TEST REPORT

Applicant: Shenzhen Ipetmon Creative Technology Co., Ltd.

Address: 101,No.93 Boguang Second Road, Shangcun Community, Gongming Street, Guangming District, Shenzhen, China

Product Name: Smart pet water dispenser

FCC ID: 2A4A7-PTM-633

Standard(s): 47 CFR Part 15, Subpart C (15.209)
ANSI C63.10-2013

Report Number: 2402Z26079E-RF-00B

Report Date: 2024/11/19

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

Reviewed By: Gavin Xu	**Approved By: Ivan Cao**
Title: **RF Engineer**	Title: **EMC Manager**

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402Z26079E-RF-00B	Original Report	2024-11-19

1 General Description

1.1 Product Description Of Equipment Under Test (EUT)

EUT Name:	Smart pet water dispenser
EUT Model:	PTM-633
Multiple Model:	PTM-653, PTM-663
Model Difference:	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: PTM-633.
Operation Frequency:	110-205kHz
Modulation Type:	ASK
Rated Input Voltage:	DC 3.7V, 5000mAh from battery or DC 5.0V from adapter
Adapter:	Model: YMK-10W050100 Input: 100-240VAC 50/60Hz, 0.3A Max Output: 5V DC, 1000mA
EUT Received Date:	Nov. 01, 2024
Test Date:	Nov. 01, 2024 ~ Nov. 18, 2024
Date of issue:	Nov. 19, 2024
EUT Received Status:	Good

1.2 Mechanical Description of EUT

The UUT measures approximately 19.2 cm (L) x 19.2 cm (W) x 16 cm (H) .

1.3 Objective

This report is prepared on behalf of *Shenzhen Ipetmon Creative Technology Co., Ltd.* in accordance with Part 2, Subpart J, and Part 15, Subpart C of the Federal Communication Commission's rules.

The objective is to determine compliance with FCC Part 15.209 for Antenna Requirement, RF Exposure & Radiated Spurious Emissions.

In order to determine compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the immunity should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing and/or I/O cable changes, etc.).

1.4 Related Submittal(s)/Grant(s)

FCC Part 15.209 Equipment Class: NII with FCC ID: 2A4A7-PTM-633.

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.10-2013.

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Parameter	Measurement uncertainty
All emissions, radiated	±4.0 dB
AC power line Conducted Emission	±2.0 dB
Temperature	±2 ºC
Humidity	±5 %
DC and low frequency voltages	±1.0 %

1.7 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.10-2013 .

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

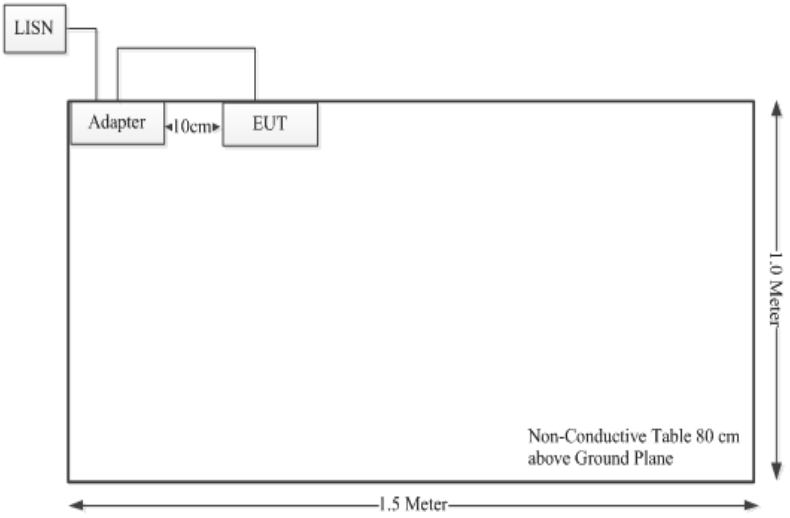
2.2 EUT Exercise Software

No test software was used during the test.

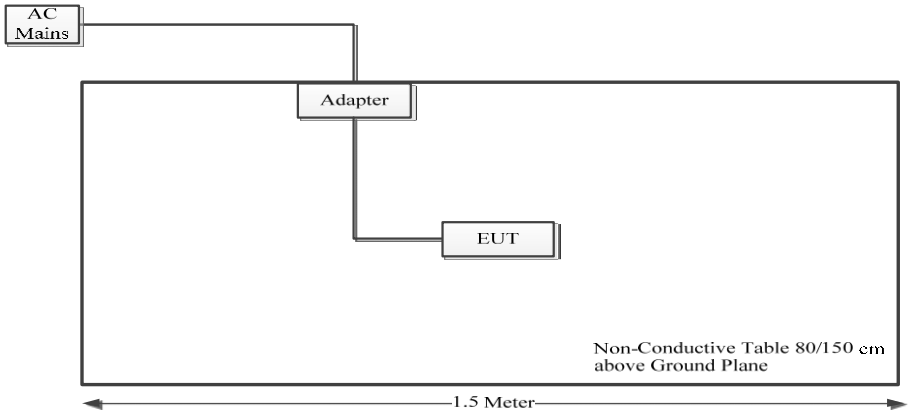
Test Channel	
Channel	Frequency(KHz)
01	181.0

2.3 Block Diagram of Test Setup

AC line conducted emissions:



Spurious Emissions:



2.4 Local Support Equipment

Manufacturer	Description	Model
Adapter	Adapter	YMK-10W050100

2.5 Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number
N/A	N/A	N/A	N/A

2.6 Interface Ports and Cabling

Cable Descriptions	Length (m)	From	To
Power Cable	< 1 m	DC Source	EUT

3 Summary of Test Results

FCC & ISEDC Rules	Description of Test	Results
FCC Part 15.207	Conducted Emission	Compliant
FCC Part 15.209	Radiated Emission	Compliant
FCC Part 15.203	Antenna Requirement	Compliant

4 FCC §15.203 – Antenna Requirements

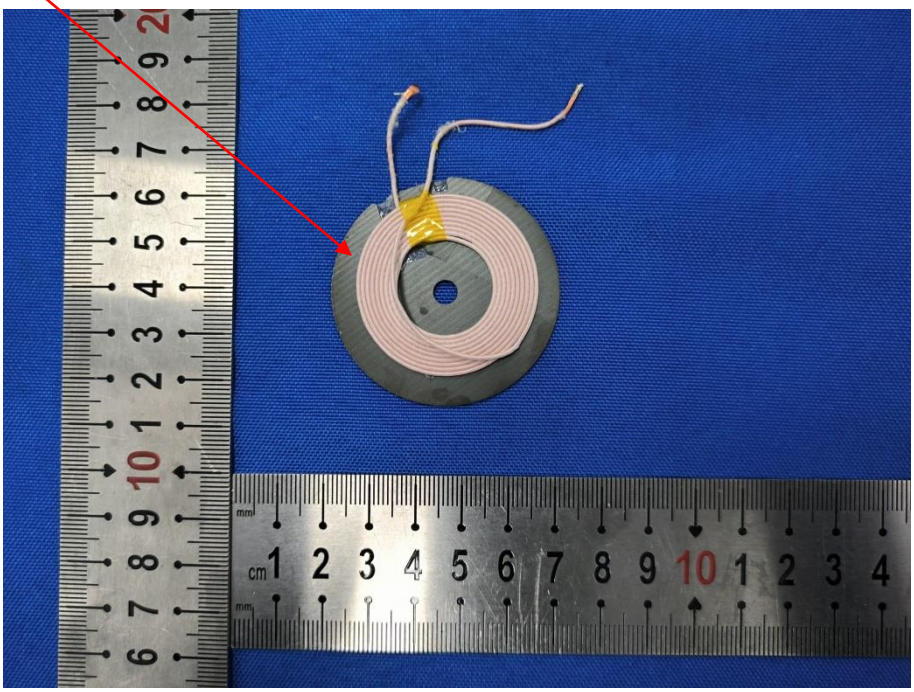
4.1 Applicable Standards

According to FCC §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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. 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.

Antenna Connected Construction:
The antenna used in this product is Coil Antenna, The directional gains of antenna used for transmitting is 0dBi.

ANTENNA:



4.2 Antenna Description

External/Internal/ Integral	Antenna Type	Frequency Range (MHz)	Maximum Antenna Gain (dBi)
Internal	Coil	0.11-0.205	0

5 RF Exposure

Please refer to the attachment

6 FCC §15.207 – AC Line Conducted Emissions

6.1 Applicable Standards

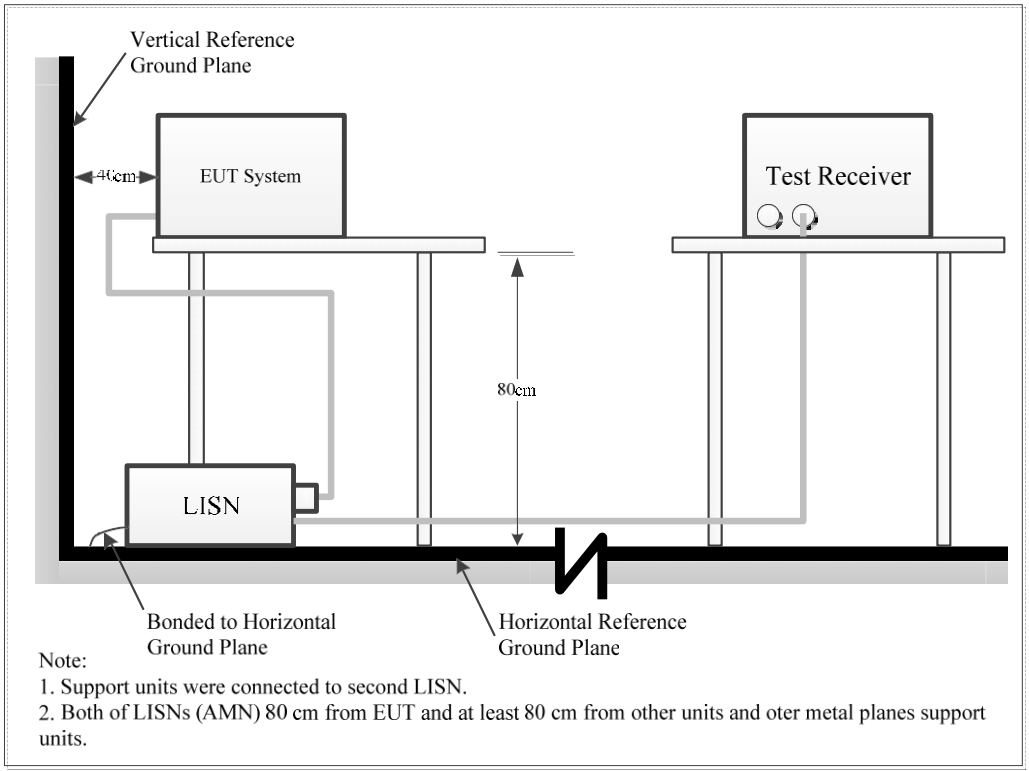
As per FCC §15.207 Conducted limits:

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 Note1	56 to 46 Note2
0.5-5	56	46
5-30	60	50

Note1: Decreases with the logarithm of the frequency.
Note2: A linear average detector is required

6.2 Test Setup



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

The measurement was performed at shield room, using the setup per ANSI C63.10-2013 measurement procedure. The specification used were FCC §15.207 limits.

External I/O cables were draped along the edge of the test table and bundle when necessary.
The AC/DC power adapter of the EUT was connected with LISN-1 which provided 120 V / 60 Hz AC power.

6.3 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit,measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground[protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current- carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current- carrying conductors.

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

6.4 Corrected Amplitude and Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Correction Factor (CF) to indicated Amplitude (Ai) reading. The basic equation is as follows:

CA = Ai + CF

For example, a corrected amplitude of 46.2 dBuV = Indicated Reading (32.5 dBuV) + Correction Factor (13.7 dB)

The Correction Factor is calculated by adding Cable loss (CL) and attenuation of the impulse limiter and the high pass filter. The basic equation is as follows:

CF= CL + Attenuator

For example, a corrected amplitude of 13.7 dB = Cable Loss (3.7 dB) + Attenuation (10 dB)

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corrected Amplitude – Limit

6.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	Receiver, EMI Test	ESCI 1166.5950.03	100044	2023-10-26	2.5 years
Rohde and Schwarz	Impulse Limiter	ESH3-Z2	101964	2024-07-01	1 year
Solar Electronics Company	High Pass Filter	Type 7930-100	7930150204	2024-03-02	1 year
Suirong	30 ft conductive emission cable	LMR 400	-	N/R	N/A
FCC	LISN	FCC-LISN-50-25-2-10-CISPR16	160130	2024-10-13	1 year
HP	DC Source	E3617A	KR32500606	N/R	N/A
Vasona	Test software	V6.0 build 11	10400213	N/R	N/A

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".*

6.6 Test Environmental Conditions

Temperature:	20 ºC
Relative Humidity:	53 %
ATM Pressure:	101.6 kPa

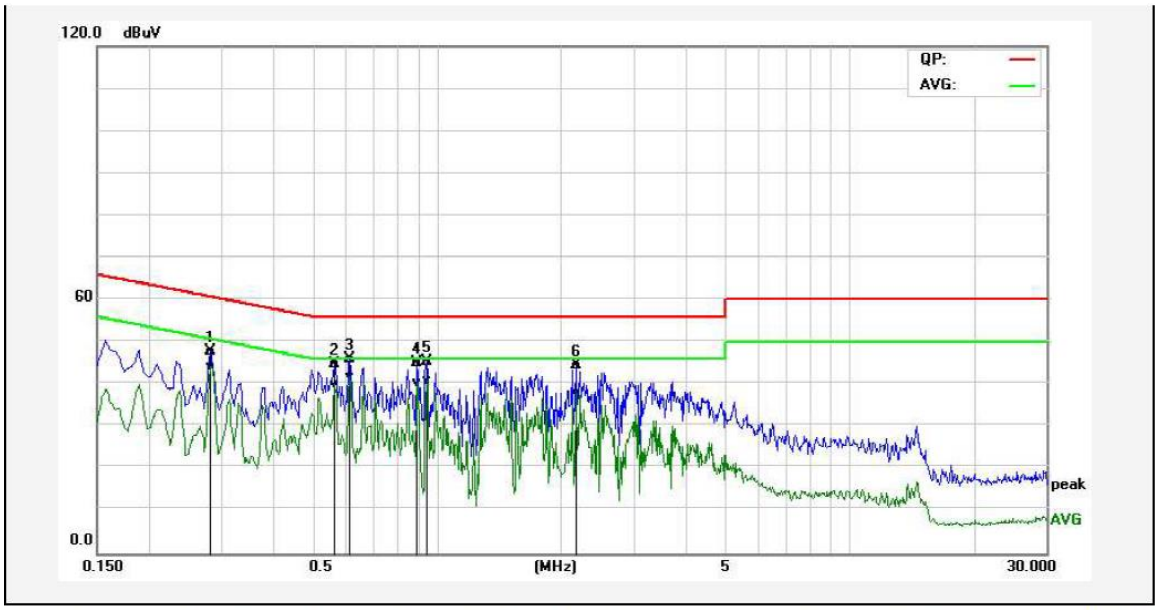
6.7 Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC 15C conducted emissions limits, with the margin reading of:

Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-4.05	0.6140	Line	0.15-30

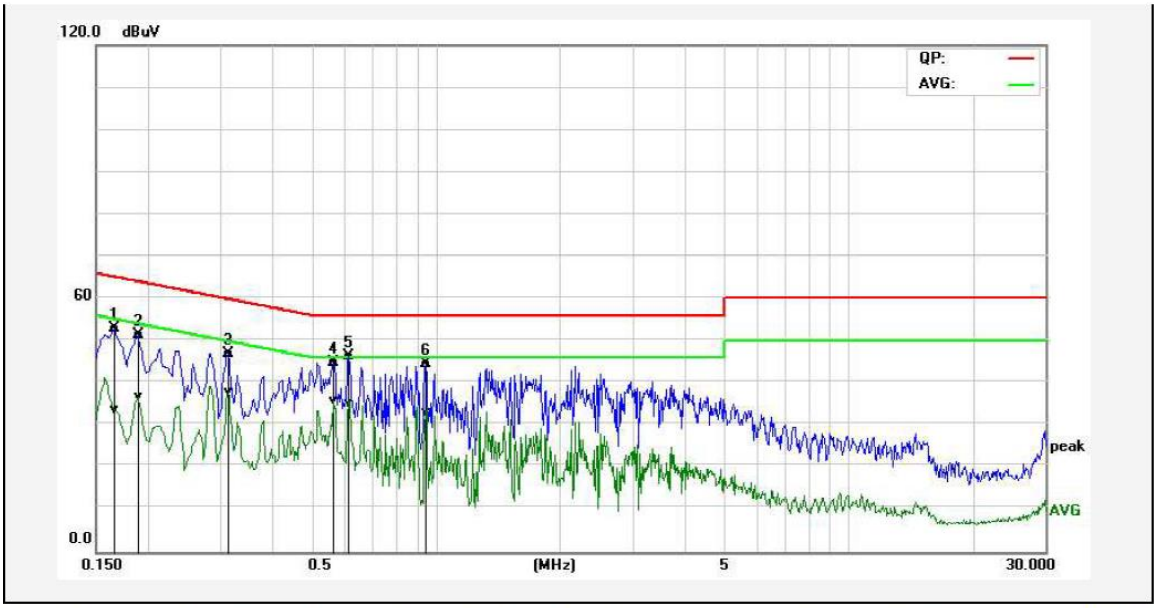
6.8 Conducted Emissions Test Plots and Data

AC 120 V, 60 Hz – Line



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1P	0.2819	37.79	33.97	10.14	47.93	44.11	60.76	50.76	-12.83	-6.65	Pass
2P	0.5660	34.64	30.05	10.07	44.71	40.12	56.00	46.00	-11.29	-5.88	Pass
3*	0.6140	36.02	31.88	10.07	46.09	41.95	56.00	46.00	-9.91	-4.05	Pass
4P	0.8980	35.18	30.35	10.12	45.30	40.47	56.00	46.00	-10.70	-5.53	Pass
5P	0.9460	35.36	30.81	10.12	45.48	40.93	56.00	46.00	-10.52	-5.07	Pass
6P	2.1780	34.22	27.71	10.22	44.44	37.93	56.00	46.00	-11.56	-8.07	Pass

120 V, 60 Hz – Neutral



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1P	0.1660	42.74	23.58	10.10	52.84	33.68	65.15	55.16	-12.31	-21.48	Pass
2P	0.1900	41.33	26.70	10.10	51.43	36.80	64.03	54.04	-12.60	-17.24	Pass
3P	0.3140	36.97	27.95	10.06	47.03	38.01	59.86	49.86	-12.83	-11.85	Pass
4P	0.5660	34.80	25.90	10.06	44.86	35.96	56.00	46.00	-11.14	-10.04	Pass
5*	0.6140	36.31	25.26	10.06	46.37	35.32	56.00	46.00	-9.63	-10.68	Pass
6P	0.9460	34.43	23.07	10.13	44.56	33.20	56.00	46.00	-11.44	-12.80	Pass

7 FCC §15.205, §15.35, §15.209– Spurious Radiated Emissions

7.1 Applicable Standards

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110 0.495 – 0.505 2.1735 – 2.1905 4.125 – 4.128 4.17725 – 4.17775 4.20725 – 4.20775 6.215 – 6.218 6.26775 – 6.26825 6.31175 – 6.31225 8.291 – 8.294 8.362 – 8.366 8.37625 – 8.38675 8.41425 – 8.41475 12.29 – 12.293 12.51975 – 12.52025 12.57675 – 12.57725 13.36 – 13.41	16.42 – 16.423 16.69475 – 16.69525 25.5 – 25.67 37.5 – 38.25 73 – 74.6 74.8 – 75.2 108 – 121.94 123 – 138 149.9 – 150.05 156.52475 – 156.52525 156.7 – 156.9 162.0125 –167.17 167.72 – 173.2 240 – 285 322 – 335.4 399.9 – 410 608 – 614	960 – 1240 1300 – 1427 1435 – 1626.5 1645.5 – 1646.5 1660 – 1710 1718.8 – 1722.2 2200 – 2300 2310 – 2390 2483.5 – 2500 2690 – 2900 3260 – 3267 3.332 – 3.339 3 3458 – 3 358 3.600 – 4.400	4. 5 – 5. 15 5. 35 – 5. 46 7.25 – 7.75 8.025 – 8.5 9.0 – 9.2 9.3 – 9.5 10.6 – 12.7 13.25 – 13.4 14.47 – 14.5 15.35 – 16.2 17.7 – 21.4 22.01 – 23.12 23.6 – 24.0 31.2 – 31.8 36.43 – 36.5 Above 38.6

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (micro volts/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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

Limit calculation and transfer to 3m distance as showed in the following table:

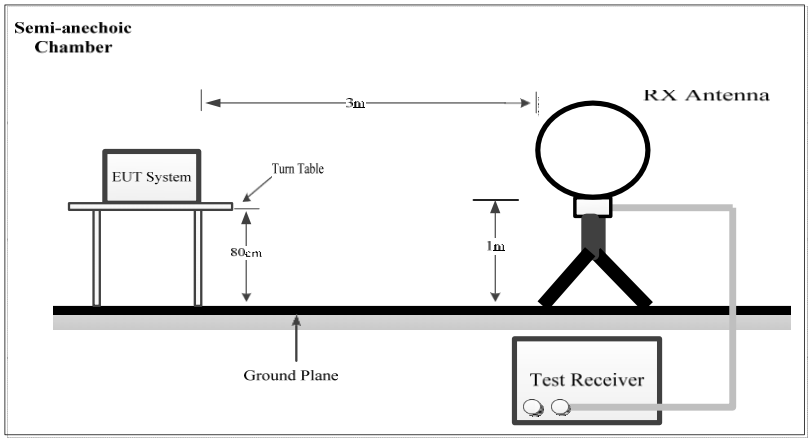
Frequency (MHz)	Limit (dBuV/m)	Distance (m)
0.009-0.490	20log(2400/F(KHz))+40log(300/3)	3
0.490-1.705	20log(24000/F(KHz))+40log(30/3)	3
1.705-30.0	69.5	3
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

CFR 47 Part 15, section 15.35
When average radiated emission measurements are specified, the limit on the peak level of the radio Frequency emission is 20dB above the maximum permitted average emission limit.

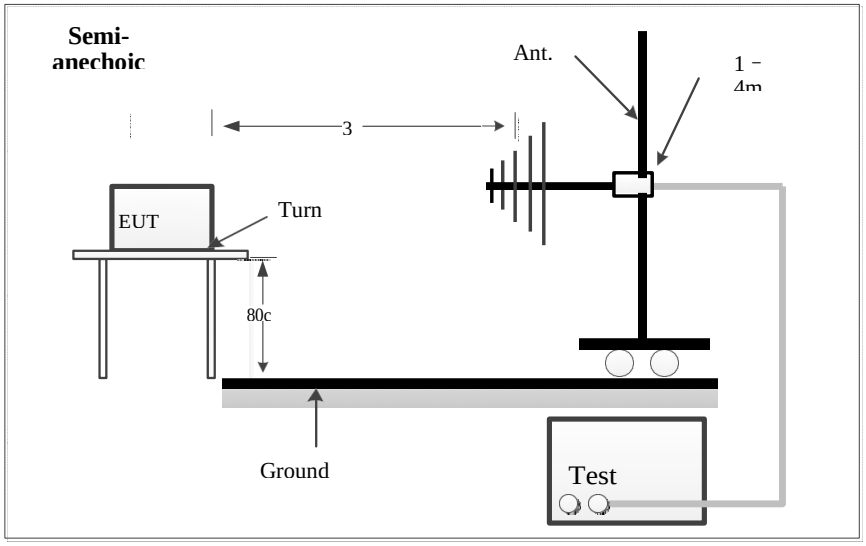
Transmitter Spurious Emissions 9KHz-30MHz			
	9-150KHz	150-490KHz	490KHz-30MHz
Resolution Bandwidth	200Hz	9KHz	9KHz
Video Bandwidth	2KHz	100KHz	100KHz
Detector	Peak	Peak	Peak
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep Time	Auto	Auto	Auto

7.2 Test Setup

9kHz-30MHz:



30MHz~1GHz:



The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.10-2013. The specification used was the FCC 15 Subpart C limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

7.3 Test Procedure

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

(1) Peak: RBW = 1MHz / VBW = 3MHz / Sweep = 100ms
(2) Average: RBW = 1MHz / VBW = 10Hz or 1/T / Sweep = Auto

Note: measurements are in units of dBuV/m at 3meters. These measurements are performed conducted in lieu of radiated as permitted by ANSI C63.10-2013. The following formula was used in making such conversions:

Above 1GHz: E[dBµV/m] = EIRP[dBm] - 20 log (d[m]) + 104.77, where E is field strength and d is distance at which the field strength limit is specified in the applicable requirements. E[dBµV/m] = EIRP[dBm] + 95.2, for d = 3 m. Straight conversion between E[dBuV/m] and EIRP[dBm} = 107. Thus offset for dBuV/m at 3meters is 95.2-107+antenna gain.

Below 1GHz: above is true in addition to adding ground plane contribution of 4.7dB. thus offset for dBuV/m at 3meters is 95.2-107+4.7+antenna gain.

1. Measurement distance is 3m.
2. For the measurement range up to 30MHz in the following plots the field strength result from 3m.
3. Distance measurement are extrapolated to 300m and 30m distance respectively, by 40dB/decade. According to part 15.31(f)(2), per antenna factor scaling.
4. Measurements below 1000MHz are performed with a peak detector and compared to average limits. Measurements with an average detector are not required.

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

7.4 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4446A	MY48250238	05-15-2024	1 year

7.5 Test Environmental Conditions

Temperature:	21 ºC
Relative Humidity:	53 %
ATM Pressure:	101.5 kPa

7.6 Test Results

PASS

For 9KHz-30MHz Test Results:

Coaxial:

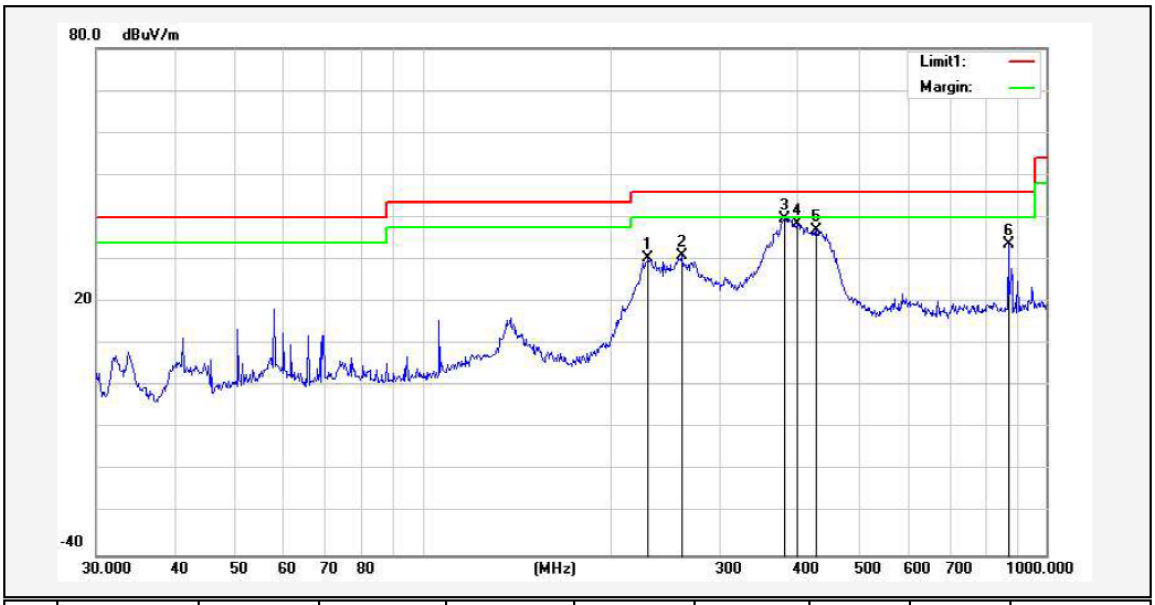
Frequency (MHz)	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limits 3m (dBuV/m)	Margin (dBuV/m)
0.181	PK	63.86	15.48	79.34	105.67	-26.33
0.754	PK	40.42	15.98	56.40	70.21	-13.81
1.861	PK	29.55	16.2	45.75	69.5	-23.75
2.648	PK	36.24	15.2	51.44	69.5	-18.06
5.456	PK	39.79	15.68	55.47	69.5	-14.03
8.762	PK	38.43	15.6	54.03	69.5	-15.47

Coplane:

Frequency (MHz)	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limits 3m (dBuV/m)	Margin (dBuV/m)
0.181	PK	61.23	15.48	76.71	105.67	-28.96
0.776	PK	45.38	15.98	61.36	69.94	-8.58
1.789	PK	33.64	16.2	49.84	69.5	-19.66
2.932	PK	31.75	15.2	46.95	69.5	-22.55
5.638	PK	30.28	15.68	45.96	69.5	-23.54
8.554	PK	30.37	15.6	45.97	69.5	-23.53

For 30MHz-1GHz Test Results:

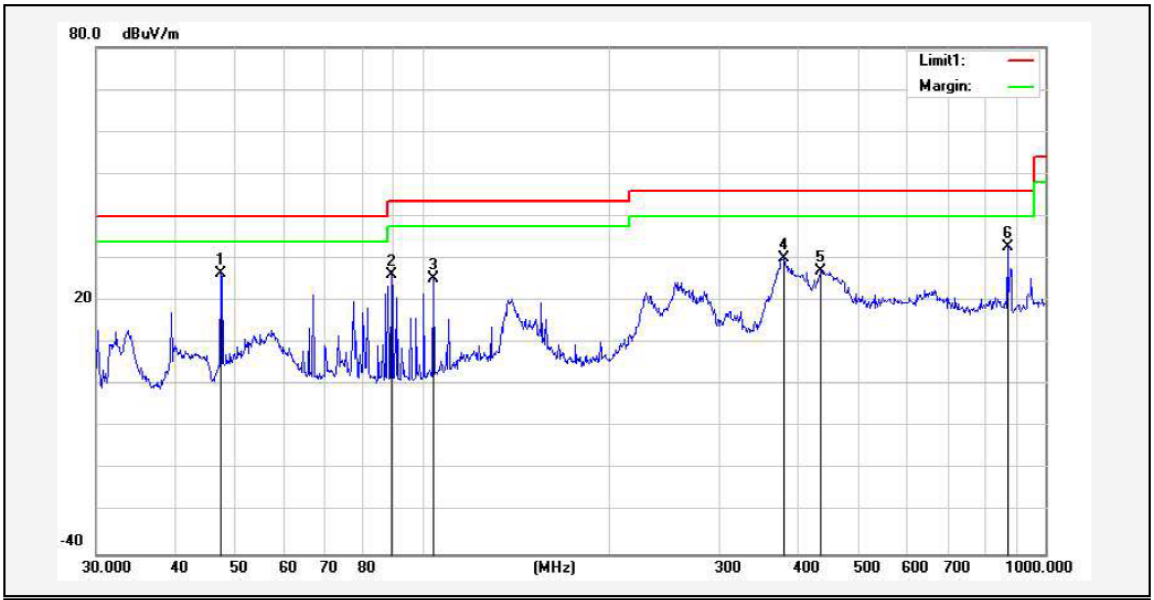
Temperature:	25℃	Relative Humidity:	60%
Test Date:	Oct. 31, 2024	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Phase:	Horizontal
Test Mode:	Transmitting mode 1 of 181.0kHz		



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	230.0985	51.78	-21.47	30.31	46.00	-15.69	164	100	peak
2	260.1444	51.42	-20.57	30.85	46.00	-15.15	128	100	peak
3*	379.9141	57.79	-18.03	39.76	46.00	-6.24	155	100	peak
4	399.0302	55.29	-16.96	38.33	46.00	-7.67	112	100	peak
5	428.0193	54.41	-17.33	37.08	46.00	-8.92	108	100	peak
6	869.1302	44.50	-10.99	33.51	46.00	-12.49	143	100	peak

Remark: Result = Reading Level + Factor, Margin = Result – Limit
Factor = Ant. Factor + Cable Loss – Pre-amplifier

Temperature:	25℃	Relative Humidity:	60%
Test Date:	Oct. 31, 2024	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Phase:	Vertical
Test Mode:	Transmitting mode 1 of 181.0kHz		



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	47.4918	51.99	-25.43	26.56	40.00	-13.44	168	100	peak
2	89.2764	51.99	-25.72	26.27	43.50	-17.23	177	100	peak
3	104.1701	49.34	-23.98	25.36	43.50	-18.14	122	100	peak
4	381.2487	48.06	-17.97	30.09	46.00	-15.91	101	100	peak
5	435.5898	44.60	-17.57	27.03	46.00	-18.97	116	100	peak
6*	869.1302	43.63	-10.99	32.64	46.00	-13.36	131	100	peak

1. * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
2. The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
3. The test mode 1 was the worst case and only the data of the worst case record in this report.

8 Appendix A (Normative) – EUT External Photographs

Please refer to the attachment

9 Appendix B (Normative) – EUT Internal Photographs

Please refer to the attachment

--- END OF REPORT ---