RADIO TEST REPORT
FCC 47 CFR PART 15 SUBPART C

Test Standard	**FCC Part 15.247**
Product name	**COMMUN.CONT.UNIT ASSY(BT Dongle)**
Brand Name	**YAMAHA**
Model No.	**YE97-A00**
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:

Dally Hong
Sr. Engineer

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	December 22, 2023	Initial Issue	ALL	Peggy Tsai

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	CHAO LONG MOTOR PARTS CORP. No.10, Lane 151, Sec.2, Guangming Rd., Luzhu Dist., Taoyuan City, 33848, Taiwan.
Manufacturer	PT Chao Long Motor Parts Indonesia. JL. Meranti 1, Blok L2 No.5-6, Delta Silicon Industrial Park 1 Bekasi Indonesia 17530
Factory	1. PT Chao Long Motor Parts Indonesia. JL. Meranti 1, Blok L2 No.5-6, Delta Silicon Industrial Park 1 Bekasi Indonesia 17530 2. Chao Long India Private Limited No.6, 8th Avenue, 1st cross road , Mahindra World City, Chengalpattu, Tamil Nadu 603004
Equipment	COMMUN.CONT.UNIT ASSY(BT Dongle)
Model No.	YE97-A00
Model Discrepancy	N/A
Trade Name	YAMAHA
Received Date	September 23, 2023
Date of Test	November 6 ~ 16, 2023
Power Supply	Powered from Car Battery: DC 12V
HW Version	BWP0-T2
SW Version	BPD-V0.08

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 GFSK for BLE 2 Mbps
Number of channel	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	☐ PIFA ☒ PCB ☐ Dipole ☐ Coils
Antenna Gain	-16.00 dBi
Antenna Connector	N/A

Notes:
1. Power Directional Gain: 10LOG(((10^(Ant1/10)+10^(Ant2/10))/2))
2. 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 and RSS-GEN 6.8

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	± 3.115 dB
Radiated Emission_30MHz-200MHz	± 4.071 dB
Radiated Emission_200MHz-1GHz	± 4.419 dB
Radiated Emission_1GHz-6GHz	± 5.023 dB
Radiated Emission_6GHz-18GHz	± 5.068 dB
Radiated Emission_18GHz-26GHz	± 3.349 dB
Radiated Emission_26GHz-40GHz	± 3.229 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

AC Powerline Conducted Emission and Conducted:

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

Radiated emission 9kHz to 40GHz:

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

☒ No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan 24803

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	-	Not applicable because EUT not connect to AC Main Source direct.
Radiation	Czerny Lin	-
RF Conducted	Marco Chan	-

Remark: The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309

1.6 INSTRUMENT CALIBRATION

Conducted_FCC/IC/NCC (All)					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Power Sensor	Anritsu	MA2411B	1911386	2023-07-25	2024-07-24
Power Sensor	Anritsu	MA2411B	1911387	2023-07-25	2024-07-24
Power Meter	Anritsu	ML2496A	2136002	2022-11-24	2023-11-23
EXA Signal Analyzer	Keysight	N9030B	MY62291089	2023-10-13	2024-10-12
DC Power Supply	GWINSTEK	SPS-3610	GPE880163	2022-12-02	2023-12-01
Software	Radio Test Software Ver. 21				

Radiated Emission Test Site: 966 D					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Antenna	SHWARZBECK	VULB 9168	1277	2023-01-13	2024-01-12
Pre-Amplifier	EMCI	EMC118A45SE	980820	2022-12-23	2023-12-22
Pre-Amplifier	EMCI	EMC330N	980853	2022-12-23	2023-12-22
Coaxial Cable	EMC	EMC101G-KM-KM-9000	220407+211228+230205	2023-03-21	2024-03-20
EXA Signal Analyzer	Agilent	N9010A	MY52220817	2023-03-09	2024-03-08
Coaxial Cable	EMC	EMCCFD400	211212+211222+211020	2023-03-21	2024-03-20
High Pass Filter	TITAN	T04H30001800070S01	211215-7-1	2023-02-02	2024-02-01
Thermo-Hygro Meter	EDSDS	EDS-A49	966D1	2023-05-11	2024-05-10
Pre-Amplifier	EMCI	EMC184045SE	980872	2023-01-03	2024-01-02
Horn Antenna	RF SPIN	DRH18-E	210301A18ES	2023-02-03	2024-02-02
Horn Antenna	SHWARZBECK	BBHA 9170	1134	2022-12-30	2023-12-29
Loop Antenna	SCHWARZBECK	FMZB 1513-60	1513-60-028	2022-12-27	2023-12-26
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:
1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

Conducted_Sup_Units					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
NB(E)	Lenovo	T460	N/A	N/A	N/A

Radiated_Sup_Units					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
NB(E)	Lenovo	IBM7663	N/A	N/A	N/A
Car Battery	YUASA	70B24R	N/A	N/A	N/A
DC Cable-1	N/A	N/A	N/A	N/A	N/A
Test Kitting	N/A	N/A	N/A	N/A	N/A

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

Test Mode:
Connect the fixture board to the NB, confirm the comport location from the device administrator, open the test software, set the test mode and transmit the signal.

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, KDB 558074 D01.

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2. TEST SUMMERY

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

Remark:
1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.
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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 Car Battery**
Worst Mode	☒ **Mode 1**
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 Car 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(X-Plane) were recorded in this report

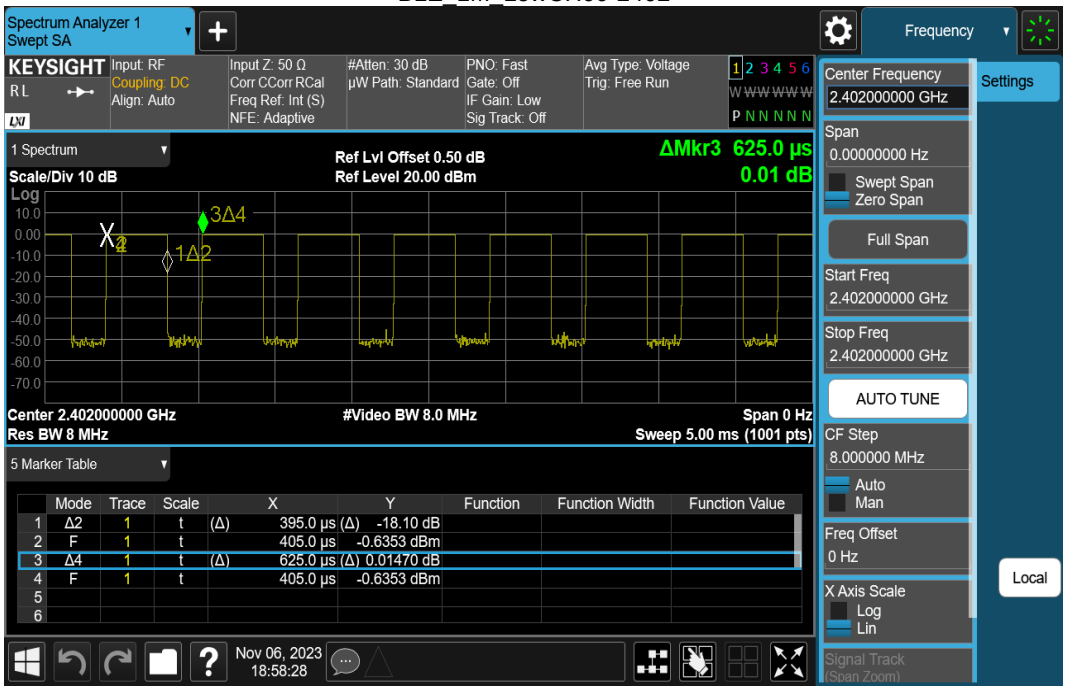
3.3 EUT DUTY CYCLE

Temperature: 26.3℃ **Test date:** November 6, 2023

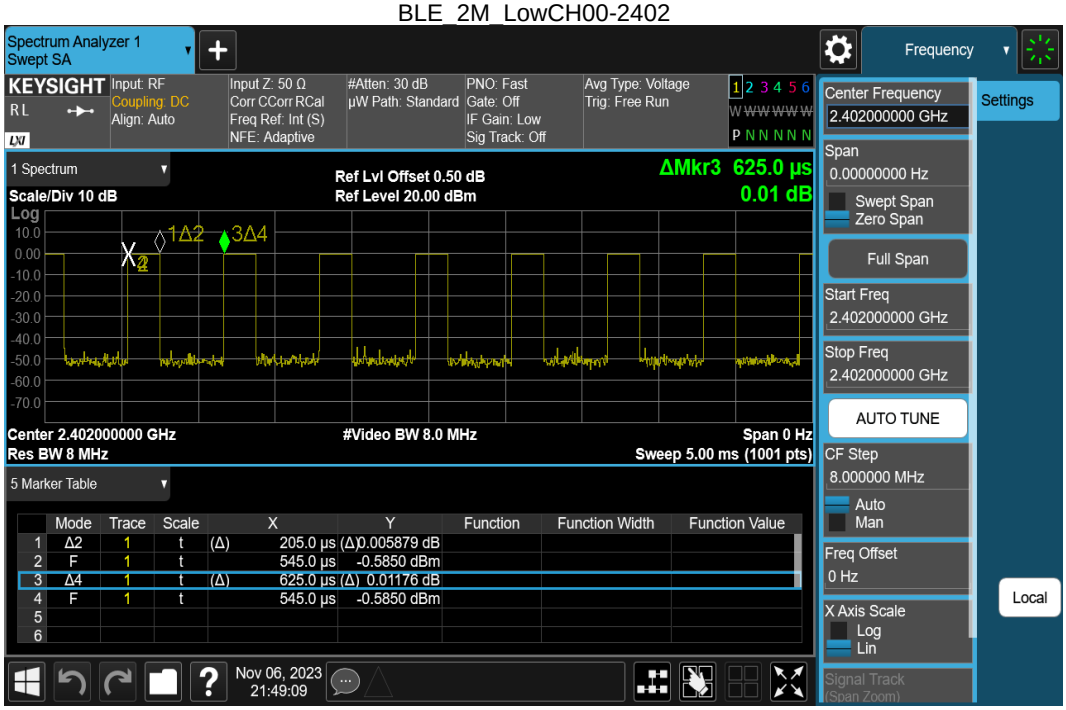
Humidity: 59% RH **Tested by:** Marco Chan

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
BLE 1M	63.20	1.99	2.53	3.00
BLE 2M	32.80	4.84	4.88	5.00

BLE_1M_LowCH00-2402



BLE_2M_LowCH00-2402



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a),

Frequency Range (MHz)	Limits(dBμV)	
	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

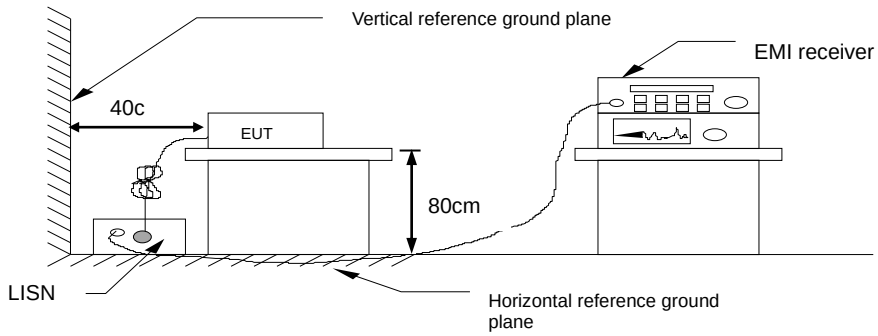
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

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

1. The EUT was placed on a non-conducted table, which is 0.8m 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..

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

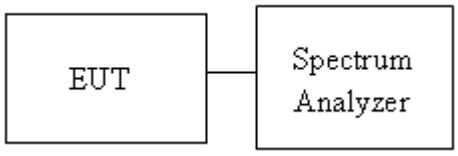
Occupied Bandwidth(99%) ： For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as KDB 558074 D01 and ANSI C63.10: 2013 clause 6.9.2.

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 6 dB Bandwidth and 99% Bandwidth.
4. 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:	26.3℃	**Test date:**	November 6, 2023
Humidity:	59% RH	**Tested by:**	Marco Chan

BLE 1M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
2402	0.7109	≧ 0.5	PASS
2440	0.7037	≧ 0.5	PASS
2480	0.6697	≧ 0.5	PASS

BLE 2M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
2402	1.139	≧ 0.5	PASS
2440	1.133	≧ 0.5	PASS
2480	1.132	≧ 0.5	PASS

BLE 1M mode

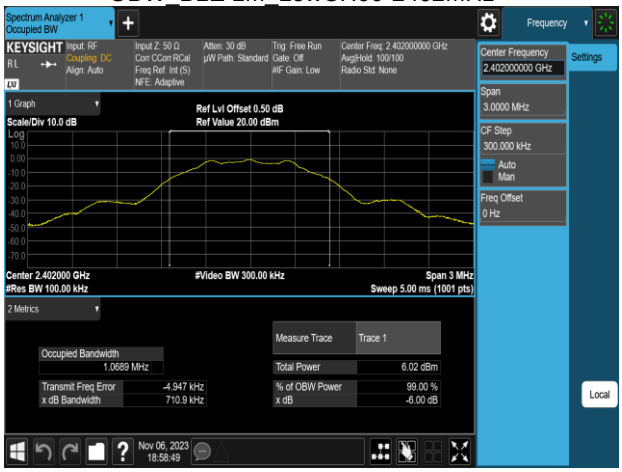
Frequency (MHz)	99%Bandwidth (MHz)
2402	1.0403
2440	1.0427
2480	1.0435

BLE 2M mode

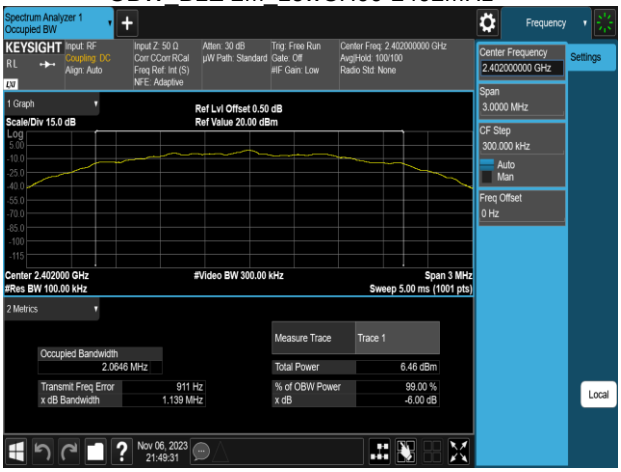
Frequency (MHz)	99%Bandwidth (MHz)
2402	2.0645
2440	2.0683
2480	2.0732

Test Data (6dB BANDWIDTH)

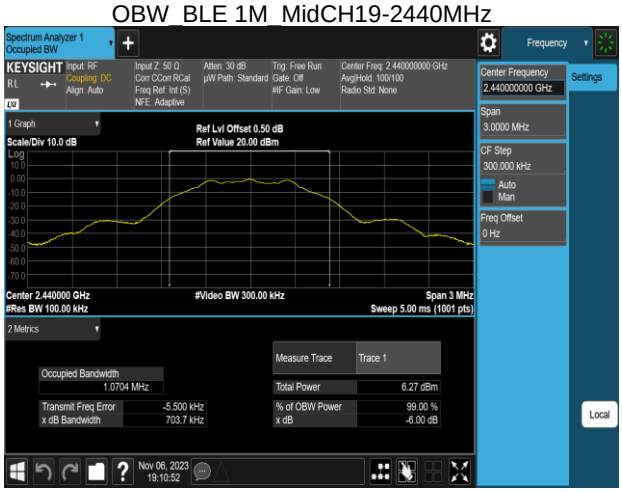
OBW_BLE 1M_LowCH00-2402MHz



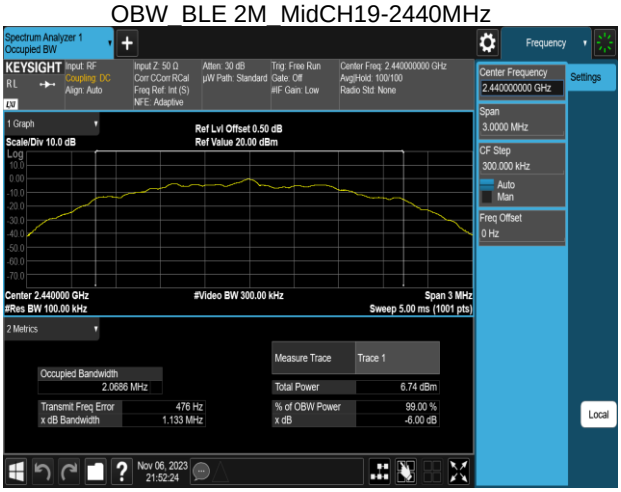
OBW_BLE 2M_LowCH00-2402MHz



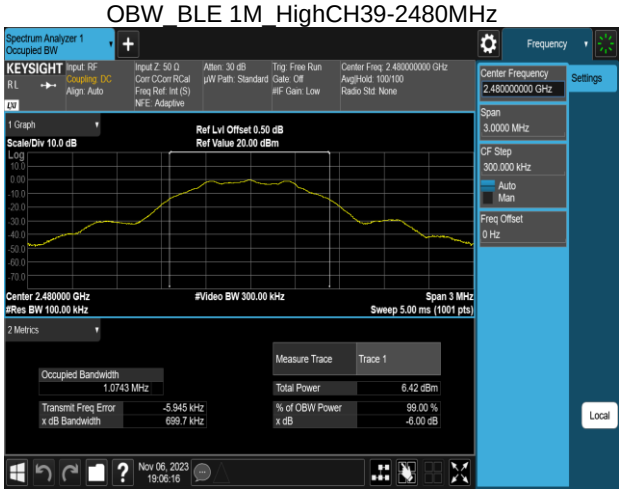
OBW_BLE 1M_MidCH19-2440MHz



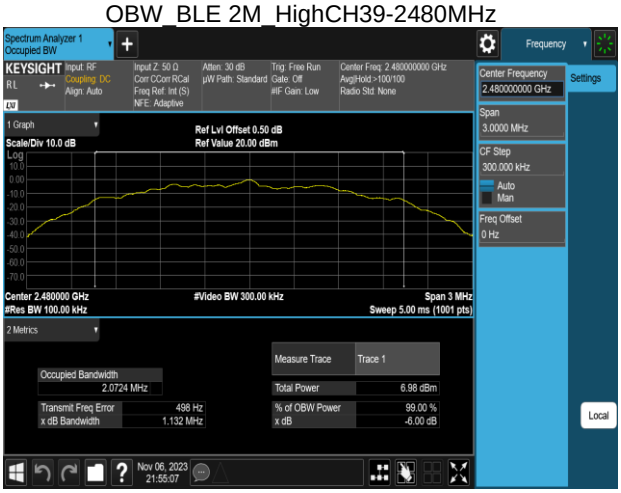
OBW_BLE 2M_MidCH19-2440MHz



OBW_BLE 1M_HighCH39-2480MHz



OBW_BLE 2M_HighCH39-2480MHz

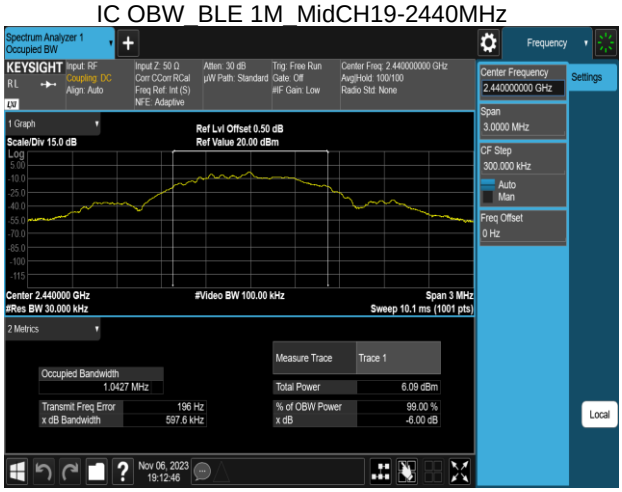


Test Data (BANDWIDTH 99%)

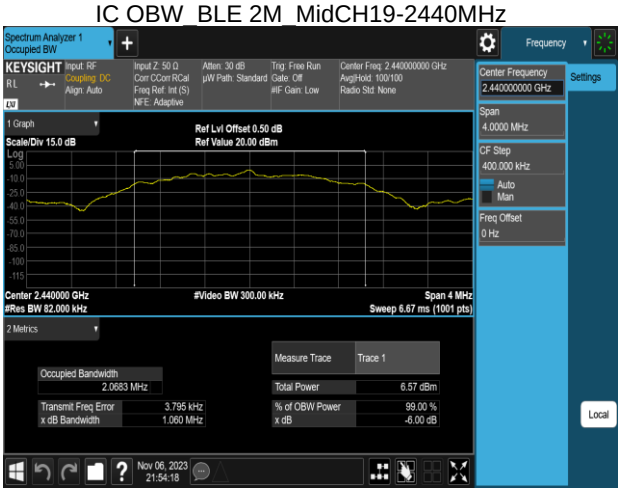
IC OBW_BLE 1M_LowCH00-2402MHz

IC OBW_BLE 2M_LowCH00-2402MHz

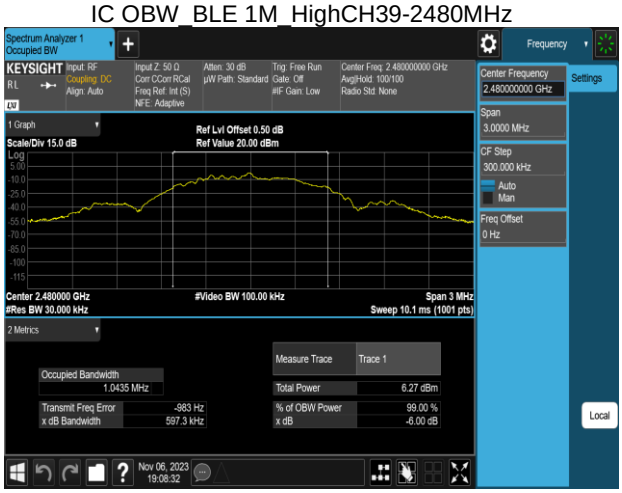
IC OBW_BLE 1M_MidCH19-2440MHz



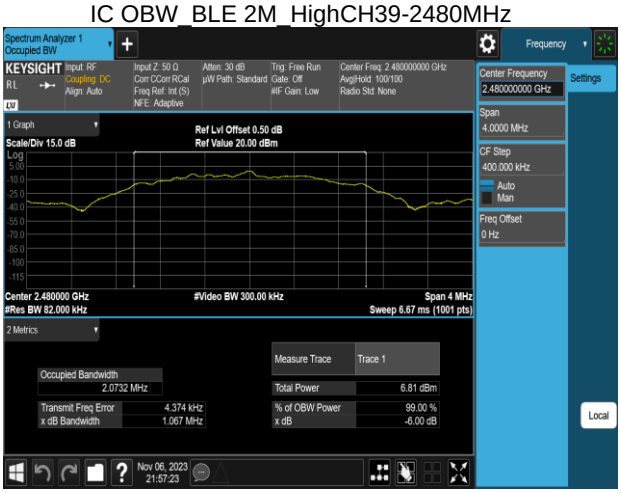
IC OBW_BLE 2M_MidCH19-2440MHz



IC OBW_BLE 1M_HighCH39-2480MHz



IC OBW_BLE 2M_HighCH39-2480MHz



4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b)(3)

Peak output power：

FCC

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Limit	☒ Antenna not exceed 6 dBi：30dBm ☐ Antenna with DG greater than 6 dBi [Limit = 30 – (DG – 6)] ☐ Point-to-point operation

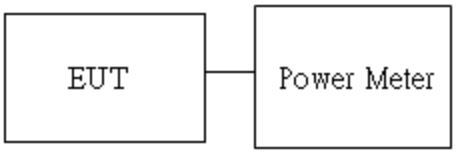
Average output power：For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as KDB 558074 D01

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



4.3.4 Test Result

Temperature:	26.3℃	**Test date:**	November 6, 2023
Humidity:	59% RH	**Tested by:**	Marco Chan

Peak & Average output power：

BLE 1M mode:

CH	Frequency (MHz)	Power set	Peak Output Power (dBm)	Required Limit (dBm)
Low	2402	default	-0.51	30
Mid	2440	default	-0.35	30
High	2480	default	-0.38	30
CH	**Frequency (MHz)**	**Power set**	**Avg. Output Power (dBm)**	**Required Limit (dBm)**
Low	2402	default	-0.67	30
Mid	2440	default	-0.36	30
High	2480	default	-0.40	30

Note:

1.Measured by power meter, cable loss 0.5 dB + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

BLE 2M mode:

CH	Frequency (MHz)	Power set	Peak Output Power (dBm)	Required Limit (dBm)
Low	2402	default	-0.16	30
Mid	2440	default	**0.01**	30
High	2480	default	-0.14	30
CH	**Frequency (MHz)**	**Power set**	**Avg. Output Power (dBm)**	**Required Limit (dBm)**
Low	2402	default	-0.17	30
Mid	2440	default	-0.02	30
High	2480	default	-0.15	30

Note:

1.Measured by power meter, cable loss 0.5 dB + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

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.

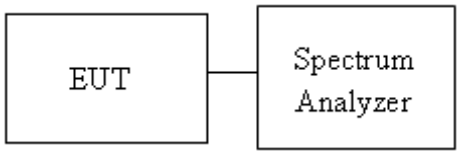
Limit	☒ Antenna not exceed 6 dBi：8dBm ☐ Antenna with DG greater than 6 dBi [Limit = 8 – (DG – 6)] ☐ Point-to-point operation：

4.4.2 Test Procedure

Test method Refer as KDB 558074 D01

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 = 30kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss was 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:	26.3℃	**Test date:**	November 6, 2023
Humidity:	59% RH	**Tested by:**	Marco Chan

BLE 1M mode

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
2402	-15.92	8	PASS
2440	-15.87	8	PASS
2480	-15.75	8	PASS

Note:

1.cable loss as 0.5dB that offsets in the spectrum

BLE 2M mode

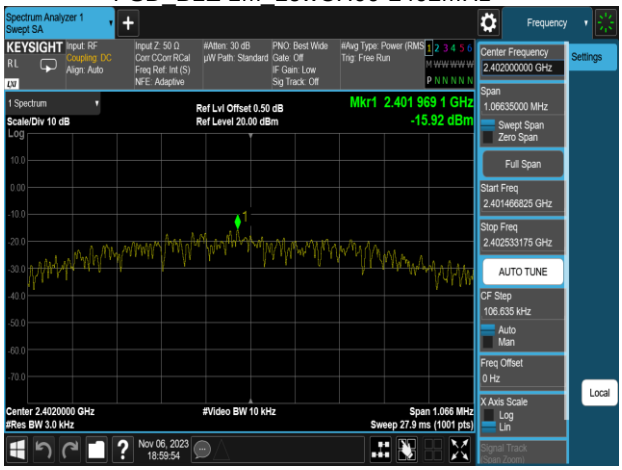
Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
2402	-18.53	8	PASS
2440	-18.25	8	PASS
2480	-18.06	8	PASS

Note:

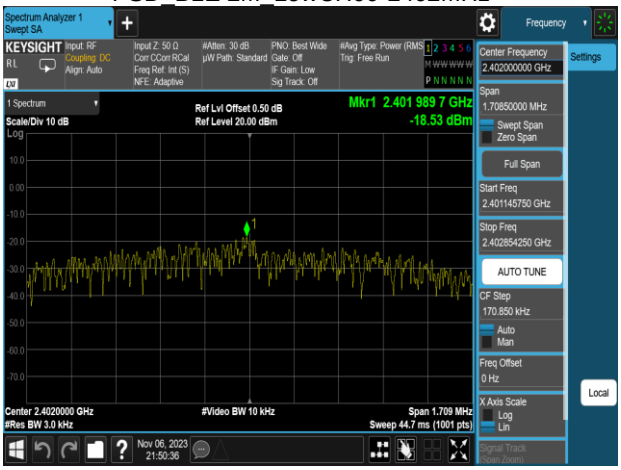
1.cable loss as 0.5dB that offsets in the spectrum

Test Data

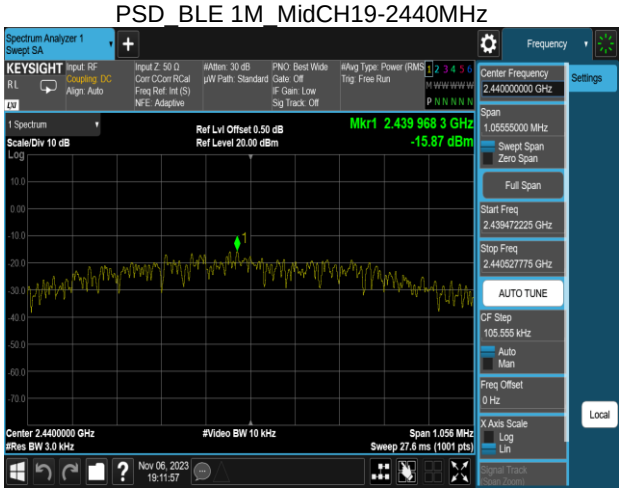
PSD_BLE 1M_LowCH00-2402MHz



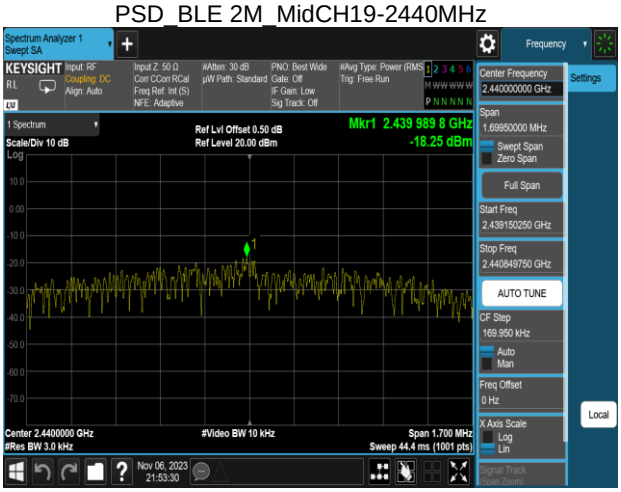
PSD_BLE 2M_LowCH00-2402MHz



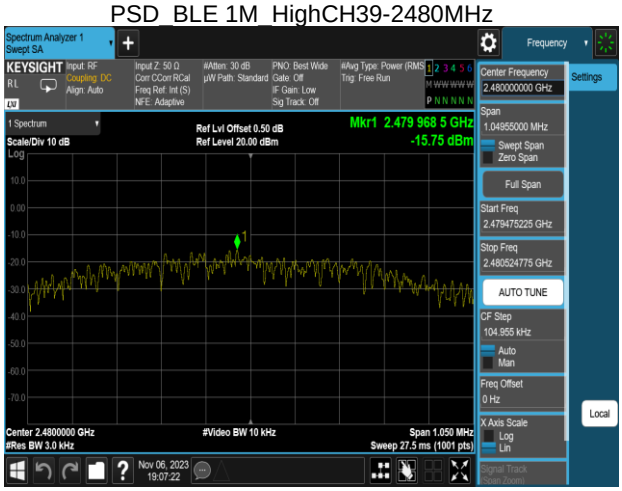
PSD_BLE 1M_MidCH19-2440MHz



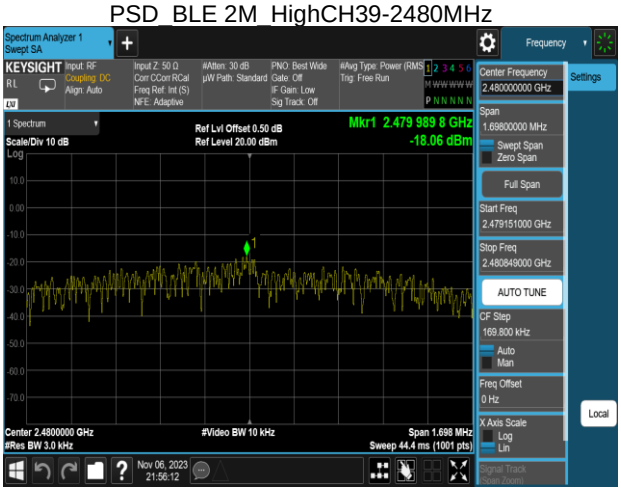
PSD_BLE 2M_MidCH19-2440MHz



PSD_BLE 1M_HighCH39-2480MHz



PSD_BLE 2M_HighCH39-2480MHz



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

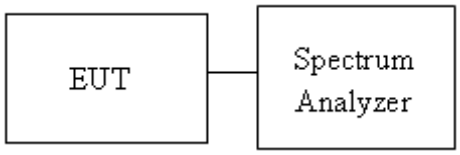
Test method Refer as KDB 558074 D01

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

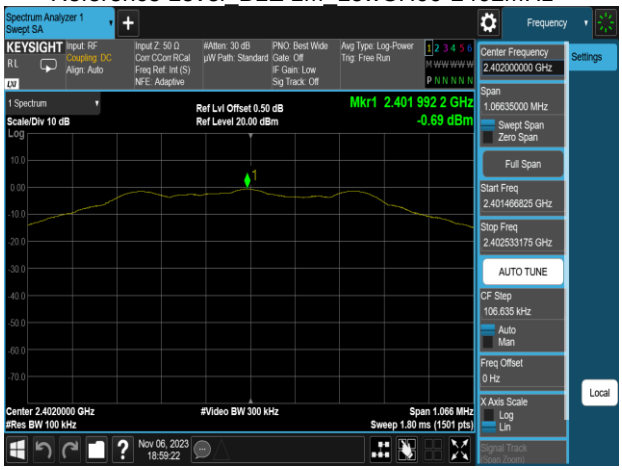


4.5.4 Test Result

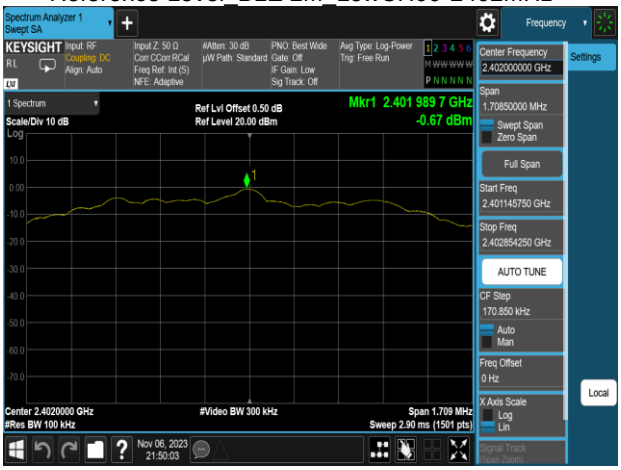
Temperature:	26.3℃	**Test date:**	November 6, 2023
Humidity:	59% RH	**Tested by:**	Marco Chan

Test Data

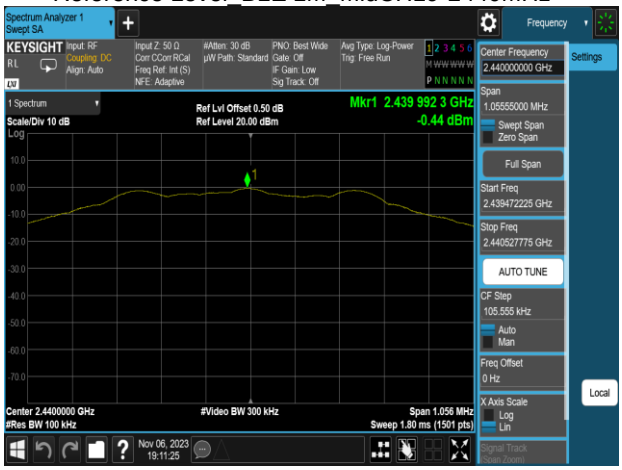
Reference Level_BLE 1M_LowCH00-2402MHz



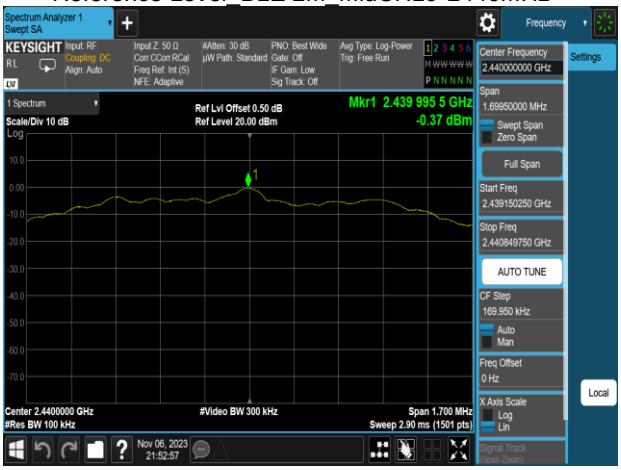
Reference Level_BLE 2M_LowCH00-2402MHz



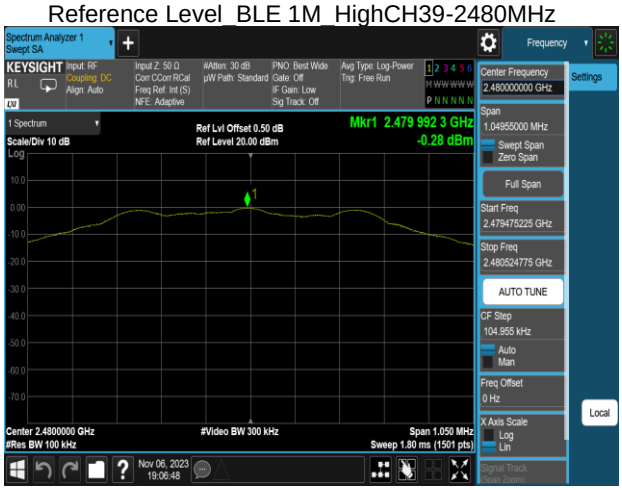
Reference Level_BLE 1M_MidCH19-2440MHz



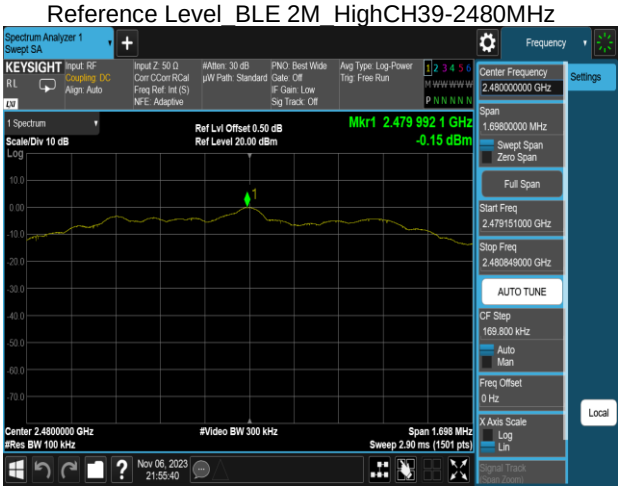
Reference Level_BLE 2M_MidCH19-2440MHz



Reference Level_BLE 1M_HighCH39-2480MHz

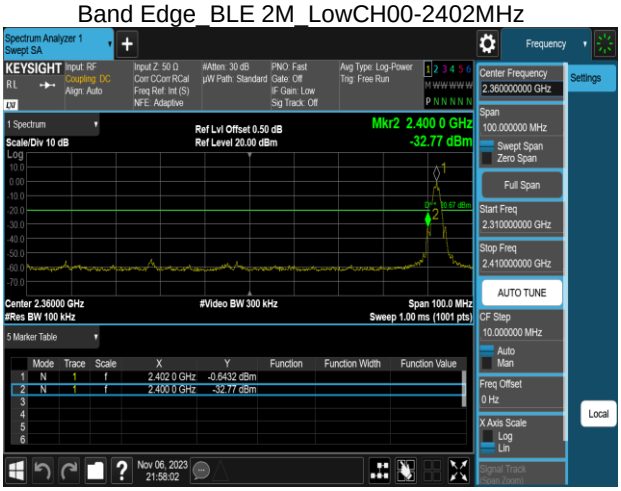


Reference Level_BLE 2M_HighCH39-2480MHz

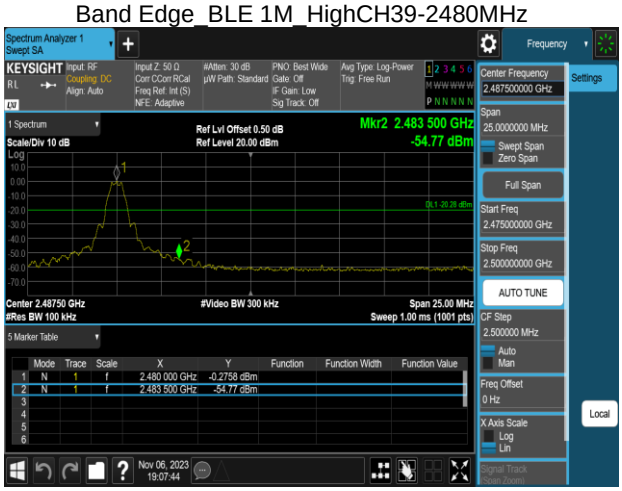


Band Edge_BLE 1M_LowCH00-2402MHz

Band Edge_BLE 2M_LowCH00-2402MHz

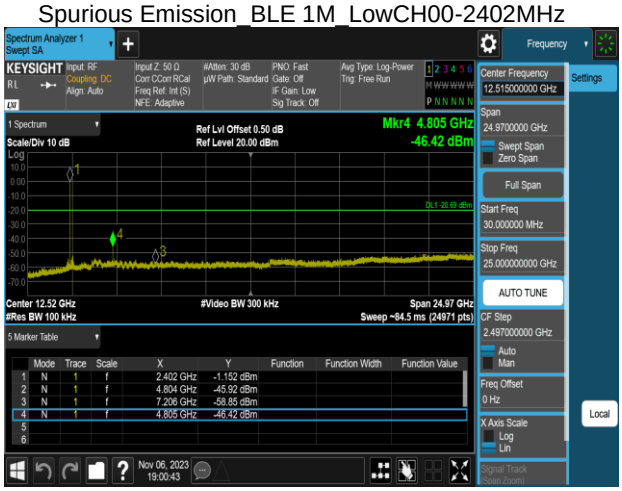


Band Edge_BLE 1M_HighCH39-2480MHz

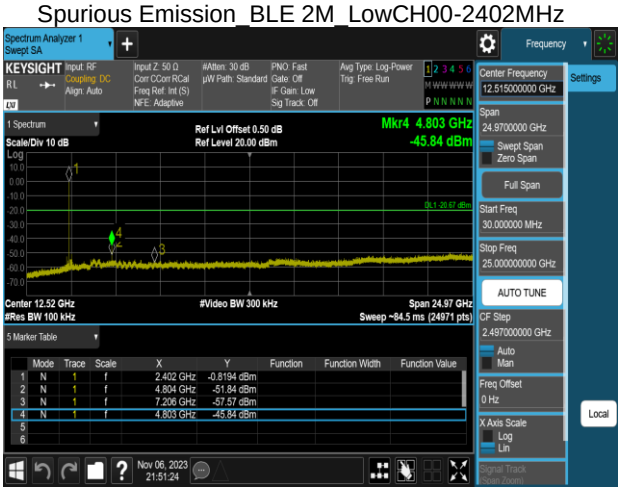


Band Edge_BLE 2M_HighCH39-2480MHz

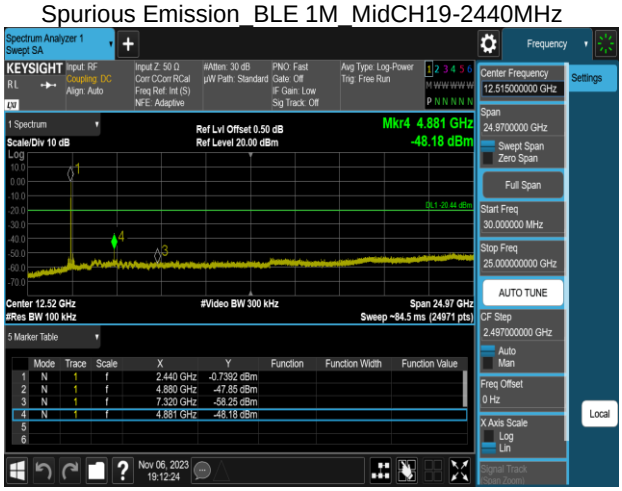
Spurious Emission_BLE 1M_LowCH00-2402MHz



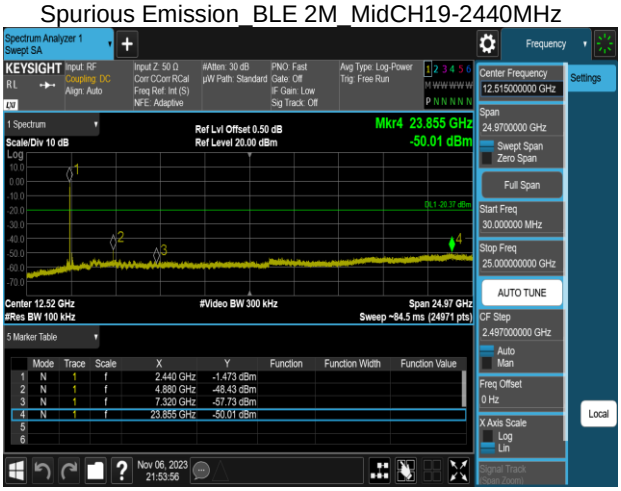
Spurious Emission_BLE 2M_LowCH00-2402MHz



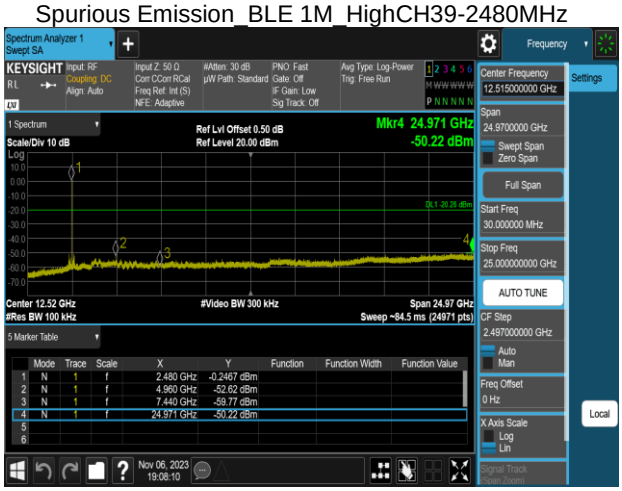
Spurious Emission_BLE 1M_MidCH19-2440MHz



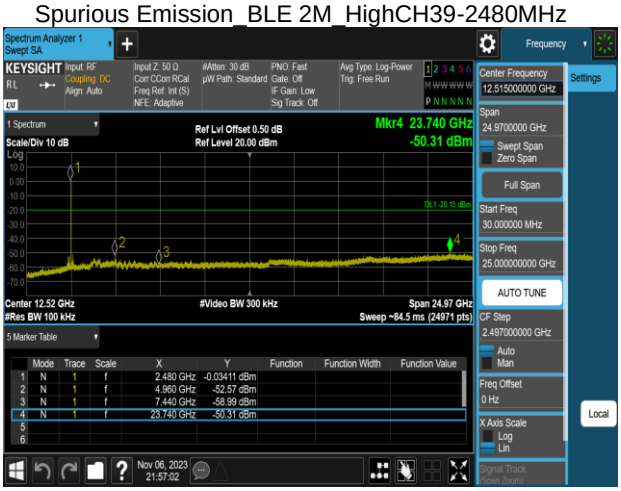
Spurious Emission_BLE 2M_MidCH19-2440MHz



Spurious Emission_BLE 1M_HighCH39-2480MHz



Spurious Emission_BLE 2M_HighCH39-2480MHz



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 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.

4.6.2 Test Procedure

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 ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G：

(2.1) For Peak measurement：RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2.2) For Average measurement：RBW = 1MHz, VBW

- If Duty Cycle ≥ 98%, VBW=10Hz.
- If Duty Cycle < 98%, VBW=1/T.

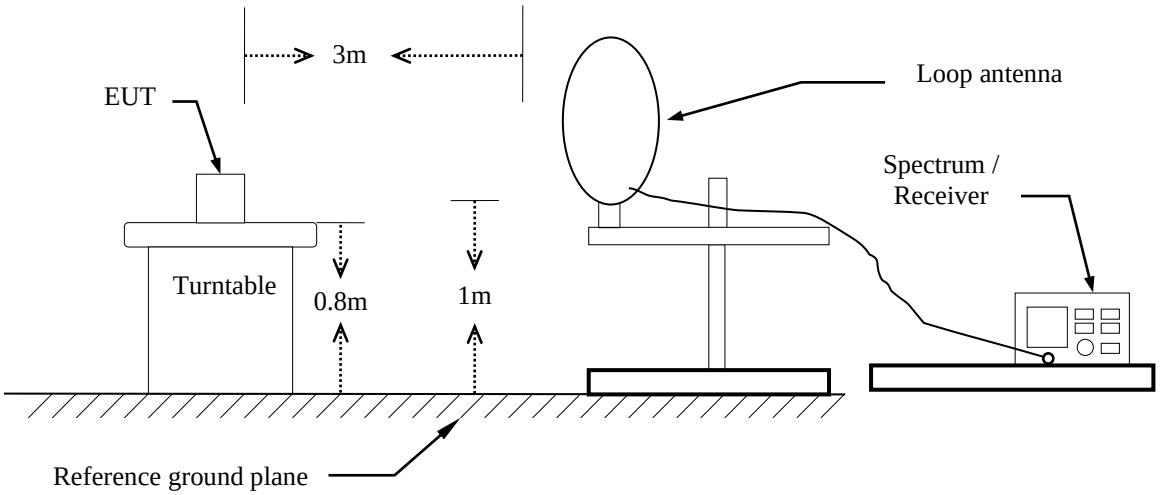
4. Data result

Actual FS=Spectrum Reading Level+Factor

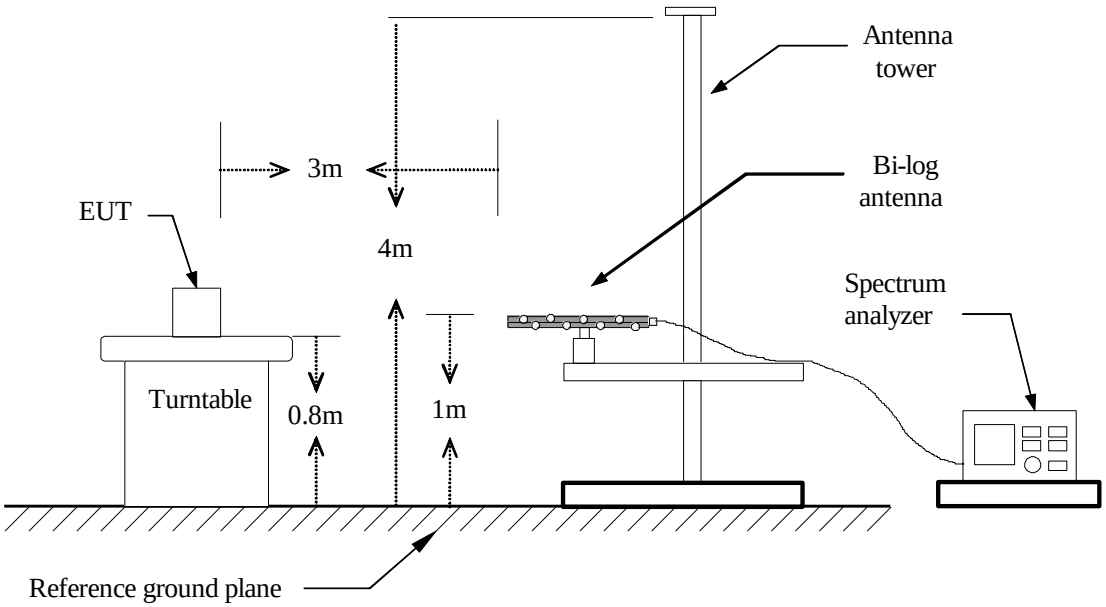
Margin=Actual FS- Limit

4.6.3 Test Setup

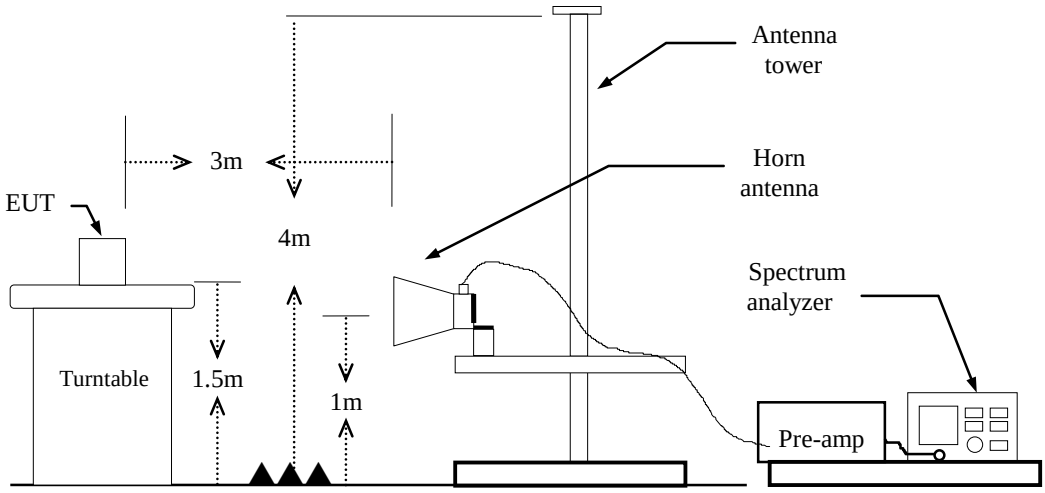
9kHz ~ 30MHz



30MHz ~ 1GHz



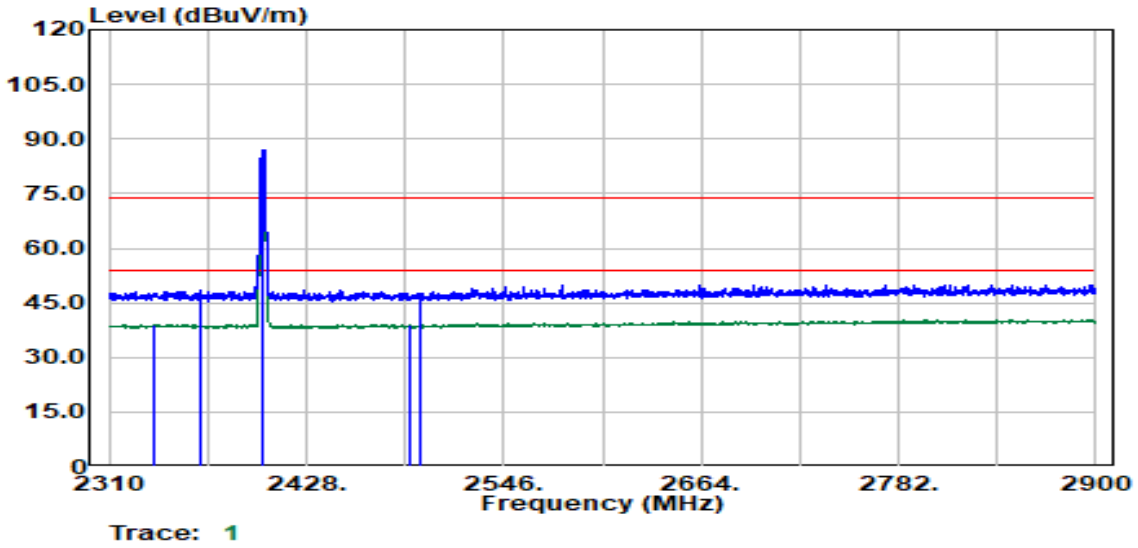
Above 1 GHz



4.6.4 Test Result

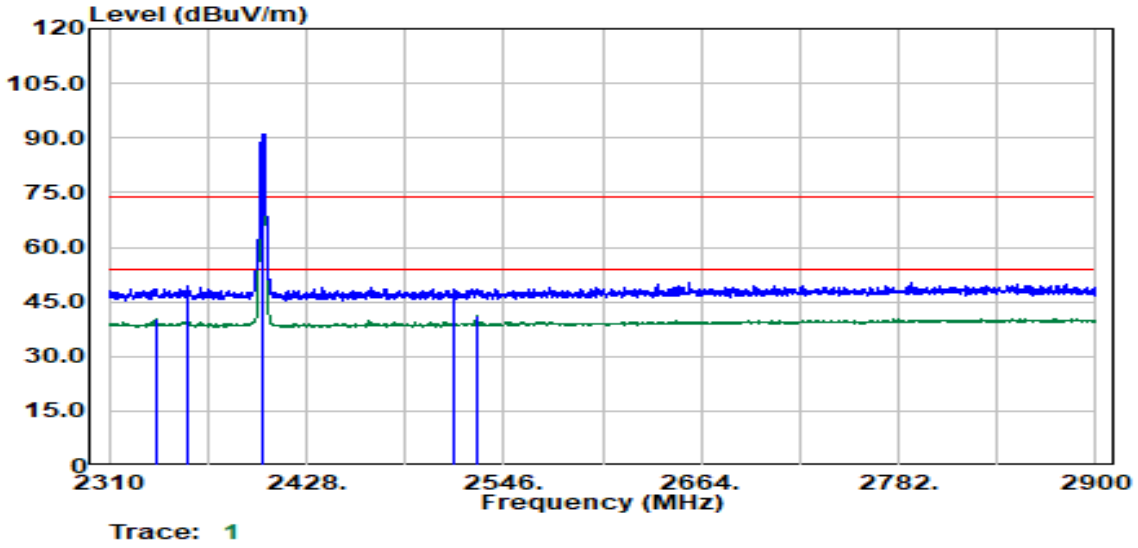
Band Edge Test Data

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



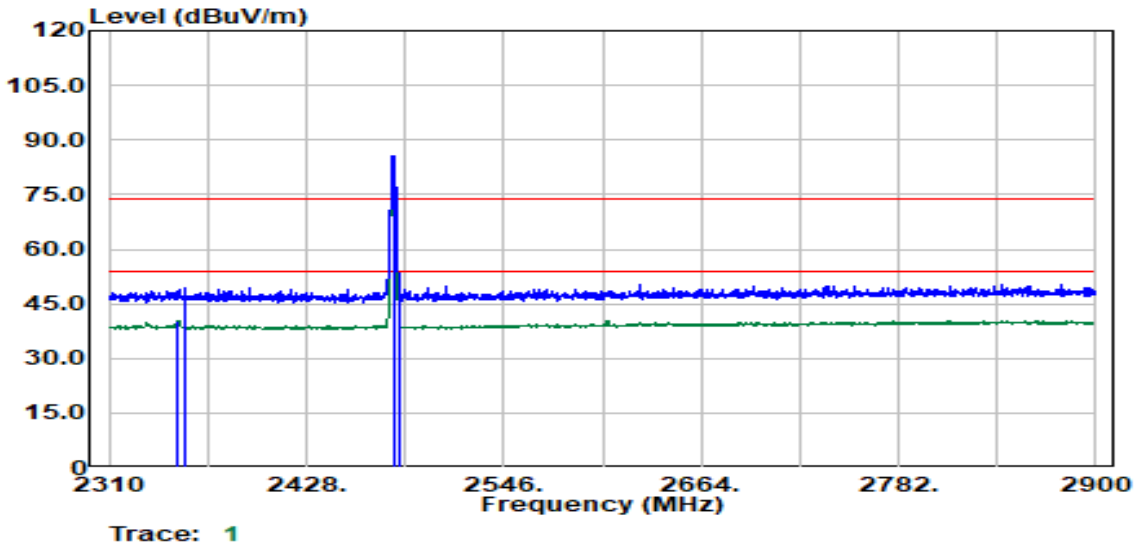
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2337.26	Average	34.24	4.74	38.98	54.00	-15.02
2364.02	Peak	43.89	4.75	48.64	74.00	-25.36
2402.00	Peak	82.56	4.51	87.07	--	--
2402.00	Average	81.29	4.51	85.81	--	--
2490.33	Average	34.24	4.55	38.79	54.00	-15.21
2496.58	Peak	43.16	4.62	47.77	74.00	-26.23

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



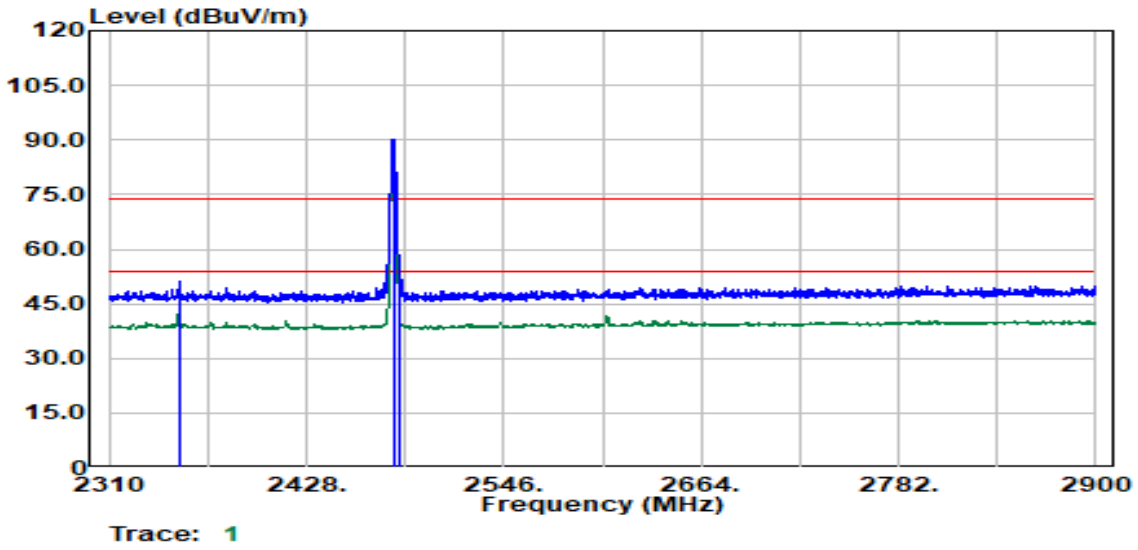
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2338.01	Average	35.62	4.75	40.37	54.00	-13.63
2357.02	Peak	44.75	4.81	49.56	74.00	-24.44
2402.00	Peak	86.62	4.51	91.13	--	--
2402.00	Average	85.31	4.51	89.82	--	--
2516.59	Peak	43.70	4.74	48.44	74.00	-25.56
2530.09	Average	36.27	4.79	41.06	54.00	-12.94

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



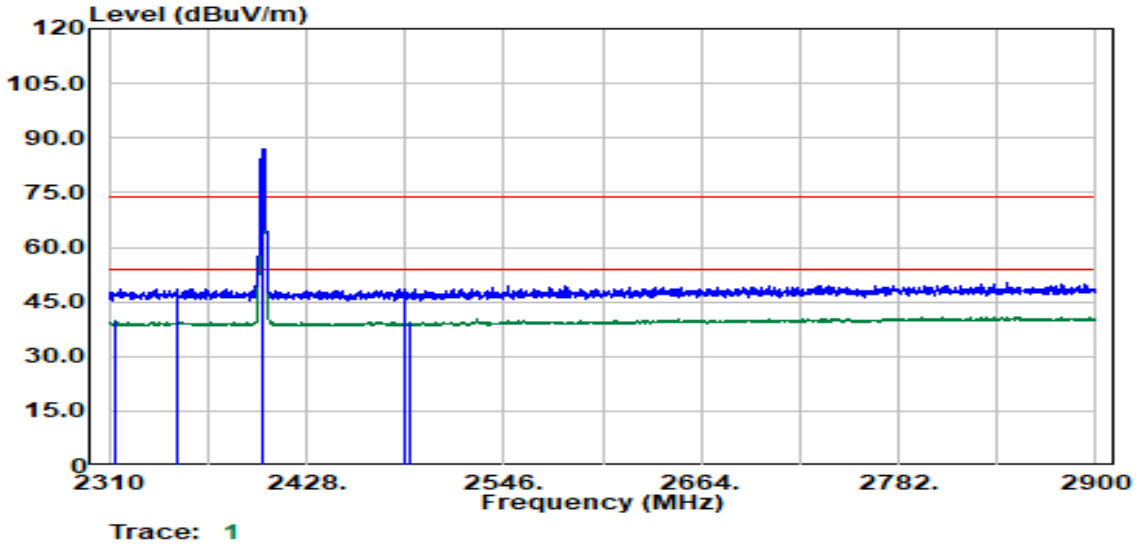
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2351.52	Average	35.47	4.87	40.33	54.00	-13.67
2355.52	Peak	44.75	4.83	49.58	74.00	-24.42
2480.00	Peak	81.16	4.65	85.80	--	--
2480.00	Average	79.78	4.65	84.42	--	--
2483.57	Peak	48.43	4.61	53.04	74.00	-20.96
2483.57	Average	35.46	4.61	40.08	54.00	-13.92

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



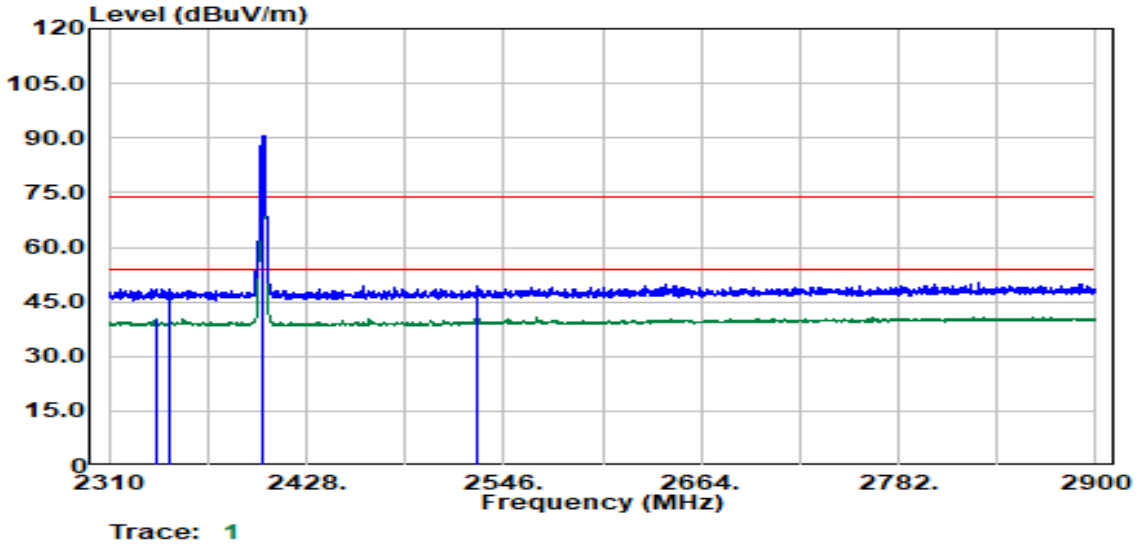
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2351.77	Average	37.39	4.86	42.25	54.00	-11.75
2352.27	Peak	46.09	4.86	50.95	74.00	-23.05
2480.00	Peak	85.62	4.65	90.26	--	--
2480.00	Average	84.34	4.65	88.98	--	--
2483.57	Peak	49.31	4.61	53.92	74.00	-20.08
2483.57	Average	37.33	4.61	41.94	54.00	-12.06

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



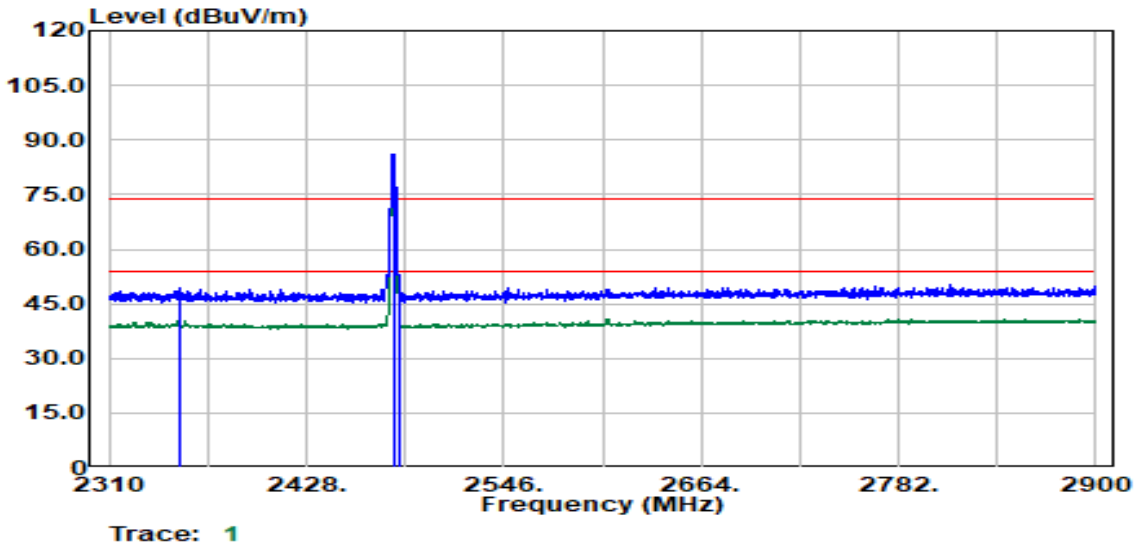
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2313.75	Average	34.94	4.71	39.66	54.00	-14.34
2351.02	Peak	43.78	4.87	48.65	74.00	-25.35
2402.00	Peak	82.36	4.51	86.87	--	--
2402.00	Average	81.28	4.51	85.79	--	--
2486.83	Peak	44.00	4.58	48.58	74.00	-25.42
2490.58	Average	34.66	4.55	39.22	54.00	-14.78

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



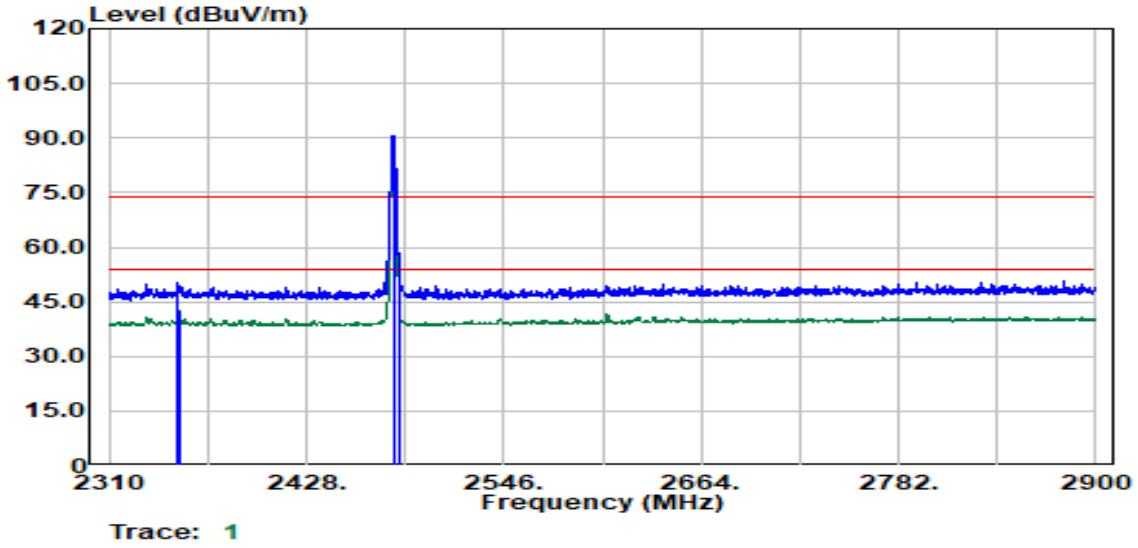
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2338.26	Average	35.73	4.75	40.49	54.00	-13.51
2346.52	Peak	43.83	4.84	48.67	74.00	-25.33
2402.00	Peak	86.09	4.51	90.60	--	--
2402.00	Average	85.00	4.51	89.51	--	--
2530.09	Peak	44.34	4.79	49.13	74.00	-24.87
2530.09	Average	36.43	4.79	41.22	54.00	-12.78

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



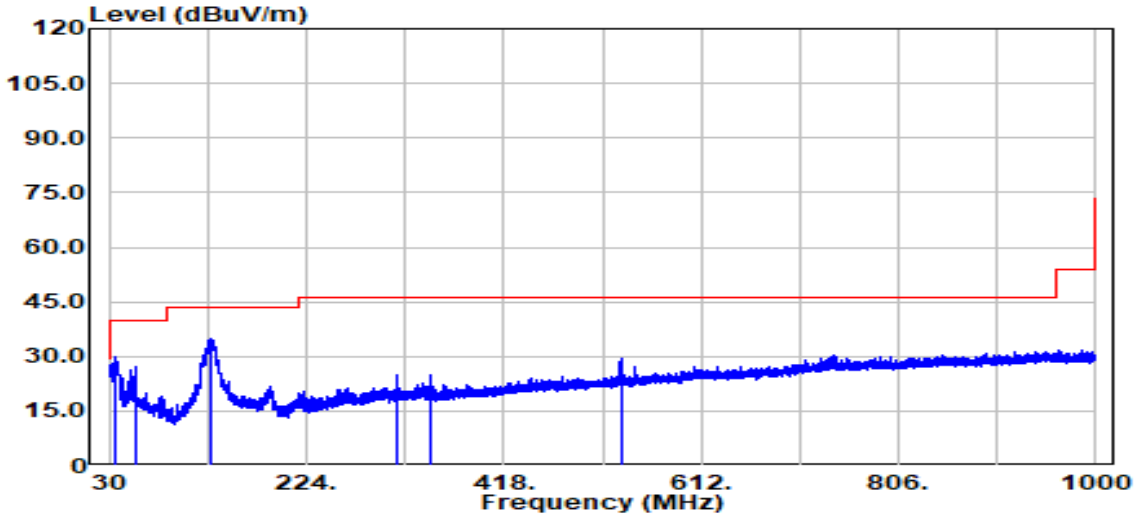
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2351.77	Peak	44.53	4.86	49.39	74.00	-24.61
2351.77	Average	36.01	4.86	40.87	54.00	-13.13
2480.00	Peak	81.39	4.65	86.04	--	--
2480.00	Average	80.21	4.65	84.86	--	--
2483.57	Peak	47.15	4.61	51.76	74.00	-22.24
2483.57	Average	35.85	4.61	40.46	54.00	-13.54

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



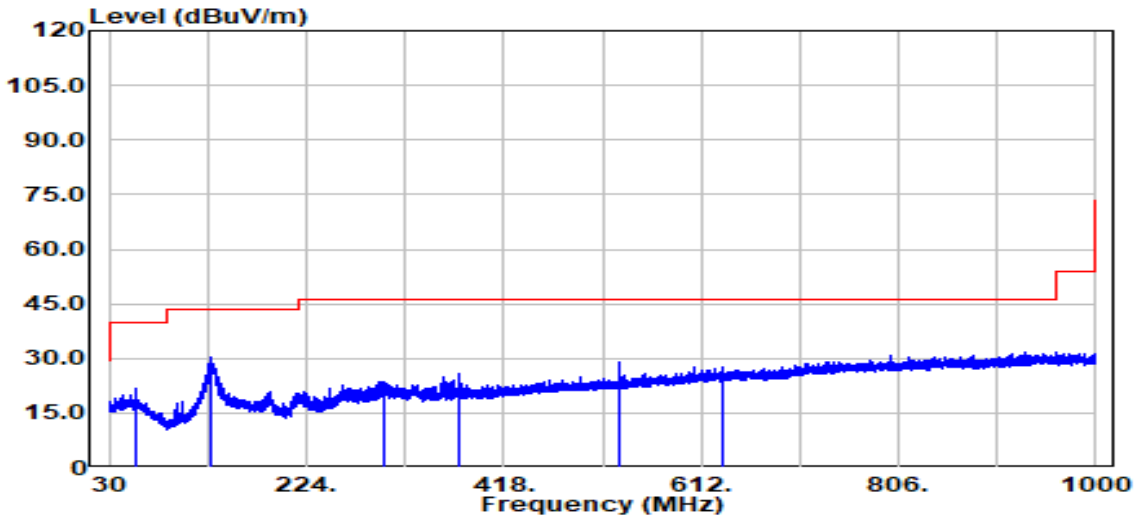
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2351.27	Peak	45.37	4.87	50.23	74.00	-23.77
2351.77	Average	37.80	4.86	42.67	54.00	-11.33
2480.00	Peak	85.80	4.65	90.45	--	--
2480.00	Average	84.69	4.65	89.33	--	--
2483.57	Peak	51.38	4.61	55.99	74.00	-18.01
2483.57	Average	38.37	4.61	42.99	54.00	-11.01

Project No.	:TM-2309000413P	Test Date	:2023-11-16
Operation Band	:BLE 2M	Temp./Humi.	:24.4/63
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



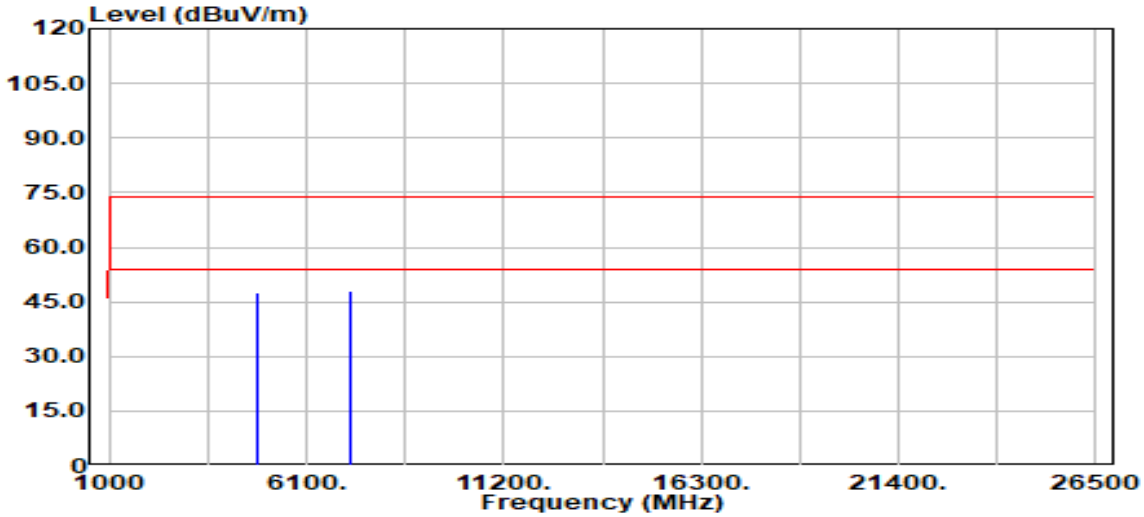
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBµV	Factor dB	Actual FS dBµV/m	Limit dBµV/m	Margin dB
37.08	Peak	43.57	-13.76	29.81	40.00	-10.19
55.90	Peak	39.55	-12.61	26.94	40.00	-13.06
129.23	Peak	49.60	-14.62	34.99	43.50	-8.51
311.98	Peak	37.01	-11.92	25.09	46.00	-20.91
345.64	Peak	36.09	-11.18	24.91	46.00	-21.09
532.85	Peak	36.49	-6.85	29.64	46.00	-16.36

Project No.	:TM-2309000413P	Test Date	:2023-11-16
Operation Band	:BLE 2M	Temp./Humi.	:24.4/63
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



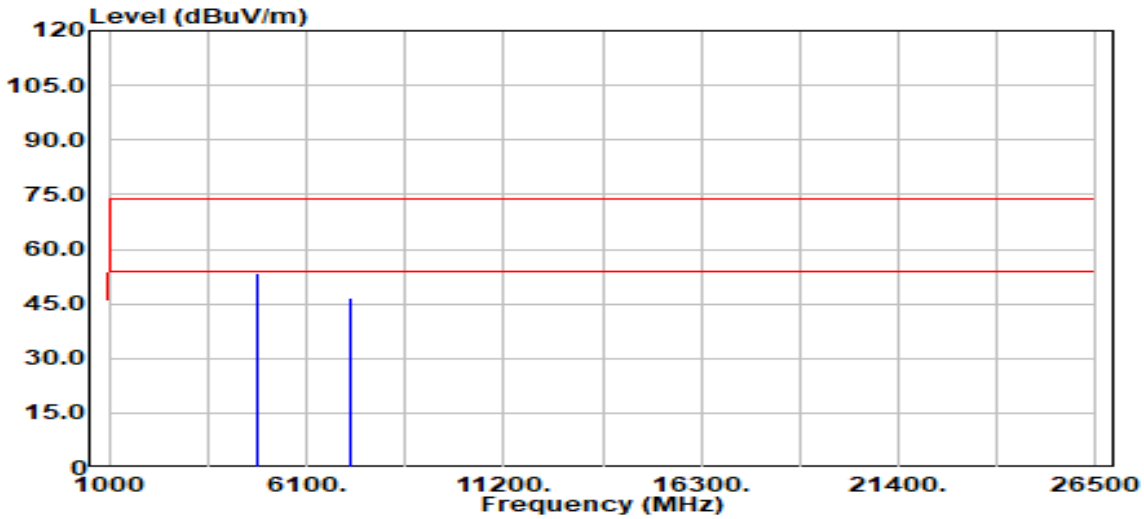
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBµV	Factor dB	Actual FS dBµV/m	Limit dBµV/m	Margin dB
55.90	Peak	34.20	-12.61	21.59	40.00	-18.41
130.40	Peak	44.69	-14.42	30.27	43.50	-13.23
301.50	Peak	35.93	-12.34	23.59	46.00	-22.41
375.22	Peak	36.10	-10.20	25.90	46.00	-20.10
531.01	Peak	35.70	-6.89	28.81	46.00	-17.19
633.63	Peak	32.41	-4.57	27.84	46.00	-18.16

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



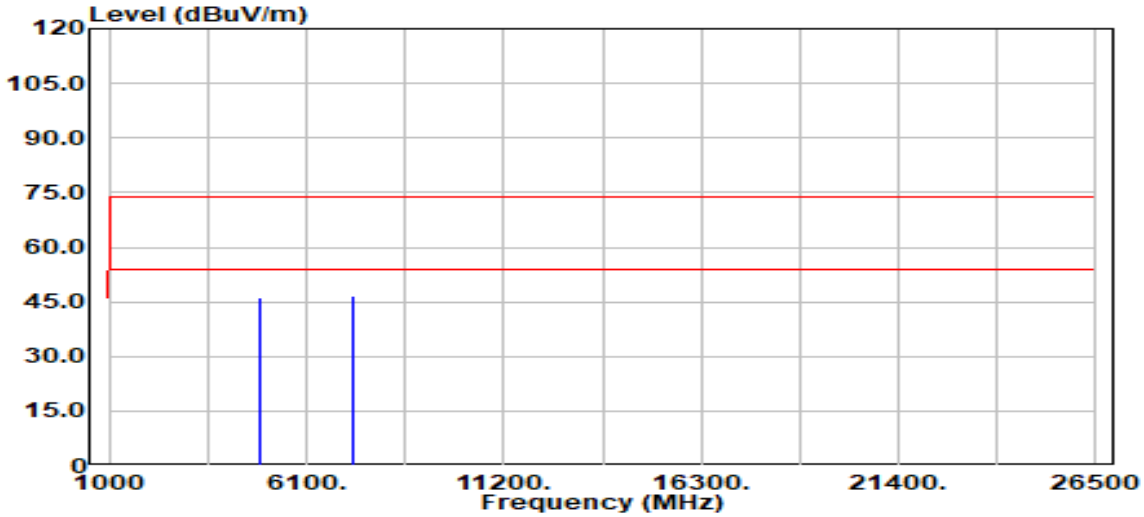
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	47.26	0.38	47.65	74.00	-26.35
4804.00	Average	41.82	0.38	42.21	54.00	-11.79
7206.00	Peak	42.83	5.33	48.16	74.00	-25.84
7206.00	Average	33.16	5.33	38.49	54.00	-15.51

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



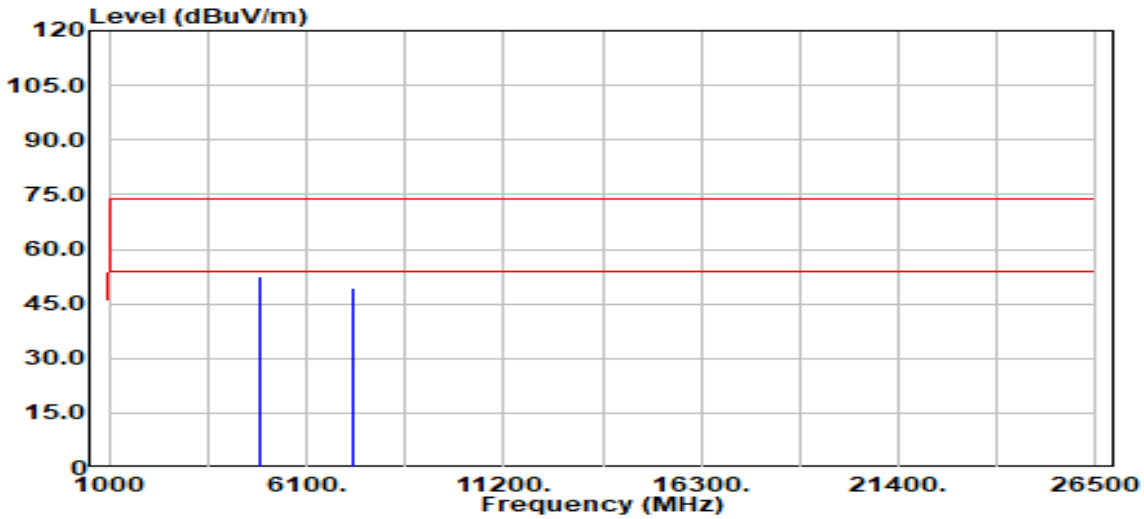
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	53.20	0.38	53.58	74.00	-20.42
4804.00	Average	47.06	0.38	47.44	54.00	-6.56
7206.00	Peak	41.27	5.33	46.59	74.00	-27.41
7206.00	Average	35.55	5.33	40.88	54.00	-13.12

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2440 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



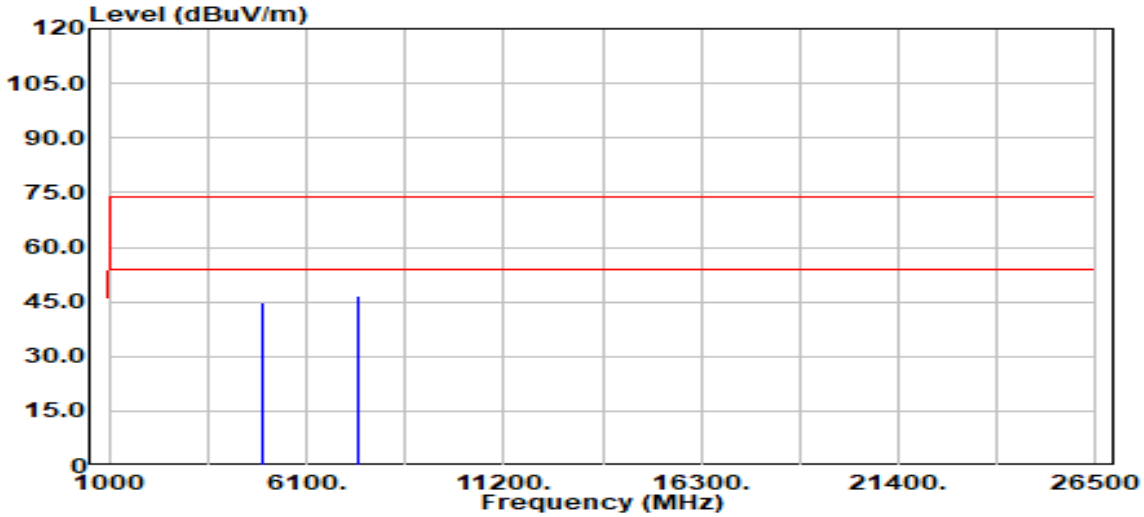
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4880.00	Peak	45.70	0.48	46.18	74.00	-27.82
4880.00	Average	38.48	0.48	38.96	54.00	-15.04
7320.00	Peak	41.12	5.48	46.60	74.00	-27.40
7320.00	Average	33.24	5.48	38.73	54.00	-15.28

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2440 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



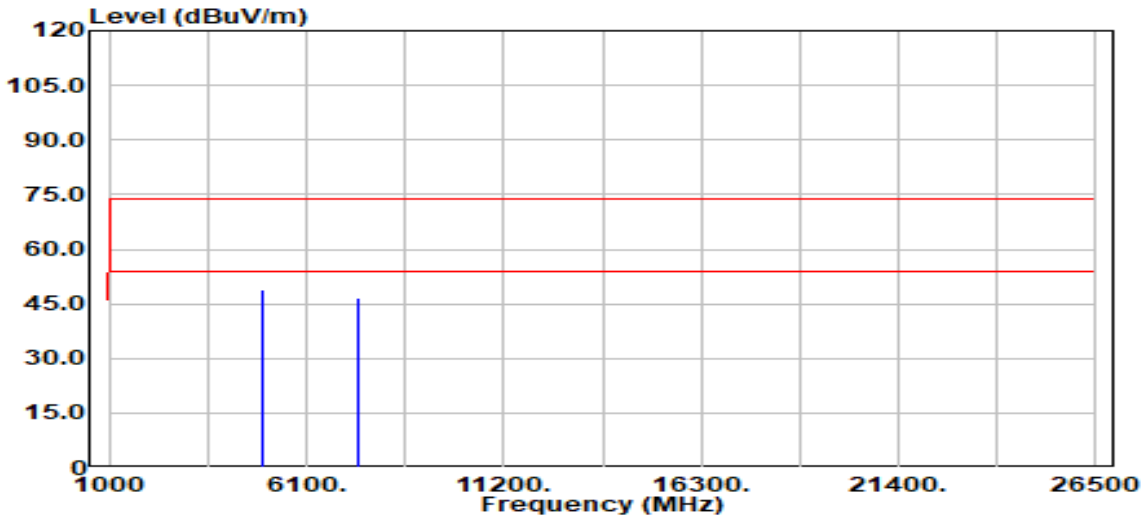
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4880.00	Peak	51.92	0.48	52.40	74.00	-21.60
4880.00	Average	45.10	0.48	45.59	54.00	-8.41
7320.00	Peak	44.00	5.48	49.48	74.00	-24.52
7320.00	Average	36.19	5.48	41.68	54.00	-12.32

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



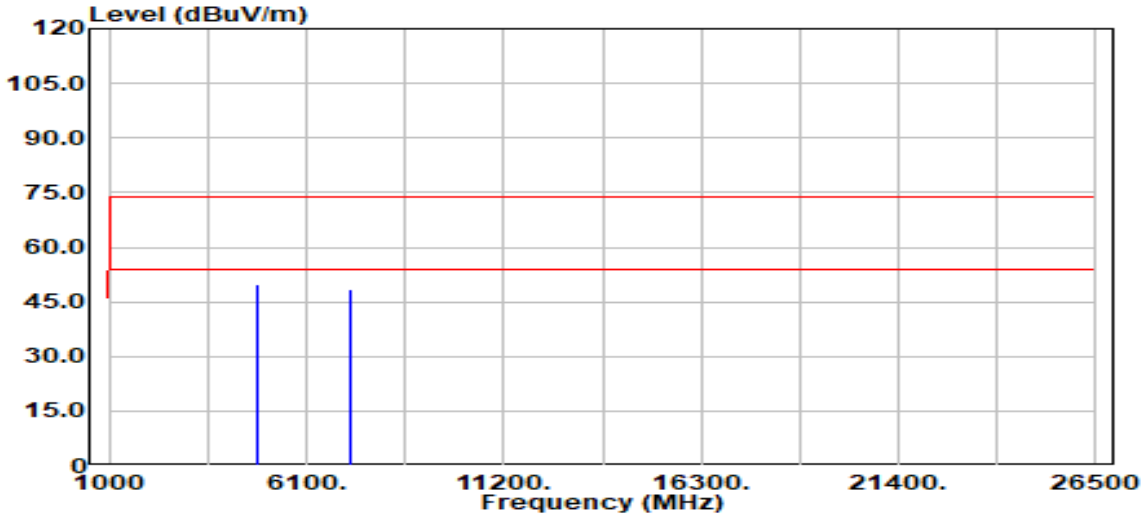
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	44.06	0.65	44.70	74.00	-29.30
4960.00	Average	36.88	0.65	37.53	54.00	-16.47
7440.00	Peak	40.88	5.56	46.44	74.00	-27.56
7440.00	Average	32.98	5.56	38.55	54.00	-15.46

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 1M	Temp./Humi.	:24.8/59
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



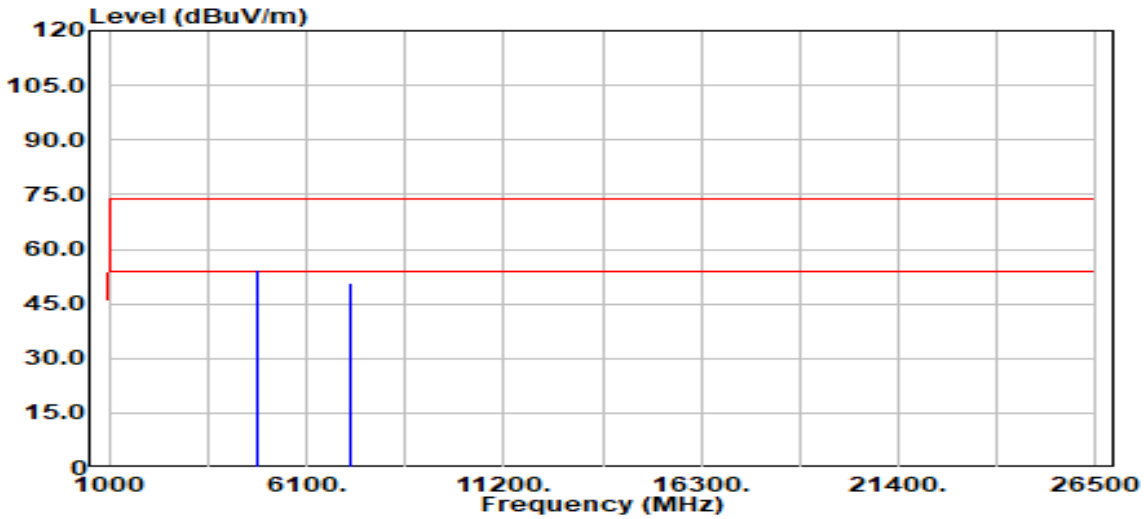
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	48.16	0.65	48.81	74.00	-25.19
4960.00	Average	40.77	0.65	41.41	54.00	-12.59
7440.00	Peak	41.27	5.56	46.83	74.00	-27.17
7440.00	Average	36.16	5.56	41.73	54.00	-12.27

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



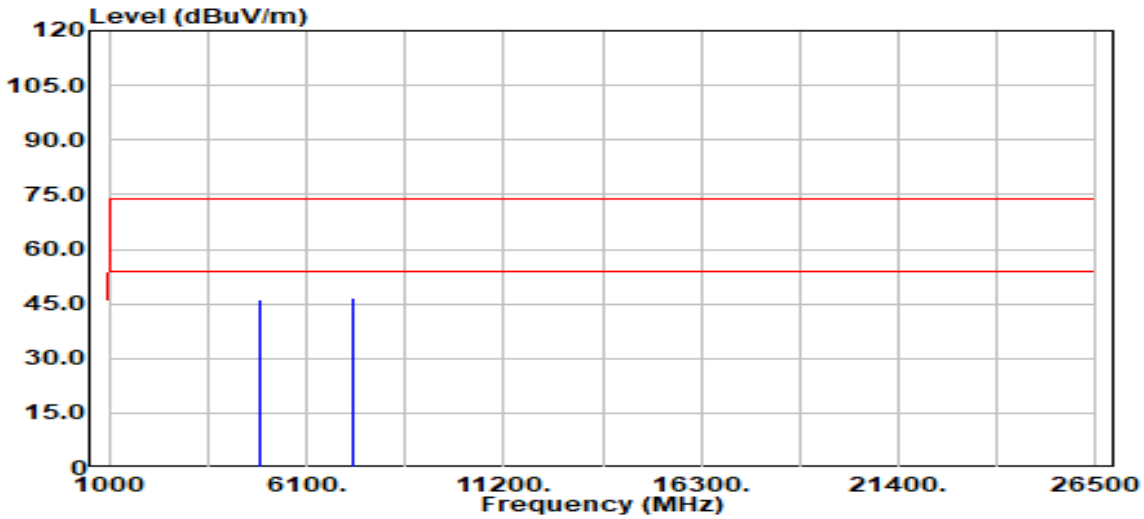
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	49.24	0.38	49.63	74.00	-24.37
4804.00	Average	42.99	0.38	43.37	54.00	-10.63
7206.00	Peak	43.31	5.33	48.64	74.00	-25.36
7206.00	Average	34.12	5.33	39.45	54.00	-14.55

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



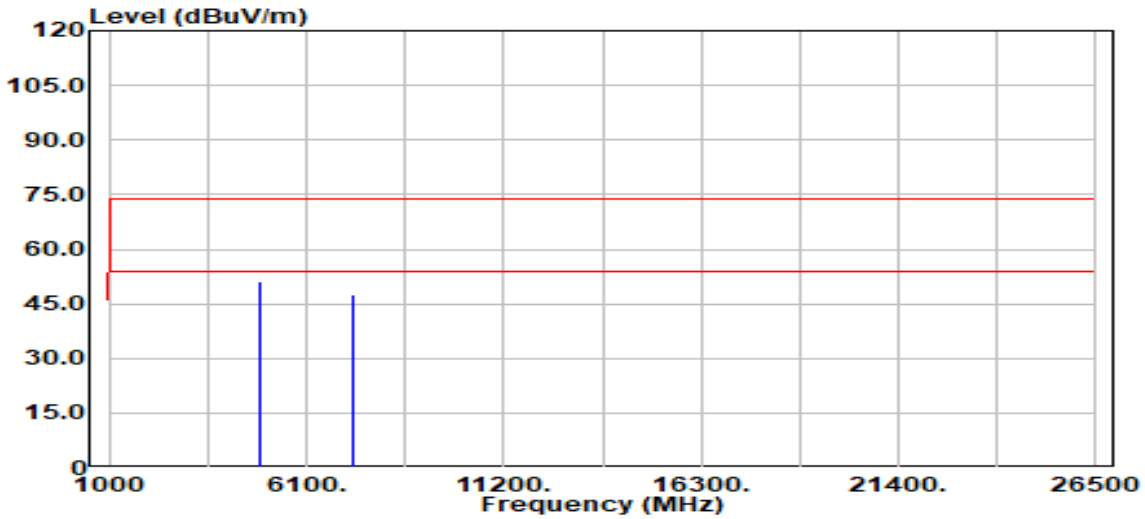
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	53.79	0.38	54.17	74.00	-19.83
4804.00	Average	47.81	0.38	48.19	54.00	-5.81
7206.00	Peak	45.38	5.33	50.70	74.00	-23.30
7206.00	Average	37.02	5.33	42.35	54.00	-11.65

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2440 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



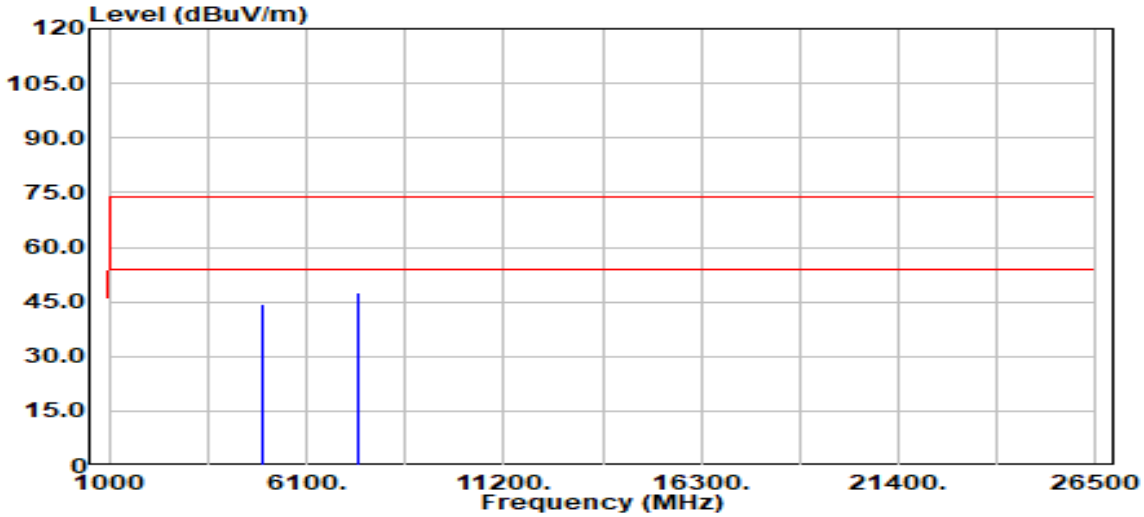
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4880.00	Peak	45.90	0.48	46.38	74.00	-27.62
4880.00	Average	37.34	0.48	37.83	54.00	-16.17
7320.00	Peak	41.06	5.48	46.55	74.00	-27.45
7320.00	Average	32.94	5.48	38.42	54.00	-15.58

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2440 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



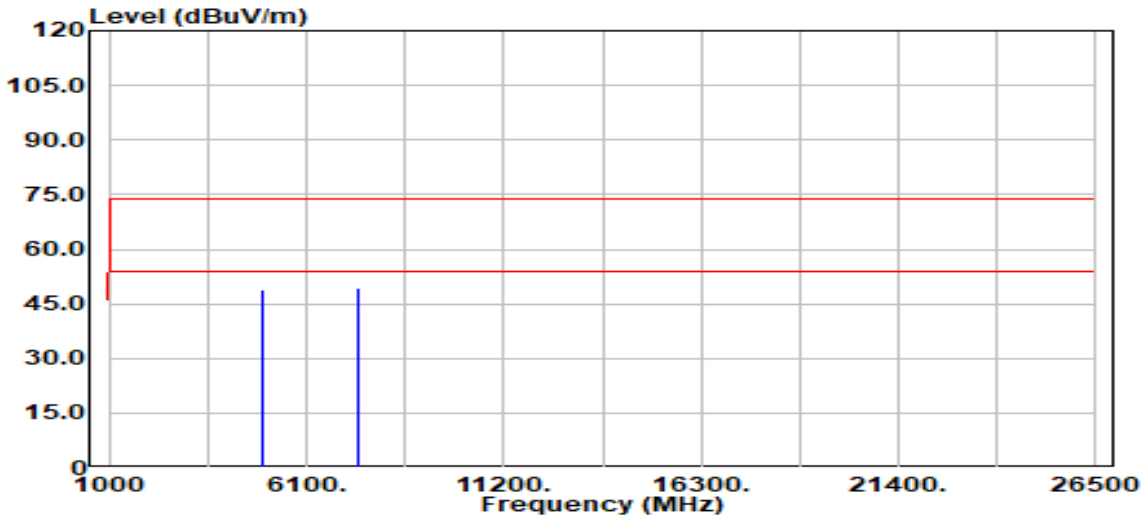
Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4880.00	Peak	50.84	0.48	51.32	74.00	-22.68
4880.00	Average	45.34	0.48	45.83	54.00	-8.17
7320.00	Peak	42.01	5.48	47.50	74.00	-26.50
7320.00	Average	37.06	5.48	42.54	54.00	-11.46

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2480 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	43.51	0.65	44.15	74.00	-29.85
4960.00	Average	34.49	0.65	35.14	54.00	-18.86
7440.00	Peak	42.13	5.56	47.69	74.00	-26.31
7440.00	Average	32.92	5.56	38.48	54.00	-15.52

Project No.	:TM-2309000413P	Test Date	:2023-11-09
Operation Band	:BLE 2M	Temp./Humi.	:24.8/59
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Czerny Lin
EUT Pol	:E2	Test Chamber	: 966D
Setting	:		



Freq.	Detector Mode	Spectrum Read Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	48.09	0.65	48.73	74.00	-25.27
4960.00	Average	41.39	0.65	42.03	54.00	-11.97
7440.00	Peak	43.65	5.56	49.22	74.00	-24.78
7440.00	Average	35.47	5.56	41.03	54.00	-12.97