NVLAP TESTING
NVLAP LAB CODE 600341-0

BACL Bay Area Compliance Labs Corp.

TEST REPORT

Applicant:	**Jingheng Tengwei (Huizhou) Electronic Technology Co., Ltd.**
Address:	**No. 8 Minying 1 Road, Yuanzhou Town, Boluo County, Huizhou City, Guangdong Province, China**
Product Name:	**Mechanical keyboard**
FCC ID:	**2A4MQ-RKX87**
IC:	**29367-RKX87**
HVIN:	**RK X87, 8001**
Standard(s):	**47 CFR Part 15, Subpart C(15.249) RSS-210 Issue 11, June 25, 2024 RSS-Gen, Issue 5, February 2021 Amendment 2 ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024★**
Report Number:	**502V16959E-RF-00B**
Report Date:	**2025/9/29**

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

Alice Tan

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2502V16959E-RF-00B	Original Report	2025/9/29

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Mechanical keyboard
EUT Model:	RK X87
Multiple Model:	8001
Operation Frequency:	2405-2475MHz
Modulation Type:	GFSK
Rated Input Voltage:	DC 3.7V From Battery or DC 5V From USB
Serial Number:	371O-10 (For AC line conducted emissions test) 371O-2 (For Radiated Spurious Emissions test) 371O-1 (For RF conducted test)
EUT Received Date:	2025/7/23
EUT Received Status:	Good
Note: The multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

1.2 Accessory Information

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

1.3 Antenna Information Detail▲:

Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
PCB	50	2.4~2.5GHz	1.2dBi
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 RSS-Gen Clause 6.8	Antenna Requirement	Compliant
§15.207(a) RSS-Gen Clause 8.8	Conduction Emissions	Compliant
15.205, §15.209, §15.249 RSS-Gen Clause 8.10 RSS-210 Annex B B.10	Radiated Emissions	Compliant
§15.215 (c)	20 dB Bandwidth	Compliant
RSS-Gen Clause 6.7	99% Occupied Bandwidth	Compliant
§1.1310 & §2.1093	SAR Evaluation	Compliant
RSS-102 Clause 6.3	Exemption Limits For Routine Evaluation- SAR Evaluation	Compliant
Note 1: For Radiated Spurious Emissions 18~25GHz, the maximum output power mode and channel was tested.		

3. DESCRIPTION OF TEST CONFIGURATION

3.1 Operation Frequency Detail

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	**2405**	9	**2440**
2	2408	10	2445
3	2414	11	2453
4	2419	12	2459
5	2422	13	2463
6	2426	14	2466
7	2436	15	2470
8	2439	16	**2475**

Note: The above frequencies in bold were performed the test.

3.2 EUT Operation Condition

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.		
Equipment Modifications:	No		
EUT Exercise Software:	Engineering Mode		
The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲:			
Test Modes	Power Level Setting		
	Lowest Channel	Middle Channel	Highest Channel
SRD	Default	Default	Default

3.3 Support Equipment List and Details

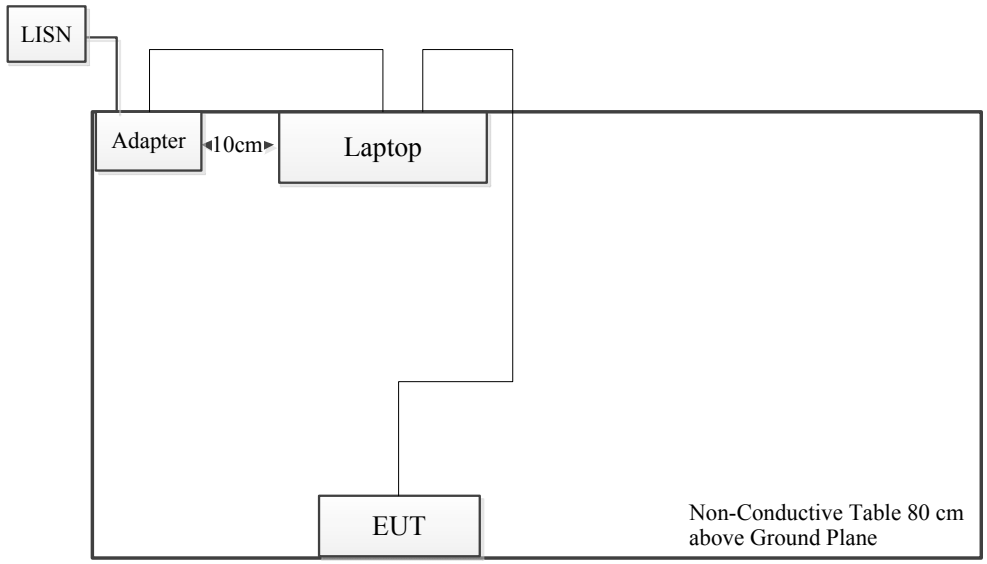
Manufacturer	Description	Model	Serial Number
Lenovo	Laptop 1(For CE)	T480S	AE-0113
Lenovo	Laptop 2(For RE)	T480S	AE-0114
HEWEISHUN	Adapter	BN073-A12012E	220617-27055ERFS1

3.4 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
DC Cable	No	No	2.8	Adapter	Laptop 1
USB Cable	No	No	1.9	EUT	Laptop 1/2

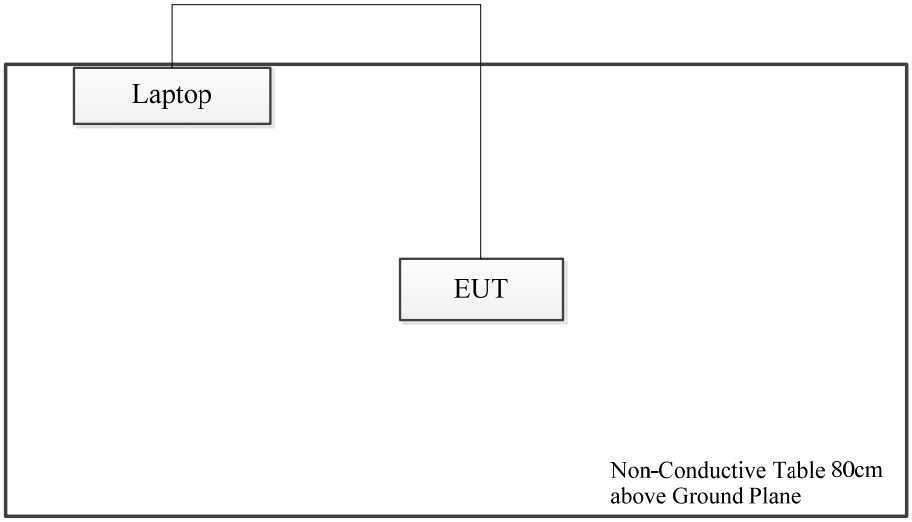
3.5 Block Diagram of Test Setup

AC line conducted emissions:

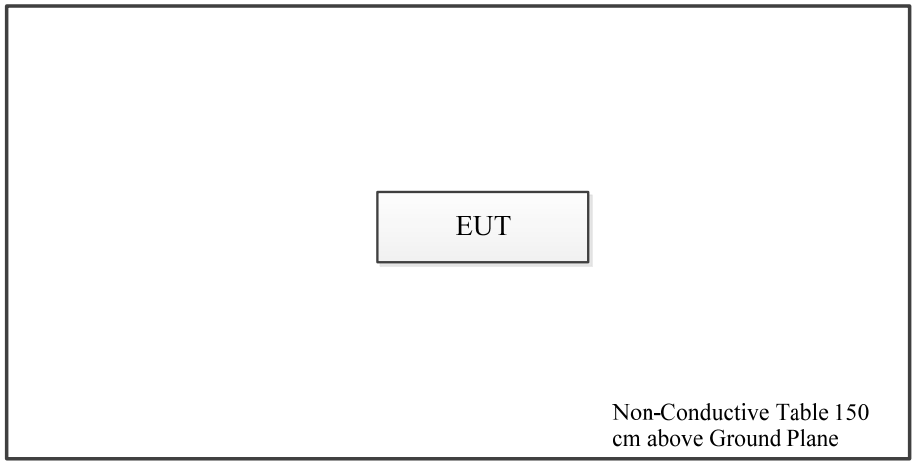


Spurious Emissions:

Below 1GHz:



Above 1GHz:



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 40~60G: 4.83dB, 60G~90G: 4.94dB, 90G-140G: 5.46dB, 140G-220G: 6.00dB, 220G-325G: 7.35dB
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.

RSS-Gen Clause 8.8

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50 μH / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.
For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

Table 4 – AC power-line conducted emissions limits

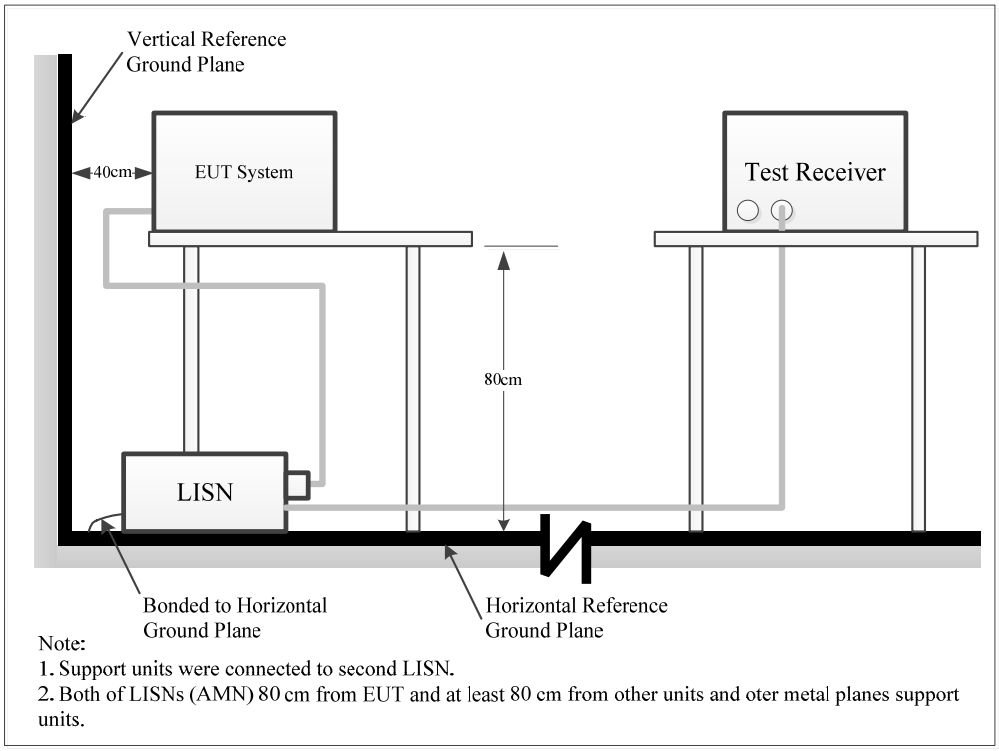
Frequency (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56[1]	56 to 46[1]
0.5 – 5	56	46
5 – 30	60	50

Note 1: The level decreases linearly with the logarithm of the frequency.

For an EUT with a permanent or detachable antenna operating between 150 kHz and 30 MHz, the AC power-line conducted emissions must be measured using the following configurations:
(a) Perform the AC power-line conducted emissions test with the antenna connected to determine compliance with the limits of table 4 outside the transmitter's fundamental emission band.

(b) Retest with a dummy load instead of the antenna to determine compliance with the limits of table 4 within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network that simulates the antenna in the fundamental frequency band.

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 C63.10-2020 measurement procedure. The specification used was with the FCC Part 15.207, RSS-Gen 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:	371O-10	Test Date:	2025/9/28
Test Site:	CE	Test Mode:	Transmitting
Tester:	Lane Sun	Test Result:	Pass

Environmental Conditions:

Temperature: (℃)	27.9	Relative Humidity: (%)	57	ATM Pressure: (kPa)	100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101614	2025/6/25	2026/6/24
Unknown	Coaxial Cable	RG 142	C-0200-05	2025/5/6	2026/5/5
R&S	EMI Test Receiver	ESCI	100224	2025/6/25	2026/6/24
Audix	Test Software	E3	191218 V9	N/A	N/A

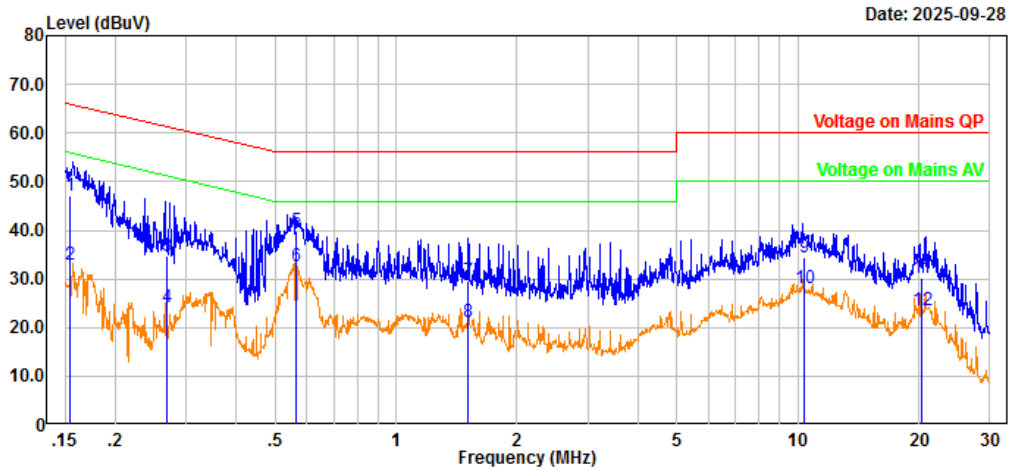
** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test data:

Low channel:

Project No.: 2502V16959E-RF
Port: Line
Test Mode: Transmitting
IF B/W 9kHz PK/AV

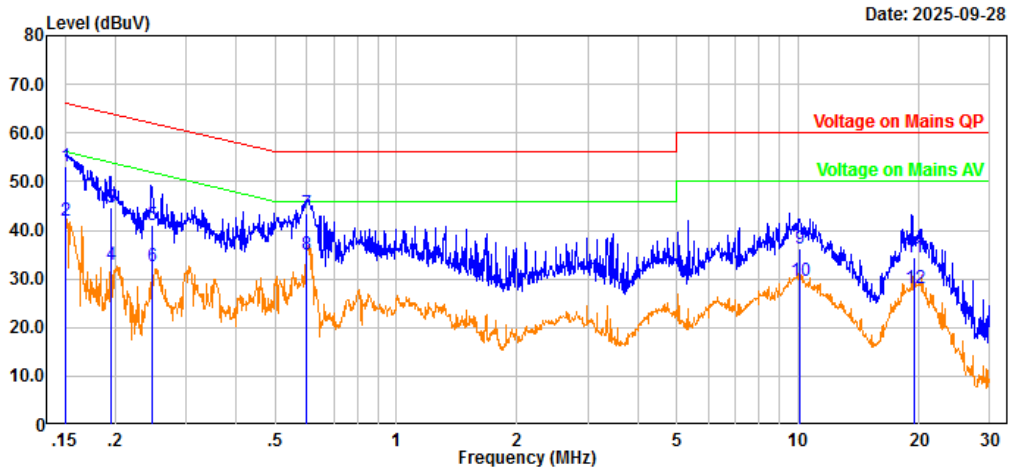
Serial No.: 3710-10
Tester: Lane Sun
Note: SRD Low Channel



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Measurement
1	0.155	35.82	11.16	46.98	65.74	18.76	QP
2	0.155	21.89	11.16	33.05	55.74	22.69	Average
3	0.270	24.03	10.75	34.78	61.13	26.35	QP
4	0.270	13.49	10.75	24.24	51.13	26.89	Average
5	0.563	29.26	10.55	39.81	56.00	16.19	QP
6	0.563	22.04	10.55	32.59	46.00	13.41	Average
7	1.514	18.39	11.07	29.46	56.00	26.54	QP
8	1.514	10.10	11.07	21.17	46.00	24.83	Average
9	10.343	23.77	10.59	34.36	60.00	25.64	QP
10	10.343	17.52	10.59	28.11	50.00	21.89	Average
11	20.240	18.85	11.32	30.17	60.00	29.83	QP
12	20.240	12.11	11.32	23.43	50.00	26.57	Average

Project No.: 2502V16959E-RF
Port: neutral
Test Mode: Transmitting
IF B/W 9kHz PK/AV

Serial No.: 3710-10
Tester: Lane Sun
Note: SRD Low Channel

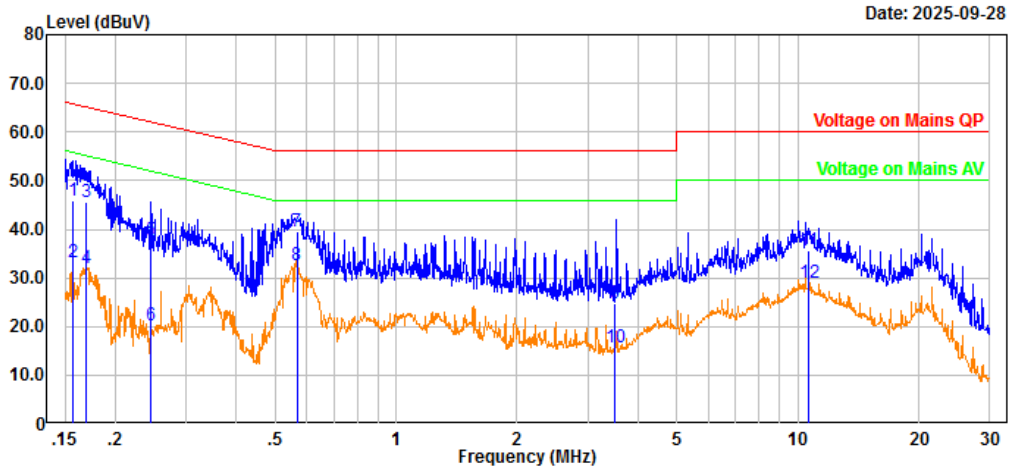


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Measurement
1	0.150	42.33	10.70	53.03	65.98	12.95	QP
2	0.150	31.36	10.70	42.06	55.98	13.92	Average
3	0.195	33.93	10.88	44.81	63.82	19.01	QP
4	0.195	22.01	10.88	32.89	53.82	20.93	Average
5	0.247	30.34	10.84	41.18	61.86	20.68	QP
6	0.247	21.76	10.84	32.60	51.86	19.26	Average
7	0.598	33.09	10.46	43.55	56.00	12.45	QP
8	0.598	24.56	10.46	35.02	46.00	10.98	Average
9	10.113	25.27	10.86	36.13	60.00	23.87	QP
10	10.113	18.73	10.86	29.59	50.00	20.41	Average
11	19.426	23.18	11.11	34.29	60.00	25.71	QP
12	19.426	16.93	11.11	28.04	50.00	21.96	Average

Middle channel:

Project No.: 2502V16959E-RF
Port: Line
Test Mode: Transmitting
IF B/W 9kHz PK/AV

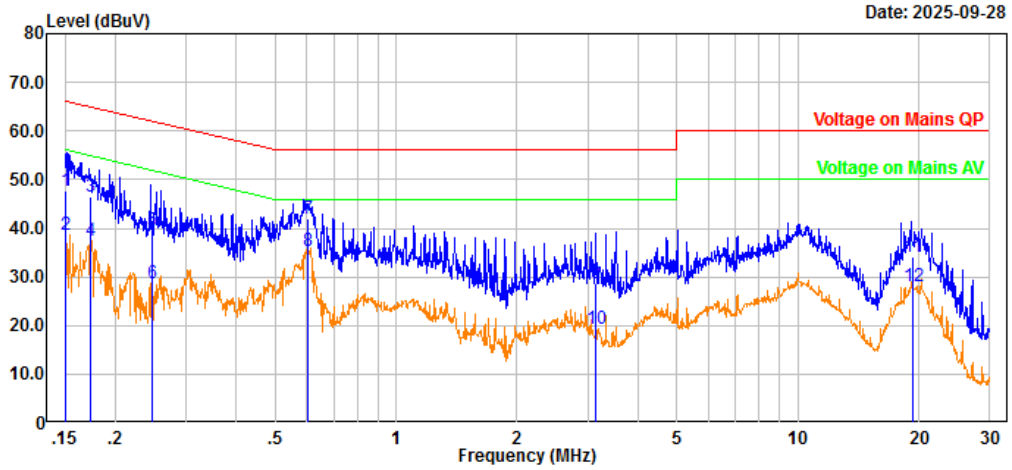
Serial No.: 3710-10
Tester: Lane Sun
Note: SRD Middle Channel



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Measurement
1	0.156	34.74	11.15	45.89	65.65	19.76	QP
2	0.156	22.11	11.15	33.26	55.65	22.39	Average
3	0.170	34.55	11.04	45.59	64.96	19.37	QP
4	0.170	21.01	11.04	32.05	54.96	22.91	Average
5	0.245	26.87	10.77	37.64	61.91	24.27	QP
6	0.245	9.37	10.77	20.14	51.91	31.77	Average
7	0.566	28.97	10.54	39.51	56.00	16.49	QP
8	0.566	21.95	10.54	32.49	46.00	13.51	Average
9	3.506	14.00	10.85	24.85	56.00	31.15	QP
10	3.506	4.91	10.85	15.76	46.00	30.24	Average
11	10.611	25.08	10.63	35.71	60.00	24.29	QP
12	10.611	18.48	10.63	29.11	50.00	20.89	Average

Project No.: 2502V16959E-RF
Port: neutral
Test Mode: Transmitting
IF B/W 9kHz PK/AV

Serial No.: 3710-10
Tester: Lane Sun
Note: SRD Middle Channel

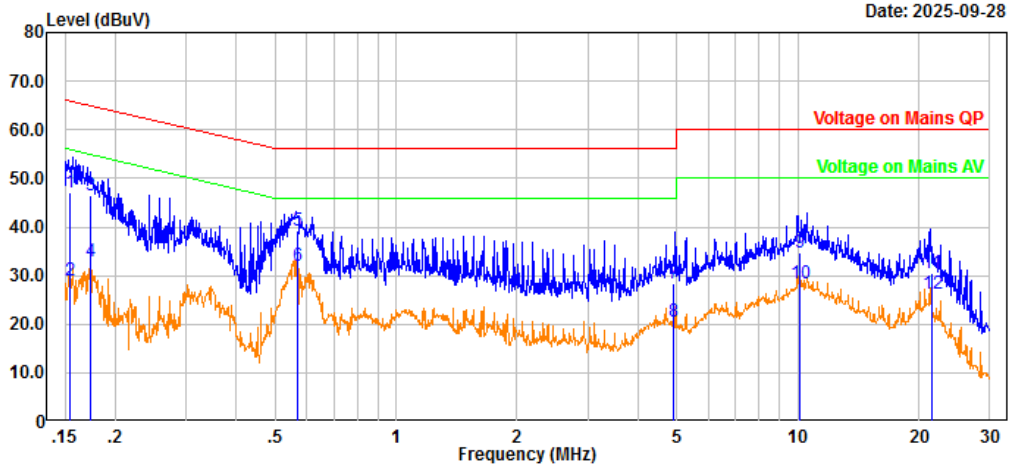


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Measurement
1	0.151	36.99	10.70	47.69	65.97	18.28	QP
2	0.151	27.83	10.70	38.53	55.97	17.44	Average
3	0.174	35.67	10.80	46.47	64.76	18.29	QP
4	0.174	26.72	10.80	37.52	54.76	17.24	Average
5	0.248	28.69	10.84	39.53	61.82	22.29	QP
6	0.248	17.74	10.84	28.58	51.82	23.24	Average
7	0.601	31.58	10.46	42.04	56.00	13.96	QP
8	0.601	24.83	10.46	35.29	46.00	10.71	Average
9	3.139	17.66	10.98	28.64	56.00	27.36	QP
10	3.139	8.47	10.98	19.45	46.00	26.55	Average
11	19.297	23.03	11.11	34.14	60.00	25.86	QP
12	19.297	17.06	11.11	28.17	50.00	21.83	Average

High channel:

Project No.: 2502V16959E-RF
Port: Line
Test Mode: Transmitting
IF B/W 9kHz PK/AV

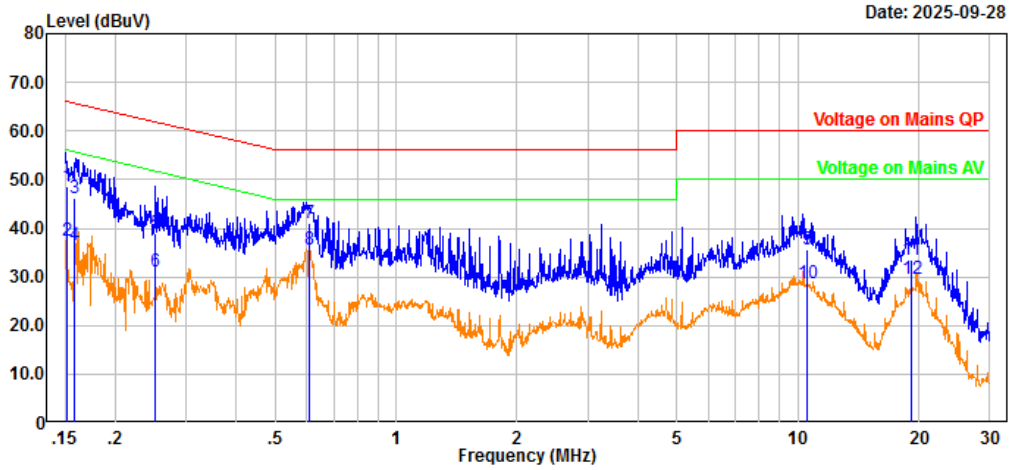
Serial No.: 3710-10
Tester: Lane Sun
Note: SRD High Channel



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Measurement
1	0.154	35.86	11.17	47.03	65.78	18.75	QP
2	0.154	17.74	11.17	28.91	55.78	26.87	Average
3	0.174	35.59	11.01	46.60	64.77	18.17	QP
4	0.174	21.75	11.01	32.76	54.77	22.01	Average
5	0.569	28.84	10.54	39.38	56.00	16.62	QP
6	0.569	21.46	10.54	32.00	46.00	14.00	Average
7	4.906	17.34	10.90	28.24	56.00	27.76	QP
8	4.906	9.68	10.90	20.58	46.00	25.42	Average
9	10.080	24.15	10.57	34.72	60.00	25.28	QP
10	10.080	17.71	10.57	28.28	50.00	21.72	Average
11	21.530	19.11	11.26	30.37	60.00	29.63	QP
12	21.530	15.03	11.26	26.29	50.00	23.71	Average

Project No.: 2502V16959E-RF
Port: neutral
Test Mode: Transmitting
IF B/W 9kHz PK/AV

Serial No.: 3710-10
Tester: Lane Sun
Note: SRD High Channel



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Measurement
1	0.151	37.78	10.71	48.49	65.92	17.43	QP
2	0.151	26.63	10.71	37.34	55.92	18.58	Average
3	0.158	35.34	10.73	46.07	65.58	19.51	QP
4	0.158	25.86	10.73	36.59	55.58	18.99	Average
5	0.251	28.21	10.83	39.04	61.74	22.70	QP
6	0.251	20.14	10.83	30.97	51.74	20.77	Average
7	0.609	30.49	10.46	40.95	56.00	15.05	QP
8	0.609	25.06	10.46	35.52	46.00	10.48	Average
9	10.565	24.63	10.88	35.51	60.00	24.49	QP
10	10.565	17.69	10.88	28.57	50.00	21.43	Average
11	19.102	22.53	11.10	33.63	60.00	26.37	QP
12	19.102	18.49	11.10	29.59	50.00	20.41	Average

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.

RSS-210, Annex B, B.10

Devices operating in the frequency bands listed in table B2 may be used for any application and shall comply with the following requirements:

(a) The field strength of fundamental and harmonic emissions measured at 3 m shall not exceed the limits in table B2.

Table B2: Field strength limits for fundamental and harmonic emissions

Fundamental frequency (MHz)	Field strength (mV/m) of fundamental emissions	Field strength (mV/m) of harmonic emissions
902-928	50	0.5
2400-2483.5	50	0.5
5725-5875	50	0.5
24000-24250	250	2.5

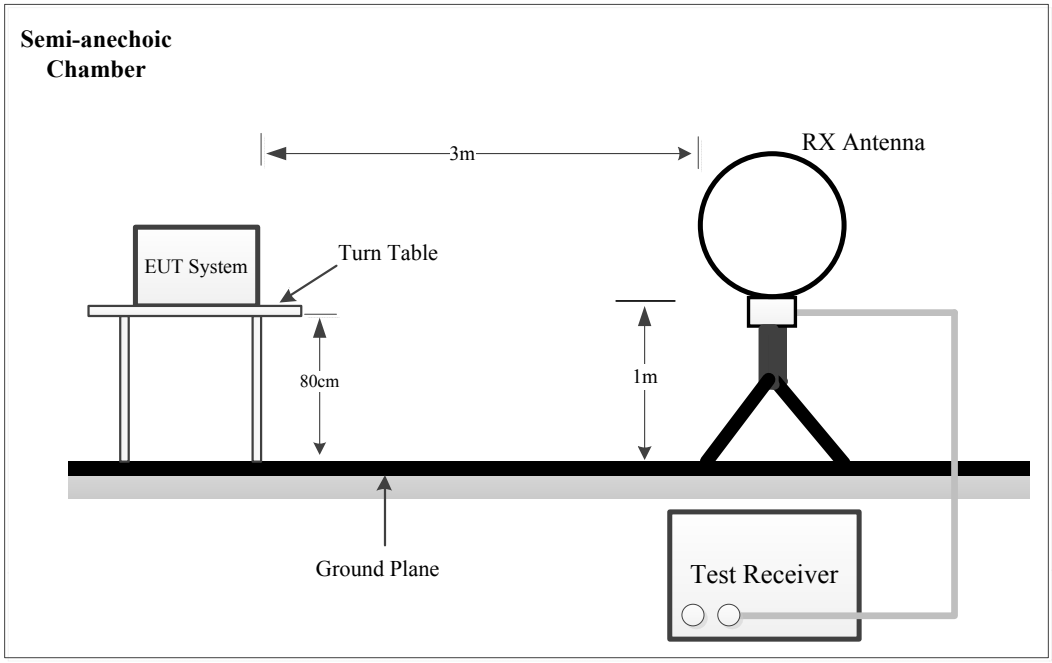
The field strength shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using a CISPR quasi-peak detector.

(b) Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emission or to the general field strength limits listed in RSS-Gen, whichever is less stringent.

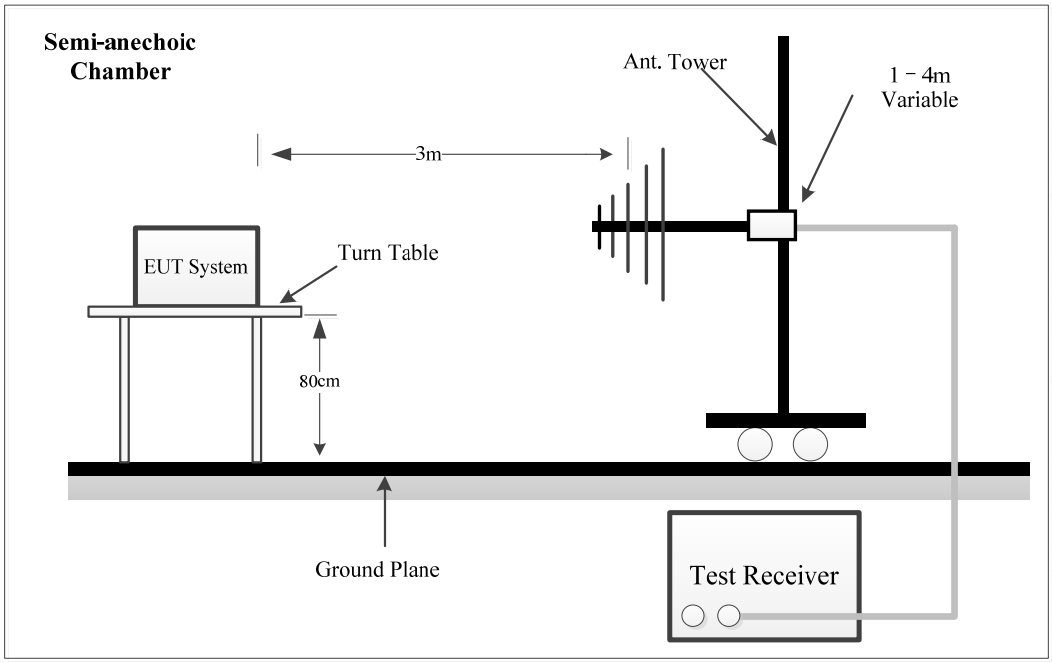
(c) The provisions of RSS-Gen regarding pulsed operation do not apply to measurements performed in the 902-928 MHz frequency range.

4.2.2 EUT Setup

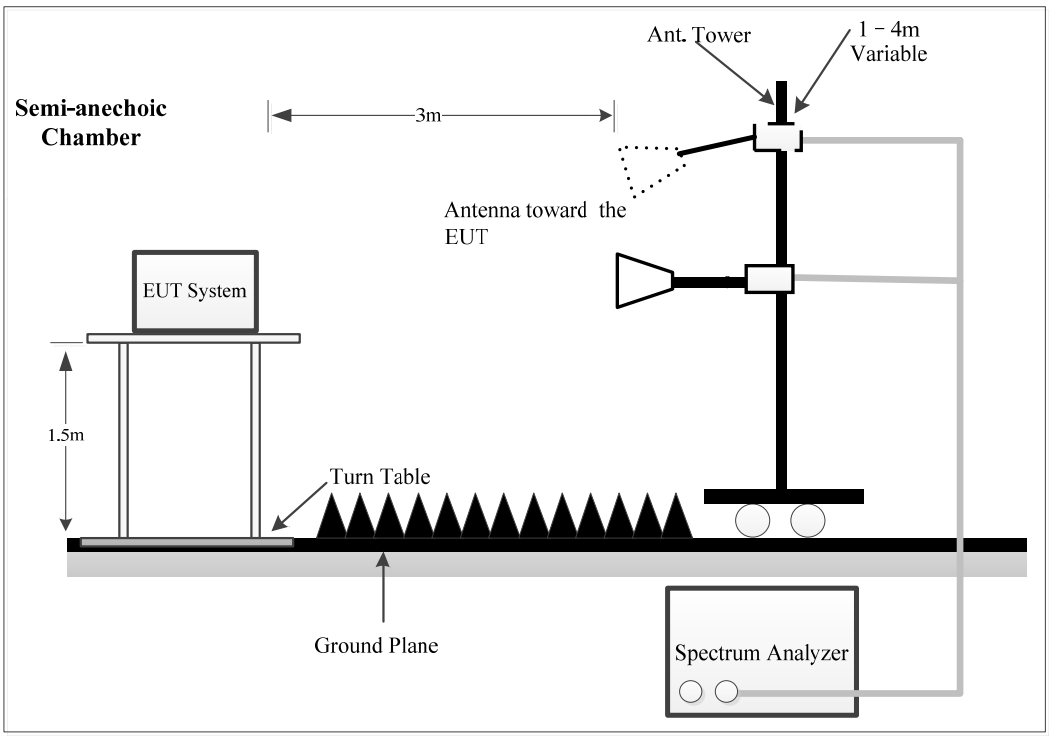
9kHz~30MHz:



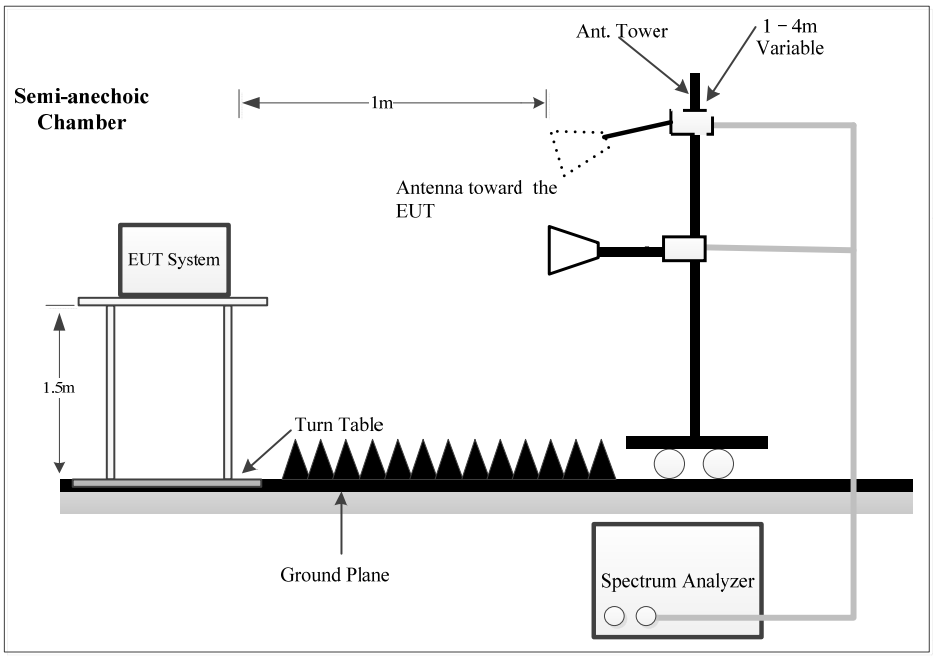
30MHz-1GHz:



1GHz-18 GHz:



18-25GHz:



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 test was performed in the semi-anechoic chamber, using the setup accordance with the ANSI C63.10-2020. The specification used was the 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 25 GHz.

9kHz-1000MHz:

Frequency Range	Measurement	RBW	Video B/W	IF B/W	Detector
9 kHz-150 kHz	QP/AV	200 Hz	1 kHz	200 Hz	QP/AV
150 kHz-30 MHz	QP/AV	9 kHz	30 kHz	9 kHz	QP/AV
30 MHz-1000 MHz	Peak	120 kHz	500 kHz	/	PK
	QP	/	/	120 kHz	QP

Above 1GHz:
Pre-scan:

Frequency Range	Measurement	RBW	Video B/W	Detector
Above 1 GHz	Peak	1MHz	3 MHz	PK
	AV	1MHz	5kHz	PK

Final measurement for emission identified during the pre-scan:

Frequency Range	Measurement	RBW	Video B/W	Detector
Above 1 GHz	Peak	1MHz	3 MHz	PK
	AV	1MHz	10 Hz	PK

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 required in Quasi-peak measurement for frequency range of 9 kHz-1 GHz except 9-90 kHz, 110-490 kHz, employing an average measurement, peak and Average measurement for frequencies above 1 GHz.

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.

For Radiated 18-25GHz test, which was performed at 1.0 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 1.0m
Distance extrapolation Factor =20 log (specific distance [3m]/test distance [1.0m]) dB= 9.54 dB

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

4.2.5 Corrected Amplitude & Margin Calculation

$E_{Log} = 20 \times \log_{10}(E_{Linear})$

E_{Linear} is the field strength of the emission, in μV/m
E_{Log} is the field strength of the emission, in dBμV/m

For 9kHz-30MHz test, test distance is 3m, extrapolation limit shall be calculated using Equation:

$E_{limit\text{-}measure} = E_{limit\text{-}Standard} + 40 \times \log_{10} (d_{standard}/d_{measure})$

The basic equation except 18-25GHz test is as follows:
Factor = Antenna Factor + Cable Loss- Amplifier Gain

For Radiated 18-25GHz test:
Factor = Antenna Factor + Cable Loss- Distance extrapolation Factor

Result = Reading + Factor

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

For the spurious emission below 30MHz, the limit was convert from dBμA/m to dBμV/m by adding 51.5 dB.

4.2.6 Test Result

Serial Number:	371O-2	Test Date:	Below 1GHz: 2025/8/11 Above 1GHz: 2025/8/7
Test Site:	Chamber 10m, Chamber B	Test Mode:	Transmitting
Tester:	Bill Yang, Leo Xiao	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.9~25.8	Relative Humidity: (%)	40~47	ATM Pressure: (kPa)	99.7~100

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
9kHz~1000MHz					
BACL	Active Loop Antenna	1313-1A	4060411	2025/6/26	2028/6/25
Sunol Sciences	Hybrid Antenna	JB3	A060611-1	2023/9/6	2026/9/5
Narda	Coaxial Attenuator	779-6dB	04269	2023/9/6	2026/9/5
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2025/7/1	2026/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-04	2025/7/1	2026/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2025/7/1	2026/6/30
Sonoma	Amplifier	310N	185914	2024/8/26	2025/8/25
R&S	EMI Test Receiver	ESR3	102453	2024/8/26	2025/8/25
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
Xinhang Macrowave	Coaxial Cable	XH750A-N/J-SMA/J-10M	20231117004 #0001	2024/11/17	2025/11/16
Xinhang Macrowave	Coaxial Cable	XH360A-2.92/J-2.92/J-6M-A	20231208001 #0001	2024/12/9	2025/12/8
AH	Preamplifier	PAM-0118P	469	2025/4/11	2026/4/10
AH	Preamplifier	PAM-1840VH	191	2024/9/6	2025/9/5
R&S	Spectrum Analyzer	FSV40	101944	2024/9/5	2025/9/4
Audix	Test Software	E3	191218 V9	N/A	N/A
Decentest	Multiplex Switch Test Control Set & Filter Switch Unit	DT7220SCU & DT7220FCU	DC79902 & DC79905	2024/8/27	2025/8/26

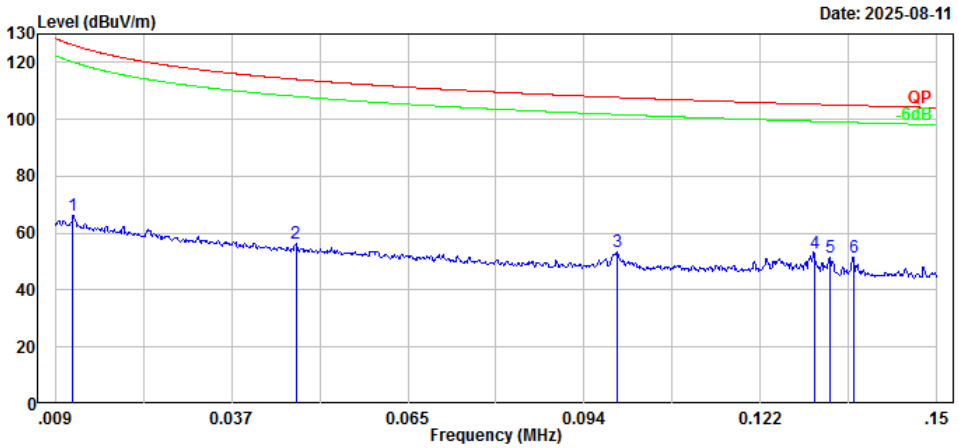
** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

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

1) 9kHz-30MHz:
Three antenna orientations (parallel, perpendicular, and ground-parallel) was measured, the worst orientations was below:
Low channel:

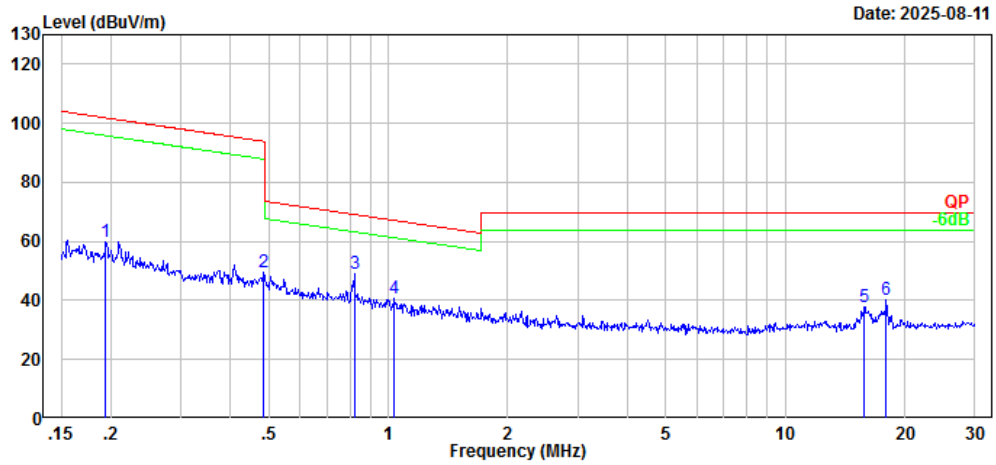
```
Project No.: 2502V16959E-RF                Serial No.: 3710-2
Polarization: Parallel                         Tester: Bill Yang
   Test Mode: Transmitting
        Note: SRD
              RBW:200Hz VBW:1kHz
```



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.012	61.32	4.96	66.28	126.15	59.87	Peak
2	0.047	56.56	-0.21	56.35	114.07	57.72	Peak
3	0.099	58.38	-4.99	53.39	107.70	54.31	Peak
4	0.130	59.97	-6.82	53.15	105.30	52.15	Peak
5	0.133	58.55	-6.97	51.58	105.14	53.56	Peak
6	0.137	58.71	-7.18	51.53	104.89	53.36	Peak

Project No.: 2502V16959E-RF
Polarization: Parallel
Test Mode: Transmitting
Note: SRD
RBW:9kHz VBW:30kHz

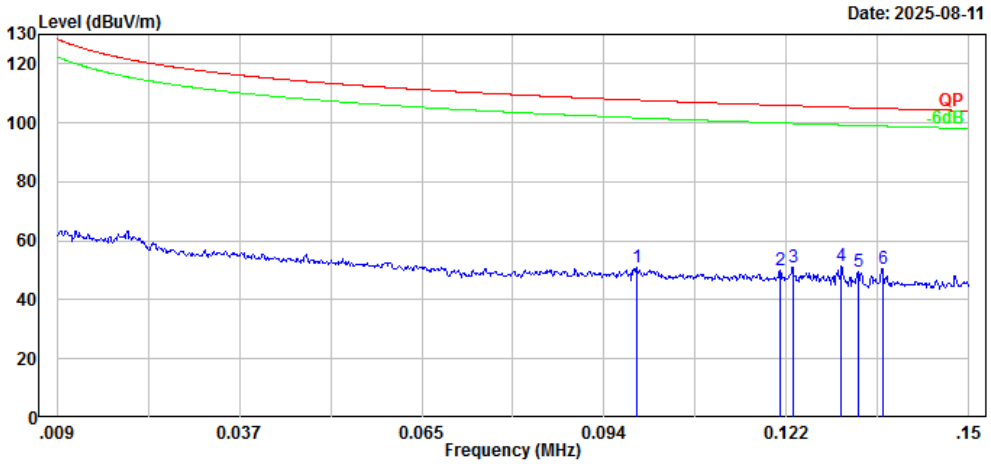
Serial No.: 3710-2
Tester: Bill Yang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.194	70.33	-10.56	59.77	101.83	42.06	Peak
2	0.486	69.65	-20.31	49.34	93.87	44.53	Peak
3	0.822	73.99	-24.79	49.20	69.21	20.01	Peak
4	1.037	66.97	-26.07	40.90	67.15	26.25	Peak
5	15.801	68.30	-30.31	37.99	69.54	31.55	Peak
6	17.944	70.77	-30.44	40.33	69.54	29.21	Peak

Middle channel:

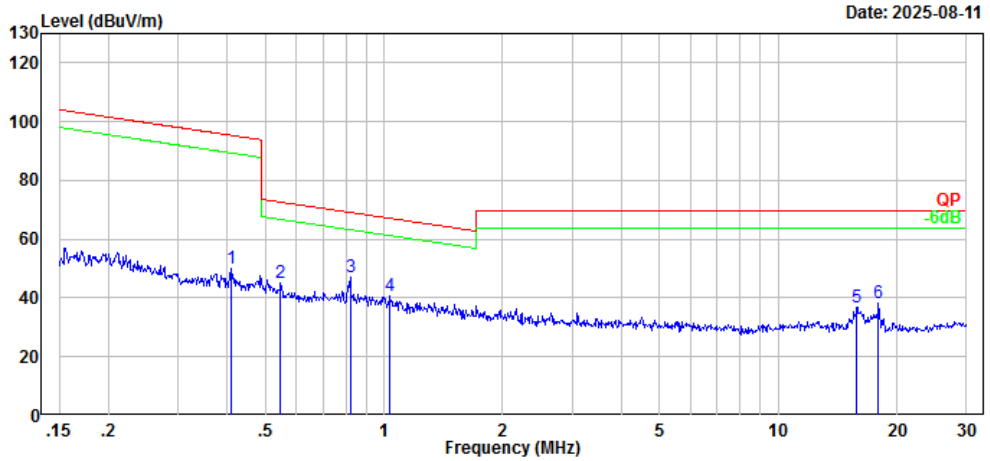
```
Project No.: 2502V16959E-RF                    Serial No.: 3710-2
Polarization: Parallel                             Tester: Bill Yang
   Test Mode: Transmitting
        Note: SRD Middle Channel
              RBW:200Hz VBW:1kHz
```



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.099	55.80	-4.97	50.83	107.72	56.89	Peak
2	0.121	56.17	-6.26	49.91	105.96	56.05	Peak
3	0.123	57.45	-6.37	51.08	105.82	54.74	Peak
4	0.130	58.13	-6.81	51.32	105.31	53.99	Peak
5	0.133	56.55	-6.97	49.58	105.14	55.56	Peak
6	0.137	57.72	-7.19	50.53	104.89	54.36	Peak

Project No.: 2502V16959E-RF
Polarization: Parallel
Test Mode: Transmitting
Note: SRD Middle Channel
RBW:9kHz VBW:30kHz

Serial No.: 3710-2
Tester: Bill Yang

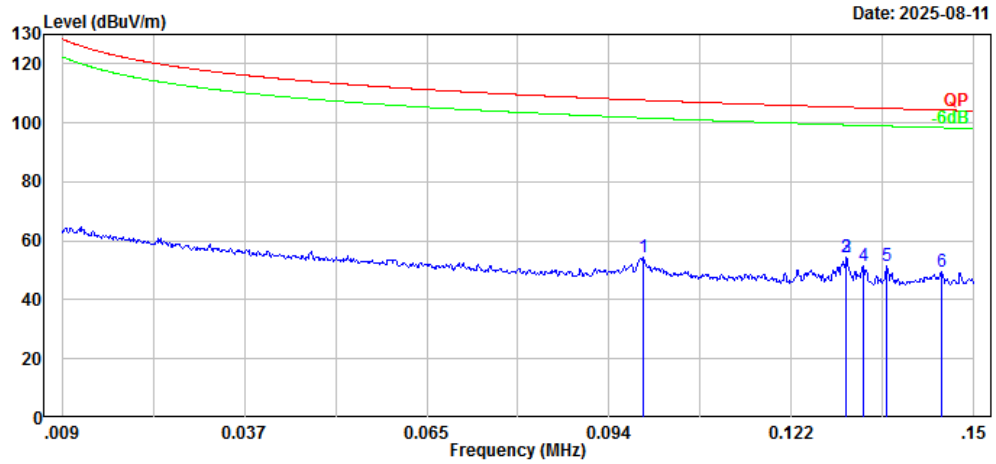


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.410	68.77	-18.92	49.85	95.34	45.49	Peak
2	0.546	66.26	-21.28	44.98	72.83	27.85	Peak
3	0.822	71.99	-24.79	47.20	69.21	22.01	Peak
4	1.037	66.97	-26.07	40.90	67.15	26.25	Peak
5	15.801	67.30	-30.31	36.99	69.54	32.55	Peak
6	17.944	68.77	-30.44	38.33	69.54	31.21	Peak

High channel:

Project No.: 2502V16959E-RF
Polarization: Parallel
Test Mode: Transmitting
Note: SRD High Channel
RBW:200Hz VBW:1kHz

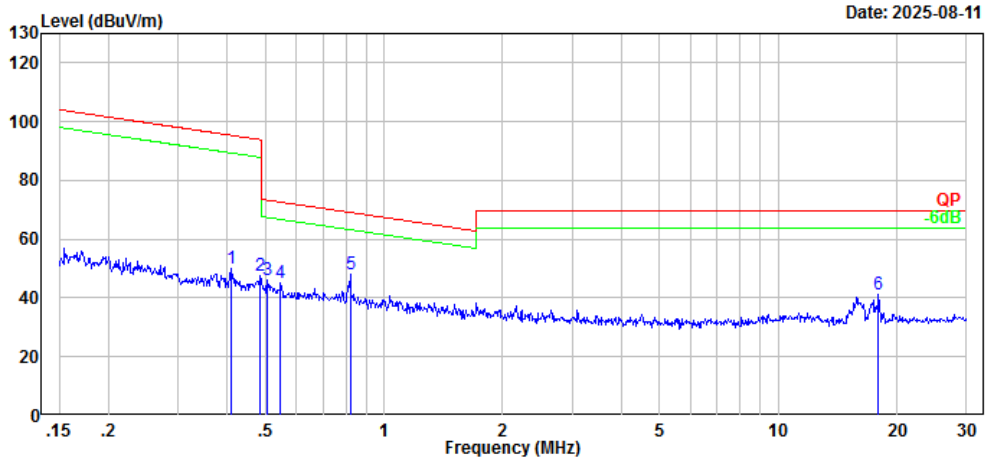
Serial No.: 3710-2
Tester: Bill Yang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.099	59.38	-4.99	54.39	107.70	53.31	Peak
2	0.130	61.13	-6.81	54.32	105.31	50.99	Peak
3	0.130	61.13	-6.81	54.32	105.31	50.99	Peak
4	0.133	58.55	-6.97	51.58	105.14	53.56	Peak
5	0.136	58.51	-7.18	51.33	104.90	53.57	Peak
6	0.145	57.04	-7.67	49.37	104.37	55.00	Peak

Project No.: 2502V16959E-RF
Polarization: Parallel
Test Mode: Transmitting
Note: SRD High Channel
RBW:9kHz VBW:30kHz

Serial No.: 3710-2
Tester: Bill Yang

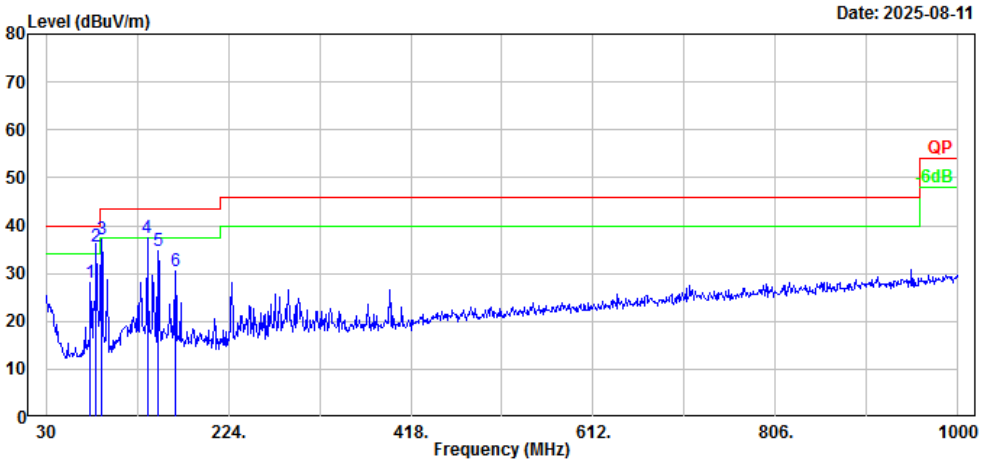


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.410	68.77	-18.92	49.85	95.34	45.49	Peak
2	0.486	67.65	-20.31	47.34	93.87	46.53	Peak
3	0.507	66.75	-20.68	46.07	73.49	27.42	Peak
4	0.546	66.26	-21.28	44.98	72.83	27.85	Peak
5	0.822	72.99	-24.79	48.20	69.21	21.01	Peak
6	17.944	71.77	-30.44	41.33	69.54	28.21	Peak

2) 30MHz-1GHz:
Low channel:

Project No.: 2502V16959E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: SRD Low Channel
RBW:120kHz VBW:500kHz

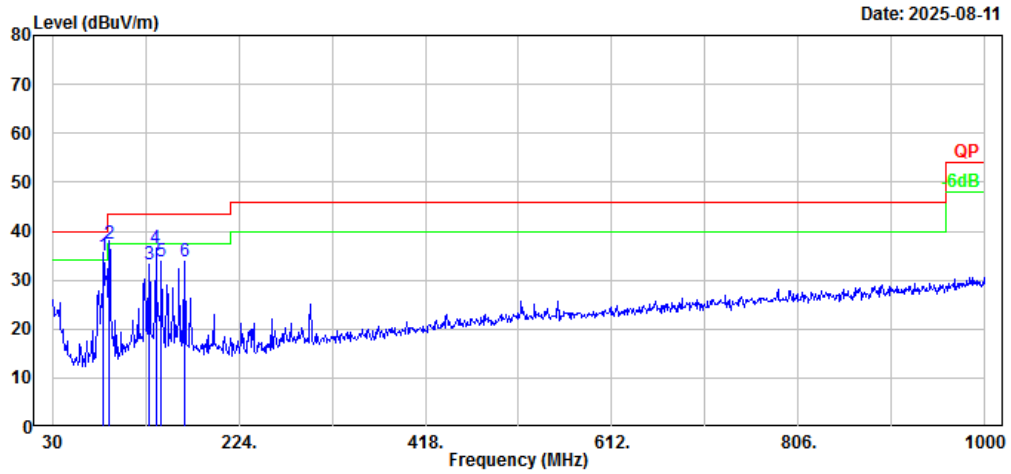
Serial No.: 3710-2
Tester: Bill Yang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	77.53	42.19	-14.24	27.95	40.00	12.05	Peak
2	83.35	50.00	-14.53	35.47	40.00	4.53	QP
3	89.17	51.49	-14.33	37.16	43.50	6.34	Peak
4	137.67	46.43	-9.07	37.36	43.50	6.14	Peak
5	149.31	44.53	-9.93	34.60	43.50	8.90	Peak
6	167.74	40.90	-10.41	30.49	43.50	13.01	Peak

Project No.: 2502V16959E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: SRD Low Channel
RBW:120kHz VBW:500kHz

Serial No.: 3710-2
Tester: Bill Yang

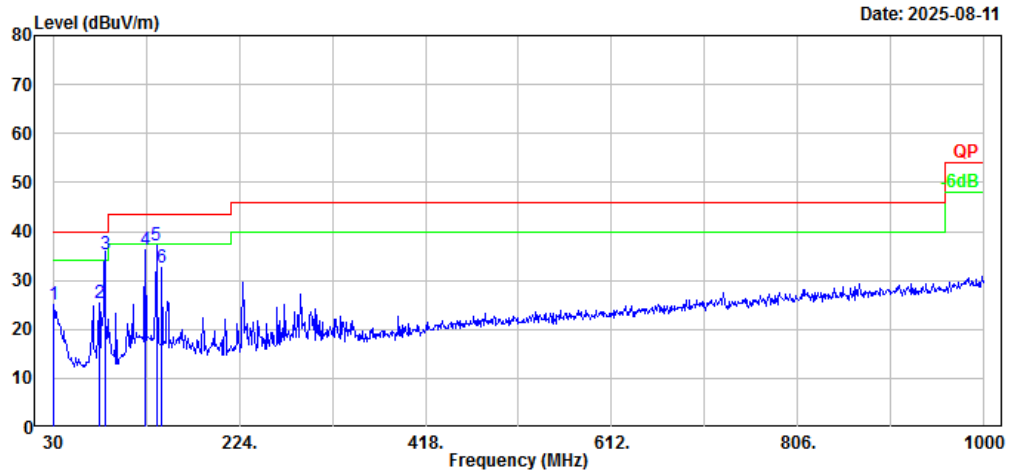


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	83.35	49.60	-14.53	35.07	40.00	4.93	QP
2	89.17	51.79	-14.33	37.46	43.50	6.04	QP
3	130.88	41.54	-8.29	33.25	43.50	10.25	Peak
4	137.67	45.49	-9.07	36.42	43.50	7.08	Peak
5	143.49	43.27	-9.55	33.72	43.50	9.78	Peak
6	167.74	44.14	-10.41	33.73	43.50	9.77	Peak

Middle channel:

Project No.: 2502V16959E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: SRD Middle Channel
RBW:120kHz VBW:500kHz

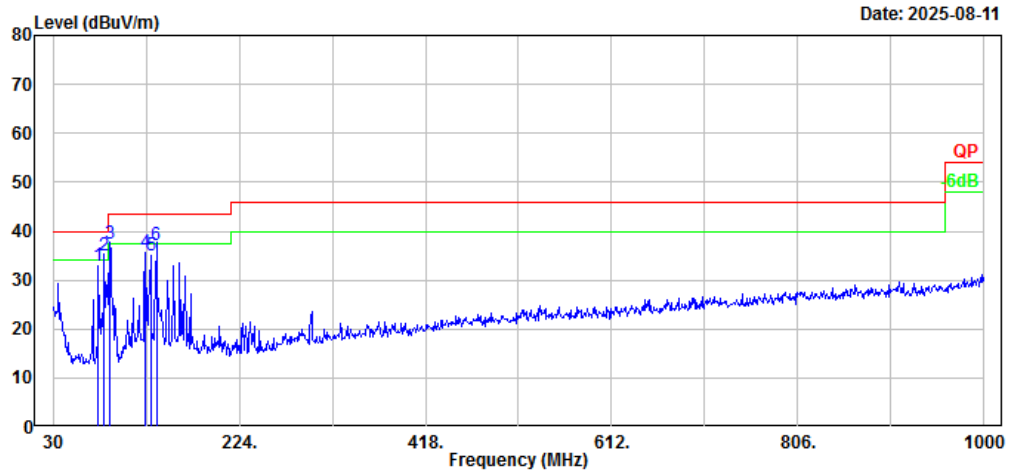
Serial No.: 3710-2
Tester: Bill Yang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	30.00	27.03	-1.86	25.17	40.00	14.83	Peak
2	78.50	39.58	-14.36	25.22	40.00	14.78	Peak
3	84.32	49.80	-14.52	35.28	40.00	4.72	QP
4	126.03	44.54	-8.36	36.18	43.50	7.32	Peak
5	137.67	46.20	-9.07	37.13	43.50	6.37	Peak
6	143.49	42.18	-9.55	32.63	43.50	10.87	Peak

Project No.: 2502V16959E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: SRD Middle Channel
RBW:120kHz VBW:500kHz

Serial No.: 3710-2
Tester: Bill Yang

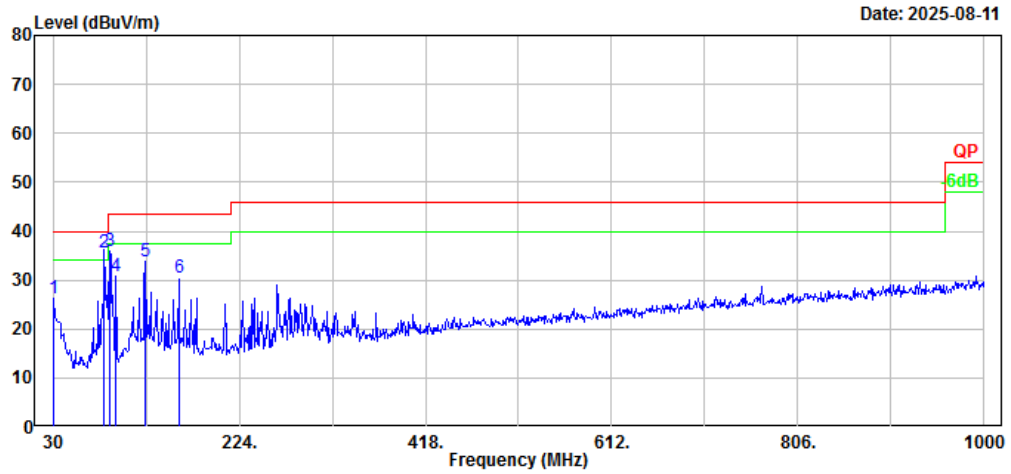


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	77.53	47.00	-14.24	32.76	40.00	7.24	Peak
2	83.35	49.50	-14.53	34.97	40.00	5.03	QP
3	89.17	51.69	-14.33	37.36	43.50	6.14	QP
4	126.03	44.04	-8.36	35.68	43.50	7.82	Peak
5	131.85	43.56	-8.40	35.16	43.50	8.34	Peak
6	137.67	46.20	-9.07	37.13	43.50	6.37	QP

High channel:

Project No.: 2502V16959E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: SRD High Channel
RBW:120kHz VBW:500kHz

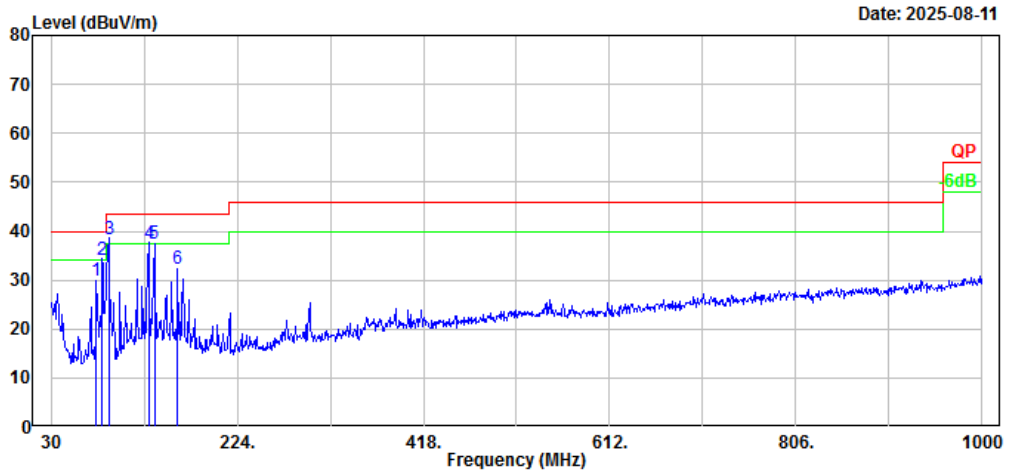
Serial No.: 3710-2
Tester: Bill Yang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	30.00	28.06	-1.86	26.20	40.00	13.80	Peak
2	83.35	50.20	-14.53	35.67	40.00	4.33	QP
3	89.17	50.15	-14.33	35.82	43.50	7.68	Peak
4	95.96	44.03	-13.23	30.80	43.50	12.70	Peak
5	126.03	42.29	-8.36	33.93	43.50	9.57	Peak
6	160.95	40.04	-9.70	30.34	43.50	13.16	Peak

Project No.: 2502V16959E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: SRD High Channel
RBW:120kHz VBW:500kHz

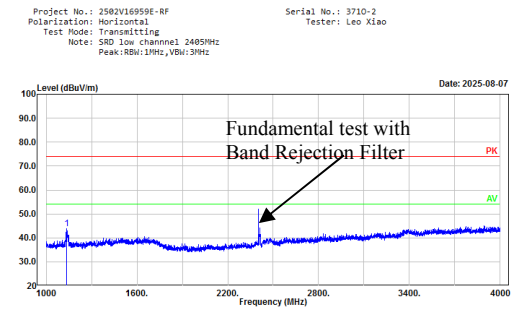
Serial No.: 3710-2
Tester: Bill Yang



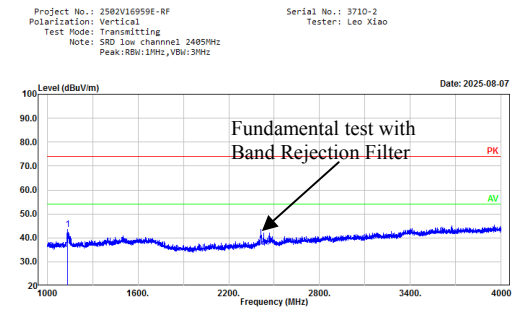
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	77.53	44.14	-14.24	29.90	40.00	10.10	Peak
2	83.35	48.50	-14.53	33.97	40.00	6.03	QP
3	90.14	52.61	-14.28	38.33	43.50	5.17	QP
4	131.85	45.71	-8.40	37.31	43.50	6.19	QP
5	137.67	46.42	-9.07	37.35	43.50	6.15	Peak
6	161.92	42.08	-9.79	32.29	43.50	11.21	Peak

3) 1-18GHz:

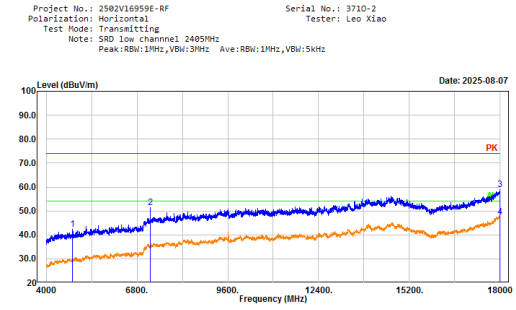
Low Channel, Horizontal	Low Channel, Vertical



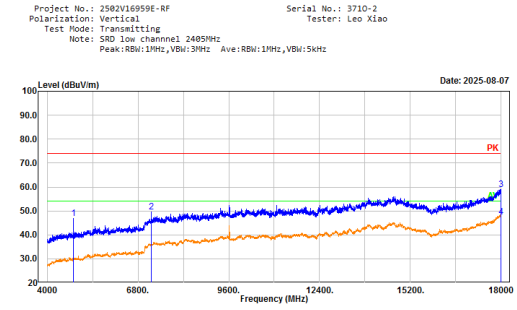
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	1135.00	51.71	-7.81	43.90	74.00	30.10	Peak



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	1135.60	51.24	-7.81	43.43	74.00	30.57	Peak



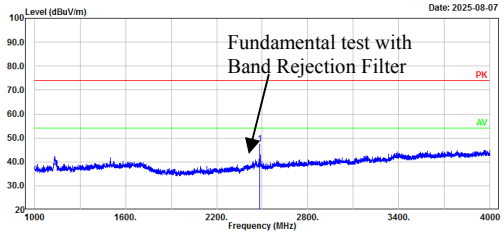
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	4810.00	49.79	-7.52	42.27	74.00	31.73	Peak
2	7215.00	54.75	-3.39	51.36	74.00	22.64	Peak
3	17983.20	47.73	11.10	58.83	74.00	15.17	Peak
4	17983.20	36.47	11.10	47.57	54.00	6.43	Average



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	4810.00	54.52	-7.52	47.00	74.00	27.00	Peak
2	7215.00	52.85	-3.39	49.46	74.00	24.54	Peak
3	17986.00	47.81	11.10	58.91	74.00	15.09	Peak
4	17986.00	36.35	11.10	47.45	54.00	6.55	Average

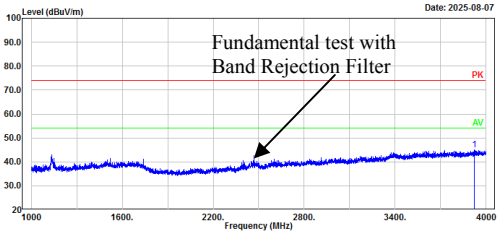
Middle Channel, Horizontal	Middle Channel, Vertical

Project No.: 2502V16959E-RF Serial No.: 371O-2
Polarization: Horizontal Tester: Leo Xiao
Test Mode: Transmitting
Note: SRD middle channnel 2440MHz
Peak:RBW:1MHz,VBW:3MHz



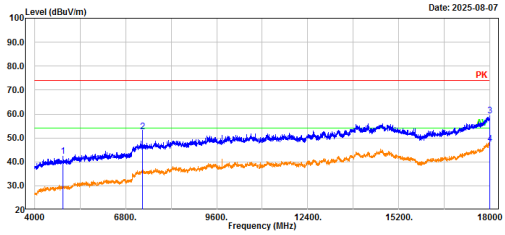
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	2485.60	54.97	-7.63	47.34	74.00	26.66	Peak

Project No.: 2502V16959E-RF Serial No.: 371O-2
Polarization: Vertical Tester: Leo Xiao
Test Mode: Transmitting
Note: SRD middle channnel 2440MHz
Peak:RBW:1MHz,VBW:3MHz



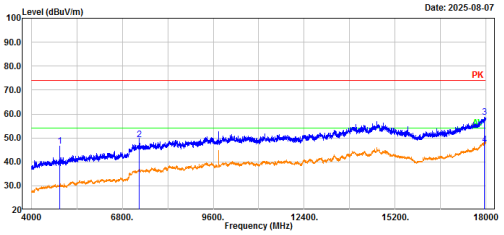
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	3920.80	48.66	-3.64	45.02	74.00	28.98	Peak

Project No.: 2502V16959E-RF Serial No.: 371O-2
Polarization: Horizontal Tester: Leo Xiao
Test Mode: Transmitting
Note: SRD middle channnel 2440MHz
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	4880.00	49.82	-7.55	42.27	74.00	31.73	Peak
2	7320.00	55.58	-2.90	52.68	74.00	21.32	Peak
3	17991.60	48.18	11.13	59.31	74.00	14.69	Peak
4	17991.60	36.39	11.13	47.52	54.00	6.48	Average

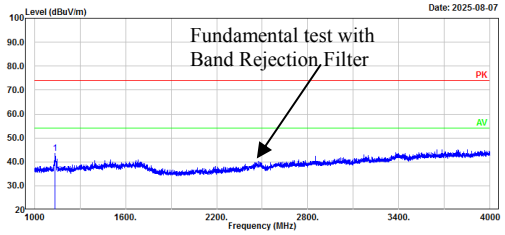
Project No.: 2502V16959E-RF Serial No.: 371O-2
Polarization: Vertical Tester: Leo Xiao
Test Mode: Transmitting
Note: SRD middle channnel 2440MHz
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	4880.00	54.23	-7.55	46.68	74.00	27.32	Peak
2	7320.00	52.26	-2.90	49.36	74.00	24.64	Peak
3	17946.80	47.78	10.86	58.64	74.00	15.36	Peak
4	17946.80	36.34	10.86	47.20	54.00	6.80	Average

High Channel, Horizontal

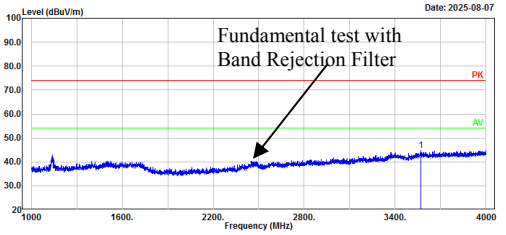
Project No.: 2502V16959E-RF Serial No.: 371O-2
Polarization: Horizontal Tester: Leo Xiao
Test Mode: Transmitting
Note: SRD high channnel 2475MHz
Peak:RBW:1MHz,VBW:3MHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	1135.00	51.22	-7.81	43.41	74.00	30.59	Peak

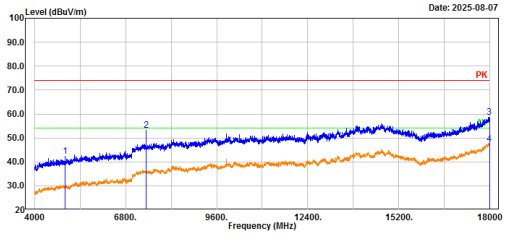
High Channel, Vertical

Project No.: 2502V16959E-RF Serial No.: 371O-2
Polarization: Vertical Tester: Leo Xiao
Test Mode: Transmitting
Note: SRD high channnel 2475MHz
Peak:RBW:1MHz,VBW:3MHz



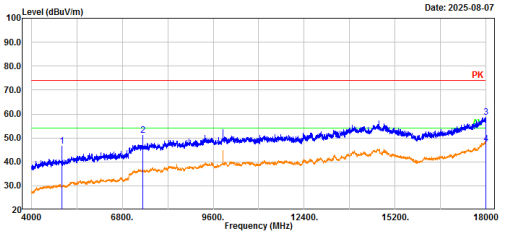
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	3567.40	49.56	-4.68	44.88	74.00	29.12	Peak

Project No.: 2502V16959E-RF Serial No.: 371O-2
Polarization: Horizontal Tester: Leo Xiao
Test Mode: Transmitting
Note: SRD high channnel 2475MHz
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	4950.00	49.81	-7.43	42.38	74.00	31.62	Peak
2	7425.00	55.75	-2.41	53.34	74.00	20.66	Peak
3	17980.40	47.51	11.07	58.58	74.00	15.42	Peak
4	17980.40	36.42	11.07	47.49	54.00	6.51	Average

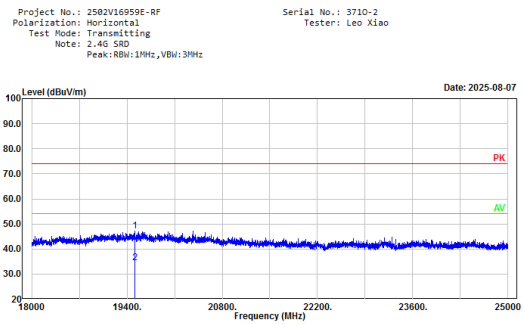
Project No.: 2502V16959E-RF Serial No.: 371O-2
Polarization: Vertical Tester: Leo Xiao
Test Mode: Transmitting
Note: SRD high channnel 2475MHz
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	4950.00	54.05	-7.43	46.62	74.00	27.38	Peak
2	7425.00	53.38	-2.41	50.97	74.00	23.03	Peak
3	17983.20	47.63	11.10	58.73	74.00	15.27	Peak
4	17983.20	36.27	11.10	47.37	54.00	6.63	Average

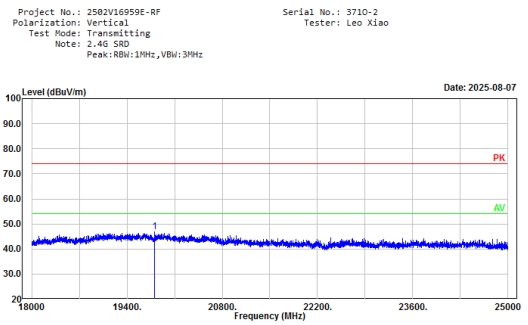
18-25GHz:
No Emission was detected in the range 18-25GHz, test was performed on the mode and channel which with the maximum power.

Low Channel, Horizontal



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	19512.00	46.86	0.28	47.14	74.00	26.86	Peak
2	19512.00	34.34	0.28	34.62	54.00	19.38	Average

Low Channel, Vertical

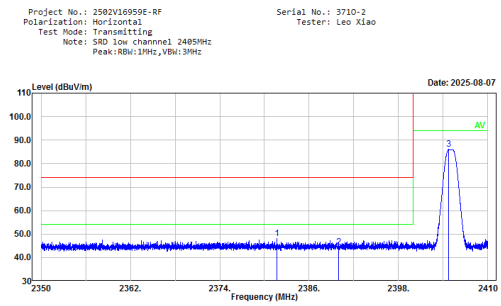


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	19804.60	46.69	0.22	46.91	74.00	27.09	Peak

Fundamental strength and Bandedge:

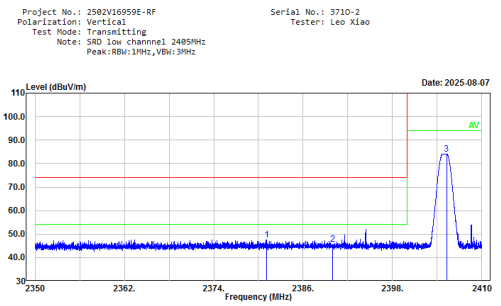
Low Channel, Horizontal	Low Channel, Vertical
Middle Channel, Horizontal	Middle Channel, Vertical

Low Channel, Horizontal



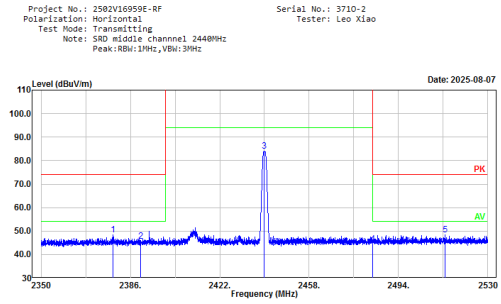
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	2381.67	48.74	-0.48	48.26	74.00	25.74	Peak
2	2390.00	45.08	-0.47	44.61	74.00	29.39	Peak
3	2404.77	86.45	-0.45	86.00	114.00	28.00	Peak

Low Channel, Vertical



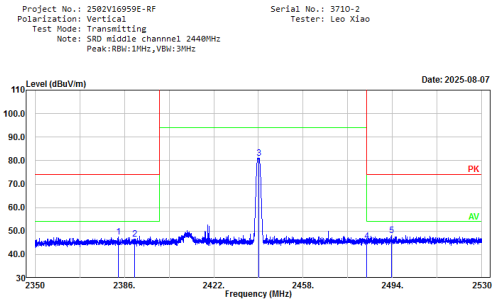
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	2381.14	48.03	-0.47	47.56	74.00	26.44	Peak
2	2390.00	46.31	-0.47	45.84	74.00	28.16	Peak
3	2405.25	84.63	-0.45	84.18	114.00	29.82	Peak

Middle Channel, Horizontal



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	2379.12	48.82	-0.48	48.34	74.00	25.66	Peak
2	2390.00	46.32	-0.47	45.85	74.00	28.15	Peak
3	2439.75	84.28	-0.38	83.90	114.00	30.10	Peak
4	2483.50	44.75	-0.30	44.45	74.00	29.55	Peak
5	2512.61	48.49	-0.20	48.29	74.00	25.71	Peak

Middle Channel, Vertical

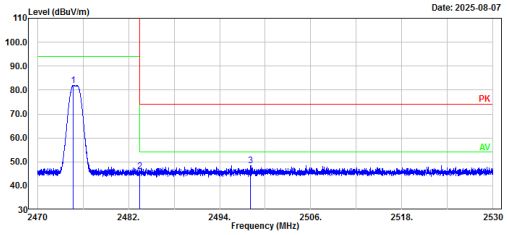


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	2383.62	48.00	-0.47	47.53	74.00	26.47	Peak
2	2390.00	47.19	-0.47	46.72	74.00	27.28	Peak
3	2440.22	81.28	-0.38	80.90	114.00	33.10	Peak
4	2483.50	45.91	-0.30	45.61	74.00	28.39	Peak
5	2493.57	48.44	-0.29	48.15	74.00	25.85	Peak

High Channel, Horizontal	High Channel, Vertical

Project No.: 2502V16959E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: SRD high channnel 2475MHz
Peak:RBW:1MHz,VBW:3MHz

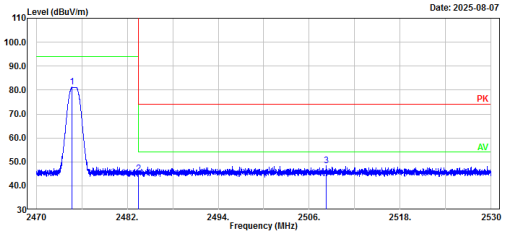
Serial No.: 371O-2
Tester: Leo Xiao



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	2474.73	82.28	-0.32	81.96	114.00	32.04	Peak
2	2483.50	46.17	-0.30	45.87	74.00	28.13	Peak
3	2498.09	48.80	-0.28	48.52	74.00	25.48	Peak

Project No.: 2502V16959E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: SRD high channnel 2475MHz
Peak:RBW:1MHz,VBW:3MHz

Serial No.: 371O-2
Tester: Leo Xiao



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	2474.74	81.50	-0.32	81.18	114.00	32.82	Peak
2	2483.50	45.40	-0.30	45.10	74.00	28.90	Peak
3	2508.28	48.56	-0.23	48.33	74.00	25.67	Peak

4.3 20 dB Emission Bandwidth and 99% Occupied 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.

RSS-Gen Clause 6.7

The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.
In some cases, the "x dB bandwidth" is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.
The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:
The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

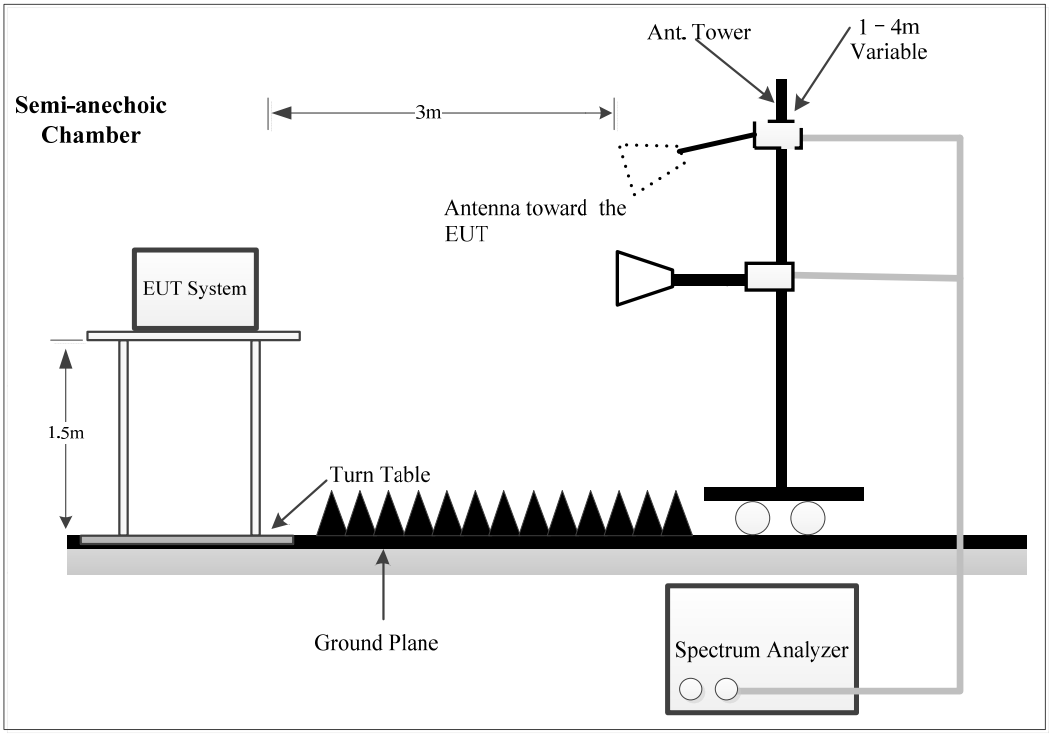
The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.

The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

4.3.2 EUT Setup



4.3.3 Test Procedure

According to ANSI C63.10-2020 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.

According to ANSI C63.10-2020 Section 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:
a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.6.2.

d) Step a) through step c) might require iteration to adjust within the specified range.
e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

4.3.4 Test Result

Serial Number:	371O-2	Test Date:	2025/8/7
Test Site:	Chamber B	Test Mode:	Transmitting
Tester:	Leo Xiao	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	23.9	Relative Humidity: (%)	40	ATM Pressure: (kPa)	99.7

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	XH750A-N/J-SMA/J-10M	20231117004 #0001	2024/11/17	2025/11/16
AH	Preamplifier	PAM-0118P	469	2025/4/11	2026/4/10
R&S	Spectrum Analyzer	FSV40	101589	2024/9/5	2025/9/4

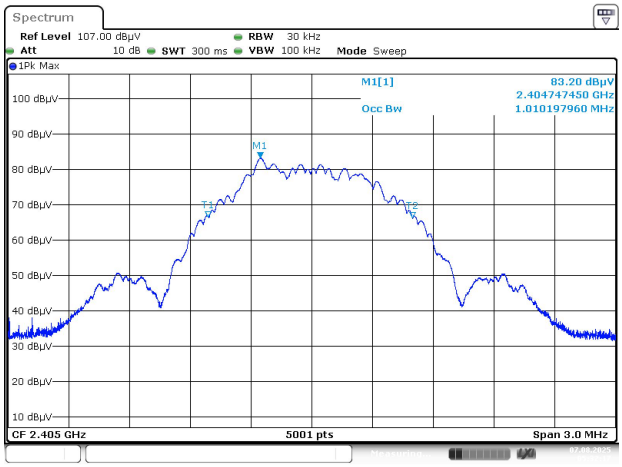
** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Test Channel (MHz)	20 dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Result
Low Channel	1126.6	1010.2	Pass
Middle Channel	1137.4	1017.0	Pass
High Channel	1135.4	1013.0	Pass

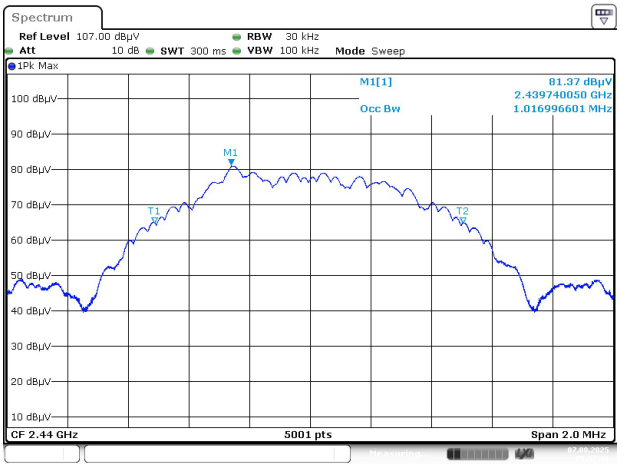
Note: the 20 dB bandwidth of the emission and 99% Occupied Bandwidth is contained within the operation frequency band. Please refer to the below plots.

99% Occupied Bandwidth_ Low Channel



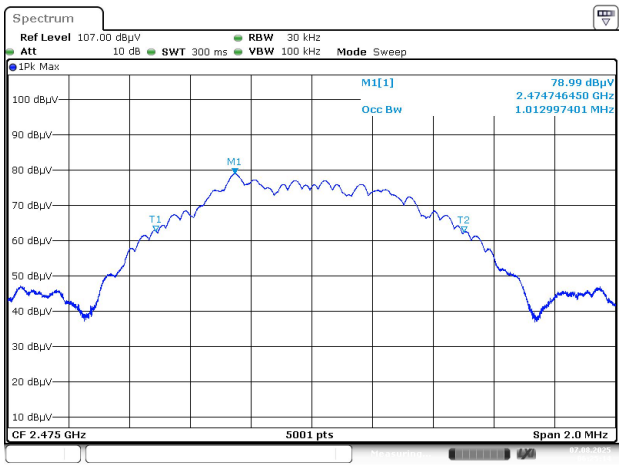
ProjectNo.:2502V16959E-RF Tester:Leo Xiao
Date: 7.AUG.2025 05:32:17

99% Occupied Bandwidth_ Middle Channel



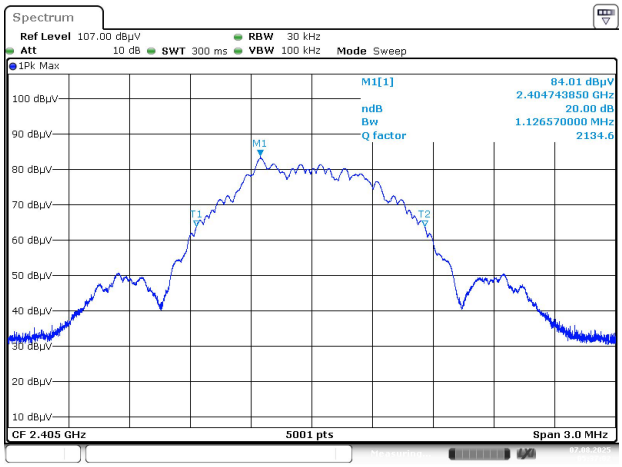
ProjectNo.:2502V16959E-RF Tester:Leo Xiao
Date: 7.AUG.2025 05:57:49

99% Occupied Bandwidth_ High Channel



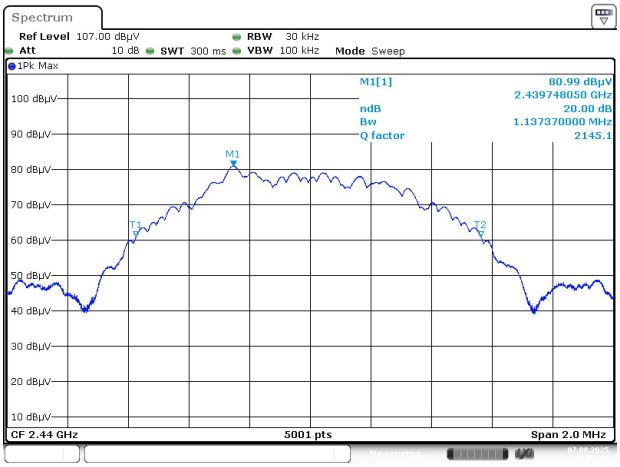
ProjectNo.:2502V16959E-RF Tester:Leo Xiao
Date: 7.AUG.2025 06:25:14

20 dB Bandwidth _ Low Channel



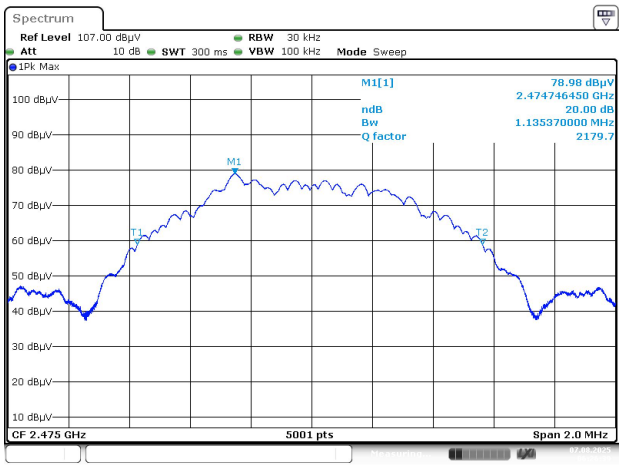
ProjectNo.:2502V16959E-RF Tester:Leo Xiao
Date: 7.AUG.2025 05:37:02

20 dB Bandwidth _ Middle Channel



ProjectNo.:2502V16959E-RF Tester:Leo Xiao
Date: 7.AUG.2025 06:04:44

20 dB Bandwidth _ High Channel



ProjectNo.:2502V16959E-RF Tester:Leo Xiao
Date: 7.AUG.2025 06:26:40

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.

RSS-Gen Clause 6.8

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).
When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.
The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.
For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:
This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

4.4.2 Judgment

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

EXHIBIT A - EUT PHOTOGRAPHS

Please refer to the attachment 502V16959E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 502V16959E-RF-INP EUT INTERNAL PHOTOGRAPHS

EXHIBIT B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment 502V16959E-RF-00B-TSP TEST SETUP PHOTOGRAPHS.

EXHIBIT C - RF EXPOSURE EVALUATION

SAR test exclusion

Applicable Standard

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

According to KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

The max EIRP including tune-up tolerance is -9.0dBm, Conducted power is -10.2dBm(0.10mW)
(Maximum E-Field is 86dBuV/m@3m= -9.2dBm EIRP).
EIRP(dBm)=Field Strength of Fundamental(dBuV/m)-95.2
Conducted power= EIRP-Antenna Gain

[(max. power of channel, mW)/(min. test separation distance, mm)][√f(GHz)]
=0.10/5*(√2.75) = 0.03< 3.0

Note:
the max conducted power including tune-up tolerance was declared by manufacturer.
BLE/ SRD can't transmit simultaneously.

Result: Compliant. The stand-alone SAR evaluation is not necessary.

Exemption Limits For Routine Evaluation- SAR Evaluation

Applicable Standard

RSS-102, Issue 6, Clause 6.3:

Devices operating at or below the applicable output power levels (adjusted for tune-up tolerance) specified in table 11, based on the separation distance, are exempt from SAR evaluation. The separation distance, defined as the distance between the user and/or bystander and the antenna and/or radiating element of the device or the outer surface of the device, shall be less than or equal to 20 cm for these exemption limits to apply.

Table 11: Power limits for exemption from routine SAR evaluation based on the separation distance

Frequency (MHz)	≤ 5 mm (mW)	10 mm (mW)	15 mm (mW)	20 mm (mW)	25 mm (mW)	30 mm (mW)	35 mm (mW)	40 mm (mW)	45 mm (mW)	> 50 mm (mW)
≤ 300	45	116	139	163	189	216	246	280	319	362
450	32	71	87	104	124	147	175	208	248	296
835	21	32	41	54	72	96	129	172	228	298
1900	6	10	18	33	57	92	138	194	257	323
2450	3	7	16	32	56	89	128	170	209	245
3500	2	6	15	29	50	72	94	114	134	158
5800	1	5	13	23	32	41	54	74	102	128

Measurement Result:

The max EIRP including tune-up tolerance is -9.0dBm(0.13mW)
(Maximum E-Field is 86dBuV/m@3m= -9.2dBm EIRP).
EIRP(dBm)=Field Strength of Fundamental(dBuV/m)-95.2

The exemption power(P) limits for routine evaluation in 2405-2475MHz is:
(2475-2450)/(3500-2450)=(P-3)/(2-3)
=>P=2.98 mW@2475 MHz
> 0.13mW

Note: the max conducted power including tune-up tolerance was declared by manufacturer.
BLE/SRD can't transmit simultaneously.

So the stand-alone SAR evaluation can be exempted.

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