

Project No.: TM-2307000005P
Report No.: TMWK2307002162KR

FCC ID: 2AQ8A-KP1DS1

Page: 1 / 45
Rev.: 00

RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Kapture Door Sensor
Brand Name	Kapture
Model	KP1-DS1
Test Result	Pass
Statements of Conformity	Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:

sehni, Hu

Sehni Hu
Supervisor

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

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Report No.: TMWK2307002162KR

Page: 2 / 45

Rev.: 00

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 2,2023	Initial Issue	ALL	Peggy Tsai

Table of contents

1.	GENERAL INFORMATION	4
1.1	EUT INFORMATION	4
1.2	EUT CHANNEL INFORMATION	5
1.3	ANTENNA INFORMATION	5
1.4	MEASUREMENT UNCERTAINTY.....	6
1.5	FACILITIES AND TEST LOCATION	7
1.6	INSTRUMENT CALIBRATION	8
1.7	SUPPORT AND EUT ACCESSORIES EQUIPMENT	9
1.8	TEST METHODOLOGY AND APPLIED STANDARDS	9
2.	TEST SUMMARY	10
3.	DESCRIPTION OF TEST MODES.....	11
3.1	THE WORST MODE OF OPERATING CONDITION	11
3.2	THE WORST MODE OF MEASUREMENT	12
3.3	EUT DUTY CYCLE	13
4.	TEST RESULT	14
4.1	AC POWER LINE CONDUCTED EMISSION	14
4.2	6DB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)	15
4.3	OUTPUT POWER MEASUREMENT	19
4.4	POWER SPECTRAL DENSITY	21
4.5	CONDUCTED BAND EDGE AND SPURIOUS EMISSION	24
4.6	RADIATION BANDEDGE AND SPURIOUS EMISSION	28
APPENDIX 1 - PHOTOGRAPHS OF EUT		

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Pamex Inc. 4680 Vinita Court, Chino, CA, 91710, United States
Manufacturer	ALZK Co., Ltd 9F., No. 36, Sec. 3, Bade Rd., Songshan Dist., Taipei City, Taiwan
Equipment	Kapture Door Sensor
Model No.	KP1-DS1
Model Discrepancy	N/A
Trade Name	Kapture
Received Date	July 5, 2023
Date of Test	July 12 ~ 21, 2023
Power Supply	Power from Battery. (DC 3V) Energizer / CR2450
HW Version	V0.0.7
SW Version	00.00.01

Remark:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

1.2 EUT CHANNEL INFORMATION

Frequency Range	2402MHz-2480MHz
Modulation Type	GFSK for BLE 1 Mbps
Number of channels	40 Channels

Remark:

Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	☐ FPCB ☒ PCB ☐ Dipole ☐ Coils
Antenna Gain	Gain: 0 dBi
Antenna connector	Direct

Notes:

1.The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	± 2.213 dB
Channel Bandwidth	± 2.7 %
RF output power (Power Meter + Power sensor)	± 0.243 dB
Power Spectral density	± 2.739 dB
Conducted Bandedge	± 2.739 dB
Conducted Spurious Emission	± 2.742 dB
Radiated Emission_9kHz-30MHz	± 3.761 dB
Radiated Emission_30MHz-200MHz	± 3.473 dB
Radiated Emission_200MHz-1GHz	± 3.946 dB
Radiated Emission_1GHz-6GHz	± 4.797 dB
Radiated Emission_6GHz-18GHz	± 4.803 dB
Radiated Emission_18GHz-26GHz	± 3.459 dB
Radiated Emission_26GHz-40GHz	± 3.297 dB

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	-	Not applicable, because EUT not connect to AC Main Source direct.
Radiation	Tony Chao	-
RF Conducted	Allen Shen	-

Remark: 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. :444940, the FCC Designation No.:TW1309

1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Cable	Woken	SUMITOMO	13	2023-03-02	2024-03-01
Power Sensor	Anritsu	MA2411B	1911386	2022-08-08	2023-08-07
Power Sensor	Anritsu	MA2411B	1911387	2022-08-08	2023-08-07
EXA Signal Analyzer	Keysight	N9010B	MY60242460	2023-02-02	2024-02-01
Power Meter	Anritsu	ML2496A	2136002	2022-11-24	2023-11-23
Software	Radio Test Software Ver. 21				

Wugu 966 Chamber D					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Loop Antenna	COM-POWER	AL-130	121051	2023-05-23	2024-05-22
Preamplifier	EMEC	EM330	060609	2023-02-22	2024-02-21
Thermo-Hygro Meter	WISEWIND	1206	D07	2022-12-19	2023-12-18
PXA Signal Analyzer	Keysight Technologies	N9030B	MY62291089	2022-10-14	2023-10-13
Preamplifier	HP	8449B	3008A00965	2022-12-23	2023-12-22
Bi-Log Antenna	Sunol Sciences	JB3	A030105	2022-08-03	2023-08-02
Cable	Huber+Suhner	104PEA	20995+21000+182330	2023-02-22	2024-02-21
Horn Antenna	ETC	MCTD 1209	DRH13M02003	2023-01-12	2024-01-11
High Pass Filters	Titan Microwave	T04H30001800070S01	22011402-4	2023-06-17	2024-06-16
Horn Antenna	SCHWARZBECK	BBHA9170	1047	2022-12-30	2023-12-29
Pre-Amplifier	EMCI	EMC184045SE	980860	2022-12-27	2023-12-26
Cable	EMCI	EMC101G	211010+211011+211012	2022-12-12	2023-12-11
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Software	e3 V9-210616c				

Remark:

- Each piece of equipment is scheduled for calibration once a year.
- N.C.R. = No Calibration Required.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment						
No.	Equipment	Brand	Model	Series No.	FCC ID	IC
	N/A					

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(E)	Lenovo	T460	N/A	N/A
2	NB(E)	Lenovo	IBM 7663	N/A	N/A

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247 and KDB 558074.

2. TEST SUMMARY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	4.1	AC Conducted Emission	N/A
15.247(a)(2)	4.2	6 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)(3)	4.3	Output Power Measurement	Pass
15.247(e)	4.4	Power Spectral Density	Pass
15.247(d)	4.5	Conducted Band Edge	Pass
15.247(d)	4.5	Conducted Spurious Emission	Pass
15.247(d)	4.6	Radiation Band Edge	Pass
15.247(d)	4.6	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	BLE Mode (1Mbps)
Test Channel Frequencies	1.Lowest Channel : 2402MHz 2.Middle Channel : 2442MHz 3.Highest Channel : 2480MHz

3.2 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT power by Battery
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☐ Placed in fixed position at X-Plane (E2-Plane) ☐ Placed in fixed position at Y-Plane (E1-Plane) ☒ Placed in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1: EUT power by Battery
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Z-Plane) were recorded in this report

Report No.: TMWK2307002162KR

3.3 EUT DUTY CYCLE

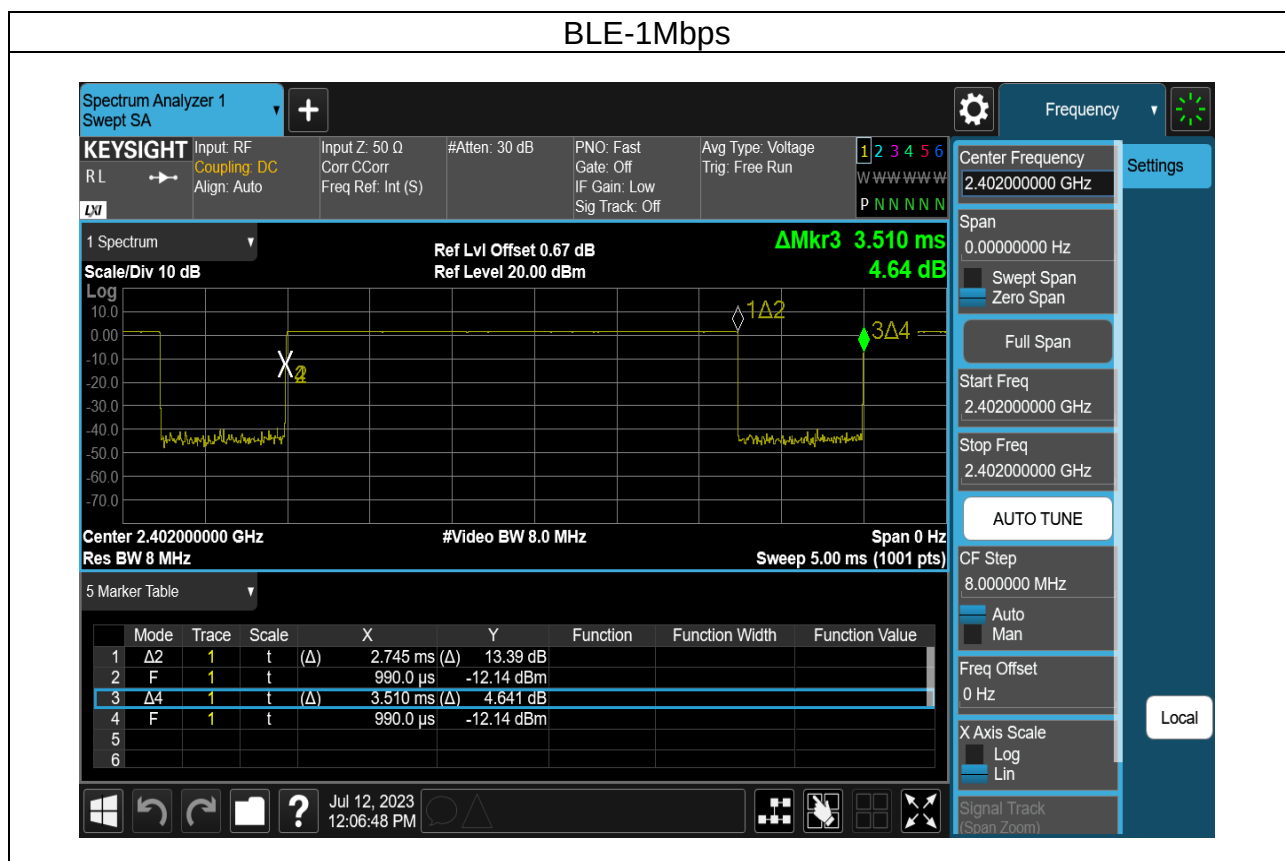
Temperature: 23.6 ~ 25.6°C

Test date: July 12 ~ 21, 2023

Humidity: 50 ~ 59% RH

Tested by: Allen Shen

Duty Cycle				
Configuration	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
BLE 1M	78.21	1.07	0.36	1.00



Report No.: TMWK2307002162KR

4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a),

Frequency Range (MHz)	Limits(dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

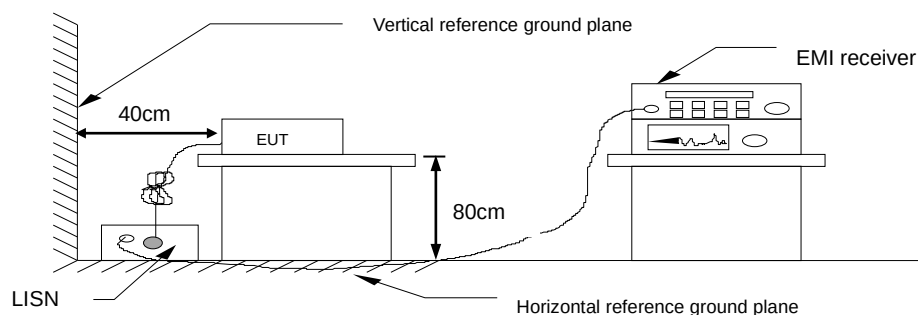
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed above horizontal ground plane and 0.4m above vertical ground plane
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



4.1.4 Test Result

Not applicable, because EUT not connect to AC Main Source direct.

Report No.: TMWK2307002162KR

4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a)(2)

6 dB Bandwidth :

Limit	Shall be at least 500kHz
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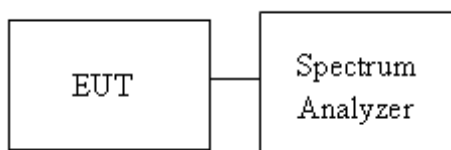
Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as ANSI C63.10: 2013,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT.
3. SA set RBW = 100KHz, VBW = 300KHz and Detector = Peak, to measurement 6dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth.
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup



4.2.4 Test Result

Temperature: 23.6 ~ 25.6°C

Test date: July 12 ~ 21, 2023

Humidity: 50 ~ 59% RH

Tested by: Allen Shen

Test mode: BLE-1Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	OBW (99%) (MHz)	6dB BW (kHz)	6dB limit (kHz)
Low	2402	1.2296	0.7741	≥500
Mid	2442	1.0834	0.771	
High	2480	1.0711	0.7762	

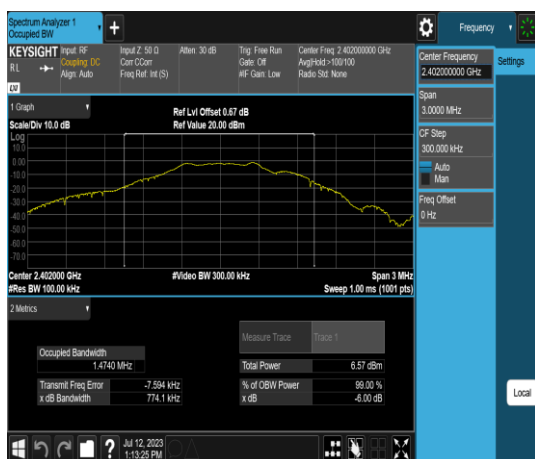
Report No.: TMWK2307002162KR

Test Data

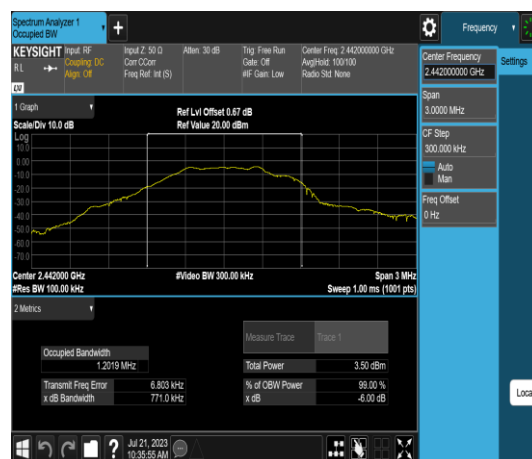
6dB BANDWIDTH

BLE-1Mbps mode

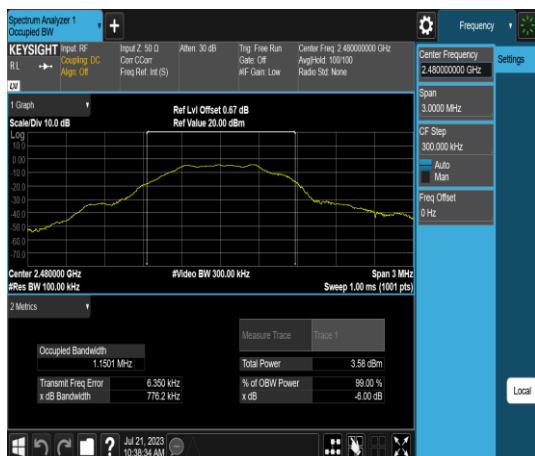
Low CH



Mid CH



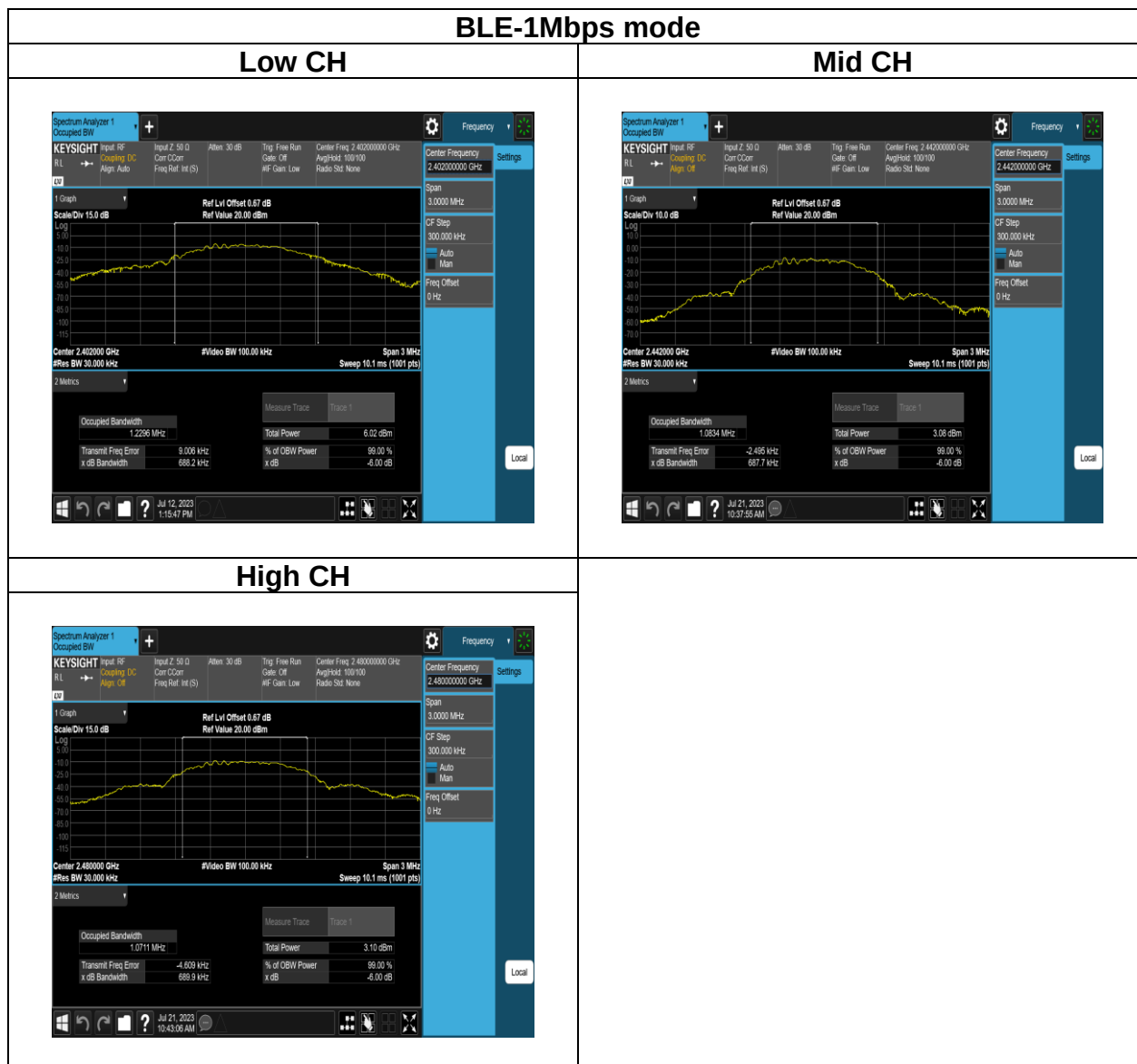
High CH



Report No.: TMWK2307002162KR

Test Data

BANDWIDTH (99%)



4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b)(3)

Peak output power :

FCC

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,

Limit	☒ Antenna not exceed 6 dBi : 30dBm ☐ Antenna with DG greater than 6 dBi [Limit = 30 – (DG – 6)] ☐ Point-to-point operation
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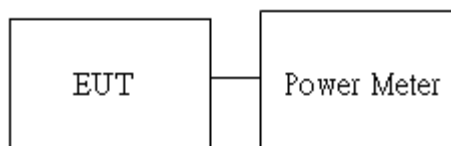
Average output power : For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup



Report No.: TMWK2307002162KR

4.3.4 Test Result

Temperature: 23.6 ~ 25.6°C
Humidity: 50 ~ 59% RH

Test date: July 12 ~ 21, 2023
Tested by: Allen Shen

Peak output power :

BLE 1M mode:

CH	Frequency (MHz)	Power set	Peak Power Output (dBm)	Required Limit (dBm)
Low	2402	1	-0.19	30
Mid	2442	0	-3.36	30
High	2480	0	-3.19	30

Average output power :

BLE 1M mode:

CH	Frequency (MHz)	Power set	Average Power Output (dBm)	Required Limit (dBm)
Low	2402	1	-0.24	30
Mid	2442	0	-3.42	30
High	2480	0	-3.21	30

Note:

Measured by power meter, cable loss + Duty cycle factor has been offsetted to the power meter for Avg. power and cable loss has been offsetted for Peak power measurement.

Report No.: TMWK2307002162KR

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e)

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.

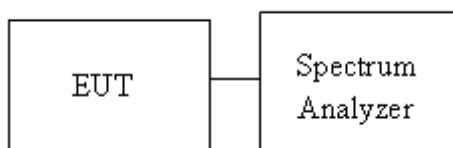
Limit	☒ Antenna not exceed 6 dBi : 8dBm ☐ Antenna with DG greater than 6 dBi [Limit = 8 – (DG – 6)] ☐ Point-to-point operation :
-------	---

4.4.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 10kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup



4.4.4 Test Result

Temperature: 23.6 ~ 25.6°C

Test date: July 12 ~ 21, 2023

Humidity: 50 ~ 59% RH

Tested by: Allen Shen

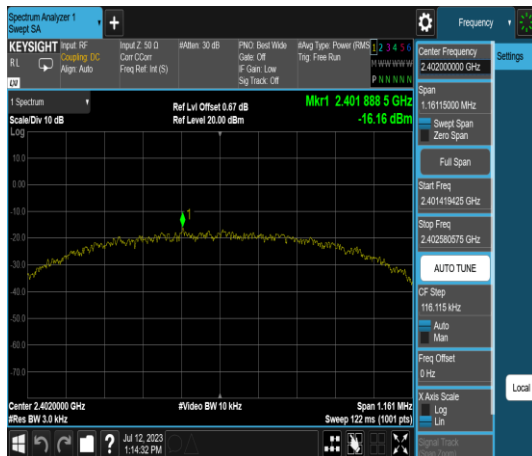
BLE 1M mode

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
2402	-16.16	8	PASS
2442	-20.12	8	PASS
2480	-19.93	8	PASS

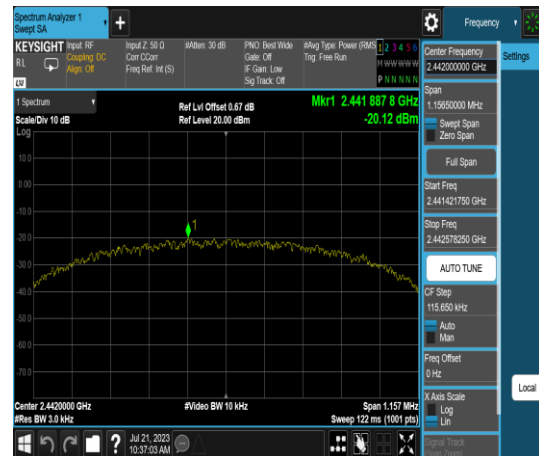
Test Data

BLE-1Mbps mode

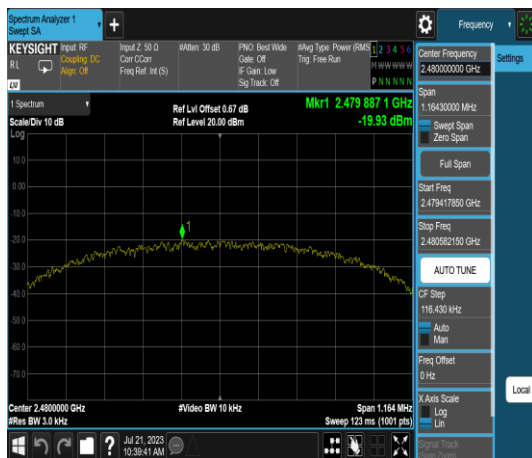
Low CH



Mid CH



High CH



4.5 CONDUCTED BAND EDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

According to §15.247(d)

FCC: In any 100 kHz bandwidth outside the authorized frequency band,

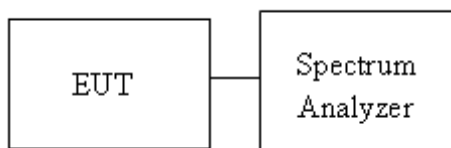
Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

4.5.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

4.5.3 Test Setup



Report No.: TMWK2307002162KR

4.5.4 Test Result

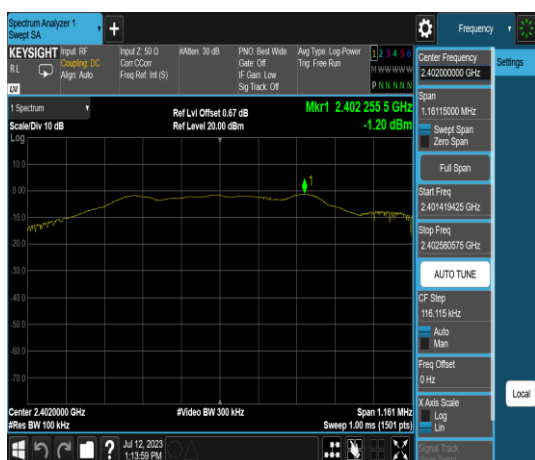
Test Data

Temperature: 23.6 ~ 25.6°C
Humidity: 50 ~ 59% RH

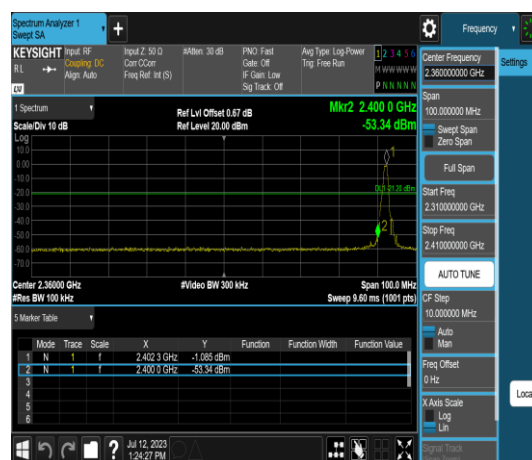
Test date: July 12 ~ 21, 2023
Tested by: Allen Shen

BLE-1Mbps mode Low CH

Reference Level



Band Edge

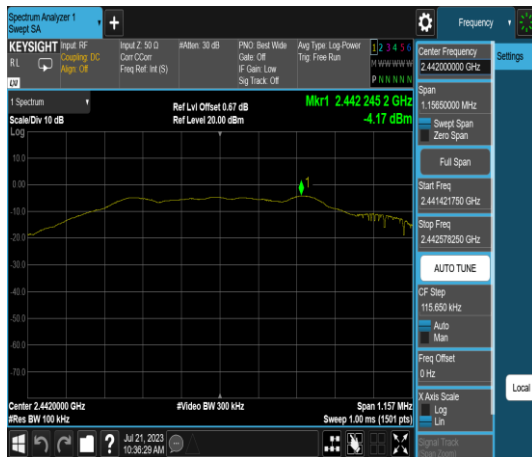


Spurious Emission 30MHz-25GHz

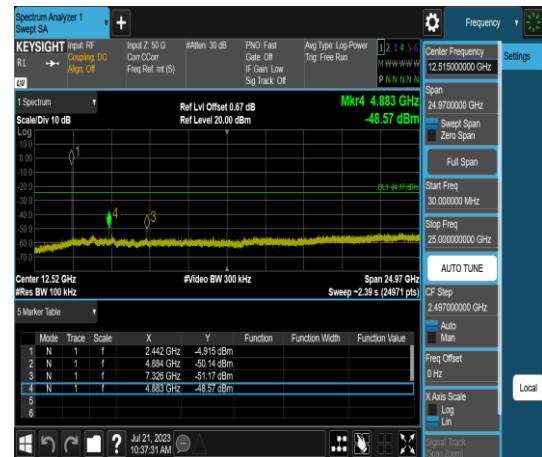


BLE-1Mbps mode Mid CH

Reference Level

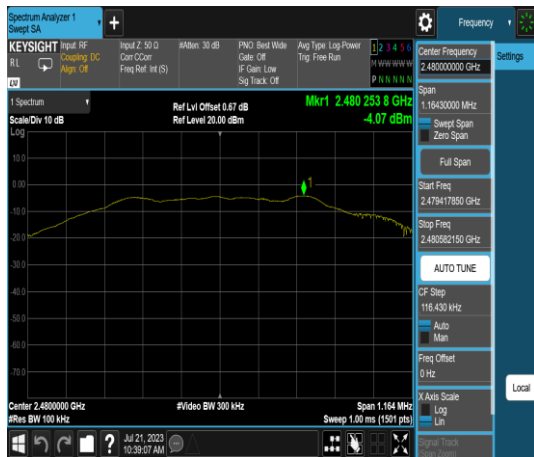


Spurious Emission 30MHz-25GHz



BLE-1Mbps mode High CH

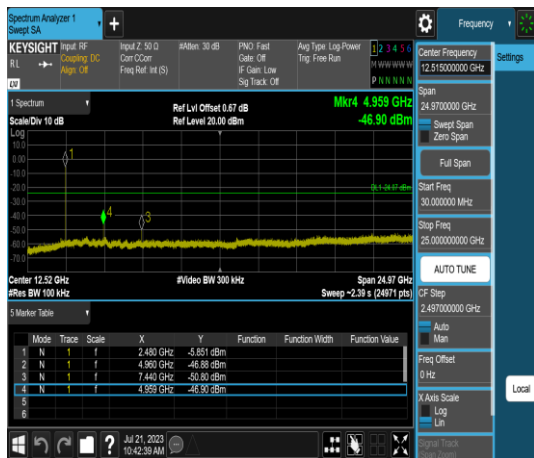
Reference Level



Band Edge



Spurious Emission 30MHz-25GHz



4.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

4.6.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.
3. Span shall wide enough to full capture the emission measured. The SA from 9KHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Remark:

1. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
2. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

3. The SA setting following :

- (1) Below 1G : RBW = 100kHz, VBW $\geq$ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
- (2) Above 1G :
 - (2.1) For Peak measurement : RBW = 1MHz, VBW $\geq$ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2.2) For Average measurement : RBW = 1MHz, VBW
 - *If Duty Cycle $\geq$ 98%, VBW=10Hz.
 - *If Duty Cycle < 98%, VBW=1/T.

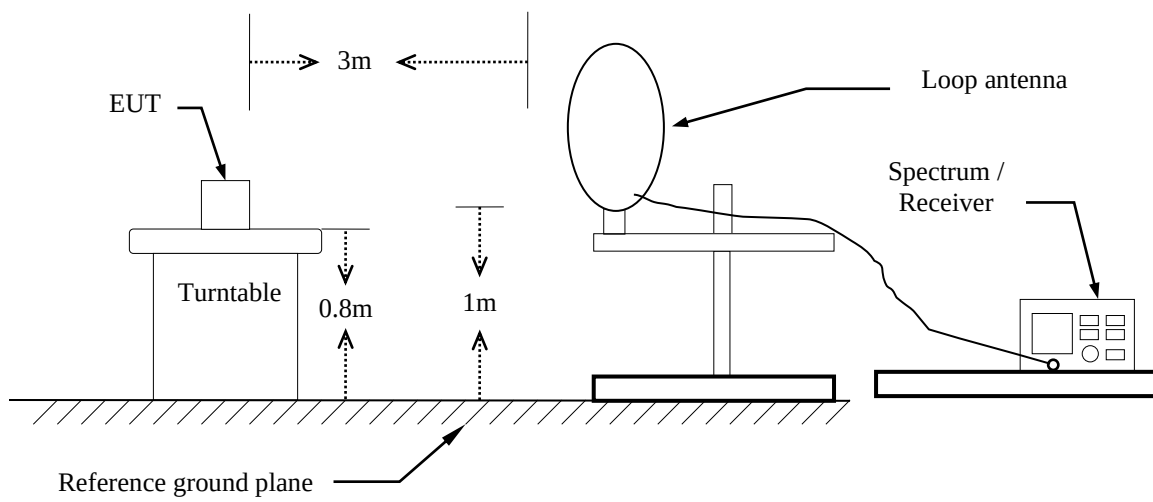
4. Data result

Actual FS=Spectrum Reading Level+Factor

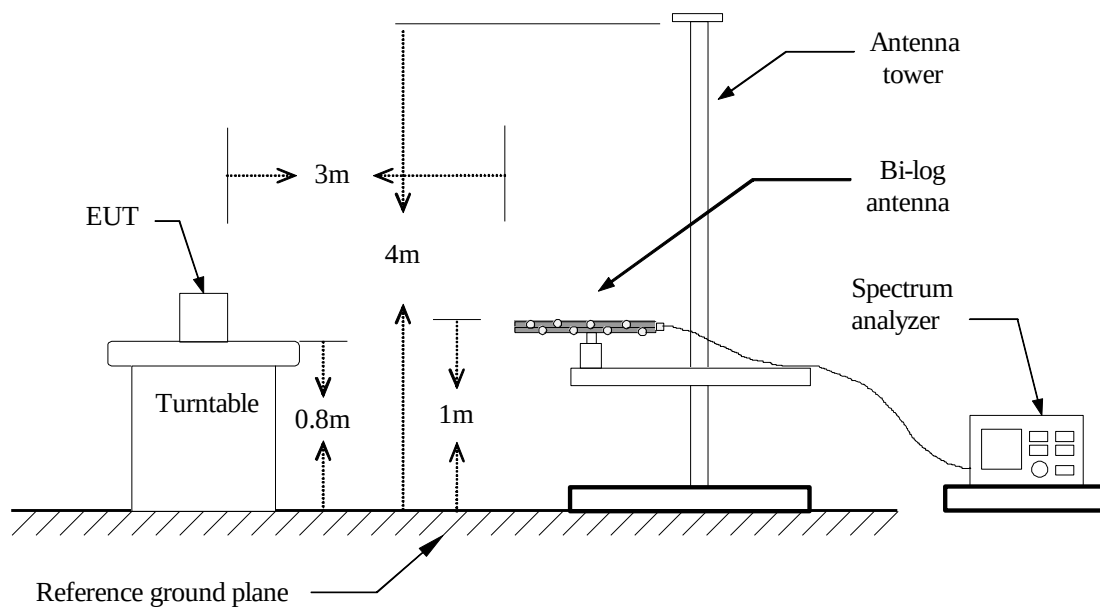
Margin=Actual FS- Limit

4.6.3 Test Setup

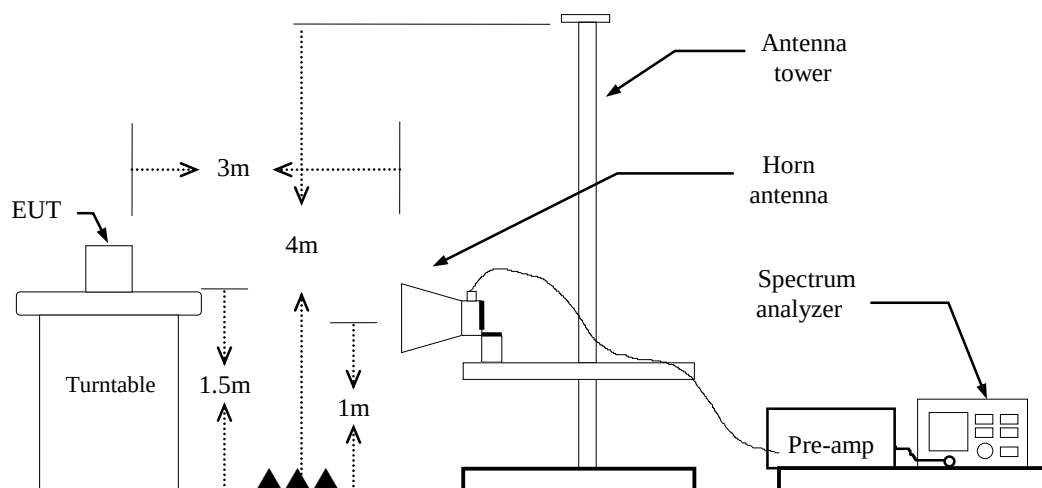
9kHz ~ 30MHz



30MHz ~ 1GHz



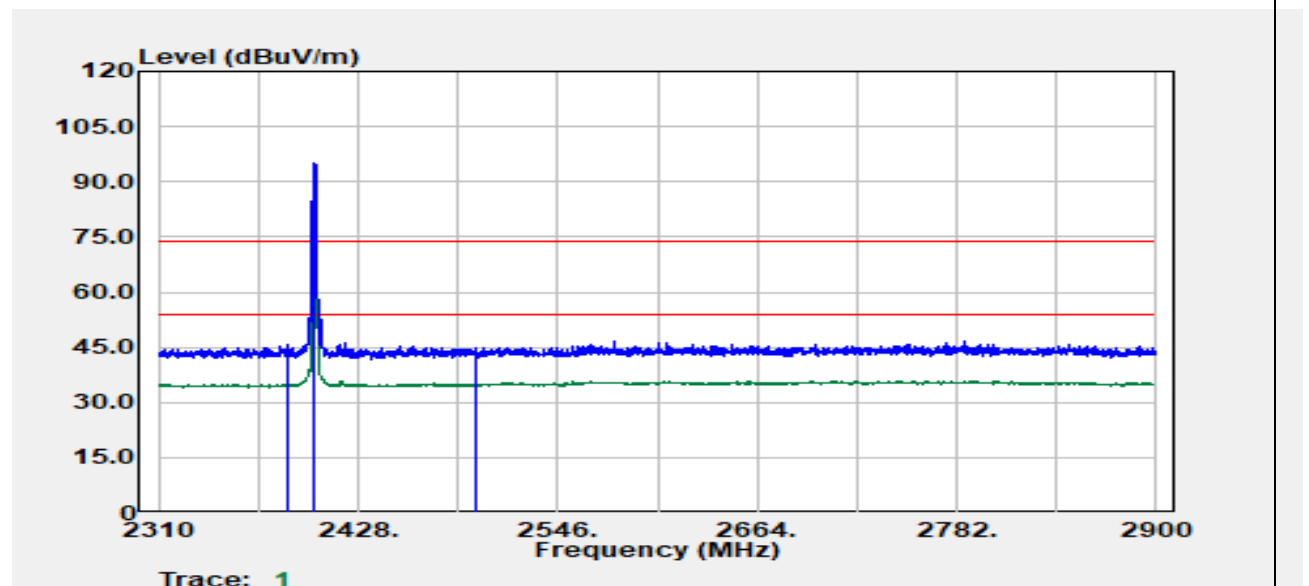
Above 1 GHz



4.6.4 Test Result

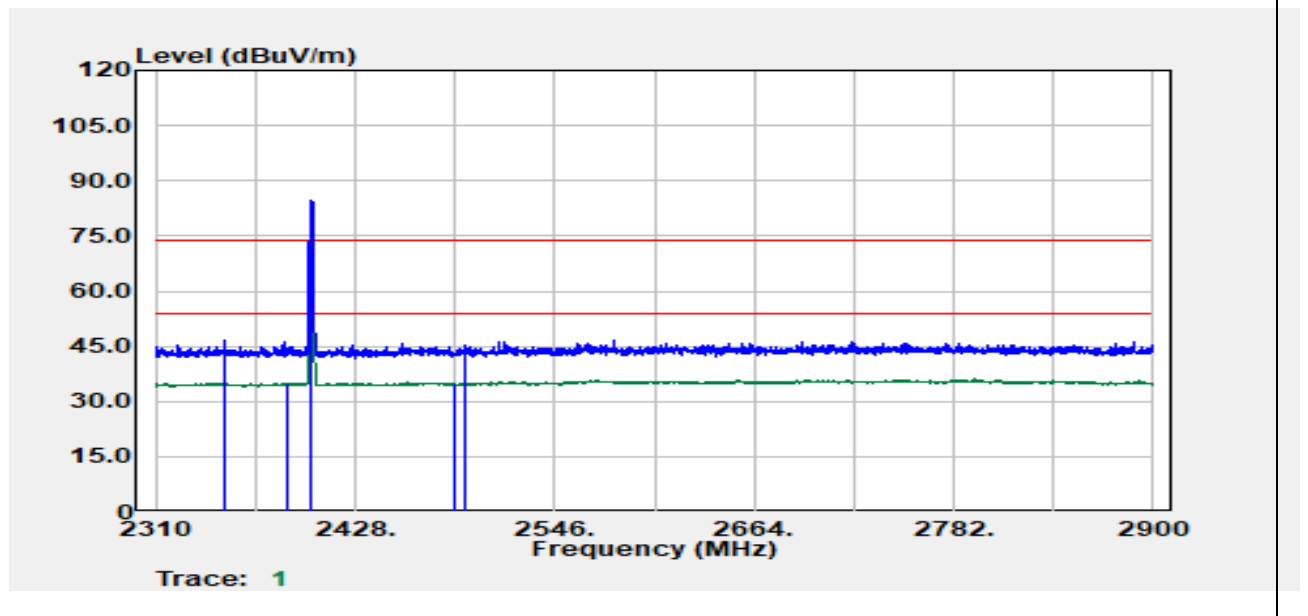
Band Edge Test Data

Test Mode:	BLE-1Mbps Low CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Band Edge	Test Date	July 13, 2023
Polarize	Vertical	Test Engineer	Tony Chao
Detector	Peak / Average		



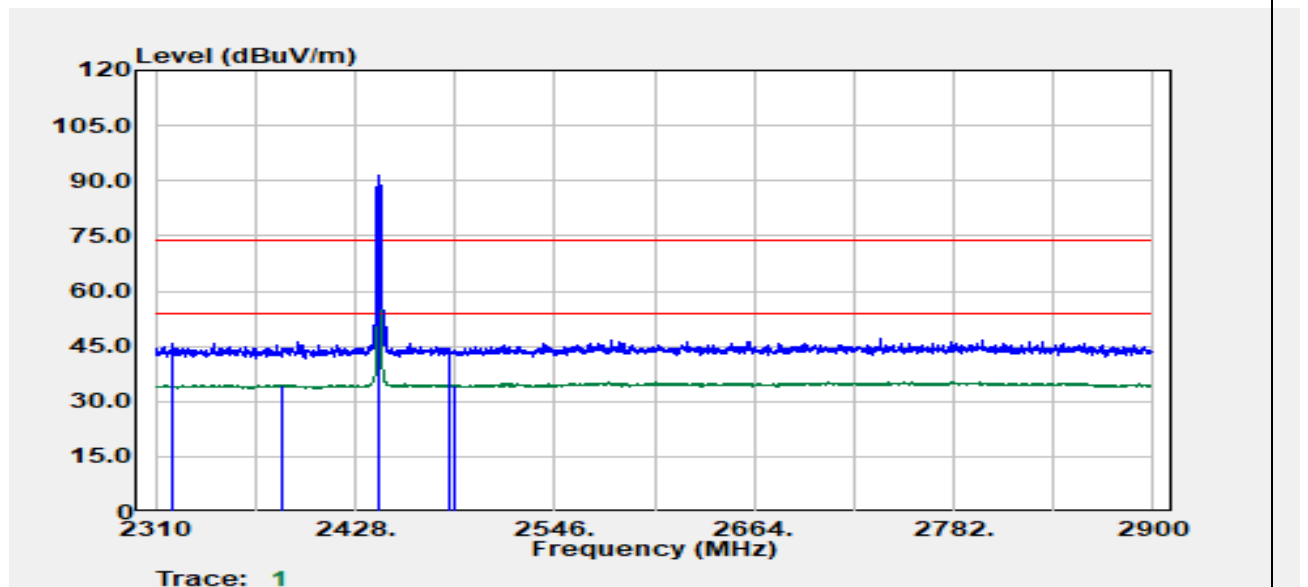
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2385.53	Peak	40.59	4.93	45.52	74.00	-28.48
2385.78	Average	30.31	4.93	35.24	54.00	-18.76
2402.00	Peak	90.44	4.79	95.22	--	--
2402.00	Average	89.66	4.79	94.44	--	--
2497.33	Peak	39.52	5.28	44.80	74.00	-29.20
2498.33	Average	29.59	5.28	34.86	54.00	-19.14

Test Mode:	BLE-1Mbps Low CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Band Edge	Test Date	July 13, 2023
Polarize	Horizontal	Test Engineer	Tony Chao
Detector	Peak / Average		



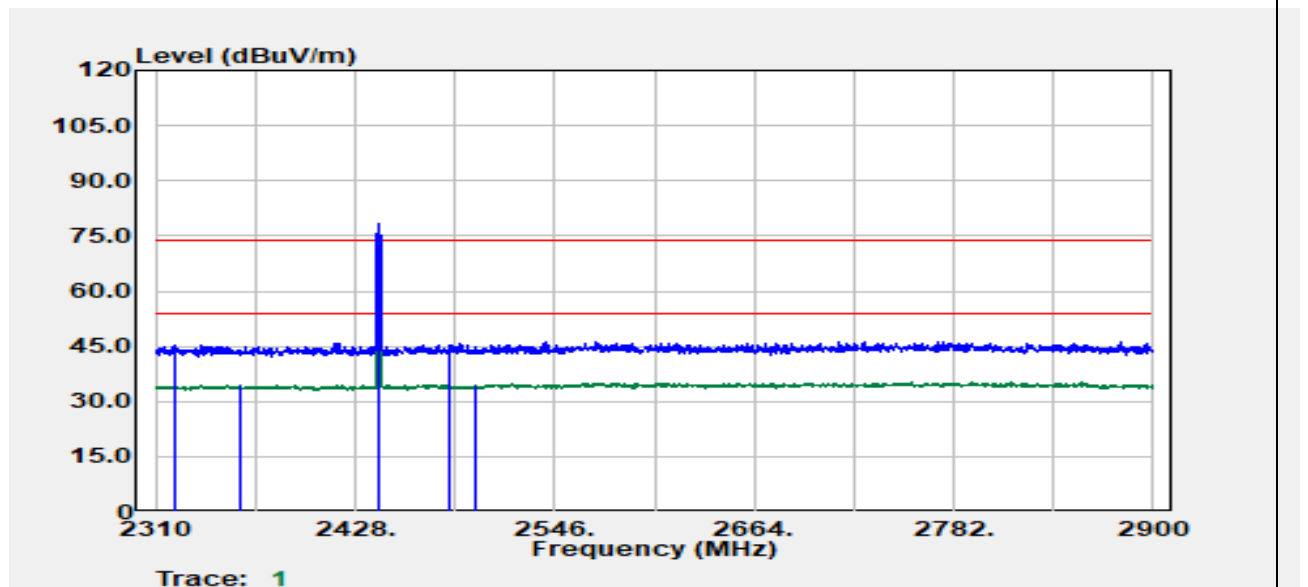
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBUV/m)	Limit @3m (dBUV/m)	Margin (dB)
2351.27	Peak	41.64	4.95	46.59	74.00	-27.41
2388.28	Average	29.99	4.96	34.95	54.00	-19.05
2402.00	Peak	79.77	4.79	84.55	--	--
2402.00	Average	78.98	4.79	83.77	--	--
2487.33	Average	29.71	5.27	34.98	54.00	-19.02
2493.58	Peak	40.00	5.27	45.27	74.00	-28.73

Test Mode:	BLE-1Mbps Mid CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Band Edge	Test Date	July 13, 2023
Polarize	Vertical	Test Engineer	Tony Chao
Detector	Peak / Average		



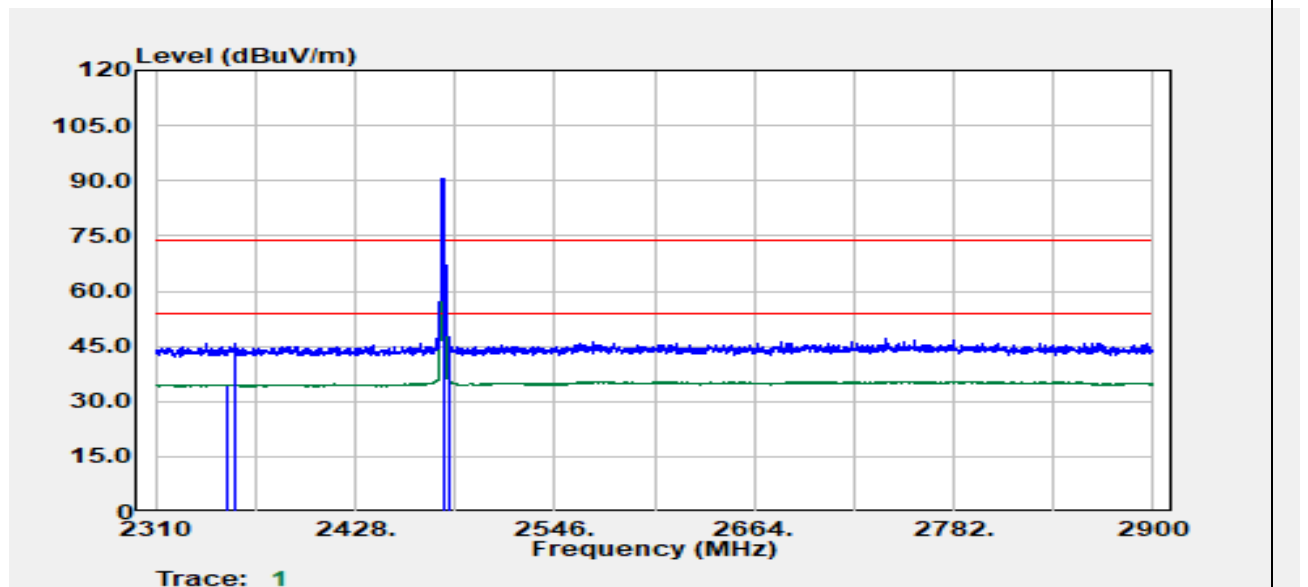
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2320.254	Peak	40.87	4.72	45.59	74.00	-28.41
2385.032	Average	29.62	4.93	34.55	54.00	-19.45
2442.000	Peak	86.39	5.01	91.39	--	--
2442.000	Average	85.39	5.01	90.40	--	--
2483.500	Peak	39.64	5.26	44.90	74.00	-29.10
2486.075	Average	29.16	5.27	34.43	54.00	-19.57

Test Mode:	BLE-1Mbps Mid CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Band Edge	Test Date	July 13, 2023
Polarize	Horizontal	Test Engineer	Tony Chao
Detector	Peak / Average		



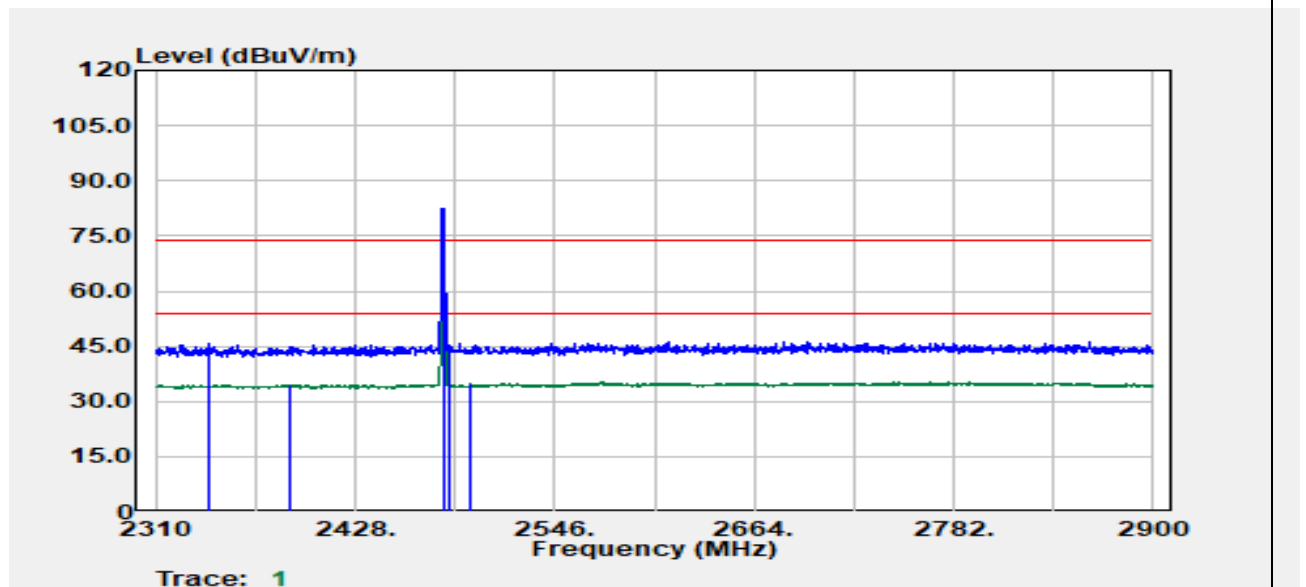
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBUV/m)	Limit @3m (dBUV/m)	Margin (dB)
2321.505	Peak	40.67	4.72	45.39	74.00	-28.61
2360.271	Average	29.48	4.87	34.34	54.00	-19.66
2442.000	Peak	73.23	5.01	78.24	--	--
2442.000	Average	72.11	5.01	77.12	--	--
2483.500	Peak	40.43	5.26	45.69	74.00	-28.31
2499.330	Average	28.92	5.28	34.20	54.00	-19.80

Test Mode:	BLE-1Mbps High CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Band Edge	Test Date	July 13, 2023
Polarize	Vertical	Test Engineer	Tony Chao
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2352.018	Average	29.69	4.95	34.64	54.00	-19.36
2357.520	Peak	40.72	4.89	45.61	74.00	-28.39
2480.000	Peak	85.42	5.26	90.68	--	--
2480.000	Average	84.53	5.26	89.79	--	--
2483.500	Peak	39.59	5.26	44.85	74.00	-29.15
2483.824	Average	30.23	5.26	35.50	54.00	-18.50

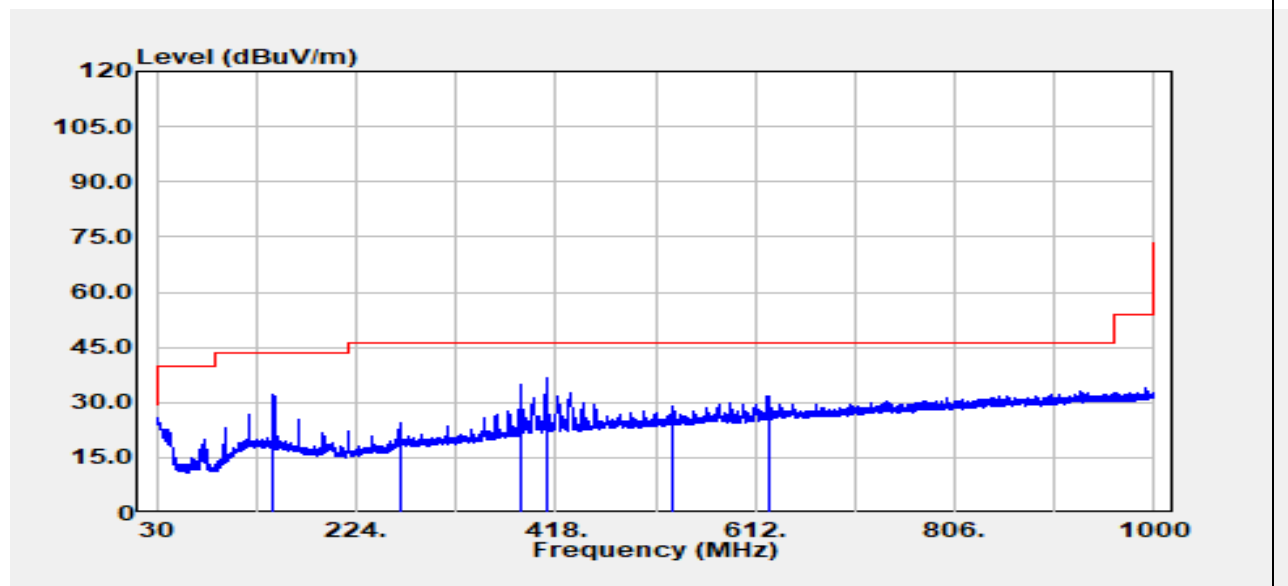
Test Mode:	BLE-1Mbps High CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Band Edge	Test Date	July 13, 2023
Polarize	Horizontal	Test Engineer	Tony Chao
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2341.013	Peak	40.88	4.86	45.74	74.00	-28.26
2390.034	Average	29.59	4.98	34.57	54.00	-19.43
2480.000	Peak	77.38	5.26	82.64	--	--
2480.000	Average	76.27	5.26	81.53	--	--
2483.500	Peak	40.29	5.26	45.56	74.00	-28.44
2496.079	Average	29.38	5.28	34.65	54.00	-19.35

Below 1G Test Data

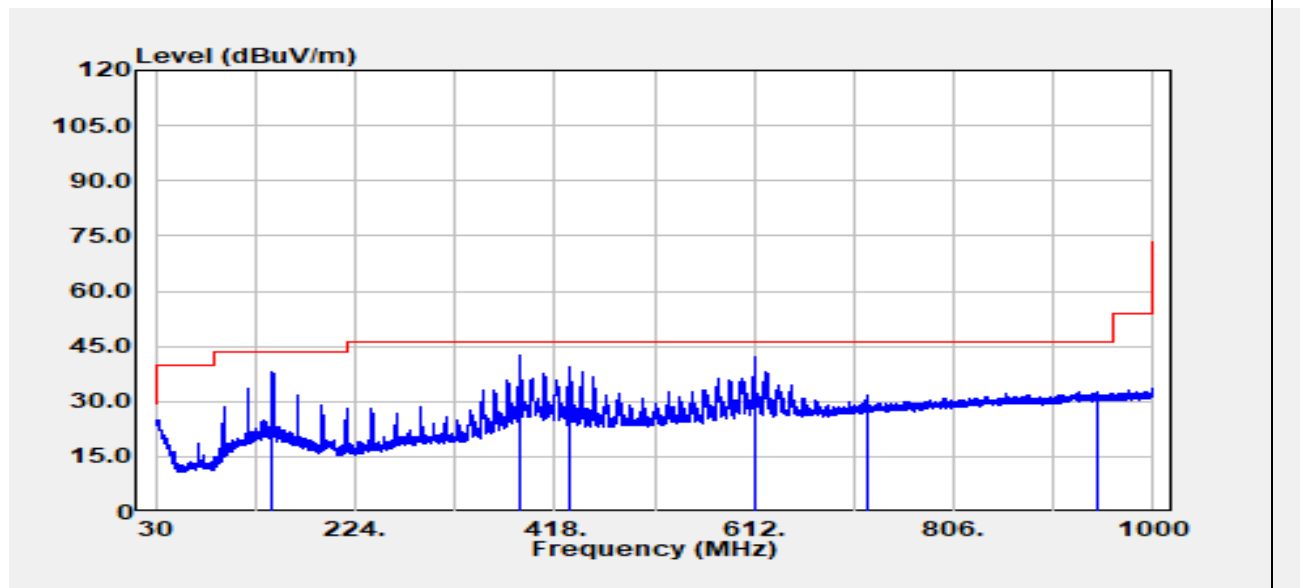
Test Mode:	BLE-1Mbps Low CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	30MHz-1GHz	Test Date	July 13, 2023
Polarize	Vertical	Test Engineer	Tony Chao
Detector	Peak		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
143.98	Peak	42.26	-10.20	32.06	43.50	-11.44
266.44	Peak	33.43	-8.97	24.47	46.00	-21.53
384.05	Peak	41.57	-6.48	35.09	46.00	-10.91
408.54	Peak	41.96	-5.42	36.54	46.00	-9.46
532.22	Peak	32.24	-3.03	29.20	46.00	-16.80
624.61	Peak	33.00	-1.18	31.82	46.00	-14.18

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

Test Mode:	BLE-1Mbps Low CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	30MHz-1GHz	Test Date	July 13, 2023
Polarize	Horizontal	Test Engineer	Tony Chao
Detector	Peak		

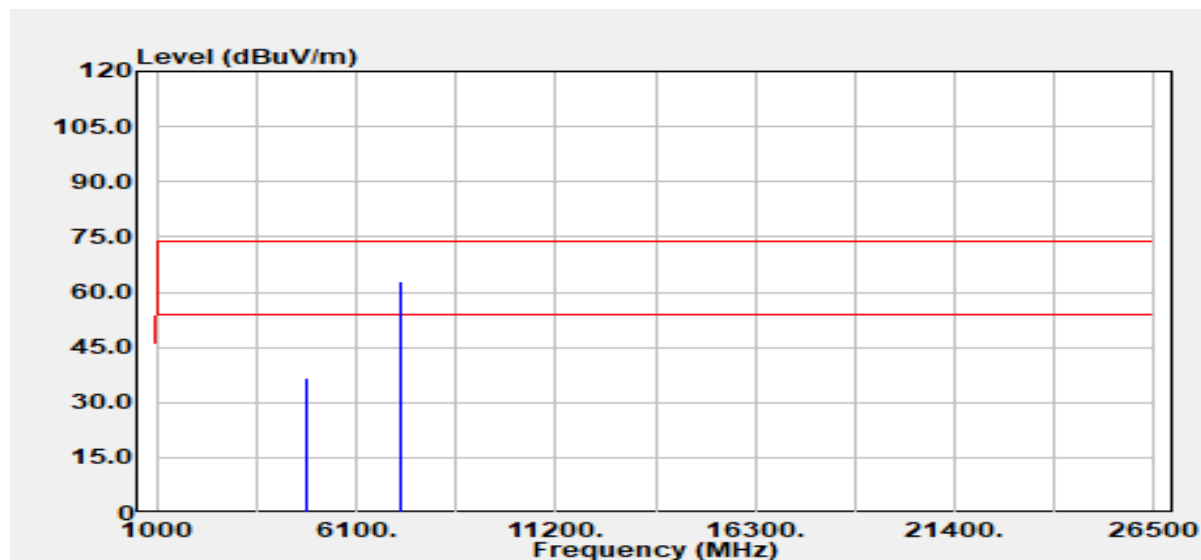


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
143.98	Peak	48.35	-10.20	38.15	43.50	-5.35
383.93	Peak	49.07	-6.48	42.59	46.00	-3.41
431.94	Peak	44.24	-4.84	39.40	46.00	-6.60
612.00	Peak	43.65	-1.63	42.02	46.00	-3.98
721.00	Peak	31.22	0.27	31.49	46.00	-14.51
944.47	Peak	29.09	3.61	32.70	46.00	-13.30

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

Above 1G Test Data

Test Mode:	BLE-1Mbps Low CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Harmonic	Test Date	July 13, 2023
Polarize	Vertical	Test Engineer	Tony Chao
Detector	Peak / Average		

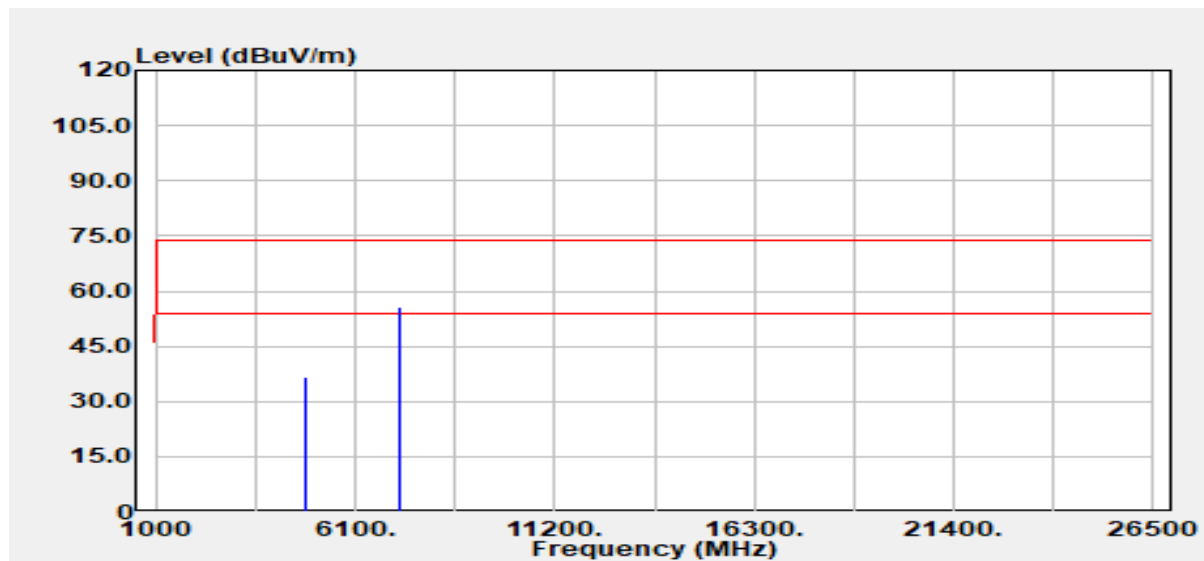


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	35.49	1.22	36.71	74.00	-37.29
4804.00	Average	26.94	1.22	28.16	54.00	-25.84
7206.00	Peak	55.03	7.75	62.78	75.22	-12.44
7206.00	Average	51.05	7.75	58.80	74.44	-15.64
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	BLE-1Mbps Low CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Harmonic	Test Date	July 13, 2023
Polarize	Horizontal	Test Engineer	Tony Chao
Detector	Peak / Average		

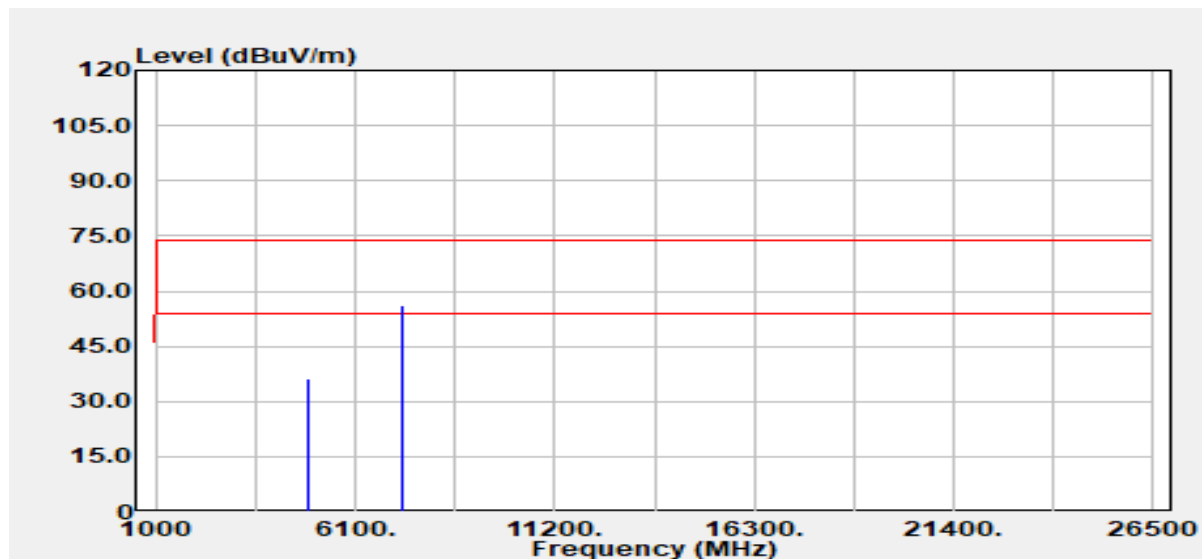


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	35.56	1.22	36.78	74.00	-37.22
4804.00	Average	26.74	1.22	27.96	54.00	-26.04
7206.00	Peak	47.95	7.75	55.70	64.55	-8.85
7206.00	Average	44.36	7.75	52.11	63.77	-11.66
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	BLE-1Mbps Mid CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Harmonic	Test Date	July 13, 2023
Polarize	Vertical	Test Engineer	Tony Chao
Detector	Peak / Average		

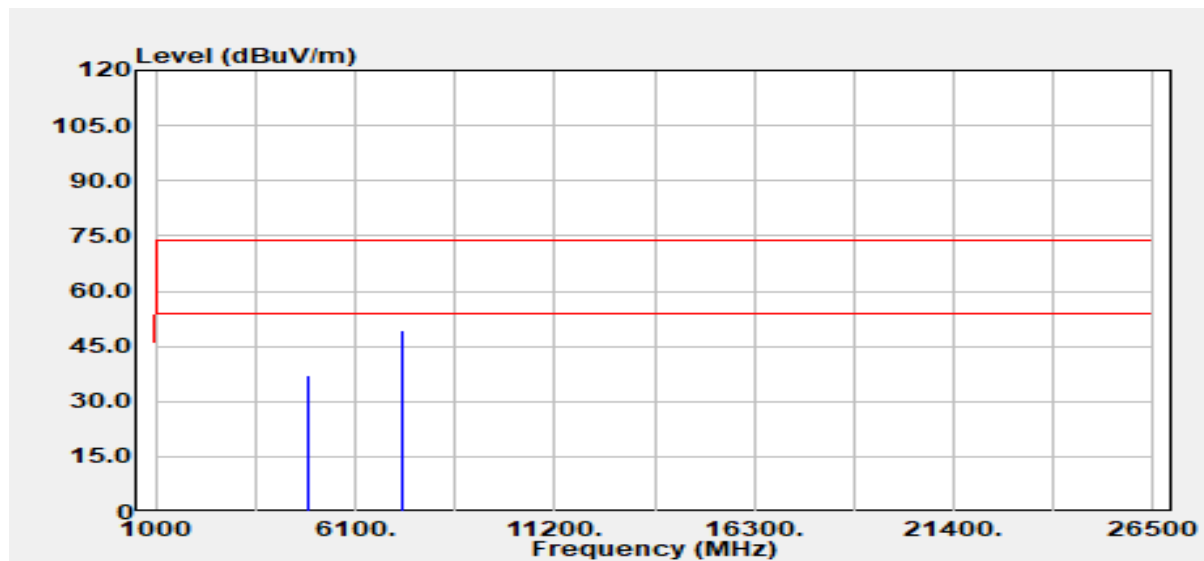


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4884.000	Peak	34.79	1.65	36.44	74.00	-37.56
4884.000	Average	27.00	1.65	28.65	54.00	-25.35
7326.000	Peak	48.33	7.70	56.03	74.00	-17.97
7326.000	Average	46.08	7.70	53.78	54.00	-0.22
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	BLE-1Mbps Mid CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Harmonic	Test Date	July 13, 2023
Polarize	Horizontal	Test Engineer	Tony Chao
Detector	Peak / Average		

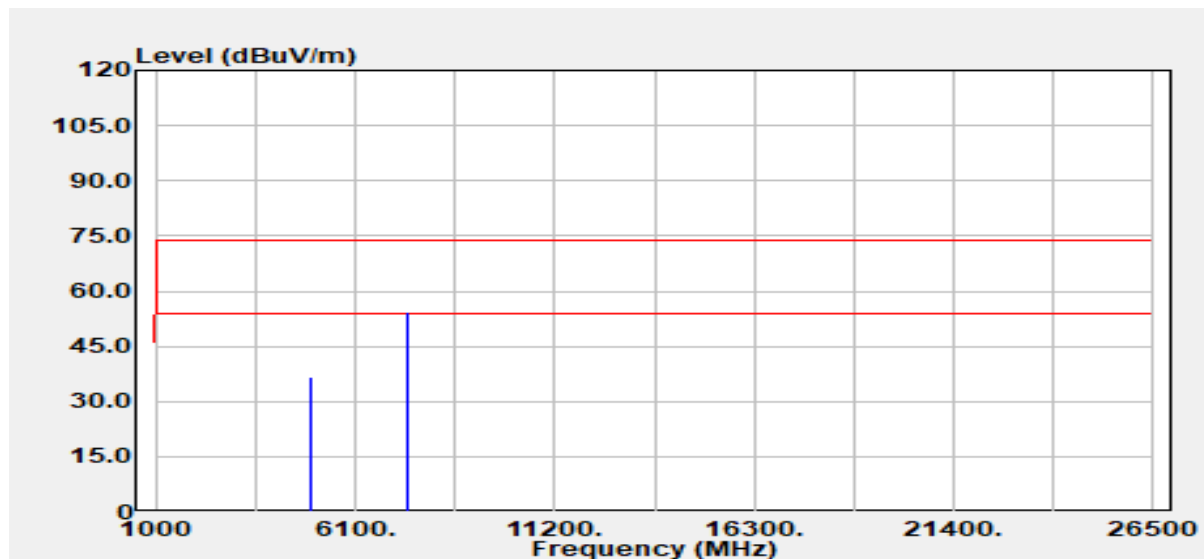


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4884.000	Peak	35.33	1.65	36.98	74.00	-37.02
4884.000	Average	26.72	1.65	28.37	54.00	-25.63
7326.000	Peak	41.58	7.70	49.28	74.00	-24.72
7326.000	Average	36.53	7.70	44.23	54.00	-9.77
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	BLE-1Mbps High CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Harmonic	Test Date	July 13, 2023
Polarize	Vertical	Test Engineer	Tony Chao
Detector	Peak / Average		

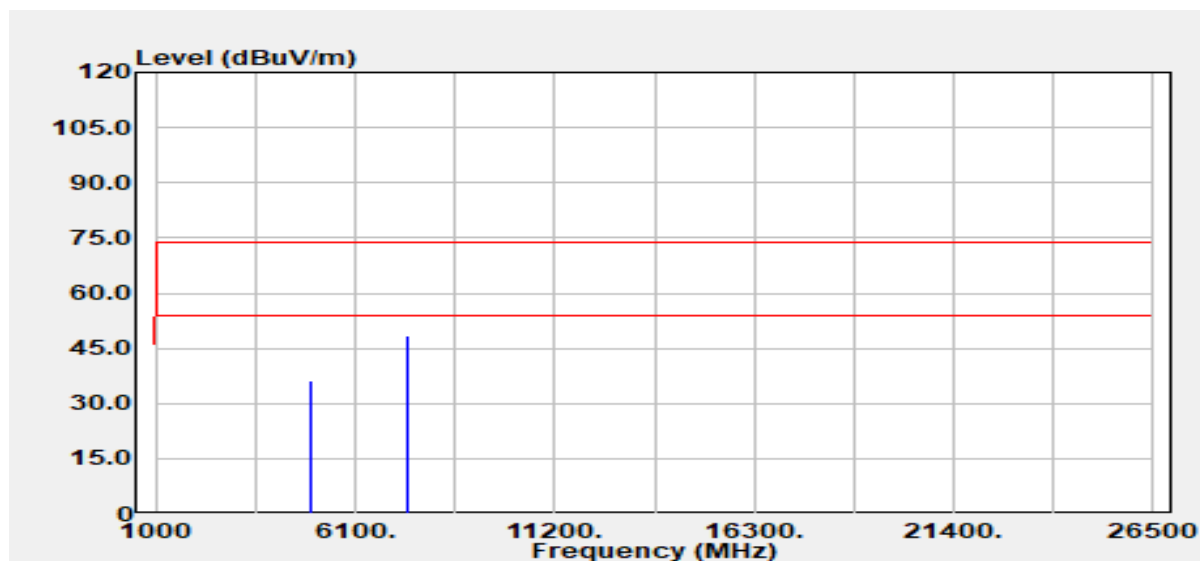


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.000	Peak	34.34	2.25	36.59	74.00	-37.41
4960.000	Average	27.16	2.25	29.41	54.00	-24.59
7440.000	Peak	46.79	7.64	54.42	74.00	-19.58
7440.000	Average	43.58	7.64	51.22	54.00	-2.78
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	BLE-1Mbps High CH	Temp/Hum	24.4(°C) / 57%RH
Test Item	Harmonic	Test Date	July 13, 2023
Polarize	Horizontal	Test Engineer	Tony Chao
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.000	Peak	34.15	2.25	36.39	74.00	-37.61
4960.000	Average	26.46	2.25	28.71	54.00	-25.29
7440.000	Peak	40.93	7.64	48.56	74.00	-25.44
7440.000	Average	36.70	7.64	44.34	54.00	-9.66
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

--End of Test Report--