



FCC TEST REPORT

FCC ID: 2A59F-BC91

Applicant: TEAM YTD CO.,LIMITED

Address: 1101B, 11/F., LIPPO SUN PLAZA 28 CANTON ROAD ,TSIM SHA TSUI, KOWLOON, HONGKONG

Manufacturer: SHENZHEN LEADINWAY TECHNOLOGY CO., LTD.

Address: 29 Building, Baotian industrial District Chentian, XixiangTown,Shenzhen, Guangdong, China

Product Name: Wireless FM Transmitter

Trade Mark: Nulaxy

Model Number: BC91, NX16, BC72

Date of Receipt: Jul. 13, 2026

Test Date: Jul. 15, 2026 – Jul. 22, 2026

Date of Report: Jul. 22, 2026

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

Applicable Standards: FCC CFR47 Part 15 Section 15.239
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

Test Result: Pass

Report Number: DLE-260715002R

Prepared (Test Engineer): Ken Tan

Reviewer (Supervisor): Jack Bu

Approved (Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



Contents

2	TEST SUMMARY	3
2.1	TEST SITE	4
3	GENERAL INFORMATION.....	5
3.1	GENERAL DESCRIPTION OF E.U.T.	5
3.2	CHANNEL LIST.....	6
3.3	TEST SETUP CONFIGURATION.....	7
3.4	TEST MODE.....	7
4	EQUIPMENT DURING TEST	8
4.1	EQUIPMENTS LIST	8
4.2	MEASUREMENT UNCERTAINTY	10
4.3	DESCRIPTION OF SUPPORT UNITS	10
5	CONDUCTED EMISSION	11
5.1	E.U.T. OPERATION	11
5.2	EUT SETUP.....	11
5.3	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	12
5.4	MEASUREMENT PROCEDURE	12
5.5	CONDUCTED EMISSION LIMIT	12
5.6	MEASUREMENT DESCRIPTION.....	12
5.7	CONDUCTED EMISSION TEST RESULT	12
6	RADIATED SPURIOUS EMISSIONS.....	13
	LIMITS OF RADIATED EMISSION MEASUREMENT (ABOVE 1000MHZ)	13
6.1	EUT OPERATION	14
6.2	TEST SETUP	15
6.3	SPECTRUM ANALYZER SETUP	16
6.4	TEST PROCEDURE	17
6.5	SUMMARY OF TEST RESULTS.....	18
7	FUNDAMENTAL AND BAND EDGE TEST.....	25
8	BANDWIDTH MEASUREMENT	31
8.1	TEST PROCEDURE	31
8.2	TEST RESULT.....	31
9	ANTENNA APPLICATION.....	33
9.1	ANTENNA REQUIREMENT.....	33
9.2	RESULT	33
10	EUT PHOTO AND TEST SETUP PHOTO	34



2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	FCC Part 15.207	N/A
Fundamental & Radiated / Conducted Spurious Emission Measurement	FCC Part 15.209 & 15.239 c	PASS
Band edge	FCC Part 15.239 c	PASS
Bandwidth	FCC Part 15.239 a	PASS
Antenna Requirement	FCC Part 15.203	PASS

Remark:

1. "N/A" denotes test is not applicable in this Test Report.



2.1 Test Site

Site Description

EMC Lab. : FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.: 27485

CAB ID.: CN0118

Name of Firm : Shenzhen DL Testing Technology Co., Ltd.

Site Location : 101-201, Comprehensive Building, Tongzhou Electronics Longgang
Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong
Street, Longgang District, Shenzhen, China



3 General Information

3.1 General Description of E.U.T.

Product Name:	:	Wireless FM Transmitter
Trademark	:	Nulaxy
Model No.:	:	BC91, NX16, BC72
Model Different.:	:	All models are same as the samples except model name and color, they have the same structure and circuit.
Operating frequency	:	88.1-107.9MHz
Number of Channels	:	199 channels
Type of Modulation	:	FM
Antenna installation	:	Internal Antenna
Antenna Gain	:	1.81dBi
Power supply	:	Input:12V-24V Output: PD36W+QC18W QC3.0 port output: 5V/3A, 9V/2A, 12V/1.5A PD port output: 5V/3A, 9V/3A, 12V/3A, PPS:3.3V-11V/3A
Hardware Version	:	V1.0
Software Version	:	V1.0
Remark: the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.		



3.2 Channel List

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2013 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The details of test channels and bandwidth were for RF conductive measurement.

Channel List:

Channel	Frequency (MHz)
01	88.1
02	88.2
~	~
100	98.0
~	~
198	107.8
199	107.9

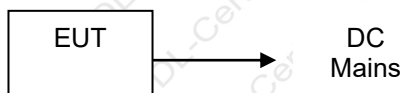
Note:

1. Test of channel was included the lowest, middle and highest frequency in highest data rate and to perform the test, then record on this report.



3.3 Test Setup Configuration

Radiated Emission(30MHz-1GHz)



Radiated Emission(above 1GHz)



3.4 Test Mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Channel	Frequency(MHz)
01	88.1
100	98.0
199	107.9



4 Equipment During Test

4.1 Equipments List

Radiation test, Band-edge test and 20db bandwidth test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Oct. 25, 2025	Oct. 24, 2026
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Oct. 25, 2025	Oct. 24, 2026
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Oct. 25, 2025	Oct. 24, 2026
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Oct. 26, 2025	Oct. 25, 2026
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Oct. 25, 2025	Oct. 24, 2026
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Oct. 25, 2025	Oct. 24, 2026
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Oct. 25, 2025	Oct. 24, 2026
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Oct. 25, 2025	Oct. 24, 2026
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Oct. 25, 2025	Oct. 24, 2026
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Oct. 25, 2025	Oct. 24, 2026
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Oct. 25, 2025	Oct. 24, 2026
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Oct. 25, 2025	Oct. 24, 2026
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Oct. 25, 2025	Oct. 24, 2026
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Oct. 25, 2025	Oct. 24, 2026



15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Oct. 25, 2025	Oct. 24, 2026
16	D.C. Power Supply	LongWei	PS-305D	010964729	Oct. 25, 2025	Oct. 24, 2026
17	Temperature & humidity chamber	Changfeng	CF-150-40-P	CF170802-01	Oct. 25, 2025	Oct. 24, 2026
18	966 chamber	YIHENG	966 Room	966	Nov. 06, 2023	Nov. 05, 2026

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	YIHENG	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
2	EMI Receiver	R&S	ESR	101421	Oct. 25, 2025	Oct. 24, 2026
3	LISN	R&S	ENV216	102417	Oct. 25, 2025	Oct. 24, 2026
4	843 Cable 1#	ChengYu	CE Cable	001	Oct. 25, 2025	Oct. 24, 2026

Other

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ EMC	EMC-CON 3A1.1
2	EMC radiation test system	FALA	EZ EMC	FA-03A2
3	RF test system	MAIWEI	MTS8310	2.0.0.0
4	RF communication test system	MAIWEI	MTS8200	2.0.0.0



4.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Time	$\pm 2\%$
Duty Cycle	$\pm 2\%$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions (150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(9KHz~30MHz)	$\pm 4.51\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~25GHz)	$\pm 4.74\text{dB}$
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%	

4.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



5 Conducted Emission

Test Requirement : FCC CFR 47 Part 15 Section 15.207

Test Method : ANSI C63.10: 2013

Test Result : PASS

Frequency Range : 150kHz to 30MHz

Class/Severity : Class B

5.1 E.U.T. Operation

Operating Environment :

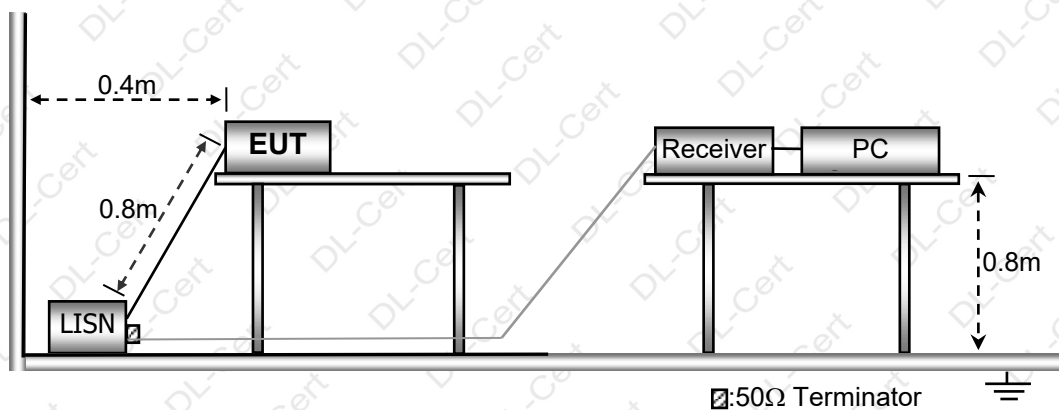
Temperature : 25.5 °C

Humidity : 51 % RH

Atmospheric Pressure : 101.2kPa

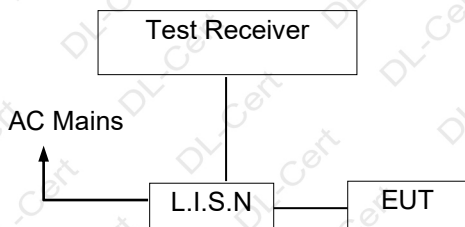
5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.





5.3 Test SET-UP (Block Diagram of Configuration)



5.4 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.

5.5 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.

5.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.7 Conducted Emission Test Result

N/A



6 Radiated Spurious Emissions

Test Requirement	:	FCC CFR47 Part 15 Section 15.209 & 15.239
Test Method	:	ANSI C63.10:2013
Test Result	:	PASS
Measurement Distance	:	3m
Limit	:	See the follow table

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.209&15.239 limit in the table below has to be followed.

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log(2400/F(\text{kHz})) + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log(24000/F(\text{kHz})) + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log(30) + 40$
30 ~ 88	100	3	100	$20\log(100)$
88 ~ 216	150	3	150	$20\log(150)$
216 ~ 960	200	3	200	$20\log(200)$
Above 960	500	3	500	$20\log(500)$

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

FUNDAMENTAL AND HARMONICS EMISSION LIMITS

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.



6.1 EUT Operation

Operating Environment :

Temperature : 23.5 °C

Humidity : 51.1 % RH

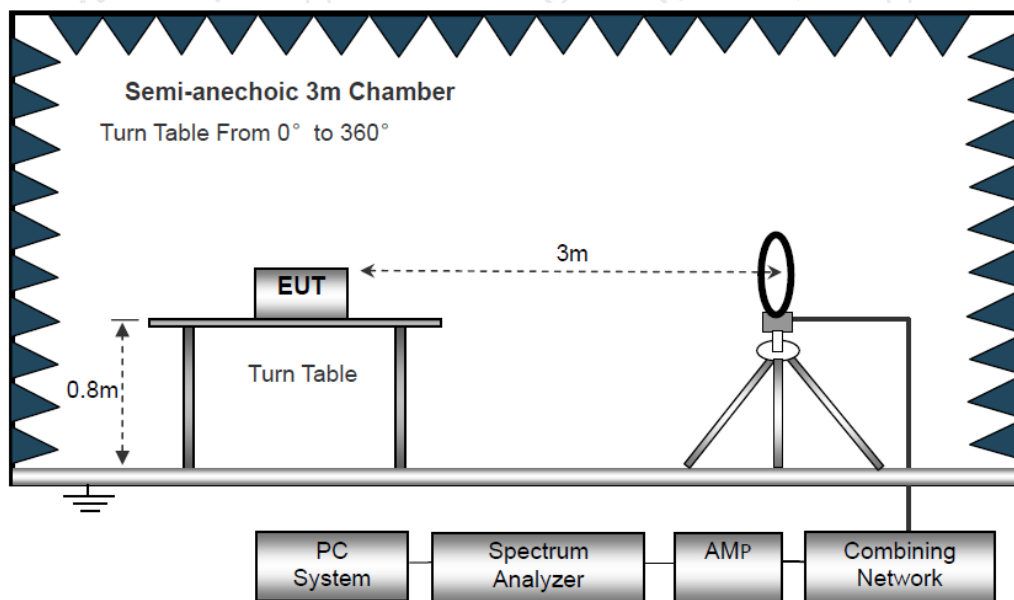
Atmospheric Pressure : 101.2kPa



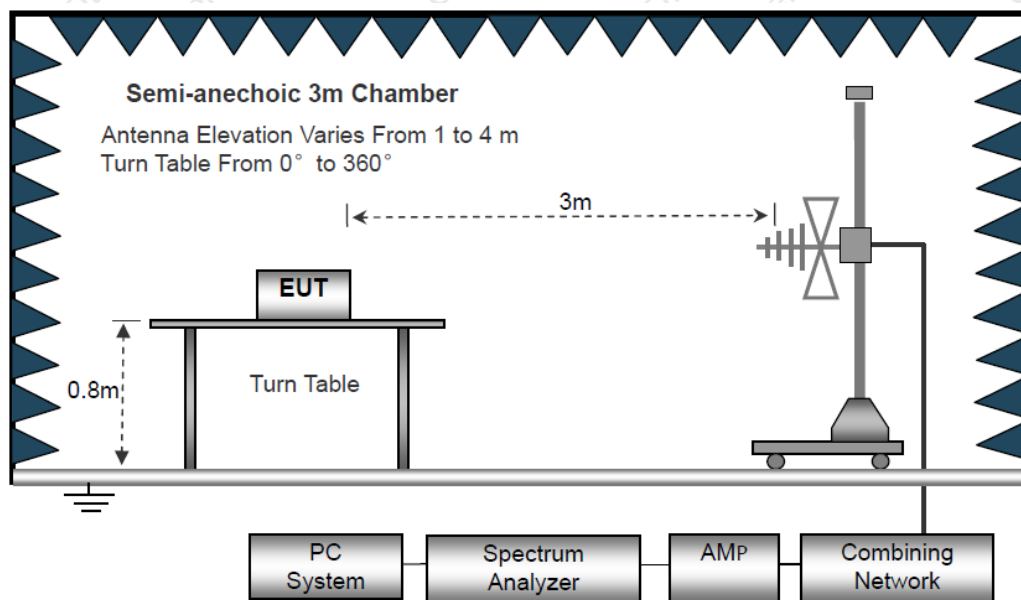
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi-Anechoic Chamber test site

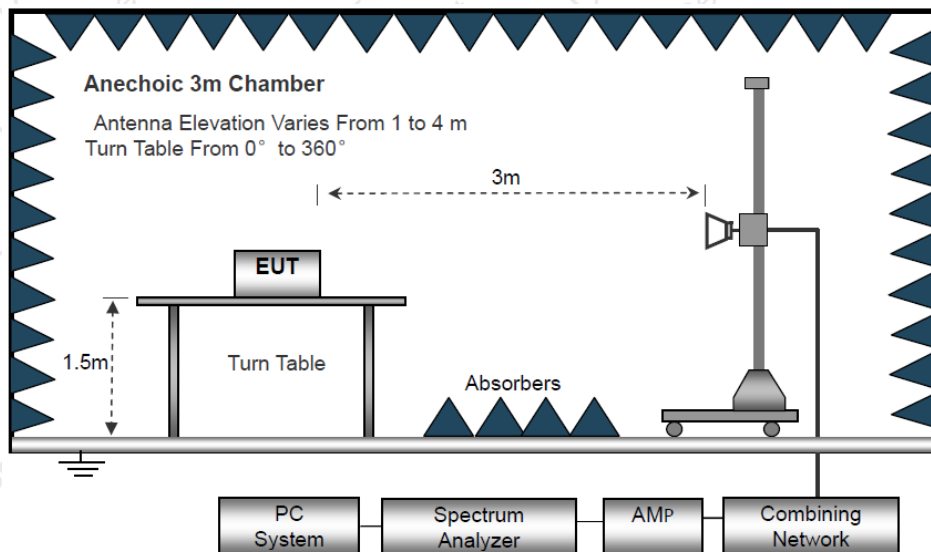
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



6.3 Spectrum Analyzer Setup

	Frequency	Detector	RBW	VBW	Remark
Receiver Setup	Below 30MHz	--	10kHz	10kHz	--
	30MHz ~ 1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value



6.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.
2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.
7. Test Procedure of measurement (For Above 1GHz):
 - 1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).
 - 2) Change the antenna polarization and repeat 1) with vertical polarization.
 - 3) Make a hardcopy of the spectrum.
 - 4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
 - 5) Change the analyser mode to Clear/ Write and found the cone of emission.
 - 6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.
 - 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.
 - 8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.
8. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.



6.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits (dBuV) + distance extrapolation factor.

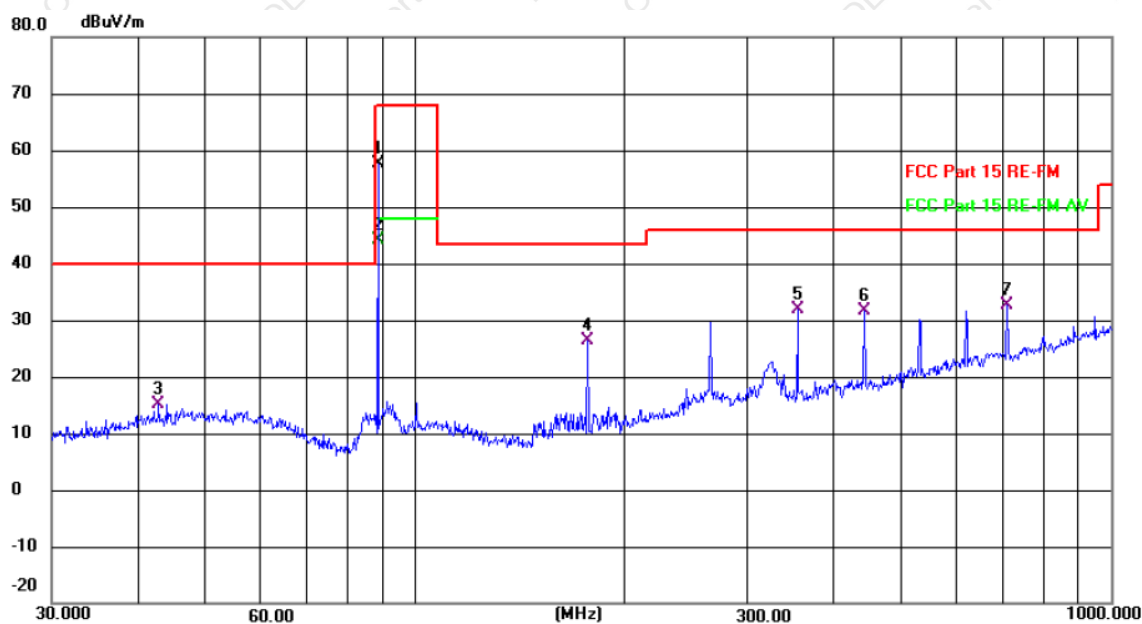
Test Frequency: 30MHz ~ 1GHz

PASS

Please refer to the following page.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Mode:	88.1MHz	Test Voltage:	DC 24V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		88.3421	75.25	-17.57	57.68	68.00	-10.32	peak
2	*	88.3421	61.82	-17.57	44.25	48.00	-3.75	AVG
3		42.7495	28.63	-13.47	15.16	40.00	-24.84	QP
4		176.8878	43.27	-16.96	26.31	43.50	-17.19	QP
5		354.1831	42.62	-10.65	31.97	46.00	-14.03	QP
6		441.7425	40.11	-8.59	31.52	46.00	-14.48	QP
7		709.1821	36.64	-4.10	32.54	46.00	-13.46	QP

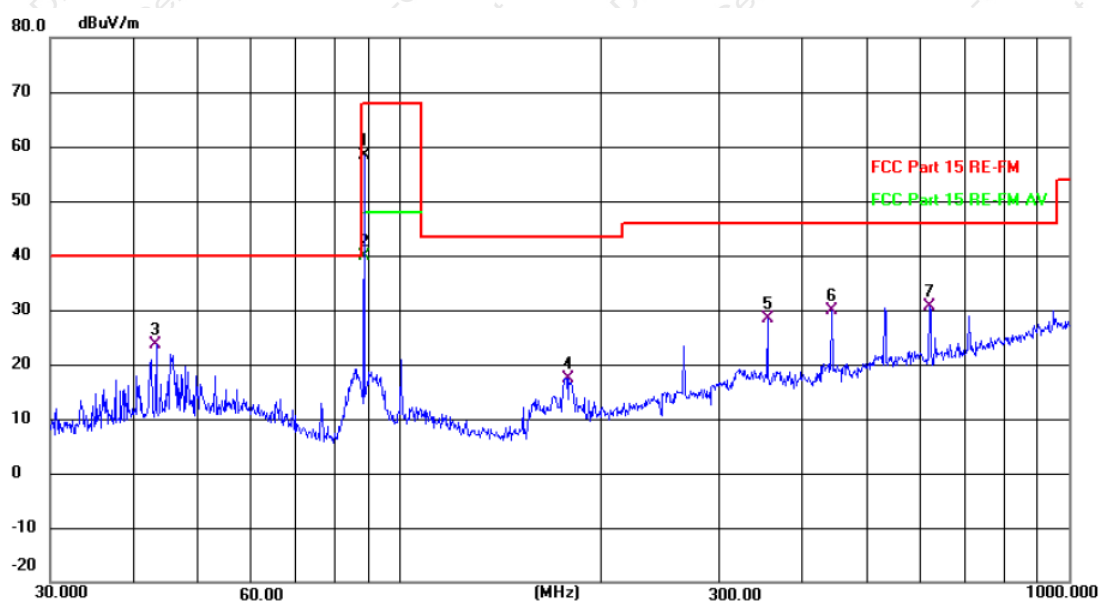
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Mode:	88.1MHz	Test Voltage:	DC 24V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		88.3421	75.94	-17.58	58.36	68.00	-9.64	peak
2	*	88.3421	57.58	-17.58	40.00	48.00	-8.00	AVG
3		43.2014	36.91	-13.38	23.53	40.00	-16.47	QP
4		178.7582	33.87	-16.39	17.48	43.50	-26.02	QP
5		354.1831	39.03	-10.65	28.38	46.00	-17.62	QP
6		441.7425	38.47	-8.59	29.88	46.00	-16.12	QP
7		618.5366	35.74	-5.06	30.68	46.00	-15.32	QP

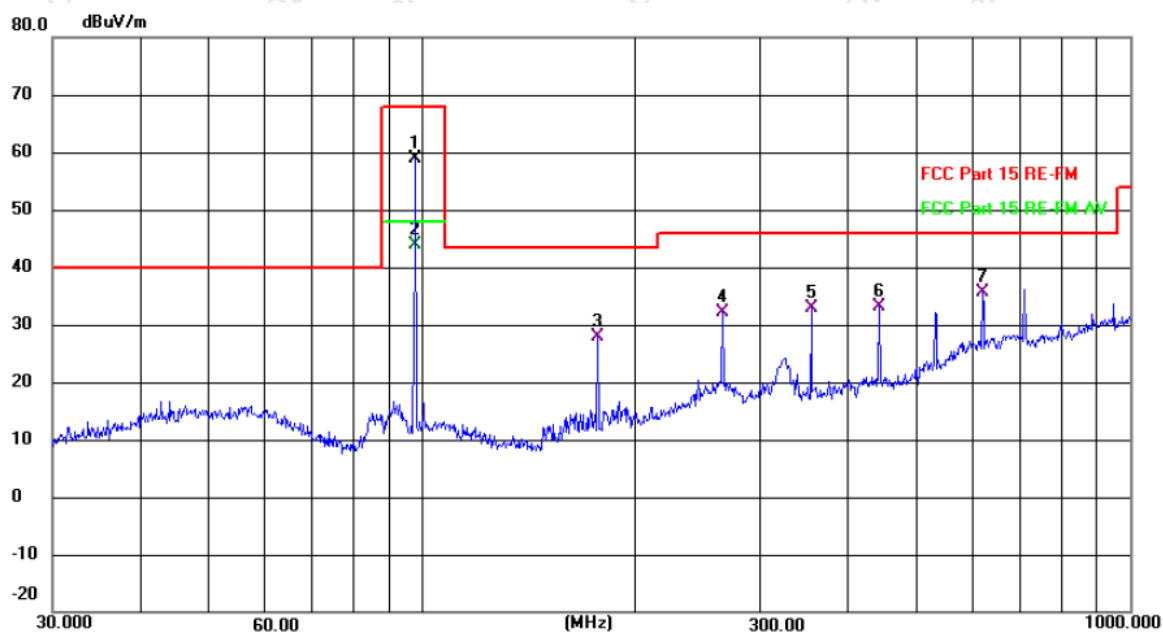
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Mode:	98MHz	Test Voltage:	DC 24V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		97.7980	74.34	-15.37	58.97	68.00	-9.03	peak
2	*	97.7980	59.19	-15.37	43.82	48.00	-4.18	AVG
3		176.8874	44.76	-16.95	27.81	43.50	-15.69	QP
4		265.6757	44.80	-12.77	32.03	46.00	-13.97	QP
5		354.1831	43.62	-10.65	32.97	46.00	-13.03	QP
6		441.7425	41.61	-8.59	33.02	46.00	-12.98	QP
7		618.5366	40.65	-5.06	35.59	46.00	-10.41	QP

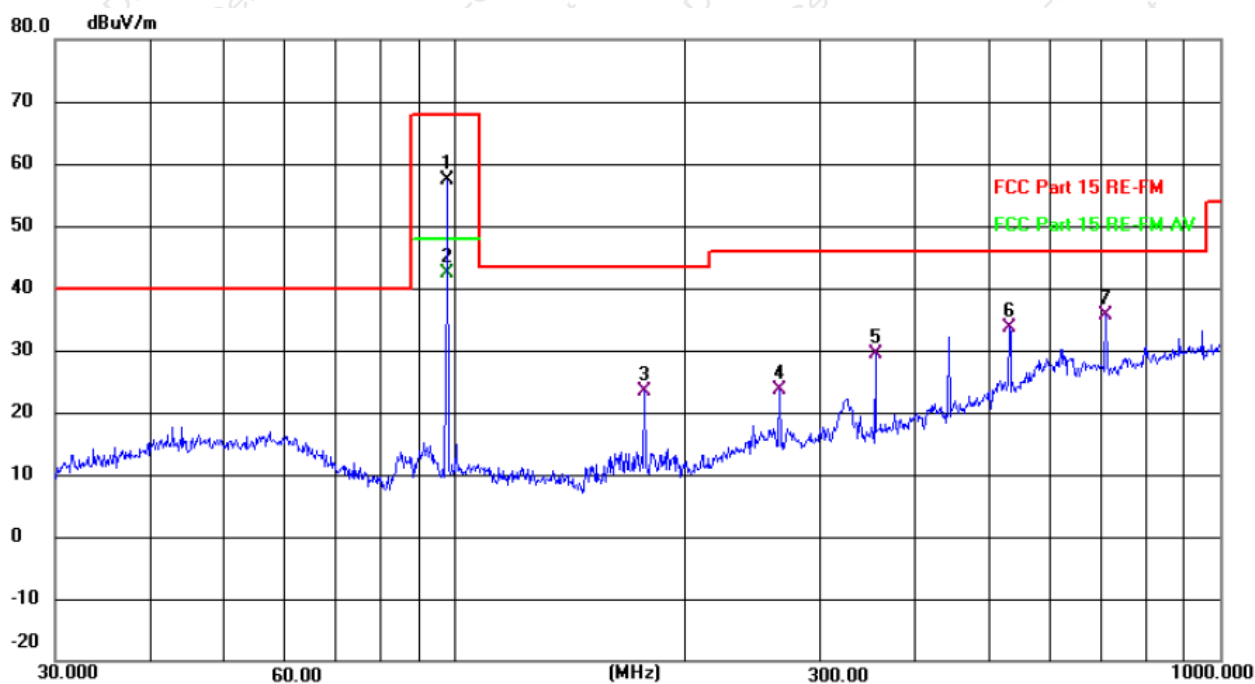
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Mode:	98MHz	Test Voltage:	DC 24V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		97.7980	72.84	-15.37	57.47	68.00	-10.53	peak
2	*	97.7980	57.69	-15.37	42.32	48.00	-5.68	AVG
3		176.8874	40.26	-16.95	23.31	43.50	-20.19	QP
4		265.6757	36.30	-12.77	23.53	46.00	-22.47	QP
5		354.1831	40.12	-10.65	29.47	46.00	-16.53	QP
6		530.1013	40.23	-6.63	33.60	46.00	-12.40	QP
7		709.1820	39.64	-4.10	35.54	46.00	-10.46	QP

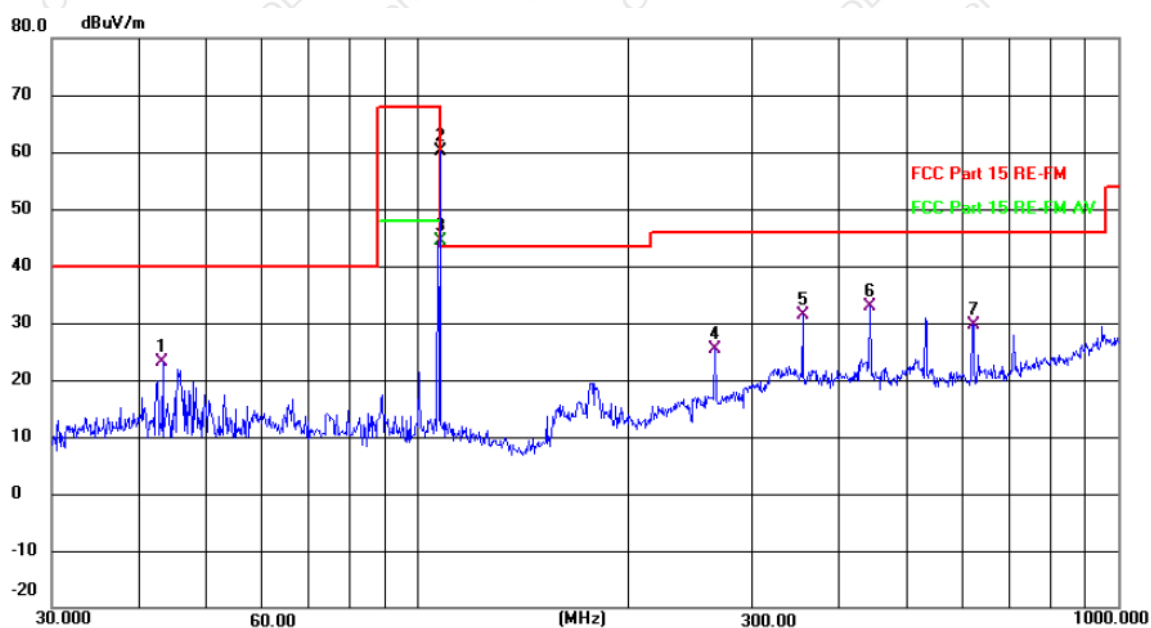
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Mode:	107.9MHz	Test Voltage:	DC 24V



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector
1		43.2014	36.41	-13.38	23.03	40.00	-16.97	QP
2		107.5100	74.97	-14.73	60.24	68.00	-7.76	peak
3	*	107.5100	59.01	-14.73	44.28	48.00	-3.72	AVG
4		265.6757	38.07	-12.77	25.30	46.00	-20.70	QP
5		354.1831	42.03	-10.65	31.38	46.00	-14.62	QP
6		441.7425	41.47	-8.59	32.88	46.00	-13.12	QP
7		620.7096	34.71	-5.02	29.69	46.00	-16.31	QP

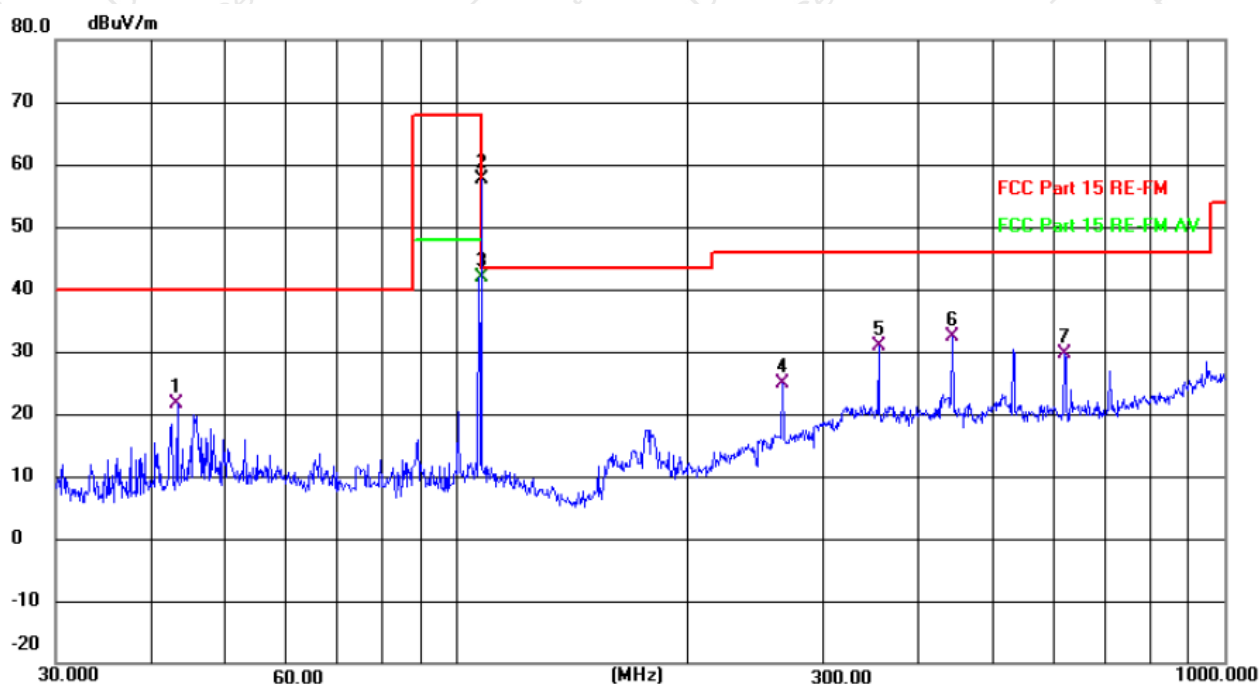
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Mode:	107.9MHz	Test Voltage:	DC 24V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		43.2014	34.91	-13.38	21.53	40.00	-18.47	QP
2		107.5100	72.47	-14.73	57.74	68.00	-10.26	peak
3	*	107.5100	56.51	-14.73	41.78	48.00	-6.22	AVG
4		265.6757	37.57	-12.77	24.80	46.00	-21.20	QP
5		354.1831	41.53	-10.65	30.88	46.00	-15.12	QP
6		441.7425	40.97	-8.59	32.38	46.00	-13.62	QP
7		618.5366	34.74	-5.06	29.68	46.00	-16.32	QP

Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



7 Fundamental and Band Edge Test

7.1 Test Standard and Limit

7.1.1 Test Standard

FCC Part 15.209 & 15.239

7.1.2 Test Limit

According to FCC 15.239(a)(b) and 15.209 requirement:

The field strength of emissions from the intentional radiators operated under these frequency bands shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental(dBuV/m)	
	Peak	Average
88 to 108	67.96	47.96

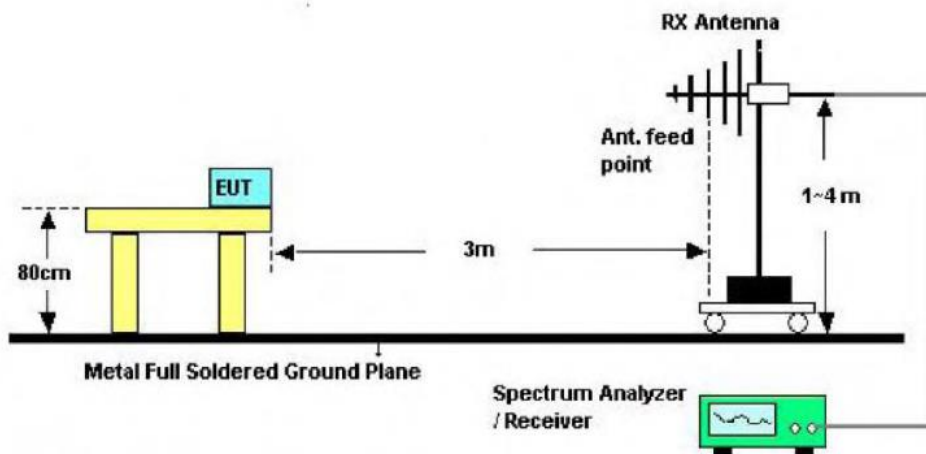
According to FCC 15.239(c) and 15.209 requirements:

Field strength of outside of the frequency bands limit show in below table.

Outside Frequency Band Edge	Distance Meters(at 3m)
Below 88 MHz	40.0(QP)
Above 108 MHz	43.5(QP)



7.2 Test Setup



7.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. The EUT was placed on a rotating 0.8m high above the ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

7.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

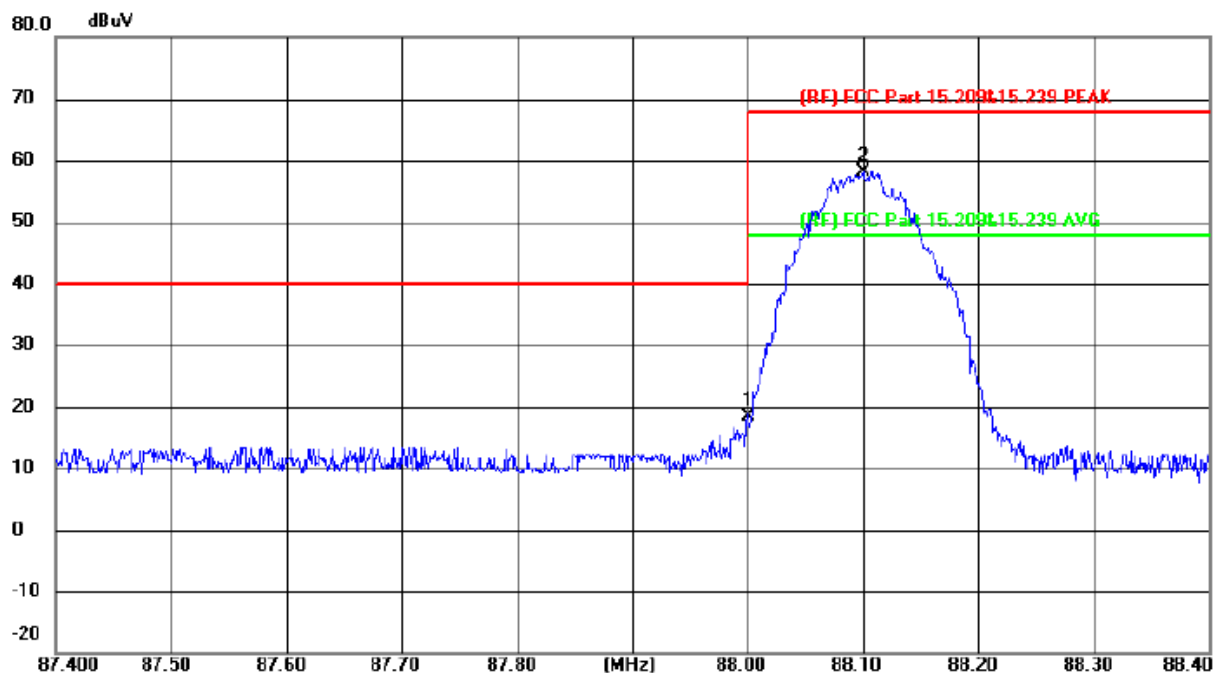
7.5 Deviation From Test Standard

No deviation



7.6 Test Data

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 24V	Test Mode:	88.1MHz
Remark:	Peak Value<Average Limit, So only show the Peak Value		



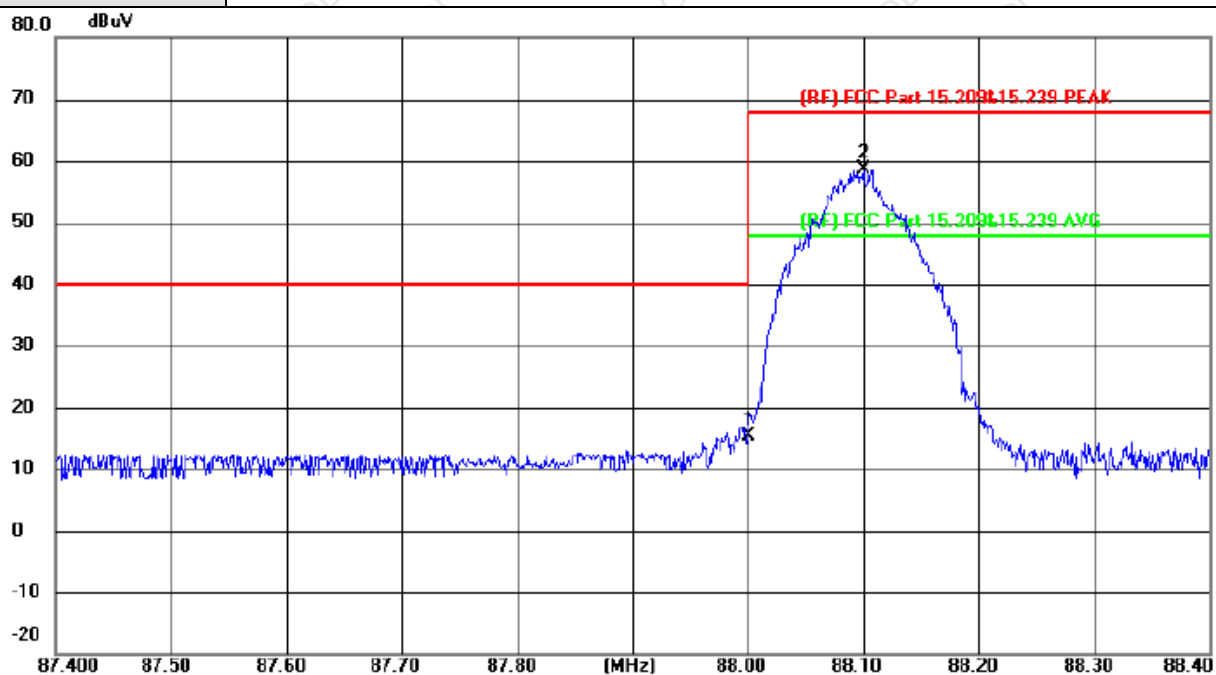
No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	88.0000	29.69	-11.39	18.30	40.00	-21.70	peak	
2 *	88.1000	69.57	-11.40	58.17	67.96	-9.79	peak	

Remark:

- 1.Final Level = Reading level + Correct Factor.
- 2.Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
- 3.Margin= Measurement Level-Limit.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 24V	Test Mode:	88.1MHz
Remark:	Peak Value<Average Limit, So only show the Peak Value		



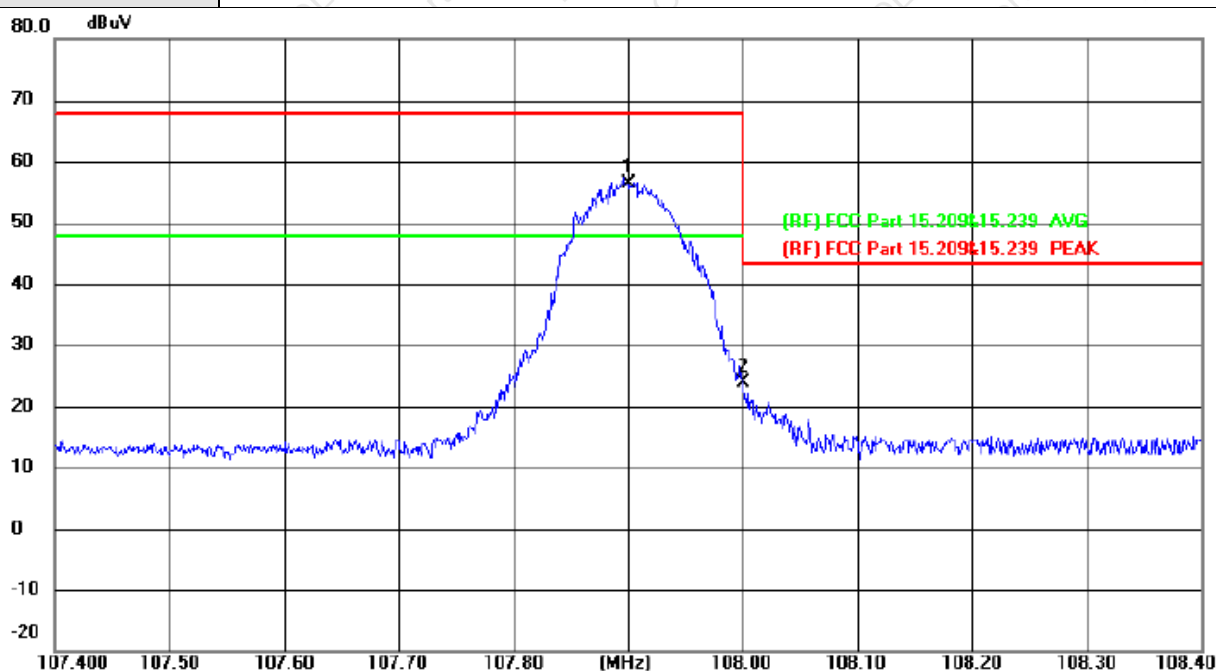
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		88.0000	26.69	-11.39	15.30	40.00	-24.70	peak	
2	*	88.1000	70.07	-11.40	58.67	67.96	-9.29	peak	

Remark:

- 1.Final Level = Reading level + Correct Factor.
- 2.Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
- 3.Margin= Measurement Level-Limit.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 24V	Test Mode:	107.9MHz
Remark:	Peak Value<Average Limit, So only show the Peak Value		



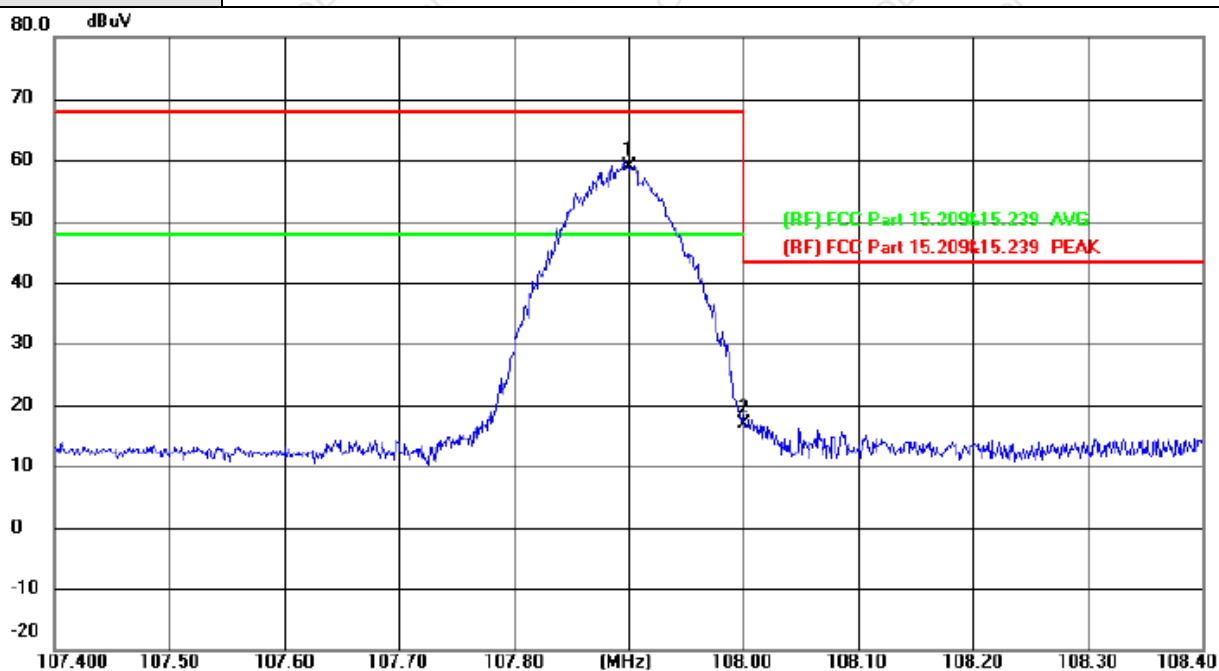
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	107.9000	65.63	-9.24	56.39	67.96	-11.57	peak	
2		108.0000	33.18	-9.24	23.94	43.50	-19.56	peak	

Remark:

- 1.Final Level = Reading level + Correct Factor.
- 2.Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
- 3.Margin= Measurement Level-Limit.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 24V	Test Mode:	107.9MHz
Remark:	Peak Value<Average Limit, So only show the Peak Value		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	107.9000	68.13	-9.24	58.89	67.96	-9.07	peak	
2		108.0000	26.18	-9.24	16.94	43.50	-26.56	peak	

Remark:

- 1.Final Level = Reading level + Correct Factor.
- 2.Correct Factor= Antenna factor+ Cable loss factor - Amplifier factor.
- 3.Margin= Measurement Level-Limit.



8 Bandwidth Measurement

Test Requirement : FCC CFR47 Part 15 Section 15.239
Test Method : ANSI C63.10:2013
Test Limit : Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency.

8.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 2kHz, VBW $\geq$ 3*RBW

8.2 Test Result

Channel number	Channel frequency (MHz)	Measurement level (KHz)	Required Limit (KHz)
01	88.10	61.60	200
100	98.00	60.39	200
199	107.90	61.09	200



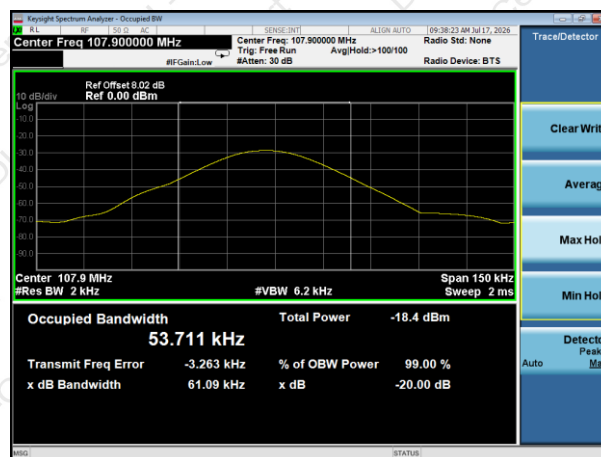
CH01



CH100



CH199





9 Antenna Application

9.1 Antenna Requirement

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 (b), 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.

9.2 Result

The antenna is Internal Antenna, the best case gain of the antennas is 1.81dBi, reference to the appendix for details.



10 EUT Photo and Test Setup Photo

Please see the attachment for details.

*****THE END REPORT*****