FCC Test Report

Product Name	：	Mesh Wi-Fi Router
Trade Name	：	CastleNet
Model No.	：	EBM552U, EBM552
FCC ID	：	RK9-EBM552

Applicant	：	CastleNet Technology Inc.
Address	：	No. 14, Ln. 141, Sec. 3, Beishen Rd. Shenkeng Dist., New Taipei City, 22244 Taiwan

Date of Receipt	：	Dec. 29, 2020
Issued Date	：	Mar. 10, 2021
Report No.	：	20C1060R-E3032110125
Report Version	：	V1.0

Testing Laboratory
3024

Test Report Certification

Issued Date : Mar. 10, 2021
Report No. : 20C1060R-E3032110125

Product Name	:	Mesh Wi-Fi Router
Applicant	:	CastleNet Technology Inc.
Address	:	No. 14, Ln. 141, Sec. 3, Beishen Rd. Shenkeng Dist., New Taipei City, 22244 Taiwan
Manufacturer	:	CastleNet Technology Inc.
Address	:	No. 14, Ln. 141, Sec. 3, Beishen Rd. Shenkeng Dist., New Taipei City, 22244 Taiwan
Model No.	:	EBM552U, EBM552
Trade Name	:	CastleNet
FCC ID	:	RK9-EBM552
EUT Voltage	:	AC 100-240V, 50/60Hz
Testing Voltage	:	AC 120V/60Hz
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2019 ANSI C63.10: 2013
Laboratory Name	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By : Carol Tsai

(Carol Tsai / Senior Engineering Adm. Specialist)

Tested By : Clemens Fang

(Clemens Fang / Senior Engineer)

Approved By : Louis Hsu

(Louis Hsu / Deputy Manager)

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Mar. 10, 2021

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	Mesh Wi-Fi Router	
Trade Name	CastleNet	
Model No.	EBM552U, EBM552	
Frequency Range/ Channel Number	IEEE 802.11a/n/ac/ax (20MHz)	5180~5240MHz / 4 Channels 5260~5320MHz / 4 Channels 5500~5700MHz / 11 Channels 5745~5825MHz / 5 Channels
	IEEE 802.11n/ac/ax (40MHz)	5190~5230MHz / 2 Channels 5270~5310MHz / 2 Channels 5510~5670MHz / 5 Channels 5755~5795MHz / 2 Channels
	IEEE 802.11ac/ax (80MHz)	5210~5210MHz / 1 Channel 5290~5290MHz / 1 Channel 5530~5610MHz / 2 Channel 5775~5775MHz / 1 Channel
Type of Modulation	IEEE 802.11a/n/ac/ax	Orthogonal Frequency Division Multiplexing
Data Speed HW Version	IEEE 802.11a	6, 9, 18, 24, 36, 48, 54Mbps
	IEEE 802.11n	Support a subset of the combination of GI, MCS 0~MCS 15 and bandwidth defined in 802.11n
	IEEE 802.11ac	Support a subset of the combination of GI, MCS 0~MCS 9 and bandwidth defined in 802.11ac
	IEEE 802.11ax	Support a subset of the combination of GI, MCS 0~MCS 11 and bandwidth defined in 802.11ax

Accessories Information	
LAN Cable	Non-Shielded, 1m
Power Adapter (For M/N: EBM552U)	MOSO, MSA-C1500CS12.0-18G-US I/P: 100-240V~50/60Hz 0.6A max. O/P: 12.0V ⎓ 1.5A Cable Out: Non-Shielded, 1.5m
Power Adapter (For M/N: EBM552)	MOSO, MS-V1000R120-012H0-US I/P: 100-240V~50/60Hz 0.3A max. O/P: 12.0V ⎓ 1.0A Cable Out: Non-Shielded, 1.5m

Ant. No.	Brand	Model No.	Antenna Type	Ant. Gain
0	Taiwan Anjie	AJDP1J-B0086	Dipole Antenna	2.4GHz: 4.52 dBi 5GHz: 4.62 dBi
1	Taiwan Anjie	AJDP1J-W0056	Dipole Antenna	2.4GHz: 2.87 dBi 5GHz: 5.43 dBi

ANT-TX / RX & Bandwidth

ANT-TX / RX	TX			RX		
Mode/ Channel Bandwidth	20MHz	40MHz	80MHz	20MHz	40MHz	80MHz
IEEE802.11a	✓			✓		
IEEE802.11n	✓	✓		✓	✓	
IEEE802.11ac/ax	✓	✓	✓	✓	✓	✓

IEEE 802.11a & IEEE 802.11n/ac/ax (20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz	48	5240 MHz
52	5260 MHz	56	5280 MHz	60	5300 MHz	64	5320 MHz
100	5500 MHz	104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz	124	5620 MHz	128	5640 MHz
132	5660 MHz	136	5680 MHz	140	5700 MHz	149	5745 MHz
153	5765 MHz	157	5785 MHz	161	5805 MHz	165	5825 MHz

IEEE 802.11n/ac/ax (40MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270MHz	62	5310 MHz
102	5510 MHz	110	5550 MHz	118	5590MHz	126	5630 MHz
134	5670 MHz	151	5755 MHz	159	5795 MHz		

IEEE 802.11ac/ax (80MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz	122	5610 MHz
155	5775 MHz						

Note:

1. This device including 2.4GHz b/g/n/ac/ax and 5GHz a/n/ac/ax transmitting and receiving functions.
2. The different of the each model is shown as below:

Model Number	USB Port	Power Adapter
EBM552U	With	MOSO, MSA-C1500CS12.0-18G-US
EBM552	Without	MOSO, MS-V1000R120-012H0-US

3. Regards to the frequency band operation; the lowest, middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. The EUT description is from the customer declaration.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

Test Mode	Mode 1: Transmit_Non-BF_EBM552U Mode 2: Transmit_Non-BF_EBM552 Mode 3: Transmit_BF

Note: BF: Beamforming

Test Items	Modulation	Channel	Antenna	Result
Conducted Emission	a	157	0+1	Complies
26dB & 99% & DTS Bandwidth	a	36/44/48/52/60/64/100/116/140/149/157/165	0/1	Complies
	11ax(20MHz)	36/44/48/52/60/64/100/116/140/149/157/165	0/1	Complies
	11ax(40MHz)	38/46/54/62/102/110/134/151/159	0/1	Complies
	11ax(80MHz)	42/58/106/122/155	0/1	Complies
Maximum conducted output power	a	36/44/48/52/60/64/100/116/140/149/157/165	0+1	Complies
	11ax(20MHz)	36/44/48/52/60/64/100/116/140/149/157/165	0+1	Complies
	11ax(40MHz)	38/46/54/62/102/110/134/151/159	0+1	Complies
	11ax(80MHz)	42/58/106/122/155	0+1	Complies
Maximum power spectral density	a	36/44/48/52/60/64/100/116/140/149/157/165	0+1	Complies
	11ax(20MHz)	36/44/48/52/60/64/100/116/140/149/157/165	0+1	Complies
	11ax(40MHz)	38/46/54/62/102/110/134/151/159	0+1	Complies
	11ax(80MHz)	42/58/106/122/155	0+1	Complies
Radiated Emission	a	36/44/48/52/60/64/100/116/140/149/157/165	0+1	Complies
	11ax(20MHz)	36/44/48/52/60/64/100/116/140/149/157/165	0+1	Complies
	11ax(40MHz)	38/46/54/62/102/110/134/151/159	0+1	Complies
	11ax(80MHz)	42/58/106/122/155	0+1	Complies
Band Edge	a	36/44/48/149/157/165	0+1	Complies
	11ax(20MHz)	36/44/48/149/157/165	0+1	Complies
	11ax(40MHz)	38/46/54/62/102/110/134/151/159	0+1	Complies
	11ax(80MHz)	42/58/106/122/155	0+1	Complies

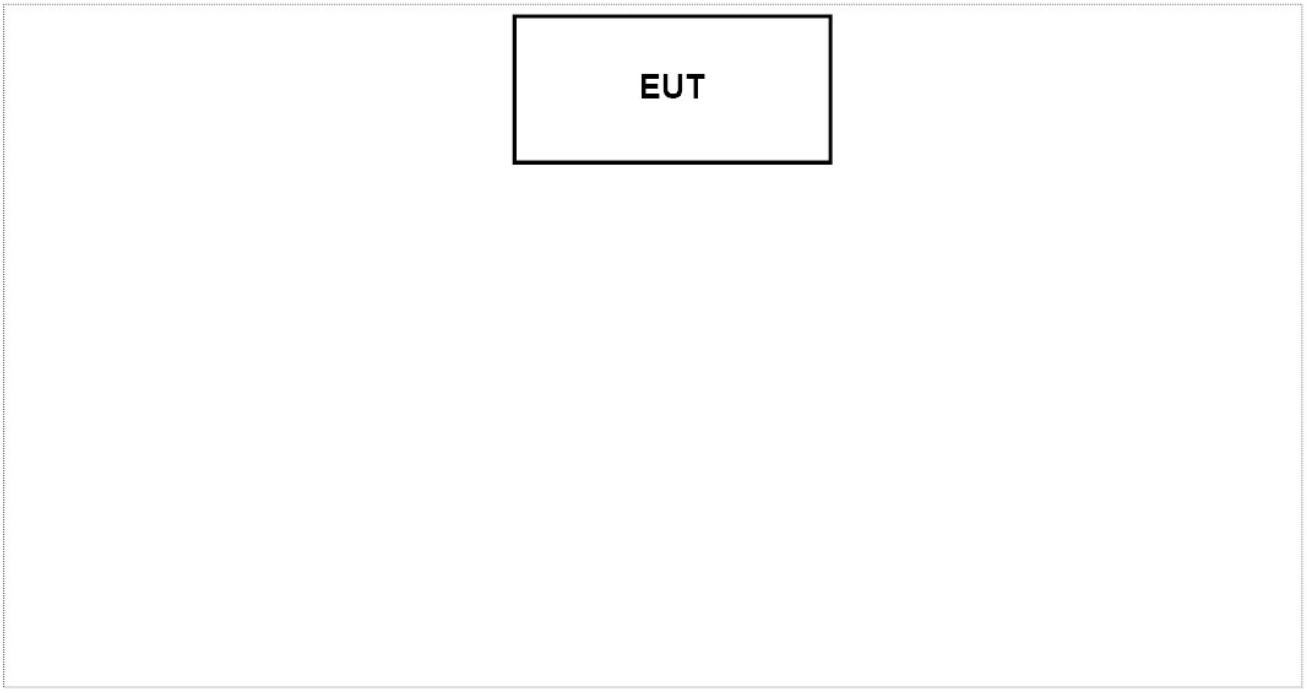
Note 1: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
Note 2: Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

N/A

1.4. Configuration of tested System

Connection Diagram


1.5. EUT Exercise Software

1	Set the EUT as shown in Section 1.4.
2	Execute “MTool” software on the laptop.
3	Configure test mode, test channel and data rate.
4	Let the EUT start transmitting or receiving signal continuously.
5	Verify that the EUT works properly.

1.6. Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required	Test Site
Temperature (°C)	FCC PART 15E 15.407	15 - 35	2
Humidity (%RH)	Conducted Emission	25 - 75	
Temperature (°C)	FCC PART 15E 15.407	15 - 35	1
Humidity (%RH)	26dB & 99% & DTS Bandwidth	25 - 75	
Temperature (°C)	FCC PART 15E 15.407	15 - 35	1
Humidity (%RH)	Maximum conducted output power	25 - 75	
Temperature (°C)	FCC PART 15E 15.407	15 - 35	1
Humidity (%RH)	Maximum power spectral density	25 - 75	
Temperature (°C)	FCC PART 15E 15.407	15 - 35	1
Humidity (%RH)	Radiated Emission	25 - 75	
Temperature (°C)	FCC PART 15E 15.407	15 - 35	1
Humidity (%RH)	Band Edge	25 - 75	

Note: Test site information refers to Laboratory Information.

Laboratory Information

USA	**:**	**FCC Registration Number: TW3024**
Canada	**:**	**IC Registration Number: 22397-1 / 22397-2 / 22397-3**

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
Email address	info.tw@dekra.com
Website	http://www.dekra.com.tw

1.8. List of Test Equipment

Conducted Emission / SR2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2020/12/24	2021/12/23
Test Receiver	R&S	ESCS 30	836858/022	2020/02/25	2021/02/24
LISN	R&S	ENV216	100092	2020/06/22	2021/06/21

Occupied Bandwidth / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Spectrum Analyzer	Agilent	N9010A	US47140172	2020/06/18	2021/06/17
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29

Maximum conducted output power / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2020/11/30	2021/11/29
Pulse Power Sensor	Anritsu	MA2411B	1531043	2020/11/30	2021/11/29
Pulse Power Sensor	Anritsu	MA2411B	1531044	2020/11/30	2021/11/29
Power Meter	Keysight	8990B	MY51000248	2020/05/20	2021/05/19
Power Sensor	Keysight	N1923A	MY57240005	2020/05/20	2021/05/19

Maximum power spectral density / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Spectrum Analyzer	Agilent	N9010A	US47140172	2020/06/18	2021/06/17
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29

Radiated Emission / CB2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2020/10/12	2021/10/11
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
Signal Analyzer	R&S	FSV40	101435	2020/06/24	2021/06/23
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21 2021/01/25	2021/02/20 2022/01/24
Bilog Antenna	Teseq	CBL6112D	23191	2020/06/12	2021/06/11
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2020/06/04	2021/06/03
Horn Antenna	Schwarzbeck	BBHA 9170	202	2020/12/16	2021/12/15
Pre-Amplifier	EMCI	EMC01820I	980365	2020/06/19	2021/06/18
Pre-Amplifier	EMEC	EM01G18GA	060741	2020/07/24	2021/07/23
Pre-Amplifier	DEKRA	AP-400C	201801231	2020/11/16	2021/11/15
Band Reject Filter	Micro-Tronics	BRM50702	G192	2020/03/09	2021/03/08
Band Reject Filter	Micro-Tronics	BRM50716	G089	2020/03/18	2021/03/17
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03 2021/01/27	2021/02/02 2022/01/26
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Coaxial Cable(13m)	Huber+Suhner	SF104	CB2-H	2020/07/25	2021/07/24

Band Edge / CB2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2020/10/12	2021/10/11
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
Signal Analyzer	R&S	FSV40	101435	2020/06/24	2021/06/23
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21 2021/01/25	2021/02/20 2022/01/24
Bilog Antenna	Teseq	CBL6112D	23191	2020/06/12	2021/06/11
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2020/06/04	2021/06/03
Horn Antenna	Schwarzbeck	BBHA 9170	202	2020/12/16	2021/12/15
Pre-Amplifier	EMCI	EMC01820I	980365	2020/06/19	2021/06/18
Pre-Amplifier	EMEC	EM01G18GA	060741	2020/07/24	2021/07/23
Pre-Amplifier	DEKRA	AP-400C	201801231	2020/11/16	2021/11/15
Band Reject Filter	Micro-Tronics	BRM50702	G192	2020/03/09	2021/03/08
Band Reject Filter	Micro-Tronics	BRM50716	G089	2020/03/18	2021/03/17
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03 2021/01/27	2021/02/02 2022/01/26
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Coaxial Cable(13m)	Huber+Suhner	SF104	CB2-H	2020/07/25	2021/07/24

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

1.9. Duty Cycle

Mode 1: Transmit_Non-BF_EBM552U

Mode	On Time(ms)	On+Off Time(ms)	Duty Cycle(%)	Duty Factor(dB) linear voltage	Duty Factor(dB) Power	1/T Minimum VBW (kHz)
11A	2.960	2.999	98.70%	0.113695	0.06	0.010
HE20	2.260	2.310	97.84%	0.190071	0.10	0.442
HE40	2.323	2.393	97.07%	0.257870	0.13	0.430
HE80	2.424	2.474	97.98%	0.177342	0.09	0.413

Note:

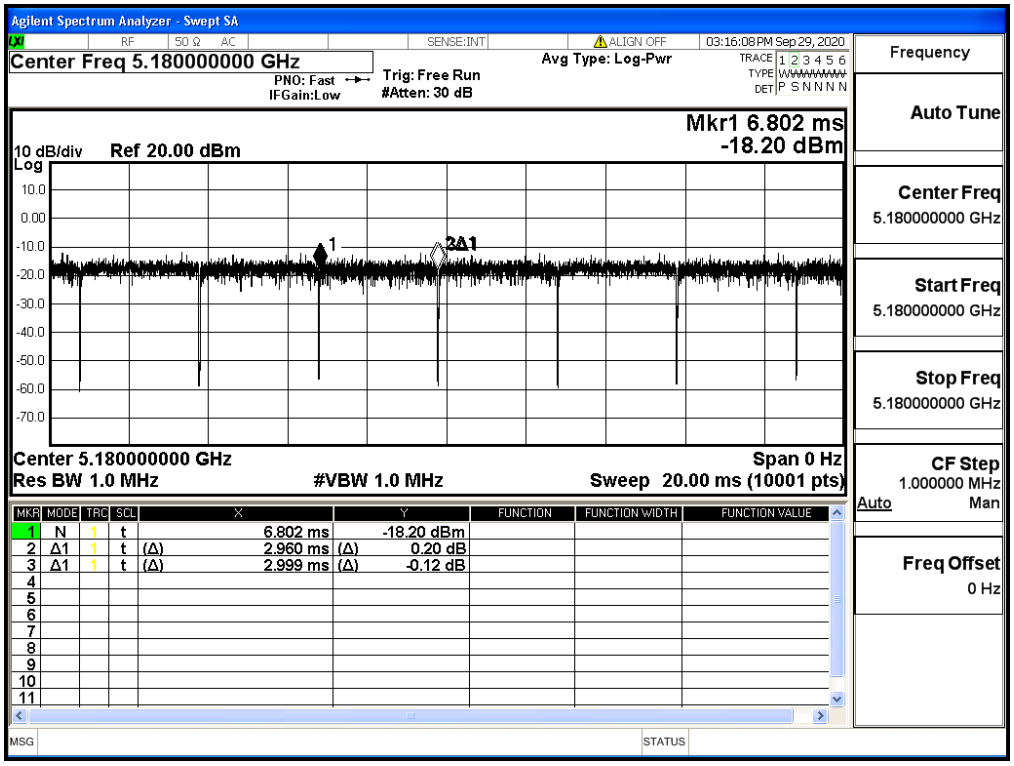
Offset = 20 log(1/duty cycle)

Accotding to KDB 789033

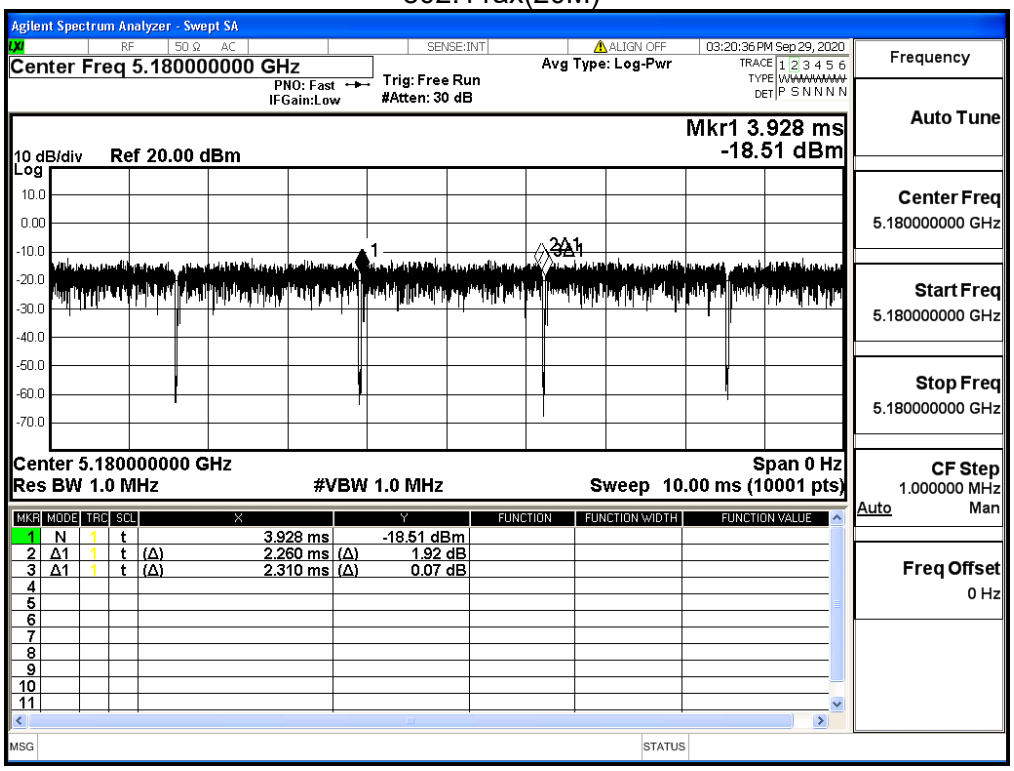
If power averaging (rms) mode was used in step (iv) above, the correction factor is 10 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB must be added to the measured emission levels.

If linear voltage averaging mode was used in step (iv) above, the correction factor is 20 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB must be added to the measured emission levels.

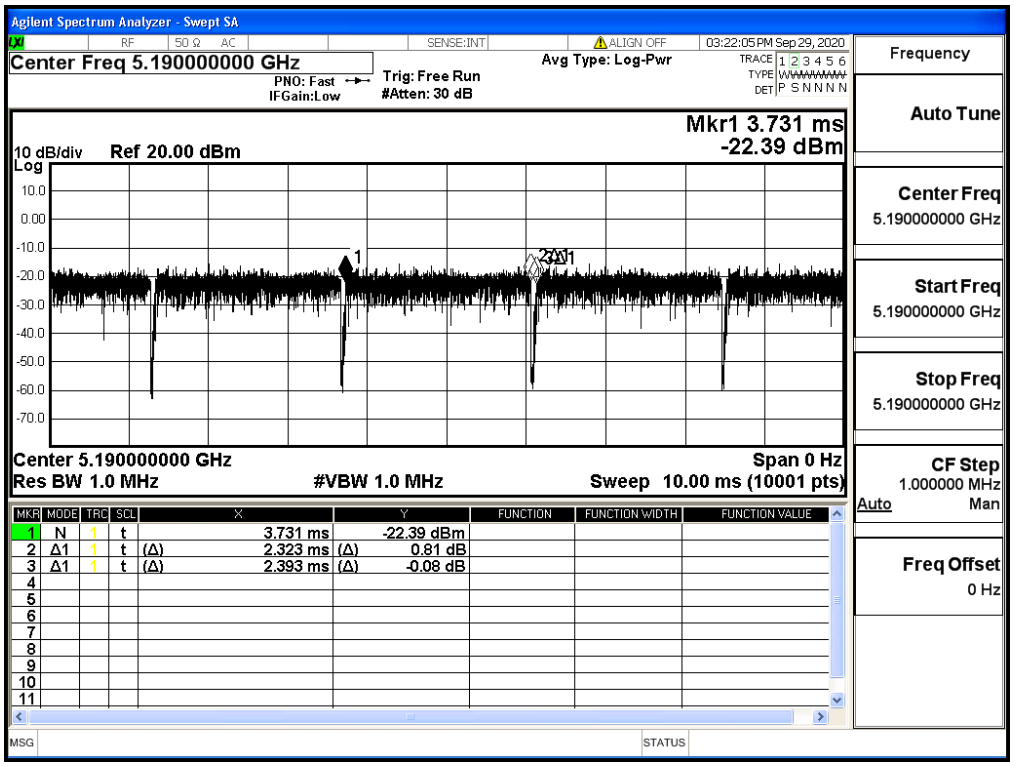
802.11a



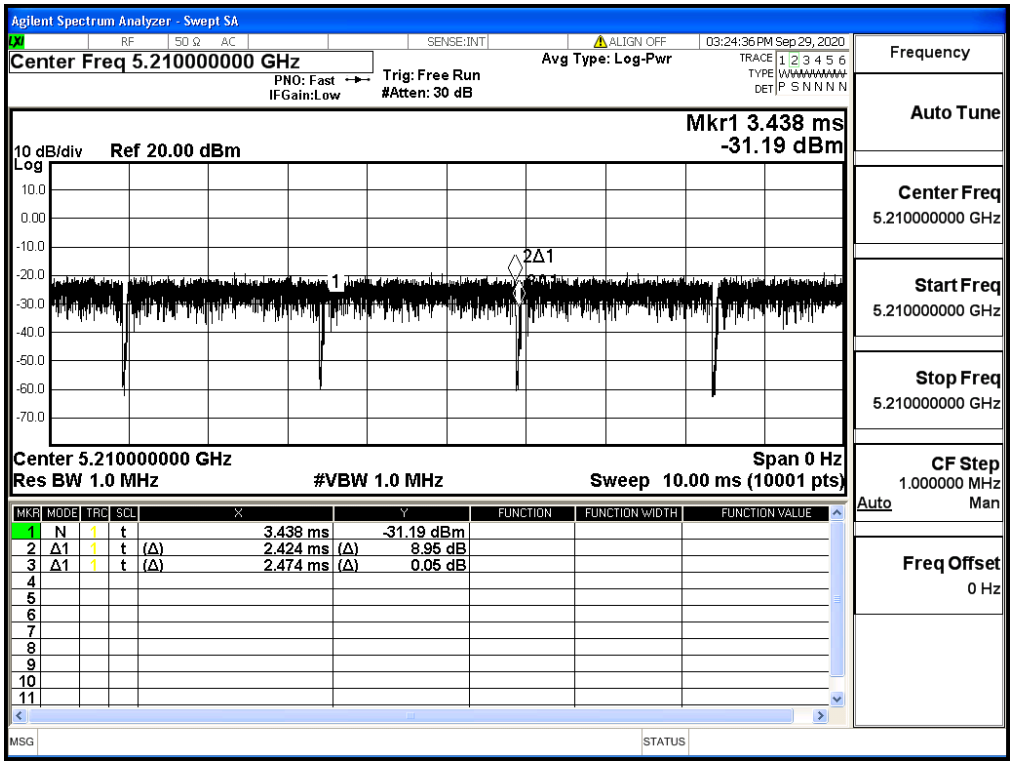
802.11ax(20M)



802.11ax(40M)



802.11ax(80M)



Mode 3: Transmit_BF

Mode	On Time(ms)	On+Off Time(ms)	Duty Cycle(%)	Duty Factor(dB) linear voltage	Duty Factor(dB) Power	1/T Minimum VBW (kHz)
HE20	2.920	3.030	96.37%	0.321196	0.16	0.342
HE40	5.820	6.339	91.81%	0.741955	0.37	0.172
HE80	6.880	7.320	93.99%	0.538453	0.27	0.145

Note:

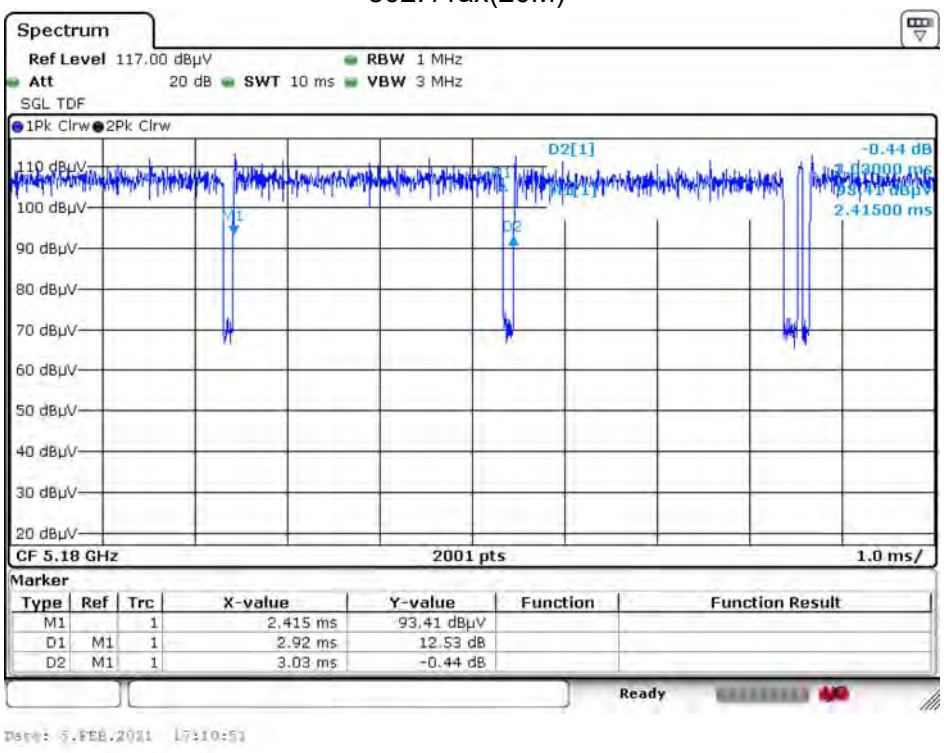
Offset = 20 log(1/duty cycle)

Accotding to KDB 789033

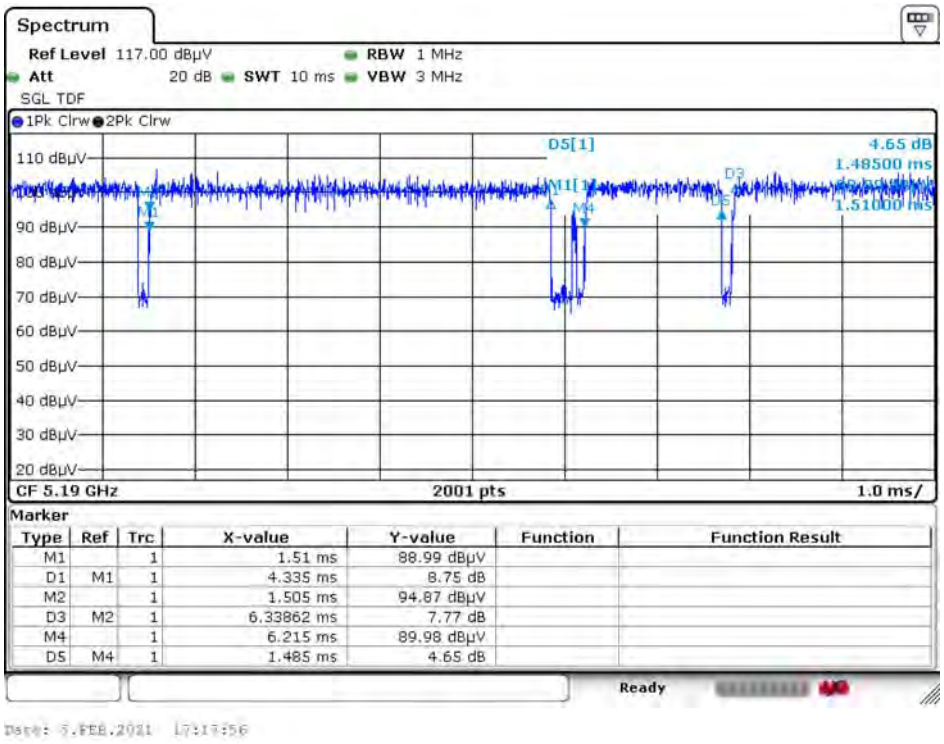
If power averaging (rms) mode was used in step (iv) above, the correction factor is 10 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB must be added to the measured emission levels.

If linear voltage averaging mode was used in step (iv) above, the correction factor is 20 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB must be added to the measured emission levels.

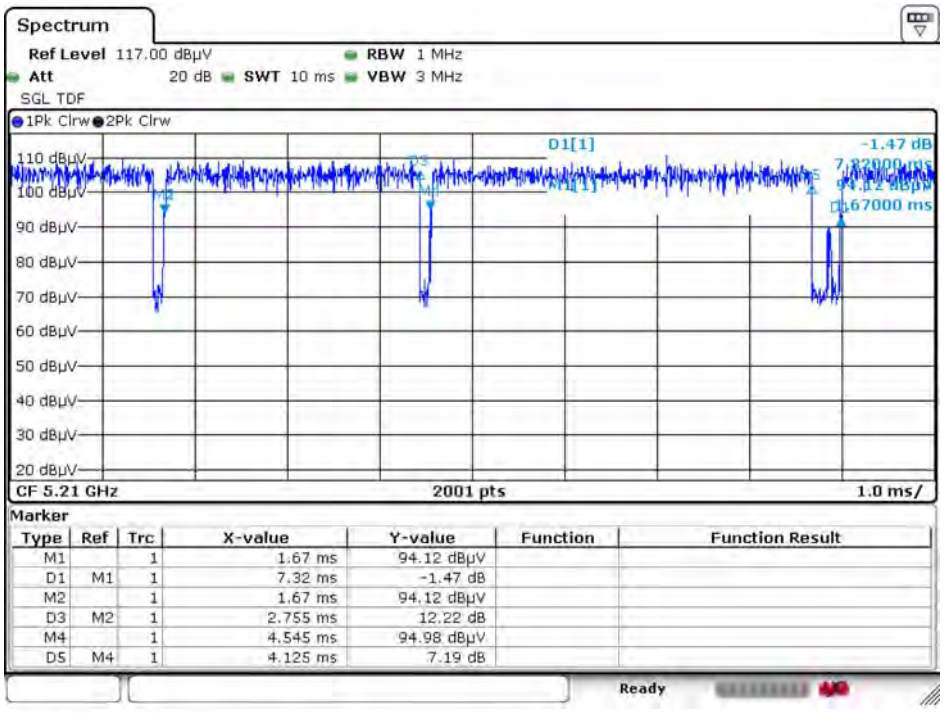
802.11ax(20M)



802.11ax(40M)



802.11ax(80M)

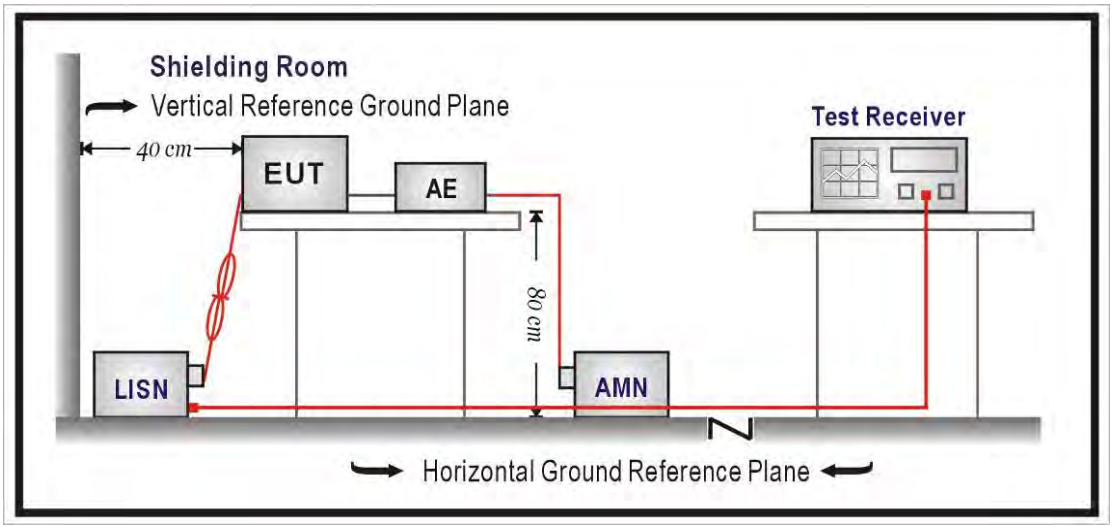


1.10. Uncertainty

Test item	Uncertainty
Conducted Emission	± 2.26 dB
26dB & 99% & DTS Bandwidth	± 50 Hz
Maximum conducted output power	± 1.27 dB
Maximum power spectral density	± 1.27 dB
Radiated Emission	30MHz~1GHz as ± 3.43 dB 1GHz~26.5GHz as ± 3.65 dB
Band Edge	± 3.65 dB

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remark: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

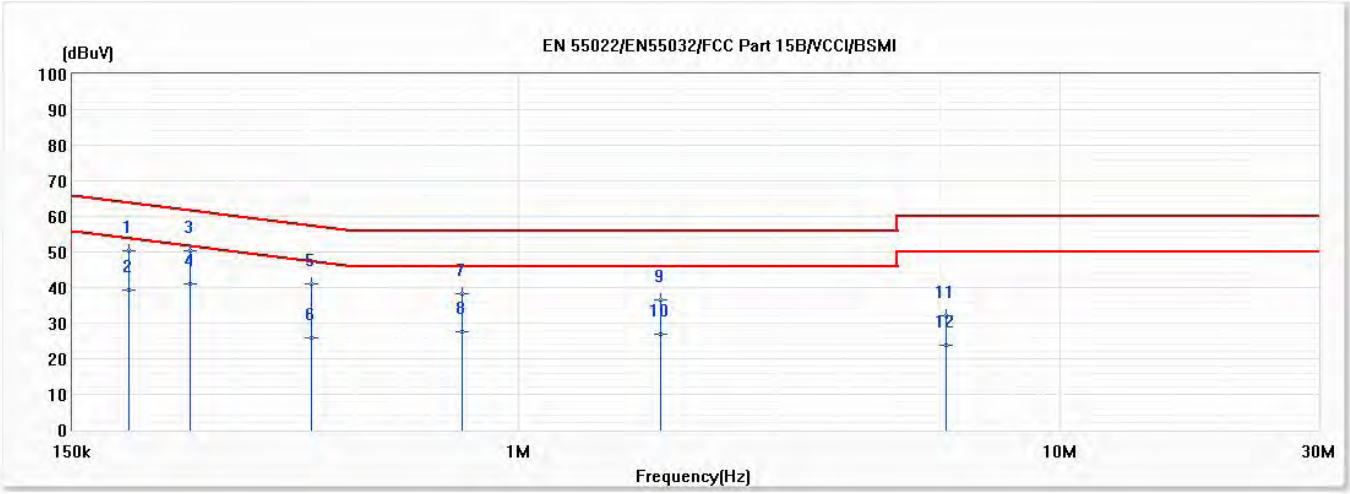
The EUT was setup according to ANSI C63.10: 2013. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)
Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.407: 2019

2.5. Test Result

Model No	EBM552U	Site	SR2-H
Test Voltage	AC 120V/60Hz	Test Date	2021/2/18
Test Mode	Mode 1: Transmit_Non-BF_EBM552U	Engineer	Scott Lin
Phase	L	Temperature (℃)	20
Test Condition	802.11a, Ch157,5.785G	Humidity (%RH)	43



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.191	50.23	64.00	-13.77	40.59	9.64	QP
2	0.191	39.28	54.00	-14.72	29.63	9.64	AV
3	0.247	50.25	61.86	-11.61	40.60	9.65	QP
*4	0.247	41.08	51.86	-10.78	31.42	9.65	AV
5	0.415	41.03	57.55	-16.52	31.35	9.68	QP
6	0.415	25.77	47.55	-21.78	16.09	9.68	AV
7	0.787	38.18	56.00	-17.82	28.46	9.72	QP
8	0.787	27.52	46.00	-18.48	17.80	9.72	AV
9	1.832	36.54	56.00	-19.46	26.76	9.78	QP
10	1.832	26.83	46.00	-19.17	17.05	9.78	AV
11	6.147	32.12	60.00	-27.88	22.14	9.99	QP
12	6.147	23.96	50.00	-26.04	13.97	9.99	AV

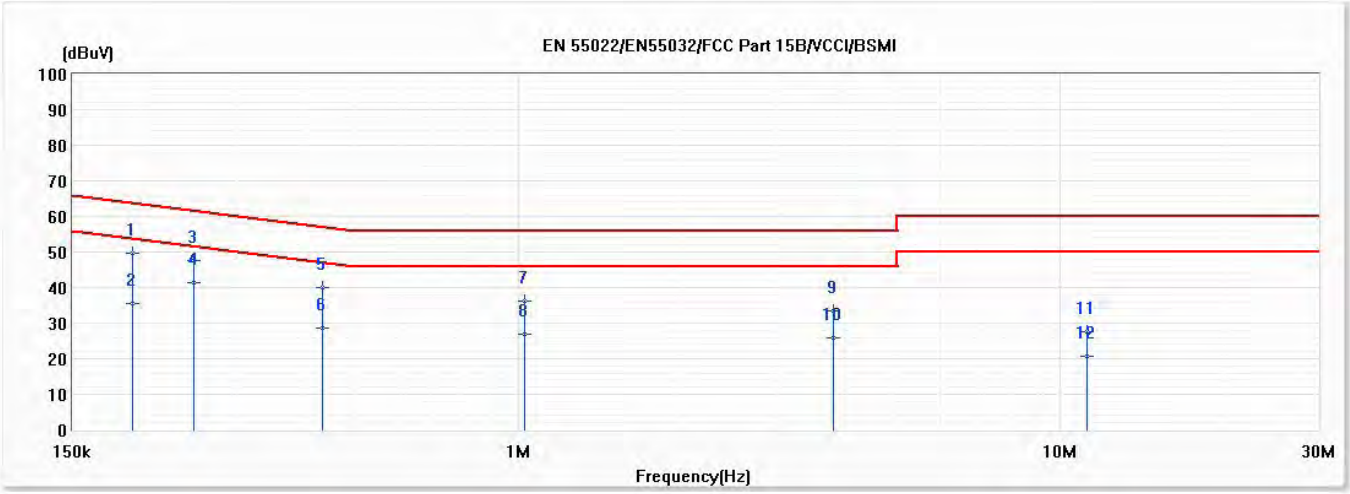
Remark:

1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

Model No	EBM552U	Site	SR2-H
Test Voltage	AC 120V/60Hz	Test Date	2021/2/18
Test Mode	Mode 1: Transmit_Non-BF_EBM552U	Engineer	Scott Lin
Phase	N	Temperature (℃)	20
Test Condition	802.11a, Ch157,5.785G	Humidity (%RH)	43



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.193	49.62	63.90	-14.27	39.99	9.63	QP
2	0.193	35.56	53.90	-18.34	25.92	9.63	AV
3	0.251	47.47	61.73	-14.26	37.82	9.64	QP
*4	0.251	41.21	51.73	-10.51	31.57	9.64	AV
5	0.434	39.84	57.17	-17.33	30.17	9.67	QP
6	0.434	28.74	47.17	-18.42	19.07	9.67	AV
7	1.028	36.16	56.00	-19.84	26.44	9.72	QP
8	1.028	27.06	46.00	-18.94	17.34	9.72	AV
9	3.803	33.47	56.00	-22.53	23.60	9.87	QP
10	3.803	25.83	46.00	-20.17	15.96	9.87	AV
11	11.207	27.60	60.00	-32.40	17.41	10.19	QP
12	11.207	20.77	50.00	-29.23	10.58	10.19	AV

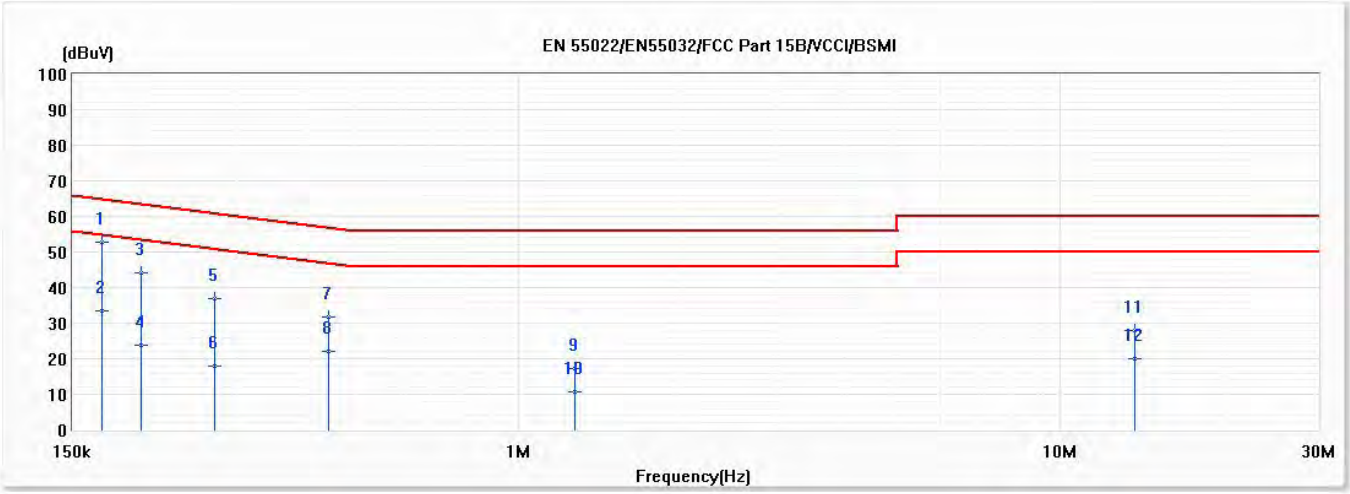
Remark:

1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

Model No	EBM552	Site	SR2-H
Test Voltage	AC 120V/60Hz	Test Date	2021/2/18
Test Mode	Mode 2: Transmit_Non-BF_EBM552	Engineer	Scott Lin
Phase	L	Temperature (℃)	20
Test Condition	802.11a, Ch157,5.785G	Humidity (%RH)	43



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
*1	0.170	52.67	64.97	-12.29	43.03	9.65	QP
2	0.170	33.58	54.97	-21.39	23.93	9.65	AV
3	0.201	44.06	63.56	-19.50	34.42	9.65	QP
4	0.201	23.63	53.56	-29.93	13.99	9.65	AV
5	0.275	37.03	60.97	-23.94	27.38	9.65	QP
6	0.275	18.06	50.97	-32.92	8.40	9.65	AV
7	0.445	31.57	56.96	-25.39	21.89	9.68	QP
8	0.445	22.17	46.96	-24.80	12.48	9.68	AV
9	1.273	17.37	56.00	-38.63	7.61	9.75	QP
10	1.273	10.73	46.00	-35.27	0.98	9.75	AV
11	13.704	27.76	60.00	-32.24	17.54	10.22	QP
12	13.704	20.02	50.00	-29.98	9.80	10.22	AV

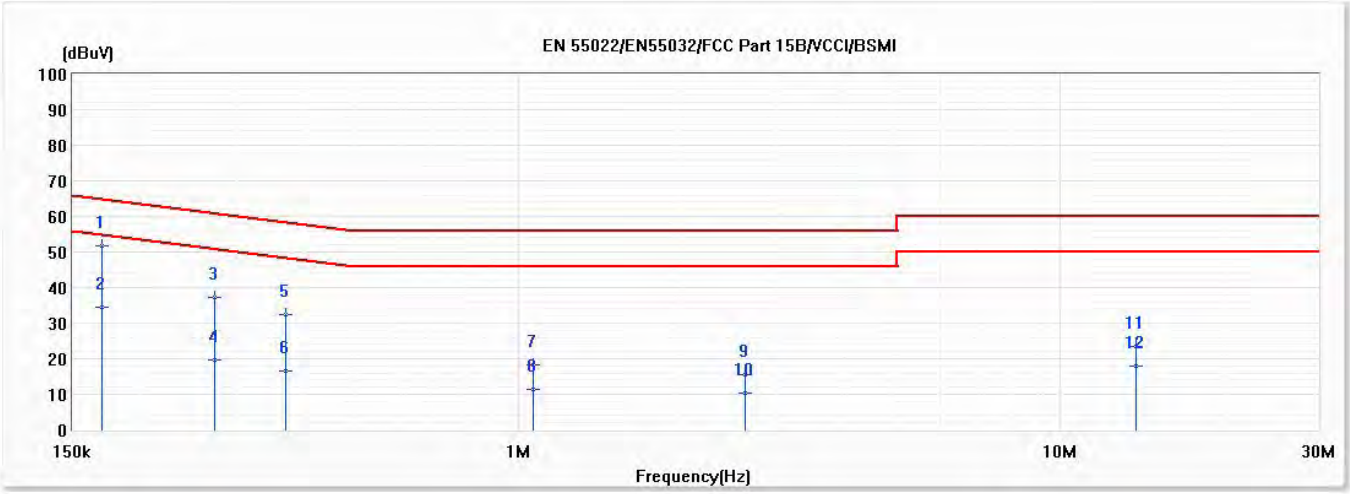
Remark:

1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

Model No	EBM552	Site	SR2-H
Test Voltage	AC 120V/60Hz	Test Date	2021/2/18
Test Mode	Mode 2: Transmit_Non-BF_EBM552	Engineer	Scott Lin
Phase	N	Temperature (℃)	20
Test Condition	802.11a, Ch157,5.785G	Humidity (%RH)	43



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
*1	0.170	51.87	64.98	-13.10	42.24	9.64	QP
2	0.170	34.55	54.98	-20.42	24.92	9.64	AV
3	0.274	37.16	60.99	-23.83	27.51	9.64	QP
4	0.274	19.63	50.99	-31.36	9.99	9.64	AV
5	0.371	32.49	58.48	-26.00	22.82	9.67	QP
6	0.371	16.66	48.48	-31.83	6.99	9.67	AV
7	1.063	18.25	56.00	-37.75	8.53	9.72	QP
8	1.063	11.47	46.00	-34.53	1.75	9.72	AV
9	2.620	15.64	56.00	-40.36	5.83	9.81	QP
10	2.620	10.50	46.00	-35.50	0.69	9.81	AV
11	13.811	23.29	60.00	-36.71	12.99	10.30	QP
12	13.811	17.81	50.00	-32.19	7.51	10.30	AV

Remark:

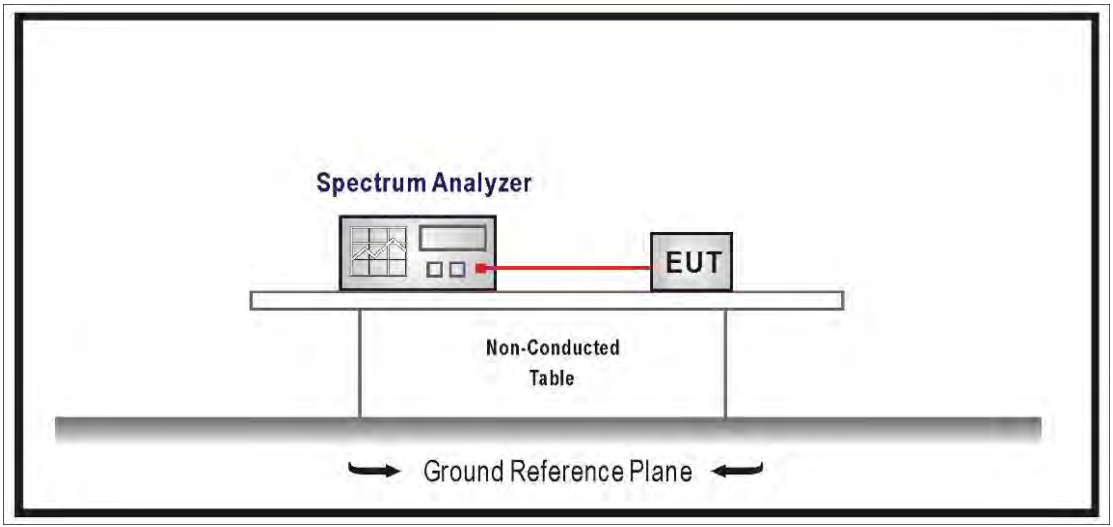
1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

3. 26dB & 99% & DTS Bandwidth

3.1. Test Setup



3.2. Limits

99% & 26dB Bandwidth : No Required

6dB Bandwidth ≧ 500KHz

3.3. Test Procedure

99% & 26dB Bandwidth :

The EUT was tested according to U-NII test procedure of KDB 789033 D02 v02r01

Set RBW 1% of the emission bandwidth, VBW equal to 3 times the RBW.

DTS Bandwidth :

Set RBW = 100KHz, VBW≧3xRBW, Sweep time=Auto, Set Peak detector.

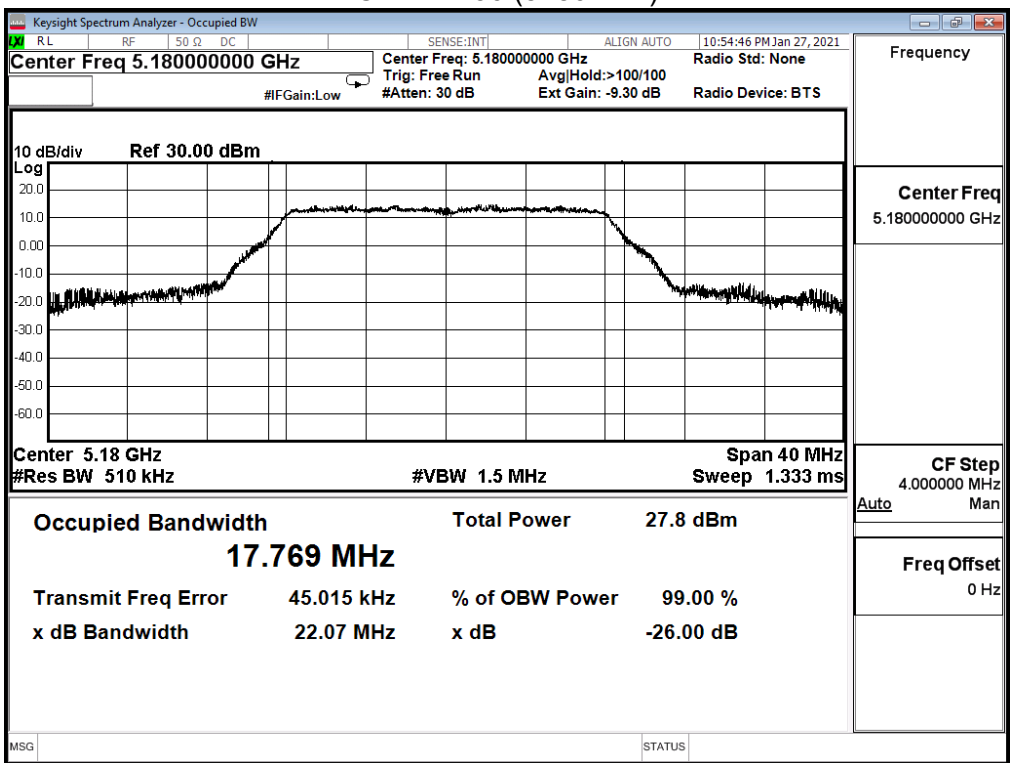
3.4. Test Result

Product	Mesh Wi-Fi Router		
Test Item	26dB & 99% Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26~2021/01/27	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

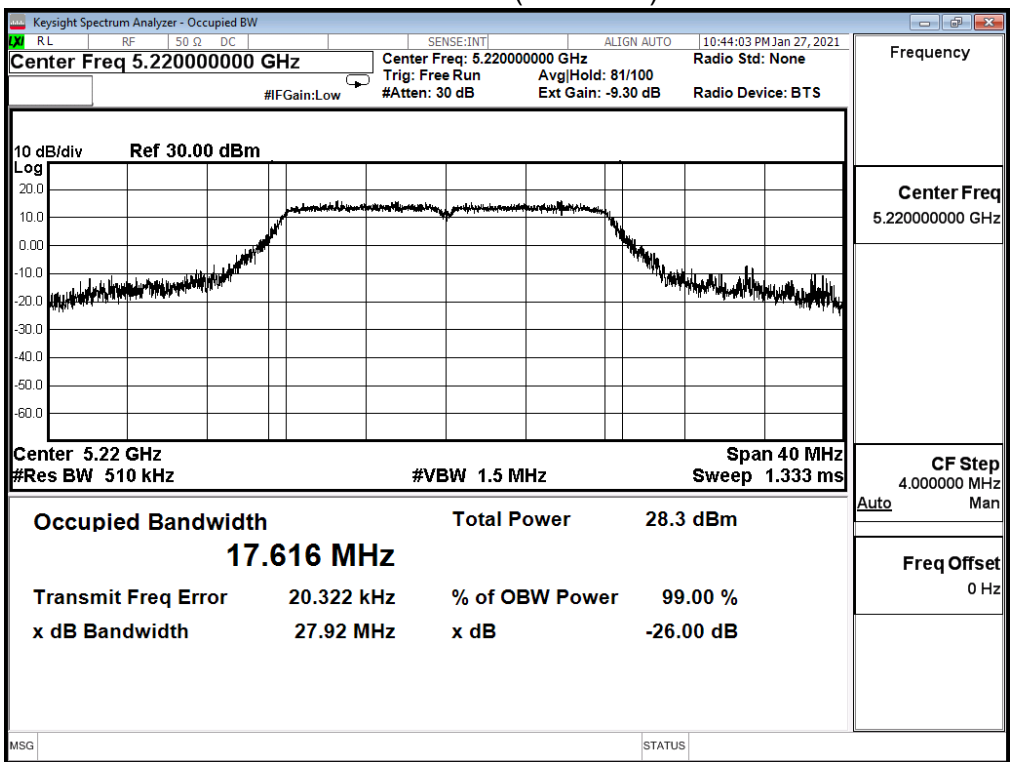
IEEE 802.11a (ANT 0)

Channel No.	Frequency (MHz)	Measure Value		Limit (MHz)
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	
36	5180	17.769	22.070	--
44	5220	17.616	27.920	--
48	5240	17.531	32.730	--
52	5260	17.438	21.950	--
60	5300	17.503	22.090	--
64	5320	17.489	21.860	--
100	5500	17.557	21.990	--
116	5580	17.595	22.030	--
140	5700	17.552	21.930	--
149	5745	21.955	N/A	--
157	5785	19.135		--
165	5825	19.216		--

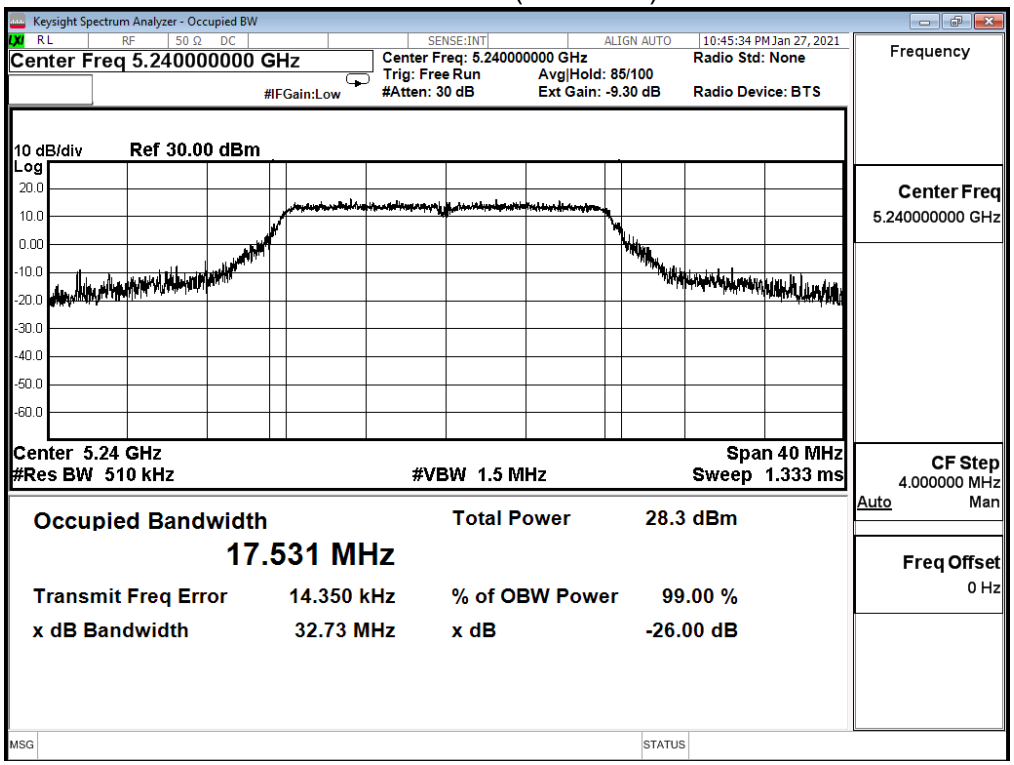
Channel 36 (5180MHz)



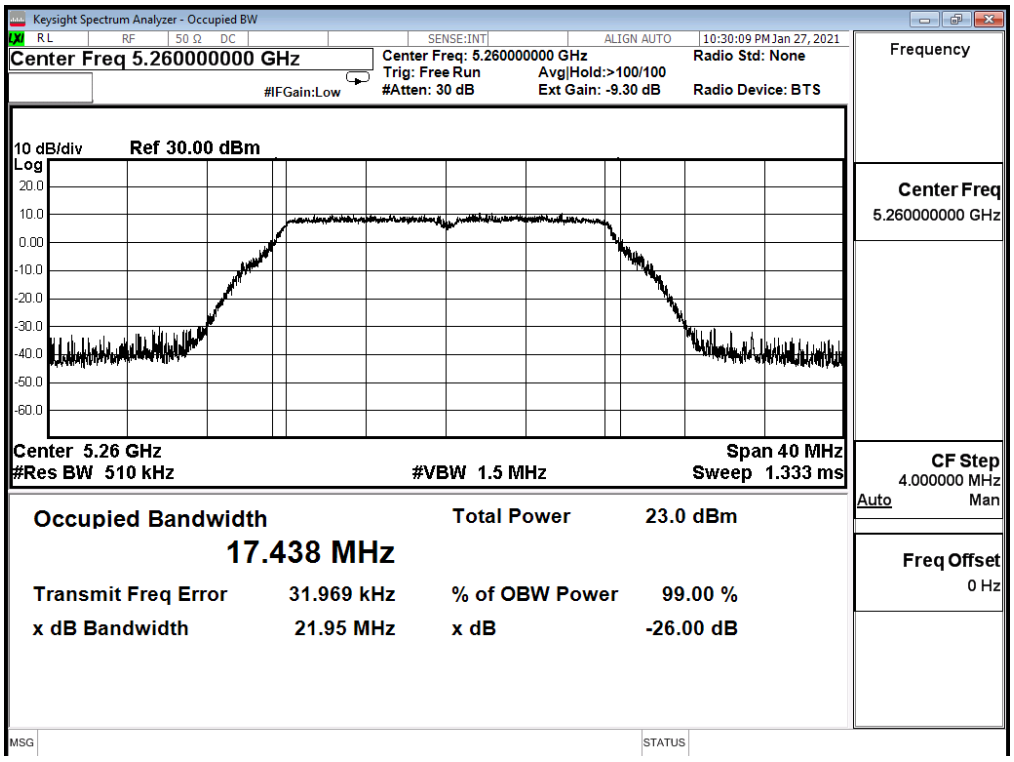
Channel 44 (5220MHz)



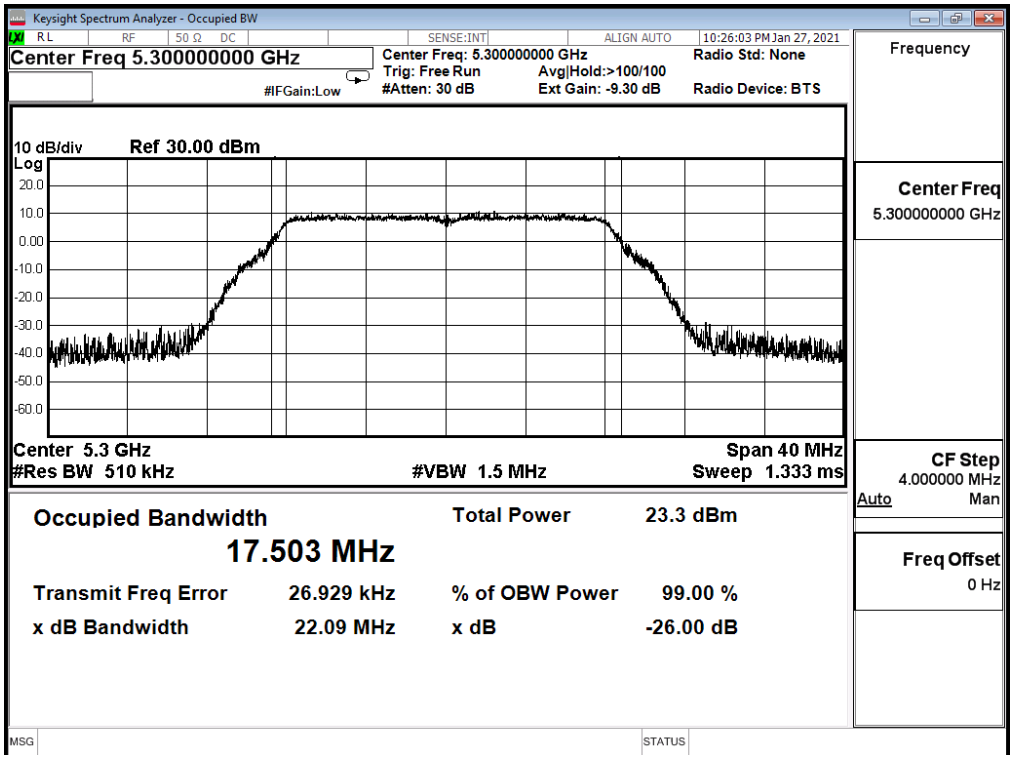
Channel 48 (5240MHz)



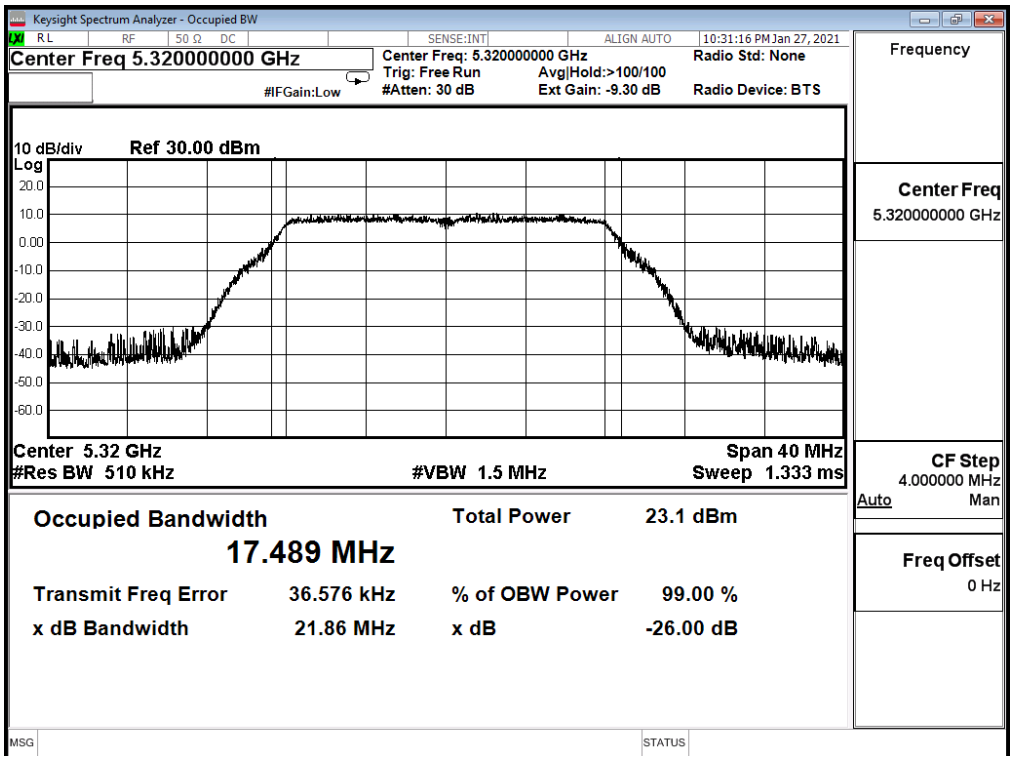
Channel 52 (5260MHz)



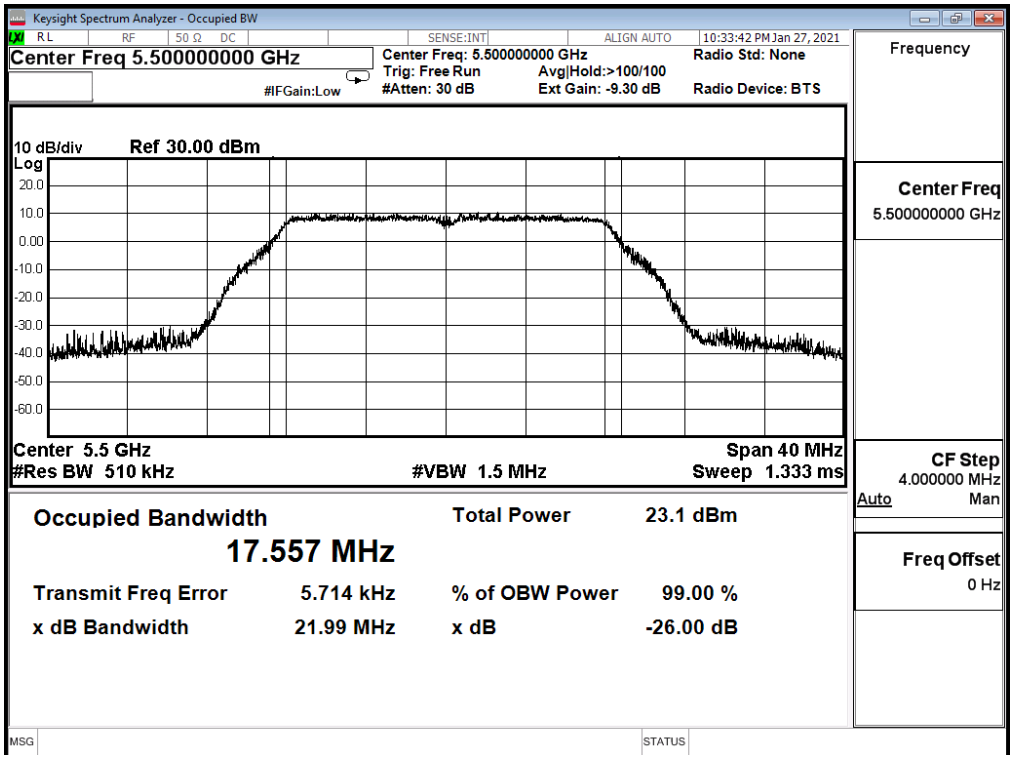
Channel 60 (5300MHz)



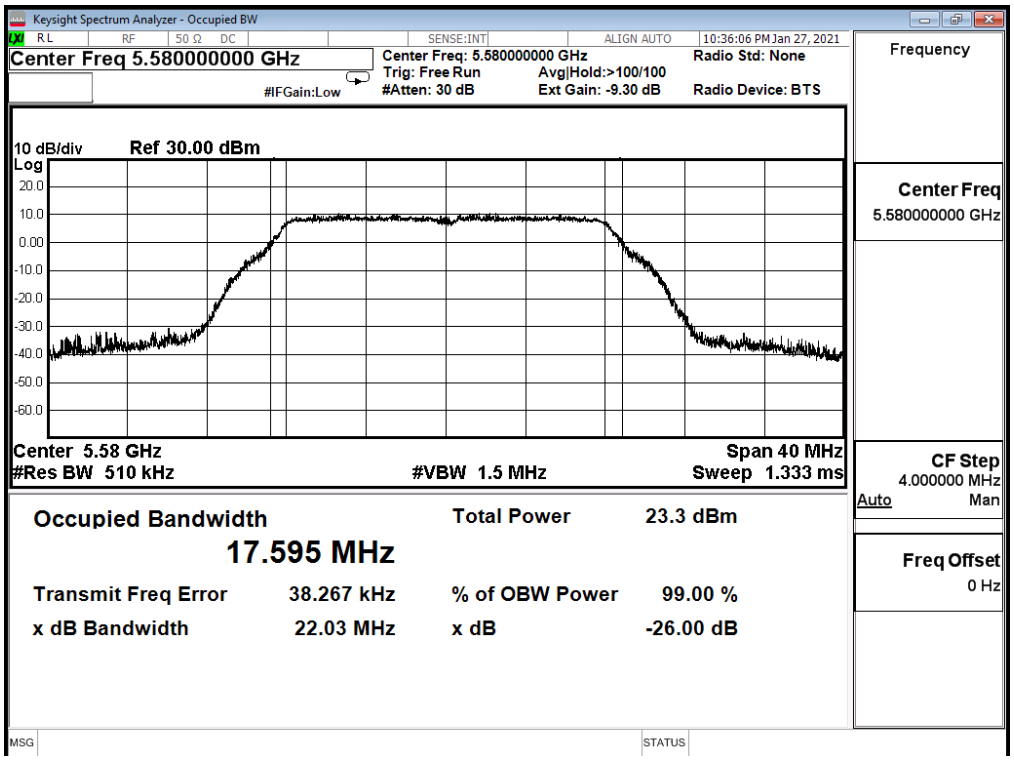
Channel 64 (5320MHz)



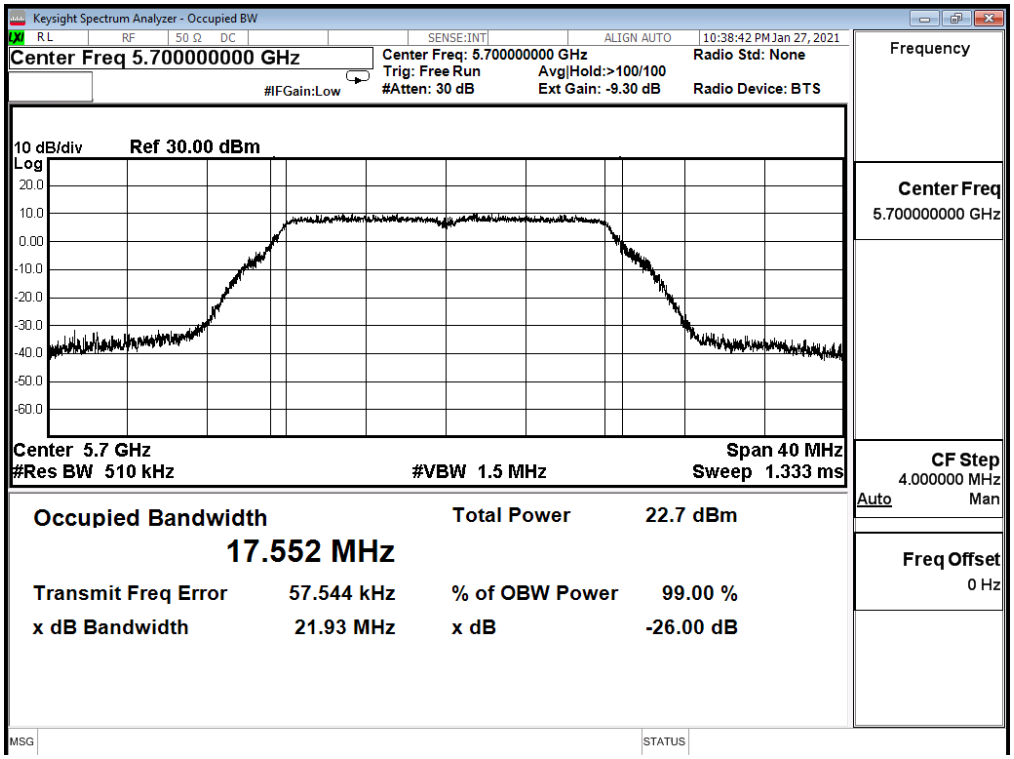
Channel 100 (5500MHz)



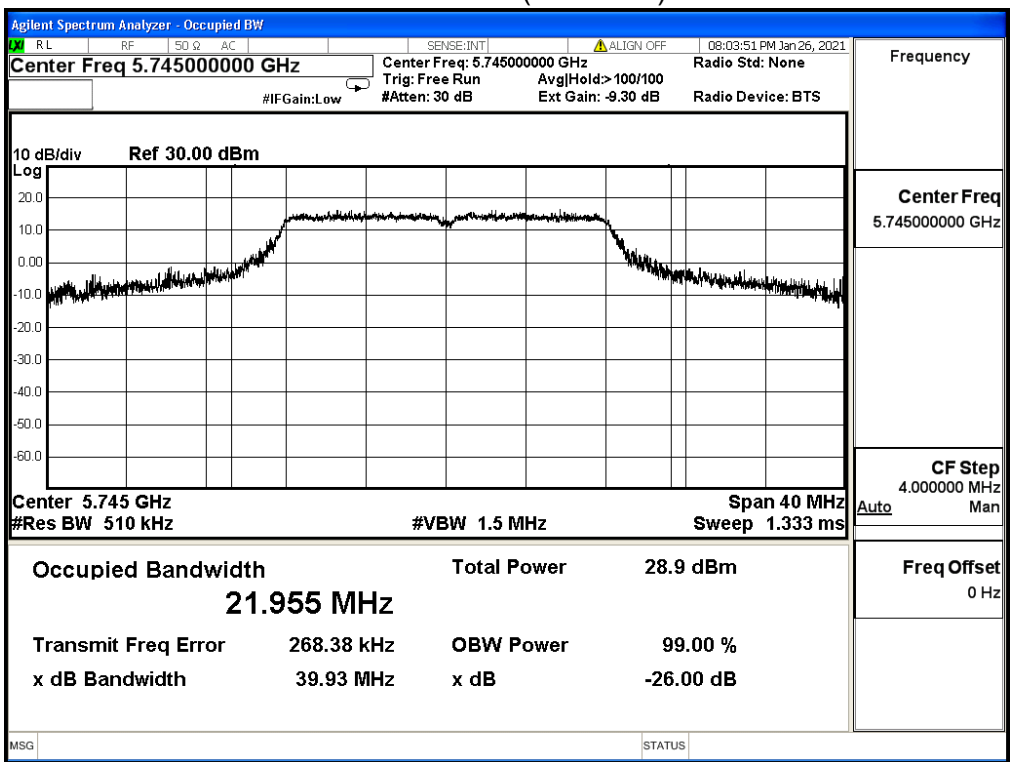
Channel 116 (5580MHz)



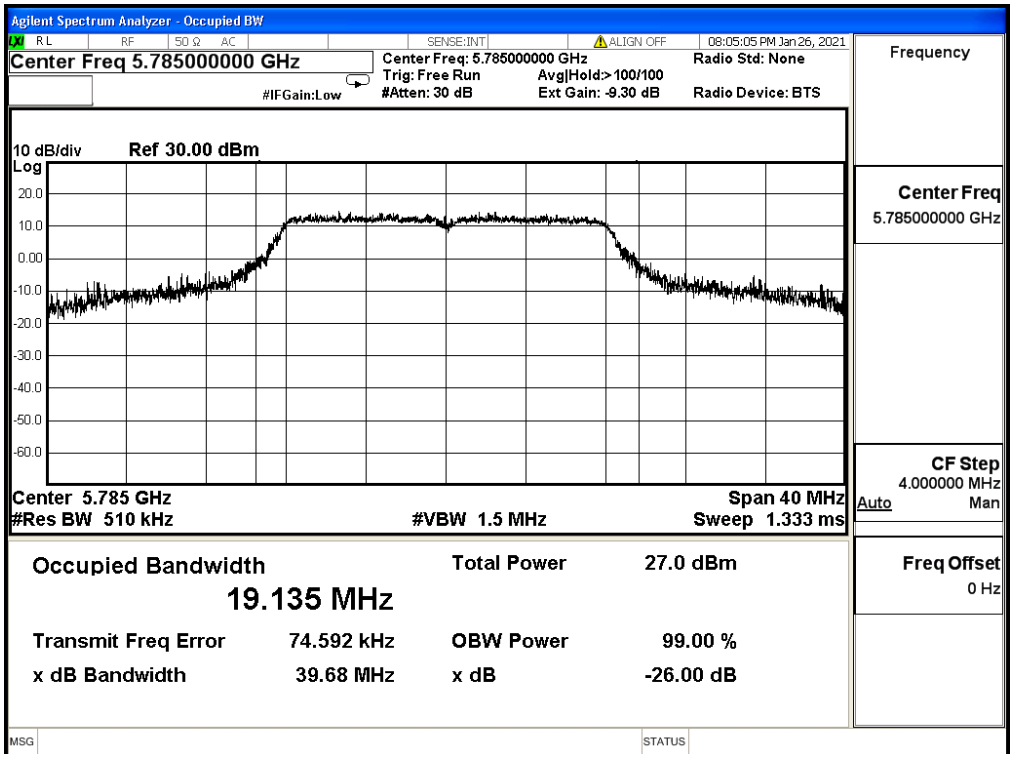
Channel 140 (5700MHz)



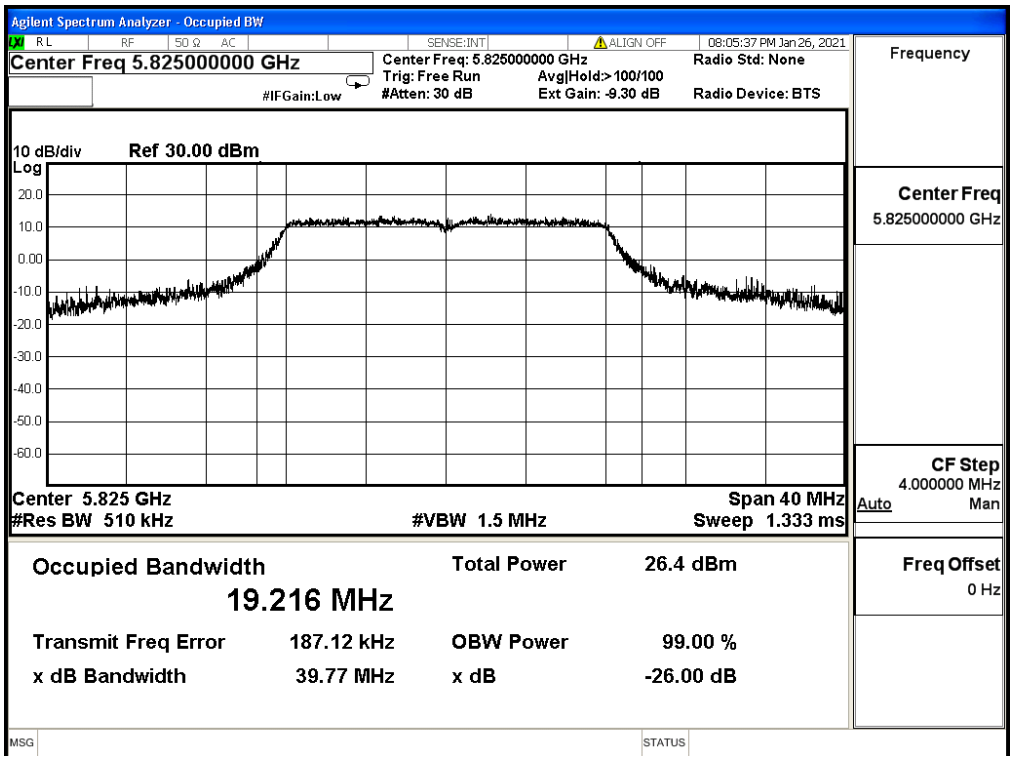
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

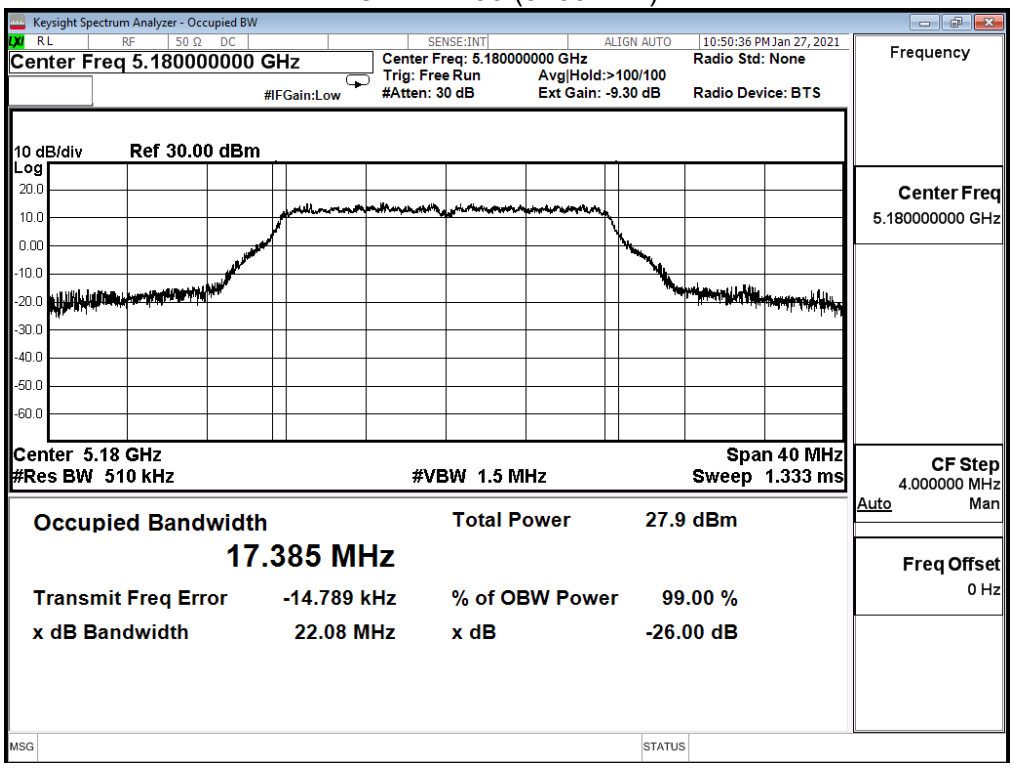


Product	Mesh Wi-Fi Router		
Test Item	26dB & 99% Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26~2021/01/27	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

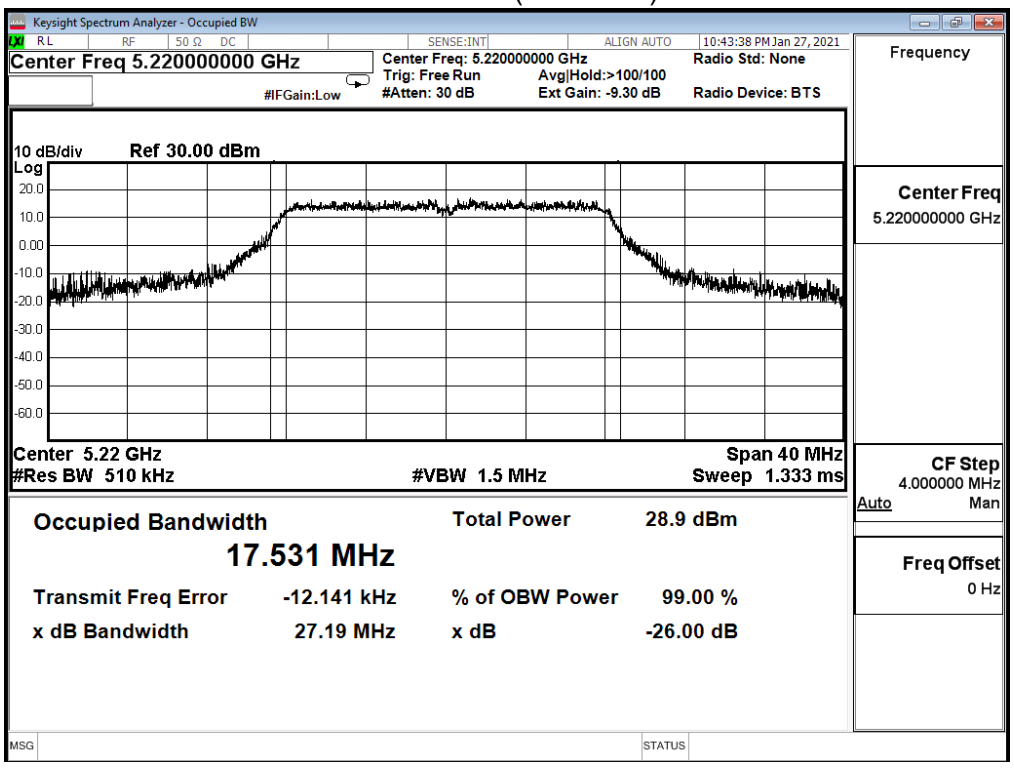
IEEE 802.11a (ANT 1)

Channel No.	Frequency (MHz)	Measure Value		Limit (MHz)
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	
36	5180	17.385	22.080	--
44	5220	17.531	27.190	--
48	5240	17.570	29.440	--
52	5260	17.296	21.640	--
60	5300	17.277	21.650	--
64	5320	17.243	21.490	--
100	5500	17.245	21.520	--
116	5580	17.221	21.510	--
140	5700	17.243	21.670	--
149	5745	21.997	N/A	--
157	5785	18.951		--
165	5825	18.741		--

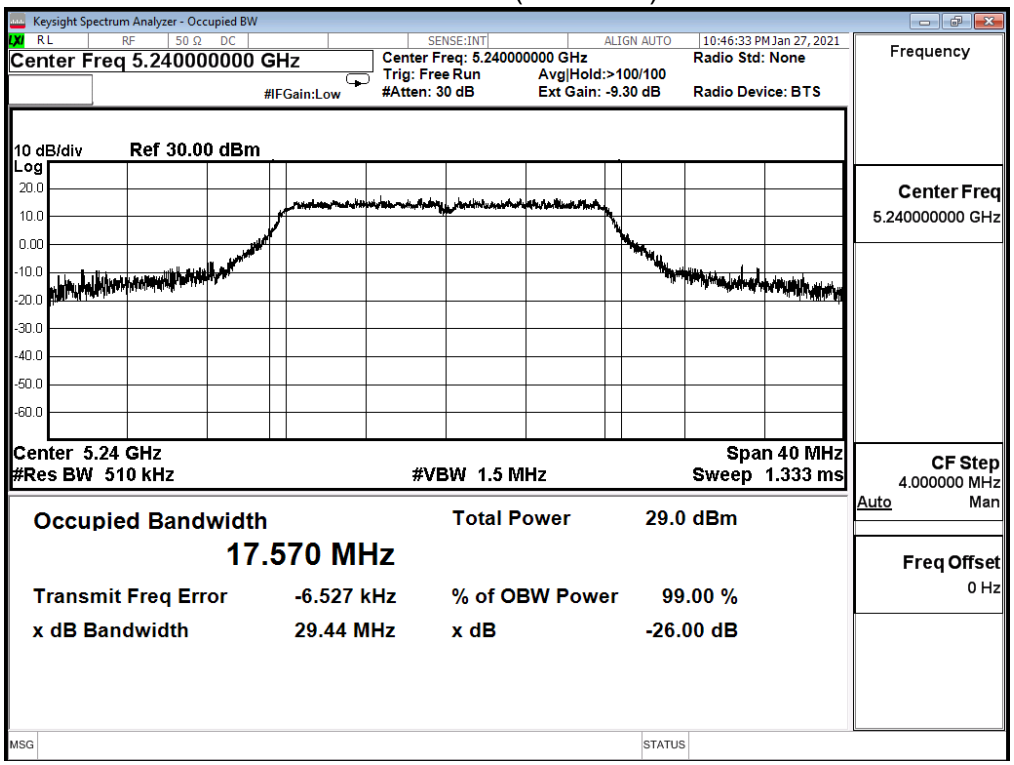
Channel 36 (5180MHz)



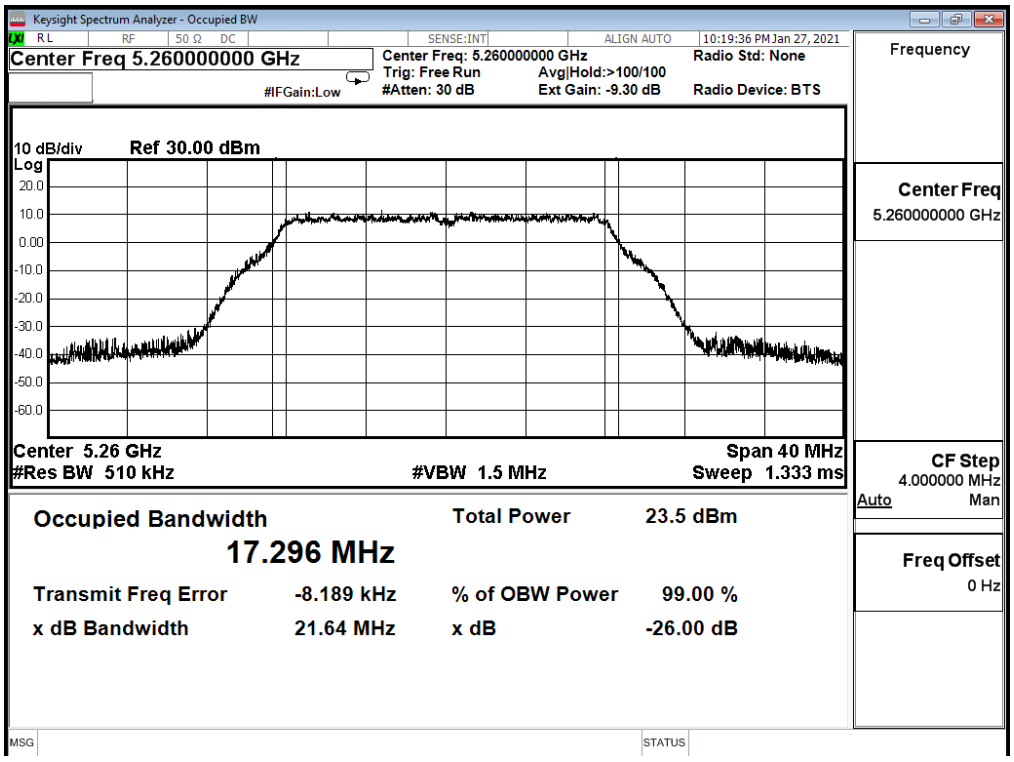
Channel 44 (5220MHz)



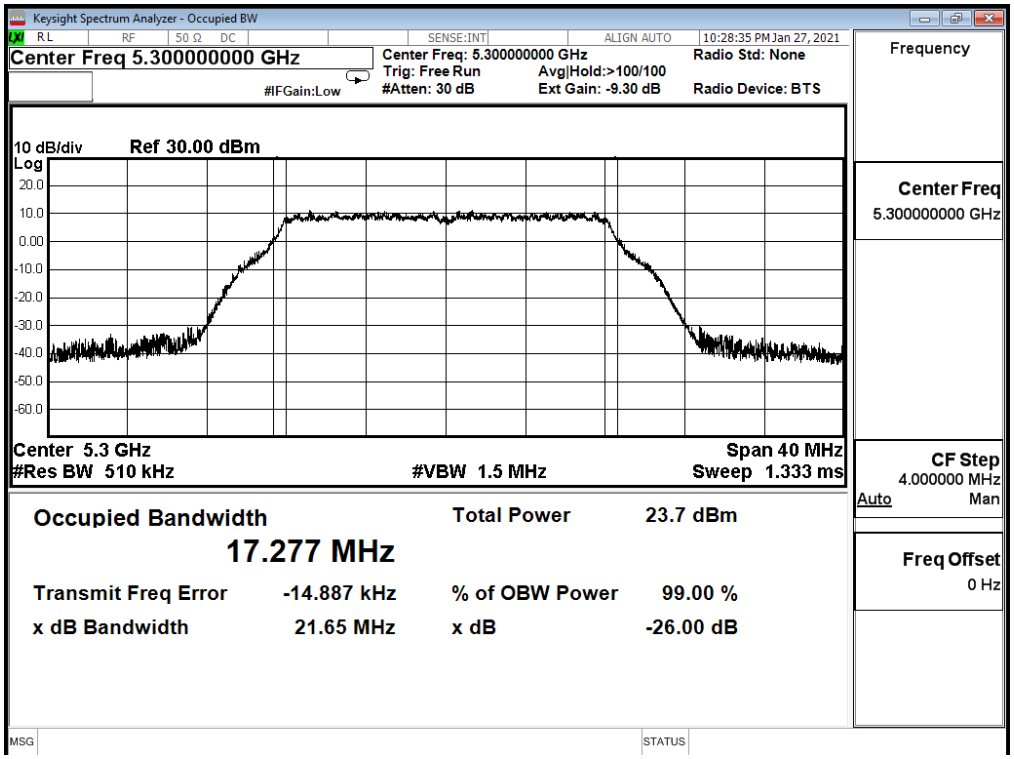
Channel 48 (5240MHz)



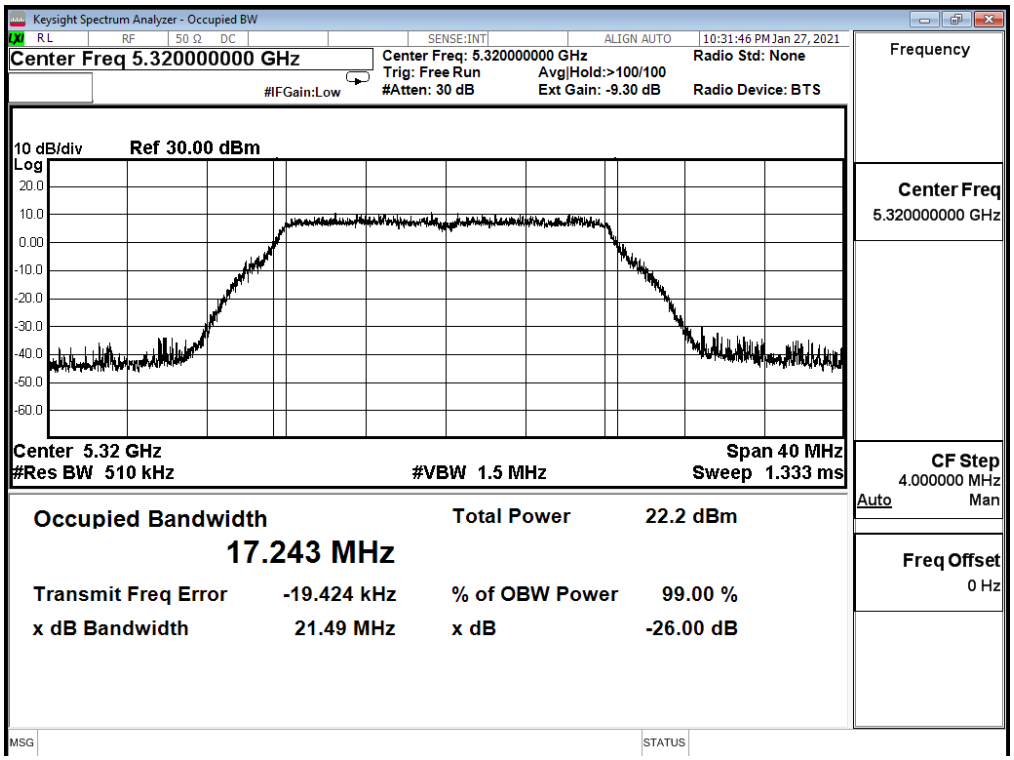
Channel 52 (5260MHz)



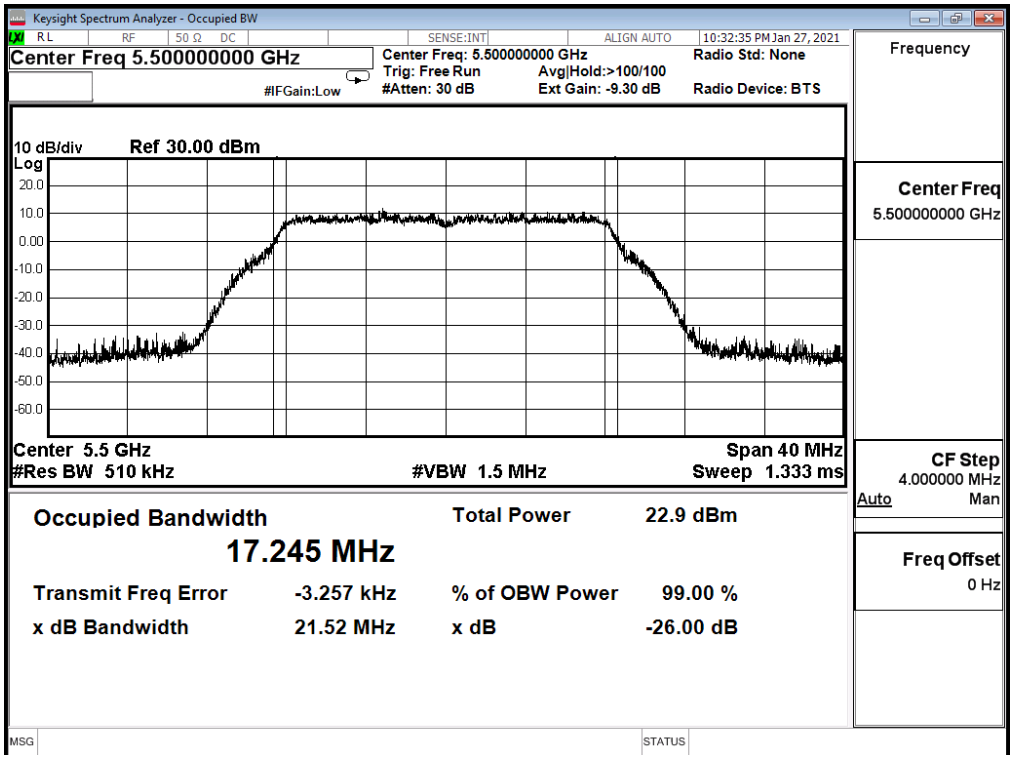
Channel 60 (5300MHz)



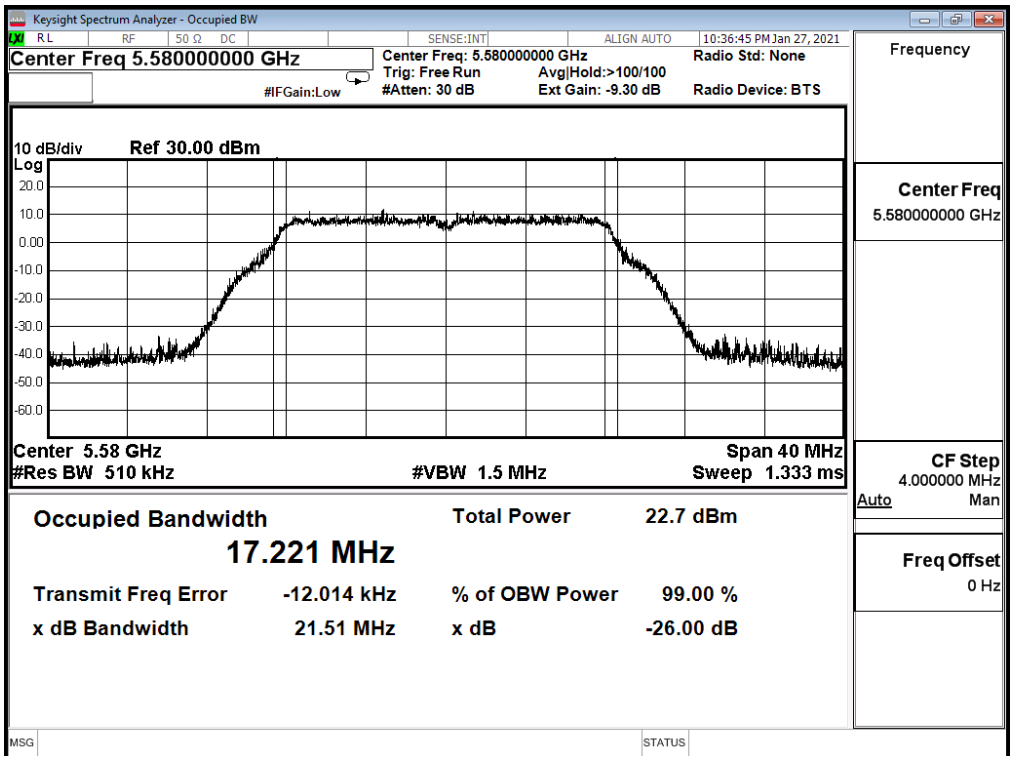
Channel 64 (5320MHz)



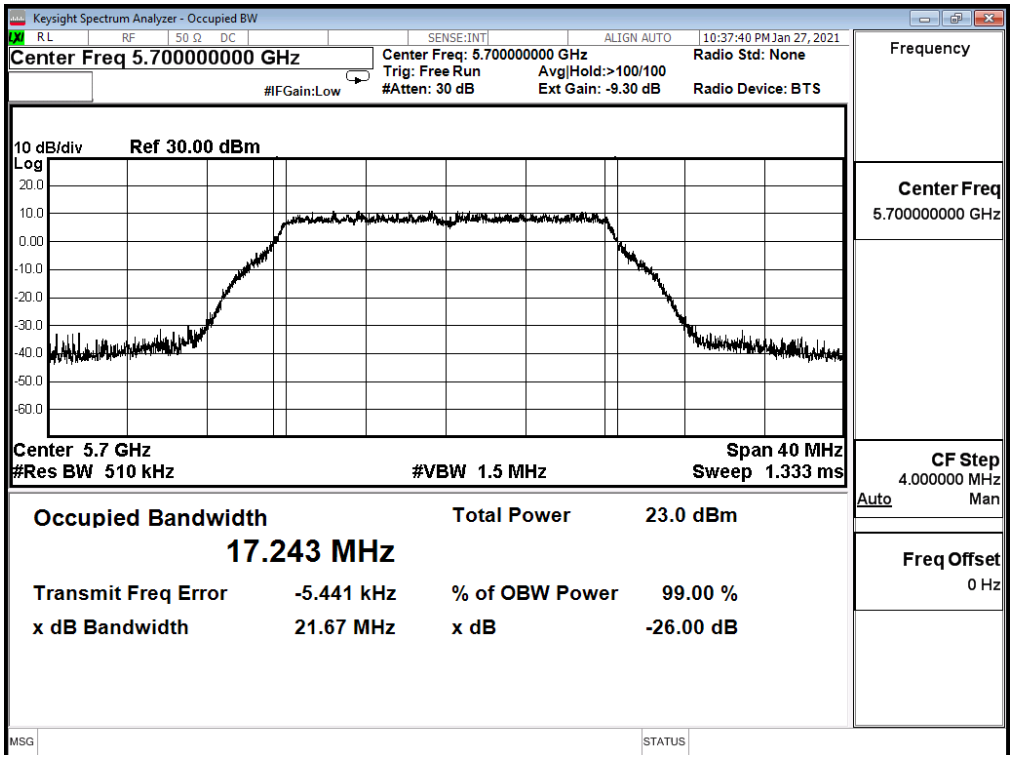
Channel 100 (5500MHz)



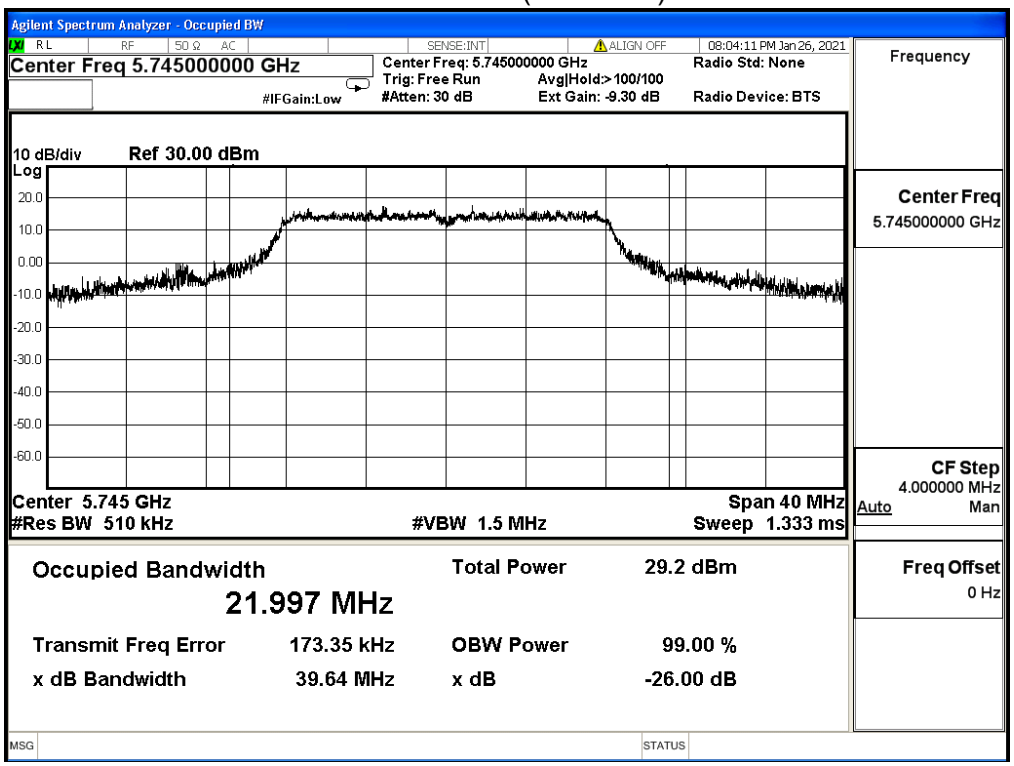
Channel 116 (5580MHz)



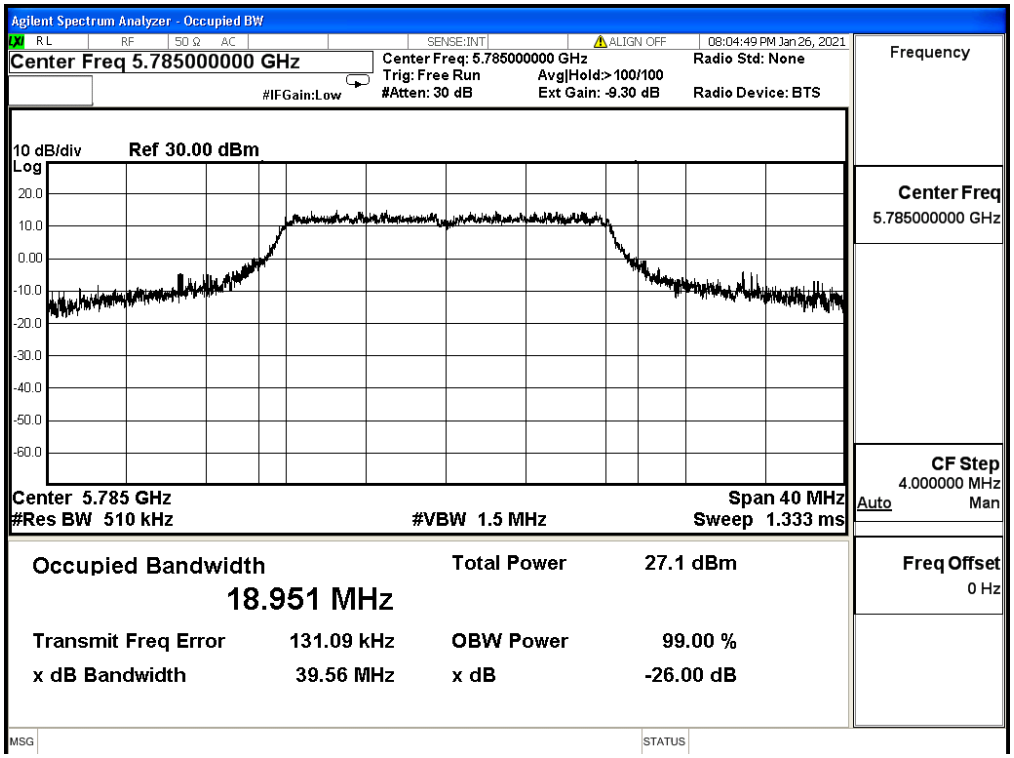
Channel 140 (5700MHz)



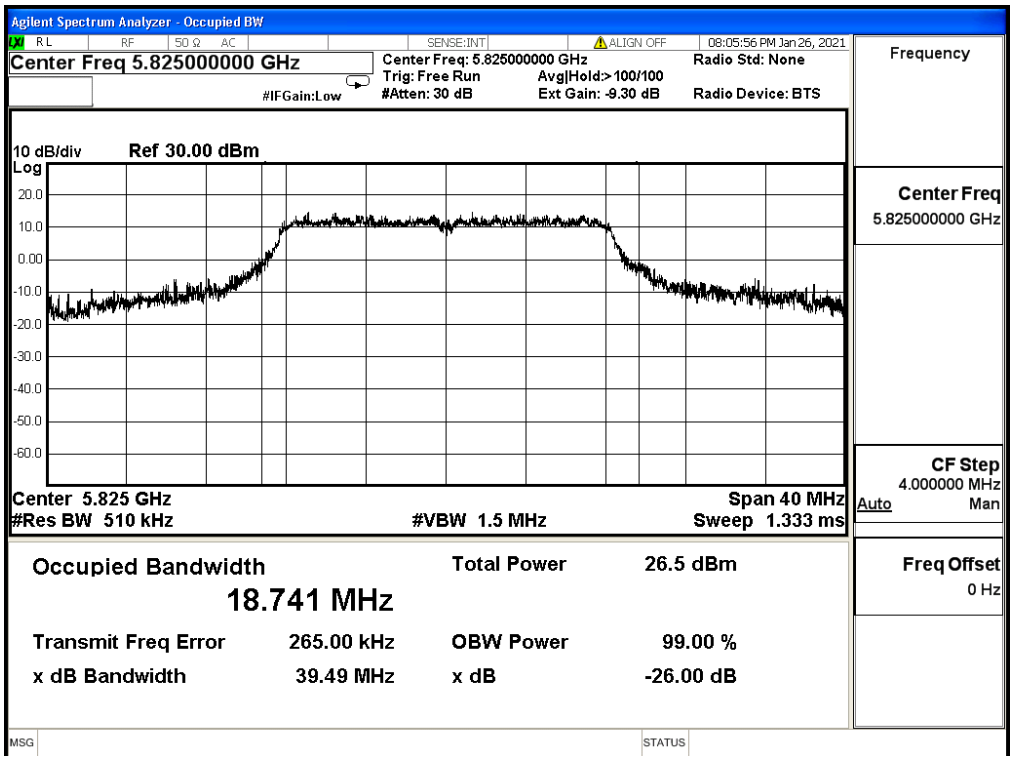
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

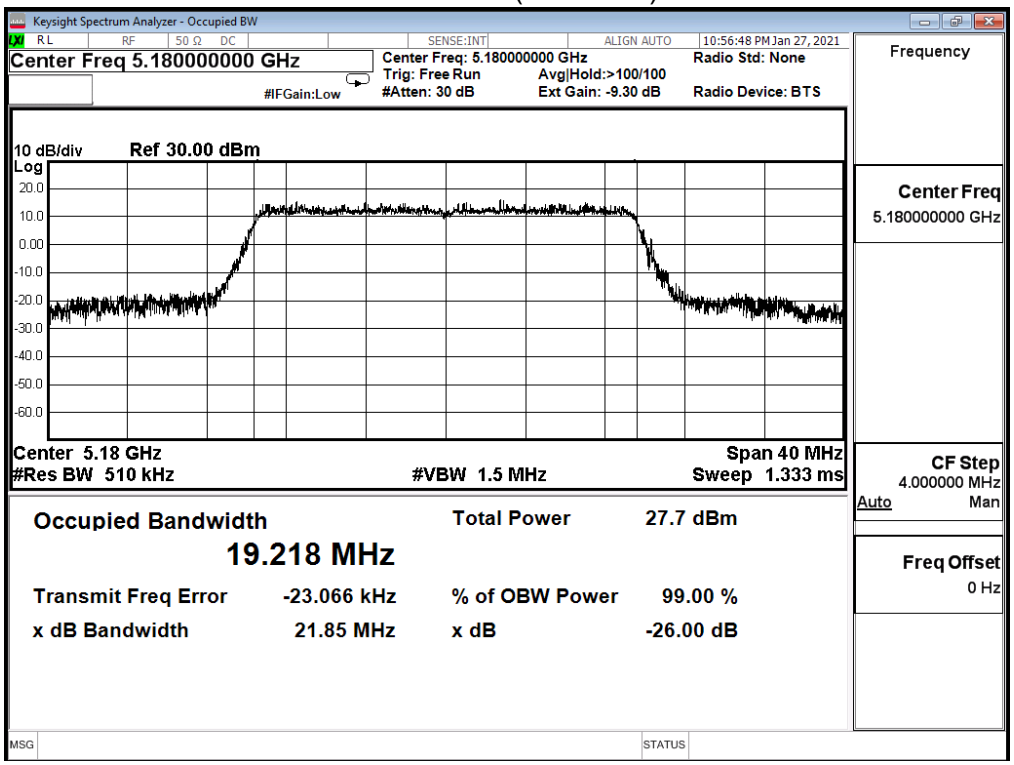


Product	Mesh Wi-Fi Router		
Test Item	26dB & 99% Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26~2021/01/27	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

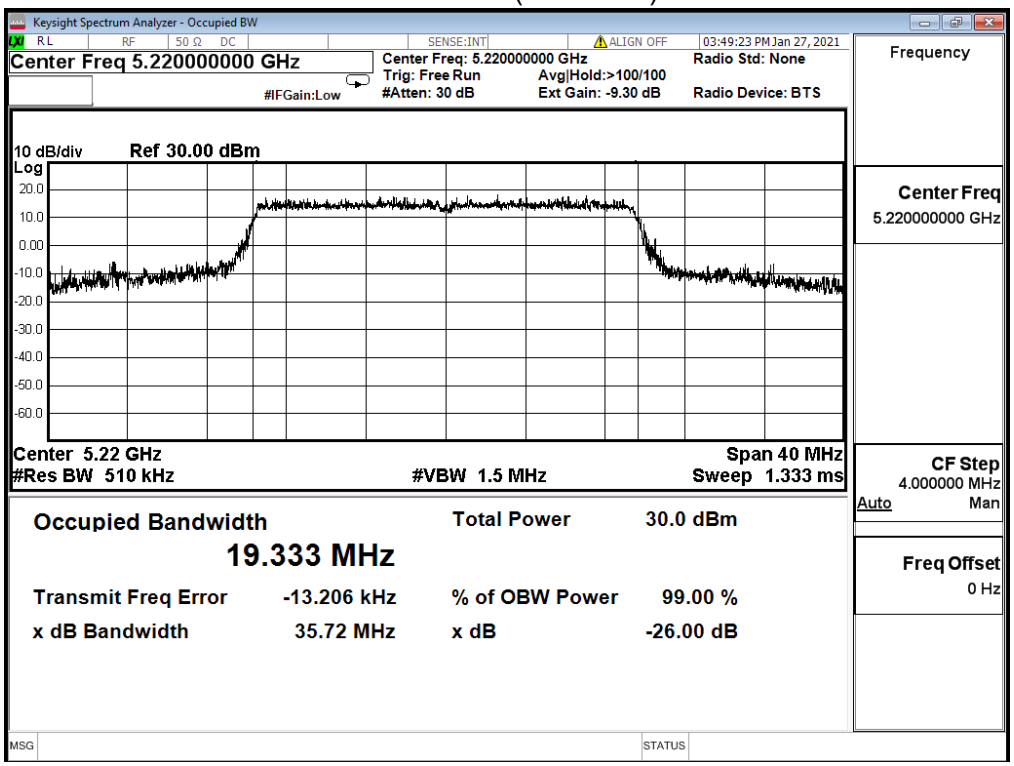
IEEE 802.11ax_20M(ANT 0)

Channel No.	Frequency (MHz)	Measure Value		Limit (MHz)
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	
36	5180	19.218	21.850	--
44	5220	19.333	35.720	--
48	5240	19.381	35.990	--
52	5260	19.155	21.730	--
60	5300	19.174	21.650	--
64	5320	19.141	21.680	--
100	5500	19.151	21.830	--
116	5580	19.168	21.670	--
140	5700	19.153	22.020	--
149	5745	22.520	N/A	--
157	5785	20.283		--
165	5825	19.951		--

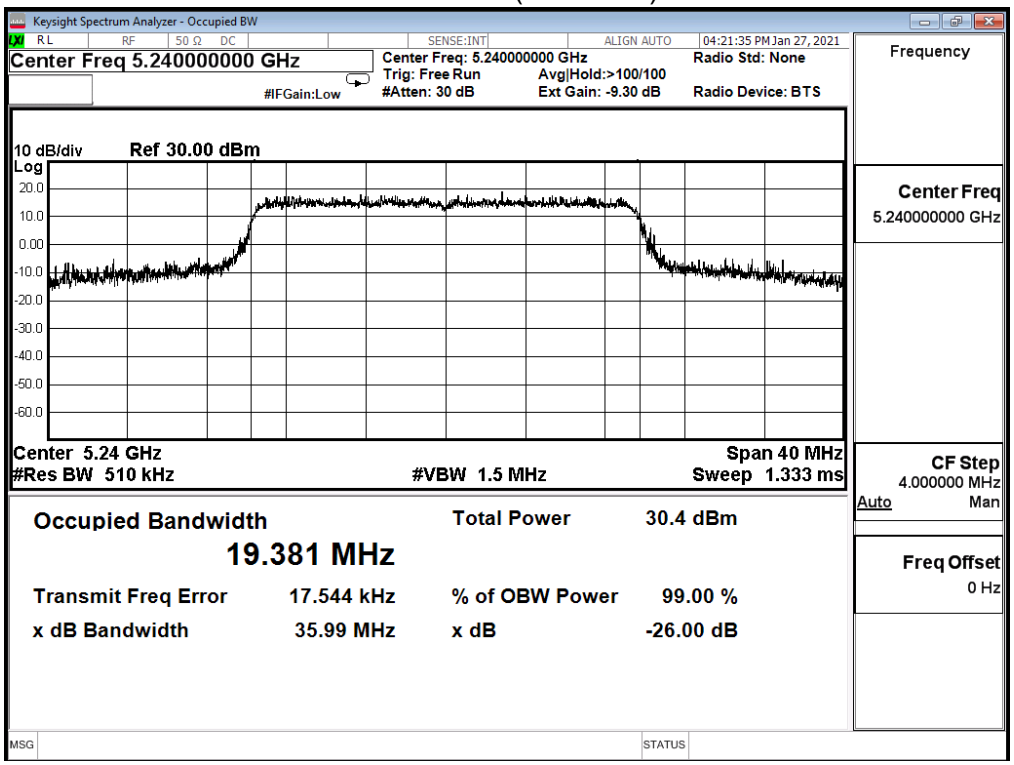
Channel 36 (5180MHz)



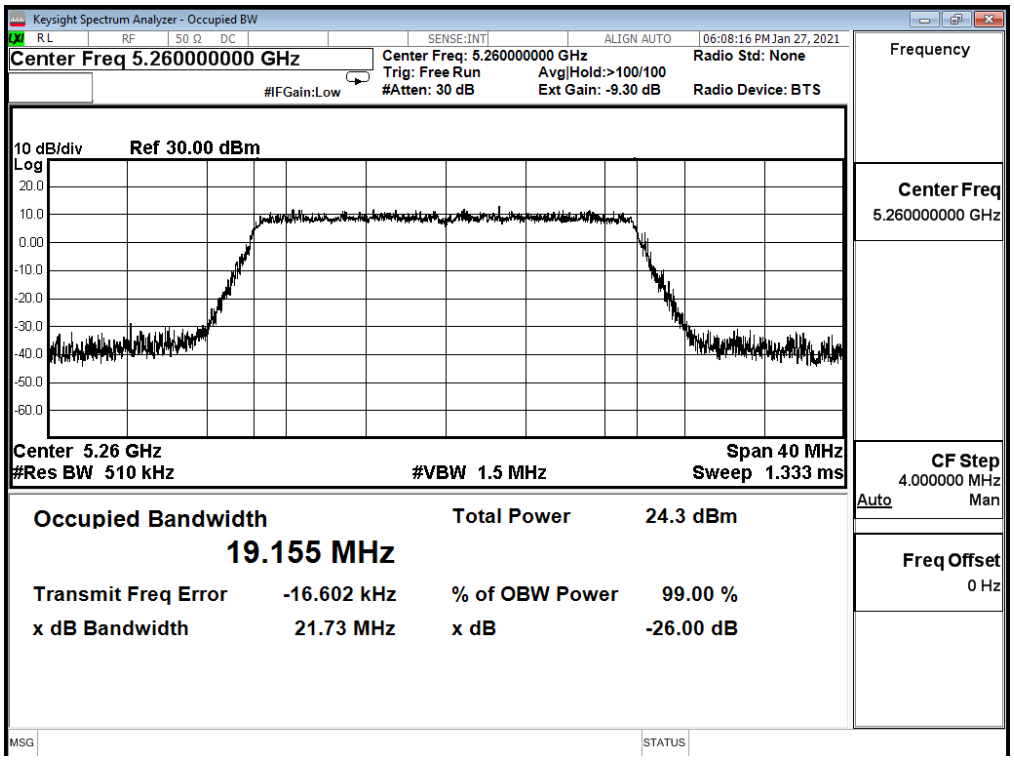
Channel 44 (5220MHz)



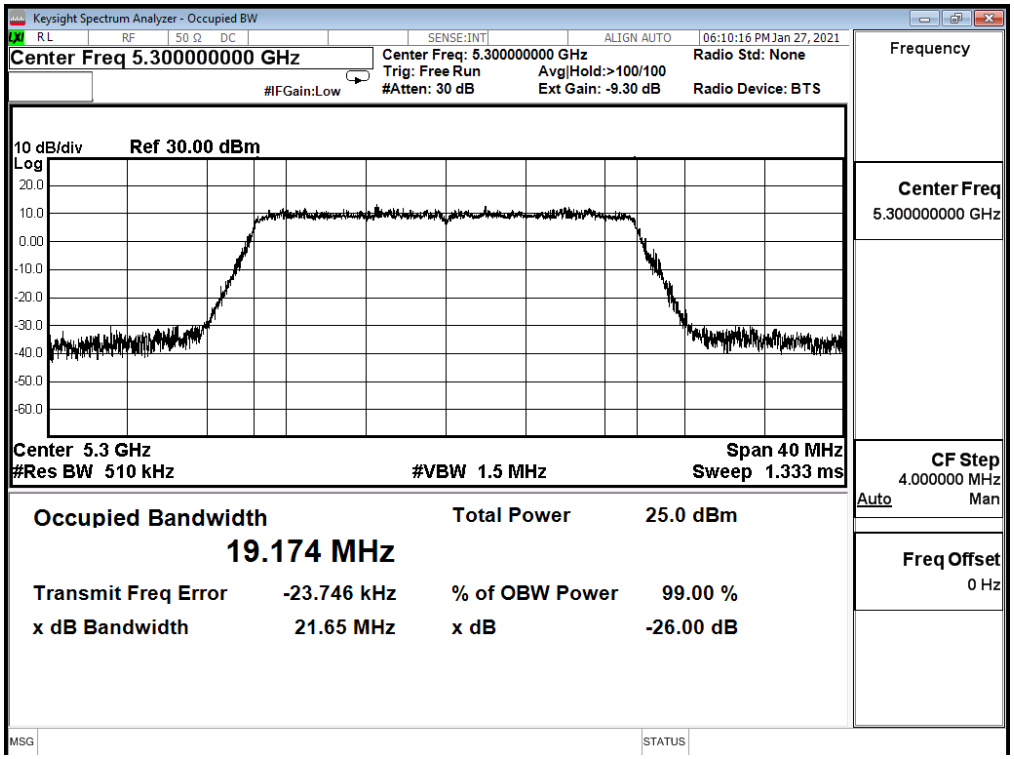
Channel 48 (5240MHz)



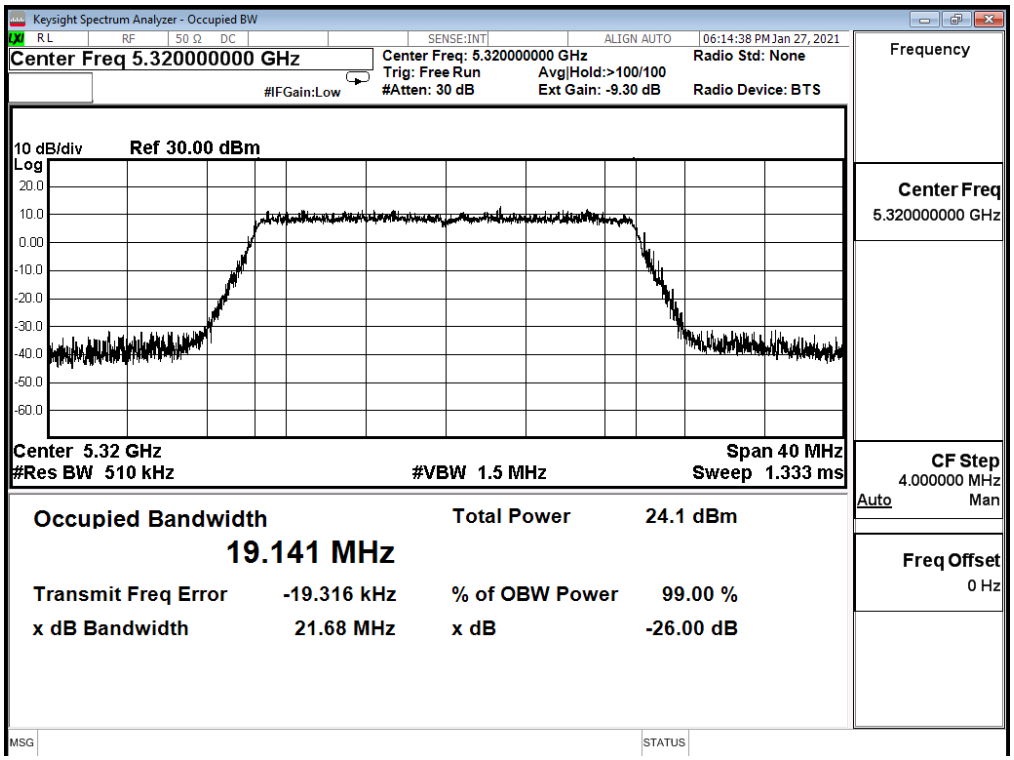
Channel 52 (5260MHz)



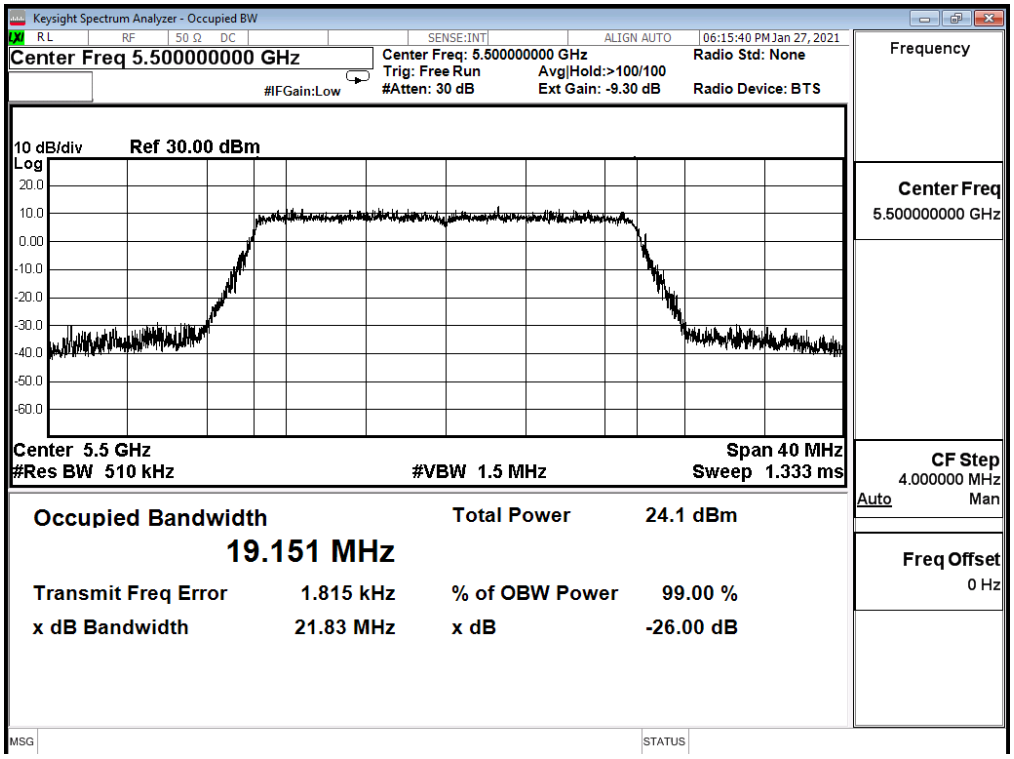
Channel 60 (5300MHz)



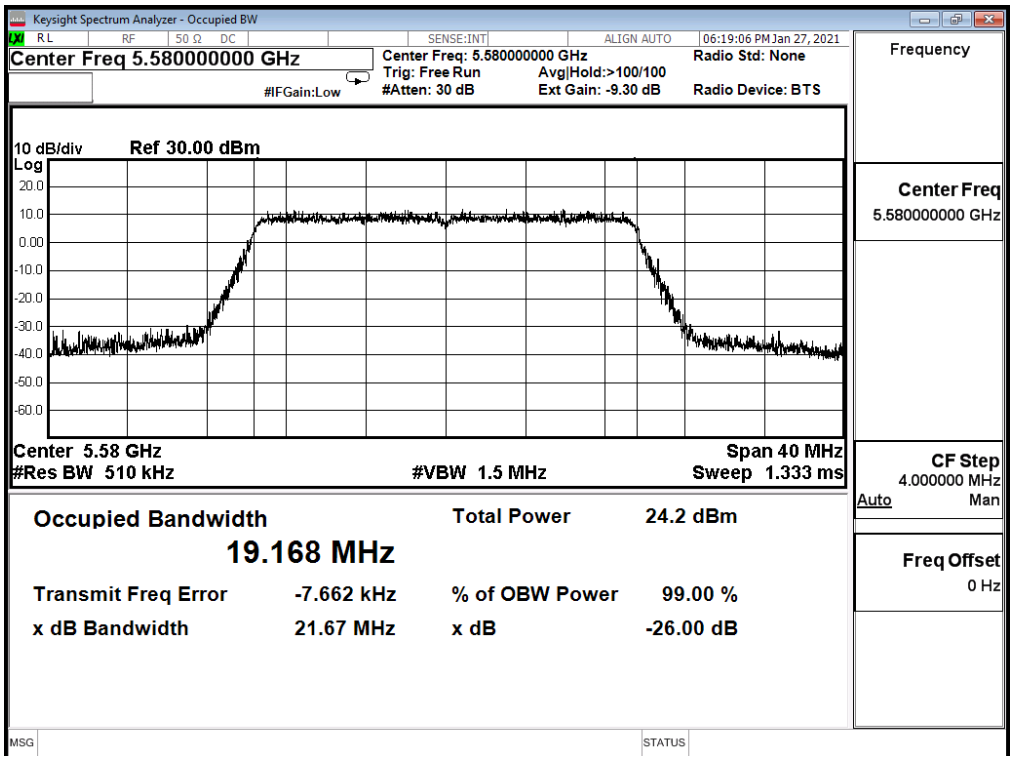
Channel 64 (5320MHz)



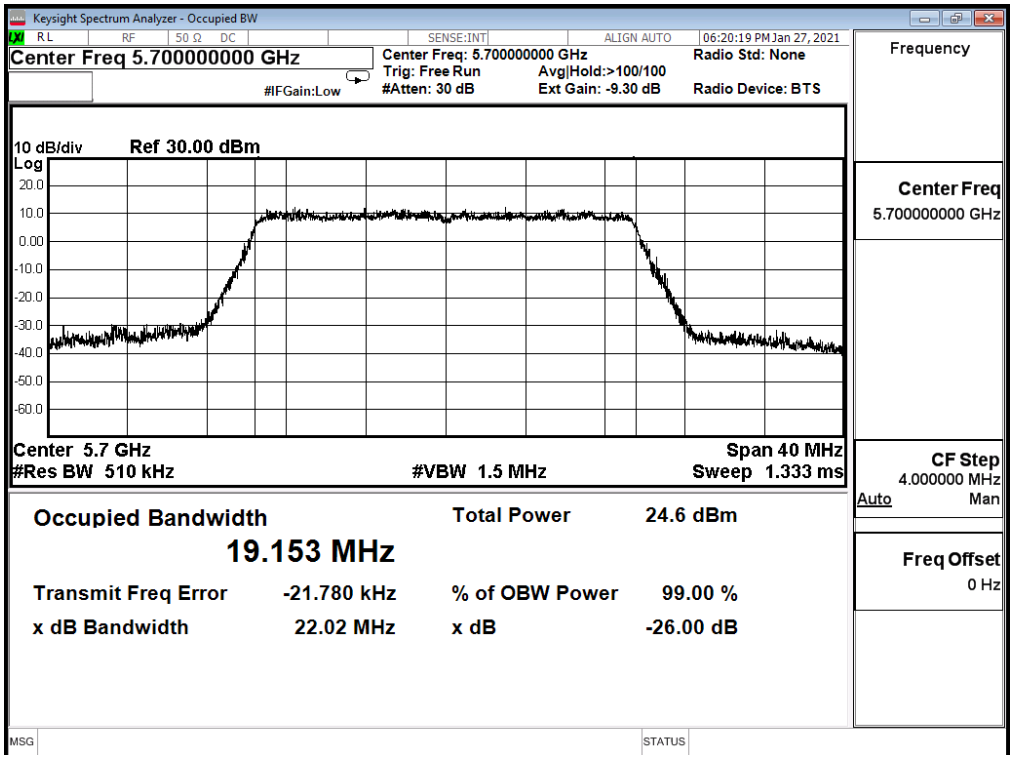
Channel 100 (5500MHz)



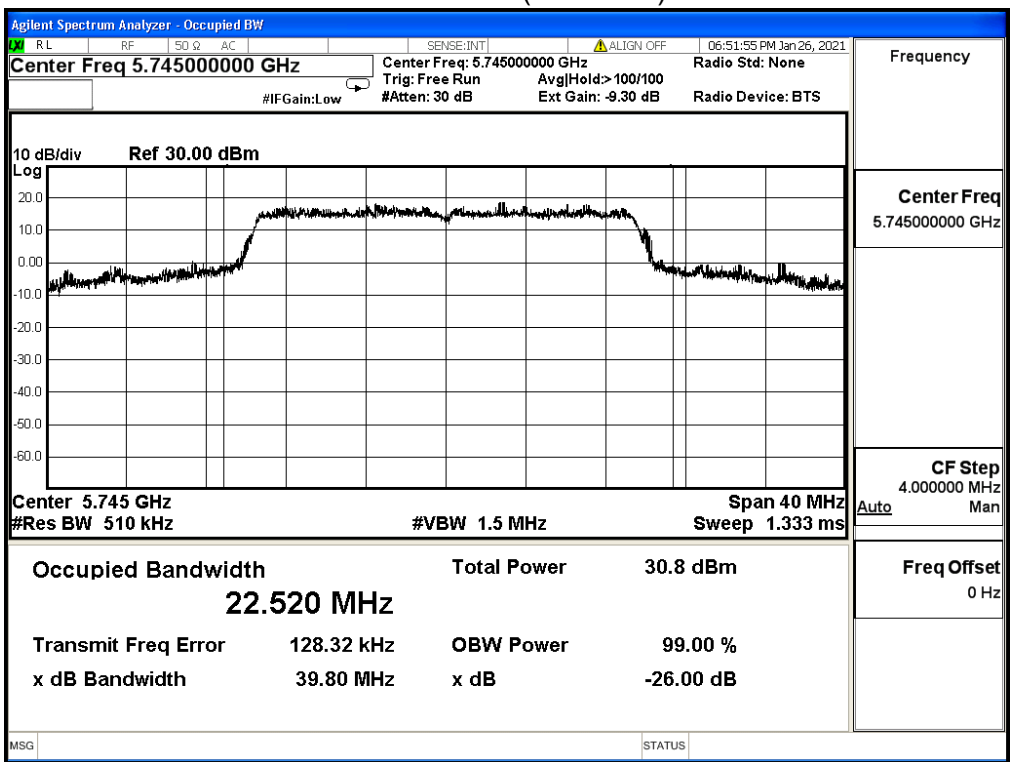
Channel 116 (5580MHz)



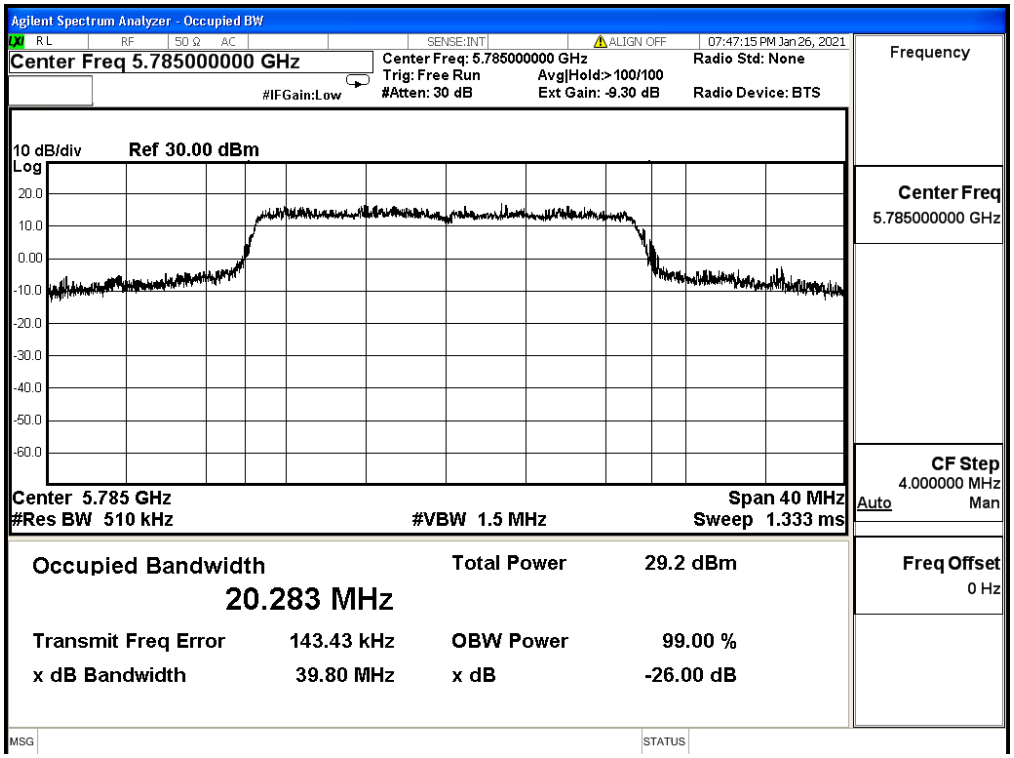
Channel 140 (5700MHz)



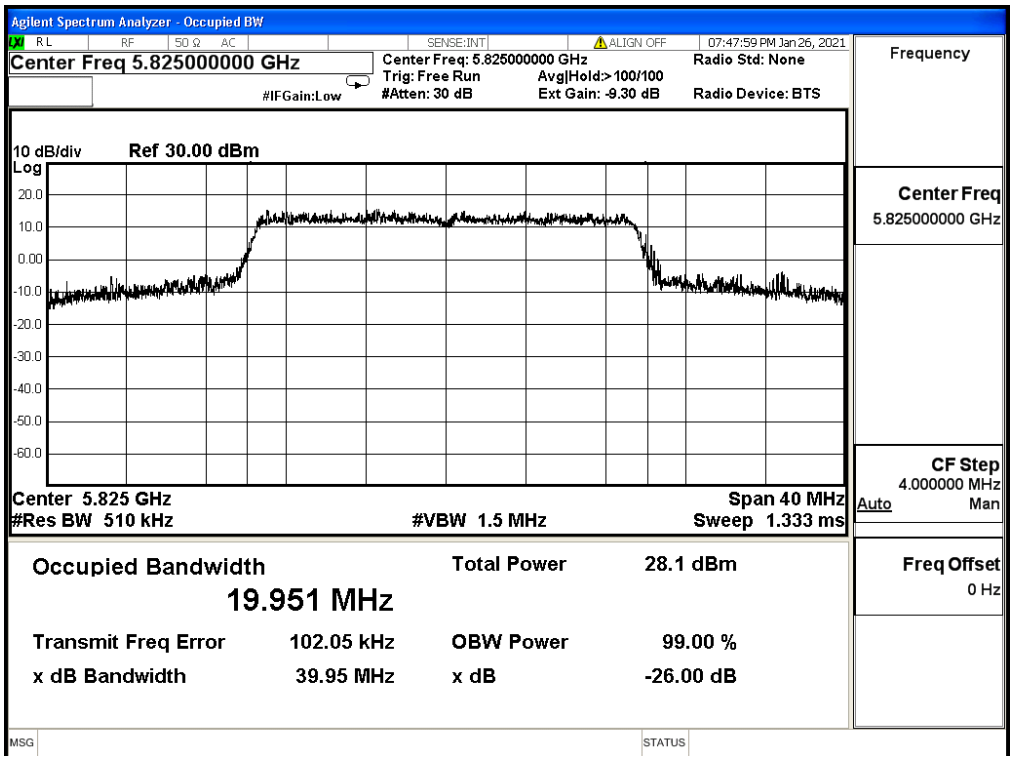
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

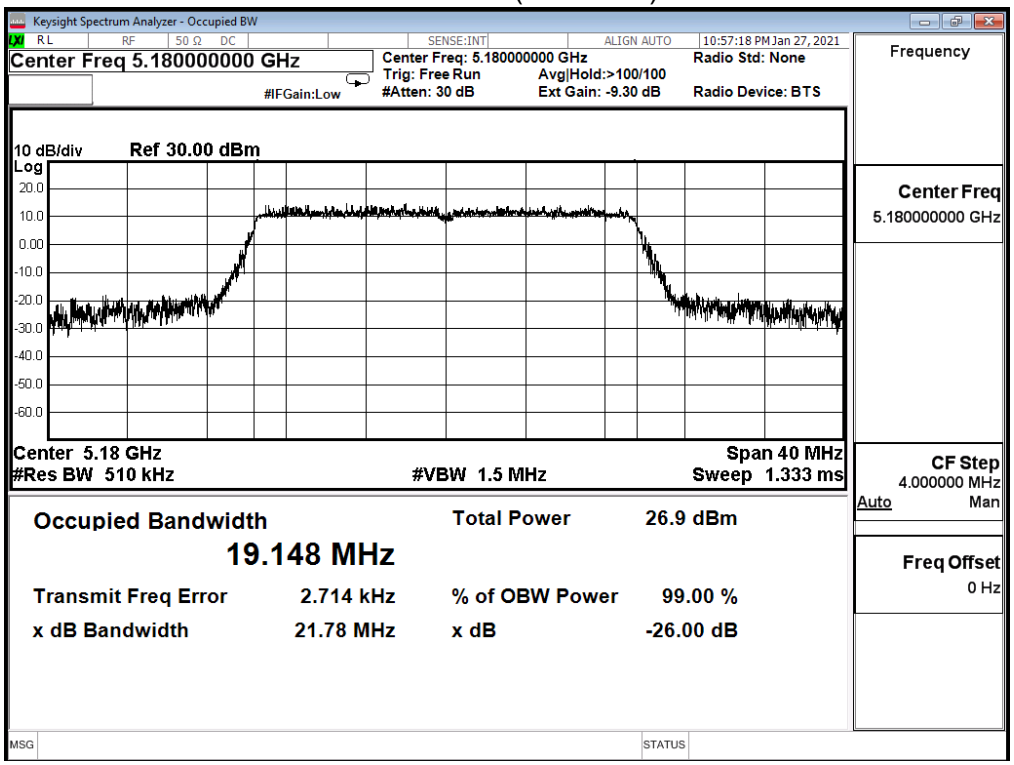


Product	Mesh Wi-Fi Router		
Test Item	26dB & 99% Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26~2021/01/27	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

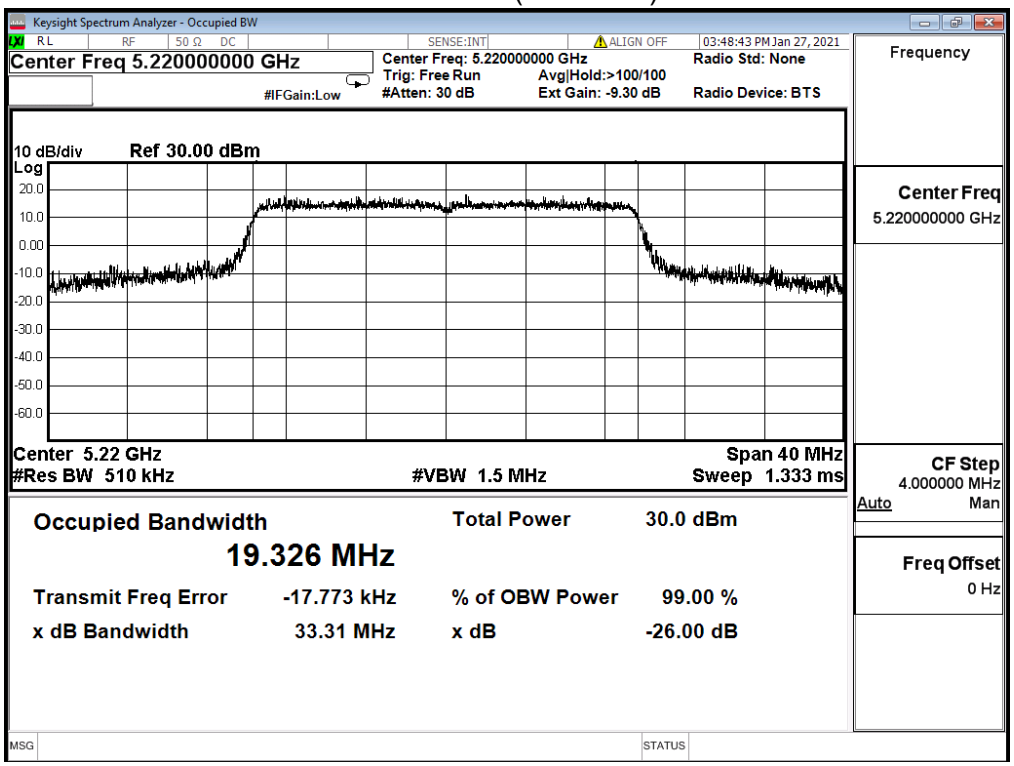
IEEE 802.11ax_20M(ANT 1)

Channel No.	Frequency (MHz)	Measure Value		Limit (MHz)
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	
36	5180	19.148	21.780	--
44	5220	19.326	33.310	--
48	5240	19.303	36.000	--
52	5260	19.123	21.750	--
60	5300	19.137	21.780	--
64	5320	19.214	21.860	--
100	5500	19.185	21.760	--
116	5580	19.178	21.830	--
140	5700	19.197	21.900	--
149	5745	22.355	N/A	--
157	5785	20.273		--
165	5825	19.794		--

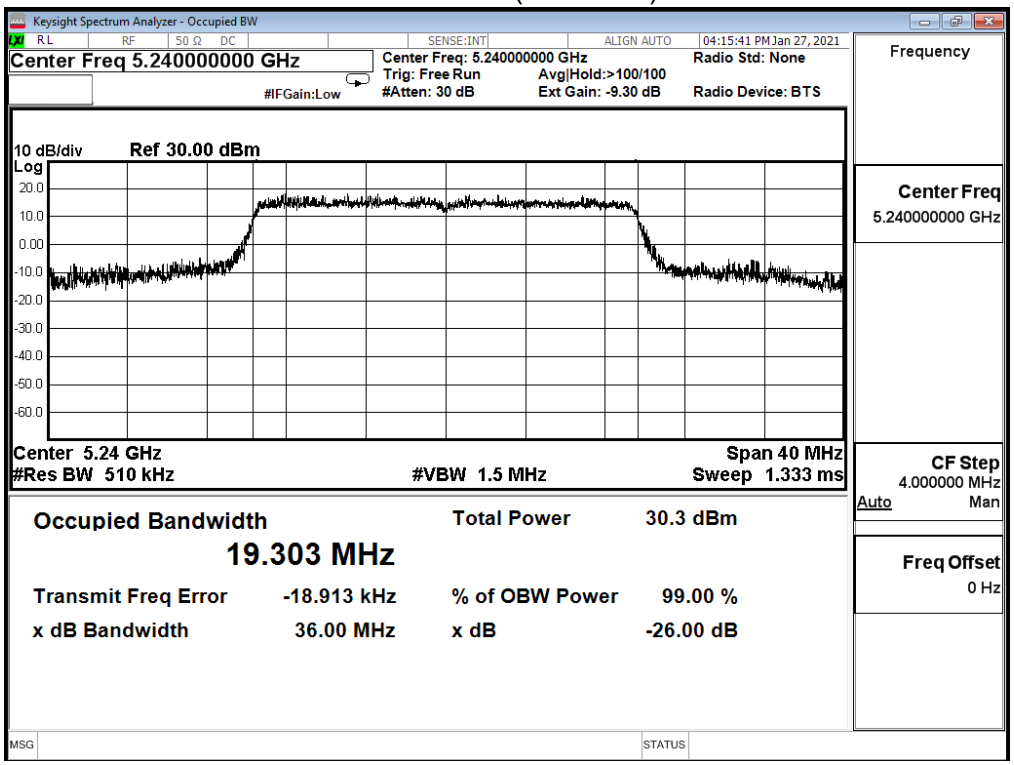
Channel 36 (5180MHz)



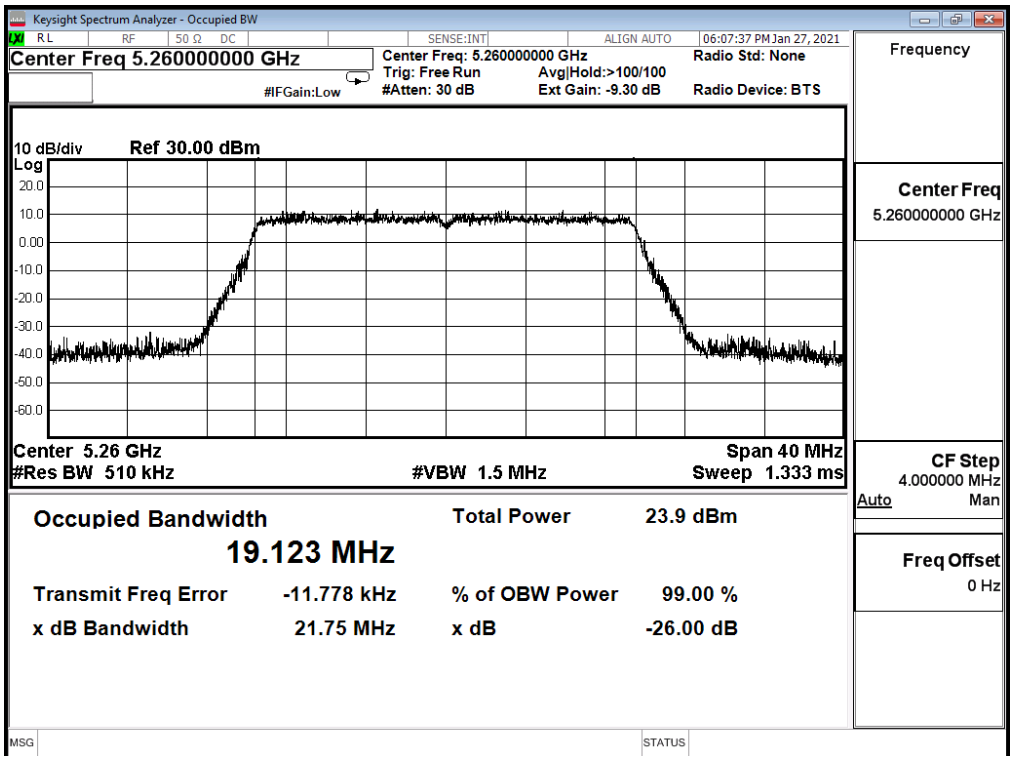
Channel 44 (5220MHz)



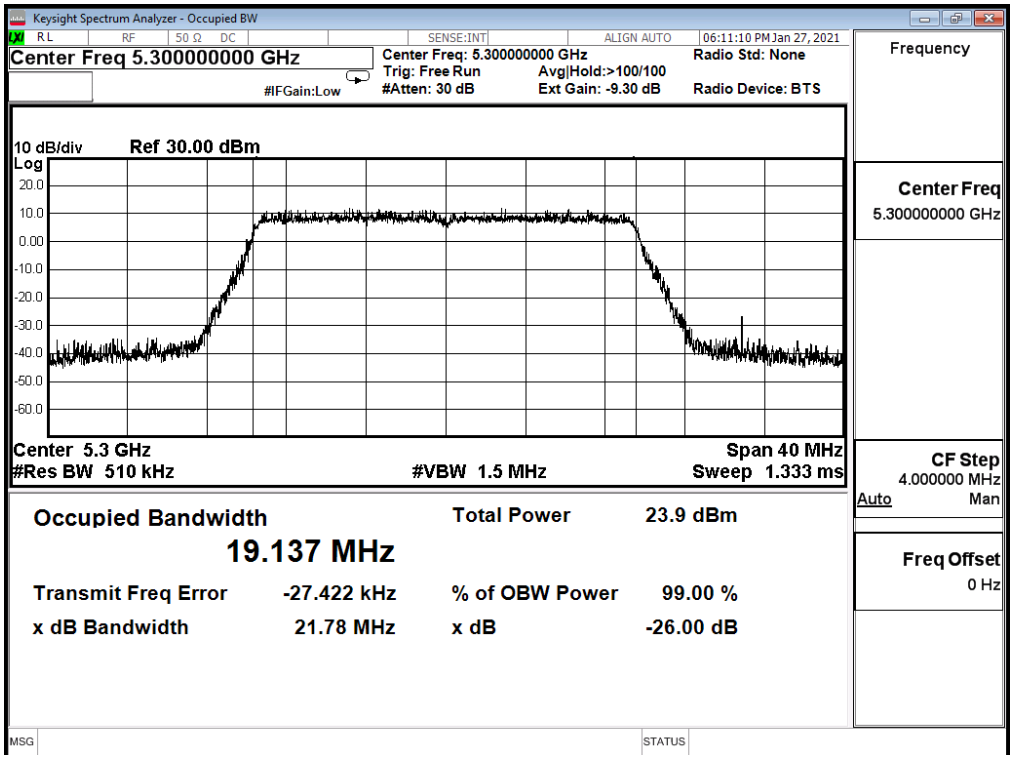
Channel 48 (5240MHz)



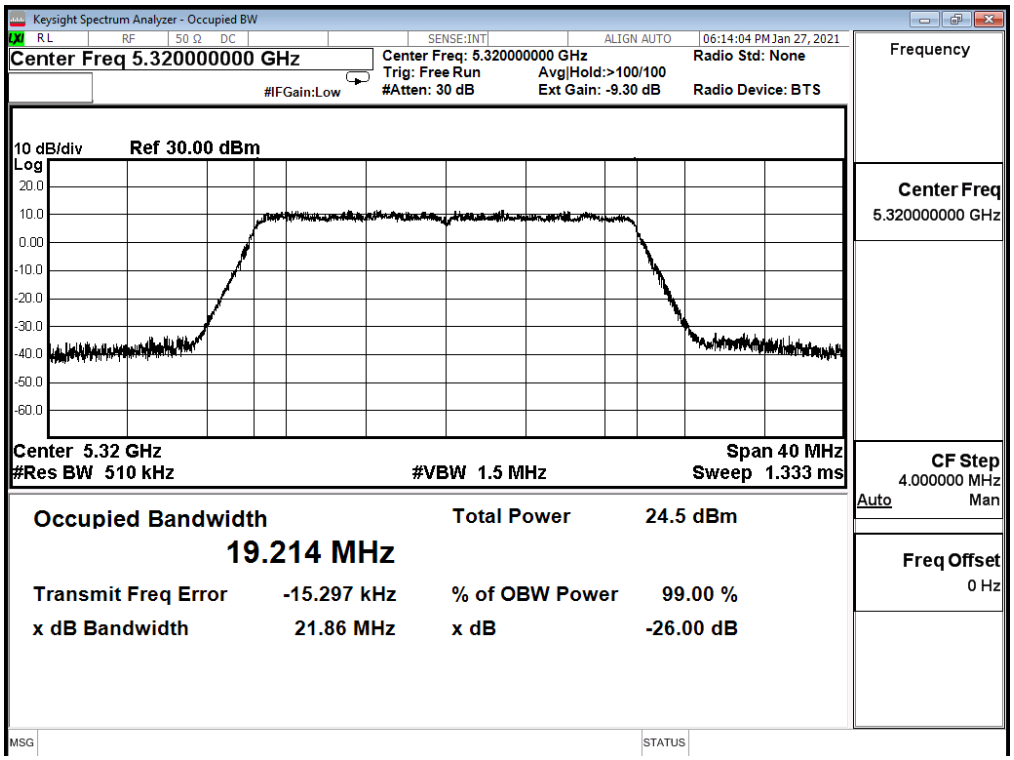
Channel 52 (5260MHz)



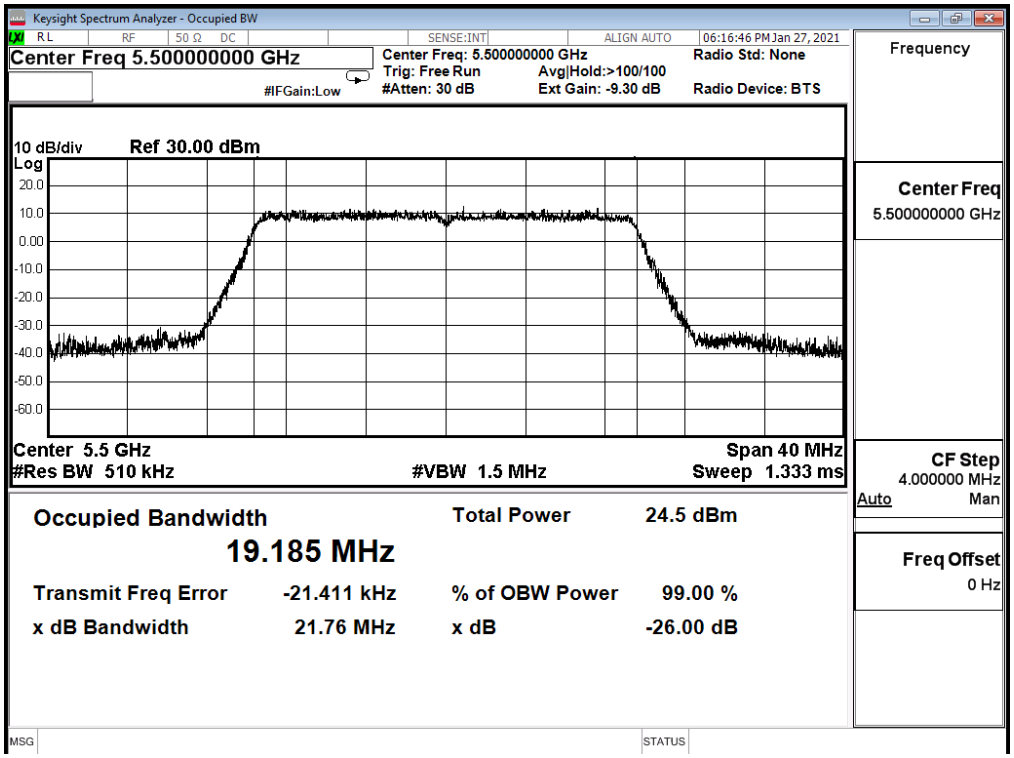
Channel 60 (5300MHz)



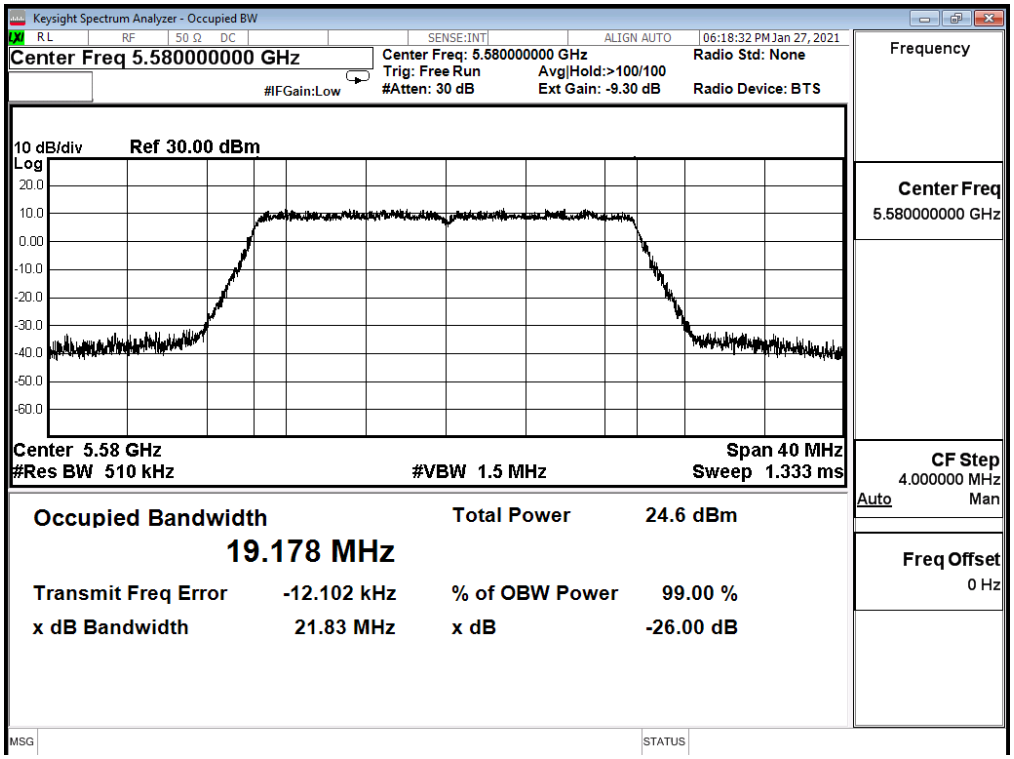
Channel 64 (5320MHz)



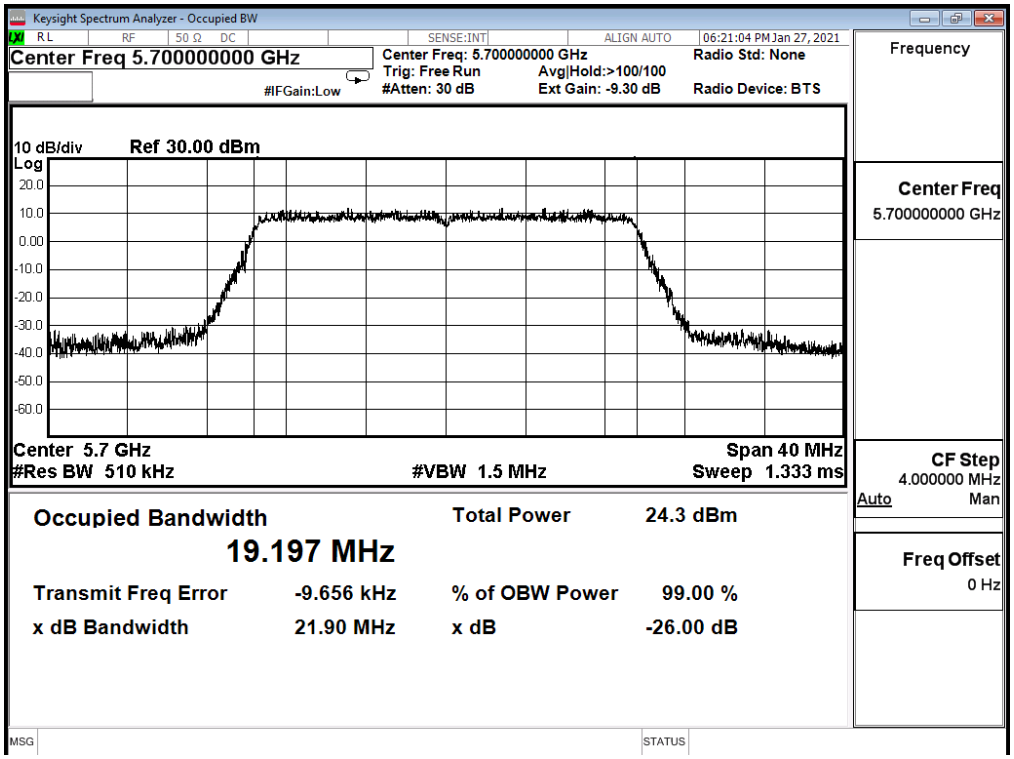
Channel 100 (5500MHz)



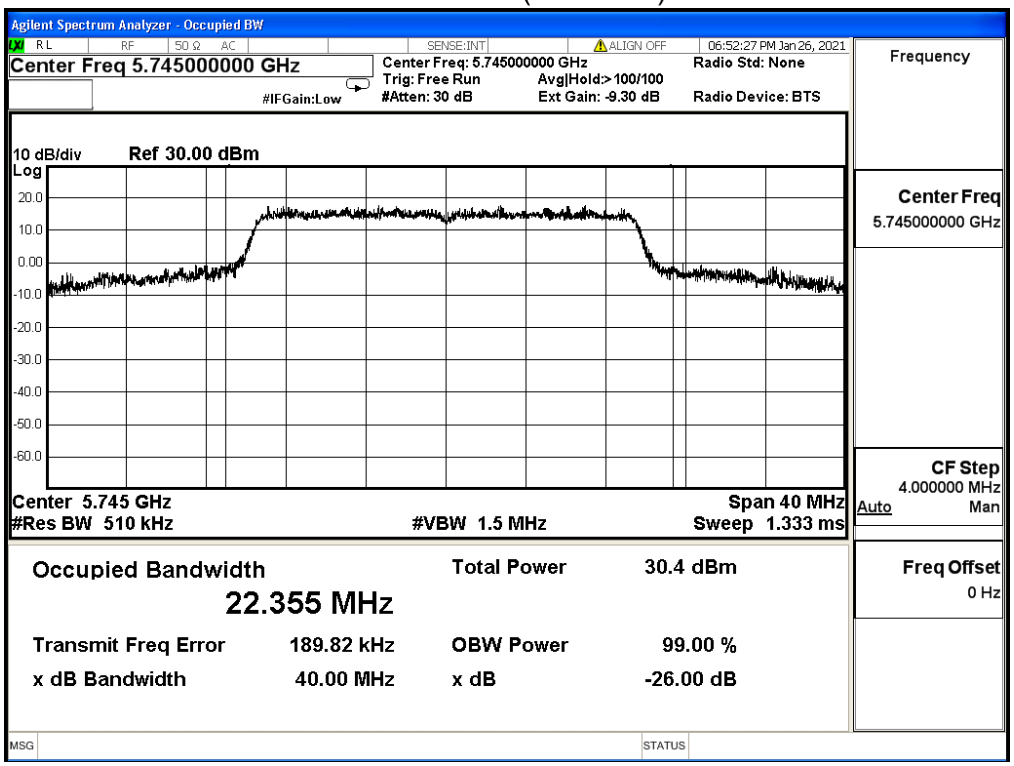
Channel 116 (5580MHz)



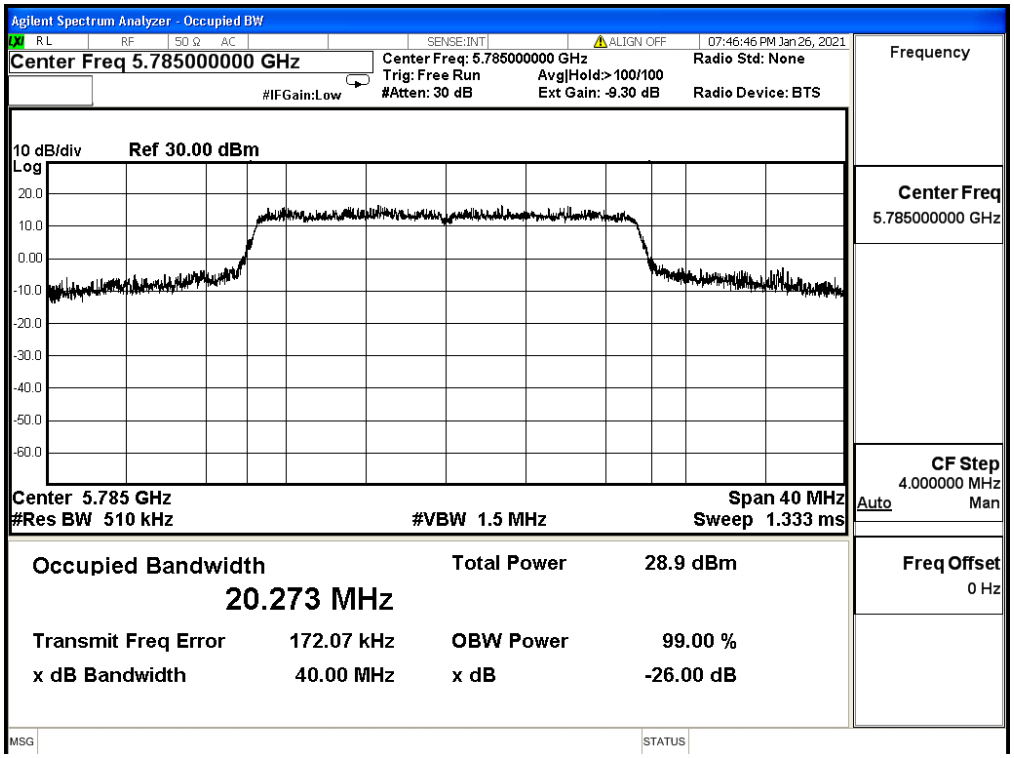
Channel 140 (5700MHz)



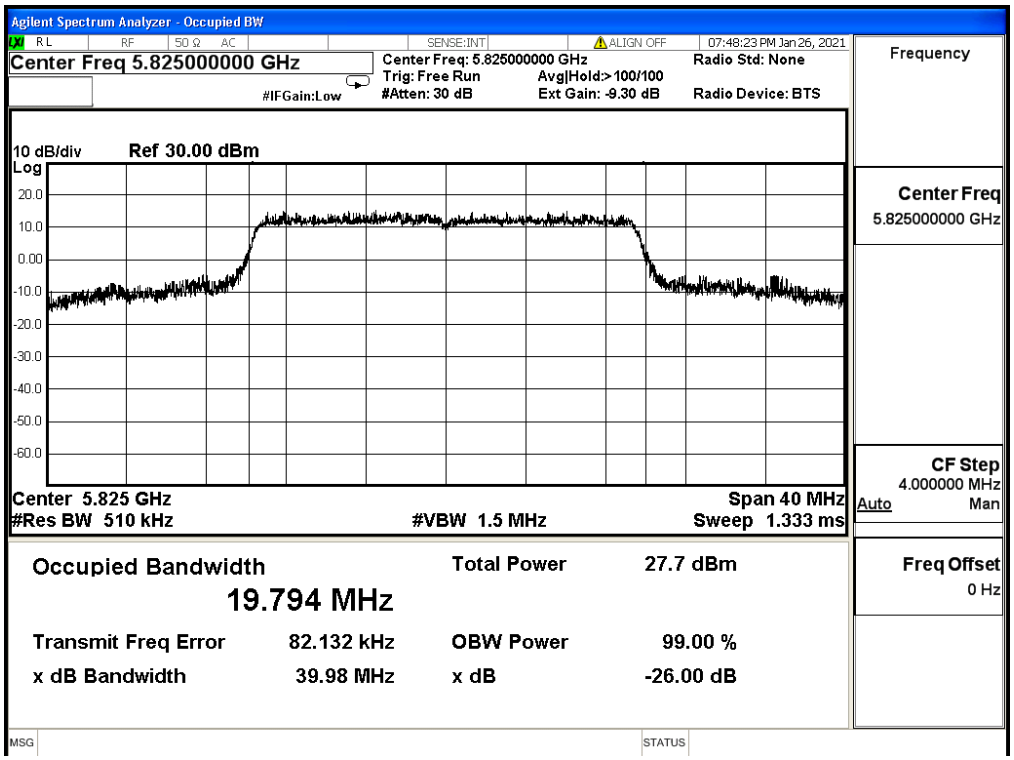
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

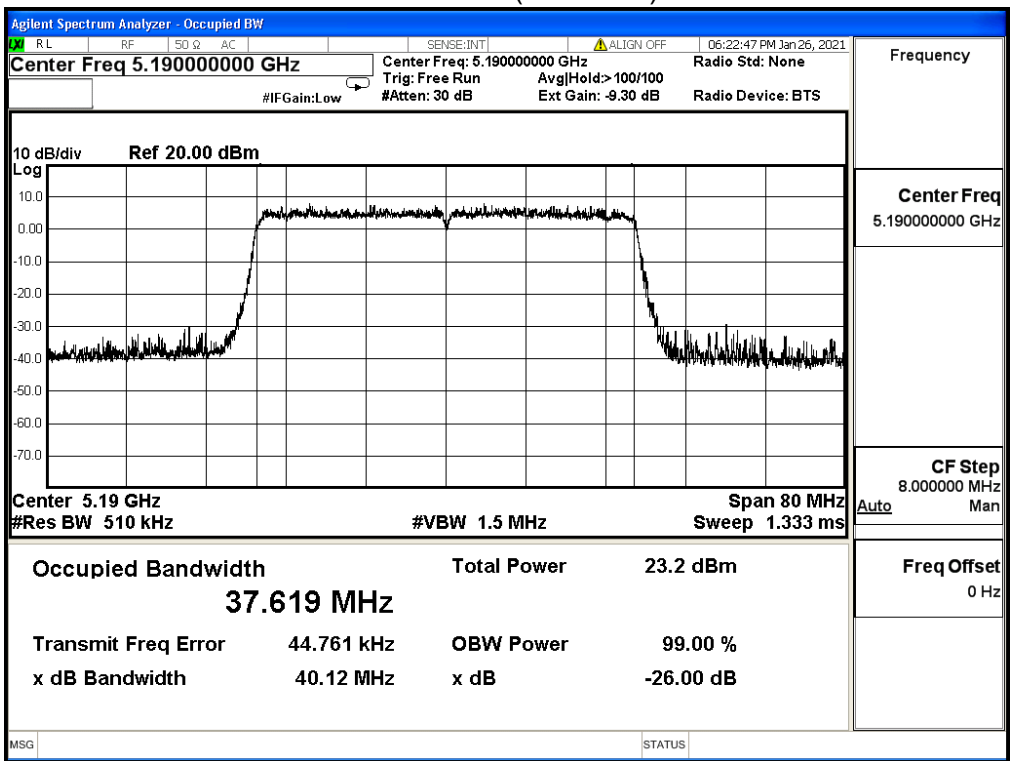


Product	Mesh Wi-Fi Router		
Test Item	26dB & 99% Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26~2021/01/27	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

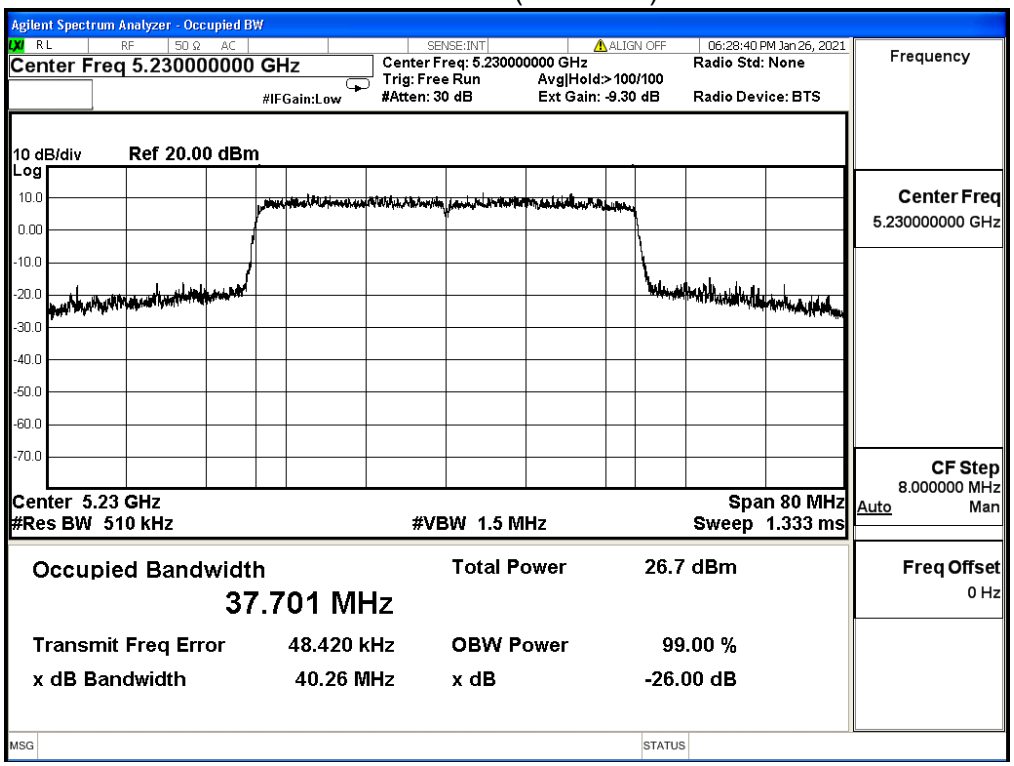
IEEE 802.11ax_40M(ANT 0)

Channel No.	Frequency (MHz)	Measure Value		Limit (MHz)
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	
38	5190	37.619	40.120	--
46	5230	37.701	40.260	--
54	5270	37.580	39.800	--
62	5310	37.530	39.530	--
102	5510	37.601	39.960	--
110	5550	37.650	39.910	--
134	5670	37.593	40.030	--
151	5755	37.780	N/A	--
159	5795	37.748		--

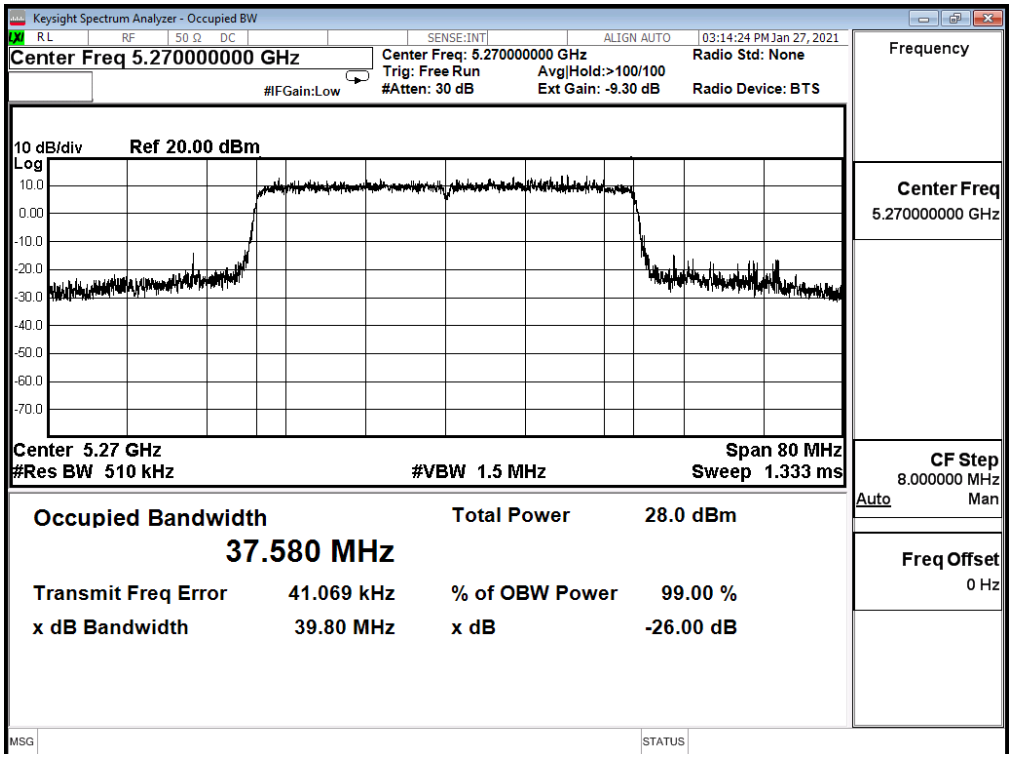
Channel 38 (5190MHz)



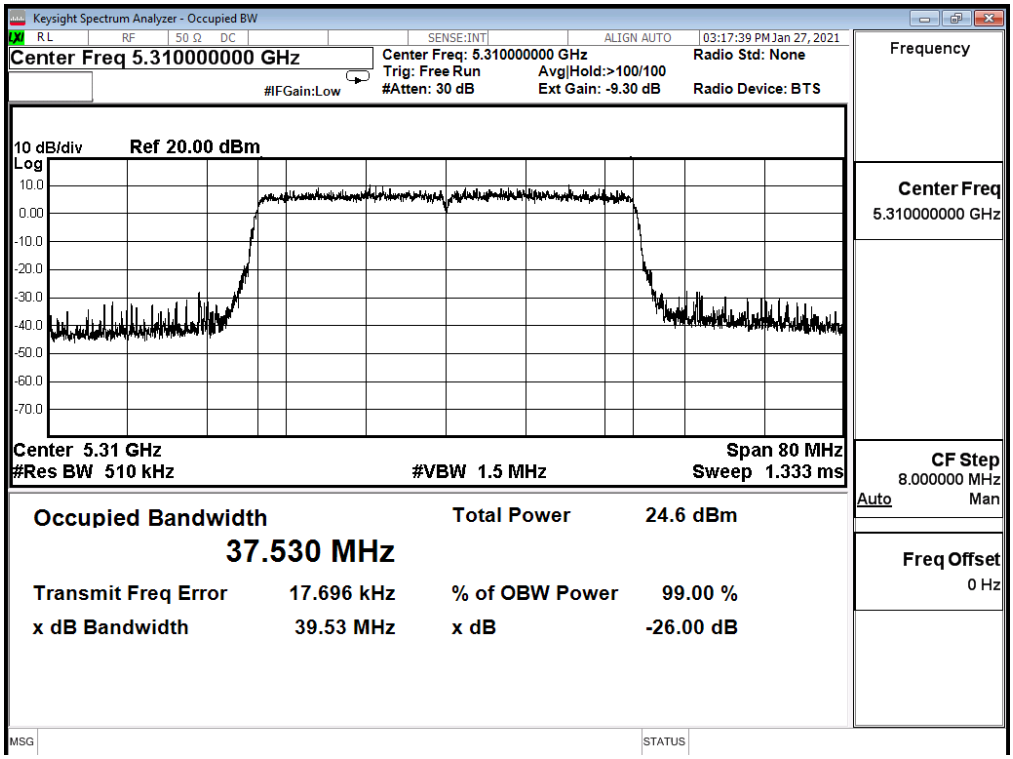
Channel 46 (5230MHz)



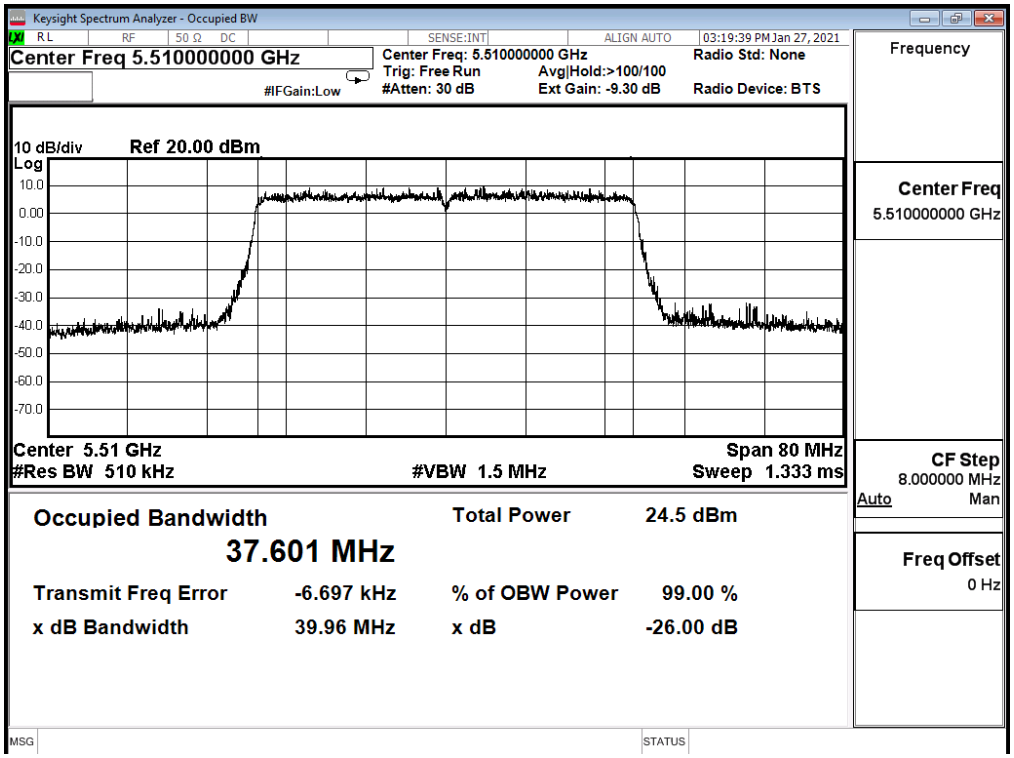
Channel 54 (5270MHz)



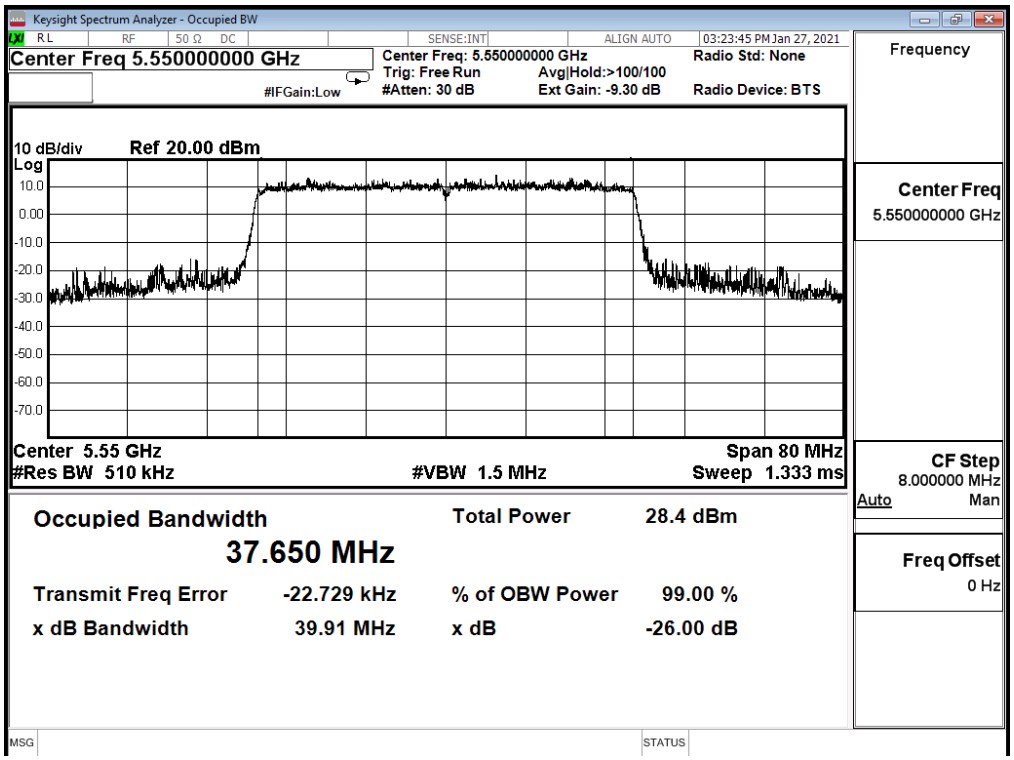
Channel 62 (5310MHz)



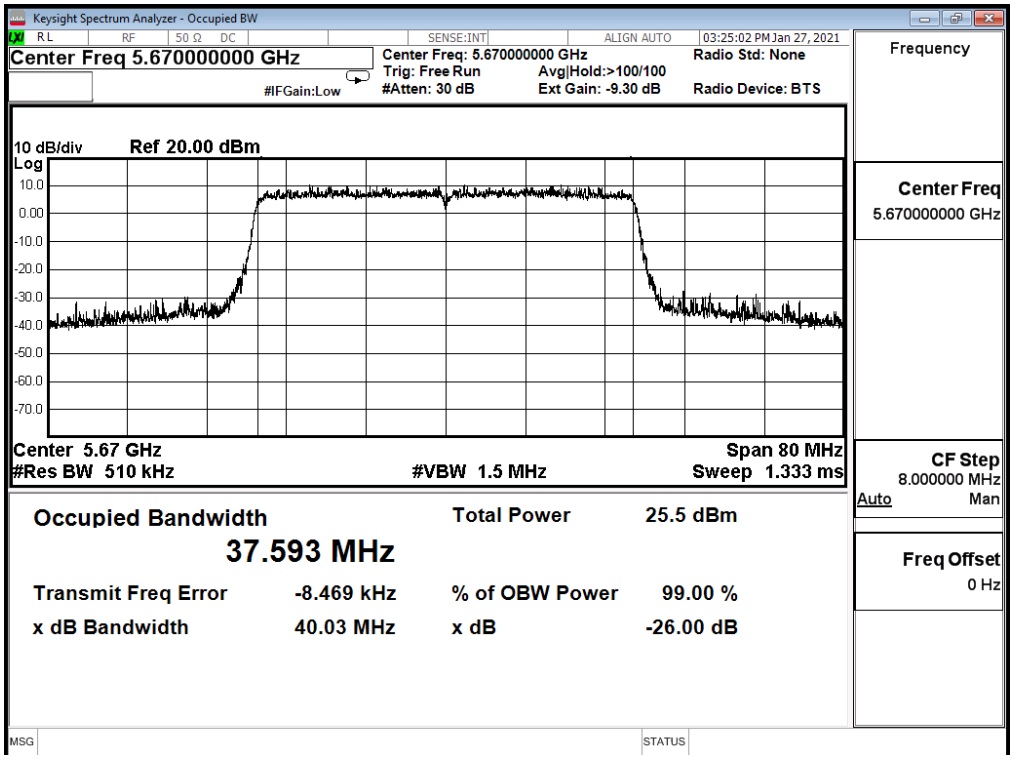
Channel 102 (5510MHz)



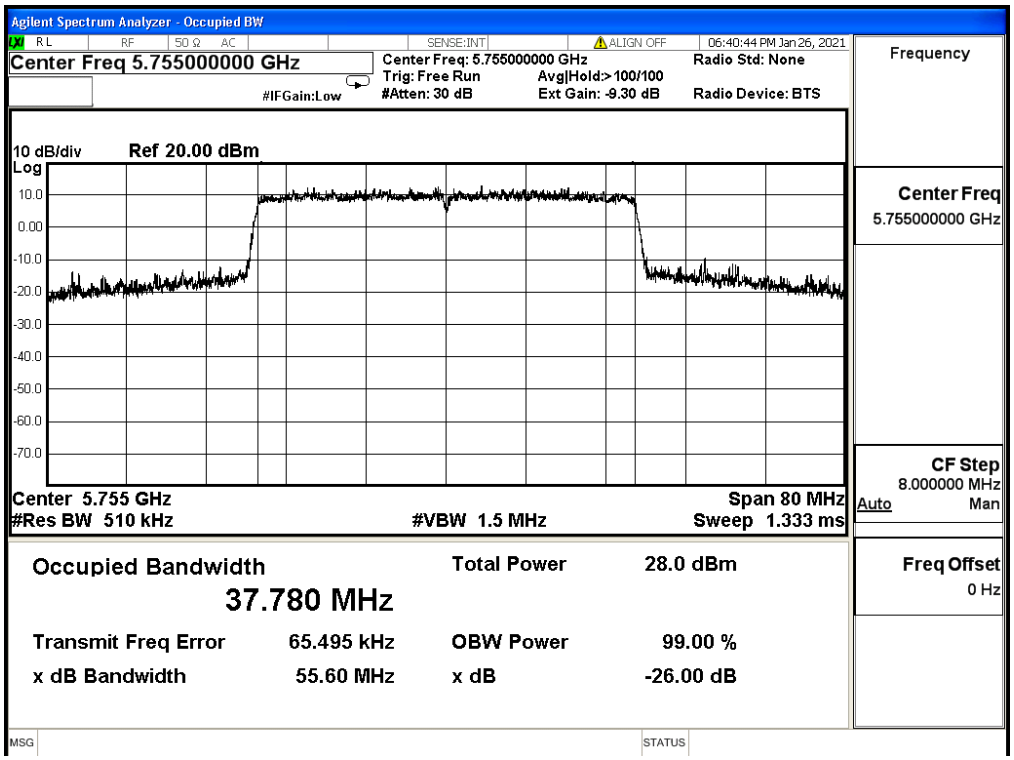
Channel 110 (5550MHz)



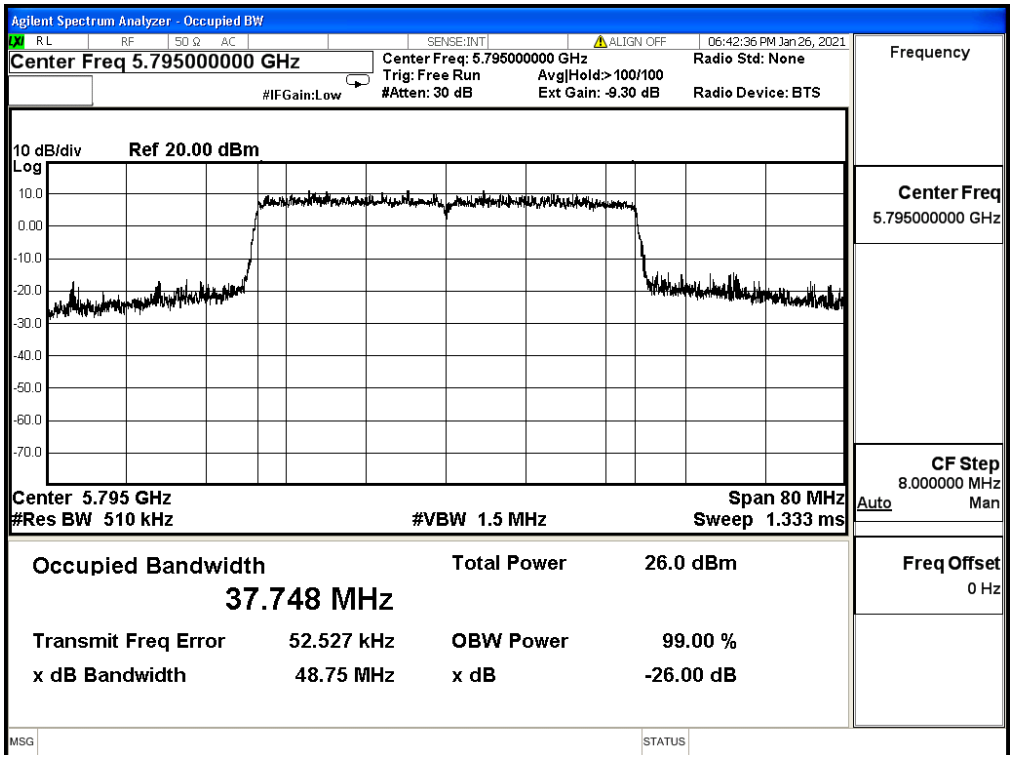
Channel 134 (5670MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)

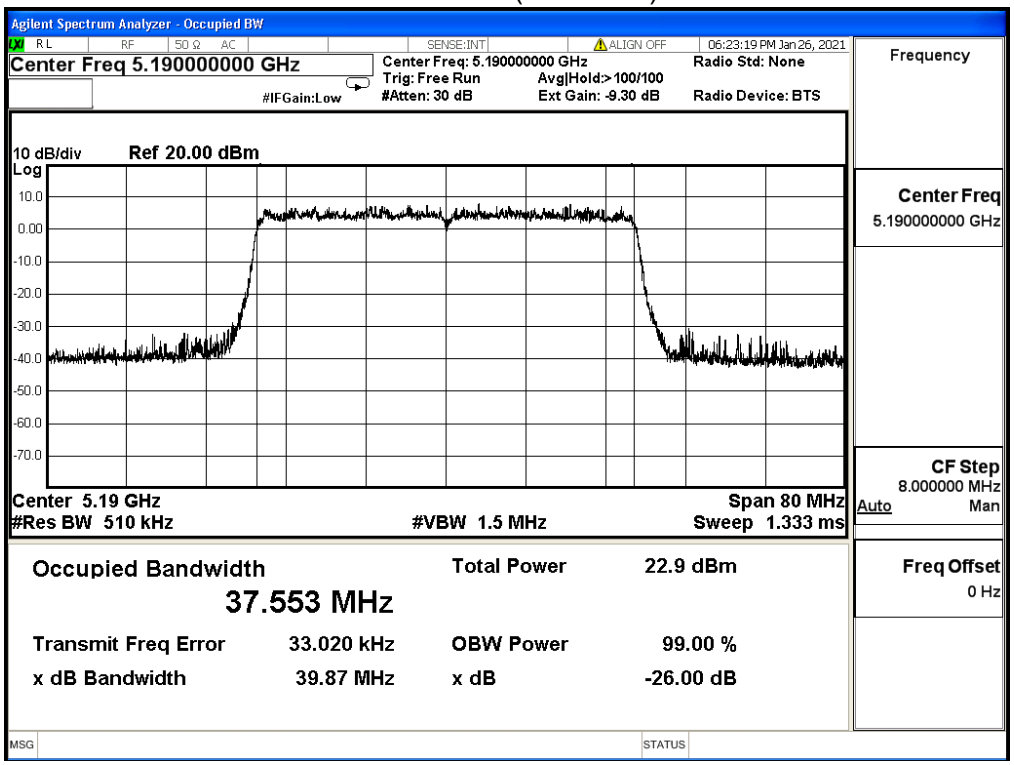


Product	Mesh Wi-Fi Router		
Test Item	26dB & 99% Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26~2021/01/27	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

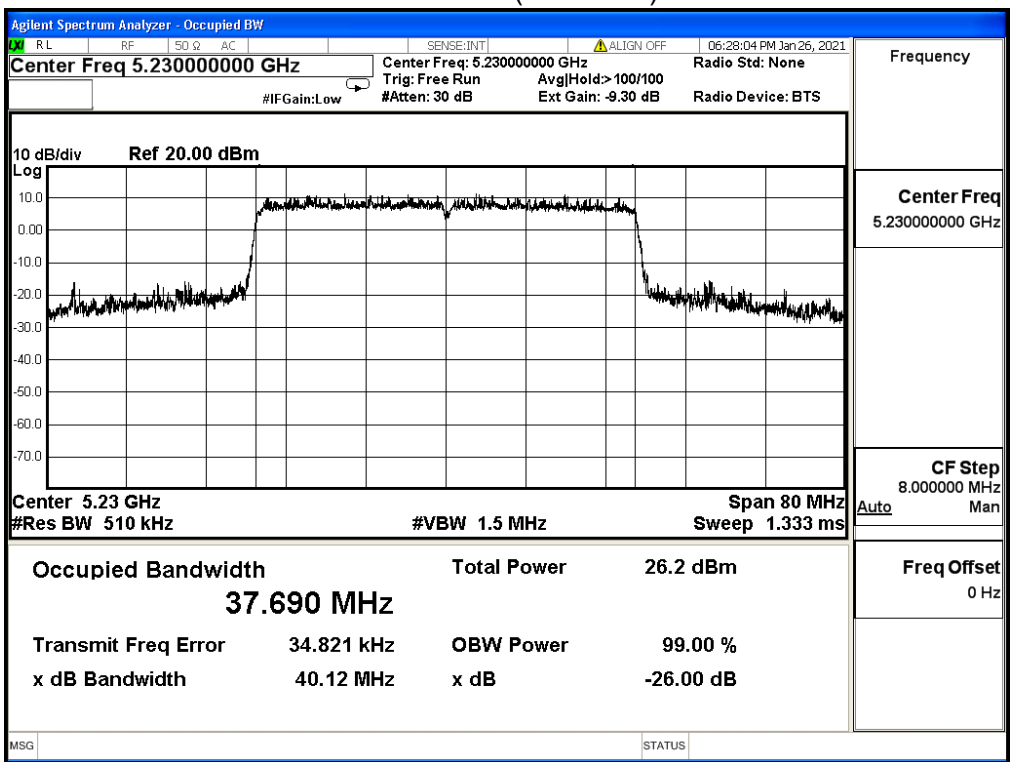
IEEE 802.11ax_40M(ANT 1)

Channel No.	Frequency (MHz)	Measure Value		Limit (MHz)
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	
38	5190	37.553	39.870	--
46	5230	37.690	40.120	--
54	5270	37.616	39.640	--
62	5310	37.645	39.910	--
102	5510	37.609	40.000	--
110	5550	37.615	39.830	--
134	5670	37.606	39.820	--
151	5755	37.786	N/A	--
159	5795	37.661		--

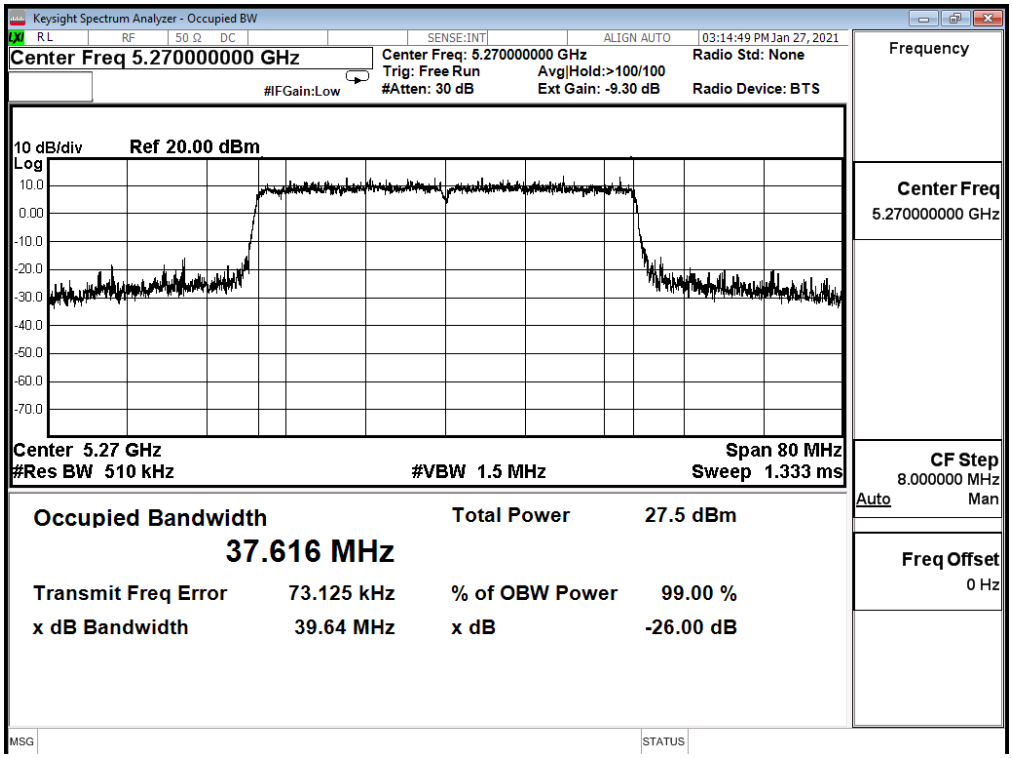
Channel 38 (5190MHz)



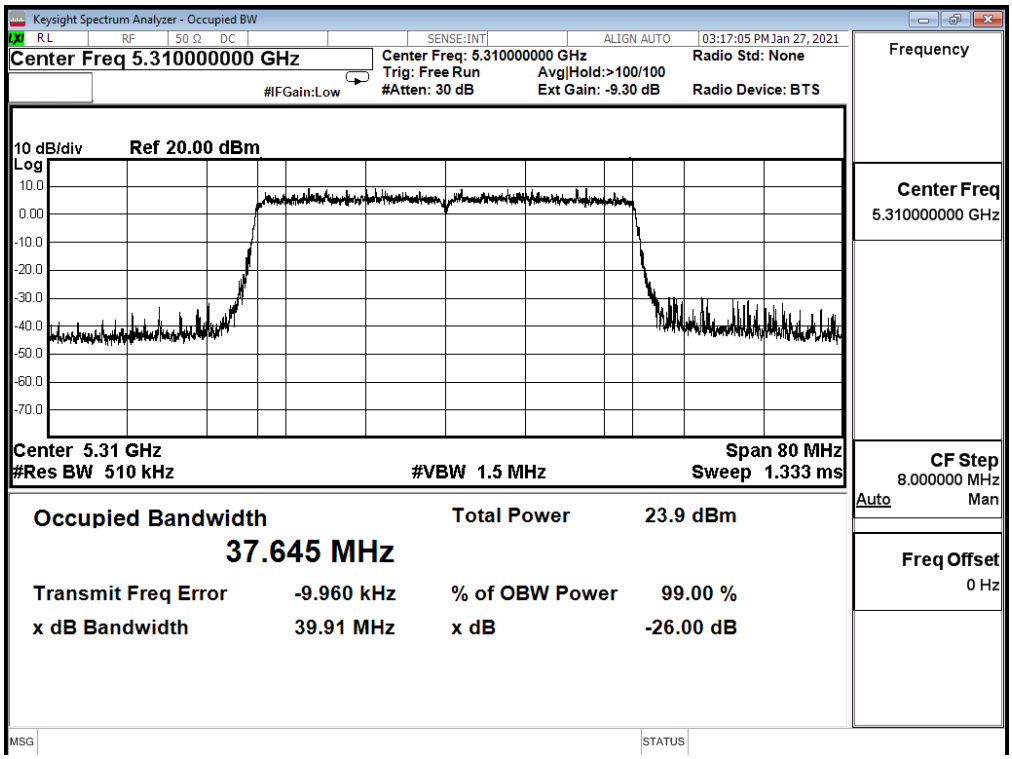
Channel 46 (5230MHz)



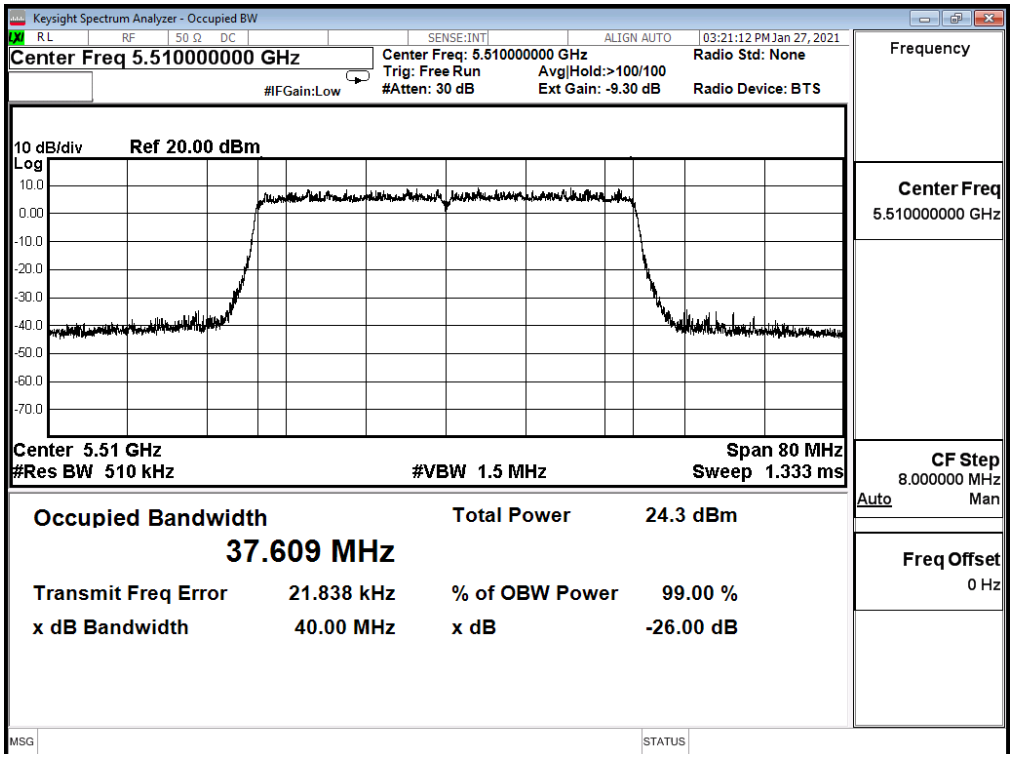
Channel 54 (5270MHz)



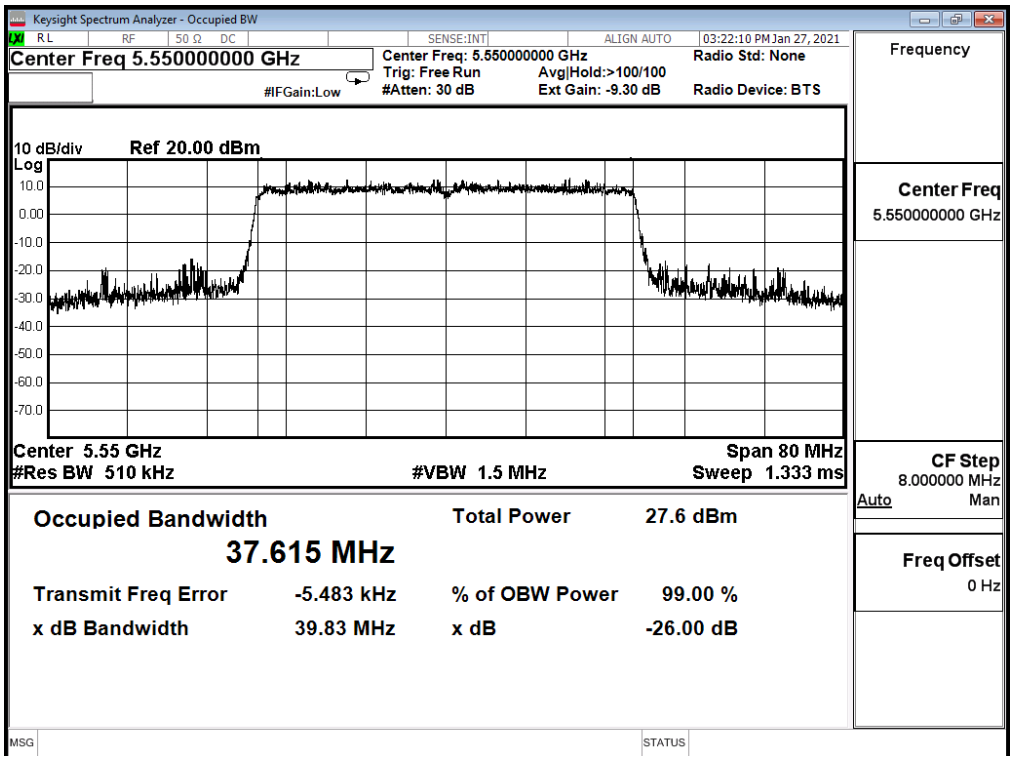
Channel 62 (5310MHz)



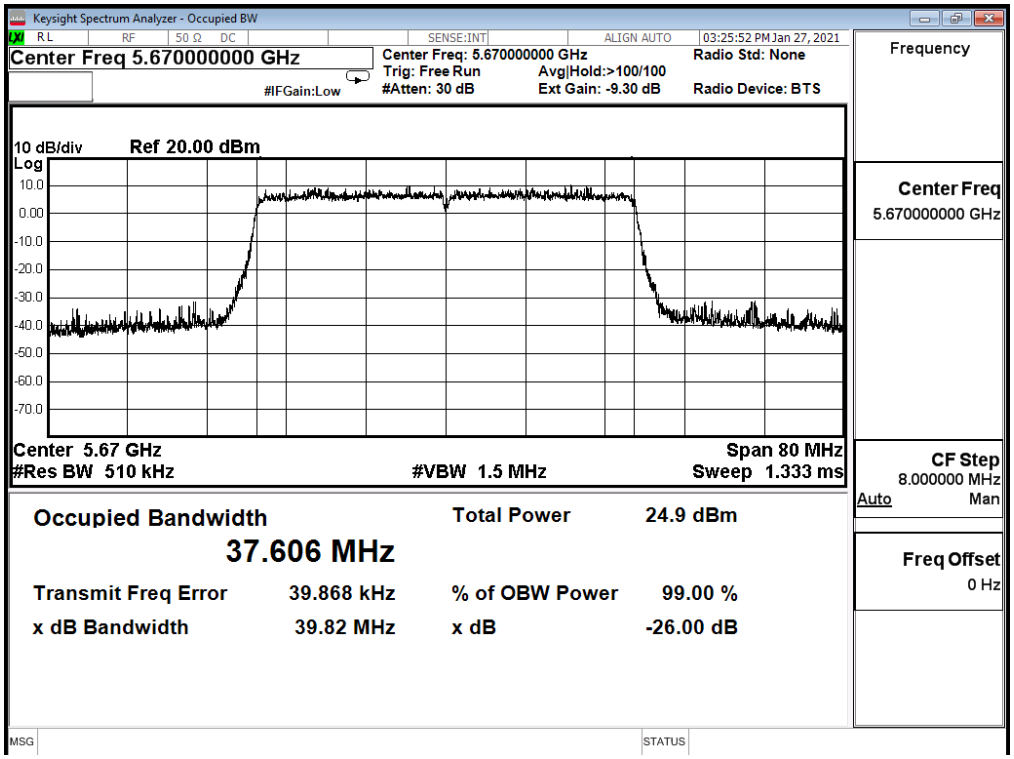
Channel 102 (5510MHz)



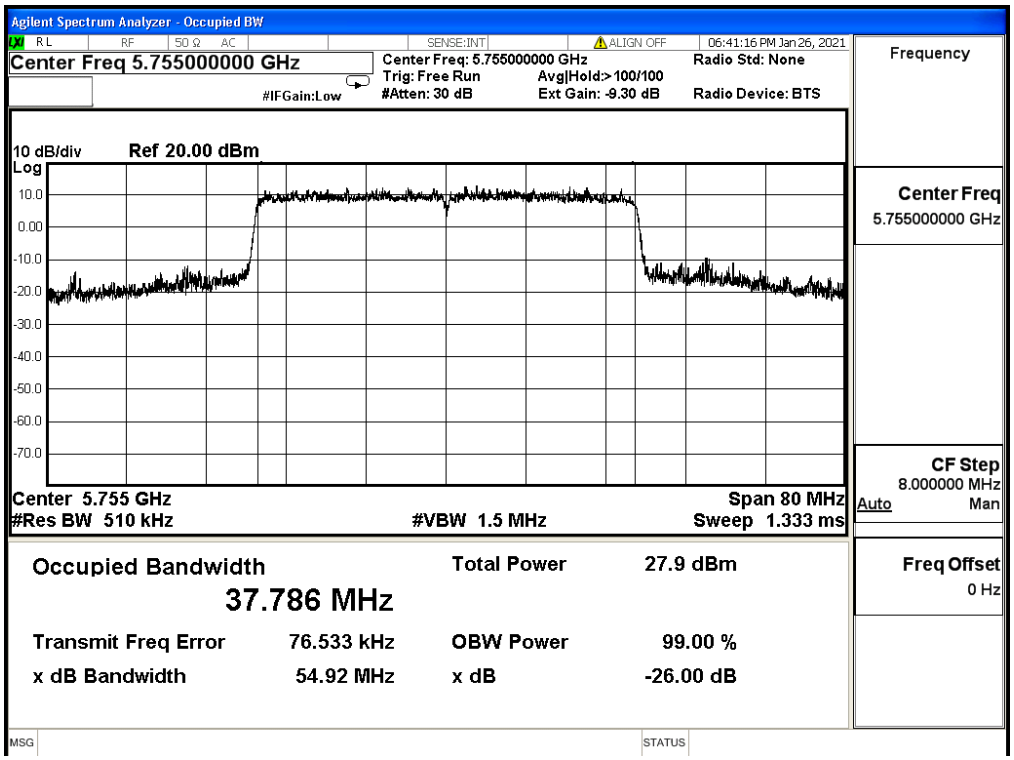
Channel 110 (5550MHz)



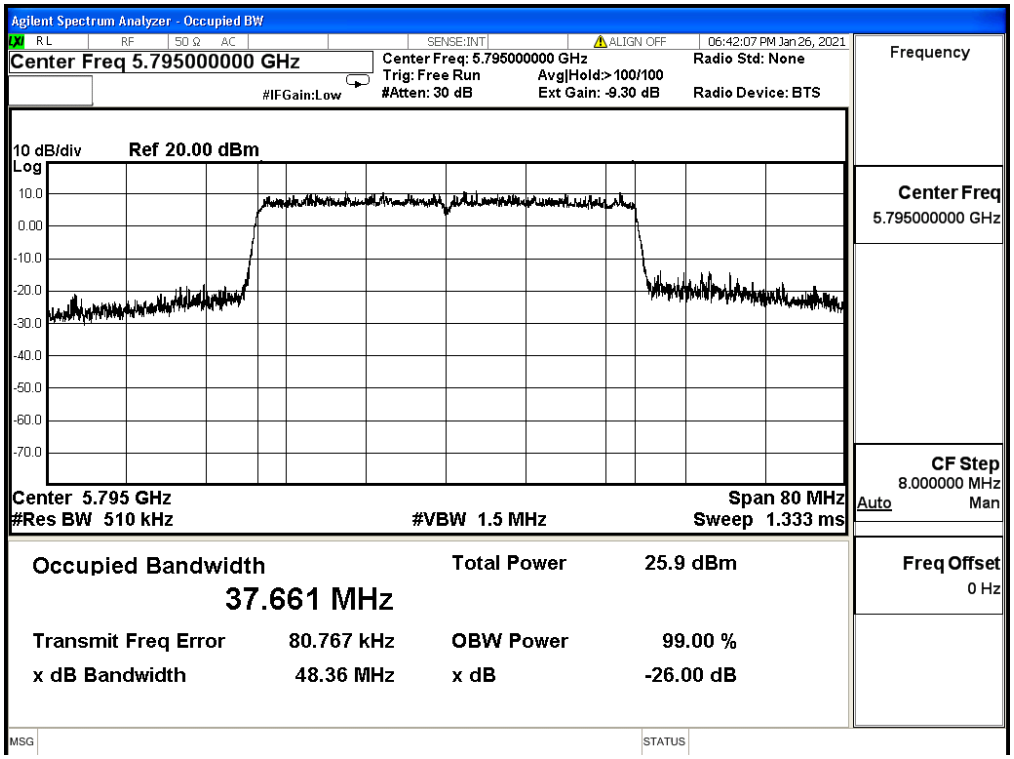
Channel 134 (5670MHz)



Channel 151 (5755MHz)



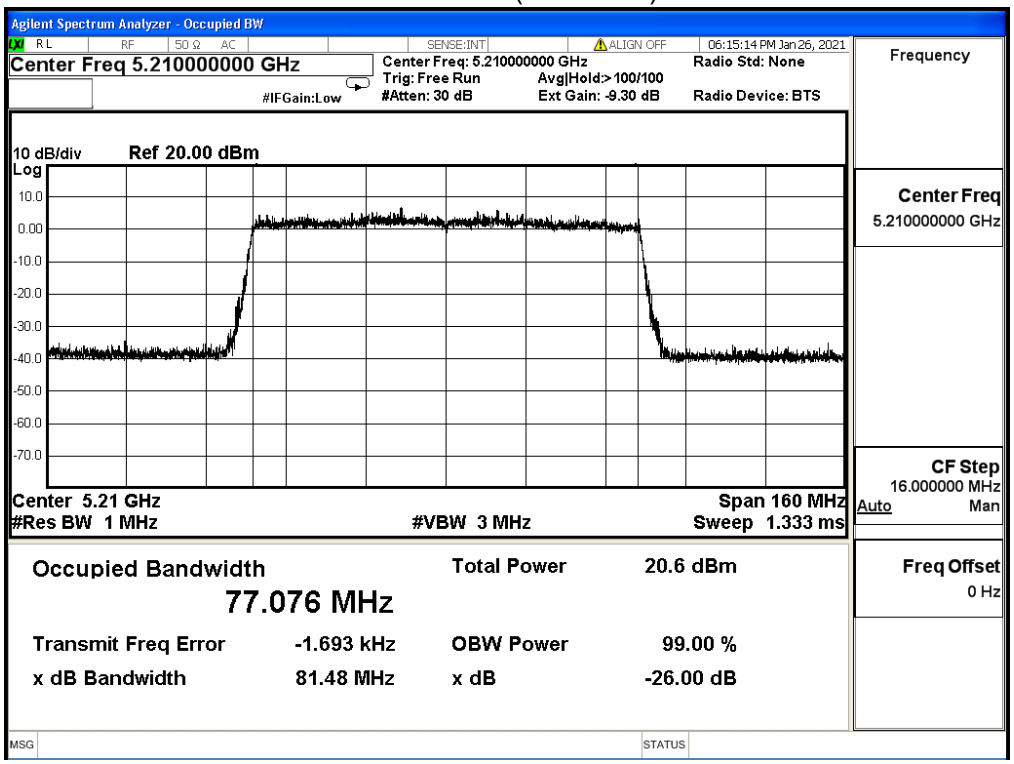
Channel 159 (5795MHz)



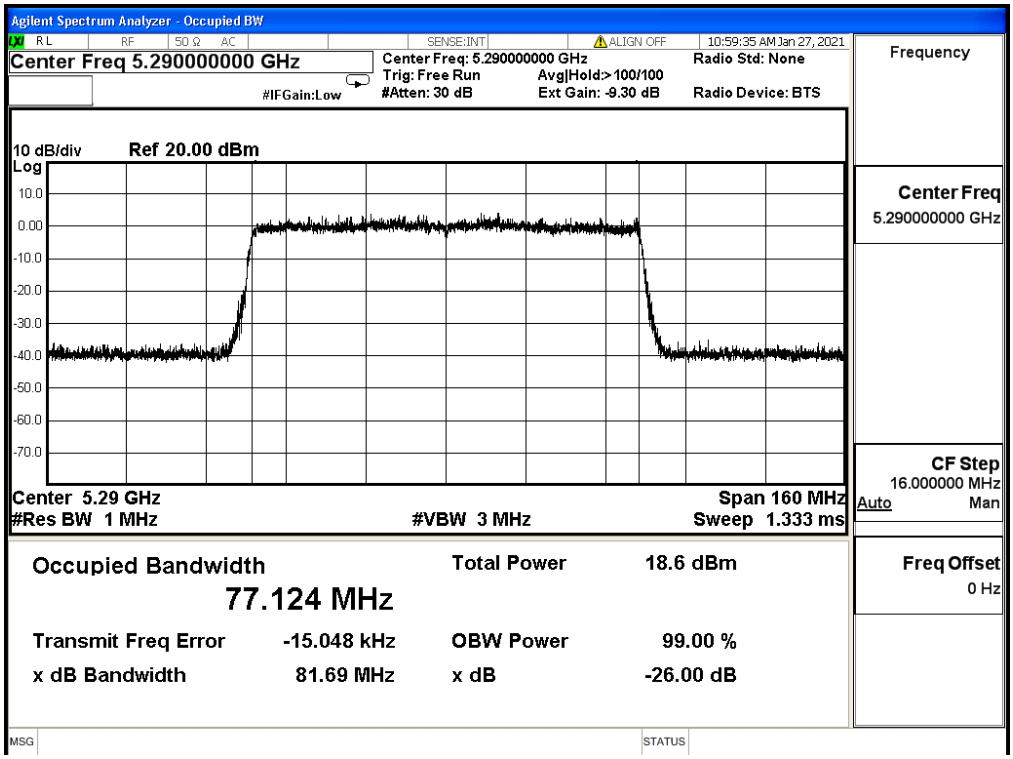
Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26~2021/01/27	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11ax_80M(ANT 0)					
Channel No.	Frequency (MHz)	Measure Value		Limit (MHz)	Result
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)		
42	5210	77.076	81.480	--	Pass
58	5290	77.124	81.690	--	Pass
106	5530	76.954	81.270	--	Pass
122	5610	77.153	81.610	--	Pass
155	5775	77.002	N/A	--	Pass

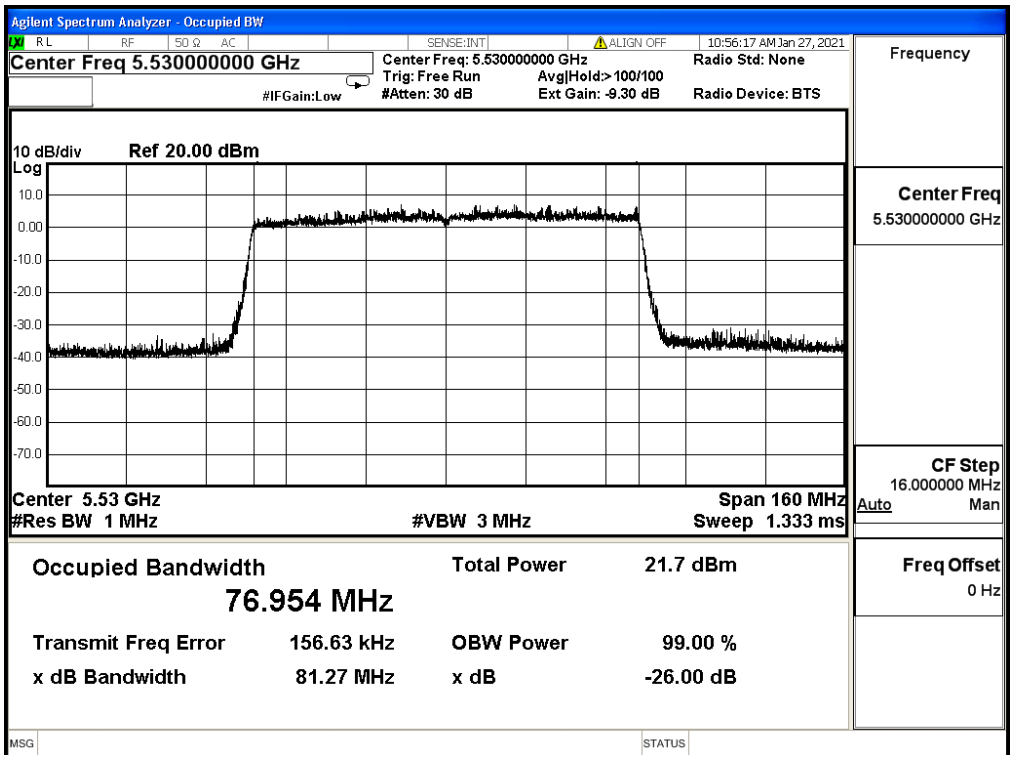
Channel 42 (5210MHz)



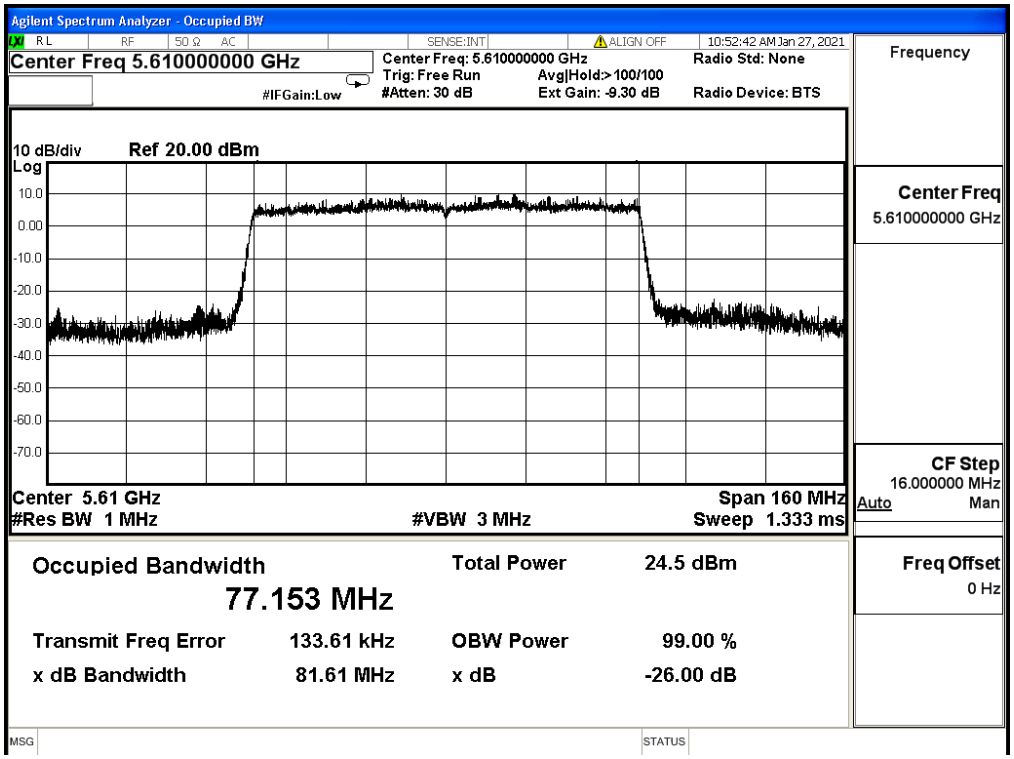
Channel 58 (5290MHz)



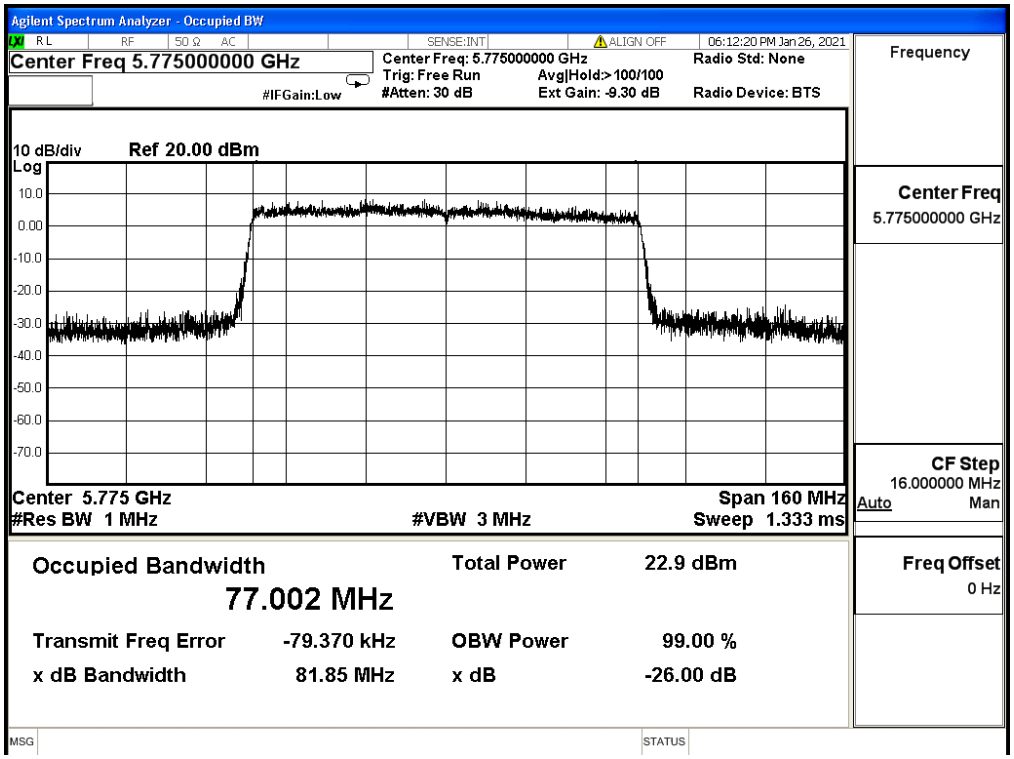
Channel 106 (5530MHz)



Channel 122 (5610MHz)



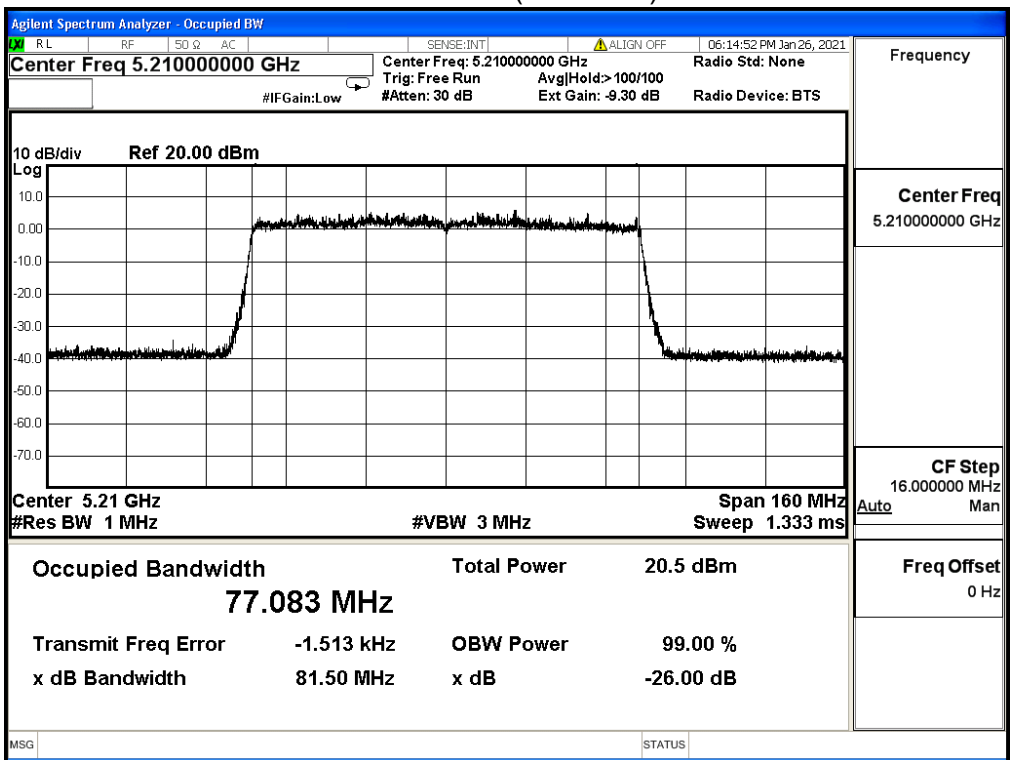
Channel 155 (5775MHz)



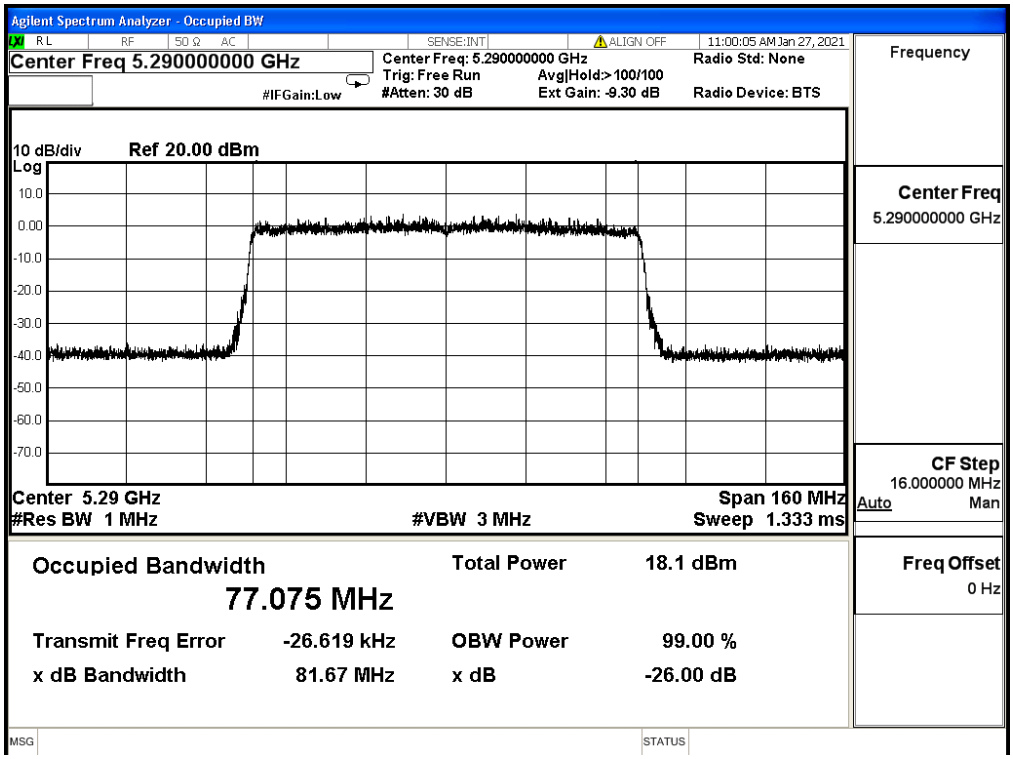
Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26~2021/01/27	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11ax_80M(ANT 1)					
Channel No.	Frequency (MHz)	Measure Value		Limit (MHz)	Result
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)		
42	5210	77.083	81.500	--	Pass
58	5290	77.075	81.670	--	Pass
106	5530	77.029	81.270	--	Pass
122	5610	77.108	81.560	--	Pass
155	5775	77.141	N/A	--	Pass

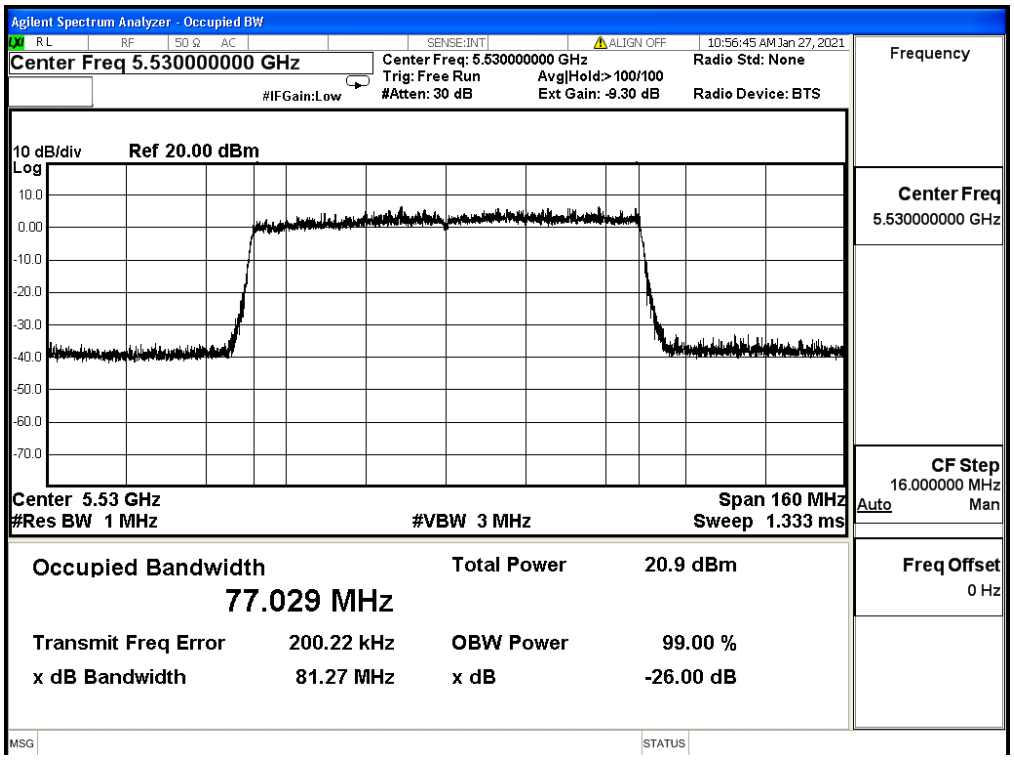
Channel 42 (5210MHz)



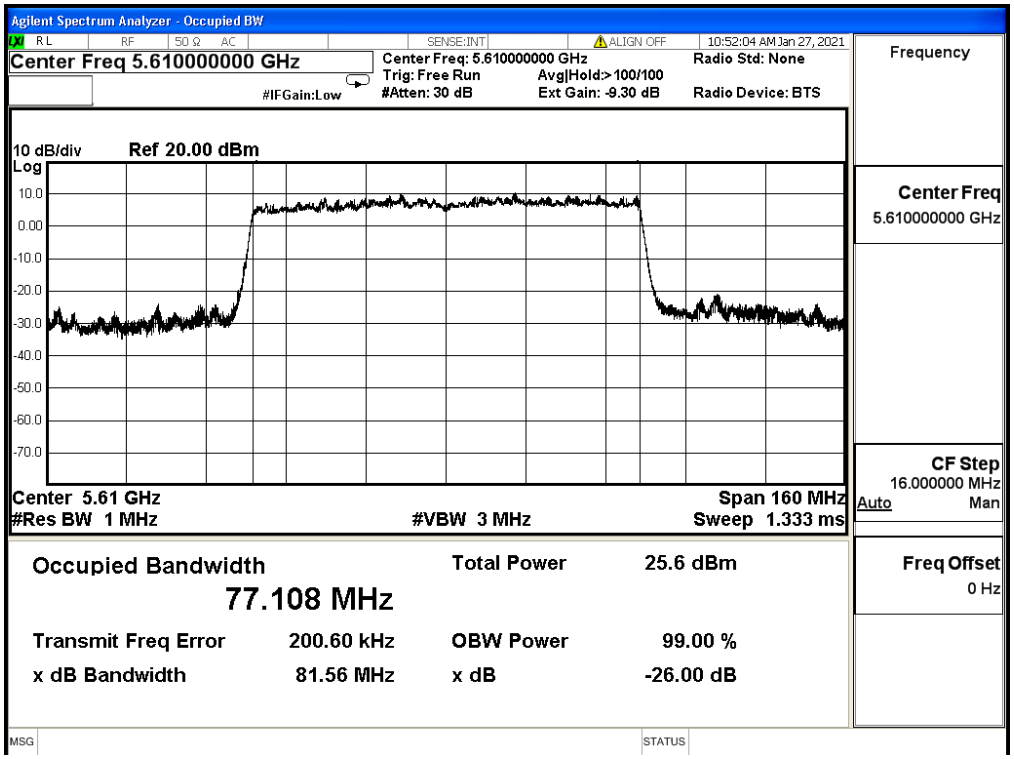
Channel 58 (5290MHz)



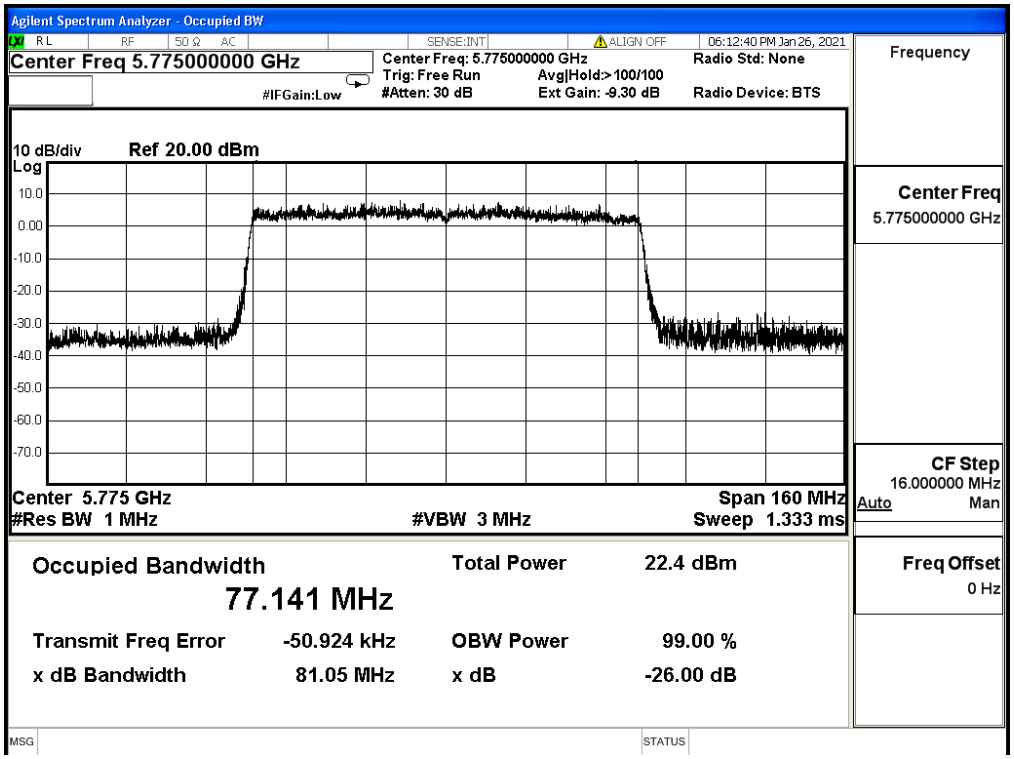
Channel 106 (5530MHz)



Channel 122 (5610MHz)



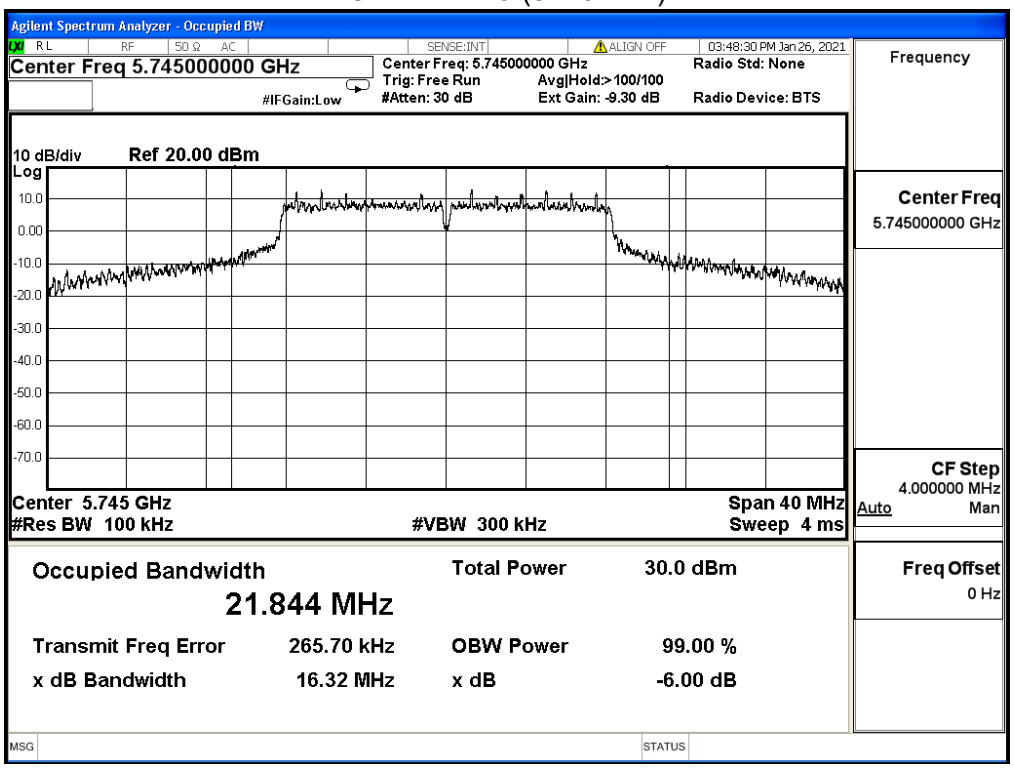
Channel 155 (5775MHz)



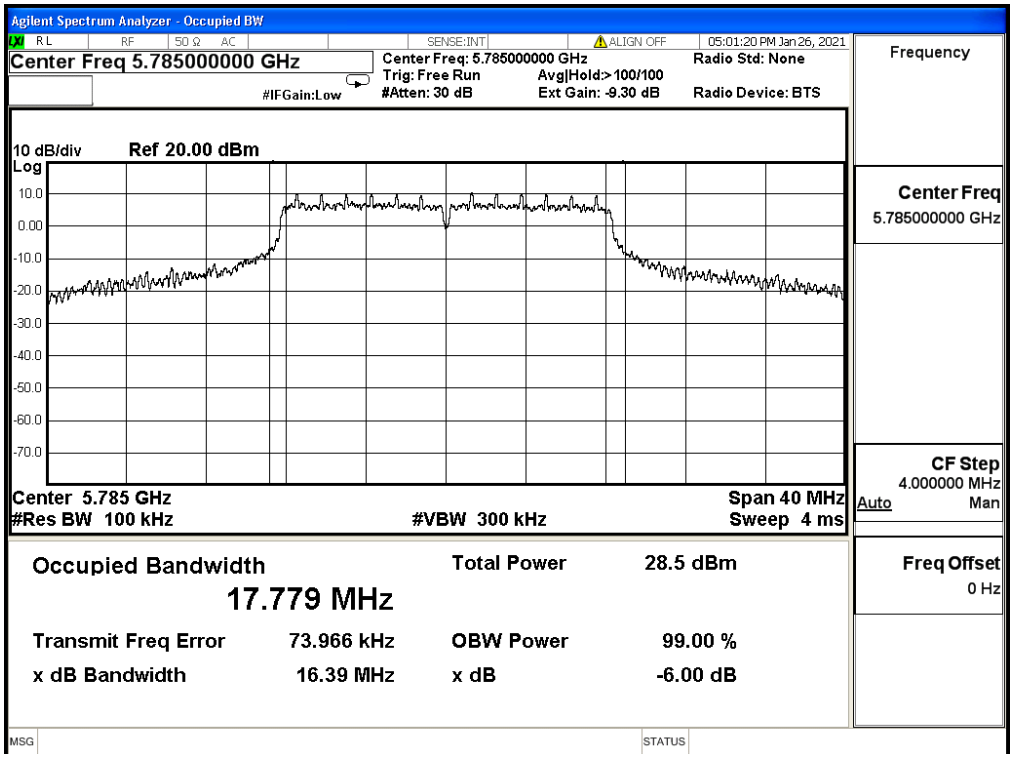
Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11a (ANT 0)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
149	5745	16.320	≧ 0.500
157	5785	16.390	≧ 0.500
165	5825	16.330	≧ 0.500

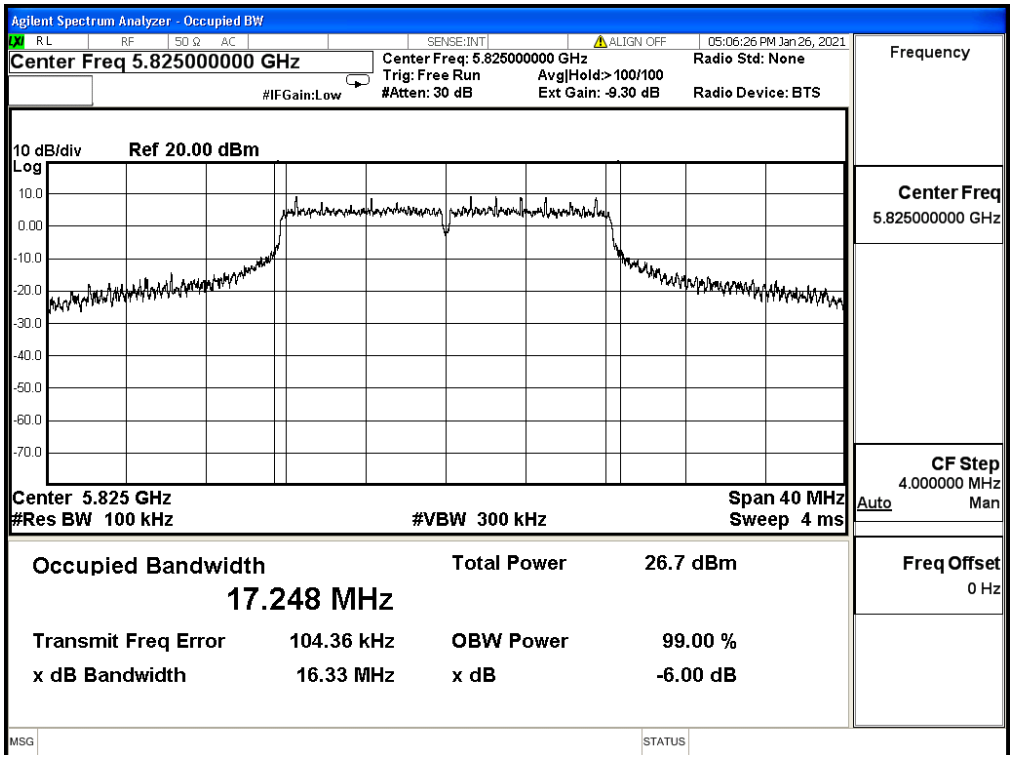
Channel 149 (5745MHz)



Channel 157 (5785MHz)



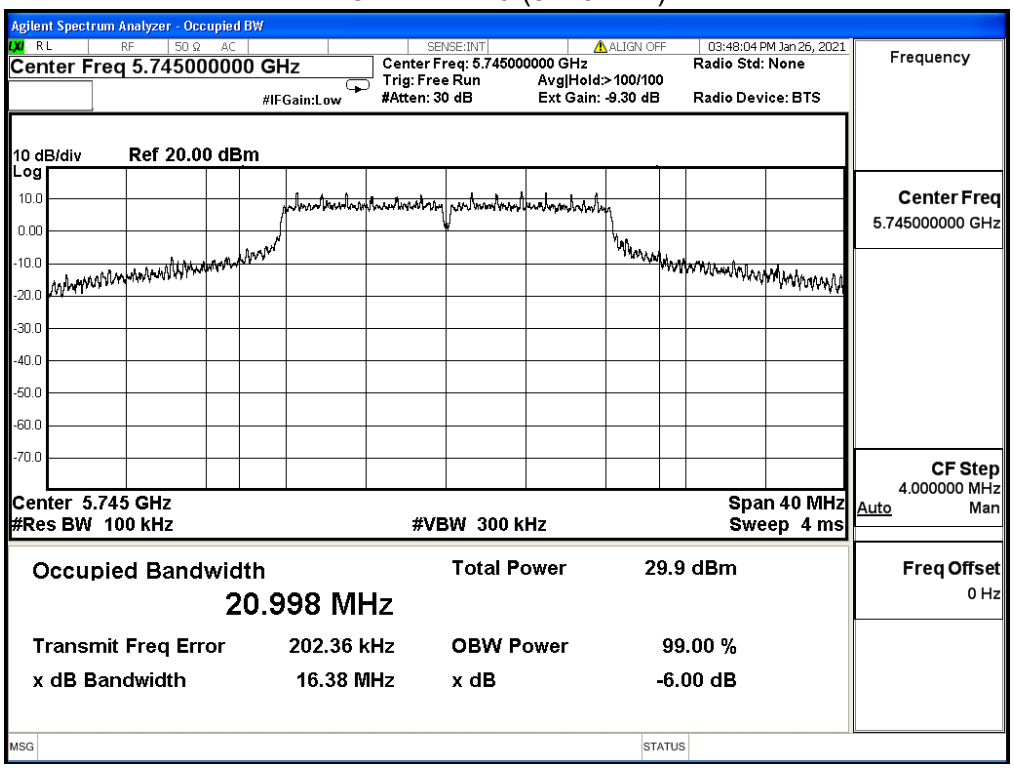
Channel 165 (5825MHz)



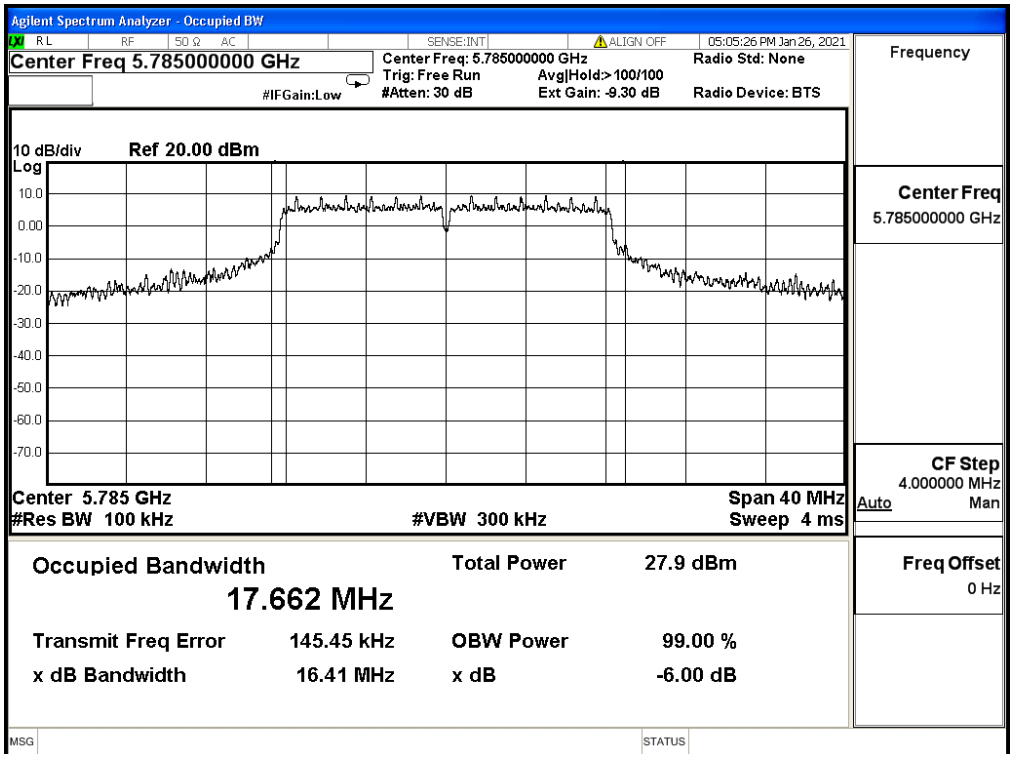
Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11a (ANT 1)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
149	5745	16.380	≧ 0.500
157	5785	16.410	≧ 0.500
165	5825	16.360	≧ 0.500

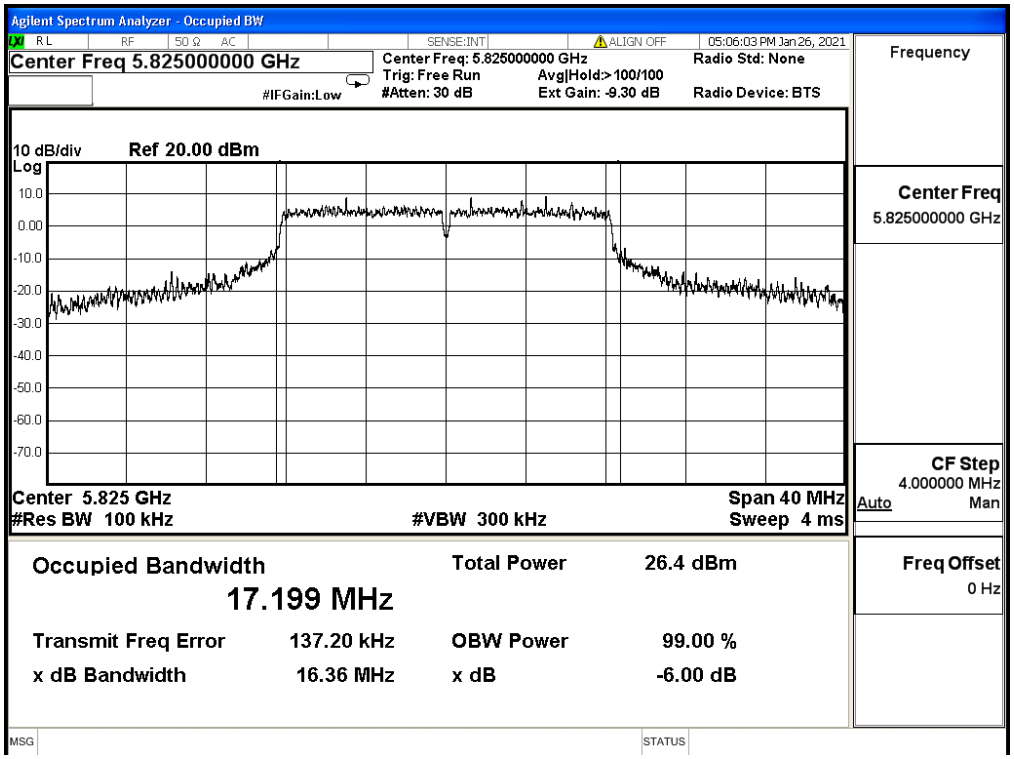
Channel 149 (5745MHz)



Channel 157 (5785MHz)



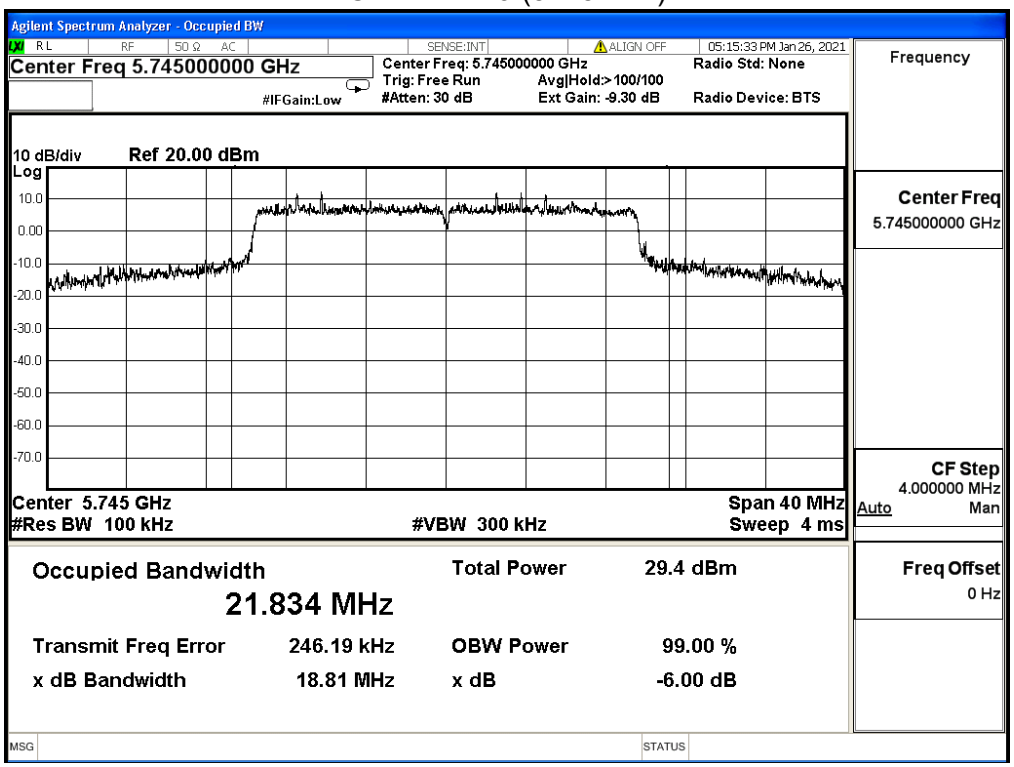
Channel 165 (5825MHz)



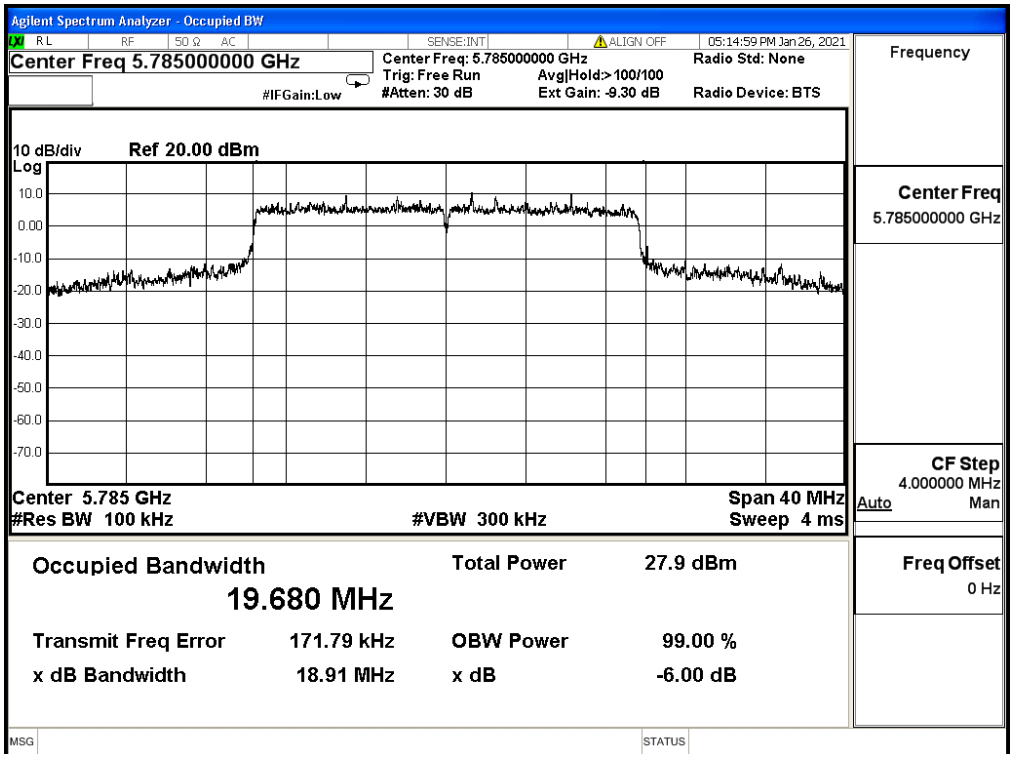
Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11ax_20M(ANT 0)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
149	5745	18.810	≧ 0.500
157	5785	18.910	≧ 0.500
165	5825	18.950	≧ 0.500

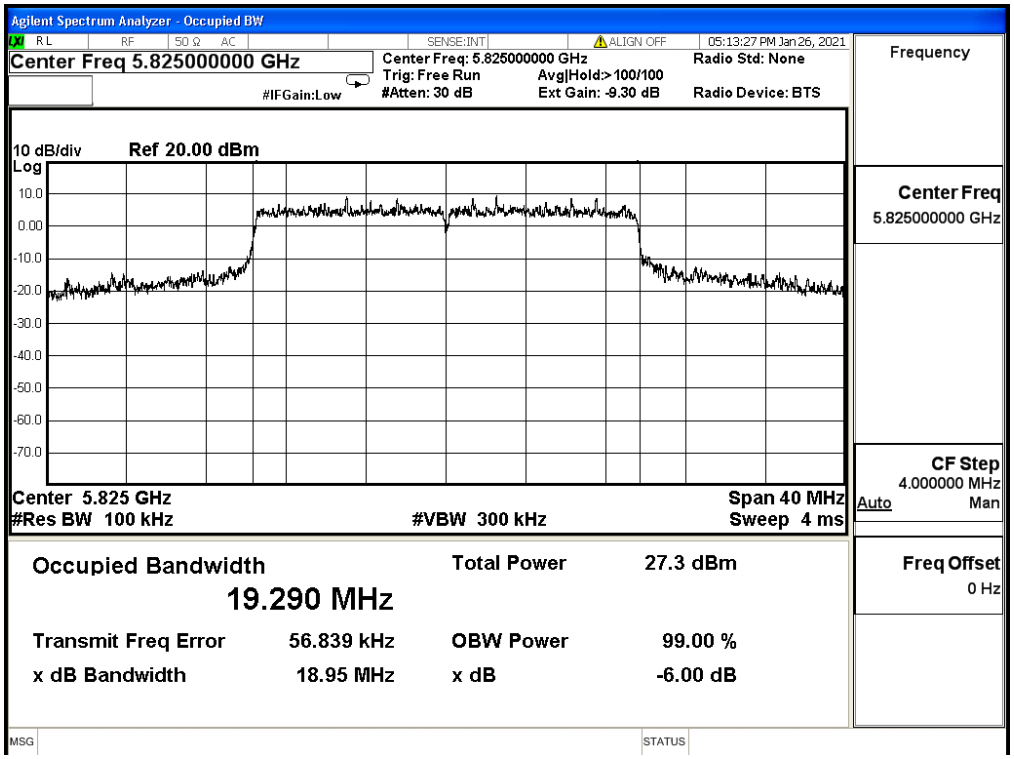
Channel 149 (5745MHz)



Channel 157 (5785MHz)



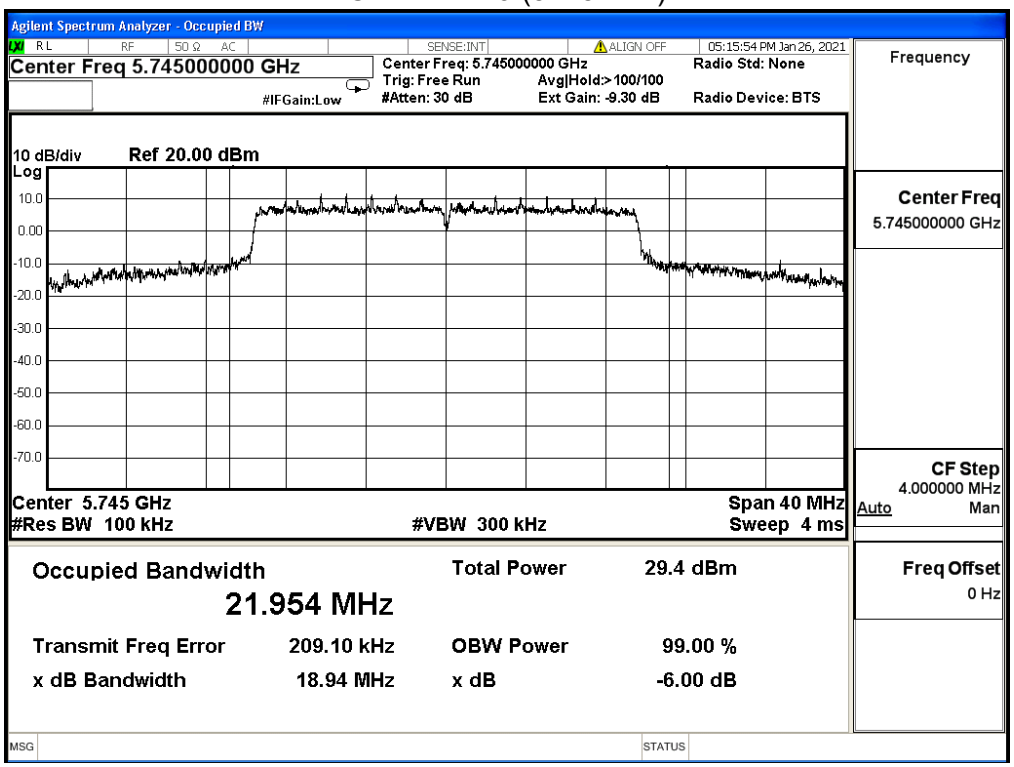
Channel 165 (5825MHz)



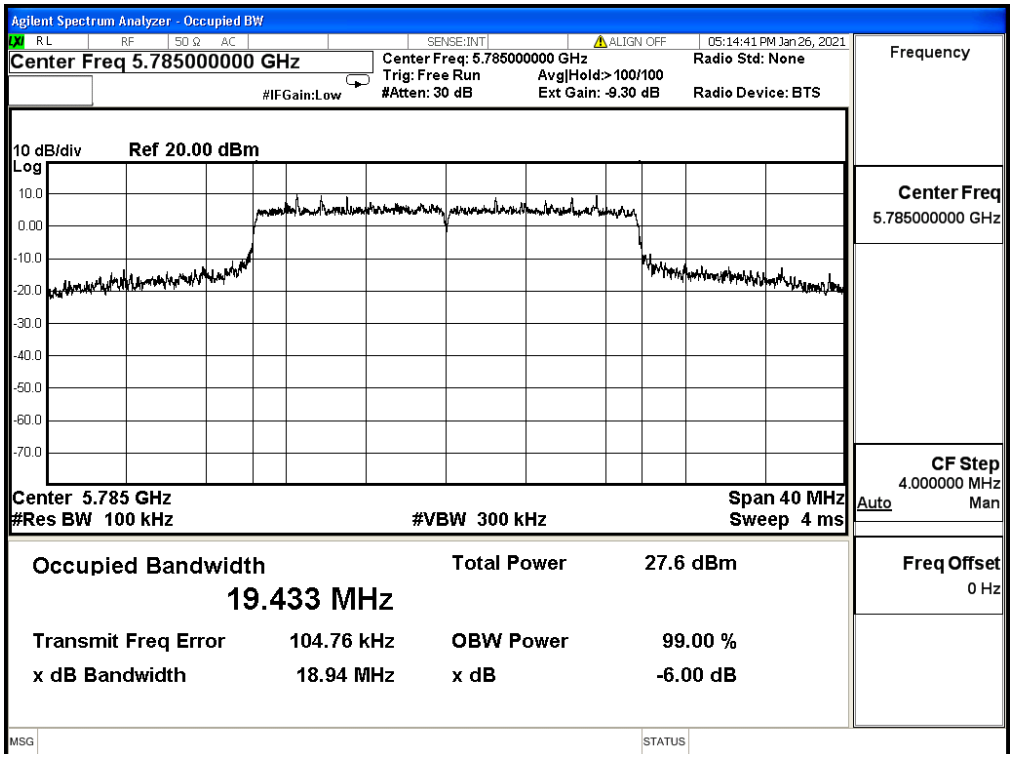
Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11ax_20M(ANT 1)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
149	5745	18.940	≧ 0.500
157	5785	18.940	≧ 0.500
165	5825	18.980	≧ 0.500

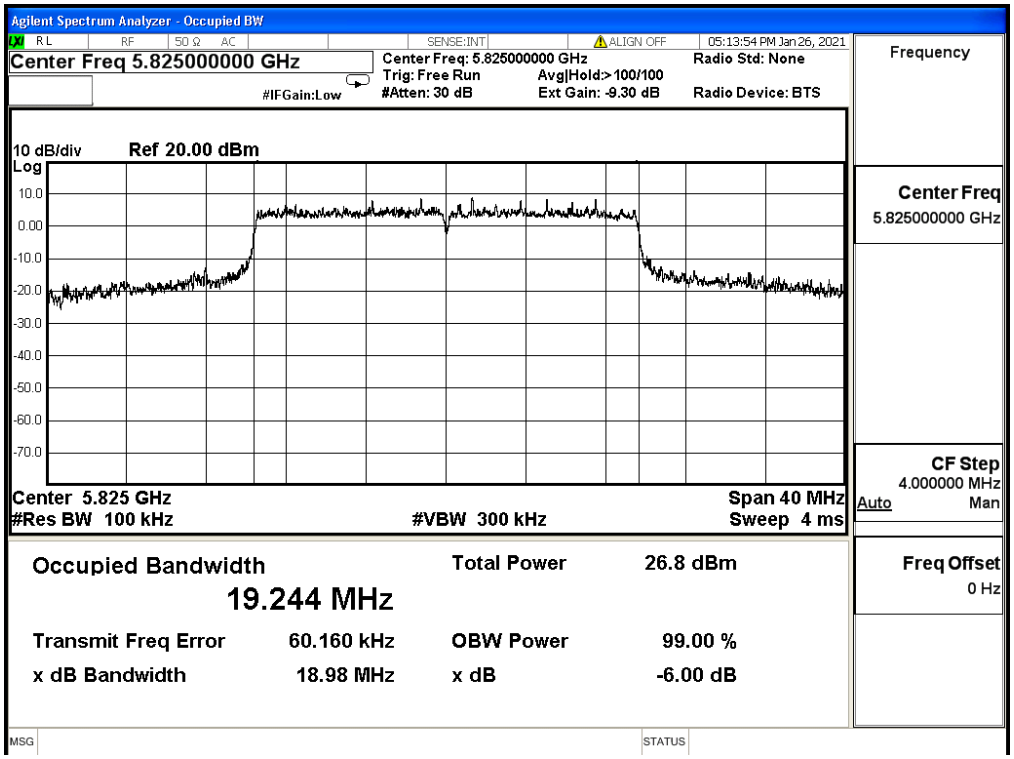
Channel 149 (5745MHz)



Channel 157 (5785MHz)



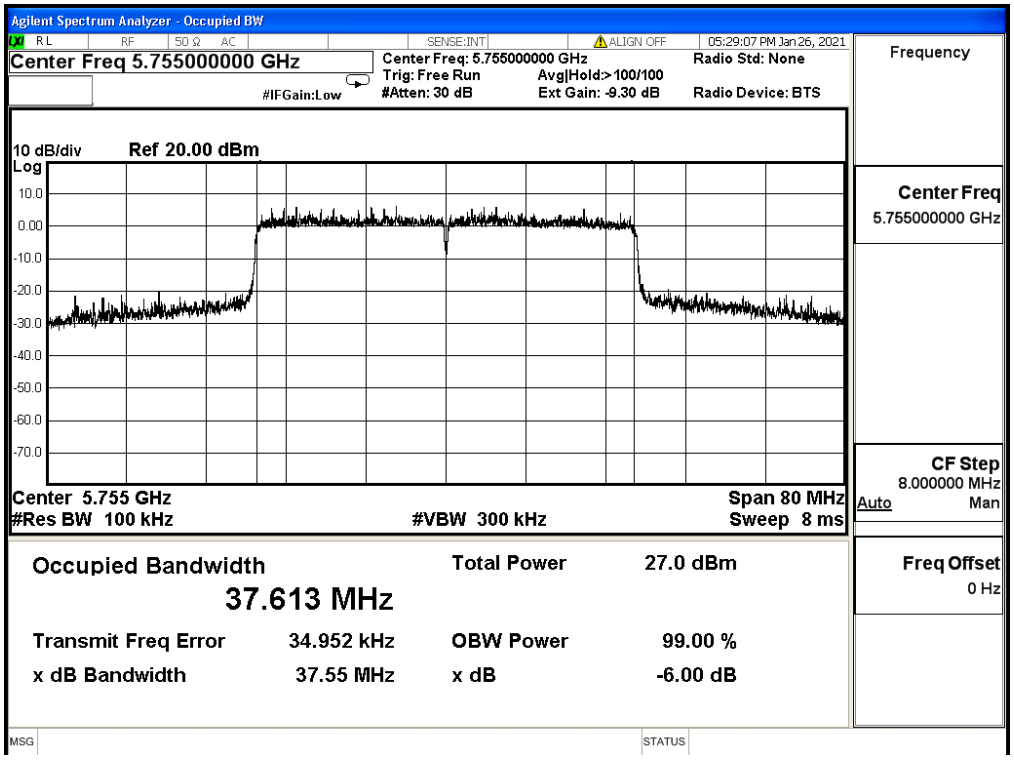
Channel 165 (5825MHz)



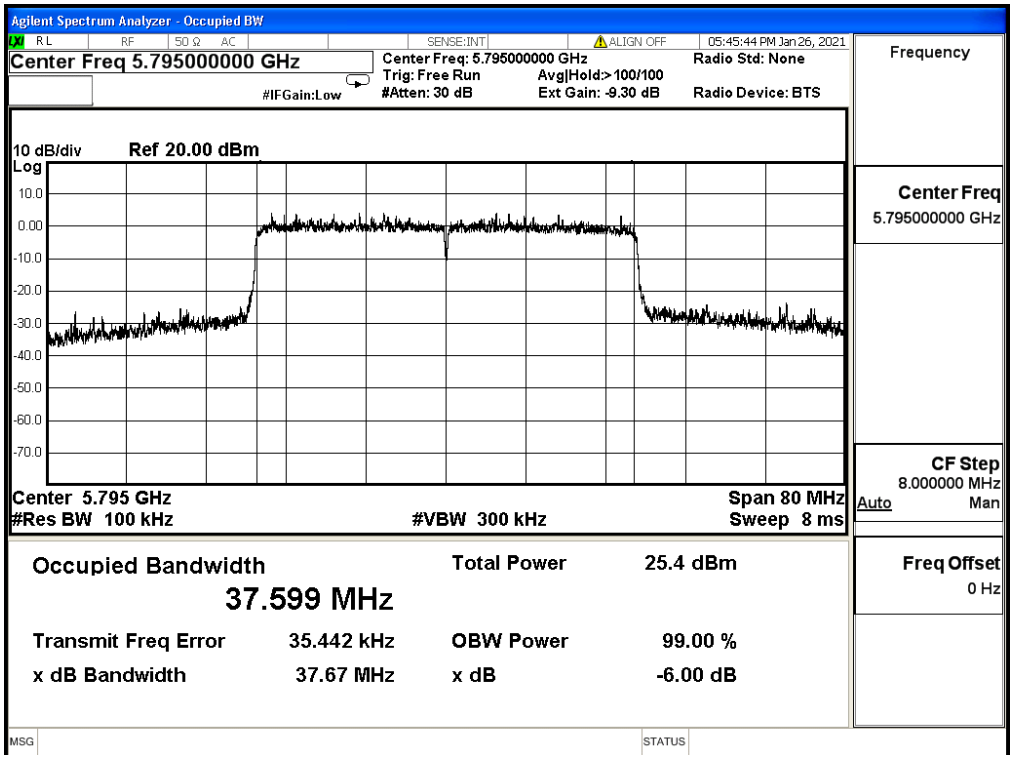
Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11ax_40M(ANT 0)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
151	5755	37.550	≧ 0.500
159	5795	37.670	≧ 0.500

Channel 151 (5755MHz)



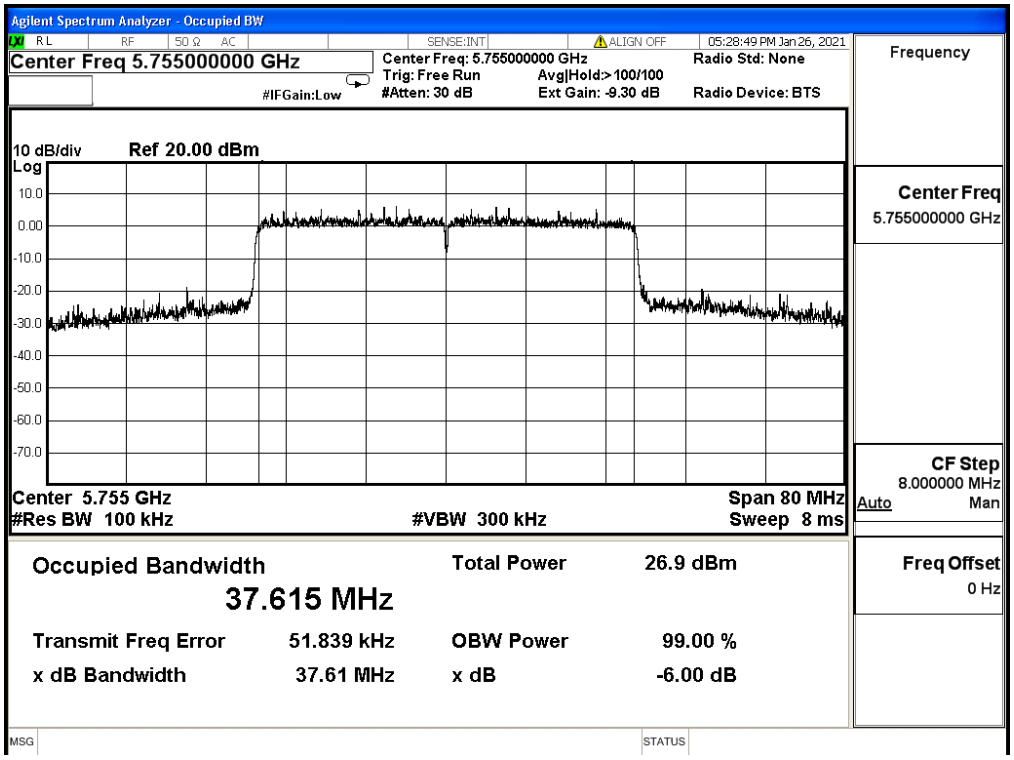
Channel 159 (5795MHz)



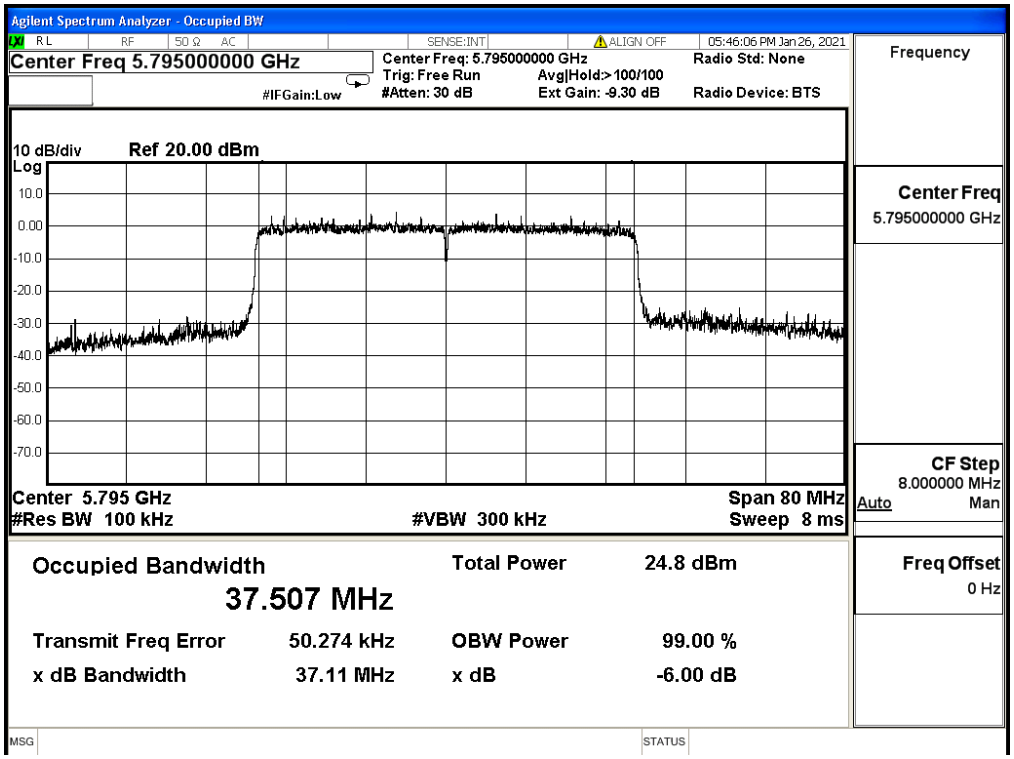
Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11ax_40M(ANT 1)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
151	5755	37.610	≧ 0.500
159	5795	37.110	≧ 0.500

Channel 151 (5755MHz)



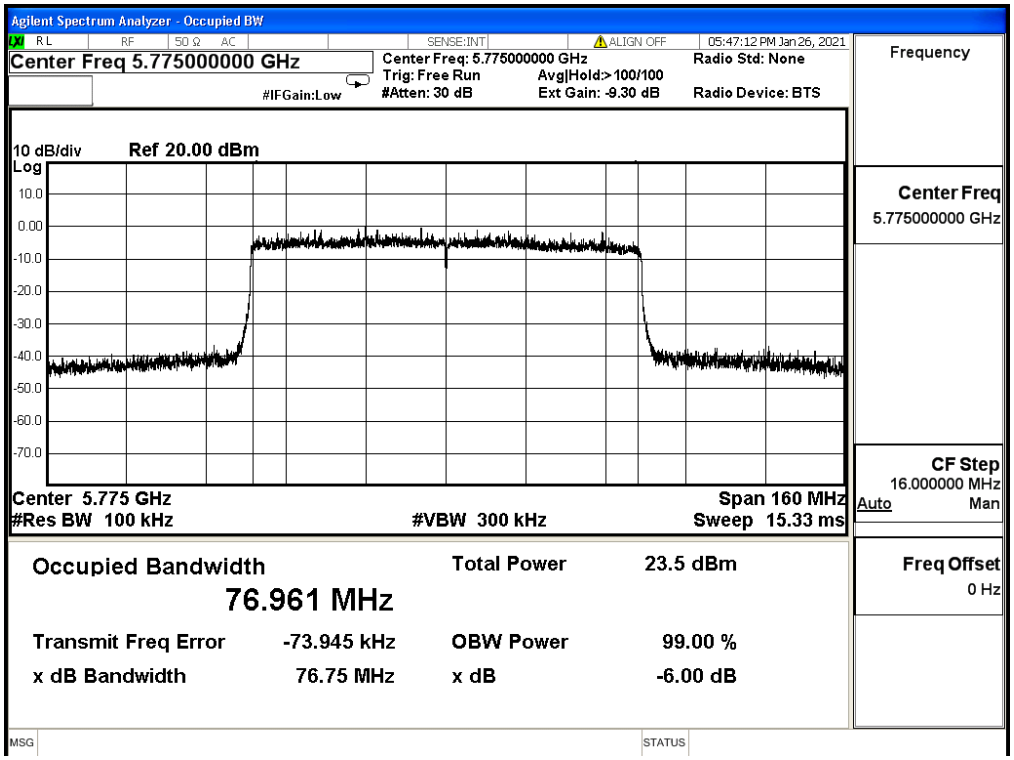
Channel 159 (5795MHz)



Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

IEEE 802.11ac_80M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)	Result
155	5775	76.750	>0.5	Pass

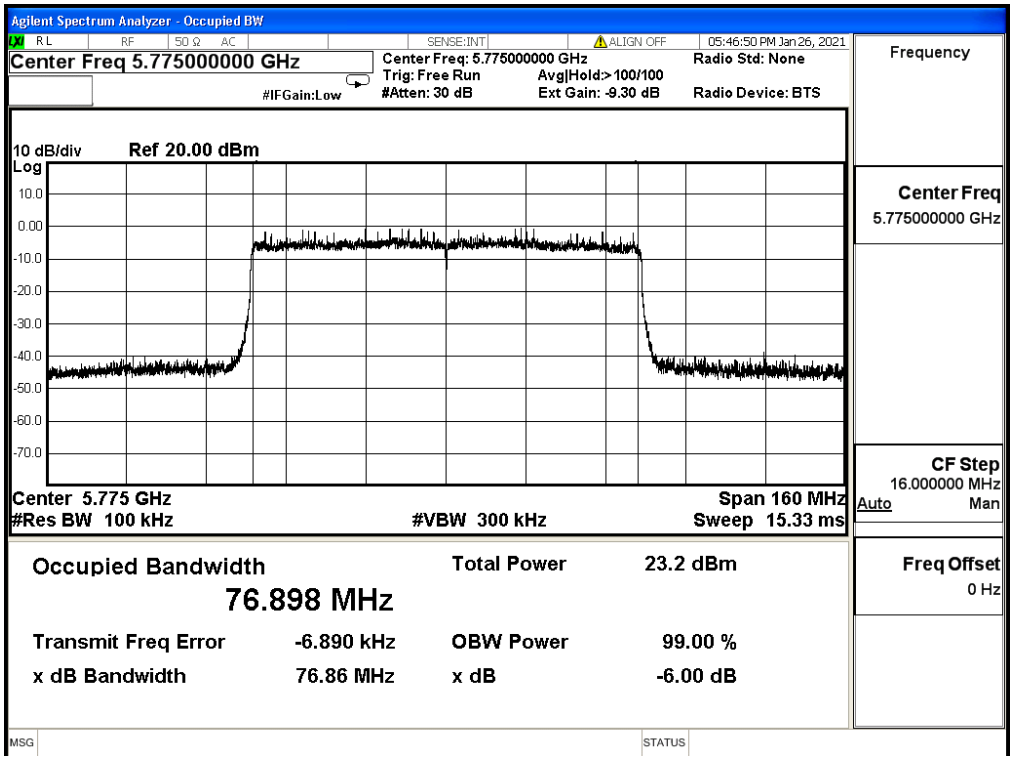
Channel 155 (5775MHz)



Product	Mesh Wi-Fi Router		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/26	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	66.0

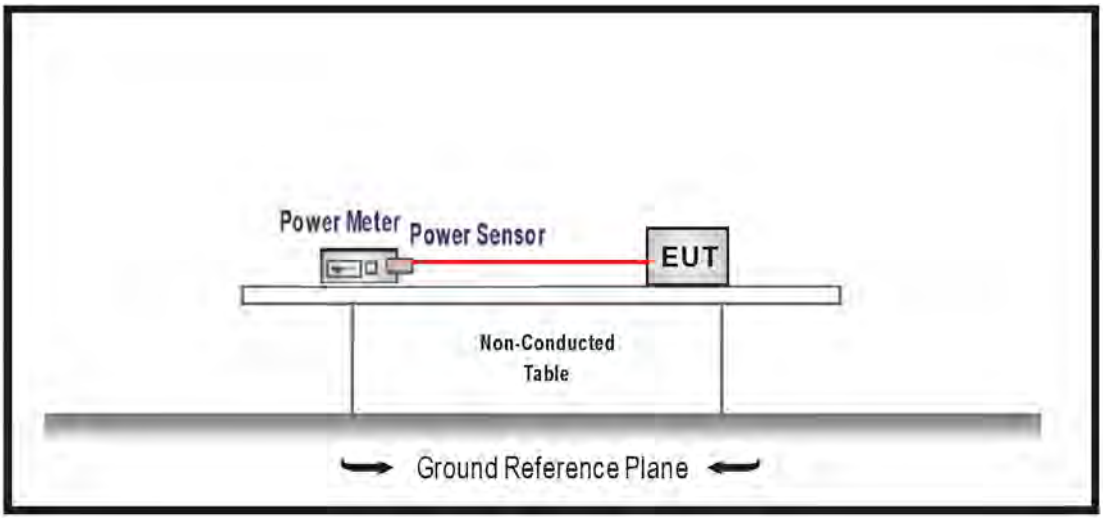
IEEE 802.11ac_80M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)	Result
155	5775	76.860	>0.5	Pass

Channel 155 (5775MHz)



4. Maximum conducted output power

4.1. Test Setup



4.2. Limits

1. For the band 5.15-5.25 GHz, the Maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1W. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

2. For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. The maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3. For the band 5.25-5.35 GHz, the Maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

4. For the band 5.725-5.850 GHz, the Maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1W. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

4.3. Test Procedure

The EUT was setup to ANSI C63.10: 2013; tested to U-NII test procedure of KDB 789033 D02 v02r01 for compliance to FCC 47CFR Subpart E requirements. The Method PM-G of the Maximum conducted output power was used.

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

4.4. Test Result

Product	Mesh Wi-Fi Router		
Test Item	Maximum conducted output power		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11a

5GHz UNII 1:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
36	5180	20.860	20.700	23.791	≦30.000
44	5220	22.410	22.340	25.385	≦30.000
48	5240	22.450	22.310	25.391	≦30.000

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
52	5260	16.780	16.320	19.566	≦24.000
60	5300	16.840	16.360	19.617	≦24.000
64	5320	16.810	16.230	19.540	≦24.000

5GHz UNII 2C:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
100	5500	16.690	16.510	19.611	≦24.000
116	5580	16.660	16.380	19.533	≦24.000
140	5700	16.740	16.680	19.720	≦24.000

5GHz UNII 3:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
149	5745	25.480	25.070	28.290	≦30.000
157	5785	24.170	24.010	27.101	≦30.000
165	5825	23.750	23.610	26.691	≦30.000

The worst emission of data rate is 6 Mbps.

Product	Mesh Wi-Fi Router		
Test Item	Maximum conducted output power		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11ax (20MHz)

5GHz UNII 1:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
36	5180	20.240	20.090	23.176	≦30.000
44	5220	23.080	23.130	26.115	≦30.000
48	5240	23.100	23.210	26.166	≦30.000

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
52	5260	17.240	16.780	20.026	≦24.000
60	5300	17.270	16.880	20.090	≦24.000
64	5320	17.140	16.610	19.893	≦24.000

5GHz UNII 2C:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
100	5500	17.210	16.950	20.092	≦24.000
116	5580	17.250	16.970	20.123	≦24.000
140	5700	17.360	17.230	20.306	≦24.000

5GHz UNII 3:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
149	5745	25.540	25.510	28.535	≦30.000
157	5785	24.720	24.620	27.681	≦30.000
165	5825	24.240	24.060	27.161	≦30.000

The worst emission of data rate is MCS 0

Product	Mesh Wi-Fi Router		
Test Item	Maximum conducted output power		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11ax (40MHz)					
5GHz UNII 1:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
38	5190	17.760	17.640	20.711	≦30.000
46	5230	21.880	21.720	24.811	≦30.000
5GHz UNII 2A:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
54	5270	19.920	19.780	22.861	≦24.000
62	5310	17.630	16.960	20.318	≦24.000
5GHz UNII 2C:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
102	5510	17.110	16.530	19.840	≦24.000
110	5550	20.330	20.120	23.237	≦24.000
134	5670	18.190	17.860	21.038	≦24.000
5GHz UNII 3:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
151	5755	23.160	23.040	26.111	≦30.000
159	5795	21.930	21.640	24.798	≦30.000

The worst emission of data rate is MCS0

Product	Mesh Wi-Fi Router		
Test Item	Maximum conducted output power		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11ax (80MHz)

5GHz UNII 1:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
42	5210	16.420	16.110	19.278	≦30.000

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
58	5290	16.510	15.950	19.249	≦24.000

5GHz UNII 2C:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
106	5530	17.850	17.440	20.660	≦24.000
122	5610	19.870	19.570	22.733	≦24.000

5GHz UNII 3:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
155	5775	19.640	19.260	22.464	≦30.000

The worst emission of data rate is MCS0

Product	Mesh Wi-Fi Router		
Test Item	TPC		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11a						
5GHz UNII 2A:						
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)				Limit (dBm)
		Ant. 0	Ant. 1	Total	EIRP	
52	5260	10.780	10.320	13.566	18.996	≦24.000
60	5300	10.840	10.360	13.617	19.047	≦24.000
64	5320	10.810	10.230	13.540	18.970	≦24.000
5GHz UNII 2C:						
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)				Limit (dBm)
		Ant. 0	Ant. 1	Total	EIRP	
100	5500	10.690	10.510	13.611	19.041	≦24.000
116	5580	10.660	10.380	13.533	18.963	≦24.000
140	5700	10.740	10.680	13.720	19.150	≦24.000

The worst emission of data rate is 6 Mbps.

IEEE 802.11ax (20MHz)						
5GHz UNII 2A:						
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)				Limit (dBm)
		Ant. 0	Ant. 1	Total	EIRP	
52	5260	11.240	10.780	14.026	19.456	≦24.000
60	5300	11.270	10.880	14.090	19.520	≦24.000
64	5320	11.140	10.610	13.893	19.323	≦24.000
5GHz UNII 2C:						
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)				Limit (dBm)
		Ant. 0	Ant. 1	Total	EIRP	
100	5500	11.210	10.950	14.092	19.522	≦24.000
116	5580	11.250	10.970	14.123	19.553	≦24.000
140	5700	11.360	11.230	14.306	19.736	≦24.000

The worst emission of data rate is MCS 0

Product	Mesh Wi-Fi Router		
Test Item	TPC		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11ax (40MHz)						
5GHz UNII 2A:						
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)				Limit (dBm)
		Ant. 0	Ant. 1	Total	EIRP	
54	5270	13.920	13.780	16.861	22.291	≦24.000
62	5310	11.630	10.960	14.318	19.748	≦24.000
5GHz UNII 2C:						
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)				Limit (dBm)
		Ant. 0	Ant. 1	Total	EIRP	
102	5510	11.110	10.530	13.840	19.270	≦24.000
110	5550	14.330	14.120	17.237	22.667	≦24.000
134	5670	12.190	11.860	15.038	20.468	≦24.000

The worst emission of data rate is MCS0

IEEE 802.11ax (80MHz)						
5GHz UNII 2A:						
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)				Limit (dBm)
		Ant. 0	Ant. 1	Total	EIRP	
58	5290	10.510	9.950	13.249	18.679	≦24.000
5GHz UNII 2C:						
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)				Limit (dBm)
		Ant. 0	Ant. 1	Total	EIRP	
106	5530	11.850	11.440	14.660	20.090	≦24.000
122	5610	13.870	13.570	16.733	22.163	≦24.000

The worst emission of data rate is MCS0

Product	Mesh Wi-Fi Router		
Test Item	TPC		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11ax (80MHz)					
5GHz UNII 2A:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
58	5290	16.510	15.950	19.249	≦24.000
5GHz UNII 2C:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
106	5530	17.850	17.440	20.660	≦24.000
122	5610	19.870	19.570	22.733	≦24.000

The worst emission of data rate is MCS0

Product	Mesh Wi-Fi Router		
Test Item	Maximum conducted output power		
Test Mode	Mode 3: Transmit_BF		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11ax (20MHz)

5GHz UNII 1:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
36	5180	20.350	20.180	23.276	≦27.955
44	5220	23.220	23.450	26.347	≦27.955
48	5240	23.250	23.310	26.290	≦27.955

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
52	5260	17.710	17.270	20.506	≦21.955
60	5300	17.770	17.260	20.533	≦21.955
64	5320	17.510	17.250	20.392	≦21.955

5GHz UNII 2C:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
100	5500	17.230	17.010	20.132	≦21.955
116	5580	17.370	17.080	20.238	≦21.955
140	5700	17.310	17.280	20.305	≦21.955

5GHz UNII 3:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
149	5745	24.710	24.680	27.705	≦27.955
157	5785	24.640	24.510	27.586	≦27.955
165	5825	23.250	23.560	26.418	≦27.955

The worst emission of data rate is MCS 0

Product	Mesh Wi-Fi Router		
Test Item	Maximum conducted output power		
Test Mode	Mode 3: Transmit_BF		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11ax (20MHz)

5GHz UNII 1:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
38	5190	18.150	17.710	20.946	≦27.955
46	5230	22.150	21.890	25.032	≦27.955

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
54	5270	18.790	18.710	21.760	≦21.955
62	5310	17.150	17.110	20.140	≦21.955

5GHz UNII 2C:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
102	5510	17.170	17.060	20.126	≦21.955
110	5550	18.880	18.770	21.836	≦21.955
134	5670	18.720	18.360	21.554	≦21.955

5GHz UNII 3:

Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
151	5755	23.570	23.440	26.516	≦27.955
159	5795	21.750	21.560	24.666	≦27.955

The worst emission of data rate is MCS0

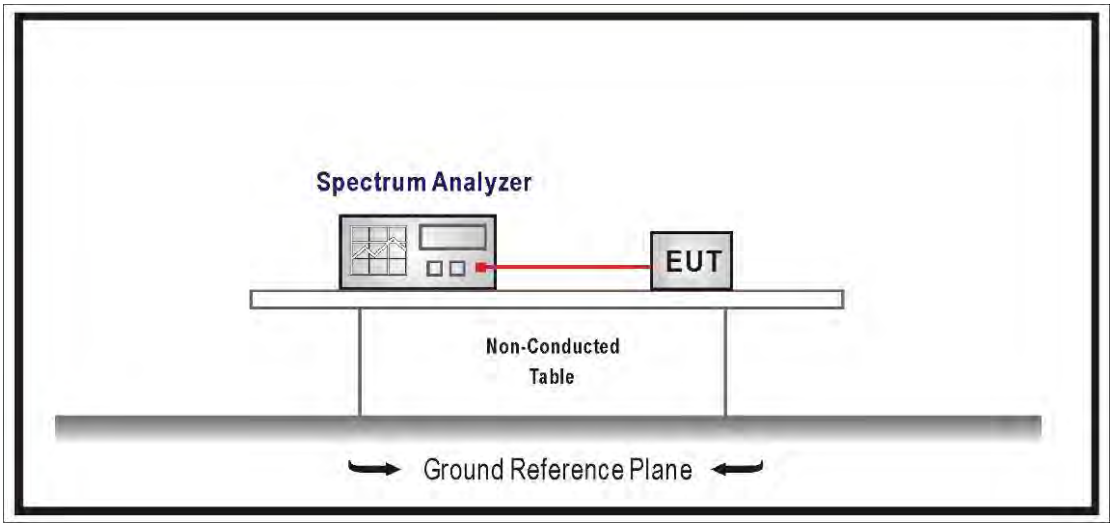
Product	Mesh Wi-Fi Router		
Test Item	Maximum conducted output power		
Test Mode	Mode 3: Transmit_BF		
Date of Test	2021/01/25	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	66.0

IEEE 802.11ax (80MHz)					
5GHz UNII 1:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
42	5210	17.410	17.110	20.273	≦27.955
5GHz UNII 2A:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
58	5290	16.510	16.330	19.431	≦21.955
5GHz UNII 2C:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
106	5530	17.760	17.450	20.618	≦21.955
122	5610	18.740	18.660	21.710	≦21.955
5GHz UNII 3:					
Channel No.	Frequency (MHz)	Max. Conducted Output Power (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
155	5775	18.730	18.660	21.705	≦27.955

The worst emission of data rate is MCS0

5. Maximum power spectral density

5.1. Test Setup



5.2. Limits

1. For the band 5.15-5.25 GHz, the Maximum power spectral density shall not exceed 17 dBm in any 1MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
2. For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi
3. For the band 5.25-5.35 GHz, the Maximum power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
4. For the band 5.725-5.850 GHz, the Maximum power spectral density shall not exceed 30 dBm in any 500KHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi..

5.3. Test Procedure

The EUT was setup to ANSI C63.10: 2013; tested to U-NII test procedure of KDB 789033 D02 v02r01 for compliance to FCC 47CFR Subpart E requirements.

For Band1 : Set RBW=1MHz, VBW=3MHz with RMS detector. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging.

For Band4 : Set RBW=500KHz, VBW=1.5MHz with RMS detector. The PPSD is the highest level found across the emission in any 500KHz band after 100 sweeps of averaging.

5.4. Test Result

Product	Mesh Wi-Fi Router		
Test Item	Maximum power spectral density		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/27	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	67.0

IEEE 802.11a

5GHz UNII 1:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
36	5180	10.600	10.390	13.150	≦14.955
44	5220	12.250	12.170	14.920	≦14.955
48	5240	12.560	12.040	14.920	≦14.955

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
52	5260	6.520	6.040	8.810	≦8.955
60	5300	6.360	6.020	8.920	≦8.955
64	5320	6.740	5.710	8.890	≦8.955

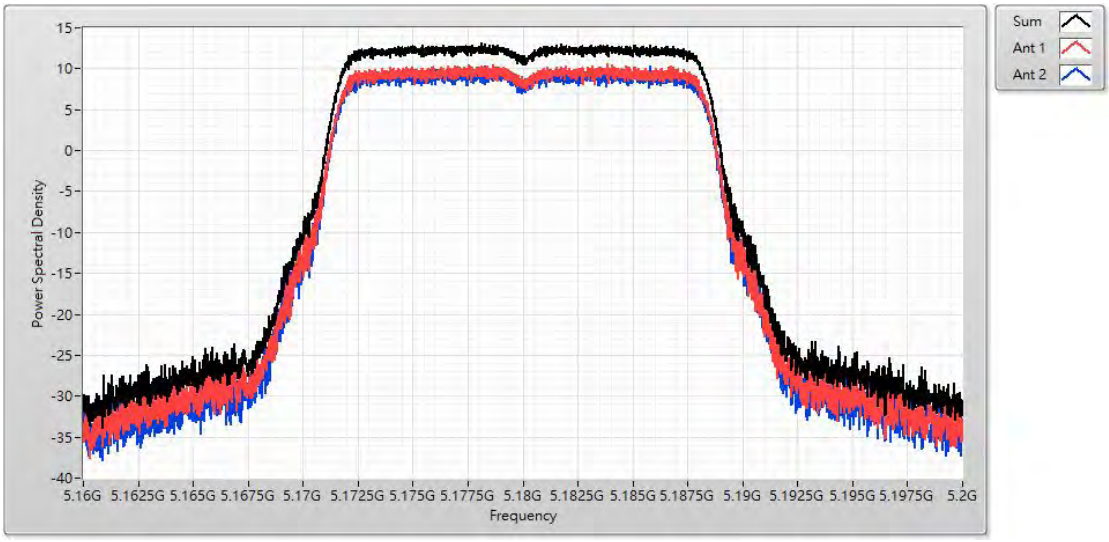
5GHz UNII 2C:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
100	5500	6.420	6.370	8.870	≦8.955
116	5580	6.380	6.090	8.770	≦8.955
140	5700	6.250	5.950	8.900	≦8.955

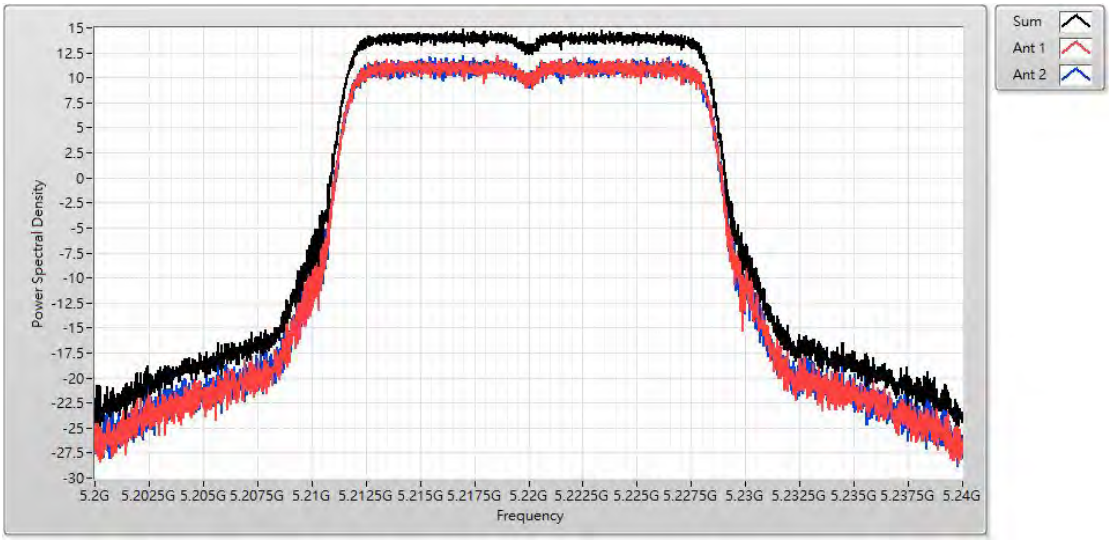
5GHz UNII 3:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
149	5745	11.580	11.400	14.130	≦27.955
157	5785	10.220	10.170	12.840	≦27.955
165	5825	9.940	9.610	12.570	≦27.955

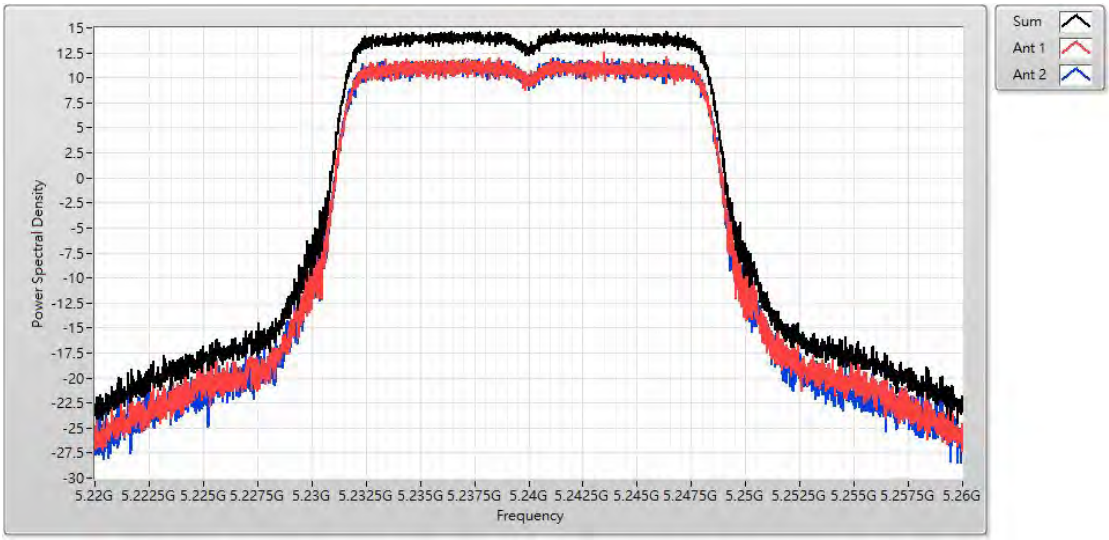
Channel 36 (5180MHz)



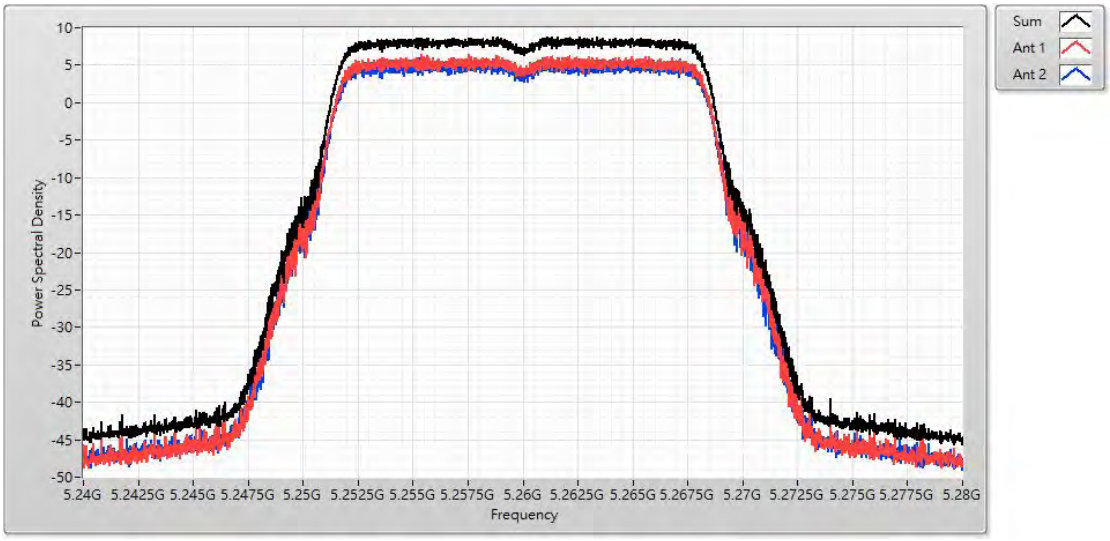
Channel 44 (5220MHz)



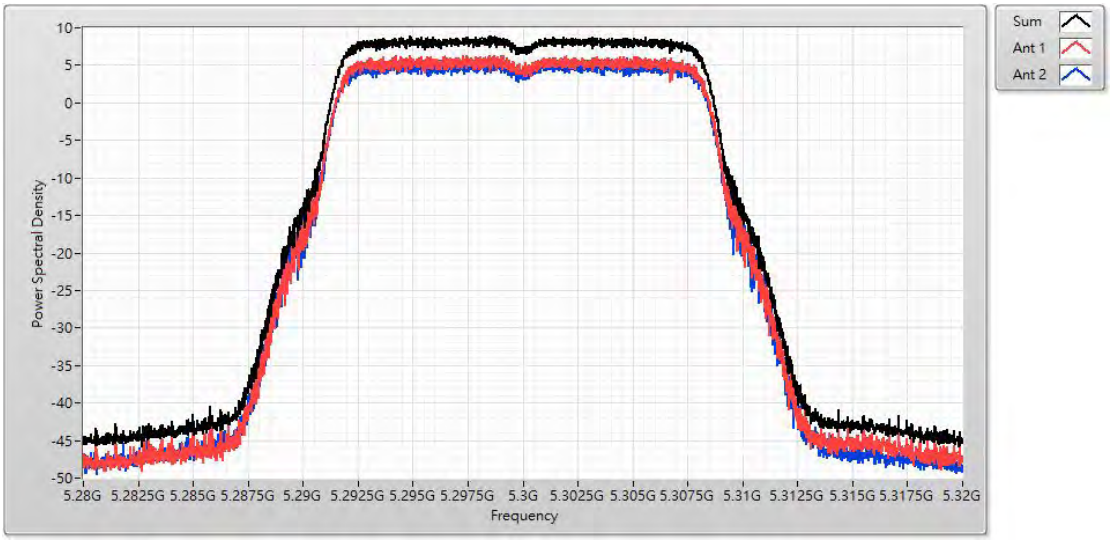
Channel 48 (5240MHz)



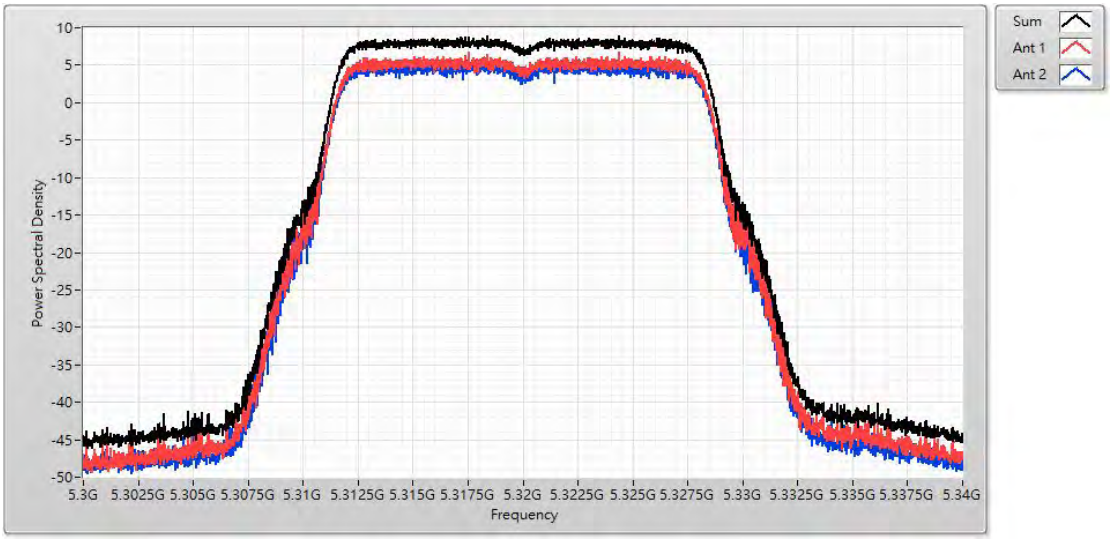
Channel 52 (5260MHz)



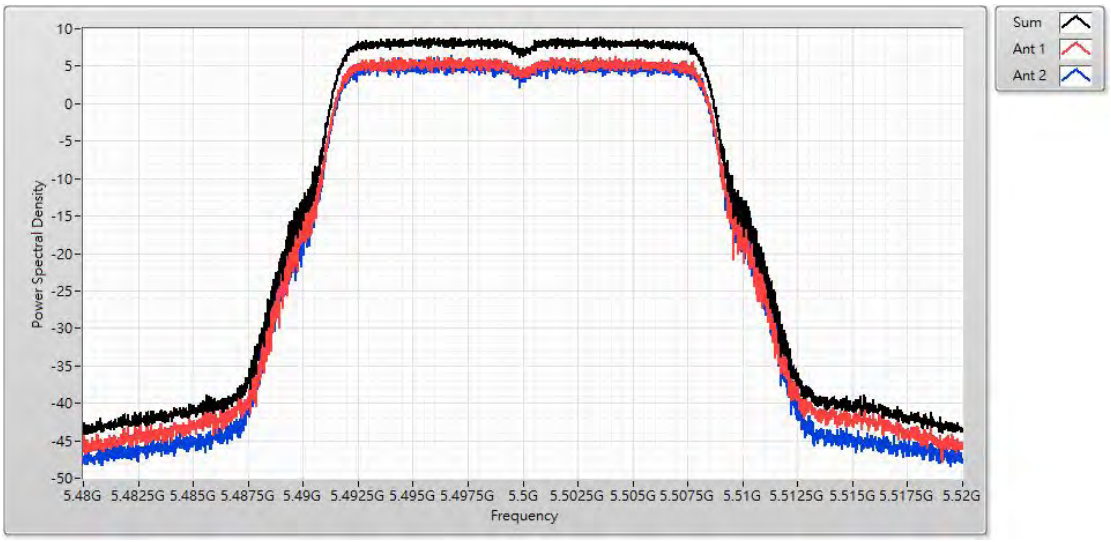
Channel 60 (5300MHz)



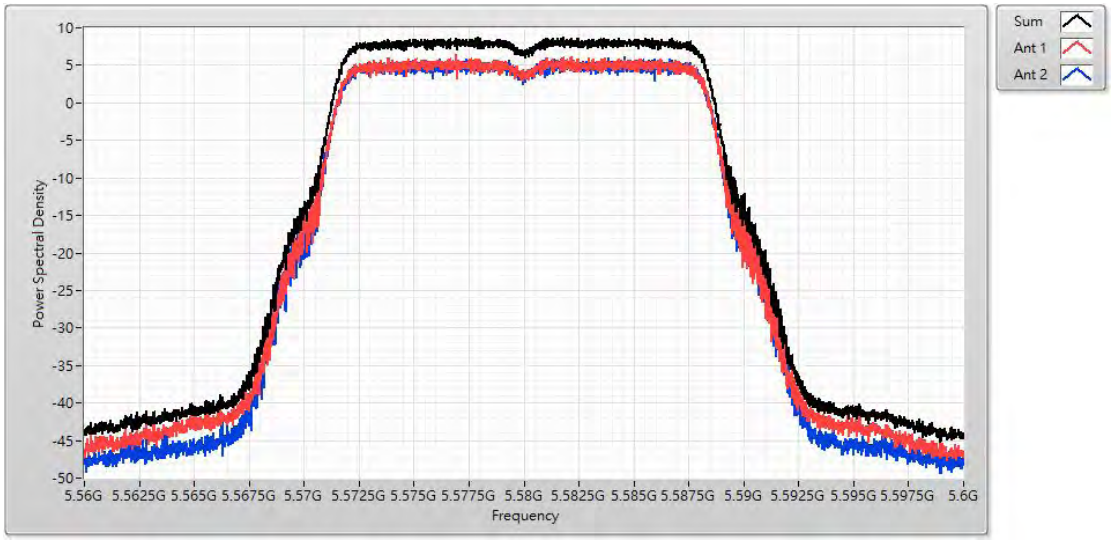
Channel 64 (5320MHz)



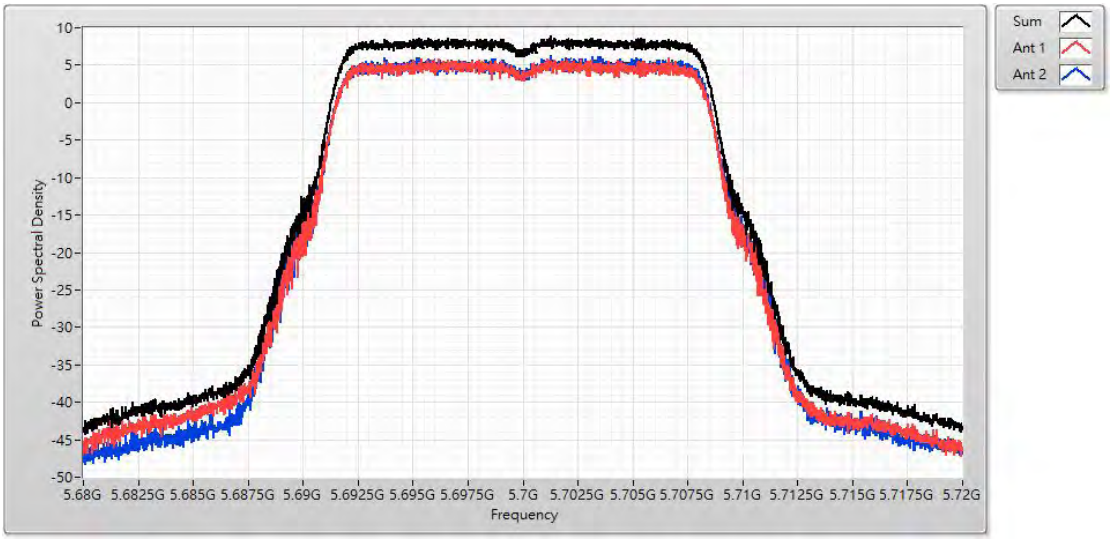
Channel 100 (5500MHz)



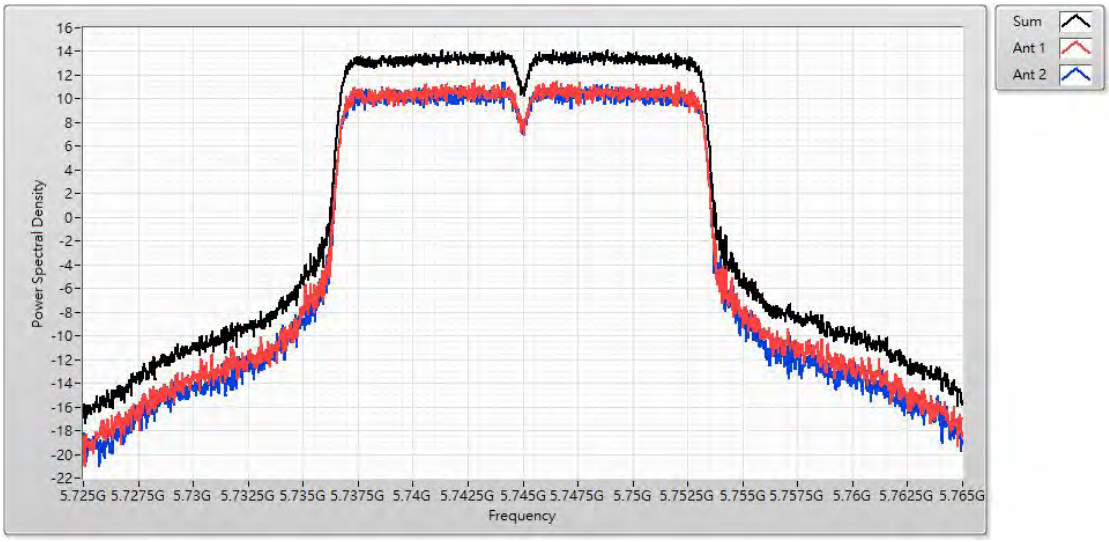
Channel 116 (5580MHz)



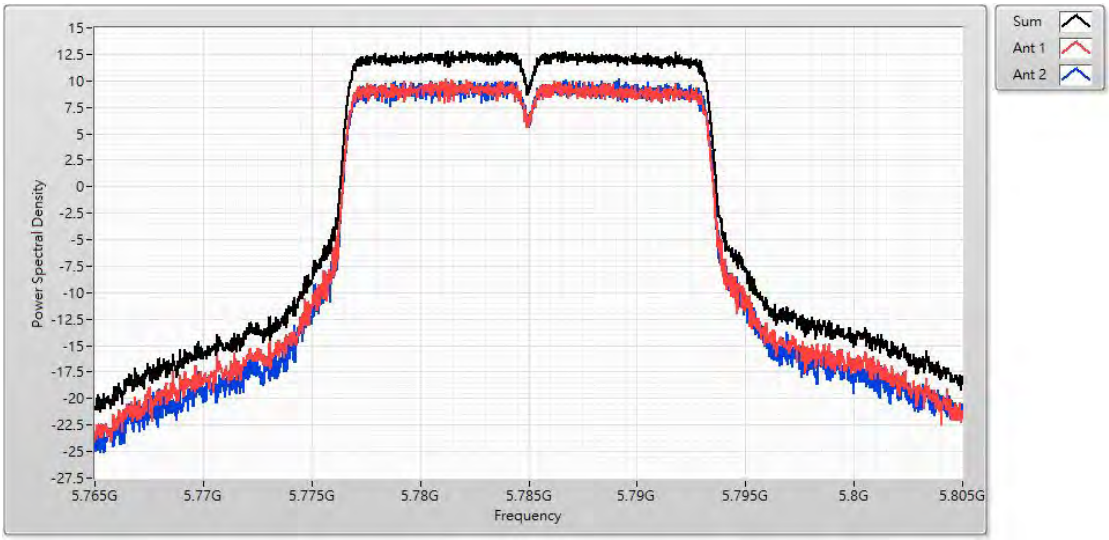
Channel 140 (5700MHz)



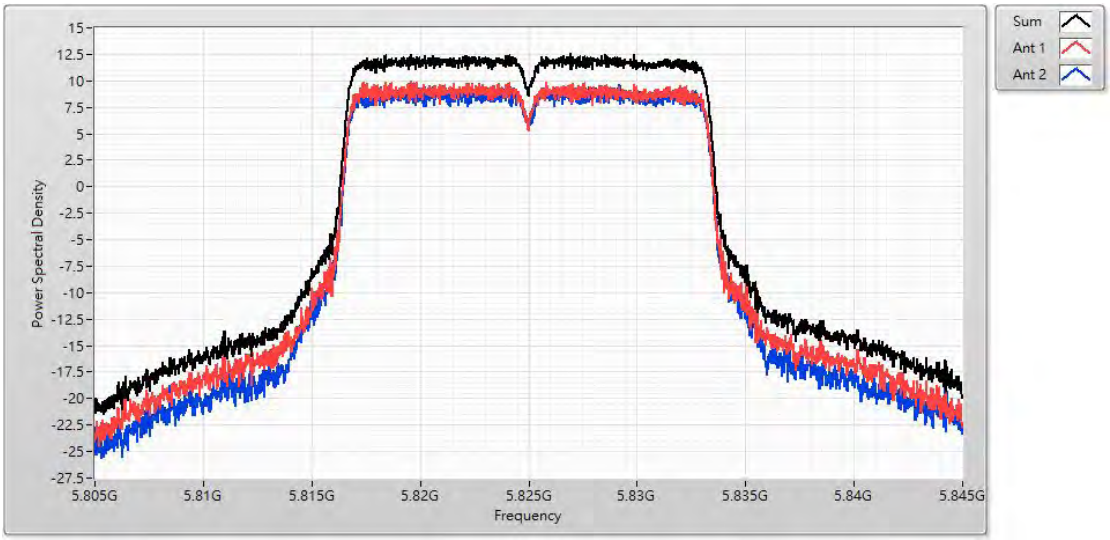
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



Product	Mesh Wi-Fi Router		
Test Item	Maximum power spectral density		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/27	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	67.0

IEEE 802.11ax (20MHz)

5GHz UNII 1:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
36	5180	9.060	8.700	11.560	≦14.955
44	5220	12.310	12.360	14.820	≦14.955
48	5240	12.310	12.310	14.940	≦14.955

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
52	5260	6.230	5.840	8.800	≦8.955
60	5300	6.420	6.100	8.880	≦8.955
64	5320	6.700	5.640	8.880	≦8.955

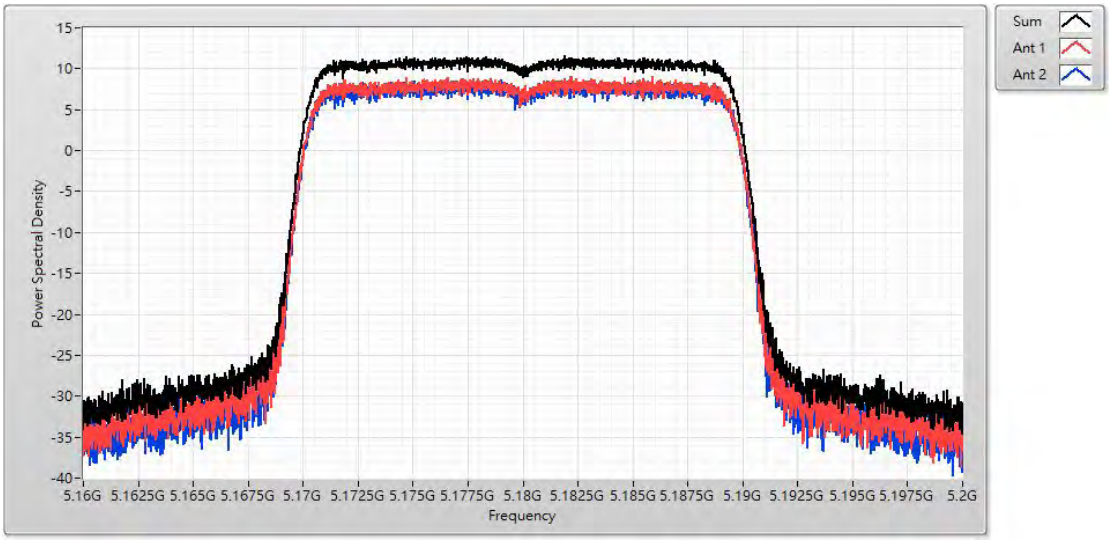
5GHz UNII 2C:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
100	5500	6.190	6.000	8.770	≦8.955
116	5580	6.210	5.800	8.780	≦8.955
140	5700	6.050	5.990	8.850	≦8.955

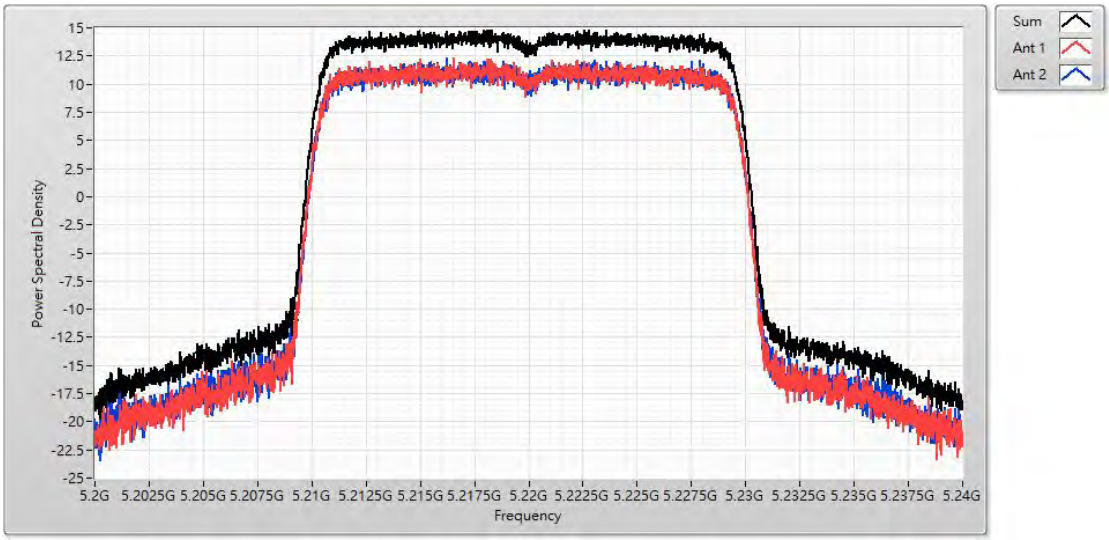
5GHz UNII 3:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
149	5745	11.13	10.990	13.910	≦27.955
157	5785	10.54	10.490	13.140	≦27.955
165	5825	9.80	9.780	12.440	≦27.955

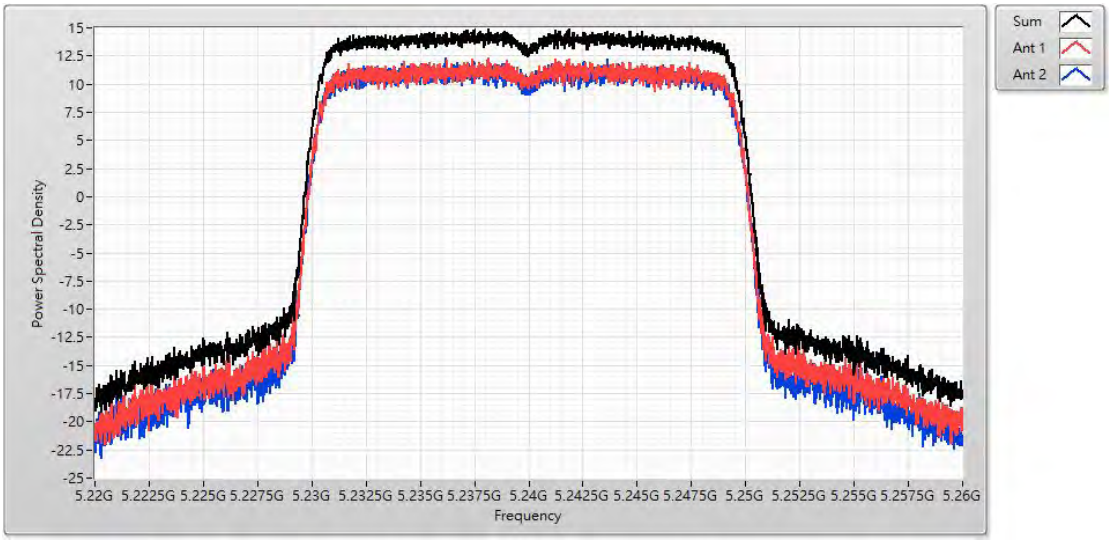
Channel 36 (5180MHz)



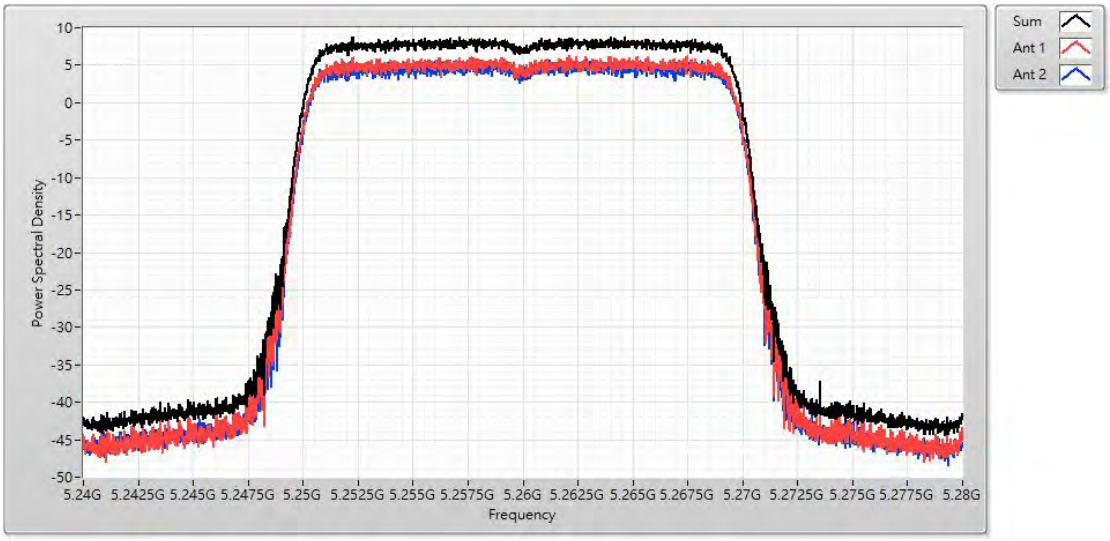
Channel 44 (5220MHz)



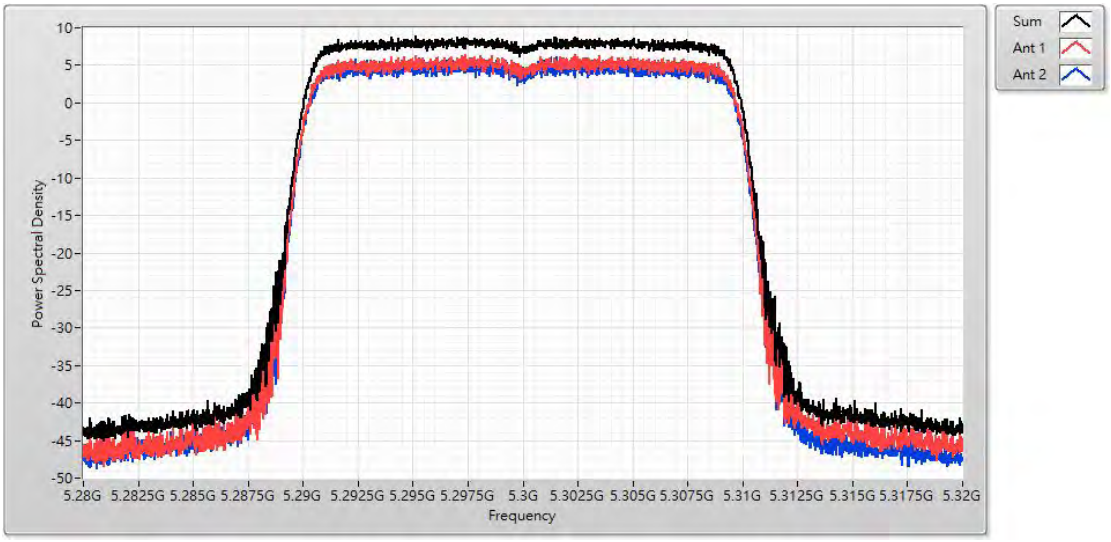
Channel 48 (5240MHz)



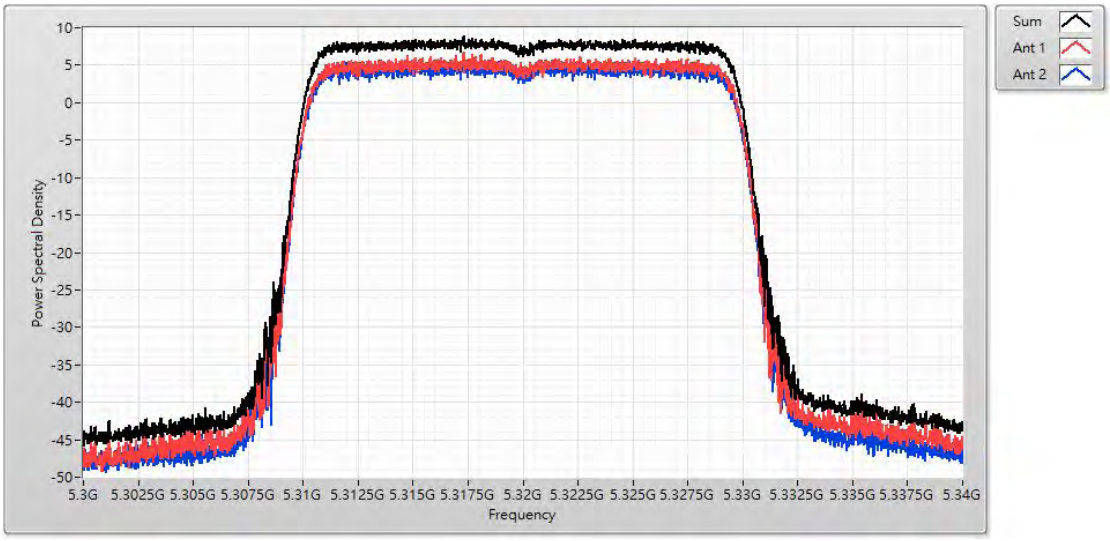
Channel 52 (5260MHz)



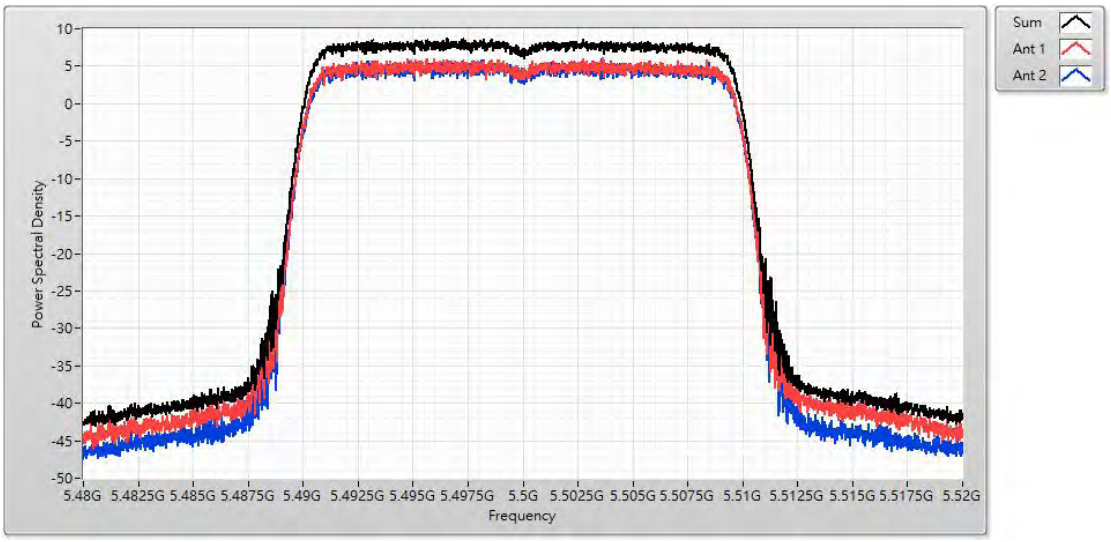
Channel 60 (5300MHz)



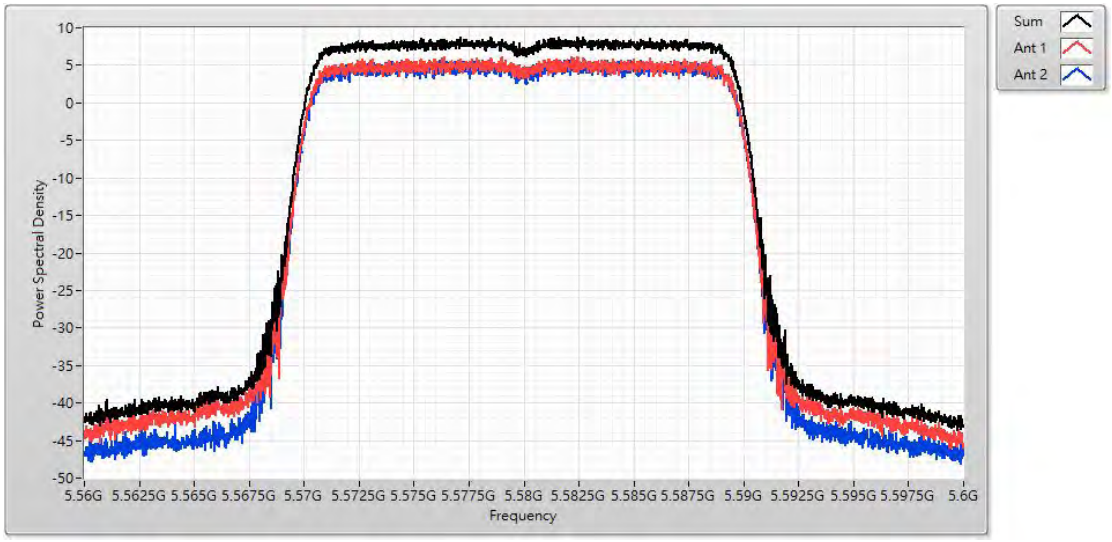
Channel 64 (5320MHz)



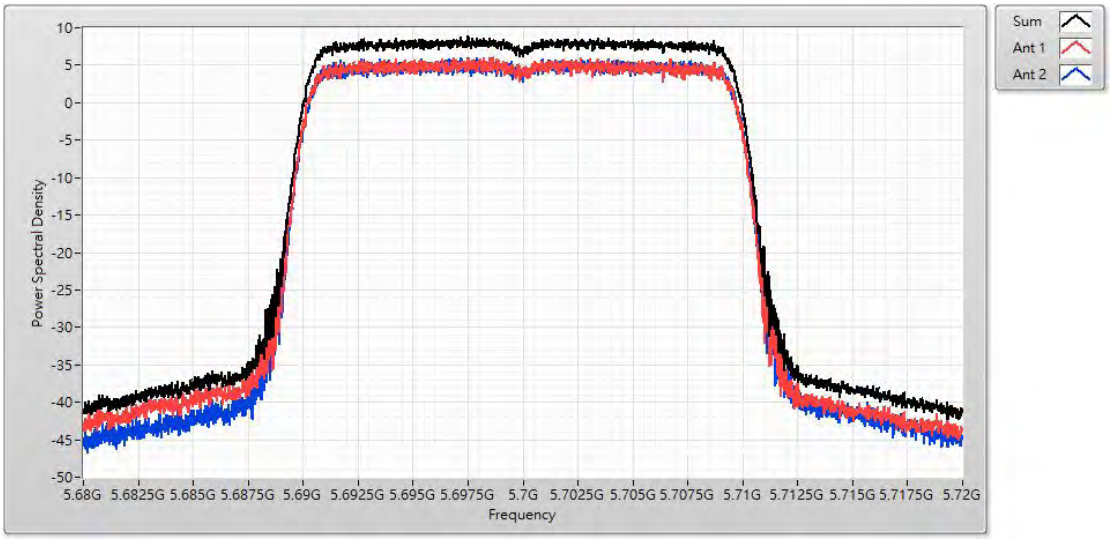
Channel 100 (5500MHz)



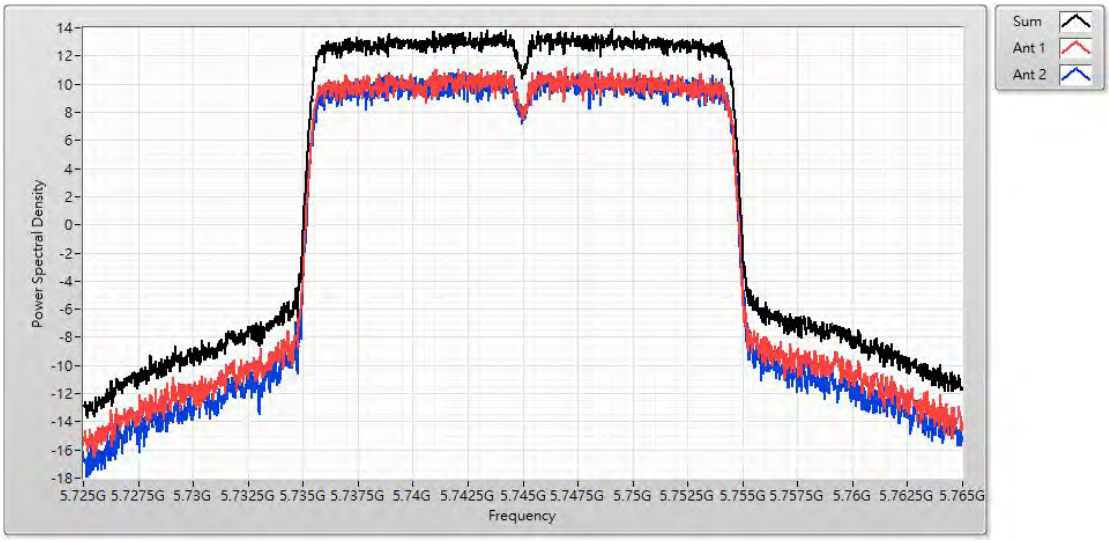
Channel 116 (5580MHz)



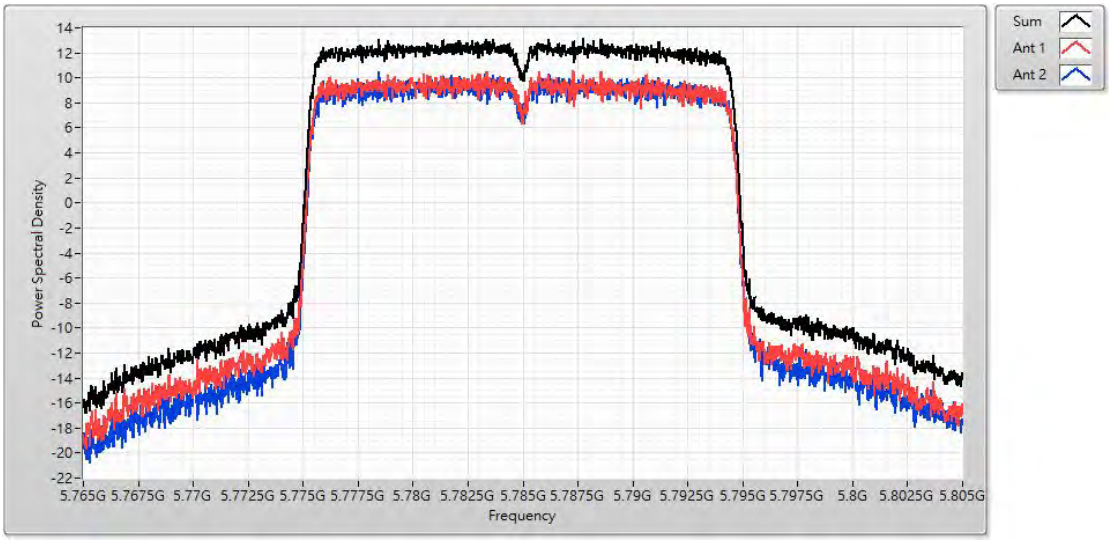
Channel 140 (5700MHz)



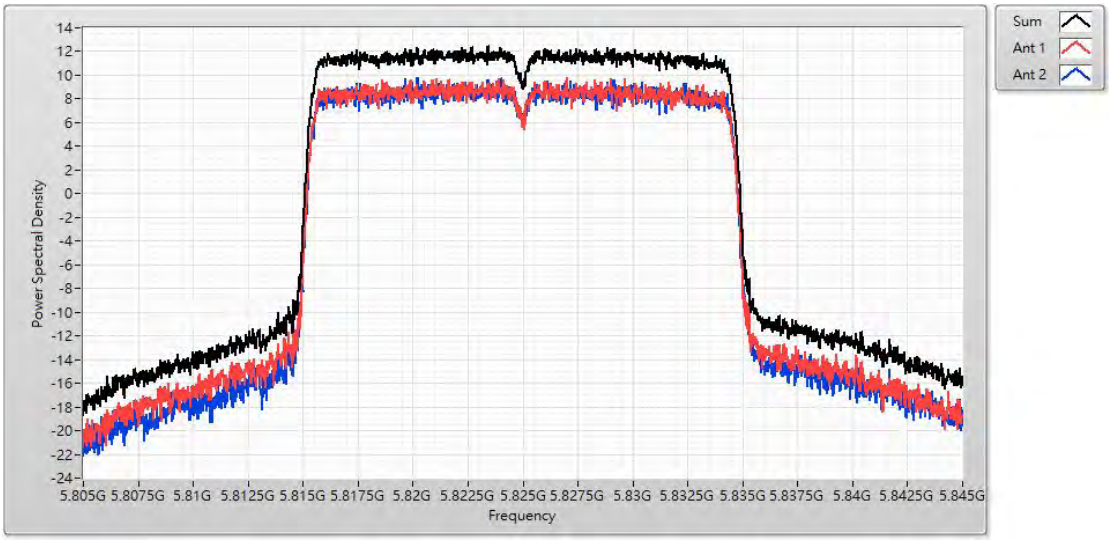
Channel 149 (5745MHz)



Channel 157 (5785MHz)



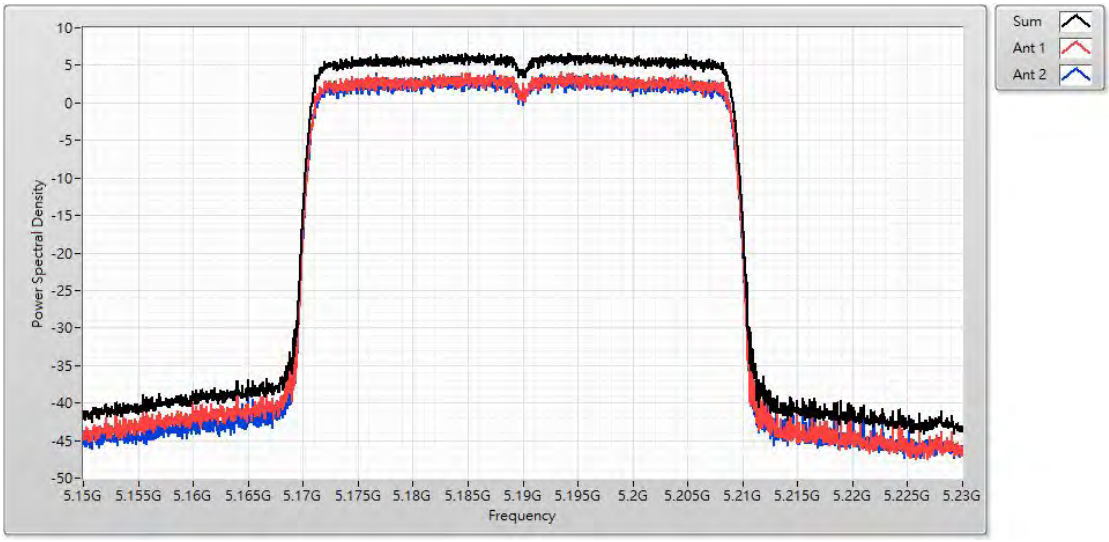
Channel 165 (5825MHz)



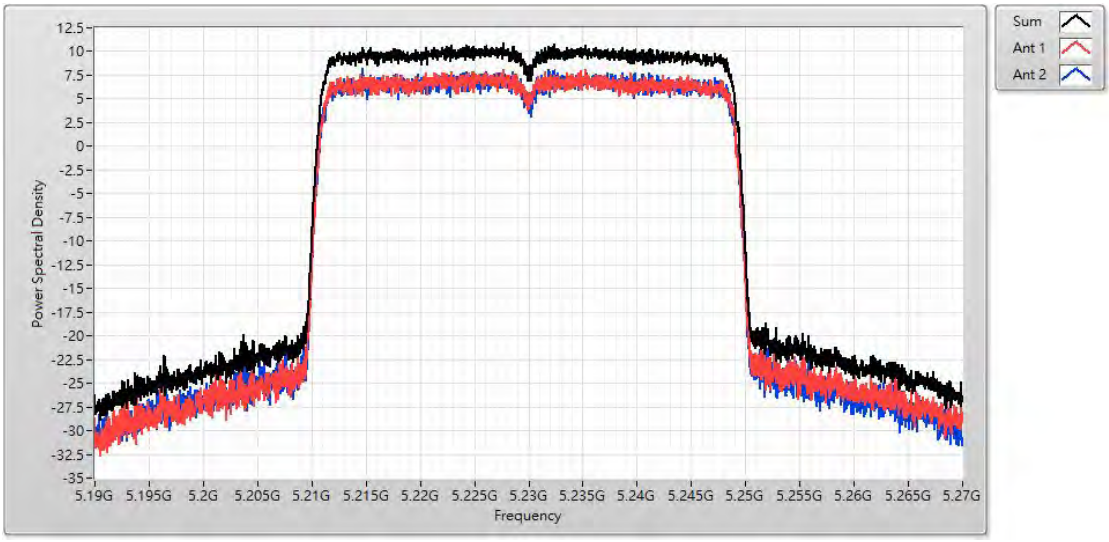
Product	Mesh Wi-Fi Router		
Test Item	Maximum power spectral density		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/27	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	67.0

IEEE 802.11ax (40MHz)					
5GHz UNII 1:					
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
38	5190	4.260	4.160	6.680	≦14.955
46	5230	8.220	8.140	10.910	≦14.955
5GHz UNII 2A:					
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
54	5270	6.170	6.120	8.790	≦8.955
62	5310	3.900	2.740	6.010	≦8.955
5GHz UNII 2C:					
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
102	5510	3.390	2.460	5.600	≦8.955
110	5550	6.450	6.160	8.950	≦8.955
134	5670	4.340	3.860	6.630	≦8.955
5GHz UNII 3:					
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
151	5755	6.320	6.300	8.750	≦27.955
159	5795	5.210	4.740	7.560	≦27.955

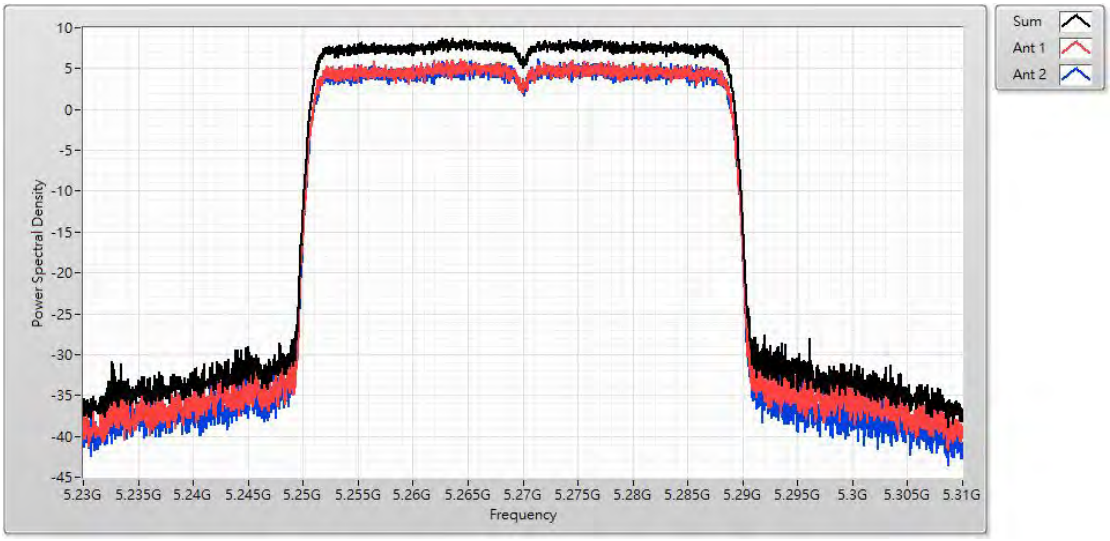
Channel 38 (5190MHz)



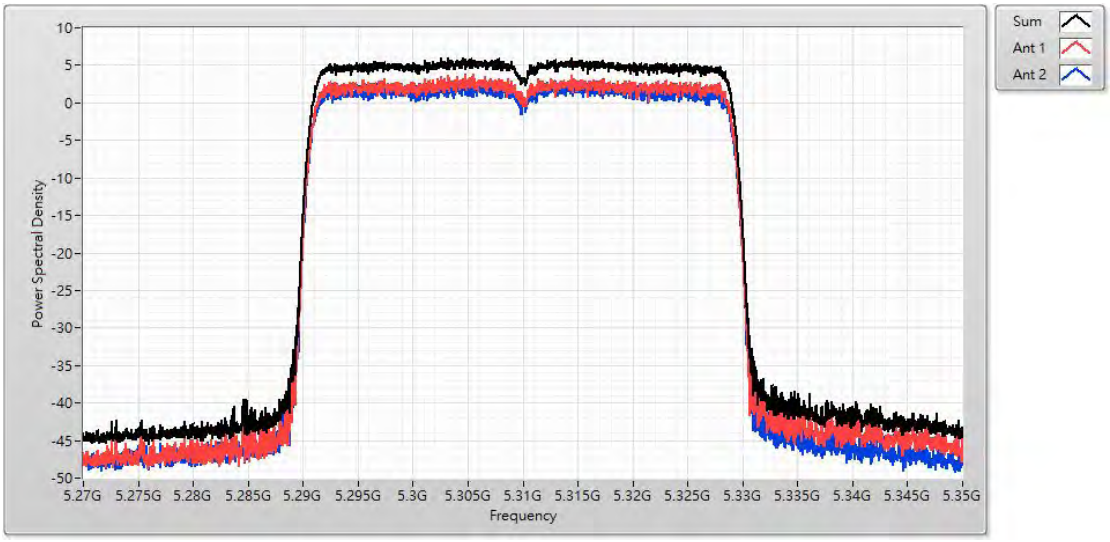
Channel 46 (5230MHz)



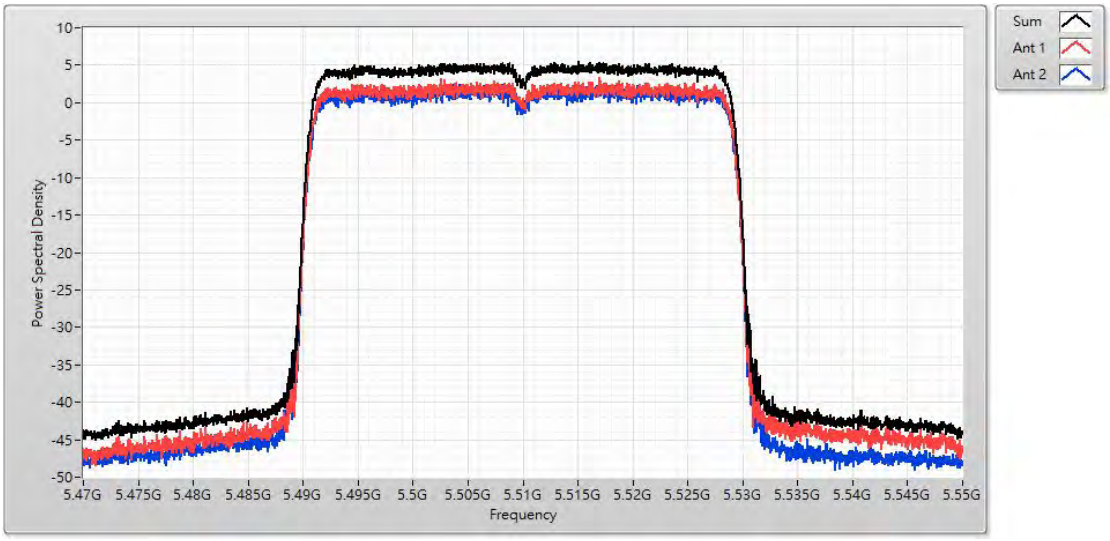
Channel 54 (5270MHz)



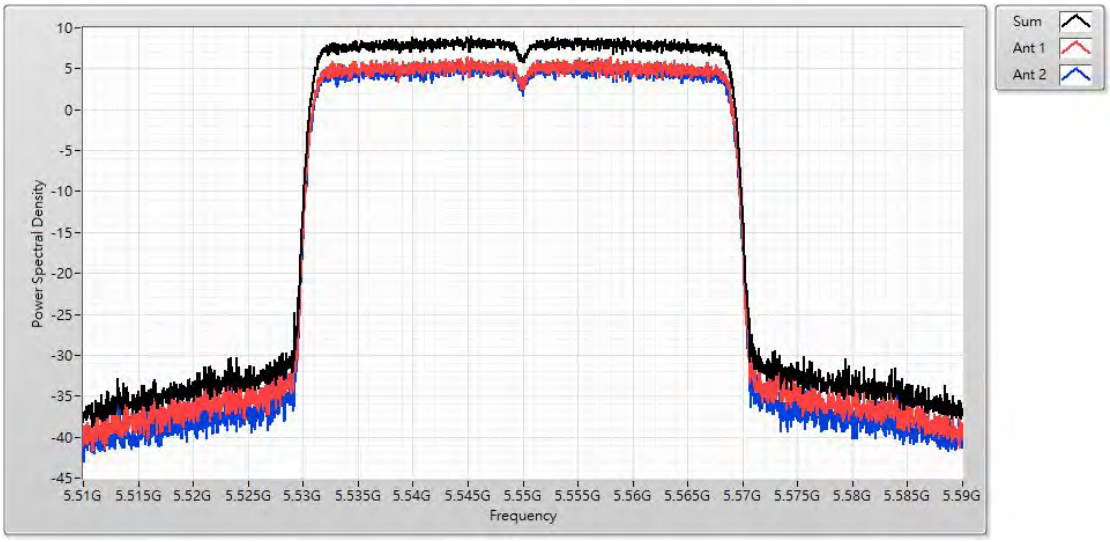
Channel 62 (5310MHz)



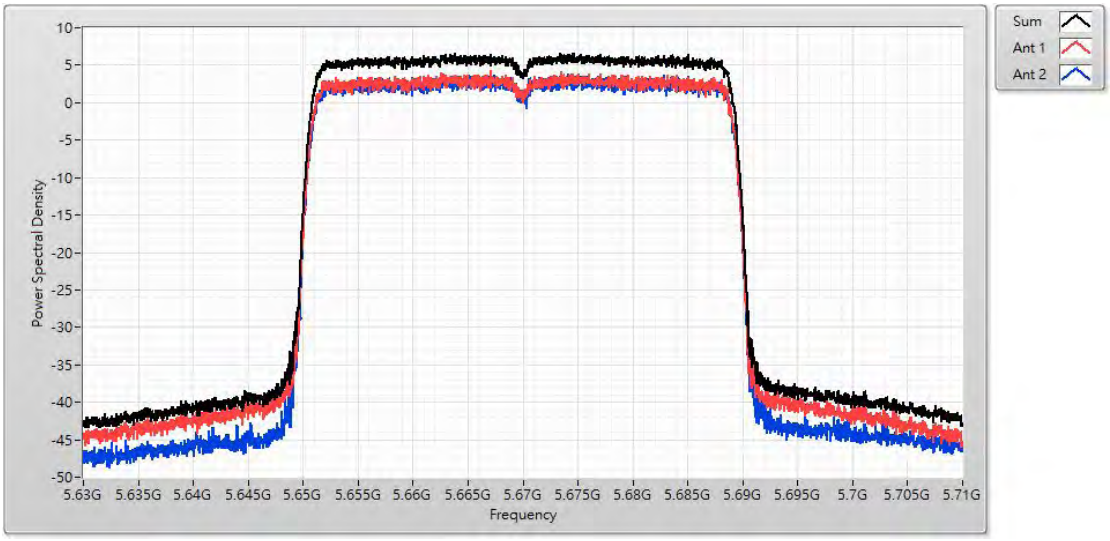
Channel 102 (5510MHz)



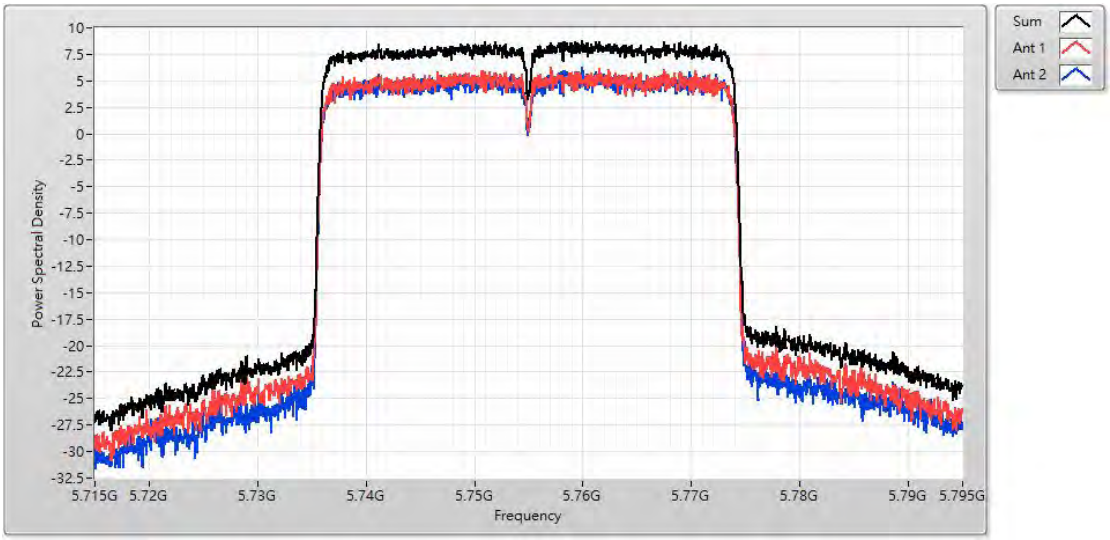
Channel 110 (5550MHz)



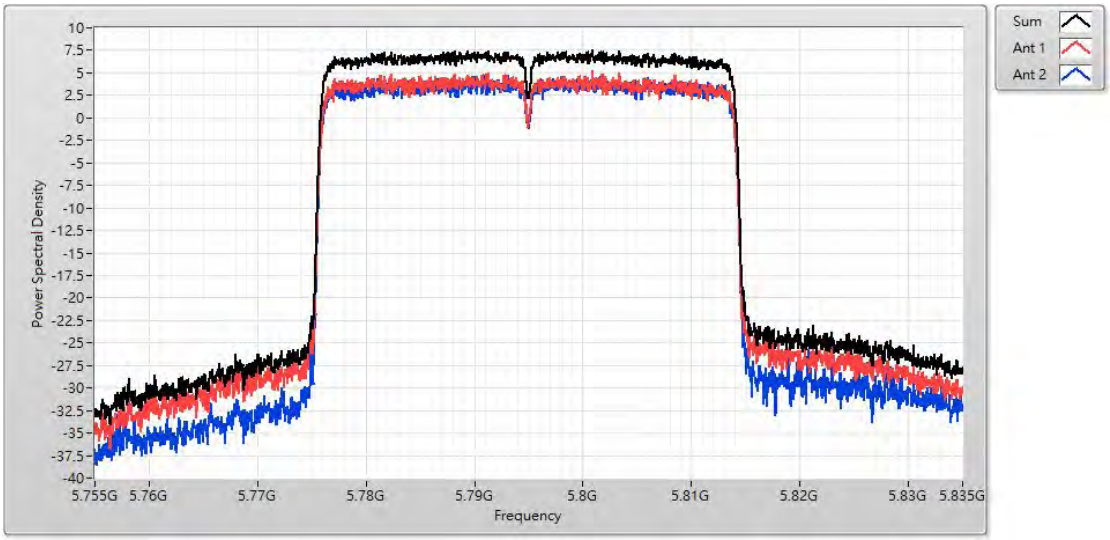
Channel 134 (5670MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)



Product	Mesh Wi-Fi Router		
Test Item	Maximum power spectral density		
Test Mode	Mode 1: Transmit_Non-BF_EBM552U		
Date of Test	2021/01/27	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	67.0

IEEE 802.11ax (80MHz)

5GHz UNII 1:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
42	5210	0.010	-0.370	2.470	≦14.955

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
58	5290	-0.090	-0.360	2.570	≦8.955

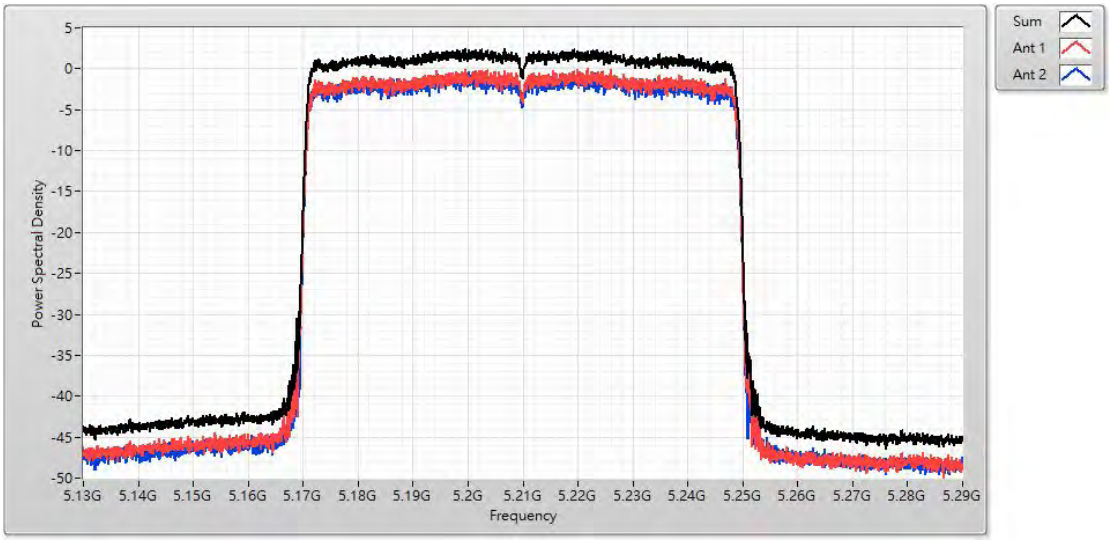
5GHz UNII 2C:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
106	5530	1.960	0.980	3.950	≦8.955
122	5610	2.890	2.740	5.410	≦8.955

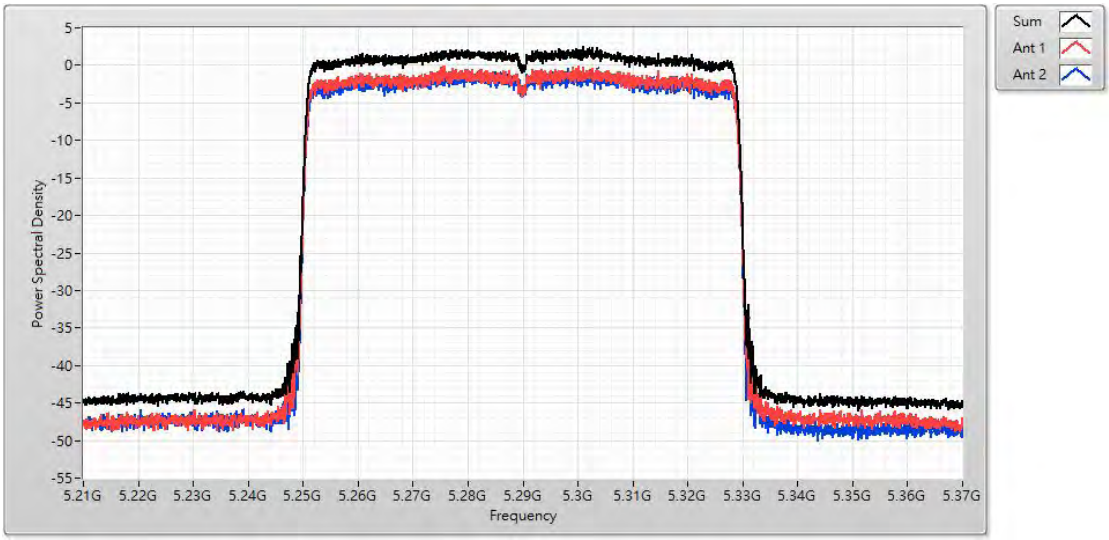
5GHz UNII 3:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
155	5775	0.430	-0.230	2.610	≦27.955

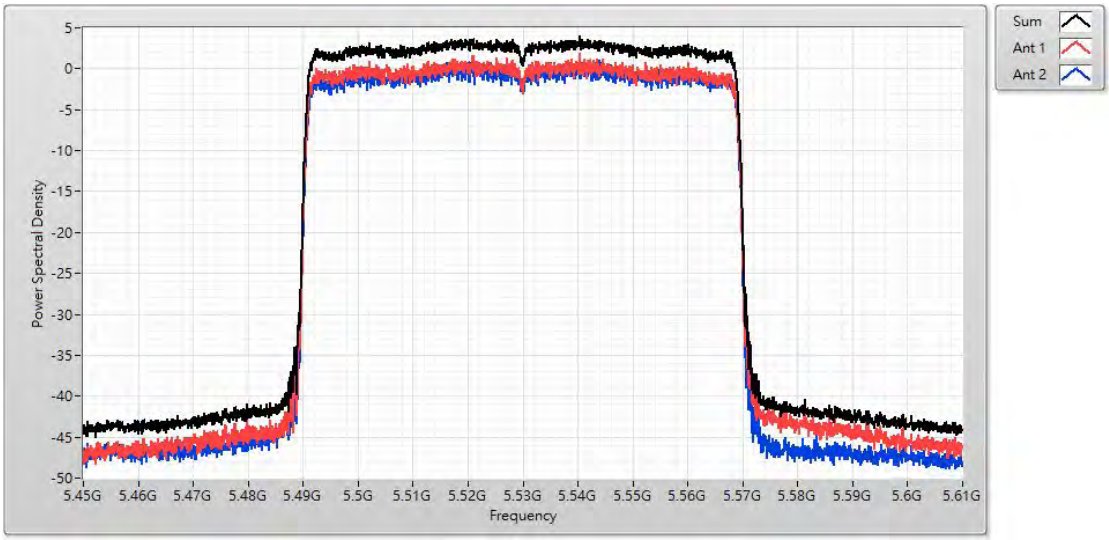
Channel 42 (5210MHz)



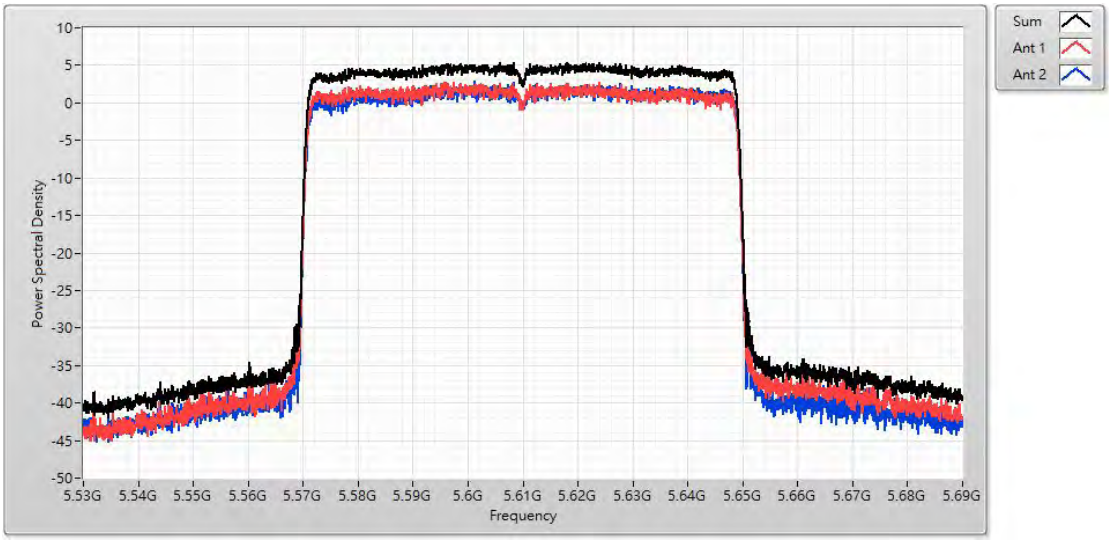
Channel 58 (5290MHz)



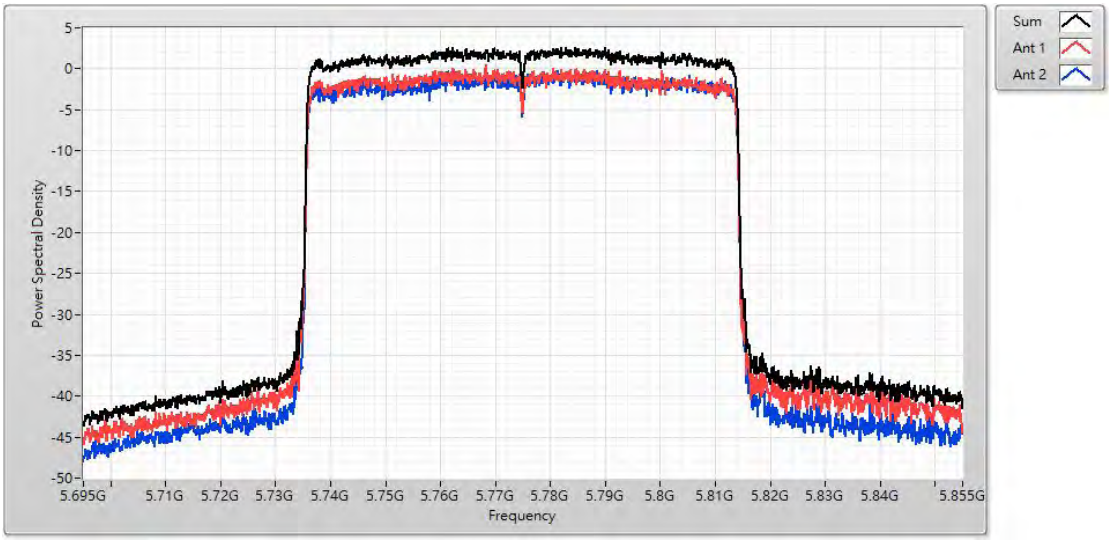
Channel 106 (5530MHz)



Channel 122 (5610MHz)



Channel 155 (5775MHz)



Product	Mesh Wi-Fi Router		
Test Item	Maximum power spectral density		
Test Mode	Mode 3: Transmit_BF		
Date of Test	2021/01/27	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	67.0

IEEE 802.11ax (20MHz)

5GHz UNII 1:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
36	5180	8.890	8.460	11.460	≦14.955
44	5220	11.640	11.720	14.480	≦14.955
48	5240	12.300	12.020	14.640	≦14.955

5GHz UNII 2A:

Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
52	5260	6.420	5.460	8.850	≦8.955
60	5300	6.210	5.730	8.750	≦8.955
64	5320	6.450	5.840	8.810	≦8.955

5GHz UNII 2C:

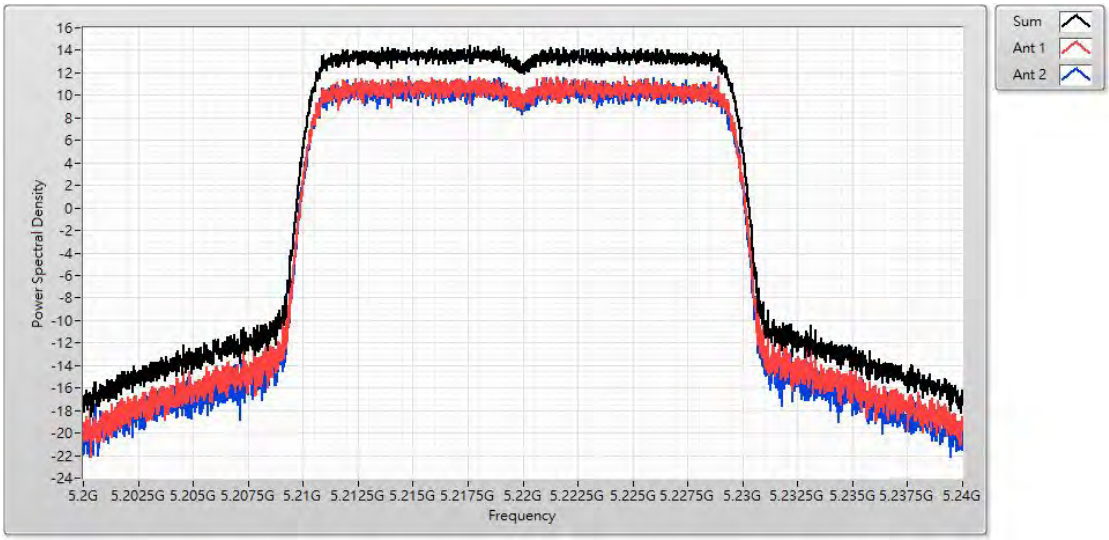
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
100	5500	6.230	6.400	8.860	≦8.955
116	5580	6.300	5.860	8.760	≦8.955
140	5700	6.390	6.140	8.770	≦8.955

5GHz UNII 3:

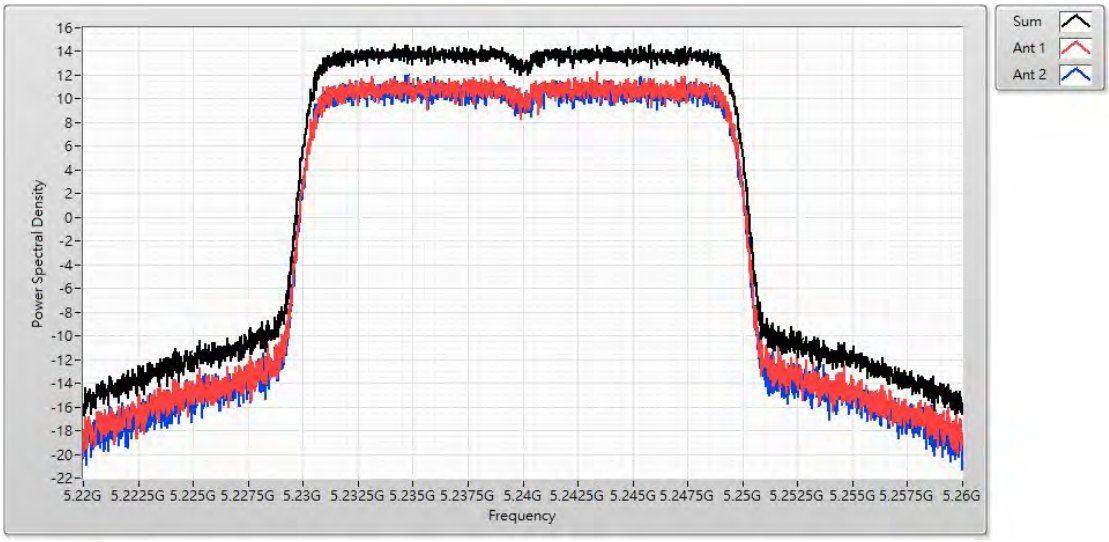
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
149	5745	10.50	10.250	13.260	≦27.955
157	5785	10.77	10.360	13.220	≦27.955
165	5825	9.76	9.870	12.420	≦27.955

Channel 36 (5180MHz)

Channel 44 (5220MHz)

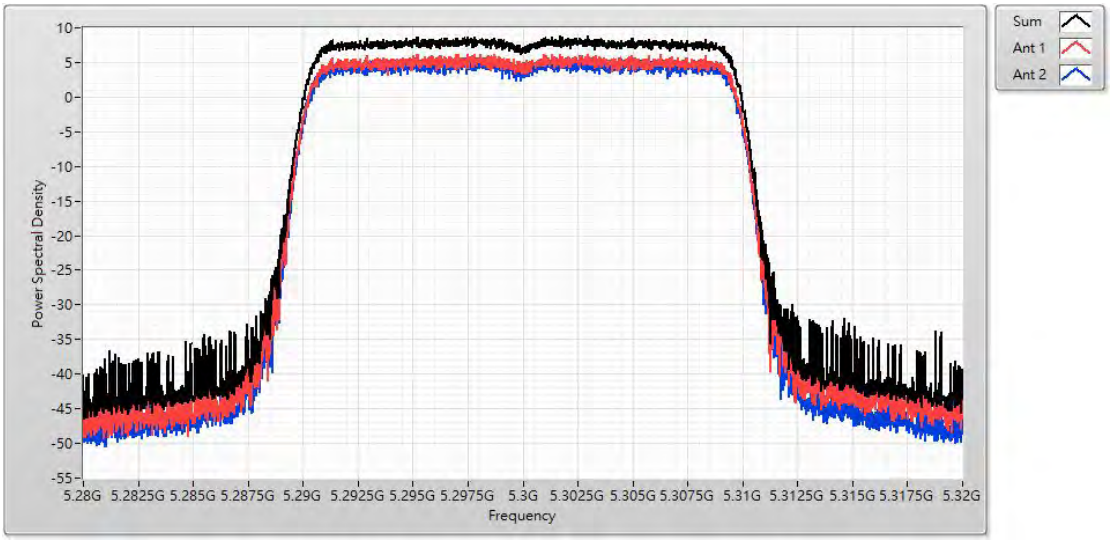


Channel 48 (5240MHz)

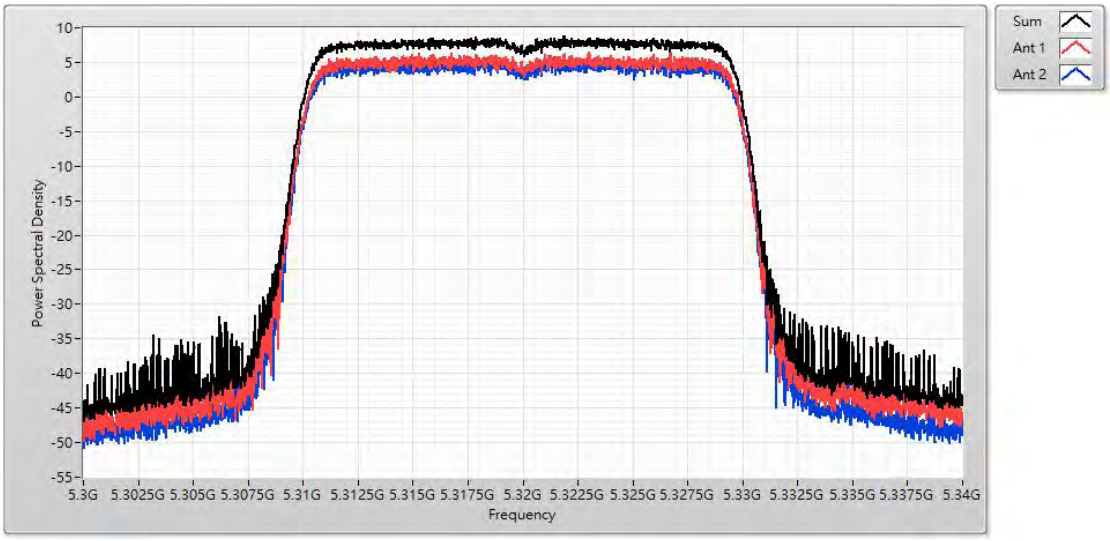


Channel 52 (5260MHz)

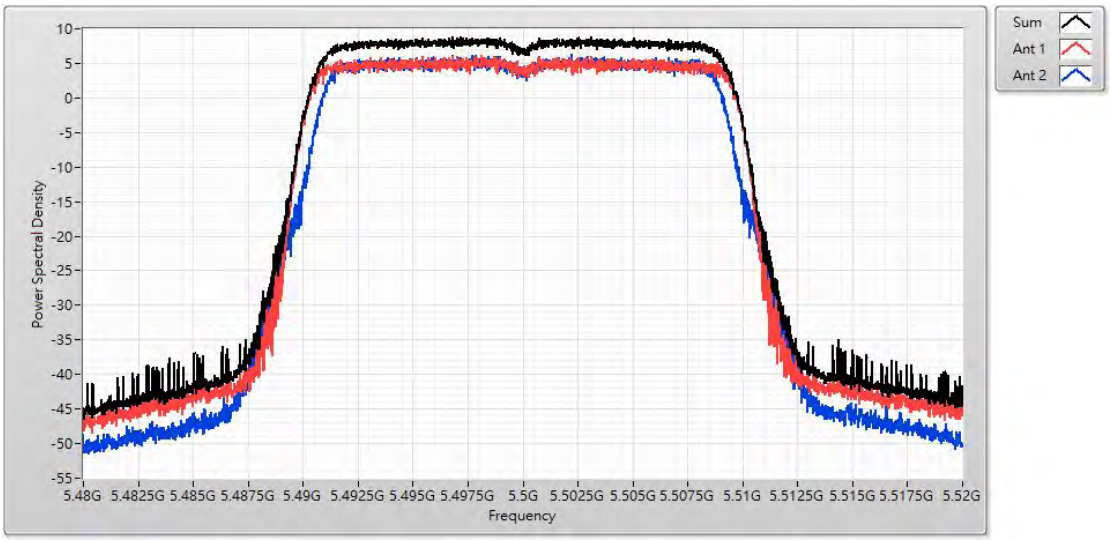
Channel 60 (5300MHz)



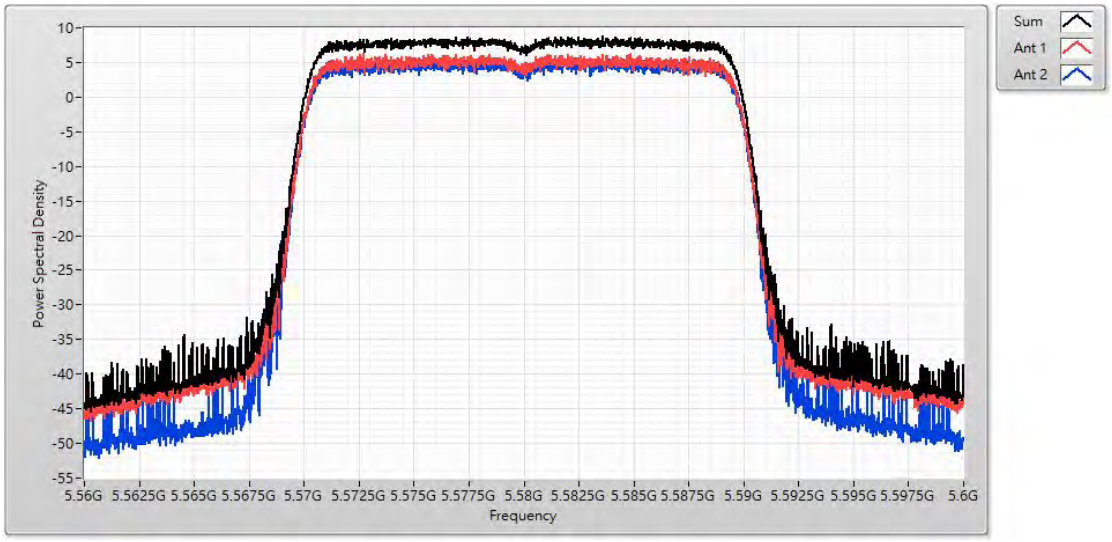
Channel 64 (5320MHz)



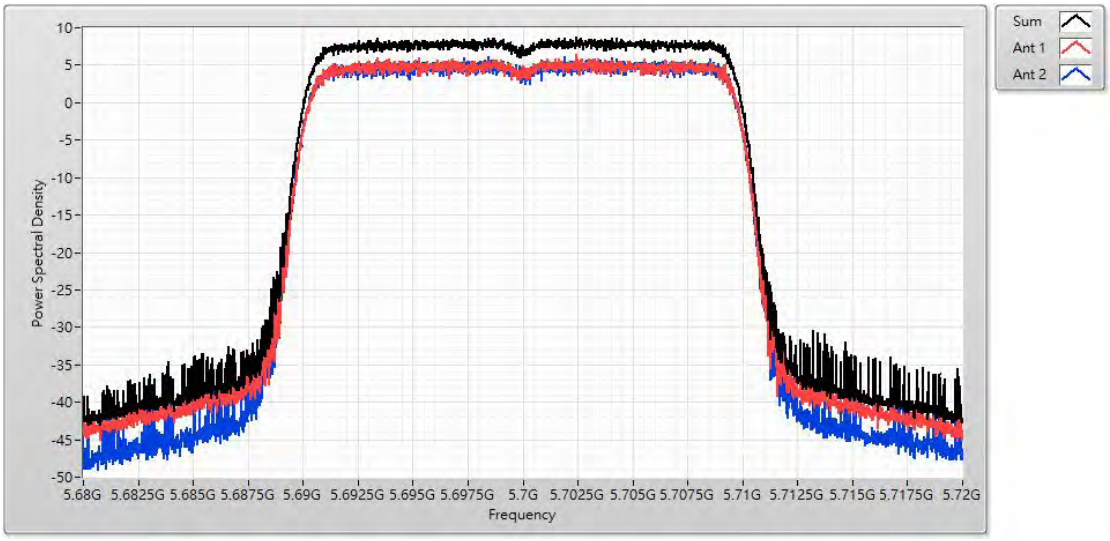
Channel 100 (5500MHz)



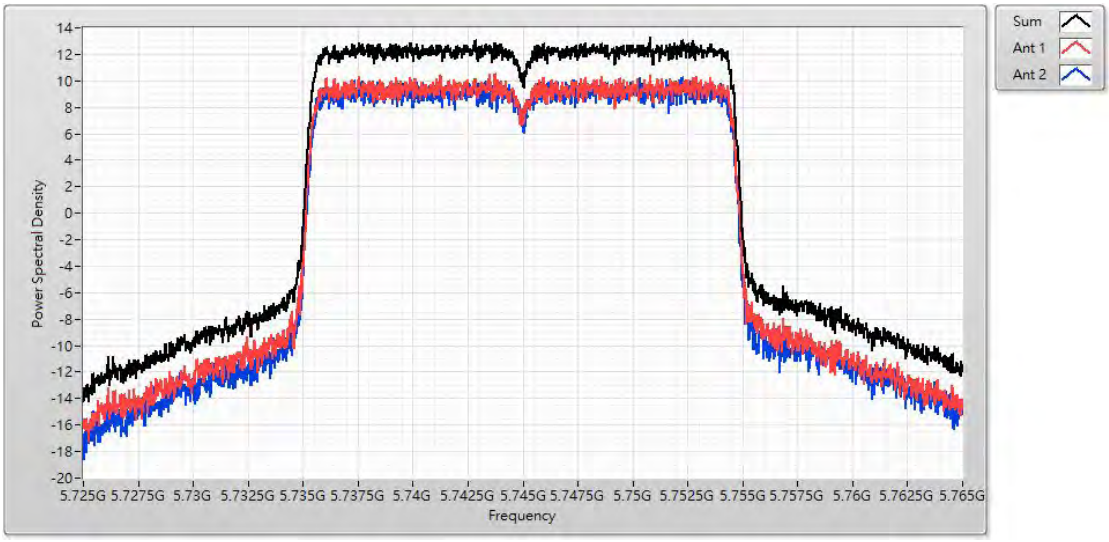
Channel 116 (5580MHz)



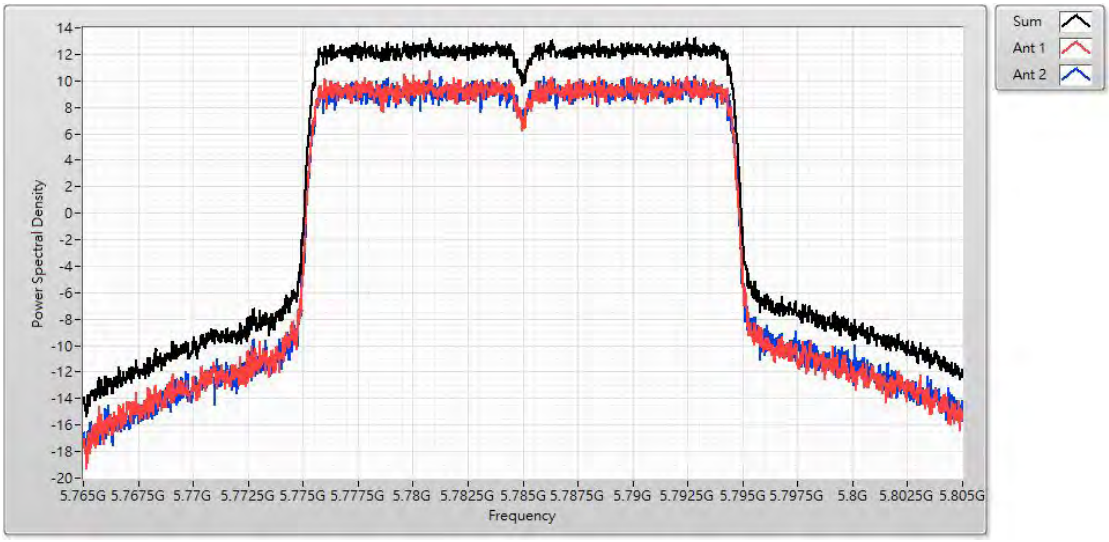
Channel 140 (5700MHz)



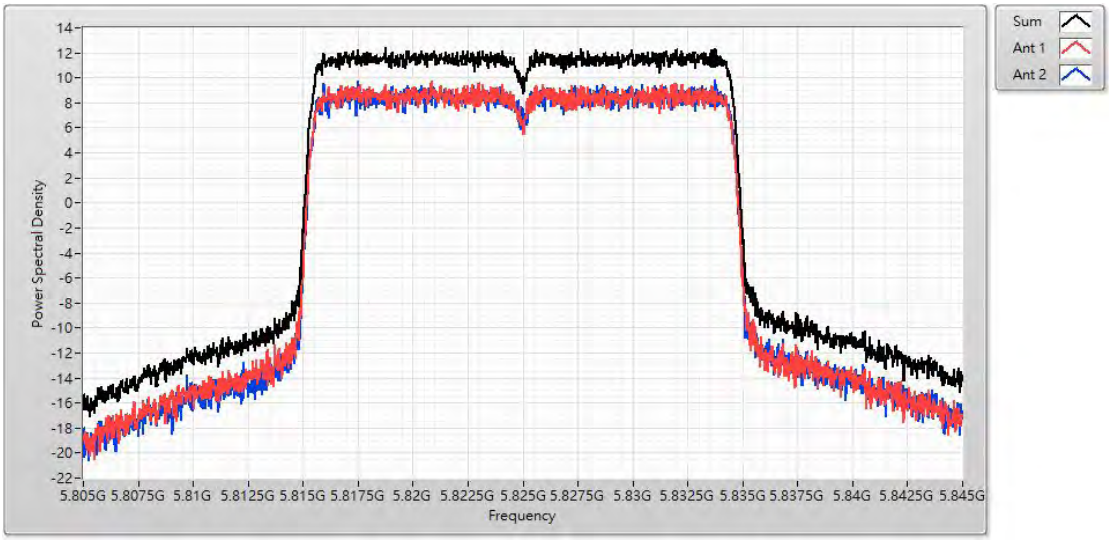
Channel 149 (5745MHz)



Channel 157 (5785MHz)



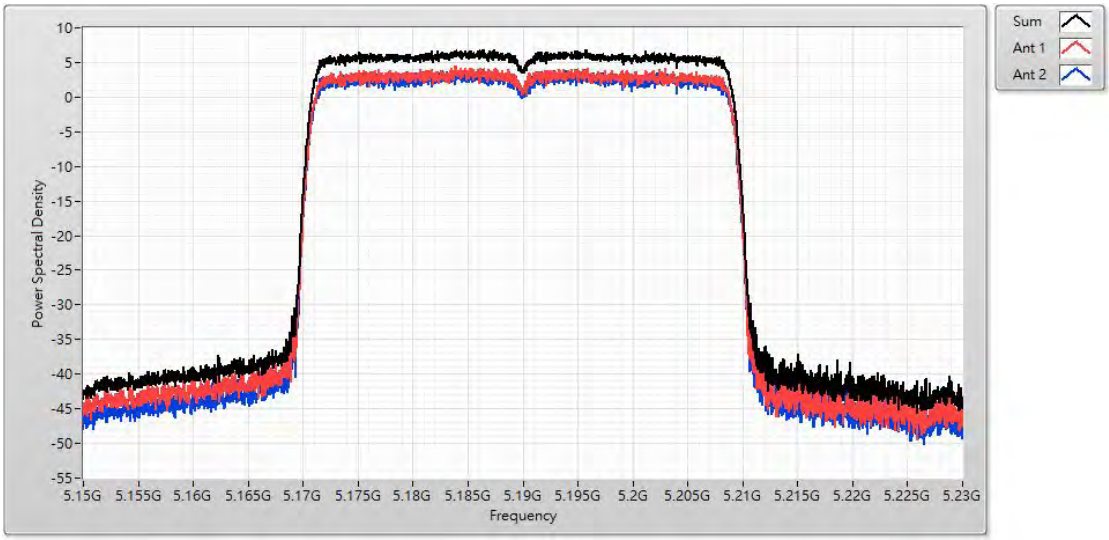
Channel 165 (5825MHz)



Product	Mesh Wi-Fi Router		
Test Item	Maximum power spectral density		
Test Mode	Mode 3: Transmit_BF		
Date of Test	2021/01/27	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	67.0

IEEE 802.11ax (40MHz)					
5GHz UNII 1:					
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
38	5190	4.430	3.780	6.800	≦14.955
46	5230	8.280	7.910	10.760	≦14.955
5GHz UNII 2A:					
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
54	5270	4.430	3.750	6.650	≦8.955
62	5310	3.370	2.930	5.930	≦8.955
5GHz UNII 2C:					
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
102	5510	3.260	3.560	5.990	≦8.955
110	5550	4.570	3.830	6.810	≦8.955
134	5670	4.230	3.770	6.540	≦8.955
5GHz UNII 3:					
Channel No.	Frequency (MHz)	Measure Level (dBm)			Limit (dBm)
		Ant. 0	Ant. 1	Total	
151	5755	6.720	6.720	9.530	≦27.955
159	5795	4.750	5.140	7.620	≦27.955

Channel 38 (5190MHz)



Channel 46 (5230MHz)