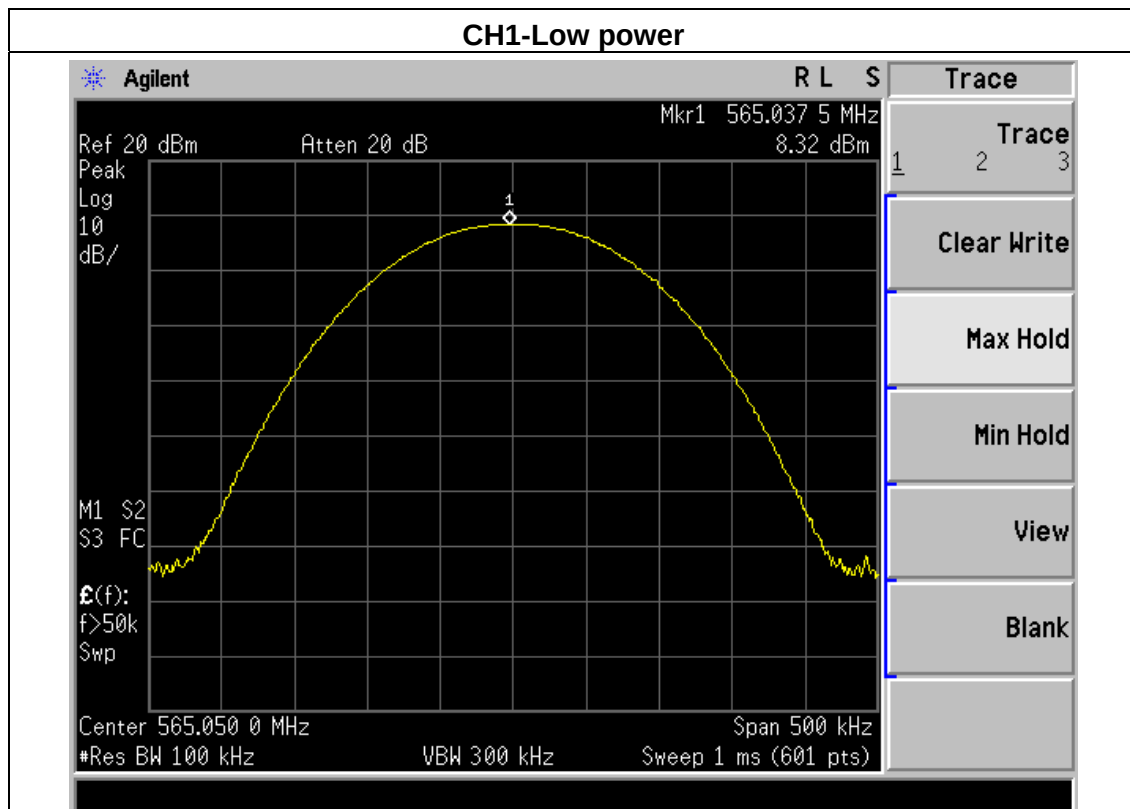


#### 4.1.4 TEST RESULTS

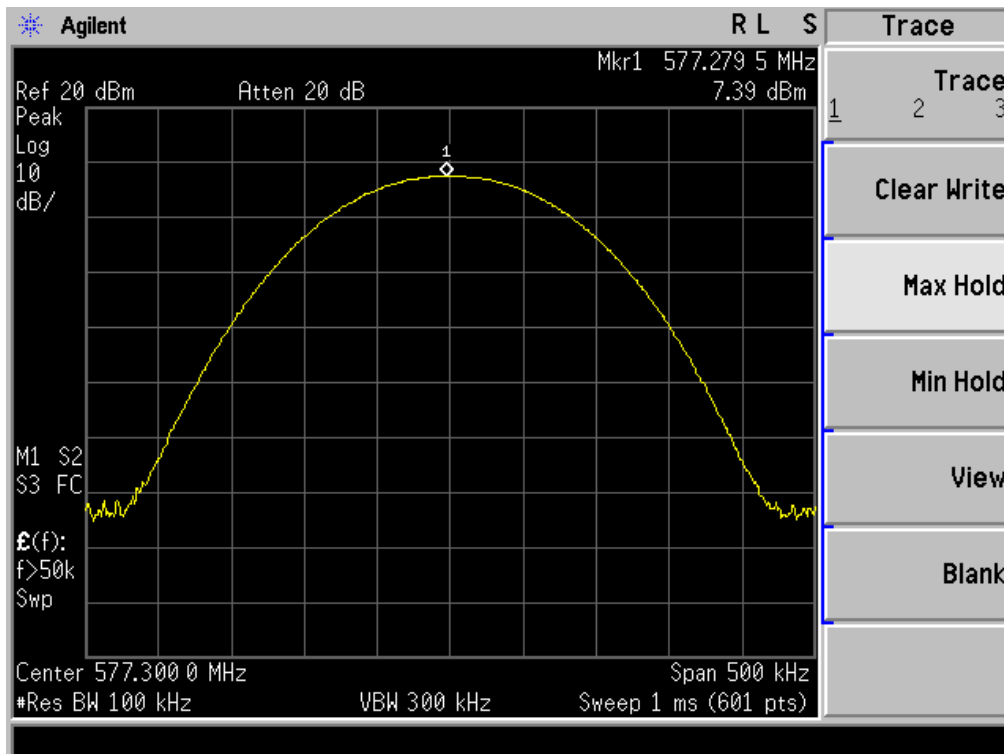
|               |                                   |                     |              |
|---------------|-----------------------------------|---------------------|--------------|
| EUT :         | IN EAR MONITOR Stereo Transmitter | Model Name :        | EM-100       |
| Temperature : | 25 °C                             | Relative Humidity : | 56%          |
| Pressure :    | 1015 hPa                          | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX Mode                           |                     |              |

| Test Channel | Frequency | Maximum Conducted Output Power(PK) | LIMIT |
|--------------|-----------|------------------------------------|-------|
|              | (MHz)     | (dBm)                              | dBm   |
| Low Power    |           |                                    |       |
| CH 1         | 565.050   | 8.32                               | 23.98 |
| CH 50        | 577.300   | 7.39                               | 23.98 |
| CH 100       | 589.800   | 7.99                               | 23.98 |
| High Power   |           |                                    |       |
| CH 1         | 565.050   | 16.95                              | 23.98 |
| CH 50        | 577.300   | 17.17                              | 23.98 |
| CH 100       | 589.800   | 17.25                              | 23.98 |

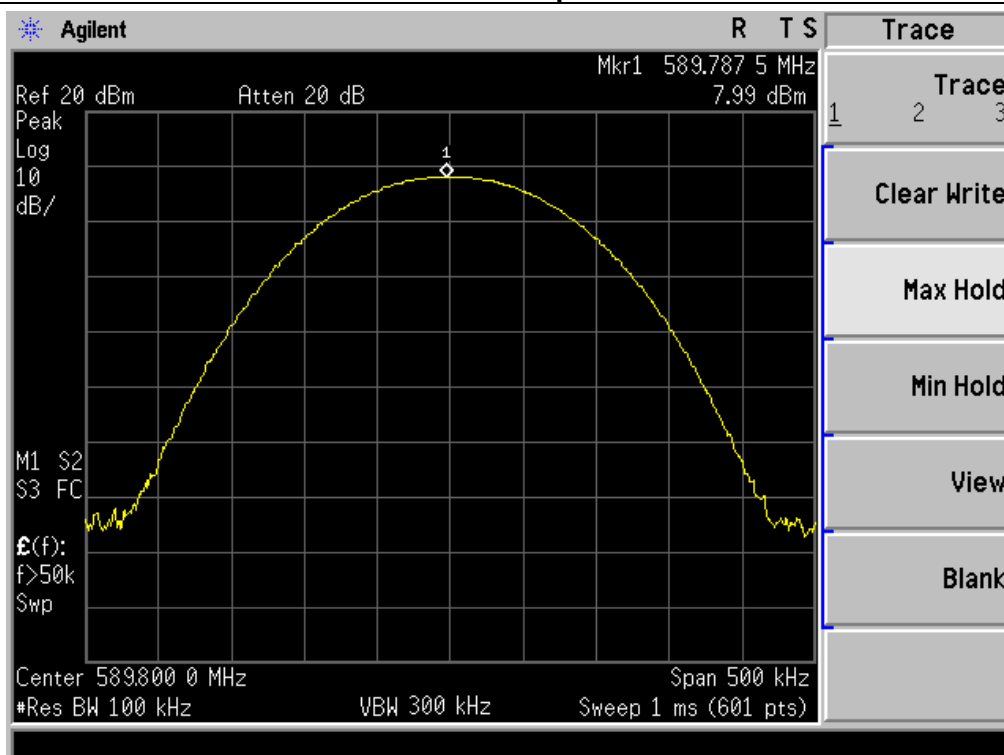
CH1-Low power



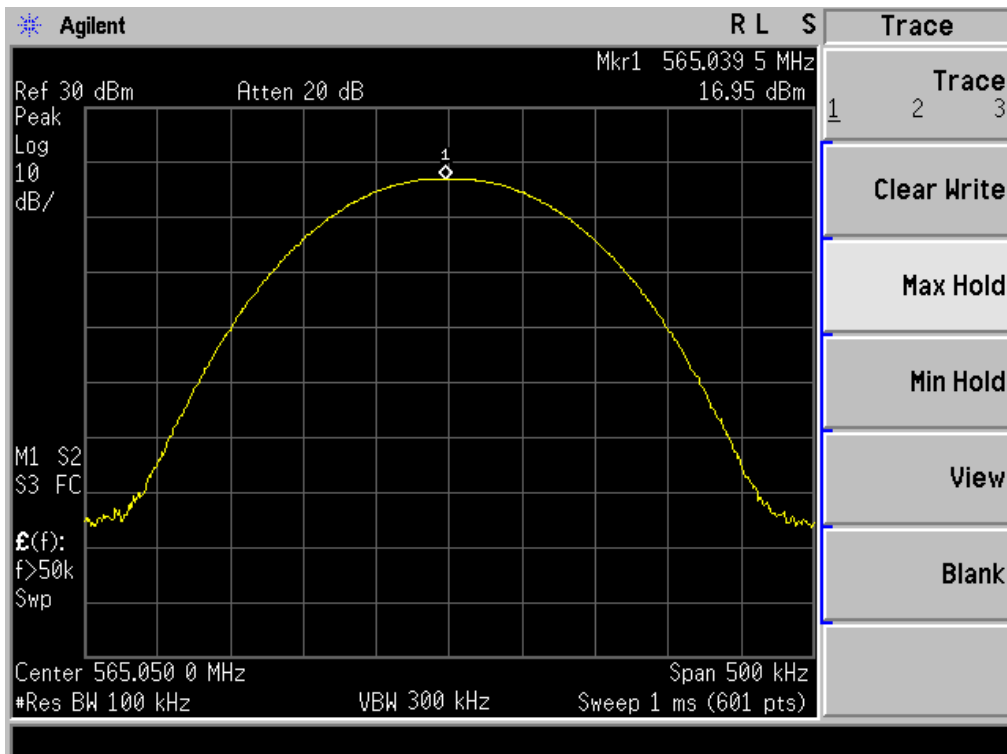
## CH 50-Low power



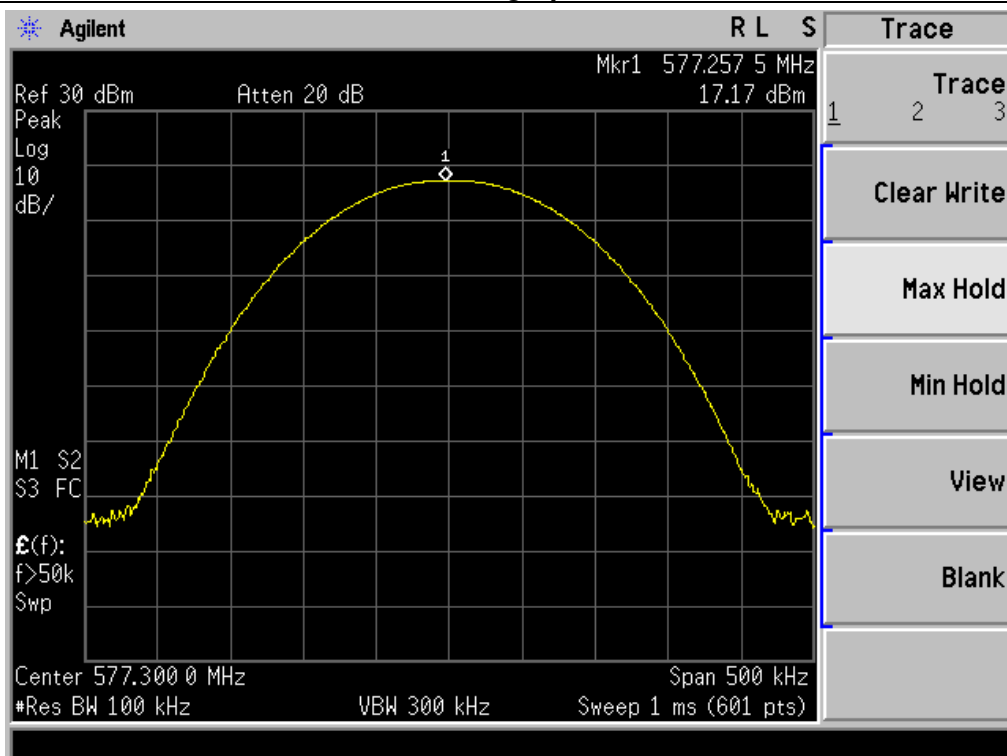
## CH 100-Low power

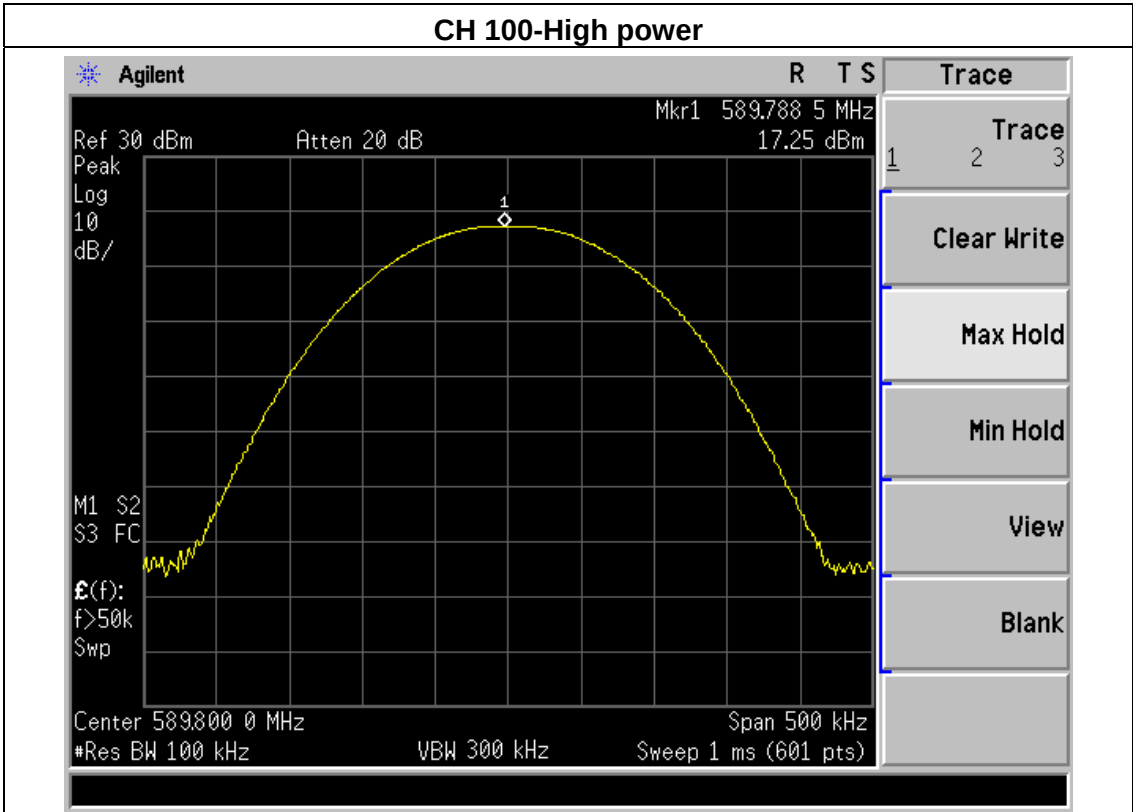


## CH1-High power



## CH 50-High power





## 5. MODULATION CHARACTERISTICS

### 5.1 APPLIED PROCEDURES / LIMIT

Test requirement: FCC CFR47 Part 2 Section 2.1047(a)

Test method: Based on TIA/EIA-603-D-2010

Requirement: According to Part 2.1047(a), for Voice Modulated Communication Equipment, the frequency response of the audio modulating circuit over a range of 100Hz to 5000Hz shall be measured.

According to §74.861(e)(3), any form of modulation may be used. A maximum deviation of  $\pm 75$  kHz is permitted when frequency modulation is employed.

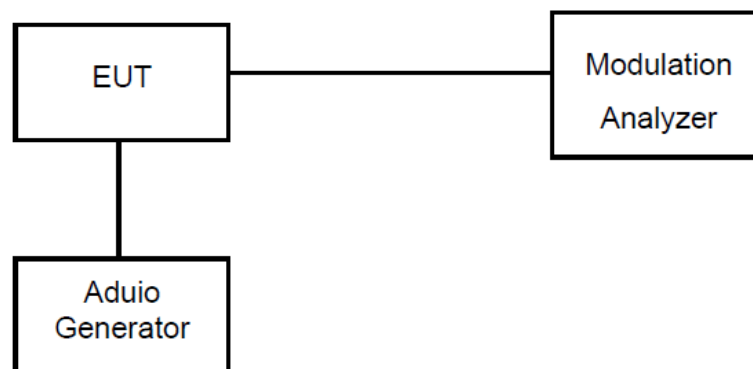
#### 5.1.1 TEST PROCEDURE

(a) Test Configuration

(b) Position the EUT as shown in figure 1, adjust the audio input frequency to 100 Hz and the input level from 0V to maximum permitted input voltage with recording each carrier frequency deviation responding to respective input level.

(C) Repeat step (b) with changing the input frequency for 100, 500, 1000, 2500 and 5000Hz in sequence.

#### TEST SETUP



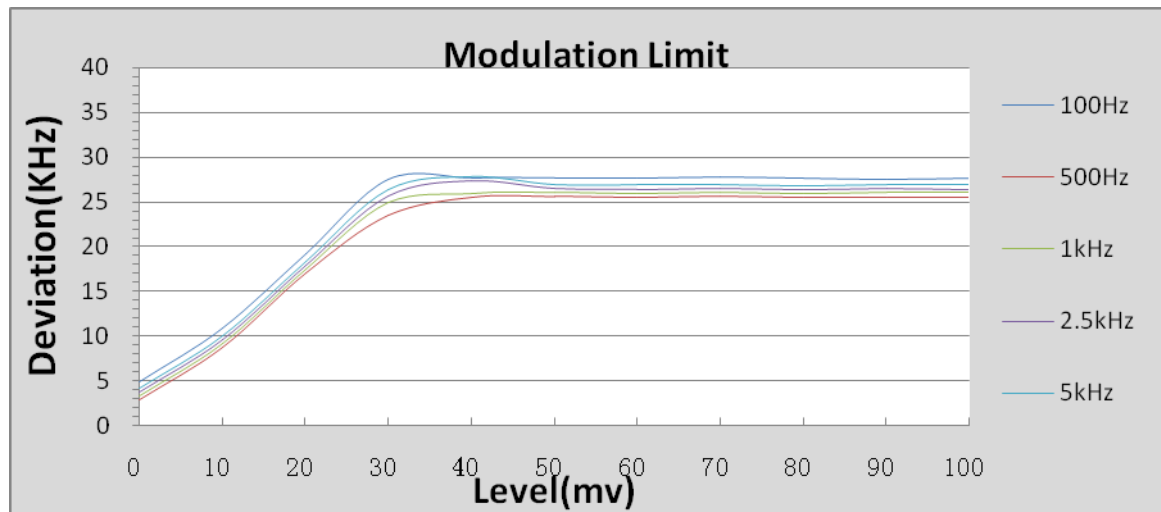
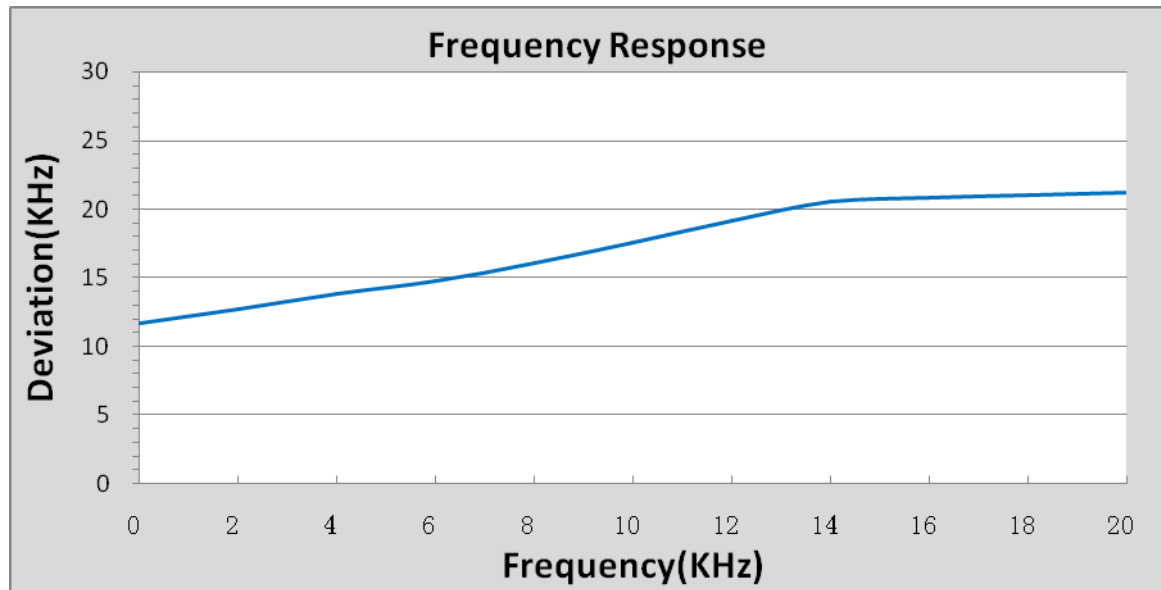
#### 5.1.2 EUT OPERATION CONDITIONS

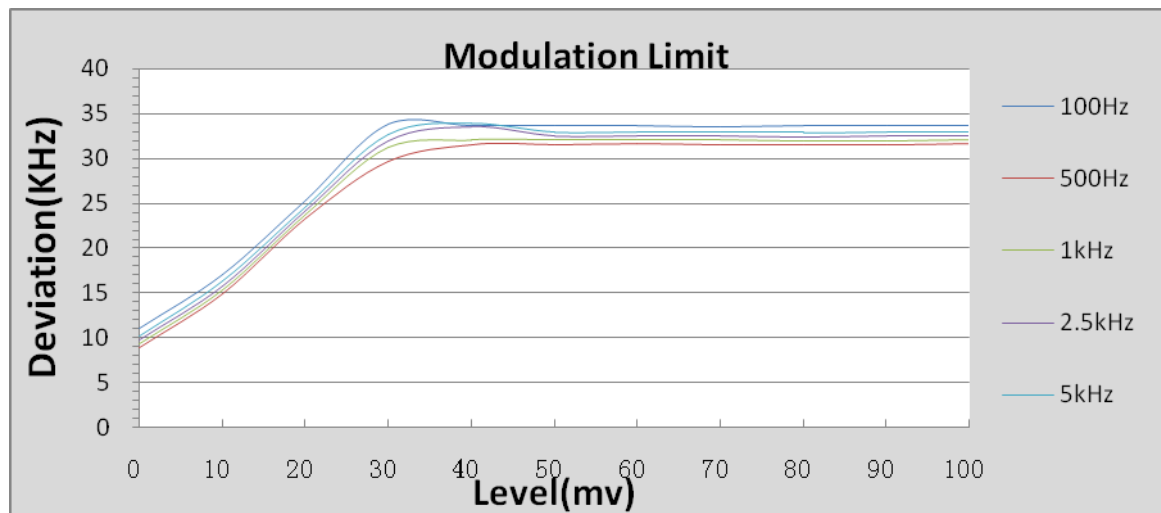
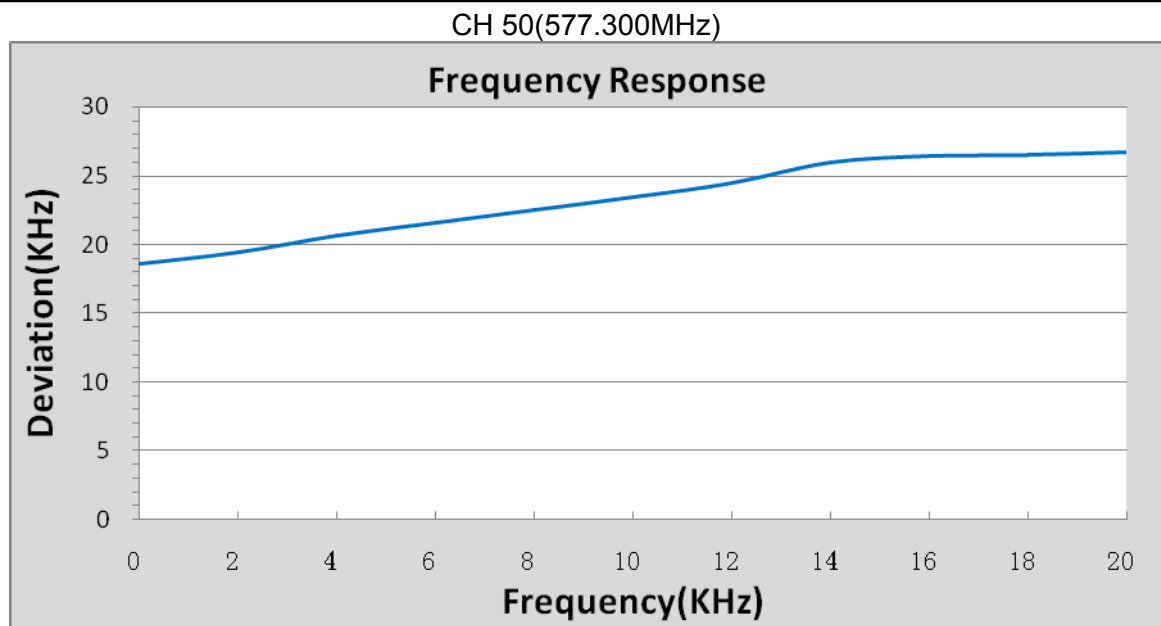
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 5.1.3 TEST RESULTS

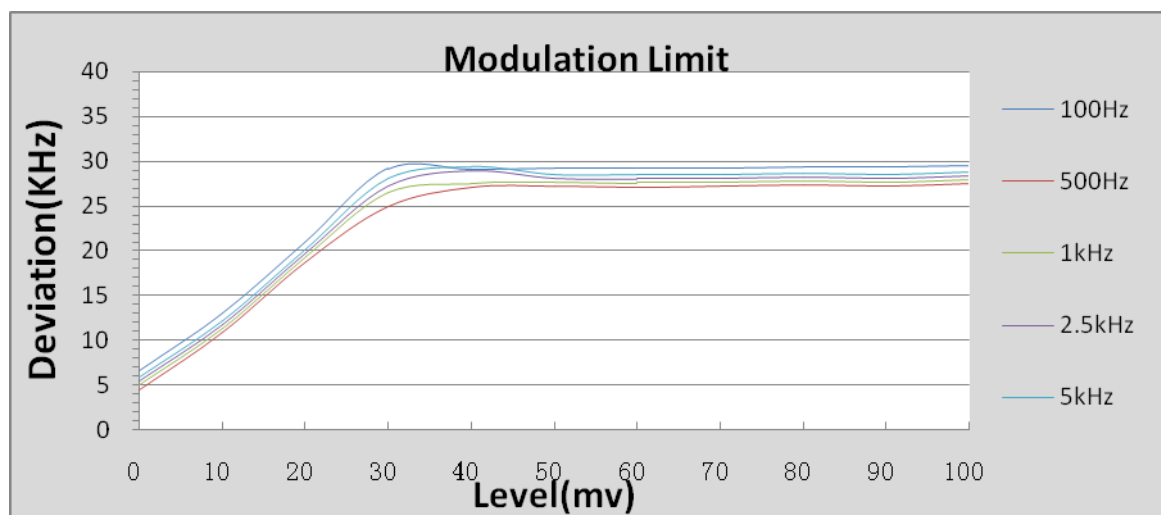
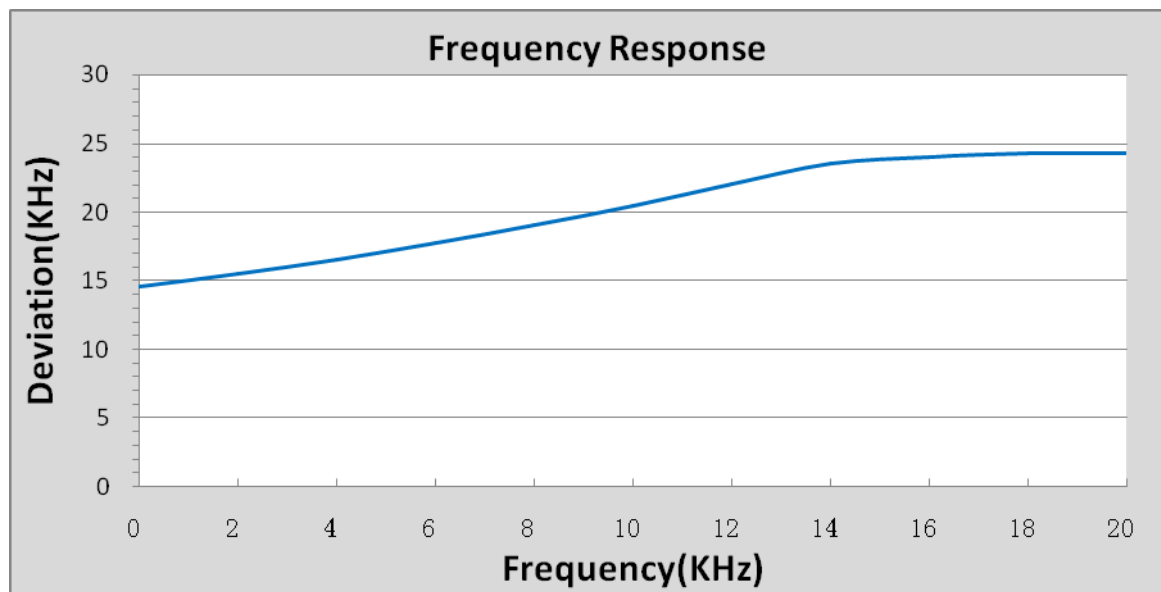
|               |                                   |                     |              |
|---------------|-----------------------------------|---------------------|--------------|
| EUT :         | IN EAR MONITOR Stereo Transmitter | Model Name :        | EM-100       |
| Temperature : | 25 °C                             | Relative Humidity : | 56%          |
| Pressure :    | 1012 hPa                          | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX Mode                           |                     |              |

CH 1(565.050MHz)





CH 100(589.800MHz)





## 6. OCCUPIED BANDWIDTH OF EMISSION

### 6.1 APPLIED PROCEDURES / LIMIT

Test requirement: FCC CFR47 Part 2 Section 2.1049©(1)

Test method: Based on TIA/EIA-603-D-2010

Limit: According to FCC 74.861 (e)(5), the frequency emission bandwidth shall not exceed 200 kHz.

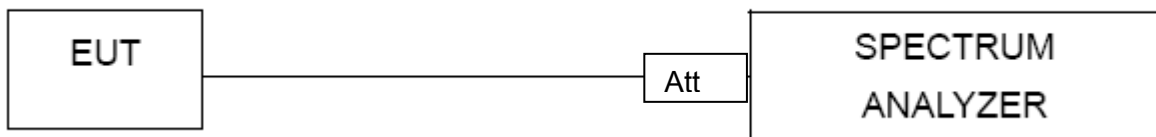
#### 6.1.1 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and set it to any one convenient frequency within its operating range.

#### 6.1.2 DEVIATION FROM STANDARD

No deviation.

#### 6.1.3 TEST SETUP



#### 6.1.4 EUT OPERATION CONDITIONS

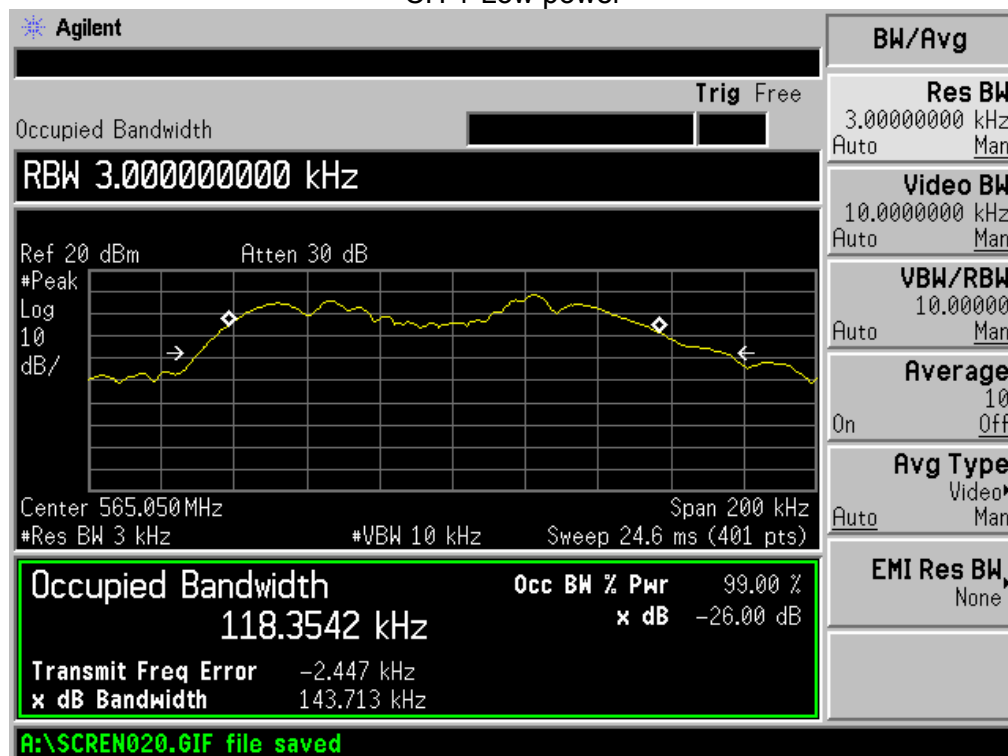
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 6.1.5 TEST RESULTS

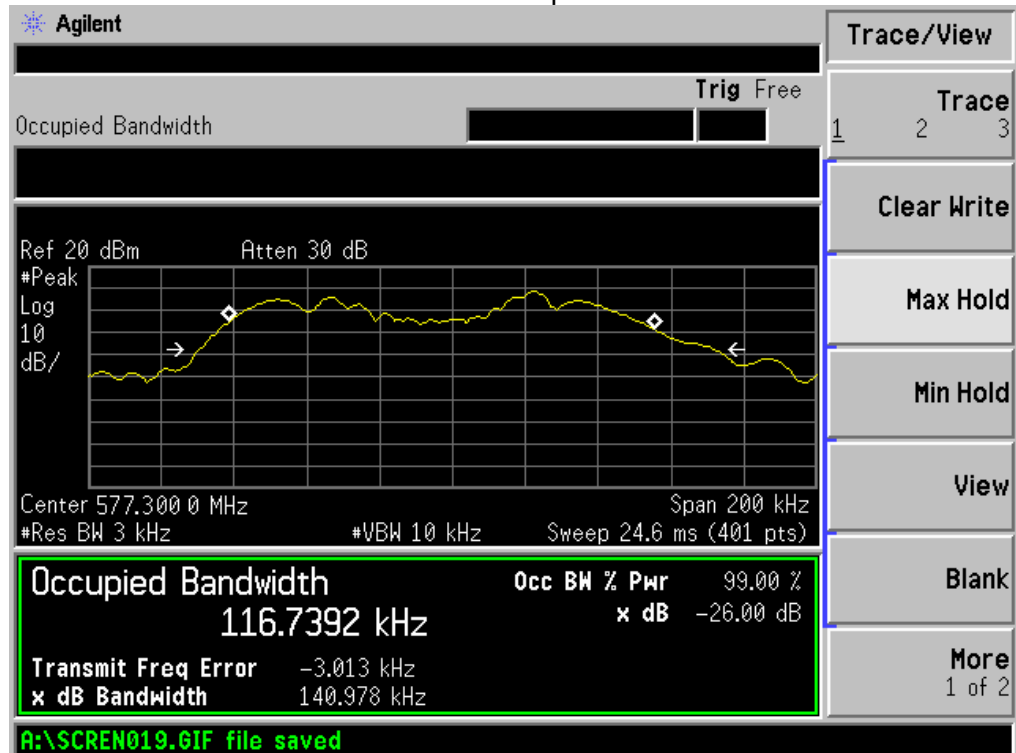
|               |                                   |                     |              |
|---------------|-----------------------------------|---------------------|--------------|
| EUT :         | IN EAR MONITOR Stereo Transmitter | Model Name :        | EM-100       |
| Temperature : | 25 °C                             | Relative Humidity : | 60%          |
| Pressure :    | 1012 hPa                          | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX Mode                           |                     |              |

| Frequency MHz | 99% Bandwidth (kHz) | Limit (kHz) | Result |
|---------------|---------------------|-------------|--------|
| Low Power     |                     |             |        |
| 565.050       | 118.3542            | 200         | PASS   |
| 577.300       | 116.7392            | 200         | PASS   |
| 589.800       | 119.8108            | 200         | PASS   |
| High Power    |                     |             |        |
| 565.050       | 118.3182            | 200         | PASS   |
| 577.300       | 116.3262            | 200         | PASS   |
| 589.800       | 119.8605            | 200         | PASS   |

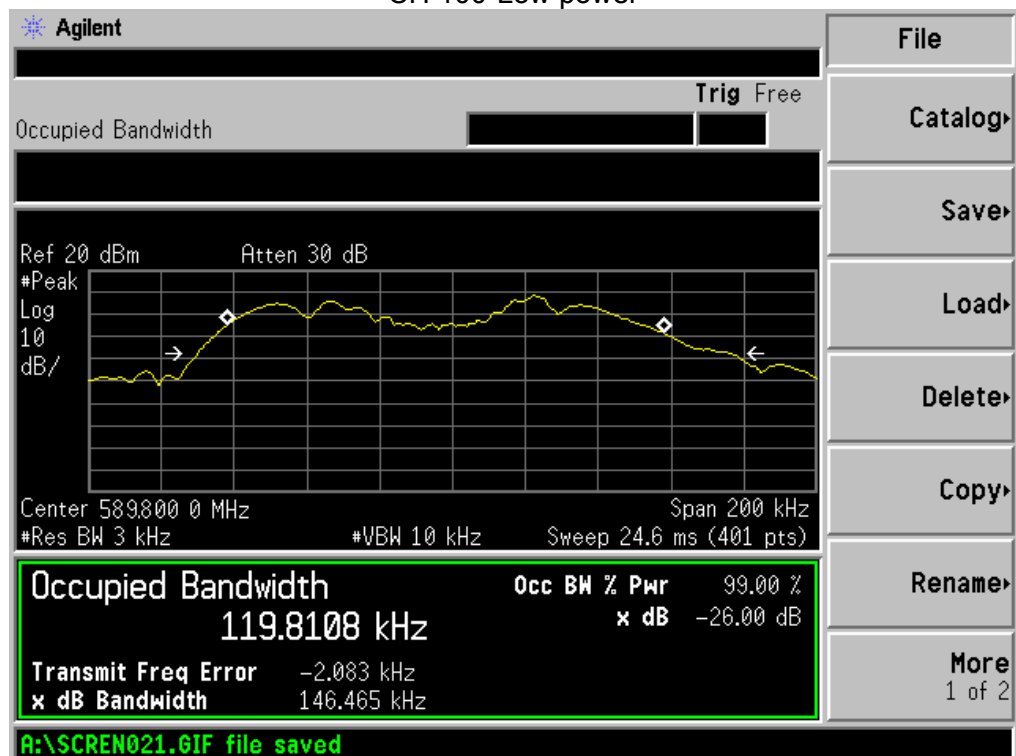
CH 1-Low power



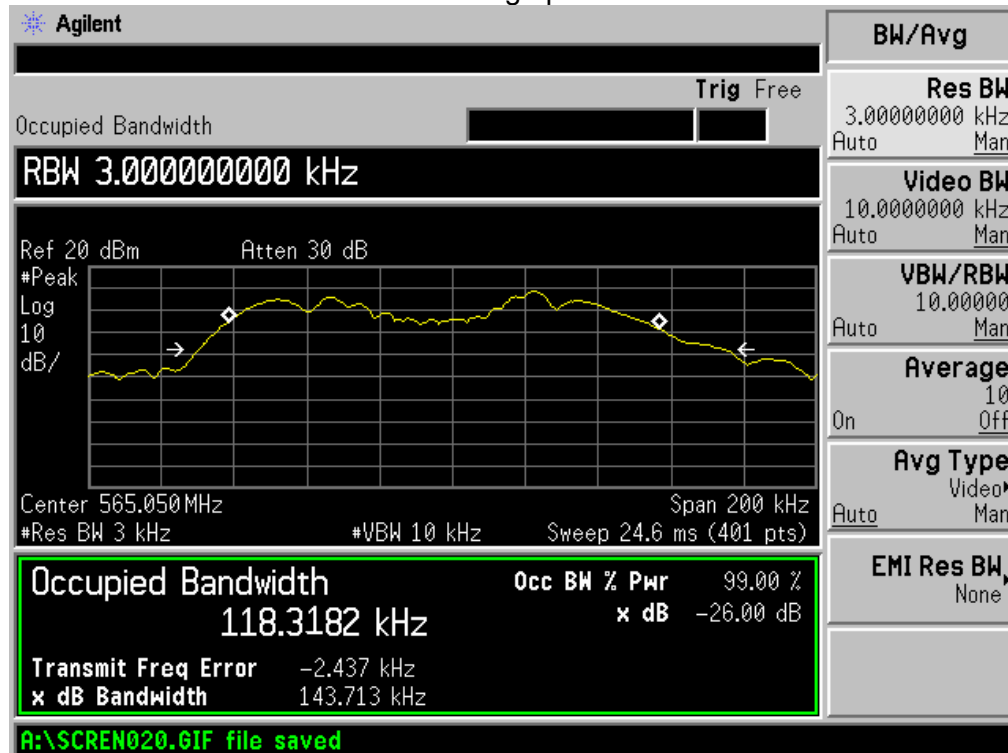
## CH 50-Low power



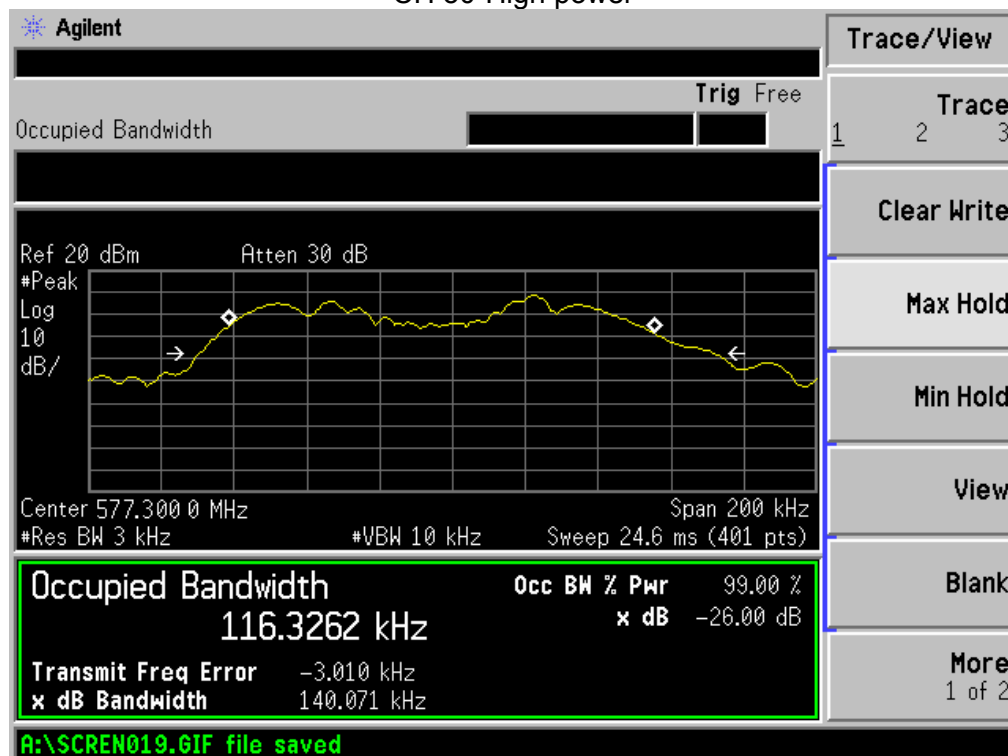
## CH 100-Low power

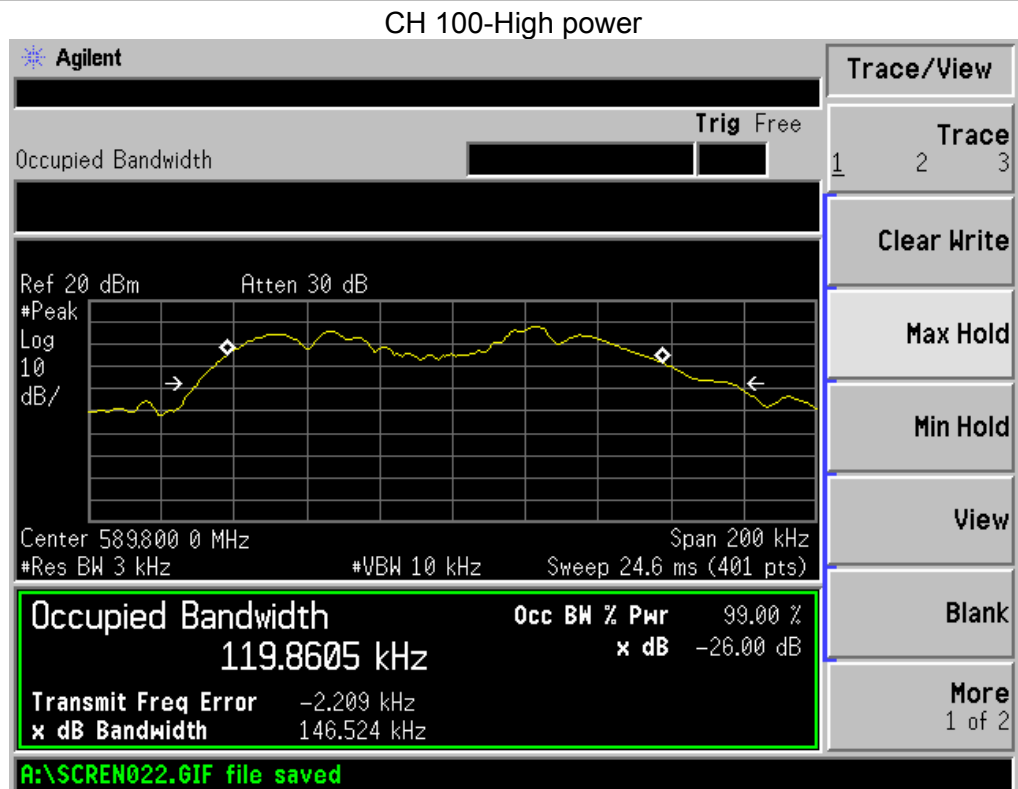


## CH 1-High power



## CH 50-High power





**7. SPURIOUS EMISSIONS AT ANTENNA TERMINALS**

Test requirement: FCC CFR47 Part 2 Section 2.1053

Test method: Based on TIA/EIA-603-D-2010

Limit: According to Part 74.861 (e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(i) 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.

(ii) 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.

(iii) on any frequency removed from the operating frequency by more than 250 percent up to and the authorized bandwidth shall be attenuated below the un-modulated carrier by at least  $43 + 10 \log$  (output power in watts)dB.

**7.1 TEST PROCEDURE**

1. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
2. Set the SA on Max-Hold Mode, and then keep the EUT in transmitting mode. Record all the signals from each channel until each one has been recorded.
3. Set the SA on View mode and then plot the result on SA screen.
4. Repeat above procedures until all frequencies measured were complete.

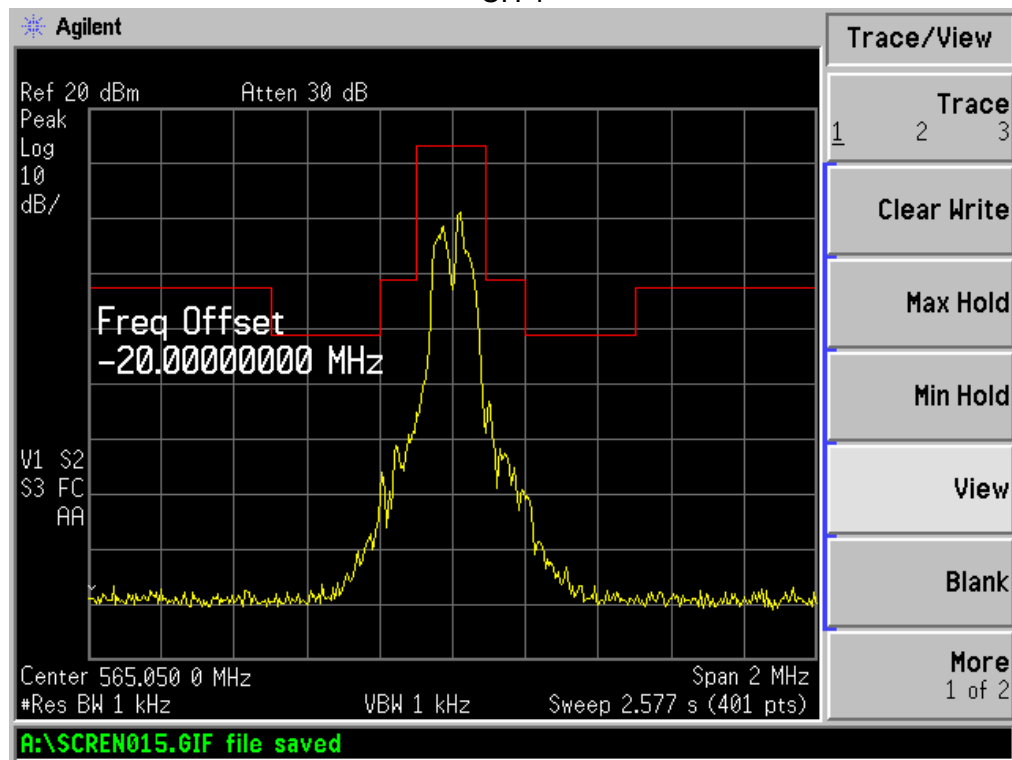
**7.2 EUT OPERATION CONDITIONS**

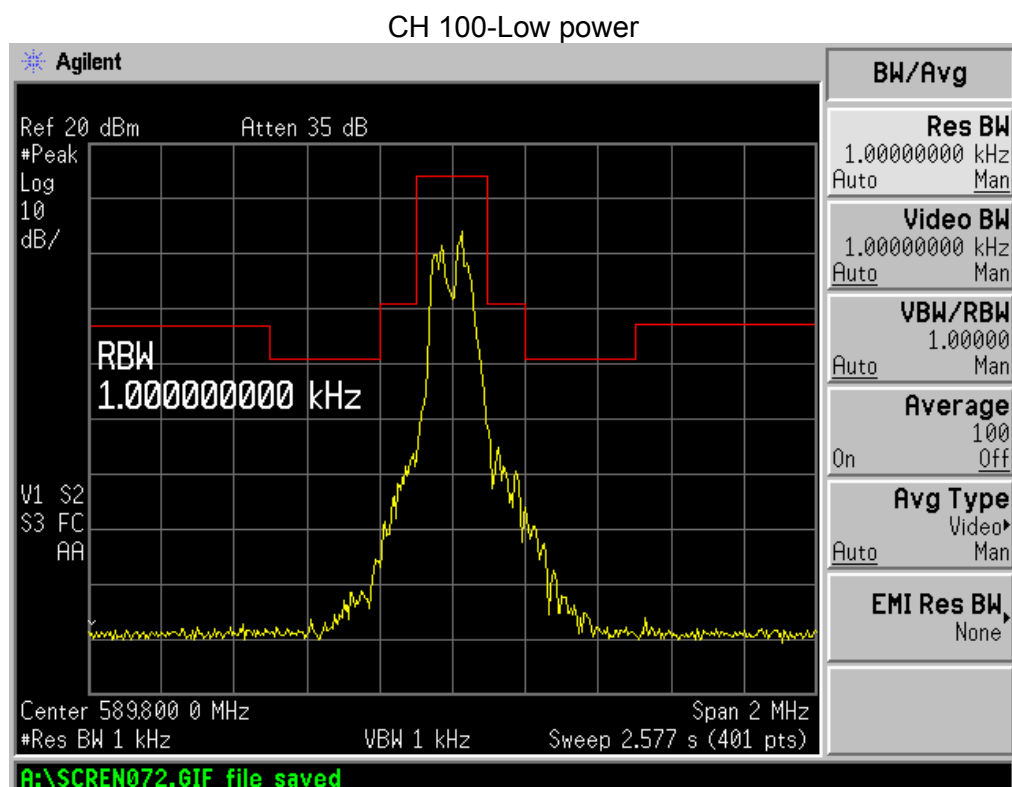
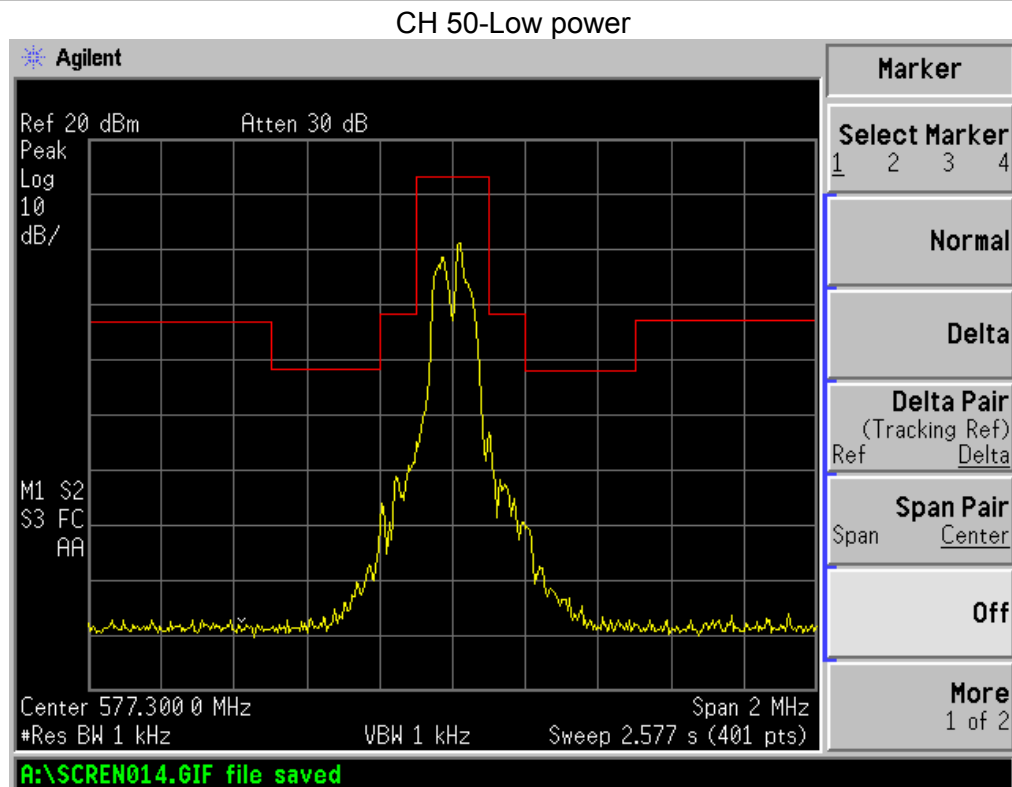
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 7.3 TEST RESULTS

|               |                                   |                     |              |
|---------------|-----------------------------------|---------------------|--------------|
| EUT :         | IN EAR MONITOR Stereo Transmitter | Model Name :        | EM-100       |
| Temperature : | 25 °C                             | Relative Humidity : | 56%          |
| Pressure :    | 1012 hPa                          | Test Voltage :      | AC 120V/60Hz |

Emission Mask-Low power  
CH 1

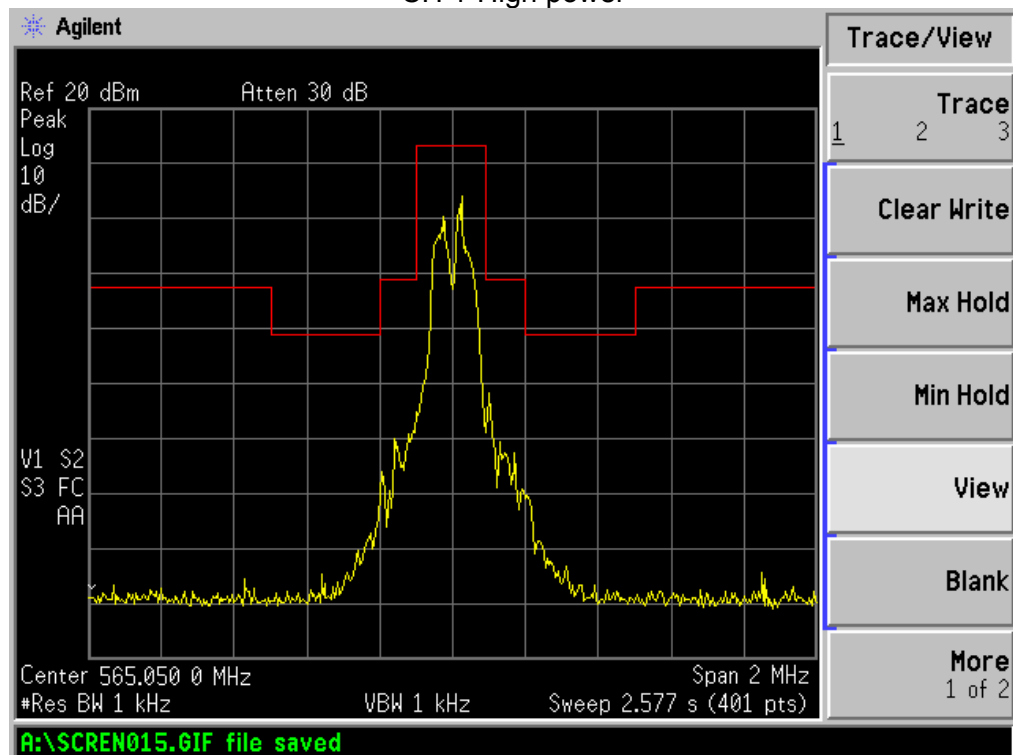




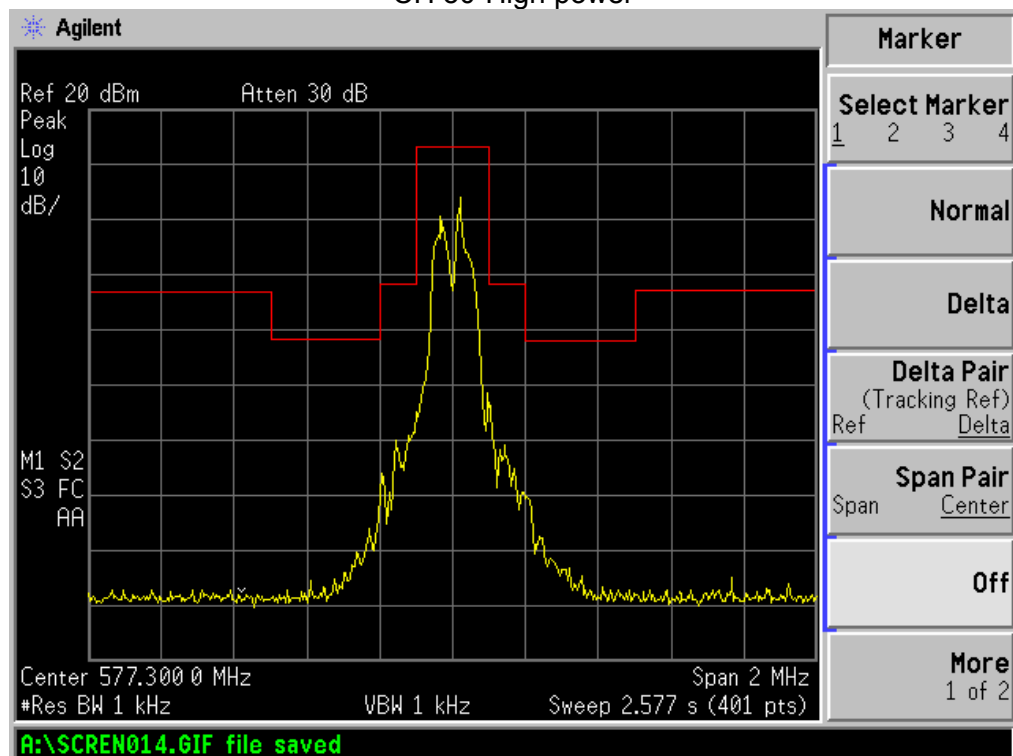


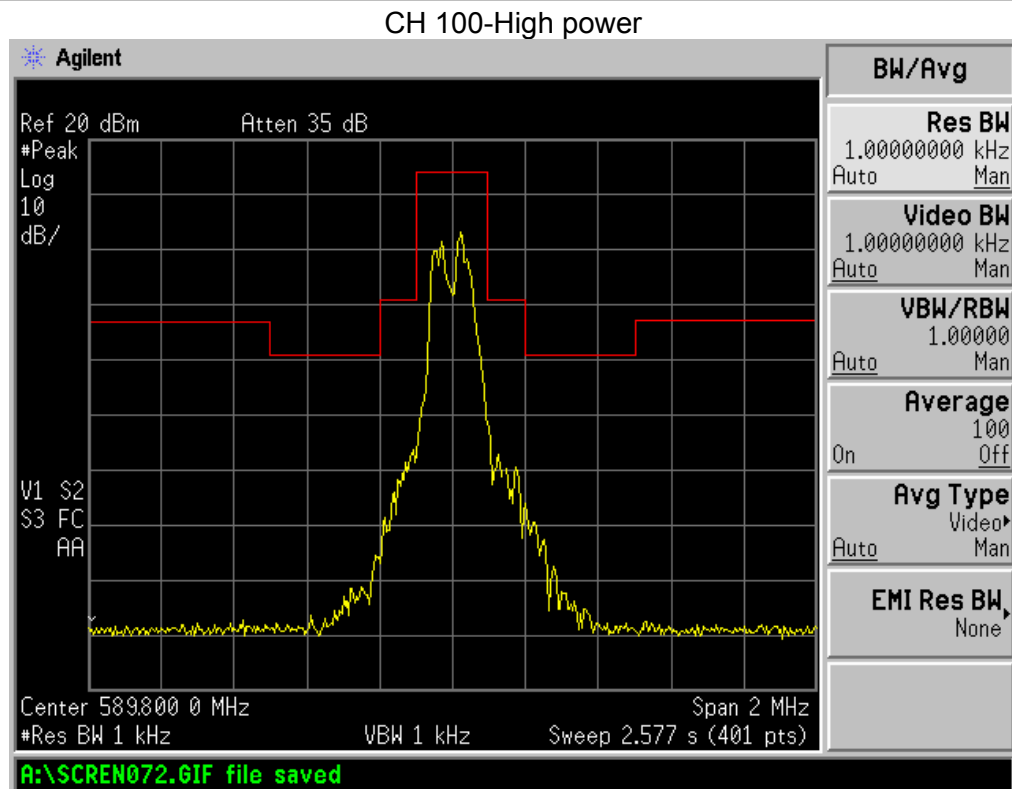
## Emission Mask-High power

## CH 1-High power

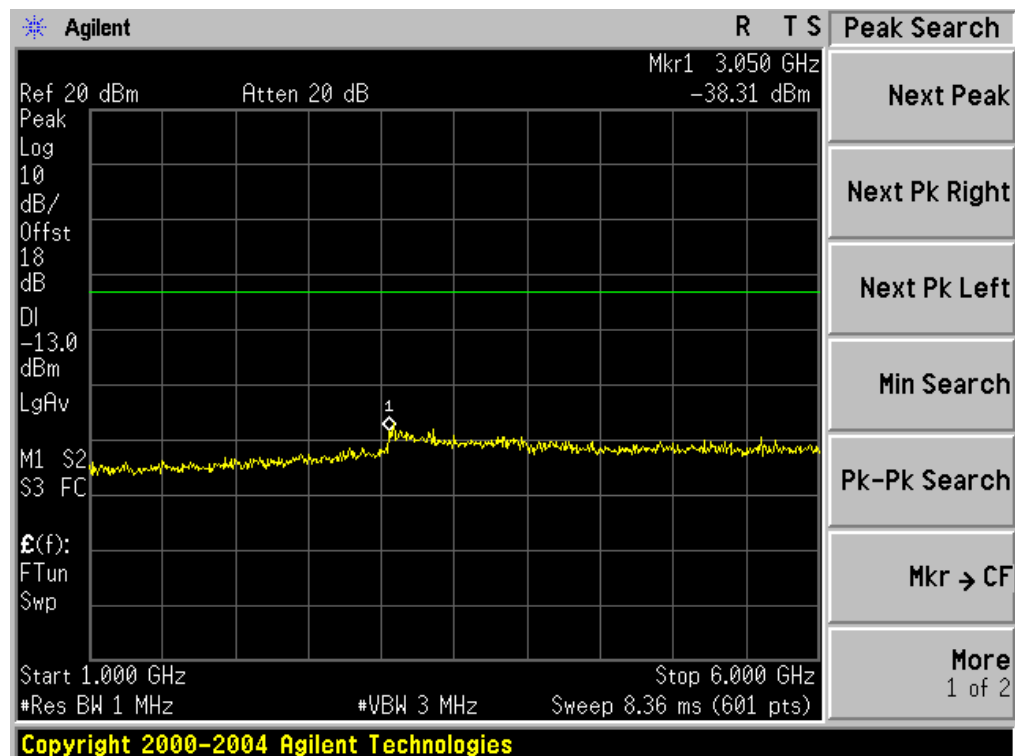
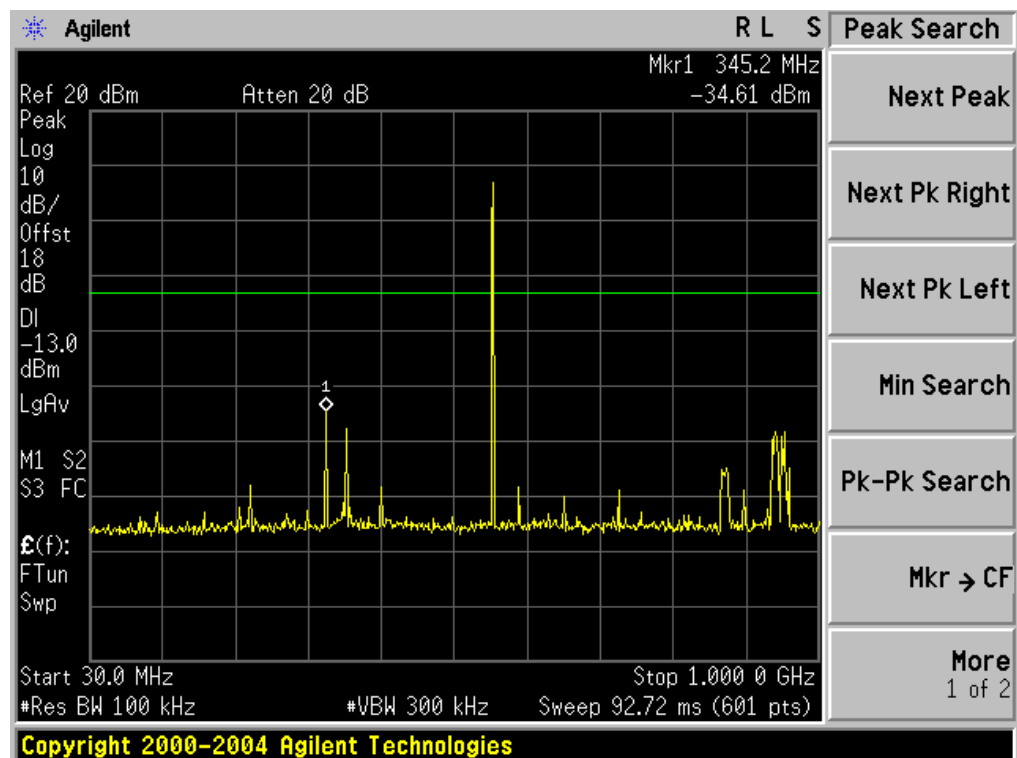


## CH 50-High power

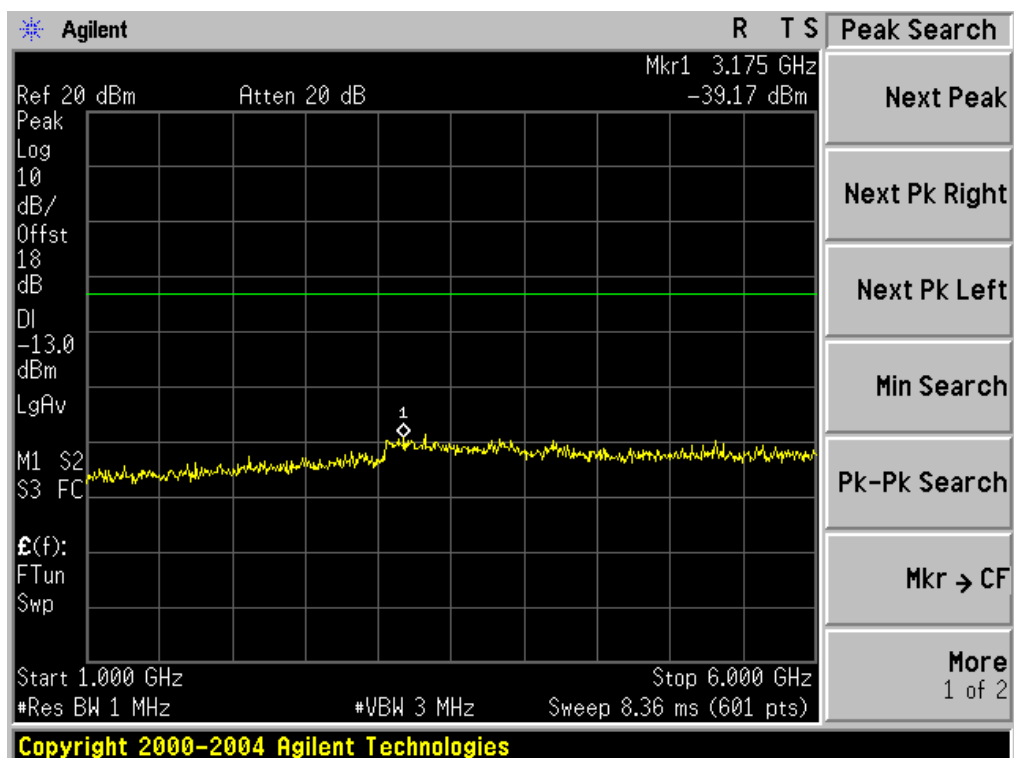
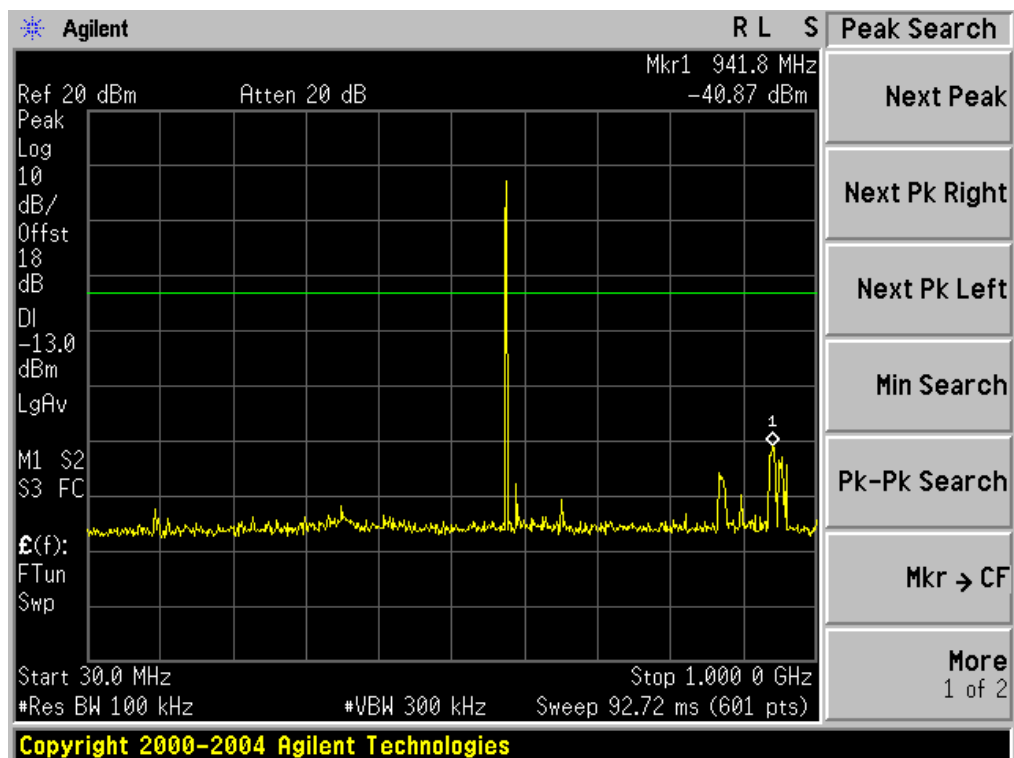


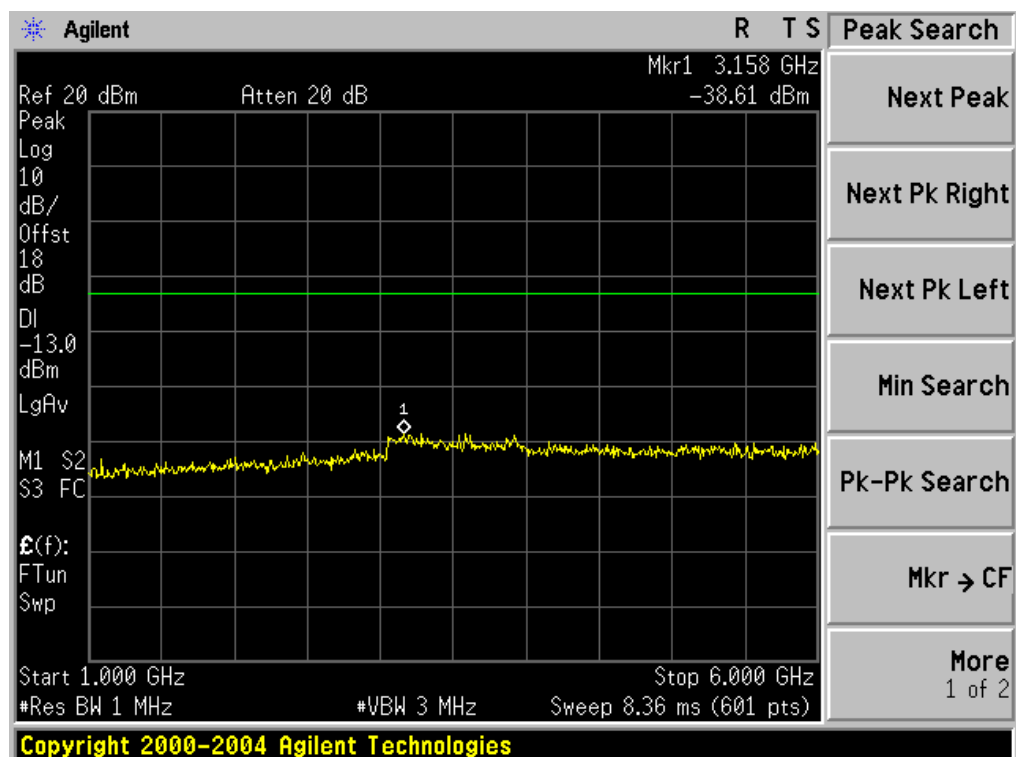
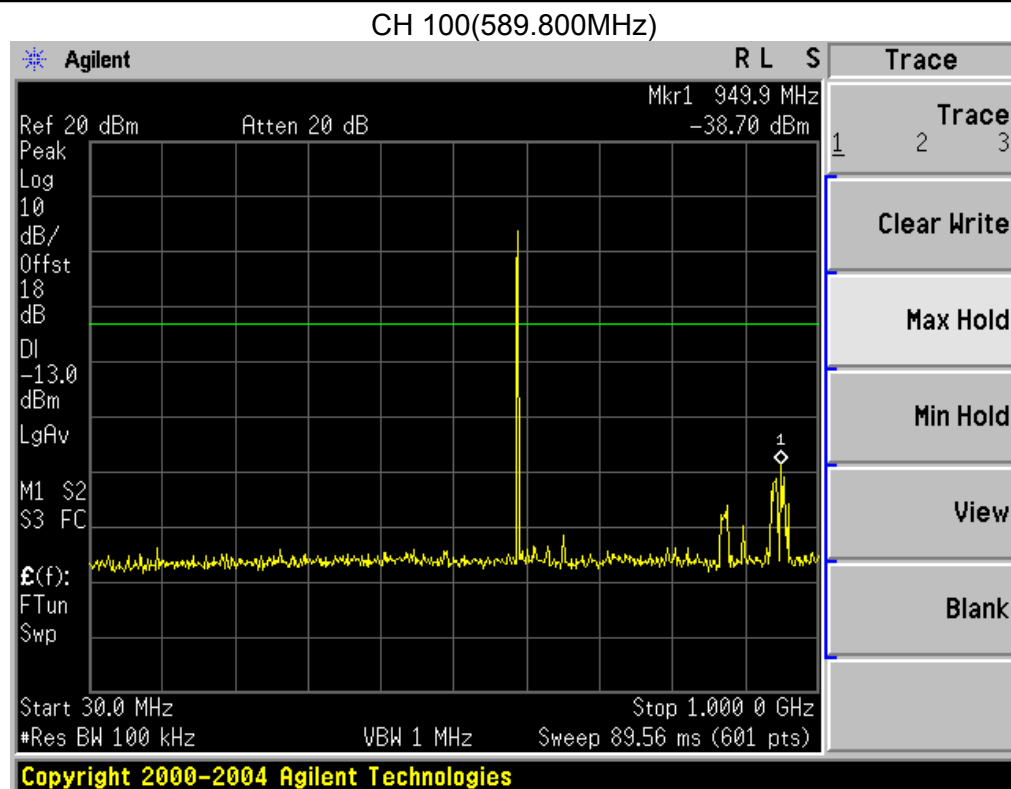


## CH 1(565.050MHz)



## CH 50(577.300MHz)





## 8. FREQUENCY STABILITY

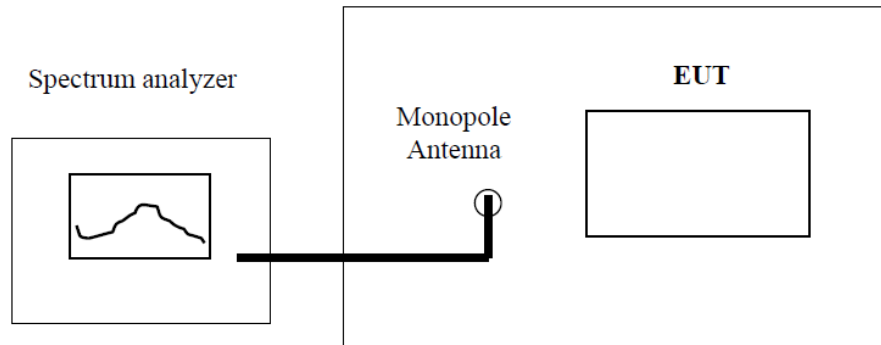
### 8.1 STANDARD REQUIREMENT

Test requirement: FCC CFR47 Part 2 Section 2.1055(a)(a)

Test method: Based on TIA/EIA-603-D-2010

Limit: According to FCC 74.86(e)(4), the frequency tolerance of the transmitter shall be 0.005 percent.

### 8.2 TEST CONFIGURATION



### 8.3 TEST PROCEDURE

#### A) Frequency stability versus input voltage

1. Setup the configuration per figure 1 for frequencies measured at an environmental chamber whose temperature is set to 20 °C. Install new batteries in the EUT.
2. Set SA center frequency to the EUT operation frequency. Then set SA RBW to 30 kHz, VBW to 100kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

#### B) Frequency stability versus environmental temperature

1. Setup the configuration per figure 1 for frequencies measured at an environmental chamber, Install new batteries in the EUT.
2. Turn on EUT and set SA center frequency to the EUT operation frequency, then set SA RBW to 30kHz, VBW to 100kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. Set the temperature of chamber to 50°C. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10°C decreased per stage until the lowest temperature -30°C is measured, record all measurement frequencies.

**8.4 TEST RESULT**

CH 1(565.050MHz)

a) Frequency stability versus input voltage

| Power Supply | Reference Frequency (MHz) | Environment Temperature (°C) | Frequency Measured | Frequency Tolerance (%) |
|--------------|---------------------------|------------------------------|--------------------|-------------------------|
| AC 102V      | 565.050                   | 20                           | 565.046            | 0.00066                 |
| AC 138V      | 565.050                   | 20                           | 565.054            | 0.00079                 |

b) Frequency stability versus environmental temperature

| Environment Temperature(°C) | Power Supply | Frequency Deviation measured with time Elapse(30 minutes) |         |
|-----------------------------|--------------|-----------------------------------------------------------|---------|
|                             |              | MHz                                                       | %       |
| 50                          | AC 120V/60Hz | 565.052                                                   | 0.00040 |
| 40                          | AC 120V/60Hz | 565.047                                                   | 0.00047 |
| 30                          | AC 120V/60Hz | 565.048                                                   | 0.00033 |
| 20                          | AC 120V/60Hz | 565.049                                                   | 0.00017 |
| 10                          | AC 120V/60Hz | 565.051                                                   | 0.00026 |
| 0                           | AC 120V/60Hz | 565.047                                                   | 0.00057 |
| -10                         | AC 120V/60Hz | 565.050                                                   | 0.00003 |
| -20                         | AC 120V/60Hz | 565.052                                                   | 0.00031 |
| -30                         | AC 120V/60Hz | 565.044                                                   | 0.00099 |

CH 50(577.300MHz)

## a) Frequency stability versus input voltage

| Power Supply | Reference Frequency (MHz) | Environment Temperature (°C) | Frequency Measured | Frequency Tolerance (%) |
|--------------|---------------------------|------------------------------|--------------------|-------------------------|
| AC 102V      | 577.300                   | 20                           | 577.297            | 0.00045                 |
| AC 138V      | 577.300                   | 20                           | 577.298            | 0.00041                 |

## b) Frequency stability versus environmental temperature

| Environment Temperature(°C) | Power Supply | Frequency Deviation measured with time Elapse(30 minutes) |         |
|-----------------------------|--------------|-----------------------------------------------------------|---------|
|                             |              | MHz                                                       | %       |
| 50                          | AC 120V/60Hz | 577.301                                                   | 0.00012 |
| 40                          | AC 120V/60Hz | 577.295                                                   | 0.00081 |
| 30                          | AC 120V/60Hz | 577.306                                                   | 0.00102 |
| 20                          | AC 120V/60Hz | 577.295                                                   | 0.00085 |
| 10                          | AC 120V/60Hz | 577.303                                                   | 0.00058 |
| 0                           | AC 120V/60Hz | 577.303                                                   | 0.00053 |
| -10                         | AC 120V/60Hz | 577.295                                                   | 0.00090 |
| -20                         | AC 120V/60Hz | 577.298                                                   | 0.00029 |
| -30                         | AC 120V/60Hz | 577.299                                                   | 0.00019 |



CH 100(589.800MHz)

a) Frequency stability versus input voltage

| Power Supply | Reference Frequency (MHz) | Environment Temperature (°C) | Frequency Measured | Frequency Tolerance (%) |
|--------------|---------------------------|------------------------------|--------------------|-------------------------|
| AC 102V      | 589.800                   | 20                           | 589.797            | 0.00045                 |
| AC 138V      | 589.800                   | 20                           | 589.796            | 0.00064                 |

b) Frequency stability versus environmental temperature

| Environment Temperature(°C) | Power Supply | Frequency Deviation measured with time Elapse(30 minutes) |         |
|-----------------------------|--------------|-----------------------------------------------------------|---------|
|                             |              | MHz                                                       | %       |
| 50                          | AC 120V/60Hz | 589.796                                                   | 0.00069 |
| 40                          | AC 120V/60Hz | 589.802                                                   | 0.00030 |
| 30                          | AC 120V/60Hz | 589.806                                                   | 0.00096 |
| 20                          | AC 120V/60Hz | 589.799                                                   | 0.00012 |
| 10                          | AC 120V/60Hz | 589.806                                                   | 0.00098 |
| 0                           | AC 120V/60Hz | 589.803                                                   | 0.00055 |
| -10                         | AC 120V/60Hz | 589.803                                                   | 0.00046 |
| -20                         | AC 120V/60Hz | 589.797                                                   | 0.00059 |
| -30                         | AC 120V/60Hz | 589.796                                                   | 0.00064 |

## 9. EUT TEST PHOTO

### Radiated Measurement Photos

