

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT



Applicant: Silex Technology, Inc.
2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,
Japan

Manufacturer: Silex Technology, Inc.
2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,
Japan

Product Name: Embedded wireless module

Brand Name: Silex Technology

Model No.: SX-PCEAX

Report Number: TERF2305001230ER

FCC ID N6C-PCEAX

IC: 4908A-PCEAX

Date of EUT Received: April 26, 2023

Date of Test: May 3, 2023~July 17, 2024

Issue Date: July 18, 2024

Approved By

Jim Chang

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 §15.407, ISSED RSS-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
TERF2305001230ER	00	Original.	July 18, 2024	Susan Lin	

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:	Embedded wireless module
Brand Name:	Silex Technology
Model No.:	SX-PCEAX
Hardware Version:	N/A
Firmware Version:	HY103710
EUT Series No.:	1CBCEC011DAC
Power Supply:	3.3Vdc
Test Software (Name/Version):	QRCT V4.0.210.0

1.2 Modulation & Data Rate

Modulation type:	64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11a, 11n
	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11ac
	1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11ax
Transition Rate:	802.11 a: 6 - 54 Mbps
	802.11 n_20MHz: up to 144.4 Mbps
	802.11 n_40MHz: up to 300 Mbps
	802.11 ac_20MHz: up to 173.4 Mbps
	802.11 ac_40MHz: up to 400 Mbps
	802.11 ac_80MHz: up to 866.6 Mbps
	802.11 ac_160MHz: up to 1733.4 Mbps
	802.11 ax_20MHz: up to 286.8 Mbps
	802.11 ax_40MHz: up to 573.6 Mbps
	802.11 ax_80MHz: up to 1201 Mbps
	802.11 ax_160MHz: up to 2402 Mbps

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1.3 Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Dipole	Molex	146153	5150~5250	3.175	6.185
			5250~5350	2.975	5.985
			5470~5725	4.275	7.285
			5725~5850	3.775	6.785
			5850~5895	4.875	7.885
Dipole	Unictron Technologies Corp.	AA258	5150~5250	3.220	6.230
			5250~5350	3.910	6.920
			5470~5725	2.770	5.780
			5725~5850	3.920	6.930
			5850~5895	4.400	7.410

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.
3. 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.

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

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} = 10G_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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1.4 FCC

Wi-Fi	Frequency Range	Channels	Rated Power(Avg) (dBm) (Worst Case)	Modulation Technology
a/ n_HT/ ac_VHT/ ax_HE 20M	5180~5240	4	22.15 dBm	OFDM
	5260~5320	4	22.14 dBm	OFDM
	5500~5720	12	20.45 dBm	OFDM
	5745-5825	5	21.72 dBm	OFDM
	5845-5865	3	16.45 dBm	OFDM
n_HT ac_VHT/ ax_HE 40M	5190~5230	2	20.21 dBm	OFDMA
	5270~5310	2	19.93 dBm	OFDM
	5510~5710	6	19.98 dBm	OFDM
	5755-5795	2	19.98 dBm	OFDM
	5835-5875	2	18.99 dBm	OFDM
ac_VHT/ ax_HE 80M	5210	1	13.88 dBm	OFDM
	5290	1	14.20 dBm	OFDM
	5530~5690	3	18.66 dBm	OFDMA
	5775	1	16.99 dBm	OFDMA
	5855	1	19.47 dBm	OFDM
ac_VHT/ ax_HE 160M	5250	1	9.69 dBm	OFDMA
	5570	1	9.51 dBm	OFDM
	5815	1	14.41 dBm	OFDM

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WLAN 5 GHz for ISED (Slave)

Wi-Fi	Frequency Range	Channels	EIRP/Avg	Rated Power(EIRP/Avg) (dBm) (Worst Case)		Modulation Technology
a/ n_HT/ ac_VHT/ ax_HE 20M	5180~5240	4	EIRP	19.22	dBm	OFDMA
	5260~5320	4	Avg	22.14	dBm	OFDM
	5500~5700	11	Avg	20.45	dBm	OFDM
	5720 (U-NII 2C)	1	Avg	18.59	dBm	OFDM
	5720 (U-NII 3)	1	Avg	13.60	dBm	OFDMA
	5745-5825	5	Avg	21.72	dBm	OFDM
	5845-5865	3	Avg	16.45	dBm	OFDMA
n_HT ac_VHT/ ax_HE 40M	5190~5230	2	EIRP	22.11	dBm	OFDMA
	5270~5310	2	Avg	19.93	dBm	OFDM
	5510~5670	5	Avg	19.98	dBm	OFDM
	5710 (U-NII 2C)	1	Avg	18.30	dBm	OFDM
	5710 (U-NII 3)	1	Avg	9.53	dBm	OFDMA
	5755-5795	2	Avg	19.98	dBm	OFDM
	5835-5875	2	Avg	18.99	dBm	OFDMA
ac_VHT/ ax_HE 80M	5210	1	EIRP	19.87	dBm	OFDM
	5290	1	Avg	14.20	dBm	OFDM
	5530	2	Avg	12.98	dBm	OFDMA
	5690 (U-NII 2C)	1	Avg	18.66	dBm	OFDMA
	5690 (U-NII 3)	1	Avg	7.27	dBm	OFDMA
	5775	1	Avg	16.99	dBm	OFDMA
	5855	1	Avg	19.47	dBm	OFDMA
ac_VHT/ ax_HE 160M	5250	1	Avg	9.71	dBm	OFDMA
	5570	1	Avg	9.51	dBm	OFDM
	5815	1	Avg	14.41	dBm	OFDM

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1.6 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

FCC KDB 291074 D02 EMC Measurement v01

RSS-247 issue 3 Aug. 2023

RSS-Gen, issue 5 April, 2018

ANSI C63.10:2013

1.7 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion 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		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction C	TW0028	
		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 indica- tion where measurements occurred in specific test site and address.				

1.8 Special Accessories

There are no special accessories used while test was conducted.

1.9 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

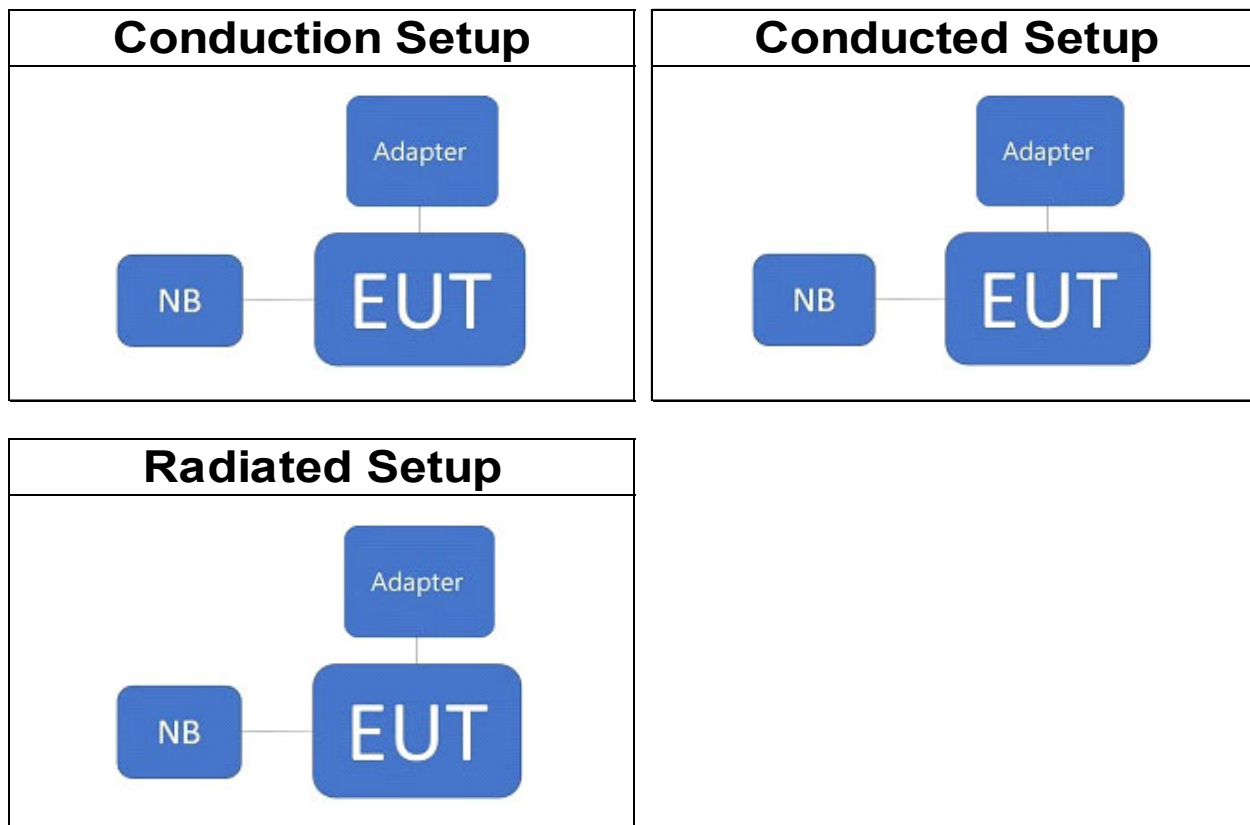
Radiated emission below 30MHz is measured in a 9m*6m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

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 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	L480	PF-1D07MD 19/08	N/A	N/A
Adapter	EDAC	EA10682N-120	N/A	N/A	N/A

Conducted Emission Test Site: Conducted 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	T430s	R9-WW5EG 13/0	N/A	N/A
Adapter	EDAC	EA10682N-120	N/A	N/A	N/A

Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	L480	PF-1D07MD 19/08	N/A	N/A
Adapter	EDAC	EA10682N-120	N/A	N/A	N/A

Radiated bandedge

Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Adapter	EDAC	EA10682N-120	N/A	N/A	N/A
Notebook	Lenovo	T440P	PC-083PYC 15/10	N/A	N/A

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3 SUMMARY OF TEST RESULT

FCC Rules	ISED Rules	Description Of Test	Result	Note	Referenced report
§15.207	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant		TERF2305001145ER
§15.407(a)	RSS-247 §6.2.1~4 (1) RSS-247 §6.2.5 (2)	Maximum Conducted Output Power	Compliant		TERF2304001050ER
§15.407(a)	RSS-247 §6.2.1~ 4 (1) RSS-247 §6.2.5 (2)	Power Spectral Density	Compliant		TERF2304001050ER
§15.205 §15.209 §15.407(b)	RSS-247 §6.2.1~3 (2) §6.2.4 (3) RSS-247 §6.2.5 (3)	Undesirable Radiated Emissions	Compliant	N	TERF2305001145ER

Note

1. N/S Indicates whether item(s) being newly tested [N] or spot checked [S].

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4 DESCRIPTION OF TEST MODES

4.1 Operating Frequencies

Operated band in 5150 MHz ~5250 MHz:

20 M		40 M		80 M	
CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				

Operated band in 5250 MHz ~5350 MHz:

20 M		40 M		80 M		160 M	
CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)
52	5260	54	5270	58	5290	50	5250
56	5280	62	5310				
60	5300						
64	5320						

Operated band in 5470 MHz ~5725 MHz:

20 M		40 M		80 M		160 M	
CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)
100	5500	102	5510	106	5530	114	5570
104	5520	110	5550	122	5610		
108	5540	118	5590	138	5690		
112	5560	126	5630				
116	5580	134	5670				
120	5600	142	5710				
124	5620						
128	5640						
132	5660						
136	5680						
140	5700						
144	5720						

Operated band in 5725 MHz ~5850 MHz:

20 M		40 M		80 M	
CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795		
157	5785				
161	5805				
165	5825				

Operated band in 5850 MHz ~5895 MHz:

20 M		40 M		80 M		160 M	
CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)
169	5845	167	5835	171	5855	163	5815
173	5865	175	5875				
177	5885						

Note:

- 5850~5895 MHz is not available for operation in Canada.

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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 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	Multiple Transmission Spatial	
v	802.11 a	v	Ch0	v	Ch1		Ch2		Ch3	1TX	v	2TX
v	802.11 n	v	Ch0	v	Ch1		Ch2		Ch3	1TX	v	2TX
v	802.11 ac	v	Ch0	v	Ch1		Ch2		Ch3	1TX	v	2TX
v	802.11 ax	v	Ch0	v	Ch1		Ch2		Ch3	1TX	v	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.

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WLAN 5GHz for FCC

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
	5845~5865	169 to 177	169,173,177			
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS0	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
	5845~5865	169 to 177	169,173,177			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	2TX
	5270~5310	54 to 62	54,62			
	5510~5710	102 to 142	102,110,134,142			
	5755~5795	151 to 159	151,159			
	5835~5875	167 to 175	167,175			
802.11ac_VHT80	5210	42	42	OFDM	MCS0	2TX
	5290	58	58			
	5530~5690	106 to 138	106,122,138			
	5775	155	155			
	5855	171	171			
802.11ac_VHT160	5250	50	50	OFDM	MCS0	2TX
	5570	114	114			
	5815	163	163			

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CONDUCTED TEST							
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT
802.11ax_HE20	5180~5240	36 to 48	36,44,48	OFDMA	FULL RU 26/0,26/8 52/37,52/40 106/53,106/54	MCS0	2TX
	5260~5320	52 to 64	52,60,64				
	5500~5720	100 to 144	100,116,140,144				
	5745~5825	149 to 165	149,157,165				
	5845~5865	169 to 177	169,173,177				
802.11ax_HE40	5190~5230	38 to 46	38,46	OFDMA	FULL RU 242/61,242/62	MCS0	2TX
	5270~5310	54 to 62	54,62				
	5510~5710	102 to 142	102,110,134,142				
	5755~5795	151 to 159	151,159				
	5835~5875	167 to 175	167,175				
802.11ax_HE80	5210	42	42	OFDMA	FULL RU 484/65,484/66	MCS0	2TX
	5290	58	58				
	5530~5690	106 to 138	106,122,138				
	5775	155	155				
	5855	171	171				
802.11ax_HE160	5250	50	50	OFDMA	FULL RU 996/67,996/67	MCS0	2TX
	5570	114	114				
	5815	163	163				

TRANSMIT RADIATED EMISSION TEST (BELOW 1 GHz)							
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT	
802.11a	5180~5240	36 to 48	44	OFDM	6	2TX	
	5260~5320	52 to 64	60				
	5260~5320	52 to 64	116				
	5745~5825	149 to 165	157				
	5845~5885	169 to 177	173				

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TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
	5845~5885	169 to 177	169,173,177			
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS0	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
	5845~5885	169 to 177	169,173,177			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	2TX
	5270~5310	54 to 62	54,62			
	5510~5710	102 to 142	102,110,134,142			
	5755~5795	151 to 159	151,159			
	5835~5875	167 to 175	167,175			
802.11ac_VHT80	5210	42	42	OFDM	MCS0	2TX
	5290	58	58			
	5530~5690	106 to 138	106,122,138			
	5775	155	155			
	5855	171	171			
802.11ac_VHT160	5250	50	50	OFDM	MCS0	2TX
	5570	114	114			
	5815	163	163			

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TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)							
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT
802.11ax_HE20	5180~5240	36 to 48	36,44,48	OFDMA	FULL RU	MCS0	2TX
	5260~5320	52 to 64	52,60,64				
	5500~5720	100 to 144	100,116,140,144				
	5745~5825	149 to 165	149,157,165				
	5845~5885	169 to 177	169,173,177				
802.11ax_HE40	5190~5230	38 to 46	38,46	OFDMA	FULL RU	MCS0	2TX
	5270~5310	54 to 62	54,62				
	5510~5710	102 to 142	102,110,134,142				
	5755~5795	151 to 159	151,159				
	5835~5875	167 to 175	167,175				
802.11ax_HE80	5210	42	42	OFDMA	FULL RU	MCS0	2TX
	5290	58	58				
	5530~5690	106 to 138	106,122,138				
	5775	155	155				
	5855	171	171				
802.11ax_HE160	5250	50	50	OFDMA	FULL RU	MCS0	2TX
	5570	114	114				
	5815	163	163				

WLAN 5GHz for IC

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS0	2TX
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	2TX
802.11ac_VHT80	5210	42	42	OFDM	MCS0	2TX

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CONDUCTED TEST							
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT
802.11ax_HE20	5180~5240	36 to 48	36,44,48	OFDMA	FULL RU 26/0,26/8 52/37,52/40 106/53,106/54	MCS0	2TX
802.11ax_HE40	5190~5230	38 to 46	38,46	OFDMA	FULL RU 242/61,242/62	MCS0	2TX
802.11ax_HE80	5210	42	42	OFDMA	FULL RU 484/65,484/66	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	+/- 2.32 dB
Output Power measurement	+/- 1 dB
Emission Bandwidth	+/- 1.53 Hz
Undesignable radiated emission measurement	+/- 1.68 dB
Peak Power Density	+/- 2.16 dB
Temperature	+/- 0.7 °C
Humidity	+/- 3 %
DC / AC Power Source	+/- 1 %

Radiated Spurious Emission Measurement Uncertainty			
Polarization: Vertical	+/-	2.8 dB	9kHz~30MHz
	+/-	4.82 dB	30MHz - 1000MHz
	+/-	4.37 dB	1GHz - 18GHz
	+/-	4.21 dB	18GHz - 40GHz
Polarization: Horizontal	+/-	2.8 dB	9kHz~30MHz
	+/-	4.54 dB	30MHz - 1000MHz
	+/-	4.37 dB	1GHz - 18GHz
	+/-	4.21 dB	18GHz - 40GHz

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 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	08/23/2022	08/22/2023
Coaxial Cables	EMC Instruments Corp.	EMCCFD300-BM-BM-3000	161207	06/22/2022	06/21/2023
Pulse Limiter	SCHWARZBECK	VTSD 9561F-N	793	06/22/2022	06/21/2023
EMI Test Receiver	R&S	ESR 7	102525	02/18/2023	02/17/2024

6.2 Conducted Measurement

Conducted Emission Test Site: Conducted 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60242081	10/06/2022	10/05/2023
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R
Power Meter	Anritsu	ML2496A	1804001	03/16/2023	03/15/2024
Power Sensor	Anritsu	MA2411B	1726104	03/16/2023	03/15/2024
Power Sensor	Anritsu	MA2411B	1726107	03/16/2023	03/15/2024
Attenuator	Mini-Circuit	BW-S10W2+	4	12/13/2022	12/12/2023
DC Block	Mini-Circuits	BLK-18-S+	1	12/13/2022	12/12/2023

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6.3 Radiated Measurement

Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	SCHWARZBECK	BBHA9170	184	12/30/2022	12/29/2023
Loop Antenna	ETS.LINDGREN	6502	148045	10/05/2022	10/04/2023
Horn Antenna	RF SPIN	DRH18-E	210303A18-ES	02/24/2023	02/23/2024
Bi-log Antenna	SCHWARZBECK	VULB9168	9168-1278	03/09/2023	03/08/2024
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60242392	12/20/2022	12/19/2023
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R
EMI Test Receiver	R&S	ESR 7	102525	02/18/2023	02/17/2024
Site Cal	SGS	SAC 2	N/A	08/31/2022	08/30/2023
Pre-Amplifier	EMCI	EMC184045B	980135	10/27/2022	10/26/2023
Pre-Amplifier	EMCI	EMC330N	980826	08/31/2022	08/30/2023
Pre-Amplifier	EMCI	EMC118A45SEE	980867	08/31/2022	08/30/2023
Attenuator	Mini-Circuit	BW-S10W2+	2	12/13/2022	12/12/2023
Bandreject Filter 5150-5350	Micro-Tronics	BRM50703	1	12/13/2022	12/12/2023
Bandreject Filter 5470-5725	Micro-Tronics	BRM50704	1	12/13/2022	12/12/2023
Bandreject Filter 5725-5875	Micro-Tronics	BRM50705	1	12/13/2022	12/12/2023
7GHz High Pass Filter	WI	WHKX7.0/18G-8SS	45	12/13/2022	12/12/2023
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2630/2	12/23/2022	12/22/2023
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY22962/2	12/23/2022	12/22/2023
Coaxial Cables	EMCI	EMCCFD400-NM-NM-10000	RX Cable below 1G (220238)	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC104-SM-SM-600	RX Cable below 1G (220237)	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-2000	RX Cable below 1G (220910)	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC104-SM-SM-10000	RX Cable above 1G (220236)	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-1000	RX Cable above 1G (201211)	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-1500	RX Cable above 1G (220906)	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-2000	RX Cable above 1G (220909)	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMCCFD400-NM-NM-10000	RX Cable below 30M (220238)	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-2000	RX Cable below 30M (220910)	08/31/2022	08/30/2023

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Radiated bandedge

Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Attenuator	Mini-Circuits	BW-S10W2+	23	12/12/2023	12/11/2024
Coaxial Cables	EMCI	EMC104-SM-SM-1000+EMC105-SM-SM-1000+EMC105-SM-SM-1500+EMC104-SM-SM-600+EMC105-SM-SM-2000	RX Cable 9K-18G (220236+201211+220906+220237+220909)	08/31/2023	08/30/2024
EXA Spectrum Analyzer	Agilent	N9010A	MY53400256	11/15/2023	11/14/2024
Horn Antenna	RF SPIN	DRH18-E	210303A18-ES	02/16/2024	02/15/2025
Pre-Amplifier	EMCI	EMC118A45SEE	980867	08/31/2023	08/30/2024
Site Cal	SGS	SAC 2	N/A	08/31/2023	08/30/2024
Test Software	Audix	e3	Ver. 9.210616	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 150 kHz to 30 MHz 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

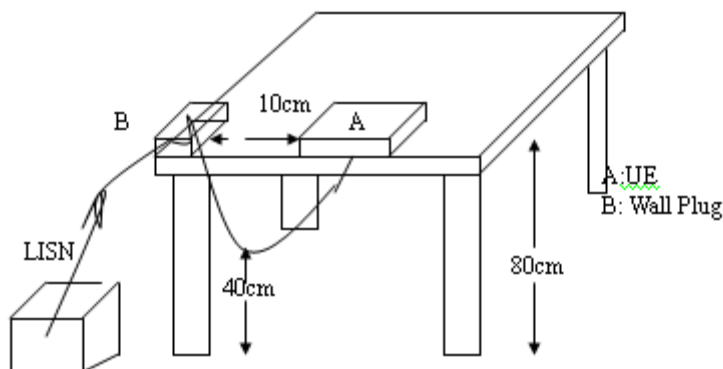
Note

- 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 SET-UP



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.

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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 :TERF2305001145ER

Test Site :Conduction 1

Operation Mode :WLAN5G

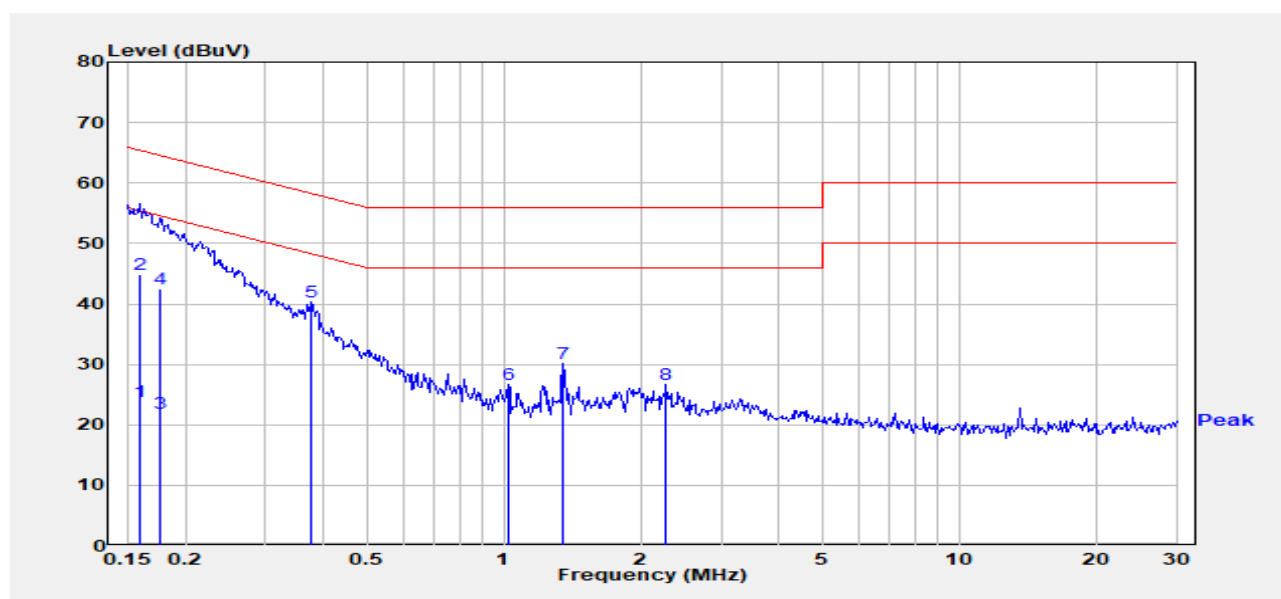
Test Date :2023-06-16

Power :120V/60Hz

Temp./Humi. :24.6°C/65%

Probe :L

Engineer :Ricky Chen



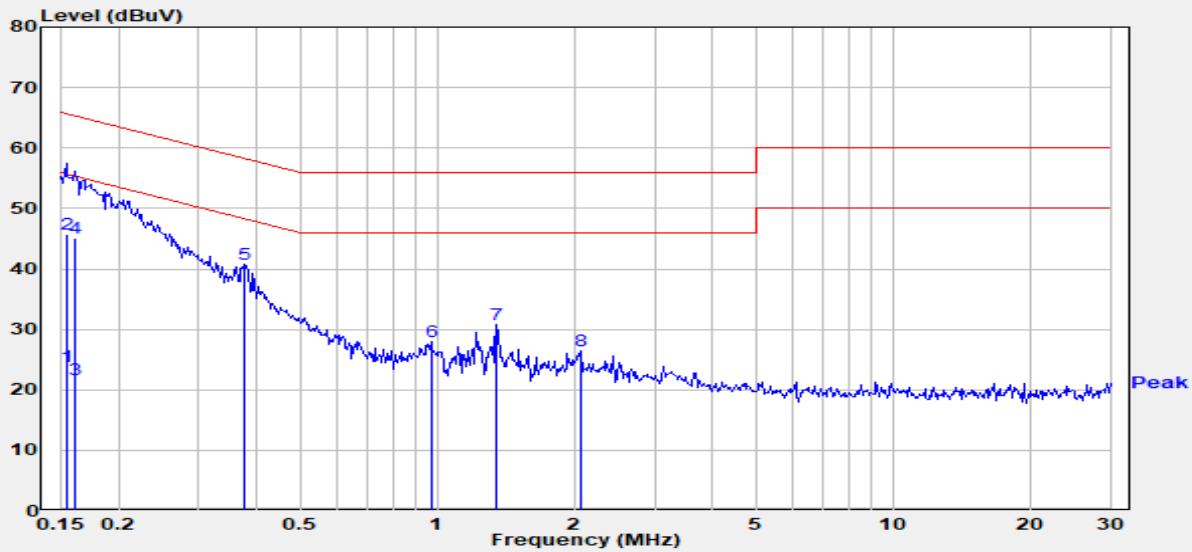
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.158	Average	13.63	10.25	23.88	55.55	-31.67
0.158	QP	34.69	10.25	44.94	65.55	-20.61
0.176	Average	11.64	10.25	21.89	54.66	-32.77
0.176	QP	32.26	10.25	42.51	64.66	-22.15
0.377	Peak	30.05	10.25	40.30	58.35	-18.05
1.023	Peak	16.35	10.38	26.74	56.00	-29.26
1.349	Peak	19.48	10.67	30.15	56.00	-25.85
2.273	Peak	15.60	11.00	26.60	56.00	-29.40

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Report Number :TERF2305001145ER
Operation Mode :WLAN5G
Power :120V/60Hz
Probe :N

Test Site :Conduction 1
Test Date :2023-06-16
Temp./Humi. :24.6°C/65%
Engineer :Ricky Chen



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.153	Average	13.67	10.25	23.92	55.81	-31.89
0.153	QP	35.55	10.25	45.80	65.81	-20.01
0.161	Average	11.34	10.25	21.59	55.43	-33.84
0.161	QP	34.87	10.25	45.12	65.43	-20.31
0.377	Peak	30.49	10.25	40.74	58.35	-17.61
0.969	Peak	17.53	10.36	27.88	56.00	-28.12
1.349	Peak	20.08	10.67	30.75	56.00	-25.25
2.073	Peak	15.37	11.06	26.43	56.00	-29.57

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8 MAXIMUM CONDUCTED 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.

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8.1.2 FCC

Band	EUT CATEGORY		e-CRF Title 47 §15.407			
			Conducted Output Power	EIRP	TPC	Antenna Directional Gain Requirements
U-NII-1		Fixed point-to-point	1 Watt(30dBm)	Not required	Not required	23dBi
		Outdoor AP	1 Watt(30dBm)	Elevation angle above 30 degrees 125mW (21dBm)	Not required	6dBi
		Indoor AP	1 Watt(30dBm)	Not required	Not required	6dBi
	V	Other	250mW(23.98dBm)	Not required	Not required	6dBi
U-NII-2A	V	Other	250mW(23.98dBm) or 11dBm+10 log B	Not required	When EIRP >500mW At least 6dB below EIRP 1W (30dBm)	6dBi
U-NII-2C	V	Other	250mW(23.98dBm) or 11dBm+10 log B	Not required		6dBi
U-NII-3	V	Other	1 Watt(30dBm)	Not required	Not required	6dBi
		Fixed point-to-point	1 Watt(30dBm)	Not required	Not required	Not required
U-NII-4		Indoor AP (a channel spans 5725~5850 and 5850~5895MHz)	Not required	36dBm	Not required	Not required
		indoor client (a channel spans 5725~5850 and 5850~5895MHz)	Not required	30dBm	Not required	Not required
		subordinate device	Not required	36dBm	Not required	Not required

1. If transmitting antennas of directional gain greater than the antenna requirements column, the Maximum transmit power shall be reduced by the amount in dB that the direction-al gain of the antenna.

2. For the 10 log B, B is the 26 dB emission bandwidth.

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8.1.3 ISED

FREQUENCY BAND (MHz)	EUT CATEGORY		RSS-247 §6.2.1~6.2.4		
			EIRP	Conducted Output Power	TPC
5150~5250		OEM devices installed in vehicles	30 mW or $1.76 + 10 \log_{10} B$	N/A	At least 3dB below 30mW EIRP
	V	Other device	200 mW or $10 + 10 \log_{10} B$ dBm	N/A	N/A
5250~5350		OEM devices installed in vehicles	30 mW or $1.76 + 10 \log_{10} B$	N/A	At least 3dB below 30mW EIRP
	V	Other device	1.0 W or $17 + 10 \log_{10} B$ dBm	250 mW or $11 + 10 \log_{10} B$	EIRP >500mW, at least 6dB below 1W EIRP
		Outdoor Fixed with EIRP>200mW	$-13 \text{ dBW/MHz for } 0^\circ \leq \theta < 8^\circ$ $-13 - 0.716 (\theta - 8) \text{ dBW/MHz for } 8^\circ \leq \theta < 40^\circ$ $-35.9 - 1.22 (\theta - 40) \text{ dBW/MHz for } 40^\circ \leq \theta \leq 45^\circ$ $-42 \text{ dBW/MHz for } \theta > 45^\circ$	N/A	EIRP >500mW, at least 6dB below 1W EIRP
5470-5600 and 5650-5725	V	All	1.0 W or $17 + 10 \log_{10} B$ dBm	250 mW or $11 + 10 \log_{10} B$	EIRP >500mW, at least 6dB below 1W EIRP
5725~5850	V	All	N/A	1 W	N/A

1 For equipment operating in the band 5725-5850 MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

2. For the $10 \log B$, B is the 99% emission bandwidth.

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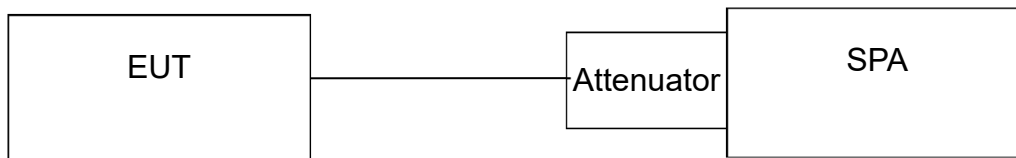
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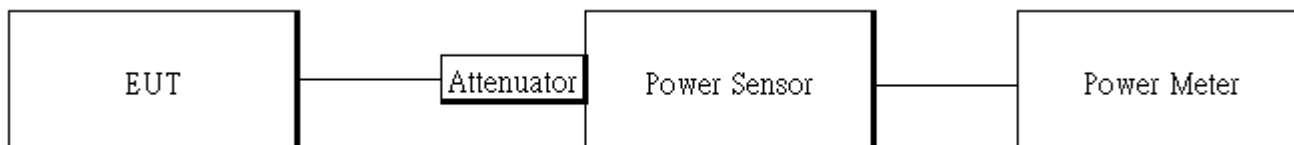
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8.2 Test Setup

8.2.1 Duty Cycle



8.2.2 Output Power



8.3 Measurement Procedure

8.3.1 Duty Cycle Measurements

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

8.3.2 Output Power Measurements

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
5. Record the max. reading and add $10 \log(1/\text{duty cycle})$.
6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.
7. 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:

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.

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

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 10Gk 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 greater than 6 dBi, therefore the power limit has been attenuated accordingly.

8.4 Duty Cycle Measurement Result

WLAN 5GHz for FCC

Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	99.15	0.04	0.48	0.01
802.11n_20	99.67	0.01	0.18	0.01
802.11ac_20	99.71	0.01	0.18	0.01
802.11n_40	99.71	0.01	0.18	0.01
802.11ac_40	99.71	0.01	0.18	0.01
802.11ac_80	99.71	0.01	0.18	0.01
802.11ac_160	99.36	0.03	0.40	0.01
802.11ax_20	99.71	0.01	0.18	0.01
802.11ax_40	99.71	0.01	0.18	0.01
802.11ax_80	99.71	0.01	0.18	0.01
802.11ax_160	99.71	0.01	0.18	0.01

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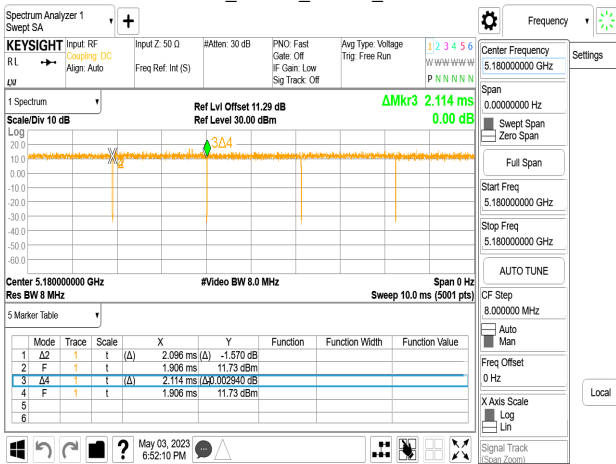
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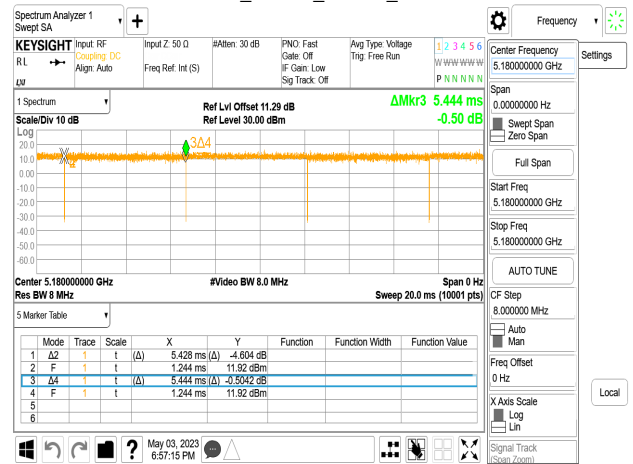
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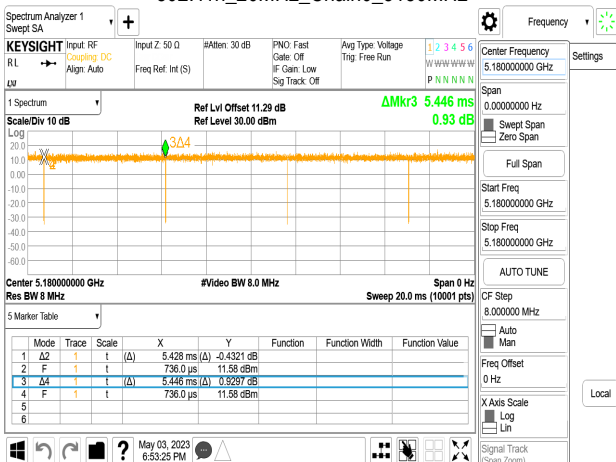
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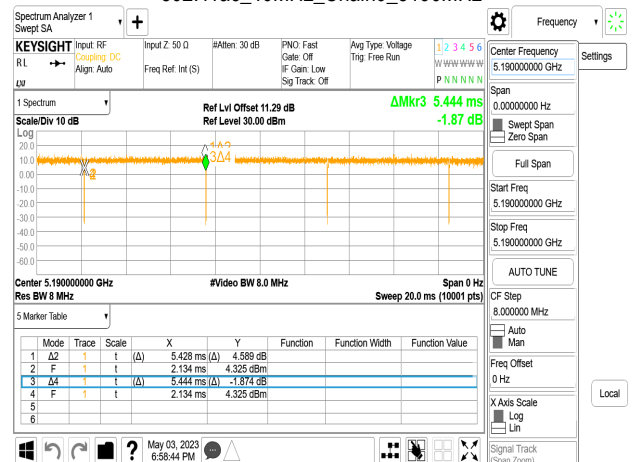
802.11ac_20MHz_Chain0_5180MHz



802.11n_20MHz_Chain0_5180MHz



802.11ac_40MHz_Chain0_5190MHz



802.11n_40MHz_Chain0_5190MHz



802.11ac_80MHz_Chain0_5210MHz



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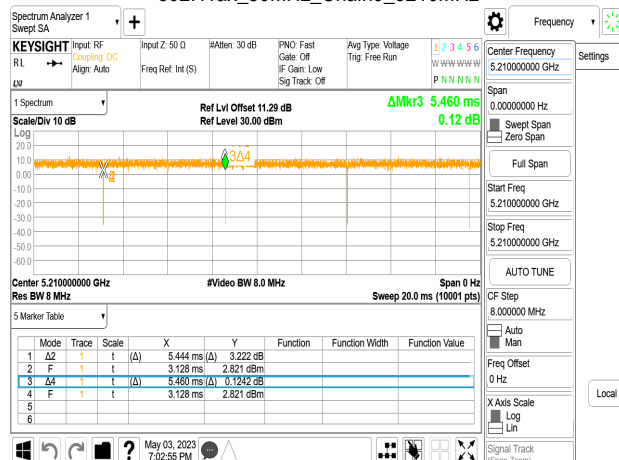
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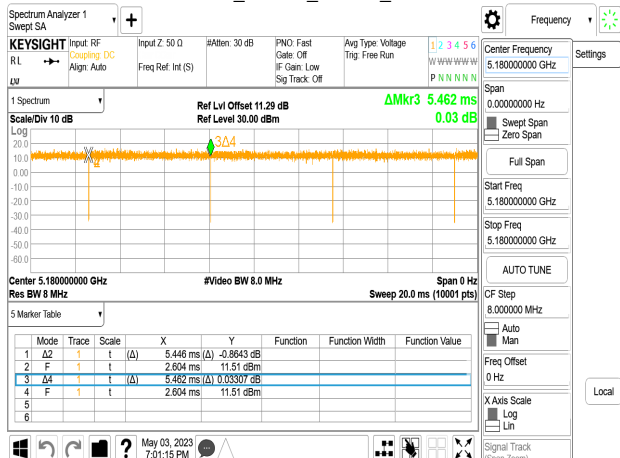
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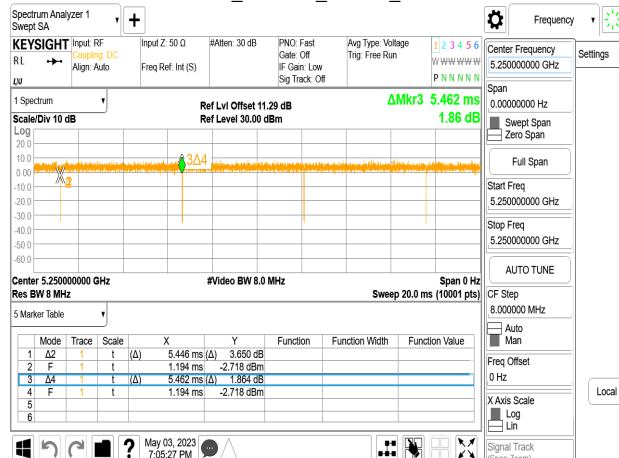
802.11ax_80MHz_Chain0_5210MHz



802.11ax_20MHz_Chain0_5180MHz



802.11ax_160MHz_Chain0_5250MHz



802.11ax_40MHz_Chain0_5190MHz



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Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	99.20	0.03	0.51	0.01
802.11n_20	99.66	0.01	0.19	0.01
802.11ac_20	99.66	0.01	0.19	0.01
802.11n_40	99.70	0.01	0.19	0.01
802.11ac_40	99.70	0.01	0.19	0.01
802.11ac_80	99.65	0.02	0.22	0.01
802.11ax_20	99.70	0.01	0.19	0.01
802.11ax_40	99.71	0.01	0.18	0.01
802.11ax_80	99.57	0.02	0.27	0.01

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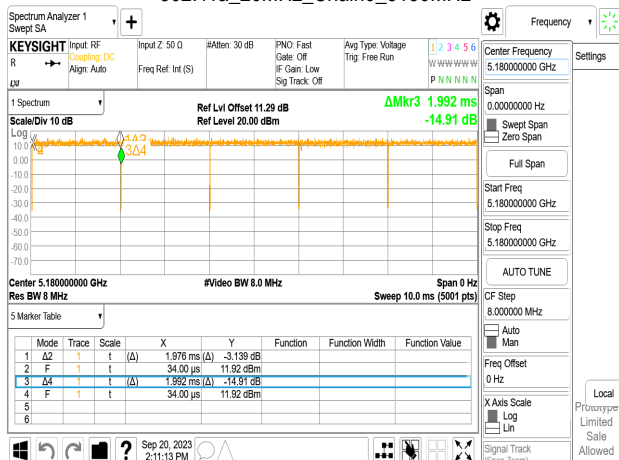
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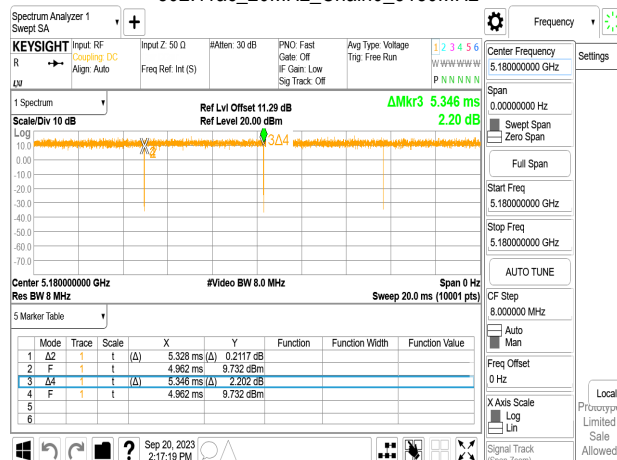
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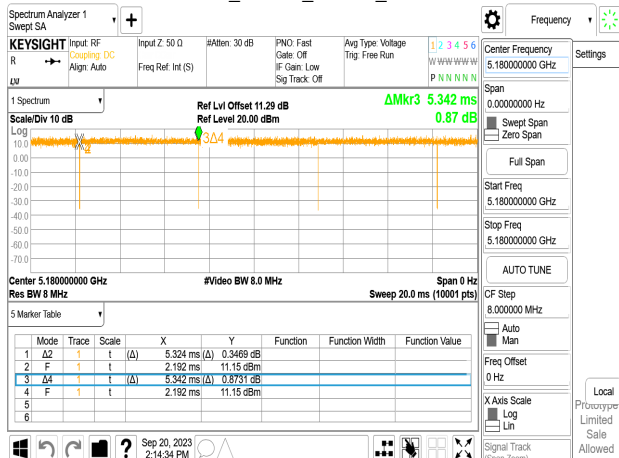
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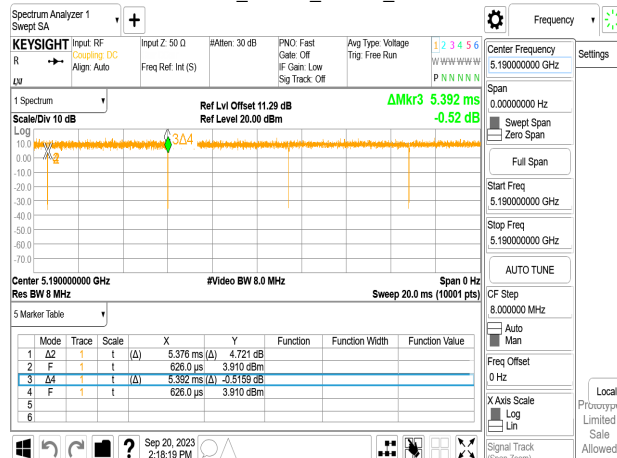
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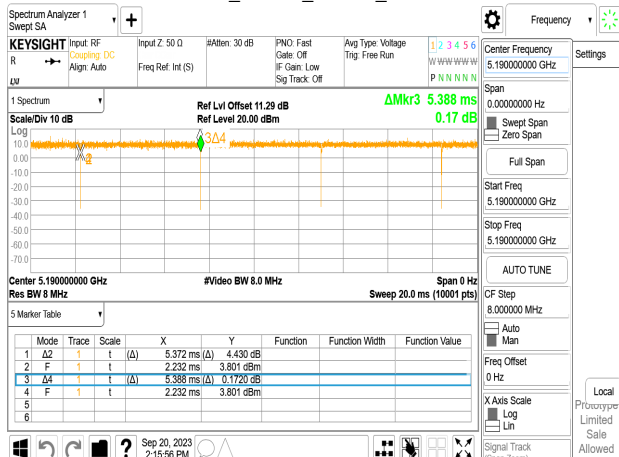
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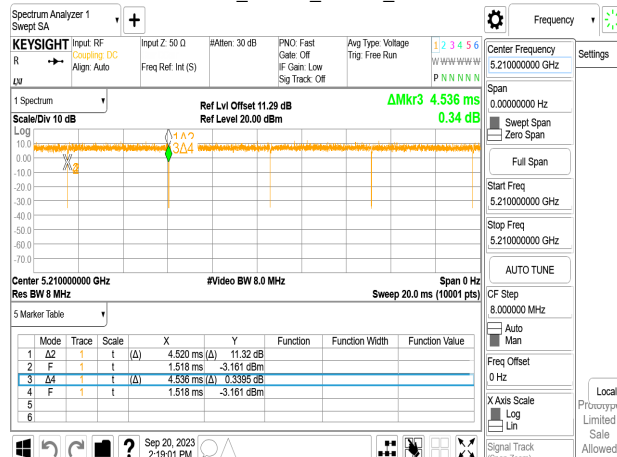
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802.11n_40MHz_Chain0_5190MHz



802.11ac_80MHz_Chain0_5210MHz

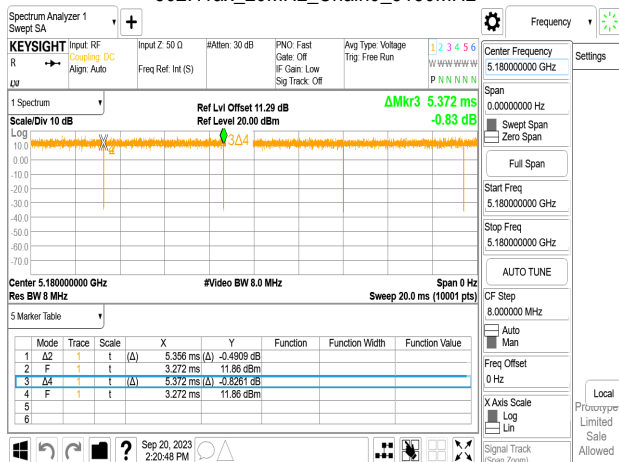


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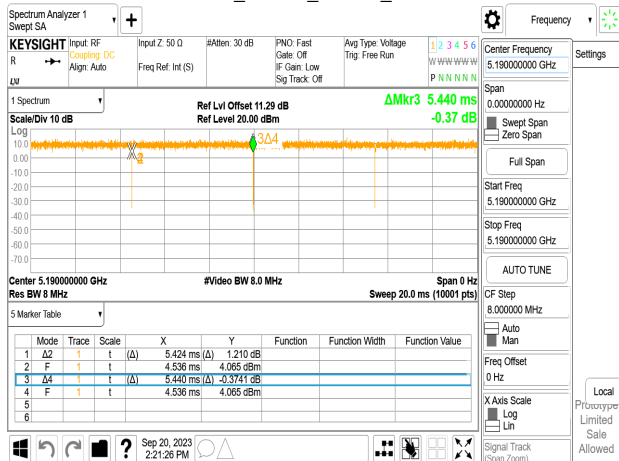
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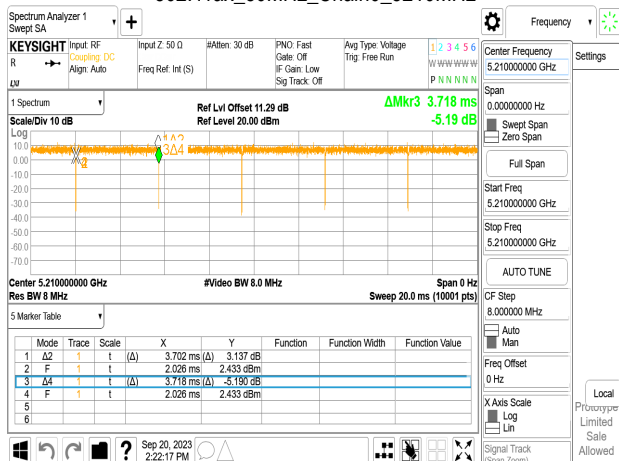
802.11ax_20MHz_Chain0_5180MHz



802.11ax_40MHz_Chain0_5190MHz



802.11ax_80MHz_Chain0_5210MHz



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8.5 Output Power Measurement Result

8.5.1 FCC Output power

802.11a_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	6	13.5	13.09	13.88	16.51	44.775	23.75	PASS
44	5220	6	20	19.53	18.72	22.15	164.105	23.75	PASS
48	5240	6	20	19.49	18.46	22.01	158.958	23.75	PASS
52	5260	6	20	19.55	18.68	22.14	163.837	23.06	PASS
60	5300	6	20	19.43	18.55	22.02	159.207	23.06	PASS
64	5320	6	15	14.00	14.58	17.31	53.790	23.06	PASS
100	5500	6	13.5	13.17	13.76	16.48	44.488	22.69	PASS
116	5580	6	17.5	17.76	17.09	20.45	110.797	22.69	PASS
140	5700	6	15	14.65	15.20	17.94	62.245	22.69	PASS
144	5720(U-NII 2C)	6	17	15.34	15.81	18.59	72.346	22.54	PASS
144	5720 (U-NII 3)	6	17	10.10	10.85	13.50	22.403	29.07	PASS
149	5745	6	19	18.93	18.48	21.72	148.532	29.07	PASS
157	5785	6	22.5	18.60	18.66	21.64	145.797	29.07	PASS
165	5825	6	19.5	18.71	18.66	21.69	147.654	29.07	PASS
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
				CH 0	CH 1				
169	5845	6	12.5	12.91	12.21	15.58	23.471	30	PASS
173	5865	6	12.5	13.00	12.33	15.69	23.575	30	PASS
177	5885	6	13.5	12.85	13.65	16.28	24.166	30	PASS

802.11n_HT20_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS0	12	11.28	12.29	14.83	30.402	23.75	PASS
44	5220	MCS0	18	17.57	16.72	20.18	104.242	23.75	PASS
48	5240	MCS0	18	17.62	16.87	20.28	106.557	23.75	PASS
52	5260	MCS0	18	17.43	16.72	20.10	102.427	23.06	PASS
60	5300	MCS0	18	17.59	16.84	20.25	105.824	23.06	PASS
64	5320	MCS0	14.5	13.30	13.62	16.48	44.439	23.06	PASS
100	5500	MCS0	13	12.30	13.25	15.82	38.156	22.69	PASS
116	5580	MCS0	17	17.09	16.38	19.76	94.714	22.69	PASS
140	5700	MCS0	12	11.52	12.09	14.83	30.402	22.69	PASS
144	5720(U-NII 2C)	MCS0	17	14.89	15.42	18.18	65.702	22.69	PASS
144	5720 (U-NII 3)	MCS0	17	10.06	10.66	13.38	21.763	29.07	PASS
149	5745	MCS0	18	17.02	17.69	20.38	109.208	29.07	PASS
157	5785	MCS0	18	17.79	16.88	20.37	108.979	29.07	PASS
165	5825	MCS0	18	17.09	17.30	20.21	104.977	29.07	PASS
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
				CH 0	CH 1				
169	5845	MCS0	13.5	13.48	12.95	16.24	24.128	30	PASS
173	5865	MCS0	13.5	13.62	12.90	16.29	24.180	30	PASS
177	5885	MCS0	14	12.96	13.62	16.32	24.207	30	PASS

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802.11n_HT40_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS0	10	9.88	10.58	13.26	21.169	23.75	PASS
46	5230	MCS0	17.5	17.47	16.78	20.15	103.552	23.75	PASS
54	5270	MCS0	17.5	17.25	16.55	19.93	98.333	23.06	PASS
62	5310	MCS0	11	10.42	10.73	13.59	22.860	23.06	PASS
102	5510	MCS0	10.5	9.97	10.20	13.10	20.415	22.69	PASS
110	5550	MCS0	17	17.36	16.53	19.98	99.488	22.69	PASS
134	5670	MCS0	15	14.73	14.93	17.84	60.870	22.69	PASS
142	5710(U-NII 2C)	MCS0	16	15.25	15.33	18.30	67.581	22.69	PASS
142	5710 (U-NII 3)	MCS0	16	6.58	6.43	9.52	8.943	29.07	PASS
151	5755	MCS0	17	16.35	16.86	19.63	91.736	29.07	PASS
159	5795	MCS0	17.5	16.78	17.14	19.98	99.464	29.07	PASS
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
				CH 0	CH 1				
167	5835	MCS0	16	16.10	15.62	18.88	26.770	30	PASS
175	5875	MCS0	16	15.69	15.72	18.72	26.608	30	PASS

802.11ac_VHT20_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS0	12	11.23	12.27	14.79	30.158	23.75	PASS
44	5220	MCS0	18	17.54	16.66	20.14	103.161	23.75	PASS
48	5240	MCS0	18	17.58	16.83	20.23	105.538	23.75	PASS
52	5260	MCS0	18	17.39	16.66	20.05	101.233	23.06	PASS
60	5300	MCS0	18	17.52	16.79	20.18	104.309	23.06	PASS
64	5320	MCS0	14.5	13.22	13.52	16.39	43.506	23.06	PASS
100	5500	MCS0	13	12.20	13.22	15.75	37.608	22.69	PASS
116	5580	MCS0	17	17.05	16.35	19.73	93.907	22.69	PASS
140	5700	MCS0	12	11.49	12.03	14.78	30.070	22.69	PASS
144	5720(U-NII 2C)	MCS0	17	14.87	15.25	18.08	64.196	22.69	PASS
144	5720 (U-NII 3)	MCS0	17	10.04	10.48	13.28	21.262	29.07	PASS
149	5745	MCS0	18	16.97	17.46	20.23	105.556	29.07	PASS
157	5785	MCS0	18	17.77	16.86	20.35	108.435	29.07	PASS
165	5825	MCS0	18	17.07	17.17	20.13	103.115	29.07	PASS
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
				CH 0	CH 1				
169	5845	MCS0	13.5	13.42	12.91	16.19	24.075	30	PASS
173	5865	MCS0	13.5	13.58	12.84	16.24	24.129	30	PASS
177	5885	MCS0	14	12.87	13.60	16.26	24.153	30	PASS

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802.11ac_VHT40_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS0	10	9.66	10.26	12.98	19.876	23.75	PASS
46	5230	MCS0	17.5	17.44	16.74	20.12	102.731	23.75	PASS
54	5270	MCS0	17.5	17.22	16.51	19.89	97.553	23.06	PASS
62	5310	MCS0	11	10.37	10.59	13.49	22.358	23.06	PASS
102	5510	MCS0	10	9.83	10.15	13.01	19.980	22.69	PASS
110	5550	MCS0	17	17.31	16.49	19.93	98.452	22.69	PASS
134	5670	MCS0	15	14.72	14.75	17.75	59.538	22.69	PASS
142	5710(U-NII 2C)	MCS0	16	15.24	15.14	18.20	66.044	22.69	PASS
142	5710 (U-NII 3)	MCS0	16	6.57	6.24	9.42	8.745	29.07	PASS
151	5755	MCS0	17	16.24	16.72	19.50	89.116	29.07	PASS
159	5795	MCS0	17.5	16.77	17.07	19.94	98.526	29.07	PASS
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
				CH 0	CH 1				
167	5835	MCS0	16	16.05	15.58	18.83	26.724	30	PASS
175	5875	MCS0	16	15.62	15.70	18.67	26.563	30	PASS

802.11ac_VHT80_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
42	5210	MCS0	11	10.54	11.17	13.88	24.431	23.75	PASS
58	5290	MCS0	11.5	10.62	11.68	14.20	26.273	23.06	PASS
106	5530	MCS0	10	9.83	10.10	12.98	19.861	22.69	PASS
122	5610	MCS0	15	14.94	14.87	17.92	61.916	22.69	PASS
138	5690(U-NII 2C)	MCS0	16	15.31	15.48	18.40	69.250	22.69	PASS
138	5690 (U-NII 3)	MCS0	16	3.65	3.75	6.71	4.689	29.07	PASS
155	5775	MCS0	14.5	13.54	14.36	16.98	49.914	29.07	PASS
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
				CH 0	CH 1				
171	5855	MCS0	17	16.38	16.49	19.45	27.338	30	PASS

802.11ac_VHT160_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
50	5250	MCS0	7	6.10	7.12	9.65	9.222	23.06	PASS
114	5570	MCS0	6.5	6.19	6.79	9.51	8.930	22.69	PASS
CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
				CH 0	CH 1				
163	5815	MCS0	12	10.81	11.92	14.41	22.299	30.00	PASS

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802.11ax_HE20_2TX

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
					Ch0	Ch1				
36	5180	MCS0	full	12	11.32	12.30	14.85	30.553	23.75	PASS
		MCS0	26/0	8.5	8.96	9.56	12.28	16.917	23.75	PASS
		MCS0	52/37	11	11.02	11.86	14.47	28.010	23.75	PASS
		MCS0	106/53	11	10.89	11.78	14.37	27.357	23.75	PASS
44	5220	MCS0	full	18	17.66	16.92	20.32	107.613	23.75	PASS
		MCS0	26/0	12	12.29	12.46	15.39	34.584	23.75	PASS
		MCS0	52/37	14.5	14.29	14.76	17.54	56.810	23.75	PASS
		MCS0	106/53	16	15.23	15.93	18.61	72.560	23.75	PASS
48	5240	MCS0	full	18	17.67	16.98	20.35	108.433	23.75	PASS
		MCS0	26/0	12	12.32	12.42	15.38	34.540	23.75	PASS
		MCS0	52/37	14.5	14.28	14.78	17.55	56.887	23.75	PASS
		MCS0	106/53	16	15.32	16.04	18.71	74.265	23.75	PASS
52	5260	MCS0	full	18	17.53	16.83	20.21	104.882	23.06	PASS
		MCS0	26/0	11.5	11.55	11.80	14.69	29.442	23.06	PASS
		MCS0	52/37	15	14.37	14.90	17.66	58.291	23.06	PASS
		MCS0	106/53	17	15.65	16.28	18.99	79.238	23.06	PASS
60	5300	MCS0	full	18.5	17.99	16.89	20.49	111.883	23.06	PASS
		MCS0	26/0	12	12.30	12.47	15.40	34.664	23.06	PASS
		MCS0	52/37	14.5	14.14	14.84	17.52	56.455	23.06	PASS
		MCS0	106/53	16.5	15.72	16.20	18.98	79.060	23.06	PASS
64	5320	MCS0	full	14	13.03	13.48	16.27	42.401	23.06	PASS
		MCS0	26/8	9.5	9.07	9.93	12.53	17.923	23.06	PASS
		MCS0	52/40	13	12.17	13.19	15.72	37.349	23.06	PASS
		MCS0	106/54	13	12.20	13.04	15.65	36.755	23.06	PASS
100	5500	MCS0	full	13	12.50	12.98	15.76	37.666	22.69	PASS
		MCS0	26/0	8.5	9.10	9.54	12.34	17.134	22.69	PASS
		MCS0	52/37	10.5	10.72	11.43	14.10	25.718	22.69	PASS
		MCS0	106/53	10	10.05	10.94	13.53	22.546	22.69	PASS
116	5580	MCS0	full	17.5	17.62	16.93	20.30	107.191	22.69	PASS
		MCS0	26/0	10	10.63	10.82	13.74	23.653	22.69	PASS
		MCS0	52/37	12.5	12.74	12.95	15.86	38.541	22.69	PASS
		MCS0	106/53	16	15.73	16.19	18.98	79.050	22.69	PASS
140	5700	MCS0	full	12	11.57	12.12	14.87	30.666	22.69	PASS
		MCS0	26/8	7	7.15	8.24	10.74	11.863	22.69	PASS
		MCS0	52/40	8.5	8.13	9.75	12.03	15.951	22.69	PASS
		MCS0	106/54	7.5	7.37	8.42	10.94	12.415	22.69	PASS
144	5720(U-NII 2C)	MCS0	full	17	14.98	15.40	18.21	66.191	22.69	PASS
		MCS0	26/0	12.5	11.86	11.95	14.92	31.033	22.69	PASS
		MCS0	52/37	15.5	14.19	14.30	17.26	53.190	22.69	PASS
		MCS0	106/53	15.5	13.24	13.99	16.64	46.175	22.69	PASS
144	5720 (U-NII 3)	MCS0	full	17	10.33	10.83	13.60	22.903	29.07	PASS
		MCS0	26/0	12.5	7.21	7.38	10.31	10.734	29.07	PASS
		MCS0	52/37	15.5	9.54	9.73	12.65	18.398	29.07	PASS
		MCS0	106/53	15.5	8.59	9.42	12.04	15.983	29.07	PASS
149	5745	MCS0	full	18	17.09	17.59	20.36	108.645	29.07	PASS
		MCS0	26/0	14	14.04	14.97	17.54	56.791	29.07	PASS
		MCS0	52/37	13.5	13.47	14.30	16.92	49.178	29.07	PASS
		MCS0	106/53	15	14.39	15.52	18.00	63.162	29.07	PASS
157	5785	MCS0	full	18	17.74	16.74	20.28	106.700	29.07	PASS
		MCS0	26/0	21	16.12	15.53	18.85	76.699	29.07	PASS
		MCS0	52/37	21	16.08	15.42	18.78	75.430	29.07	PASS
		MCS0	106/53	15.5	14.57	15.06	17.83	60.741	29.07	PASS
165	5825	MCS0	full	18	17.35	17.60	20.49	111.936	29.07	PASS
		MCS0	26/8	15.5	15.59	15.83	18.72	74.552	29.07	PASS
		MCS0	52/40	15	14.23	15.22	17.77	59.787	29.07	PASS
		MCS0	106/54	15	14.34	15.00	17.70	58.823	29.07	PASS
CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
					CH 0	CH 1				
169	5845	MCS0	full	13.5	13.62	13.17	16.41	24.304	30	PASS
		MCS0	26/9	5	5.85	5.65	8.76	16.654	30	PASS
		MCS0	52/41	8.5	9.15	8.77	11.98	19.867	30	PASS
		MCS0	106/55	11.5	11.48	11.98	14.75	22.640	30	PASS
173	5865	MCS0	full	13.5	13.69	13.17	16.45	24.341	30	PASS
		MCS0	26/10	5.5	6.29	6.17	9.24	17.133	30	PASS
		MCS0	52/42	8	8.91	8.52	11.73	19.622	30	PASS
		MCS0	106/56	11.5	11.60	12.05	14.84	22.734	30	PASS
177	5885	MCS0	full	14	13.02	13.62	16.34	24.233	30	PASS
		MCS0	26/11	5.5	5.38	6.22	8.83	16.723	30	PASS
		MCS0	52/43	8.5	8.02	9.35	11.75	19.639	30	PASS
		MCS0	106/57	11.5	10.97	12.00	14.53	22.418	30	PASS

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CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
					Ch0	Ch1				
38	5190	MCS0	full	10.5	9.83	10.70	13.30	21.378	23.75	PASS
		MCS0	242/61	10.5	6.05	6.72	9.41	8.731	23.75	PASS
46	5230	MCS0	full	18	17.54	16.82	20.21	104.901	23.75	PASS
		MCS0	242/61	16	15.47	15.97	18.74	74.819	23.75	PASS
54	5270	MCS0	full	17.5	16.95	16.29	19.65	92.160	23.06	PASS
		MCS0	242/61	16	15.33	15.89	18.63	72.978	23.75	PASS
62	5310	MCS0	full	11.5	10.35	10.93	13.66	23.241	23.06	PASS
		MCS0	242/62	8.5	3.13	3.26	6.21	4.177	23.06	PASS
102	5510	MCS0	full	11	10.18	10.75	13.49	22.322	22.69	PASS
		MCS0	242/61	8	3.29	3.35	6.33	4.298	22.69	PASS
110	5550	MCS0	full	17	17.04	16.22	19.66	92.517	22.69	PASS
		MCS0	242/61	12.5	12.74	13.44	16.12	40.898	22.69	PASS
134	5670	MCS0	full	15	14.53	14.56	17.56	56.989	22.69	PASS
		MCS0	242/62	7	2.78	2.20	5.51	3.558	22.69	PASS
142	5710(U-NII 2C)	MCS0	full	16	15.05	15.12	18.10	64.527	22.69	PASS
		MCS0	242/61	14.5	13.81	14.15	17.00	50.067	22.69	PASS
142	5710 (U-NII 3)	MCS0	full	16	6.52	6.52	9.53	8.976	29.07	PASS
		MCS0	242/61	14.5	5.28	5.55	8.43	6.963	29.07	PASS
151	5755	MCS0	full	17.5	16.42	16.98	19.72	93.798	29.07	PASS
		MCS0	242/61	12	7.03	7.44	10.25	10.599	29.07	PASS
159	5795	MCS0	full	17.5	16.46	16.99	19.75	94.319	29.07	PASS
		MCS0	242/62	12.5	7.29	7.33	10.32	10.772	29.07	PASS
CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
					CH 0	CH 1				
167	5835	MCS0	full	16.5	16.22	15.72	18.99	26.880	30	PASS
		MCS0	242/61	14	13.93	14.01	16.98	24.873	30	PASS
175	5875	MCS0	full	16.5	15.90	15.80	18.86	26.753	30	PASS
		MCS0	242/62	19	14.23	13.69	16.98	24.871	30	PASS

802.11ax_HE80_2TX

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
					Ch0	Ch1				
42	5210	MCS0	full	11	10.25	10.78	13.54	22.574	23.75	PASS
		MCS0	484/65	7.5	7.46	8.06	10.78	11.976	23.75	PASS
58	5290	MCS0	full	11.5	10.45	11.50	14.02	25.232	23.06	PASS
		MCS0	484/66	10	9.28	10.20	12.78	18.955	23.06	PASS
106	5530	MCS0	full	10	9.64	9.93	12.80	19.056	22.69	PASS
		MCS0	484/65	8	8.31	8.87	11.61	14.494	22.69	PASS
122	5610	MCS0	full	15	14.72	14.57	17.66	58.325	22.69	PASS
		MCS0	484/66	8	8.16	8.52	11.36	13.667	22.69	PASS
138	5690(U-NII 2C)	MCS0	full	16.5	15.59	15.71	18.66	73.518	22.69	PASS
		MCS0	484/66	16.5	15.58	15.69	18.65	73.264	22.69	PASS
138	5690 (U-NII 3)	MCS0	full	16.5	4.14	4.38	7.27	5.339	29.07	PASS
		MCS0	484/66	16.5	4.13	4.36	7.26	5.320	29.07	PASS
155	5775	MCS0	full	14.5	13.48	14.42	16.99	49.984	29.07	PASS
		MCS0	484/65	7.5	7.47	8.52	11.04	12.704	29.07	PASS
		MCS0	484/66	7.5	6.98	8.18	10.63	11.572	29.07	PASS
CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
					CH 0	CH 1				
171	5855	MCS0	full	17	16.38	16.53	19.47	27.359	30	PASS
		MCS0	484/65	16.5	16.39	16.50	19.46	27.348	30	PASS
		MCS0	484/66	17	16.36	16.38	19.38	27.273	30	PASS

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802.11ax_HE160_2TX

CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
					Ch0	Ch1				
50	5250	MCS0	full	7	6.09	7.19	9.69	9.306	23.06	PASS
		MCS0	996/67	5.5	5.28	6.09	8.72	7.442	23.06	PASS
		MCS0	996/S67	5	4.66	5.43	8.07	6.419	23.06	PASS
114	5570	MCS0	full	6	5.85	6.49	9.19	8.307	22.69	PASS
		MCS0	996/67	1	2.11	2.40	5.27	3.365	22.69	PASS
		MCS0	996/S67	1	1.32	1.35	4.35	2.721	22.69	PASS
CH	Frequency (MHz)	Data Rate	RU config.	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
					CH 0	CH 1				
163	5815	MCS0	full	12	10.62	11.96	14.35	22.244	30	PASS
		MCS0	484/65	10.5	10.51	11.53	14.06	21.953	30	PASS
		MCS0	484/66	12	10.60	11.67	14.18	22.071	30	PASS

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8.5.2 ISED Conducted output power and EIRP

Output power

802.11a_2TX

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		Ch0	Ch1				
52	5260	19.55	18.68	22.14	163.837	23.98	PASS
60	5300	19.43	18.55	22.02	159.207	23.98	PASS
64	5320	14.00	14.58	17.31	53.790	23.98	PASS
100	5500	13.17	13.76	16.48	44.488	23.98	PASS
116	5580	17.76	17.09	20.45	110.797	23.98	PASS
140	5700	14.65	15.20	17.94	62.245	23.98	PASS
144	5720(U-NII 2C)	15.34	15.81	18.59	72.346	23.98	PASS
144	5720 (U-NII 3)	10.10	10.85	13.50	22.403	29.07	PASS
149	5745	18.93	18.48	21.72	148.532	29.07	PASS
157	5785	18.60	18.66	21.64	145.797	29.07	PASS
165	5825	18.71	18.66	21.69	147.654	29.07	PASS

802.11n_HT20_2TX

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		Ch0	Ch1				
52	5260	17.43	16.72	20.10	102.427	23.98	PASS
60	5300	17.59	16.84	20.25	105.824	23.98	PASS
64	5320	13.30	13.62	16.48	44.439	23.98	PASS
100	5500	12.30	13.25	15.82	38.156	23.98	PASS
116	5580	17.09	16.38	19.76	94.714	23.98	PASS
140	5700	11.52	12.09	14.83	30.402	23.98	PASS
144	5720(U-NII 2C)	14.89	15.42	18.18	65.702	23.98	PASS
144	5720 (U-NII 3)	10.06	10.66	13.38	21.763	29.07	PASS
149	5745	17.02	17.69	20.38	109.208	29.07	PASS
157	5785	17.79	16.88	20.37	108.979	29.07	PASS
165	5825	17.09	17.30	20.21	104.977	29.07	PASS

802.11n_HT40_2TX

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		Ch0	Ch1				
54	5270	17.25	16.55	19.93	98.333	23.98	PASS
62	5310	10.42	10.73	13.59	22.860	23.98	PASS
102	5510	9.97	10.20	13.10	20.415	23.98	PASS
110	5550	17.36	16.53	19.98	99.488	23.98	PASS
134	5670	14.73	14.93	17.84	60.870	23.98	PASS
142	5710(U-NII 2C)	15.25	15.33	18.30	67.581	23.98	PASS
142	5710 (U-NII 3)	6.58	6.43	9.52	8.943	29.07	PASS
151	5755	16.35	16.86	19.63	91.736	29.07	PASS
159	5795	16.78	17.14	19.98	99.464	29.07	PASS

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802.11ac_VHT20_2TX

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		Ch0	Ch1				
52	5260	17.39	16.66	20.05	101.233	23.98	PASS
60	5300	17.52	16.79	20.18	104.309	23.98	PASS
64	5320	13.22	13.52	16.39	43.506	23.98	PASS
100	5500	12.20	13.22	15.75	37.608	23.98	PASS
116	5580	17.05	16.35	19.73	93.907	23.98	PASS
140	5700	11.49	12.03	14.78	30.070	23.98	PASS
144	5720(U-NII 2C)	14.87	15.25	18.08	64.196	23.98	PASS
144	5720 (U-NII 3)	10.04	10.48	13.28	21.262	29.07	PASS
149	5745	16.97	17.46	20.23	105.556	29.07	PASS
157	5785	17.77	16.86	20.35	108.435	29.07	PASS
165	5825	17.07	17.17	20.13	103.115	29.07	PASS

802.11ac_VHT40_2TX

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		Ch0	Ch1				
54	5270	17.22	16.51	19.89	97.553	23.98	PASS
62	5310	10.37	10.59	13.49	22.358	23.98	PASS
102	5510	9.83	10.15	13.01	19.980	23.98	PASS
110	5550	17.31	16.49	19.93	98.452	23.98	PASS
134	5670	14.72	14.75	17.75	59.538	23.98	PASS
142	5710(U-NII 2C)	15.24	15.14	18.20	66.044	23.98	PASS
142	5710 (U-NII 3)	6.57	6.24	9.42	8.745	29.07	PASS
151	5755	16.24	16.72	19.50	89.116	29.07	PASS
159	5795	16.77	17.07	19.94	98.526	29.07	PASS

802.11ac_VHT80_2TX

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		Ch0	Ch1				
58	5290	10.62	11.68	14.20	26.273	23.98	PASS
106	5530	9.83	10.10	12.98	19.861	23.98	PASS
138	5710(U-NII 2C)	15.31	15.48	18.40	69.250	23.98	PASS
138	5690 (U-NII 3)	3.65	3.75	6.71	4.689	29.07	PASS
155	5775	13.54	14.36	16.98	49.914	29.07	PASS

802.11ac_VHT160_2TX

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		Ch0	Ch1				
50	5250	6.10	7.12	9.65	9.222	23.98	PASS

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802.11ax_HE20_2TX

CH	Frequency (MHz)	RU config.	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			Ch0	Ch1				
52	5260	full	17.53	16.83	20.21	104.882	23.98	PASS
		26/0	11.55	11.80	14.69	29.442	23.98	PASS
		52/37	14.37	14.90	17.66	58.291	23.98	PASS
		106/53	15.65	16.28	18.99	79.238	23.98	PASS
60	5300	full	17.99	16.89	20.49	111.883	23.98	PASS
		26/0	12.30	12.47	15.40	34.664	23.98	PASS
		52/37	14.14	14.84	17.52	56.455	23.98	PASS
		106/53	15.72	16.20	18.98	79.060	23.98	PASS
64	5320	full	13.03	13.48	16.27	42.401	23.98	PASS
		26/8	9.07	9.93	12.53	17.923	23.98	PASS
		52/40	12.17	13.19	15.72	37.349	23.98	PASS
		106/54	12.20	13.04	15.65	36.755	23.98	PASS
100	5500	full	12.50	12.98	15.76	37.666	23.98	PASS
		26/0	9.10	9.54	12.34	17.134	23.98	PASS
		52/37	10.72	11.43	14.10	25.718	23.98	PASS
		106/53	10.05	10.94	13.53	22.546	23.98	PASS
116	5580	full	17.62	16.93	20.30	107.191	23.98	PASS
		26/0	10.63	10.82	13.74	23.653	23.98	PASS
		52/37	12.74	12.95	15.86	38.541	23.98	PASS
		106/53	15.73	16.19	18.98	79.050	23.98	PASS
140	5700	full	11.57	12.12	14.87	30.666	23.98	PASS
		26/8	7.15	8.24	10.74	11.863	23.98	PASS
		52/40	8.13	9.75	12.03	15.951	23.98	PASS
		106/54	7.37	8.42	10.94	12.415	23.98	PASS
144	5720(U-NII 2C)	full	14.98	15.40	18.21	66.191	23.98	PASS
		26/0	11.86	11.95	14.92	31.033	23.98	PASS
		52/37	14.19	14.30	17.26	53.190	23.98	PASS
		106/53	13.24	13.99	16.64	46.175	23.98	PASS
144	5720 (U-NII 3)	full	10.33	10.83	13.60	22.903	29.07	PASS
		26/0	7.21	7.38	10.31	10.734	29.07	PASS
		52/37	9.54	9.73	12.65	18.398	29.07	PASS
		106/53	8.59	9.42	12.04	15.983	29.07	PASS
149	5745	full	17.09	17.59	20.36	108.645	29.07	PASS
		26/0	14.04	14.97	17.54	56.791	29.07	PASS
		52/37	13.47	14.30	16.92	49.178	29.07	PASS
		106/53	14.39	15.52	18.00	63.162	29.07	PASS
157	5785	full	17.74	16.74	20.28	106.700	29.07	PASS
		26/0	16.12	15.53	18.85	76.699	29.07	PASS
		52/37	16.08	15.42	18.78	75.430	29.07	PASS
		106/53	14.57	15.06	17.83	60.741	29.07	PASS
165	5825	full	17.35	17.60	20.49	111.936	29.07	PASS
		26/8	15.59	15.83	18.72	74.552	29.07	PASS
		52/40	14.23	15.22	17.77	59.787	29.07	PASS
		106/54	14.34	15.00	17.70	58.823	29.07	PASS

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802.11ax_HE40_2TX

CH	Frequency (MHz)	RU config.	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			Ch0	Ch1				
54	5270	full	16.95	16.29	19.65	92.160	23.98	PASS
		242/61	15.33	15.89	18.63	72.978	23.98	PASS
62	5310	full	10.35	10.93	13.66	23.241	23.98	PASS
		242/62	3.13	3.26	6.21	4.177	23.98	PASS
102	5510	full	10.18	10.75	13.49	22.322	23.98	PASS
		242/61	3.29	3.35	6.33	4.298	23.98	PASS
110	5550	full	17.04	16.22	19.66	92.517	23.98	PASS
		242/61	12.74	13.44	16.12	40.898	23.98	PASS
134	5670	full	14.53	14.56	17.56	56.989	23.98	PASS
		242/62	2.78	2.20	5.51	3.558	23.98	PASS
142	5710(U-NII 2C)	full	15.05	15.12	18.10	64.527	23.98	PASS
		242/61	13.81	14.15	17.00	50.067	23.98	PASS
142	5710 (U-NII 3)	full	6.52	6.52	9.53	8.976	29.07	PASS
		242/61	5.28	5.55	8.43	6.963	29.07	PASS
151	5755	full	16.42	16.98	19.72	93.798	29.07	PASS
		242/61	7.03	7.44	10.25	10.599	29.07	PASS
159	5795	full	16.46	16.99	19.75	94.319	29.07	PASS
		242/62	7.29	7.33	10.32	10.772	29.07	PASS

802.11ax_HE80_2TX

CH	Frequency (MHz)	RU config.	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			Ch0	Ch1				
58	5290	full	10.45	11.50	14.02	25.232	23.98	PASS
		484/66	9.28	10.20	12.78	18.955	23.98	PASS
106	5530	full	9.64	9.93	12.80	19.056	23.98	PASS
		484/65	8.31	8.87	11.61	14.494	23.98	PASS
138	5690(U-NII 2C)	full	15.59	15.71	18.66	73.518	23.98	PASS
		484/66	15.58	15.69	18.65	73.264	23.98	PASS
138	5690 (U-NII 3)	full	4.14	4.38	7.27	5.339	29.07	PASS
		484/66	4.13	4.36	7.26	5.320	29.07	PASS
155	5775	full	13.48	14.42	16.99	49.984	29.07	PASS
		484/65	7.47	8.52	11.04	12.704	29.07	PASS
		484/66	6.98	8.18	10.63	11.572	29.07	PASS

802.11ax_HE160_2TX

CH	Frequency (MHz)	RU config.	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			Ch0	Ch1				
50	5250	full	6.11	7.21	9.71	9.347	23.98	PASS
		996/67	5.29	5.47	8.39	6.907	23.98	PASS
		996/S67	4.68	5.45	8.09	6.448	23.98	PASS

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EIRP

802.11a_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	12.70	6.230	18.93	78.163	23.01	PASS
44	5220	12.99	6.230	19.22	83.560	23.01	PASS
48	5240	12.98	6.230	19.21	83.368	23.01	PASS
52	5260	22.14	6.920	29.06	805.378	30	PASS
60	5300	22.02	6.920	28.94	783.430	30	PASS
64	5320	17.31	6.920	24.23	264.850	30	PASS
100	5500	16.48	7.285	23.77	238.232	30	PASS
116	5580	20.45	7.285	27.73	592.925	30	PASS
140	5700	17.94	7.285	25.23	333.426	30	PASS

802.11n_HT20_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	12.87	6.230	19.10	81.283	23.01	PASS
44	5220	12.99	6.230	19.22	83.560	23.01	PASS
48	5240	12.98	6.230	19.21	83.368	23.01	PASS
52	5260	20.10	6.920	27.02	503.501	30	PASS
60	5300	20.25	6.920	27.17	521.195	30	PASS
64	5320	16.48	6.920	23.40	218.776	30	PASS
100	5500	15.82	7.285	23.10	204.174	30	PASS
116	5580	19.76	7.285	27.05	506.991	30	PASS
140	5700	14.83	7.285	22.11	162.555	30	PASS

802.11n_HT40_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	12.99	6.230	19.22	83.560	23.01	PASS
46	5230	15.69	6.230	21.92	155.597	23.01	PASS
54	5270	19.93	6.920	26.85	484.172	30	PASS
62	5310	13.59	6.920	20.51	112.460	30	PASS
102	5510	13.10	7.285	20.38	109.144	30	PASS
110	5550	19.98	7.285	27.26	532.108	30	PASS
134	5670	17.84	7.285	25.13	325.837	30	PASS

802.11ac_VHT20_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	12.81	6.230	19.04	80.168	23.01	PASS
44	5220	12.98	6.230	19.21	83.368	23.01	PASS
48	5240	12.96	6.230	19.19	82.985	23.01	PASS
52	5260	20.05	6.920	26.97	497.737	30	PASS
60	5300	20.18	6.920	27.10	512.861	30	PASS
64	5320	16.39	6.920	23.31	214.289	30	PASS
100	5500	15.75	7.285	23.04	201.372	30	PASS
116	5580	19.73	7.285	27.01	502.343	30	PASS
140	5700	14.78	7.285	22.07	161.065	30	PASS

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802.11ac_VHT40_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	12.98	6.230	19.21	83.368	23.01	PASS
46	5230	15.65	6.230	21.88	154.170	23.01	PASS
54	5270	19.89	6.920	26.81	479.733	30	PASS
62	5310	13.49	6.920	20.41	109.901	30	PASS
102	5510	13.01	7.285	20.29	106.905	30	PASS
110	5550	19.93	7.285	27.22	527.230	30	PASS
134	5670	17.75	7.285	25.03	318.420	30	PASS

802.11ac_VHT80_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	13.64	6.230	19.87	97.051	23.01	PASS
58	5290	14.20	6.920	21.12	129.420	30	PASS
106	5530	12.98	7.285	20.27	106.414	30	PASS

802.11ac_VHT160_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
50	5250	9.65	6.920	16.57	45.394	23.01	PASS

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802.11ax_HE20_2TX

CH	Frequency (MHz)	RU config.	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	full	12.99	6.230	19.22	83.560	23.01	PASS
		26/0	5.71	6.230	11.94	15.631	23.01	PASS
		52/37	8.67	6.230	14.90	30.903	23.01	PASS
		106/53	11.32	6.230	17.55	56.885	23.01	PASS
44	5220	full	12.94	6.230	19.17	82.604	23.01	PASS
		26/0	5.71	6.230	11.94	15.631	23.01	PASS
		52/37	8.53	6.230	14.76	29.923	23.01	PASS
		106/53	10.74	6.230	16.97	49.774	23.01	PASS
48	5240	full	12.80	6.230	19.03	79.983	23.01	PASS
		26/0	5.69	6.230	11.92	15.560	23.01	PASS
		52/37	8.56	6.230	14.79	30.130	23.01	PASS
		106/53	11.19	6.230	17.42	55.208	23.01	PASS
52	5260	full	20.21	6.920	27.13	516.416	30	PASS
		26/0	14.69	6.920	21.61	144.877	30	PASS
		52/37	17.66	6.920	24.58	287.078	30	PASS
		106/53	18.99	6.920	25.91	389.942	30	PASS
60	5300	full	20.49	6.920	27.41	550.808	30	PASS
		26/0	15.40	6.920	22.32	170.608	30	PASS
		52/37	17.52	6.920	24.44	277.971	30	PASS
		106/53	18.98	6.920	25.90	389.045	30	PASS
64	5320	full	16.27	6.920	23.19	208.449	30	PASS
		26/8	12.53	6.920	19.45	88.105	30	PASS
		52/40	15.72	6.920	22.64	183.654	30	PASS
		106/54	15.65	6.920	22.57	180.717	30	PASS
100	5500	full	15.76	7.285	23.04	201.372	30	PASS
		26/0	12.34	7.285	19.62	91.622	30	PASS
		52/37	14.10	7.285	21.39	137.721	30	PASS
		106/53	13.53	7.285	20.82	120.781	30	PASS
116	5580	full	20.30	7.285	27.59	574.116	30	PASS
		26/0	13.74	7.285	21.02	126.474	30	PASS
		52/37	15.86	7.285	23.14	206.063	30	PASS
		106/53	18.98	7.285	26.26	422.669	30	PASS
140	5700	full	14.87	7.285	22.15	164.059	30	PASS
		26/8	10.74	7.285	18.03	63.533	30	PASS
		52/40	12.03	7.285	19.31	85.310	30	PASS
		106/54	10.94	7.285	18.22	66.374	30	PASS

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802.11ax_HE40_2TX

CH	Frequency (MHz)	RU config.	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	full	12.75	6.230	18.98	79.068	23.01	PASS
		242/61	9.41	6.230	15.64	36.644	23.01	PASS
46	5230	full	15.88	6.230	22.11	162.555	23.01	PASS
		242/61	9.29	6.230	15.52	35.645	23.01	PASS
54	5270	full	19.65	6.920	26.57	453.942	30	PASS
		242/61	18.63	6.920	25.55	358.922	30	PASS
62	5310	full	13.66	6.920	20.58	114.288	30	PASS
		242/62	6.21	6.920	13.13	20.559	30	PASS
102	5510	full	13.49	7.285	20.77	119.399	30	PASS
		242/61	6.33	7.285	13.62	23.014	30	PASS
110	5550	full	19.66	7.285	26.95	495.450	30	PASS
		242/61	16.12	7.285	23.40	218.776	30	PASS
134	5670	full	17.56	7.285	24.84	304.789	30	PASS
		242/62	5.51	7.285	12.80	19.055	30	PASS

802.11ax_HE80_2TX

CH	Frequency (MHz)	RU config.	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	full	13.54	6.230	19.77	94.842	23.01	PASS
		484/65	10.79	6.230	17.02	50.350	23.01	PASS
58	5290	full	14.02	6.920	20.94	124.165	30	PASS
		484/66	12.78	6.920	19.70	93.325	30	PASS
106	5530	full	12.80	7.285	20.09	102.094	30	PASS
		484/65	11.61	7.285	18.90	77.625	30	PASS

802.11ax_HE160_2TX

CH	Frequency (MHz)	RU config.	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
50	5250	full	9.71	6.920	16.63	46.026	23.01	PASS
		996/67	8.39	6.920	15.31	33.963	23.01	PASS
		996/S67	8.09	6.920	15.01	31.696	23.01	PASS

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9 MAXIMUM POWER SPECTRAL DENSITY

9.1 FCC Standard

Operation Bands	EUT CATEGORY		e-CRF Title 47 §15.407 Power Spectral Density	Antenna Directional Gain Requirements
U-NII-1		Outdoor Access Point (Master)	1. 17dBm/ MHz 2. EIRP<=125mW(21dBm) at any elevation angle > 30°	6dBi
		Indoor Access Point (Master)	17dBm / MHz	6dBi
		Fixed point-to-point Access Point	17dBm / MHz	23dBi
	V	Client device	11dBm / MHz	6dBi
U-NII-2A	V	All	11dBm / MHz	6dBi
U-NII-2C	V	All	11dBm / MHz	6dBi
U-NII-3	V	All	30dBm / 500kHz	6dBi
U-NII-4		Indoor AP	20dBm / MHz e.i.r.p.	Not required
		indoor client	14dBm / MHz e.i.r.p.	Not required
		subordinate device	20dBm / MHz e.i.r.p.	Not required
If transmitting antennas of directional gain greater than the antenna requirements column, the Maximum transmit power shall be reduced by the amount in dB that the directional gain of the antenna.				

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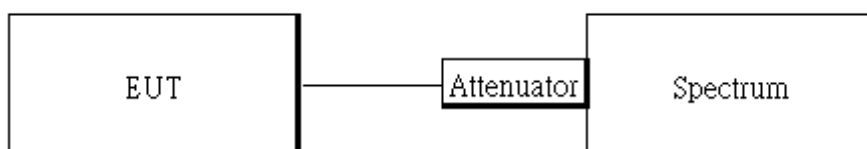
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9.2 ISED Standard

FREQUENCY BAND (MHz)	EUT CATEGORY		RSS-247 §6.2.1~6.2.4	
			EIRP Density	Power Density
5150~5250		OEM devices installed in vehicles	N/A	N/A
	V	Other device	10 dBm/MHz	N/A
5250~5350		OEM devices installed in vehicles	N/A	N/A
	V	Other device	N/A	11 dBm/MHz
5470-5600 and 5650-5725	V	All	N/A	11 dBm/MHz
5725~5850	V	All	N/A	30 dBm/500kHz

For equipment operating in the band 5725-5850 MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

9.3 Test Setup



9.4 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. **For U-NII1, U-NII-2A, U-NII-2C Band:**
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (1001 pts), Detector = power averaging (rms), if available. Otherwise, use sample detector mode, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
For U-NII-3 Band:
Set RBW=300kHz, VBW=1MHz, where span is enough to capture the entire bandwidth,

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Sweep time = Auto, detector = RMS or sample, traces 100 sweeps of video averaging. In addition, measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result.

5. User the cursor on spectrum to peak search the highest level of trace
6. (1)Duty cycle $\geq 98\%$: Record the max. reading.
(2)Duty cycle $< 98\%$: Record the max. reading and add 10 log(1/duty cycle).
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported 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.

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.

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

where

Each antenna is driven by 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 10Gk 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 greater than 6 dBi, therefore the power limit has been attenuated accordingly.

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9.5 Measurement Result

EIRP spectral density 802.11a MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5180	3.141	6.23	9.37	10	-0.63
5220	3.429	6.23	9.66	10	-0.34
5240	2.859	6.23	9.09	10	-0.91
EIRP spectral density 802.11n HT20 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5180	2.959	6.23	9.19	10	-0.81
5220	3.112	6.23	9.34	10	-0.66
5240	2.823	6.23	9.05	10	-0.95
EIRP spectral density 802.11n HT40 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5190	0.459	6.23	6.69	10	-3.31
5230	3.022	6.23	9.25	10	-0.75
EIRP spectral density 802.11ac VHT80 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5210	-0.958	6.23	5.27	10	-4.73

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EIRP spectral density 802.11ax HE20 MODE						
Freq. (MHz)	RU config.	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5180	full	3.128	6.23	9.36	10	-0.64
	26/0	3.203	6.23	9.43	10	-0.57
	52/37	3.287	6.23	9.52	10	-0.48
	106/53	3.126	6.23	9.36	10	-0.64
5220	full	2.959	6.23	9.19	10	-0.81
5240	full	3.324	6.23	9.55	10	-0.45
EIRP spectral density 802.11ax HE40 MODE						
Freq. (MHz)	RU config.	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5190	full	0.747	6.23	6.98	10	-3.02
	242/61	-1.868	6.23	4.36	10	-5.64
5230	full	2.905	6.23	9.14	10	-0.86
EIRP spectral density 802.11ax HE80 MODE						
Freq. (MHz)	RU config.	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5210	full	-1.820	6.23	4.41	10	-5.59
	484/65	-3.847	6.23	2.38	10	-7.62

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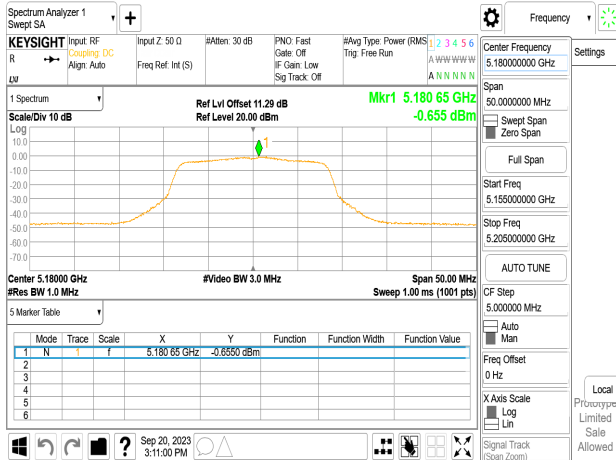
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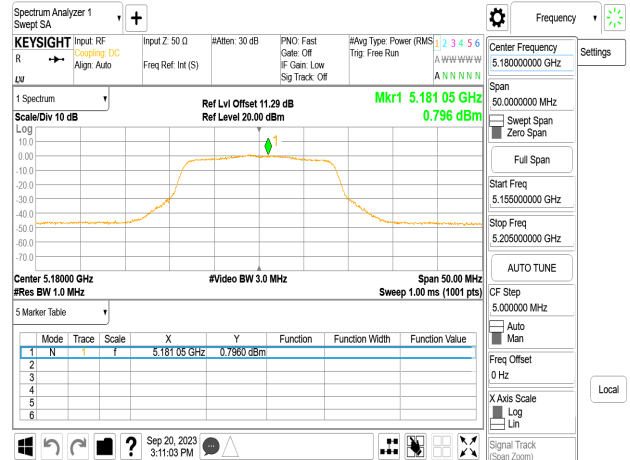
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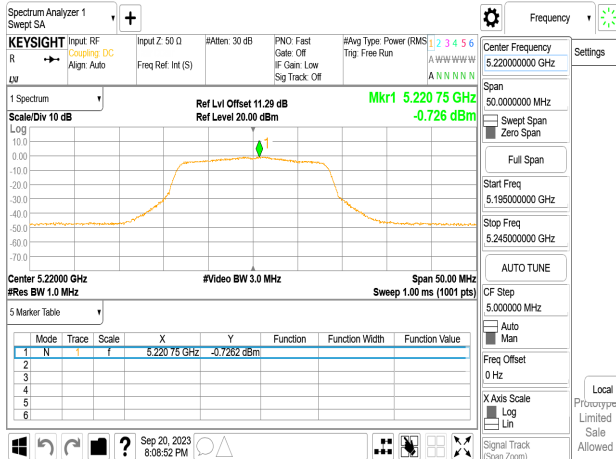
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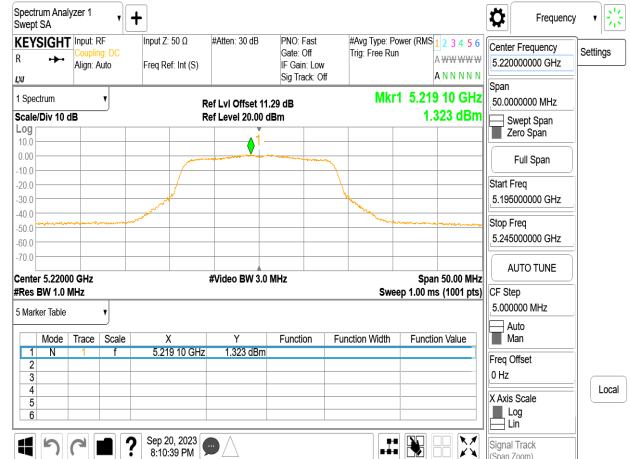
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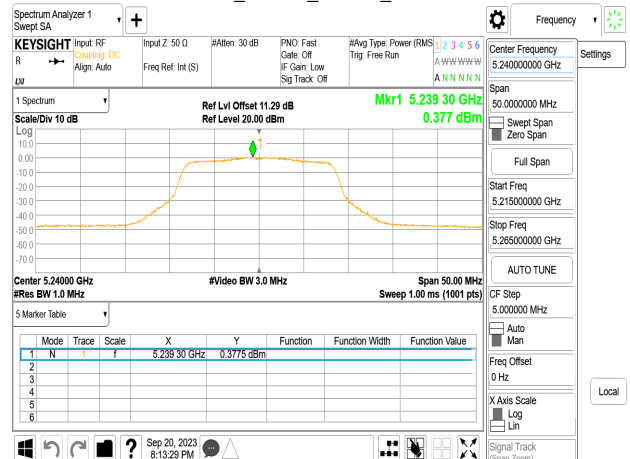
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802.11a_20MHz_Chain0_5240MHz



802.11a_20MHz_Chain1_5240MHz



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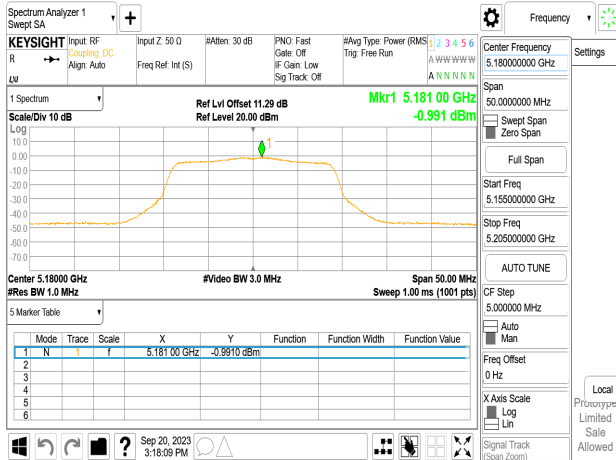
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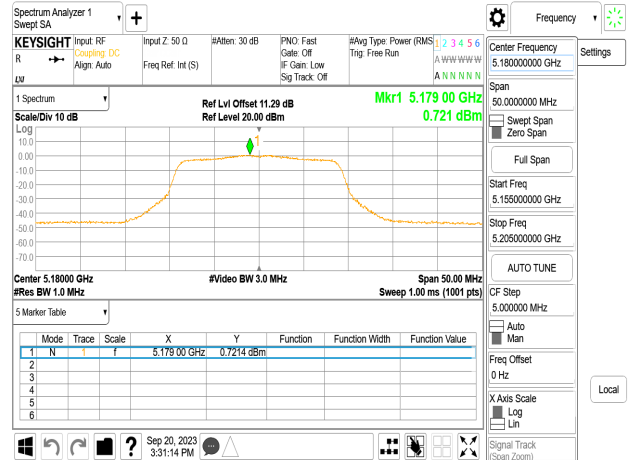
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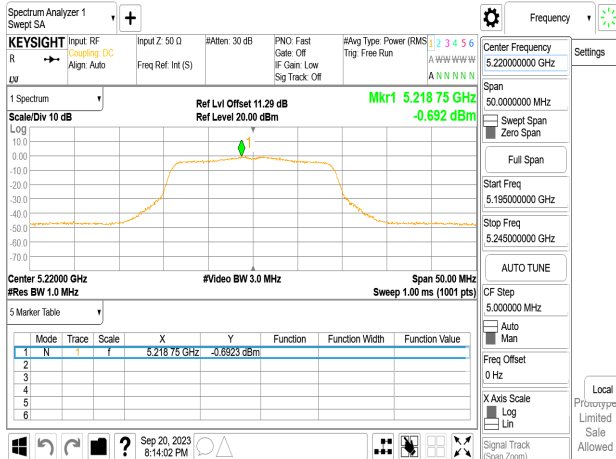
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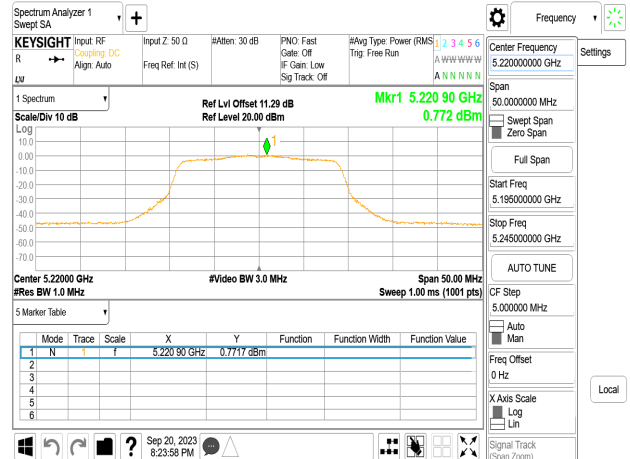
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802.11n_20MHz_Chain0_5220MHz



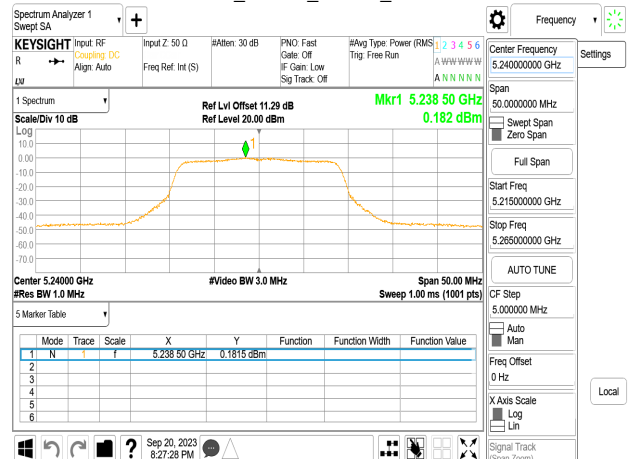
802.11n_20MHz_Chain1_5220MHz



802.11n_20MHz_Chain0_5240MHz



802.11n_20MHz_Chain1_5240MHz



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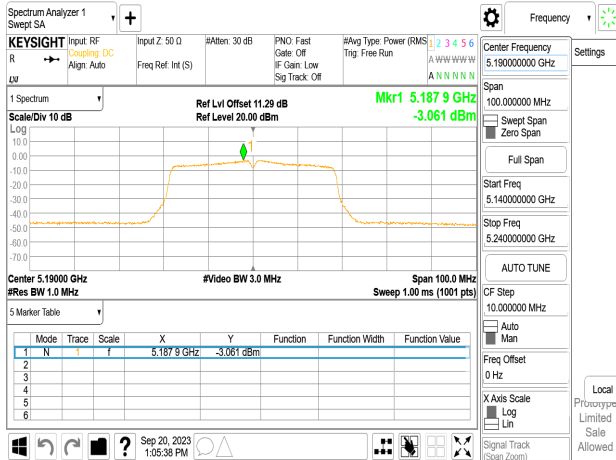
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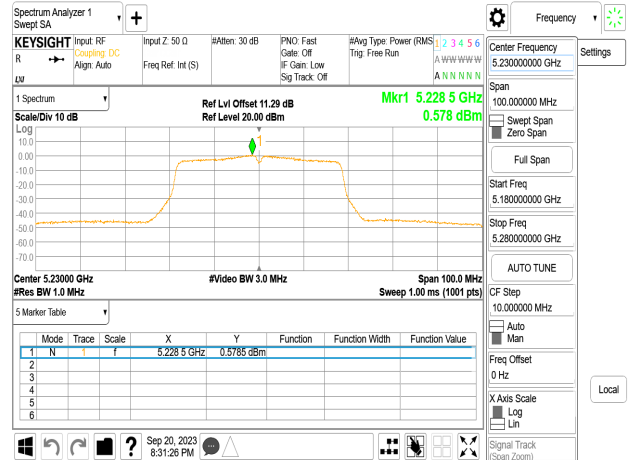
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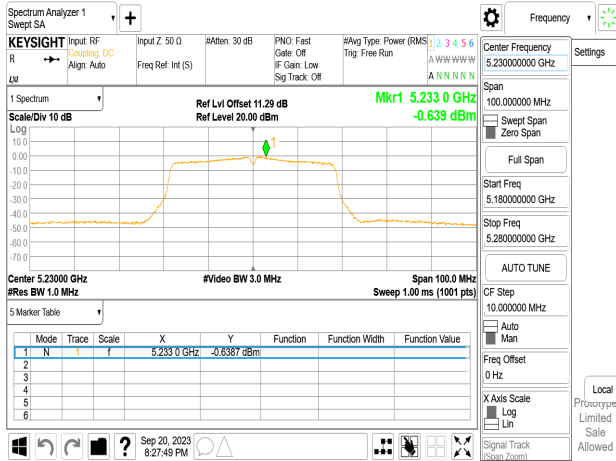
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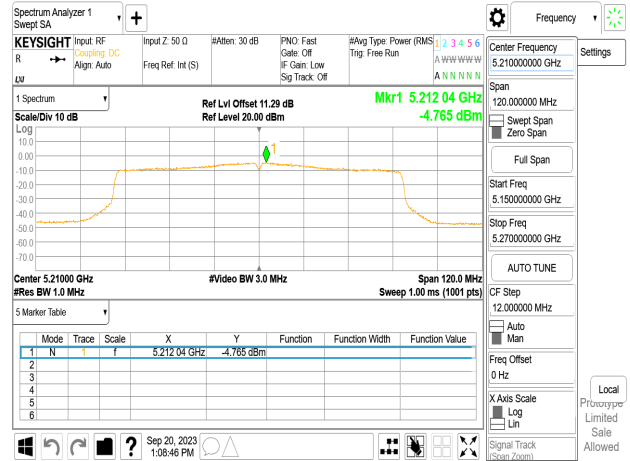
802.11n_40MHz_Chain1_5230MHz



802.11n_40MHz_Chain0_5230MHz



802.11ac_80MHz_Chain0_5210MHz



802.11n_40MHz_Chain1_5190MHz



802.11ac_80MHz_Chain1_5210MHz

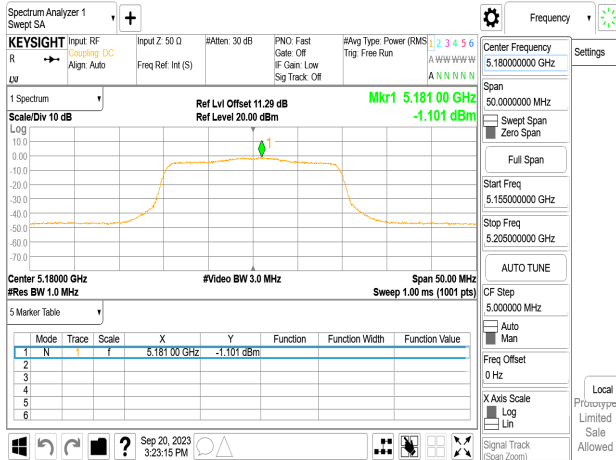


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802.11ax_20MHz_Chain0_5180MHz



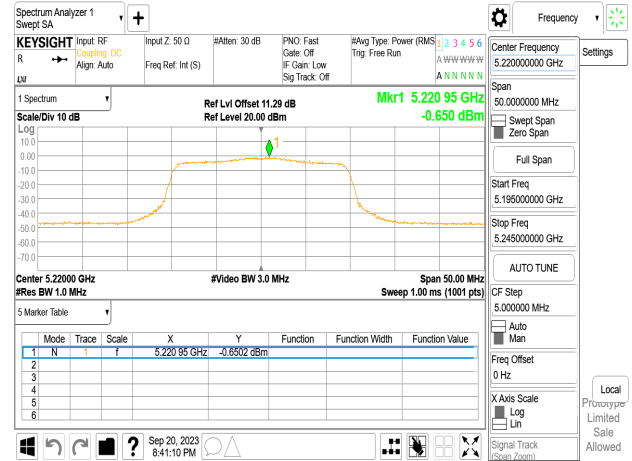
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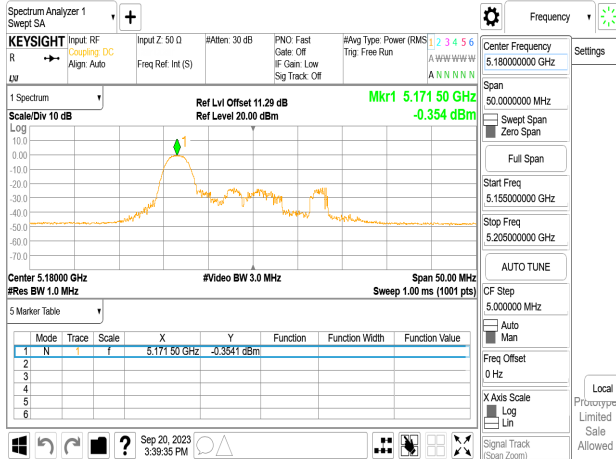
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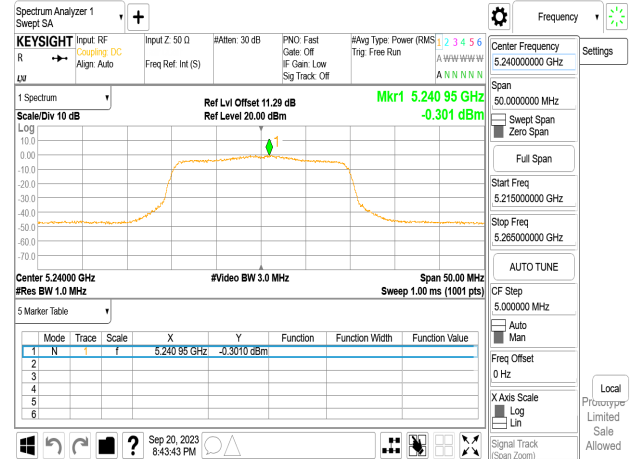
802.11ax_20MHz_Chain0_5220MHz



802.11ax_20MHz_Chain0_5180MHz_RU26_0



802.11ax_20MHz_Chain0_5240MHz



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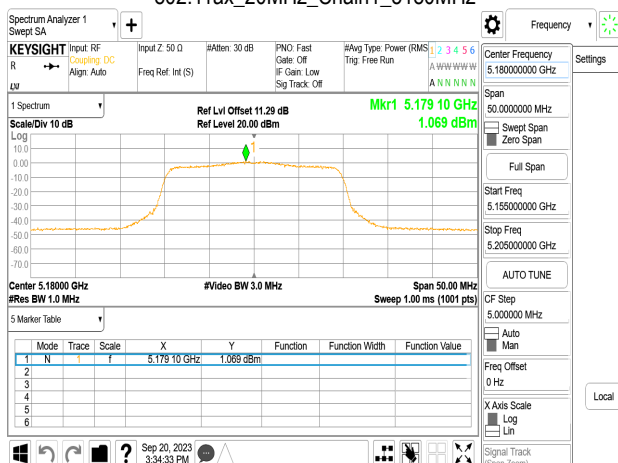
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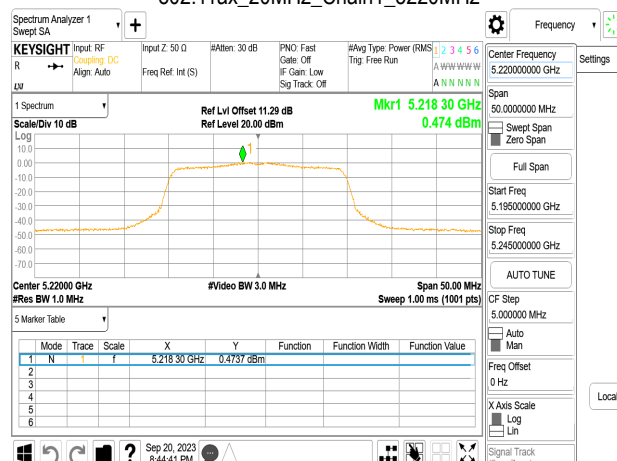
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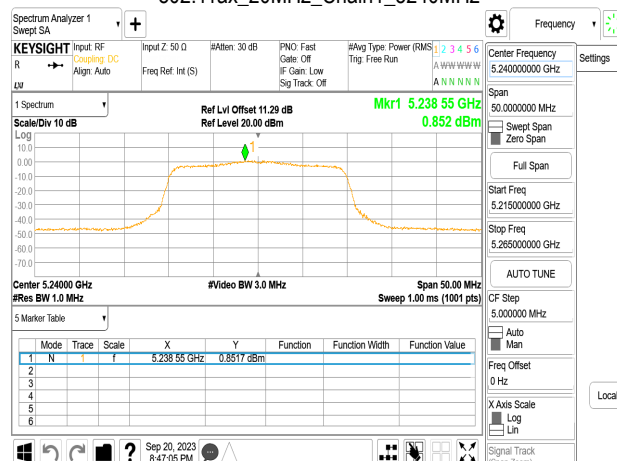
802.11ax_20MHz_Chain1_5220MHz



802.11ax_20MHz_Chain1_5180MHz_RU26_0



802.11ax_20MHz_Chain1_5240MHz



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