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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT





Applicant: SHARP Corporation Mobile Communication BU

2-13-1 lida Hachihonmatsu, Higashi-hiroshima city, Hiroshima,

739-0192, Japan

Manufacturer: **Sharp Corporation**

1 Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan

Product Name: Smart Phone

Brand Name: SHARP

Report Number: TERF2404001034ER

FCC ID APYHRO00332

Date of EUT Received: April 18, 2024

April 18, 2024~May 10, 2024 **Date of Test:**

Issue Date: May 23, 2024

Approved By

Blue Yang

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
TERF2404001034ER	00	Original.	May 23, 2024	Karen Huang	

Note:

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

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1 GENERAL INFORMATION

1.1 Product Description

Product Name:	Smart Phone
Brand Name:	SHARP
Hardware Version:	DVT
Firmware Version:	N/A
Power Supply:	3.89Vdc from Rechargeable Battery
Test Software (Name/Version)	Tera Term/4.106 & QRCT/4.0.95.1

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RF Specification 1.2

WLAN 2.4GHz

Wi-Fi	Frequency	Channels	Rated Pov	wer (dBm)	Modulation	
VVI-F1	Range	Channels	Peak	Avg.	Technology	
802.11b	2412~2462	11	17.70	14.96	DSSS	
802.11g	2412~2462	11	20.79	14.99	OFDM	
802.11n_HT20	2412~2462	11	20.89	14.97	OFDM	
802.11n_HT40	2422~2452	7	20.97	14.91	OFDM	
802.11ax_HE20	2412~2462	11	21.15	14.95	OFDMA	
802.11ax_HE40	2422~2452	7	21.00	14.88	OFDMA	
802.11be_EHT20	2412~2462	11	21.25	14.98	OFDMA	
802.11be_EHT40	2422~2452	7	21.08	14.93	OFDMA	
		CCK, DQPSK, DBPSK for DSSS in 802.11b				
		64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11g				
Modulation	tvne·	· ·	Qam, 16Qan	M, QPSK, BF	PSK for OFDM	
ivioddiation	type.	in 802.11n				
		4096QAM, 1024QAM, 256QAM, 64QAM, 16QAM,				
		QPSK, BPSK for OFDMA in 802.11ax				
		4096QAM, 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11be				
		802.11b: 1/2/5.5/11 Mbps				
		802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11n_HT20:up to 173.4Mbps				
		802.11n_HT40:up to 400Mbps				
Data Ra	te:	802.11ax_HE20:up to 344.1Mbps				
			802.11ax_HE40:up to 688.2Mbps			
			802.11be_EHT20:up to 344.1Mbps			
		802.11be_EHT40:up to 688.2Mbps				

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Antenna Designation

Antenna Type	Antenna Model No.	Freq.	Peak Antenna Gain (dBi)
Inverted E Antonna	ANT4	2.4GHz	-3.7
Inverted-F Antenna	ANT8	2.4GHz	-0.9

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.
- Antenna information is provided by the applicant. 2.

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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 Designa- tion number	IC CAB
	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1 SAC 2 SAC 3 Conduction 1 Conducted 1 Conducted 2 Conducted 3 Conducted 4 Conducted 5	TW0027	
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conducted 6 Conduction C SAC C SAC D SAC G Conducted A Conducted B Conducted C Conducted D Conducted E Conducted F Conducted G	TW0028	TW3702

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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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 a 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.

Radiated Emissions

The EUT is a 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.

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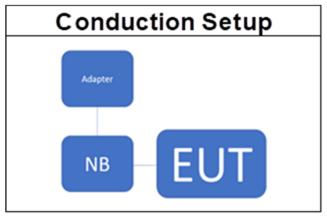
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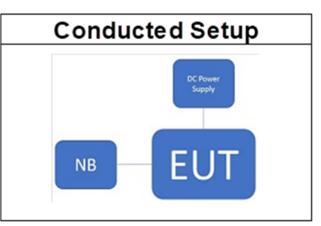


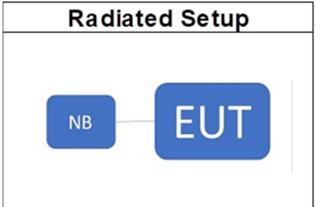
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2.5 **Test Configuration**







2.6 Control Unit(s)

	AC Powe	r-Line Conducted Em	ission Test Site: Con	duction 1	
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	T470	PF-0TGY30 17/07	N/A	N/A
Adapter	Lenovo	ADLX90NCC3A	N/A	N/A	N/A
	Conducted Emission Test Site: Conducted 1				
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	T470	PF-0TGY30 17/07	N/A	N/A

Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE MFR MODEL NUMBER SERIAL NUMBER LAST CAL. CAL DUE.					
Notebook	HP	HSN-Q35C-4	5CD2428X45	N/A	N/A

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SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§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

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DESCRIPTION OF TEST MODES

4.1 **Operating Frequencies**

2400	1 2/02	! 5 MH2
74111	1~ / 4 8 9	~ 1VIH/

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

401	ЛHz
СН	Freq. (MHz)
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
·	•

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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 gevin UE is pre-scanned among below modes.

										Single		Multi	
	Modulation			Tra	nsmiss	sion	Chain			Tr	ansmission	Tr	ansmission
											Spatial		Spatial
٧	802.11 b	٧	V Ch0 V Ch1 Ch2 Ch3				1TX	٧	2TX				
٧	802.11 g	٧	Ch0	٧	Ch1		Ch2		Ch3		1TX	٧	2TX
٧	802.11 n	٧	Ch0	٧	Ch1		Ch2		Ch3		1TX	٧	2TX
٧	802.11 ac	٧	Ch0	٧	Ch1		Ch2		Ch3		1TX	>	2TX
٧	802.11 ax	٧	V Ch0 V Ch1 Ch2 Ch3				1TX	٧	2TX				
٧	802.11 be	٧	Ch0	٧	Ch1		Ch2		Ch3		1TX	٧	2TX

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	2TX					
802.11g	1 to 11	1,6,11	OFDM	6	2TX					

			CONDUCT	ED TEST		
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT
802.11be_EHT20	1 to 11	1,6,11	OFDMA	FULL RU 26/0,26/8 52/37,52/40 106/53,106/54 52+26MRU1,MRU3 106+26MRU1,MRU2	MCS0	2TX
802.11be_EHT40	3 to 9	3,6,9	OFDMA	FULL RU 242/61,242/62 52+26MRU1,MRU6 106+26MRU1,MRU4	MCS0	2TX

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TRANSMIT RADIATED EMISSION TEST (BELOW 1 GHz)								
MODE	MODE AVAILABLE TESTED MODULATION DATA RATE ANTENNA (Mbps) PORT							
802.11g	802.11g 1 to 11 6 OFDM 6 2TX							

	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	1	2TX					
802.11g	1 to 11	1,6,11	OFDM	6	2TX				

	TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11be_EHT20	1 to 11	1,6,11	OFDMA	FULL RU 26/0,26/8 52/37,52/40 106/53,106/54 52+26MRU1,MRU3 106+26MRU1,MRU2	MCS0	2TX		
802.11be_EHT40	3 to 9	3,6,9	OFDMA	FULL RU 242/61,242/62 52+26MRU1,MRU6 106+26MRU1,MRU4	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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MEASUREMENT UNCERTAINTY

Test Items	Un	certain	ty
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 Em	Radiated Spurious Emission Measurement Uncertainty						
	+/-	1.89	dB	9kHz~30MHz			
Polarization: Vertical	+/-	4.15	dB	30MHz - 1000MHz			
Polarization. Vertical	+/-	3.43	dB	1GHz - 18GHz			
	+/-	3.86	dB	18GHz - 40GHz			
	+/-	1.89	dB	9kHz~30MHz			
Polarization: Horizontal	+/-	4.02	dB	30MHz - 1000MHz			
Polarization. Horizontal	+/-	3.43	dB	1GHz - 18GHz			
	+/-	3.86	dB	18GHz - 40GHz			
	+/-	2	dB	33GHz-50GHz			
	+/-	1.59	dB	50GHz-60GHz			
Radiated Spurious Emission	+/-	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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MEASUREMENT EQUIPMENT USED

6.1 **Emission from AC power line**

	AC Power-Line Conducted Emission Test Site: Conduction 1								
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R				
LISN	SCHWARZBECK	NSLK 8127	1040	09/06/2023	09/05/2024				
Coaxial Cables	EMC Instruments Corp.	EMCCFD300-BM- BM-3000	161207	06/22/2023	06/21/2024				
Pulse Limiter	SCHWARZBECK	VTSD 9561F-N	793	06/22/2023	06/21/2024				
EMI Test Receiver	R&S	ESCI 7	100759	08/21/2023	08/20/2024				

6.2 **Conducted Measurement**

Conducted Emission Test Site: Conducted 1								
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.			
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071571	06/07/2023	06/06/2024			
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R			
Power Meter	Anritsu	ML2496A	1242004	10/24/2023	10/23/2024			
Power Sensor	Anritsu	MA2411B	1207365	10/24/2023	10/23/2024			
Power Sensor	Anritsu	MA2411B	1207368	10/24/2023	10/23/2024			
DC Power Supply	Agilent	E3640A	KR93300208	09/12/2023	09/11/2024			
Attenuator	Mini-Circuits	BW-S10W2+	1	12/12/2023	12/11/2024			
DC Block	Mini-Circuits	BLK-18-S+	10	12/12/2023	12/11/2024			

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Radiated Measurement

	Radiated Emission Test Site: SAC 3							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.			
Loop Antenna	COM-POWER	AL-130R	10160104	12/04/2023	12/03/2024			
Horn Antenna	RF SPIN	DRH0844	LE2D05A0844	07/03/2023	07/02/2024			
Bi-log Antenna	SCHWARZBECK	VULB9168	378	08/09/2023	08/08/2024			
Horn Antenna	SCHWARZBECK	BBHA9120D	1441	09/23/2023	09/22/2024			
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY63440386	02/06/2024	02/05/2025			
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R			
EMI Test Receiver	R&S	ESCI 7	100759	08/21/2023	08/20/2024			
Pre-Amplifier	EMCI	EMC184045B	980135	08/31/2023	08/30/2024			
Pre-Amplifier	HP	8447D	2944A07676	08/31/2023	08/30/2024			
Pre-Amplifier	EMCI	EMC118A45SEE	980868	08/31/2023	08/30/2024			
Attenuator	Mini-Circuits	BW-S10W2+	4	12/12/2023	12/11/2024			
Band Reject Filter 2400-2483.5	EWT	EWT-54-0038	M2	12/12/2023	12/11/2024			
4G High Pass Filter	WI	WHKX4.0	22	12/12/2023	12/11/2024			
Coaxial Cables	Huber Suhner	SUCOFLEX 102	RX Cable 18G-40G MY2630/2+805062/ 2	08/31/2023	08/30/2024			
Coaxial Cables	EMCI+Huber Suhner	EMC107-SM-SM- 1000+EMC107-SM- SM-1500+EMC107- SM-SM- 8000+SUCOFLEX 104PEA	RX Cable 9K-18G (221110+221106+22 1212+MY4251/4PEA)	08/31/2023	08/30/2024			

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

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CONDUCTED EMISSION TEST

7.1 Standard Applicable

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

Frequency range	Limits (dBuV)					
MHz	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				

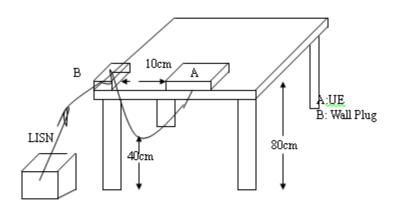
Note

- 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 * reveals the worst-case results that closest to the limit.

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AC POWER LINE CONDUCTED EMISSION TEST DATA

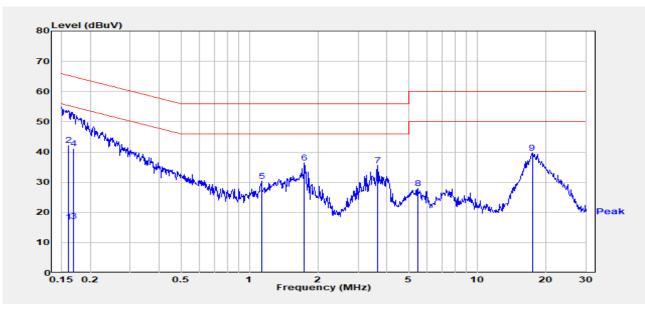
Report Number :TERF2404001034ER Test Site :Conduction 1

 Operation Mode :WLAN2.4G
 Test Date :2024-05-10

 Power :120V/60Hz
 Temp./Humi. :23.0 ℃ /50%

Probe :L Engineer :Eason Wang

Note: :



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS		
MHz	PK/QP/AV	dΒμV	dB	dΒμV	dΒμV	dB
0.160	Average	6.72	10.13	16.85	55.47	-38.62
0.160	QP	32.17	10.13	42.30	65.47	-23.17
0.169	Average	7.06	10.13	17.19	55.03	-37.84
0.169	QP	30.98	10.13	41.11	65.03	-23.92
1.129	Peak	20.13	10.20	30.33	56.00	-25.67
1.744	Peak	26.26	10.19	36.45	56.00	-19.55
3.661	Peak	25.35	10.28	35.63	56.00	-20.37
5.476	Peak	17.66	10.35	28.00	60.00	-32.00
17.475	Peak	29.12	10.50	39.62	60.00	-20.38

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Report Number :TERF2404001034ER

Operation Mode :WLAN2.4G Power :120V/60Hz

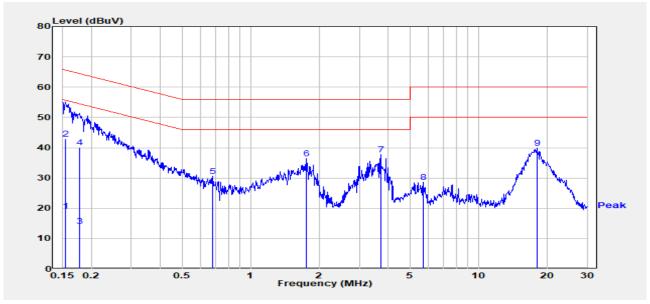
Probe :N

Note: :

Test Site :Conduction 1
Test Date :2024-05-10

Temp./Humi. :23.0°C/50%

Engineer : Eason Wang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS		
MHz	PK/QP/AV	dΒμV	dB	dΒμV	dΒμV	dB
0.154	Average	8.97	10.12	19.09	55.78	-36.69
0.154	QP	32.80	10.12	42.92	65.78	-22.86
0.178	Average	3.96	10.12	14.08	54.59	-40.51
0.178	QP	29.98	10.12	40.10	64.59	-24.49
0.683	Peak	20.35	10.17	30.53	56.00	-25.47
1.753	Peak	26.17	10.19	36.36	56.00	-19.64
3.720	Peak	27.44	10.29	37.74	56.00	-18.26
5.713	Peak	18.25	10.36	28.61	60.00	-31.39
18.039	Peak	29.43	10.56	39.99	60.00	-20.01

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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 form 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:

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.

• Directional Gain =
$$10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^{2}}{N_{ANT}} \right]$$

where

Each antenna is driven by than no more one spatial stream; **NSS** independent the number of spatial streams of data: NANT the total number of antennas $g_{j,k}$ = $10^{Gk/20}$ 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.

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

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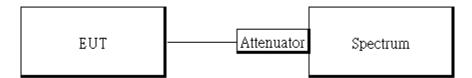


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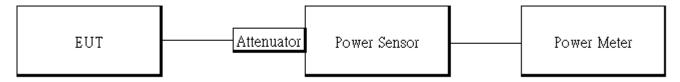


8.2 **Test Setup**

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:

Mo	ode	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.	802.11b 802.11g		0.13	1.51	2.00
802.	.11g	99.15	0.04	0.48	0.01
802.1	1n_20	99.66	0.01	0.19	0.01
802.1	1n_40	99.67	0.01	0.19	0.01
Mode	RU Config	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
	Full	99.65	0.02	0.19	0.01
802.11ax_20	26 RU	95.35	0.21	0.22	1.00
002.11dX_20	52 RU	95.34	0.21	0.22	1.00
	106 RU	95.82	0.19	0.23	1.00
802.11ax_40	Full	99.69	0.01	0.19	0.01
002.11dA_40	242 RU	94.51	0.25	0.41	1.00
	Full	99.65	0.02	0.19	0.01
	26 RU	95.35	0.21	0.22	1.00
802.11be_20	52 RU	95.34	0.21	0.22	1.00
002.11be_20	106 RU	95.82	0.19	0.23	1.00
	52+26 MRU	95.35	0.21	0.22	1.00
	106+26 MRU	96.61	0.15	0.23	1.00
	Full	99.67	0.01	0.19	0.01
802.11be_40	242 RU	94.54	0.24	0.41	1.00
002.11DE_40	52+26 MRU	95.37	0.21	0.22	1.00
	106+26 MRU	96.63	0.15	0.23	1.00

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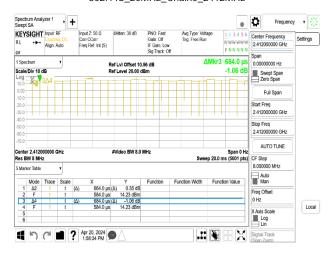


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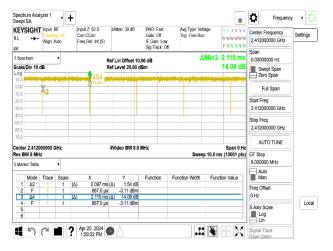


8.4.2 Duty Cycle test plots

802.11b_20MHz_Chain0_2412MHz



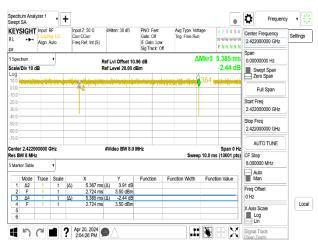
802.11q_20MHz_Chain0_2412MHz



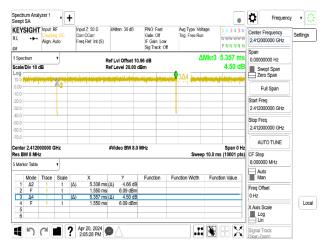
802.11n_20MHz_Chain0_2412MHz



802.11n_40MHz_Chain0_2422MHz



802.11ax_20MHz_Chain0_2412MHz



802.11ax_20MHz_Chain0_2412MHz_RU106_53



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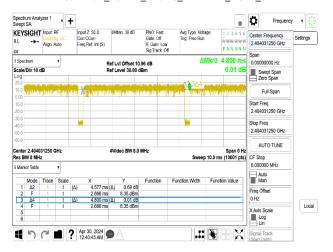
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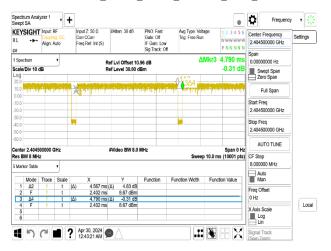


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802.11ax_20MHz_Chain0_2412MHz_RU26_0



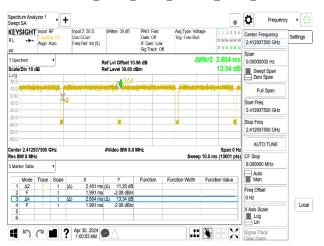
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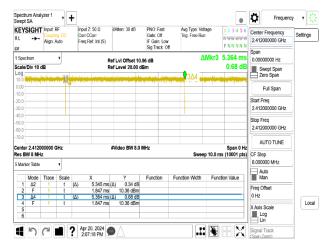
802.11ax_40MHz_Chain0_2422MHz



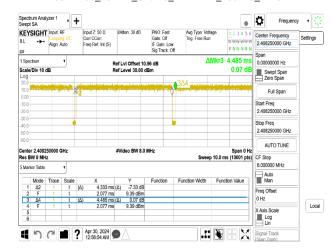
802.11ax_40MHz_Chain0_2422MHz_RU242_61



802.11be_20MHz_Chain0_2412MHz



802.11be_20MHz_Chain0_2412MHz_106+26_MRU1



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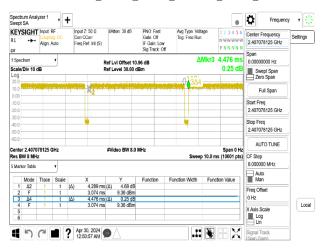
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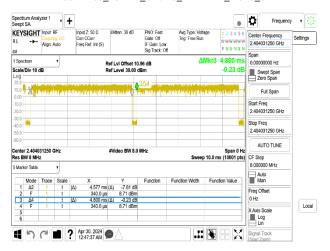
802.11be_20MHz_Chain0_2412MHz_52+26_MRU1



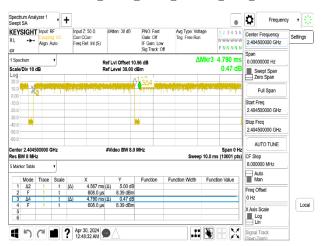
802.11be_20MHz_Chain0_2412MHz_RU106_53



802.11be_20MHz_Chain0_2412MHz_RU26_0



802.11be_20MHz_Chain0_2412MHz_RU52_37



802.11be_40MHz_Chain0_2422MHz



802.11be_40MHz_Chain0_2422MHz_106+26_MRU1



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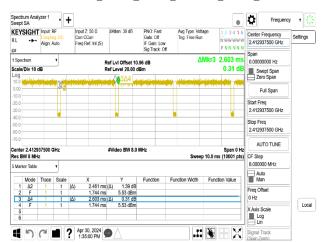


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802.11be_40MHz_Chain0_2422MHz_52+26_MRU1



802.11be_40MHz_Chain0_2422MHz_RU242_61



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8.4.3 **Output Power**

802.11	b_2TX									
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(ubili)				
1	2412	1	115	14.57	14.80	17.70	30.00	PASS		
6	2437	1	110	14.15	14.55	17.36	30.00	PASS		
11	2462	1	110	14.16	14.33	17.26	30.00	PASS		
802.11	b_2TX		•					•		
СН	Freq. (MHz)	Data Rate	Power Setting	Pov	Output wer Bm)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT		
				Ch0	Ch1	(ubiii)				
1	2412	1	115	11.88	12.03	14.96	30.00	PASS		
6	2437	1	110	11.59	11.88	14.75	30.00	PASS		
11	2462	1	110	11.51	11.65	14.59	30.00	PASS		

802.11	lg_2TX									
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(ubiii)				
1	2412	6	120	17.56	17.99	20.79	30.00	PASS		
6	2437	6	115	17.34	17.71	20.54	30.00	PASS		
11	2462	6	115	16.91	17.40	20.17	30.00	PASS		
802.11	g_2TX									
СН	Freq. (MHz)	Data Rate	Power Setting	Pov	Output wer Bm)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT		
				Ch0	Ch1	(ubiii)				
1	2412	6	120	11.92	12.05	14.99	30.00	PASS		
6	2437	6	115	11.73	11.91	14.83	30.00	PASS		
11	2462	6	115	11.46	11.67	14.57	30.00	PASS		

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11_F11 ZUIV	1_2TX								
Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Power		Total Peak Output Power	Limit (dBm)	RESULT
			Ch0	Ch1	(dDIII)				
2412	MCS0	120	17.68	18.08	20.89	30.00	PASS		
2437	MCS0	115	17.48	17.77	20.64	30.00	PASS		
2462	MCS0	115	17.01	17.54	20.29	30.00	PASS		
n_HT20N	1_2TX								
Freq. (MHz)	Data Rate	Power Setting	Po	wer .	Total Avg. Output Power	Limit (dBm)	RESULT		
			Ch0	Ch1	(ubiii)				
2412	MCS0	120	11.88	12.03	14.97	30.00	PASS		
2437	MCS0	115	11.73	11.89	14.83	30.00	PASS		
2462	MCS0	115	11.39	11.71	14.57	30.00	PASS		
	Freq. (MHz) 2412 2437 2462 n_HT20N Freq. (MHz) 2412 2437	Freq. Data (MHz) Rate 2412 MCS0 2437 MCS0 2462 MCS0 n_HT20M_2TX Freq. Data (MHz) Rate 2412 MCS0 2437 MCS0	Freq. (MHz) Data Rate Power Setting 2412 MCS0 120 2437 MCS0 115 2462 MCS0 115 n_HT20M_2TX Freq. Data Power Setting (MHz) Rate Setting 2412 MCS0 120 2437 MCS0 115	Freq. (MHz) Data Rate Power Setting Power (decomposition) 2412 MCS0 120 17.68 2437 MCS0 115 17.48 2462 MCS0 115 17.01 n_HT20M_2TX Freq. Data Power (MHz) Power Setting (decomposition) Avg. Composition (decomposition) 2412 MCS0 120 11.88 2437 MCS0 115 11.73	Freq. (MHz) Data Rate Power Setting Peak Output Power (dBm) 2412 MCS0 120 17.68 18.08 2437 MCS0 115 17.48 17.77 2462 MCS0 115 17.01 17.54 n_HT20M_2TX Power (MHz) Avg. Output Power (dBm) (MHz) Rate Setting (dBm) Ch0 Ch1 2412 MCS0 120 11.88 12.03 2437 MCS0 115 11.73 11.89	Freq. (MHz) Data Rate Power Setting Power (dBm) Total Peak Output Power (dBm) 2412 MCS0 120 17.68 18.08 20.89 2437 MCS0 115 17.48 17.77 20.64 2462 MCS0 115 17.01 17.54 20.29 n_HT20M_2TX Power (dBm) Avg. Output Power (dBm) Total Avg. Output Power (dBm) Output Power (dBm) 2412 MCS0 120 11.88 12.03 14.97 2437 MCS0 115 11.73 11.89 14.83	Freq. (MHz) Data Rate Power Setting Peak Output Power (dBm) Total Peak Output Power (dBm) Limit (dBm) 2412 MCS0 120 17.68 18.08 20.89 30.00 2437 MCS0 115 17.48 17.77 20.64 30.00 2462 MCS0 115 17.01 17.54 20.29 30.00 n_HT20M_2TX Freq. (MHz) Data Rate Power (dBm) Avg. Output Power (dBm) Limit (dBm) Ch0 Ch1 Ch0 Ch1 Ch0 Ch1 2412 MCS0 120 11.88 12.03 14.97 30.00 2437 MCS0 115 11.73 11.89 14.83 30.00		

802.11	n_HT40N	/I_2TX						
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(dDIII)		
3	2422	MCS0	120	17.69	18.18	20.95	30.00	PASS
6	2437	MCS0	115	17.76	18.15	20.97	30.00	PASS
9	2452	MCS0	115	17.40	18.27	20.87	30.00	PASS
802.11	n_HT40N	/I_2TX						
СН	Freq. (MHz)	Data Rate	Power Setting	Po	Output wer Bm)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(dDIII)		
3	2422	MCS0	120	11.70	12.09	14.91	30.00	PASS
6	2437	MCS0	115	11.82	11.88	14.86	30.00	PASS
9	2452	MCS0	115	11.13	11.92	14.56	30.00	PASS

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はいつ 17	lax_HE20	ハハンコメ							
CH	Freq. (MHz)	Data Rate	RU Config	Power Setting			Total Peak Output Power (dBm)	Limit (dBm)	RESULT
			full	120	18.04	18.24	21.15	30.00	PASS
4	0.440	14000	26/0	4.5	13.31	13.42	16.38	30.00	PASS
1	2412	MCS0	52/37	7.5	16.20	16.73	19.48	30.00	PASS
		-	106/53	7.5	15.84	16.49	19.19	30.00	PASS
6	2437	MCS0	full	115	17.95	18.03	21.00	30.00	PASS
			full	115	17.68	17.88	20.79	30.00	PASS
11	24/2	MCCO	26/8	2	10.96	11.80	14.41	30.00	PASS
11	2462	MCS0	52/40	5	13.89	14.41	17.17	30.00	PASS
			106/54	7	16.08	16.61	19.36	30.00	PASS
802.11	ax_HE20	M_2TX		•					•
					Avg. 0	Jutnut			
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting	Po	-	Total Avg. Output Power (dRm)	Limit (dBm)	RESULT
СН	-		RU Config		Po	wer	_		RESULT
СН	-		RU Config		Pov (dE	wer Bm)	Output Power		RESULT PASS
	(MHz)	Rate	J	Setting	Por (dE Ch0	wer Bm) Ch1	Output Power (dBm)	(dBm)	
1 CH	-		full	Setting 120	Por (dE Ch0 11.86	wer Bm) Ch1 12.03	Output Power (dBm) 14.95	(dBm) 30.00	PASS
	(MHz)	Rate	full 26/0	120 4.5	Por (dE Ch0 11.86 7.38	wer Bm) Ch1 12.03 7.89	Output Power (dBm) 14.95 10.65	(dBm) 30.00 30.00	PASS PASS
	(MHz)	Rate	full 26/0 52/37	120 4.5 7.5	Por (dE Ch0 11.86 7.38 7.40	wer Bm) Ch1 12.03 7.89 7.76	Output Power (dBm) 14.95 10.65 10.59	(dBm) 30.00 30.00 30.00	PASS PASS PASS
1	(MHz) 2412	Rate MCS0	full 26/0 52/37 106/53	120 4.5 7.5 7.5	Por (dE Ch0 11.86 7.38 7.40 7.43	wer Bm) Ch1 12.03 7.89 7.76 7.72	Output Power (dBm) 14.95 10.65 10.59 10.58	(dBm) 30.00 30.00 30.00 30.00	PASS PASS PASS PASS
1 6	(MHz) 2412 2437	MCS0 -	full 26/0 52/37 106/53 full	120 4.5 7.5 7.5 115	Por (dE Ch0 11.86 7.38 7.40 7.43 11.79	wer 38m) Ch1 12.03 7.89 7.76 7.72 11.91	Output Power (dBm) 14.95 10.65 10.59 10.58 14.86	(dBm) 30.00 30.00 30.00 30.00 30.00	PASS PASS PASS PASS PASS
1	(MHz) 2412	Rate MCS0	full 26/0 52/37 106/53 full full	120 4.5 7.5 7.5 115	Por (dE Ch0 11.86 7.38 7.40 7.43 11.79	wer Bm) Ch1 12.03 7.89 7.76 7.72 11.91 11.70	Output Power (dBm) 14.95 10.65 10.59 10.58 14.86 14.59	(dBm) 30.00 30.00 30.00 30.00 30.00 30.00	PASS PASS PASS PASS PASS PASS

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802.11	ax_HE40	M_2TX							
СН	Freq. (MHz)	i i RUCONIO i i		Total Peak Output Power (dBm)	Limit (dBm)	RESULT			
					Ch0	Ch1	(ubiii)		
3	2422	MCS0	full	120	17.77	18.19	21.00	30.00	PASS
J	2422	IVICOU	242/61	7.5	16.62	16.81	19.73	30.00	PASS
6	2437	MCS0	full	115	17.96	18.02	21.00	30.00	PASS
9	2452	MCS0	full	115	17.47	18.17	20.84	30.00	PASS
7	2432	IVICOU	242/62	7	15.80	16.44	19.14	30.00	PASS
802.11	ax_HE40	M_2TX							
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting	Po	Output wer 3m)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1	(UDIII)		
3	2422	MCS0	full	120	11.71	12.02	14.88	30.00	PASS
3	2422	IVICSU	242/61	7.5	8.05	7.77	10.92	30.00	PASS
6	2437	MCS0	full	115	11.73	11.90	14.83	30.00	PASS
9	2452	MCS0	full	115	11.12	11.91	14.55	30.00	PASS
9	2402	IVICSU	242/62	7	7.54	7.63	10.59	30.00	PASS

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0UZ. I	IDE_EHIA	ZUIVI_Z I /	\	1	Doak (Output		Γ	1
	Freq.	Data		Power	Po		Total Peak	Limit	
CH	(MHz)	Rate	RU Config	Setting		Bm)	Output Power	(dBm)	RESULT
	(IVII IZ)	Nate		Jenny	Ch0	Ch1	(dBm)	(dbiii)	
			full	120	18.14	18.33	21.25	30.00	PASS
			26/0	4.5	13.39	13.54	16.48	30.00	PASS
			52/37	7.5	16.32	16.80	19.58	30.00	PASS
1	2412	MCS0	106/53	7.5	15.91	16.60	19.28	30.00	PASS
			52+26 MRU1	7.5	15.92	16.55	19.26	30.00	PASS
			106+26 MRU1	7.5	16.14	16.78	19.48	30.00	PASS
6	2437	MCS0	full	115	18.01	18.14	21.09	30.00	PASS
	2437	WOOO	full	115	17.71	17.98	20.86	30.00	PASS
			26/8	2	11.03	11.89	14.49	30.00	PASS
			52/40	5	13.93	14.54	17.26	30.00	PASS
11	2462	MCS0	106/54	7	16.15	16.70	19.44	30.00	PASS
			52+26 MRU3	6	14.95	15.31	18.14	30.00	PASS
			106+26 MRU2	7	15.91	16.83	19.40	30.00	PASS
				•		.0.00	.,	00.00	
1802.11	1be_EHT2	20M_2T>	(
802.11	lbe_EHT2	20M_2TX 	(Avg. (Output			
		20M_2T) Data		Power	Avg. (Output wer	Total Avg.	Limit	DECL!! T
802.11 CH	Freq.		RU Config		Po	wer	Output Power		RESULT
		Data		Power Setting	Po ^r (dE	wer Bm)		Limit (dBm)	RESULT
	Freq.	Data			Po	wer	Output Power		RESULT PASS
	Freq.	Data	RU Config	Setting	Po (dE Ch0	wer Bm) Ch1	Output Power (dBm)	(dBm)	
СН	Freq. (MHz)	Data Rate	RU Config	Setting 120	Po' (dE Ch0 11.90	wer Bm) Ch1 12.05	Output Power (dBm) 14.98	(dBm) 30.00	PASS
	Freq.	Data	RU Config full 26/0	120 4.5	Por (dE Ch0 11.90 7.45	wer Bm) Ch1 12.05 7.91	Output Power (dBm) 14.98 10.69	(dBm) 30.00 30.00	PASS PASS
СН	Freq. (MHz)	Data Rate	full 26/0 52/37	120 4.5 7.5	Por (dE Ch0 11.90 7.45 7.42	wer Bm) Ch1 12.05 7.91 7.81	Output Power (dBm) 14.98 10.69 10.63	(dBm) 30.00 30.00 30.00	PASS PASS PASS
СН	Freq. (MHz)	Data Rate	full 26/0 52/37 106/53	120 4.5 7.5 7.5	Por (dE Ch0 11.90 7.45 7.42 7.50	wer Bm) Ch1 12.05 7.91 7.81 7.78	Output Power (dBm) 14.98 10.69 10.63 10.65	(dBm) 30.00 30.00 30.00 30.00	PASS PASS PASS PASS
СН	Freq. (MHz)	Data Rate	full 26/0 52/37 106/53 52+26 MRU1	120 4.5 7.5 7.5 7.5	Por (dE Ch0 11.90 7.45 7.42 7.50 7.63	wer 3m) Ch1 12.05 7.91 7.81 7.78 7.82	Output Power (dBm) 14.98 10.69 10.63 10.65 10.73	(dBm) 30.00 30.00 30.00 30.00 30.00	PASS PASS PASS PASS PASS
CH 1	Freq. (MHz)	Data Rate	full 26/0 52/37 106/53 52+26 MRU1 106+26 MRU1	120 4.5 7.5 7.5 7.5 7.5	Por (dE Ch0 11.90 7.45 7.42 7.50 7.63 7.56	wer Bm) Ch1 12.05 7.91 7.81 7.78 7.82 7.84	Output Power (dBm) 14.98 10.69 10.63 10.65 10.73 10.71	(dBm) 30.00 30.00 30.00 30.00 30.00 30.00	PASS PASS PASS PASS PASS PASS
CH 1	Freq. (MHz)	Data Rate	full 26/0 52/37 106/53 52+26 MRU1 106+26 MRU1 full	120 4.5 7.5 7.5 7.5 7.5 115	Por (dE Ch0 11.90 7.45 7.42 7.50 7.63 7.56 11.82	wer 3m) Ch1 12.05 7.91 7.81 7.78 7.82 7.84 11.95	Output Power (dBm) 14.98 10.69 10.63 10.65 10.73 10.71 14.89	(dBm) 30.00 30.00 30.00 30.00 30.00 30.00 30.00	PASS PASS PASS PASS PASS PASS PASS
1 6	Freq. (MHz) 2412	Data Rate MCS0	full 26/0 52/37 106/53 52+26 MRU1 106+26 MRU1 full	120 4.5 7.5 7.5 7.5 7.5 115	Por (dE Ch0 11.90 7.45 7.42 7.50 7.63 7.56 11.82 11.53	wer 3m) Ch1 12.05 7.91 7.81 7.78 7.82 7.84 11.95 11.73	Output Power (dBm) 14.98 10.69 10.63 10.65 10.73 10.71 14.89 14.64	(dBm) 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00	PASS PASS PASS PASS PASS PASS PASS PASS
CH 1	Freq. (MHz)	Data Rate	full 26/0 52/37 106/53 52+26 MRU1 106+26 MRU1 full full 26/8	120 4.5 7.5 7.5 7.5 7.5 115 115	Por (dE Ch0 11.90 7.45 7.42 7.50 7.63 7.56 11.82 11.53 7.21	wer 3m) Ch1 12.05 7.91 7.81 7.78 7.82 7.84 11.95 11.73 8.38	Output Power (dBm) 14.98 10.69 10.63 10.65 10.73 10.71 14.89 14.64 10.84	(dBm) 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00	PASS PASS PASS PASS PASS PASS PASS PASS
1 6	Freq. (MHz) 2412	Data Rate MCS0	full 26/0 52/37 106/53 52+26 MRU1 106+26 MRU1 full full 26/8 52/40	120 4.5 7.5 7.5 7.5 7.5 115 115 2	Por (dE Ch0 11.90 7.45 7.42 7.50 7.63 7.56 11.82 11.53 7.21 7.29	response verification (No. 100 to 100	Output Power (dBm) 14.98 10.69 10.63 10.65 10.73 10.71 14.89 14.64 10.84 10.79	(dBm) 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00	PASS PASS PASS PASS PASS PASS PASS PASS

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802.11	lbe_EHT4	10M_2TX	(
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting			Total Peak Output Power (dBm)	Limit (dBm)	RESULT
			full	120	17.86	18.27	21.08	30.00	PASS
	0.400	MCCO	242/61	7.5	16.75	16.87	19.82	30.00	PASS
3	2422	MCS0	52+26 MRU1	4.5	12.93	12.37	15.67	30.00	PASS
			106+26 MRU1	6.5	15.42	14.92	18.19	30.00	PASS
6	2437	MCS0	full	115	18.03	18.07	21.06	30.00	PASS
			full	115	17.53	18.31	20.95	30.00	PASS
9	2452	MCS0	242/62	7	15.87	16.51	19.21	30.00	PASS
9	2432	MCSU	52+26 MRU6	4	12.69	12.87	15.79	30.00	PASS
			106+26 MRU4	5.5	14.49	14.81	17.66	30.00	PASS
802.11	be_EHT4	10M_2TX	(-			
СН	Freq. (MHz)	Data Rate	RU Config	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1	(ubiii)		
			full	120	11.74	12.08	14.93	30.00	PASS
3	2422	MCS0	242/61	7.5	8.08	7.82	10.97	30.00	PASS
J	2422	IVICSU	52+26 MRU1	4.5	8.06	7.57	10.83	30.00	PASS
			106+26 MRU1	6.5	7.97	7.48	10.74	30.00	PASS
6	2437	MCS0	full	115	11.77	11.94	14.87	30.00	PASS
			full	115	11.15	11.96	14.59	30.00	PASS
9	2452	MCS0	242/62	7	7.57	7.65	10.62	30.00	PASS
7	Z47Z	MICOU	52+26 MRU6	4	8.00	7.77	10.89	30.00	PASS
			106+26 MRU4	5.5	7.73	7.89	10.82	30.00	PASS

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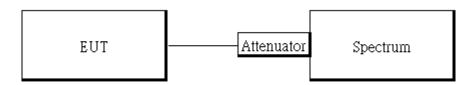
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EMISSION BANDWIDTH MEASUREMENT

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 kHz,

VBW = 3 X RBW,

Span= 2 to 5 times of the OBW,

Sweep=auto, Detector = Peak, and Max hold.

- 3. Mark the upper and lower frequencies of -6dB.
- 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	7636.00	≥ 500	PASS
2437	8106.00	≥ 500	PASS
2462	8066.00	≥ 500	PASS

802.11b Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	7628.00	≥ 500	PASS
2437	7659.00	≥ 500	PASS
2462	8096.00	≥ 500	PASS

802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16410.00	≥ 500	PASS
2437	16450.00	≥ 500	PASS
2462	16410.00	≥ 500	PASS

802.11g Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16390.00	≥ 500	PASS
2437	16390.00	≥ 500	PASS
2462	16420.00	≥ 500	PASS

802.11be_EHT_20M Ch0

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2412	full	18930.00	≥ 500	PASS
2437	full	19090.00	≥ 500	PASS
2462	full	18990.00	≥ 500	PASS

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802.11be_EHT_20M Ch1

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2412	full	18810.00	≥ 500	PASS
2437	full	18950.00	≥ 500	PASS
2462	full	19020.00	≥ 500	PASS

802.11be_EHT_40M Ch0

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2422	full	37980.00	≥ 500	PASS
2437	full	38330.00	≥ 500	PASS
2452	full	37930.00	≥ 500	PASS

802.11be_EHT_40M Ch1

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2422	full	37820.00	≥ 500	PASS
2437	full	37930.00	≥ 500	PASS
2452	full	38230.00	≥ 500	PASS

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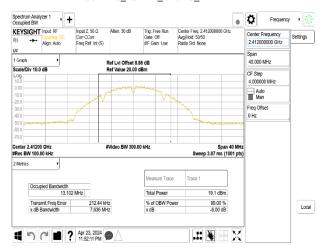
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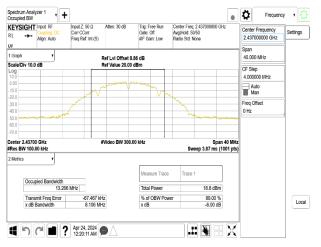


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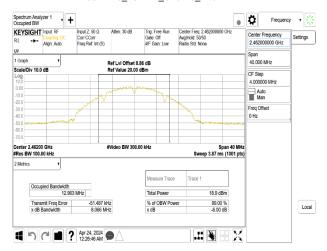
802.11b_20MHz_Chain0_2412MHz



802.11b_20MHz_Chain0_2437MHz



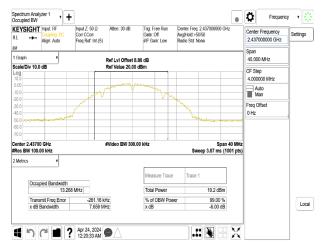
802.11b_20MHz_Chain0_2462MHz



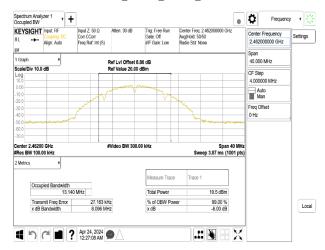
802.11b_20MHz_Chain1_2412MHz



802.11b_20MHz_Chain1_2437MHz



802.11b_20MHz_Chain1_2462MHz



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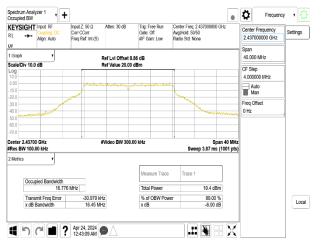


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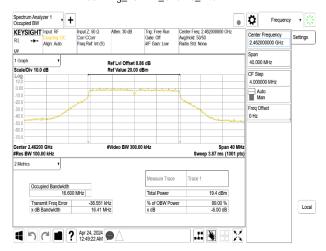
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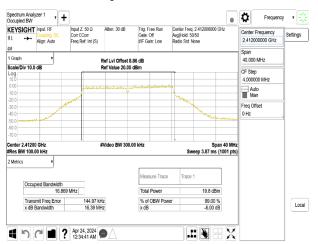
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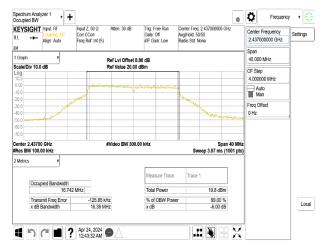
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802.11g_20MHz_Chain1_2412MHz



802.11g_20MHz_Chain1_2437MHz



802.11g_20MHz_Chain1_2462MHz



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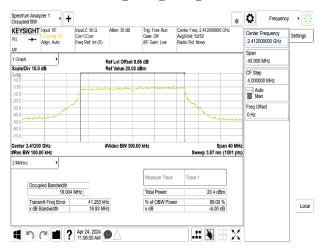
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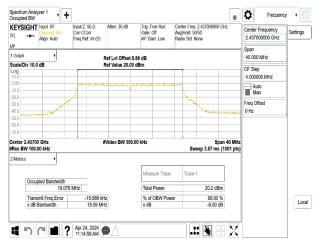


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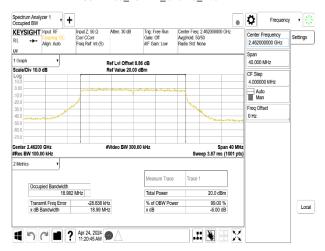
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802.11be_20MHz_Chain0_2437MHz



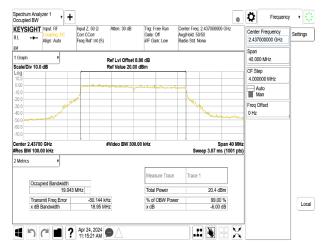
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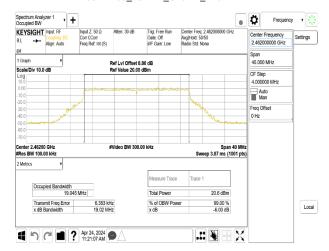
802.11be_20MHz_Chain1_2412MHz



802.11be_20MHz_Chain1_2437MHz



802.11be_20MHz_Chain1_2462MHz



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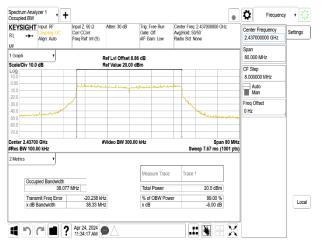


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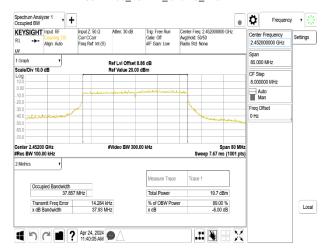
802.11be_40MHz_Chain0_2422MHz



802.11be_40MHz_Chain0_2437MHz



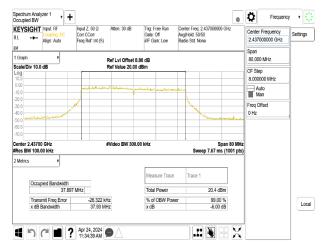
802.11be_40MHz_Chain0_2452MHz



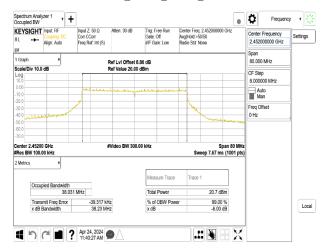
802.11be_40MHz_Chain1_2422MHz



802.11be_40MHz_Chain1_2437MHz



802.11be_40MHz_Chain1_2452MHz



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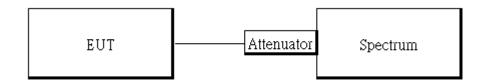
10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

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

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**



Measurement Procedure 10.3

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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Conducted Band Edge: 10.3.2

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 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
- 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.

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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. Guid-
- 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.

Measurement Result 10.4

802.11b Ch0 802.11b Ch1

Reference Level of Limit		Reference Level of Limit			
Freq.	PSD	Reference Level of Limit	Freq.	PSD	Reference Level of Limit
(MHz)	(dBm)	(dBm)	(MHz)	(dBm)	(dBm)
2412	3.75	-16.25	2412	2.93	-17.07
2437	2.60	-17.40	2437	3.07	-16.93
2462	2.77	-17.23	2462	3.28	-16.72

802.11g Ch0 802.11q Ch1

Reference Level of Limit		Reference Level of Limit			
Freq.	PSD	Reference Level of Limit	Freq.	PSD	Reference Level of Limit
(MHz)	(dBm)	(dBm)	(MHz)	(dBm)	(dBm)
2412	1.69	-18.31	2412	2.45	-17.55
2437	1.22	-18.78	2437	2.50	-17.50
2462	0.92	-19.08	2462	1.64	-18.36

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802.11be_EHT_20M Ch0

802.11be_EHT_20M Ch1

Reference Level of Limit		Reference Level of Limit			
Freq.	PSD	Reference Level of Limit	Freq.	PSD	Reference Level of Limit
(MHz)	(dBm)	(dBm)	(MHz)	(dBm)	(dBm)
2412	1.74	-18.26	2412	2.53	-17.47
2437	1.10	-18.90	2437	2.39	-17.61
2462	0.94	-19.06	2462	1.71	-18.29

802.11be EHT 40M Ch0

802.11be_EHT_40M Ch1

			_	-	
Reference Level of Limit		Reference Level of Limit			
Freq.	PSD	Reference Level of Limit	Freq.	PSD	Reference Level of Limit
(MHz)	(dBm)	(dBm)	(MHz)	(dBm)	(dBm)
2422	-1.75	-21.75	2422	-0.91	-20.91
2437	-1.11	-21.11	2437	-1.01	-21.01
2452	-2.13	-22.13	2452	-0.72	-20.72

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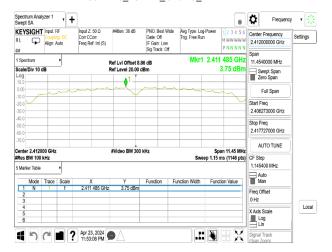
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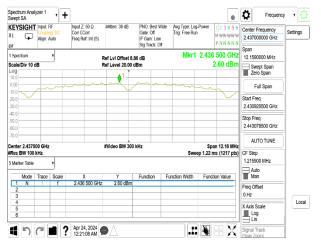


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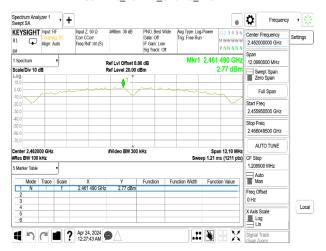
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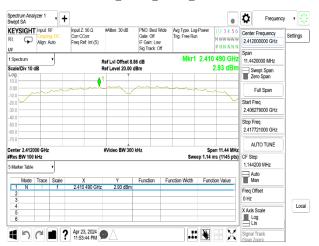
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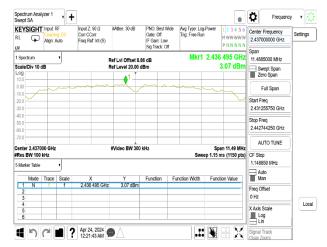
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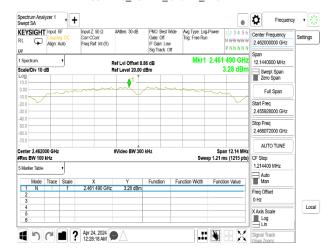
802.11b_20MHz_Chain1_2412MHz



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802.11b_20MHz_Chain1_2462MHz



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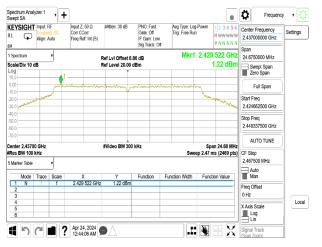


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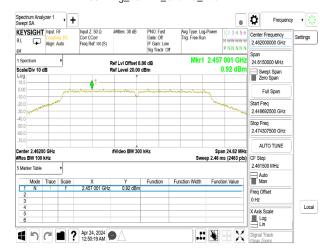
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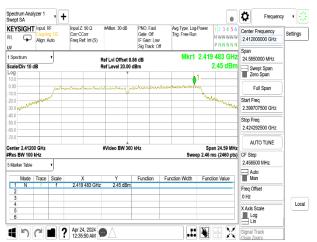
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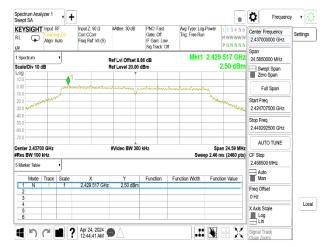
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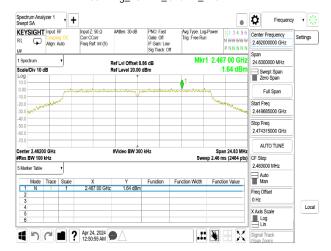
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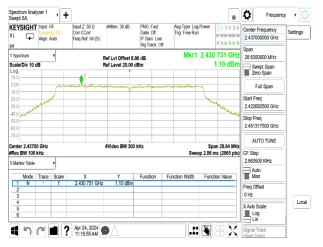


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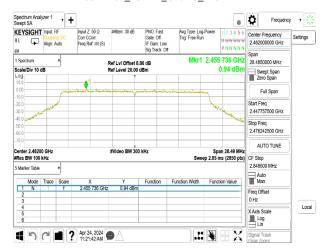
802.11be_20MHz_Chain0_2412MHz



802.11be 20MHz Chain0 2437MHz



802.11be_20MHz_Chain0_2462MHz



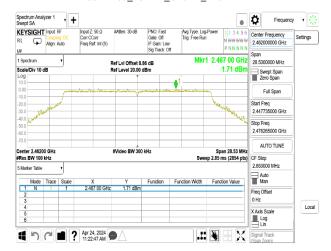
802.11be_20MHz_Chain1_2412MHz



802.11be_20MHz_Chain1_2437MHz



802.11be_20MHz_Chain1_2462MHz



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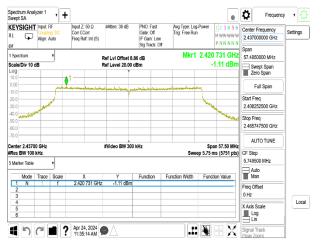


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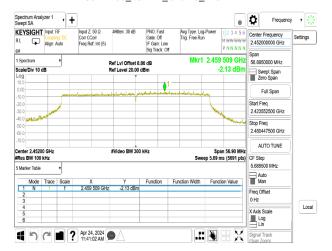
802.11be_40MHz_Chain0_2422MHz



802.11be 40MHz Chain0 2437MHz



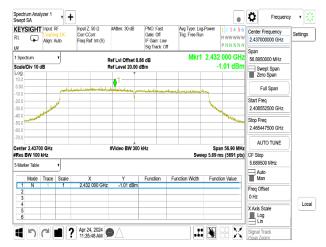
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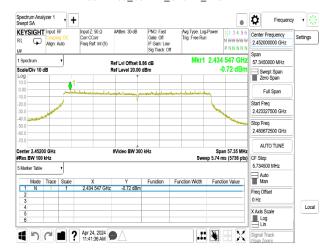
802.11be_40MHz_Chain1_2422MHz



802.11be_40MHz_Chain1_2437MHz



802.11be_40MHz_Chain1_2452MHz



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