FCC Part 15

TEST REPORT

For

SMHS Wireless Speaker (2.4G Transmitter)

Model Number: 256

Brand Name: Standardmerit

FCC ID: VXASMHS256-002

Report No.: SZAGC045071201E6

Date of Issue: Jan.25, 2008

Prepared For

Standard Merit USA LLC

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Prepared By

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VERIFICATION OF COMPLIANCE

Applicant:	Standard Merit USA LLC
Manufacturer	Rm E.Floor 18, JinRun Mansion 6019 Shenzhen Rd, Shenzhen City, P.R.China
Product Description:	SMHS Wireless Speaker (2.4G Transmitter)
Brand Name:	Standardmerit
Model Number:	256
FCC ID	VXASMHS256-002
Report Number:	SZAGC045071201E6
Date of Test:	Jan.2, 2008-Jan.24, 2008

WE HEREBY CERTIFY THAT:

The above equipment was tested by **Shenzhen Attestation of Global Compliance Science & Technology Co., Ltd.** The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4:2003 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 15.247.

Tested By: Tony Tian

Tony Tian Jan.25, 2008

Checked By: Randy He

Randy He Jan.25, 2008

Authorized By King Zhang

King Zhang Jan.25, 2008

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

The EUT is an short range, lower power, **2.4G Transmitter** designed as an “Communication Device”. It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following:

Operation Frequency	2.421GHz, 2.433GHz, 2.445GHz
Modulation	GFSK
Number of channels	3
Antenna Designation	Dedicated Antenna with Maximum -3.5 dBi
Power Supply	DC 5V By adapter

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: VXASMHS256-002 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

1.3 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:2003. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 TEST FACILITY

All measurement facilities used to collect the measurement data are located at
World Standardization Certification & Testing Co., Ltd.
1-2F, Dachong Science & Technology Building, No.28 of Tonggu Road, Nanshan District, Shenzhen,
P. R. China
FCC test site Registration Number: 276008

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

1.5 SPECIAL ACCESSORIES

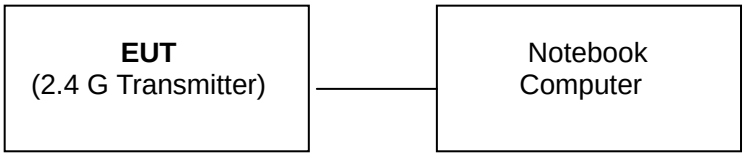
Not available for this EUT intended for grant.

1.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 CONFIGURATION OF TESTED SYSTEM



2.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1	2.4 G Transmitter	Standardmerit	256	VXASMHS256-002	--	--
2	Notebook	Asus	X80H	--	7AN0AS402251	--
3	Adapter	Acmexx	LY-SPA060-050030 0 JU	--	--	--

3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.107	Conducted Emission	Compliant
§15.247	Maximum Output Power	Compliant
§15.247	Maximum Power Density	Compliant
§15.247	Minimum 6 dB Bandwidth	Compliant
§15.247	Out of Band Conducted Output Power	Compliant
§15.247	Band Edge	Compliant

4. DESCRIPTION OF TEST MODES

(1) The EUT has been set to operate continuously on the lowest, the middle and the highest operation frequency individually.

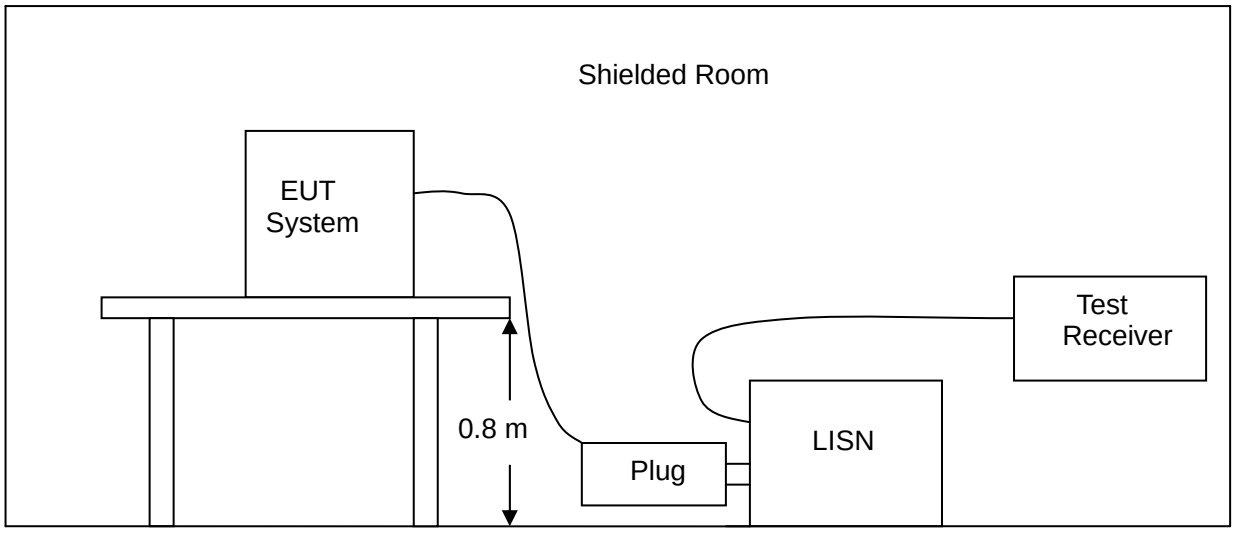
(2) The EUT stays in continuous transmitting mode on the operation frequency being set.

5. CONDUCTION EMISSIONS

5.1 MEASUREMENT PROCEDURE

(1) The equipment was set up as per the test configuration to simulate typical actual usage per the users manual. 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 ANSI C63.4:2003.
(2) Support equipment, if needed, was placed as per ANSI C63.4:2003.
(3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4:2003.
(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 AC power from a second LISN, 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 30MHz for emissions in each of the test modes.
(8) During the above scans, the emissions were maximized by cable manipulation.

5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



5.3 MEASUREMENT EQUIPMENT USED

CONDUCTED EMISSION TEST SITE # 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCS30	100343	2007/07	2008/07
LISN	AFJ	LS16	16010222119	2007/07	2008/07

5.4 LIMITS AND MEASUREMENT RESULT

(The chart below shows the highest readings taken from the final data)

Conducted Emission Test Result													
Frequency	Reading Level (dBuV)			Factor	Emission Level (dBuV)			Limits		Margin		Result	Remarks
(MHz)	Peak	Q.P.	Avg.	dB	Peak	Q.P.	Avg.	Q.P.	Avg.	Q.P.	Avg.	(P/F)	(L/N)
0.19	48.63	--	31.15	11.05	59.68	--	42.20	64.83	54.83	-5.15	-12.63	P	L
0.25	41.68	--	31.59	12.59	54.27	--	44.18	63.14	53.14	-8.87	-8.96	P	L
9.87	35.87	--	28.98	15.86	51.73	--	44.84	60	50	-8.27	-5.16	P	L
17.67	32.16	--	22.76	16.14	48.30	--	38.90	60	50	-11.70	-11.10	P	L
21.09	31.08	--	27.88	16.16	47.24	--	44.04	60	50	-12.76	-5.96	P	L
28.14	32.35	--	23.58	16.48	48.83	--	40.06	60	50	-11.17	-9.94	P	L
0.19	43.98	--	34.56	15.93	59.91	--	50.49	64.83	54.83	-4.92	-4.34	P	N
0.25	39.98	--	21.09	15.34	55.32	--	36.43	63.03	53.03	-7.71	-16.60	P	N
8.26	32.58	--	20.31	15.68	48.26	--	35.99	60	50	-11.74	-14.01	P	N
14.57	32.96	--	20.14	16.12	49.08	--	36.26	60	50	-10.92	-13.74	P	N
19.68	32.41	--	18.76	16.52	48.93	--	35.28	60	50	-11.07	-14.72	P	N
23.68	32.15	--	20.11	16.24	48.39	--	36.35	60	50	-11.61	-13.65	P	N

L = Line One (Hot side) / N = Line Two (Neutral side)

****NOTE:**

1) Freq. = Emission frequency in MHz

2) Reading level = Uncorrected Analyzer/Receiver reading

3) Factor = Cable loss + LISN inserting loss

4) Emission level = Reading level + Factor

5) Limit = Limit stated in standard

6) Margin = Reading in reference to limit

7) "---" = The emission level complied with the Average limits, with at least 2 dB margin, so no further recheck.

6. MAXIMUM OUTPUT POWER

6.1 MEASUREMENT 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 than 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.

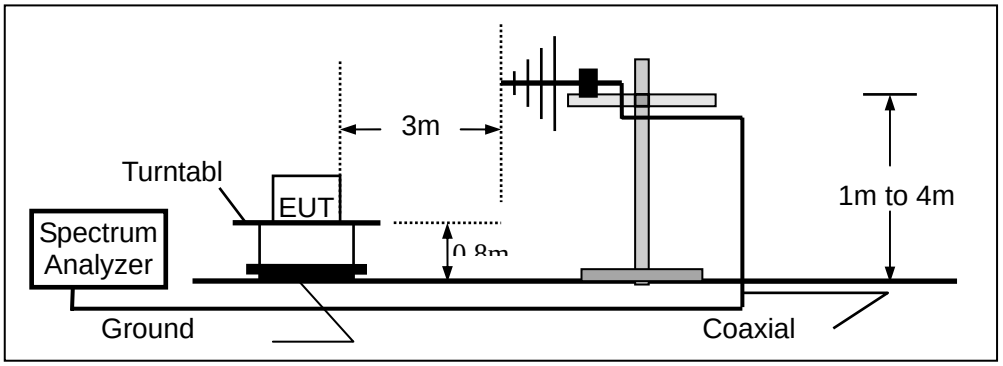
(14). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

(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.

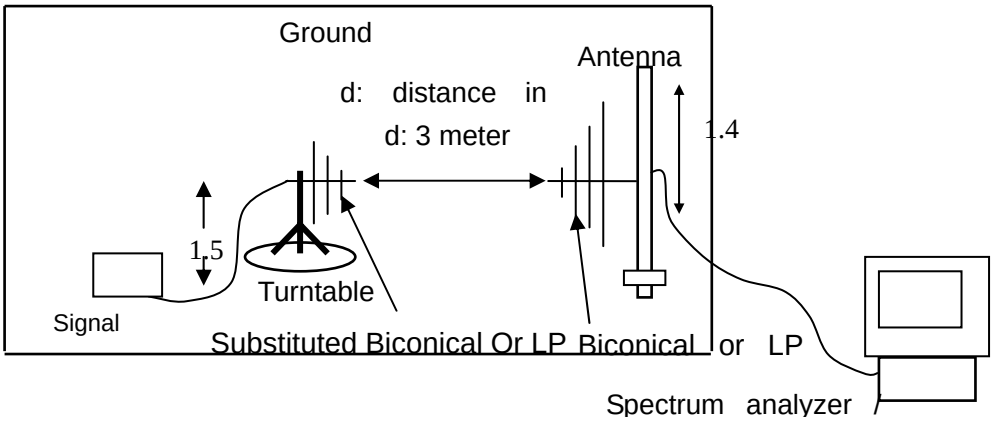
(16). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

(17). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

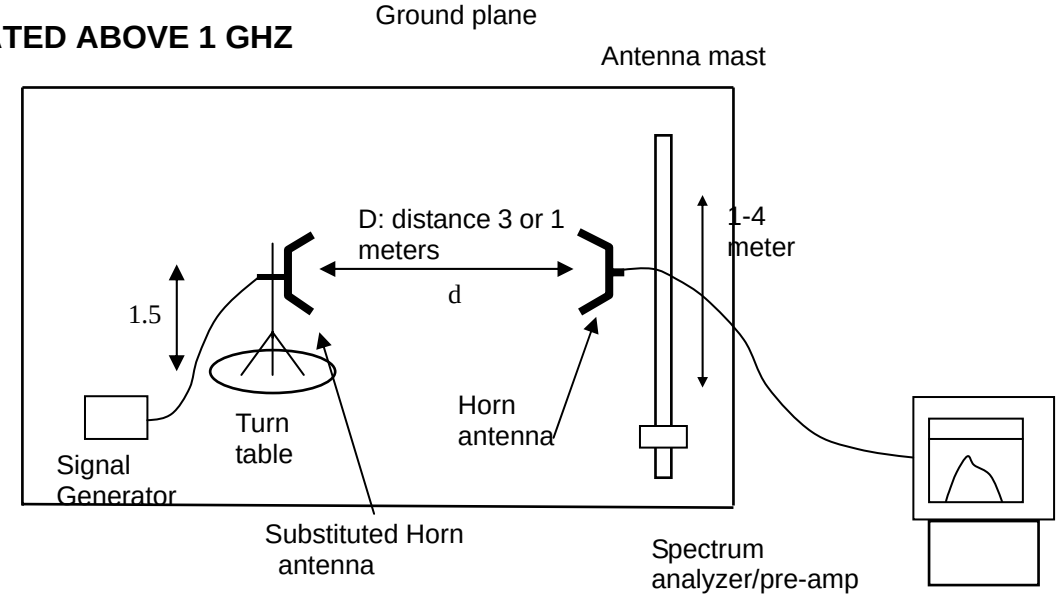
6.2 TEST SET-UP



SUBSTITUTION METHOD: (RADIATED EMISSIONS)
RADIATED BELOW 1GHZ



RADIATED ABOVE 1 GHZ



6.3 MEASUREMENT EQUIPMENT USED

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.
EMI test receiver	R&S	ESCS30	100343	2007-07-29
SPECTRUM ANALYZER	AGILENT	8593E	--	2008-02-06
Amplifier	H.P.	HP8447E	2945A02715	2007-08-08
Antenna	Sunol Science Corp.	JB3	A021907	2007-06-09

6.4 LIMITS AND MEASUREMENT RESULT

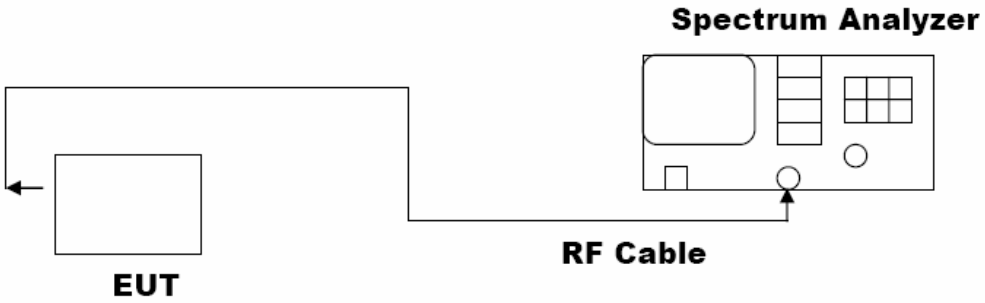
LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Frequency	Measurement Result	
		ERP(dBm)	Criteria
30 dBm	2.421GHz	1.54	PASS
30 dBm	2.433GHz	1.43	PASS
30 dBm	2.445GHz	1.39	PASS

7. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

7.1 MEASUREMENT PROCEDURE

(1). The EUT was placed on a turn table which is 0.8m above ground plane.
(2). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
(3), Set the EUT Work on the top, the middle and the bottom operation frequency individually.
(4). Set SPA Centre Frequency = Operation Frequency, RBW= 3 KHz,
VBW= 10 KHz., Sweep time= Auto
(5). Set SPA Trace 1 Max hold, then View.

7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



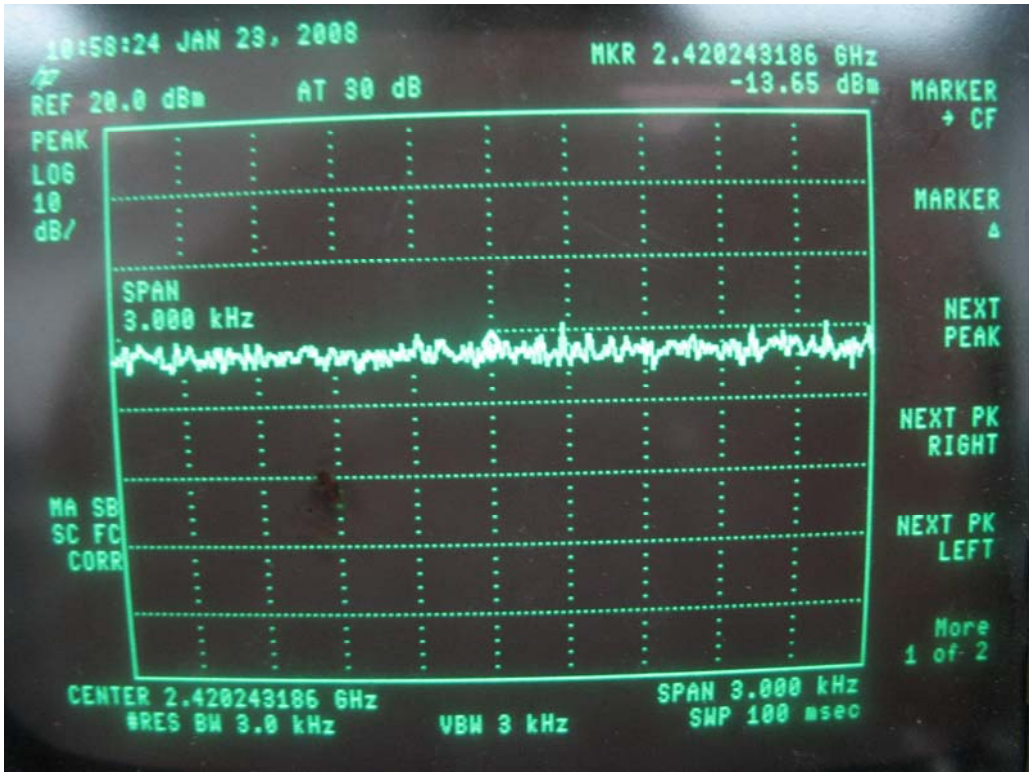
7.3 MEASUREMENT EQUIPMENT USED

SHIELDING ROOM					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
SPECTRUM ANALYZER	AGILENT	E4446A	US44300399	2008-02-06	2009-02-05

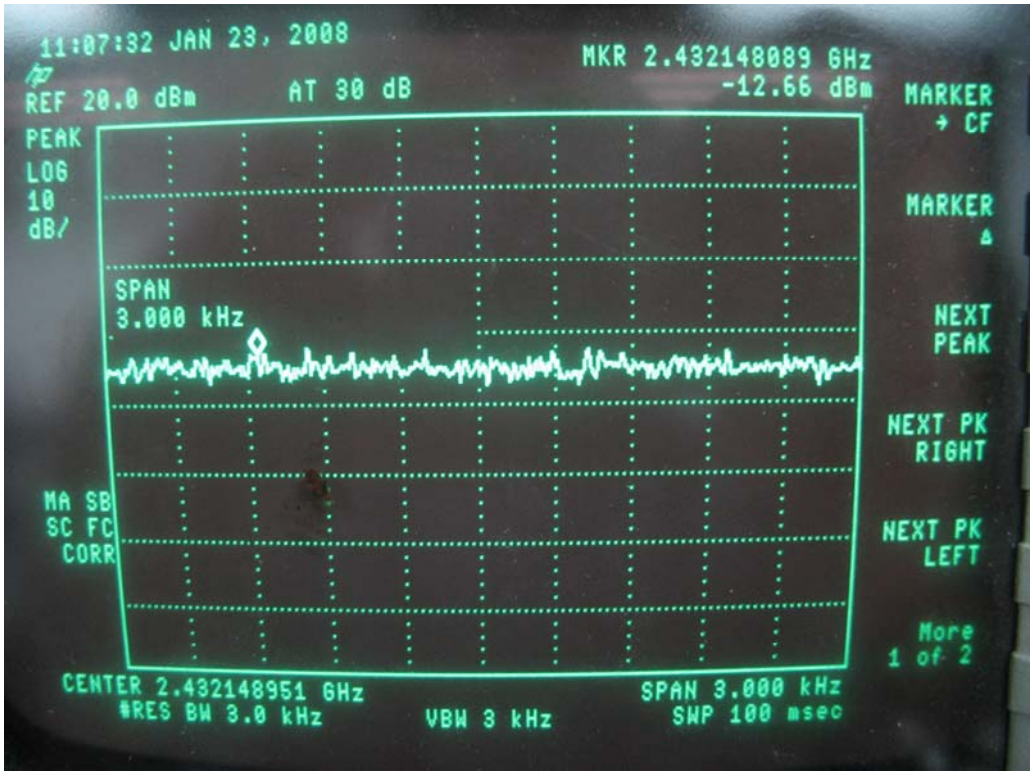
7.4 LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (dBm/3KHz)		Criteria
8 dBm / 3KHz	Bottom Channel	-13.65	PASS
	Middle Channel	-12.66	PASS
	Top Channel	-13.88	PASS

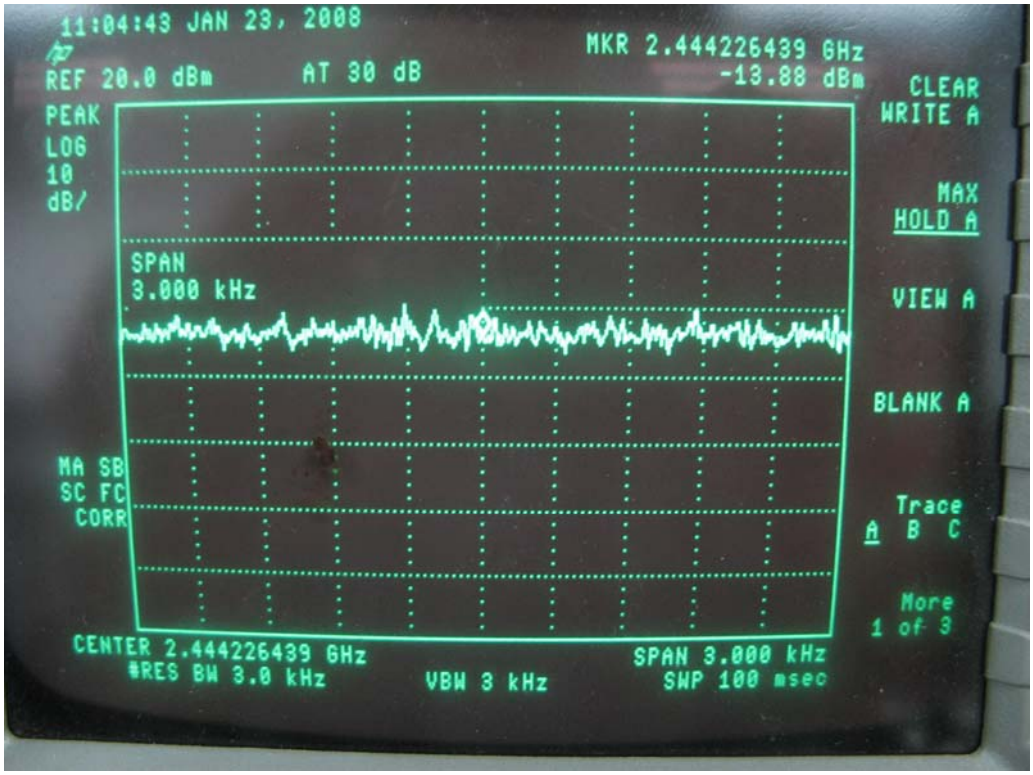
TEST PLOT OF SPECTRAL DENSITY – BOTTOM CHANNEL



TEST PLOT OF SPECTRAL DENSITY – MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY – TOP CHANNEL



8. MINIMUM 6 DB BANDWIDTH

8.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 1MHz,
   VBW= 1 MHz.
4. Set SPA Trace 1 Max hold, then View.

8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The Same as described in Section 7.2

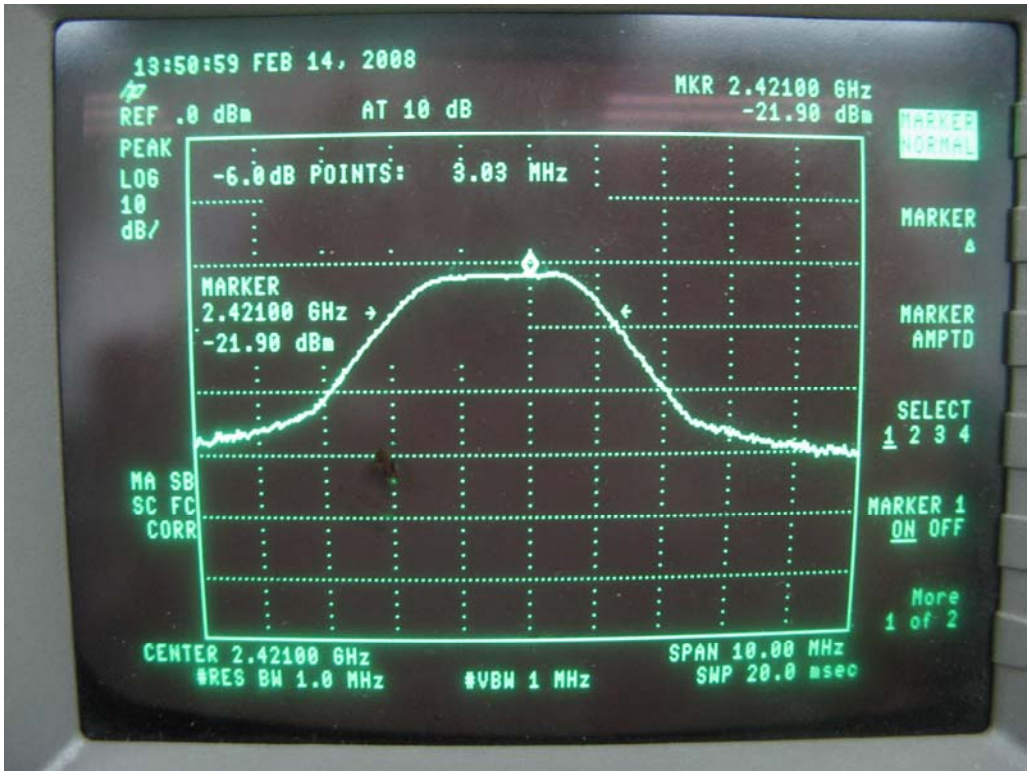
8.3 MEASUREMENT EQUIPMENT USED

The same as described in Section 7.3

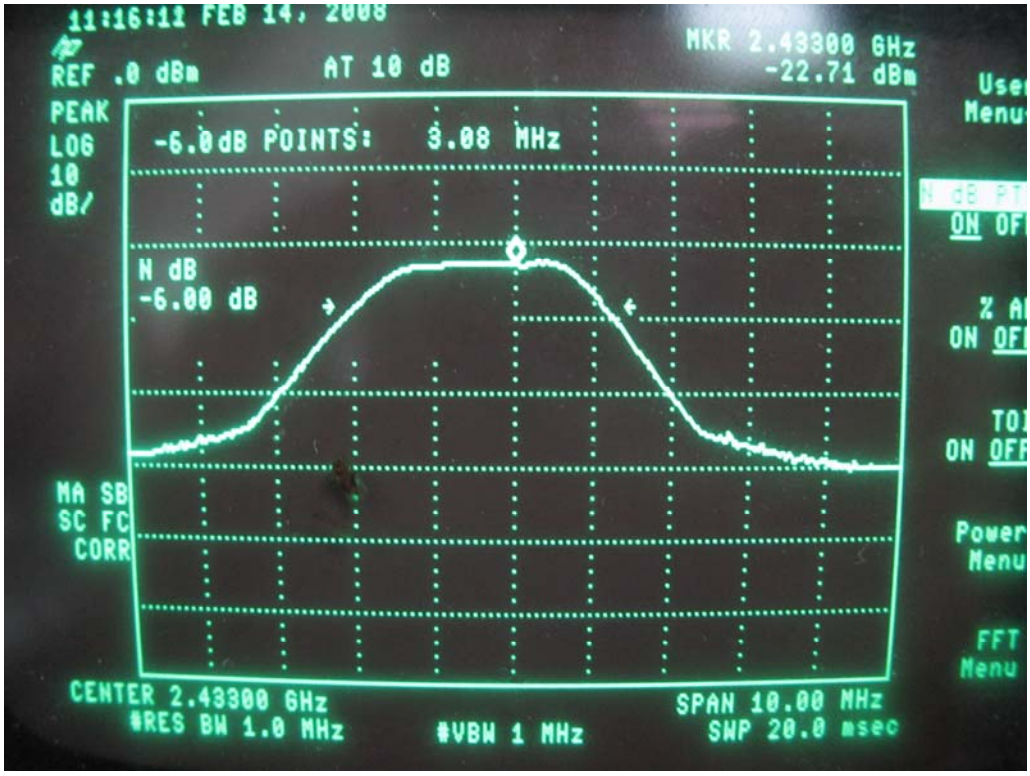
8.4 LIMITS AND MEASUREMENT RESULTS

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
> 500 KHz	Bottom Channel	3.03	PASS
	Middle Channel	3.08	PASS
	Top Channel	2.95	PASS

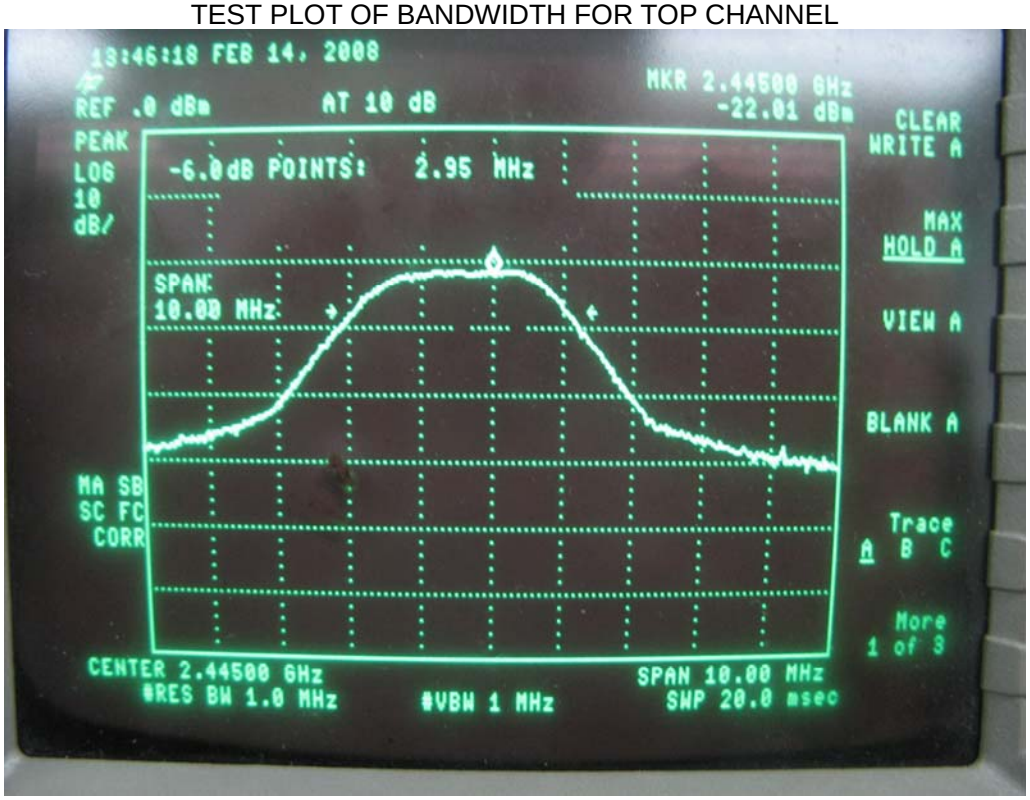
TEST PLOT OF BANDWIDTH FOR BOTTOM CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR TOP CHANNEL



9. OUT OF BAND EMISSION

9.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3, Set the EUT Work on the top and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW= 100 KHz.
4. Set SPA Trace 1 Max hold, then View.

9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The Same as described in section 7.2

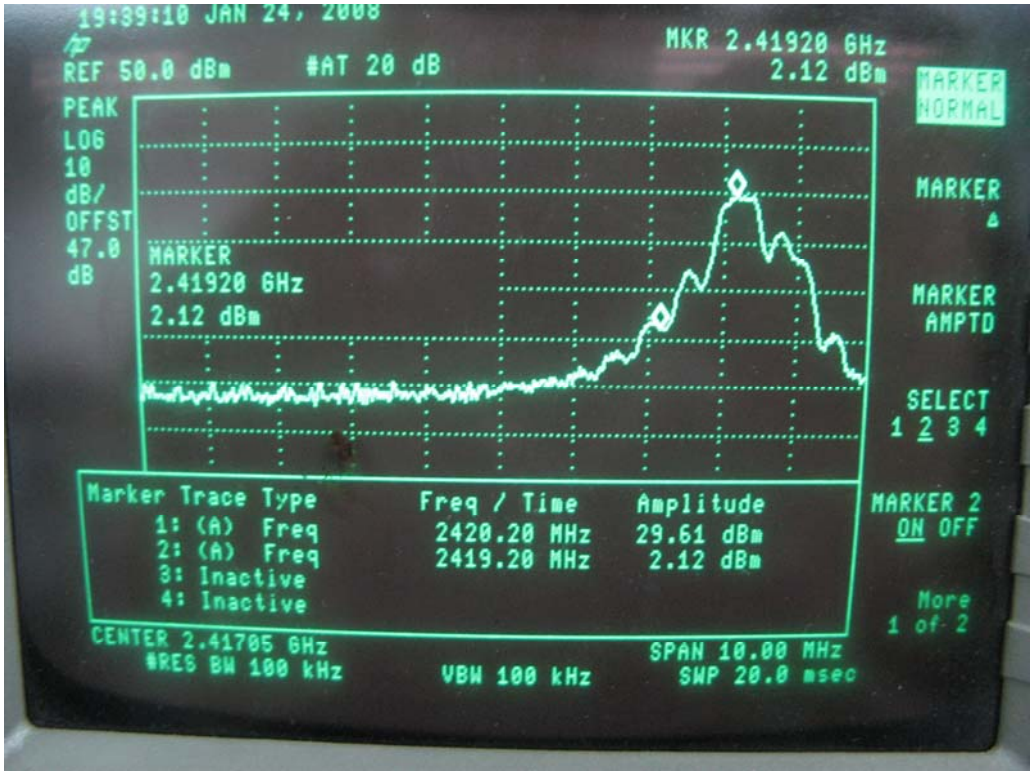
9.3 MEASUREMENT EQUIPMENT USED

The Same as described in section 6.3

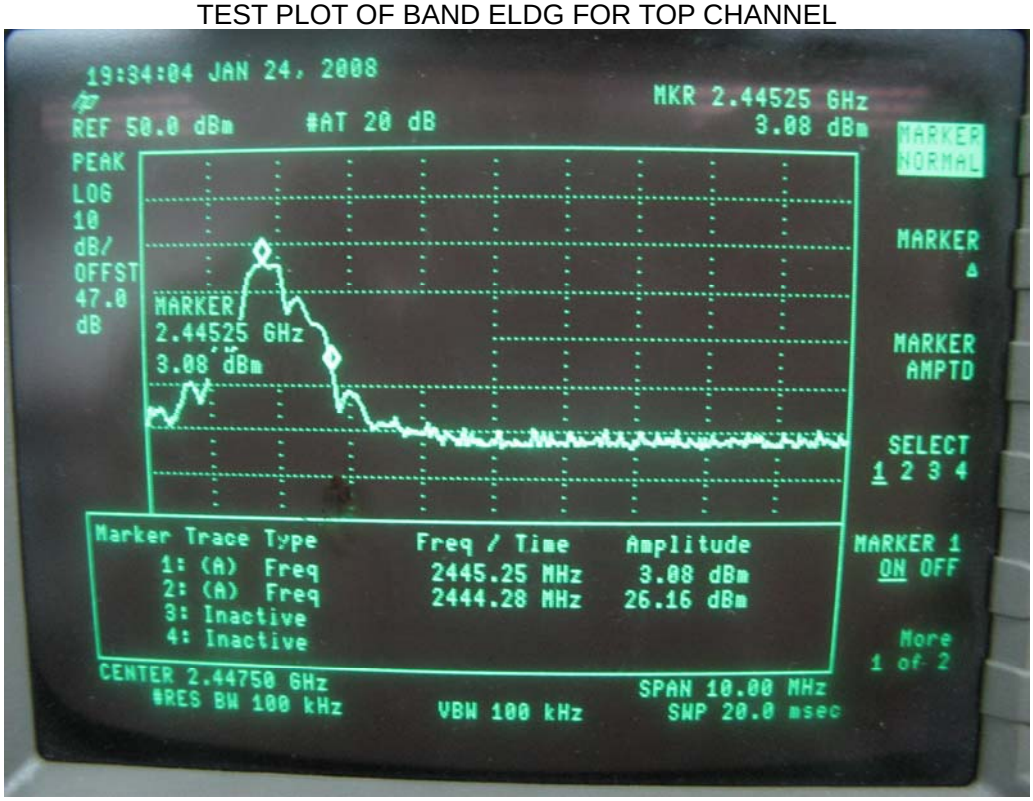
9.4 LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -20dBc than the limit Specified on the TOP Channel	PASS

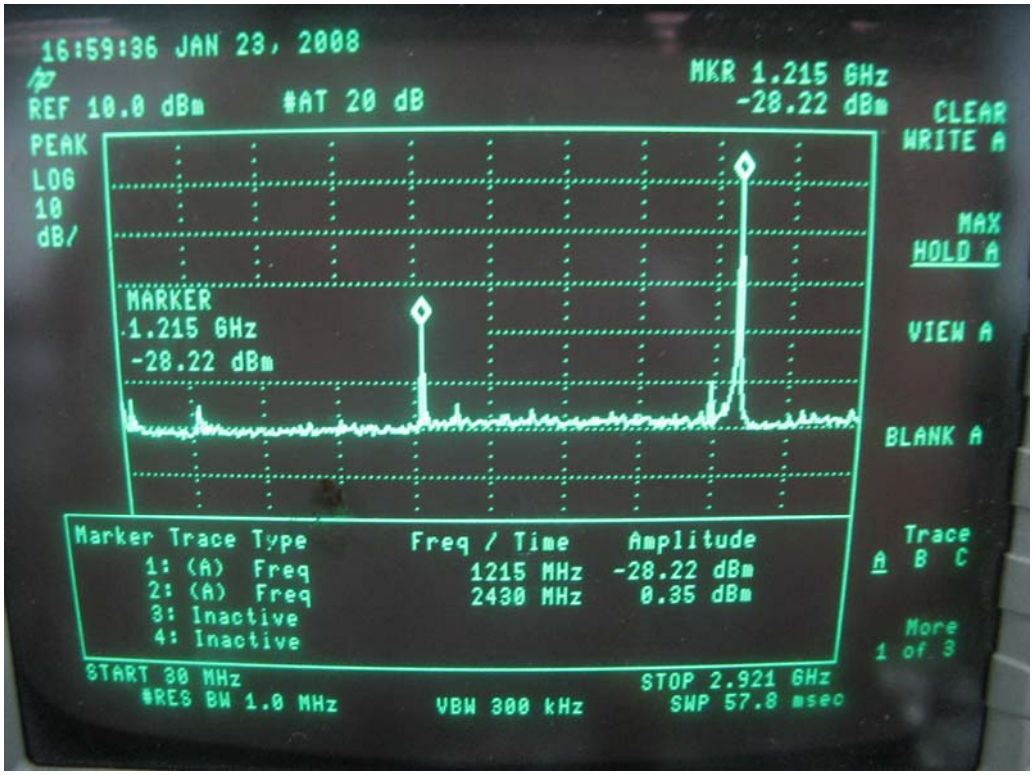
TEST PLOT OF BAND ELDG FOR BOTTOM CHANNEL



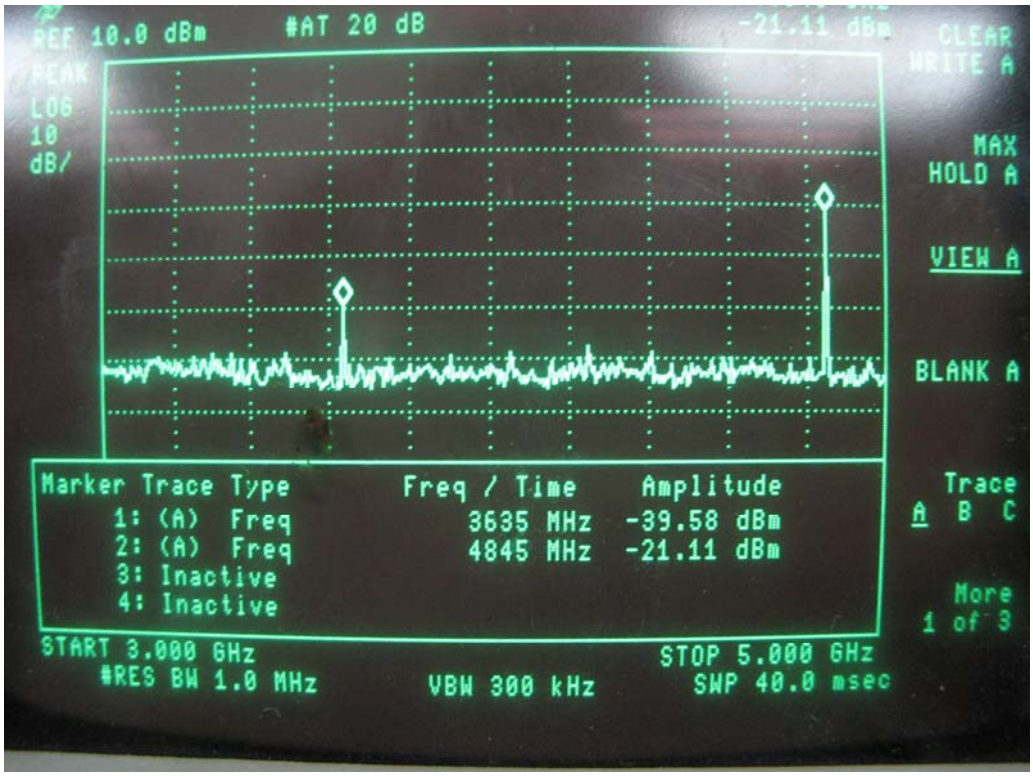
TEST PLOT OF BAND ELDG FOR TOP CHANNEL



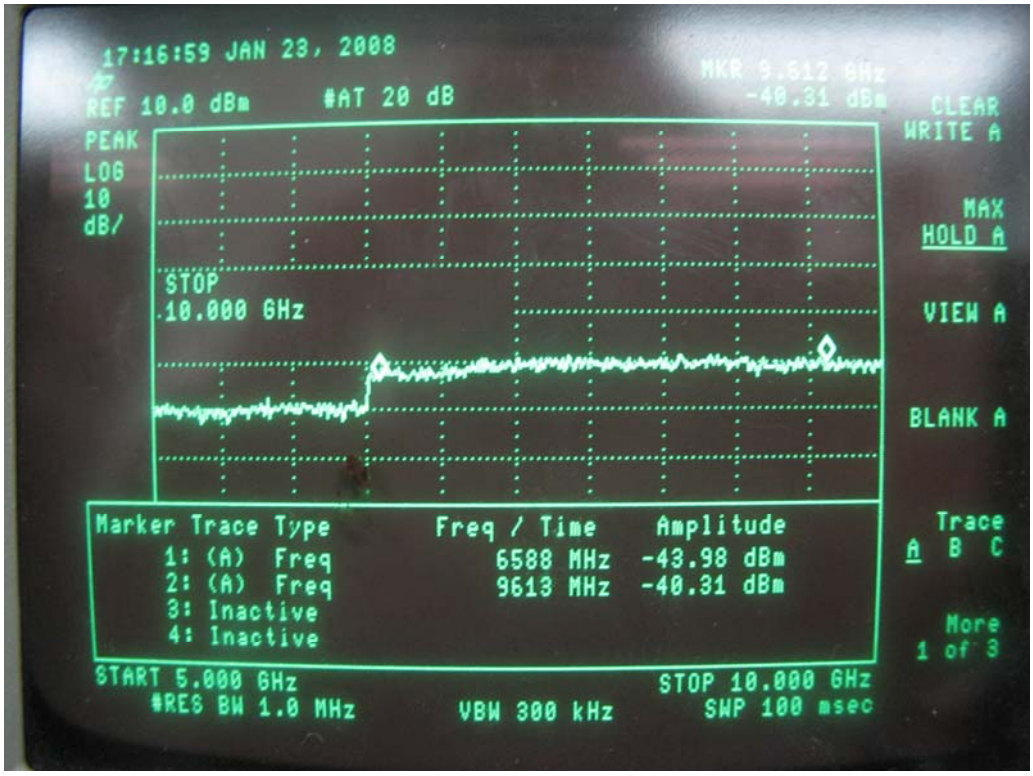
TEST PLOT OF OUT OF BAND EMISSIONS FOR **BOTTOM CHANNEL** - 1



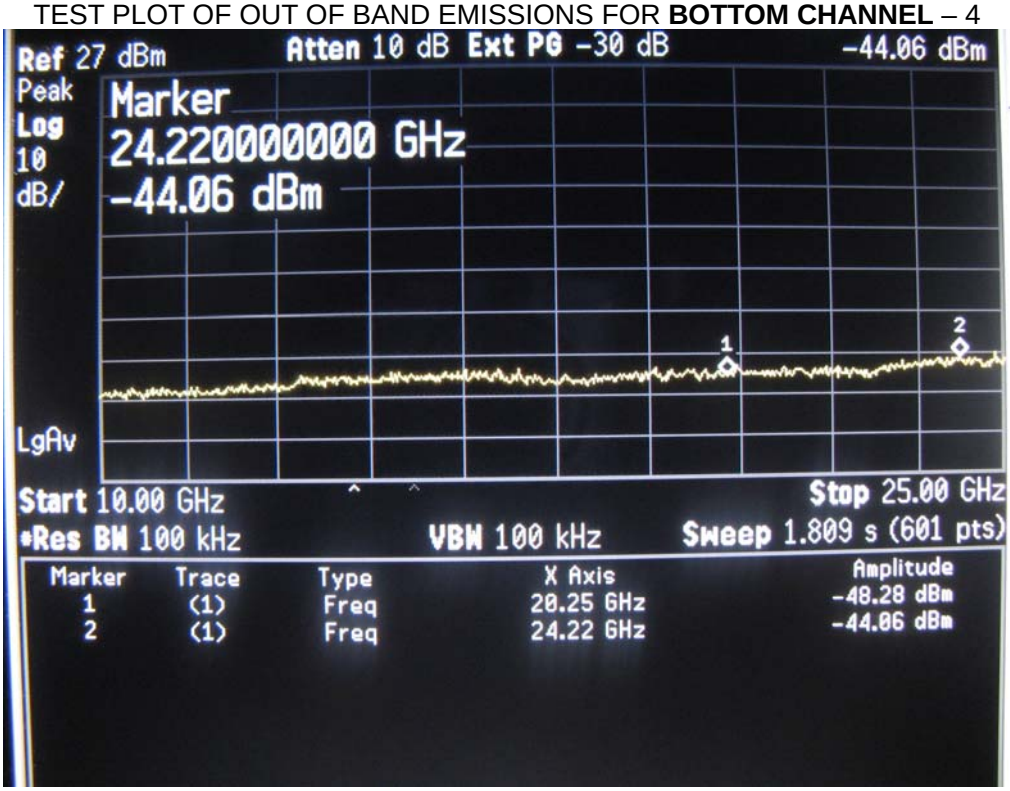
TEST PLOT OF OUT OF BAND EMISSIONS FOR **BOTTOM CHANNEL** – 2



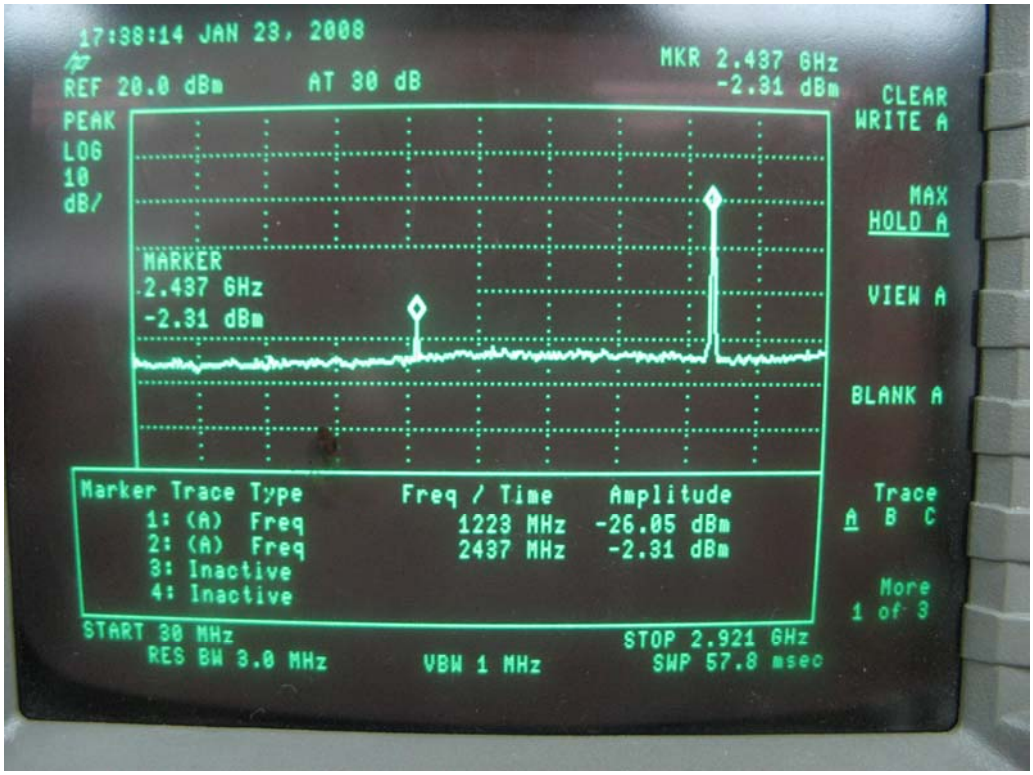
TEST PLOT OF OUT OF BAND EMISSIONS FOR **BOTTOM CHANNEL** – 3



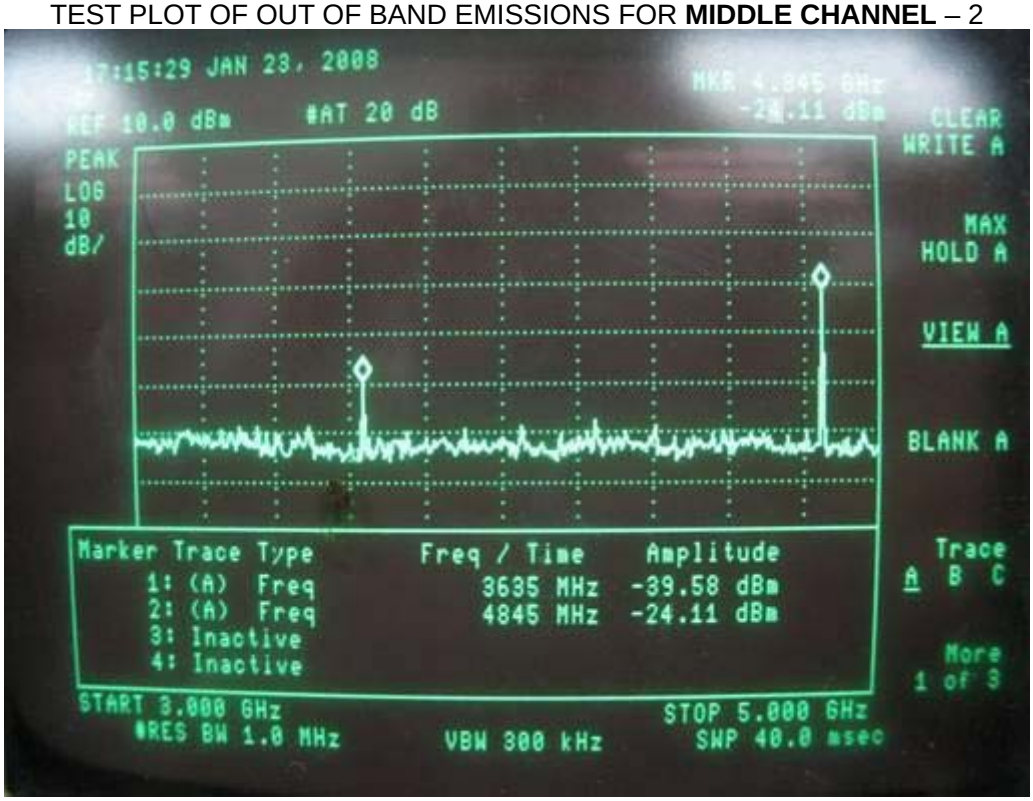
TEST PLOT OF OUT OF BAND EMISSIONS FOR **BOTTOM CHANNEL** – 4



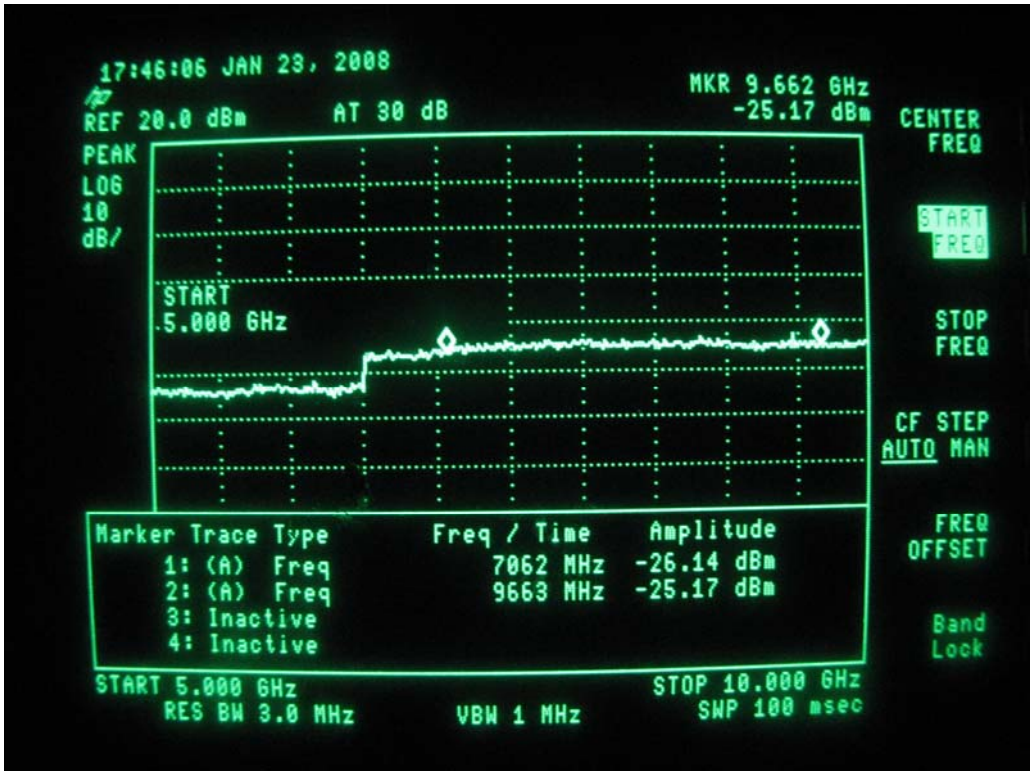
TEST PLOT OF OUT OF BAND EMISSIONS FOR **MIDDLE CHANNEL** – 1



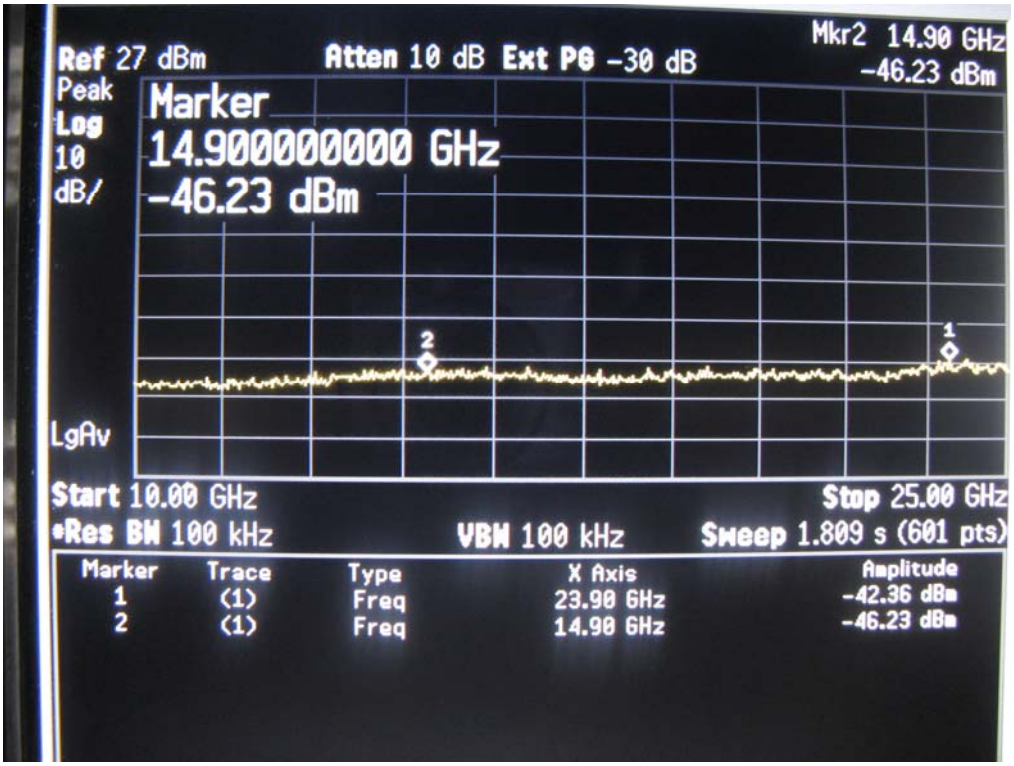
TEST PLOT OF OUT OF BAND EMISSIONS FOR **MIDDLE CHANNEL** – 2



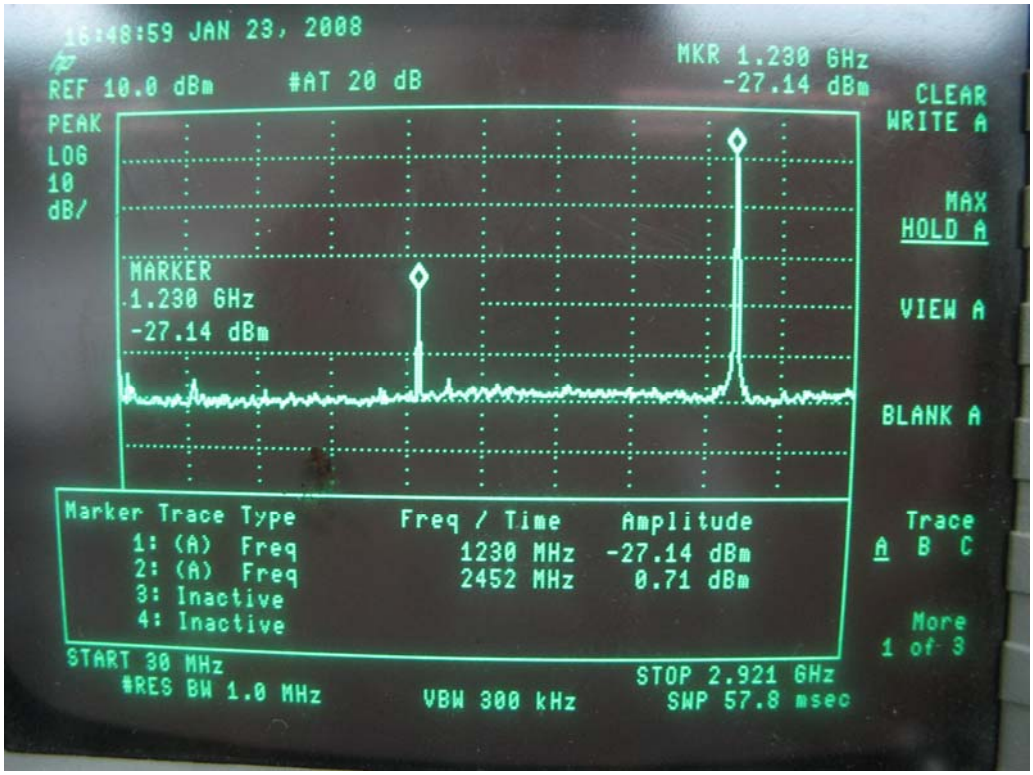
TEST PLOT OF OUT OF BAND EMISSIONS FOR **MIDDLE CHANNEL** – 3



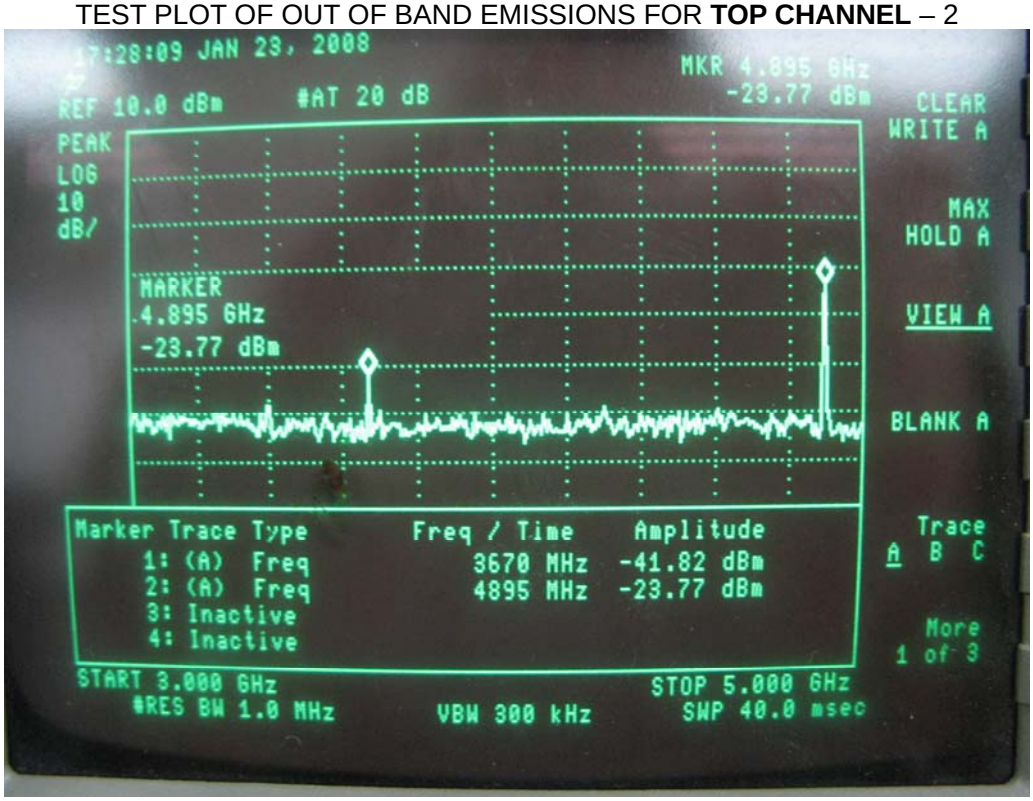
TEST PLOT OF OUT OF BAND EMISSIONS FOR **MIDDLE CHANNEL** – 4



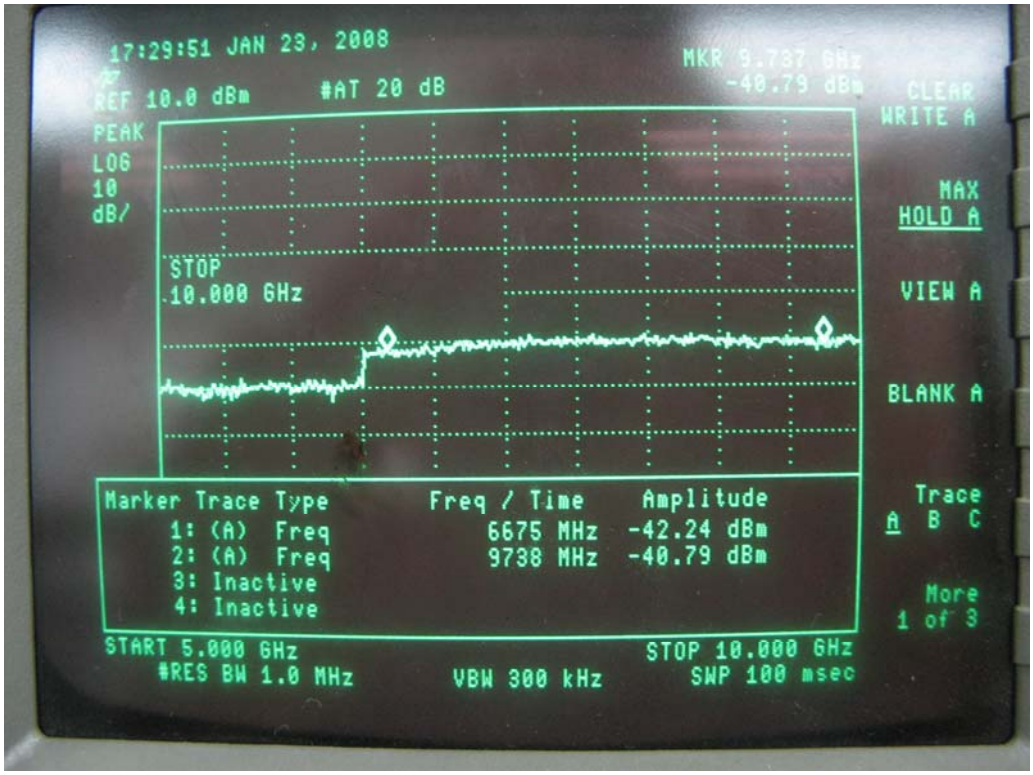
TEST PLOT OF OUT OF BAND EMISSIONS FOR **TOP CHANNEL** – 1



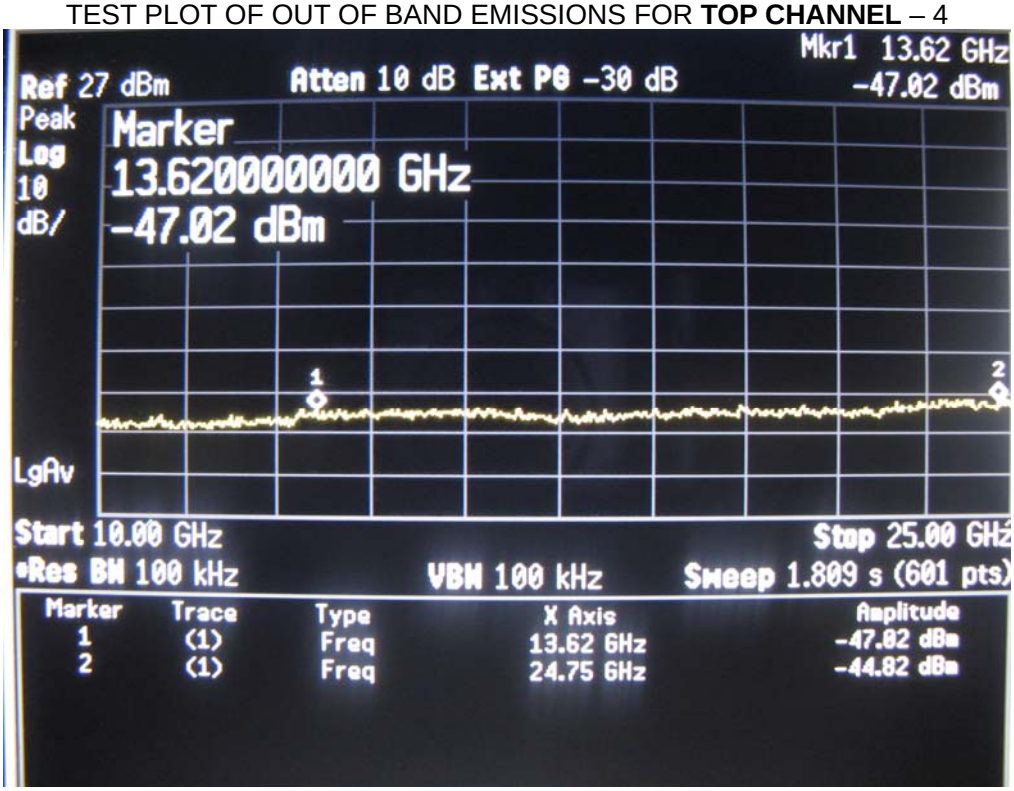
TEST PLOT OF OUT OF BAND EMISSIONS FOR **TOP CHANNEL** – 2



TEST PLOT OF OUT OF BAND EMISSIONS FOR **TOP CHANNEL** – 3



TEST PLOT OF OUT OF BAND EMISSIONS FOR **TOP CHANNEL** – 4

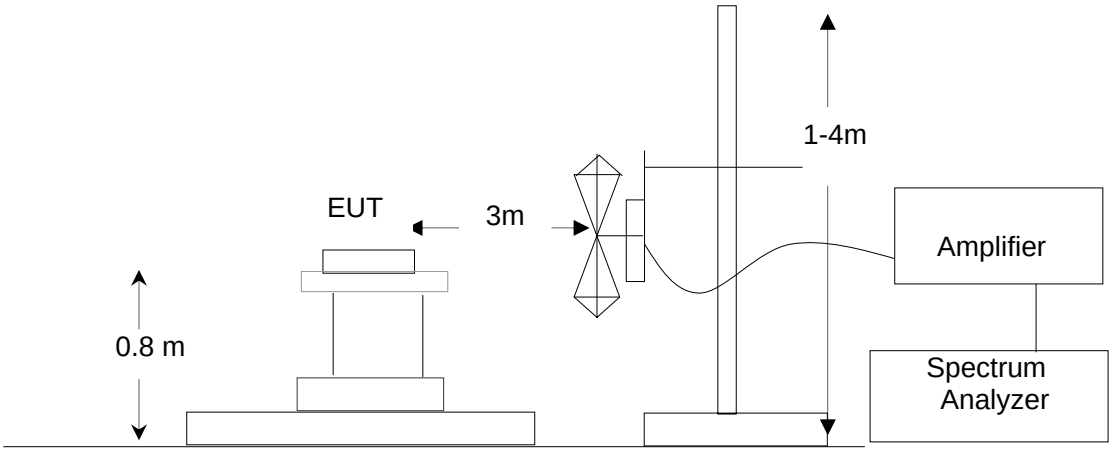


10. RADIATED EMISSION TEST

10. 1 MEASUREMENT PROCEDURE

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 turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4:2003 (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 ANSI C63.4:2003.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4:2003.
4. The EUT received DC5V from the adapter. All support equipments received AC 120V/60Hz power from socket under the turntable, if any.
5. The antenna was placed at 3 meter away from the EUT as stated in FCC Part 15. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
6. The Analyzer / Receiver quickly scanned from 30MHz to 8000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



10.3MEASUREMENT EQUIPMENT USED

3m semi-anechoic chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
EMI test receiver	R&S	ESCS30	100343	2007-07-29	2008-07-28
SPECTRUM ANALYZER	AGILENT	8593E	--	2008-02-06	2009-02-05
Amplifier	H.P.	HP8447E	2945A02715	2007-08-08	08/07/2008
Antenna	Sunol Science Corp.	JB3	A021907	2007-06-09	2008-06-08
ULTRA-BROADBAND ANTENNA	R & S	HL562	100015	2007-06-09	2008-06-08

10.4 LIMITS AND TEST RESULT

Emission for Bottom/Middle/Top Channel Below 1GHz						
Frequency	Antenna Pol.	Field Strength	Field Strength	Limit (PK)	Limit (AV)	Memo
MHz	H/V	dBuV/m (PK)	dBuV/m (AV)	dBuV/m	dBuV/m	
--	H/V	--	--	--	--	*
--	H/V	--	--	--	--	*
--	H/V	--	--	--	--	*
--	H/V	--	--	--	--	*

Restricted Band Emission for Bottom Channel						
Frequency	Antenna Pol.	Field Strength	Field Strength	Limit (PK)	Limit (AV)	Memo
GHz	H/V	dBuV/m (PK)	dBuV/m (AV)	dBuV/m	dBuV/m	
4.84	H	57.37	37.89	74	54	*
4.84	V	58.09	41.09	74	54	*
4.84-25	H	--	--	74	54	*
4.84-25	V	--	--	74	54	*

Restricted Band Emission for Middle Channel						
Frequency	Antenna Pol.	Field Strength	Field Strength	Limit (PK)	Limit (AV)	Memo
GHz	H/V	dBuV/m (PK)	dBuV/m (AV)	dBuV/m	dBuV/m	
4.87	H	52.12	38.76	74	54	*
4.87	V	60.12	42.33	74	54	*
7.29	H	64.39	38.87	74	54	*
7.29	V	61.90	37.98	74	54	*
7.29-25	H	--	--	74	54	
7.29-25	V	--	--	74	54	

Restricted Band Emission for Top Channel						
Frequency	Antenna Pol.	Field Strength	Field Strength	Limit (PK)	Limit (AV)	Memo
GHz	H/V	dBuV/m (PK)	dBuV/m (AV)	dBuV/m	dBuV/m	
4.89	H	49.02	32.15	74	54	*
4.89	V	56.76	37.12	74	54	*
7.34	H	58.26	47.09	74	54	*
7.34	V	53.76	40.87	74	54	*
7.34-25	H	--	--	74	54	*
7.34-25	V	--	--	74	54	*

Note: "--" Indicated the test value is much lower to limit.

APPENDIX 1

PHOTOGRAPHS OF SET UP

RADIATED EMISSION TEST SETUP

CONDUCTED EMISSION TEST SETUP

APPENDIX 2

PHOTOGRAPHS OF EUT

TOP VIEW OF EUT

BOTTOM VIEW OF EUT

LEFT VIEW OF EUT

RIGHT VIEW OF EUT

FRONT VIEW OF EUT

BACK VIEW OF EUT

----END OF REPORT----