TEST REPORT

Applicant Name:	YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.
Address:	No.666 Hu'an Rd. Huli District Xiamen City, Fujian, P.R. China
Report Number:	2401V67572E-RFB
FCC ID:	T2C-AX83H
IC:	10741A-AX83H

Test Standard (s)

FCC PART 15.247; RSS-GEN ISSUE 5, FEBRUARY 2021 AMENDMENT 2;
RSS-247 ISSUE 3, AUGUST 2023

Sample Description

Product Type:	Wi-Fi IP Phone
Model No.:	AX83H
Multiple Model(s) No.:	N/A
Trade Mark:	Yealink
Date Received:	2024/08/01
Issue Date:	2024/12/09

Test Result:	Pass▲

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Gala Liu
RF Engineer

Approved By:

Nancy Wang
RF Supervisor

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401V67572E-RFB	Original Report	2024/12/09

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

HVIN	AX83H
FVIN	180.86.254.93
Product	Wi-Fi IP Phone
Tested Model	AX83H
Multiple Model(s)	N/A
Frequency Range	BLE: 2402-2480MHz Wi-Fi: 2412-2462MHz
Maximum Conducted Peak Output Power	BLE: 9.84dBm Wi-Fi: 19.76dBm
Modulation Technique	BLE: GFSK Wi-Fi: DSSS, OFDM, OFDMA
Antenna Specification#	0.21dBi (provided by the applicant)
Voltage Range	DC3.80V from Battery or DC5V from Type-C Port or DC5V from Adapter
Sample serial number	2PBE-1 for Conducted and Radiated Emissions Test 2PBE-6 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Adapter 1 Model: YLPS051200B1-US Input: 100-240V~50/60Hz 0.2A Output: 5.0V, 1.2A Adapter 2 Model: YLPS051200C1-US Input: 100-240V~50/60Hz 0.2A Output: 5.0V, 1.2A
Note: The EUT powered by Type-C Port or Charger, the worst case powered by Charger with adapter 1 was selected to test for AC line conducted emission according to DSS report test result.	

Objective

This report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission's rules and RSS-GEN Issue 5, February 2021 Amendment 2 and RSS-247 Issue 3, August 2023 of the Innovation, Science and Economic Development Canada rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and 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 C63.10-2013, American National Standard of Procedures for Compliant Testing of Unlicensed Wireless Devices and RSS-GEN Issue 5, February 2021 Amendment 2 and RSS-247 Issue 3, August 2023.

And KDB 558074 D01 15.247 Meas Guidance v05r02.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF Frequency		213.55 Hz(k=2, 95% level of confidence)
RF output power, conducted		0.72 dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.75 dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9 kHz~150 KHz	3.94dB(k=2, 95% level of confidence)
	150 kHz ~30MHz	3.84dB(k=2, 95% level of confidence)
Radiated Emissions	9kHz - 30MHz	3.30dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	4.48dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	4.55dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	4.85dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.05dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.35dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.44dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.16dB(k=2, 95% level of confidence)
Temperature		±1℃
Humidity		±1%
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.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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. : 715558, the FCC Designation No. : CN5045.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0023.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For Wi-Fi mode, total 11 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	/	/
6	2437	/	/
7	2442	/	/

For 802.11b, 802.11g, 802.11n-HT20 and 802.11ax-HE20, EUT was tested with Channel 1, 6 and 11.
For 802.11n-HT40 and 802.11ax-HE40, EUT was tested with Channel 3, 6 and 9.

For BLE 1M mode, 40 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2412	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

EUT was tested with Channel 0, 19 and 39.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

"Authentication Tool.exe V 2.0.11.0"# exercise software was used and the power level as below. The software and power level was provided by the manufacturer.

The worst case was performed under:

Mode	Data rate	Power Level#		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	10	10	10
802.11g	6Mbps	10	10	10
802.11n-HT20	MCS0	10	10	10
802.11n-HT40	MCS0	10	10	10
802.11ax-HT20	MCS0	10	10	10
802.11ax-HT40	MCS0	10	10	10
BLE	1Mbps	Default	Default	Default

Note:
1. The worst-case data rates are determined to be as follows for each mode based upon inverstigation by measuring the average power, power and PSD across all data rates bandwidths, and modulations.
2. For 802.11 ax modes, the device not support partial RU mode.

Support Equipment List and Details

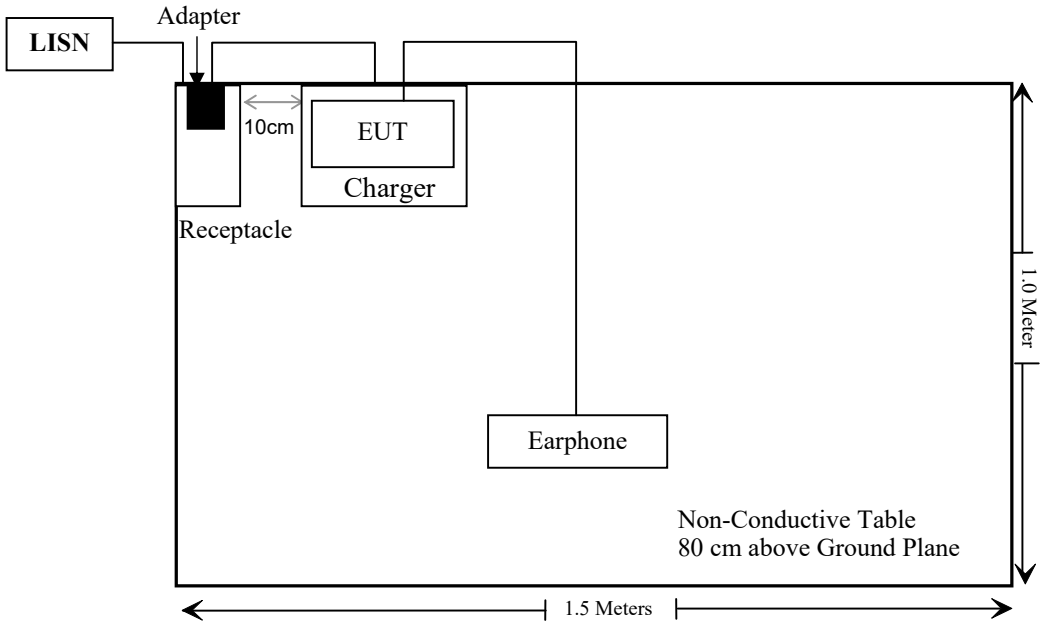
Manufacturer	Description	Model	Serial Number
Unknown	Receptacle	Unknown	Unknown
Guang dong Beicom Electronics Co.,LTD	Adapter	TN-050200E3	Unknown
Unknown	Earphone	Unknown	Unknown

External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielded Un-Detachable AC Cable	1.5	Receptacle	LISN/AC Mains
Un-shielding Un-Detachable DC Cable	2.0	Adapter	Charger
Un-shielding Detachable USB Cable	0.8	Adapter	EUT
Un-shielding Detachable Audio Cable	1.2	EUT	Earphone

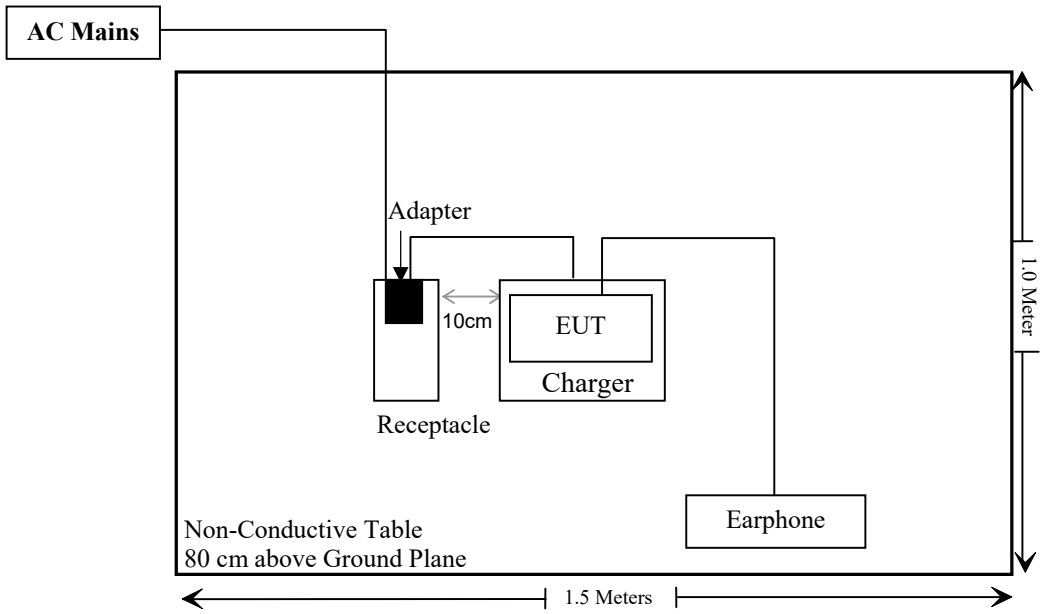
Block Diagram of Test Setup

For Conducted Emissions:

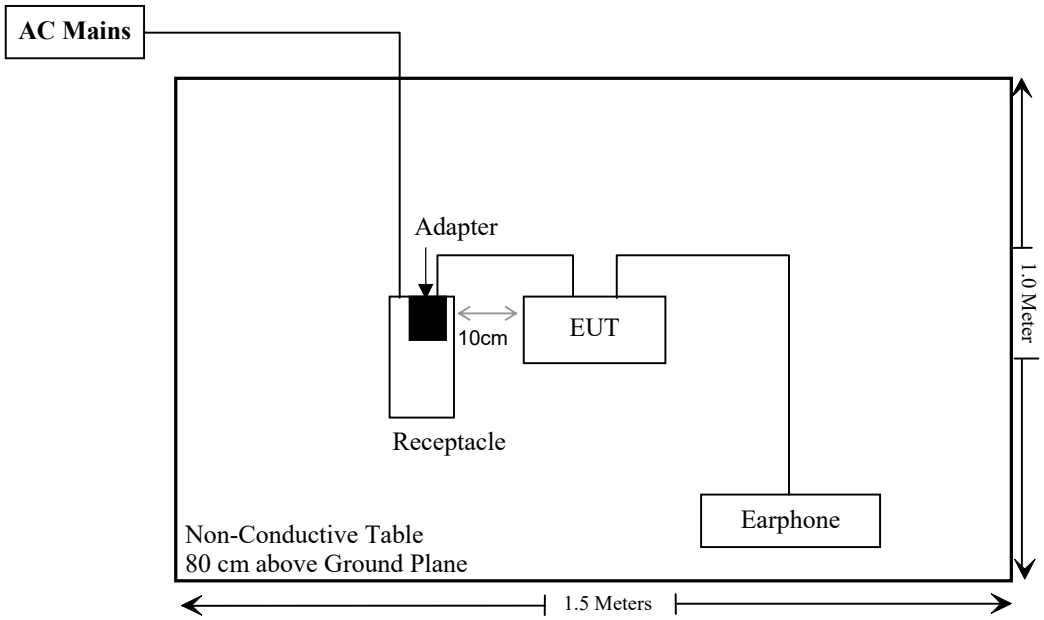


For Radiated Emissions below 1GHz:

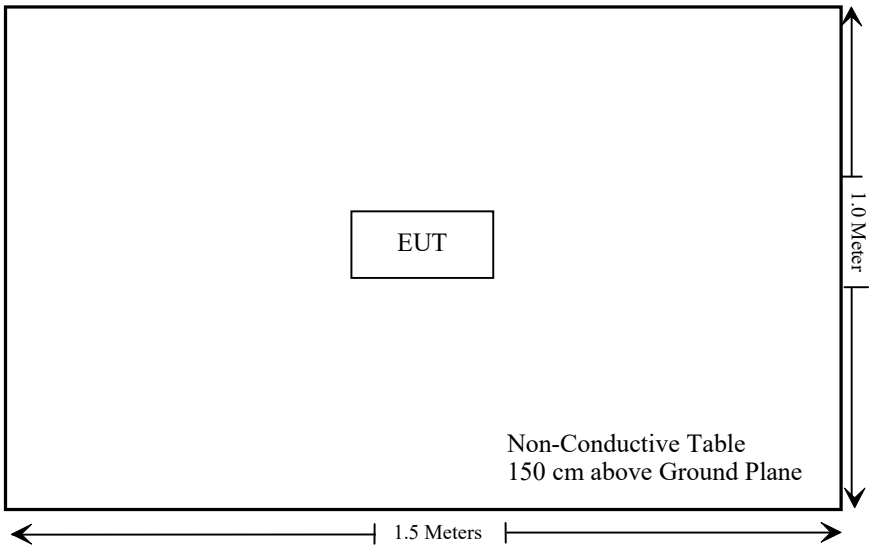
Powered by Charger:



Powered by Type-C Port:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	RSS Rules	Description of Test	Result
§15.203	RSS-Gen §6.8	Antenna Requirement	Compliant
§15.207 (a)	RSS-Gen §8.8	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	RSS-GEN § 8.10 & RSS-247 § 5.5	Spurious Emissions	Compliant
§15.247 (a)(2)	RSS- Gen§6.7 RSS-247 § 5.2 (a)	99% Occupied Bandwidth & 6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	RSS-247 § 5.4(d)	Maximum Conducted Output Power	Compliant
§15.247(d)	RSS-247 § 5.5	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	RSS-247 § 5.2 (b)	Power Spectral Density	Compliant
C63.10 §11.6	C63.10 §11.6	Duty Cycle	/

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/01/16	2025/01/15
Rohde & Schwarz	LISN	ENV216	101613	2024/01/16	2025/01/15
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Rohde & Schwarz	EMC Measurement	EMC32	V8.53.0	NCR	NCR
Radiated Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
COM-POWER	Pre-amplifier	PA-122	181919	2024/06/18	2025/06/17
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	735	2024/06/18	2025/06/17
Unknown	RF Cable	UFA147	219661	2024/06/18	2025/06/17
Unknown	RF Cable	XH750A-N	J-10M	2024/06/18	2025/06/17
JD	Multiplex Switch Test Control Set	DT7220FSU	DQ77926	2024/06/18	2025/06/17
A.H.System	Pre-amplifier	PAM-1840VH	190	2024/06/18	2025/06/17
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
Audix	EMI Test software	E3	191218(V9)	NCR	NCR

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Tonscend	RF control Unit	JS0806-2	19D8060154	2024/08/06	2025/08/05
Rohde &Schwarz	Spectrum Analyzer	FSV40	101473	2024/01/16	2025/01/15
ANRITSU	Microwave peak power sensor	MA24418A	12622	2024/05/21	2025/05/20
MARCONI	10dB Attenuator	6534/3	2942	2024/06/27	2025/06/26

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

§15.203 & RSS-Gen §6.8 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.

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.

Antenna Connector Construction

The EUT has one internal antenna arrangement which was permanently attached and the maximum antenna gain# is 0.21dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Antenna Type	Antenna Gain#	Impedance	Frequency Range
Metal	0.21dBi	50Ω	2.4~2.5GHz

Result: Compliant.

§15.207 (a) & RSS-GEN §8.8 AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207 (a) & RSS-GEN §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 Lines Conducted Emission Limits

Frequency range (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

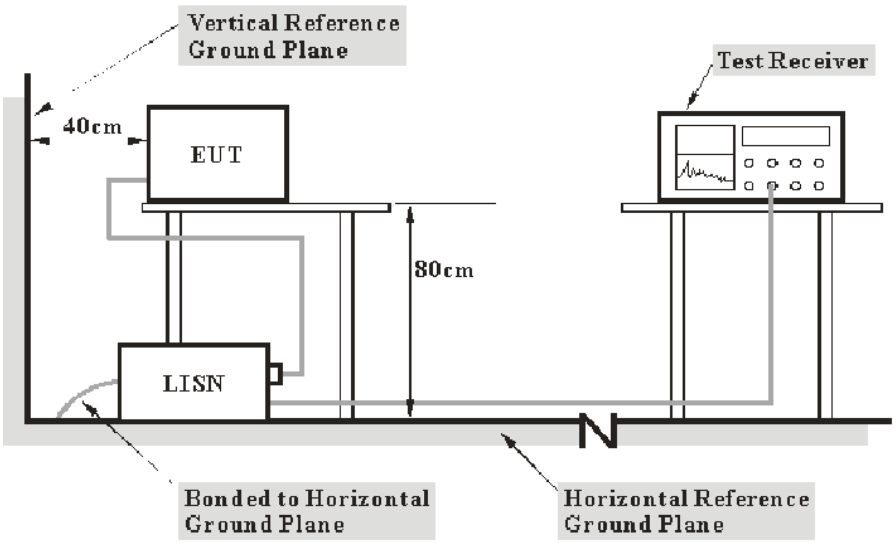
Note 1: The level decreases linearly with the logarithm of the frequency.

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.

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 setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 & RSS-247/RSS-Gen limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

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

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.

Corrected Factor & Margin Calculation

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

Correction Factor (Corr.) = LISN VDF + Cable Loss + Transient Limiter Attenuation

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

Margin = Limit – Corrected Amplitude

Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

Test Data

Environmental Conditions

Temperature:	25.3 ℃
Relative Humidity:	55 %
ATM Pressure:	101.2 kPa

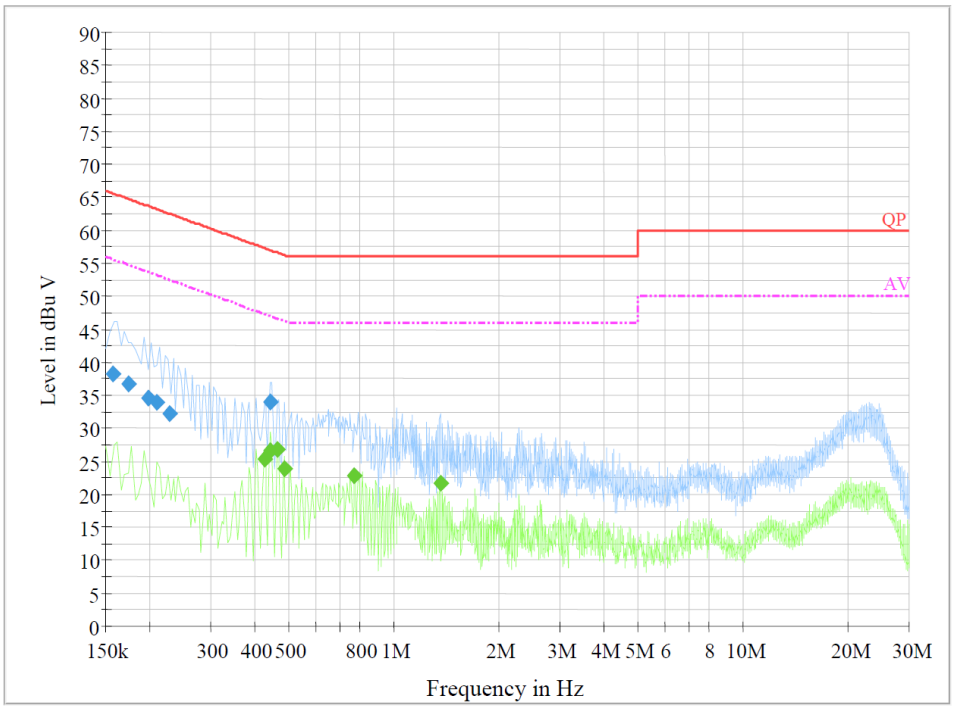
The testing was performed by Macy Shi on 2024-12-09.

EUT operation mode: Transmitting

BLE: *(Maximum output power mode, Low Channel)*

AC 120V/60 Hz, Line

Project No.:	2401V67572E-RF	**Environmental Conditions:**	25.3°C 55%RH 101.2kPa
EUT Number:	2PBE-1	**Test By:**	Macy Shi
Test Mode:	Low Channel	**Date:**	2024.12.09



Final Result 1

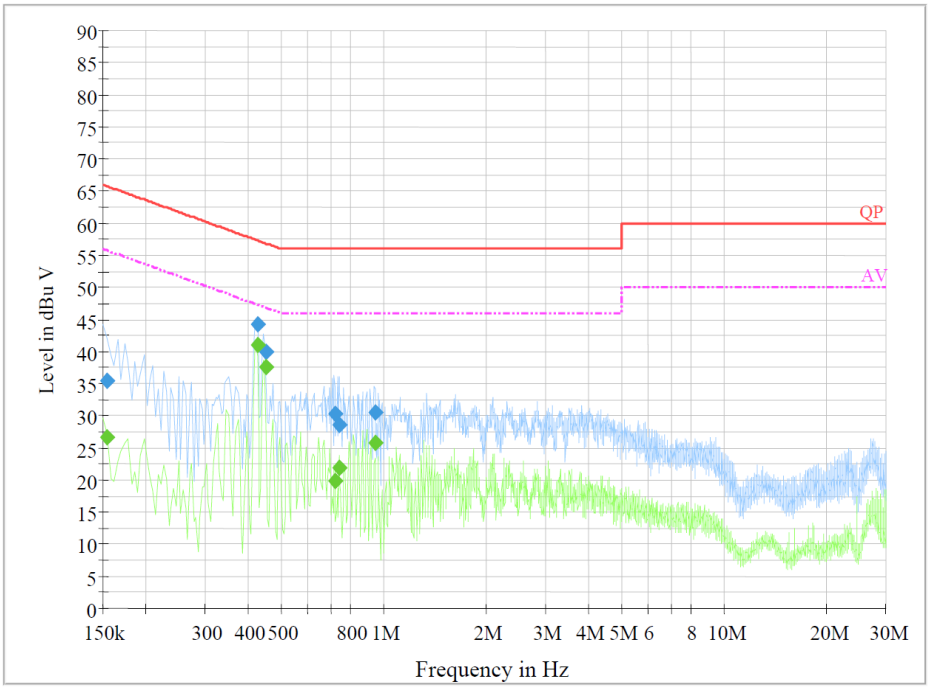
Frequency (MHz)	Quasi Peak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.157500	38.2	9.000	L1	20.4	27.4	65.6
0.174500	36.8	9.000	L1	20.4	27.9	64.7
0.198500	34.7	9.000	L1	20.4	29.0	63.7
0.209500	33.9	9.000	L1	20.4	29.3	63.2
0.229500	32.3	9.000	L1	20.4	30.2	62.5
0.443250	34.5	9.000	L1	20.4	22.5	57.0

Final Result 2

Frequency (MHz)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.426000	23.8	9.000	L1	20.4	23.5	47.3
0.446000	26.5	9.000	L1	20.4	20.4	46.9
0.466000	26.9	9.000	L1	20.4	19.7	46.6
0.486000	24.7	9.000	L1	20.4	21.5	46.2
0.774000	23.2	9.000	L1	20.4	22.8	46.0
1.362000	22.4	9.000	L1	20.4	23.6	46.0

AC 120V/60 Hz, Neutral

Project No.:	2401V67572E-RF	**Environmental Conditions:**	25.3°C 55%RH 101.2kPa
EUT Number:	2PBE-1	**Test By:**	Macy Shi
Test Mode:	Low Channel	**Date:**	2024.12.09



Final Result 1

Frequency (MHz)	Quasi Peak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.154500	35.5	9.000	N	20.3	30.3	65.8
0.427610	44.2	9.000	N	20.4	13.1	57.3
0.451310	40.0	9.000	N	20.4	16.9	56.9
0.723230	30.3	9.000	N	20.5	25.7	56.0
0.746870	28.6	9.000	N	20.5	27.4	56.0
0.947870	30.6	9.000	N	20.4	25.4	56.0

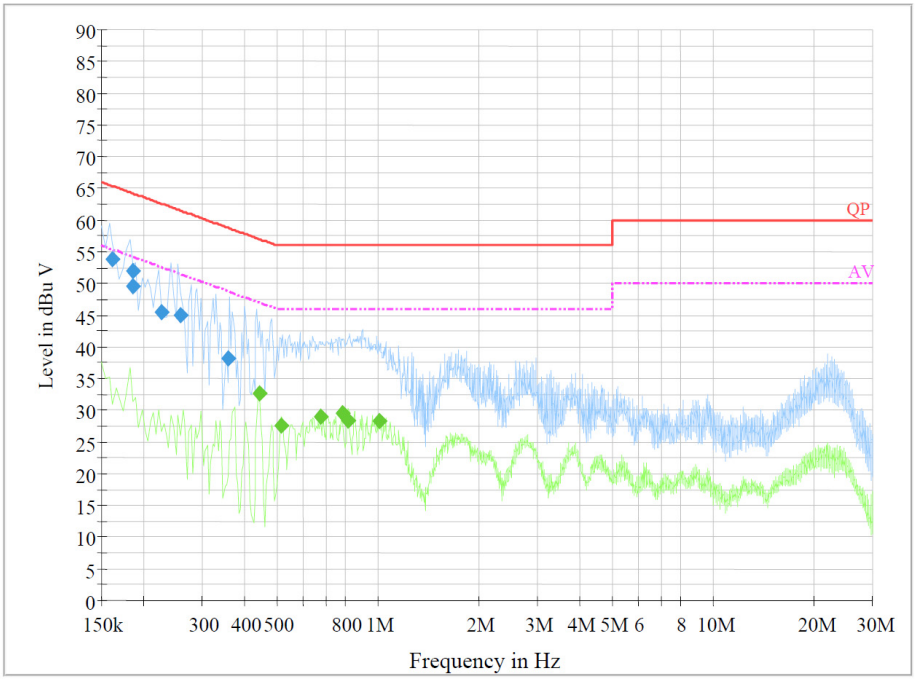
Final Result 2

Frequency (MHz)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.154500	28.1	9.000	N	20.3	27.7	55.8
0.427610	40.9	9.000	N	20.4	6.4	47.3
0.451310	37.5	9.000	N	20.4	9.4	46.9
0.723230	19.8	9.000	N	20.5	26.2	46.0
0.746870	23.1	9.000	N	20.5	22.9	46.0
0.947870	25.7	9.000	N	20.4	20.3	46.0

2.4G Wi-Fi: *(Maximum output power mode, 802.11ax20 Middle Channel)*

AC 120V/60 Hz, Line

Project No.:	2401V67572E-RF	**Environmental Conditions:**	25.3°C 55%RH 101.2kPa
EUT Number:	2PBE-1	**Test By:**	Macy Shi
Test Mode:	802.11ax20 Middle Channel	**Date:**	2024.12.09



Final Result 1

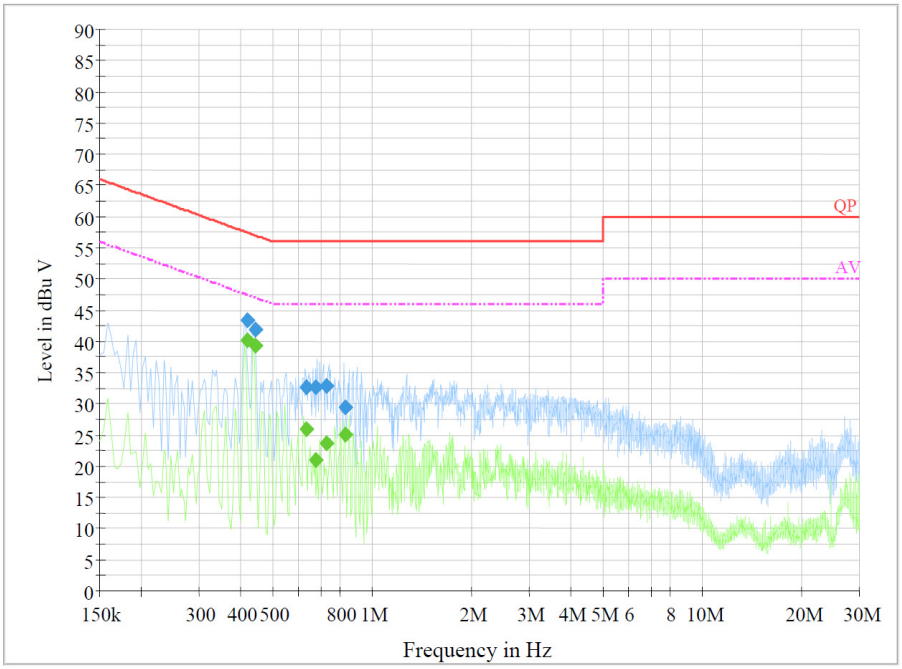
Frequency (MHz)	Quasi Peak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.161500	54.8	9.000	L1	20.4	10.6	65.4
0.185500	52.2	9.000	L1	20.4	12.0	64.2
0.186500	49.4	9.000	L1	20.4	14.8	64.2
0.225500	45.6	9.000	L1	20.4	17.0	62.6
0.257500	45.1	9.000	L1	20.4	16.4	61.5
0.356570	39.2	9.000	L1	20.5	19.6	58.8

Final Result 2

Frequency (MHz)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.446000	32.7	9.000	L1	20.4	14.2	46.9
0.518000	28.1	9.000	L1	20.4	17.9	46.0
0.674000	29.1	9.000	L1	20.4	16.9	46.0
0.786000	29.2	9.000	L1	20.4	16.8	46.0
0.818000	29.0	9.000	L1	20.4	17.0	46.0
1.010000	28.3	9.000	L1	20.4	17.7	46.0

AC 120V/60 Hz, Neutral

Project No.:	2401V67572E-RF	**Environmental Conditions:**	25.3°C 55%RH 101.2kPa
EUT Number:	2PBE-1	**Test By:**	Macy Shi
Test Mode:	802.11ax20 Middle Channel	**Date:**	2024.12.09



Final Result 1

Frequency (MHz)	Quasi Peak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.419790	43.4	9.000	N	20.4	14.1	57.5
0.443430	41.9	9.000	N	20.4	15.1	57.0
0.632550	38.2	9.000	N	20.5	17.8	56.0
0.679710	32.6	9.000	N	20.5	23.4	56.0
0.730870	32.8	9.000	N	20.5	23.2	56.0
0.833670	29.4	9.000	N	20.4	26.6	56.0

Final Result 2

Frequency (MHz)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.419790	40.1	9.000	N	20.4	7.4	47.5
0.443430	39.2	9.000	N	20.4	7.8	47.0
0.632550	24.2	9.000	N	20.5	21.8	46.0
0.679710	21.7	9.000	N	20.5	24.3	46.0
0.730870	24.9	9.000	N	20.5	21.1	46.0
0.833670	25.3	9.000	N	20.4	20.7	46.0

§15.205, §15.209, §15.247(d) & RSS-GEN § 8.10 & RSS-247 § 5.5 SPURIOUS EMISSIONS

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

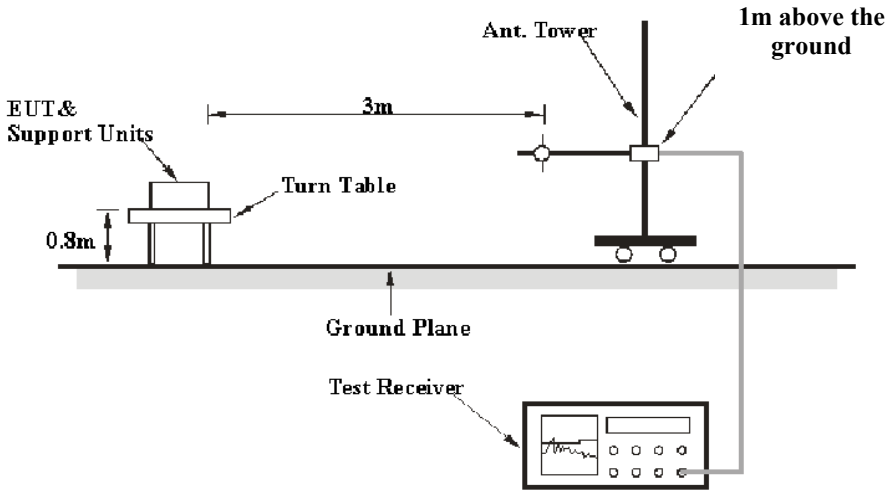
According to RSS-GEN § 8.10 & RSS-247 § 5.5

Restricted frequency bands, identified in table 7, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following conditions related to the restricted frequency bands apply:(a) The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7 except for apparatus compliant with RSS-287, Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD).(b) Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6.(c) Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in table 5 and table 6.

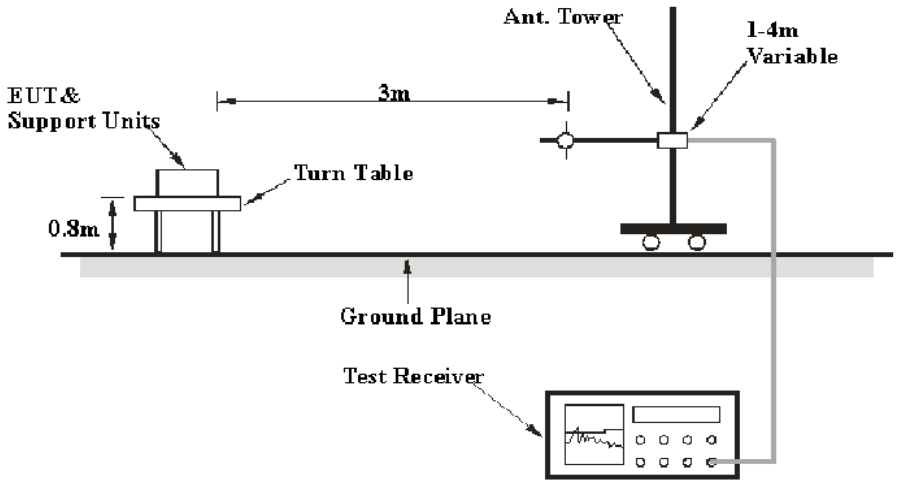
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

EUT Setup

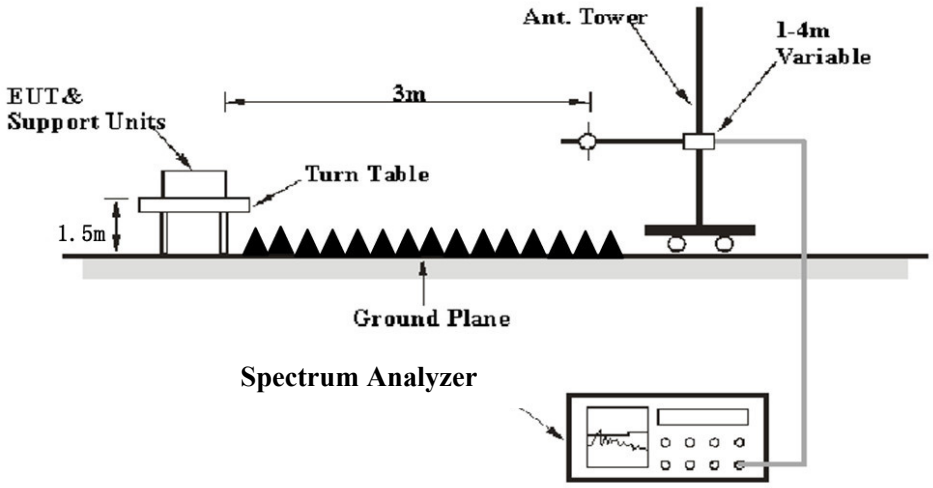
9 kHz-30MHz:



30MHz-1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013 & RSS-Gen. The specification used was the FCC 15.209, and FCC 15.247 & RSS-Gen limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

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:

9 kHz-1GHz:

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

1-25GHz:

Pre-scan

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	5 kHz
	<98%	1MHz	≥1/Ton, not less than 5 kHz

Final measurement for emission identified during pre-scan

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	10 Hz
	<98%	1MHz	≥1/Ton

Note: Ton is minimum transmission duration

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.

Test Procedure

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

All final data was recorded in Quasi-peak detection mode except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, average detection modes for frequency bands 9–90 kHz and 110–490 kHz, peak and average detection modes for frequencies above 1 GHz.

For 9 kHz-30MHz, the report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground-parallel) unless the margin is greater than 20 dB.

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

Factor & Over Limit/Margin Calculation

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

Factor = Antenna Factor + Cable Loss - 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:

Over Limit/Margin = Level/Corrected Amplitude – Limit
Level / Corrected Amplitude = Read Level + Factor

Test Data

Environmental Conditions

Temperature:	25~25.6 ℃
Relative Humidity:	50~54 %
ATM Pressure:	101 kPa

The testing was performed by Jack Liu and Carl Zhu from 2024-08-27 to 2024-10-08 for below 1GHz and Zenos Qiao and Dylan Yang from 2024-08-17 to 2024-10-26 for above 1GHz.

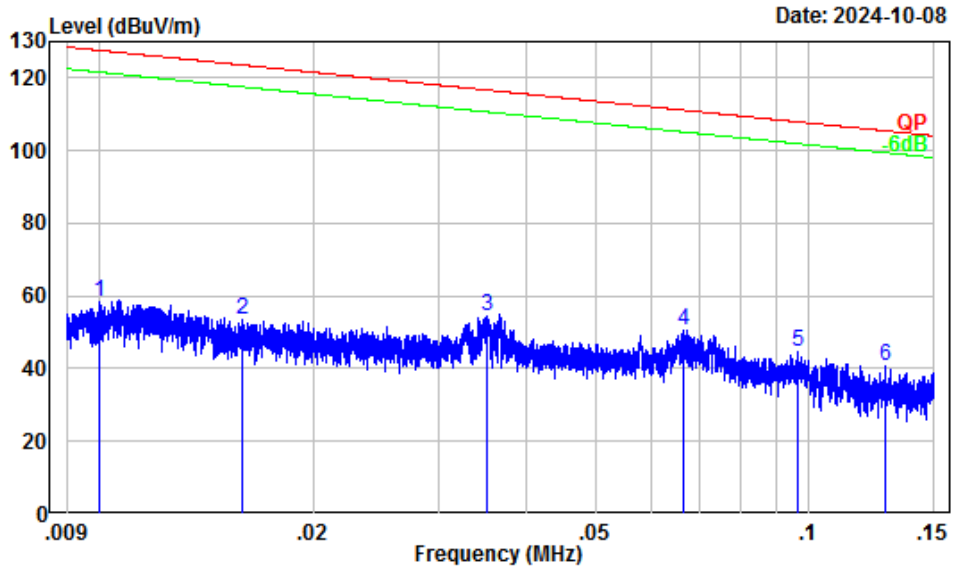
EUT operation mode: Transmitting

Note: Pre-scan in the X, Y and Z axes of orientation, the worst case z-axis of orientation was recorded.

BLE: *(Maximum output power mode, Low Channel, Worst case is powered by Charger with Adapter 1)*

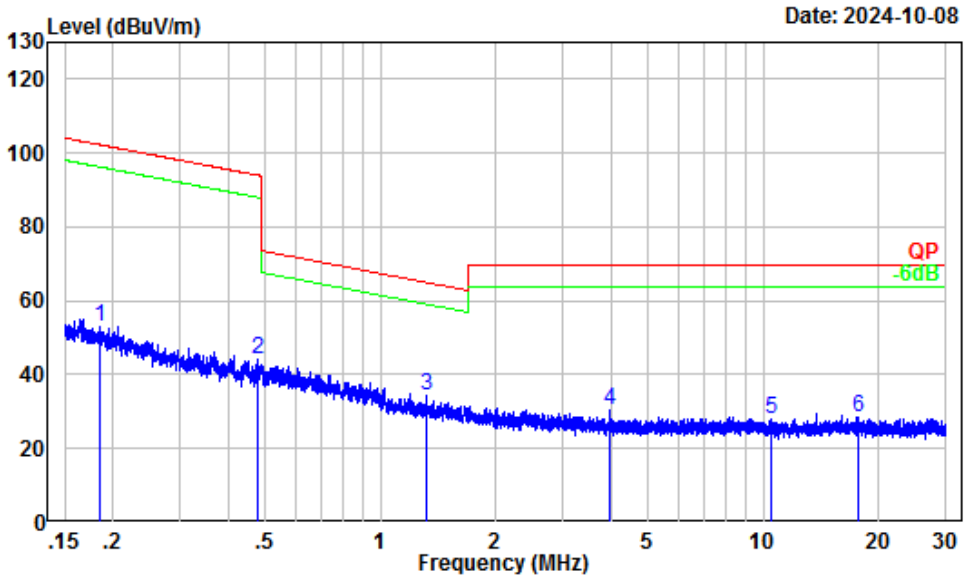
9 kHz-30MHz: *Parallel (worst case)*

Note: When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded.



Site : Chamber A
Condition : 3m
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.30	26.10	58.40	127.61	-69.21	Peak
2	0.02	31.18	22.41	53.59	123.57	-69.98	Peak
3	0.04	27.96	26.27	54.23	116.68	-62.45	Peak
4	0.07	24.75	25.62	50.37	111.14	-60.77	Peak
5	0.10	22.27	22.53	44.80	107.94	-63.14	Peak
6	0.13	20.34	20.13	40.47	105.45	-64.98	Peak

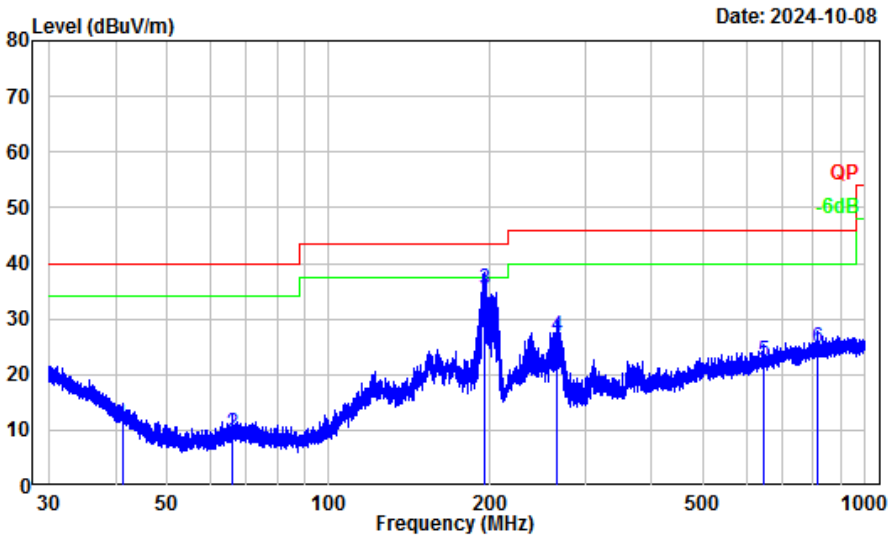


Site : Chamber A
Condition : 3m
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.19	16.95	36.19	53.14	102.24	-49.10	Peak
2	0.48	6.79	37.28	44.07	93.99	-49.92	Peak
3	1.32	0.32	33.91	34.23	65.04	-30.81	Peak
4	3.96	-2.68	32.93	30.25	69.54	-39.29	Peak
5	10.54	-2.80	30.94	28.14	69.54	-41.40	Peak
6	17.68	-2.81	31.20	28.39	69.54	-41.15	Peak

30MHz-1GHz:

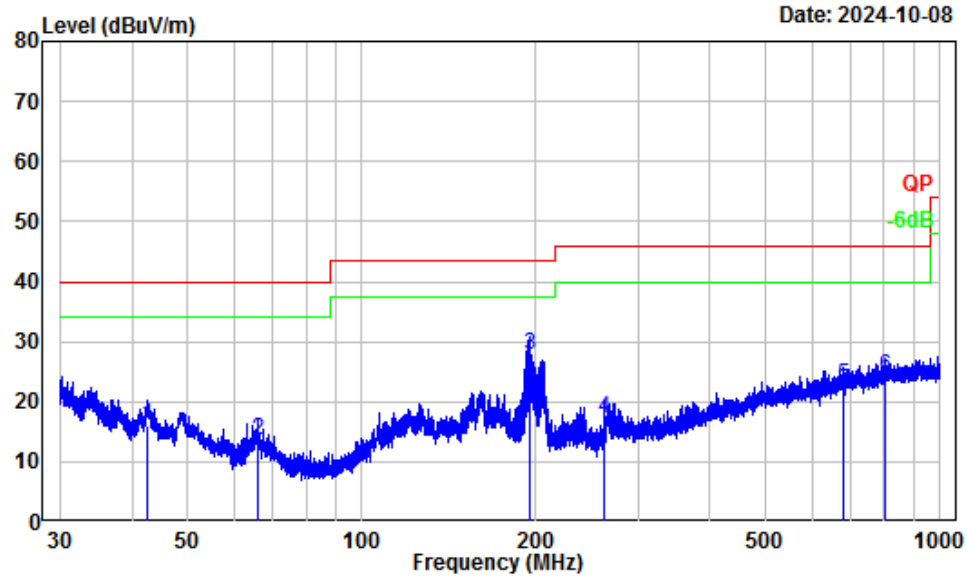
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	41.17	-13.20	24.07	10.87	40.00	-29.13	QP
2	65.98	-17.89	27.36	9.47	40.00	-30.53	QP
3	195.05	-13.64	48.84	35.20	43.50	-8.30	QP
4	265.44	-12.22	39.08	26.86	46.00	-19.14	QP
5	646.25	-4.20	26.69	22.49	46.00	-23.51	QP
6	815.25	-2.03	26.78	24.75	46.00	-21.25	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

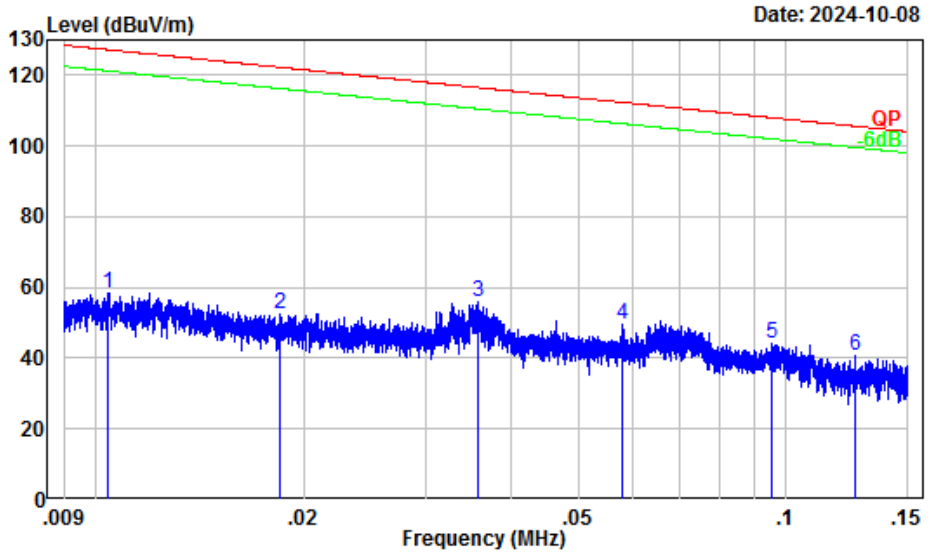
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	42.47	-14.20	30.32	16.12	40.00	-23.88	QP
2	66.01	-17.89	31.60	13.71	40.00	-26.29	QP
3	195.39	-13.59	41.38	27.79	43.50	-15.71	QP
4	263.01	-12.47	29.56	17.09	46.00	-28.91	QP
5	680.56	-3.71	26.40	22.69	46.00	-23.31	QP
6	802.14	-2.13	26.18	24.05	46.00	-21.95	QP

2.4G Wi-Fi: *(Maximum output power mode, 802.11ax20 Middle Channel)*

Powered by Charger with Adapter 1:

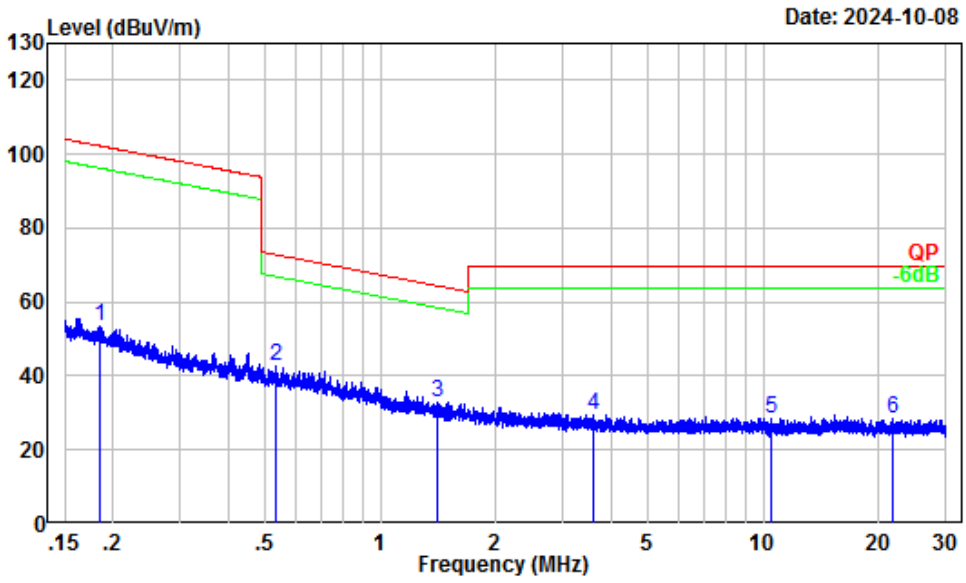
9 kHz-30MHz: *Parallel (worst case)*

Note: When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded.




```
Site           : Chamber A
Condition      : 3m
Project Number: 2401V67572E-RF
Test Mode      : Transmitting
Tester         : Carl Zhu
```

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.22	26.14	58.36	127.22	-68.86	Peak
2	0.02	30.69	21.92	52.61	122.28	-69.67	Peak
3	0.04	27.89	27.87	55.76	116.53	-60.77	Peak
4	0.06	25.60	24.17	49.77	112.33	-62.56	Peak
5	0.10	22.33	21.58	43.91	108.02	-64.11	Peak
6	0.13	20.49	20.06	40.55	105.62	-65.07	Peak

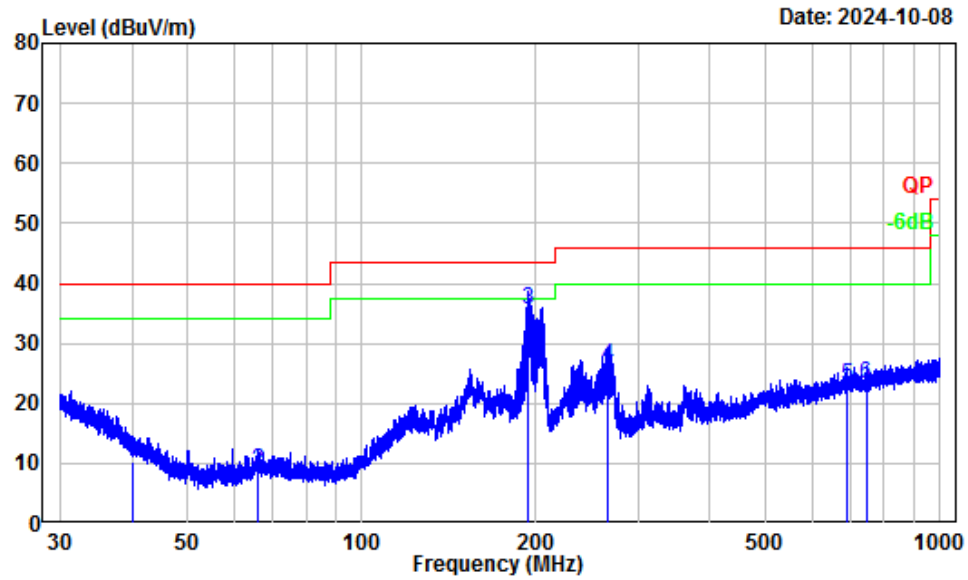


Site : Chamber A
Condition : 3m
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.18	17.03	36.38	53.41	102.29	-48.88	Peak
2	0.53	5.99	36.79	42.78	73.05	-30.27	Peak
3	1.41	0.05	32.95	33.00	64.43	-31.43	Peak
4	3.62	-2.49	32.00	29.51	69.54	-40.03	Peak
5	10.53	-2.80	31.47	28.67	69.54	-40.87	Peak
6	21.74	-3.10	31.43	28.33	69.54	-41.21	Peak

30MHz-1GHz:

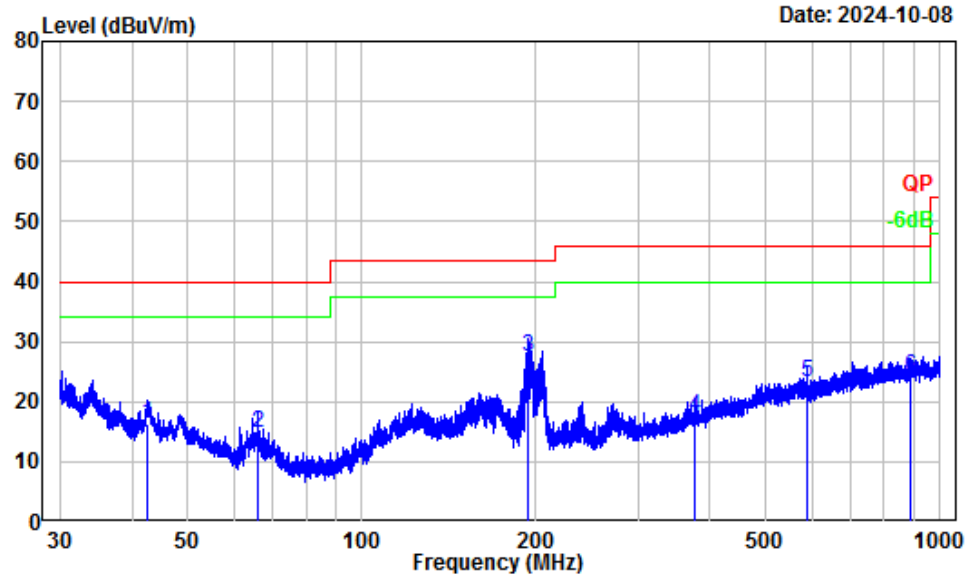
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.24	-12.54	22.95	10.41	40.00	-29.59	QP
2	65.95	-17.90	26.71	8.81	40.00	-31.19	QP
3	194.03	-13.80	49.38	35.58	43.50	-7.92	QP
4	265.44	-12.22	38.47	26.25	46.00	-19.75	QP
5	691.68	-3.63	26.72	23.09	46.00	-22.91	QP
6	744.87	-2.89	26.12	23.23	46.00	-22.77	QP

Vertical



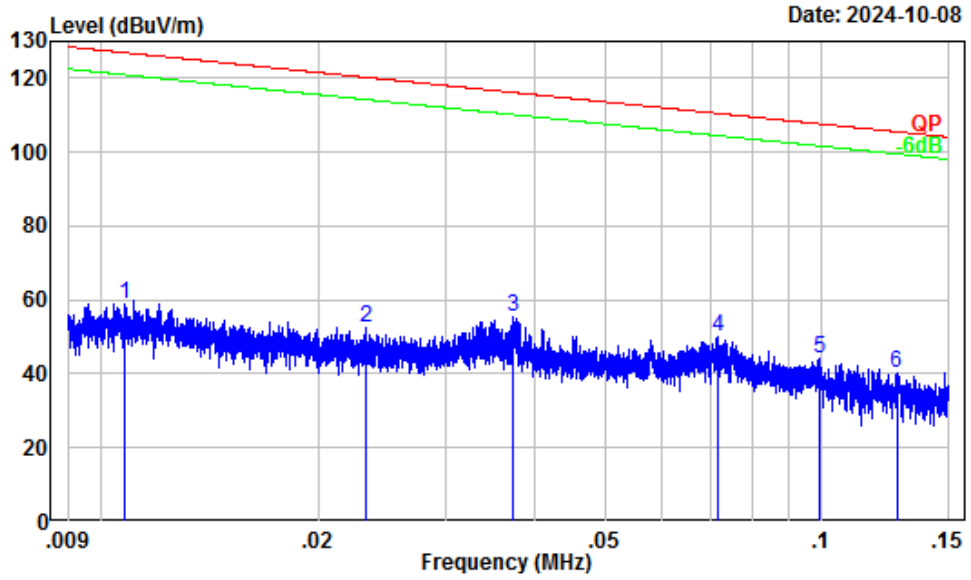
Site : Chamber A
Condition : 3m Vertical
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	42.49	-14.21	30.45	16.24	40.00	-23.76	QP
2	65.98	-17.89	32.63	14.74	40.00	-25.26	QP
3	193.94	-13.81	41.17	27.36	43.50	-16.14	QP
4	376.60	-9.25	26.75	17.50	46.00	-28.50	QP
5	590.46	-5.27	28.39	23.12	46.00	-22.88	QP
6	887.22	-1.41	25.49	24.08	46.00	-21.92	QP

Powered by Charger with Adapter 2:

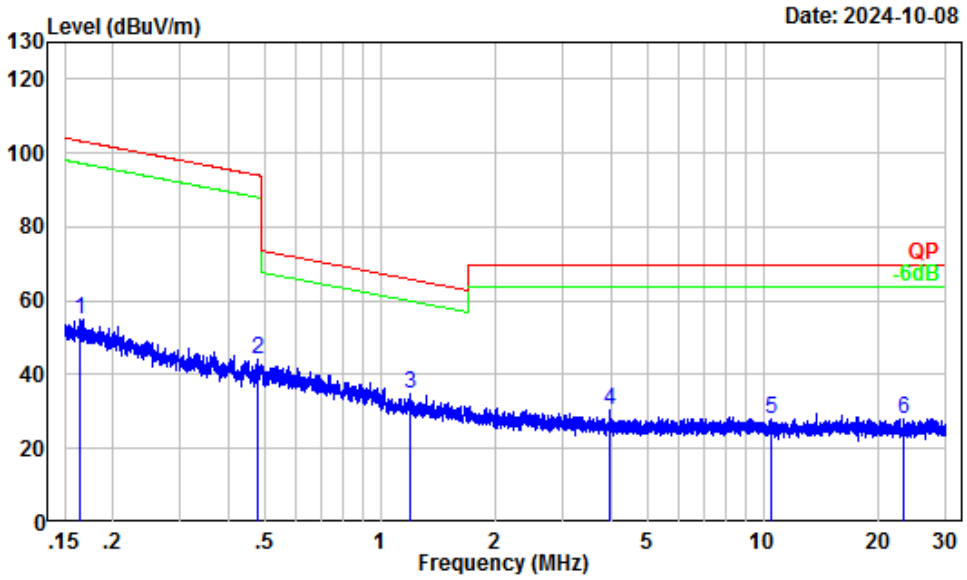
9 kHz-30MHz: *Parallel (worst case)*

Note: When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded.



Site : Chamber A
Condition : 3m
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.15	26.92	59.07	126.95	-67.88	Peak
2	0.02	29.76	22.63	52.39	120.24	-67.85	Peak
3	0.04	27.74	27.79	55.53	116.18	-60.65	Peak
4	0.07	24.24	25.64	49.88	110.50	-60.62	Peak
5	0.10	22.07	22.25	44.32	107.69	-63.37	Peak
6	0.13	20.41	19.62	40.03	105.53	-65.50	Peak

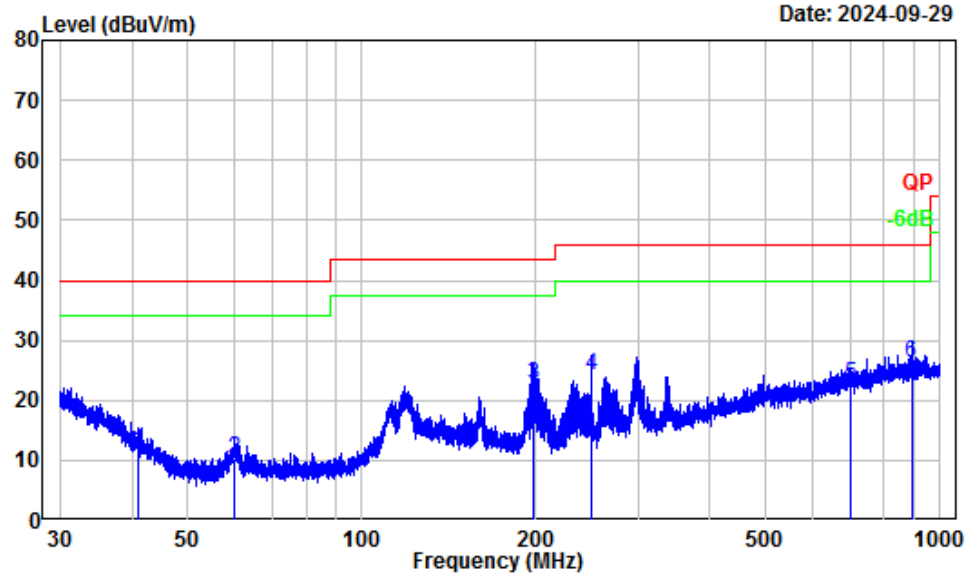


Site : Chamber A
Condition : 3m
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.16	18.25	36.79	55.04	103.33	-48.29	Peak
2	0.48	6.79	37.28	44.07	93.99	-49.92	Peak
3	1.19	0.66	34.37	35.03	65.90	-30.87	Peak
4	3.96	-2.68	32.93	30.25	69.54	-39.29	Peak
5	10.54	-2.80	30.94	28.14	69.54	-41.40	Peak
6	23.23	-3.10	31.29	28.19	69.54	-41.35	Peak

30MHz-1GHz:

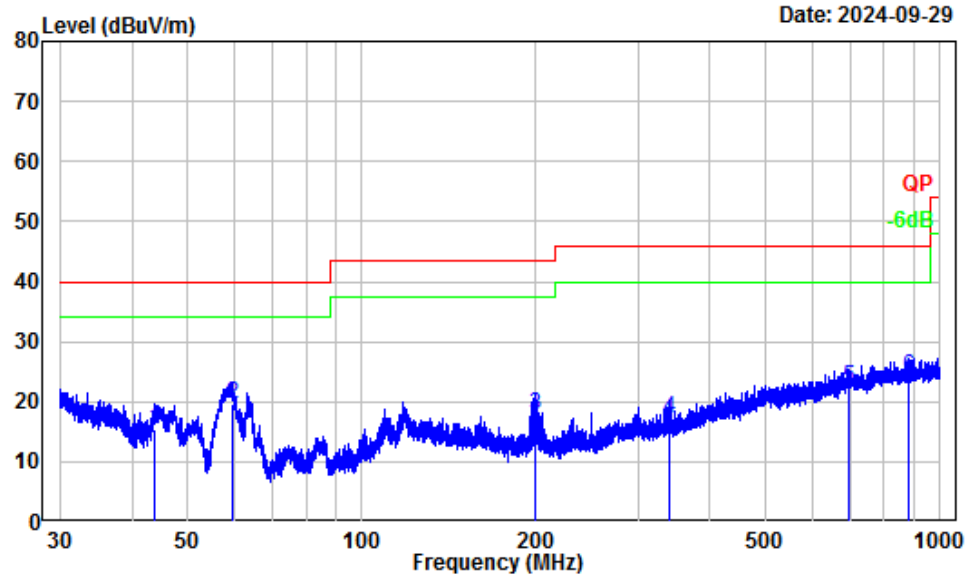
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	41.11	-13.16	24.61	11.45	40.00	-28.55	QP
2	60.25	-18.12	28.43	10.31	40.00	-29.69	QP
3	198.50	-13.20	35.92	22.72	43.50	-20.78	QP
4	249.97	-13.09	37.38	24.29	46.00	-21.71	QP
5	699.00	-3.52	26.11	22.59	46.00	-23.41	QP
6	892.29	-1.36	27.75	26.39	46.00	-19.61	QP

Vertical



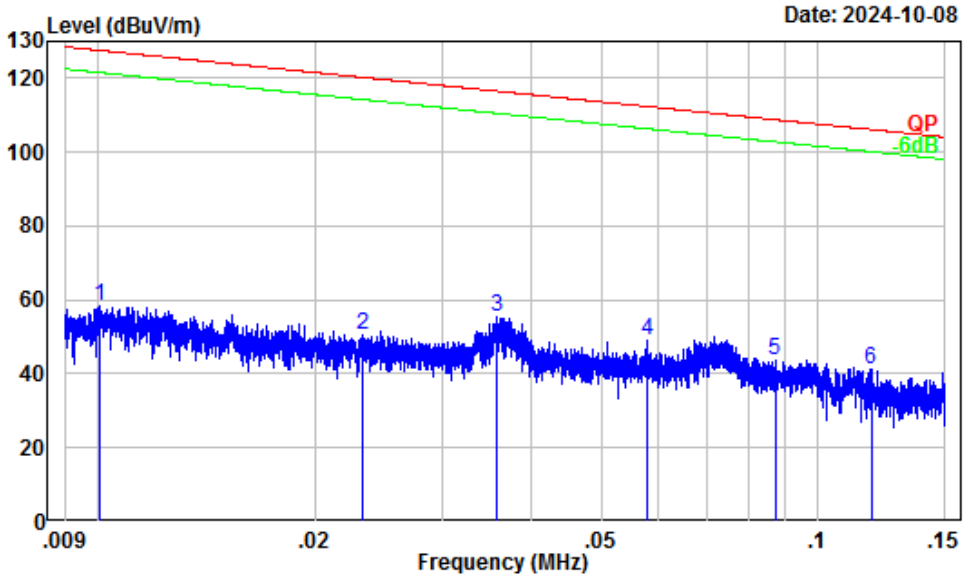
Site : Chamber A
Condition : 3m Vertical
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	43.68	-14.98	30.52	15.54	40.00	-24.46	QP
2	59.65	-18.16	37.75	19.59	40.00	-20.41	QP
3	199.72	-13.08	30.95	17.87	43.50	-25.63	QP
4	339.44	-10.42	27.48	17.06	46.00	-28.94	QP
5	697.16	-3.53	25.97	22.44	46.00	-23.56	QP
6	885.28	-1.42	25.62	24.20	46.00	-21.80	QP

Powered by Type-C Port:

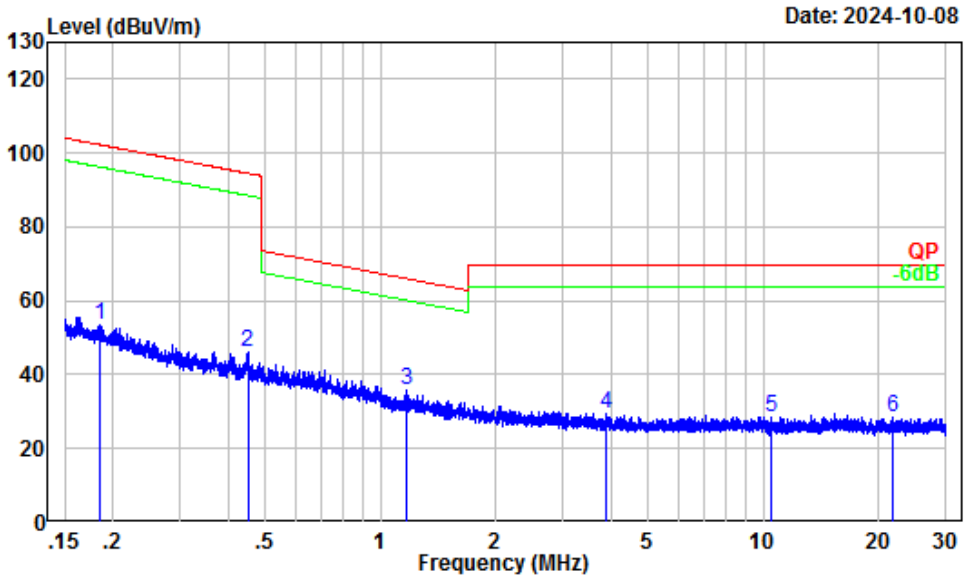
9 kHz-30MHz: *Parallel (worst case)*

Note: When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded.



Site : Chamber A
Condition : 3m
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.28	25.89	58.17	127.54	-69.37	Peak
2	0.02	29.76	20.88	50.64	120.24	-69.60	Peak
3	0.04	27.90	27.61	55.51	116.54	-61.03	Peak
4	0.06	25.61	23.49	49.10	112.35	-63.25	Peak
5	0.09	22.90	20.73	43.63	108.80	-65.17	Peak
6	0.12	20.91	20.51	41.42	106.14	-64.72	Peak

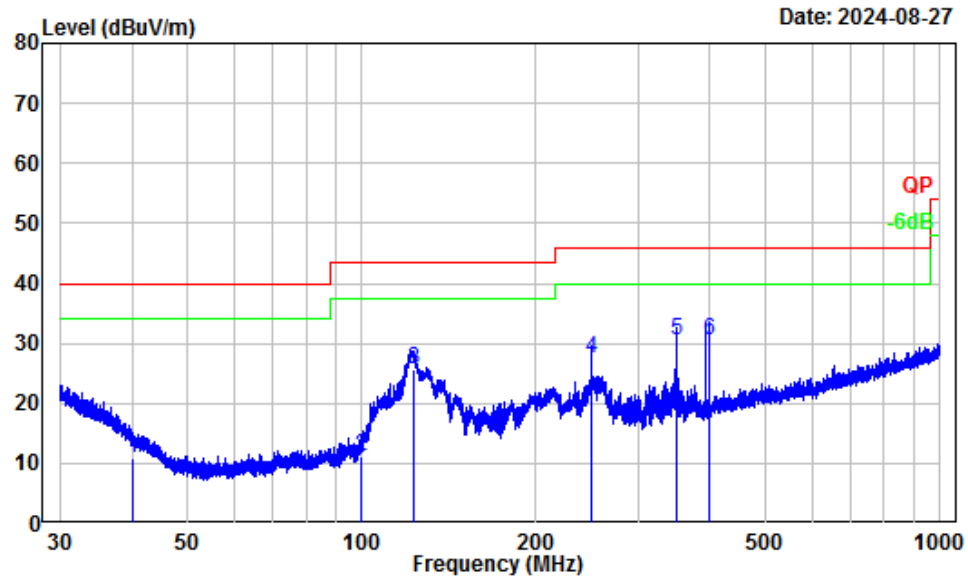


Site : Chamber A
Condition : 3m
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.18	17.03	36.38	53.41	102.29	-48.88	Peak
2	0.45	7.34	38.55	45.89	94.53	-48.64	Peak
3	1.17	0.73	34.85	35.58	66.09	-30.51	Peak
4	3.88	-2.63	32.00	29.37	69.54	-40.17	Peak
5	10.53	-2.80	31.47	28.67	69.54	-40.87	Peak
6	21.74	-3.10	31.43	28.33	69.54	-41.21	Peak

30MHz-1GHz:

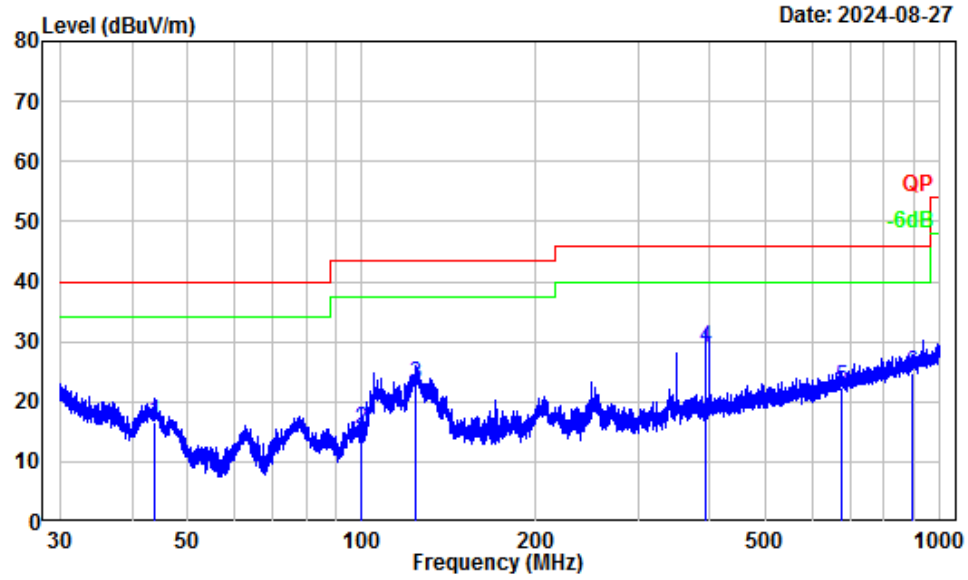
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.01	-12.56	23.55	10.99	40.00	-29.01	QP
2	99.92	-15.64	26.85	11.21	43.50	-32.29	QP
3	122.73	-11.01	36.69	25.68	43.50	-17.82	QP
4	249.97	-12.90	40.37	27.47	46.00	-18.53	QP
5	350.02	-10.01	40.52	30.51	46.00	-15.49	QP
6	400.08	-8.56	39.09	30.53	46.00	-15.47	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number: 2401V67572E-RF
Test Mode : Transmitting
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	43.91	-15.29	31.75	16.46	40.00	-23.54	QP
2	99.97	-15.63	30.99	15.36	43.50	-28.14	QP
3	123.86	-10.98	33.83	22.85	43.50	-20.65	QP
4	393.30	-8.83	37.82	28.99	46.00	-17.01	QP
5	675.80	-3.81	26.08	22.27	46.00	-23.73	QP
6	892.68	-0.22	24.94	24.72	46.00	-21.28	QP

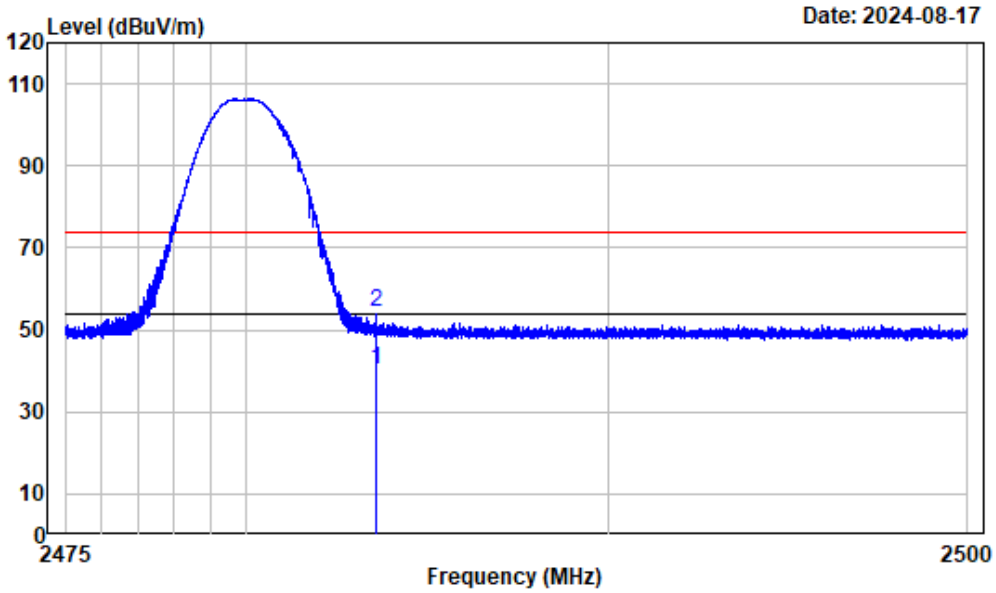
1-25 GHz:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
BLE 1M							
Low Channel 2402MHz							
2384.50	56.73	PK	H	-2.93	53.80	74	-20.20
2384.50	42.06	AV	H	-2.93	39.13	54	-14.87
2383.05	55.95	PK	V	-2.93	53.02	74	-20.98
2383.05	41.87	AV	V	-2.93	38.94	54	-15.06
4804.00	50.32	PK	H	2.42	52.74	74	-21.26
4804.00	39.51	AV	H	2.42	41.93	54	-12.07
4804.00	49.45	PK	V	2.42	51.87	74	-22.13
4804.00	38.88	AV	V	2.42	41.30	54	-12.70
Middle Channel 2440MHz							
4880.00	49.54	PK	H	2.58	52.12	74	-21.88
4880.00	38.20	AV	H	2.58	40.78	54	-13.22
4880.00	48.75	PK	V	2.58	51.33	74	-22.67
4880.00	37.69	AV	V	2.58	40.27	54	-13.73
High Channel 2480MHz							
2483.58	57.35	PK	H	-3.17	54.18	74	-19.82
2483.58	43.54	AV	H	-3.17	40.37	54	-13.63
2483.70	56.47	PK	V	-3.17	53.30	74	-20.70
2483.70	43.09	AV	V	-3.17	39.92	54	-14.08
4960.00	49.63	PK	H	2.68	52.31	74	-21.69
4960.00	38.55	AV	H	2.68	41.23	54	-12.77
4960.00	48.86	PK	V	2.68	51.54	74	-22.46
4960.00	37.72	AV	V	2.68	40.40	54	-13.60

Note:
Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Corrected Factor + Reading
Margin = Corrected. Amplitude - Limit
The other spurious emission which is in the noise floor level was not recorded.

Test plots for worst Band Edge Measurements (Radiated):

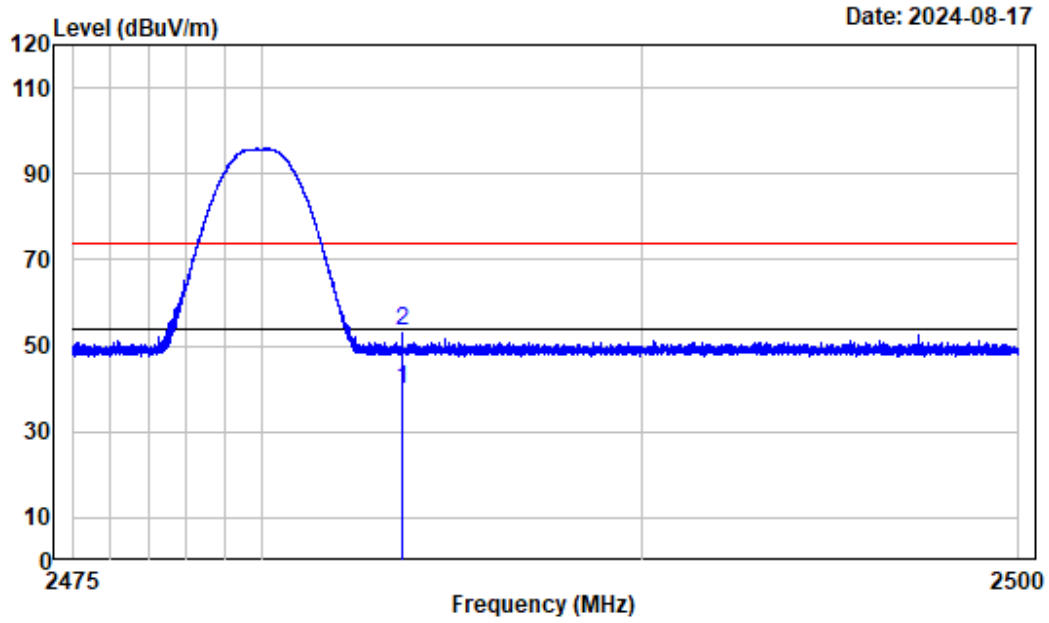
BLE 1M			
Test Channel:	**2480MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: 2401V67572E-RF
Tester : Zenos Qiao
Note : BLE1M-2480

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.576	-3.17	43.54	40.37	54.00	-13.63	Average
2	2483.576	-3.17	57.35	54.18	74.00	-19.82	Peak

BLE 1M			
Test Channel:	**2480MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: 2401V67572E-RF
Tester : Zenos Qiao
Note : BLE1M-2480

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.700	-3.17	43.09	39.92	54.00	-14.08	Average
2	2483.700	-3.17	56.47	53.30	74.00	-20.70	Peak

2.4G Wi-Fi

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11b							
Low Channel 2412MHz							
2389.25	55.78	PK	H	-2.93	52.85	74	-21.15
2389.25	42.91	AV	H	-2.93	39.98	54	-14.02
2388.83	55.44	PK	V	-2.93	52.51	74	-21.49
2388.83	42.69	AV	V	-2.93	39.76	54	-14.24
4824.00	48.23	PK	H	2.45	50.68	74	-23.32
4824.00	36.12	AV	H	2.45	38.57	54	-15.43
4824.00	47.39	PK	V	2.45	49.84	74	-24.16
4824.00	35.45	AV	V	2.45	37.90	54	-16.10
Middle Channel 2437MHz							
4874.00	47.58	PK	H	2.56	50.14	74	-23.86
4874.00	35.64	AV	H	2.56	38.20	54	-15.80
4874.00	46.83	PK	V	2.56	49.39	74	-24.61
4874.00	34.91	AV	V	2.56	37.47	54	-16.53
High Channel 2462MHz							
2484.17	56.42	PK	H	-3.17	53.25	74	-20.75
2484.17	43.19	AV	H	-3.17	40.02	54	-13.98
2484.54	55.97	PK	V	-3.17	52.80	74	-21.20
2484.54	42.84	AV	V	-3.17	39.67	54	-14.33
4924.00	47.72	PK	H	2.63	50.35	74	-23.65
4924.00	35.85	AV	H	2.63	38.48	54	-15.52
4924.00	46.94	PK	V	2.63	49.57	74	-24.43
4924.00	35.09	AV	V	2.63	37.72	54	-16.28

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11g							
Low Channel 2412MHz							
2389.83	66.72	PK	H	-2.93	63.79	74	-10.21
2389.83	45.37	AV	H	-2.93	42.44	54	-11.56
2389.68	64.96	PK	V	-2.93	62.03	74	-11.97
2389.68	44.89	AV	V	-2.93	41.96	54	-12.04
4824.00	48.08	PK	H	2.45	50.53	74	-23.47
4824.00	36.69	AV	H	2.45	39.14	54	-14.86
4824.00	47.17	PK	V	2.45	49.62	74	-24.38
4824.00	35.85	AV	V	2.45	38.30	54	-15.70
Middle Channel 2437MHz							
4874.00	47.21	PK	H	2.56	49.77	74	-24.23
4874.00	35.92	AV	H	2.56	38.48	54	-15.52
4874.00	46.44	PK	V	2.56	49.00	74	-25.00
4874.00	35.05	AV	V	2.56	37.61	54	-16.39
High Channel 2462MHz							
2484.09	72.86	PK	H	-3.17	69.69	74	-4.31
2483.70	47.68	AV	H	-3.17	44.51	54	-9.49
2483.61	70.91	PK	V	-3.17	67.74	74	-6.26
2483.51	47.40	AV	V	-3.17	44.23	54	-9.77
4924.00	47.63	PK	H	2.63	50.26	74	-23.74
4924.00	36.08	AV	H	2.63	38.71	54	-15.29
4924.00	46.79	PK	V	2.63	49.42	74	-24.58
4924.00	35.25	AV	V	2.63	37.88	54	-16.12

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11n20							
Low Channel 2412MHz							
2389.13	65.11	PK	H	-2.93	62.18	74	-11.82
2389.13	45.76	AV	H	-2.93	42.83	54	-11.17
2389.48	63.24	PK	V	-2.93	60.31	74	-13.69
2389.48	45.32	AV	V	-2.93	42.39	54	-11.61
4824.00	47.60	PK	H	2.45	50.05	74	-23.95
4824.00	36.72	AV	H	2.45	39.17	54	-14.83
4824.00	46.81	PK	V	2.45	49.26	74	-24.74
4824.00	35.93	AV	V	2.45	38.38	54	-15.62
Middle Channel 2437MHz							
4874.00	47.25	PK	H	2.56	49.81	74	-24.19
4874.00	35.94	AV	H	2.56	38.50	54	-15.50
4874.00	46.39	PK	V	2.56	48.95	74	-25.05
4874.00	35.12	AV	V	2.56	37.68	54	-16.32
High Channel 2462MHz							
2483.58	71.78	PK	H	-3.17	68.61	74	-5.39
2483.58	49.52	AV	H	-3.17	46.35	54	-7.65
2483.72	69.69	PK	V	-3.17	66.52	74	-7.48
2483.72	38.94	AV	V	-3.17	35.77	54	-18.23
4924.00	47.42	PK	H	2.63	50.05	74	-23.95
4924.00	36.01	AV	H	2.63	38.64	54	-15.36
4924.00	46.57	PK	V	2.63	49.20	74	-24.80
4924.00	35.24	AV	V	2.63	37.87	54	-16.13

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11n40							
Low Channel 2422MHz							
2389.94	67.93	PK	H	-2.93	65.00	74	-9.00
2389.94	46.34	AV	H	-2.93	43.41	54	-10.59
2389.75	66.02	PK	V	-2.93	63.09	74	-10.91
2389.75	45.89	AV	V	-2.93	42.96	54	-11.04
4844.00	47.35	PK	H	2.45	49.80	74	-24.20
4844.00	35.89	AV	H	2.45	38.34	54	-15.66
4844.00	46.48	PK	V	2.45	48.93	74	-25.07
4844.00	35.01	AV	V	2.45	37.46	54	-16.54
Middle Channel 2437MHz							
4874.00	47.68	PK	H	2.56	50.24	74	-23.76
4874.00	36.07	AV	H	2.56	38.63	54	-15.37
4874.00	46.82	PK	V	2.56	49.38	74	-24.62
4874.00	35.29	AV	V	2.56	37.85	54	-16.15
High Channel 2452MHz							
2483.91	71.39	PK	H	-3.17	68.22	74	-5.78
2483.91	49.57	AV	H	-3.17	46.40	54	-7.60
2483.84	69.26	PK	V	-3.17	66.09	74	-7.91
2483.84	48.85	AV	V	-3.17	45.68	54	-8.32
4904.00	48.18	PK	H	2.64	50.82	74	-23.18
4904.00	36.21	AV	H	2.64	38.85	54	-15.15
4904.00	47.32	PK	V	2.64	49.96	74	-24.04
4904.00	35.44	AV	V	2.64	38.08	54	-15.92

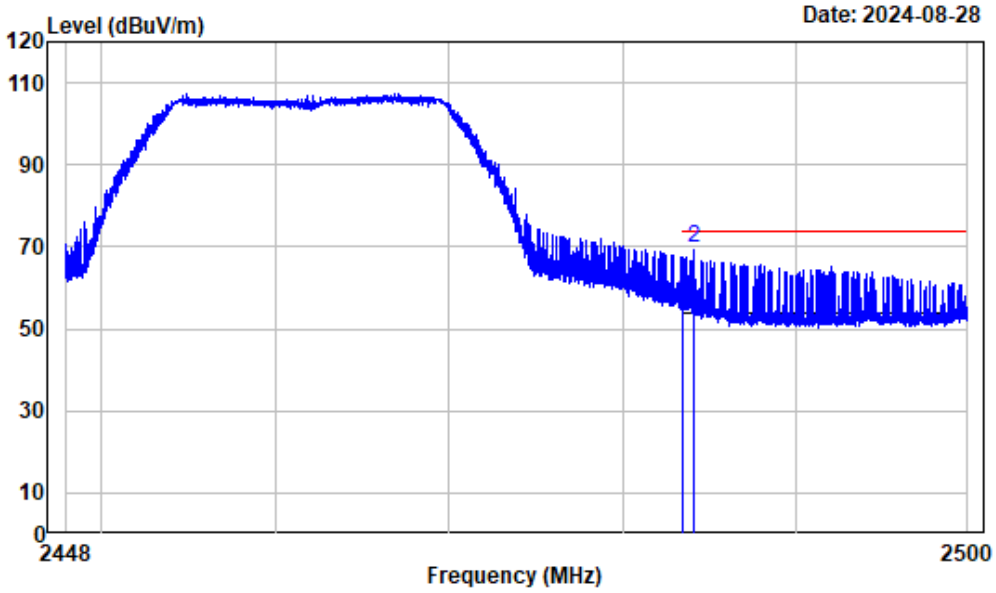
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11ax20							
Low Channel 2412MHz							
2389.02	67.15	PK	H	-2.93	64.22	74	-9.78
2389.02	48.86	AV	H	-2.93	45.93	54	-8.07
2389.40	65.37	PK	V	-2.93	62.44	74	-11.56
2389.40	48.09	AV	V	-2.93	45.16	54	-8.84
4824.00	47.77	PK	H	2.45	50.22	74	-23.78
4824.00	36.35	AV	H	2.45	38.80	54	-15.20
4824.00	46.92	PK	V	2.45	49.37	74	-24.63
4824.00	35.54	AV	V	2.45	37.99	54	-16.01
Middle Channel 2437MHz							
4874.00	47.64	PK	H	2.56	50.20	74	-23.80
4874.00	36.13	AV	H	2.56	38.69	54	-15.31
4874.00	46.75	PK	V	2.56	49.31	74	-24.69
4874.00	35.32	AV	V	2.56	37.88	54	-16.12
High Channel 2462MHz							
2483.65	70.56	PK	H	-3.17	67.39	74	-6.61
2483.65	50.05	AV	H	-3.17	46.88	54	-7.12
2483.54	68.73	PK	V	-3.17	65.56	74	-8.44
2483.54	49.17	AV	V	-3.17	46.00	54	-8.00
4924.00	48.29	PK	H	2.63	50.92	74	-23.08
4924.00	37.38	AV	H	2.63	40.01	54	-13.99
4924.00	47.43	PK	V	2.63	50.06	74	-23.94
4924.00	36.61	AV	V	2.63	39.24	54	-14.76

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11ax40							
Low Channel 2422MHz							
2389.59	67.57	PK	H	-2.93	64.64	74	-9.36
2389.59	46.38	AV	H	-2.93	43.45	54	-10.55
2389.83	66.04	PK	V	-2.93	63.11	74	-10.89
2389.83	45.69	AV	V	-2.93	42.76	54	-11.24
4844.00	47.32	PK	H	2.45	49.77	74	-24.23
4844.00	35.48	AV	H	2.45	37.93	54	-16.07
4844.00	46.54	PK	V	2.45	48.99	74	-25.01
4844.00	34.73	AV	V	2.45	37.18	54	-16.82
Middle Channel 2437MHz							
4874.00	47.94	PK	H	2.56	50.50	74	-23.50
4874.00	36.35	AV	H	2.56	38.91	54	-15.09
4874.00	47.11	PK	V	2.56	49.67	74	-24.33
4874.00	35.57	AV	V	2.56	38.13	54	-15.87
High Channel 2452MHz							
2483.60	67.25	PK	H	-3.17	64.08	74	-9.92
2483.60	48.64	AV	H	-3.17	45.47	54	-8.53
2483.77	65.47	PK	V	-3.17	62.30	74	-11.70
2483.77	47.78	AV	V	-3.17	44.61	54	-9.39
4904.00	48.51	PK	H	2.64	51.15	74	-22.85
4904.00	36.97	AV	H	2.64	39.61	54	-14.39
4904.00	47.68	PK	V	2.64	50.32	74	-23.68
4904.00	36.12	AV	V	2.64	38.76	54	-15.24

Note:
Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Factor + Reading
Margin = Corrected. Amplitude - Limit
The other spurious emission which is in the noise floor level was not recorded.

Test plots for worst Band Edge Measurements (Radiated):

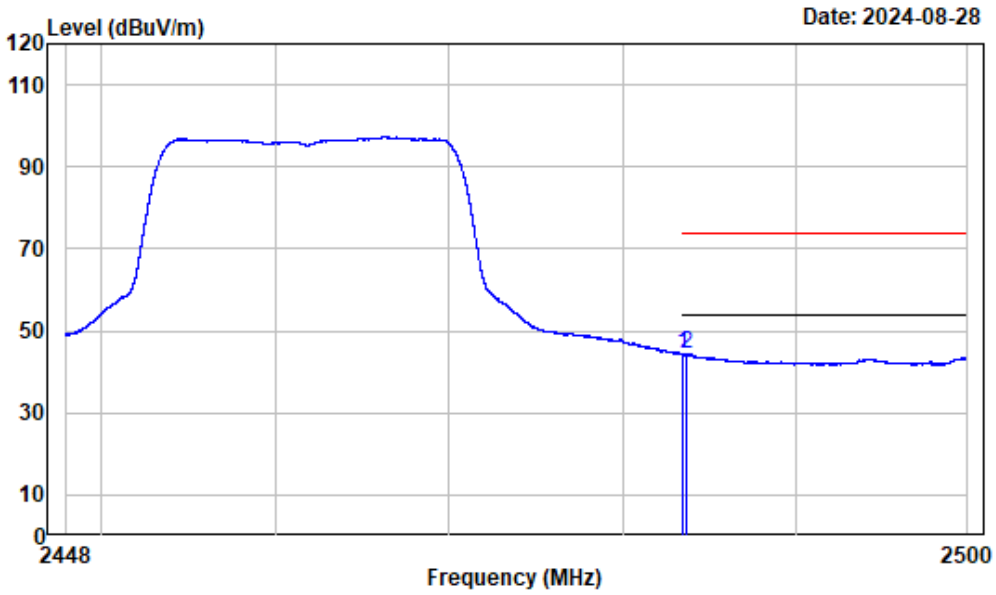
802.11g			
Test Channel:	**2462MHz**	**Ant. Polar. :**	**Horizontal-Peak**



Condition : Horizontal
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : 802.11G_2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-3.17	60.26	57.09	74.00	-16.91	Peak
2	2484.093	-3.17	72.86	69.69	74.00	-4.31	peak

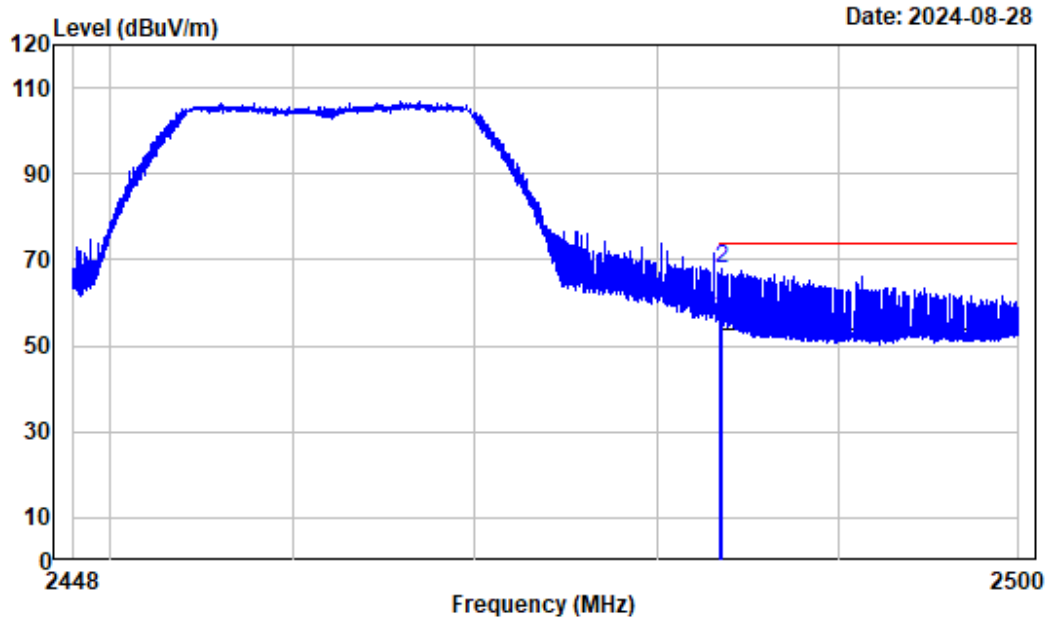
802.11g			
Test Channel:	**2462MHz**	**Ant. Polar. :**	**Horizontal-Average**



Condition : Horizontal
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : 802.11G_2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-3.17	47.44	44.27	54.00	-9.73	Average
2	2483.696	-3.17	47.68	44.51	54.00	-9.49	Average

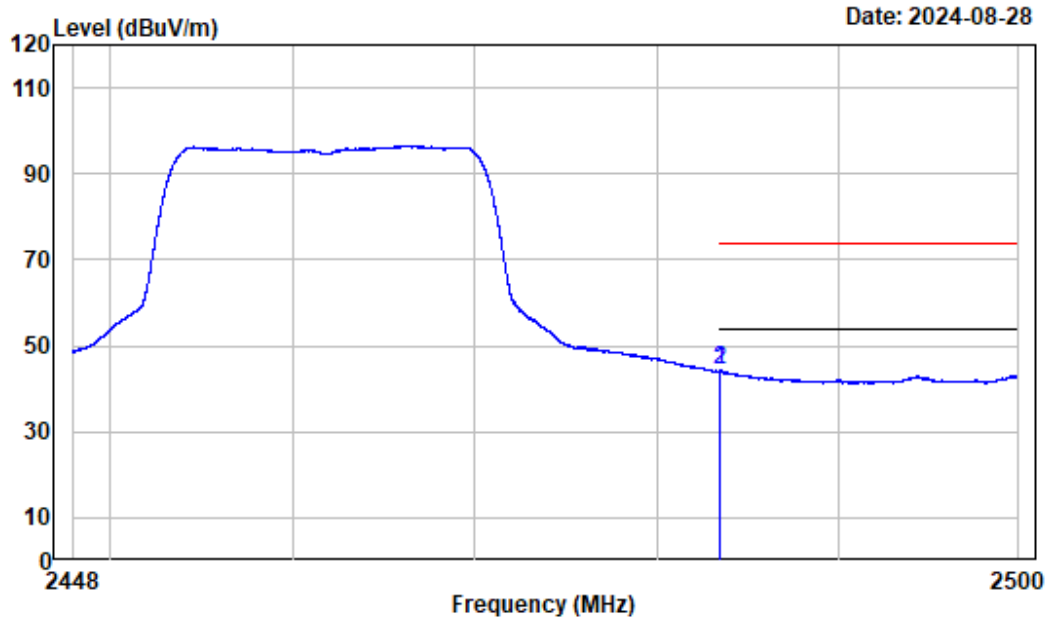
802.11g			
Test Channel:	**2462MHz**	**Ant. Polar. :**	**Vertical-Peak**



Condition : Vertical
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : 802.11G_2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-3.17	59.58	56.41	74.00	-17.59	Peak
2	2483.605	-3.17	70.91	67.74	74.00	-6.26	Peak

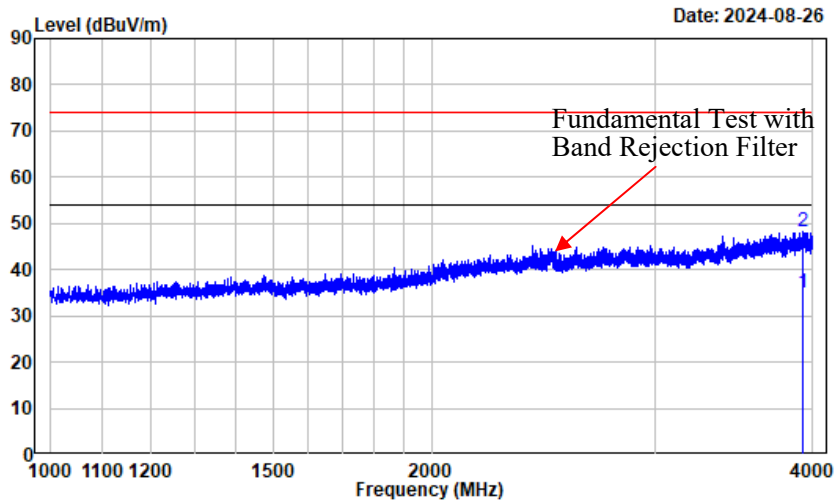
802.11g			
Test Channel:	**2462MHz**	**Ant. Polar. :**	**Vertical-Average**



Condition : Vertical
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : 802.11G_2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-3.17	47.33	44.16	54.00	-9.84	Average
2	2483.514	-3.17	47.40	44.23	54.00	-9.77	Average

Listed with the worst harmonic margin test plot:

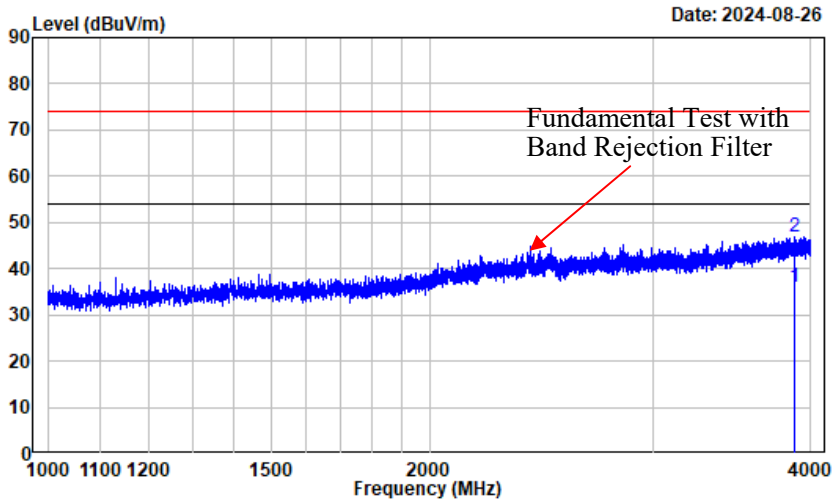
Horizontal	
1-4GHz	

Condition : Horizontal
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : BLE1M_2402

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3924.615	-0.34	35.44	35.10	54.00	-18.90	Average
2	3924.615	-0.34	48.54	48.20	74.00	-25.80	Peak

Vertical

1-4GHz

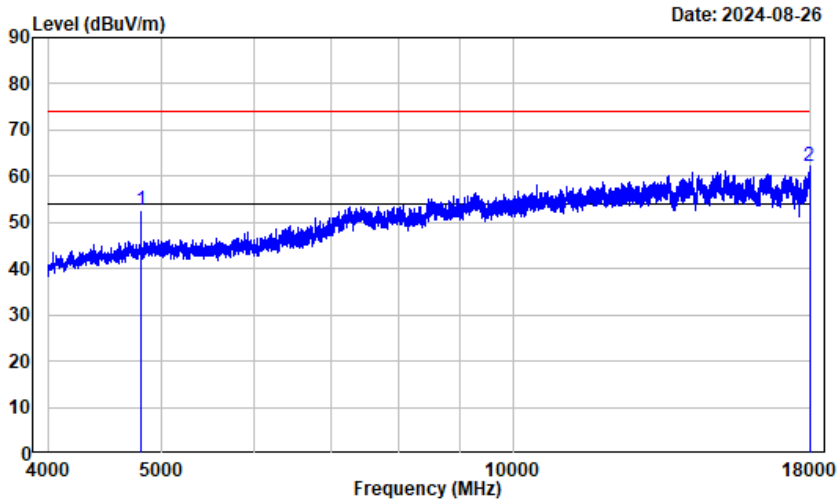


Condition : Vertical
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : BLE1M_2402

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3883.360	-0.61	36.58	35.97	54.00	-18.03	Average
2	3883.360	-0.61	47.54	46.93	74.00	-27.07	Peak

Horizontal-Peak

4-18GHz

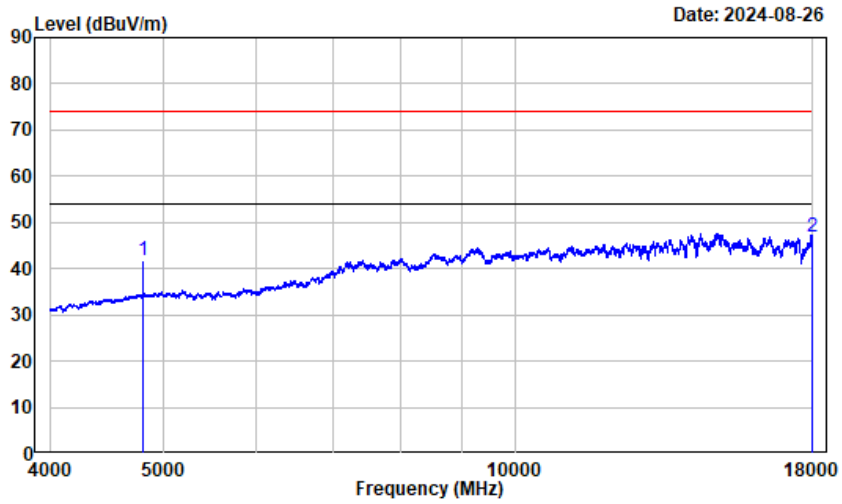


Condition : Horizontal
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : BLE1M_2402

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4804.000	2.42	50.32	52.74	74.00	-21.26	Peak
2	17956.240	24.31	37.95	62.26	74.00	-11.74	Peak

Horizontal-Average

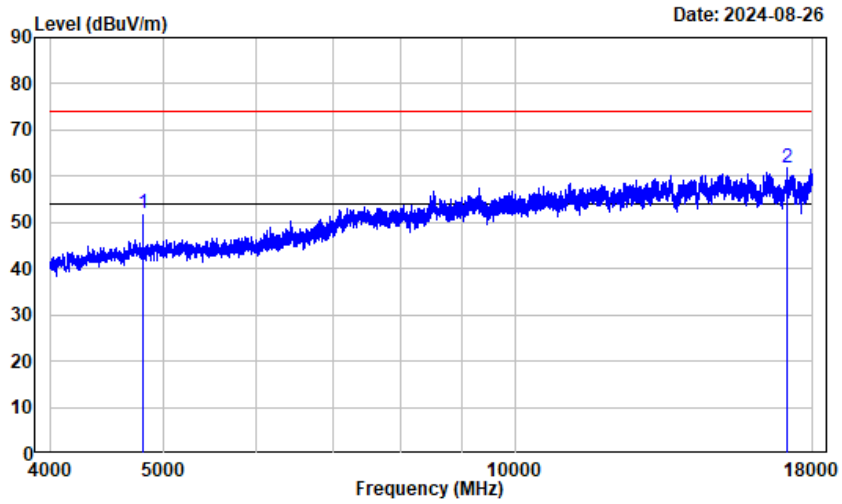
4-18GHz



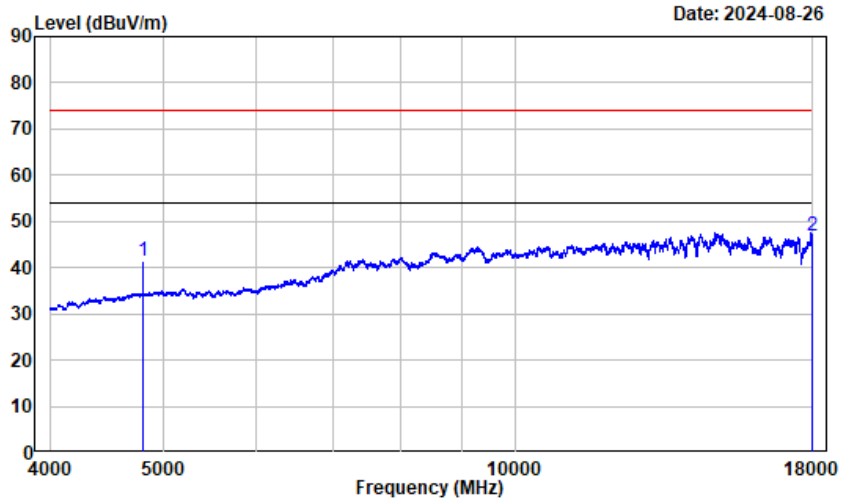
Condition : Horizontal
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : BLE1M_2402

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4804.000	2.42	39.51	41.93	54.00	-12.07	Average
2	17989.500	24.55	22.35	46.90	54.00	-7.10	Average

Note: Spectrum analyzer setting: RBW=1 MHz, VBW=5 kHz

Vertical-Peak	
4-18GHz	 Condition : Vertical Project No.: 2401V67572E-RF Tester : Dylan.Yang Note : BLE1M_2402

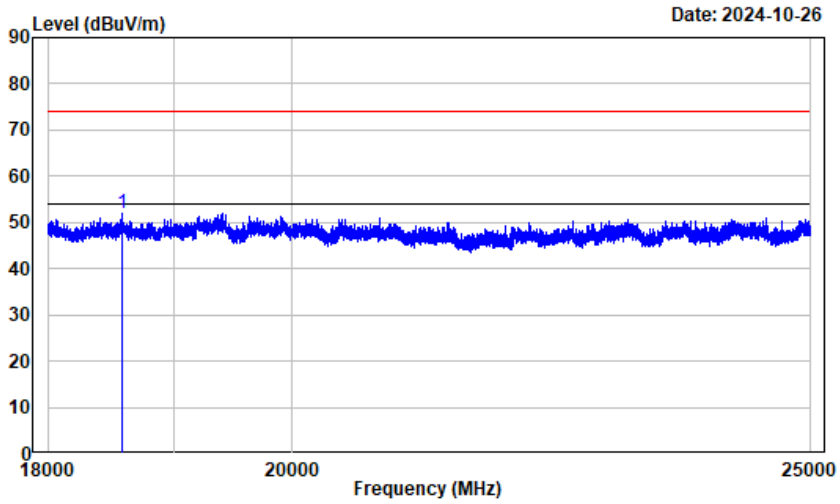
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4804.000	2.42	49.45	51.87	74.00	-22.13	Peak
2	17112.640	18.09	43.78	61.87	74.00	-12.13	Peak

Vertical-Average	
4-18GHz	 Condition : Vertical Project No.: 2401V67572E-RF Tester : Dylan.Yang Note : BLE1M_2402 Freq / Factor / Read Level / Limit Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 1 4804.000 2.42 38.88 41.30 54.00 -12.70 Average 2 17996.500 24.60 22.15 46.75 54.00 -7.25 Average

Note: Spectrum analyzer setting: RBW=1 MHz, VBW=5 kHz

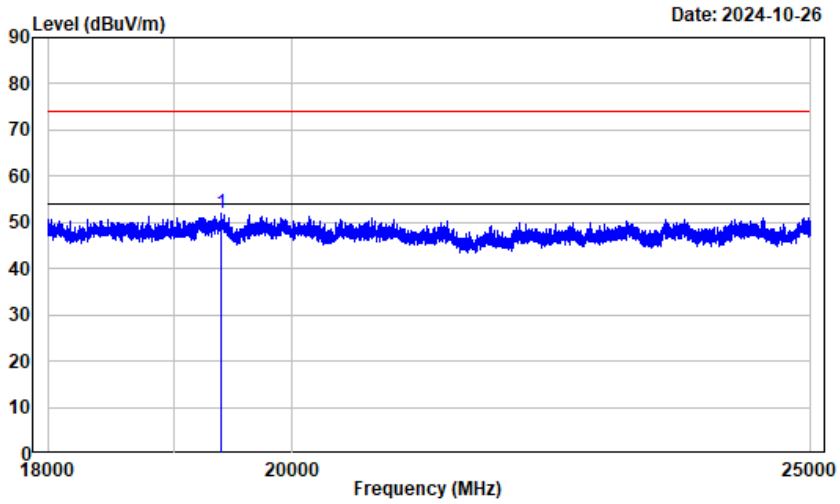
Horizontal

18-25GHz



Condition : Horizontal
Project No.: 2401V67572E-RF
Tester : Dylan.Yang
Note : BLE1M_2402

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	18586.320	14.60	37.25	51.85	74.00	-22.15	Peak

Vertical	
18-25GHz	 Condition : Vertical Project No.: 2401V67572E-RF Tester : Dylan.Yang Note : BLE1M_2402 Freq / Read Level / Factor / Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 1 19394.920 15.09 36.95 52.04 74.00 -21.96 Peak

§15.247 (a)(2) & RSS-Gen§6.7 & RSS-247 § 5.2 (a) 99% OCCUPIED BANDWIDTH & 6 dB EMISSION BANDWIDTH

Applicable Standard

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

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 "6 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 6 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.

Test Procedure

Test Method: ANSI C63.10-2013 Clause 11.8.1 and Clause 6.9.3& RSS-Gen§6.7

6 dB Emission Bandwidth

The steps for the first option are as follows:
a) Set RBW = 100 kHz.
b) Set the 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 6 dB relative to the maximum level measured in the fundamental emission.

99% Occupied Bandwidth

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（Note: for RSS-GEN rules, VBW shall not be smaller than three times the RBW value. Video averaging is not permitted）, 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 4.1.5.2.

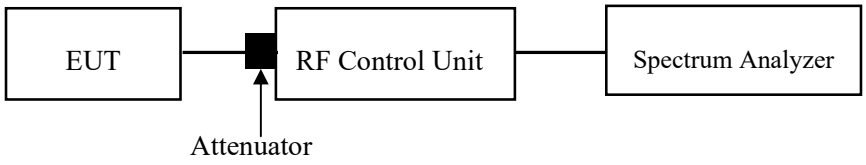
d) Step a) through step c) might require iteration to adjust within the specified range.

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



Test Data

Environmental Conditions

Temperature:	25~27 ℃
Relative Humidity:	55~58 %
ATM Pressure:	101 kPa

The testing was performed by Lee Li on 2024-08-10 and 2024-08-29.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

§15.247(b)(3) & RSS-247 § 5.4(d) 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.

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

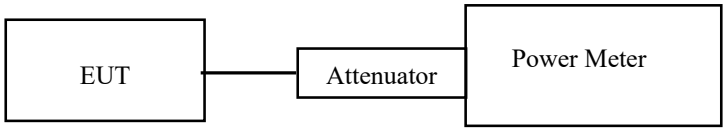
As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signalling alphabet when the 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 transmitting at a reduced power level. If multiple modes of operation are implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

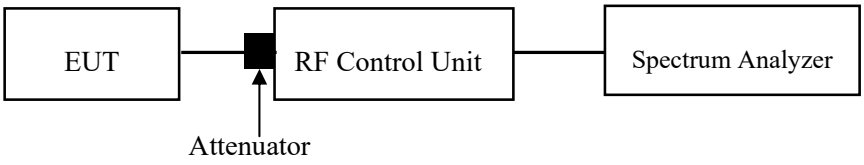
Test Method: ANSI C63.10-2013 Clause 11.9.1.1 for BLE and Clause 11.9.1.3 & 11.9.2.3.2 for Wi-Fi

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
3. Add a correction factor to the display.

For Wi-Fi mode:



For BLE mode:



Test Data

Environmental Conditions

Temperature:	25~27 ℃
Relative Humidity:	55~58 %
ATM Pressure:	101 kPa

The testing was performed by Lee Li on 2024-08-10 and 2024-08-29.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

§15.247(d) & RSS-247 § 5.5 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

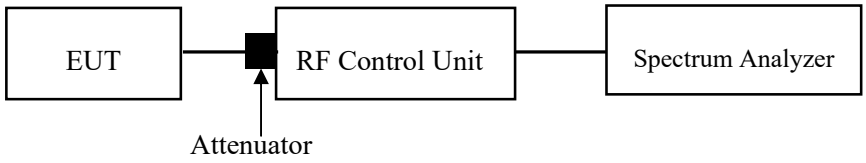
Applicable Standard

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

Test Method: ANSI C63.10-2013 Clause 11.11

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.



Test Data

Environmental Conditions

Temperature:	25~27 ℃
Relative Humidity:	55~58 %
ATM Pressure:	101 kPa

The testing was performed by Lee Li on 2024-08-10 and 2024-08-29.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

§15.247(e) & RSS-247 § 5.2 (b) POWER SPECTRAL DENSITY

Applicable Standard

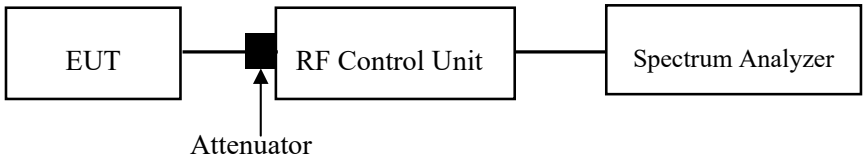
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of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

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than8 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 section 5.4(d), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

Test Procedure

Test Method: ANSI C63.10-2013 Clause 11.10.2

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW to: 3kHz≤ RBW≤100 kHz.
3. Set the VBW ≥ 3×RBW.
4. Set the span to 1.5 times the DTS bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



Test Data

Environmental Conditions

Temperature:	25~27 ℃
Relative Humidity:	55~58 %
ATM Pressure:	101 kPa

The testing was performed by Lee Li on 2024-08-10 and 2024-08-29.

EUT operation mode: Transmitting

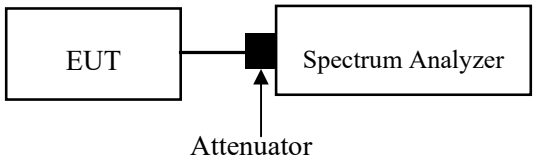
Test Result: Compliant. Please refer to the Appendix.

C63.10 §11.6- DUTY CYCLE

Test Procedure

According to ANSI C63.10-2013 Section 11.6

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
1) Set the center frequency of the instrument to the center frequency of the transmission.
2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.
3) Set VBW ≥ RBW. Set detector = peak or average.
4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if T ≤ 16.7 μs.)



Test Data

Environmental Conditions

Temperature:	25~27 ℃
Relative Humidity:	55~58 %
ATM Pressure:	101 kPa

The testing was performed by Lee Li and Tom Tan from 2024-08-10 to 2024-12-09.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

EUT PHOTOGRAPHS

Please refer to the attachment 2401V67572E-RF External photo and 2401V67572E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401V67572E-RFB Test Setup photo.

APPENDIX - BLE

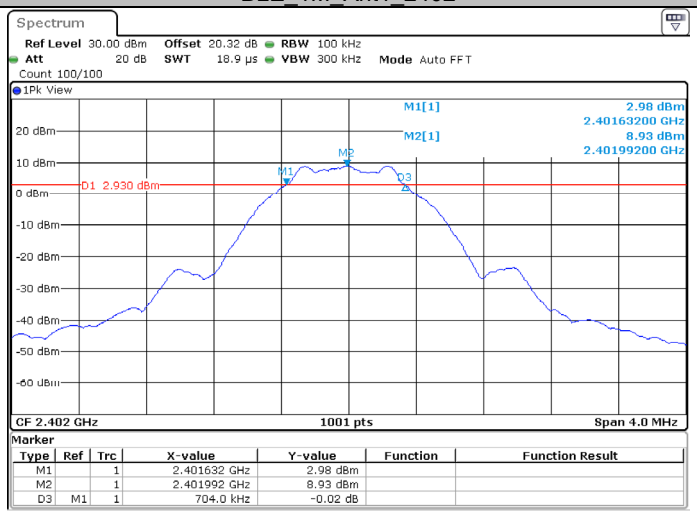
Appendix A: DTS Bandwidth

Test Result

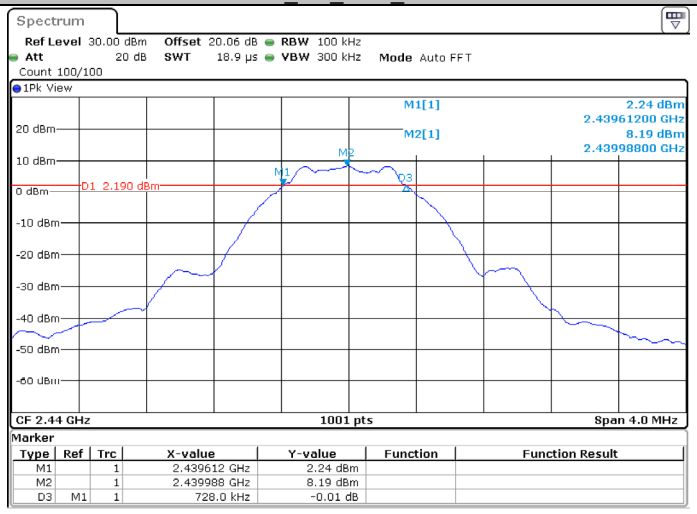
Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.704	2401.632	2401.992	0.5	PASS
		2440	0.728	2439.612	2439.988	0.5	PASS
		2480	0.716	2479.624	2479.992	0.5	PASS

Test Graphs

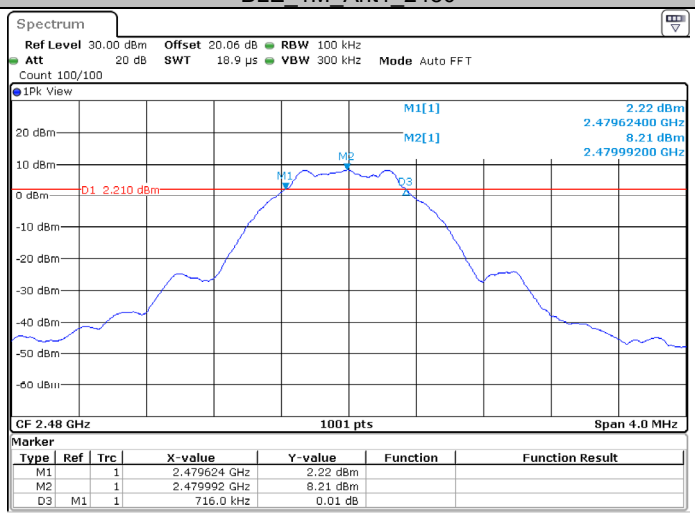
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



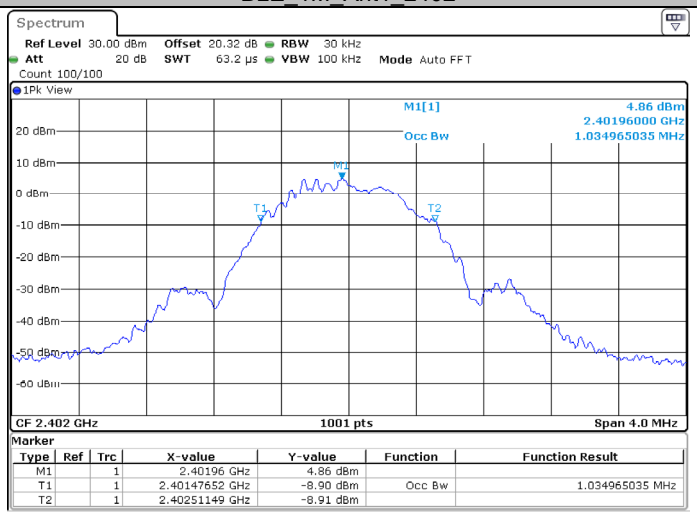
Appendix B: Occupied Channel Bandwidth

Test Result

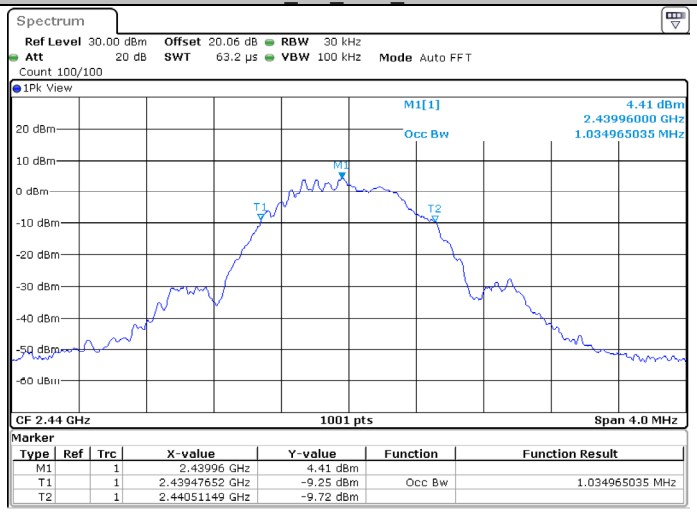
Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.035	2401.4765	2402.5115	---	---
		2440	1.035	2439.4765	2440.5115	---	---
		2480	1.031	2479.4765	2480.5075	---	---

Test Graphs

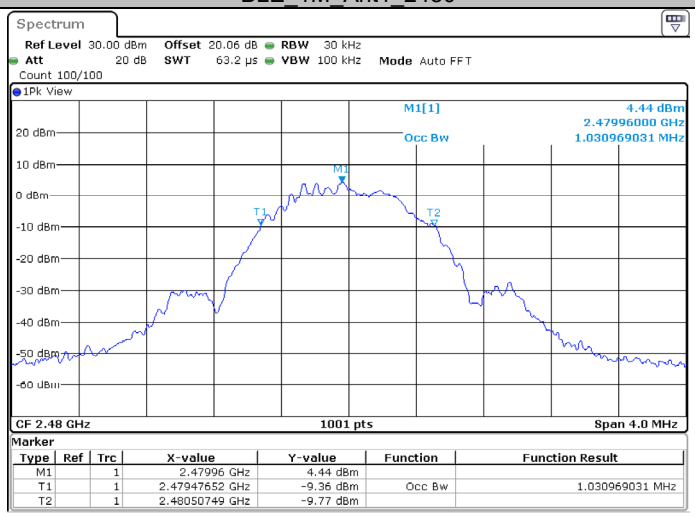
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



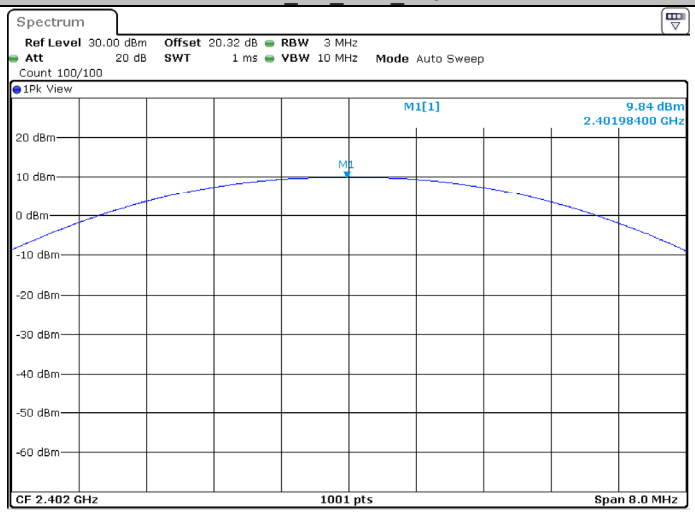
Appendix C: Maximum Conducted Output Power

Test Result Peak

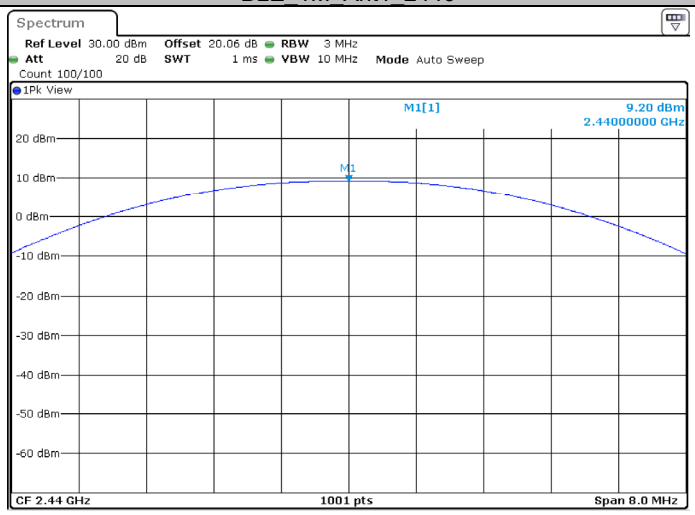
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power [dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
BLE_1M	Ant1	2402	9.84	≤30	10.05	≤36	PASS
		2440	9.20	≤30	9.41	≤36	PASS
		2480	9.16	≤30	9.37	≤36	PASS

Test Graphs Peak

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480