TEST REPORT

Report No.:	TW2305190-04E
Applicant:	Delta Electronics Incorporated
Product:	NovoDS Digital Signage Solution
Model No.:	DS210, DS110
Trademark:	Vivitek
FCC ID:	H79-023DS2
Test Standards:	FCC Part 15 Subpart E, Paragraph 15.407
Test Result:	It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15 Subpart C, Paragraph 15.247 for the evaluation of electromagnetic compatibility

Approved By

Terry Tang

Manager

Dated: June 13, 2023

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

CAB identifier: CN0033

Test Report Conclusion

Content

1.0 **General Details**

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688

Fax: (755) 83442996

Site Listed with Federal Communications commission (FCC)

Registration Number:744189

For 3m Anechoic Chamber

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-02

For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Delta Electronics Incorporated

Address: 3 Tungyung rd., Chungli Industrial Zone, Taoyuan County 32063 Taiwan

Telephone: --

Fax: --

1.3 Description of EUT

Product:	NovoDS Digital Signage Solution
Manufacturer:	Delta Electronics Incorporated
Address:	3 Tungyung rd., Chungli Industrial Zone, Taoyuan County 32063 Taiwan
Trademark:	Vivitek
Additional Trademark:	N/A
Model Number:	DS210
Additional Model Number:	DS110
Hardware Version:	RKS221012
Software Version:	build number: 5.0.0.12
Serial No.:	N/A
Type of Modulation:	IEEE 802.11a/n (HT20/HT40): OFDM (64QAM, 16QAM, QPSK, BPSK); IEEE 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Frequency:	Band 1: 5180MHz-5240MHz; Band 4: 5745MHz-5825MHz
Air Data Rate:	IEEE 802.11a: 54, 48,36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n/HT20: mcs0-mcs15 IEEE 802.11n/HT40: mcs0-mcs15 IEEE 802.11ac: NSS1 mcs0-mcs9
Antenna: Antenna Gain:	Two Dipole antenna used with reverse polarity antenna connectors. The gain of each antenna is -1.54 dBi for 5G Band 1 and 3.09dBi for 5G Band 4 (Get from the antenna

	specification)
Test Mode:	During testing, EUT was set to 100% duty cycle. 6Mbps air data rate was the worst case for 802.11a mode; mcs0 air data rate was the worst case for 802.11n mode; 23.9Mbps air data rate was the worst case for 802.11ac mode.
Frequency Selection	By software
Rating:	Input: DC5.0V, 3.0A
Power Supply:	Model: CNXZX3015-050030SA Input: AC100-240V~, 50/60Hz, 0.4A; Output: DC5V, 3A, 15W

Each Channel Operation Frequency

Band 1					
802.11a / 11n HT20 / 802.11ac VHT20		802.11n HT40 / 802.11acVHT40		802.11ac VHT80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190 MHz	42	5210 MHz
40	5200 MHz	46	5230 MHz		
44	5220 MHz				
48	5240 MHz				
Band 4					
802.11a / 11n HT20 / 802.11ac VHT20		802.11n HT40 / 802.11acVHT40		802.11ac VHT80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	151	5755 MHz	155	5775 MHz
153	5765 MHz	159	5795 MHz		
157	5785 MHz				
165	5825 MHz				

The selected test channels as follows:

Band 1					
802.11a / 11n HT20		802.11n HT40		802.11ac VHT80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190 MHz	42	5210 MHz
40	5200 MHz	46	5230 MHz		
48	5240 MHz				

Band 4					
802.11a / 11n HT20		802.11n HT40		802.11ac VHT80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	151	5755 MHz	155	5775 MHz
157	5785 MHz	159	5795 MHz		
165	5825 MHz				

Note: 802.11ac VHT20/VHT40 is similar with 802.11n HT20/HT40.

1.4 Submitted Sample: 1 Sample

1.5 Test Duration
2023-05-17 to 2023-06-13

1.6 Test Uncertainty
Conducted Emissions Uncertainty =3.6dB
Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

The sample tested by Andy

Print Name: Andy Zhe

2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17
LISN	R&S	EZH3-Z5	100253	2022-07-18	2023-07-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2022-07-18	2023-07-17
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17
Spectrum	R&S	FSIQ26	100292	2022-07-15	2023-07-14
Spectrum	Keysight	N9020A	MY53300466	2023-03-05	2024-03-04
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2022-07-18	2025-07-17
Horn Antenna	R&S	BBHA 9120D	9120D-631	2022-07-18	2024-07-17
Power meter	Anritsu	ML2487A	6K00003613	2022-07-18	2023-07-17
Power sensor	Anritsu	MA2491A	32263	2022-07-18	2023-07-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2022-07-18	2025-07-17
9*6*6 Anechoic	--	--	N/A	2022-07-26	2025-07-25
EMI Test Receiver	RS	ESVB	826156/011	2022-07-15	2023-07-14
EMI Test Receiver	RS	ESCS 30	834115/006	2022-07-15	2023-07-14
Spectrum	HP/Agilent	E4407B	MY50441392	2022-07-15	2023-07-14
Spectrum	RS	FSP	1164.4391.38	2022-07-15	2023-07-14
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2022-07-15	2023-07-14
RF Cable	Zhengdi	7m	--	2022-07-15	2023-07-14
Pre-Amplifier	Schwarebeck	BBV9743	#218	2022-07-15	2023-07-14
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2022-07-15	2023-07-14
LISN	SCHAFFNER	NNB42	00012	2022-08-18	2023-07-17
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107 & 15.407	Conducted Emission Test	Pass	Complies
FCC Part 15 Subpart E Paragraph 15.407 (b1/4), Part 15.205 and Part 15.209	Undesirable Emission and Restrict band	Pass	Complies
FCC Part 15, Paragraph 15.407 (a1/3)	Peak Transmit Power	Pass	Complies
FCC Part 15, Paragraph 15.407 (a)(1)	Peak Power Excursion	Pass	Complies
FCC Part 15, Paragraph 15.407 (a/1/3)	Peak Power Spectral Density	Pass	Complies
FCC Part 15, Paragraph 15.407(g)	Frequency Stability	Pass	Complies

3.2 Test Standards

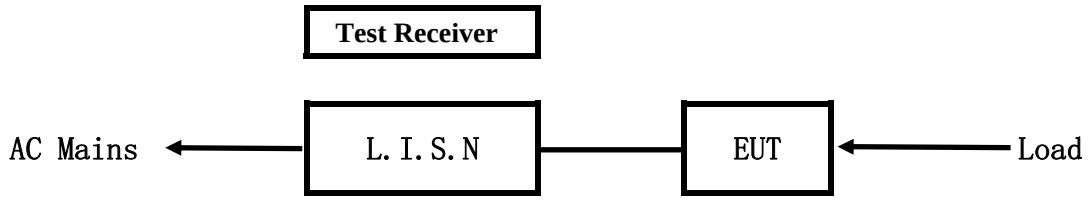
FCC Part 15 Subpart & Subpart C, Paragraph 15.247, ANSI C63.10 :2013, ANSI C63.4 :2014
KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

5. Power Line Conducted Emission Test

5.1 Schematics of the test



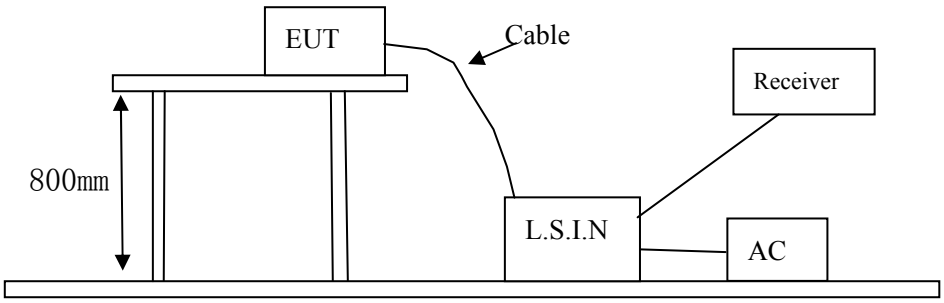
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013.The Frequency spectrum from 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10–2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
NovoDS Digital Signage Solution	Delta Electronics Incorporated	DS210, DS110	H79-023DS2

B. Internal Device

Device	Trademark	Model	FCC ID/DOC
Adapter	Utech	CNXZX3015-0500305A	DOC

C. Peripherals

Device	Trademark	Model	Rating
LED Display	DELL	U2720QM	--

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10 -2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ～ 0.50	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	56.0	46.0
5.00 ～ 30.00	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

A: Conducted Emission on Live Terminal (150kHz to 30MHz)

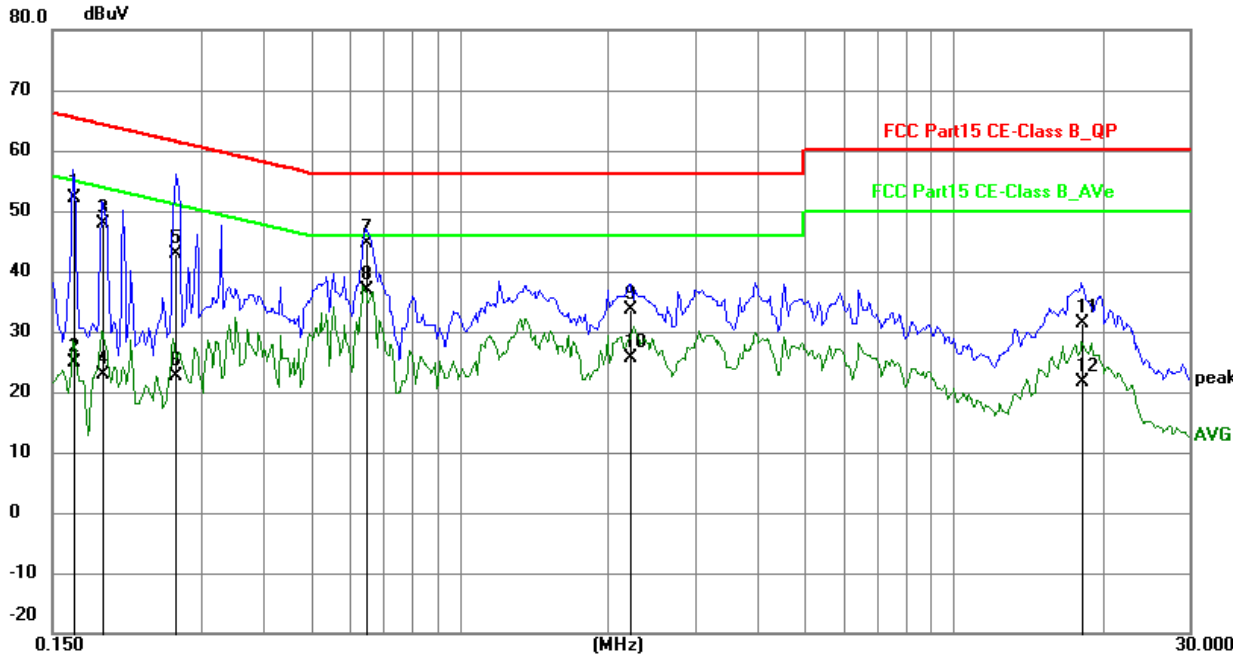
EUT Operating Environment

Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keeping WIFI Transmitting

Results: Pass **Test Power:AC120V/60Hz**

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1655	42.46	9.77	52.23	65.18	-12.95	QP	P
2	0.1655	15.11	9.77	24.88	55.18	-30.30	AVG	P
3	0.1890	38.21	9.76	47.97	64.08	-16.11	QP	P
4	0.1890	13.13	9.76	22.89	54.08	-31.19	AVG	P
5	0.2670	33.20	9.75	42.95	61.21	-18.26	QP	P
6	0.2670	12.97	9.75	22.72	51.21	-28.49	AVG	P
7	0.6453	34.75	9.78	44.53	56.00	-11.47	QP	P
8	0.6453	27.22	9.78	37.00	46.00	-9.00	AVG	P
9	2.2131	23.92	9.81	33.73	56.00	-22.27	QP	P
10	2.2131	15.74	9.81	25.55	46.00	-20.45	AVG	P
11	18.1709	20.93	10.57	31.50	60.00	-28.50	QP	P
12	18.1709	11.16	10.57	21.73	50.00	-28.27	AVG	P

B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

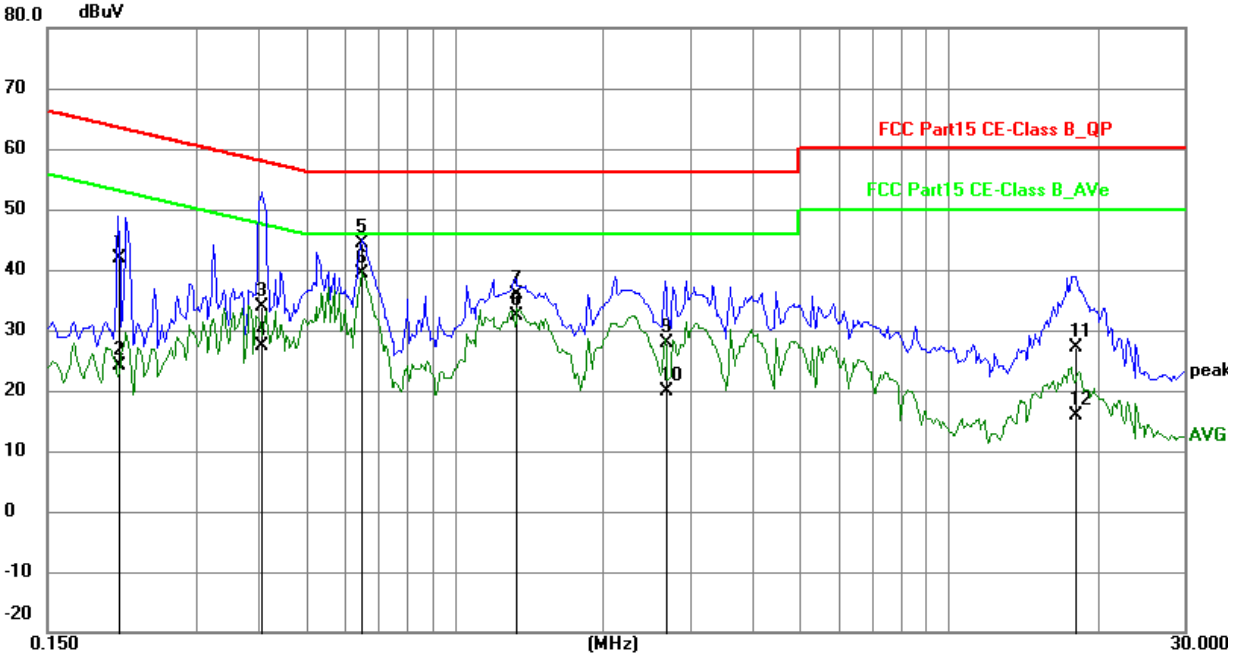
EUT Operating Environment

Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keeping WIFI Transmitting

Results: Pass **Test Power:AC120V/60Hz**

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2085	32.23	9.75	41.98	63.26	-21.28	QP	P
2	0.2085	14.47	9.75	24.22	53.26	-29.04	AVG	P
3	0.4074	24.14	9.76	33.90	57.70	-23.80	QP	P
4	0.4074	17.63	9.76	27.39	47.70	-20.31	AVG	P
5	0.6492	34.61	9.78	44.39	56.00	-11.61	QP	P
6	0.6492	29.50	9.78	39.28	46.00	-6.72	AVG	P
7	1.3278	25.98	9.79	35.77	56.00	-20.23	QP	P
8	1.3278	22.49	9.79	32.28	46.00	-13.72	AVG	P
9	2.6694	18.09	9.83	27.92	56.00	-28.08	QP	P
10	2.6694	10.07	9.83	19.90	46.00	-26.10	AVG	P
11	17.9721	16.58	10.56	27.14	60.00	-32.86	QP	P
12	17.9721	5.32	10.56	15.88	50.00	-34.12	AVG	P

Note：Both 240V and 120V voltages are tested, the data of the worst-case is shown in the report.

6 Undesirable Emission and Restrict band

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.

(3) The frequency spectrum is set as follows:

Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

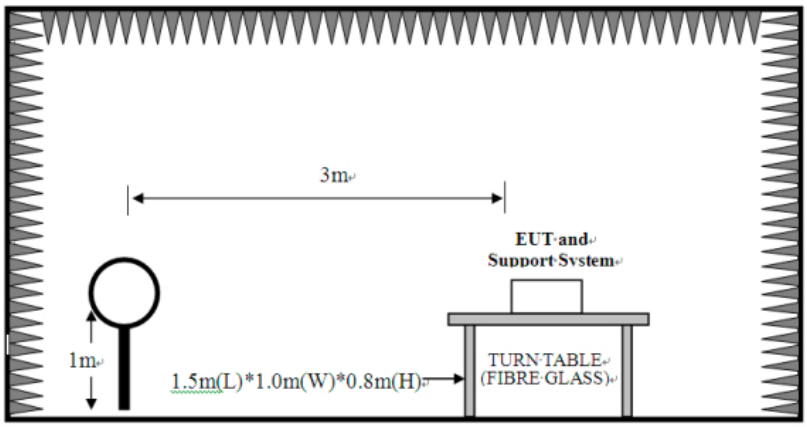
(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

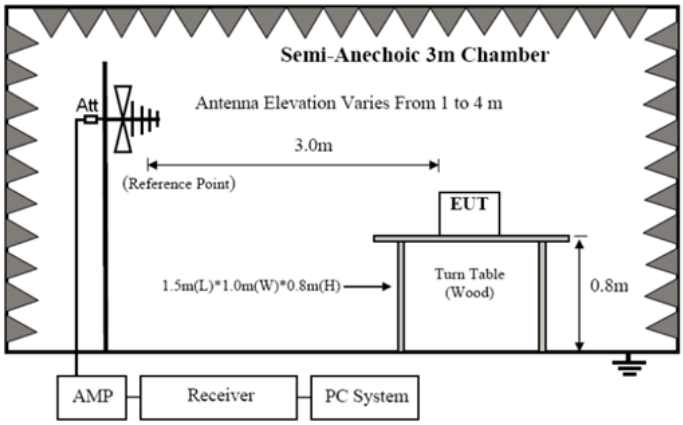
(6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

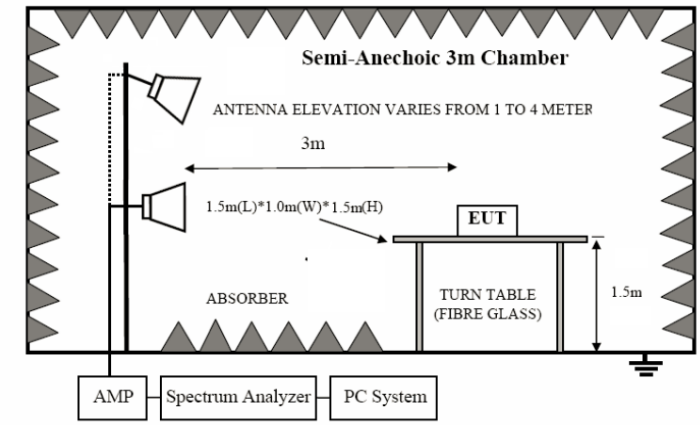
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
0.009-0.049	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm/MHz

(2) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27dBm/MHz.

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the higher limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (9kHz----30MHz)

EUT set Condition: **Keep Transmitting**
Results: **Pass**

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

Note:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =20 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor

Test result

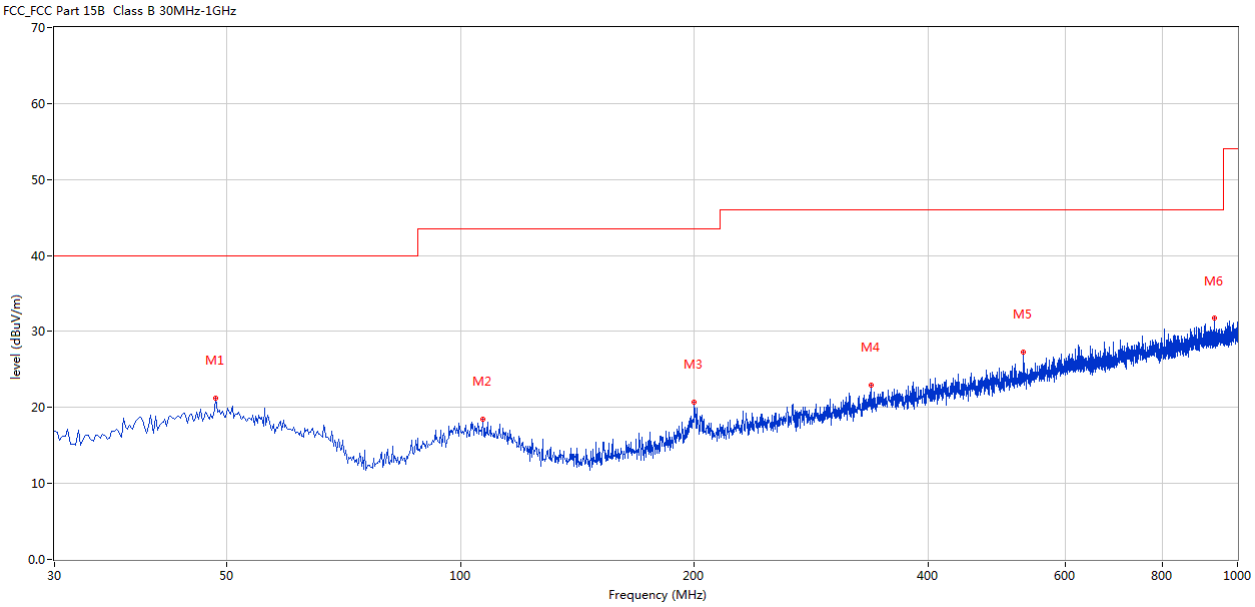
General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: **Keeping WIFI Transmitting**

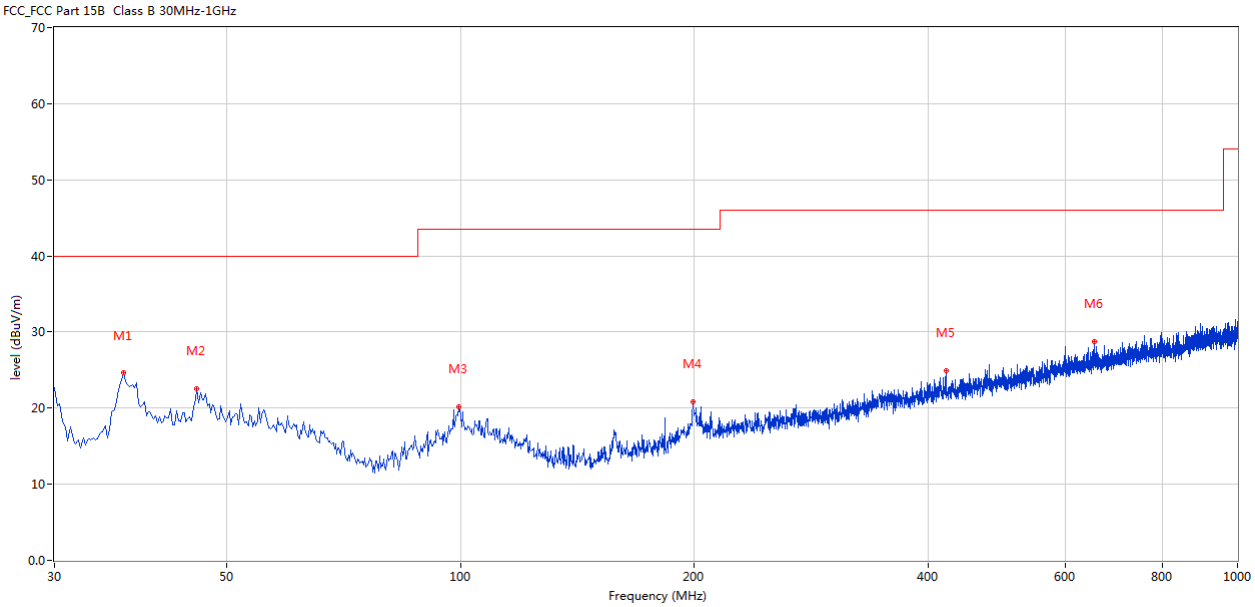
Results: **Pass**

Test Figure



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	48.425	21.21	-11.22	40.0	-18.79	Peak	143.00	100	Horizontal	Pass
2	106.853	18.46	-13.38	43.5	-25.04	Peak	152.00	100	Horizontal	Pass
3	199.950	20.68	-13.45	43.5	-22.82	Peak	92.00	100	Horizontal	Pass
4	337.413	22.89	-9.83	46.0	-23.11	Peak	292.00	100	Horizontal	Pass
5	530.395	27.31	-6.45	46.0	-18.69	Peak	95.00	100	Horizontal	Pass
6	932.844	31.71	-1.70	46.0	-14.29	Peak	198.00	100	Horizontal	Pass

Test Figure



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	36.788	24.59	-13.31	40.0	-15.41	Peak	30.00	100	Vertical	Pass
2	45.759	22.52	-11.40	40.0	-17.48	Peak	281.00	100	Vertical	Pass
3	99.338	20.17	-13.64	43.5	-23.33	Peak	246.00	100	Vertical	Pass
4	199.223	20.80	-13.50	43.5	-22.70	Peak	255.00	100	Vertical	Pass
5	422.024	24.88	-8.08	46.0	-21.12	Peak	103.00	100	Vertical	Pass
6	653.797	28.76	-4.39	46.0	-17.24	Peak	265.00	100	Vertical	Pass

Operation Mode: Keeping Transmitting under CH36 for 11a at 6Mbps-ANT1

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5180.00	100.96（PK）	V	Fundamental Frequency
5180.00	93.08（PK）	H	
10360	47.85（PK）	V	74(Peak)/ 54(AV)
10360	46.37（PK）	H	74(Peak)/ 54(AV)
15540	--	H/V	74(Peak)/ 54(AV)
20720	--	H/V	74(Peak)/ 54(AV)
25900	--	H/V	74(Peak)/ 54(AV)
31080	--	H/V	74(Peak)/ 54(AV)
36260	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH40 for 11a at 6Mbps-ANT1

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5200.00	100.32（PK）	V	Fundamental Frequency
5200.00	92.85（PK）	H	
10400	46.85（PK）	V	74(Peak)/ 54(AV)
10400	45.5（PK）	H	74(Peak)/ 54(AV)
15600	--	H/V	74(Peak)/ 54(AV)
20800	--	H/V	74(Peak)/ 54(AV)
26000	--	H/V	74(Peak)/ 54(AV)
31200	--	H/V	74(Peak)/ 54(AV)
36400	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH48 for 11a at 6Mbps-ANT1

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5240.00	101.43（PK）	V	Fundamental Frequency
5240.00	92.29（PK）	H	
10480	47.74（PK）	V	74(Peak)/ 54(AV)
10480	45.25（PK）	H	74(Peak)/ 54(AV)
15720	--	H/V	74(Peak)/ 54(AV)
20960	--	H/V	74(Peak)/ 54(AV)
26200	--	H/V	74(Peak)/ 54(AV)
31440	--	H/V	74(Peak)/ 54(AV)
36680	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH36 for 11n20 at MCS0-MIMO

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5180.00	99.74（PK）	V	Fundamental Frequency
5180.00	91.63（PK）	H	
10360	45.34（PK）	V	74(Peak)/ 54(AV)
10360	43.26（PK）	H	74(Peak)/ 54(AV)
15540	--	H/V	74(Peak)/ 54(AV)
20720	--	H/V	74(Peak)/ 54(AV)
25900	--	H/V	74(Peak)/ 54(AV)
31080	--	H/V	74(Peak)/ 54(AV)
36260	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH40 for 11n20 at MCS0-MIMO

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5200.00	101.45（PK）	V	Fundamental Frequency
5200.00	92.32（PK）	H	
10400	46.23（PK）	V	74(Peak)/ 54(AV)
10400	44.51（PK）	H	74(Peak)/ 54(AV)
15600	--	H/V	74(Peak)/ 54(AV)
20800	--	H/V	74(Peak)/ 54(AV)
26000	--	H/V	74(Peak)/ 54(AV)
31200	--	H/V	74(Peak)/ 54(AV)
36400	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH48 for 11n20 at MCS0-MIMO

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5240.00	100.46（PK）	V	Fundamental Frequency
5240.00	91.77（PK）	H	
10480	46.35（PK）	V	74(Peak)/ 54(AV)
10480	45.35（PK）	H	74(Peak)/ 54(AV)
15720	--	H/V	74(Peak)/ 54(AV)
20960	--	H/V	74(Peak)/ 54(AV)
26200	--	H/V	74(Peak)/ 54(AV)
31440	--	H/V	74(Peak)/ 54(AV)
36680	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH149 for 11a at 6Mbps-ANT1

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5745.00	101.32（PK）	V	Fundamental Frequency
5745.00	94.03（PK）	H	
11490	48.32（PK）	V	74(Peak)/ 54(AV)
11490	45.39（PK）	H	74(Peak)/ 54(AV)
17235	--	H/V	74(Peak)/ 54(AV)
22980	--	H/V	74(Peak)/ 54(AV)
28725	--	H/V	74(Peak)/ 54(AV)
34470	--	H/V	74(Peak)/ 54(AV)
40215	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH157 for 11a at 6Mbps-ANT1

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5785.00	100.39（PK）	V	Fundamental Frequency
5785.00	91.79（PK）	H	
11570	47.37（PK）	V	74(Peak)/ 54(AV)
11570	44.86（PK）	H	74(Peak)/ 54(AV)
17355	--	H/V	74(Peak)/ 54(AV)
23140	--	H/V	74(Peak)/ 54(AV)
28925	--	H/V	74(Peak)/ 54(AV)
34710	--	H/V	74(Peak)/ 54(AV)
40495	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH165 for 11a at 6Mbps-ANT1

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5825.00	100.58（PK）	V	Fundamental Frequency
5825.00	93.82（PK）	H	
11650	48.76（PK）	V	74(Peak)/ 54(AV)
11650	46.01（PK）	H	74(Peak)/ 54(AV)
17475	--	H/V	74(Peak)/ 54(AV)
23300	--	H/V	74(Peak)/ 54(AV)
29125	--	H/V	74(Peak)/ 54(AV)
34950	--	H/V	74(Peak)/ 54(AV)
40775	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH149 for 11n20 at MCS0-MIMO

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5745.00	102.31（PK）	V	Fundamental Frequency
5745.00	90.71（PK）	H	
11490	47.33（PK）	V	74(Peak)/ 54(AV)
11490	44.08（PK）	H	74(Peak)/ 54(AV)
17235	--	H/V	74(Peak)/ 54(AV)
22980	--	H/V	74(Peak)/ 54(AV)
28725	--	H/V	74(Peak)/ 54(AV)
34470	--	H/V	74(Peak)/ 54(AV)
40215	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH157 for 11n20 at MCS0-MIMO

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5785.00	101.45（PK）	V	Fundamental Frequency
5785.00	92.32（PK）	H	
11570	46.23（PK）	V	74(Peak)/ 54(AV)
11570	44.51（PK）	H	74(Peak)/ 54(AV)
17355	--	H/V	74(Peak)/ 54(AV)
23140	--	H/V	74(Peak)/ 54(AV)
28925	--	H/V	74(Peak)/ 54(AV)
34710	--	H/V	74(Peak)/ 54(AV)
40495	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark "---" means that the emissions level is too low to be measured

Operation Mode: Keeping Transmitting under CH165 for 11n20 at MCS0-MIMO

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5825.00	100.46（PK）	V	Fundamental Frequency
5825.00	91.77（PK）	H	
11650	46.35（PK）	V	74(Peak)/ 54(AV)
11650	45.35（PK）	H	74(Peak)/ 54(AV)
17475	--	H/V	74(Peak)/ 54(AV)
23300	--	H/V	74(Peak)/ 54(AV)
29125	--	H/V	74(Peak)/ 54(AV)
34950	--	H/V	74(Peak)/ 54(AV)
40775	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark "---" means that the emissions level is too low to be measured

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 36 (5180MHz)-11a
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	45.1 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-50.1		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 45.1 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=45.1-95.2=-50.1dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 36 (5180MHz)-11a
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	42.6 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-52.6		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 42.6 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=42.6-95.2=-52.6dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 48 (5240MHz)-11a
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dBμV/m)	49.7 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-45.5		
Polarity	Vertical			

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 49.7dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=49.7-95.2=-45.5dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 48 (5240MHz)-11a
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dBμV/m)	46.6 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-48.6		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 46.6dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=46.6-95.2=-48.6dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 149 (5745MHz)-11a
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5725	PK (dBμV/m)	53.2 (PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-42.0		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 53.2 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=53.2-95.2=-42.0dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 149 (5745MHz)-11a
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5725	PK (dBμV/m)	47.7(PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-47.5		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 47.7 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=47.7-95.2=-47.5dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 161 (5825MHz)-11a
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5850	PK (dBμV/m)	55.0(PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-40.2		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 55.0dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=55.0-95.2=-40.2dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 161 (5825MHz)-11a
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5850	PK (dBμV/m)	50.6 (PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-44.6		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]=50.6 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=50.6-95.2=-44.6dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 36 (5180MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	46.1(PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-49.1		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 46.1 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=46.1-95.2=-49.1dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 36 (5180MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	43.6(PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-51.6		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 43.6dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=43.6-95.2=-51.6dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 48 (5240MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dBμV/m)	47.4(PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-47.8		
Polarity	Vertical			

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 47.4dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=47.4-95.2=-47.8dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 48 (5240MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dBμV/m)	44.8(PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-50.4		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 44.8dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=44.8-95.2=-50.4dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 149 (5745MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5725	PK (dBμV/m)	50.3 (PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-44.9		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 50.3dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=50.3-95.2=-44.9dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 149 (5745MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5725	PK (dBμV/m)	46.1(PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-49.1		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 46.1dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=46.1-95.2= -49.1 dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 161 (5825MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5850	PK (dBμV/m)	50.4 (PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-44.8		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 50.4dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=50.4-95.2= -44.8dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 161 (5825MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5850	PK (dBμV/m)	46.4 (PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-48.8		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 46.4dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=46.4-95.2=-48.8dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 38 (5190MHz)-11n/HT40
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	44.8(PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-50.4		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 44.8dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=44.8-95.2=-50.4dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 38 (5190MHz)-11n/HT40
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	42.9 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-52.3		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 42.9dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=42.9-95.2=-52.3dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 46 (5230MHz)-11n/HT40
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dBμV/m)	48.2(PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-47.0		
Polarity	Vertical			

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 48.2dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=48.2-95.2=-47.0dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 46 (5230MHz)-11n/HT40
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dBμV/m)	45.8(PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-49.4		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 45.8dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=45.8-95.2=-49.4dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 151 (5755MHz)-11n/HT40
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5725	PK (dBμV/m)	51.4(PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-43.8		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 51.4 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=51.4 -95.2= -43.8dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 151 (5755MHz)-11n/HT40
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5725	PK (dBμV/m)	46.9(PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-48.3		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 46.9dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=46.9-95.2=-48.3dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 159 (5795MHz)-11n/HT40
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5850	PK (dBμV/m)	53.1 (PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-42.1		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 53.1dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=53.1-95.2=-42.1dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 159 (5795MHz)-11n/HT40
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5850	PK (dBμV/m)	47.7(PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-47.5		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 47.7 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=47.7-95.2=-47.5 dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 42 (5210MHz)-11ac/VHT80
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	47.9 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-47.3		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 47.9 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=47.9-95.2=-47.3dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 42 (5210MHz)-11ac/VHT80
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	45.3 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-49.9		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 45.3dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=45.3-95.2= -49.9dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 155 (5775MHz)-11ac/VHT80
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5850	PK (dBμV/m)	52.0 (PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-43.2		
Polarity	Vertical		--	--

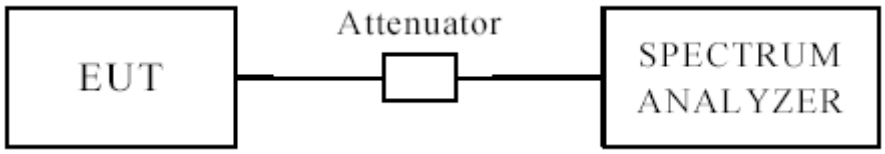
Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 52.0 dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=52.0-95.2=-43.2 dBm
2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	NovoDS Digital Signage Solution		Test Mode:	Channel 157 (5775MHz)-11ac/VHT80
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5850	PK (dBμV/m)	47.5(PK)	Limit	-17dBm/MHz
	EIRP (dBm)	-47.7		
Polarity	Horizontal		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm] = E[dBμV/m] - 95.2
For Example, if E[dBμV/m]= 47.1dBμV/m,
EIRP[dBm] = E[dBμV/m] - 95.2=47.5-95.2=-47.7dBm
2. RBW=1MHz, VBW=3MHz

7.0 Emission Bandwidth

7.1 Test Setup



7.3 Test Procedure for Emission Bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set VBW> RBW
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

7.4 Test Procedure for Minimum Bandwidth for the Band 5725-5850MHz

1. Set RBW = 100 kHz.
2. Set VBW≥ 3 × RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.5 Test Procedure for 99% Bandwidth

1. Set center frequency to the nominal EUT channel center frequency
2. Set span = 1.5 times to 5.0 times OBW
3. Set RBW= 1% TO 5% of the OBW
4. Set VBW≥ 3 × RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Other, peak detection and max mode (until trace stabilizes) shall be used.
6. Use the 99% power bandwidth function of the instrument

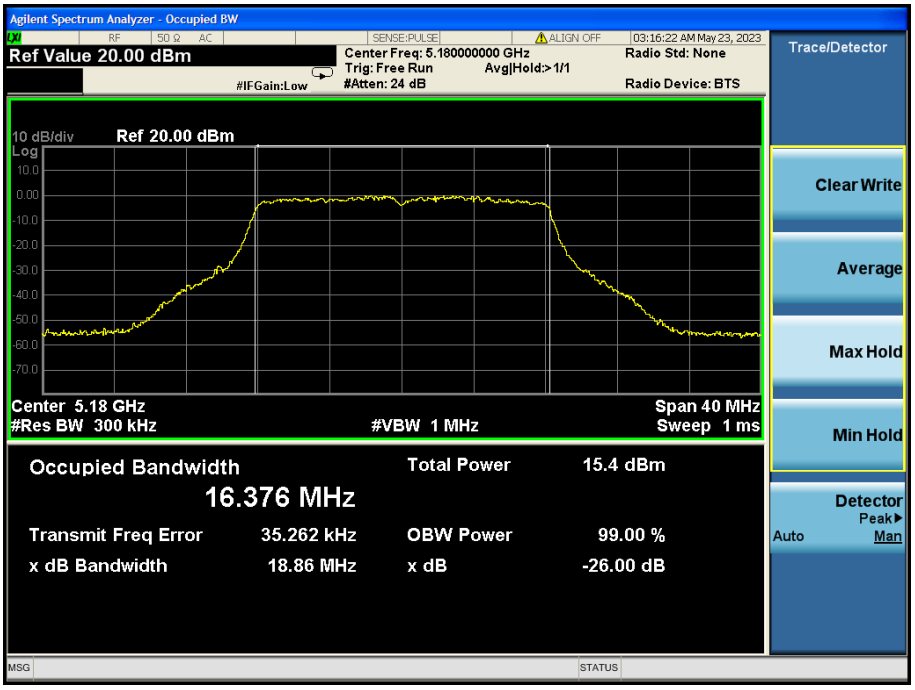
7.6 Test Result

Test Mode	Test CH	Frequency (MHz)	26 dB Bandwidth (MHz)ANT 1	26 dB Bandwidth (MHz)ANT 2	99 % Emission Bandwidth (MHz) ANT 1	99 % Emission Bandwidth (MHz) ANT 2
802.11a	CH36	5180	18.86	18.65	16.376	16.256
	CH40	5200	18.73	18.36	16.374	16.345
	CH48	5240	18.67	18.63	16.349	16.327
802.11n(20M)	CH36	5180	20.17	20.06	17.523	17.526
	CH40	5200	20.26	20.15	17.543	17.544
	CH48	5240	19.78	19.64	17.543	17.523
802.11ac(20M)	CH36	5180	20.16	20.15	17.513	17.507
	CH40	5200	19.84	19.46	17.529	17.530
	CH48	5240	19.98	19.84	17.544	17.536
802.11n(40M)	CH38	5190	39.63	39.58	36.013	36.011
	CH46	5230	39.29	39.24	35.987	35.963
802.11ac(40M)	CH38	5190	39.47	39.36	36.013	36.005
	CH46	5230	39.44	39.24	36.029	36.018
802.11ac(80M)	CH42	5210	81.17	81.09	75.368	75.353

Note: ANT 1(2) Represent the value of antenna 1 and 2, The worst data is Antenna 1, only shown Antenna 1 Plot

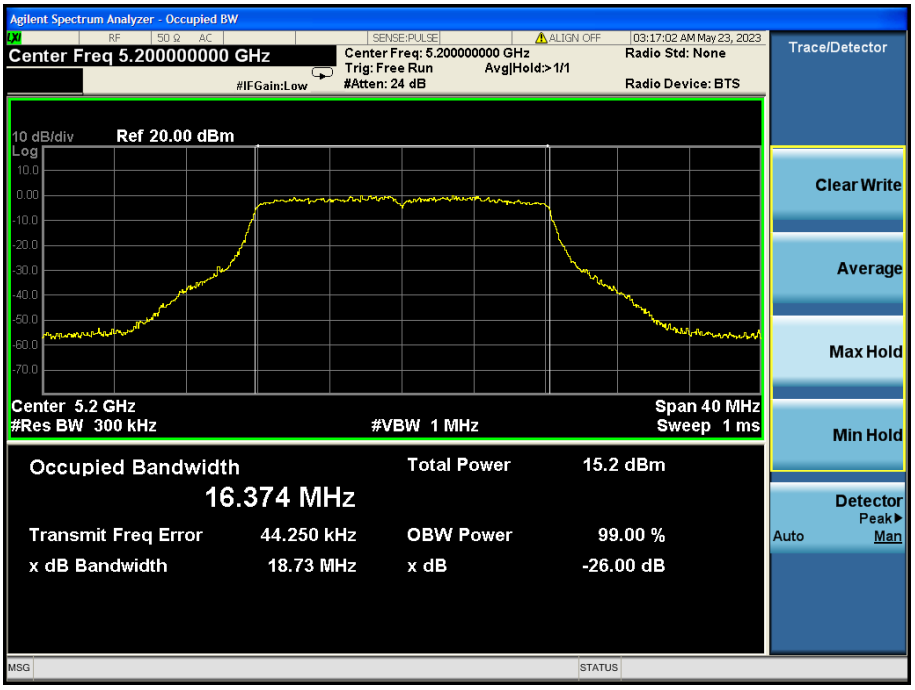
802.11a (5.15GHz-5.25GHz)

The Low Channel 36: 5180MHz



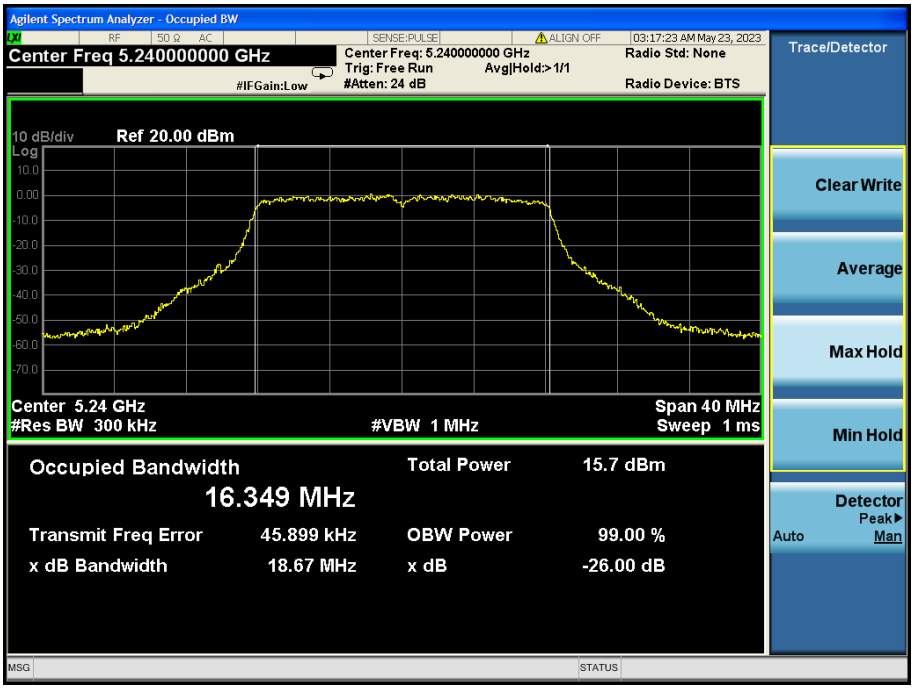
802.11a (5.15GHz-5.25GHz)

The Middle Channel 40: 5200MHz



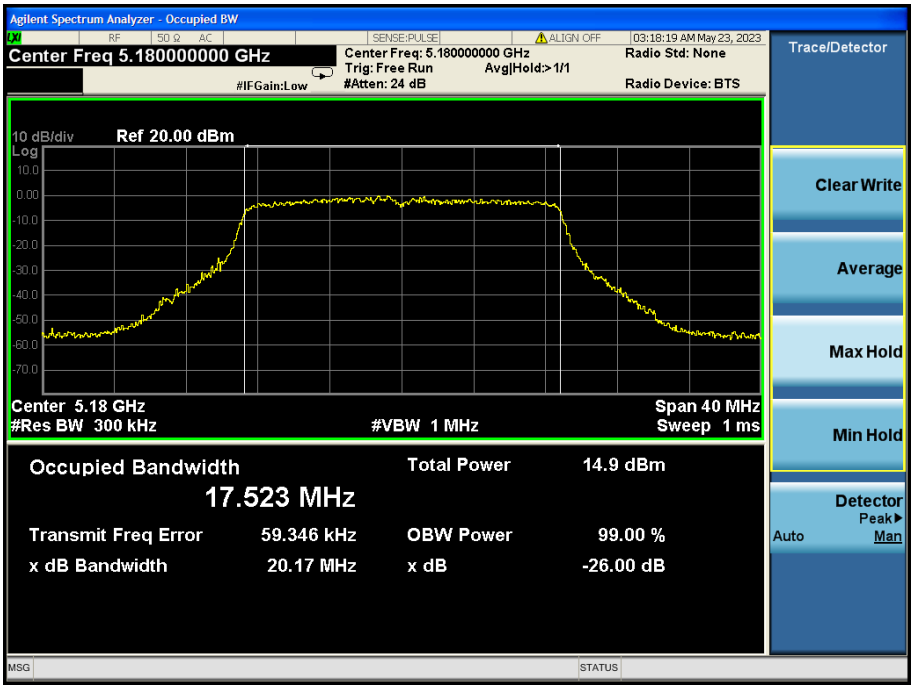
802.11a (5.15GHz-5.25GHz)

The High Channel 48: 5240MHz



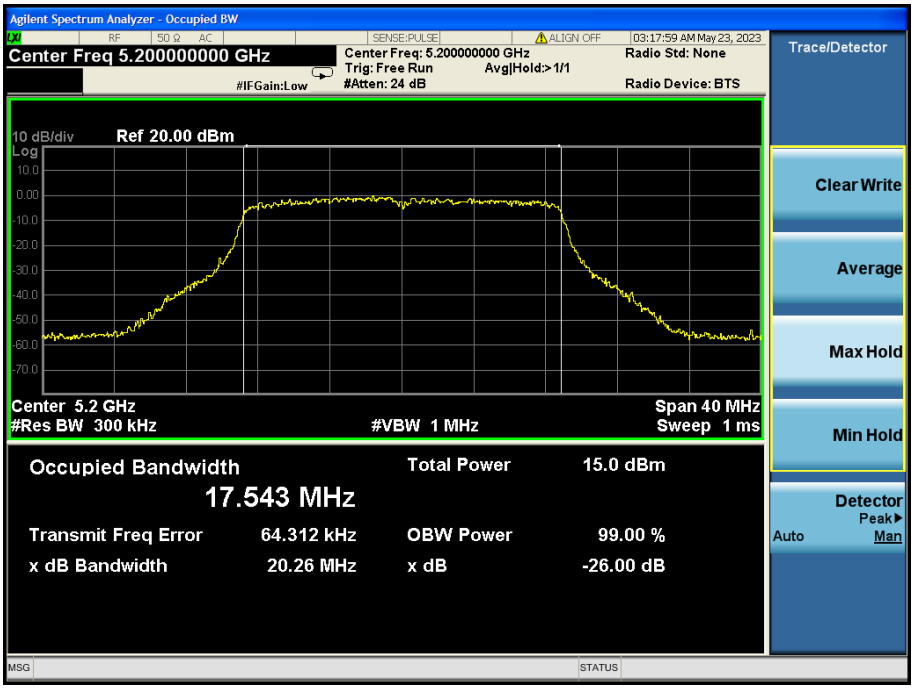
802.11n(20M) (5.15GHz-5.25GHz)

The Lowest Channel 36: 5180MHz



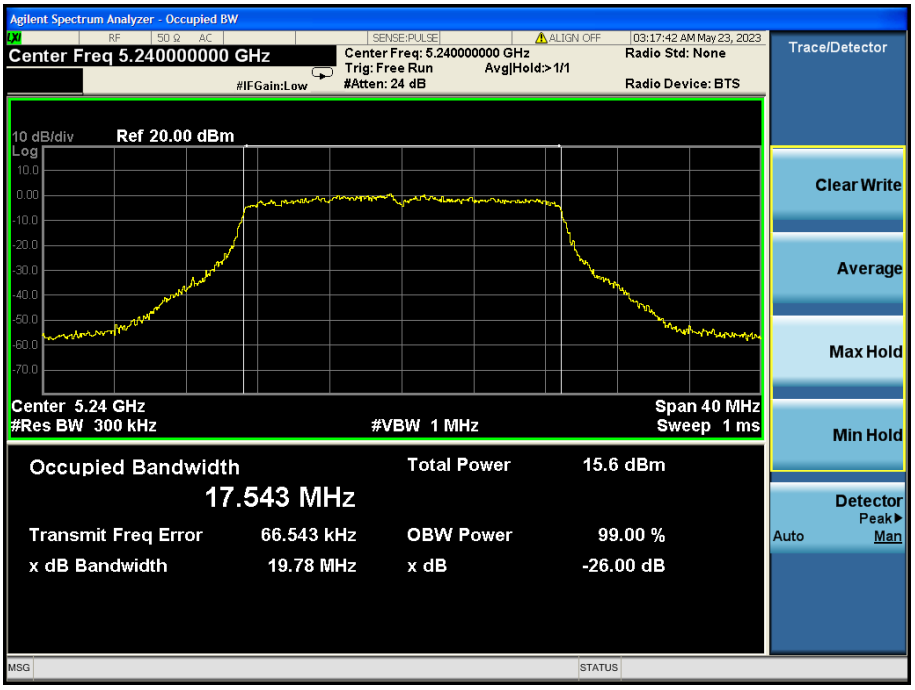
802.11n(20M) (5.15GHz-5.25GHz)

The Middle Channel 40: 5200MHz



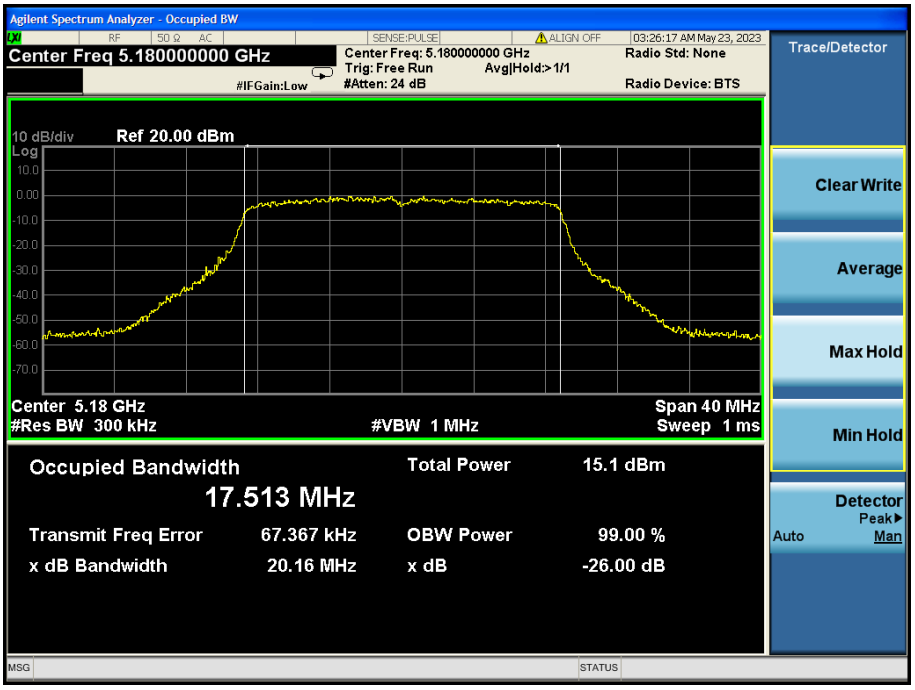
802.11n(20M) (5.15GHz-5.25GHz)

The High Channel 48: 5240MHz



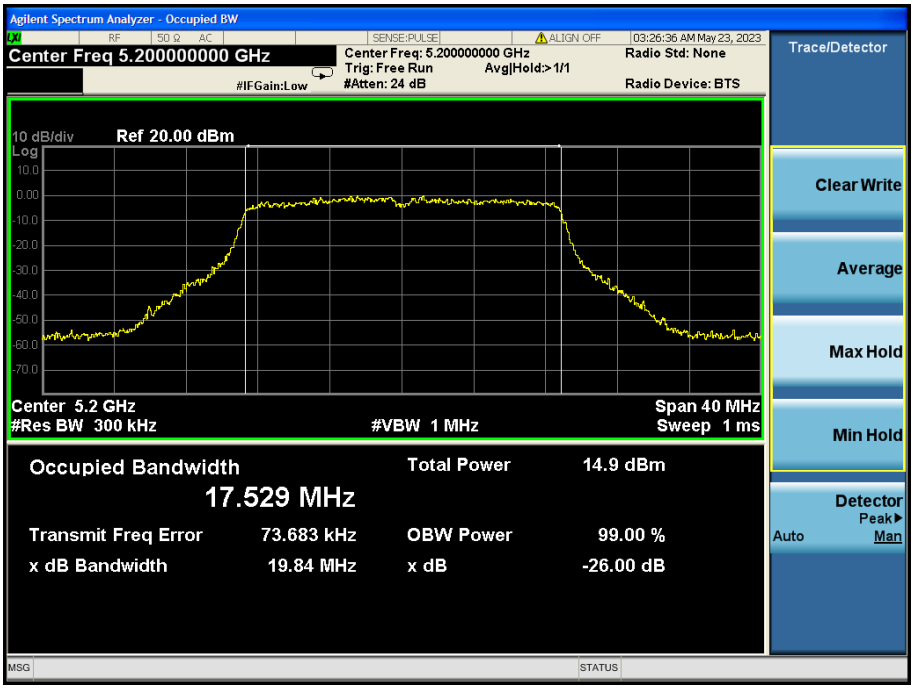
802.11ac(20M) (5.15GHz-5.25GHz)

The Middle Channel 36: 5180MHz



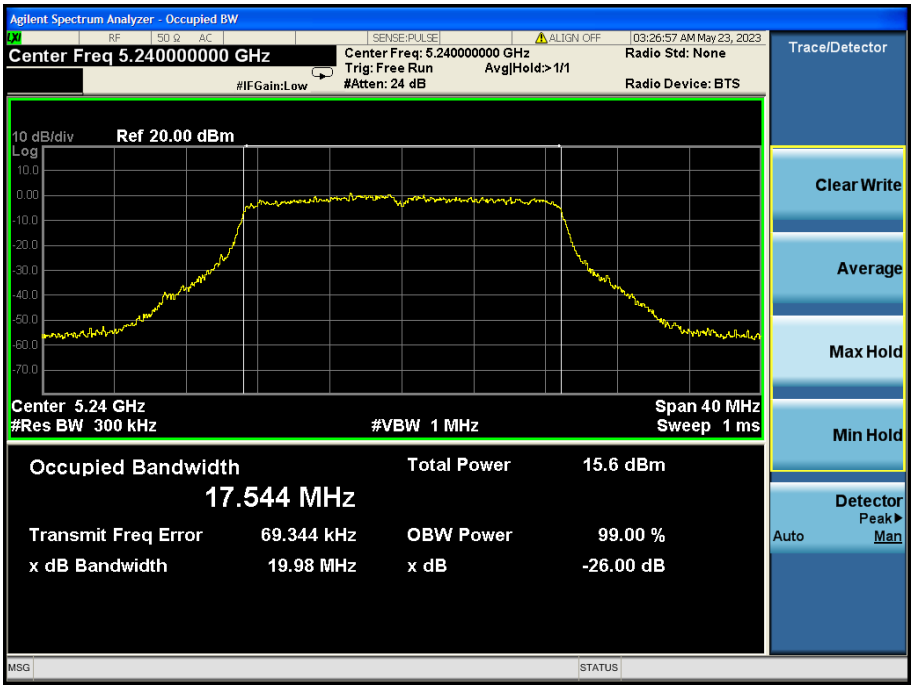
802.11n(20M) (5.15GHz-5.25GHz)

The High Channel 40: 5200MHz



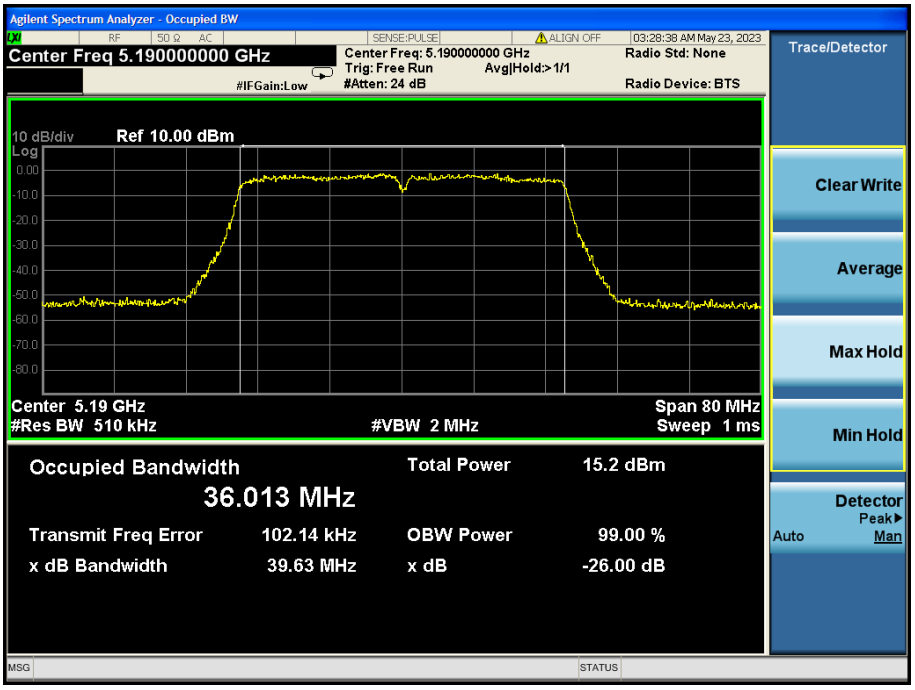
802.11ac(20M) (5.15GHz-5.25GHz)

The Middle Channel 48: 5240MHz



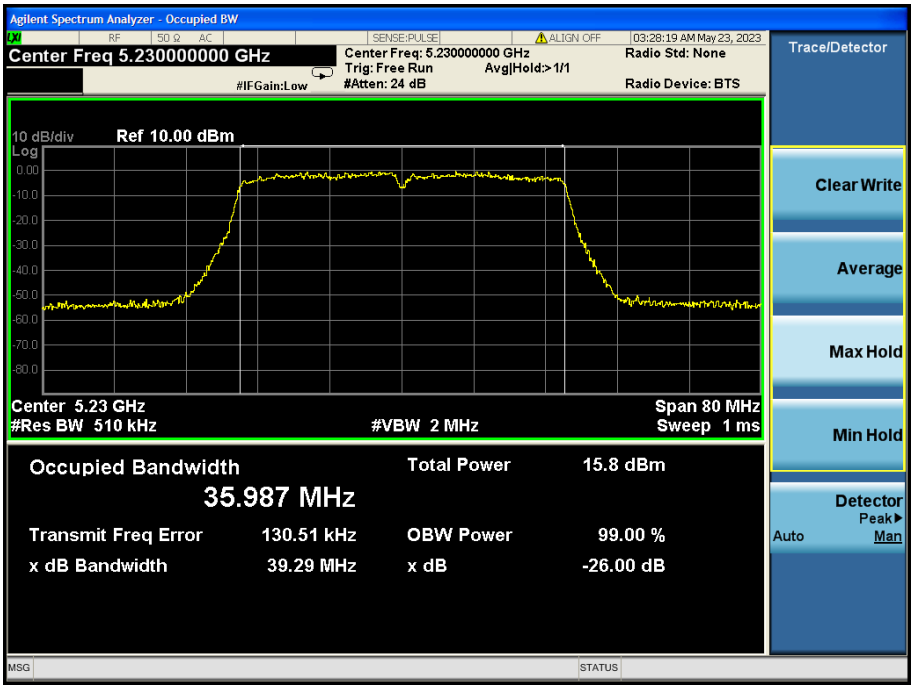
802.11n(40M) (5.15GHz-5.25GHz)

The Lowest Channel 38: 5190MHz



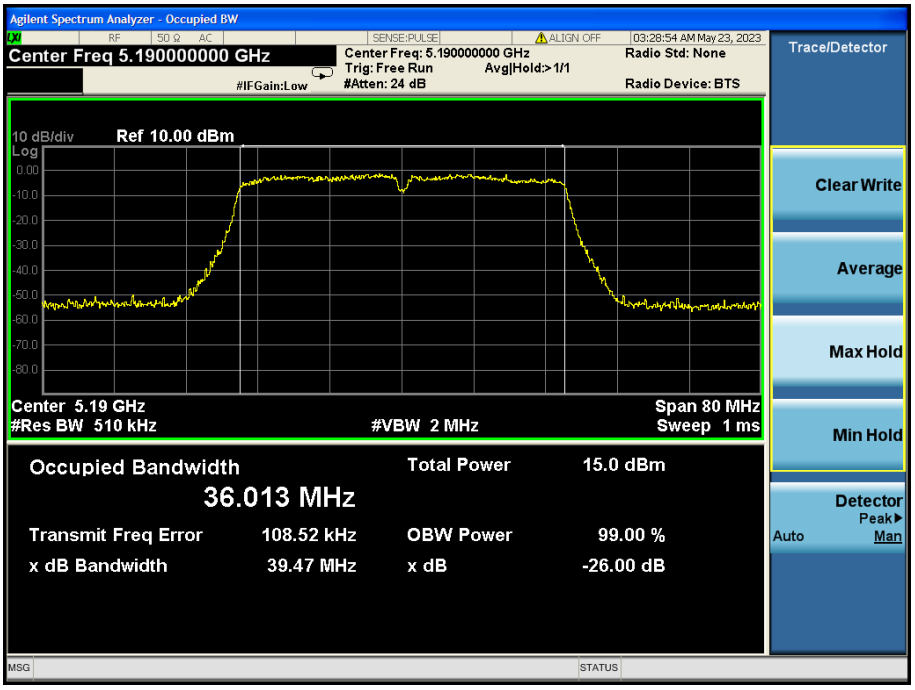
802.11n(40M) (5.15GHz-5.25GHz)

The High Channel 46: 5230MHz



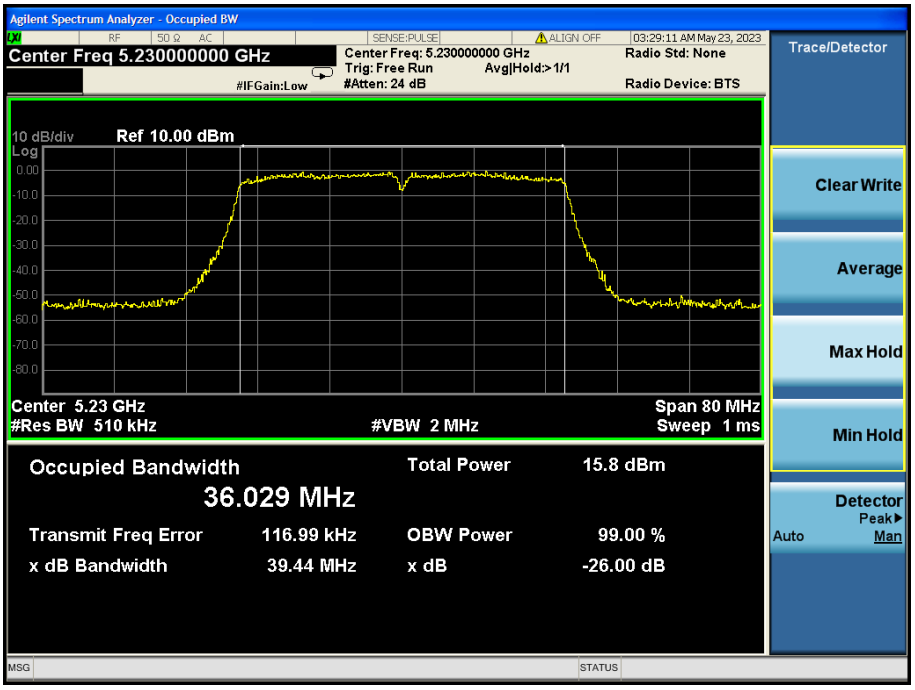
802.11ac(40M) (5.15GHz-5.25GHz)

The Lowest Channel 38: 5190MHz



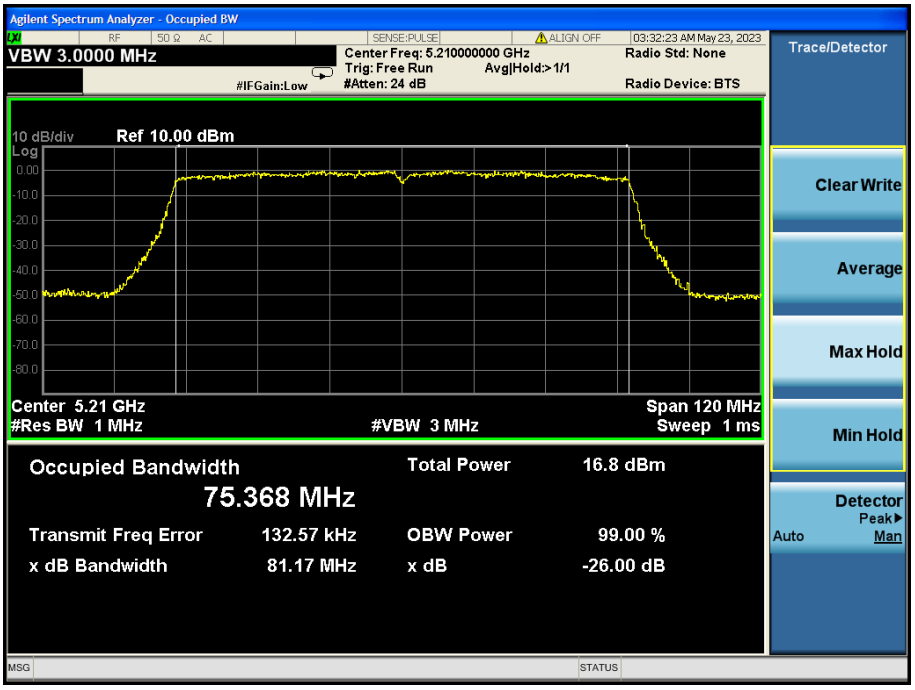
802.11ac(40M) (5.15GHz-5.25GHz)

The High Channel 46: 5230MHz



802.11ac(80M) (5.15GHz-5.25GHz)

The Lowest Channel 42: 5210MHz

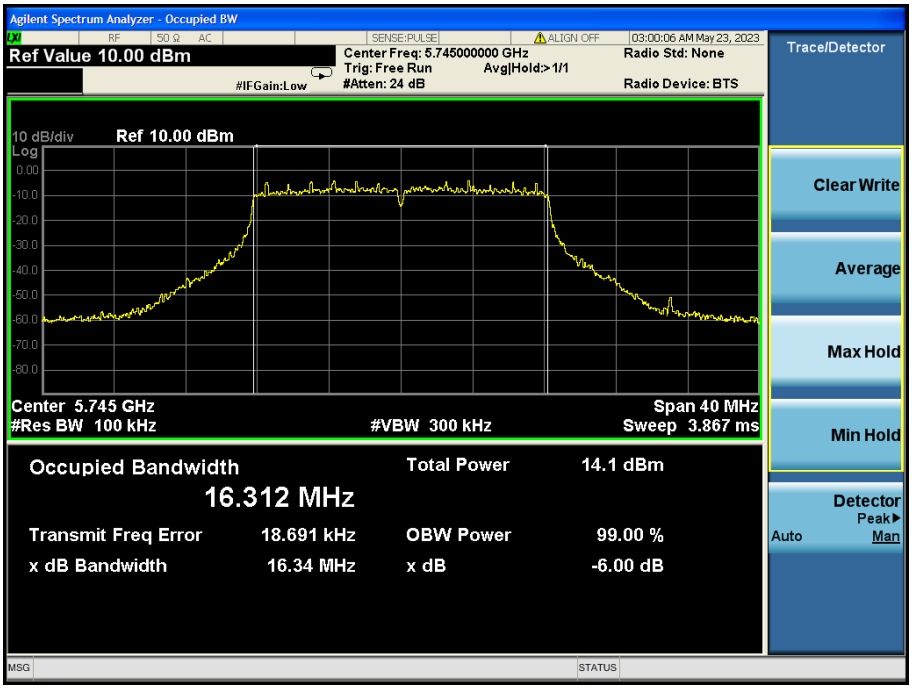


Test Channel	Frequency	6dB Bandwidth (MHz) Antenna 1	6dB Bandwidth (MHz) Antenna 2	99 % Emission Bandwidth (MHz) ANT 1	99 % Emission Bandwidth (MHz) ANT 2	6dB Bandwidth Limit (kHz)	Result
802.11a							
CH 149	5745	16.34	16.13	16.376	16.363	≧500	Pass
CH 157	5785	16.08	16.18	16.374	16.358	≧500	Pass
CH 165	5825	16.31	16.21	16.377	16.363	≧500	Pass
802.11n(20M)							
CH 149	5745	16.79	16.62	17.589	17.547	≧500	Pass
CH 157	5785	16.78	16.53	17.591	17.564	≧500	Pass
CH 165	5825	16.31	16.28	17.594	17.568	≧500	Pass
802.11ac(20M)							
CH 149	5745	17.68	17.26	17.608	17.588	≧500	Pass
CH 157	5785	16.28	16.43	17.589	17.547	≧500	Pass
CH 165	5825	17.24	17.17	17.588	17.532	≧500	Pass
802.11n(40M)							
CH 151	5755	34.85	35.02	35.966	35.947	≧500	Pass
CH 159	5795	35.97	35.73	35.928	35.916	≧500	Pass
802.11ac(40M)							
CH 151	5755	35.94	35.58	35.999	35.895	≧500	Pass
CH 159	5795	35.10	35.12	35.956	35.946	≧500	Pass
802.11ac(80M)							
CH 155	5775	74.16	74.05	75.313	75.278	≧500	Pass

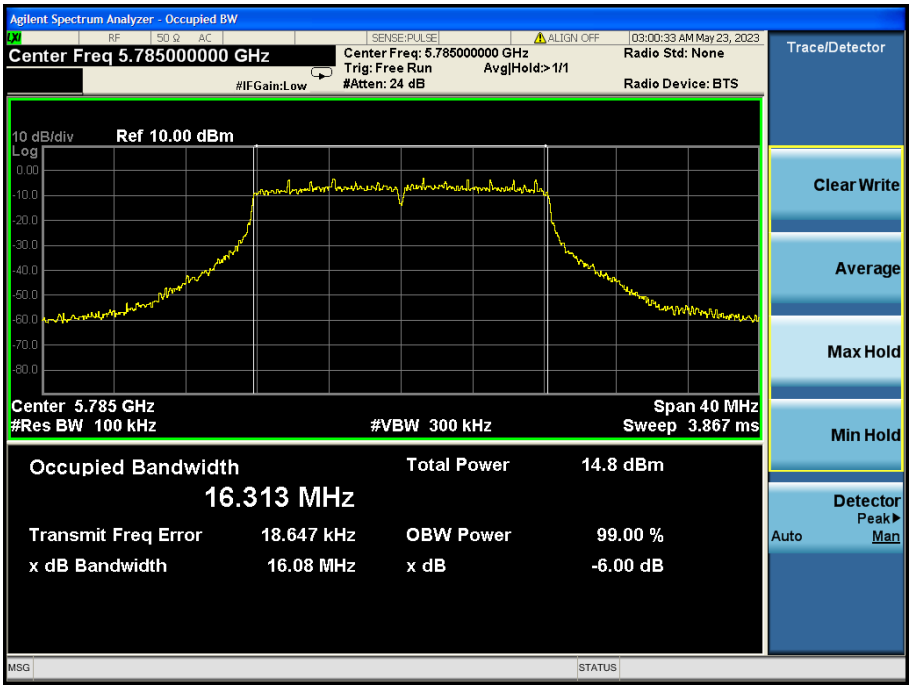
Note: ANT 1(2) Represent the value of antenna 1 and 2, The worst data is Antenna 1, only shown Antenna 1 Plot.

6dB bandwidth-802.11a

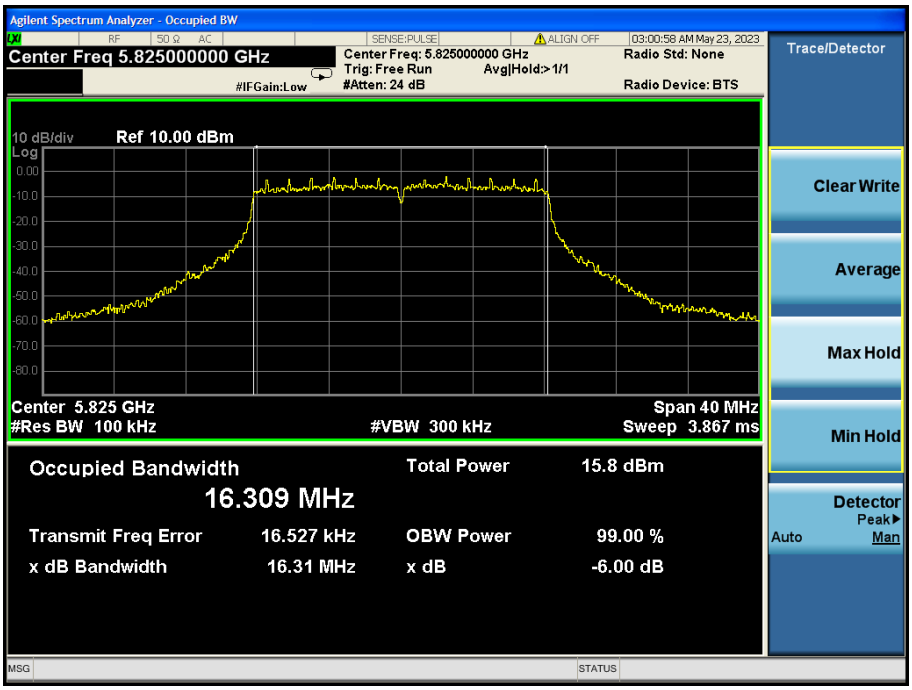
TX CH 149



TX CH 157

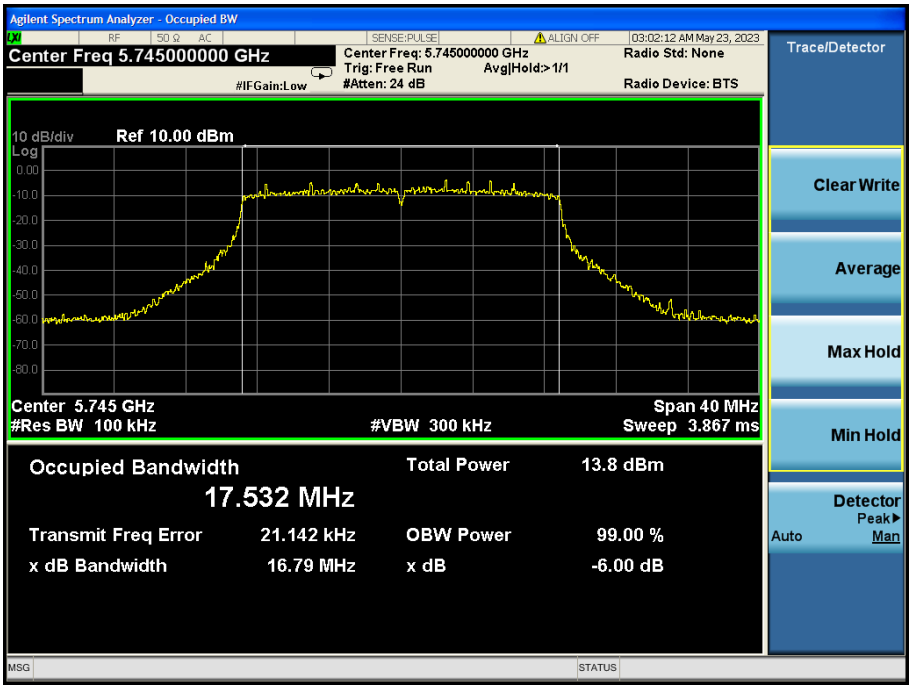


TX CH 165

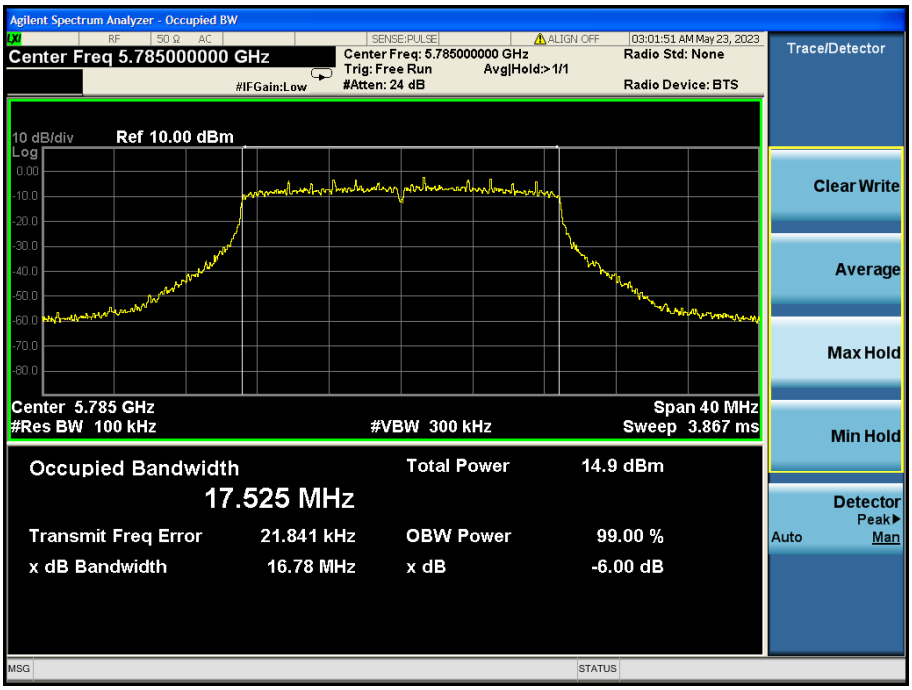


6dB bandwidth-802.11n20

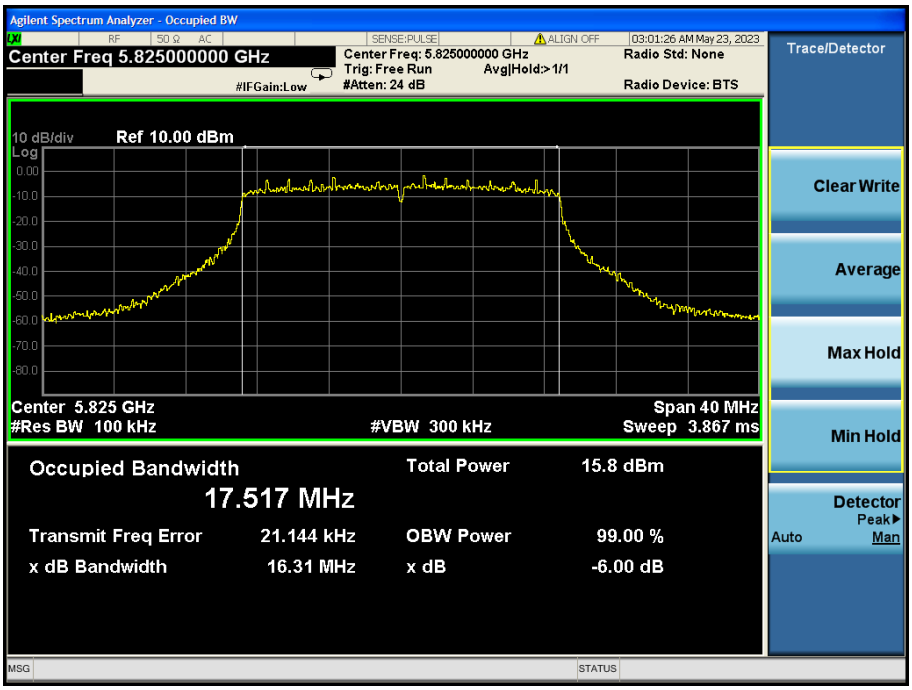
TX CH 149



TX CH 157

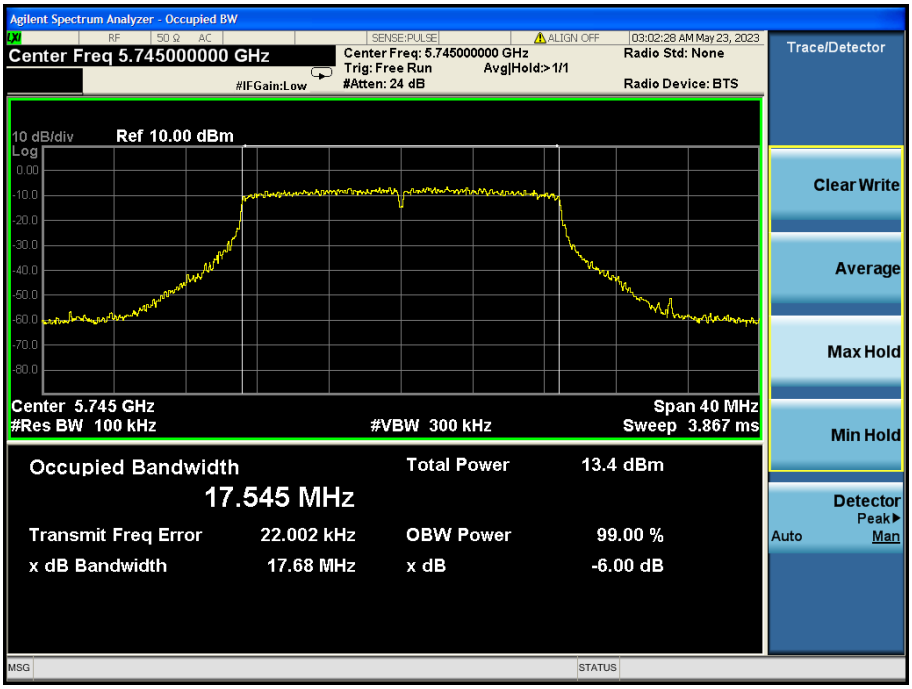


TX CH 165

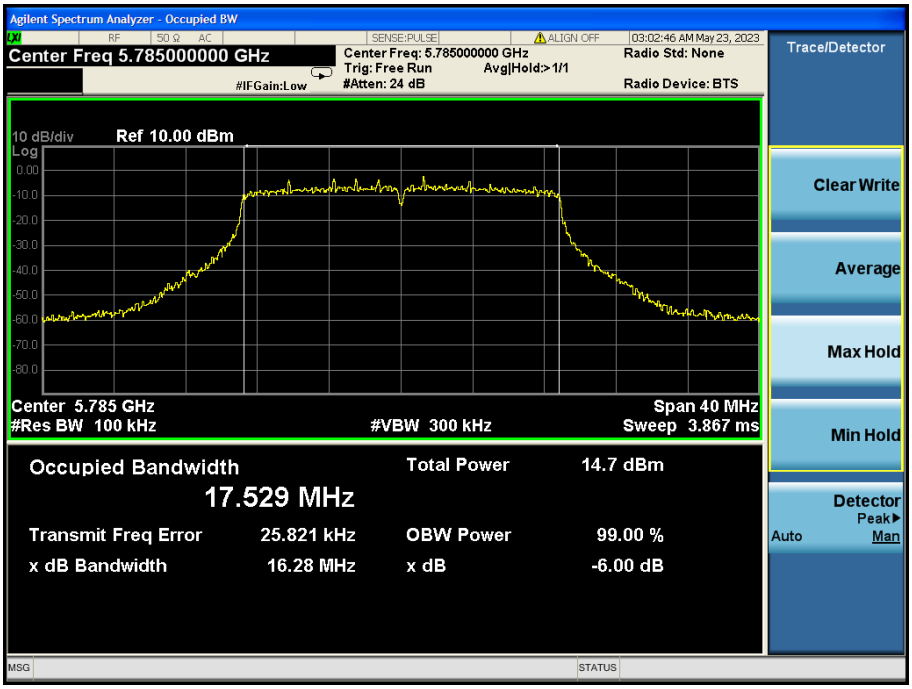


6dB bandwidth-802.11ac20

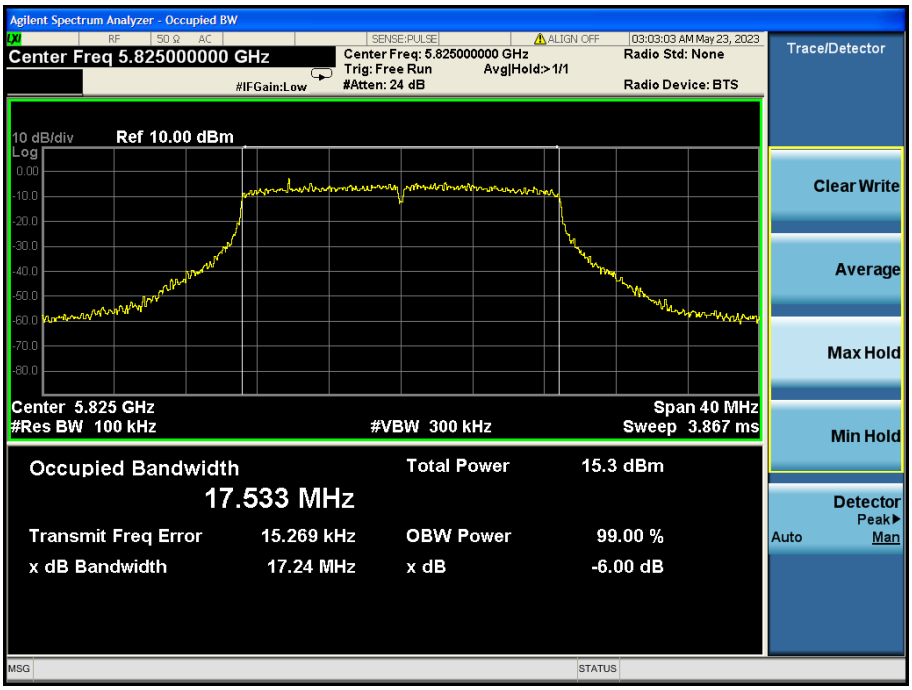
TX CH 149



TX CH 157

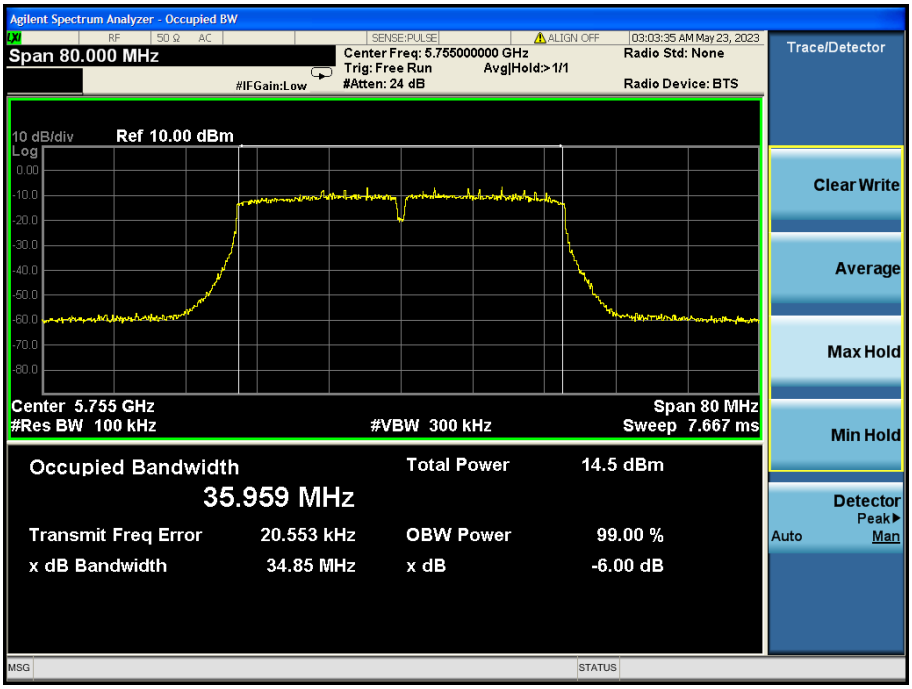


TX CH 165

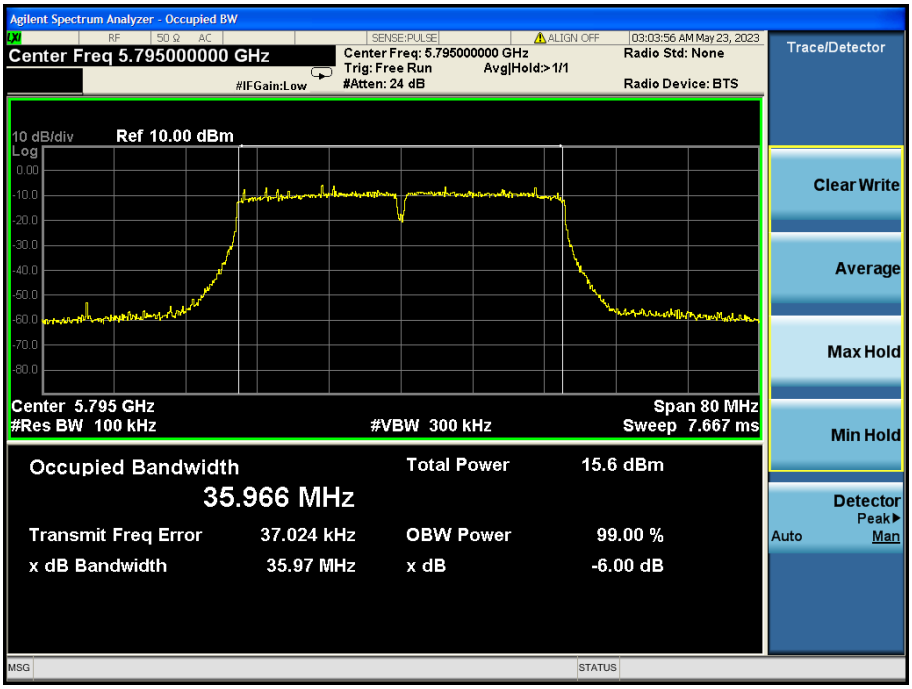


6dB bandwidth-802.11n40

TX CH 151

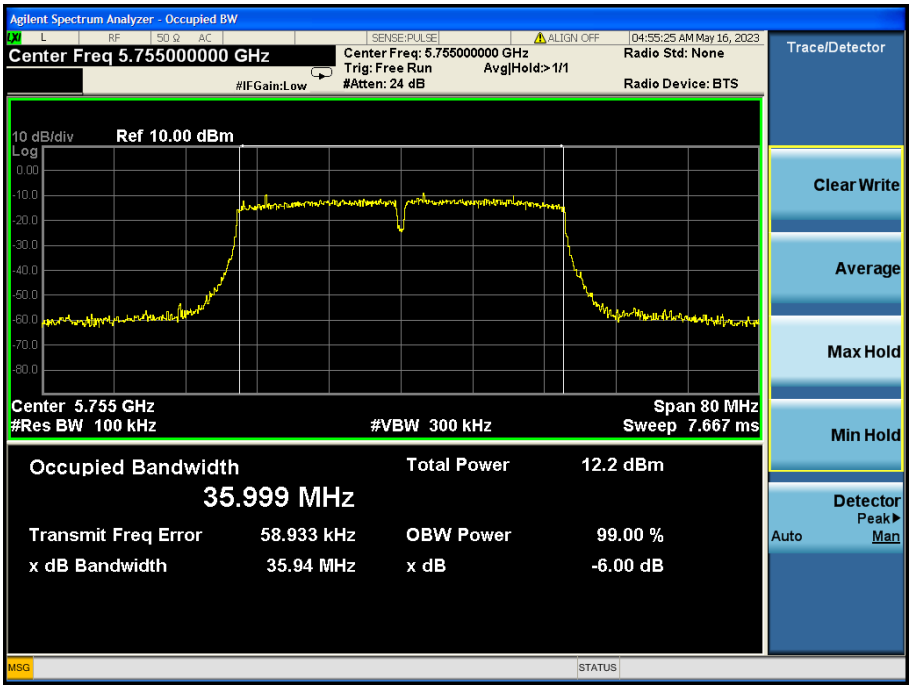


TX CH 159

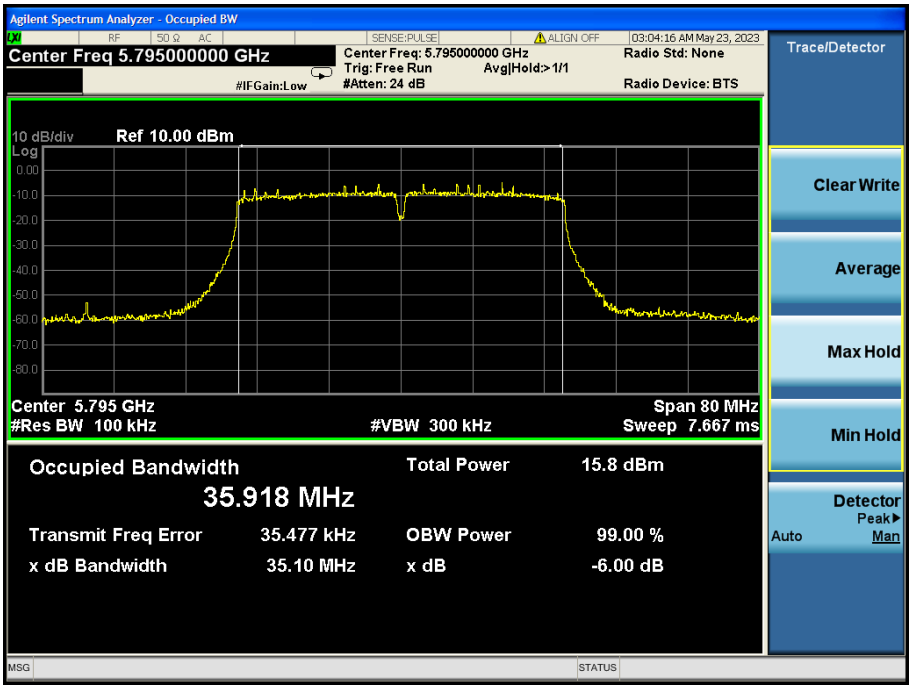


6dB bandwidth-802.11ac40

TX CH 151

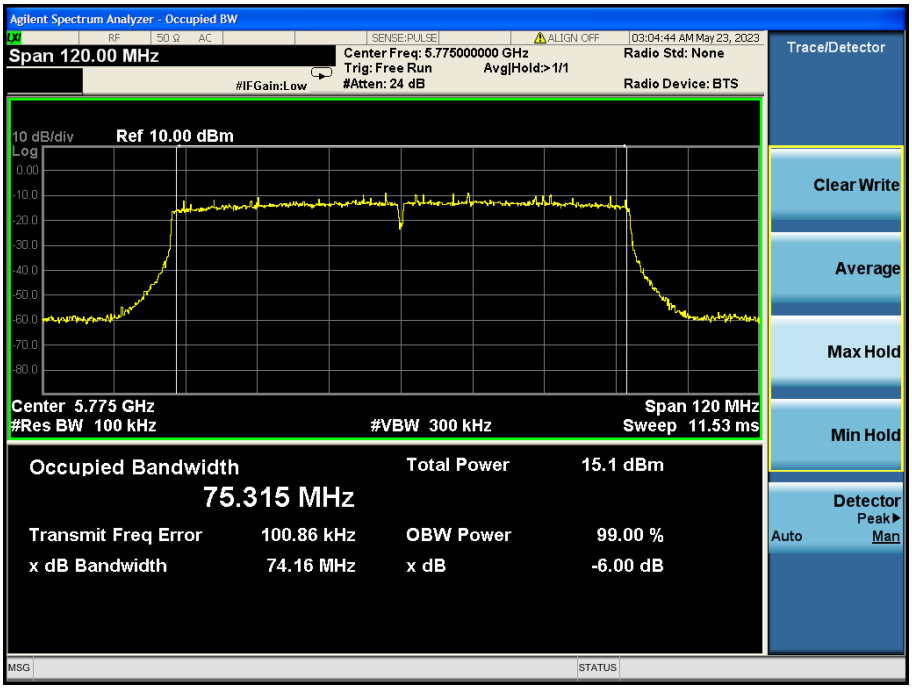


TX CH 159



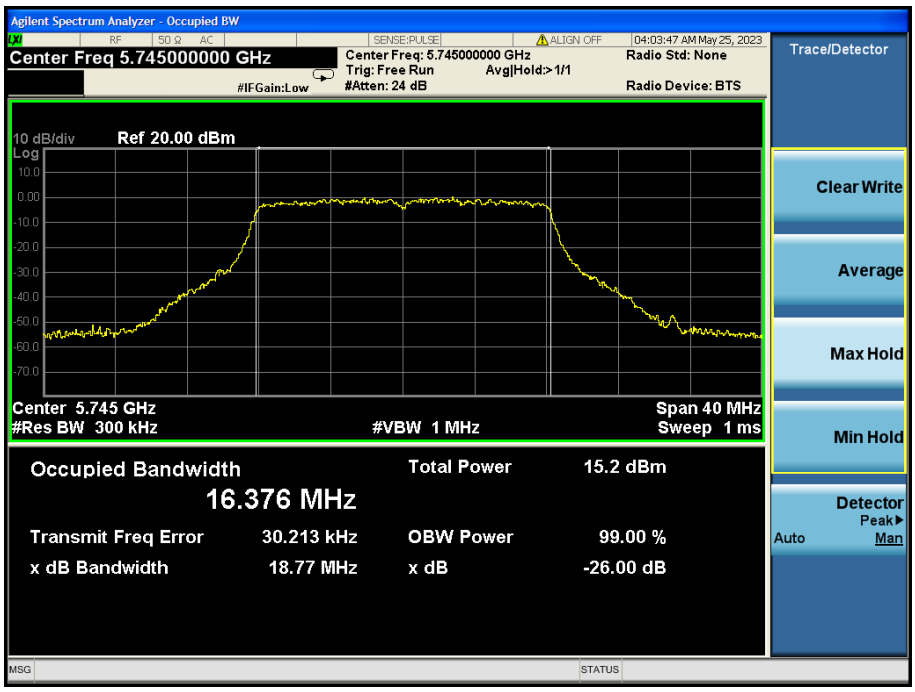
6dB bandwidth-802.11ac80

TX CH 155

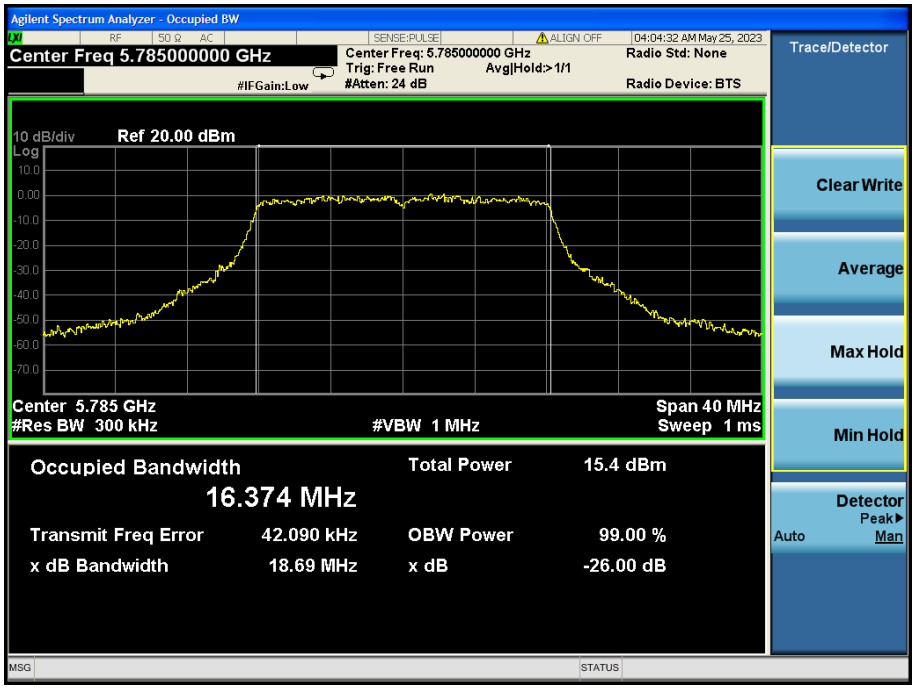


99% bandwidth-802.11a

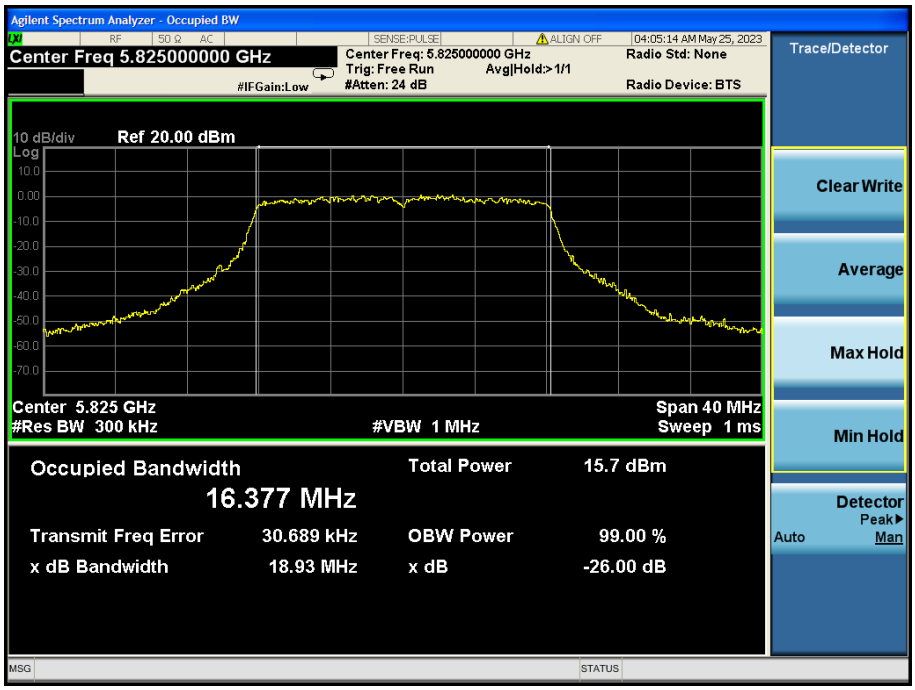
TX CH 149



TX CH 157

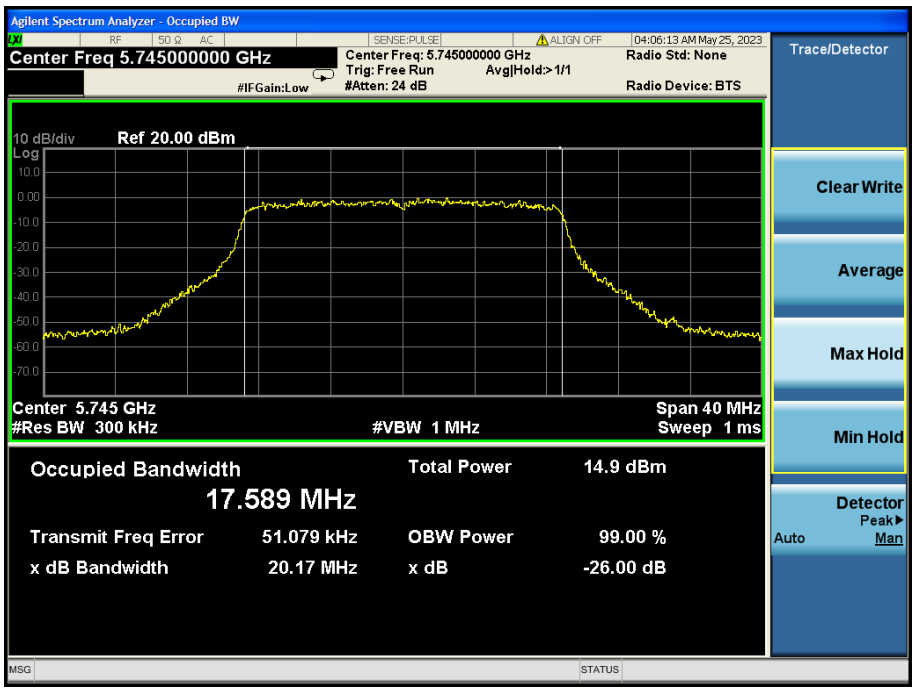


TX CH 165

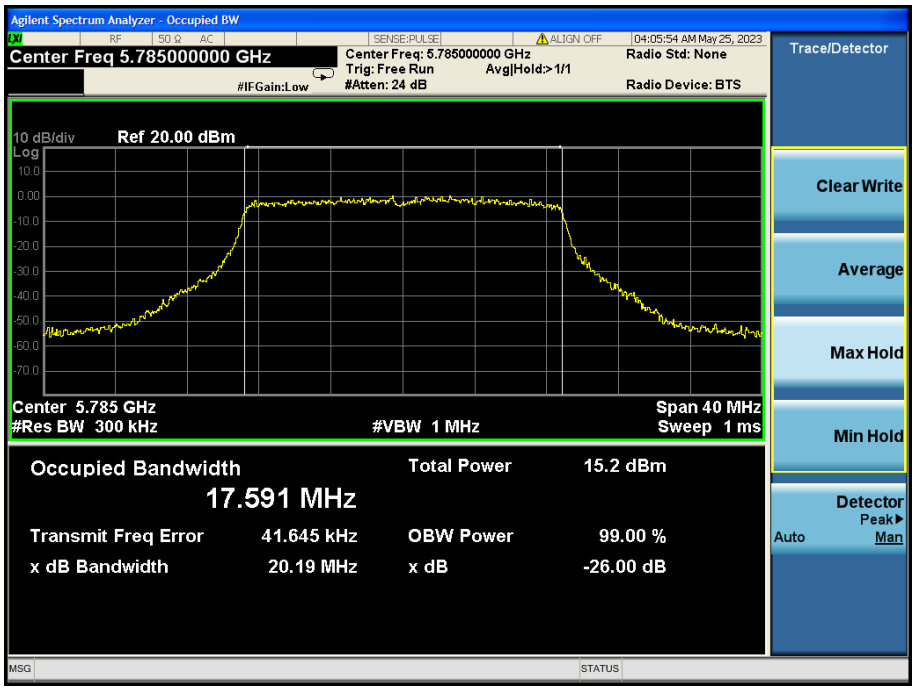


99% bandwidth-802.11n20

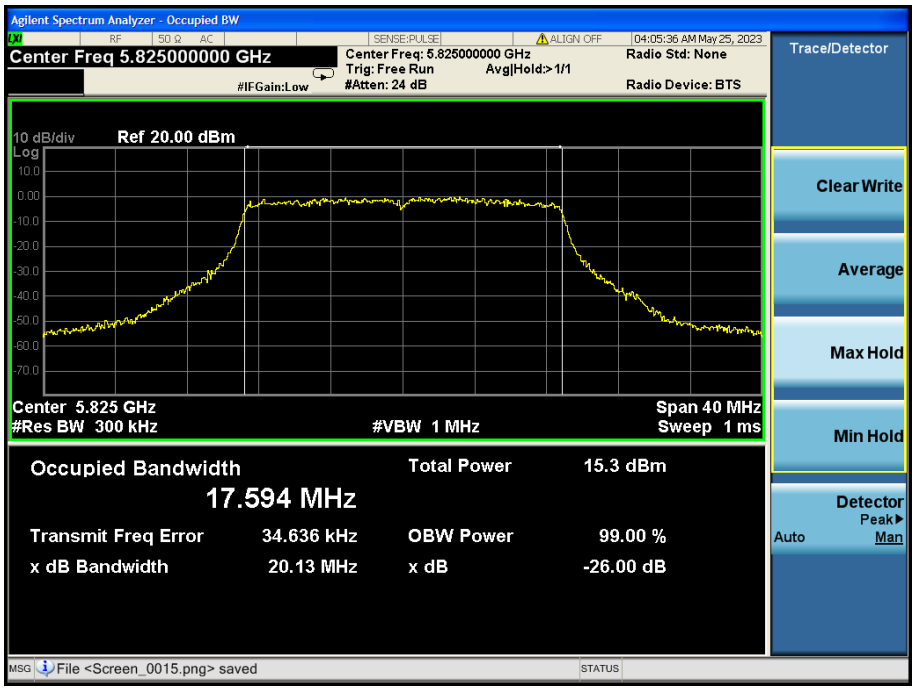
TX CH 149



TX CH 157

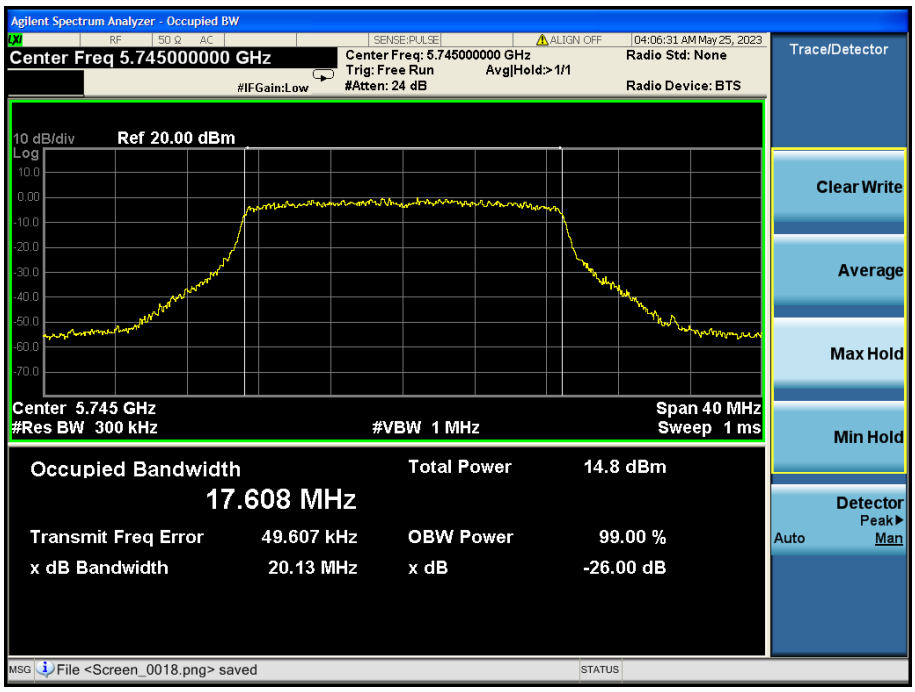


TX CH 165

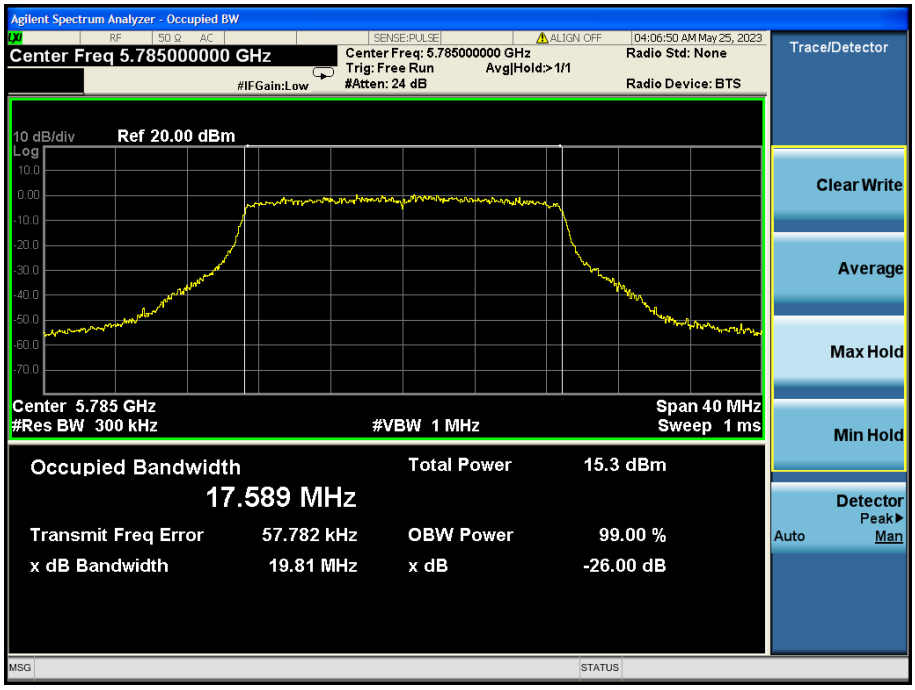


99% bandwidth-802.11ac20

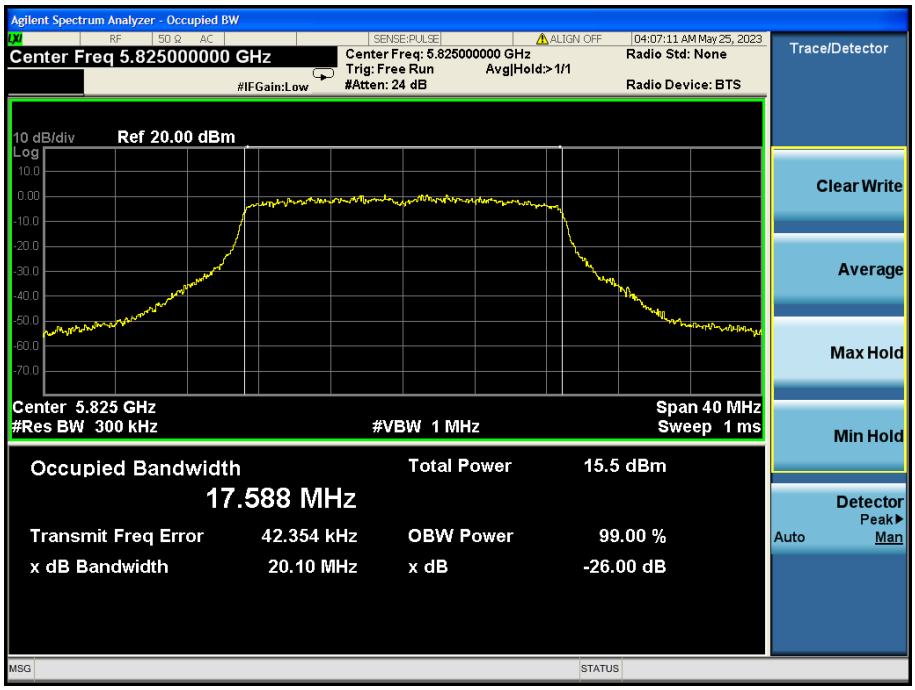
TX CH 149



TX CH 157

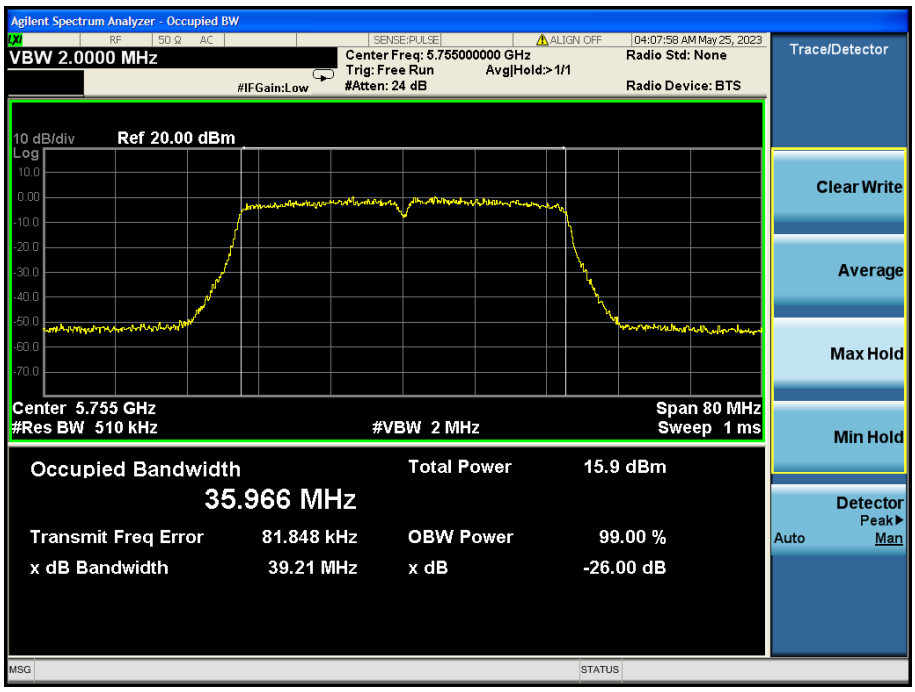


TX CH 165

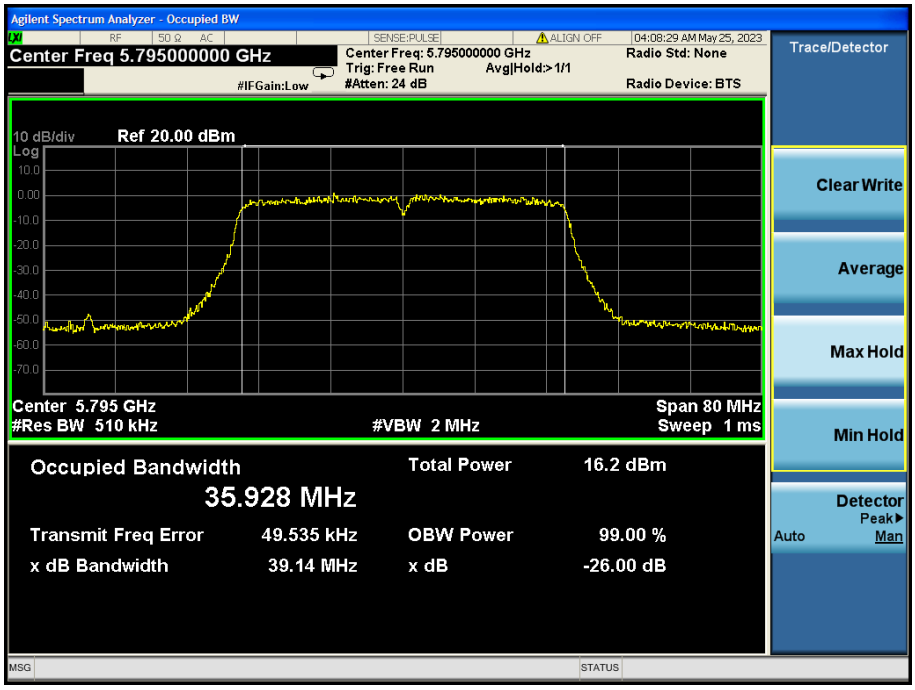


99% bandwidth-802.11n40

TX CH 151

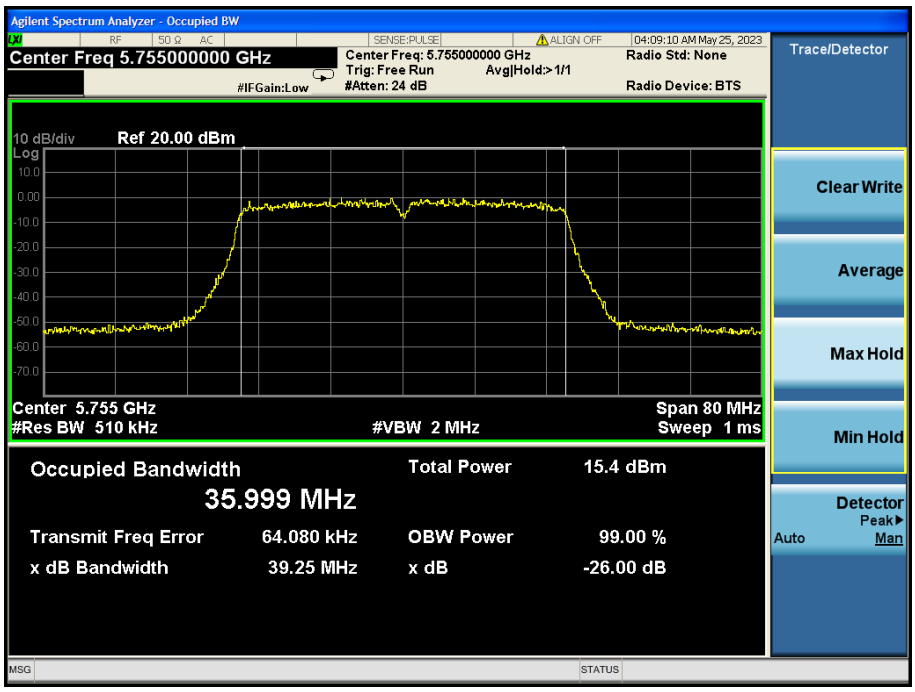


TX CH 159

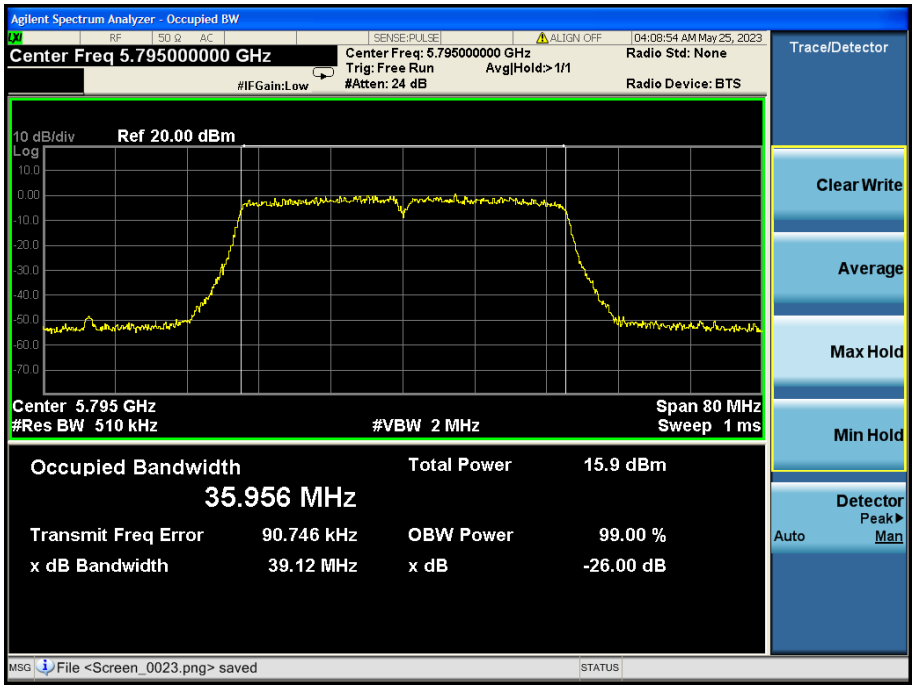


99% bandwidth-802.11ac40

TX CH 151

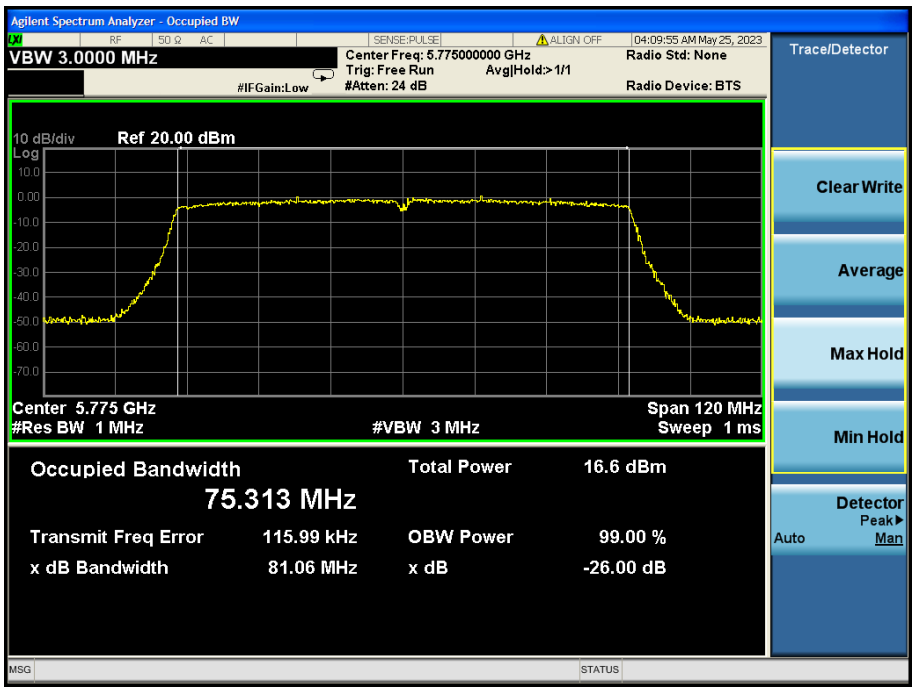


TX CH 159



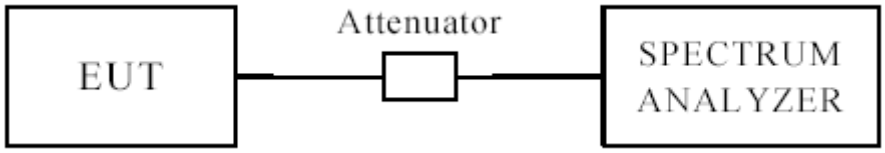
99% bandwidth-802.11ac80

TX CH 155



8.0 Peak Transmit Power Measurement

8.1 Test Setup



8.2 Limits of Peak Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) ≦(Max. e.i.r.p 125mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Client device	250mW (24 dBm)
U-NII-2A	--		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	--		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	--		1 Watt (30 dBm)

Note: Where B is the 26dB emission bandwidth in MHz.

8.3 Test Procedure

The average power output was measured with a Spectrum analyzer connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the average power was measured

8.4Test Results

CH. No.	Frequency	Conducted Average Power(dBm)		total power (dBm)	Limit (dBm)	Result
		ANT A	ANT B			
TX 802.11a Mode						
CH36	5180	18.90	18.20	--	24	Pass
CH40	5200	19.10	17.70	--	24	Pass
CH48	5240	19.29	18.76	--	24	Pass
CH 149	5745	20.20	17.31	--	29.58	Pass
CH 157	5785	19.70	18.71	--	29.58	Pass
CH 165	5825	20.13	19.16	--	29.58	Pass
TX 802.11n20 Mode						
CH36	5180	17.20	16.73	19.98	24	Pass
CH40	5200	17.56	16.89	20.25	24	Pass
CH48	5240	17.78	16.88	20.36	24	Pass
CH 149	5745	18.53	17.81	21.20	29.58	Pass
CH 157	5785	18.32	17.65	21.01	29.58	Pass
CH 165	5825	18.54	17.94	21.26	29.58	Pass
TX 802.11n40 Mode						
CH38	5190	16.18	15.30	18.77	24	Pass
CH46	5230	16.33	15.70	19.04	24	Pass
CH151	5755	17.79	15.49	19.80	29.58	Pass
CH159	5795	18.04	15.52	19.97	29.58	Pass

CH. No.	Frequency	Conducted Average Power(dBm)		total power (dBm)	Limit (dBm)	Result
		ANT A	ANT B			
TX 802.11 ac(VHT20) Mode						
CH 36	5180	17.99	16.58	20.35	24	Pass
CH 40	5200	17.40	16.44	19.96	24	Pass
CH 48	5240	18.01	15.60	19.98	24	Pass
CH 149	5745	18.01	17.15	20.61	29.58	Pass
CH 157	5785	18.57	17.23	20.96	29.58	Pass
CH 165	5825	18.20	16.47	20.43	29.58	Pass
TX 802.11 ac(VHT40) Mode						
CH38	5190	15.65	15.04	18.37	24	Pass
CH46	5230	16.63	16.17	19.42	24	Pass
CH 151	5755	16.20	15.56	18.90	29.58	Pass
CH 159	5795	16.52	16.10	19.33	29.58	Pass
TX 802.11 ac(VHT80) Mode						
CH42	5210	14.43	13.76	17.12	24	Pass
CH155	5775	14.35	13.86	17.12	29.58	Pass

Note: For MIMO mode: Directional ：

5.2Gwifi：gain=GANT +10log(N)dBi =1.47dBi

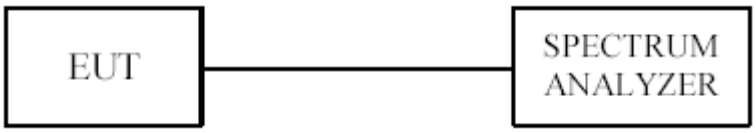
5.8Gwifi：

gain=GANT +10log(N)dBi =6.42dBi，Limit =30-6.42+6=29.58 dBm,

Note: ANT 1(2) Represent the value of antenna 1 and 2, The worst data is Antenna 1, only shown Antenna 1 Plot.

9. Power Spectral Density Measurement

9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Client device	11dBm/MHz
U-NII-2A	--		11dBm/MHz
U-NII-2C	--		11dBm/MHz
U-NII-3	--		30dBm/500kHz

9.3 Test Procedure

1. The EUT was directly connected to the spectrum analyzer
2. Set the RBW = 1MHz or 500kHz
3. Set the VBW =3MHz or 2MHz
4. Set the span to encompass the entire emissions bandwidth (EBW) of the signal
5. Detector = RMS
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.

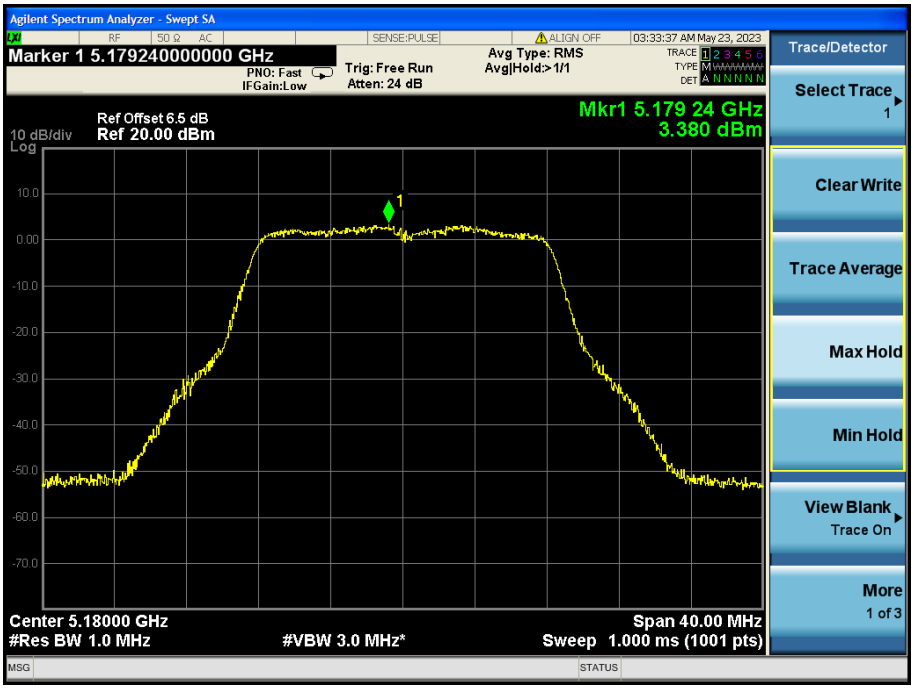
9.4Test Result

Test Mode	Channel	Channel Frequency (MHz)	Power Density (dBm/MHz) ANT 1	Power Density (dBm/MHz) ANT 2	Total Power Density (dBm/MHz)	Total Power Density (dBm/MHz)	Result
802.11a	Low	5180	3.380	3.324	--	11	Pass
	Middle	5200	3.379	3.225	--	11	Pass
	Highest	5240	3.816	3.735	--	11	Pass
802.11n(20M)	Low	5180	0.508	0.427	3.48	11	Pass
	Middle	5200	0.031	0.026	3.04	11	Pass
	Highest	5240	0.450	0.374	3.42	11	Pass
802.11ac(20M)	Low	5180	-0.485	-0.497	2.57	11	Pass
	Middle	5200	-0.388	-0.453	2.64	11	Pass
	Highest	5240	0.532	0.518	3.54	11	Pass
802.11n(40M)	Low	5190	-2.712	-2.846	0.23	11	Pass
	Highest	5230	-2.462	-2.543	0.51	11	Pass
802.11ac(40M)	Low	5190	-3.138	-3.205	-0.16	11	Pass
	Highest	5230	-2.925	-2.953	0.07	11	Pass
802.11ac(80M)	---	5210	-4.636	-4.662	-1.64	11	Pass

Note: ANT 1(2) Represent the value of antenna 1 and 2, The worst data is Antenna 1, only shown Antenna 1 Plot.

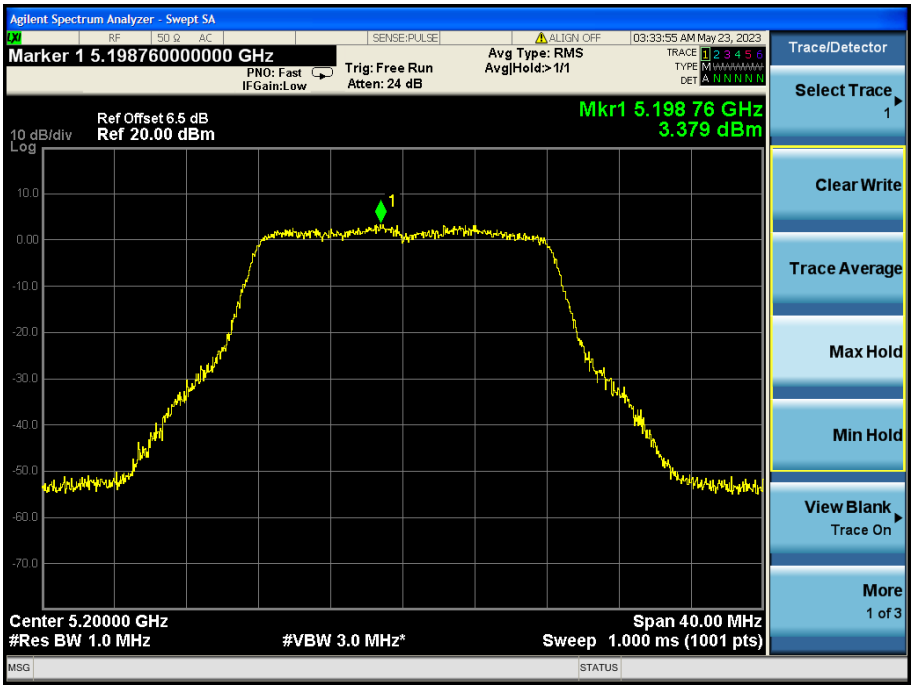
802.11a (5.15GHz-5.25GHz)

The Lowest Channel 36: 5180MHz



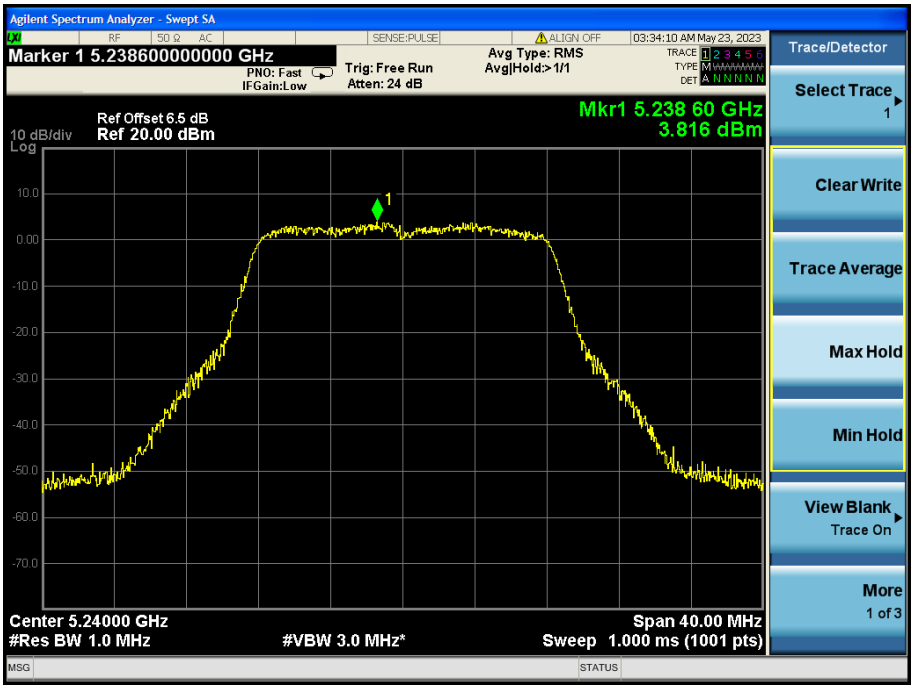
802.11a (5.15GHz-5.25GHz)

The Middle Channel 40: 5200MHz



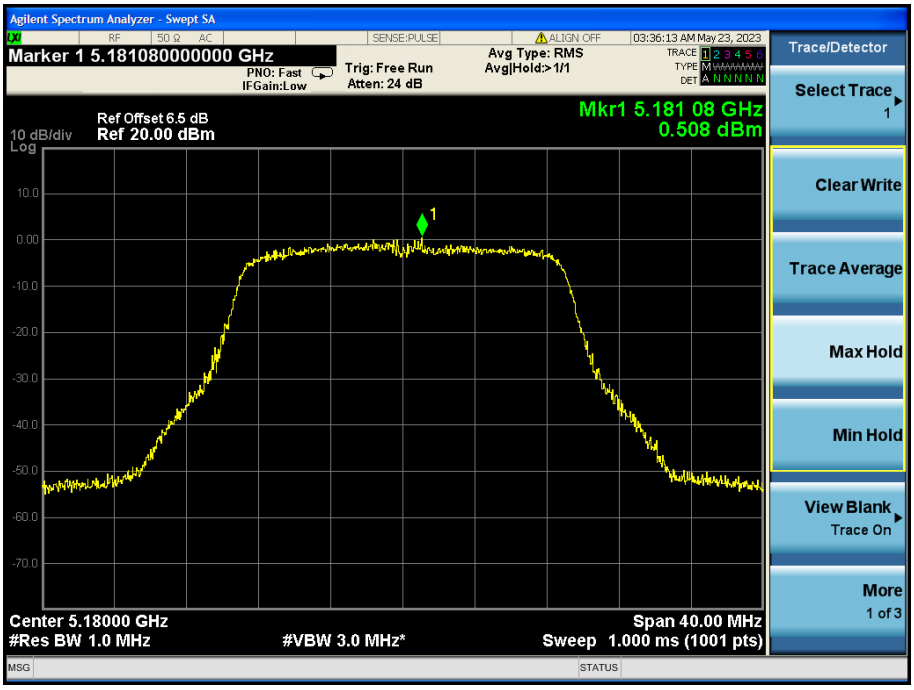
802.11a (5.15GHz-5.25GHz)

The Highest Channel 48: 5240MHz



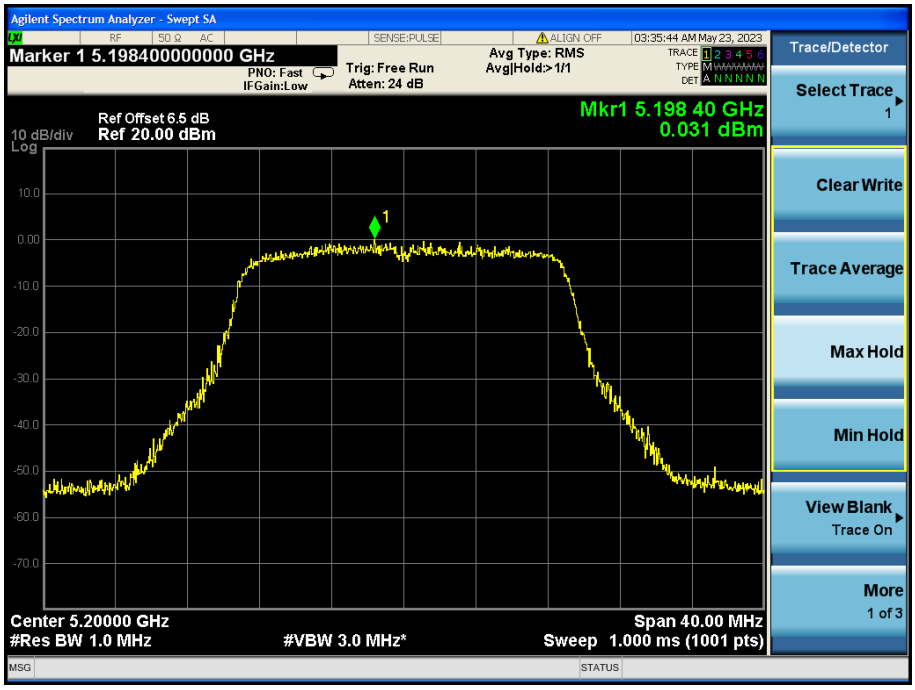
802.11n(20M) (5.15GHz-5.25GHz)

The Lowest Channel 36: 5180MHz



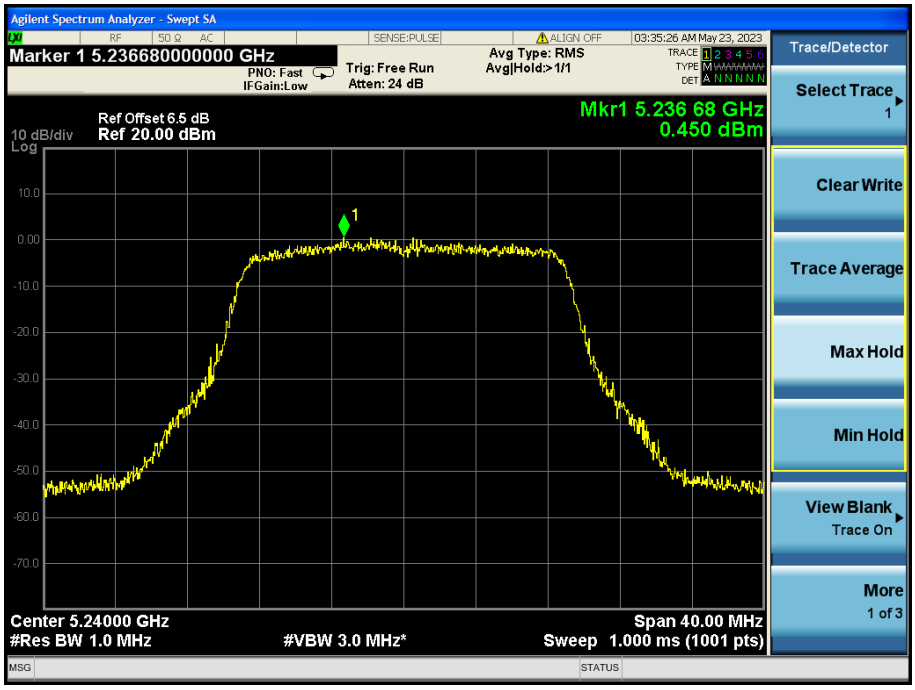
802.11n(20M) (5.15GHz-5.25GHz)

The Middle Channel 40: 5200MHz



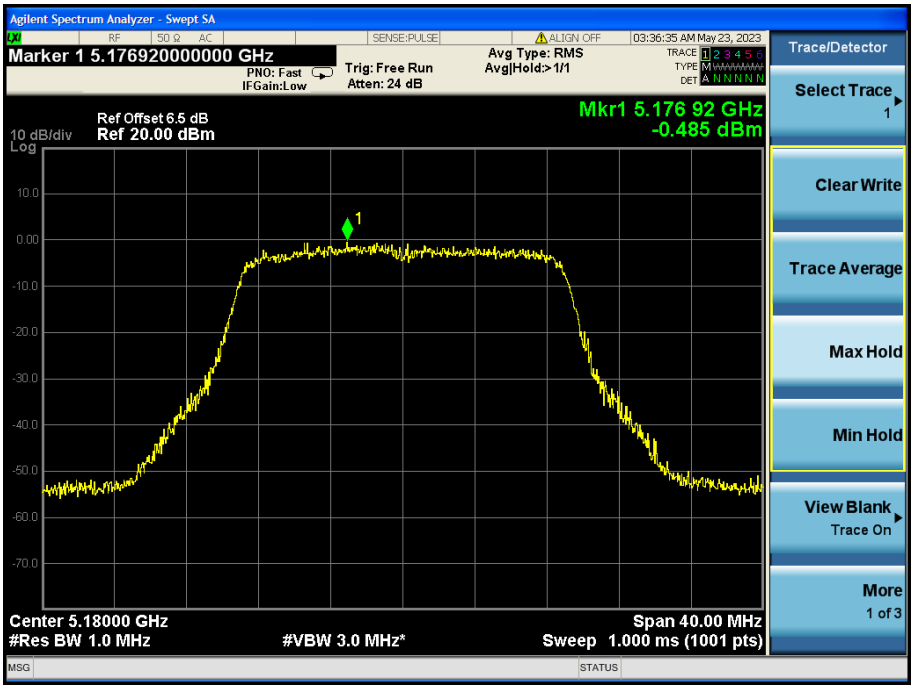
802.11n(20M) (5.15GHz-5.25GHz)

The Highest Channel 48: 5240MHz



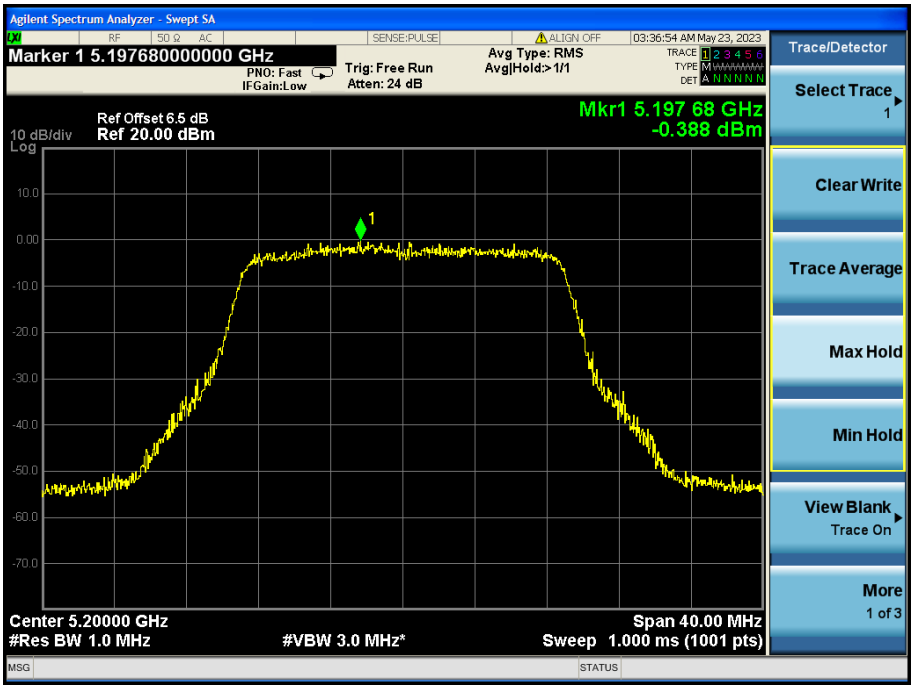
802.11ac (5.15GHz-5.25GHz)

The Lowest Channel 36: 5180MHz



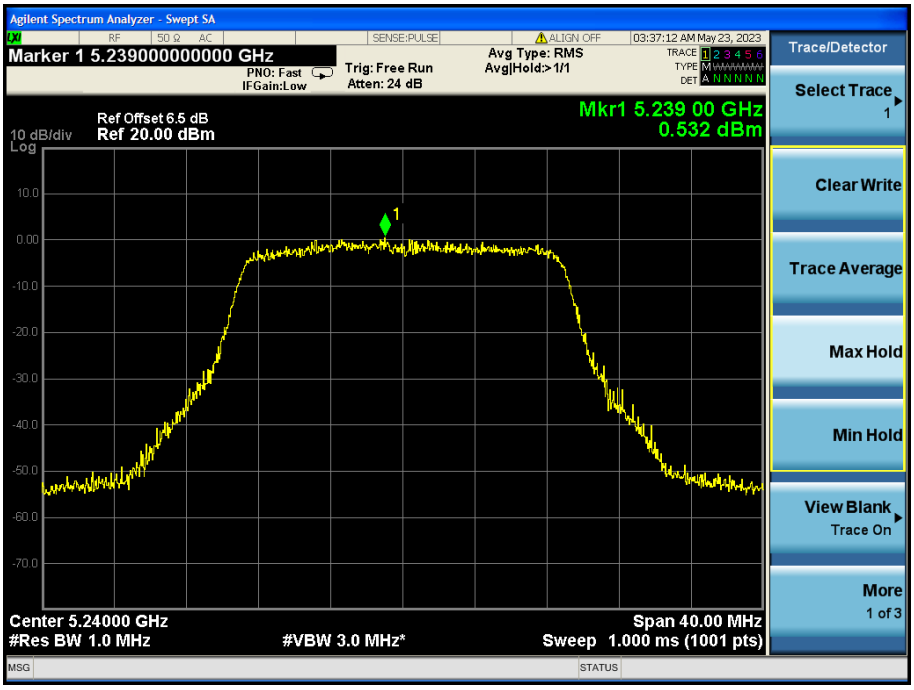
802.11ac (5.15GHz-5.25GHz)

The Middle Channel 40: 5200MHz



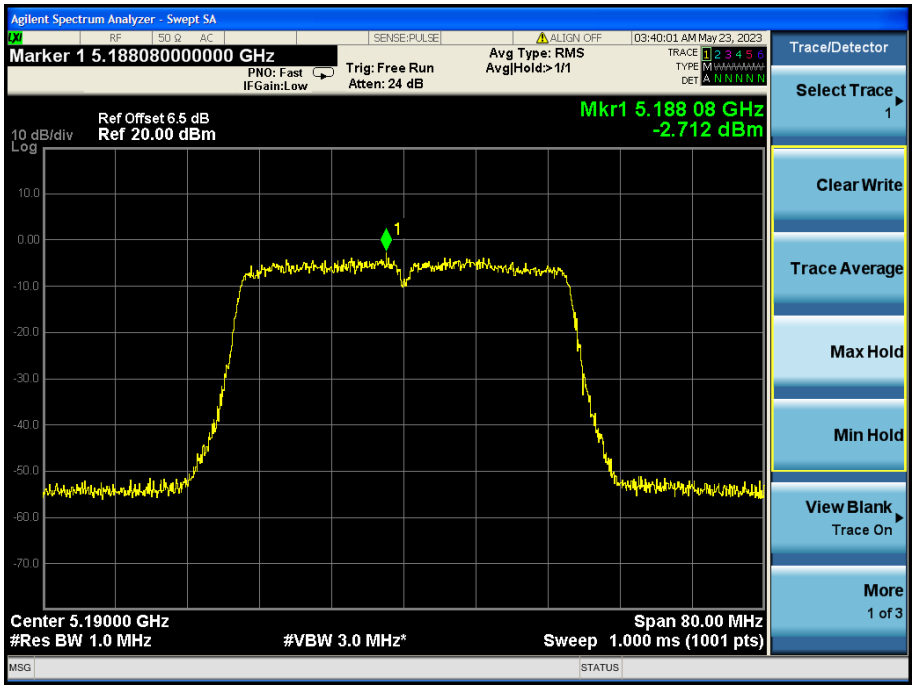
802.11ac (5.15GHz-5.25GHz)

The Highest Channel 48: 5240MHz



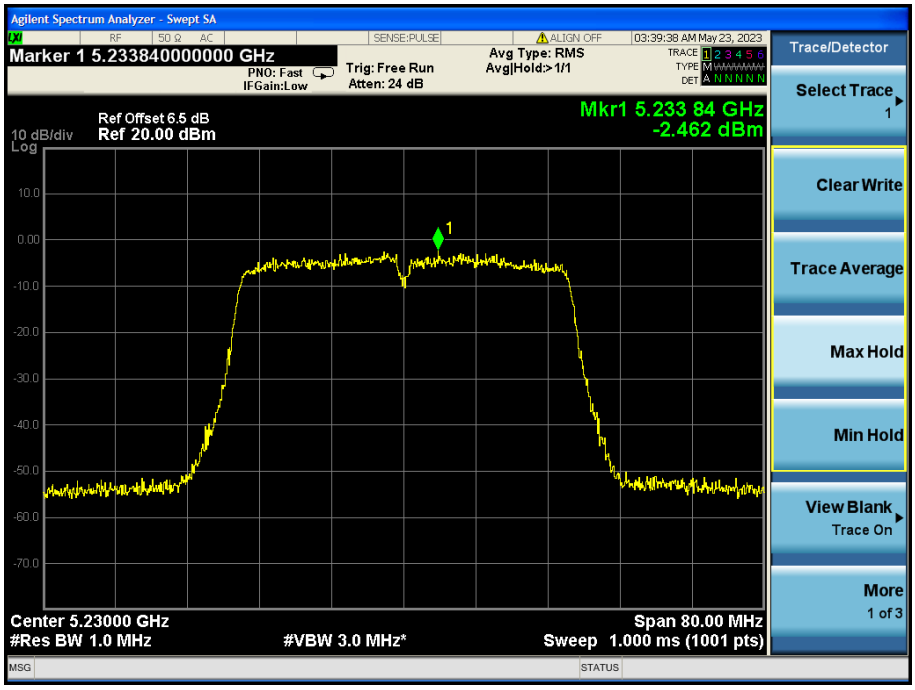
802.11n(40M) (5.15GHz-5.25GHz)

The Lowest Channel 38: 5190MHz



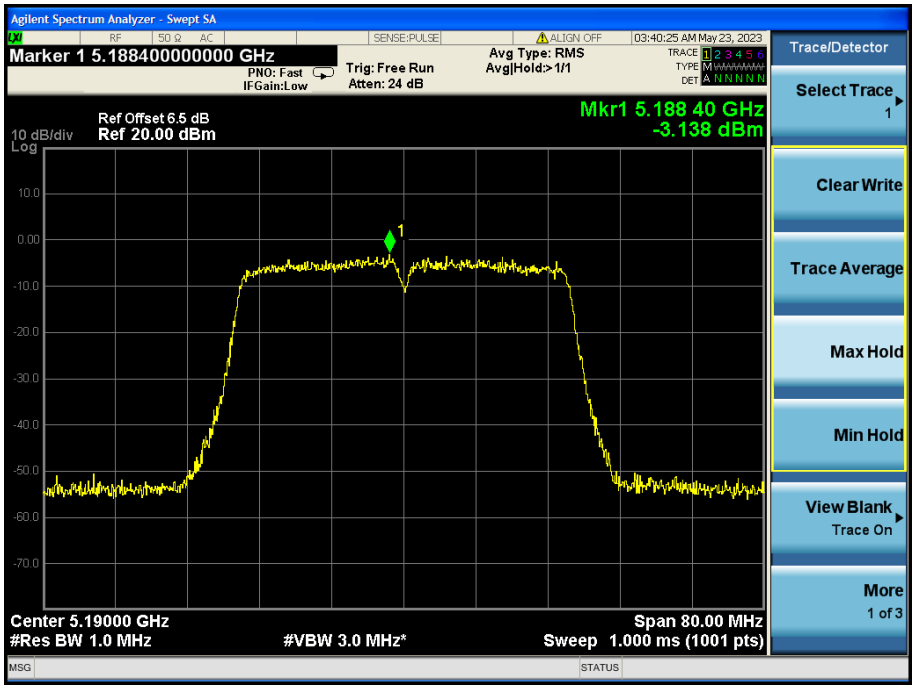
802.11n(40M) (5.15GHz-5.25GHz)

The Highest Channel 46: 5230MHz



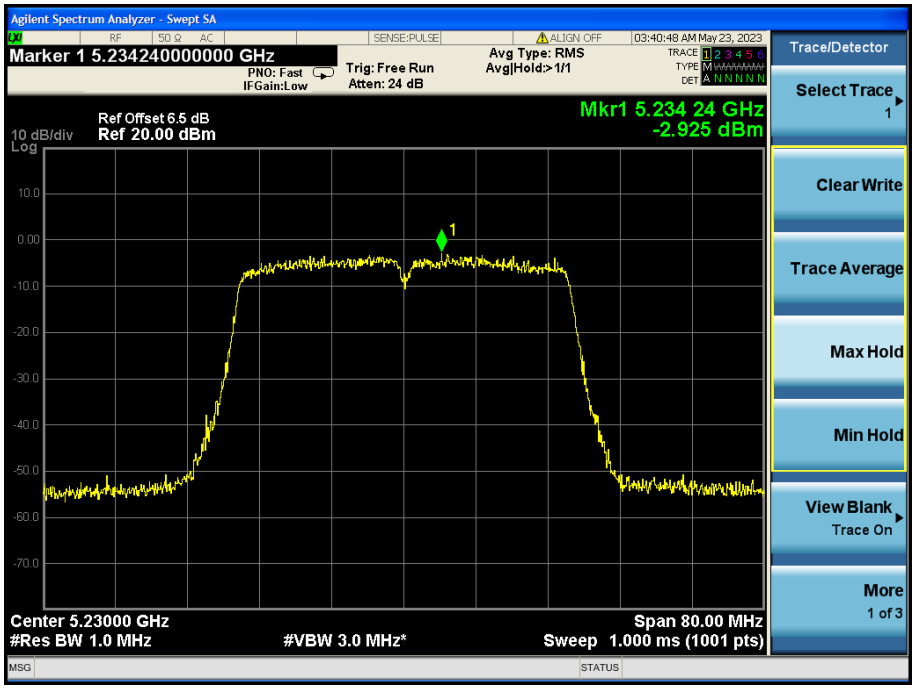
802.11ac(40M) (5.15GHz-5.25GHz)

The Lowest Channel 38: 5190MHz



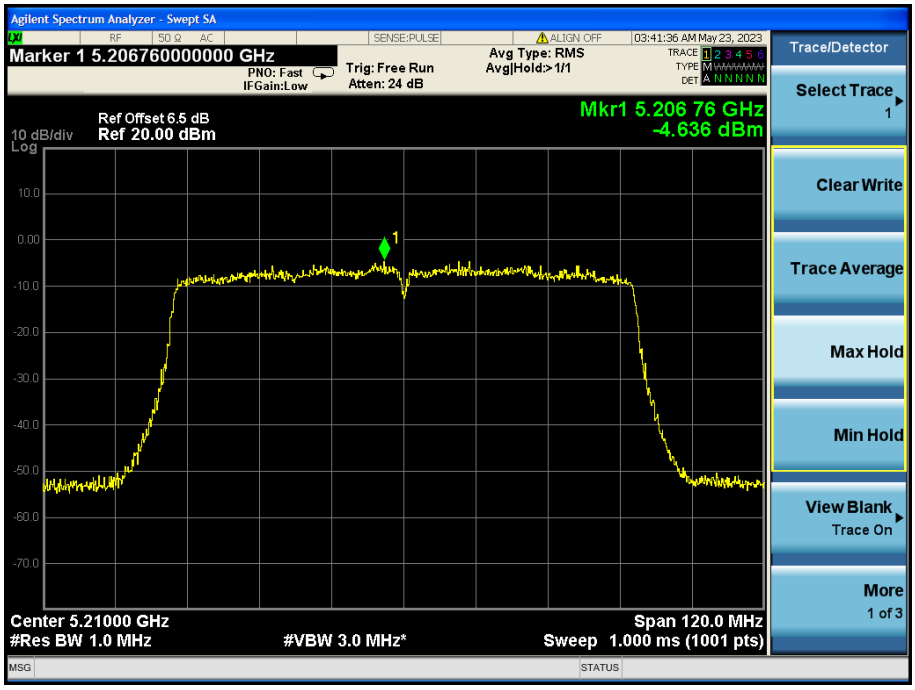
802.11ac(40M) (5.15GHz-5.25GHz)

The Highest Channel 46: 5230MHz



802.11ac(80M) (5.15GHz-5.25GHz)

The Lowest Channel 42: 5210MHz



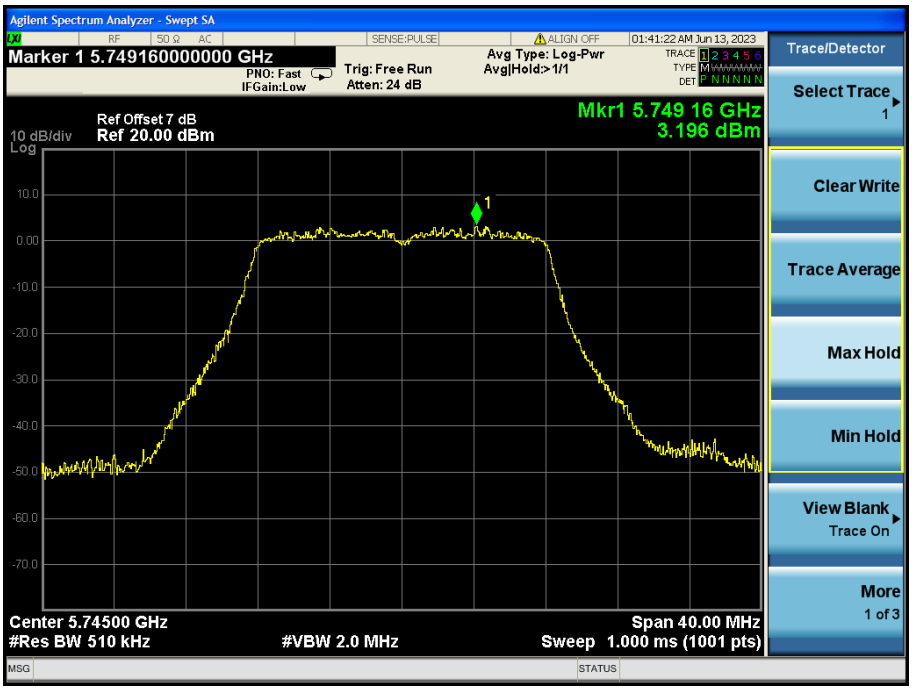
Test Mode	Test Channel	Frequency	Power Density (dBm/500kHz) ANT 1	Power Density (dBm/500kHz) ANT 2	Total Power Density (dBm/500 kHz)	Limit (dBm/500 kHz)	Result
802.11a (5.725GHz-5.85GHz) Data rate 6Mbps	CH 149	5745	3.196	3.023	/	29.58	Pass
	CH 157	5785	1.725	1.581	/	29.58	Pass
	CH 165	5825	1.313	1.156	/	29.58	Pass
802.11n(20M) (5.725GHz-5.85GHz) Data rate 13Mbps	CH 149	5745	3.466	3.351	6.42	29.58	Pass
	CH 157	5785	1.697	1.487	4.60	29.58	Pass
	CH 165	5825	1.858	1.693	4.79	29.58	Pass
802.11ac(20M) (5.725GHz-5.85GHz) Data rate 13Mbps	CH 149	5745	4.034	3.899	6.98	29.58	Pass
	CH 157	5785	2.318	2.250	5.29	29.58	Pass
	CH 165	5825	2.516	2.417	5.48	29.58	Pass
802.11n(40M) (5.725GHz-5.85GHz) Data rate 27Mbps	CH 151	5755	2.097	1.964	5.04	29.58	Pass
	CH 159	5795	0.540	0.389	3.48	29.58	Pass
802.11ac(40M) (5.725GHz-5.85GHz) Data rate 27Mbps	CH 151	5755	1.366	1.128	4.26	29.58	Pass
	CH 159	5795	1.362	1.256	4.32	29.58	Pass
802.11ac(80M) (5.725GHz-5.85GHz) Data rate 58.6Mbps	CH 155	5775	-1.811	-1.971	1.12	29.58	Pass

Note: 1. ANT 1(2) Represent the value of antenna 1 and 2, The worst data is Antenna 1, only shown Antenna 1 Plot.

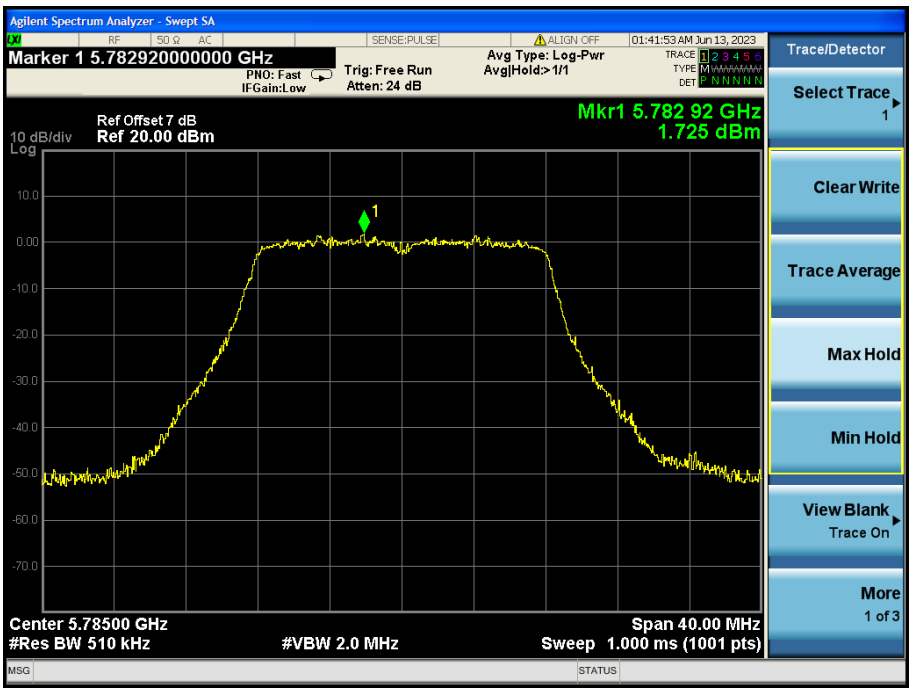
2. For MIMO mode: Directional gain=GANT +10log(N)dBi =6.42dBi

Limit =30-6.42+6=29.58 dBm.

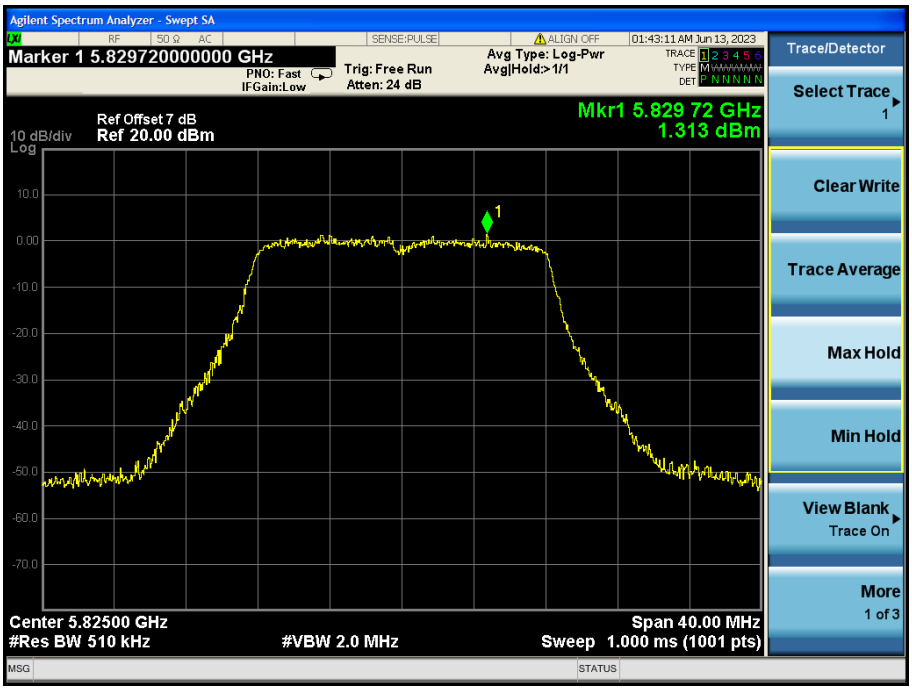
802.11a (5.725GHz-5.85GHz)
TX CH149



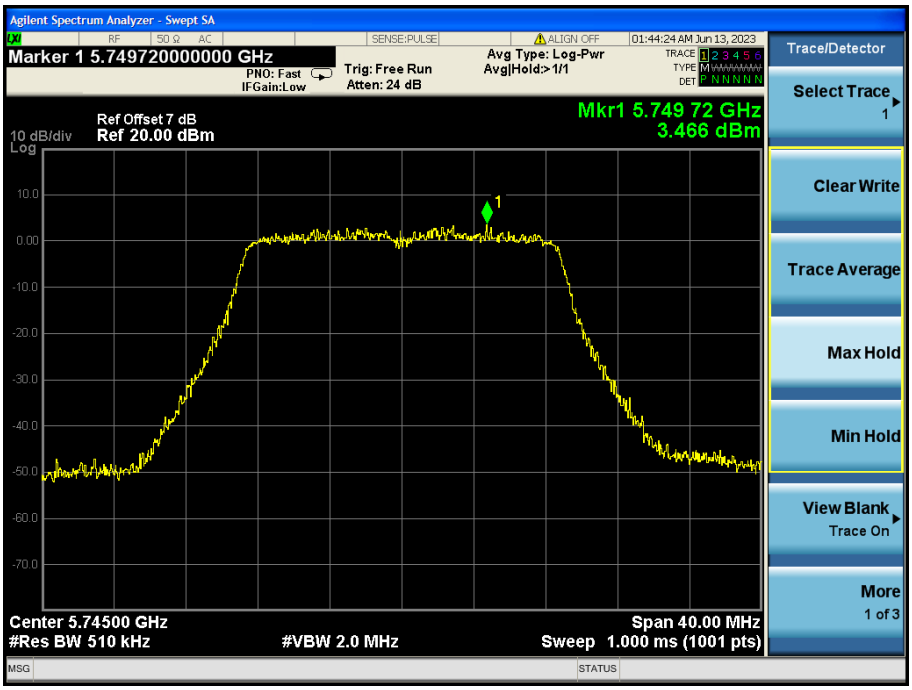
TX CH157



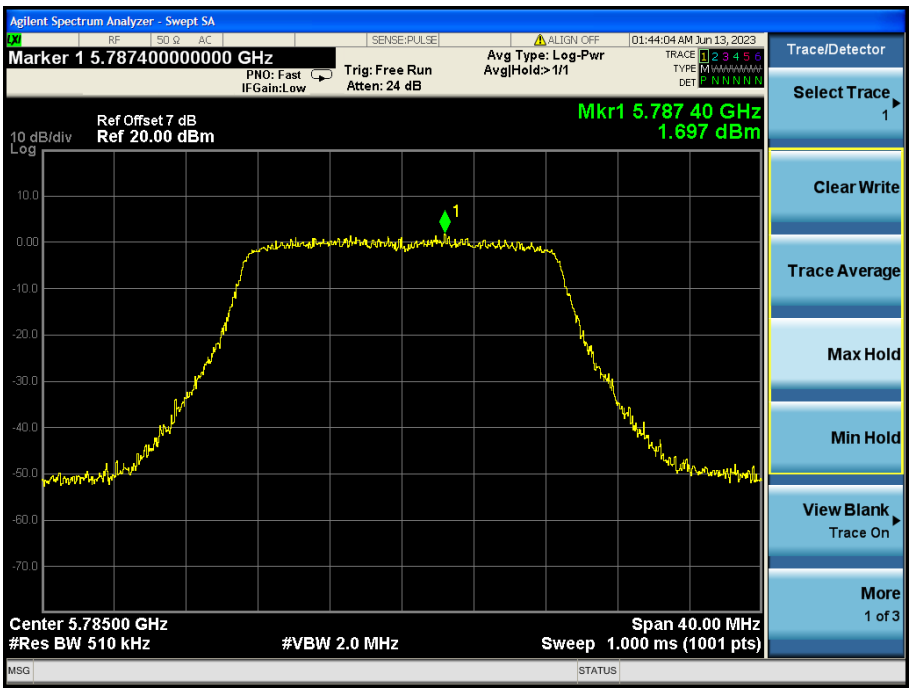
TX CH165



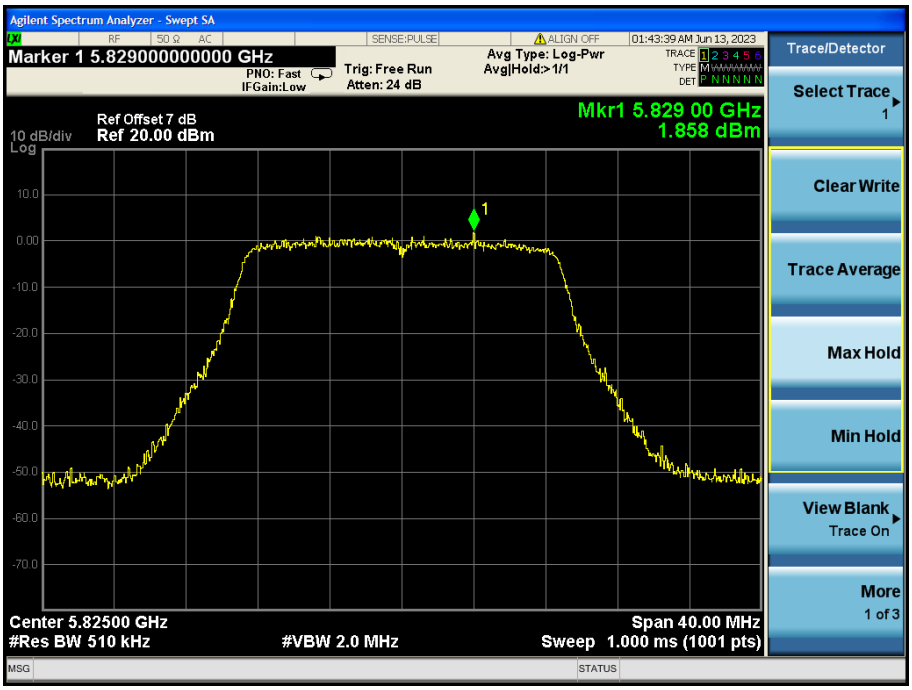
802.11n(20M) (5.725GHz-5.85GHz)
TX CH149



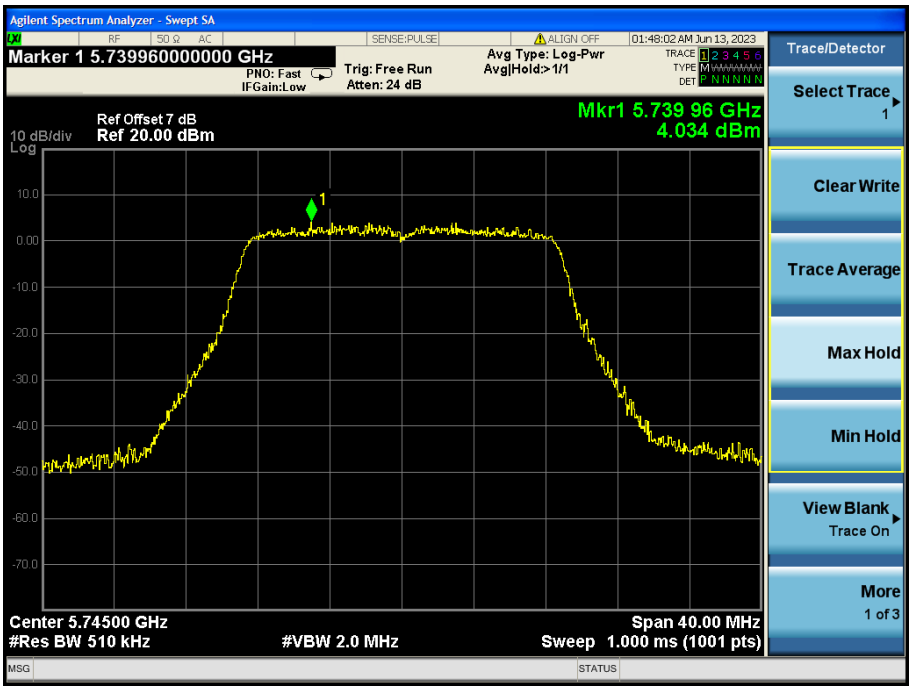
TX CH157



TX CH165



802.11ac(20M) (5.725GHz-5.85GHz)
TX CH149



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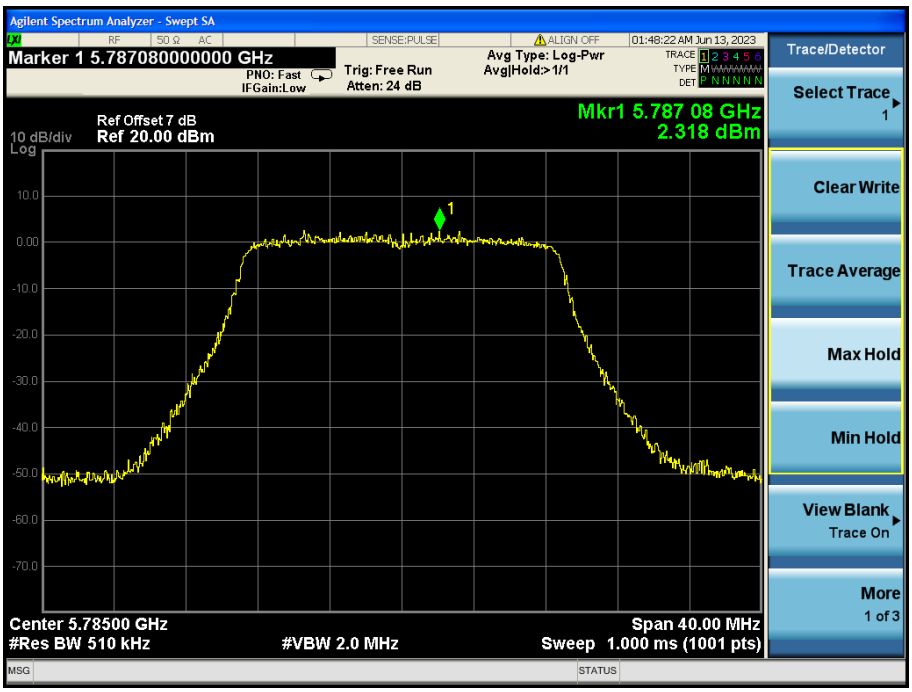

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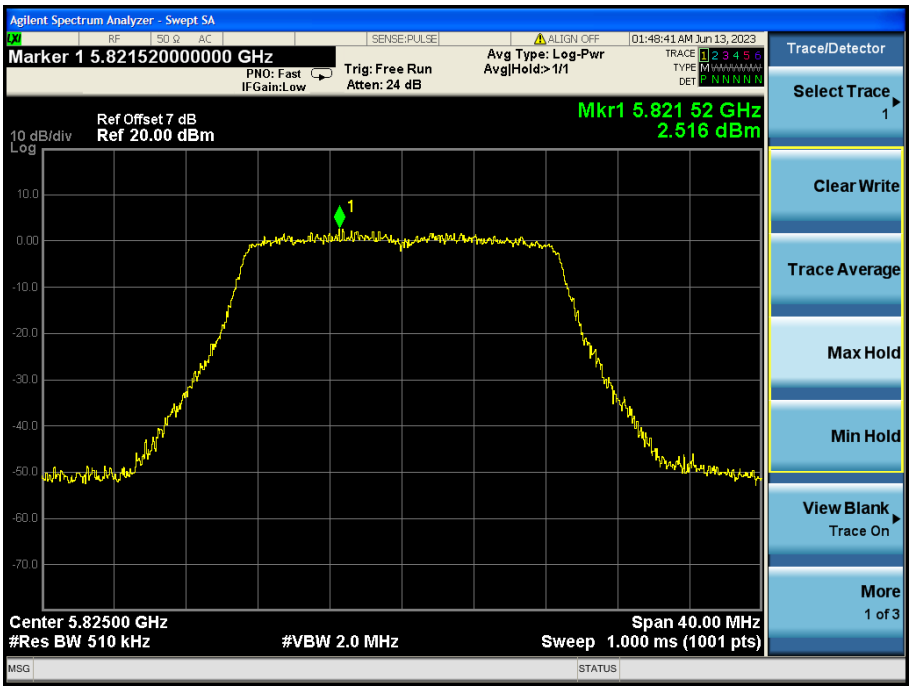
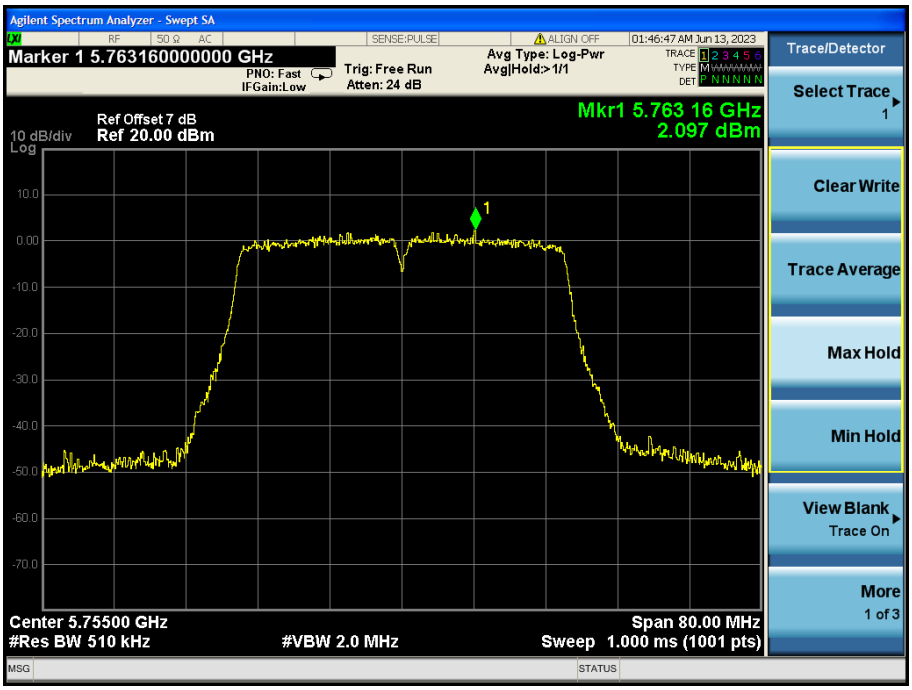
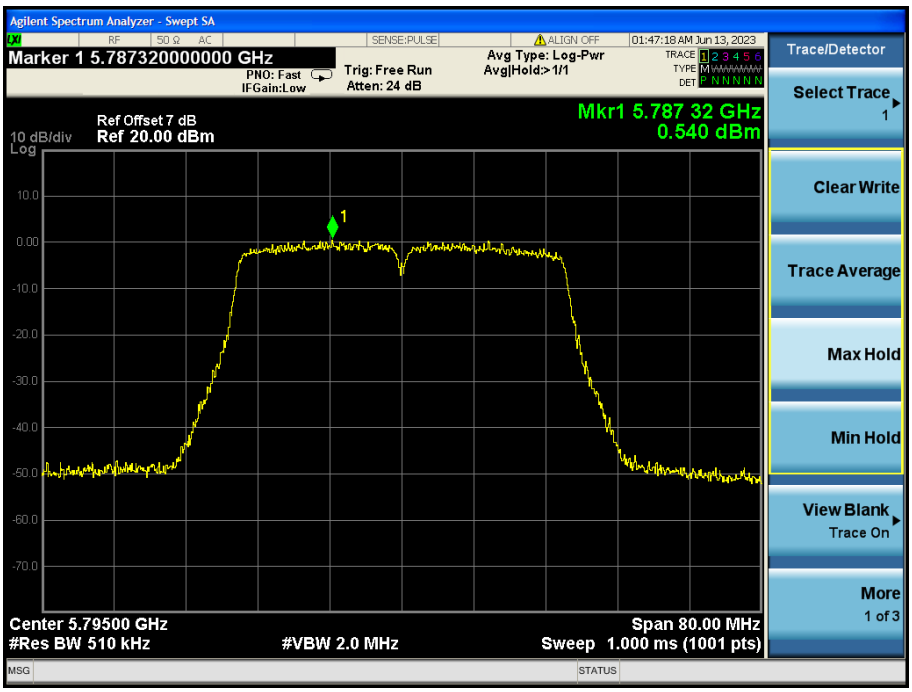


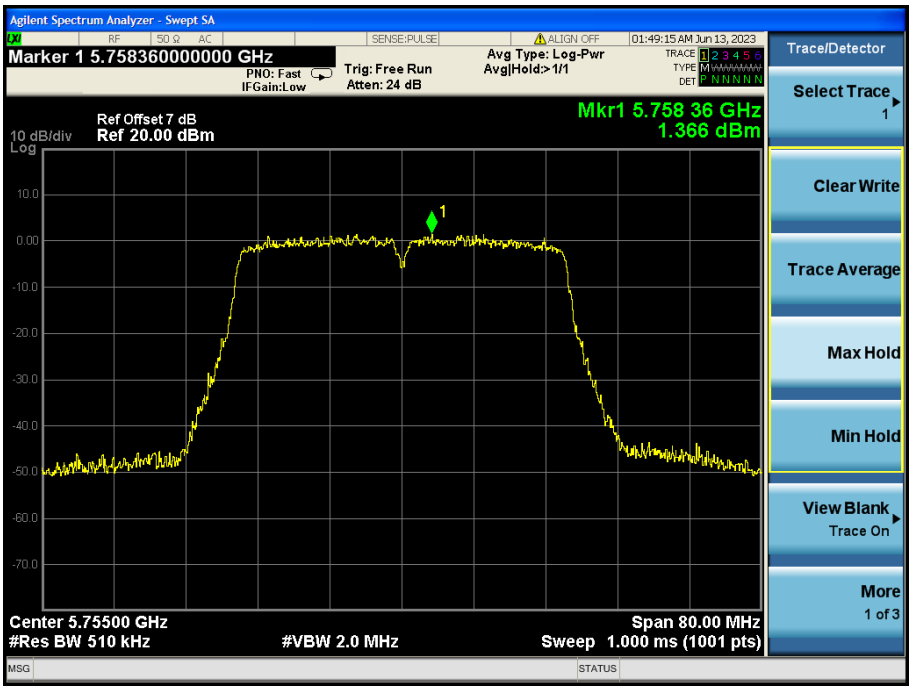
802.11n(40M) (5.725GHz-5.85GHz)
TX CH151



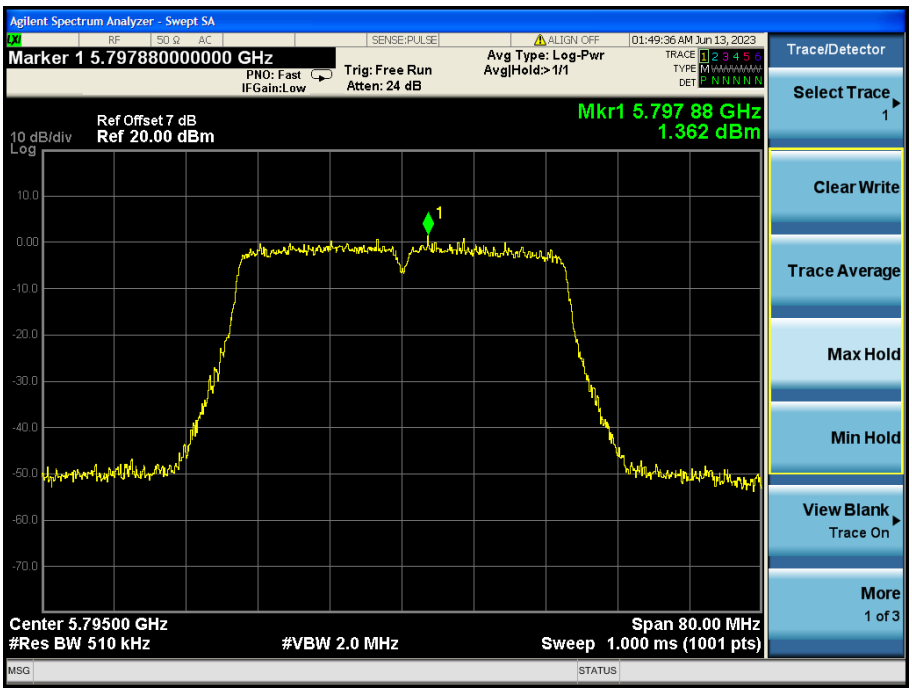
TX CH159



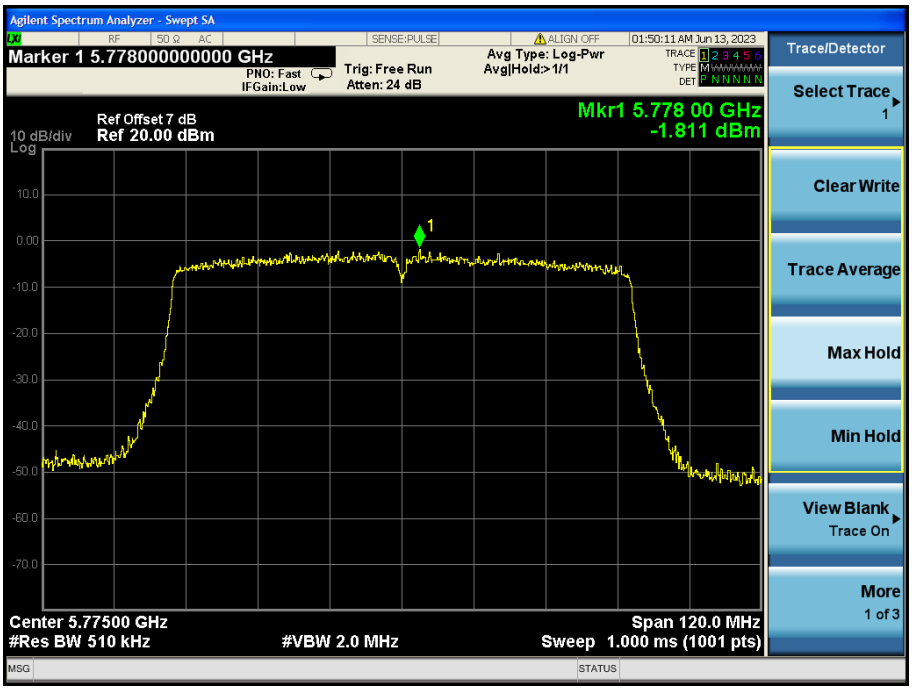
802.11ac(40M) (5.725GHz-5.85GHz)
TX CH151



TX CH159



802.11ac(80M) (5.725GHz-5.85GHz)
TX CH155



10.0 Frequency Stability

10.1 Limits of Frequency Stability Measurement

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of –30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees

10.2 Test Procedure

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

10.3 Test Result

Channel 36 (5180MHz)

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
120V	5180.0429
108V	5180.0452
132V	5180.0441
Max. Deviation (MHz)	0.0452
Max. Deviation (ppm)	8.73

Rated working voltage: 120V~

Temperature vs. Frequency Stability

Temperature（℃）	Measurement Frequency (MHz)
-30	5180.0441
-20	5180.0435
-10	5180.0453
0	5180.0450
10	5180.0429
20	5180.0437
30	5180.0422
40	5180.0449
50	5180.0437
Max. Deviation (MHz)	0.0453
Max. Deviation (ppm)	8.75

Channel 149 (5745MHz)

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
120V	5745.0550
108V	5745.0546
132V	5745.0528
Max. Deviation (MHz)	0.0550
Max. Deviation (ppm)	9.57

Rated working voltage: 120V~

Temperature vs. Frequency Stability

Temperature（℃）	Measurement Frequency (MHz)
-30	5745.0549
-20	5745.0556
-10	5745.0547
0	5745.0561
10	5745.0538
20	5745.0539
30	5745.0553
40	5745.0549
50	5745.0536
Max. Deviation (MHz)	0.0561
Max. Deviation (ppm)	9.77

11.0 Antenna Requirement

11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2 Antenna Connected construction

Two Dipole antenna used with reverse polarity antenna connectors. The gain of each antenna is 2.41dBi for 5G Band 1 and 3.41dBi for 5G Band 4 (Get from the antenna specification)

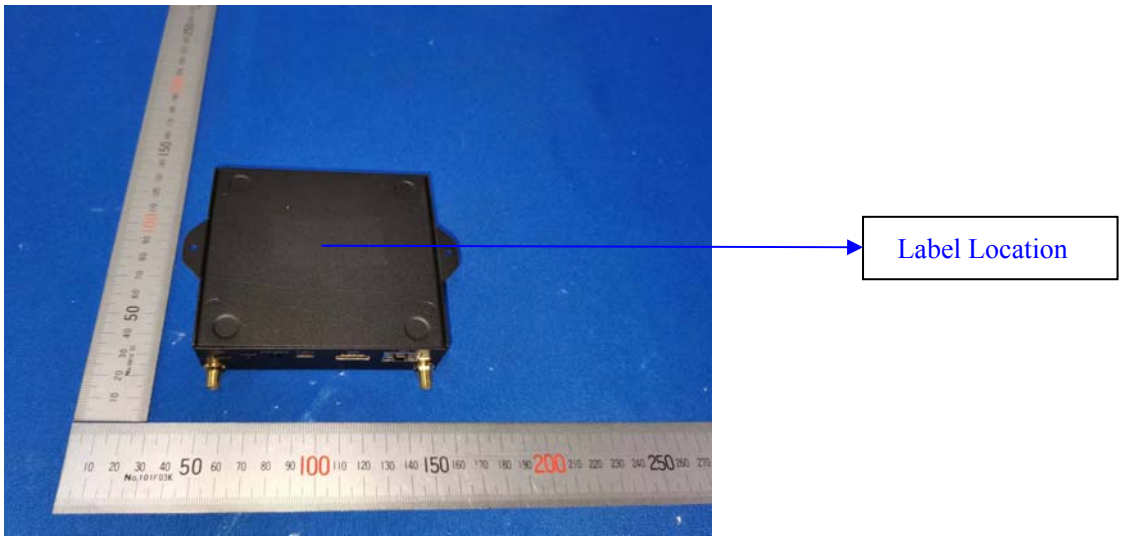
12.0 FCC Label

FCC ID: H79-023DS2

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

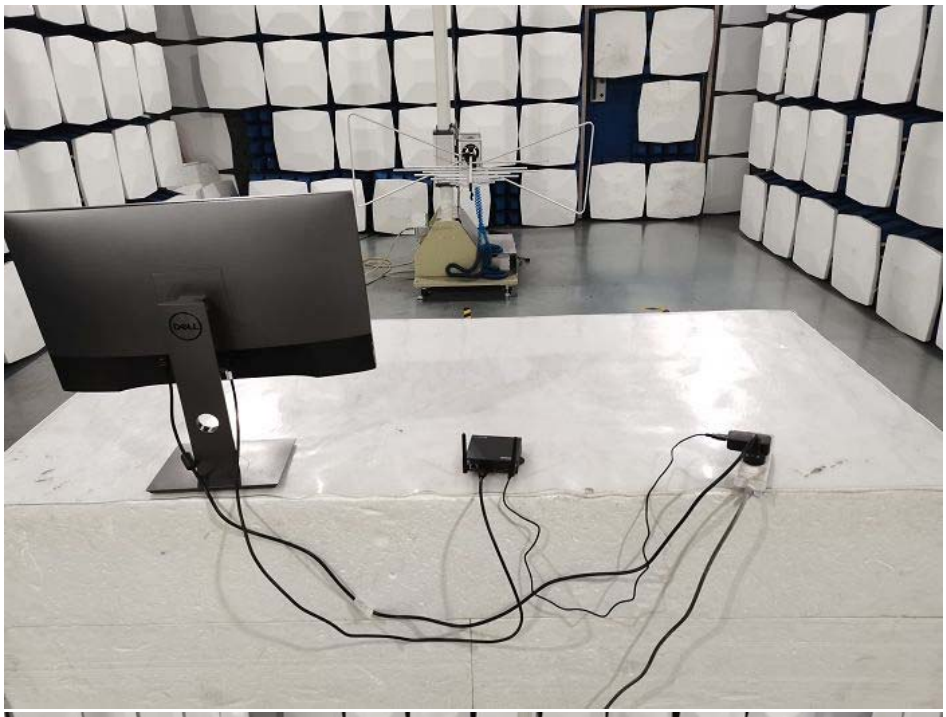
Mark Location:



13.0 Photo of testing

Conducted Emission Test Setup:

Radiated Emission Test Setup:



Photos of EUT

Please see test report TW2305190-01E

--End of the report--