

Project No.: TM-2312000115P
Report No.: TMWK2312004665KR

FCC ID: 2AIHD-0055

Page: 1 / 71
Rev.: 02

RADIO TEST REPORT FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Vehicle Gateway
Brand Name	Samsara
Model No.	010-00008, 010-00006
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:



Shawn Wu
Supervisor

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

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

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Report No.: TMWK2312004665KR

Page: 2 / 71

Rev.: 02

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	March 20, 2024	Initial Issue	ALL	Allison Chen
01	March 28, 2024	See the following Note Rev.(01)	P.5, 8, 15	Allison Chen
02	April 3, 2024	See the following Note Rev.(02)	P.9	Allison Chen

Note:

Rev.(01)

1. Modify antenna model, measurement equipment list and setup diagram.

Rev.(02)

1. Modify test setup diagram in section 1.8.

Table of contents

1.	GENERAL INFORMATION.....	4
1.1	EUT INFORMATION.....	4
1.2	EUT CHANNEL INFORMATION.....	5
1.3	ANTENNA INFORMATION.....	5
1.4	MEASUREMENT UNCERTAINTY.....	6
1.5	FACILITIES AND TEST LOCATION.....	7
1.6	INSTRUMENT CALIBRATION.....	8
1.7	SUPPORT AND EUT ACCESSORIES EQUIPMENT.....	9
1.8	TEST SETUP DIAGRAM.....	9
1.9	TEST METHODOLOGY AND APPLIED STANDARDS.....	10
2.	TEST SUMMARY.....	11
3.	DESCRIPTION OF TEST MODES.....	12
3.1	THE WORST MODE OF OPERATING CONDITION.....	12
3.2	THE WORST MODE OF MEASUREMENT.....	13
4.	EUT DUTY CYCLE.....	14
5.	TEST RESULT.....	15
5.1	AC POWER LINE CONDUCTED EMISSION.....	15
5.2	6DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%).....	16
5.3	OUTPUT POWER MEASUREMENT.....	23
5.4	POWER SPECTRAL DENSITY.....	26
5.5	CONDUCTED BANDEDGE AND SPURIOUS EMISSION.....	30
5.6	RADIATION BANDEDGE AND SPURIOUS EMISSION.....	36
	APPENDIX 1 - PHOTOGRAPHS OF EUT	

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Samsara Inc. 1 De Haro Street, San Francisco, CA 94107, USA	
Manufacturer	Sercomm Corporation 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan	
Equipment	Vehicle Gateway	
Model Name	010-00008, 010-00006	
Model Discrepancy	For detailed description of the differences between series models, please see the table below:	
	Model name	Difference
	010-00008	LTE Band: 2,4,5,12,14
	010-00006	LTE Band: 2,4,5,12,13
Received Date	December 11, 2023	
Date of Test	December 22, 2023 ~ January 19, 2024	
Power Supply	EUT power by Power supply. (DC24V & DC12V)	
HW Version	02-04:23	
EUT Serial #	010-00008: GHBE-HW6-JBR 010-00006: GYYV-DEB-3SR	

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	802.11b/g/n HT 20: 2412MHz ~ 2462MHz
Modulation Type	1. IEEE 802.11b mode: CCK 2. IEEE 802.11g mode: OFDM 3. IEEE 802.11n HT20 mode : OFDM
Number of channel	1. IEEE 802.11b mode: 11 Channels 2. IEEE 802.11g mode: 11 Channels 3. IEEE 802.11n HT20 mode : 11 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
<input type="checkbox"/> 1 MHz or less	1	Middle
<input type="checkbox"/> 1 MHz to 10 MHz	2	1 near top and 1 near bottom
<input checked="" type="checkbox"/> More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	<input checked="" type="checkbox"/> PIFA <input type="checkbox"/> PCB <input type="checkbox"/> Dipole <input type="checkbox"/> Coils
Antenna Gain	Gain: 2.4 dBi
Brand / Model	Brand: Sercomm, Model: 6172001NWA
Antenna Connector	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.

1.4 MEASUREMENT UNCERTAINTY

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

Remark:

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

1.5 FACILITIES AND TEST LOCATION

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

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	N/A	Not applicable, because EUT doesn't connect to AC Main Source direct.
Radiation	Tony Chao / 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

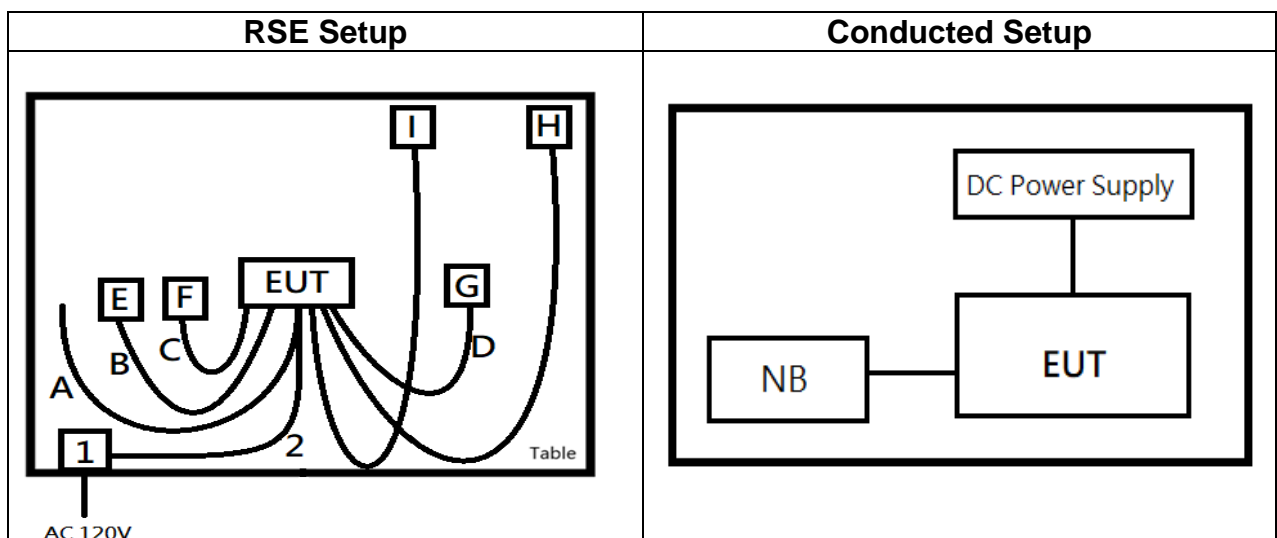
Conducted_FCC/IC/NCC (All)					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Sensor	Anritsu	MA2411B	1911386	2023-07-25	2024-07-24
Power Sensor	Anritsu	MA2411B	1911387	2023-07-25	2024-07-24
Power Meter	Anritsu	ML2496A	2136002	2023-11-16	2024-11-15
EXA Signal Analyzer	Keysight	N9010B	MY60242460	2023-02-02	2024-02-01
EXA Signal Analyzer	Keysight	N9030A	MY54200716	2023-10-13	2024-10-12
Attenuator	Marvelous Microwave Inc	MVE2213-10	08	2023-11-07	2024-11-06
Software	Radio Test Software Ver. 21				

966A_Radiated Wi-Fi 2.4GHz					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Thermo-Hygro Meter	WISEWIND	1206	D07	2023-12-08	2024-12-07
Signal Analyzer	KEYSIGHT	N9010A	MY54200716	2023-10-13	2024-10-12
Loop Antenna	COM-POWER	AL-130	121051	2023-05-23	2024-05-22
Bi-Log Antenna	Sunol Sciences	JB3	A030105	2023-08-08	2024-08-07
Preamplifier	EMEC	EM330	060609	2023-02-22	2024-02-21
Cable	Huber+Suhner	104PEA	20995+21000+182330	2023-02-22	2024-02-21
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
High Pass Filters	Titan Microwave	T04H30001800070S01	22011402-4	2023-06-17	2024-06-16
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				

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

Support Unit List						
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	Remark
DC Power Source	GWINSTEK	SPS-3610	GPE880163	2023-11-16	2024-11-15	1
DC Power Cable	N/A	N/A	N/A	N/A	N/A	2
DC power Cable	N/A	N/A	N/A	N/A	N/A	A
USB Cable	LINDY	36761-ANTHRA	N/A	N/A	N/A	B
USB Cable	LINDY	36761-ANTHRA	N/A	N/A	N/A	C
USB Cable	LINDY	36761-ANTHRA	N/A	N/A	N/A	D
USB	HP	x306w 32G	N/A	N/A	N/A	E
USB	HP	x306w 32G	N/A	N/A	N/A	F
USB	HP	x306w 32G	N/A	N/A	N/A	G
CM32	N/A	N/A	N/A	N/A	N/A	H
Panic Button	N/A	020-0011	N/A	N/A	N/A	I
Conducted_Sup_Units						
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	
NB(E)	Lenovo	T460	N/A	N/A	N/A	
Cable	SP	Type C Cable	N/A	N/A	N/A	

1.8 TEST SETUP DIAGRAM





Report No.: TMWK2312004665KR

Page: 10 / 71

Rev.: 02

1.9 TEST METHODOLOGY AND APPLIED STANDARDS

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

2. TEST SUMMARY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	5.1	AC Conducted Emission	N/A
15.247(a)(2)	5.2	6 dB Bandwidth	Pass
-	5.2	Occupied Bandwidth (99%)	Pass
15.247(b)(3)	5.3	Output Power Measurement	Pass
15.247(e)	54	Power Spectral Density	Pass
15.247(d)	5.5	Conducted Band Edge	Pass
15.247(d)	5.5	Conducted Emission	Pass
15.247(d) 15.205 15.209	5.6	Radiation Band Edge	Pass
15.247(d) 15.205 15.209	5.6	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

<p>Operation mode</p>	<p>IEEE 802.11b mode :1Mbps IEEE 802.11g mode :6Mbps IEEE 802.11n HT20 mode :MCS0</p>
<p>Test Channel Frequencies</p>	<p>IEEE 802.11b mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11g mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11n HT20 mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz</p>
<p>Operation Transmitter</p>	<p>IEEE 802.11b mode :1T1R IEEE 802.11g mode :1T1R IEEE 802.11n HT20 mode : 1T1R</p>

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

Radiated Emission Measurement Above 1G	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Test Mode	Mode 1: EUT(010-00006) power by Power supply DC24V
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Worst Position	<input type="checkbox"/> Placed in fixed position. <input checked="" type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Test Mode	Mode 1: EUT(010-00006) power by Power supply DC24V Mode 2: EUT(010-00006) power by Power supply DC12V Mode 3: EUT(010-00008) power by Power supply DC24V Mode 4: EUT(010-00008) power by Power supply DC12V
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> 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



4. EUT DUTY CYCLE

Temperature: 19.5~23.2°C

Test date: December 22, 2023 ~
January 19, 2024

Humidity: 50~55% RH

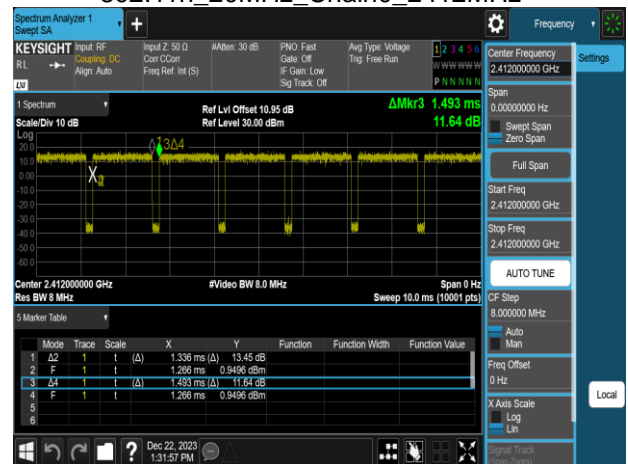
Tested by: David Li

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	98.31	0.07	0.12	0.01
802.11g	90.09	0.45	0.70	1.00
802.11n_20	89.54	0.48	0.75	1.00

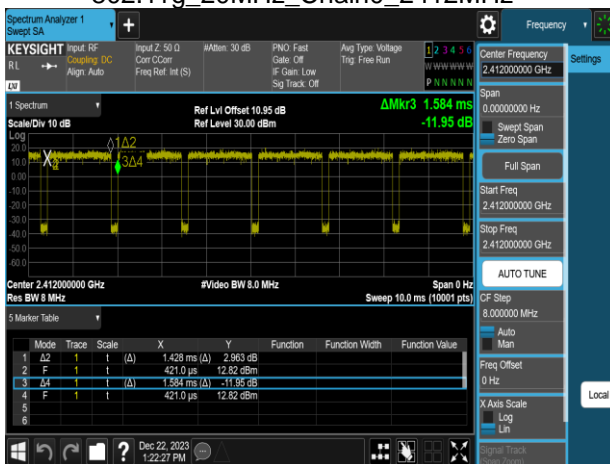
802.11b_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2412MHz



5. TEST RESULT

5.1 AC POWER LINE CONDUCTED EMISSION

5.1.1 Test Limit

According to §15.207(a)(2),

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

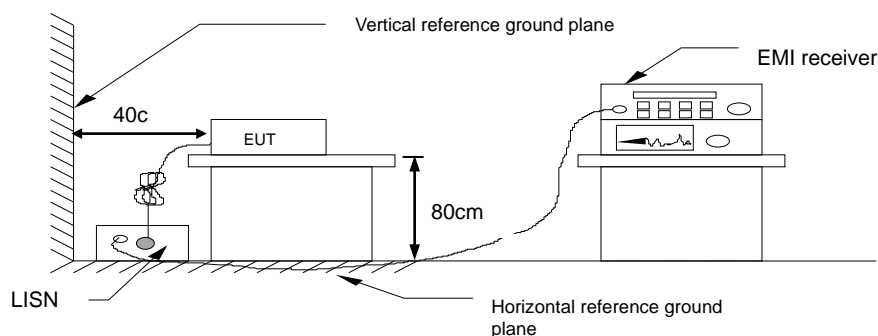
* Decreases with the logarithm of the frequency.

5.1.2 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.

5.1.3 Test Setup



5.1.4 Test Result

Not applicable, because EUT doesn't connect to AC Main Source direct.

5.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

5.2.1 Test Limit

According to §15.247(a)(2),

6 dB Bandwidth :

Limit	Shall be at least 500kHz
-------	--------------------------

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

5.2.2 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.

5.2.3 Test Setup

Refer to section 1.8.

5.2.4 Test Result

Temperature: 19.5~23.2°C

Test date: December 22, 2023 ~
January 19, 2024

Humidity: 50~55% RH

Tested by: David Li

6dB Bandwidth

802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	9046.00	≥ 500	PASS
2437	8601.00	≥ 500	PASS
2462	8600.00	≥ 500	PASS

802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15440.00	≥ 500	PASS
2437	15170.00	≥ 500	PASS
2462	15480.00	≥ 500	PASS

802.11n_HT_20M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15160.00	≥ 500	PASS
2437	15160.00	≥ 500	PASS
2462	15480.00	≥ 500	PASS



Report No.: TMWK2312004665KR

Page: 18 / 71

Rev.: 02

Bandwidth 99%

802.11b Ch0

Freq. (MHz)	99% BW (MHz)
2412	12.135
2437	11.819
2462	11.053

802.11g Ch0

Freq. (MHz)	99% BW (MHz)
2412	16.602
2437	16.690
2462	16.747

802.11n_HT20M Ch0

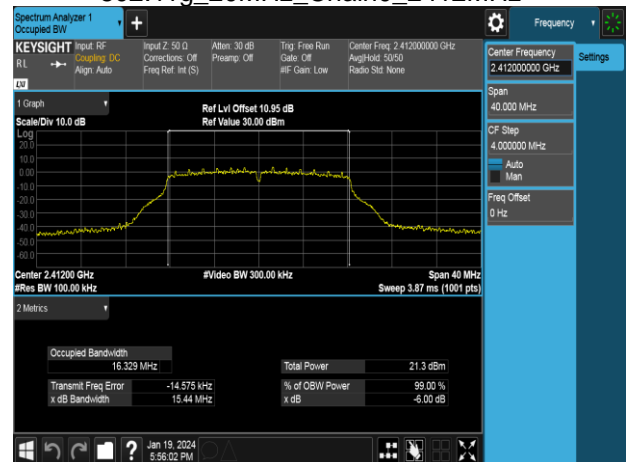
Freq. (MHz)	99% BW (MHz)
2412	17.705
2437	17.793
2462	17.798

Test Data (6dB Bandwidth)

802.11b_20MHz_Chain0_2412MHz



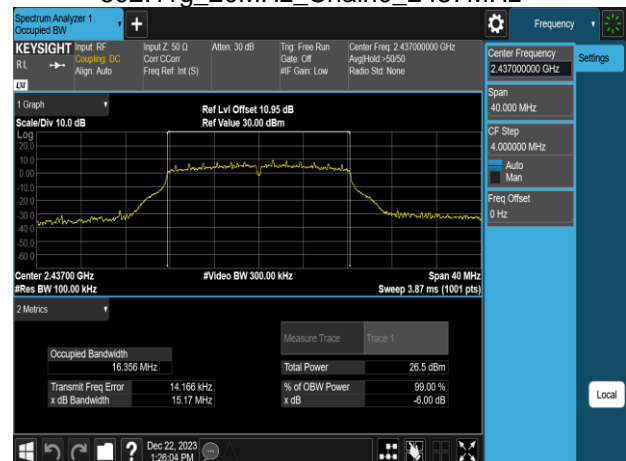
802.11g_20MHz_Chain0_2412MHz



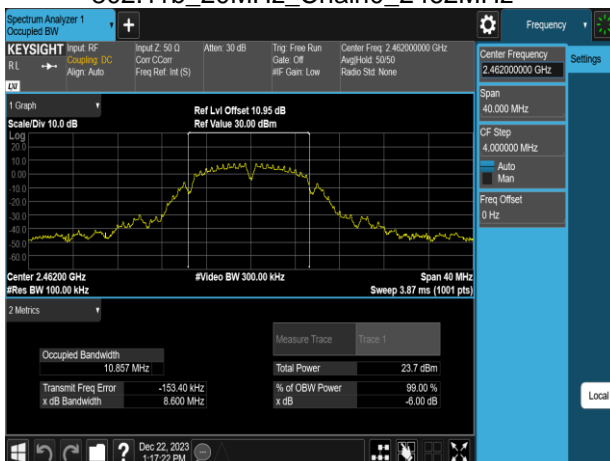
802.11b_20MHz_Chain0_2437MHz



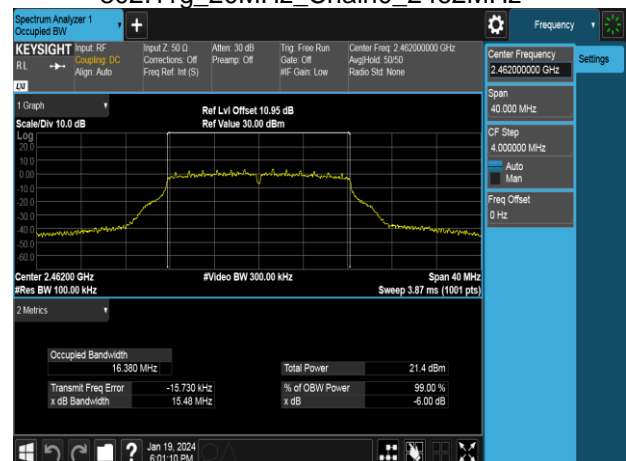
802.11g_20MHz_Chain0_2437MHz



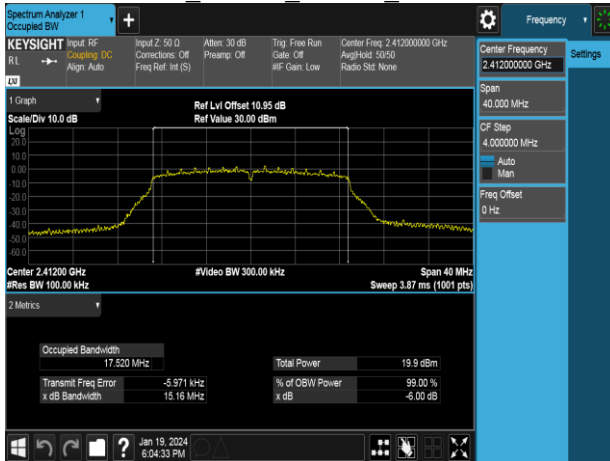
802.11b_20MHz_Chain0_2462MHz



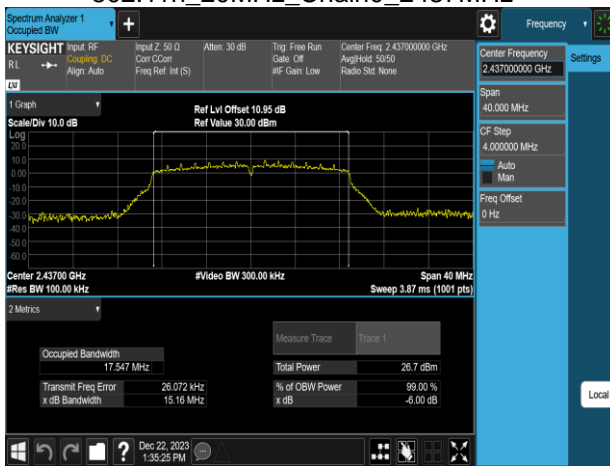
802.11g_20MHz_Chain0_2462MHz



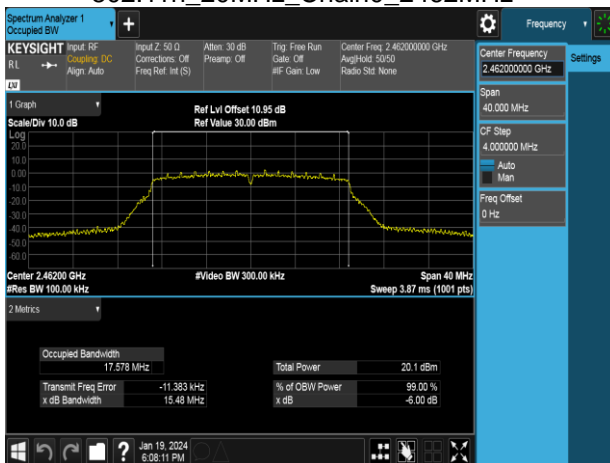
802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz

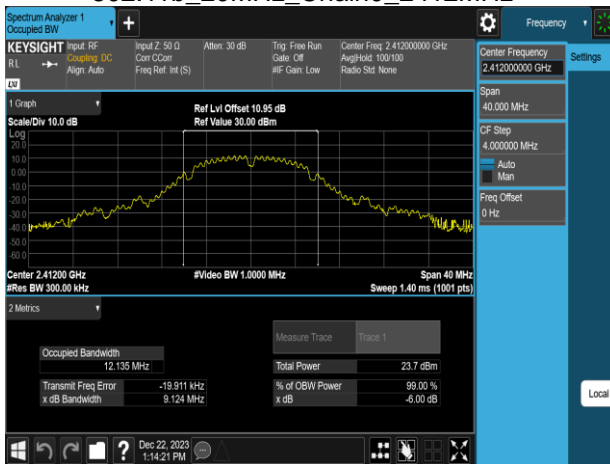


802.11n_20MHz_Chain0_2462MHz

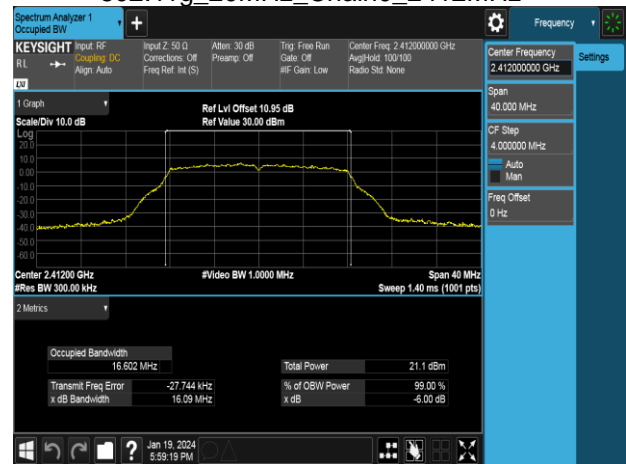


Test Data (Bandwidth 99%)

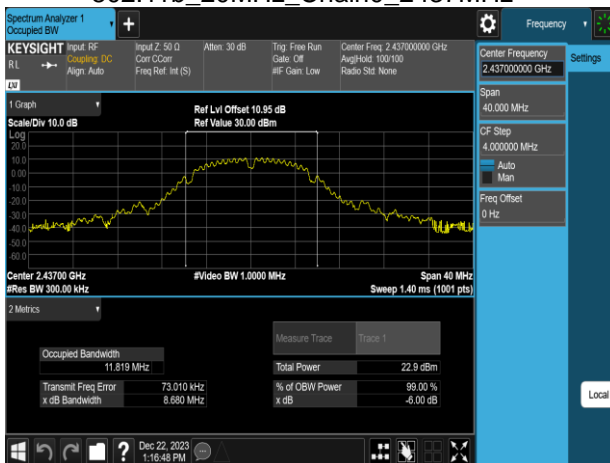
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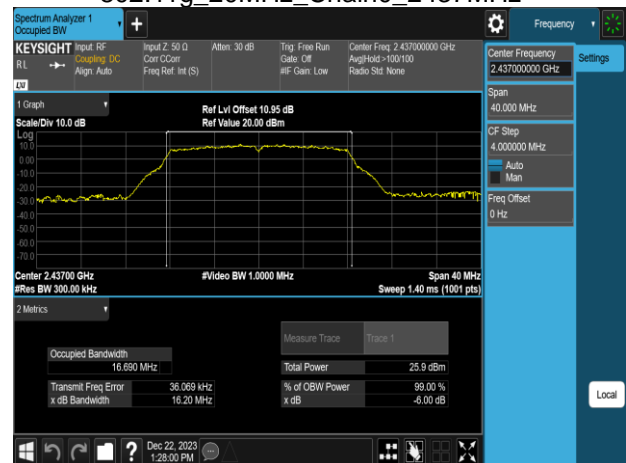
802.11g_20MHz_Chain0_2412MHz



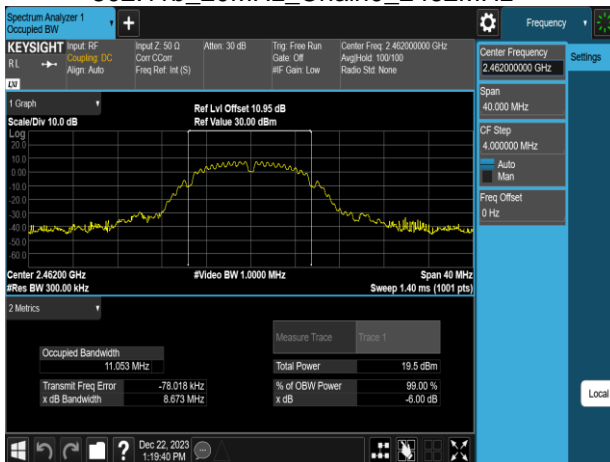
802.11b_20MHz_Chain0_2437MHz



802.11g_20MHz_Chain0_2437MHz



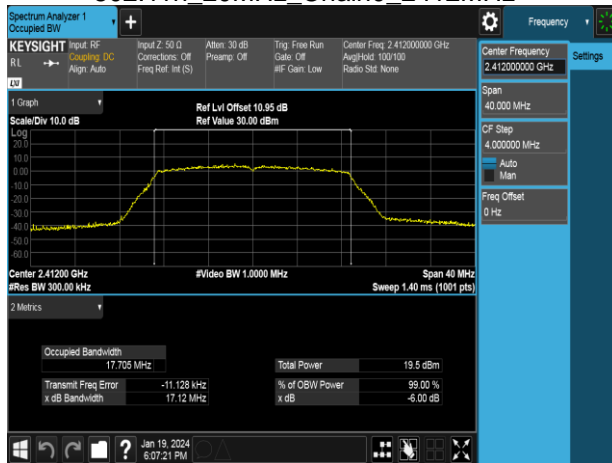
802.11b_20MHz_Chain0_2462MHz



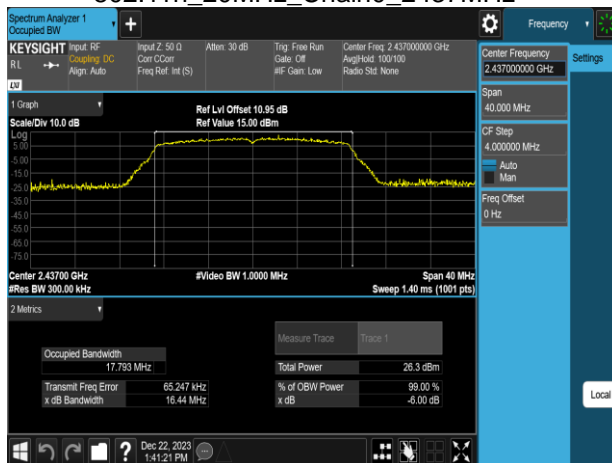
802.11g_20MHz_Chain0_2462MHz



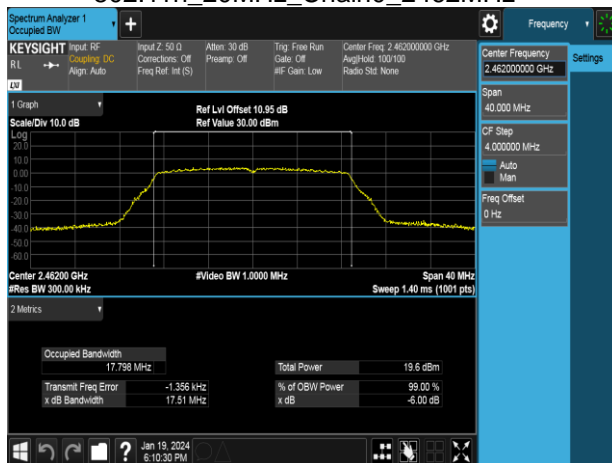
802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz



Report No.: TMWK2312004665KR

5.3 OUTPUT POWER MEASUREMENT

5.3.1 Test Limit

According to §15.247(b),

Peak output power :

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

Base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 30dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)] <input type="checkbox"/> Point-to-point operation :
-------	---

Average output power : For reporting purposes only.

5.3.2 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.

5.3.3 Test Setup

Refer to section 1.8.

5.3.4 Test Result

Temperature: 19.5~23.2°C

Test date: December 22, 2023 ~
January 19, 2024

Humidity: 50~55% RH

Tested by: David Li

Peak & Average output power :

802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	76	23.03	30.00	PASS
6	2437	1	72	22.18	30.00	PASS
11	2462	1	60	19.23	30.00	PASS
802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	76	20.19	30.00	PASS
6	2437	1	72	19.25	30.00	PASS
11	2462	1	60	16.00	30.00	PASS

802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	54	21.23	30.00	PASS
6	2437	6	72	25.23	30.00	PASS
11	2462	6	54	21.17	30.00	PASS
802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	54	14.39	30.00	PASS
6	2437	6	72	19.12	30.00	PASS
11	2462	6	54	14.36	30.00	PASS

802.11n_HT_20M Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	48	20.41	30.00	PASS
6	2437	MCS0	72	25.39	30.00	PASS
11	2462	MCS0	48	20.26	30.00	PASS
802.11n_HT_20M Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	48	12.55	30.00	PASS
6	2437	MCS0	72	18.86	30.00	PASS
11	2462	MCS0	48	12.73	30.00	PASS

Report No.: TMWK2312004665KR

5.4 POWER SPECTRAL DENSITY

5.4.1 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	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 8dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : [Limit = 8 – (DG – 6)] <input type="checkbox"/> Point-to-point operation :
-------	---

5.4.2 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 and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

5.4.3 Test Setup

Refer to section 1.8.

5.4.4 Test Result

Temperature: 19.5~23.2°C

Test date:

December 22, 2023 ~

January 19, 2024

Humidity: 50~55% RH

Tested by:

David Li

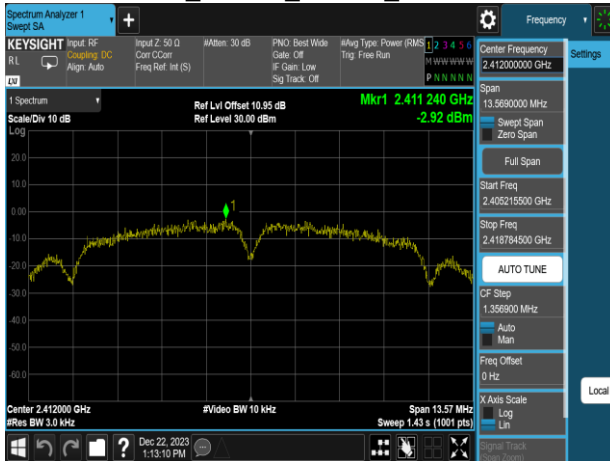
POWER DENSITY 802.11b				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-2.92	-2.92	8.00	PASS
2437	-2.51	-2.51	8.00	PASS
2462	-6.16	-6.16	8.00	PASS

POWER DENSITY 802.11g				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-10.10	-10.10	8.00	PASS
2437	-5.82	-5.82	8.00	PASS
2462	-10.90	-10.90	8.00	PASS

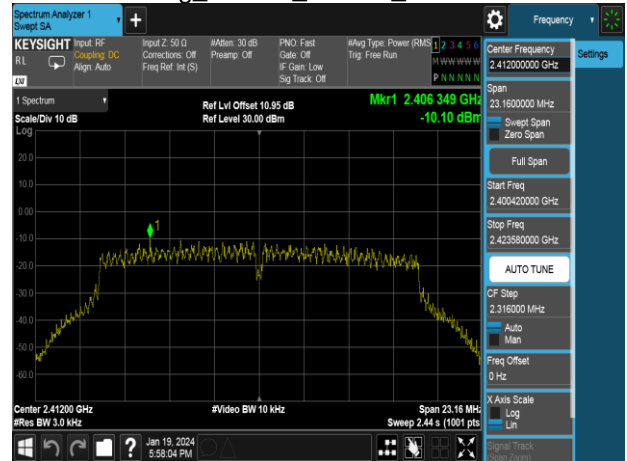
POWER DENSITY 802.11n HT20				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-12.61	-12.61	8.00	PASS
2437	-6.00	-6.00	8.00	PASS
2462	-12.71	-12.71	8.00	PASS

Test Data (Power density)

802.11b_20MHz_Chain0_2412MHz



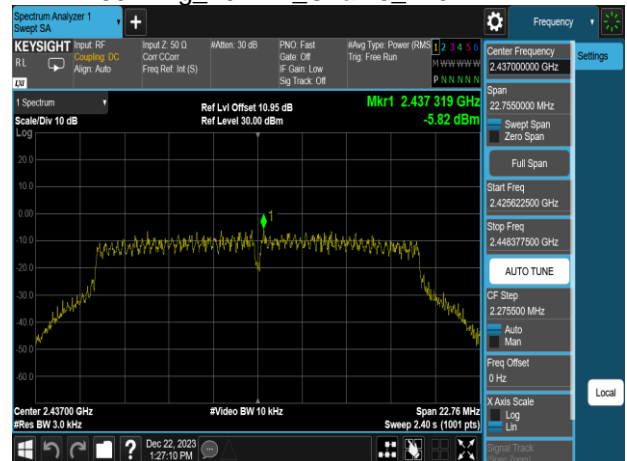
802.11g_20MHz_Chain0_2412MHz



802.11b_20MHz_Chain0_2437MHz



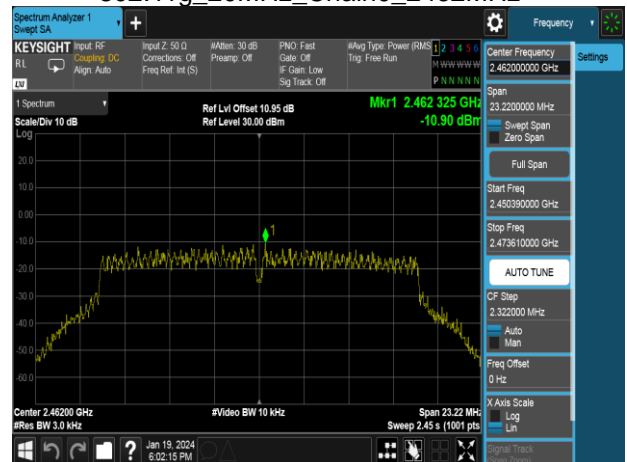
802.11g_20MHz_Chain0_2437MHz



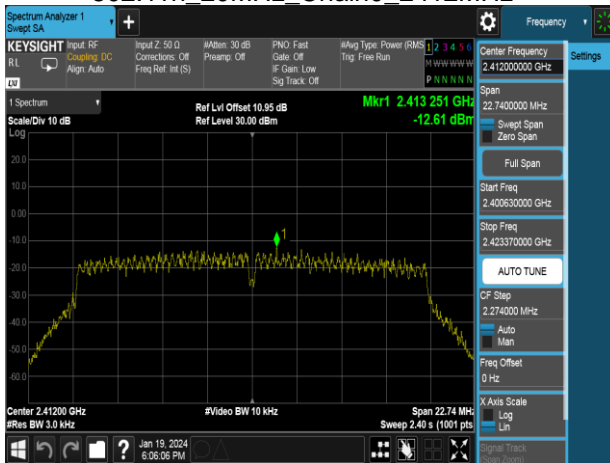
802.11b_20MHz_Chain0_2462MHz



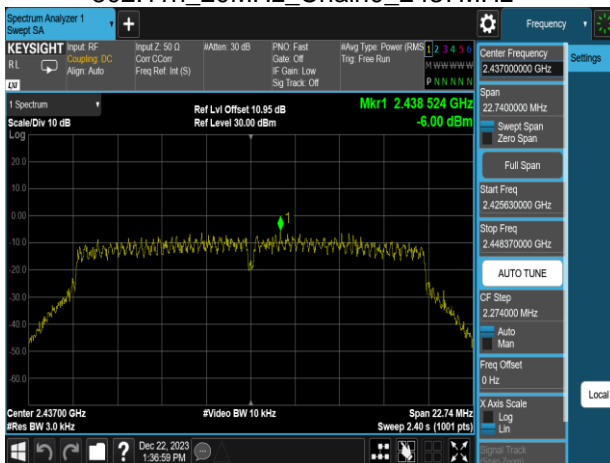
802.11g_20MHz_Chain0_2462MHz



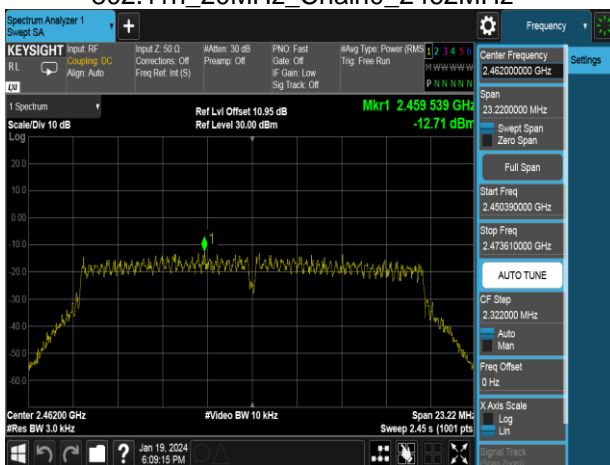
802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz



5.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

5.5.1 Test Limit

According to §15.247(d),

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).

5.5.2 Test Procedure

Test method Refer as KDB 662911 D01, 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.

5.5.3 Test Setup

Refer to section 1.8.

5.5.4 Test Result

Temperature: 19.5~23.2°C

Test date: December 22, 2023 ~
January 19, 2024

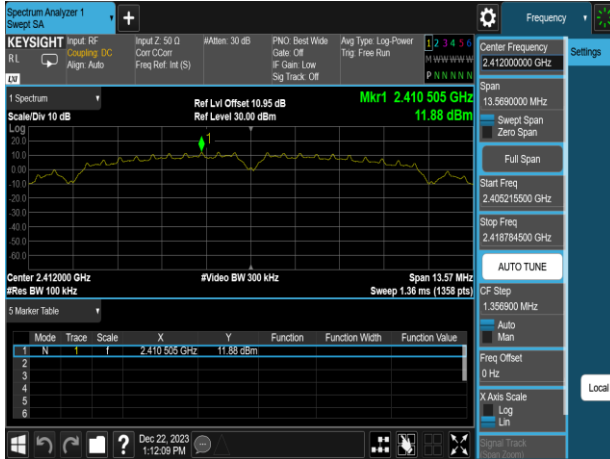
Humidity: 50~55% RH

Tested by: David Li

Test Data

Conducted Reference

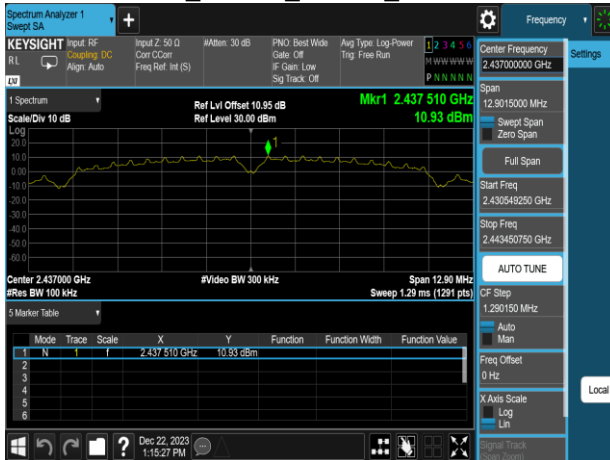
802.11b_20MHz_Chain0_2412MHz



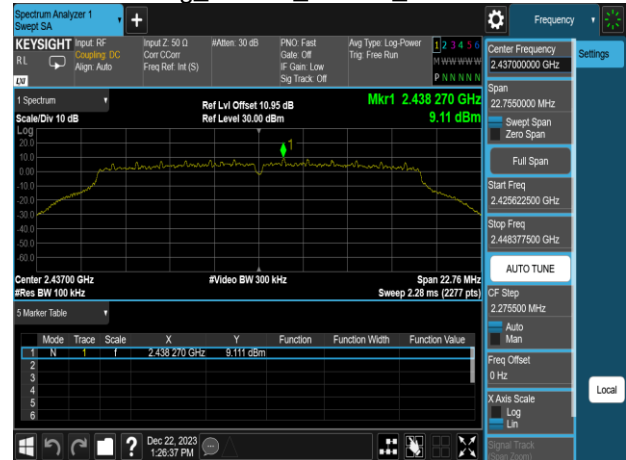
802.11g_20MHz_Chain0_2412MHz



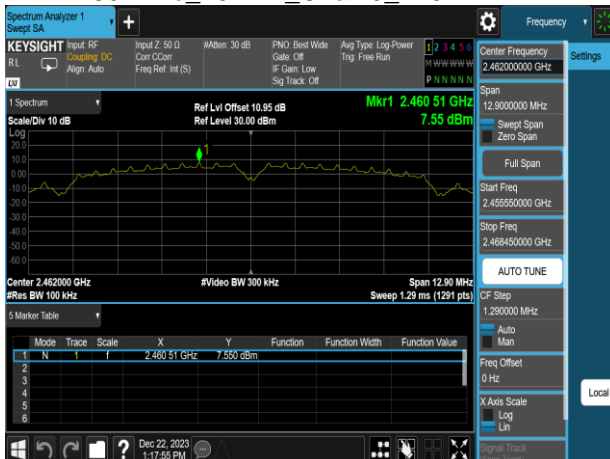
802.11b_20MHz_Chain0_2437MHz



802.11g_20MHz_Chain0_2437MHz



802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2462MHz



802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz

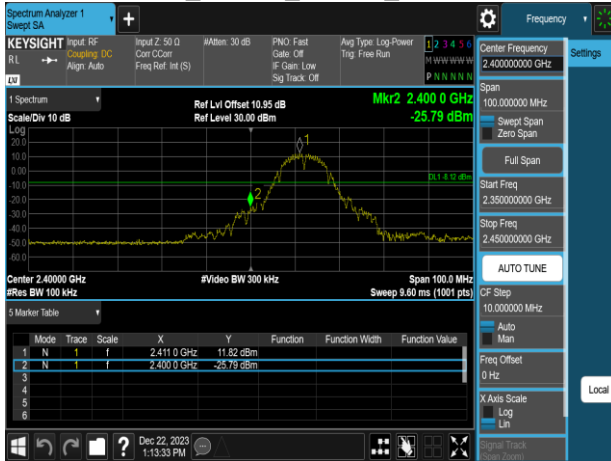


802.11n_20MHz_Chain0_2462MHz



Conducted Band Edge

802.11b_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2462MHz



802.11b_20MHz_Chain0_2462MHz



802.11n_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2412MHz

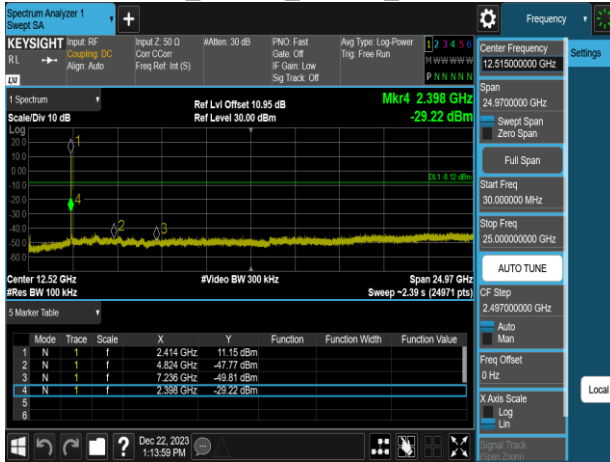


802.11n_20MHz_Chain0_2462MHz

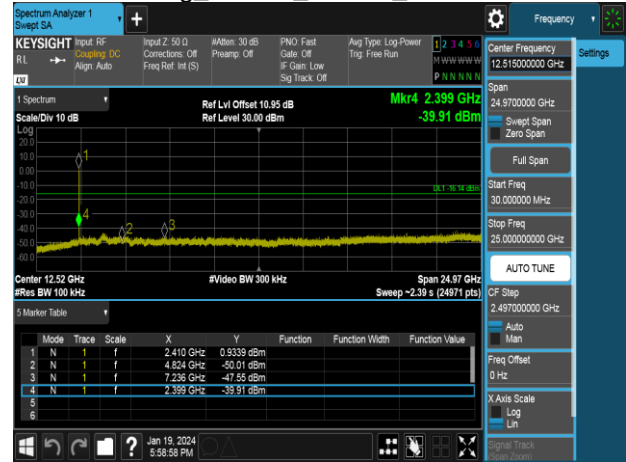


Conducted Spurious Emission

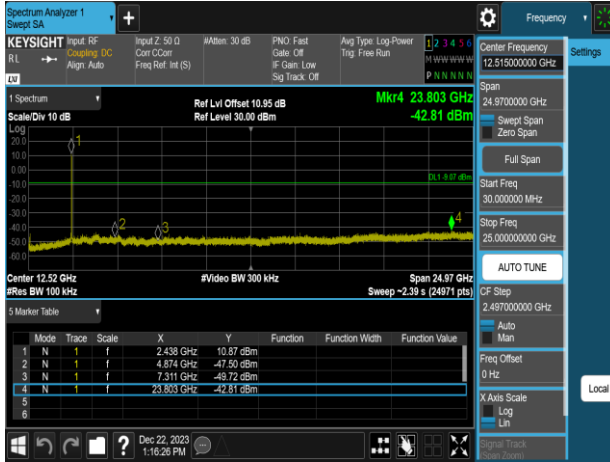
802.11b_20MHz_Chain0_2412MHz



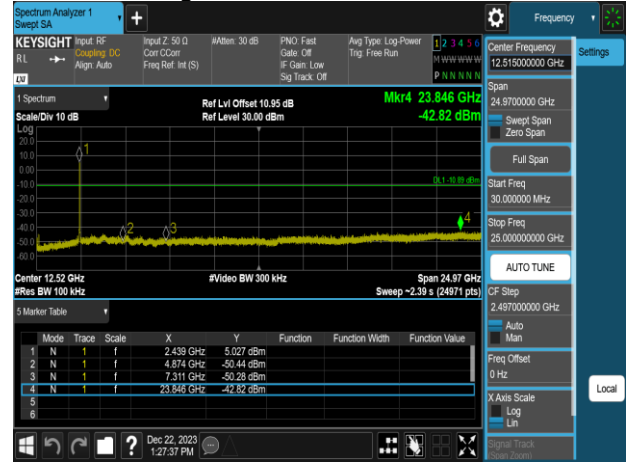
802.11g_20MHz_Chain0_2412MHz



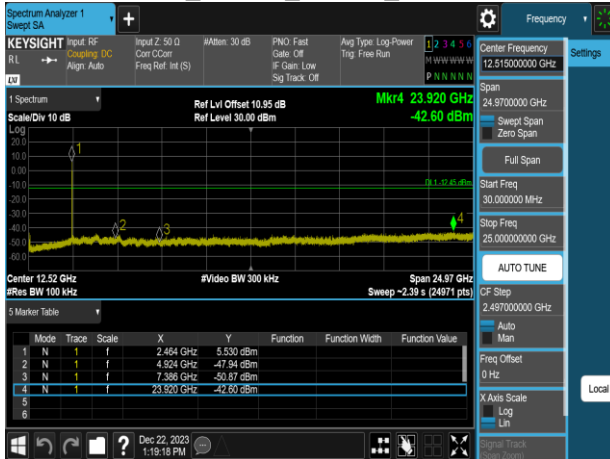
802.11b_20MHz_Chain0_2437MHz



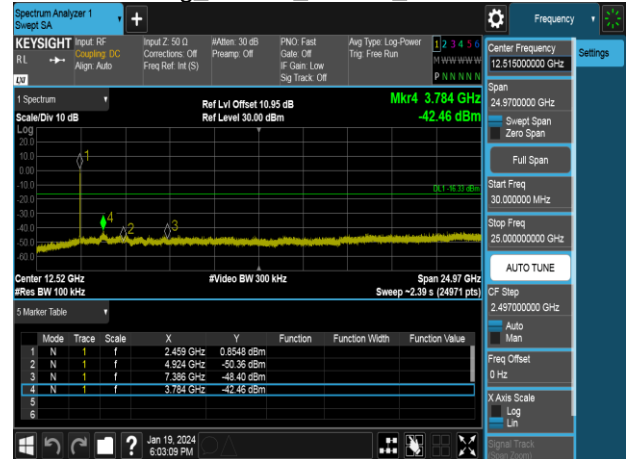
802.11g_20MHz_Chain0_2437MHz



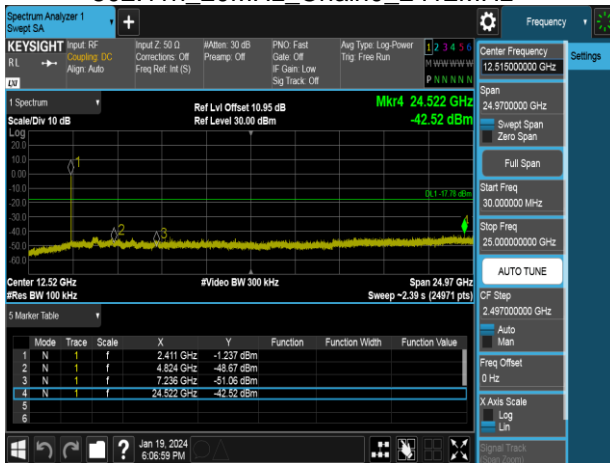
802.11b_20MHz_Chain0_2462MHz



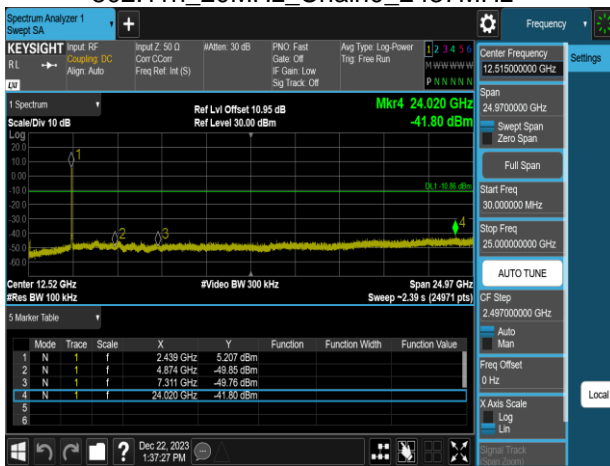
802.11g_20MHz_Chain0_2462MHz



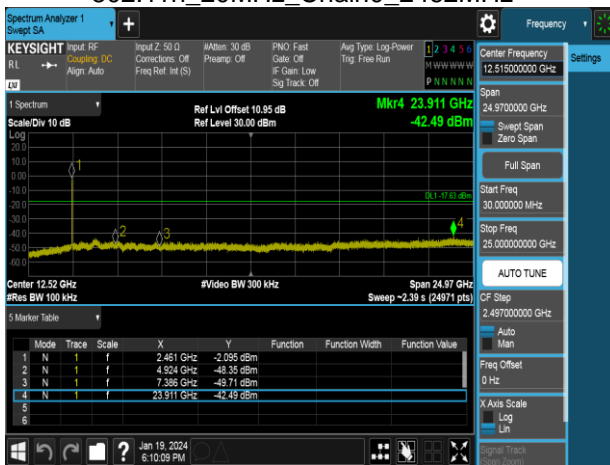
802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz



5.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

5.6.1 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	Field Strength (microvolts/m)	Measurement Distance (metres)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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.

Report No.: TMWK2312004665KR

5.6.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

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

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. The SA setting following :

(1) Below 1G : RBW = 100kHz, VBW \geq 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G :

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

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

·If Duty Cycle \geq 98%, VBW=10Hz.

·If Duty Cycle < 98%, VBW=1/T.

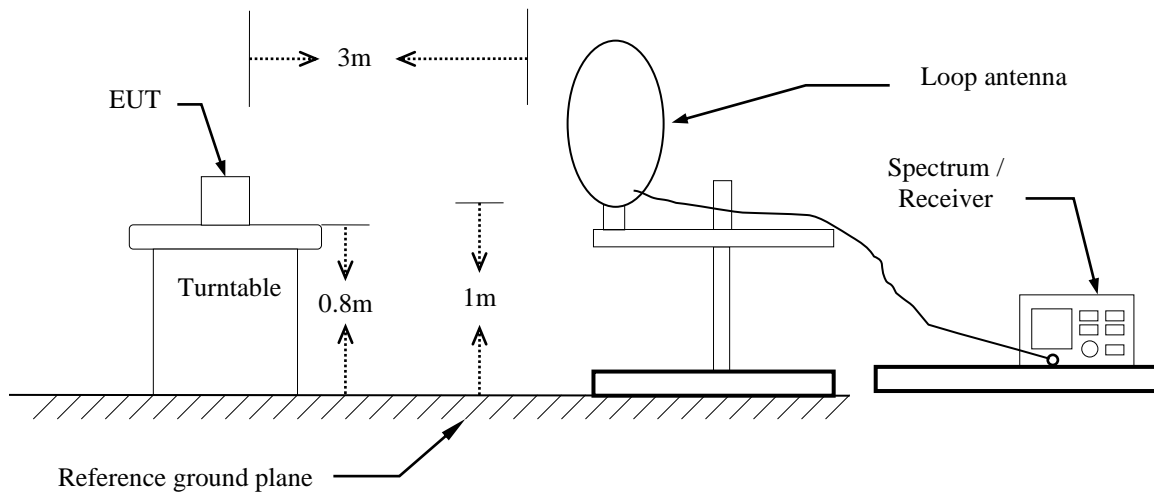
5. Data result :

Actual FS=Spectrum Reading Level + Factor

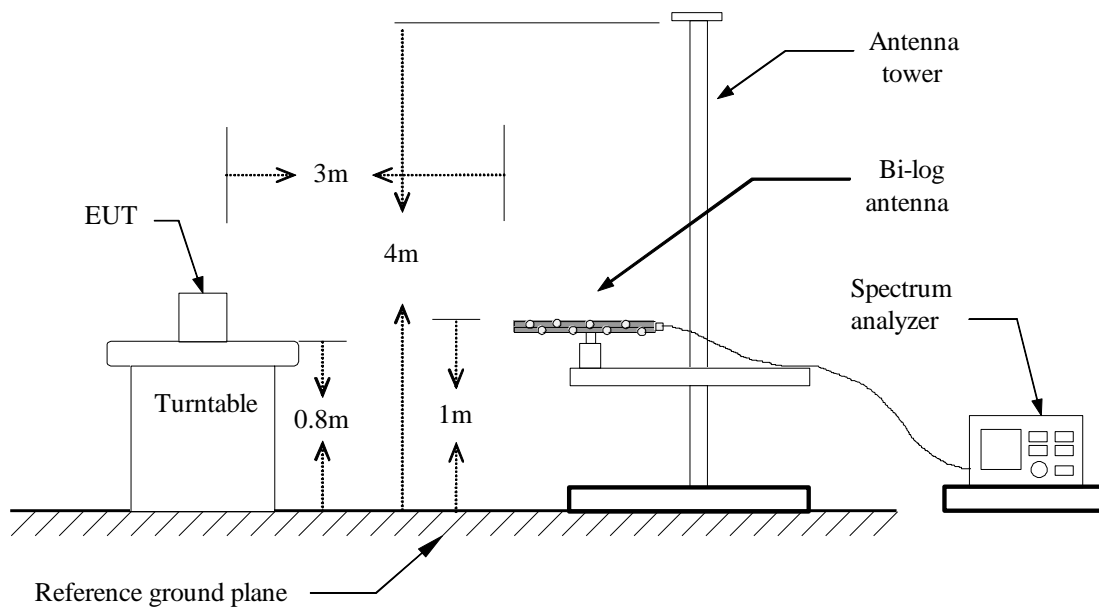
Margin=Actual FS- Limit

5.6.3 Test Setup

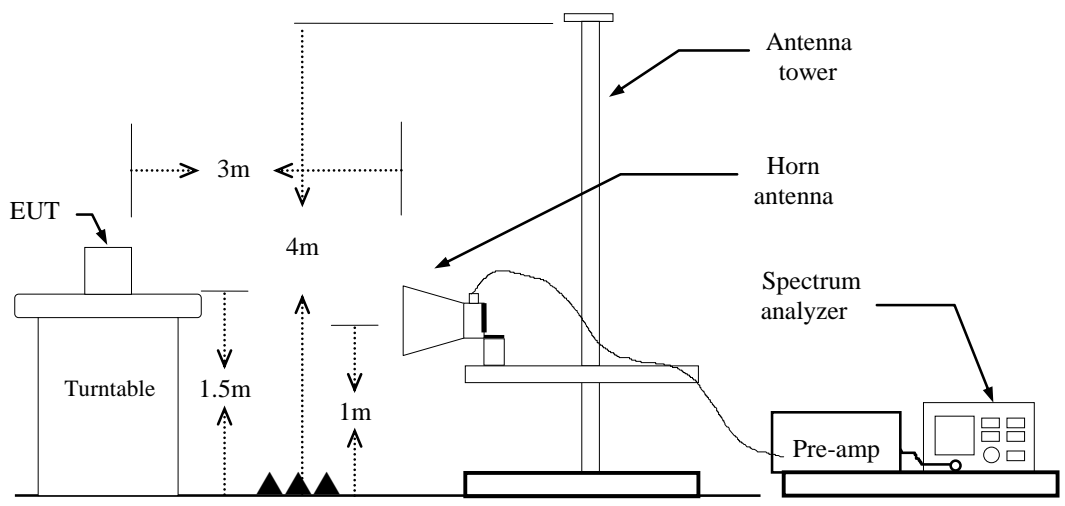
9kHz ~ 30MHz



30MHz ~ 1GHz



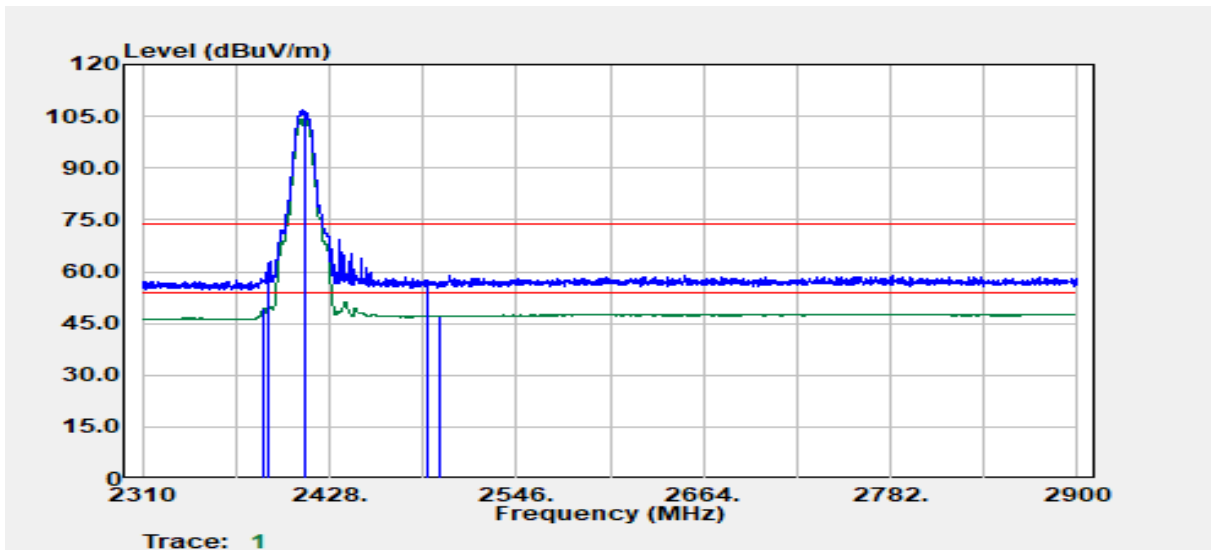
Above 1 GHz



5.6.4 Test Result

Band Edge Test Data

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:802.11b	Temp./Humi.	:24.5/58
Frequency	:2412 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:76		



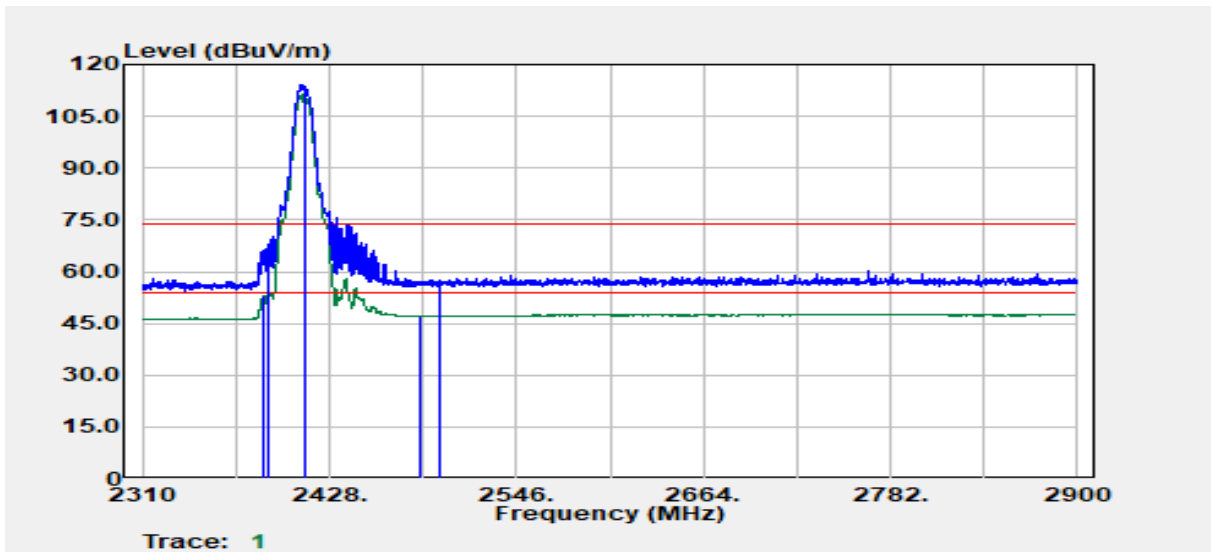
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit dB μ V/m	Margin dB
2387.03	Average	39.49	9.71	49.21	54.00	-4.79
2388.78	Peak	52.96	9.71	62.68	74.00	-11.32
2412.00	Peak	97.04	9.78	106.82	--	--
2412.00	Average	94.44	9.78	104.22	--	--
2489.33	Peak	47.33	10.11	57.45	74.00	-16.55
2498.08	Average	36.90	10.21	47.11	54.00	-6.89

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11b
 Frequency :2412 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :76

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A

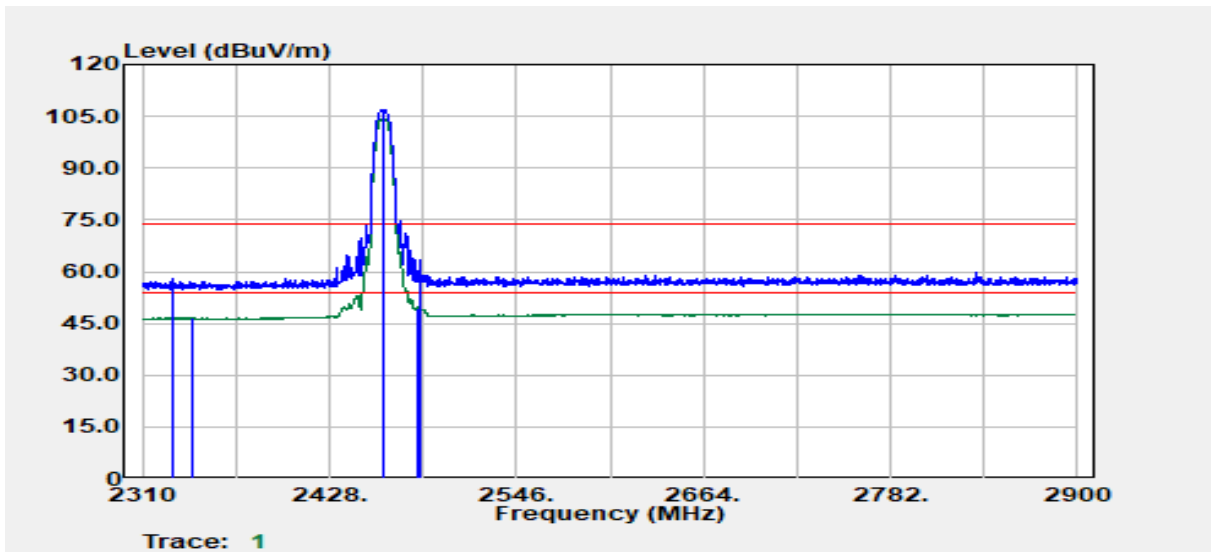


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2387.03	Average	43.30	9.71	53.01	54.00	-0.99
2389.78	Peak	58.34	9.71	68.06	74.00	-5.94
2412.00	Peak	104.38	9.78	114.16	--	--
2412.00	Average	101.45	9.78	111.23	--	--
2484.57	Average	37.22	10.06	47.28	54.00	-6.72
2498.08	Peak	47.44	10.21	57.65	74.00	-16.35

Report No.: TMWK2312004665KR

Rev.: 02

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:802.11b	Temp./Humi.	:24.5/58
Frequency	:2462 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:Bandedge	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:60		



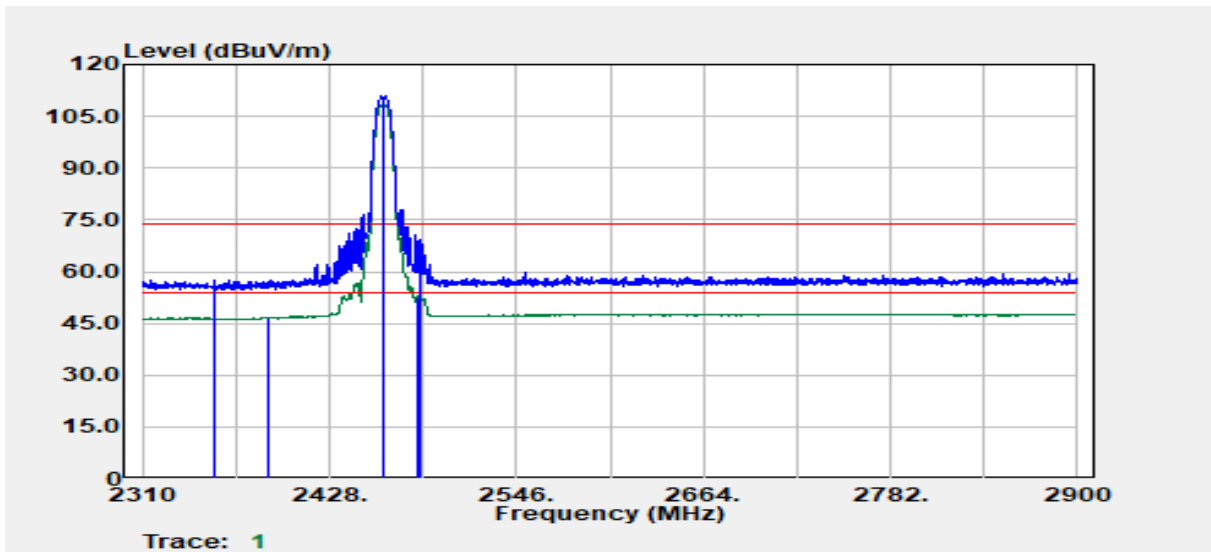
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2329.76	Peak	48.08	9.85	57.94	74.00	-16.06
2341.26	Average	36.63	9.86	46.50	54.00	-7.50
2462.00	Peak	97.09	9.99	107.08	--	--
2462.00	Average	94.26	9.99	104.25	--	--
2483.57	Average	39.49	10.05	49.54	54.00	-4.46
2485.32	Peak	53.25	10.07	63.32	74.00	-10.68

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11b
 Frequency :2462 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :60

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A



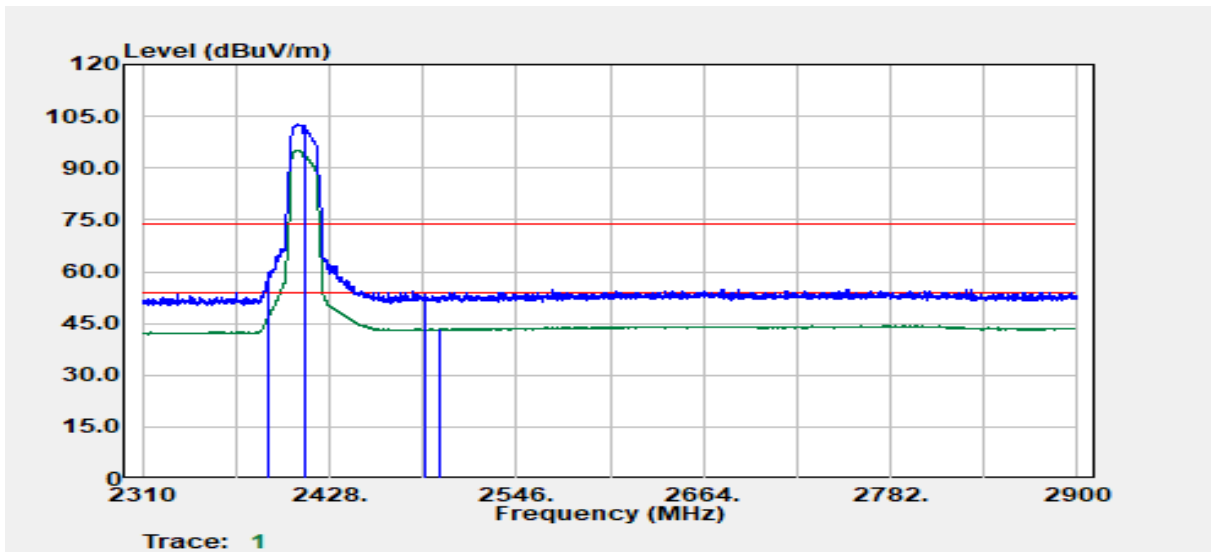
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2355.27	Peak	47.82	9.74	57.56	74.00	-16.44
2389.03	Average	37.05	9.71	46.76	54.00	-7.24
2462.00	Peak	100.78	9.99	110.77	--	--
2462.00	Average	98.26	9.99	108.25	--	--
2483.57	Average	42.69	10.05	52.74	54.00	-1.26
2485.82	Peak	59.17	10.07	69.24	74.00	-4.76

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2412 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :54

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :VERTICAL
 Engineer :Tony.Chao
 Test Chamber : 966A



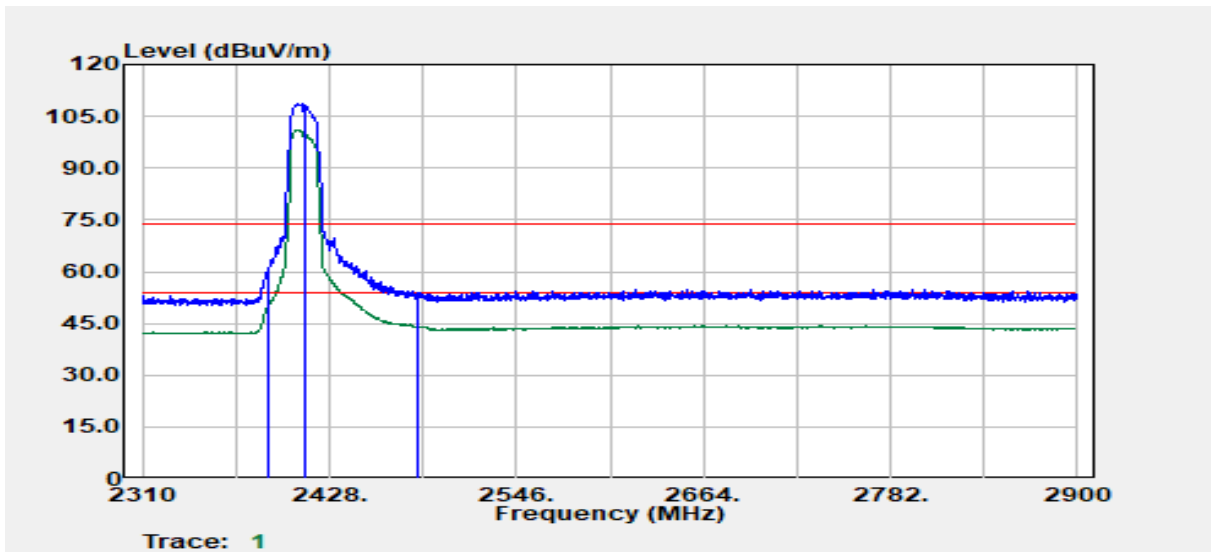
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2389.53	Peak	54.38	5.50	59.88	74.00	-14.12
2390.00	Average	41.89	5.51	47.40	54.00	-6.60
2412.00	Peak	97.18	5.53	102.71	--	--
2412.00	Average	89.70	5.53	95.23	--	--
2488.58	Peak	47.53	6.01	53.54	74.00	-20.46
2498.33	Average	37.38	6.06	43.45	54.00	-10.55

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2412 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :54

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A



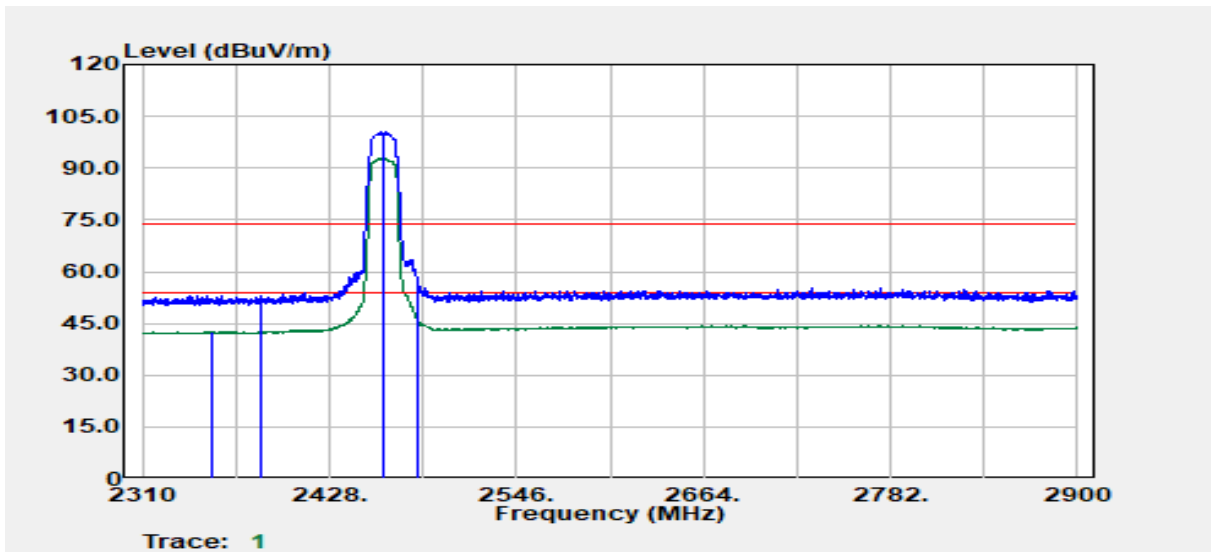
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2390.00	Peak	55.70	5.51	61.21	74.00	-12.79
2390.00	Average	44.87	5.51	50.38	54.00	-3.62
2412.00	Peak	103.13	5.53	108.66	--	--
2412.00	Average	95.55	5.53	101.09	--	--
2484.07	Peak	48.16	5.95	54.11	74.00	-19.89
2484.07	Average	38.31	5.95	44.26	54.00	-9.74

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2462 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :54

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :VERTICAL
 Engineer :Tony.Chao
 Test Chamber : 966A



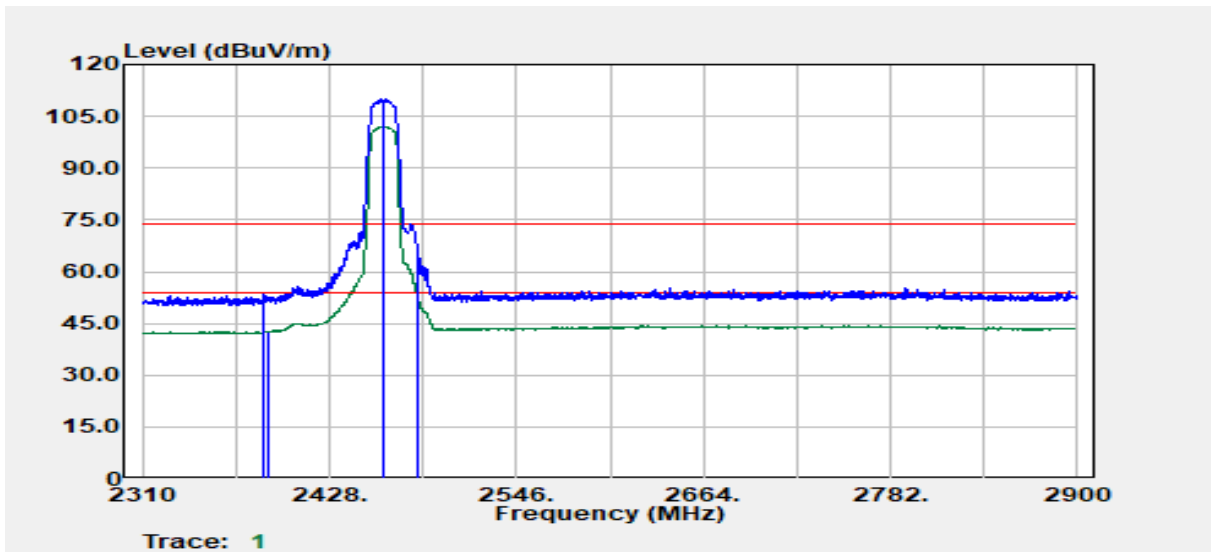
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2354.27	Average	37.21	5.47	42.69	54.00	-11.31
2384.78	Peak	47.73	5.40	53.14	74.00	-20.86
2462.00	Peak	95.11	5.54	100.66	--	--
2462.00	Average	87.30	5.54	92.84	--	--
2483.57	Peak	52.11	5.94	58.06	74.00	-15.94
2483.57	Average	40.04	5.94	45.98	54.00	-8.02

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2462 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :54

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A



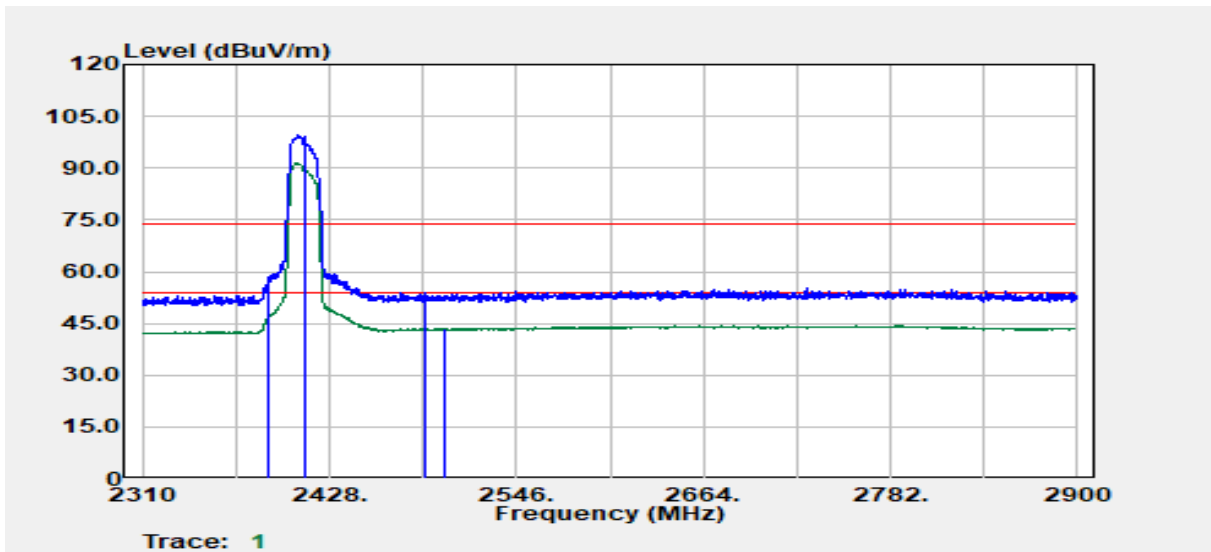
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2386.78	Peak	47.99	5.44	53.43	74.00	-20.57
2389.03	Average	37.26	5.49	42.75	54.00	-11.25
2462.00	Peak	104.44	5.54	109.98	--	--
2462.00	Average	96.46	5.54	102.00	--	--
2483.57	Peak	61.31	5.94	67.25	74.00	-6.75
2483.57	Average	47.19	5.94	53.13	54.00	-0.87

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2412 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :48

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :VERTICAL
 Engineer :Tony.Chao
 Test Chamber : 966A



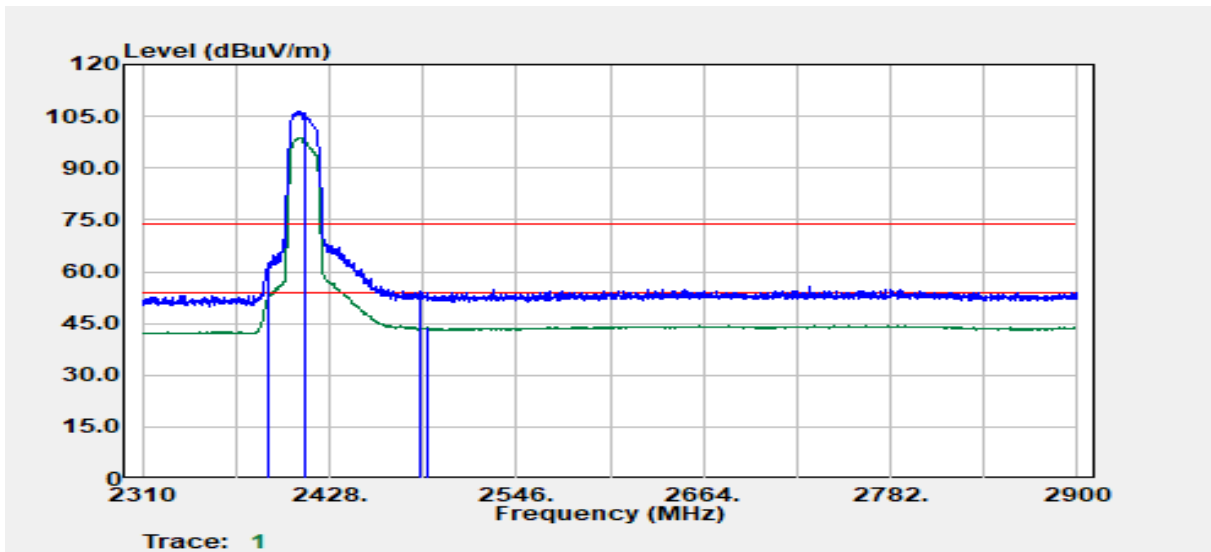
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2389.78	Average	41.53	5.51	47.04	54.00	-6.96
2390.00	Peak	52.91	5.51	58.42	74.00	-15.58
2412.00	Peak	93.94	5.53	99.47	--	--
2412.00	Average	85.88	5.53	91.41	--	--
2487.83	Peak	48.08	6.00	54.08	74.00	-19.92
2500.00	Average	37.31	6.07	43.38	54.00	-10.62

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2412 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :48

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A



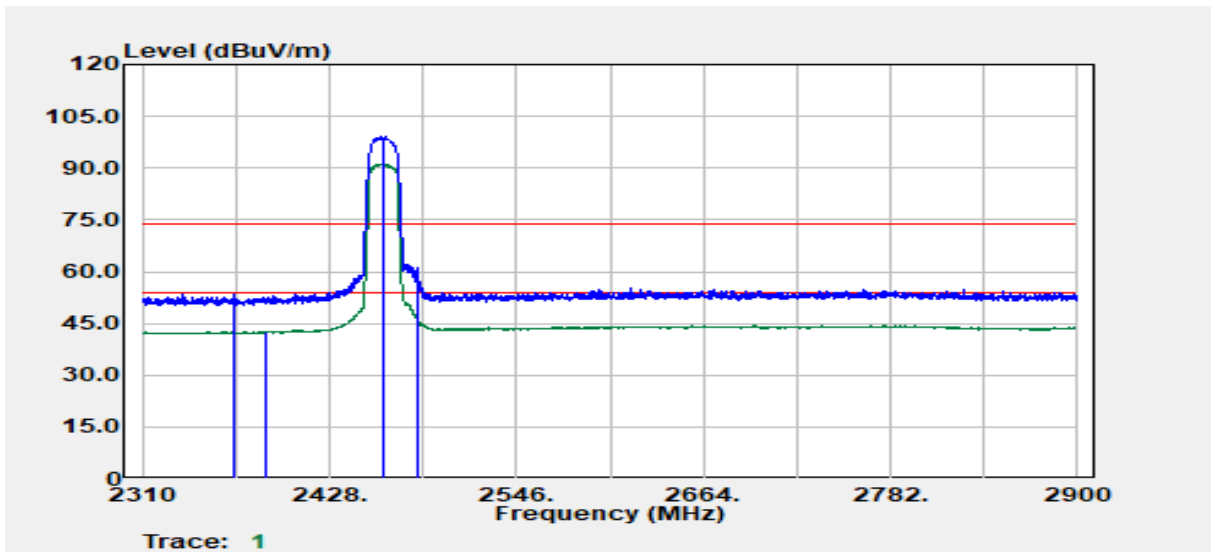
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2390.00	Peak	57.04	5.51	62.55	74.00	-11.45
2390.00	Average	47.52	5.51	53.03	54.00	-0.97
2412.00	Peak	100.68	5.53	106.21	--	--
2412.00	Average	93.20	5.53	98.74	--	--
2485.57	Peak	48.17	5.97	54.14	74.00	-19.86
2489.33	Average	37.75	6.02	43.78	54.00	-10.22

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2462 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :48

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :VERTICAL
 Engineer :Tony.Chao
 Test Chamber : 966A



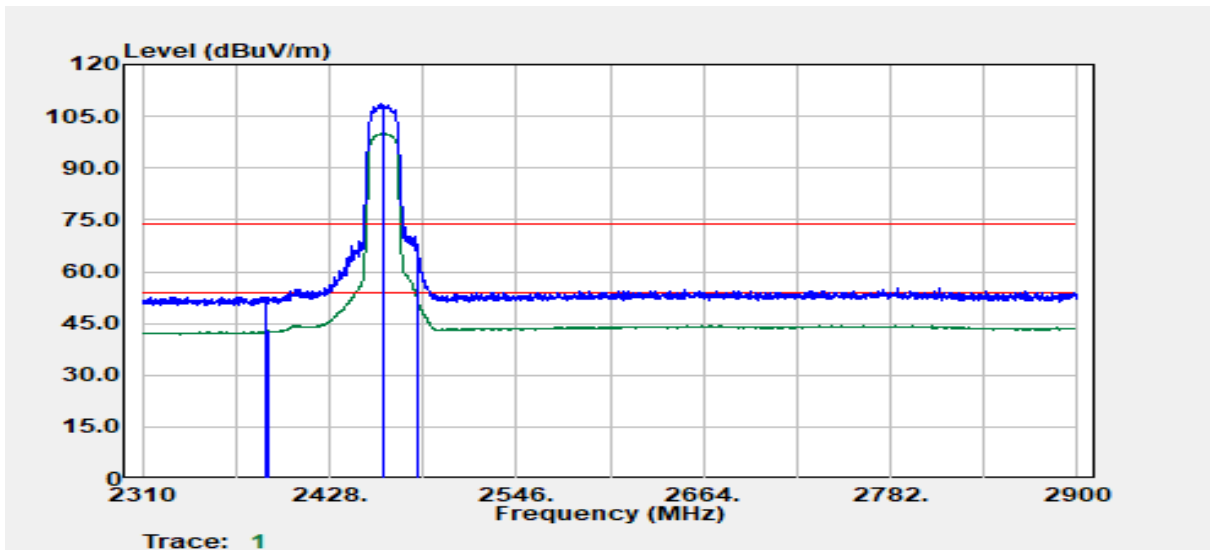
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2367.52	Peak	48.19	5.41	53.60	74.00	-20.40
2388.03	Average	37.04	5.47	42.51	54.00	-11.49
2462.00	Peak	93.63	5.54	99.17	--	--
2462.00	Average	85.67	5.54	91.21	--	--
2483.57	Peak	55.20	5.94	61.15	74.00	-12.85
2483.82	Average	39.84	5.95	45.78	54.00	-8.22

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2462 MHz
 Operation Mode :Bandedge
 EUT Pol :E2
 Setting :48

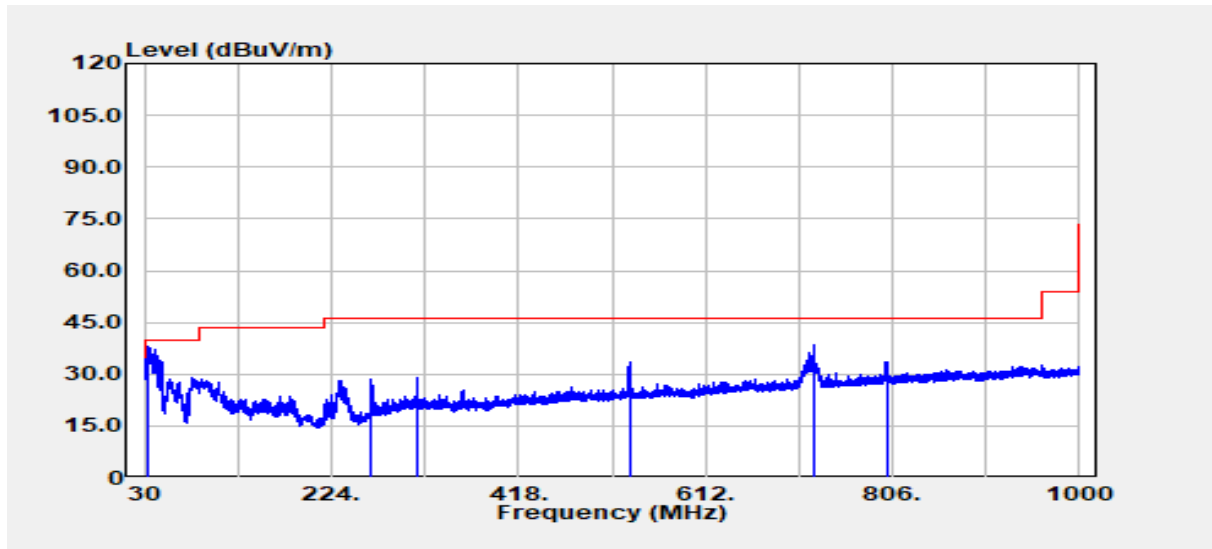
Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
2388.53	Peak	47.22	5.48	52.70	74.00	-21.30
2389.28	Average	37.32	5.49	42.82	54.00	-11.18
2462.00	Peak	102.97	5.54	108.52	--	--
2462.00	Average	94.44	5.54	99.98	--	--
2483.57	Average	46.03	5.94	51.97	54.00	-2.03
2484.32	Peak	59.42	5.95	65.37	74.00	-8.63

TX Test Data

Project No	:TM-2312000115P	Test Date	:2024-01-19
Operation Band	:802.11g	Temp./Humi.	:24.5/57
Frequency	:2462 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:		



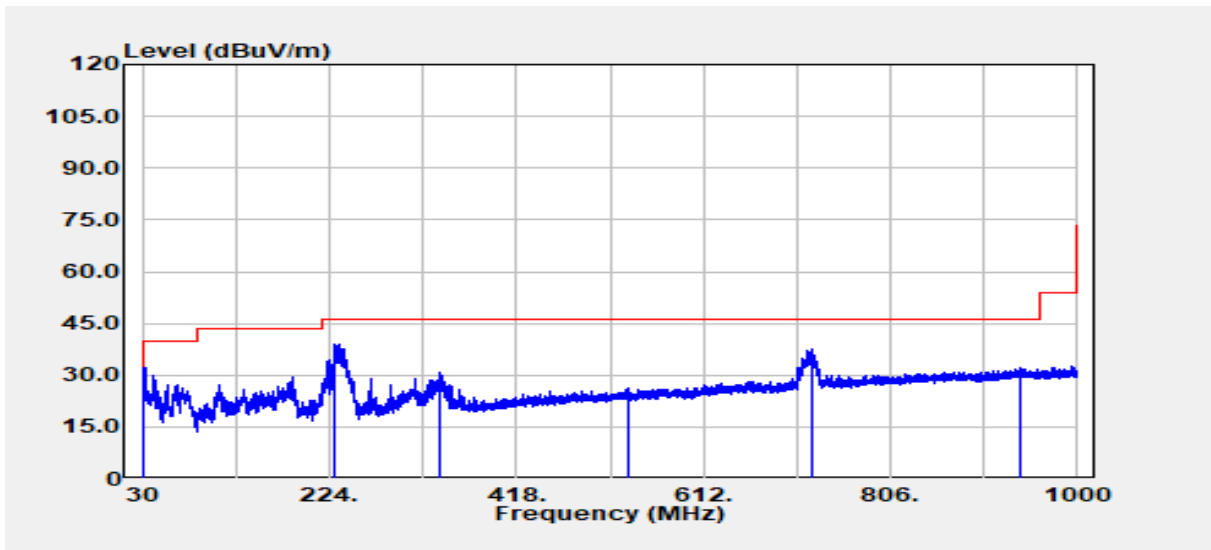
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBUV	Factor dB	Actual FS dBUV/m	Limit dBUV/m	Margin dB
32.91	Peak	42.76	-4.92	37.84	40.00	-2.16
265.35	Peak	37.91	-9.50	28.40	46.00	-17.60
312.03	Peak	37.27	-8.35	28.93	46.00	-17.07
533.07	Peak	36.70	-3.13	33.58	46.00	-12.42
724.40	Peak	38.12	0.18	38.30	46.00	-7.70
800.06	Peak	32.33	1.32	33.65	46.00	-12.35

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2462 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A

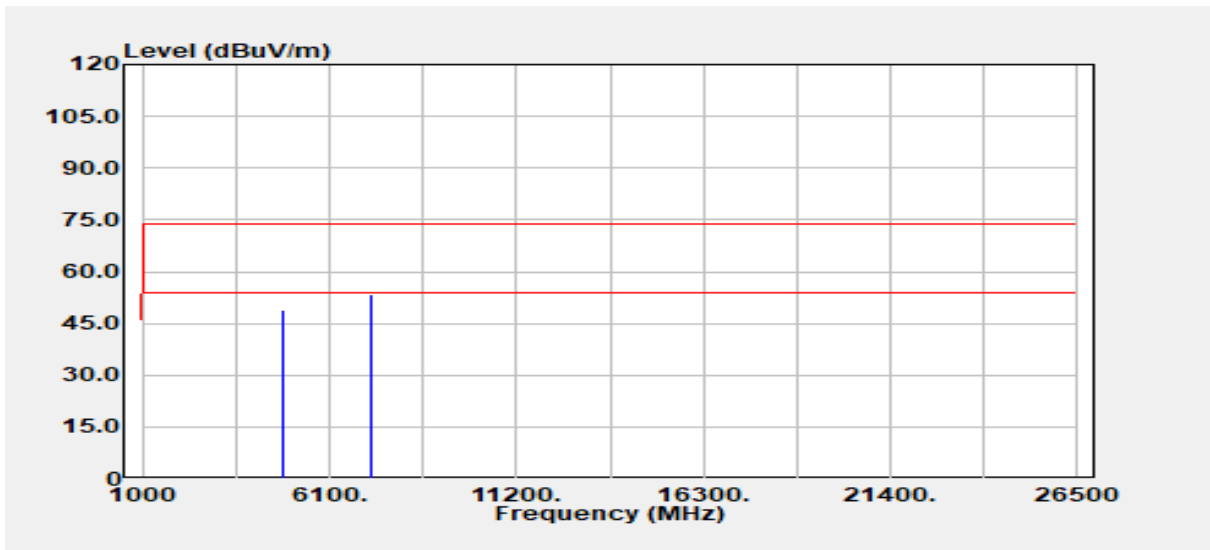


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
32.18	Peak	35.90	-3.76	32.14	40.00	-7.86
229.70	Peak	50.25	-11.32	38.93	46.00	-7.07
338.46	Peak	38.68	-7.83	30.85	46.00	-15.15
533.07	Peak	29.57	-3.13	26.45	46.00	-19.55
724.52	Peak	37.55	0.18	37.73	46.00	-8.27
941.07	Peak	28.43	3.67	32.10	46.00	-13.90

Report No.: TMWK2312004665KR

Rev.: 02

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:802.11b	Temp./Humi.	:24.5/58
Frequency	:2412 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:76		



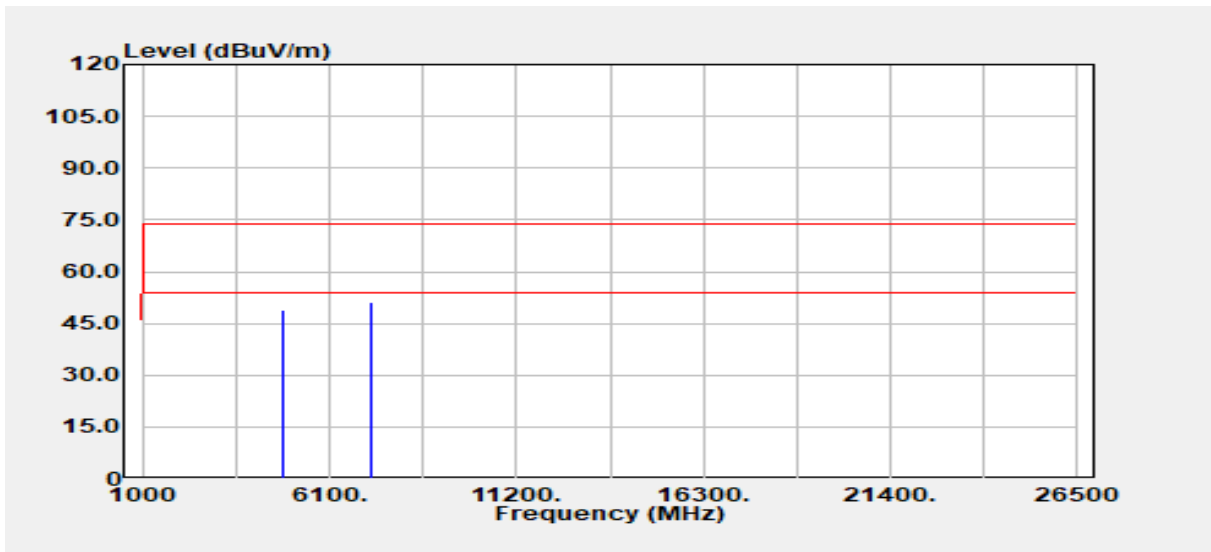
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4824.00	Peak	43.48	5.38	48.86	74.00	-25.14
4824.00	Average	41.67	5.38	47.05	54.00	-6.95
7236.00	Peak	44.88	8.47	53.35	74.00	-20.65
7236.00	Average	41.55	8.47	50.02	54.00	-3.98

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11b
 Frequency :2412 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :76

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :Horizontal
 Engineer :Ray.Li
 Test Chamber : 966A



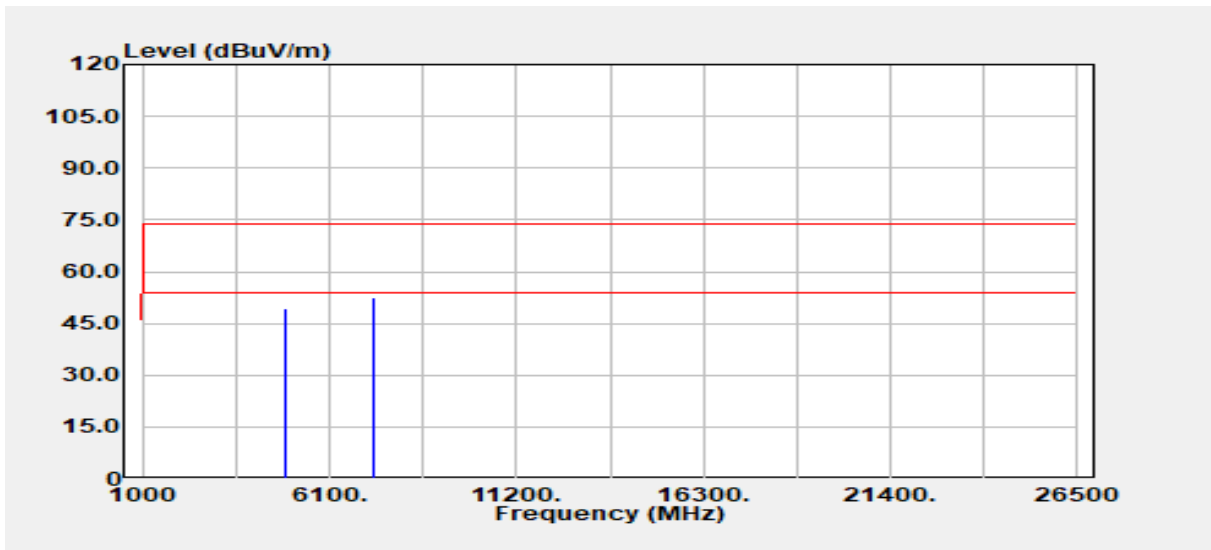
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4824.00	Peak	43.60	5.38	48.99	74.00	-25.02
4824.00	Average	42.62	5.38	48.00	54.00	-6.00
7236.00	Peak	42.50	8.47	50.97	74.00	-23.03
7236.00	Average	38.17	8.47	46.65	54.00	-7.35

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11b
 Frequency :2437 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :72

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :Vertical
 Engineer :Ray.Li
 Test Chamber : 966A



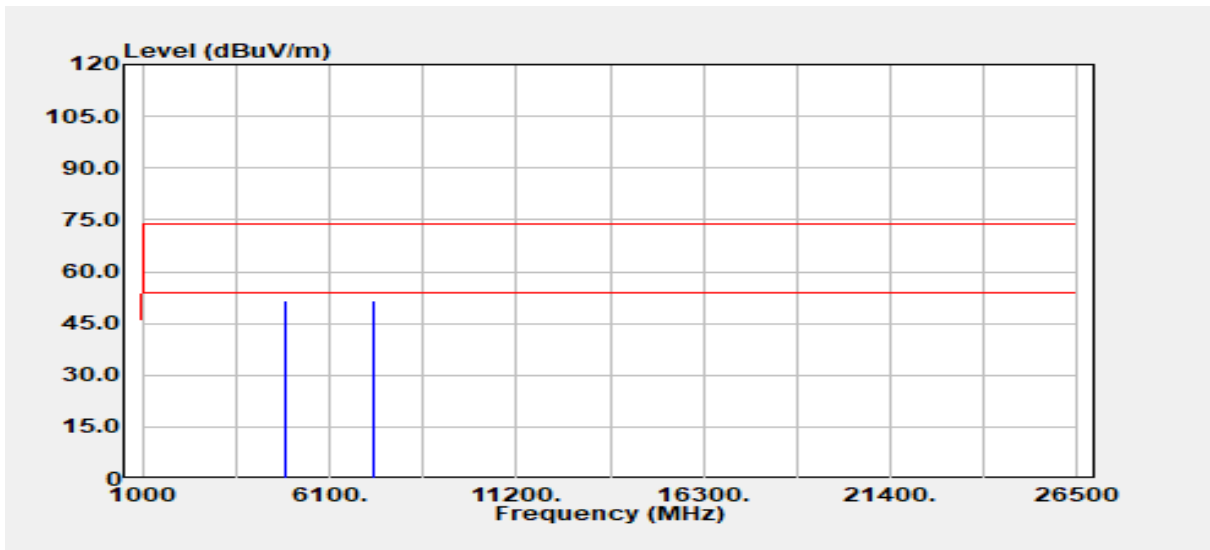
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4874.00	Peak	43.94	5.39	49.33	74.00	-24.67
4874.00	Average	43.11	5.39	48.51	54.00	-5.49
7311.00	Peak	44.17	8.42	52.59	74.00	-21.41
7311.00	Average	40.27	8.42	48.69	54.00	-5.31

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11b
 Frequency :2437 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :72

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :Horizontal
 Engineer :Ray.Li
 Test Chamber : 966A

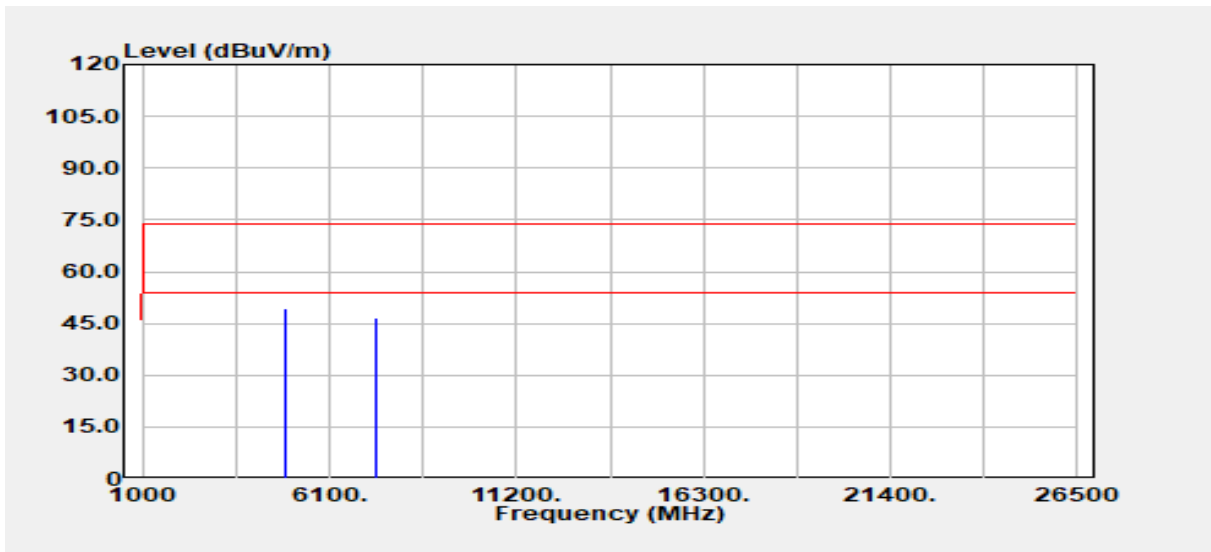


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4874.00	Peak	46.05	5.39	51.44	74.00	-22.56
4874.00	Average	44.16	5.39	49.55	54.00	-4.45
7311.00	Peak	43.31	8.42	51.73	74.00	-22.27
7311.00	Average	39.78	8.42	48.20	54.00	-5.80

Report No.: TMWK2312004665KR

Rev.: 02

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:802.11b	Temp./Humi.	:24.5/58
Frequency	:2462 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:60		



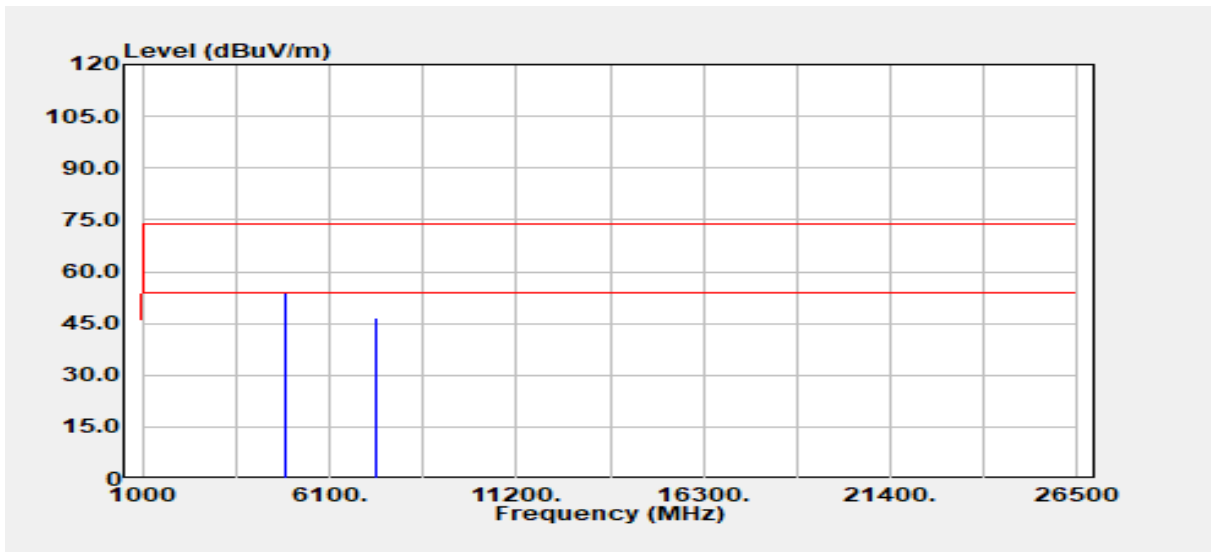
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4924.00	Peak	44.13	5.45	49.58	74.00	-24.42
4924.00	Average	41.10	5.45	46.54	54.00	-7.46
7386.00	Peak	38.15	8.57	46.72	74.00	-27.28
7386.00	Average	30.73	8.57	39.31	54.00	-14.69

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11b
 Frequency :2462 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :60

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :Horizontal
 Engineer :Ray.Li
 Test Chamber : 966A



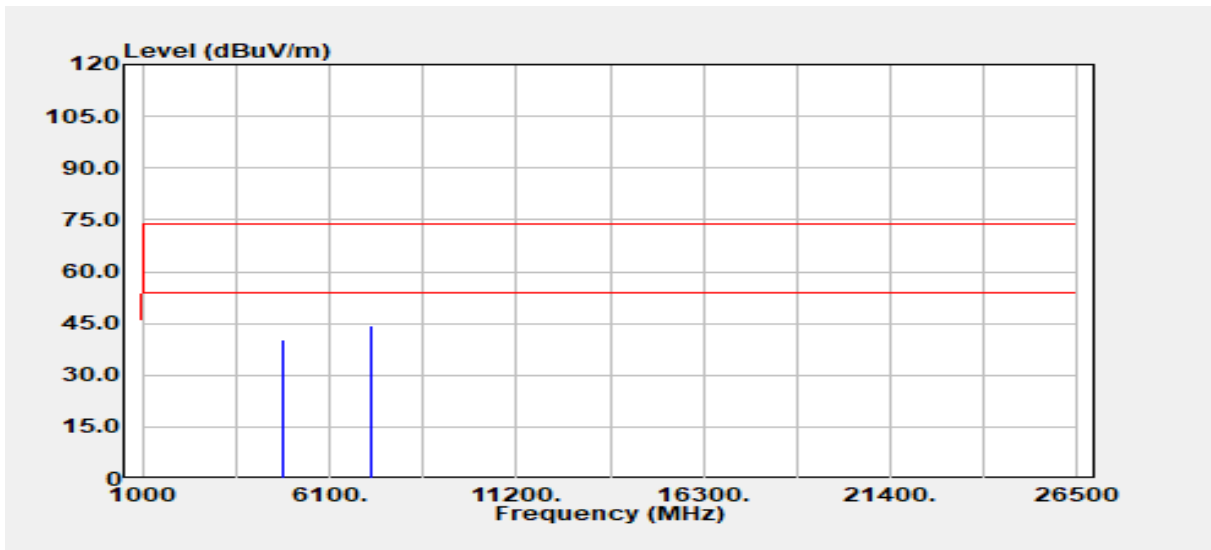
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4924.00	Peak	48.46	5.45	53.90	74.00	-20.10
4924.00	Average	46.36	5.45	51.81	54.00	-2.19
7386.00	Peak	38.19	8.57	46.76	74.00	-27.24
7386.00	Average	31.49	8.57	40.07	54.00	-13.93

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2412 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :54

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :VERTICAL
 Engineer :Tony.Chao
 Test Chamber : 966A



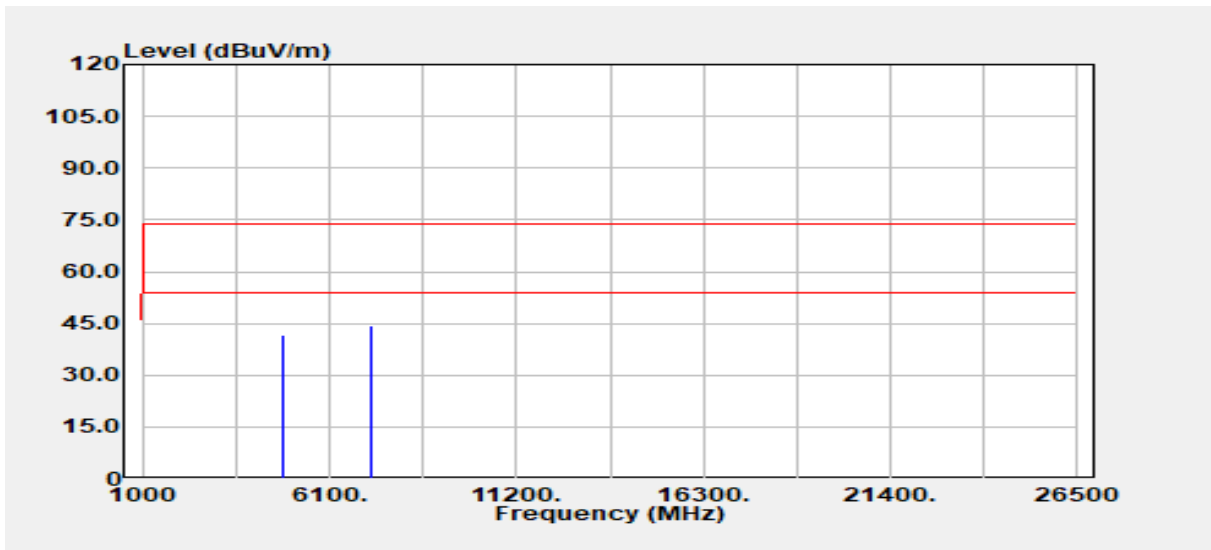
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4824.00	Peak	38.03	2.25	40.28	74.00	-33.72
4824.00	Average	29.96	2.25	32.21	54.00	-21.79
7236.00	Peak	35.02	9.17	44.18	74.00	-29.82
7236.00	Average	27.08	9.17	36.25	54.00	-17.75

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2412 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :54

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A

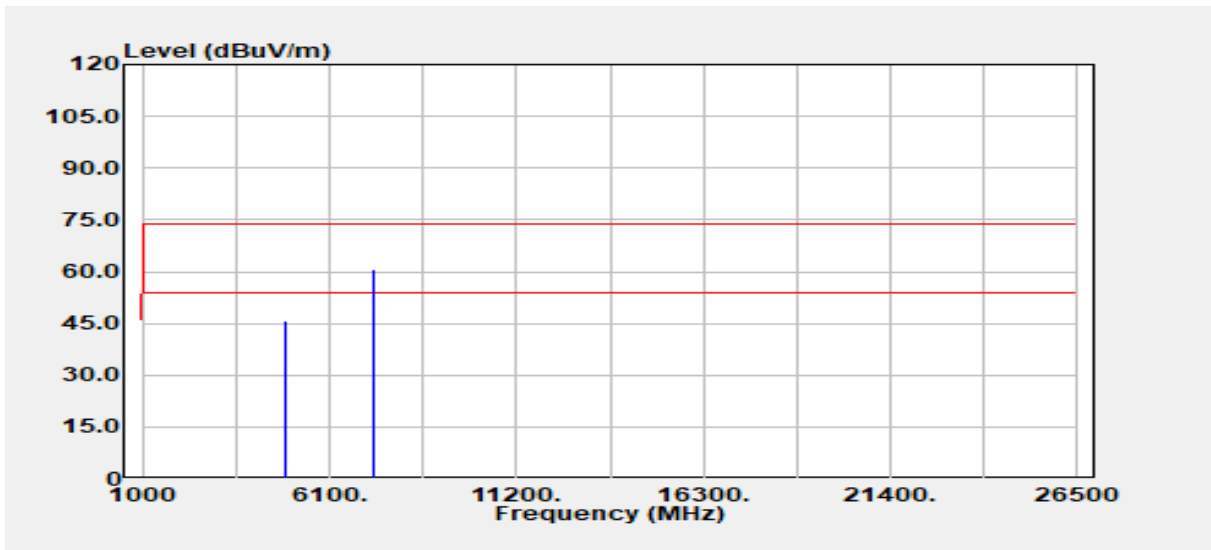


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4824.00	Peak	39.52	2.25	41.77	74.00	-32.23
4824.00	Average	31.32	2.25	33.57	54.00	-20.43
7236.00	Peak	35.19	9.17	44.36	74.00	-29.64
7236.00	Average	27.04	9.17	36.21	54.00	-17.79

Report No.: TMWK2312004665KR

Rev.: 02

Project No	:TM-2312000115P	Test Date	:2024-01-08
Operation Band	:802.11g	Temp./Humi.	:24.5/58
Frequency	:2437 MHz	Antenna Pol.	:Vertical
Operation Mode	:TX	Engineer	:Ray.Li
EUT Pol	:E2	Test Chamber	: 966A
Setting	:72		



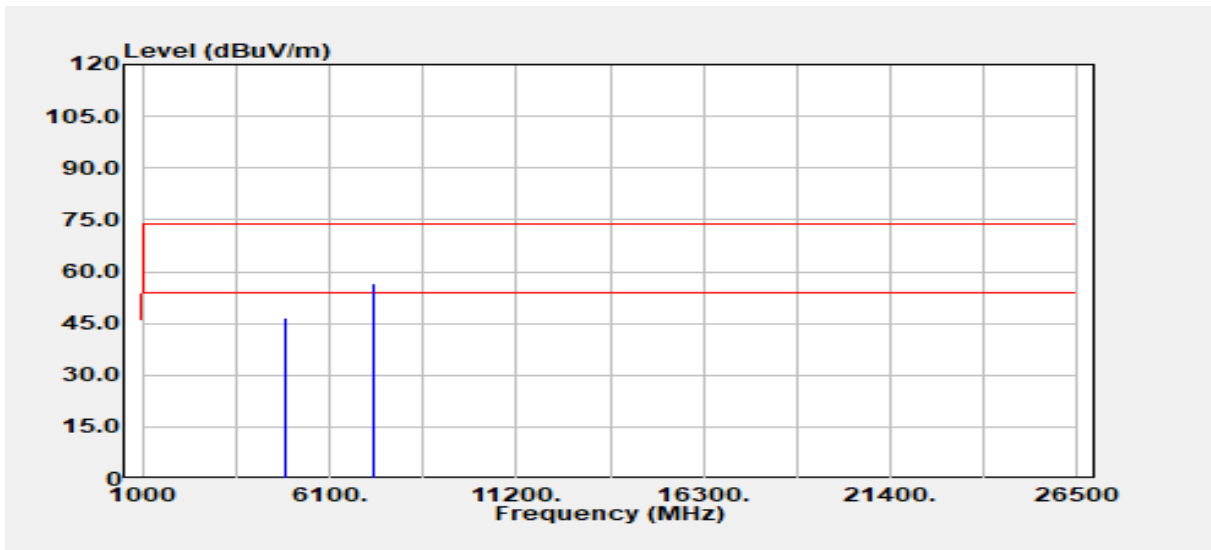
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4874.00	Peak	40.39	5.39	45.78	74.00	-28.22
4874.00	Average	32.44	5.39	37.84	54.00	-16.16
7311.00	Peak	52.32	8.42	60.73	74.00	-13.27
7311.00	Average	41.77	8.42	50.19	54.00	-3.81

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2437 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :72

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :Horizontal
 Engineer :Ray.Li
 Test Chamber : 966A

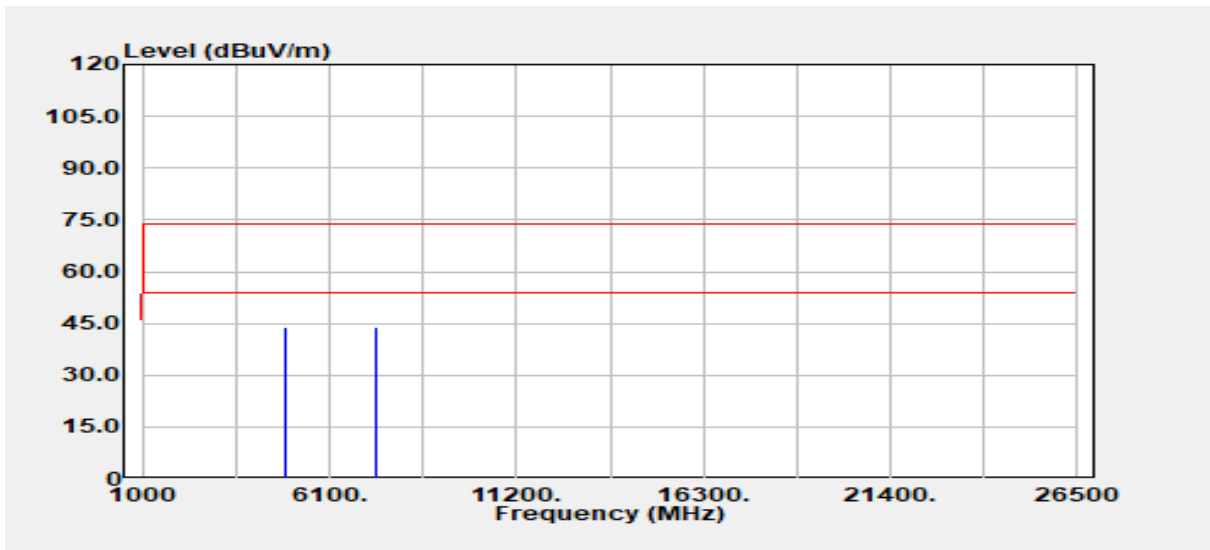


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4874.00	Peak	41.10	5.39	46.49	74.00	-27.51
4874.00	Average	35.01	5.39	40.41	54.00	-13.59
7311.00	Peak	48.16	8.42	56.57	74.00	-17.43
7311.00	Average	38.86	8.42	47.28	54.00	-6.72

Report No.: TMWK2312004665KR

Rev.: 02

Project No	:TM-2312000115P	Test Date	:2024-01-19
Operation Band	:802.11g	Temp./Humi.	:24.5/57
Frequency	:2462 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:54		



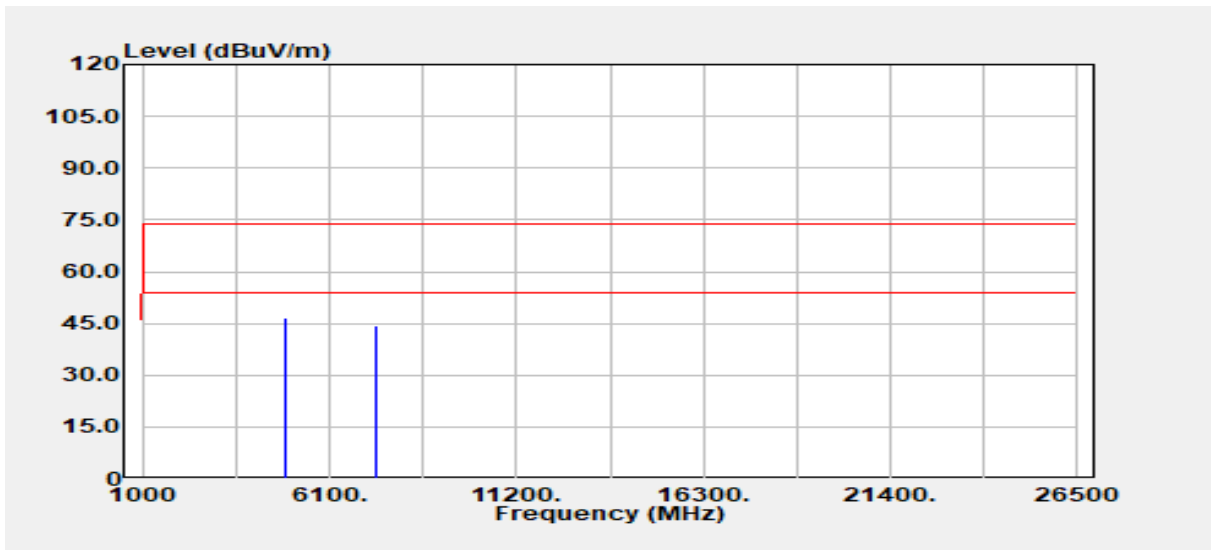
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4924.00	Peak	40.90	2.93	43.83	74.00	-30.17
4924.00	Average	32.75	2.93	35.68	54.00	-18.32
7386.00	Peak	34.69	9.01	43.71	74.00	-30.29
7386.00	Average	27.62	9.01	36.63	54.00	-17.37

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11g
 Frequency :2462 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :54

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A



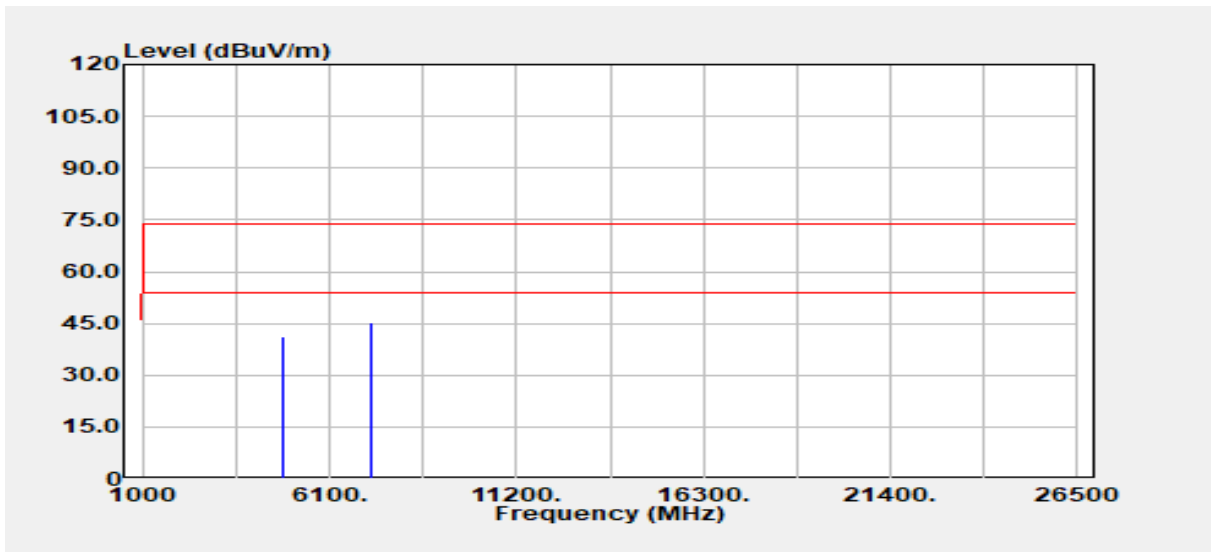
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4924.00	Peak	43.71	2.93	46.64	74.00	-27.36
4924.00	Average	36.74	2.93	39.67	54.00	-14.33
7386.00	Peak	35.33	9.01	44.34	74.00	-29.66
7386.00	Average	27.68	9.01	36.69	54.00	-17.31

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2412 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :48

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :VERTICAL
 Engineer :Tony.Chao
 Test Chamber : 966A



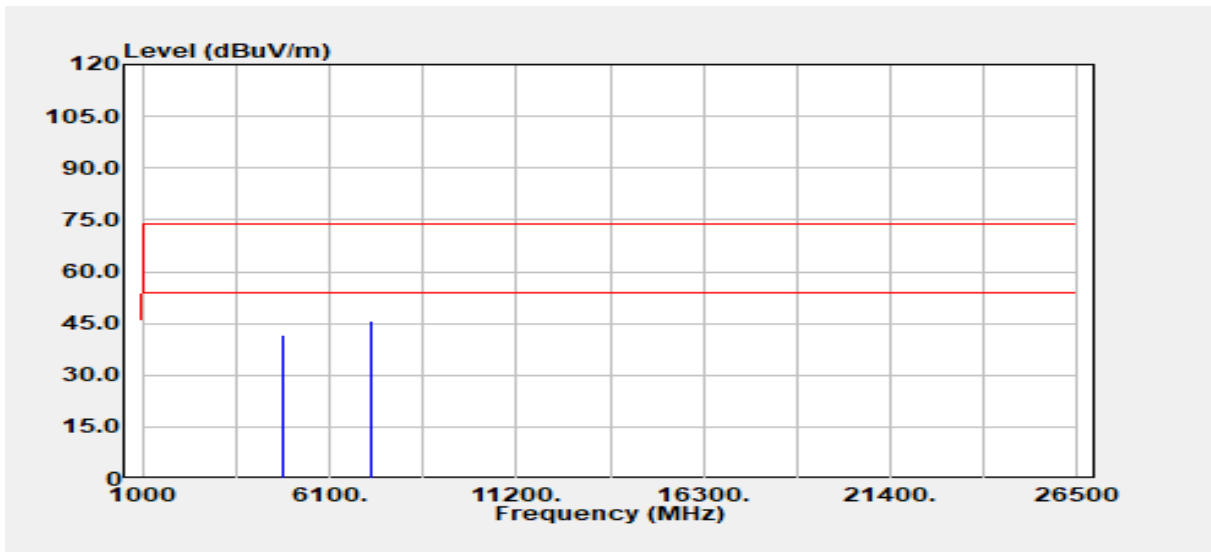
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4824.00	Peak	38.81	2.25	41.06	74.00	-32.94
4824.00	Average	29.42	2.25	31.67	54.00	-22.33
7236.00	Peak	36.29	9.17	45.46	74.00	-28.54
7236.00	Average	26.91	9.17	36.08	54.00	-17.92

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2412 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :48

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A



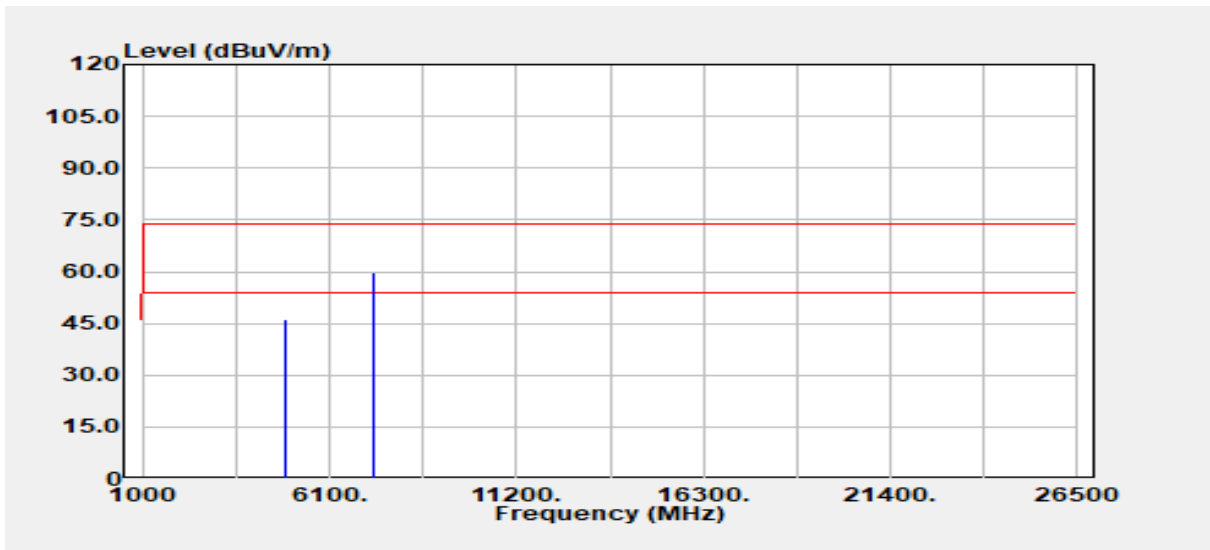
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4824.00	Peak	39.22	2.25	41.47	74.00	-32.53
4824.00	Average	30.17	2.25	32.42	54.00	-21.58
7236.00	Peak	36.78	9.17	45.95	74.00	-28.05
7236.00	Average	27.04	9.17	36.21	54.00	-17.79

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2437 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :72

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :Vertical
 Engineer :Ray.Li
 Test Chamber : 966A



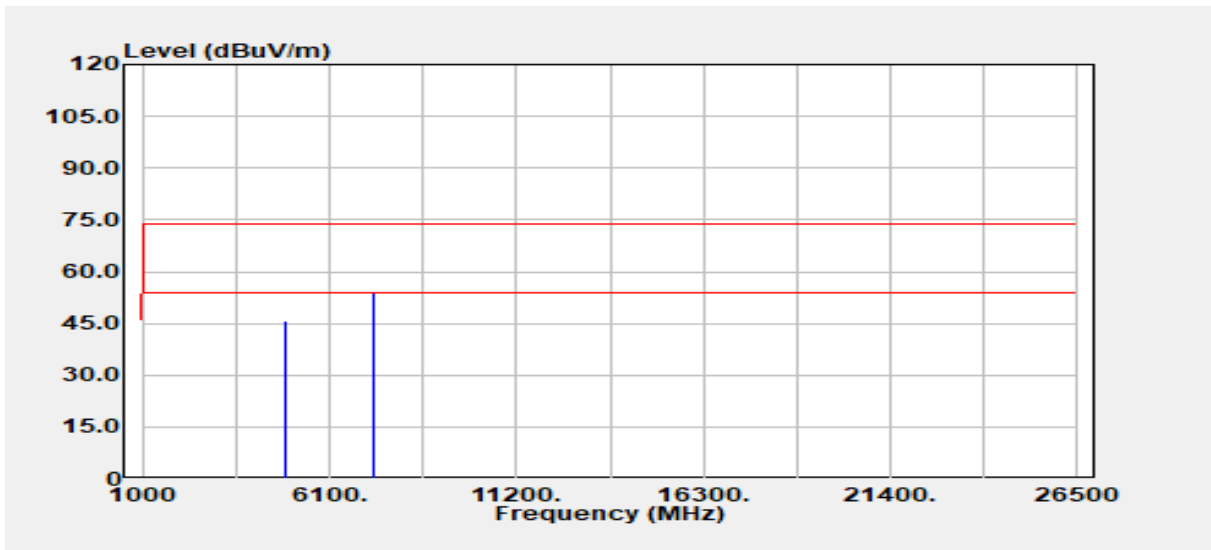
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4874.00	Peak	40.80	5.39	46.20	74.00	-27.80
4874.00	Average	32.52	5.39	37.91	54.00	-16.09
7311.00	Peak	51.31	8.42	59.72	74.00	-14.28
7311.00	Average	40.75	8.42	49.17	54.00	-4.83

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2437 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :72

Test Date :2024-01-08
 Temp./Humi. :24.5/58
 Antenna Pol. :Horizontal
 Engineer :Ray.Li
 Test Chamber : 966A

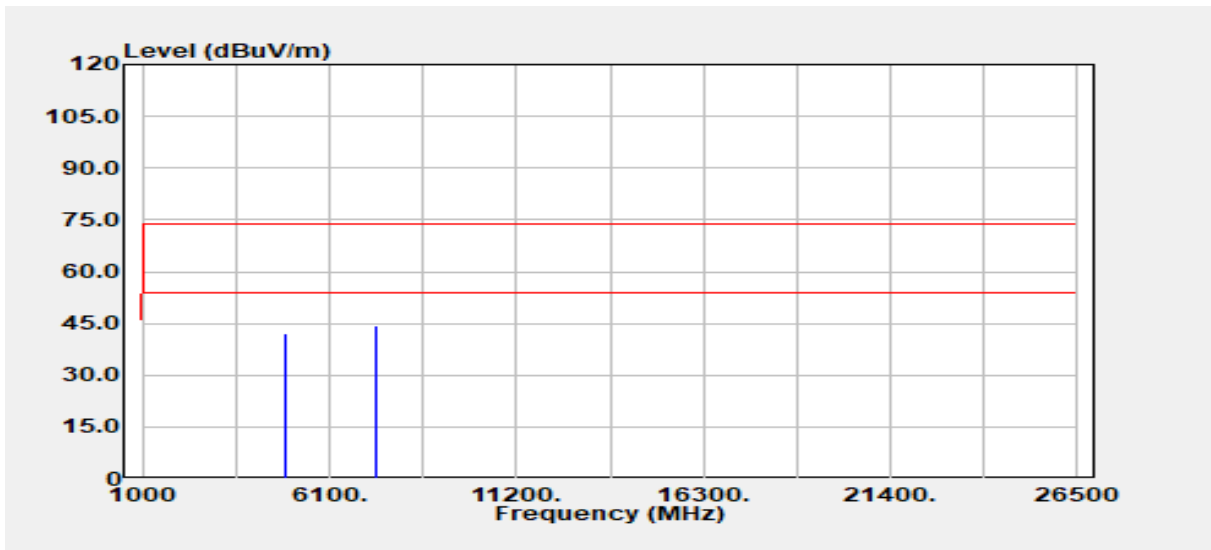


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4874.00	Peak	40.30	5.39	45.70	74.00	-28.30
4874.00	Average	33.31	5.39	38.70	54.00	-15.30
7311.00	Peak	45.63	8.42	54.05	74.00	-19.95
7311.00	Average	38.76	8.42	47.18	54.00	-6.82

Report No.: TMWK2312004665KR

Rev.: 02

Project No	:TM-2312000115P	Test Date	:2024-01-19
Operation Band	:802.11n20	Temp./Humi.	:24.5/57
Frequency	:2462 MHz	Antenna Pol.	:VERTICAL
Operation Mode	:TX	Engineer	:Tony.Chao
EUT Pol	:E2	Test Chamber	: 966A
Setting	:48		



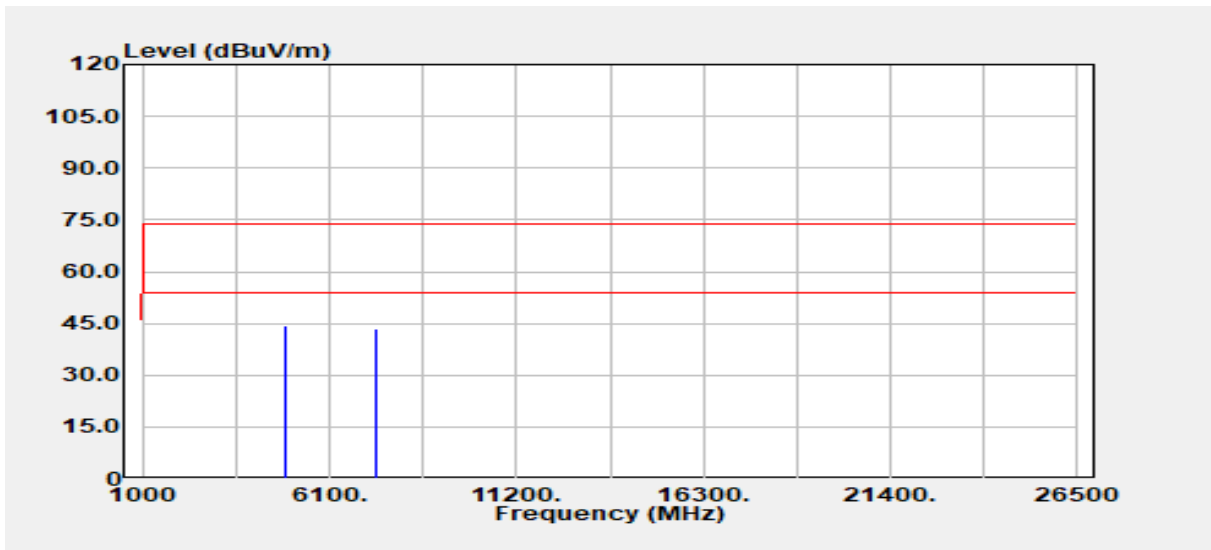
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4924.00	Peak	39.41	2.93	42.34	74.00	-31.66
4924.00	Average	30.34	2.93	33.27	54.00	-20.73
7386.00	Peak	35.31	9.01	44.33	74.00	-29.67
7386.00	Average	26.81	9.01	35.82	54.00	-18.18

Report No.: TMWK2312004665KR

Rev.: 02

Project No :TM-2312000115P
 Operation Band :802.11n20
 Frequency :2462 MHz
 Operation Mode :TX
 EUT Pol :E2
 Setting :48

Test Date :2024-01-19
 Temp./Humi. :24.5/57
 Antenna Pol. :HORIZONTAL
 Engineer :Tony.Chao
 Test Chamber : 966A



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBuV	Factor dB	Actual FS dBuV/m	Limit dBuV/m	Margin dB
4924.00	Peak	41.51	2.93	44.43	74.00	-29.57
4924.00	Average	34.74	2.93	37.67	54.00	-16.33
7386.00	Peak	34.49	9.01	43.50	74.00	-30.50
7386.00	Average	27.68	9.01	36.69	54.00	-17.31

- End of Test Report -