FCC Part 15C Test Report
FCC ID:2AYAF-W5

Applicant:	**Shenzhen Smartpet Technology Co.,Ltd.**
Address:	A2-301, Yingzhan Industry Zone, No.8 Longtian Tongfuyu Road, Longtian Community, Longtian Street, Pingshan District, Shenzhen, Guangdong, China
Manufacturer:	**Shenzhen Smartpet Technology Co.,Ltd.**
Address:	A2-301, Yingzhan Industry Zone, No.8 Longtian Tongfuyu Road, Longtian Community, Longtian Street, Pingshan District, Shenzhen, Guangdong, China
EUT:	Dog Training Collar
Trade Mark:	N/A
Model Number:	W5 P20, P30, OT3
Date of Receipt:	Jul. 15, 2025
Test Date:	Jul. 15, 2025 to Jul. 21, 2025
Date of Report:	Aug. 21, 2025
Prepared By:	Shenzhen DL Testing Technology Co., Ltd.
Address:	101-201, Building C, Shuanghuan, No.8, Baoqing Roa Baolong Industrial Zone, Baolong Street, Longgang Shenzhen, Guangdong, China.
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.231 ANSI C63.10:2013
Test Result:	Pass
Report Number:	DLE-250821009R

Prepared by(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.

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1. VERSION

Report No.	Version	Description	Approved
DLE-250821009R	Rev.01	Initial issue of report	Aug. 21, 2025

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.231) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	AC power line Conducted Emission	PASS	
15.209,15.231b	Fundamental & Radiated Spurious Emission Measurement	PASS	
15.231c	20dB Occupied Bandwidth	PASS	
15.231a	Dwell time	PASS	
15.203	Antenna Requirement	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 ± U, where expended 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=4.5dB
2	3m camber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8MHz
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59℃

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment:	Dog Training Collar
Model Name.:	W5
Serial Model:	P20, P30, OT3
Model Difference:	All the model are the same circuit , only the model name are different.
Hardware version:	N/A
Software version:	N/A
Operation Frequency:	433.92MHz
Modulation Type:	FSK
Antenna Type:	Spring antenna
Antenna Gain:	0dBi
Power supply:	Input: 5V⎓ 1A
Battery:	Battery: DC 3.7V, 300mAh, 1.11Wh

3.2 DESCRIPTION OF TEST MODES

For All Emission	
Final Test Mode	Description
Transmitting mode	Keep the EUT in continuously transmitting mode

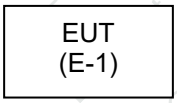
Note:

(1) Fully-charged battery is used during the test

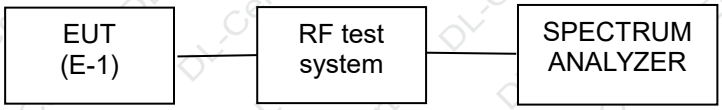
3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission

Radiated Emission



Conducted Spurious



3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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	W5	N/A	EUT
A1	AC/DC Adapter	N/A	050450C00	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) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

(4) EUT used new batteries during test.

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	Nov. 01, 2024	Oct. 31, 2025
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 01, 2024	Oct. 31, 2025
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 01, 2024	Oct. 31, 2025
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 01, 2024	Oct. 31, 2025
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 01, 2024	Oct. 31, 2025
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 01, 2024	Oct. 31, 2025
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 01, 2024	Oct. 31, 2025
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 01, 2024	Oct. 31, 2025
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 01, 2024	Oct. 31, 2025
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 01, 2024	Oct. 31, 2025
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 01, 2024	Oct. 31, 2025
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 01, 2024	Oct. 31, 2025
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 01, 2024	Oct. 31, 2025
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Nov. 01, 2024	Oct. 31, 2025
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Nov. 01, 2024	Oct. 31, 2025
16	D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 01, 2024	Oct. 31, 2025

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	ChengYu	843 Room	843	Nov. 01, 2024	Oct. 31, 2025
2	EMI Receiver	R&S	ESR	101421	Nov. 01, 2024	Oct. 31, 2025
3	LISN	R&S	ENV216	102417	Nov. 01, 2024	Oct. 31, 2025
4	843 Cable 1#	ChengYu	CE Cable	001	Nov. 01, 2024	Oct. 31, 2025

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. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS

(Frequency Range 150KHz-30MHz)

FREQUNCY (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) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

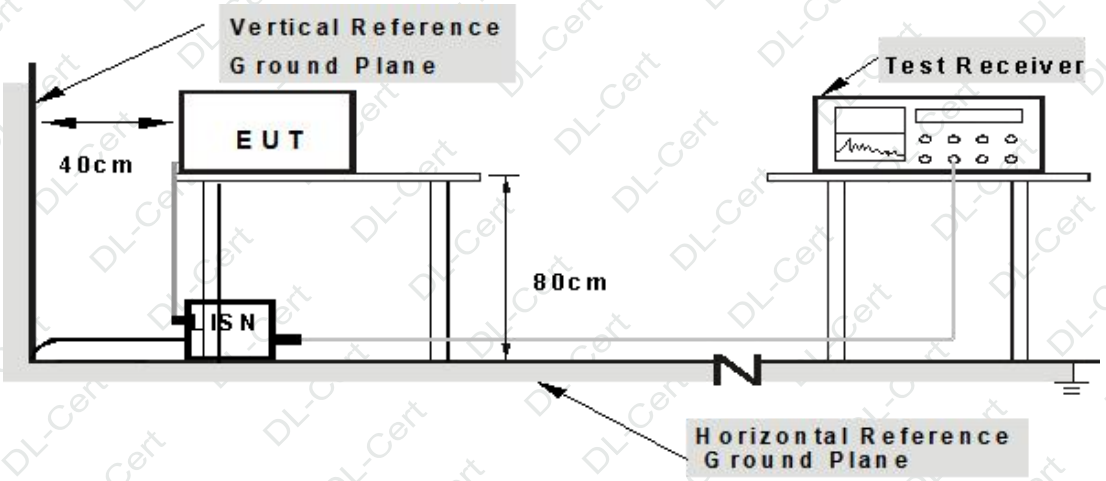
4.1.2 TEST PROCEDURE

a. 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.
b. 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.
c. 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.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. 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



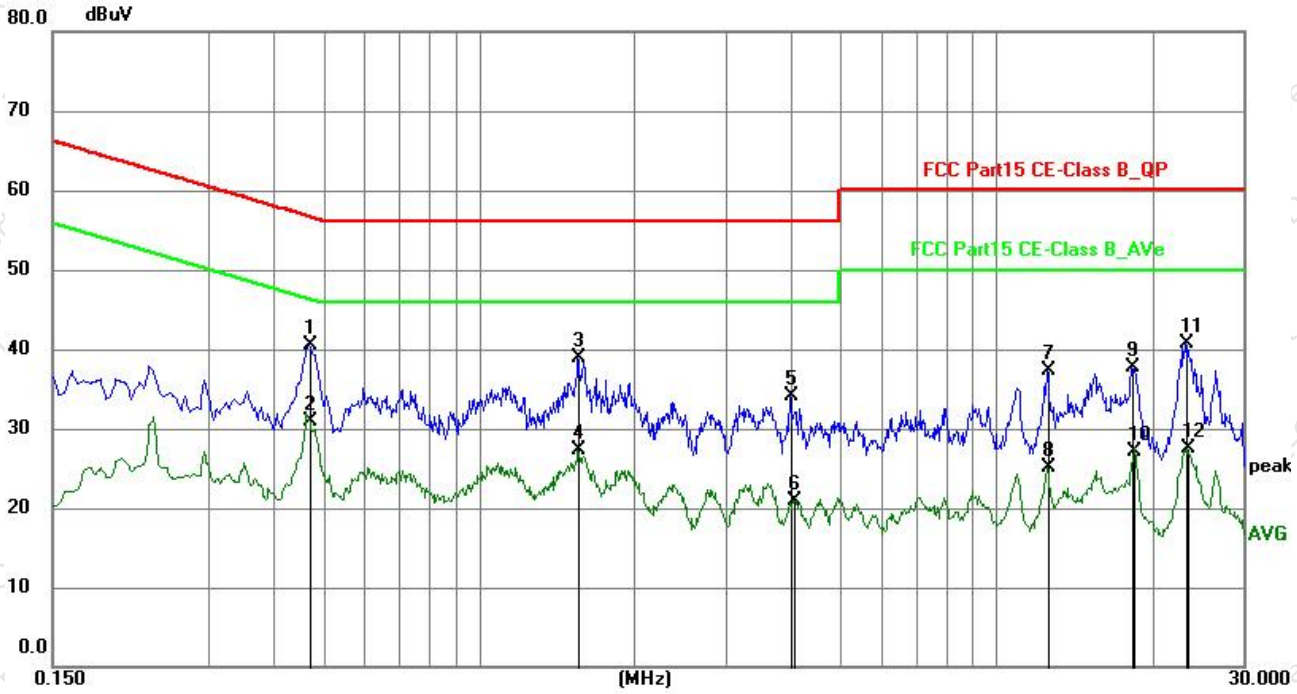
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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 RESULTS

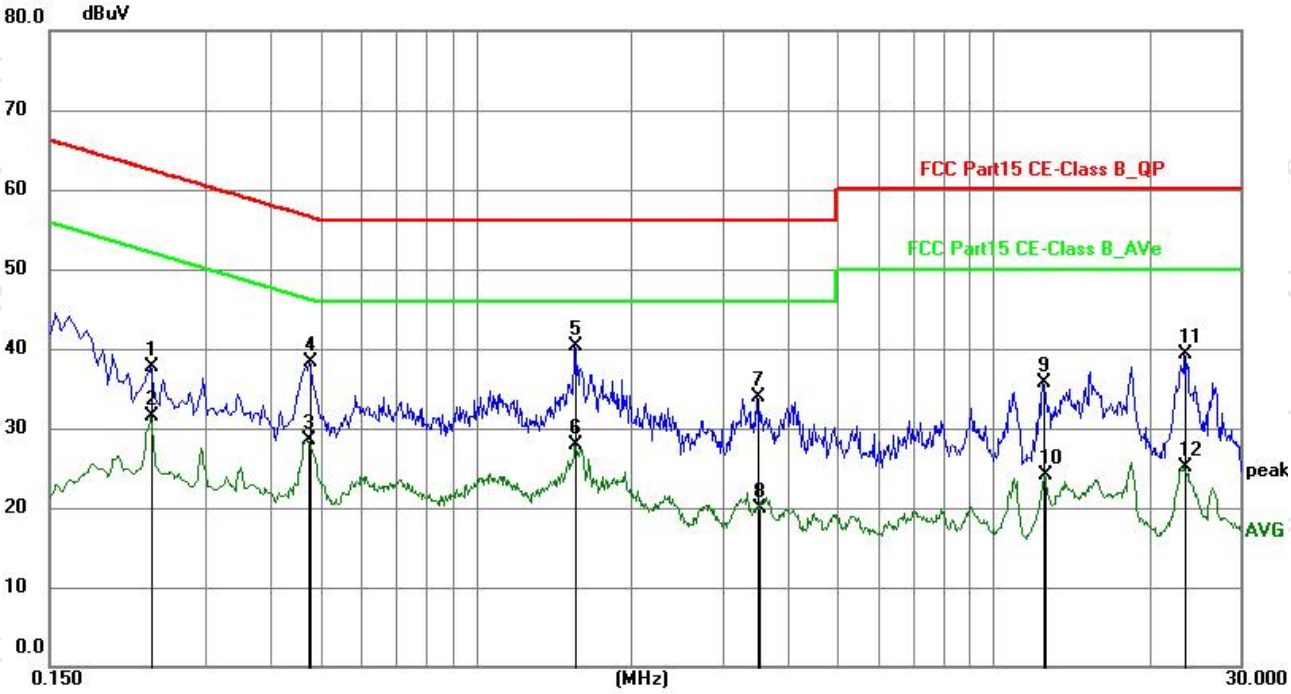
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	TX Mode



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.4695	20.10	20.31	40.41	56.52	-16.11	QP	P	
2	0.4711	10.54	20.31	30.85	46.49	-15.64	AVG	P	
3	1.5584	18.51	20.30	38.81	56.00	-17.19	QP	P	
4	1.5584	7.06	20.30	27.36	46.00	-18.64	AVG	P	
5	4.0020	13.69	20.34	34.03	56.00	-21.97	QP	P	
6	4.0515	0.54	20.34	20.88	46.00	-25.12	AVG	P	
7	12.5655	16.88	20.47	37.35	60.00	-22.65	QP	P	
8	12.5655	4.55	20.47	25.02	50.00	-24.98	AVG	P	
9	18.3210	17.23	20.50	37.73	60.00	-22.27	QP	P	
10	18.4515	6.58	20.50	27.08	50.00	-22.92	AVG	P	
11	23.2395	20.09	20.59	40.68	60.00	-19.32	QP	P	
12	23.4960	6.92	20.59	27.51	50.00	-22.49	AVG	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 = Lisn factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.

Temperature:	26℃	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	Remark
1	0.2355	17.41	20.36	37.77	62.25	-24.48	QP	P	
2	0.2355	11.14	20.36	31.50	52.25	-20.75	AVG	P	
3	0.4740	8.20	20.31	28.51	46.44	-17.93	AVG	P	
4	0.4785	18.05	20.31	38.36	56.37	-18.01	QP	P	
5	1.5585	20.09	20.30	40.39	56.00	-15.61	QP	P	
6	1.5585	7.68	20.30	27.98	46.00	-18.02	AVG	P	
7	3.4935	13.58	20.33	33.91	56.00	-22.09	QP	P	
8	3.5250	-0.44	20.33	19.89	46.00	-26.11	AVG	P	
9	12.4935	15.31	20.48	35.79	60.00	-24.21	QP	P	
10	12.5610	3.69	20.49	24.18	50.00	-25.82	AVG	P	
11	23.3970	18.68	20.62	39.30	60.00	-20.70	QP	P	
12	23.3970	4.47	20.62	25.09	50.00	-24.91	AVG	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 = Lisn factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.

4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	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

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.231(b) limit in the table below has to be followed.

Frequencies(MHz)	Field Strength(micorvolts/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

LIMITS OF RADIATED EMISSION MEASUREMENT

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

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66–40.70	2,250	225
70–130	1,250	125
130–174	[1] 1,250 to 3,750	[1] 125 to 375
174–260	3,750	375
260–470	[1] 3,750 to 12,500	[1] 375 to 1,250
Above 470	12,500	1,250

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, μV/m at 3 meters = 56.81818*(F) - 6136.3636; for the band 260-470 MHz, μV/m at 3 meters = 41.6667*(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

Frequency	Limit (dBμV/m @3m)	Remark
433.92MHz	80.80	Average Value
	100.80	Peak Value

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW setting	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.2.2 TEST PROCEDURE

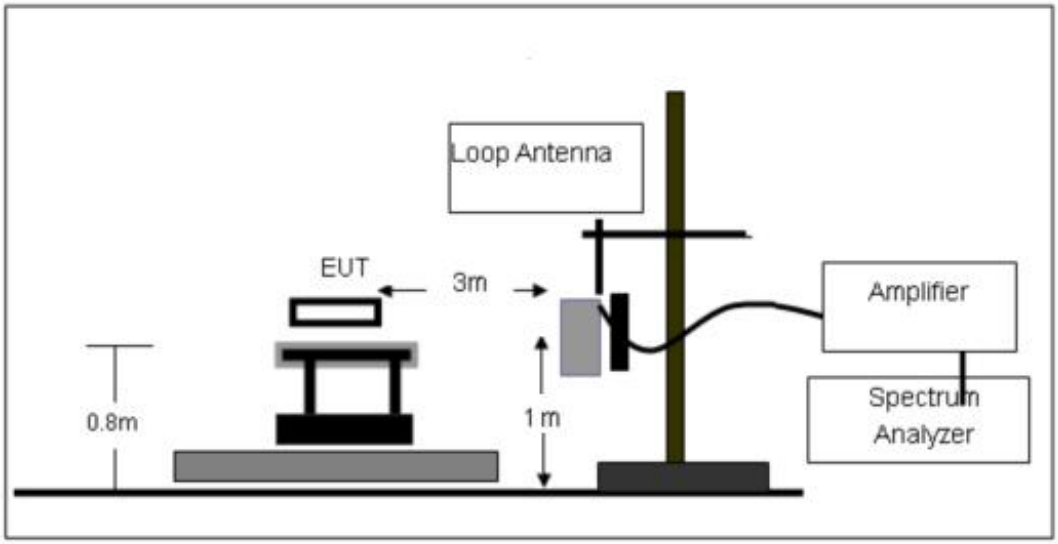
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; above 1GHz, the height was 1.5m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. 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.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

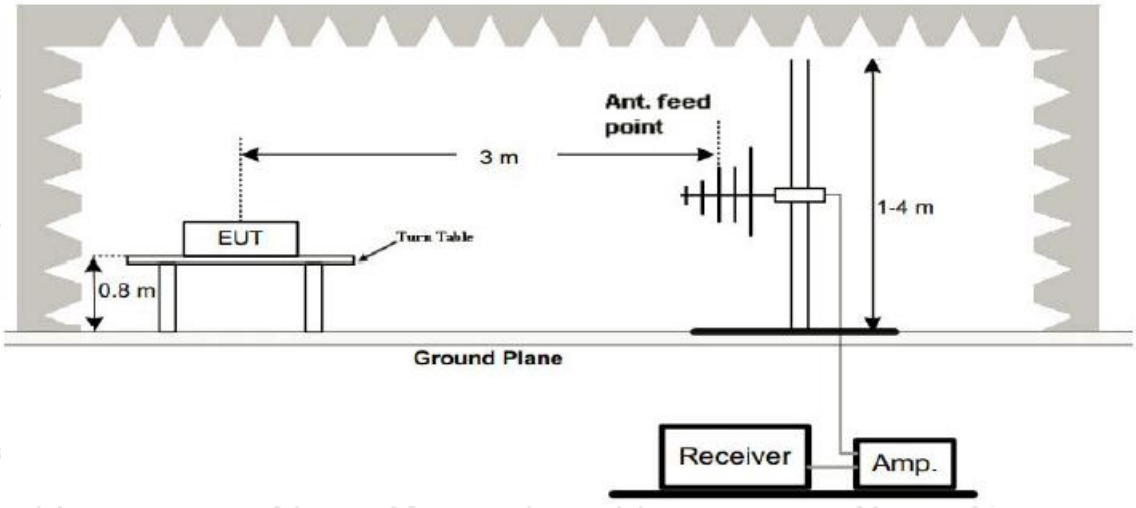
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case was X axis and the emissions were reported

4.2.3 TEST SETUP

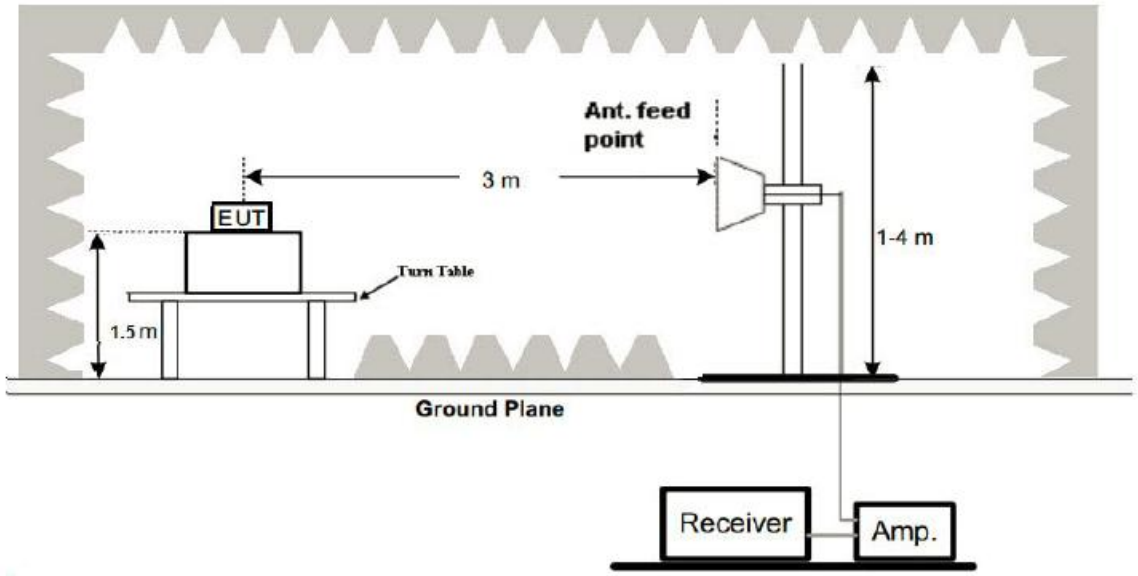
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



4.2.4 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.

4.2.5 TEST RESULTS

Radiated Spurious Emission (Below 9KHz – 30MHz)

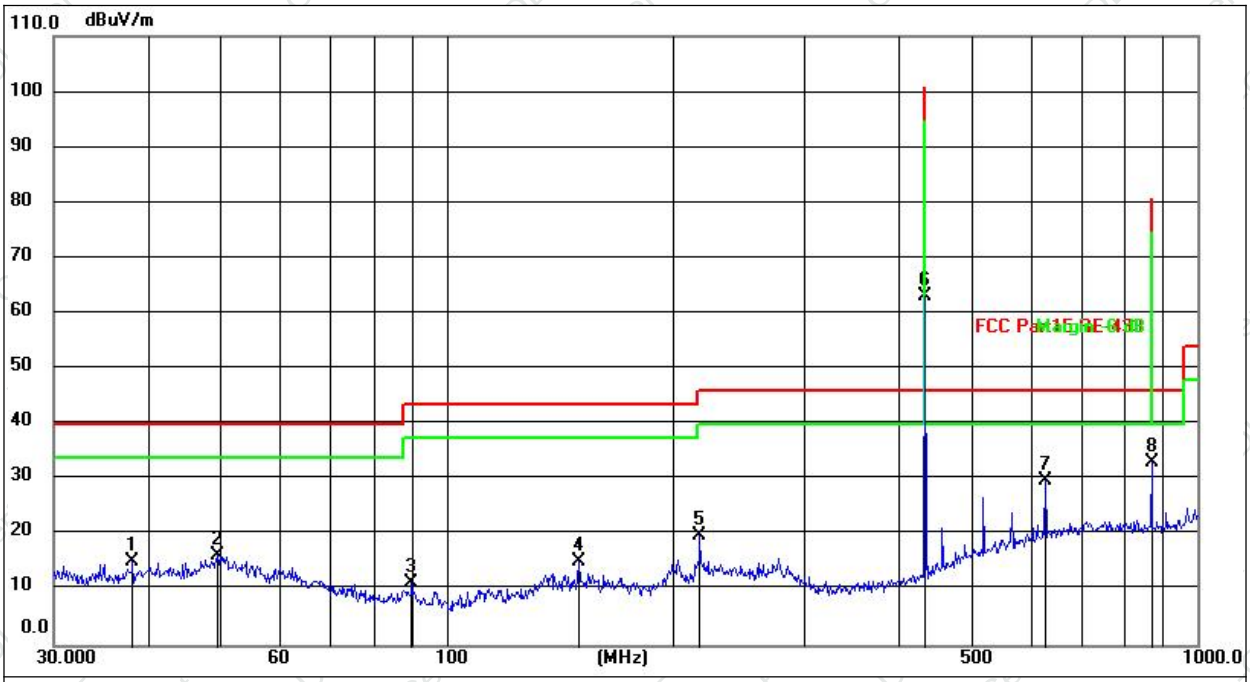
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101 kPa	Polarization :	---
Test Voltage :	DC 3.7V		
Test Mode :	TX Mode		

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	--
--	--	--	--	--

NOTE:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

Radiated Spurious Emission (Between 30MHz – 1GHz)

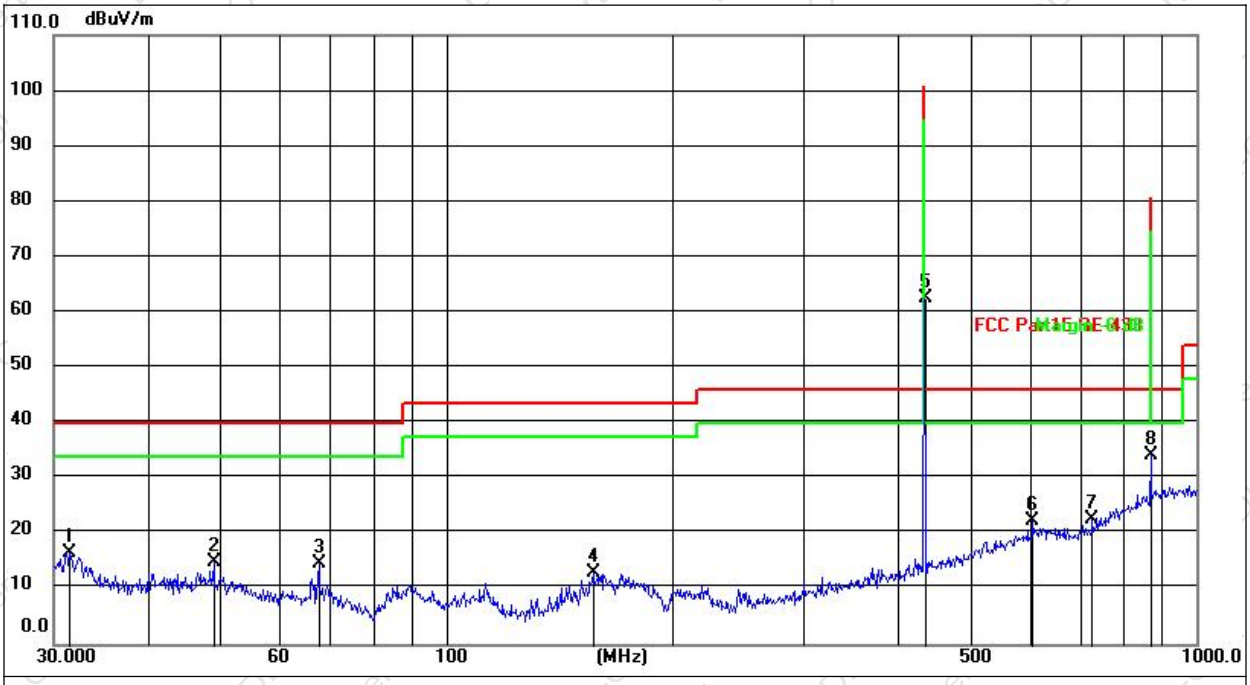
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101 kPa	Polarization :	Horizontal
Test Voltage :	DC 3.7V	Test Mode :	TX Mode



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	38.2120	29.61	-14.36	15.25	40.00	-24.75	QP
2	49.5328	30.20	-13.94	16.26	40.00	-23.74	QP
3	89.9046	31.54	-20.07	11.47	43.50	-32.03	QP
4	150.0108	31.62	-16.35	15.27	43.50	-28.23	QP
5	217.5443	37.66	-17.59	20.07	46.00	-25.93	QP
6	434.0649	77.36	-14.35	63.01	100.83	-37.82	peak
7	627.2737	37.76	-7.85	29.91	46.00	-16.09	QP
8	869.1301	39.78	-6.69	33.09	80.83	-47.74	peak

Remarks:
1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.

Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101 kPa	Polarization :	Vertical
Test Voltage :	DC 3.7V	Test Mode :	TX Mode



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	31.5095	34.81	-18.08	16.73	40.00	-23.27	QP
2	49.0145	32.00	-17.14	14.86	40.00	-25.14	QP
3	67.6751	33.63	-18.99	14.64	40.00	-25.36	QP
4	157.0074	33.03	-20.08	12.95	43.50	-30.55	QP
5	434.0651	75.79	-13.32	62.47	100.83	-38.36	peak
6	605.6592	29.85	-7.34	22.51	46.00	-23.49	QP
7	726.8052	28.88	-6.28	22.60	46.00	-23.40	QP
8	869.1302	35.62	-1.33	34.29	80.83	-46.54	peak

Remarks:
1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.

For Average Emission

Frequency (MHz)	Peak Level (dBuV/m)	Duty cycle Factor (dB)	Average Level (dBuV/m)	Limit AV (dBuV/m)	Margin (dB)	Polarization
433.92	63.01	0	63.01	80.83	-17.82	Horizontal
867.84	33.09	0	33.09	60.83	-27.74	Horizontal

Notes: 1. Average emission Level = Peak Level + Duty cycle factor
2.Duty cycle level please see clause 5.

Frequency (MHz)	Peak Level (dBuV/m)	Duty cycle Factor (dB)	Average Level (dBuV/m)	Limit AV (dBuV/m)	Margin (dB)	Polarization
433.92	62.47	0	62.47	80.83	-18.36	Vertical
867.84	34.29	0	34.29	60.83	-26.54	Vertical

Notes: 1. Average emission Level = Peak Level + Duty cycle factor
2. Duty cycle level please see clause 5.

Radiated Spurious Emission (1GHz to 10th harmonics)

Frequency (MHz)	Peak Level (dBuV/m)	Duty cycle Factor (dB)	Average Level (dBuV/m)	Limit (dBuV/m)		Margin (dB)		Polarization
				PK	AV	PK	AV	
1301.63	45.04	0	45.04	74.00	54.00	-28.96	-8.96	Horizontal
1735.65	45.56	0	45.56	80.80	60.80	-35.24	-15.24	Horizontal
2603.43	45.94	0	45.94	80.80	60.80	-34.86	-14.86	Horizontal
3037.76	46.49	0	46.49	80.80	60.80	-34.31	-14.31	Horizontal
3471.46	47.30	0	47.30	80.80	60.80	-33.50	-13.50	Horizontal
3905.23	48.63	0	48.63	74.00	54.00	-25.37	-5.37	Horizontal
1301.51	44.51	0	44.51	74.00	54.00	-29.49	-9.49	Vertical
1735.60	45.58	0	45.58	80.80	60.80	-35.22	-15.22	Vertical
2603.64	46.37	0	46.37	80.80	60.80	-34.43	-14.43	Vertical
3037.41	47.00	0	47.00	80.80	60.80	-33.80	-13.80	Vertical
3471.37	47.55	0	47.55	80.80	60.80	-33.25	-13.25	Vertical
3905.39	48.17	0	48.17	74.00	54.00	-25.83	-5.83	Vertical

Notes: 1. Average emission Level = Peak Level + Duty cycle factor;

2. Duty cycle level please see clause 6.

5. 20DB OCCUPIED BANDWIDTH

5.1 APPLIED PROCEDURES / LIMIT

According to FCC 15.231(c) requirement:

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating between 70 MHz to 900 MHz. Those devices operating above 900 MHz, the emission spurious shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

B.W (20dBc) Limit = 0.25% * f(MHz) = 0.25% * 433.92MHz = 1.0848MHz

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	1.5*OBW ~ 5*OBW
RBW	1%~5%OBW
VBW	3*RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

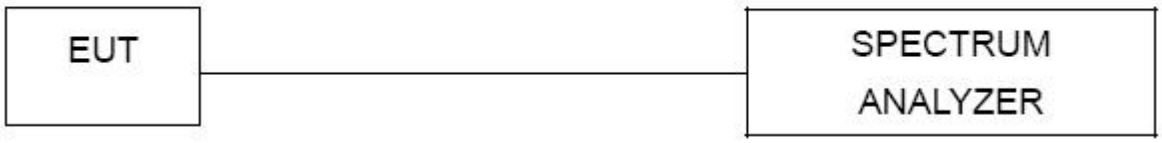
5.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 1%~5%OBW, VBW≥3*RBW, Sweep time = Auto.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

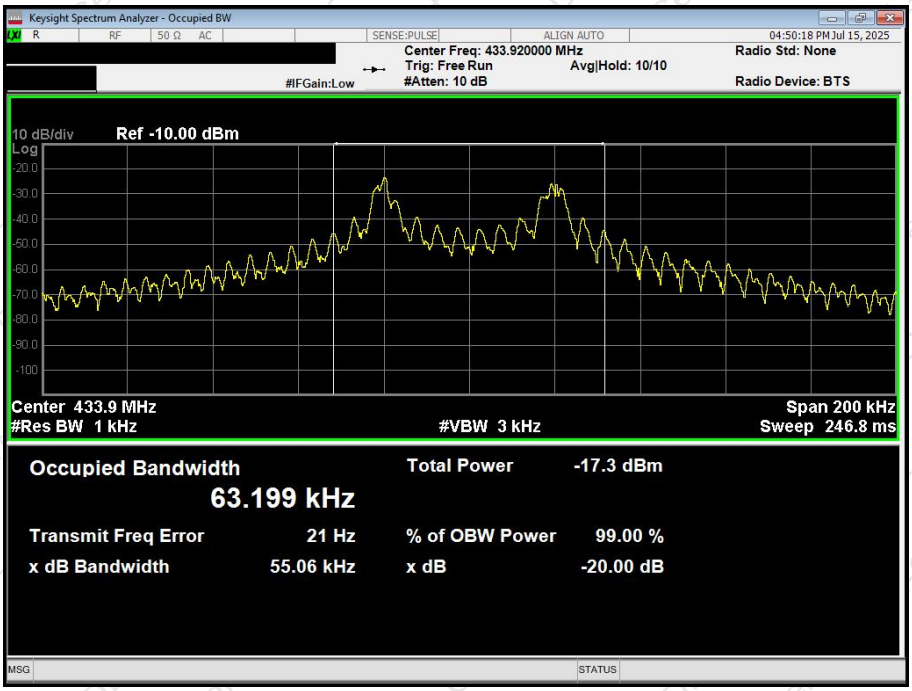
The EUT tested system was configured as the statements of 5.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX Mode		

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (MHz)	Result
433.92	55.06	0.25%*433.92=1.0848	PASS

Mode 1



6. 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 = 20log (duty cycle)

The duration of one cycle = 100ms

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

Duty Cycle = 100/ 100ms

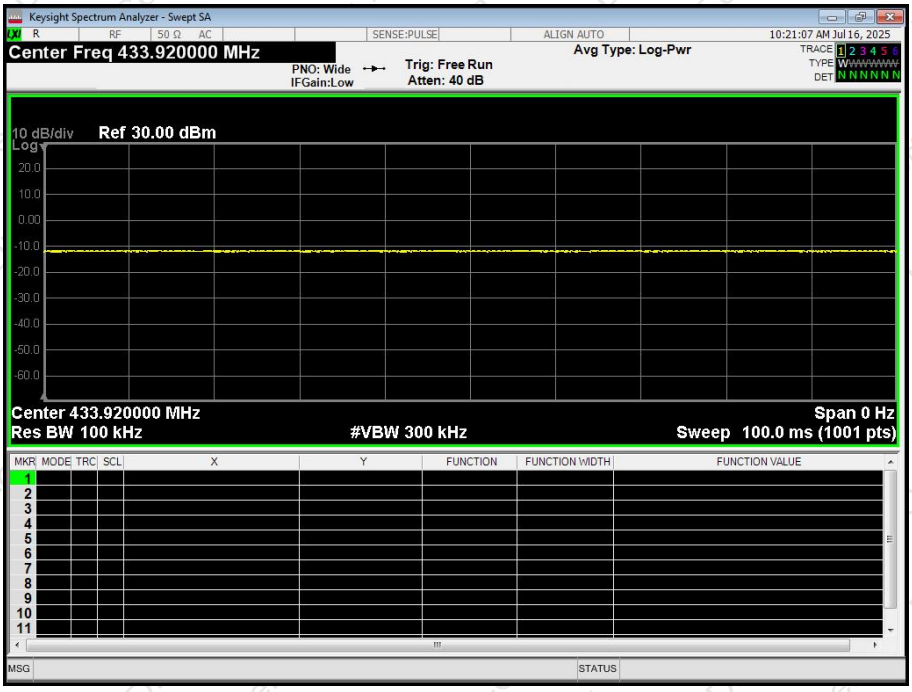
=1

Therefore, the averaging factor is found by $20*\log_{10}(1) = 0dB$

Test plot as follows:

Note: During the 100ms, the amount of pulse and on-time of pulse are the same for every pulse train.

Cycle



7. DWELL TIME

7.1 APPLICABLE STANDARD

According to FCC 15.231(a) requirement:

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

7.2 TEST PROCEDURE

Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

1.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.

2.Set RBW to 100kHz and VBW of spectrum analyzer to 300kHz with a convenient frequency span including 100 kHz bandwidth from band edge.

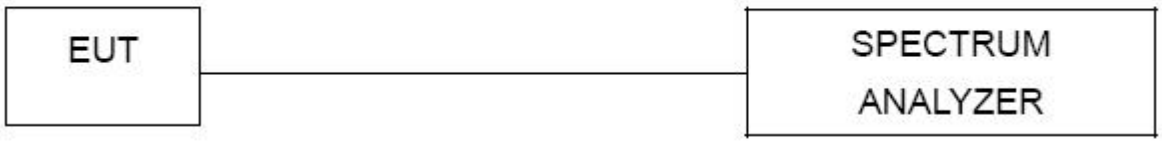
3.Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

4.Repeat above procedures until all measured frequencies were complete.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



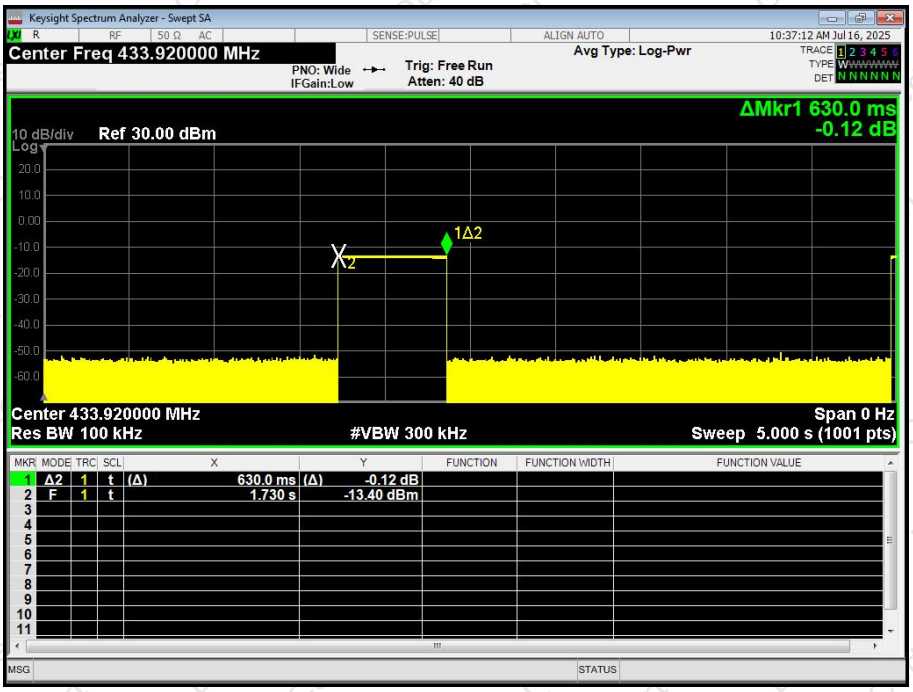
7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 7.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

Dwell time (s)	Limit (s)	Result
0.63	<5	Pass

Test plot as follows:



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.	

※※※※※ END OF REPORT ※※※※※