

**ELECTROMAGNETIC EMISSIONS
COMPLIANCE REPORT**

Applicant: Murata Manufacturing Co., Ltd.
10-1, Higashikotari 1-chome Nagaokakyo-shi, Kyoto 617-8555 Japan
Manufacturer: Murata Manufacturing Co., Ltd.
10-1, Higashikotari 1-chome Nagaokakyo-shi, Kyoto 617-8555 Japan
Product Name: Communication Module
Brand Name: muRata
Model No.: For FCC:
LBEE5XV2EA
For ISED:
LBEE5XV2EA_SANT, LBEE5XV2EA_DANT
Model Difference: Refer to section 1.9
Report Number: TERF2211002261ER
FCC ID VPLYLBEE5XV2EA
IC: 772C-LBEE5XV2EA
Date of EUT Received: November 08, 2022
Date of Test: November 29, 2022 ~ August 09, 2023
Issue Date: August 10, 2023

CHUN-CHIEH, CHEN

Approved By _____

CHUN-CHIEH, CHEN

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-248.

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
TERF2211002261ER	00	Original	May 04, 2023	Violetta Tang	
TERF2211002261ER	01	Remove HMN information from page 9	June 02, 2023	Violetta Tang	
TERF2211002261ER	02	Correct firmware information on page 4	June 13, 2023	Violetta Tang	
TERF2211002261ER	03	Modify statements on page 54 & 67	July 27, 2023	Violetta Tang	*
TERF2211002261ER	04	1. Add explanation for antenna selection on page 5 2. Add information of chosen antennas on page 55 & 68	July 28, 2023	Violetta Tang	*
TERF2211002261ER	05	1. Update the date of test on the front page 2. Update the conducted test equipment list on page 19 3. Update the OBW test plots for section 8 on pages 26~ 51 4. Modify the order of PSD test plots for section 10 on pages 75~116	August 10, 2023	Violetta Tang	*

Note:

- 1、The remark "*" indicates modification of the report upon requests from certification body.
- 2、Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received.

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1 GENERAL INFORMATION

1.1 Product Description

Product Name:	Communication Module
Brand Name:	muRata
Model No.:	For FCC: LBEE5XV2EA For ISED: LBEE5XV2EA_SANT, LBEE5XV2EA_DANT
Model Difference:	Refer to section 1.9
Hardware Version:	1.0
Firmware Version:	1.1.1.1 1.1.2.1
EUT Series No.:	SA2022019000001046
Power Supply:	3.3Vdc, 1.8Vdc
Test Software (Name/Version)	Tera Term / 4.71

1.2 Modulation & Data Rate

SISO

Modulation type:	16QAM, QPSK, BPSK for OFDM in 802.11a
	1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11ax
Transition Rate:	802.11 a: 6 - 24 Mbps
	802.11 ax_20MHz: up to 143.4 Mbps
	802.11 ax_40MHz: up to 286.8 Mbps
	802.11 ax_80MHz: up to 600.5 Mbps

MIMO

Modulation type:	1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11ax
Transition Rate:	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

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1.3 Antenna Designation

SISO

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain(dBi)
Dipole	Molex	146153	5925~7125	5.8	5.8
	Molex	219611	5925~7125	4	4
	Unictron	WT32D1-KX	5925~7125	4	4
Monopole	Murata	Type2EA_Antenna	5925~7125	2.5	2.5

MIMO

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain(dBi)
Dipole	Molex	219611	5925~7125	4	7.01
	Unictron	WT32D1-KX	5925~7125	4	7.01

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. When the antenna gain is the same, the antennas chosen provided the overall highest emissions.
4. For the dipole antenna
SISO mode selects part number 146153 as the final test.
MIMO mode selects part number WT32D1-KX as the final test.

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1.4 Rated Power SISO

WLAN 6E

WLAN	Frequency Range	Channels	Rated Power(E.I.R.P.) (dBm) (Worst Case)
a 20MHz	5955~6415	24	14.78 dBm
	6435~6515	5	14.79 dBm
	6535~6875	18	14.73 dBm
	6895~7095	11	15.74 dBm

WLAN 6E

WLAN	Frequency Range	Channels	Rated Power(Avg) (dBm) (Worst Case)
ax_HE 20MHz	5955~6415	24	16.78 dBm
	6435~6515	5	16.76 dBm
	6535~6875	18	16.79 dBm
	6895~7095	11	17.74 dBm
ax_HE 40MHz	5965~6405	12	19.78 dBm
	6445~6525	3	19.79 dBm
	6565~6845	8	18.78 dBm
	6885~7085	6	19.79 dBm
ax_HE 80MHz	5985~6385	6	19.78 dBm
	6465	1	19.79 dBm
	6545~6865	5	19.77 dBm
	6945~7025	2	19.79 dBm

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MIMO

WLAN 6E

WLAN	Frequency Range	Channels	Rated Power(E.I.R.P.) (dBm) (Worst Case)
ax_HE 20MHz	5955~6415	24	14.98 dBm
	6435~6515	5	14.98 dBm
	6535~6875	18	14.91 dBm
	6895~7095	11	14.98 dBm
ax_HE 40MHz	5965~6405	12	16.98 dBm
	6445~6525	3	16.99 dBm
	6565~6845	8	16.85 dBm
	6885~7085	6	16.98 dBm
ax_HE 80MHz	5985~6385	6	17.99 dBm
	6465	1	17.85 dBm
	6545~6865	5	17.87 dBm
	6945~7025	2	17.96 dBm

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1.5 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

RSS-248, issue 2 Dec, 2022

RSS-Gen, issue 5 April, 2018

FCC KDB 987594 D02 U-NII 6GHz EMC Measurement v01r01

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10:2013

1.6 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 2		
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
	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 indication where measurements occurred in specific test site and address.

1.7 Special Accessories

There are no special accessories used while test was conducted.

1.8 Equipment Modifications

There was no modification incorporated into the EUT.

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1.9 Model Variants

The LBEE5XV2EA_SANT and LBEE5XV2EA_DANT are electrically identical.

Model For ISED	Model For FCC	Chip on C101	RF functions
LBEE5XV2EA_SANT	LBEE5XV2EA	CYW55573	2x2 WLAN2.4GHz,5GHz, 6GHz +BT/ BLE
LBEE5XV2EA_DANT			

In addition, the differences of firmware versions are

Model	Firmware versions	Antenna connector(s)	WLAN	BT	BLE
LBEE5XV2EA_DANT	1.1.2.1	3 (ANT0, ANT1, BT_ANT)	ANT0, ANT1	BT_ANT	BT_ANT
LBEE5XV2EA_SANT	1.1.1.1	2 (ANT0, ANT1)	ANT0, ANT1	ANT0	ANT0

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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.

2.3.4 CBP Test

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer and signal generator and companion device to perform the test.

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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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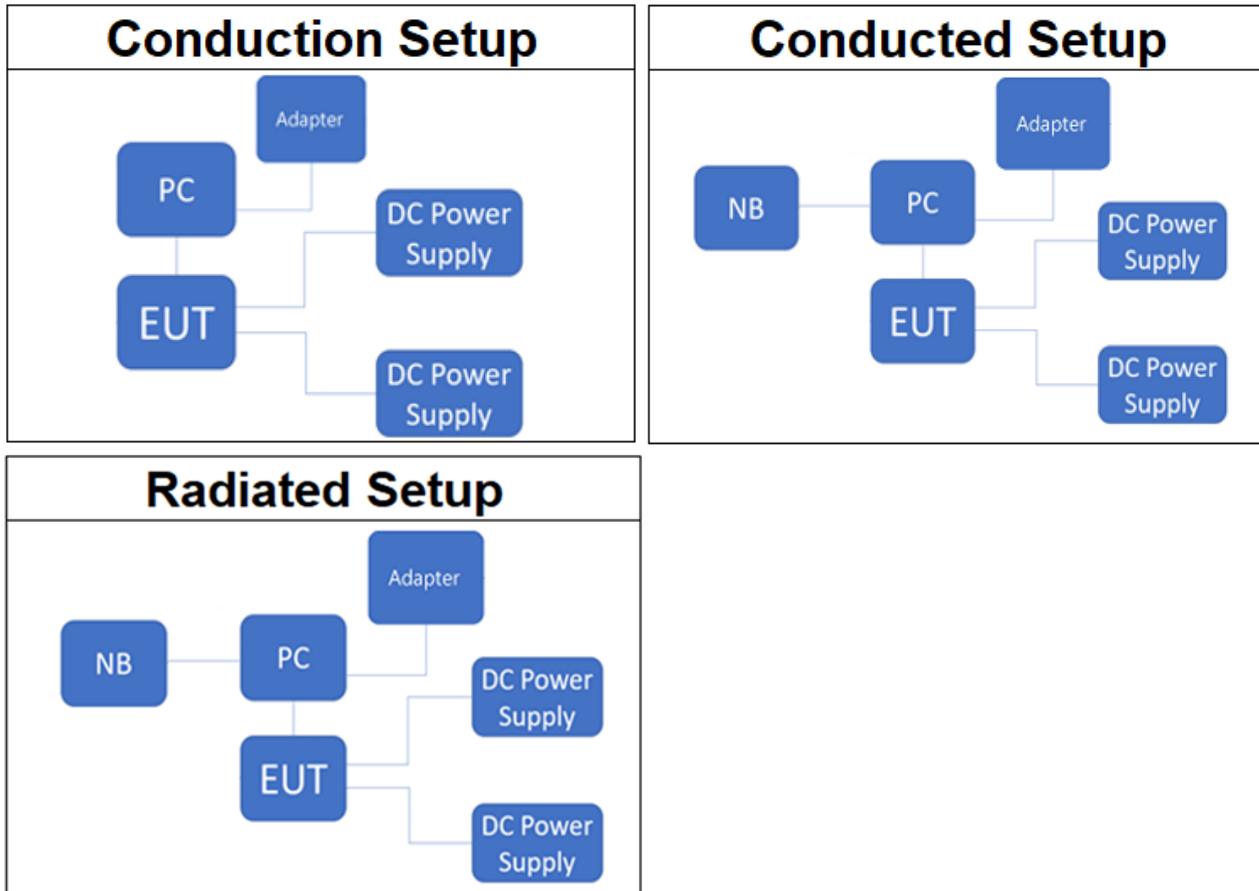
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2.5 Test Configuration



2.6 Control Unit(s)

2.6.1 Conduction setup

AC Power-Line Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PC	GIGABYTE	GB-BX17H-4500	N/A	N/A	N/A
Adapter	FSP GROUP INC.	FSP065-REB	N/A	N/A	N/A

2.6.2 Conducted Setup

Conducted Emission Test Site: Conducted 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PC	GIGABYTE	GB-BX17H-4500	N/A	N/A	N/A
Adapter	FSP GROUP INC.	FSP065-REB	N/A	N/A	N/A
Notebook	Lenovo	T440P	PC-014TAK	N/A	N/A

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2.6.3 Radiated Setup

Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PC	GIGABYTE	GB-BX17H-4500	N/A	N/A	N/A
Adapter	FSP GROUP INC.	FSP065-REB	N/A	N/A	N/A
Notebook	Lenovo	T440P	PC-06L5W6	N/A	N/A

2.6.4 CBP Setup

Conducted Emission Test Site: Conducted 5					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	L430	PK-126TN	N/A	N/A
Notebook	Lenovo	T440P	PC-014TAK	N/A	N/A
Communication Module	Shenzhen Murata Technology Co., Ltd.	LBEE5XV2EA	00000312	N/A	N/A

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3 SUMMARY OF TEST RESULT

FCC Rules	ISED Rules	Description Of Test	Result
§15.207	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.407(a)(10) §2.1049	RSS-248 §4.4	Emission Bandwidth	Compliant
§15.407(a)(4~8)	RSS-248 §4.6	Maximum Conducted Output Power	Compliant
§15.407(a)(4~8)	RSS-248 §4.6	Power Spectral Density	Compliant
§15.407(b)(6)	RSS-248 §4.7	In-band emission	Compliant
§15.205 §15.209 §15.407(b)(5), (b)(8), (b)(9)	RSS-248 §4.7	Undesirable Radiated Emissions	Compliant
§15.407(d)(6)	RSS-248 §4.8	contention-based protocol	Compliant
§15.407(a)(7)(8)	NA	Test Demonstration of Proper Power Adjustment based on As-associated AP	NA Device only associates with indoor AP
§15.407(c)	RSS-248 §4.11	Transmission in case of Absence of Information	Compliant
§15.203	N/A	Antenna Requirement	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 Operating Frequencies

UNII-5 5925~6425 MHz								UNII-6 6425~6525 MHz					
20MHz				40MHz		80MHz		20MHz		40MHz		80MHz	
CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)
1	5955	49	6195	3	5965	7	5985	97	6435	99	6445	103	6465
5	5975	53	6215	11	6005	23	6065	101	6455	107	6485		
9	5995	57	6235	19	6045	39	6145	105	6475	115	6525		
13	6015	61	6255	27	6085	55	6225	109	6495				
17	6035	65	6275	35	6125	71	6305	113	6515				
21	6055	69	6295	43	6165	87	6385						
25	6075	73	6315	51	6205								
29	6095	77	6335	59	6245								
33	6115	81	6355	67	6285								
37	6135	85	6375	75	6325								
41	6155	89	6395	83	6365								
45	6175	93	6415	91	6405								

UNII-7 6525~6875 MHz								UNII-8 6875~7125 MHz					
20MHz				40MHz		80MHz		20MHz		40MHz		80MHz	
CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)
117	6535	153	6715	123	6565	119	6545	189	6895	187	6885	199	6945
121	6555	157	6735	131	6605	135	6625	193	6915	195	6925	215	7025
125	6575	161	6755	139	6645	151	6705	197	6935	203	6965		
129	6595	165	6775	147	6685	167	6785	201	6955	211	7005		
133	6615	169	6795	155	6725	183	6865	205	6975	219	7045		
137	6635	173	6815	163	6765			209	6995	227	7085		
141	6655	177	6835	171	6805			213	7015				
145	6675	181	6855	179	6845			217	7035				
149	6695	185	6875					221	7055				
								225	7075				
								229	7095				

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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
☒ 802.11 a	☒ Ch0	☒ Ch1	☐ Ch2	☐ Ch3	☒ 1TX	☐ 2TX
☐ 802.11 n	☐ Ch0	☐ Ch1	☐ Ch2	☐ Ch3	☐ 1TX	☐ 2TX
☐ 802.11 ac	☐ Ch0	☐ Ch1	☐ Ch2	☐ Ch3	☐ 1TX	☐ 2TX
☒ 802.11 ax	☒ Ch0	☒ Ch1	☐ Ch2	☐ Ch3	☒ 1TX	☒ 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	FREQUENCY BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5955~6415	1 to 93	1,45,93	OFDM	6	Ch0
	6435~6515	97 to 113	97,105,113			
	6535~6875	117 to 185	117,149,181,185			
	6895~7095	189 to 229	189,209,229			

CONDUCTED TEST							
MODE	FREQUENCY BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT
802.11ax_HE20	5955~6415	1 to 93	1,45,93	OFDMA	FULL RU 26/0,26/8 52/37,52/40 106/53,106/54	MCS0	Ch0/2TX
	6435~6515	97 to 113	97,105,113				
	6535~6875	117 to 185	117,149,181,185				
	6895~7095	189 to 229	189,209,229				
802.11ax_HE40	5965~6405	3 to 91	3,43,91	OFDMA	FULL RU 242/61,242/62	MCS0	Ch0/2TX
	6445~6525	99 to 115	99,107,115				
	6565~6845	123 to 179	123,147,179				
	6885~7085	187 to 227	187,195,211,227				
802.11ax_HE80	5985~6385	7 to 87	7,39,87	OFDMA	FULL RU 484/65,484/66	MCS0	Ch0/2TX
	6465	103	103				
	6545~6865	119 to 183	119,135,151,167,183				
	6945~7025	199 to 215	199,215				

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RADIATED EMISSION TEST (BELOW 1 GHz)							
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)		ANTENNA PORT
802.11a	5955~6415	1 to 93	45	OFDM	6		Ch0
	6435~6515	97 to 113	105				
	6535~6875	117 to 185	181				
	6895~7095	189 to 229	209				
802.11ax_HE20	5955~6415	1 to 93	45	OFDMA	FULL RU	MCS0	2TX
	6435~6515	97 to 113	105				
	6535~6875	117 to 185	181				
	6895~7095	189 to 229	209				

RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5955~6415	1 to 93	1,45,93	OFDM	6	Ch0
	6435~6515	97 to 113	97,105,113			
	6535~6875	117 to 185	117,149,181,185			
	6895~7095	189 to 229	189,209,229			

RADIATED EMISSION TEST (ABOVE 1 GHz)							
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGUR	DATA RATE (Mbps)	ANTENNA PORT
802.11ax_HE20	5955~6415	1 to 93	1,45,93	OFDMA	FULL RU 26/0,26/8 52/37,52/40 106/53,106/54	MCS0	Ch0/2TX
	6435~6515	97 to 113	97,105,113				
	6535~6875	117 to 185	117,149,181,185				
	6895~7095	189 to 229	189,209,229				
802.11ax_HE40	5965~6405	3 to 91	3,43,91	OFDMA	FULL RU 242/61,242/62	MCS0	Ch0/2TX
	6445~6525	99 to 115	99,107,115				
	6565~6845	123 to 179	123,147,179				
	6885~7085	187 to 227	187,195,211,227				
802.11ax_HE80	5985~6385	7 to 87	7,39,87	OFDMA	FULL RU 484/65,484/66	MCS0	Ch0/2TX
	6465	103	103				
	6545~6865	119 to 183	119,135,151,167,183				
	6945~7025	199 to 215	199,215				

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.
EMI Test Receiver	R&S	ESR 7	102525	02/18/2023	02/17/2024
Pulse Limiter	SCHWARZBECK	VTSD 9561F-N	793	06/22/2022	06/21/2023
LISN	SCHWARZBECK	NSLK 8127	01040	08/23/2022	08/22/2023
LISN	SCHWARZBECK	NSLK 8127	01041	10/25/2022	10/24/2023
Coaxial Cables	EMC Instruments Corp.	EMCCFD300-BM-BM-3000	161207	06/22/2022	06/21/2023
DC Power Supply	Agilent	E3640A	MY40005907	10/07/2022	10/06/2023
DC Power Supply	Agilent	E3640A	KR93300208	09/08/2022	09/07/2023
Test Software	audix	e3	Ver. 9 210322	N.C.R	N.C.R

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	MY59071541	07/14/2022	07/13/2023
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071541	07/13/2023	07/12/2024
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R
Power Meter	Anritsu	ML2496A	2132007	09/21/2022	09/20/2023
Power Sensor	Anritsu	MA2411B	1911391	09/21/2022	09/20/2023
Power Sensor	Anritsu	MA2411B	1911392	09/21/2022	09/20/2023
DC Power Supply	Agilent	E3640A	MY40005907	10/07/2022	10/06/2023
DC Power Supply	Gwinstek	SPS-3610	GEV856761	09/13/2022	09/12/2023
Attenuator	KEYSIGHT	8494B	TH60073121	12/14/2021	12/13/2022
Attenuator	KEYSIGHT	8494B	TH60073121	12/13/2022	12/12/2023
DC Block	Mini-Circuits	BLK-18-S+	1	12/14/2021	12/13/2022
DC Block	Mini-Circuits	BLK-18-S+	1	12/13/2022	12/12/2023

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6.3 Contention based protocol measurement

Conducted Emission Test Site: Conducted 5					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
DC Power Supply	Gwinstek	GPC-3060D	GEW925544	03/24/2023	03/23/2024
DC Power Supply	Gwinstek	GPC-3060D	GEW925533	03/24/2023	03/23/2024
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071406	06/15/2022	06/14/2023
Frequency Extender	KEYSIGHT	N5182BX07	MY59360217	03/07/2023	03/06/2024
Signal Generator	KEYSIGHT	N5182B	MY59100743	03/07/2023	03/06/2024
Attenuator	Agilent	8495B	3308A22470	12/13/2022	12/12/2023
Attenuator	HP	8494B	2812A17605	12/13/2022	12/12/2023
DC Block	Mini-Circuits	BLK-18-S+	4	12/13/2022	12/12/2023
Power Divider	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-020	12/13/2022	12/12/2023
Power Divider	RF-LAMBDA	RFLT2W1G18G	21032900018	12/13/2022	12/12/2023
Power Divider	Titan	T0510E2W118Q	22015161	12/13/2022	12/12/2023
Power Divider	Agilent	11636B	59351	12/13/2022	12/12/2023

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6.4 Radiated Measurement

Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	RF SPIN	DRH18-E	210303A18-ES	02/24/2022	02/23/2023
Bi-log Antenna	SCHWARZBECK	VULB9168	9168-1278	02/25/2022	02/24/2023
Loop Antenna	ETS.LINDGREN	6502	148045	10/05/2022	10/04/2023
Horn Antenna	SCHWARZBECK	BBHA9170	184	12/30/2022	12/29/2023
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071541	07/14/2022	07/13/2023
Test Software	Audix	e3	Ver. 9.210322	N.C.R	N.C.R
DC Power Supply	Agilent	E3640A	MY40005907	10/07/2022	10/06/2023
DC Power Supply	Agilent	E3640A	KR93300208	09/08/2022	09/07/2023
EMI Test Receiver	R&S	ESCI 7	100759	08/22/2022	08/21/2023
Pre-Amplifier	EMCI	EMC330N	980826	08/31/2022	08/30/2023
Pre-Amplifier	EMCI	EMC118A45SEE	980867	08/31/2022	08/30/2023
Pre-Amplifier	EMCI	EMC184045B	980135	10/27/2022	10/26/2023
Attenuator	Mini-Circuit	BW-S10W2+	2	12/13/2022	12/12/2023
Bandreject Filter 5925-6425	Woken	WFIL-N5925-6425F	WRGBAFWC2F9	12/13/2022	12/12/2023
Bandreject Filter 6425-6525	Woken	WFIL-N6425-6525F	WRGBAFWC2J1	12/13/2022	12/12/2023
Bandreject Filter 6525-6875	Woken	WFIL-N6525-6875F	WRGBAFWC2J4	12/13/2022	12/12/2023
Bandreject Filter 6875-7125	Woken	WFIL-N6875-7125F	WRGBAFWC2J9	12/13/2022	12/12/2023
8.6GHz High Pass Filter	Titan	T04H86002600060S01	210619-2-7	12/13/2022	12/12/2023
Coaxial Cables	EMCI	EMCCFD400-NM-NM-	RX Cable below 1G	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC104-SM-SM-600	RX Cable below 1G	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-2000	RX Cable below 1G	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC104-SM-SM-10000	RX Cable above 1G	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-1000	RX Cable above 1G	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-1500	RX Cable above 1G	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-2000	RX Cable above 1G	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMCCFD400-NM-NM-	RX Cable below 30M	08/31/2022	08/30/2023
Coaxial Cables	EMCI	EMC105-SM-SM-2000	RX Cable below 30M	08/31/2022	08/30/2023
Site Cal	SGS	SAC 2	N/A	08/31/2022	08/30/2023

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

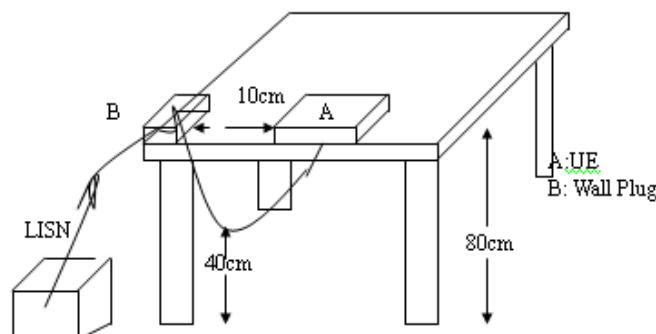
Note

- 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 rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The LISN was connected with 120Vac/60Hz power source.

7.3 Test Setup



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 :TERF2211002261ER

Test Site :Conduction 1

Test Mode :Operation (6E)

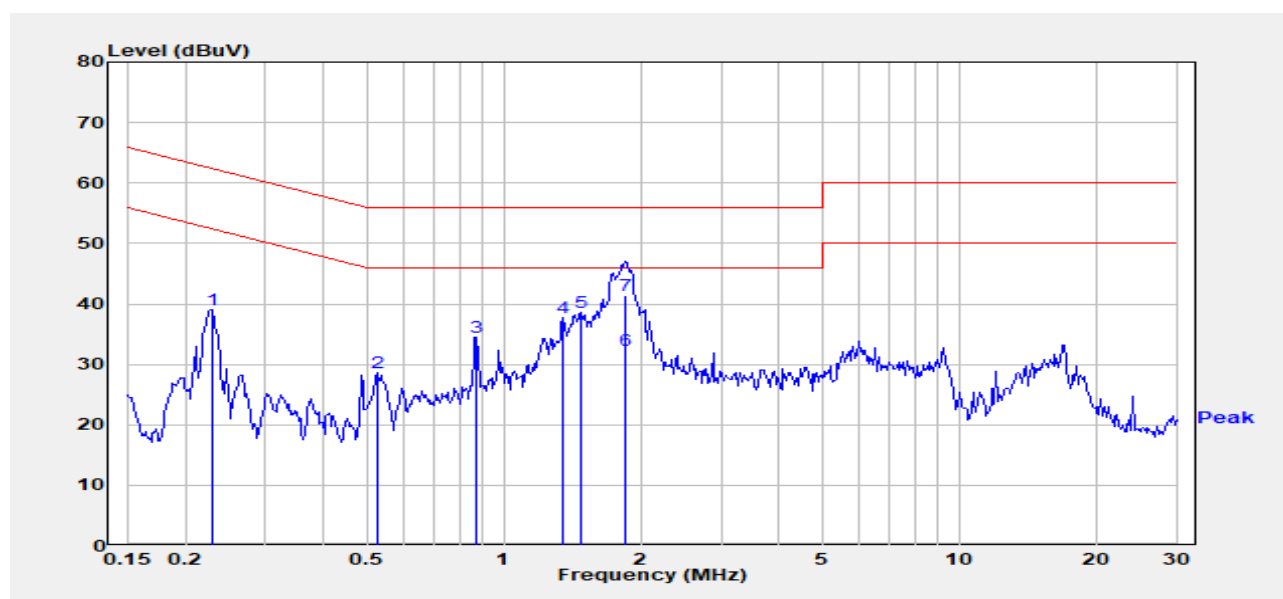
Test Date :2023-03-02

Power :120V/60Hz

Temp./Humi. :23.8/52

Probe :L

Engineer :Ricky Chen



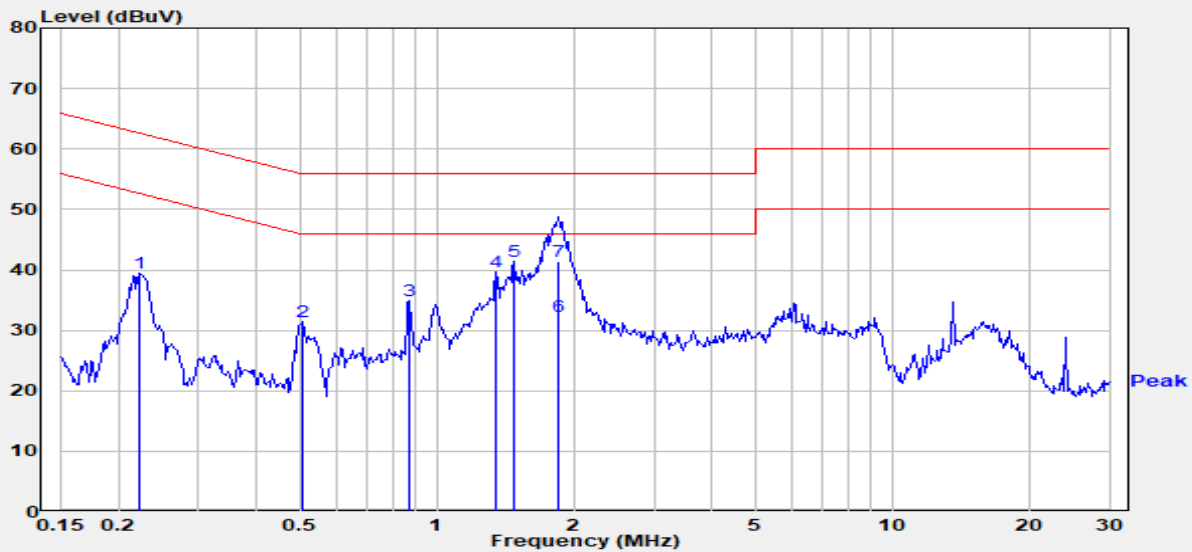
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.229	Peak	28.85	10.25	39.10	62.49	-23.39
0.528	Peak	18.39	10.26	28.65	56.00	-27.35
0.870	Peak	24.05	10.34	34.39	56.00	-21.61
1.349	Peak	27.05	10.67	37.72	56.00	-18.28
1.479	Peak	27.84	10.77	38.61	56.00	-17.39
1.847	Average	21.39	11.00	32.39	46.00	-13.61
1.847	QP	30.41	11.00	41.41	56.00	-14.59

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Report Number :TERF2211002261ER
 Test Mode :Operation (6E)
 Power :120V/60Hz
 Probe :N

Test Site :Conduction 1
 Test Date :2023-03-02
 Temp./Humi. :23.8/52
 Engineer :Ricky Chen



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.222	Peak	29.11	10.25	39.36	62.75	-23.38
0.509	Peak	21.23	10.26	31.48	56.00	-24.52
0.870	Peak	24.58	10.34	34.92	56.00	-21.08
1.349	Peak	28.93	10.67	39.60	56.00	-16.40
1.479	Peak	30.56	10.77	41.32	56.00	-14.68
1.847	Average	21.38	11.00	32.38	46.00	-13.62
1.847	QP	30.46	11.00	41.46	56.00	-14.54

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8 EMISSION BANDWIDTH

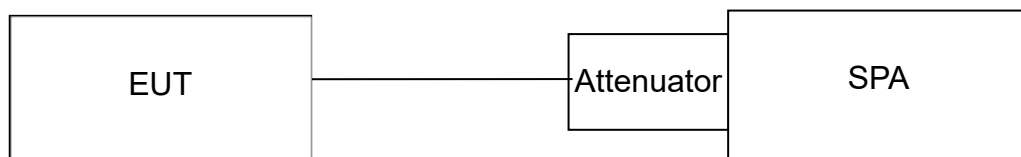
8.1 Standard Applicable

The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.

8.2 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 the spectrum analyzer.
 - 3.a. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW
Sweep=auto,
Detector = Peak,
Trace Mode = Max Hold,
Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.
 - 3.b. Mark the peak frequency and -26dB (upper and lower) frequency.
4. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
5. For 99% Bandwidth: Set the spectrum analyzer as
RBW=1%,
VBW = 3*RBW,
Span = 30M/50MHz,
Detector=Sample,
Sweep=auto.
6. Turn on the 99% bandwidth function, max reading.
7. Repeat above procedures until all frequency of interest measured was complete.

8.3 Test Setup



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8.4 Measurement Result

8.4.1 Bandwidth

SISO

802.11a_Ch0

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
1	5955	16.440	20.37
45	6175	16.527	20.23
93	6415	16.531	20.25
97	6435	16.418	20.15
105	6475	16.441	20.34
113	6515	16.529	20.88
117	6535	16.501	20.21
149	6695	16.528	20.29
181	6855	16.537	20.01
185	6875(U-NII 7)	8.259	10.06
185	6875(U-NII 8)	8.259	10.06
189	6895	16.576	20.27
209	6995	16.474	20.10
229	7095	16.544	20.73

802.11ax_HE20_Ch0

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
1	5955	18.962	21.38
45	6175	19.037	21.30
93	6415	19.030	21.50
97	6435	19.066	21.41
105	6475	19.005	21.75
113	6515	19.072	21.59
117	6535	19.044	21.30
149	6695	19.070	21.79
181	6855	19.093	21.19
185	6875(U-NII 7)	9.518	10.63
185	6875(U-NII 8)	9.518	10.63
189	6895	19.030	21.32
209	6995	19.059	21.07
229	7095	18.990	21.30

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802.11ax_HE40_Ch0

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
3	5965	37.443	39.74
43	6165	37.441	40.79
91	6405	37.567	40.74
99	6445	37.522	39.77
107	6485	37.521	40.14
115	6525(U-NII 6)	18.781	20.38
115	6525(U-NII 7)	18.781	20.38
123	6565	37.607	40.88
147	6685	37.480	40.57
179	6845	37.565	41.63
187	6885(U-NII 7)	8.787	10.34
187	6885(U-NII 8)	28.787	30.34
195	6925	37.464	39.63
211	7005	37.499	41.94
227	7085	37.587	39.81

802.11ax_HE80_Ch0

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
7	5985	76.850	81.12
39	6145	76.918	80.70
87	6385	76.915	81.34
103	6465	76.923	80.65
119	6545(U-NII 6)	18.485	20.09
119	6545(U-NII 7)	58.485	60.09
135	6625	76.963	80.81
151	6705	76.918	80.63
167	6785	77.121	80.95
183	6865(U-NII 7)	48.619	50.73
183	6865(U-NII 8)	28.619	30.73
199	6945	76.970	80.84
215	7025	76.924	80.55

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802.11ax_HE20_Ch0

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
1	5955	19.031	21.78
45	6175	19.060	21.66
93	6415	19.125	21.56
97	6435	19.004	21.28
105	6475	19.042	21.47
113	6515	19.063	21.66
117	6535	18.961	21.58
149	6695	19.077	21.64
181	6855	19.035	21.86
185	6875(U-NII 7)	9.525	10.57
185	6875(U-NII 8)	9.525	10.57
189	6895	19.035	21.44
209	6995	19.002	21.18
229	7095	19.095	21.37

802.11ax_HE20_Ch1

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
1	5955	19.040	21.15
45	6175	19.051	21.35
93	6415	18.999	21.58
97	6435	19.024	21.79
105	6475	19.035	21.37
113	6515	19.006	21.15
117	6535	19.024	21.13
149	6695	19.077	22.00
181	6855	18.991	21.31
185	6875(U-NII 7)	9.527	10.59
185	6875(U-NII 8)	9.527	10.59
189	6895	18.994	21.13
209	6995	19.071	20.93
229	7095	19.006	21.36

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802.11ax_HE40_Ch0

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
3	5965	37.451	39.57
43	6165	37.590	39.87
91	6405	37.580	39.81
99	6445	37.586	39.73
107	6485	37.496	40.63
115	6525(U-NII 6)	18.795	20.17
115	6525(U-NII 7)	18.795	20.17
123	6565	37.508	39.79
147	6685	37.501	39.74
179	6845	37.508	39.76
187	6885(U-NII 7)	8.763	10.11
187	6885(U-NII 8)	28.763	30.11
195	6925	37.606	39.64
211	7005	37.553	40.03
227	7085	37.503	39.71

802.11ax_HE40_Ch1

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
3	5965	37.520	39.48
43	6165	37.531	39.33
91	6405	37.438	39.38
99	6445	37.624	39.61
107	6485	37.527	39.21
115	6525(U-NII 6)	18.813	20.57
115	6525(U-NII 7)	18.813	20.57
123	6565	37.694	39.75
147	6685	37.515	39.81
179	6845	37.588	40.61
187	6885(U-NII 7)	8.750	9.77
187	6885(U-NII 8)	28.750	29.77
195	6925	37.583	39.71
211	7005	37.542	41.39
227	7085	37.617	41.87

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802.11ax_HE80_Ch0

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
7	5985	76.987	80.88
39	6145	76.946	81.07
87	6385	76.950	80.73
103	6465	76.912	80.69
119	6545(U-NII 6)	18.454	20.41
119	6545(U-NII 7)	58.454	60.41
135	6625	77.012	81.36
151	6705	76.949	81.05
167	6785	77.065	81.17
183	6865(U-NII 7)	48.518	50.30
183	6865(U-NII 8)	28.518	30.30
199	6945	76.951	80.91
215	7025	76.841	81.00

802.11ax_HE80_Ch1

CH	Frequency (MHz)	99% BW (MHz)	26dB BW (MHz)
7	5985	76.969	80.92
39	6145	76.904	80.41
87	6385	76.956	80.23
103	6465	77.134	80.32
119	6545(U-NII 6)	18.465	20.48
119	6545(U-NII 7)	58.465	60.48
135	6625	77.041	80.90
151	6705	76.844	81.44
167	6785	77.003	80.54
183	6865(U-NII 7)	48.550	50.47
183	6865(U-NII 8)	28.550	30.47
199	6945	77.018	80.75
215	7025	76.900	81.10

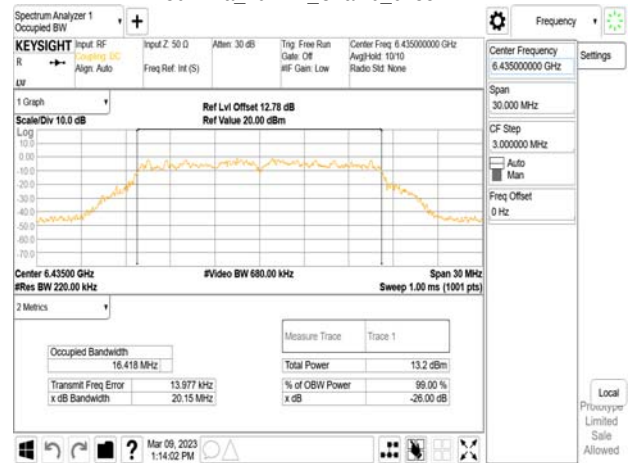
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802.11a_20MHz_Chain0_5955MHz



802.11a_20MHz_Chain0_6435MHz



802.11a_20MHz_Chain0_6175MHz



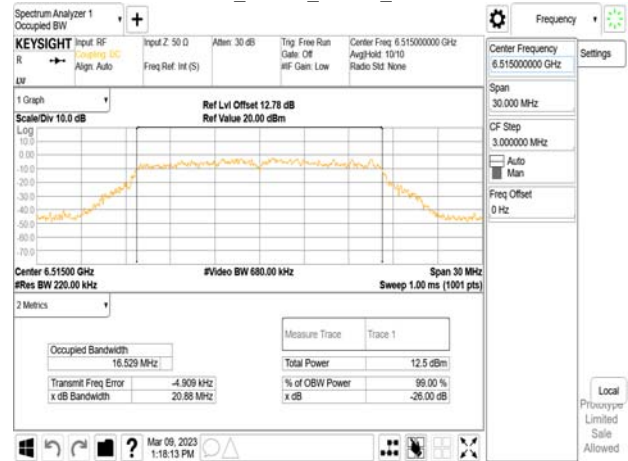
802.11a_20MHz_Chain0_6475MHz



802.11a_20MHz_Chain0_6415MHz



802.11a_20MHz_Chain0_6515MHz



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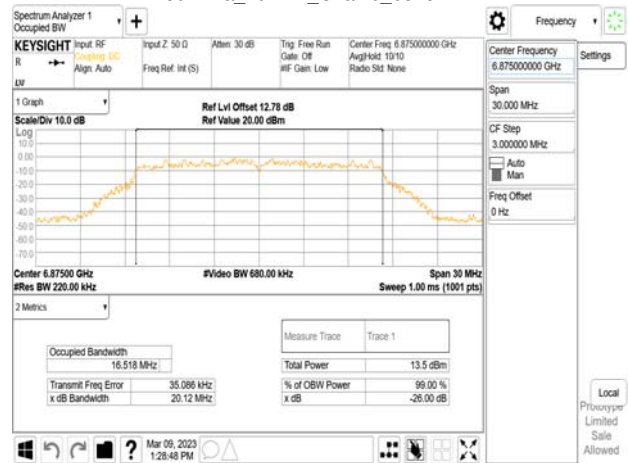
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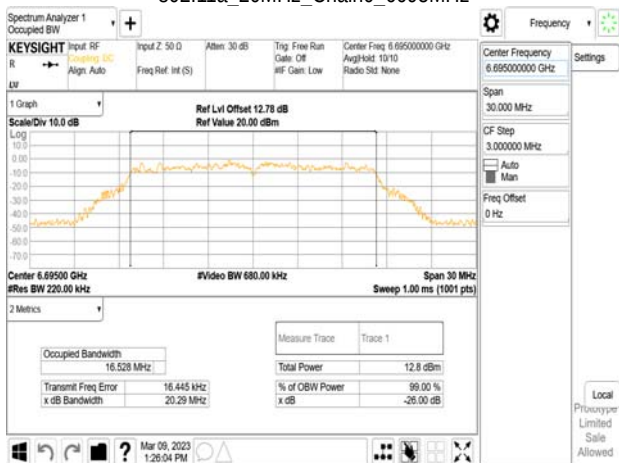
802.11a_20MHz_Chain0_6535MHz



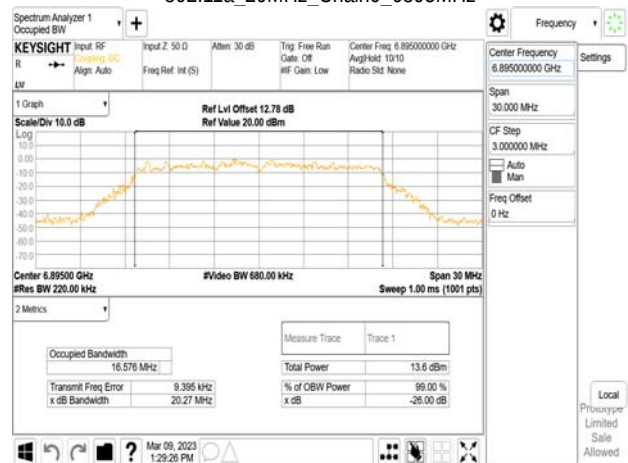
802.11a_20MHz_Chain0_6875MHz



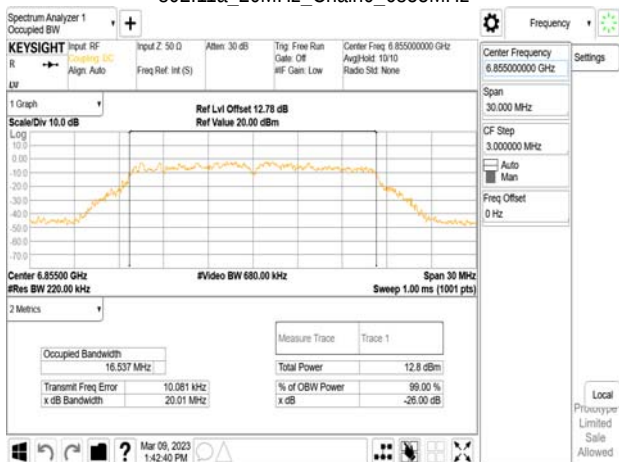
802.11a_20MHz_Chain0_6695MHz



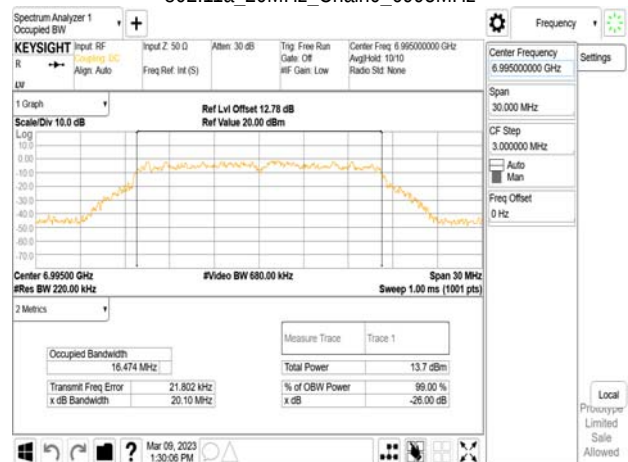
802.11a_20MHz_Chain0_6895MHz



802.11a_20MHz_Chain0_6855MHz



802.11a_20MHz_Chain0_6995MHz



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802.11a_20MHz_Chain0_7095MHz



802.11ax_20MHz_Chain0_6415MHz



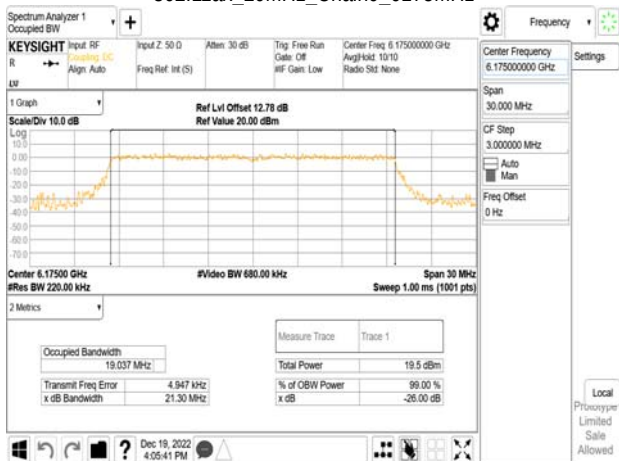
802.11ax_20MHz_Chain0_5955MHz



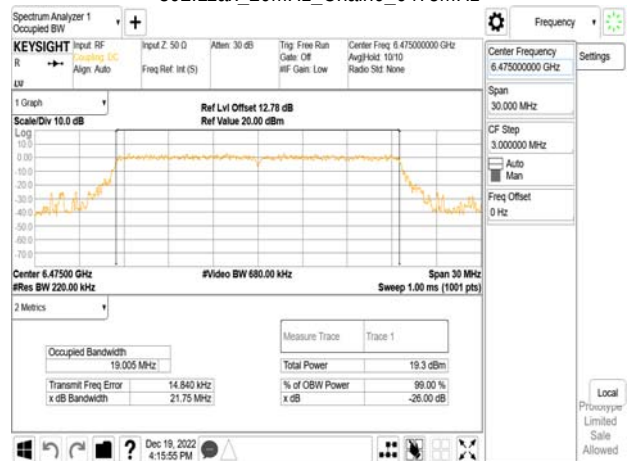
802.11ax_20MHz_Chain0_6435MHz



802.11ax_20MHz_Chain0_6175MHz



802.11ax_20MHz_Chain0_6475MHz



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802.11ax_20MHz_Chain0_6515MHz



802.11ax_20MHz_Chain0_6855MHz



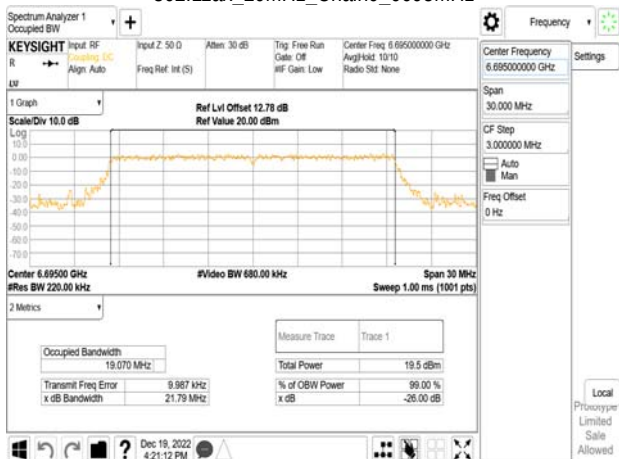
802.11ax_20MHz_Chain0_6535MHz



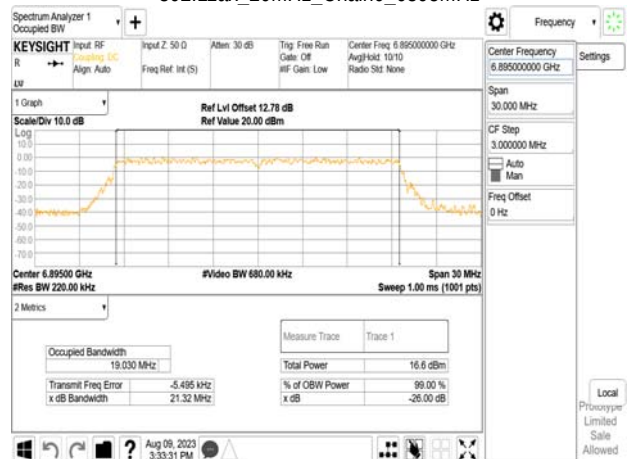
802.11ax_20MHz_Chain0_6875MHz



802.11ax_20MHz_Chain0_6695MHz



802.11ax_20MHz_Chain0_6895MHz



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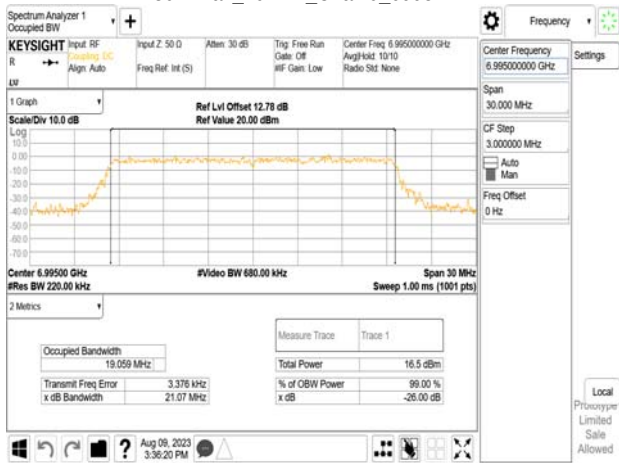
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802.11ax_20MHz_Chain0_6995MHz



802.11ax_40MHz_Chain0_6165MHz



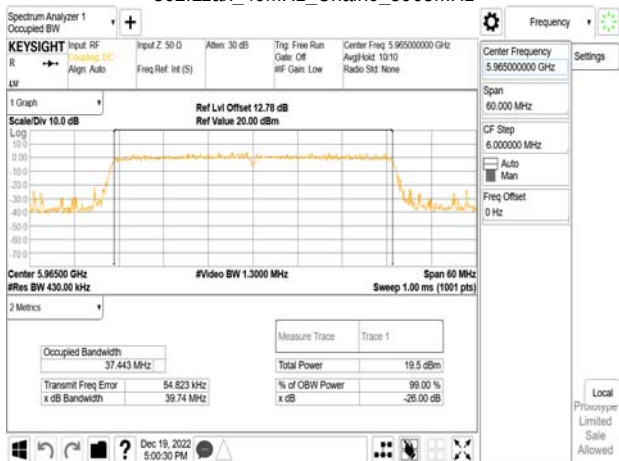
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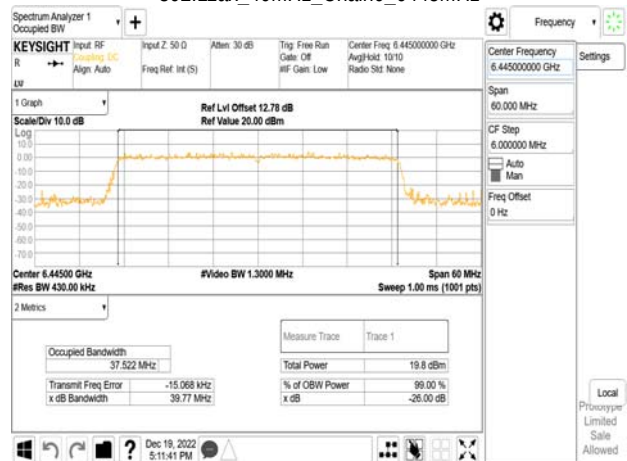
802.11ax_40MHz_Chain0_6405MHz



802.11ax_40MHz_Chain0_5965MHz



802.11ax_40MHz_Chain0_6445MHz

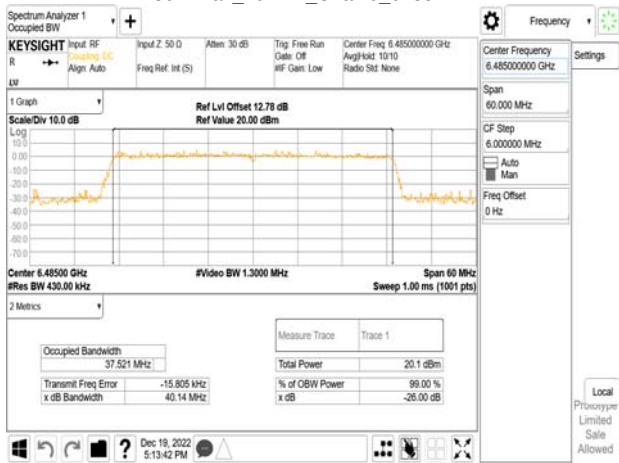


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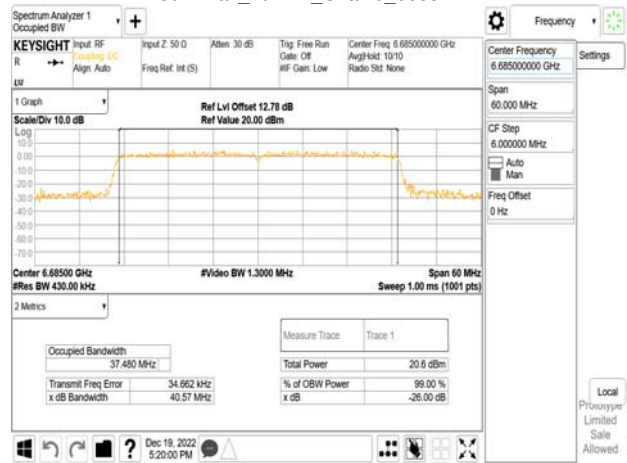
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802.11ax_40MHz_Chain0_6485MHz



802.11ax_40MHz_Chain0_6685MHz



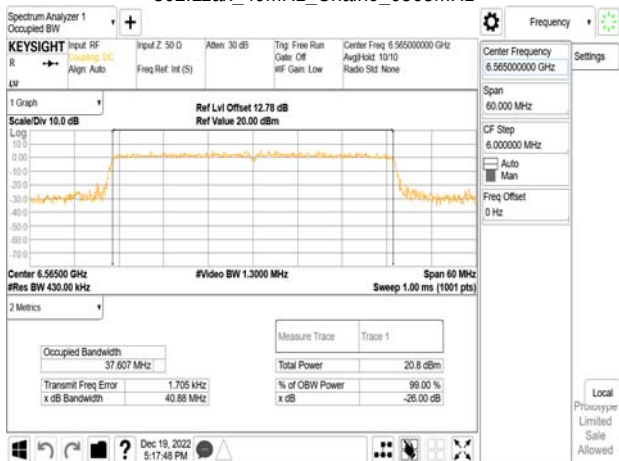
802.11ax_40MHz_Chain0_6525MHz



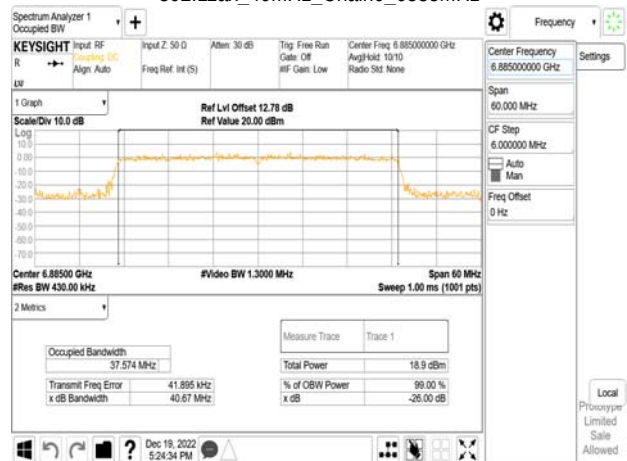
802.11ax_40MHz_Chain0_6845MHz



802.11ax_40MHz_Chain0_6565MHz



802.11ax_40MHz_Chain0_6885MHz

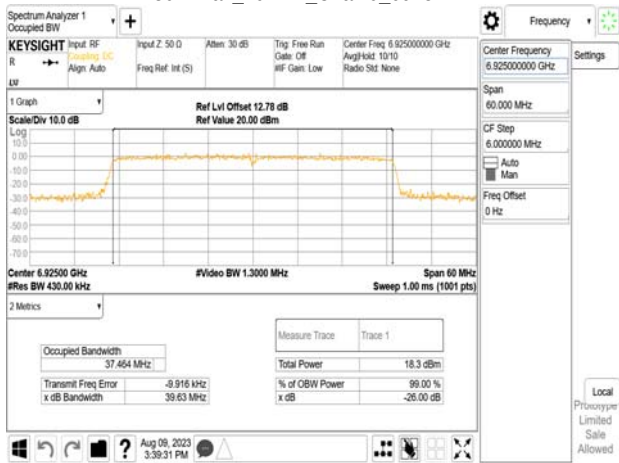


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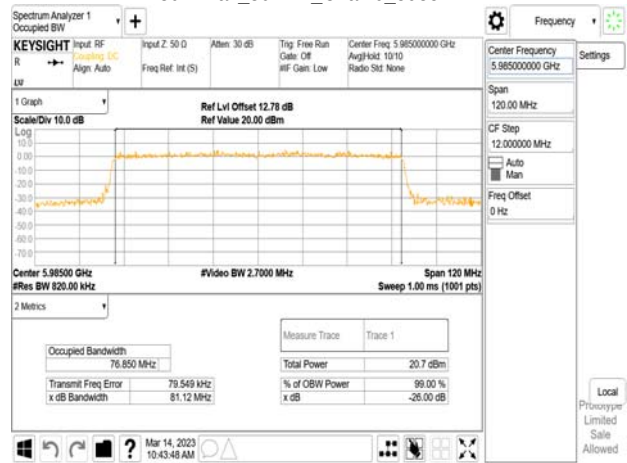
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802.11ax_40MHz_Chain0_6925MHz



802.11ax_80MHz_Chain0_5985MHz



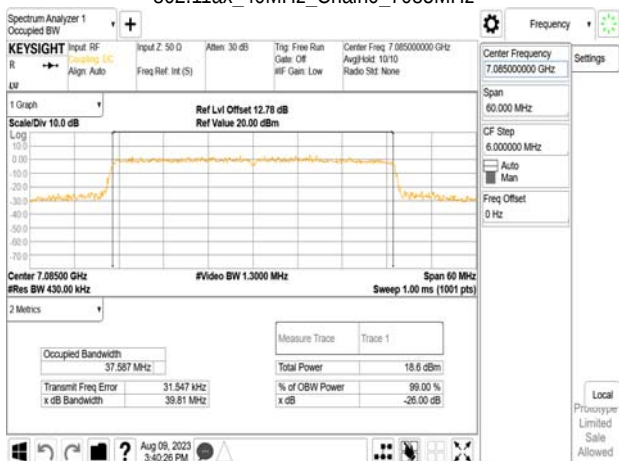
802.11ax_40MHz_Chain0_7005MHz



802.11ax_80MHz_Chain0_6145MHz



802.11ax_40MHz_Chain0_7085MHz



802.11ax_80MHz_Chain0_6385MHz

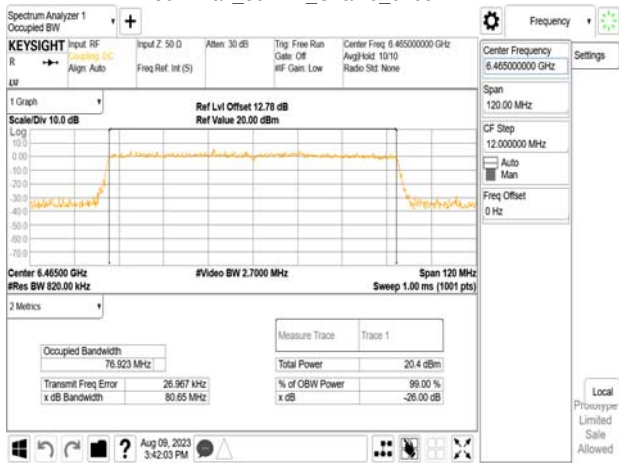


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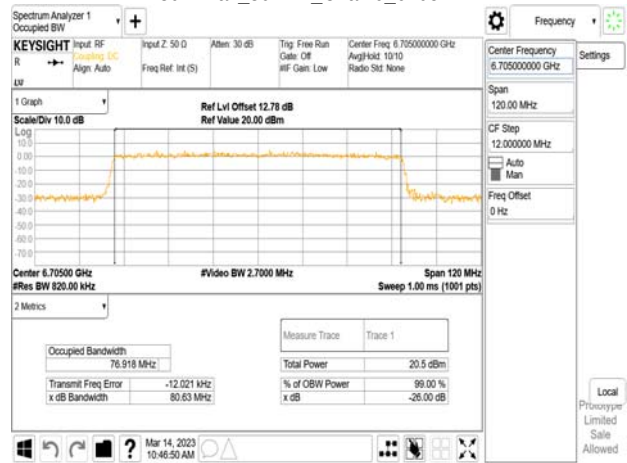
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802.11ax_80MHz_Chain0_6465MHz



802.11ax_80MHz_Chain0_6705MHz



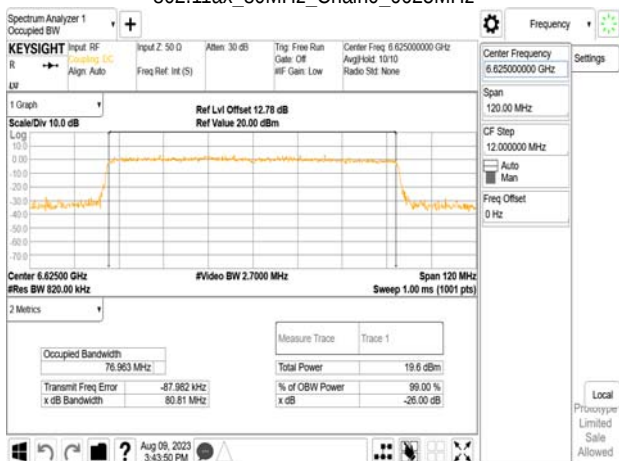
802.11ax_80MHz_Chain0_6545MHz



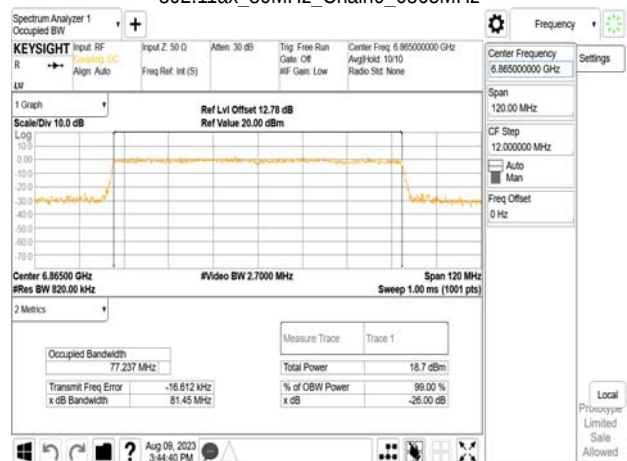
802.11ax_80MHz_Chain0_6785MHz



802.11ax_80MHz_Chain0_6625MHz



802.11ax_80MHz_Chain0_6865MHz



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MIMO

802.11ax_80MHz_Chain0_6945MHz



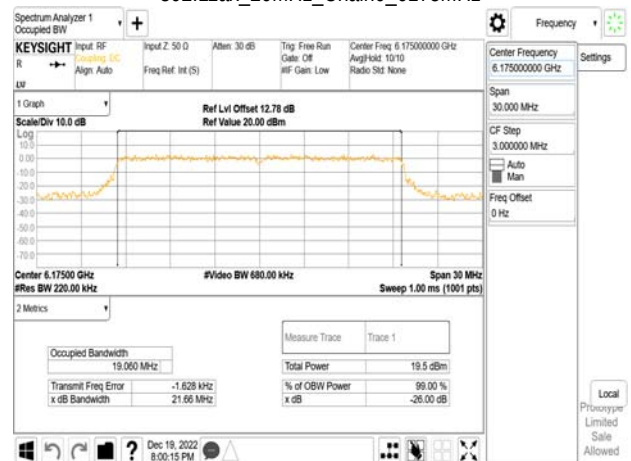
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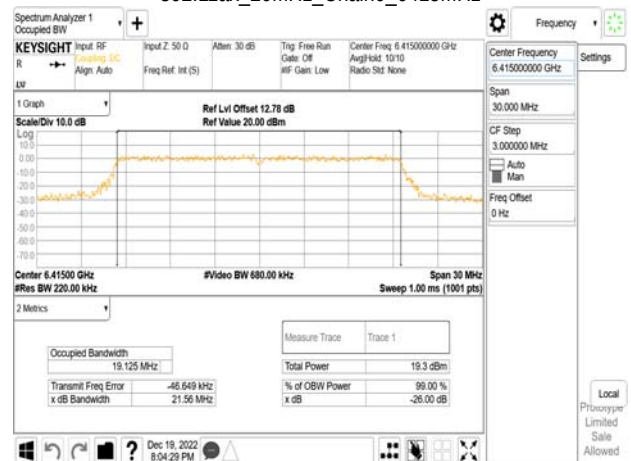
802.11ax_80MHz_Chain0_7025MHz



802.11ax_20MHz_Chain0_6175MHz



802.11ax_20MHz_Chain0_6415MHz

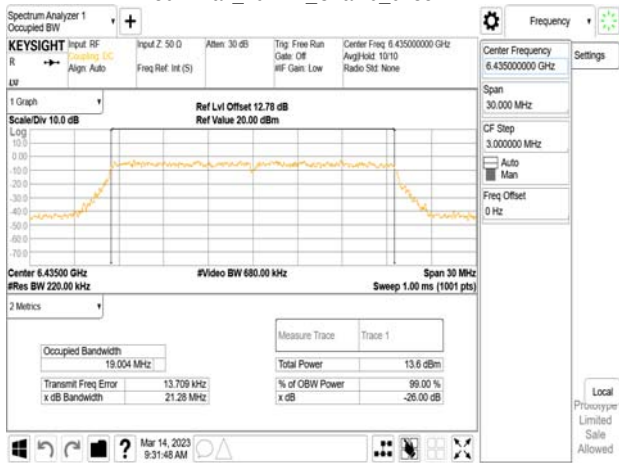


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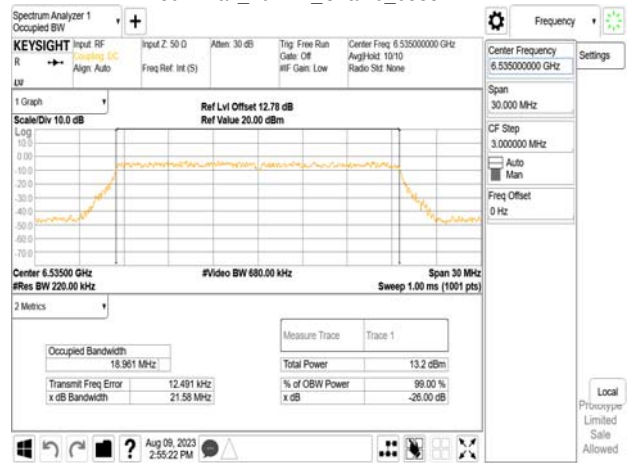
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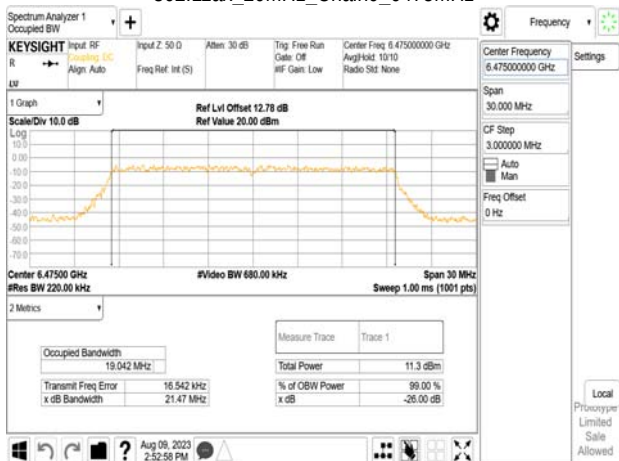
802.11ax_20MHz_Chain0_6435MHz



802.11ax_20MHz_Chain0_6535MHz



802.11ax_20MHz_Chain0_6475MHz



802.11ax_20MHz_Chain0_6695MHz



802.11ax_20MHz_Chain0_6515MHz



802.11ax_20MHz_Chain0_6855MHz



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台灣檢驗科技股份有限公司

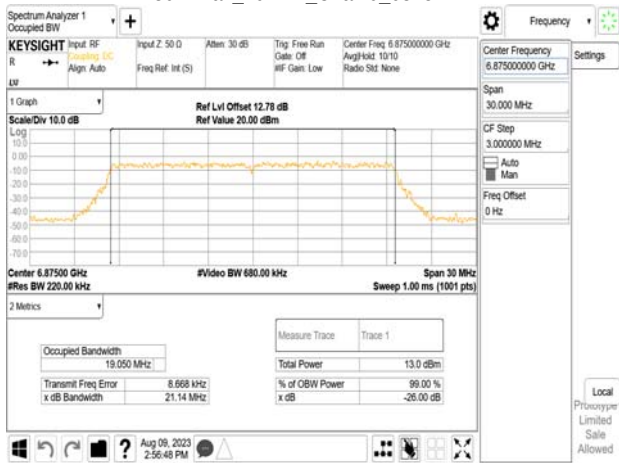
t (886-2) 2299-3279

f (886-2) 2298-0488

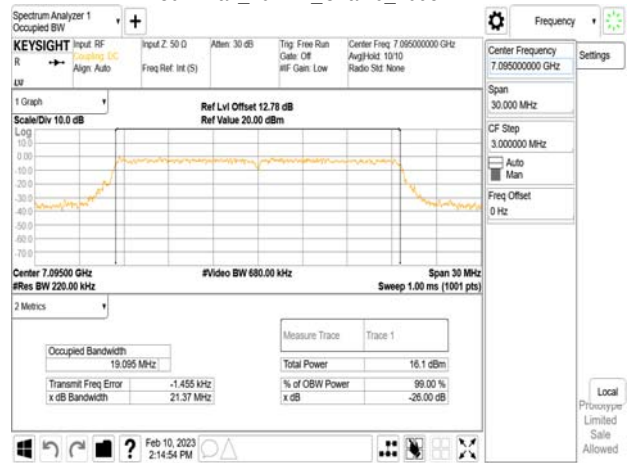
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802.11ax_20MHz_Chain0_6875MHz



802.11ax_20MHz_Chain0_7095MHz



802.11ax_20MHz_Chain0_6895MHz



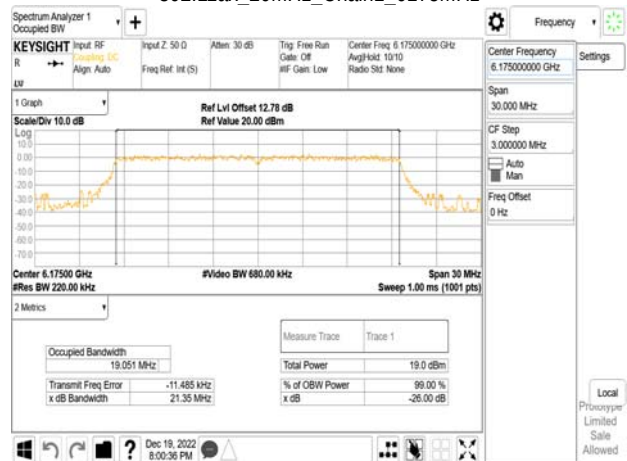
802.11ax_20MHz_Chain1_5955MHz



802.11ax_20MHz_Chain0_6995MHz



802.11ax_20MHz_Chain1_6175MHz



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802.11ax_20MHz_Chain1_6415MHz



802.11ax_20MHz_Chain1_6515MHz



802.11ax_20MHz_Chain1_6435MHz



802.11ax_20MHz_Chain1_6535MHz



802.11ax_20MHz_Chain1_6475MHz



802.11ax_20MHz_Chain1_6695MHz



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台灣檢驗科技股份有限公司

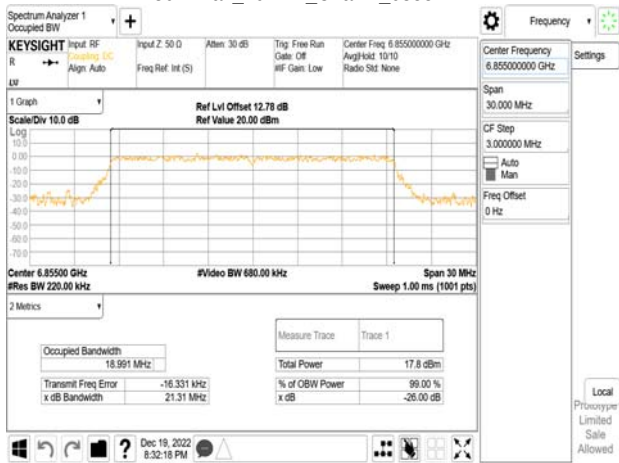
t (886-2) 2299-3279

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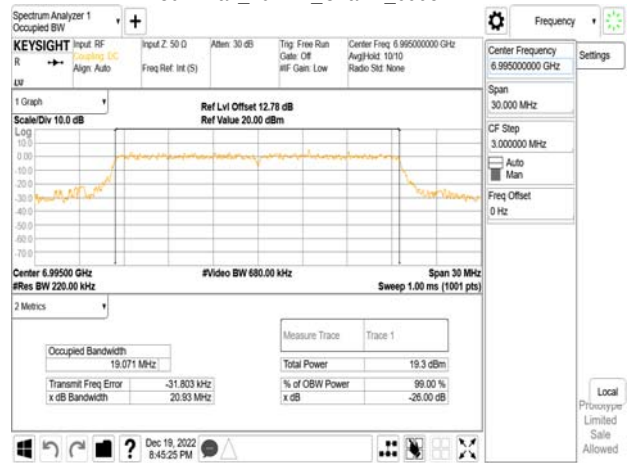
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802.11ax_20MHz_Chain1_6855MHz



802.11ax_20MHz_Chain1_6995MHz



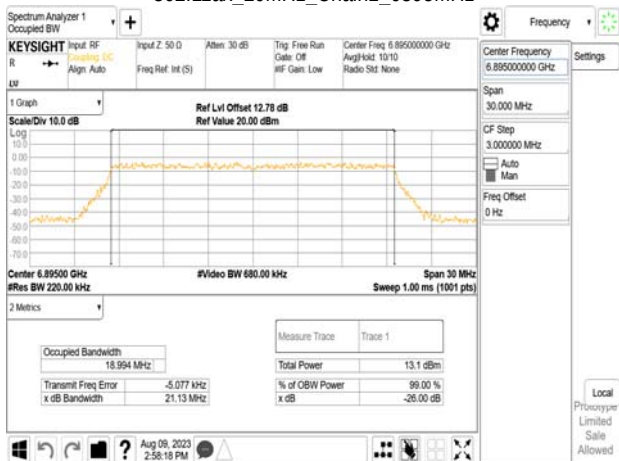
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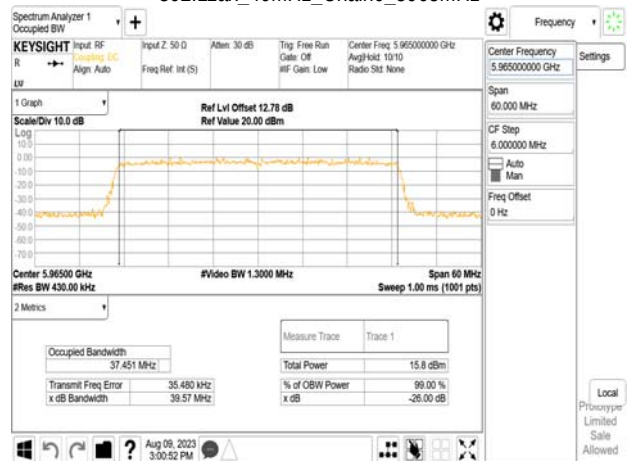
802.11ax_20MHz_Chain1_7095MHz



802.11ax_20MHz_Chain1_6895MHz



802.11ax_40MHz_Chain0_5965MHz

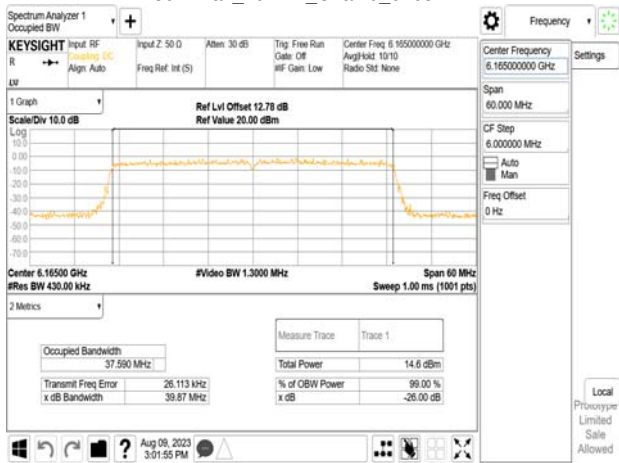


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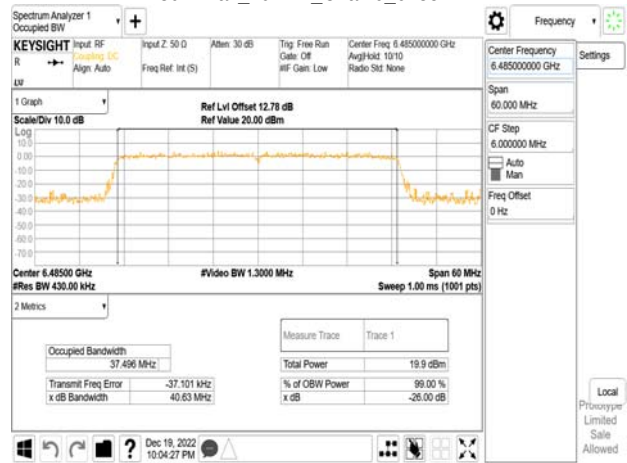
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802.11ax_40MHz_Chain0_6165MHz



802.11ax_40MHz_Chain0_6485MHz



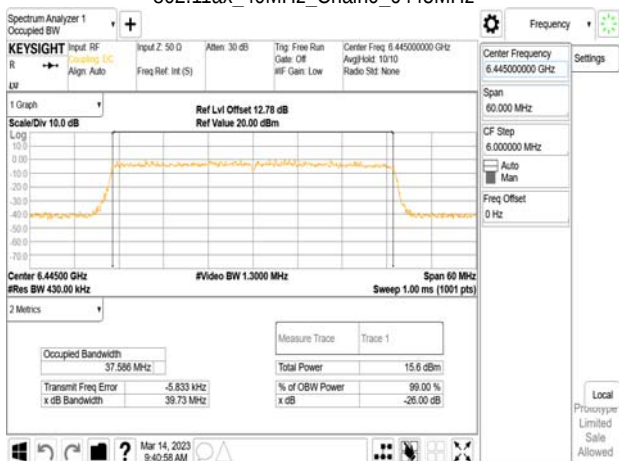
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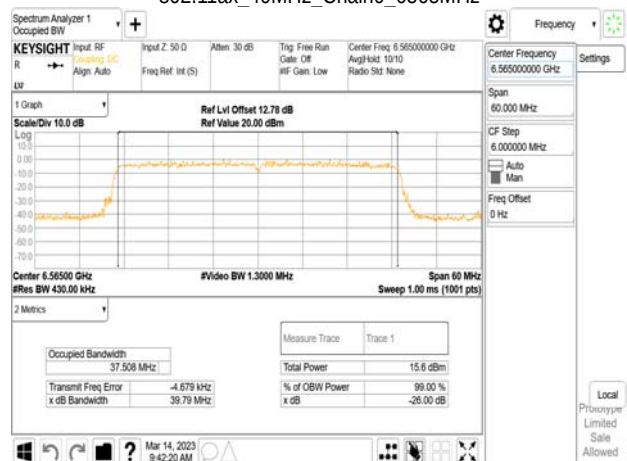
802.11ax_40MHz_Chain0_6525MHz



802.11ax_40MHz_Chain0_6445MHz



802.11ax_40MHz_Chain0_6565MHz

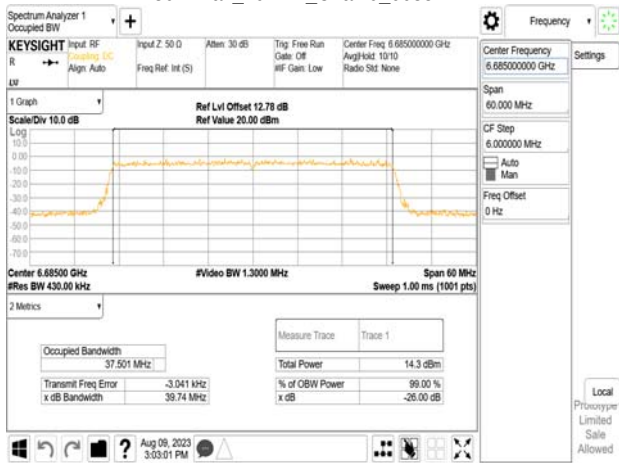


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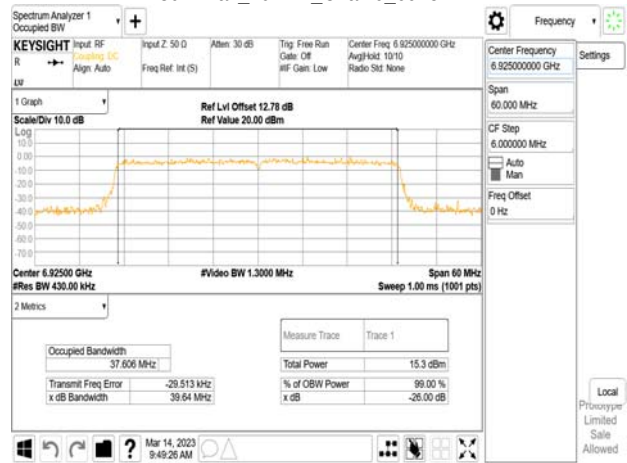
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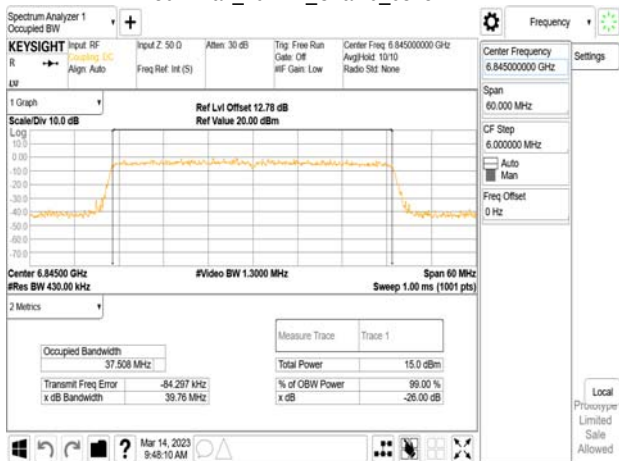
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802.11ax_40MHz_Chain0_6925MHz



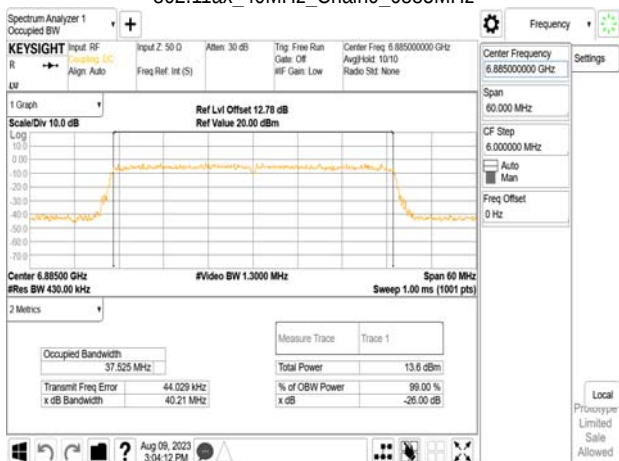
802.11ax_40MHz_Chain0_6845MHz



802.11ax_40MHz_Chain0_7005MHz



802.11ax_40MHz_Chain0_6885MHz



802.11ax_40MHz_Chain0_7085MHz

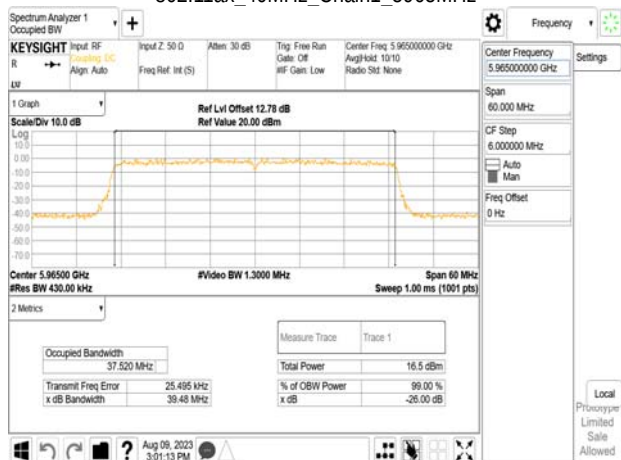


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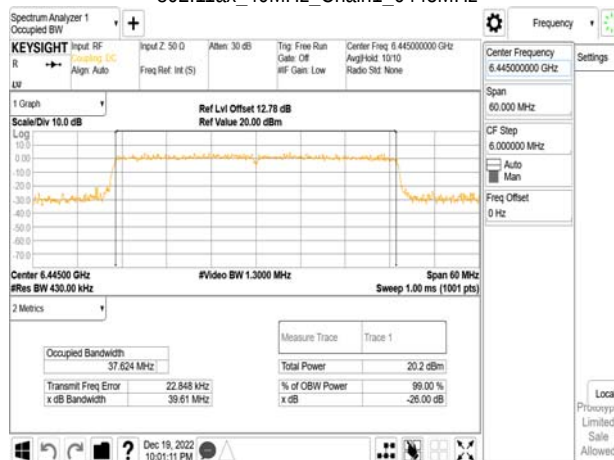
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802.11ax_40MHz_Chain1_5965MHz



802.11ax_40MHz_Chain1_6445MHz



802.11ax_40MHz_Chain1_6165MHz



802.11ax_40MHz_Chain1_6485MHz



802.11ax_40MHz_Chain1_6405MHz



802.11ax_40MHz_Chain1_6525MHz

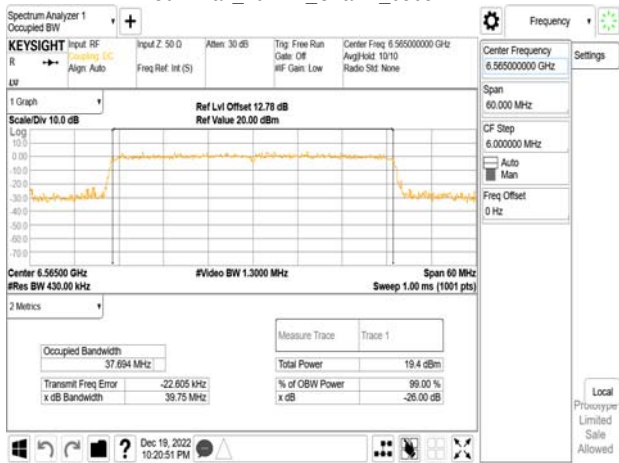


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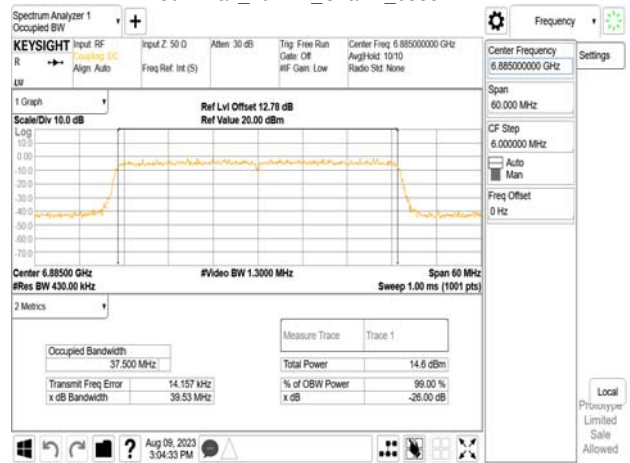
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802.11ax_40MHz_Chain1_6565MHz



802.11ax_40MHz_Chain1_6885MHz



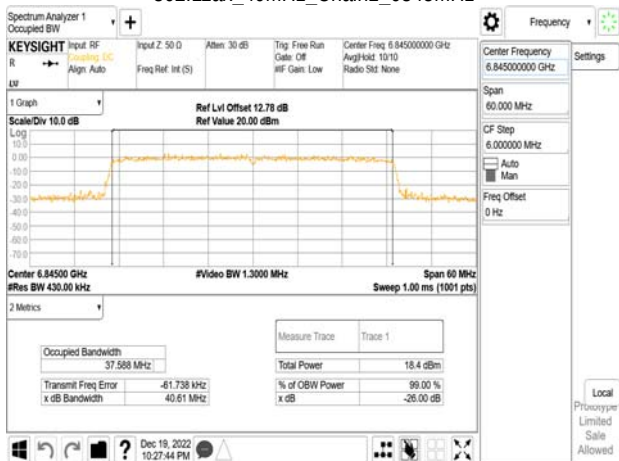
802.11ax_40MHz_Chain1_6685MHz



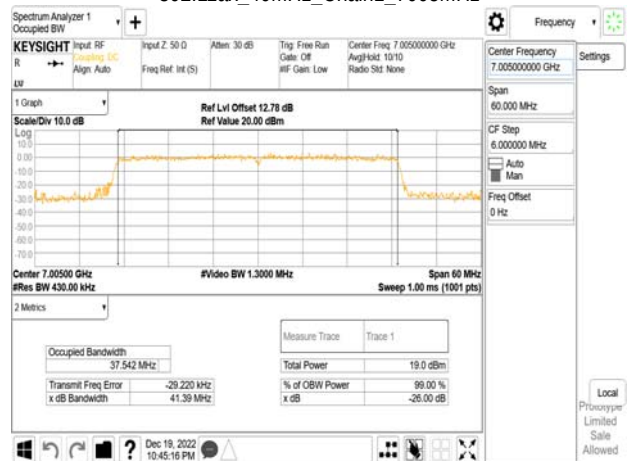
802.11ax_40MHz_Chain1_6925MHz



802.11ax_40MHz_Chain1_6845MHz



802.11ax_40MHz_Chain1_7005MHz

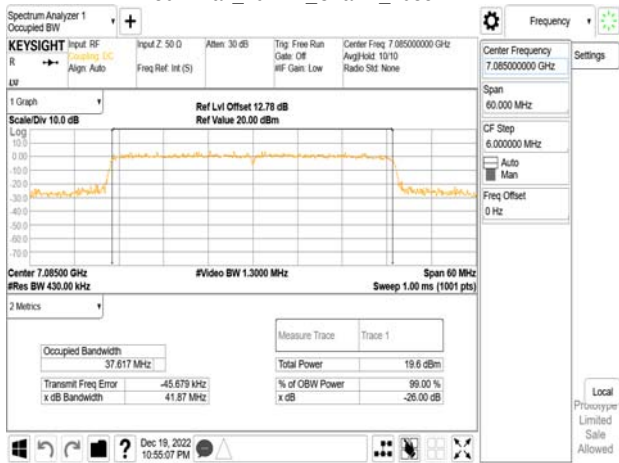


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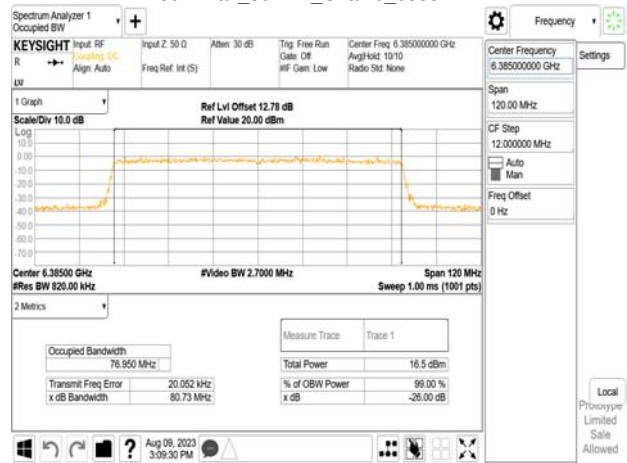
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802.11ax_40MHz_Chain1_7085MHz



802.11ax_80MHz_Chain0_6385MHz



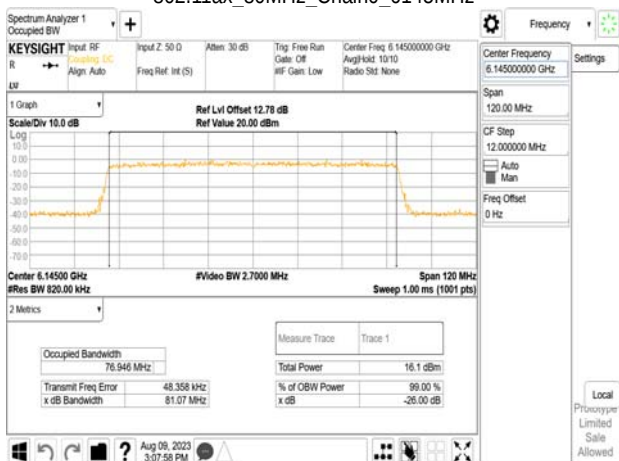
802.11ax_80MHz_Chain0_5985MHz



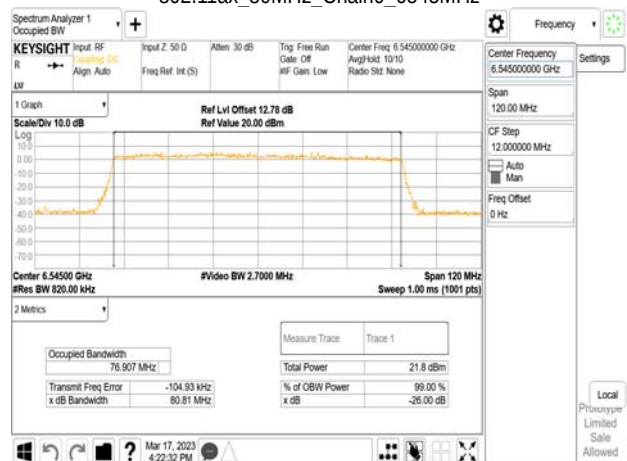
802.11ax_80MHz_Chain0_6465MHz



802.11ax_80MHz_Chain0_6145MHz



802.11ax_80MHz_Chain0_6545MHz



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802.11ax_80MHz_Chain0_6625MHz



802.11ax_80MHz_Chain0_6865MHz



802.11ax_80MHz_Chain0_6705MHz



802.11ax_80MHz_Chain0_6945MHz



802.11ax_80MHz_Chain0_6785MHz



802.11ax_80MHz_Chain0_7025MHz

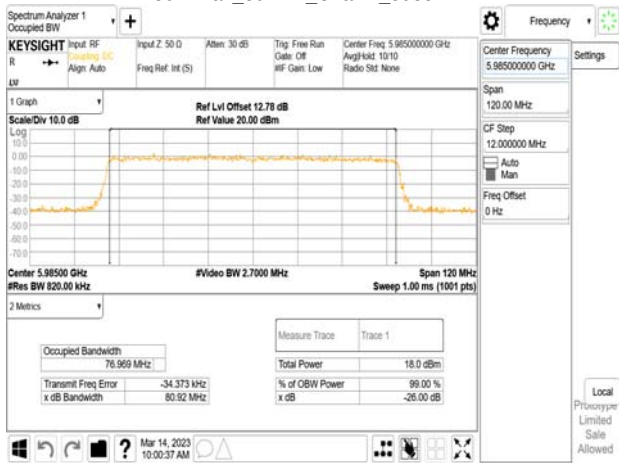


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802.11ax_80MHz_Chain1_5985MHz



802.11ax_80MHz_Chain1_6465MHz



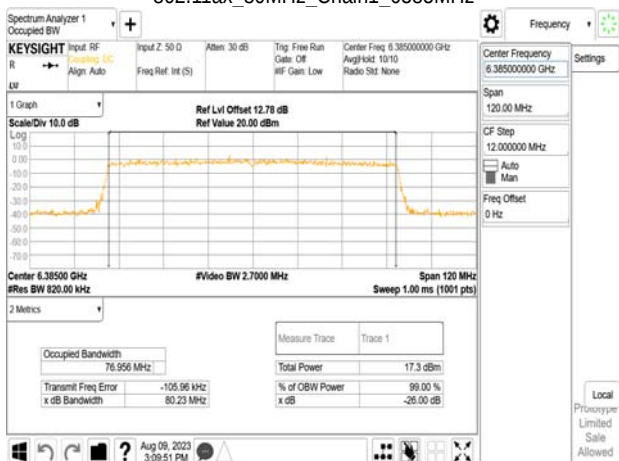
802.11ax_80MHz_Chain1_6145MHz



802.11ax_80MHz_Chain1_6545MHz



802.11ax_80MHz_Chain1_6385MHz



802.11ax_80MHz_Chain1_6625MHz

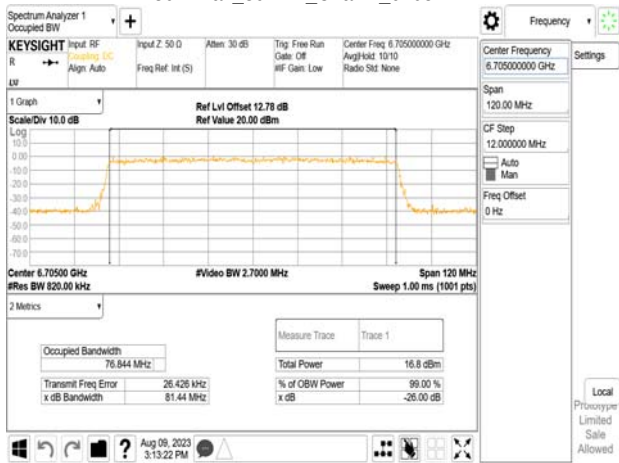


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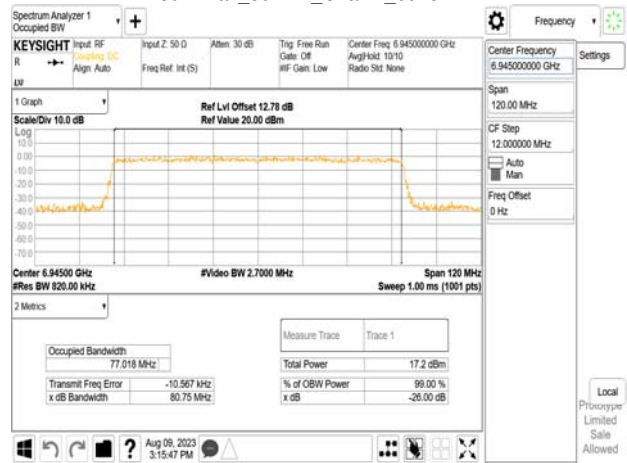
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802.11ax_80MHz_Chain1_6705MHz



802.11ax_80MHz_Chain1_6945MHz



802.11ax_80MHz_Chain1_6785MHz



802.11ax_80MHz_Chain1_7025MHz



802.11ax_80MHz_Chain1_6865MHz



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9 MAXIMUM OUTPUT POWER

9.1 Standard Applicable

9.1.1 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.

9.1.2 Output Power

§15.407(a)

- (4) For a standard power access point and fixed client device operating in the 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 36 dBm.
For outdoor devices, the maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
- (5) For an indoor access point operating in the 5.925-7.125 GHz band, the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm.
- (6) For a subordinate device operating under the control of an indoor access point in the 5.925-7.125 GHz band, the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm.
- (7) For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm and the device must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power.
- (8) For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm.

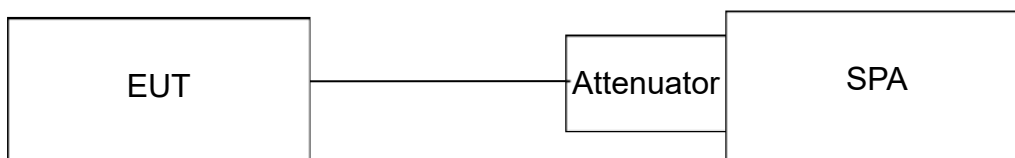
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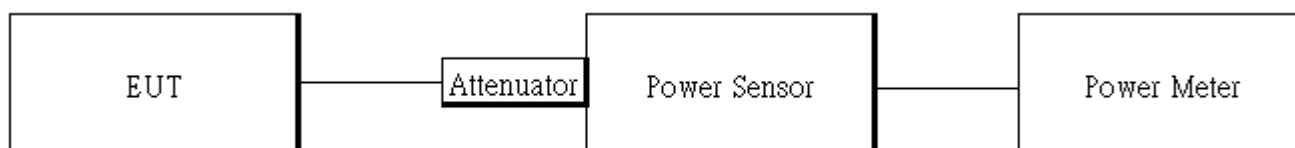
EUT CATEGORY		Equipment Class	§15.407(a)	§RSS 248 4.6
	Standard Access Point	6SD	EIRP < 36dBm and antenna angle above 30 degrees < 21dBm EIRP for outdoor use	EIRP < 30dBm
V	indoor Access Point	6ID	EIRP < 30dBm	
	Subordinate Device	6PP	EIRP < 30dBm	
	Fixed Client	6FC	EIRP < 36dBm and antenna angle above 30 degrees < 21dBm EIRP for outdoor use	EIRP < 24dBm
	Indoor Client	6XD	EIRP < 24dBm	
	Standard Client	6FX	EIRP < 30dBm no more than 6 dB below its associated standard power access point's authorized trans-mit power	
	Dual Client	6CD	Compliance both indoor client and standard client limit	

9.2 Test Setup

9.2.1 Duty Cycle



9.2.2 Output Power



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Note:

As per section F. 2). e). (ii) and F. 2). f). 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

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

G_k is the gain in dBi of the kth antenna.

(i) If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

• For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$

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9.3 Measurement Procedure

9.3.1 Duty Cycle

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

9.3.2 Output Power

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.
8. The maximum antenna gain is selected just like below.

SISO/ MIMO	Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)
SISO	Dipole	Molex	146153	5925~7125	5.8
MIMO	Dipole	Unictron	WT32D1-KX	5925~7125	4

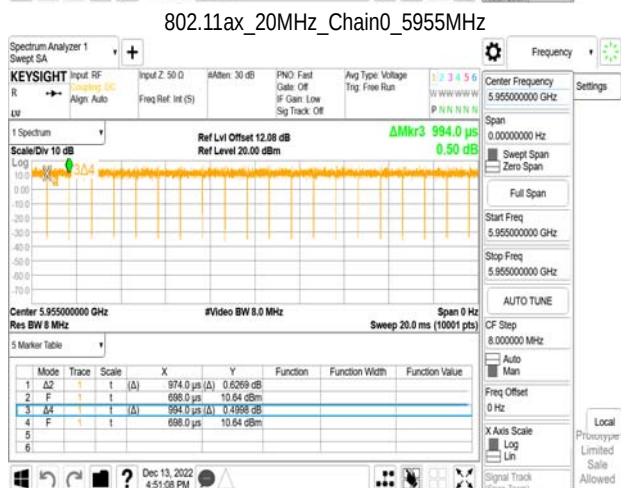
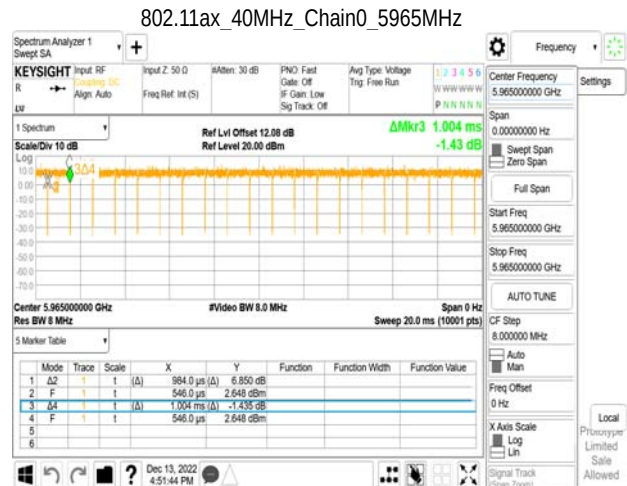
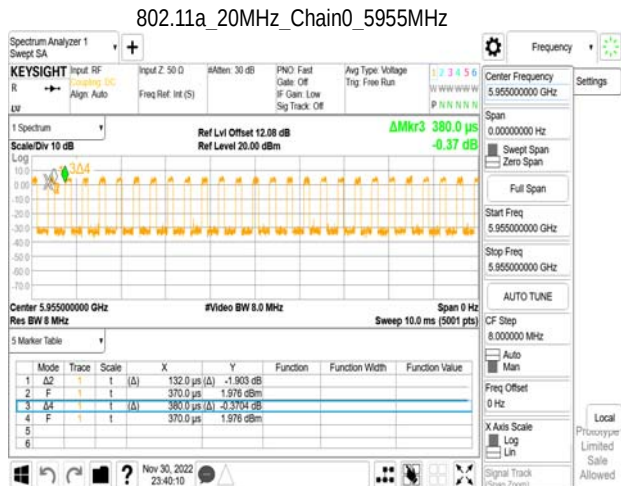
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9.4 Measurement Result

9.4.1 Duty Cycle

Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	34.74	4.59	7.58	8.00
802.11ax_20	97.99	0.09	1.03	2.00
802.11ax_40	98.01	0.09	1.02	0.01
802.11ax_80	98.01	0.09	1.01	0.01



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9.4.2 Conducted output power

802.11a_Ch0

CH	Frequency (MHz)	Average POWER +Factor (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
1	5955	8.98	5.8	14.78	30	PASS
45	6175	8.93	5.8	14.73	30	PASS
93	6415	8.85	5.8	14.65	30	PASS
97	6435	8.99	5.8	14.79	30	PASS
105	6475	8.92	5.8	14.72	30	PASS
113	6515	8.84	5.8	14.64	30	PASS
117	6535	8.85	5.8	14.65	30	PASS
149	6695	8.93	5.8	14.73	30	PASS
181	6855	8.92	5.8	14.72	30	PASS
185	6875(U-NII 7)	6.97	5.8	12.77	30	PASS
185	6875(U-NII 8)	6.97	5.8	12.77	30	PASS
189	6895	9.82	5.8	15.62	30	PASS
209	6995	9.90	5.8	15.70	30	PASS
229	7095	9.94	5.8	15.74	30	PASS

802.11a_Ch1

CH	Frequency (MHz)	Average POWER +Factor (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
1	5955	8.96	5.8	14.76	30	PASS
45	6175	8.87	5.8	14.67	30	PASS
93	6415	8.57	5.8	14.37	30	PASS
97	6435	8.83	5.8	14.63	30	PASS
105	6475	8.68	5.8	14.48	30	PASS
113	6515	8.80	5.8	14.60	30	PASS
117	6535	8.75	5.8	14.55	30	PASS
149	6695	8.78	5.8	14.58	30	PASS
181	6855	8.64	5.8	14.44	30	PASS
185	6875(U-NII 7)	6.70	5.8	12.50	30	PASS
185	6875(U-NII 8)	6.70	5.8	12.50	30	PASS
189	6895	9.64	5.8	15.44	30	PASS
209	6995	9.74	5.8	15.54	30	PASS
229	7095	9.78	5.8	15.58	30	PASS

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802.11ax_HE20_Ch0

CH	Frequency (MHz)	RU config.	Average POWER +Factor (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
1	5955	full	10.90	5.8	16.70	30	PASS
		26/0	1.98	5.8	7.78	30	PASS
		52/37	4.96	5.8	10.76	30	PASS
		106/53	7.97	5.8	13.77	30	PASS
45	6175	full	10.98	5.8	16.78	30	PASS
93	6415	full	10.92	5.8	16.72	30	PASS
		26/8	1.95	5.8	7.75	30	PASS
		52/40	4.95	5.8	10.75	30	PASS
		106/54	7.79	5.8	13.59	30	PASS
97	6435	full	10.96	5.8	16.76	30	PASS
		26/0	1.99	5.8	7.79	30	PASS
		52/37	4.98	5.8	10.78	30	PASS
		106/53	7.89	5.8	13.69	30	PASS
105	6475	full	10.84	5.8	16.64	30	PASS
113	6515	full	10.93	5.8	16.73	30	PASS
		26/8	1.99	5.8	7.79	30	PASS
		52/40	4.67	5.8	10.47	30	PASS
		106/54	7.99	5.8	13.79	30	PASS
117	6535	full	10.99	5.8	16.79	30	PASS
		26/0	1.96	5.8	7.76	30	PASS
		52/37	3.95	5.8	9.75	30	PASS
		106/53	6.98	5.8	12.78	30	PASS
149	6695	full	10.82	5.8	16.62	30	PASS
181	6855	full	10.98	5.8	16.78	30	PASS
		26/8	1.93	5.8	7.73	30	PASS
		52/40	3.87	5.8	9.67	30	PASS
		106/54	6.95	5.8	12.75	30	PASS
185	6875(U-NII 7)	full	8.88	5.8	14.68	30	PASS
185	6875(U-NII 8)	full	8.88	5.8	14.68	30	PASS
189	6895	full	11.90	5.8	17.70	30	PASS
		26/0	2.97	5.8	8.77	30	PASS
		52/37	5.96	5.8	11.76	30	PASS
		106/53	7.87	5.8	13.67	30	PASS
209	6995	full	11.92	5.8	17.72	30	PASS
229	7095	full	11.94	5.8	17.74	30	PASS
		26/8	2.93	5.8	8.73	30	PASS
		52/40	5.70	5.8	11.50	30	PASS
		106/54	7.96	5.8	13.76	30	PASS

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802.11ax_HE20_Ch1

CH	Frequency (MHz)	RU config.	Average POWER +Factor (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
1	5955	full	10.88	5.8	16.68	30	PASS
		26/0	1.85	5.8	7.65	30	PASS
		52/37	4.92	5.8	10.72	30	PASS
		106/53	7.95	5.8	13.75	30	PASS
45	6175	full	10.82	5.8	16.62	30	PASS
93	6415	full	10.85	5.8	16.65	30	PASS
		26/8	1.83	5.8	7.63	30	PASS
		52/40	4.93	5.8	10.73	30	PASS
		106/54	7.72	5.8	13.52	30	PASS
97	6435	full	10.93	5.8	16.73	30	PASS
		26/0	1.95	5.8	7.75	30	PASS
		52/37	4.92	5.8	10.72	30	PASS
		106/53	7.59	5.8	13.39	30	PASS
105	6475	full	10.82	5.8	16.62	30	PASS
113	6515	full	10.90	5.8	16.70	30	PASS
		26/8	1.68	5.8	7.48	30	PASS
		52/40	4.59	5.8	10.39	30	PASS
		106/54	7.96	5.8	13.76	30	PASS
117	6535	full	10.93	5.8	16.73	30	PASS
		26/0	1.93	5.8	7.73	30	PASS
		52/37	3.91	5.8	9.71	30	PASS
		106/53	6.85	5.8	12.65	30	PASS
149	6695	full	10.80	5.8	16.60	30	PASS
181	6855	full	10.95	5.8	16.75	30	PASS
		26/8	1.88	5.8	7.68	30	PASS
		52/40	3.84	5.8	9.64	30	PASS
		106/54	6.90	5.8	12.70	30	PASS
185	6875(U-NII 7)	full	8.72	5.8	14.52	30	PASS
185	6875(U-NII 8)	full	8.72	5.8	14.52	30	PASS
189	6895	full	11.69	5.8	17.49	30	PASS
		26/0	2.88	5.8	8.68	30	PASS
		52/37	5.92	5.8	11.72	30	PASS
		106/53	7.85	5.8	13.65	30	PASS
209	6995	full	11.88	5.8	17.68	30	PASS
229	7095	full	11.92	5.8	17.72	30	PASS
		26/8	2.90	5.8	8.70	30	PASS
		52/40	5.57	5.8	11.37	30	PASS
		106/54	7.87	5.8	13.67	30	PASS

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802.11ax_HE40_Ch0

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3	5965	full	13.77	5.8	19.57	30	PASS
		242/61	10.82	5.8	16.62	30	PASS
43	6165	full	13.92	5.8	19.72	30	PASS
91	6405	full	13.98	5.8	19.78	30	PASS
		242/62	10.83	5.8	16.63	30	PASS
99	6445	full	13.93	5.8	19.73	30	PASS
		242/61	10.89	5.8	16.69	30	PASS
107	6485	full	13.99	5.8	19.79	30	PASS
		242/62	10.90	5.8	16.70	30	PASS
115	6525(U-NII 6)	full	10.86	5.8	16.66	30	PASS
115	6525(U-NII 7)	full	10.86	5.8	16.66	30	PASS
123	6565	full	12.98	5.8	18.78	30	PASS
		242/61	11.76	5.8	17.56	30	PASS
147	6685	full	12.96	5.8	18.76	30	PASS
179	6845	full	12.96	5.8	18.76	30	PASS
		242/62	11.97	5.8	17.77	30	PASS
187	6885(U-NII 7)	full	7.66	5.8	13.46	30	PASS
187	6885(U-NII 8)	full	12.81	5.8	18.61	30	PASS
195	6925	full	13.99	5.8	19.79	30	PASS
		242/61	11.83	5.8	17.63	30	PASS
211	7005	full	13.96	5.8	19.76	30	PASS
227	7085	full	13.92	5.8	19.72	30	PASS
		242/62	11.79	5.8	17.59	30	PASS

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802.11ax_HE40_Ch1

CH	Frequency (MHz)	RU config.	Average POWER +Factor (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
3	5965	full	13.57	5.8	19.37	30	PASS
		242/61	10.80	5.8	16.60	30	PASS
43	6165	full	13.66	5.8	19.46	30	PASS
91	6405	full	13.62	5.8	19.42	30	PASS
		242/62	10.81	5.8	16.61	30	PASS
99	6445	full	13.66	5.8	19.46	30	PASS
		242/61	10.85	5.8	16.65	30	PASS
107	6485	full	13.55	5.8	19.35	30	PASS
		242/62	10.71	5.8	16.51	30	PASS
115	6525(U-NII 6)	full	10.63	5.8	16.43	30	PASS
115	6525(U-NII 7)	full	10.63	5.8	16.43	30	PASS
123	6565	full	12.87	5.8	18.67	30	PASS
		242/61	11.65	5.8	17.45	30	PASS
147	6685	full	12.92	5.8	18.72	30	PASS
179	6845	full	12.93	5.8	18.73	30	PASS
		242/62	11.82	5.8	17.62	30	PASS
187	6885(U-NII 7)	full	7.34	5.8	13.14	30	PASS
187	6885(U-NII 8)	full	12.49	5.8	18.29	30	PASS
195	6925	full	13.66	5.8	19.46	30	PASS
		242/61	11.70	5.8	17.50	30	PASS
211	7005	full	13.66	5.8	19.46	30	PASS
227	7085	full	13.70	5.8	19.50	30	PASS
		242/62	11.72	5.8	17.52	30	PASS

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802.11ax_HE80_Ch0

CH	Frequency (MHz)	RU config.	Average POWER +Factor (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
7	5985	full	13.97	5.8	19.77	30	PASS
		484/65	13.96	5.8	19.76	30	PASS
39	6145	full	13.91	5.8	19.71	30	PASS
87	6385	full	13.98	5.8	19.78	30	PASS
		484/66	13.97	5.8	19.77	30	PASS
103	6465	full	13.99	5.8	19.79	30	PASS
		484/65	13.96	5.8	19.76	30	PASS
		484/66	13.94	5.8	19.74	30	PASS
119	6545(U-NII 6)	full	7.52	5.8	13.32	30	PASS
119	6545(U-NII 7)	full	12.51	5.8	18.31	30	PASS
135	6625	full	13.97	5.8	19.77	30	PASS
		484/65	13.96	5.8	19.76	30	PASS
151	6705	full	13.96	5.8	19.76	30	PASS
167	6785	full	13.83	5.8	19.63	30	PASS
		484/66	13.93	5.8	19.73	30	PASS
183	6865(U-NII 7)	full	11.73	5.8	17.53	30	PASS
183	6865(U-NII 8)	full	9.42	5.8	15.22	30	PASS
199	6945	full	13.99	5.8	19.79	30	PASS
		484/65	13.88	5.8	19.68	30	PASS
215	7025	full	13.96	5.8	19.76	30	PASS
		484/66	13.88	5.8	19.68	30	PASS

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802.11ax_HE80_Ch1

CH	Frequency (MHz)	RU config.	Average POWER +Factor (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
7	5985	full	13.73	5.8	19.53	30	PASS
		484/65	13.53	5.8	19.33	30	PASS
39	6145	full	13.62	5.8	19.42	30	PASS
87	6385	full	13.62	5.8	19.42	30	PASS
		484/66	13.74	5.8	19.54	30	PASS
103	6465	full	13.80	5.8	19.60	30	PASS
		484/65	13.74	5.8	19.54	30	PASS
		484/66	13.76	5.8	19.56	30	PASS
119	6545(U-NII 6)	full	7.37	5.8	13.17	30	PASS
119	6545(U-NII 7)	full	12.36	5.8	18.16	30	PASS
135	6625	full	13.68	5.8	19.48	30	PASS
		484/65	13.52	5.8	19.32	30	PASS
151	6705	full	13.64	5.8	19.44	30	PASS
167	6785	full	13.65	5.8	19.45	30	PASS
		484/66	13.62	5.8	19.42	30	PASS
183	6865(U-NII 7)	full	11.62	5.8	17.42	30	PASS
183	6865(U-NII 8)	full	9.31	5.8	15.11	30	PASS
199	6945	full	13.65	5.8	19.45	30	PASS
		484/65	13.64	5.8	19.44	30	PASS
215	7025	full	13.66	5.8	19.46	30	PASS
		484/66	13.66	5.8	19.46	30	PASS

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MIMO

802.11ax_20_2TX

CH	Frequency (MHz)	RU config.	AVERAGE POWER + Factor(dBm)		TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
			CH 0	CH 1					
1	5955	full	7.93	7.97	10.96	4	14.96	30	PASS
		26/0	-0.97	-1.09	1.98	4	5.98	30	PASS
		52/37	1.96	1.81	4.89	4	8.89	30	PASS
		106/53	5.18	4.76	7.98	4	11.98	30	PASS
45	6175	full	7.98	7.95	10.97	4	14.97	30	PASS
93	6415	full	8.18	7.76	10.98	4	14.98	30	PASS
		26/8	-0.87	-1.66	1.76	4	5.76	30	PASS
		52/40	2.01	1.31	4.68	4	8.68	30	PASS
		106/54	5.02	4.34	7.70	4	11.70	30	PASS
97	6435	full	8.11	7.83	10.98	4	14.98	30	PASS
		26/0	-0.79	-1.28	1.98	4	5.98	30	PASS
		52/37	1.60	2.33	4.99	4	8.99	30	PASS
		106/53	4.70	4.41	7.57	4	11.57	30	PASS
105	6475	full	7.84	8.10	10.98	4	14.98	30	PASS
113	6515	full	8.06	7.47	10.78	4	14.78	30	PASS
		26/8	-1.12	-1.85	1.54	4	5.54	30	PASS
		52/40	2.02	0.95	4.53	4	8.53	30	PASS
		106/54	5.03	4.35	7.71	4	11.71	30	PASS
117	6535	full	7.90	7.07	10.51	4	14.51	30	PASS
		26/0	-0.89	-2.12	1.55	4	5.55	30	PASS
		52/37	1.27	0.63	3.97	4	7.97	30	PASS
		106/53	4.44	3.45	6.98	4	10.98	30	PASS
149	6695	full	7.54	8.00	10.78	4	14.78	30	PASS
181	6855	full	7.42	8.34	10.91	4	14.91	30	PASS
		26/8	-1.75	-1.25	1.52	4	5.52	30	PASS
		52/40	0.02	1.60	3.89	4	7.89	30	PASS
		106/54	4.00	3.95	6.98	4	10.98	30	PASS
185	6875(U-NII 7)	full	4.30	5.55	7.98	4	11.98	30	PASS
185	6875(U-NII 8)	full	4.30	5.55	7.98	4	11.98	30	PASS
189	6895	full	8.03	7.92	10.98	4	14.98	30	PASS
		26/0	-1.30	-0.76	1.99	4	5.99	30	PASS
		52/37	0.31	0.94	3.64	4	7.64	30	PASS
		106/53	3.47	4.24	6.88	4	10.88	30	PASS
209	6995	full	7.56	8.28	10.94	4	14.94	30	PASS
229	7095	full	7.32	7.73	10.54	4	14.54	30	PASS
		26/8	-1.82	-0.58	1.85	4	5.85	30	PASS
		52/40	0.75	1.17	3.97	4	7.97	30	PASS
		106/54	3.68	4.27	6.99	4	10.99	30	PASS

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802.11ax_40_2TX

CH	Frequency (MHz)	RU config.	AVERAGE POWER + Factor(dBm)		TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
			CH 0	CH 1					
3	5965	full	10.56	9.27	12.97	4	16.97	30	PASS
		242/61	7.76	7.96	10.87	4	14.87	30	PASS
43	6165	full	10.70	9.10	12.98	4	16.98	30	PASS
91	6405	full	10.74	9.02	12.97	4	16.97	30	PASS
		242/62	7.81	7.32	10.58	4	14.58	30	PASS
99	6445	full	9.61	10.32	12.99	4	16.99	30	PASS
		242/61	7.64	8.05	10.86	4	14.86	30	PASS
107	6485	full	9.54	10.17	12.87	4	16.87	30	PASS
		242/62	8.10	7.40	10.77	4	14.77	30	PASS
115	6525(U-NII 6)	full	5.81	7.18	9.56	4	13.56	30	PASS
115	6525(U-NII 7)	full	5.81	7.18	9.56	4	13.56	30	PASS
123	6565	full	10.01	9.67	12.85	4	16.85	30	PASS
		242/61	7.48	6.14	9.87	4	13.87	30	PASS
147	6685	full	10.13	9.28	12.73	4	16.73	30	PASS
179	6845	full	9.56	9.84	12.71	4	16.71	30	PASS
		242/62	7.20	6.72	9.97	4	13.97	30	PASS
187	6885(U-NII 7)	full	2.83	4.17	6.56	4	10.56	30	PASS
187	6885(U-NII 8)	full	7.98	9.32	11.71	4	15.71	30	PASS
195	6925	full	9.68	10.21	12.96	4	16.96	30	PASS
		242/61	6.21	7.62	9.98	4	13.98	30	PASS
211	7005	full	8.97	10.00	12.52	4	16.52	30	PASS
227	7085	full	9.66	10.27	12.98	4	16.98	30	PASS
		242/62	6.82	7.03	9.93	4	13.93	30	PASS

802.11ax_80_2TX

CH	Frequency (MHz)	RU config.	AVERAGE POWER + Factor(dBm)		TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED EIRP LIMIT (dBm)	RESULT
			CH 0	CH 1					
7	5985	full	10.57	11.20	13.90	4	17.90	30	PASS
		484/65	9.98	9.17	12.60	4	16.60	30	PASS
39	6145	full	10.68	11.27	13.99	4	17.99	30	PASS
87	6385	full	10.58	11.03	13.82	4	17.82	30	PASS
		484/66	10.31	9.47	12.92	4	16.92	30	PASS
103	6465	full	10.97	10.72	13.85	4	17.85	30	PASS
		484/65	8.13	9.67	11.98	4	15.98	30	PASS
		484/66	8.08	9.70	11.97	4	15.97	30	PASS
119	6545(U-NII 6)	full	4.78	4.26	7.54	4	11.54	30	PASS
119	6545(U-NII 7)	full	9.79	9.27	12.54	4	16.54	30	PASS
135	6625	full	11.17	10.53	13.87	4	17.87	30	PASS
		484/65	9.04	8.90	11.98	4	15.98	30	PASS
151	6705	full	10.83	10.87	13.86	4	17.86	30	PASS
167	6785	full	10.76	10.79	13.78	4	17.78	30	PASS
		484/66	8.85	9.05	11.96	4	15.96	30	PASS
183	6865(U-NII 7)	full	8.66	9.00	11.84	4	15.84	30	PASS
183	6865(U-NII 8)	full	6.35	6.69	9.53	4	13.53	30	PASS
199	6945	full	10.51	11.35	13.96	4	17.96	30	PASS
		484/65	8.01	9.06	11.57	4	15.57	30	PASS
215	7025	full	10.39	11.05	13.74	4	17.74	30	PASS
		484/66	8.51	9.30	11.93	4	15.93	30	PASS

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10 MAXIMUM POWER SPECTRAL DENSITY

10.1 Standard Applicable

§15.407(a)

- (4) For a standard power access point and fixed client device operating in the 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed 23 dBm e.i.r.p in any 1-megahertz band.
- (5) For an indoor access point operating in the 5.925-7.125 GHz band, the maximum power spectral density must not exceed 5 dBm e.i.r.p. in any 1-megahertz band.
- (6) For a subordinate device operating under the control of an indoor access point in the 5.925-7.125 GHz band, the maximum power spectral density must not exceed 5 dBm e.i.r.p in any 1-megahertz band.
- (7) For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed 17 dBm e.i.r.p. in any 1- megahertz band.
- (8) For client devices operating under the control of an indoor access point in the 5.925- 7.125 GHz bands, the maximum power spectral density must not exceed -1 dBm e.i.r.p. in any 1-megahertz band.

EUT CATEGORY		Equipment Class	§15.407(a)	§RSS 248 4.6
V	Standard Access Point	6SD	EIRP < 23dBm/MHz	EIRP < 5dBm
	Indoor Access Point	6ID	EIRP < 5dBm/MHz	
	Subordinate Device	6PP	EIRP < 5dBm/MHz	
	Fixed Client	6FC	EIRP < 23dBm/MHz	EIRP < -1dBm/MHz
	Indoor Client	6XD	EIRP < -1dBm/MHz	
	Standard Client	6FX	EIRP < 17dBm/MHz	
	Dual Client	6CD	Compliance both indoor client and standard client limits	

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Note:

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

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

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

where

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

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

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

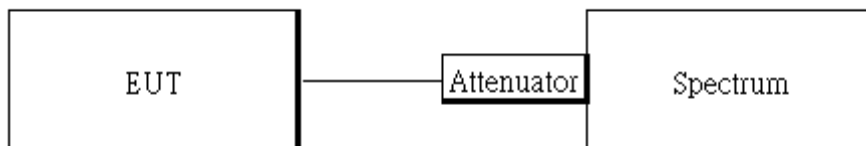
G_k is the gain in dBi of the kth antenna.

(i) If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

• For power spectral density (PSD) measurements on all devices

$\text{Array Gain} = 10 \log(N_{ANT}/N_{SS}) \text{ dB}$.

10.2 Test Setup



10.3 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. Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
5. Use the cursor on spectrum to peak search the highest level of trace
6. 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.

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8. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

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.

9. The maximum directional gain is selected just like below.

SISO/ MIMO	Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain(dBi)
SISO	Dipole	Molex	146153	5925~7125	5.8	5.8
MIMO	Dipole	Unictron	WT32D1-KX	5925~7125	4	7.01

10.4 Measurement Result

10.4.1 Power spectral density

SISO

POWER DENSITY 802.11a MODE							
Frequency (MHz)	PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)	Directional Gain(dBi)	EIRP PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
	Ch0 meas						
5955	-5.611	4.59	-1.02	5.80	4.78	5.00	-0.22
6175	-5.686	4.59	-1.10	5.80	4.70	5.00	-0.30
6415	-5.535	4.59	-0.95	5.80	4.86	5.00	-0.15
6435	-5.800	4.59	-1.21	5.80	4.59	5.00	-0.41
6475	-6.052	4.59	-1.46	5.80	4.34	5.00	-0.66
6515	-6.147	4.59	-1.56	5.80	4.24	5.00	-0.76
6535	-5.562	4.59	-0.97	5.80	4.83	5.00	-0.17
6695	-6.179	4.59	-1.59	5.80	4.21	5.00	-0.79
6855	-6.204	4.59	-1.61	5.80	4.19	5.00	-0.81
6875(U-NII 7)	-4.692	4.59	-4.69	5.80	1.11	5.00	-3.89
6875(U-NII 8)	-4.692	4.59	-4.69	5.80	1.11	5.00	-3.89
6895	-6.135	4.59	-1.55	5.80	4.26	5.00	-0.75
6995	-5.700	4.59	-1.11	5.80	4.69	5.00	-0.31
7095	-5.754	4.59	-1.16	5.80	4.64	5.00	-0.36

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POWER DENSITY 802.11ax HE20 MODE								
Frequency (MHz)	RU config.	PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)	Directional Gain(dBi)	EIRP PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Ch0 meas						
5955	full	-0.921	0.09	-0.83	5.80	4.97	5.00	-0.03
	26/0	-1.042	0.09	-0.95	5.80	4.85	5.00	-0.15
	52/37	-1.264	0.09	-1.17	5.80	4.63	5.00	-0.37
	106/53	-1.706	0.09	-1.62	5.80	4.18	5.00	-0.82
6175	full	-1.609	0.09	-1.52	5.80	4.28	5.00	-0.72
6415	full	-1.439	0.09	-1.35	5.80	4.45	5.00	-0.55
	26/8	-1.532	0.09	-1.44	5.80	4.36	5.00	-0.64
	52/40	-1.553	0.09	-1.46	5.80	4.34	5.00	-0.66
	106/54	-1.344	0.09	-1.25	5.80	4.55	5.00	-0.45
6435	full	-0.955	0.09	-0.87	5.80	4.94	5.00	-0.07
	26/0	-1.327	0.09	-1.24	5.80	4.56	5.00	-0.44
	52/37	-1.361	0.09	-1.27	5.80	4.53	5.00	-0.47
	106/53	-1.491	0.09	-1.40	5.80	4.40	5.00	-0.60
6475	full	-1.329	0.09	-1.24	5.80	4.56	5.00	-0.44
6515	full	-1.400	0.09	-1.31	5.80	4.49	5.00	-0.51
	26/8	-1.469	0.09	-1.38	5.80	4.42	5.00	-0.58
	52/40	-1.738	0.09	-1.65	5.80	4.15	5.00	-0.85
	106/54	-1.576	0.09	-1.49	5.80	4.31	5.00	-0.69
6535	full	-0.954	0.09	-0.86	5.80	4.94	5.00	-0.06
	26/0	-1.694	0.09	-1.60	5.80	4.20	5.00	-0.80
	52/37	-1.731	0.09	-1.64	5.80	4.16	5.00	-0.84
	106/53	-1.406	0.09	-1.32	5.80	4.48	5.00	-0.52
6695	full	-1.282	0.09	-1.19	5.80	4.61	5.00	-0.39
6855	full	-1.549	0.09	-1.46	5.80	4.34	5.00	-0.66
	26/8	-1.499	0.09	-1.41	5.80	4.39	5.00	-0.61
	52/40	-1.085	0.09	-1.00	5.80	4.81	5.00	-0.20
	106/54	-1.519	0.09	-1.43	5.80	4.37	5.00	-0.63
6875(U-NII 7)	full	-2.758	0.09	-2.76	5.80	3.04	5.00	-1.96
6875(U-NII 8)	full	-2.758	0.09	-2.76	5.80	3.04	5.00	-1.96
6895	full	-1.474	0.09	-1.38	5.80	4.42	5.00	-0.58
	26/0	-1.728	0.09	-1.64	5.80	4.16	5.00	-0.84
	52/37	-1.404	0.09	-1.31	5.80	4.49	5.00	-0.51
	106/53	-2.035	0.09	-1.95	5.80	3.86	5.00	-1.15
6995	full	-1.003	0.09	-0.91	5.80	4.89	5.00	-0.11
7095	full	-1.246	0.09	-1.16	5.80	4.64	5.00	-0.36
	26/8	-0.908	0.09	-0.82	5.80	4.98	5.00	-0.02
	52/40	-1.322	0.09	-1.23	5.80	4.57	5.00	-0.43
	106/54	-1.014	0.09	-0.92	5.80	4.88	5.00	-0.12

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POWER DENSITY 802.11ax HE40 MODE								
Frequency (MHz)	RU config.	PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)	Directional Gain(dBi)	EIRP PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Ch0 meas						
5965	full	-2.011	0.00	-2.01	5.80	3.79	5.00	-1.21
	242/61	-0.933	0.00	-0.93	5.80	4.87	5.00	-0.13
6165	full	-2.225	0.00	-2.23	5.80	3.58	5.00	-1.43
6405	full	-1.231	0.00	-1.23	5.80	4.57	5.00	-0.43
	242/62	-1.314	0.00	-1.31	5.80	4.49	5.00	-0.51
6445	full	-1.434	0.00	-1.43	5.80	4.37	5.00	-0.63
	242/61	-1.164	0.00	-1.16	5.80	4.64	5.00	-0.36
6485	full	-1.536	0.00	-1.54	5.80	4.26	5.00	-0.74
	242/62	-1.281	0.00	-1.28	5.80	4.52	5.00	-0.48
6525(U-NII 6)	full	-5.041	0.00	-5.04	5.80	0.76	5.00	-4.24
6525(U-NII 7)	full	-5.041	0.00	-5.04	5.80	0.76	5.00	-4.24
6565	full	-1.288	0.00	-1.29	5.80	4.51	5.00	-0.49
	242/61	-0.970	0.00	-0.97	5.8	4.83	5.00	-0.17
6685	full	-1.380	0.00	-1.38	5.8	4.42	5.00	-0.58
6845	full	-2.316	0.00	-2.32	5.8	3.48	5.00	-1.52
	242/62	-1.275	0.00	-1.28	5.8	4.53	5.00	-0.48
6885(U-NII 7)	full	-8.758	0.00	-8.76	5.80	-2.96	5.00	-7.96
6885(U-NII 8)	full	-3.605	0.00	-3.60	5.80	2.20	5.00	-2.80
6925	full	-2.308	0.00	-2.31	5.8	3.49	5.00	-1.51
	242/61	-1.099	0.00	-1.10	5.8	4.70	5.00	-0.30
7005	full	-1.487	0.00	-1.49	5.8	4.31	5.00	-0.69
7085	full	-1.546	0.00	-1.55	5.8	4.25	5.00	-0.75
	242/62	-1.056	0.00	-1.06	5.8	4.74	5.00	-0.26

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POWER DENSITY 802.11ax HE80 MODE								
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		Ch0 meas						
5985	full	-4.587	0.00	-4.59	5.80	1.21	5.00	-3.79
	484/65	-1.210	0.00	-1.21	5.80	4.59	5.00	-0.41
6145	full	-4.939	0.00	-4.94	5.80	0.86	5.00	-4.14
6385	full	-4.440	0.00	-4.44	5.80	1.36	5.00	-3.64
	484/66	-1.336	0.00	-1.34	5.80	4.46	5.00	-0.54
6465	full	-4.044	0.00	-4.04	5.80	1.76	5.00	-3.24
	484/65	-1.473	0.00	-1.47	5.80	4.33	5.00	-0.67
	484/66	-1.330	0.00	-1.33	5.80	4.47	5.00	-0.53
6545(U-NII 6)	full	-11.103	0.00	-11.10	5.80	-5.30	5.00	-10.30
6545(U-NII 7)	full	-6.105	0.00	-6.10	5.80	-0.30	5.00	-5.30
6625	full	-4.730	0.00	-4.73	5.80	1.07	5.00	-3.93
	484/65	-1.611	0.00	-1.61	5.80	4.19	5.00	-0.81
6705	full	-4.253	0.00	-4.25	5.8	1.55	5.00	-3.45
6785	full	-4.686	0.00	-4.69	5.8	1.11	5.00	-3.89
	484/66	-1.452	0.00	-1.45	5.8	4.35	5.00	-0.65
6865(U-NII 7)	full	-7.471	0.00	-7.47	5.80	-1.67	5.00	-6.67
6865(U-NII 8)	full	-9.776	0.00	-9.78	5.80	-3.98	5.00	-8.98
6945	full	-4.573	0.00	-4.57	5.8	1.23	5.00	-3.77
	484/65	-2.124	0.00	-2.12	5.8	3.68	5.00	-1.32
7025	full	-4.469	0.00	-4.47	5.8	1.33	5.00	-3.67
	484/66	-1.268	0.00	-1.27	5.8	4.53	5.00	-0.47

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MIMO

POWER DENSITY 802.11ax HE20 MODE									
Frequency (MHz)	RU config.	PSD (dBm/MHz)		Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)	Directional Gain(dBi)	EIRP PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Ch0 meas	Ch1 meas						
5955	full	-6.730	-4.246	0.09	-2.21	7.01	4.80	5	-0.20
	26/0	-6.778	-4.452	0.09	-2.36	7.01	4.65	5	-0.35
	52/37	-6.908	-4.432	0.09	-2.40	7.01	4.61	5	-0.39
	106/53	-6.817	-4.194	0.09	-2.21	7.01	4.80	5	-0.20
6175	full	-5.924	-5.149	0.09	-2.42	7.01	4.59	5	-0.41
6415	full	-5.771	-4.921	0.09	-2.22	7.01	4.79	5	-0.21
	26/8	-5.479	-5.201	0.09	-2.24	7.01	4.77	5	-0.23
	52/40	-5.637	-5.173	0.09	-2.30	7.01	4.71	5	-0.29
	106/54	-5.432	-5.001	0.09	-2.11	7.01	4.90	5	-0.10
6435	full	-6.758	-4.727	0.09	-2.52	7.01	4.49	5	-0.51
	26/0	-6.524	-4.867	0.09	-2.52	7.01	4.49	5	-0.51
	52/37	-6.236	-4.555	0.09	-2.21	7.01	4.80	5	-0.20
	106/53	-6.177	-4.488	0.09	-2.15	7.01	4.86	5	-0.14
6475	full	-6.875	-4.232	0.09	-2.26	7.01	4.75	5	-0.25
6515	full	-5.460	-5.143	0.09	-2.20	7.01	4.81	5	-0.19
	26/8	-4.759	-5.527	0.09	-2.03	7.01	4.98	5	-0.02
	52/40	-4.861	-5.590	0.09	-2.11	7.01	4.90	5	-0.10
	106/54	-5.209	-5.239	0.09	-2.12	7.01	4.89	5	-0.11
6535	full	-4.590	-5.840	0.09	-2.07	7.01	4.94	5	-0.06
	26/0	-4.841	-5.454	0.09	-2.04	7.01	4.97	5	-0.03
	52/37	-4.791	-5.773	0.09	-2.15	7.01	4.86	5	-0.14
	106/53	-4.835	-6.050	0.09	-2.30	7.01	4.71	5	-0.29
6695	full	-5.796	-5.169	0.09	-2.37	7.01	4.64	5	-0.36
6855	full	-5.135	-5.963	0.09	-2.43	7.01	4.58	5	-0.42
	26/8	-5.195	-6.123	0.09	-2.53	7.01	4.48	5	-0.52
	52/40	-5.309	-5.267	0.09	-2.19	7.01	4.82	5	-0.18
	106/54	-4.786	-6.137	0.09	-2.31	7.01	4.70	5	-0.30
6875(U-NII 7)	full	-5.089	-5.234	0.09	-2.15	7.01	4.86	5	-0.14
6875(U-NII 8)	full	-5.089	-5.234	0.09	-2.15	7.01	4.86	5	-0.14
6895	full	-5.203	-5.754	0.09	-2.37	7.01	4.64	5	-0.36
	26/0	-5.109	-5.662	0.09	-2.28	7.01	4.73	5	-0.27
	52/37	-5.098	-5.666	0.09	-2.27	7.01	4.74	5	-0.26
	106/53	-5.073	-5.742	0.09	-2.29	7.01	4.72	5	-0.28
6995	full	-6.171	-5.060	0.09	-2.48	7.01	4.53	5	-0.47
7095	full	-5.057	-5.702	0.09	-2.27	7.01	4.74	5	-0.26
	26/8	-4.814	-5.573	0.09	-2.08	7.01	4.93	5	-0.07
	52/40	-4.742	-5.795	0.09	-2.14	7.01	4.87	5	-0.13
	106/54	-5.078	-5.630	0.09	-2.24	7.01	4.77	5	-0.23

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POWER DENSITY 802.11ax HE40 MODE									
Frequency (MHz)	RU config.	PSD (dBm/MHz)		Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)	Directional Gain(dBi)	EIRP PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Ch0 meas	Ch1 meas						
5965	full	-7.185	-5.523	0.00	-3.26	7.01	3.75	5	-1.25
	242/61	-6.911	-4.016	0.00	-2.22	7.01	4.79	5	-0.21
6165	full	-6.505	-7.530	0.00	-3.98	7.01	3.03	5	-1.97
6405	full	-4.985	-5.811	0.00	-2.37	7.01	4.64	5	-0.36
	242/62	-5.711	-4.856	0.00	-2.25	7.01	4.76	5	-0.24
6445	full	-5.660	-4.741	0.00	-2.17	7.01	4.84	5	-0.16
	242/61	-6.111	-4.619	0.00	-2.29	7.01	4.72	5	-0.28
6485	full	-5.416	-4.861	0.00	-2.12	7.01	4.89	5	-0.11
	242/62	-6.273	-4.787	0.00	-2.46	7.01	4.55	5	-0.45
6525(U-NII 6)	full	-7.728	-7.021	0.00	-4.35	7.01	2.66	5	-2.34
6525(U-NII 7)	full	-7.728	-7.021	0.00	-4.35	7.01	2.66	5	-2.34
6565	full	-4.741	-5.551	0.00	-2.12	7.01	4.89	5	-0.11
	242/61	-4.645	-6.596	0.00	-2.50	7.01	4.51	5	-0.49
6685	full	-6.497	-6.514	0.00	-3.50	7.01	3.51	5	-1.49
6845	full	-5.040	-5.299	0.00	-2.16	7.01	4.85	5	-0.15
	242/62	-4.751	-5.993	0.00	-2.32	7.01	4.69	5	-0.31
6885(U-NII 7)	full	-11.530	-11.313	0.00	-8.41	7.01	-1.40	5	-6.40
6885(U-NII 8)	full	-6.380	-6.168	0.00	-3.26	7.01	3.75	5	-1.25
6925	full	-6.112	-5.437	0.00	-2.75	7.01	4.26	5	-0.74
	242/61	-5.290	-5.499	0.00	-2.38	7.01	4.63	5	-0.37
7005	full	-5.356	-5.294	0.00	-2.31	7.01	4.70	5	-0.30
7085	full	-5.611	-5.004	0.00	-2.29	7.01	4.72	5	-0.28
	242/62	-4.820	-5.578	0.00	-2.17	7.01	4.84	5	-0.16

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POWER DENSITY 802.11ax HE80 MODE									
Frequency (MHz)	RU config.	PSD (dBm/MHz)		Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)	Directional Gain(dBi)	EIRP PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
		Ch0 meas	Ch1 meas						
5985	full	-8.034	-7.186	0.00	-4.58	7.01	2.43	5	-2.57
	484/65	-7.778	-6.186	0.00	-3.90	7.01	3.11	5	-1.89
6145	full	-8.114	-7.757	0.00	-4.92	7.01	2.09	5	-2.91
6385	full	-7.654	-6.834	0.00	-4.21	7.01	2.80	5	-2.20
	484/66	-4.104	-8.422	0.00	-2.74	7.01	4.27	5	-0.73
6465	full	-6.950	-7.490	0.00	-4.20	7.01	2.81	5	-2.19
	484/65	-8.859	-5.781	0.00	-4.04	7.01	2.97	5	-2.03
	484/66	-8.067	-5.668	0.00	-3.69	7.01	3.32	5	-1.68
6545(U-NII 6)	full	-13.056	-13.658	0.00	-10.43	7.01	-3.42	5	-8.42
6545(U-NII 7)	full	-8.069	-8.665	0.00	-5.44	7.01	1.57	5	-3.43
6625	full	-7.054	-7.862	0.00	-4.43	7.01	2.58	5	-2.42
	484/65	-4.126	-6.850	0.00	-2.27	7.01	4.74	5	-0.26
6705	full	-7.675	-7.575	0.00	-4.61	7.01	2.40	5	-2.60
6785	full	-7.867	-8.219	0.00	-5.03	7.01	1.98	5	-3.02
	484/66	-4.828	-5.501	0.00	-2.14	7.01	4.87	5	-0.13
6865(U-NII 7)	full	-10.255	-10.147	0.00	-7.28	7.01	-0.27	5	-5.27
6865(U-NII 8)	full	-12.558	-12.447	0.00	-9.58	7.01	-2.57	5	-7.57
6945	full	-7.930	-7.538	0.00	-4.72	7.01	2.29	5	-2.71
	484/65	-5.792	-5.150	0.00	-2.45	7.01	4.56	5	-0.44
7025	full	-7.992	-7.764	0.00	-4.87	7.01	2.14	5	-2.86
	484/66	-7.172	-6.427	0.00	-3.77	7.01	3.24	5	-1.76

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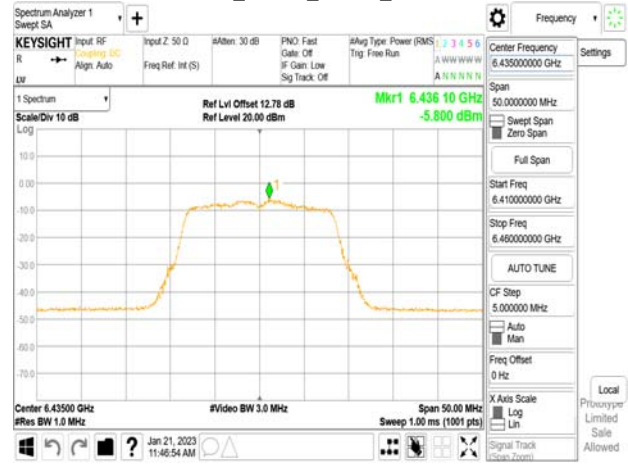
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802.11a_20MHz_Chain0_5955MHz



802.11a_20MHz_Chain0_6435MHz



802.11a_20MHz_Chain0_6175MHz



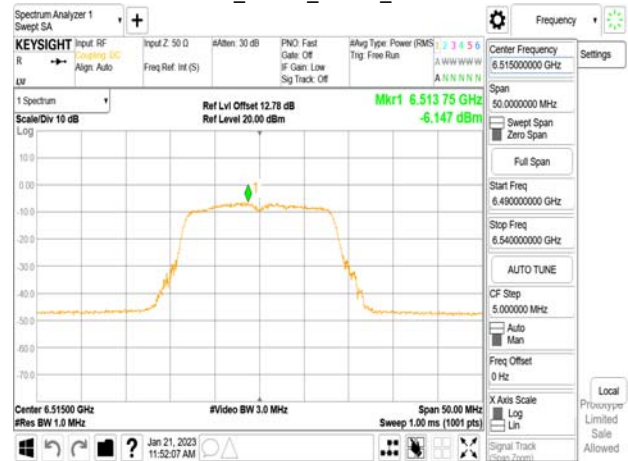
802.11a_20MHz_Chain0_6475MHz



802.11a_20MHz_Chain0_6415MHz



802.11a_20MHz_Chain0_6515MHz



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802.11a_20MHz_Chain0_6535MHz



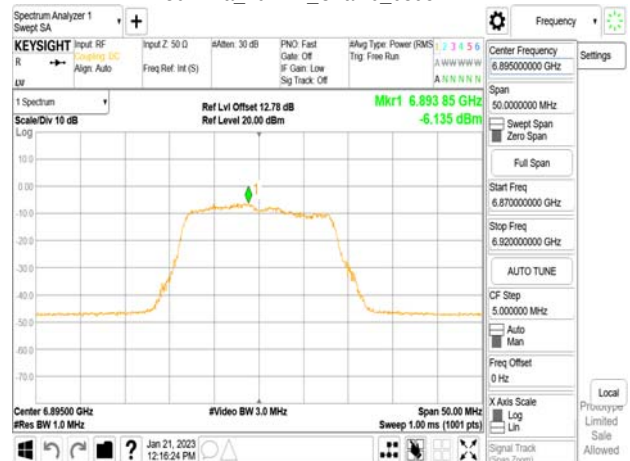
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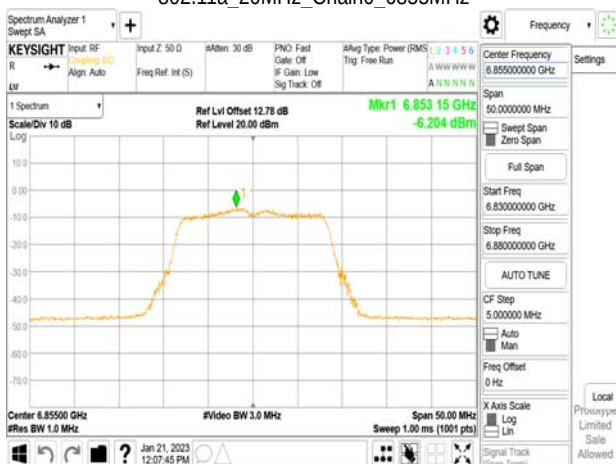
802.11a_20MHz_Chain0_6695MHz



802.11a_20MHz_Chain0_6895MHz



802.11a_20MHz_Chain0_6855MHz



802.11a_20MHz_Chain0_6995MHz



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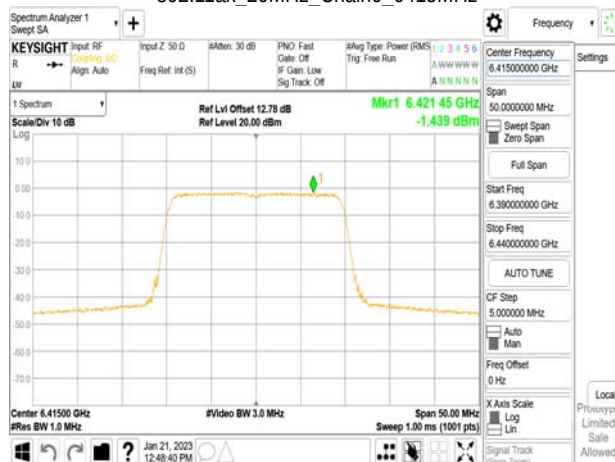
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802.11a_20MHz_Chain0_7095MHz



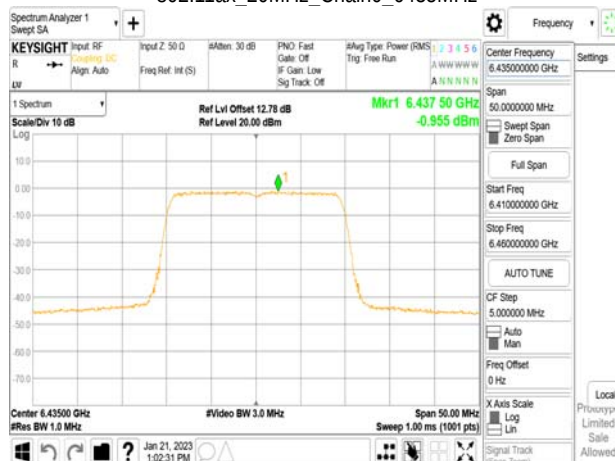
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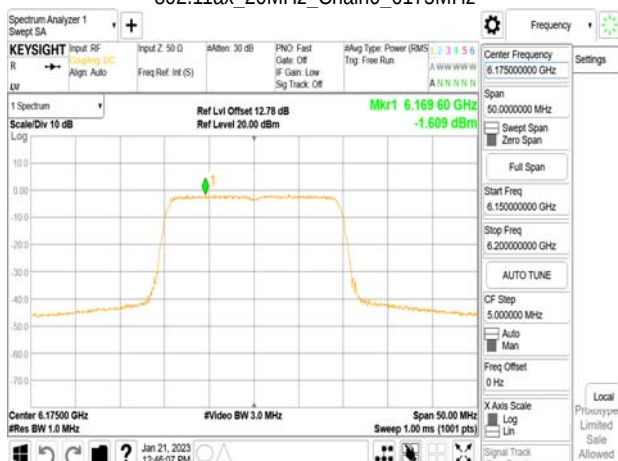
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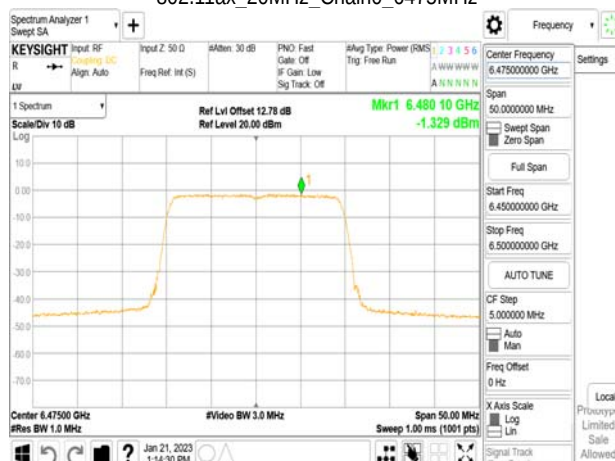
802.11ax_20MHz_Chain0_6435MHz



802.11ax_20MHz_Chain0_6175MHz



802.11ax_20MHz_Chain0_6475MHz



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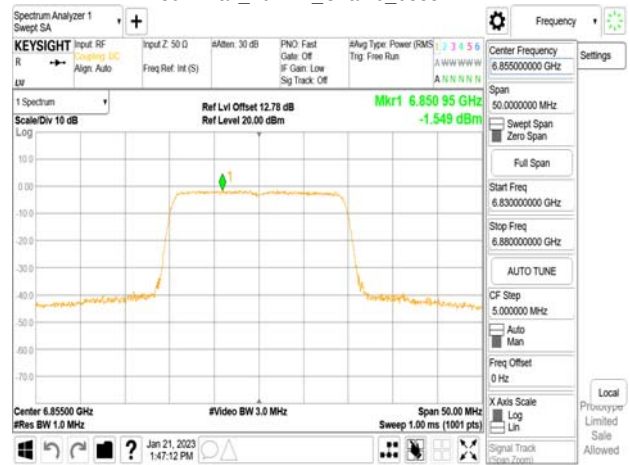
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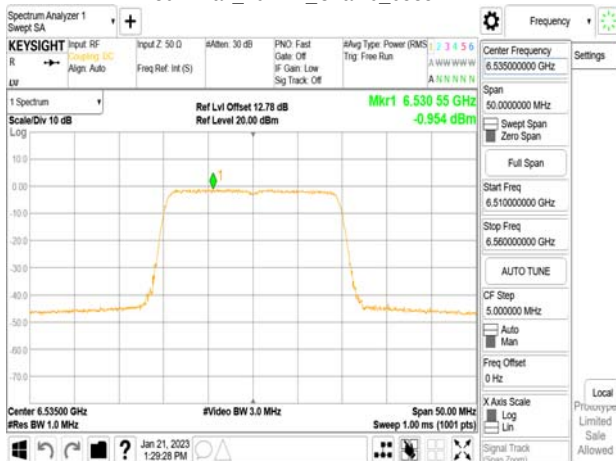
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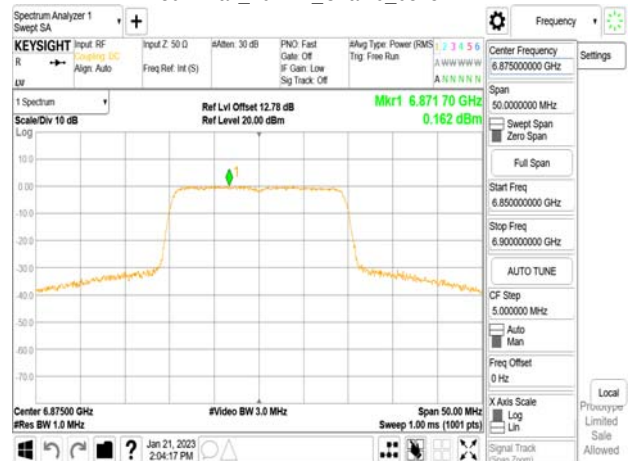
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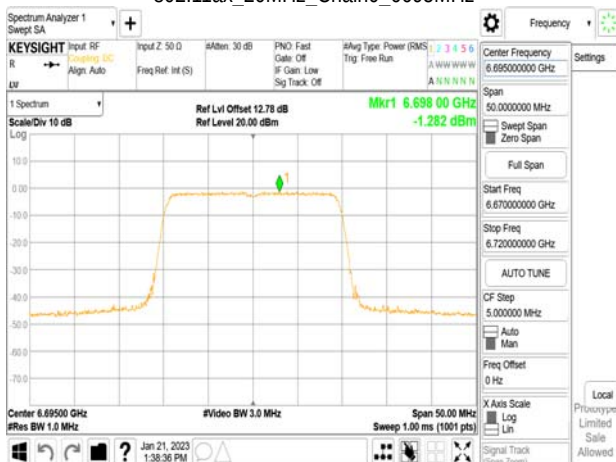
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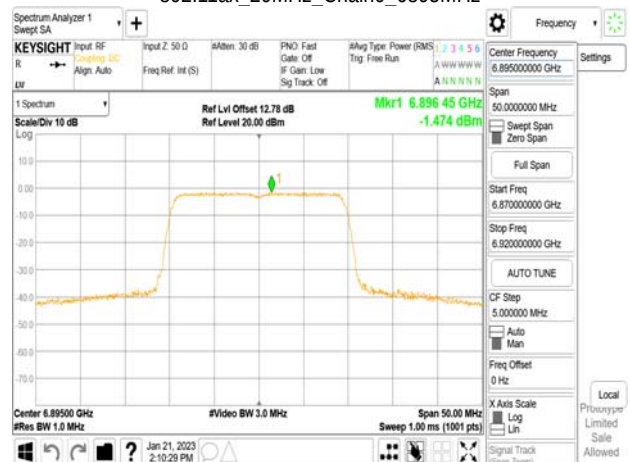
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802.11ax_20MHz_Chain0_6695MHz



802.11ax_20MHz_Chain0_6895MHz

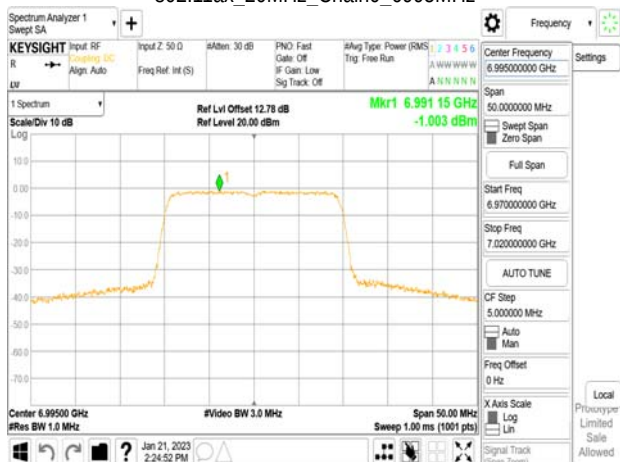


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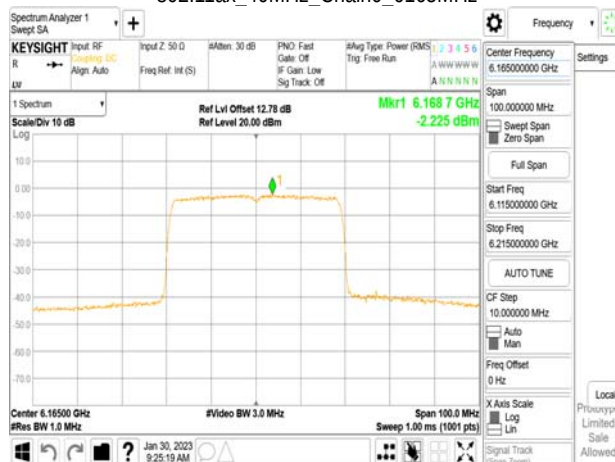
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802.11ax_20MHz_Chain0_6995MHz



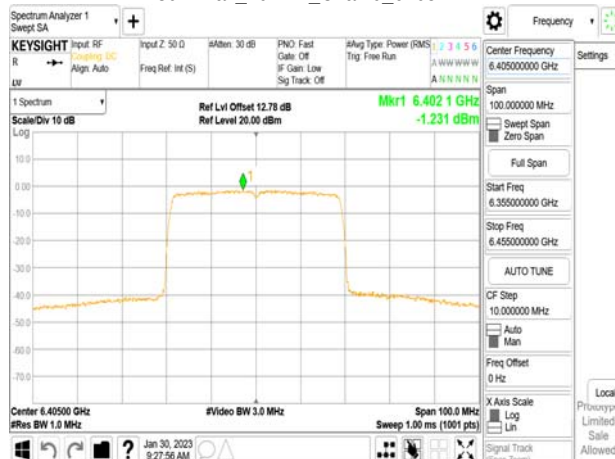
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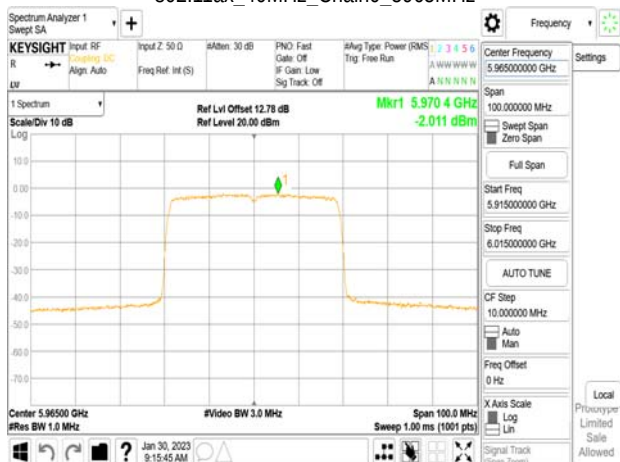
802.11ax_20MHz_Chain0_7095MHz



802.11ax_40MHz_Chain0_6405MHz



802.11ax_40MHz_Chain0_5965MHz



802.11ax_40MHz_Chain0_6445MHz



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