ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

GPS rearview mirror monitor

Model No.: CM-035RA, CM-043RA, OM-035RA, OM-043RA, CN-035RA, CN-043RA, GM-035RA, GM-043RA, GN-035RA, GN-043LA, AN-035RA, AN-043LA, GN-043RA, ON-035RA, ON-043RA, CM-035RAD, CM-043RAD, OM-035RAD, OM-043RAD, CN-035RAD, CN-043RAD, GM-035RAD, GM-043RAD, GN-035RAD, GN-043LAD, ADN-035RAD, ADN-043LAD, GN-043RAD, ON-035RAD, ON-043RAD

FCC ID: OFLCM-043RAD

REPORT NO: ES120521099F

ISSUE DATE: June 20, 2012

Prepared for

SHENZHEN GLOBAL MEDIA ELECTRONIC TECHNOLOGY DEVELOPMENT CO., LTD.

2/F ,Building NO.7 Hua Lun technology Park, FengHuang NO,one industry zone FuYong Town, Baoan, Shenzhen, China

Prepared by

SHENZHEN EMTEK CO., LTD

Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China
TEL: 86-755-26954280
FAX: 86-755-26954282

VERIFICATION OF COMPLIANCE

Applicant:	SHENZHEN GLOBAL MEDIA ELECTRONIC TECHNOLOGY DEVELOPMENT CO., LTD.
Manufacturer:	SHENZHEN GLOBAL MEDIA ELECTRONIC TECHNOLOGY DEVELOPMENT CO., LTD.
Product Description:	GPS rearview mirror monitor
Brand Name:	N/A
Model Number:	CM-035RA, CM-043RA, OM-035RA, OM-043RA, CN-035RA, CN-043RA, GM-035RA, GM-043RA, GN-035RA, GN-043LA, AN-035RA, AN-043LA, GN-043RA, ON-035RA, ON-043RA, CM-035RAD, CM-043RAD, OM-035RAD, OM-043RAD, CN-035RAD, CN-043RAD, GM-035RAD, GM-043RAD, GN-035RAD, GN-043LAD, ADN-035RAD, ADN-043LAD, GN-043RAD, ON-035RAD, ON-043RAD (Note: All models have the same constructions, circuit diagram and PCB layout except for their model numbers. We take CM-043RAD for test.)
Serial Number:	N/A
File Number:	ES120521099F
Date of Test:	May 10, 2012 to June 20, 2012

We hereby certify that:

The above equipment was tested by SHENZHEN EMTEK 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 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.239.

The test results of this report relate only to the tested sample identified in this report.

Date of Test : May 10, 2012 to June 20, 2012

Prepared by : Aaron Lai/Editor

Reviewer : King Wang/Supervisor

Approved & Authorized Signer : Lisa Wang/Manager

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1. GENERAL INFORMATION

1.1 Product Description

The SHENZHEN GLOBAL MEDIA ELECTRONIC TECHNOLOGY DEVELOPMENT CO., LTD. GPS rearview mirror monitor Model: CM-035RA (referred to as the EUT in this report). The EUT is a GPS rearview mirror monitor; The actual tuning Controls can be manually adjusted to from 88.1MHz to 107.9MHz.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 88.1MHz~107.9MHz
B). Step: 100KHz
C). Antenna Designation: Internal antenna
D). Power Supply: DC 9-18V from rechargeable Li-ion battery

Channel List:

	88.1MHz	88.2MHz	88.3MHz	88.4MHz	88.5MHz	88.6MHz	88.7MHz	88.8MHz	88.9MHz
89.0MHz	89.1MHz	89.2MHz	89.3MHz	89.4MHz	89.5MHz	89.6MHz	89.7MHz	89.8MHz	89.9MHz
90.0MHz	90.1MHz	90.2MHz	90.3MHz	90.4MHz	90.5MHz	90.6MHz	90.7MHz	90.8MHz	90.9MHz
91.0MHz	91.1MHz	91.2MHz	91.3MHz	91.4MHz	91.5MHz	91.6MHz	91.7MHz	91.8MHz	91.9MHz
92.0MHz	92.1MHz	92.2MHz	92.3MHz	92.4MHz	92.5MHz	92.6MHz	92.7MHz	92.8MHz	92.9MHz
93.0MHz	93.1MHz	93.2MHz	93.3MHz	93.4MHz	93.5MHz	93.6MHz	93.7MHz	93.8MHz	93.9MHz
94.0MHz	94.1MHz	94.2MHz	94.3MHz	94.4MHz	94.5MHz	94.6MHz	94.7MHz	94.8MHz	94.9MHz
95.0MHz	95.1MHz	95.2MHz	95.3MHz	95.4MHz	95.5MHz	95.6MHz	95.7MHz	95.8MHz	95.9MHz
96.0MHz	96.1MHz	96.2MHz	96.3MHz	96.4MHz	96.5MHz	96.6MHz	96.7MHz	96.8MHz	96.9MHz
97.0MHz	97.1MHz	97.2MHz	97.3MHz	97.4MHz	97.5MHz	97.6MHz	97.7MHz	97.8MHz	97.9MHz
98.0MHz	98.1MHz	98.2MHz	98.3MHz	98.4MHz	98.5MHz	98.6MHz	98.7MHz	98.8MHz	98.9MHz
99.0MHz	99.1MHz	99.2MHz	99.3MHz	99.4MHz	99.5MHz	99.6MHz	99.7MHz	99.8MHz	99.9MHz
100.0MHz	100.1MHz	100.2MHz	100.3MHz	100.4MHz	100.5MHz	100.6MHz	100.7MHz	100.8MHz	100.9MHz
101.0MHz	101.1MHz	101.2MHz	101.3MHz	101.4MHz	101.5MHz	101.6MHz	101.7MHz	101.8MHz	101.9MHz
102.0MHz	102.1MHz	102.2MHz	102.3MHz	102.4MHz	102.5MHz	102.6MHz	102.7MHz	102.8MHz	102.9MHz
103.0MHz	103.1MHz	103.2MHz	103.3MHz	103.4MHz	103.5MHz	103.6MHz	103.7MHz	103.8MHz	103.9MHz
104.0MHz	104.1MHz	104.2MHz	104.3MHz	104.4MHz	104.5MHz	104.6MHz	104.7MHz	104.8MHz	104.9MHz
105.0MHz	105.1MHz	105.2MHz	105.3MHz	105.4MHz	105.5MHz	105.6MHz	105.7MHz	105.8MHz	105.9MHz
106.0MHz	106.1MHz	106.2MHz	106.3MHz	106.4MHz	106.5MHz	106.6MHz	106.7MHz	106.8MHz	106.9MHz
107.0MHz	107.1MHz	107.2MHz	107.3MHz	107.4MHz	107.5MHz	107.6MHz	107.7MHz	107.8MHz	107.9MHz

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: OFLCM-043RAD filing to comply with Section 15.239 of the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2010.10.28
The certificate is valid until 2013.10.29
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01: 2006(identical to ISO/IEC17025: 2005)
The Certificate Registration Number is L2291

Accredited by TUV Rheinland Guangzhou, 2010.10.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025

Accredited by FCC, October 28, 2010
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 05, 2010
The Certificate Registration Number is 46405-4480

Name of Firm : SHENZHEN EMTEK CO., LTD

Site Location : Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the operating mode. The Tx frequency was 88.1MHz~107.9MHz.

2.3 Test Procedure

2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 Limitation

(1) Radiated Emission

(a) The field strength of any emissions within the permitted 200kHz 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 section 15.35 for limiting peak emissions apply.

(b) The field strength of any emissions radiated on any frequency outside of the specified 200Khz band shall not exceed the general radiated emission limits in Section 15.209.

Remark: The limit for average field strength dBuv/m for the fundamental frequency=48.0 dBuv/m.
And the limit for peak field strength dBuv/m for the fundamental frequency=68.0 dBuv/m.

Intentional Radiators general limit).as below.

Frequency (MHz)	Field strength μV/m	Distance(m)	Field strength at 3m dBμV/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

(2) Occupied Bandwidth

(a) Emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operation frequency; The 200kHz band shall lie wholly within the frequency range of 88.1MHz~107.9MHz.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

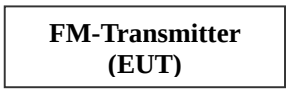


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1.	GPS rearview mirror monitor	N/A	CM-035RA	OFLCM-043RAD	N/A	***EUT***
2.	Speaker	N/A	N/A	N/A	N/A	

Note:

(1) Unless otherwise denoted as EUT in『Remark』column , device(s) used in tested system is a support equipment.

(2) This EUT owns a SD card, and the Audio Test File is from the SD card during the test.

(3) The tuning controls were manually adjusted to verify maximum tuning range is only between 88.1 MHz ~ 107.9 MHz.

(4) All relevant tests are performed with the maximum audio input.

(5) This EUT support Bluetooth and FM transmitting function, however, the Bluetooth and FM transmitting function will not be workable simultaneously.

3. Summary Of Test Results

FCC Rules	Description Of Test	Result
§ 15.239	Radiated Emission	Compliant
§ 15.239	Bandwidth Test	Compliant

4. Description of test modes

The EUT (GPS rearview mirror monitor) has been tested under normal operating condition.
Three channels of EUT (the lowest channel, the middle channel and the highest channel) have been chosen for testing under Normal Operating condition. In this report, all the measured datum of the three channels have been reported. No software used to control the EUT for staying in continuous transmitting mode for testing.

1. For lowest channel : 88.1MHz
2. For middle channel : 98 MHz
3. For highest channel: 107.9MHz

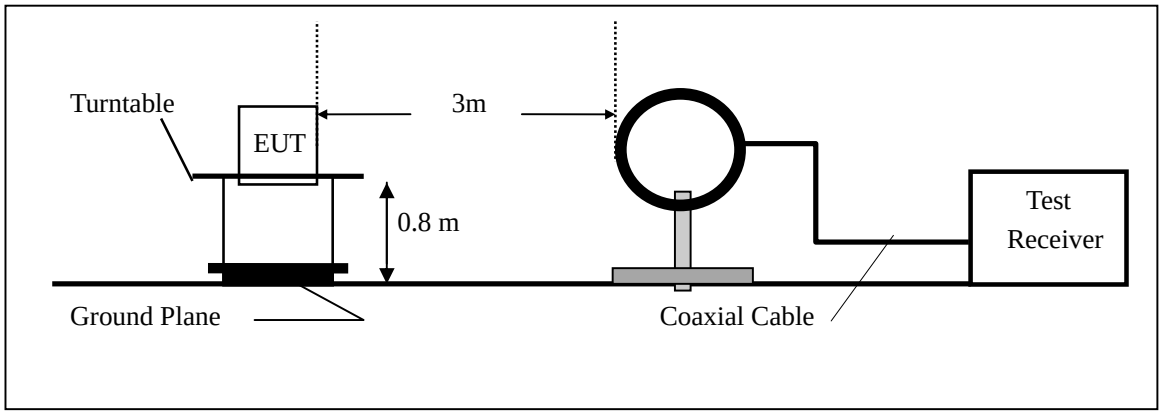
5. Radiated Emission Test

5.1 Measurement Procedure

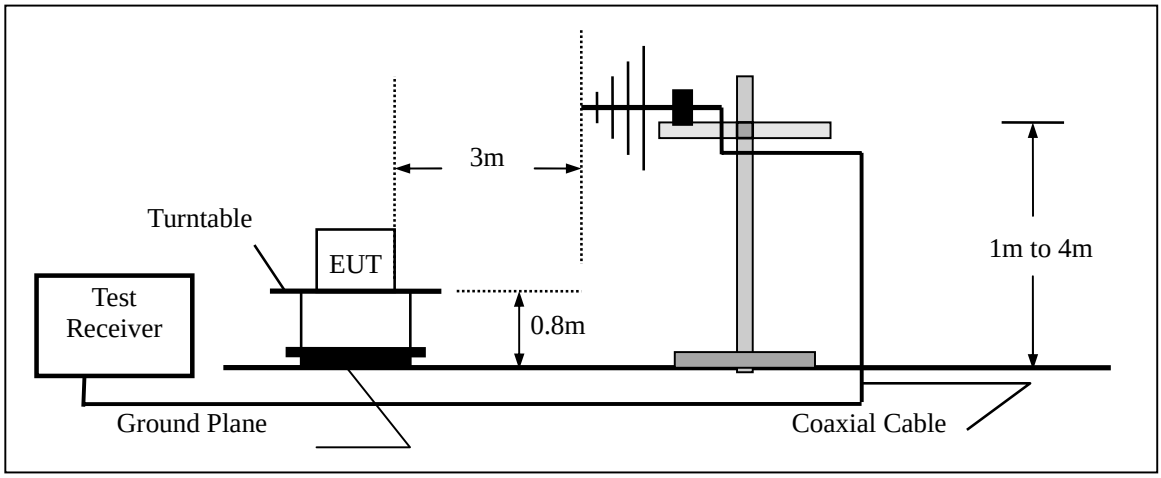
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

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



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



5.3 Measurement Equipment Used:

Test Site # 1					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/29/2012	05/29/2013
Pre-Amplifier	HP	8447D	2944A07999	05/29/2012	05/29/2013
Bilog Antenna	Schwarzbeck	VULB9163	142	05/29/2012	05/29/2013
Loop Antenna	ARA	PLA-1030/ B	1029	05/29/2012	05/29/2013

5.4 Measurement Result

A. Fundamental Radiated Emission Data

Operation Mode:	Transmitting Mode	Test Date :	June 10, 2012
Test Item:	Fundamental Radiated Emission Data	Temperature :	28 ℃
Fundamental Frequency:	Lowest channel (88.1MHz)	Humidity :	65 %
Test Result:	PASS	Test By:	Andy

Peak Measurement

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
88.10	V	42.92	68.00	-25.08	Peak
88.10	H	45.52	68.00	-22.48	Peak

Average Measurement

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
88.10	V	40.01	48.00	-7.99	AV
88.10	H	42.10	48.00	-5.90	AV

Note: (1) Emission Level= Reading Level+Probe Factor +Cable Loss
(2) The average measurement was not performed when the peak measured data under the limit of average detection.

Operation Mode:	Transmitting Mode	Test Date :	June 10, 2012
Test Item:	Fundamental Radiated Emission Data	Temperature :	28 ℃
Fundamental Frequency:	Middle channel (98.0MHz)	Humidity :	65 %
Test Result:	PASS	Test By:	Andy

Peak Measurement

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
98.0	V	43.18	68	-24.82	Peak
98.0	H	44.69	68	-23.31	Peak

Average Measurement

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
98.0	V	40.98	48	-7.02	AV
98.0	H	41.31	48	-6.69	AV

Note: (1) Emission Level= Reading Level+Probe Factor +Cable Loss
(2) The average measurement was not performed when the peak measured data under the limit of average detection.

Operation Mode:	Transmitting Mode	Test Date :	June 10, 2012
Test Item:	Fundamental Radiated Emission Data	Temperature :	28 ℃
Fundamental Frequency:	Highest channel (107.9MHz)	Humidity :	65 %
Test Result:	PASS	Test By:	Andy

Peak Measurement

Freq. (MHz)	**Ant.Pol.** H/V	**Emission Level** (dBuV)	**Limit 3m** (dBuV/m)	**Margin** (dB)	**Note**
107.9	V	41.77	68.00	-26.23	Peak
107.9	H	47.95	68.00	-20.05	Peak

Average Measurement

Freq. (MHz)	**Ant.Pol.** H/V	**Emission Level** (dBuV)	**Limit 3m** (dBuV/m)	**Margin** (dB)	**Note**
107.9	V	38.98	48.00	-9.02	AV
107.9	H	44.30	48.00	-3.70	AV

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

B. Harmonics Radiated Emission Data

Operation Mode:	Transmitting Mode	Test Date :	June 10, 2012
Test Item:	Radiated Emission Data	Temperature :	28 ℃
Fundamental Frequency:	Lowest channel (88.1MHz)	Humidity :	65 %
Test Result:	PASS	Test By:	Andy

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
31.55	V	21.73	40.00	-18.27	Peak
62.64	V	22.71	40.00	-17.29	Peak
188.55	V	31.86	43.50	-11.64	Peak
264.72	V	31.59	46.00	-14.41	Peak
891.18	V	36.02	46.00	-9.98	Peak
920.25	V	18.37	46.00	-27.63	Peak
54.87	H	31.38	40.00	-8.62	Peak
68.86	H	25.15	40.00	-14.85	Peak
179.23	H	39.39	43.50	-4.11	Peak
224.31	H	41.02	46.00	-4.98	Peak
253.84	H	42.75	46.00	-3.25	Peak
267.83	H	41.18	46.00	-4.82	Peak

No others harmonics emissions are higher than 20dB below the limits.

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

Operation Mode:	Transmitting Mode	Test Date :	June 10, 2012
Test Item:	Radiated Emission Data	Temperature :	28 ℃
Fundamental Frequency:	Middle channel (98.0MHz)	Humidity :	65 %
Test Result:	PASS	Test By:	Andy

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
61.08	V	22.54	40.00	-17.46	Peak
118.60	V	19.98	43.50	-23.52	Peak
199.43	V	33.89	43.50	-9.61	Peak
244.51	V	28.72	46.00	-17.28	Peak
269.39	V	31.19	46.00	-14.81	Peak
303.59	V	18.04	46.00	-27.96	Peak
68.8622	H	23.51	40.00	-16.49	Peak
118.6058	H	30.37	43.50	-13.13	Peak
190.1121	H	39.59	43.50	-3.91	Peak
213.4295	H	39.64	43.50	-3.86	Peak
258.5096	H	41.81	46.00	-4.19	Peak
330.02	H	27.96	46.00	-18.04	Peak

No others harmonics emissions are higher than 20dB below the limits .

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

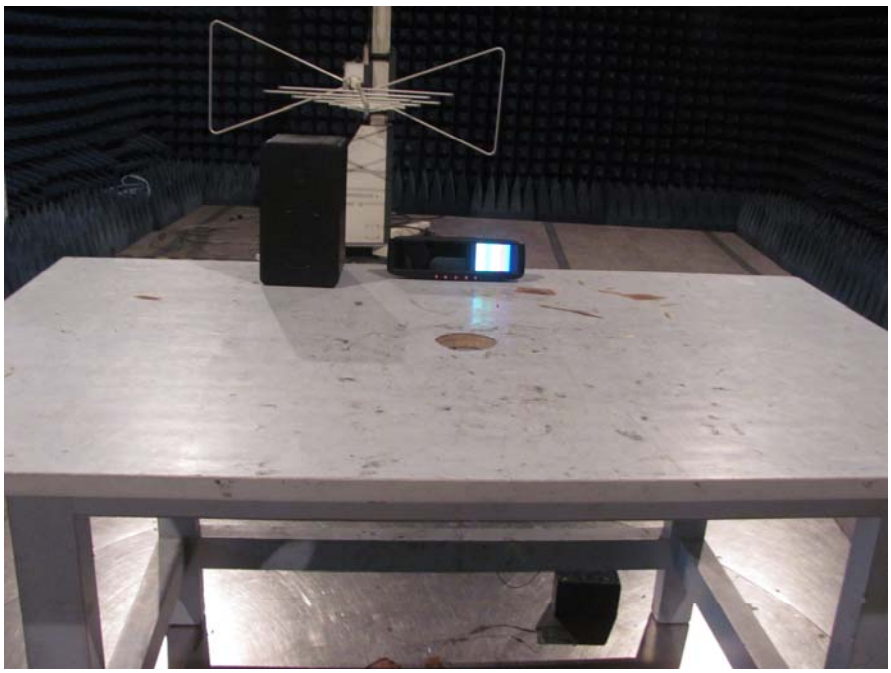
Operation Mode:	Transmitting Mode	Test Date :	June 10, 2012
Test Item:	Radiated Emission Data	Temperature :	28 ℃
Fundamental Frequency:	High channel (107.9)	Humidity :	65 %
Test Result:	PASS	Test By:	Andy

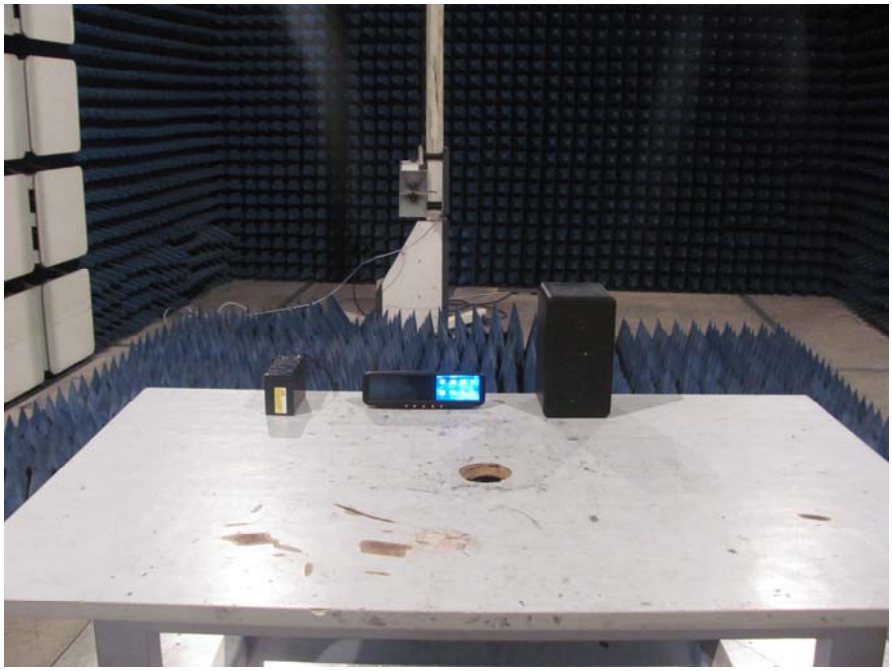
Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
55.12	V	29.44	40.00	-10.56	Peak
121.71	V	30.15	43.50	-13.35	Peak
196.35	V	33.85	43.50	-9.65	Peak
215.08	V	30.79	43.50	-12.71	Peak
272.50	V	33.55	46.00	-12.45	Peak
431.06	V	28.89	46.00	-17.11	Peak
72.88	H	25.88	40.00	-14.12	Peak
118.65	H	31.42	43.50	-12.08	Peak
192.05	H	37.88	43.50	-5.62	Peak
219.43	H	38.47	46.00	-7.53	Peak
260.95	H	40.69	46.00	-5.31	Peak
431.06	H	35.99	46.00	-10.01	Peak

No others harmonics emissions are higher than 20dB below the limits.

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

5.5 Radiation Measurement Photos



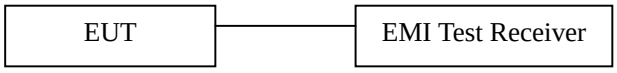


6. Occupied Bandwidth

6.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW = 10KHz, VBW= 30KHz
4. Set SPA Max hold. Mark peak.

6.2 Test SET-UP (Block Diagram of Configuration)



6.3 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/29/2012	05/29/2013

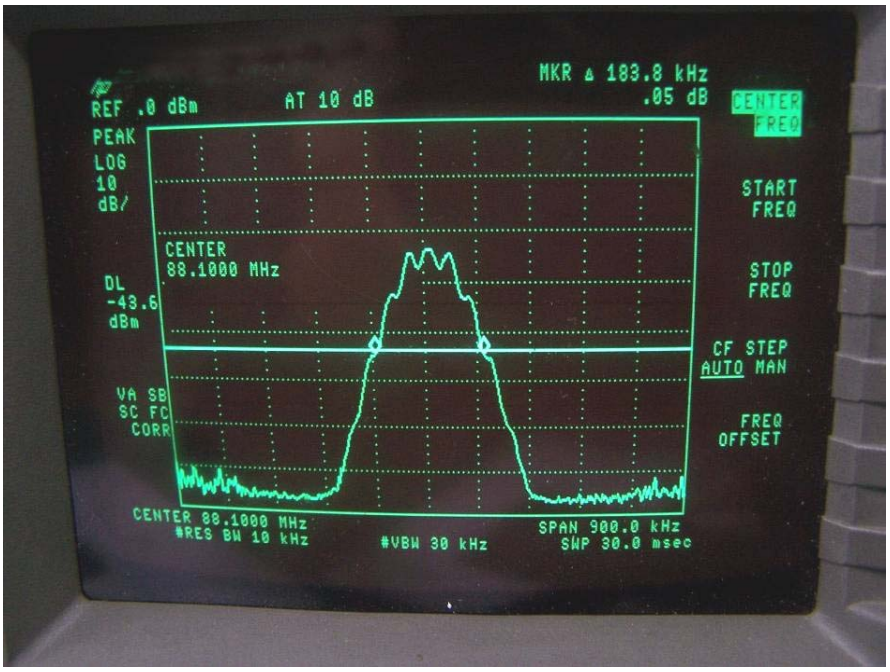
6.4 Measurement Results

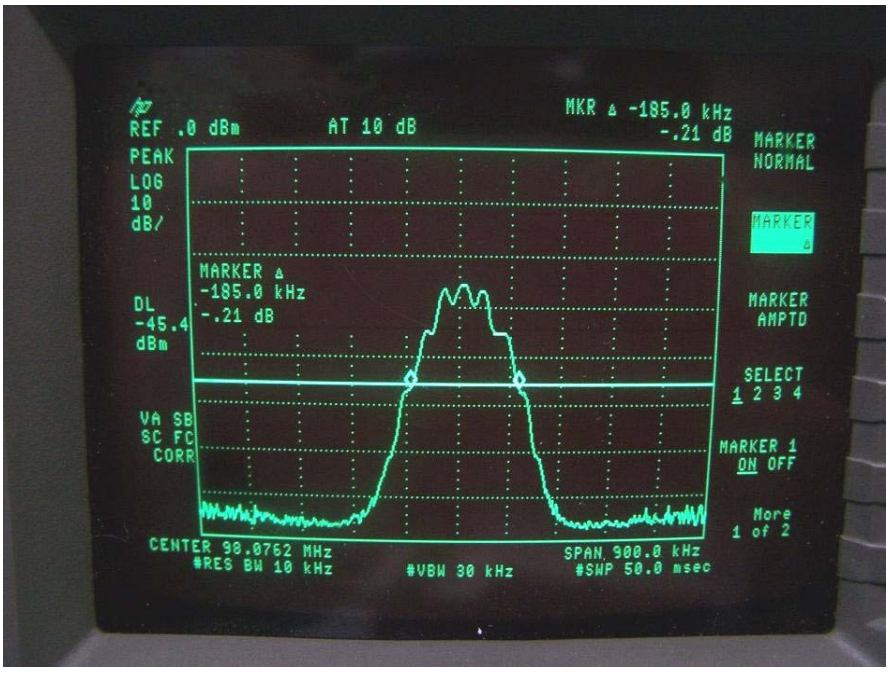
The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209.

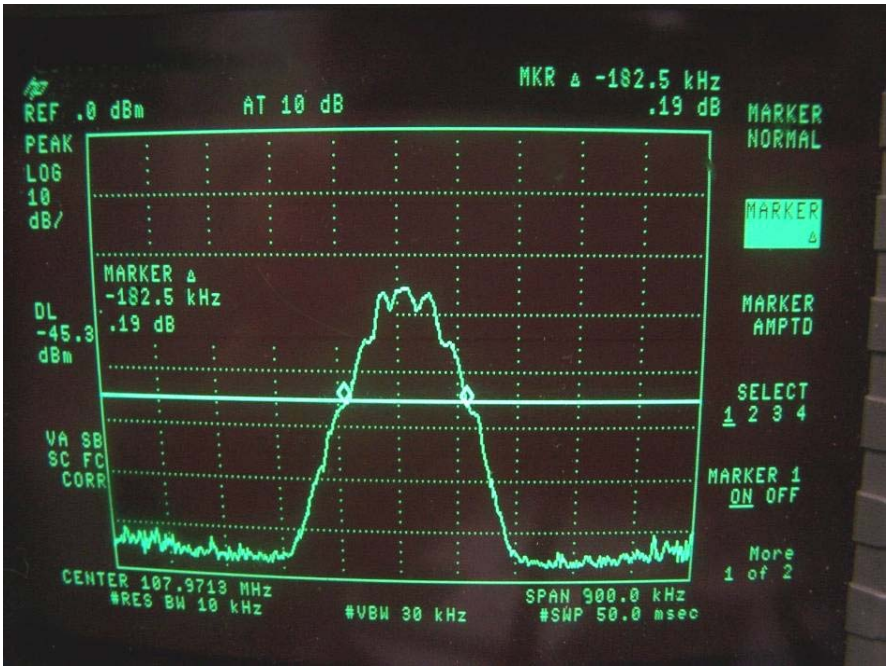
Operation Mode:	Transmitting Mode	Test Date :	June 10, 2012
Test Item:	Occupied bandwidth	Temperature :	28 ℃
Fundamental Frequency:	Low, Mid, High channels	Humidity :	65 %
Test Result:	PASS	Test By:	Andy

Channel Frequency (MHz)	Occupied bandwidth	Occupied bandwidth Limit	Pass/Fail
88.1	183.8 kHz	200kHz	PASS
98.0	185.0 kHz		PASS
107.9	182.5 kHz		PASS

Band Width Test Data







7. Antenna Application

7.1 Antenna requirement

The EUT's antenna used a dipole antenna and integrated on PCB, The EUT'S antenna is met the requirement of FCC part 15C section 15.203.