



TEST REPORT

No. I20N02988-RLAN

Guangdong OPPO Mobile Telecommunications Corp., Ltd.

Mobile Phone

Model Name: CPH2205

with

Hardware Version: 11

Software Version: ColorOS V11.1

FCC ID: R9C-CPH2205

Issued Date: 2021-01-11

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

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1. Summary of Test Report

1.1. Test Items

Description	Mobile Phone
Model Name	CPH2205
Applicant's name	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Manufacturer's Name	Guangdong OPPO Mobile Telecommunications Corp., Ltd.

1.2. Test Standards

FCC Part15-2019; ANSI C63.10-2013; KDB789033-V02r01

1.3. Test Result

Pass

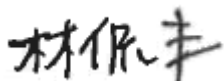
1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China

1.5. Project data

Testing Start Date:	2020-11-23
Testing End Date:	2020-12-14

1.6. Signature



Lin Kanfeng
(Prepared this test report)



Tang Weisheng
(Reviewed this test report)



Zhang Bojun
(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
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City, Guangdong, China
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Telephone: (86)76986076999
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2.2. Manufacturer Information

Company Name: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
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City, Guangdong, China
Contact Person Mei XiLi
E-Mail meixili@oppo.com
Telephone: (86)76986076999
Fax: /

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Mobile Phone
Model Name	CPH2205
RLAN Frequency Range	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz -5725MHz~5850MHz
RLAN Protocol	IEEE 802.11a,802.11n-HT20/40,802.11ac-VHT20/40/80
Type of modulation	OFDM
Antenna Type	Integrated
Antenna Gain	-3dBi
Power Supply	3.85V DC by Battery
FCC ID	R9C-CPH2205
Condition of EUT as received	No abnormality in appearance

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
EUT1	866811050019317	11	ColorOS V11.1	2020-11-23
EUT2	866811050019119	11	ColorOS V11.1	2020-11-23

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Battery	/
AE2	Charger	/

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment under Test (EUT) is a model of Mobile Phone with integrated antenna and battery. It consists of normal options: Lithium Battery and Charger. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the client.



4. REFERENCE DOCUMENTS

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	FCC CFR 47,Part 15,Subpart C FCC CFR 47,Part 15,Subpart E	2019
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
KDB789033	GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E	V02r01

5. Test Results

5.1. Testing Environment

Normal Temperature: 15~35°C

Relative Humidity: 20~75%

5.2. Test Results

No.	Test cases	Sub-clause of Part15E	Verdict
1	Maximum Output Power	15.407	P
2	Power Spectral Density	15.407	P
3	Occupied 26dB Bandwidth	15.403	P
4	Occupied 6dB Bandwidth	15.407	P
5	99% Occupied Bandwidth	15.403	P
6	Band edge compliance	15.209	P
7	Transmitter Spurious Emissions	15.407, 15.205	P
8	AC Power line Conducted	15.107, 15.207	P
9	Frequency Stability	15.407	P
10	Transmit Power Control	15.407	NA

Please refer to **ANNEX A** for detail.

Note: According to the definition of the application description, the device will automatically discontinue transmission in case of either absence of information to transmit or operational failure.

5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacture as listed in section 5.2 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

6. Test Equipments Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2021-01-15	1 year
2	Power Sensor	U2021XA	MY55430013	Agilent	2021-01-15	1 year
3	Data Acquisition	U2531A	TW55443507	Agilent	/	/
4	Climate chamber	SU-242	93008165	ESPEC	2021-03-25	1 year
5	DC Power Supply	ZUP60-14	6MY-847Z13-0001	TDK-Lambda	2021-02-26	1 year

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Date	Calibration Period
1	LISN	ESH2-Z5	100196	R&S	2022-01-01	1 year
2	Test Receiver	ESCI	100701	R&S	2021-08-05	1 year
3	Loop Antenna	HLA6120	35779	TESEQ	2022-05-01	3 year
4	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2021-02-16	3 year
5	Horn Antenna	3117	00066585	ETS-Lindgren	2022-03-04	3 year
6	Test Receiver	ESR7	101675	R&S	2021-07-17	1 year
7	Spectrum Analyzer	FSP 40	100378	R&S	2021-12-11	1 year
8	Chamber	FACT5-2.0	4166	ETS-Lindgren	2021-05-12	3 year
9	Antenna	QSH-SL-1 8-26-S-20	17013	Q-par	2021-01-14	3 year
10	Antenna	QSH-SL-2 6-40-K-20	17014	Q-par	2024-01-09	3 year

Test software

No.	Equipment	Manufacturer	Version
1	TechMgr Software	CAICT	2.1.1
2	EMC32	Rohde & Schwarz	8.53.0
3	EMC32	Rohde & Schwarz	10.01.00

EUT is engineering software provided by the customer to control the transmitting signal. The EUT was programmed to be in continuously transmitting mode.

Anechoic chamber

Fully anechoic chamber by ETS-Lindgren

7. Laboratory Environment

Semi-anechoic chamber

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance, from 30 to 1000 MHz

Shielded room

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-1000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω

Fully-anechoic chamber

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 18 GHz, 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

8. Measurement Uncertainty

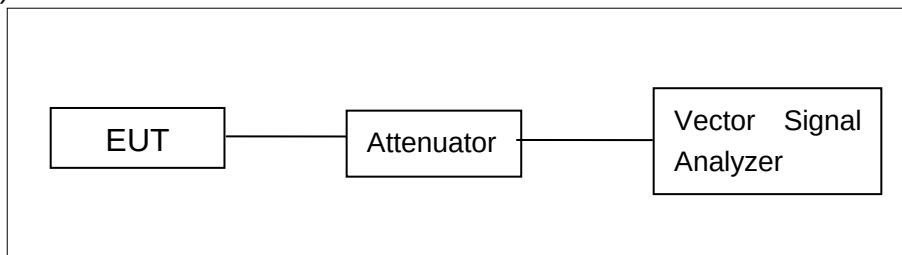
Test Name	Uncertainty ($k=2$)	
1. RF Output Power - Conducted	1.32dB	
2. Power Spectral Density - Conducted	2.32dB	
3. Occupied channel bandwidth - Conducted	66Hz	
4. Transmitter Spurious Emission - Conducted	$30\text{MHz} \leq f \leq 1\text{GHz}$	1.41dB
	$1\text{GHz} \leq f \leq 7\text{GHz}$	1.92dB
	$7\text{GHz} \leq f \leq 13\text{GHz}$	2.31dB
	$13\text{GHz} \leq f \leq 26\text{GHz}$	2.61dB
5. Transmitter Spurious Emission - Radiated	$9\text{kHz} \leq f \leq 30\text{MHz}$	1.70dB
	$30\text{MHz} \leq f \leq 1\text{GHz}$	4.90dB
	$1\text{GHz} \leq f \leq 18\text{GHz}$	4.60dB
	$18\text{GHz} \leq f \leq 40\text{GHz}$	4.10dB
6. AC Power line Conducted Emission	$150\text{kHz} \leq f \leq 30\text{MHz}$	3.00dB

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

Conducted Measurements

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode.
- 3). Set the EUT to the required channel.
- 4). Set the spectrum analyzer to start measurement.
- 5). Record the values.

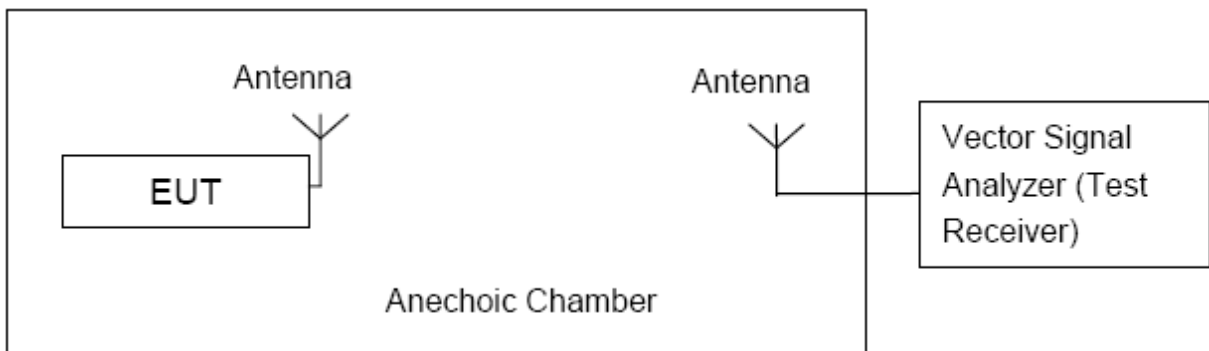


Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows:

Sweep frequency from 30 MHz to 1 GHz, RBW = 100 KHz, VBW = 300 KHz;

Sweep frequency from 1 GHz to 26 GHz, RBW = 1 MHz, VBW = 10 Hz;



The measurement is made according to KDB 789033.

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

A.2. Maximum Output Power

Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407	5150MHz~5250MHz	24
	5250MHz~5350MHz	24 or 11+10logB
	5470MHz~5725MHz	24 or 11+10logB
	5725MHz~5850MHz	30

Limit use the less value, and B is the 26dB bandwidth.

Measurement of method: See ANSI C63.10-2013-Clause 12.3.3.2

Method PM-G is a measurement using a gated RF average power meter.

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. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Measurement Results:

802.11a mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz(Ch36)	15.45	15.41	15.37	15.36	15.31	15.25	15.28	15.24
	5200MHz(Ch40)	16.51	/	/	/	/	/	/	/
	5240MHz(Ch48)	16.55	/	/	/	/	/	/	/
	5260MHz(Ch52)	16.51	/	/	/	/	/	/	/
	5280MHz(Ch56)	16.56	/	/	/	/	/	/	/
	5320MHz(Ch64)	16.49	/	/	/	/	/	/	/
	5500MHz(Ch100)	16.42	/	/	/	/	/	/	/
	5580MHz(Ch116)	16.50	/	/	/	/	/	/	/
	5700MHz(Ch140)	13.25	/	/	/	/	/	/	/
	5745MHz(Ch149)	15.31	/	/	/	/	/	/	/
	5785MHz(Ch157)	15.25	/	/	/	/	/	/	/
	5825MHz(Ch165)	15.23	/	/	/	/	/	/	/

802.11n-HT20 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz(Ch36)	16.37	16.33	16.29	16.31	16.26	16.25	16.23	16.19
	5200MHz(Ch40)	16.43	/	/	/	/	/	/	/
	5240MHz(Ch48)	16.48	/	/	/	/	/	/	/
	5260MHz(Ch52)	16.46	/	/	/	/	/	/	/

	5280MHz(Ch56)	16.48	/	/	/	/	/	/	/
	5320MHz(Ch64)	16.37	/	/	/	/	/	/	/
	5500MHz(Ch100)	16.30	/	/	/	/	/	/	/
	5580MHz(Ch116)	16.26	/	/	/	/	/	/	/
	5700MHz(Ch140)	16.33	/	/	/	/	/	/	/
	5745MHz(Ch149)	15.21	/	/	/	/	/	/	/
	5785MHz(Ch157)	15.22	/	/	/	/	/	/	/
	5825MHz(Ch165)	15.19	/	/	/	/	/	/	/

802.11ac-VHT20 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (VHT20)	5180MHz(Ch36)	16.41	16.39	16.35	16.36	16.32	16.25	16.27	16.21
	5200MHz(Ch40)	16.44	/	/	/	/	/	/	/
	5240MHz(Ch48)	16.47	/	/	/	/	/	/	/
	5260MHz(Ch52)	16.46	/	/	/	/	/	/	/
	5280MHz(Ch56)	16.47	/	/	/	/	/	/	/
	5320MHz(Ch64)	16.38	/	/	/	/	/	/	/
	5500MHz(Ch100)	16.28	/	/	/	/	/	/	/
	5580MHz(Ch116)	16.26	/	/	/	/	/	/	/
	5700MHz(Ch140)	16.35	/	/	/	/	/	/	/
	5745MHz(Ch149)	15.18	/	/	/	/	/	/	/
	5785MHz(Ch157)	15.21	/	/	/	/	/	/	/
	5825MHz(Ch165)	15.20	/	/	/	/	/	/	/

802.11n-HT40 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz(Ch38)	16.17	16.14	16.13	16.10	16.09	16.02	15.98	15.93
	5230MHz(Ch46)	16.18	/	/	/	/	/	/	/
	5270MHz(Ch54)	16.12	/	/	/	/	/	/	/
	5310MHz(Ch62)	16.15	/	/	/	/	/	/	/
	5510MHz(Ch102)	16.25	/	/	/	/	/	/	/
	5550MHz(Ch110)	16.24	/	/	/	/	/	/	/
	5670MHz(Ch134)	16.26	/	/	/	/	/	/	/
	5755MHz(Ch151)	15.28	/	/	/	/	/	/	/
	5795MHz(Ch159)	15.22	/	/	/	/	/	/	/

802.11ac-VHT40 mode

Mode	Channel	Test Result (dBm)							
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		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (VHT40)	5190MHz(Ch38)	16.13	16.08	16.05	16.04	16.01	16.03	15.99	15.97
	5230MHz(Ch46)	16.08	/	/	/	/	/	/	/
	5270MHz(Ch54)	16.06	/	/	/	/	/	/	/
	5310MHz(Ch62)	16.10	/	/	/	/	/	/	/
	5510MHz(Ch102)	16.15	/	/	/	/	/	/	/
	5550MHz(Ch110)	16.10	/	/	/	/	/	/	/
	5670MHz(Ch134)	16.13	/	/	/	/	/	/	/
	5755MHz(Ch151)	15.10	/	/	/	/	/	/	/
	5795MHz(Ch159)	15.07	/	/	/	/	/	/	/

802.11ac-VHT80 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (VHT80)	5210MHz(Ch42)	16.21	16.17	16.13	16.12	16.08	16.10	16.07	16.03
	5290MHz(Ch58)	16.15	/	/	/	/	/	/	/
	5530MHz(Ch106)	16.09	/	/	/	/	/	/	/
	5610MHz(Ch122)	16.12	/	/	/	/	/	/	/
	5775MHz(Ch155)	15.06	/	/	/	/	/	/	/

Note: The data rate 6Mbps (11a mode), MCS0 (11n mode) and MCS0 (11ac mode) are selected as the worst case. 802.11a, 802.11n-HT40 and 802.11ac-VHT80 modes are selected as the worst case. The following cases and test graphs are performed with this condition. The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

A.3. Peak Power Spectral Density

Measurement Limit:

Standard	Frequency (MHz)	Limit
FCC CRF Part 15.407	5150MHz~5250MHz	11dBm/MHz
	5250MHz~5350MHz	11dBm/MHz
	5470MHz~5725MHz	11dBm/MHz
	5725MHz~5850MHz	30dBm/500KHz

The PPSD measurement method SA-1 is made according to KDB 789033.

Measurement Results:

5.2GHz Band (UNII-1)

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180MHz(Ch36)	2.27	P
	5200MHz(Ch40)	3.38	P
	5240MHz(Ch48)	3.35	P
802.11n HT40	5190MHz(Ch38)	0.16	P
	5230MHz(Ch46)	0.05	P
802.11ac VHT80	5210MHz(Ch42)	-3.33	P

5.3GHz Band (UNII-2A)

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5260MHz(Ch52)	3.04	P
	5280MHz(Ch56)	3.19	P
	5320MHz(Ch64)	2.95	P
802.11n HT40	5270MHz(Ch54)	-0.21	P
	5310MHz(Ch62)	0.28	P
802.11ac VHT80	5290MHz(Ch58)	-3.37	P

5.5GHz Band (UNII-2C)

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5500MHz(Ch100)	3.17	P
	5580MHz(Ch116)	3.33	P
	5700MHz(Ch140)	0.12	P
802.11n HT40	5510MHz(Ch102)	0.11	P
	5550MHz(Ch110)	-0.34	P
	5670MHz(Ch134)	-0.06	P
802.11ac VHT80	5530MHz(Ch106)	-3.05	P
	5610MHz(Ch122)	-3.57	P

**5.8GHz Band (UNII-3)**

Mode	Channel	Power Spectral Density (dBm/500kHz)	Conclusion
802.11a	5745MHz(CH149)	-0.73	P
	5785MHz(CH157)	-0.77	P
	5825MHz(CH165)	-0.48	P
802.11n HT40	5755MHz(CH151)	-3.73	P
	5795MHz(CH159)	-3.97	P
802.11ac VHT80	5775MHz(CH155)	-7.34	P

Conclusion: PASS

A.4. Occupied 26dB Bandwidth

Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.403	/

The measurement is made according to KDB 789033.

Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth (MHz)		Conclusion
802.11a	5180MHz(Ch36)	Fig.1	25.05	P
	5200MHz(Ch40)	Fig.2	25.80	P
	5240MHz(Ch48)	Fig.3	26.90	P
	5260MHz(Ch52)	Fig.4	28.10	P
	5280MHz(Ch56)	Fig.5	28.00	P
	5320MHz(Ch64)	Fig.6	28.15	P
	5500MHz(Ch100)	Fig.7	26.35	P
	5580MHz(Ch116)	Fig.8	25.45	P
	5700MHz(Ch140)	Fig.9	28.30	P
802.11n HT40	5190MHz(Ch38)	Fig.10	41.84	P
	5230MHz(Ch46)	Fig.11	42.32	P
	5270MHz(Ch54)	Fig.12	40.56	P
	5310MHz(Ch62)	Fig.13	42.00	P
	5510MHz(Ch102)	Fig.14	41.92	P
	5550MHz(Ch110)	Fig.15	41.80	P
	5670MHz(Ch134)	Fig.16	41.20	P
802.11ac VHT80	5210MHz(Ch42)	Fig.17	87.84	P
	5290MHz(Ch58)	Fig.18	80.80	P
	5530MHz(Ch106)	Fig.19	81.60	P
	5610MHz(Ch122)	Fig.20	89.92	P

Conclusion: PASS

Test graphs as below:

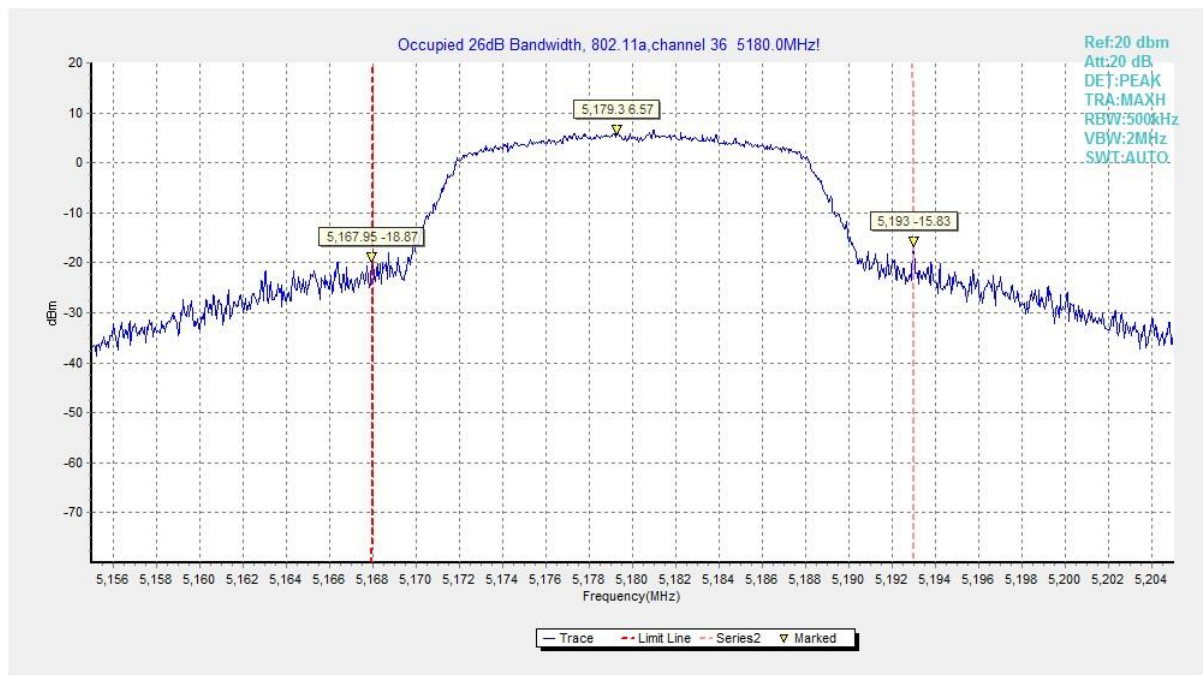


Fig. 1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

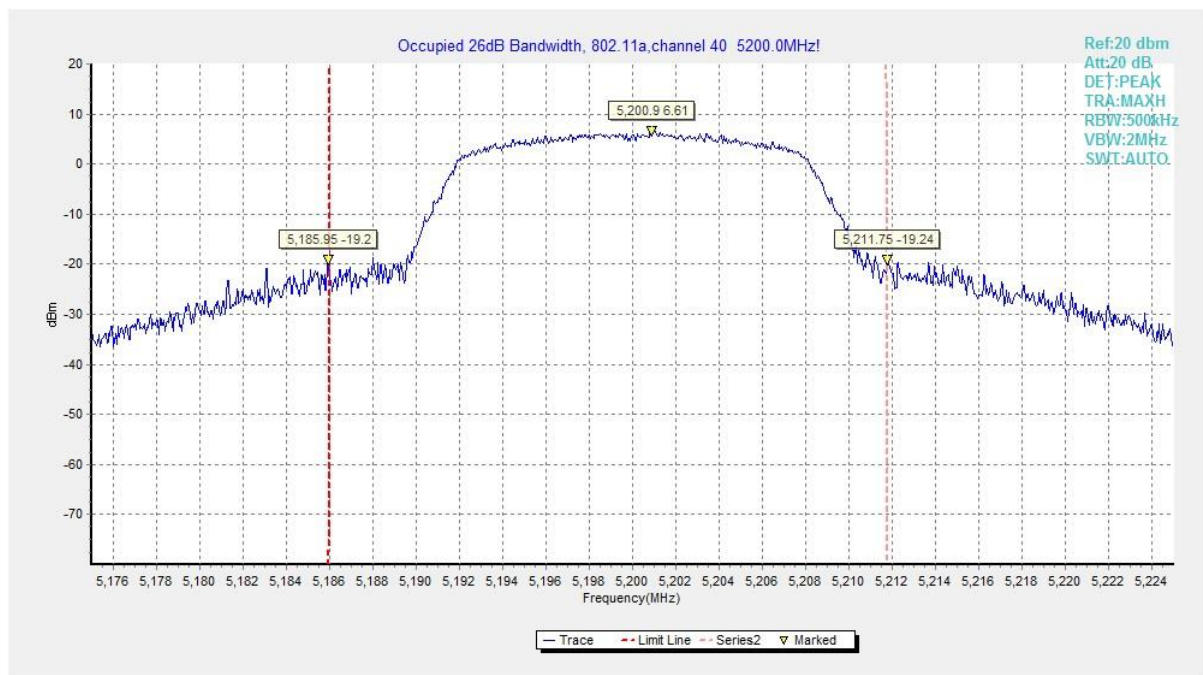


Fig. 2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

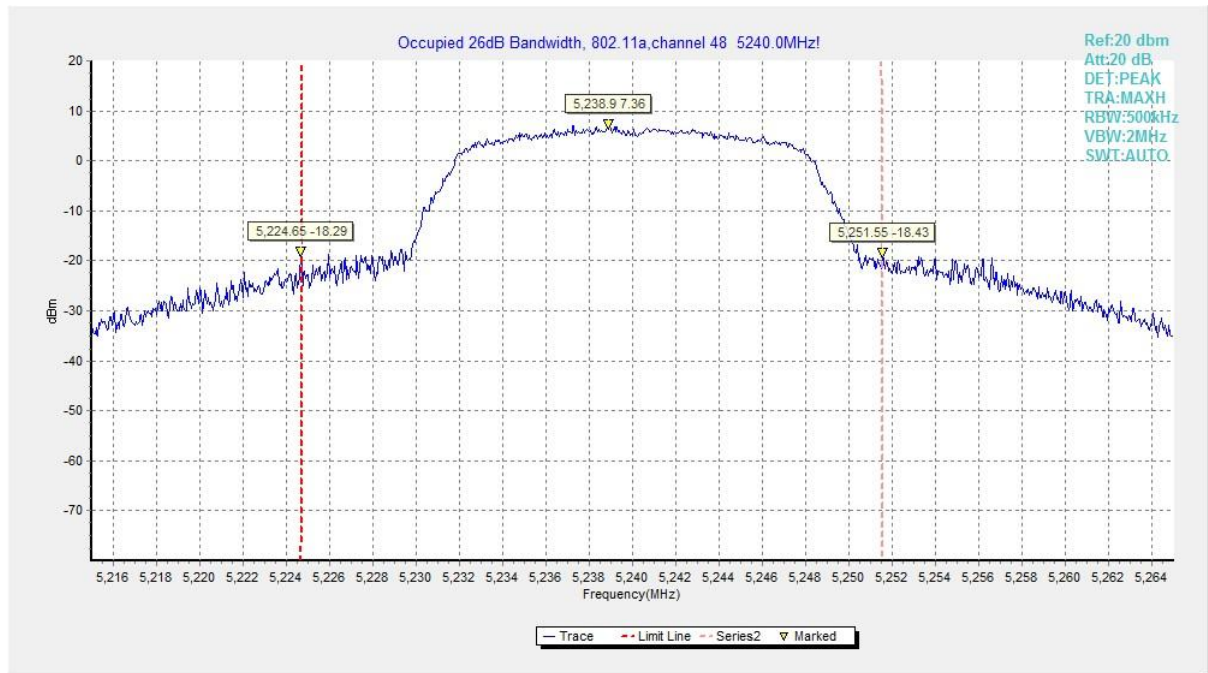


Fig. 3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

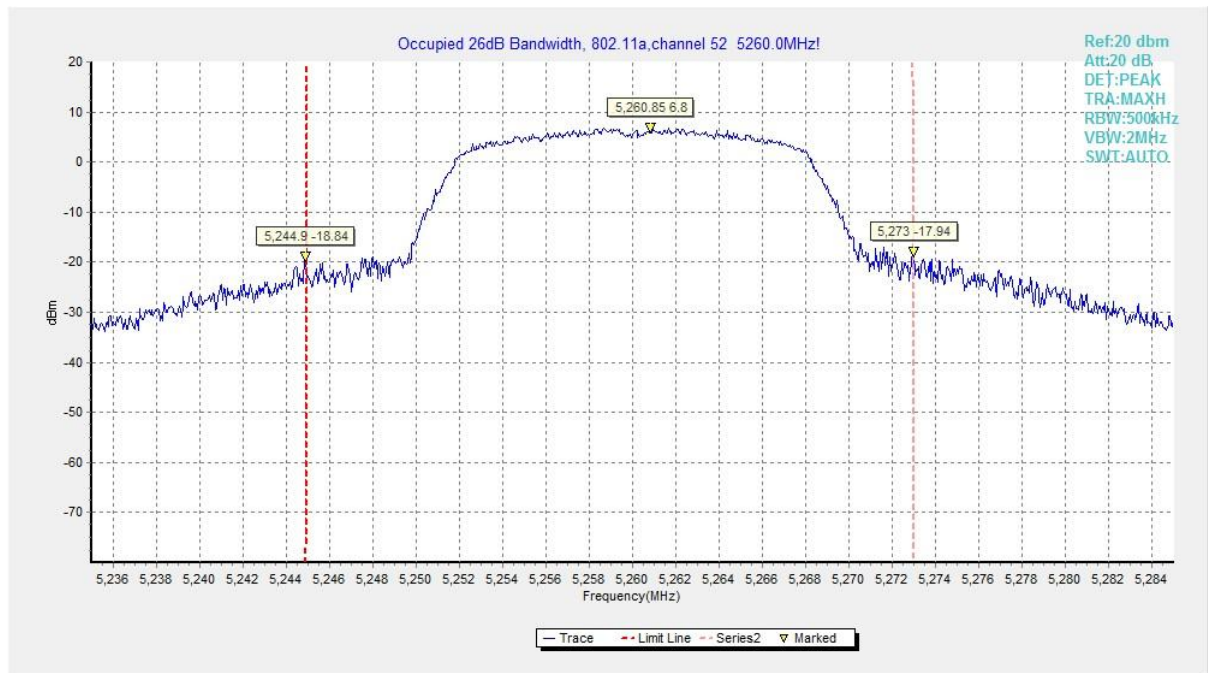


Fig. 4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

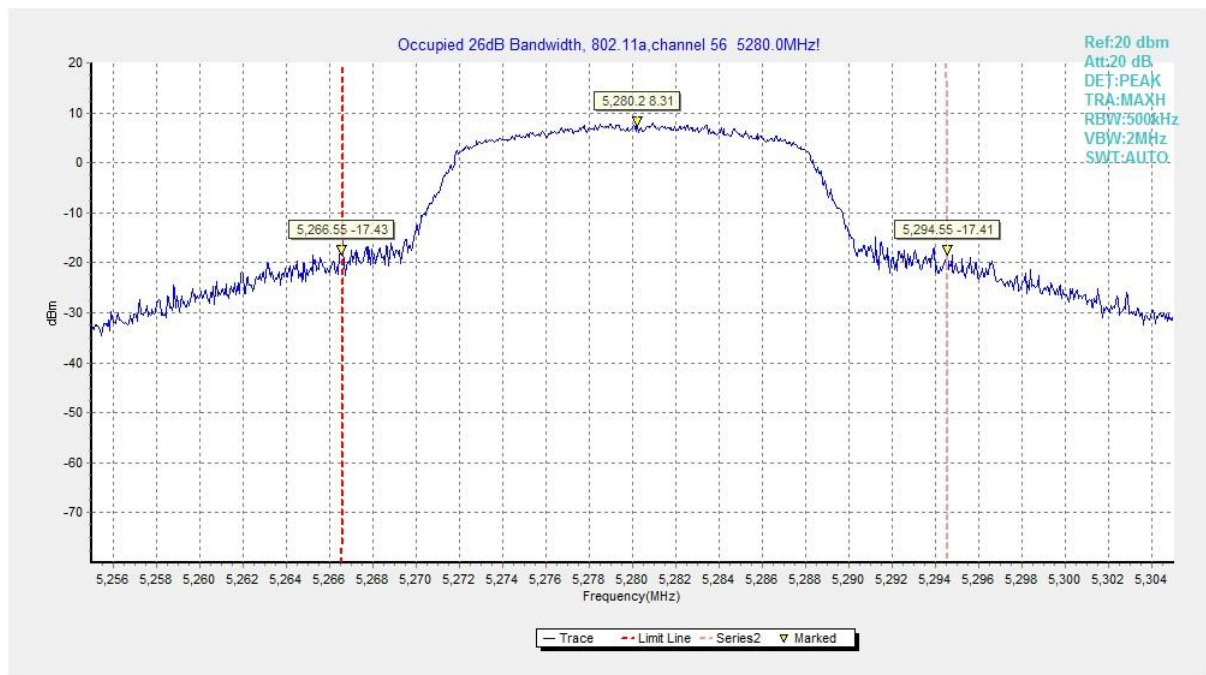


Fig. 5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

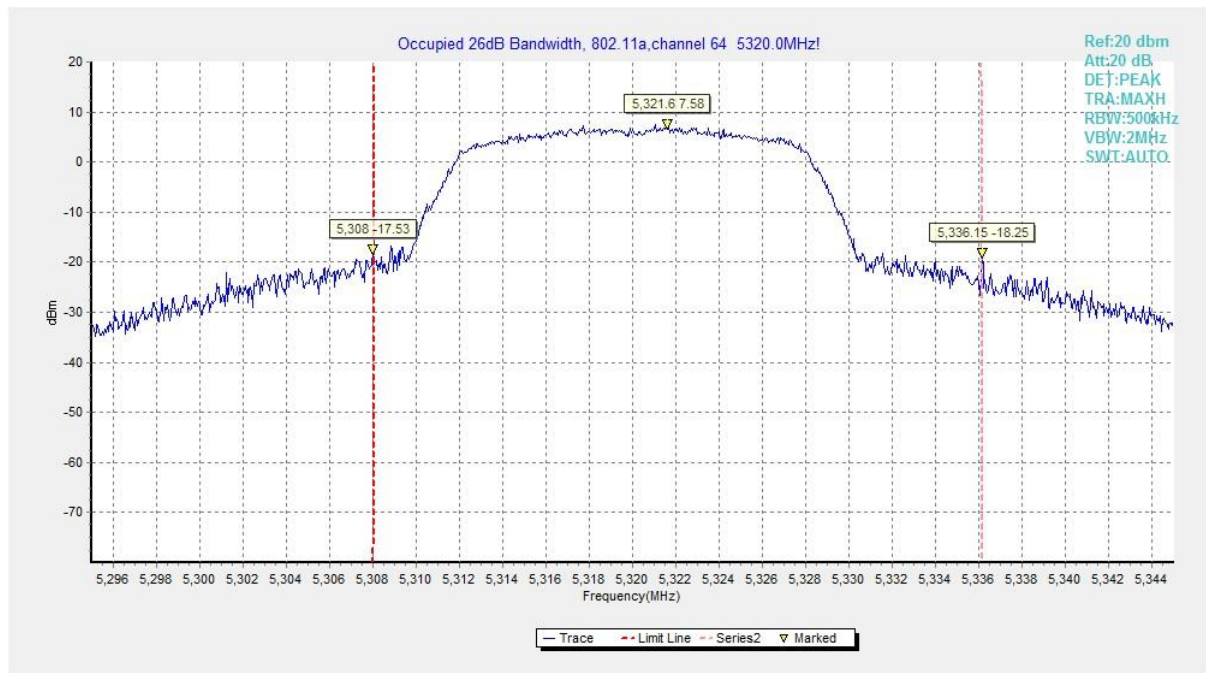


Fig. 6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

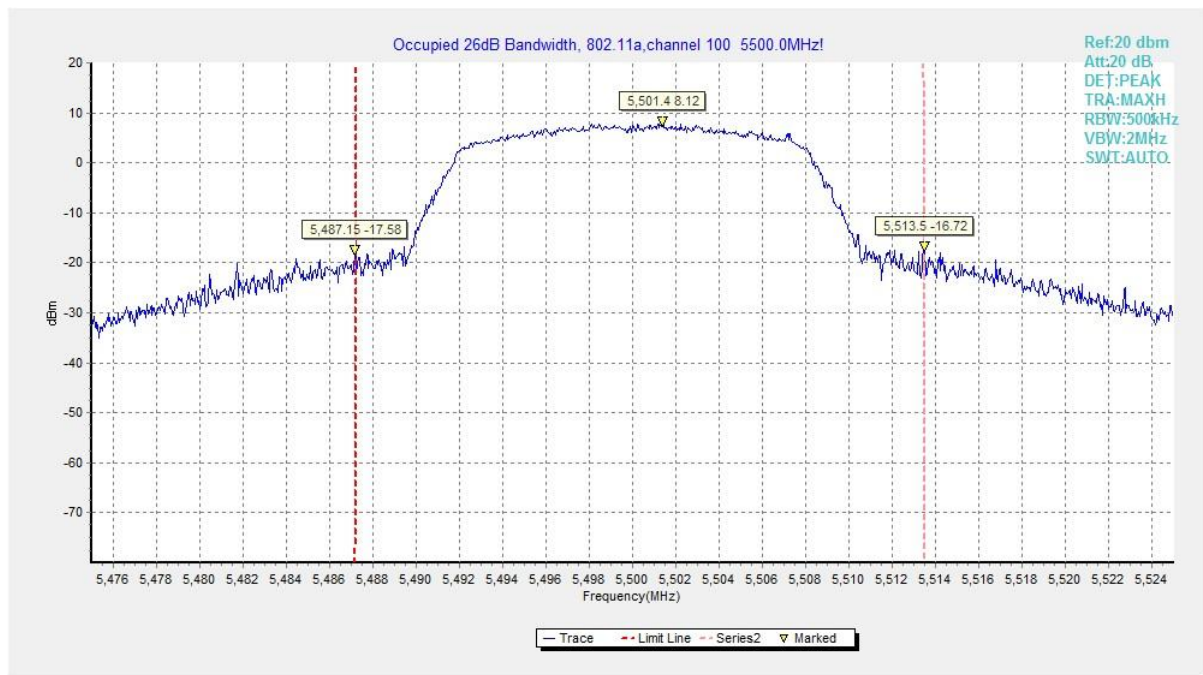


Fig. 7 Occupied 26dB Bandwidth (802.11a, 5500MHz)

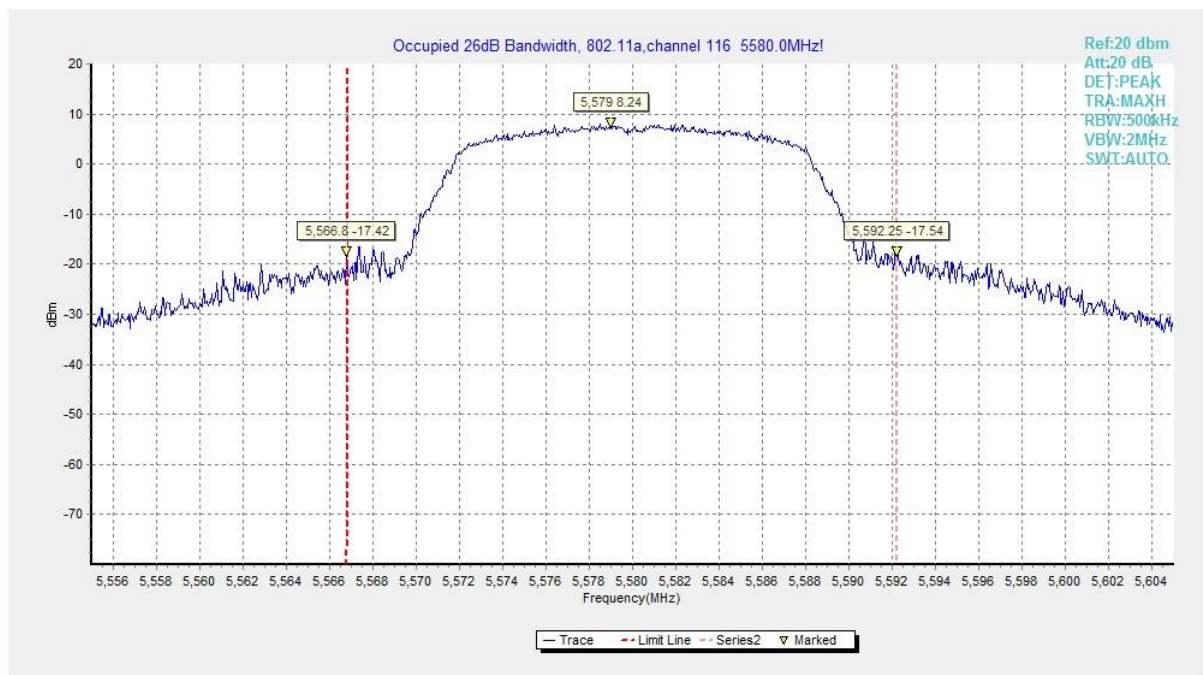


Fig. 8 Occupied 26dB Bandwidth (802.11a, 5580MHz)

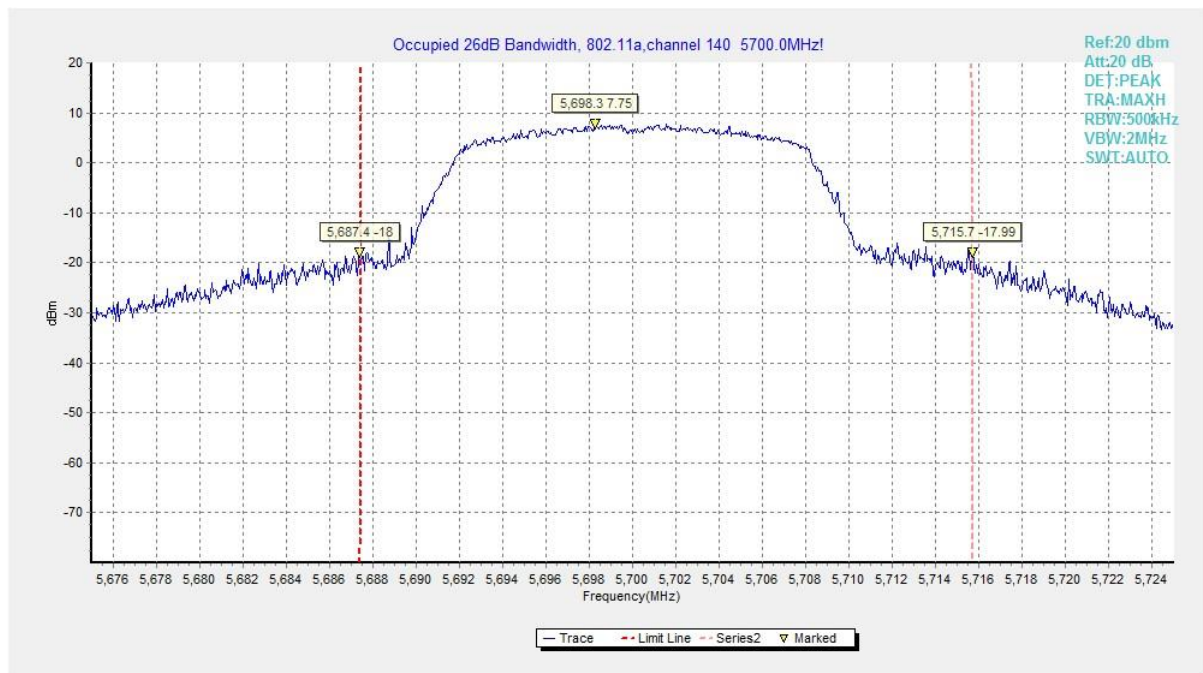


Fig. 9 Occupied 26dB Bandwidth (802.11a, 5700MHz)

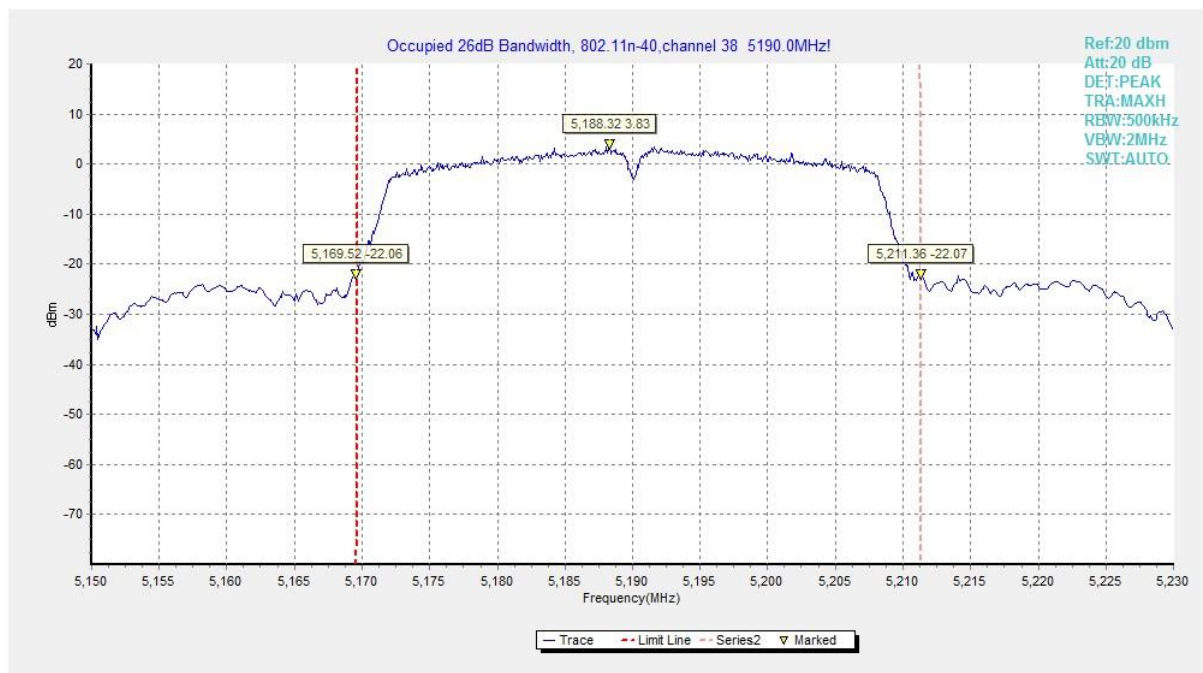


Fig. 10 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

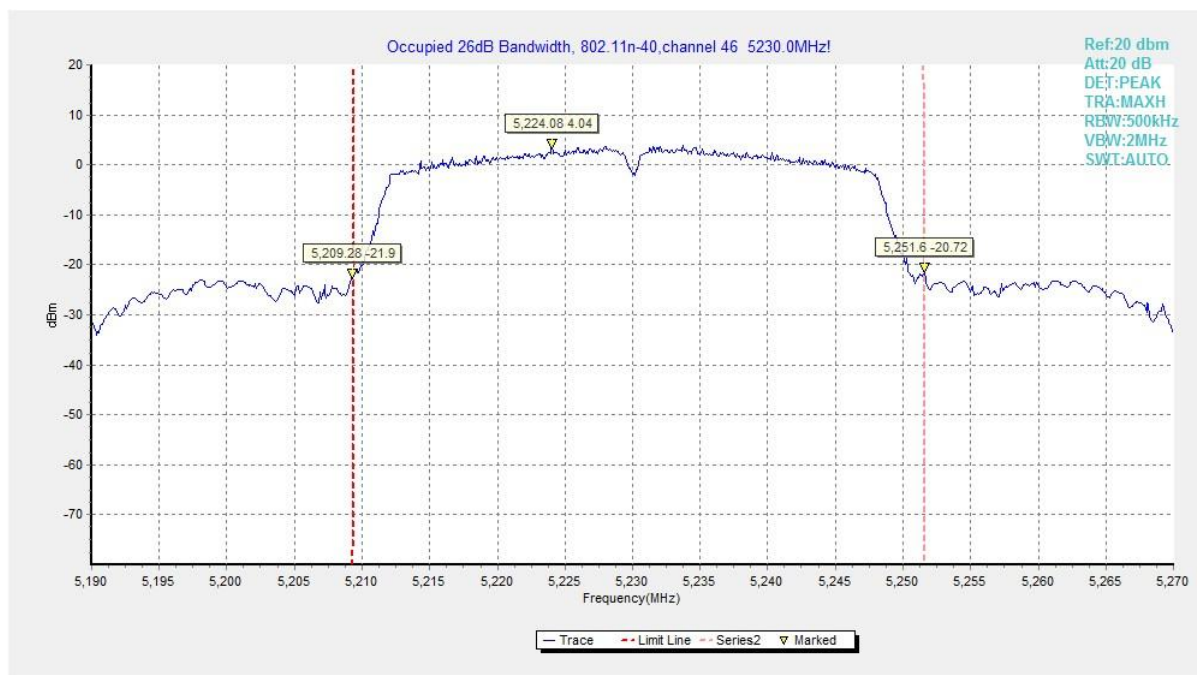


Fig. 11 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

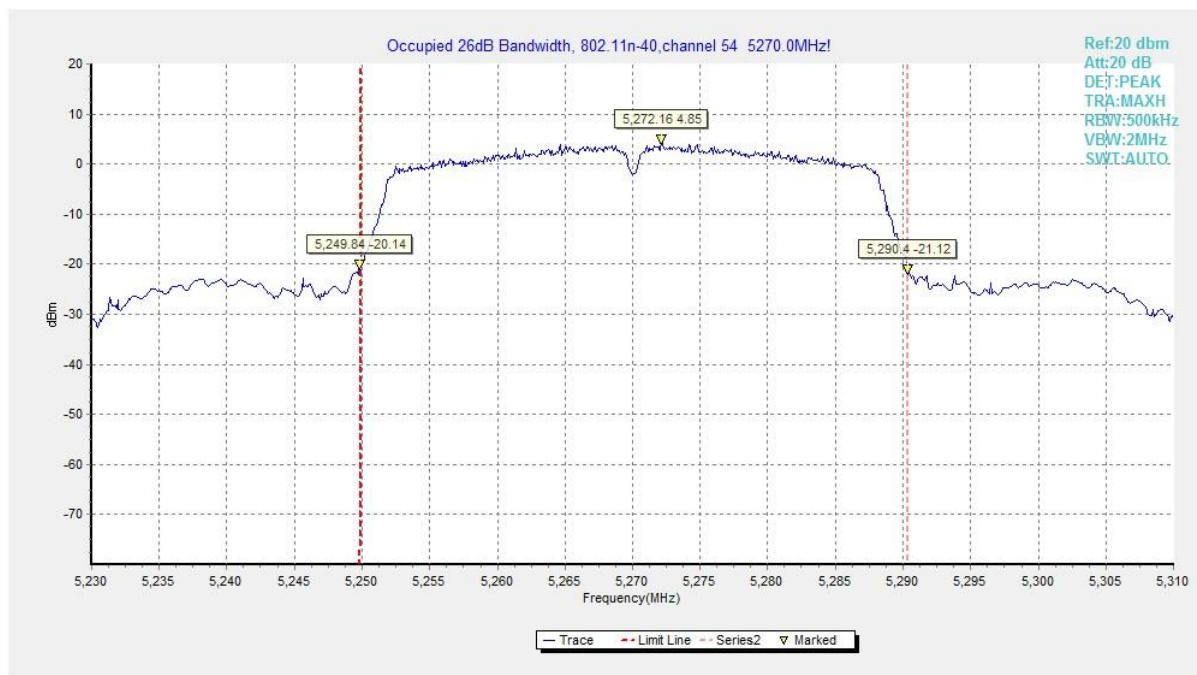


Fig. 12 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)

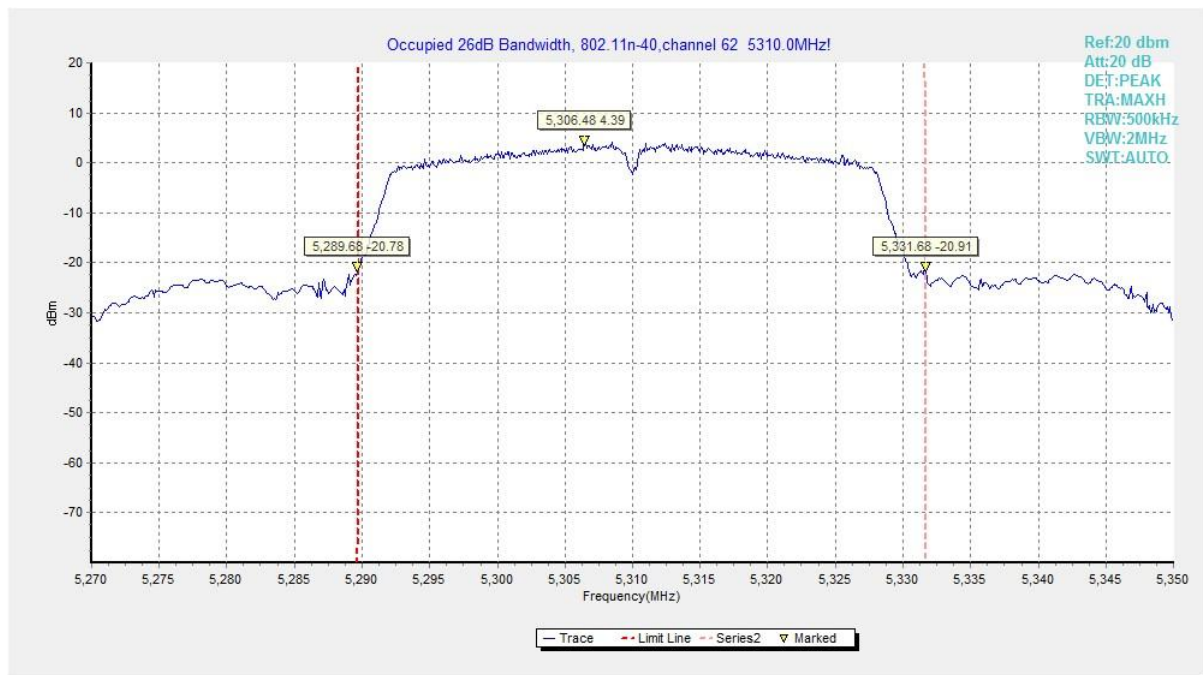


Fig. 13 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

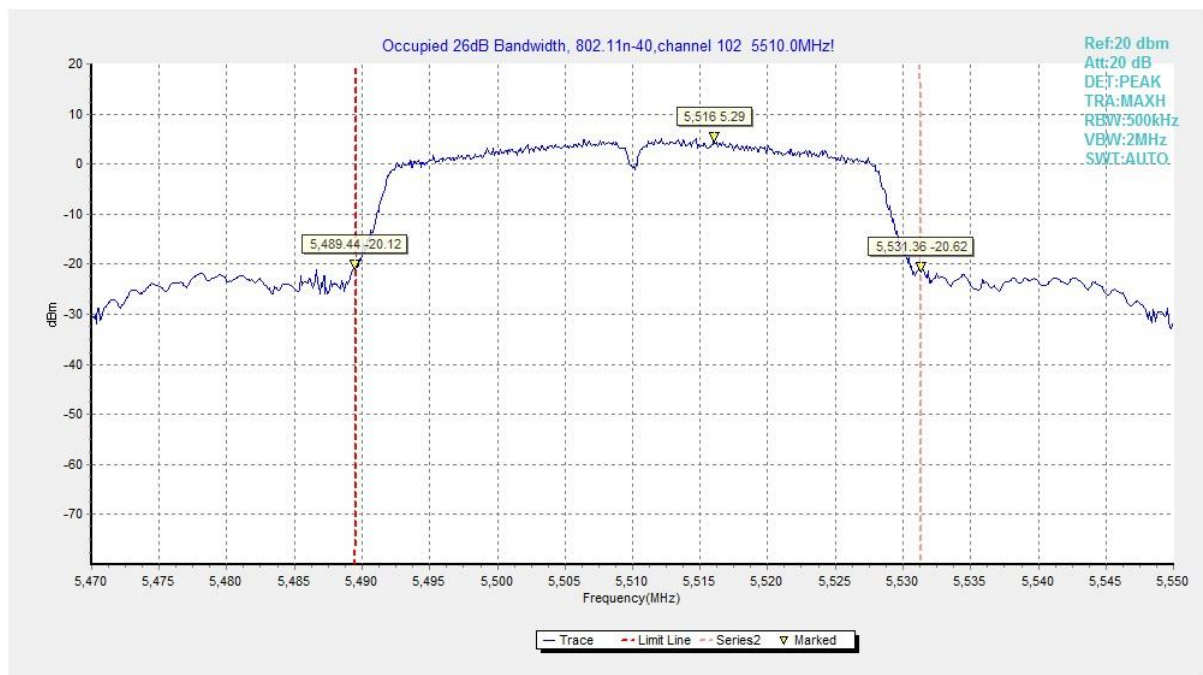


Fig. 14 Occupied 26dB Bandwidth (802.11n-HT40, 5510MHz)

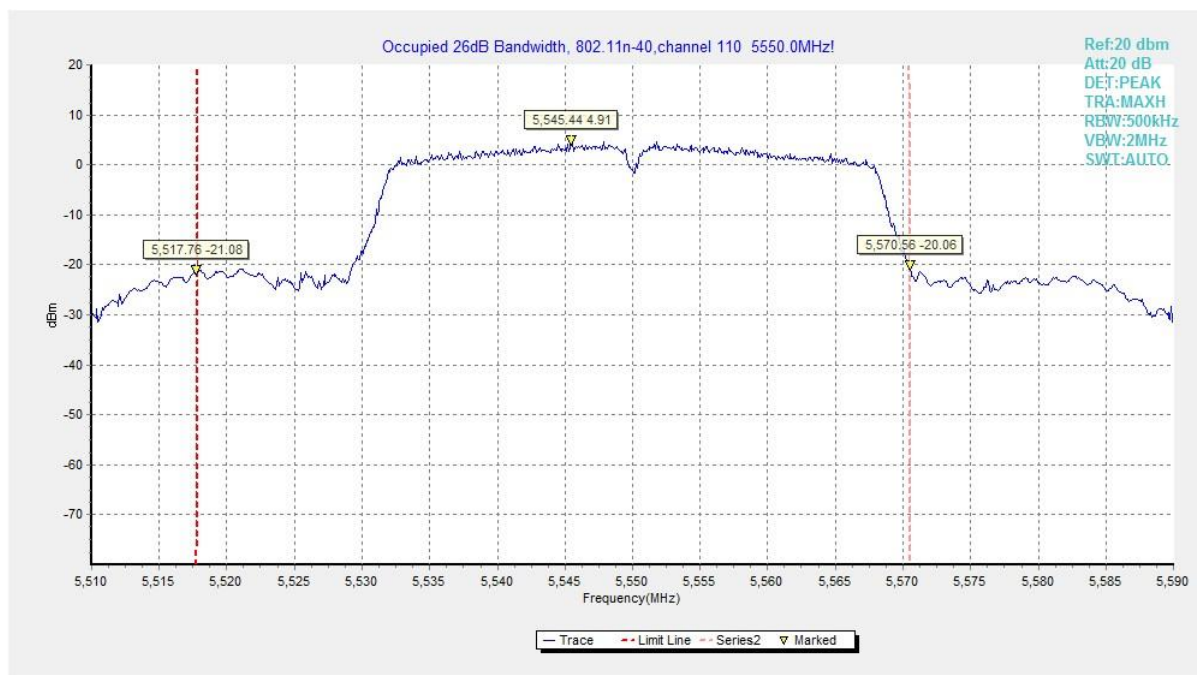


Fig. 15 Occupied 26dB Bandwidth (802.11n-HT40, 5550MHz)

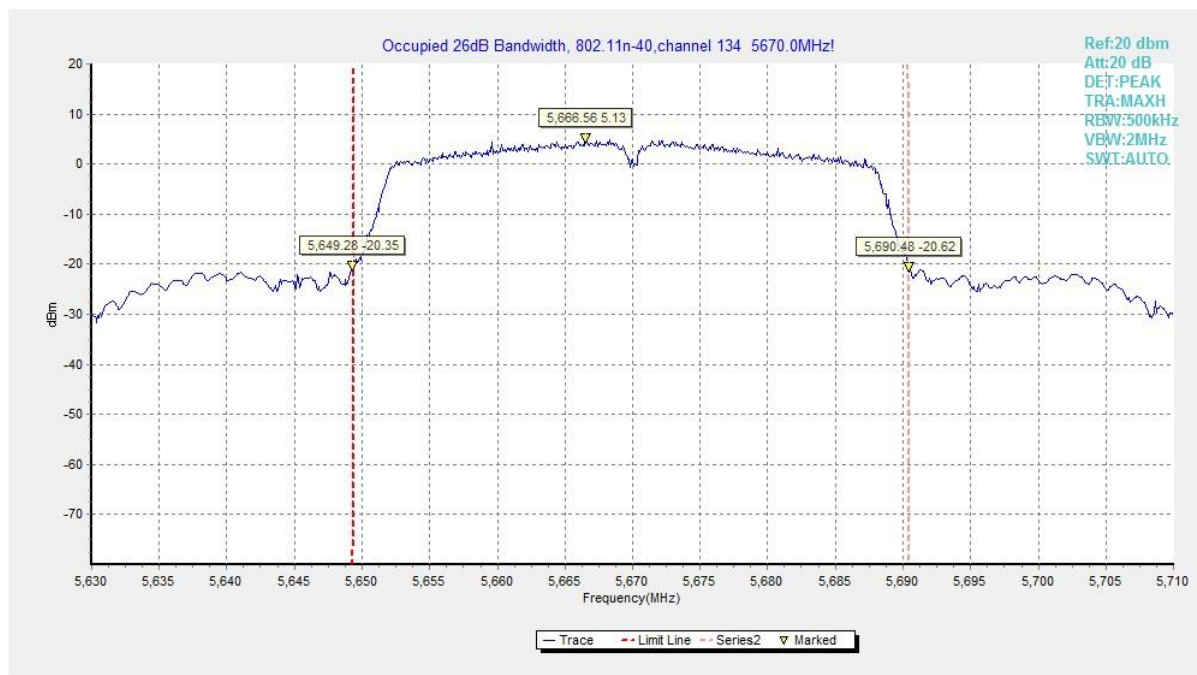


Fig. 16 Occupied 26dB Bandwidth (802.11n-HT40, 5670MHz)

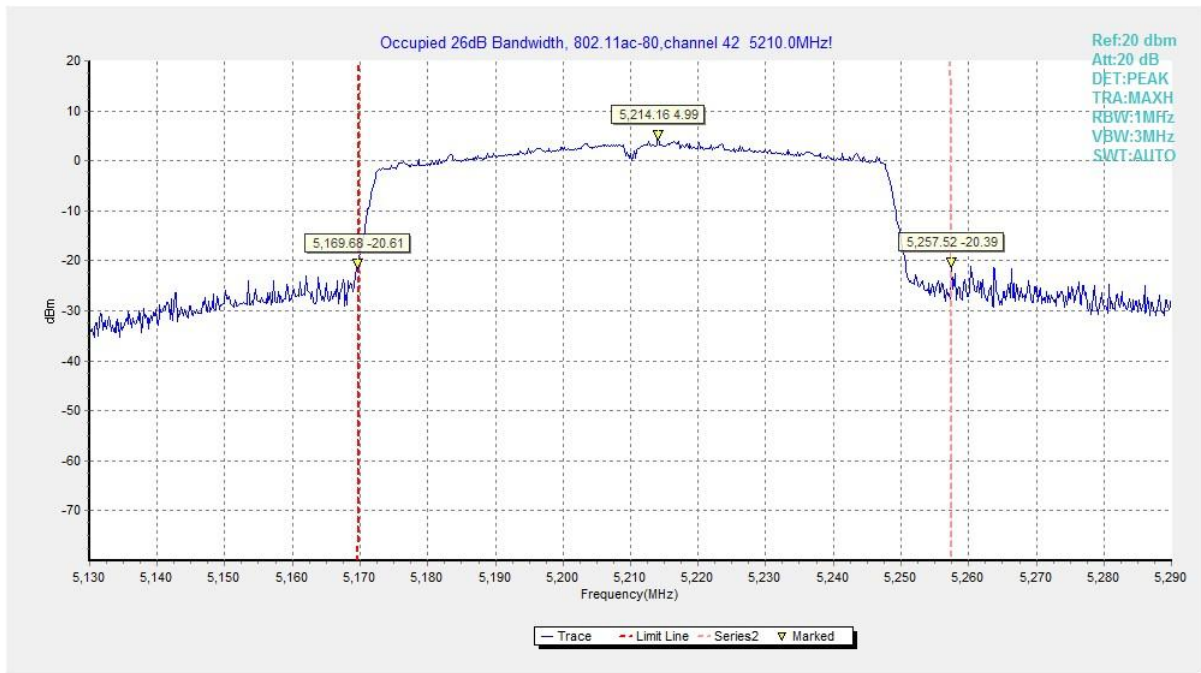


Fig. 17 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5210MHz)

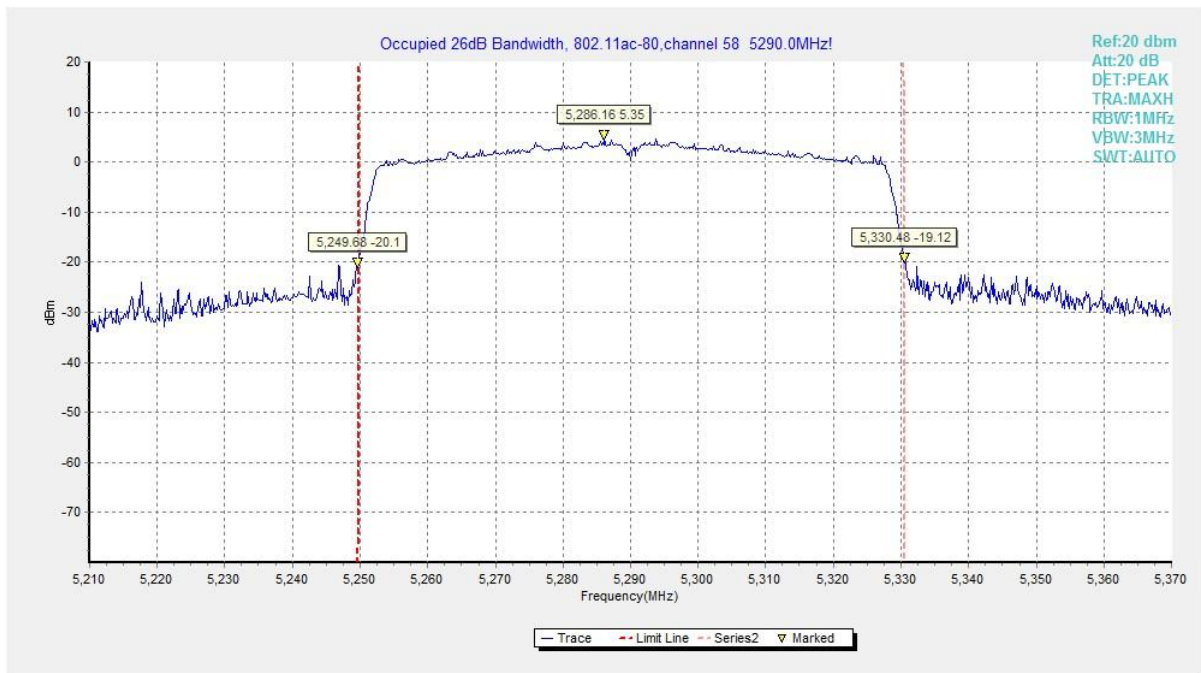


Fig. 18 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5290MHz)

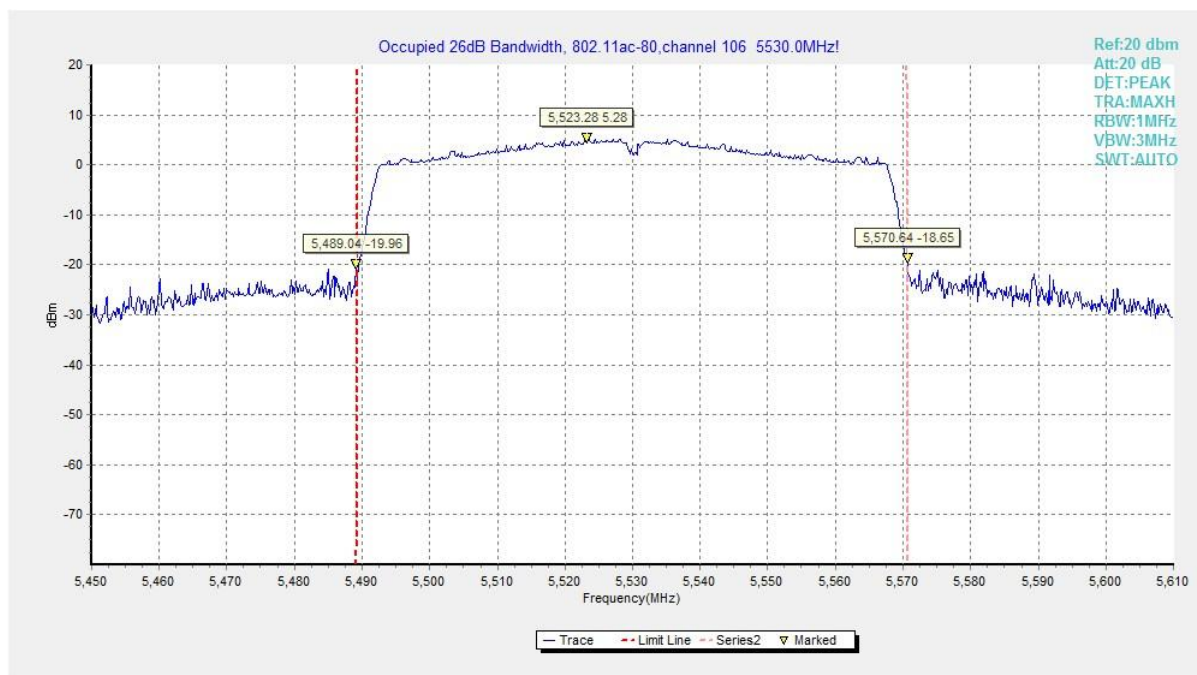


Fig. 19 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5530MHz)

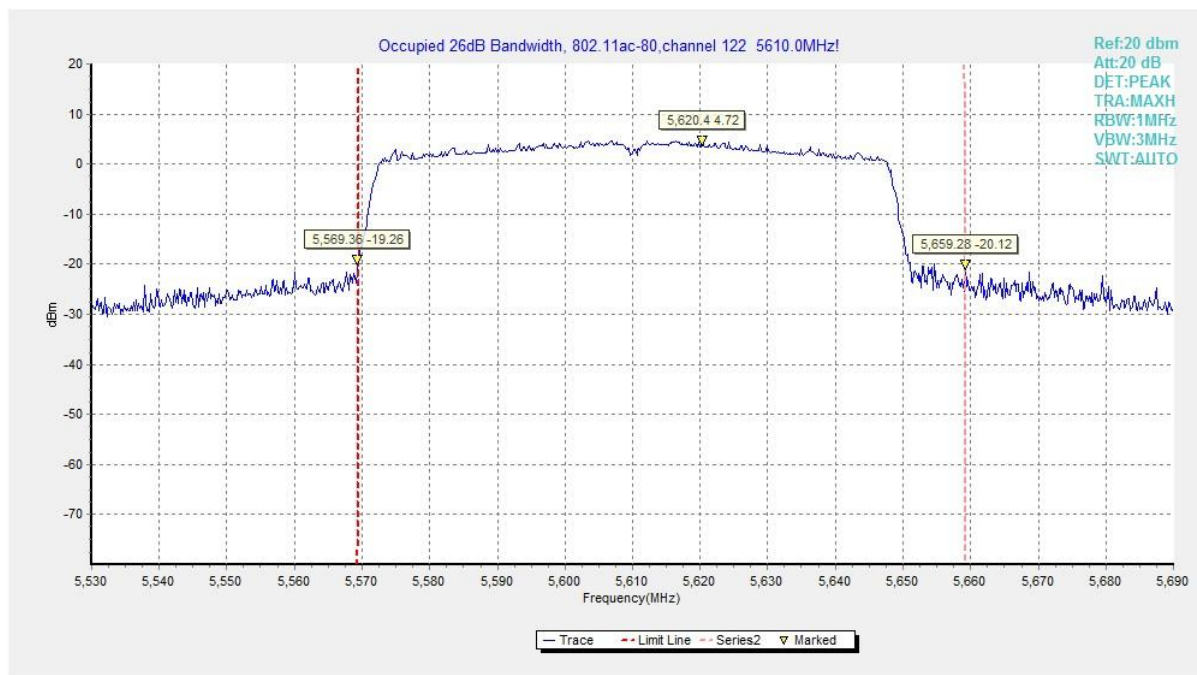


Fig. 20 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5610MHz)

A.5. Occupied 6dB Bandwidth

Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.407	≥ 0.5

The measurement is made according to KDB 789033.

Measurement Result:

Mode	Channel	Occupied 6dB Bandwidth (MHz)		Conclusion
802.11a	5745MHz(Ch149)	Fig.21	15.10	P
	5785MHz(Ch157)	Fig.22	15.45	P
	5825MHz(Ch165)	Fig.23	15.30	P
802.11n HT40	5755MHz(Ch151)	Fig.24	35.12	P
	5795MHz(Ch159)	Fig.25	35.12	P
802.11ac VHT80	5775MHz(Ch155)	Fig.26	75.20	P

Conclusion: PASS

Test graphs as below:

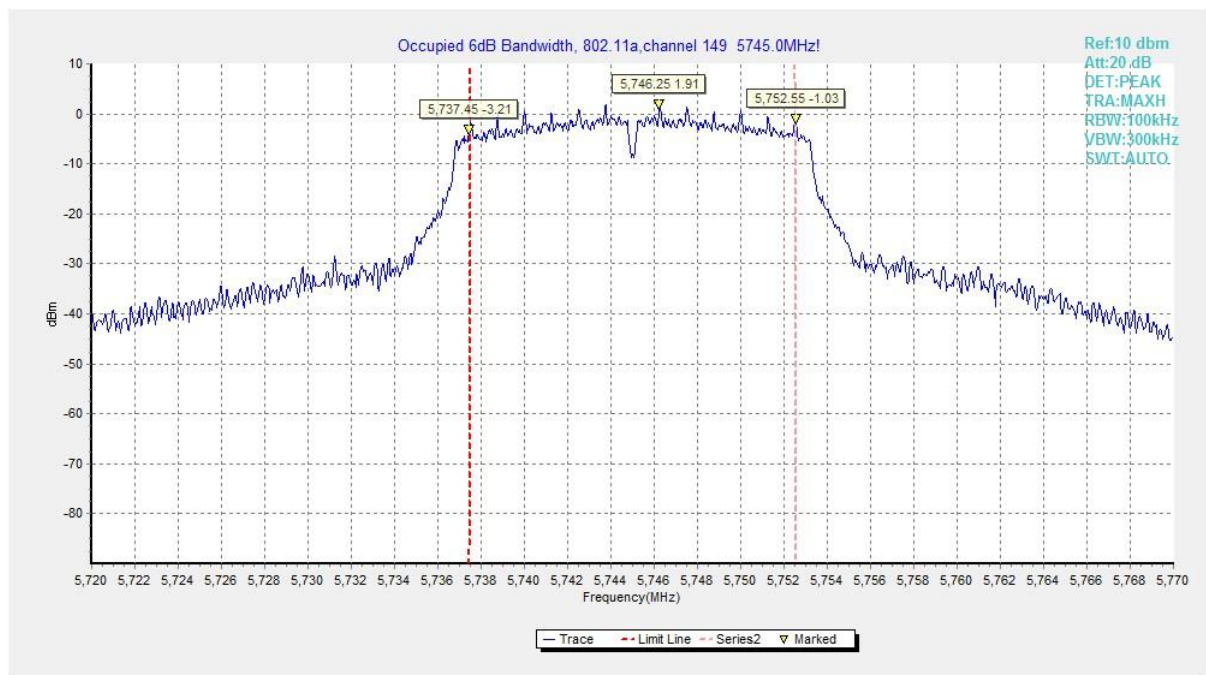


Fig. 21 Occupied 6dB Bandwidth (802.11a, 5745MHz)

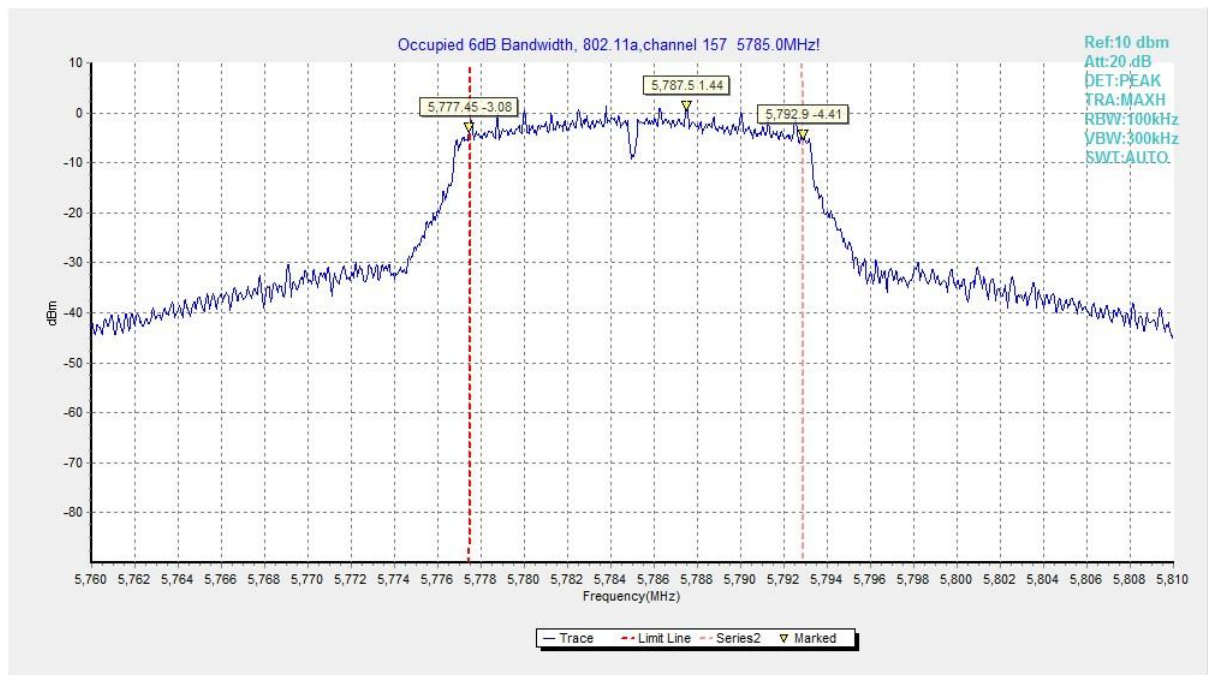


Fig. 22 Occupied 6dB Bandwidth (802.11a, 5785MHz)

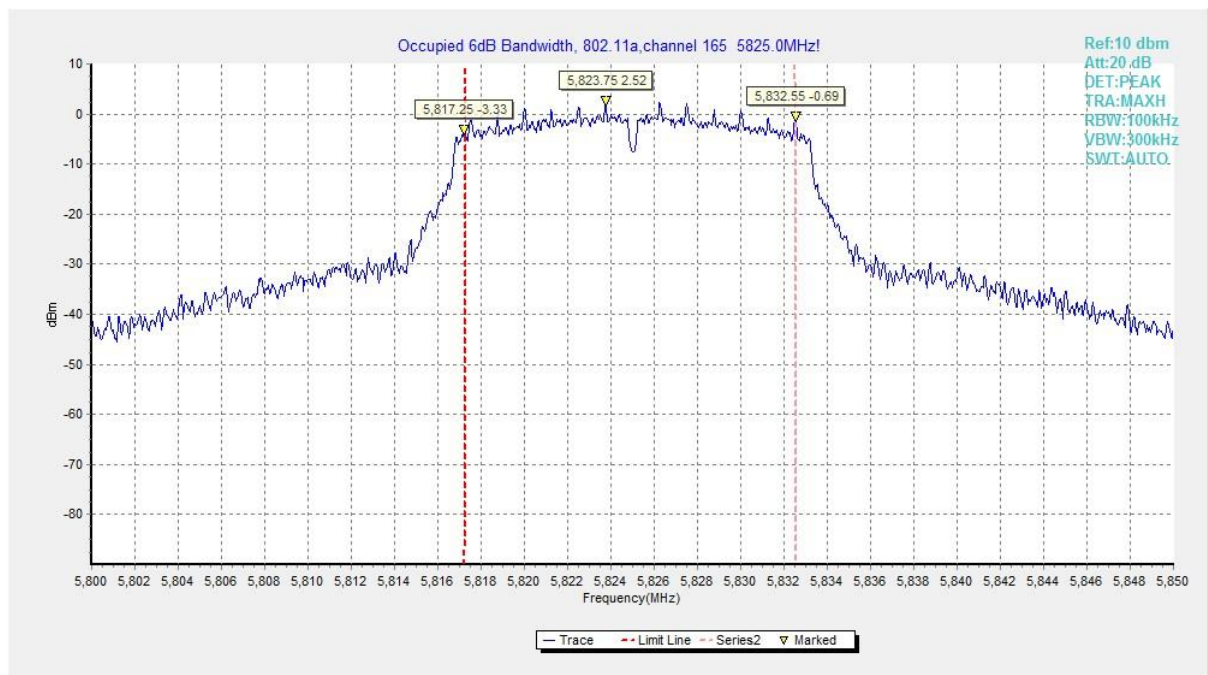


Fig. 23 Occupied 6dB Bandwidth (802.11a, 5825MHz)

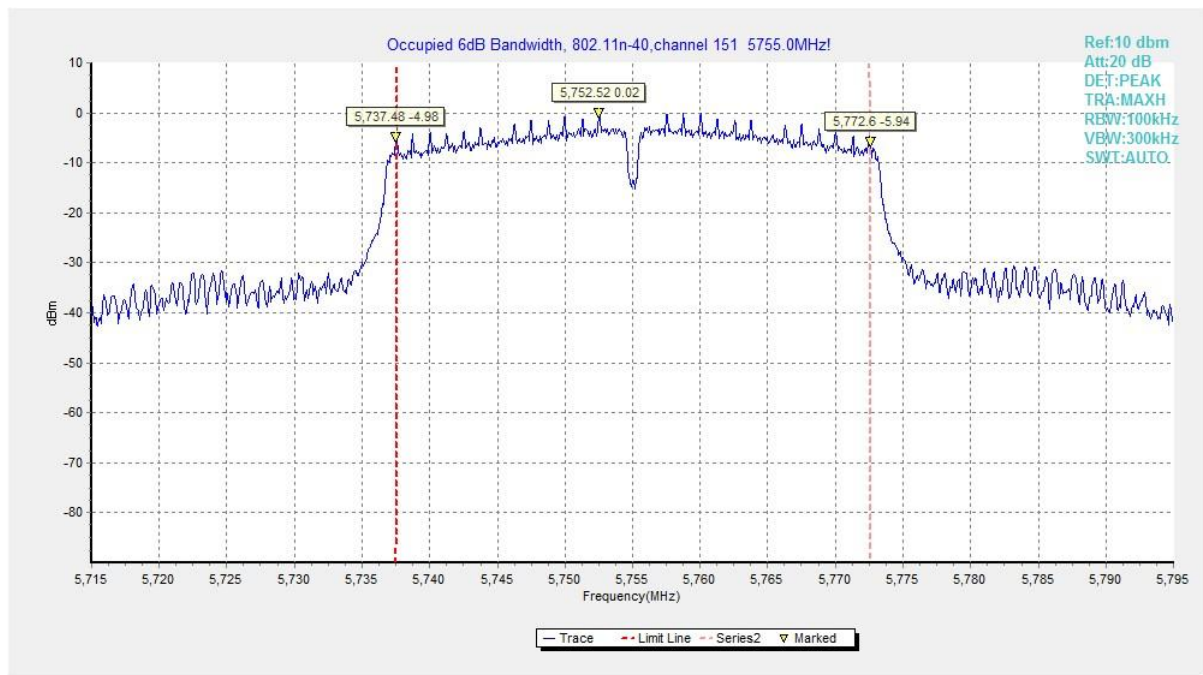


Fig. 24 Occupied 6dB Bandwidth (802.11n-HT40, 5755MHz)

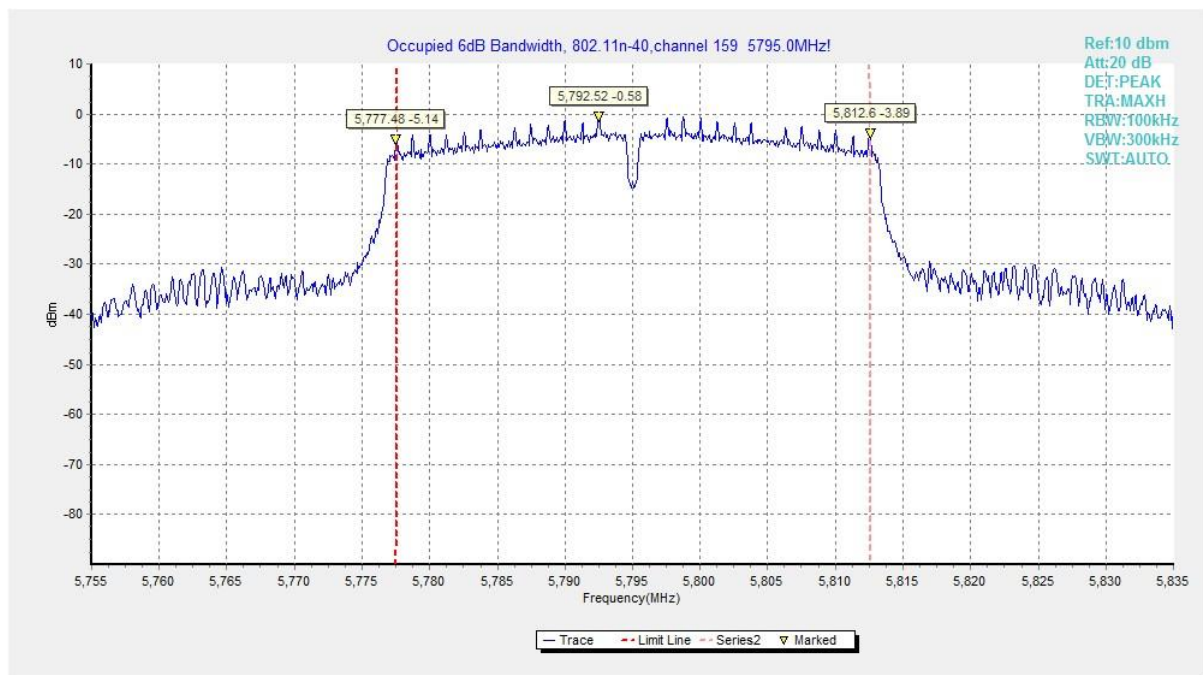


Fig. 25 Occupied 6dB Bandwidth (802.11n-HT40, 5795MHz)

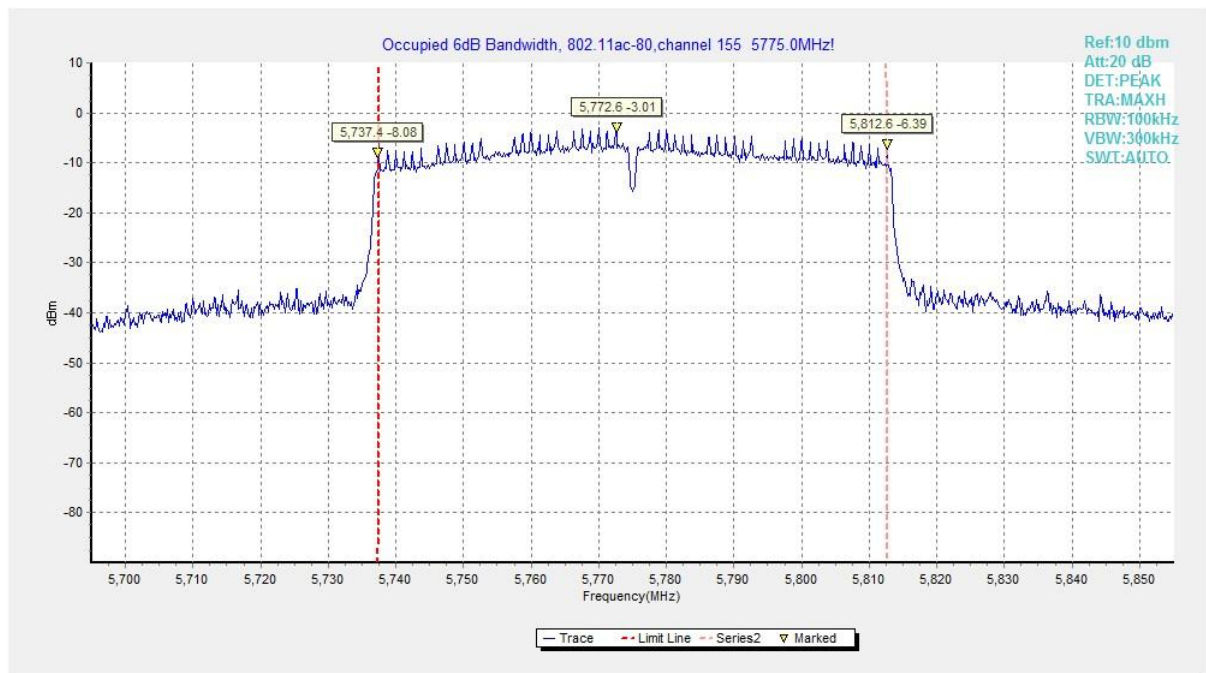


Fig. 26 Occupied 6dB Bandwidth (802.11ac-VHT80, 5775MHz)

A.6. 99% Occupied Bandwidth

Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.403	/

The measurement is made according to KDB 789033.

Measurement Result:

Mode	Channel	99% Occupied Bandwidth (MHz)		Conclusion
802.11a	5180MHz(Ch36)	Fig.27	17.38	P
	5200MHz(Ch40)	Fig.28	17.50	P
	5240MHz(Ch48)	Fig.29	17.42	P
	5260MHz(Ch52)	Fig.30	17.38	P
	5280MHz(Ch56)	Fig.31	17.42	P
	5320MHz(Ch64)	Fig.32	17.42	P
	5500MHz(Ch100)	Fig.33	17.46	P
	5580MHz(Ch116)	Fig.34	17.34	P
	5700MHz(Ch140)	Fig.35	17.42	P
	5745MHz(Ch149)	Fig.36	17.46	P
	5785MHz(Ch157)	Fig.37	17.58	P
	5825MHz(Ch165)	Fig.38	17.46	P
802.11n HT40	5190MHz(Ch38)	Fig.39	36.44	P
	5230MHz(Ch46)	Fig.40	36.28	P
	5270MHz(Ch54)	Fig.41	36.36	P
	5310MHz(Ch62)	Fig.42	36.36	P
	5510MHz(Ch102)	Fig.43	36.36	P
	5550MHz(Ch110)	Fig.44	36.52	P
	5670MHz(Ch134)	Fig.45	36.36	P
	5755MHz(Ch151)	Fig.46	36.28	P
	5795MHz(Ch159)	Fig.47	36.52	P
802.11ac VHT80	5210MHz(Ch42)	Fig.48	75.28	P
	5290MHz(Ch58)	Fig.49	75.28	P
	5530MHz(Ch106)	Fig.50	75.28	P
	5610MHz(Ch122)	Fig.51	75.44	P
	5775MHz(Ch155)	Fig.52	75.44	P

Conclusion: PASS

Test graphs as below:

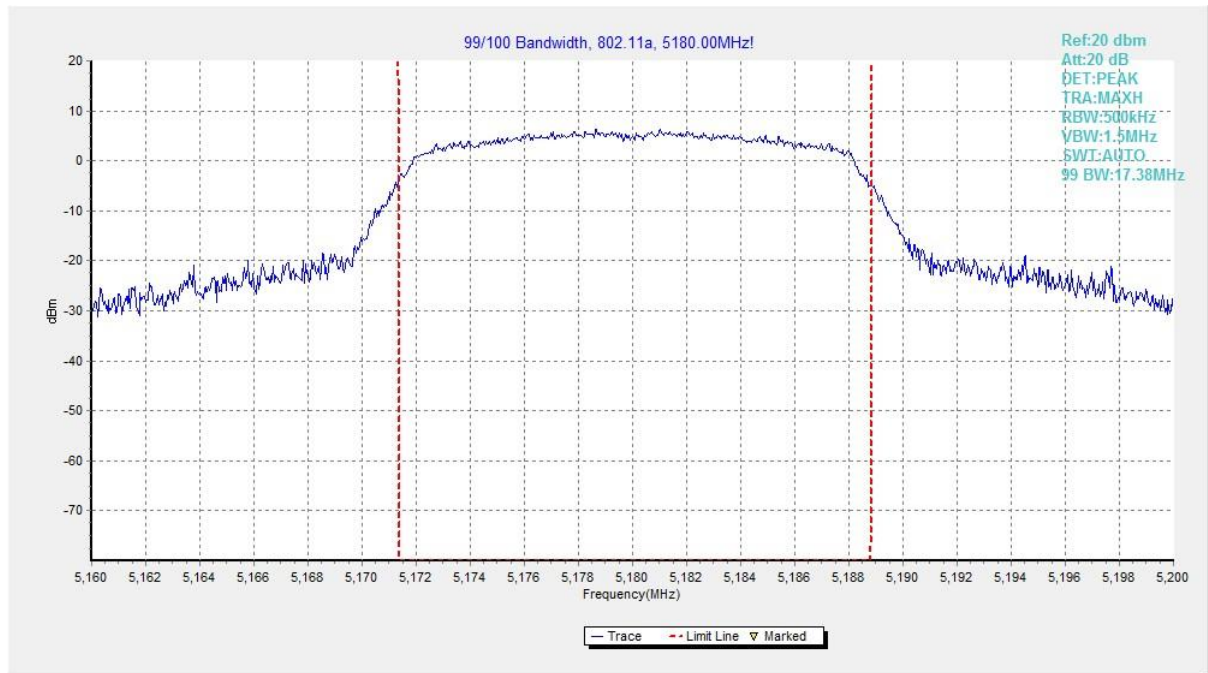


Fig. 27 99% Occupied Bandwidth (802.11a, 5180MHz)

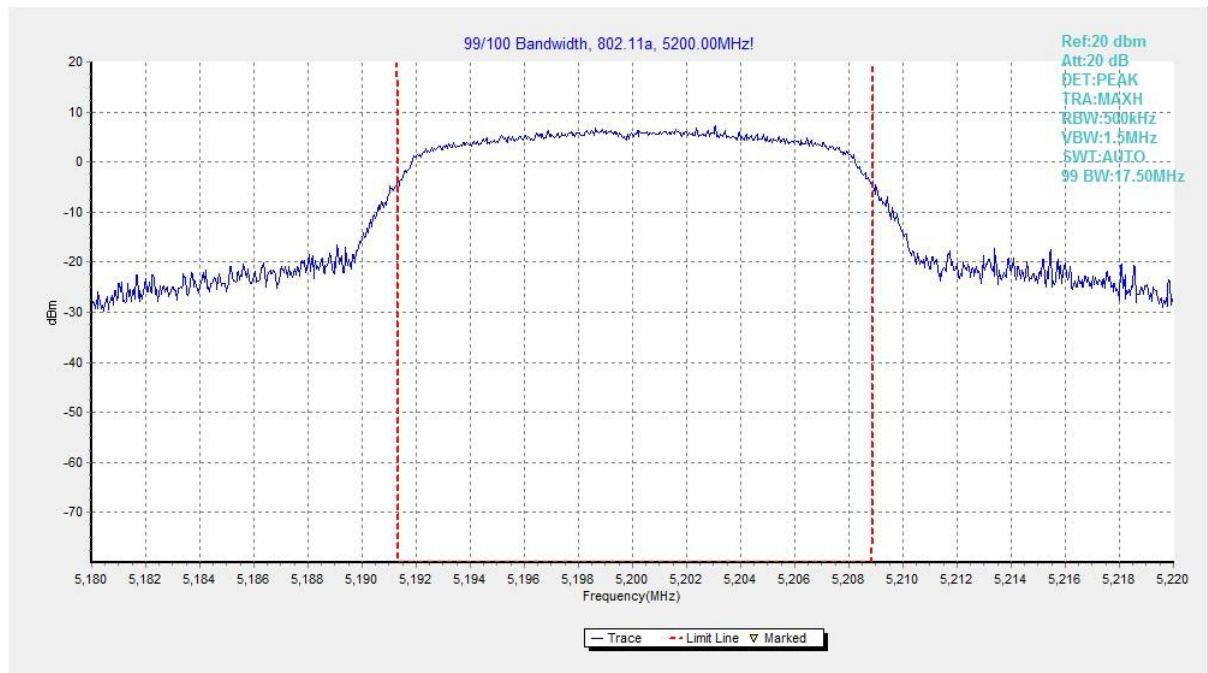


Fig. 28 99% Occupied Bandwidth (802.11a, 5200MHz)

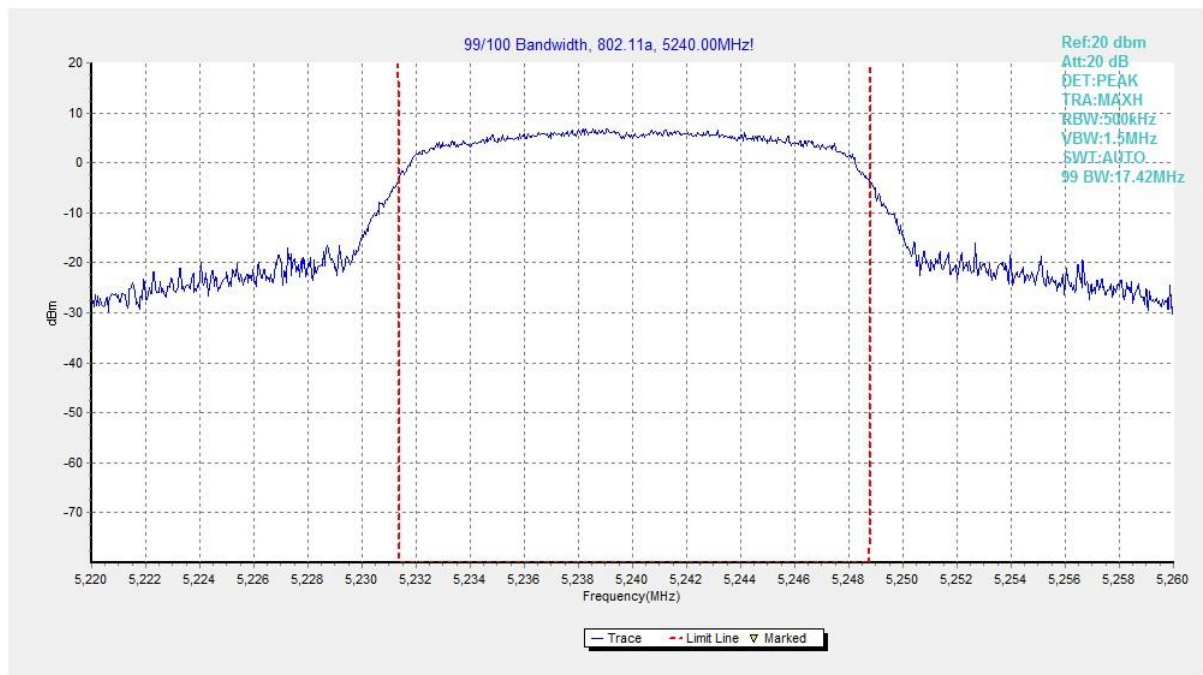


Fig. 29 99% Occupied Bandwidth (802.11a, 5240MHz)

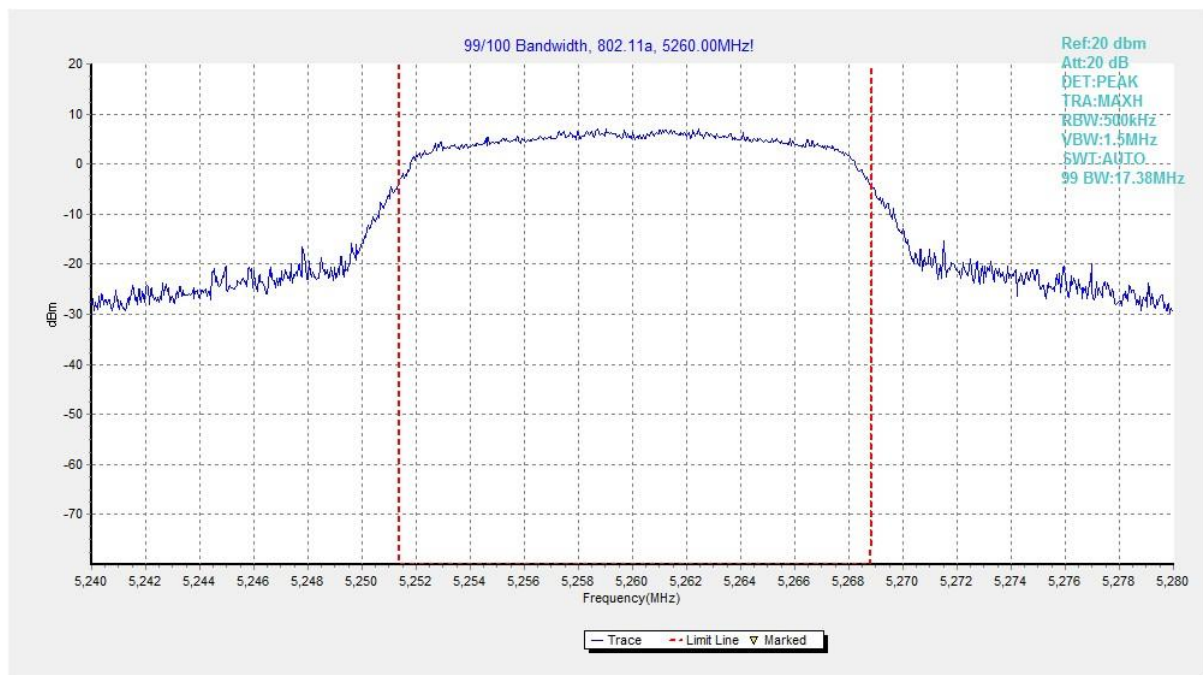


Fig. 30 99% Occupied Bandwidth (802.11a, 5260MHz)

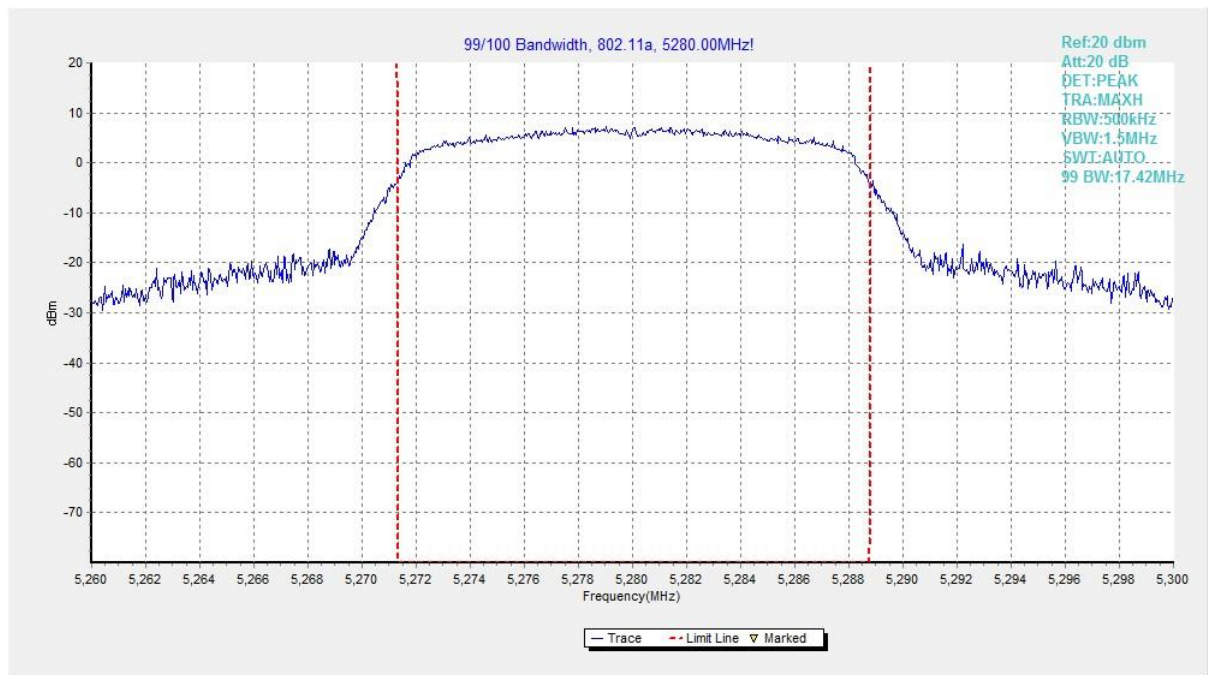


Fig. 31 99% Occupied Bandwidth (802.11a, 5280MHz)

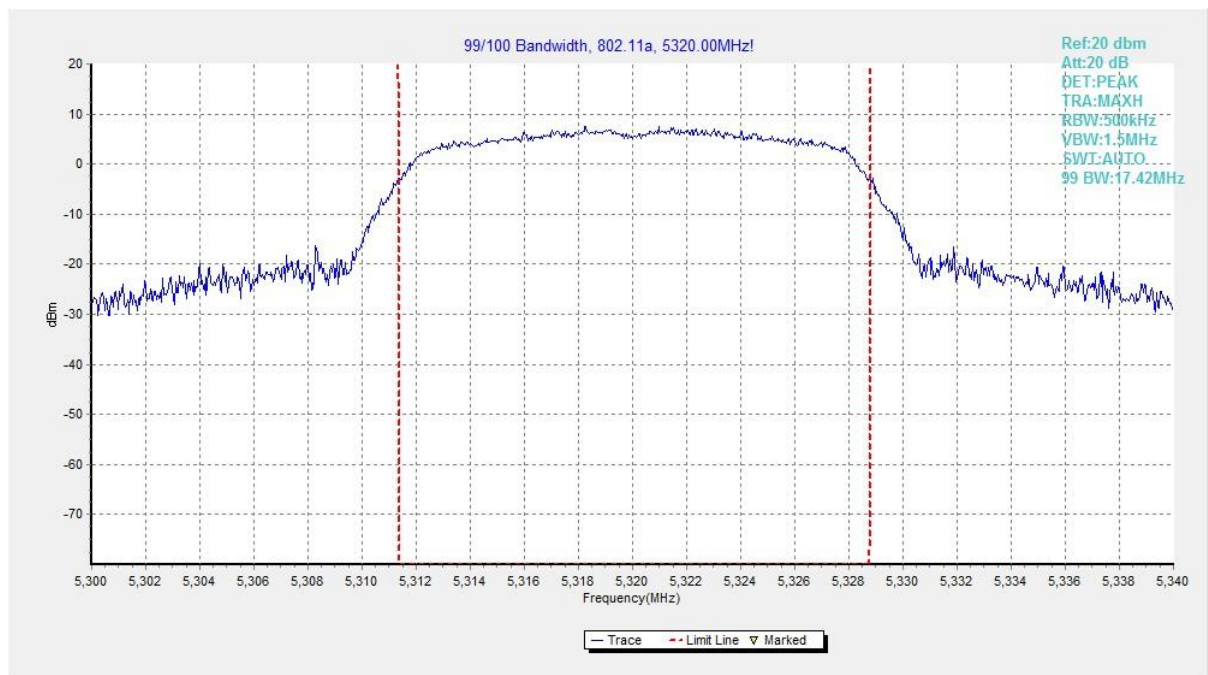


Fig. 32 99% Occupied Bandwidth (802.11a, 5320MHz)



Fig. 33 99% Occupied Bandwidth (802.11a, 5500MHz)

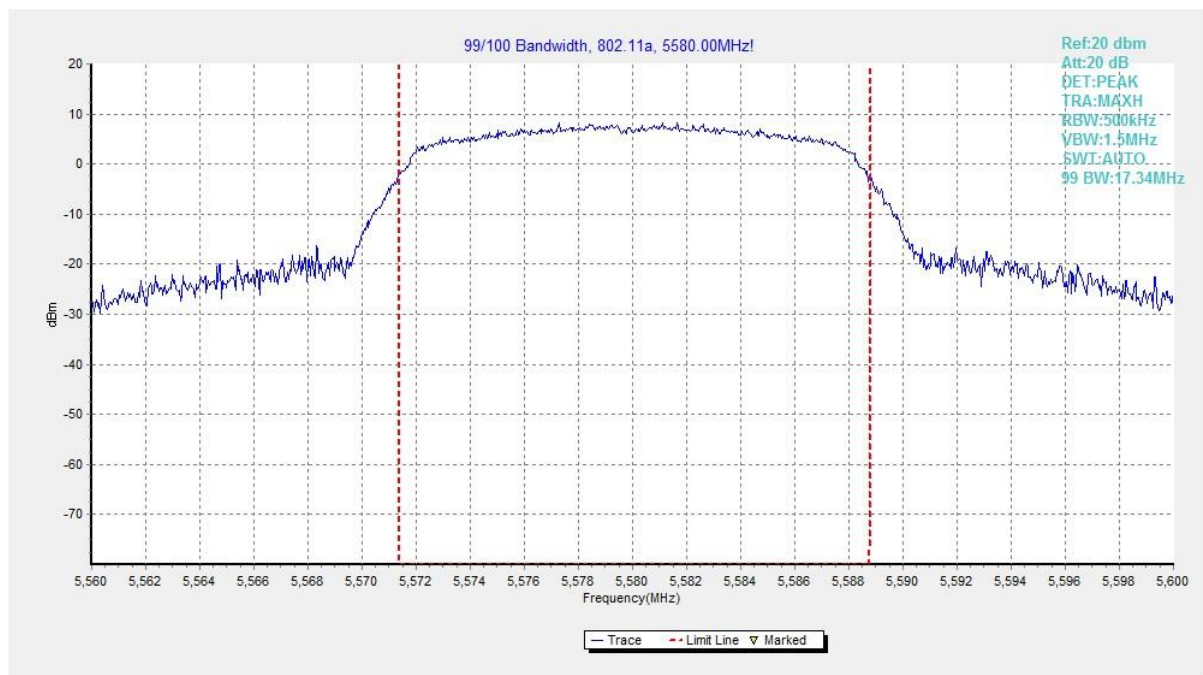


Fig. 34 99% Occupied Bandwidth (802.11a, 5580MHz)

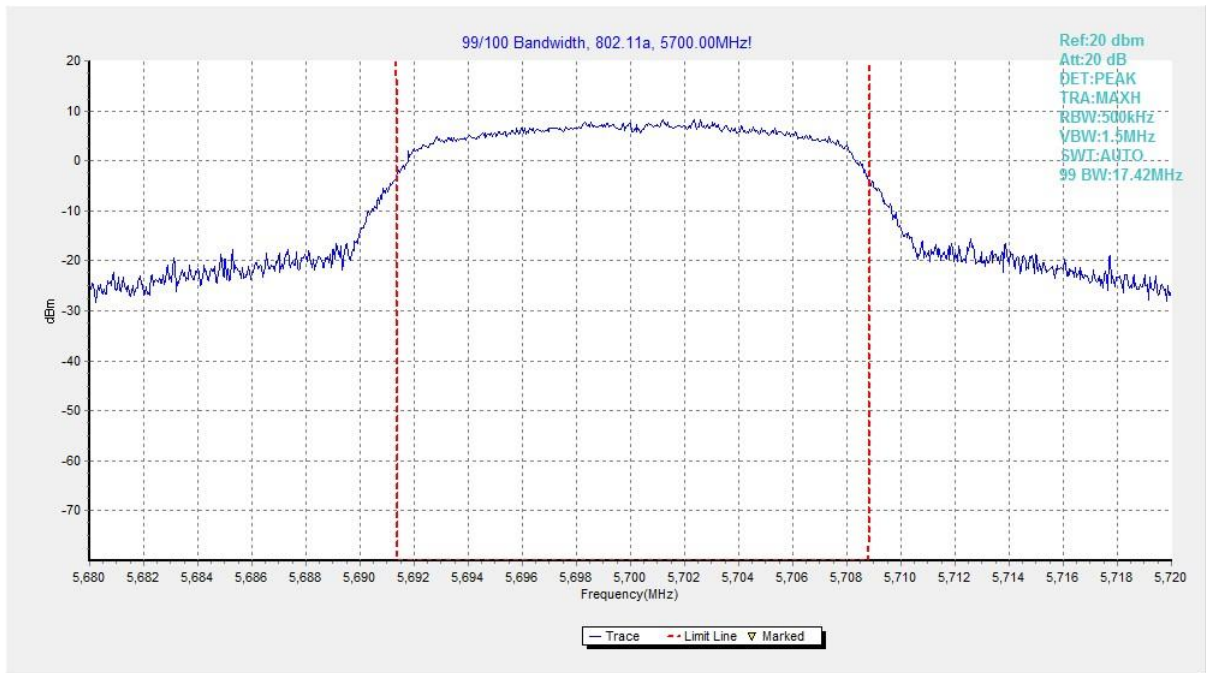


Fig. 35 99% Occupied Bandwidth (802.11a, 5700MHz)

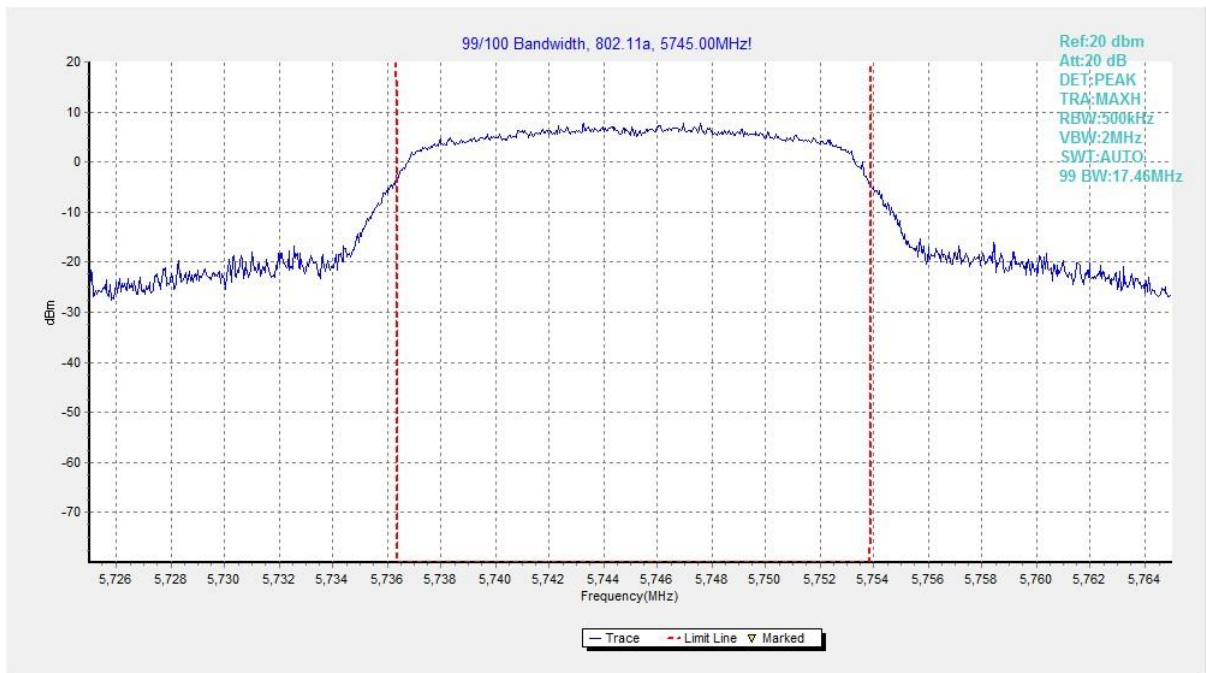


Fig. 36 99% Occupied Bandwidth (802.11a, 5745MHz)

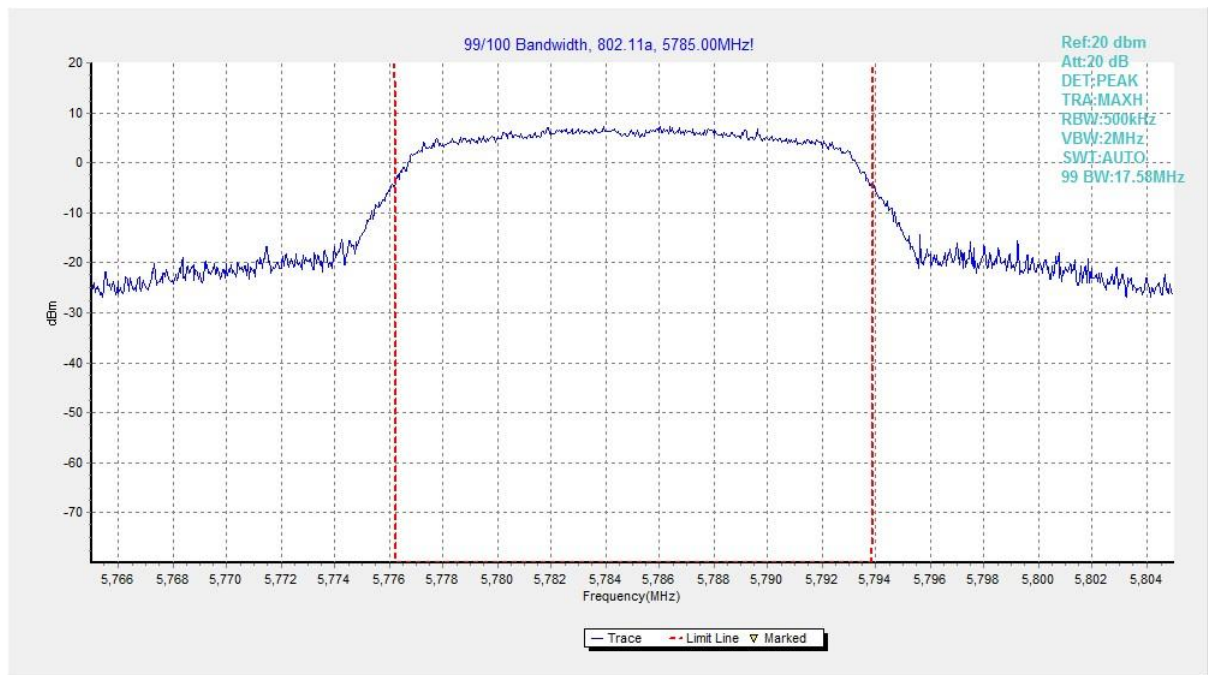


Fig. 37 99% Occupied Bandwidth (802.11a, 5785MHz)

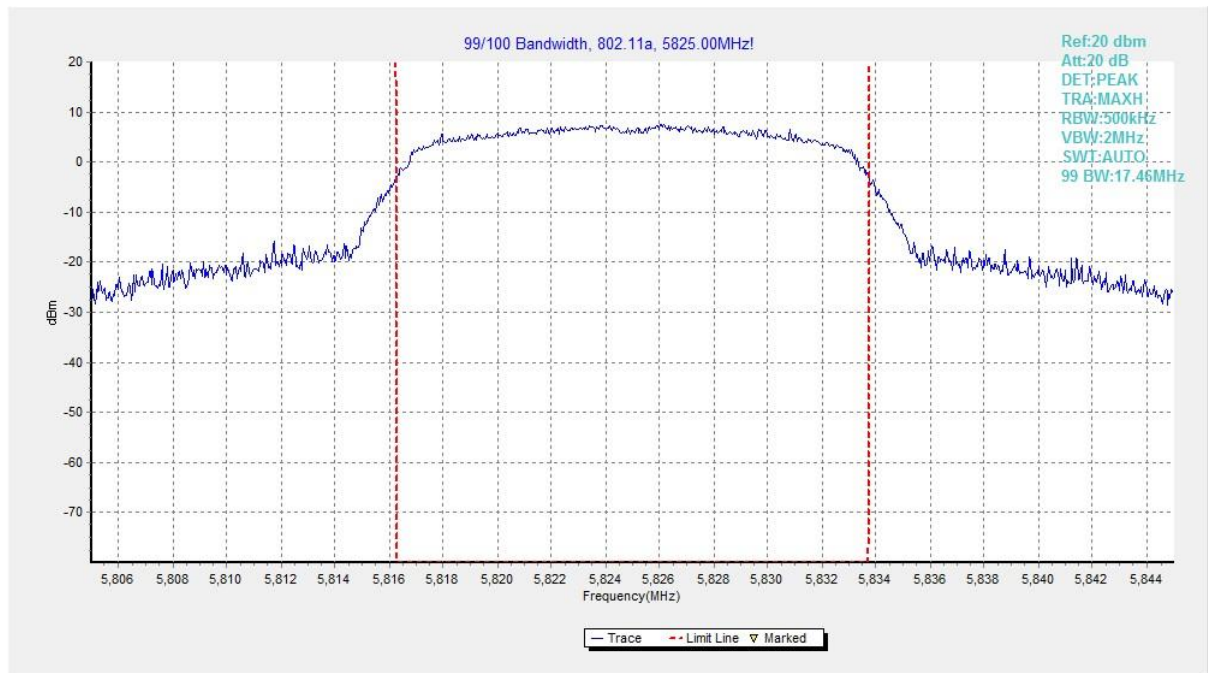


Fig. 38 99% Occupied Bandwidth (802.11a, 5825MHz)

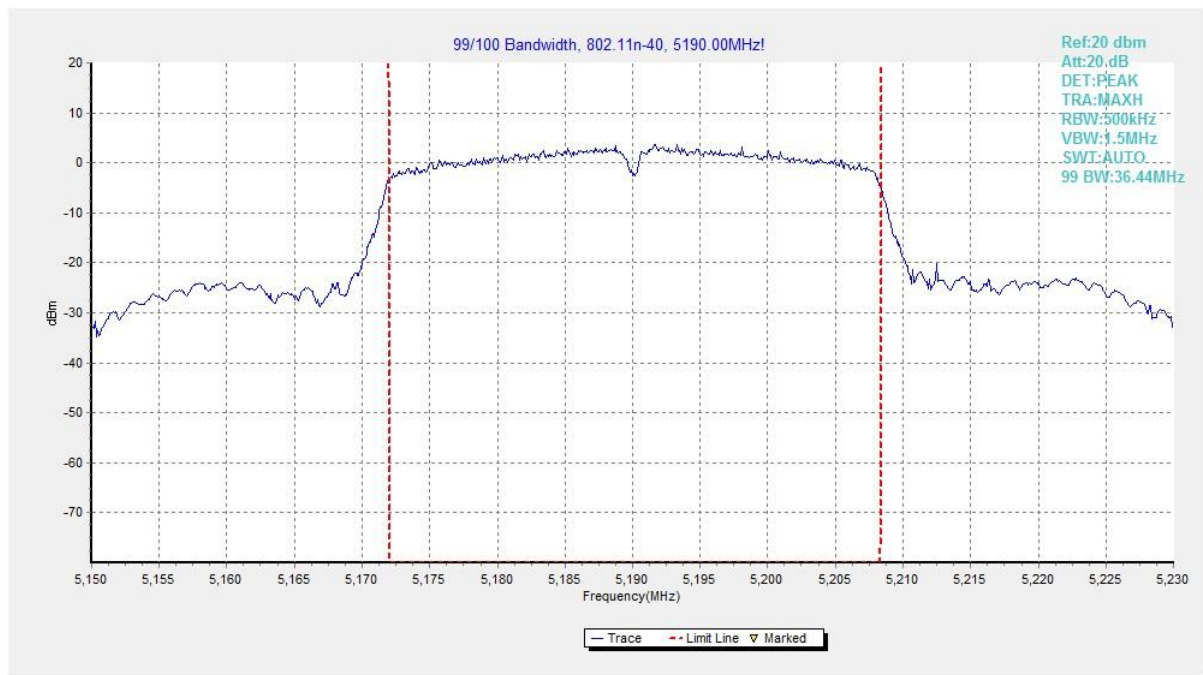


Fig. 39 99% Occupied Bandwidth (802.11n-HT40, 5190MHz)

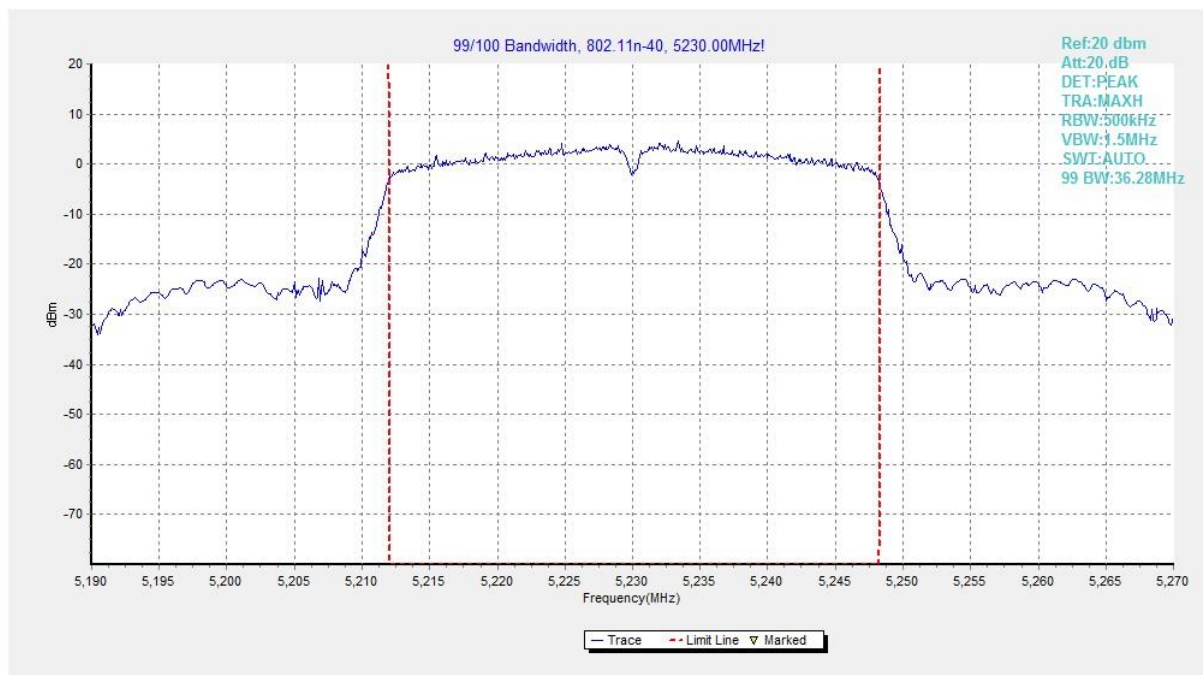


Fig. 40 99% Occupied Bandwidth (802.11n-HT40, 5230MHz)

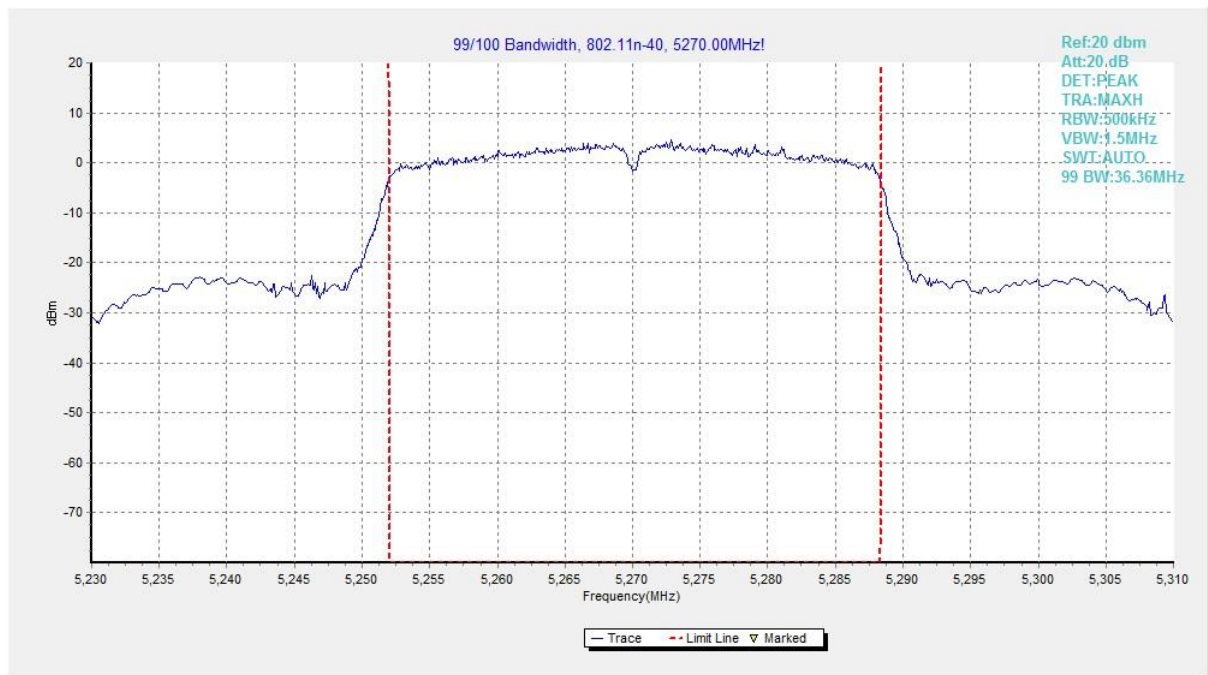


Fig. 41 99% Occupied Bandwidth (802.11n-HT40, 5270MHz)

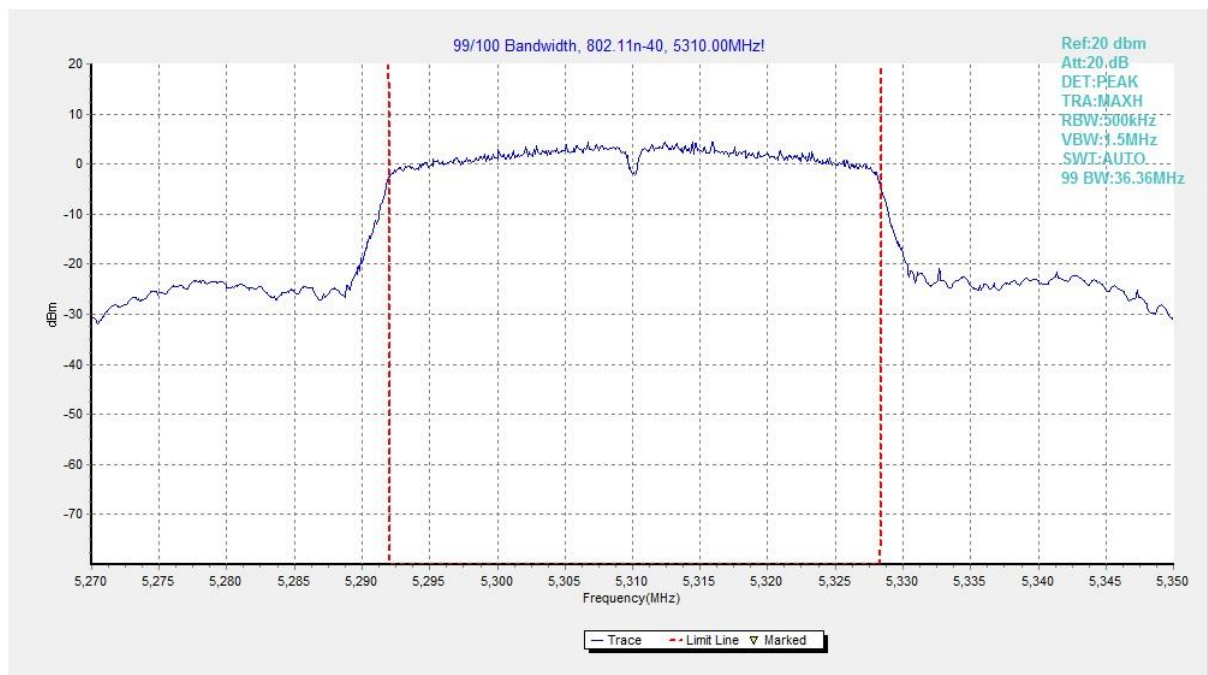


Fig. 42 99% Occupied Bandwidth (802.11n-HT40, 5310MHz)

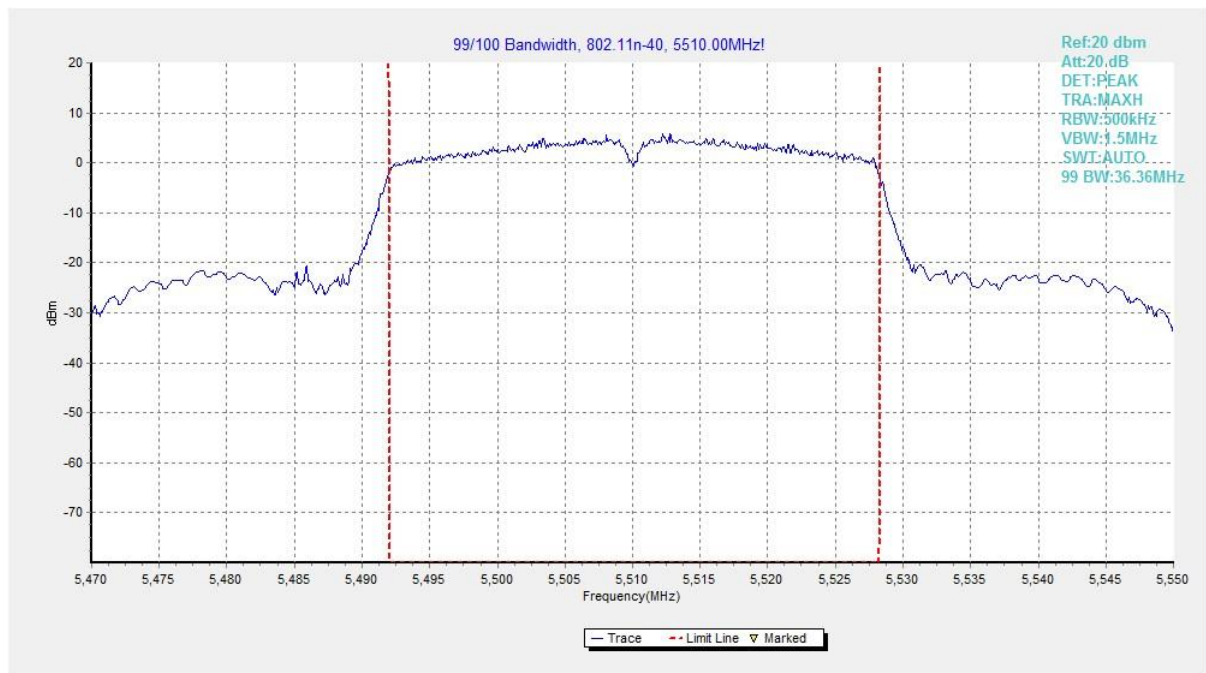


Fig. 43 99% Occupied Bandwidth (802.11n-HT40, 5510MHz)

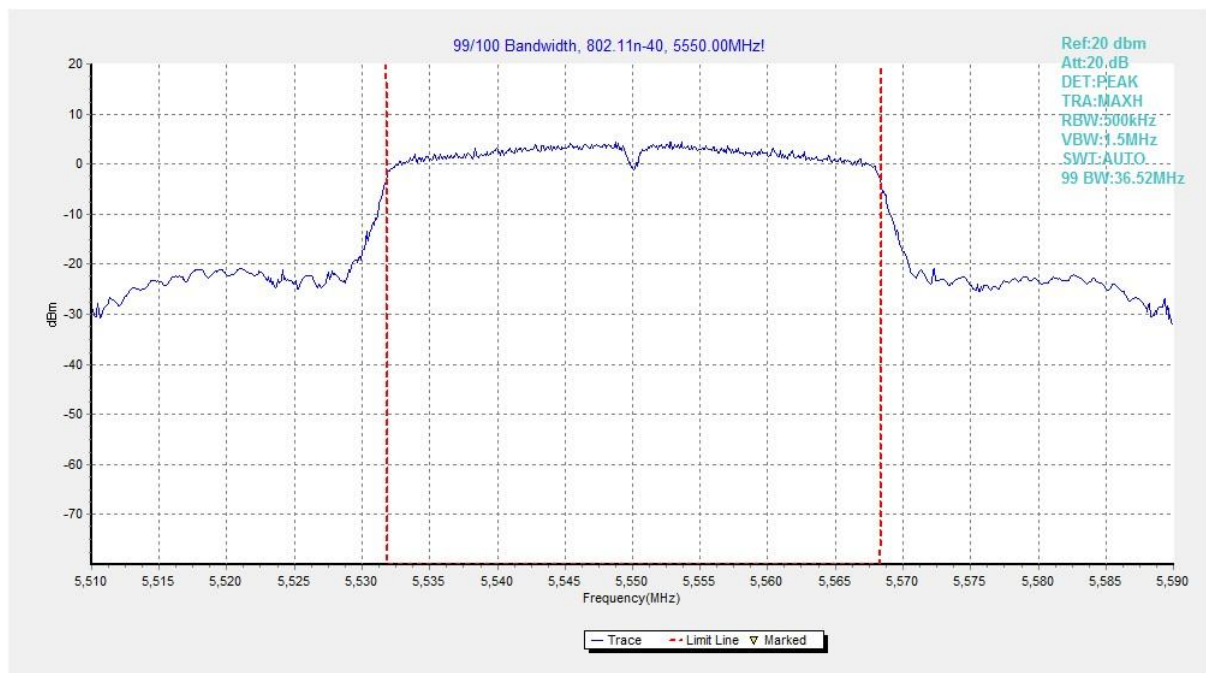


Fig. 44 99% Occupied Bandwidth (802.11n-HT40, 5550MHz)

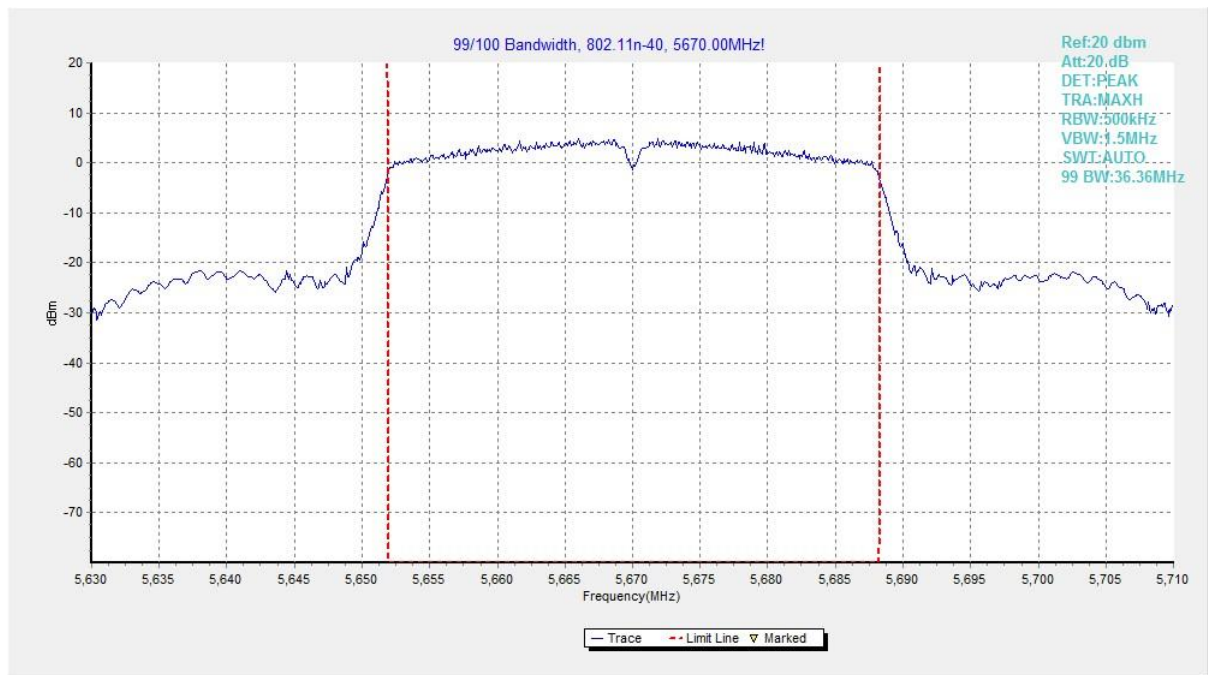


Fig. 45 99% Occupied Bandwidth (802.11n-HT40, 5670MHz)

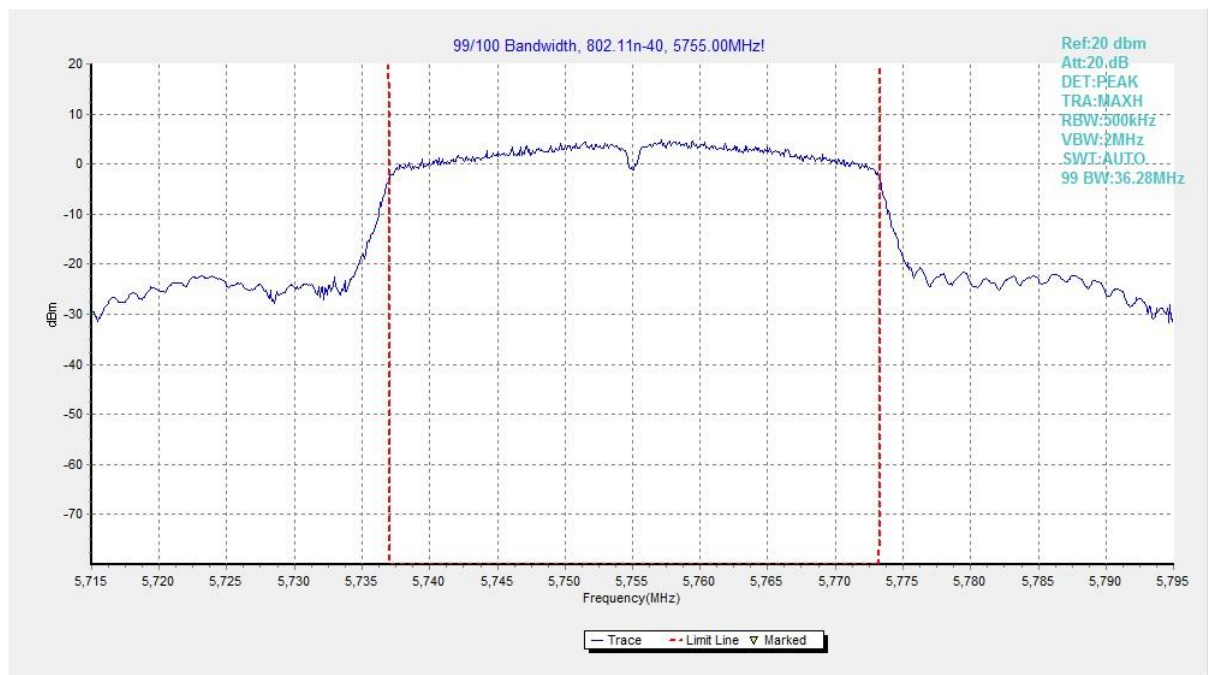


Fig. 46 99% Occupied Bandwidth (802.11n-HT40, 5755MHz)

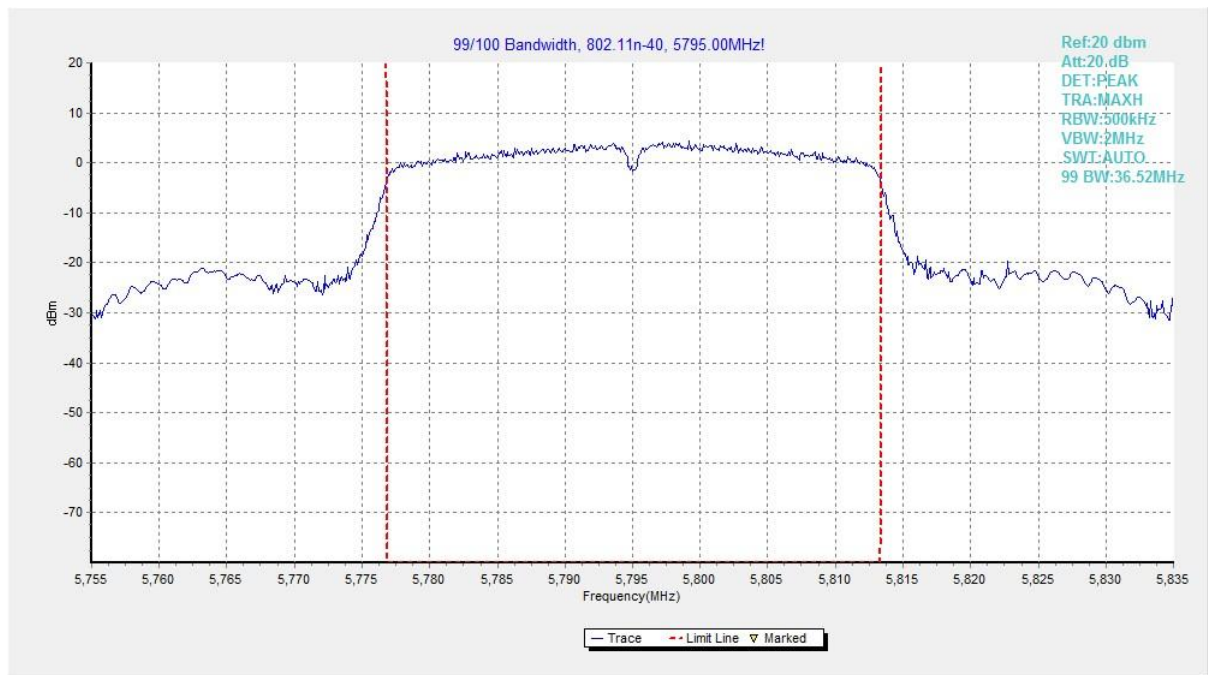


Fig. 47 99% Occupied Bandwidth (802.11n-HT40, 5795MHz)

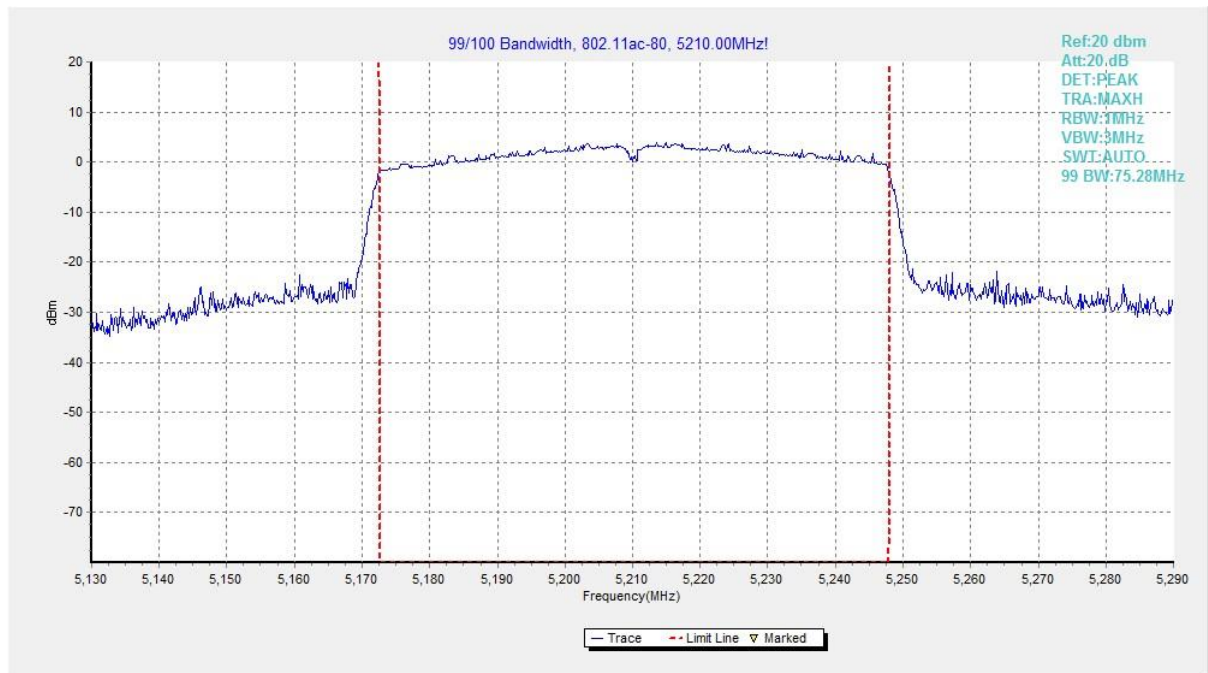


Fig. 48 99% Occupied Bandwidth (802.11ac-VHT80, 5210MHz)

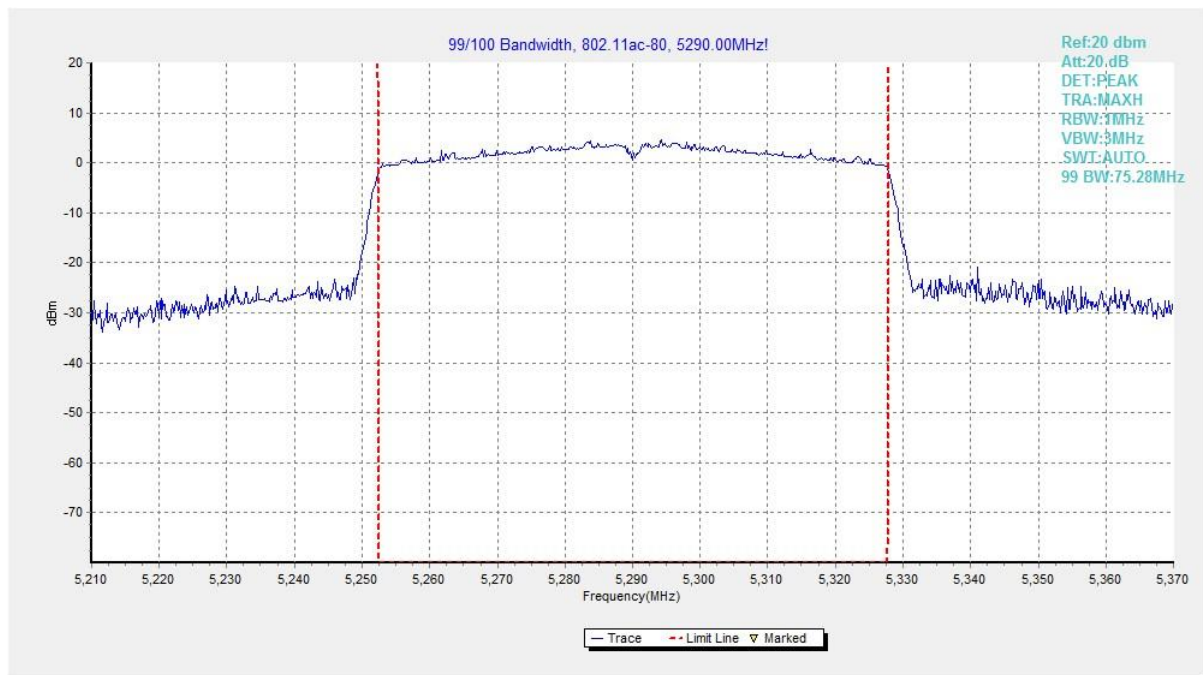


Fig. 49 99% Occupied Bandwidth (802.11ac-VHT80, 5290MHz)

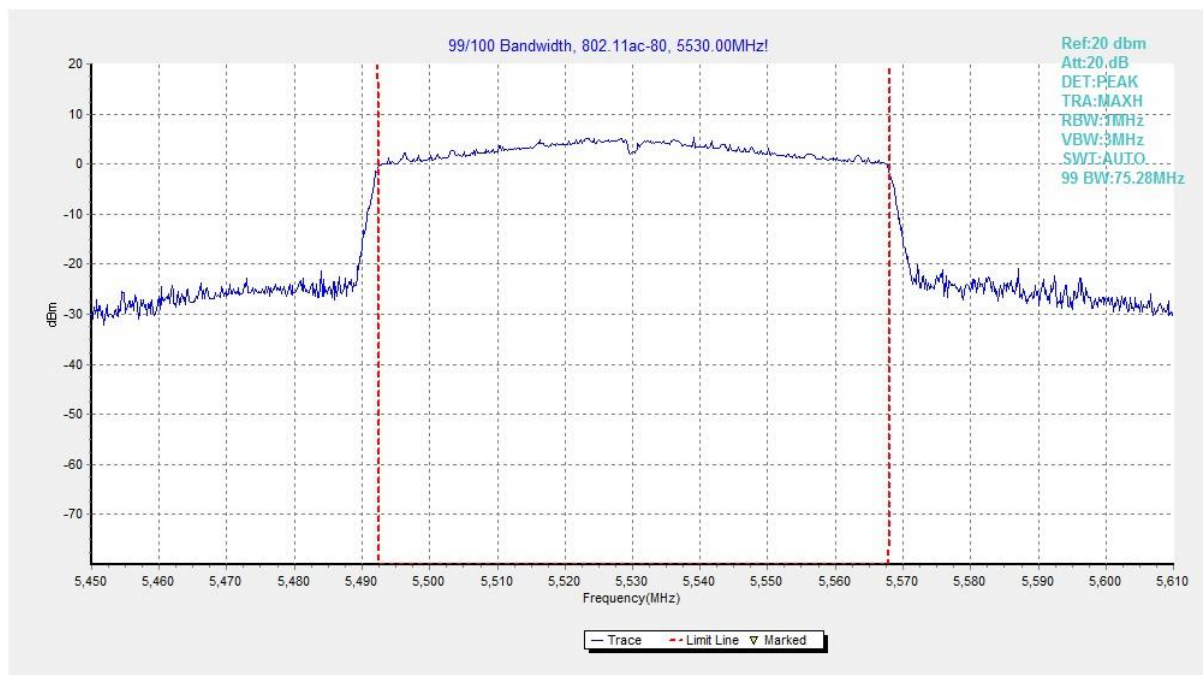


Fig. 50 99% Occupied Bandwidth (802.11ac-VHT80, 5530MHz)

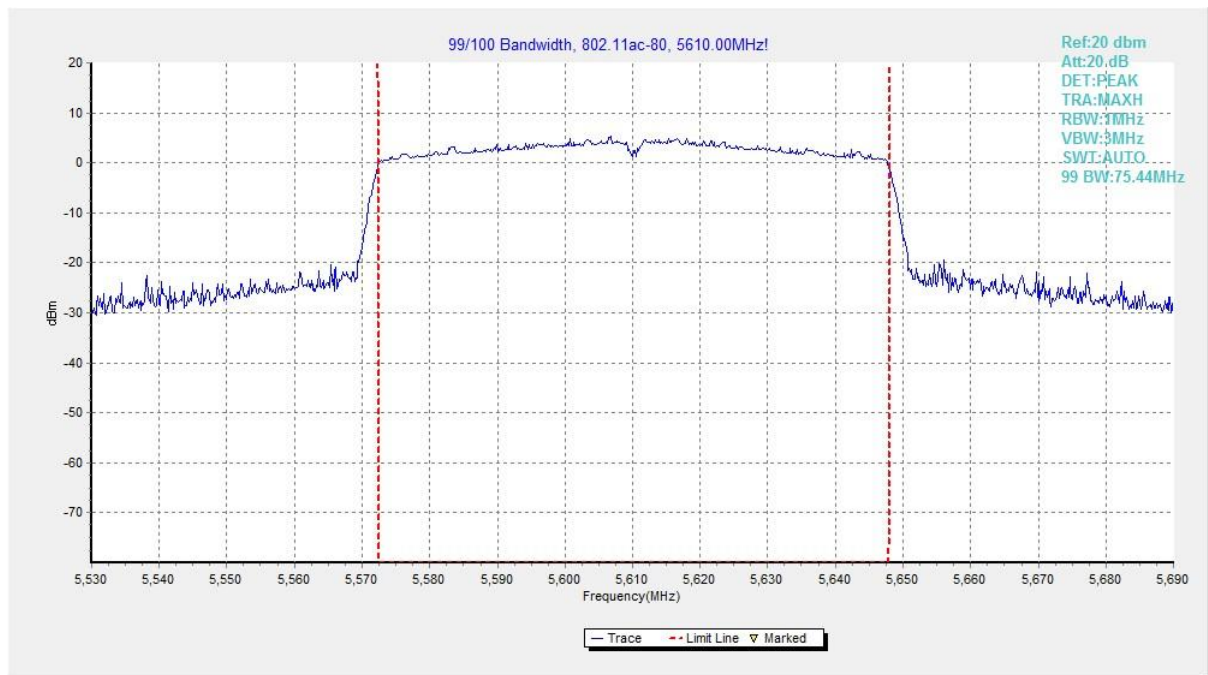


Fig. 51 99% Occupied Bandwidth (802.11ac-VHT80, 5610MHz)

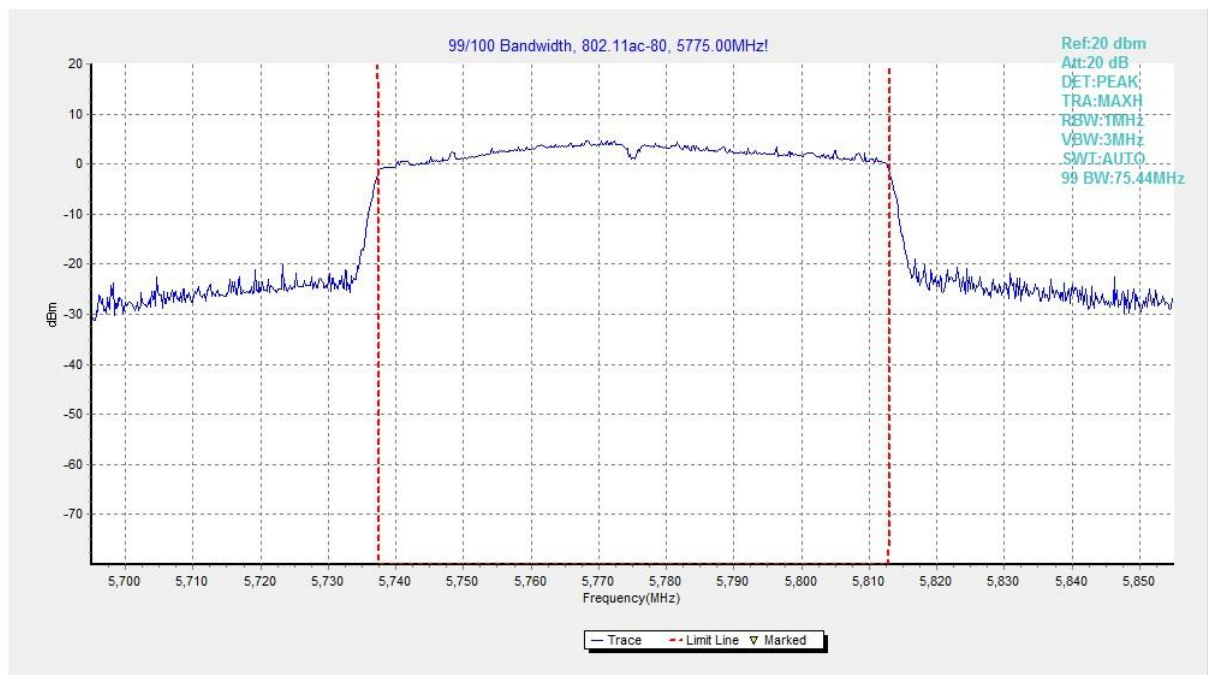


Fig. 52 99% Occupied Bandwidth (802.11ac-VHT80, 5775MHz)

A.7. Band Edges Compliance

Measurement Limit:

Standard	Limit (dBuV/m)	
FCC 47 CFR Part 15.209	Peak	74
	Average	54

The measurement is made according to KDB 789033.

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz (CH36)	Fig.53	P
	5320 MHz (CH64)	Fig.54	P
	5500 MHz (CH100)	Fig.55	P
	5700 MHz (CH140)	Fig.56	P
	5745 MHz (CH149)	Fig.57	P
	5825 MHz (CH165)	Fig.58	P
802.11n HT40	5190 MHz (CH38)	Fig.59	P
	5310 MHz (CH62)	Fig.60	P
	5510 MHz (CH102)	Fig.61	P
	5670 MHz (CH134)	Fig.62	P
	5755 MHz (CH151)	Fig.63	P
	5795 MHz (CH159)	Fig.64	P
802.11ac VHT80	5210 MHz (CH42)	Fig.65	P
	5290 MHz (CH58)	Fig.66	P
	5530 MHz (CH106)	Fig.67	P
	5610MHz (Ch122)	Fig.68	P
	5775 MHz (CH155)	Fig.69	P

Conclusion: PASS

Test graphs as below:

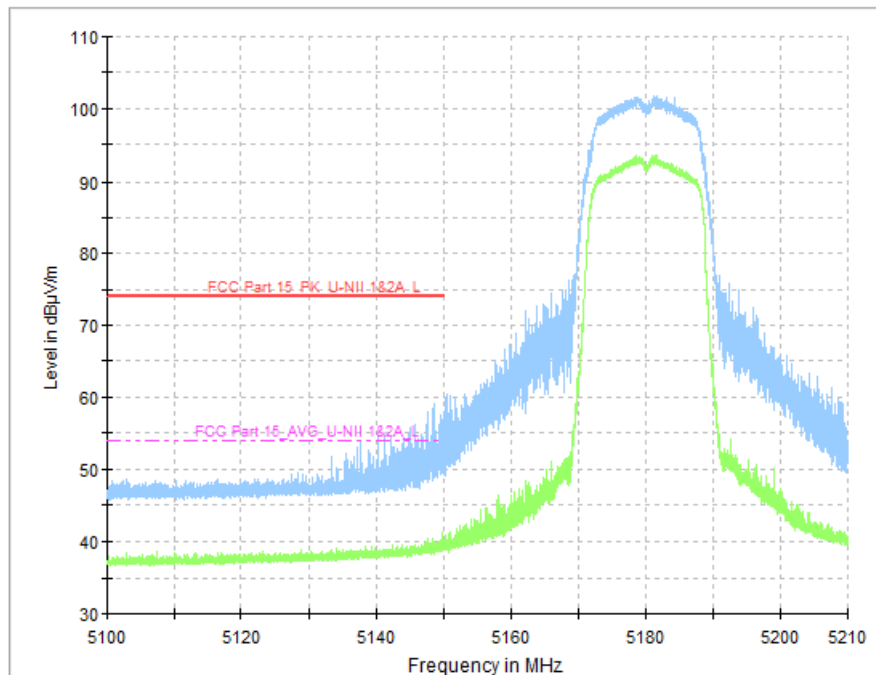


Fig. 53 Band Edges (802.11a, CH36 5180MHz)

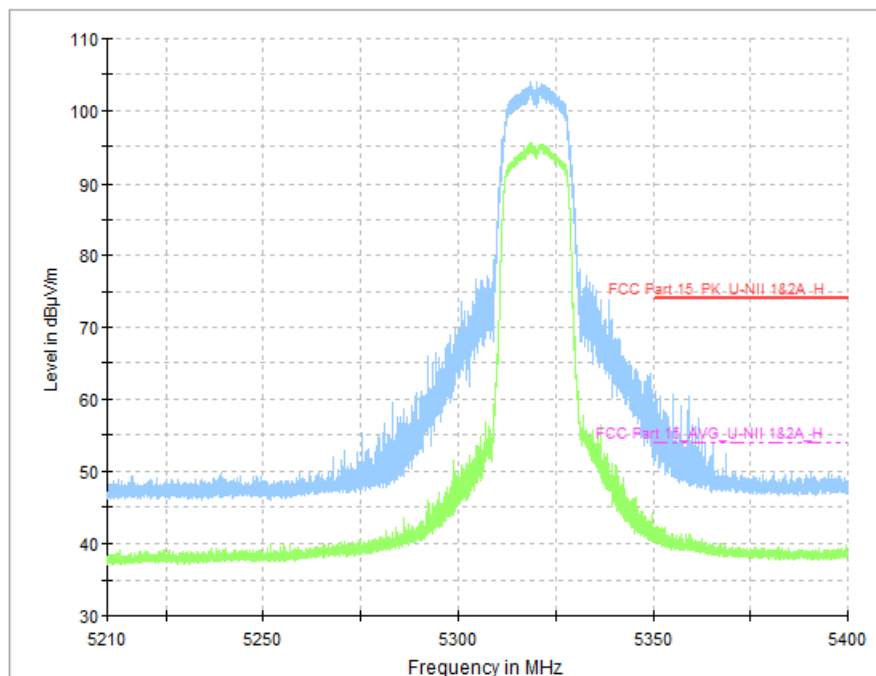


Fig. 54 Band Edges (802.11a, CH64 5320MHz)

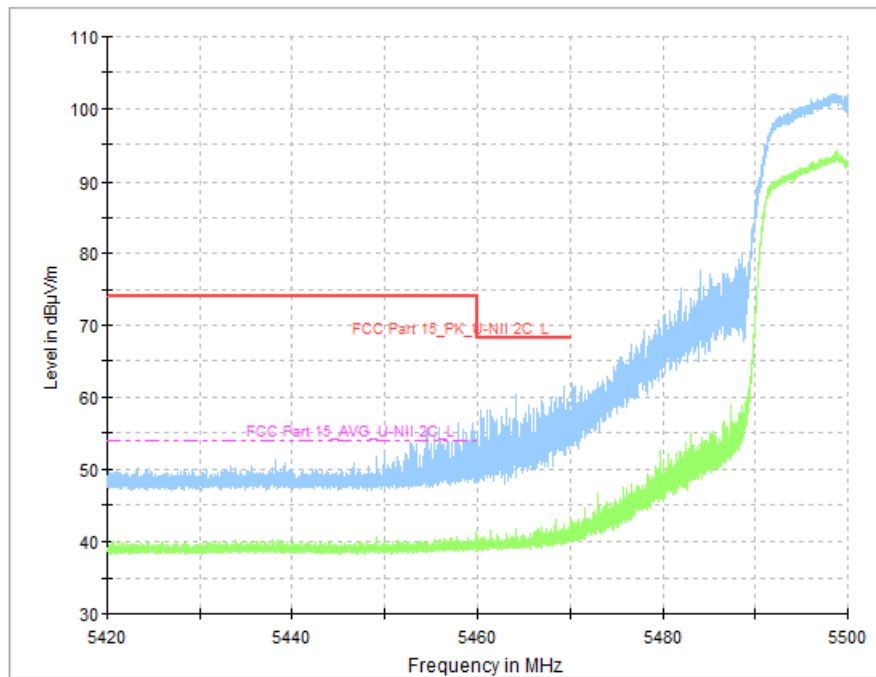


Fig. 55 Band Edges (802.11a, CH100 5500MHz)

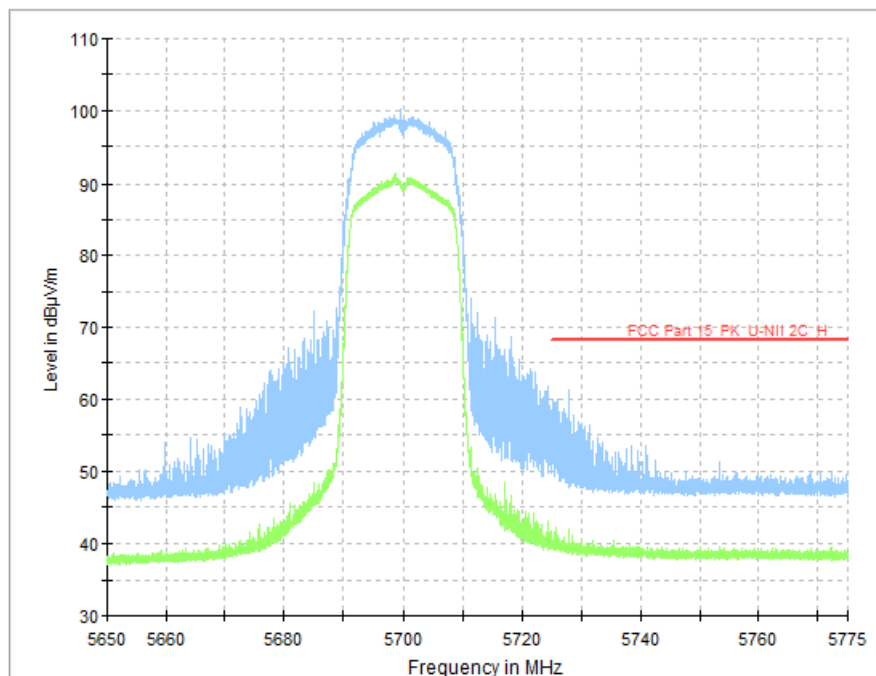


Fig. 56 Band Edges (802.11a, CH140 5700MHz)

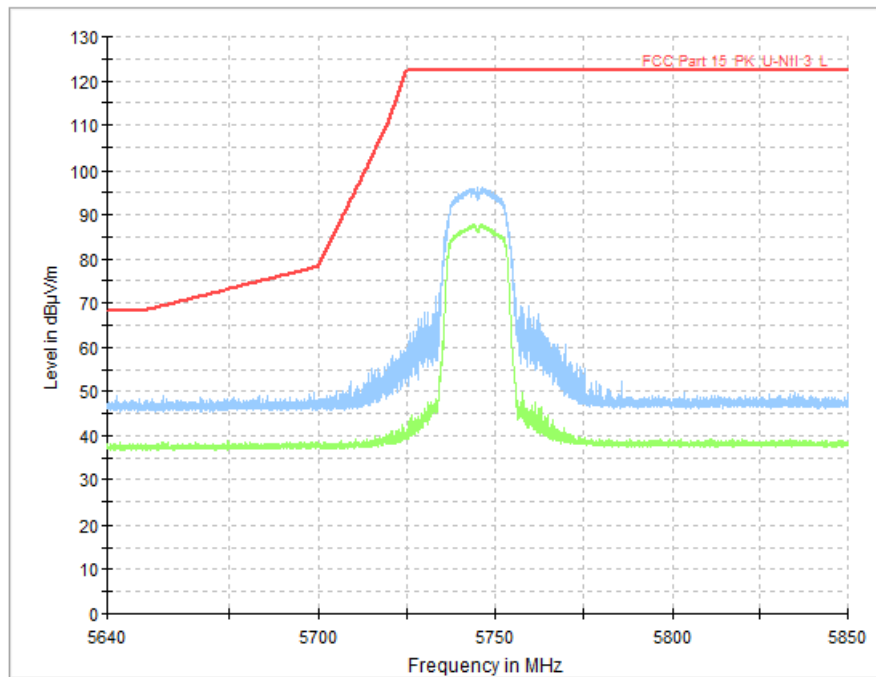


Fig. 57 Band Edges (802.11a, CH149 5745MHz)

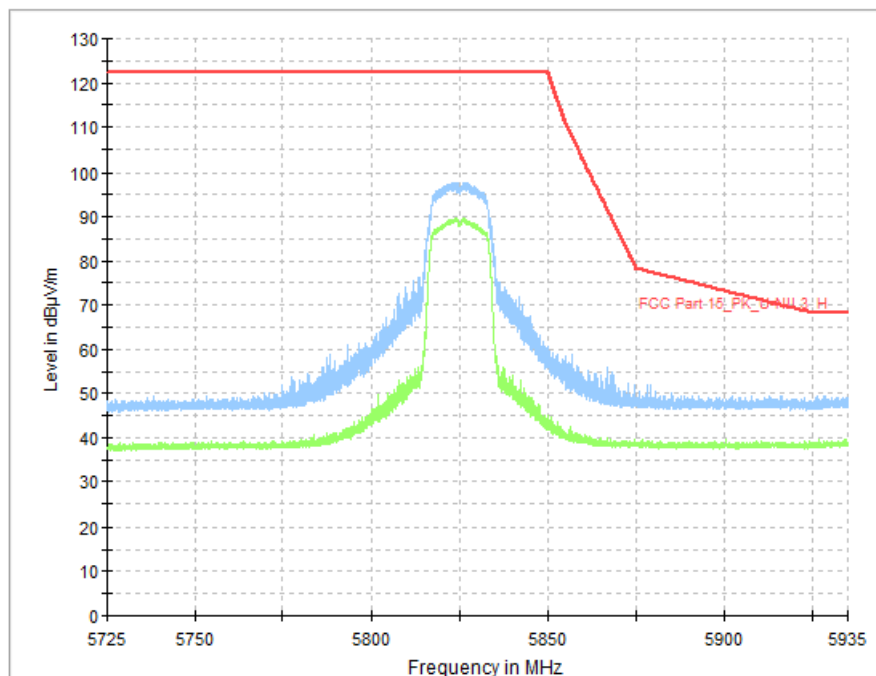


Fig. 58 Band Edges (802.11a, CH165 5825MHz)

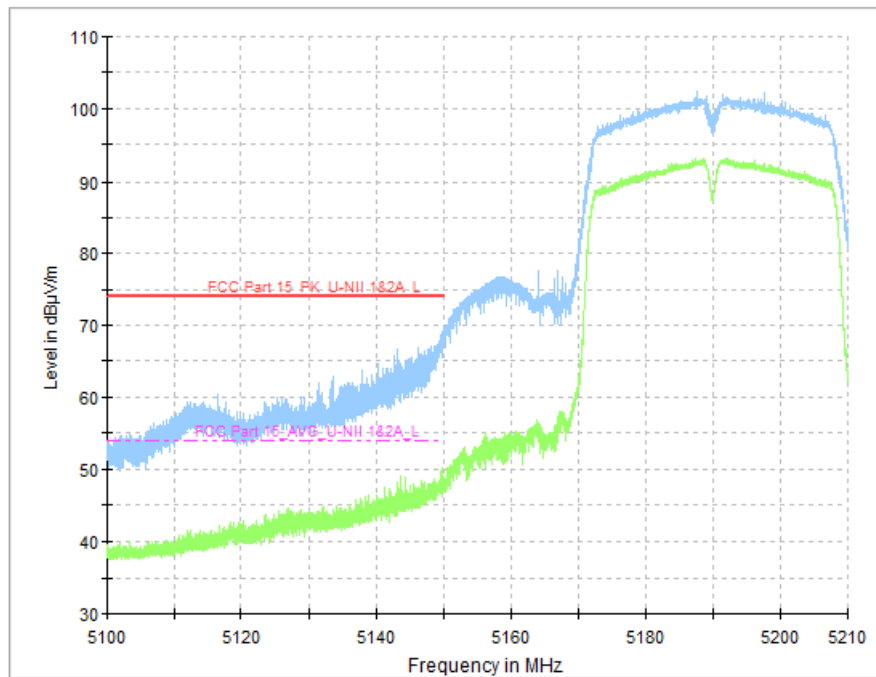


Fig. 59 Band Edges (802.11n-HT40, CH38 5190MHz)

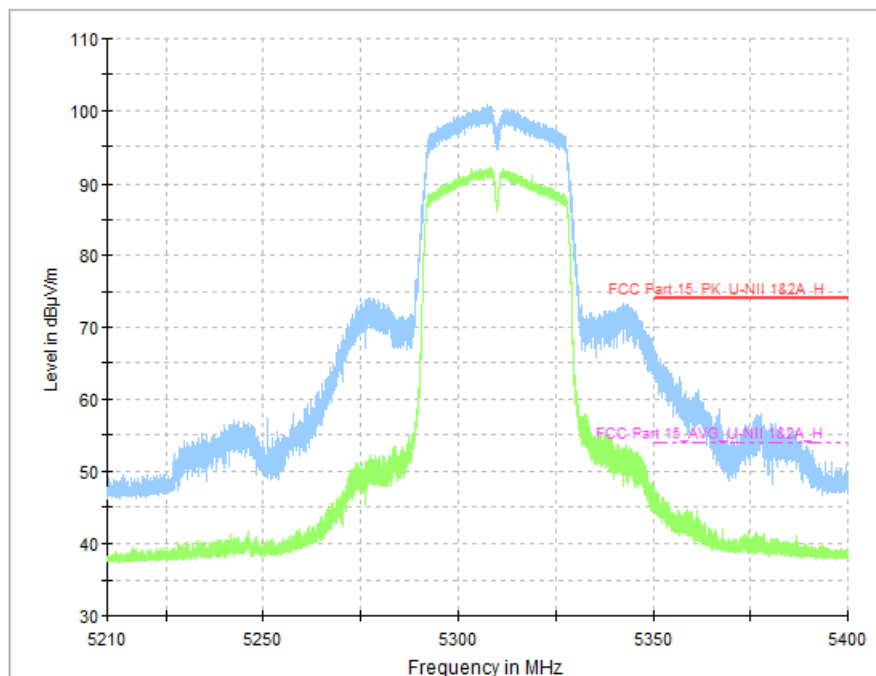


Fig. 60 Band Edges (802.11n-HT40, CH62 5310MHz)

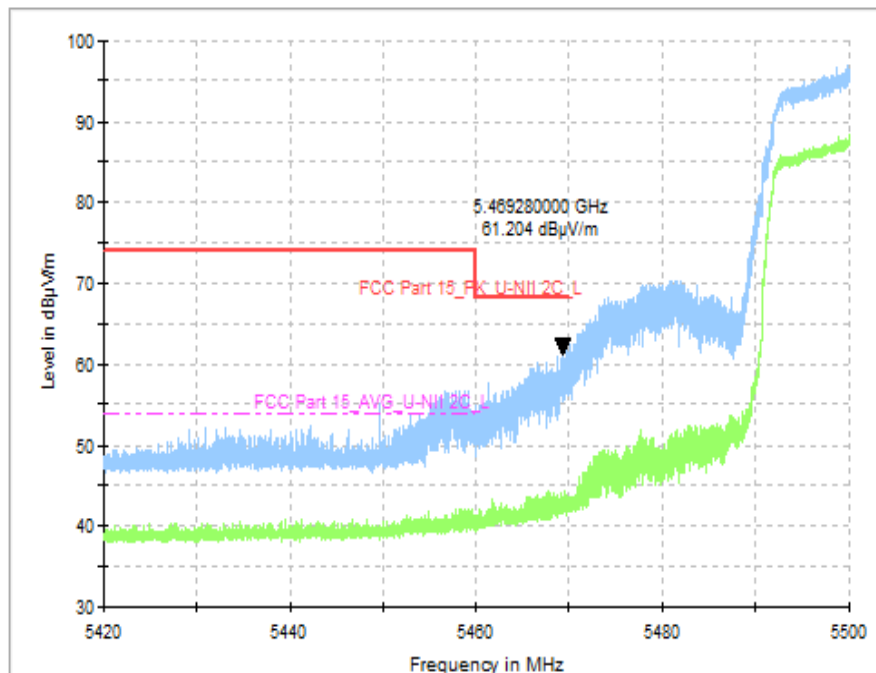


Fig. 61 Band Edges (802.11n-HT40, CH102 5510MHz)

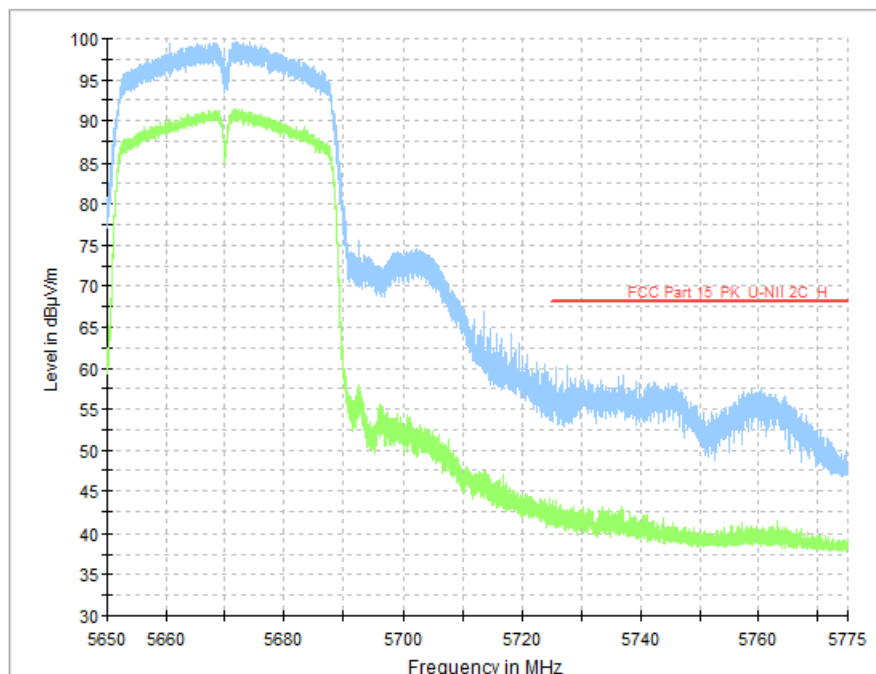


Fig. 62 Band Edges (802.11n-HT40, CH134 5670MHz)

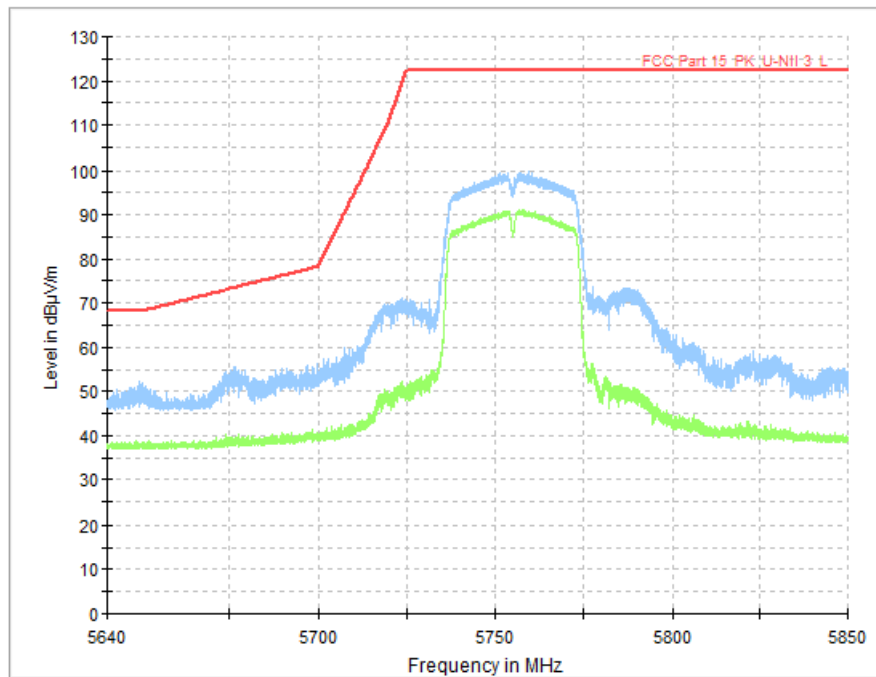


Fig. 63 Band Edges (802.11n-HT40, CH151 5755MHz)

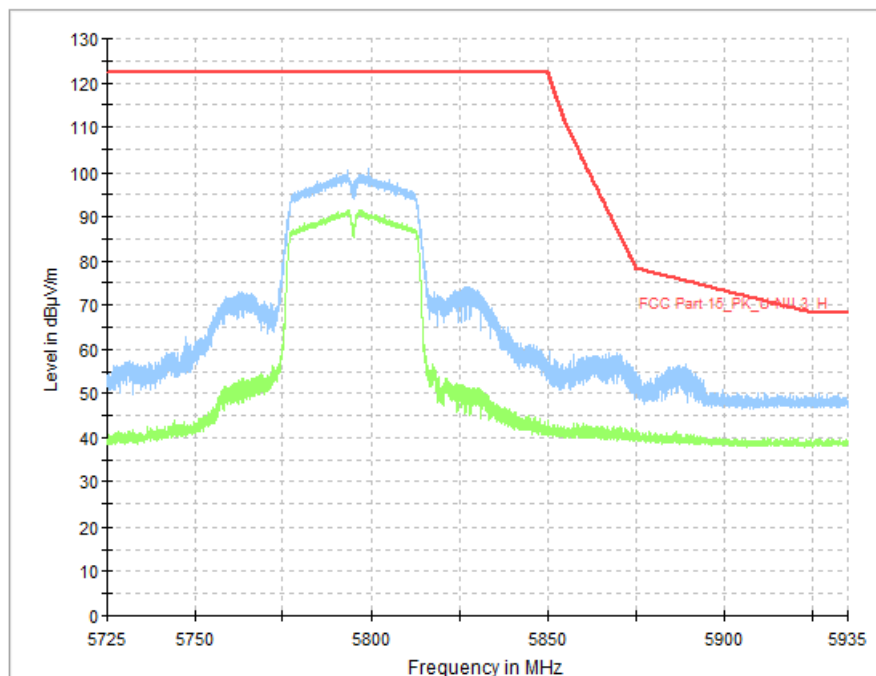


Fig. 64 Band Edges (802.11n-HT40, CH159 5795MHz)

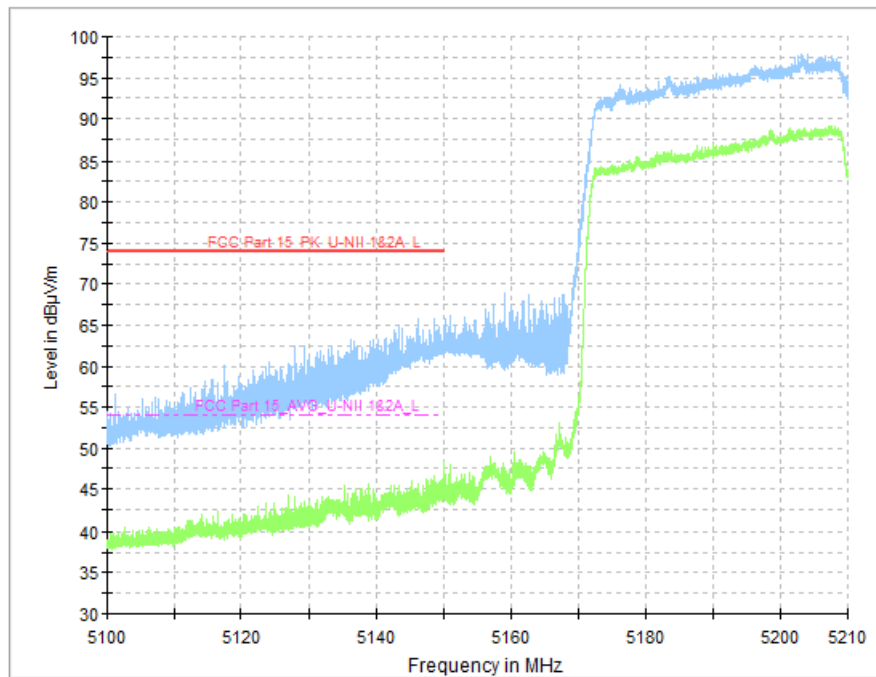


Fig. 65 Band Edges (802.11ac-VHT80, CH42 5210MHz)

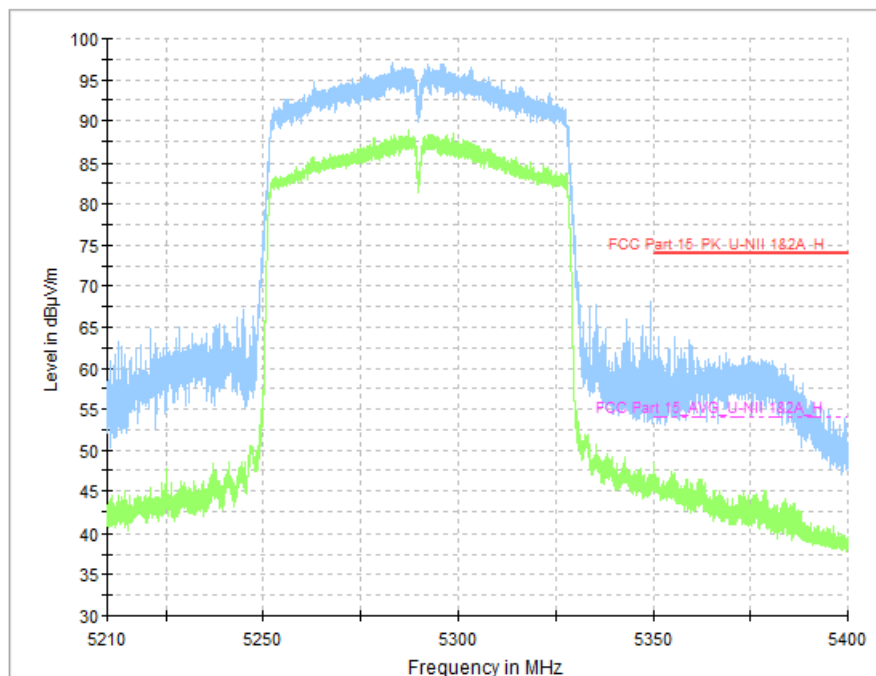


Fig. 66 Band Edges (802.11ac-VHT80, CH58 5290MHz)

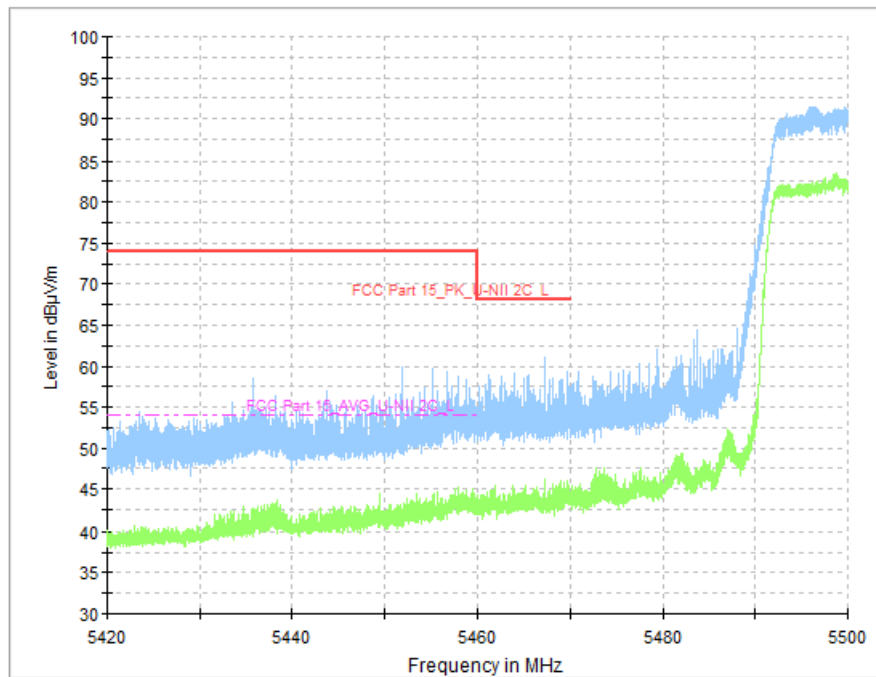


Fig. 67 Band Edges (802.11ac-VHT80, CH106 5530MHz)

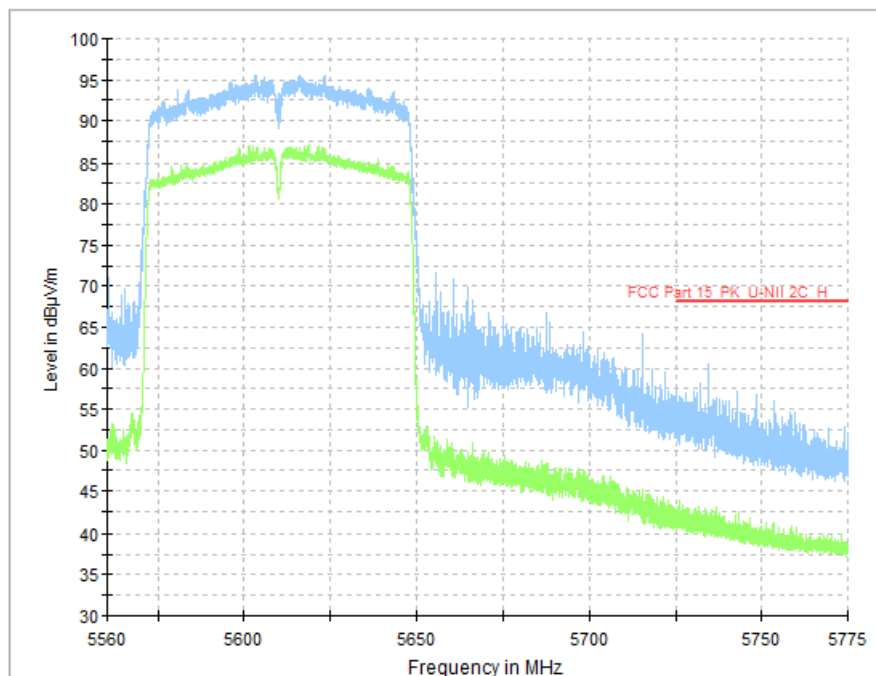


Fig. 68 Band Edges (802.11ac-VHT80, CH122 5610MHz)

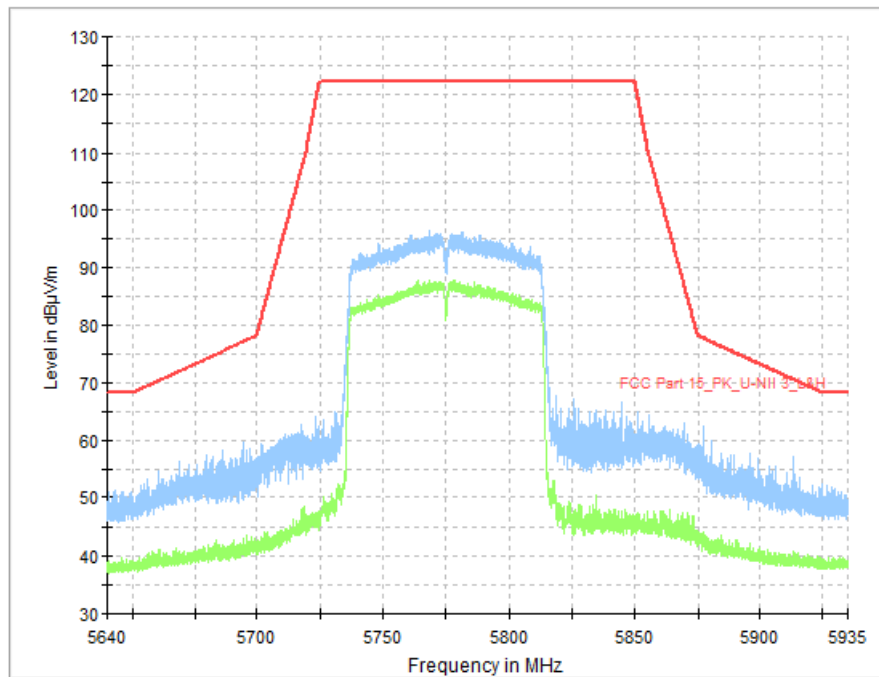


Fig. 69 Band Edges (802.11ac-VHT80, CH155 5775MHz)

A.8. Transmitter Spurious Emission

Measurement Limit:

Standard	Limit (dBm/MHz)
FCC 47 CFR Part 15.407, 15.205	< -27

The measurement is made according to KDB 789033.

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength (dBμV/m)	Measurement distance (m)
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

Note: For frequency range below 960MHz, the limit in 15.209 is defined in 10m test distance. The limit used above is calculated from 10m to 3m.

Measurement Result:

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	5180MHz (Ch36)	1 GHz ~ 18 GHz	Fig.70	P
	5200MHz (Ch40)	1 GHz ~ 18 GHz	Fig.71	P
	5240MHz (Ch48)	1 GHz ~ 18 GHz	Fig.72	P
	5260MHz (Ch52)	1 GHz ~ 18 GHz	Fig.73	P
	5280MHz (Ch56)	1 GHz ~ 18 GHz	Fig.74	P
	5320MHz (Ch64)	1 GHz ~ 18 GHz	Fig.75	P
	5500MHz(Ch100)	1 GHz ~ 18 GHz	Fig.76	P
	5580MHz(Ch116)	1 GHz ~ 18 GHz	Fig.77	P
	5700MHz(Ch140)	1 GHz ~ 18 GHz	Fig.78	P
	5745MHz (Ch149)	1 GHz ~ 18 GHz	Fig.79	P
	5785MHz (Ch157)	1 GHz ~ 18 GHz	Fig.80	P
	5825MHz (Ch165)	1 GHz ~ 18 GHz	Fig.81	P
802.11n HT40	5190MHz (Ch38)	1 GHz ~ 18 GHz	Fig.82	P
	5230MHz (Ch46)	1 GHz ~ 18 GHz	Fig.83	P
	5270MHz (Ch54)	1 GHz ~ 18 GHz	Fig.84	P
	5310MHz (Ch62)	1 GHz ~ 18 GHz	Fig.85	P
	5510MHz(Ch102)	1 GHz ~ 18 GHz	Fig.86	P
	5550MHz(Ch110)	1 GHz ~ 18 GHz	Fig.87	P
	5670MHz(Ch134)	1 GHz ~ 18 GHz	Fig.88	P
	5755MHz (Ch151)	1 GHz ~ 18 GHz	Fig.89	P
	5795MHz (Ch159)	1 GHz ~ 18 GHz	Fig.90	P
802.11ac	5210MHz (Ch42)	1 GHz ~ 18 GHz	Fig.91	P

VHT80	5290MHz (Ch58)	1 GHz ~ 18 GHz	Fig.92	P
	5530MHz(Ch106)	1 GHz ~ 18 GHz	Fig.93	P
	5610MHz(Ch122)	1 GHz ~ 18 GHz	Fig.94	P
	5775MHz (Ch155)	1 GHz ~ 18 GHz	Fig.95	P
All channels		30 MHz ~ 1 GHz	Fig.96	P
		18 GHz ~ 26.5 GHz	Fig.97	P
		26.5GHz ~ 40GHz	Fig.98	P

Conclusion: PASS

Test graphs as below:

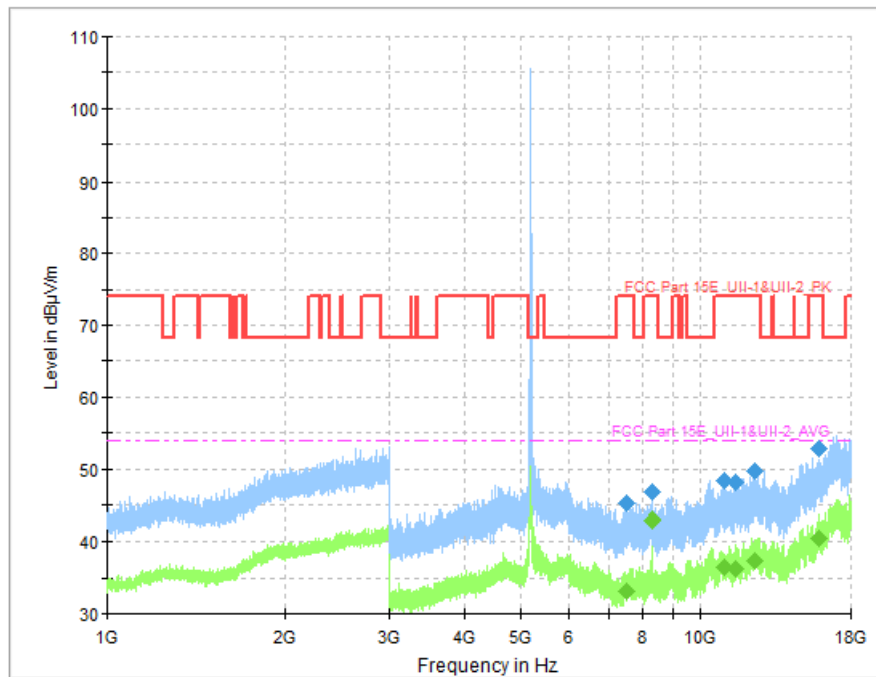


Fig. 70 Transmitter Spurious Emission (802.11a, CH36 5180MHz)

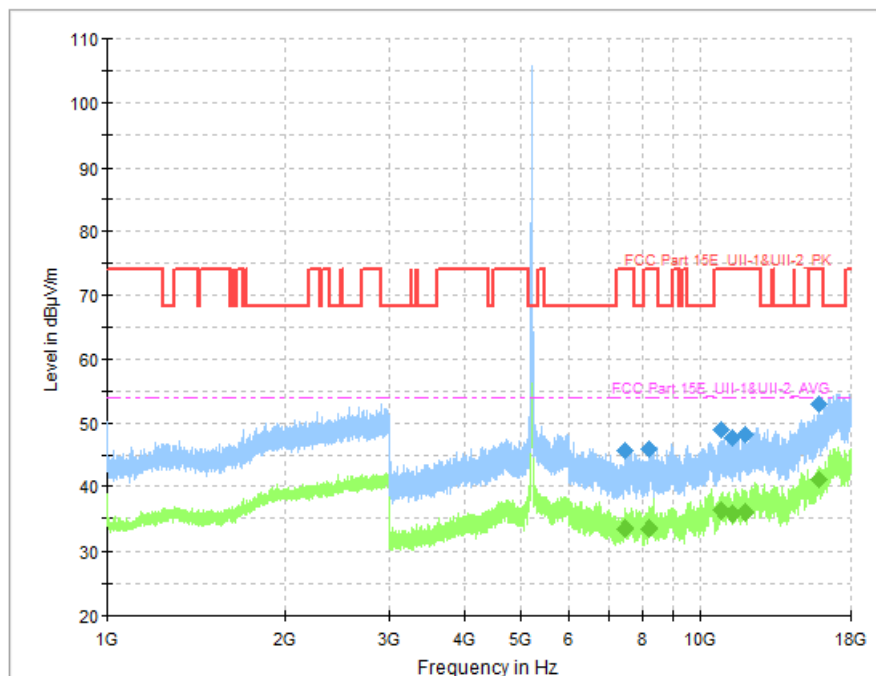


Fig. 71 Transmitter Spurious Emission (802.11a, CH40 5200MHz)

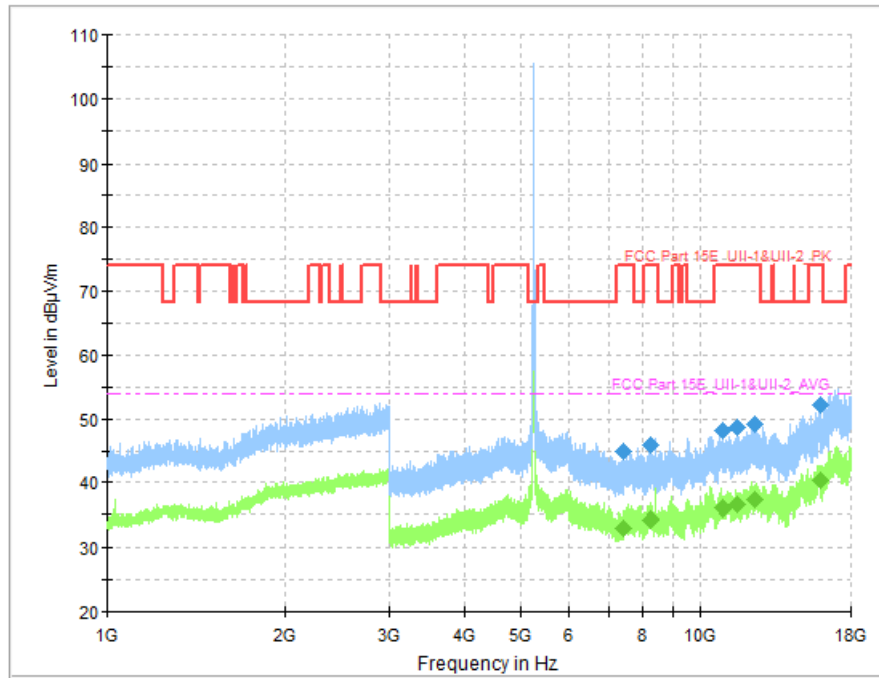


Fig. 72 Transmitter Spurious Emission (802.11a, CH48 5240MHz)

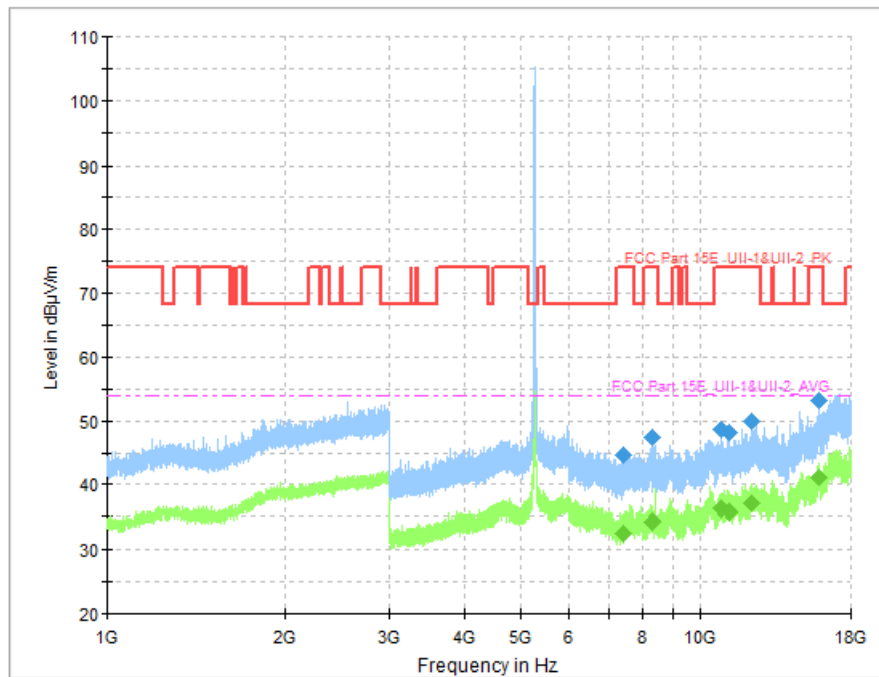


Fig. 73 Transmitter Spurious Emission (802.11a, CH52 5260MHz)

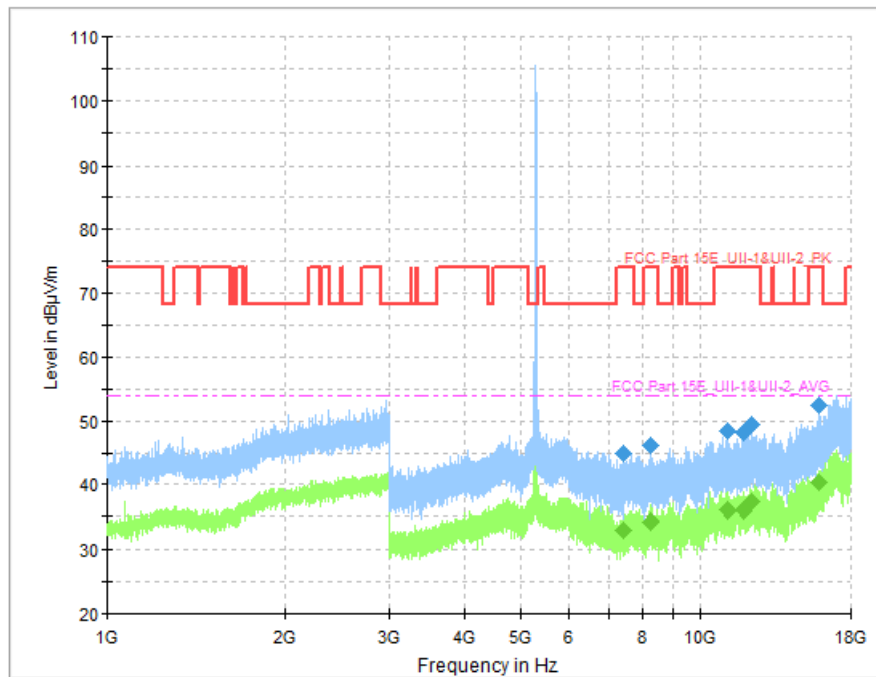


Fig. 74 Transmitter Spurious Emission (802.11a, CH56 5280MHz)

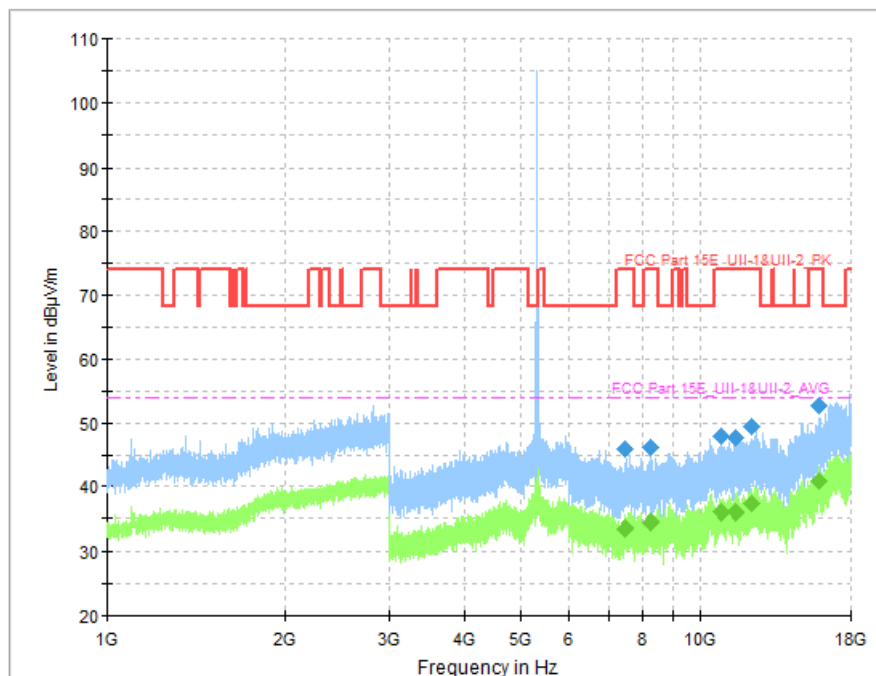


Fig. 75 Transmitter Spurious Emission (802.11a, CH64 5320MHz)

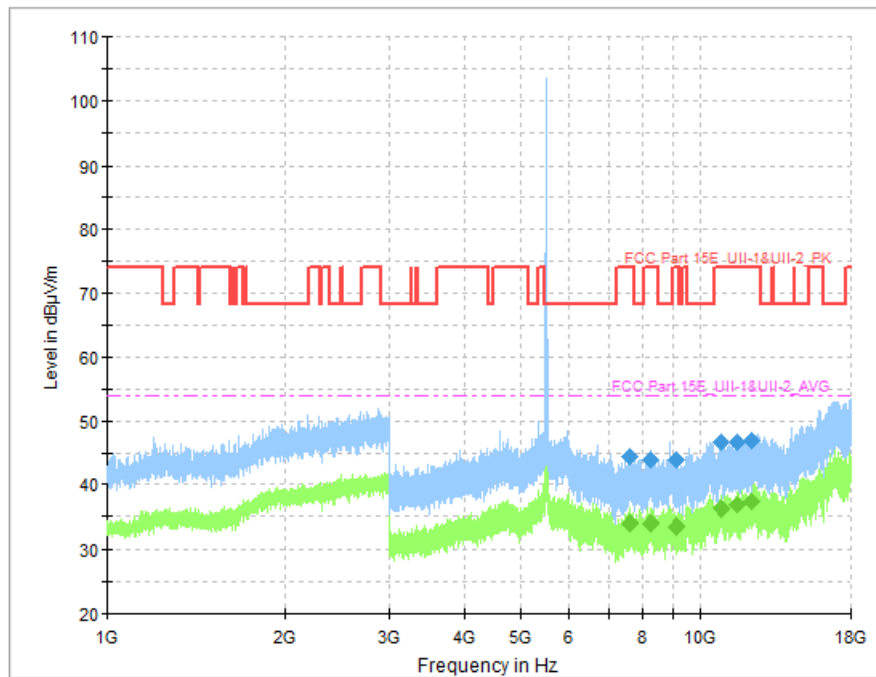


Fig. 76 Transmitter Spurious Emission (802.11a, CH100 5500MHz)

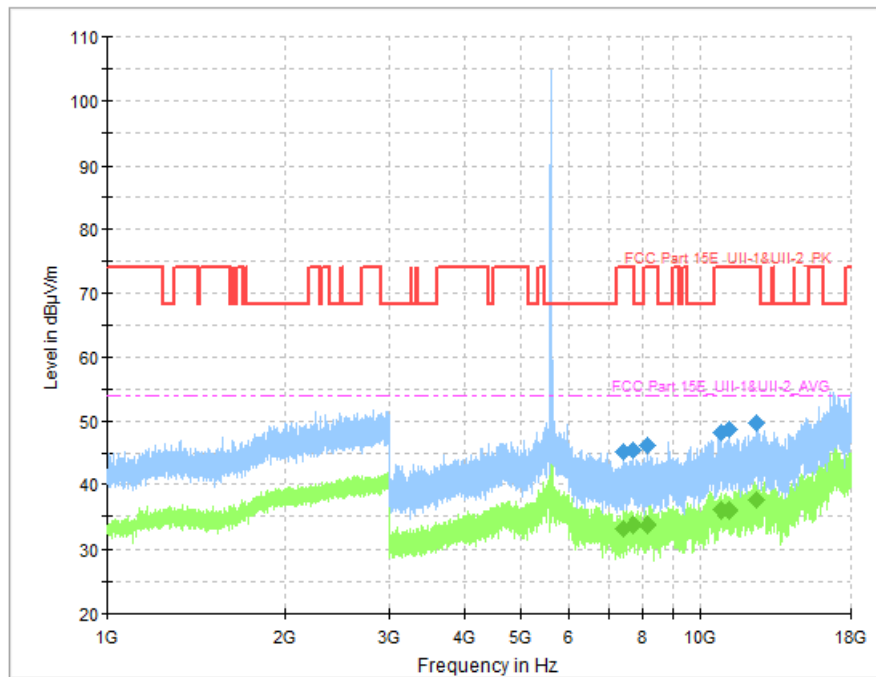


Fig. 77 Transmitter Spurious Emission (802.11a, CH116 5580MHz)

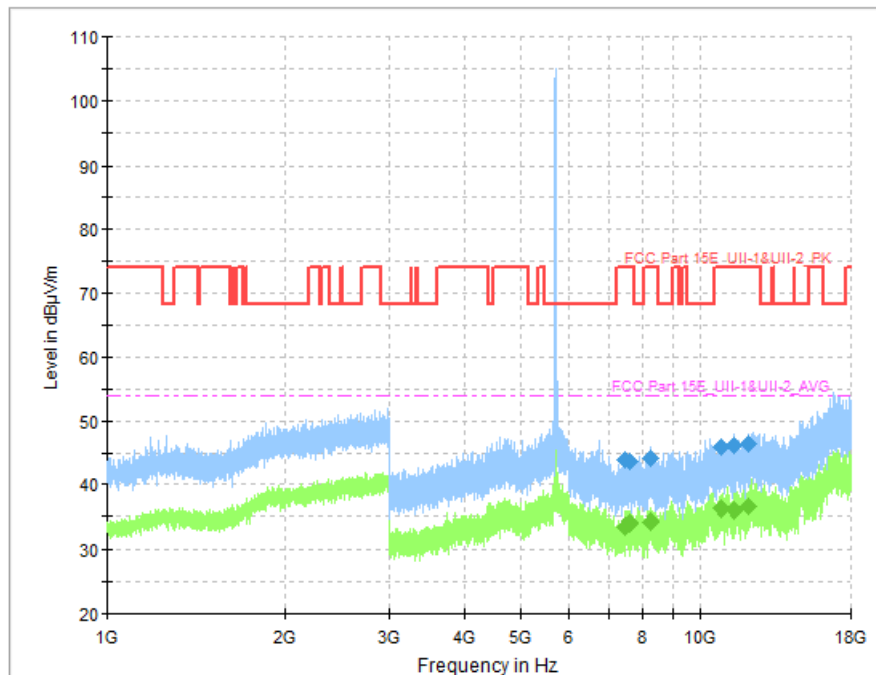


Fig. 78 Transmitter Spurious Emission (802.11a, CH140 5700MHz)

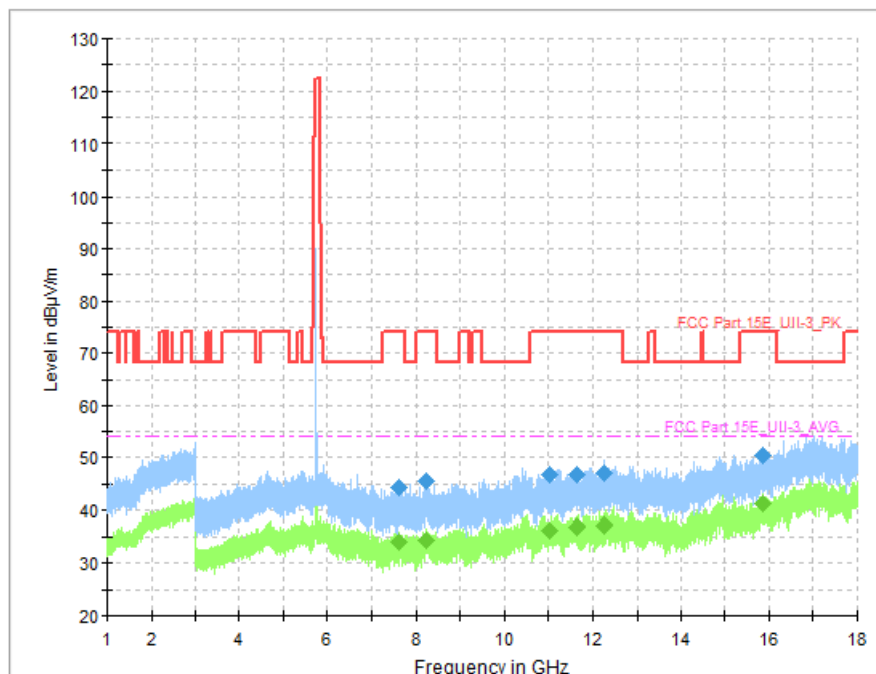


Fig. 79 Transmitter Spurious Emission (802. 11a, CH149 5745MHz)

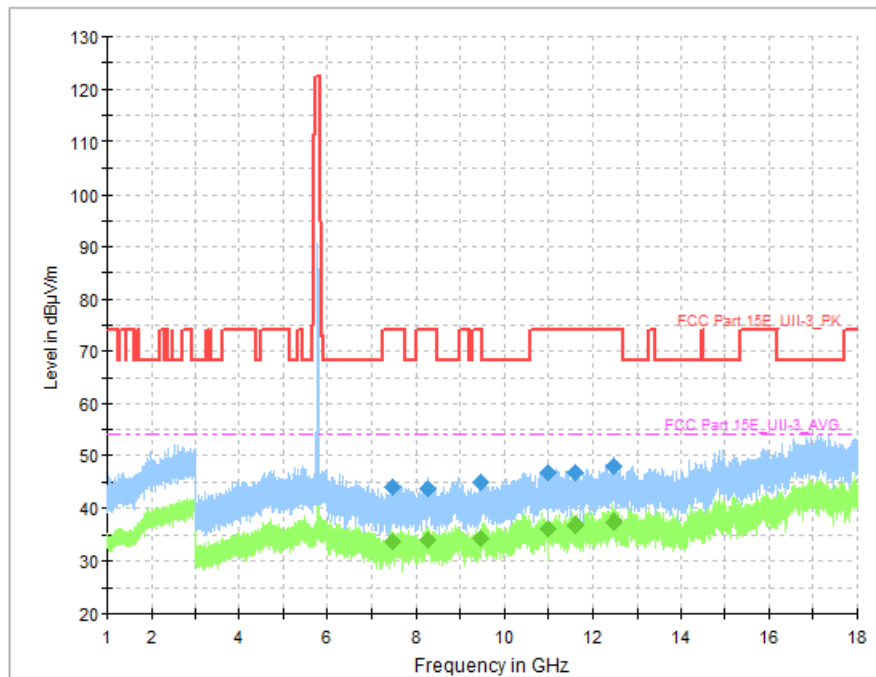


Fig. 80 Transmitter Spurious Emission (802. 11a, CH157 5785MHz)

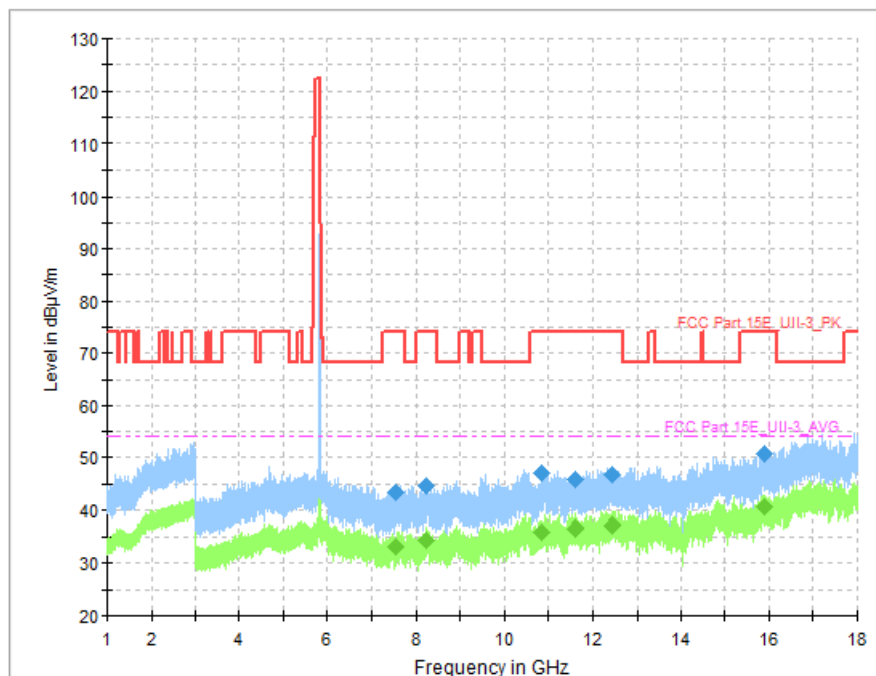


Fig. 81 Transmitter Spurious Emission (802. 11a, CH165 5825MHz)

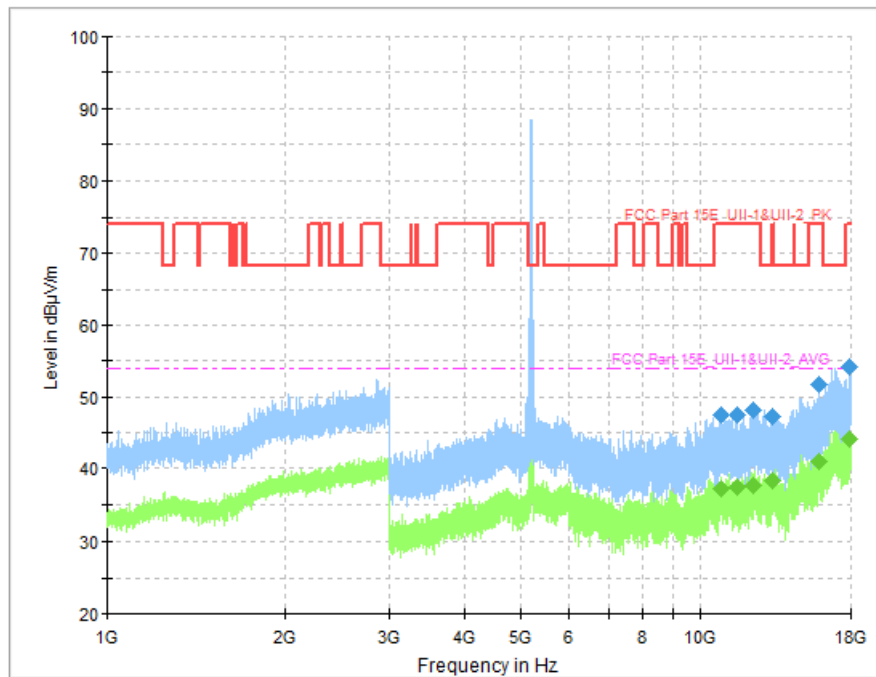


Fig. 82 Transmitter Spurious Emission (802.11n-HT40, CH38 5190MHz)

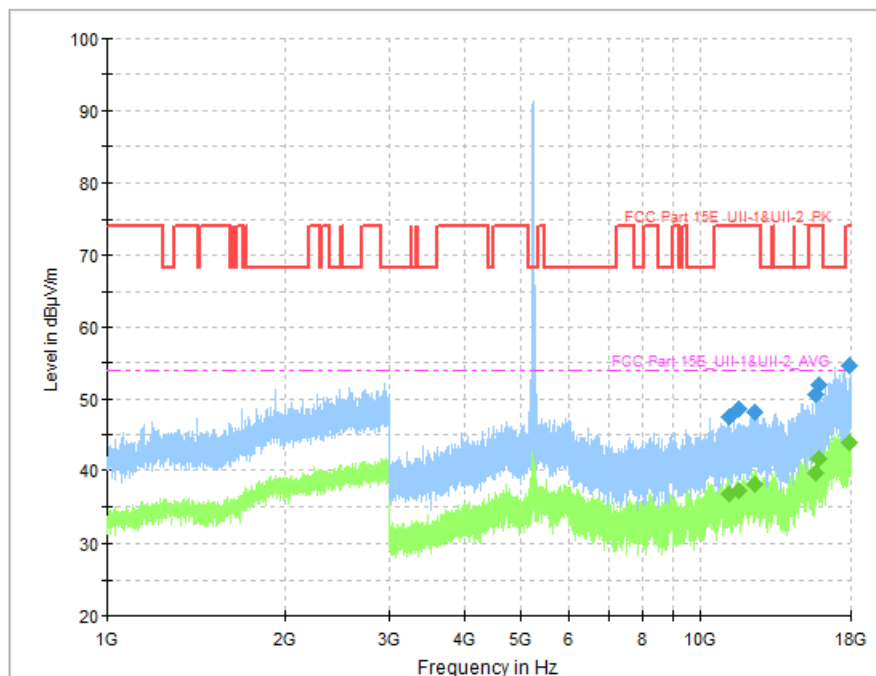


Fig. 83 Transmitter Spurious Emission (802.11n-HT40, CH46 5230MHz)

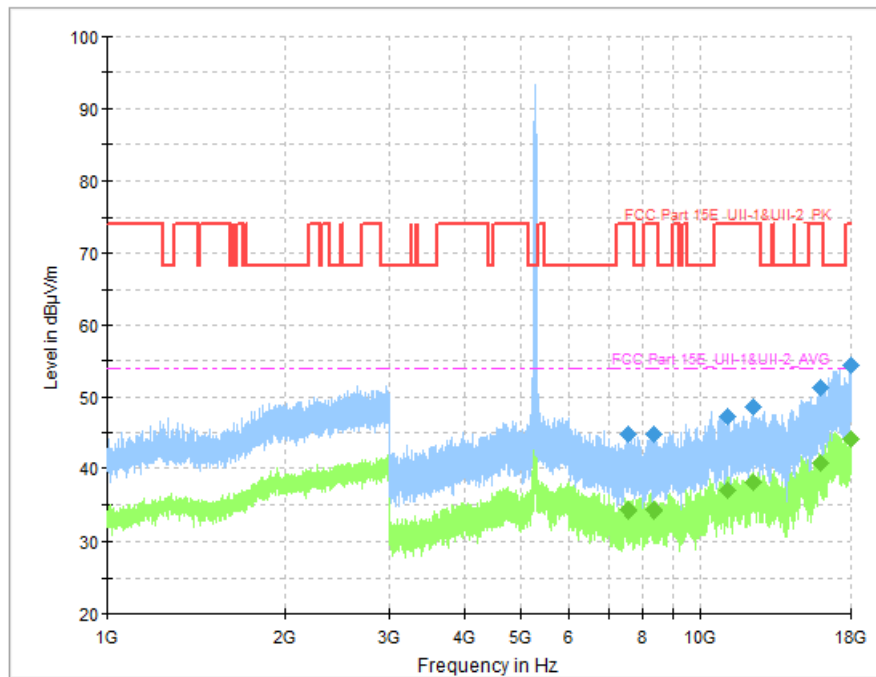


Fig. 84 Transmitter Spurious Emission (802.11n-HT40, CH54 5270MHz)

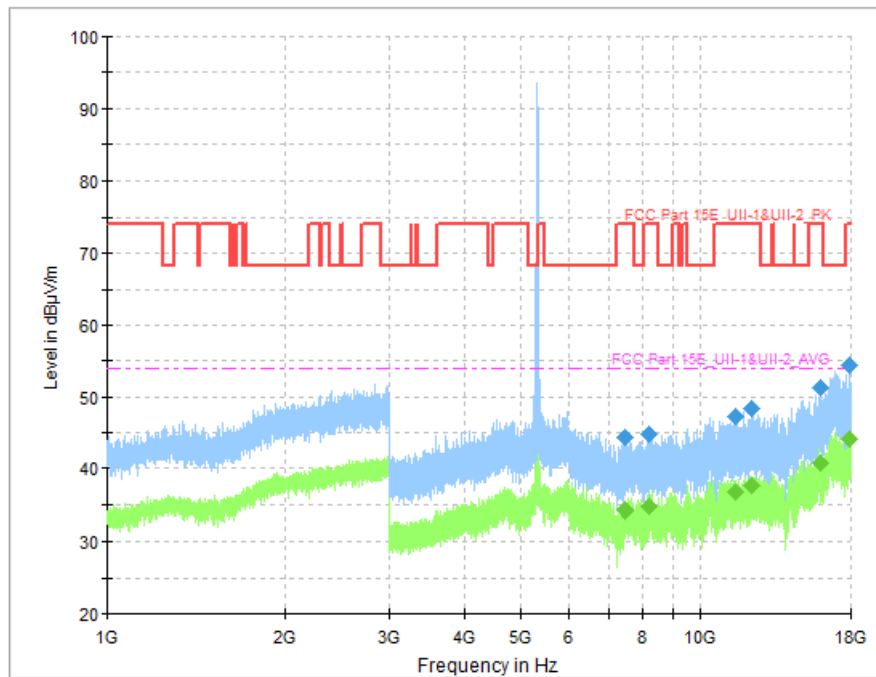


Fig. 85 Transmitter Spurious Emission (802.11n-HT40, CH62 5310MHz)

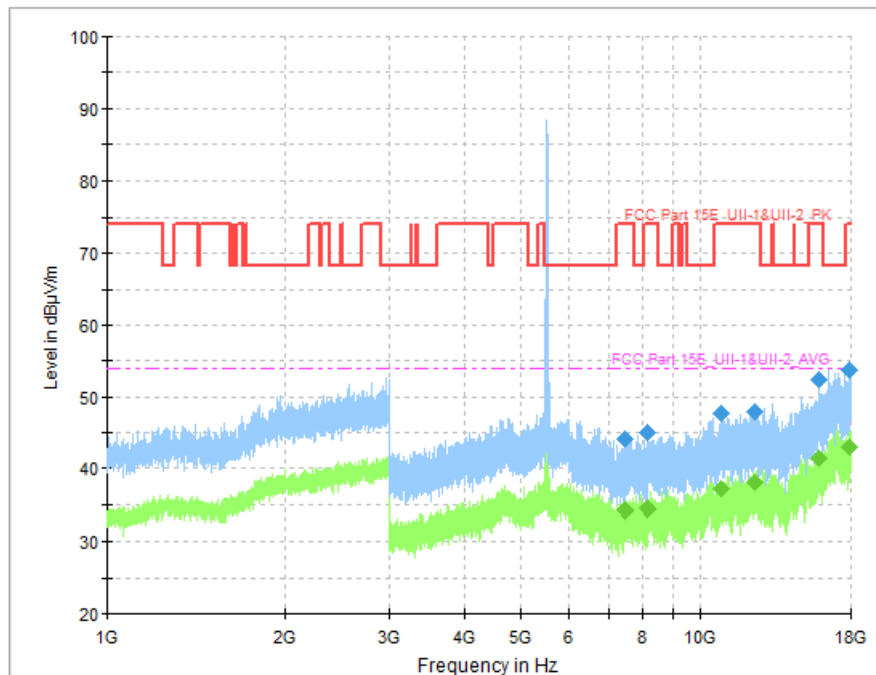


Fig. 86 Transmitter Spurious Emission (802.11n-HT40, CH102 5510MHz)

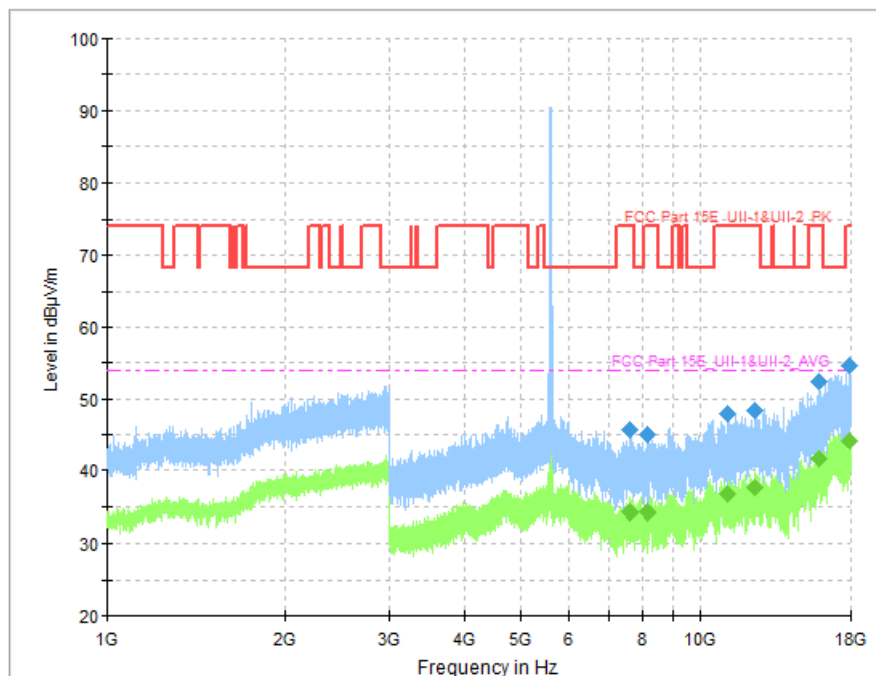


Fig. 87 Transmitter Spurious Emission (802.11n-HT40, CH110 5550MHz)

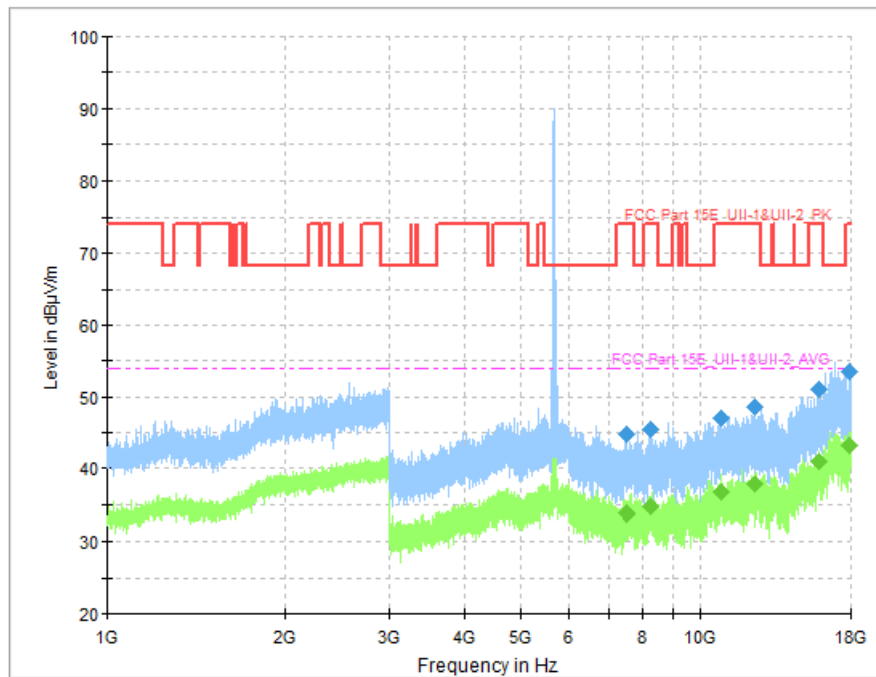


Fig. 88 Transmitter Spurious Emission (802.11n-HT40, CH134 5670MHz)

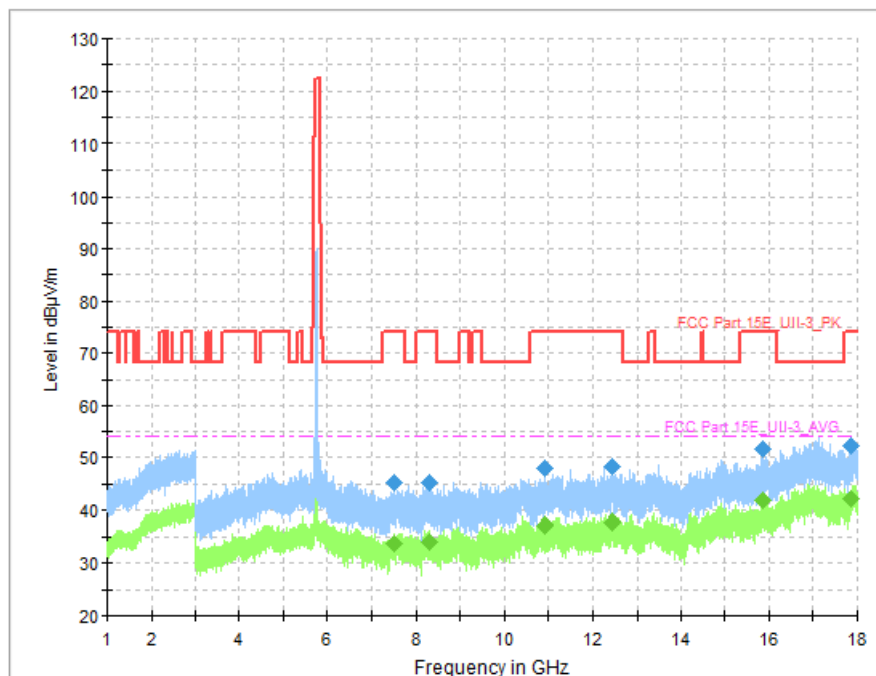


Fig. 89 Transmitter Spurious Emission (802. 11n-HT40, CH151 5755MHz)

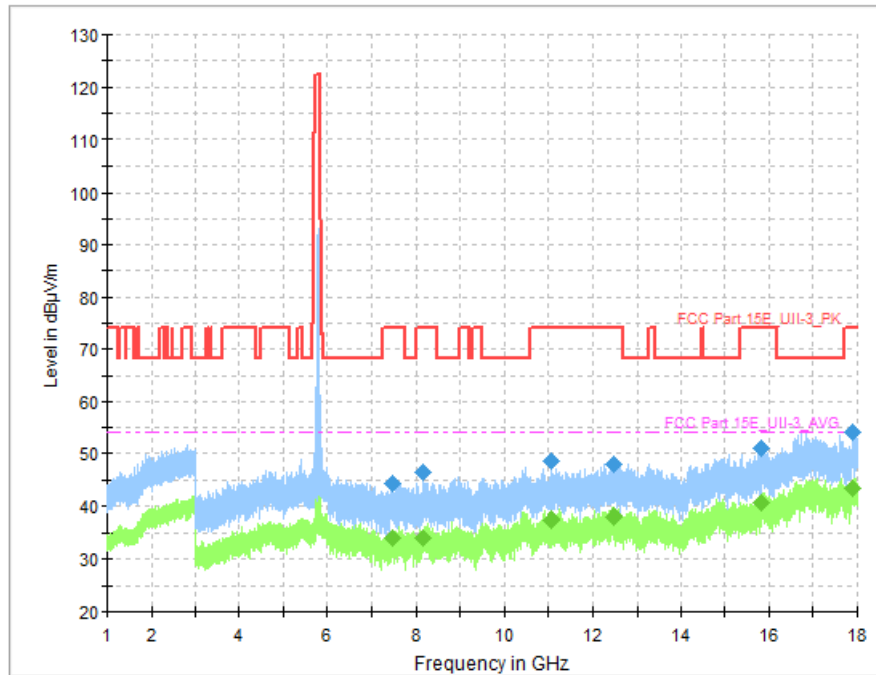


Fig. 90 Transmitter Spurious Emission (802. 11n-HT40, CH159 5795MHz)

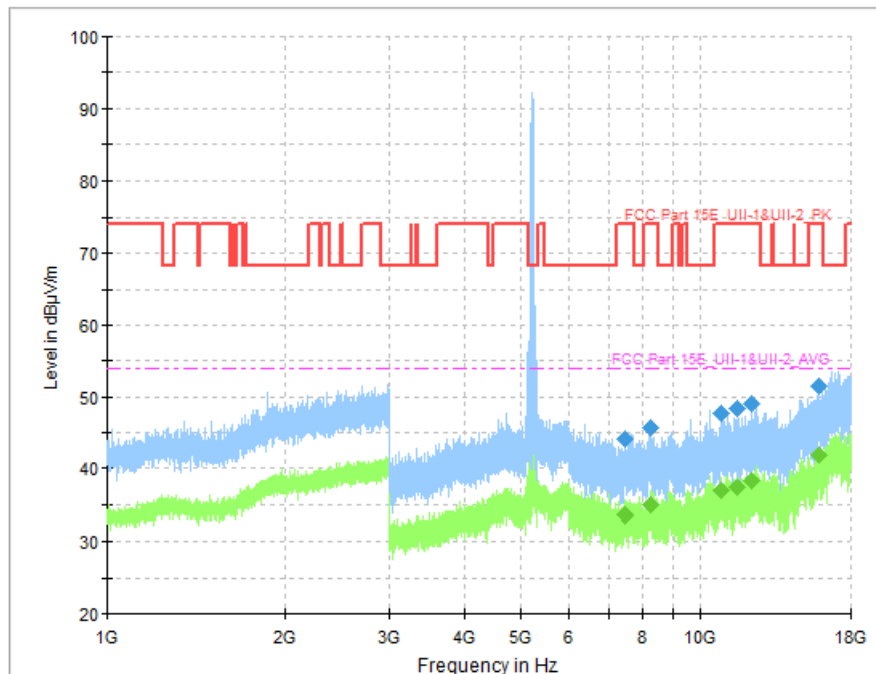


Fig. 91 Transmitter Spurious Emission (802. 11ac-VHT80, CH42 5210MHz)

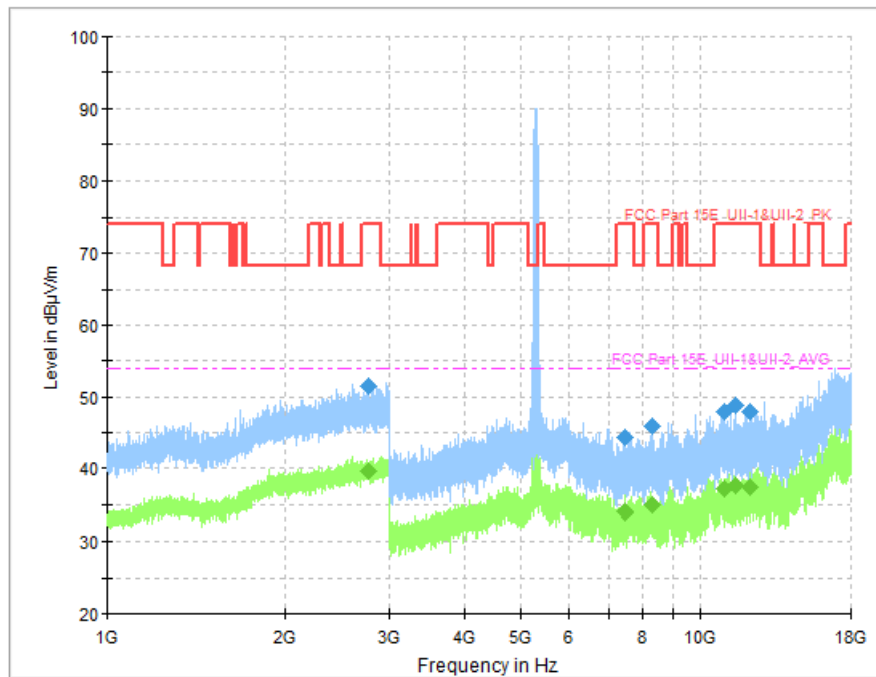


Fig. 92 Transmitter Spurious Emission (802. 11ac-VHT80, CH58 5290MHz)

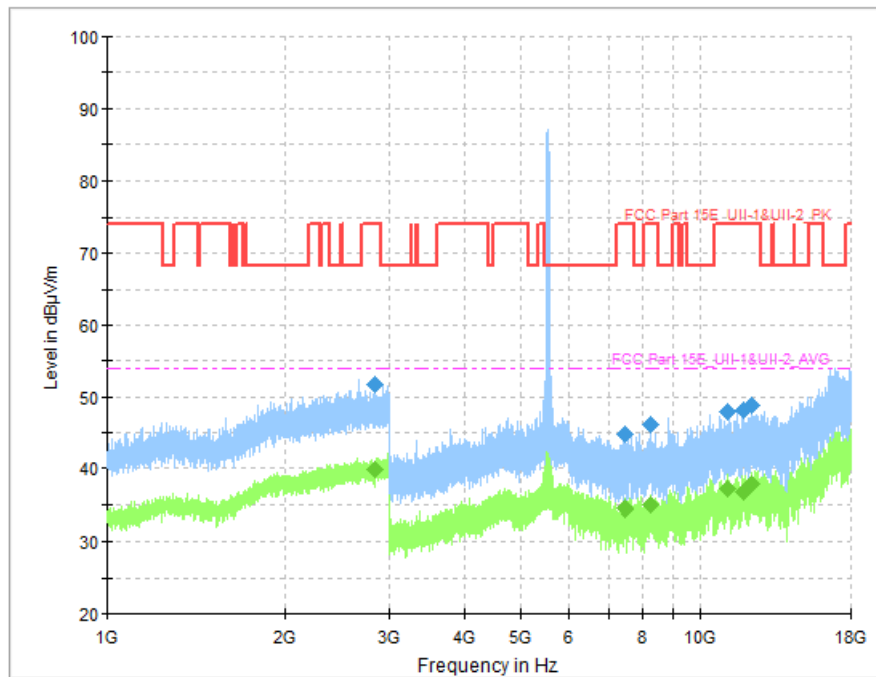


Fig. 93 Transmitter Spurious Emission (802. 11ac-VHT80, CH106 5530MHz)

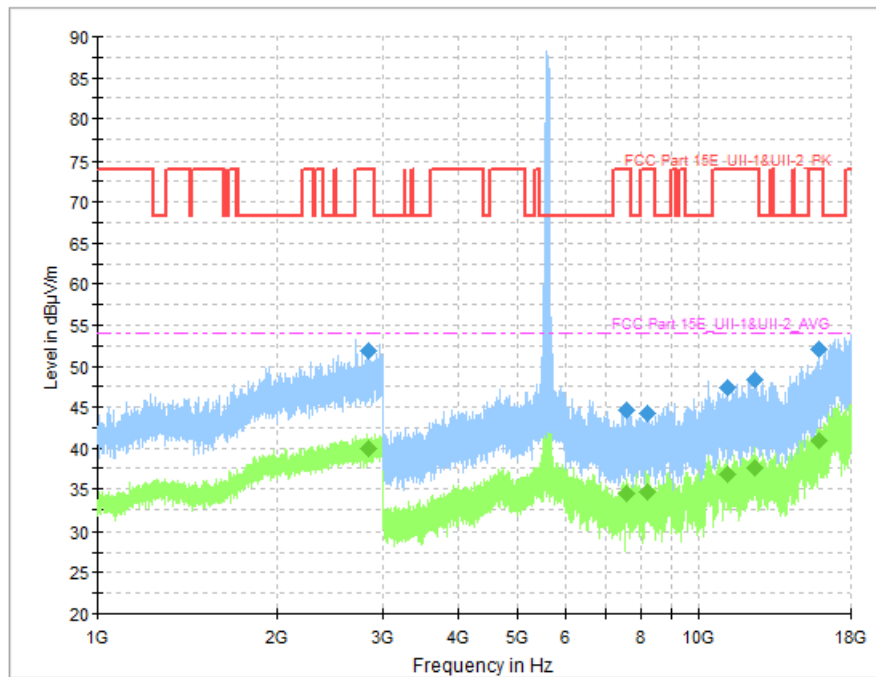


Fig. 94 Transmitter Spurious Emission (802. 11ac-VHT80, CH122 5610MHz)

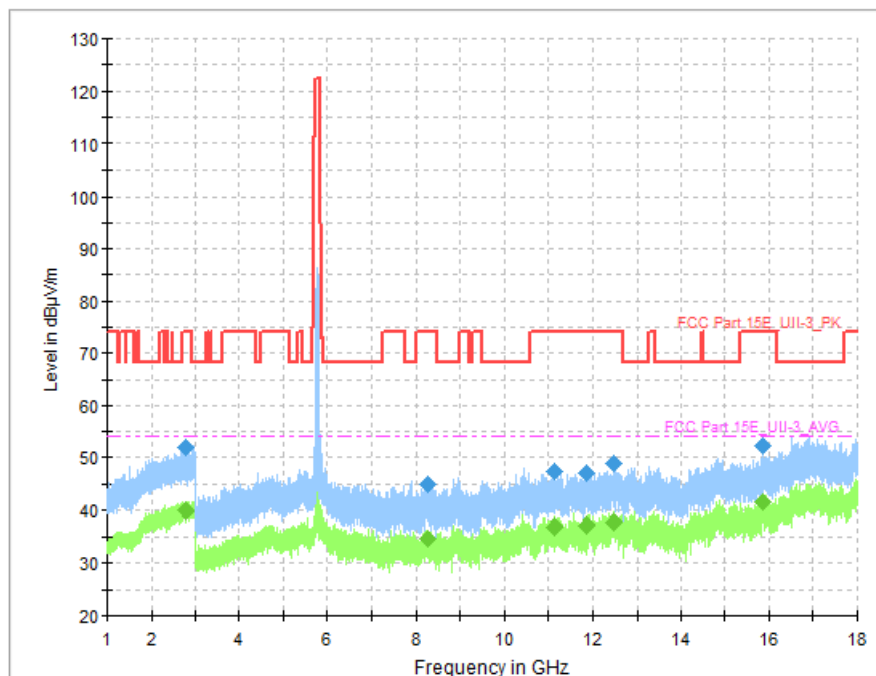


Fig. 95 Transmitter Spurious Emission (802. 11ac-VHT80, CH155 5775MHz)

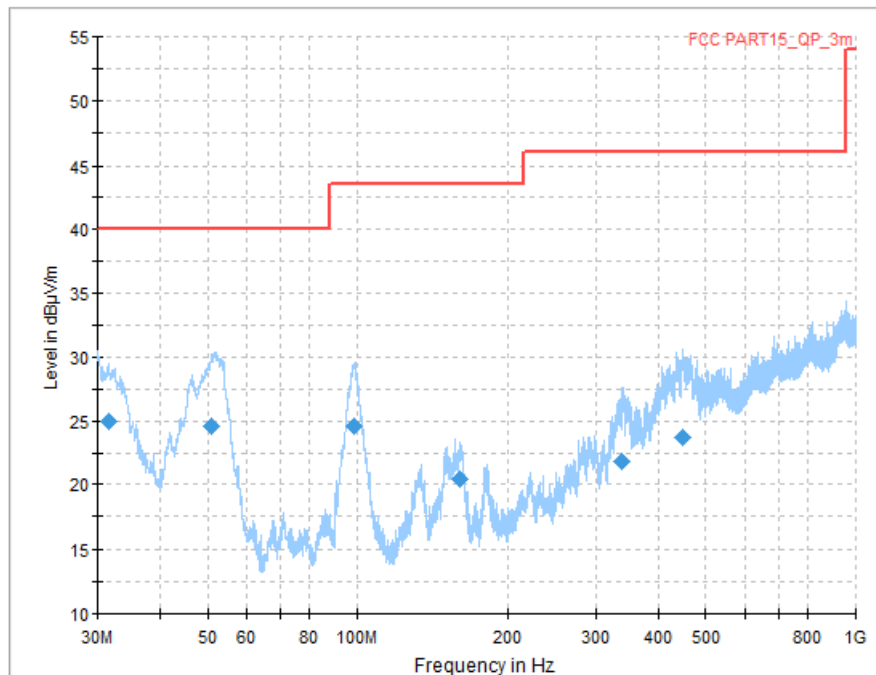


Fig. 96 Transmitter Spurious Emission (All channel, 30MHz~1GHz)

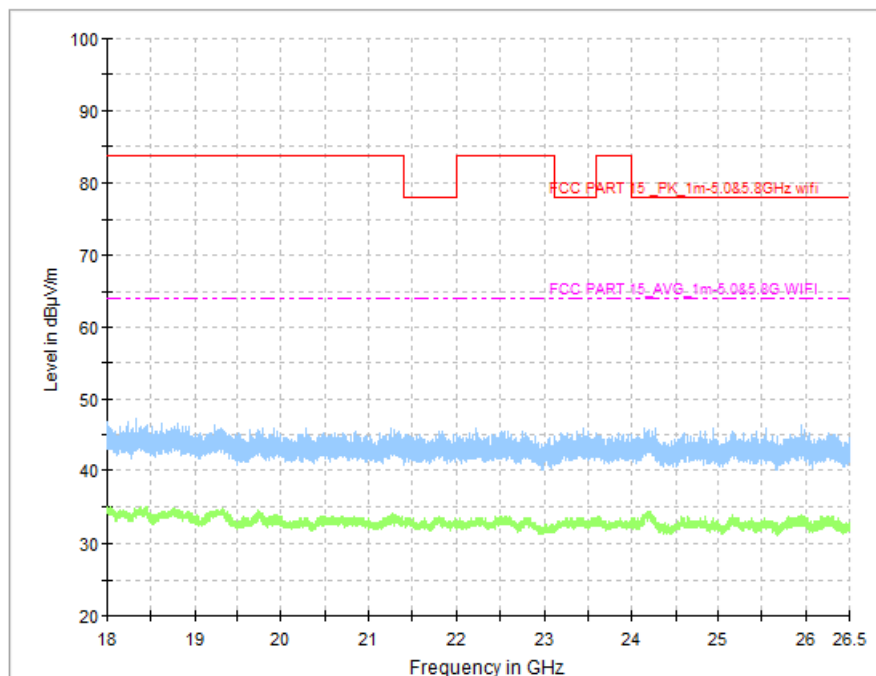


Fig. 97 Transmitter Spurious Emission (All channel, 18GHz~26.5GHz)

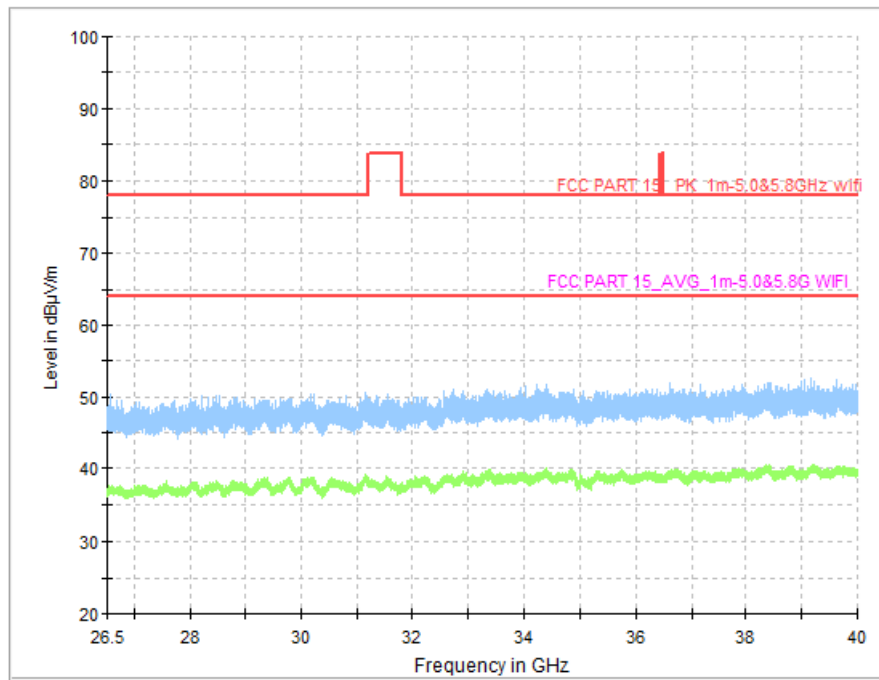


Fig. 98 Transmitter Spurious Emission (All channel, 26.5GHz~40GHz)

Worst Case Result
802.11a CH48

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7430.769231	44.98	74.00	29.02	H	5.8
8256.000000	45.79	74.00	28.21	H	5.9
10926.000000	48.11	74.00	25.89	V	9.5
11554.615385	48.76	74.00	25.24	V	10.0
12420.923077	49.21	74.00	24.79	H	11.4
15963.692308	52.21	74.00	21.79	H	14.1

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7430.769231	33.13	54.00	20.87	H	5.8
8256.000000	34.25	54.00	19.75	H	5.9
10926.000000	36.18	54.00	17.82	V	9.5
11554.615385	36.49	54.00	17.51	V	10.0
12420.923077	37.42	54.00	16.58	H	11.4
15963.692308	40.26	54.00	13.74	H	14.1

802.11a CH56

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7429.384616	44.91	74.00	29.09	V	5.8
8238.461539	46.23	74.00	27.77	V	5.9
11172.000000	48.32	74.00	25.68	V	9.7
11853.692308	48.14	74.00	25.86	V	10.1
12280.615385	49.48	74.00	24.52	V	11.0
15939.692308	52.38	74.00	21.62	V	14.1

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7429.384616	33.15	54.00	20.85	V	5.8
8238.461539	34.26	54.00	19.74	V	5.9
11172.000000	36.21	54.00	17.79	V	9.7
11853.692308	36.18	54.00	17.82	V	10.1
12280.615385	37.35	54.00	16.65	V	11.0
15939.692308	40.35	54.00	13.65	V	14.1

802.11a CH116

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7437.230769	45.07	74.00	28.93	V	5.8
7685.538462	45.41	74.00	28.59	V	5.7
8154.461539	46.06	74.00	27.94	V	6.0
10910.307692	48.09	74.00	25.91	V	9.4
11229.230769	48.55	74.00	25.45	V	9.7
12465.230769	49.74	74.00	24.26	V	11.3

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7437.230769	33.26	54.00	20.74	V	5.8
7685.538462	33.83	54.00	20.17	V	5.7
8154.461539	33.94	54.00	20.06	V	6.0
10910.307692	36.19	54.00	17.81	V	9.4
11229.230769	36.16	54.00	17.84	V	9.7
12465.230769	37.60	54.00	16.40	V	11.3

802.11a CH149

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7613.538462	44.23	74.00	29.77	V	5.7
8243.538462	45.64	74.00	28.36	V	5.9
11004.000000	46.59	74.00	27.41	V	9.7
11642.307692	46.69	74.00	27.31	V	9.9
12259.846154	47.13	74.00	26.87	V	10.9
15856.153846	50.53	74.00	23.47	V	14.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7613.538462	34.06	54.00	19.94	V	5.7
8243.538462	34.32	54.00	19.68	V	5.9
11004.000000	36.40	54.00	17.60	V	9.7
11642.307692	37.03	54.00	16.97	V	9.9
12259.846154	37.33	54.00	16.67	V	10.9
15856.153846	41.09	54.00	12.91	V	14.0

802.11n HT40 CH46

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
11226.923077	47.53	74.00	26.47	V	9.7
11684.307692	48.64	74.00	25.36	V	9.8
12418.153846	48.25	74.00	25.75	V	11.4
15658.153846	50.57	74.00	23.43	V	13.5
15859.384615	51.98	74.00	22.02	V	14.0
17906.307692	54.66	74.00	19.35	V	18.8

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
11226.923077	36.65	54.00	17.35	V	9.7
11684.307692	37.15	54.00	16.85	V	9.8
12418.153846	38.07	54.00	15.93	V	11.4
15658.153846	39.62	54.00	14.38	V	13.5
15859.384615	41.70	54.00	12.30	V	14.0
17906.307692	43.94	54.00	10.06	V	18.8

802.11n HT40 CH62

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7457.538462	44.28	74.00	29.72	V	5.7
8187.230769	44.85	74.00	29.15	V	6.0
11502.923077	47.23	74.00	26.77	V	10.1
12246.923077	48.29	74.00	25.71	V	10.9
15954.923077	51.32	74.00	22.68	V	14.1
17916.923077	54.45	74.00	19.55	V	18.9

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7457.538462	34.31	54.00	19.69	V	5.7
8187.230769	34.70	54.00	19.30	V	6.0
11502.923077	36.69	54.00	17.31	V	10.1
12246.923077	37.70	54.00	16.30	V	10.9
15954.923077	40.87	54.00	13.13	V	14.1
17916.923077	44.11	54.00	9.89	V	18.9

802.11n HT40 CH134

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7521.230769	44.91	74.00	29.09	V	5.7
8227.846154	45.57	74.00	28.43	V	5.9
10878.461539	47.10	74.00	26.90	V	9.3
12429.230769	48.67	74.00	25.33	V	11.4
15919.846154	51.05	74.00	22.95	V	14.1
17872.615385	53.41	74.00	20.59	V	18.8

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7521.230769	33.84	54.00	20.16	V	5.7
8227.846154	34.68	54.00	19.32	V	5.9
10878.461539	36.73	54.00	17.27	V	9.3
12429.230769	37.92	54.00	16.08	V	11.4
15919.846154	40.94	54.00	13.06	V	14.1
17872.615385	43.23	54.00	10.77	V	18.8

802.11n HT40 CH151

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7499.538462	45.14	74.00	28.86	V	5.7
8315.538462	45.30	74.00	28.70	V	6.0
10906.615385	47.81	74.00	26.19	V	9.4
12432.461539	48.12	74.00	25.88	V	11.4
15855.692308	51.79	74.00	22.21	V	14.0
17847.230769	52.41	74.00	21.59	V	18.7

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7499.538462	33.98	54.00	20.02	V	5.7
8315.538462	34.21	54.00	19.79	V	6.0
10906.615385	37.06	54.00	16.94	V	9.4
12432.461539	37.77	54.00	16.23	V	11.4
15855.692308	41.81	54.00	12.19	V	14.0
17847.230769	42.22	54.00	11.78	V	18.7

802.11ac VHT80 CH42

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7446.000000	44.18	74.00	29.82	V	5.7
8220.461539	45.72	74.00	28.28	V	5.9
10912.615385	47.70	74.00	26.30	V	9.4
11554.615385	48.27	74.00	25.73	V	10.0
12288.461539	49.01	74.00	24.99	V	11.0
15854.307692	51.62	74.00	22.38	V	14.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7446.000000	33.68	54.00	20.32	V	5.7
8220.461539	34.95	54.00	19.05	V	5.9
10912.615385	37.06	54.00	16.94	V	9.4
11554.615385	37.35	54.00	16.65	V	10.0
12288.461539	38.27	54.00	15.73	V	11.0
15854.307692	41.87	54.00	12.13	V	14.0

802.11ac VHT80 CH58

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
2770.357143	51.51	74.00	22.49	V	6.3
7459.384616	44.34	74.00	29.66	V	5.7
8268.000000	45.86	74.00	28.14	V	5.9
11028.000000	47.94	74.00	26.06	V	9.7
11495.538462	48.79	74.00	25.21	V	10.1
12171.230769	47.88	74.00	26.12	V	10.7

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
2770.357143	39.76	54.00	14.24	V	6.3
7459.384616	33.98	54.00	20.02	V	5.7
8268.000000	35.07	54.00	18.93	V	5.9
11028.000000	37.10	54.00	16.90	V	9.7
11495.538462	37.62	54.00	16.38	V	10.1
12171.230769	37.51	54.00	16.49	V	10.7

802.11ac VHT80 CH122

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
2829.642857	51.93	74.00	22.07	V	6.4
7579.846154	44.62	74.00	29.38	V	5.7
8200.615385	44.31	74.00	29.69	V	5.9
11228.307692	47.33	74.00	26.67	V	9.7
12429.230769	48.30	74.00	25.70	V	11.4
15935.076923	52.12	74.00	21.88	V	14.1

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
2829.642857	39.90	54.00	14.10	V	6.4
7579.846154	34.44	54.00	19.56	V	5.7
8200.615385	34.61	54.00	19.39	V	5.9
11228.307692	36.84	54.00	17.16	V	9.7
12429.230769	37.69	54.00	16.31	V	11.4
15935.076923	40.99	54.00	13.01	V	14.1

802.11ac VHT80 CH155

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
2784.642857	51.99	74.00	22.01	V	6.2
8287.846154	44.88	74.00	29.12	V	6.0
11114.307692	47.48	74.00	26.52	V	9.7
11860.615385	46.96	74.00	27.04	V	10.1
12482.307692	48.74	74.00	25.26	V	11.3
15858.923077	52.29	74.00	21.71	V	14.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
2784.642857	39.82	54.00	14.18	V	6.2
8287.846154	34.61	54.00	19.39	V	6.0
11114.307692	37.01	54.00	16.99	V	9.7
11860.615385	37.11	54.00	16.89	V	10.1
12482.307692	37.68	54.00	16.32	V	11.3
15858.923077	41.66	54.00	12.34	V	14.0

Note: A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument. The measurement results are obtained as described below: $Result = P_{Mea} + A_{Rpl} = P_{Mea} + Cable Loss + Antenna Factor$

A.9. Radiated Spurious Emissions < 30MHz

Measurement Limit (15.209, 9kHz-30MHz):

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Measurement distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30.0	30	30

The measurement is made according to KDB 789033.

Note: The measurement distance during the test is 3m. The limit used in plots recalculated based on the extrapolation factor of 40 dB/decade.

Measurement Result:

Channel	Frequency Range	Test Results	Conclusion
All Channel	9 kHz ~30 MHz	Fig.99	P

Conclusion: PASS

Test graphs as below:

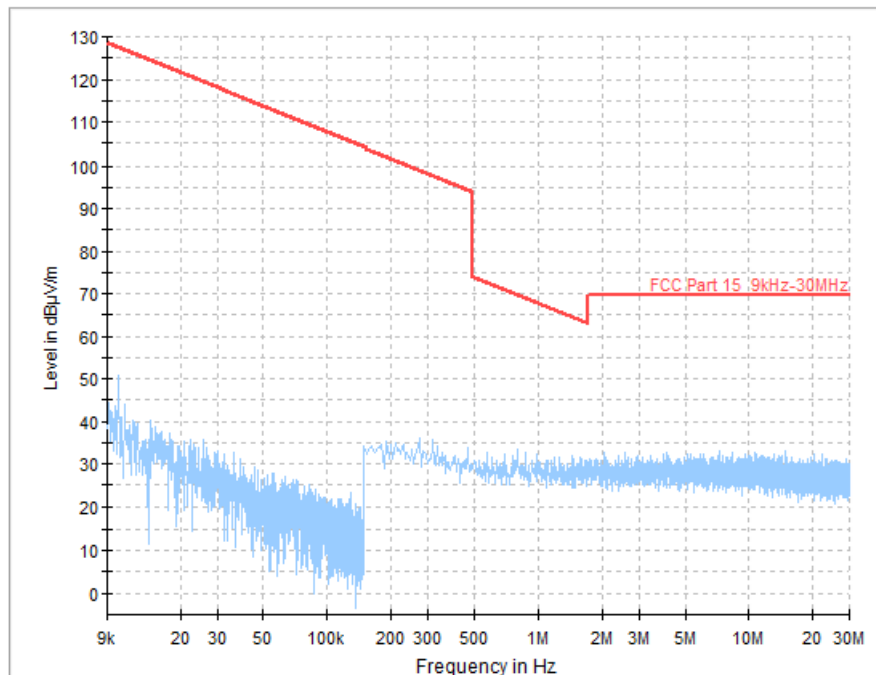


Fig. 99 Radiated Spurious Emission (All Channel, 9 kHz ~30 MHz)

A.10. AC Power Line Conducted Emission

Test Condition:

Voltage(V)	Frequency(Hz)
120	60

Measurement Result and limit:

RLAN (Quasi-peak Limit) - AE2

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.100	Fig.101	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

RLAN (Average Limit) - AE2

Frequency range (MHz)	Average-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.100	Fig.101	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note: The measurement results include the L1 and N measurements.

Conclusion: PASS

Test graphs as below:

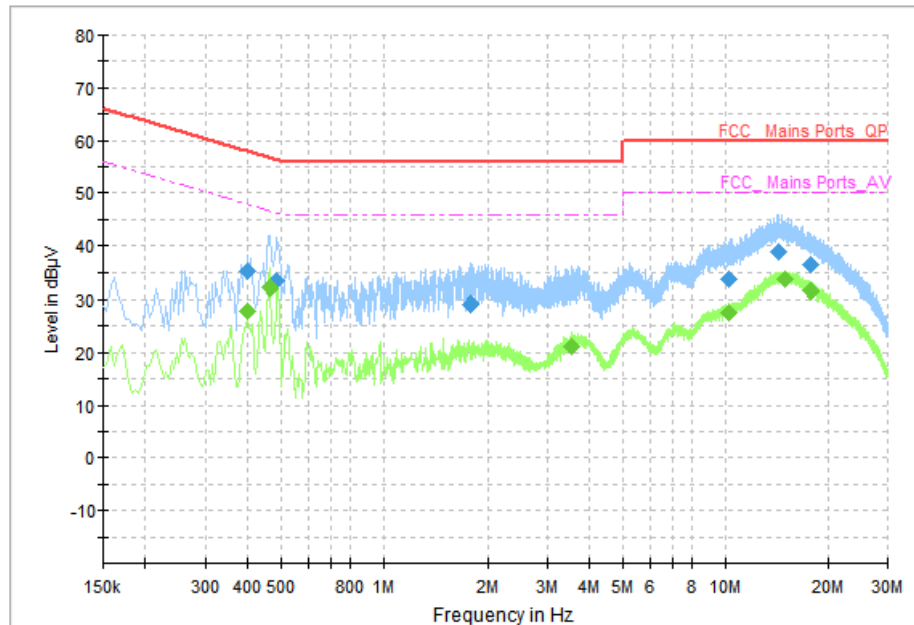


Fig. 100 AC Power line Conducted Emission (Traffic)

Measurement Result: Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.398000	35.05	57.90	22.84	L1	ON	10
0.486000	33.43	56.24	22.81	N	ON	10
1.774000	29.02	56.00	26.98	L1	ON	10
10.290000	33.53	60.00	26.47	L1	ON	10
14.358000	38.88	60.00	21.12	L1	ON	10
17.738000	36.53	60.00	23.47	L1	ON	10

Measurement Result: Average

Frequency (MHz)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.398000	27.74	47.90	20.16	L1	ON	10
0.462000	32.23	46.66	14.42	N	ON	10
3.550000	21.07	46.00	24.93	L1	ON	10
10.198000	27.61	50.00	22.39	L1	ON	10
14.894000	33.77	50.00	16.23	L1	ON	10
17.858000	31.50	50.00	18.50	L1	ON	10

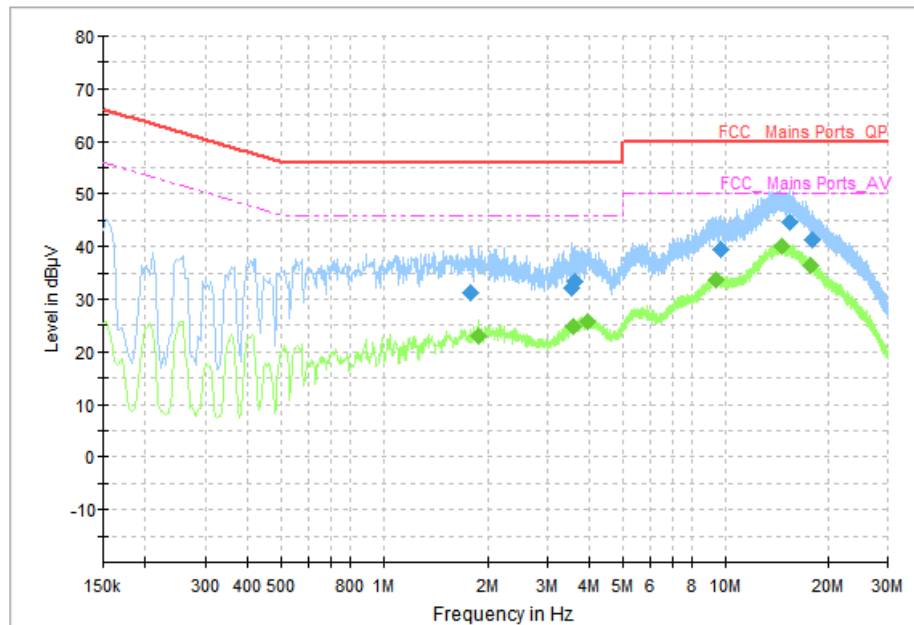


Fig. 101 AC Power line Conducted Emission (Idle)

Measurement Result: Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
1.774000	31.18	56.00	24.82	L1	ON	10
3.530000	32.23	56.00	23.77	N	ON	10
3.626000	33.40	56.00	22.60	L1	ON	10
9.710000	39.59	60.00	20.41	L1	ON	10
15.434000	44.78	60.00	15.22	L1	ON	10
18.022000	41.33	60.00	18.67	L1	ON	10

Measurement Result: Average

Frequency (MHz)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
1.882000	23.11	46.00	22.89	L1	ON	10
3.570000	24.82	46.00	21.18	L1	ON	10
3.938000	25.58	46.00	20.42	L1	ON	10
9.438000	33.64	50.00	16.36	L1	ON	10
14.654000	39.92	50.00	10.08	L1	ON	10
17.862000	36.49	50.00	13.51	L1	ON	10

A.11. Frequency Stability

Manufacturers ensured the EUT meet the requirement of frequency stability, such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

Measurement Condition:

T min = 0°C T nom = 25°C T max = 35°C
V min = 3.6V V nom = 3.85V V max = 4.4V

Measurement Result:

Mode	Channel	Condition		Frequency	Conclusion
802.11a	5180 MHz (CH36)	T nom	V nom	5179.9831	P
		T max	V nom	5179.9853	P
		T min	V nom	5179.9845	P
		T nom	V max	5179.9831	P
		T nom	V min	5179.9773	P
802.11n HT40	5190 MHz (CH38)	T nom	V nom	5189.9131	P
		T max	V nom	5189.9638	P
		T min	V nom	5189.9684	P
		T nom	V max	5189.9658	P
		T nom	V min	5189.9652	P
802.11ac VHT80	5210 MHz (CH42)	T nom	V nom	5209.9831	P
		T max	V nom	5209.9752	P
		T min	V nom	5209.9754	P
		T nom	V max	5209.9842	P
		T nom	V min	5209.9753	P

A.12. Power control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500mW).

*** END OF REPORT BODY ***