

**FCC PART 74**  
**MEASUREMENT AND TEST REPORT**  
**FOR**

**IXT SYSTEMS DBA**

**6365 53<sup>rd</sup> Street North Suite B Pinellas Park, FL33781, USA**

**FCC ID: UTMIXTWM100**

<b>Report Concerns:</b> Original Report	<b>Equipment Type:</b> Wireless Microphone
<b>Model:</b>	<u>WM320 WM310 WM315</u>
<b>Report No.:</b>	<u>STR06118037I</u>
<b>Test/Witness Engineer:</b>	<u>Innaz Lee</u>
<b>Test Date:</b>	<u>2006-12-06</u>
<b>Prepared By:</b>	<b>Shenzhen SEM.Test Compliance Service Co., Ltd</b> Room 609-610, Baotong Building, Baomin 1 <sup>st</sup> Road, Baoan District, Shenzhen, Guangdong, P.R.C. (518133)
<b>Approved &amp; Authorized By:</b>	 _____ PSQ Manager / Jandy So

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: IXT Systems dba  
Address of applicant: 6365 53rd Street North Suite B Pinellas Park,  
FL33781, USA

Manufacturer 1: FANGGE ACOUSTICS TECHNOLOGY COMPANY  
Address of manufacturer 1: F2, Civilian & Foreign Capital Developing Area,  
Enpin, Guangdong, China

Manufacturer 2: SHUANGYI ELECTRONICS INDUSTRIAL CO., LTD.  
Address of manufacturer 2: B1 FOREIGN AND PRIVATE CAPITAL INDUSTRY,  
ENPIN, GANGDONG, CHINA

#### General Description of E.U.T

Items	Description
EUT Description:	IXT Systems dba
Trade Name:	/
Model No.:	WM320 WM310 WM315
Rated Voltage:	DC 9V Battery
Output Power:	50W
Frequency Range:	181.7 – 215.8 MHz
Antenna Type:	Integral Antenna
Size:	24.0X4.5X4.5 cm
For more information refer to the circuit diagram form and the user's manual.	

*The test data gathered are from a production sample, provided by the manufacturer.*

### 1.2 Test Standards

The following report of is prepared on behalf of IXT Systems dba in accordance with Part 74 Subpart H of the Federal Communication Commissions rules.

The objective is to determine compliance with the Federal Communication Commissions rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

### 1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

## 1.4 Test Methodology

Measurements contained in this report were also conducted with TIA/EIA Standard 603, Telecommunications Industry Association Land Mobile FM or PM Communications Equipment Measurement and Performance Standards and ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted with Low Channel, Middle Channel and High Channel, accordingly in reference to the Operating Instructions.

## 1.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

United States of American Federal Communications Commission (**FCC**), and the registration number is **274801**.

Industry Canada (**IC**), and the registration number is **IC4174**.

All measurement required was performed at laboratory of Shenzhen Academy of Metrology and Quality Inspection, Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China.

## 1.6 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components. The test software is started while the whole system is on.

## 1.7 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

## 1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Cord/Without Cord
/	/	/	/

## 2. SUMMARY OF TEST RESULTS

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FCC RULES	DESCRIPTION OF TEST	RESULT
§74.861(e)(1)(i)	Output Power Measurement	Compliant
§74.861(e)(3)	Modulation Characteristics	Compliant
§74.861(e)(5)	Occupied Bandwidth Emission	Compliant
§74.861(e)(6)	Radiated Spurious Emission	Compliant
§2.1051	Spurious Emission at Antenna Port	Compliant
§74.86(e)(4)	Frequency Stability	Compliant

### 3. §74.861(e)(1)(i)-OUTPUT POWER MEASUREMENT

#### 3.1 Standard Applicable

According to FCC 74.861(e)(1)(i), for low power auxiliary station operating in the 54–72, 76–88, and 174–216 MHz bands, the power of the measured unmodulated carrier power and the output of the transmitter power amplifier (antenna input power) may not exceed 50mW.

#### 3.1 Test Equipment List and Detail

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2006-06-30	2007-06-29

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

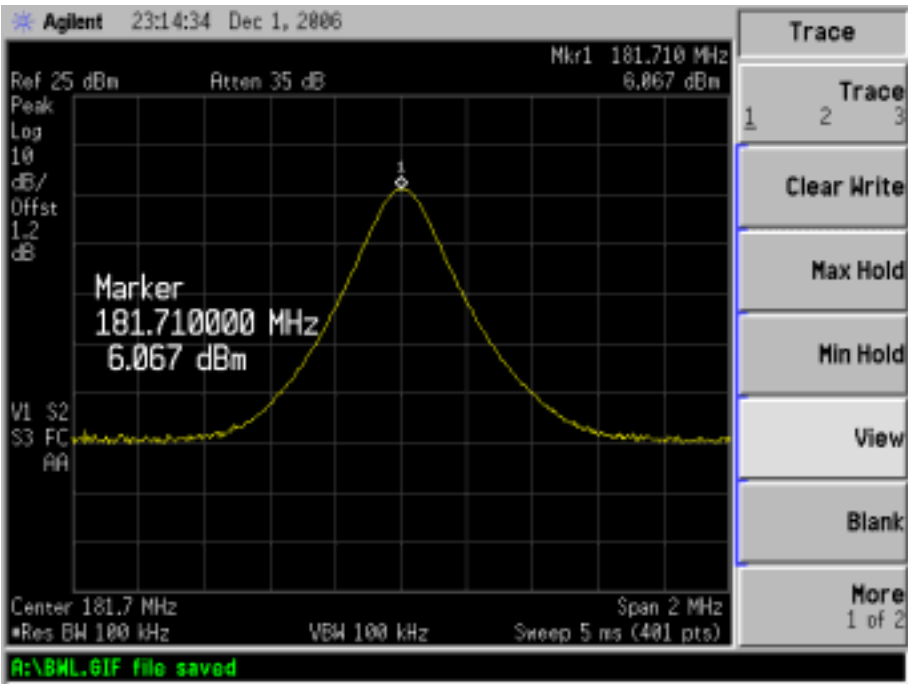
#### 4.3 Test Procedure

The maximum peak output power was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in unmodulated situation.

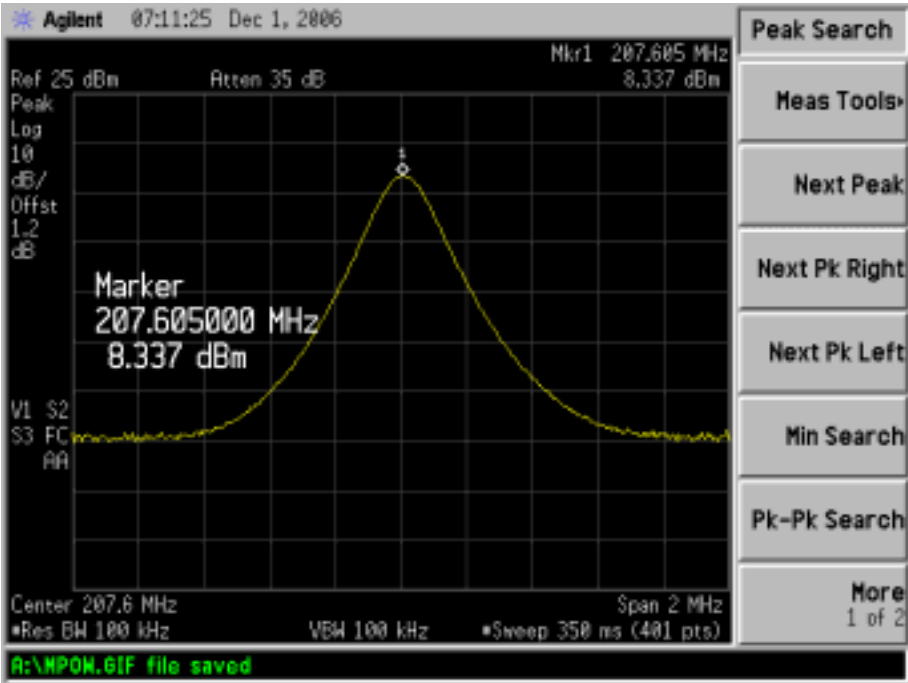
#### 3.2 Test Result/Plots

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low CH	181.7	6.607	17
Middle CH	207.6	8.337	17
High CH	215.8	5.983	17

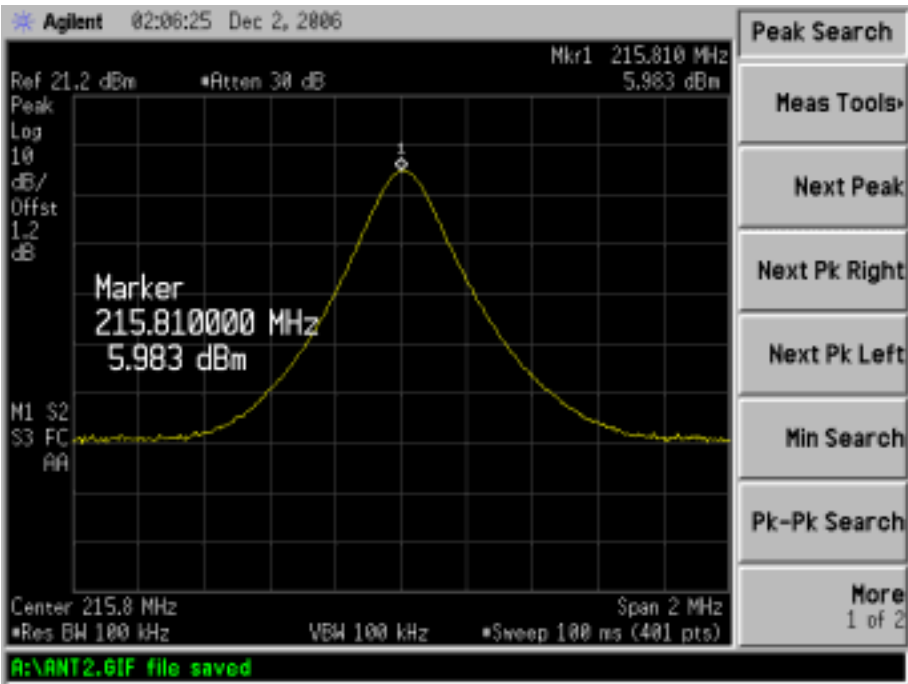
Low Channel:



Middle Channel:



High Channel:





## 4. §74.861(e)(3)-MODULATION CHARACTERISTICS

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### 4.1 Standard Applicable

According to FCC 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. For equipment required to have an audio low-pass filter, the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage 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.

### 4.2 Test Equipment List and Details

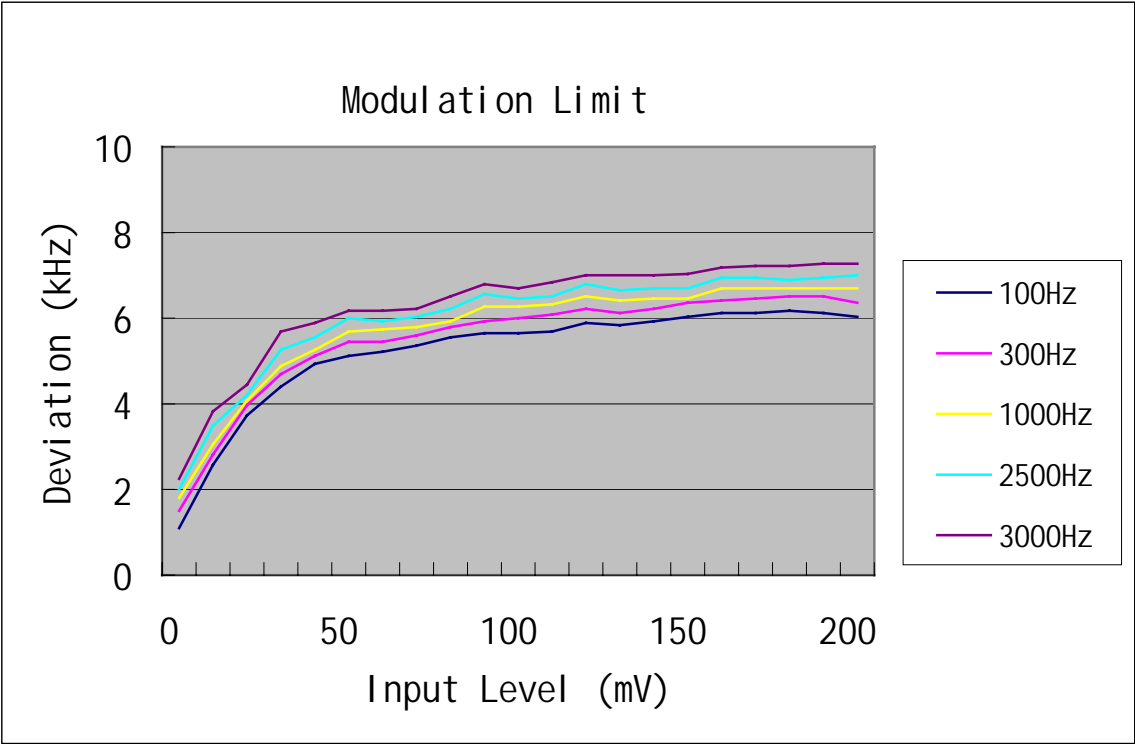
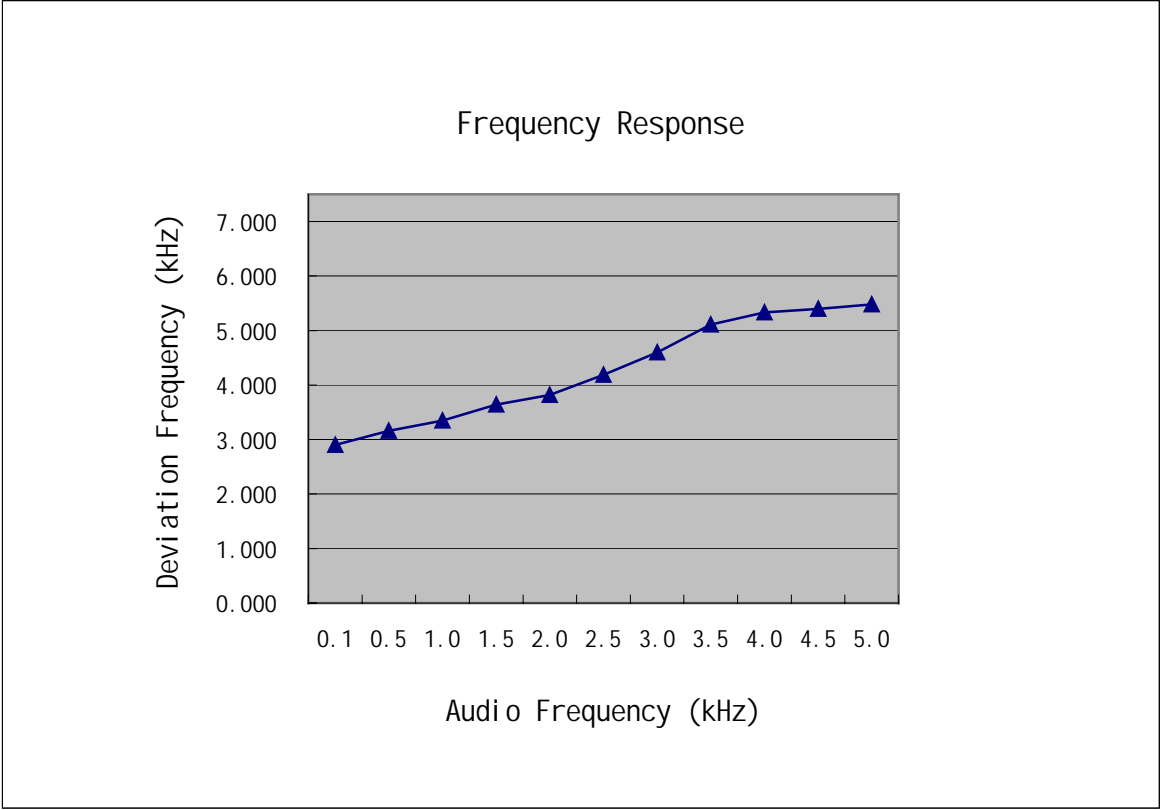
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Modulation Analyzer	Rohde & Schwarz	FAM 54	334.2015.54	2006-06-30	2007-06-29
Audio Generator	MEILI	MFG-3005	200612187	2006-06-30	2007-06-29

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 4.3 Test Procedure

- 1) 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.
- 2) Repeat step 1 with changing the input frequency for 100, 300, 1000, 2500 and 3000 Hz in sequence.

### 4.4 Test Results/Plots



## 5. §74.861(e)(5) - OCCUPIED BANDWIDTH OF EMISSION

### 5.1 Standard Applicable

According to FCC 2.1049 (c) (1), for radiotelephone transmitter, other than single sideband or independent sideband transmitter, when modulated by a 2.5 kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.

According to §74.861(e)(5), the operating bandwidth shall not exceed 200 kHz.

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2006-06-30	2007-06-29
Audio Generator	MEILI	MFG-3005	200612187	2006-06-30	2007-06-29

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

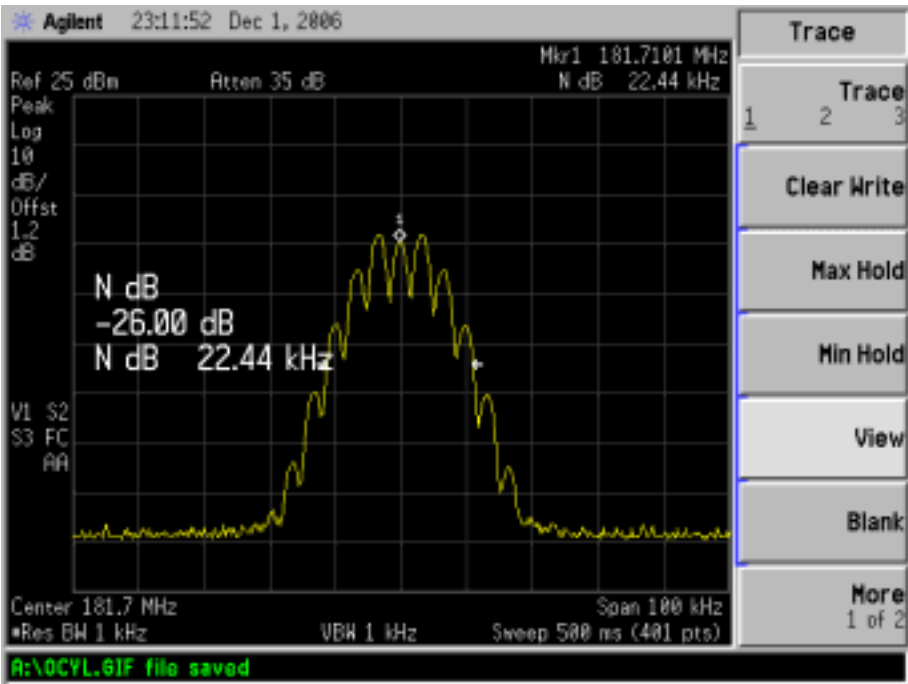
### 5.2 Test Procedure

According to TIA-603 for additional Test Set-Up procedures, the occupied bandwidth of emission was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation. Then mark the -26dB Bandwidth and record it.

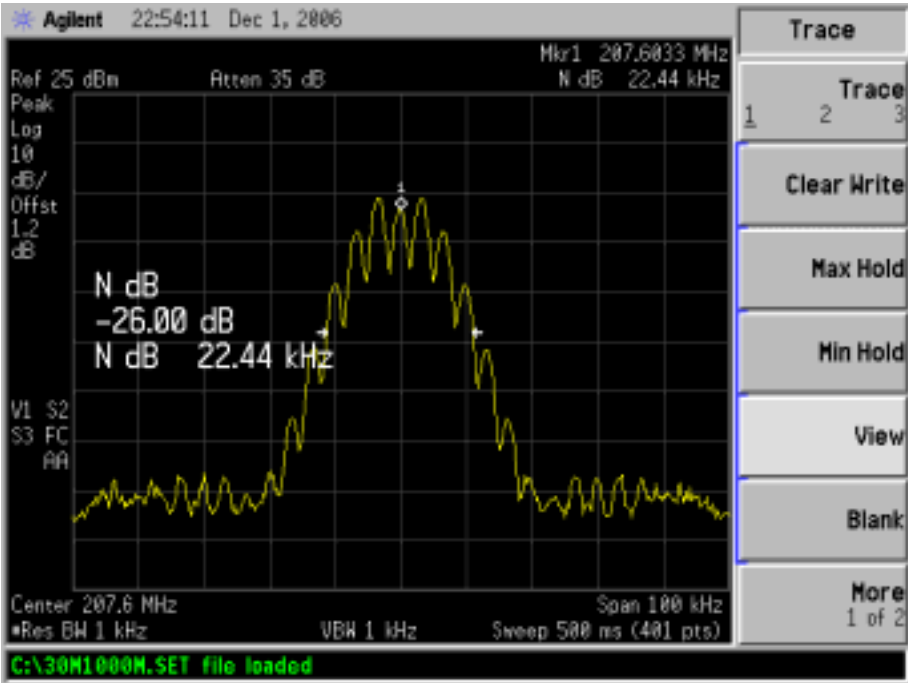
### 5.3 Test Results/Plots

Channel	Freq (MHz)	Measured Bandwidth (KHz)	Limit (dBm)
Low CH	181.7	22.44	200
Middle CH	207.6	22.44	200
High CH	215.8	22.69	200

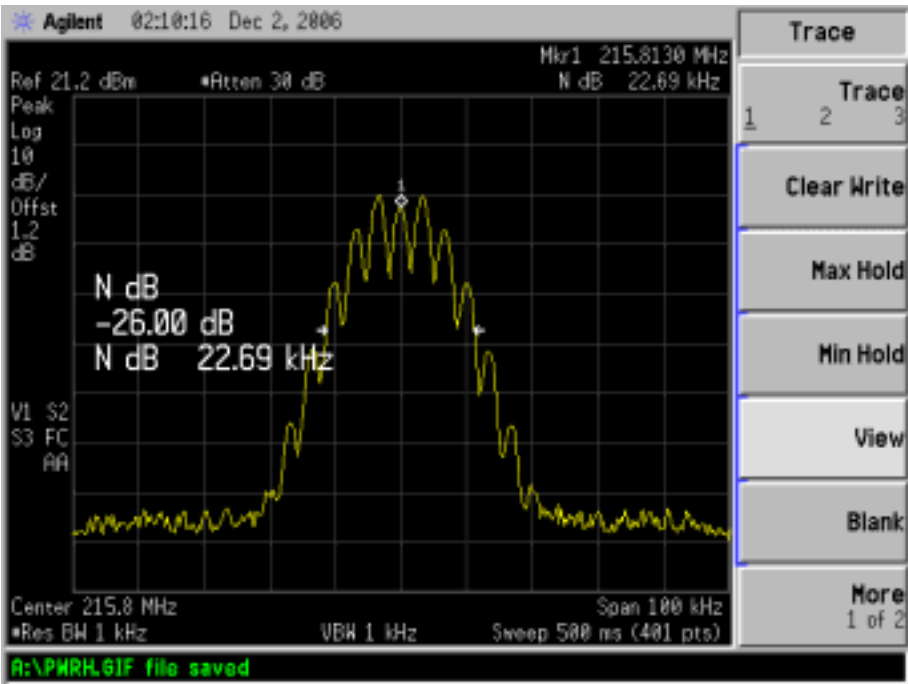
Low Channel:



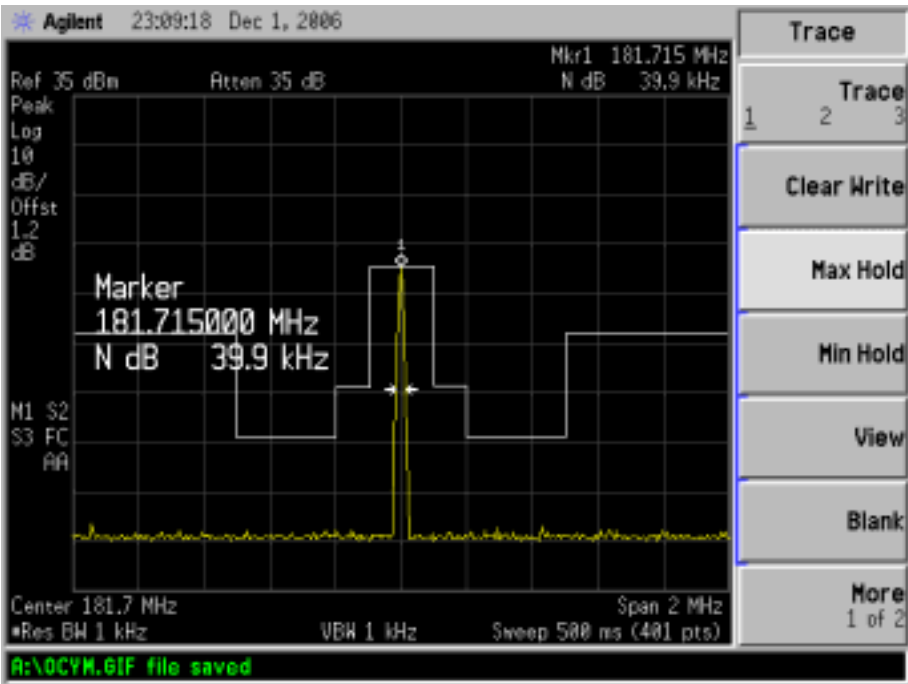
Middle Channel:



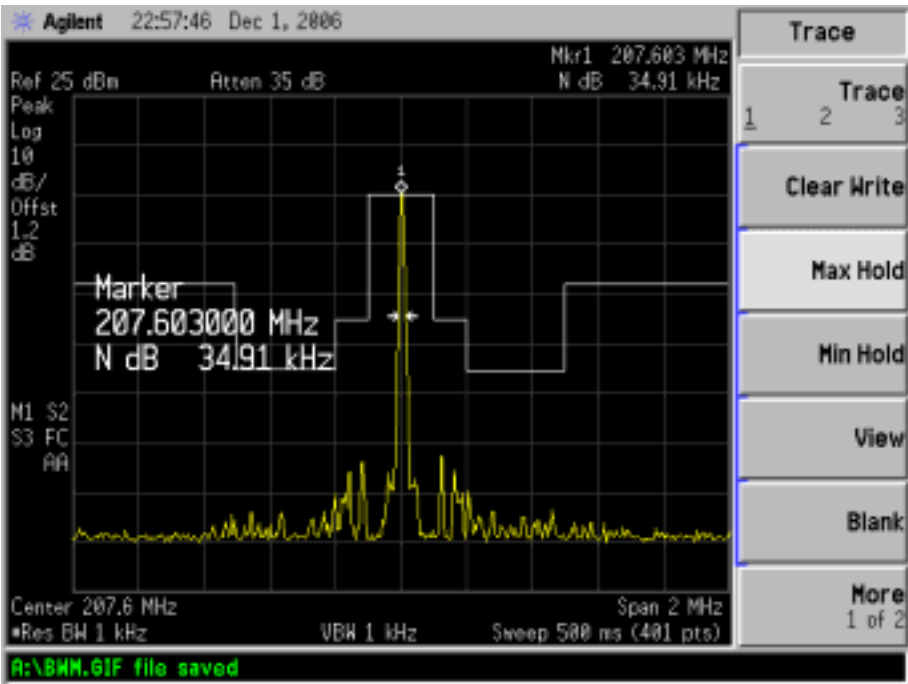
High Channel:



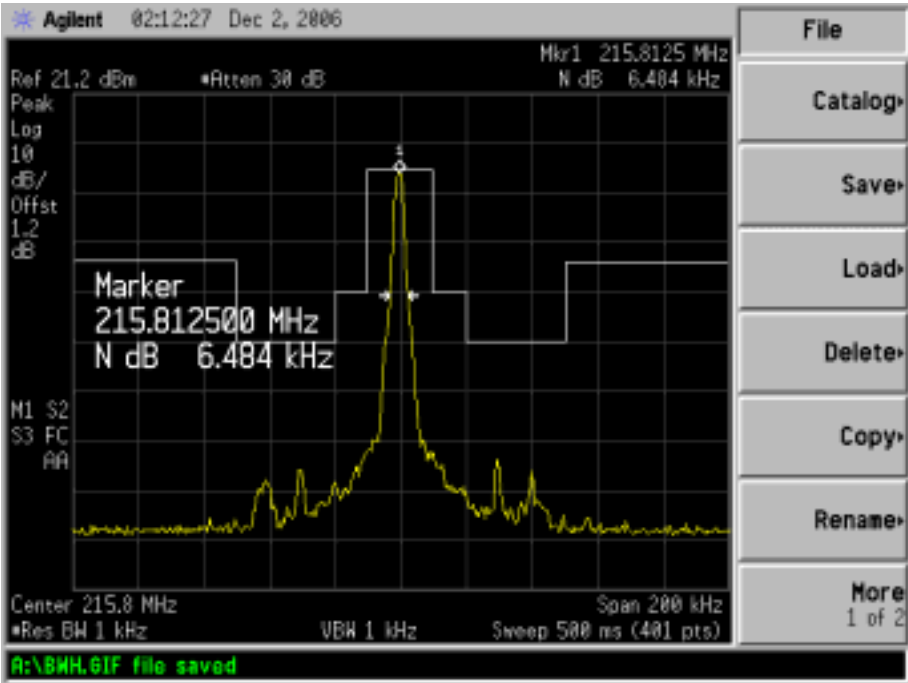
Emission Mask (Low Channel)



Emission Mask (Middle Channel)



Emission Mask (High Channel)



## 6. §74.861 (e)(6)(iii)- RADIATED SPURIOUS EMISSION

### 6.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is  $\pm 3.0$  dB.

### 6.2 Standard Applicable

According to FCC 2.1053, measurements shall be made to detect spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediated circuit elements under normal condition of installation and operation. Information submitted shall include the relative radiated power of spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from a halfwave dipole antenna.

According to FCC74.861 (e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

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.

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 plus 10 Log (output power in watts) dB.

### 6.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Rohde & Schwarz	EMI Test Receiver	ESI26	830245/009	2006-1-26	2007-1-25
ETS	Multi_Device Controller	2090	57230	2006-1-26	2007-1-25
Antenna	Schwarzbeck	VUBA9117	115	2006-1-24	2009-1-25
3m chamber	Albatross Projects	9X6X6	----	2006-1-24	2008-1-25
Rohde & Schwarz	Horn Antenna	HF906	100014	2006-1-26	2007-1-25
Signal Generator	Rohde & Schwarz	SMR20	100047	2006-1-24	2007-1-25
Dipole Antenna	Schwarzbeck	H00009170	9136	2006-1-24	2007-1-25

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

## 6.4 Test Procedure

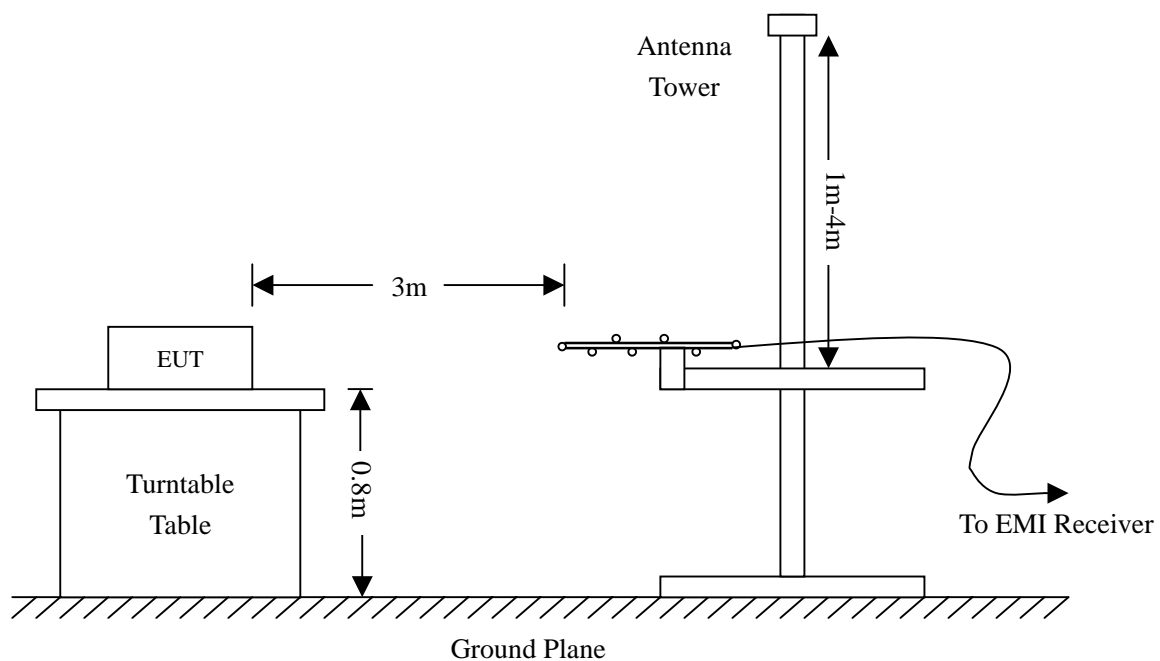
The setup of EUT is according with per TIA/EIA Standard 603 and ANSI C63.4-2003 measurement procedure.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious attenuation limit in dB =  $43 + 10 \log_{10}(\text{power in Watts})$





## 6.5 Environmental Conditions

Temperature:	26° C
Relative Humidity:	52%
ATM Pressure:	1022 mbar

## 6.6 Summary of Test Results/Plots

According to the data below, the FCC Part 74.861 standards, and had the worst margin of:

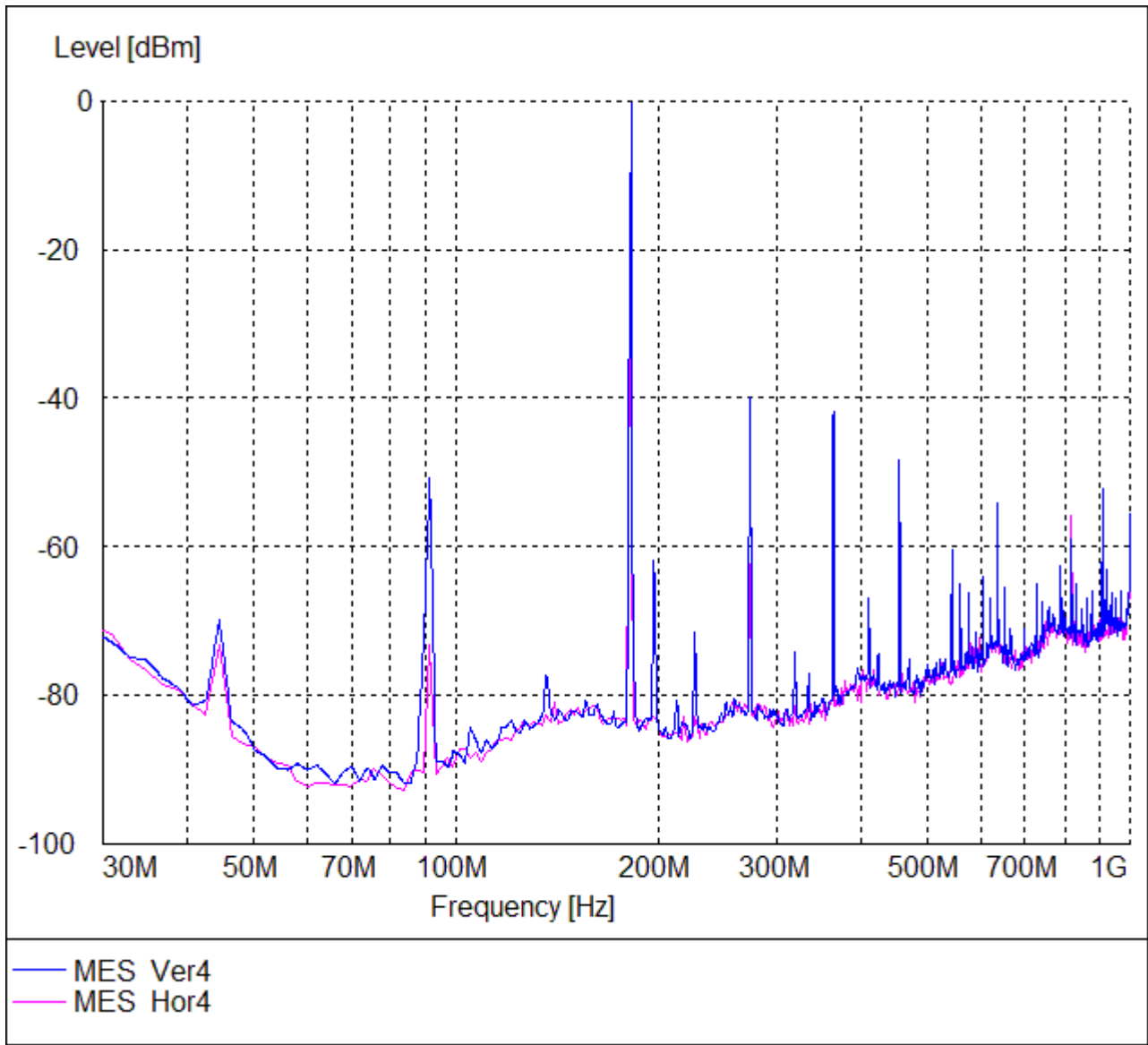
**-18.30 dBμV at 320.20 MHz in the Vertical of High channel polarization, 30 MHz to 3 GHz, 3Meters.**

Frequency	SG Reading	Height	Polar	Cable loss	Antenna Gain	Corrected Ampl.	FCC Part 74 Limit	FCC Part 74 Margin
MHz	dBm	Meter	H / V	dB	dB	dBm	dBm	dB
Low Channel, 1-3GHz								
273.70	-41.4	1.2	V	1.6	0	-40.0	-13	-27.0
363.40	-44.1	1.5	V	2.1	0	-42.3	-13	-29.3
457.80	-50.8	1.3	V	2.4	0	-48.6	-13	-35.6
826.10	-53.5	1.3	H	3.1	0	-50.2	-13	-37.2
826.10	-55.6	1.2	V	3.1	0	-52.3	-13	-39.3
92.40	-54.8	1.1	V	1.0	0	-53.9	-13	-40.9
363.40	-57.0	1.1	H	2.1	0	-55.2	-13	-42.2
641.20	-59.6	1.2	V	2.8	0	-56.7	-13	-43.7
457.80	-59.8	1.2	H	2.4	0	-57.6	-13	-44.6
641.20	-62.2	1.5	H	2.8	0	-59.3	-13	-46.3
273.70	-63.8	1.0	H	1.6	0	-62.4	-13	-49.4
92.40	-65.4	1.2	H	1.0	0	-64.5	-13	-51.5
Middle Channel, 1-3GHz								
309.60	-39.5	1.2	V	1.6	0	-37.9	-13	-24.9
309.60	-48.0	1.0	H	1.6	0	-46.4	-13	-33.4
411.60	-50.8	1.5	V	2.1	0	-48.7	-13	-35.7
513.50	-52.4	1.3	V	2.4	0	-50.0	-13	-37.0
717.90	-53.3	1.2	V	3.1	0	-50.2	-13	-37.2
615.70	-53.9	1.2	V	2.8	0	-51.1	-13	-38.1
102.20	-55.3	1.1	V	1.0	0	-54.3	-13	-41.3
717.90	-63.3	1.3	H	3.1	0	-60.2	-13	-47.2
411.60	-63.6	1.1	H	2.1	0	-61.5	-13	-48.5
513.50	-65.0	1.2	H	2.4	0	-62.6	-13	-49.6
102.20	-64.1	1.2	H	1.0	0	-63.1	-13	-50.1
615.70	-71.4	1.5	H	2.8	0	-68.6	-13	-55.6

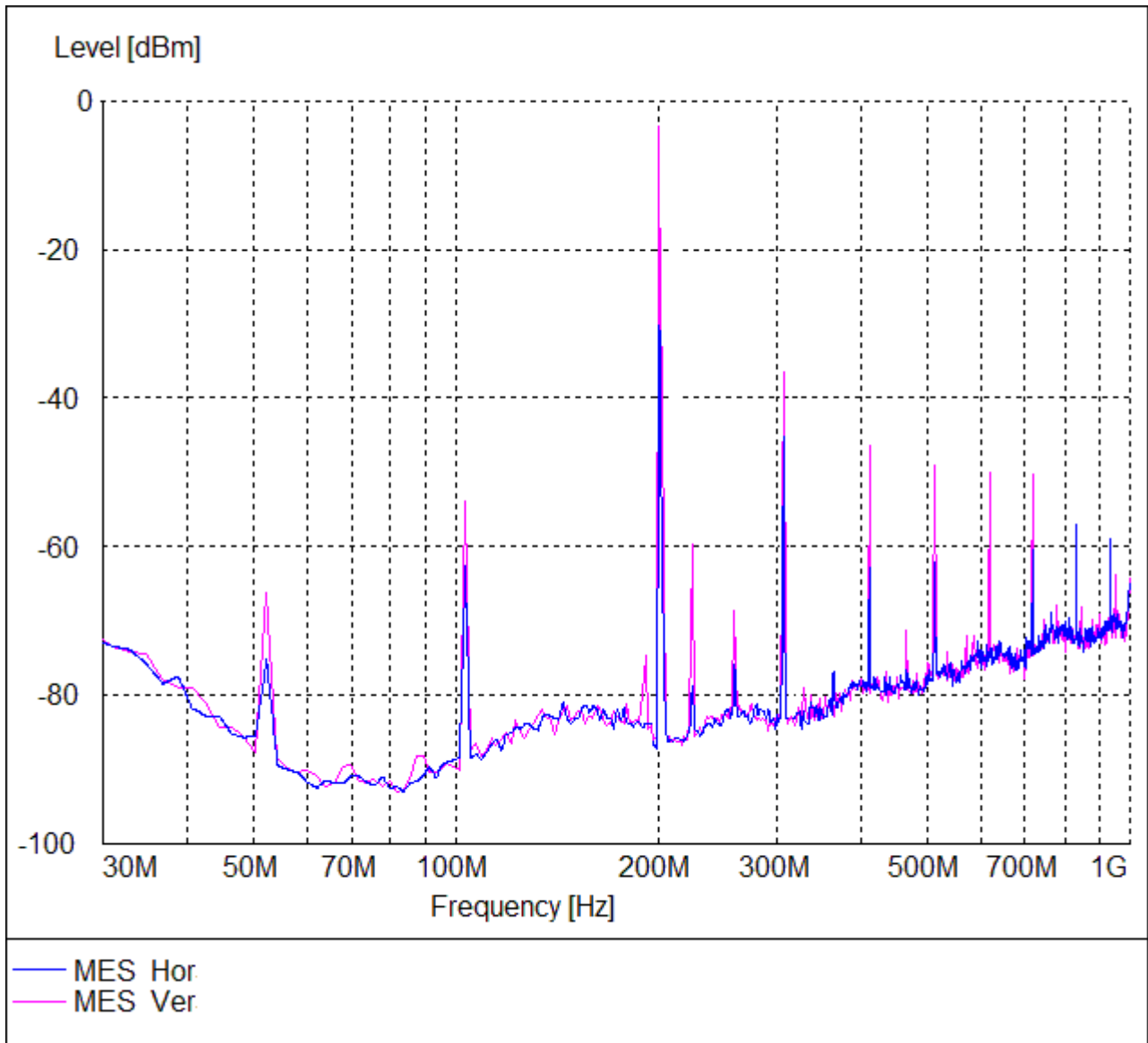
High Channel, 1-3GHz								
320.20	-33.0	1.2	V	1.7	0	-31.3	-13	-18.3
424.30	-42.9	1.5	V	2.1	0	-40.8	-13	-27.8
320.20	-46.3	1.0	H	1.7	0	-44.6	-13	-31.6
320.20	-46.3	1.1	V	1.7	0	-44.6	-13	-31.6
632.60	-48.0	1.2	V	2.8	0	-45.2	-13	-32.2
528.50	-48.2	1.3	V	2.5	0	-45.7	-13	-32.7
736.80	-56.0	1.2	V	3.1	0	-52.9	-13	-39.9
736.80	-64.3	1.3	H	3.1	0	-61.2	-13	-48.2
528.50	-64.5	1.2	H	2.5	0	-62.0	-13	-49.0
424.30	-65.2	1.1	H	2.1	0	-63.1	-13	-50.1
104.20	-64.1	1.2	H	1.0	0	-63.1	-13	-50.1
632.60	-71.2	1.5	H	2.8	0	-68.4	-13	-55.4

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics. Emissions undetected below the base noise are not reported.

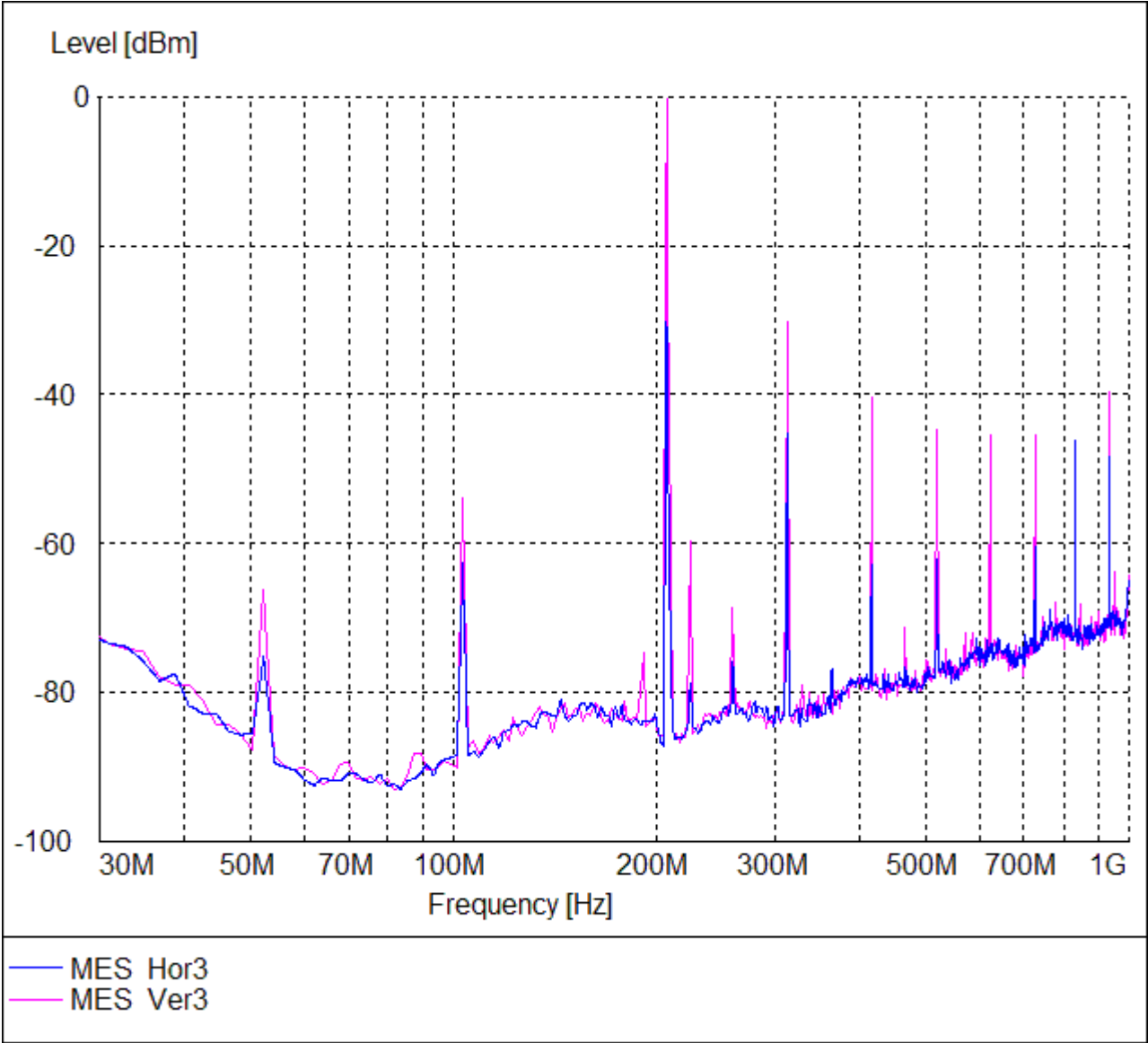
Low Channel:



Middle Channel:



High Channel:



## 7. §2.1051-SPURIOUS EMISSION AT ANTENNA TERMINAL

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### 7.1 Standard Applicable

According to §2.1051, the radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate.

### 7.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2006-06-30	2007-06-29
ETS	50 ohm Coaxial Cable	SUCOFLEX 104	25498514	2006-1-26	2007-1-25

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

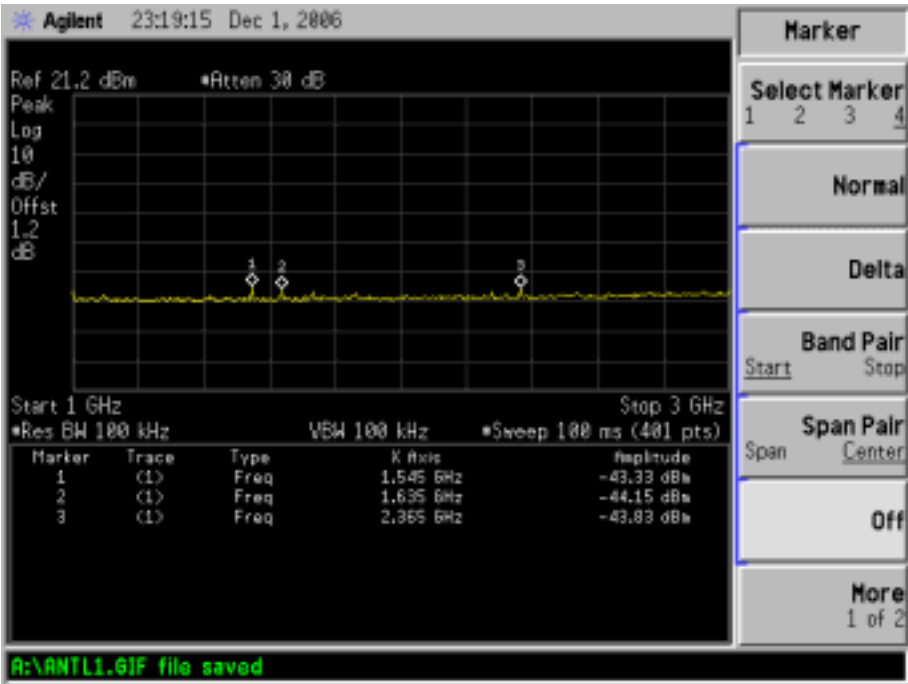
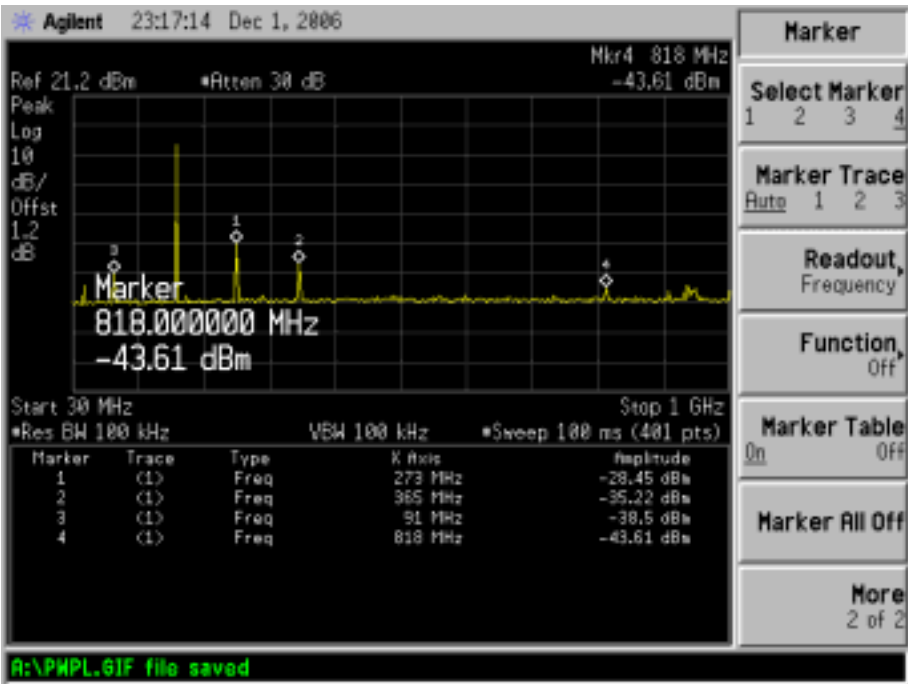
### 7.3 Test Procedure

Connect a suitable artificial antenna properly, set the Low, Middle and High Transmitting Channel, observed the spurious emissions from antenna port, and then mark the higher-level emission for comparing with the FCC rules.

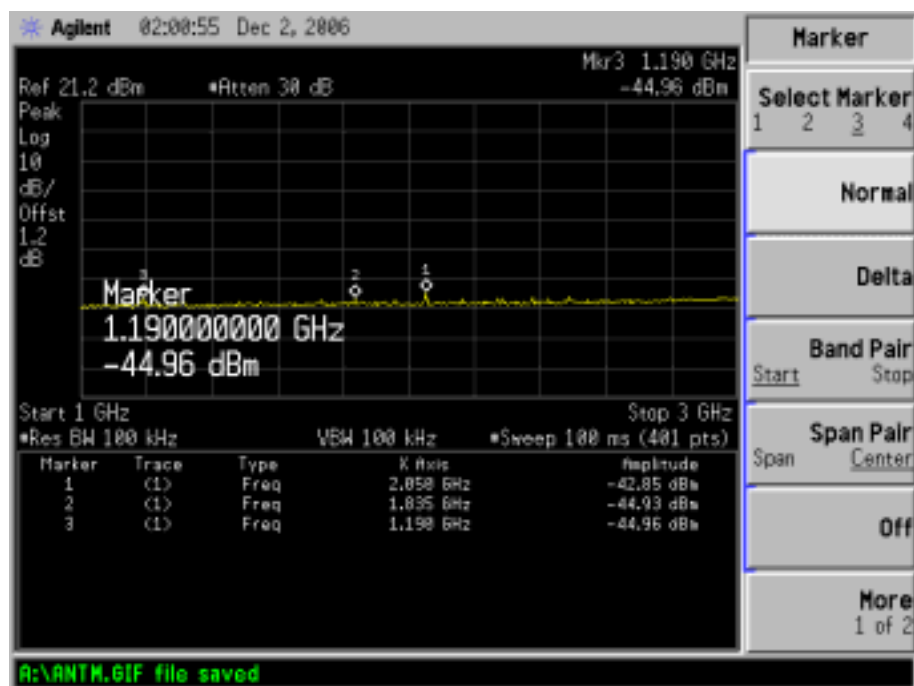
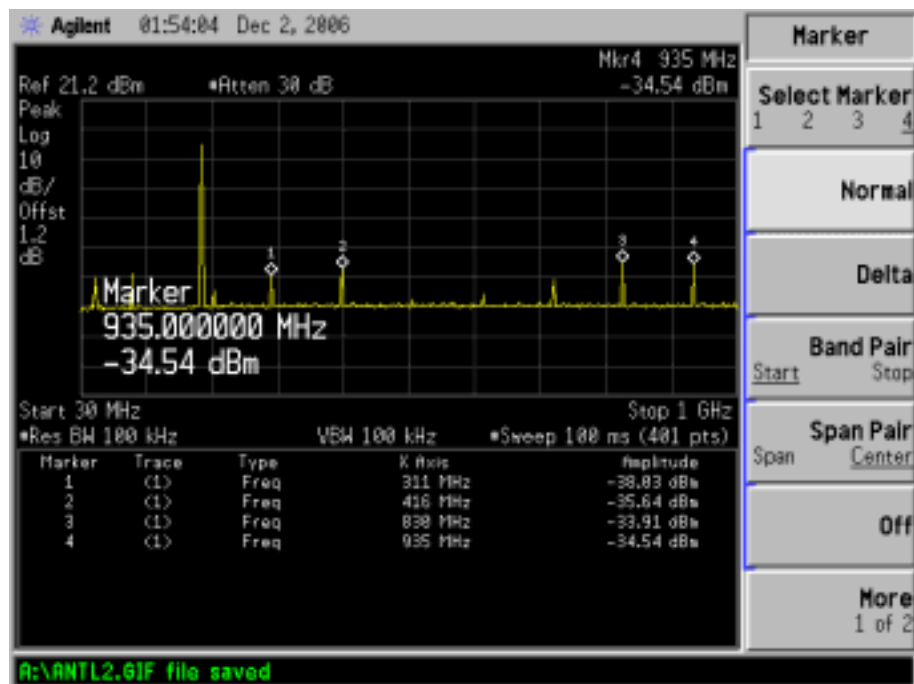
### 7.4 Summary of Test Results/Plots

Refer to the attached plots.

Lowest Channel:

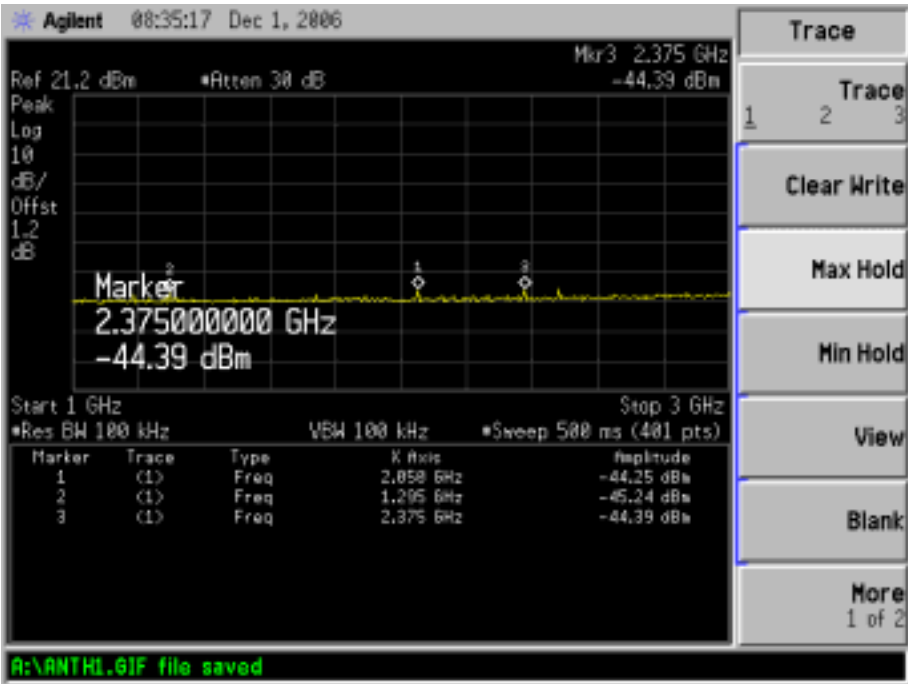
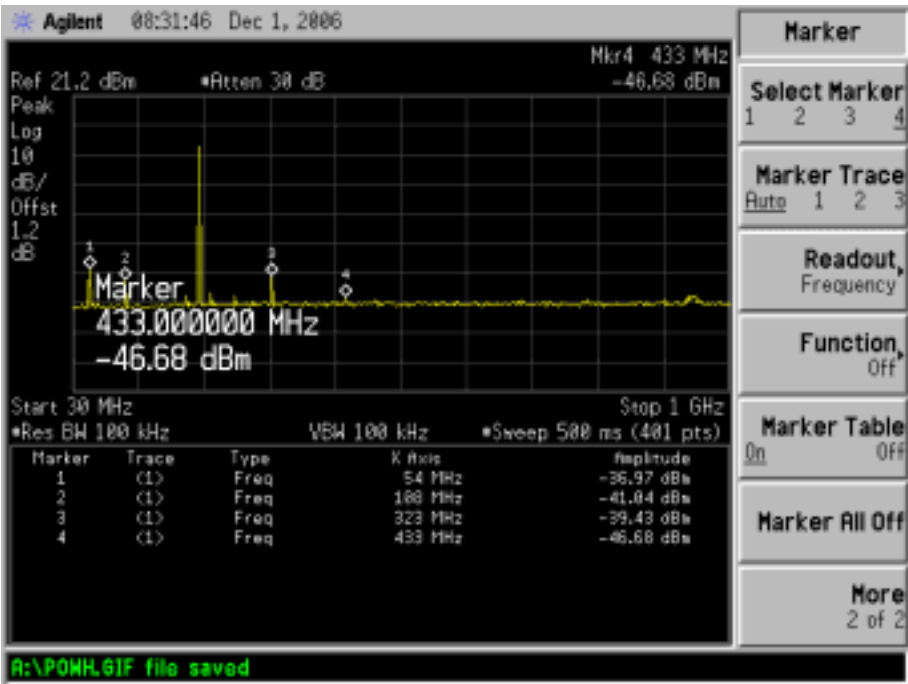


Middle Channel:





Highest Channel:



## 8. §74.86(e)(4) - FREQUENCY STABILITY MEASUREMENT

### 8.1 Standard Applicable

According to FCC 2.1055(a)(1), the frequency stability shall be measure with variation of ambient temperature from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ , and according to FCC 2.1055(d)(2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to FCC 74.861, the frequency tolerance of the transmitter shall be 0.005 percent.

### 8.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2006-06-30	2007-06-29
GONGWEN	Moisture Test Chamber	GDS-150	SEMT-0013	2006-06-30	2007-06-29

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 8.3 Test Procedure

1. Setup the configuration of the ambient temperature form  $-30^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  with sufficient time. And measure the different power of the EUT with an artificial power from highest to end point voltage.
2. Set frequency counter center frequency to the right frequency needs to be measured.

### 8.4 Test Results/Plots

Test conditions		Frequency Error (kHz)		
		181.7MHz	207.6MHz	215.8MHz
$T_{\text{nom}}(22^{\circ}\text{C})$	$V_{\text{nom}}(9.0\text{V})$	0.00438	0.00416	0.00352
$T_{\text{min}}(-30^{\circ}\text{C})$	$V_{\text{min}}(7.21\text{V})$	0.00432	0.00410	0.00360
	$V_{\text{max}}(10.35\text{V})$	0.00426	0.00422	0.00360
$T_{\text{max}}(+50^{\circ})$	$V_{\text{min}}(7.21\text{V})$	0.00426	0.00422	0.00358
	$V_{\text{max}}(10.35\text{V})$	0.00427	0.00420	0.00357
Max. frequency error (KHz)		0.00438	0.00422	0.00360
Limit		$\pm 0.005$		
End Point		DC 7.2V		

## EXHIBIT 1- PRODUCT LABELING

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### Proposed FCC ID Label Format

**FCC ID: UTMIXTWM100**

Specifications: Text is Black in color. Labels are printed in indelible ink on permanent adhesive silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT.

### Proposed Label Location on EUT

FCC ID Label Location



**EXHIBIT 2 - EUT EXTERNAL PHOTOGRAPHS**

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**EUT View**

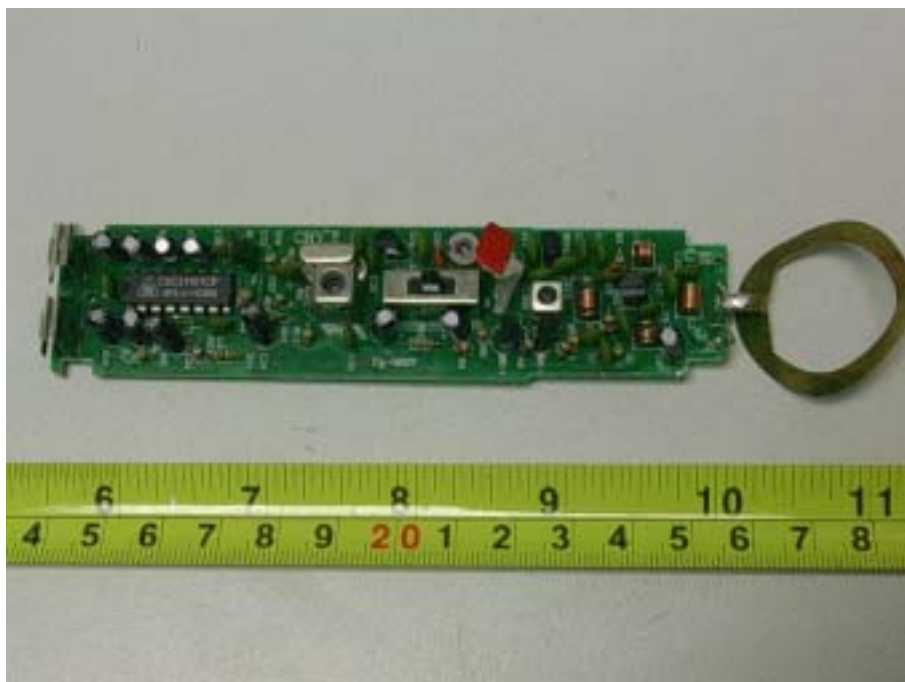
## EXHIBIT 3 - EUT INTERNAL PHOTOGRAPHS

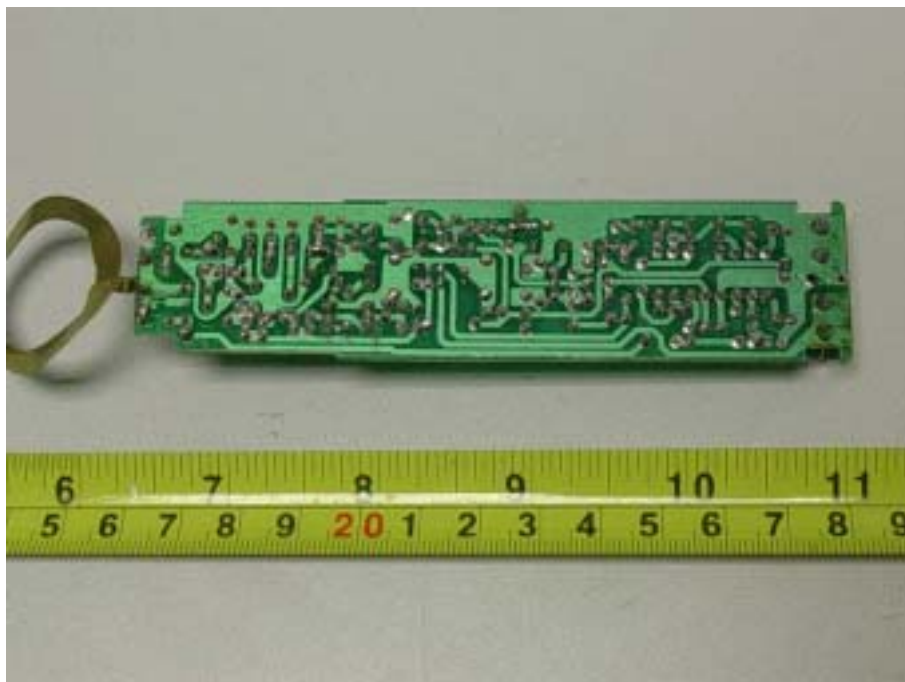
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### EUT Housing and Board View



### Solder Board-Component View 1

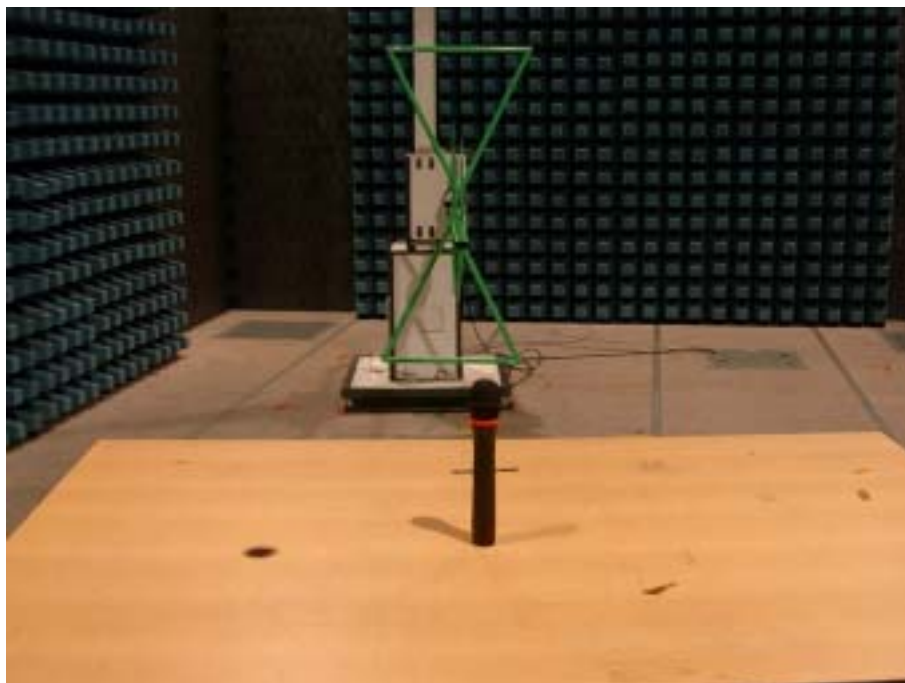


**Solder Board-Component View 2**

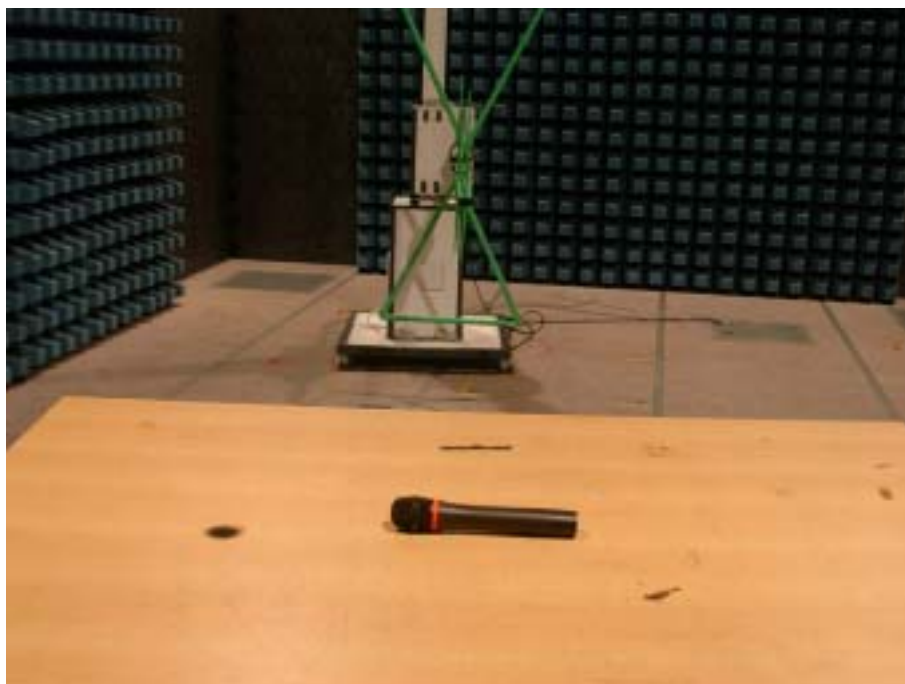
## EXHIBIT 4 - TEST SETUP PHOTOGRAPHS

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### Radiation Emission Test Setup 1



### Radiation Emission Test Setup 2





**Frequency Stability Test Setup**