

FCC PART 15.239
MEASUREMENT AND TEST REPORT
FOR

HK HONGSHENG TECH LTD.

**3rd Floor, 14 Building, Jindi Industrial Zone, Futian District,
Shenzhen, China**

FCC ID: XLEH165

Report Concerns: Original Report	Equipment Type: FM TRANSMITTER																		
<table style="width: 100%;"><tr><td style="width: 40%;">Model:</td><td><u>H165</u></td></tr><tr><td>Report No.:</td><td><u>STR09078028I</u></td></tr><tr><td>Test/Witness Engineer:</td><td></td></tr><tr><td>Test Date:</td><td><u>2010-07-07 to 2009-07-20</u></td></tr><tr><td>Issue Date:</td><td><u>2009-07-22</u></td></tr><tr><td>Prepared By:</td><td></td></tr><tr><td colspan="2" style="text-align: center;">SEM.Test Compliance Service Co., Ltd 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C. (518101)</td></tr><tr><td>Approved & Authorized By:</td><td style="text-align: center;"> <hr style="width: 200px; margin: 0 auto;"/></td></tr><tr><td colspan="2" style="text-align: center;">Jandy So / PSQ Manager</td></tr></table>		Model:	<u>H165</u>	Report No.:	<u>STR09078028I</u>	Test/Witness Engineer:		Test Date:	<u>2010-07-07 to 2009-07-20</u>	Issue Date:	<u>2009-07-22</u>	Prepared By:		SEM.Test Compliance Service Co., Ltd 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C. (518101)		Approved & Authorized By:	 <hr style="width: 200px; margin: 0 auto;"/>	Jandy So / PSQ Manager	
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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)

Applicant: HK HONGSHENG TECH LTD.
Address of applicant: 3rd Floor, 141Building, Jindi Industrial Zone, Futian District, Shenzhen, China

Manufacturer: HK HONGSHENG TECH LTD.
Address of manufacturer: 3rd Floor, 141Building, Jindi Industrial Zone, Futian District, Shenzhen, China

General Description of E.U.T

Items	Description
EUT Description:	FM TRANSMITTER
Trade Name:	/
Model No.:	H165
Rated Voltage:	DC 12-24V
Output Power:	<48dBu/m
Frequency Range:	88.1MHz~107.9MHz
Antenna Type:	Integral Antenna
Size:	13.5x4.6x3.0cm
Comment:	Manual Operation Device
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 the HK HONGSHENG TECH LTD. in accordance with FCC Part 15, Subpart C, and section 15.239, 15.203 and 15.209 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.239, 15.203 and 15.209 of 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/immunity, should be checked to ensure compliance has been maintained.

1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

1.4 Test Methodology

All measurements contained in this report were conducted with 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 accordingly in reference to the Operating Instructions. The EUT was tested in all three orthogonal planes and the worse case was showed.

1.5 Test Facility

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

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 EUT system is on.

1.7 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
KINGMAX	SD Card	512MB	/

1.8 EUT Cable List and Details

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

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.203 Antenna Requirement	Compliant
§15.209 General Requirement	Compliant
§15.239 (c) Out of band emission Testing	Compliant
§15.239 (a) Emission Bandwidth Testing	Compliant
§15.239 (b) Radiated Emission	Compliant

3. §15.203 - ANTENNA REQUIREMENT

3.1 Standard Applicable

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has a permanent antenna, fulfill the requirement of this section.

4. §15.209, §15.239 (b)(c)- RADIATED EMISSION

4.1 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 ± 3.0 dB.

4.2 Standard Applicable

According to §15.239(b), The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

According to §15.239(c), The field strength of any emissions radiated on any frequency outside of the specified 200 kHz band shall not exceed the general radiated emission limits in §15.209.

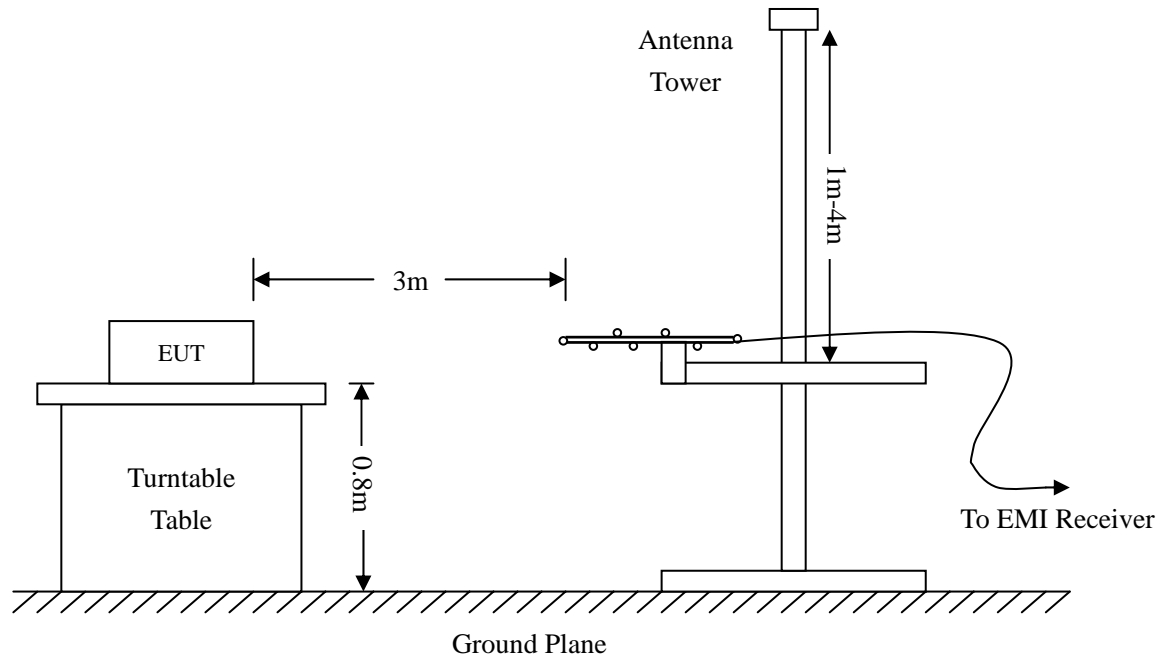
4.3 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2009-07-08	2010-07-07
Positioning Controller	C&C	CC-C-1F	N/A	2009-07-08	2010-07-07
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2009-07-08	2010-07-07
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2009-07-08	2010-07-07
RF Switch	EM	EMSW18	SW060023	2009-07-08	2010-07-07
Amplifier	Agilent	8447F	3113A06717	2009-07-08	2010-07-07
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2009-07-08	2010-07-07
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2009-07-08	2010-07-07

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

4.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.239(b) and FCC Part 15.209 Limit.



4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Loss} + \text{Cab. Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.239 Limit}$$

4.6 Environmental Conditions

Temperature:	21° C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

According to the data below, the [FCC Part 15.209 and 15.239](#) standards, and had the worst margin of:

-1.79 dBμV at 88.1 MHz in the Vertical polarization, Low Channel, 30 MHz to 18 GHz, 3Meters

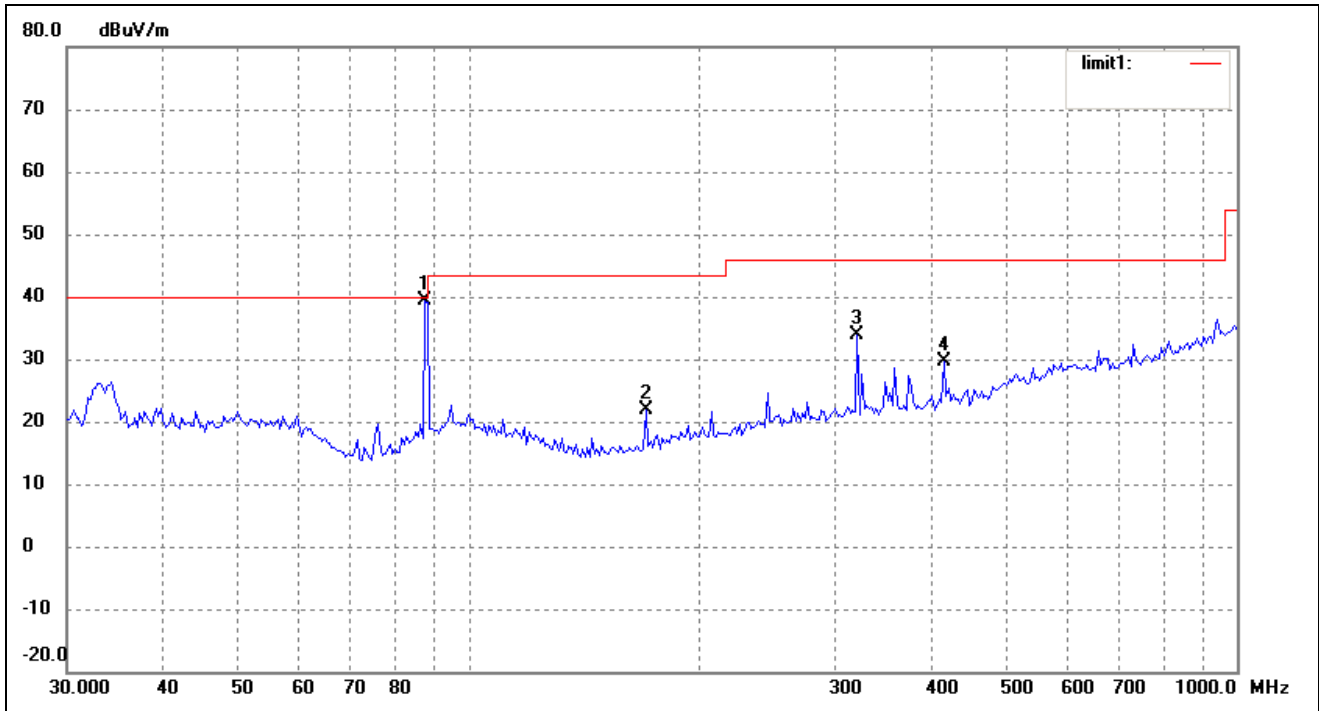
-1.70dBμV at 98.0 MHz in the Vertical polarization, Mid Channel, 30 MHz to 18 GHz, 3Meters

-5.82 dBμV at 107.9 MHz in the Vertical polarization, High Channel, 30 MHz to 18 GHz, 3Meters

Plot of Radiation Emissions Test

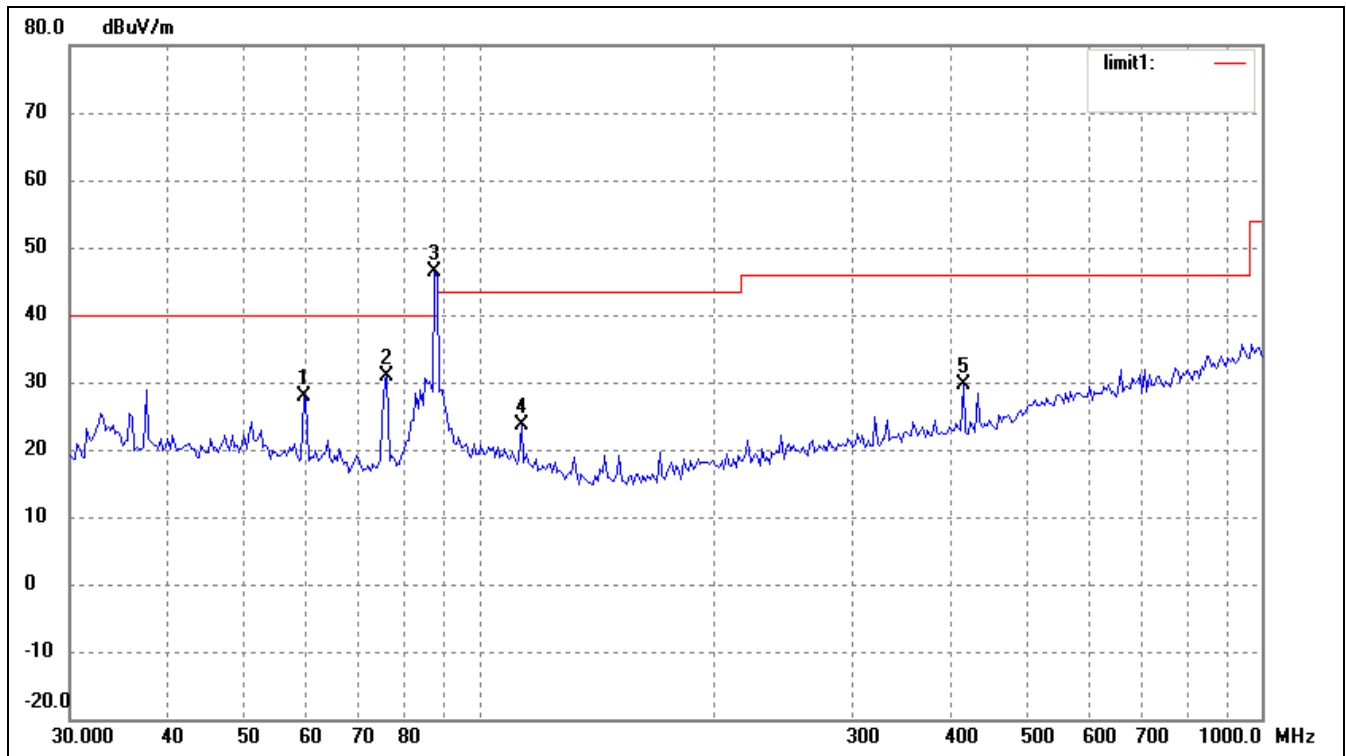
Low Channel

Horizontal



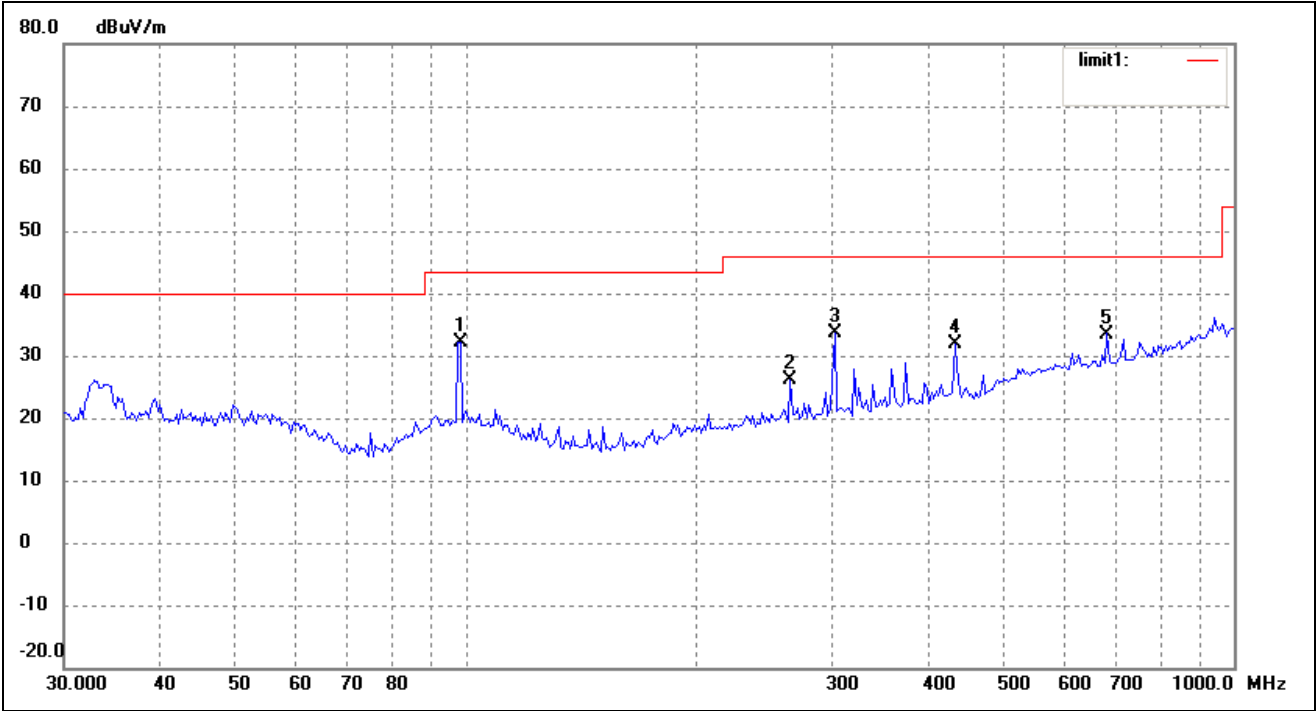
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	88.10	33.01	5.87	38.88	48.00	-9.12	12	100	Ave/Fundamental
	88.10	33.45	5.87	39.32	68.00	-28.68	14	100	Peak/Fundamental
2	170.1888	17.89	4.07	21.96	43.50	-21.54	13	10	Peak
3	320.3306	24.94	8.83	33.77	46.00	-12.23	360	100	Peak
4	415.4486	19.53	10.02	29.55	46.00	-16.45	24	100	Peak

Vertical



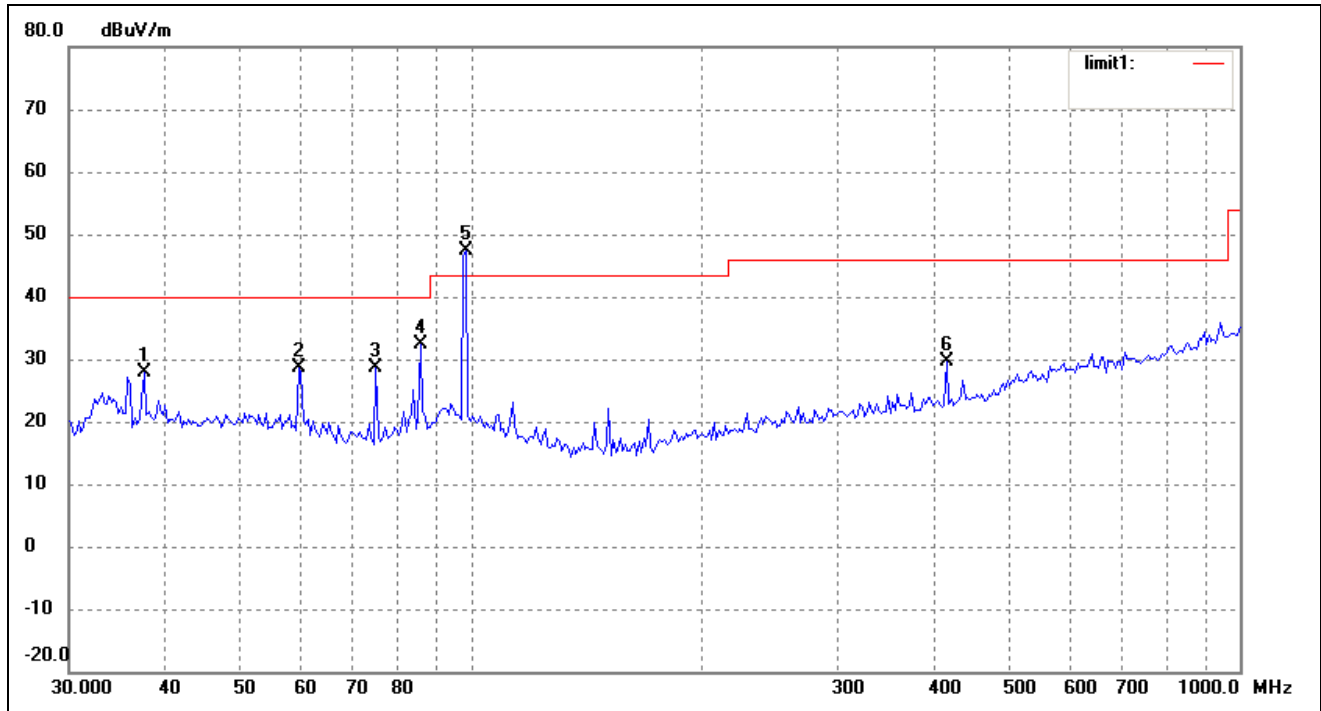
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	59.7315	20.69	7.21	27.90	40.00	-12.10	36	100	Peak
2	76.3869	28.15	2.61	30.76	40.00	-9.24	15	100	Peak
3	88.10	40.34	5.87	46.21	48.00	-1.79	12	100	Ave/Fundamental
	88.10	40.55	5.87	46.42	68.00	-21.58	16	100	Peak/Fundamental
4	113.2200	17.15	6.40	23.55	43.50	-19.95	360	100	Peak
5	415.4486	19.66	10.02	29.68	46.00	-16.32	21	100	Peak

Mid Channel
Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	98.00	24.38	7.70	32.08	48.00	-15.92	16	100	Ave/Fundamental
	98.00	24.48	7.70	32.18	68.00	-35.82	12	100	Peak/Fundamental
2	264.9709	17.99	8.06	26.05	46.00	-19.95	15	100	Peak
3	302.8193	24.95	8.68	33.63	46.00	-12.37	12	100	Peak
4	433.3397	21.43	10.54	31.97	46.00	-14.03	16	100	Peak
5	684.2259	17.91	15.59	33.50	46.00	-12.50	360	100	Peak

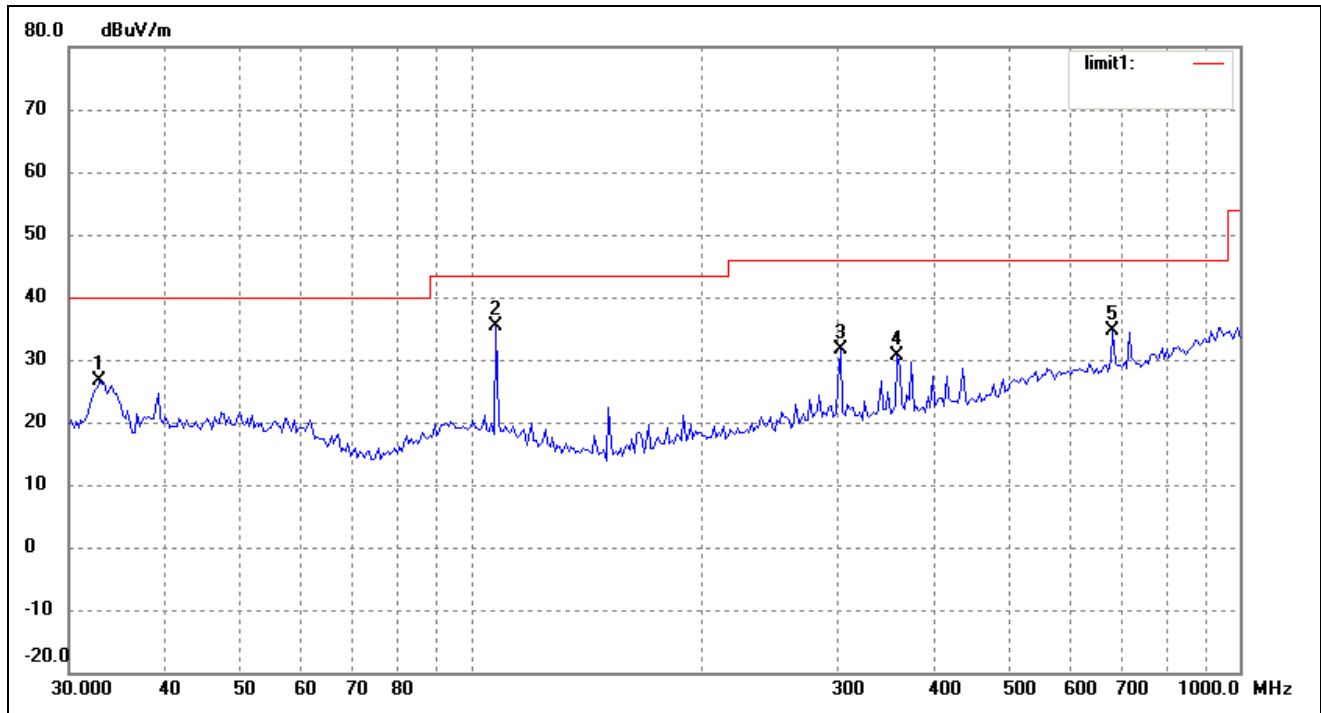
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	37.5648	20.52	7.29	27.81	40.00	-12.19	12	100	Peak
2	59.7315	21.36	7.21	28.57	40.00	-11.43	14	100	Peak
3	75.3208	26.24	2.45	28.69	40.00	-11.31	13	10	Peak
4	86.0796	27.17	5.29	32.46	40.00	-7.54	360	100	Peak
5	98.00	38.60	7.70	46.30	48.00	-1.70	24	100	Ave/Fundamental
	98.00	39.20	7.70	46.90	68.00	-21.1	19	100	Peak/Fundamental
6	415.4486	19.64	10.02	29.66	46.00	-16.34	360	100	Peak

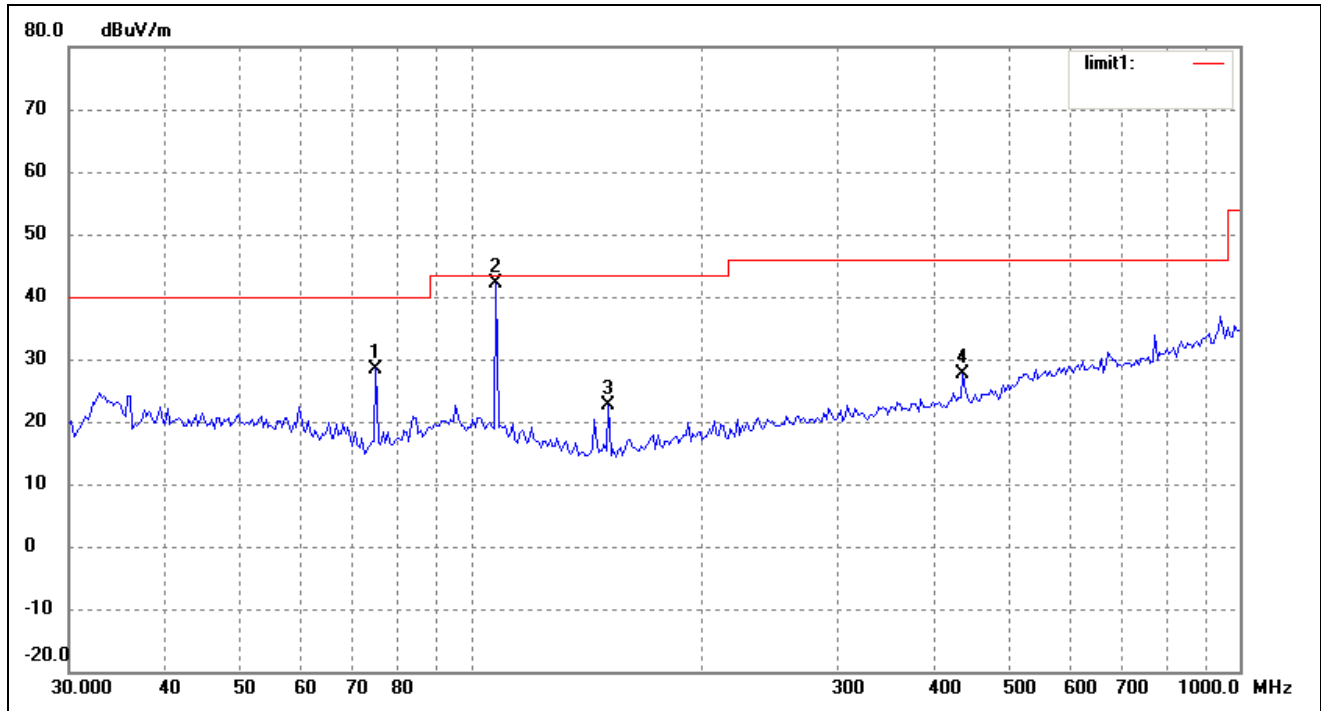
High Channel

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	32.8697	20.02	6.61	26.63	40.00	-13.37	15	100	Peak
2	107.90	28.28	7.13	35.41	48.00	-12.59	12	100	Ave/Fundamental
	107.90	28.88	7.13	36.01	68.00	-31.99	12	100	Peak/Fundamental
3	302.8193	22.96	8.68	31.64	46.00	-14.36	13	100	Peak
4	358.4497	20.89	9.62	30.51	46.00	-15.49	36	100	Peak
5	684.2259	18.93	15.59	34.52	46.00	-11.48	360	100	Peak

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	75.3208	26.05	2.45	28.50	40.00	-11.50	23	100	Peak
2	107.90	34.99	7.13	42.12	48.00	-5.82	25	100	Ave/Fundamental
	107.90	35.35	7.13	42.48	68.00	-25.52	25	100	Peak/Fundamental
3	151.0252	19.27	3.35	22.62	43.50	-20.88	21	100	Peak
4	436.3956	17.05	10.65	27.70	46.00	-18.30	360	100	Peak

Note: The EUT was tested in all three orthogonal planes and frequency rang 30MHz to the tenth harmonics.
Emissions attenuated closely to the noise base are not reported.

5. §15.239(a) EMISSION BANDWIDTH TESTING

5.1 Standard Applicable

According to FCC 15.239(a), Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88–108 MHz.

5.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2009-07-08	2010-07-07
ETS	Receiver Antenna	2175	57337	2009-07-08	2010-07-07
ETS	50 ohm Coaxial Cable	SUCOFLEX 104	25498514	2009-07-08	2010-07-07

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

5.3 Test Procedure

With the EUT's antenna attached, the EUT's 26dB Bandwidth power was received by the test antenna, which was connected to the spectrum analyzer with the START, and STOP frequencies set to the EUT's operation band.

5.4 Environmental Conditions

Temperature:	21° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

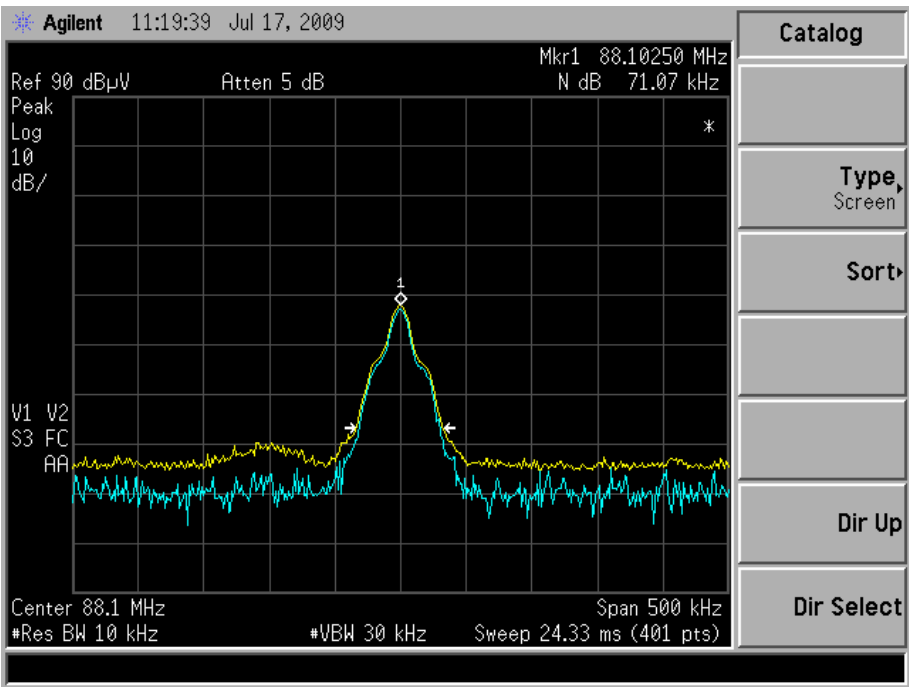
5.5 Summary of Test Results/Plots

Frequency MHz	Emission Bandwidth KHz	Limit KHz
88.1	71.07	200
98.0	69.83	200
107.9	69.83	200

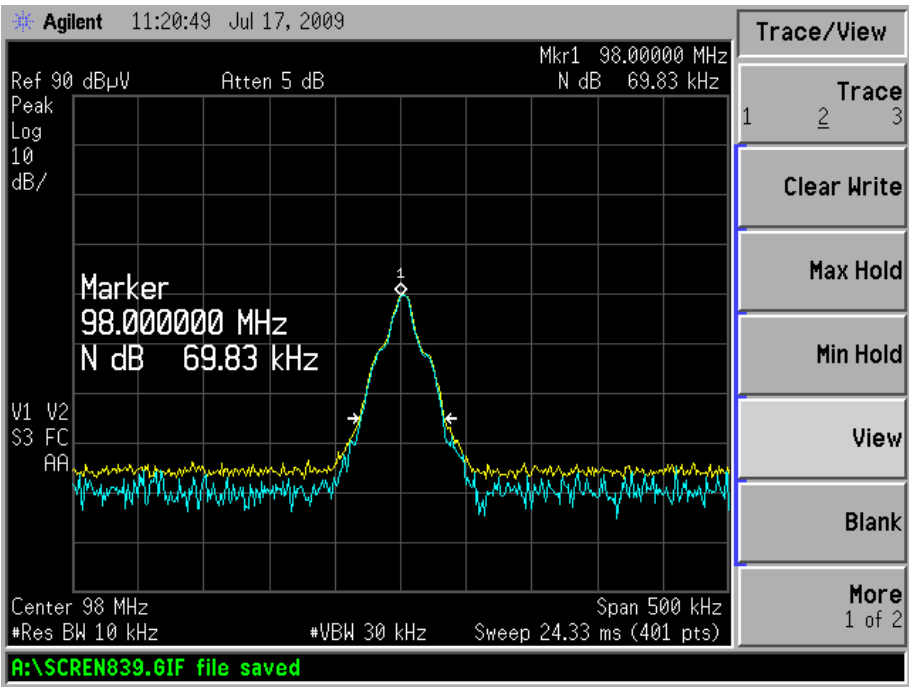
Test Result Pass

Refer to the attached plots.

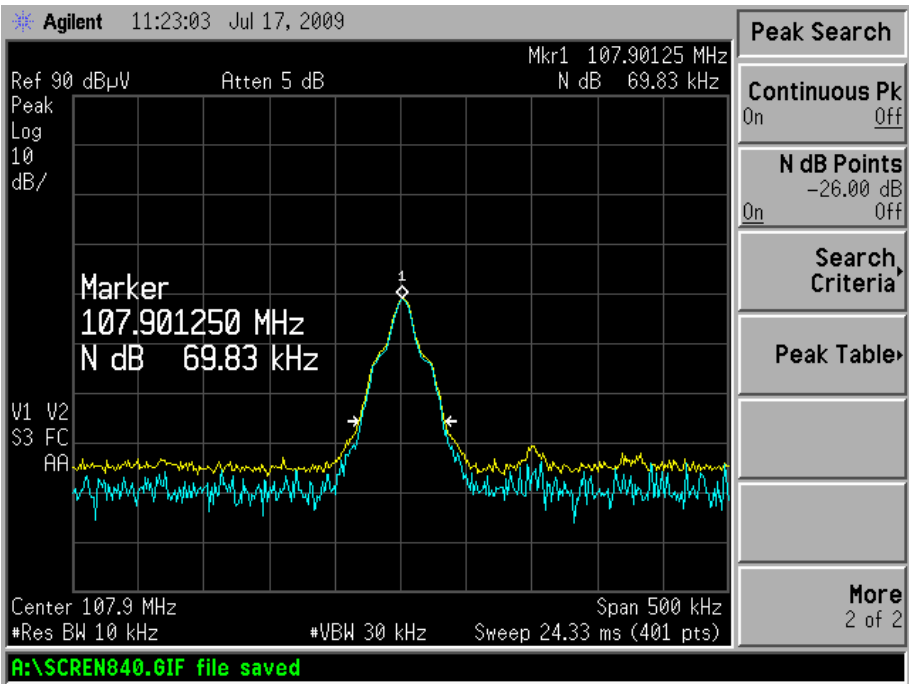
Low Channel



Middle Channel



High Channel



6. §15.249(b) OUT OF BAND EMISSIONS

6.1 Standard Applicable

According to §15.239(c), The field strength of any emissions radiated on any frequency outside of the specified 200 kHz band shall not exceed the general radiated emission limits in §15.209.

6.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2009-07-08	2010-07-07
Positioning Controller	C&C	CC-C-1F	N/A	2009-07-08	2010-07-07
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2009-07-08	2010-07-07
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2009-07-08	2010-07-07
RF Switch	EM	EMSW18	SW060023	2009-07-08	2010-07-07
Amplifier	Agilent	8447F	3113A06717	2009-07-08	2010-07-07
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2009-07-08	2010-07-07
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2009-07-08	2010-07-07

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

6.3 Test Procedure

As the radiation test, set the Lowest and Highest Transmitting Channel, observed the outside band of 88MHz to 108MHz, than mark the higher-level emission for comparing with the FCC rules.

6.4 Environmental Conditions

Temperature:	22° C
Relative Humidity:	54%
ATM Pressure:	1012 mbar

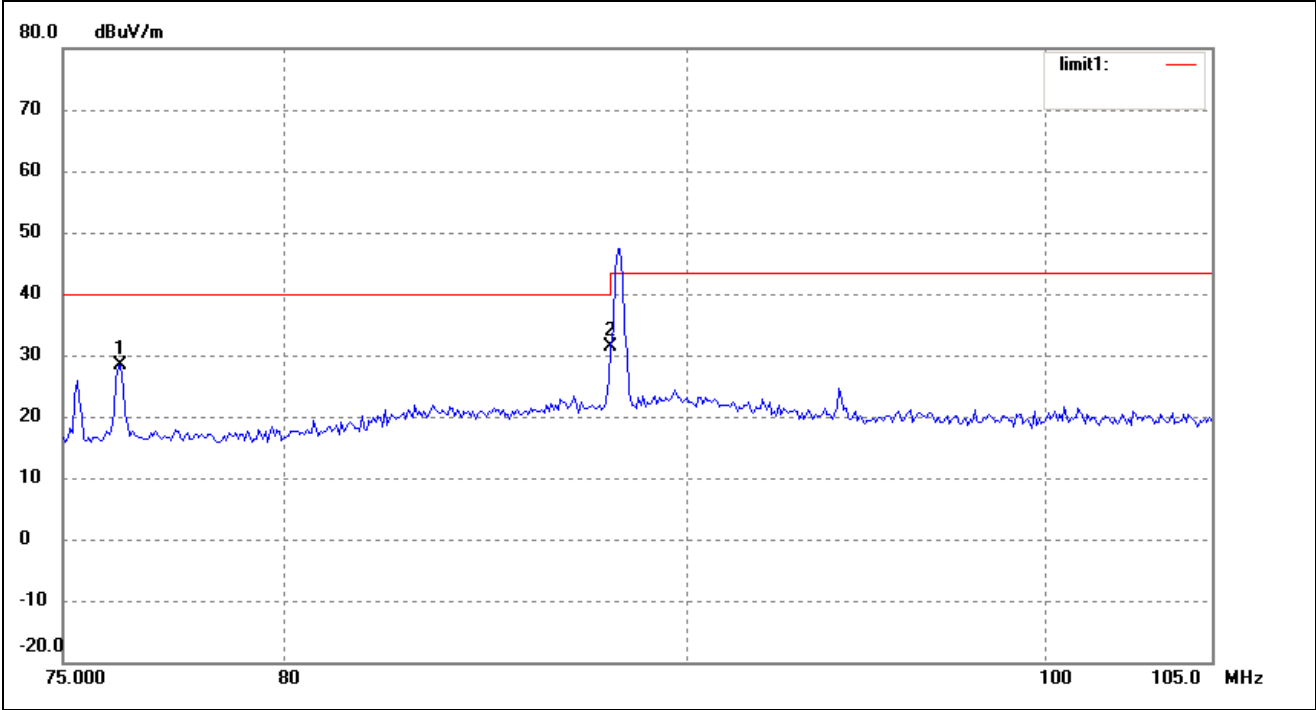
6.5 Summary of Test Results/Plots

Frequency MHz	Emission dB μ V/m	Limit dB μ V/m
88	31.27	40
108	33.56	43.5

Test Result Pass

Refer to the attached plots.
Lower Bandedge

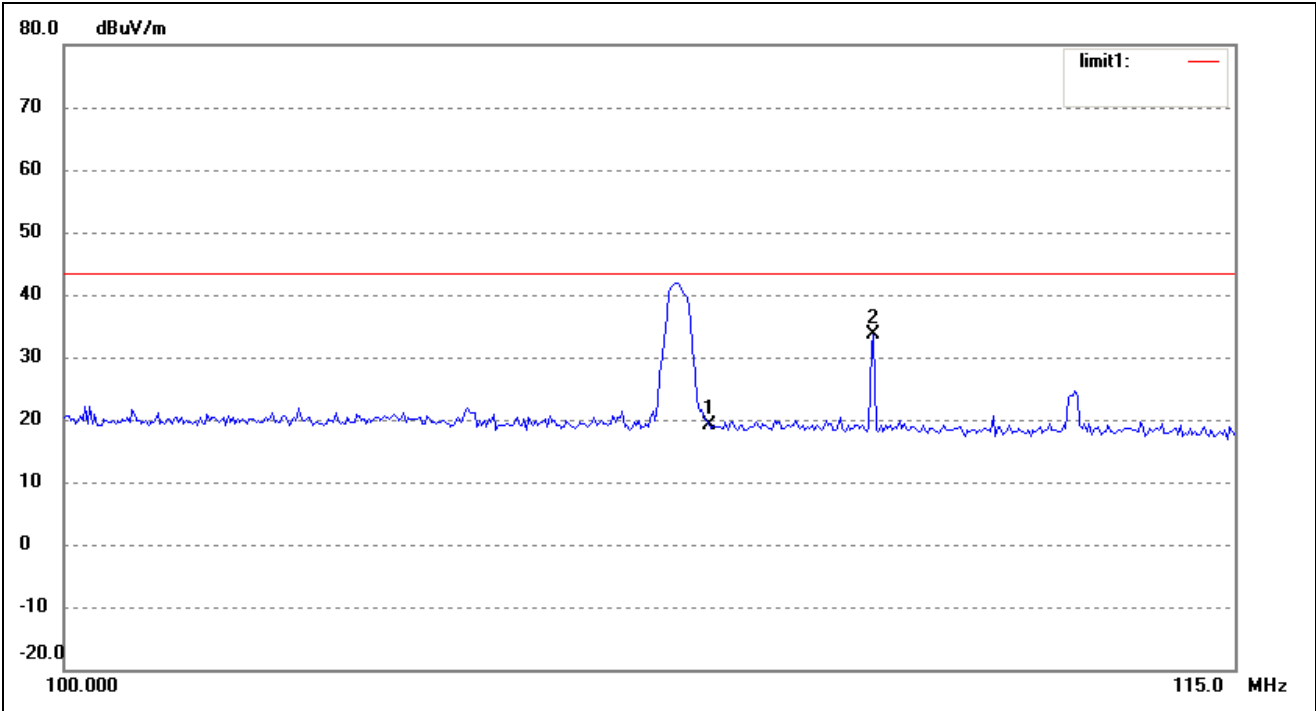
TEST DATA PLOTS



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	76.2750	25.87	2.59	28.46	40.00	-11.54	12	100	peak
2	88.0000	25.38	5.89	31.27	40.00	-8.73	360	100	peak

Upper Bandedge

TEST DATA PLOTS



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	108.0000	12.04	7.11	19.15	43.50	-24.35	25	100	peak
2	110.1452	26.65	6.91	33.56	43.50	-9.94	12	100	peak

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