



TEST REPORT

Applicant Name : Shenzhen wanbo Technology Co., Ltd.
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Report Number: 2504R28083E-RF-00B-M1
FCC ID: 2A7PIWPB84

Test Standard (s)

FCC PART 15.247

Sample Description

Product Type: Wanbo Projector
Model No.: WPB84, WPB21, WPB81, WPC24, WPA34, WPA23, WPL11, WPD24, WPC14, WPC34, WPA101, WPC024
Trade Mark: wanbo
Date Received: 2025-03-25
Date of Test: 2025-03-31 to 2025-05-10
Report Date: 2025-05-12

Test Result:	The EUT complied with the standards above.
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Prepared and Checked By:

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Matt Liang
EMC Engineer

Approved By:

Bob Liao

Bob Liao
EMC Engineer

Note: This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA, or any agency of the Federal Government. The information marked "#" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included but no need marked. This report cannot be reproduced except in full, without prior written approval of the Company. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
Rev.00	2504R28083E-RF-00B	Original Report	2025-05-08
Rev.01	2504R28083E-RF-00B-M1	Corrected description of report.	2025-05-12

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Wanbo Projector
Tested Model	WPB84
Multiple Model	WPB21, WPB81, WPC24, WPA34, WPA23, WPL11, WPD24, WPC14, WPC34, WPA101, WPC024
Model Difference [#]	The difference between the above models is only the model name. Please refer to DOS letter for details. The applicant provided model "WPB84" for testing.
Voltage Range [#]	DC 19V from Adapter
Adapter 1 Information [#]	Model: NSA180EC-19094701 Input: 100-240V~50/60Hz 2.5A Output: 19.0V $\pm$ 9.47A 180.0W Max AC Cable(1.0m), DC Cable(1.5m)
Adapter 2 Information [#]	Model: SOY-1900947-454 Input: 100-240V~50/60Hz 2.5A Max Output: 19.0V $\pm$ 9.47A 179.93W AC Cable(1.0m), DC Cable(1.5m)

Frequency Range	BLE 1M/2M: 2402-2480MHz
Maximum Conducted Peak Output Power	7.99dBm
Modulation Technique	GFSK
Antenna Specification [#]	4.83dBi(It is provided by the applicant.)
Sample Serial Number	30DC-1 (For CE&RE Test),30DC-2 (For RF Conducted Test) (Assigned by ATC, Shenzhen)
Sample/EUT Status	Good condition

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

And KDB 558074 D01 15.247 Meas Guidance v05r02.

Unless otherwise stated there are no any additions to, deviations, or exclusions from the method.

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the Floor 1, KuMaKe Building, Dongzhou Community, Guangming Street, Guangming District, Shenzhen, Guangdong, China.

Accredited by American Association for Laboratory Accreditation (A2LA).The Certificate Number is 4297.01.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF Frequency		0.064×10^{-7}
RF output power, conducted		0.3 dB
Unwanted Emission, conducted		1.2 dB
AC Power Lines Conducted Emissions		2.7 dB
Emissions, Radiated	9kHz - 30MHz	2.1 dB
	30MHz - 1GHz	4.3 dB
	1GHz - 18GHz	4.9 dB
	18GHz - 26.5GHz	5.2 dB
Temperature		1°C
Humidity		7%
Supply voltages		0.4%

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For BLE, 40 channels are provided to testing:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	2402	11	2422	21	2442	31	2462
2	2404	12	2424	22	2444	32	2464
...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...
9	2418	19	2438	29	2458	39	2478
10	2420	20	2440	30	2460	40	2480

EUT was tested with Channel 0, 19 and 39.

EUT Exercise Software and Power Level[#]

Exercise Software:	Secure CRT
Power Level:	0x40

Note: The information in the above table is provided by the applicant.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

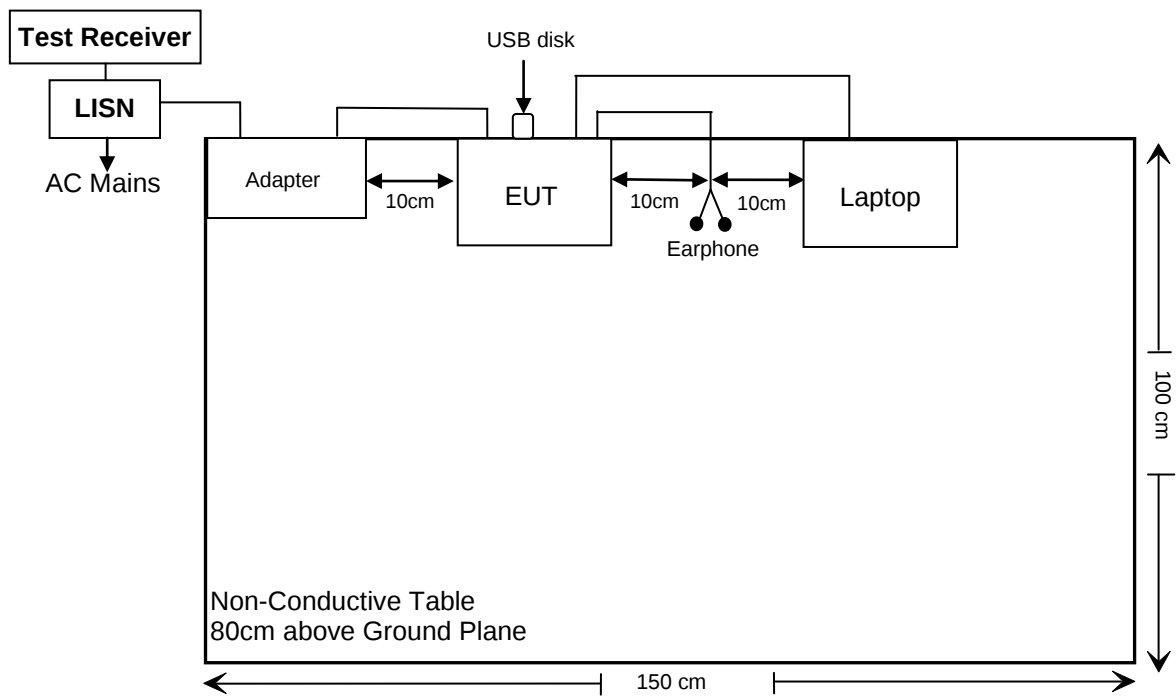
Manufacturer	Description	Model	Serial Number
LENOVO	Laptop	ThinkPad x240	SL10F31638JS
Kinston	USB disk	Unknown	Unknown

External I/O Cable

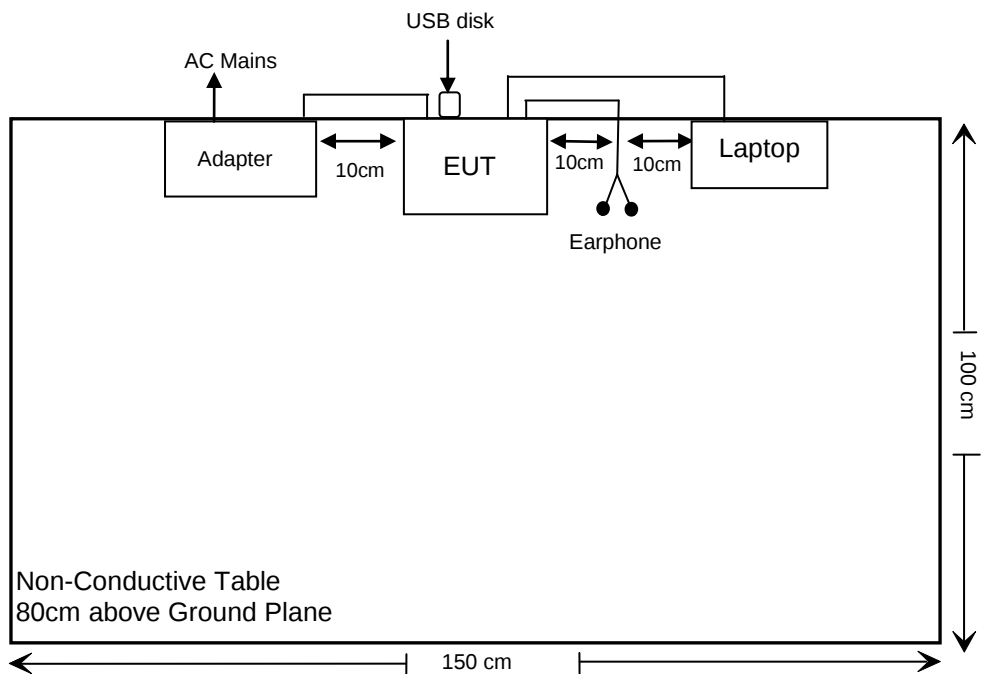
Cable Description	Shielding Type	Length (m)	From Port	To
AC Cable	NO	1.0	AC Mains	Adapter
DC Cable	NO	1.5	Adapter	EUT
Earphone Cable	NO	1.0	EUT	Earphone
HDMI cable	YES	0.5	Laptop	EUT

Block Diagram of Test Setup

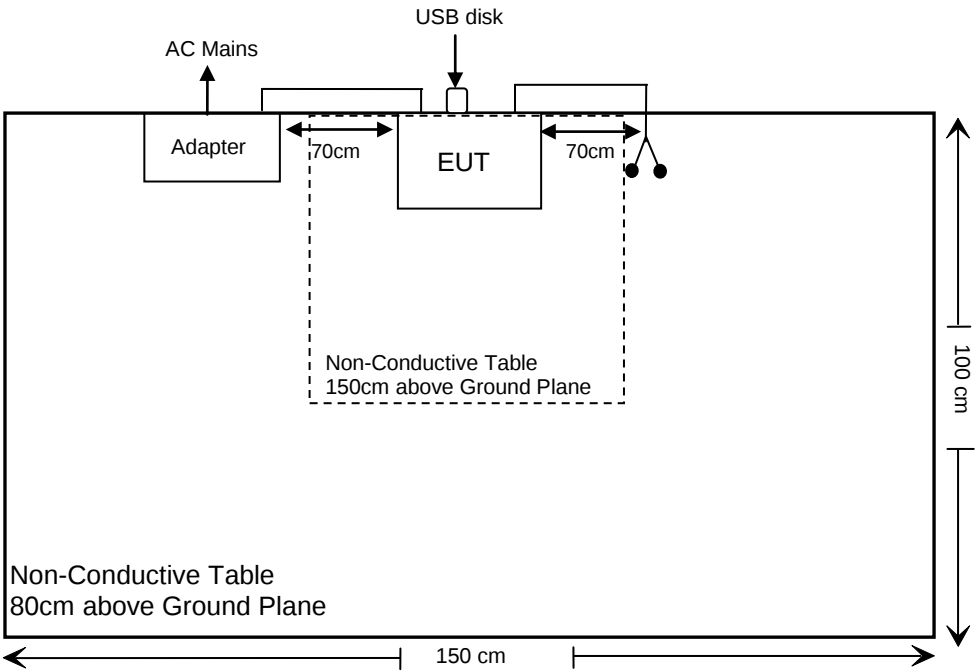
For Conducted Emission:



For Radiated Emission Below 1GHz:



For Radiated Emission Above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310, §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Radiated Spurious Emissions	Compliance
§15.247(a)(2)	6 dB Emission Bandwidth & Occupied Bandwidth	Compliance
§15.247(b)(3)	Maximum Conducted Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

Note 1: For AC line conducted emissions, the maximum output power mode and channel was tested.

Note 2: For Radiated Spurious Emissions 9kHz~1GHz, the maximum output power mode and channel was tested. And according to 5G Wi-Fi report test result, the worst case adapter 1 was selected to test.

Note 3: For Radiated Spurious Emissions 1GHz~25GHz, all tests used the adapter 1.

Note 4: This device is installed vertically in X-axes orientation. It was provided by applicant. The X-axes orientation was tested and recorded in the report.

Note 5: The cable loss is 0.5dB, which was added into the all RF test results.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	100784	2024/11/08	2025/11/07
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2024/11/08	2025/11/07
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2024/10/08	2025/10/07
Rohde & Schwarz	Pulse Limiter	ESH3-Z2	100312	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.17	N0350	2024/10/08	2025/10/07
Test Software: e3 191218 (V9)					
Radiated Spurious Emission Test(Below 1GHz)					
Rohde & Schwarz	Test Receiver	ESR	102725	2024/11/08	2025/11/07
SONOMA INSTRUMENT	Amplifier	310N	186131	2024/05/24	2025/05/23
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2024/08/08	2027/08/07
Unknown	RF Coaxial Cable	No.12	N040	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.13	N300	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.14	N800	2024/10/08	2025/10/07
BACL	LOOP ANTENNA	1313-1A	3110711	2024/01/16	2027/01/15
Test Software: e3 191218 (V9)					
Radiated Spurious Emission Test(Above 1GHz)					
Rohde & Schwarz	Spectrum Analyzer	FSV40	101949	2024/10/08	2025/10/07
Decentest	Filter Switch Unit	DT7220FSU	DQ77927	2024/10/08	2025/10/07
Decentest	Multiplex Switch Test Control Set	DT7220CSU	DQ77924	2024/10/08	2025/10/07
A.H. Systems, inc.	Preamplifier	PAM-0118	226	2024/05/24	2025/05/23
Schwarzbeck	Horn Antenna	BBHA9120D	837	2023/02/22	2026/02/21
Unknown	RF Coaxial Cable	No.10	N050	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.11	N1000	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.19	N500	2024/10/08	2025/10/07
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2023/12/12	2026/12/11
BACL	Amplifier	BACL-1313-A1840	4012521	2024/07/05	2025/07/04
Unknown	RF Coaxial Cable	No.15	N600	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.16	N650	2024/10/08	2025/10/07
Test Software: e3 191218 (V9)					

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101948	2024/10/08	2025/10/07
WEINSCHEL	10dB Attenuator	5324	AU 3842	2024/10/08	2025/10/07
Test Software: JDAutoTestSystem V1.0.0					

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §2.1091 and 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 General Population/Uncontrolled Exposure

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

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

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)

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Mode	Frequency (MHz)	Antenna Gain		Tune Up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
BLE	2480	4.83	3.04	8.5	7.08	20	0.0043	1.0

Note 1: The tune-up conducted power and antenna gain were declared by the applicant.

Note 2: The Bluetooth and WIFI can't transmission simultaneously.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

FCC §15.203-ANTENNA REQUIREMENT

Applicable Standard

According to § 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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.
- c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one internal antenna arrangement, which were permanently attached to the EUT, fulfill the requirement of this section. Please refer to the EUT photos.

Frequency Range	Antenna gain
2402-2480MHz	4.83dBi

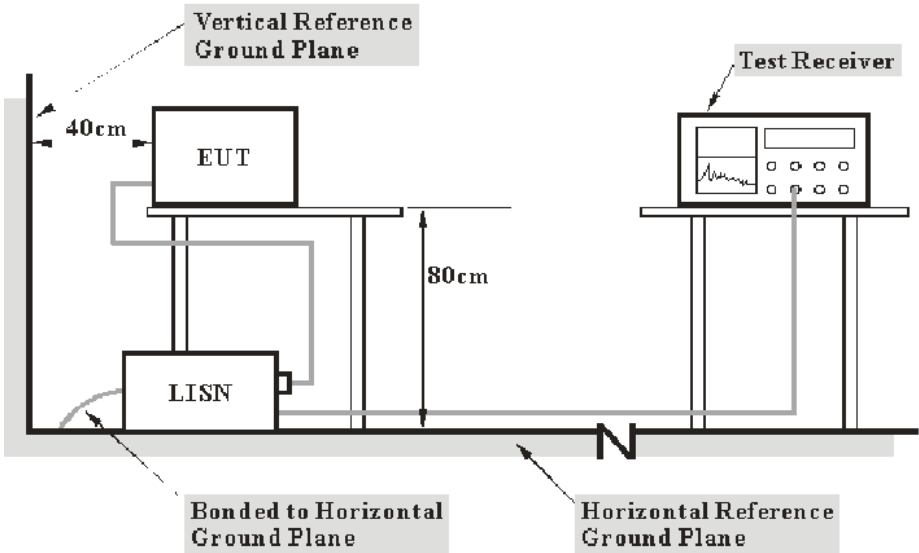
Result: Compliance.

FCC §15.207 (a)-AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a).

EUT Setup



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

The measurement procedure of EUT setup is according with ANSI C63.10-2020. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

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

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Calculation

The Factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Limiter Attenuation. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss} + 10\text{dB Attenuation(Limiter)}$$

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit}$$

$$\text{Level} = \text{Read Level} + \text{Factor}$$

Test Data

Environmental Conditions

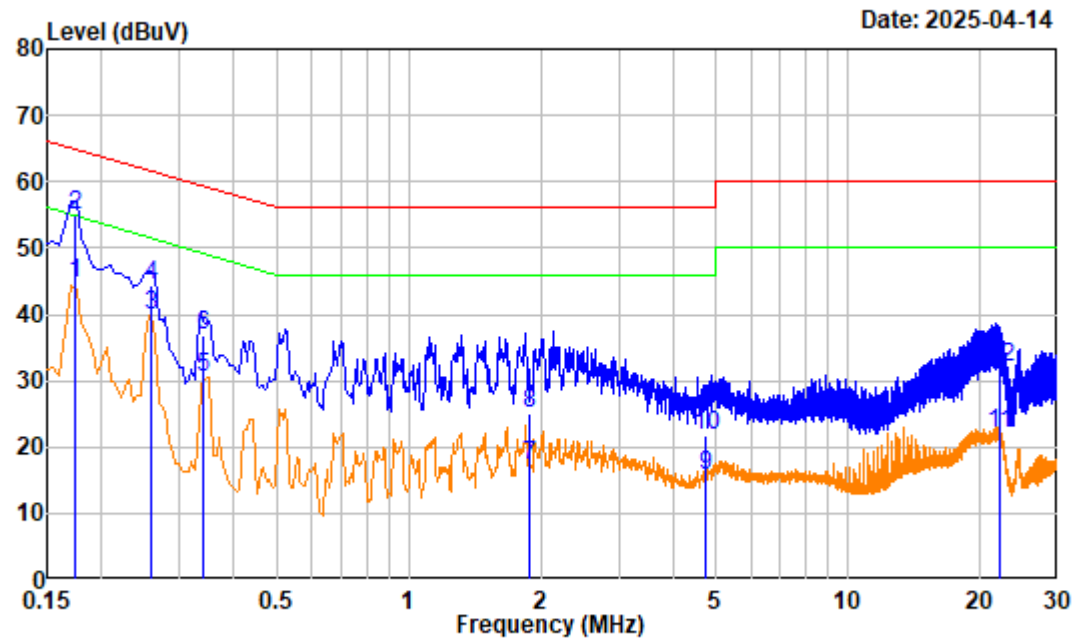
Temperature:	23.2 °C
Relative Humidity:	44 %
ATM Pressure:	101.3 kPa
Test Engineer:	Jason Fan
Test Date:	2025-04-14
EUT Operation Mode:	BLE Transmitting

Test Result: Compliance, please refer to the below data.

Note: The maximum output power mode and channel: BLE 2M middle channel was tested.

For Adapter 1

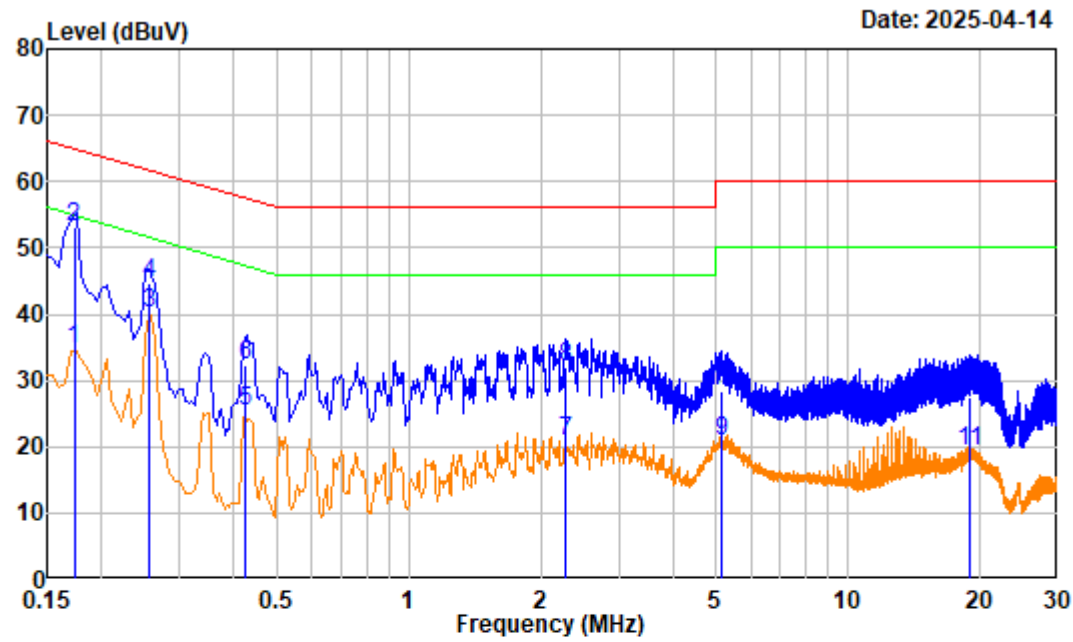
AC 120V/60Hz, Line:



Site : Shielding Room
Condition : Line
Project No. : 2504R28083E-RF Tester:Jason Fan
Test Mode : BLE Transmitting
Note : Adapter 1#
Receiver Setting: IF B/W 9kHz PK/AV

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.173	20.12	24.64	44.76	54.80	-10.04	Average
2	0.173	20.12	34.73	54.85	64.80	-9.95	QP
3	0.259	20.16	19.84	40.00	51.47	-11.47	Average
4	0.259	20.16	24.07	44.23	61.47	-17.24	QP
5	0.342	20.10	10.50	30.60	49.16	-18.56	Average
6	0.342	20.10	16.68	36.78	59.16	-22.38	QP
7	1.889	20.40	-3.23	17.17	46.00	-28.83	Average
8	1.889	20.40	4.68	25.08	56.00	-30.92	QP
9	4.753	20.50	-4.95	15.55	46.00	-30.45	Average
10	4.753	20.50	1.25	21.75	56.00	-34.25	QP
11	22.120	19.98	2.15	22.13	50.00	-27.87	Average
12	22.120	19.98	12.02	32.00	60.00	-28.00	QP

AC 120V/60Hz, Neutral:

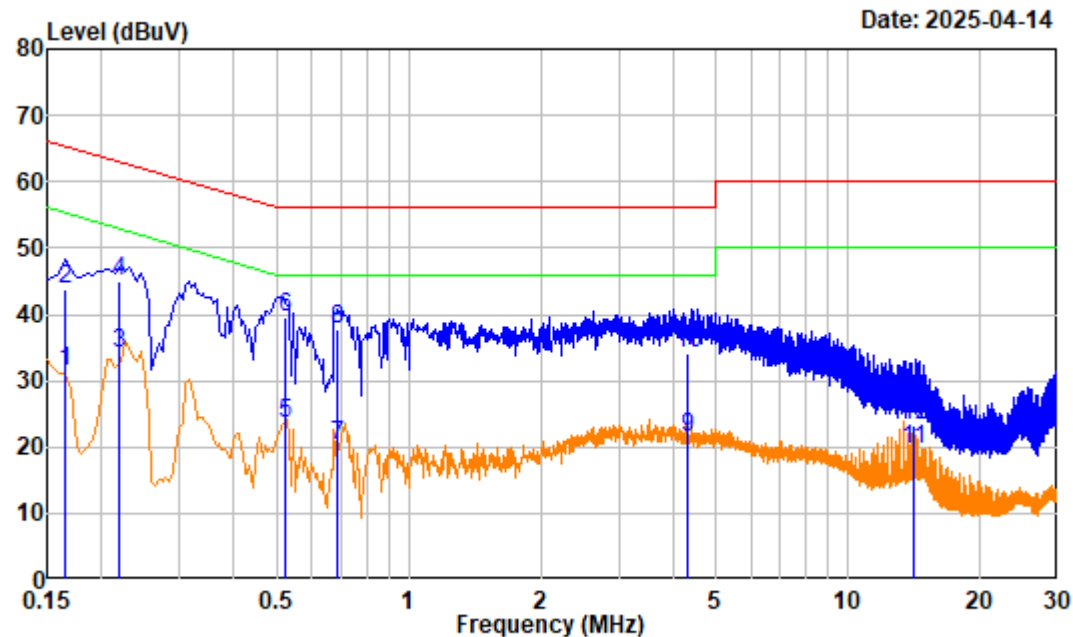


Site : Shielding Room
Condition : neutral
Project No. : 2504R28083E-RF Tester:Jason Fan
Test Mode : BLE Transmitting
Note : Adapter 1#
Receiver Setting: IF B/W 9kHz PK/AV

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.173	19.87	14.71	34.58	54.82	-20.24	Average
2	0.173	19.87	33.25	53.12	64.82	-11.70	QP
3	0.255	19.82	20.37	40.19	51.59	-11.40	Average
4	0.255	19.82	24.90	44.72	61.59	-16.87	QP
5	0.422	19.82	5.62	25.44	47.40	-21.96	Average
6	0.422	19.82	12.38	32.20	57.40	-25.20	QP
7	2.260	20.21	0.69	20.90	46.00	-25.10	Average
8	2.260	20.21	11.87	32.08	56.00	-23.92	QP
9	5.138	20.37	0.55	20.92	50.00	-29.08	Average
10	5.138	20.37	7.86	28.23	60.00	-31.77	QP
11	18.923	20.16	-0.74	19.42	50.00	-30.58	Average
12	18.923	20.16	7.18	27.34	60.00	-32.66	QP

For Adapter 2

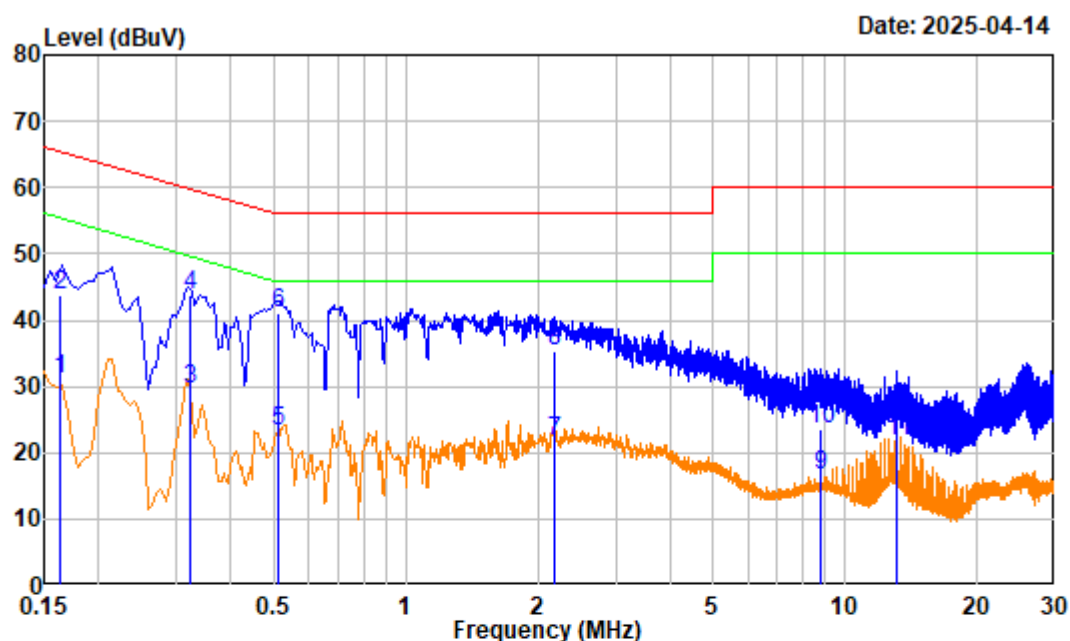
AC 120V/60Hz, Line:



Site : Shielding Room
Condition : Line
Project No. : 2504R28083E-RF Tester:Jason Fan
Test Mode : BLE Transmitting
Note : Adapter 2#
Receiver Setting: IF B/W 9kHz PK/AV

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.164	20.08	11.40	31.48	55.25	-23.77	Average
2	0.164	20.08	23.62	43.70	65.25	-21.55	QP
3	0.219	20.20	13.97	34.17	52.87	-18.70	Average
4	0.219	20.20	24.67	44.87	62.87	-18.00	QP
5	0.523	20.05	3.56	23.61	46.00	-22.39	Average
6	0.523	20.05	19.53	39.58	56.00	-16.42	QP
7	0.689	20.20	0.16	20.36	46.00	-25.64	Average
8	0.689	20.20	17.63	37.83	56.00	-18.17	QP
9	4.321	20.47	0.85	21.32	46.00	-24.68	Average
10	4.321	20.47	13.57	34.04	56.00	-21.96	QP
11	14.049	19.74	-0.15	19.59	50.00	-30.41	Average
12	14.049	19.74	3.60	23.34	60.00	-36.66	QP

AC 120V/60Hz, Neutral:



Site : Shielding Room
 Condition : neutral
 Project No. : 2504R28083E-RF Tester: Jason Fan
 Test Mode : BLE Transmitting
 Note : Adapter 2#
 Receiver Setting: IF B/W 9kHz PK/AV

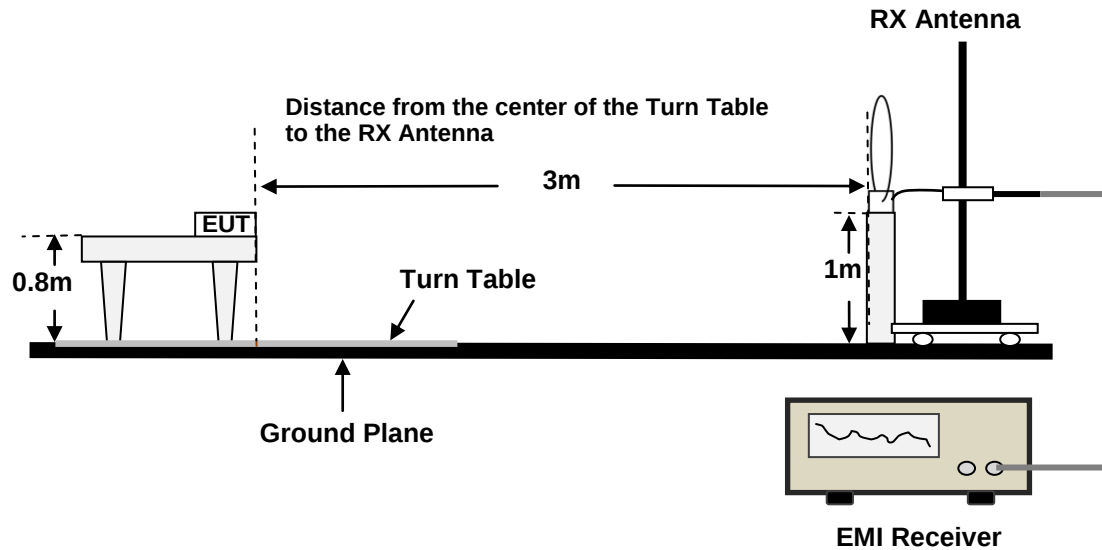
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.164	19.89	11.34	31.23	55.28	-24.05	Average
2	0.164	19.89	23.74	43.63	65.28	-21.65	QP
3	0.323	19.82	9.84	29.66	49.64	-19.98	Average
4	0.323	19.82	23.81	43.63	59.64	-16.01	QP
5	0.513	19.86	3.33	23.19	46.00	-22.81	Average
6	0.513	19.86	21.15	41.01	56.00	-14.99	QP
7	2.170	20.21	1.42	21.63	46.00	-24.37	Average
8	2.170	20.21	14.99	35.20	56.00	-20.80	QP
9	8.762	20.37	-3.79	16.58	50.00	-33.42	Average
10	8.762	20.37	3.08	23.45	60.00	-36.55	QP
11	13.139	20.19	1.44	21.63	50.00	-28.37	Average
12	13.139	20.19	4.74	24.93	60.00	-35.07	QP

FCC §15.205, §15.209 & §15.247(d)-RADIATED EMISSIONS**Applicable Standard**

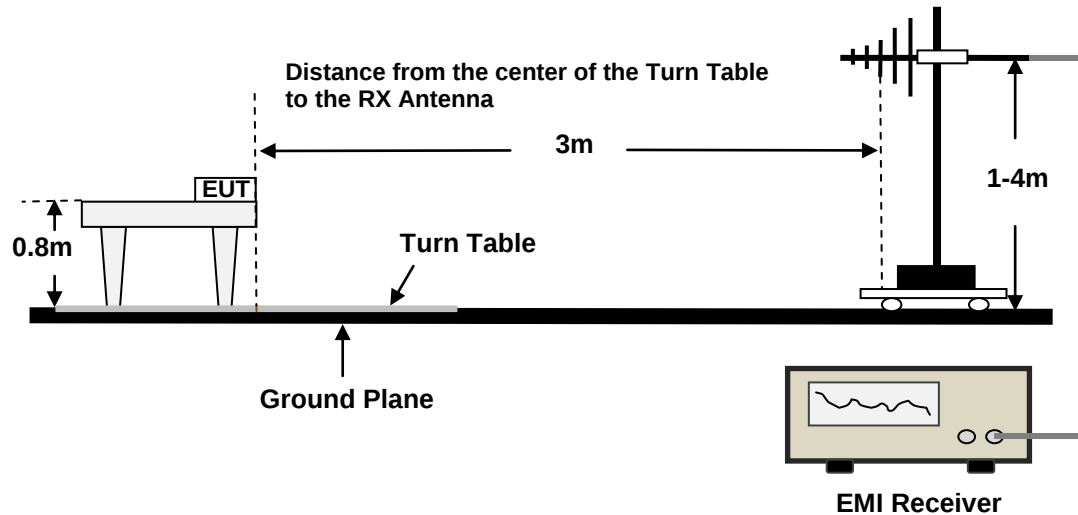
FCC §15.205; §15.209; §15.247(d)

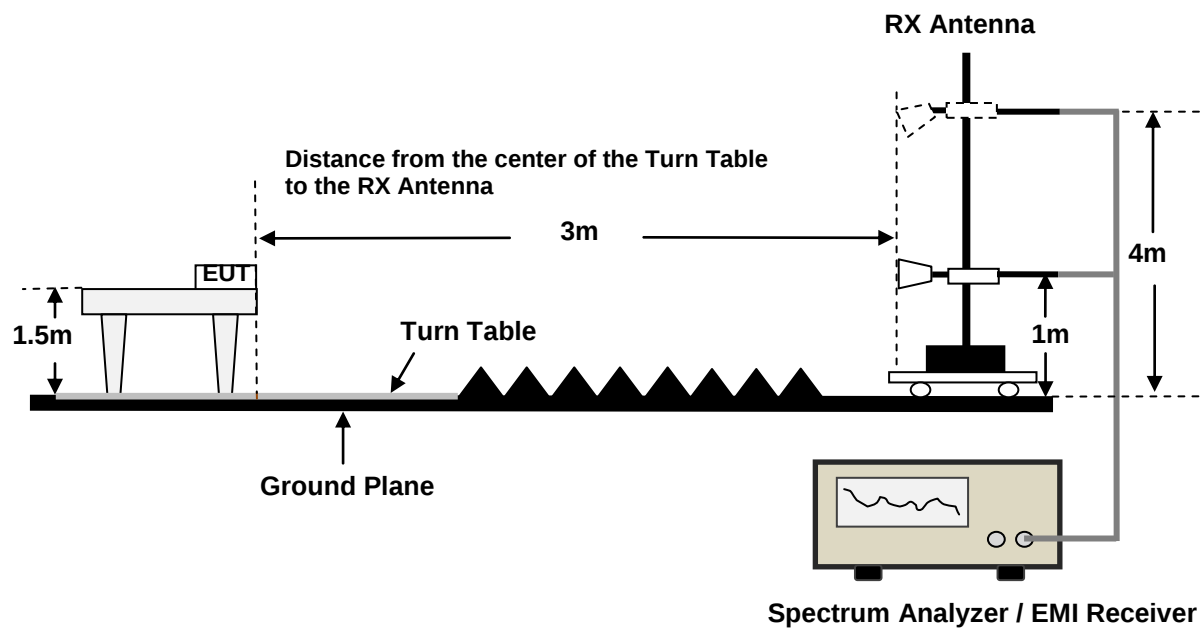
EUT Setup

9kHz - 30MHz:



30MHz - 1GHz:



Above 1GHz:

Boundary of the EUT, local AE and associated cabling and measurement distance for radiated emissions measurements:

The central point of the arrangement shall be positioned at the centre of the turntable. The measurement distance is the shortest horizontal distance between an imaginary circular periphery just encompassing this arrangement and the calibration point of the antenna. See as below Figure C.1 and C.2.

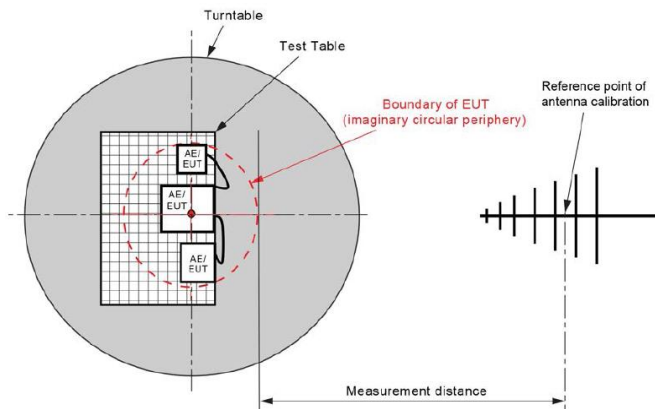


Figure C.1 – Measurement distance

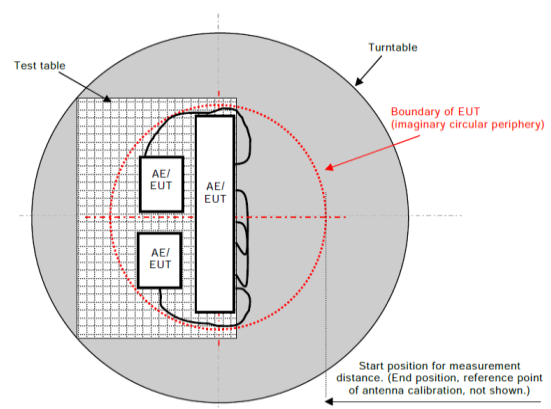


Figure C.2 – Boundary of EUT, Local AE and associated cabling

The radiated emission performed in the 3 meters, using the setup accordance with the ANSI C63.10-2020. The specification used was the FCC 15.209, FCC 15.247 limits.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 25 GHz.

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

9kHz - 1000MHz:

Frequency Range	Measurement	RBW	Video B/W	IF B/W	Detector
9kHz - 150kHz	PK	0.3kHz	1kHz	/	PK
	QP/AV	/	/	200Hz	QP/AV
150kHz - 30MHz	PK	10kHz	30kHz	/	PK
	QP/AV	/	/	9kHz	QP/AV
30MHz - 1000MHz	PK	100kHz	300kHz	/	PK
	QP	/	/	120kHz	QP

1GHz - 25GHz:

Pre-scan:

Measurement	Detector	Duty cycle	RBW	Video B/W
PK	Peak	Any	1MHz	3MHz
Ave.	Peak	>98%	1MHz	3kHz
		<98%	1MHz	≥1/T, no less than 5 kHz

Final measurement for emission identified during the pre-scan:

Measurement	Detector	Duty cycle	RBW	Video B/W
PK	Peak	Any	1MHz	3MHz
Ave.	Peak	>98%	1MHz	3kHz
		<98%	1MHz	≥1/T

Note 1: T is minimum transmission duration

Note 2: The 1GHz-4GHz testing use the notch filter and the 4GHz-18GHz testing use high-pass filter.

Note 3: The band edge testing use 10dB attenuator.

Note 4: The filters and attenuators are all integrated within the filter switch unit.

Test Procedure

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

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

According to ANSI C63.10-2020, 9.2: For field strength measurements made at other than the distance specified by the limit, extrapolate the measured field strength to the field strength at the distance specified by the limit using an inverse distance correction factor (20 dB/decade of distance).

$$E_{SpecLimit} = E_{Meas} + 20 \log \left(\frac{D_{Meas}}{D_{SpecLimit}} \right)$$

where

$E_{SpecLimit}$	is the field strength of the emission at the distance specified by the limit, in dBuV/m
E_{Meas}	is the field strength of the emission at the measurement distance, in dBuV/m
D_{Meas}	is the measurement distance, in m
$D_{SpecLimit}$	is the distance specified by the limit, in m

Note 1: If the maximized peak measured value is under the QP/Average limit by more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Note 2: For above 1GHz, the test result of peak was 20dB below to the limit of peak, which can be compliant to the average limit, so just peak value was recorded.

Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Over Limit/Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

$$\text{Over Limit/Margin} = \text{Level} / \text{Corrected Amplitude} - \text{Limit}$$

$$\text{Level} / \text{Corrected Amplitude} = \text{Read Level} + \text{Factor}$$

Test Data

9kHz-1GHz

Environmental Conditions

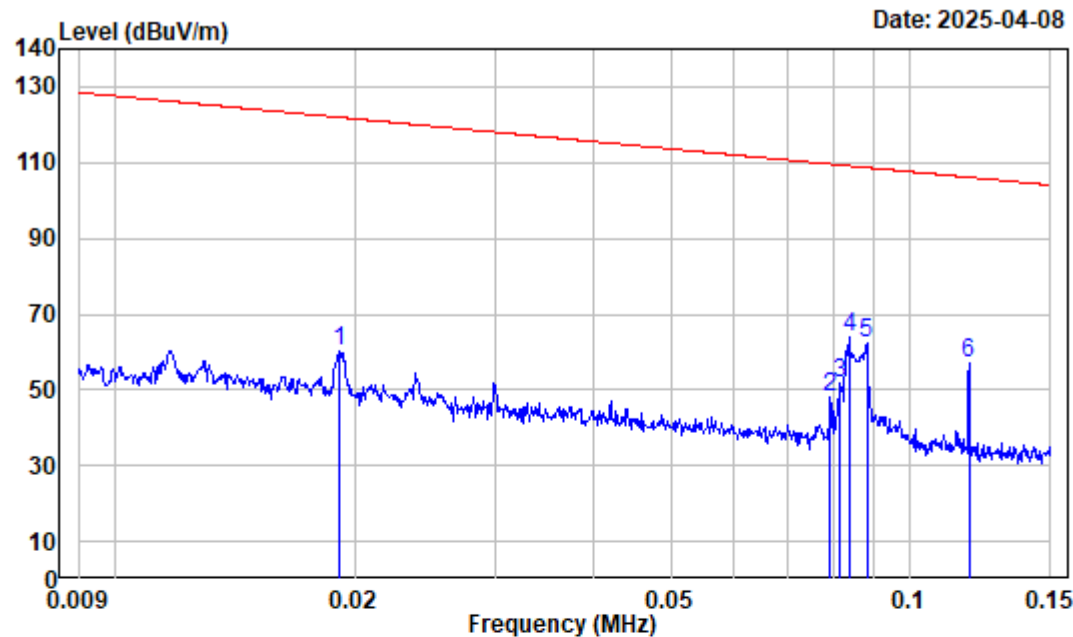
Temperature:	22.1 to 23.5 °C
Relative Humidity:	53 to 54 %
ATM Pressure:	100.2 to 101.3 kPa
Test Engineer:	Roger Ling
Test Date:	2025-04-08 to 2025-05-10
EUT Operation Mode:	BLE Transmitting

Test Result: Compliance, please refer to the below data.

Note 1: The Loop Antenna were tested in parallel, perpendicular and ground-parallel. The worst orientation was parallel and the data was recorded in report.

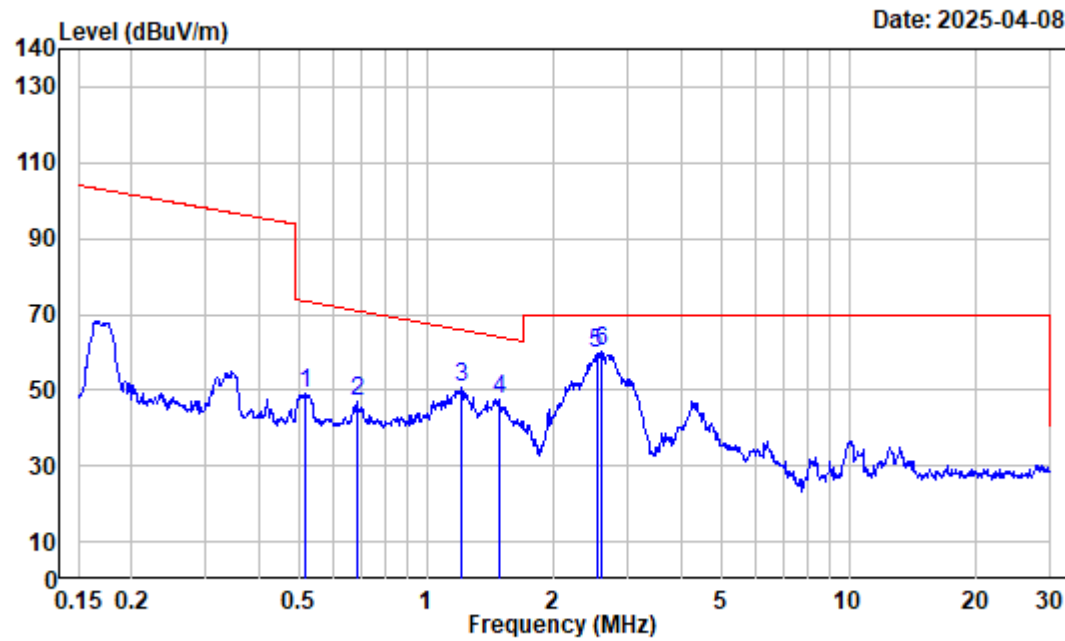
Note 2: The maximum output power mode and channel: BLE 2M Middle Channel was tested.

9kHz~30MHz:



Site : Chamber
Condition : 3m
Project No. : 2504R28083E-RF Tester:Roger Ling
Test Mode : BLE Transmitting
Polarization : Parallel
Note : Adapter 1#
Receiver Setting: RBW:0.3kHz VBW:1kHz

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.019	31.74	28.35	60.09	121.95	-61.86 Peak
2	0.079	18.66	29.57	48.23	109.63	-61.40 Peak
3	0.082	18.37	33.33	51.70	109.36	-57.66 Peak
4	0.084	18.15	45.69	63.84	109.14	-45.30 Peak
5	0.088	17.70	44.38	62.08	108.70	-46.62 Peak
6	0.118	15.60	41.44	57.04	106.14	-49.10 Peak



Site : Chamber

Condition : 3m

Project No. : 2504R28083E-RF Tester:Roger Ling

Test Mode : BLE Transmitting

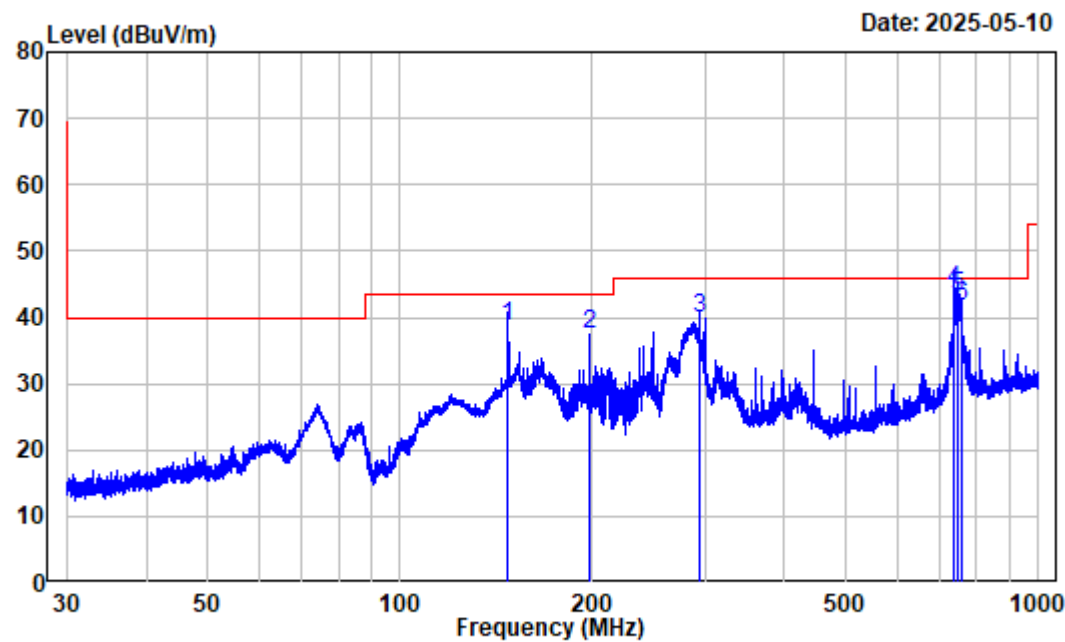
Polarization : Parallel

Note : Adapter 1#

Receiver Setting: RBW:10kHz VBW:30kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.516	3.10	45.88	48.98	73.35	-24.37	Peak
2	0.683	1.11	45.74	46.85	70.86	-24.01	Peak
3	1.210	-2.62	53.41	50.79	65.78	-14.99	Peak
4	1.495	-3.63	51.31	47.68	63.90	-16.22	Peak
5	2.527	-5.66	65.61	59.95	69.54	-9.59	Peak
6	2.594	-5.70	66.09	60.39	69.54	-9.15	Peak

30MHz~1GHz:



Site : Chamber

Condition : 3m HORIZONTAL

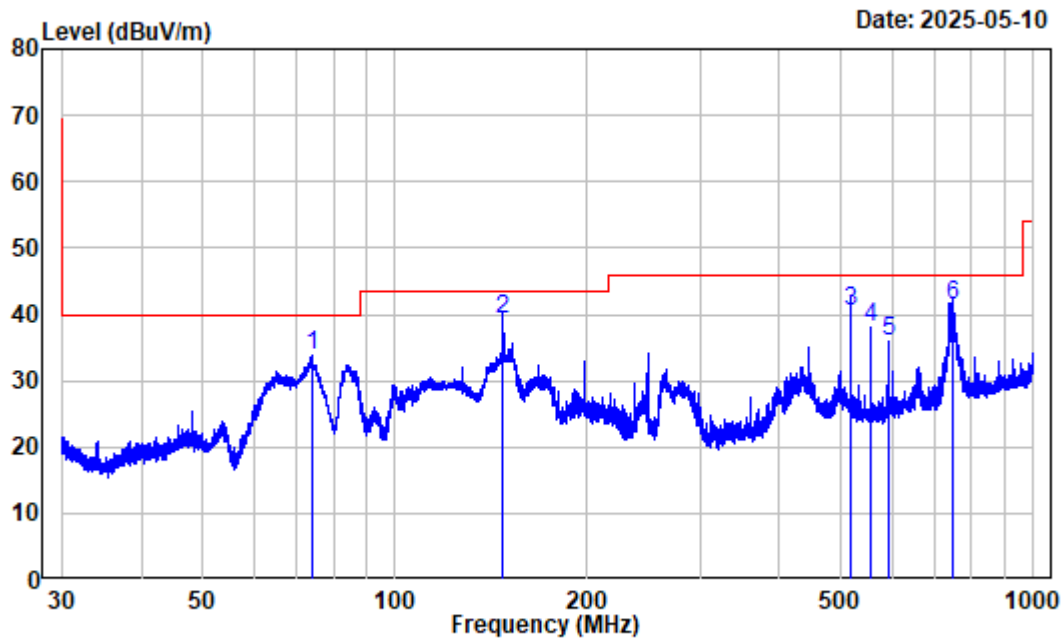
Project No. : 2504R28083E-RF Tester:Roger Ling

Test Mode : BLE Transmitting

Note : Adapter 1#

Receiver Setting: RBW:100kHz VBW:300kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	147.404	-15.01	53.69	38.68	43.50	-4.82	QP
2	197.806	-10.41	47.87	37.46	43.50	-6.04	Peak
3	294.888	-8.88	48.84	39.96	46.00	-6.04	QP
4	737.084	-0.56	44.72	44.16	46.00	-1.84	QP
5	745.846	-0.33	43.48	43.15	46.00	-2.85	QP
6	758.041	-0.39	42.08	41.69	46.00	-4.31	QP



Site : Chamber

Condition : 3m VERTICAL

Project No. : 2504R28083E-RF Tester:Roger Ling

Test Mode : BLE Transmitting

Note : Adapter 1#

Receiver Setting: RBW:100kHz VBW:300kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	74.168	-16.00	49.73	33.73	40.00	-6.27	Peak
2	147.404	-15.01	54.32	39.31	43.50	-4.19	QP
3	515.965	-3.78	44.21	40.43	46.00	-5.57	QP
4	556.287	-3.54	41.61	38.07	46.00	-7.93	Peak
5	593.570	-2.34	38.41	36.07	46.00	-9.93	Peak
6	746.173	-0.31	41.66	41.35	46.00	-4.65	QP

1GHz-25GHz

Environmental Conditions

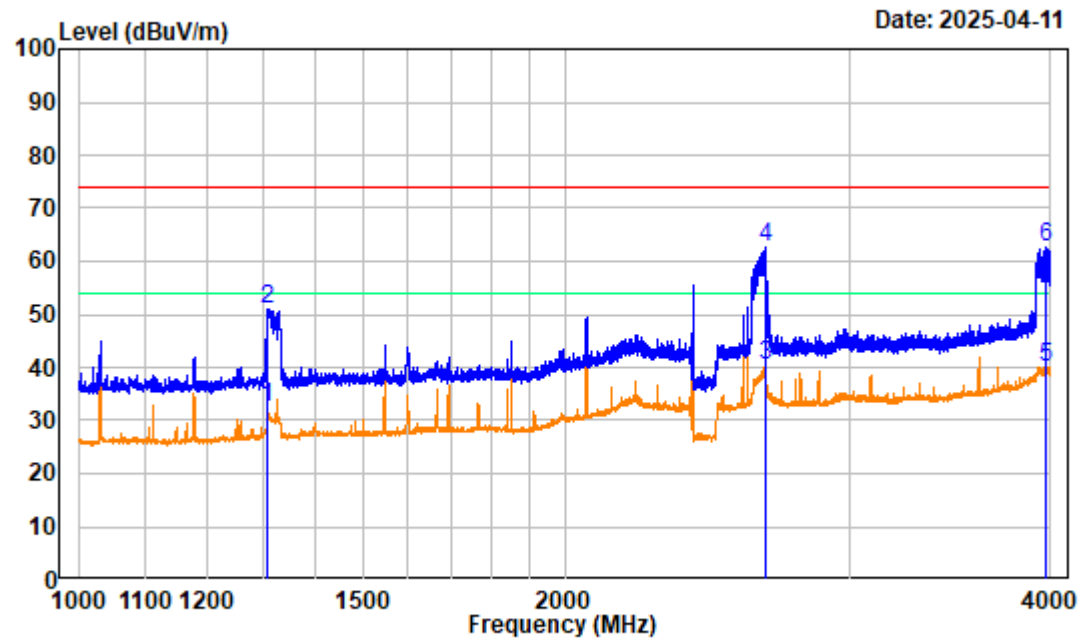
Temperature:	23 to 24 °C
Relative Humidity:	53 to 55 %
ATM Pressure:	101.3 kPa
Test Engineer:	Kevin Lv
Test Date:	2025-04-08 to 2025-04-11
EUT Operation Mode:	Transmitting

Test Result: Compliance, please refer to the below data.

Note 1: For 18-25GHz, the maximum output power mode and channel: BLE 2M Middle Channel was tested.

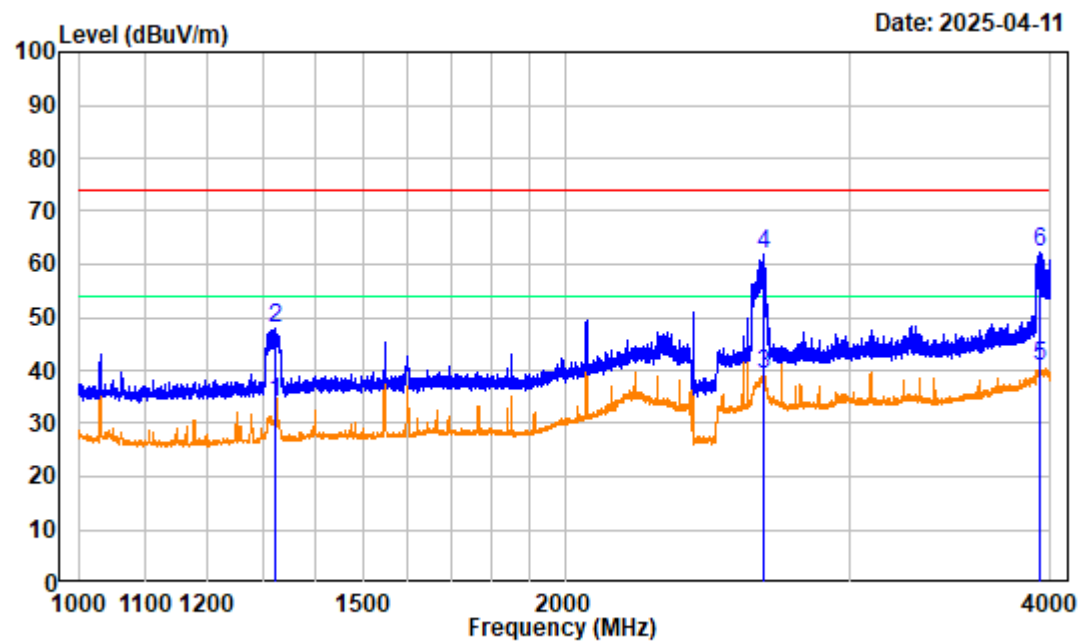
Note 2: The 18GHz-25GHz test without filter, and others used.

1GHz~4GHz:



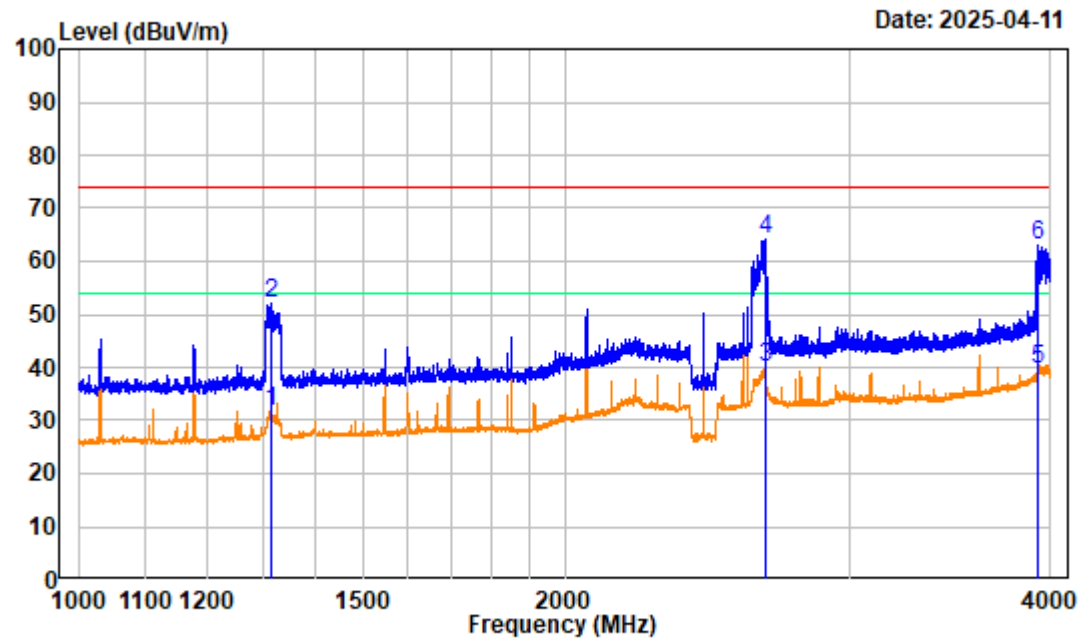
Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1309.375	-13.73	46.29	32.56	54.00	-21.44	Average
2	1309.375	-13.73	64.78	51.05	74.00	-22.95	Peak
3	2666.875	-10.24	50.47	40.23	54.00	-13.77	Average
4	2666.875	-10.24	72.88	62.64	74.00	-11.36	Peak
5	3970.000	-8.28	48.30	40.02	54.00	-13.98	Average
6	3970.000	-8.28	70.85	62.57	74.00	-11.43	Peak



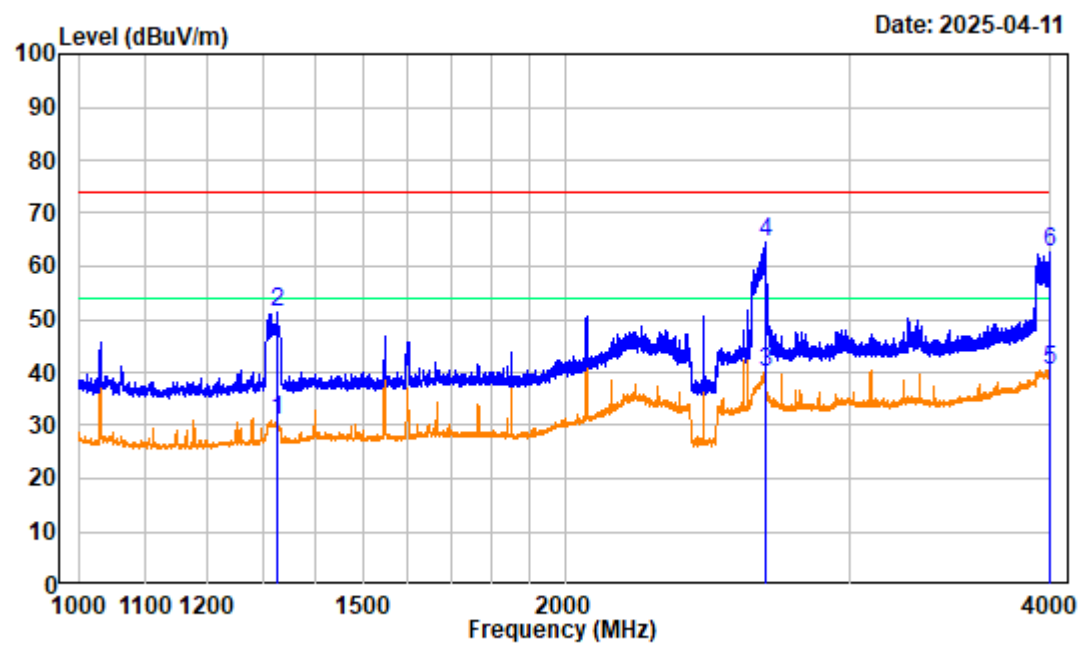
Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1324.750	-13.72	47.84	34.12	54.00	-19.88	Average
2	1324.750	-13.72	61.54	47.82	74.00	-26.18	Peak
3	2659.375	-10.37	49.51	39.14	54.00	-14.86	Average
4	2659.375	-10.37	72.29	61.92	74.00	-12.08	Peak
5	3937.000	-8.27	48.97	40.70	54.00	-13.30	Average
6	3937.000	-8.27	70.47	62.20	74.00	-11.80	Peak



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Middle Channel 2440MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1317.250	-13.73	45.58	31.85	54.00	-22.15	Average
2	1317.250	-13.73	65.82	52.09	74.00	-21.91	Peak
3	2662.375	-10.33	50.18	39.85	54.00	-14.15	Average
4	2662.375	-10.33	74.66	64.33	74.00	-9.67	Peak
5	3926.875	-8.18	47.93	39.75	54.00	-14.25	Average
6	3926.875	-8.18	71.22	63.04	74.00	-10.96	Peak



Site : chamber

Condition : 3m VERTICAL

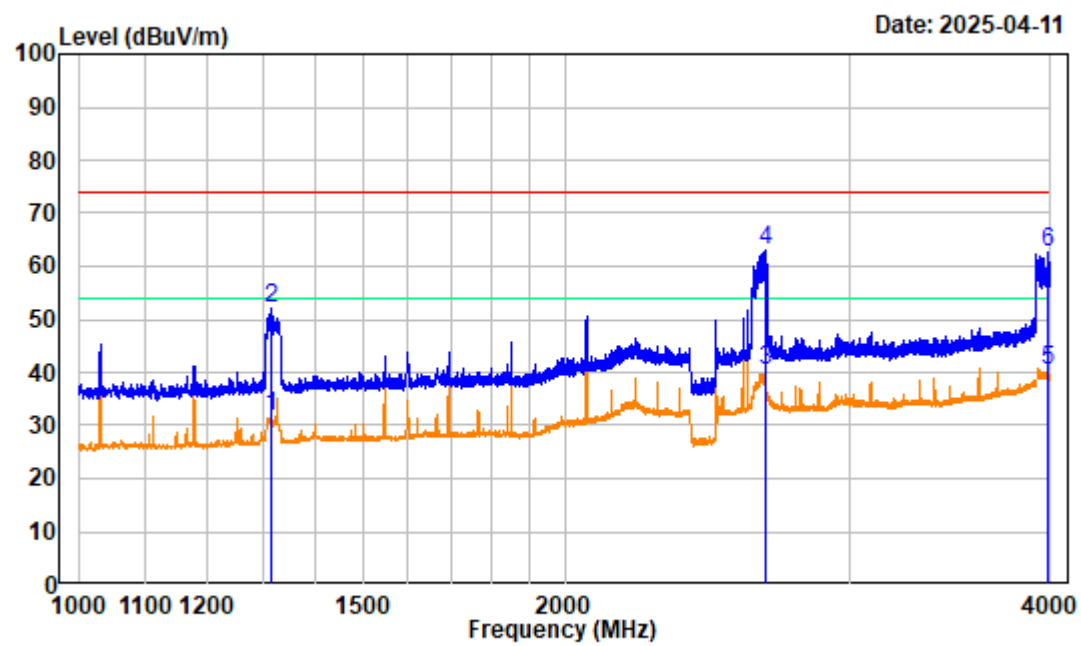
Project No.: 2504R28083E-RF

Test Mode : TransmittingTester:Kevin Lv

Note : BLE 1M Middle Channel 2440MHz

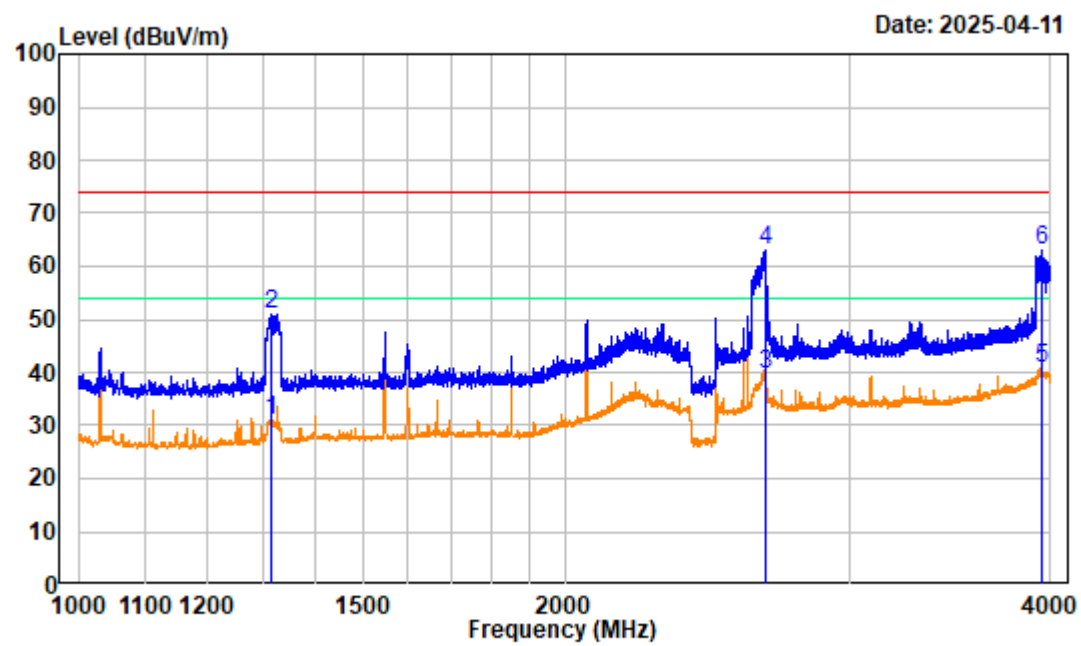
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1326.625	-13.71	44.71	31.00	54.00	-23.00	Average
2	1326.625	-13.71	64.97	51.26	74.00	-22.74	Peak
3	2666.500	-10.25	50.11	39.86	54.00	-14.14	Average
4	2666.500	-10.25	74.66	64.41	74.00	-9.59	Peak
5	3993.250	-8.15	48.36	40.21	54.00	-13.79	Average
6	3993.250	-8.15	70.76	62.61	74.00	-11.39	Peak



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1315.750	-13.73	45.56	31.83	54.00	-22.17	Average
2	1315.750	-13.73	65.94	52.21	74.00	-21.79	Peak
3	2665.000	-10.28	50.50	40.22	54.00	-13.78	Average
4	2665.000	-10.28	73.13	62.85	74.00	-11.15	Peak
5	3984.625	-8.19	48.49	40.30	54.00	-13.70	Average
6	3984.625	-8.19	70.99	62.80	74.00	-11.20	Peak



Site : chamber

Condition : 3m VERTICAL

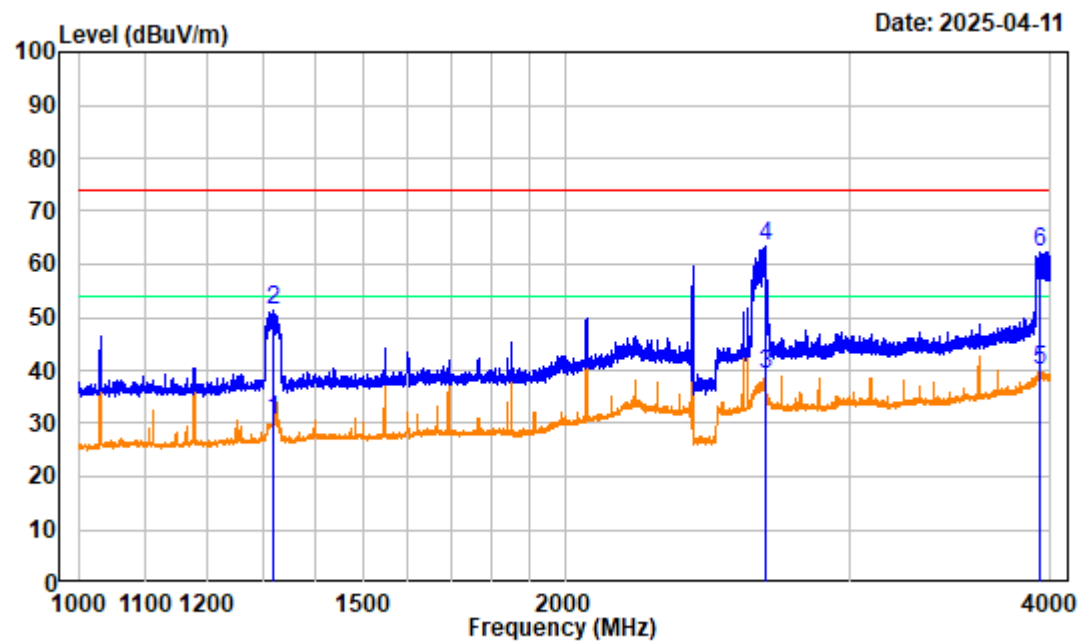
Project No.: 2504R28083E-RF

Test Mode : TransmittingTester:Kevin Lv

Note : BLE 1M High Channel 2480MHz

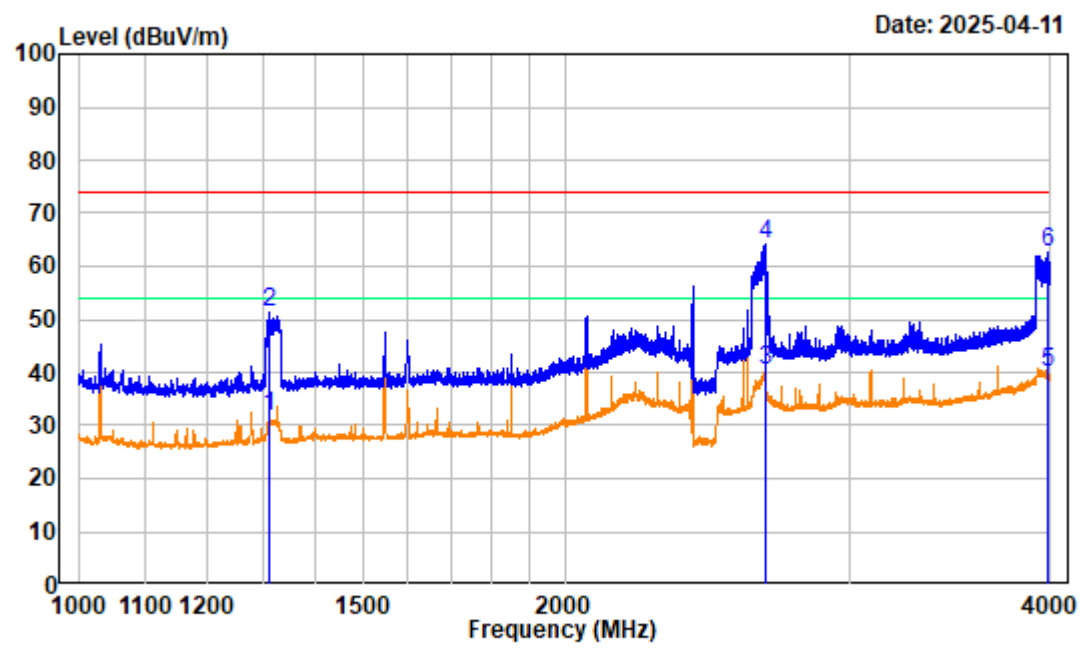
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1315.000	-13.72	44.62	30.90	54.00	-23.10	Average
2	1315.000	-13.72	64.82	51.10	74.00	-22.90	Peak
3	2663.500	-10.30	49.90	39.60	54.00	-14.40	Average
4	2663.500	-10.30	73.42	63.12	74.00	-10.88	Peak
5	3956.125	-8.35	49.10	40.75	54.00	-13.25	Average
6	3956.125	-8.35	71.39	63.04	74.00	-10.96	Peak



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1319.500	-13.72	44.27	30.55	54.00	-23.45	Average
2	1319.500	-13.72	64.97	51.25	74.00	-22.75	Peak
3	2662.375	-10.33	49.57	39.24	54.00	-14.76	Average
4	2662.375	-10.33	73.66	63.33	74.00	-10.67	Peak
5	3941.125	-8.31	48.30	39.99	54.00	-14.01	Average
6	3941.125	-8.31	70.61	62.30	74.00	-11.70	Peak



Site : chamber

Condition : 3m VERTICAL

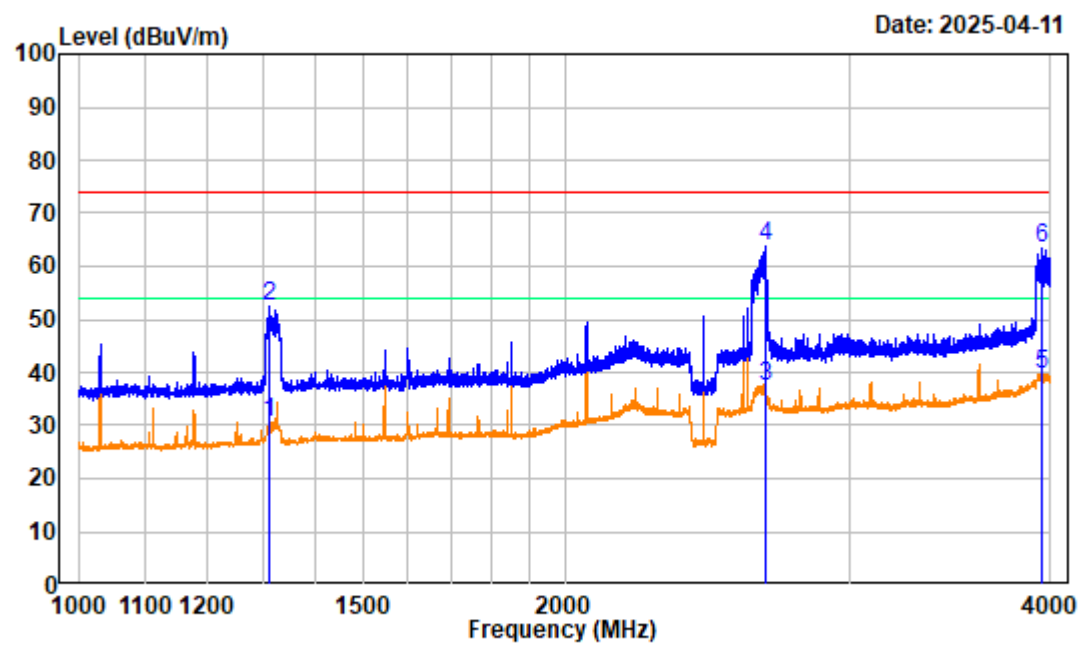
Project No.: 2504R28083E-RF

Test Mode : TransmittingTester:Kevin Lv

Note : BLE 2M Low Channel 2402MHz

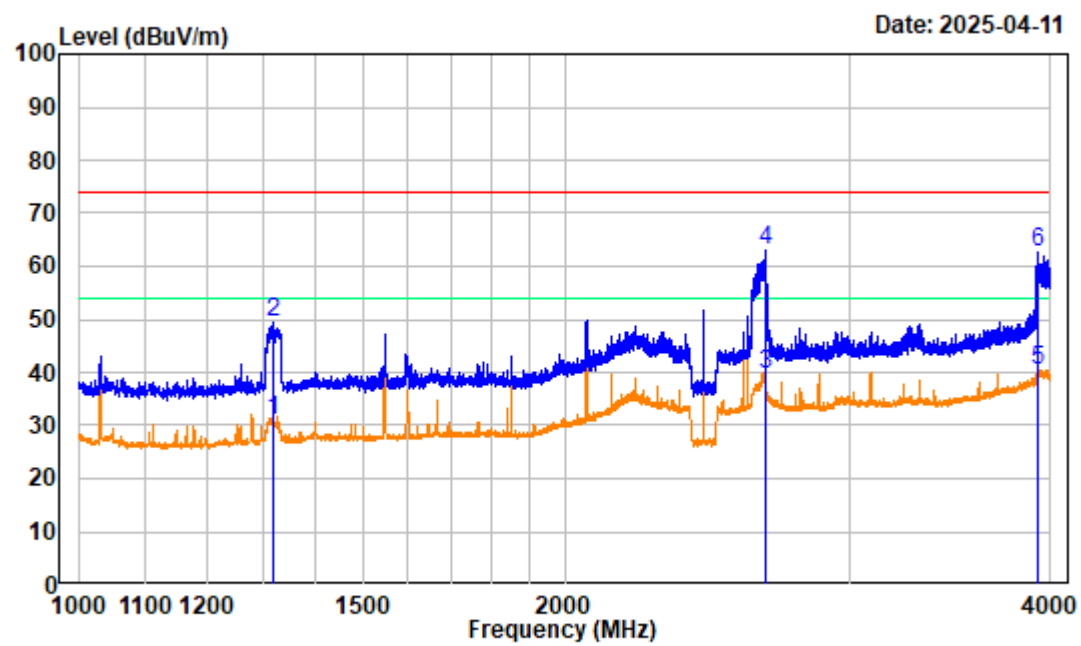
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1311.250	-13.74	45.30	31.56	54.00	-22.44	Average
2	1311.250	-13.74	64.91	51.17	74.00	-22.83	Peak
3	2663.500	-10.30	50.78	40.48	54.00	-13.52	Average
4	2663.500	-10.30	74.40	64.10	74.00	-9.90	Peak
5	3987.625	-8.18	48.34	40.16	54.00	-13.84	Average
6	3987.625	-8.18	70.80	62.62	74.00	-11.38	Peak



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Middle Channel 2440MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1311.250	-13.74	44.29	30.55	54.00	-23.45	Average
2	1311.250	-13.74	66.07	52.33	74.00	-21.67	Peak
3	2662.375	-10.33	47.75	37.42	54.00	-16.58	Average
4	2662.375	-10.33	74.25	63.92	74.00	-10.08	Peak
5	3949.375	-8.38	48.15	39.77	54.00	-14.23	Average
6	3949.375	-8.38	71.65	63.27	74.00	-10.73	Peak



Site : chamber

Condition : 3m VERTICAL

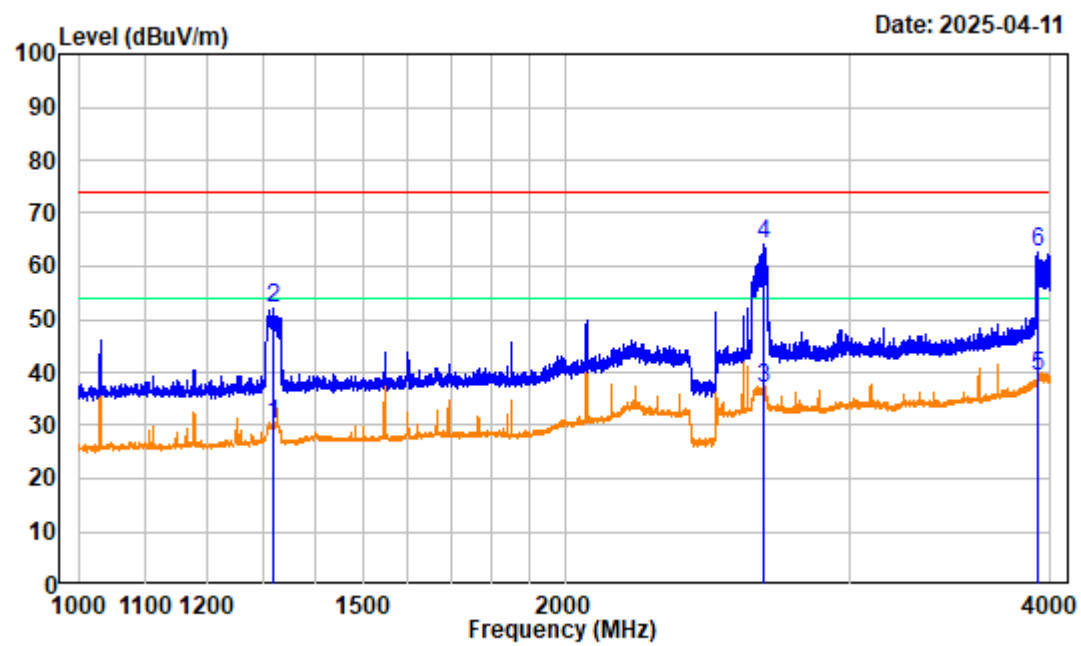
Project No.: 2504R28083E-RF

Test Mode : TransmittingTester:Kevin Lv

Note : BLE 2M Middle Channel 2440MHz

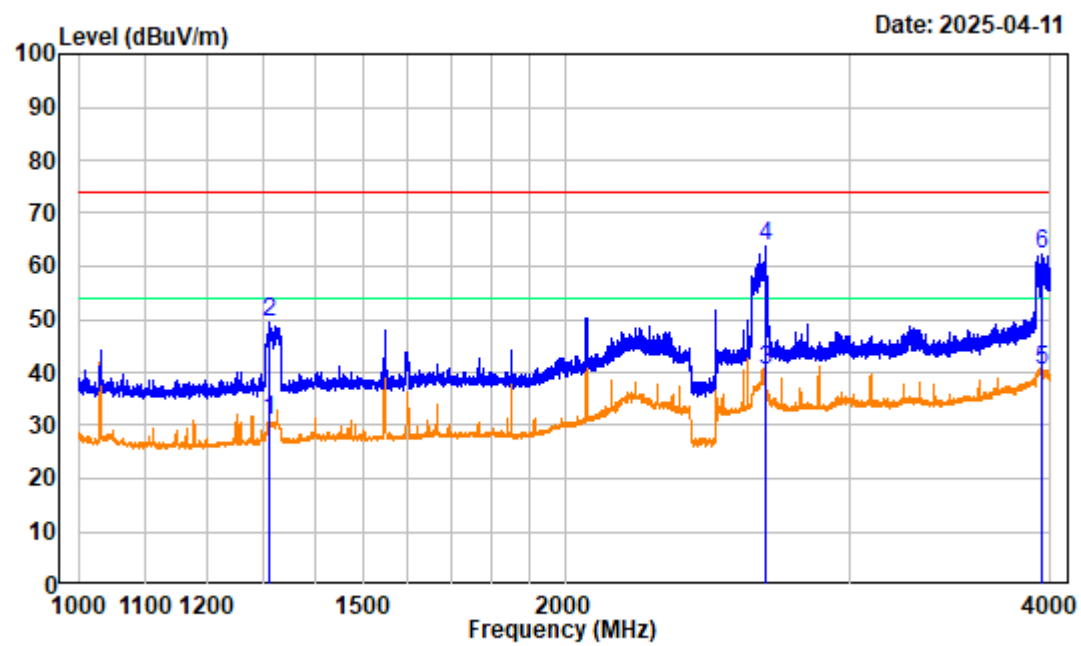
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1320.250	-13.72	44.70	30.98	54.00	-23.02	Average
2	1320.250	-13.72	63.10	49.38	74.00	-24.62	Peak
3	2663.875	-10.30	50.02	39.72	54.00	-14.28	Average
4	2663.875	-10.30	73.43	63.13	74.00	-10.87	Peak
5	3930.625	-8.21	48.61	40.40	54.00	-13.60	Average
6	3930.625	-8.21	71.04	62.83	74.00	-11.17	Peak



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

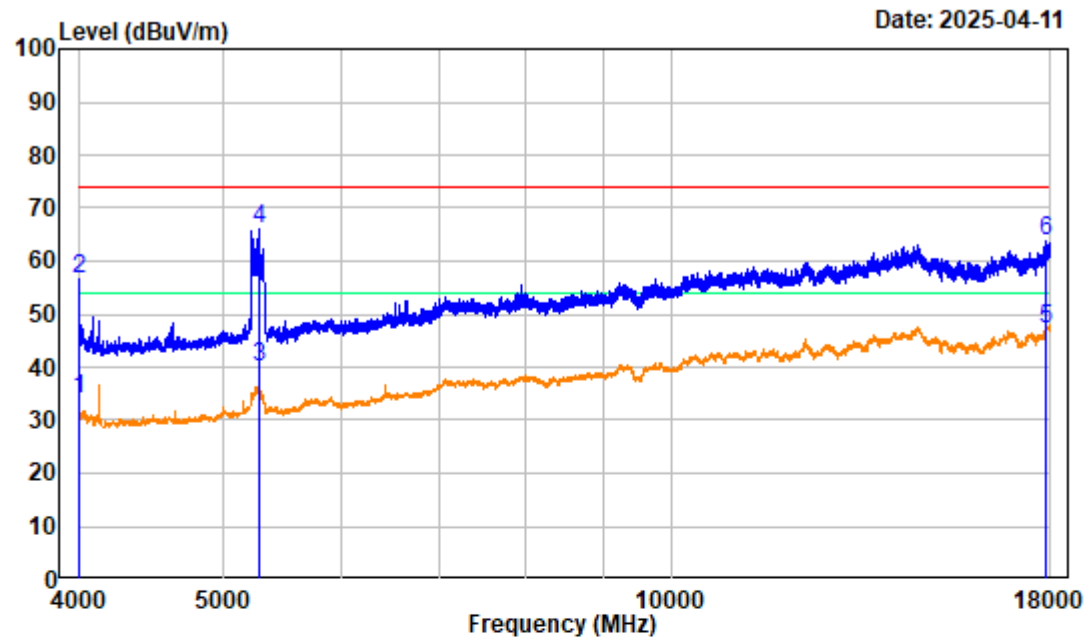
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1321.000	-13.72	44.02	30.30	54.00	-23.70	Average
2	1321.000	-13.72	65.65	51.93	74.00	-22.07	Peak
3	2655.250	-10.44	47.25	36.81	54.00	-17.19	Average
4	2655.250	-10.44	74.67	64.23	74.00	-9.77	Peak
5	3929.125	-8.18	47.56	39.38	54.00	-14.62	Average
6	3929.125	-8.18	70.72	62.54	74.00	-11.46	Peak



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

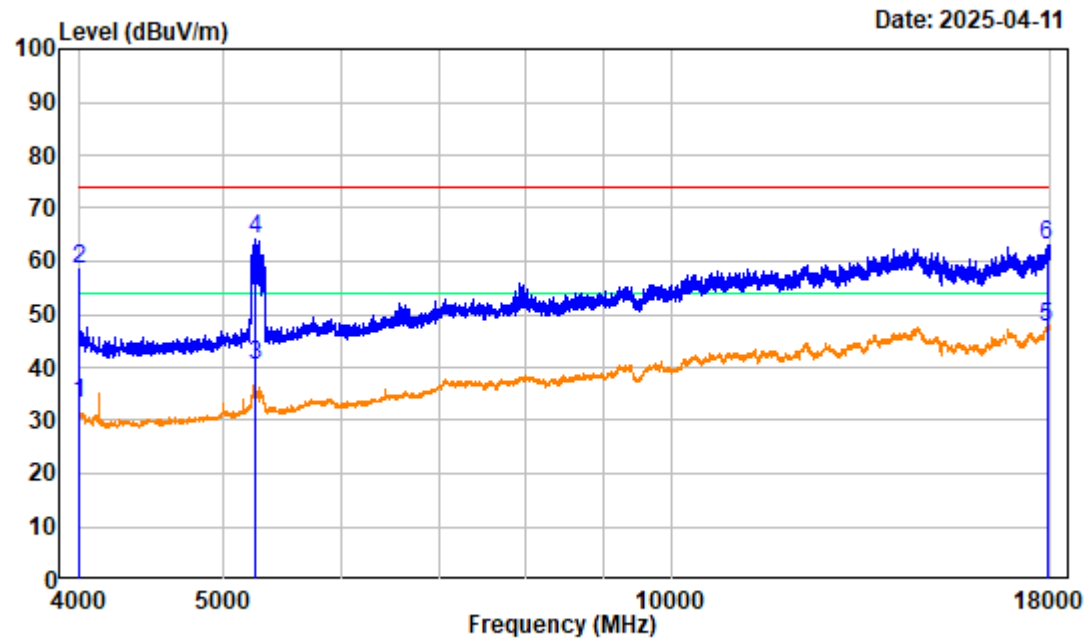
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1314.250	-13.73	44.56	30.83	54.00	-23.17	Average
2	1314.250	-13.73	63.14	49.41	74.00	-24.59	Peak
3	2663.500	-10.30	50.63	40.33	54.00	-13.67	Average
4	2663.500	-10.30	74.03	63.73	74.00	-10.27	Peak
5	3949.375	-8.38	48.92	40.54	54.00	-13.46	Average
6	3949.375	-8.38	70.63	62.25	74.00	-11.75	Peak

4GHz~18GHz:



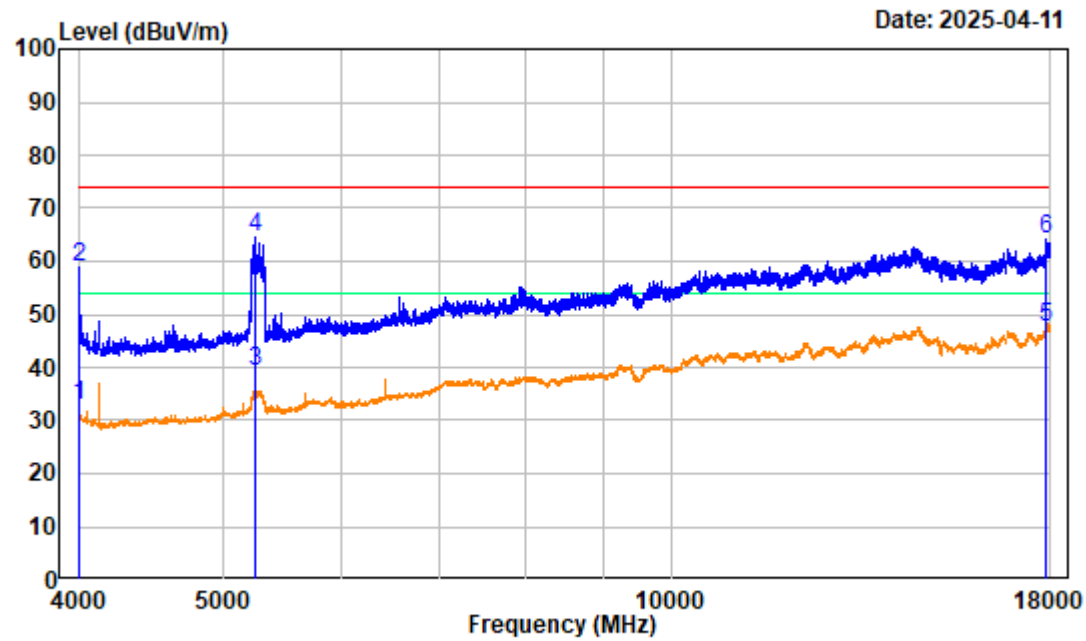
Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	41.96	33.85	54.00	-20.15	Average
2	4000.000	-8.11	64.79	56.68	74.00	-17.32	Peak
3	5293.250	-5.91	45.79	39.88	54.00	-14.12	Average
4	5293.250	-5.91	71.81	65.90	74.00	-8.10	Peak
5	17863.500	8.23	38.98	47.21	54.00	-6.79	Average
6	17863.500	8.23	55.45	63.68	74.00	-10.32	Peak



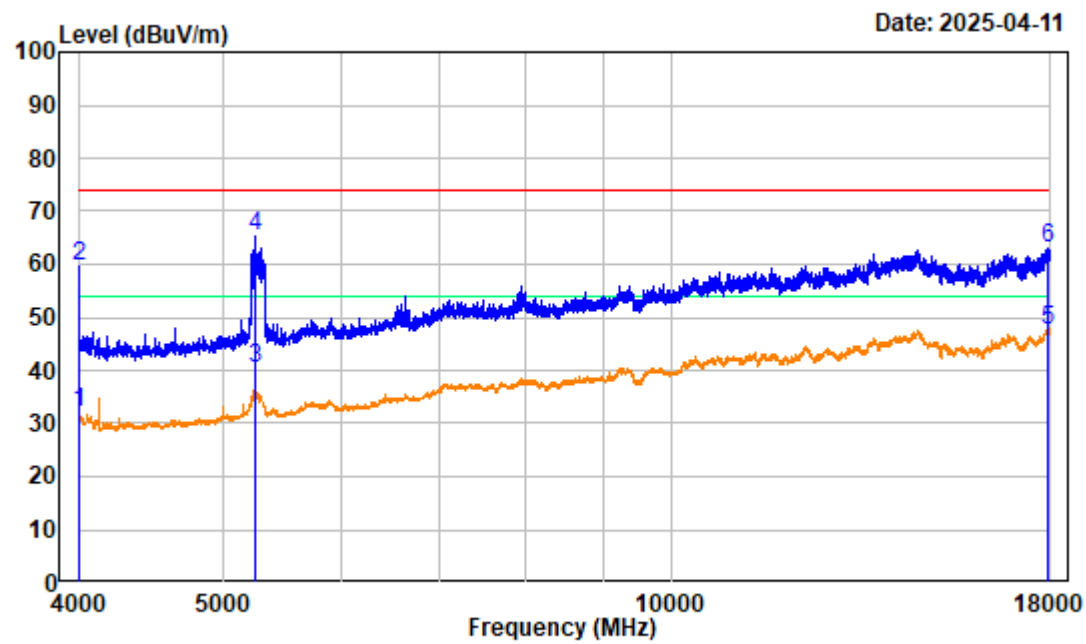
Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	41.26	33.15	54.00	-20.85	Average
2	4000.000	-8.11	66.56	58.45	74.00	-15.55	Peak
3	5260.000	-5.72	46.27	40.55	54.00	-13.45	Average
4	5260.000	-5.72	69.84	64.12	74.00	-9.88	Peak
5	17902.000	8.24	39.41	47.65	54.00	-6.35	Average
6	17902.000	8.24	54.68	62.92	74.00	-11.08	Peak



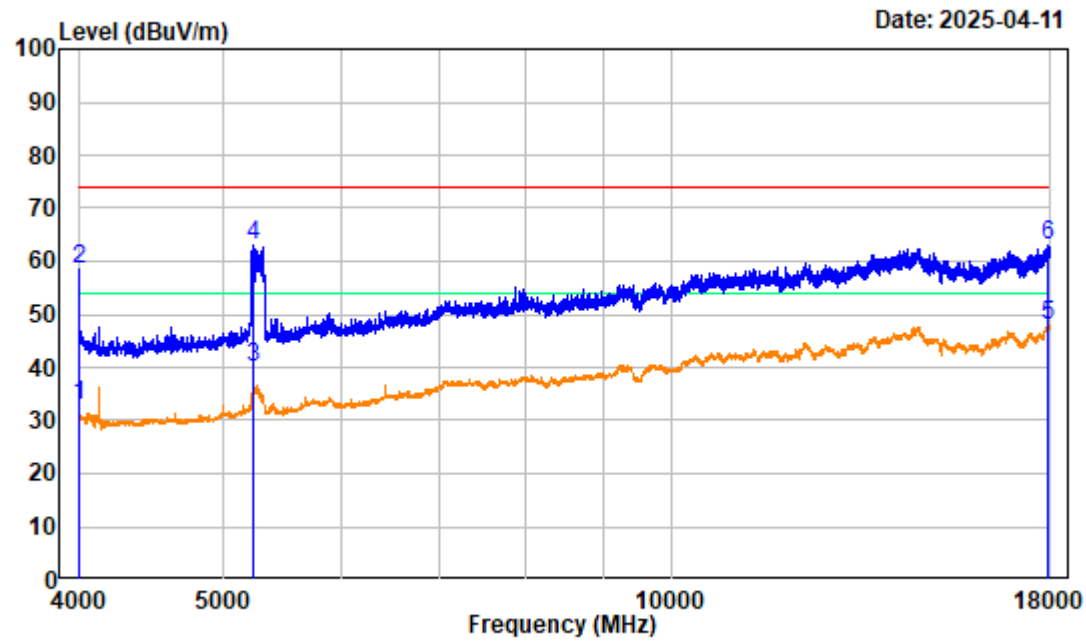
Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Middle Channel 2440MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	41.10	32.99	54.00	-21.01	Average
2	4000.000	-8.11	66.91	58.80	74.00	-15.20	Peak
3	5261.750	-5.72	44.86	39.14	54.00	-14.86	Average
4	5261.750	-5.72	70.27	64.55	74.00	-9.45	Peak
5	17870.500	8.23	39.33	47.56	54.00	-6.44	Average
6	17870.500	8.23	56.07	64.30	74.00	-9.70	Peak



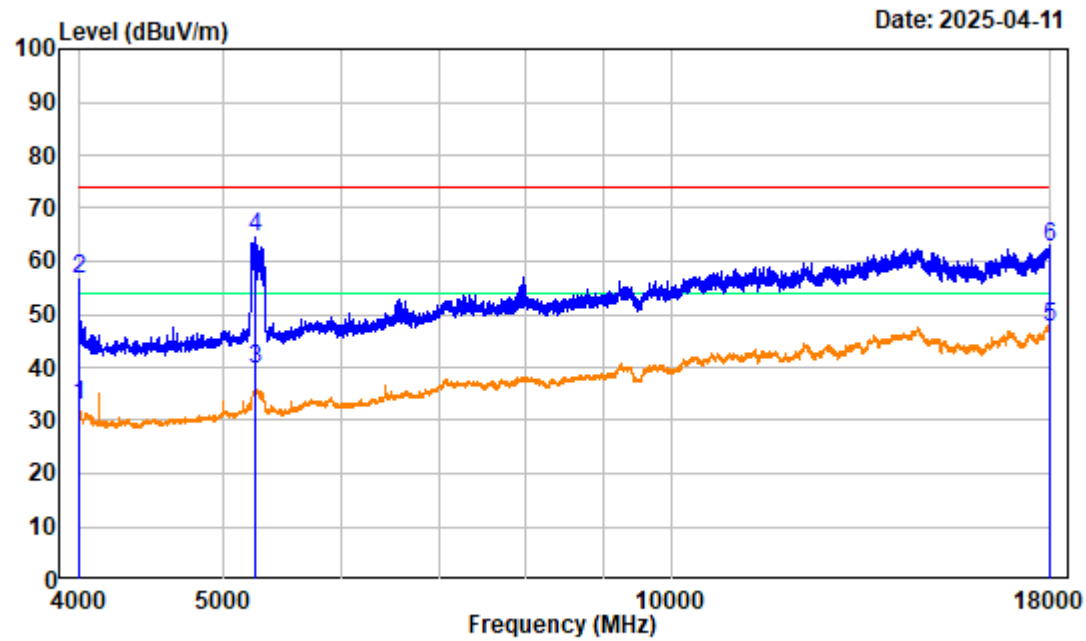
Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Middle Channel 2440MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	40.35	32.24	54.00	-21.76	Average
2	4000.000	-8.11	67.56	59.45	74.00	-14.55	Peak
3	5253.000	-5.68	46.05	40.37	54.00	-13.63	Average
4	5253.000	-5.68	70.79	65.11	74.00	-8.89	Peak
5	17935.250	8.20	39.41	47.61	54.00	-6.39	Average
6	17935.250	8.20	54.93	63.13	74.00	-10.87	Peak



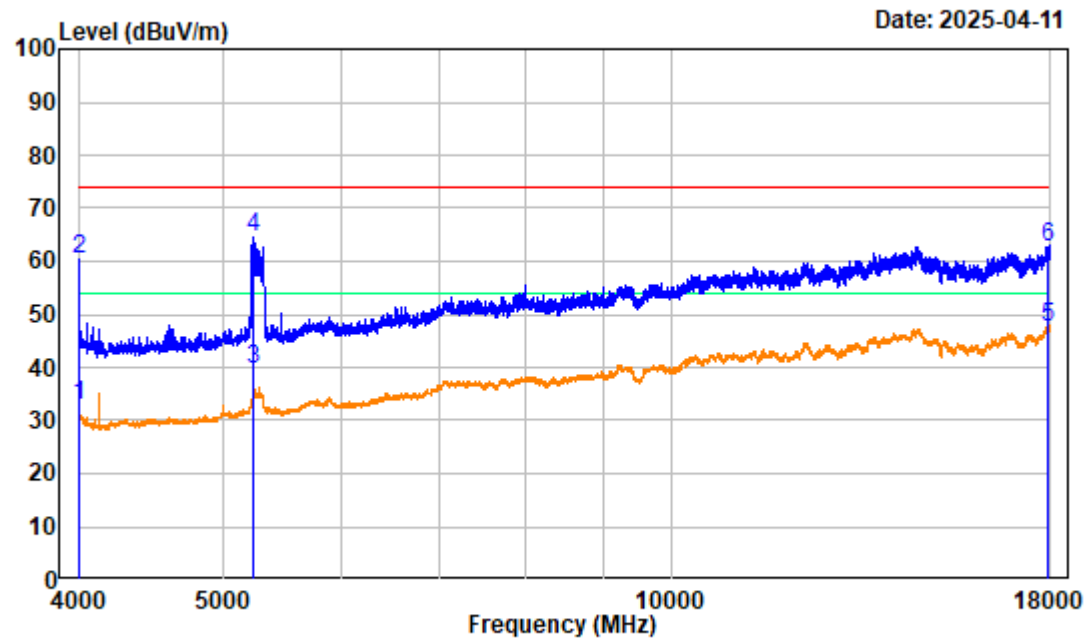
Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	40.84	32.73	54.00	-21.27	Average
2	4000.000	-8.11	66.58	58.47	74.00	-15.53	Peak
3	5240.750	-5.66	45.65	39.99	54.00	-14.01	Average
4	5240.750	-5.66	68.86	63.20	74.00	-10.80	Peak
5	17933.500	8.20	39.68	47.88	54.00	-6.12	Average
6	17933.500	8.20	54.82	63.02	74.00	-10.98	Peak



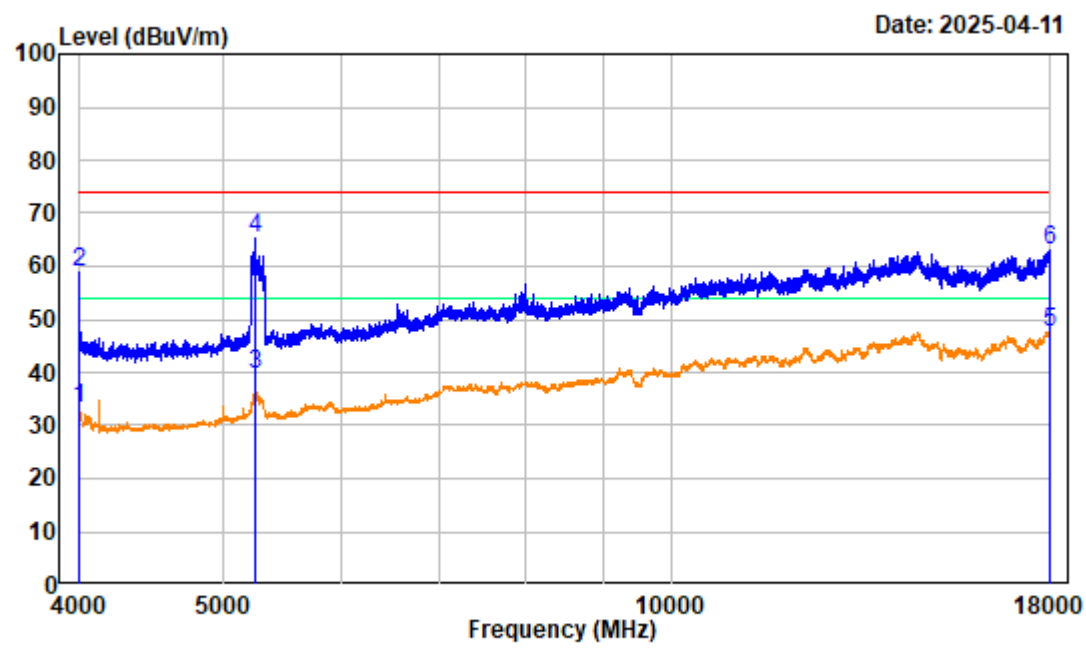
Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	40.86	32.75	54.00	-21.25	Average
2	4000.000	-8.11	64.69	56.58	74.00	-17.42	Peak
3	5265.250	-5.75	45.52	39.77	54.00	-14.23	Average
4	5265.250	-5.75	70.13	64.38	74.00	-9.62	Peak
5	17959.750	8.21	39.32	47.53	54.00	-6.47	Average
6	17959.750	8.21	54.45	62.66	74.00	-11.34	Peak



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	41.10	32.99	54.00	-21.01	Average
2	4000.000	-8.11	68.51	60.40	74.00	-13.60	Peak
3	5247.750	-5.66	45.39	39.73	54.00	-14.27	Average
4	5247.750	-5.66	70.03	64.37	74.00	-9.63	Peak
5	17937.000	8.19	39.47	47.66	54.00	-6.34	Average
6	17937.000	8.19	54.53	62.72	74.00	-11.28	Peak



Site : chamber

Condition : 3m VERTICAL

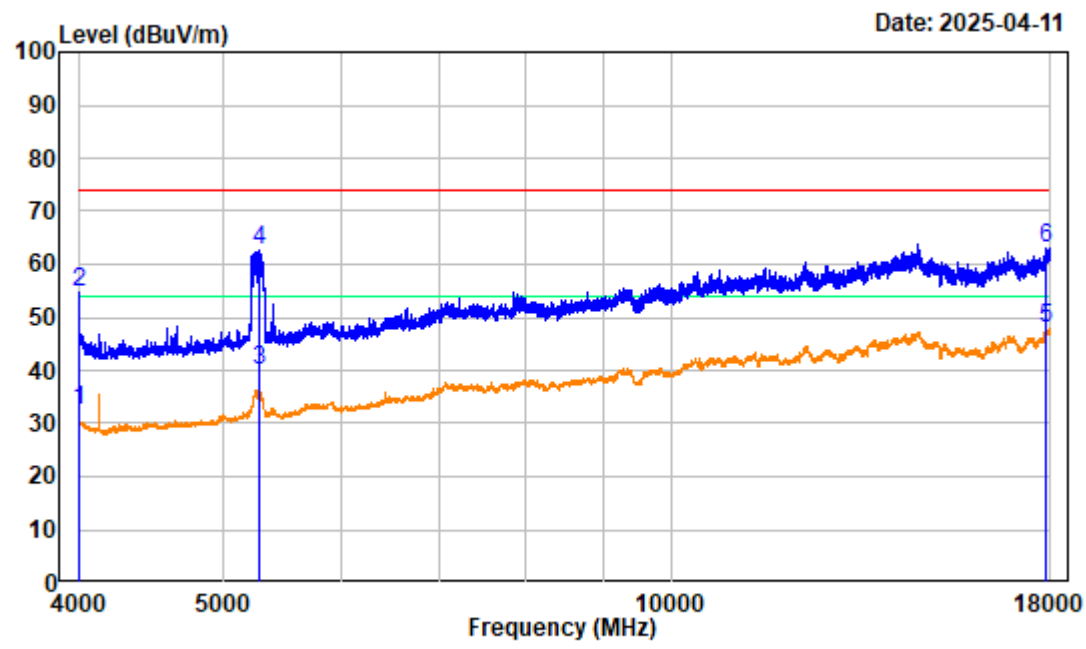
Project No.: 2504R28083E-RF

Test Mode : TransmittingTester:Kevin Lv

Note : BLE 2M Low Channel 2402MHz

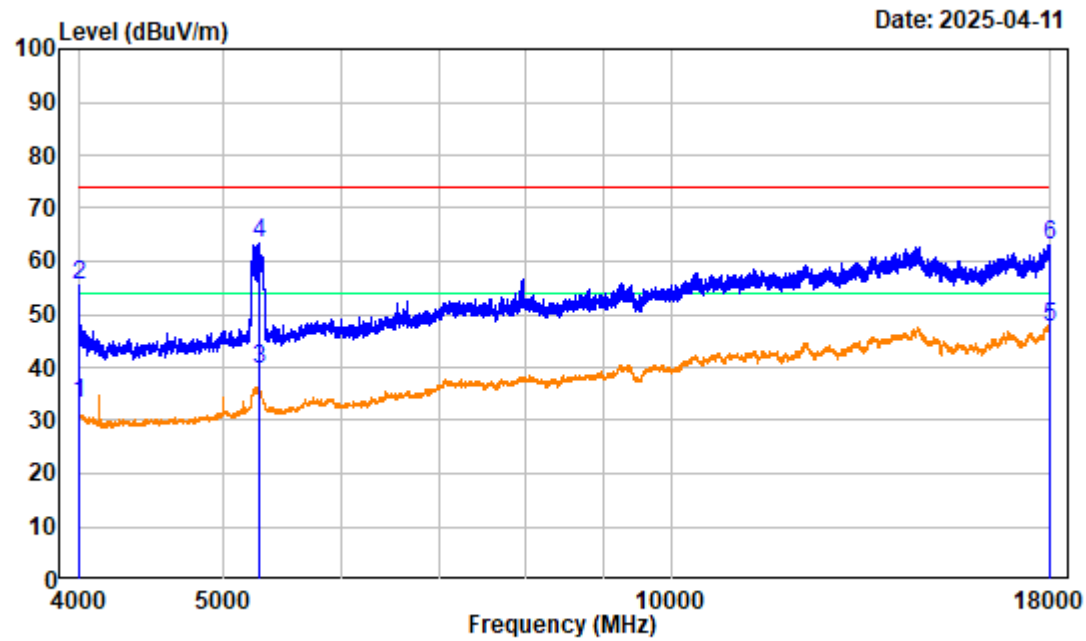
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	41.15	33.04	54.00	-20.96	Average
2	4000.000	-8.11	66.98	58.87	74.00	-15.13	Peak
3	5260.000	-5.72	45.28	39.56	54.00	-14.44	Average
4	5260.000	-5.72	70.98	65.26	74.00	-8.74	Peak
5	17987.750	8.30	39.12	47.42	54.00	-6.58	Average
6	17987.750	8.30	54.59	62.89	74.00	-11.11	Peak



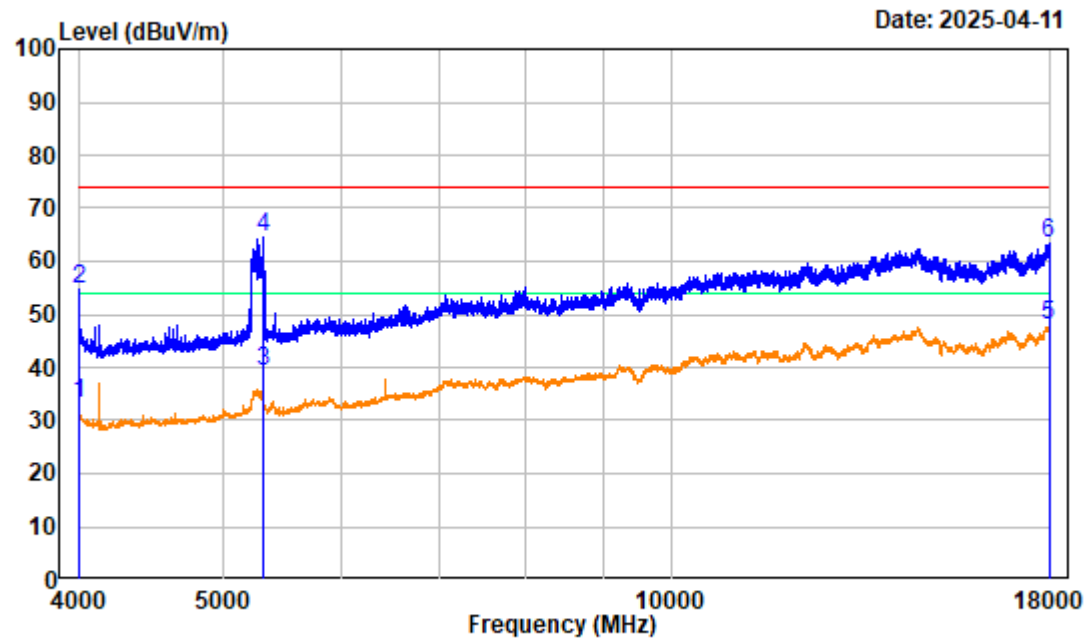
Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Middle Channel 2440MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	40.61	32.50	54.00	-21.50	Average
2	4000.000	-8.11	62.96	54.85	74.00	-19.15	Peak
3	5298.500	-5.95	45.91	39.96	54.00	-14.04	Average
4	5298.500	-5.95	68.65	62.70	74.00	-11.30	Peak
5	17888.000	8.23	39.52	47.75	54.00	-6.25	Average
6	17888.000	8.23	54.93	63.16	74.00	-10.84	Peak



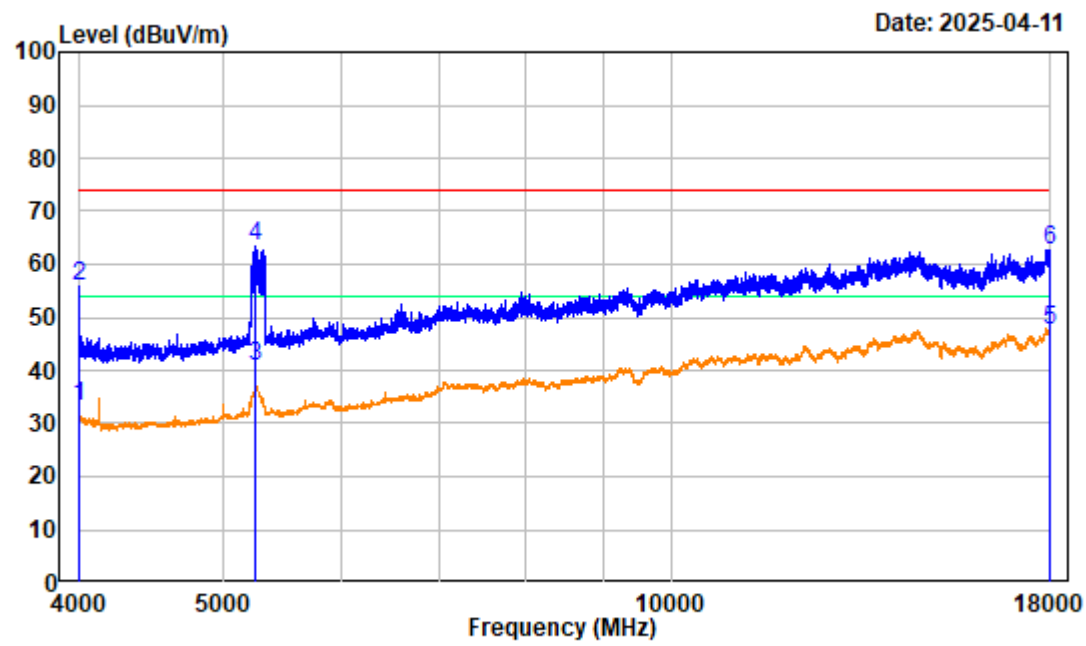
Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Middle Channel 2440MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4003.500	-8.12	41.51	33.39	54.00	-20.61	Average
2	4003.500	-8.12	63.66	55.54	74.00	-18.46	Peak
3	5291.500	-5.90	45.68	39.78	54.00	-14.22	Average
4	5291.500	-5.90	69.37	63.47	74.00	-10.53	Peak
5	17996.500	8.32	39.34	47.66	54.00	-6.34	Average
6	17996.500	8.32	54.86	63.18	74.00	-10.82	Peak



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

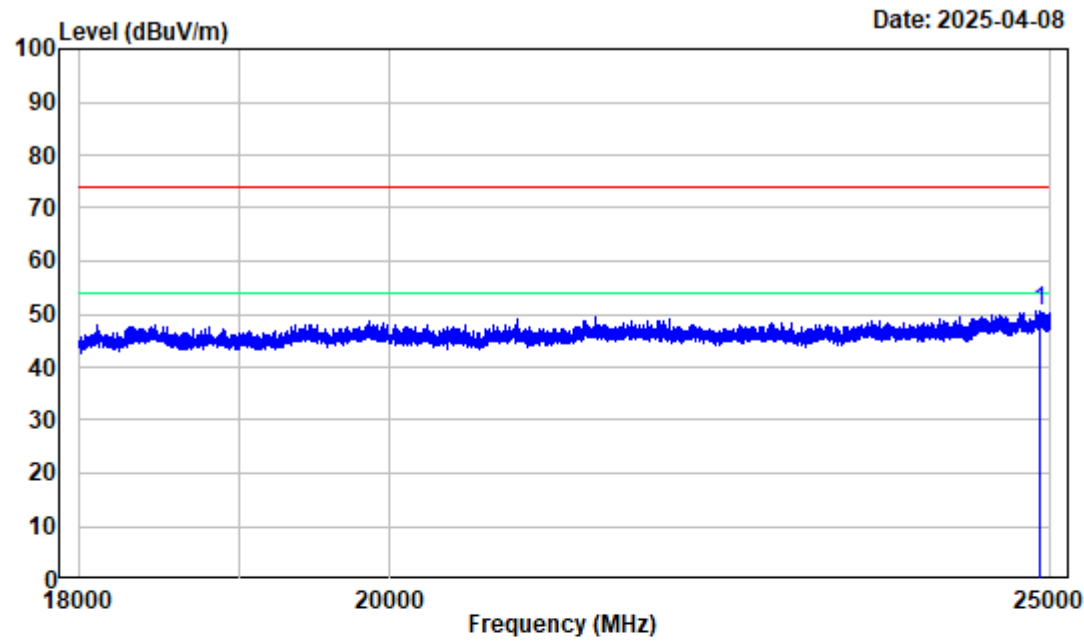
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	41.19	33.08	54.00	-20.92	Average
2	4000.000	-8.11	62.92	54.81	74.00	-19.19	Peak
3	5326.500	-5.87	44.99	39.12	54.00	-14.88	Average
4	5326.500	-5.87	70.52	64.65	74.00	-9.35	Peak
5	17958.000	8.21	39.53	47.74	54.00	-6.26	Average
6	17958.000	8.21	55.24	63.45	74.00	-10.55	Peak



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

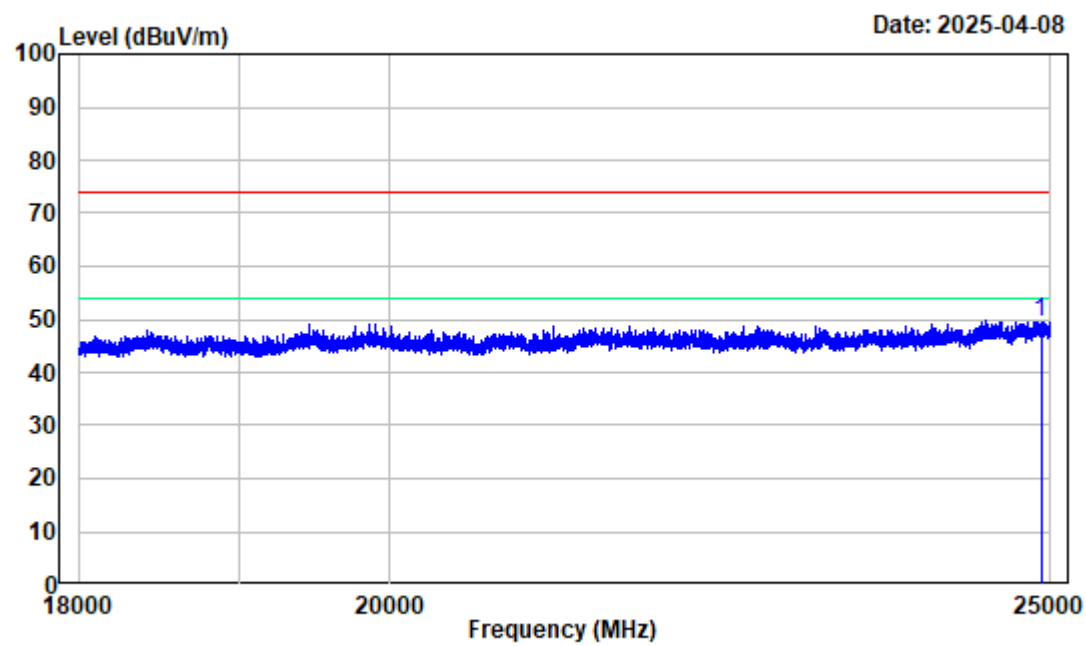
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4000.000	-8.11	41.46	33.35	54.00	-20.65	Average
2	4000.000	-8.11	64.12	56.01	74.00	-17.99	Peak
3	5256.500	-5.70	46.41	40.71	54.00	-13.29	Average
4	5256.500	-5.70	69.25	63.55	74.00	-10.45	Peak
5	17973.750	8.25	39.34	47.59	54.00	-6.41	Average
6	17973.750	8.25	54.48	62.73	74.00	-11.27	Peak

18GHz~25GHz:



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Middle Channel 2440MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz

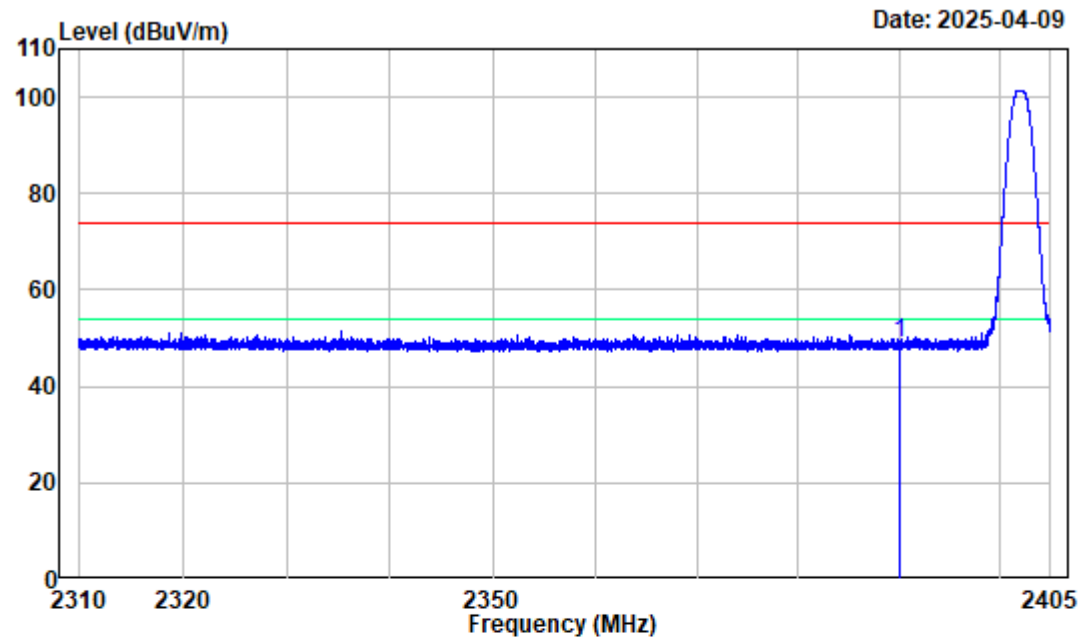
	Freq	Factor	Read	Limit	Over	Remark
			Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	24909.880	0.42	50.21	50.63	74.00	-23.37 Peak



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Middle Channel 2440MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz

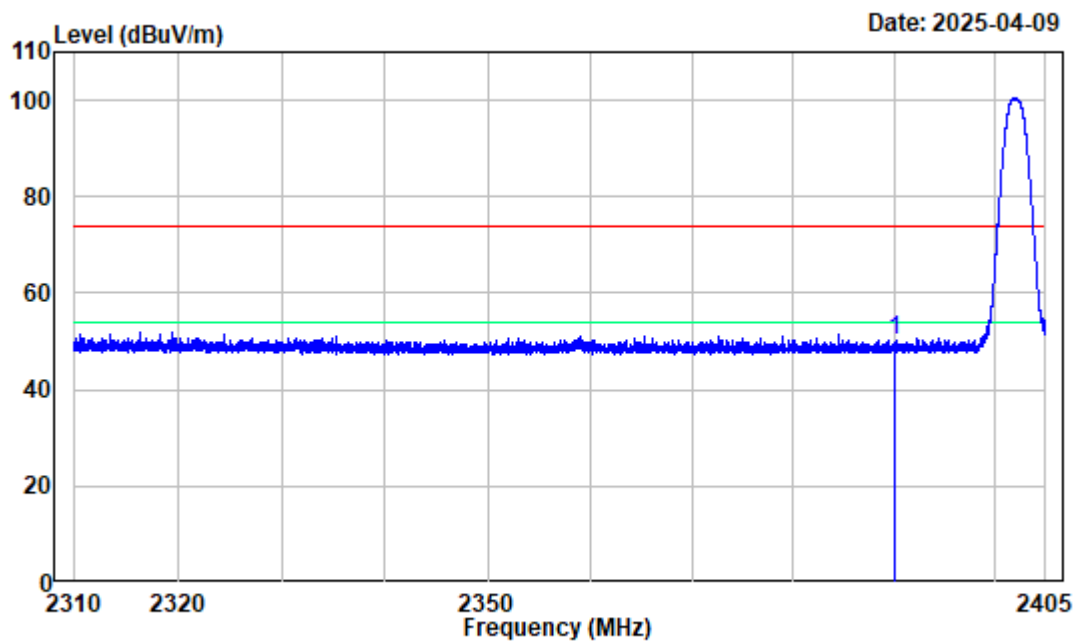
Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	24919.500	0.44	49.13	49.57	74.00	-24.43	Peak

Band Edge:



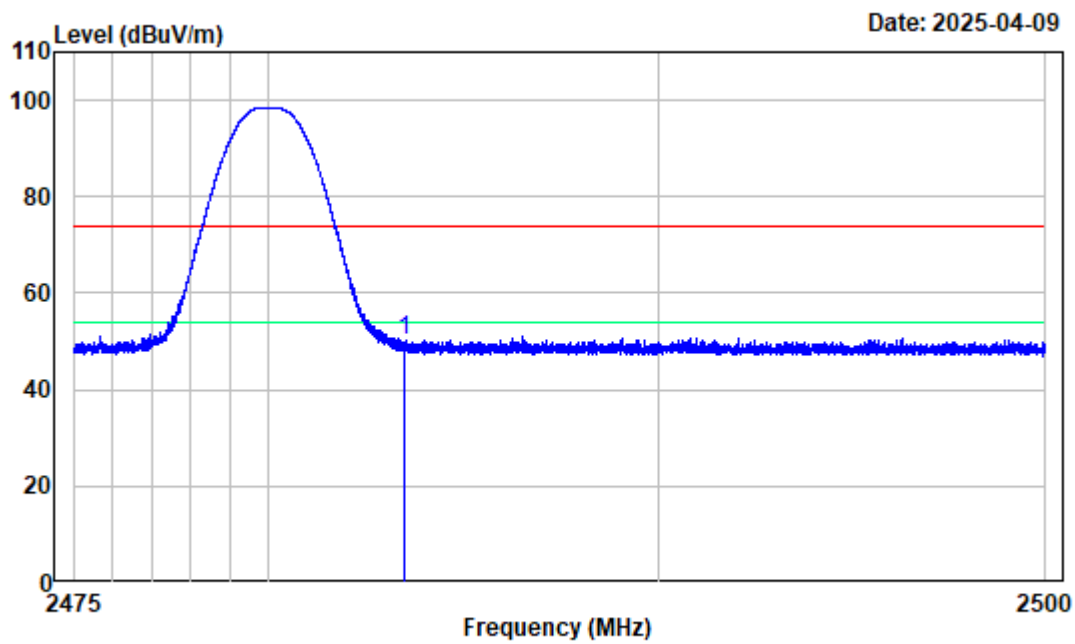
Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

		Read		Limit	Over	Remark
Freq	Factor	Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2390.000	-10.24	59.29	49.05	74.00	-24.95	Peak



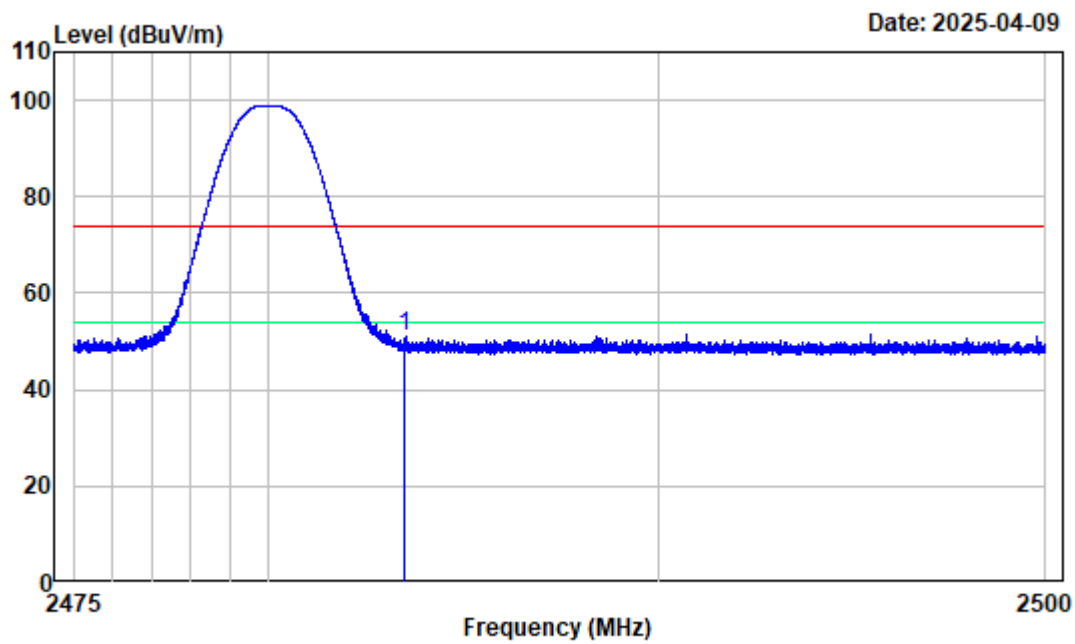
Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	-10.24	60.57	50.33	74.00	-23.67	peak



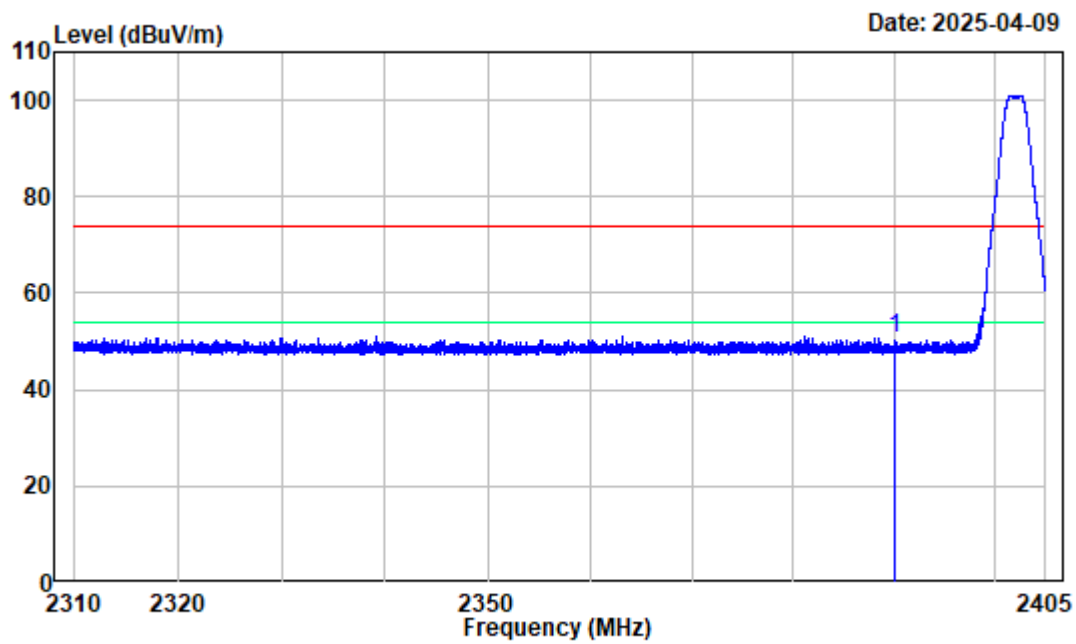
Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.22	60.39	50.17	74.00	-23.83	peak



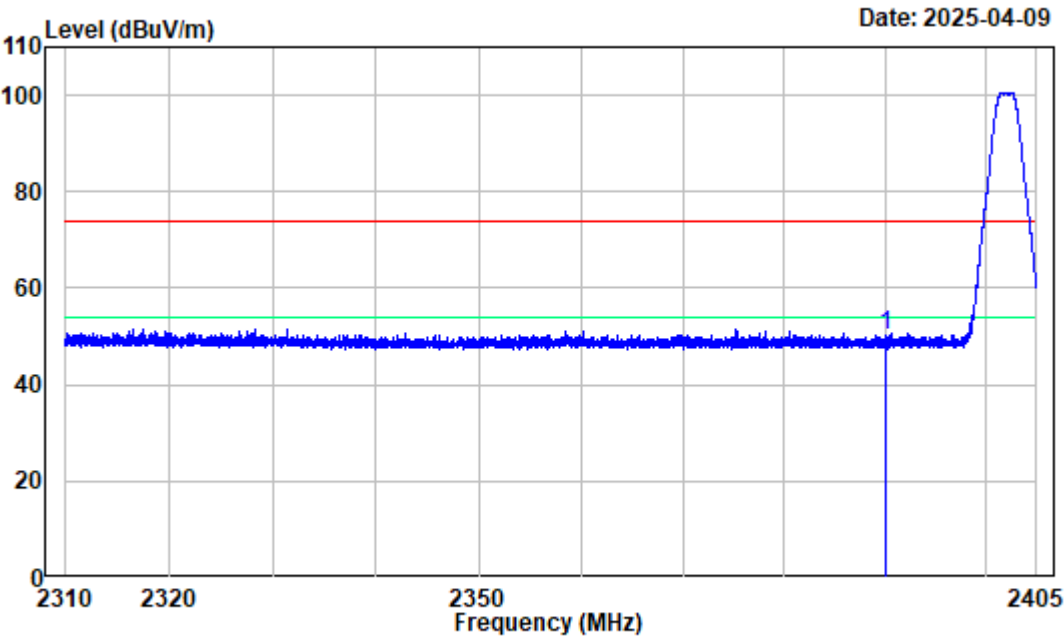
Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 1M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.22	61.08	50.86	74.00	-23.14	peak



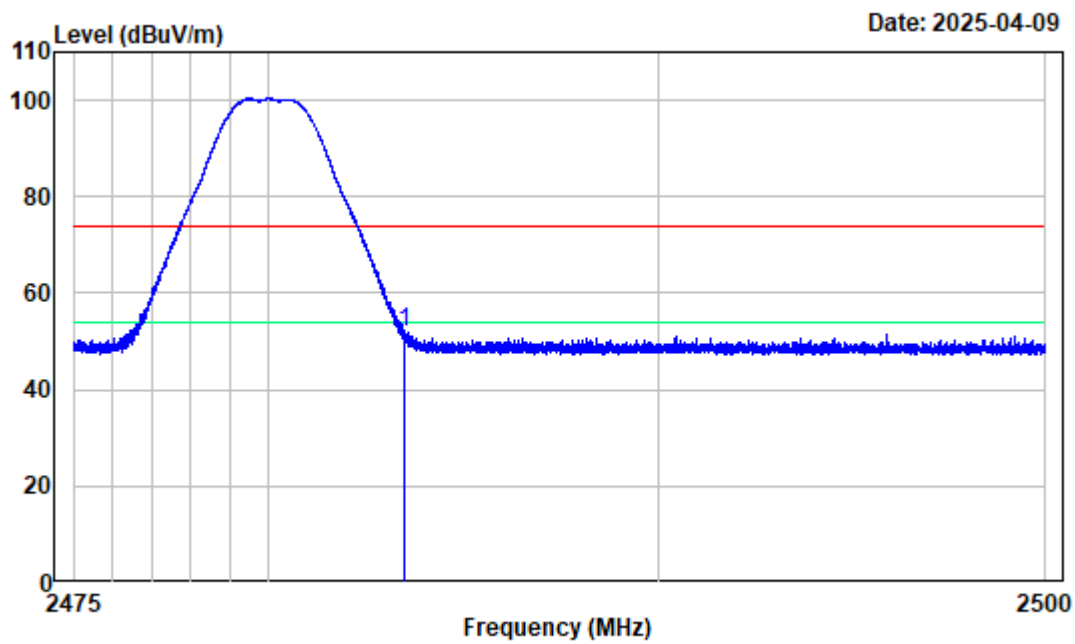
Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2390.000	-10.24	60.78	50.54	74.00	-23.46	peak



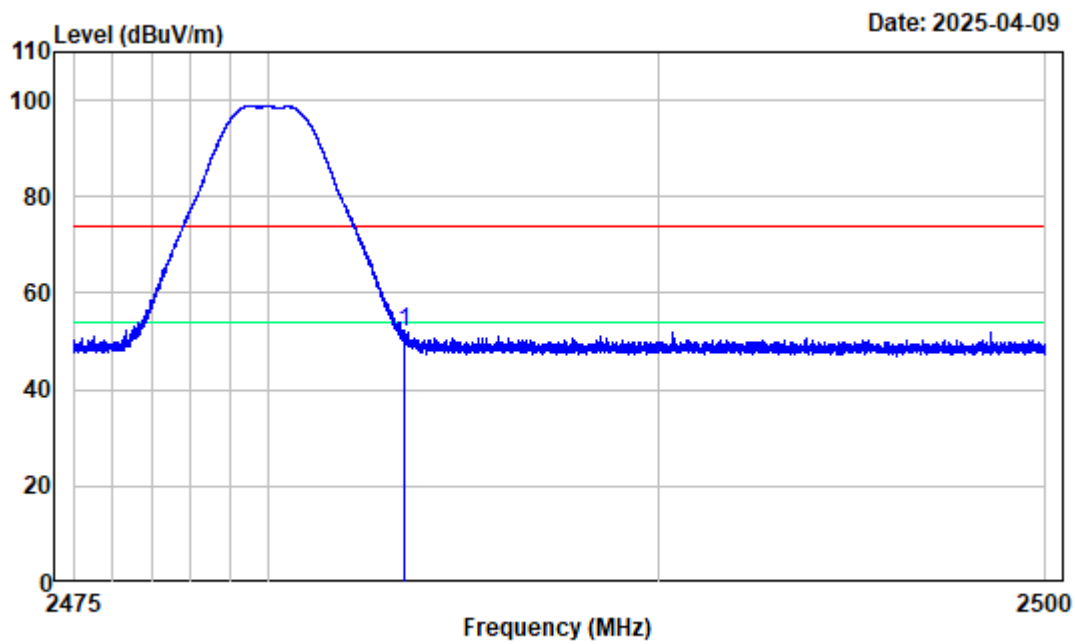
Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M Low Channel 2402MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	-10.24	60.42	50.18	74.00	-23.82	peak



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.22	62.31	52.09	74.00	-21.91	peak



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504R28083E-RF
Test Mode : Transmitting Tester:Kevin Lv
Note : BLE 2M High Channel 2480MHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.22	62.12	51.90	74.00	-22.10	peak

FCC §15.247(a) (2)-6 dB EMISSION BANDWIDTH & OCCUPIED BANDWIDTH

Applicable Standard

Systems using digital modulation techniques may operate in the 902–928MHz, 2400–2483.5MHz, and 5725–5850MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

Test Procedure

According to ANSI C63.10-2020, section 11.8 and section 6.9

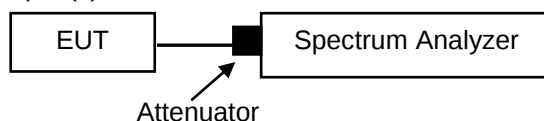
The steps for the first option are as follows:

- Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Trace mode = max-hold.
- Sweep = No faster than coupled (auto) time.
- Allow the trace to stabilize.
- Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “–6 dB down amplitude”. If a marker is below this “–6 dB down amplitude” value, then it shall be as close as possible to this value.

According to ANSI C63.10-2020, section 7.8.6 and 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:

- 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.
- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement.
- 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 $[10 \log (\text{OBW}/\text{RBW})]$ below the reference level. Specific guidance is given in 4.1.6.2.
- Step a) through step c) might require iteration to adjust within the specified range.
- 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.
- Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- 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.
- The occupied bandwidth shall be reported by providing spectral 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).



Test Data

Please refer to the Appendix.

FCC §15.247(b) (3)-MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

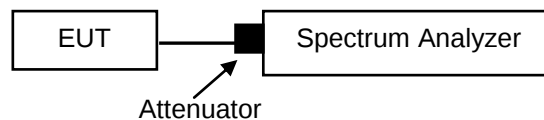
Test Procedure

According to ANSI C63.10-2020, section 11.9.1.1

- Measurement using a spectrum analyzer (SA)

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- Set the RBW $\geq$ DTS bandwidth.
- Set VBW $\geq$ $[3 \times \text{RBW}]$.
- Set span $\geq$ $[3 \times \text{RBW}]$.
- Sweep time = No faster than coupled (auto) time.
- Detector = peak.
- Trace mode = max-hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.



Test Data

Please refer to the Appendix.

FCC §15.247(d)-100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

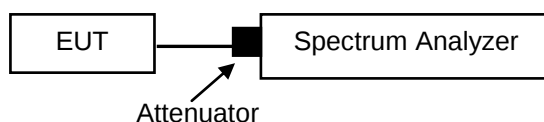
According to ANSI C63.10-2020, section 11.11

- a) Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.

NOTE—the number of points can also be increased for large spans to retain frequency resolution

- b) Set the RBW = 100 kHz.
c) Set the VBW $\geq [3 \times \text{RBW}]$.
d) Detector = peak.
e) Sweep time = No faster than coupled (auto) time.
f) Trace mode = max-hold.
g) Allow trace to fully stabilize.
h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.



Test Data

Please refer to the Appendix.

FCC §15.247(e)-POWER SPECTRAL DENSITY

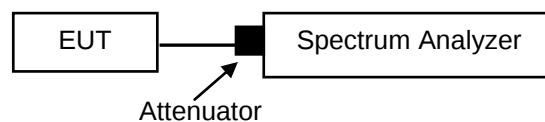
Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

According to ANSI C63.10-2020, section 11.10.2

- Set analyzer center frequency to DTS channel center frequency.
- Set the span >1.5 times the DTS bandwidth.
- Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = No faster than coupled (auto) time.
- Trace mode = max-hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.
- If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.



Test Data

Please refer to the Appendix.

APPENDIX (RF TEST RESULTS)

6dB Emission Bandwidth

Test Information:

Sample No.:	30OX-1	Test Date:	2025/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cayde Hou	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	18.6	Relative Humidity: (%)	61	ATM Pressure: (kPa)	100.4
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Test Data:

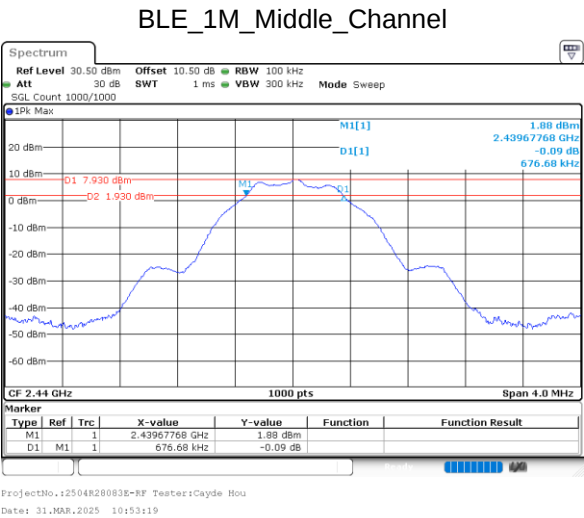
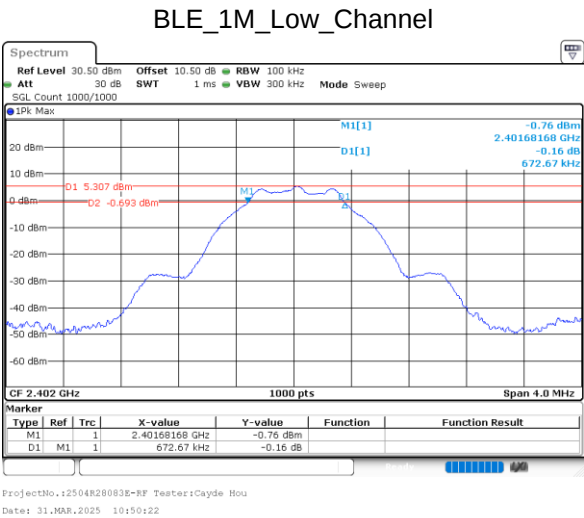
BLE 1M

Channel	Result (MHz)	Limit (MHz)	Verdict
Low	0.673	≥0.5	Pass
Middle	0.677	≥0.5	Pass
High	0.669	≥0.5	Pass

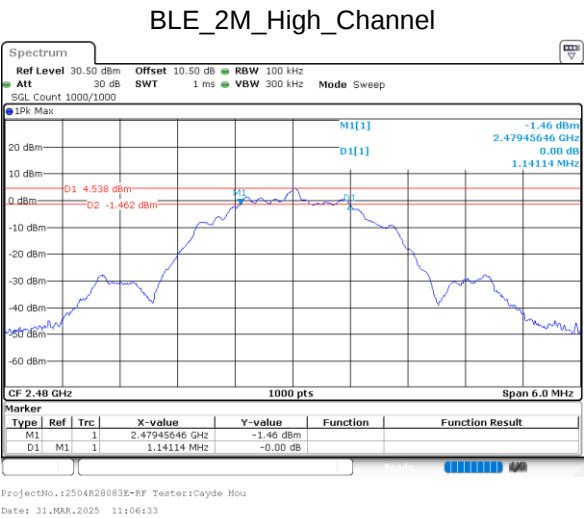
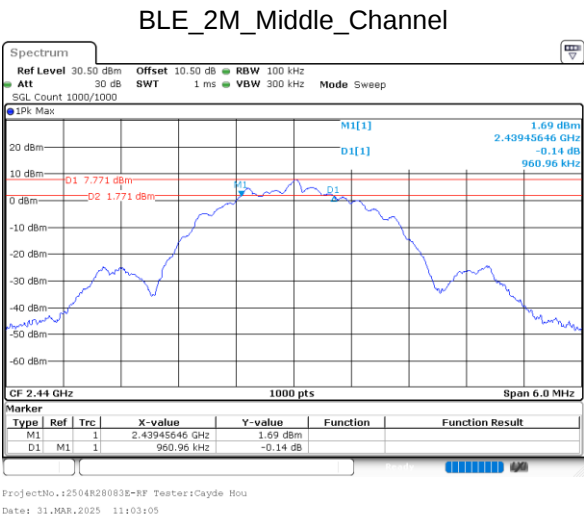
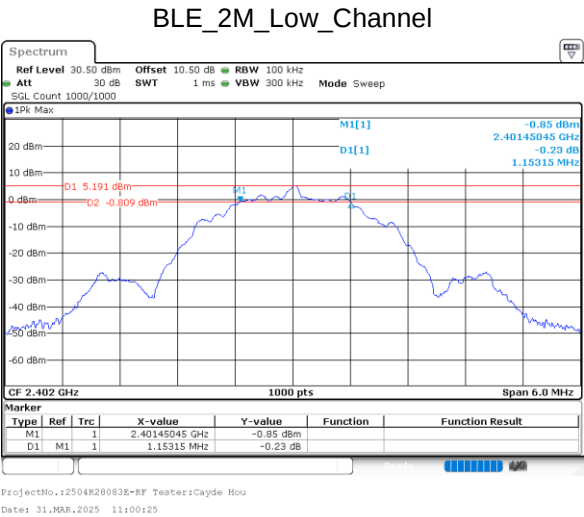
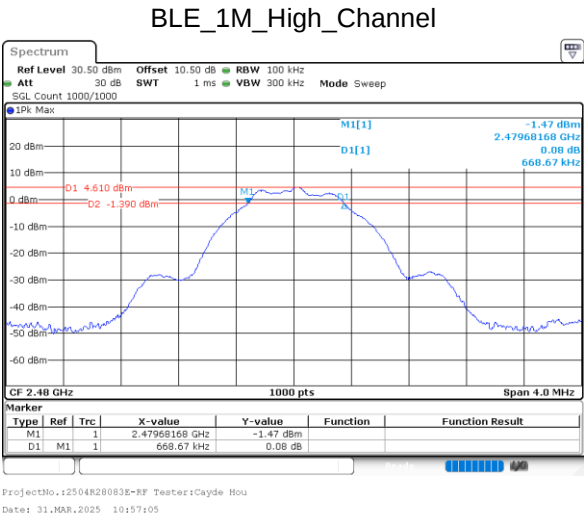
BLE 2M

Channel	Result (MHz)	Limit (MHz)	Verdict
Low	1.153	≥0.5	Pass
Middle	0.961	≥0.5	Pass
High	1.141	≥0.5	Pass

BLE 1M



BLE 2M



99% Occupied Bandwidth

Test Information:

Sample No.:	30OX-1	Test Date:	2025/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cayde Hou	Test Result:	/

Environmental Conditions:

Temperature: (°C)	18.6	Relative Humidity: (%)	61	ATM Pressure: (kPa)	100.4
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Test Data:

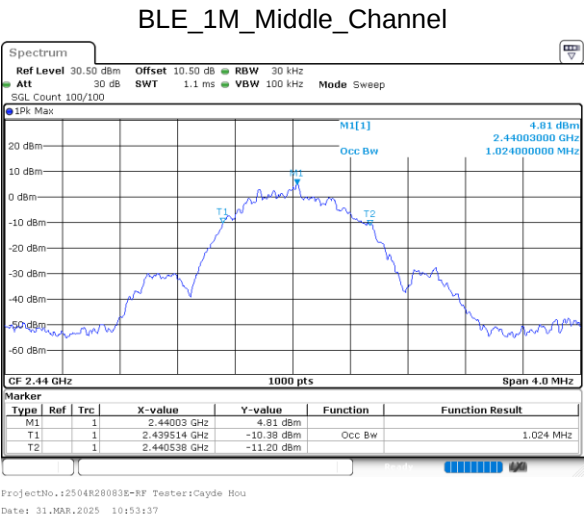
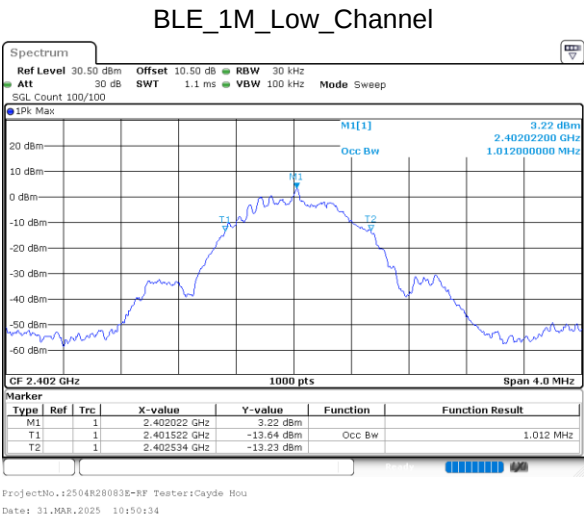
BLE 1M

Channel	99% OBW (MHz)
Low	1.012
Middle	1.024
High	1.020

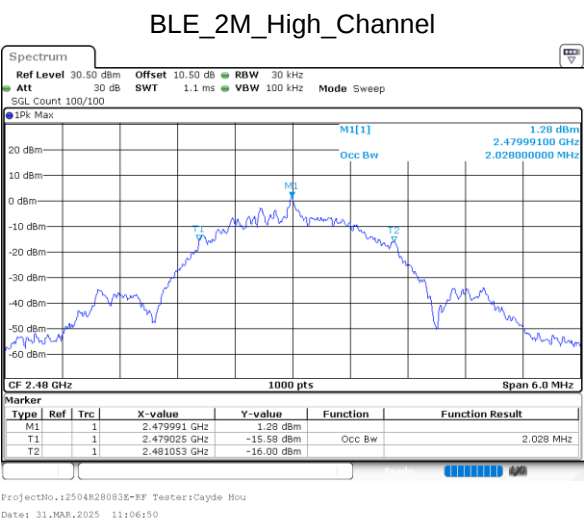
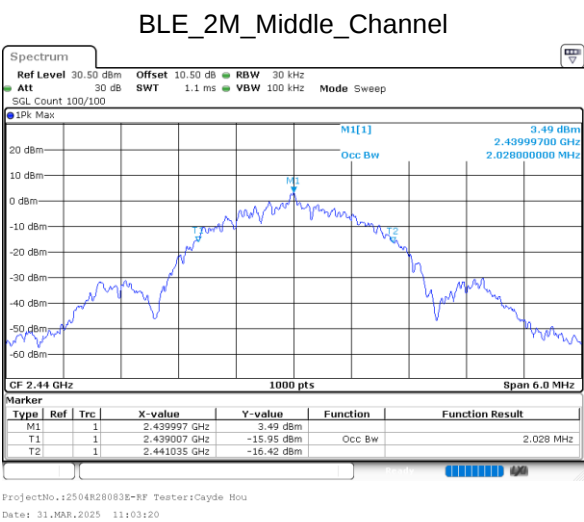
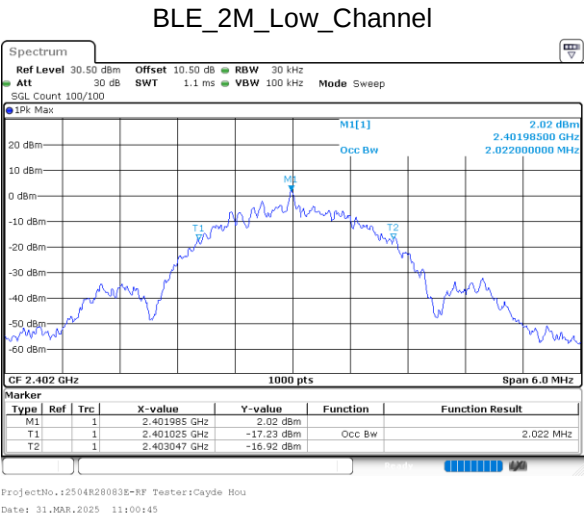
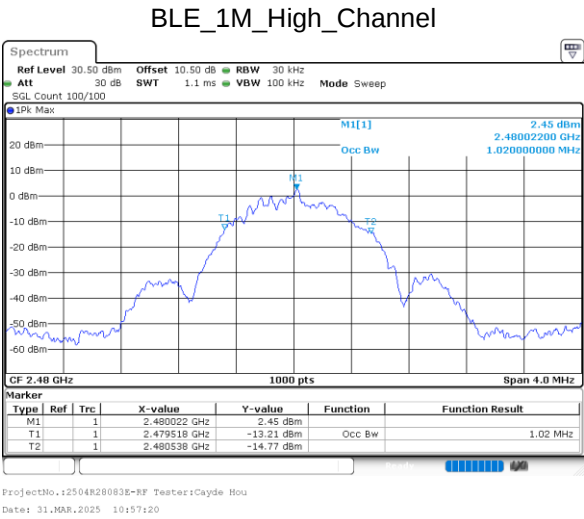
BLE 2M

Channel	99% OBW (MHz)
Low	2.022
Middle	2.028
High	2.028

BLE 1M



BLE 2M



Maximum Conducted Output Power

Test Information:

Sample No.:	30OX-1	Test Date:	2025/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cayde Hou	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	18.6	Relative Humidity: (%)	61	ATM Pressure: (kPa)	100.4
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Test Data:

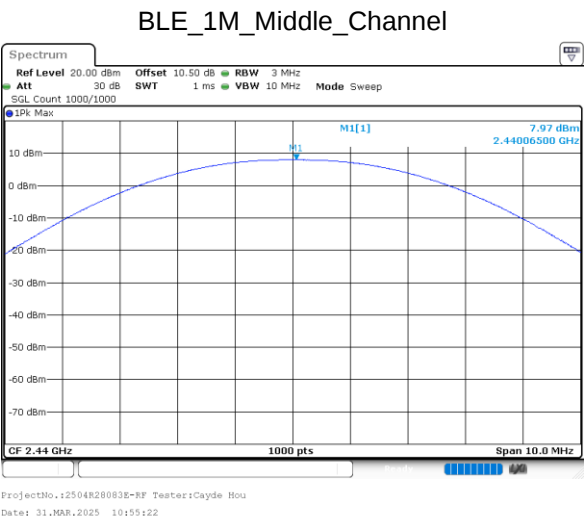
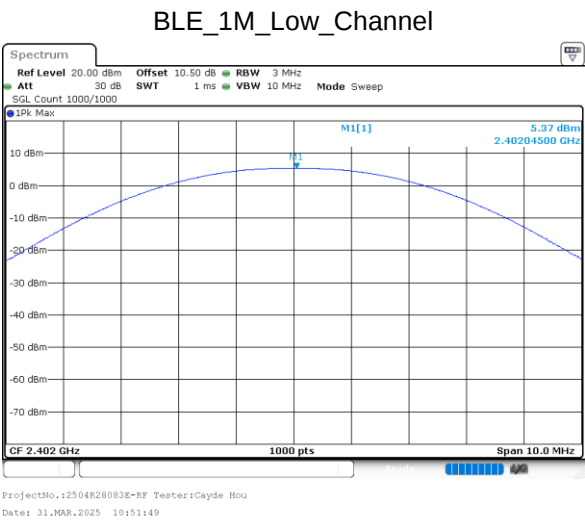
BLE 1M

Channel	Peak Output Power (dBm)	Limit (dBm)	Verdict
Low	5.37	30.00	Pass
Middle	7.97	30.00	Pass
High	4.68	30.00	Pass

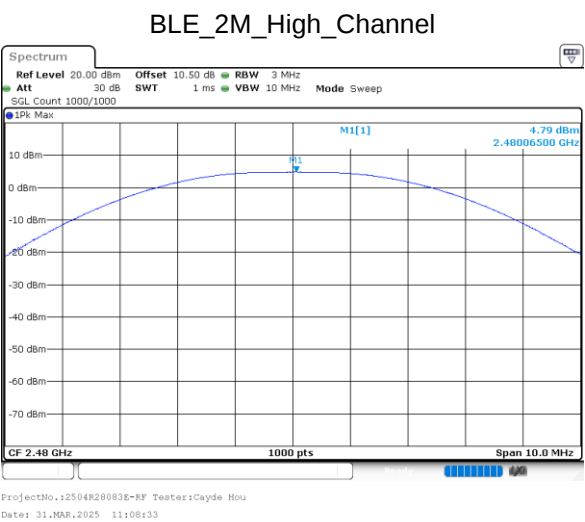
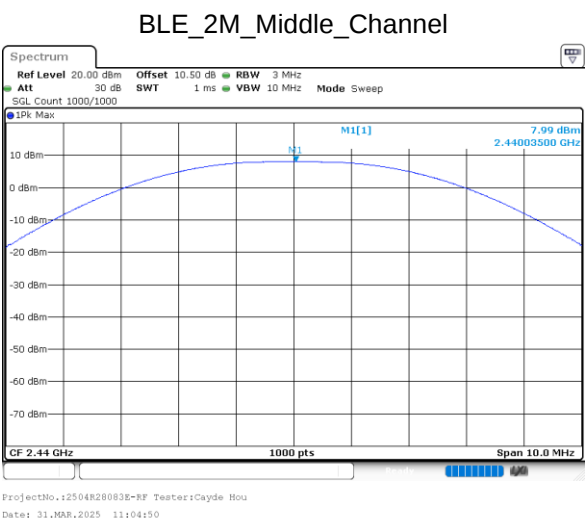
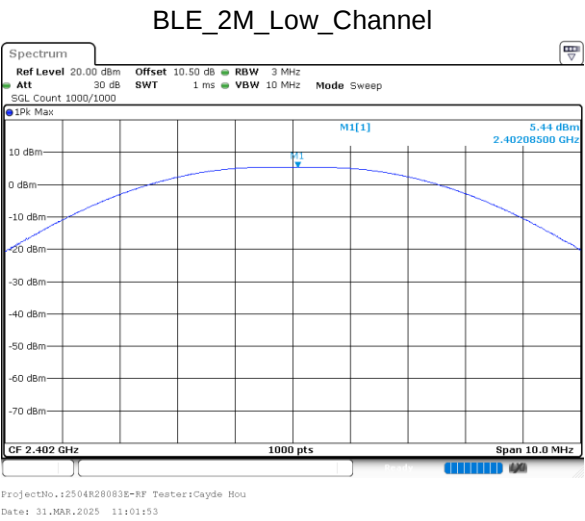
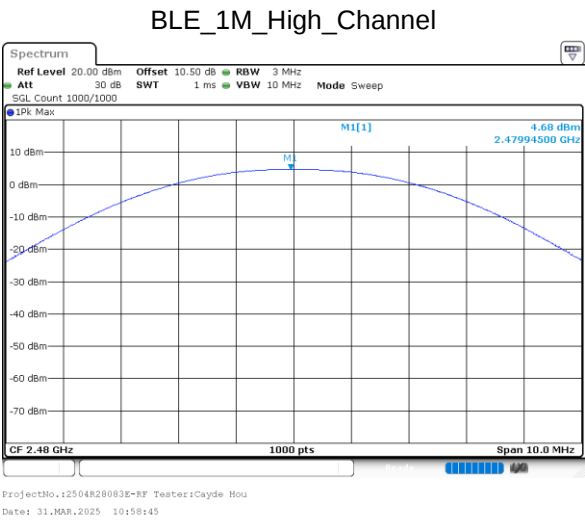
BLE 2M

Channel	Peak Output Power (dBm)	Limit (dBm)	Verdict
Low	5.44	30.00	Pass
Middle	7.99	30.00	Pass
High	4.79	30.00	Pass

BLE 1M



BLE 2M



Power Spectral Density

Test Information:

Sample No.:	30OX-1	Test Date:	2025/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cayde Hou	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	18.6	Relative Humidity: (%)	61	ATM Pressure: (kPa)	100.4
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Test Data:

BLE 1M

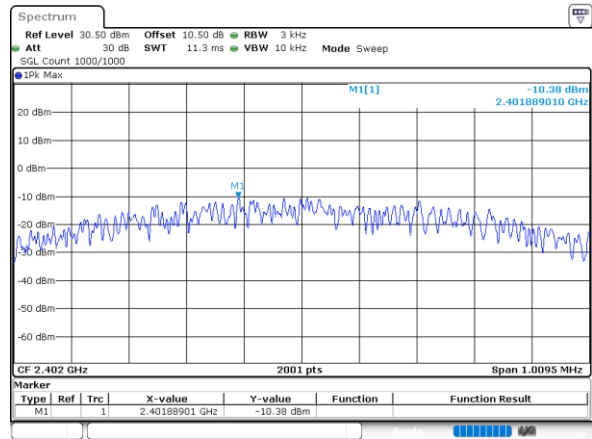
Channel	Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-10.38	8	Pass
Middle	-7.42	8	Pass
High	-11.05	8	Pass

BLE 2M

Channel	Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low	-12.28	8	Pass
Middle	-9.51	8	Pass
High	-12.49	8	Pass

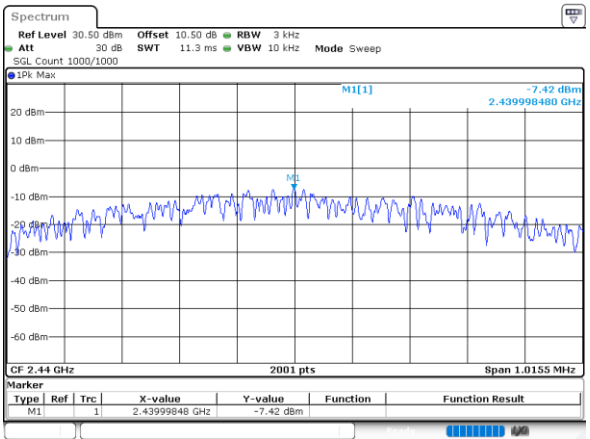
BLE 1M

BLE_1M_Low_Channel



ProjectNo.:2504R28083E-RF Tester:Cayde Hou
Date: 31.MAR.2025 10:52:18

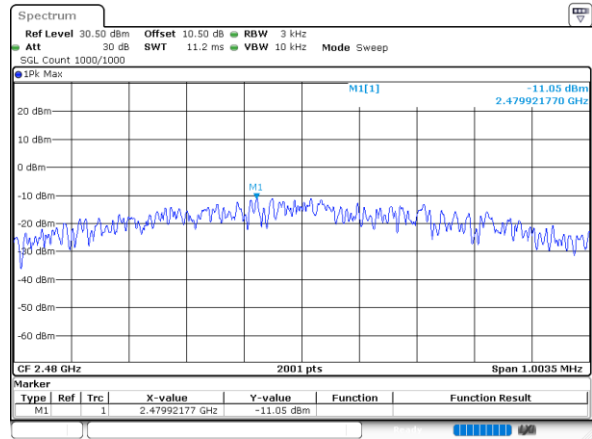
BLE_1M_Middle_Channel



ProjectNo.:2504R28083E-RF Tester:Cayde Hou
Date: 31.MAR.2025 10:55:58

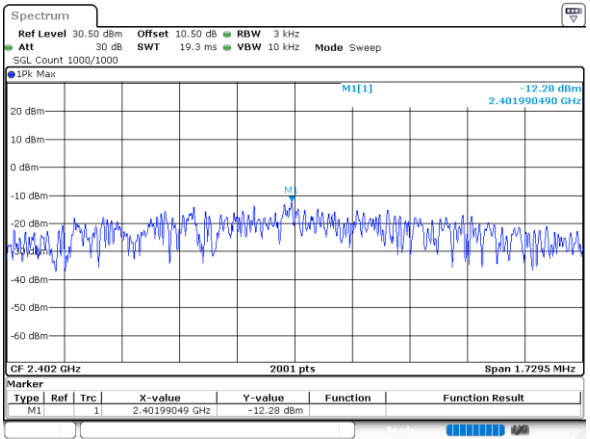
BLE 2M

BLE_1M_High_Channel



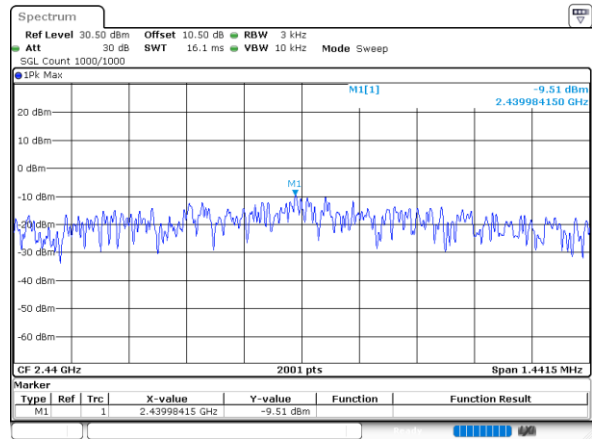
ProjectNo.:2504R28083E-RF Tester:Cayde Hou
Date: 31.MAR.2025 10:59:17

BLE_2M_Low_Channel



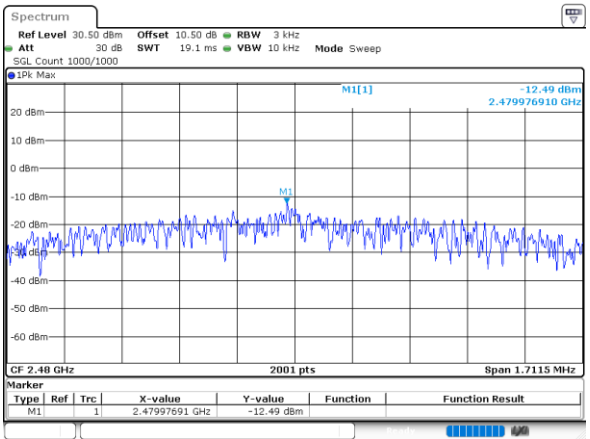
ProjectNo.:2504R28083E-RF Tester:Cayde Hou
Date: 31.MAR.2025 11:02:32

BLE_2M_Middle_Channel



ProjectNo.:2504R28083E-RF Tester:Cayde Hou
Date: 31.MAR.2025 11:09:28

BLE_2M_High_Channel



ProjectNo.:2504R28083E-RF Tester:Cayde Hou
Date: 31.MAR.2025 11:09:15

100 kHz Bandwidth of Frequency Band Edge

Test Information:

Sample No.:	30OX-1	Test Date:	2025/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cayde Hou	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	18.6	Relative Humidity: (%)	61	ATM Pressure: (kPa)	100.4
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Test Data:

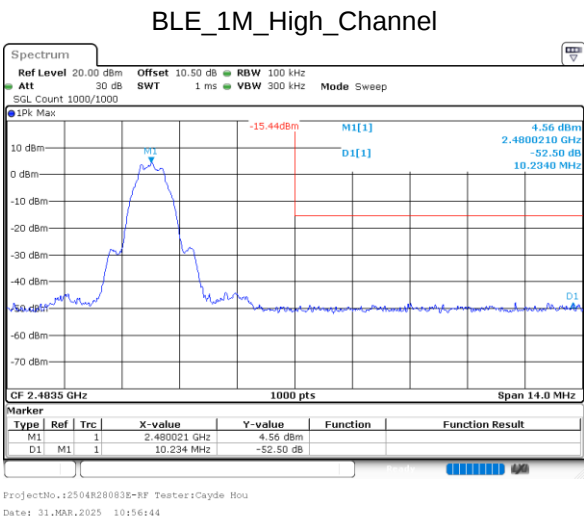
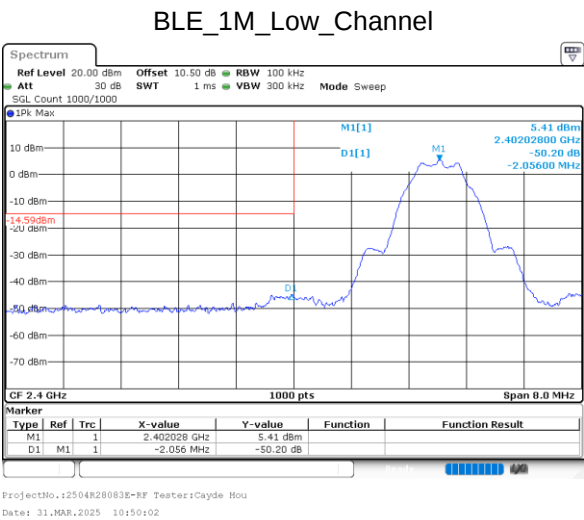
BLE 1M

Channel	Result (dB)	Limit (dB)	Verdict
Low	50.20	20	Pass
High	52.50	20	Pass

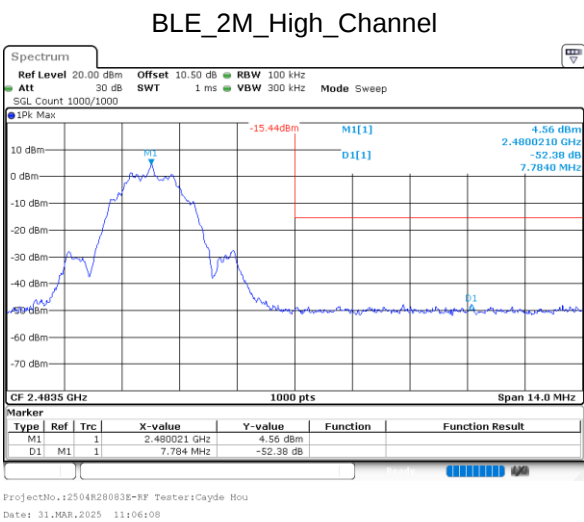
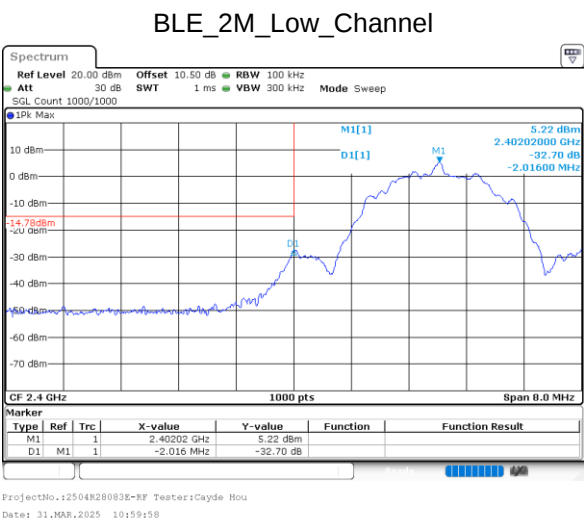
BLE 2M

Channel	Result (dB)	Limit (dB)	Verdict
Low	32.70	20	Pass
High	52.38	20	Pass

BLE 1M



BLE 2M



Duty Cycle

Test Information:

Sample No.:	30OX-1	Test Date:	2025/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cayde Hou	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	18.6	Relative Humidity: (%)	61	ATM Pressure: (kPa)	100.4
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Test Data:

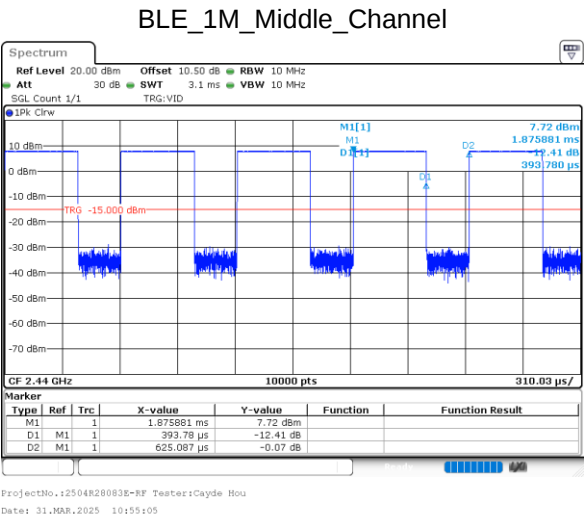
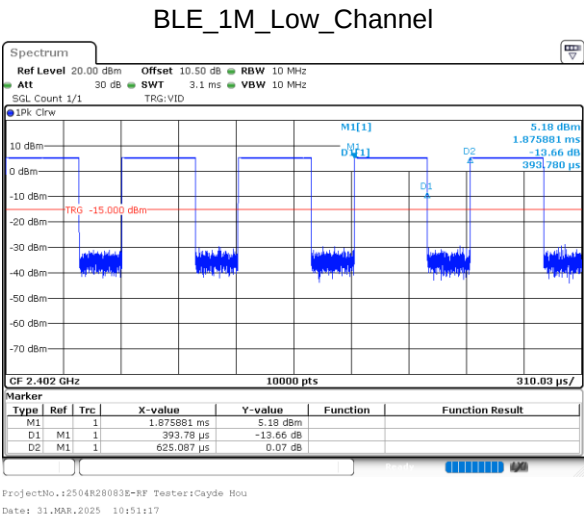
BLE 1M

Channel	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
Low	0.394	0.625	63.04	2.00	2538	3
Middle	0.394	0.625	63.04	2.00	2538	3
High	0.394	0.625	63.04	2.00	2538	3

BLE 2M

Channel	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
Low	0.208	0.625	33.28	4.78	4808	5
Middle	0.208	0.625	33.28	4.78	4808	5
High	0.208	0.625	33.28	4.78	4808	5

BLE 1M



BLE 2M

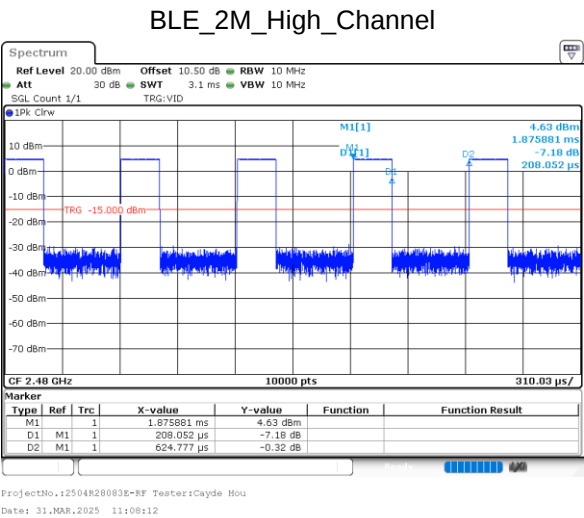
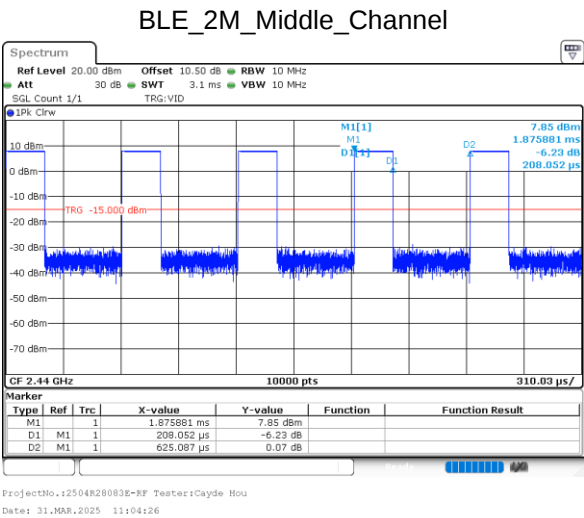
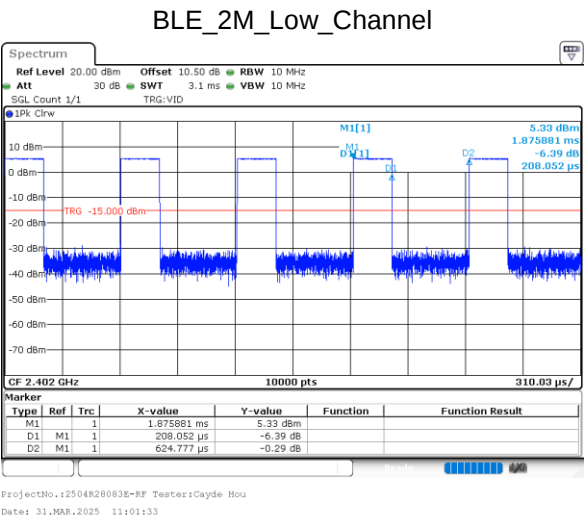
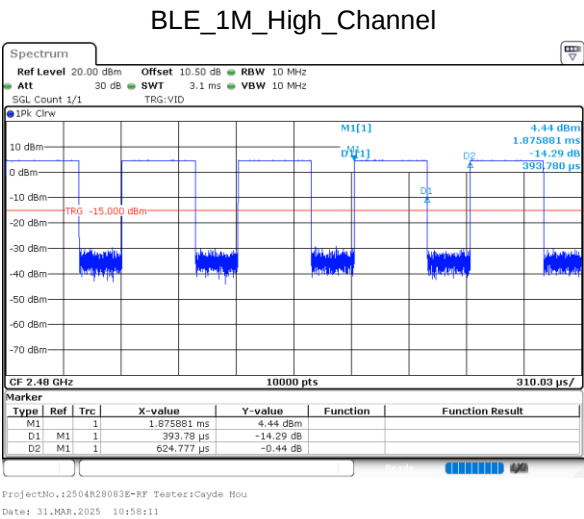


EXHIBIT A-EUT PHOTOGRAPHS

Please refer to the Annex: 2504R28083E-RF EUT EXTERNAL PHOTOGRAPHS and 2504R28083E-RF EUT INTERNAL PHOTOGRAPHS.

EXHIBIT B-TEST SETUP PHOTOGRAPHS

Please refer to the Attachment: 2504R28083E-RF-00B TEST SETUP PHOTOGRAPHS.

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