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FCC PART 15 SUBPART C TEST REPORT

FCC Part 15.239

Report Reference No......: **CTL1501090060-WF**

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Date of issue.....: Jan. 27, 2015

Test Firm.....: **Shenzhen CTL Testing Technology Co., Ltd.**

Address.....: Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China.

Applicant's name.....: **China Etech Groups Ltd.**

Address.....: 4th Floor,A3 Building, Huafeng Centery Industrial Park, Xixiang Town, Baoan District, Shenzhen, Guangdong, China

Test specification:

Standard: **FCC Part 15.239:** Operation in the band 88–108 MHz.

TRF Originator.....: Shenzhen CTL Testing Technology Co., Ltd.

Master TRF.....: Dated 2011-01

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Test item description : Wireless FM transmitter

Trade Mark: N/A

Models/Type reference.....: 1500061

Modulation: FM

Work Frequency.....: 88.1-107.9MHz

Antenna Type.....: internal

FCC ID: **Y36-1500061**

Result.....: **Positive**

TEST REPORT

Test Report No. :	CTL1501090060-WF	Jan. 27, 2015
		Date of issue

Equipment under Test : Wireless FM transmitter

Model /Type : 1500061

Applicant : **China Etech Groups Ltd.**

Address : 4th Floor, A3 Building, Huafeng Centery Industrial Park,
Xixiang Town, Baoan District, Shenzhen, Guangdong,
China

Manufacturer : **China Etech Groups Ltd.**

Address : 4th Floor, A3 Building, Huafeng Centery Industrial Park,
Xixiang Town, Baoan District, Shenzhen, Guangdong,
China

Test Result according to the standards on page 4:

Positive

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15.239](#): Operation in the band 88–108 MHz.

[ANSI C63.4-2009](#)



2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : Jan. 09, 2015

Testing commenced on : Jan. 09, 2015

Testing concluded on : Jan. 27, 2015

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : 120V / 60 Hz 115V / 60Hz
 12 V DC 24 V DC
 Other (specified in blank below)

2.3. Short description of the Equipment under Test (EUT)

The EUT is a Wireless FM transmitter work at 88.1-107.9MHz.
 For more details, refer to the user's manual of the EUT.
 Serial number: Prototype

2.4. EUT operation mode

The EUT has been tested under typical operating condition.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- supplied by the manufacturer
- supplied by the lab

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: Y36-1500061 filing to comply with Section 15.239 of the FCC Part 15, Subpart C Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. Test Result Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2009)	PASS
Field Strength of the Fundamental Signal	47 CFR Part 15, Subpart C Section 15.239 (a)	ANSI C63.10 (2009)	PASS
Spurious Emissions	47 CFR Part 15, Subpart C Section 15.239 (c)/15.209	ANSI C63.10 (2009)	PASS
20dB Bandwidth	47 CFR Part 15, Subpart C Section 15.239 (a)	ANSI C63.10 (2009)	PASS

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
 Floor 1-A, Baisha Technology Park, No. 3011, Shaheji Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 970318

Shenzhen CTL Testing Technology 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. Registration 970318, December 19, 2013.

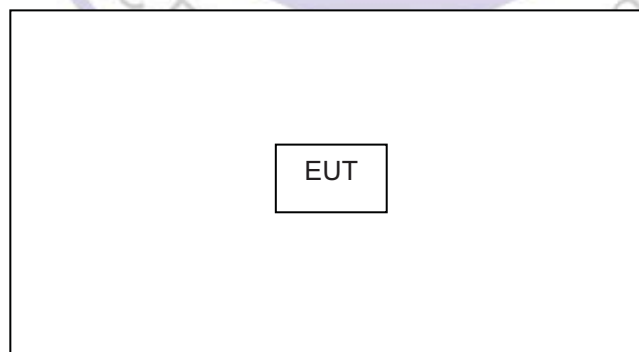
3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



Cable List and Details

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

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~26.5GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



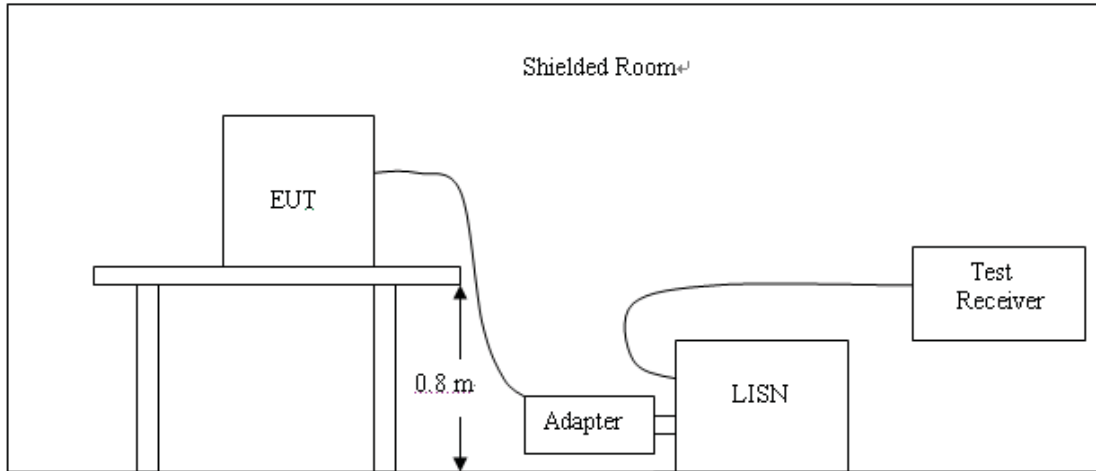
3.6. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2014/07/12	2015/07/11
EMI Test Receiver	R&S	ESCI	103710	2014/07/10	2015/07/09
Spectrum Analyzer	Agilent	E4407B	MY45108355	2014/07/06	2015/07/05
Controller	EM Electronics	Controller EM 1000	N/A	2014/07/06	2015/07/05
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2014/07/12	2015/07/11
Horn Antenna	SCHWARZBECK	BBHA9170	1562	2014/07/12	2015/07/11
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	2014/07/12	2015/07/11
LISN	R&S	ENV216	101316	2014/07/10	2015/07/09
LISN	SCHWARZBECK	NSLK8127	8127687	2014/07/10	2015/07/09
Microwave Preamplifier	HP	8349B	3155A00882	2014/07/10	2015/07/09
Amplifier	HP	8447D	3113A07663	2014/07/10	2015/07/09
Transient Limiter	Com-Power	LIT-153	532226	2014/07/10	2015/07/09
Radio Communication Tester	R&S	CMU200	3655A03522	2014/07/06	2015/07/05
Temperature/Humidity Meter	zhicheng	ZC1-2	22522	2014/07/10	2015/07/09
SIGNAL GENERATOR	HP	8647A	3200A00852	2014/07/10	2015/07/09
Wideband Peak Power Meter	Anritsu	ML2495A	220.23.35	2014/07/06	2015/07/05
Climate Chamber	ESPEC	EL-10KA	A20120523	2014/07/06	2015/07/05
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	/	2014/07/06	2015/07/05
High-Pass Filter	K&L	41H10-1375/U12750-O/O	/	2014/07/06	2015/07/05

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
- 2 Support equipment, if needed, was placed as per ANSI C63.4.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4 If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

The RBW/VBW for 150KHz to 30MHz: 9KHz

CONDUCTED POWER LINE EMISSION LIMIT

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dB μ V)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

TEST RESULTS

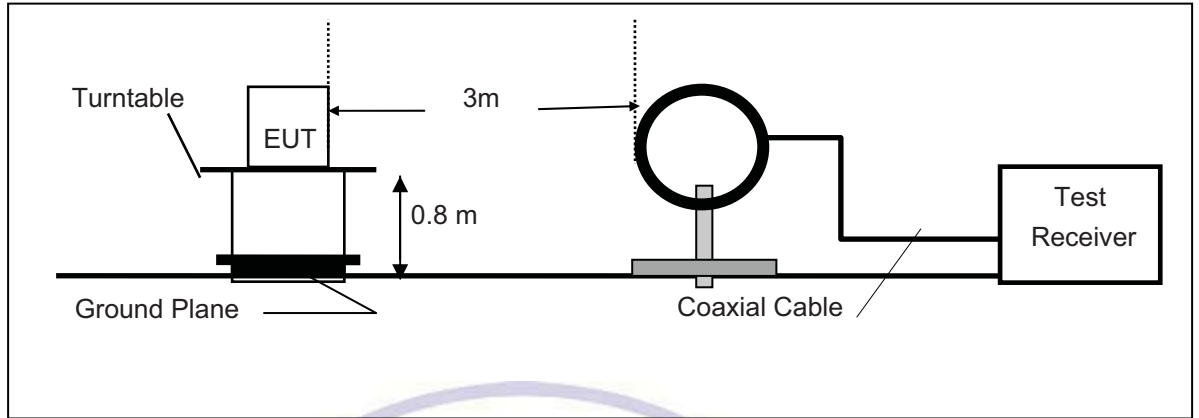
Not applicable to this device.



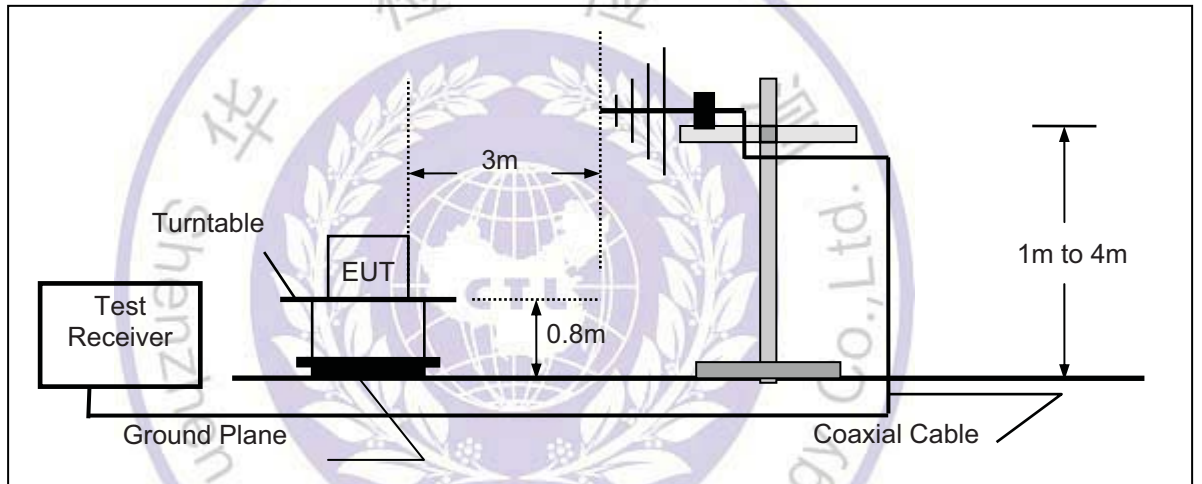
4.2. Radiated Emission Test

TEST CONFIGURATION

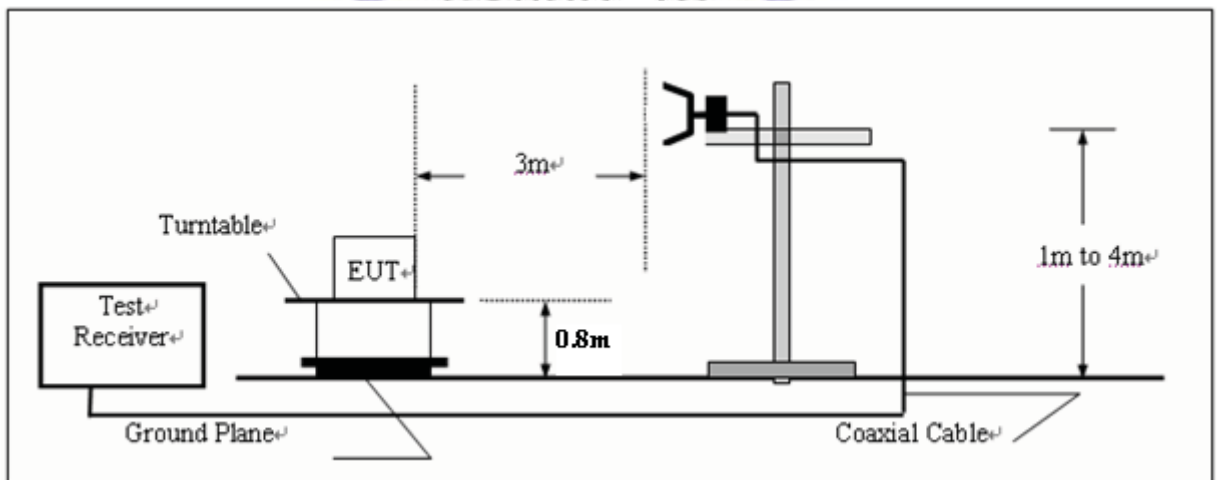
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Peak		1MHz	10Hz	Average	

Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3	

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Limit: (Field strength of The fundamental signal)	Frequency	Limit (dBuV/m @3m)	Remark
	88MHz-108MHz	48.0	Average Value
		68.0	Peak Value

TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. Based on the Frequency Generator in the device include 24MHz. The test frequency range from 30MHz to 1GHz per FCC PART 15.33(a).

Note:

Three axes are chosen for pretest, the Y axis is the worst mode for final test.

For battery operated equipment, the equipment tests shall be performed using a new battery.

4.2.1 Field Strength of Fundamental Emissions

REMARK : H and V all have been test, only worse case is reported

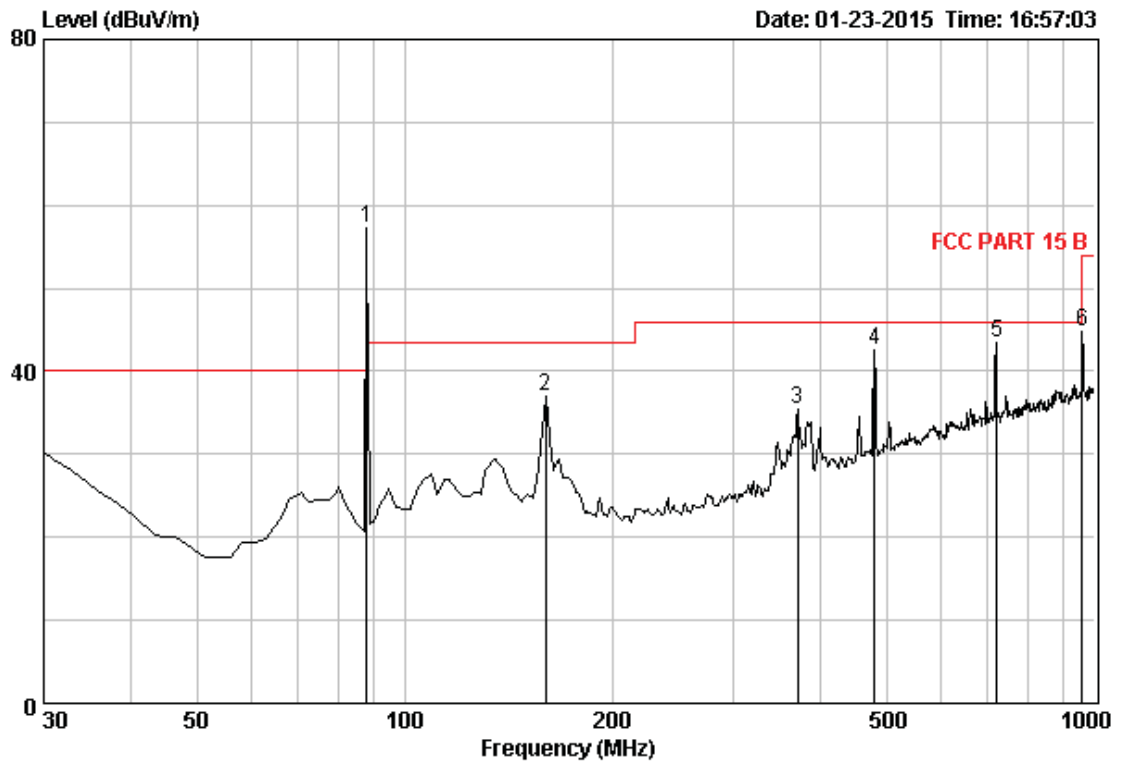
Field Strength of Fundamental Emissions Result					
Modulation	Frequency	Max.Fundamental	Margin	Limit	Type
Mode	(MHz)	(dBuV/m)@3m	(dB)	(dBuV/m)@3m	
FM	88.0	38.6	1.40	40	QP
FM	88.1	57.18	10.82	68	peak
FM	88.1	42.61	5.39	48	average
FM	98.1	56.39	11.61	68	peak
FM	98.1	43.27	4.73	48	average
FM	107.9	57.33	10.67	68	peak
FM	107.9	43.29	4.71	48	average
FM	108.0	39.2	4.30	43.5	QP

Note:

1. Measurement worst emissions of receive antenna polarization: Vertical.
2. For 88.0MHz QP value when 88.1MHz transmitting mode, for 108.0MHz QP value when 107.9MHz transmitting.
3. RBW 120KHz VBW 300KHz for QP , RBW 300KHz VBW 300KHz for PK and AV

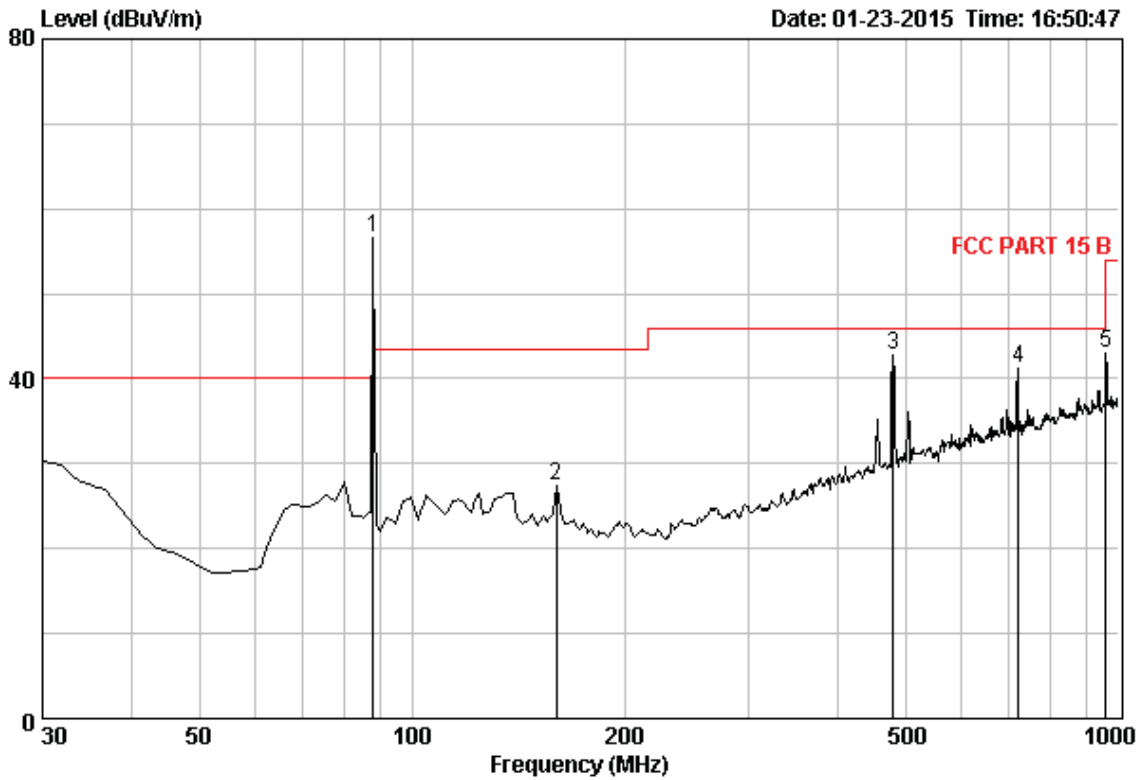
4.2.2 Spurious Emissions

88.1MHz:



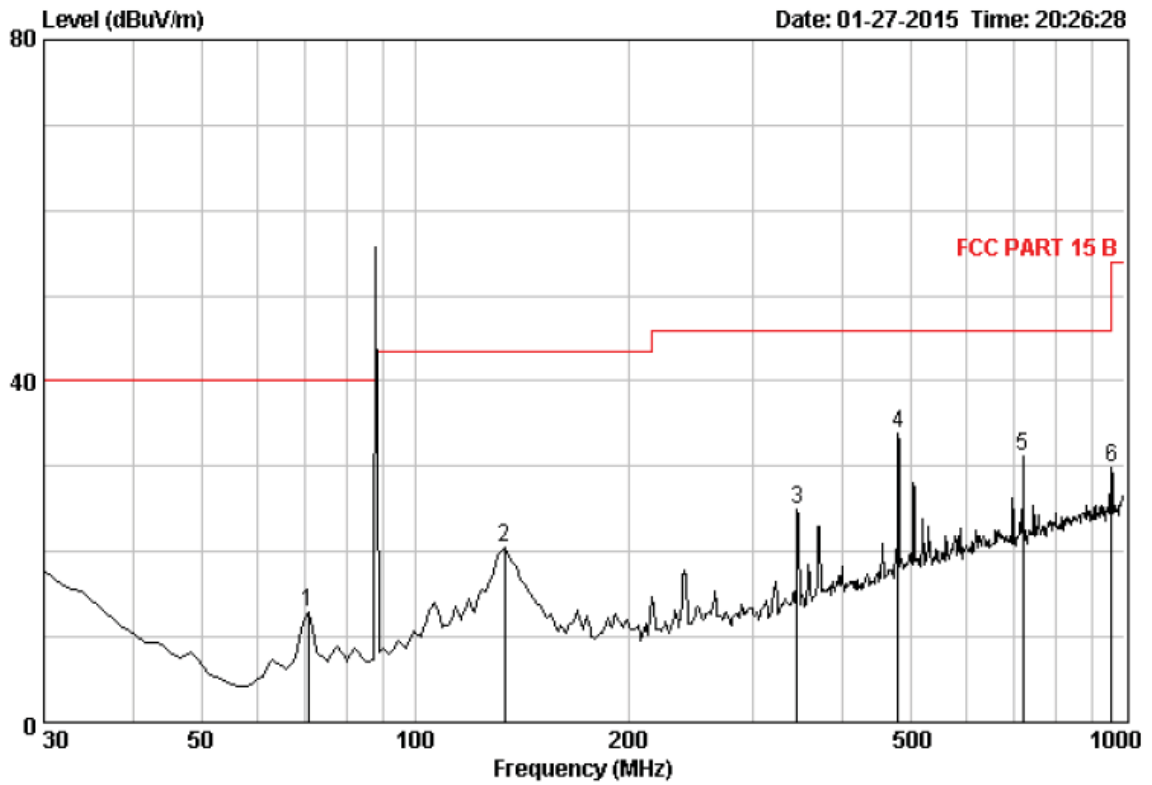
Site no. : 3m Chamber Data no. : 208
 Dis. / Ant. : 3m JB1 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B
 Env. / Ins. : 23*C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission		Margin (dB)	Remark
				Level (dBUV/m)	Limits (dBUV/m)		
1	8.72	0.56	76.71	57.18	43.50	-13.68	Peak
2	12.50	0.96	52.29	36.93	43.50	6.57	Peak
3	15.22	2.02	46.86	35.47	46.00	10.53	Peak
4	17.38	2.38	51.31	42.54	46.00	3.46	Peak
5	20.51	3.16	48.20	43.56	46.00	2.44	Peak
6	22.92	3.73	46.15	44.70	46.00	1.30	Peak



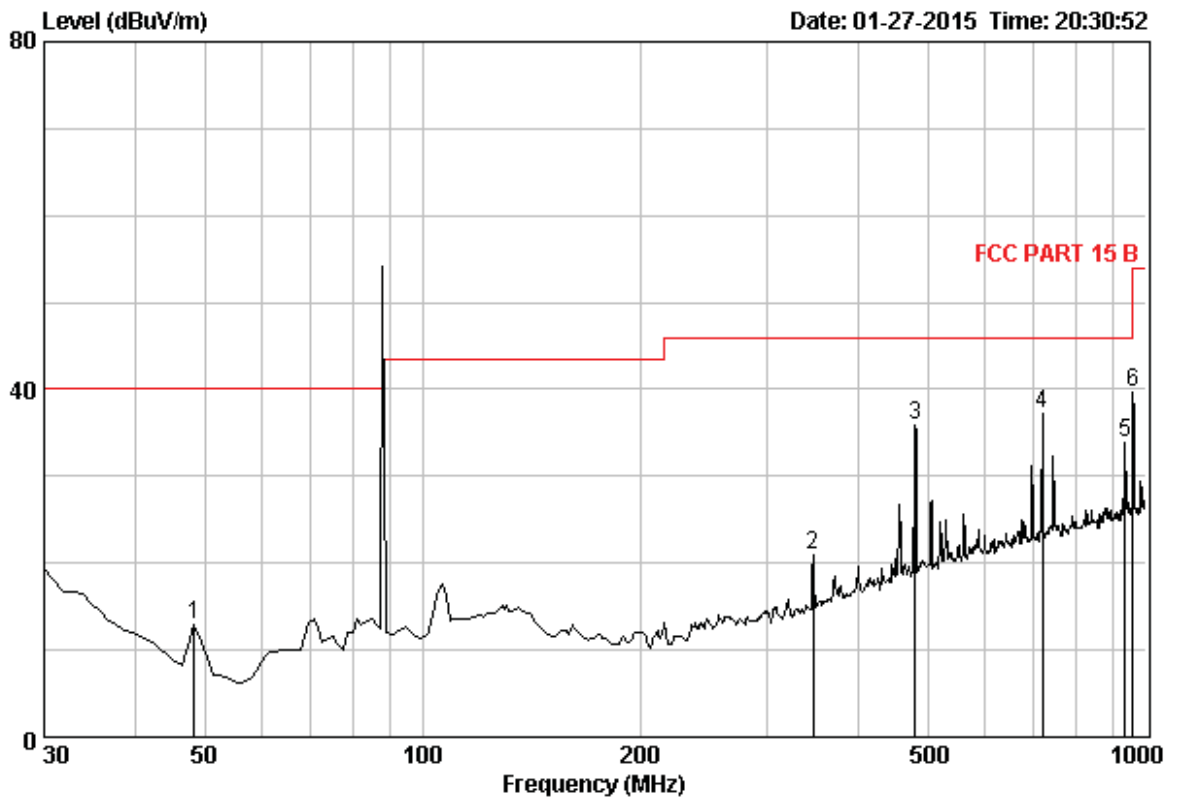
Site no. : 3m Chamber Data no. : 207
 Dis. / Ant. : 3m JB1 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B
 Env. / Ins. : 23°C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission			Remark	
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)		
1	88.10	8.72	0.56	76.18	56.65	43.50	-13.15	Peak
2	159.98	12.50	0.96	42.82	27.46	43.50	16.04	Peak
3	479.11	17.38	2.38	51.53	42.76	46.00	3.24	Peak
4	720.64	20.51	3.16	45.80	41.16	46.00	4.84	Peak
5	960.23	22.92	3.73	44.35	42.90	54.00	11.10	Peak



Site no. : 3m Chamber Data no. : 342
 Dis. / Ant. : 3m JB1 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B
 Env. / Ins. : 23°C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission		Margin (dB)	Remark
				Level (dBuV)	Limits (dBuV)		
1	7.75	0.50	33.38	12.92	40.00	27.08	Average
2	14.00	0.85	34.47	20.48	43.50	23.02	Average
3	14.76	1.93	36.84	24.88	46.00	21.12	Average
4	17.38	2.38	42.68	33.91	46.00	12.09	Average
5	20.48	3.16	35.93	31.26	46.00	14.74	Average
6	22.92	3.73	31.24	29.79	54.00	24.21	Average



Site no. : 3m Chamber
 Dis. / Ant. : 3m JB1
 Limit : FCC PART 15 B
 Env. / Ins. : 23*C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

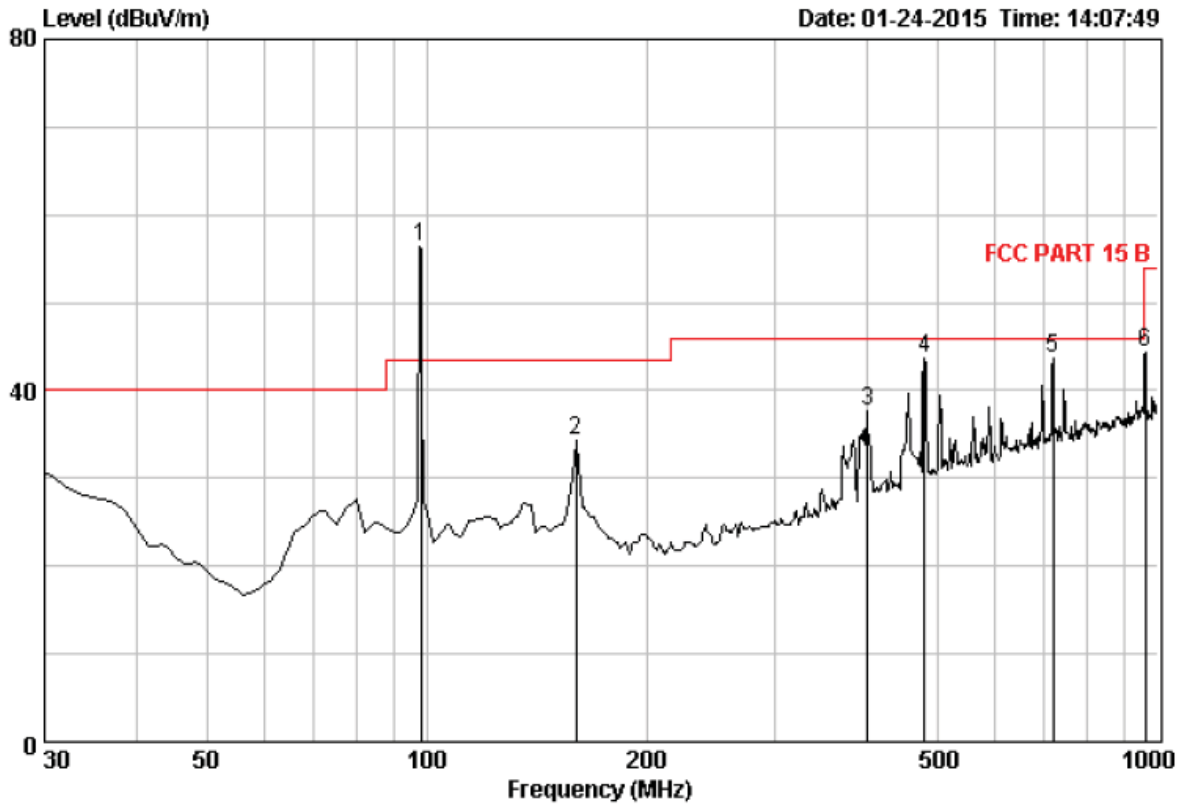
Data no. : 353
 Ant. pol. : HORIZONTAL

No.	Freq. (MHz)	Ant. / Cable		Emission				Remark
		Factor (dB)	Loss (dB)	Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)	
1	48.43	8.40	0.28	32.91	13.00	40.00	27.00	Average
2	347.19	14.76	1.93	32.98	21.02	46.00	24.98	Average
3	480.08	17.38	2.38	44.55	35.78	46.00	10.22	Average
4	719.67	20.48	3.16	41.96	37.29	46.00	8.71	Average
5	935.98	22.69	3.67	35.60	33.84	46.00	12.16	Average
6	959.26	22.92	3.73	41.03	39.58	46.00	6.42	Average

Remark:

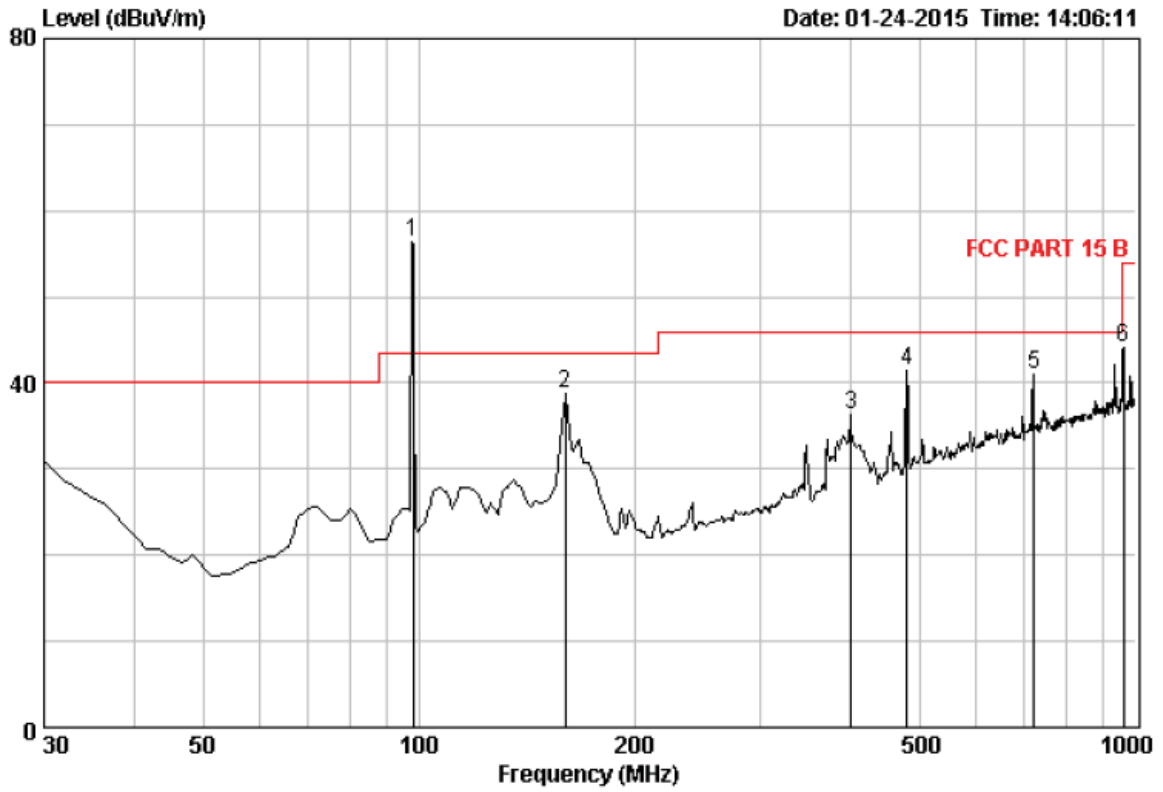
- (1) Measuring frequencies from 30 MHz to the 2GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz and 1 MHz for measuring above 1 GHz

98.1MHz:



Site no. : 3m Chamber Data no. : 254
 Dis. / Ant. : 3m JB1 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B
 Env. / Ins. : 23°C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

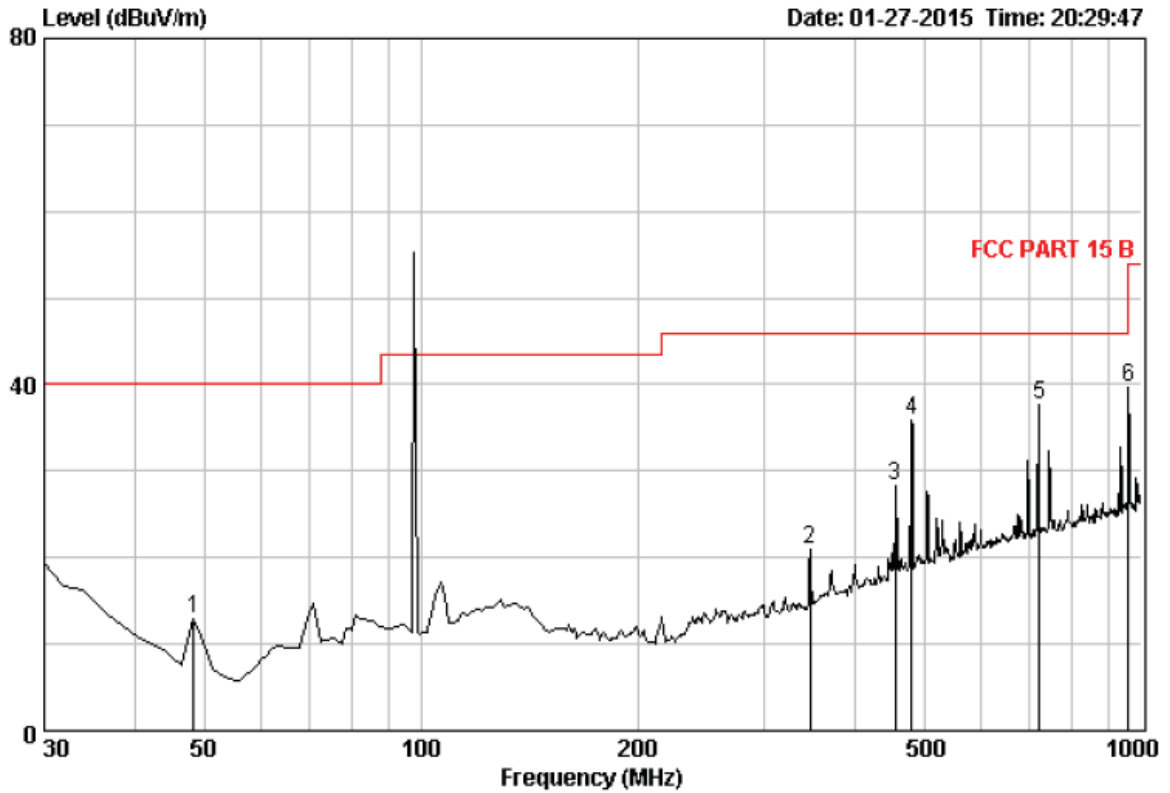
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	98.10	10.00	0.59	74.63	56.36	43.50	-12.86	Peak
2	159.98	12.50	0.96	49.63	34.27	43.50	9.23	Peak
3	400.54	15.80	2.11	48.29	37.60	46.00	8.40	Peak
4	479.11	17.38	2.38	52.56	43.79	46.00	2.21	Peak
5	719.67	20.48	3.16	48.44	43.77	46.00	2.23	Peak
6	961.20	22.94	3.73	45.82	44.39	54.00	9.61	Peak



Site no. : 3m Chamber
 Dis. / Ant. : 3m JB1
 Limit : FCC PART 15 B
 Env. / Ins. : 23°C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

Data no. : 251
 Ant. pol. : VERTICAL

Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission		Margin (dB)	Remark	
				Level (dBuV/m)	Limits (dBuV/m)			
1	98.10	10.00	0.59	74.66	56.39	43.50	-12.89	Peak
2	159.98	12.50	0.96	54.04	38.68	43.50	4.82	Peak
3	400.54	15.80	2.11	46.95	36.26	46.00	9.74	Peak
4	480.08	17.38	2.38	50.31	41.54	46.00	4.46	Peak
5	720.64	20.51	3.16	45.54	40.90	46.00	5.10	Peak
6	961.20	22.94	3.73	45.59	44.16	54.00	9.84	Peak

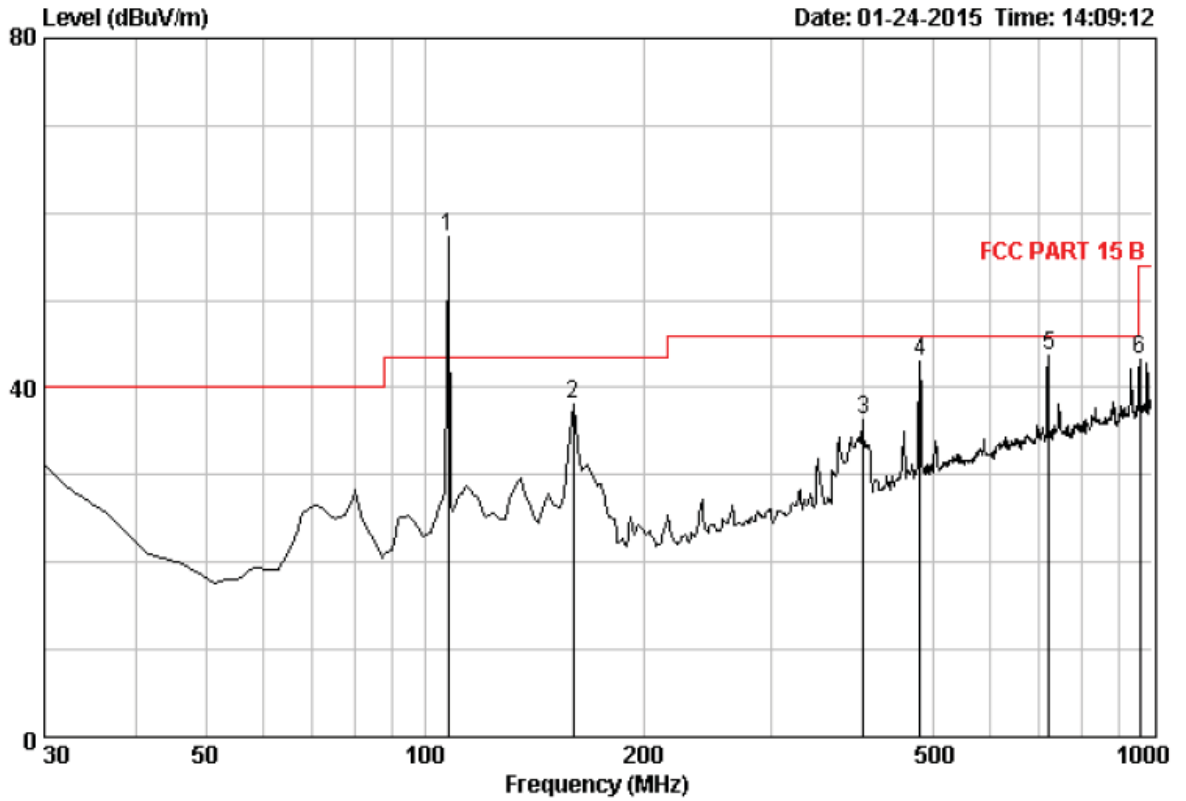


Site no. : 3m Chamber
 Dis. / Ant. : 3m JB1
 Limit : FCC PART 15 B
 Env. / Ins. : 23°C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

Data no. : 352
 Ant. pol. : HORIZONTAL

Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission			Remark	
				Level (dBUV)	Limits (dBUV)	Margin (dB)		
1	48.43	8.40	0.28	32.91	13.00	40.00	27.00	Average
2	347.19	14.76	1.93	32.98	21.02	46.00	24.98	Average
3	455.83	16.92	2.30	37.68	28.35	46.00	17.65	Average
4	480.08	17.38	2.38	44.55	35.78	46.00	10.22	Average
5	720.64	20.51	3.16	42.23	37.59	46.00	8.41	Average
6	959.26	22.92	3.73	41.03	39.58	46.00	6.42	Average

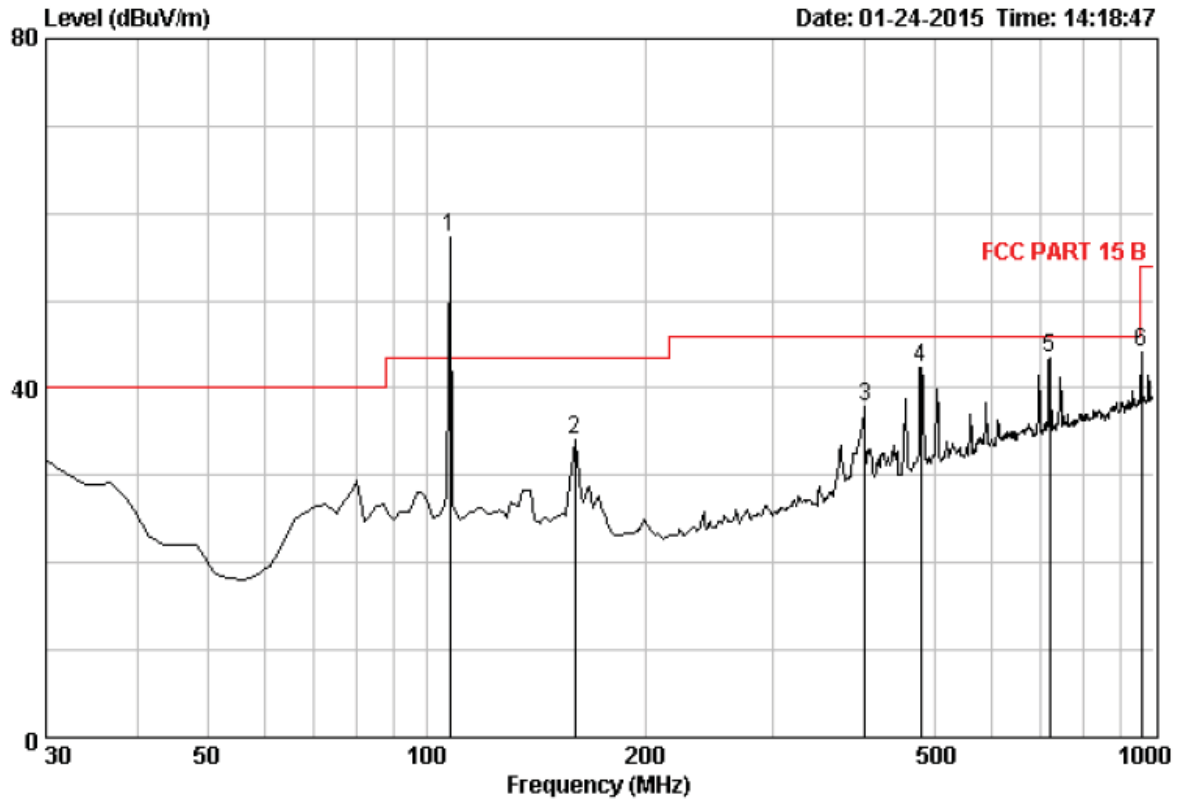
107.9MHz:



Site no. : 3m Chamber
 Dis. / Ant. : 3m JB1
 Limit : FCC PART 15 B
 Env. / Ins. : 23°C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

Data no. : 256
 Ant. pol. : VERTICAL

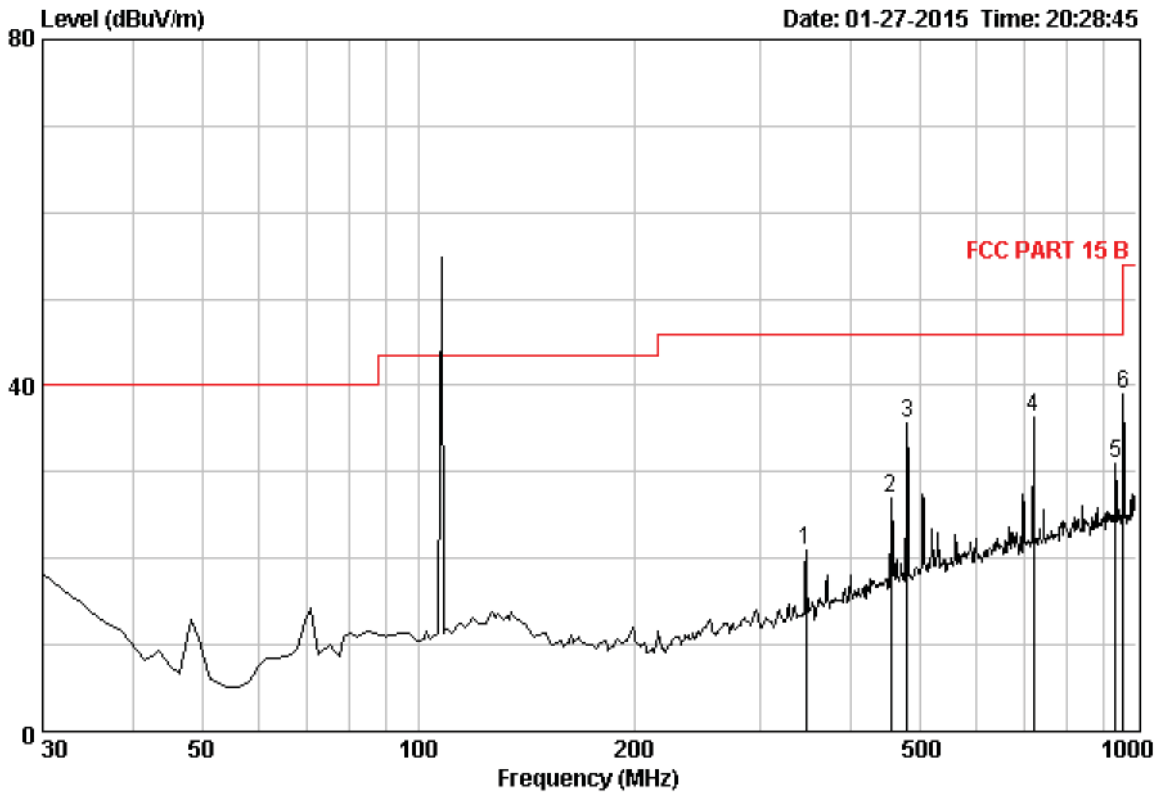
Peak	Antenna			Emission				Remark
	Freq. (MHz)	Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1	107.90	12.47	0.66	73.06	57.33	43.50	-13.83	Peak
2	159.98	12.50	0.96	53.58	38.22	43.50	5.28	Peak
3	400.54	15.80	2.11	47.04	36.35	46.00	9.65	Peak
4	480.08	17.38	2.38	51.79	43.02	46.00	2.98	Peak
5	720.64	20.51	3.16	48.43	43.79	46.00	2.21	Peak
6	962.17	22.94	3.73	44.58	43.16	54.00	10.84	Peak



Site no. : 3m Chamber
 Dis. / Ant. : 3m JB1
 Limit : FCC PART 15 B
 Env. / Ins. : 23°C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

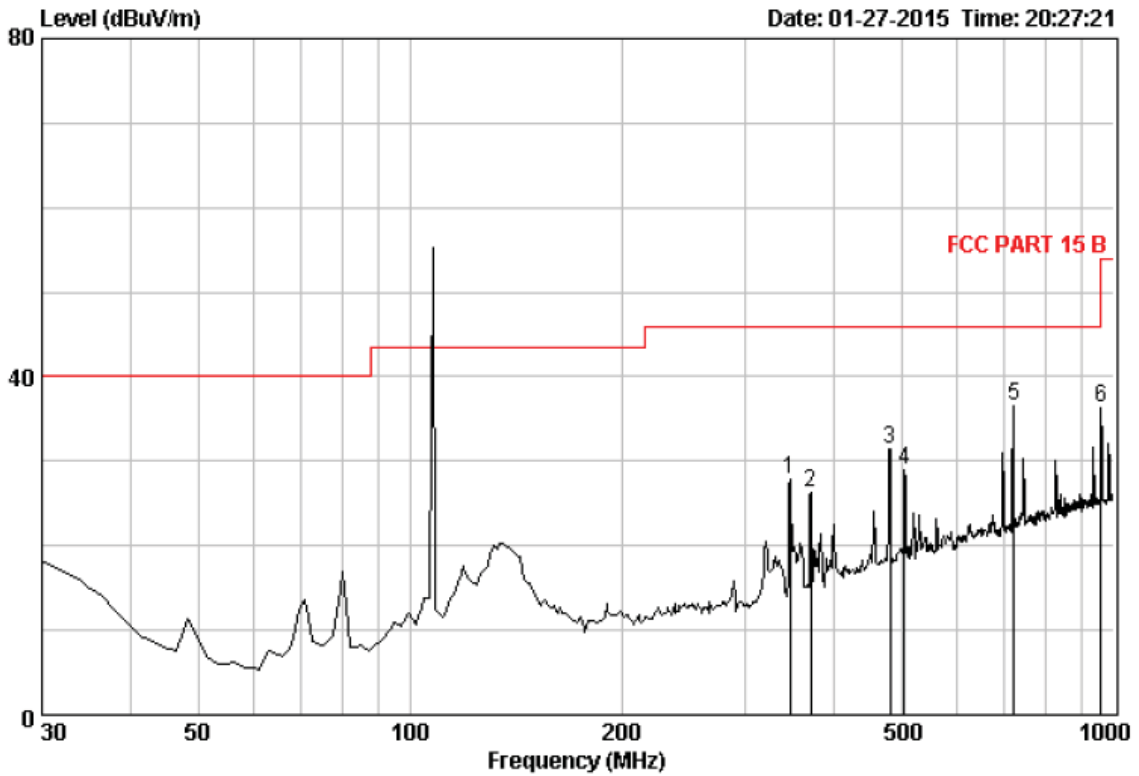
Data no. : 258
 Ant. pol. : HORIZONTAL

No.	Ant. Cable			Emission				Remark
	Freq. (MHz)	Factor (dB)	Loss (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1	107.90	12.47	0.66	72.92	57.19	43.50	-13.69	Peak
2	159.98	12.50	0.96	49.42	34.06	43.50	9.44	Peak
3	400.54	15.80	2.11	48.50	37.81	46.00	8.19	Peak
4	478.14	17.34	2.37	51.22	42.40	46.00	3.60	Peak
5	719.67	20.48	3.16	48.10	43.43	46.00	2.57	Peak
6	961.20	22.94	3.73	45.60	44.17	54.00	9.83	Peak



Site no. : 3m Chamber Data no. : 348
 Dis. / Ant. : 3m JB1 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B
 Env. / Ins. : 23°C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

No.	Ant. Cable			Emission				Remark
	Freq. (MHz)	Factor (dB)	Loss (dB)	Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)	
1	347.19	14.76	1.93	32.98	21.02	46.00	24.98	Average
2	455.83	16.92	2.30	36.30	26.97	46.00	19.03	Average
3	480.08	17.38	2.38	44.41	35.64	46.00	10.36	Average
4	719.67	20.48	3.16	40.99	36.32	46.00	9.68	Average
5	935.98	22.69	3.67	32.69	30.93	46.00	15.07	Average
6	959.26	22.92	3.73	40.49	39.04	46.00	6.96	Average



Site no. : 3m Chamber Data no. : 346
 Dis. / Ant. : 3m JB1 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B
 Env. / Ins. : 23*C/54%
 Engineer :
 EUT :
 Power :
 M/N :
 Test Mode :

Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Emission				
			Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	14.76	1.93	39.92	27.96	46.00	18.04	Average
2	15.22	2.02	37.66	26.27	46.00	19.73	Average
3	17.42	2.38	40.16	31.43	46.00	14.57	Average
4	17.84	2.47	37.27	29.07	46.00	16.93	Average
5	20.51	3.16	41.23	36.59	46.00	9.41	Average
6	22.92	3.73	37.78	36.33	46.00	9.67	Average

Remark:

- (1) Measuring frequencies from 30 MHz to the 2GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz and 1 MHz for measuring above 1 GHz

4.3. Occupied Bandwidth

Measurement Procedure

1. Set EUT as TX operation
2. Based on FCC Part15 C Section 15.239: RBW= 10KHz, VBW= 30KHz.
3. The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

Test SET-UP (Block Diagram of Configuration)

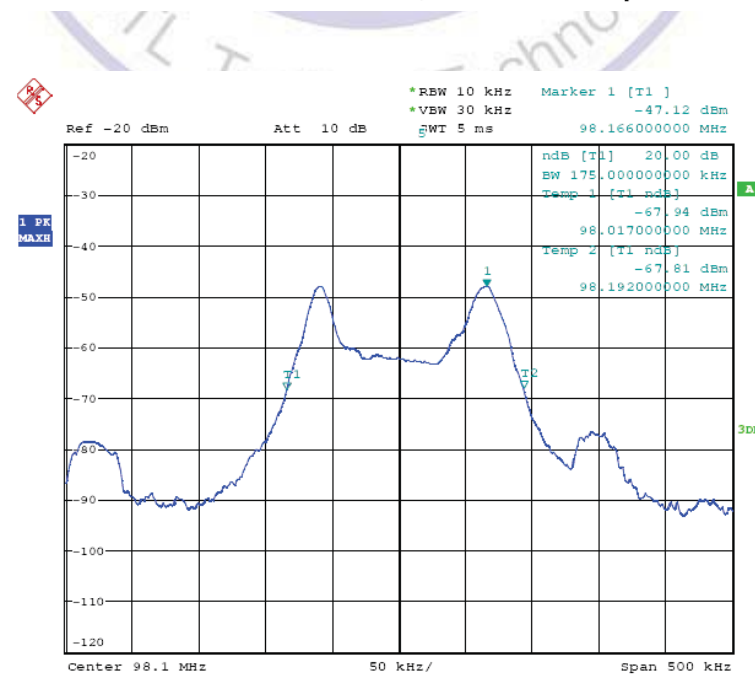
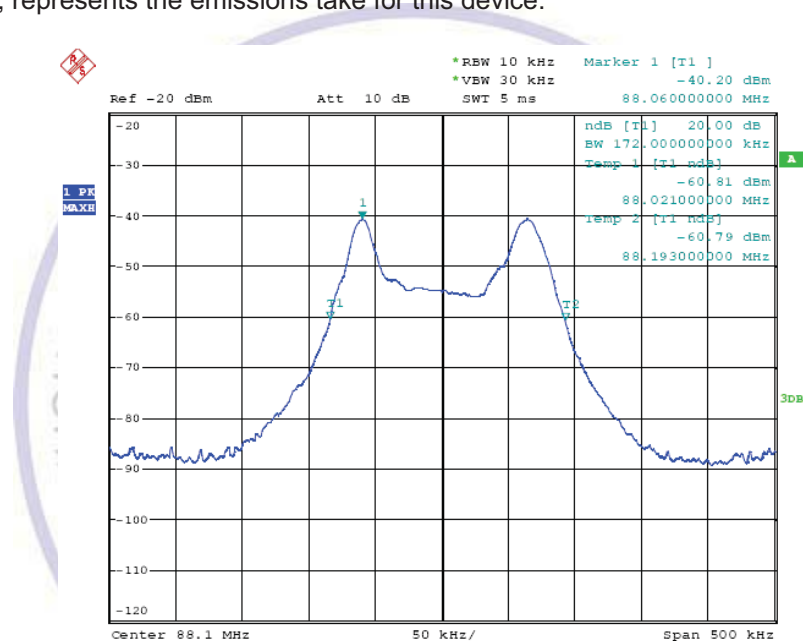
Same as Radiated Emission Measurement.

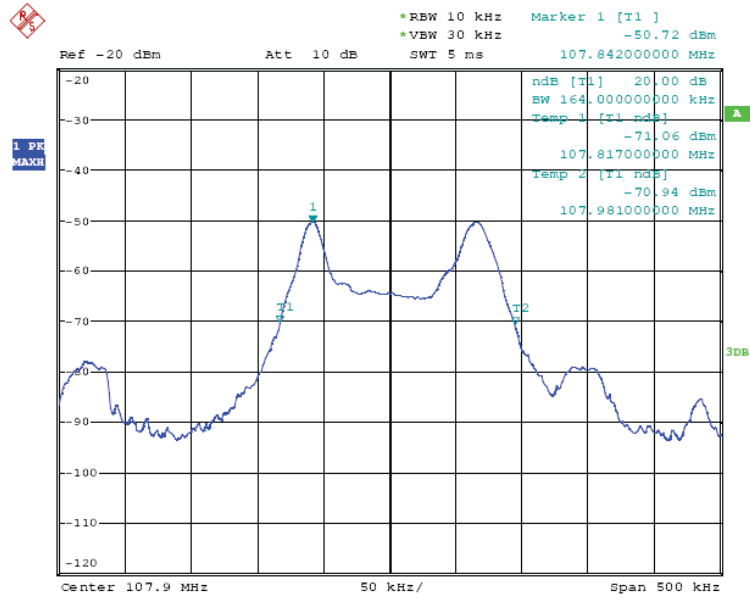
Measurement Equipment Used:

Same as Radiated Emission Measurement.

Measurement Results:

The graph as below, represents the emissions take for this device.





5. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

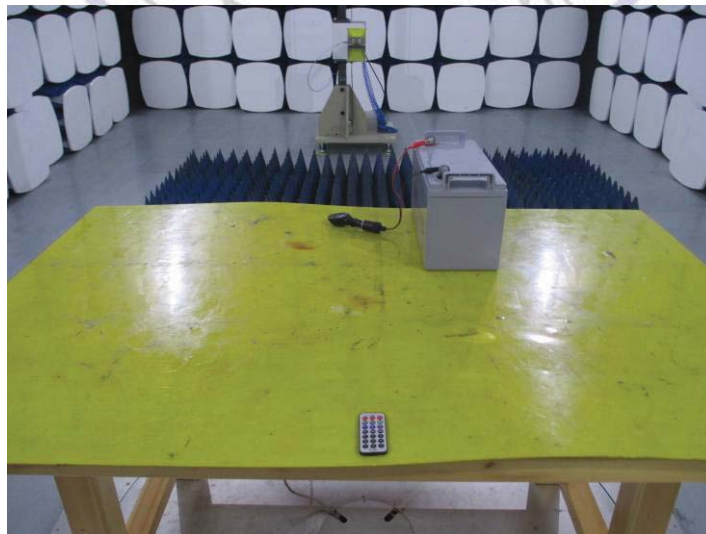
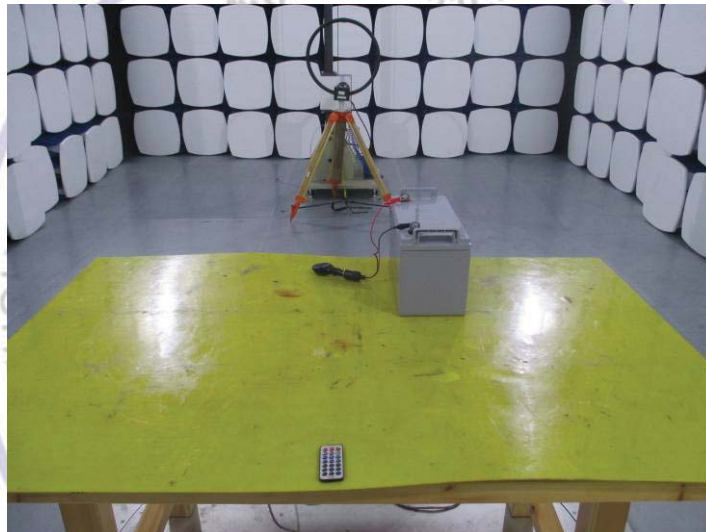
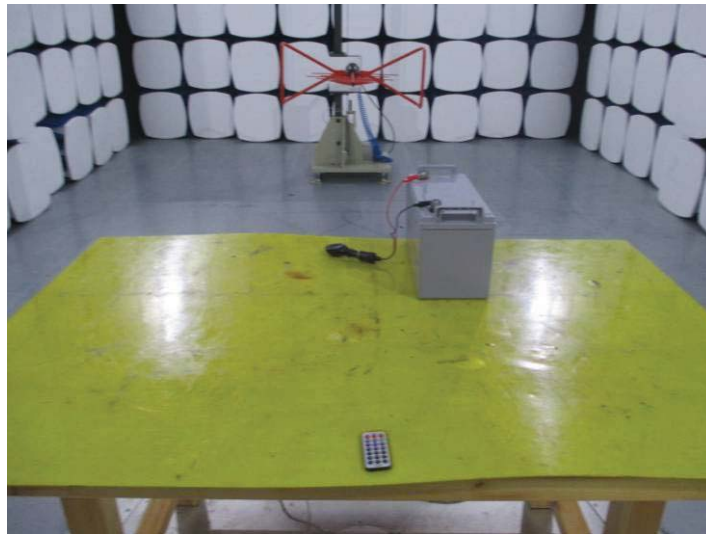
The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is an internal Antenna, The directional gains of antenna used for transmitting is 0 dBi.



6. Test Setup Photos of the EUT



7. External and Internal Photos of the EUT

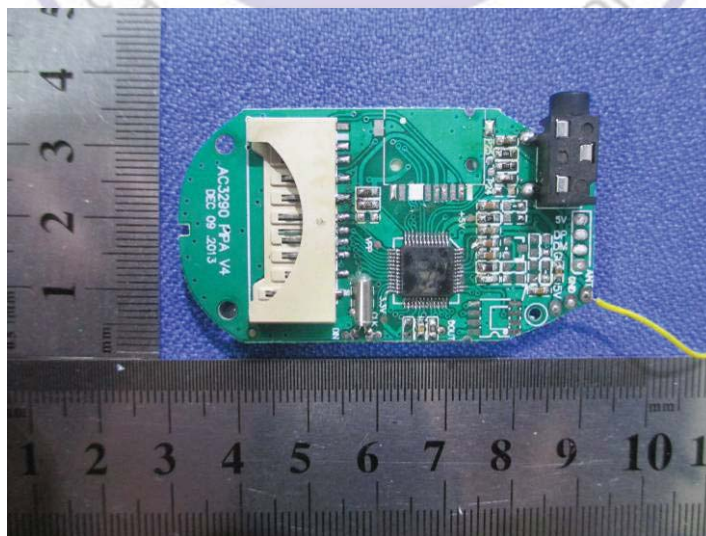
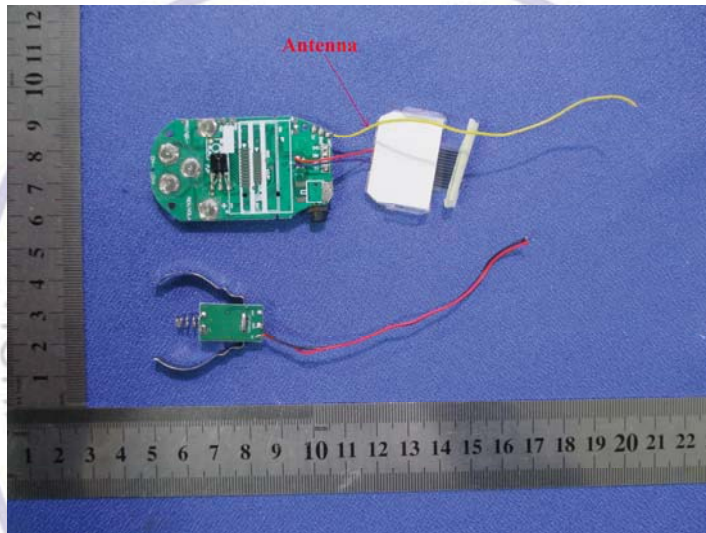
External Photos of EUT

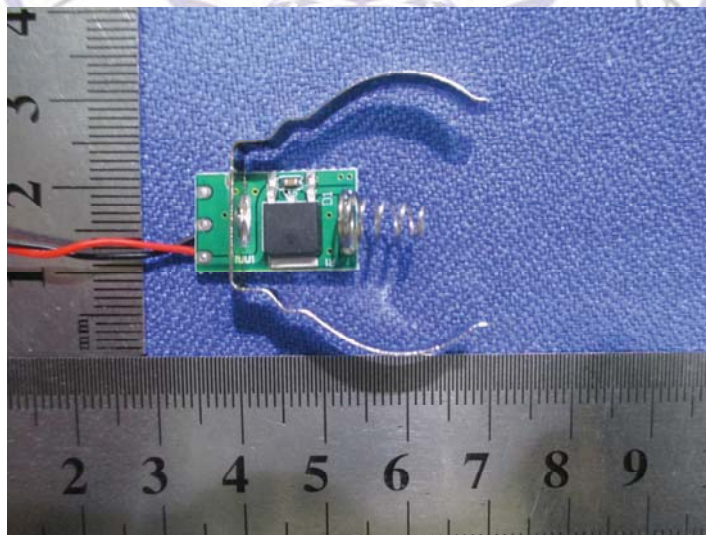
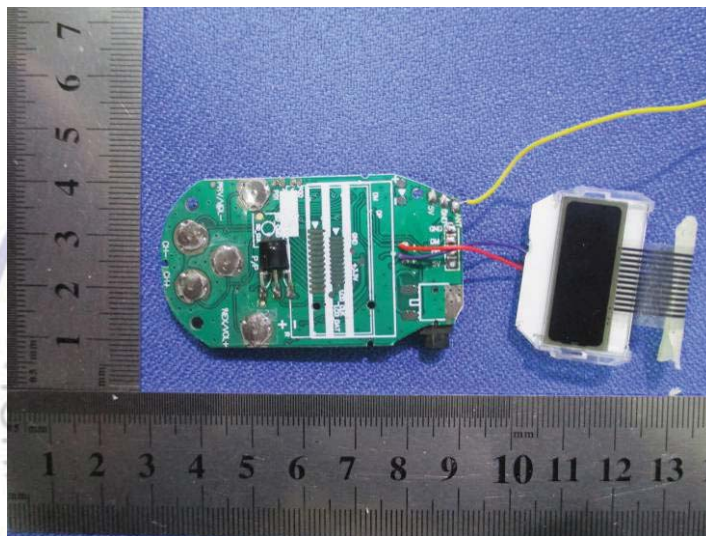
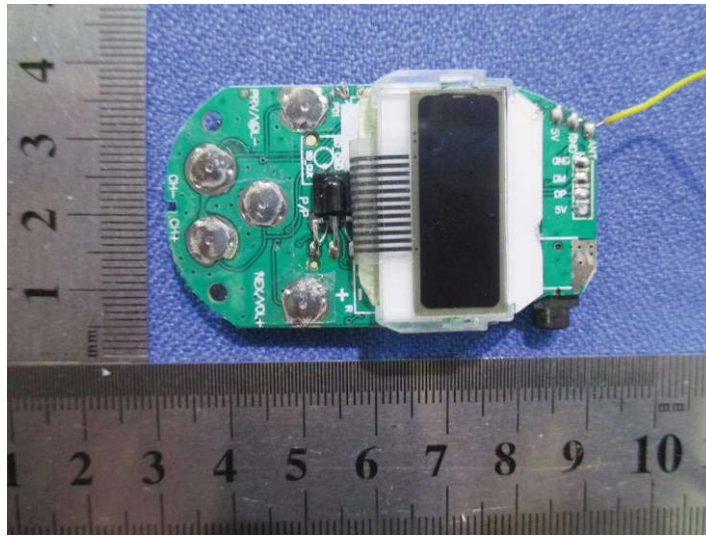


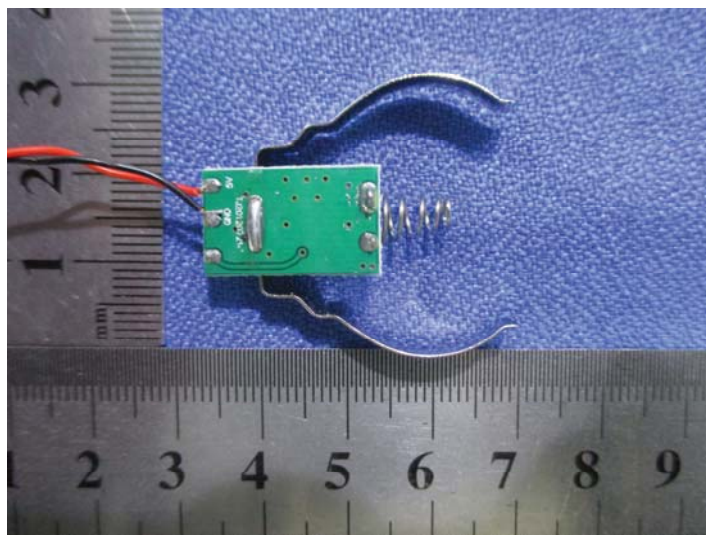




Internal Photos of EUT







.....End of Report.....

