FCC/ISED Test Report

Report No.:	2505P41486EB-A1
Applicant:	Shenzhen Qianyan Technology LTD
Address:	No.3301, Block C, Section 1, Chuangzhi Yuncheng Building, Liuxian Avenue, Xili Community, Xili Street, Nanshan District, Shenzhen, China
Product Name:	Smart Countertop Ice Maker 1s
Product Model:	H717D
Multiple Models:	N/A
Trade Mark:	GoveeLife
FCC ID:	2A7VD-H717D
IC:	28789-H717D
Standards:	FCC CFR Title 47 Part 15C (§15.247) RSS-247 Issue 3, August 2023
Test Date:	2025-01-15 to 2025-02-14
Test Result:	Complied
Report Date:	2025-02-17

Reviewed by: Abel Chen — Abel Chen, Project Engineer

Approved by: Jacob Kong — Jacob Kong, Manager

Prepared by:

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

NVLAP TESTING NVLAP LAB CODE 600335-0

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Announcement

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Revision History

Version No.	Report No.	Issued Date	Description
00	*RWAZ202300051B*	*2024-04-23*	*Original*
01	*2505P41486EB-A1*	*2025-02-17*	*CIIPC*

Contents

1 General Information

1.1 Client Information

Applicant:	Shenzhen Qianyan Technology LTD
Address:	No.3301, Block C, Section 1, Chuangzhi Yuncheng Building, Liuxian Avenue, Xili Community, Xili Street, Nanshan District, Shenzhen, China
Manufacturer:	Shenzhen Qianyan Technology LTD
Address:	No.3301, Block C, Section 1, Chuangzhi Yuncheng Building, Liuxian Avenue, Xili Community, Xili Street, Nanshan District, Shenzhen, China

1.2 Product Description of EUT

The EUT is Smart Countertop Ice Maker 1s that contains 2.4G WLAN and BLE radios, this report covers the full testing of the BLE radio.

HVIN	H717DA
Sample Serial Number	2XD4-2 for CE test, 2XD4-1 for RE& RF conducted test (assigned by WATC)
Sample Received Date	2025-01-13
Sample Status	Good Condition
Frequency Range	2402-2480MHz(BLE(1M))
Maximum Conducted Peak Output Power	1.15dBm
Modulation Technology	GFSK
Antenna Gain#	2.28dBi
Spatial Streams#	SISO (1TX, 1RX)
Power Supply	AC 120V/60Hz
Adapter Information	N/A
Modification	Sample No Modification by the test lab

1.3 Antenna information

15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

RSS-GEN Clause 6.8 requirement:

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.

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.

Device Antenna information:	

The BLE antenna is an internal antenna which cannot replace by end-user. Please see product internal photos for details.

Antenna type	Antenna gain	Frequency Range	Input impedance
FPC	2.28dBi	2.4-2.5GHz	50Ω

1.4 Related Submittal(s)/Grant(s)

No Related Submittal(s)/Grant(s)

1.5 Measurement Uncertainty

Parameter		**Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))**
AC Power Lines Conducted Emissions		±3.14dB
Emissions, Radiated	Below 30MHz	±2.78dB
	Below 1GHz	±4.84dB
	Above 1GHz	±5.44dB
Emissions, Conducted		1.75dB
Conducted Power		0.74dB
Frequency Error		150Hz
Bandwidth		0.34%
Power Spectral Density		0.74dB

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.*

1.6 Laboratory Location

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@watc.com.cn

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. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

1.7 Test Methodology

FCC CFR 47 Part 2

FCC CFR 47 Part 15

KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

RSS-247 Issue 3, August 2023

RSS-Gen, Issue 5, Amendment 2 (February 2021)

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

2 Description of Measurement

2.1 Test Configuration

Operating channels:					
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2402	19	2440	38	2478
1	2404	20	2442	39	2480
…	…	…	…	/	/
18	2438	…	…	/	/
According to RSS-Gen chapter 6.9 Table 1 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2402	19	2440	39	2480

Test Mode:				
Transmitting mode:	Keep the EUT in continuous transmitting with modulation			
Exercise software#:	EspRFTestTool_v3.6			
Mode	**Data rate**	**Power Level Setting#**		
		Low Channel	**Middle Channel**	**High Channel**
BLE 1M	1Mbps	8	8	8
The exercise software and the maximum power setting that provided by manufacturer.				

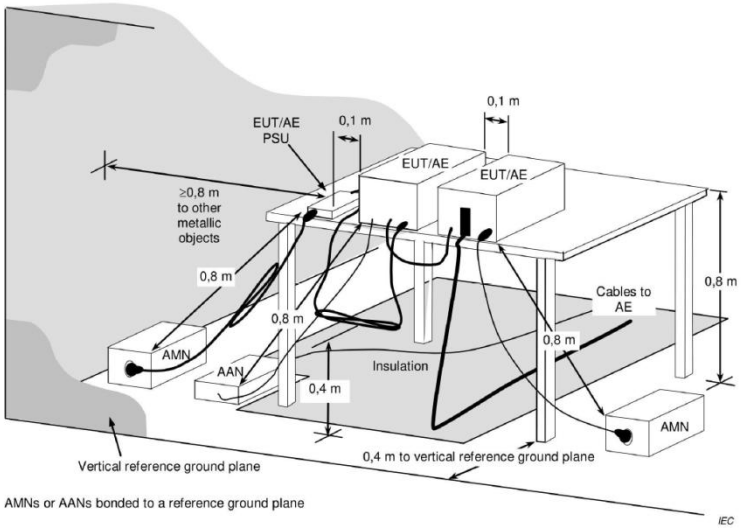
Worst-Case Configuration:
For radiated emissions, EUT was investigated in three orthogonal orientation, the worst-case orientation was recorded in report

2.2 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
/	/	/	/

2.3 Test Setup

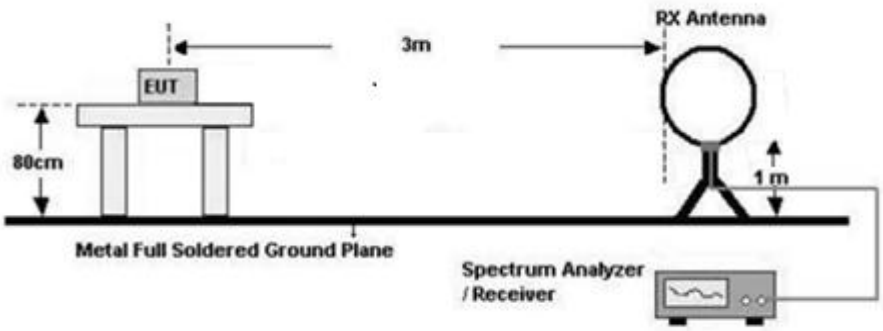
1) Conducted emission measurement:



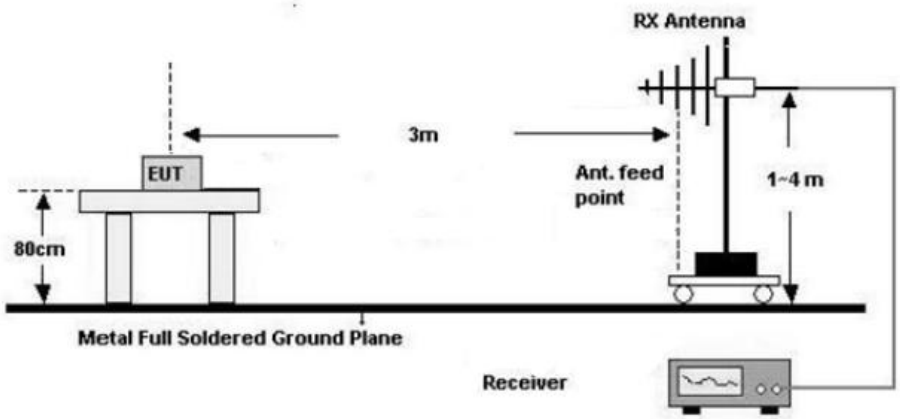
Note: The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

2) Radiated emission measurement:

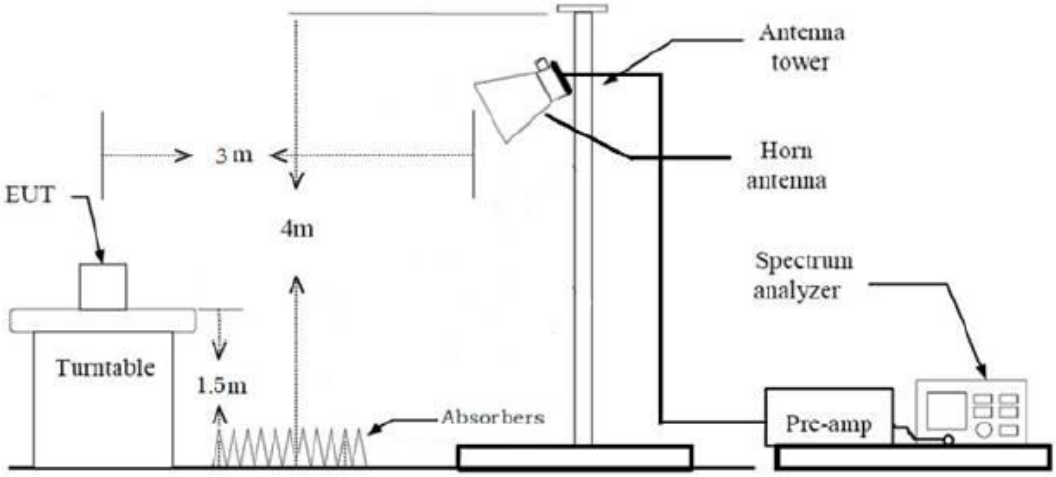
Below 30MHz (3m SAC)



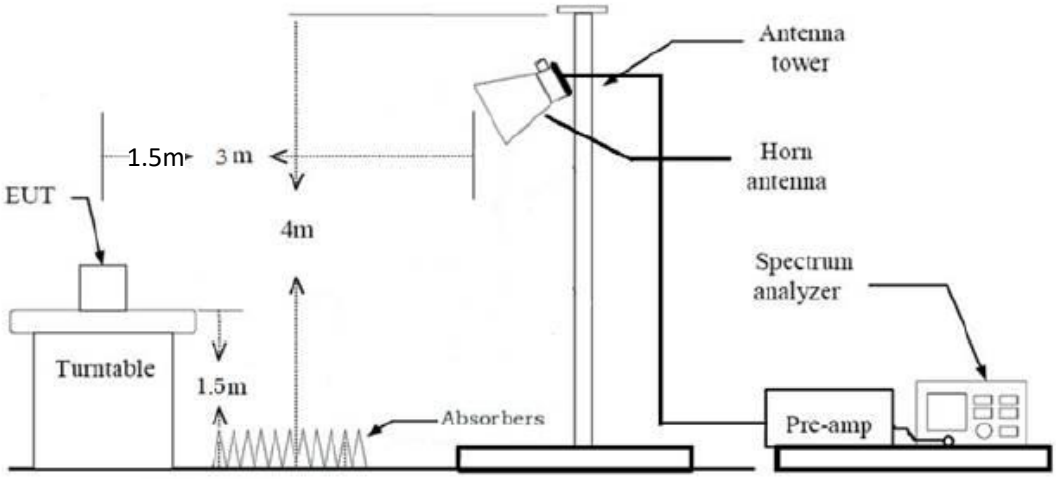
30MHz-1GHz (3m SAC)



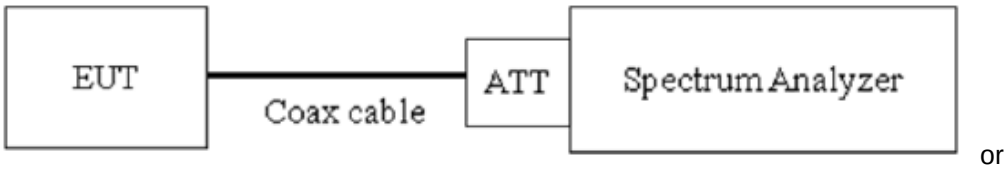
1GHz-18GHz



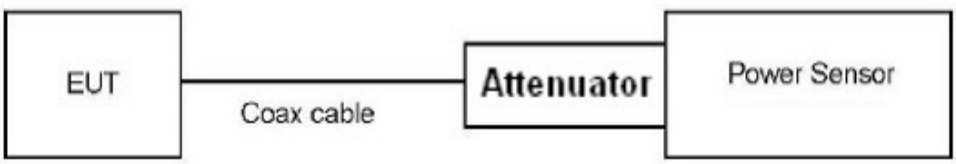
Above 18GHz



1) RF Conducted Test



or



2.4 Test Procedure

Conducted emission:

1. The E.U.T is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane (Please refer to the block diagram of the test setup and photographs).
2. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
3. Line conducted data is recorded for both Line and Neutral

Radiated Emission Procedure:

a) For below 30MHz

1. All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz- 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).
2. Loop antenna use, investigation was done on the three antenna orientations (parallel, perpendicular, gound-parallel)
3. The RBW/VBW of receiver is set to 200Hz/1kHz for 9kHz to 150kHz range, to 9kHz/30kHz for 150kHz to 30MHz range for scan Peak emission, 200Hz/9kHz IF BW was used for final measurement in the Quasi-peak or average detection mode for frequency range 9~150kHz/150kHz~30MHz respectively.
4. If the Peak emission complies with the QP limit, then perform final measurement is optional.

b) For 30MHz-1GHz:

1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
3. The RBW/VBW of receiver is set to 100kHz/300kHz for scan Peak emission, 120kHz IF BW was used for final measurement in the Quasi-peak detection mode.
4. If the Peak emission complies with the QP limit, then perform final measurement is optional.

c) For above 1GHz:

1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m (1-18GHz) and 1.5 m (above 18GHz).
2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal

polarizations.

3. The RBW/VBW of spectrum analyzer is set to 1MHz/3MHz for scan Peak emission, for measured average emission, reduce the VBW to 10Hz(for duty cycle≥98%), or ≥1/T(for duty cycle<98%). T is minimum transmission duration. (Note: a high VBW (for example 1kHz, not less than 1/T) may used to scan average emissions to avoid long sweep time.)
4. If the Peak emission complies with the Average limit, then perform average measurement is optional.
5. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
6. Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

RF Conducted Test:

1. The antenna port of EUT was connected to the RF port of the test equipment (Power Meter or Spectrum analyzer) through Attenuator and RF cable.
2. The cable assembly insertion loss of 8.0dB (including 6.0 dB Attenuator and 2.0 dB cable) was entered as an offset in the power meter. Note: Actual cable loss was unavailable at the time of testing, therefore a loss of 2.0dB was assumed as worst case. This was later verified to be true by laboratory. (if the RF cable provided by client, the cable loss declared by client)
3. The EUT is keeping in continuous transmission mode and tested in all modulation modes.

2.5 Measurement Method

Description of Test	Measurement Method
AC Line Conducted Emissions	ANSI C63.10-2013 Section 6.2
Maximum Conducted Output Power	ANSI C63.10-2013 Section 11.9.1.1
Power Spectral Density	ANSI C63.10-2013 Section 11.10.2
6 dB Emission Bandwidth	ANSI C63.10-2013 Section 11.8.1
99% Occupied Bandwidth	ANSI C63.10-2013 Section 6.9.3
100kHz Bandwidth of Frequency Band Edge	ANSI C63.10-2013 Section 6.10
Radiated emission	ANSI C63.10-2013 Section 11.11&11.12
Duty Cycle	ANSI C63.10-2013 Section 11.6

2.6 Measurement Equipment

Manufacturer	Description	Model	Management No.	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
ROHDE& SCHWARZ	EMI TEST RECEIVER	ESR	101817	2024/6/4	2025/6/3
R&S	LISN	ENV216	101748	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.12	N/A	2024/6/4	2025/6/3
Farad	Test Software	EZ-EMC	Ver. EMEC-3A1	/	/
Radiated Emission Test					
R&S	EMI test receiver	ESR3	102758	2024/6/4	2025/6/3
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40-N	101608	2024/6/4	2025/6/3
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2024/6/4	2025/6/3
A.H. Systems	PREAMPLIFIER	PAM-0118P	531	2024/6/4	2025/6/3
COM-POWER	Amplifier	PAM-840A	461306	2024/8/7	2025/8/6
BACL	Loop Antenna	1313-1A	4010611	2024/2/7	2027/2/6
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2026/7/6
Astro Antenna Ltd	Horn antenna	AHA-118S	3015	2023/7/6	2026/7/5
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2023/7/10	2026/7/9
Oulitong	Band Reject Filter	OBSF-2400-2483.5-50N	OE02103119	2024/6/4	2025/6/3
Unknown	6.7G High Pass Filter	Unknown	6.7G	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.9	N/A	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.13	N/A	2024/8/7	2025/8/6
N/A	Coaxial Cable	NO.15	N/A	2024/6/4	2025/6/3
RF Conducted Test					
ANRITSU	USB Power Sensor	MA24418A	12620	2024/6/4	2025/6/3
narda	6dB attenuator	603-06-1	N/A	2024/6/4	2025/6/3

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.

3 Test Results

3.1 Test Summary

FCC/ISEDC Rules	Description of Test	Result
§15.203 RSS-GEN §6.8	Antenna Requirement	Compliance
§15.207 (a) RSS-GEN §8.8	AC Line Conducted Emissions	Compliance
§15.247(b)(3) RSS-247 §5.4 d)	Maximum Conducted Output Power	Compliance
§15.247(e) RSS-247 §5.2 b)	Power Spectral Density	Compliance (see note)
§15.247 (a)(2) RSS-247 §5.2 a)	6 dB Emission Bandwidth	Compliance (see note)
RSS-GEN §6.7	99% Occupied Bandwidth	Compliance (see note)
§15.247(d) RSS-247 §5.5	100kHz Bandwidth of Frequency Band Edge	Compliance (see note)
§15.205, §15.209, §15.247(d) RSS-247 §5.5 RSS-GEN §8.9&§8.10	Radiated emission	Compliance
-	Duty Cycle	Report only (see note)

Note:
This is a Class II Permissive Change test report. The applicant declared the difference# between EUT and original device (Granted on 2024/05/20) as below:

1. Add alternative components supplier

Evaporator	Shenzhen Qianyan Technology LTD
Solenoid valve	Anhui Tianhao Refrigerating Equipment Co Ltd（MH47312）
Relay	SHENZHEN YUANZE ELECTRICCO LTD(E341498)
PCB	HUIZHOU KEDISHENG TECHNOLOGY CO LTD (E312490)
Water pump	Changzhou Duling Controller Co.,Ltd

2. Change the product name
3. Change the HVIN

Base on above difference, the output power of BLE was re-test and verified consist with original device, so those items please refer the original report.

3.2 Limit

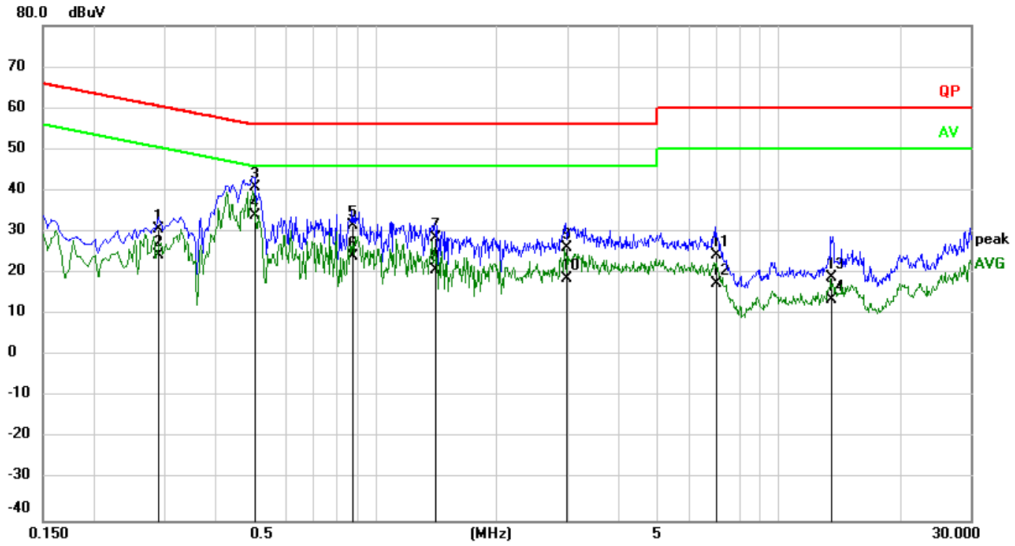
Test items	Limit
AC Line Conducted Emissions	See details §15.207 (a)/ RSS-GEN §8.8
Conducted Output Power	For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).
6dB Emission Bandwidth	The minimum 6 dB bandwidth shall be at least 500 kHz.
Power Spectral Density	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.
Spurious Emissions, 100kHz Bandwidth of Frequency Band Edge	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)/RSS-GEN §8.9 is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) /RSS-GEN §8.10, must also comply with the radiated emission limits specified in §15.209(a) /RSS-GEN §8.9 (see §15.205(c)).

3.3 AC Line Conducted Emissions Test Data

Test Date:	2025-01-15	Test By:	Ryan Zhang
Environment condition:	Temperature: 21.8°C; Relative Humidity:43%; ATM Pressure: 100.7kPa		

Conducted Emission Measurement

File :2505P41486E Data :#6 Date: 2025/1/15 Time: 10:23:39



Limit: QP
Mode:
Note: BLE 1M High Channel

Phase: L1
Power: AC 120V/60Hz

Temperature: 21.8 ℃
Humidity: 43 %
Air Pressure: 1007 hpa

Receiver Setting: 0.15~30MHz: Pre-scan: RBW: 9kHz, DET: PK/AV; Final measure: RBW: 9kHz, DET: QP/AV

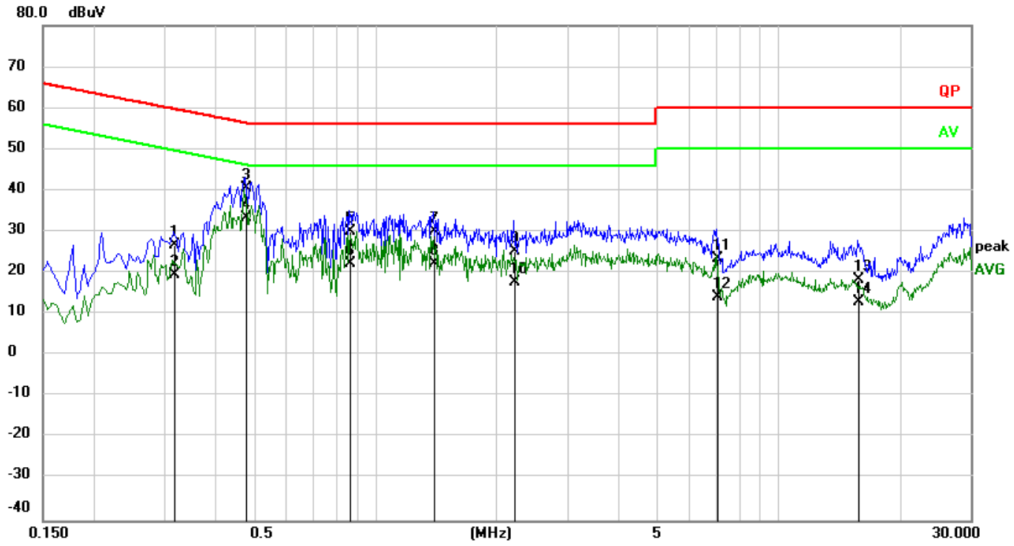
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2900	20.10	10.45	30.55	60.52	-29.97	QP	
2		0.2900	14.01	10.45	24.46	50.52	-26.06	AVG	
3		0.5020	30.18	10.59	40.77	56.00	-15.23	QP	
4	*	0.5020	23.24	10.59	33.83	46.00	-12.17	AVG	
5		0.8780	21.01	10.64	31.65	56.00	-24.35	QP	
6		0.8780	13.32	10.64	23.96	46.00	-22.04	AVG	
7		1.4060	17.78	10.71	28.49	56.00	-27.51	QP	
8		1.4060	9.93	10.71	20.64	46.00	-25.36	AVG	
9		2.9660	15.33	10.69	26.02	56.00	-29.98	QP	
10		2.9660	8.02	10.69	18.71	46.00	-27.29	AVG	
11		6.9940	14.05	10.27	24.32	60.00	-35.68	QP	
12		6.9940	7.24	10.27	17.51	50.00	-32.49	AVG	
13		13.4980	8.74	10.31	19.05	60.00	-40.95	QP	
14		13.4980	3.21	10.31	13.52	50.00	-36.48	AVG	

*:Maximum data x:Over limit !:over margin

Engineer Signature: Ryan

Conducted Emission Measurement

File :2505P41486E Data :#5 Date: 2025/1/15 Time: 10:21:26



Limit: QP Phase: N Temperature: 21.8 ℃

Mode: Power: AC 120V/60Hz Humidity: 43 %

Note: BLE 1M High Channel Air Pressure: 1007 hpa

Receiver Setting: 0.15~30MHz: Pre-scan: RBW: 9kHz, DET: PK/AV; Final measure: RBW: 9kHz, DET: QP/AV

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3180	16.15	10.47	26.62	59.76	-33.14	QP	
2		0.3180	9.11	10.47	19.58	49.76	-30.18	AVG	
3		0.4780	29.90	10.58	40.48	56.37	-15.89	QP	
4	*	0.4780	22.67	10.58	33.25	46.37	-13.12	AVG	
5		0.8620	19.57	10.53	30.10	56.00	-25.90	QP	
6		0.8620	11.87	10.53	22.40	46.00	-23.60	AVG	
7		1.3980	19.38	10.61	29.99	56.00	-26.01	QP	
8		1.3980	11.77	10.61	22.38	46.00	-23.62	AVG	
9		2.2100	14.63	10.65	25.28	56.00	-30.72	QP	
10		2.2100	7.21	10.65	17.86	46.00	-28.14	AVG	
11		7.0380	13.22	10.37	23.59	60.00	-36.41	QP	
12		7.0380	3.92	10.37	14.29	50.00	-35.71	AVG	
13		15.7540	8.14	10.36	18.50	60.00	-41.50	QP	
14		15.7540	2.63	10.36	12.99	50.00	-37.01	AVG	

*:Maximum data x:Over limit !:over margin Engineer Signature: Ryan

Remark:

Measurement (dBuV)= Reading Level (dBuV) + Correct Factor(dB)

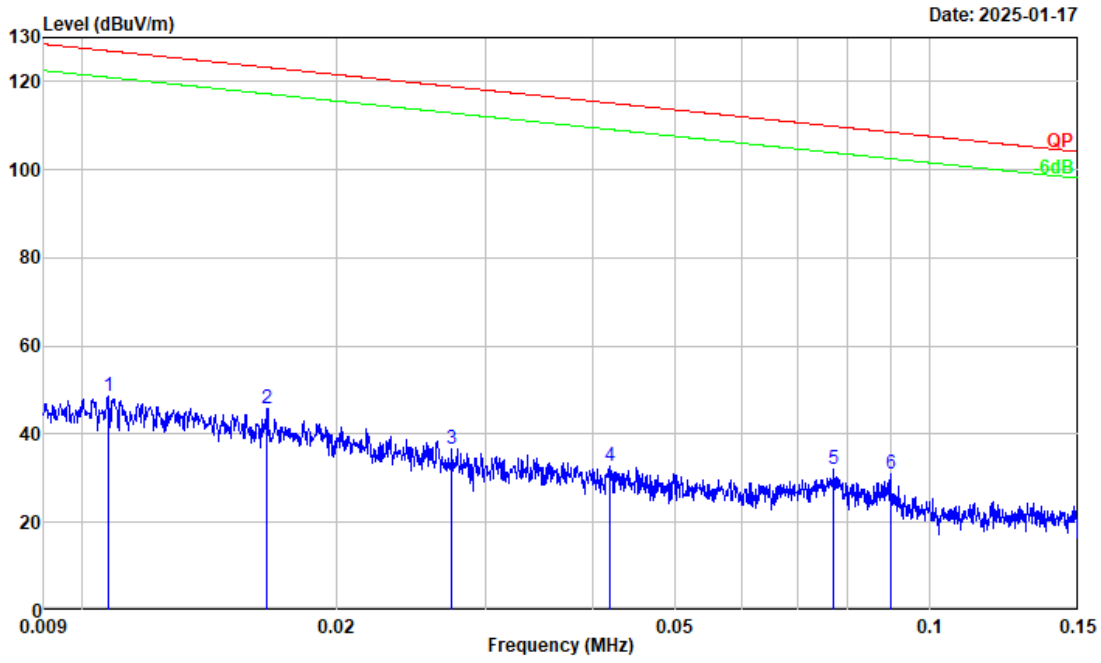
Correct Factor (dB)= LISN Voltage Division Factor (dB)+ Cable loss(dB)

Over Limit= Measurement – Limit

3.4 Radiated emission Test Data

9 kHz-30MHz:

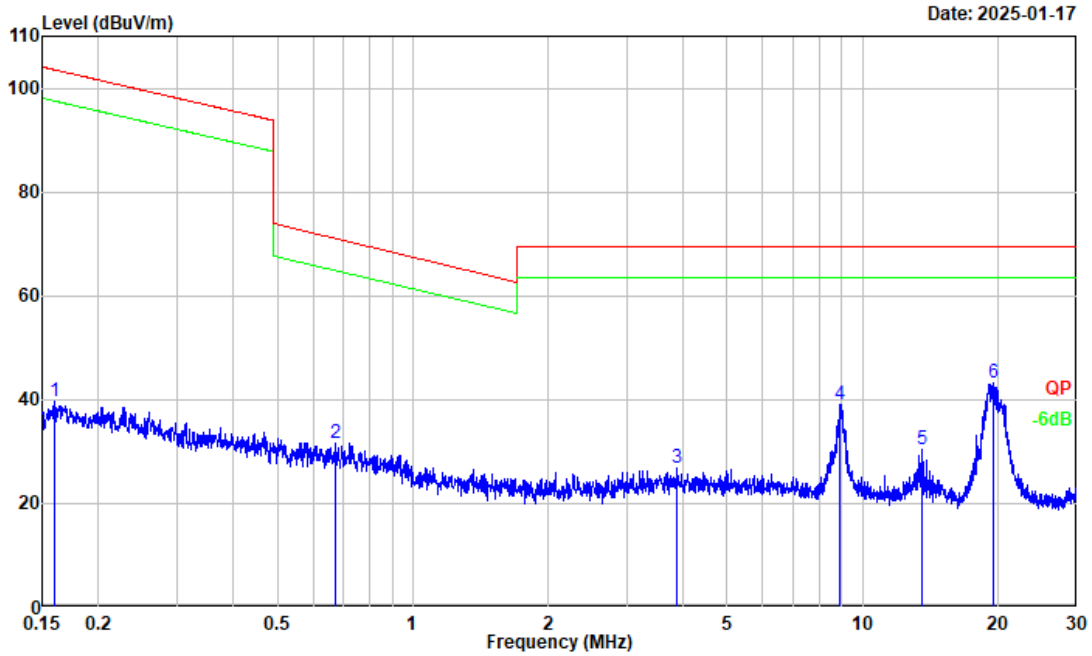
Test Date:	2025-01-17	Test By:	Bard Huang
Environment condition:	Temperature: 22.5°C; Relative Humidity:32%; ATM Pressure: 101.3kPa		



Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 22.5℃/32%R.H./101.3kPa
Tested by : Bard Huang
Polarization : PARALLEL
Remark : BLE 1M 2480

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	0.011	11.86	36.76	48.62	126.99	-78.37	Peak
2	0.017	12.74	33.06	45.80	123.23	-77.43	Peak
3	0.027	10.52	26.25	36.77	118.89	-82.12	Peak
4	0.042	10.71	22.08	32.79	115.16	-82.37	Peak
5	0.077	15.49	16.68	32.17	109.88	-77.71	Peak
6	0.090	15.54	15.64	31.18	108.53	-77.35	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: RBW/VWB: 200Hz/1kHz, DET: PK



Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 22.5℃/32%R.H./101.3kPa
Tested by : Bard Huang
Polarization : PARALLEL
Remark : BLE 1M 2480

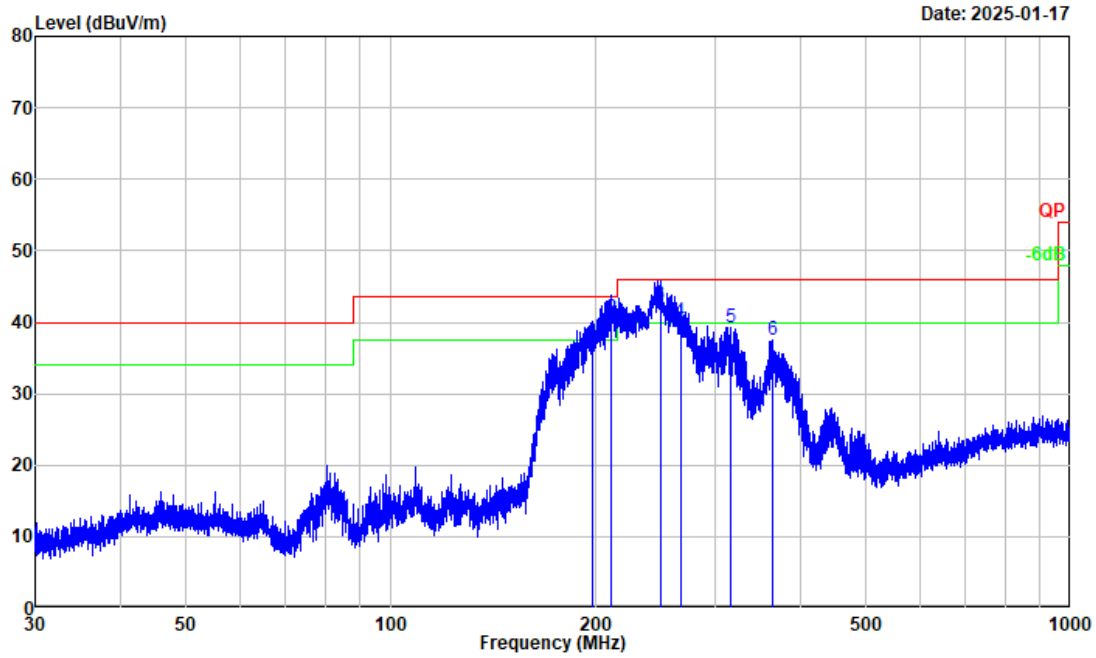
--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	0.160	26.28	13.39	39.67	103.53	-63.86	Peak
2	0.672	27.78	3.85	31.63	71.00	-39.37	Peak
3	3.864	30.53	-3.71	26.82	69.54	-42.72	Peak
4	8.913	42.74	-3.65	39.09	69.54	-30.45	Peak
5	13.595	33.96	-3.49	30.47	69.54	-39.07	Peak
6	19.598	46.16	-3.08	43.08	69.54	-26.46	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: RBW/VWB: 9kHz/30kHz, DET: PK

For radiated emissions below 30MHz, there were no emissions found within 20dB of limit.

30MHz-1GHz:

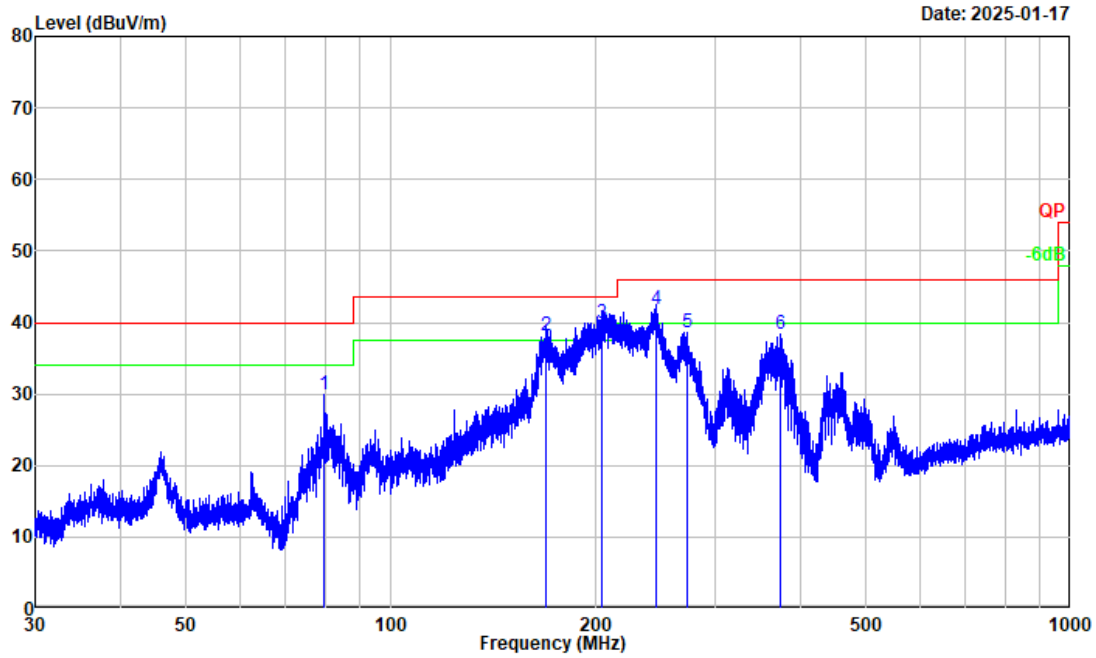
Test Date:	2025-01-17	Test By:	Bard Huang
Environment condition:	Temperature: 22.5°C; Relative Humidity:32%; ATM Pressure: 101.3kPa		



Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 22.5℃/32%R.H./101.3kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : BLE 1M 2480

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	198.327	50.60	-13.79	36.81	43.50	-6.69	QP
2	210.601	54.30	-13.81	40.49	43.50	-3.01	QP
3	248.988	54.80	-12.39	42.41	46.00	-3.59	QP
4	266.609	52.20	-12.01	40.19	46.00	-5.81	QP
5	316.450	50.20	-10.90	39.30	46.00	-6.70	Peak
6	365.379	47.00	-9.39	37.61	46.00	-8.39	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Pre-scan: RBW/VWB: 100kHz/300kHz, DET: PK
Final measure: RBW: 120kHz, DET: QP



Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 22.5℃/32%R.H./101.3kPa
Tested by : Bard Huang
Polarization : vertical
Remark : BLE 1M 2480

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	79.660	47.99	-18.01	29.98	40.00	-10.02	Peak
2	169.228	54.30	-16.24	38.06	43.50	-5.44	QP
3	204.776	53.60	-13.72	39.88	43.50	-3.62	QP
4	246.275	54.20	-12.44	41.76	46.00	-4.24	QP
5	272.755	50.44	-11.87	38.57	46.00	-7.43	Peak
6	374.130	47.63	-9.32	38.31	46.00	-7.69	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Pre-scan: RBW/VWB: 100kHz/300kHz, DET: PK
Final measure: RBW: 120kHz, DET: QP

Remark:

Level = Reading + Factor

Factor = Antenna factor + Cable loss – Amplifier gain

Over Limit = Level – Limit

Above 1GHz:

Test Date:	2025-01-24~2025-02-14	Test By:	Bard Huang
Environment condition:	Temperature: 22.3~23.6°C; Relative Humidity:55~58%; ATM Pressure: 101.1~101.5kPa		

Frequency (MHz)	Reading level (dBμV)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
BLE 1M							
Low Channel							
4804.000	48.24	horizontal	-2.42	45.82	74.00	-28.18	Peak
4804.000	47.19	vertical	-2.42	44.77	74.00	-29.23	Peak
Middle Channel							
4880.000	47.09	horizontal	-1.88	45.21	74.00	-28.79	Peak
4880.000	49.24	vertical	-1.88	47.36	74.00	-26.64	Peak
High Channel							
4960.000	47.40	horizontal	-1.70	45.70	74.00	-28.30	Peak
4960.000	47.63	vertical	-1.70	45.93	74.00	-28.07	Peak

Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss – Amplifier gain

Margin = Corrected Amplitude – Limit

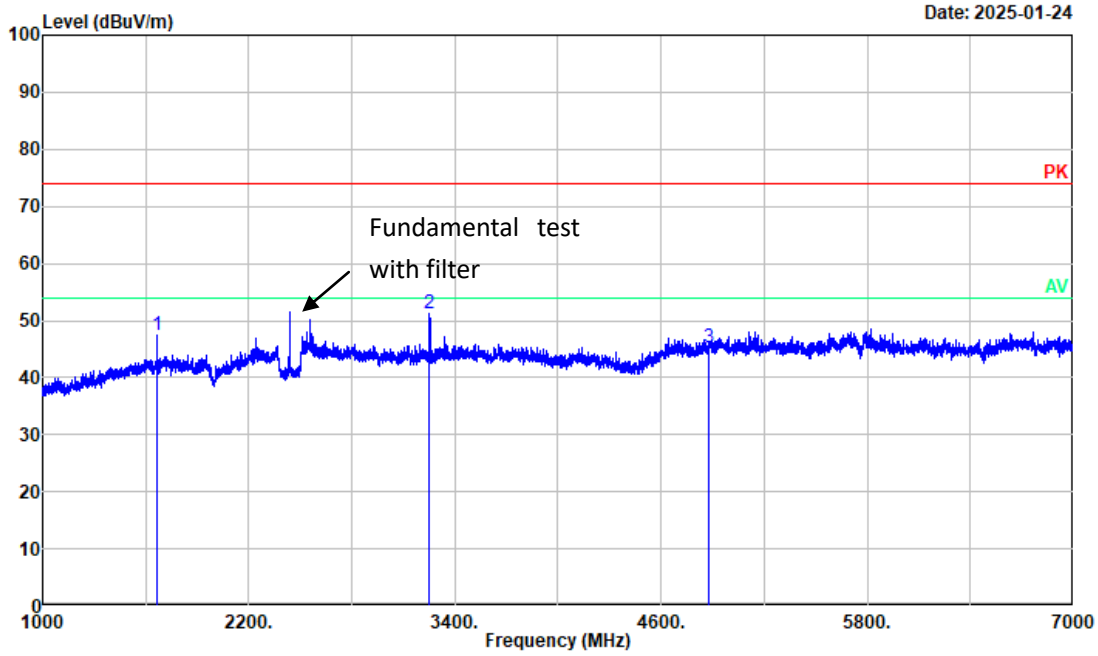
For the test result of Peak below the Peak limit more than 20dB, which can compliance with the average limit, just the Peak level was recorded.

The emission levels of other frequencies that were lower than the limit 20dB not show in test report.

For emissions in 18GHz-25GHz range, all emissions were investigated and in the noise floor level.

Test plot for example as below:

Mode:	BLE 1M	Channel:	2440MHz

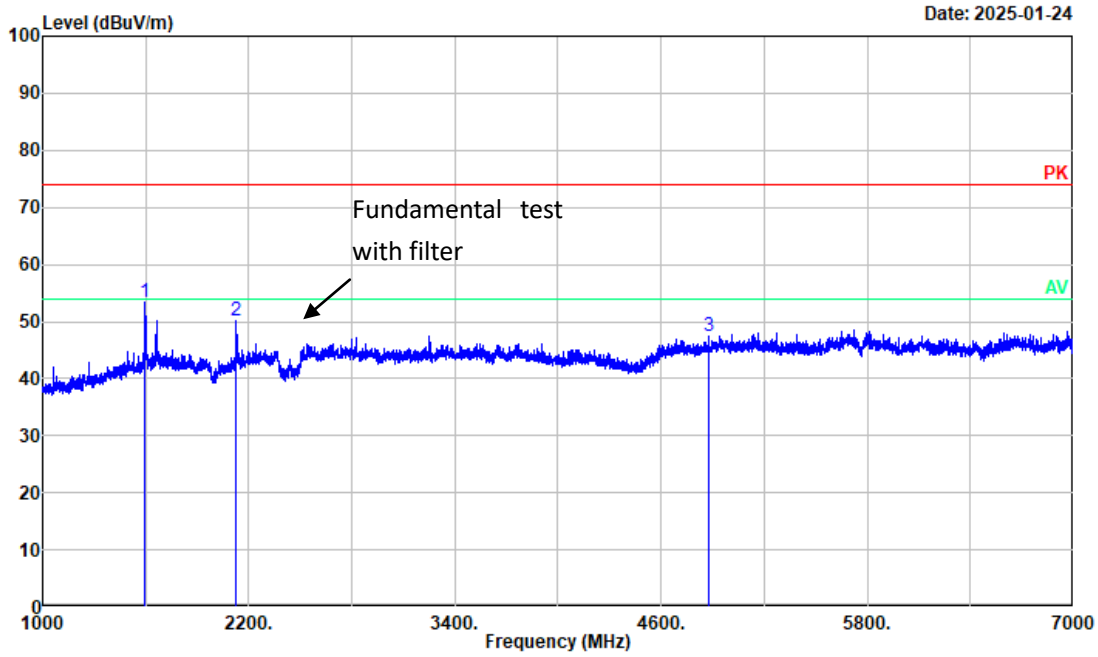


Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.6℃/58%R.H./101.5kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : BLE 1M 2440

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	1665.000	51.21	-3.78	47.43	74.00	-26.57	Peak
2	3253.000	53.98	-2.70	51.28	74.00	-22.72	Peak
3	4880.000	47.09	-1.88	45.21	74.00	-28.79	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VWB: 1MHz/3MHz, DET: PK
Average: RBW/VWB: 1MHz/1kHz, DET: PK

Mode:	BLE 1M	Channel:	2440MHz

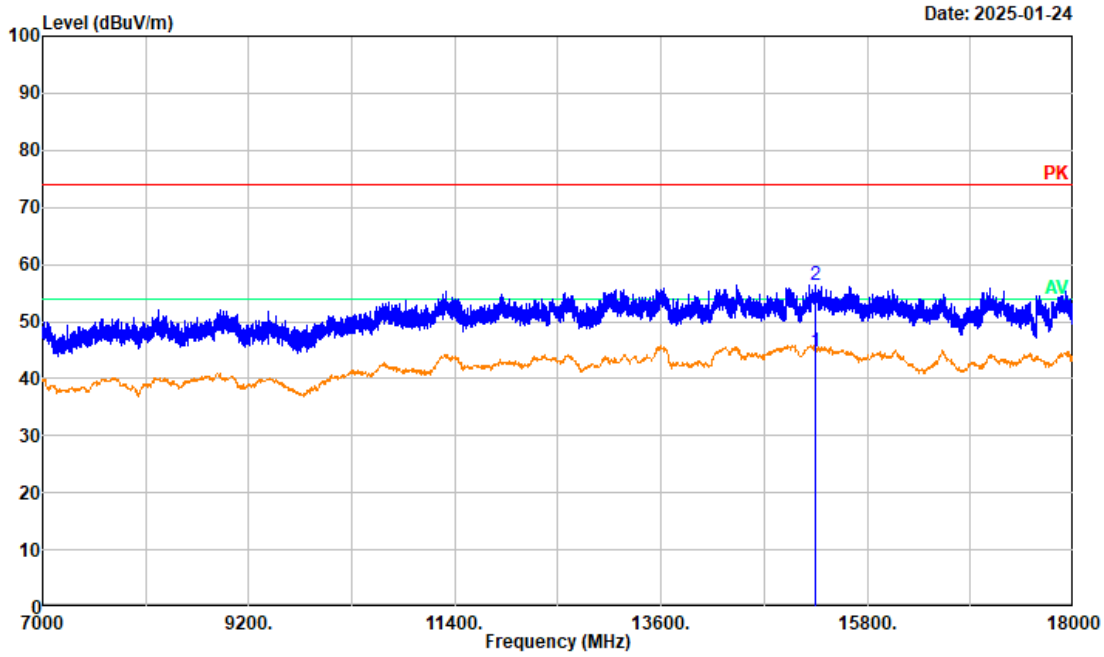


Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.6℃/58%R.H./101.5kPa
Tested by : Bard Huang
Polarization : vertical
Remark : BLE 1M 2440

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	1592.000	57.59	-4.28	53.31	74.00	-20.69	Peak
2	2128.000	54.12	-3.97	50.15	74.00	-23.85	Peak
3	4880.000	49.24	-1.88	47.36	74.00	-26.64	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VWB: 1MHz/3MHz, DET: PK
Average: RBW/VWB: 1MHz/1kHz, DET: PK

Mode:	BLE 1M	Channel:	2440MHz

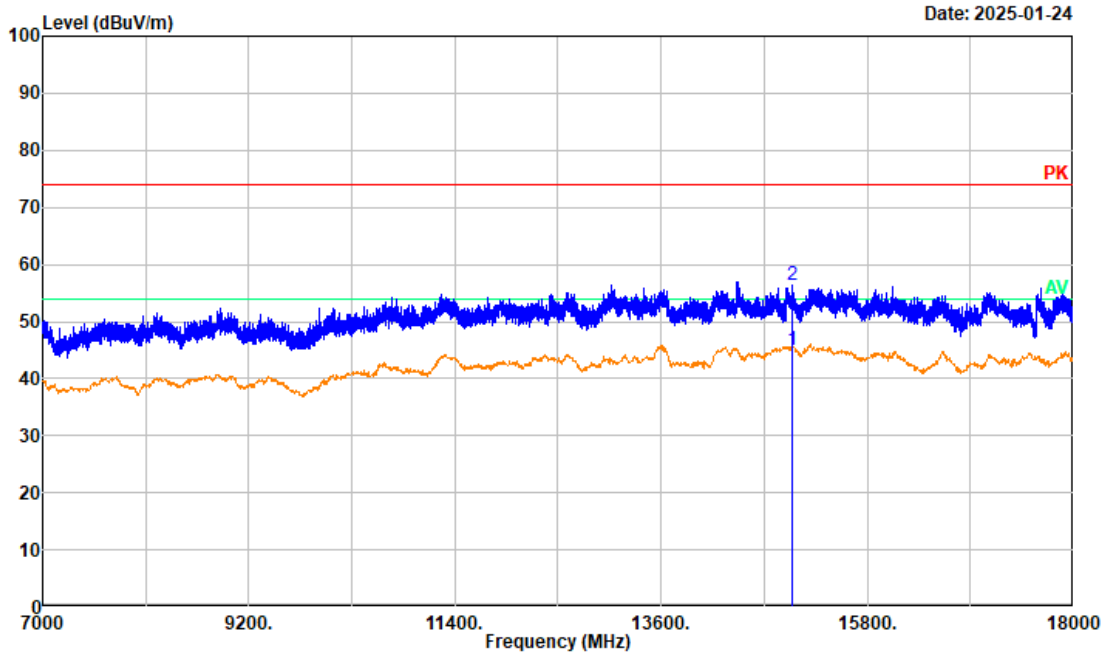


Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.6℃/58%R.H./101.5kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : BLE 1M 2440

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	15241.000	38.38	6.23	44.61	54.00	-9.39	Average
2	15241.000	50.14	6.23	56.37	74.00	-17.63	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VWB: 1MHz/3MHz, DET: PK
Average: RBW/VWB: 1MHz/1kHz, DET: PK

Mode:	BLE 1M	Channel:	2440MHz

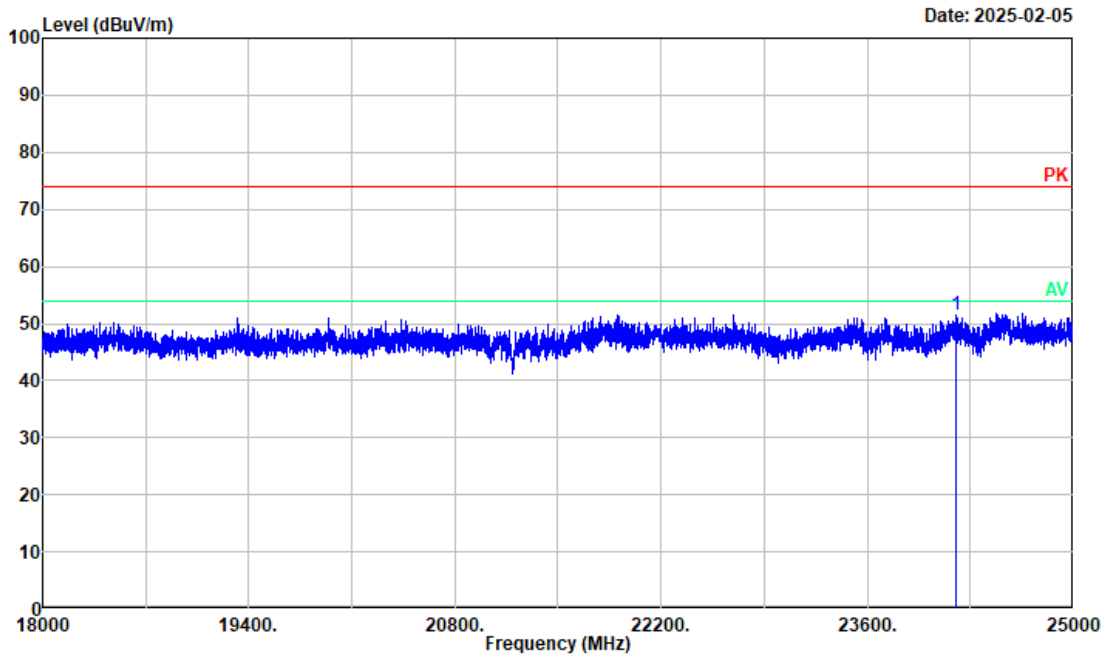


Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.6℃/58%R.H./101.5kPa
Tested by : Bard Huang
Polarization : vertical
Remark : BLE 1M 2440

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	15003.000	38.48	6.60	45.08	54.00	-8.92	Average
2	15003.000	49.72	6.60	56.32	74.00	-17.68	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VWB: 1MHz/3MHz, DET: PK
Average: RBW/VWB: 1MHz/1kHz, DET: PK

Mode:	BLE 1M	Channel:	2480MHz

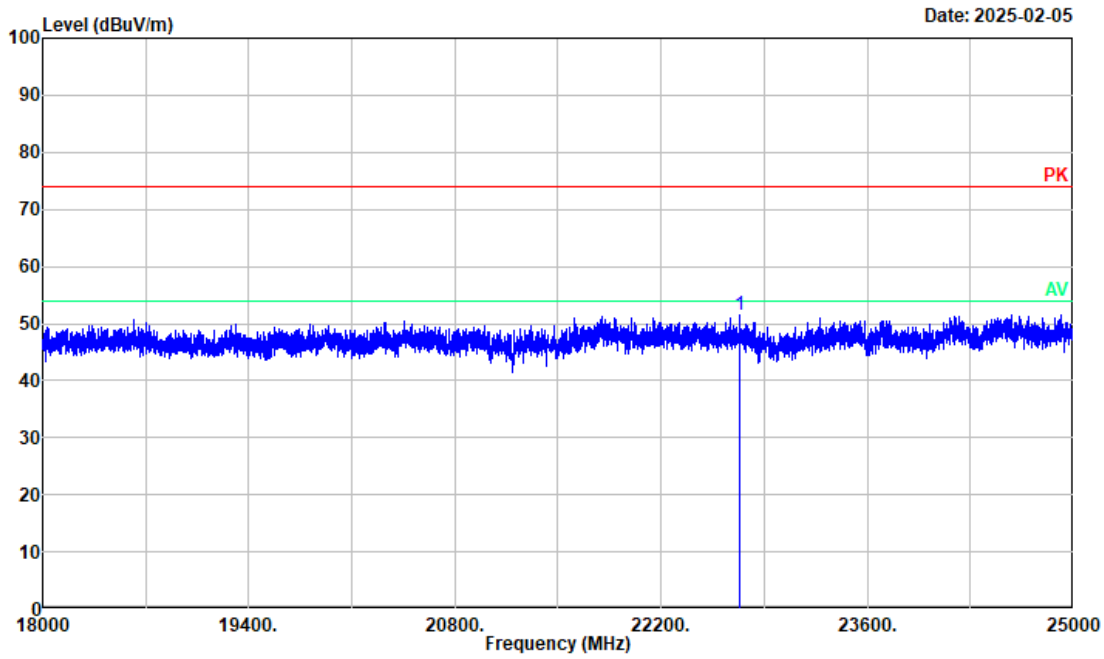


Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 20.9℃/44%R.H./101.3kPa
Tested by : Bard Huang
Polarization : vertical
Remark : BLE 1M 2480

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	24201.000	53.03	-1.59	51.44	74.00	-22.56	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain - Distance extrapolate factor
Distance extrapolate factor = 20*log(specified distance/measured distance)
Specified distance = 3 meters, measured distance = 1.5 meters
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VWB: 1MHz/3MHz, DET: PK
Average: RBW/VWB: 1MHz/1kHz, DET: PK

Mode:	BLE 1M	Channel:	2480MHz



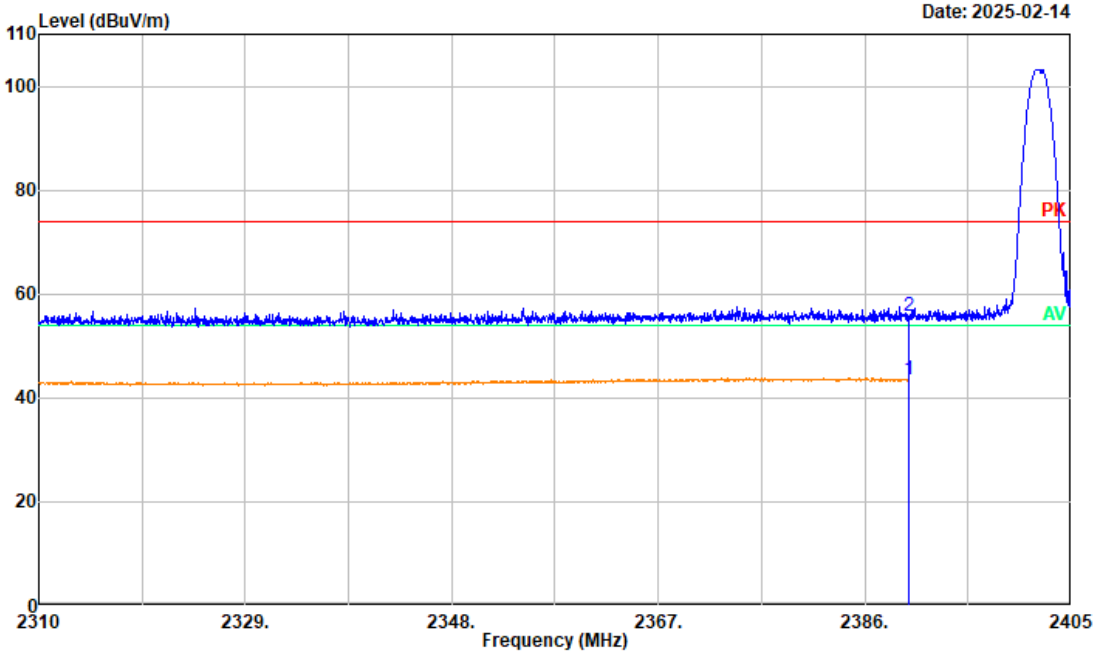
Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 20.9℃/44%R.H./101.3kPa
Tested by : Bard Huang
Polarization : vertical
Remark : BLE 1M 2480

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	22736.000	54.56	-3.10	51.46	74.00	-22.54	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain - Distance extrapolate factor
Distance extrapolate factor = 20*log(specified distance/measured distance)
Specified distance = 3 meters, measured distance = 1.5 meters
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VWB: 1MHz/3MHz, DET: PK
Average: RBW/VWB: 1MHz/1kHz, DET: PK

Radiated Band edge:

Mode:	BLE 1M	Channel:	2402MHz

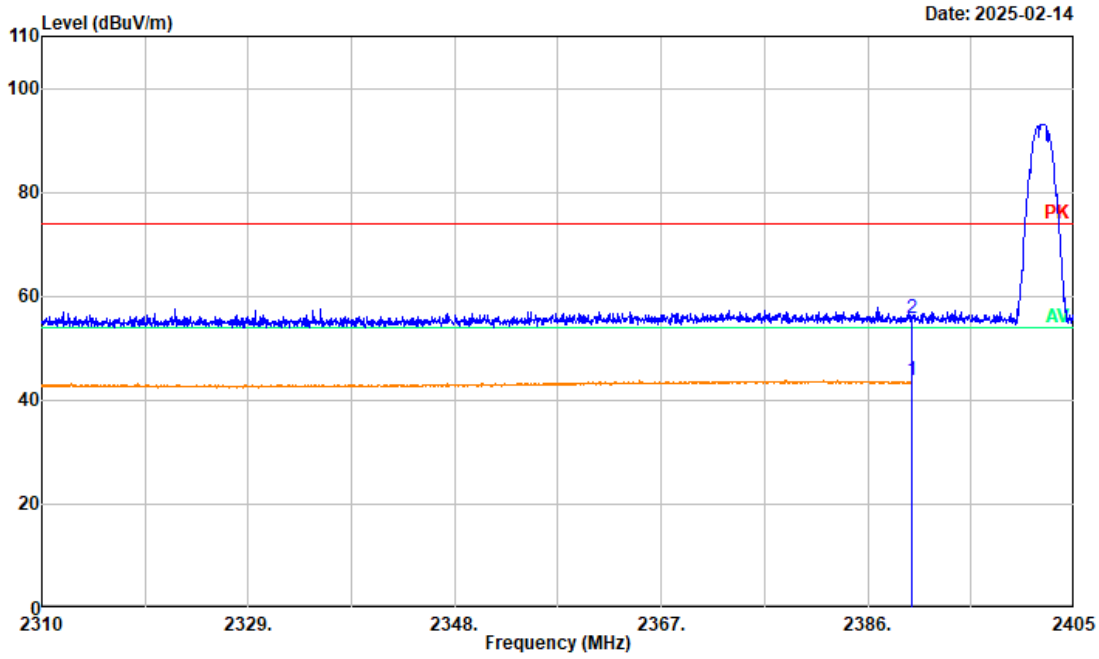


Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.6℃/58%R.H./101.5kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : BLE 1M 2402

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	2389.982	36.65	7.00	43.65	54.00	-10.35	Average
2	2389.982	48.68	7.00	55.68	74.00	-18.32	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/500Hz , DET: PK

Mode:	BLE 1M	Channel:	2402MHz

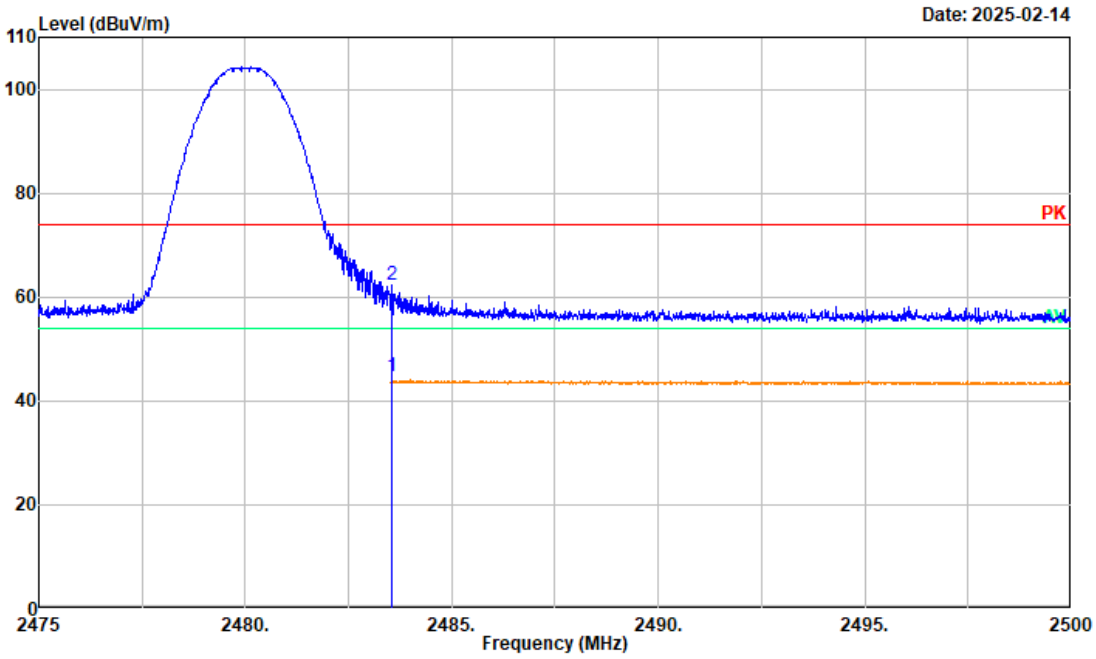


Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.6℃/58%R.H./101.5kPa
Tested by : Bard Huang
Polarization : vertical
Remark : BLE 1M 2402

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	2389.982	36.83	7.00	43.83	54.00	-10.17	Average
2	2389.982	48.74	7.00	55.74	74.00	-18.26	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/500Hz , DET: PK

Mode:	BLE 1M	Channel:	2480MHz

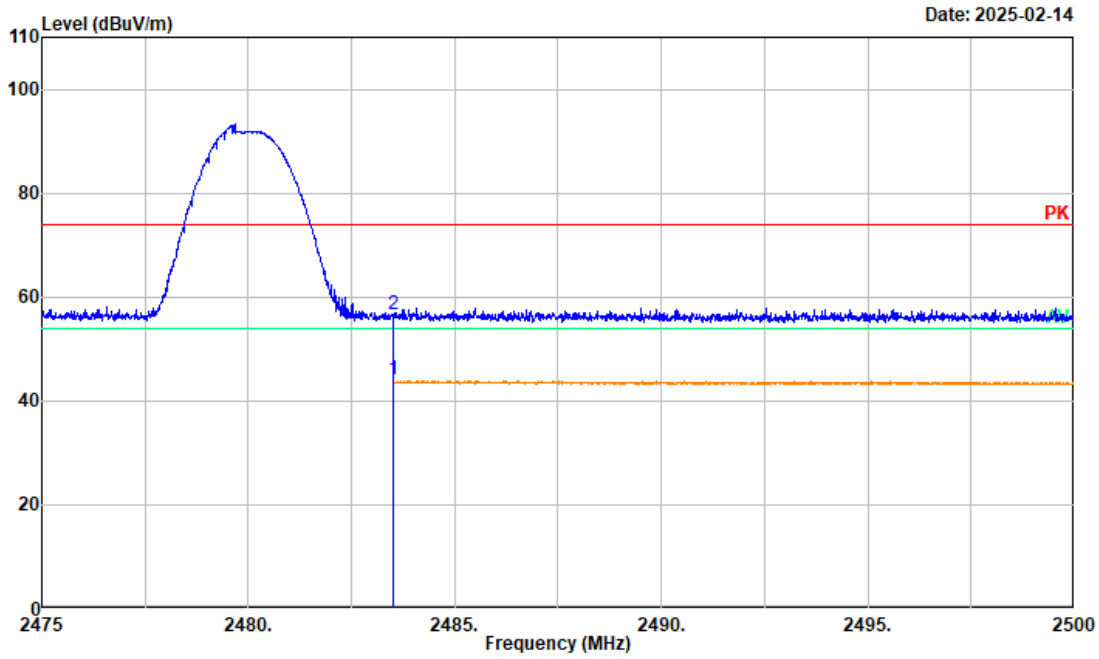


Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.6℃/58%R.H./101.5kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : BLE 1M 2480

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	2483.529	37.61	7.20	44.81	54.00	-9.19	Average
2	2483.529	54.97	7.20	62.17	74.00	-11.83	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/500Hz , DET: PK

Mode:	BLE 1M	Channel:	2480MHz



Project No. : 2505P41486E-RFA1
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 23.6℃/58%R.H./101.5kPa
Tested by : Bard Huang
Polarization : vertical
Remark : BLE 1M 2480

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	2483.504	36.87	7.20	44.07	54.00	-9.93	Average
2	2483.504	49.52	7.20	56.72	74.00	-17.28	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/500Hz , DET: PK

3.5 RF Conducted Test Data

Test Date:	2025-02-07	Test By:	Ryan Zhang
Environment condition:	Temperature: 23.1°C; Relative Humidity:55%; ATM Pressure: 100.5kPa		

3.5.1 Maximum Conducted Peak Output Power

Channel	Result (dBm)	Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Verdict
Low	0.91	30.00	3.19	36	Pass
Middle	1.05	30.00	3.33	36	Pass
High	1.15	30.00	3.43	36	Pass

4 Test Setup Photo

Please refer to the attachment 2505P41486E-A1 Test Setup photo.

5 E.U.T Photo

Please refer to the attachment 2505P41486E-A1 External photo and 2505P41486E-A1 Internal photo.

---End of Report---