

Project No.: TM-2406000276P
Report No.: TMWK2406002056KR

FCC ID: PANBM3086

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RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Bluetooth v5.4 APTX LE Audio TX Module
Brand Name	CC&C
Model No.	BM-3086, BM-3086E
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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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 08, 2024	Initial Issue	ALL	Allison Chen
01	August 22, 2024	See the following Note Rev.(01)	P.4-5, 10-11, 29-30	Allison Chen
02	September 16, 2024	See the following Note Rev.(02)	P.4-6	Allison Chen
03	September 24, 2024	See the following Note Rev.(03)	P.4	Allison Chen

Note:

Rev.(01)

- 1. Modify model discrepancy, antenna information, support equipment list information in section 1.1, 1.3 and 1.7.
- 2. Modify test description in section 1.9 and 4.4.2, test data for 2M 2442MHz in section 4.4.4.

Rev.(02)

- 1. Modify antenna type and serial number in section 1.1 and 1.3.

Rev.(03)

- 1. Modify serial number in section 1.1.

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	CC&C Technologies, Inc. 8F, No.150, Jian Yi Rd, Zhonghe District, New Taipei City, 235, Taiwan	
Manufacturer	CC&C Technologies, Inc. 8F, No.150, Jian Yi Rd, Zhonghe District, New Taipei City, 235, Taiwan	
Equipment	Bluetooth v5.4 APTX LE Audio TX Module	
Brand Name	CC&C	
Model No.	BM-3086, BM-3086E	
Model Discrepancy	For detailed description of the differences between series models, please see the table below:	
	Model name	Antenna Type Difference
	BM-3086	Chip antenna
	BM-3086E	embedded antenna
Received Date	June 24, 2024	
Date of Test	July 2 ~ 11, 2024	
EUT Power Rating	Power from host device: DC 5V	
H.W Version	0B	
S.W Version	01	
Serial Number	000272F14FD9 for Radiated [embedded antenna Configuration] 000272F14FDA for Conducted [chip antenna Configuration] 000272F14FD5 for Radiated [chip antenna Configuration]	

- 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.
 - 3. Disclaimer: The variant model numbers / trademarks are assessed as identical in hardware and software to each other, hence all variants are fully covered by the test results in this test report without further verification test.

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 Specification	Model name:	BM-3086	BM-3086E
	Antenna Type:	Chip Antenna	embedded antenna
	Antenna Gain:	0.5 dBi	3.2 dBi
	Antenna Brand:	ACX	LYNwave
	Antenna Model:	AT3216-B2R7HAAT/LF	ALA120-051026-00
	Connector:	N/A	IPEX

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.



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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.



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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	Ben Yang	-
Radiation	Ray Li	-
RF Conducted	David Li	-

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

Conducted_FCC/NCC/IC(All)					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Sensor	Anritsu	MA2411B	1911387	2023-07-25	2024-07-24
Power Meter	Anritsu	ML2496A	2136002	2023-11-16	2024-11-15
Signal Analyzer	KEYSIGHT	N9010B	MY55460167	2024-01-03	2025-01-02
Software	Radio Test Software Ver. 21				

966A Radiated					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Signal Analyzer	KEYSIGHT	N9010A	MY52220817	2024-03-15	2025-03-14
Thermo-Hygro Meter	WISEWIND	1206	D07	2023-12-08	2024-12-07
Active Loop Antenna	SCHWARZBECK	FMZB 1513-60	1513-60-028	2023-12-13	2024-12-12
Bi-Log Antenna	Sunol Sciences	JB1	A052609	2024-02-02	2025-02-01
Preamplifier	EMEC	EM330	060609	2024-02-21	2025-02-20
Cable	Huber+Suhner	104PEA	20995+21000+182330	2024-02-21	2025-02-20
Horn Antenna	ETC	MCTD 1209	DRH13M02003	2023-12-28	2024-12-27
Preamplifier	HP	8449B	3008A00965	2023-12-22	2024-12-21
Cable	EMCI	EMC101G	221213+221011+221012	2023-10-17	2024-10-16
Attenuator	Mini-Circuits	BW-S9W5	BWS9W5-09-966A-01	2024-02-07	2025-02-06
High Pass Filters	Titan Microwave	T04H30001800070S01	22011402-4	2024-06-12	2025-06-13
Horn Antenna	SCHWARZBECK	BBHA9170	1047	2023-12-13	2024-12-12
Pre-Amplifier	EMCI	EMC184045SE	980860	2023-12-12	2024-12-11
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.



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AC Mains Conduction					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI	100064	2024-06-14	2025-06-13
LISN	TESEQ	LN2-16N	22012	2024-02-29	2025-02-27
Cable	Woken	SFL402	185A	2024-07-08	2025-07-07
Software	e3 V6-110812				

- 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

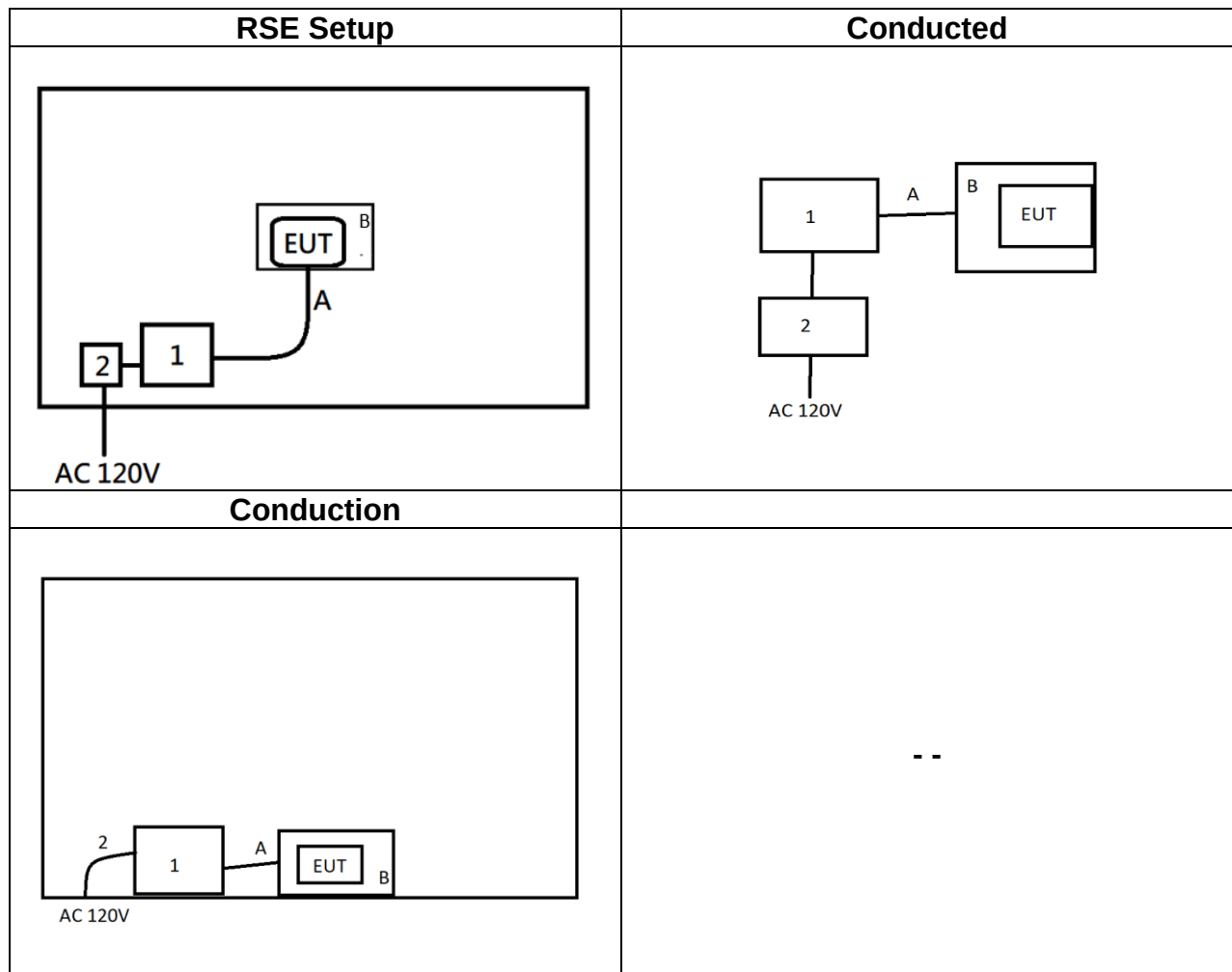
EUT Accessories Equipment						
No.	Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
	N/A					

Support Unit List (RSE)						
No.	Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
1	NB(D)	Lenovo	ThinkPad X260	N/A	N/A	N/A
2	Adapter	Lenovo	ADLX45DLC3A	N/A	N/A	N/A
A	Type-C to USB Cable	Dong Guan YCD Electronic Co., Ltd	37G1E6300-00	N/A	N/A	N/A
B	Test fixture	CC&C	BM-3086 TEST BOARD	N/A	N/A	N/A

Support Unit List (Conducted)						
No.	Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
1	NB(B)	Lenovo	T470	N/A	N/A	N/A
2	Adapter	Lenovo	ADLX45DLC3A	N/A	N/A	N/A
A	Type-C to USB Cable	Dong Guan YCD Electronic Co., Ltd	37G1E6300-00	N/A	N/A	N/A
B	Test fixture	CC&C	BM-3086 TEST BOARD	N/A	N/A	N/A

Support Unit List (Conduction)						
No.	Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
1	NB(D)	Lenovo	ThinkPad X260	N/A	N/A	N/A
2	Adapter	Lenovo	ADLX45DLC3A	N/A	N/A	N/A
A	Type-C to USB Cable	Dong Guan YCD Electronic Co., Ltd	37G1E6300-00	N/A	N/A	N/A
B	Test fixture	CC&C	BM-3086 TEST BOARD	N/A	N/A	N/A

1.8 TEST SETUP DIAGRAM



1.9 TEST PROGRAM

This EUT uses "BlueTest3" software to set the frequency, modulation, and power to allow the sample to continuously transmit.

1.10 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, KDB 558074 D01.

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	Pass
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 Emission	Pass
15.247(d) 15.205 15.209	4.6	Radiation Band Edge	Pass
15.247(d) 15.205 15.209	4.6	Radiation Spurious Emission	Pass



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3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

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

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	AC Power line conducted emission for line and neutral
Power supply Mode	Mode 1: EUT (BM-3086) power by Host System Mode 2: EUT (BM-3086E) power by Host System
Worst Mode	☒ Mode 1 ☒ Mode 2 ☐ Mode 3 ☐ Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT (BM-3086) power by Host System Mode 2: EUT (BM-3086E) power by Host System
Worst Mode	☒ Mode 1 ☒ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☒ Mode 1: Placed in fixed position at X-Plane (E2-Plane) ☒ Mode 2: 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 (BM-3086) power by Host System Mode 2: EUT (BM-3086E) power by Host System
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(Mode 1: X-Plane, Mode 2: Y-Plane) were recorded in this report
3. AC power line conducted emission was(were) performed the EUT transmit at the highest output power channel as worse case.



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3.3 EUT DUTY CYCLE

Temperature: 24.4°C Test date: July 2, 2024
Humidity: 54% RH Tested by: David Li

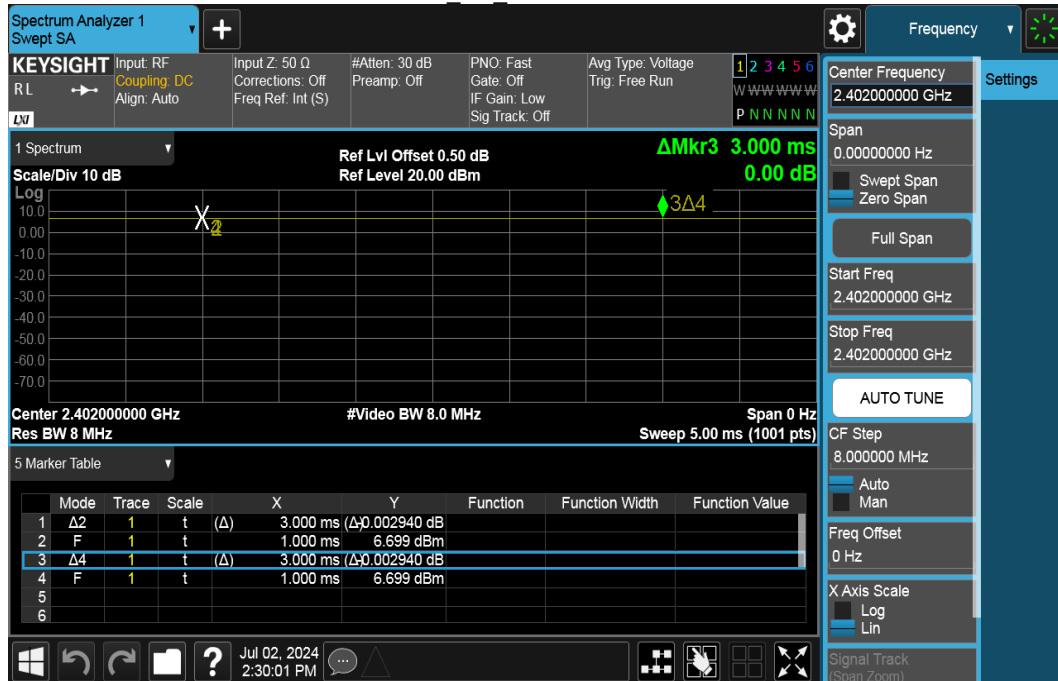
	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
BLE 1M	100.00	0.00	0.00	0.01
BLE 2M	100.00	0.00	0.00	0.01



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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(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

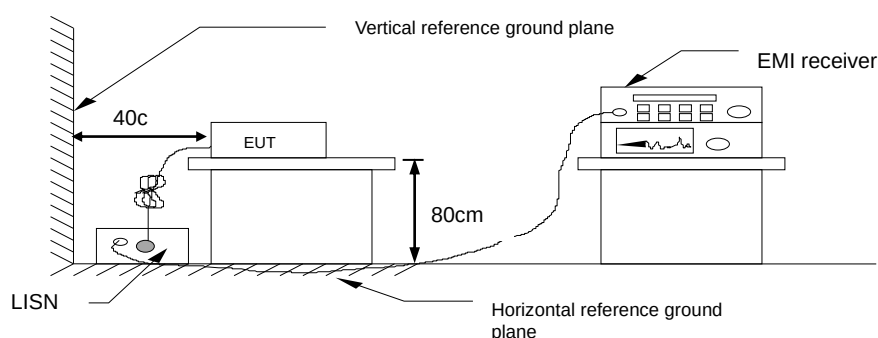
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

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

1. The EUT was placed 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

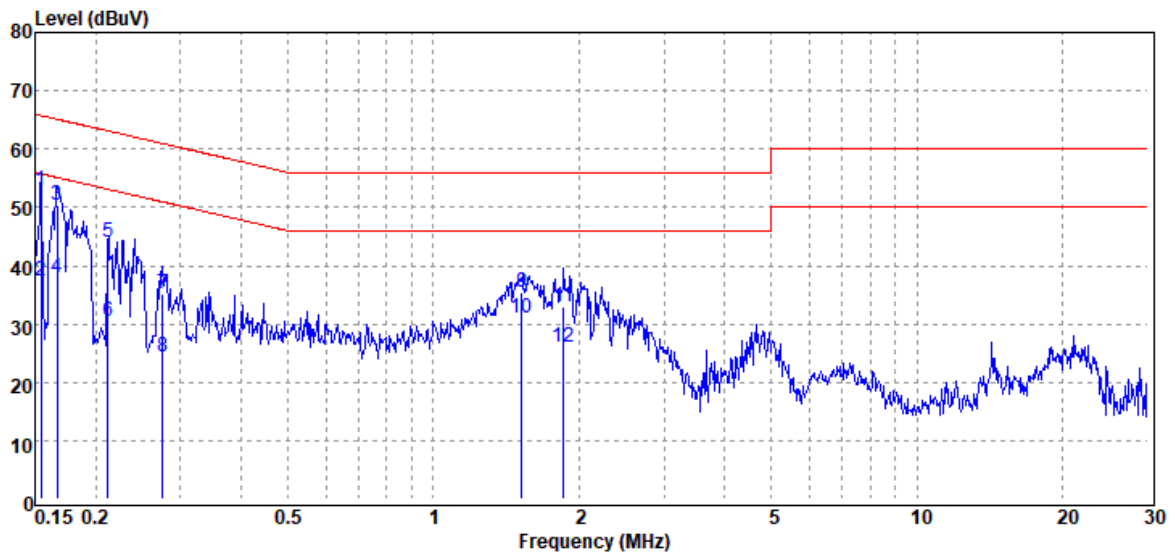
Pass

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Test Data

Project No	: TM-2406000276P	Test Date	: 2024-07-11
Operation Mode	: BLE	Temp./Humi.	: 23.4°C / 54%
Test Chamber	: Conduction	Engineer	: Ben Yang
Probe	: LINE	Test Voltage	: AC 120V/60Hz
Note	: Mode 1		



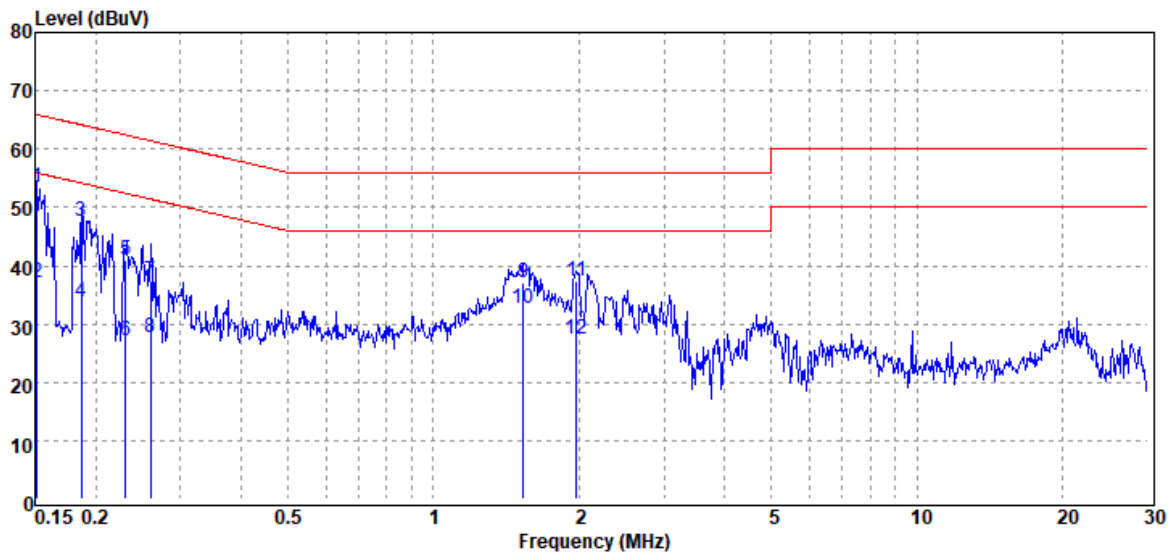
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.154	QP	52.80	0.14	52.94	65.75	-12.81
0.154	Average	37.32	0.14	37.46	55.75	-18.29
0.166	QP	50.12	0.22	50.34	65.14	-14.80
0.166	Average	37.74	0.22	37.96	55.14	-17.18
0.212	QP	43.70	0.39	44.09	63.11	-19.02
0.212	Average	30.04	0.39	30.43	53.11	-22.68
0.275	QP	34.69	0.39	35.08	60.96	-25.88
0.275	Average	23.85	0.39	24.24	50.96	-26.72
1.520	QP	35.26	0.18	35.44	56.00	-20.56
1.520	Average	30.91	0.18	31.09	46.00	-14.91
1.859	QP	32.67	0.18	32.85	56.00	-23.15
1.859	Average	25.81	0.18	25.99	46.00	-20.01

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Project No : TM-2406000276P
Operation Mode : BLE
Test Chamber : Conduction
Probe : NEUTRAL
Note : Mode 1

Test Date : 2024-07-11
Temp./Humi. : 23.4°C/ 54%
Engineer : Ben Yang
Test Voltage : AC 120V/60Hz



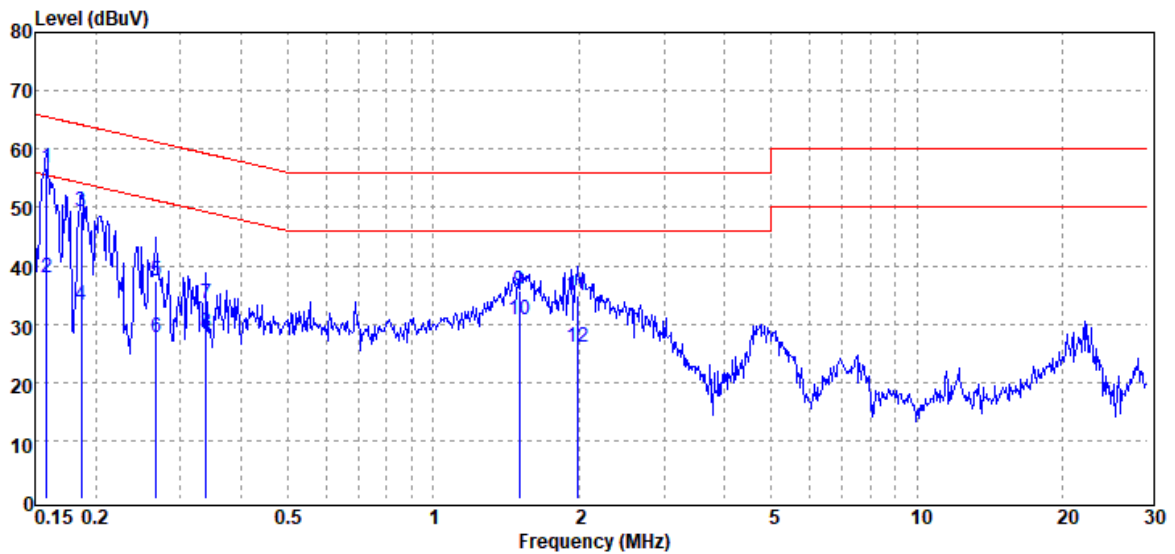
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.152	QP	53.44	0.11	53.55	65.92	-12.37
0.152	Average	36.92	0.11	37.03	55.92	-18.89
0.187	QP	47.42	0.30	47.72	64.16	-16.44
0.187	Average	33.34	0.30	33.64	54.16	-20.52
0.231	QP	40.53	0.36	40.89	62.42	-21.53
0.231	Average	26.90	0.36	27.26	52.42	-25.16
0.260	QP	37.13	0.36	37.49	61.43	-23.94
0.260	Average	27.30	0.36	27.66	51.43	-23.77
1.533	QP	37.02	0.15	37.17	56.00	-18.83
1.533	Average	32.59	0.15	32.74	46.00	-13.26
1.979	QP	37.27	0.16	37.43	56.00	-18.57
1.979	Average	27.37	0.16	27.53	46.00	-18.47

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Project No : TM-2406000276P
Operation Mode : BLE
Test Chamber : Conduction
Probe : LINE
Note : Mode 2

Test Date : 2024-07-11
Temp./Humi. : 23.4°C / 54%
Engineer : Ben Yang
Test Voltage : AC 120V/60Hz



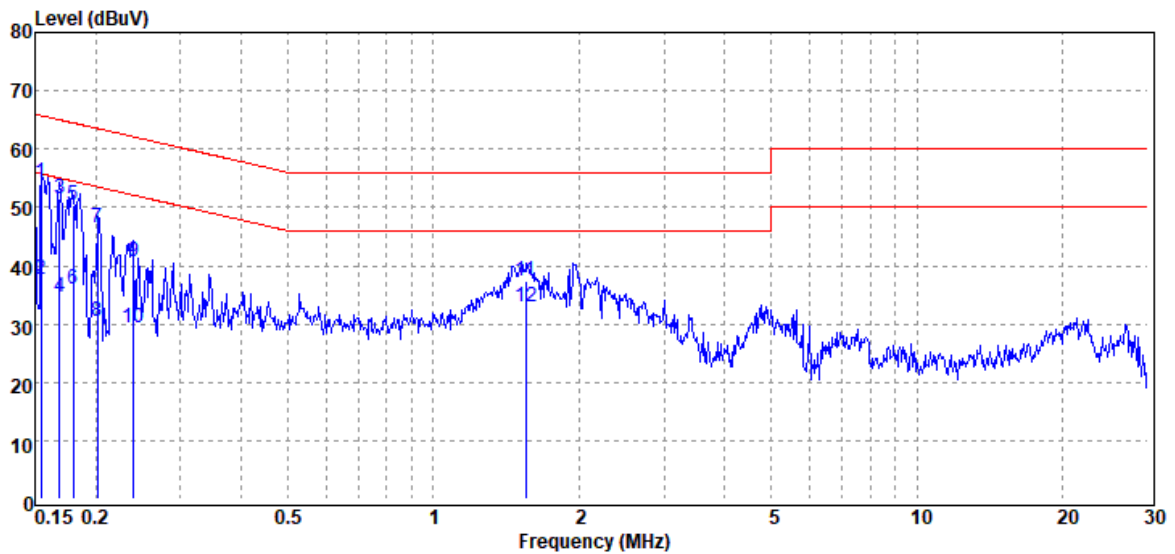
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.158	QP	56.45	0.18	56.63	65.55	-8.92
0.158	Average	37.69	0.18	37.87	55.55	-17.68
0.187	QP	49.00	0.33	49.33	64.15	-14.82
0.187	Average	32.93	0.33	33.26	54.15	-20.89
0.267	QP	37.00	0.39	37.39	61.21	-23.82
0.267	Average	27.19	0.39	27.58	51.21	-23.63
0.338	QP	33.04	0.38	33.42	59.24	-25.82
0.338	Average	28.03	0.38	28.41	49.24	-20.83
1.508	QP	35.58	0.18	35.76	56.00	-20.24
1.508	Average	30.54	0.18	30.72	46.00	-15.28
1.986	QP	34.69	0.18	34.87	56.00	-21.13
1.986	Average	25.91	0.18	26.09	46.00	-19.91

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Project No : TM-2406000276P
Operation Mode : BLE
Test Chamber : Conduction
Probe : NEUTRAL
Note : Mode 2

Test Date : 2024-07-11
Temp./Humi. : 23.4°C / 54%
Engineer : Ben Yang
Test Voltage : AC 120V/60Hz



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.154	QP	54.25	0.12	54.37	65.76	-11.39
0.154	Average	37.59	0.12	37.71	55.76	-18.05
0.169	QP	51.21	0.20	51.41	65.02	-13.61
0.169	Average	34.31	0.20	34.51	55.02	-20.51
0.180	QP	50.01	0.27	50.28	64.50	-14.22
0.180	Average	35.77	0.27	36.04	54.50	-18.46
0.202	QP	46.17	0.36	46.53	63.53	-17.00
0.202	Average	30.01	0.36	30.37	53.53	-23.16
0.240	QP	40.20	0.36	40.56	62.09	-21.53
0.240	Average	29.06	0.36	29.42	52.09	-22.67
1.554	QP	37.28	0.15	37.43	56.00	-18.57
1.554	Average	32.82	0.15	32.97	46.00	-13.03

Note: 1. Actual FS= Spectrum Read Level + Factor

Note: 2. Margin= Actual FS - Limit

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.
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

Refer to section 1.8.



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4.2.4 Test Result

Temperature: 24.4℃ Test date: July 2, 2024
Humidity: 54% RH Tested by: David Li

6dB BANDWIDTH

BLE 1M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
2402	0.7275	≥ 0.5	PASS
2442	0.7236	≥ 0.5	PASS
2480	0.7317	≥ 0.5	PASS

BLE 2M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
2402	1.45	≥ 0.5	PASS
2442	1.455	≥ 0.5	PASS
2480	1.437	≥ 0.5	PASS



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BANDWIDTH 99%

BLE 1M mode

Frequency (MHz)	99%Bandwidth (MHz)
2402	1.055
2442	1.0597
2480	1.0555

BLE 2M mode

Frequency (MHz)	99%Bandwidth (MHz)
2402	2.1064
2442	2.1051
2480	2.0992

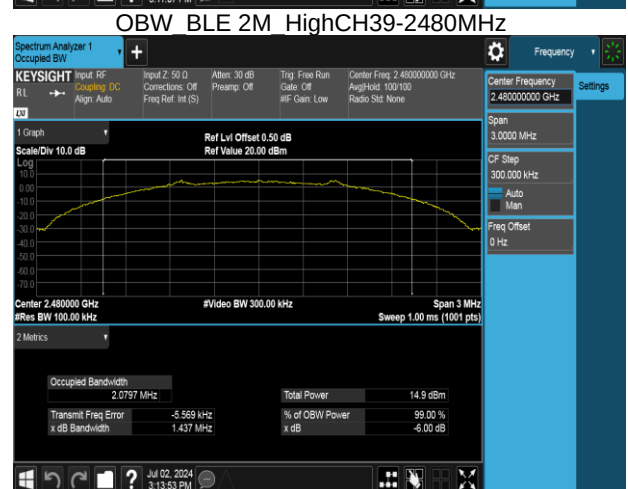
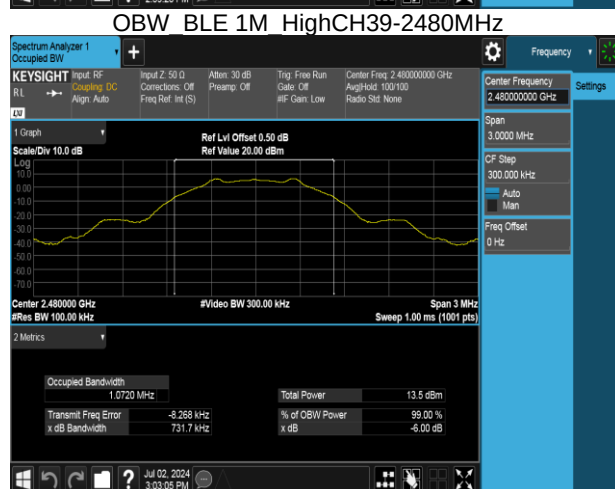
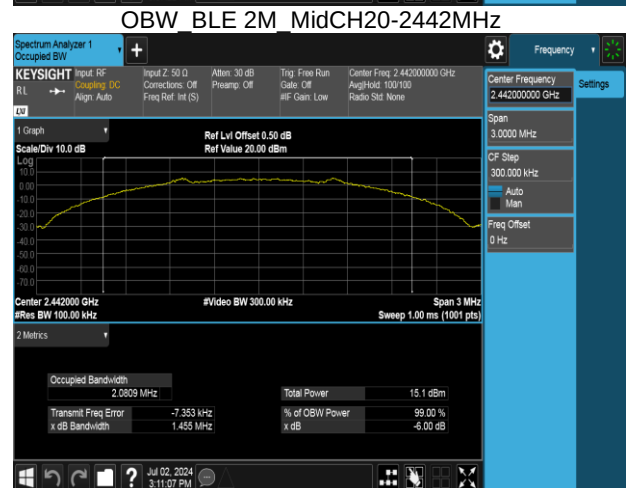
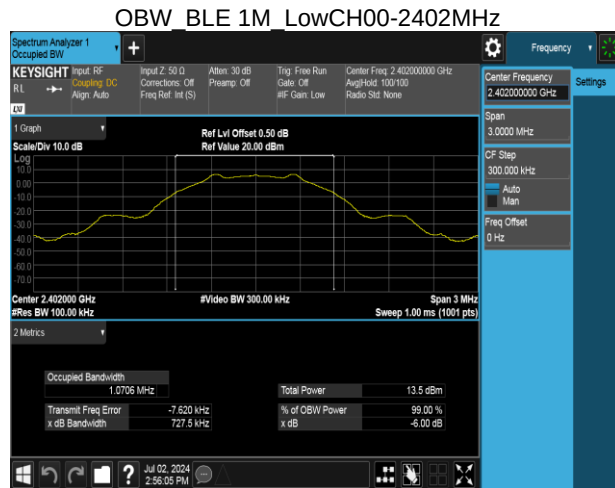


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Test Data

6dB BANDWIDTH





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Test Data

BANDWIDTH 99%

IC OBW BLE 1M LowCH00-2402MHz



IC OBW BLE 2M LowCH00-2402MHz



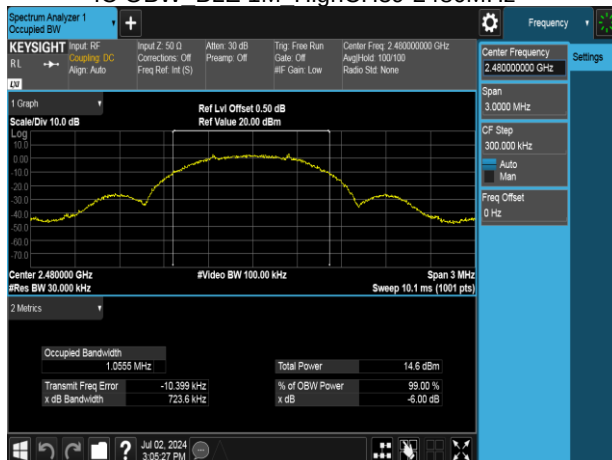
IC OBW BLE 1M MidCH20-2442MHz



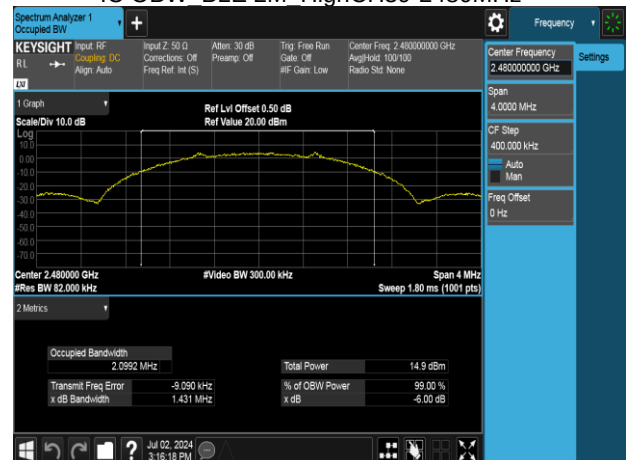
IC OBW BLE 2M MidCH20-2442MHz



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

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

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

Refer to section 1.8

4.3.4 Test Result

Temperature: 24.4°C Test date: July 2, 2024
Humidity: 54% RH Tested by: David Li

Peak & Average output power :

BLE 1M mode:

CH	Frequency (MHz)	Power Setting	Peak Output Power (dBm)	Required Limit (dBm)
Low	2402	11	6.72	30
Mid	2442	11	6.75	30
High	2480	11	6.97	30
CH	Frequency (MHz)	Power Setting	Avg. Output Power (dBm)	Required Limit (dBm)
Low	2402	11	6.58	30
Mid	2442	11	6.65	30
High	2480	11	6.87	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	11	6.78	30
Mid	2442	11	6.80	30
High	2480	11	6.96	30
CH	Frequency (MHz)	Power set	Avg. Output Power (dBm)	Required Limit (dBm)
Low	2402	11	6.67	30
Mid	2442	11	6.70	30
High	2480	11	6.85	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 :
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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 = 10kHz, 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

Refer to section 1.8.

4.4.4 Test Result

Temperature: 24.4°C Test date: July 2, 2024
Humidity: 54% RH Tested by: David Li

BLE 1M mode

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
2402	-5.51	8	PASS
2442	-5.48	8	PASS
2480	-4.94	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	-8.49	8	PASS
2442	-8.38	8	PASS
2480	-7.93	8	PASS

***Note:**

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

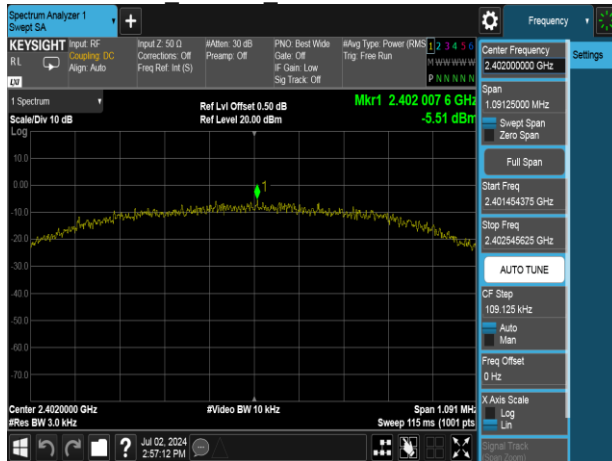


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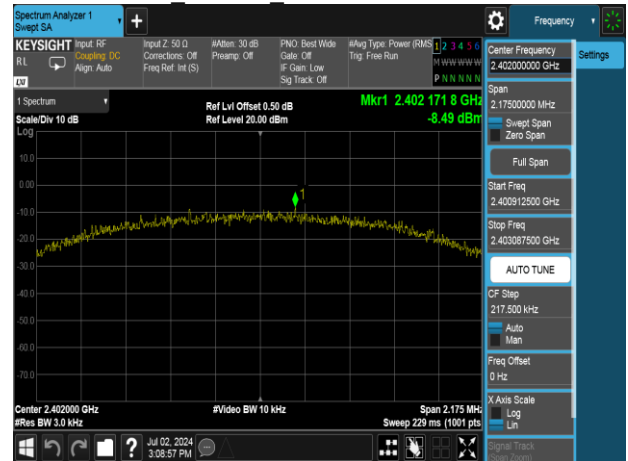
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Test Data Power Density

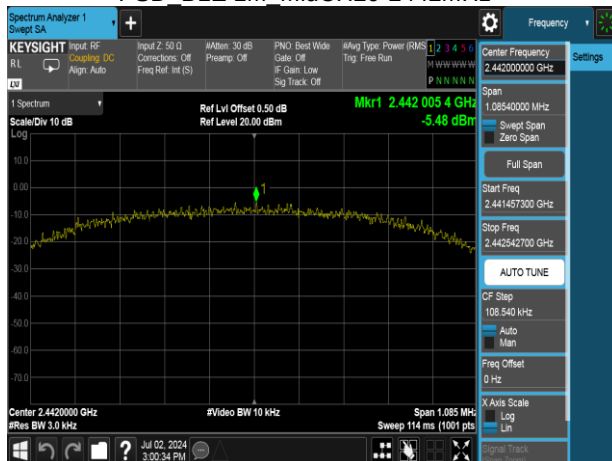
PSD BLE 1M LowCH00-2402MHz



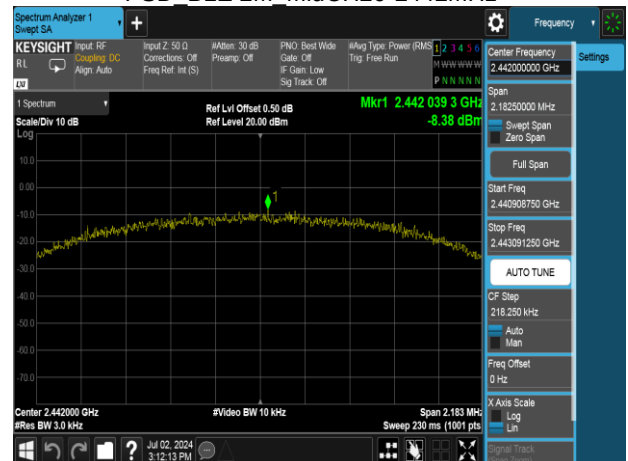
PSD BLE 2M LowCH00-2402MHz



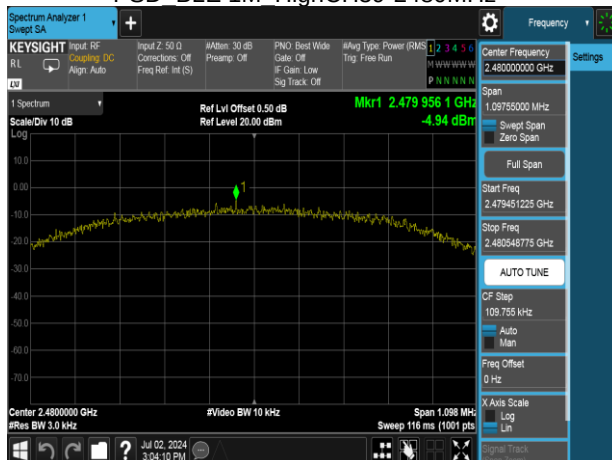
PSD BLE 1M MidCH20-2442MHz



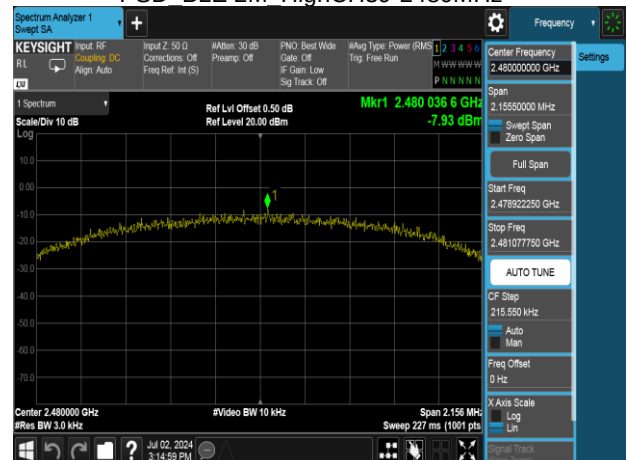
PSD BLE 2M MidCH20-2442MHz



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

Refer to section 1.8.

4.5.4 Test Result

Temperature:	24.4°C	Test date:	July 2, 2024
Humidity:	54% RH	Tested by:	David Li



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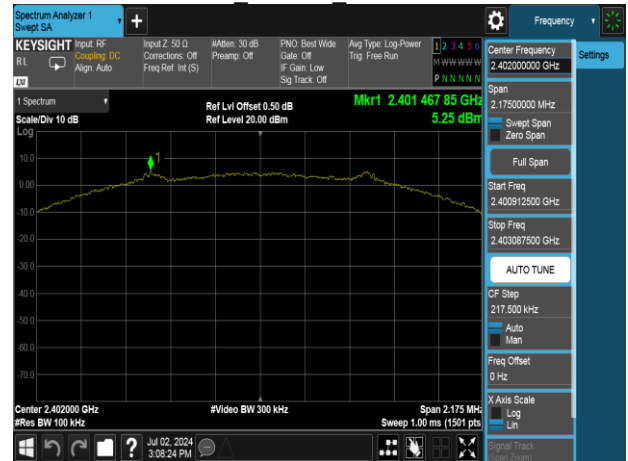
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Test Data Reference Level

Reference Level BLE 1M LowCH00-2402MHz



Reference Level BLE 2M LowCH00-2402MHz



Reference Level BLE 1M MidCH20-2442MHz



Reference Level BLE 2M MidCH20-2442MHz



Reference Level BLE 1M HighCH39-2480MHz



Reference Level BLE 2M HighCH39-2480MHz





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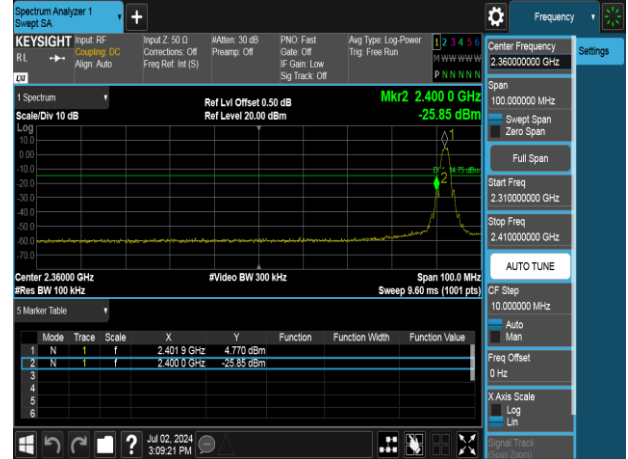
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BandEdge

Band Edge BLE 1M LowCH00-2402MHz



Band Edge BLE 2M LowCH00-2402MHz



Band Edge BLE 1M HighCH39-2480MHz



Band Edge BLE 2M HighCH39-2480MHz



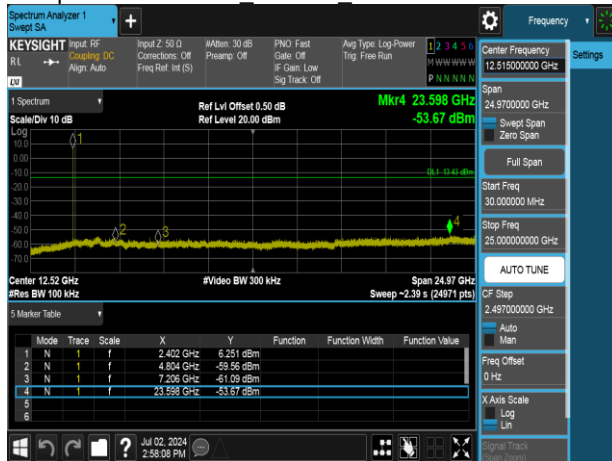


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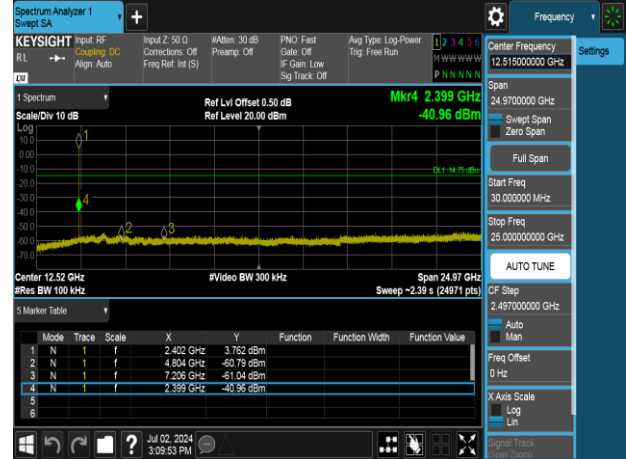
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Spurious Emission

Spurious Emission BLE 1M LowCH00-2402MHz



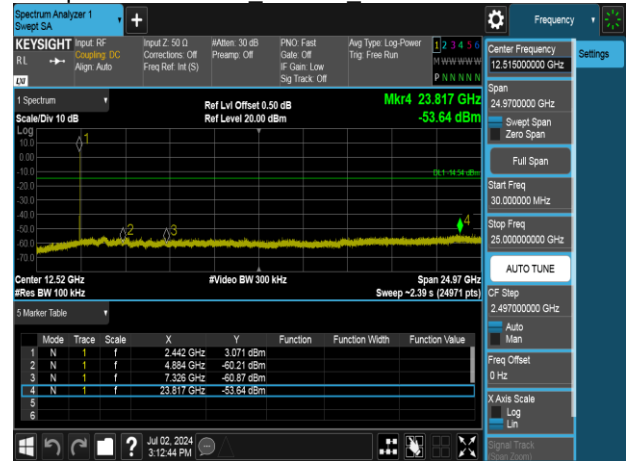
Spurious Emission BLE 2M LowCH00-2402MHz



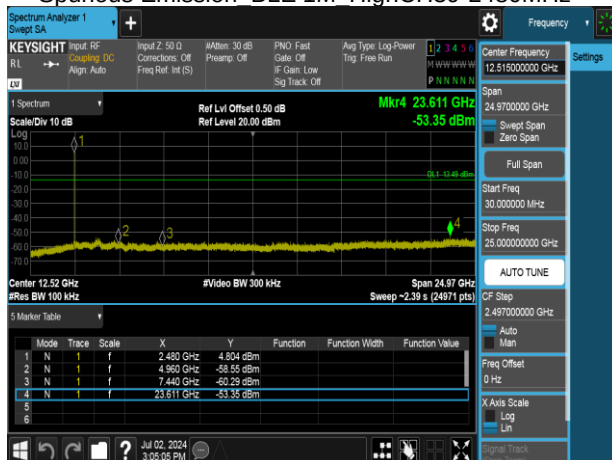
Spurious Emission BLE 1M MidCH20-2442MHz



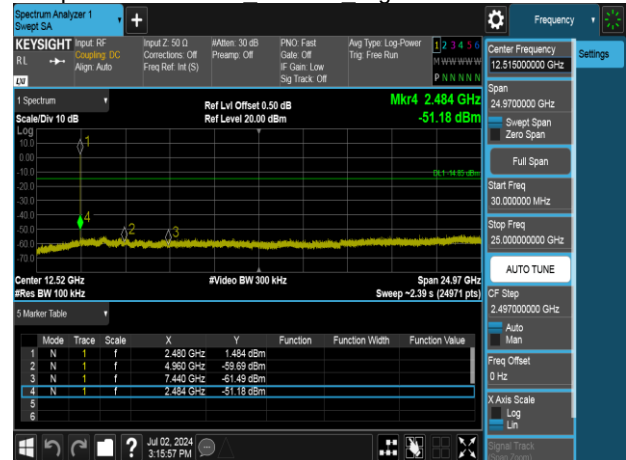
Spurious Emission BLE 2M MidCH20-2442MHz



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 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

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

Radiated emission below 30MHz is measured in a 9m*6m*6m semi-ane choic chamber, the measurements correspond to those obtained at an open-field test site. There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

5. The SA setting following :

(1) Below 30MHz :

(1.1) 9KHz-490KHz : RBW=200Hz / VBW=1kHz / Sweep=AUTO

(1.2) 490KHz-30MHz : RBW=10kHz / VBW=30kHz / Sweep=AUTO

(2) 30MHz to 1GHz : RBW = 100kHz, VBW $\geq 3 \times$ RBW, Sweep = Auto,

Detector = Peak, Trace = Max hold.

(3) Above 1GHz :

(3.1) For Peak measurement : RBW = 1MHz, VBW $\geq 3 \times$ RBW, Sweep = Auto,

Detector = Peak, Trace = Max hold.

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

If Duty Cycle $\geq 98\%$, VBW=10Hz.

If Duty Cycle $< 98\%$, VBW=1/T.

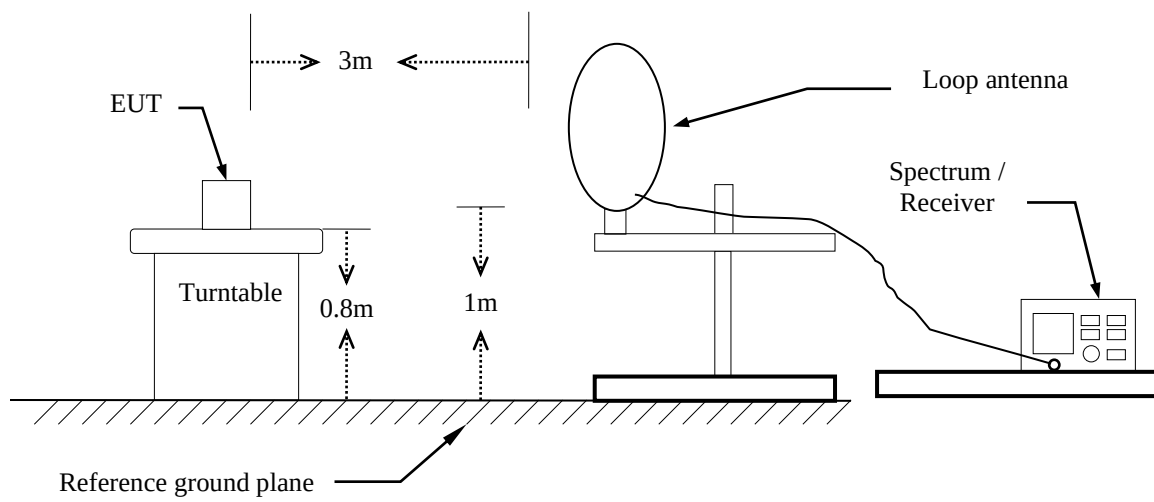
6. Data result

Actual FS=Spectrum Reading Level+Factor

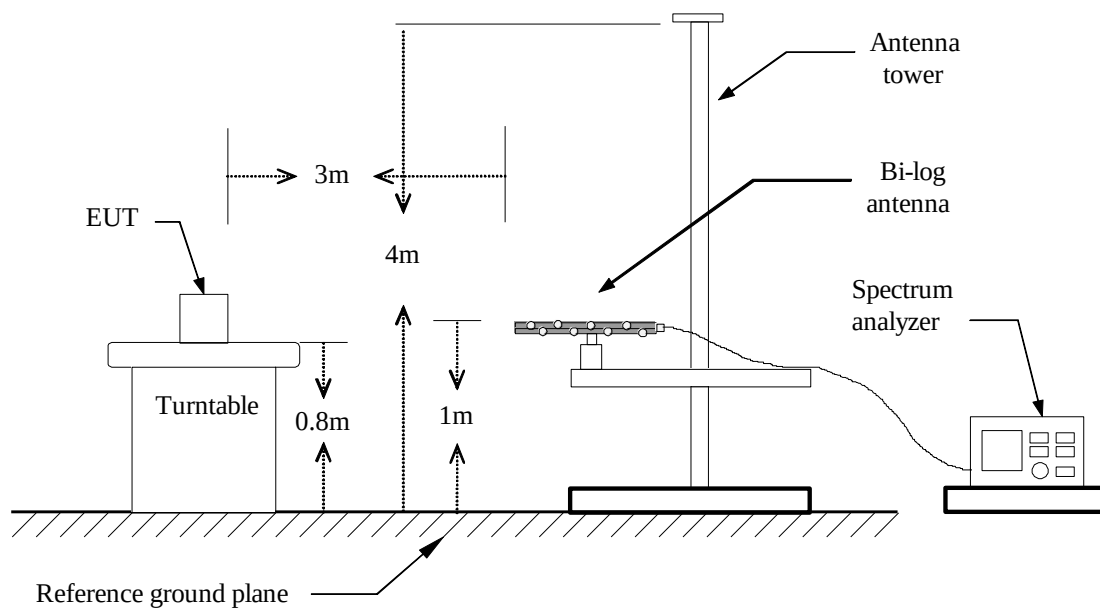
Margin=Actual FS- Limit

4.6.3 Test Setup

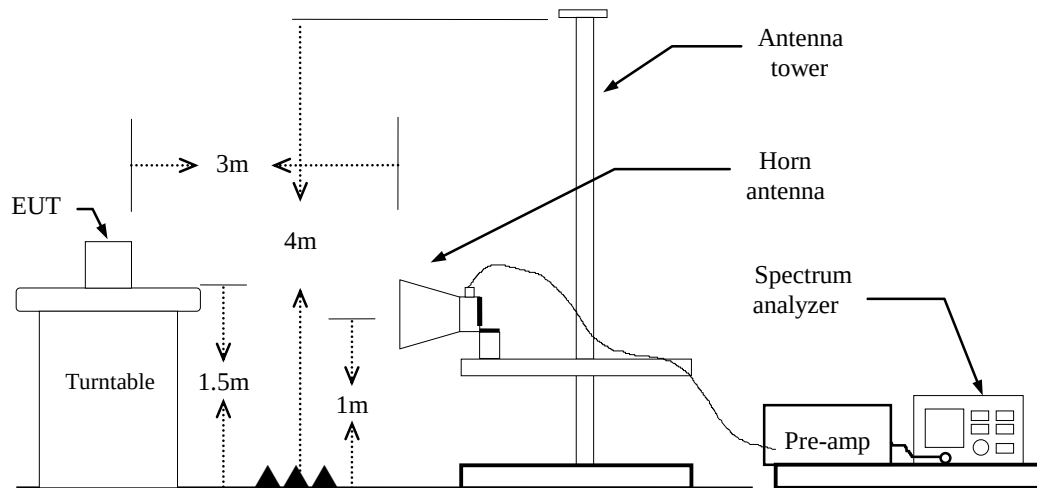
9kHz ~ 30MHz



30MHz ~ 1GHz



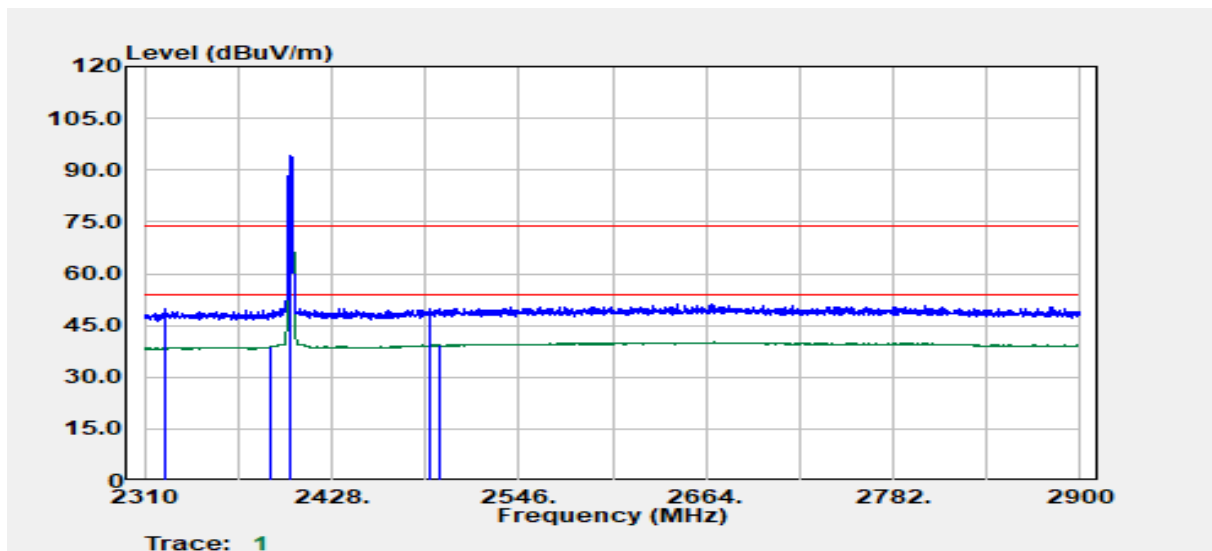
Above 1 GHz



4.6.4 Test Result

Band Edge Test Data: Mode 1

Project No	:TM-2406000276P	Test Date	:2024-07-09
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

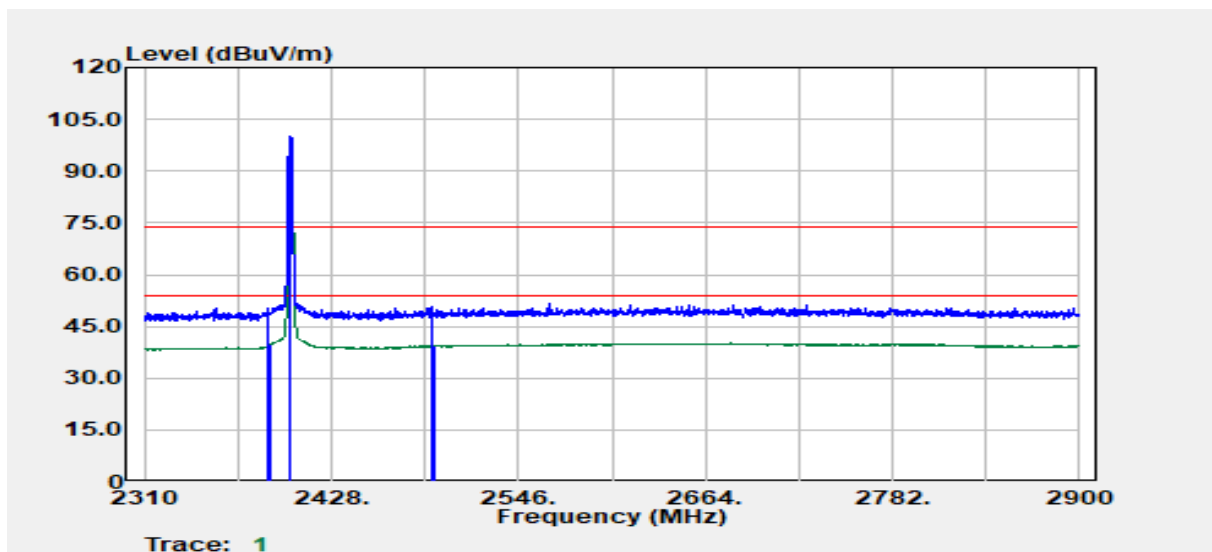


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2322.26	Peak	43.51	6.16	49.67	74.00	-24.33
2390.00	Average	32.59	6.28	38.87	54.00	-15.13
2402.00	Peak	87.89	6.29	94.19	--	--
2402.00	Average	87.51	6.29	93.80	--	--
2490.58	Peak	43.14	6.81	49.95	74.00	-24.05
2495.58	Average	32.48	6.82	39.30	54.00	-14.70

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Project No	:TM-2406000276P	Test Date	:2024-07-09
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

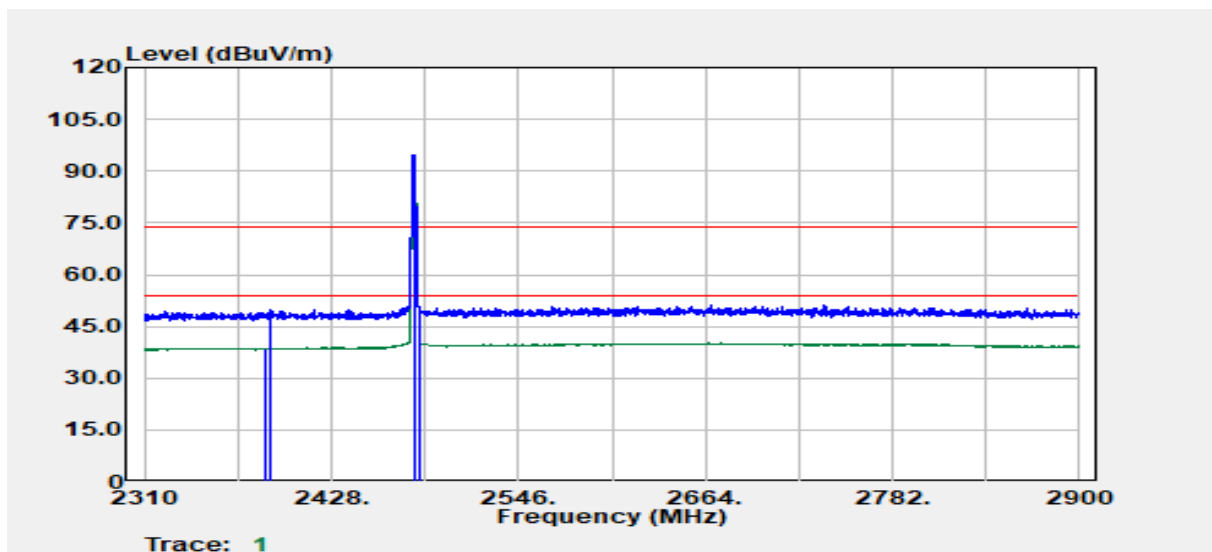


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2388.03	Peak	44.09	6.24	50.33	74.00	-23.67
2390.00	Average	33.51	6.28	39.79	54.00	-14.21
2402.00	Peak	93.75	6.29	100.04	--	--
2402.00	Average	93.41	6.29	99.70	--	--
2491.08	Peak	43.83	6.81	50.64	74.00	-23.36
2493.08	Average	32.62	6.81	39.43	54.00	-14.57

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Project No	:TM-2406000276P	Test Date	:2024-07-09
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

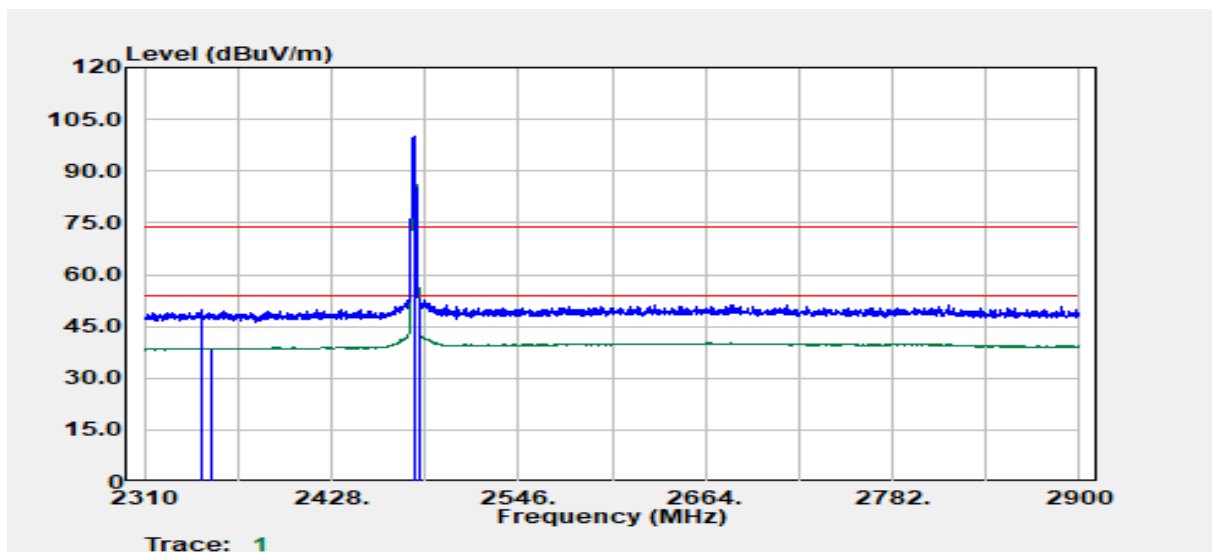


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2386.78	Average	32.49	6.21	38.70	54.00	-15.30
2390.00	Peak	43.40	6.28	49.68	74.00	-24.32
2480.00	Peak	87.81	6.67	94.48	--	--
2480.00	Average	87.48	6.67	94.15	--	--
2483.57	Average	35.42	6.72	42.14	54.00	-11.86
2484.32	Peak	43.64	6.73	50.36	74.00	-23.64

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Project No	:TM-2406000276P	Test Date	:2024-07-09
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

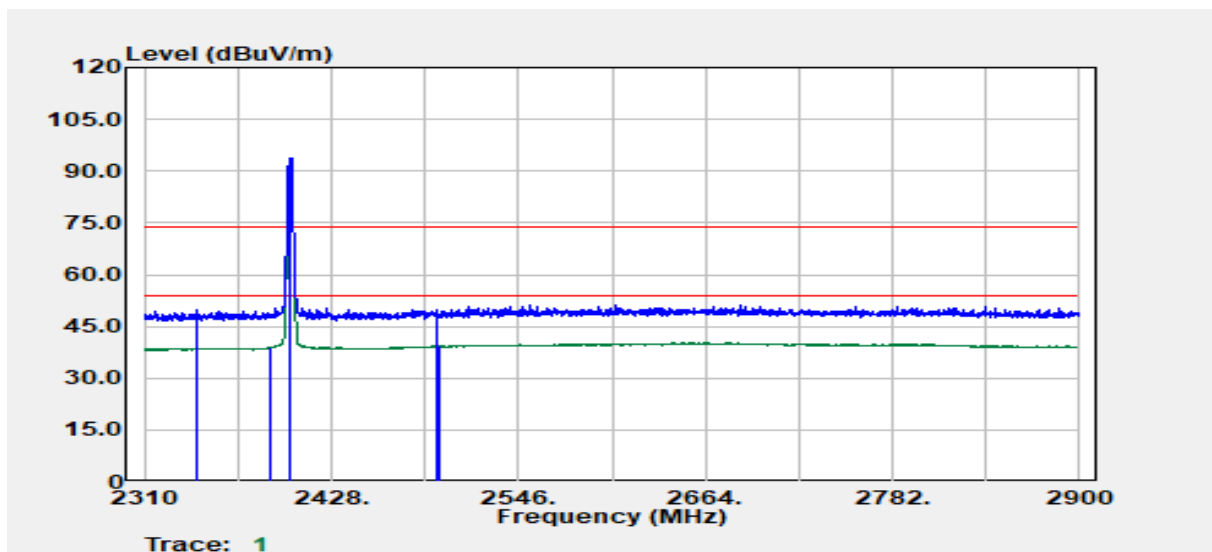


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2346.27	Peak	43.42	6.19	49.61	74.00	-24.39
2353.02	Average	32.45	6.24	38.69	54.00	-15.31
2480.00	Peak	93.20	6.67	99.86	--	--
2480.00	Average	92.82	6.67	99.49	--	--
2483.57	Peak	46.20	6.72	52.91	74.00	-21.09
2483.57	Average	39.20	6.72	45.91	54.00	-8.09

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Project No	:TM-2406000276P	Test Date	:2024-07-09
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

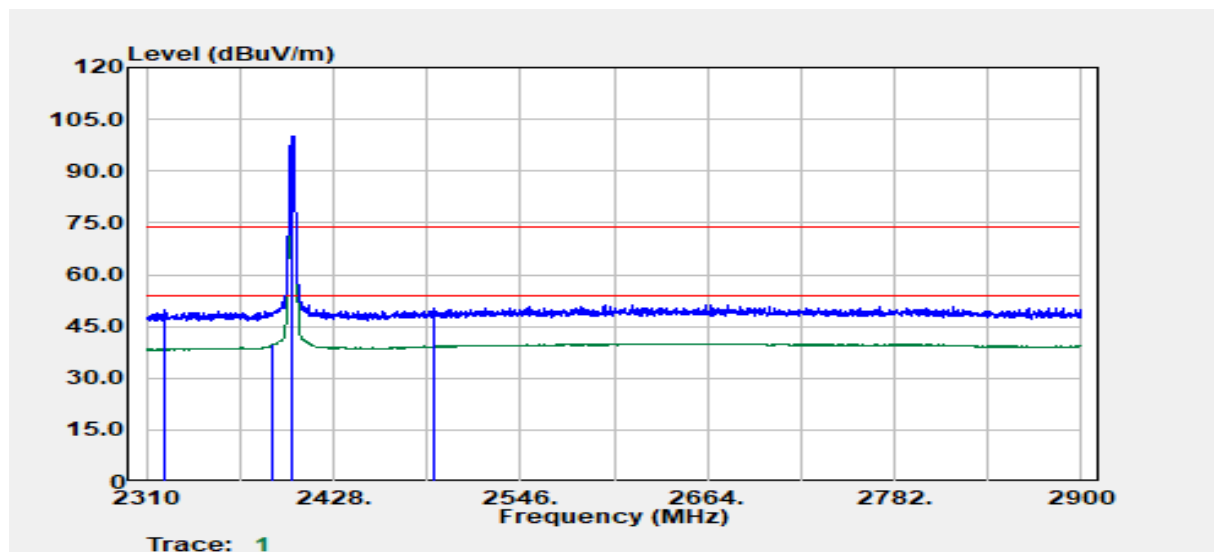


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2343.76	Peak	43.71	6.16	49.87	74.00	-24.13
2389.53	Average	32.68	6.27	38.95	54.00	-15.05
2402.00	Peak	87.63	6.29	93.92	--	--
2402.00	Average	86.25	6.29	92.55	--	--
2494.83	Peak	43.00	6.82	49.82	74.00	-24.18
2495.58	Average	32.43	6.82	39.26	54.00	-14.74

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Project No	:TM-2406000276P	Test Date	:2024-07-09
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

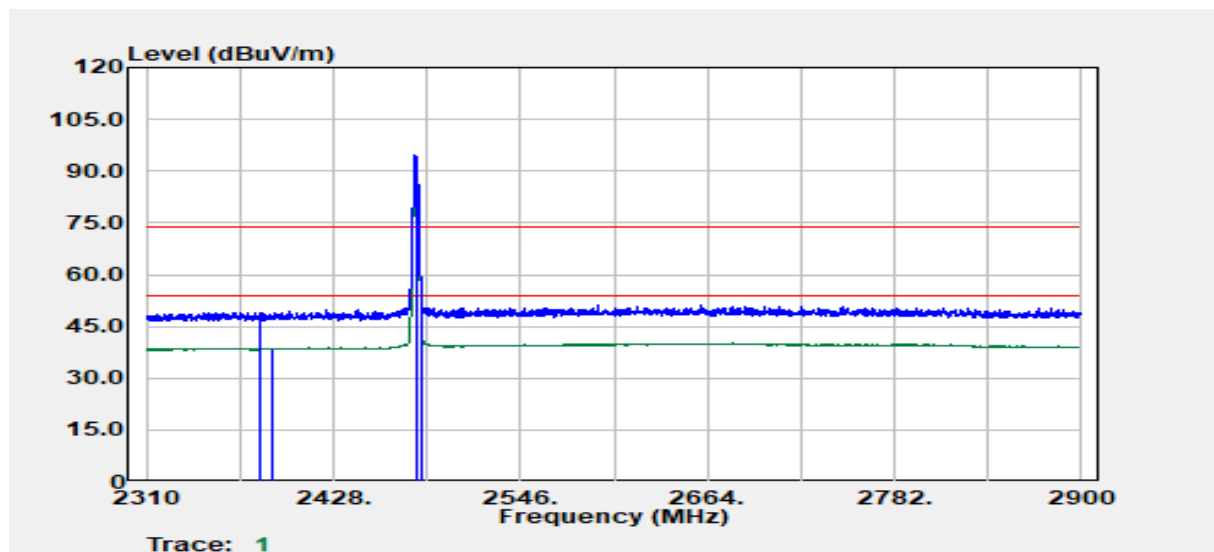


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2320.76	Peak	43.57	6.16	49.72	74.00	-24.28
2390.00	Average	33.43	6.28	39.71	54.00	-14.29
2402.00	Peak	93.73	6.29	100.02	--	--
2402.00	Average	92.37	6.29	98.66	--	--
2491.08	Average	32.61	6.81	39.42	54.00	-14.58
2491.58	Peak	43.25	6.81	50.05	74.00	-23.95

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Project No	:TM-2406000276P	Test Date	:2024-07-09
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

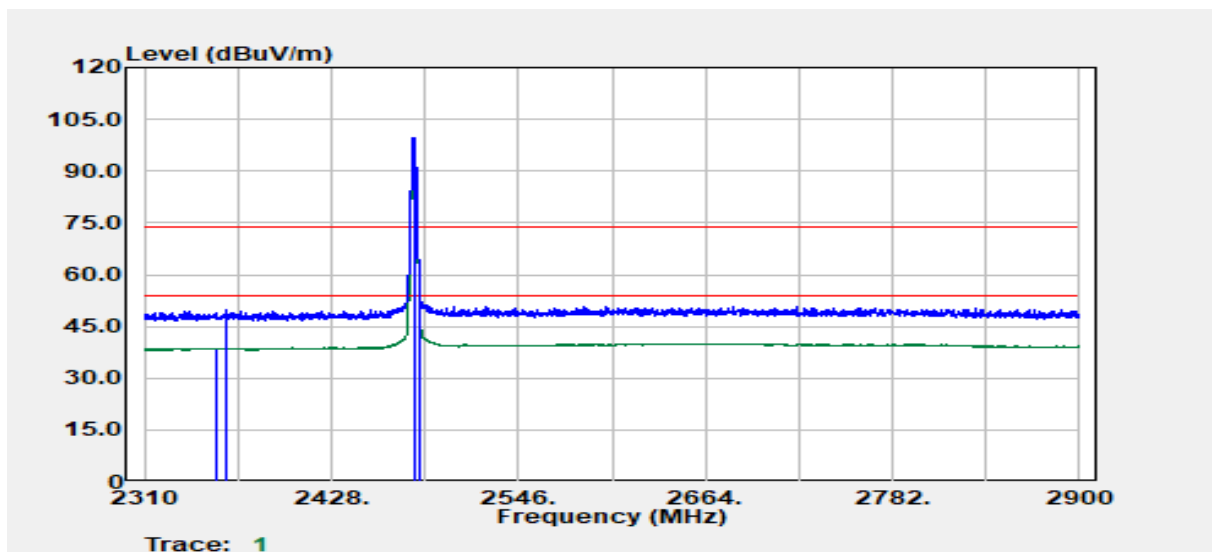


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2381.78	Peak	43.00	6.11	49.11	74.00	-24.89
2389.78	Average	32.40	6.28	38.68	54.00	-15.32
2480.00	Peak	87.79	6.67	94.46	--	--
2480.00	Average	86.45	6.67	93.11	--	--
2483.57	Peak	46.80	6.72	53.51	74.00	-20.49
2483.57	Average	41.26	6.72	47.97	54.00	-6.03

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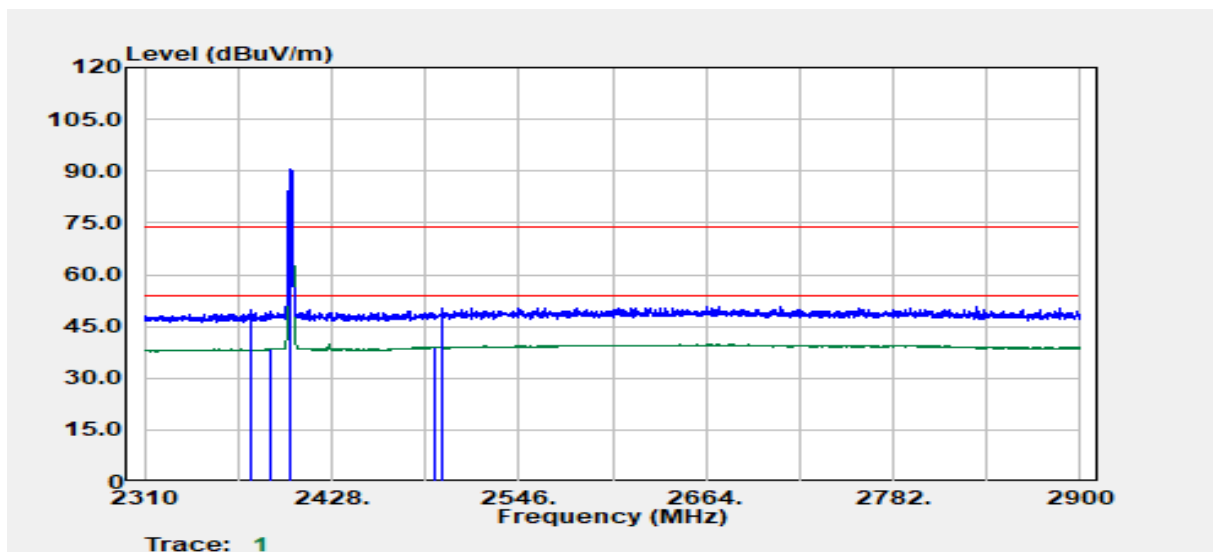
Project No	:TM-2406000276P	Test Date	:2024-07-09
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2355.52	Average	32.42	6.25	38.66	54.00	-15.34
2361.52	Peak	43.39	6.24	49.63	74.00	-24.37
2480.00	Peak	92.95	6.67	99.61	--	--
2480.00	Average	91.61	6.67	98.28	--	--
2483.57	Peak	50.77	6.72	57.48	74.00	-16.52
2483.57	Average	46.15	6.72	52.87	54.00	-1.13

Band Edge Test Data: Mode 2

Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

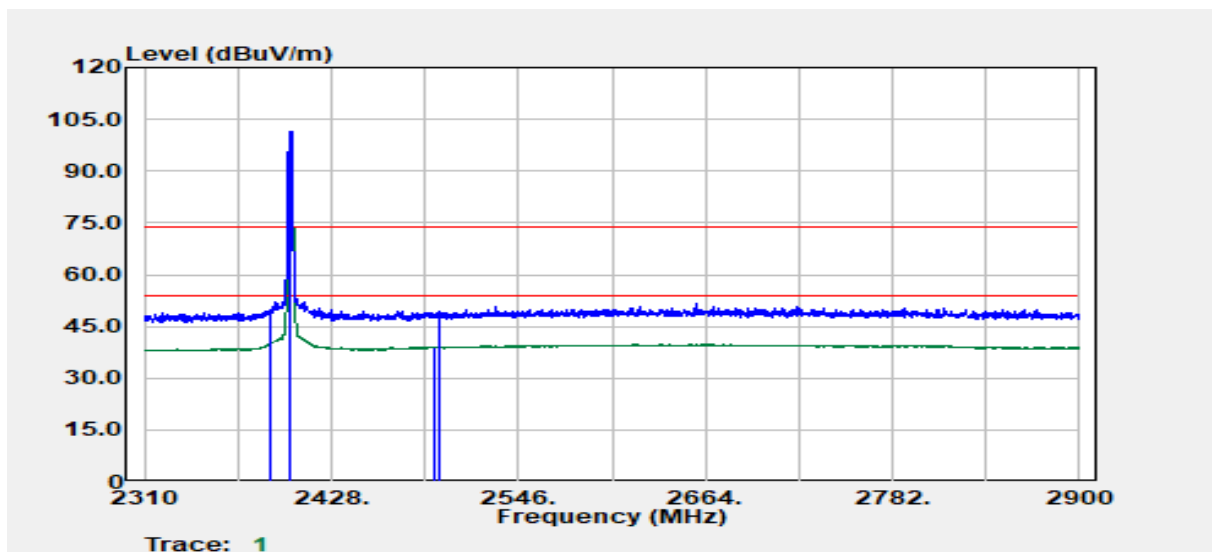


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2377.78	Peak	43.74	6.09	49.83	74.00	-24.17
2389.53	Average	32.14	6.27	38.41	54.00	-15.59
2402.00	Peak	84.07	6.29	90.37	--	--
2402.00	Average	83.67	6.29	89.96	--	--
2492.58	Average	32.21	6.81	39.02	54.00	-14.98
2498.33	Peak	43.52	6.83	50.35	74.00	-23.65

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

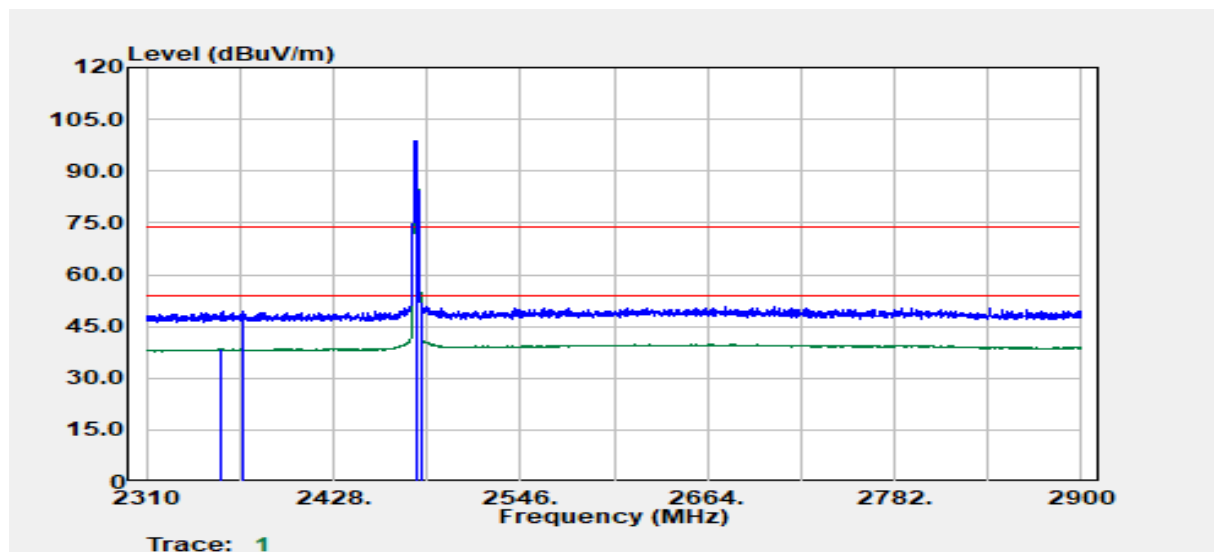


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2389.53	Peak	43.56	6.27	49.83	74.00	-24.17
2390.00	Average	33.88	6.28	40.16	54.00	-13.84
2402.00	Peak	95.36	6.29	101.65	--	--
2402.00	Average	95.01	6.29	101.30	--	--
2492.58	Average	32.27	6.81	39.08	54.00	-14.92
2495.33	Peak	42.65	6.82	49.47	74.00	-24.53

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

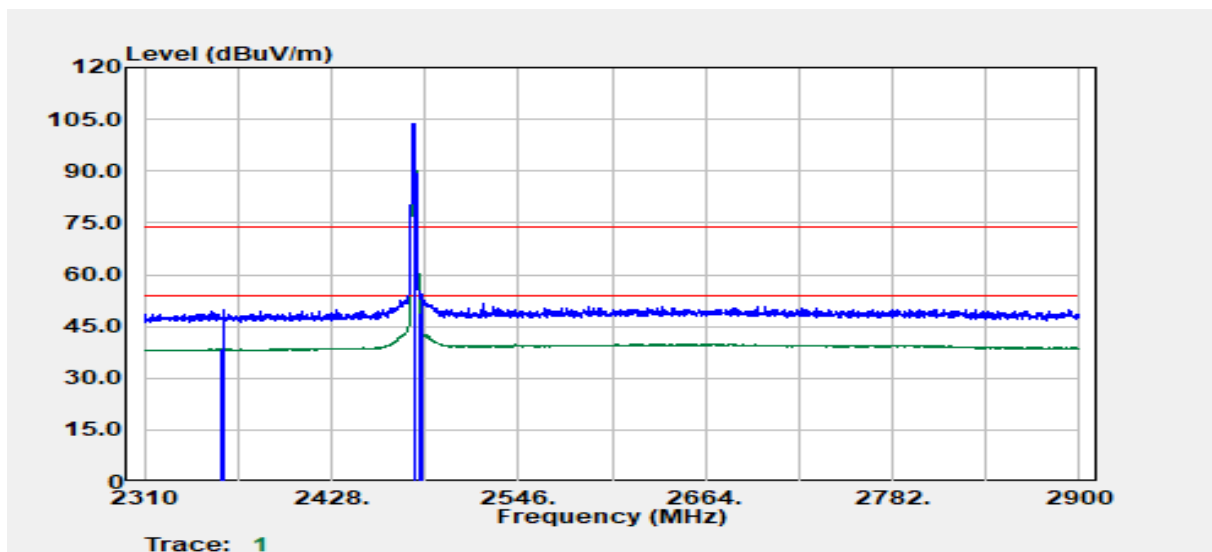


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2357.02	Average	32.08	6.25	38.32	54.00	-15.68
2370.78	Peak	43.32	6.15	49.48	74.00	-24.52
2480.00	Peak	92.00	6.67	98.66	--	--
2480.00	Average	91.62	6.67	98.29	--	--
2483.57	Average	38.07	6.72	44.78	54.00	-9.22
2483.82	Peak	44.52	6.72	51.24	74.00	-22.76

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

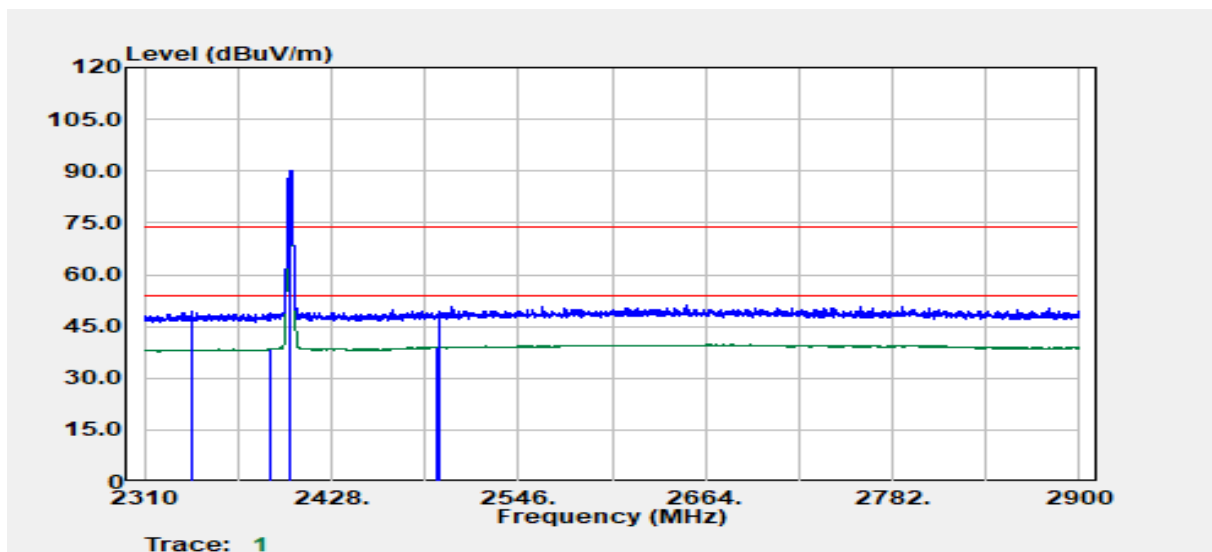


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2358.77	Average	32.19	6.25	38.44	54.00	-15.56
2360.02	Peak	43.42	6.25	49.67	74.00	-24.33
2480.00	Peak	97.08	6.67	103.75	--	--
2480.00	Average	96.73	6.67	103.39	--	--
2483.57	Average	42.33	6.72	49.05	54.00	-4.95
2484.57	Peak	47.62	6.73	54.35	74.00	-19.65

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

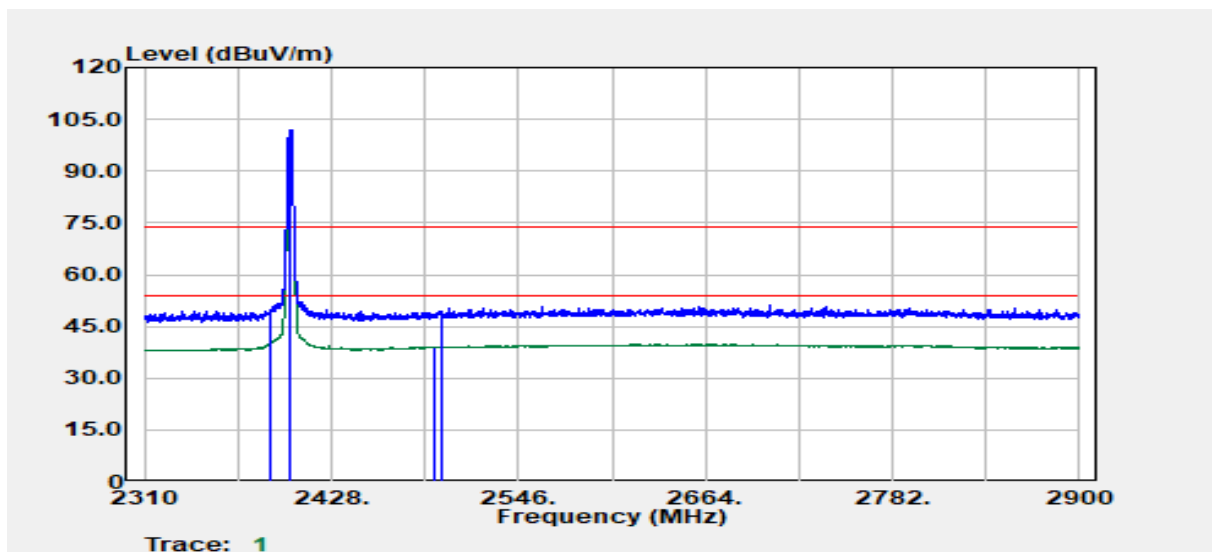


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2339.76	Peak	43.40	6.11	49.51	74.00	-24.49
2390.00	Average	32.10	6.28	38.38	54.00	-15.62
2402.00	Peak	84.02	6.29	90.31	--	--
2402.00	Average	82.56	6.29	88.85	--	--
2494.33	Average	32.21	6.82	39.03	54.00	-14.97
2496.33	Peak	42.54	6.83	49.37	74.00	-24.63

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

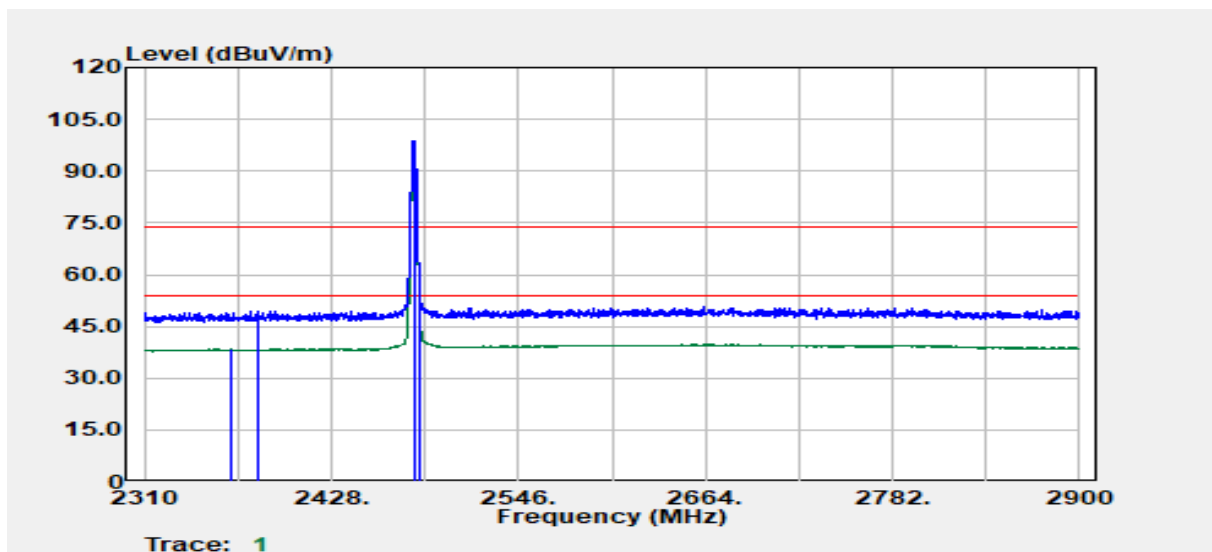


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2389.53	Peak	43.37	6.27	49.64	74.00	-24.36
2390.00	Average	33.89	6.28	40.17	54.00	-13.83
2402.00	Peak	95.60	6.29	101.90	--	--
2402.00	Average	94.27	6.29	100.57	--	--
2492.33	Average	32.13	6.81	38.94	54.00	-15.06
2496.83	Peak	42.61	6.83	49.44	74.00	-24.56

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

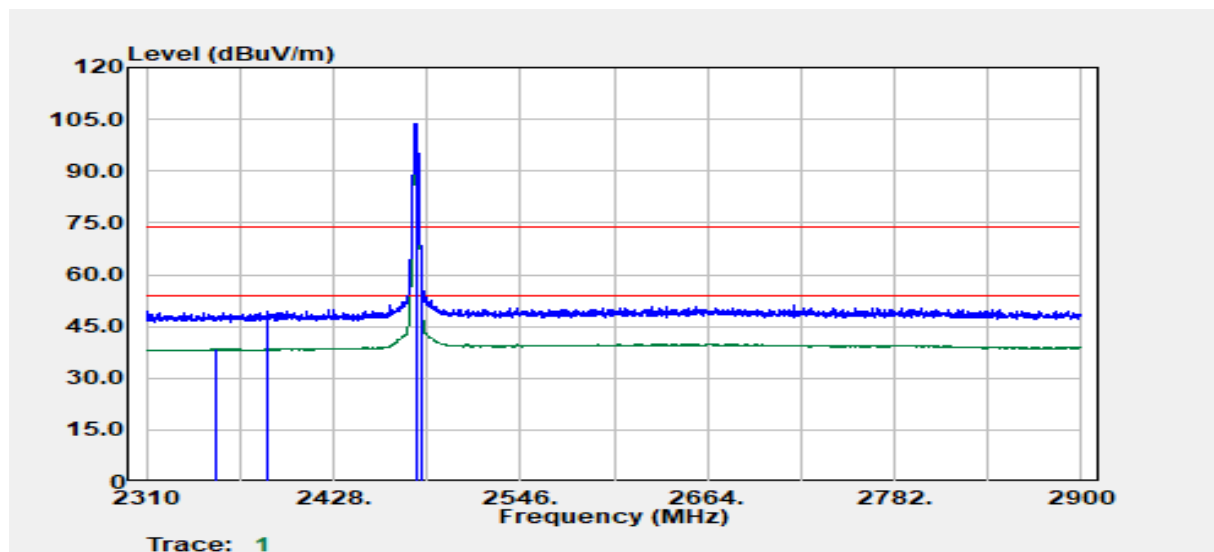


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2365.02	Average	32.12	6.20	38.32	54.00	-15.68
2381.03	Peak	43.17	6.09	49.26	74.00	-24.74
2480.00	Peak	92.13	6.67	98.80	--	--
2480.00	Average	90.77	6.67	97.44	--	--
2483.57	Peak	51.06	6.72	57.77	74.00	-16.23
2483.57	Average	45.42	6.72	52.13	54.00	-1.87

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:Bandedge	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		



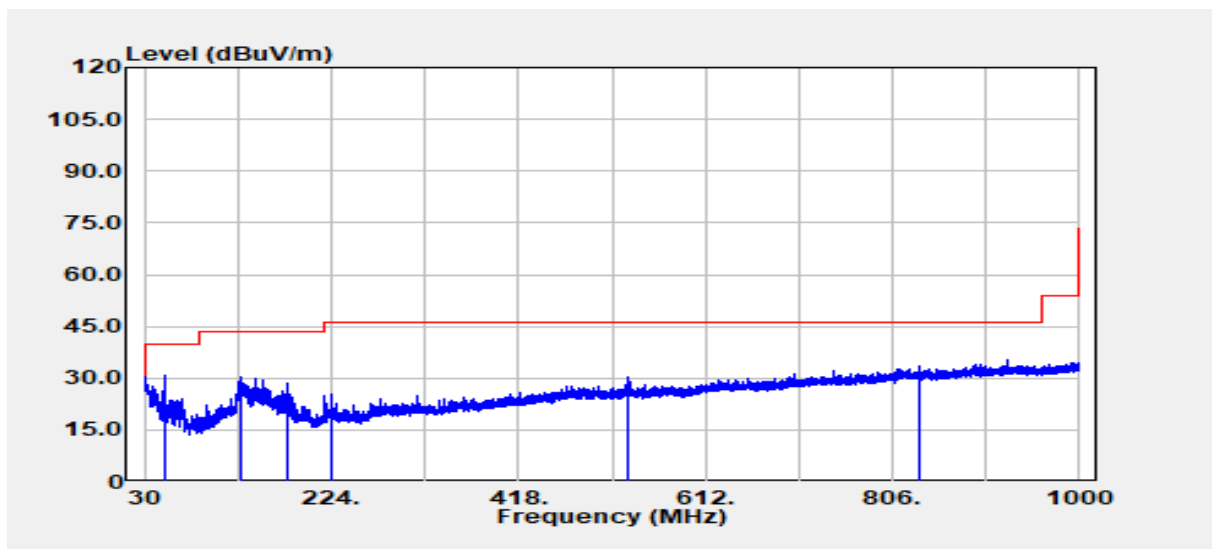
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
2354.27	Average	32.22	6.24	38.46	54.00	-15.54
2385.78	Peak	43.02	6.19	49.21	74.00	-24.79
2480.00	Peak	96.99	6.67	103.66	--	--
2480.00	Average	95.64	6.67	102.30	--	--
2483.57	Peak	53.92	6.72	60.64	74.00	-13.36
2483.57	Average	46.21	6.72	52.92	54.00	-1.08

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TX Below 1GHz: Mode 1

Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

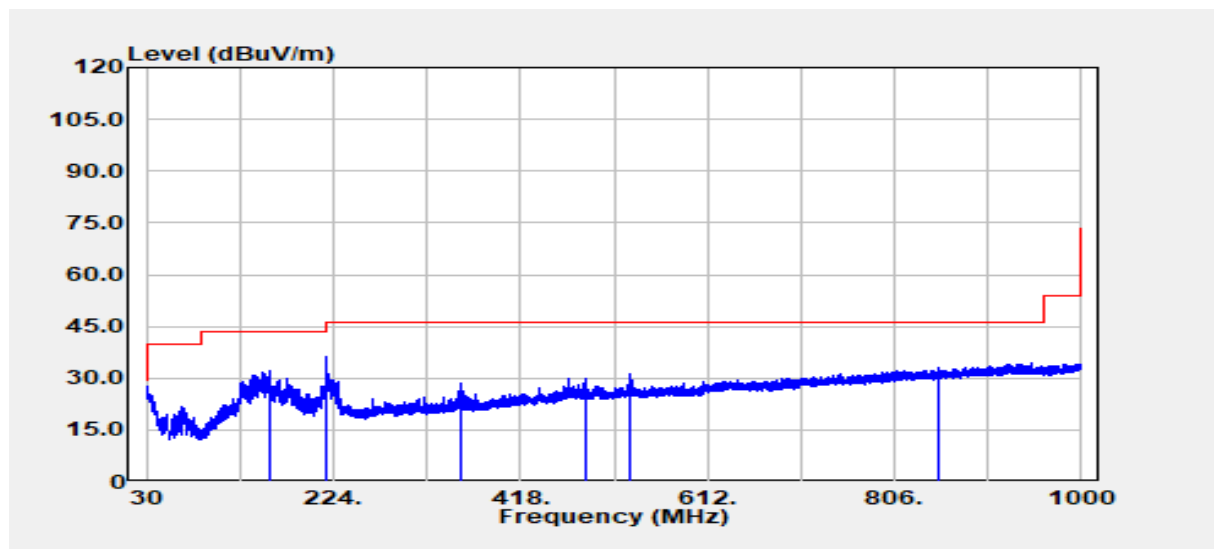


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
50.30	Peak	46.34	-15.61	30.73	40.00	-9.27
130.70	Peak	39.09	-8.69	30.40	43.50	-13.10
178.00	Peak	39.74	-11.03	28.70	43.50	-14.80
223.30	Peak	36.49	-11.33	25.15	46.00	-20.85
531.40	Peak	32.52	-2.29	30.24	46.00	-15.76
833.20	Peak	30.87	2.57	33.44	46.00	-12.56

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



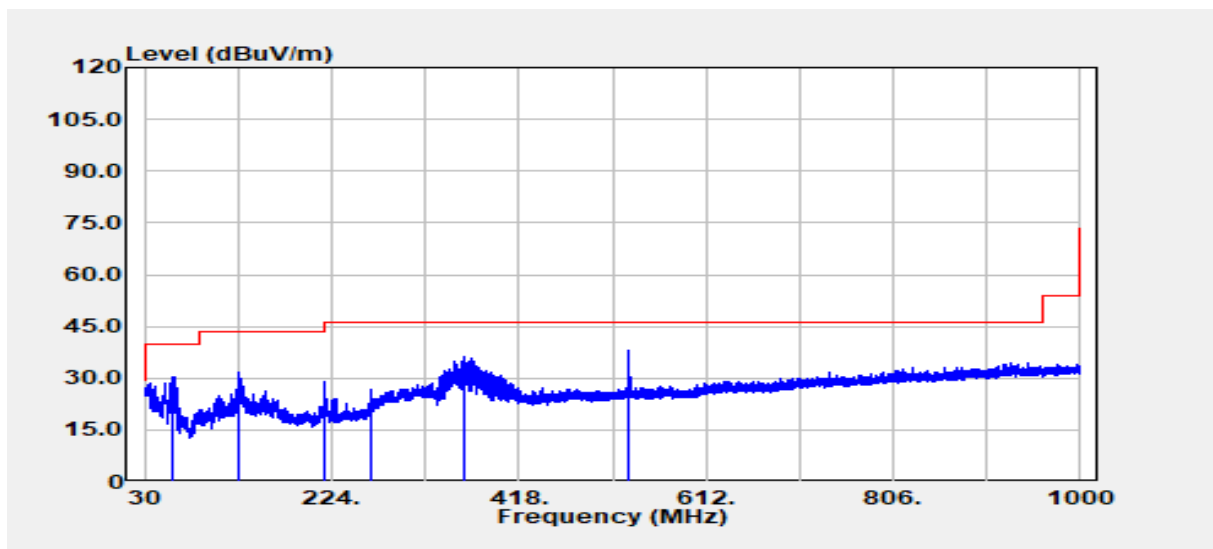
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
157.00	Peak	42.62	-10.64	31.98	43.50	-11.52
216.00	Peak	47.62	-11.57	36.05	43.50	-7.45
357.20	Peak	35.30	-6.62	28.68	46.00	-17.32
485.60	Peak	33.06	-3.23	29.84	46.00	-16.16
532.10	Peak	33.67	-2.30	31.37	46.00	-14.63
851.90	Peak	30.43	2.53	32.96	46.00	-13.04

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TX Below 1GHz: Mode 2

Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

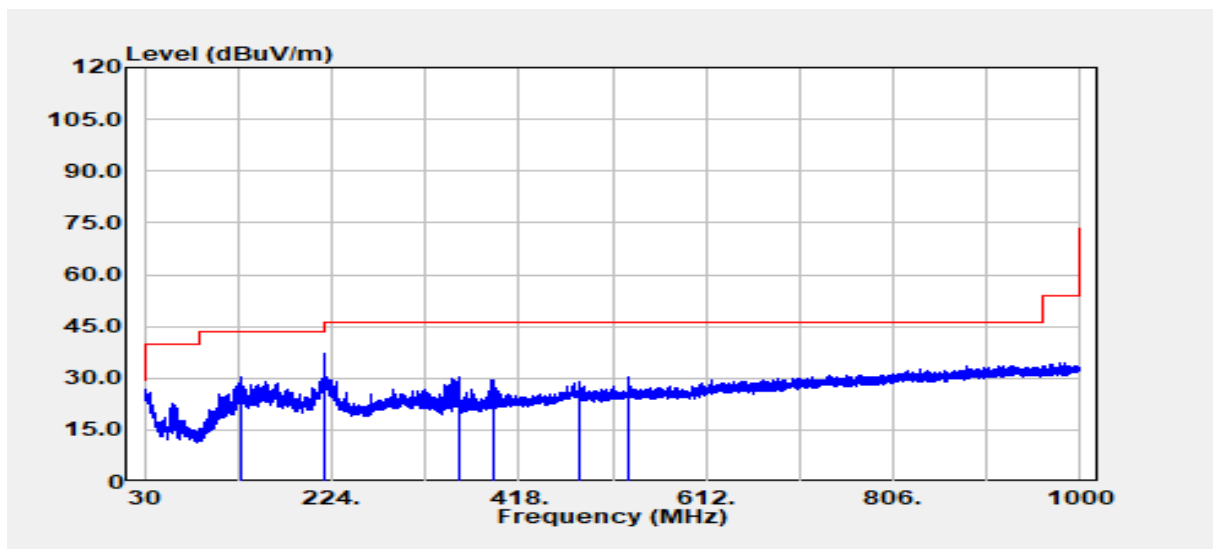


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
60.10	Peak	45.55	-15.13	30.42	40.00	-9.58
126.80	Peak	40.15	-8.59	31.56	43.50	-11.94
216.10	Peak	40.49	-11.56	28.93	46.00	-17.07
264.00	Peak	36.52	-9.74	26.77	46.00	-19.23
360.10	Peak	42.60	-6.59	36.02	46.00	-9.98
531.00	Peak	40.19	-2.28	37.92	46.00	-8.08

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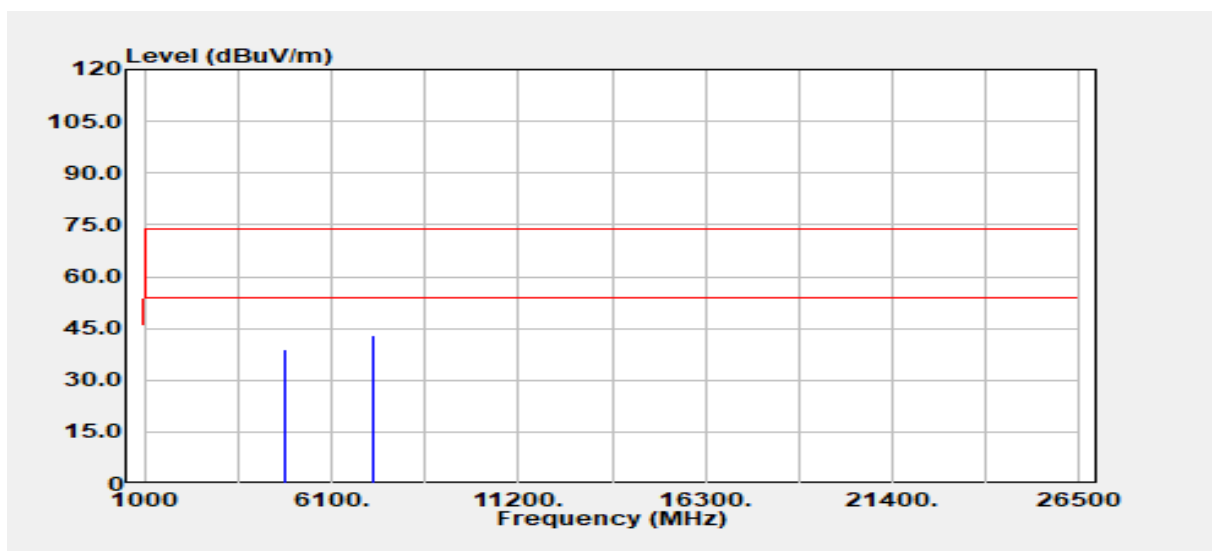
Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:HORIZONTAL
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
131.10	Peak	39.05	-8.72	30.34	43.50	-13.16
216.00	Peak	48.80	-11.57	37.23	43.50	-6.27
356.40	Peak	37.05	-6.63	30.42	46.00	-15.58
390.50	Peak	35.33	-5.79	29.53	46.00	-16.47
480.00	Peak	31.98	-3.12	28.86	46.00	-17.14
531.90	Peak	32.80	-2.29	30.51	46.00	-15.49

TX Above 1GHz: Mode 1

Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

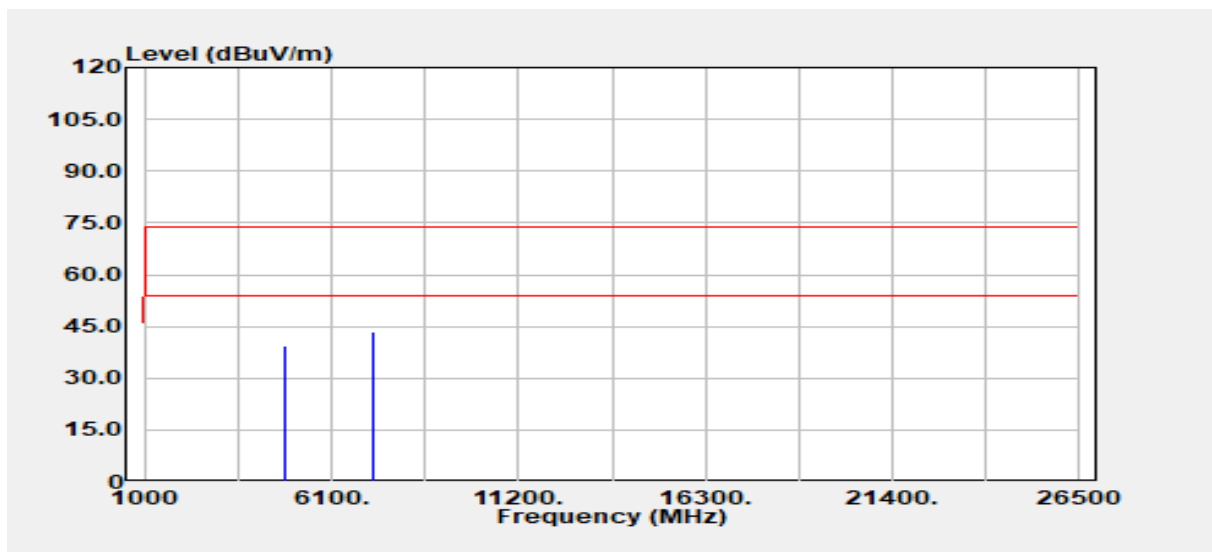


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4804.00	Peak	36.87	2.23	39.09	74.00	-34.91
4804.00	Average	32.51	2.23	34.73	54.00	-19.27
7206.00	Peak	34.23	9.01	43.24	74.00	-30.76
7206.00	Average	28.10	9.01	37.11	54.00	-16.89

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

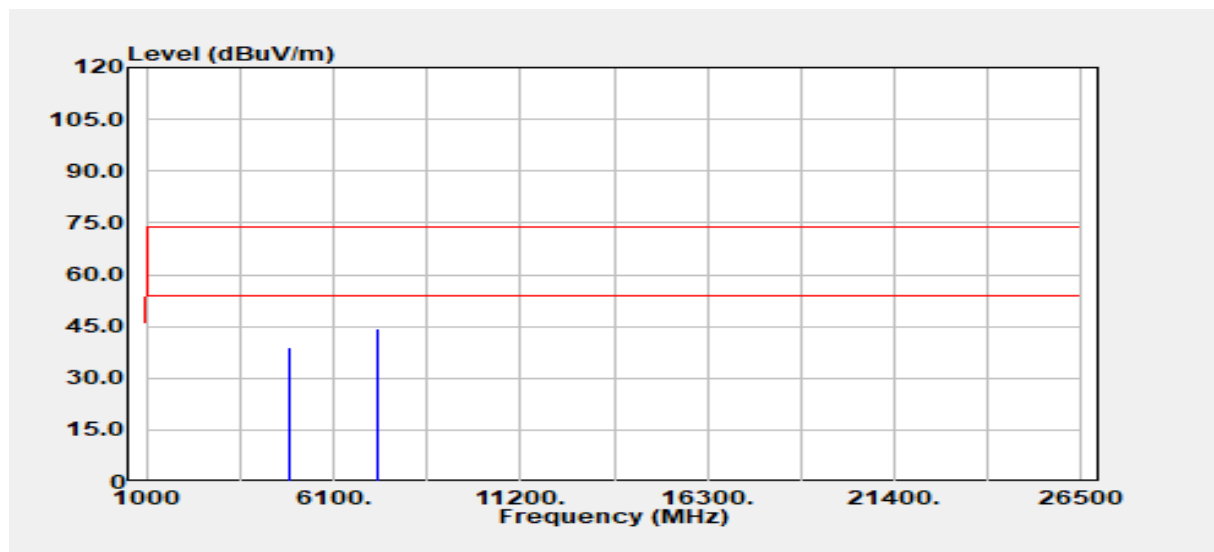


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4804.00	Peak	37.37	2.23	39.59	74.00	-34.41
4804.00	Average	33.53	2.23	35.76	54.00	-18.24
7206.00	Peak	34.53	9.01	43.54	74.00	-30.46
7206.00	Average	28.04	9.01	37.05	54.00	-16.95

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2442 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

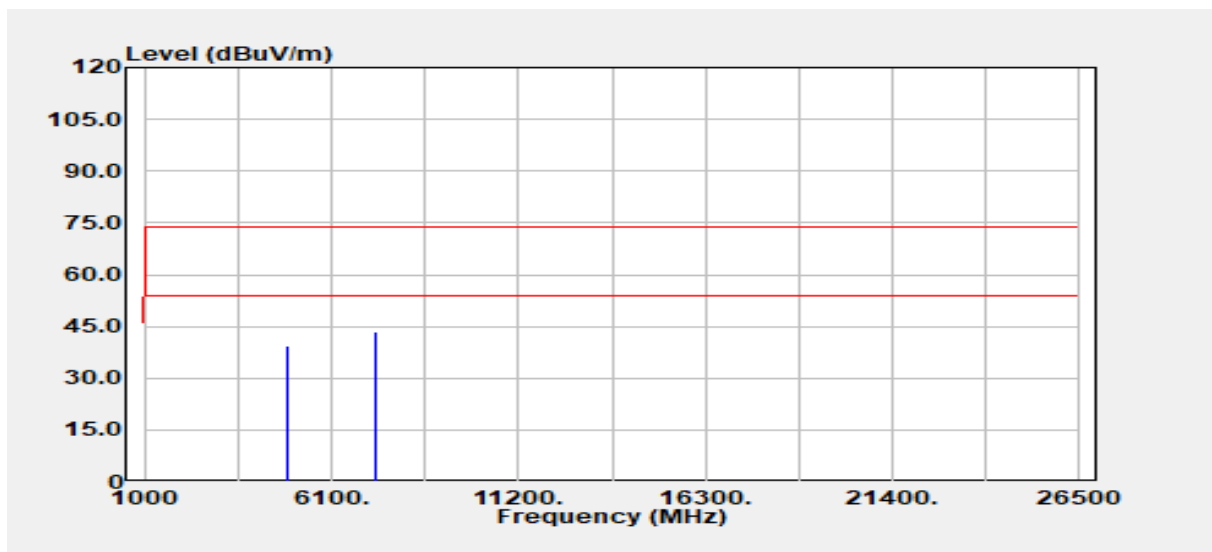


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4884.00	Peak	36.33	2.58	38.91	74.00	-35.09
4884.00	Average	31.04	2.58	33.62	54.00	-20.38
7326.00	Peak	35.45	8.95	44.41	74.00	-29.59
7326.00	Average	28.49	8.95	37.45	54.00	-16.55

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2442 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

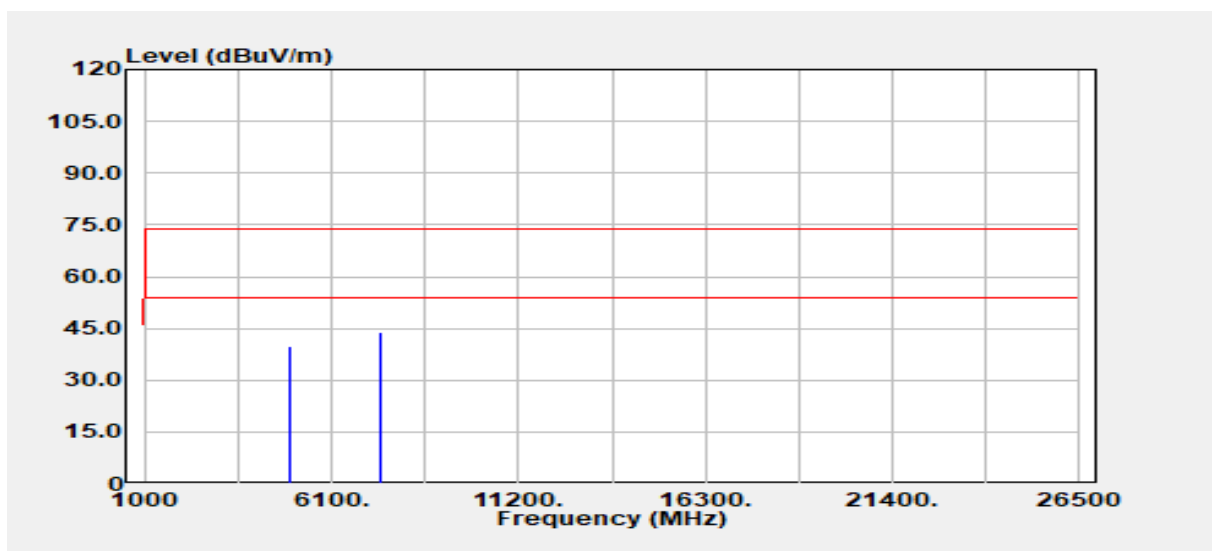


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4884.00	Peak	36.97	2.58	39.55	74.00	-34.45
4884.00	Average	31.25	2.58	33.83	54.00	-20.17
7326.00	Peak	34.74	8.95	43.70	74.00	-30.30
7326.00	Average	28.40	8.95	37.36	54.00	-16.64

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

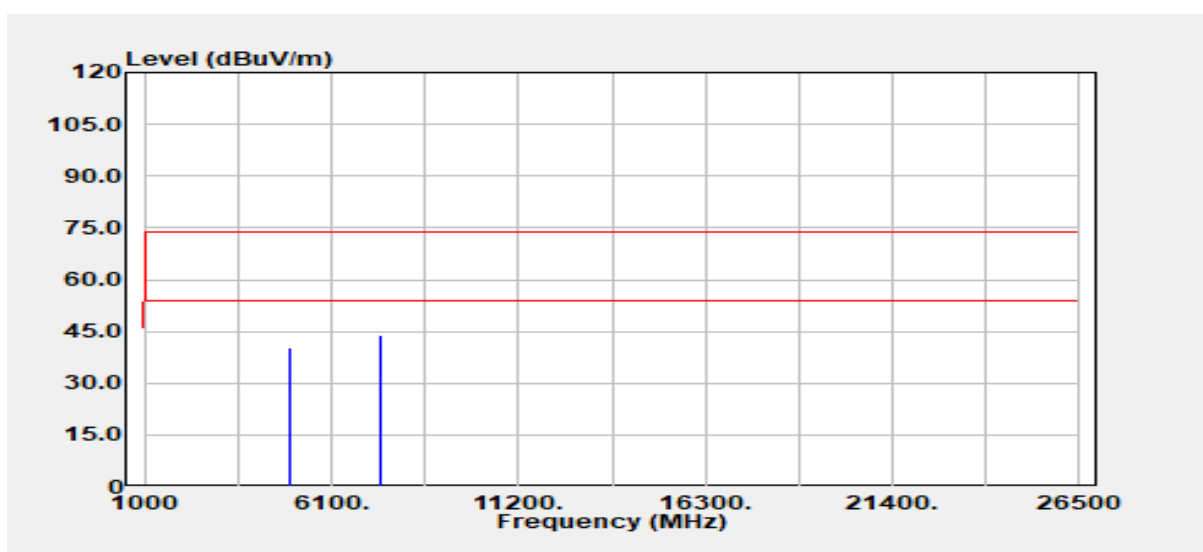


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4960.00	Peak	36.72	3.21	39.93	74.00	-34.07
4960.00	Average	30.75	3.21	33.96	54.00	-20.04
7440.00	Peak	34.85	8.92	43.77	74.00	-30.23
7440.00	Average	27.89	8.92	36.81	54.00	-17.19

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

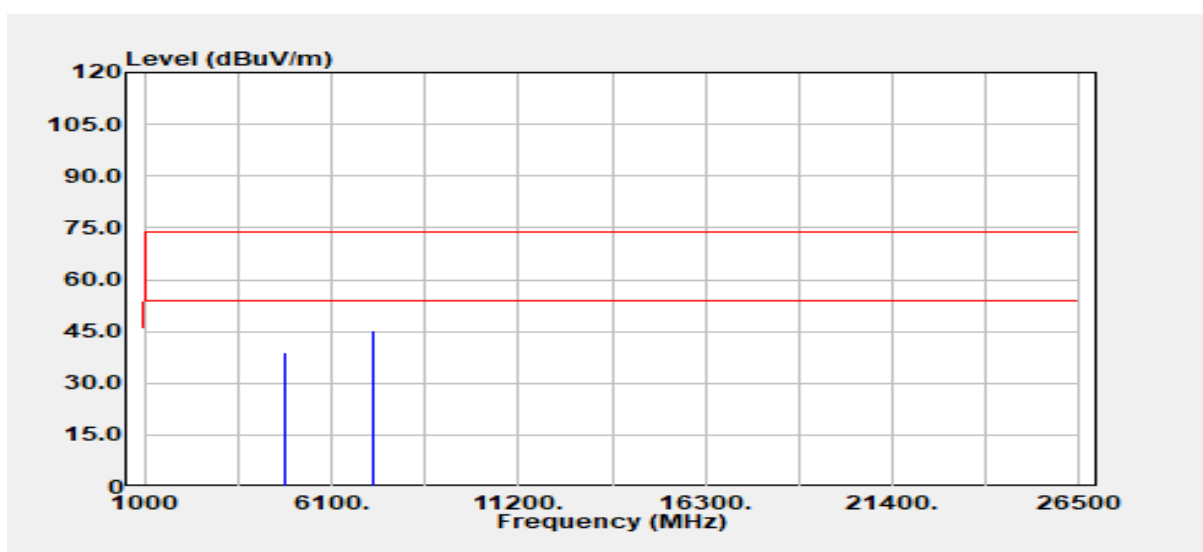


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4960.00	Peak	37.14	3.21	40.36	74.00	-33.64
4960.00	Average	31.02	3.21	34.23	54.00	-19.77
7440.00	Peak	35.15	8.92	44.07	74.00	-29.93
7440.00	Average	27.81	8.92	36.73	54.00	-17.27

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

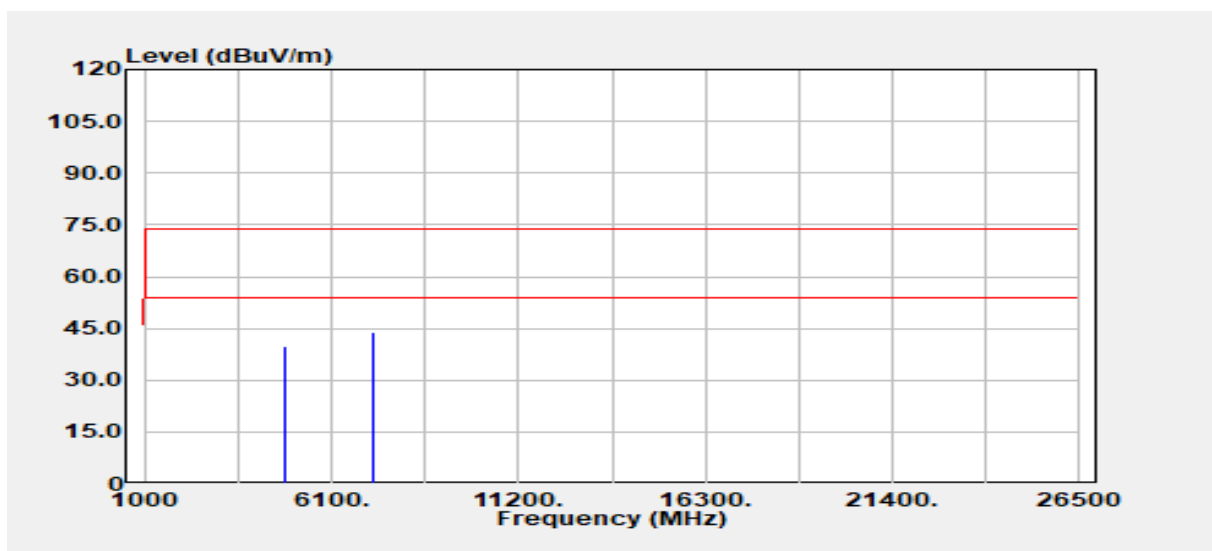


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4804.00	Peak	36.75	2.23	38.97	74.00	-35.03
4804.00	Average	31.73	2.23	33.95	54.00	-20.05
7206.00	Peak	36.35	9.01	45.36	74.00	-28.64
7206.00	Average	27.98	9.01	36.99	54.00	-17.01

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

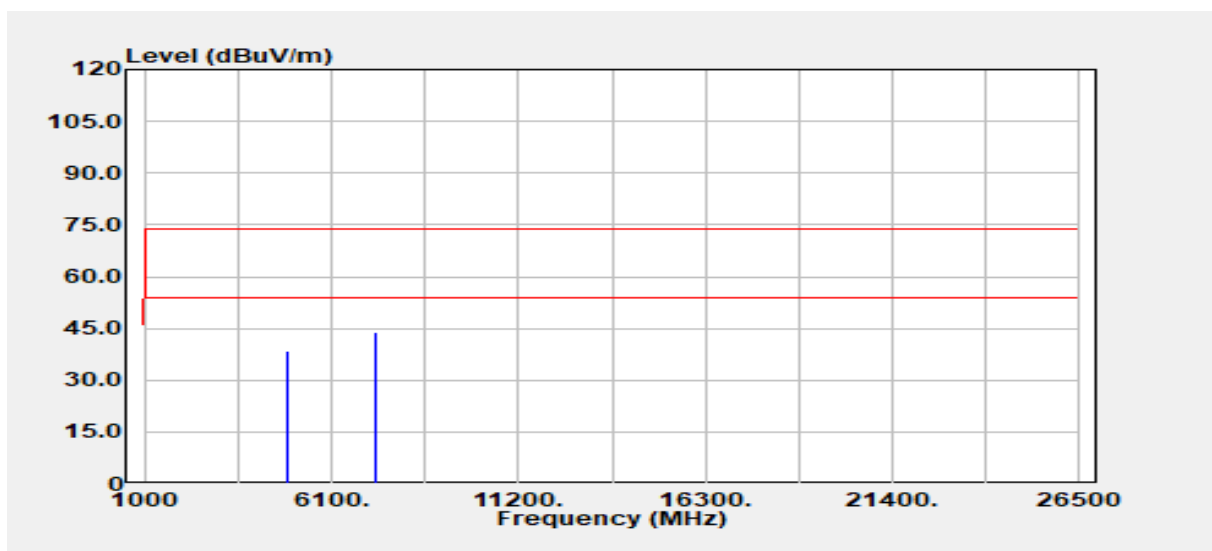


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit dB μ V/m	Margin dB
4804.00	Peak	37.40	2.23	39.63	74.00	-34.37
4804.00	Average	32.52	2.23	34.75	54.00	-19.25
7206.00	Peak	34.79	9.01	43.80	74.00	-30.20
7206.00	Average	28.02	9.01	37.03	54.00	-16.97

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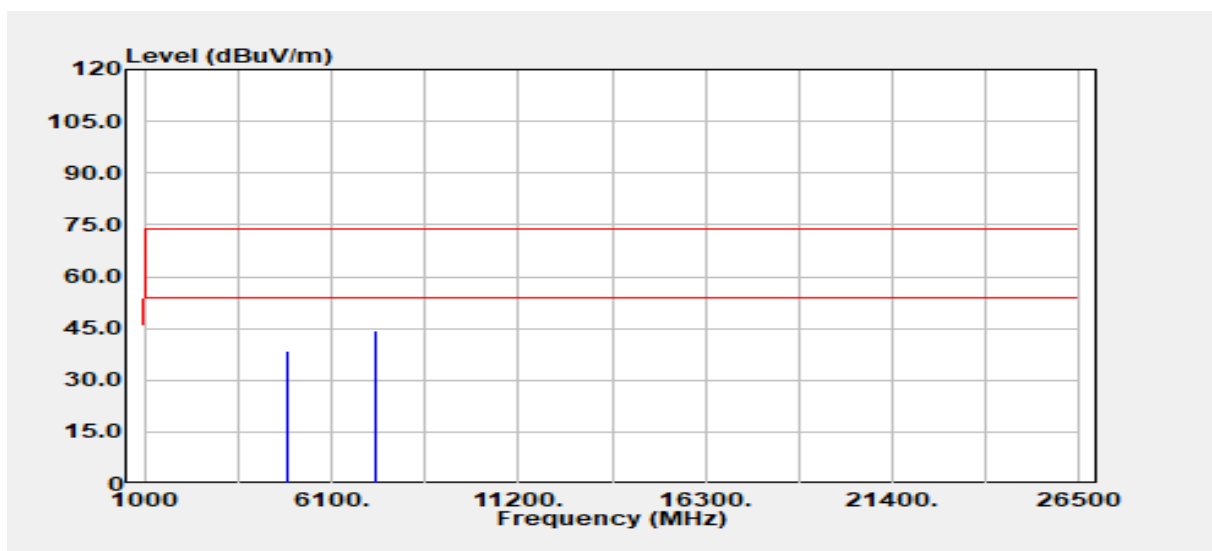
Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2442 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit dB μ V/m	Margin dB
4884.00	Peak	35.70	2.58	38.28	74.00	-35.72
4884.00	Average	30.08	2.58	32.66	54.00	-21.34
7326.00	Peak	35.01	8.95	43.97	74.00	-30.03
7326.00	Average	28.31	8.95	37.26	54.00	-16.74

Project No :TM-2406000276P
Operation Band :BLE 2M
Frequency :2442 MHz
Operation Mode :TX
EUT Pol :E2
Setting :

Test Date :2024-07-10
Temp./Humi. :24.6/57
Antenna Pol. :Horizontal
Engineer :Ray.Li
Test Chamber : 966A

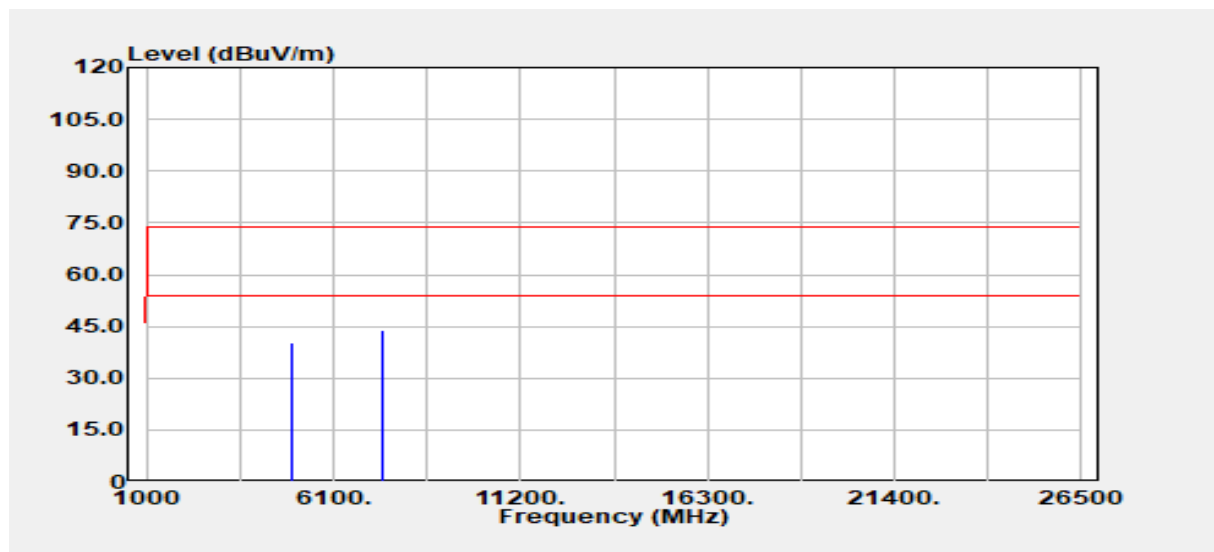


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4884.00	Peak	35.95	2.58	38.53	74.00	-35.47
4884.00	Average	30.29	2.58	32.87	54.00	-21.13
7326.00	Peak	35.20	8.95	44.16	74.00	-29.84
7326.00	Average	28.31	8.95	37.27	54.00	-16.73

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Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		

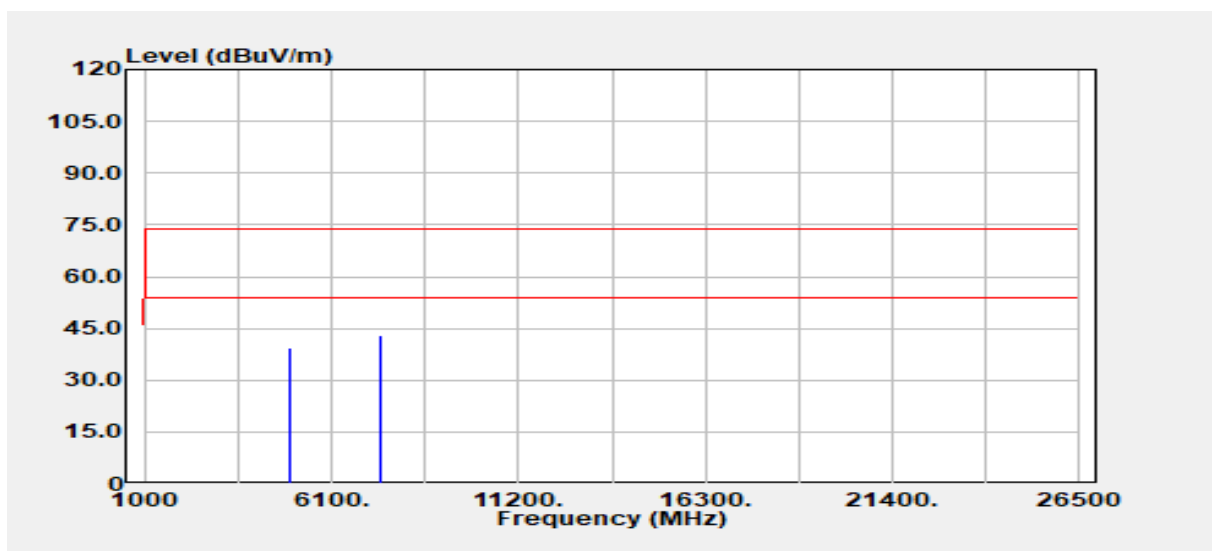


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit dB μ V/m	Margin dB
4960.00	Peak	37.08	3.21	40.30	74.00	-33.70
4960.00	Average	30.21	3.21	33.42	54.00	-20.58
7440.00	Peak	35.12	8.92	44.04	74.00	-29.96
7440.00	Average	27.74	8.92	36.66	54.00	-17.34

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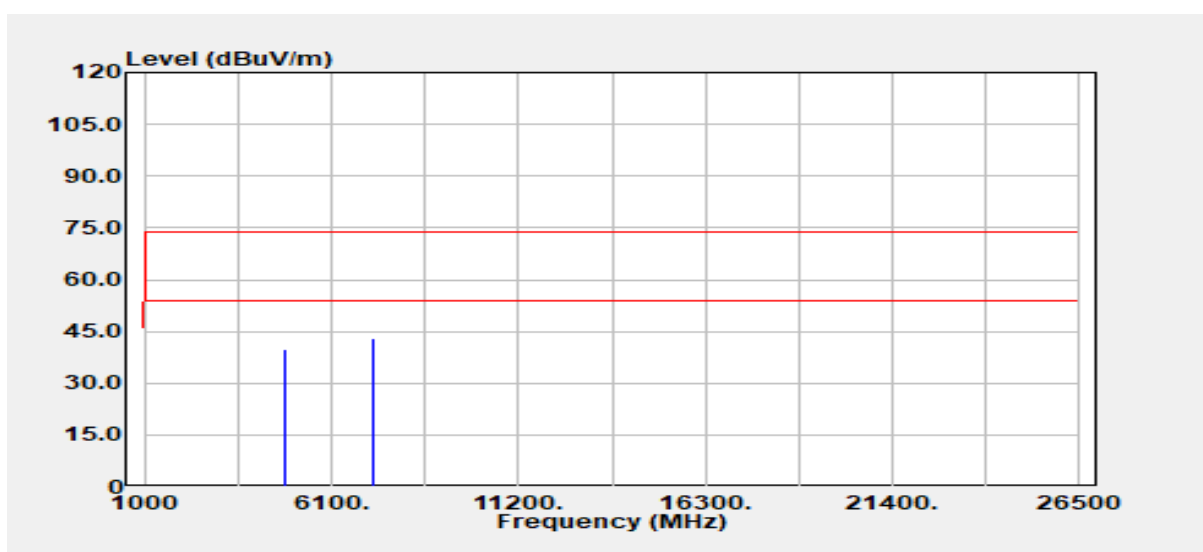
Project No	:TM-2406000276P	Test Date	:2024-07-10
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4960.00	Peak	36.28	3.21	39.49	74.00	-34.51
4960.00	Average	30.57	3.21	33.78	54.00	-20.22
7440.00	Peak	33.93	8.92	42.85	74.00	-31.15
7440.00	Average	27.65	8.92	36.57	54.00	-17.43

TX Above 1GHz: Mode 2

Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

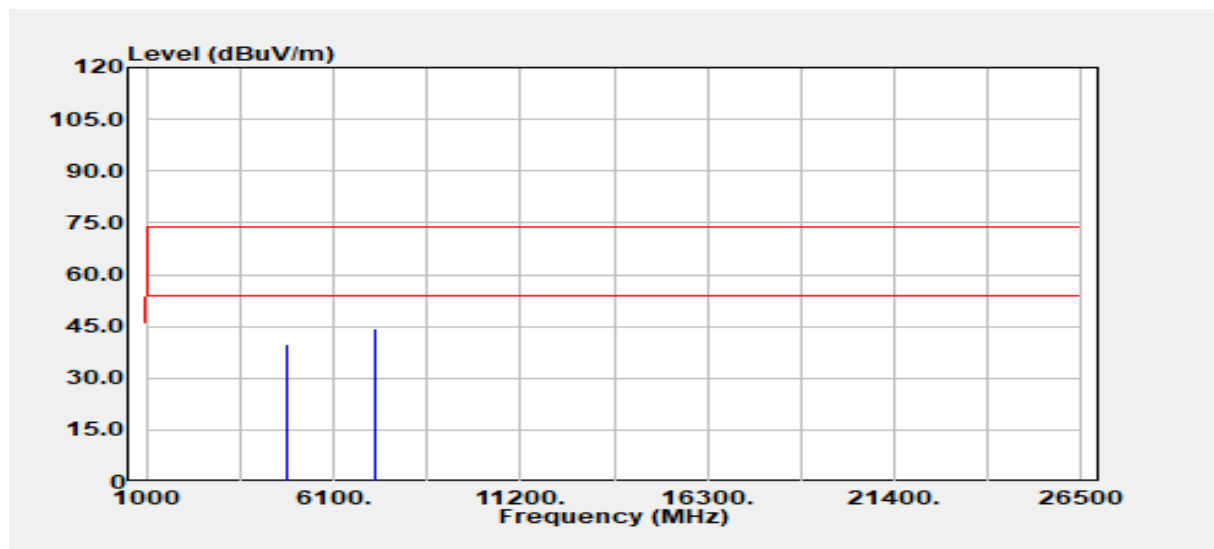


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4804.00	Peak	37.60	2.23	39.83	74.00	-34.17
4804.00	Average	28.73	2.23	30.96	54.00	-23.04
7206.00	Peak	34.18	9.01	43.19	74.00	-30.81
7206.00	Average	26.33	9.01	35.34	54.00	-18.66

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

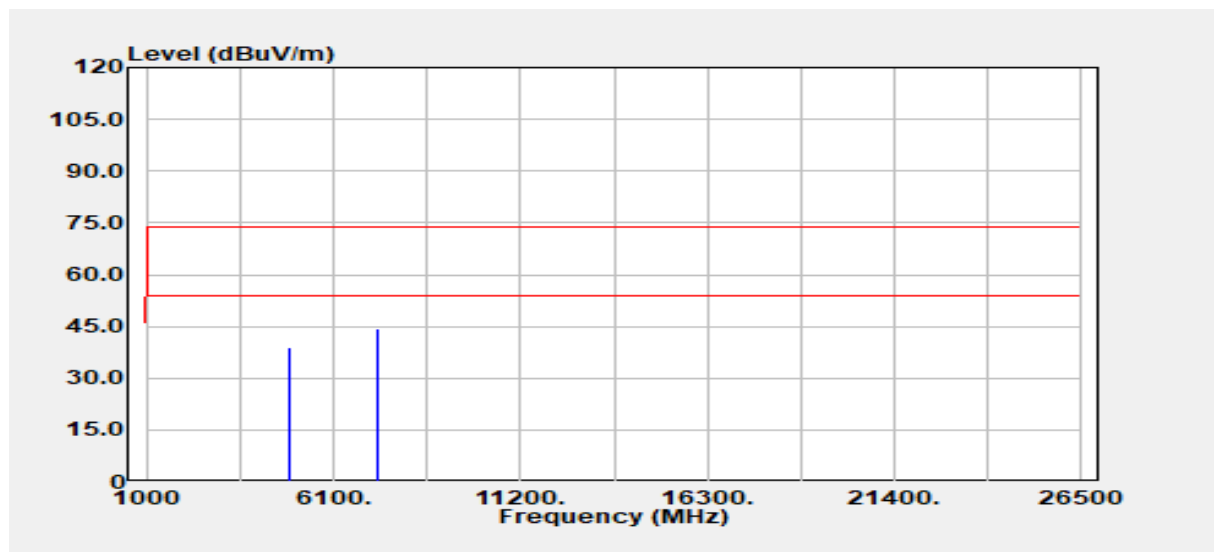


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4804.00	Peak	37.45	2.23	39.67	74.00	-34.33
4804.00	Average	28.64	2.23	30.87	54.00	-23.13
7206.00	Peak	35.48	9.01	44.50	74.00	-29.50
7206.00	Average	26.43	9.01	35.44	54.00	-18.56

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2442 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		



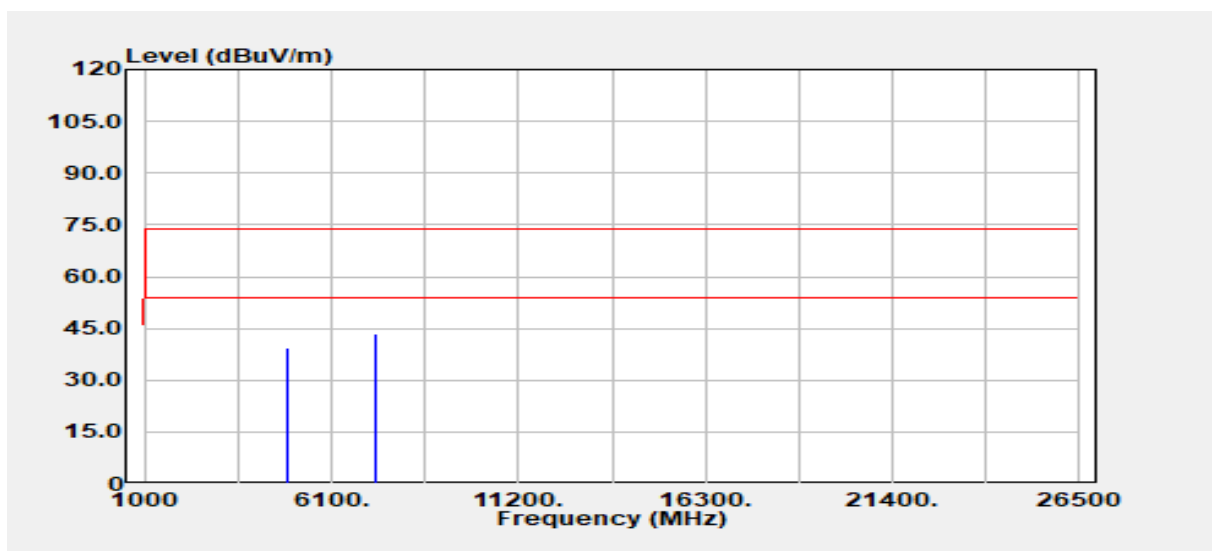
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4884.00	Peak	36.57	2.58	39.15	74.00	-34.85
4884.00	Average	27.93	2.58	30.51	54.00	-23.49
7326.00	Peak	35.55	8.95	44.51	74.00	-29.49
7326.00	Average	26.24	8.95	35.20	54.00	-18.80

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Project No :TM-2406000276P
Operation Band :BLE 1M
Frequency :2442 MHz
Operation Mode :TX
EUT Pol :E1
Setting :

Test Date :2024-07-11
Temp./Humi. :24.6/57
Antenna Pol. :Horizontal
Engineer :Ray.Li
Test Chamber : 966A

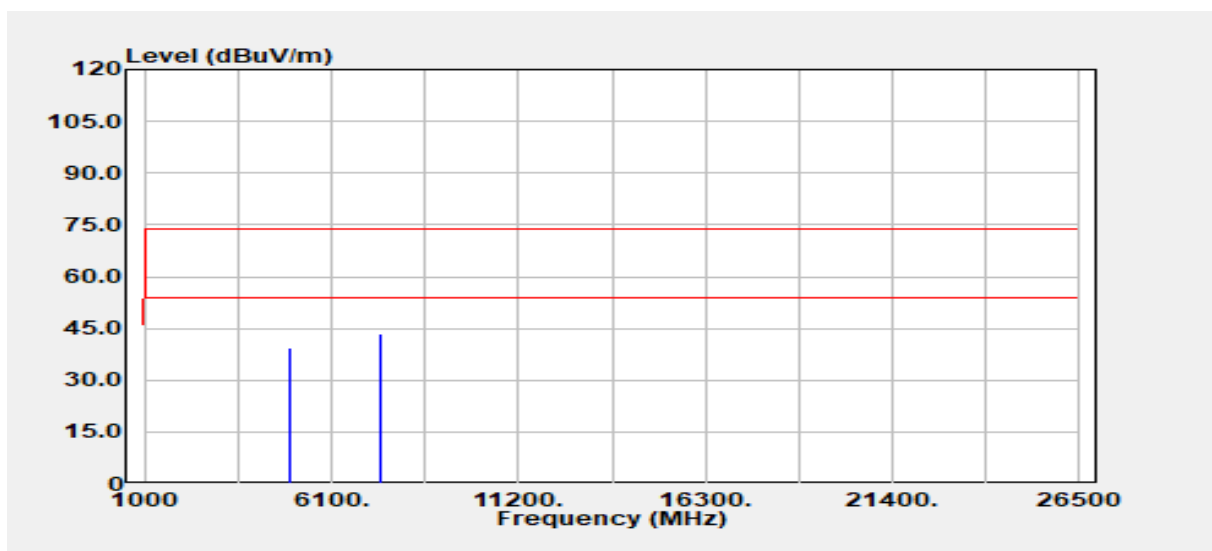


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4884.00	Peak	36.65	2.58	39.23	74.00	-34.77
4884.00	Average	28.02	2.58	30.60	54.00	-23.40
7326.00	Peak	34.68	8.95	43.63	74.00	-30.37
7326.00	Average	26.39	8.95	35.34	54.00	-18.66

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

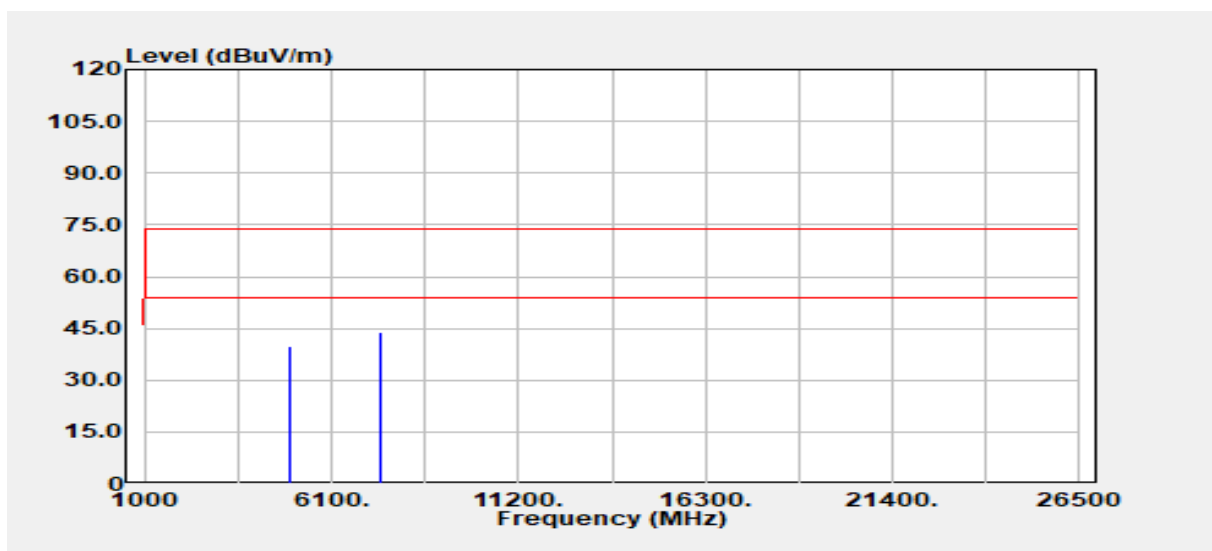


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4960.00	Peak	36.37	3.21	39.59	74.00	-34.41
4960.00	Average	29.48	3.21	32.70	54.00	-21.30
7440.00	Peak	34.37	8.92	43.29	74.00	-30.71
7440.00	Average	26.11	8.92	35.03	54.00	-18.97

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 1M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

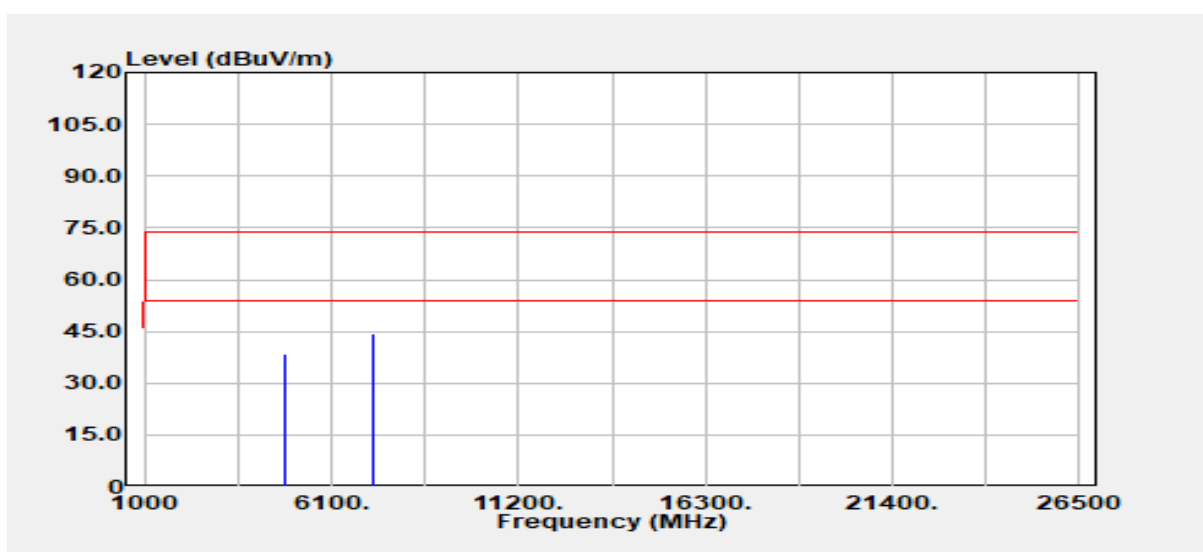


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4960.00	Peak	36.63	3.21	39.84	74.00	-34.16
4960.00	Average	30.10	3.21	33.32	54.00	-20.68
7440.00	Peak	35.00	8.92	43.92	74.00	-30.08
7440.00	Average	26.04	8.92	34.96	54.00	-19.04

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

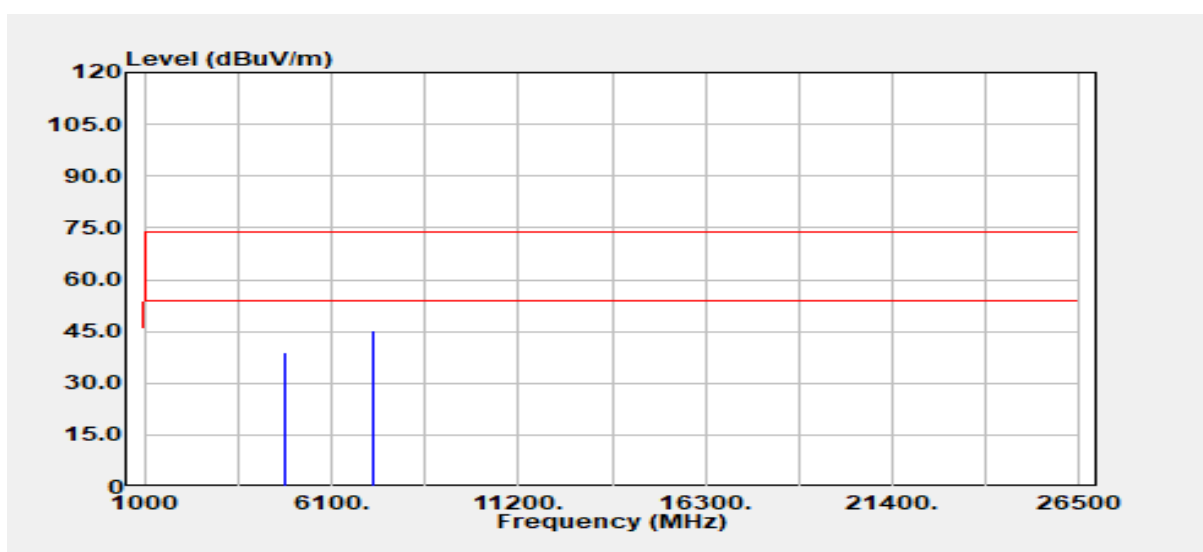


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4804.00	Peak	36.29	2.23	38.52	74.00	-35.48
4804.00	Average	28.34	2.23	30.57	54.00	-23.43
7206.00	Peak	35.27	9.01	44.28	74.00	-29.72
7206.00	Average	26.17	9.01	35.18	54.00	-18.82

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2402 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

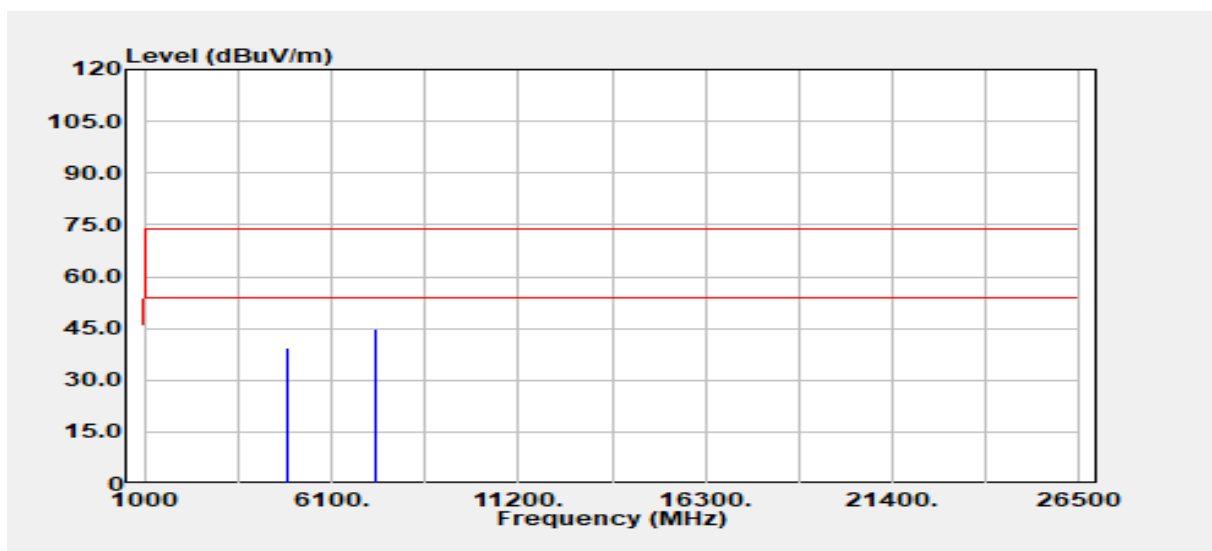


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4804.00	Peak	36.80	2.23	39.03	74.00	-34.97
4804.00	Average	28.67	2.23	30.90	54.00	-23.10
7206.00	Peak	36.23	9.01	45.25	74.00	-28.75
7206.00	Average	26.37	9.01	35.38	54.00	-18.62

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2442 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		



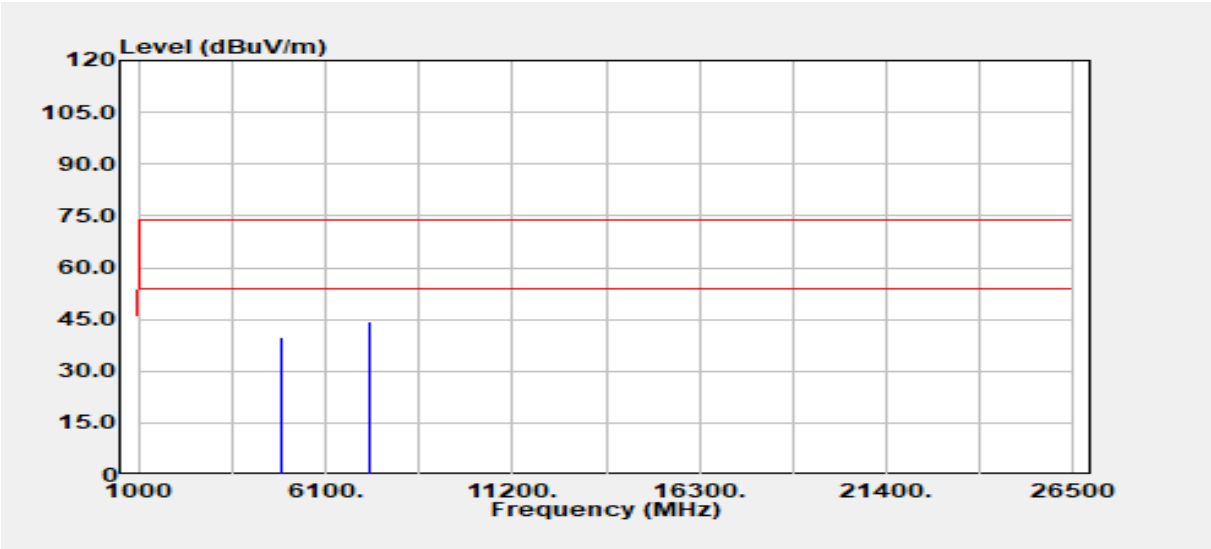
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4884.00	Peak	36.77	2.58	39.35	74.00	-34.65
4884.00	Average	27.33	2.58	29.91	54.00	-24.09
7326.00	Peak	36.01	8.95	44.96	74.00	-29.04
7326.00	Average	26.34	8.95	35.30	54.00	-18.70



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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2442 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

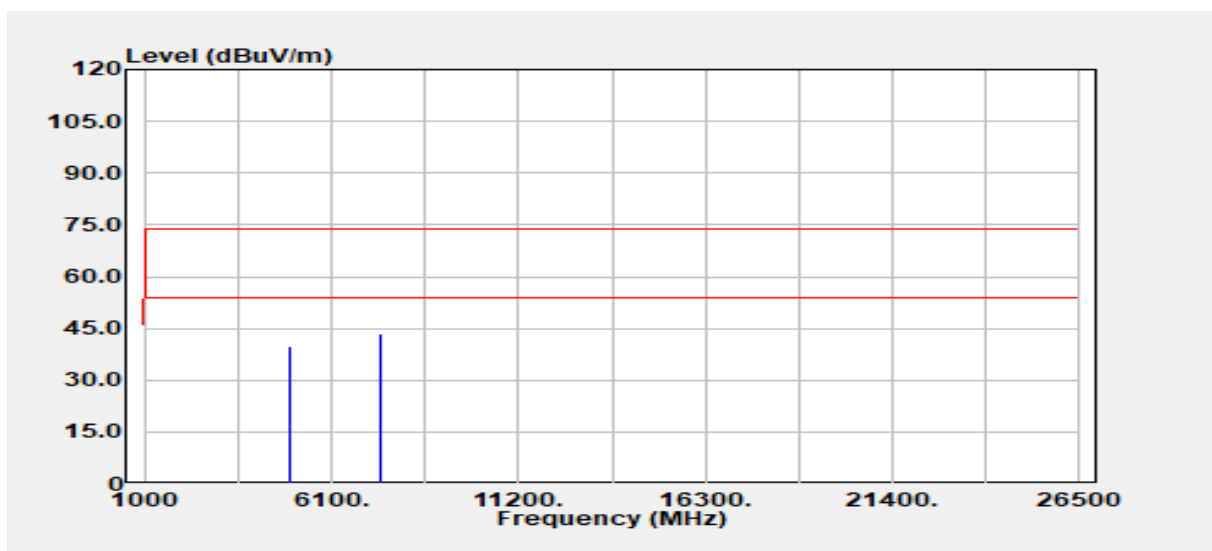


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4884.00	Peak	37.24	2.58	39.82	74.00	-34.18
4884.00	Average	27.57	2.58	30.15	54.00	-23.85
7326.00	Peak	35.21	8.95	44.16	74.00	-29.84
7326.00	Average	26.39	8.95	35.34	54.00	-18.66

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		

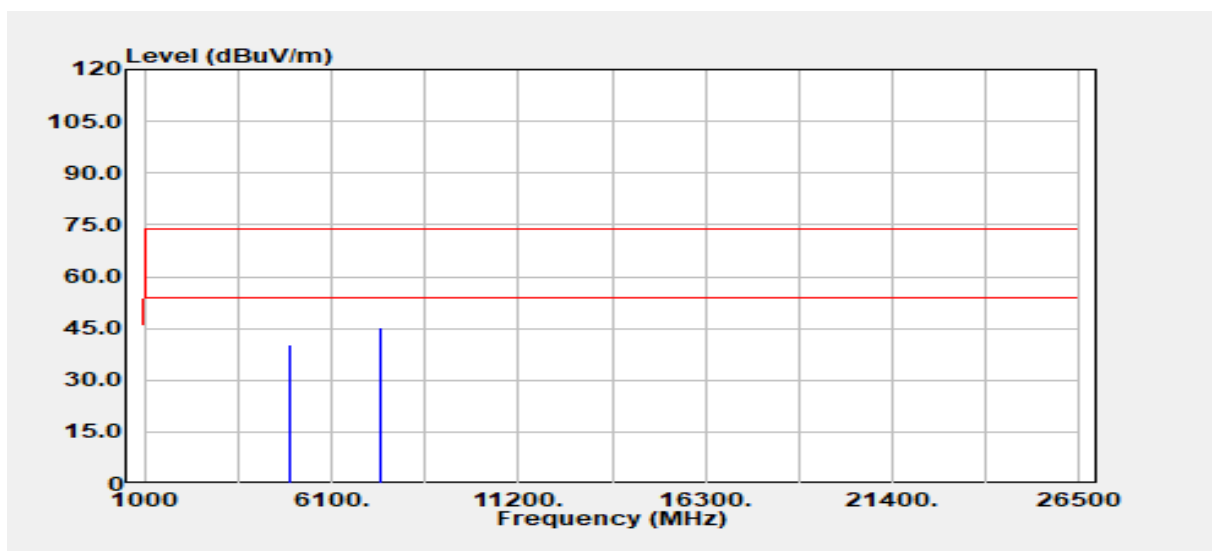


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4960.00	Peak	36.85	3.21	40.07	74.00	-33.93
4960.00	Average	28.43	3.21	31.65	54.00	-22.35
7440.00	Peak	34.73	8.92	43.65	74.00	-30.35
7440.00	Average	25.90	8.92	34.82	54.00	-19.18

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Project No	:TM-2406000276P	Test Date	:2024-07-11
Operation Band	:BLE 2M	Temp./Humi.	:24.6/57
Frequency	:2480 MHz	Antenna Pol.	:Horizontal
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E1	Test Chamber	: 966A
Setting	:		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV/m	Limit dBμV/m	Margin dB
4960.00	Peak	37.24	3.21	40.45	74.00	-33.55
4960.00	Average	29.24	3.21	32.46	54.00	-21.54
7440.00	Peak	36.20	8.92	45.12	74.00	-28.88
7440.00	Average	25.93	8.92	34.85	54.00	-19.15

- End of Test Report -