

FCC PART 15.231
MEASUREMENT AND TEST REPORT
FOR

Shenzhen Jinchuangwei Electronics

4 Floor, Defengcheng Big Building, Dabao Road, Bao'an 23 Section, Shenzhen
City, Guangdong, China

FCC ID: VN4JCW32869

Report Concerns: Original Report	Equipment Type: Car MP3
Model:	<u>JCW-09RF</u>
Report No.:	<u>STR07098020I</u>
Test/Witness Engineer:	<u>Lahm Peng</u>
Test Date:	<u>2007-09-13</u>
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Approved & Authorized By:	 _____ Jandy So / PSQ Manager

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: Shenzhen Jinchuangwei Electronics
Address of applicant: 4 Floor, Defengcheng Big Building, Dabao Road, Bao'an 23 Section, Shenzhen City, Guangdong, China

Manufacturer: Shenzhen Jinchuangwei Electronics
Address of manufacturer: 4 Floor, Defengcheng Big Building, Dabao Road, Bao'an 23 Section, Shenzhen City, Guangdong, China

General Description of E.U.T

Items	Description
EUT Description:	Car MP3
Trade Name:	/
Model No.:	JCW-09RF JCW-05RF JCW-05ARF JCW-06RF JCW-08RF JCW-B1
Rated Voltage:	DC 12V
Output Power:	<48dBuV/m
Frequency Range:	88.1MHz~107.9MHz
Antenna Type:	Integral Antenna
Size:	12.0x4.5x4.0cm
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, model: JCW-09RF, provided by the manufacturer. Since the other Models listed in this report are different from the appearance of Model JCW-09RF without circuits and structure changed.

1.2 Test Standards

The following report is prepared on behalf of Shenzhen Jinchuangwei Electronics 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

The 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 files which the Registration No.: **759397**.

Measurement required was performed at laboratory of Solid Industrial Co., Ltd. at 333 Bulong Highway Buji Longgang, Shenzhen, Guangdong, China.

1.6 EUT Exercise Software

The EUT exercise program used during testing was designed to exercise the system components.

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

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.

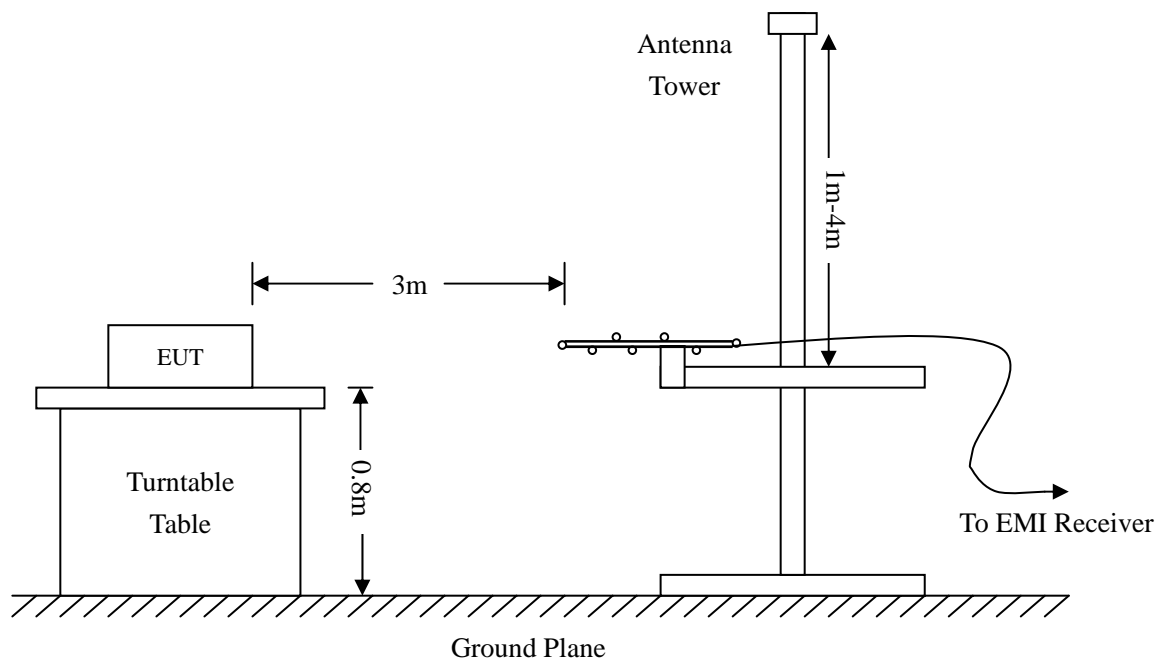
4.3 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	830245/009	2007-1-25	2008-1-24
Multi_Device Controller	ETS	2090	57230	2007-1-25	2008-1-24
Receiver Antenna	ETS	2175	57337	2007-1-25	2008-1-24
Horn Antenna	Rohde & Schwarz	HF906	100013	2007-1-25	2008-1-24
50 ohm Coaxial Cable	ETS	SUCOFLEX 104	25498514	2007-1-25	2008-1-24
3m chamber	Albatross Projects	9X6X6	----	2007-1-25	2008-1-04

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 15.205 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 -6dB μ V means the emission is 6dB μ V 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

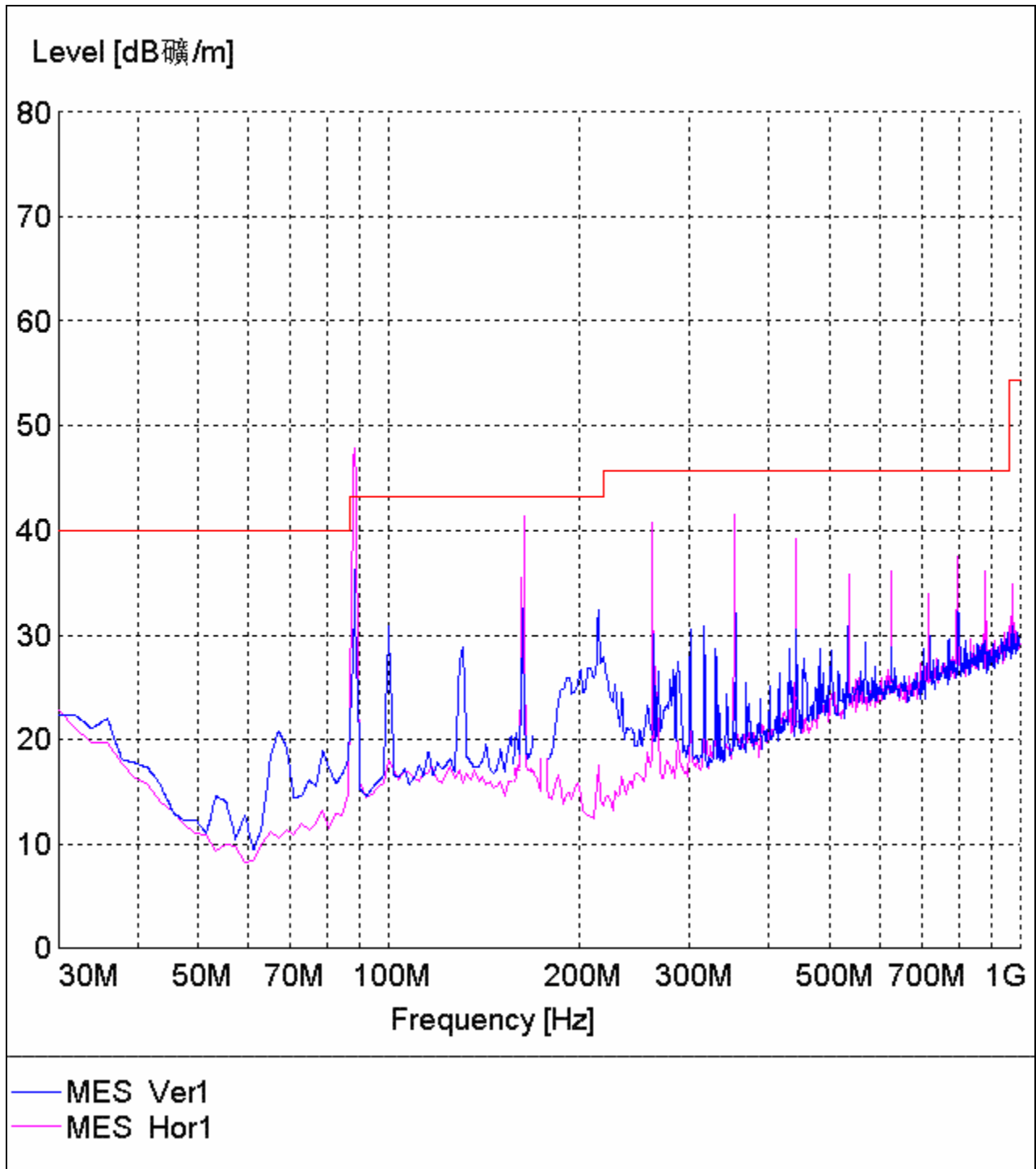
According to the data below, the FCC Part 15.209 and 15.239 standards, and had the worst margin of:

- 1.3 dB μ V at 88.1 MHz in the **Horizontal** polarization, **Low Channel**, 30 MHz to 18 GHz, 3Meters
- 1.2 dB μ V at 98.0 MHz in the **Horizontal** polarization, **Mid Channel**, 30 MHz to 18 GHz, 3Meters
- 1.1 dB μ V at 107.9 MHz in the **Horizontal** polarization, **High Channel**, 30 MHz to 18 GHz, 3Meters

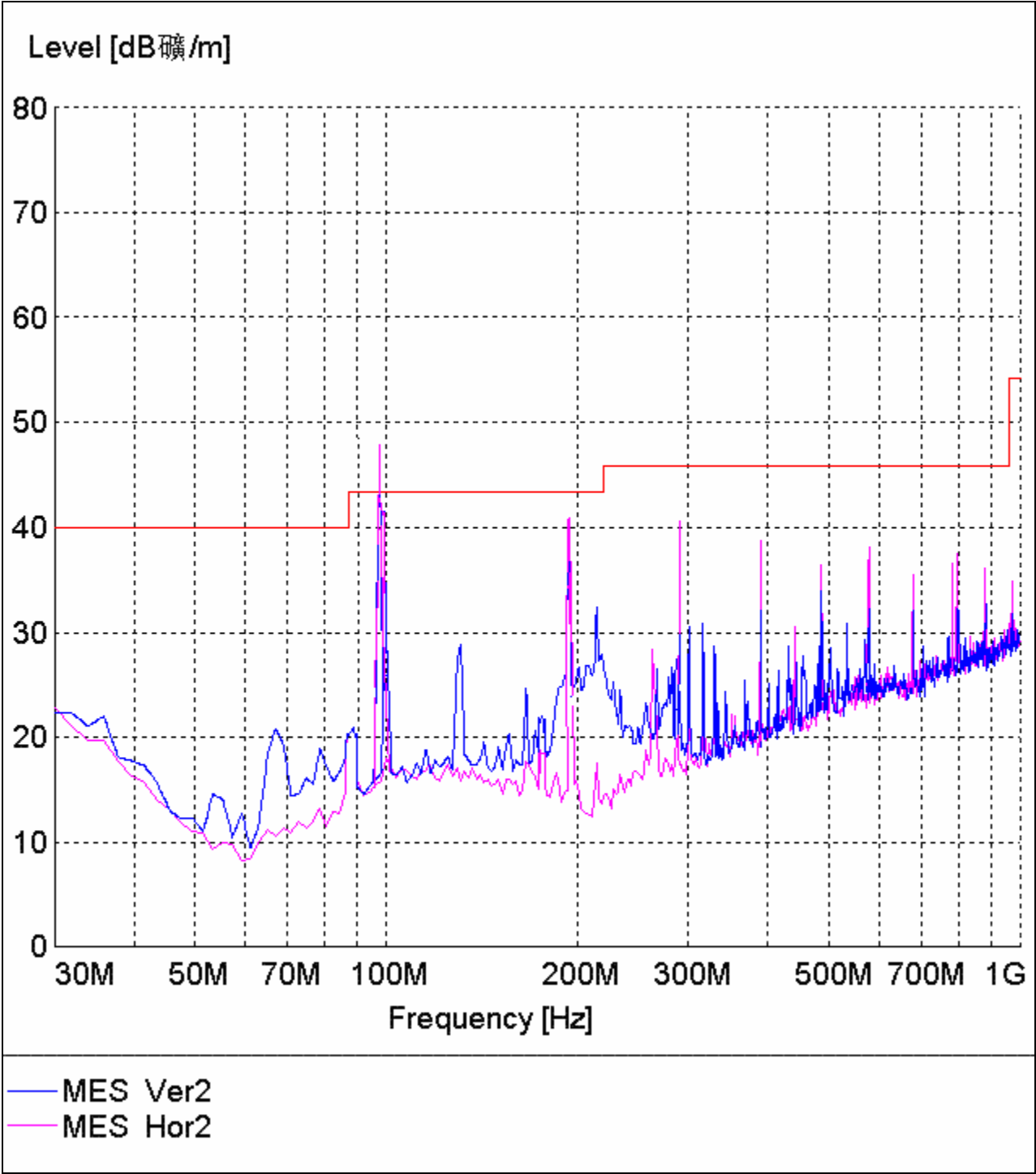
Frequency	Meter Reading	Detector	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier Gain	Corr. Ampl.	FCC Part 15.239 & 15.209	
MHz	dBuV	PK/ AV	Degree	Meter	H / V	dB	dB	dB	dBuV/m	Limit dBuV/m	Margin dB
<i>Low Channel (88.1MHz)</i>											
88.1	63.6	AV(Fun.)	135	1.2	H	8.1	0.9	25.94	46.7	48	-1.3
176.2	53.7	PK	56	1.5	H	11.9	1.2	25.3	41.5	43.5	-2.0
352.4	49.9	PK			H	15.0	1.8	25.09	41.6	46	-4.4
264.3	51.8	PK	43	2.0	H	12.4	1.4	24.74	40.9	46	-5.1
176.2	45.3	PK	135	1.0	V	11.9	1.2	25.3	33.1	43.5	-10.4
88.1	52.1	AV(Fun.)	88	1.2	V	8.1	0.9	25.94	35.2	48	-12.8
352.4	41.1	PK			V	15.0	1.8	25.09	32.8	46	-13.2
264.3	41.2	PK	98	1.2	V	12.4	1.4	24.74	30.3	46	-15.7
88.1	64.2	PK(Fun.)	90	1.3	H	8.1	0.9	25.94	47.3	68	-20.7
88.1	52.7	PK(Fun.)	98	1.2	V	8.1	0.9	25.94	35.8	68	-32.2
<i>Middle Channel (98.0MHz)</i>											
98.0	63.7	AV(Fun.)	135	1.2	H	8.2	0.9	25.99	46.8	48	-1.2
196.0	52.7	PK	43	2.0	H	12.0	1.3	25.15	40.8	43.5	-2.7
294.0	49.9	PK	56	1.5	H	13.8	1.6	24.59	40.7	46	-5.3
98.0	59.4	AV(Fun.)	88	1.2	V	8.2	0.9	25.99	42.5	48	-5.5
196.0	48.1	PK	135	1.0	V	12.0	1.3	25.15	36.2	43.5	-7.3
392.0	45.6	PK	0	1.0	H	16.0	1.9	25.34	38.2	46	-7.8
392.0	39.8	PK	90	1.0	V	16.0	1.9	25.34	32.4	46	-13.6
294.0	39.2	PK	98	1.2	V	13.8	1.6	24.59	30.0	46	-16.0
98.0	64.4	PK(Fun.)	90	1.3	H	8.2	0.9	25.99	47.5	68	-20.5
98.0	60.1	PK(Fun.)	98	1.2	V	8.2	0.9	25.99	43.2	68	-24.8
<i>High Channel (108.0MHz)</i>											
107.9	60.8	AV(Fun.)	135	1.2	H	11.0	1.0	25.89	46.9	48	-1.1
215.8	54.5	PK	56	1.5	H	11.4	1.3	25.06	42.1	43.5	-1.4
323.7	50.9	PK	43	2.0	H	14.3	1.7	25.04	41.9	46	-4.1
431.6	44.4	PK	45	1.2	H	16.8	2.2	25.51	37.9	46	-8.1
215.8	47.6	PK	135	1.0	V	11.4	1.3	25.06	35.2	43.5	-8.3
107.9	51.8	AV(Fun.)	98	1.2	V	11.0	1.0	25.89	37.9	48	-10.1
323.7	42.7	PK	98	1.2	V	14.3	1.7	25.04	33.7	46	-12.3
431.6	38.1	PK	180	1.5	V	16.8	2.2	25.51	31.6	46	-14.4
107.9	61.3	PK(Fun.)	90	1.3	H	11.0	1.0	25.89	47.4	68	-20.6
107.9	52.2	PK(Fun.)	88	1.2	V	11.0	1.0	25.89	38.3	68	-29.7

Note: The EUT was tested in all three orthogonal planes and frequency rang 30MHz to the tenth harmonics.

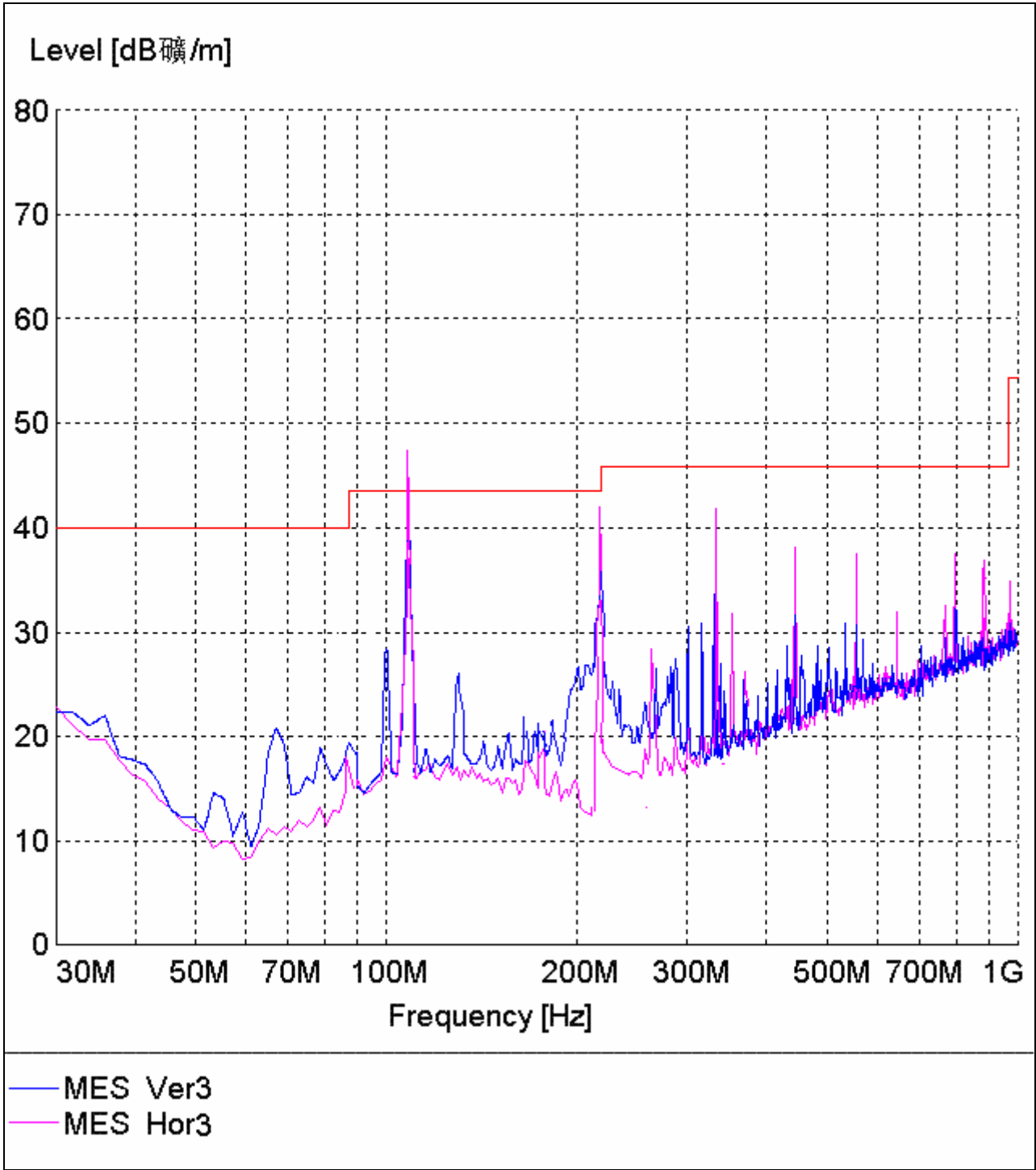
Emissions attenuated closely to the noise base are not reported.

*Plot of Radiation Emissions Test**Low Channel*

Mid Channel



High Channel



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	2007-1-20	2008-1-19
ETS	Receiver Antenna	2175	57337	2007-1-26	2008-1-25
ETS	50 ohm Coaxial Cable	SUCOFLEX 104	25498514	2007-1-26	2008-1-25

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

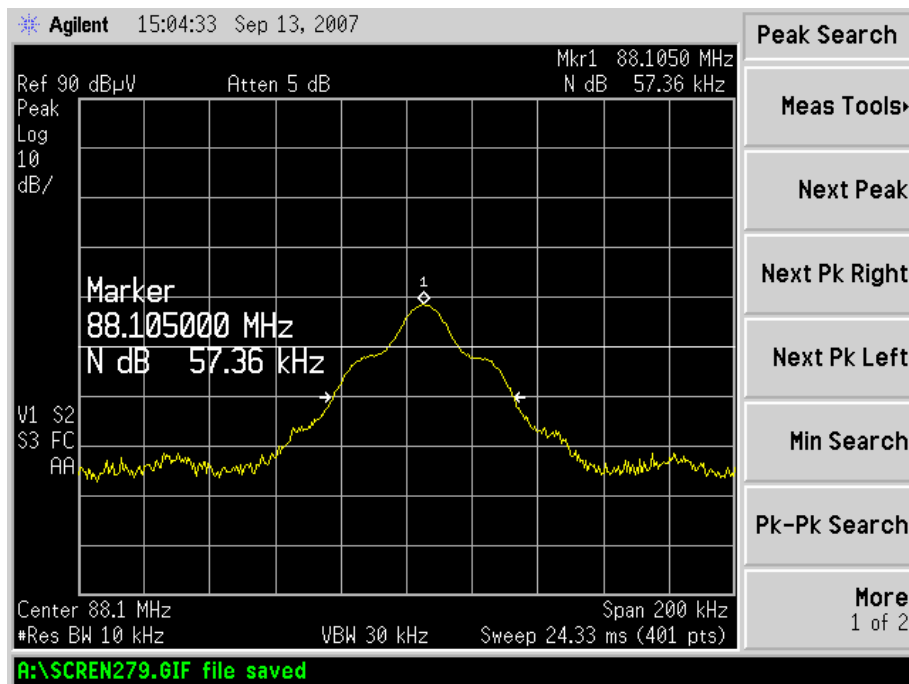
5.5 Summary of Test Results/Plots

Frequency MHz	Emission Bandwidth KHz	Limit KHz
88.1	57.36	200
98.0	57.36	200
107.9	55.86	200

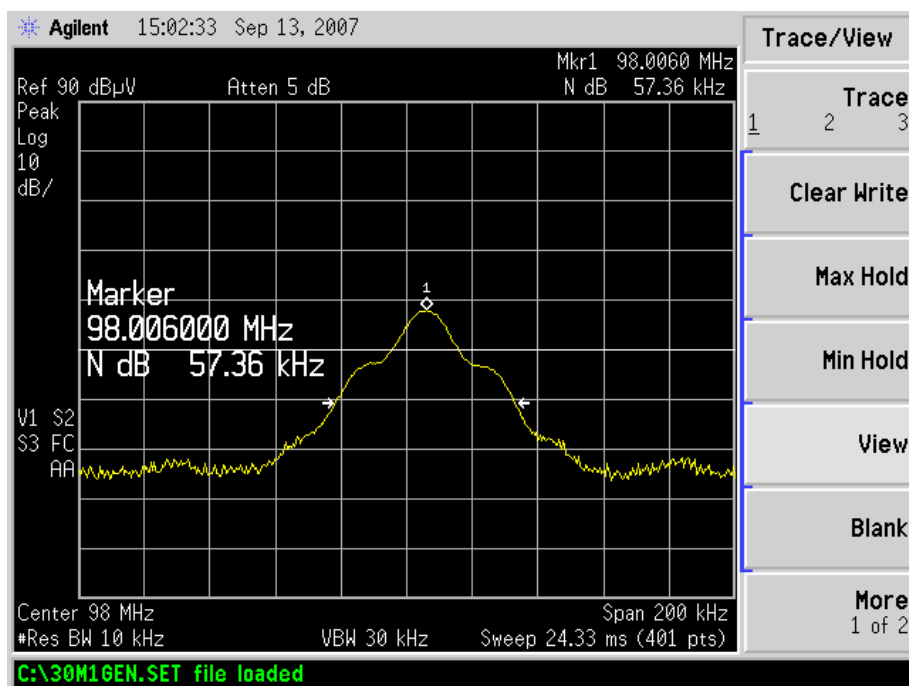
Test Result Pass

Refer to the attached plots.

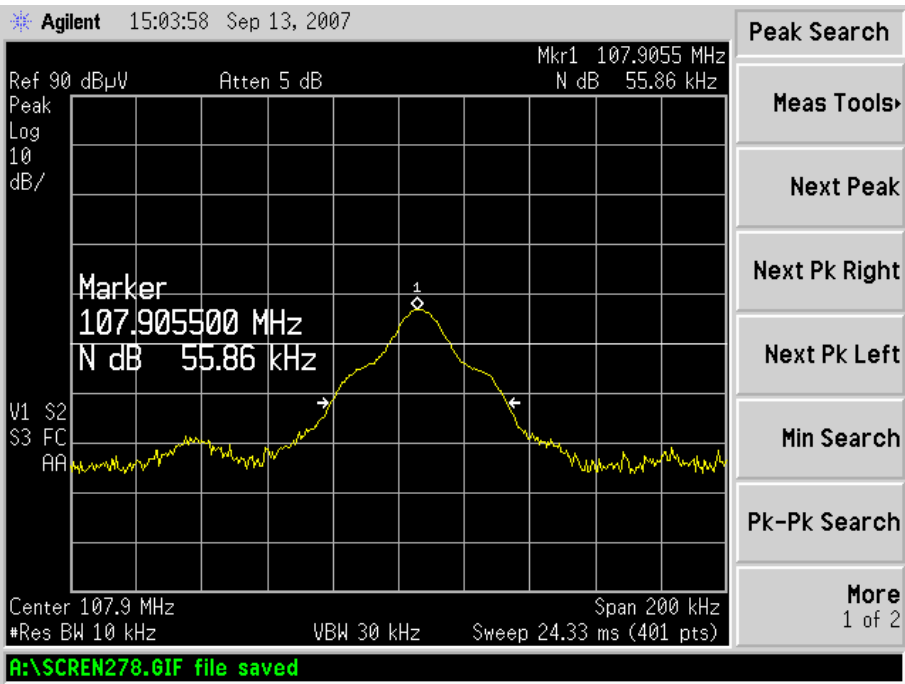
Low Channel



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

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2007-06-30	2008-06-29
ETS	Receiver Antenna	2175	57337	2007-1-26	2008-1-25
ETS	50 ohm Coaxial Cable	SUCOFLEX 104	25498514	2007-1-26	2008-1-25
Rohde & Schwarz	Horn Antenna	HF906	100014	2007-1-26	2008-1-25

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

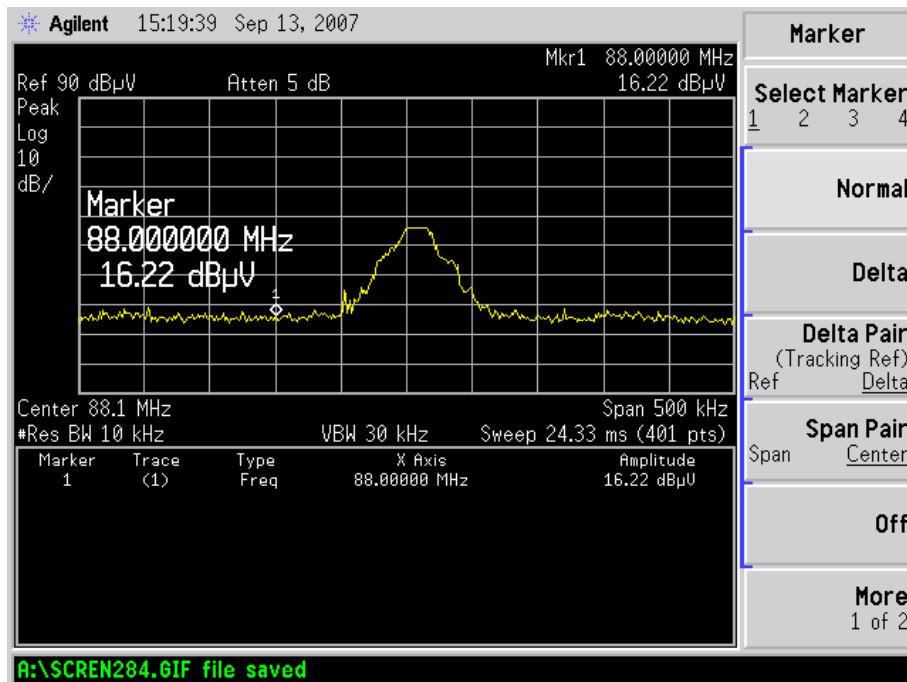
6.5 Summary of Test Results/Plots

Frequency MHz	Emission dB μ V/m	Limit dB μ V/m
88	16.22	40
108	19.23	43.5

Test Result Pass

Refer to the attached plots.

Lower Bandedge



Upper Bandedge

