



## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT



**Applicant:** Toshiba Tec Singapore Pte Ltd  
 2 Ang Mo Kio Street 62, Singapore 569138  
  
**Manufacturer:** KunShan CC&C Technologies Co., Ltd.  
 No.9 Building, 3rd Main Street, Kunshan Free Trade Zone,  
 JiangSu, China 215301  
  
**Product Name:** USB Dongle  
  
**Brand Name:** Toshiba Tec Singapore Pte Ltd  
  
**Model No.:** CL-8822CU  
  
**Report Number:** TERF2412004056E2  
  
**FCC ID:** 2BMB2-CL8822CU  
  
**Date of EUT Received:** N/A, the test results are fully leveraged from test report number TERF2410003205E2, for more details please refer to section 3 in this report.  
  
**Date of Test:** N/A, the test results are fully leveraged from test report number TERF2410003205E2, for more details please refer to section 3 in this report.  
  
**Issue Date:** December 25, 2024

**Approved By**

**Aken Huang**

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.247.

The results of this report relate only to the sample identified in this report.

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## Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TERF2412004056E2	00	Original	December 25, 2024	Candice Li	

**Note:**

- 1、The remark "\*" indicates modification of the report upon requests from certification body.

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## Table of Contents

1 GENERAL INFORMATION .....	4
2 SYSTEM TEST CONFIGURATION .....	7
3 SUMMARY OF TEST RESULTS .....	10
4 DESCRIPTION OF TEST MODES .....	11
5 MEASUREMENT UNCERTAINTY .....	13
6 MEASUREMENT EQUIPMENT USED .....	14
7 CONDUCTED EMISSION TEST .....	16
8 PEAK OUTPUT POWER MEASUREMENT .....	20
9 EMISSION BANDWIDTH MEASUREMENT .....	28
10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT .....	38
11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT .....	49
12 POWER SPECTRAL DENSITY .....	103
13 ANTENNA REQUIREMENT .....	109

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## 1 GENERAL INFORMATION

### 1.1 Product Description

Product Name:	USB Dongle
Brand Name:	Toshiba Tec Singapore Pte Ltd
Model No.:	CL-8822CU
Firmware Version:	ver.V15
EUT Series No.:	P2424025562
Power Supply:	5 Vdc from USB port
Test Software (Name/Version)	MP tool Version 0.0001.1020.2018

### 1.2 RF Specification

#### WLAN 2.4GHz

Wi-Fi	Frequency Range	Channels	Rated Power (dBm)		Modulation Technology
			Peak	Avg.	
802.11b	2412~2462	11	23.43	21.91	DSSS
802.11g	2412~2462	11	27.79	20.81	OFDM
802.11n_HT20	2412~2462	11	29.89	22.90	OFDM
802.11n_HT40	2422~2452	7	29.86	22.97	OFDM
Modulation type:		CCK, DQPSK, DBPSK for DSSS in 802.11b			
		64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11g,11n			
Data Rate:		802.11b: 1/2/5.5/11 Mbps			
		802.11g: 6/9/12/18/24/36/48/54 Mbps			
		802.11n_HT20:up to 144.4Mbps			
		802.11n_HT40:up to 300Mbps			

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### 1.3 Antenna Designation

Antenna Type	Freq. (MHz)	Ant 1/Ant 2	Peak Antenna Gain (dBi)
PIFA	2412~2462	Ant 1	-0.08
	2412~2462	Ant 2	-0.46

**Note:**

1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.
2. Antenna information is provided by the applicant.

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## 1.4 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10:2013

## 1.5 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 2		
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
		Conduction C		
		SAC C		
		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		

**Note:** Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.

## 1.6 Special Accessories

There are no special accessories used while test was conducted.

## 1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50uH/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Conducted Test (RF)

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

#### 2.3.3 Radiated Emissions

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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## 2.4 Measurement Results Explanation Example

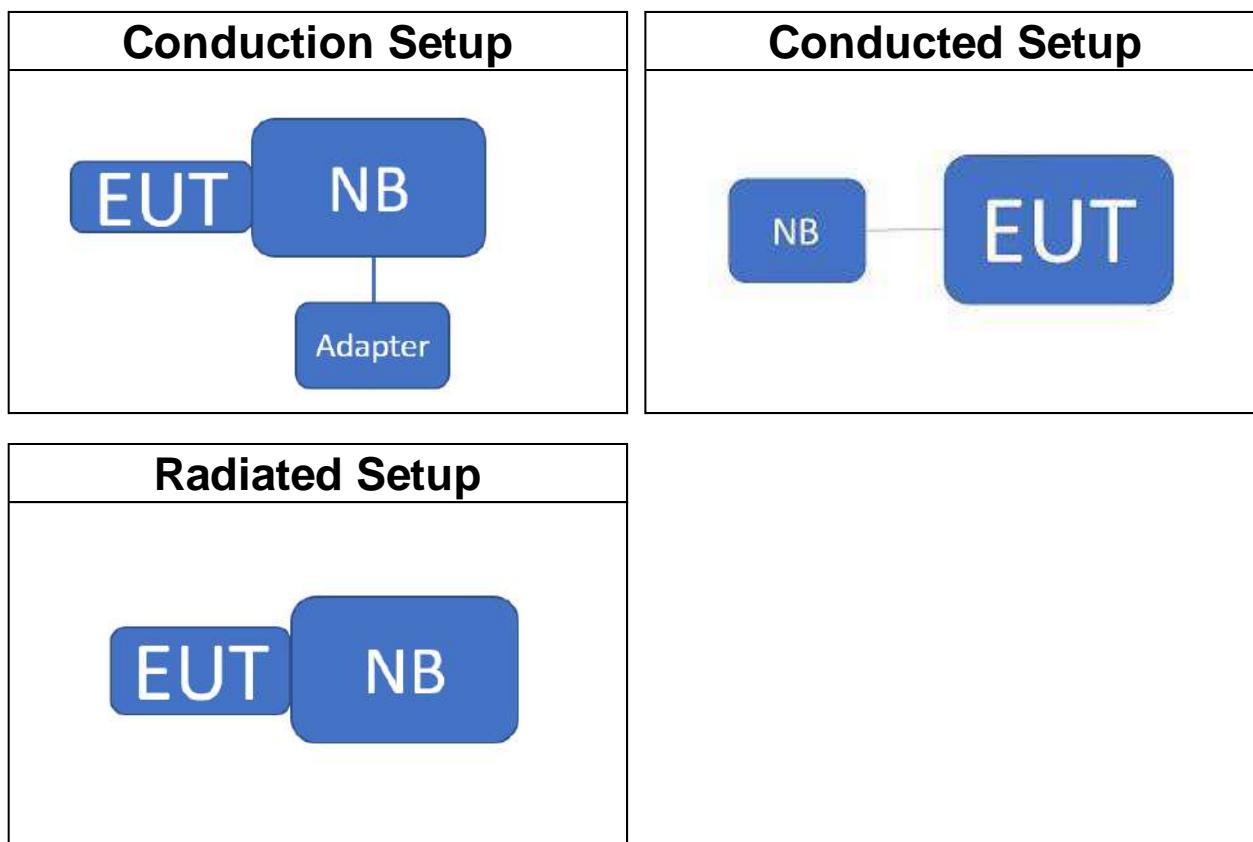
### 2.4.1 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-anechoic 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.

### 2.4.2 For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

## 2.5 Test Configuration



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## 2.6 Control Unit(s)

AC Power-Line Conducted Emission Test Site: Conduction C					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
NB Adapter	Lenovo	ADLX65YLC3A	8SSA10M13945L1CZ 88N0F8W	N/A	N/A
Notebook	Lenovo	T470	P0001293	N/A	N/A
Conducted Emission Test Site: Conducted D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	T14	P0003332	N/A	N/A
USB Cable	Magic	MA-AMF001	P0003332	N/A	N/A
Radiated Emission Test Site: SAC C					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL. (mm/dd/yyyy)	CAL DUE. (mm/dd/yyyy)
Notebook	Lenovo	T470	P0001293	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result	Note
§15.207(a)	AC Power Line Conducted Emission	Compliant	
§15.247(b) (3)	Peak Output Power	Compliant	
§15.247(a)(2)	Emission Bandwidth	Compliant	
§15.209 §15.247(d)	Conducted Band Edge and Spurious Emission	Compliant	
§15.209 §15.247(d)	Radiated Band Edge and Spurious Emission	Compliant	
§15.205	Restricted Bands	Compliant	
§15.247(e)	Power Spectral Density	Compliant	
§15.203	Antenna Requirement	Compliant	

#### Note

1. *N/S* Indicates whether item(s) being newly tested [N] or spot checked [S].
2. Items other than newly tested [N] are leveraged from test report TERF2410003205E2.

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operating Frequencies

2400~2483.5 MHz			
20MHz		40MHz	
CH	Freq. (MHz)	CH	Freq. (MHz)
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
8	2447		
9	2452		
10	2457		
11	2462		

### 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

The given UE is pre-scanned among below modes.

Modulation		Transmission Chain						Single Transmission Spatial		Multi Transmission Spatial			
V	802.11 b	V	Ch0	V	Ch1		Ch2		Ch3	V	1TX		2TX
V	802.11 g	V	Ch0	V	Ch1		Ch2		Ch3	V	1TX		2TX
V	802.11 n	V	Ch0	V	Ch1		Ch2		Ch3		1TX	V	2TX
	802.11 ac		Ch0		Ch1		Ch2		Ch3		1TX		2TX
	802.11 ax		Ch0		Ch1		Ch2		Ch3		1TX		2TX
	802.11 be		Ch0		Ch1		Ch2		Ch3		1TX		2TX

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4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

CONDUCTED TEST					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1,6,11	DSSS	1	ch0
802.11g	1 to 11	1,2,6,11	OFDM	6	ch0
802.11n_HT20	1 to 11	1,2,6,11	OFDM	MCS0	2TX
802.11n_HT40	3 to 9	3,4,5,6,9	OFDM	MCS0	2TX

TRANSMIT RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11g	1 to 11	6	OFDM	6	ch0

TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1,6,11	DSSS	1	ch0
802.11g	1 to 11	1,2,6,11	OFDM	6	ch0
802.11n_HT20	1 to 11	1,2,6,11	OFDM	MCS0	2TX
802.11n_HT40	3 to 9	3,4,5,6,9	OFDM	MCS0	2TX

**Note:**

The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 1.54 dB
Output Power measurement	+/- 0.97 dB
Emission Bandwidth	+/- 1.38 Hz
Conducted emission measurement	+/- 0.77 dB
Peak Power Density	+/- 0.61 dB
Temperature	+/- 0.6 °C
Humidity	+/- 3 %
DC / AC Power Source	+/- 1 %

Radiated Spurious Emission Measurement Uncertainty			
<b>Polarization: Vertical</b>	+/- 1.89 dB	9kHz~30MHz	
	+/- 4.15 dB	30MHz - 1000MHz	
	+/- 3.43 dB	1GHz - 18GHz	
	+/- 3.86 dB	18GHz - 40GHz	
<b>Polarization: Horizontal</b>	+/- 1.89 dB	9kHz~30MHz	
	+/- 4.02 dB	30MHz - 1000MHz	
	+/- 3.43 dB	1GHz - 18GHz	
	+/- 3.86 dB	18GHz - 40GHz	
<b>Radiated Spurious Emission</b>	+/- 2 dB	33GHz-50GHz	
	+/- 1.59 dB	50GHz-60GHz	
	+/- 1.7 dB	60GHz-90GHz	
	+/- 1.64 dB	90GHz-140GHz	
	+/- 3.83 dB	140GHz-220GHz	

### Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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## 6 MEASUREMENT EQUIPMENT USED

### 6.1 Emission from AC power line

AC Power-Line Conducted Emission Test Site: Conduction C					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Coaxial Cable	EC Lab	RF-HY-CAB-250	RF-HY-CAB-250-01	03/27/2024	03/26/2025
EMI Test Receiver	R&S	ESCI	101342	04/29/2024	04/28/2025
LISN	SCHWARZBECK Mess-Elektronik	NSLK8127	973	04/22/2024	04/21/2025
Pulse Limiter	EC Lab	VTSD 9561F-N	485	03/27/2024	03/26/2025
Test Software	audix	e3	E3 20923 SGS Ver.9 ( C )	N.C.R	N.C.R

### 6.2 Conducted Measurement

Conducted Emission Test Site: Conducted D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Attenuator	Woken	WATT-218FS-10	RF19	11/15/2023	11/14/2024
Attenuator	Woken	WATT-218FS-10	RF19	11/14/2024	11/13/2025
Attenuator	Woken	WATT-218FS-10	RF20	11/15/2023	11/14/2024
Attenuator	Woken	WATT-218FS-10	RF20	11/14/2024	11/13/2025
DC Block	PASTERNACK	PE8210	RF153	11/15/2023	11/14/2024
DC Block	PASTERNACK	PE8210	RF153	11/14/2024	11/13/2025
Power Meter	Anritsu	ML2496A	2138002	08/28/2024	08/27/2025
Power Sensor	Anritsu	MA2411B	1911390	08/28/2024	08/27/2025
Power Sensor	Anritsu	MA2411B	1911398	08/28/2024	08/27/2025
Spectrum Analyzer	KEYSIGHT	N9010B	MY60240506	06/17/2024	06/16/2025
Test Software	SGS Taiwan	Radio Test Software	Ver.21	N.C.R	N.C.R

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### 6.3 Radiated Measurement

Radiated Emission Test Site: SACC					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL. (mm/dd/yyyy)	CAL DUE. (mm/dd/yyyy)
3m Site NSA	SGS	966 chamber G	N/A	03/30/2024	03/29/2025
Active Loop Antenna	COM-POWER	AL-130R	10160105	12/04/2023	12/03/2024
Broadband Antenna	SCHWARZBECK	VULB 9168	1208	07/17/2024	07/16/2025
Coaxial Cable	EMC Instruments	EMC104-SM-SM-8000-5000-5000	210219 、 210220 、 210221	03/13/2024	03/12/2025
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM-8000-5000-2000	210216 、 210217 、 210218	03/13/2024	03/12/2025
High Pass Filter	WI	WHKX10-2624-3200-18000-80SS	RF210	11/14/2023	11/13/2024
High Pass Filter	WI	WHKX10-2624-3200-18000-80SS	RF210	11/14/2024	11/13/2025
Horn Antenna	RF SPIN	DRH18-E	210105A18E	04/12/2024	04/11/2025
Horn Antenna	Schwarzbeck	BBHA9170	184	12/28/2023	12/27/2024
Lowpass Filter	Woken	EWT-56-0019	RF173	11/14/2023	11/13/2024
Lowpass Filter	Woken	EWT-56-0019	RF173	11/14/2024	11/13/2025
Pre-Amplifier	EMC Instruments	EMC118A45SE	980815	05/08/2024	05/07/2025
Pre-Amplifier	EMC Instruments	EMC330N	980781	03/13/2024	03/12/2025
Spectrum Analyzer	KEYSIGHT	N9010B	MY63440390	02/16/2024	02/15/2025
Test Software	audix	e3	E3 20923 SGS Ver.9 ( C )	N.C.R	N.C.R

**NOTE:** N.C.R refers to Not Calibrated Required.

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## 7 CONDUCTED EMISSION TEST

### 7.1 Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range MHz	Limits (dBuV)	
	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

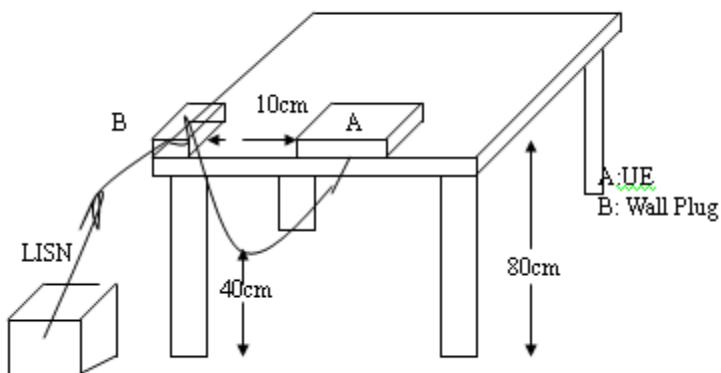
#### Note

1. The lower limit shall apply at the transition frequencies
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 7.2 EUT Setup:

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
3. The LISN was connected with 120Vac/60Hz power source.

### 7.3 Test Setup



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## 7.4 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all phases of power being supplied by given UE are completed.

## 7.5 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The test data reveals the worst-case results that closest to the limit.

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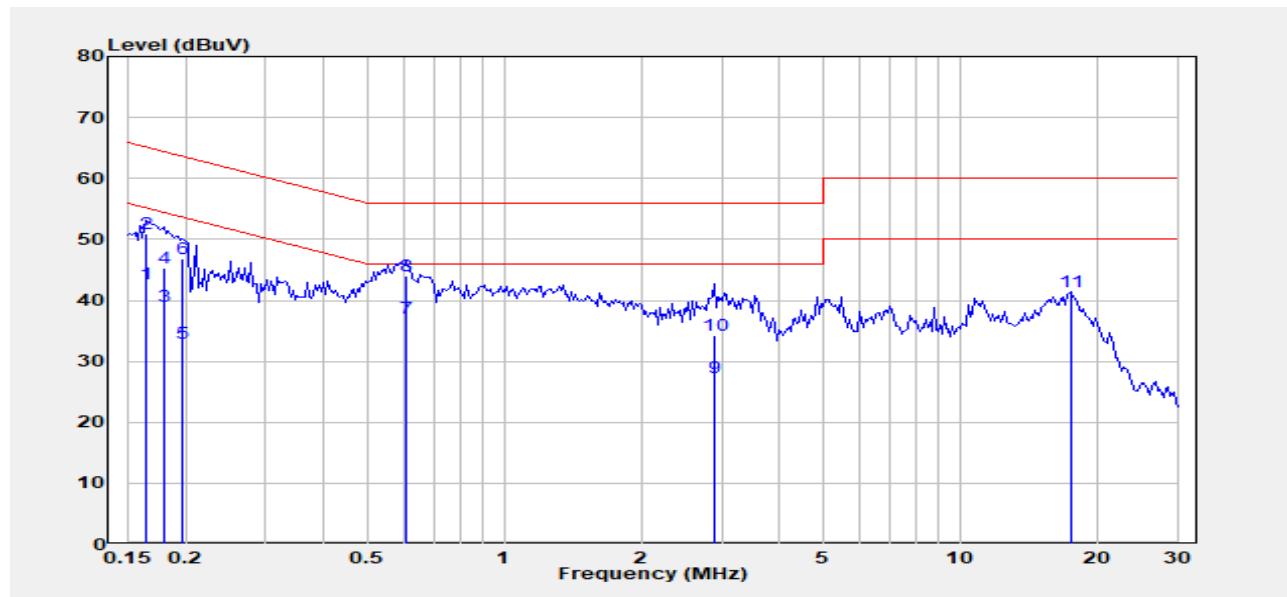
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**AC POWER LINE CONDUCTED EMISSION TEST DATA**

Report Number :TERF2410003205E2  
 Test Mode :2.4G  
 Power :120V/60Hz  
 Probe :L1

Test Site :Conduction C  
 Test Date :2024-11-04  
 Temp./Humi :21.1°C/61%  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V	dB $\mu$ V	dB
0.163	Average	32.00	10.65	42.65	55.30	-12.65
0.163	QP	40.20	10.65	50.85	65.30	-14.45
0.180	Average	28.40	10.65	39.05	54.50	-15.45
0.180	QP	34.60	10.65	45.25	64.50	-19.25
0.198	Average	22.20	10.65	32.85	53.71	-20.86
0.198	QP	36.10	10.65	46.75	63.71	-16.96
0.608	Average	26.50	10.64	37.14	46.00	-8.86
0.608	QP	33.30	10.64	43.94	56.00	-12.06
2.884	Average	16.40	10.84	27.24	46.00	-18.76
2.884	QP	23.40	10.84	34.24	56.00	-21.76
17.475	Peak	30.36	11.12	41.48	60.00	-18.52

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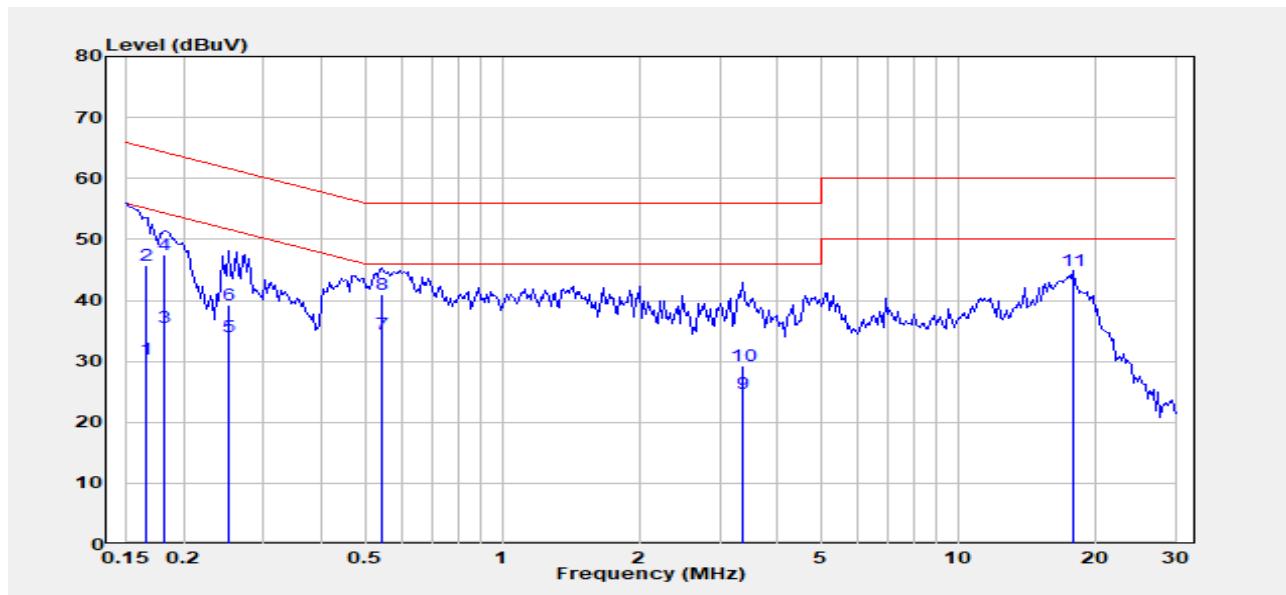
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Report Number :TERF2410003205E2  
 Test Mode :2.4G  
 Power :120V/60Hz  
 Probe :N

Test Site :Conduction C  
 Test Date :2024-11-04  
 Temp./Humi :21.1°C/61%  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit dB $\mu$ V	Margin dB
				FS dB $\mu$ V		
0.165	Average	19.80	10.66	30.46	55.21	-24.75
0.165	QP	35.00	10.66	45.66	65.21	-19.55
0.182	Average	24.80	10.65	35.45	54.42	-18.96
0.182	QP	36.90	10.65	47.55	64.42	-16.86
0.252	Average	23.50	10.64	34.14	51.69	-17.55
0.252	QP	28.60	10.64	39.24	61.69	-22.45
0.546	Average	23.80	10.61	34.41	46.00	-11.59
0.546	QP	30.30	10.61	40.91	56.00	-15.09
3.381	Average	13.80	10.85	24.65	46.00	-21.35
3.381	QP	18.40	10.85	29.25	56.00	-26.75
17.849	Peak	33.75	11.13	44.87	60.00	-15.13

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## 8 PEAK OUTPUT POWER MEASUREMENT

### 8.1 Standard Applicable

#### 8.1.1 Duty Cycle

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

#### 8.1.2 FCC

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

**Note:** When the antenna gain is greater than 6 dBi, the power limit attenuated accordingly.

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

$$\bullet \quad \text{DirectionalGain} = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

$g_{j,k} = 10^{G_k/20}$  if the kth antenna is being fed by spatial stream j, or zero if it is not;

$G_k$  is the gain in dBi of the kth antenna.

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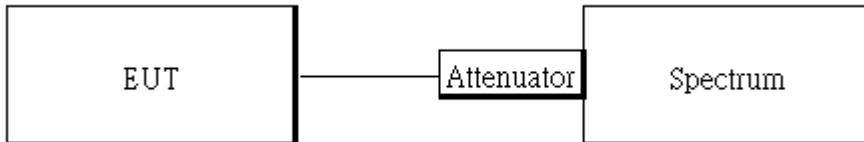
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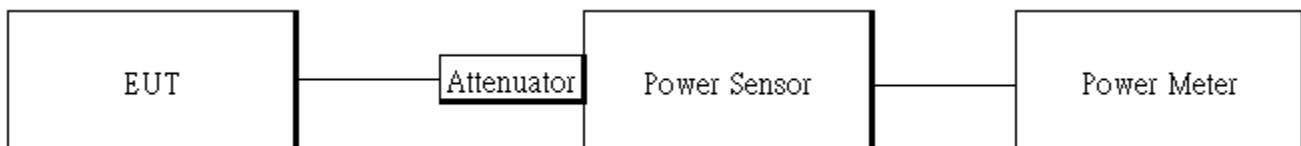


## 8.2 Test Setup

### 8.2.1 Duty Cycle



### 8.2.2 Output Power:



## 8.3 Measurement Procedure

### 8.3.1 Duty Cycle:

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

### 8.3.2 Output Power

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

#### Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.
5. MIMO mode: offset is set with “measure and add 10 Log (N)” to measurement for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna, cable loss is specified below.

**\* Note: The duty cycle factor and below is compensated to obtain the maximum value of measurement in average.**

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## 8.4 Measurement Result

### 8.4.1 Duty Cycle:

Mode	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11b	94.25	0.26	0.12	1.00
802.11g	73.04	1.36	0.74	1.00
802.11n_20	71.70	1.44	0.79	1.00
802.11n_40	55.73	2.54	1.58	2.00

### 8.4.2 Duty Cycle test plots

802.11b\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11n\_40MHz\_Chain0\_2422MHz



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### 8.4.3 Output Power

#### 802.11b Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	110	220.29	23.43	30.00	PASS
6	2437	1	93	114.55	20.59	30.00	PASS
11	2462	1	100	139.00	21.43	30.00	PASS

#### 802.11b Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	110	155.14	21.91	30.00	PASS
6	2437	1	93	61.48	17.89	30.00	PASS
11	2462	1	100	75.11	18.76	30.00	PASS

#### 802.11b Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	105	215.77	23.34	30.00	PASS
6	2437	1	90	111.43	20.47	30.00	PASS
11	2462	1	98	136.46	21.35	30.00	PASS

#### 802.11b Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	105	150.22	21.77	30.00	PASS
6	2437	1	90	58.17	17.65	30.00	PASS
11	2462	1	98	73.07	18.64	30.00	PASS

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## 802.11g Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	80	389.94	25.91	30.00	PASS
2	2417	6	94	575.44	27.60	30.00	PASS
6	2437	6	94	601.17	27.79	30.00	PASS
11	2462	6	94	568.85	27.55	30.00	PASS

## 802.11g Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	80	58.94	17.70	30.00	PASS
2	2417	6	94	117.34	20.69	30.00	PASS
6	2437	6	94	120.63	20.81	30.00	PASS
11	2462	6	94	117.34	20.69	30.00	PASS

## 802.11g Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	78	388.15	25.89	30.00	PASS
2	2417	6	90	436.52	26.40	30.00	PASS
6	2437	6	90	416.87	26.20	30.00	PASS
11	2462	6	90	429.54	26.33	30.00	PASS

## 802.11g Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	78	58.27	17.65	30.00	PASS
2	2417	6	90	114.67	20.59	30.00	PASS
6	2437	6	90	118.70	20.74	30.00	PASS
11	2462	6	90	113.88	20.56	30.00	PASS

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## 802.11n\_HT\_20M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	78	428.55	26.32	30.00	PASS
2	2417	MCS0	85	545.76	27.37	30.00	PASS
6	2437	MCS0	85	570.16	27.56	30.00	PASS
11	2462	MCS0	85	575.44	27.60	30.00	PASS

## 802.11n\_HT\_20M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	78	58.81	17.69	30.00	PASS
2	2417	MCS0	85	93.00	19.68	30.00	PASS
6	2437	MCS0	85	94.51	19.75	30.00	PASS
11	2462	MCS0	85	96.49	19.84	30.00	PASS

## 802.11n\_HT\_20M Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	76	417.83	26.21	30.00	PASS
2	2417	MCS0	83	527.23	27.22	30.00	PASS
6	2437	MCS0	83	504.66	27.03	30.00	PASS
11	2462	MCS0	83	523.60	27.19	30.00	PASS

## 802.11n\_HT\_20M Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	76	58.01	17.63	30.00	PASS
2	2417	MCS0	83	91.51	19.61	30.00	PASS
6	2437	MCS0	83	91.72	19.62	30.00	PASS
11	2462	MCS0	83	94.08	19.73	30.00	PASS

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## 802.11n\_HT20M\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
1	2412	MCS0	80	26.59	26.05	858.75	29.34	30.00	PASS
2	2417	MCS0	85	26.55	26.01	850.88	29.30	30.00	PASS
6	2437	MCS0	85	26.99	26.77	975.37	29.89	30.00	PASS
11	2462	MCS0	85	27.02	26.70	971.24	29.87	30.00	PASS

## 802.11n\_HT20M\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
1	2412	MCS0	80	18.30	16.98	117.63	20.71	30.00	PASS
2	2417	MCS0	85	20.31	19.13	189.46	22.78	30.00	PASS
6	2437	MCS0	85	20.49	19.19	195.14	22.90	30.00	PASS
11	2462	MCS0	85	20.53	19.10	194.48	22.89	30.00	PASS

## 802.11n\_HT\_40M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	68	449.78	26.53	30.00	PASS
4	2427	MCS0	69	562.34	27.50	30.00	PASS
5	2432	MCS0	83	552.08	27.42	30.00	PASS
6	2437	MCS0	83	574.12	27.59	30.00	PASS
9	2452	MCS0	83	606.74	27.83	30.00	PASS

## 802.11n\_HT\_40M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	68	38.27	15.83	30.00	PASS
4	2427	MCS0	69	41.97	16.23	30.00	PASS
5	2432	MCS0	83	92.66	19.67	30.00	PASS
6	2437	MCS0	83	94.60	19.76	30.00	PASS
9	2452	MCS0	83	98.61	19.94	30.00	PASS

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## 802.11n\_HT\_40M Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	66	438.53	26.42	30.00	PASS
4	2427	MCS0	67	540.75	27.33	30.00	PASS
5	2432	MCS0	81	543.25	27.35	30.00	PASS
6	2437	MCS0	81	553.35	27.43	30.00	PASS
9	2452	MCS0	81	568.85	27.55	30.00	PASS

## 802.11n\_HT\_40M Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	66	37.23	15.71	30.00	PASS
4	2427	MCS0	67	40.54	16.08	30.00	PASS
5	2432	MCS0	81	90.55	19.57	30.00	PASS
6	2437	MCS0	81	92.03	19.64	30.00	PASS
9	2452	MCS0	81	95.26	19.79	30.00	PASS

## 802.11n\_HT40M\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
3	2422	MCS0	72	26.22	25.89	806.94	29.07	30.00	PASS
4	2427	MCS0	73	26.98	26.71	967.70	29.86	30.00	PASS
5	2432	MCS0	81	26.85	26.51	931.89	29.69	30.00	PASS
6	2437	MCS0	81	26.91	26.65	953.29	29.79	30.00	PASS
9	2452	MCS0	81	27.08	26.61	968.65	29.86	30.00	PASS

## 802.11n\_HT40M\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
3	2422	MCS0	72	16.29	15.37	76.98	18.86	30.00	PASS
4	2427	MCS0	73	16.50	16.13	85.67	19.33	30.00	PASS
5	2432	MCS0	81	20.08	19.27	186.35	22.70	30.00	PASS
6	2437	MCS0	81	20.20	19.35	190.77	22.81	30.00	PASS
9	2452	MCS0	81	20.53	19.31	198.25	22.97	30.00	PASS

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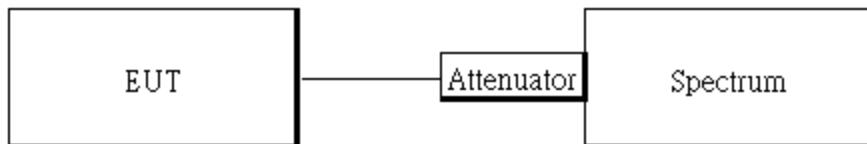


## 9 EMISSION BANDWIDTH MEASUREMENT

### 9.1 Standard Applicable

The minimum 6 dB bandwidth shall be at least 500 kHz.

### 9.2 Test Setup



### 9.3 Measurement Procedure:

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

#### 9.3.1 6dB BW measurements

1. The testing follows the Measurement Procedure of the KDB 558074 D01.
2. Set the spectrum analyzer as  
 $RBW = 100 \text{ kHz}$ ,  
 $VBW = 3 \times RBW$ ,  
 $Span = 2 \text{ to } 5 \text{ times of the OBW}$ ,  
 $Sweep = \text{auto}$ ,  $\text{Detector} = \text{Peak}$ , and  $\text{Max hold}$ .
3. Mark the upper and lower frequencies of  $-6\text{dB}$ .
4. Repeat above procedures until all test default channel is completed.

#### 9.3.2 99% BW measurements

1. The testing follows the Measurement Procedure of the RSS-Gen section 6.7.
2. Set the spectrum analyzer as  
 $RBW = 1\% \text{ to } 5\% \text{ of } 99\%$ ,  
 $VBW \geq 3 \times RBW$ ,  
 $Span = \text{large enough to capture all products of the modulation process}$   
 $Sweep = \text{auto}$ ,  $\text{Detector} = \text{Peak}$ , and  $\text{Max hold}$ .
3. Mark the upper and lower frequencies of  $99\%$ .
4. Repeat above procedures until all test default channel is completed.

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## 9.4 Measurement Result:

### 9.4.1 6dB BW measurements

#### 802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	10150.00	≥ 500	PASS
2437	10140.00	≥ 500	PASS
2462	10150.00	≥ 500	PASS

#### 802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15190.00	≥ 500	PASS
2437	15360.00	≥ 500	PASS
2462	15550.00	≥ 500	PASS

#### 802.11n HT\_20M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15840.00	≥ 500	PASS
2437	15800.00	≥ 500	PASS
2462	15820.00	≥ 500	PASS

#### 802.11n HT\_20M Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15840.00	≥ 500	PASS
2437	15840.00	≥ 500	PASS
2462	16480.00	≥ 500	PASS

#### 802.11n HT\_40M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	35250.00	≥ 500	PASS
2437	35270.00	≥ 500	PASS
2452	35260.00	≥ 500	PASS

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## 802.11n\_HT\_40M Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	<b>35230.00</b>	$\geq 500$	PASS
2437	<b>35230.00</b>	$\geq 500$	PASS
2452	35170.00	$\geq 500$	PASS

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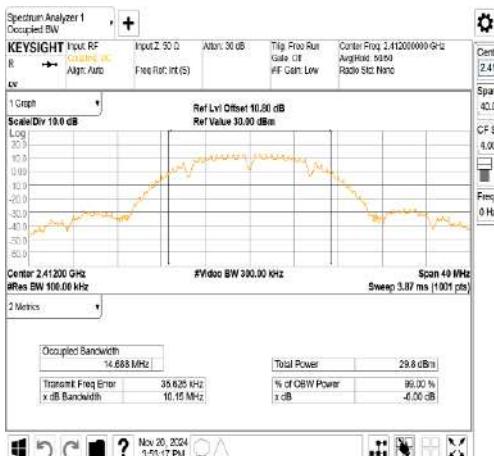
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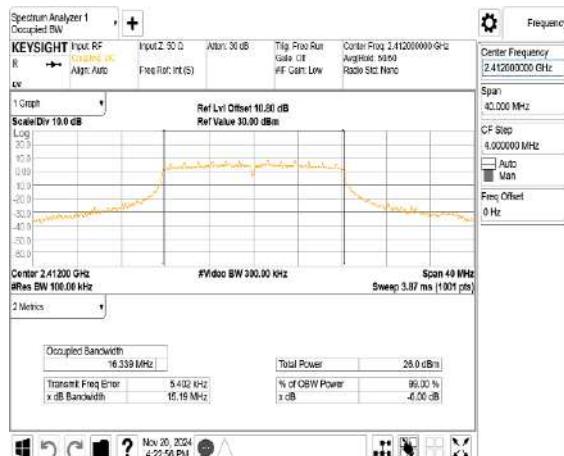
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802.11b\_20MHz\_Chain0\_2412MHz



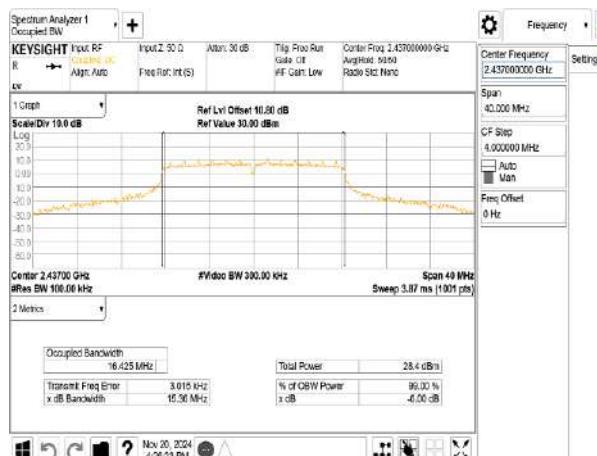
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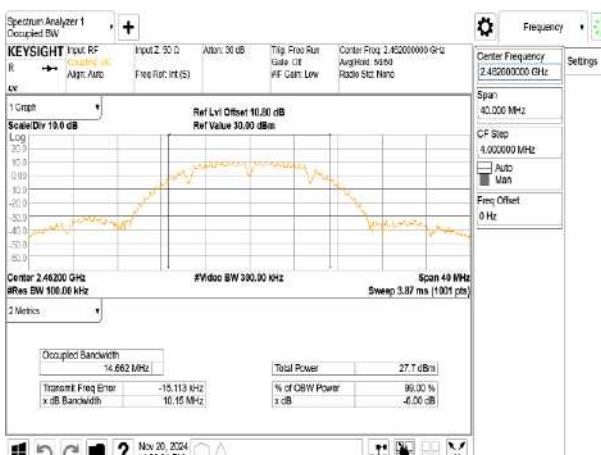
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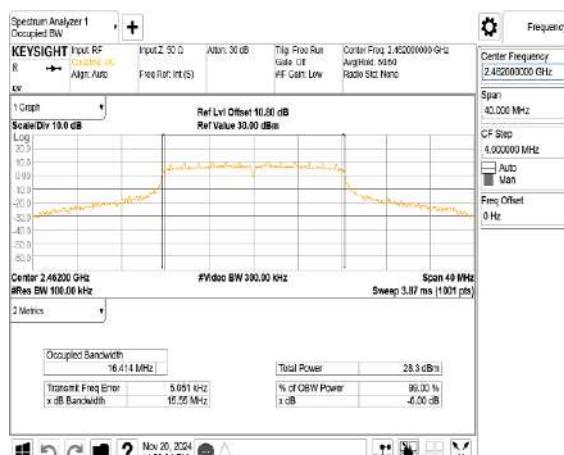
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802.11b\_20MHz\_Chain0\_2462MHz



802.11g\_20MHz\_Chain0\_2462MHz



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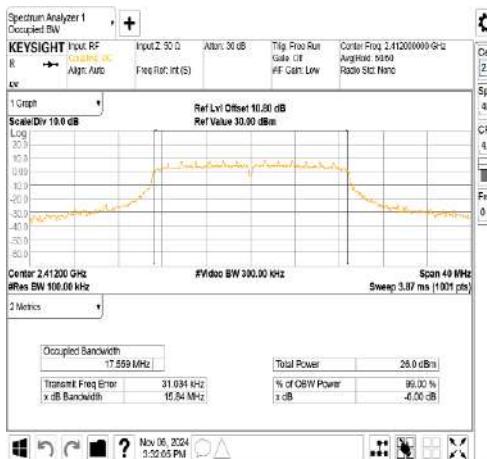
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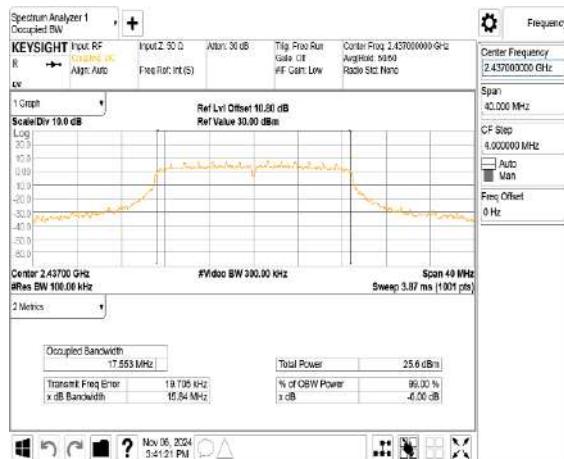
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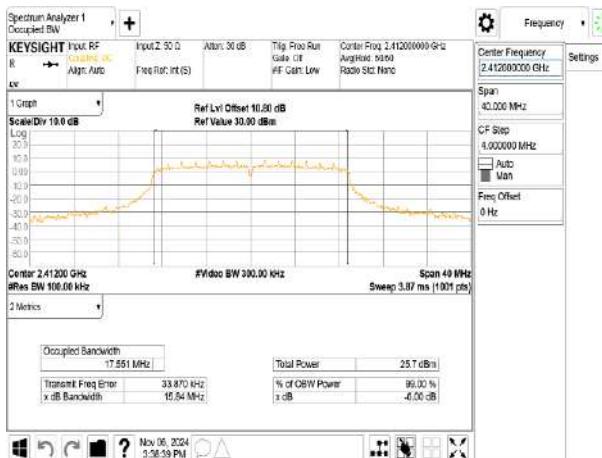
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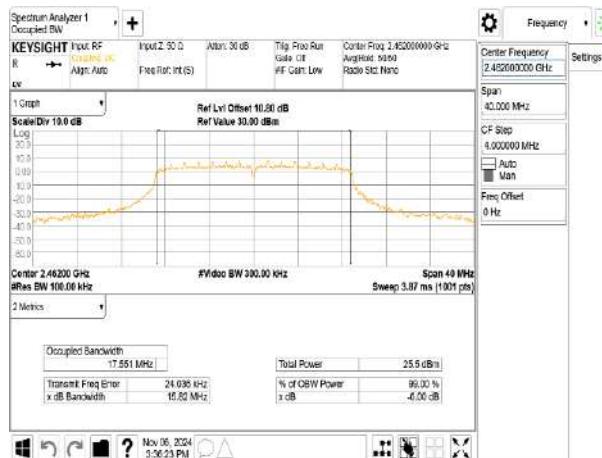
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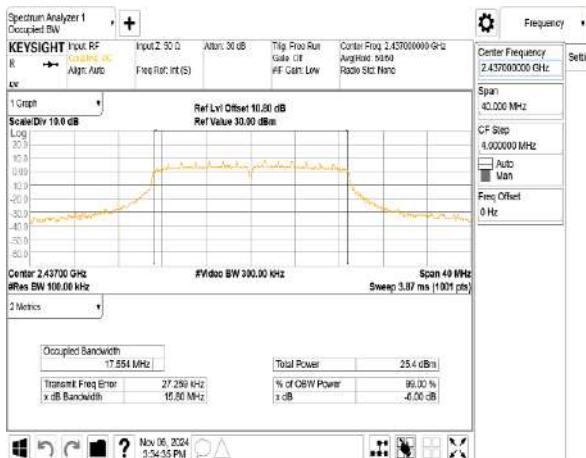
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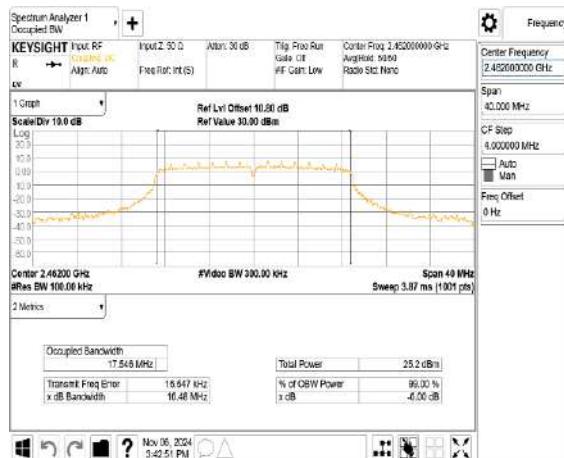
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802.11n\_20MHz\_Chain0\_2437MHz



802.11n\_20MHz\_Chain1\_2462MHz



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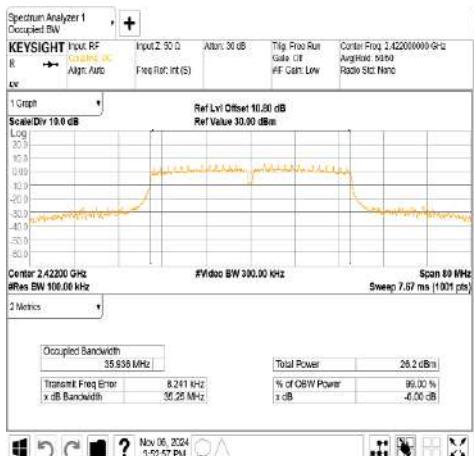
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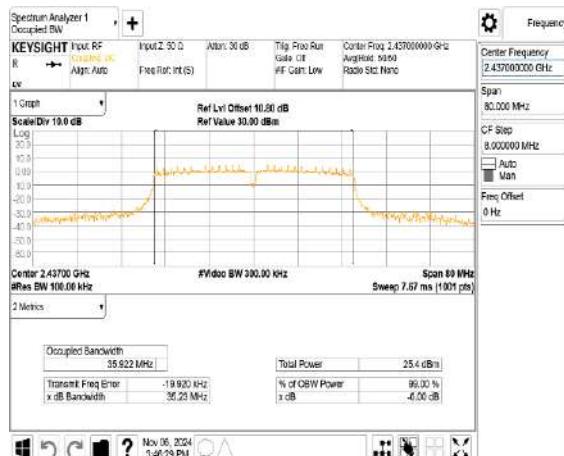
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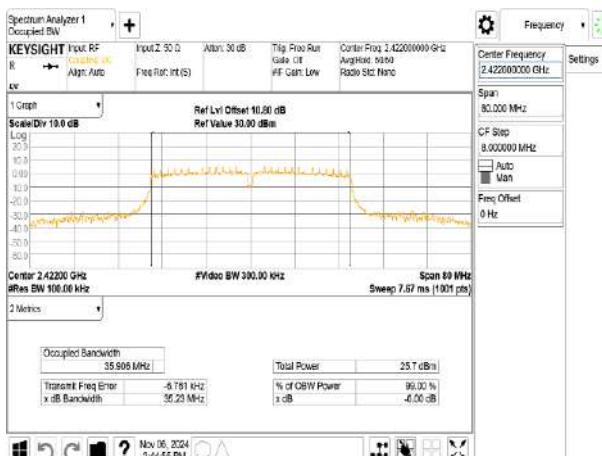
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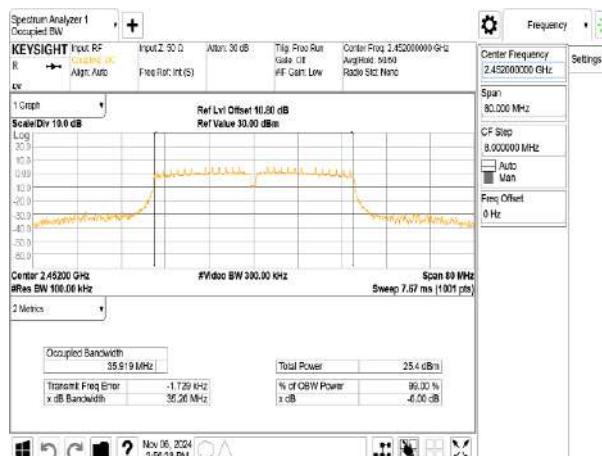
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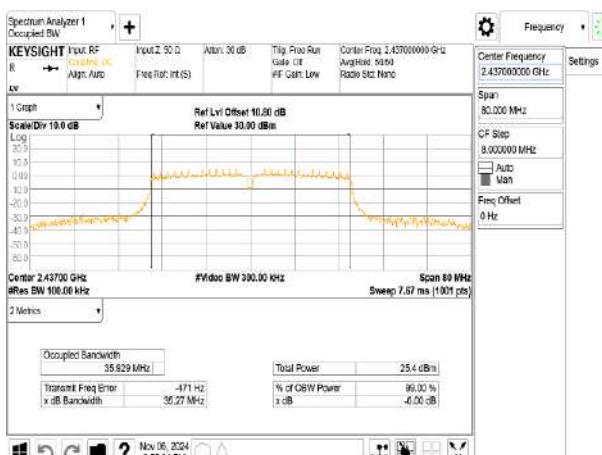
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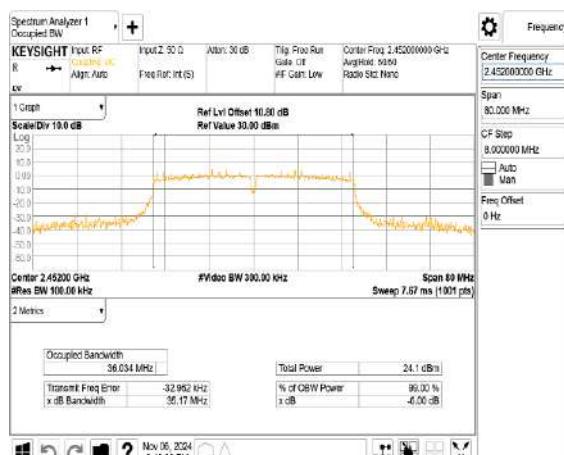
802.11n\_40MHz\_Chain0\_2452MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n\_40MHz\_Chain1\_2452MHz



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#### 9.4.2 99% Bandwidth

802.11b Ch0

Freq. (MHz)	99% BW (MHz)
2412	<b>14.712</b>
2437	14.692
2462	14.696

802.11n HT20M Ch1

Freq. (MHz)	99% BW (MHz)
2412	17.706
2437	17.710
2462	<b>17.726</b>

802.11g Ch0

Freq. (MHz)	99% BW (MHz)
2412	16.576
2437	<b>16.738</b>
2462	16.723

802.11n HT40M Ch0

Freq. (MHz)	99% BW (MHz)
2422	36.220
2437	<b>36.257</b>
2452	36.245

802.11n HT20M Ch0

Freq. (MHz)	99% BW (MHz)
2412	17.708
2437	<b>17.715</b>
2462	17.711

802.11n HT40M Ch1

Freq. (MHz)	99% BW (MHz)
2422	36.199
2437	36.226
2452	<b>36.250</b>

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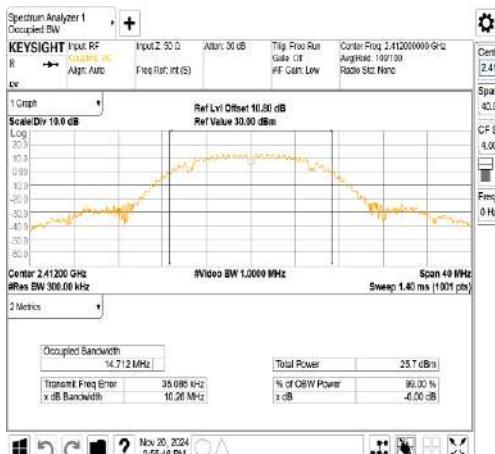
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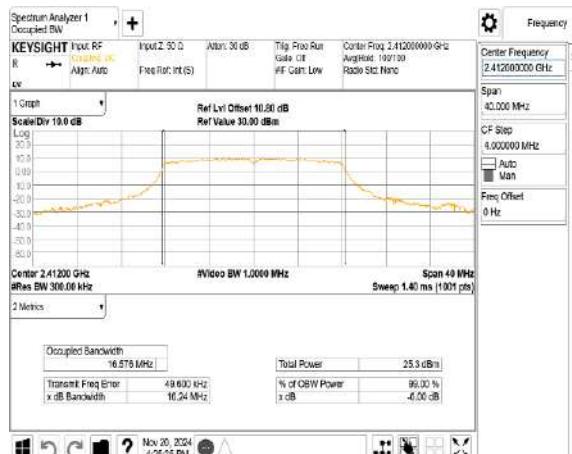
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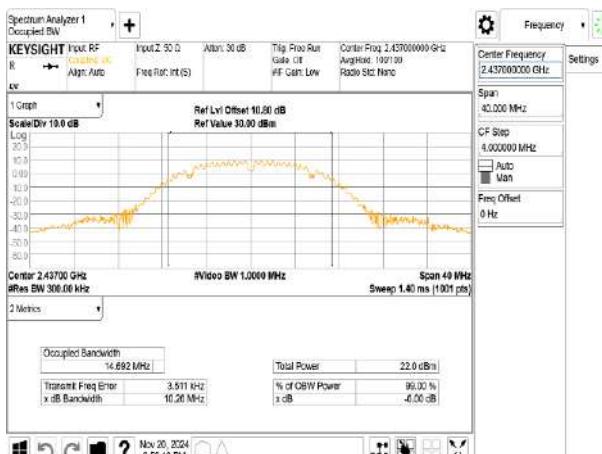
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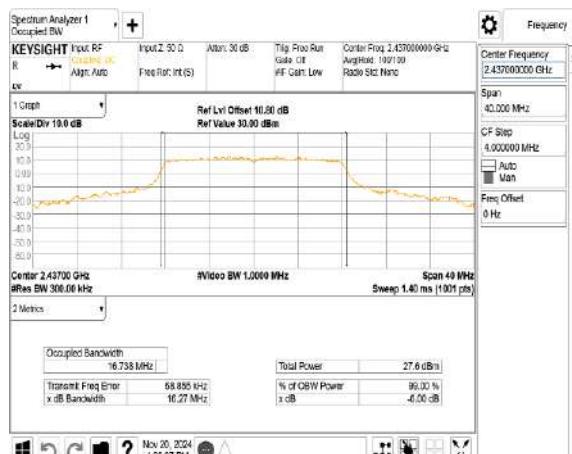
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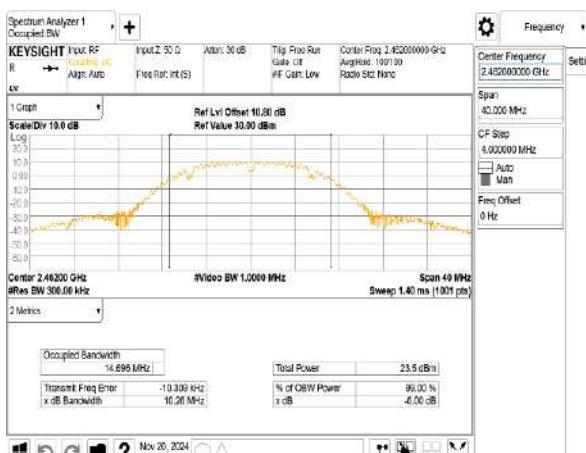
802.11b 20MHz Chain0 2437MHz



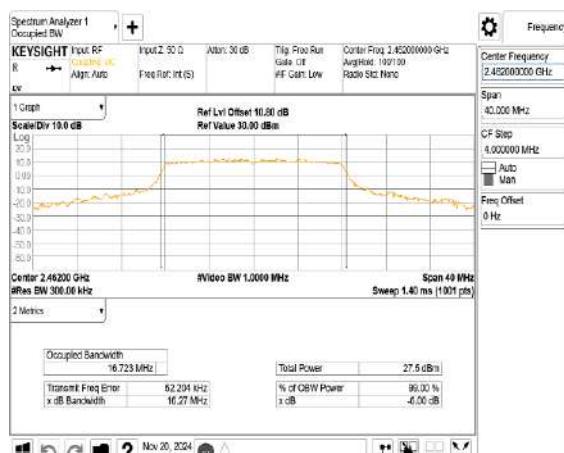
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802.11b 20MHz Chain0 2462MHz



802.11q 20MHz Chain0 2462MHz



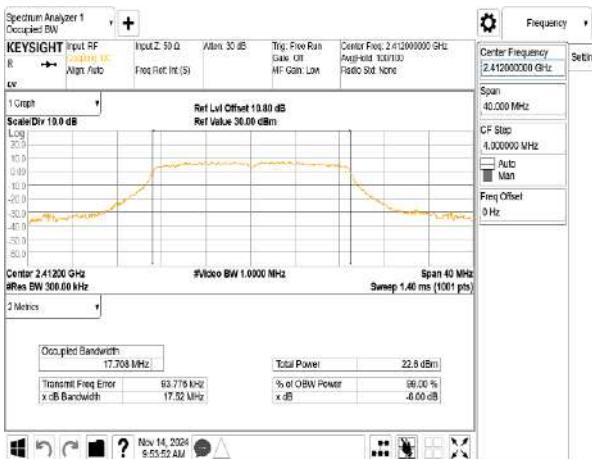
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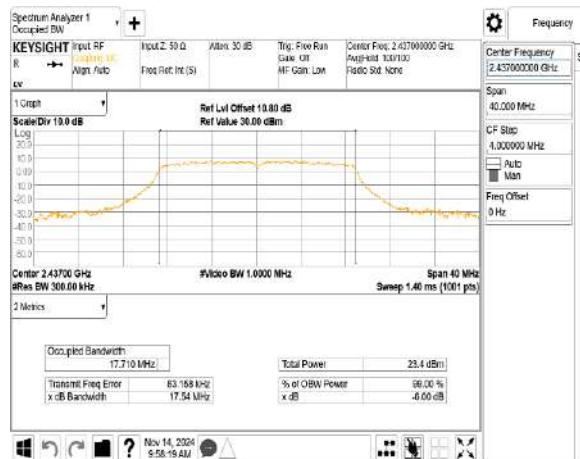
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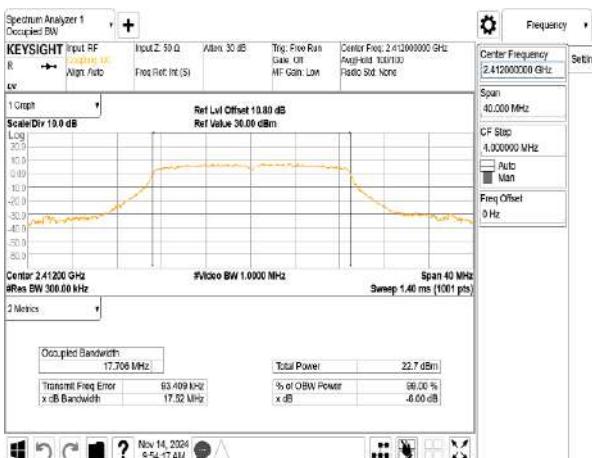
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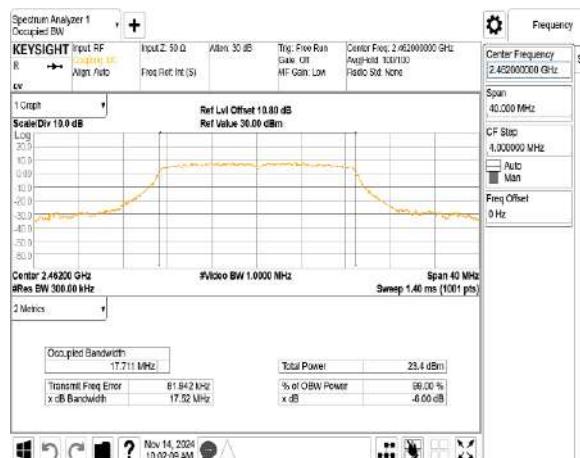
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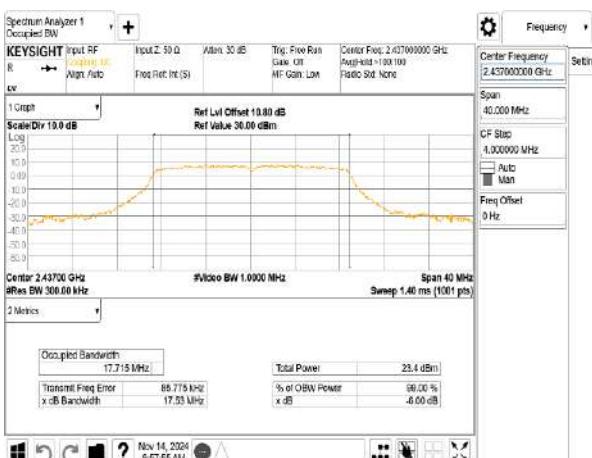
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802.11n\_20MHz\_Chain0\_2462MHz



802.11n\_20MHz\_Chain0\_2437MHz



802.11n\_20MHz\_Chain1\_2462MHz



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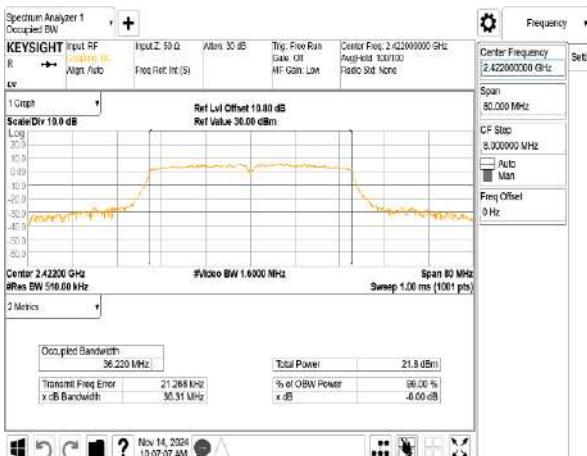
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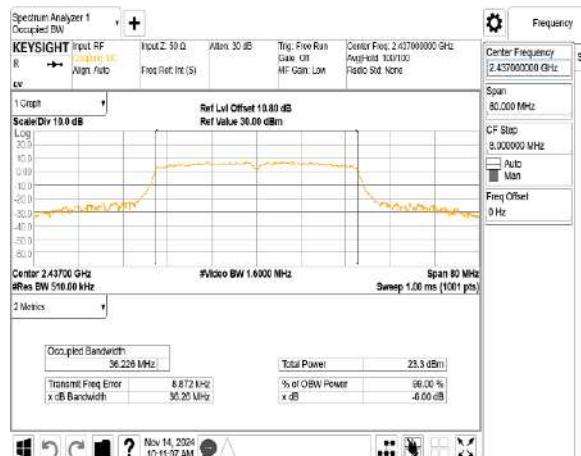
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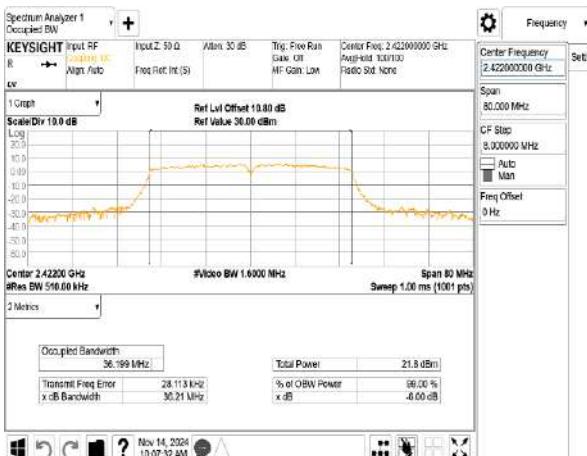
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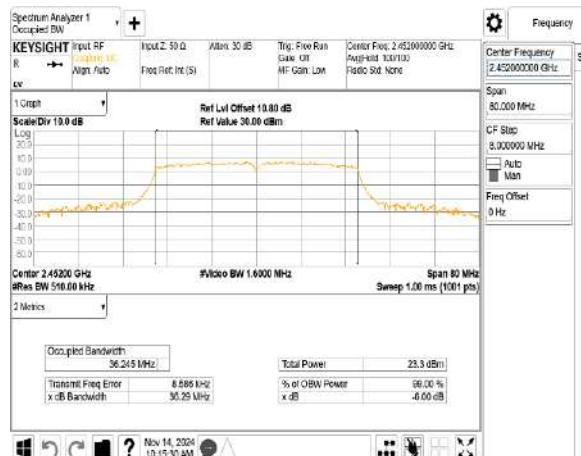
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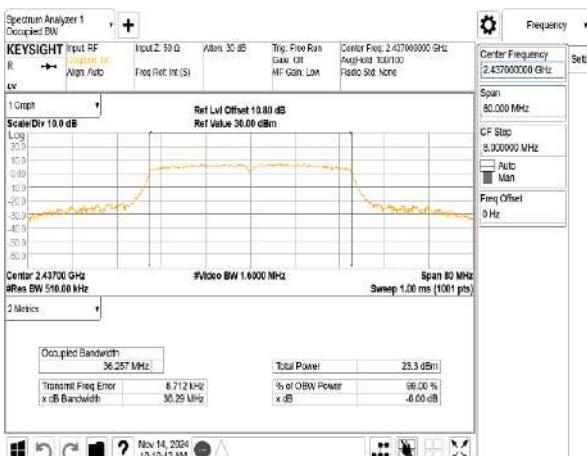
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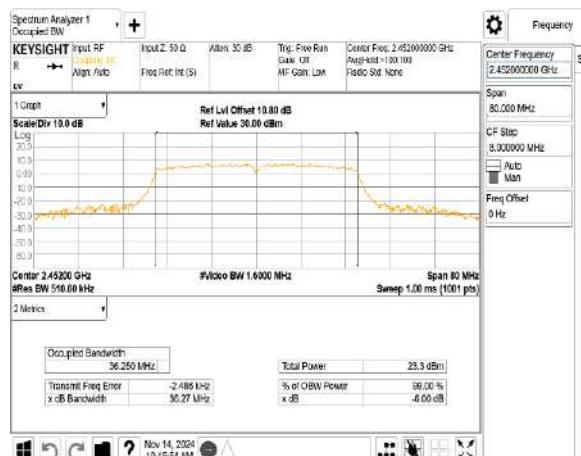
802.11n\_40MHz\_Chain0\_2452MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n\_40MHz\_Chain1\_2452MHz



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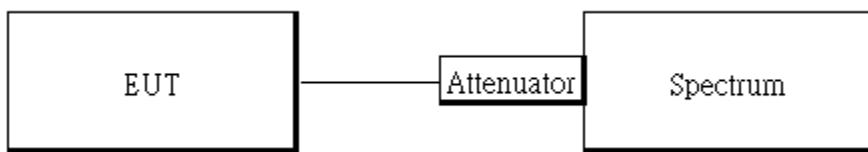
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## 10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

### 10.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions 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).

### 10.2 Test Setup



### 10.3 Measurement Procedure

#### 10.3.1 Reference Level of Emission Limit:

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 100kHz & VBW = 300 kHz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

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### 10.3.2 Conducted Band Edge:

1. To connect Antenna Port of EUT to Spectrum.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
6. Mark the highest reading of the emission as the reference level measurement.
7. Set DL as the limit = reading on marker of reference level measurement -20 dBm.
8. Mark the highest readings of the emissions outside of 2400MHz~2483.5MHz.
9. Repeat above procedures until all default test channel (low, middle, and high) was complete.
10. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

### Conducted Spurious Emission:

1. To connect Antenna Port of EUT to Spectrum
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Set RBW = 100 kHz & VBW= 300 kHz, Detector =Peak, Sweep = Auto.
4. Allow trace to fully stabilize.
5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Repeat above procedures until all default test channel measured were complete.
7. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

### Note:

*For test of MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome.*

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## 10.4 Measurement Result

802.11b Ch0

Reference Level of Limit			Reference Level of Limit		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)	Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2412	12.69	-7.31	2412	8.24	-11.76
2437	8.99	-11.01	2437	10.67	-9.33
2462	10.51	-9.49	2462	10.54	-9.46

802.11n HT 20M Ch0

Reference Level of Limit			Reference Level of Limit		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)	Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2412	6.02	-13.98	2412	5.70	-14.30
2437	6.57	-13.43	2437	6.50	-13.50
2462	6.69	-13.31	2462	6.45	-13.55

802.11n HT 40M Ch0

Reference Level of Limit			Reference Level of Limit		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)	Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2422	1.76	-18.24	2422	1.56	-18.44
2437	3.38	-16.62	2437	3.18	-16.82
2452	3.44	-16.56	2452	3.13	-16.87

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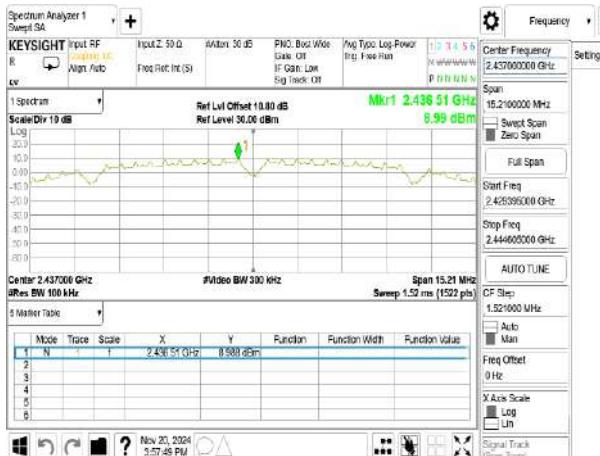
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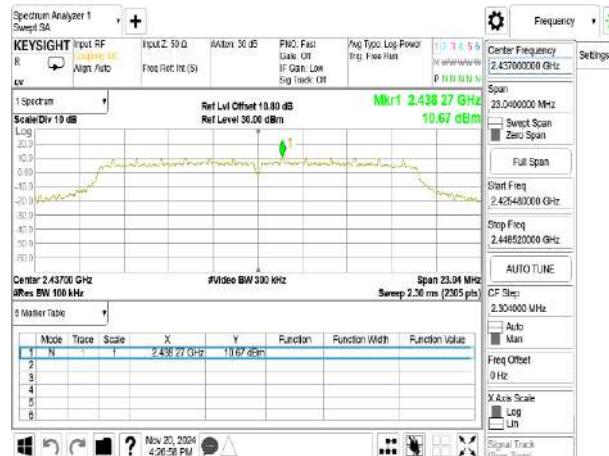
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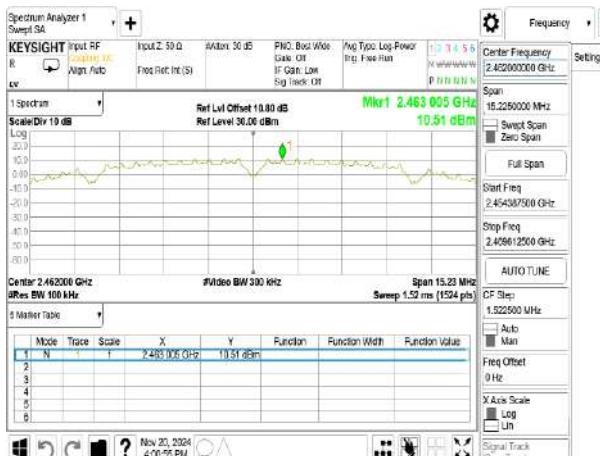
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802.11g\_20MHz\_Chain0\_2437MHz



802.11b\_20MHz\_Chain0\_2462MHz



802.11g\_20MHz\_Chain0\_2462MHz



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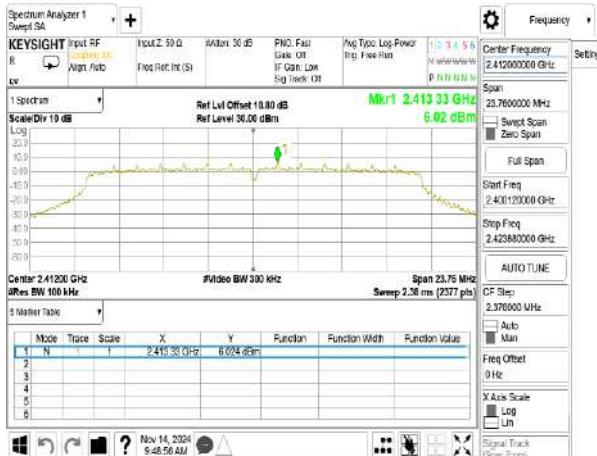
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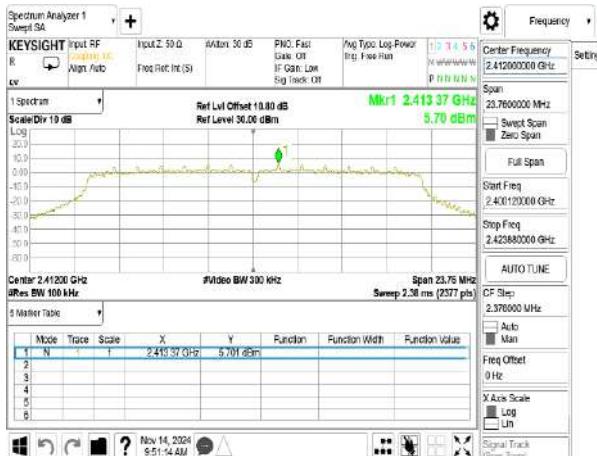
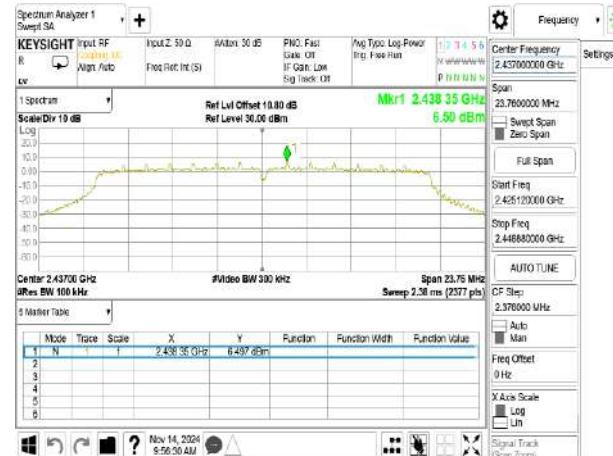
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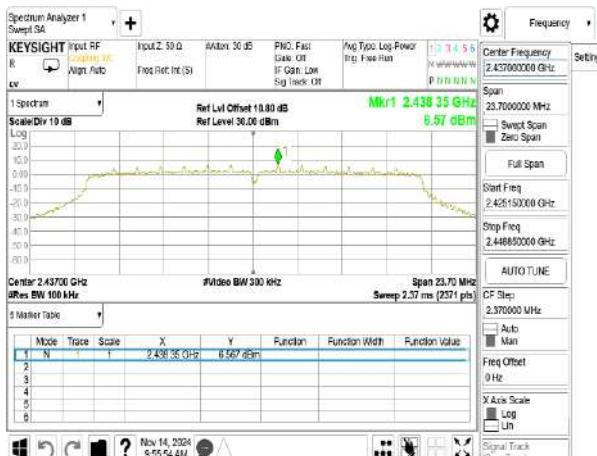
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802.11n\_20MHz\_Chain0\_2437MHz



802.11n\_20MHz\_Chain1\_2437MHz



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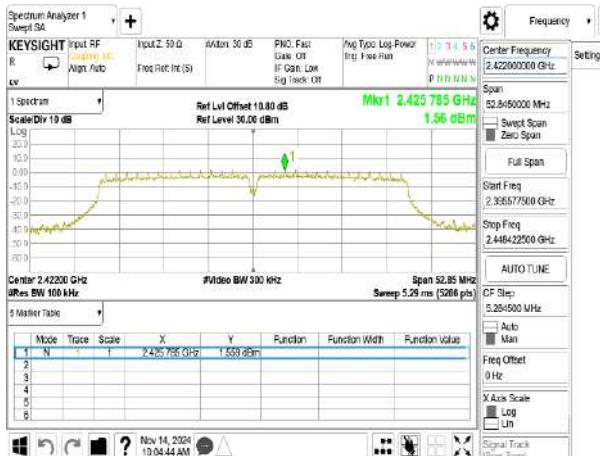
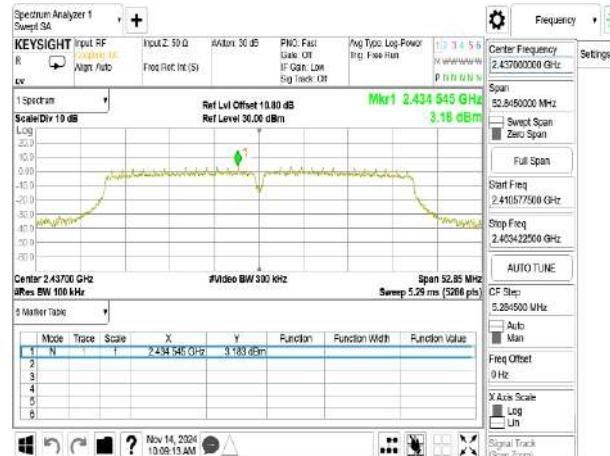
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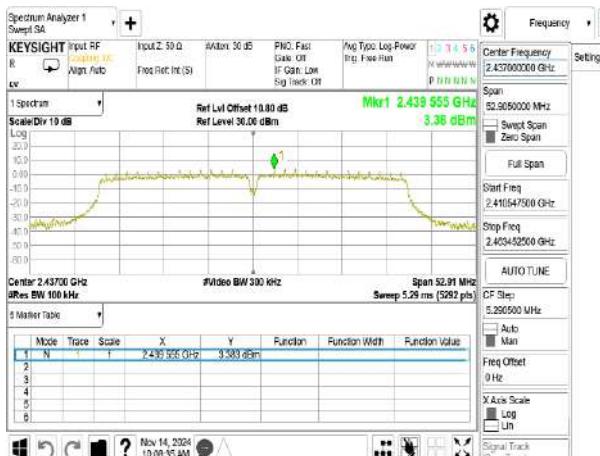
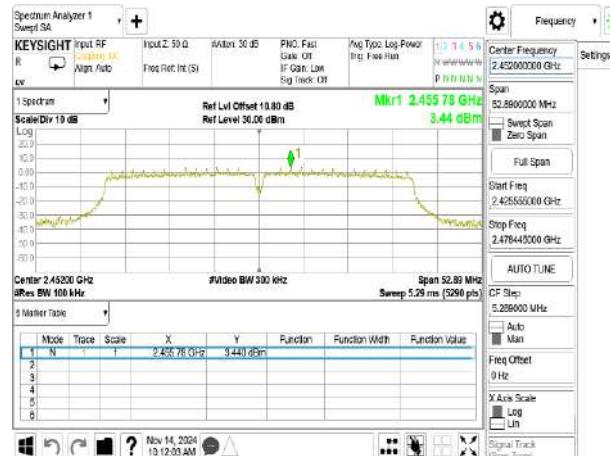
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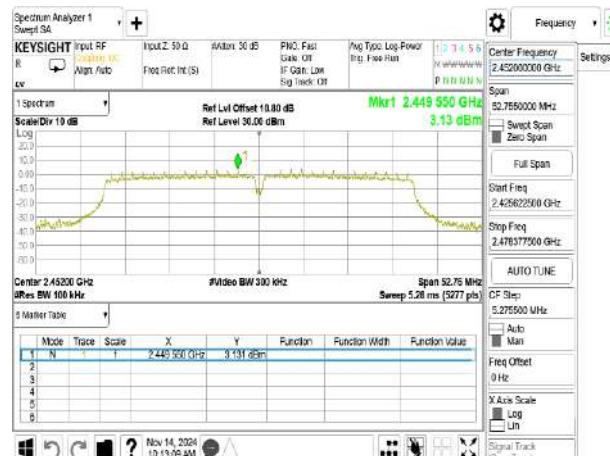
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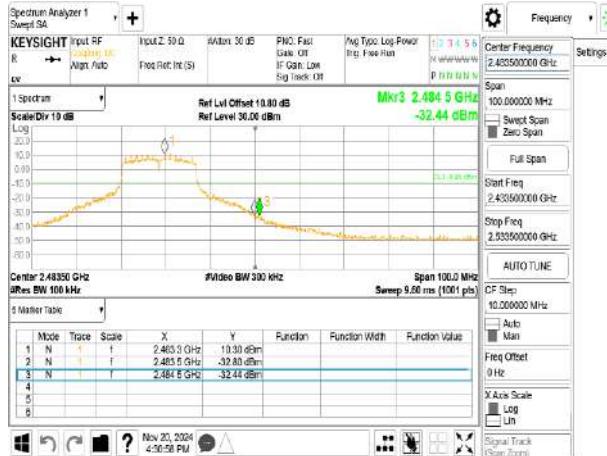
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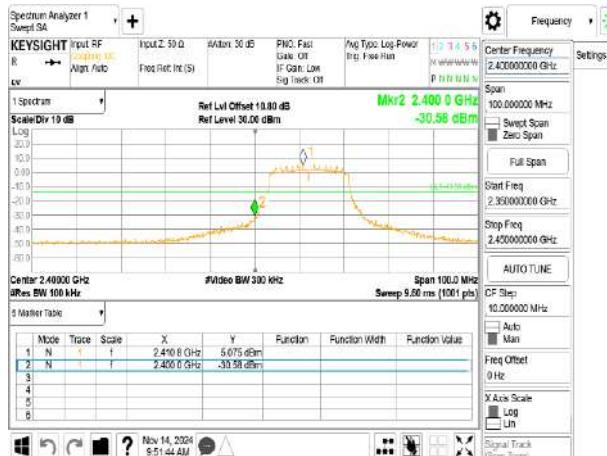
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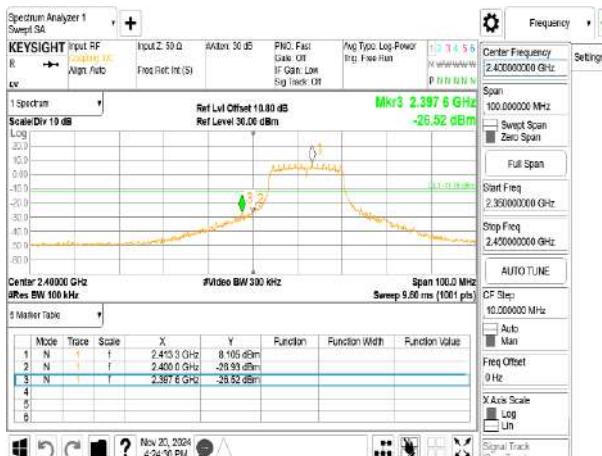
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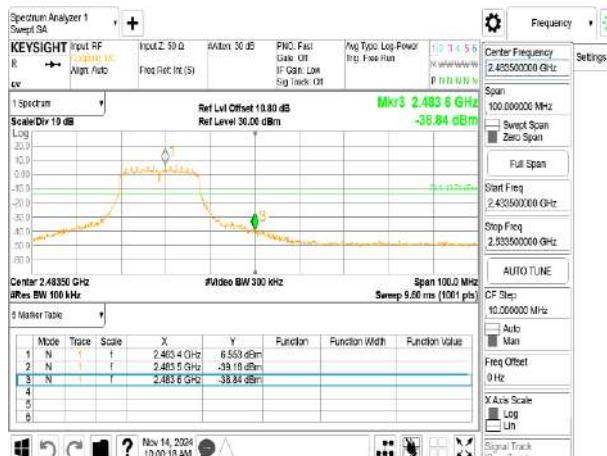
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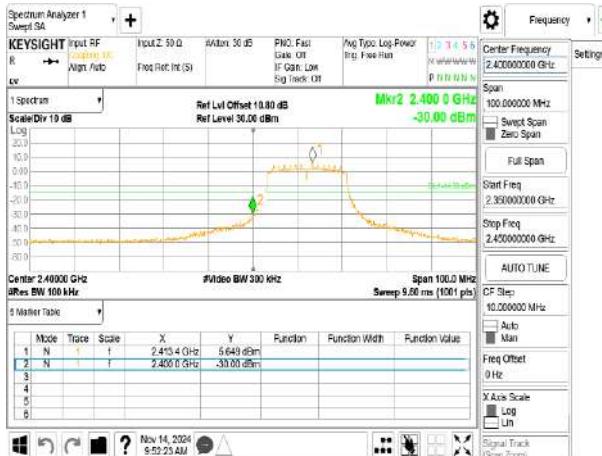
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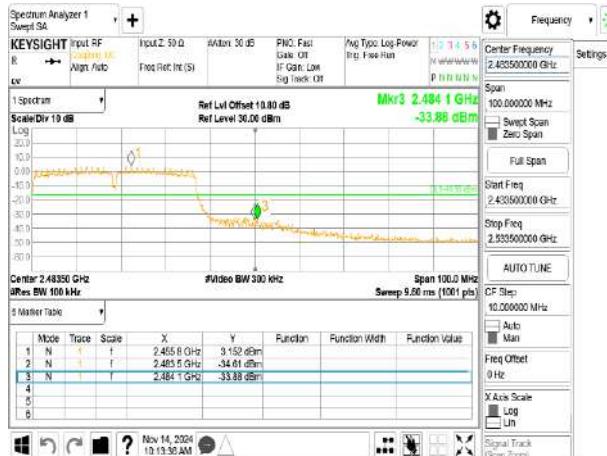
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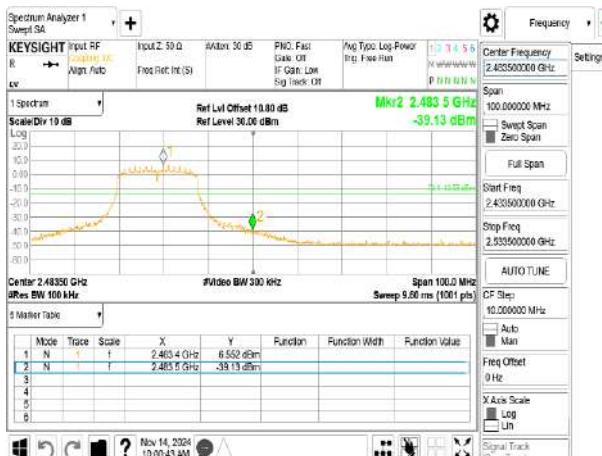
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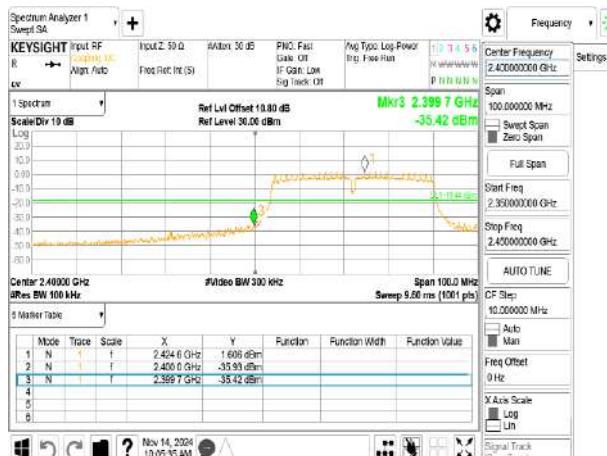
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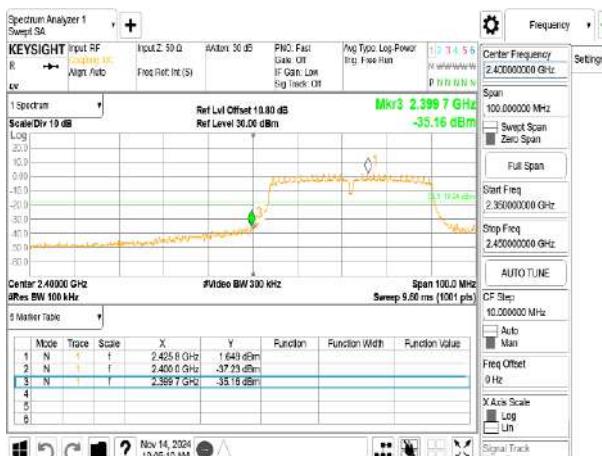
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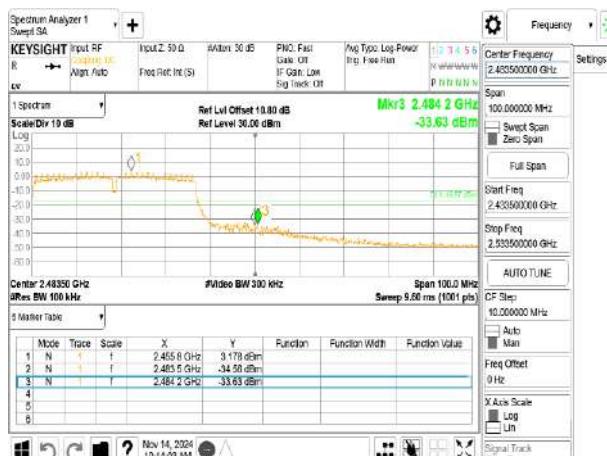
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802.11n\_40MHz\_Chain1\_2452MHz



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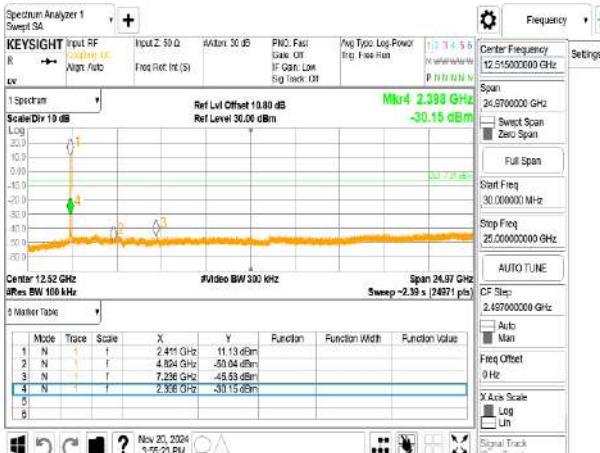
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## 802.11b\_20MHz\_Chain0\_2412MHz



## 802.11g\_20MHz\_Chain0\_2412MHz



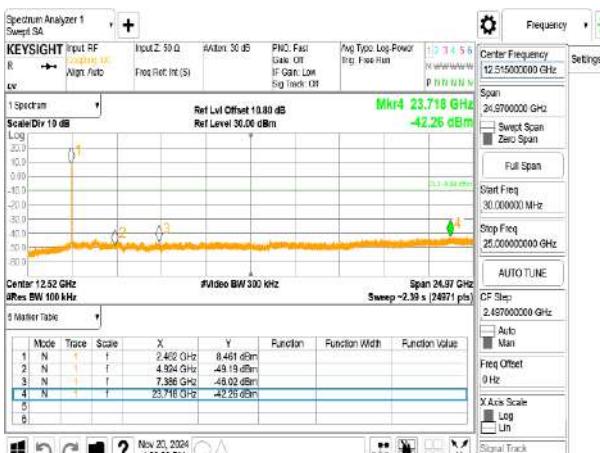
## 802.11b\_20MHz\_Chain0\_2437MHz



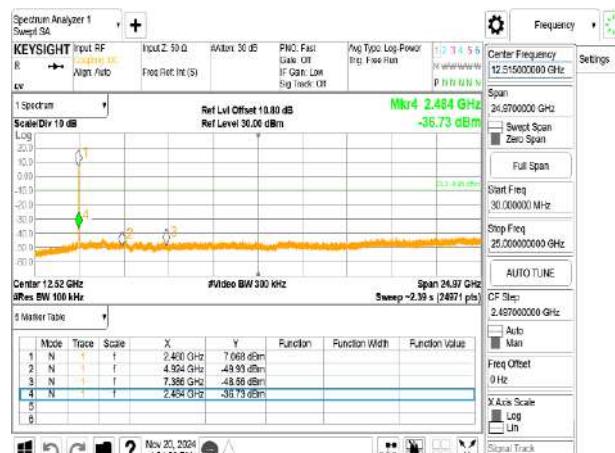
## 802.11g\_20MHz\_Chain0\_2437MHz



## 802.11b\_20MHz\_Chain0\_2462MHz



## 802.11g\_20MHz\_Chain0\_2462MHz



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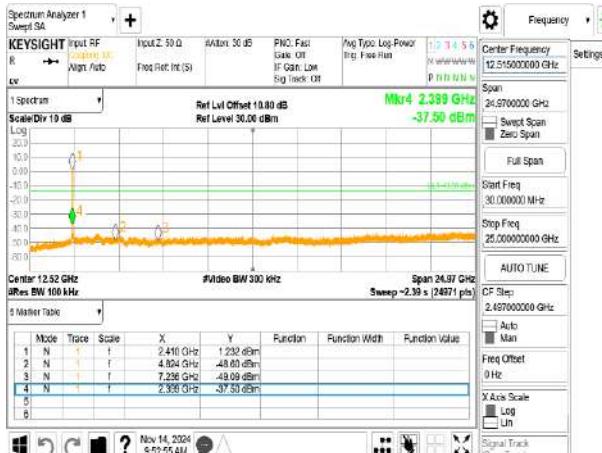
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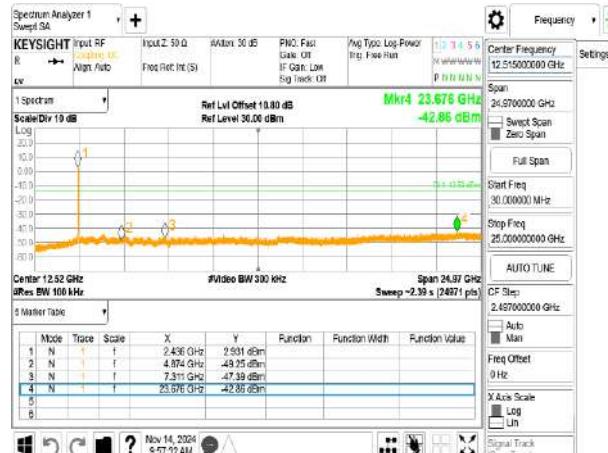
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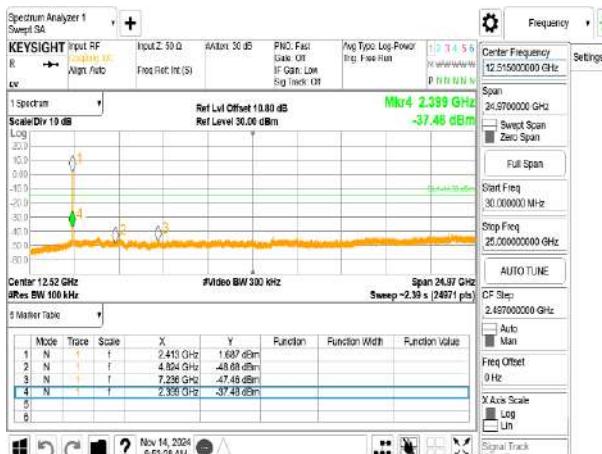
802.11n\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain1\_2437MHz



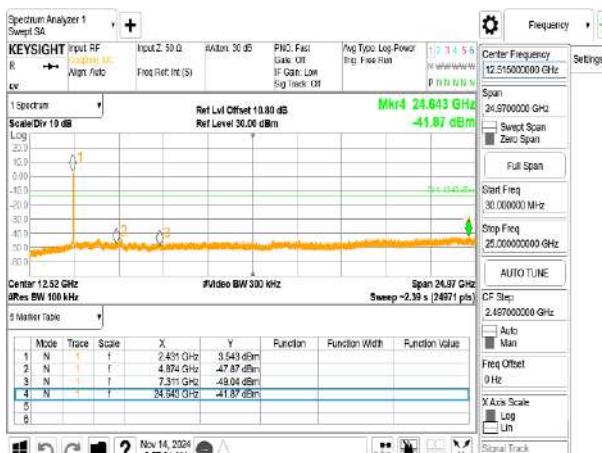
802.11n\_20MHz\_Chain1\_2412MHz



802.11n\_20MHz\_Chain0\_2462MHz



802.11n\_20MHz\_Chain0\_2437MHz



802.11n\_20MHz\_Chain1\_2462MHz



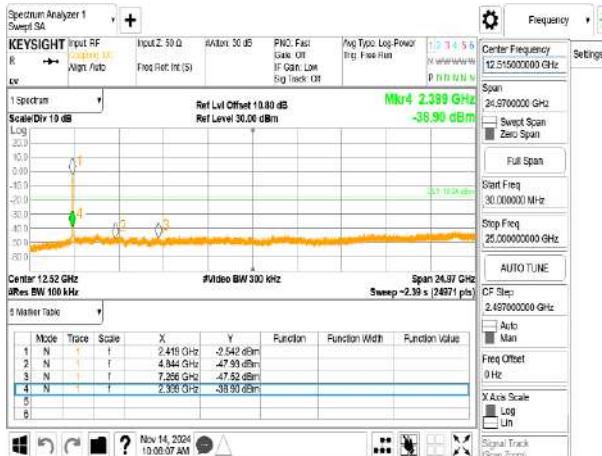
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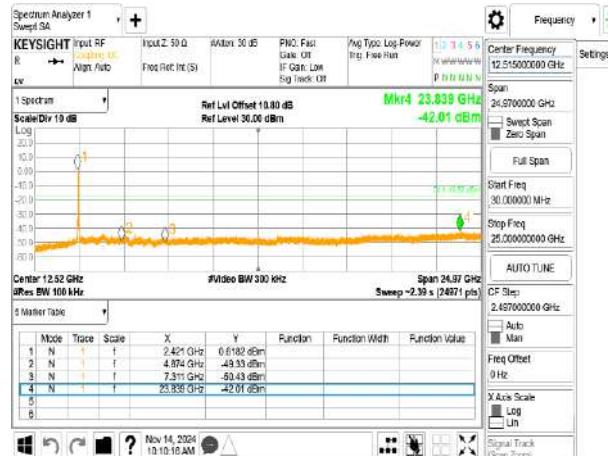
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802.11n\_40MHz\_Chain0\_2422MHz



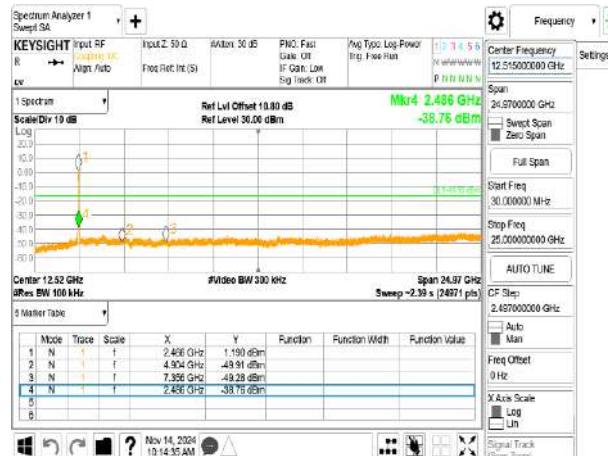
802.11n\_40MHz\_Chain1\_2437MHz



802.11n\_40MHz\_Chain1\_2422MHz



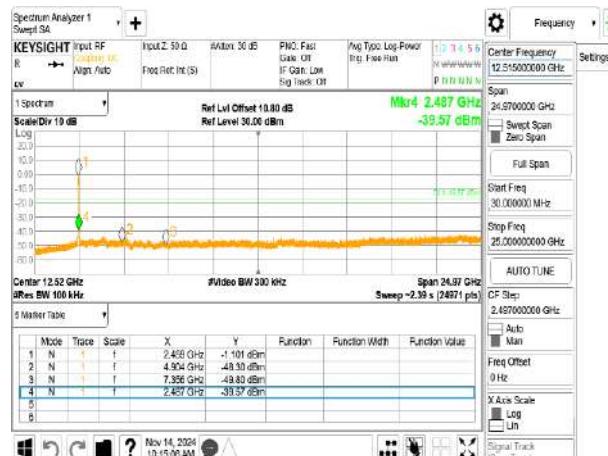
802.11n\_40MHz\_Chain0\_2452MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n\_40MHz\_Chain1\_2452MHz



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## 11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

### 11.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**Note:** The lower limit shall apply at the transition frequencies.

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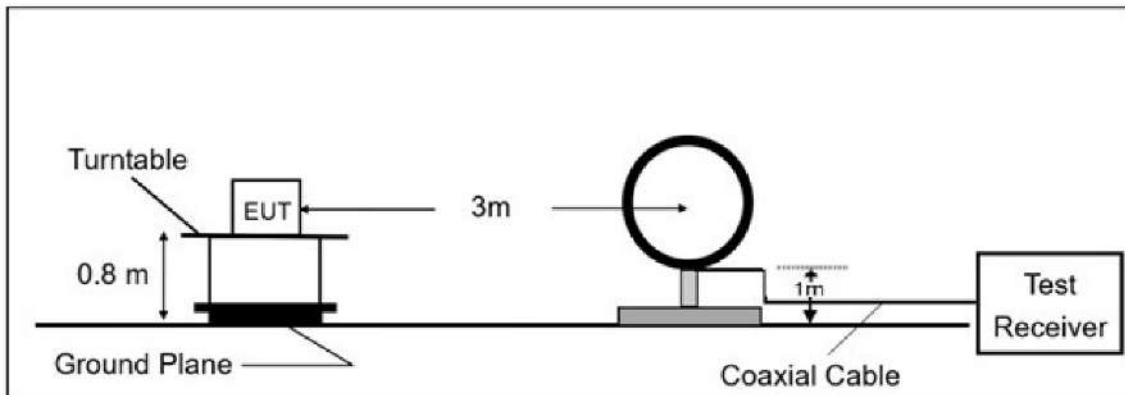
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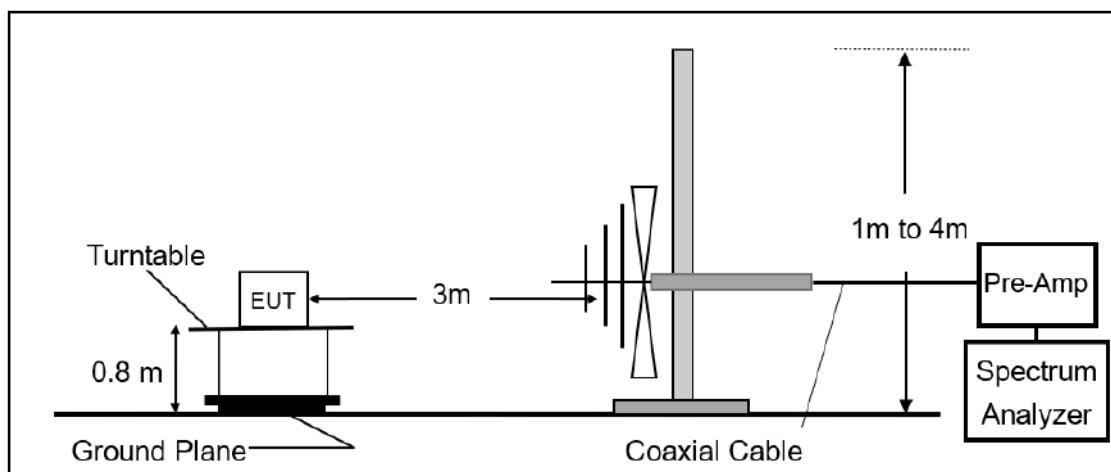
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## 11.2 Test Setup

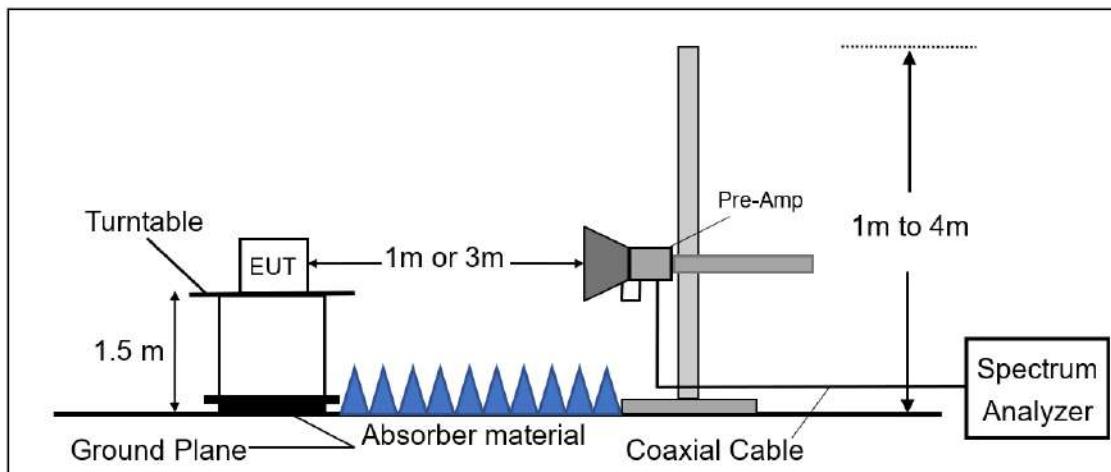
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency From 30MHz to 1000MHz.



(C) Radiated Emission Test Set-Up, Frequency Above 1GHz.



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### 11.3 Measurement Procedure

1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
2. The EUT was placed on a turn table with 0.8m for frequency < 1GHz and 1.5m for frequency > 1GHz above ground plane.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
5. Set the spectrum analyzer as RBW=100 kHz and VBW=300 kHz for Peak Detector (PK) at frequency between 30MHz and 1 GHz.
6. Use receiver mode as RBW=120 kHz for Quasi-peak (QP) at frequency between 30MHz and 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Maximum Emission Measurements at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW  $\geq$  1/T (Duty cycle < 98%) for Average Emission Measurements at frequency above 1 GHz.
9. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
12. Repeat above procedures until all default test channel measured were complete.

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## 11.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

**Where**  $FS$  = Field Strength

$CL$  = Cable Attenuation Factor (Cable Loss)

$RA$  = Reading Amplitude

$AG$  = Amplifier Gain

$AF$  = Antenna Factor

The limit of the emission level is expressed in  $dB\mu V/m$ , which converts  $20 * \log(uV/m)$

Actual  $FS(dB\mu V/m) = SPA \cdot Reading\ level(dB\mu V) + Factor(dB)$

$Factor(dB) = Antenna\ Factor(dB\mu V/m) + Cable\ Loss(dB) - Pre\_Amplifier\ Gain(dB)$

## 11.5 Test Results of Radiated Spurious Emissions from 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

## 11.6 Measurement Result

### Note:

1. Refer to next page spectrum analyzer data chart and tabular data sheets.
2. Measurements are completed at peak and average level, the mark of average is the highest emission in restricted bands.

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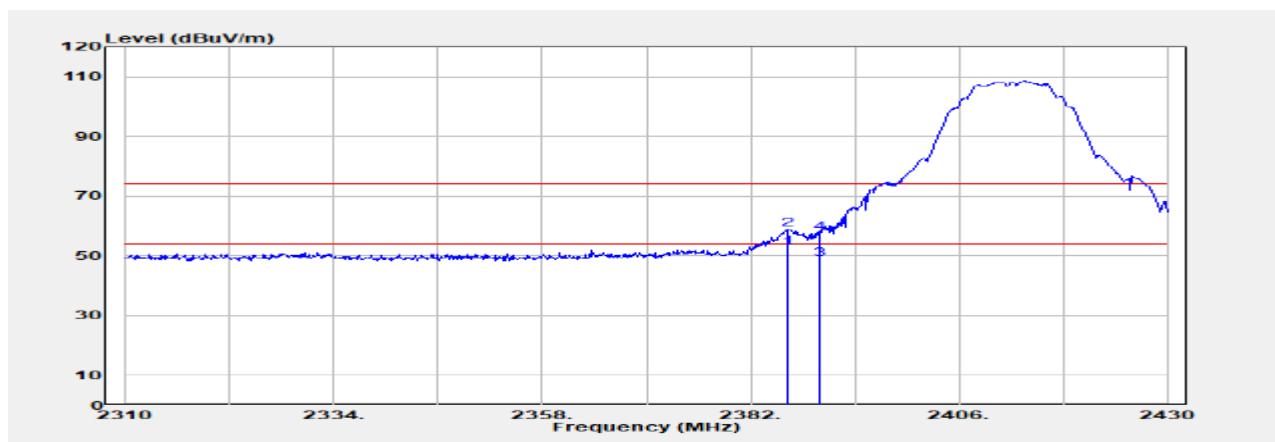
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### 11.6.1 Radiated Band Edge Measurement Result

Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2412 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
2386.320	Average	55.87	-3.27	52.60	54.00	-1.40
2386.320	Peak	62.19	-3.27	58.92	74.00	-15.08
2390.000	Average	52.12	-3.28	48.84	54.00	-5.16
2390.000	Peak	60.87	-3.28	57.60	74.00	-16.40

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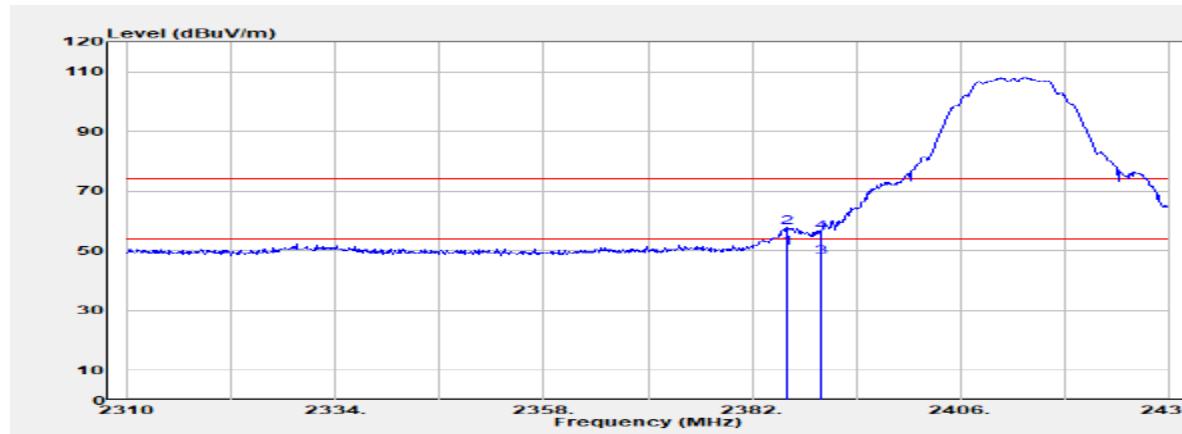
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Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2412 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2386.080	Average	54.39	-3.27	51.12	54.00	-2.88
2386.080	Peak	61.05	-3.27	57.78	74.00	-16.22
2390.000	Average	50.93	-3.28	47.65	54.00	-6.35
2390.000	Peak	59.58	-3.28	56.31	74.00	-17.69

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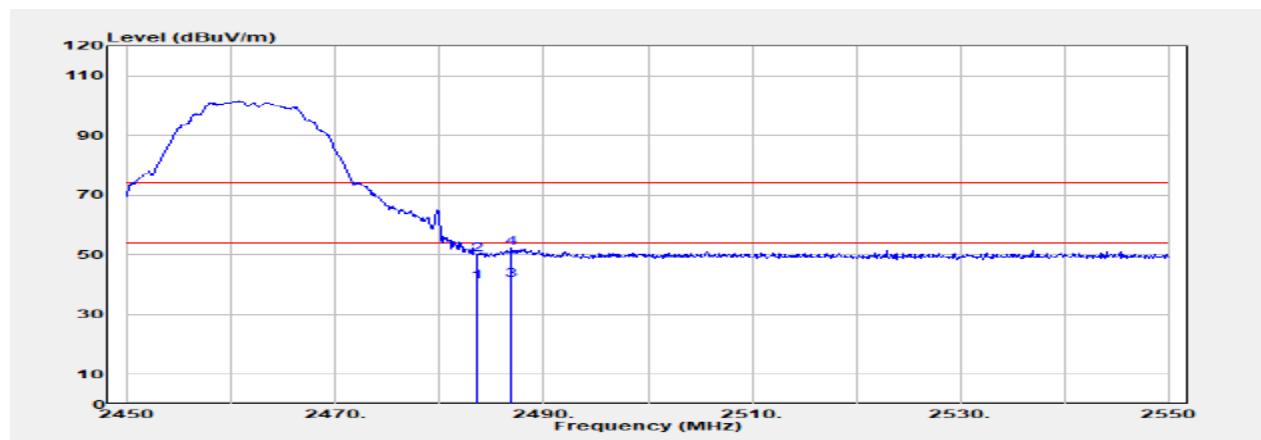
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Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2462 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m	Margin
					dB $\mu$ V/m	dB
2483.500	Average	44.13	-3.31	40.82	54.00	-13.18
2483.500	Peak	53.40	-3.31	50.08	74.00	-23.92
2486.900	Average	44.92	-3.30	41.62	54.00	-12.38
2486.900	Peak	55.57	-3.30	52.26	74.00	-21.74

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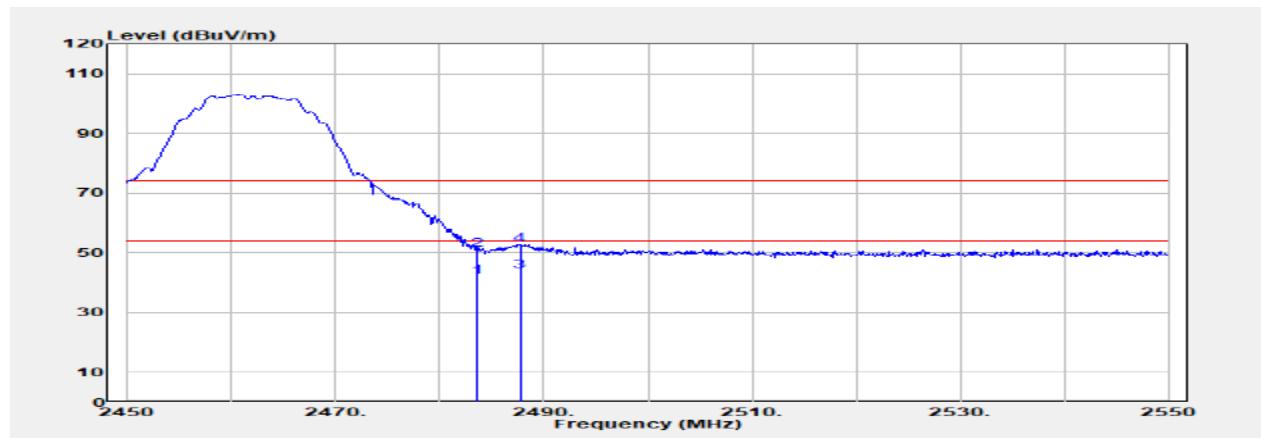
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Member of SGS Group

Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2462 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
2483.500	Average	45.18	-3.31	41.87	54.00	-12.13
2483.500	Peak	54.32	-3.31	51.00	74.00	-23.00
2487.700	Average	47.23	-3.30	43.93	54.00	-10.07
2487.700	Peak	56.04	-3.30	52.74	74.00	-21.26

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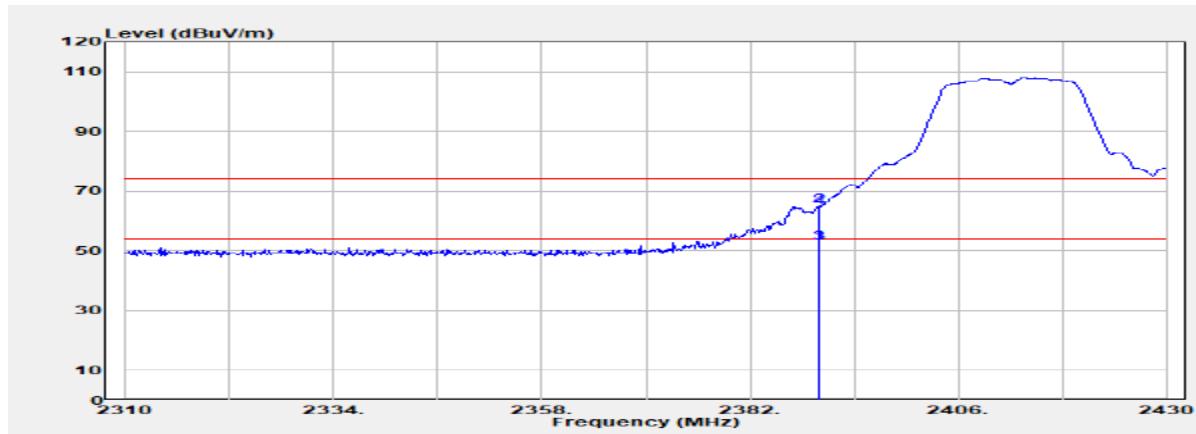
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2412 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.920	Average	55.96	-3.27	52.68	54.00	-1.32
2389.920	Peak	68.21	-3.27	64.93	74.00	-9.07
2390.000	Average	56.04	-3.28	52.76	54.00	-1.24
2390.000	Peak	68.07	-3.28	64.80	74.00	-9.20

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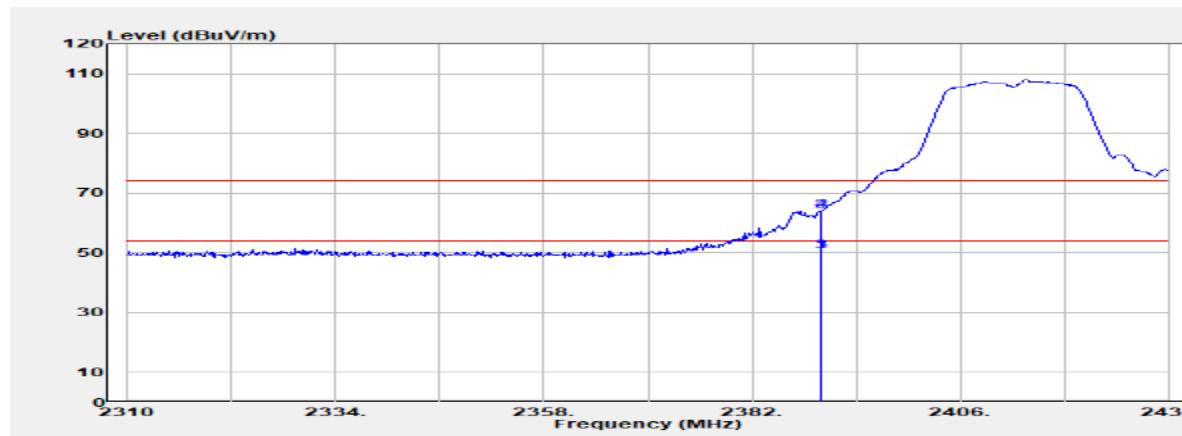
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2412 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.920	Average	53.58	-3.27	50.31	54.00	-3.69
2389.920	Peak	67.50	-3.27	64.22	74.00	-9.78
2390.000	Average	53.73	-3.28	50.46	54.00	-3.54
2390.000	Peak	67.35	-3.28	64.08	74.00	-9.92

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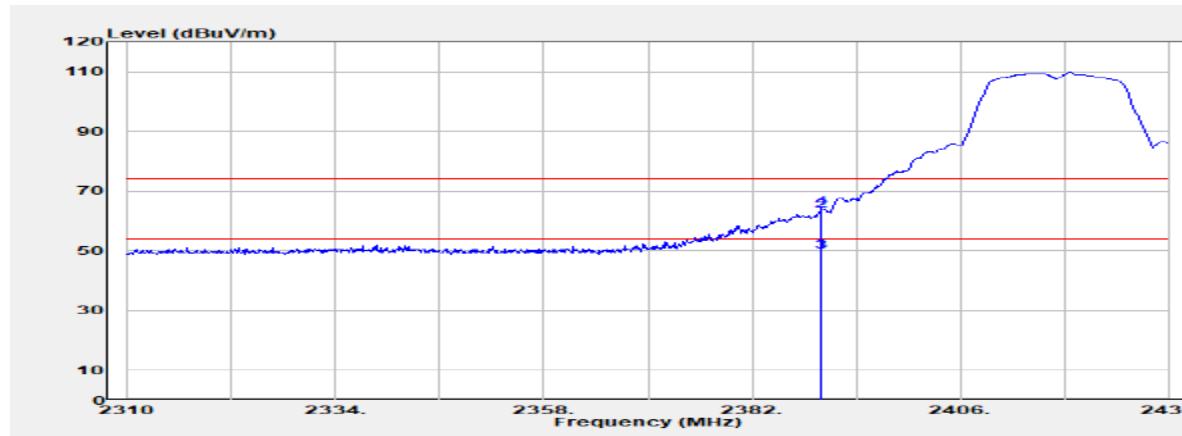
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2417 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :24.8°C/58%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.920	Average	52.93	-3.27	49.66	54.00	-4.34
2389.920	Peak	66.57	-3.27	63.30	74.00	-10.70
2390.000	Average	52.94	-3.28	49.67	54.00	-4.33
2390.000	Peak	67.51	-3.28	64.24	74.00	-9.76

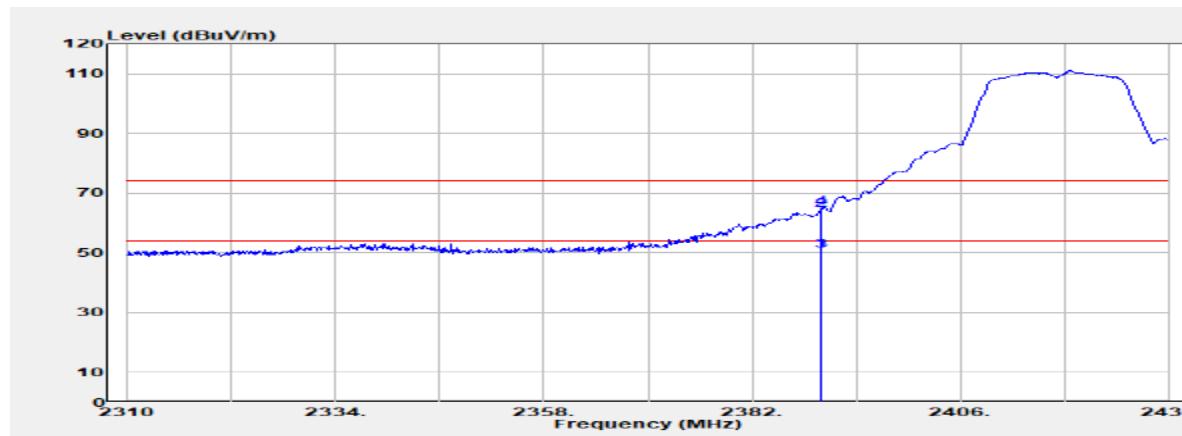
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2417 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :24.8°C/58%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	
				dB $\mu$ V/m	dB $\mu$ V/m	dB
2389.920	Average	53.86	-3.27	50.58	54.00	-3.42
2389.920	Peak	67.71	-3.27	64.43	74.00	-9.57
2390.000	Average	53.95	-3.28	50.67	54.00	-3.33
2390.000	Peak	68.30	-3.28	65.03	74.00	-8.97

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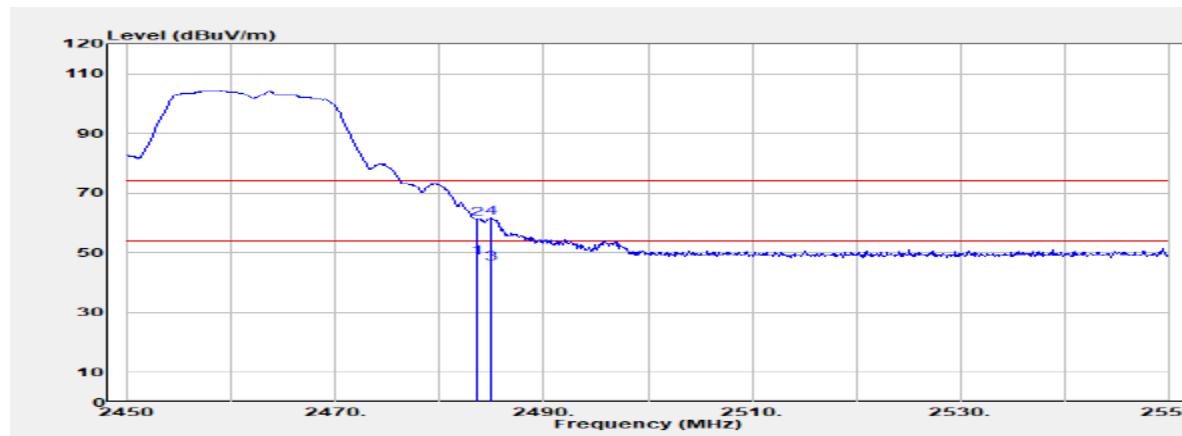
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2462 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2483.500	Average	51.71	-3.31	48.39	54.00	-5.61
2483.500	Peak	64.85	-3.31	61.54	74.00	-12.46
2484.900	Average	49.73	-3.31	46.42	54.00	-7.58
2484.900	Peak	64.97	-3.31	61.66	74.00	-12.34

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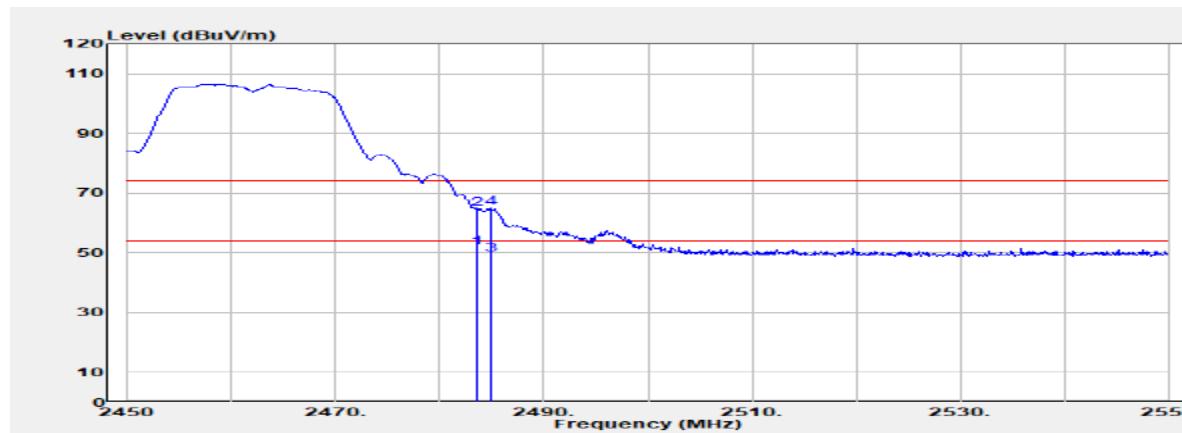
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2462 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2483.500	Average	54.93	-3.31	51.62	54.00	-2.38
2483.500	Peak	67.88	-3.31	64.56	74.00	-9.44
2485.000	Average	52.69	-3.31	49.38	54.00	-4.62
2485.000	Peak	68.41	-3.31	65.10	74.00	-8.90

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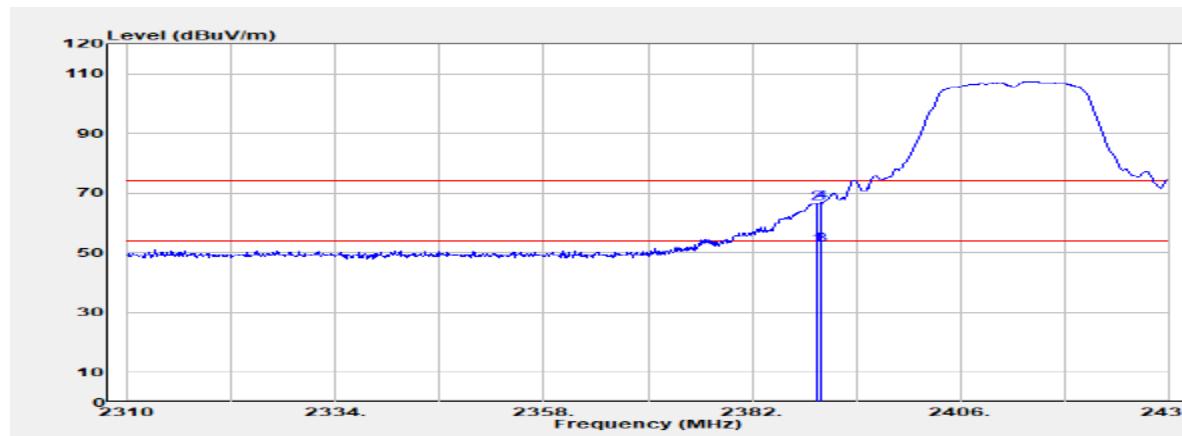
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2412 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.560	Average	55.81	-3.27	52.54	54.00	-1.46
2389.560	Peak	70.07	-3.27	66.80	74.00	-7.20
2390.000	Average	55.83	-3.28	52.55	54.00	-1.45
2390.000	Peak	70.27	-3.28	66.99	74.00	-7.01

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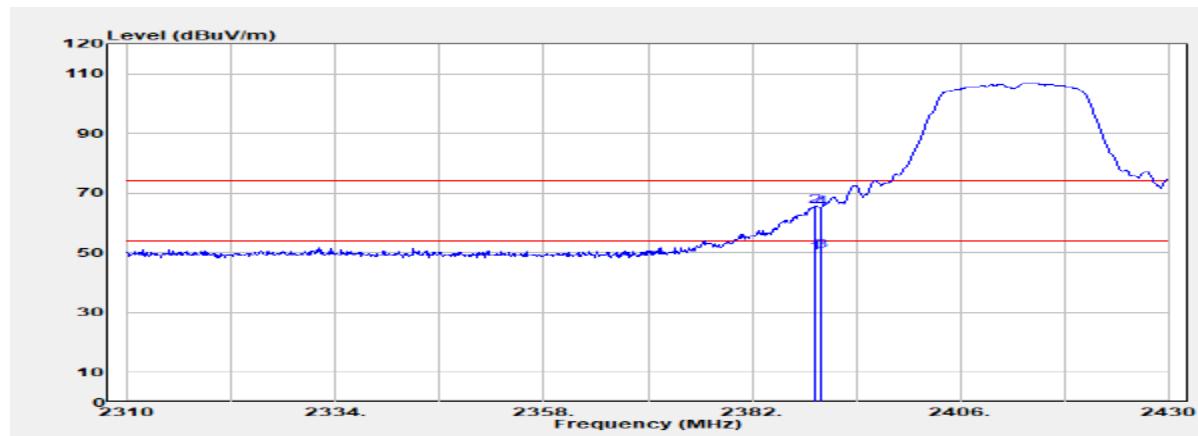
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2412 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.320	Average	53.48	-3.27	50.20	54.00	-3.80
2389.320	Peak	68.96	-3.27	65.69	74.00	-8.31
2390.000	Average	53.86	-3.28	50.59	54.00	-3.41
2390.000	Peak	68.44	-3.28	65.17	74.00	-8.83

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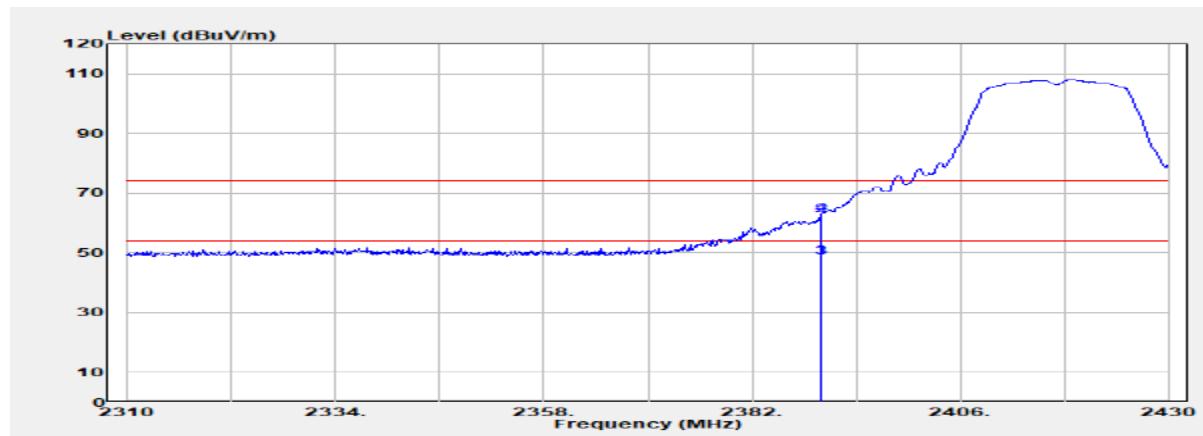
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2417 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :24.8°C/58%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.920	Average	51.62	-3.27	48.34	54.00	-5.66
2389.920	Peak	65.65	-3.27	62.37	74.00	-11.63
2390.000	Average	51.73	-3.28	48.45	54.00	-5.55
2390.000	Peak	65.92	-3.28	62.64	74.00	-11.36

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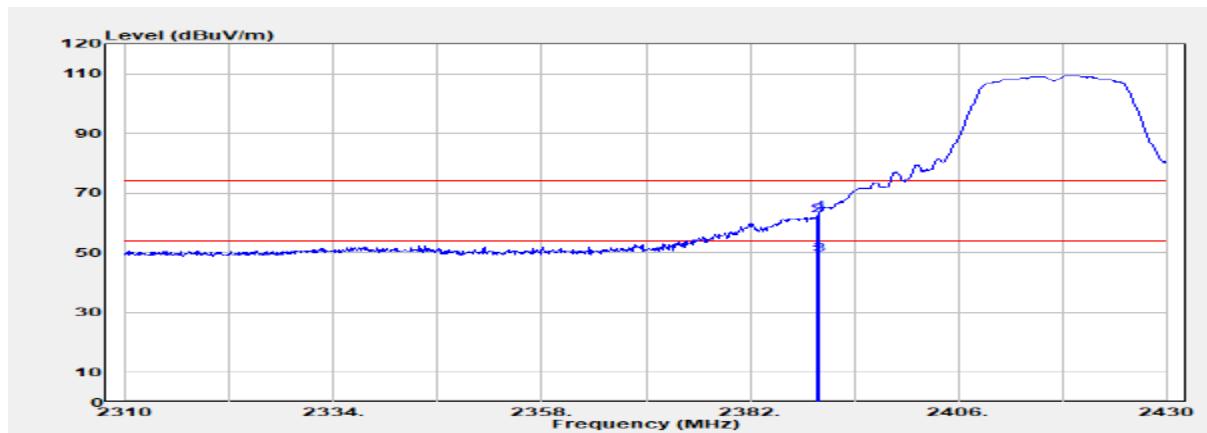
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Member of SGS Group

Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2417 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :24.8°C/58%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.800	Average	52.53	-3.27	49.26	54.00	-4.74
2389.800	Peak	65.76	-3.27	62.48	74.00	-11.52
2390.000	Average	52.81	-3.28	49.53	54.00	-4.47
2390.000	Peak	66.83	-3.28	63.56	74.00	-10.44

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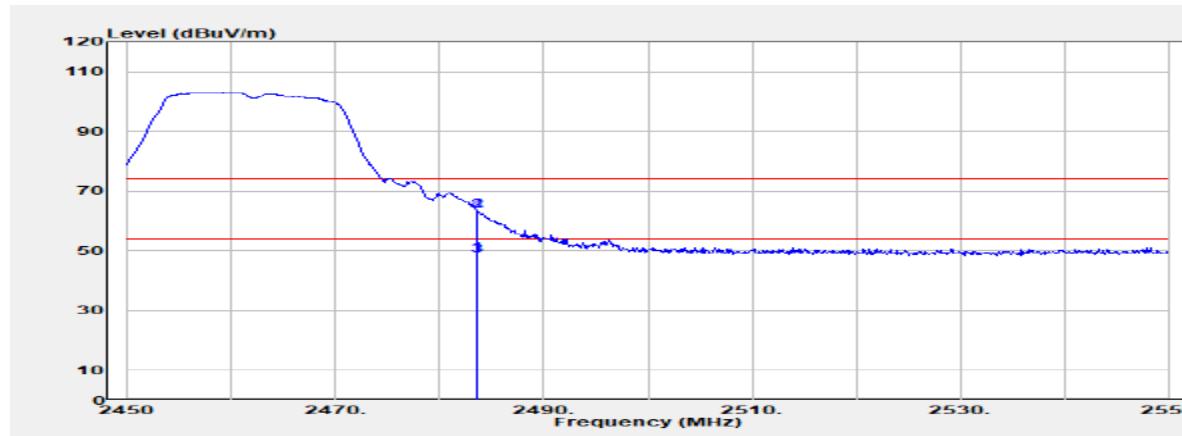
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2462 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2483.500	Average	52.10	-3.31	48.79	54.00	-5.21
2483.500	Peak	66.84	-3.31	63.53	74.00	-10.47
2483.600	Average	51.92	-3.31	48.61	54.00	-5.39
2483.600	Peak	66.77	-3.31	63.46	74.00	-10.54

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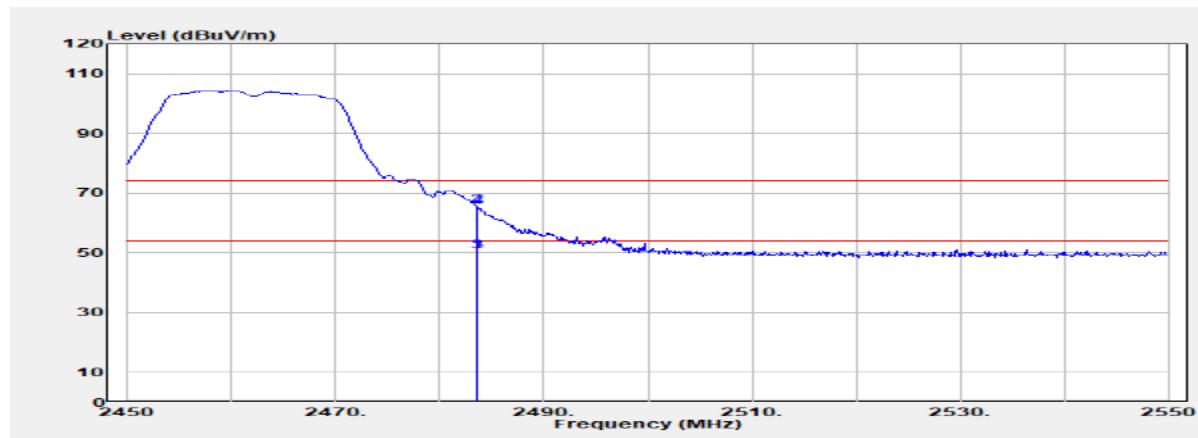
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2462 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2483.500	Average	53.83	-3.31	50.51	54.00	-3.49
2483.500	Peak	68.97	-3.31	65.66	74.00	-8.34
2483.600	Average	53.72	-3.31	50.41	54.00	-3.59
2483.600	Peak	68.66	-3.31	65.35	74.00	-8.65

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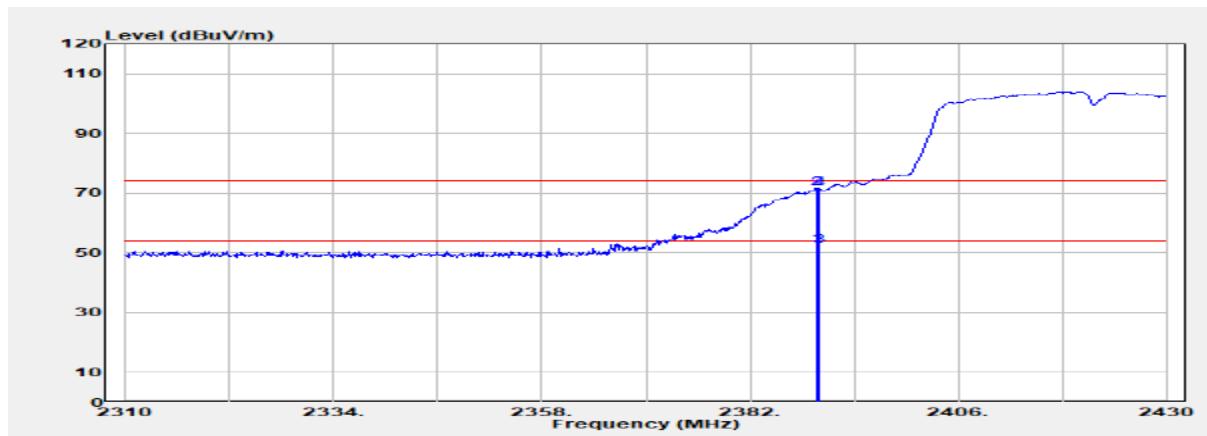
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2422 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.800	Average	55.60	-3.27	52.32	54.00	-1.68
2389.800	Peak	74.85	-3.27	71.57	74.00	-2.43
2390.000	Average	55.68	-3.28	52.41	54.00	-1.59
2390.000	Peak	74.81	-3.28	71.53	74.00	-2.47

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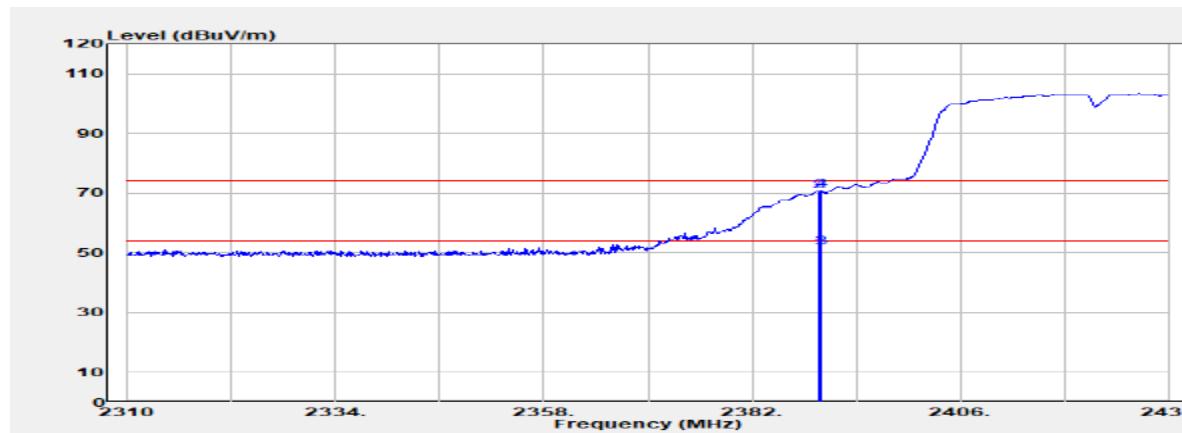
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2422 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.800	Average	54.81	-3.27	51.53	54.00	-2.47
2389.800	Peak	74.00	-3.27	70.73	74.00	-3.27
2390.000	Average	54.92	-3.28	51.64	54.00	-2.36
2390.000	Peak	74.06	-3.28	70.79	74.00	-3.21

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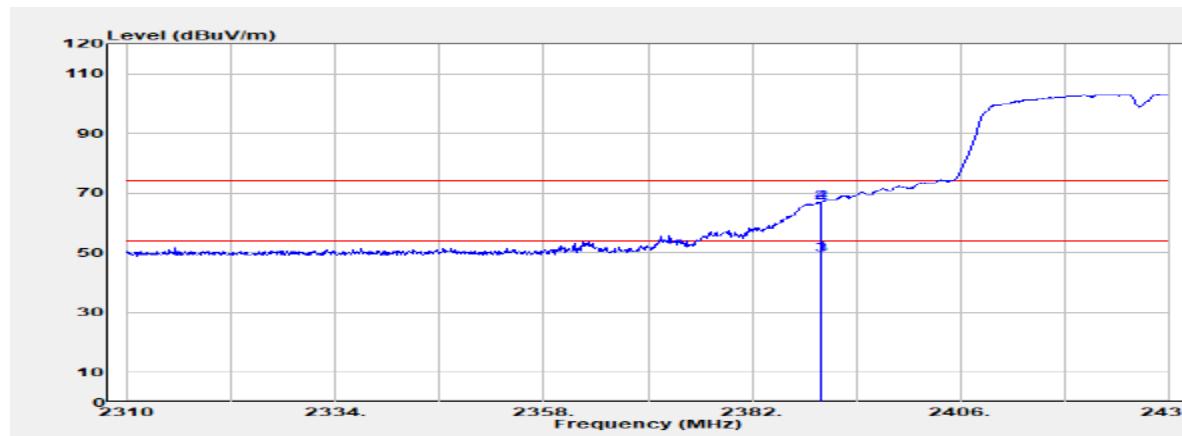
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2427 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :24.8°C/58%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.920	Average	52.91	-3.27	49.63	54.00	-4.37
2389.920	Peak	70.22	-3.27	66.94	74.00	-7.06
2390.000	Average	52.80	-3.28	49.52	54.00	-4.48
2390.000	Peak	70.36	-3.28	67.08	74.00	-6.92

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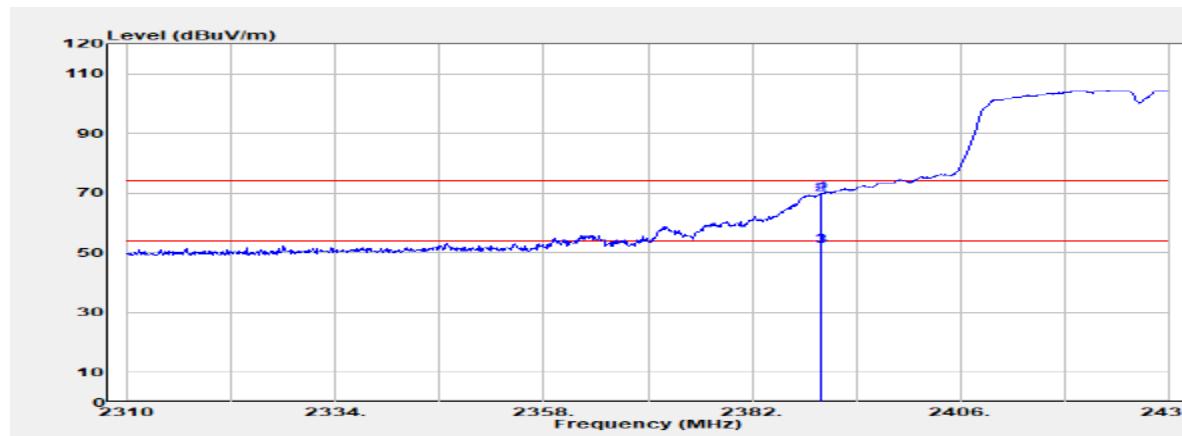
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2427 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :24.8°C/58%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.920	Average	55.74	-3.27	52.47	54.00	-1.53
2389.920	Peak	72.83	-3.27	69.55	74.00	-4.45
2390.000	Average	55.50	-3.28	52.23	54.00	-1.77
2390.000	Peak	73.10	-3.28	69.83	74.00	-4.17

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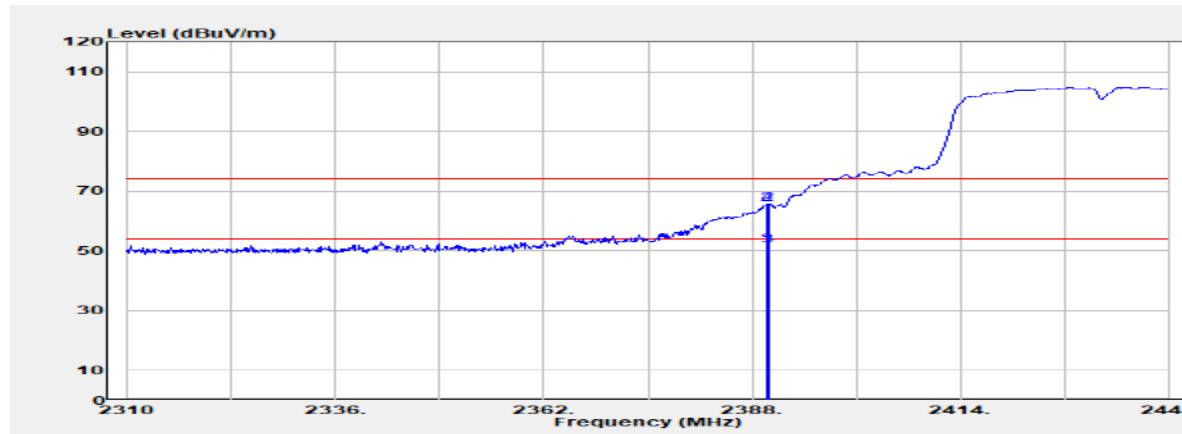
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2432 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :24.8°C/58%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.820	Average	54.90	-3.27	51.62	54.00	-2.38
2389.820	Peak	68.81	-3.27	65.53	74.00	-8.47
2390.000	Average	54.89	-3.28	51.62	54.00	-2.38
2390.000	Peak	68.90	-3.28	65.62	74.00	-8.38

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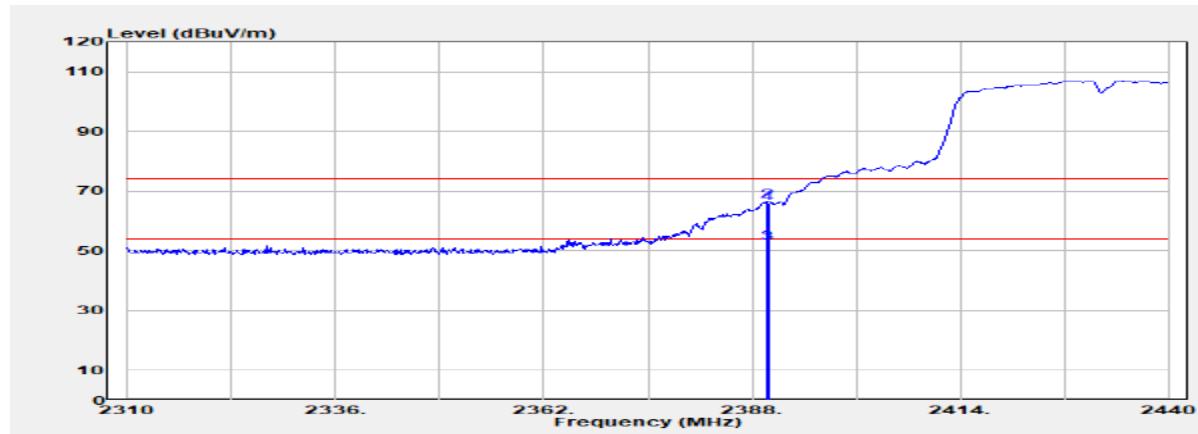
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2432 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :24.8°C/58%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2389.820	Average	55.93	-3.27	52.65	54.00	-1.35
2389.820	Peak	69.87	-3.27	66.60	74.00	-7.40
2390.000	Average	55.90	-3.28	52.63	54.00	-1.37
2390.000	Peak	69.42	-3.28	66.15	74.00	-7.85

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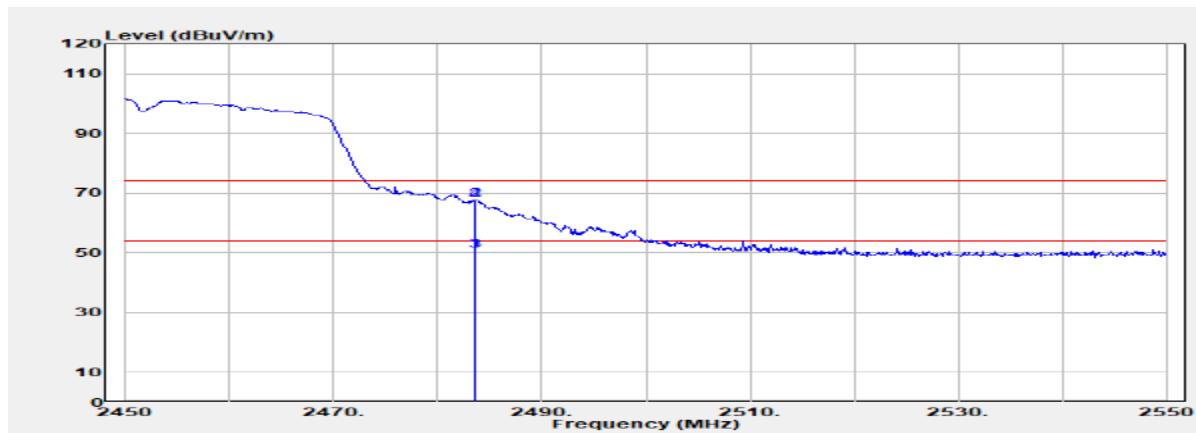
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2452 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
2483.500	Average	54.01	-3.31	50.69	54.00	-3.31
2483.500	Peak	71.07	-3.31	67.76	74.00	-6.24
2483.600	Average	53.93	-3.31	50.62	54.00	-3.38
2483.600	Peak	71.09	-3.31	67.78	74.00	-6.22

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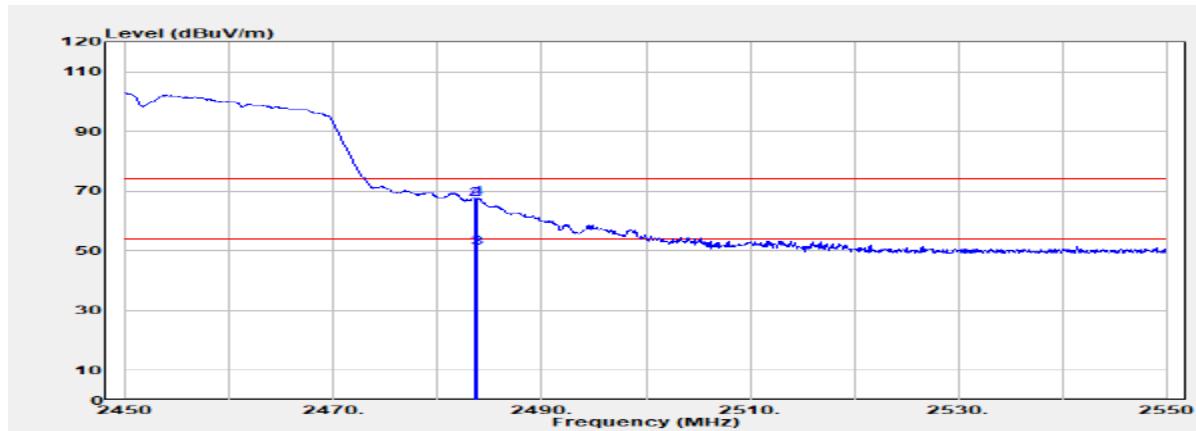
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2452 MHz  
 Test Mode :Bandedge  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
2483.500	Average	54.60	-3.31	51.29	54.00	-2.71
2483.500	Peak	70.71	-3.31	67.40	74.00	-6.60
2483.700	Average	54.52	-3.31	51.21	54.00	-2.79
2483.700	Peak	71.06	-3.31	67.74	74.00	-6.26

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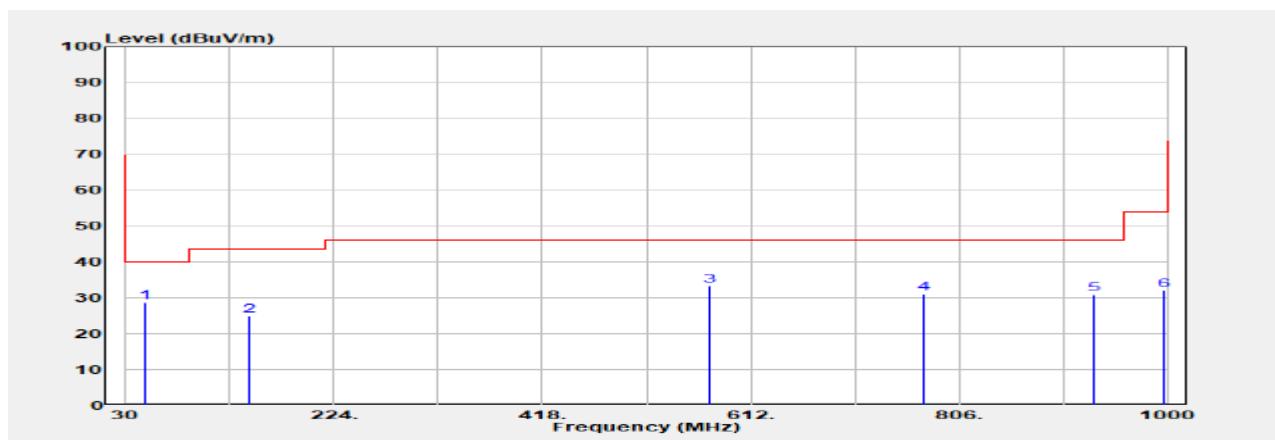
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## 11.6.2 Spurious Emission:

Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :23.8°C/58%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
48.430	Peak	41.48	-12.67	28.81	40.00	-11.19
144.460	Peak	38.14	-13.15	24.99	43.50	-18.51
574.170	Peak	38.93	-5.71	33.22	46.00	-12.78
773.990	Peak	32.65	-1.53	31.12	46.00	-14.88
931.130	Peak	31.19	-0.25	30.94	46.00	-15.06
997.090	Peak	31.30	0.75	32.05	54.00	-21.95

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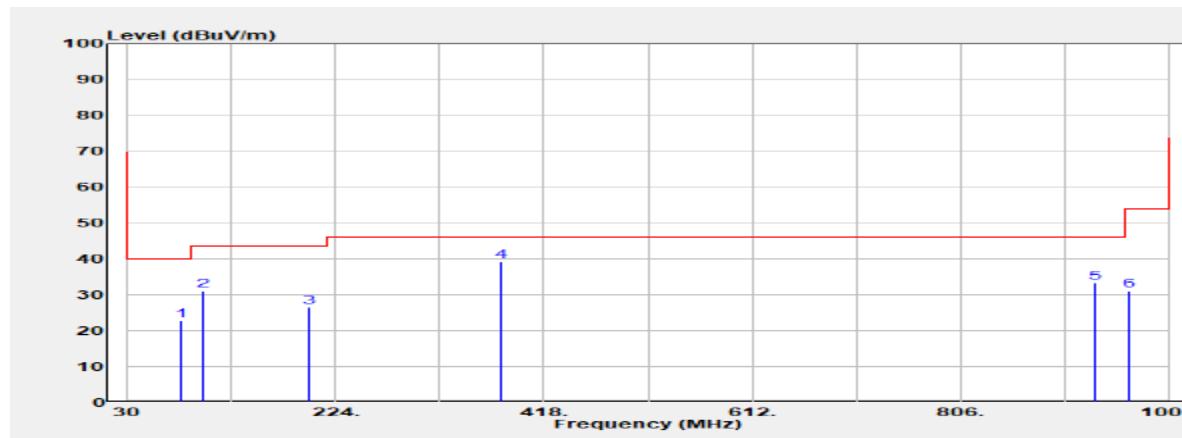
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-14  
 Temp./Humi. :23.8°C/58%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual		Margin dB
				FS	Limit @3m dB $\mu$ V/m	
PK/QP/AVG		dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
79.470	Peak	40.00	-17.12	22.88	40.00	-17.12
100.810	Peak	48.49	-17.39	31.11	43.50	-12.39
198.780	Peak	42.39	-15.70	26.69	43.50	-16.81
378.230	Peak	48.94	-9.78	39.16	46.00	-6.84
931.130	Peak	33.58	-0.25	33.32	46.00	-12.68
963.140	Peak	30.13	1.08	31.21	54.00	-22.79

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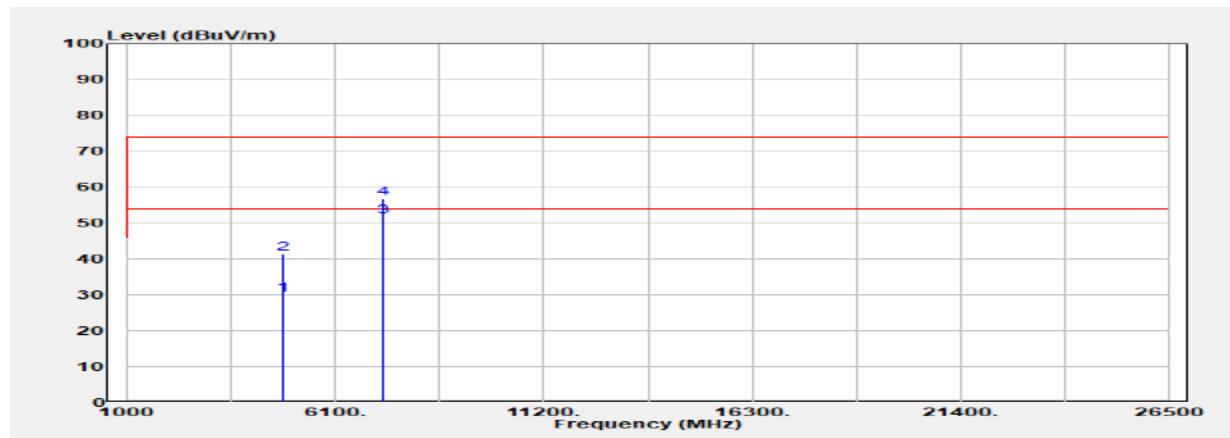
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Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2412 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
PK/QP/AVG	dB $\mu$ V			dB $\mu$ V/m	dB $\mu$ V/m	
4824.000	Average	26.75	3.35	30.09	54.00	-23.91
4824.000	Peak	38.11	3.35	41.46	74.00	-32.54
7236.000	Average	42.35	9.38	51.73	54.00	-2.27
7236.000	Peak	47.47	9.38	56.85	74.00	-17.15

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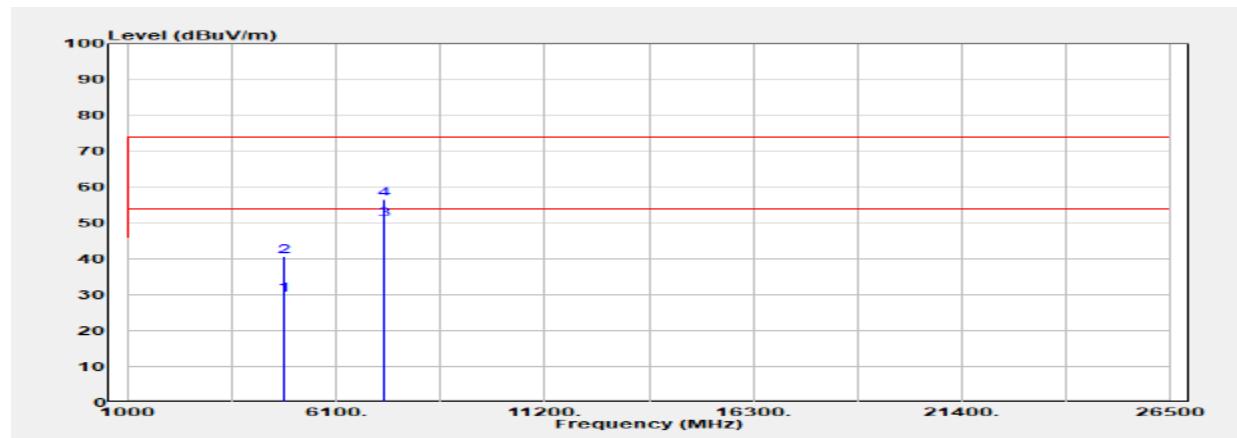
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Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2412 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
PK/QP/AVG	dB $\mu$ V		dB	dB $\mu$ V/m	dB $\mu$ V/m	
4824.000	Average	26.67	3.35	30.02	54.00	-23.98
4824.000	Peak	37.32	3.35	40.67	74.00	-33.33
7236.000	Average	41.59	9.38	50.97	54.00	-3.03
7236.000	Peak	47.16	9.38	56.54	74.00	-17.46

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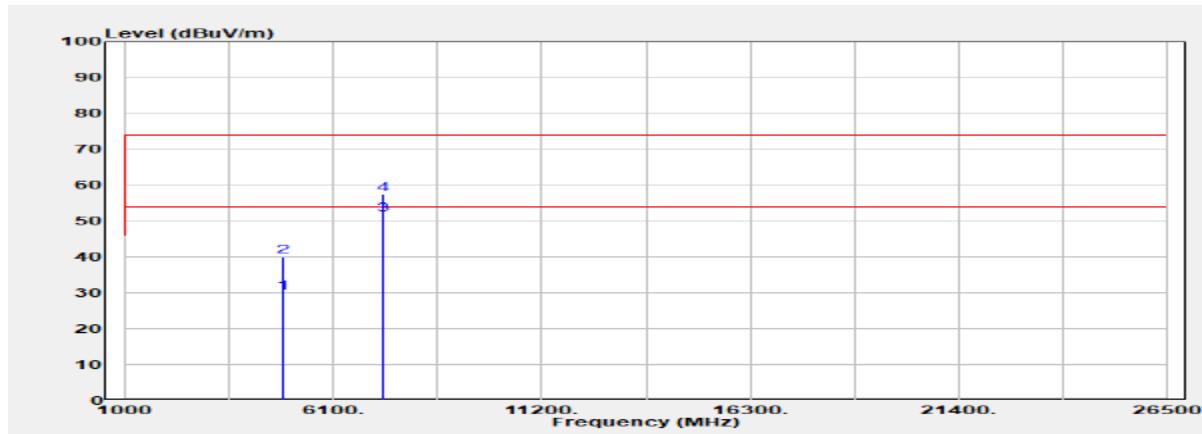
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Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor	Actual	Limit	Margin
				FS	@3m	dB
	PK/QP/AVG	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
4874.000	Average	26.53	3.49	30.02	54.00	-23.98
4874.000	Peak	36.69	3.49	40.17	74.00	-33.83
7311.000	Average	42.08	9.76	51.83	54.00	-2.17
7311.000	Peak	47.71	9.76	57.47	74.00	-16.53

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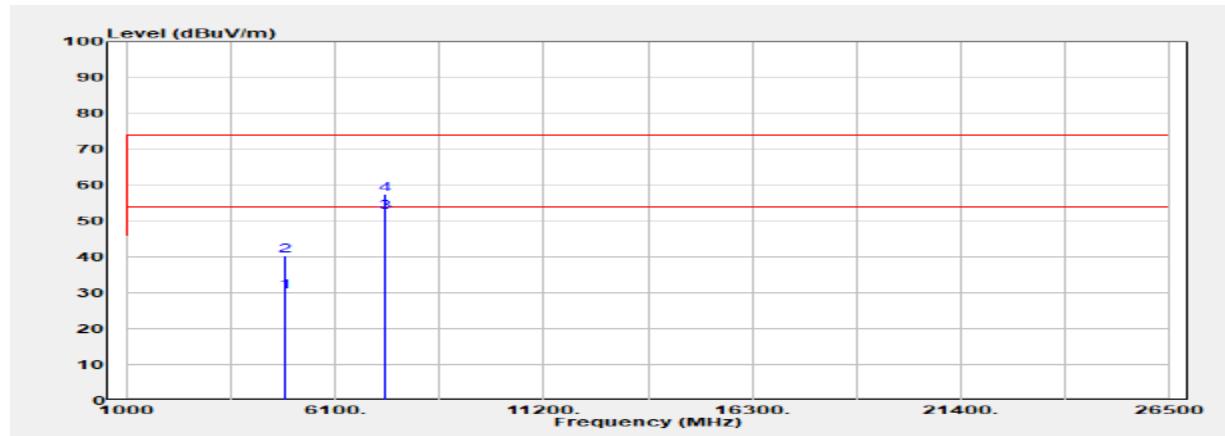
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Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor	Actual	Limit	Margin
				FS	@3m	dB
	PK/QP/AVG	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
4874.000	Average	26.94	3.49	30.43	54.00	-23.57
4874.000	Peak	36.99	3.49	40.48	74.00	-33.52
7311.000	Average	42.86	9.76	52.62	54.00	-1.38
7311.000	Peak	47.80	9.76	57.56	74.00	-16.44

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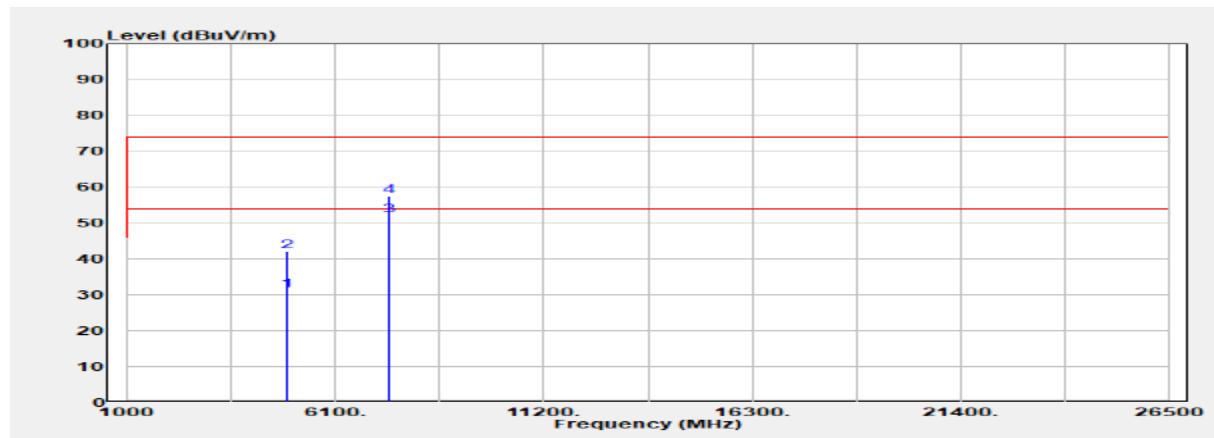
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Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2462 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
4924.000	Average	27.41	3.71	31.12	54.00	-22.88
4924.000	Peak	38.29	3.71	42.00	74.00	-32.00
7386.000	Average	42.06	9.86	51.92	54.00	-2.08
7386.000	Peak	47.66	9.86	57.52	74.00	-16.48

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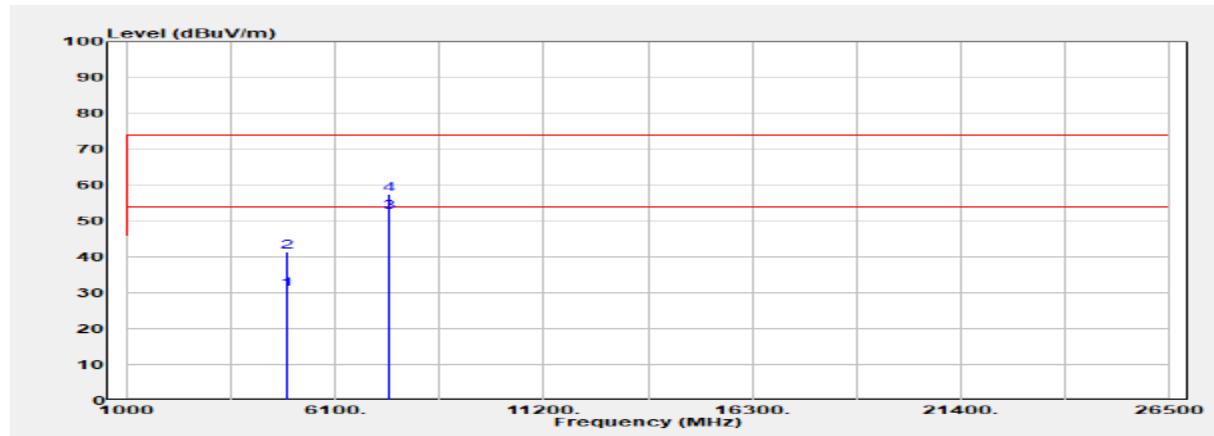
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Report Number :TERF2410003205E2  
 Operation Mode :802.11b  
 Test Frequency :2462 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
PK/QP/AVG	dB $\mu$ V	dB $\mu$ V/m		dB $\mu$ V/m	dB $\mu$ V/m	
4924.000	Average	27.29	3.71	31.00	54.00	-23.00
4924.000	Peak	37.64	3.71	41.35	74.00	-32.65
7386.000	Average	42.71	9.86	52.57	54.00	-1.43
7386.000	Peak	47.66	9.86	57.52	74.00	-16.48

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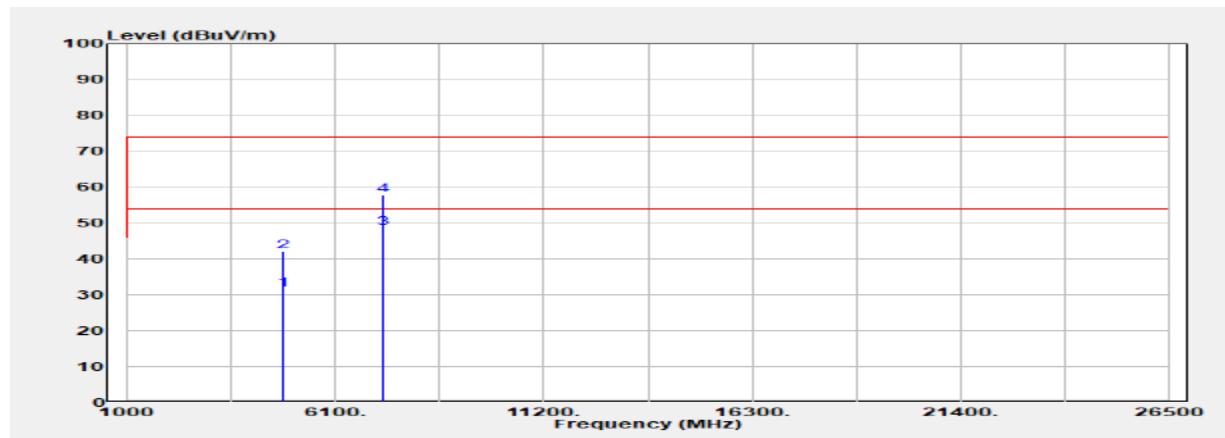
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2412 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS	@3m	
PK/QP/AVG	dBμV	dB	dB	dB	dB	dB
4824.000	Average	28.10	3.35	31.45	54.00	-22.55
4824.000	Peak	38.63	3.35	41.98	74.00	-32.02
7236.000	Average	39.00	9.38	48.38	54.00	-5.62
7236.000	Peak	48.29	9.38	57.67	74.00	-16.33

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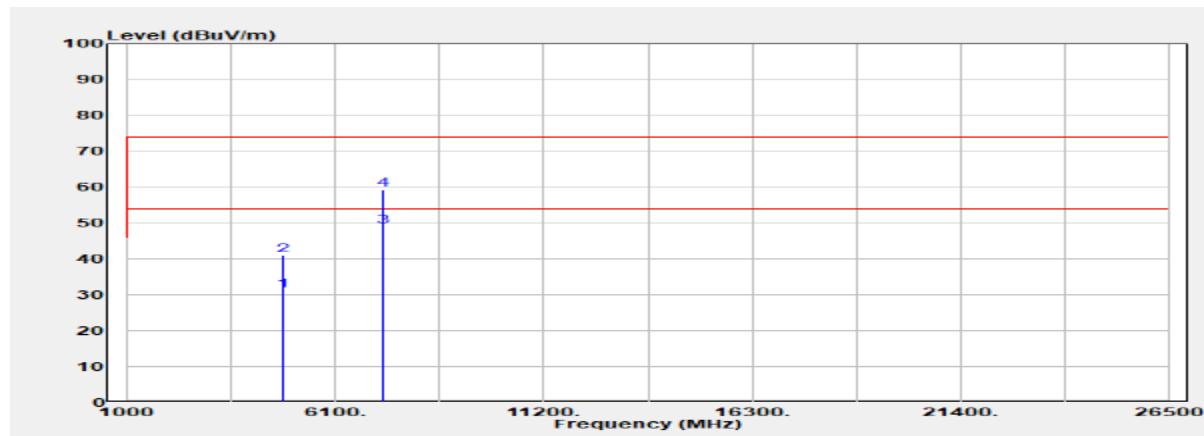
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2412 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor	Actual	Limit	Margin
				FS	@3m	dB
	PK/QP/AVG	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
4824.000	Average	27.69	3.35	31.04	54.00	-22.96
4824.000	Peak	37.61	3.35	40.96	74.00	-33.04
7236.000	Average	39.55	9.38	48.93	54.00	-5.07
7236.000	Peak	49.86	9.38	59.24	74.00	-14.76

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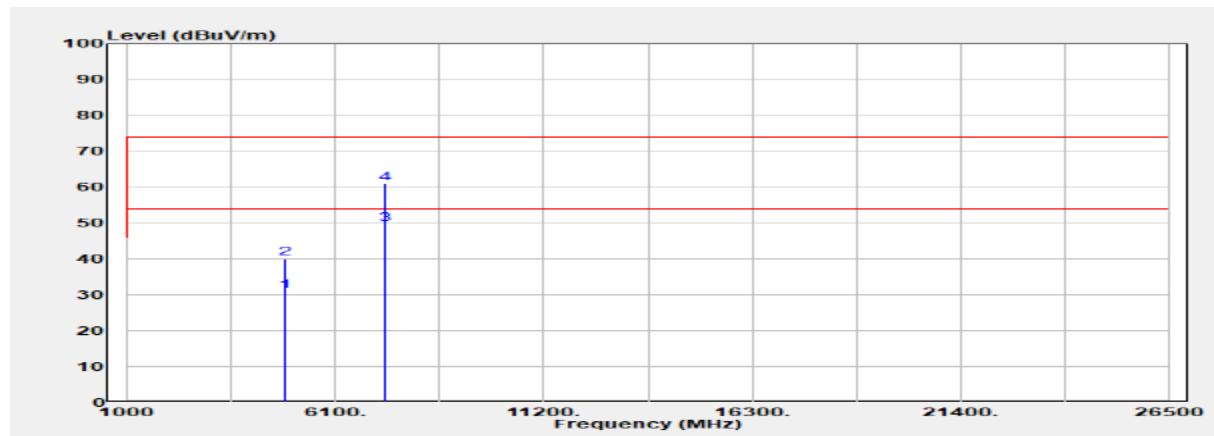
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor	Actual	Limit	Margin
				FS	@3m	dB
	PK/QP/AVG	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
4874.000	Average	27.42	3.48	30.90	54.00	-23.10
4874.000	Peak	36.54	3.48	40.02	74.00	-33.98
7311.000	Average	39.83	9.75	49.57	54.00	-4.43
7311.000	Peak	51.17	9.75	60.92	74.00	-13.08

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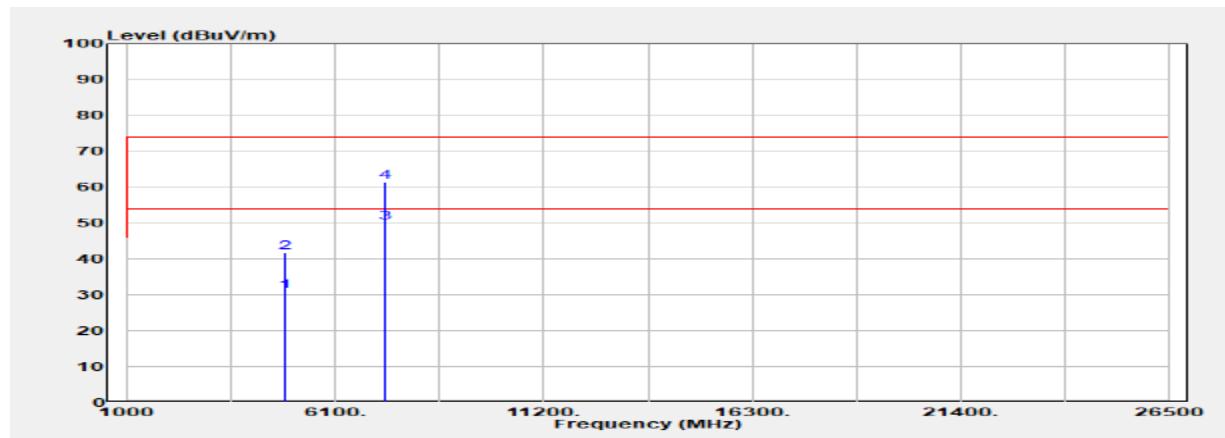
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4874.000	Average	27.35	3.48	30.83	54.00	-23.17
4874.000	Peak	38.25	3.48	41.73	74.00	-32.27
7311.000	Average	40.52	9.75	50.26	54.00	-3.74
7311.000	Peak	51.83	9.75	61.57	74.00	-12.43

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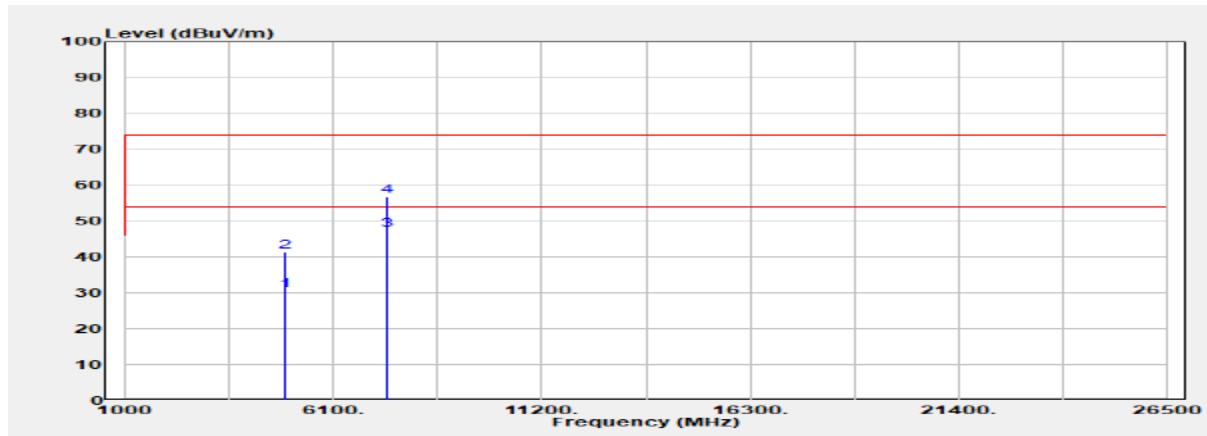
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2462 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
4924.000	Average	26.98	3.71	30.69	54.00	-23.31
4924.000	Peak	37.62	3.71	41.33	74.00	-32.67
7386.000	Average	37.53	9.86	47.39	54.00	-6.61
7386.000	Peak	47.13	9.86	56.99	74.00	-17.01

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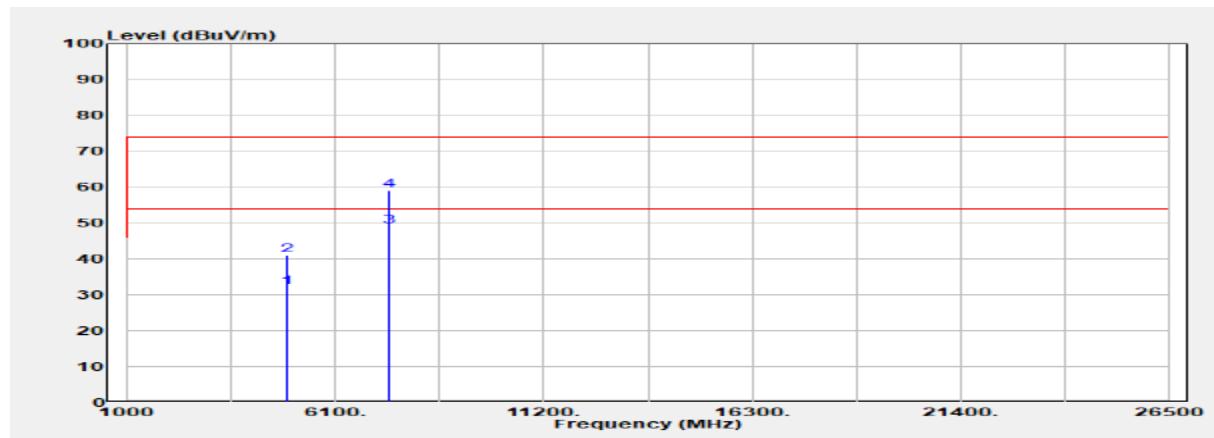
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Report Number :TERF2410003205E2  
 Operation Mode :802.11g  
 Test Frequency :2462 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-06  
 Temp./Humi. :24.1°C/53%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor	Actual	Limit	Margin
				FS	@3m	dB
	PK/QP/AVG	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
4924.000	Average	28.25	3.71	31.96	54.00	-22.04
4924.000	Peak	37.24	3.71	40.95	74.00	-33.05
7386.000	Average	39.21	9.86	49.07	54.00	-4.93
7386.000	Peak	49.10	9.86	58.96	74.00	-15.04

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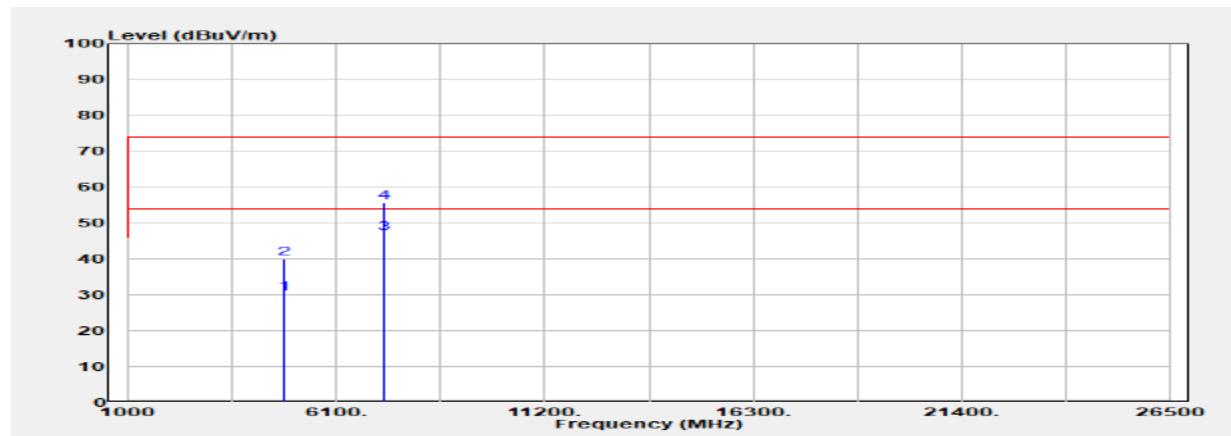
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2412 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor	Actual	Limit	Margin
				FS	@3m	dB
	PK/QP/AVG	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
4824.000	Average	26.89	3.35	30.24	54.00	-23.76
4824.000	Peak	36.70	3.35	40.05	74.00	-33.95
7236.000	Average	37.74	9.38	47.12	54.00	-6.88
7236.000	Peak	46.48	9.38	55.86	74.00	-18.14

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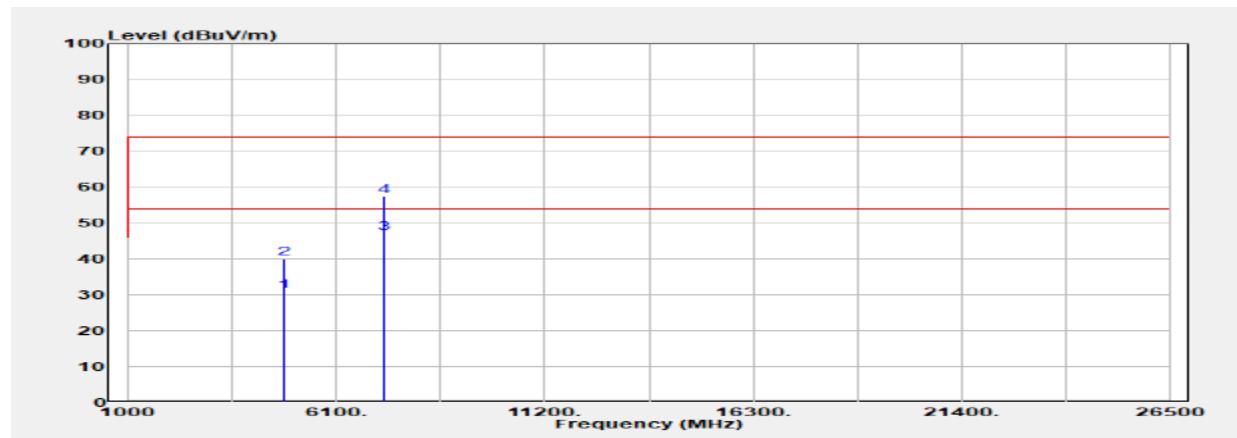
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2412 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS	@3m	
PK/QP/AVG	dB $\mu$ V	dB $\mu$ V/m				
4824.000	Average	27.42	3.35	30.77	54.00	-23.23
4824.000	Peak	36.88	3.35	40.23	74.00	-33.77
7236.000	Average	37.85	9.38	47.23	54.00	-6.77
7236.000	Peak	48.16	9.38	57.53	74.00	-16.47

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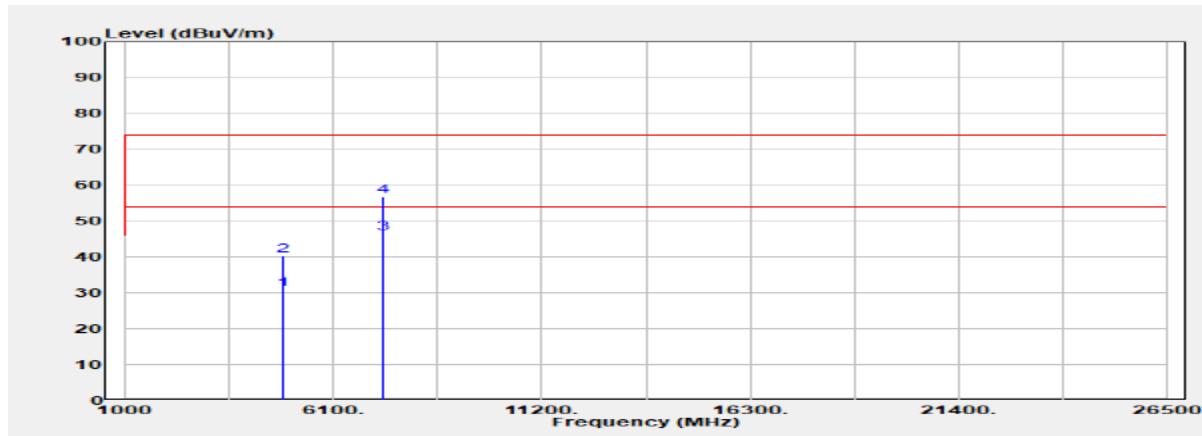
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4874.000	Average	27.54	3.49	31.03	54.00	-22.97
4874.000	Peak	36.77	3.49	40.26	74.00	-33.74
7311.000	Average	36.95	9.76	46.71	54.00	-7.29
7311.000	Peak	47.06	9.76	56.82	74.00	-17.18

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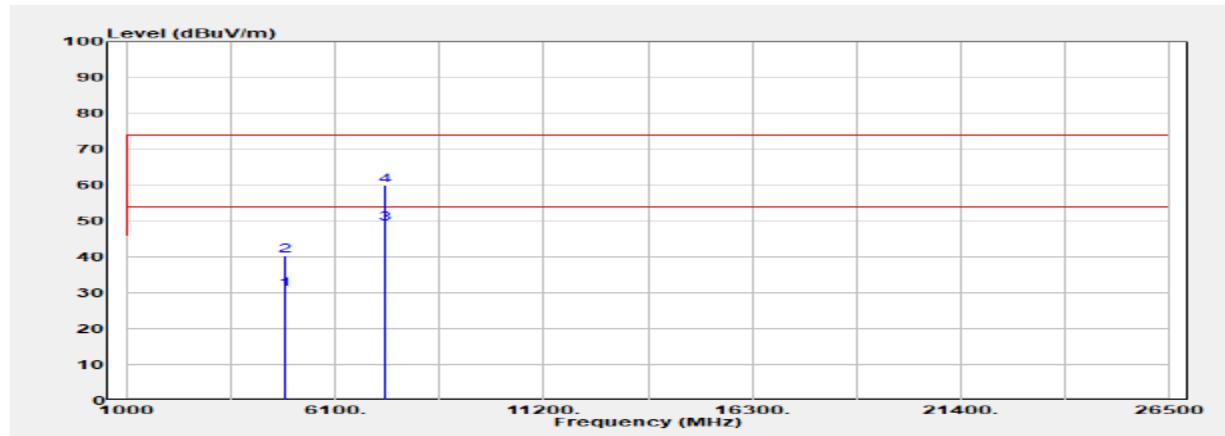
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Member of SGS Group

Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
4874.000	Average	27.33	3.49	30.82	54.00	-23.18
4874.000	Peak	36.91	3.49	40.40	74.00	-33.60
7311.000	Average	39.61	9.76	49.37	54.00	-4.63
7311.000	Peak	50.18	9.76	59.94	74.00	-14.06

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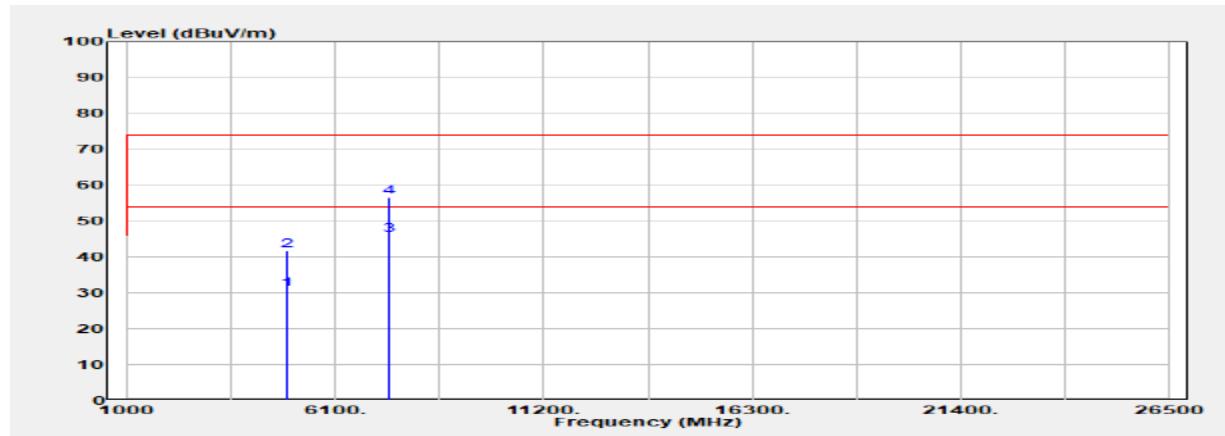
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n20  
 Test Frequency :2462 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4924.000	Average	27.13	3.71	30.84	54.00	-23.16
4924.000	Peak	38.13	3.71	41.84	74.00	-32.16
7386.000	Average	36.17	9.86	46.03	54.00	-7.97
7386.000	Peak	46.80	9.86	56.66	74.00	-17.34

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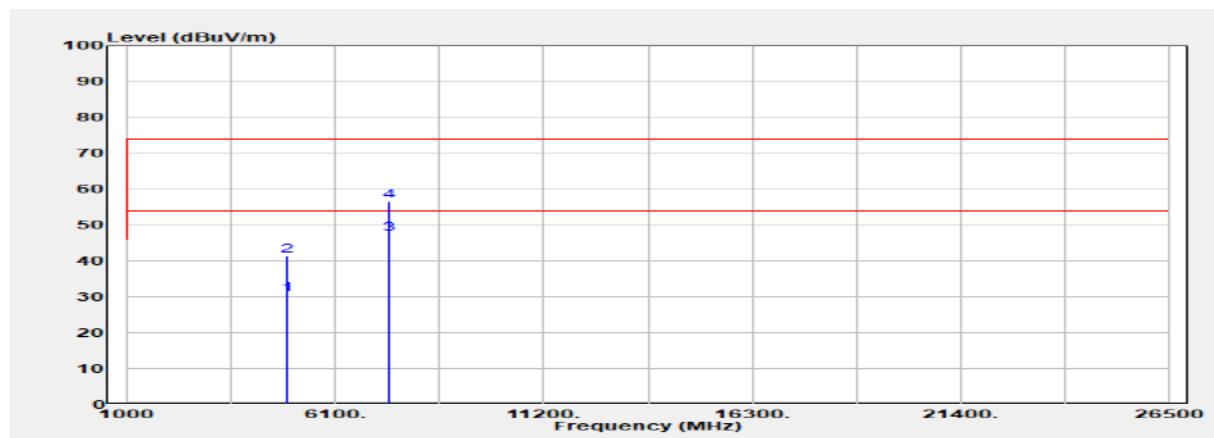
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 Operation Mode :802.11n20  
 Test Frequency :2462 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual FS dB $\mu$ V/m	Limit	Margin
					@3m dB $\mu$ V/m	dB
PK/QP/AVG	dB $\mu$ V					
4924.000	Average	26.89	3.71	30.60	54.00	-23.40
4924.000	Peak	37.78	3.71	41.49	74.00	-32.51
7386.000	Average	37.58	9.86	47.44	54.00	-6.56
7386.000	Peak	46.68	9.86	56.54	74.00	-17.46

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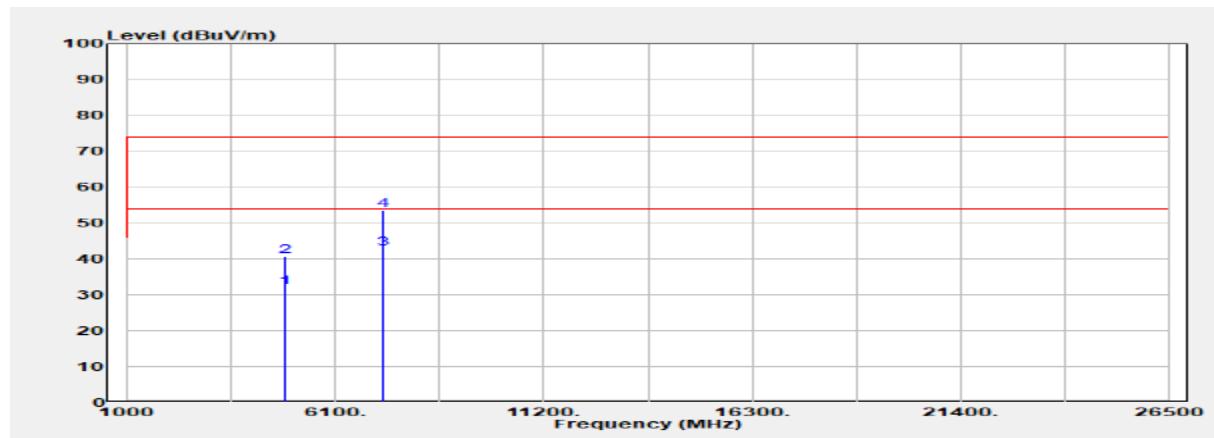
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2422 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual FS	Limit	Margin
					dB $\mu$ V/m	dB $\mu$ V/m
PK/QP/AVG	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4844.000	Average	28.50	3.36	31.86	54.00	-22.14
4844.000	Peak	37.42	3.36	40.78	74.00	-33.22
7266.000	Average	33.36	9.55	42.92	54.00	-11.08
7266.000	Peak	44.11	9.55	53.67	74.00	-20.33

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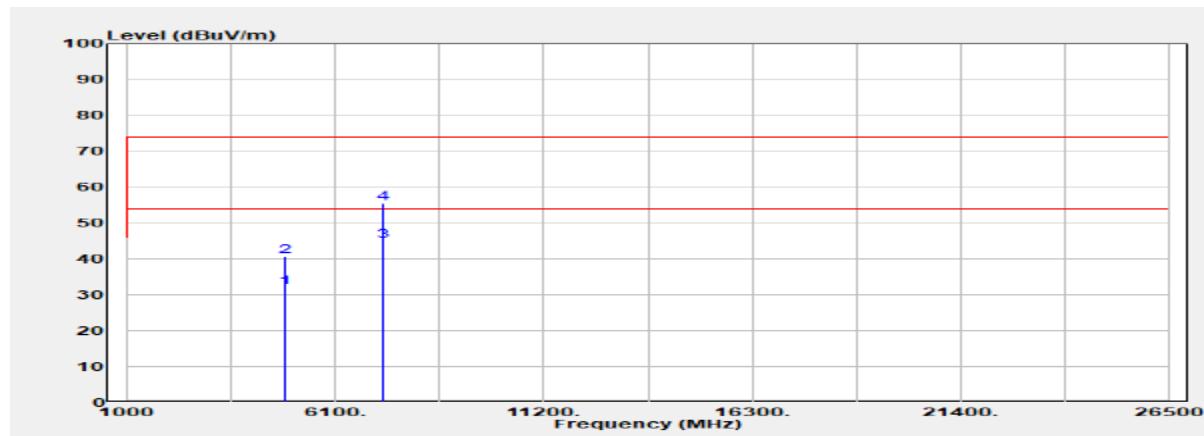
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2422 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4844.000	Average	28.50	3.36	31.86	54.00	-22.14
4844.000	Peak	37.39	3.36	40.75	74.00	-33.25
7266.000	Average	35.37	9.55	44.93	54.00	-9.07
7266.000	Peak	46.12	9.55	55.67	74.00	-18.33

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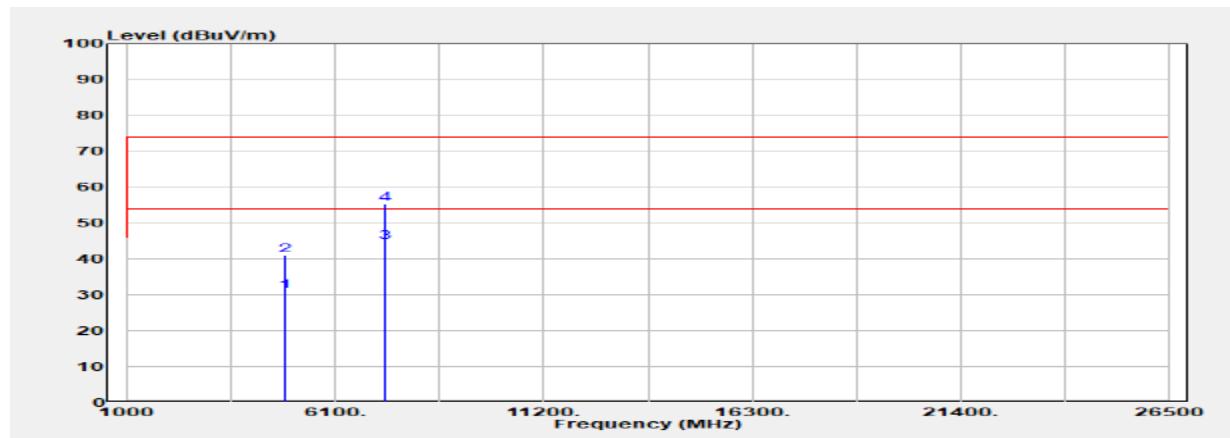
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
4874.000	Average	27.30	3.49	30.79	54.00	-23.21
4874.000	Peak	37.46	3.49	40.94	74.00	-33.06
7311.000	Average	34.86	9.76	44.61	54.00	-9.39
7311.000	Peak	45.52	9.76	55.28	74.00	-18.72

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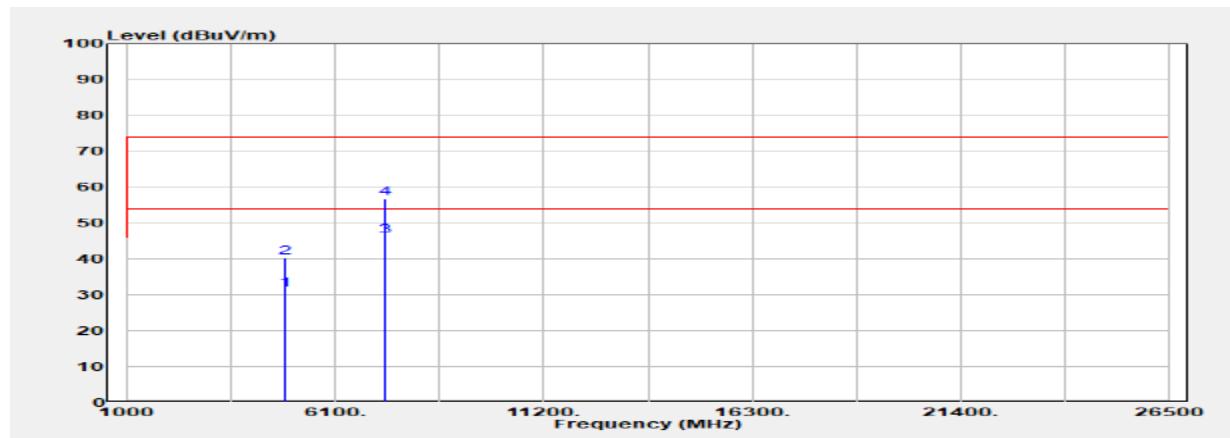
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2437 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor	Actual	Limit	Margin
				FS	@3m	dB
	PK/QP/AVG	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
4874.000	Average	27.85	3.49	31.34	54.00	-22.66
4874.000	Peak	37.01	3.49	40.50	74.00	-33.50
7311.000	Average	36.67	9.76	46.42	54.00	-7.58
7311.000	Peak	47.12	9.76	56.88	74.00	-17.12

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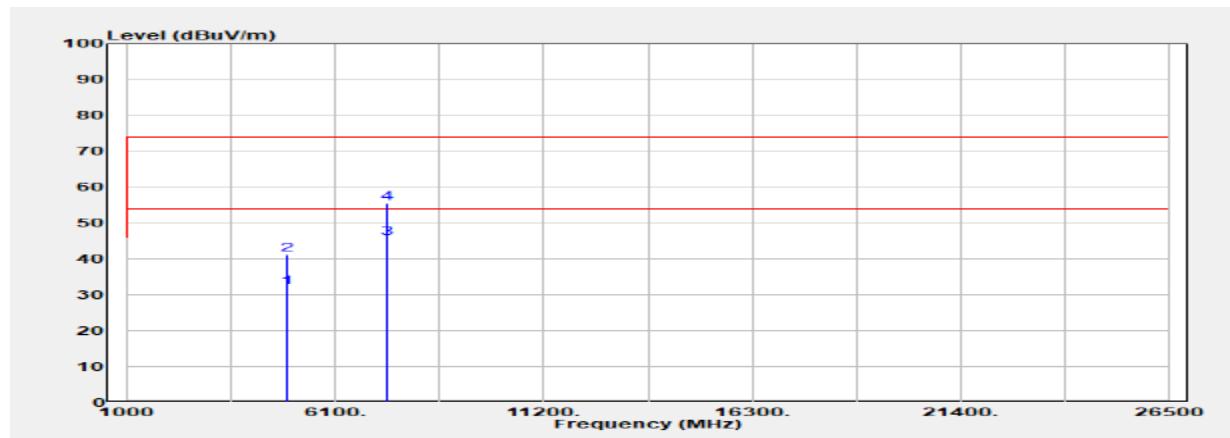
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2452 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Vertical  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS	@3m	dB
4904.000	Average	28.40	3.63	32.03	54.00	-21.97
4904.000	Peak	37.68	3.63	41.31	74.00	-32.69
7356.000	Average	35.90	9.88	45.78	54.00	-8.22
7356.000	Peak	45.78	9.88	55.66	74.00	-18.34

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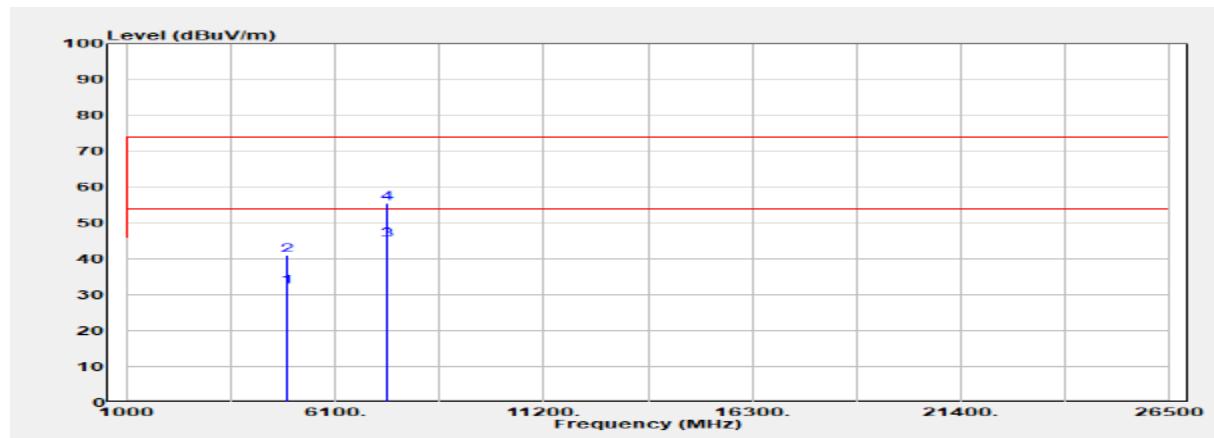
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Report Number :TERF2410003205E2  
 Operation Mode :802.11n40  
 Test Frequency :2452 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC G Chamber  
 Test Date :2024-11-07  
 Temp./Humi. :23.1°C/63%  
 Antenna Pol. :Horizontal  
 Engineer :Jacky Chen



Freq. MHz	Detector Mode	Spectrum Reading	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4904.000	Average	28.50	3.63	32.13	54.00	-21.87
4904.000	Peak	37.26	3.63	40.89	74.00	-33.11
7356.000	Average	35.26	9.88	45.14	54.00	-8.86
7356.000	Peak	45.73	9.88	55.61	74.00	-18.39

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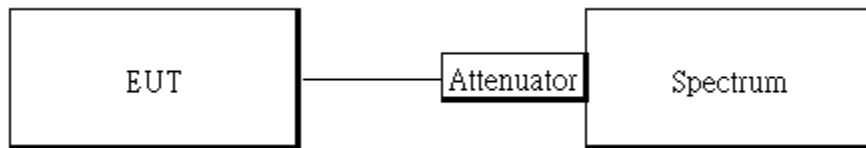
## 12 POWER SPECTRAL DENSITY

### 12.1 Standard Applicable

Per RSS-247 section 5.2 b

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

### 12.2 Test Setup



### 12.3 Measurement Procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 3 kHz & VBW = 10 kHz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.

**Note:**

1. When the antenna gain is greater than 6 dBi, the power spectral density limit attenuated accordingly.
2. *For the test of MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome.*

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## 12.4 As per FCC KDB 662911 D01

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

$$\bullet \quad \text{DirectionalGain} = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

$g_{j,k} = / 20 10G_k$  if the kth antenna is being fed by spatial stream j, or zero if it is not;

$G_k$  is the gain in dBi of the kth antenna.

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## 12.5 Power spectral density

POWER DENSITY 802.11b					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-1.8	-	-1.80	8.00	PASS
2437	-5.94	-	-5.94	8.00	PASS
2462	-3.25	-	-3.25	8.00	PASS

POWER DENSITY 802.11g					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-7.22	-	-7.22	8.00	PASS
2437	-4.58	-	-4.58	8.00	PASS
2462	-4.61	-	-4.61	8.00	PASS

POWER DENSITY 802.11n HT20					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-7.02	-7.29	-4.14	8.00	PASS
2437	-7.85	-7.08	-4.44	8.00	PASS
2462	-7.36	-7.30	-4.32	8.00	PASS

POWER DENSITY 802.11n HT40					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422	-9.87	-10.04	-6.94	8.00	PASS
2437	-10.41	-10.83	-7.60	8.00	PASS
2452	-9.48	-10.76	-7.06	8.00	PASS

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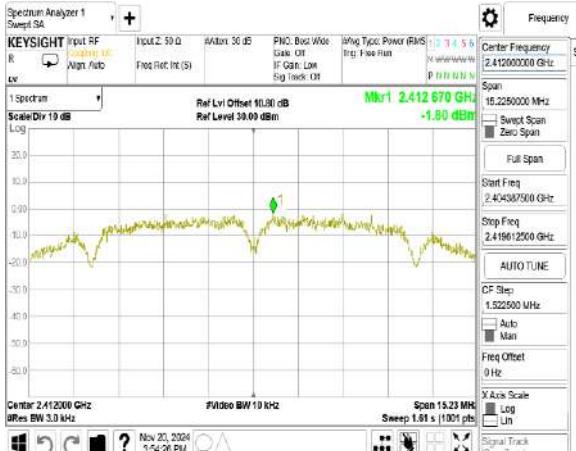
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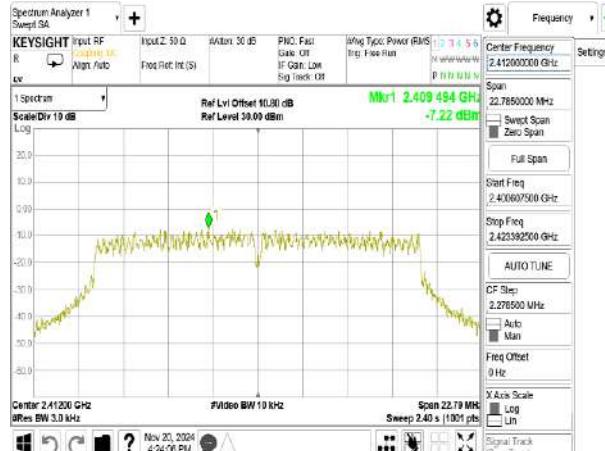
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802.11b\_20MHz\_Chain0\_2412MHz



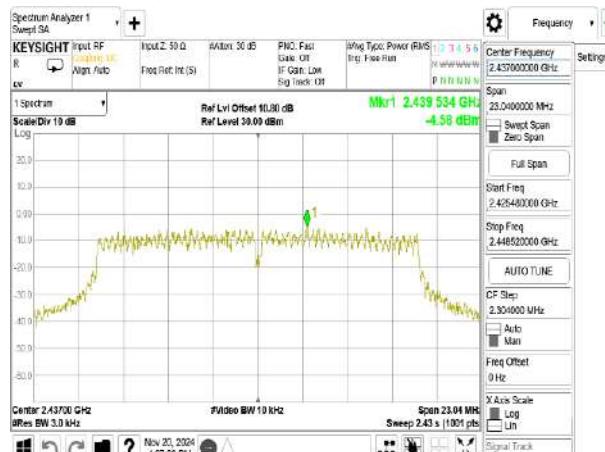
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802.11b\_20MHz\_Chain0\_2437MHz



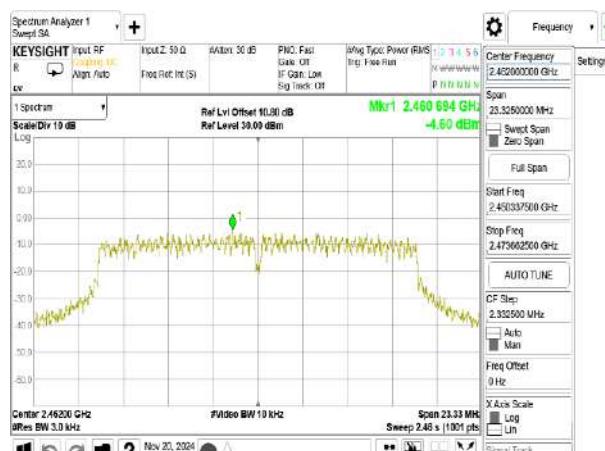
802.11g\_20MHz\_Chain0\_2437MHz



802.11b\_20MHz\_Chain0\_2462MHz



802.11g\_20MHz\_Chain0\_2462MHz



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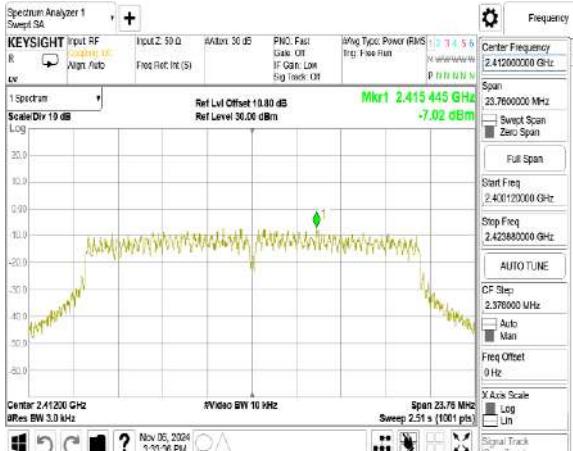
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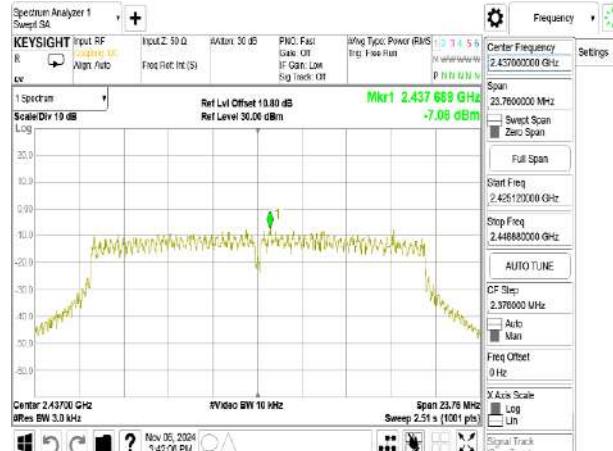
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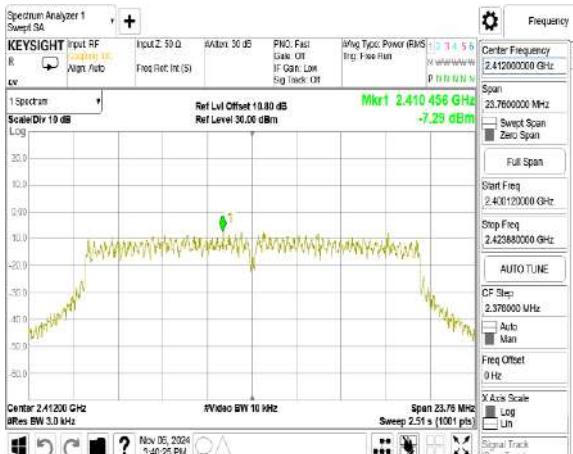
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802.11n\_20MHz\_Chain1\_2437MHz



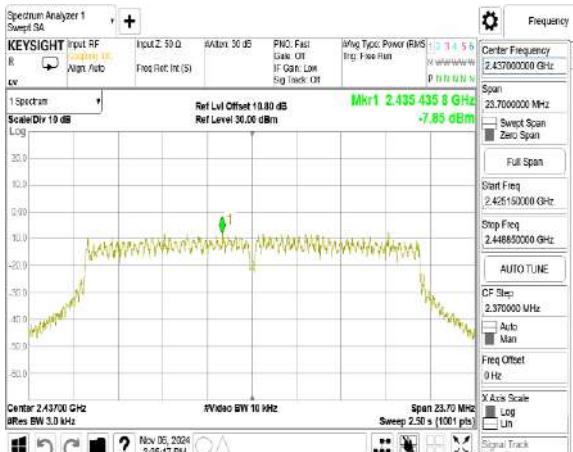
802.11n\_20MHz\_Chain1\_2412MHz



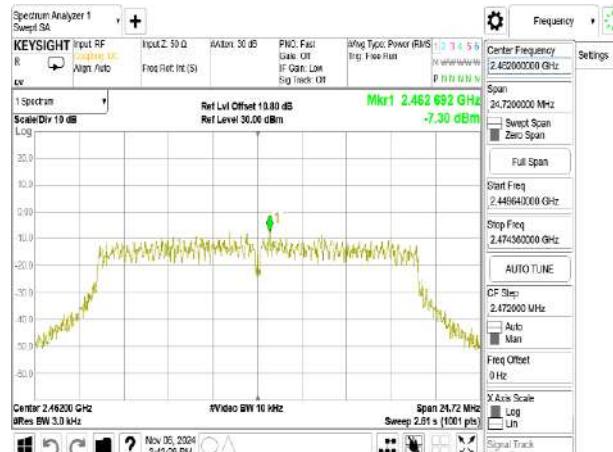
802.11n\_20MHz\_Chain0\_2462MHz



802.11n\_20MHz\_Chain0\_2437MHz



802.11n\_20MHz\_Chain1\_2462MHz



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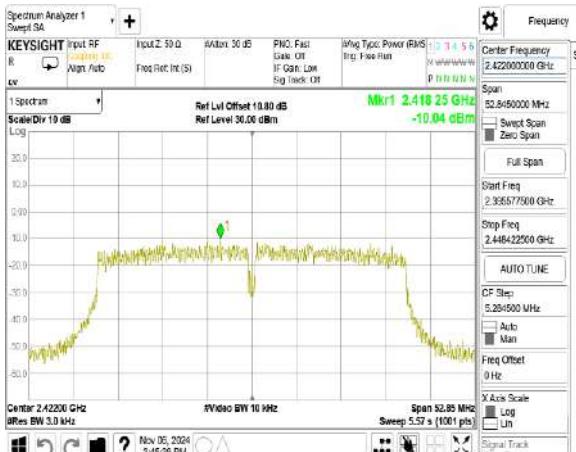
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802.11n\_40MHz\_Chain1\_2437MHz



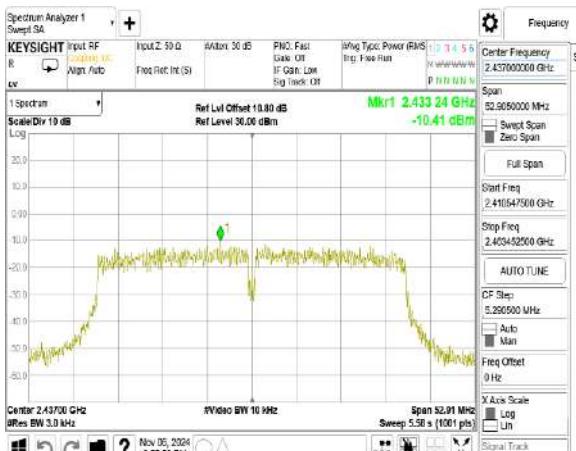
802.11n\_40MHz\_Chain0\_2422MHz



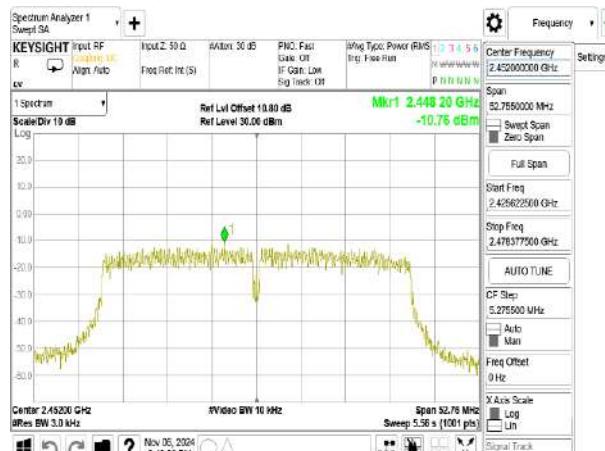
802.11n\_40MHz\_Chain0\_2452MHz



802.11n\_40MHz\_Chain1\_2437MHz



802.11n\_40MHz\_Chain1\_2452MHz



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## 13 ANTENNA REQUIREMENT

### 13.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### 13.2 Antenna Connected Construction:

The antenna complies with this requirement and no consideration of replacement. Please see EUT photo for details.

*~ End of Report ~*

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