FCC PART 15 SUBPART C TEST REPORT

FCC PART 15.225

Report Reference No..... :	**MAX25030155P01-R04**
FCC ID..... :	**2BPVZ-HT-A001**
Compiled by (position+printed name+signature).. :	Engineer/ Cindy Zheng
Supervised by (position+printed name+signature).. :	Manager/Haley Wen
Approved by (position+printed name+signature).. :	RF Manager/ Vivian Jiang
Date of issue..... :	June 4, 2025

Cindy zheng
Haley wen
Vivian Jiang

Testing Laboratory Name..... :	**MAXLAB Testing Co.,Ltd.**
Address..... :	1/F, Building B, Xinshidai GR Park,Shiyan Street, Bao'an District, Shenzhen,Guangdong, 518052, People's Republic of China
Applicant's name..... :	**Happy Tik USA LLC**
Address..... :	1429 Vivginia Ave Baldwin Park,CA 91706 USA
Test specification..... :	
Standard..... :	**FCC Part15 Subpart C, Section 15.225**

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Equipment description..... :	Automatic pet washing machine
Trade Mark..... :	Happy Tik
Manufacturer..... :	Happy Tik USA LLC
Model/Type reference..... :	HT-A001
Listed Models ..... :	N/A
Modulation ..... :	ASK
Frequency.....	13.56MHz
Ratings..... :	AC 120V
Result..... :	**PASS**

TEST REPORT

Equipment under Test	**:**	**Automatic pet washing machine**
Model /Type	:	HT-A001
Listed Models	:	N/A
Model Declaration	:	N/A
Applicant	**:**	**Happy Tik USA LLC**
Address	:	1429 Vivginia Ave Baldwin Park,CA 91706 USA
Manufacturer	**:**	**Happy Tik USA LLC**
Address	:	1429 Vivginia Ave Baldwin Park,CA 91706 USA

Test Result:	**PASS**

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 15.225:Operation within the band 26.96-27.28 MHz.
ANSI C63.10:2013 : American National Standard for Testing Unlicensed Wireless Devices

2 SUMMARY

2.1 General Remarks

Date of receipt of test sample	:	April 3, 2025
Testing commenced on	:	April 3, 2025
Testing concluded on	:	May 30, 2025

2.2 Product Description

Product Name:	Automatic pet washing machine
Model/Type reference:	HT-A001
Listed Models:	N/A
Testing sample ID:	MAX25030155P01-R04-1# (Engineer sample), MAX25030155P01-R04-2# (Normal sample)
Power supply:	AC 120V
Modulation:	ASK
Operation frequency:	13.56MHz
Channel number:	1
Antenna type:	Coil antenna
Antenna gain:	3 dBi

2.3 Equipment Under Test

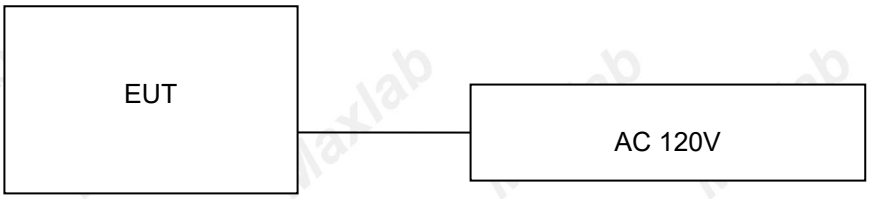
Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	●	120V / 60Hz
		○	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

2.4 Short description of the Equipment under Test (EUT)

This is a Automatic pet washing machine.
For more details, refer to the user's manual of the EUT.

2.5 Block Diagram of Test Setup



2.6 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
/	/	/	/	/	/

2.7 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for the device filing to comply with Section 15.227 of the FCC Part 15, Subpart C Rules.

2.8 Modifications

No modifications were implemented to meet testing criteria.

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

MAXLAB Testing Co.,Ltd.
1/F, Building B, Xinshidai GR Park,Shiyan Street, Bao'an District, Shenzhen,Guangdong, 518052, People's Republic of China

3.2 Test Facility

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

FCC-Registration No.: 562200 Designation Number: CN1338
MAXLAB Testing Co.,Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

Industry Canada Registration Number. Is: 11093A CAB identifier: CN0019
The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

A2LA-Lab Cert. No.: 4707.01
MAXLAB Testing Co.,Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

3.3 Environmental conditions

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

Radiated Emission:

Temperature:	25 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

Conducted testing:

Temperature:	25 ° C
Humidity:	44 %
Atmospheric pressure:	950-1050mbar

3.4 Summary of measurement results

FCC Requirements		
FCC Part 15.207	Conducted Emission	PASS
FCC Part 15.203	Antenna requirement	PASS
FCC Part 15.215	-20dB bandwidth	PASS
FCC Part 15.225(e)	Frequency Tolerance	PASS
FCC Part 15.225(a)(b)(c)(d)/15.209	Radiated Emissions	PASS

Remark: The measurement uncertainty is not included in the test result.

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 TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the MAXLAB Testing 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 MAXLAB Testing Co.,Ltd. :

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MHz	3.20 dB	(1)
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.9KHz~30MHz	3.12 dB	(1)
Occupied Channel Bandwidth	/	5%	(1)
RF Frequency	/	$0.082*10^{-7}$	(1)
RF output power, conducted	/	0. 73 dB	(1)
Unwanted Emission, conducted	/	1 .6dB	(1)
AC Power Lines Conducted Emissions|	/	2. 72dB	(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

Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2024-10-28	2025-10-27
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	100126	2024-10-28	2025-10-27
Electrostatic analog generator	LIONCEL	ESD-203B	0210502	2024-10-28	2025-10-27
Signal Generator	HP	8648A	3633A02081	2024-10-28	2025-10-27
Amplifier	A&R	500A100	17034	2024-10-28	2025-10-27
Amplifier	A&R	100W/1000M1	17028	2024-10-28	2025-10-27
Isotropic Field Monitor	A&R	FM2000	16829	2024-10-28	2025-10-27
Isotropic Field Probe	A&R	FLW220100	16755	2024-10-28	2025-10-27
Biconic Antenna	EMCO	EVOD PROTANK8	9507-2534	2024-10-28	2025-10-27
Log-periodic Antenna	A&R	AT1080	16812	2024-10-28	2025-10-27
Injection Clamp	EMTEST	F-2031-23MM	368	2024-10-28	2025-10-27
Attenuator	EMTEST	ATT6	0010222a	2024-10-28	2025-10-27
Computer	IBM	8434	1S8434KCE99BLXLO*	-	-
Oscillator	KENWOOD	AG-203D	3070002	2024-10-28	2025-10-27
Spectrum Analyzer	HAMEG	HM5012	-	-	-
Power Supply	LW	APS1502	-	-	-
5K VA AC Power Source	California Instruments	5001iX	56060	2024-10-28	2025-10-27
CDN	EM TEST	CDN M2/M3	-	2024-10-28	2025-10-27
Attenuation	EM TEST	ATT6/75	-	2024-10-28	2025-10-27
Resistance	EM TEST	R100	-	2024-10-28	2025-10-27
Electromagnetic Injection Clamp	LITTHI	EM101	35708	2024-10-28	2025-10-27
Inductive Components	EM TEST	MC2630	-	2024-10-28	2025-10-27
Antenna	EM TEST	MS100	-	2024-10-28	2025-10-27
Signal Generator	ROHDE&SCHWARZ	SMT03	100029	2024-10-28	2025-10-27
Power DJ MIXER	AR	150W1000	300999	2024-10-28	2025-10-27
Field probe	Holaday	HI-6005	105152	2024-10-28	2025-10-27
Bilog Antenna	Chase	CBL6111C	2576	2024-10-28	2025-10-27
Loop Antenna	EMCO	6502	00042960	2024-10-28	2025-10-27
ESPI Test Receiver	ROHDE&SCHWARZ	ESI7	838786/013	2024-10-28	2025-10-27
3m OATS	--	--	N/A	2024-10-28	2025-10-27
Horn Antenna	SCHWARZBECK	VULB9168	N/A	2024-10-28	2025-10-27
Horn Antenna	SCHWARZBECK	BBHA9120D	N/A	2024-10-28	2025-10-27
Power meter	Anritsu	ML2487A	6K00003613	2024-10-28	2025-10-27
Power sensor	Anritsu	MA2491A	32263	2024-10-28	2025-10-27
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2024-10-28	2025-10-27
9*6*6 Anechoic	--	--	N/A	2024-10-28	2025-10-27
Test Receiver	Rohde&Schwarz	ESC17(9kHz-7GHz)	100336	2024-10-28	2025-10-27
Broadband antenna	Schwarzbeck	VULB9168	01222	2024-10-28	2025-10-27
Horn antenna	Schwarzbeck	BBHA9120D	02476	2024-10-28	2025-10-27
Preamplifier	Schwarzbeck	BBV9745	00250	2024-10-28	2025-10-27

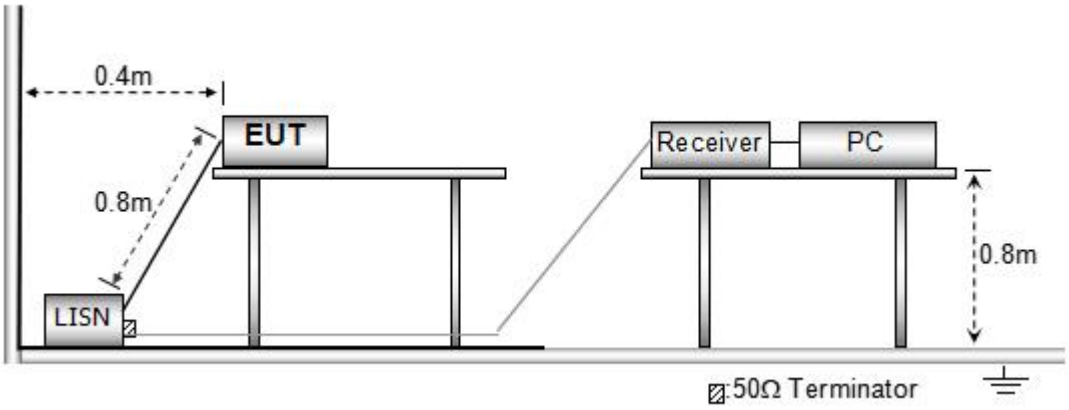
Preamplifier	N/A	TRLA-01018G440B	21081001	2024-10-28	2025-10-27
3M method semi anechoic chamber	SKET	9m*6m*6m	2021082304	2024-10-28	2025-10-27
Pointer hygrometer	M&G	ARC92570	N/A	2024-10-28	2025-10-27
Spectrometer	ROHDE&SCHWARZ	FSP 9kHz-40GHz	N/A	2024-10-28	2025-10-27
Synthesizer	ROHDE&SCHWARZ	CMW500	N/A	2024-10-28	2025-10-27

Note: The Cal.Interval was one year.

4 TEST CONDITIONS AND RESULTS

4.1 AC Power Conducted Emission

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 C63.10-2020.
2 Support equipment, if needed, was placed as per ANSI C63.10-2020
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2020
4 The EUT received DC 12V power from adapter, the adapter received AC120V/60Hz and AC 240V/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.

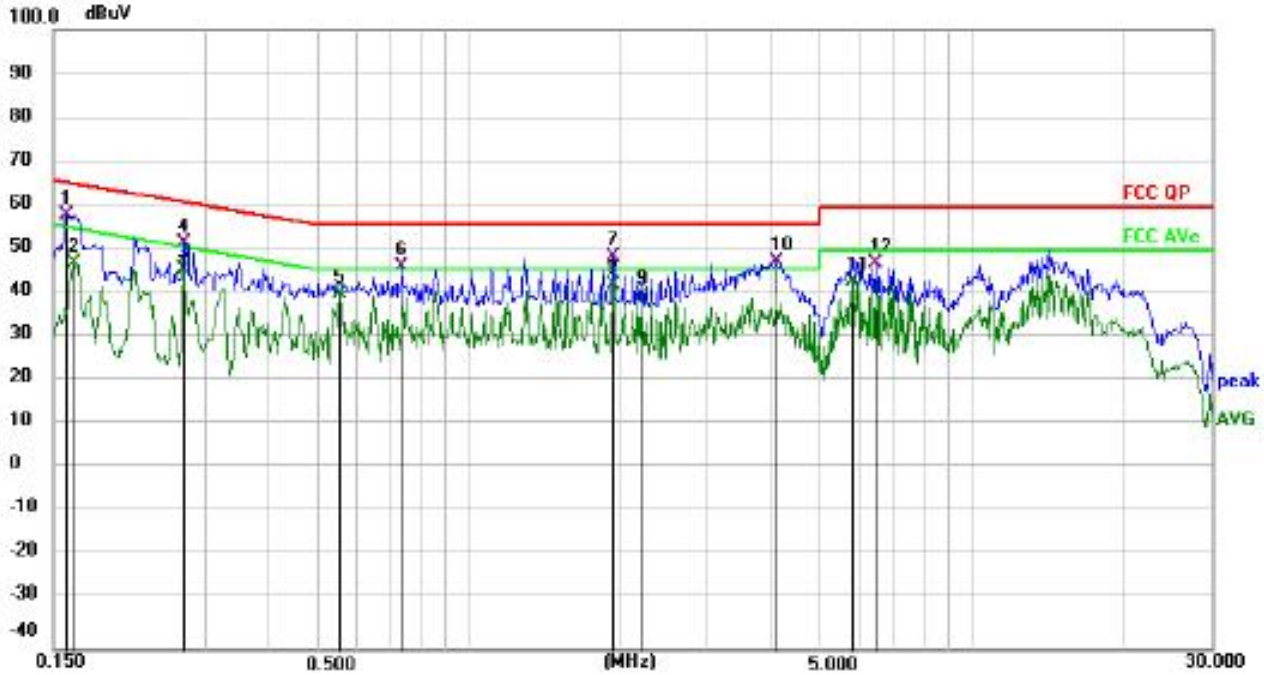
AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

TEST RESULTS

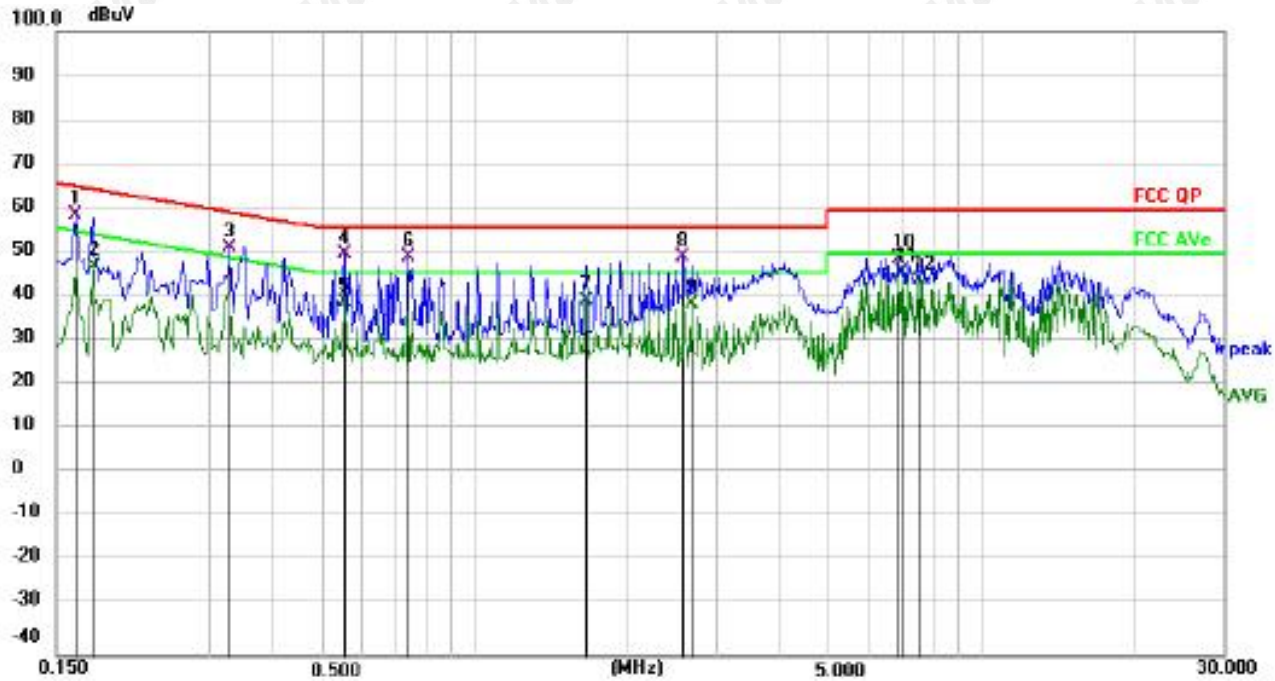
Power supply:	AC 120V/60Hz	Polarization	L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1590	41.69	16.65	58.34	65.52	-7.18	QP	P
2	0.1650	30.65	16.69	47.34	55.21	-7.87	AVG	P
3	0.2714	29.22	16.71	45.93	51.07	-5.14	AVG	P
4	0.2726	35.04	16.71	51.75	61.04	-9.29	QP	P
5	0.5550	23.73	16.67	40.40	46.00	-5.60	AVG	P
6	0.7395	30.01	16.65	46.66	56.00	-9.34	QP	P
7	1.9455	32.22	16.49	48.71	56.00	-7.29	QP	P
8 *	1.9455	26.06	16.49	42.55	46.00	-3.45	AVG	P
9	2.2244	23.65	16.45	40.10	46.00	-5.90	AVG	P
10	4.1055	31.60	16.21	47.81	56.00	-8.19	QP	P
11	5.8334	27.24	15.94	43.18	50.00	-6.82	AVG	P
12	6.4813	31.64	15.81	47.45	60.00	-12.55	QP	P

Note:1).Level (dBμV)= Reading (dBμV)+ Factor (dB)
2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
3). Margin(dB) = Limit (dBμV) - Level (dBμV)

Power supply:	AC 120V/60Hz	Polarization	N



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1635	41.20	17.53	58.73	65.28	-6.55	QP	P
2	0.1768	29.86	17.53	47.39	54.63	-7.24	AVG	P
3	0.3300	34.02	17.52	51.54	59.45	-7.91	QP	P
4	0.5550	32.66	17.51	50.17	56.00	-5.83	QP	P
5	0.5550	21.73	17.51	39.24	46.00	-6.76	AVG	P
6	0.7439	31.96	17.51	49.47	56.00	-6.53	QP	P
7	1.6665	22.20	17.49	39.69	46.00	-6.31	AVG	P
8	2.5935	31.96	17.45	49.41	56.00	-6.59	QP	P
9	2.6880	21.61	17.45	39.06	46.00	-6.94	AVG	P
10	6.9134	32.05	17.05	49.10	60.00	-10.90	QP	P
11 *	7.0213	28.87	17.03	45.90	50.00	-4.10	AVG	P
12	7.5613	27.20	16.94	44.14	50.00	-5.86	AVG	P

Note:1).Level (dBμV)= Reading (dBμV)+ Factor (dB)
2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
3). Margin(dB) = Limit (dBμV) - Level (dBμV)

4.2 Radiated Emission

Limit

For intentional device, according to 15.209 the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.49	2400/F(KHz)	300
0.49-1.705	24000/F(KHz)	30
1.705-30	30	30
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz and 110-490kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.		
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for above 1000MHz. Radiated emission limits above 1000MHz is based on measurements employing an average detector.		

According to FCC Part1 5.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

Limits of radiated emission measurement(FCC 15.225)

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410- 13.553 MHz and 13.567- 13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in S1 5.209.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1 MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~1 50kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz/ RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

Test Procedure

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz and above 1GHz,

b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter. 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; the height of the test antenna shall vary between 1 m to4 m.

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.

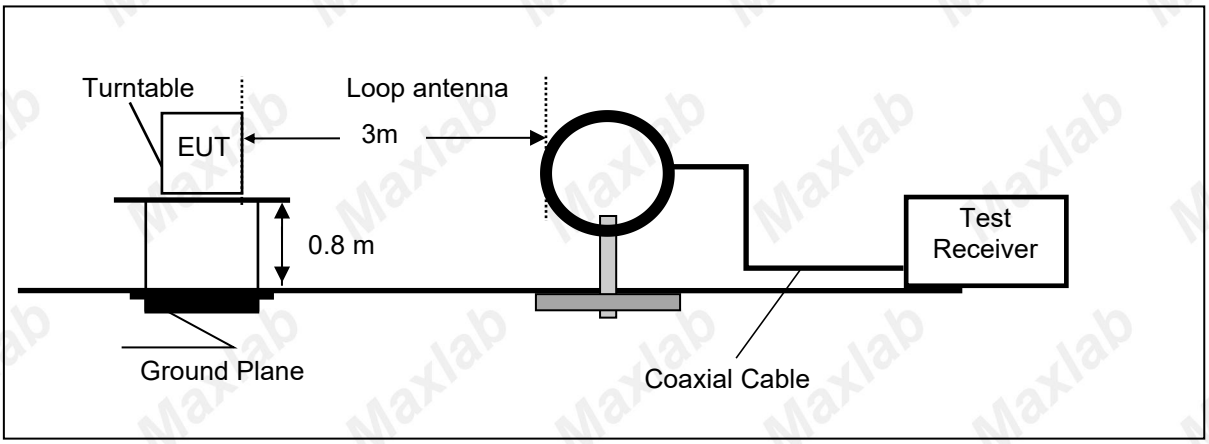
f. For the actual test configuration, please refer to the related Item - EUT Test Photos.

Note:

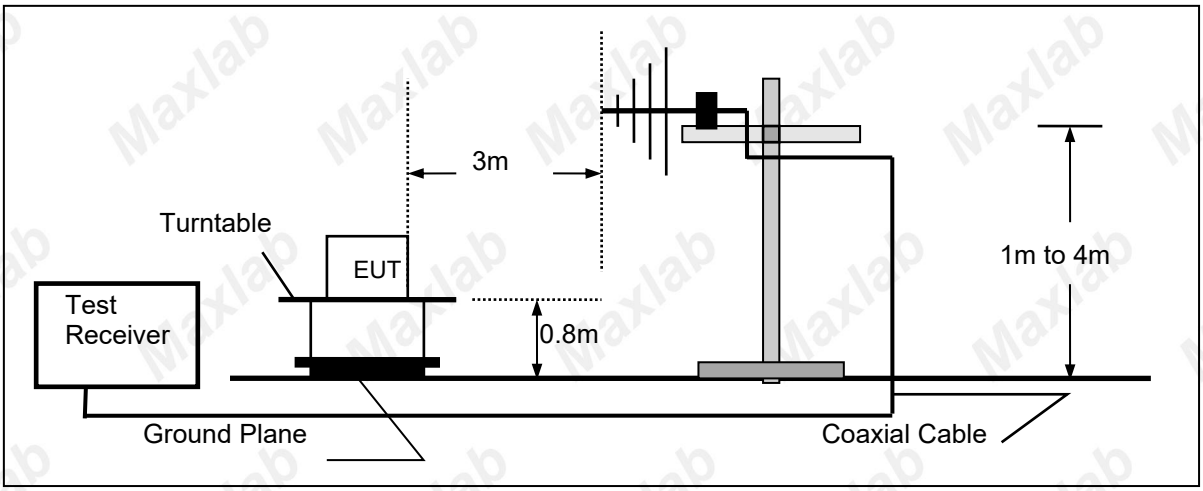
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.The worst case emissions were reported.

Test Configuration

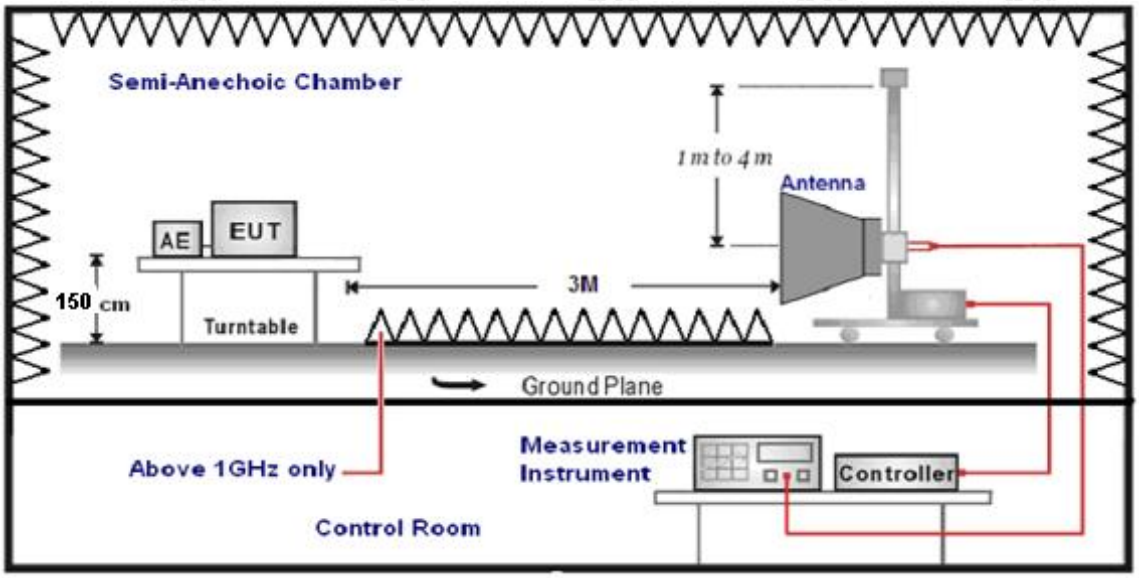
(A) Radiated Emission Test-Up Frequency Below 30MHz



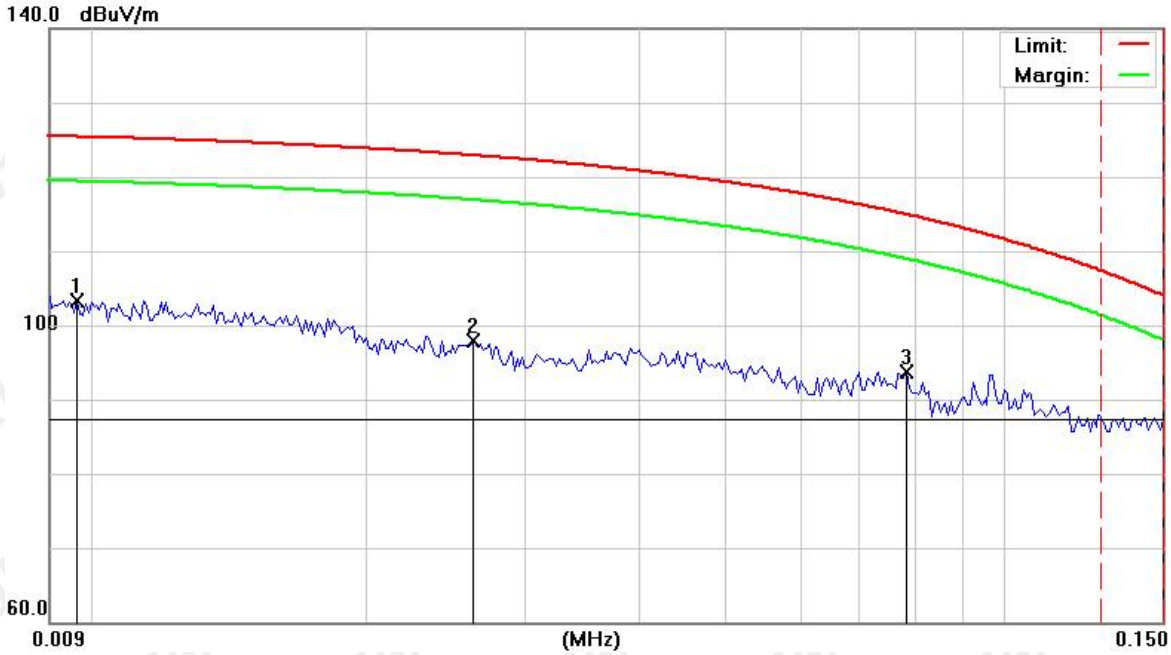
(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



Above 1GHz

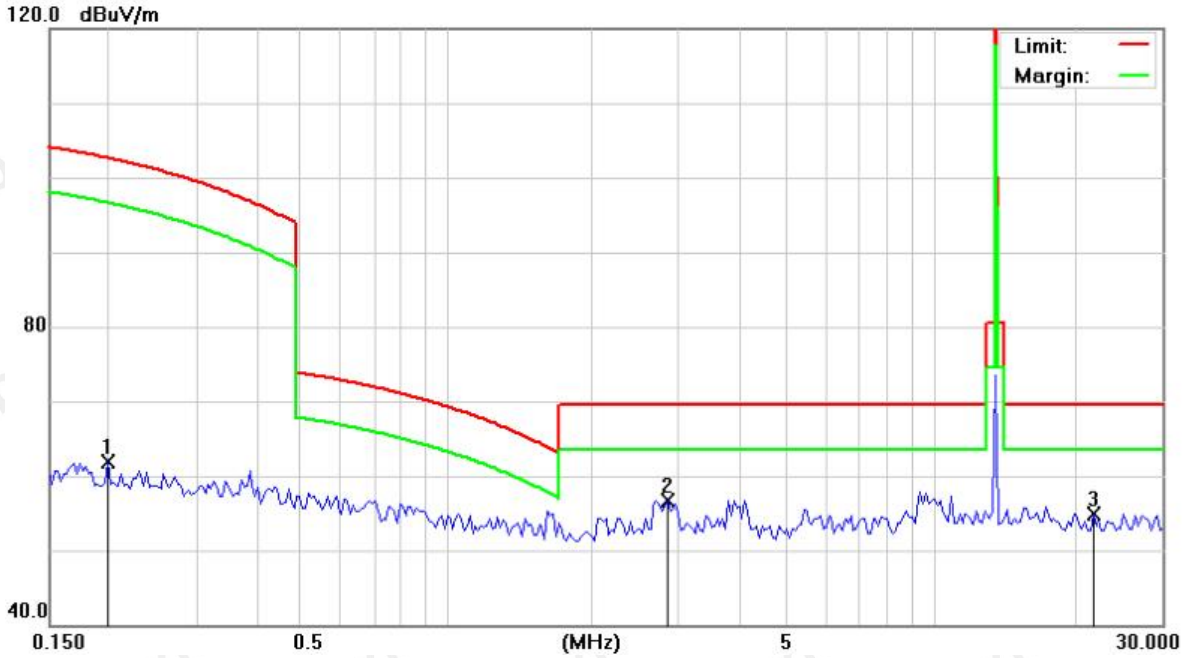


Spurious Emission below 150kHz (9KHz to 150kHz H-field)

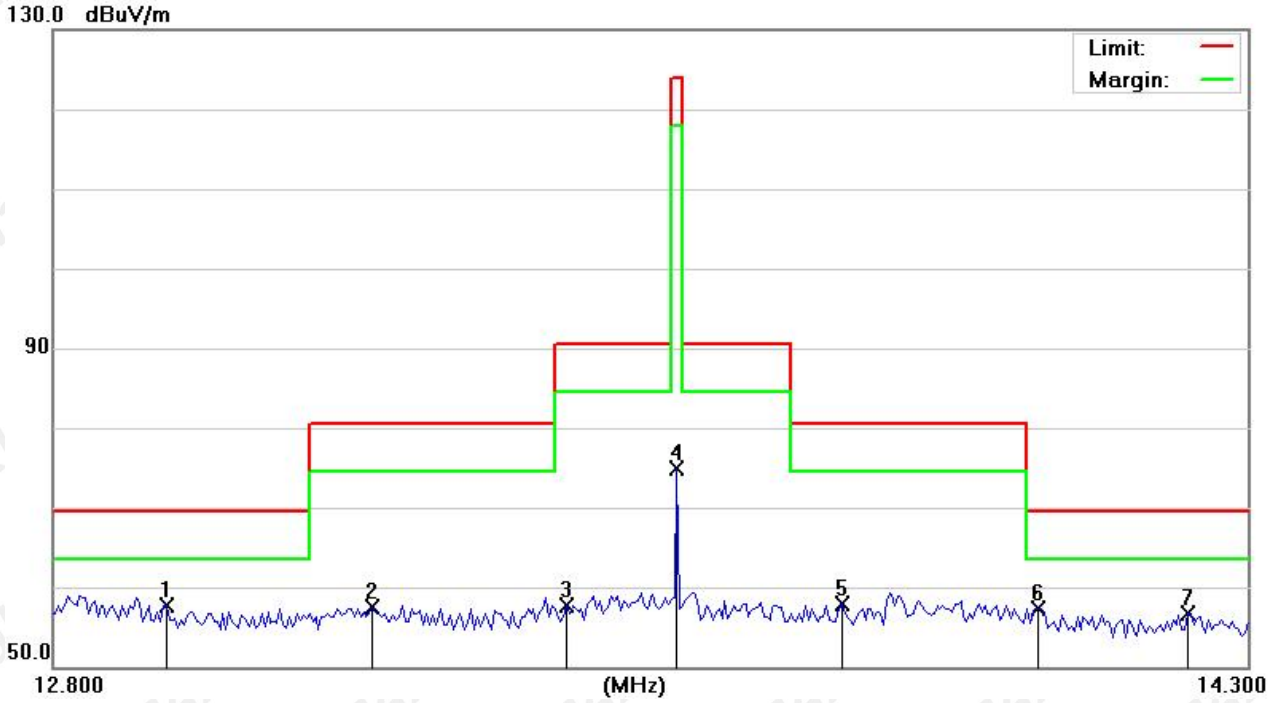


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		0.0097	92.67	10.63	103.30	125.4	-22.11	peak
2		0.0262	89.37	8.63	98.00	122.9	-24.90	peak
3	*	0.0785	88.57	5.03	93.60	114.9	-21.35	peak

Spurious Emission below 30MHz (150KHz to 30MHz)

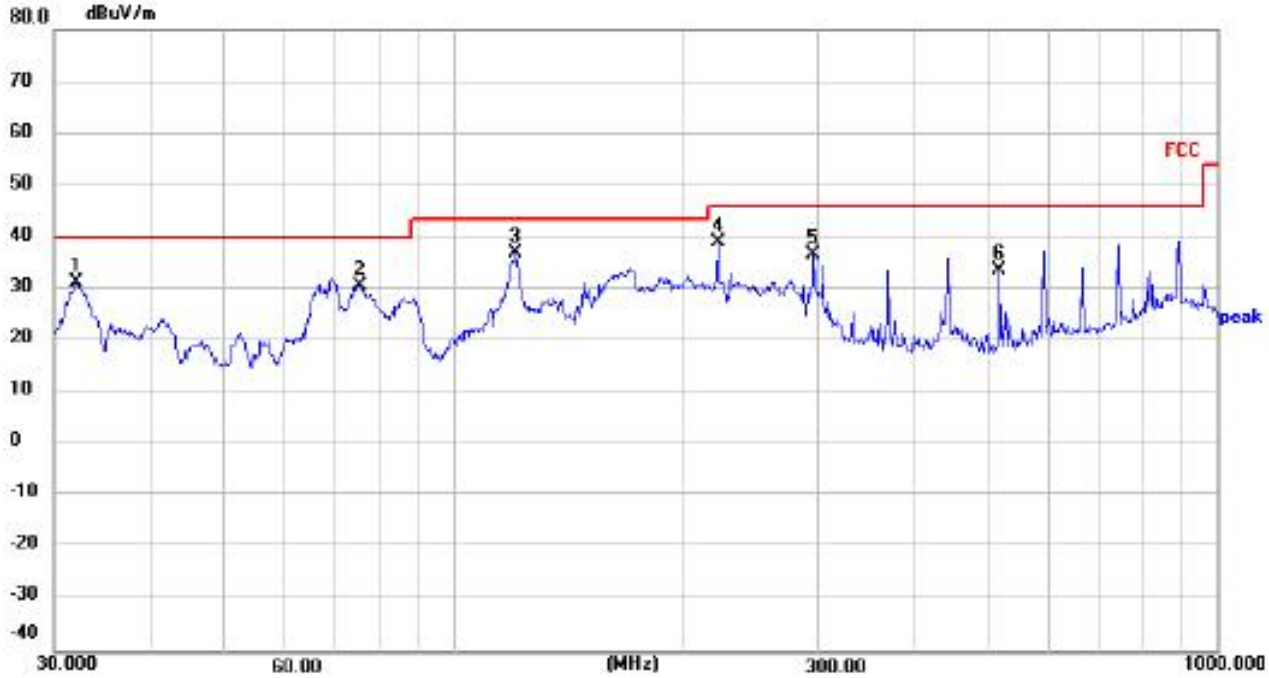


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		0.1981	57.20	4.70	61.90	102.6	-40.72	peak
2	*	2.8389	52.07	4.73	56.80	69.54	-12.74	peak
3		21.5430	50.09	4.91	55.00	69.54	-14.54	peak

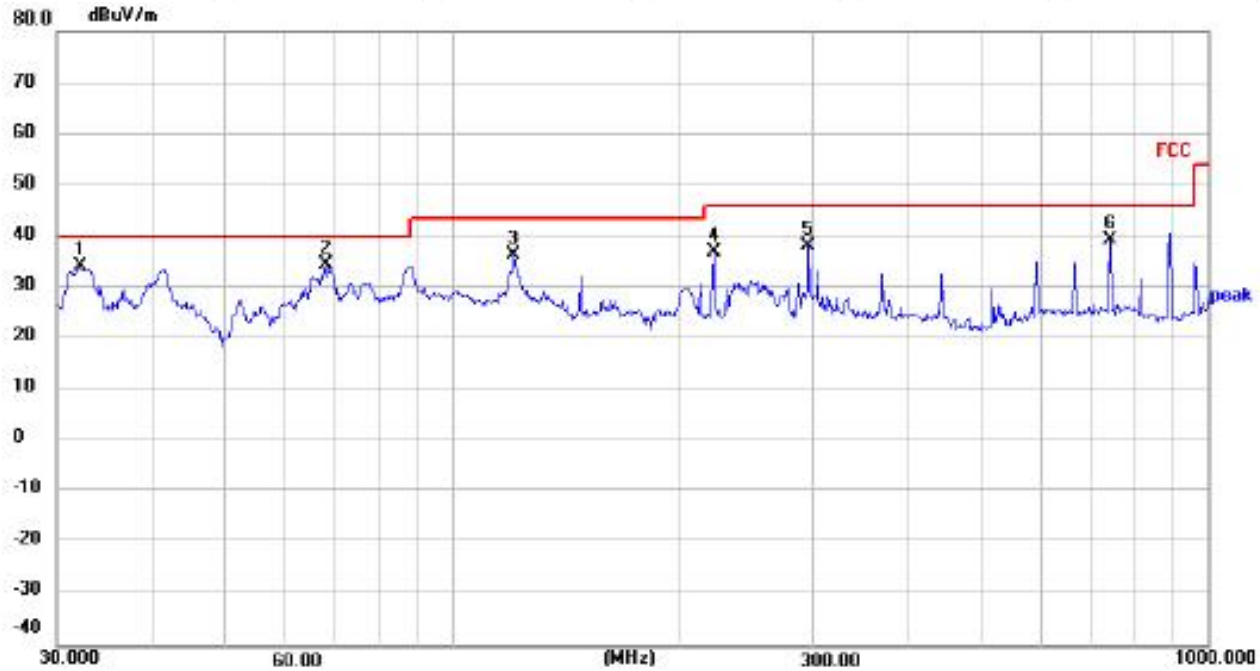


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	12.9354	52.87	4.83	57.70	69.54	-11.84	peak
2		13.1851	52.67	4.83	57.50	80.50	-23.00	peak
3		13.4246	52.77	4.83	57.60	90.50	-32.90	peak
4		13.5600	70.00	4.83	74.83	124.0	-49.17	peak
5		13.7712	53.06	4.84	57.90	80.50	-22.60	peak
6		14.0254	52.56	4.84	57.40	69.54	-12.14	peak
7		14.2210	51.86	4.84	56.70	69.54	-12.84	peak

Spurious Emission above 30MHz (30MHz~1GHz)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	32.0667	48.29	-17.10	31.19	40.00	-8.81	peak	100	0	P
2	75.4462	50.49	-19.74	30.75	40.00	-9.25	peak	100	0	P
3 *	120.6991	54.67	-17.86	36.81	43.50	-6.69	peak	100	0	P
4	222.1697	58.12	-19.17	38.95	46.00	-7.05	peak	100	0	P
5	296.1836	52.23	-15.69	36.54	46.00	-9.46	peak	100	0	P
6	519.0647	43.72	-10.15	33.57	46.00	-12.43	peak	100	0	P



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F
1	32.1794	51.33	-17.10	34.23	40.00	-5.77	peak	100	360	P
2 *	68.1512	52.84	-18.35	34.49	40.00	-5.51	peak	100	360	P
3	120.6991	54.06	-17.86	36.20	43.50	-7.30	peak	100	360	P
4	222.1697	56.02	-19.17	36.85	46.00	-9.15	peak	100	360	P
5	296.1836	53.84	-15.69	38.15	46.00	-7.85	peak	100	360	P
6	742.2586	44.85	-5.49	39.36	46.00	-6.64	peak	100	360	P

4.3 Frequency Tolerance

Standard Applicable

According to 15 .225(e), the frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test Procedure

The setup of EUT is according with per ANSI C63. 10-2013 measurement procedure.

Test Result

Temperature vs. Frequency Stability

Temperature (°C)	Power(V DC)	Measurement Frequency (MHz)	Frequency Error (%)	Limit (%)
-20	3.7	13.560362	0.000362	±0.01
-10		13.560148	0.000148	±0.01
0		13.560214	0.000214	±0.01
10		13.560142	0.000142	±0.01
20		13.560241	0.000241	±0.01
30		13.560251	0.000251	±0.01
40		13.560011	0.000011	±0.01
50		13.560484	0.000484	±0.01
20	3.15Vdc	13.560024	0.000024	±0.01
20	4.26Vdc	13.560014	0.000014	±0.01

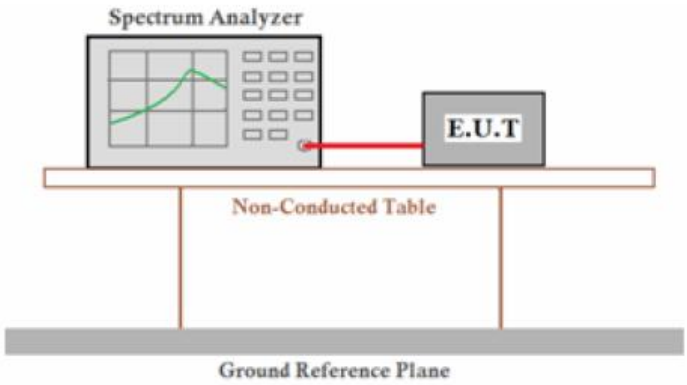
4.4 20dB Bandwidth

Limit

According to FCC Part15 C Section part 15.215(c):

Per 15.215 (C), Intentional radiators operating under the altermative provisions to the general emission limits, as contained in 815.217 through 15.257 and in subpart E of this part, must bc designed to cnsure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is opcrated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Test Configuration



Test Procedure

The 20dB bandwidth and 99% bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

According to the ANSI 63. 10-2013, the emission bandwidth test method as follows.

Set span = 10kHz, centered on a transmitting channel

RBW≥1 % 20dB Bandwidth, VBW≥RBW

Sweep = auto

Detector function = peak

Trace = max hold

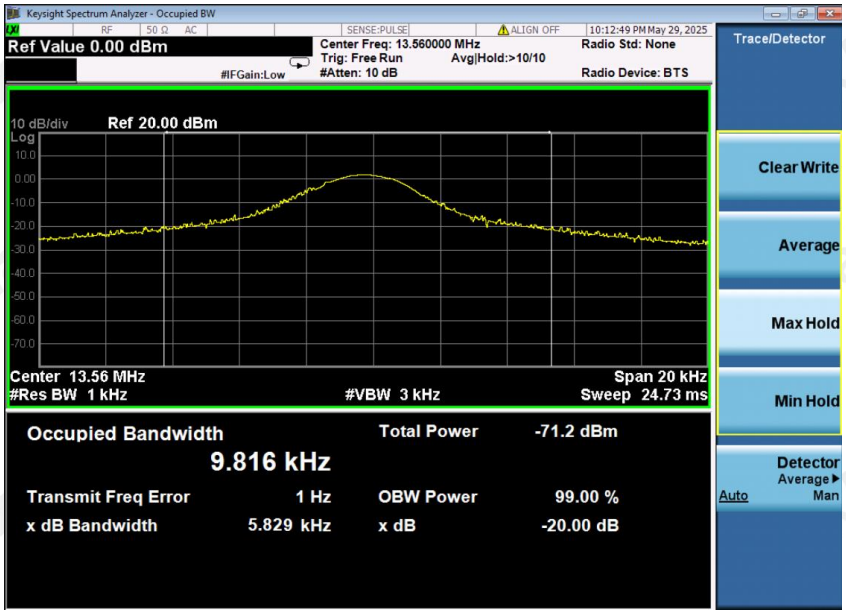
All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down of the emission.

Test Results

Mode	Frequency (MHz)	-20dB bandwidth (KHz)	Limit (kHz)	Result
ASK	13.56	5.829	N/A	Pass

Test plot as follows:

13.56MHz



4.5 Antenna Requirement

Standard Applicable

According to FCC Part 15C 15.203

An intentional radiator shall be de-signed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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.

Refer to statement below for compliance.

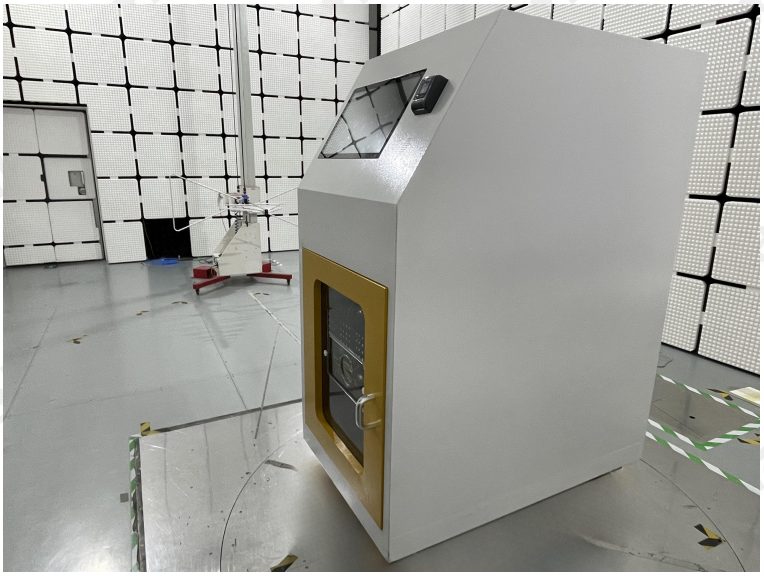
The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

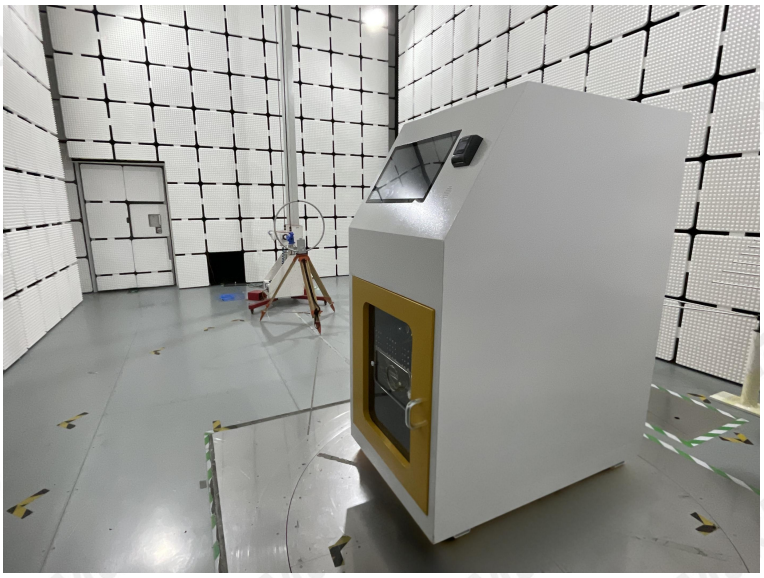
Antenna Connected Construction

The antenna used in this product is a Coil Antenna, The directional gains of antenna used for transmitting is 3 dBi.

Remark:The antenna gain is provided by the customer , if the data provided by the customer is not accurate, MAXLAB Testing Co.,Ltd. does not assume any responsibility.

5 Test Setup Photos of the EUT





6 Photos of the EUT

Reference to the report ANNEX A of external photos and ANNEX B of internal photos.

********** End of Report **********