

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, LBEE5XV2EB
For ISED:
LBEE5XV2EA_SANT, LBEE5XV2EA_DANT,
LBEE5XV2EB_SANT, LBEE5XV2EB_DANT

Model Difference: Refer to section 1.10

Report Number: TERF2211002259ER

FCC ID VPLYLBEE5XV2EA

IC: 772C-LBEE5XV2EA

Date of EUT Received: November 08, 2022

Date of Test: November 25, 2022 ~ March 09, 2023

Issue Date: June 26, 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-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
TERF2211002259ER	00	Original	May 04, 2023	Violetta Tang	
TERF2211002259ER	01	Remove HMN information from page 12	June 02, 2023	Violetta Tang	
TERF2211002259ER	02	Correct firmware information on page 4	June 13, 2023	Violetta Tang	
TERF2211002259ER	03	1. Revise typo of power values on page 10 2. Correct typo of ac 80MHz frequency on page 162	June 26, 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, LBEE5XV2EB For ISED: LBEE5XV2EA_SANT, LBEE5XV2EA_DANT, LBEE5XV2EB_SANT, LBEE5XV2EB_DANT
Model Difference:	Refer to section 1.10
Hardware Version:	1.0
Firmware Version:	1.1.1.1 1.1.2.1 1.1.1.2 1.1.2.2
EUT Series No.:	SA2022019000001046
Power Supply:	3.3Vdc, 1.8Vdc
Test Software (Name/Version)	Tera Term / 4.71

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1.2 Modulation & Data Rate

SISO

Modulation type:	64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11a,11n,11ac
	256QAM 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 72.2 Mbps
	802.11 n_40MHz: up to 150 Mbps
	802.11 ac_20MHz: up to 86.7 Mbps
	802.11 ac_40MHz: up to 200 Mbps
	802.11 ac_80MHz: up to 433.3 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:	64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11a,11n,11ac
	256QAM 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 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)
Dipole	Molex	146153	5150~5850	4.25
	Molex	219611	5150~5850	3.67
	Unictron	WT32D1-KX	5150~5850	4
Monopole	Murata	Type2EA_Antenna	5150~5850	2.9

MIMO

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)
Dipole	Molex	219611	5150~5850	3.67
	Unictron	WT32D1-KX	5150~5850	4

Note:

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

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1.4 FCC

SISO

WLAN	Frequency Range	Channels	Rated Power(Avg) (dBm) (Worst Case)		Modulation Technology
a/ n_HT/ ac_VHT/ ax_HE 20M	5180~5240	4	17.99	dBm	OFDM/OFDMA
	5260~5320	4	17.95	dBm	OFDM/OFDMA
	5500~5720	12	17.58	dBm	OFDM/OFDMA
	5745~5825	5	17.98	dBm	OFDM/OFDMA
n_HT ac_VHT/ ax_HE 40M	5190~5230	2	15.99	dBm	OFDM/OFDMA
	5270~5310	2	15.81	dBm	OFDM/OFDMA
	5510~5710	6	15.90	dBm	OFDM/OFDMA
	5755~5795	2	15.95	dBm	OFDM/OFDMA
ac_VHT/ ax_HE 80M	5210	1	12.99	dBm	OFDM/OFDMA
	5290	1	8.85	dBm	OFDM/OFDMA
	5530~5690	3	15.91	dBm	OFDM/OFDMA
	5775	1	12.96	dBm	OFDM/OFDMA

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MIMO

WLAN	Frequency Range	Channels	Rated Power(Avg) (dBm) (Worst Case)		Modulation Technology
a/ n_HT/ ac_VHT/ ax_HE 20M	5180~5240	4	17.91	dBm	OFDM/OFDMA
	5260~5320	4	17.92	dBm	OFDM/OFDMA
	5500~5720	12	17.86	dBm	OFDM/OFDMA
	5745-5825	5	17.97	dBm	OFDM/OFDMA
n_HT ac_VHT/ ax_HE 40M	5190~5230	2	15.91	dBm	OFDM/OFDMA
	5270~5310	2	15.96	dBm	OFDM/OFDMA
	5510~5710	6	15.90	dBm	OFDM/OFDMA
	5755-5795	2	15.88	dBm	OFDM/OFDMA
ac_VHT/ ax_HE 80M	5210	1	12.79	dBm	OFDM/OFDMA
	5290	1	9.72	dBm	OFDM/OFDMA
	5530~5690	3	16.69	dBm	OFDM/OFDMA
	5775	1	12.98	dBm	OFDM/OFDMA

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1.5 ISED

SISO

WLAN	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	20.23	dBm	OFDM/OFDMA
	5260~5320	4	Avg	17.95	dBm	OFDM/OFDMA
	5500~5700	9	Avg	17.58	dBm	OFDM/OFDMA
	5720 (U-NII 2C)	1	Avg	16.54	dBm	OFDM/OFDMA
	5720 (U-NII 3)	1	Avg	11.76	dBm	OFDM/OFDMA
	5745-5825	5	Avg	17.98	dBm	OFDM/OFDMA
n_HT ac_VHT/ ax_HE 40M	5190~5230	2	EIRP	20.24	dBm	OFDM/OFDMA
	5270~5310	2	Avg	15.81	dBm	OFDM/OFDMA
	5510~5670	4	Avg	15.90	dBm	OFDM/OFDMA
	5710 (U-NII 2C)	1	Avg	15.35	dBm	OFDM/OFDMA
	5710 (U-NII 3)	1	Avg	7.15	dBm	OFDM/OFDMA
	5755-5795	2	Avg	15.95	dBm	OFDM/OFDMA
ac_VHT/ ax_HE 80M	5210	1	EIRP	17.24	dBm	OFDM/OFDMA
	5290	1	Avg	8.85	dBm	OFDM/OFDMA
	5530~5610	2	Avg	15.91	dBm	OFDM/OFDMA
	5690 (U-NII 2C)	1	Avg	15.39	dBm	OFDM/OFDMA
	5690 (U-NII 3)	1	Avg	4.09	dBm	OFDM/OFDMA
	5775	1	Avg	12.96	dBm	OFDM/OFDMA

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WLAN	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	17.90	dBm	OFDM/OFDMA
	5260~5320	4	Avg	17.92	dBm	OFDM/OFDMA
	5500~5700	9	Avg	17.86	dBm	OFDM/OFDMA
	5720 (U-NII 2C)	1	Avg	16.38	dBm	OFDM/OFDMA
	5720 (U-NII 3)	1	Avg	12.00	dBm	OFDM/OFDMA
	5745-5825	5	Avg	17.97	dBm	OFDM/OFDMA
n_HT ac_VHT/ ax_HE 40M	5190~5230	2	EIRP	19.91	dBm	OFDM/OFDMA
	5270~5310	2	Avg	15.96	dBm	OFDM/OFDMA
	5510~5670	4	Avg	15.90	dBm	OFDM/OFDMA
	5710 (U-NII 2C)	1	Avg	15.25	dBm	OFDM/OFDMA
	5710 (U-NII 3)	1	Avg	6.74	dBm	OFDM/OFDMA
	5755-5795	2	Avg	15.88	dBm	OFDM/OFDMA
ac_VHT/ ax_HE 80M	5210	1	EIRP	16.79	dBm	OFDM/OFDMA
	5290	1	Avg	9.72	dBm	OFDM/OFDMA
	5530~5610	2	Avg	15.81	dBm	OFDM/OFDMA
	5690 (U-NII 2C)	1	Avg	15.55	dBm	OFDM/OFDMA
	5690 (U-NII 3)	1	Avg	4.09	dBm	OFDM/OFDMA
	5775	1	Avg	12.98	dBm	OFDM/OFDMA

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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 2 Feb. 2017

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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1.10 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			

The LBEE5XV2EB_SANT and LBEE5XV2EB_DANT are electrically identical.

Model For ISED	Model For FCC	Chip on C101	RF functions
LBEE5XV2EB_SANT	LBEE5XV2EB	CYW55572	2x2 WLAN2.4GHz,5GHz +BT/ BLE
LBEE5XV2EB_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
LBEE5XV2EB_DANT	1.1.2.2				
LBEE5XV2EA_SANT	1.1.1.1	2 (ANT0, ANT1)	ANT0, ANT1	ANT0	ANT0
LBEE5XV2EB_SANT	1.1.1.2				

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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.

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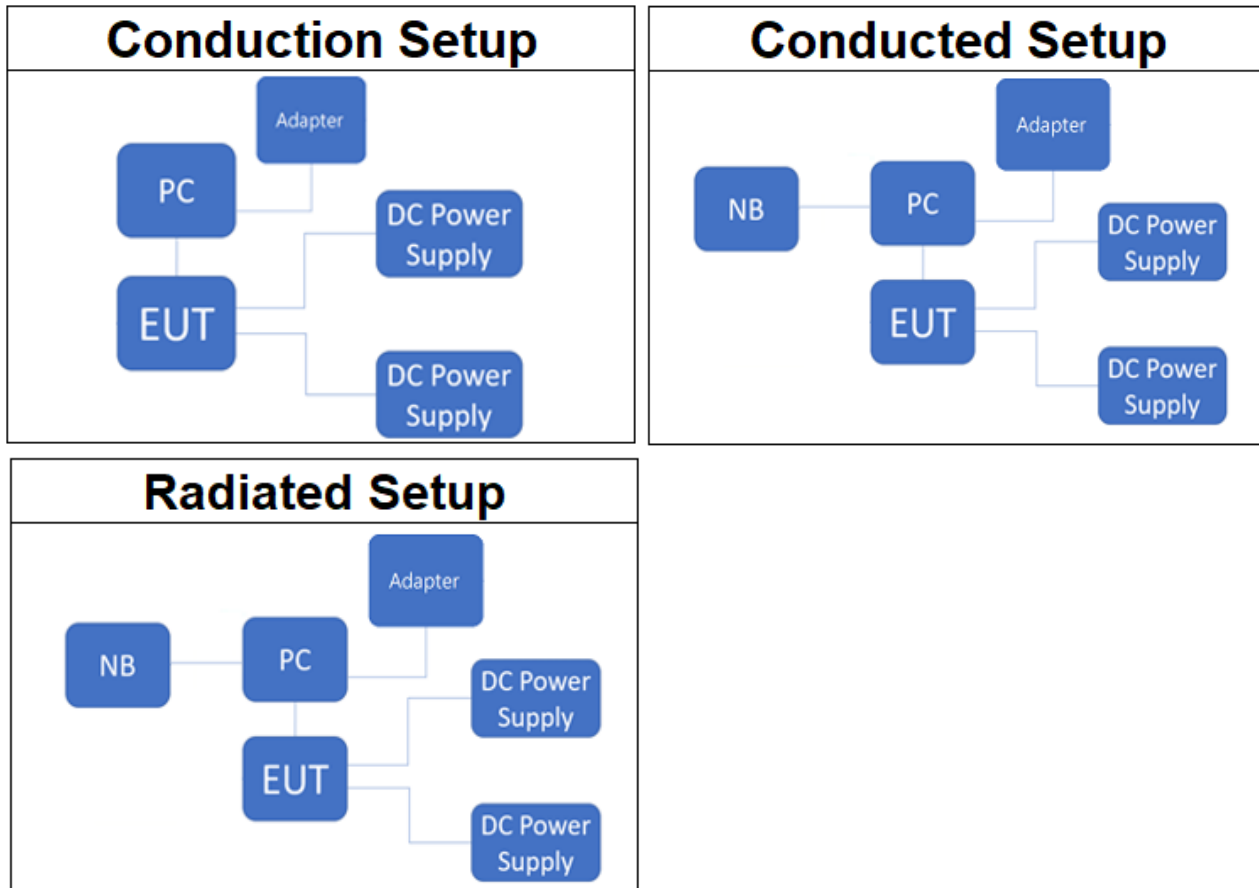
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2.5 Test Configuration



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.
PC	GIGABYTE	GB-BXI7H-4500	N/A	N/A	N/A
Adapter	FSP GROUP INC.	FSP065-REB	N/A	N/A	N/A

Conducted Emission Test Site: Conducted 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PC	GIGABYTE	GB-BXI7H-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

Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PC	GIGABYTE	GB-BXI7H-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

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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(e)	RSS-Gen §6.7 RSS-247 §6.2.4.1	Emission Bandwidth	Compliant
§15.407(a)	RSS-247 §6.2.1~ 4 (1)	Maximum Conducted Output Power	Compliant
§15.407(a)	RSS-247 §6.2.1~ 4 (1)	Power Spectral Density	Compliant
§15.205 §15.209 §15.407(b)	RSS-247 §6.2.1~ 4 (2)	Undesirable Radiated Emissions	Compliant
§15.407(c)	RSS-247 §6.4	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

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	
CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)
52	5260	54	5270	58	5290
56	5280	62	5310		
60	5300				
64	5320				

Operated band in 5470 MHz ~5725 MHz:

20 M		40 M		80 M	
CH	Freq (MHz)	CH	Freq (MHz)	CH	Freq (MHz)
100	5500	102	5510	106	5530
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				

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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.

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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	Ch0/2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,136,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS0	Ch0/2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,136,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	Ch0/2TX
	5270~5310	54 to 62	54,62			
	5510~5670	102 to 142	102,110,134,142			
	5755~5795	151 to 159	151,159			
802.11ac_VHT80	5210	42	42	OFDM	MCS0	Ch0/2TX
	5290	58	58			
	5530~5610	106 to 138	106,122,138			
	5775	155	155			

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	Ch0/2TX
	5260~5320	52 to 64	52,60,64				
	5500~5720	100 to 144	100,116,136,140,144				
	5745~5825	149 to 165	149,157,165				
802.11ax_HE40	5190~5230	38 to 46	38,46	OFDMA	FULL RU 242/61,242/62	MCS0	Ch0/2TX
	5270~5310	54 to 62	54,62				
	5510~5670	102 to 142	102,110,134,142				
	5755~5795	151 to 159	151,159				
802.11ax_HE80	5210	42	42	OFDMA	FULL RU 484/65,484/66	MCS0	Ch0/2TX
	5290	58	58				
	5530~5610	106 to 138	106,122,138				
	5775	155	155				

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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	5180~5240	36 to 48	44	OFDM	6	Ch0/2TX
	5260~5320	52 to 64	60			
	5500~5720	100 to 144	116			
	5745~5825	149 to 165	157			

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	Ch0/2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,136,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS0	Ch0/2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,136,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	Ch0/2TX
	5270~5310	54 to 62	54,62			
	5510~5710	102 to 142	102,110,134,142			
	5755~5795	151 to 159	151,159			
802.11ac_VHT80	5210	42	42	OFDM	MCS0	Ch0/2TX
	5290	58	58			
	5530~5690	106 to 138	106,122,138			
	5775	155	155			

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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 26/0,26/8 52/37,52/40 106/53,106/54	MCS0	Ch0/2TX
	5260~5320	52 to 64	52,60,64				
	5500~5720	100 to 144	100,116,136 ,140,144				
	5745~5825	149 to 165	149,157,165				
802.11ax_HE40	5190~5230	38 to 46	38,46	OFDMA	FULL RU 242/61,242/62	MCS0	Ch0/2TX
	5270~5310	54 to 62	54,62				
	5510~5710	102 to 142	102,110,134 ,142				
	5755~5795	151 to 159	151,159				
802.11ax_HE80	5210	42	42	OFDMA	FULL RU 484/65,484/66	MCS0	Ch0/2TX
	5290	58	58				
	5530~5690	106 to 138	106,122,138				
	5775	155	155				

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
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 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 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 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

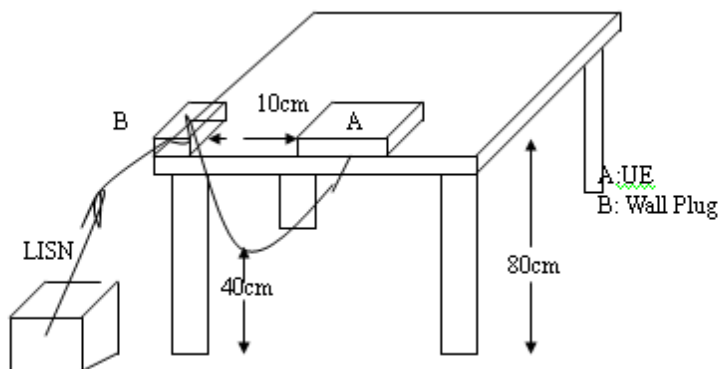
Note

- 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 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.

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 :TERF2211002259ER

Test Site :Conduction 1

Test Mode :Operation (5G)

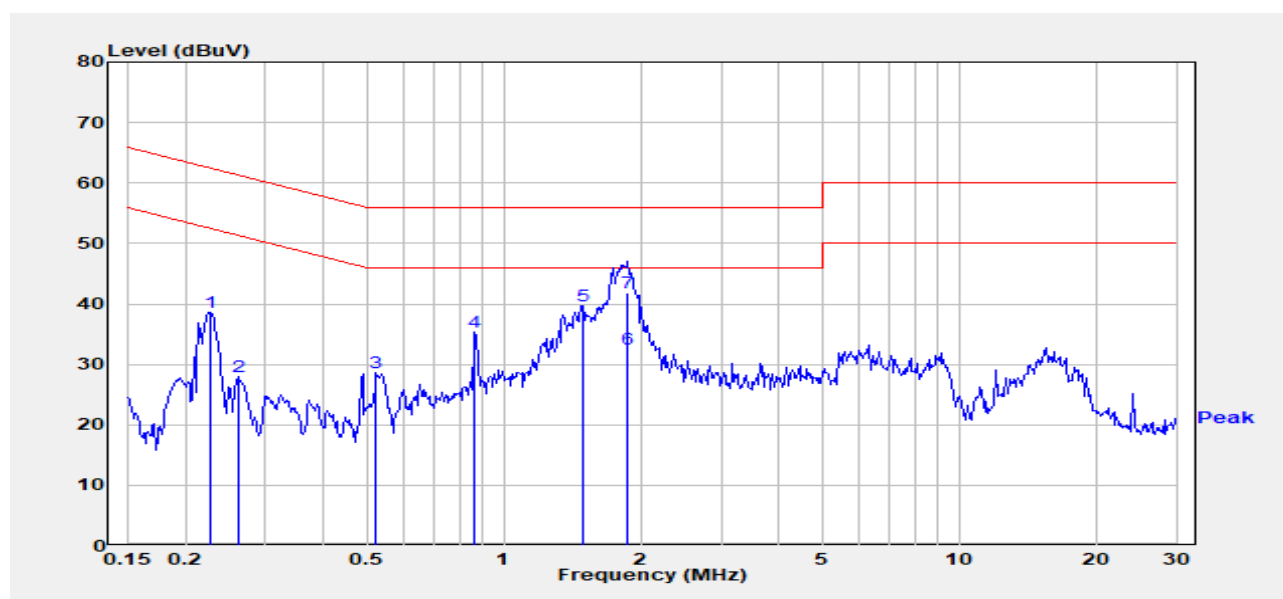
Test Date :2023-03-02

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
0.227	Peak	28.43	10.25	38.68	62.56	-23.88
0.261	Peak	17.73	10.25	27.98	61.41	-33.43
0.524	Peak	18.28	10.26	28.54	56.00	-27.46
0.864	Peak	24.93	10.34	35.26	56.00	-20.74
1.490	Peak	28.81	10.77	39.59	56.00	-16.41
1.876	Average	21.52	11.01	32.53	46.00	-13.47
1.876	QP	30.93	11.01	41.94	56.00	-14.06

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Report Number :TERF2211002259ER

Test Mode :Operation (5G)

Power :120V/60Hz

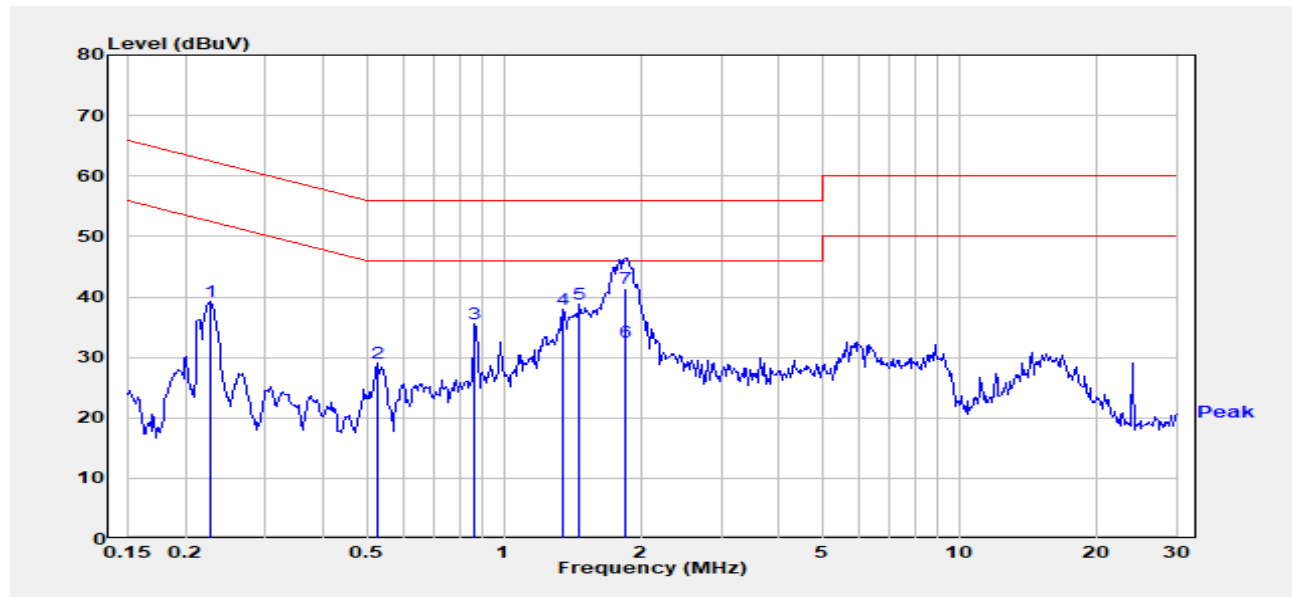
Probe :N

Test Site :Conduction 1

Test Date :2023-03-02

Temp./Humi. :23.8/52

Engineer :Ricky Chen



Freq. MHz	Detector Mode	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.227	Peak	28.93	10.25	39.18	62.56	-23.38
0.528	Peak	18.70	10.26	28.96	56.00	-27.04
0.864	Peak	25.19	10.34	35.53	56.00	-20.47
1.349	Peak	27.34	10.67	38.01	56.00	-17.99
1.467	Peak	27.99	10.76	38.75	56.00	-17.25
1.847	Average	21.45	11.00	32.45	46.00	-13.55
1.847	QP	30.36	11.00	41.36	56.00	-14.64

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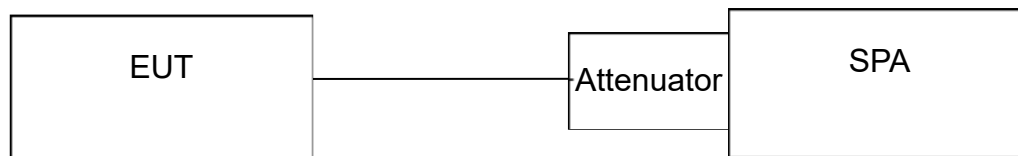
8 EMISSION BANDWIDTH MEASUREMENT

8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.

The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3.

8.2 Test Setup



8.3 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 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. Minimum Emission Bandwidth for the band 5.725-5.850GHz.
 - a. Set the spectrum analyzer as
RBW = 100 kHz,
VBW = 3*RBW,
Span = large enough to capture all products of the modulation process,
Detector=Peak,
Sweep=auto
 - b. Mark the peak frequency and -6dB (upper and lower) frequency.
6. For 99% Bandwidth: Set the spectrum analyzer as
RBW = 1%,
VBW = 3*RBW,
Span = large enough to capture all products of the modulation process,
Detector=Sample,
Sweep=auto.
7. Turn on the 99% bandwidth function, max reading.
8. Repeat above procedures until all frequency of interest measured was complete.

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8.4 Measurement Result

8.4.1 FCC Occupied Bandwidth SISO

802.11a_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.89	13.20
5220	21.45	13.31
5240	21.44	13.31
5260	21.09	13.24
5300	21.16	13.26
5320	21.24	13.27
5500	20.85	13.19
5580	21.37	13.30
5680	21.67	13.36
5700	21.02	13.23
5720(U-NII 2C)	15.60	11.93
5720(U-NII 3)	5.60	7.48

802.11a_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	15.67	11.95
5785	15.41	11.88
5825	16.32	12.13

802.11a_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.34	< 5250
5745	5736.72	> 5725

802.11n_HT20_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.16	13.26
5220	21.19	13.26
5240	21.16	13.26
5260	21.31	13.29
5300	21.36	13.30
5320	21.70	13.36
5500	21.23	13.27
5580	21.43	13.31
5680	22.21	13.47
5700	21.25	13.27
5720(U-NII 2C)	16.90	12.28
5720(U-NII 3)	6.90	8.39

802.11n_HT20_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.38	12.14
5785	17.59	12.45
5825	16.82	12.26

802.11n_HT20_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.90	< 5250
5745	5736.20	> 5725

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802.11n_HT40_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	39.88	16.01
5230	40.02	16.02
5270	39.98	16.02
5310	40.24	16.05
5510	39.93	16.01
5550	40.21	16.04
5670	39.82	16.00
5710(U-NII 2C)	35.35	15.48
5710(U-NII 3)	5.35	7.29

802.11n_HT40_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.45	15.50
5795	35.53	15.51

802.11n_HT40_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.11	< 5250
5755	5736.96	> 5725

802.11ac_VHT80_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	81.65	19.12
5290	81.48	19.11
5530	81.78	19.13
5610	81.16	19.09
5690(U-NII 2C)	75.60	18.78
5690(U-NII 3)	5.60	7.48

802.11ac_VHT80_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	75.27	18.77

802.11ac_VHT80_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5247.77	< 5250
5775	5737.35	> 5725

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802.11ax_HE20_Ch0

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5180	full	21.30	13.28
5220	full	21.72	13.37
5240	full	21.07	13.24
5260	full	21.72	13.37
5300	full	21.52	13.33
5320	full	22.13	13.45
5500	full	21.43	13.31
5580	full	22.26	13.48
5680	full	22.82	13.58
5700	full	21.65	13.35
5720 (U-NII 2C)	full	17.06	12.32
5720 (U-NII 3)	full	7.06	8.49

802.11ax_HE20_Ch0

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5745	full	19.02	12.79
5785	full	18.93	12.77
5825	full	18.91	12.77

802.11ax_HE20_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5249.53	< 5250
5745	5735.53	> 5725

802.11ax_HE40_Ch0

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5190	full	39.96	16.02
5230	full	41.62	16.19
5270	full	40.07	16.03
5310	full	40.41	16.06
5510	full	40.01	16.02
5550	full	40.86	16.11
5670	full	41.84	16.22
5710 (U-NII 2C)	full	35.56	15.51
5710 (U-NII 3)	full	5.56	7.45

802.11ax_HE40_Ch0

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5755	full	37.45	15.73
5795	full	36.66	15.64

802.11ax_HE40_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.82	< 5250
5755	5736.27	> 5725

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802.11ax_HE80_Ch0

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5210	full	81.97	19.14
5290	full	81.18	19.09
5530	full	81.48	19.11
5610	full	81.23	19.10
5690 (U-NII 2C)	full	75.48	18.78
5690 (U-NII 3)	full	5.48	7.39

802.11ax_HE80_Ch0

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5775	full	77.81	18.91

802.11ax_HE80_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5248.46	< 5250
5775	5736.57	> 5725

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802.11a_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.96	13.21
5220	20.67	13.15
5240	20.85	13.19
5260	20.78	13.18
5300	20.79	13.18
5320	21.33	13.29
5500	21.15	13.25
5580	21.28	13.28
5680	21.26	13.28
5700	21.08	13.24
5720(U-NII 2C)	15.53	11.91
5720(U-NII 3)	5.53	7.43

802.11a_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.06	12.06
5785	16.34	12.13
5825	16.34	12.13

802.11a_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.30	< 5250
5745	5736.76	> 5725

802.11a_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.72	13.16
5220	21.08	13.24
5240	21.24	13.27
5260	21.26	13.28
5300	21.06	13.23
5320	20.89	13.20
5500	20.93	13.21
5580	21.22	13.27
5680	21.85	13.39
5700	20.91	13.20
5720(U-NII 2C)	15.88	12.01
5720(U-NII 3)	5.88	7.69

802.11a_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.27	12.11
5785	16.33	12.13
5825	16.09	12.07

802.11a_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.28	< 5250
5745	5736.79	> 5725

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802.11n_HT20_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.61	13.35
5220	21.34	13.29
5240	21.24	13.27
5260	21.39	13.30
5300	21.38	13.30
5320	21.46	13.32
5500	21.14	13.25
5580	21.45	13.31
5680	21.37	13.30
5700	21.62	13.35
5720(U-NII 2C)	15.72	11.96
5720(U-NII 3)	5.72	7.57

802.11n_HT20_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.88	12.27
5785	16.87	12.27
5825	16.83	12.26

802.11n_HT20_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.89	< 5250
5745	5736.15	> 5725

802.11n_HT20_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.84	13.19
5220	21.27	13.28
5240	21.09	13.24
5260	21.28	13.28
5300	21.16	13.26
5320	21.30	13.28
5500	20.95	13.21
5580	21.34	13.29
5680	21.47	13.32
5700	21.35	13.29
5720(U-NII 2C)	15.65	11.94
5720(U-NII 3)	5.65	7.52

802.11n_HT20_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.97	12.30
5785	17.58	12.45
5825	17.33	12.39

802.11n_HT20_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.86	< 5250
5745	5736.18	> 5725

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802.11n_HT40_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	39.65	15.98
5230	39.96	16.02
5270	39.91	16.01
5310	39.90	16.01
5510	40.08	16.03
5550	39.52	15.97
5670	39.86	16.01
5710(U-NII 2C)	35.08	15.45
5710(U-NII 3)	5.08	7.06

802.11n_HT40_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.84	15.54
5795	35.68	15.52

802.11n_HT40_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.16	< 5250
5755	5736.94	> 5725

802.11n_HT40_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	39.80	16.00
5230	39.30	15.94
5270	39.33	15.95
5310	39.14	15.93
5510	39.57	15.97
5550	39.74	15.99
5670	39.54	15.97
5710(U-NII 2C)	34.84	15.42
5710(U-NII 3)	4.84	6.84

802.11n_HT40_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	36.03	15.57
5795	35.95	15.56

802.11n_HT40_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.08	< 5250
5755	5736.93	> 5725

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802.11ac_VHT80_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	81.29	19.10
5290	80.92	19.08
5530	81.33	19.10
5610	80.98	19.08
5690(U-NII 2C)	75.78	18.80
5690(U-NII 3)	5.78	7.62

802.11ac_VHT80_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	75.30	18.77

802.11ac_VHT80_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5247.76	< 5250
5775	5737.32	> 5725

802.11ac_VHT80_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	81.03	19.09
5290	80.98	19.08
5530	80.50	19.06
5610	80.49	19.06
5690(U-NII 2C)	75.13	18.76
5690(U-NII 3)	5.13	7.10

802.11ac_VHT80_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	75.33	18.77

802.11ac_VHT80_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5247.72	< 5250
5775	5737.26	> 5725

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802.11ax_HE20_Ch0

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5180	full	21.73	13.37
5220	full	21.44	13.31
5240	full	21.52	13.33
5260	full	21.49	13.32
5300	full	21.60	13.34
5320	full	21.67	13.36
5500	full	21.64	13.35
5580	full	21.61	13.35
5680	full	21.61	13.35
5700	full	21.32	13.29
5720 (U-NII 2C)	full	15.77	11.98
5720 (U-NII 3)	full	5.77	7.62

802.11ax_HE20_Ch0

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5745	full	18.96	12.78
5785	full	18.97	12.78
5825	full	18.92	12.77

802.11ax_HE20_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5249.51	< 5250
5745	5735.51	> 5725

802.11ax_HE20_Ch1

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5180	full	21.22	13.27
5220	full	21.18	13.26
5240	full	20.78	13.18
5260	full	21.32	13.29
5300	full	21.12	13.25
5320	full	21.50	13.32
5500	full	21.26	13.28
5580	full	21.42	13.31
5680	full	21.47	13.32
5700	full	21.57	13.34
5720 (U-NII 2C)	full	16.05	12.05
5720 (U-NII 3)	full	6.05	7.81

802.11ax_HE20_Ch1

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5745	full	18.76	12.73
5785	full	18.71	12.72
5825	full	18.90	12.76

802.11ax_HE20_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5249.51	< 5250
5745	5735.53	> 5725

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802.11ax_HE40_Ch0

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5190	full	39.77	16.00
5230	full	40.39	16.06
5270	full	40.29	16.05
5310	full	40.33	16.06
5510	full	39.94	16.01
5550	full	39.92	16.01
5670	full	40.24	16.05
5710 (U-NII 2C)	full	34.88	15.43
5710 (U-NII 3)	full	4.88	6.88

802.11ax_HE40_Ch0

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5755	full	37.30	15.72
5795	full	37.27	15.71

802.11ax_HE40_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.80	< 5250
5755	5736.20	> 5725

802.11ax_HE40_Ch1

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5190	full	39.52	15.97
5230	full	40.06	16.03
5270	full	39.58	15.97
5310	full	39.81	16.00
5510	full	39.57	15.97
5550	full	40.88	16.12
5670	full	40.13	16.03
5710 (U-NII 2C)	full	35.48	15.50
5710 (U-NII 3)	full	5.48	7.38

802.11ax_HE40_Ch1

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5755	full	37.39	15.73
5795	full	37.23	15.71

802.11ax_HE40_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.76	< 5250
5755	5736.23	> 5725

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802.11ax_HE80_Ch0

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5210	full	80.29	19.05
5290	full	83.66	19.23
5530	full	81.67	19.12
5610	full	83.42	19.21
5690 (U-NII 2C)	full	75.57	18.78
5690 (U-NII 3)	full	5.57	7.46

802.11ax_HE80_Ch0

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5775	full	77.32	18.88

802.11ax_HE80_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5248.44	< 5250
5775	5736.60	> 5725

802.11ax_HE80_Ch1

Freq. (MHz)	RU config	26dB BW (MHz)	10 Log (B) (dB)
5210	full	81.25	19.10
5290	full	81.10	19.09
5530	full	81.81	19.13
5610	full	82.85	19.18
5690 (U-NII 2C)	full	75.99	18.81
5690 (U-NII 3)	full	5.99	7.77

802.11ax_HE80_Ch1

Freq. (MHz)	RU config	6dB BW (MHz)	10 Log (B) (dB)
5775	full	76.76	18.85

802.11ax_HE80_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5248.38	< 5250
5775	5736.61	> 5725

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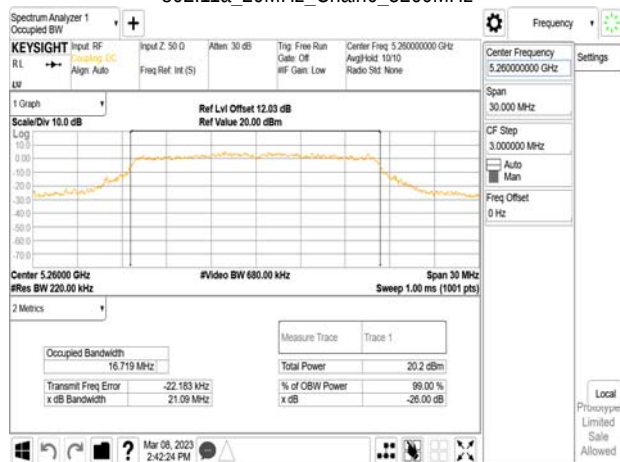
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802.11a_20MHz_Chain0_5180MHz



802.11a_20MHz_Chain0_5260MHz



802.11a_20MHz_Chain0_5220MHz



802.11a_20MHz_Chain0_5300MHz



802.11a_20MHz_Chain0_5240MHz



802.11a_20MHz_Chain0_5320MHz

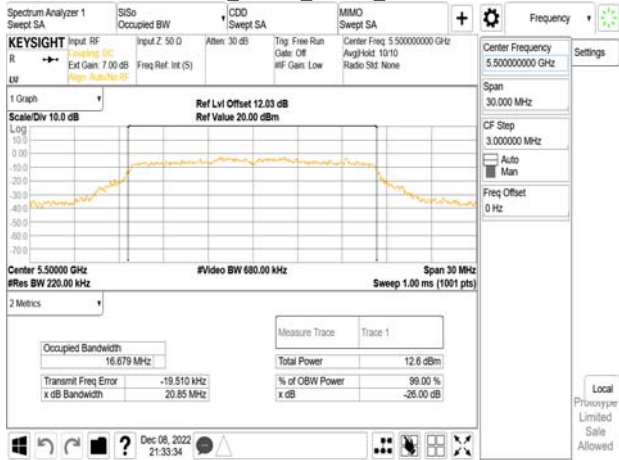


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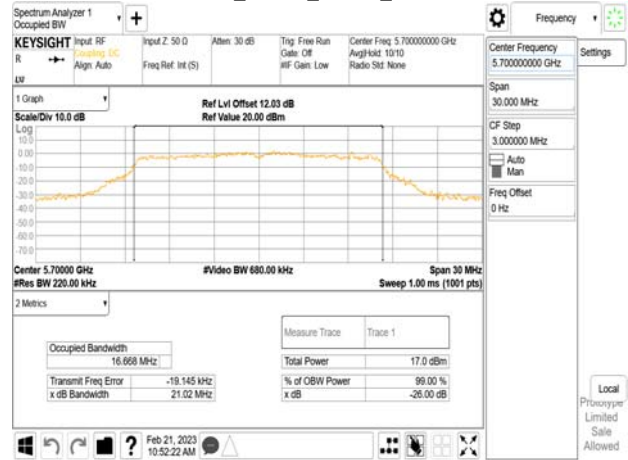
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802.11a_20MHz_Chain0_5500MHz



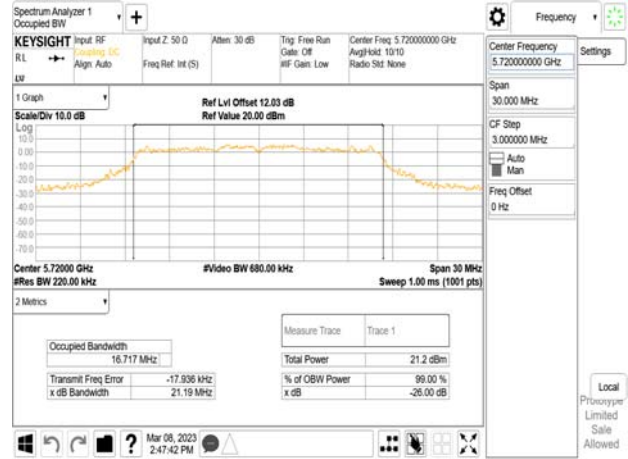
802.11a_20MHz_Chain0_5700MHz



802.11a_20MHz_Chain0_5580MHz



802.11a_20MHz_Chain0_5720MHz



802.11a_20MHz_Chain0_5680MHz



802.11a_20MHz_Chain0_5745MHz

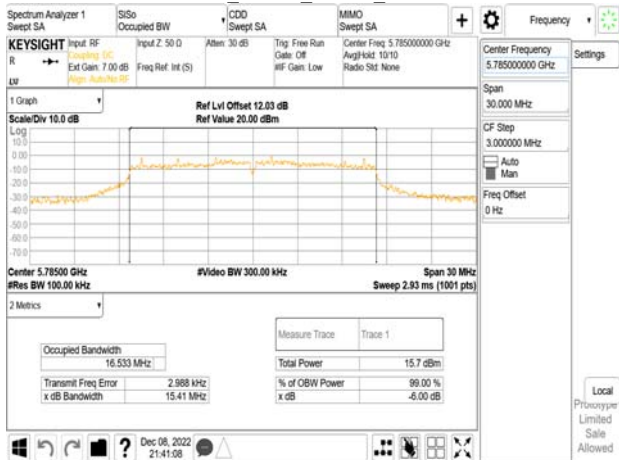


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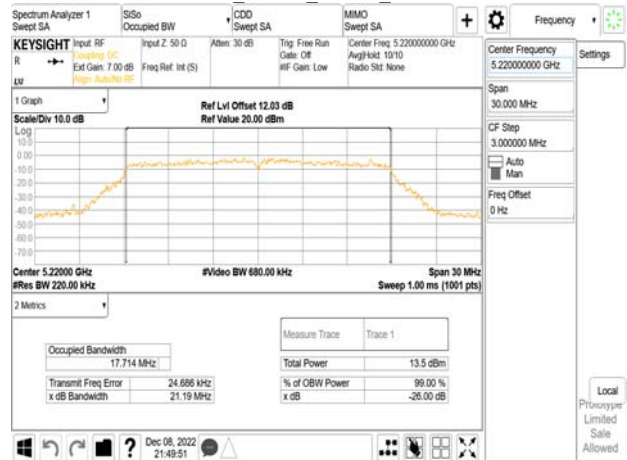
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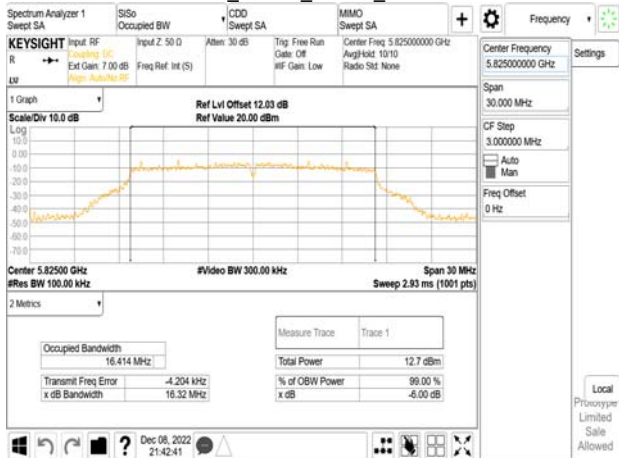
802.11a_20MHz_Chain0_5785MHz



802.11n_20MHz_Chain0_5220MHz



802.11a_20MHz_Chain0_5825MHz



802.11n_20MHz_Chain0_5240MHz



802.11n_20MHz_Chain0_5180MHz



802.11n_20MHz_Chain0_5260MHz

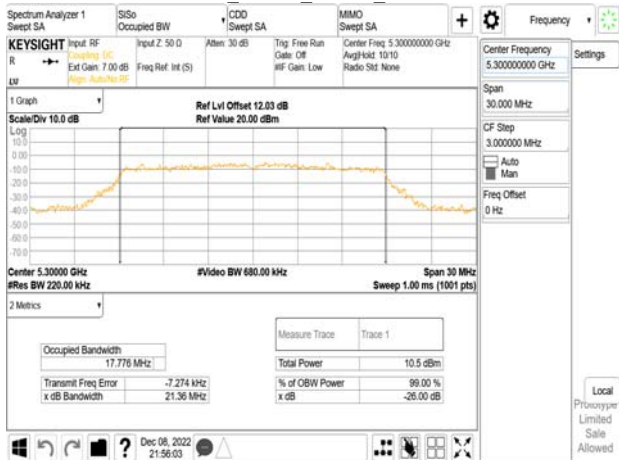


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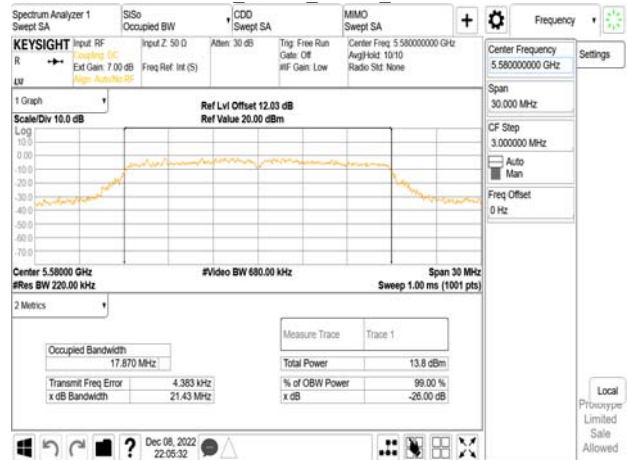
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802.11n_20MHz_Chain0_5300MHz



802.11n_20MHz_Chain0_5580MHz



802.11n_20MHz_Chain0_5320MHz



802.11n_20MHz_Chain0_5680MHz



802.11n_20MHz_Chain0_5500MHz



802.11n_20MHz_Chain0_5700MHz



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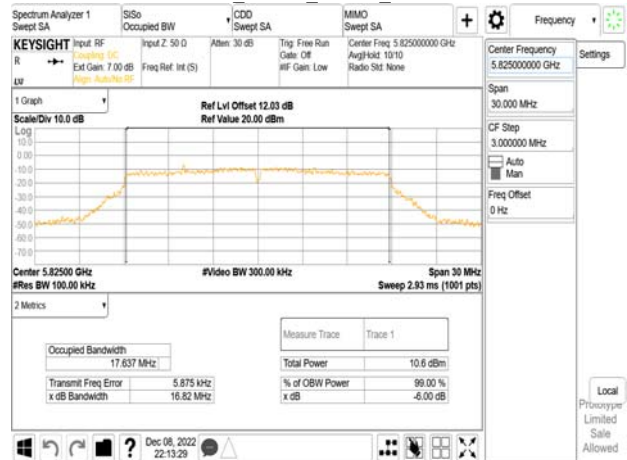
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802.11n_20MHz_Chain0_5720MHz



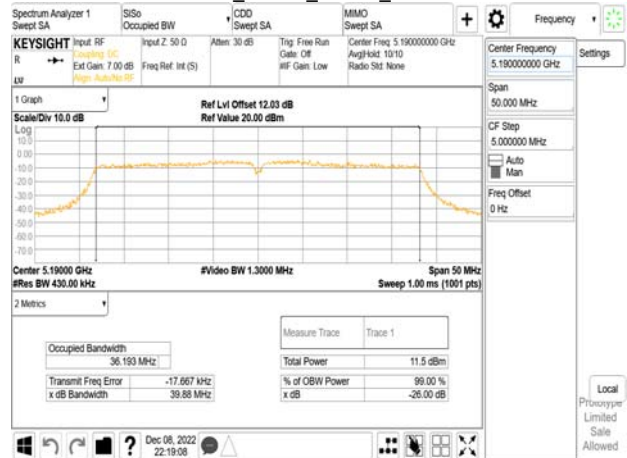
802.11n_20MHz_Chain0_5825MHz



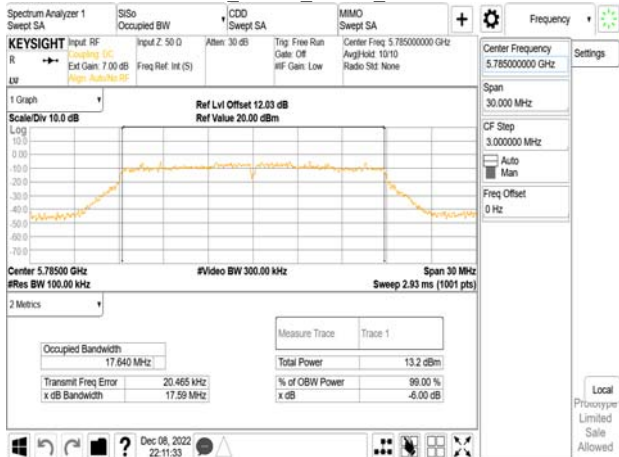
802.11n_20MHz_Chain0_5745MHz



802.11n_40MHz_Chain0_5190MHz



802.11n_20MHz_Chain0_5785MHz



802.11n_40MHz_Chain0_5230MHz

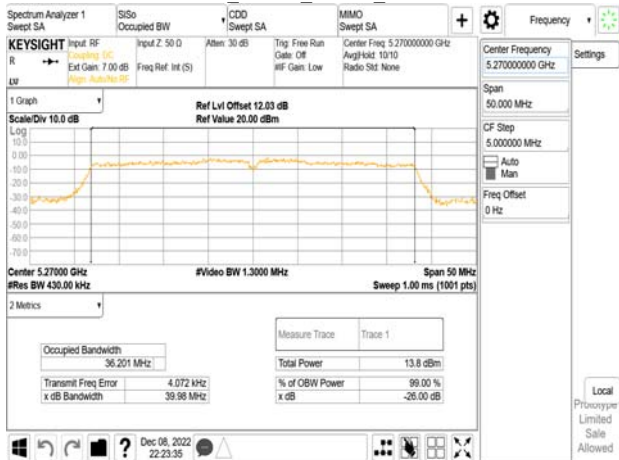


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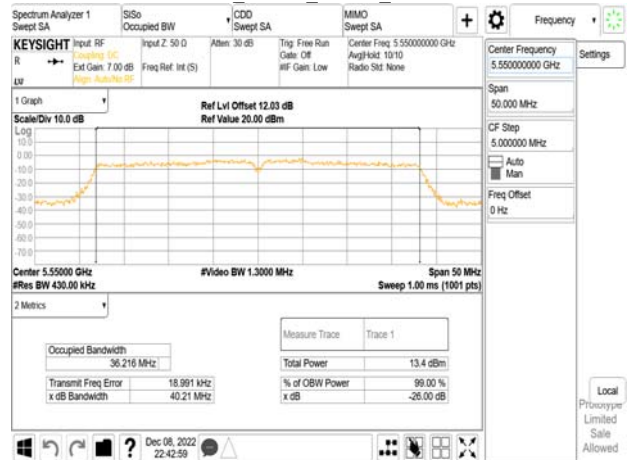
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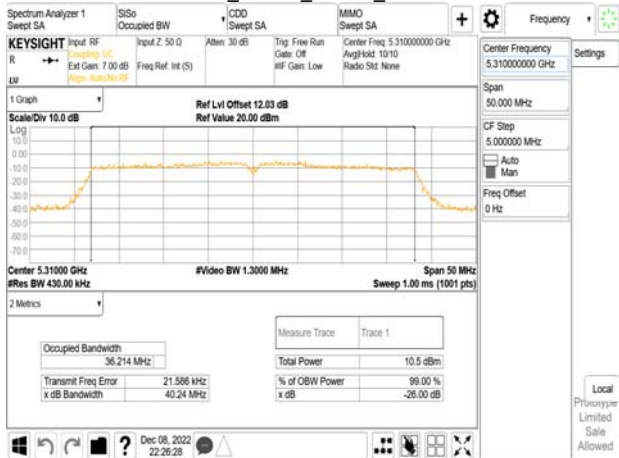
802.11n_40MHz_Chain0_5270MHz



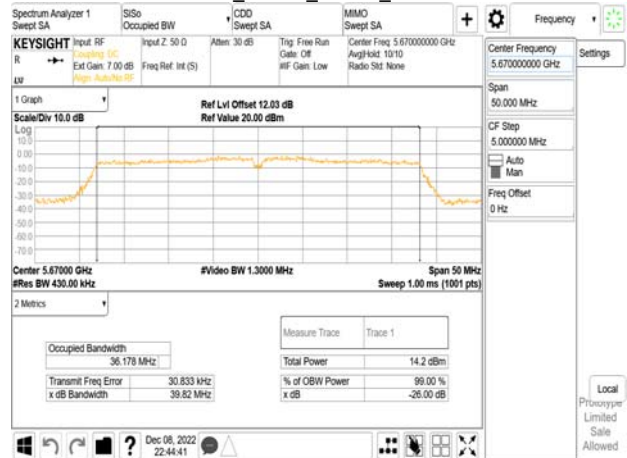
802.11n_40MHz_Chain0_5550MHz



802.11n_40MHz_Chain0_5310MHz



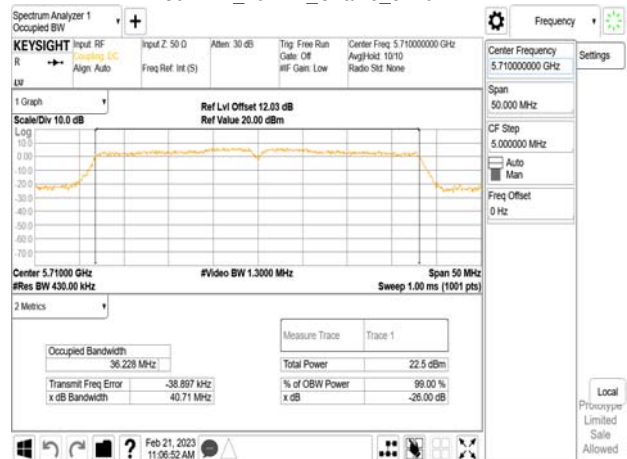
802.11n_40MHz_Chain0_5670MHz



802.11n_40MHz_Chain0_5510MHz



802.11n_40MHz_Chain0_5710MHz



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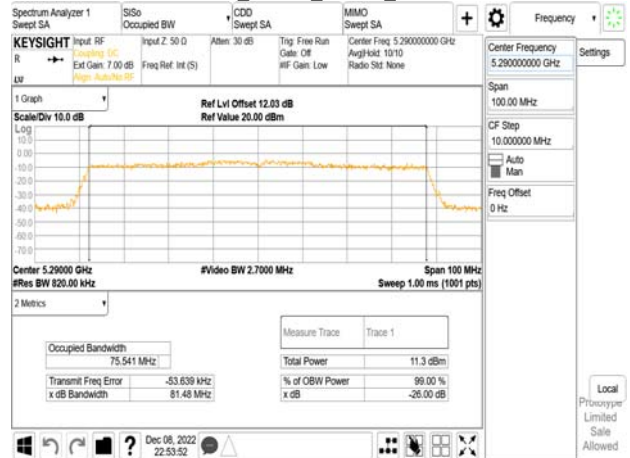
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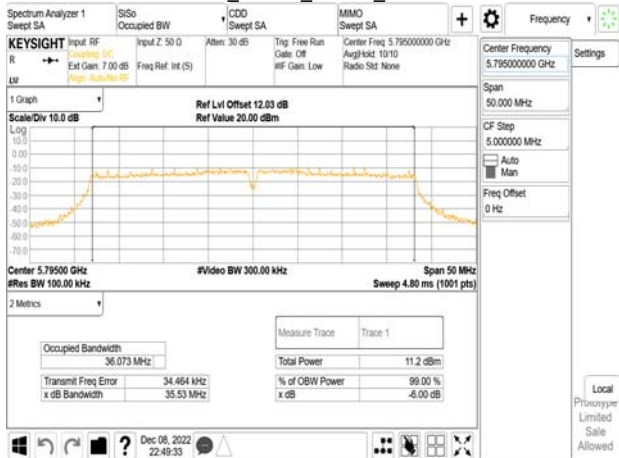
802.11n_40MHz_Chain0_5755MHz



802.11ac_80MHz_Chain0_5290MHz



802.11n_40MHz_Chain0_5795MHz



802.11ac_80MHz_Chain0_5530MHz



802.11ac_80MHz_Chain0_5210MHz



802.11ac_80MHz_Chain0_5610MHz

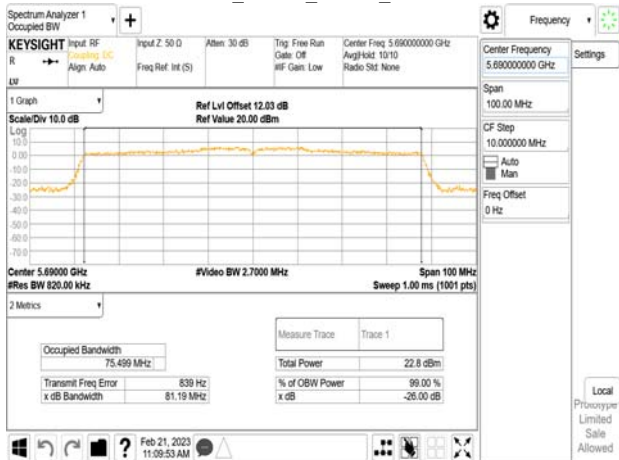


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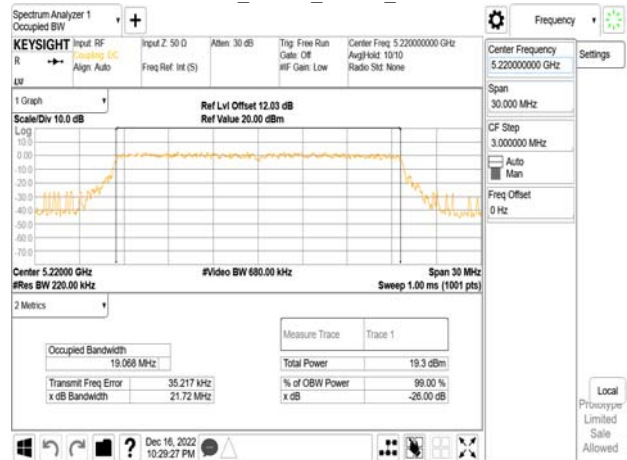
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802.11ac_80MHz_Chain0_5690MHz



802.11ax_20MHz_Chain0_5220MHz



802.11ac_80MHz_Chain0_5775MHz



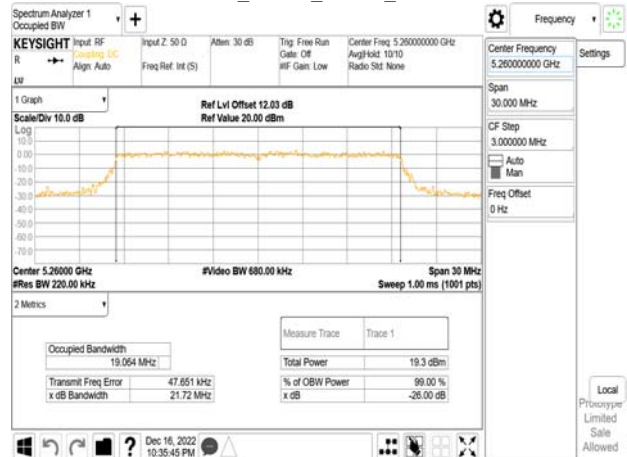
802.11ax_20MHz_Chain0_5240MHz



802.11ax_20MHz_Chain0_5180MHz



802.11ax_20MHz_Chain0_5260MHz

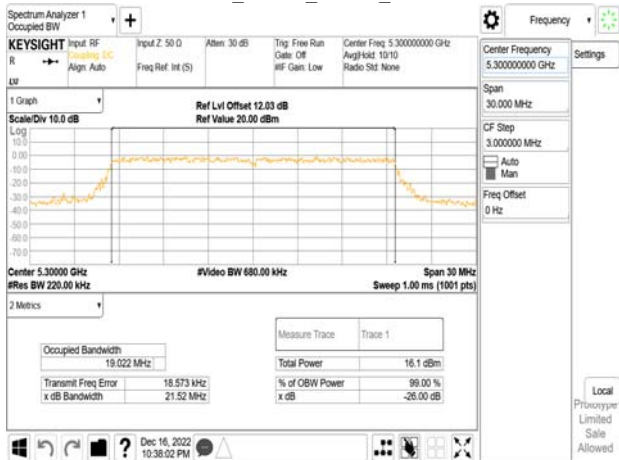


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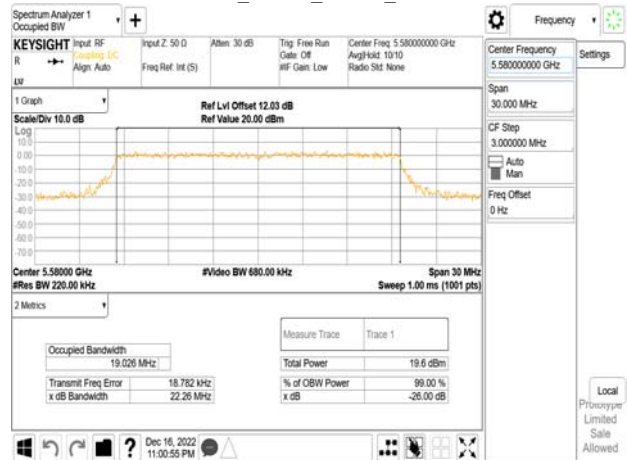
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802.11ax_20MHz_Chain0_5300MHz



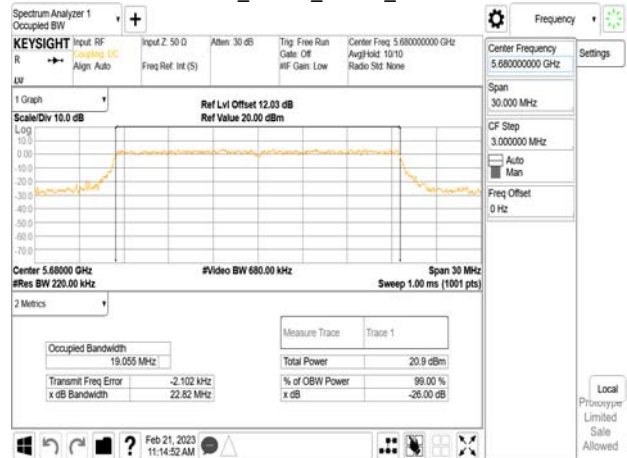
802.11ax_20MHz_Chain0_5580MHz



802.11ax_20MHz_Chain0_5320MHz



802.11ax_20MHz_Chain0_5680MHz



802.11ax_20MHz_Chain0_5500MHz



802.11ax_20MHz_Chain0_5700MHz

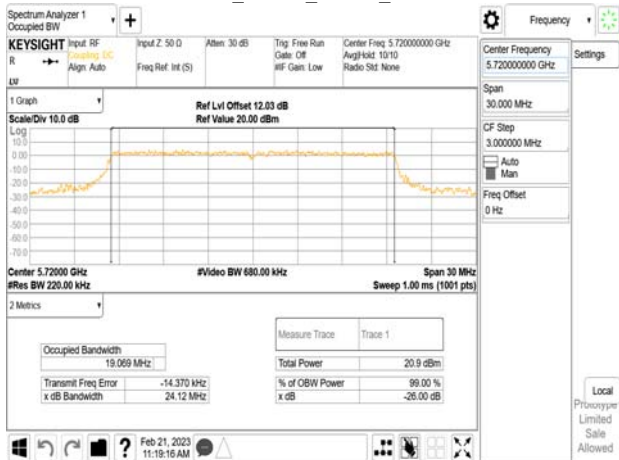


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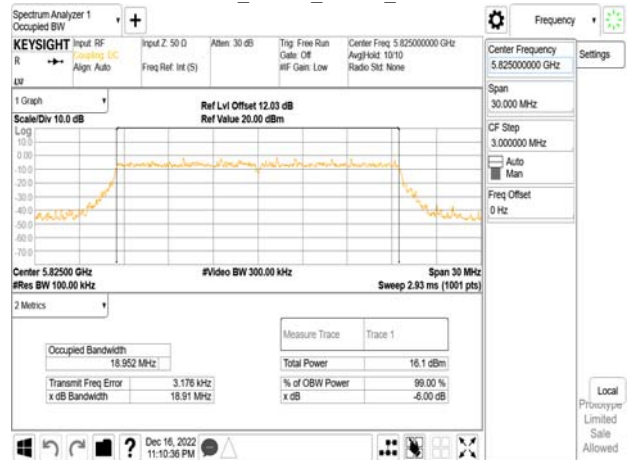
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802.11ax_20MHz_Chain0_5720MHz



802.11ax_20MHz_Chain0_5825MHz



802.11ax_20MHz_Chain0_5745MHz



802.11ax_40MHz_Chain0_5190MHz



802.11ax_20MHz_Chain0_5785MHz



802.11ax_40MHz_Chain0_5230MHz

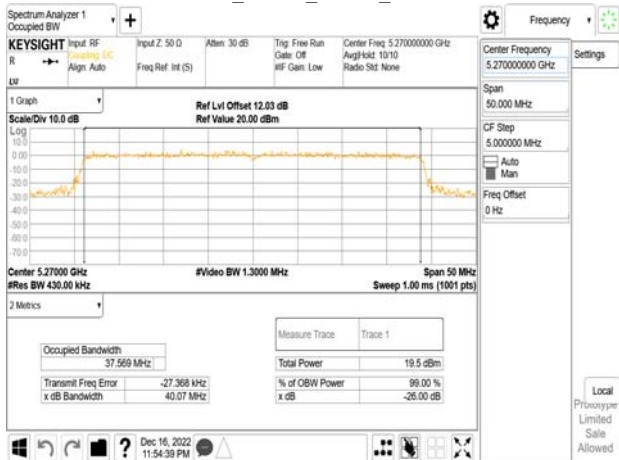


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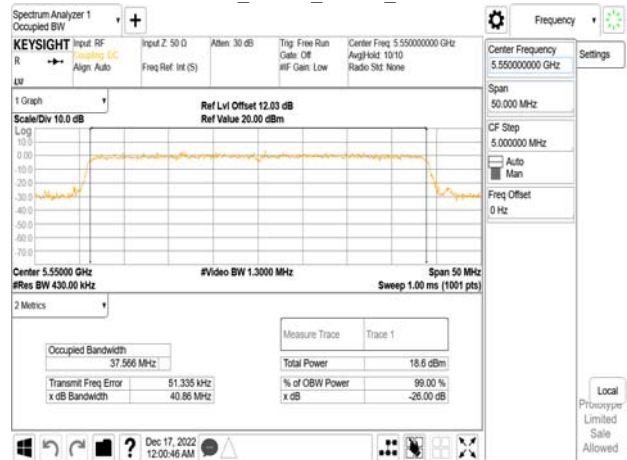
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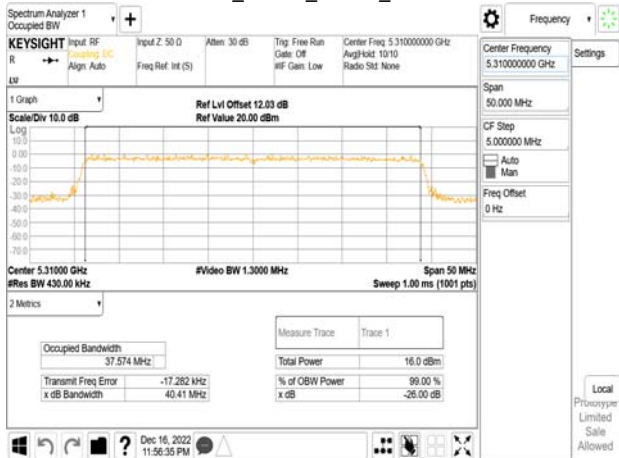
802.11ax_40MHz_Chain0_5270MHz



802.11ax_40MHz_Chain0_5550MHz



802.11ax_40MHz_Chain0_5310MHz



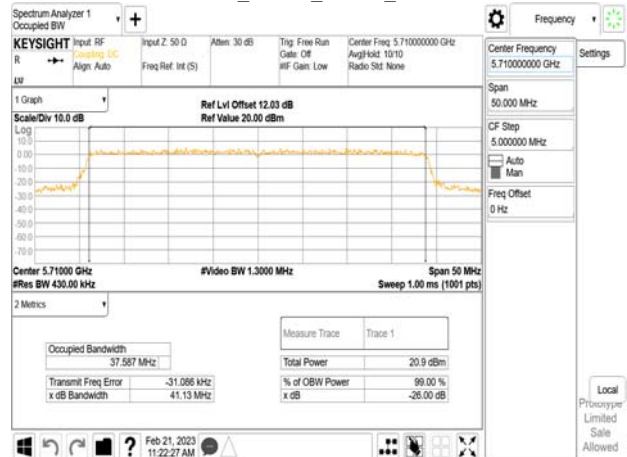
802.11ax_40MHz_Chain0_5670MHz



802.11ax_40MHz_Chain0_5510MHz



802.11ax_40MHz_Chain0_5710MHz



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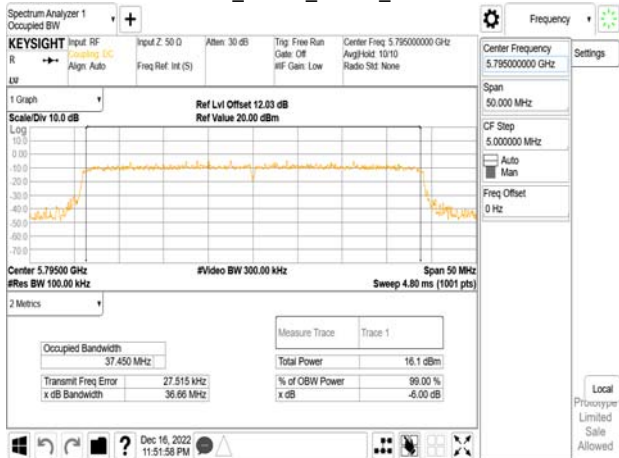
802.11ax_40MHz_Chain0_5755MHz



802.11ax_80MHz_Chain0_5290MHz



802.11ax_40MHz_Chain0_5795MHz



802.11ax_80MHz_Chain0_5530MHz



802.11ax_80MHz_Chain0_5210MHz



802.11ax_80MHz_Chain0_5610MHz



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MIMO

802.11ax_80MHz_Chain0_5690MHz



802.11a_20MHz_Chain0_5180MHz



802.11ax_80MHz_Chain0_5775MHz



802.11a_20MHz_Chain0_5220MHz



802.11a_20MHz_Chain0_5240MHz



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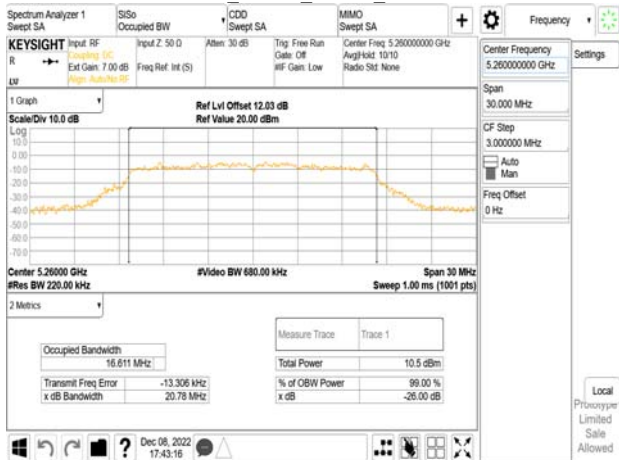
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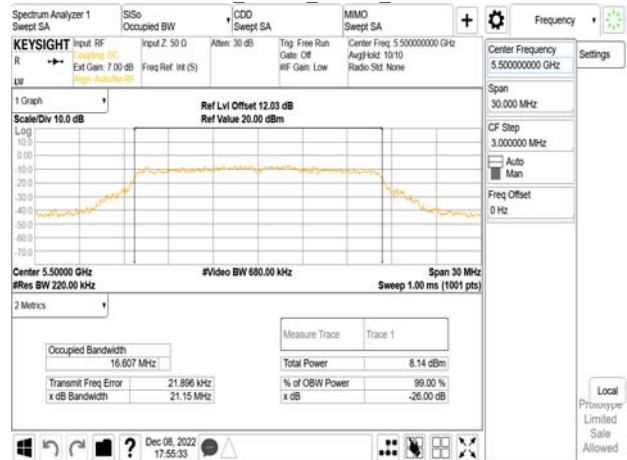
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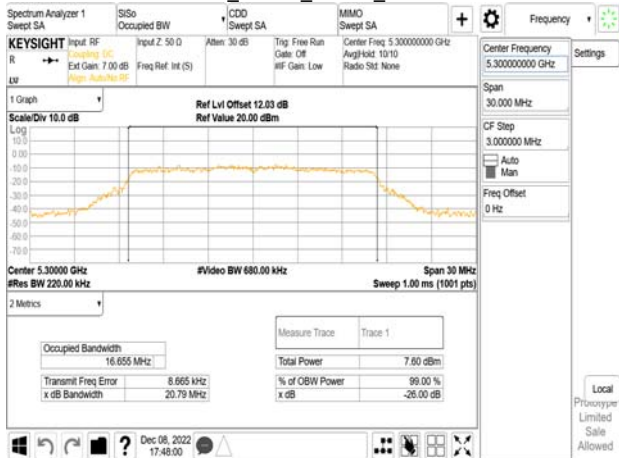
802.11a_20MHz_Chain0_5260MHz



802.11a_20MHz_Chain0_5500MHz



802.11a_20MHz_Chain0_5300MHz



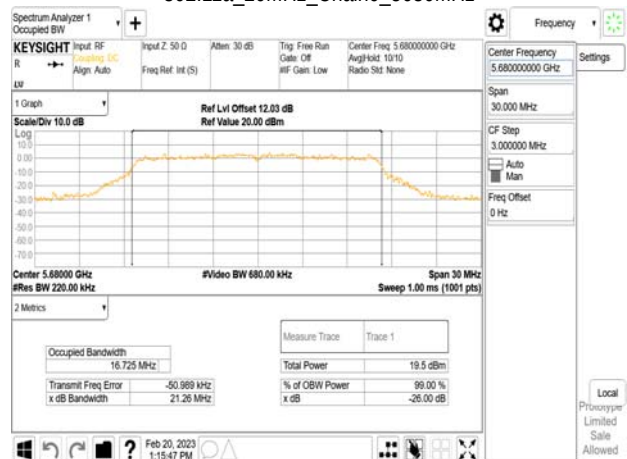
802.11a_20MHz_Chain0_5580MHz



802.11a_20MHz_Chain0_5320MHz



802.11a_20MHz_Chain0_5680MHz

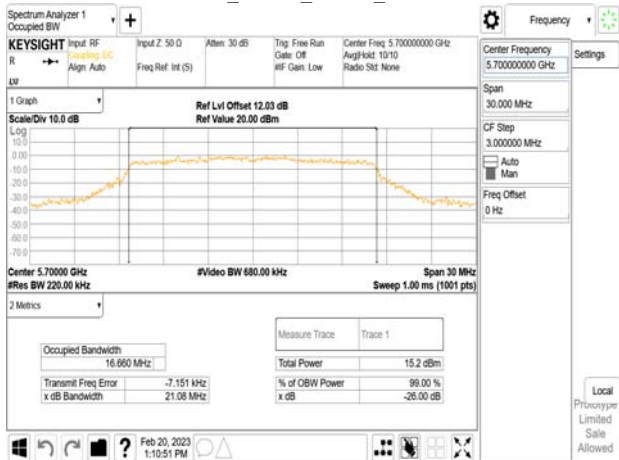


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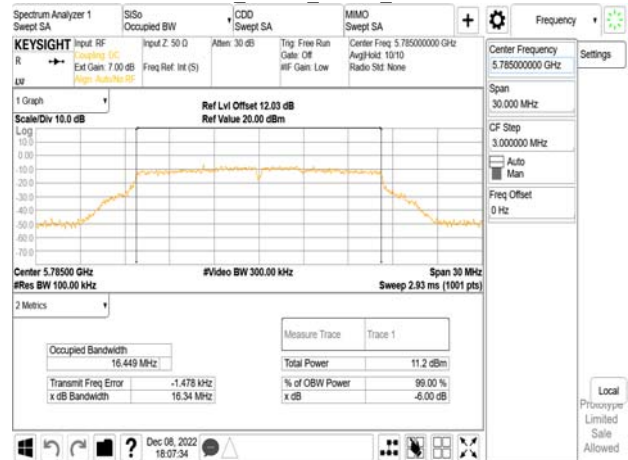
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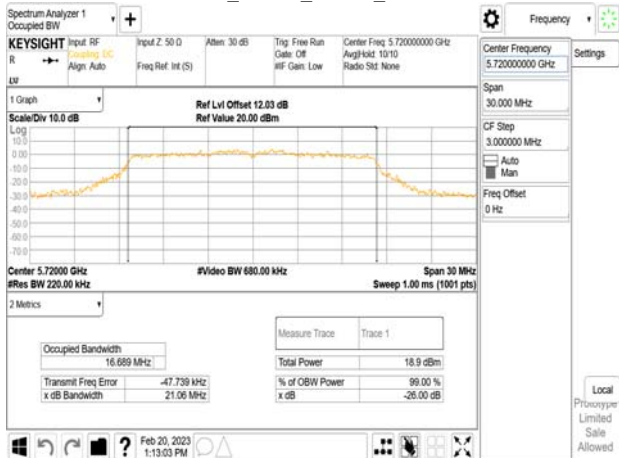
802.11a_20MHz_Chain0_5700MHz



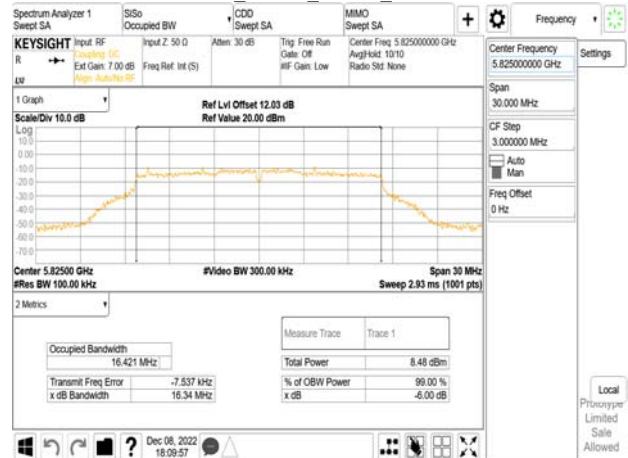
802.11a_20MHz_Chain0_5785MHz



802.11a_20MHz_Chain0_5720MHz



802.11a_20MHz_Chain0_5825MHz



802.11a_20MHz_Chain0_5745MHz



802.11a_20MHz_Chain1_5180MHz

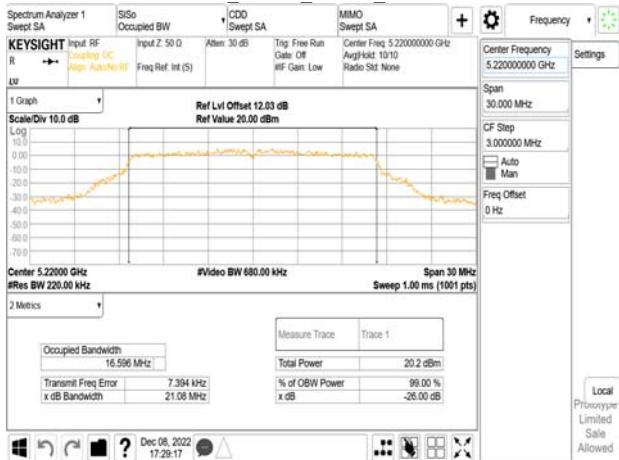


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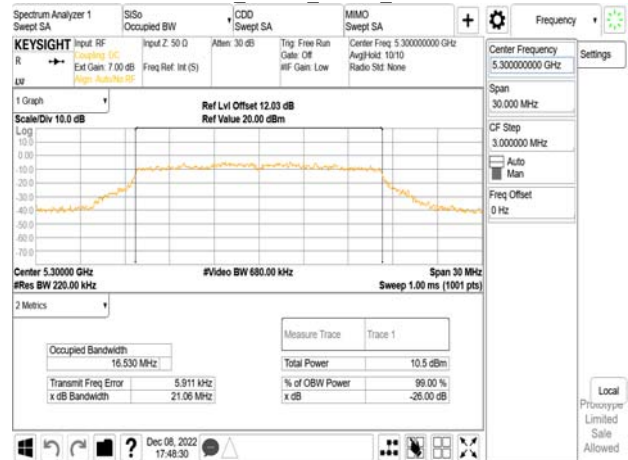
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802.11a_20MHz_Chain1_5220MHz



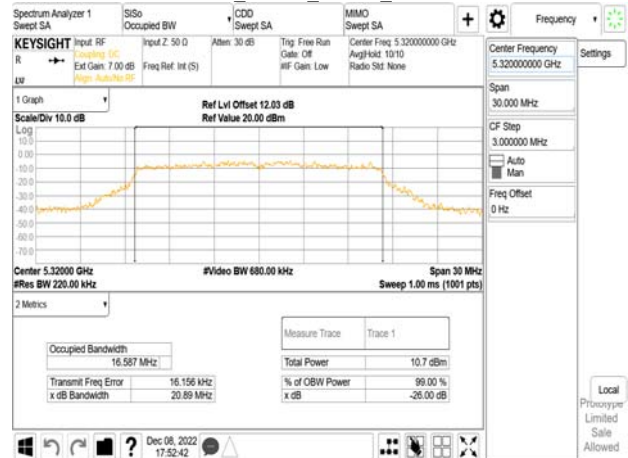
802.11a_20MHz_Chain1_5300MHz



802.11a_20MHz_Chain1_5240MHz



802.11a_20MHz_Chain1_5320MHz



802.11a_20MHz_Chain1_5260MHz



802.11a_20MHz_Chain1_5500MHz

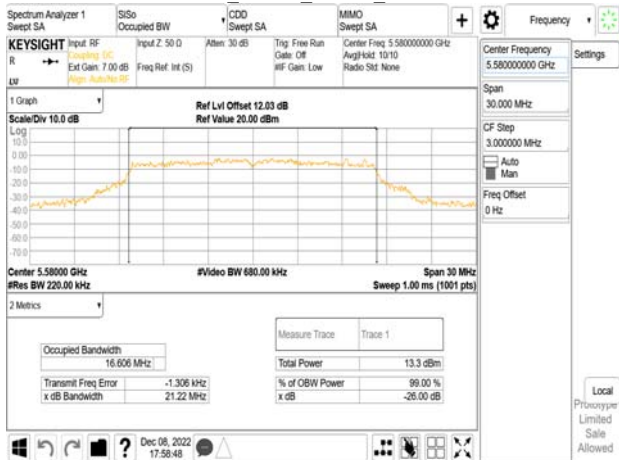


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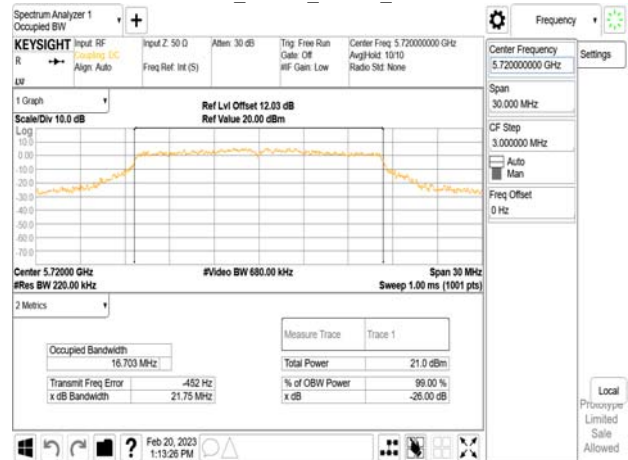
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802.11a_20MHz_Chain1_5580MHz



802.11a_20MHz_Chain1_5720MHz



802.11a_20MHz_Chain1_5680MHz



802.11a_20MHz_Chain1_5745MHz



802.11a_20MHz_Chain1_5700MHz



802.11a_20MHz_Chain1_5785MHz

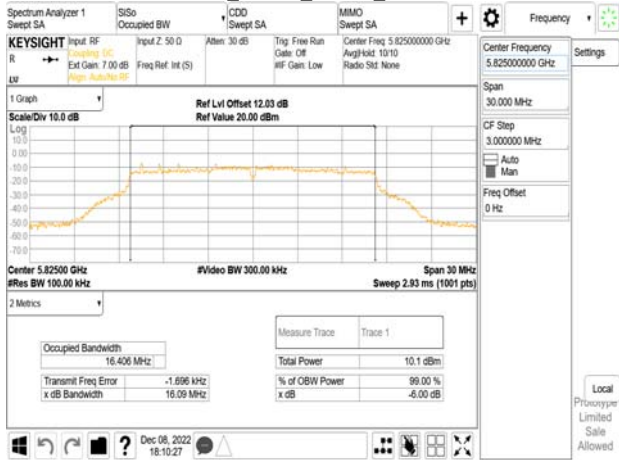


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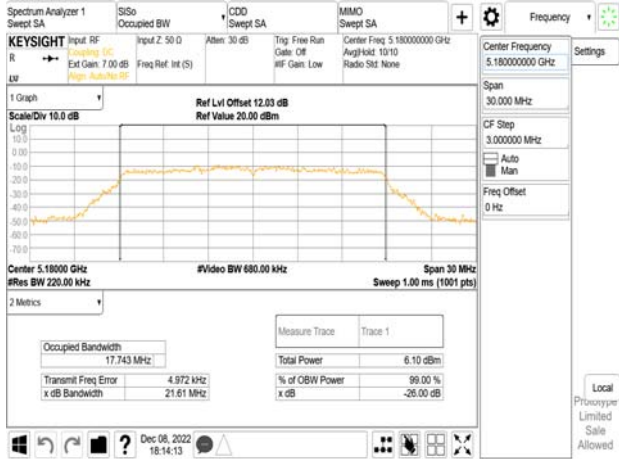
802.11a_20MHz_Chain1_5825MHz



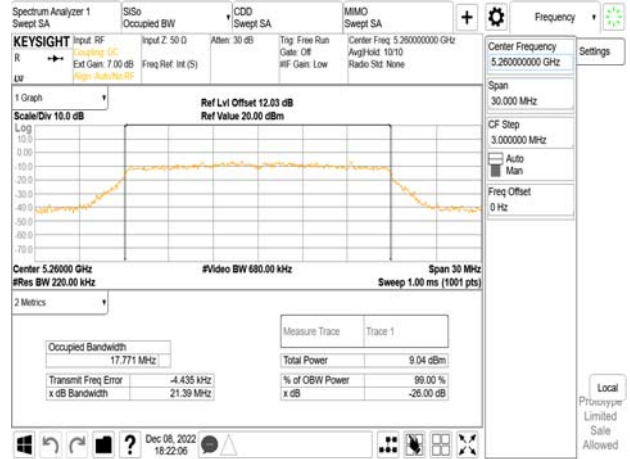
802.11n_20MHz_Chain0_5240MHz



802.11n_20MHz_Chain0_5180MHz



802.11n_20MHz_Chain0_5260MHz



802.11n_20MHz_Chain0_5220MHz



802.11n_20MHz_Chain0_5300MHz



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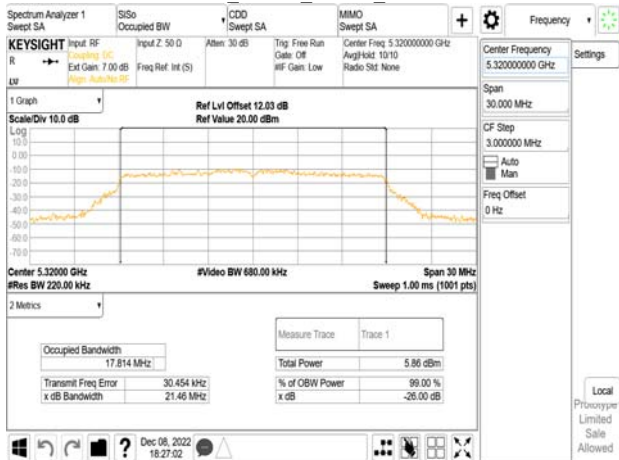
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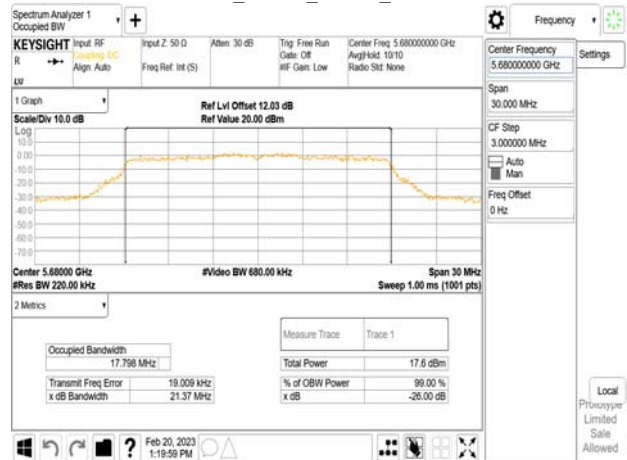
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802.11n_20MHz_Chain0_5320MHz



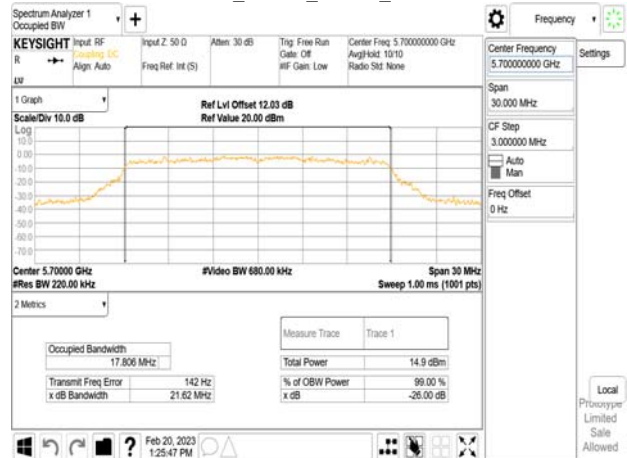
802.11n_20MHz_Chain0_5680MHz



802.11n_20MHz_Chain0_5500MHz



802.11n_20MHz_Chain0_5700MHz



802.11n_20MHz_Chain0_5580MHz



802.11n_20MHz_Chain0_5720MHz



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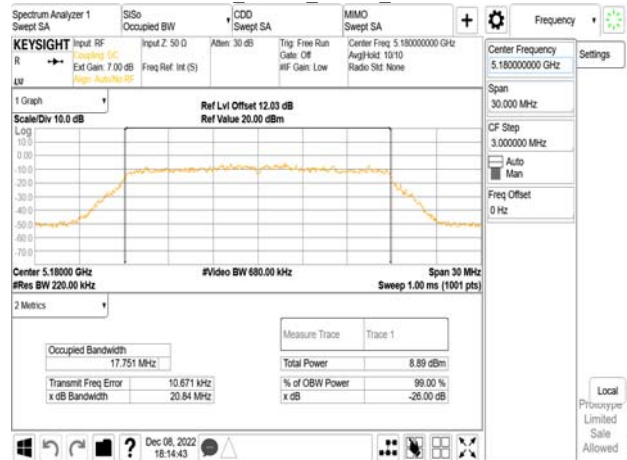
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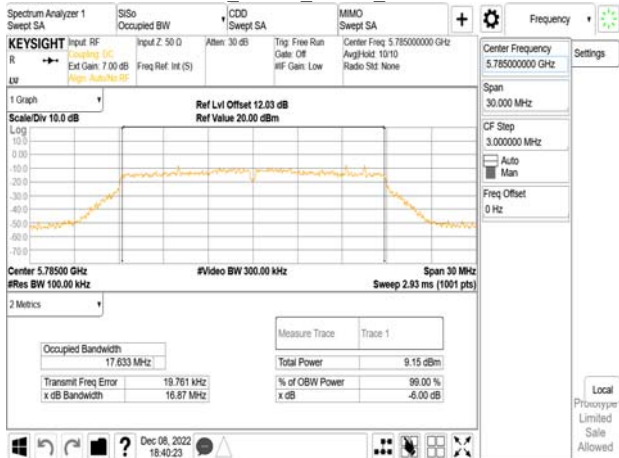
802.11n_20MHz_Chain0_5745MHz



802.11n_20MHz_Chain1_5180MHz



802.11n_20MHz_Chain0_5785MHz



802.11n_20MHz_Chain1_5220MHz



802.11n_20MHz_Chain0_5825MHz



802.11n_20MHz_Chain1_5240MHz



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802.11n_20MHz_Chain1_5260MHz



802.11n_20MHz_Chain1_5500MHz



802.11n_20MHz_Chain1_5300MHz



802.11n_20MHz_Chain1_5580MHz



802.11n_20MHz_Chain1_5320MHz



802.11n_20MHz_Chain1_5680MHz

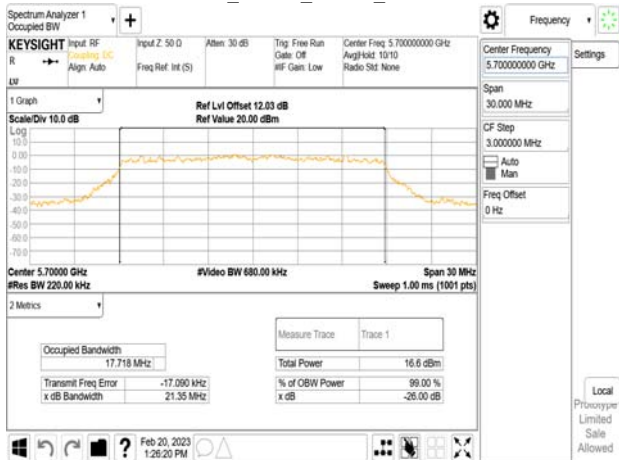


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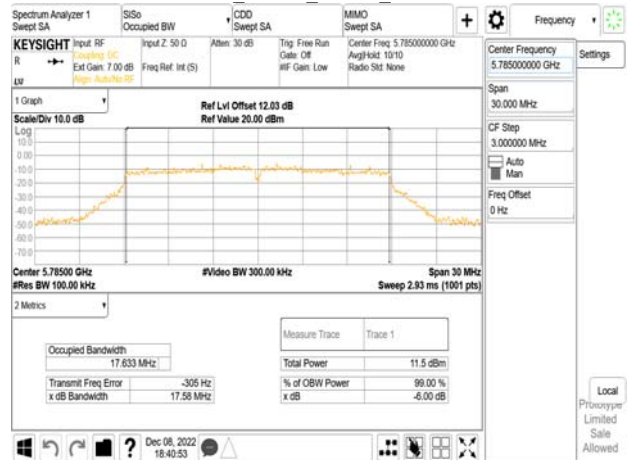
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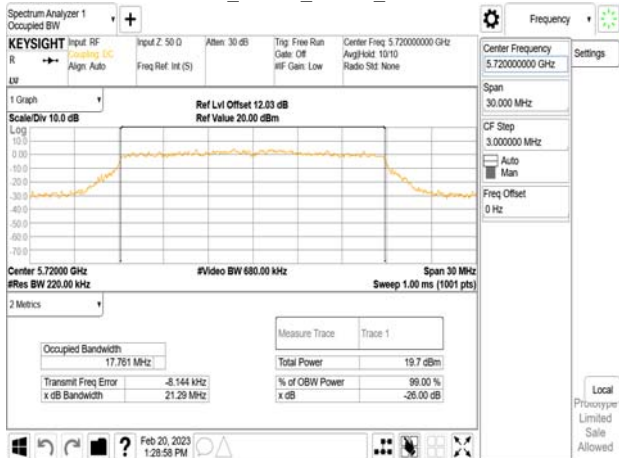
802.11n_20MHz_Chain1_5700MHz



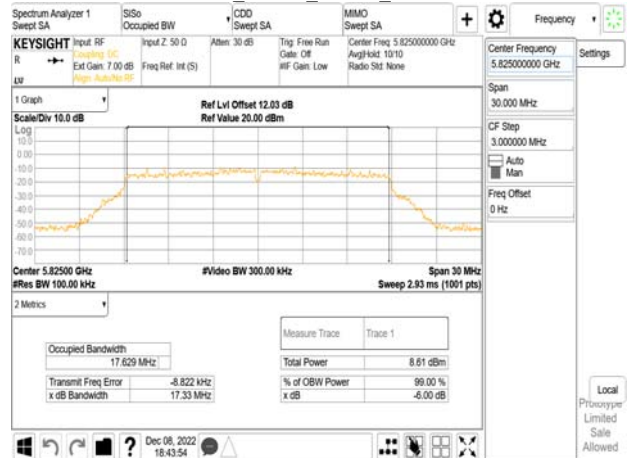
802.11n_20MHz_Chain1_5785MHz



802.11n_20MHz_Chain1_5720MHz



802.11n_20MHz_Chain1_5825MHz



802.11n_20MHz_Chain1_5745MHz



802.11n_40MHz_Chain0_5190MHz



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台灣檢驗科技股份有限公司

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f (886-2) 2298-0488

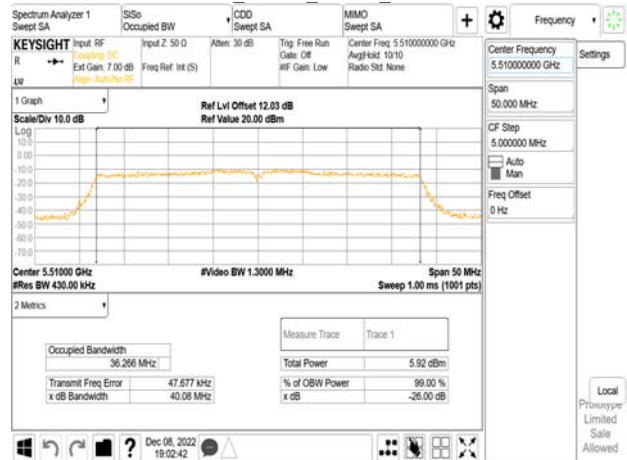
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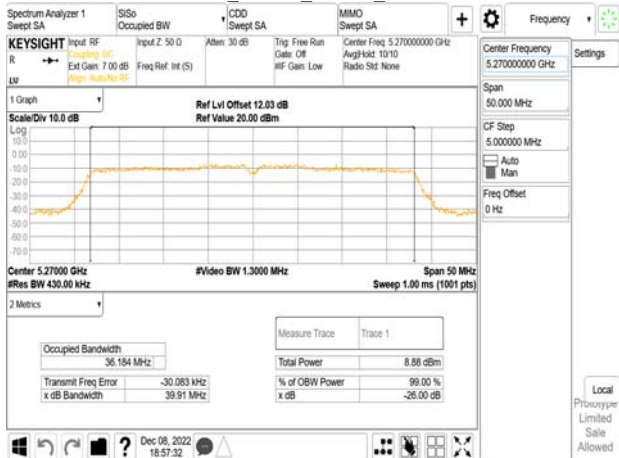
802.11n 40MHz_Chain0 5230MHz



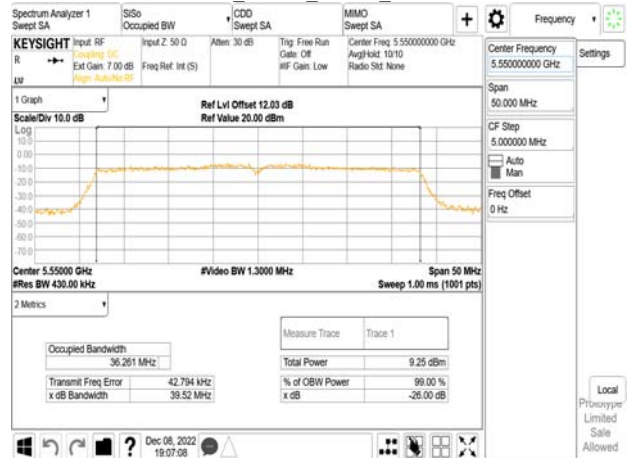
802.11n 40MHz_Chain0 5510MHz



802.11n 40MHz_Chain0 5270MHz



802.11n 40MHz_Chain0 5550MHz



802.11n 40MHz_Chain0 5310MHz



802.11n 40MHz_Chain0 5670MHz



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台灣檢驗科技股份有限公司

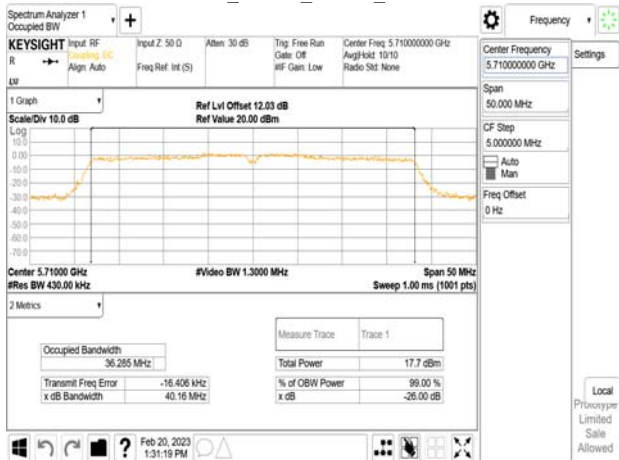
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802.11n_40MHz_Chain0_5710MHz



802.11n_40MHz_Chain1_5190MHz



802.11n_40MHz_Chain0_5755MHz



802.11n_40MHz_Chain1_5230MHz



802.11n_40MHz_Chain0_5795MHz



802.11n_40MHz_Chain1_5270MHz

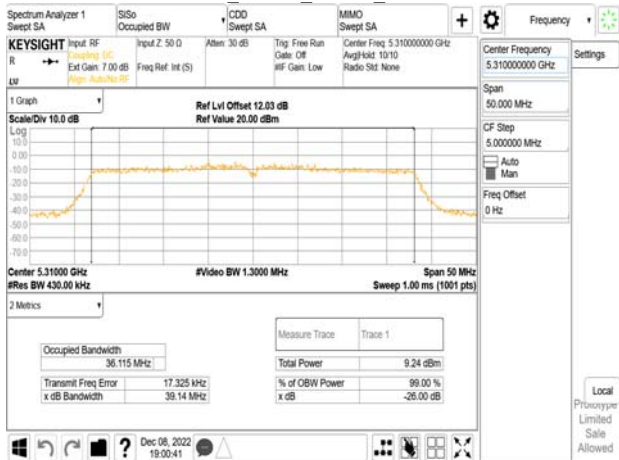


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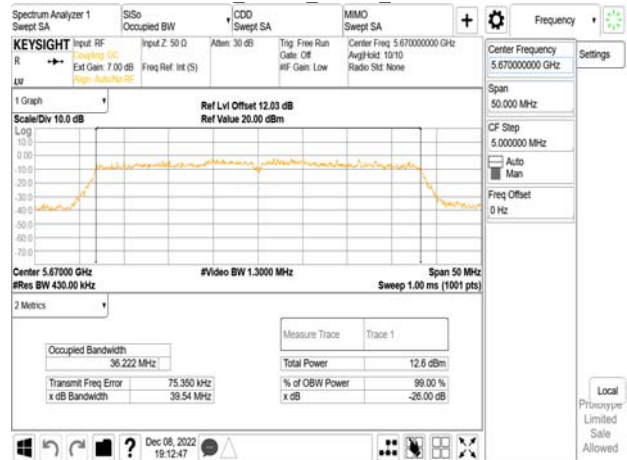
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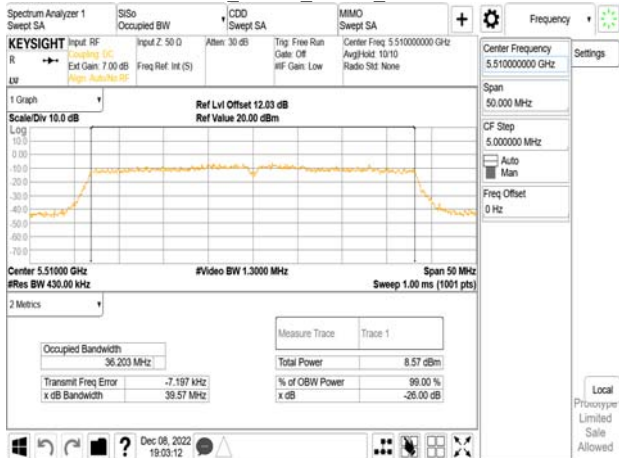
802.11n_40MHz_Chain1_5310MHz



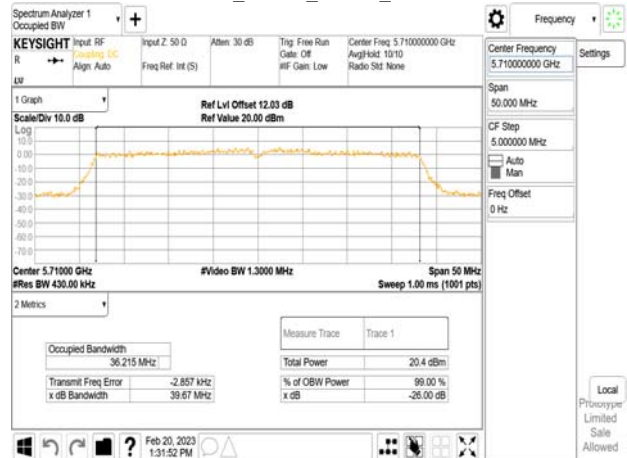
802.11n_40MHz_Chain1_5670MHz



802.11n_40MHz_Chain1_5510MHz



802.11n_40MHz_Chain1_5710MHz



802.11n_40MHz_Chain1_5550MHz



802.11n_40MHz_Chain1_5755MHz

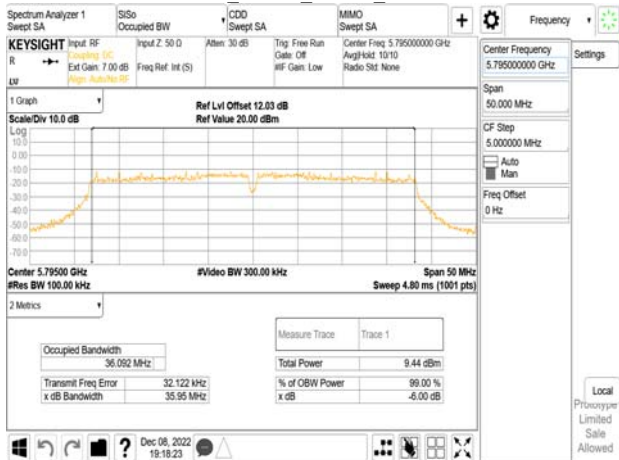


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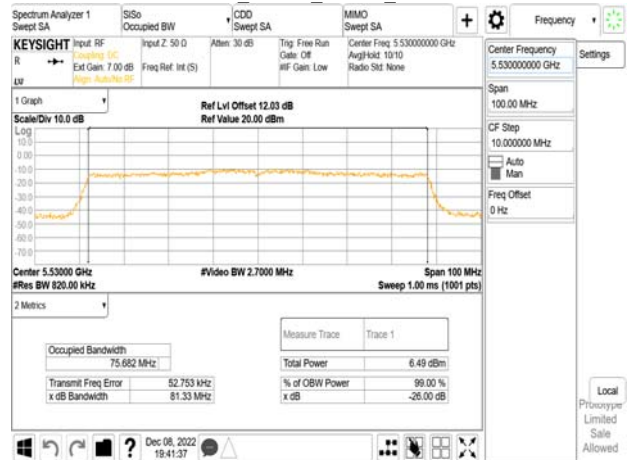
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802.11n_40MHz_Chain1_5795MHz



802.11ac_80MHz_Chain0_5530MHz



802.11ac_80MHz_Chain0_5210MHz



802.11ac_80MHz_Chain0_5610MHz



802.11ac_80MHz_Chain0_5290MHz



802.11ac_80MHz_Chain0_5690MHz



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802.11ac 80MHz Chain0 5775MHz



802.11ac 80MHz Chain1 5530MHz



802.11ac 80MHz Chain1 5210MHz



802.11ac 80MHz Chain1 5610MHz



802.11ac 80MHz Chain1 5290MHz



802.11ac 80MHz Chain1 5690MHz

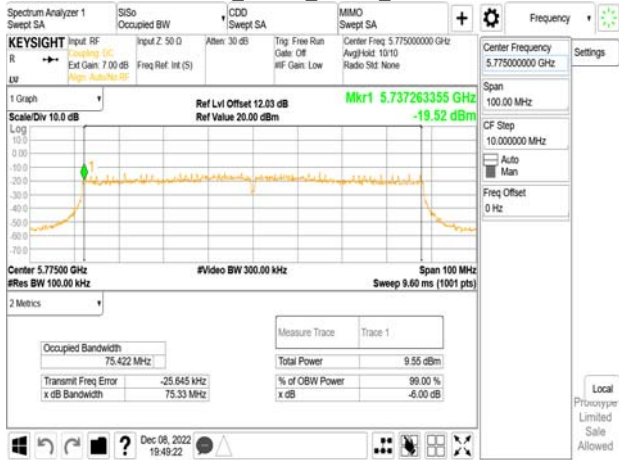


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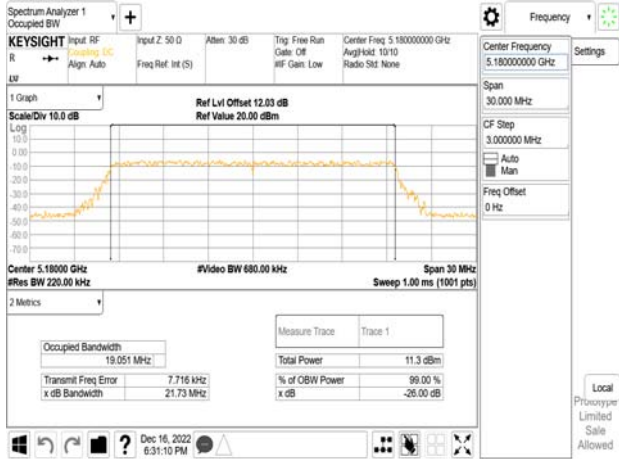
802.11ac_80MHz_Chain1_5775MHz



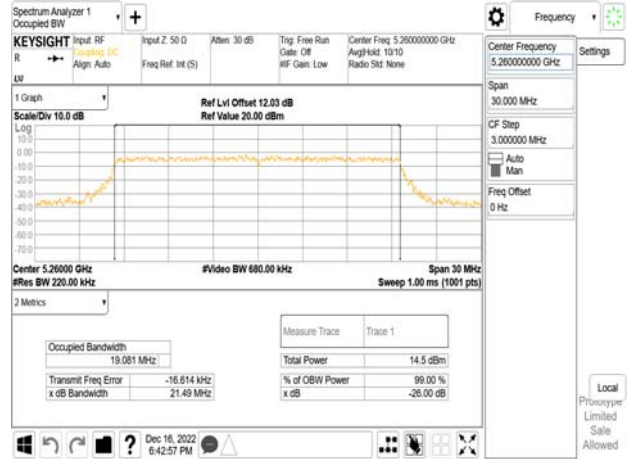
802.11ax_20MHz_Chain0_5240MHz



802.11ax_20MHz_Chain0_5180MHz



802.11ax_20MHz_Chain0_5260MHz



802.11ax_20MHz_Chain0_5220MHz



802.11ax_20MHz_Chain0_5300MHz



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