

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

OF

Mobile Portal

Model No.: 87131790

FCC ID: XLU87131790

Trademark: Activision

Report No.:KAD140729115E2

Issue Date: August 29, 2014

Prepared for

**ACTIVISION PUBLISHING, INC.
3100 Ocean Park Blvd., Santa Monica, CA90405, USA**

Prepared by

DONGGUAN EMTEK CO., LTD.

**No.281, Guantai Road, Nancheng District,
Shenzhen, Guangdong, China**

TEL: 86-769-22807078

FAX: 86-769-22807079

VERIFICATION OF COMPLIANCE

Applicant:	ACTIVISION PUBLISHING, INC 3100 Ocean Park Blvd., Santa Monica, CA90405, USA
Manufacturer:	DONGGUAN CHANGANFOOWAY METAL & PLASTIC No.208 Bubugao Road, Jiangbei, Wusha, Changan Town, Dongguan City, Guangdong, China.
Product Description:	Mobile Portal
Model Number:	87131790
Trademark:	Activision
File Number:	KAD140729115E2
Date of Test:	July 29, 2014 to August 11, 2014

We hereby certify that:

The above equipment was tested by DONGGUAN 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 15.225(2013).

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

Approved By



**Sam Lv / Q.A. Manager
DONGGUAN EMTEK CO., LTD.**

Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	KAD140729115E2

Table of Contents

1	GENERAL INFORMATION	5
1.1	PRODUCT DESCRIPTION	5
1.2	RELATED SUBMITTAL(S) / GRANT(S)	5
1.3	TEST METHODOLOGY	6
1.4	SPECIAL ACCESSORIES	6
1.5	EQUIPMENT MODIFICATIONS	6
1.6	TEST FACILITY	6
2	SYSTEM TEST CONFIGURATION.....	7
2.1	EUT CONFIGURATION	7
2.2	EUT EXERCISE	7
2.3	TEST PROCEDURE	7
2.4	CONFIGURATION OF TESTED SYSTEM.....	8
3	SUMMARY OF TEST RESULTS.....	9
4	CONDUCTED EMISSIONS TEST	10
4.1	MEASUREMENT PROCEDURE	10
4.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	10
4.3	MEASUREMENT EQUIPMENT USED.....	10
4.4	CONDUCTED EMISSION LIMIT	11
4.5	MEASUREMENT RESULT	11
4.6	CONDUCTED MEASUREMENT PHOTOS:	11
5	RADIATED EMISSION TEST	12
5.1	MEASUREMENT PROCEDURE	12
5.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	12
5.3	MEASUREMENT EQUIPMENT USED.....	13
5.4	RADIATED EMISSION LIMIT	13
5.5	MEASUREMENT RESULT	15
5.6	RADIATED MEASUREMENT PHOTOS:.....	17
6	FREQUENCY STABILITY MEASUREMENT	18
6.1	FREQUENCY STABILITY LIMITS	18
6.2	MEASUREMENT INSTRUMENTS LIST	18
6.3	TEST PROCEDURE	18
6.4	EUT OPERATING CONDITIONS	18
6.5	TEST RESULTS	19
7	EMISSION BANDWIDTH.....	24
7.1	EMISSION BANDWIDTH LIMIT	24
7.2	TEST INSTRUMENTS	24
7.3	TEST PROCEDURE	24
7.4	TEST SETUP.....	24
7.5	ANTENNA REQUIREMENT	26
7.6	RESULT	26

APPENDIX (Photos of EUT) (4 pages)

1 General Information

1.1 Product Description

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 13.56MHz
- B). Modulation: ASK
- C). Number of Channel: 1 channel
- D). Power Supply: DC 3*1.5V Battery
- E). Antenna Type: Internal Loop antenna
- F).Antenna Gain: 0 dBi

Note: for a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.2 Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended for FCC ID: XLU87131790 filing to comply with Section 15.225 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 (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 FCC, June 18, 2014
The Certificate Number is 247565.

Accredited by Industry Canada, February 19, 2014
The Certificate Registration Number. is 9444A.

Name of Firm
Site Location

:
:

DONGGUAN EMTEK CO., LTD.
No.281, Guantai Road, Nancheng District,
Dongguan, 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 fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a 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 30 MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is placed on a 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 transmitter(EUT) was tested according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

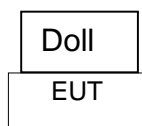


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1.	Mobile Portal	Activision	87131790	XLU87131790	N/A	EUT
2	Doll	Activision	84999888	N/A	N/A	Support Equipment
3	Life Trap	Activision	87141888	N/A	N/A	Support Equipment

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
§15.207	AC Power Conducted Emission	N/A
§15.225(a)(b)(c), (d), §15.209	Radiated Emission	Compliant
§15.225(e)	Frequency Stability	Compliant
§15.203	Antenna Application	Compliant

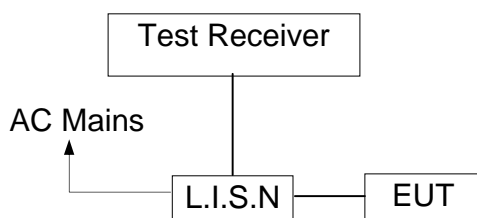
Remark: The EUT is supplied by Battery, there is no need for AC Power Conducted Emission test to be performed on this product.

4 Conducted Emissions Test

4.1 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

4.2 Test SET-UP (Block Diagram of Configuration)



4.3 Measurement Equipment Used

Equipment	Serial No.	Manufacturer	Model No.	Cal. Date	Due Date
Test Receiver	Rohde&Schwarz	ESCS30	100018	05/16/2014	05/15/2015
L.I.S.N.	Rohde&Schwarz	ENV216	100017	05/16/2014	05/15/2015
RF Switching Unit	CDS	RSU-M2	38401	05/16/2014	05/15/2015
Coaxial Cable	CDS	79254	46107086	05/16/2014	05/15/2015

4.4 Conducted Emission Limit

Conducted Emission Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.5 Measurement Result

N/A.

4.6 Conducted Measurement Photos:

N/A.

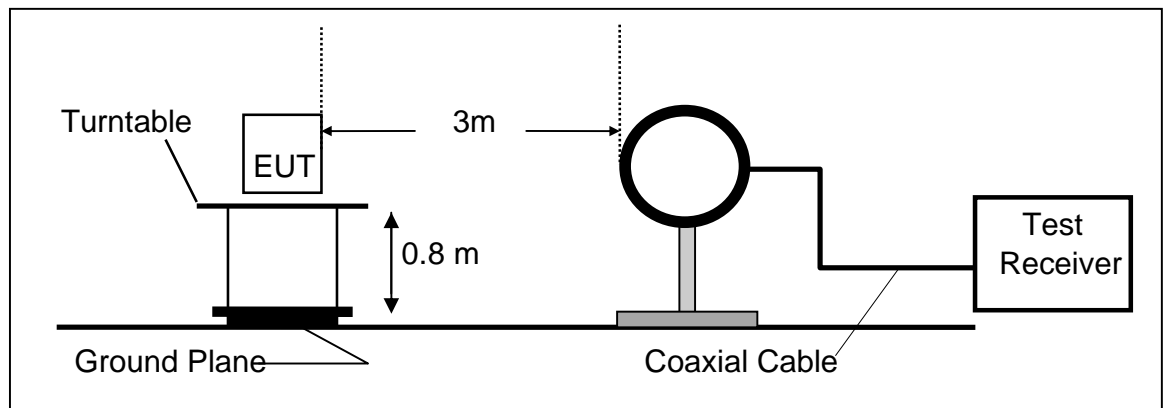
5 Radiated Emission Test

5.1 Measurement Procedure

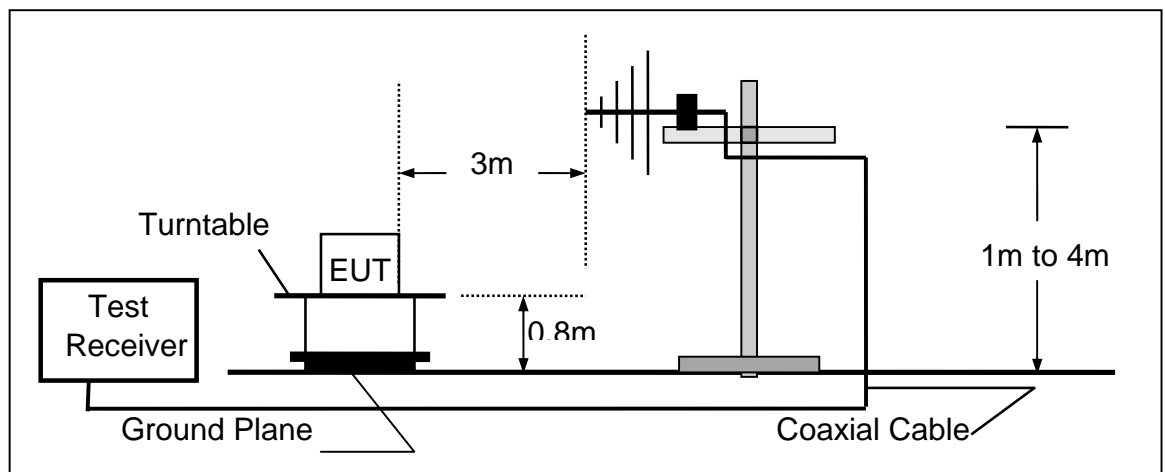
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above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

Equipment	Serial No.	Manufacturer	Model No.	Cal. Date	Due Date
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/16/2014	05/15/2015
Pre-Amplifier	HP	8447D	2944A07999	05/16/2014	05/15/2015
Bilog Antenna	Schwarzbeck	VULB9163	142	05/16/2014	05/15/2015
Loop Antenna	Schwarzbeck	FMZB 1519	012	05/16/2014	05/15/2015
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/16/2014	05/15/2015
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/16/2014	05/15/2015
Cable	Schwarzbeck	AK9513	ACRX1	05/19/2014	05/18/2015
Cable	Rosenberger	AK9515E	FP2RX2	05/19/2014	05/18/2015
Cable	Schwarzbeck	AK9513	CRPX1	05/19/2014	05/18/2015
Cable	Schwarzbeck	AK9513	CRRX2	05/19/2014	05/18/2015
Pre-Amplifier	A.H.	PAM-0126	1415261	05/19/2014	05/18/2015

5.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency tion at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

FCC Part 15.225(a)/(b)/(c)				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency tion at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
13.110 – 13.410	106	30 m	106*100	80.5
13.410 – 13.553	334	30 m	334*100	90.5
13.553 – 13.567	15,848	30 m	15,848*100	124
13.567 – 13.710	334	30 m	334*100	90.5
13.710 – 14.010	106	30 m	106*100	80.5

15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

Remark 1. Emission level in dBuV/m=20 log (uV/m)

- :
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

5.5 Measurement Result

Operation Mode: TX Mode Test Date : August 05, 2014
Frequency Range: 9KHz~30MHz Temperature : 28℃
Test Result: PASS Humidity : 65 %
Measured Distance: 3m Test By: KYO

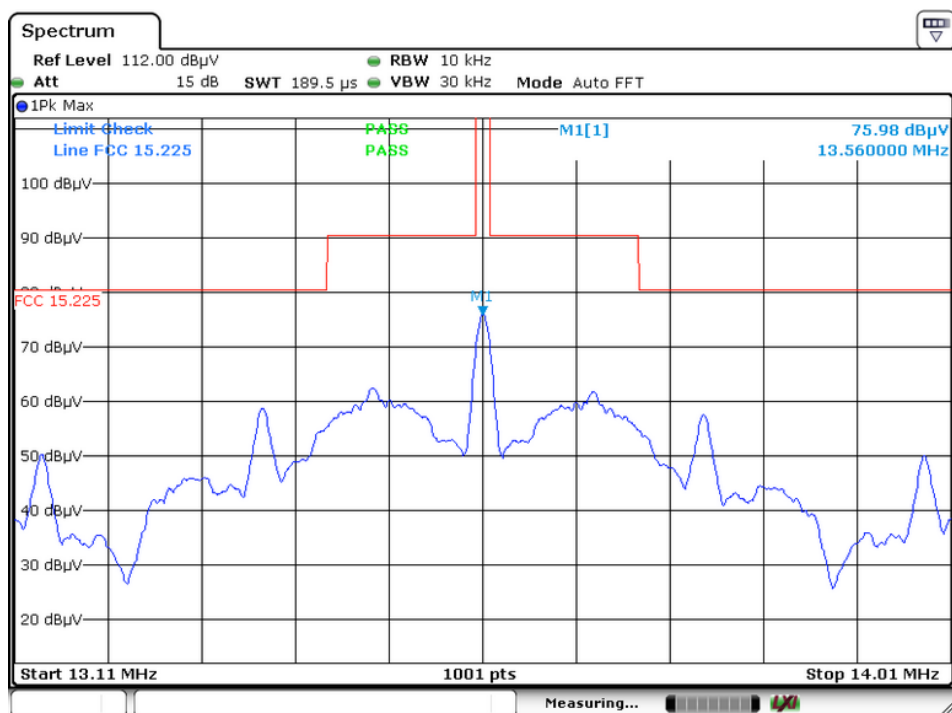
Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
8.16	V	30.13	69.54	-39.41	QP
11.31	V	31.44	69.54	-38.10	QP
14.45	V	32.75	69.54	-36.79	QP
17.22	V	33.58	69.54	-35.96	QP
27.57	V	34.57	69.54	-34.97	QP
28.03	V	35.74	69.54	-33.8	QP
6.67	H	30.16	69.54	-39.38	QP
11.11	H	31.96	69.54	-37.58	QP
15.68	H	32.13	69.54	-37.41	QP
23.66	H	32.81	69.54	-36.73	QP
25.08	H	33.46	69.54	-36.08	QP
27.71	H	34.53	69.54	-35.01	QP

Operation Mode: TX Mode Test Date : August 05, 2014
Frequency Range: 30~1000MHz Temperature : 28℃
Test Result: PASS Humidity : 65 %
Measured Distance: 3m Test By: KYO

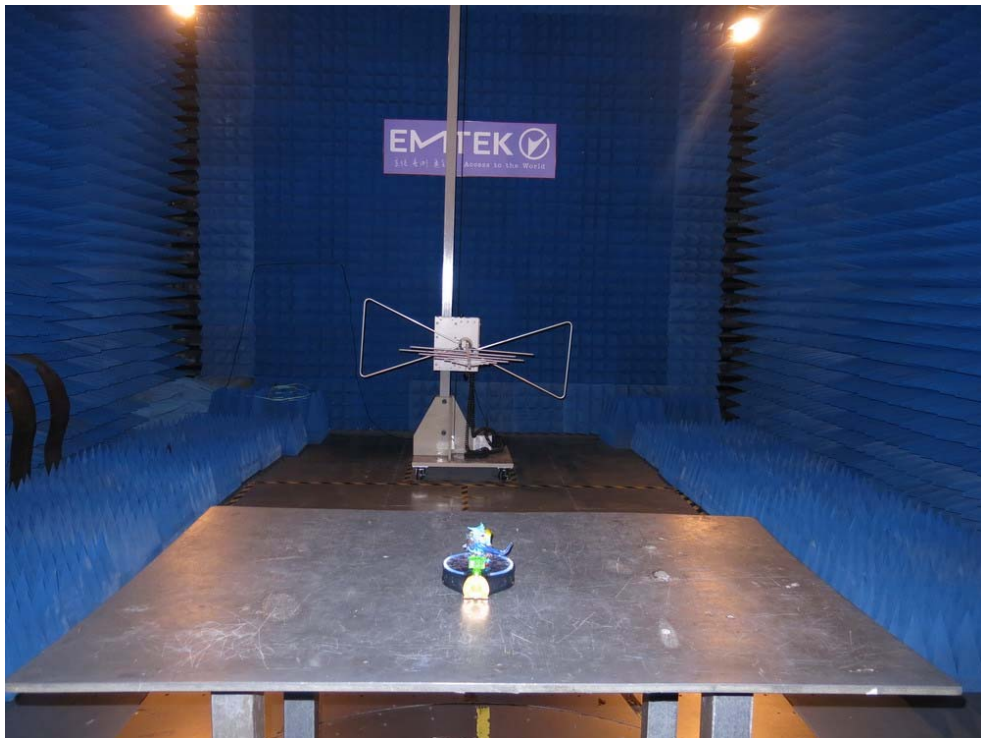
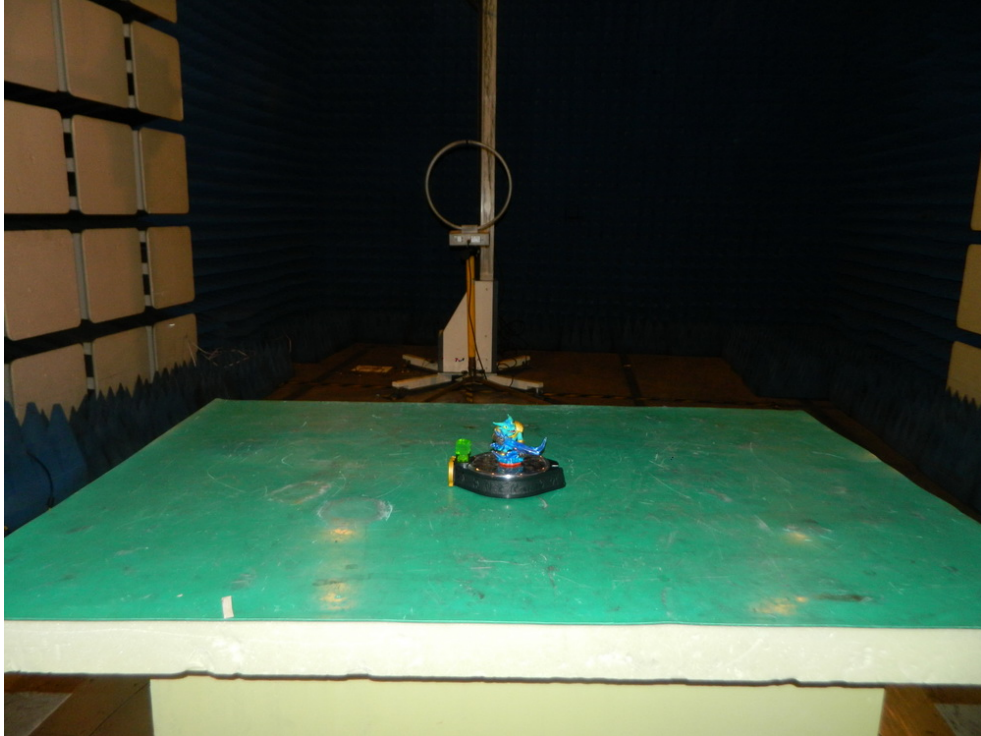
Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
37.7600	V	15.43	40.00	-24.57	QP
41.6400	V	16.27	40.00	-23.73	QP
134.7600	V	12.92	43.50	-30.58	QP
658.5600	V	20.90	46.00	-25.10	QP
820.5500	V	24.16	46.00	-21.84	QP
921.4300	V	25.62	46.00	-20.38	QP
40.6700	H	18.86	40.00	-21.14	QP
122.1500	H	14.26	43.50	-29.24	QP
324.8800	H	18.04	46.00	-27.96	QP
662.4400	H	22.72	46.00	-23.28	QP
759.4400	H	24.02	46.00	-21.98	QP
902.0300	H	25.23	46.00	-20.77	QP

Operation Mode: TX Mode
Frequency Range: 13.110MHz~14.010
MHz
Test Result: PASS
Measured Distance: 3m

Test Date : August 05, 2014
Temperature : 28°C
Humidity : 65 %
Test By: KYO



5.6 Radiated Measurement Photos:



6 FREQUENCY STABILITY MEASUREMENT

6.1 FREQUENCY STABILITY LIMITS

FCC Part 15.225(e)

the frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+ 50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

6.2 MEASUREMENT INSTRUMENTS LIST

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSV30	1321.3008K	05/16/2014	05/15/2015
RF Switching Unit	CDS	RSU-M2	38401	05/16/2014	05/15/2015
Coaxial Cable	CDS	79254	46107086	05/16/2014	05/15/2015

6.3 TEST PROCEDURE

The EUT is supplied by new batteries and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. And the operation temperature was set in 20°C . After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.

6.4 EUT OPERATING CONDITIONS

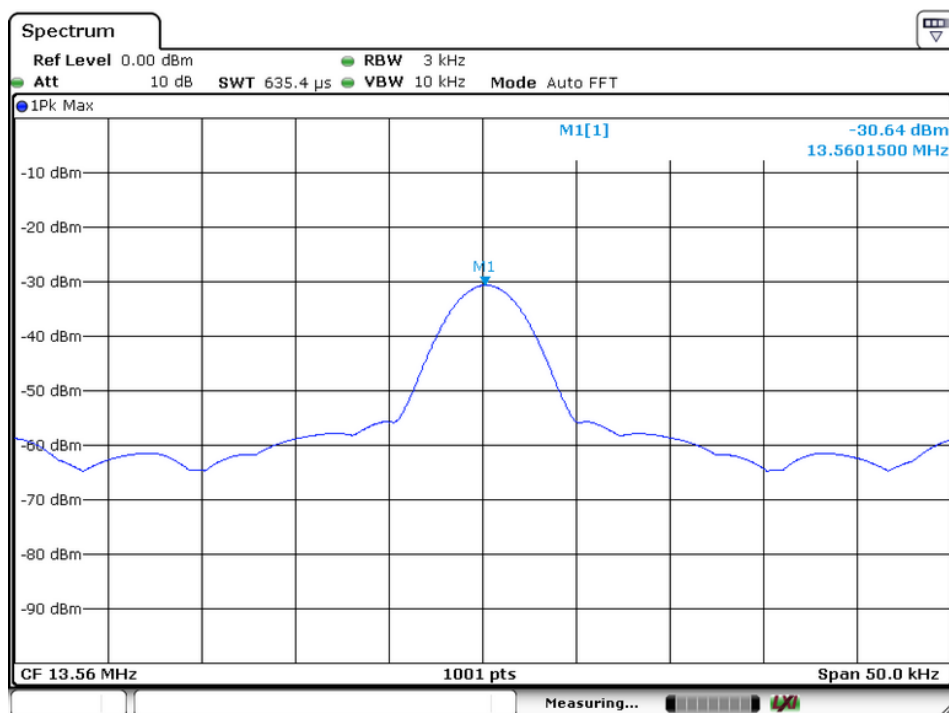
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

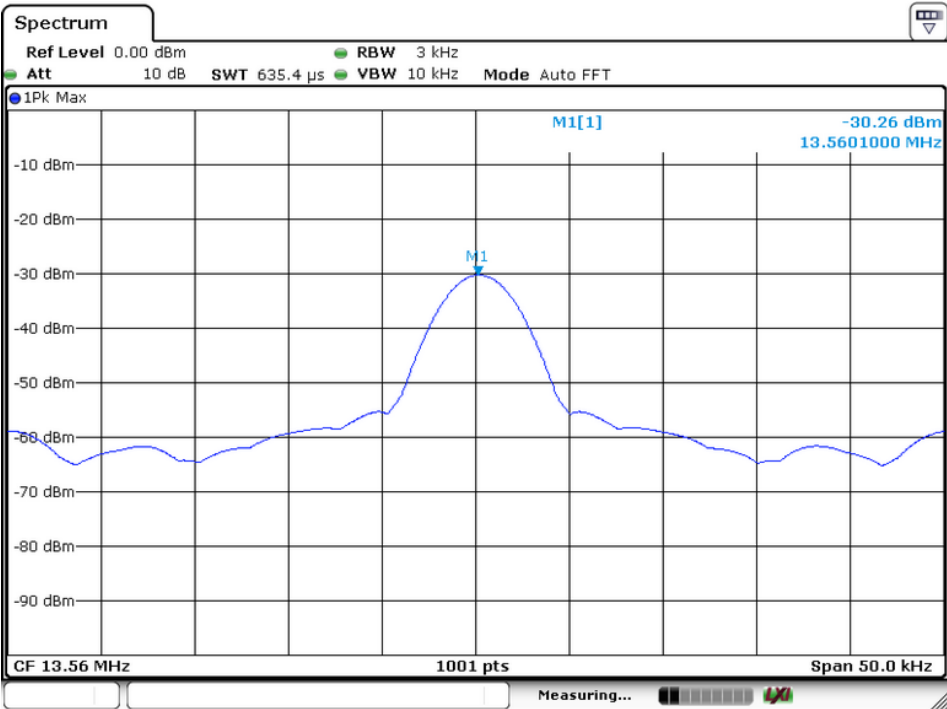
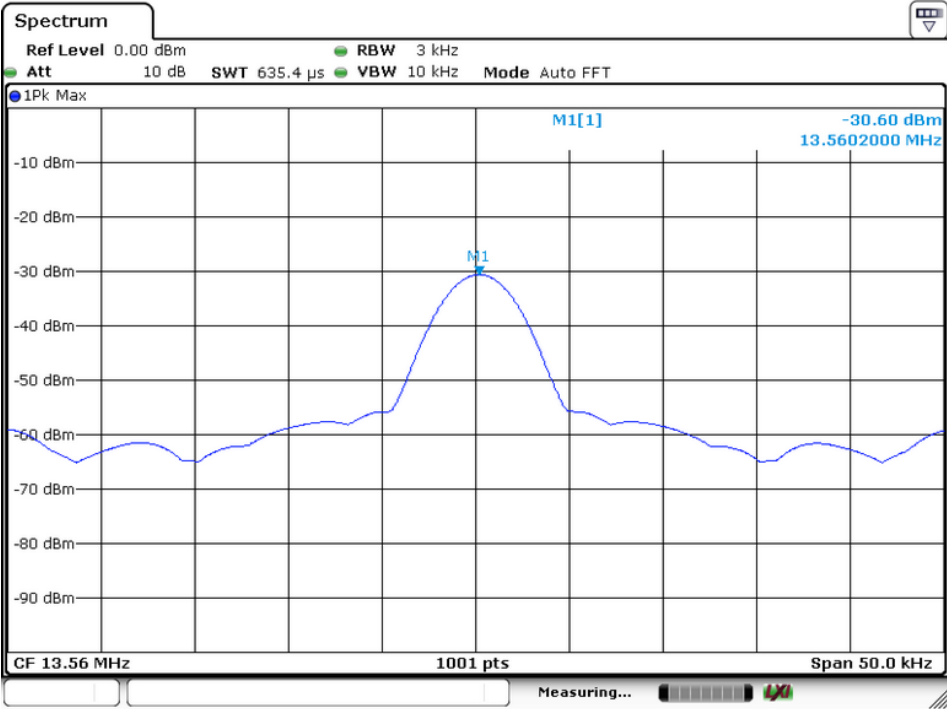
6.5 TEST RESULTS

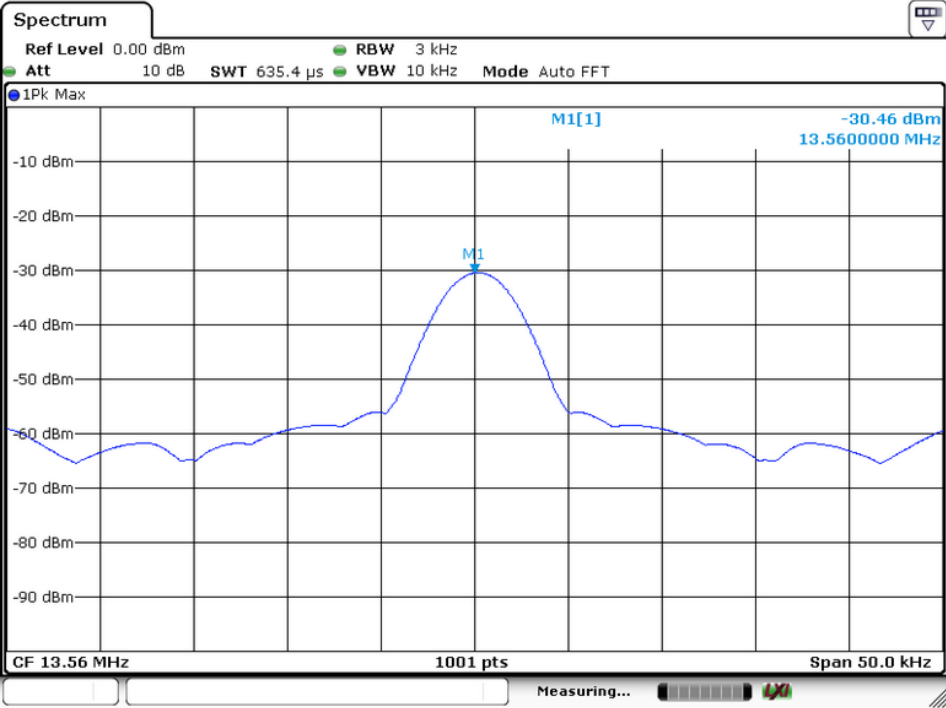
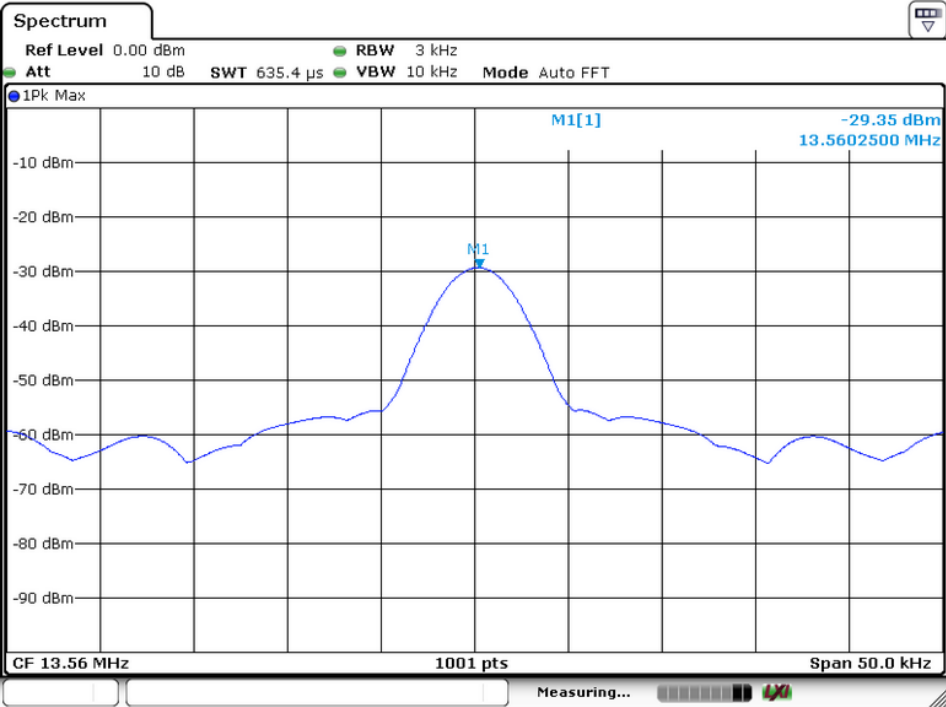
E.U.T :	Mobile Portal	Test Mode :	TX Mode
Test Voltage :	DC 3*1.5V Battery		

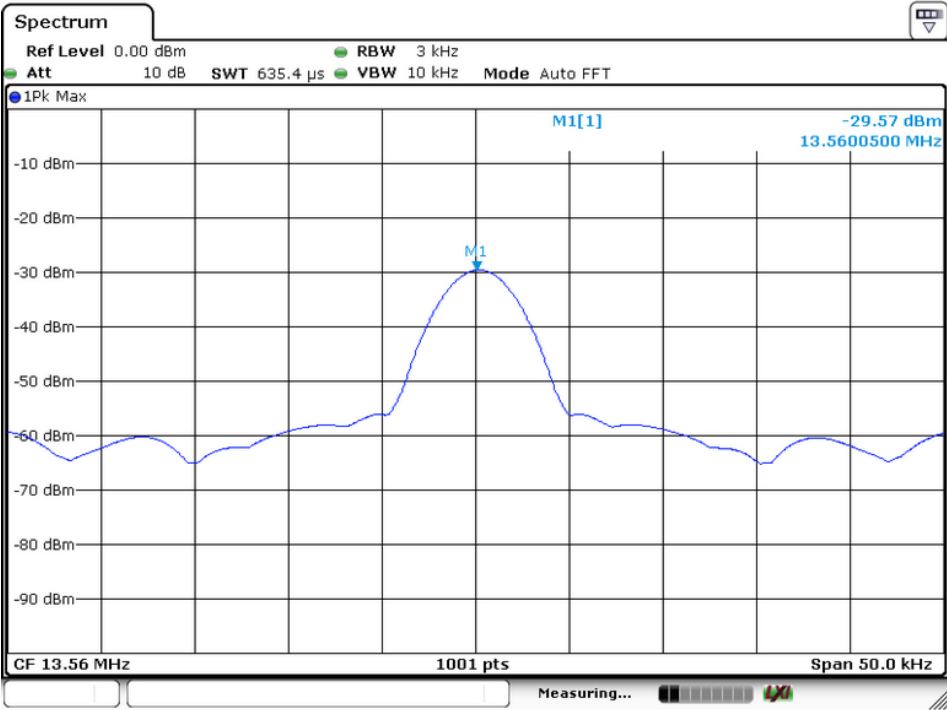
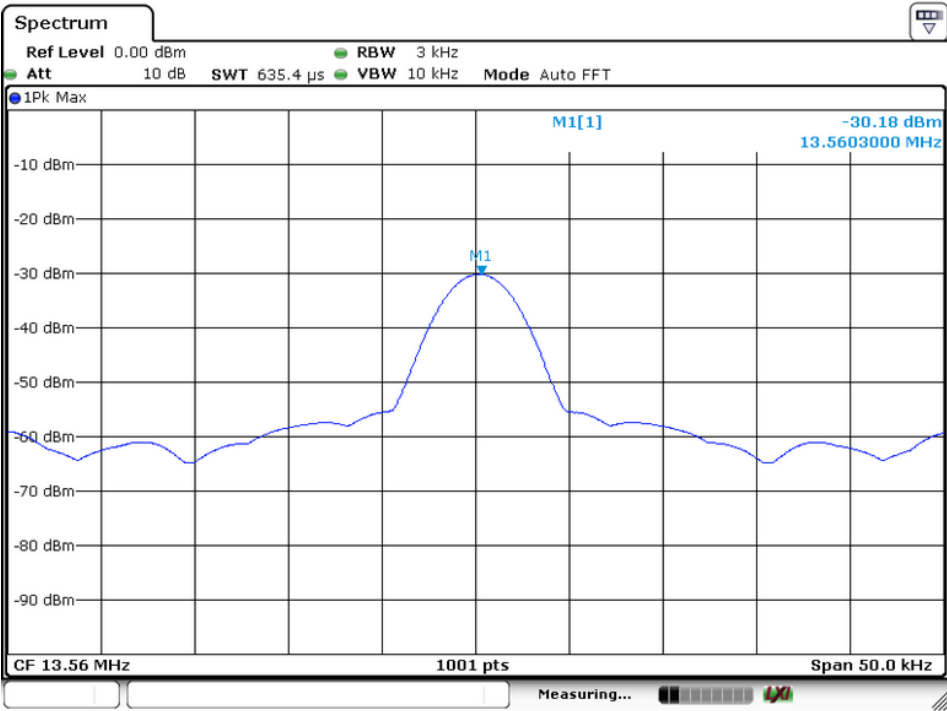
Frequency Stability Versus Environmental Temperature					
Temperature (°C)	Voltage (Vdc)	Frequency (MHz)	Freq Error (ppm)	Limit (ppm)	Results
-20	4.5V	13.56015	11.06	100	PASS
-10	4.5V	13.56002	1.47	100	PASS
0	4.5V	13.56010	7.37	100	PASS
10	4.5V	13.56025	18.44	100	PASS
20	4.5V	13.56000	0.00	100	PASS
30	4.5V	13.56030	22.12	100	PASS
40	4.5V	13.56005	3.69	100	PASS
50	4.5V	13.56015	11.06	100	PASS

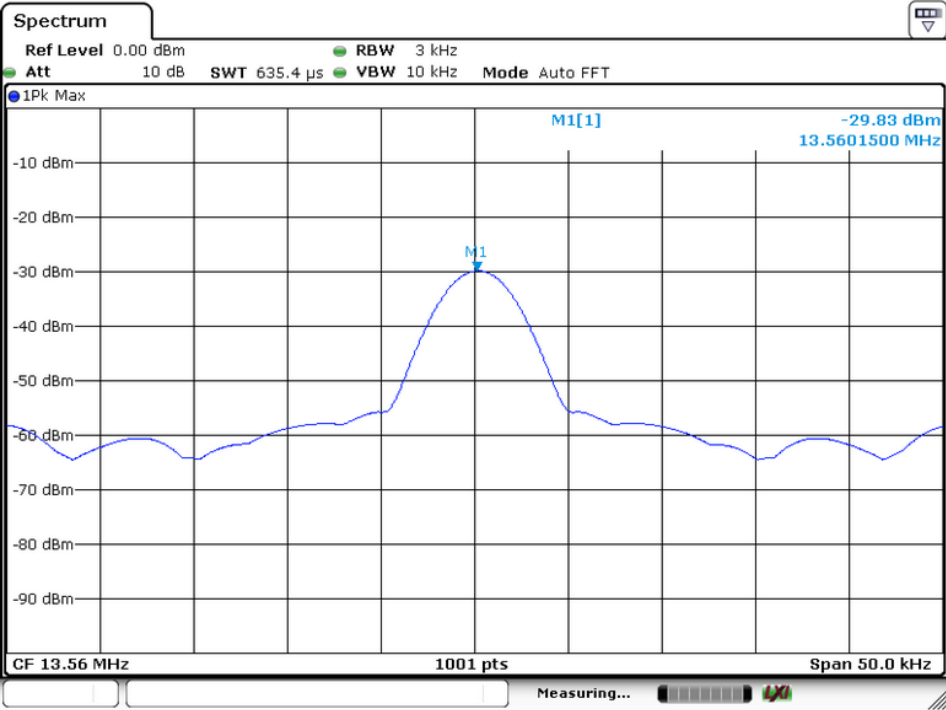
Frequency Stability Versus Environmental Temperature











7 EMISSION BANDWIDTH

7.1 Emission Bandwidth Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (13.553 – 13.567 MHz).

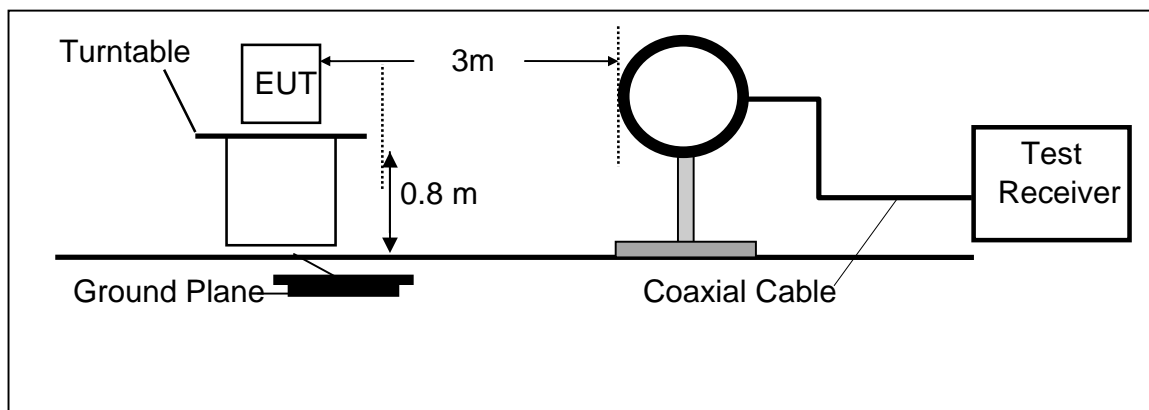
7.2 TEST INSTRUMENTS

Refer a test equipment and calibration data table in this test report.

7.3 TEST PROCEDURE

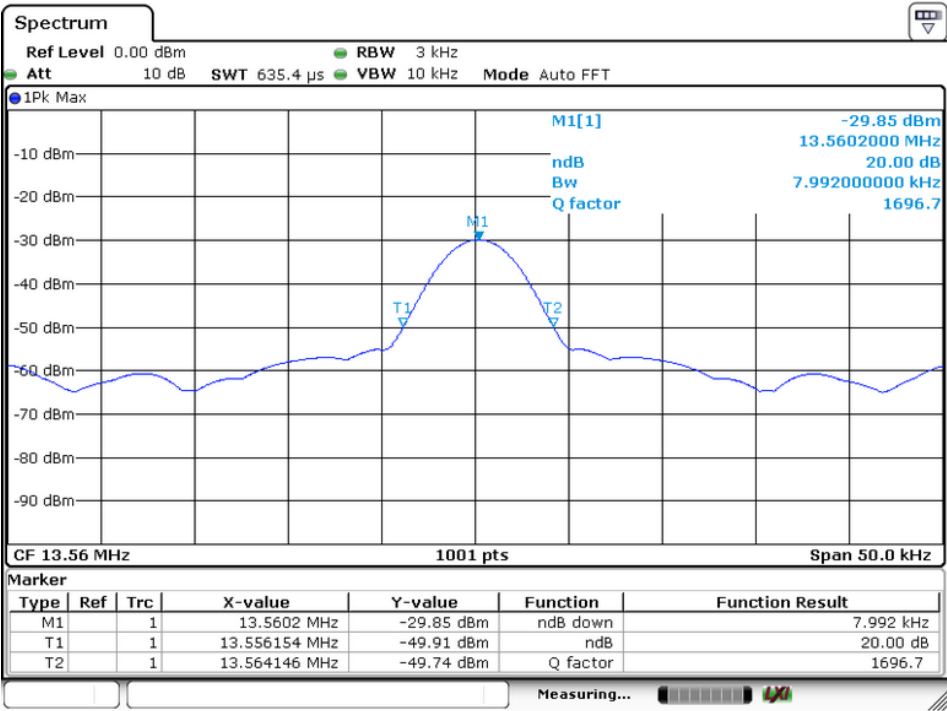
The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10kHz RBW and 30kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

7.4 Test Setup



Frequency (MHz)	20dB Bandwidth (kHz)	Results
13.56	7.992	PASS

BANDWIDTH TEST PLOT



7.5 Antenna requirement

The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.247.

FCC part 15C section 15.247 requirements:

Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

7.6 Result

The EUT's antenna used an inter Loop Antenna and integral on the PCB.

APPENDIX I (Photos of EUT)

