NVLAP TESTING
NVLAP LAB CODE 600341-0

BACL Bay Area Compliance Labs Corp.

TEST REPORT

Applicant:	**Xiamen Milesight IoT Co., Ltd.**
Address:	**Building C09, Software Park Phase III, Xiamen 361024, Fujian, China**
Product Name:	**Ultra ToF People Counter**
FCC ID:	**2AYHY-VS135HALOW**
Standard(s):	**47 CFR Part 15, Subpart C(15.249) ANSI C63.10-2013**
Report Number:	**XMDN240322-14951E-RF-00B**
Report Date:	**2024/5/13**

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	XMDN240322-14951E-RF-00B	Original Report	2024/5/13

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Ultra ToF People Counter
EUT Model:	VS135-HL-915M
Multiple Models:	NF135-HL-915M, VS135-HL-9M, NF135-HL-9M, VS135, NF135
Operation Frequency:	5856MHz
Modulation Type:	CW
Rated Input Voltage:	DC 12V From adapter
Serial Number:	2HPE-2
EUT Received Date:	2024/3/29
EUT Received Status:	Good
Note: The Multiple models are electrically identical with the test model. The deference is only the model name. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

1.2 Accessory Information

Accessory Description	Manufacturer	Model	Parameters
Adapter	SHENZHEN FUJIA APPLIANCE CO., LTD.	FJ-SW126G1202000U	Input: 100-240~50/60Hz 0.6A Max Output: 12V,2A

1.3 Antenna Information Detail▲:

Antenna Manufacturer	Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
Shenzhen MoreSense Technology Co., Ltd.	PCB	50	5850-5875MHz	6.48 dBi
The design of compliance with §15.203:				
☒ Unit uses a permanently attached antenna.				
☐ Unit uses a unique coupling to the intentional radiator.				
☐ Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.				

1.4 Equipment Modifications

No modifications are made to the EUT during all test items.

2. SUMMARY OF TEST RESULTS

Standard(s)/Rule(s)	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207(a)	Conduction Emissions	Compliant
15.205, §15.209, §15.249	Radiated Emissions	Compliant
§15.215 (c)	20 dB Bandwidth	Compliant

3. DESCRIPTION OF TEST CONFIGURATION

3.1 EUT Operation Condition

The system was configured for testing in production version with highest transmitter activity (on time), which was provided by the manufacturer.

3.2 EUT Exercise Software

No software was used in test.

3.3 Support Equipment List and Details

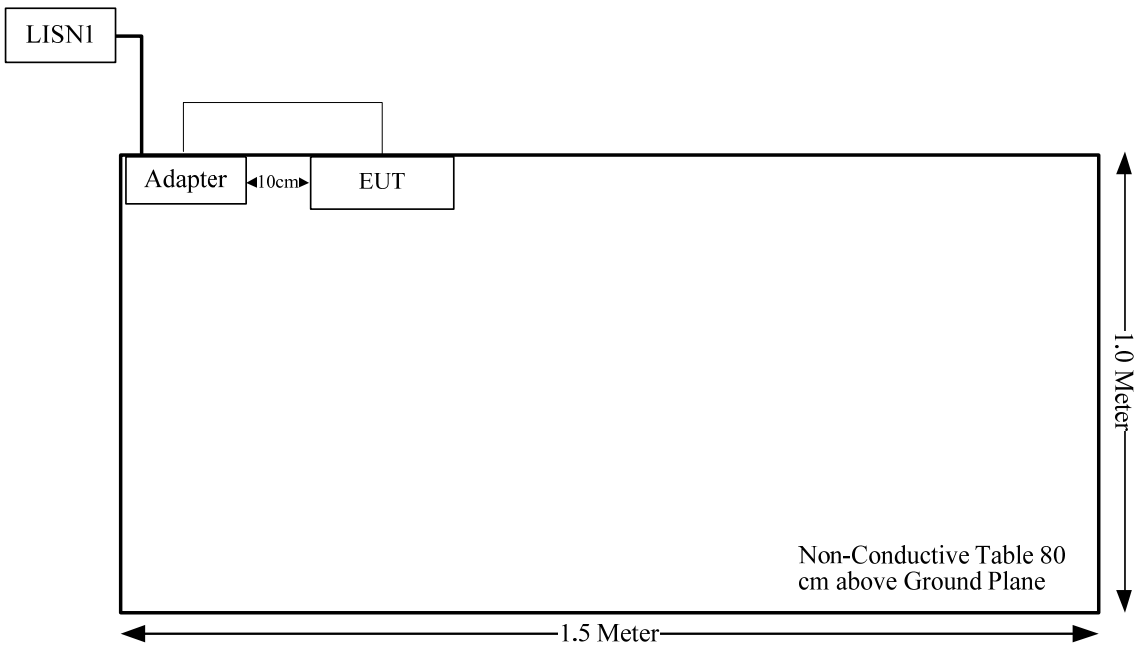
Manufacturer	Description	Model	Serial Number
/	/	/	/

3.4 Support Cable List and Details

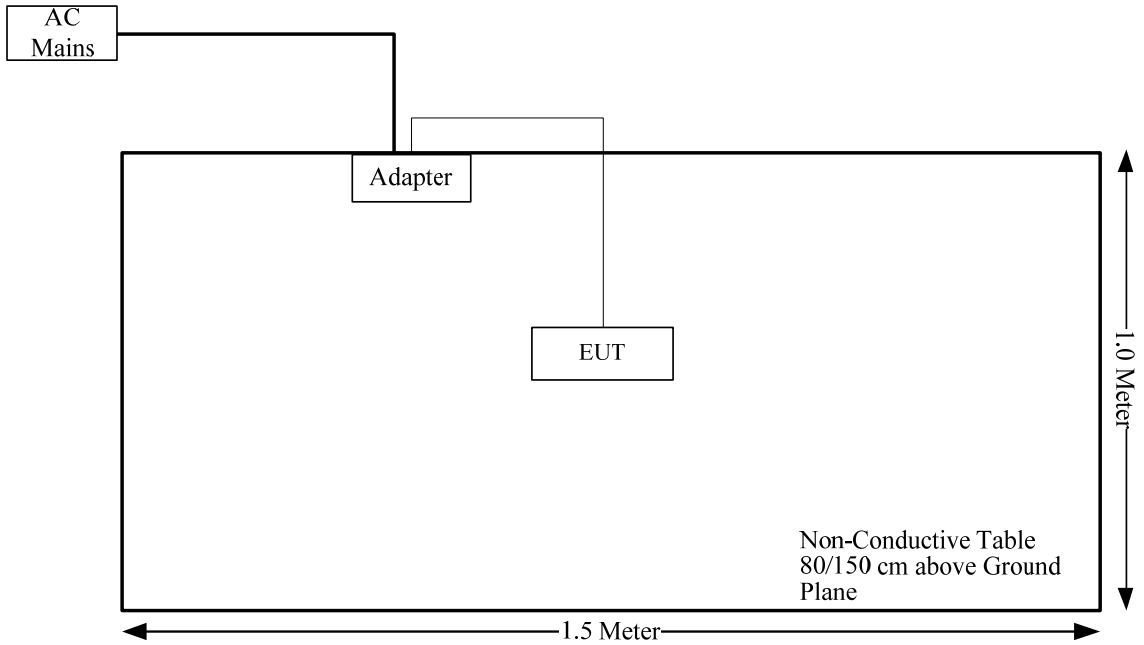
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
DC Cable	Yes	No	1	Adapter	EUT

3.5 Block Diagram of Test Setup

AC Power Lines Conducted Emission:



Radiated Spurious Emissions:



3.6 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.

3.7 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
Unwanted Emissions, radiated	9kHz~30MHz: 3.3dB, 30MHz~200MHz: 4.55 dB, 200MHz~1GHz: 5.92 dB, 1GHz~6GHz: 4.98 dB, 6GHz~18GHz: 5.89 dB, 18GHz~26.5GHz:5.47 dB, 26.5GHz~40GHz:5.63 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
AC Power Lines Conducted Emission	3.11 dB (150 kHz to 30 MHz)

4. REQUIREMENTS AND TEST RESULTS

4.1 AC Line Conducted Emissions

4.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, 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 frequency ranges.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	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.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

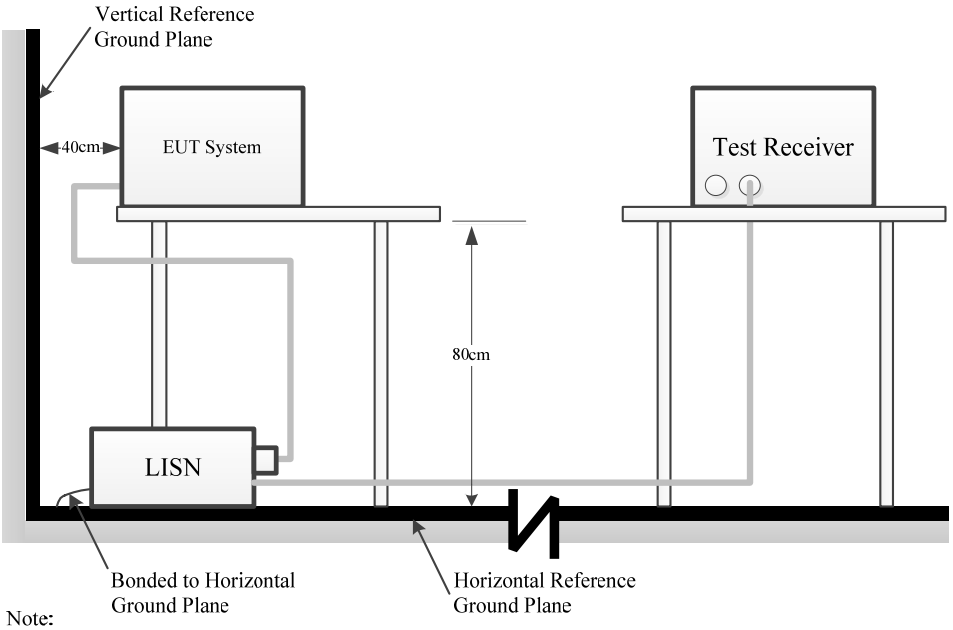
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtainig their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

4.1.2 EUT 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 setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

4.1.3 EMI Test Receiver Setup

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

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

4.1.4 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.

4.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor
Factor = attenuation caused by cable loss + voltage division factor of AMN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4.1.6 Test Result

Serial Number:	2HPE-2	Test Date:	2024/4/9
Test Site:	CE	Test Mode:	Transmitting
Tester:	Wright Lai	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.8	Relative Humidity: (%)	68	ATM Pressure: (kPa)	100.8

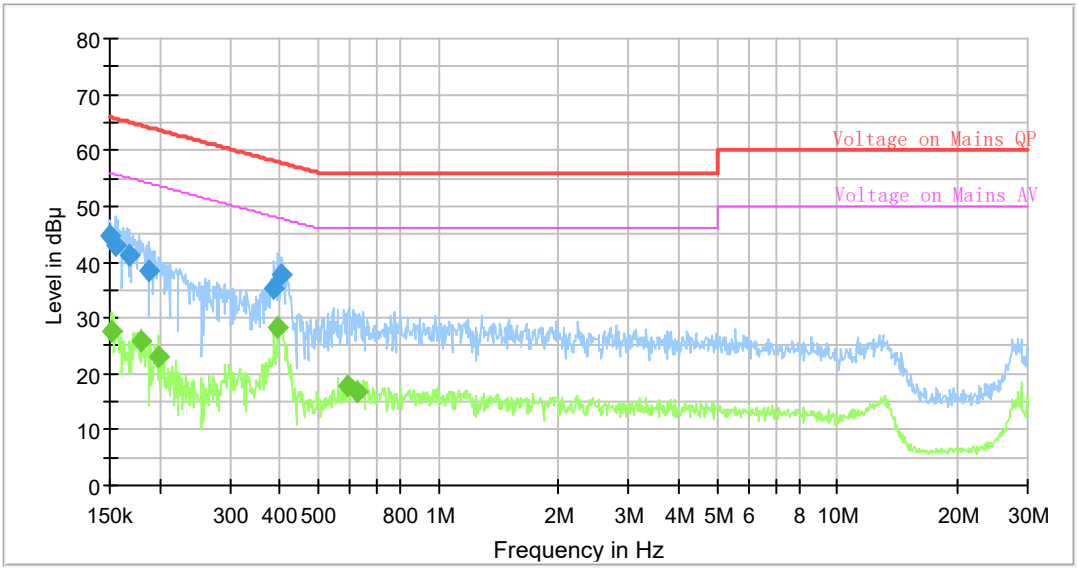
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101614	2023/10/18	2024/10/17
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2023/9/5	2024/9/4
R&S	EMI Test Receiver	ESCI	100035	2023/8/18	2024/8/17
R&S	Test Software	EMC32	V9.10.00	N/A	N/A

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

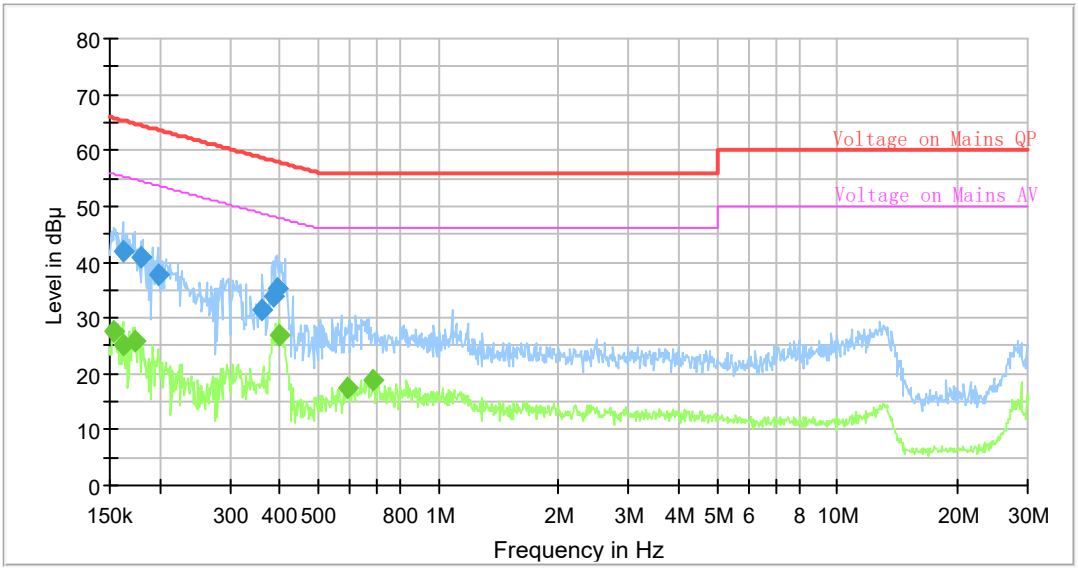
Project No:	XMDN240322-14951E-RF
Test Engineer:	Wright Lai
Test Date:	2024-4-9
Port:	L
Test Mode:	Transmitting
Power Source:	AC 120V/60Hz



Final_Result

Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.150750	44.86	---	65.96	21.10	9.000	L1	10.8
0.151504	---	27.64	55.92	28.28	9.000	L1	10.8
0.154557	43.08	---	65.75	22.67	9.000	L1	10.8
0.168233	41.37	---	65.05	23.68	9.000	L1	10.8
0.179502	---	25.99	54.51	28.52	9.000	L1	10.8
0.186809	38.49	---	64.18	27.69	9.000	L1	10.8
0.199323	---	23.15	53.64	30.49	9.000	L1	10.8
0.386939	35.17	---	58.13	22.96	9.000	L1	10.8
0.396710	---	28.36	47.92	19.56	9.000	L1	10.8
0.404704	37.72	---	57.76	20.04	9.000	L1	10.8
0.594189	---	17.99	46.00	28.01	9.000	L1	10.8
0.624575	---	16.71	46.00	29.29	9.000	L1	10.8

Project No:	XMDN240322-14951E-RF
Test Engineer:	Wright Lai
Test Date:	2024-4-9
Port:	N
Test Mode:	Transmitting
Power Source:	AC 120V/60Hz



Final_Result

Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.153788	---	27.72	55.79	28.07	9.000	N	10.9
0.161652	42.09	---	65.38	23.29	9.000	N	10.9
0.161652	---	25.11	55.38	30.27	9.000	N	10.9
0.173343	---	26.02	54.80	28.78	9.000	N	10.9
0.179502	40.97	---	64.51	23.54	9.000	N	10.9
0.198331	37.85	---	63.68	25.83	9.000	N	10.9
0.362647	31.35	---	58.67	27.32	9.000	N	10.8
0.385014	33.73	---	58.17	24.44	9.000	N	10.8
0.392773	35.31	---	58.00	22.69	9.000	N	10.8
0.398694	---	26.89	47.88	20.99	9.000	N	10.8
0.591232	---	17.62	46.00	28.38	9.000	N	10.7
0.686657	---	19.00	46.00	27.00	9.000	N	10.8

4.2 Radiated Emissions

4.2.1 Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

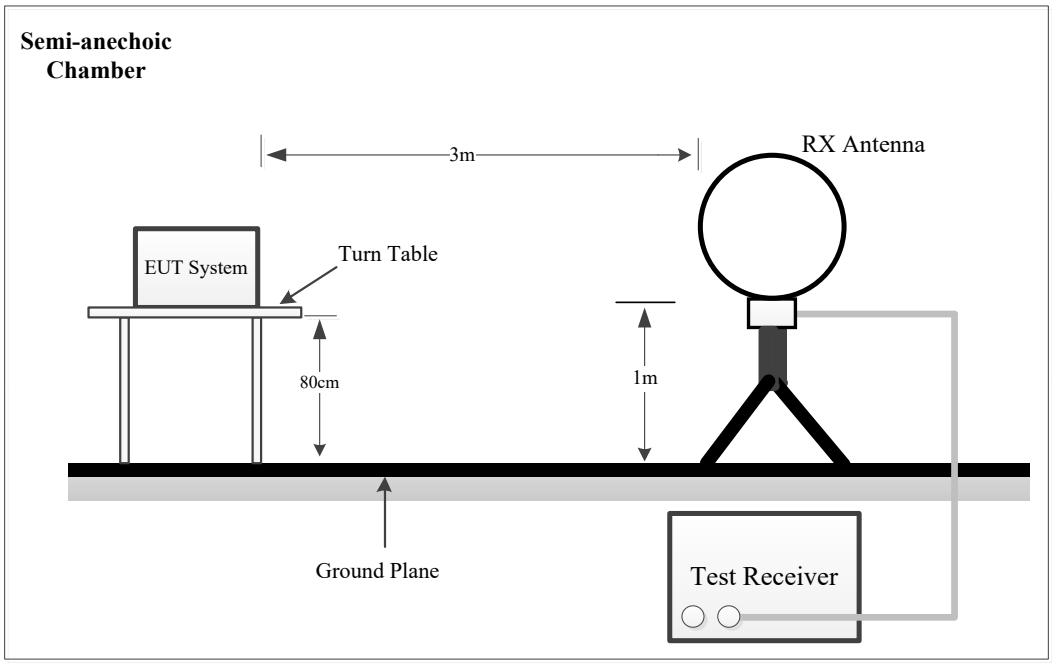
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

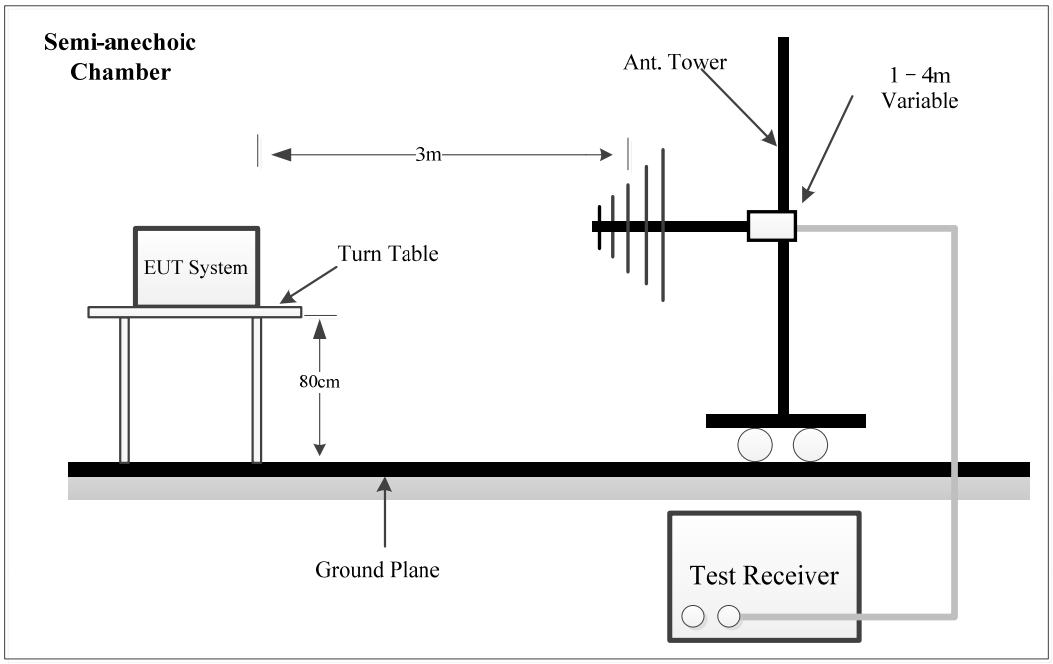
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

4.2.2 EUT Setup

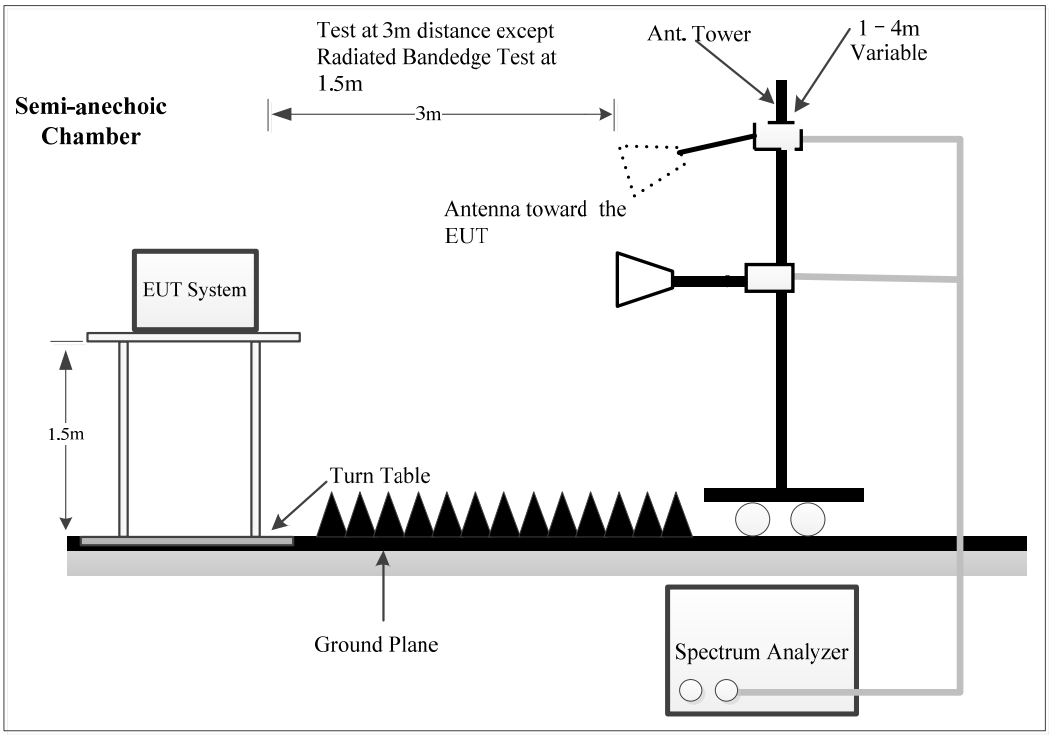
9kHz~30MHz:



Below 1GHz:



Above 1GHz:



For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

The radiated emission tests were performed in the semi-anechoic chamber, using the setup accordance with the ANSI C63.10-2013. The specification used was FCC 15.209/15.205 and FCC 15.249 limits.

4.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	Measurement	RBW	Video B/W	IF B/W
9 kHz – 150 kHz	QP/AV	200 Hz	1 kHz	200 Hz
150 kHz – 30 MHz	QP/AV	9 kHz	30 kHz	9 kHz
30 MHz – 1000 MHz	PK	100 kHz	300 kHz	/
	QP	/	/	120 kHz
Above 1 GHz	PK	1MHz	3 MHz	/
	CISPR AV	/	/	1MHz

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

4.2.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz -1 GHz, except 9-90 kHz, 110-490 kHz, employing an average detector, peak and Average detection modes for frequencies above 1 GHz.

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as: E [dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

For Radiated Bandedge test, which was performed at 1.5 m distance, according to C63.10, the test result shall be extrapolated to the specified distance using an extrapolation Factor of 20dB/decade from 3m to 1.5m
Distance extrapolation Factor =20 log (specific distance [3m]/test distance [1.5m]) dB= 6.0dB

All emissions under the average limit and under the noise floor have not recorded in the report.

4.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Factor = Antenna Factor + Cable Loss- Amplifier Gain

Corrected Amplitude= Reading + Factor

Extrapolation Result = Corrected Amplitude- Extrapolation Factor

For Radiated fundamental and Bandedge test: Extrapolation Factor=6.0 dB

For other emission test: Extrapolation Factor=0 dB

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit –Extrapolation Result

4.2.6 Test Result

Serial Number:	2HPE-2	Test Date:	Below 1GHz: 2024/4/16 Above 1GHz: 2024/4/16
Test Site:	Chamber A, Chamber B	Test Mode:	Transmitting
Tester:	Alan Xie, Colin Yang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	24.6~26.1	Relative Humidity: (%)	49~51	ATM Pressure: (kPa)	100.5

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
9kHz~1000MHz					
EMCO	Passive Loop Antenna	6512	9706-1206	2023/10/21	2026/10/20
Sunol Sciences	Hybrid Antenna	JB3	A060611-3	2024/1/12	2027/1/11
Wilson	Attenuator	859936	F-08-EM014	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2023/7/1	2024/6/30
Sonoma	Amplifier	310N	372193	2023/7/1	2024/6/30
R&S	EMI Test Receiver	ESR3	102453	2023/8/18	2024/8/17
Audix	Test Software	E3	191218 (V9)	N/A	N/A
Above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2026/9/6
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2023/2/22	2026/2/21
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2023/2/22	2026/2/21
Xinhang Macrowave	Coaxial Cable	XH750A-N/J-SMA/J-10M	20231117004 #0001	2023/11/17	2024/11/16
Xinhang Macrowave	Coaxial Cable	XH360A-2.92/J-2.92/J-6M-A	20231208001 #0001	2023/12/11	2024/12/10
AH	Preamplifier	PAM-0118P	469	2023/8/19	2024/8/18
AH	Preamplifier	PAM-1840VH	191	2023/9/7	2024/9/6
R&S	Spectrum Analyzer	FSV40	101944	2023/10/18	2024/10/17
Audix	Test Software	E3	191218 (V9)	N/A	N/A

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

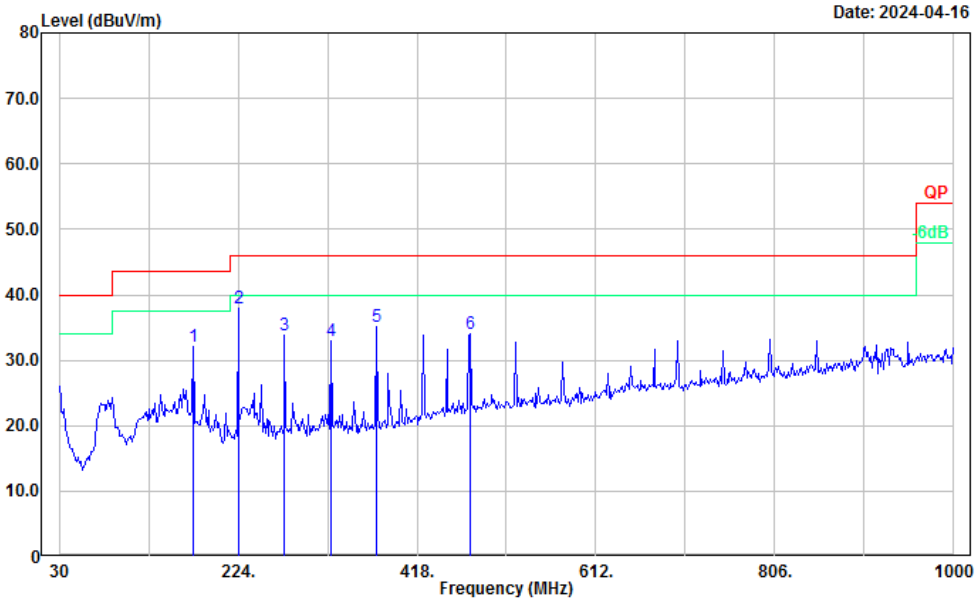
Please refer to the below table and plots.
After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

1) 9kHz~30MHz

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

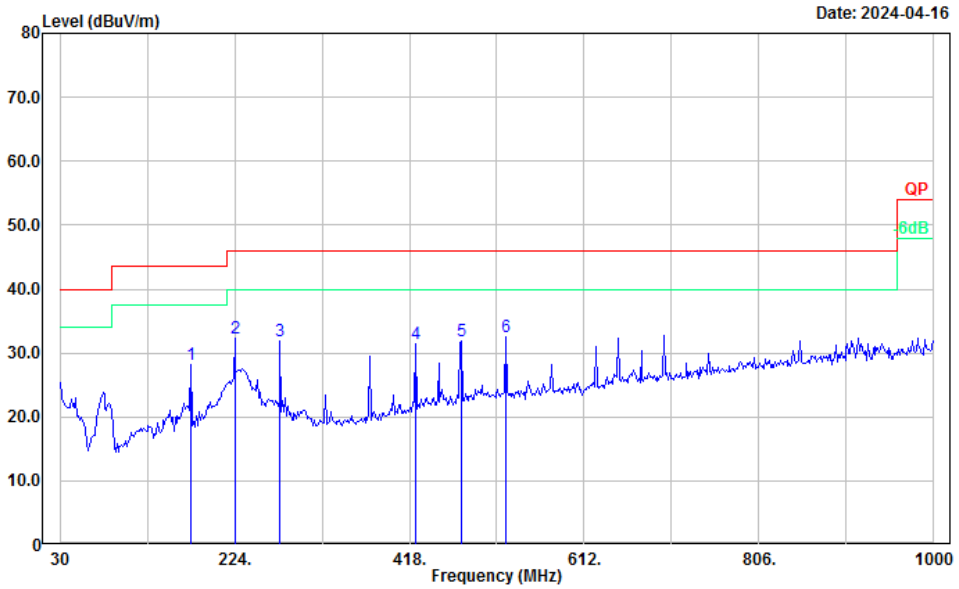
2) 30MHz-1GHz

Project No.: XMDN240322-14951E-RF Serial No.: 2HPE-2
Polarization: Horizontal Tester: Alan Xie
Test Mode: Transmitting
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	174.80	44.02	-11.84	32.18	43.50	11.32	Peak
2	224.00	48.82	-10.84	37.98	46.00	8.02	Peak
3	274.61	43.76	-9.87	33.89	46.00	12.11	Peak
4	325.22	41.21	-8.28	32.93	46.00	13.07	Peak
5	374.42	42.40	-7.38	35.02	46.00	10.98	Peak
6	475.64	38.37	-4.27	34.10	46.00	11.90	Peak

Project No.: XMDN240322-14951E-RF Serial No.: 2HPE-2
Polarization: Vertical Tester: Alan Xie
Test Mode: Transmitting
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	174.80	39.97	-11.84	28.13	43.50	15.37	Peak
2	224.00	43.09	-10.84	32.25	46.00	13.75	Peak
3	274.61	41.78	-9.87	31.91	46.00	14.09	Peak
4	425.03	37.28	-5.74	31.54	46.00	14.46	Peak
5	475.64	36.13	-4.27	31.86	46.00	14.14	Peak
6	524.84	35.93	-3.45	32.48	46.00	13.52	Peak

3) 1-40GHz:

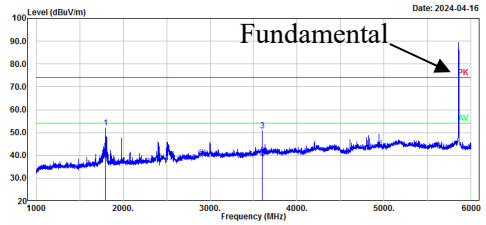
Frequency 5856.39 MHz

Frequency	Reading	Detector	Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Extrapolation result	Limit	Margin
			Polar	Factor						
MHz	dBµV	PK/QP/AV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dBµV/m	dB
5856.39	56.77	PK	H	34.13	1.88	0.00	92.78	86.78	113.98	27.20
5856.39	56.21	AV	H	34.13	1.88	0.00	92.22	86.22	93.98	7.76
5856.39	59.98	PK	V	34.13	1.88	0.00	95.99	89.99	113.98	23.99
5856.39	59.44	AV	V	34.13	1.88	0.00	95.45	89.45	93.98	4.53
5725.00	31.55	PK	H	33.97	1.84	0.00	67.36	61.36	74.00	12.64
5725.00	17.85	AV	H	33.97	1.84	0.00	53.66	47.66	54.00	6.34
5725.00	30.38	PK	V	33.97	1.84	0.00	66.19	60.19	74.00	13.81
5725.00	17.65	AV	V	33.97	1.84	0.00	53.46	47.46	54.00	6.54
5875.00	33.39	PK	H	34.15	1.89	0.00	69.43	63.43	74.00	10.57
5875.00	17.26	AV	H	34.15	1.89	0.00	53.30	47.3	54.00	6.70
5875.00	31.23	PK	H	34.15	1.89	0.00	67.27	61.27	74.00	12.73
5875.00	17.24	AV	H	34.15	1.89	0.00	53.28	47.28	54.00	6.72
11712.79	48.58	PK	H	38.06	4.61	38.19	53.06	53.06	74.00	20.94
11712.79	44.03	AV	H	38.06	4.61	38.19	48.51	48.51	54.00	5.49
11712.79	45.39	PK	V	38.06	4.61	38.19	49.87	49.87	74.00	24.13
11712.79	41.08	AV	V	38.06	4.61	38.19	45.56	45.56	54.00	8.44
17569.18	42.12	PK	H	41.13	6.50	31.45	58.30	58.3	74.00	15.70
17569.18	33.64	AV	H	41.13	6.50	31.45	49.82	49.82	54.00	4.18
17569.18	43.04	PK	V	41.13	6.50	31.45	59.22	59.22	74.00	14.78
17569.18	34.16	AV	V	41.13	6.50	31.45	50.34	50.34	54.00	3.66
1799.00	61.80	PK	H	25.56	0.85	36.13	52.08	52.08	74.00	21.92
1799.00	48.21	AV	H	25.56	0.85	36.13	38.49	38.49	54.00	15.51
3600.00	55.92	PK	H	30.96	1.02	37.04	50.86	50.86	74.00	23.14
3600.00	43.56	AV	H	30.96	1.02	37.04	38.50	38.5	54.00	15.50
3001.00	57.53	PK	V	29.90	0.93	36.92	51.44	51.44	74.00	22.56
3001.00	45.25	AV	V	29.90	0.93	36.92	39.16	39.16	54.00	14.84
4933.00	52.15	PK	V	32.95	1.40	36.81	49.69	49.69	74.00	24.31
4933.00	40.14	AV	V	32.95	1.40	36.81	37.68	37.68	54.00	16.32

Note:
Factor = Antenna Factor + Cable Loss- Amplifier Gain
Corrected Amplitude= Reading + Factor
Extrapolation Result = Corrected Amplitude- Extrapolation Factor
For Radiated fundamental and Bandedge test: Extrapolation Factor=6.0 dB
For other emission test: Extrapolation Factor=0 dB

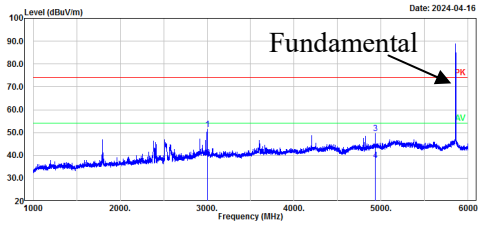
Horizontal	Vertical

Project No.: XMDN240322-14951E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: SRD TX 5856.39MHz
Serial No.: 2HPE-2
Tester: Colin Yang



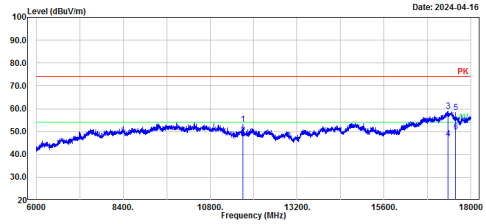
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	1799.00	61.80	-9.72	52.08	74.00	21.92	Peak
2	1799.00	48.21	-9.72	38.49	54.00	15.51	Average
3	3600.00	55.92	-5.06	50.86	74.00	23.14	Peak
4	3600.00	43.56	-5.06	38.50	54.00	15.50	Average

Project No.: XMDN240322-14951E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: SRD TX 5856.39MHz
Serial No.: 2HPE-2
Tester: Colin Yang



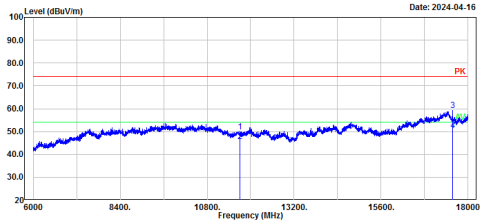
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	3001.00	57.53	-6.09	51.44	74.00	22.56	Peak
2	3001.00	45.25	-6.09	39.16	54.00	14.84	Average
3	4933.00	52.15	-2.46	49.69	74.00	24.31	Peak
4	4933.00	40.14	-2.46	37.68	54.00	16.32	Average

Project No.: XMDN240322-14951E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: SRD TX 5856.39MHz
Serial No.: 2HPE-2
Tester: Colin Yang



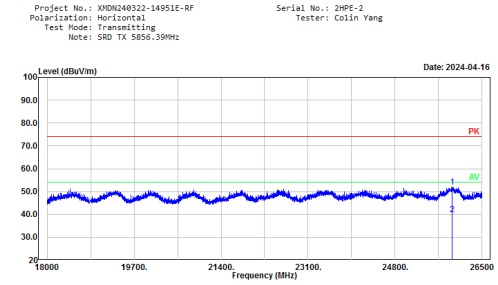
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	11712.79	48.58	4.48	53.06	74.00	20.94	Peak
2	11712.79	44.03	4.48	48.51	54.00	5.49	Average
3	17359.20	44.04	14.76	58.80	74.00	15.20	Peak
4	17359.20	32.20	14.76	46.96	54.00	7.04	Average
5	17569.18	42.12	16.18	58.30	74.00	15.70	Peak
6	17569.18	33.64	16.18	49.82	54.00	4.18	Average

Project No.: XMDN240322-14951E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: SRD TX 5856.39MHz
Serial No.: 2HPE-2
Tester: Colin Yang

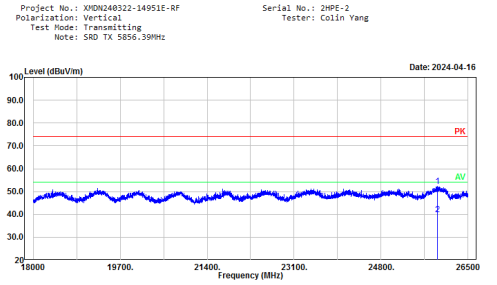


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	11712.79	45.39	4.48	49.87	74.00	24.13	Peak
2	11712.79	41.08	4.48	45.56	54.00	8.44	Average
3	17569.18	43.04	16.18	59.22	74.00	14.78	Peak
4	17569.18	34.16	16.18	50.34	54.00	3.66	Average

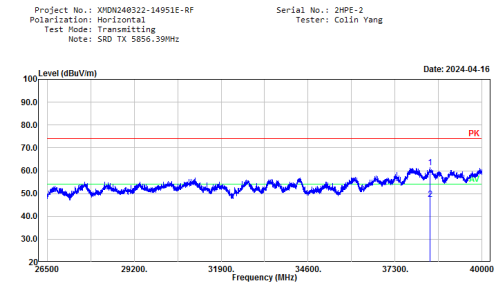
Horizontal	Vertical



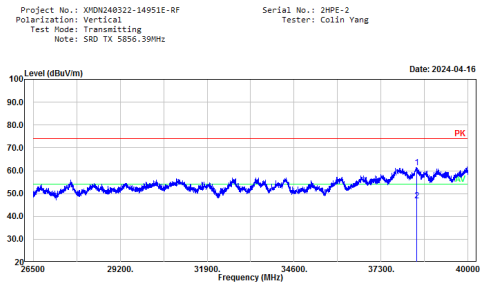
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	25908.40	41.28	10.68	51.96	74.00	22.04	Peak
2	25908.40	29.14	10.68	39.82	54.00	14.18	Average



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	25896.50	41.52	10.67	52.19	74.00	21.81	Peak
2	25896.50	29.34	10.67	40.01	54.00	13.99	Average



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	38385.40	43.96	17.37	61.33	74.00	12.67	Peak
2	38385.40	30.12	17.37	47.49	54.00	6.51	Average

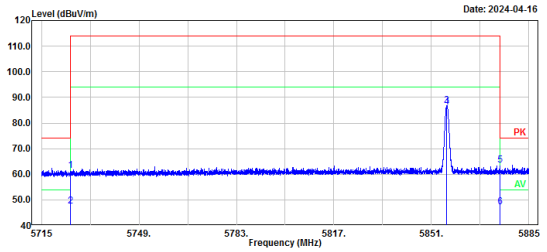


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	38396.20	44.15	17.35	61.50	74.00	12.50	Peak
2	38396.20	29.43	17.35	46.78	54.00	7.22	Average

Fundamental And Bandedge, Horizontal	Fundamental And Bandedge, Vertical

Project No.: XMDN240322-14951E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: SRD TX 5856.39MHz

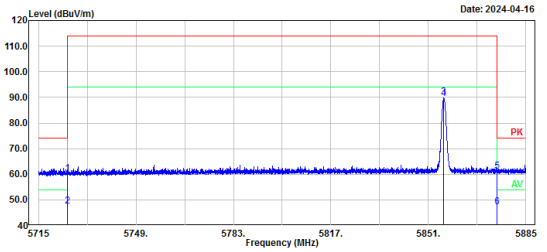
Serial No.: 2HPE-2
Tester: Colin Yang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	5725.00	31.55	29.81	61.36	74.00	12.64	Peak
2	5725.00	17.85	29.81	47.66	54.00	6.34	Average
3	5856.39	56.77	30.01	86.78	113.98	27.20	Peak
4	5856.39	56.21	30.01	86.22	93.98	7.76	Average
5	5875.00	33.39	30.04	63.43	74.00	10.57	Peak
6	5875.00	17.26	30.04	47.30	54.00	6.70	Average

Project No.: XMDN240322-14951E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: SRD TX 5856.39MHz

Serial No.: 2HPE-2
Tester: Colin Yang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	5725.00	30.38	29.81	60.19	74.00	13.81	Peak
2	5725.00	17.65	29.81	47.46	54.00	6.54	Average
3	5856.39	59.98	30.01	89.99	113.98	23.99	Peak
4	5856.39	59.44	30.01	89.45	93.98	4.53	Average
5	5875.00	31.23	30.04	61.27	74.00	12.73	Peak
6	5875.00	17.24	30.04	47.28	54.00	6.72	Average

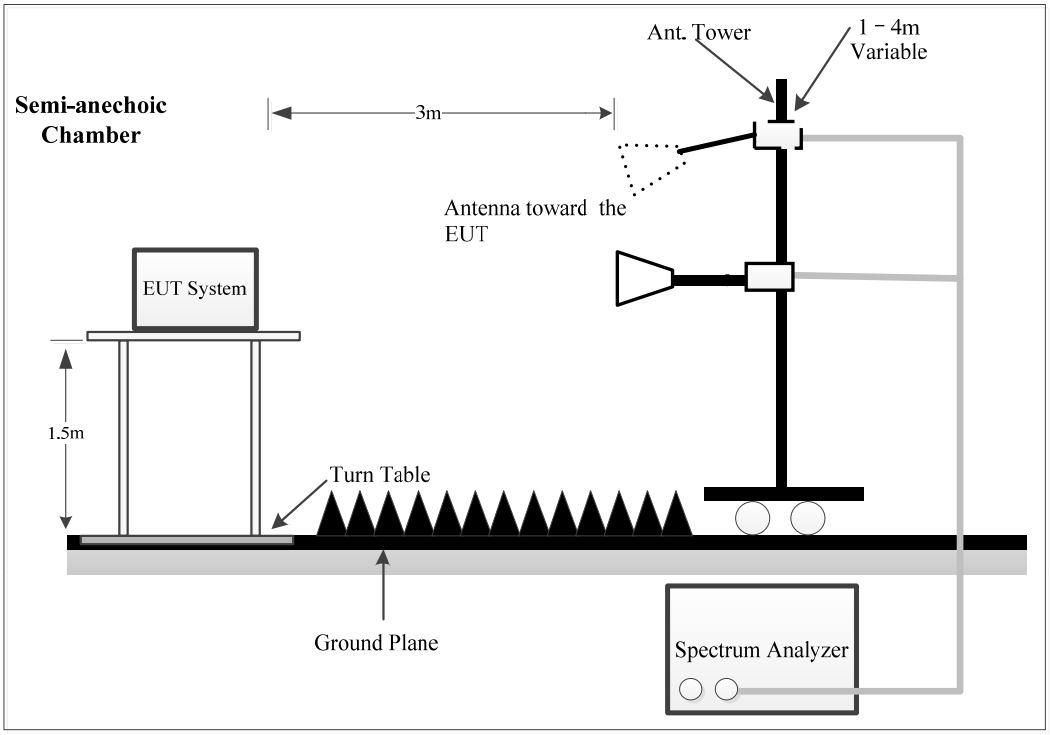
4.3 20 dB Emission Bandwidth

4.3.1 Applicable Standard

FCC §15.215

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure 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 operated.

4.3.2 EUT Setup



4.3.3 Test Procedure

According to ANSI C63.10-2013 Section 6.9.2

a) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, unless otherwise specified by the applicable requirement.
b) Set the video bandwidth (VBW) ≥ 3×RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) 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.

4.3.4 Test Result

Serial No.:	2HPE-2	**Test Date:**	2024/4/16
Test Site:	Chamber B	**Test Mode:**	Transmitting
Tester:	Colin Yang	**Test Result:**	Pass

Environmental Conditions:

Temperature: (℃)	24.6	**Relative Humidity: (%)**	49	**ATM Pressure: (kPa)**	100.5

Test Equipment List and Details:

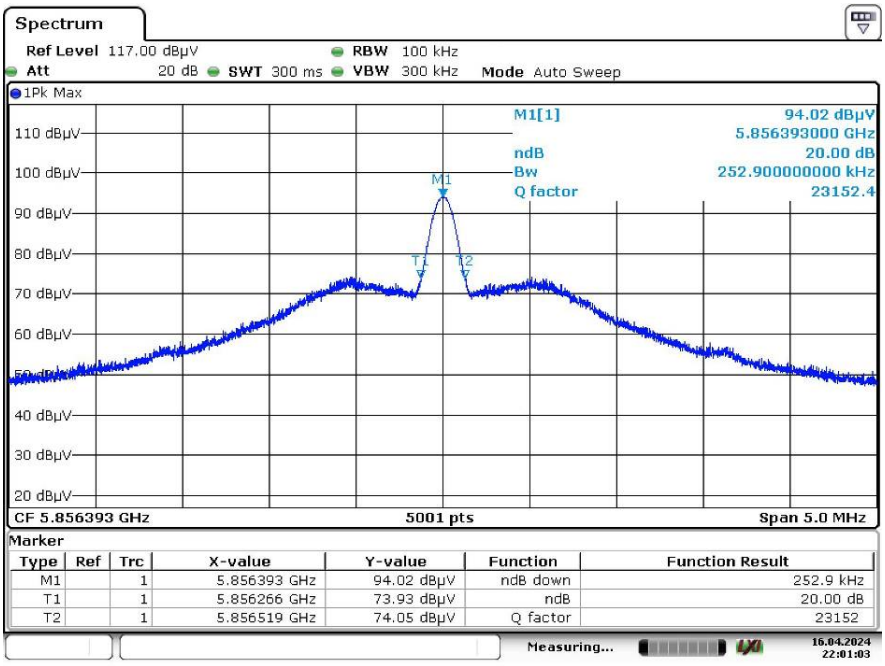
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2026/9/6
Xinhang Macrowave	Coaxial Cable	XH360A-2.92/J-2.92/J-6M-A	20231208001 #0001	2023/12/11	2024/12/10
AH	Preamplifier	PAM-1840VH	191	2023/9/7	2024/9/6
R&S	Spectrum Analyzer	FSV40	101944	2023/10/18	2024/10/17

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

20 dB Bandwidth (kHz)	F_L (MHz)	F_L Limit (MHz)	F_H (MHz)	F_H Limit (MHz)
252.9	5856.266	5725	5856.519	5875

20 dB Bandwidth



ProjectNo:XMDN240322-14951E-RF Tester:Colin Yang
Date: 16.APR.2024 22:01:04

4.4 Antenna Requirement

4.4.1 Applicable Standard

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

4.4.2 Judgment

Compliant. Please refer to the Antenna Information detail in Section 1.3.

APPENDIX A - EUT PHOTOGRAPHS

Please refer to the attachment XMDN240322-14951E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and XMDN240322-14951E-RF-INP EUT INTERNAL PHOTOGRAPHS

APPENDIX B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment XMDN240322-14951E-RF-00B-TSP TEST SETUP PHOTOGRAPHS.

APPENDIX C - RF EXPOSURE EVALUATION

Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data:

Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
	(dBi)	(numeric)	(dBm)	(mW)			
903.5-926.5	-3.95	0.40	24	251.19	20.00	0.0201	0.6
2412-2462	2.13	1.63	26	398.11	20.00	0.1294	1.0
5856	6.48	4.45	-11.50	0.07	20.00	0.0001	1.0

.
Note:
For 5G,The power of EUT: E Field@3m is 89.99dBuV/m =-5.21dBm (0.30mW)
E[dBμV/m] = EIRP[dBm] + 95.2 for d = 3 m.
Conducted output power=-5.21 dBm -6.48dBi=-11.69 dBm
Conducted output power= EIRP(dBm)- Antenna Gain(dBi)

The Conducted output power including Tune-up Tolerance provided by manufacturer

The WLAN 2.4G / 5G/900M can transmit simultaneously:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$=S_{2.4G}/S_{limit-\ 2.4G}+ S_{5G}/S_{limit-\ 5G}+ S_{900M}/S_{limit-\ 900M}$

=0.1294/1+0.0001/1+0.0201/0.6

=0.16

< 1.0

Result: The device meet FCC MPE at 20 cm distance

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