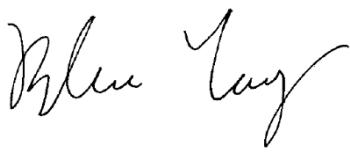


## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT



**FCC Applicant:** Barco NV  
President Kennedypark 35 8500 Kortrijk Belgium  
**Product Name:** ClickShare  
**Brand Name:** Barco  
**Model No.:** CSBTN004  
**Model Difference:** N/A  
**Report Number:** ER/2021/C0049  
**FCC ID:** 2AAED-CSBTN004  
**Issue Date:** January 18, 2022  
**Date of Test:** December 15, 2021~January 5, 2022  
**Date of EUT Received:** December 10, 2021

  
**Approved By** \_\_\_\_\_  
**Blue Yang**

### We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.407.

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
ER/2021/C0049	00	Original.	January 18, 2022	Karen Huang	

**Note:**

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

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SGS Taiwan Ltd.

台灣檢驗科技股份有限公司

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新北市五股區新北產業園區五工路 134 號

t (886-2) 2299-3279

f (886-2) 2298-0488

[www.sgs.com.tw](http://www.sgs.com.tw)

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## 1 GENERAL INFORMATION

### 1.1 Product Description

Product Name:	ClickShare
Brand Name:	Barco
Model No.:	CSBTN004
Model Difference:	N/A
Hardware Version:	DVT
Firmware Version:	04.11.00.certification_GEN4_1_RF_regulatory_certification-0002-RFCertification
EUT Series No.:	1200051081
Power Supply:	5Vdc

### 1.2 Modulation & Data Rate

Modulation type:	64QAM, 16QAM, QPSK, BPSK for OFDM
	256QAM for OFDM in 802.11ac only
Transition Rate:	802.11 a: 6 - 54 Mbps
	802.11 n_20MHz: 6.5 - 144.4 Mbps
	802.11 n_40MHz: 13.5 - 300 Mbps
	802.11 ac_20MHz: 6.5 - 173.4 Mbps
	802.11 ac_40MHz: 13.5 - 400 Mbps
	802.11 ac_80MHz: 29.3 - 866.6 Mbps

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### 1.3 Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Ceramic Chip	Pulse Electronics	W3078	5150~5250	4.30	7.31
			5250~5350	4.30	7.31
			5475~5725	4.30	7.31
			5475~5825	4.30	7.31

**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

Wi-Fi	Frequency Range	Channels	Rated Power(Avg) (dBm) (Worst Case)	Modulation Technology
a/ n_HT/ ac_VHT 20M	5180~5240	4	12.19 dBm	OFDM
	5260~5320	4	14.85 dBm	OFDM
	5500~5720	12	14.99 dBm	OFDM
	5745~5825	5	14.88 dBm	OFDM
n_HT/ ac_VHT 40M	5190~5230	2	14.66 dBm	OFDM
	5270~5310	2	14.88 dBm	OFDM
	5510~5710	6	14.99 dBm	OFDM
	5755~5795	2	14.99 dBm	OFDM
ac_VHT 80M	5210	1	12.09 dBm	OFDM
	5290	1	11.32 dBm	OFDM
	5530~5690	3	14.85 dBm	OFDM
	5775	1	14.98 dBm	OFDM

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## 1.5 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

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 SAC 3 Conduction 1 Conducted 1 Conducted 2 Conducted 3 Conducted 4 Conducted 5 Conducted 6	TW0027	
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction C SAC C SAC D SAC G Conducted A Conducted B Conducted C Conducted D Conducted E Conducted F Conducted G	TW3702 TW0028	

**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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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

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

### 2.2 EUT Exercise

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

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

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

#### 2.3.2 Conducted Test (RF)

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

#### 2.3.3 Radiated Emissions

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

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## 2.4 Measurement Results Explanation Example

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

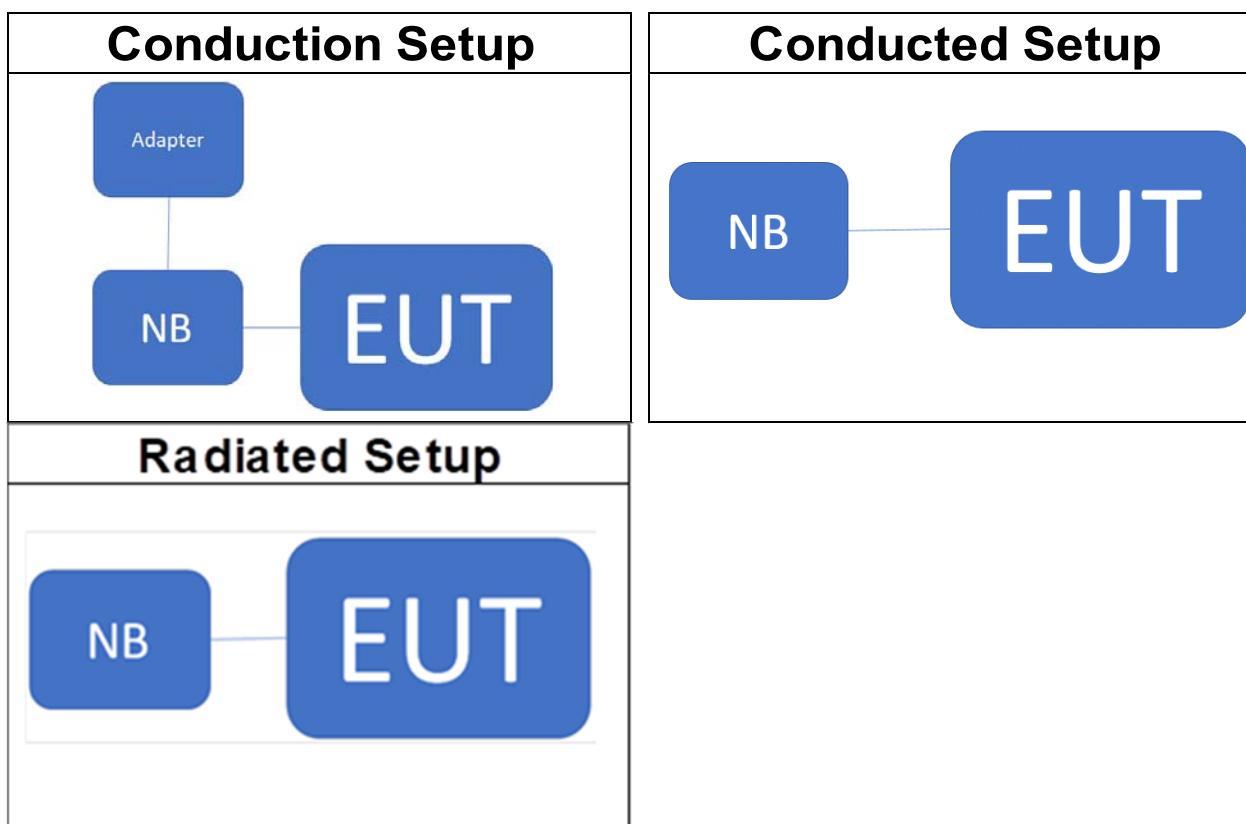
Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

### 2.4.2 For all conducted test items:

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

## 2.5 Test Configuration



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## 2.6 Control Unit(s)

AC Power-Line Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	Audix	e3	Ver. 9.210322	N.C.R	N.C.R
Notebook	Lenovo	T440P	PC-089AH5	N/A	N/A
Adapter	Lenovo	ADLX90NDC 3A	NA	N/A	N/A
Type C to USB	esense	01-ELS645	NA	N/A	N/A

Conducted Emission Test Site: Conducted 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	T440P	PC-089AH5	N/A	N/A

Radiated Emission Test Site: SAC 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	Audix	e3	Ver. 9.210322	N.C.R	N.C.R
Notebook	Lenovo	T440P	PC-089AH5	N/A	N/A
Type C to USB	esense	01-ELS645	NA	N/A	N/A

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### 3 SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.407(e)	Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.205 §15.209 §15.407(b)	Undesirable Radiated Emissions	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.203	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	
CH	Freq (MHz)
36	5180
40	5200
44	5220
48	5240

40 M	
CH	Freq (MHz)
38	5190
46	5230

80 M	
CH	Freq (MHz)
42	5210

#### Operated band in 5250 MHz ~5350 MHz:

20 M	
CH	Freq (MHz)
52	5260
56	5280
60	5300
64	5320

40 M	
CH	Freq (MHz)
54	5270
62	5310

80 M	
CH	Freq (MHz)
58	5290

#### Operated band in 5470 MHz ~5725 MHz:

20 M	
CH	Freq (MHz)
100	5500
104	5520
108	5540
112	5560
116	5580
120	5600
124	5620
128	5640
132	5660
136	5680
140	5700
144	5720

40 M	
CH	Freq (MHz)
102	5510
110	5550
118	5590
126	5630
134	5670
142	5710

80 M	
CH	Freq (MHz)
106	5530
122	5610
138	5690

#### Operated band in 5725 MHz ~5850 MHz:

20 M	
CH	Freq (MHz)
149	5745
153	5765
157	5785
161	5805
165	5825

40 M	
CH	Freq (MHz)
151	5755
159	5795

80 M	
CH	Freq (MHz)
155	5775

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## 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case. The given UE is pre-scanned among below modes.

Modulation		Transmission Chain							Single Transmission Spatial		Multiple Transmission Spatial		
v	802.11 a	v	Ch0	v	Ch1		Ch2		Ch3	v	1TX	v	2TX
v	802.11 n	v	Ch0	v	Ch1		Ch2		Ch3	v	SISO	v	MIMO
v	802.11 ac	v	Ch0	v	Ch1		Ch2		Ch3	v	SISO	v	MIMO
	802.11 ax		Ch0		Ch1		Ch2		Ch3		SISO		MIMO

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.

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	44	OFDM	6	2TX
	5260~5320	52 to 64	60			
	5500~5720	100 to 144	116			
	5745~5825	149 to 165	157			
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MIMO
	5290	58	58			
	5530~5610	106 to 138	106			
	5775	155	155			

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RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS8	MIMO
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO
	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	MIMO
	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	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS8	MIMO
	5260~5320	52 to 64	52,60,64			
	5500~5720	100 to 144	100,116,140,144			
	5745~5825	149 to 165	149,157,165			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO
	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	MIMO
	5290	58	58			
	5530~5610	106 to 138	106,122,138			
	5775	155	155			

### Note:

1. 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.
2. Investigation has been done on Beamforming and CDD configurations for searching the worst case, the CDD is determined as the worst case scenario demonstrated in this report.

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	
AC Power Line Conducted Emission	+/-	2.34 dB
Output Power measurement	+/-	1 dB
Emission Bandwidth	+/-	1.53 Hz
Undesignable radiated emission measurement	+/-	1.68 dB
Peak Power Density	+/-	1.62 dB
Temperature	+/-	0.4 °C
Humidity	+/-	3.5 %
DC / AC Power Source	+/-	1 %

Radiated Spurious Emission Measurement Uncertainty			
Polarization: Vertical	+/-	2.57 dB	9kHz~30MHz
	+/-	4.85 dB	30MHz - 1000MHz
	+/-	4.45 dB	1GHz - 18GHz
	+/-	4.24 dB	18GHz - 40GHz
Polarization: Horizontal	+/-	2.57 dB	9kHz~30MHz
	+/-	4.37 dB	30MHz - 1000MHz
	+/-	4.45 dB	1GHz - 18GHz
	+/-	4.24 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.
LISN	SCHWARZBEC K	NSLK 8127	1040	08/10/2021	08/09/2022
Coaxial Cables	N/A	Coaxial Cable	161207	12/07/2021	12/06/2022
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022

### 6.2 Conducted Measurement

Conducted Emission Test Site: Conducted 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY54200716	10/13/2021	10/12/2022
Power Meter	Anritsu	ML2496A	1804001	03/02/2021	03/01/2022
Power Sensor	Anritsu	MA2411B	1726104	03/02/2021	03/01/2022
Power Sensor	Anritsu	MA2411B	1726107	03/02/2021	03/01/2022
Attenuator	Mini-Circuit	BW-S10W2+	4	12/14/2021	12/13/2022
Attenuator	Mini-Circuit	BW-S10W2+	2	12/14/2021	12/13/2022
DC Block	Mini-Circuits	BLK-18-S+	1	12/14/2021	12/13/2022

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### 6.3 Radiated Measurement

Radiated Emission Test Site: SAC 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	SCHWARZBEC K	BBHA9120D	D803	12/20/2021	12/19/2022
Bi-log Antenna	TESEO	CBL 6112D	35242 & AT-N0555	01/13/2021	01/12/2022
Horn Antenna	SCHWARZBEC K	BBHA9170	185	08/06/2021	08/05/2022
Loop Antenna	ETS. LINDGREN	6502	148045	09/29/2021	09/28/2022
Spectrum Analyzer	Agilent	E4446A	MY51100003	10/26/2021	10/25/2022
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022
Site Cal	SGS	SAC 1	N/A	01/01/2022	12/31/2022
Pre-Amplifier	EMC Instruments	EMC184045 B	980135	10/27/2021	10/26/2022
Pre-Amplifier	HP	8449B	3008A01973	12/16/2021	12/15/2022
Pre-Amplifier	HP	8447D	2944A09469	12/16/2021	12/15/2022
Bandreject Filter 5150-5350	Micro-Tronics	BRM50703	1	12/14/2021	12/13/2022
Bandreject Filter 5470-5725	Micro-Tronics	BRM50704	1	12/14/2021	12/13/2022
Bandreject Filter 5725-5875	Micro-Tronics	BRM50705	1	12/14/2021	12/13/2022
7GHz High Pass Filter	WI	WHKX10-6090-80SS	3	12/14/2021	12/13/2022
Coaxial Cable	Huber Suhner	succoflex 102	MY2622/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	succoflex 104A	800086/4a	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	EMC 104-SM-SM-2000	160123	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2630/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY22962/2	12/16/2021	12/15/2022

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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

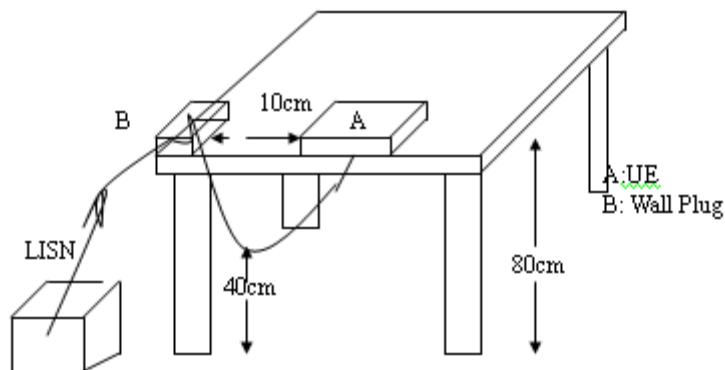
1. The lower limit shall apply at the transition frequencies

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.

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## 7.5 Measurement Result

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

Note2: The \* reveals the worst-case results that closet to the limit.

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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number :ER/2021/C0049

Test Site :Conduction 1

Test Mode :WIFI 5G

Test Date :2022-01-03

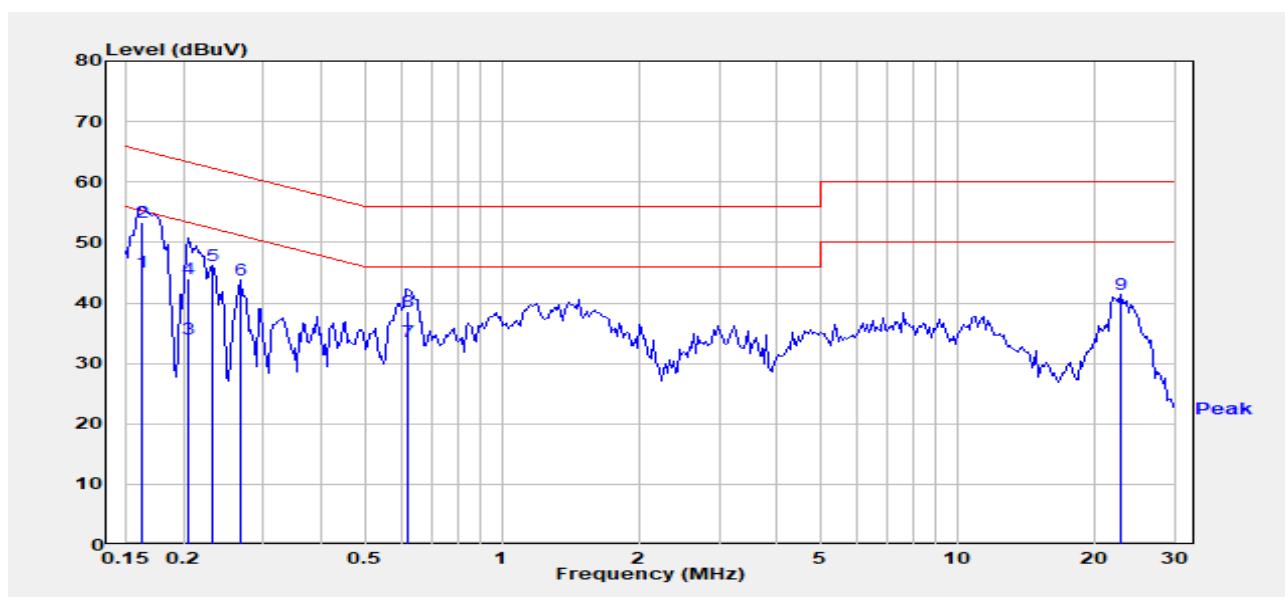
Power :120V/60Hz

Temp./Humi. :22.0/55

Probe :L

Engineer :Neo Tsai

Note: :



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V	Limit dB $\mu$ V	Margin dB
0.162	Average	45.00	0.02	45.02	55.38	-10.36
0.162	QP	53.40	0.02	53.42	65.38	-11.96
0.204	Average	34.00	0.02	34.02	53.45	-19.43
0.204	QP	44.00	0.02	44.02	63.45	-19.43
0.232	Peak	46.11	0.02	46.13	62.39	-16.26
0.266	Peak	43.70	0.02	43.72	61.25	-17.53
0.621	Average	33.60	0.09	33.69	46.00	-12.31
0.621	QP	38.40	0.09	38.49	56.00	-17.51
22.775	Peak	41.06	0.43	41.49	60.00	-18.51

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Report Number :ER/2021/C0049

Test Mode :WIFI 5G

Power :120V/60Hz

Probe :N

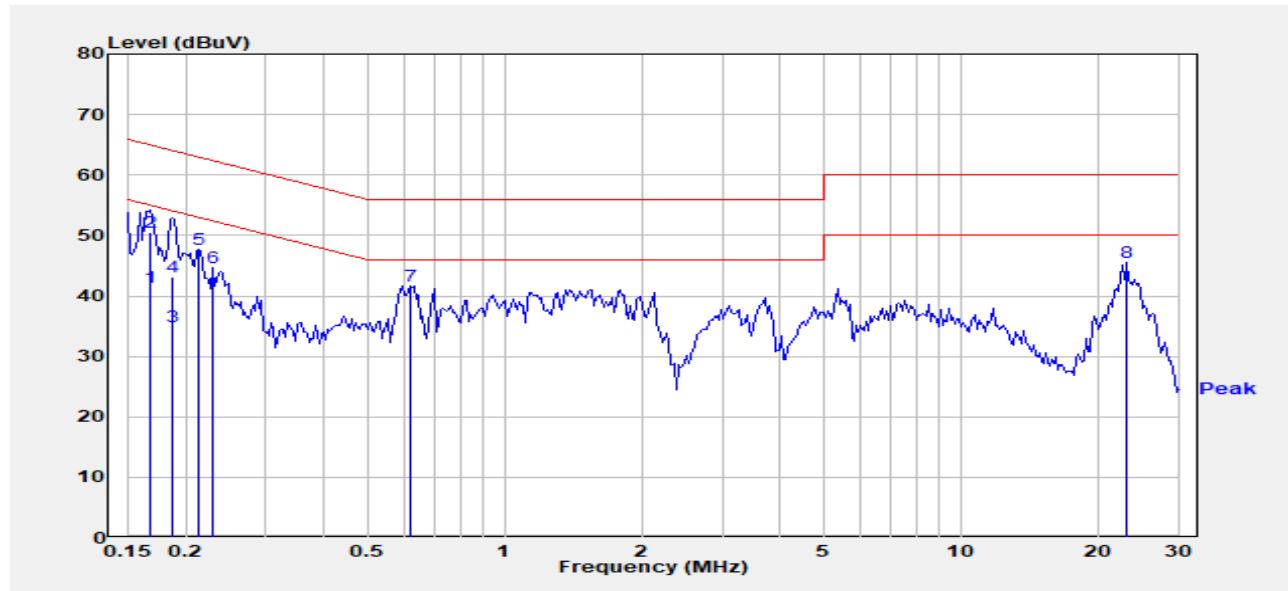
Note: :

Test Site :Conduction 1

Test Date :2022-01-03

Temp./Humi. :22.0/55

Engineer :Neo Tsai



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V	Limit dB $\mu$ V	Margin dB
0.167	Average	41.30	0.09	41.39	55.12	-13.73
0.167	QP	50.50	0.09	50.59	65.12	-14.53
0.187	Average	34.80	0.16	34.96	54.15	-19.19
0.187	QP	43.00	0.16	43.16	64.15	-20.99
0.213	Peak	47.50	0.18	47.69	63.10	-15.41
0.229	Peak	44.52	0.16	44.69	62.48	-17.79
0.621	Peak	41.62	0.09	41.72	56.00	-14.28
23.018	Peak	44.99	0.43	45.42	60.00	-14.58

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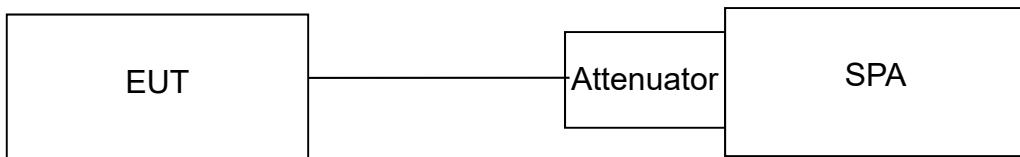
## 8 EMISSION BANDWIDTH MEASUREMENT

### 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. 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

802.11a\_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	19.35	12.870
5220	19.56	12.910
5240	20.03	13.020
5260	19.59	12.920
5300	19.43	12.880
5320	19.57	12.920
5500	19.68	12.940
5580	19.70	12.940
5700	19.65	12.930
5720(U-NII 2C)	14.81	11.710
5720(U-NII 3)	4.81	6.820

802.11a\_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.40	12.150
5785	16.45	12.160
5825	16.54	12.190

802.11a\_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.30	< 5250
5745	5736.75	> 5725

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## 802.11a\_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	19.54	12.910
5220	19.53	12.910
5240	19.31	12.860
5260	19.32	12.860
5300	19.23	12.840
5320	19.52	12.900
5500	19.24	12.840
5580	19.63	12.930
5700	19.25	12.840
5720(U-NII 2C)	14.60	11.640
5720(U-NII 3)	4.60	6.630

## 802.11a\_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.54	12.190
5785	16.40	12.150
5825	16.35	12.140

## 802.11a\_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.26	< 5250
5745	5736.74	> 5725

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## 802.11n\_HT20\_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.05	13.020
5220	20.34	13.080
5240	20.87	13.200
5260	19.91	12.990
5300	19.65	12.930
5320	20.40	13.100
5500	19.72	12.950
5580	19.94	13.000
5700	19.85	12.980
5720(U-NII 2C)	15.05	11.780
5720(U-NII 3)	5.05	7.030

## 802.11n\_HT20\_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.58	12.450
5785	17.36	12.400
5825	17.56	12.450

## 802.11n\_HT20\_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.82	< 5250
5745	5736.18	> 5725

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## 802.11n\_HT20\_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	19.90	12.990
5220	19.78	12.960
5240	20.02	13.010
5260	19.66	12.940
5300	19.75	12.960
5320	19.61	12.920
5500	19.53	12.910
5580	19.83	12.970
5700	19.79	12.960
5720(U-NII 2C)	14.93	11.740
5720(U-NII 3)	4.93	6.930

## 802.11n\_HT20\_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.59	12.450
5785	17.58	12.450
5825	17.61	12.460

## 802.11n\_HT20\_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.82	< 5250
5745	5736.20	> 5725

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## 802.11n\_HT40\_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	40.18	16.040
5230	40.88	16.120
5270	40.75	16.100
5310	40.35	16.060
5510	40.07	16.030
5550	40.46	16.070
5670	40.56	16.080
5710(U-NII 2C)	34.97	15.440
5710(U-NII 3)	4.97	6.960

## 802.11n\_HT40\_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.61	15.520
5795	35.75	15.530

## 802.11n\_HT40\_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.12	< 5250
5755	5736.95	> 5725

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## 802.11n\_HT40\_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	39.73	15.990
5230	40.13	16.030
5270	40.36	16.060
5310	40.14	16.040
5510	39.93	16.010
5550	39.99	16.020
5670	40.16	16.040
5710(U-NII 2C)	34.93	15.430
5710(U-NII 3)	4.93	6.930

## 802.11n\_HT40\_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.51	15.500
5795	36.05	15.570

## 802.11n\_HT40\_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.09	< 5250
5755	5736.96	> 5725

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## 802.11ac\_VHT80\_Ch0

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	81.66	19.120
5290	81.48	19.110
5530	82.44	19.160
5610	81.49	19.110
5690(U-NII 2C)	75.83	18.800
5690(U-NII 3)	5.83	7.660

## 802.11ac\_VHT80\_Ch0

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	75.82	18.800

## 802.11ac\_VHT80\_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5248.13	< 5250
5775	5737.14	> 5725

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## 802.11ac\_VHT80\_Ch1

Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	81.45	19.110
5290	81.32	19.100
5530	80.77	19.070
5610	80.92	19.080
5690(U-NII 2C)	75.53	18.780
5690(U-NII 3)	5.53	7.430

## 802.11ac\_VHT80\_Ch1

Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	76.04	18.810

## 802.11ac\_VHT80\_Ch1

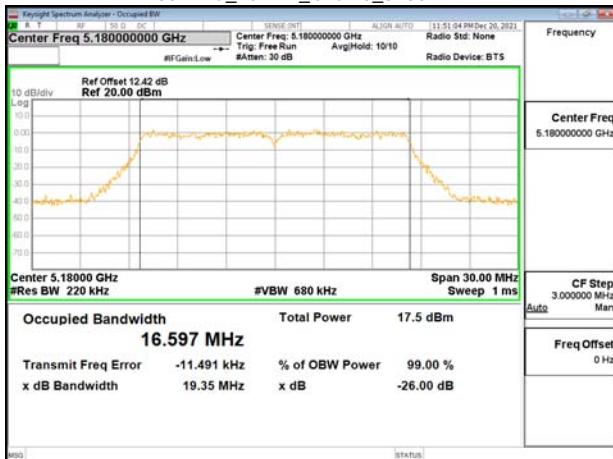
Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5247.95	< 5250
5775	5737.16	> 5725

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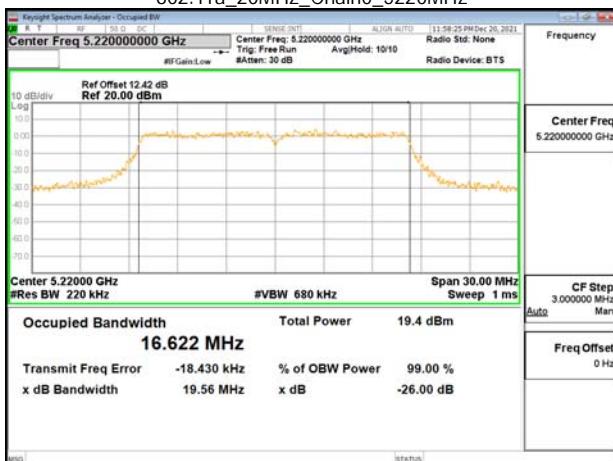
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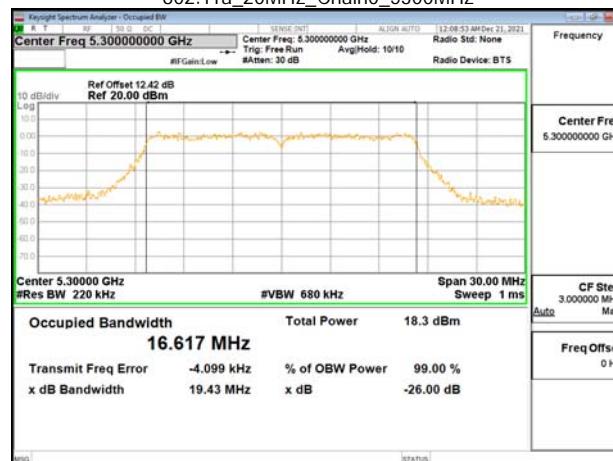
802.11a\_20MHz\_Chain0\_5260MHz



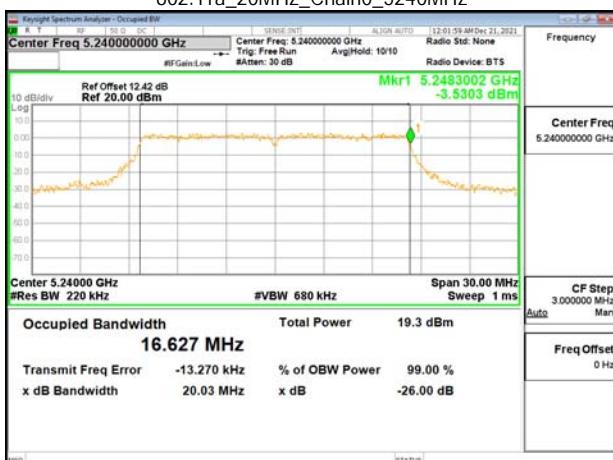
802.11a\_20MHz\_Chain0\_5220MHz



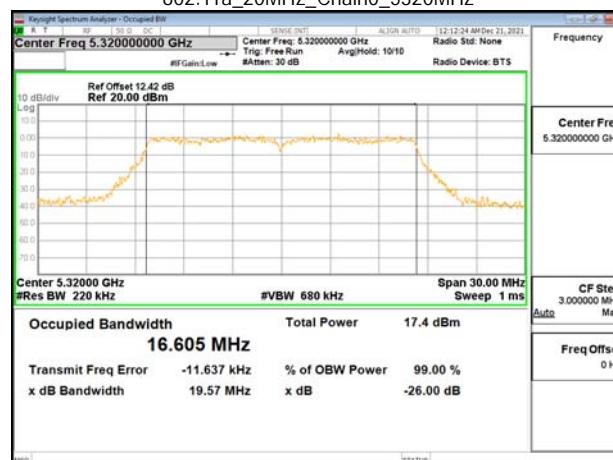
802.11a\_20MHz\_Chain0\_5300MHz



802.11a\_20MHz\_Chain0\_5240MHz



802.11a\_20MHz\_Chain0\_5320MHz

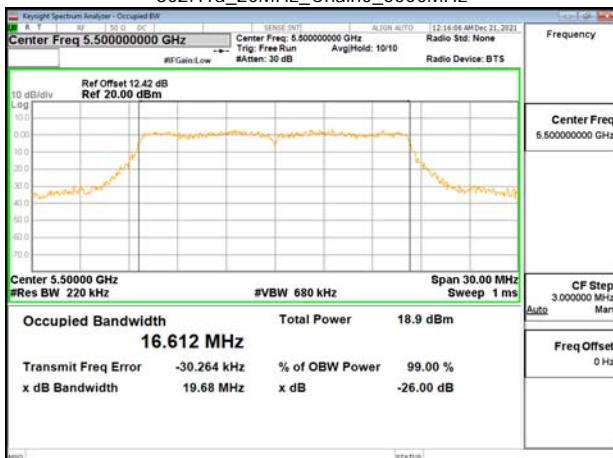


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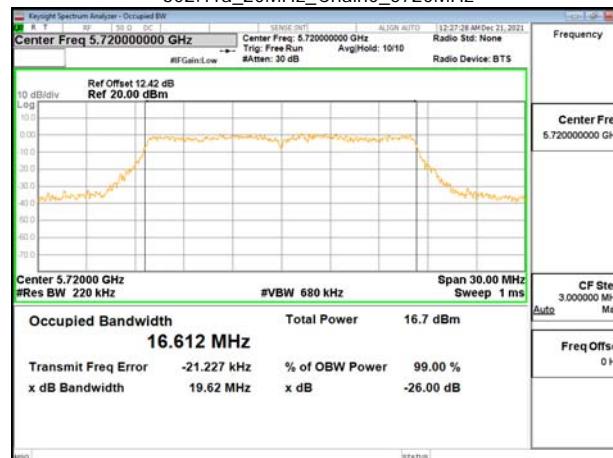
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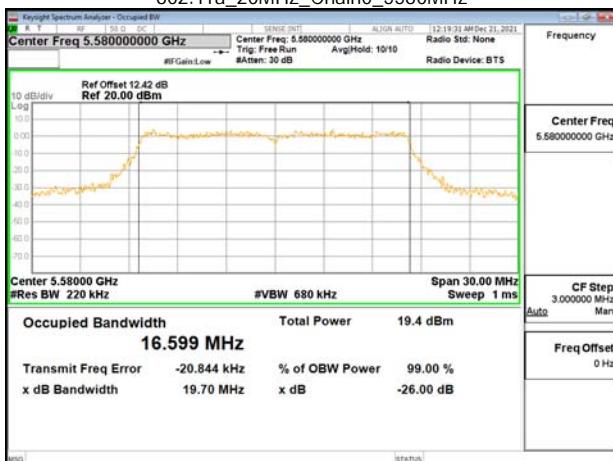
802.11a\_20MHz\_Chain0\_5500MHz



802.11a\_20MHz\_Chain0\_5720MHz



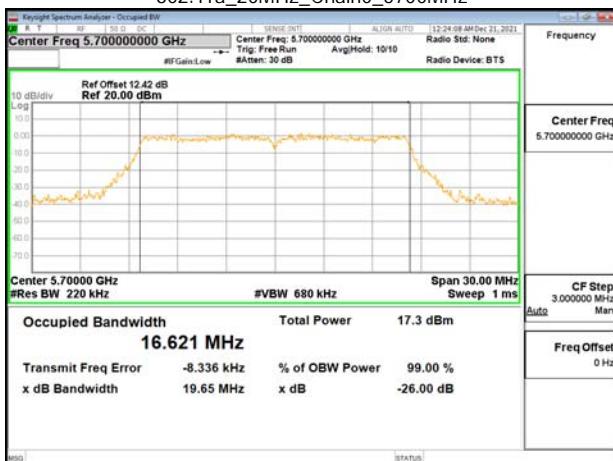
802.11a\_20MHz\_Chain0\_5580MHz



802.11a\_20MHz\_Chain0\_5745MHz



802.11a\_20MHz\_Chain0\_5700MHz



802.11a\_20MHz\_Chain0\_5785MHz

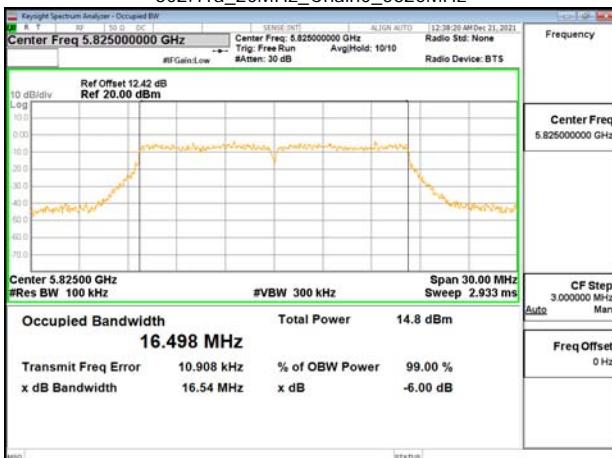


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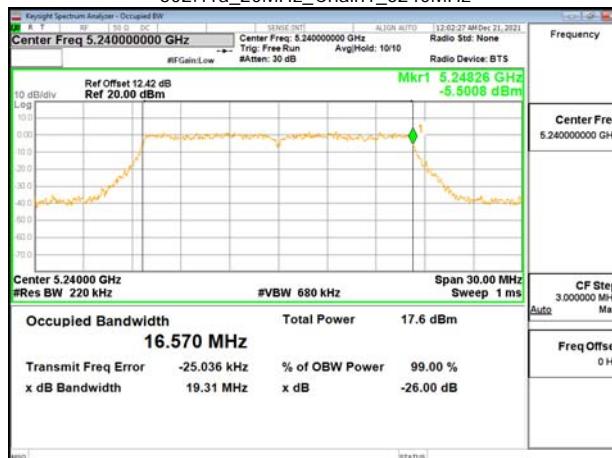
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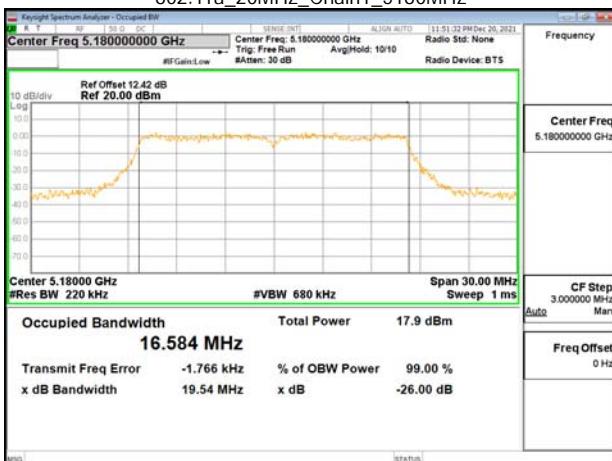
802.11a\_20MHz\_Chain0\_5825MHz



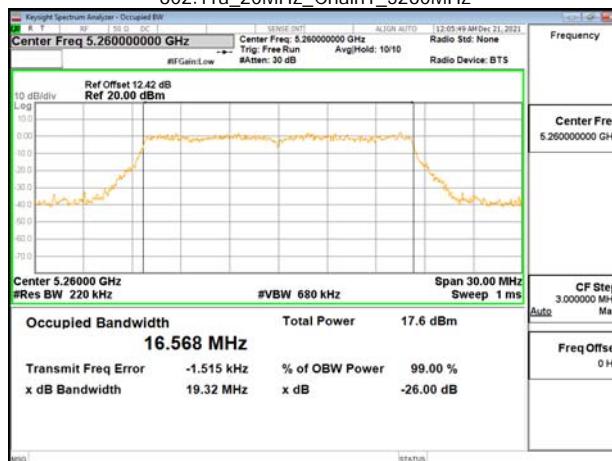
802.11a\_20MHz\_Chain1\_5240MHz



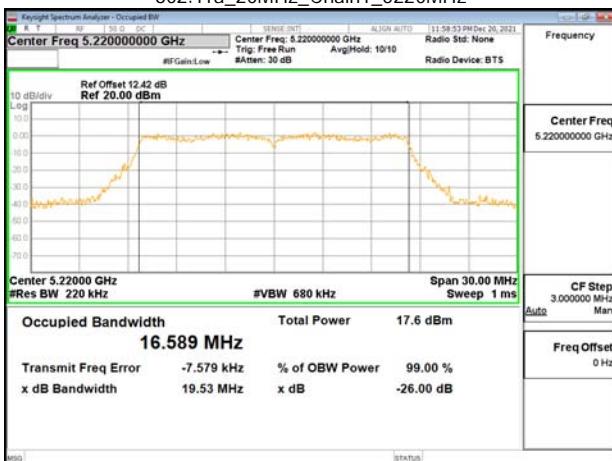
802.11a\_20MHz\_Chain1\_5180MHz



802.11a\_20MHz\_Chain1\_5260MHz



802.11a\_20MHz\_Chain1\_5220MHz



802.11a\_20MHz\_Chain1\_5300MHz

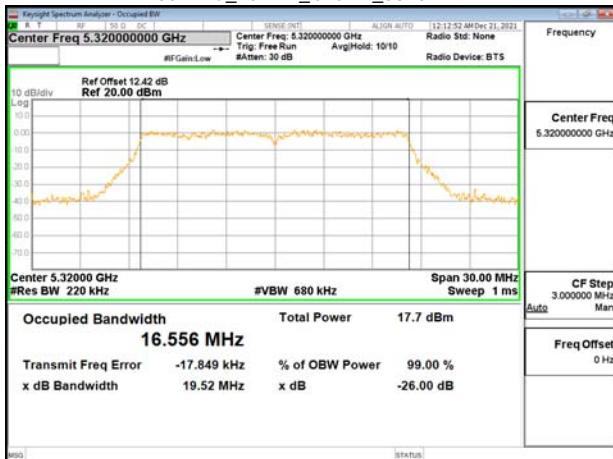


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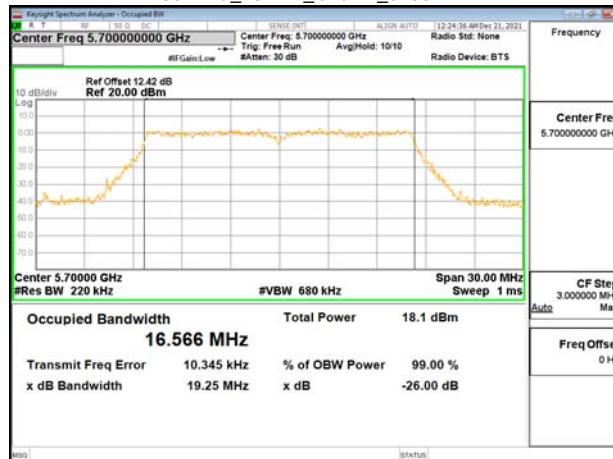
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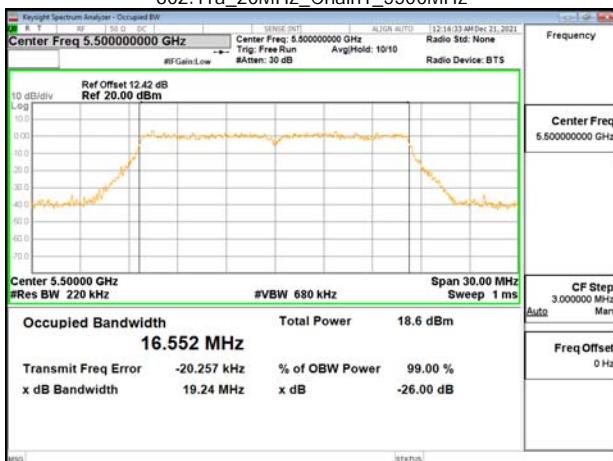
802.11a\_20MHz\_Chain1\_5320MHz



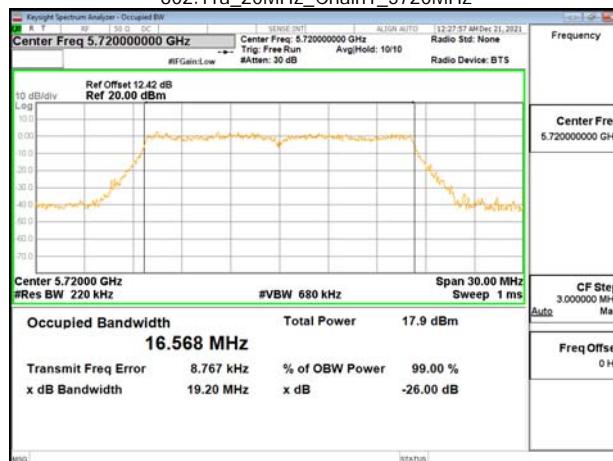
802.11a\_20MHz\_Chain1\_5700MHz



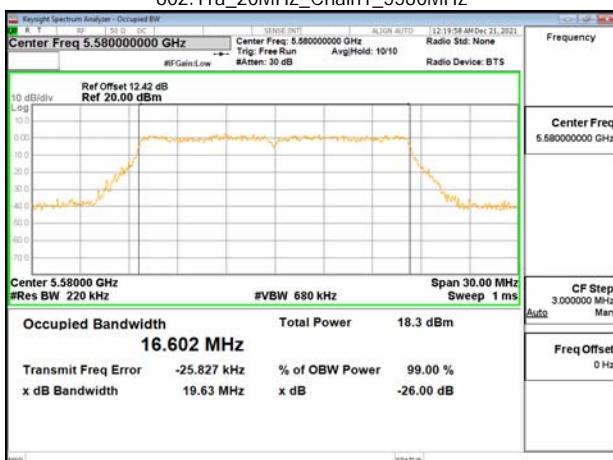
802.11a\_20MHz\_Chain1\_5500MHz



802.11a\_20MHz\_Chain1\_5720MHz



802.11a\_20MHz\_Chain1\_5580MHz



802.11a\_20MHz\_Chain1\_5745MHz



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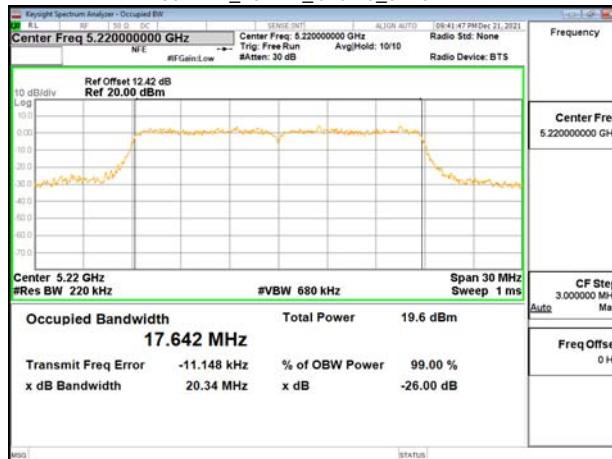
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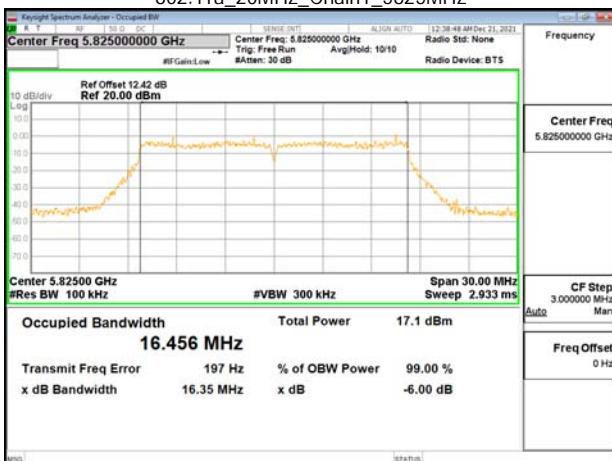
802.11a\_20MHz\_Chain1\_5785MHz



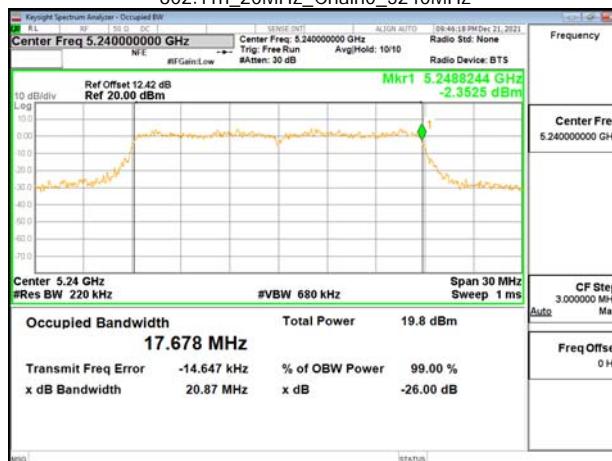
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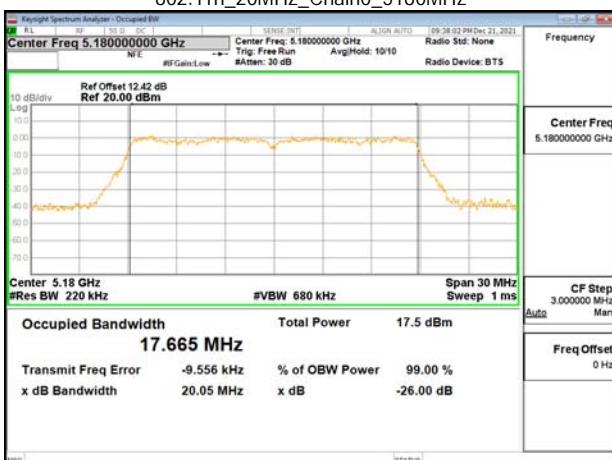
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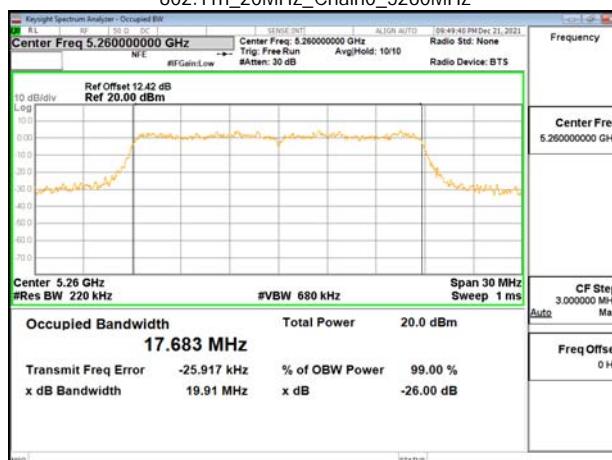
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802.11n\_20MHz\_Chain0\_5180MHz



802.11n\_20MHz\_Chain0\_5260MHz

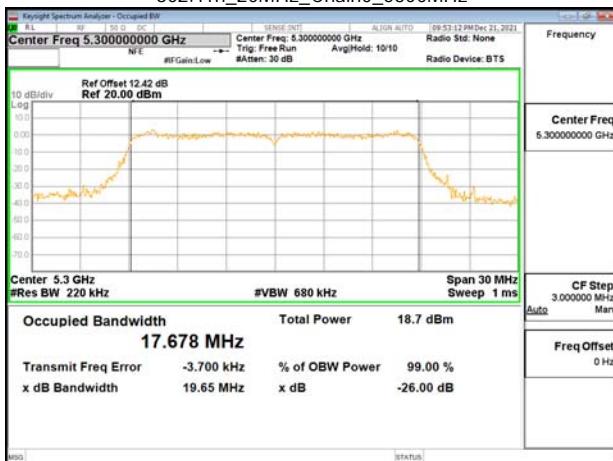


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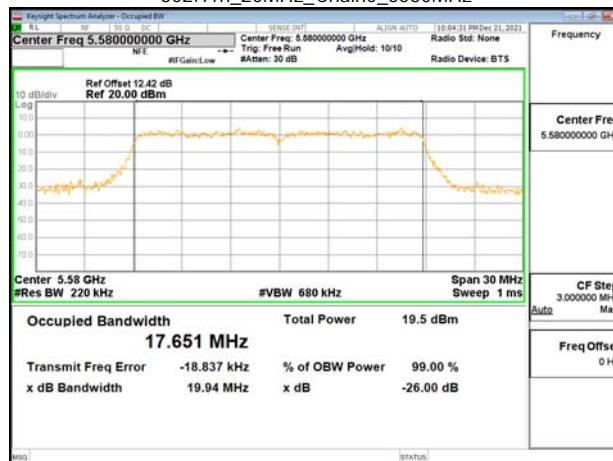
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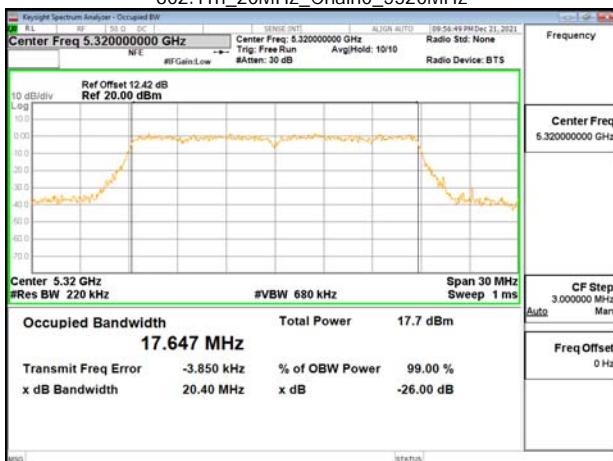
802.11n\_20MHz\_Chain0\_5300MHz



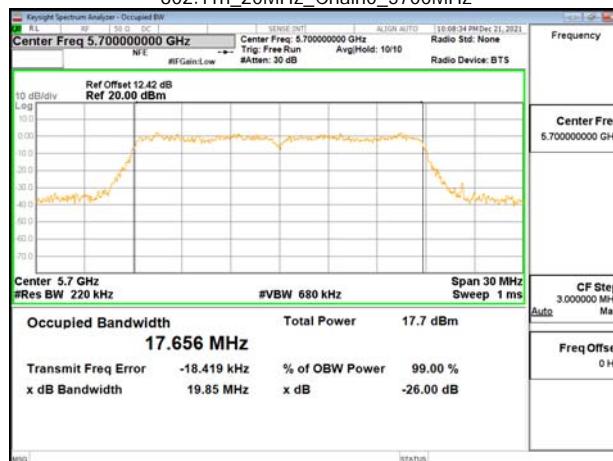
802.11n\_20MHz\_Chain0\_5580MHz



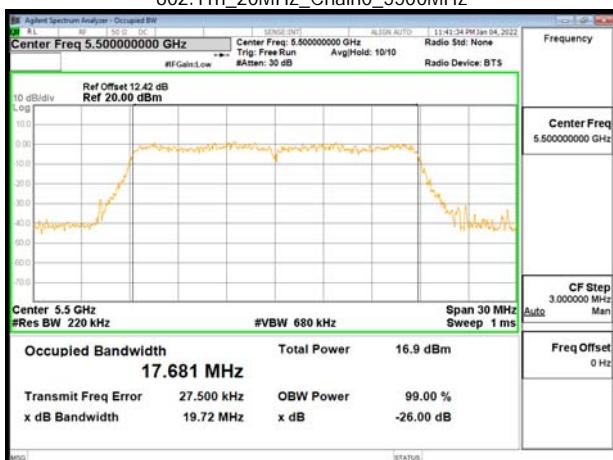
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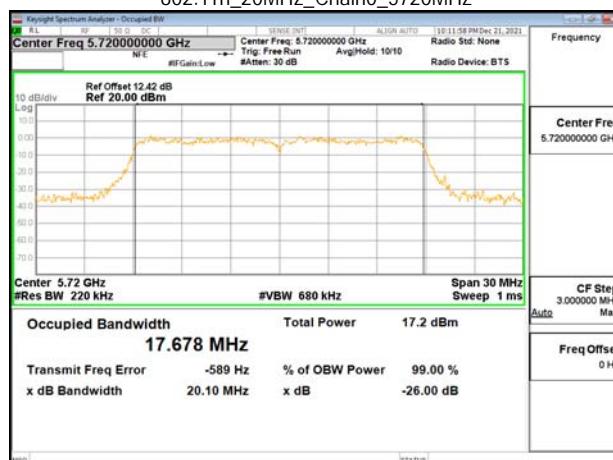
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802.11n\_20MHz\_Chain0\_5500MHz



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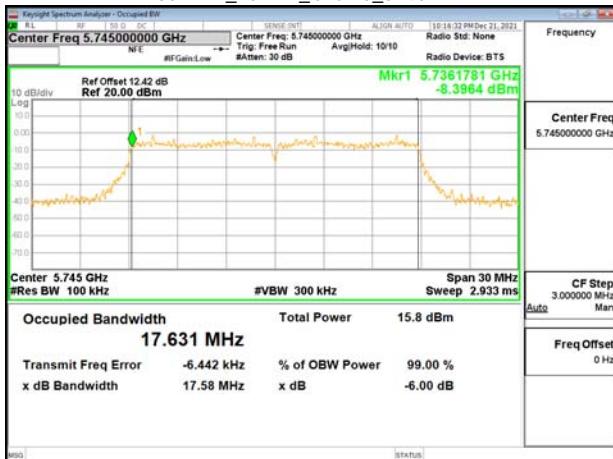


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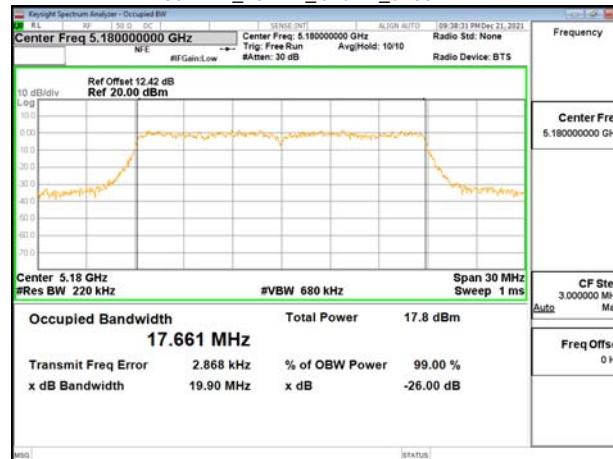
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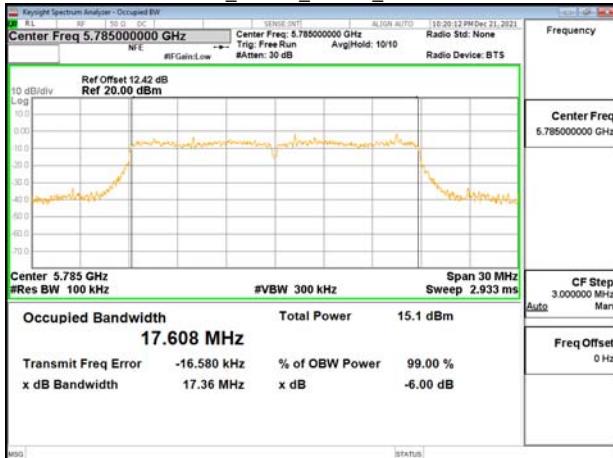
802.11n\_20MHz\_Chain0\_5745MHz



802.11n\_20MHz\_Chain1\_5180MHz



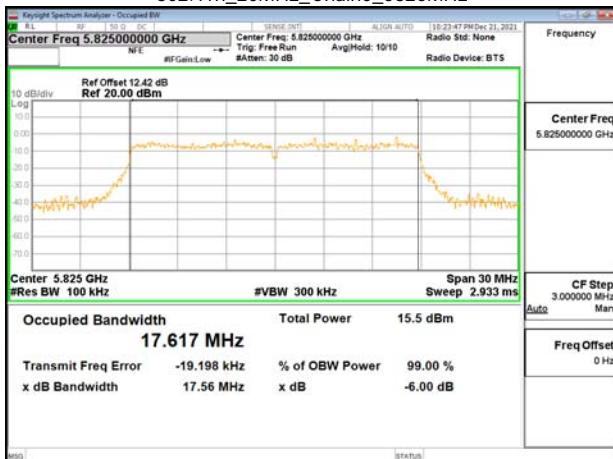
802.11n\_20MHz\_Chain0\_5785MHz



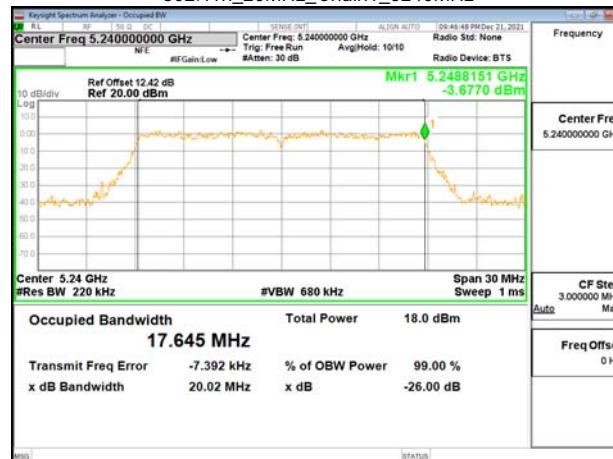
802.11n\_20MHz\_Chain1\_5220MHz



802.11n\_20MHz\_Chain0\_5825MHz



802.11n\_20MHz\_Chain1\_5240MHz

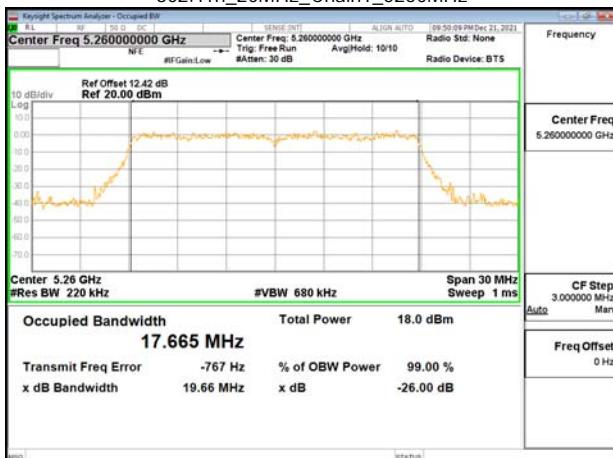


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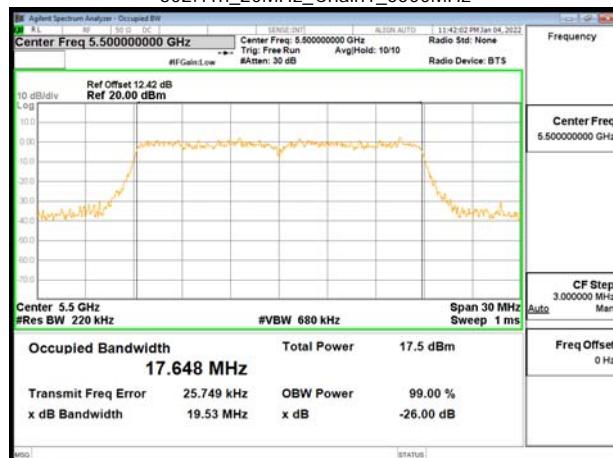
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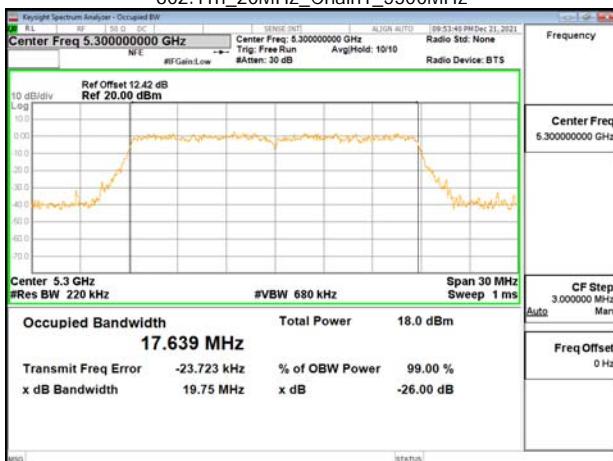
802.11n\_20MHz\_Chain1\_5260MHz



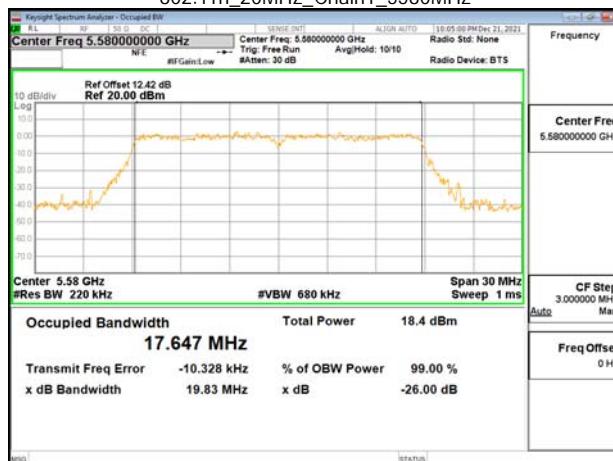
802.11n\_20MHz\_Chain1\_5500MHz



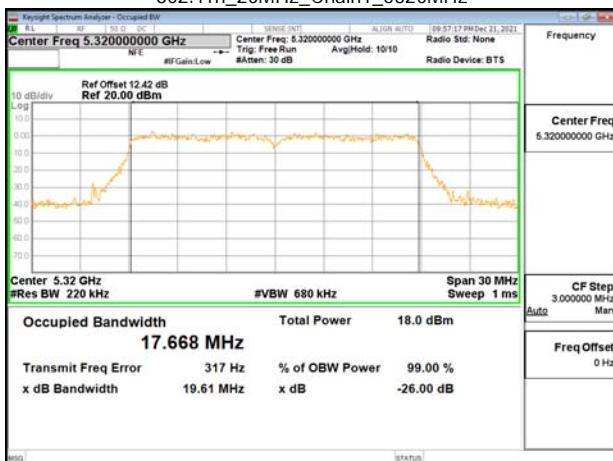
802.11n\_20MHz\_Chain1\_5300MHz



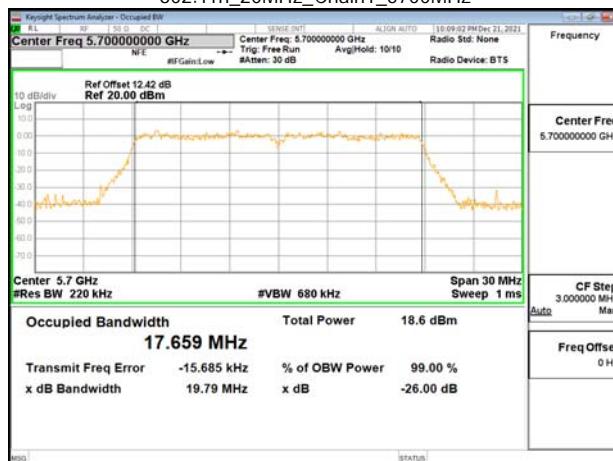
802.11n\_20MHz\_Chain1\_5580MHz



802.11n\_20MHz\_Chain1\_5320MHz



802.11n\_20MHz\_Chain1\_5700MHz

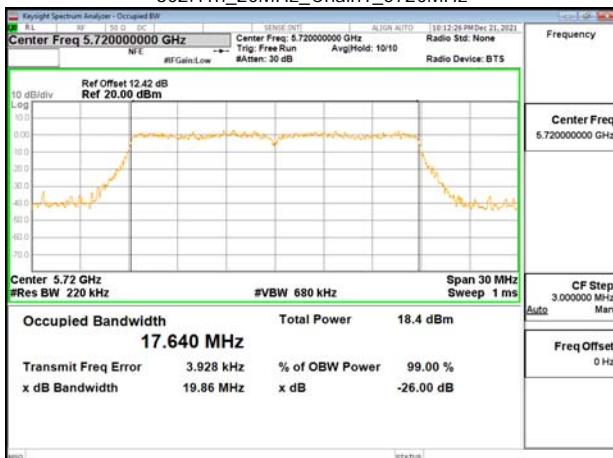


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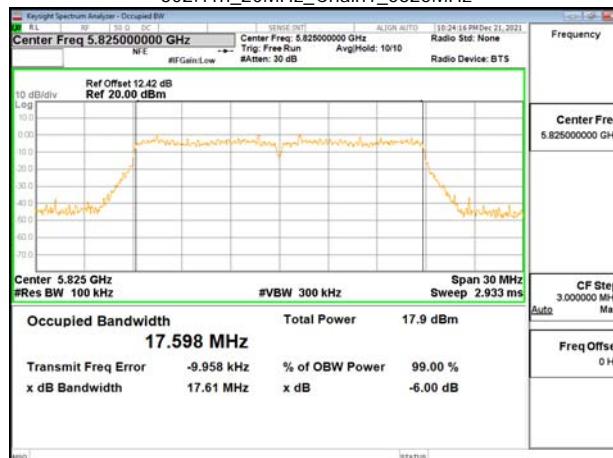
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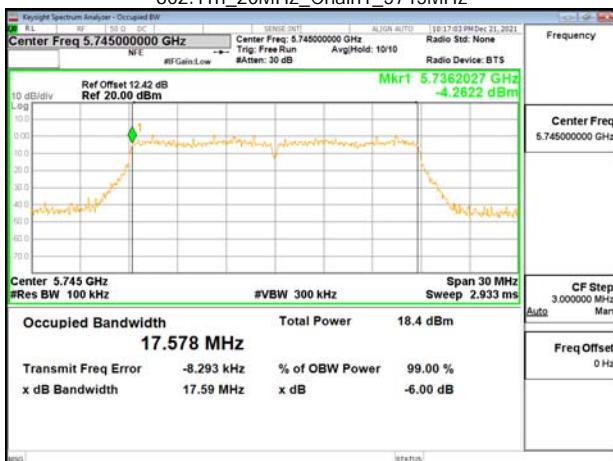
802.11n\_20MHz\_Chain1\_5720MHz



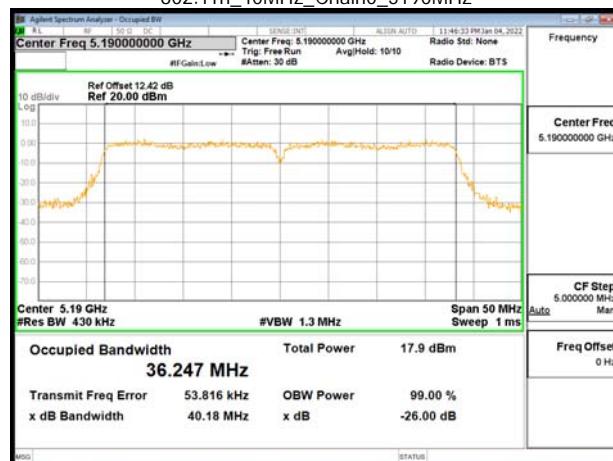
802.11n\_20MHz\_Chain1\_5825MHz



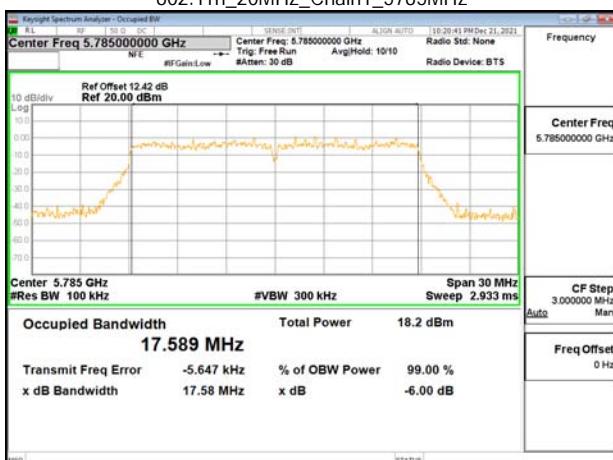
802.11n\_20MHz\_Chain1\_5745MHz



802.11n\_40MHz\_Chain0\_5190MHz



802.11n\_20MHz\_Chain1\_5785MHz



802.11n\_40MHz\_Chain0\_5230MHz

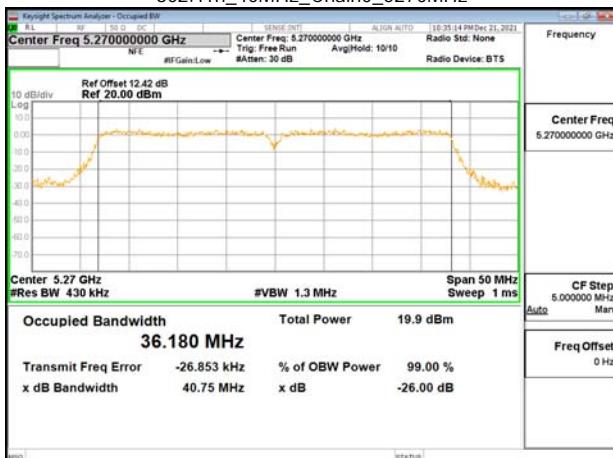


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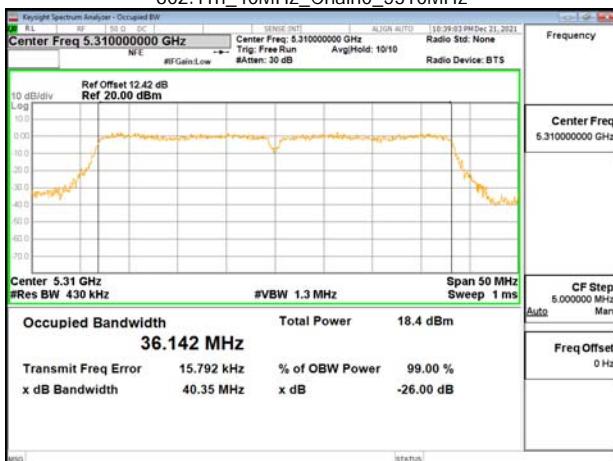
802.11n\_40MHz\_Chain0\_5270MHz



802.11n\_40MHz\_Chain0\_5550MHz



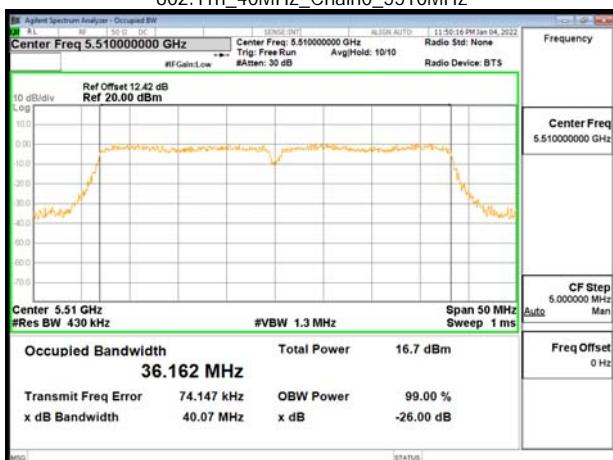
802.11n\_40MHz\_Chain0\_5310MHz



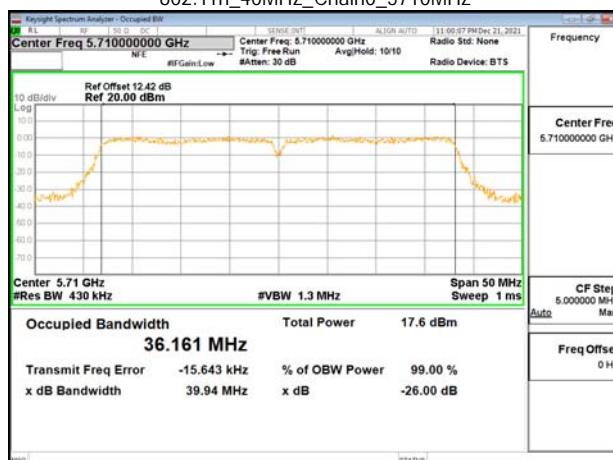
802.11n\_40MHz\_Chain0\_5670MHz



802.11n\_40MHz\_Chain0\_5510MHz



802.11n\_40MHz\_Chain0\_5710MHz



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802.11n\_40MHz\_Chain0\_5755MHz



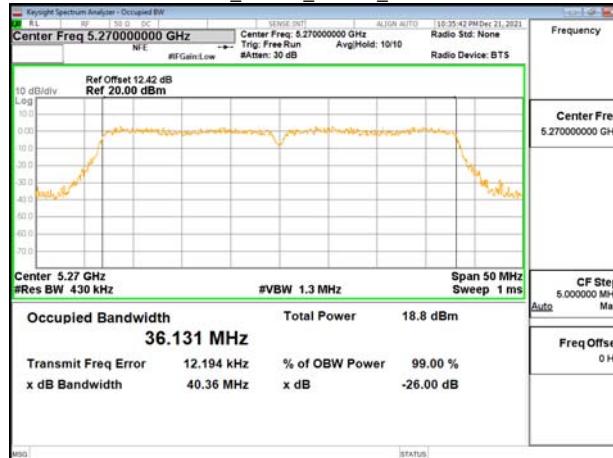
802.11n\_40MHz\_Chain1\_5230MHz



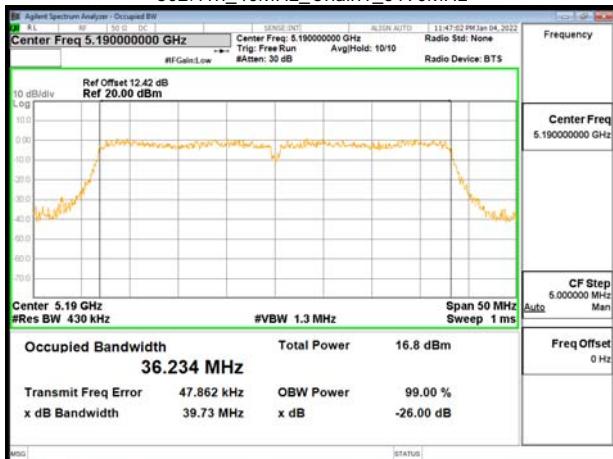
802.11n\_40MHz\_Chain0\_5795MHz



802.11n\_40MHz\_Chain1\_5270MHz



802.11n\_40MHz\_Chain1\_5190MHz



802.11n\_40MHz\_Chain1\_5310MHz

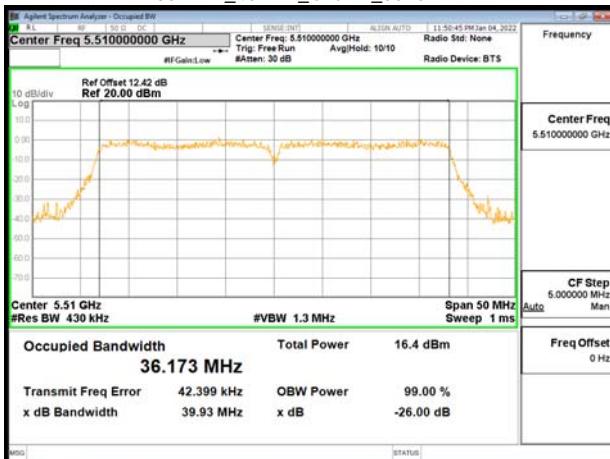


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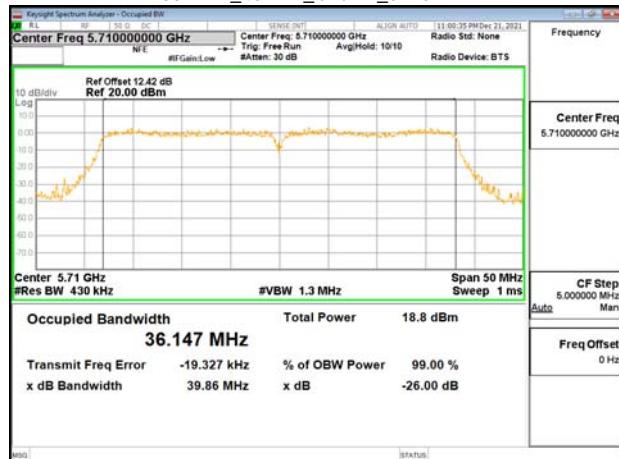
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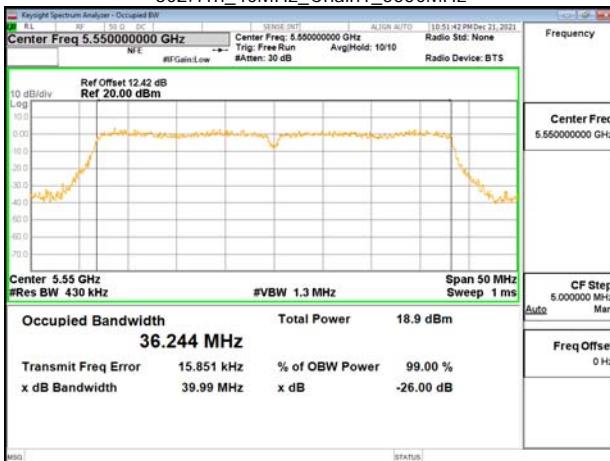
802.11n\_40MHz\_Chain1\_5510MHz



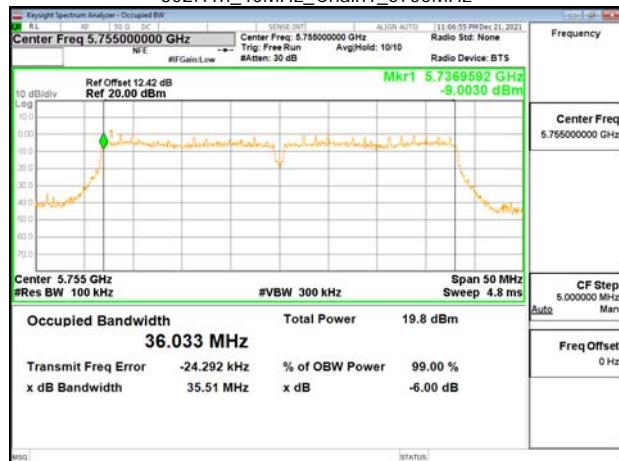
802.11n\_40MHz\_Chain1\_5710MHz



802.11n\_40MHz\_Chain1\_5550MHz



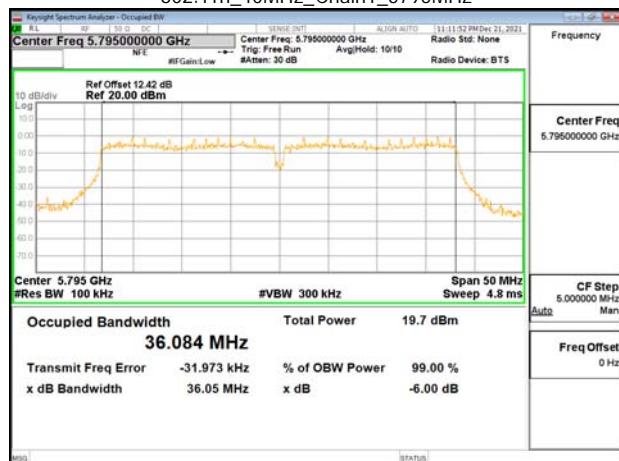
802.11n\_40MHz\_Chain1\_5755MHz



802.11n\_40MHz\_Chain1\_5670MHz



802.11n\_40MHz\_Chain1\_5795MHz

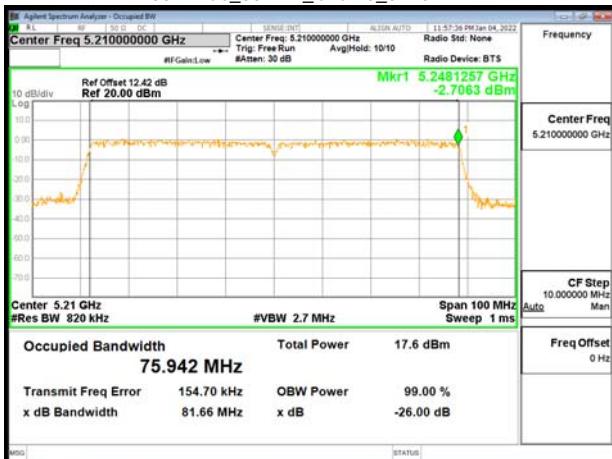


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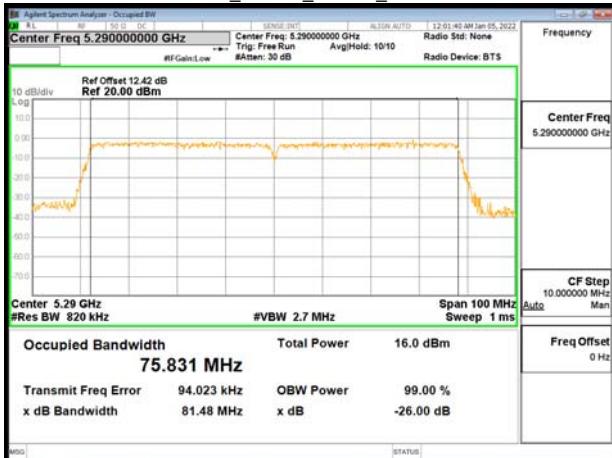
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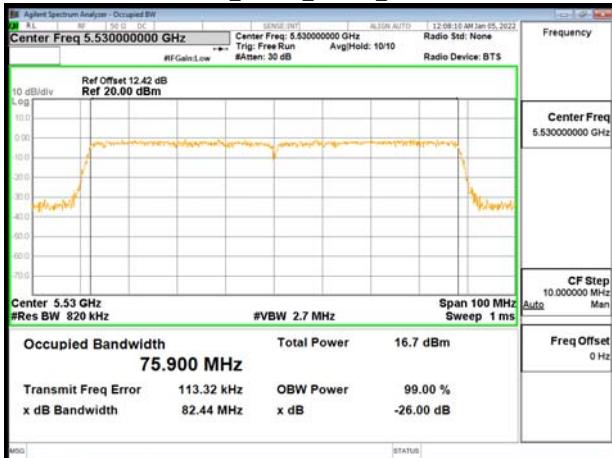
802.11ac\_80MHz\_Chain0\_5210MHz



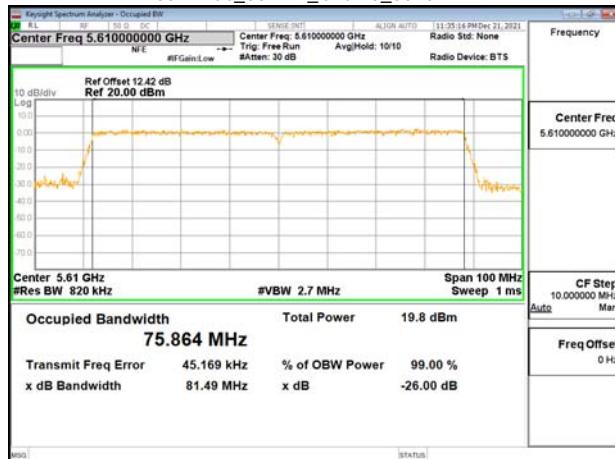
802.11ac\_80MHz\_Chain0\_5290MHz



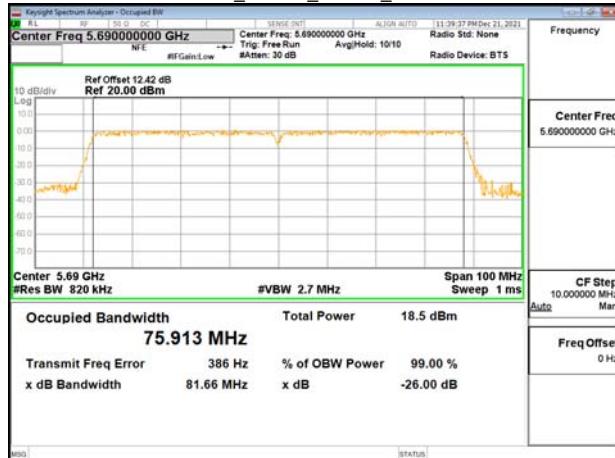
802.11ac\_80MHz\_Chain0\_5530MHz



802.11ac\_80MHz\_Chain0\_5610MHz



802.11ac\_80MHz\_Chain0\_5690MHz



802.11ac\_80MHz\_Chain0\_5775MHz

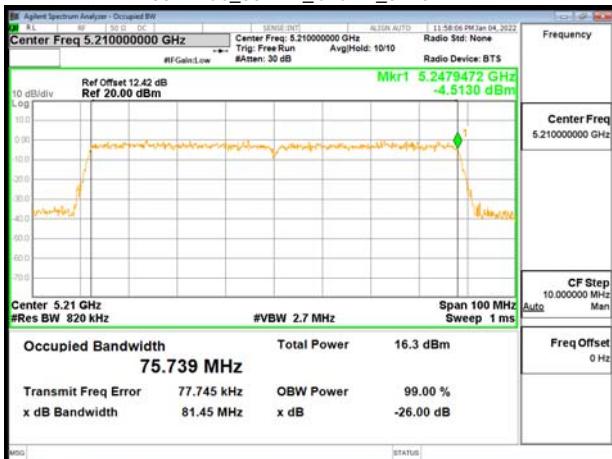


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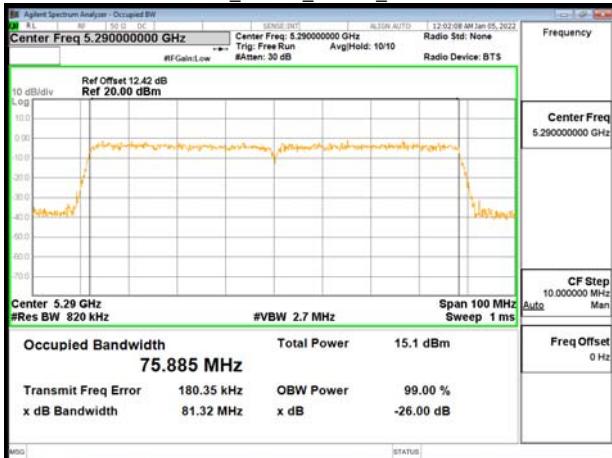
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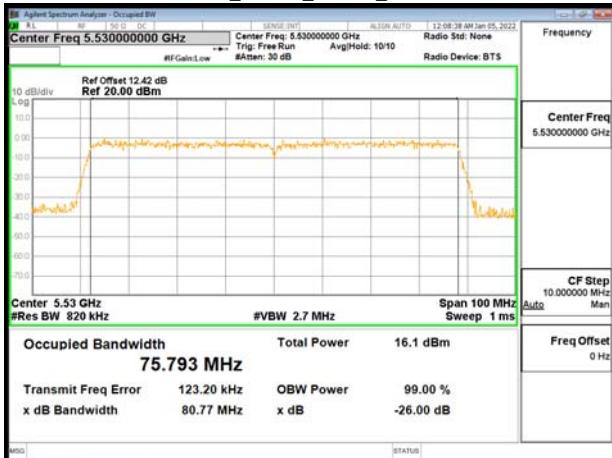
802.11ac\_80MHz\_Chain1\_5210MHz



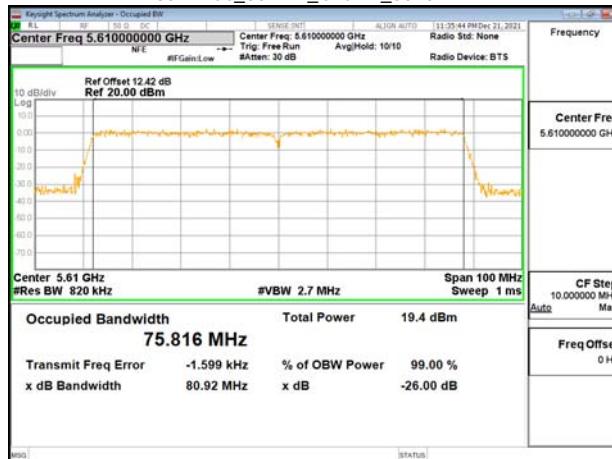
802.11ac\_80MHz\_Chain1\_5290MHz



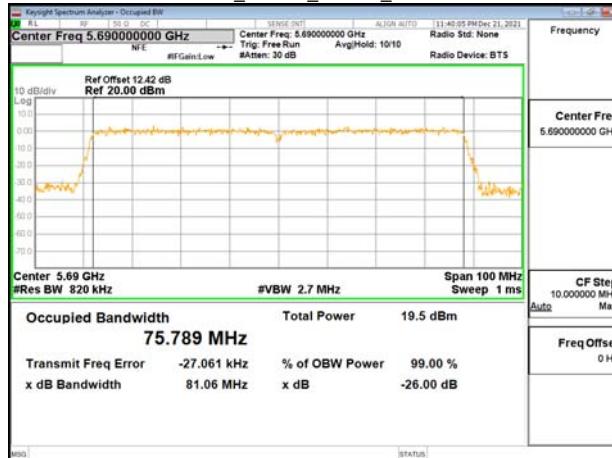
802.11ac\_80MHz\_Chain1\_5530MHz



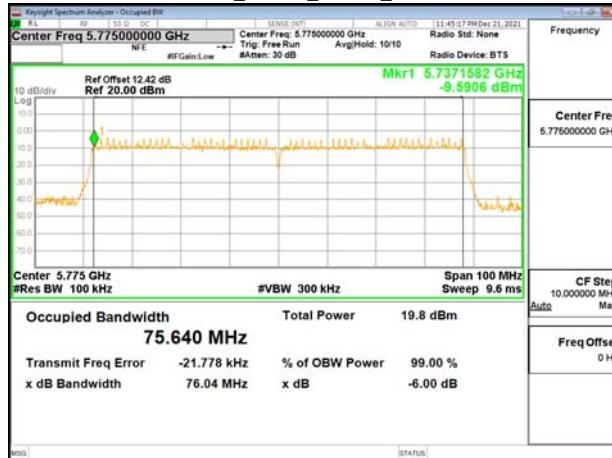
802.11ac\_80MHz\_Chain1\_5610MHz



802.11ac\_80MHz\_Chain1\_5690MHz



802.11ac\_80MHz\_Chain1\_5775MHz



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## 9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 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

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

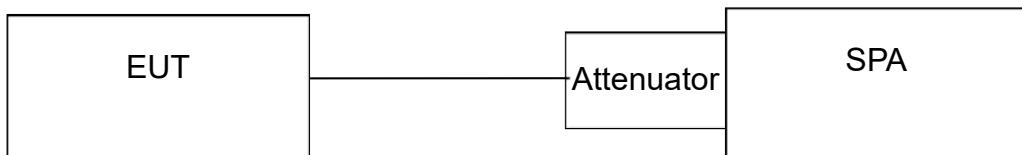
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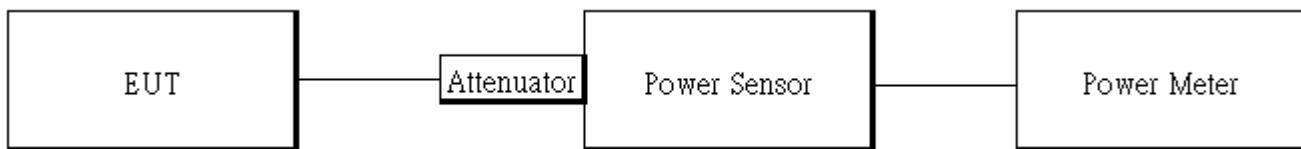
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## 9.2 Test Setup

### 9.2.1 Duty Cycle



### 9.2.2 Output Power



## 9.3 Measurement Procedure

### 9.3.1 Duty Cycle Measurements

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

### 9.3.2 Output Power Measurements

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

Cable Loss Offset (dB)
12.42

\*Note: The beamforming and CDD mode follow same power table.

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#### 9.4 Duty Cycle Measurement Result

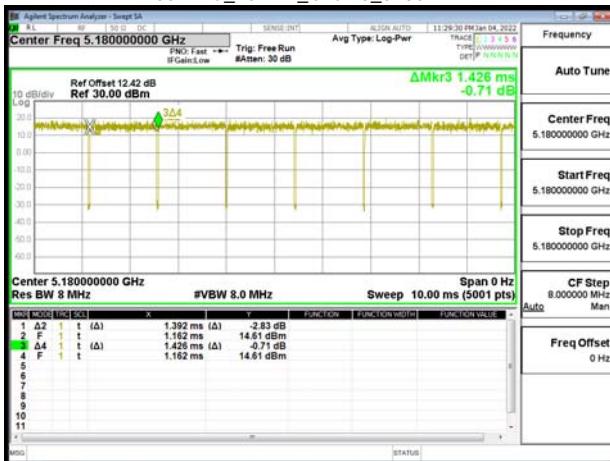
Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11a	97.62	0.10	0.72	1.00
802.11n_20	97.31	0.12	0.77	1.00
802.11ac_20	97.47	0.11	0.76	1.00
802.11n_40	94.74	0.23	1.54	2.00
802.11ac_40	94.77	0.23	1.53	2.00
802.11ac_80	90.00	0.46	3.09	4.00

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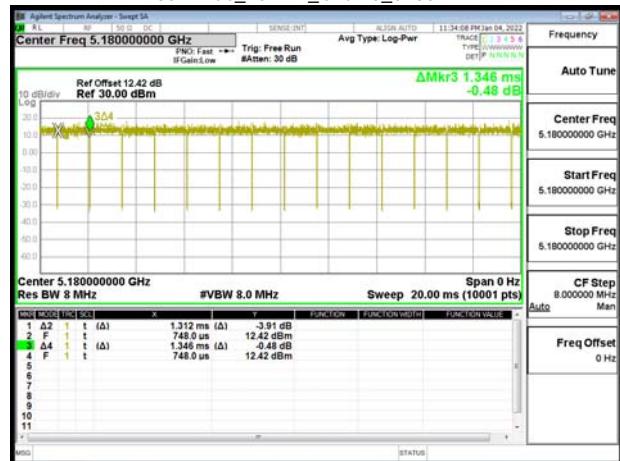
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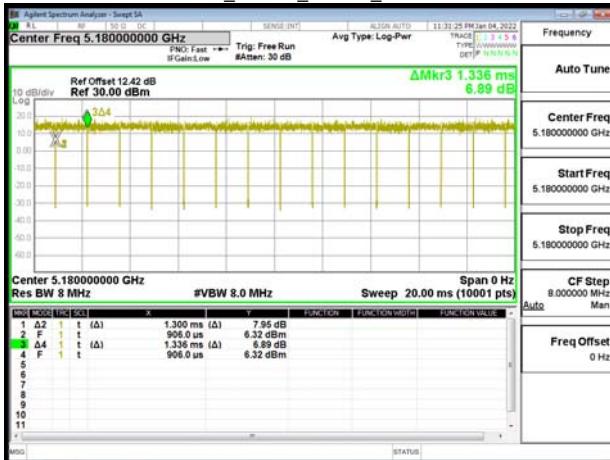
802.11a\_20MHz\_Chain0\_5180MHz



802.11ac\_20MHz\_Chain0\_5180MHz



802.11n\_20MHz\_Chain0\_5180MHz



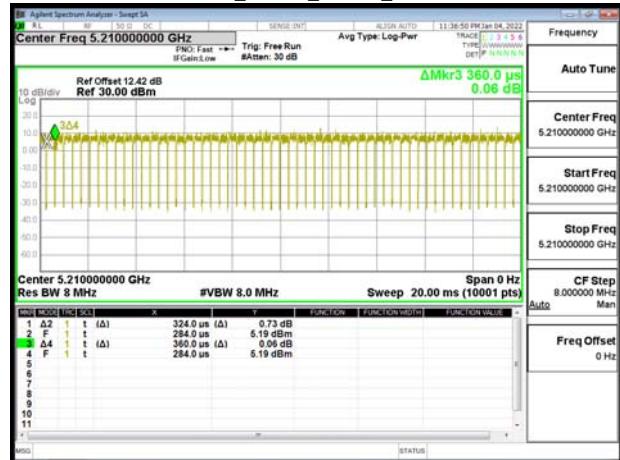
802.11ac\_40MHz\_Chain0\_5190MHz



802.11n\_40MHz\_Chain0\_5190MHz



802.11ac\_80MHz\_Chain0\_5210MHz



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## 9.5 Output Power Measurement Result

### 9.5.1 FCC Output power

#### 802.11a\_Ch0

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	10	8.79	7.576	23.98	PASS
44	5220	6	10	8.88	7.735	23.98	PASS
48	5240	6	10	8.93	7.825	23.98	PASS
52	5260	6	13	11.86	15.362	23.92	PASS
60	5300	6	13	11.91	15.540	23.88	PASS
64	5320	6	13	11.97	15.757	23.92	PASS
100	5500	6	12	11.96	15.720	23.94	PASS
116	5580	6	12	11.97	15.757	23.94	PASS
140	5700	6	12	11.85	15.327	23.93	PASS
144	5720(U-NII 2C)	6	12	10.58	11.44	22.71	PASS
144	5720 (U-NII 3)	6	12	5.70	3.71	30	PASS
149	5745	6	12	11.79	15.117	30	PASS
157	5785	6	12	11.80	15.152	30	PASS
165	5825	6	12	11.73	14.909	30	PASS

#### 802.11a\_Ch1

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	10	8.77	7.542	23.98	PASS
44	5220	6	10	8.85	7.682	23.98	PASS
48	5240	6	10	8.91	7.789	23.98	PASS
52	5260	6	13	11.51	14.173	23.86	PASS
60	5300	6	13	11.63	14.570	23.84	PASS
64	5320	6	13	11.62	14.537	23.9	PASS
100	5500	6	12	11.79	15.117	23.84	PASS
116	5580	6	12	11.78	15.082	23.93	PASS
140	5700	6	12	11.83	15.257	23.84	PASS
144	5720(U-NII 2C)	6	12	10.60	11.47	22.64	PASS
144	5720 (U-NII 3)	6	12	5.58	3.61	30	PASS
149	5745	6	12	11.51	14.173	30	PASS
157	5785	6	11	11.54	14.271	30	PASS
165	5825	6	11	11.52	14.206	30	PASS

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**802.11a\_2TX**

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	6	10	8.71	9.17	12.06	16.069	23.98	PASS
44	5220	6	10	8.81	9.06	12.05	16.032	23.98	PASS
48	5240	6	10	8.87	9.13	12.12	16.293	23.98	PASS
52	5260	6	13	11.78	11.42	14.72	29.648	23.86	PASS
60	5300	6	13	11.83	11.56	14.81	30.269	23.84	PASS
64	5320	6	13	11.91	11.53	14.84	30.479	23.9	PASS
100	5500	6	12	12.03	11.71	14.99	31.550	23.84	PASS
116	5580	6	12	12.01	11.7	14.97	31.405	23.93	PASS
140	5700	6	12	11.78	11.95	14.98	31.477	23.84	PASS
144	5720(U-NII 2C)	6	12	10.50	10.72	13.72	23.557	22.64	PASS
144	5720 (U-NII 3)	6	12	5.61	5.70	8.77	7.534	30	PASS
149	5745	6	11	11.71	11.44	14.69	29.444	30	PASS
157	5785	6	11	11.72	11.46	14.71	29.580	30	PASS
165	5825	6	11	11.65	11.43	14.66	29.242	30	PASS

**802.11n\_HT20\_Ch0**

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	10	8.74	7.479	23.98	PASS
44	5220	MCS0	10	8.91	7.778	23.98	PASS
48	5240	MCS0	10	9.00	7.940	23.98	PASS
52	5260	MCS0	13	11.85	15.305	23.98	PASS
60	5300	MCS0	13	11.86	15.341	23.98	PASS
64	5320	MCS0	13	11.96	15.698	23.93	PASS
100	5500	MCS0	11	11.50	14.120	23.98	PASS
116	5580	MCS0	12	11.82	15.200	23.95	PASS
140	5700	MCS0	12	11.82	15.200	23.98	PASS
144	5720(U-NII 2C)	MCS0	12	10.51	11.25	23.98	PASS
144	5720 (U-NII 3)	MCS0	12	5.77	3.78	30	PASS
149	5745	MCS0	12	11.79	15.095	30	PASS
157	5785	MCS0	12	11.95	15.662	30	PASS
165	5825	MCS0	12	11.82	15.200	30	PASS

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**802.11n\_HT20\_Ch1**

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	10	8.72	7.445	23.98	PASS
44	5220	MCS0	10	8.89	7.742	23.98	PASS
48	5240	MCS0	10	8.98	7.904	23.98	PASS
52	5260	MCS0	13	11.66	14.650	23.98	PASS
60	5300	MCS0	13	11.65	14.616	23.94	PASS
64	5320	MCS0	13	11.68	14.718	23.96	PASS
100	5500	MCS0	11	11.01	12.614	23.92	PASS
116	5580	MCS0	12	11.80	15.130	23.91	PASS
140	5700	MCS0	12	11.79	15.095	23.97	PASS
144	5720(U-NII 2C)	MCS0	12	10.52	11.27	23.96	PASS
144	5720 (U-NII 3)	MCS0	12	5.71	3.72	30	PASS
149	5745	MCS0	11	11.73	14.888	30	PASS
157	5785	MCS0	11	11.68	14.718	30	PASS
165	5825	MCS0	11	11.69	14.752	30	PASS

**802.11n\_HT20\_MIMO**

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS8	10	8.73	9.06	12.03	15.959	23.98	PASS
44	5220	MCS8	10	8.81	9.11	12.09	16.181	23.98	PASS
48	5240	MCS8	10	8.91	9.21	<b>12.19</b>	16.558	23.98	PASS
52	5260	MCS8	13	11.76	11.55	14.78	30.061	23.94	PASS
60	5300	MCS8	13	11.85	11.55	14.83	30.409	23.93	PASS
64	5320	MCS8	13	11.87	11.57	<b>14.85</b>	30.549	23.92	PASS
100	5500	MCS8	11	11.41	11.15	14.41	27.606	23.91	PASS
116	5580	MCS8	12	11.72	11.95	<b>14.97</b>	31.405	23.97	PASS
140	5700	MCS8	12	11.71	11.94	14.96	31.333	23.96	PASS
144	5720(U-NII 2C)	MCS8	12	10.41	10.69	13.68	23.359	22.74	PASS
144	5720 (U-NII 3)	MCS8	12	5.67	5.88	8.91	7.774	30	PASS
149	5745	MCS8	11	11.69	11.63	14.79	30.130	30	PASS
157	5785	MCS8	11	11.92	11.58	<b>14.88</b>	30.761	30	PASS
165	5825	MCS8	11	11.72	11.6	14.79	30.130	30	PASS

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**802.11n\_HT40\_Ch0**

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	12	10.59	11.467	23.98	PASS
46	5230	MCS0	13	11.69	14.773	23.98	PASS
54	5270	MCS0	13	11.85	15.327	23.98	PASS
62	5310	MCS0	13	11.96	15.721	23.98	PASS
102	5510	MCS0	10	10.28	10.677	23.98	PASS
110	5550	MCS0	12	11.96	15.721	23.98	PASS
134	5670	MCS0	12	11.94	15.648	23.98	PASS
142	5710(U-NII 2C)	MCS0	12	11.41	13.83	23.98	PASS
142	5710 (U-NII 3)	MCS0	12	2.93	1.97	30	PASS
151	5755	MCS0	12	11.88	15.434	30	PASS
159	5795	MCS0	12	11.92	15.576	30	PASS

**802.11n\_HT40\_Ch1**

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	12	10.56	11.389	23.98	PASS
46	5230	MCS0	13	11.55	14.304	23.98	PASS
54	5270	MCS0	13	11.66	14.671	23.98	PASS
62	5310	MCS0	13	11.75	14.978	23.98	PASS
102	5510	MCS0	10	10.23	10.555	23.98	PASS
110	5550	MCS0	12	11.77	15.048	23.98	PASS
134	5670	MCS0	12	11.82	15.222	23.98	PASS
142	5710(U-NII 2C)	MCS0	12	11.28	13.43	23.98	PASS
142	5710 (U-NII 3)	MCS0	12	2.78	1.90	30	PASS
151	5755	MCS0	11	11.53	14.239	30	PASS
159	5795	MCS0	11	11.63	14.570	30	PASS

**802.11n\_HT40\_MIMO**

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS8	12	10.42	10.38	13.65	23.174	23.98	PASS
46	5230	MCS8	13	11.47	11.35	14.66	29.242	23.98	PASS
54	5270	MCS8	13	11.65	11.46	14.80	30.200	23.98	PASS
62	5310	MCS8	13	11.74	11.53	14.88	30.761	23.98	PASS
102	5510	MCS8	10	10.28	10.07	13.42	21.979	23.98	PASS
110	5550	MCS8	12	11.89	11.58	14.98	31.477	23.98	PASS
134	5670	MCS8	12	11.87	11.61	14.99	31.550	23.98	PASS
142	5710(U-NII 2C)	MCS8	12	11.23	11.07	14.39	27.484	23.98	PASS
142	5710 (U-NII 3)	MCS8	12	2.76	2.56	5.90	3.893	30	PASS
151	5755	MCS8	12	12.13	11.32	14.99	31.550	30	PASS
159	5795	MCS8	12	12.02	11.43	14.98	31.477	30	PASS

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## 802.11ac\_VHT20\_Ch0

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	10	8.71	7.432	23.98	PASS
44	5220	MCS0	10	8.87	7.711	23.98	PASS
48	5240	MCS0	10	8.85	7.676	23.98	PASS
52	5260	MCS0	13	11.82	15.210	23.98	PASS
60	5300	MCS0	13	11.81	15.175	23.98	PASS
64	5320	MCS0	13	11.90	15.493	23.93	PASS
100	5500	MCS0	11	11.42	13.872	23.98	PASS
116	5580	MCS0	12	11.79	15.105	23.95	PASS
140	5700	MCS0	12	11.73	14.898	23.98	PASS
144	5720(U-NII 2C)	MCS0	12	10.47	11.15	23.98	PASS
144	5720 (U-NII 3)	MCS0	12	5.73	3.74	30	PASS
149	5745	MCS0	12	11.76	15.001	30	PASS
157	5785	MCS0	12	11.79	15.105	30	PASS
165	5825	MCS0	12	11.77	15.036	30	PASS

## 802.11ac\_VHT20\_Ch1

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	10	8.70	7.415	23.98	PASS
44	5220	MCS0	10	8.85	7.676	23.98	PASS
48	5240	MCS0	10	8.82	7.623	23.98	PASS
52	5260	MCS0	13	11.61	14.492	23.98	PASS
60	5300	MCS0	13	11.60	14.459	23.94	PASS
64	5320	MCS0	13	11.64	14.592	23.96	PASS
100	5500	MCS0	11	10.94	12.420	23.92	PASS
116	5580	MCS0	12	11.74	14.932	23.91	PASS
140	5700	MCS0	12	11.71	14.830	23.97	PASS
144	5720(U-NII 2C)	MCS0	12	10.48	11.17	23.96	PASS
144	5720 (U-NII 3)	MCS0	12	5.67	3.69	30	PASS
149	5745	MCS0	11	11.70	14.795	30	PASS
157	5785	MCS0	11	11.62	14.525	30	PASS
165	5825	MCS0	11	11.64	14.592	30	PASS

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**802.11ac\_VHT20\_MIMO**

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS0	10	8.72	9.05	12.01	15.885	23.98	PASS
44	5220	MCS0	10	8.79	9.08	12.06	16.069	23.98	PASS
48	5240	MCS0	10	8.78	9.19	12.11	16.255	23.98	PASS
52	5260	MCS0	13	11.74	11.51	14.75	29.854	23.94	PASS
60	5300	MCS0	13	11.81	11.52	14.79	30.130	23.93	PASS
64	5320	MCS0	13	11.83	11.54	14.81	30.269	23.92	PASS
100	5500	MCS0	11	11.38	11.09	14.36	27.290	23.91	PASS
116	5580	MCS0	12	11.69	11.93	14.93	31.117	23.97	PASS
140	5700	MCS0	12	11.64	11.91	14.90	30.903	23.96	PASS
144	5720(U-NII 2C)	MCS0	12	10.39	10.68	13.66	23.226	22.74	PASS
144	5720 (U-NII 3)	MCS0	12	5.65	5.87	8.88	7.729	30	PASS
149	5745	MCS0	11	11.67	11.62	14.77	29.992	30	PASS
157	5785	MCS0	11	11.87	11.54	14.83	30.409	30	PASS
165	5825	MCS0	11	11.67	11.58	14.75	29.854	30	PASS

**802.11ac\_VHT40\_Ch0**

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	12	10.55	11.359	23.98	PASS
46	5230	MCS0	13	11.64	14.599	23.98	PASS
54	5270	MCS0	13	11.83	15.252	23.98	PASS
62	5310	MCS0	13	11.91	15.536	23.98	PASS
102	5510	MCS0	10	10.24	10.576	23.98	PASS
110	5550	MCS0	12	11.92	15.571	23.98	PASS
134	5670	MCS0	12	11.93	15.607	23.98	PASS
142	5710(U-NII 2C)	MCS0	12	11.39	13.76	23.98	PASS
142	5710 (U-NII 3)	MCS0	12	2.91	1.96	30	PASS
151	5755	MCS0	12	11.85	15.322	30	PASS
159	5795	MCS0	12	11.88	15.429	30	PASS

**802.11ac\_VHT40\_Ch1**

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	12	10.52	11.281	23.98	PASS
46	5230	MCS0	13	11.53	14.234	23.98	PASS
54	5270	MCS0	13	11.62	14.532	23.98	PASS
62	5310	MCS0	13	11.72	14.871	23.98	PASS
102	5510	MCS0	10	10.19	10.455	23.98	PASS
110	5550	MCS0	12	11.74	14.939	23.98	PASS
134	5670	MCS0	12	11.79	15.112	23.98	PASS
142	5710(U-NII 2C)	MCS0	12	11.25	13.33	23.98	PASS
142	5710 (U-NII 3)	MCS0	12	2.75	1.88	30	PASS
151	5755	MCS0	11	11.51	14.169	30	PASS
159	5795	MCS0	11	11.60	14.465	30	PASS

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**802.11ac\_VHT40\_MIMO**

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS0	12	10.37	10.31	13.58	22.803	23.98	PASS
46	5230	MCS0	13	11.43	11.33	14.62	28.973	23.98	PASS
54	5270	MCS0	13	11.61	11.43	14.76	29.923	23.98	PASS
62	5310	MCS0	13	11.69	11.51	14.84	30.479	23.98	PASS
102	5510	MCS0	10	10.21	10.03	13.36	21.677	23.98	PASS
110	5550	MCS0	12	11.87	11.52	14.94	31.189	23.98	PASS
134	5670	MCS0	12	11.84	11.57	14.95	31.261	23.98	PASS
142	5710(U-NII 2C)	MCS0	12	11.20	11.04	14.36	27.295	23.98	PASS
142	5710 (U-NII 3)	MCS0	12	2.73	2.53	5.87	3.866	30	PASS
151	5755	MCS0	12	12.08	11.3	14.95	31.261	30	PASS
159	5795	MCS0	12	11.99	11.39	14.94	31.189	30	PASS

**802.11ac\_VHT80\_Ch0**

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	10	9.16	8.237	23.98	PASS
58	5290	MCS0	9	8.37	6.867	23.98	PASS
106	5530	MCS0	8	8.79	7.564	23.98	PASS
122	5610	MCS0	11	11.93	15.587	23.98	PASS
138	5690(U-NII 2C)	MCS0	11	11.62	14.51	23.98	PASS
138	5690 (U-NII 3)	MCS0	11	0.47	1.12	30	PASS
155	5775	MCS0	11	11.97	15.731	30	PASS

**802.11ac\_VHT80\_Ch1**

CH	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	10	8.94	7.830	23.98	PASS
58	5290	MCS0	9	8.18	6.573	23.98	PASS
106	5530	MCS0	7	8.40	6.914	23.98	PASS
122	5610	MCS0	11	11.69	14.749	23.98	PASS
138	5690(U-NII 2C)	MCS0	11	11.51	14.16	23.98	PASS
138	5690 (U-NII 3)	MCS0	11	0.16	1.04	30	PASS
155	5775	MCS0	11	11.93	15.587	30	PASS

**802.11ac\_VHT80\_MIMO**

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
42	5210	MCS0	10	8.73	8.52	12.09	16.181	23.98	PASS
58	5290	MCS0	9	7.96	7.75	11.32	13.552	23.98	PASS
106	5530	MCS0	8	8.42	7.97	11.67	14.689	23.98	PASS
122	5610	MCS0	11	11.3	11.47	14.85	30.549	23.98	PASS
138	5690(U-NII 2C)	MCS0	11	10.85	11.21	14.50	28.215	23.98	PASS
138	5690 (U-NII 3)	MCS0	11	-0.29	-0.14	3.25	2.115	30	PASS
155	5775	MCS0	11	11.17	11.82	14.98	31.477	30	PASS

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## 10 MAXIMUM POWER SPECTRAL DENSITY

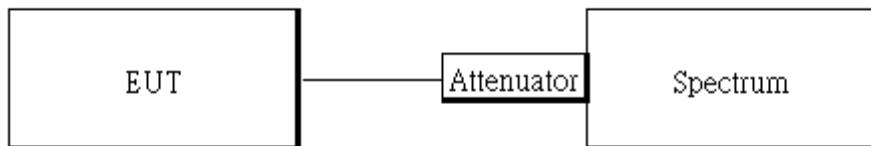
### 10.1 Standard Applicable

Operation Bands	EUT CATEGORY		e-CRF Title 47 §15.407 Power Spectral Density	Antenna Directional Gain Requirements
U-NII-1		Outdoor Access Point (Master)	1. 17dBm/ MHz 2. EIRP<=125mW(21dBm) at any elevation angle > 30°	6dBi
		Indoor Access Point (Master)	17dBm/ MHz	6dBi
		Fixed point-to-point Access Ponit	17dBm/ MHz	23dBi
	V	Client device	11dBm/ MHz	6dBi
U-NII-2A	V	All	11dBm/ MHz	6dBi
U-NII-2C	V	All	11dBm/ MHz	6dBi
U-NII-3	V	All	30dBm/ 500kHz	6dBi
If transmitting antennas of directional gain greater than the antenna requirements column, the Maximum transmit power shall be reduced by the amount in dB that the directional gain of the antenna.				

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## 10.1 Test Setup



## 10.2 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 Spectrum.
4. For U-NII1, U-NII-2A, U-NII-2C Band:

Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (1001 pts), Detector = power averaging (rms), if available. Otherwise, use sample detector mode, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

For U-NII-3 Band:

Set RBW=300kHz, VBW=1MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto, detector = RMS or sample, traces 100 sweeps of video averaging.

In addition, measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10 \log (500 \text{ kHz}/\text{RBW})$  to the measured result.

5. User the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add  $10 \log (1/\text{duty cycle})$ .
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.
8. MIMO mode: offset is set with "measure and add  $10 \log (N)$ " to measurement for MIMO mode. Offset = cable loss +  $10 \log (N)$ , where N is number of transmitting antenna, cable loss is specified below.

Cable Loss Offset (dB)
12.42

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

### Note:

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

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

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

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

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

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

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

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## 10.3 Measurement Result

POWER DENSITY 802.11a MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)		Limit	Margin (dB)
5180	-0.82	-0.78	0.10	2.31		9.69 dBm/MHz	-7.38
5220	-1.38	-1.09	0.10	1.88		9.69 dBm/MHz	-7.81
5240	-1.11	-0.80	0.10	2.16		9.69 dBm/MHz	-7.53
5260	3.01	1.33	0.10	5.36		9.69 dBm/MHz	-4.33
5300	1.69	1.51	0.10	4.71		9.69 dBm/MHz	-4.98
5320	0.82	1.15	0.10	4.10		9.69 dBm/MHz	-5.59
5500	3.55	2.78	0.10	6.29		9.69 dBm/MHz	-3.40
5580	3.47	2.43	0.10	6.09		9.69 dBm/MHz	-3.60
5700	0.63	1.80	0.10	4.37		9.69 dBm/MHz	-5.32
5720 (U-NII 2C)	0.08	1.51	0.10	3.96		9.69 dBm/MHz	-5.73
POWER DENSITY 802.11n HT20 MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)
5720 (U-NII 3)	-4.94	-4.01	0.10	2.22	0.88	28.69 dBm/500kHz	-27.81
5745	-6.18	-4.03	0.10	2.22	0.36	28.69 dBm/500kHz	-28.33
5785	-6.91	-4.21	0.10	2.22	-0.02	28.69 dBm/500kHz	-28.71
5825	-6.10	-3.90	0.10	2.22	0.47	28.69 dBm/500kHz	-28.22
POWER DENSITY 802.11n HT40 MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)		Limit	Margin (dB)
5180	-1.26	-1.06	0.12	1.97		9.69 dBm/MHz	-7.72
5220	-1.30	-1.21	0.12	1.88		9.69 dBm/MHz	-7.81
5240	-1.28	-1.37	0.12	1.80		9.69 dBm/MHz	-7.89
5260	3.70	1.70	0.12	5.94		9.69 dBm/MHz	-3.75
5300	2.11	1.84	0.12	5.11		9.69 dBm/MHz	-4.58
5320	1.26	1.65	0.12	4.59		9.69 dBm/MHz	-5.10
5500	-0.30	0.86	0.12	3.45		9.69 dBm/MHz	-6.24
5580	2.59	1.85	0.12	5.37		9.69 dBm/MHz	-4.32
5700	1.27	2.28	0.12	4.93		9.69 dBm/MHz	-4.76
5720 (U-NII 2C)	0.72	2.11	0.12	4.60		9.69 dBm/MHz	-5.09
POWER DENSITY 802.11n HT20+HT40 MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD(dBm/500kHz)	Limit	Margin (dB)
5720 (U-NII 3)	-4.018	-2.18	0.12	2.22	2.35	28.69 dBm/500kHz	-26.34
5745	-5.48	-2.45	0.12	2.22	1.64	28.69 dBm/500kHz	-27.05
5785	-6.65	-3.50	0.12	2.22	0.55	28.69 dBm/500kHz	-28.14
5825	-5.95	-3.67	0.12	2.22	0.69	28.69 dBm/500kHz	-28.00

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POWER DENSITY 802.11n HT40 MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)		Limit	Margin (dB)
5190	-1.96	-3.16	0.23	0.72		9.69 dBm/MHz	-8.97
5230	0.12	-1.46	0.23	2.64		9.69 dBm/MHz	-7.05
5270	0.23	-1.27	0.23	2.78		9.69 dBm/MHz	-6.91
5310	-1.34	-1.60	0.23	1.77		9.69 dBm/MHz	-7.92
5510	-2.87	-3.57	0.23	0.04		9.69 dBm/MHz	-9.65
5550	-0.21	-0.87	0.23	2.71		9.69 dBm/MHz	-6.98
5670	-1.24	-1.10	0.23	2.07		9.69 dBm/MHz	-7.62
5710 (U-NII 2C)	-2.49	-0.85	0.23	1.65		9.69 dBm/MHz	-8.04
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD(dBm/500kHz)	Limit	Margin (dB)
5710 (U-NII 3)	-7.29	-6.54	0.23	2.22	-1.44	28.69 dBm/500kHz	-30.13
5755	-7.98	-5.46	0.23	2.22	-1.08	28.69 dBm/500kHz	-29.77
5795	-8.61	-5.47	0.23	2.22	-1.30	28.69 dBm/500kHz	-29.99
POWER DENSITY 802.11ac VHT80 MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)		Limit	Margin (dB)
5210	-6.72	-8.43	0.46	-4.02		9.69 dBm/MHz	-13.71
5290	-8.44	-9.14	0.46	-5.30		9.69 dBm/MHz	-14.99
5530	-7.97	-8.39	0.46	-4.70		9.69 dBm/MHz	-14.39
5610	-4.28	-5.24	0.46	-1.26		9.69 dBm/MHz	-10.95
5690 (U-NII 2C)	-5.72	-5.13	0.46	-1.94		9.69 dBm/MHz	-11.63
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD(dBm/500kHz)	Limit	Margin (dB)
5690 (U-NII 3)	-10.58	-10.34	0.46	2.22	-4.77	28.69 dBm/500kHz	-33.46
5775	-12.06	-8.60	0.46	2.22	-4.30	28.69 dBm/500kHz	-32.99

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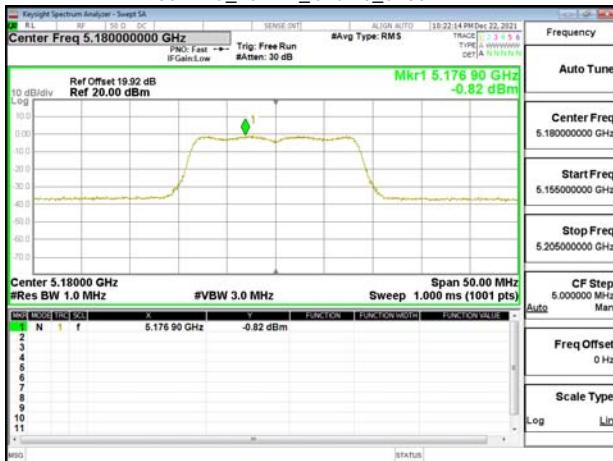
EIRP spectral density 802.11a MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5180	2.31	7.31	9.62	10	-0.38
5220	1.88	7.31	9.19	10	-0.81
5240	2.16	7.31	9.47	10	-0.53
EIRP spectral density 802.11n HT40 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5190	0.72	7.31	8.03	10	-1.97
5230	2.64	7.31	9.95	10	-0.05
EIRP spectral density 802.11n HT20 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5180	1.97	7.31	9.28	10	-0.72
5220	1.88	7.31	9.19	10	-0.81
5240	1.80	7.31	9.11	10	-0.89
EIRP spectral density 802.11ac VHT80 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5210	-4.02	7.31	3.29	10	-6.71

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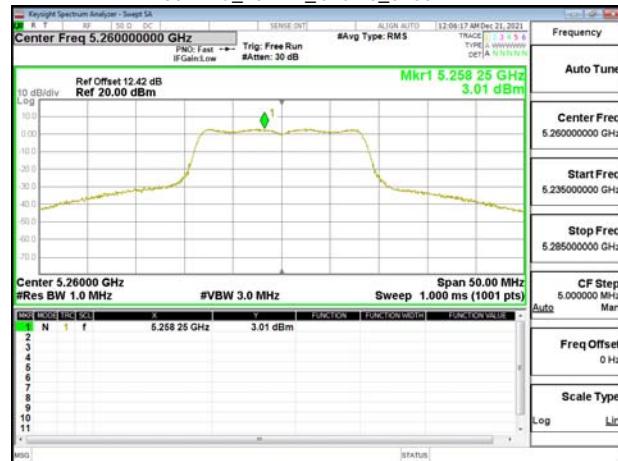
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802.11a\_20MHz\_Chain0\_5180MHz



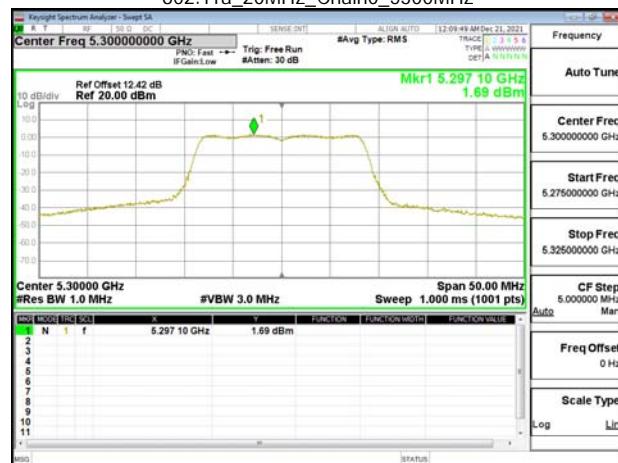
802.11a\_20MHz\_Chain0\_5260MHz



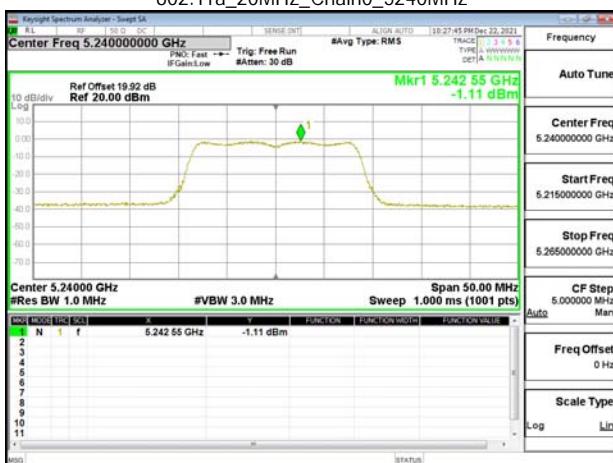
802.11a\_20MHz\_Chain0\_5220MHz



802.11a\_20MHz\_Chain0\_5300MHz



802.11a\_20MHz\_Chain0\_5240MHz



802.11a\_20MHz\_Chain0\_5320MHz

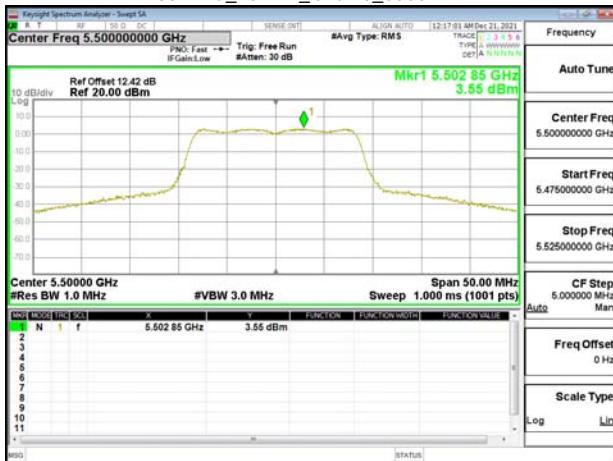


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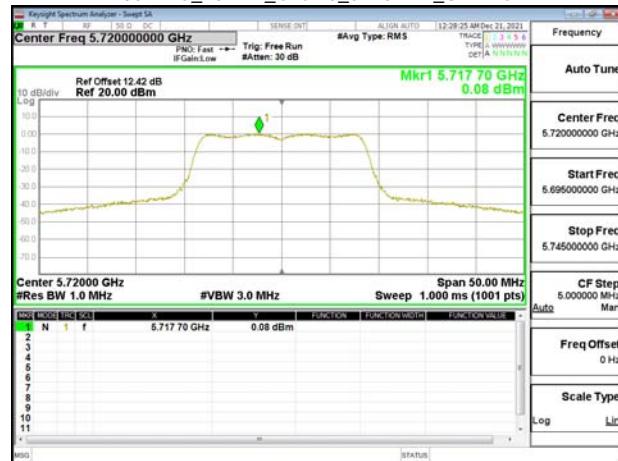
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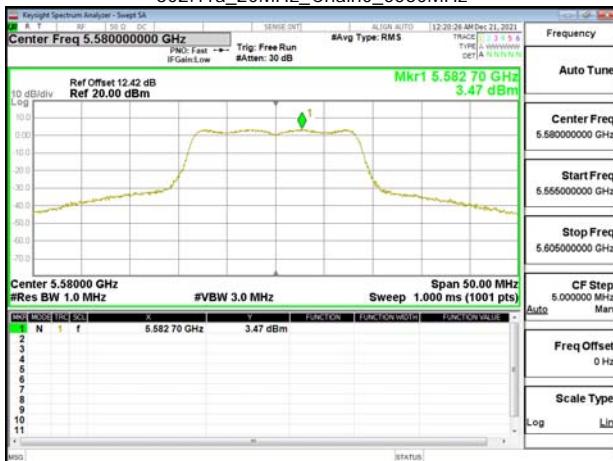
802.11a\_20MHz\_Chain0\_5500MHz



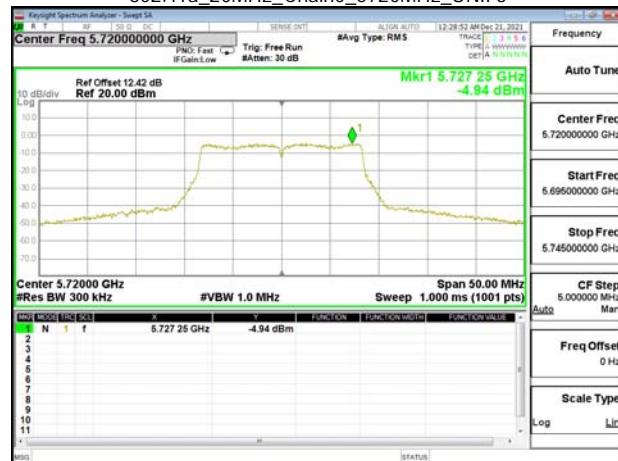
802.11a\_20MHz\_Chain0\_5720MHz\_UNII 2C



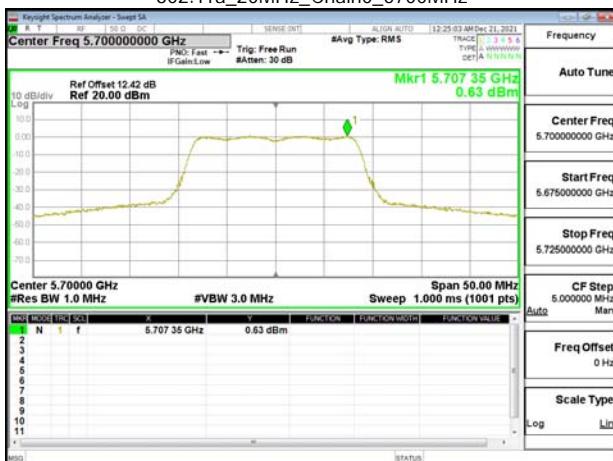
802.11a\_20MHz\_Chain0\_5580MHz



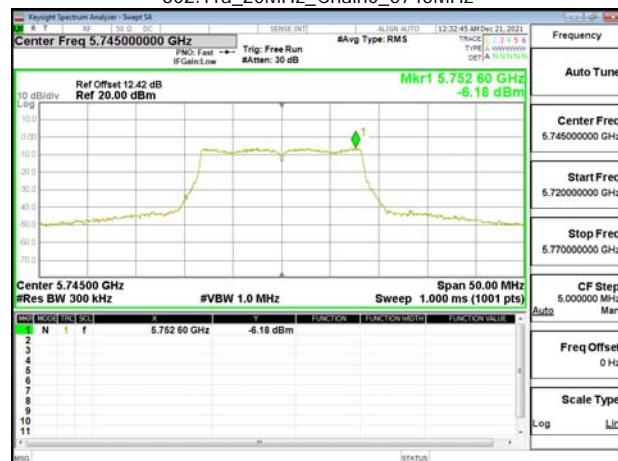
802.11a\_20MHz\_Chain0\_5720MHz\_UNII 3



802.11a\_20MHz\_Chain0\_5700MHz



802.11a\_20MHz\_Chain0\_5745MHz

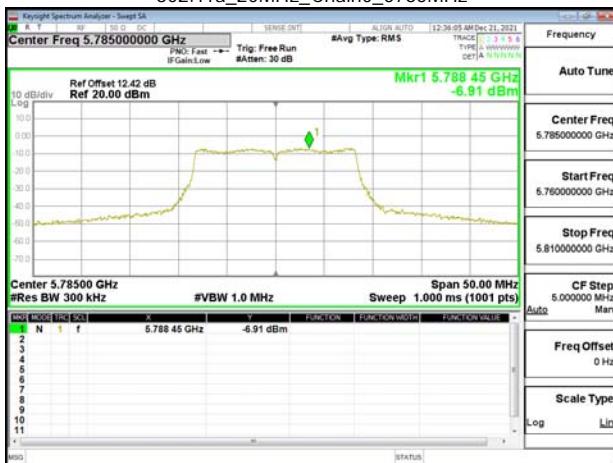


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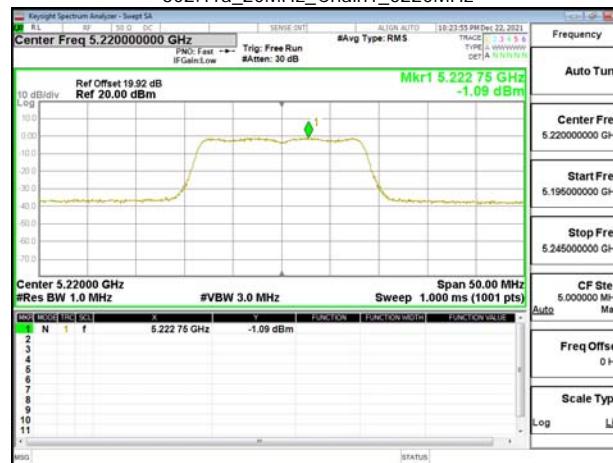
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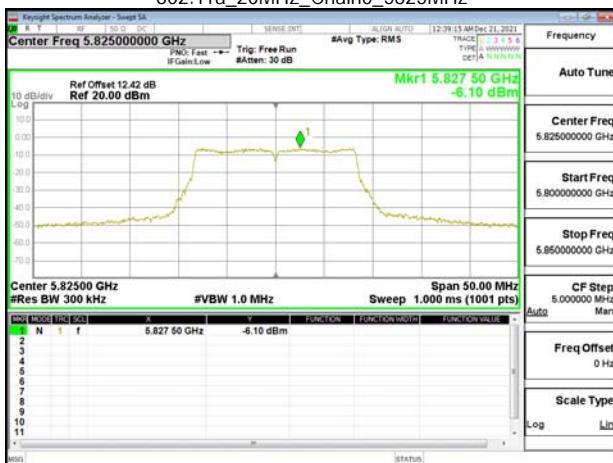
802.11a\_20MHz\_Chain0\_5785MHz



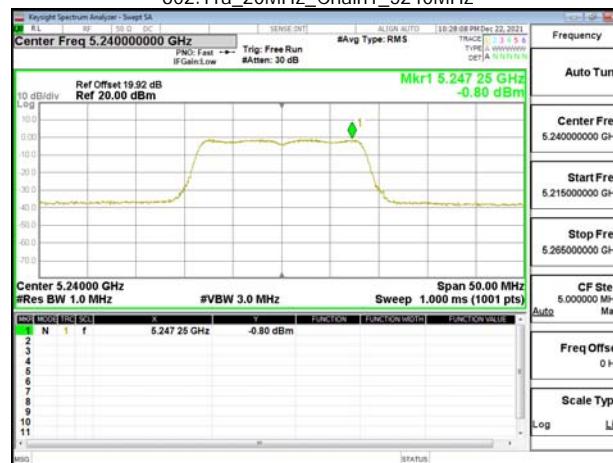
802.11a\_20MHz\_Chain1\_5220MHz



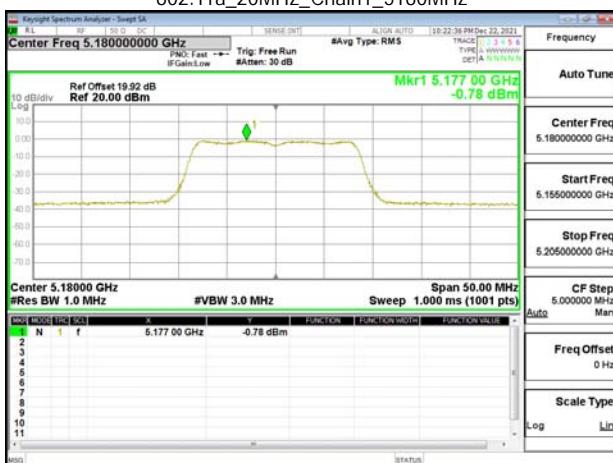
802.11a\_20MHz\_Chain0\_5825MHz



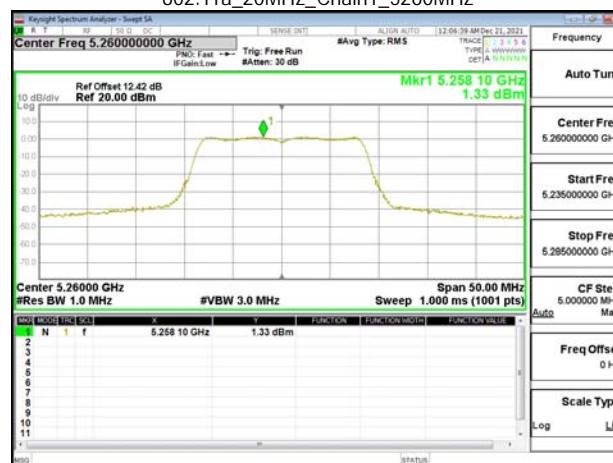
802.11a\_20MHz\_Chain1\_5240MHz



802.11a\_20MHz\_Chain1\_5180MHz



802.11a\_20MHz\_Chain1\_5260MHz

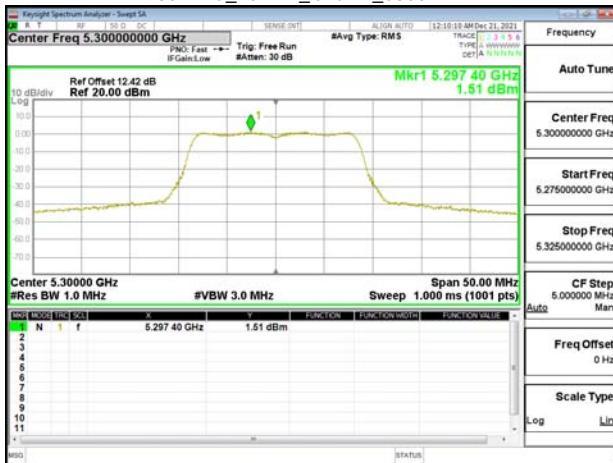


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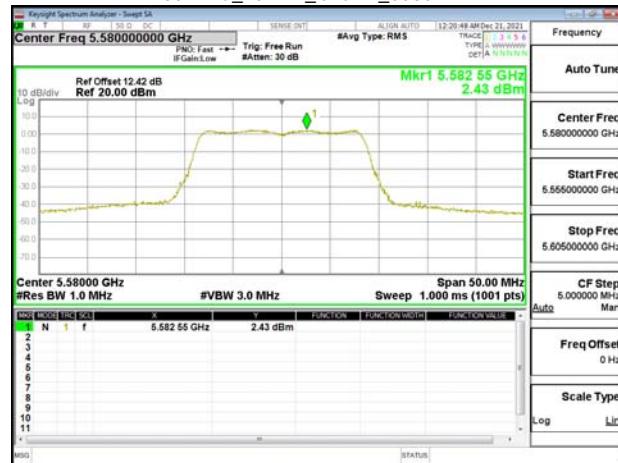
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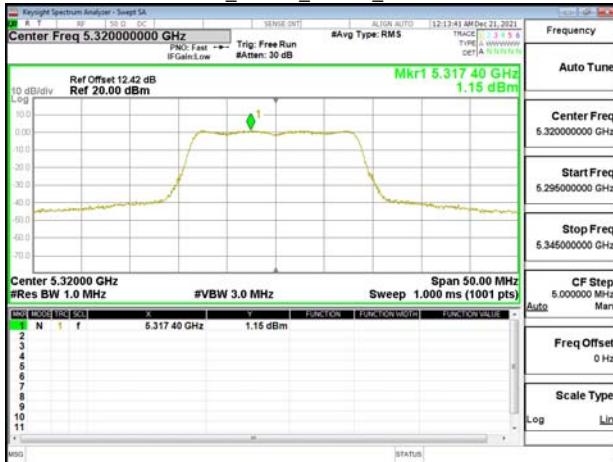
802.11a\_20MHz\_Chain1\_5300MHz



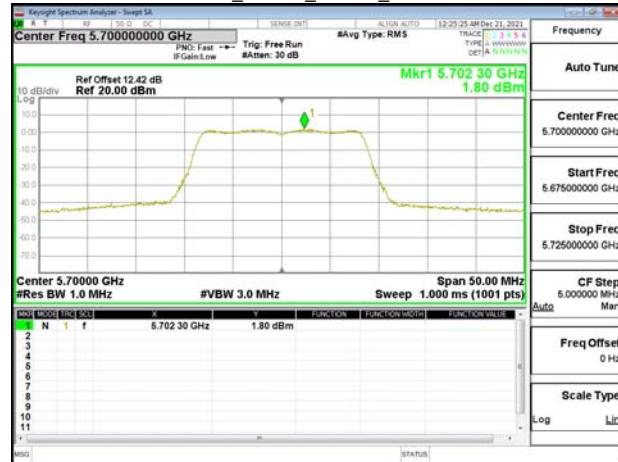
802.11a\_20MHz\_Chain1\_5580MHz



802.11a\_20MHz\_Chain1\_5320MHz



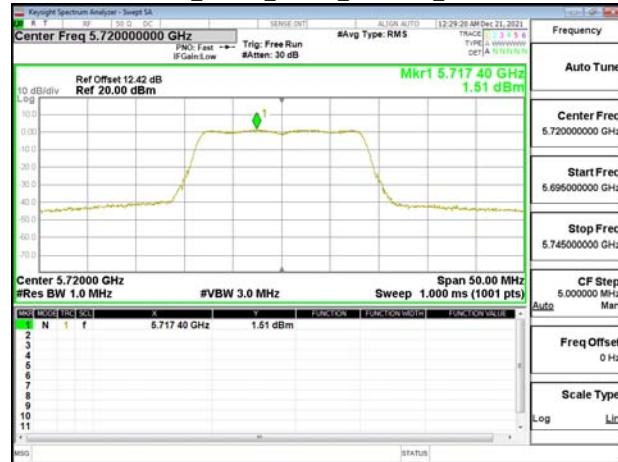
802.11a\_20MHz\_Chain1\_5700MHz



802.11a\_20MHz\_Chain1\_5500MHz



802.11a\_20MHz\_Chain1\_5720MHz\_UNII\_2C

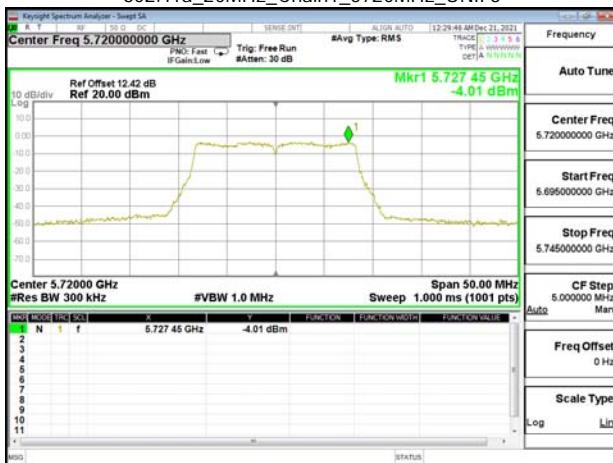


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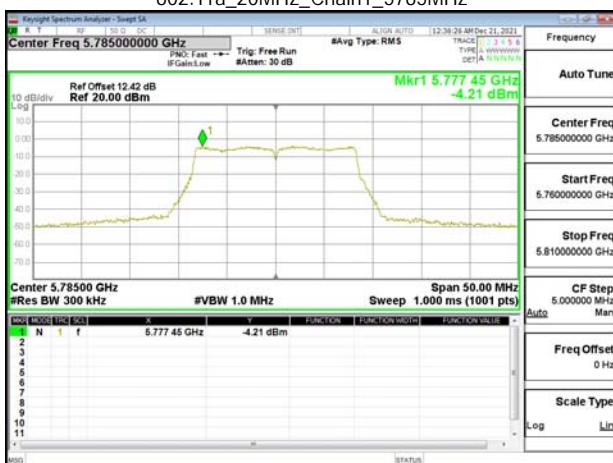
802.11a\_20MHz\_Chain1\_5720MHz\_UNII 3



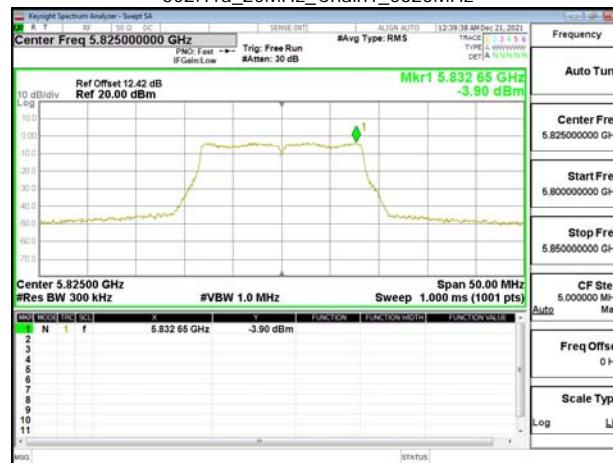
802.11a\_20MHz\_Chain1\_5745MHz



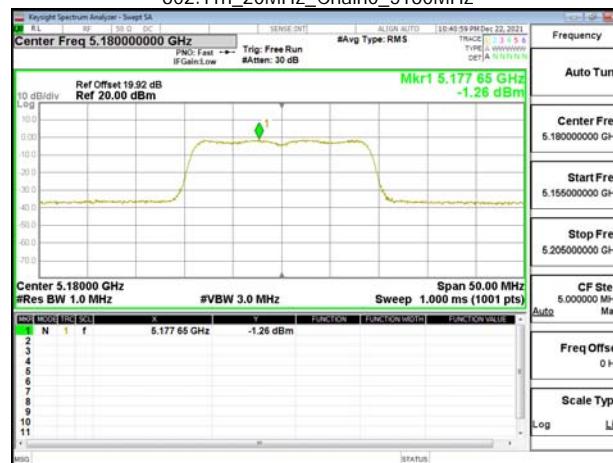
802.11a\_20MHz\_Chain1\_5785MHz



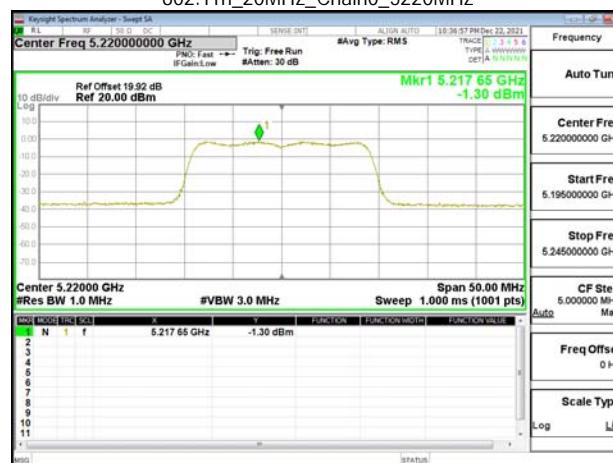
802.11a\_20MHz\_Chain1\_5825MHz



802.11n\_20MHz\_Chain0\_5180MHz



802.11n\_20MHz\_Chain0\_5220MHz

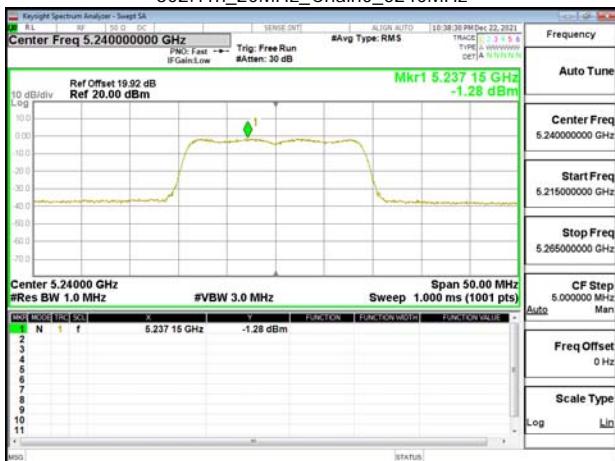


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802.11n\_20MHz\_Chain0\_5240MHz



802.11n\_20MHz\_Chain0\_5260MHz



802.11n\_20MHz\_Chain0\_5300MHz



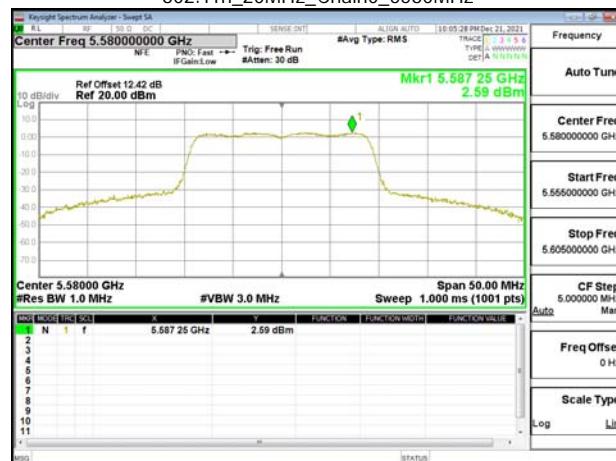
802.11n\_20MHz\_Chain0\_5320MHz



802.11n\_20MHz\_Chain0\_5500MHz



802.11n\_20MHz\_Chain0\_5580MHz



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No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新北市五股區新北產業園區五工路 134 號

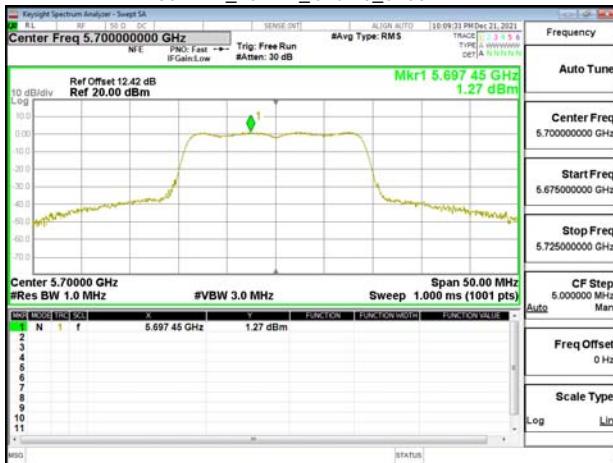
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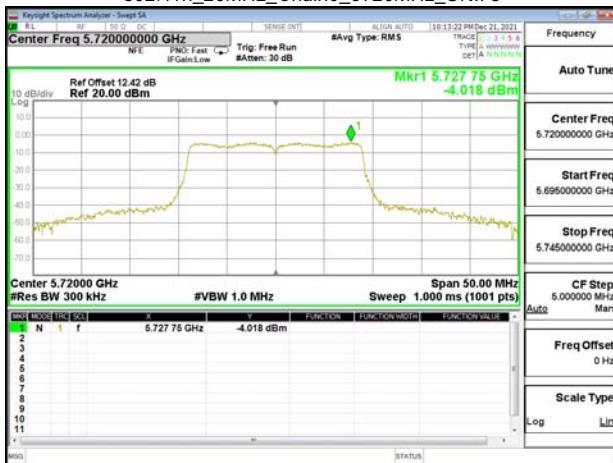
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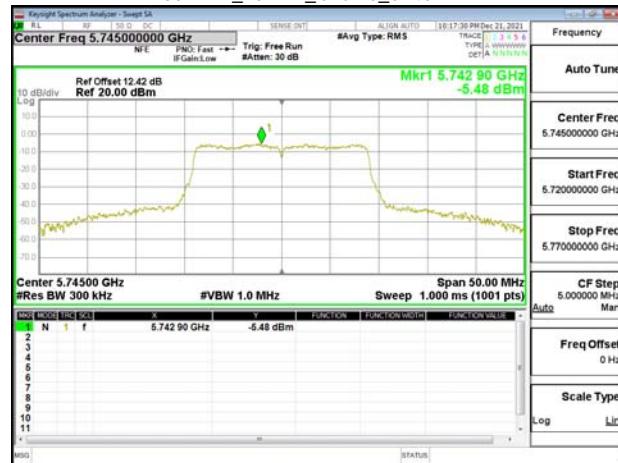
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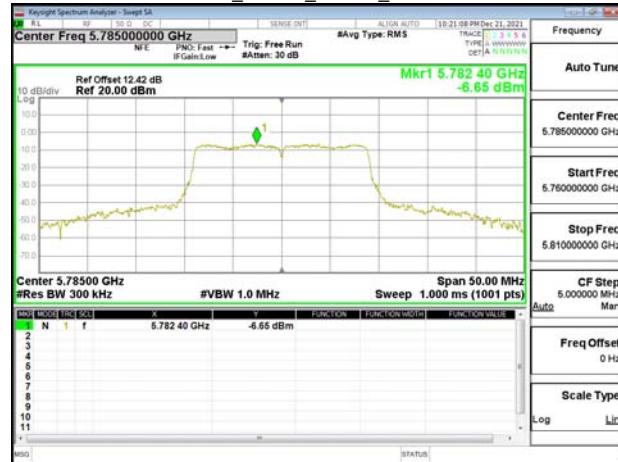
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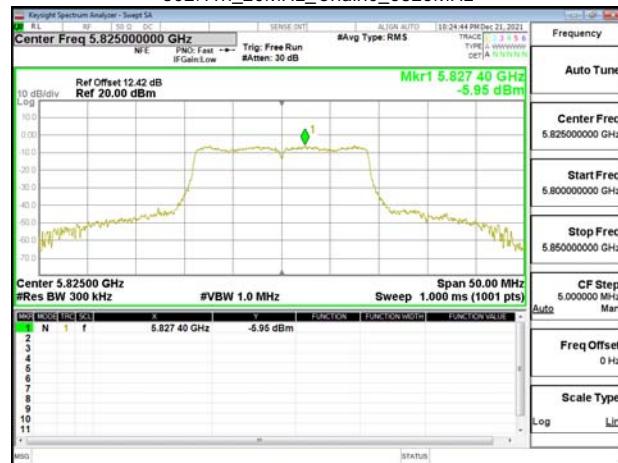
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## 802.11n\_20MHz\_Chain0\_5785MHz



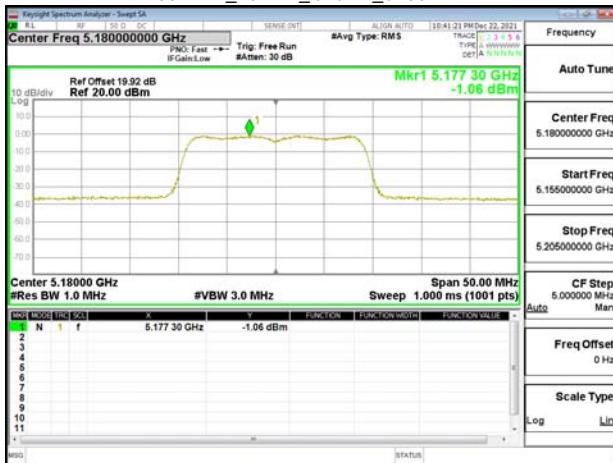
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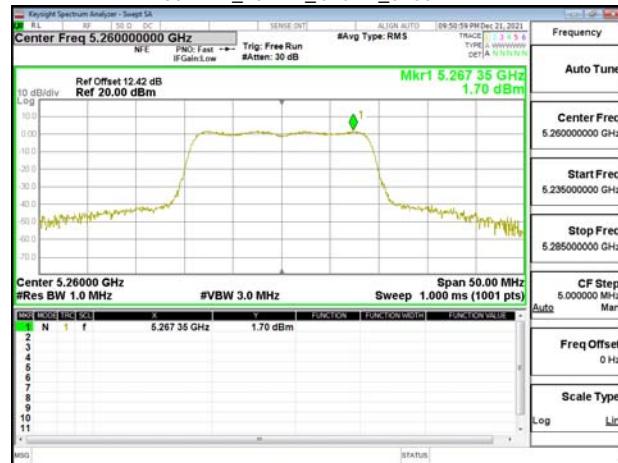
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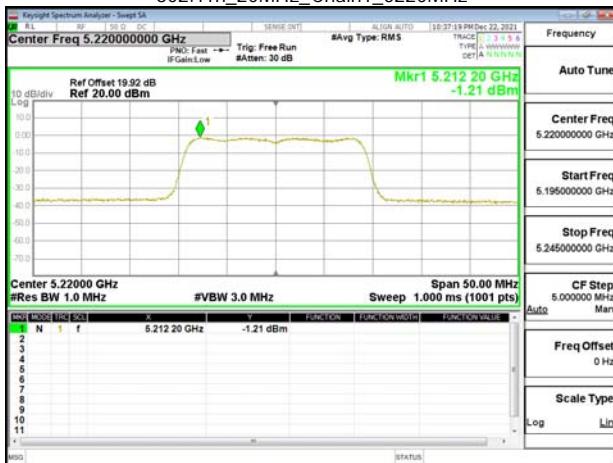
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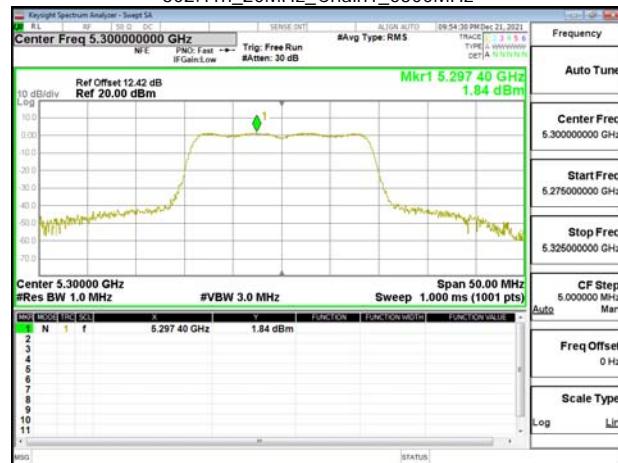
802.11n\_20MHz\_Chain1\_5260MHz



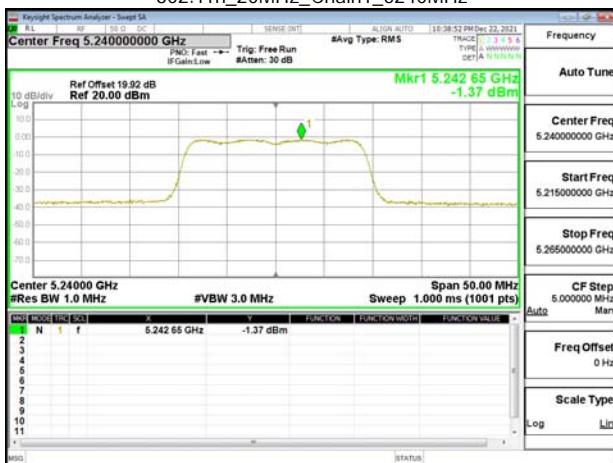
802.11n\_20MHz\_Chain1\_5220MHz



802.11n\_20MHz\_Chain1\_5300MHz



802.11n\_20MHz\_Chain1\_5240MHz



802.11n\_20MHz\_Chain1\_5320MHz



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