EMTEK
Access to the World

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

OF

9" Headrest Monitor with DVD Player

MODEL No.: HRDA0902, AVXMTG9HD

FCC ID: ATI9R3HRDA0902

Trademark: N/A

REPORT NO: ES150804031E

ISSUE DATE: August 12, 2015

Prepared for

ACTION ELECTRONICS CO., LTD.

2480, TINGKAT PERUSAHAAN ENAM, PRAI FREE TRADE ZONE, 13600, PERAI, PENANG, MALAYSIA

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:	ACTION ELECTRONICS CO., LTD. 2480, TINGKAT PERUSAHAAN ENAM, PRAI FREE TRADE ZONE, 13600, PERAI, PENANG, MALAYSIA
Manufacturer1:	ACTION INDUSTRIES (M) SDN. BHD. 2480, TINGKAT PERUSAHAAN ENAM, PRAI FREE TRADE ZONE, 13600, PERAI, PENANG, MALAYSIA
Manufacturer2:	ACTION ASIA(SHENZHEN) CO., LTD DeDe industrial Park, Jian'an Road, High-Tech industrial Park, Fuyong Town, Bao'an District, Shenzhen, China.
Product Description:	9" Headrest Monitor with DVD Player
Brand Name:	N/A
Model Number:	HRDA0902, AVXMTG9HD
Serial Number:	N/A
File Number:	ES150804031E
Date of Test:	August 05, 2015 to August 11, 2014

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 C63.10:2013 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 : August 05, 2015 to August 11, 2014

Prepared by : Doris Su

Doris Su/Editor

Reviewer : Joe Xia

Joe Xia /Supervisor

Approve & Authorized Signer :

Lisa Wang/Manager

Table of Contents

1. GENERAL INFORMATION

1.1 Product Description

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 88.1MHz~107.9MHz
B). Modulation: FM
C). Number of Channel: 7 channel
D). Frequency list: 88.1MHz, 88.5MHz, 88.9MHz, 106.7MHz, 107.1MHz, 107.5MHz, 107.9MHz
C). Antenna Type: Monopole Antenna
D). Power Supply: DC 12V

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: ATI9R3HRDA0902 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 C63.10:2013. 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, 2013.10.29
The certificate is valid until 2016.10.28
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, April 17, 2013
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 5, 2010
The Certificate Registration Number is 4480A-2.

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 normal 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 C63.10-2013.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

Below 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

Above 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Above 1GHz：
The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

2.4 Limitation

(1) Radiated Emission

(b) 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.

(c) 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

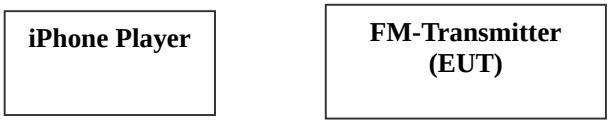


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Note
1.	9" Headrest Monitor with DVD Playe	N/A	HRDA0902, AVXMTG9HD	ATI9R3HRDA0902	***EUT***
2.	iPhone	Apple	iPhone 5/A1526	BCG-E2694A	

Note:

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

3. Summary Of Test Results

FCC Rules	Description Of Test	Result
§ 15.239	Radiated Emission	Pass
§ 15.209	Band Edge	Pass
§ 15.239	Bandwidth Test	Pass

4. Description of test modes

The EUT 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 : 106.7 MHz
3. For highest channel: 107.9MHz

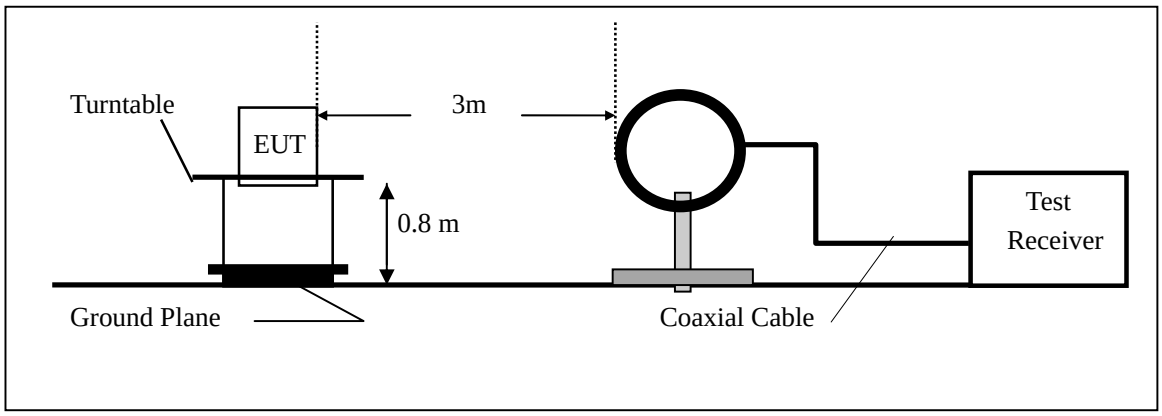
5. Radiated Emission and Band Edge Test

5.1 Measurement Procedure

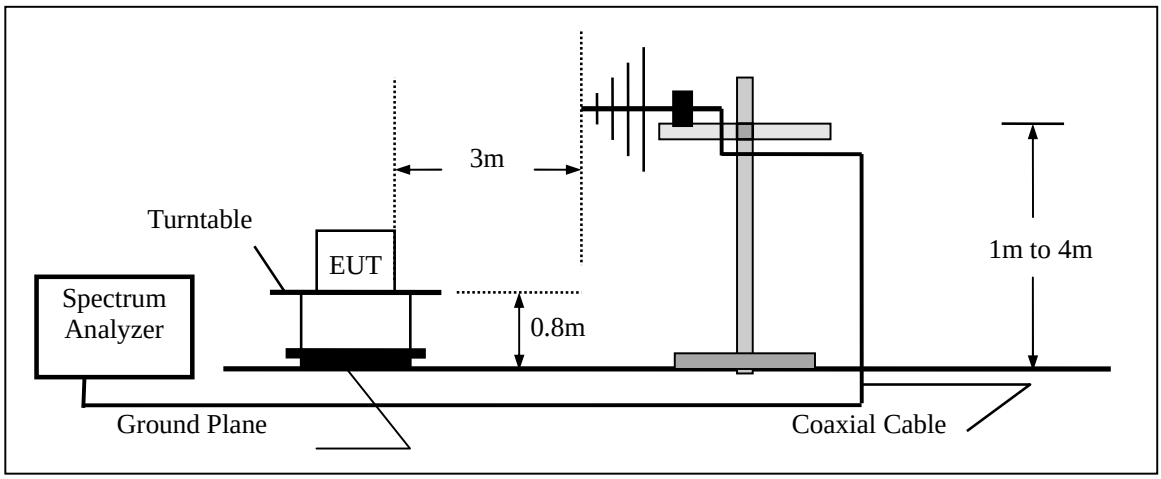
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above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

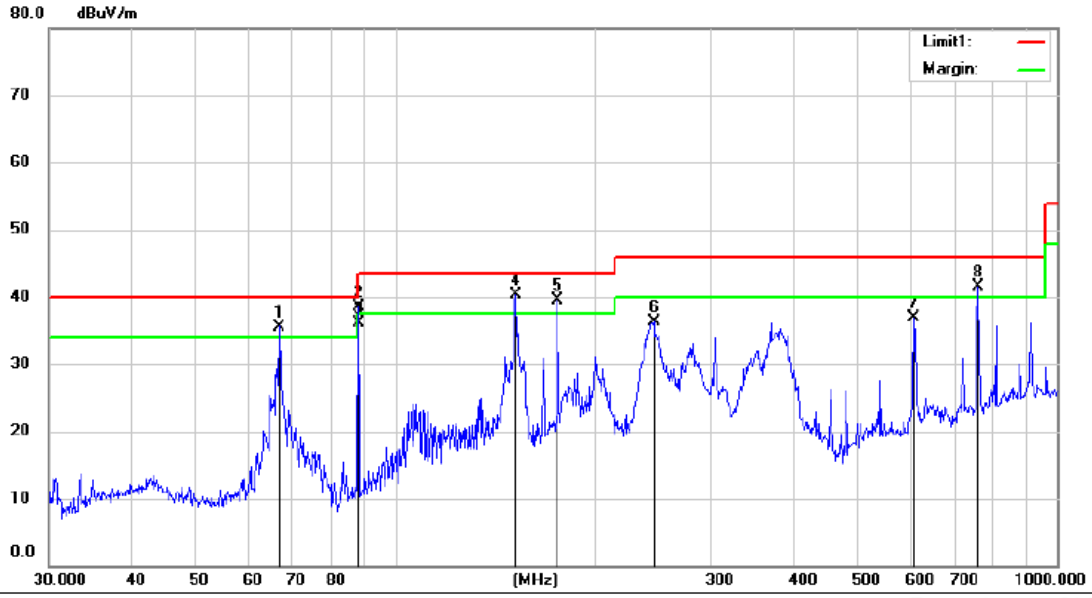


5.3 Measurement Equipment Used:

Test Site # 1					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	5/16/2015	5/16/2016
Pre-Amplifier	HP	8447D	2944A07999	5/16/2015	5/16/2016
Bilog Antenna	Schwarzbeck	VULB9163	142	5/16/2015	5/16/2016
Loop Antenna	ARA	PLA-1030/ B	1029	5/16/2015	5/16/2016

5.4 Measurement Result

A. Fundamental and Harmonics Radiated Emission Data



Site 3m Chamber #3 Polarization: *Horizontal* Temperature: 24 C

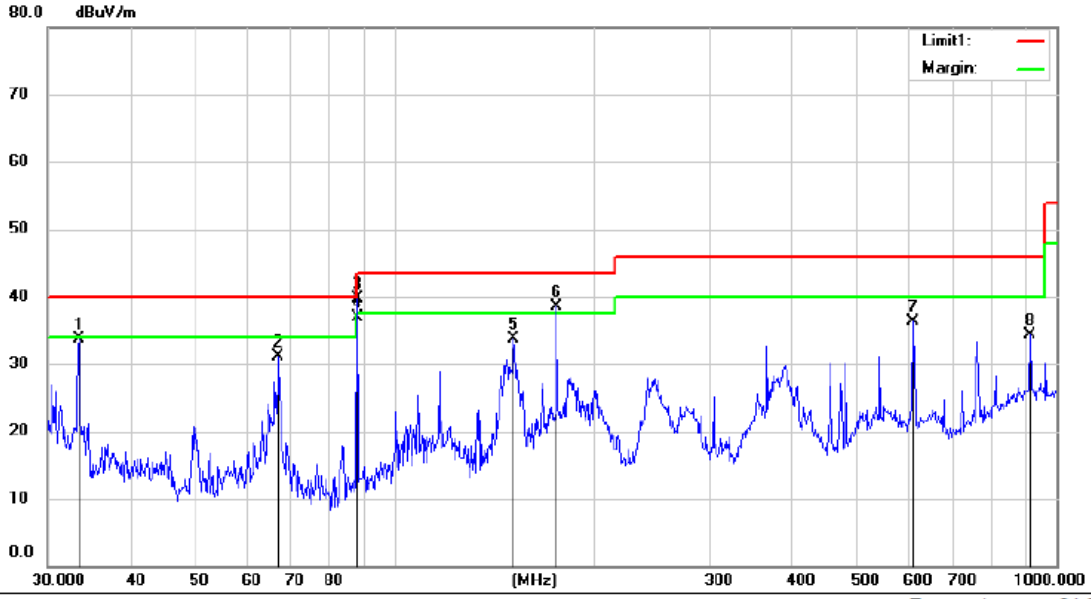
Limit: (RE)FCC PART 15 CLASS C Power: DC 12V Humidity: 53 %

Mode:FM 88.1MHZ

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	66.9670	53.20	-17.60	35.60	40.00	-4.40	QP			
2	!	88.0930	56.12	-17.53	38.59	68.00	-29.41	QP			
3		88.0930	53.69	-17.53	36.16	48.00	-11.84	AVG			
4	*	152.1297	58.50	-18.24	40.26	43.50	-3.24	QP			
5	!	176.2686	58.74	-19.15	39.59	43.50	-3.91	QP			
6		245.9510	49.80	-13.52	36.28	46.00	-9.72	QP			
7		607.7866	43.80	-6.91	36.89	46.00	-9.11	QP			
8	!	760.7035	45.67	-4.09	41.58	46.00	-4.42	QP			

*:Maximum data x:Over limit !:over margin Operator: H



Site 3m Chamber #3 Polarization: *Vertical* Temperature: 24 C

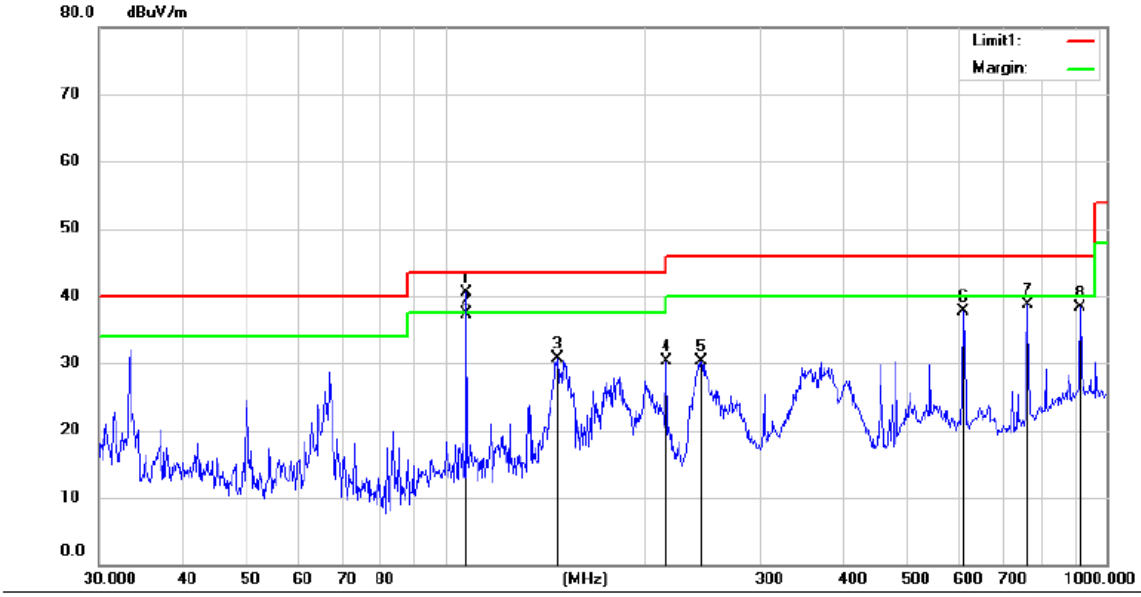
Limit: (RE)FCC PART 15 CLASS C Power: DC 12V Humidity: 53 %

Mode:FM 88.1MHZ

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		33.4450	48.96	-15.31	33.65	40.00	-6.35	QP			
2		66.9670	48.71	-17.60	31.11	40.00	-8.89	QP			
3	*	88.0330	57.26	-17.53	39.73	68.00	-28.27	QP			
4		88.0330	54.48	-17.53	36.95	48.00	-11.05	AVG			
5		151.5972	51.84	-18.21	33.63	43.50	-9.87	QP			
6	!	176.2686	57.71	-19.15	38.56	43.50	-4.94	QP			
7		607.7867	43.25	-6.91	36.34	46.00	-9.66	QP			
8		912.8620	34.92	-0.64	34.28	46.00	-11.72	QP			

*:Maximum data x:Over limit !:over margin Operator: H



Site 3m Chamber #3 Polarization: *Vertical* Temperature: 24 C

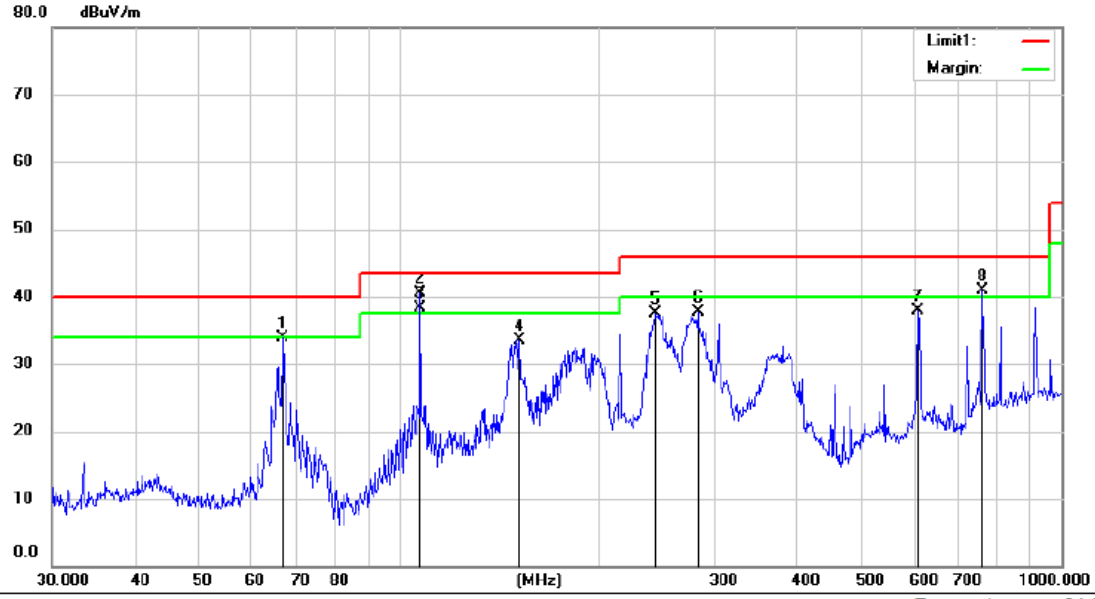
Limit: (RE)FCC PART 15 CLASS C Power: DC 12V Humidity: 53 %

Mode:FM 107.9MHZ

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	107.8876	54.66	-14.17	40.49	68.00	-27.51	QP			
2		107.8877	51.41	-14.17	37.24	48.00	-10.76	AVG			
3		147.9214	48.80	-18.03	30.77	43.50	-12.73	QP			
4		216.0240	46.72	-16.38	30.34	46.00	-15.66	QP			
5		244.2321	43.93	-13.62	30.31	46.00	-15.69	QP			
6		607.7867	44.69	-6.91	37.78	46.00	-8.22	QP			
7		760.7035	42.71	-4.09	38.62	46.00	-7.38	QP			
8		912.8620	38.92	-0.64	38.28	46.00	-7.72	QP			

*:Maximum data x:Over limit !:over margin Operator: H



Site 3m Chamber #3 Polarization: *Horizontal* Temperature: 24 C

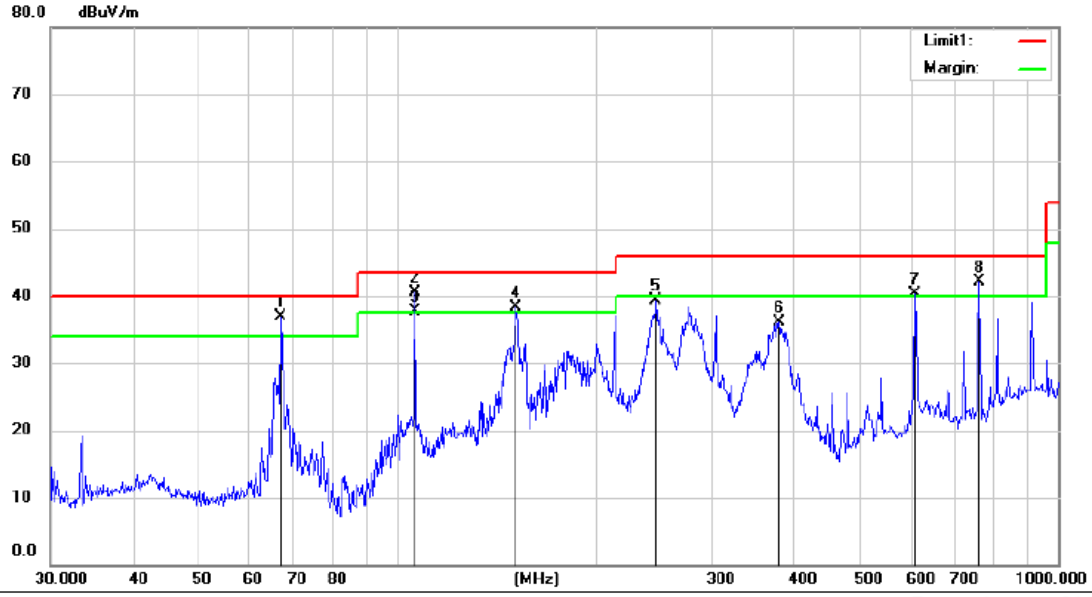
Limit: (RE)FCC PART 15 CLASS C Power: DC 12V Humidity: 53 %

Mode:FM 107.9MHZ

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		66.9670	51.43	-17.60	33.83	40.00	-6.17	QP			
2	*	107.8877	54.61	-14.17	40.44	68.00	-27.56	QP			
3		107.8877	52.51	-14.17	38.34	48.00	-9.66	AVG			
4		152.1297	51.78	-18.24	33.54	43.50	-9.96	QP			
5		244.2321	51.16	-13.62	37.54	46.00	-8.46	QP			
6		282.9852	50.50	-12.76	37.74	46.00	-8.26	QP			
7		607.7867	44.81	-6.91	37.90	46.00	-8.10	QP			
8	!	760.7036	44.93	-4.09	40.84	46.00	-5.16	QP			

*:Maximum data x:Over limit !:over margin Operator: H



Site 3m Chamber #3 Polarization: ***Horizontal*** Temperature: 24 C

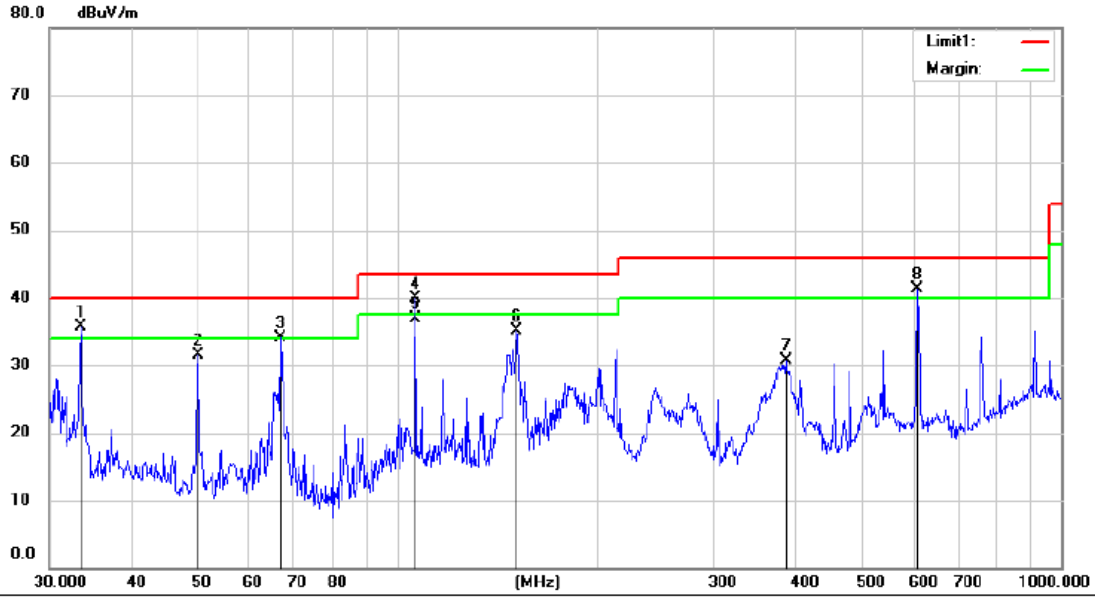
Limit: (RE)FCC PART 15 CLASS C Power: DC 12V Humidity: 53 %

Mode:FM 106.7MHZ

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	66.9670	54.46	-17.60	36.86	40.00	-3.14	QP			
2	*	106.7587	54.76	-14.16	40.60	68.00	-27.40	QP			
3		106.7587	51.85	-14.16	37.69	48.00	-10.31	AVG			
4	!	151.5972	56.60	-18.21	38.39	43.50	-5.11	QP			
5		246.8150	52.72	-13.48	39.24	46.00	-6.76	QP			
6		378.5842	46.07	-10.05	36.02	46.00	-9.98	QP			
7	!	607.7867	47.12	-6.91	40.21	46.00	-5.79	QP			
8	!	760.7035	46.12	-4.09	42.03	46.00	-3.97	QP			

*:Maximum data x:Over limit !:over margin Operator: H



Site 3m Chamber #3
Limit: (RE)FCC PART 15 CLASS C
Mode:FM 106.7MHZ
Note:

Polarization: *Vertical*
Power: DC 12V

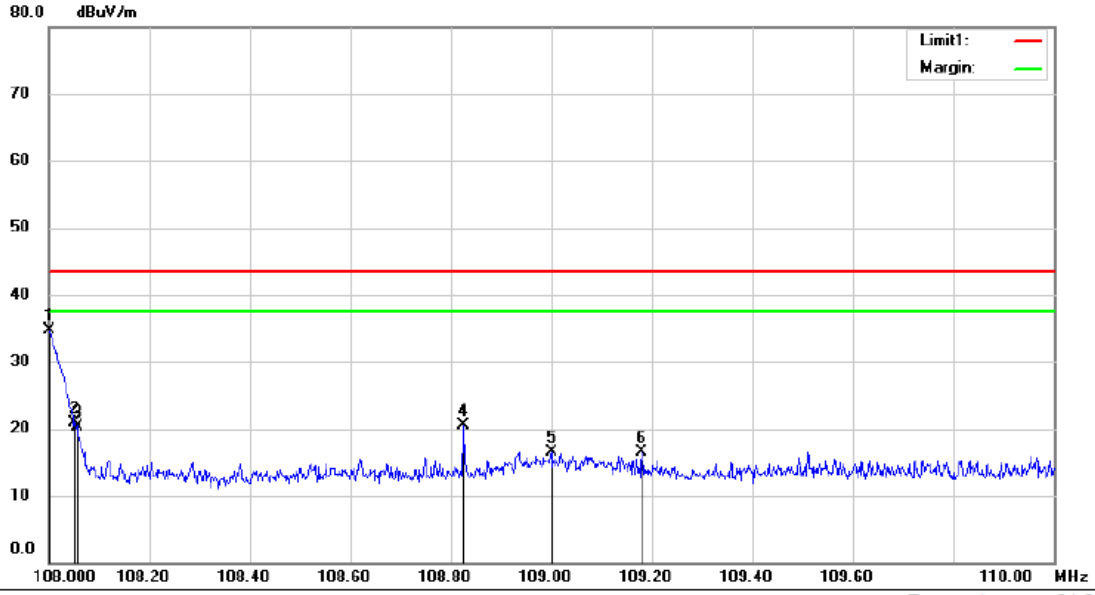
Temperature: 24 C
Humidity: 53 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	33.4450	50.97	-15.31	35.66	40.00	-4.34	QP			
2		50.2324	47.34	-15.82	31.52	40.00	-8.48	QP			
3	!	66.9670	51.72	-17.60	34.12	40.00	-5.88	QP			
4	*	106.7587	54.03	-14.16	39.87	68.00	-28.13	QP			
5		106.7587	50.99	-14.16	36.83	48.00	-11.17	AVG			
6		151.5972	53.33	-18.21	35.12	43.50	-8.38	QP			
7		385.2804	40.48	-9.70	30.78	46.00	-15.22	QP			
8	!	607.7867	48.19	-6.91	41.28	46.00	-4.72	QP			

*:Maximum data x:Over limit !:over margin

Operator: H

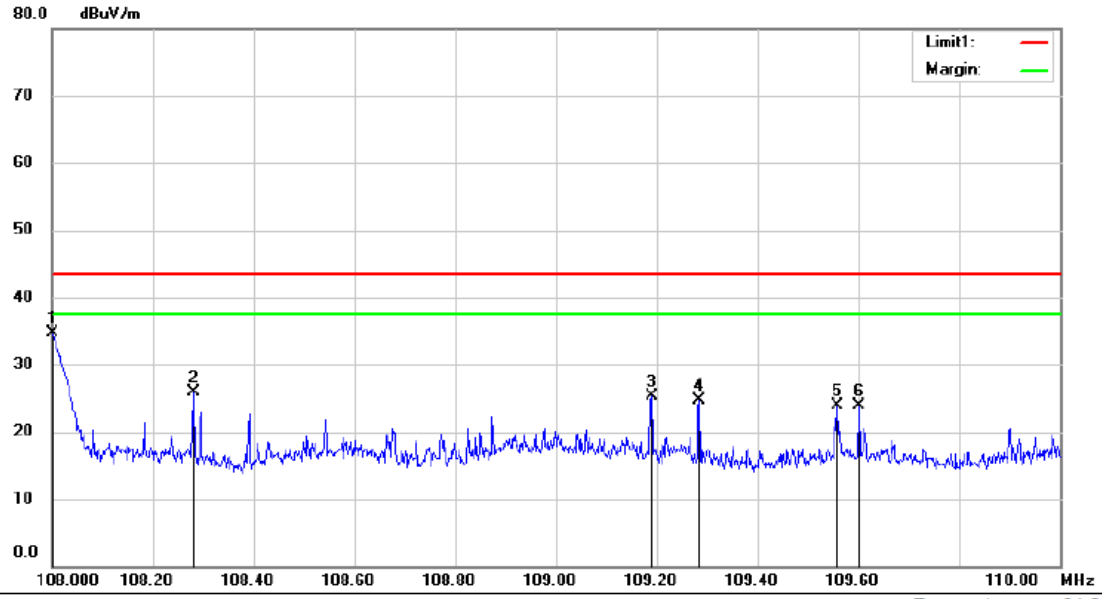
B. Band Edge Data



Site 3m Chamber #3 Polarization: *Horizontal* Temperature: 24 C
Limit: (RE)FCC PART 15 CLASS C Power: Humidity: 53 %
Mode:FM 107.9MHz
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	108.0000	48.90	-14.17	34.73	43.50	-8.77	QP			
2		108.0520	35.12	-14.17	20.95	43.50	-22.55	QP			
3		108.0560	34.57	-14.17	20.40	43.50	-23.10	QP			
4		108.8260	34.68	-14.20	20.48	43.50	-23.02	QP			
5		109.0000	30.76	-14.20	16.56	43.50	-26.94	QP			
6		109.1800	30.79	-14.20	16.59	43.50	-26.91	QP			

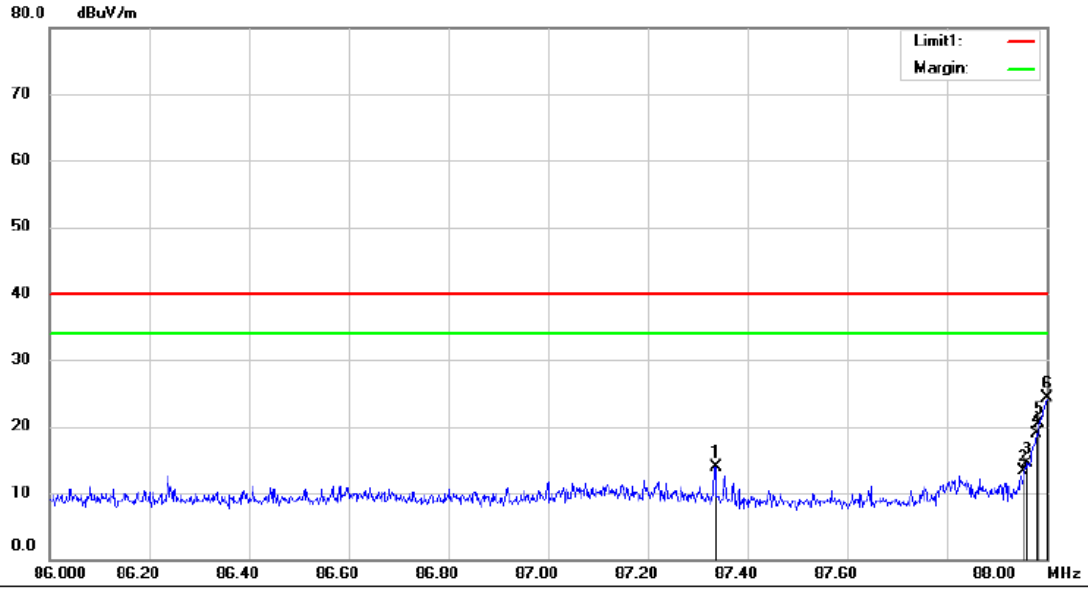
*:Maximum data x:Over limit !:over margin Operator: KK



Site 3m Chamber #3
Polarization: *Vertical*
Temperature: 24 C
Limit: (RE)FCC PART 15 CLASS C
Power:
Humidity: 53 %
Mode:FM 107.9MHz
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	108.0000	48.90	-14.17	34.73	43.50	-8.77	QP			
2		108.2800	40.06	-14.18	25.88	43.50	-17.62	QP			
3		109.1900	39.56	-14.20	25.36	43.50	-18.14	QP			
4		109.2840	38.89	-14.21	24.68	43.50	-18.82	QP			
5		109.5580	38.17	-14.21	23.96	43.50	-19.54	QP			
6		109.6020	38.11	-14.21	23.90	43.50	-19.60	QP			

*:Maximum data x:Over limit !:over margin
Operator: KK



Site 3m Chamber #3 Polarization: *Horizontal* Temperature: 24 C

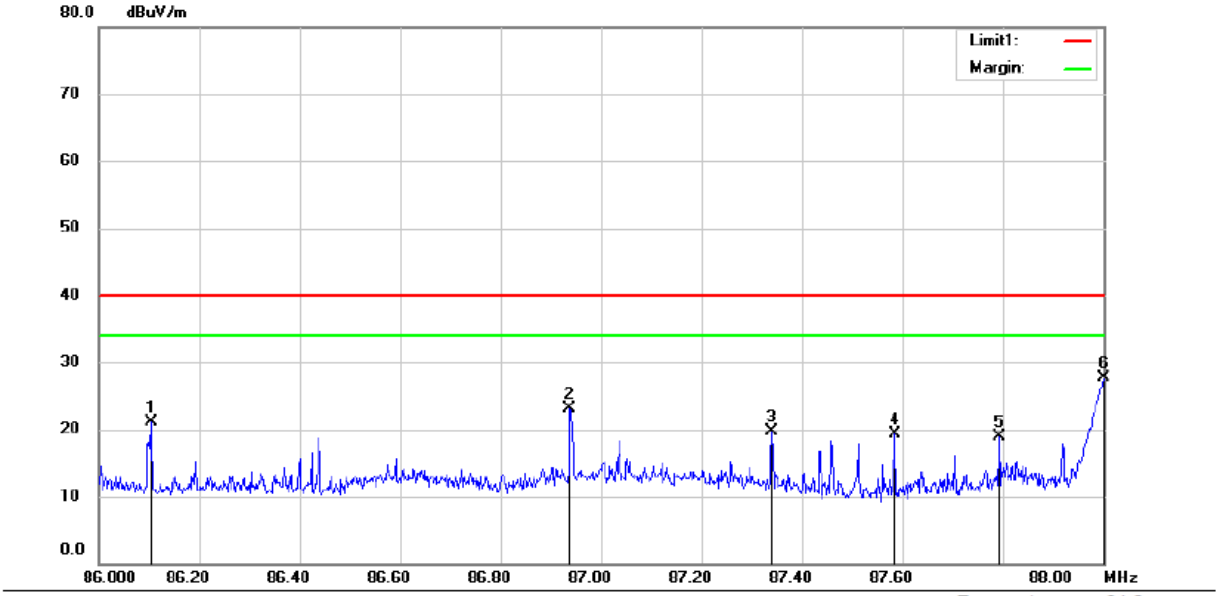
Limit: (RE)FCC PART 15 CLASS C Power: Humidity: 53 %

Mode:FM 88.1MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		87.3360	31.62	-17.76	13.86	40.00	-26.14	QP			
2		87.9540	30.79	-17.55	13.24	40.00	-26.76	QP			
3		87.9620	32.13	-17.55	14.58	40.00	-25.42	QP			
4		87.9800	36.50	-17.55	18.95	40.00	-21.05	QP			
5		87.9860	38.12	-17.54	20.58	40.00	-19.42	QP			
6	*	88.0000	41.86	-17.54	24.32	40.00	-15.68	QP			

*:Maximum data x:Over limit !:over margin Operator: KK



Site 3m Chamber #3 Polarization: *Vertical* Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS C Power: Humidity: 53 %

Mode:FM 88.1MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		86.1040	39.32	-18.15	21.17	40.00	-18.83	QP			
2		86.9380	40.97	-17.89	23.08	40.00	-16.92	QP			
3		87.3400	37.48	-17.76	19.72	40.00	-20.28	QP			
4		87.5840	36.98	-17.67	19.31	40.00	-20.69	QP			
5		87.7940	36.45	-17.61	18.84	40.00	-21.16	QP			
6	*	88.0000	45.20	-17.54	27.66	40.00	-12.34	QP			

*:Maximum data x:Over limit !:over margin Operator: KK

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.

Note: The EUT can be connected to iPod Player. The input signal of EUT is controlled by iPod Player. So the volume control of iPod Player was set to maximum during the test. It means that the test was performed with the maximum audio input.

6.2 Test SET-UP (Block Diagram of Configuration)

Same as 5.2 Radiated Emission Measurement.

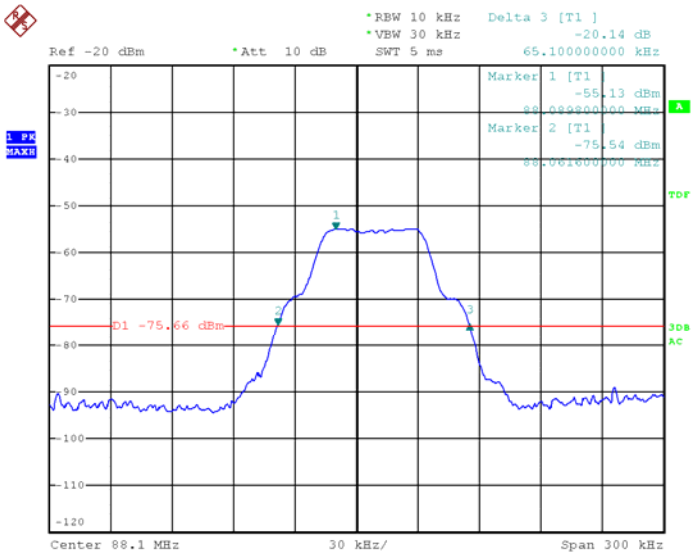
6.3 Measurement Equipment Used:

Same as 5.2 Radiated Emission Measurement.

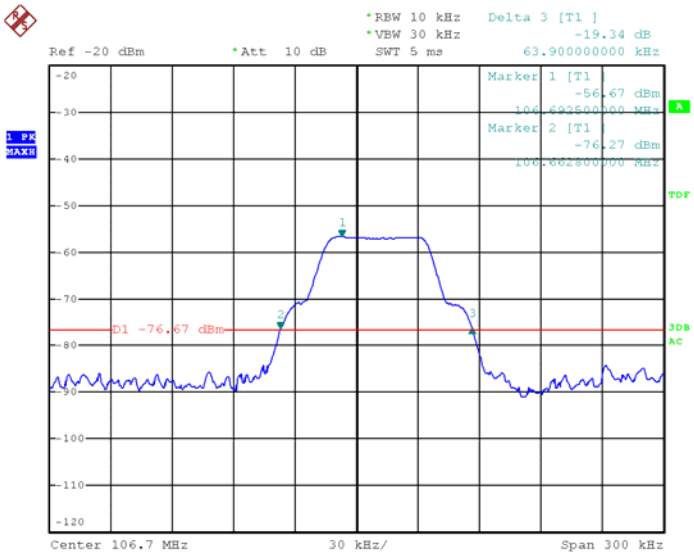
6.4 Measurement Results:

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

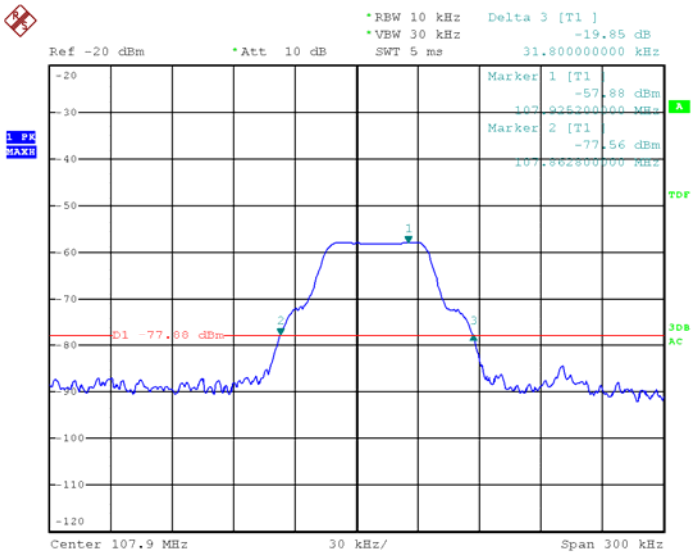
Band Width Test Data



Date: 12.AUG.2015 09:46:47



Date: 12.AUG.2015 09:48:59



Date: 12.AUG.2015 09:51:25

7. Antenna Application

7.1 Antenna requirement

The EUT's antenna used a monopole antenna, The EUT'S antenna is met the requirement of FCC part 15C section 15.203

7.2 Result

Monopole Antenna is for FM, the antenna meets the requirement.