



FCC Part 15C Test Report

FCC ID:2BFSO-HQ01

Applicant: SHENZHEN CROSSKA ELECTRONICS Co., Ltd
Address: 5th Floor, Building B1, Hengfeng Industrial City, Hangcheng Street, Bao'an District, Shenzhen City, China.
Manufacturer: SHENZHEN CROSSKA ELECTRONICS Co., Ltd
Address: 5th Floor, Building B1, Hengfeng Industrial City, Hangcheng Street, Bao'an District, Shenzhen City, China.
EUT: Dog Training Collar
Trade Mark: N/A
Model Number: HQ01, HQ02, HQ03, HQ05, HQ06, HQ07, HQ08, HQ09
Date of Receipt: Oct. 24, 2025
Test Date: Oct. 24, 2025 to Nov. 20, 2025
Date of Report: Nov. 20, 2025
Prepared By: Shenzhen DL Testing Technology Co., Ltd.
Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Road Baolong Industrial Zone, Baolong Street, Longgang Shenzhen, Guangdong, China.
Applicable Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249
ANSI C63.10:2020
Test Result: Pass
Report Number: DLE-251114015R

Prepared (Test Engineer):

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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.

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**1. VERSION**

Report No.	Version	Description	Approved
DLE-251114015R	Rev.01	Initial issue of report	Nov. 20, 2025



2. TEST SUMMARY

Test procedures according to the technical standards:

FCC Part15 (15.249) , Subpart C			
Standard Section	Test Item	Result	Remark
15.203	Antenna Requirement	PASS	
15.207	AC Power Line Conducted Emission	PASS	
15.215 (c)	20dB Occupied Bandwidth	PASS	
15.209/15.249	Radiated Emission and Fundamental	PASS	
15.205/15.209	Restricted Band	PASS	

NOTE:

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



2.1 TEST FACILITY

Shenzhen DL Testing Technology Co., Ltd.

Add. : 101-201, Building C, Shuanghuan, No.8, Baoqing Roa Baolong Industrial Zone, Baolong Street, Longgang Shenzhen, Guangdong, China.

FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.: 27485

CAB ID.: CN0118

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	3m camber Radiated spurious emission(9KHz-30MHz)	$U=4.5\text{dB}$
2	3m camber Radiated spurious emission(30MHz-1GHz)	$U=4.8\text{dB}$
3	3m chamber Radiated spurious emission(1GHz-6GHz)	$U=4.9\text{dB}$
4	3m chamber Radiated spurious emission(6GHz-40GHz)	$U=5.0\text{dB}$
5	Conducted disturbance	$U=3.2\text{dB}$
6	RF Band Edge	$U=1.68\text{dB}$
7	RF Occupied Bandwidth	$U=1.8\text{MHz}$
8	humidity uncertainty	$U=5.3\%$
9	Temperature uncertainty	$U=0.59^{\circ}\text{C}$



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Dog Training Collar
Model No.:	HQ01
Serial model No.:	HQ02, HQ03, HQ05, HQ06, HQ07, HQ08, HQ09
Model Different.:	Only the model name is different.
Sample(s) Status:	Engineer sample
Channel numbers:	1 CH
Operation Frequency:	915MHz
Type of Modulation:	AM
Antenna Type:	Spring Antenna
Antenna gain:	0dBi
Ratings:	Input: 5V  Battery: 3.7V  300mA
AC/DC Adapter:	N/A
AC/DC Adapter Mode:	N/A

Channel List

CH	Frequency (MHz)
1	915

Note:

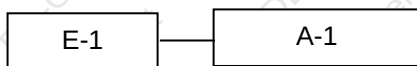
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency
1	915MHz

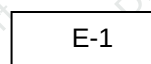


3.2 Test Setup Configuration

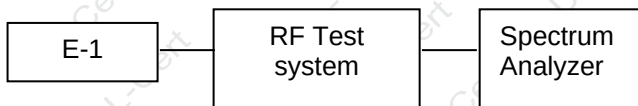
Conducted emissions



Radiated Emission



Conducted Spurious



3.3 Support Equipment

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
E-1	Dog Training Collar	N/A	HQ01	N/A	EUT
A-1	AC Adapter	UGREEN	X569	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	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.



3.4 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Mode	Test mode
1	Transmitting

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.	



3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation test, Band-edge test and 6db 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. 27, 2025	Oct. 24, 2026
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Oct. 27, 2025	Oct. 24, 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	Power meter	KEYSIGHT	N1912AP	926431	Oct. 25, 2025	Oct. 24, 2026

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	ChengYu	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_EMCC	EMC-CON 3A1.1
2	EMC radiation test system	FALA	EZ_EMCC	FA-03A2
3	RF test system	MAIWEI	MTS8310	2.0.0.0
4	RF communication test system	MAIWEI	MTS8200	2.0.0.0



4. EMC EMISSION TEST

4.1 Conducted emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2020
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

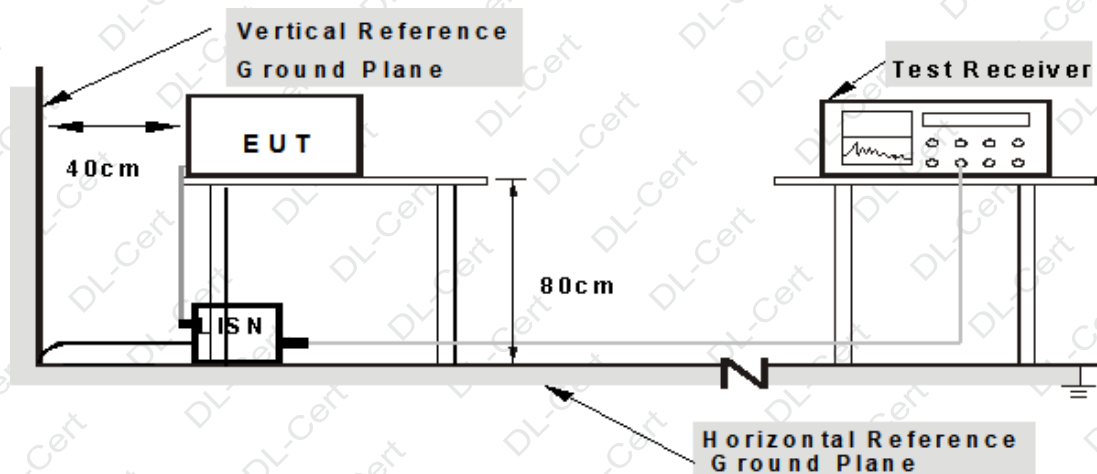
- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

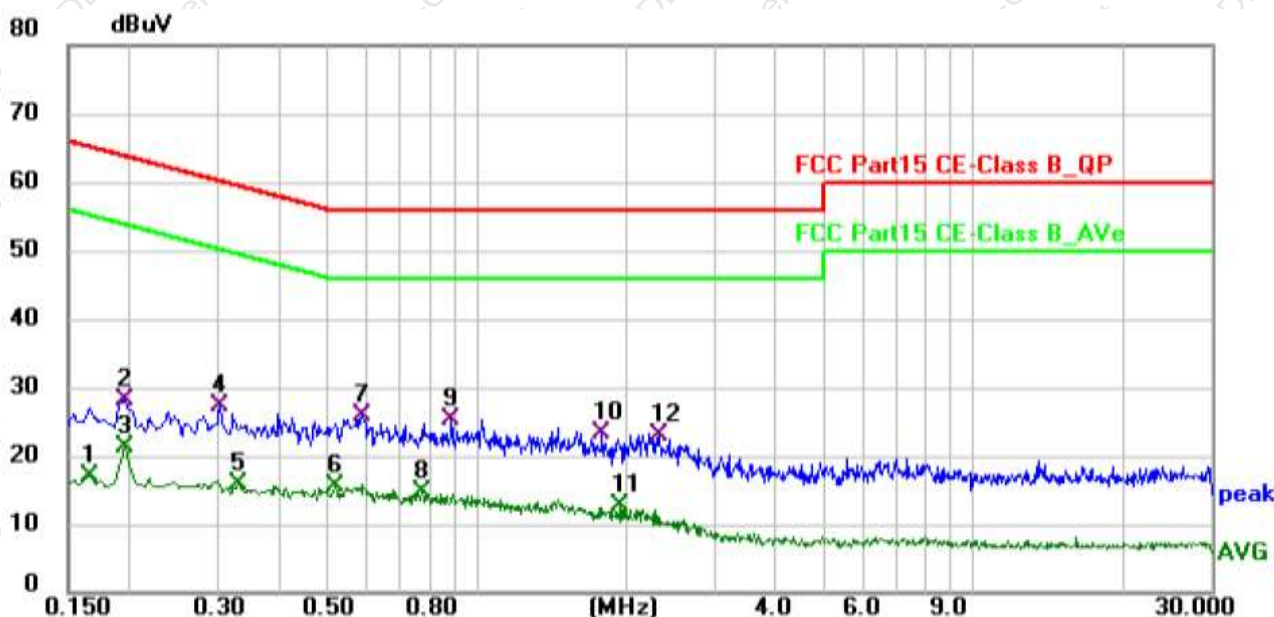
4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



4.1.6 Test Result

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	TX Mode



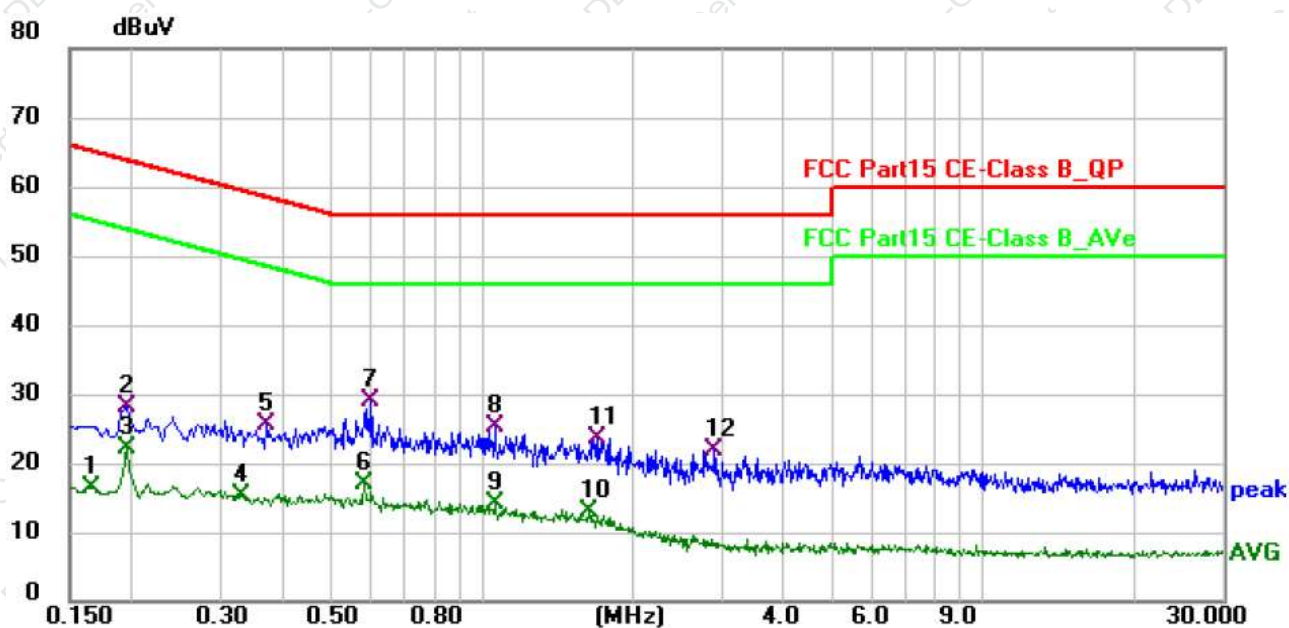
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1660	7.32	9.72	17.04	55.16	-38.12	AVG	P
2	0.1940	18.45	9.72	28.17	63.86	-35.69	QP	P
3	0.1940	11.58	9.72	21.30	53.86	-32.56	AVG	P
4	0.3020	17.67	9.72	27.39	60.19	-32.80	QP	P
5	0.3300	6.00	9.72	15.72	49.45	-33.73	AVG	P
6	0.5180	5.91	9.72	15.63	46.00	-30.37	AVG	P
7 *	0.5899	16.22	9.72	25.94	56.00	-30.06	QP	P
8	0.7780	5.13	9.72	14.85	46.00	-31.15	AVG	P
9	0.8860	15.54	9.72	25.26	56.00	-30.74	QP	P
10	1.7860	13.53	9.74	23.27	56.00	-32.73	QP	P
11	1.9460	2.85	9.74	12.59	46.00	-33.41	AVG	P
12	2.3340	13.37	9.74	23.11	56.00	-32.89	QP	P

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi - Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor = Lism factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	TX Mode



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1660	6.82	9.70	16.52	55.16	-38.64	AVG	P
2	0.1940	18.53	9.70	28.23	63.86	-35.63	QP	P
3	0.1940	12.34	9.70	22.04	53.86	-31.82	AVG	P
4	0.3300	5.61	9.70	15.31	49.45	-34.14	AVG	P
5	0.3700	15.91	9.70	25.61	58.50	-32.89	QP	P
6	0.5820	7.18	9.71	16.89	46.00	-29.11	AVG	P
7 *	0.5980	19.30	9.71	29.01	56.00	-26.99	QP	P
8	1.0620	15.65	9.71	25.36	56.00	-30.64	QP	P
9	1.0620	4.35	9.71	14.06	46.00	-31.94	AVG	P
10	1.6420	3.24	9.73	12.97	46.00	-33.03	AVG	P
11	1.6940	13.98	9.73	23.71	56.00	-32.29	QP	P
12	2.9140	12.03	9.73	21.76	56.00	-34.24	QP	P

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi - Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor = Lisen factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.



4.2 Radiated emissions

Test Requirement:	FCC Part15 C Section 15.209/15.249				
Test Method:	ANSI C63.10:2020				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	MX5Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

4.2.1 Radiated Emission Limits

Frequencies (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

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).

LIMITS OF RADIATED EMISSION MEASUREMENT

Fundamental Frequency	Field Strength of Fundamental @3m (millivolts/meter)	Average Limit @3m (dBuV/m)	Peak Limit @3m (dBuV/m)
900-928MHz	50	94	114
2400-2483.5MHz	50	94	114
5725-5875MHz	50	94	114
24.0-24.25GHz	250	108	128



Note :

1. Average Limit (dB μ V/m)=20 $\times$ log[1000 $\times$ Field Strength (mV/m)].
2. Peak Limit (dB μ V/m)= Average Limit (dB μ V/m)+20dB

4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
- h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

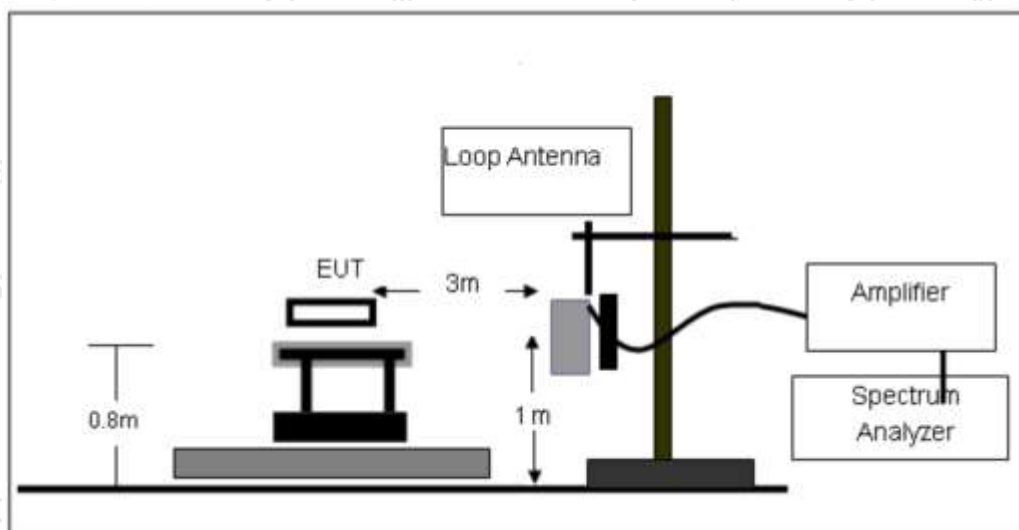
4.2.3 DEVIATION FROM TEST STANDARD

No deviation

4.2.4 TEST SETUP

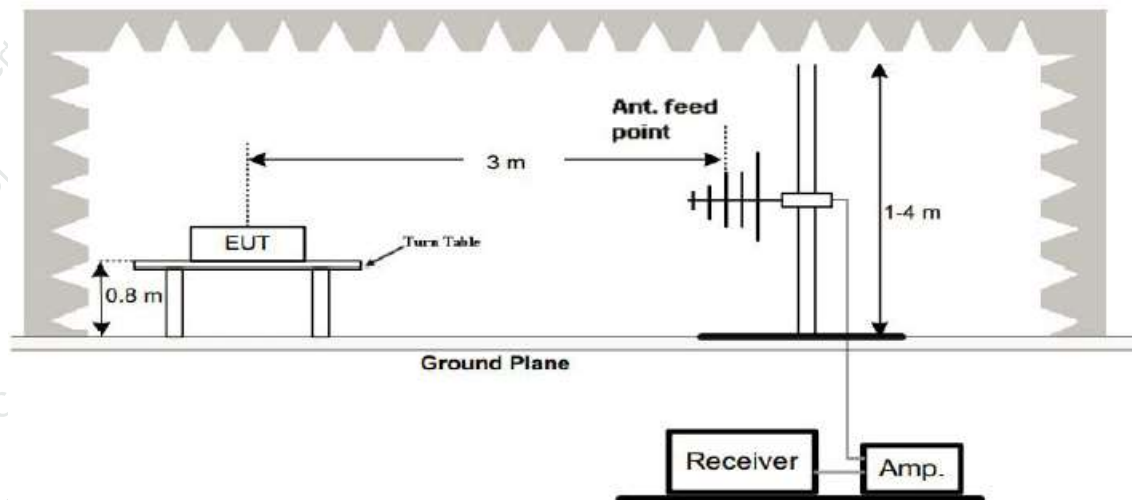


(A) Radiated Emission Test-Up Frequency Below 30MHz

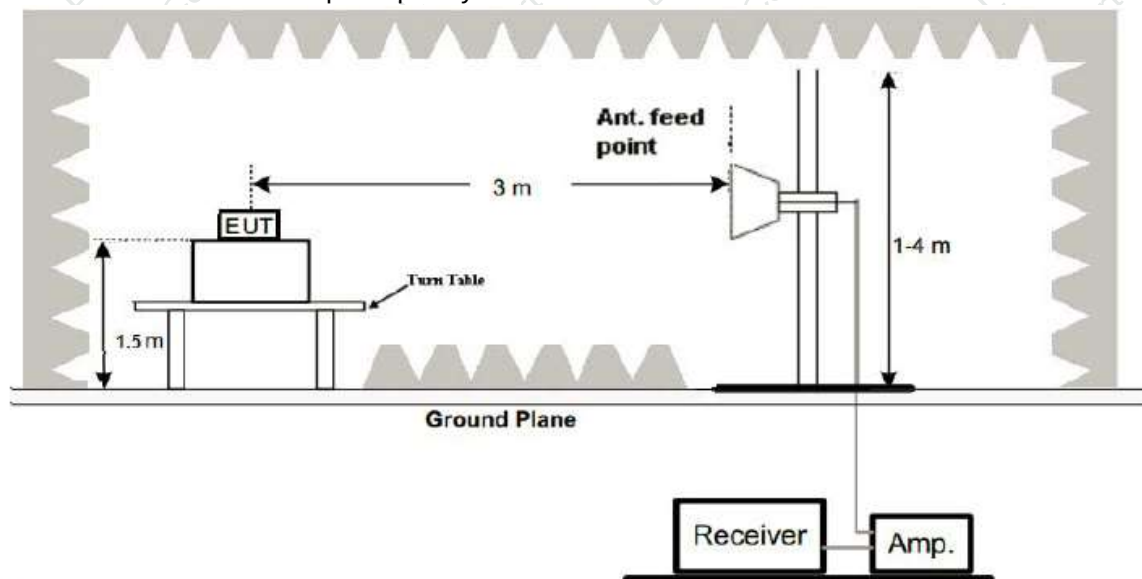




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.2.6 TEST RESULTS

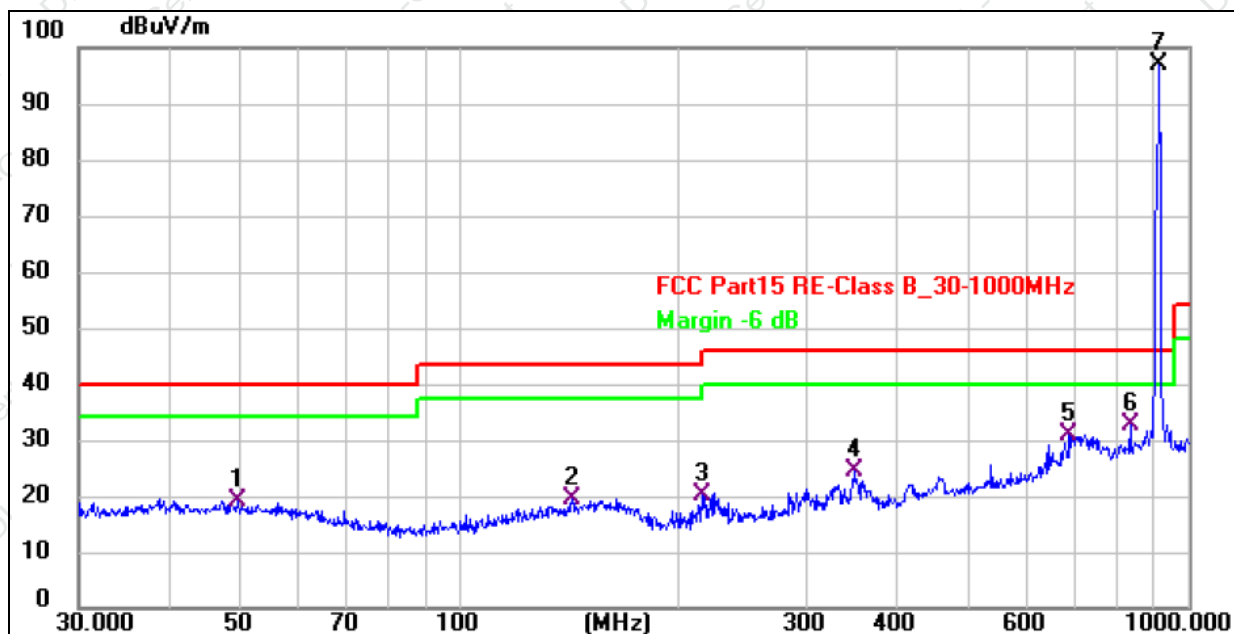
Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.



Between 30MHz – 1GHz

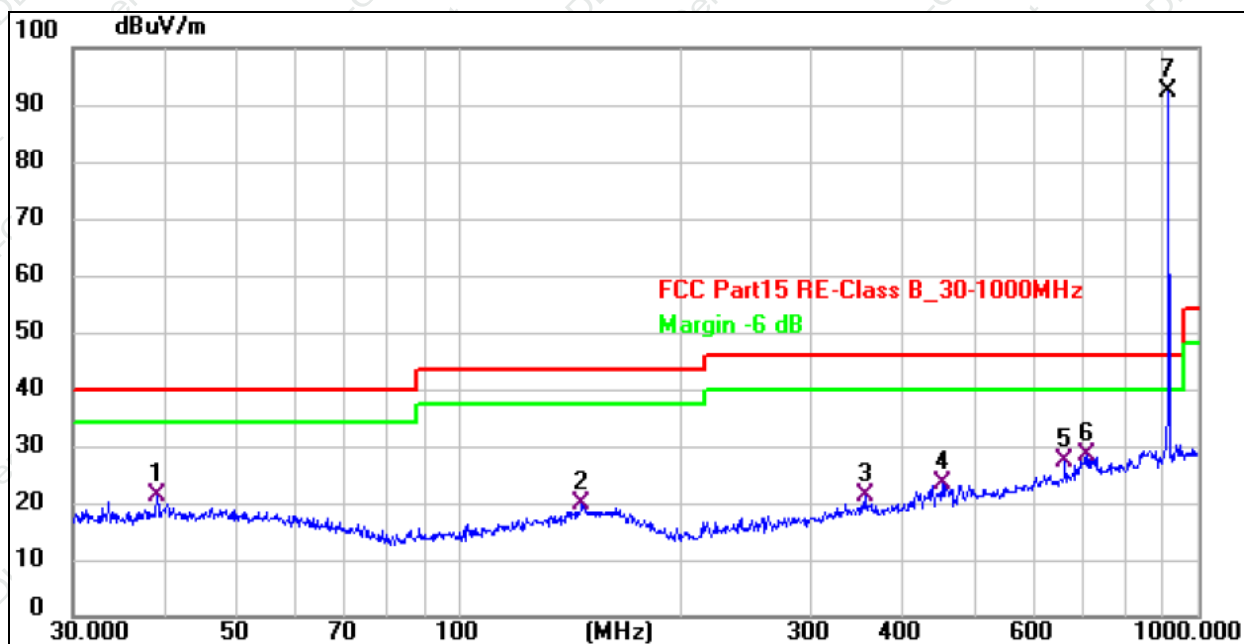
Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V	Test Channel :	915MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	49.7066	32.86	-13.67	19.19	40.00	-20.81	QP
2	142.8241	33.20	-13.61	19.59	43.50	-23.91	QP
3	215.2676	37.36	-17.08	20.28	43.50	-23.22	QP
4	349.2500	38.44	-13.92	24.52	46.00	-21.48	QP
5	687.1506	38.91	-7.97	30.94	46.00	-15.06	QP
6	833.3170	38.82	-6.13	32.69	46.00	-13.31	QP
7 *	915.1620	101.85	-4.83	97.02	114.00	-16.98	peak



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V	Test Channel :	915MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	39.0243	34.40	-13.28	21.12	40.00	-18.88	QP
2	146.8875	33.19	-13.35	19.84	43.50	-23.66	QP
3	354.1831	34.97	-13.84	21.13	46.00	-24.87	QP
4	451.1350	35.21	-11.91	23.30	46.00	-22.70	QP
5	661.1503	35.72	-8.32	27.40	46.00	-18.60	QP
6	706.6997	36.12	-7.72	28.40	46.00	-17.60	QP
7 *	915.1620	97.23	-4.83	92.40	114.00	-21.60	peak

Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.



(Above 1000 MHz)

Normal Voltage 915MHz

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
V	1830.45	55.61	-3.47	52.14	74	-21.86	Pk
V	1830.45	46.72	-3.47	43.25	54	-10.75	AV
V	2745.61	50.25	-3.74	46.51	74	-27.49	Pk
V	2745.61	43.72	-3.74	39.98	54	-14.02	AV
V	3660.23	52.36	-4.59	47.77	74	-26.23	Pk
V	3660.23	44.28	-4.59	39.69	54	-14.31	AV
H	1830.45	52.93	-3.47	49.46	74	-24.54	Pk
H	1830.45	44.17	-3.47	40.7	54	-13.3	AV
H	2745.61	49.55	-3.74	45.81	74	-28.19	Pk
H	2745.61	37.2	-3.74	33.46	54	-20.54	AV
H	3660.23	54.56	-4.59	49.97	74	-24.03	Pk
H	3660.23	46.11	-4.59	41.52	54	-12.48	AV

Remark:

Absolute Level= Reading Level+ Factor, Margin= Limit- Absolute Level

Other harmonics emissions are lower than 20dB below the allowable limit.



4.2.7 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:

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

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

Test Result:

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization :	Horizontal
Test Voltage :	DC 3.7V		
Test Mode :	Mode 1		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
910.3	101.85	-4.83	97.02	114.00	-16.98	Peak
910.3	97.02	-13.25	83.77	94.00	-10.23	Average

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Average = Peak Emission Level (dBμV/m) - Duty Cycle Factor (dB)

All interfaces was connected, and TX mode

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization :	Vertical
Test Voltage :	DC 3.7V		
Test Mode :	Mode 1		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
910.3	97.23	-4.83	92.40	114.00	-21.60	Peak
910.3	96.40	-13.25	83.15	94.00	-10.85	Average

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Average = Peak Emission Level (dBμV/m) - Duty Cycle Factor (dB)

All interfaces was connected, and TX mode



5. CALCULATION OF AVERAGE FACTOR

The output field strengths of specification in accordance with the FCC rules specify measurements with an average detector. During the test, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.

The duty cycle is measured in 100 ms or the repetition cycle period, whichever is a shorter time frame. The duty cycle is measured by placing the spectrum analyzer to set zero span at 100kHz resolution bandwidth.

Averaging factor in dB = $20\log(\text{duty cycle})$

The duration of one cycle = 100ms

The duty cycle is simply the on-time divided the duration of one cycle

Duty Cycle = $(0.79\text{ms} \times 3 + 0.190\text{ms} \times 102) / 100\text{ms}$

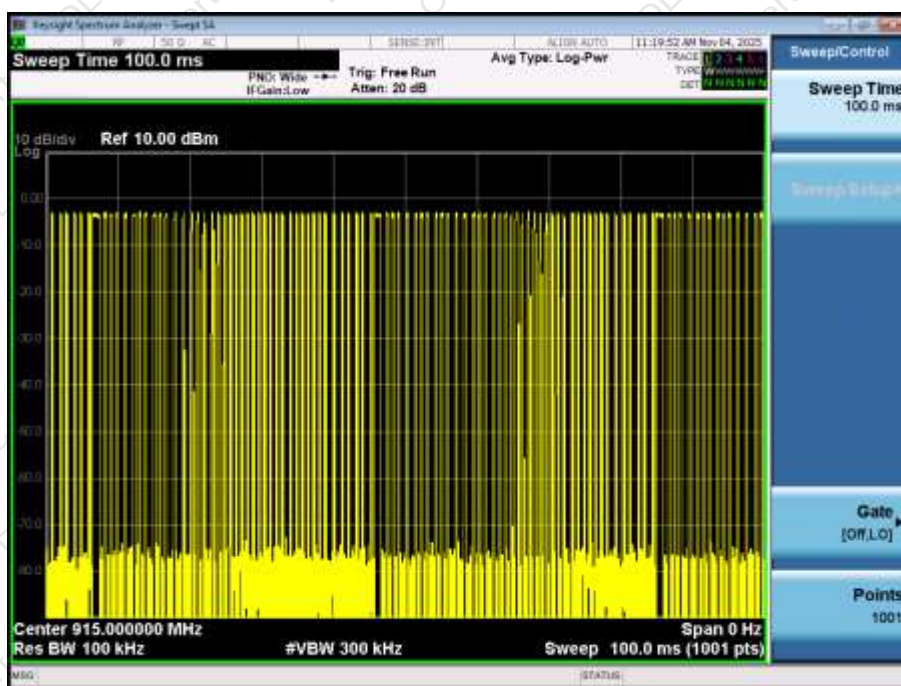
= $21.75\text{ms} / 100\text{ms}$

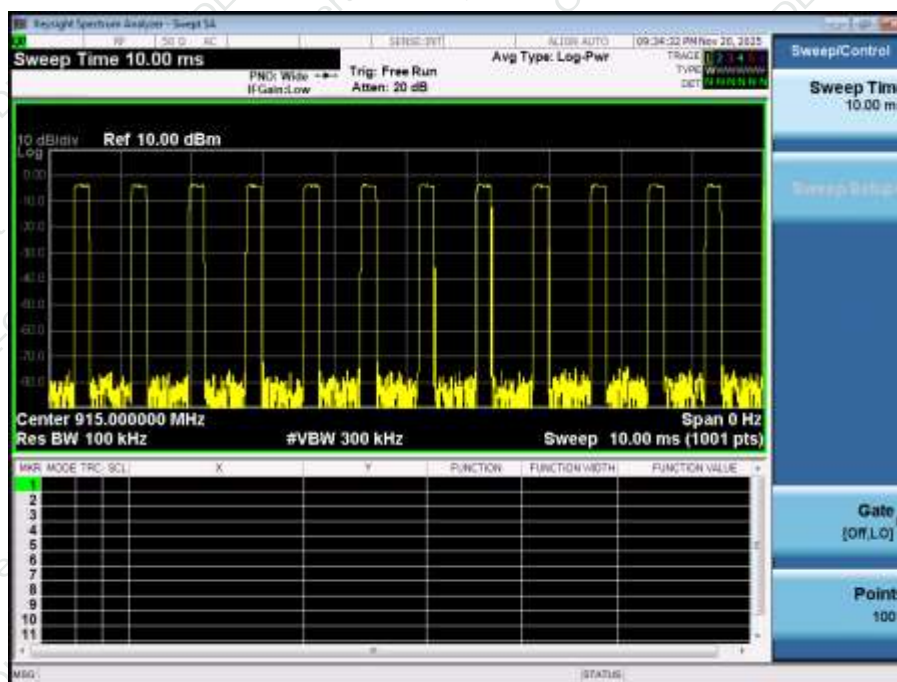
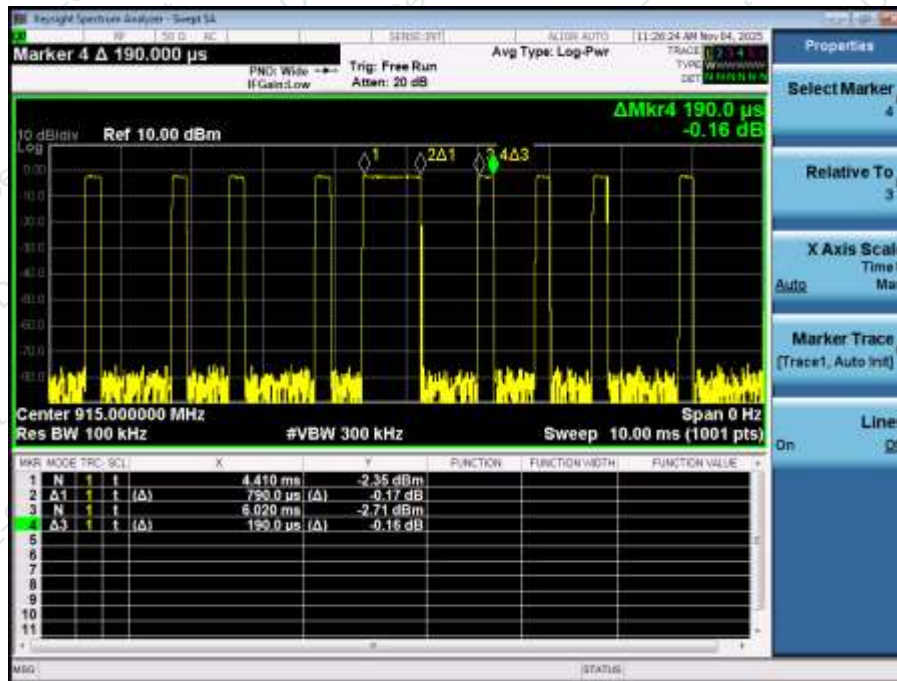
= 0.2175

Therefore, the averaging factor is found by $20 \times \log_{10}(0.2175) = -13.25\text{dB}$

Test plot as follows:

Cycle

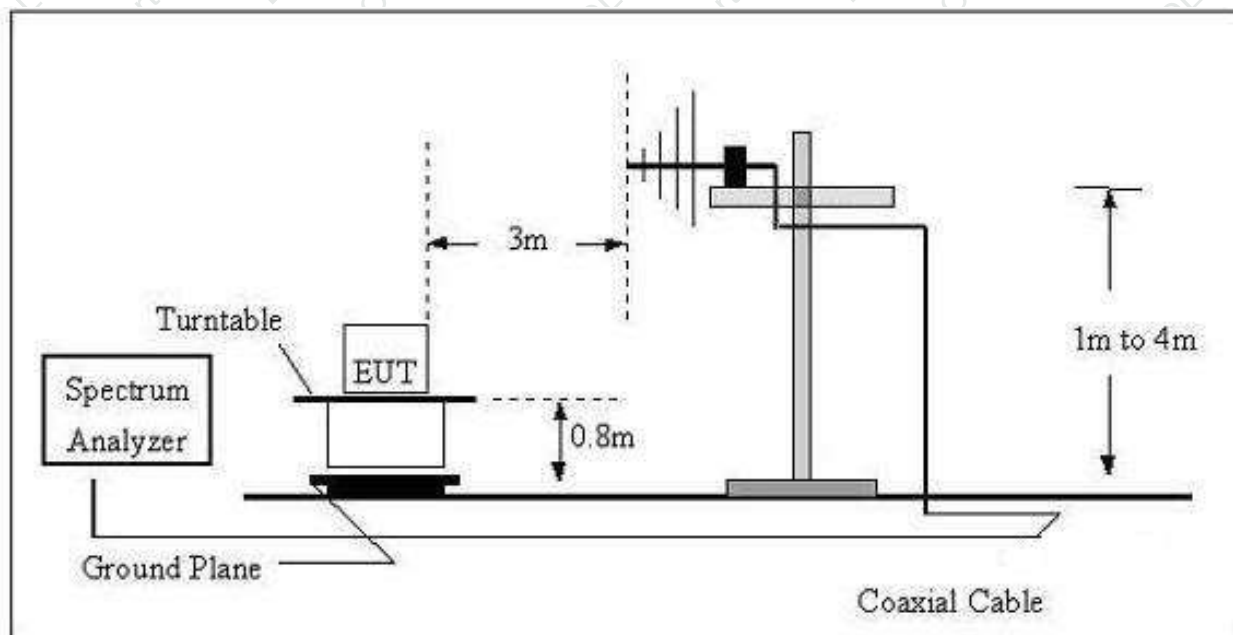






6. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

6.1 Block Diagram Of Test Setup



6.2 Applicable Standard

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be

attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation

6.3 Test Procedure

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- VBW for Peak, Quasi-peak, or Average Detector Function: $3 \times \text{RBW}$
- Repeat above procedures until all measured frequencies were complete.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

6.4 EUT Operating Conditions

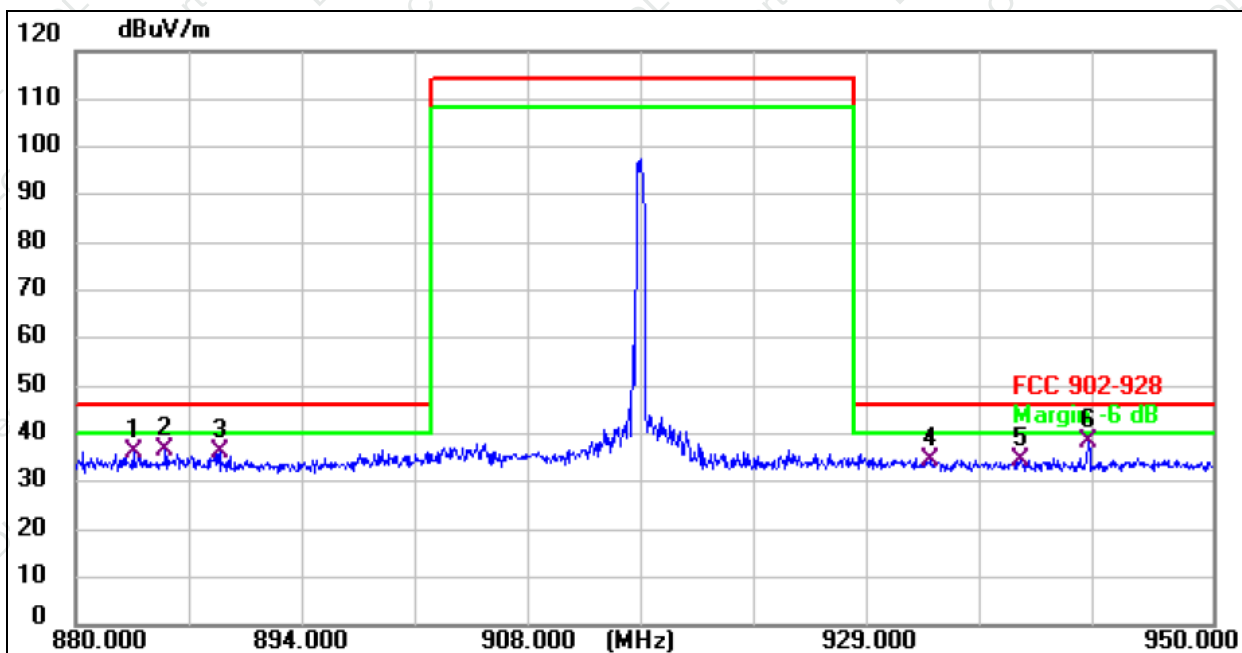
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



6.5 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage :	DC 3.7V
Test Mode :	Transmitting		

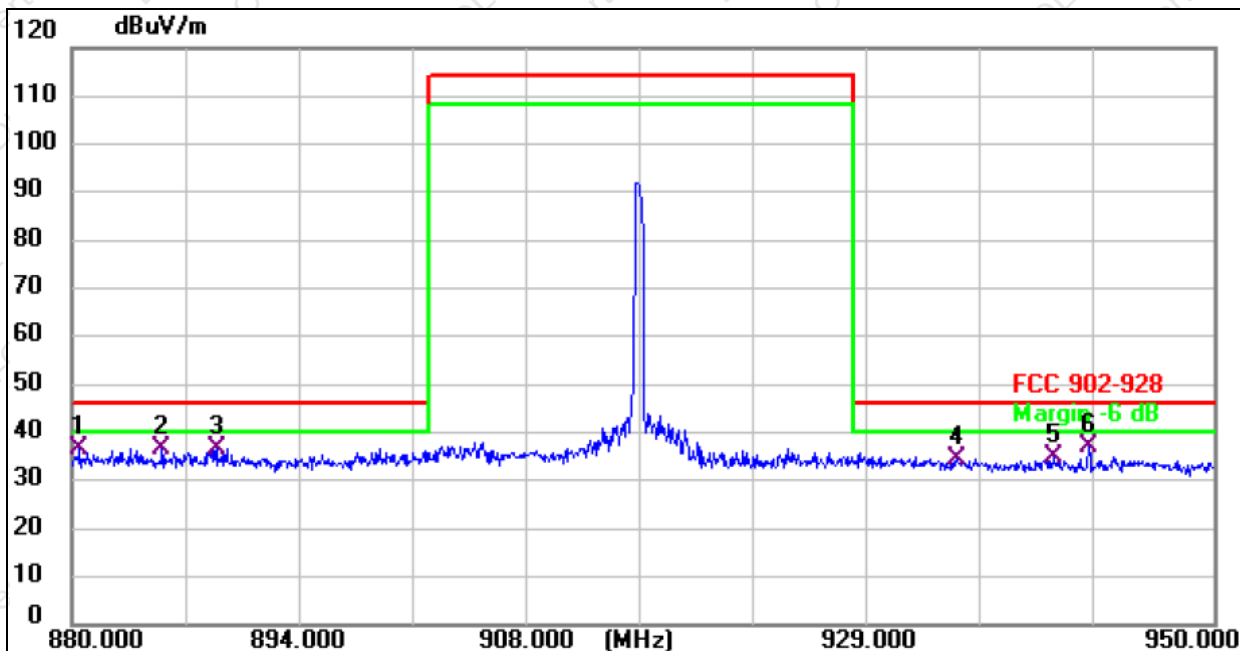
915MHz Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	883.5700	41.42	-5.36	36.06	46.00	-9.94	QP
2	885.5300	41.84	-5.33	36.51	46.00	-9.49	QP
3	888.8900	41.55	-5.27	36.28	46.00	-9.72	QP
4	932.5700	39.18	-4.51	34.67	46.00	-11.33	QP
5	938.1700	39.08	-4.44	34.64	46.00	-11.36	QP
6 *	942.3000	42.93	-4.39	38.54	46.00	-7.46	QP



915MHz Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	880.4900	42.17	-5.42	36.75	46.00	-9.25	QP
2	885.5300	41.84	-5.33	36.51	46.00	-9.49	QP
3	888.8900	42.05	-5.27	36.78	46.00	-9.22	QP
4	934.3200	39.13	-4.50	34.63	46.00	-11.37	QP
5	940.2000	39.33	-4.42	34.91	46.00	-11.09	QP
6 *	942.3000	41.43	-4.39	37.04	46.00	-8.96	QP



7. 20DB BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.215
Test Method:	ANSI C63.10:2020

7.1 Test Setup



7.2 Limit

FCC Part15 (15.249) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.249(c)	Bandwidth	902~928	PASS

7.3 Test procedure

1. Set resolution bandwidth (RBW) = 1 ~ 5% of the OBW.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

7.4 EUT Operation Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



7.5 Test Result

Temperature :	26°C	Relative Humidity :	54%
Test Voltage :	DC 3.7V	Remark	N/A

Channel	Frequency (MHz)	20dB bandwidth (KHz)
01	915	17.53

CH01





8. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
EUT Antenna:	
The antenna is Spring Antenna, the best case gain of the antennas is 0dBi, reference to the appendix II for details	



9. TEST SETUP PHOTO

Reference to the appendix I for details.

10. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

***** END OF REPORT *****