



TEST REPORT

No. I21N00360-RLAN

for

unitech Electronics Co., Ltd.

Wearable Computer

Model Name: WD200

with

Hardware Version: DVT2

Software Version: v117-0

FCC ID: HLEWD200BTNF

Issued Date: 2021-03-29

Designation Number: CN1210

Note:

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1. Summary of Test Report

1.1. Test Items

Description	Wearable Computer
Model Name	WD200
Applicant's name	unitech Electronics Co., Ltd.
Manufacturer's Name	unitech Electronics Co., Ltd.

1.2. Test Standards

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

1.3. Test Result

Pass

Please refer to "5.2. Test Results"

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:	2021-02-16
Testing End Date:	2021-03-26

1.6. Signature

Lin Zechuang
(Prepared this test report)

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(Reviewed this test report)

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2. Client Information

2.1. Applicant Information

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2.2. Manufacturer Information

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**3. Equipment Under Test (EUT) and Ancillary Equipment (AE)****3.1. About EUT**

Description	Wearable Computer
Model Name	WD200
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	SISO:1.0dBi MIMO:0.2dBi
Power Supply	3.85V DC by Battery
FCC ID	HLEWD200BTNF
Condition of EUT as received	No abnormality in appearance

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Shenzhen Academy of Information and Communications Technology.

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
UT04aa	950105210046	DVT2	v117-0	2021-02-07
UT05aa	950104210109	DVT2	v117-0	2021-02-05
UT06aa	950104210038	DVT2	v117-0	2021-02-05

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

UT04aa is used for conduction test, UT05aa is used for radiation test, and UT06aa is used for AC Power line Conducted Emission test.

3.3. Internal Identification of AE

AE ID*	Description	AE ID*
AE1	Battery	/
AE2	Charger	/
AE3	Data Cable	/

AE1

Model	206546G
Manufacturer	Sichuan iGreen Technology Co.,Ltd
Capacity	2050mAh
Nominal Voltage	3.85V

AE2

Model	S018BYV1200150
-------	----------------



No. I21N00360-RLAN

Manufacturer	Ten Pao Industrial Co., Ltd
AE3	
Model	USB 3.0 A TO C 1M
Manufacturer	JHEN VEI ELECTRONIC CO., LTD.

*AE ID: is used to identify the test sample in the lab internally. AE2: just for testing.

3.4. General Description

The Equipment under Test (EUT) is a model of Wearable Computer with integrated antenna and battery.

It consists of normal options: Lithium Battery and USB Cable.

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	2019
	FCC CFR 47,Part 15,Subpart E	
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
0	Maximum Output Power	15.407(a)	P
1	Power Spectral Density	15.407(a)	P
2	Occupied 26dB Bandwidth	15.403(i)	I
3	Occupied 6dB Bandwidth	15.407(e)	P
4	99% Occupied Bandwidth	15.403	I
5	Band edge compliance	15.209	P
6	Radiated Spurious Emissions	15.209	P
7	AC Power line Conducted	15.207	P
8	Transmit Power Control	15.407	NA

See **ANNEX A** for details.

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 Due date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2021-12-30	1 year
2	Power Sensor	U2021XA	MY55430013	Agilent	2022-01-13	1 year
3	Data Acquisiton	U2531A	TW55443507	Agilent	/	/
4	Test Receiver	ESCI	100701	Rohde & Schwarz	2021-08-09	1 year
5	LISN	ENV216	102067	Rohde & Schwarz	2021-07-16	1 year

Radiated test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Loop Antenna	HLA6120	35779	TESEQ	2022-04-25	3 years
2	BiLog Antenna	3142E	00224831	ETS-Lindgren	2021-05-17	3 years
3	Horn Antenna	3117	00066577	ETS-Lindgren	2022-04-02	3 years
4	Horn Antenna	QSH-SL-18-26-S-20	17013	Q-par	2023-01-06	3 years
5	Horn Antenna	QSH-SL-8-26-40-K-20	17014	Q-par	2023-01-06	3 years
6	Test Receiver	ESR7	101676	Rohde & Schwarz	2021-11-25	1 year
7	Spectrum Analyser	FSV40	101192	Rohde & Schwarz	2022-01-13	1 year
8	Chamber	FACT3-2.0	1285	ETS-Lindgren	2021-07-19	2 years

Test software

No.	Equipment	Manufacturer	Version
1	TechMgr Software	CAICT	2.1.1
2	EMC32	Rohde & Schwarz	10.50.40

EUT is Qualcomm engineering software provided by the customer to control the transmitting signal.

Anechoic chamber

Fully anechoic chamber by ETS-Lindgren

7. Laboratory Environment

Semi-anechoic chamber

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, 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. = 20 %, 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

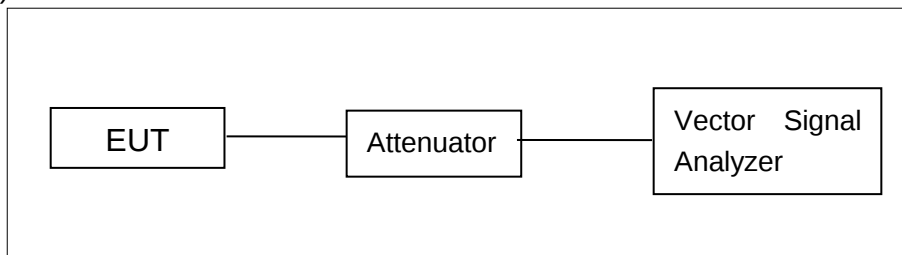
Test Name	Uncertainty ($k=2$)	
1. RF Output Power - Conducted	1.32dB	
2. Power Spectral Density - Conducted	2.32dB	
3. Occupied channel bandwidth - Conducted	$\pm 66\text{Hz}$	
4 Transmitter Spurious Emission - Conducted	$30\text{MHz} \leq f < 1\text{GHz}$	1.41dB
	$1\text{GHz} \leq f < 7\text{GHz}$	1.92dB
	$7\text{GHz} \leq f < 13\text{GHz}$	2.31dB
	$13\text{GHz} \leq f \leq 26\text{GHz}$	2.61dB
5. Transmitter Spurious Emission - Radiated	$9\text{kHz} \leq f < 30\text{MHz}$	1.74dB
	$30\text{MHz} \leq f < 1\text{GHz}$	4.84dB
	$1\text{GHz} \leq f < 18\text{GHz}$	4.68dB
	$18\text{GHz} \leq f \leq 40\text{GHz}$	3.76dB
6. AC Power line Conducted Emission	$150\text{kHz} \leq f \leq 30\text{MHz}$	3.00dB

ANNEX A: Detailed Test 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.

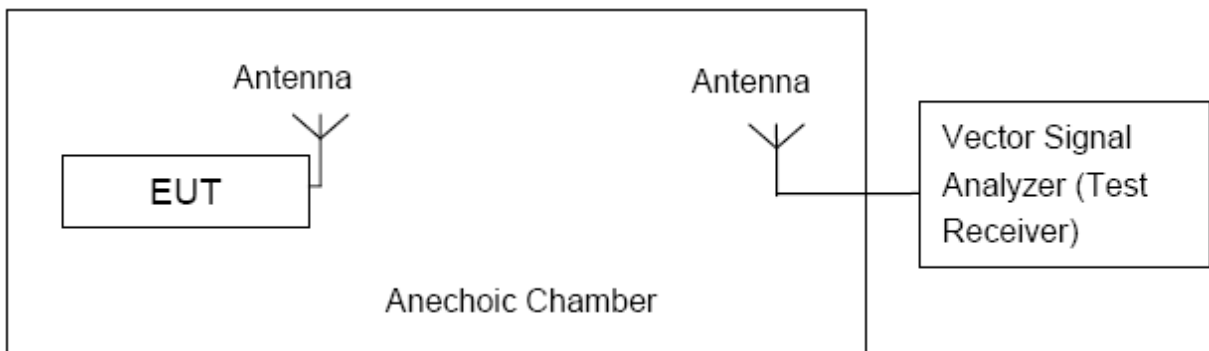


Radiated Emission Measurements

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(a)	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:

SISO:

U–NII Band	Mode	Channel	Frequency (MHz)	RF output power (dBm)	
				ANT0	ANT1
5.2GHz Band (UNII-1)	802.11a	CH 36	5180	14.95	16.15
		CH 40	5200	14.85	16.20
		CH 48	5240	14.93	15.92
	802.11n-HT20	CH 36	5180	13.88	14.89
		CH 40	5200	13.78	14.93
		CH 48	5240	13.81	14.70
	802.11n-HT40	CH 38	5190	14.25	15.22
		CH 46	5230	14.06	15.23
	802.11ac-VHT20	CH 36	5180	11.99	13.05
		CH 40	5200	11.81	13.06
		CH 48	5240	11.82	12.88
	802.11ac-VHT40	CH 38	5190	12.33	13.37
		CH 46	5230	12.21	13.25
	802.11ac-VHT80	CH 42	5210	11.26	12.42

U–NII Band	Mode	Channel	Frequency (MHz)	RF output power (dBm)	
				ANT0	ANT1
5.3GHz Band (UNII-2A)	802.11a	CH 52	5260	15.18	15.91
		CH 56	5280	14.98	15.99
		CH 64	5320	15.21	15.93
	802.11n-HT20	CH 52	5260	14.02	14.74
		CH 56	5280	13.90	14.80
		CH 64	5320	14.03	14.70

	802.11n-HT40	CH 54	5270	14.32	15.05
		CH 62	5310	14.45	15.02
	802.11ac-VHT20	CH 52	5260	11.99	12.78
		CH 56	5280	11.93	12.78
		CH 64	5320	12.18	12.77
	802.11ac-VHT40	CH 54	5270	12.40	12.99
		CH 62	5310	12.39	13.18
	802.11ac-VHT80	CH 58	5290	11.53	12.34

U-NII Band	Mode	Channel	Frequency (MHz)	RF output power (dBm)	
				ANT0	ANT1
5.5GHz Band (UNII-2C)	802.11a	CH 100	5500	15.23	15.56
		CH 120	5600	15.08	15.17
		CH 140	5700	15.08	16.01
	802.11n-HT20	CH 100	5500	14.07	14.39
		CH 120	5600	13.90	14.05
		CH 140	5700	13.92	14.88
	802.11n-HT40	CH 102	5510	14.27	14.70
		CH 118	5590	13.96	14.34
		CH 134	5670	14.34	14.88
	802.11ac-VHT20	CH 100	5500	12.05	12.33
		CH 120	5600	11.92	12.05
		CH 140	5700	12.02	12.90
	802.11ac-VHT40	CH 102	5510	12.46	12.64
		CH 118	5590	12.17	12.42
		CH 134	5670	12.33	12.69
	802.11ac-VHT80	CH 106	5530	11.54	11.93
		CH 122	5610	11.41	11.80

U-NII Band	Mode	Channel	Frequency (MHz)	RF output power (dBm)	
				ANT0	ANT1
5.8GHz Band (UNII-3)	802.11a	CH 149	5745	11.52	12.68
		CH 157	5785	15.09	16.27
		CH 165	5825	15.10	16.05
	802.11n-HT20	CH 149	5745	8.82	9.83
		CH 157	5785	13.89	15.13
		CH 165	5825	13.99	14.94
	802.11n-HT40	CH 151	5755	14.18	15.30
		CH 159	5795	14.23	15.43
	802.11ac-VHT20	CH 149	5745	8.73	9.83
		CH 157	5785	11.95	13.17
		CH 165	5825	11.86	12.94
	802.11ac-VHT40	CH 151	5755	12.10	13.41



		CH 159	5795	12.23	13.38
	802.11ac-VHT80	CH 155	5775	11.25	12.62

MIMO:

U-NII Band	Mode	Channel	Frequency (MHz)	RF output power (dBm)		
				ANT0	ANT1	SUM
5.2GHz Band (UNII-1)	802.11n-HT20	CH 36	5180	13.87	15.08	17.53
		CH 40	5200	13.81	15.14	17.54
		CH 48	5240	13.86	14.87	17.40
	802.11n-HT40	CH 38	5190	14.29	15.40	17.89
		CH 46	5230	14.07	15.42	17.81
	802.11ac-VHT20	CH 36	5180	12.05	13.18	15.66
		CH 40	5200	11.86	13.20	15.59
		CH 48	5240	11.87	12.81	15.38
	802.11ac-VHT40	CH 38	5190	12.37	13.39	15.92
		CH 46	5230	12.15	13.40	15.83
	802.11ac-VHT80	CH 42	5210	11.44	12.58	15.06

U-NII Band	Mode	Channel	Frequency (MHz)	RF output power (dBm)		
				ANT0	ANT1	SUM
5.3GHz Band (UNII-2A)	802.11n-HT20	CH 52	5260	14.07	14.86	17.49
		CH 56	5280	13.76	15.07	17.47
		CH 64	5320	14.00	14.85	17.46
	802.11n-HT40	CH 54	5270	14.36	15.20	17.81
		CH 62	5310	14.52	15.12	17.84
	802.11ac-VHT20	CH 52	5260	12.03	12.85	15.47
		CH 56	5280	12.03	12.87	15.48
		CH 64	5320	12.28	12.94	15.63
	802.11ac-VHT40	CH 54	5270	12.44	13.02	15.75
		CH 62	5310	12.36	13.23	15.83
	802.11ac-VHT80	CH 58	5290	11.87	12.49	15.20

U-NII Band	Mode	Channel	Frequency (MHz)	RF output power (dBm)		
				ANT0	ANT1	SUM
5.5GHz Band (UNII-2C)	802.11n-HT20	CH 100	5500	14.28	14.59	17.45
		CH 120	5600	14.01	14.06	17.05
		CH 140	5700	14.14	14.90	17.55
	802.11n-HT40	CH 102	5510	14.42	14.80	17.62
		CH 118	5590	14.11	14.42	17.28
		CH 134	5670	14.45	15.00	17.74
	802.11ac-VHT20	CH 100	5500	12.28	12.46	15.38
		CH 120	5600	12.10	12.12	15.12
		CH 140	5700	12.21	12.98	15.62

	802.11ac-VHT40	CH 102	5510	12.59	12.86	15.74
		CH 118	5590	12.26	12.49	15.39
		CH 134	5670	12.44	12.90	15.69
	802.11ac-VHT80	CH 106	5530	11.54	12.05	14.81
		CH 122	5610	11.60	11.87	14.75

U-NII Band	Mode	Channel	Frequency (MHz)	RF output power (dBm)		
				ANT0	ANT1	SUM
5.8GHz Band (UNII-3)	802.11n-HT20	CH 149	5745	8.73	9.84	12.33
		CH 157	5785	14.19	15.19	17.73
		CH 165	5825	14.05	15.00	17.56
	802.11n-HT40	CH 151	5755	14.22	15.41	17.87
		CH 159	5795	14.36	15.49	17.97
	802.11ac-VHT20	CH 149	5745	8.94	9.89	12.45
		CH 157	5785	12.17	13.21	15.73
		CH 165	5825	11.73	13.04	15.44
	802.11ac-VHT40	CH 151	5755	12.26	13.46	15.91
		CH 159	5795	12.30	13.48	15.94
	802.11ac-VHT80	CH 155	5775	11.36	12.71	15.10

Note:

The data rate 6Mbps (11a mode), MCS0 (11n mode) and MCS0 (11ac mode) are selected as the worst case. SISO-ANT1 (802.11a, 802.11n-HT40 and 802.11ac-VHT80) and MIMO(802.11n-HT20, 802.11n-HT40 and 802.11ac-VHT80) are selected as the worst-case. The following cases and test graphs are mostly performed with this condition.

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

Conclusion: PASS

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

Standard	Frequency (MHz)	Limit
FCC CRF Part 15.407(a)	5150MHz~5250MHz	11dBm/MHz(FCC)
		10dBm/MHz EIRP(IC)
	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:

SISO:

5.2GHz Band (UNII-1) & 5.3GHz Band (UNII-2A) & 5.5GHz Band (UNII-2C):

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180MHz(Ch36)	2.93	P
	5200MHz(Ch40)	2.68	P
	5240MHz(Ch48)	2.47	P
	5260MHz(Ch52)	2.19	P
	5280MHz(Ch56)	2.02	P
	5320MHz(Ch64)	1.91	P
	5500MHz(Ch100)	2.10	P
	5580MHz(Ch116)	1.87	P
	5700MHz(Ch140)	2.40	P
802.11n-HT40	5190MHz(Ch38)	-1.40	P
	5230MHz(Ch46)	-1.75	P
	5270MHz(Ch54)	-2.34	P
	5310MHz(Ch62)	-1.86	P
	5510MHz(Ch102)	-1.99	P
	5550MHz(Ch110)	-1.99	P
	5670MHz(Ch134)	-1.51	P
802.11ac-VHT80	5210MHz(Ch42)	-7.07	P
	5290MHz(Ch58)	-7.09	P
	5530MHz(Ch106)	-6.87	P
	5610MHz(Ch122)	-7.58	P

5.8GHz Band (UNII-3):

Mode	Channel	Power Spectral Density (dBm/500kHz)	Conclusion
802.11a	5745MHz(CH149)	-3.63	P
	5785MHz(CH157)	0.46	P
	5825MHz(CH165)	0.58	P



802.11n HT40	5755MHz(CH151)	-4.42	P
	5795MHz(CH159)	-4.24	P
802.11ac-VHT80	5775MHz(CH155)	-9.48	P

MIMO:
5.2GHz Band (UNII-1) & 5.3GHz Band (UNII-2A) & 5.5GHz Band (UNII-2C):

Mode	Channel	Power Spectral Density (dBm/MHz)			Conclusion
		Ant0	Ant1	Sum	
802.11n-HT20	5180MHz(Ch36)	0.40	1.50	4.00	P
	5200MHz(Ch40)	0.15	1.27	3.76	P
	5240MHz(Ch48)	0.27	0.93	3.62	P
	5260MHz(Ch52)	0.03	0.69	3.38	P
	5280MHz(Ch56)	-0.18	0.48	3.17	P
	5320MHz(Ch64)	-0.02	0.30	3.15	P
	5500MHz(Ch100)	0.45	0.88	3.68	P
	5580MHz(Ch116)	0.22	0.32	3.28	P
	5700MHz(Ch140)	0.45	1.16	3.83	P
802.11n-HT40	5190MHz(Ch38)	-2.37	-1.27	1.23	P
	5230MHz(Ch46)	-2.56	-1.50	1.01	P
	5270MHz(Ch54)	-2.88	-2.23	0.47	P
	5310MHz(Ch62)	-2.60	-1.99	0.73	P
	5510MHz(Ch102)	-1.96	-1.83	1.12	P
	5550MHz(Ch110)	-2.36	-1.86	0.91	P
	5670MHz(Ch134)	-2.30	-1.55	1.10	P
802.11ac-VHT80	5210MHz(Ch42)	-7.84	-6.88	-4.32	P
	5290MHz(Ch58)	-7.47	-6.97	-4.20	P
	5530MHz(Ch106)	-7.47	-6.95	-4.19	P
	5610MHz(Ch122)	-7.61	-7.46	-4.52	P

5.8GHz Band (UNII-3):

Mode	Channel	Power Spectral Density (dBm/500kHz)			Conclusion
		Ant 0	Ant 1	Sum	
802.11n-HT20	5745MHz(CH149)	-8.35	-6.47	-4.30	P
	5785MHz(CH157)	-2.47	-0.83	1.44	P
	5825MHz(CH165)	-2.85	-0.98	1.20	P
802.11n-HT40	5755MHz(CH151)	-5.51	-4.38	-1.90	P
	5795MHz(CH159)	-5.31	-4.22	-1.72	P
802.11ac-VHT80	5775MHz(CH155)	-10.82	-9.29	-6.98	P

Conclusion: PASS

A.4. Occupied 26dB Bandwidth (conducted)

Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.403 (i)	/

The measurement is made according to KDB 789033

Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth(MHz)		Conclusion
802.11a	5180MHz(Ch36)	Fig.1	23.40	/
	5200MHz(Ch40)	Fig.2	23.40	/
	5240MHz(Ch48)	Fig.3	23.70	/
	5260MHz(Ch52)	Fig.4	23.35	/
	5280MHz(Ch56)	Fig.5	23.35	/
	5320MHz(Ch64)	Fig.6	23.40	/
	5500MHz(Ch100)	Fig.7	23.60	/
	5580MHz(Ch116)	Fig.8	23.25	/
802.11n-HT40	5700MHz(Ch140)	Fig.9	23.40	/
	5190MHz(Ch38)	Fig.10	41.92	/
	5230MHz(Ch46)	Fig.11	42.08	/
	5270MHz(Ch54)	Fig.12	42.00	/
	5310MHz(Ch62)	Fig.13	41.84	/
	5510MHz(Ch102)	Fig.14	42.00	/
	5550MHz(Ch110)	Fig.15	41.84	/
802.11 ac-VHT80	5670MHz(Ch134)	Fig.16	42.08	/
	5210MHz(Ch42)	Fig.17	84.16	/
	5290MHz(Ch58)	Fig.18	83.20	/
	5530MHz(Ch106)	Fig.19	83.68	/
	5610MHz(Ch122)	Fig.20	83.68	/

See below for test graphs.

Conclusion: PASS

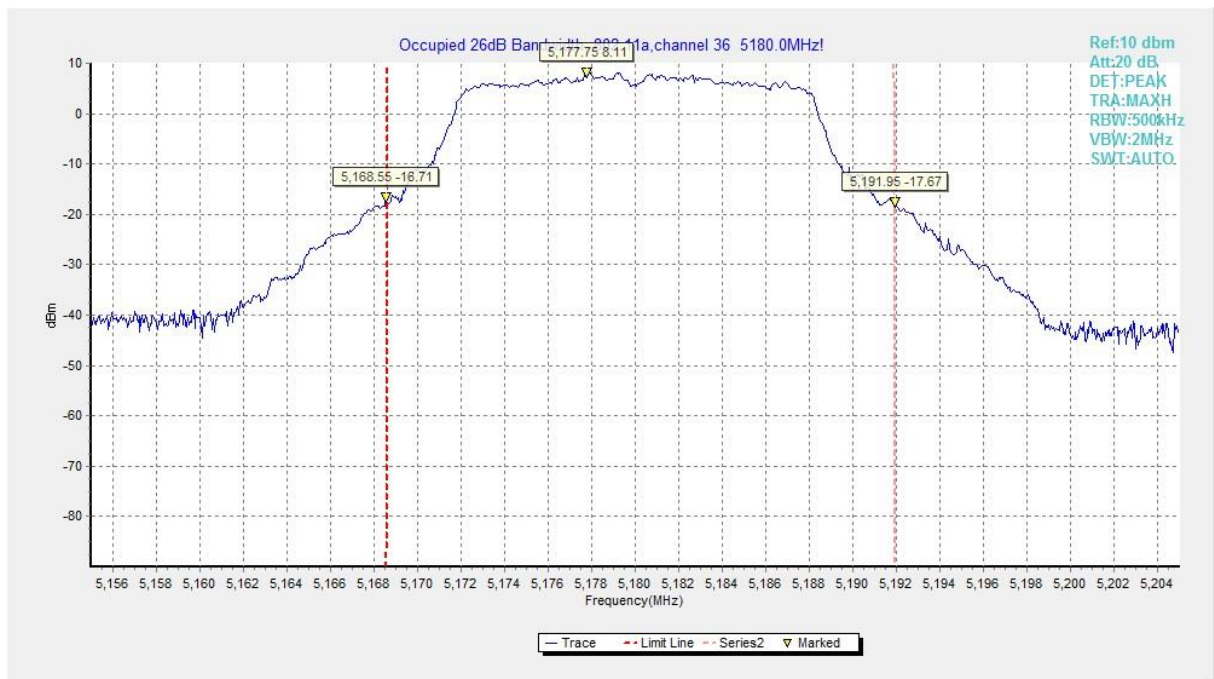


Fig. 1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

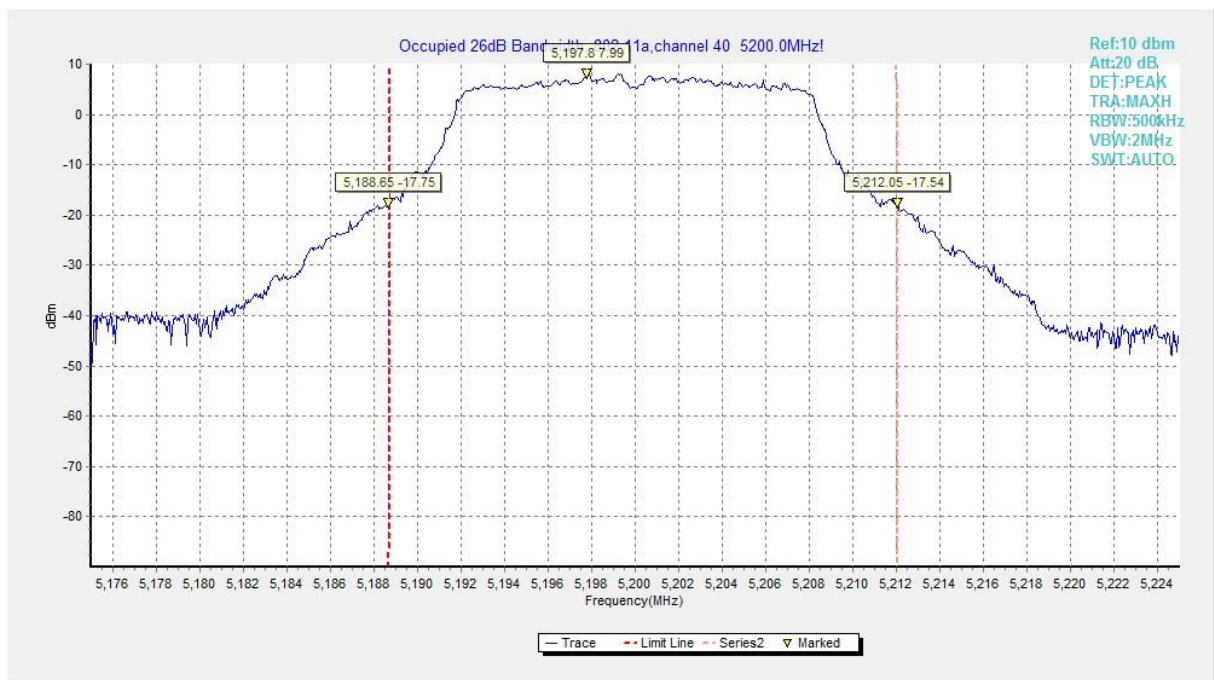


Fig. 2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

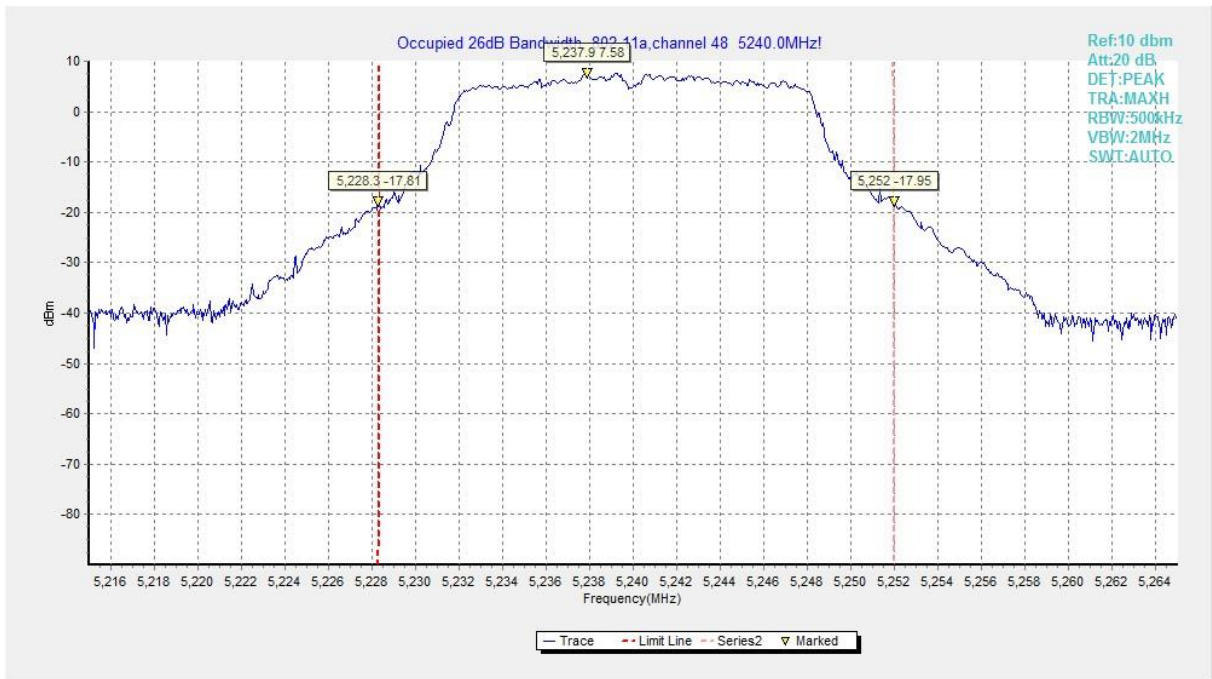


Fig. 3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

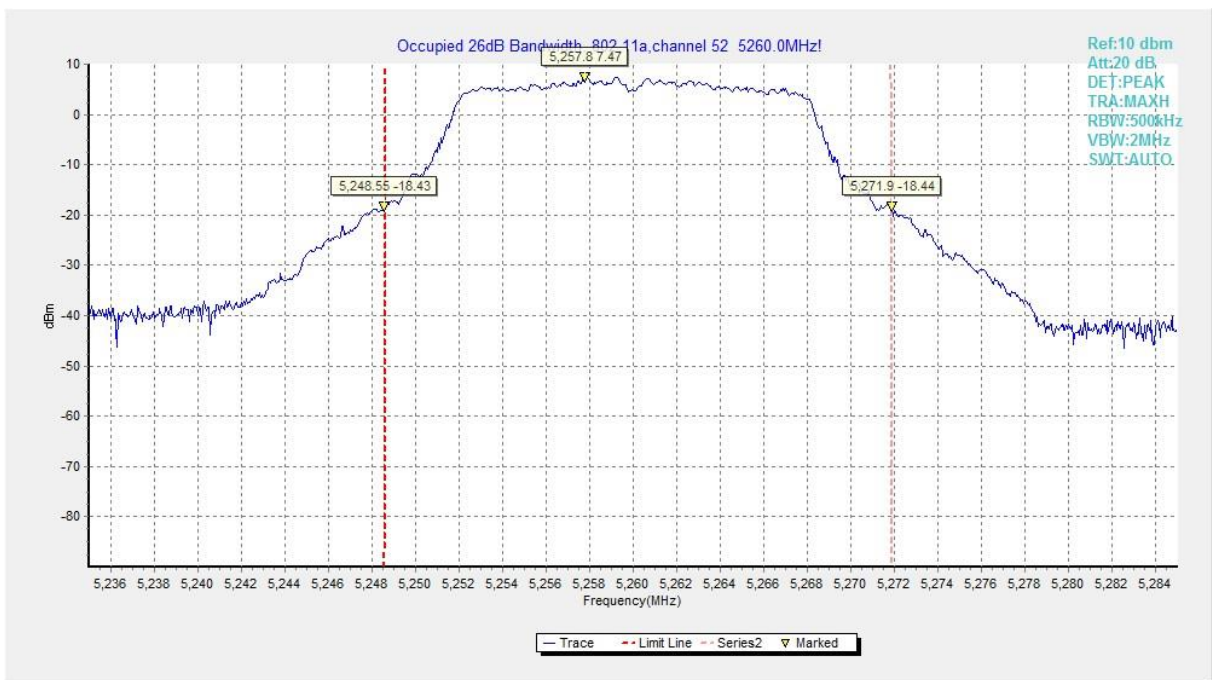


Fig. 4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

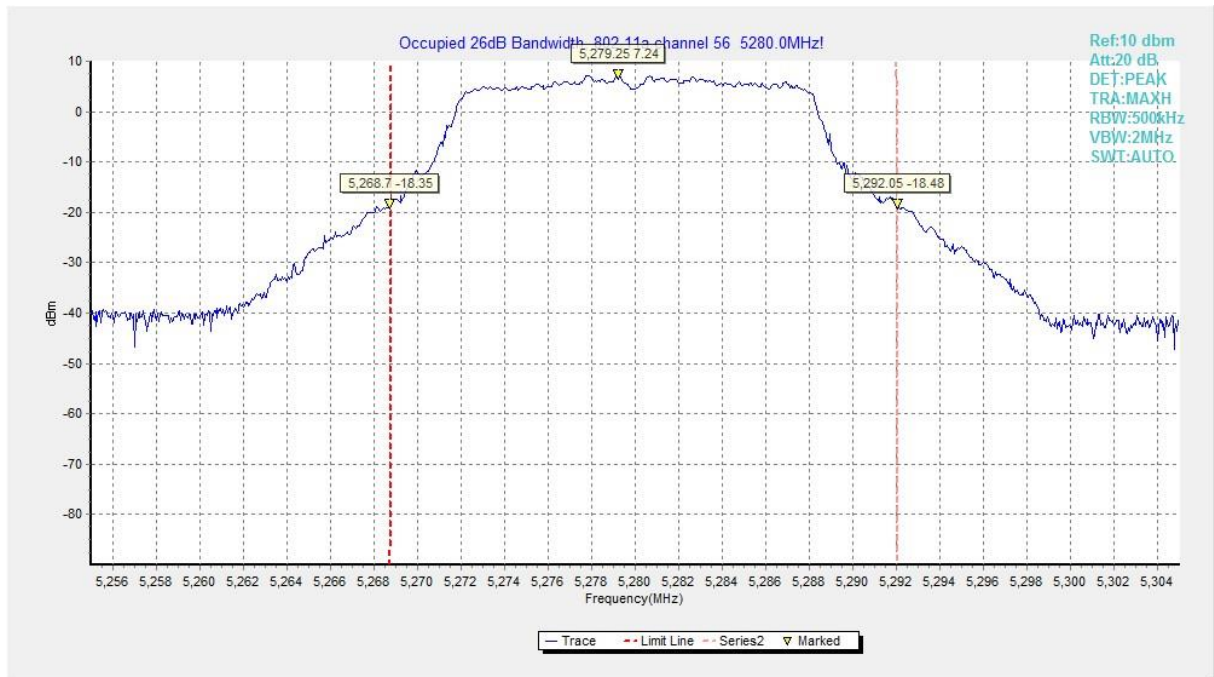


Fig. 5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

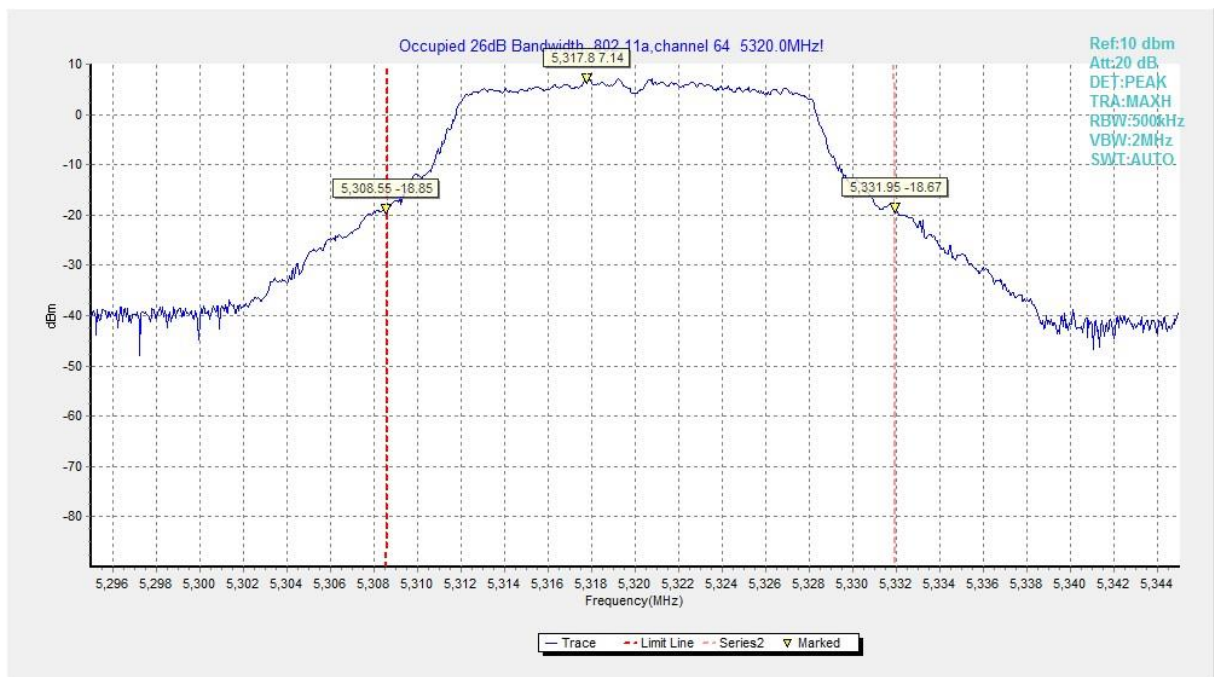


Fig. 6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

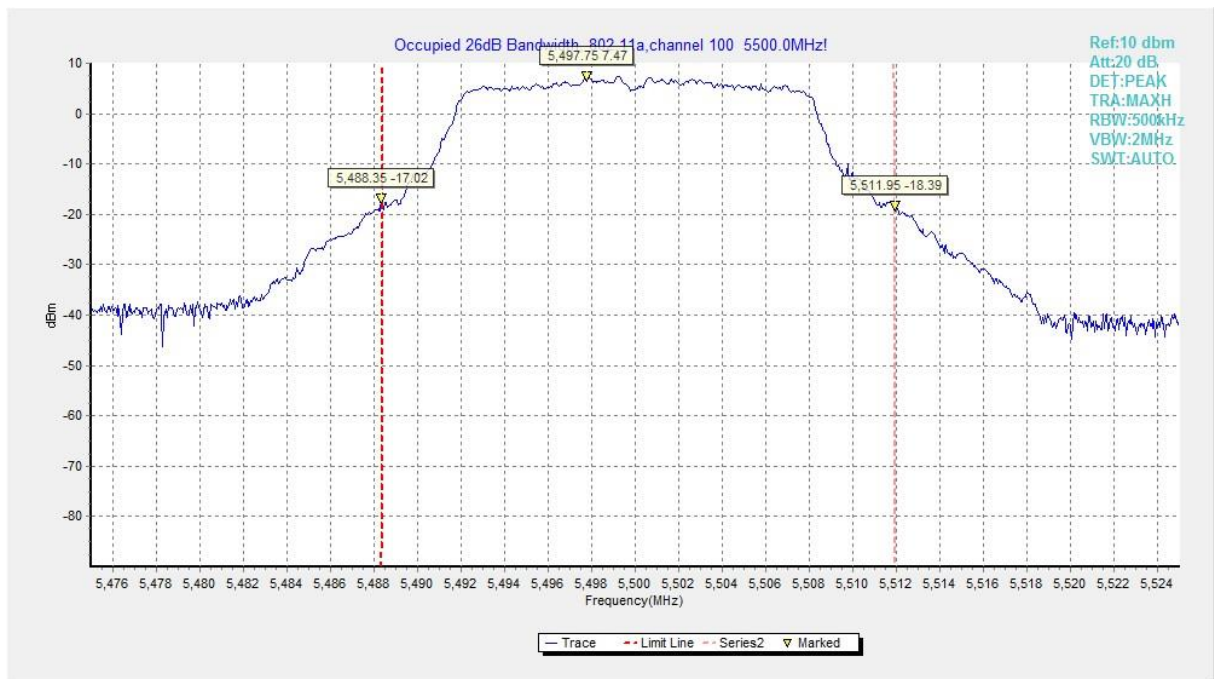


Fig. 7 Occupied 26dB Bandwidth (802.11a, 5500MHz)



Fig. 8 Occupied 26dB Bandwidth (802.11a, 5600MHz)

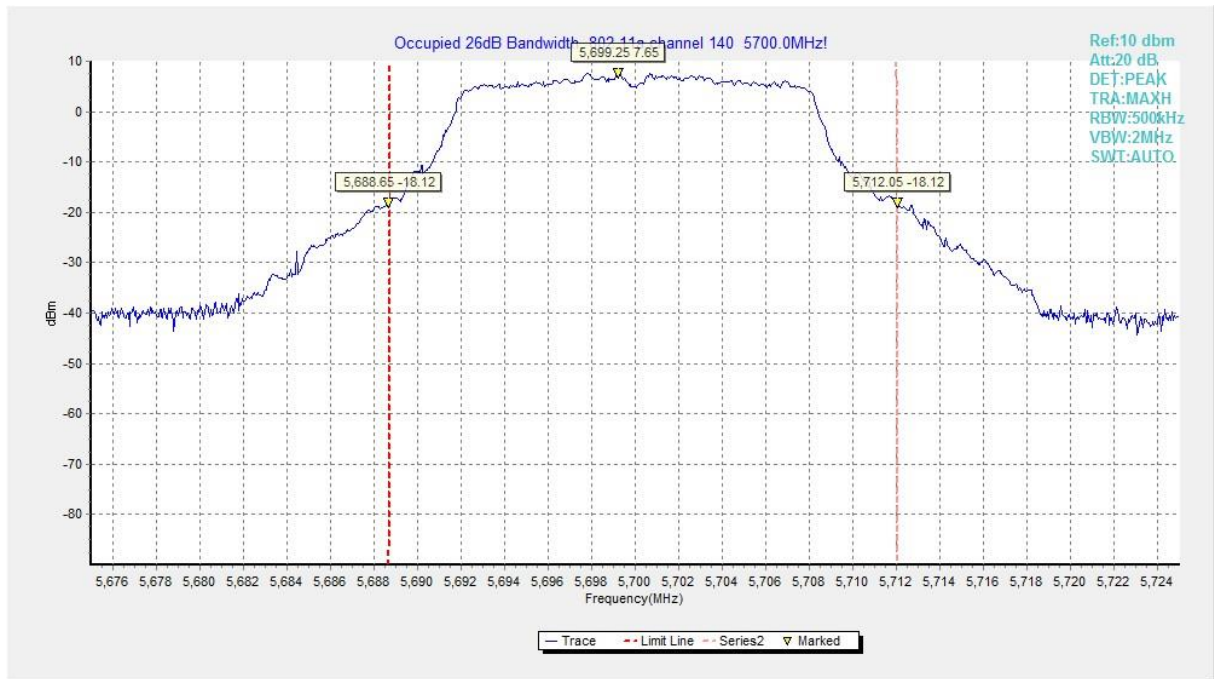


Fig. 9 Occupied 26dB Bandwidth (802.11a, 5700MHz)

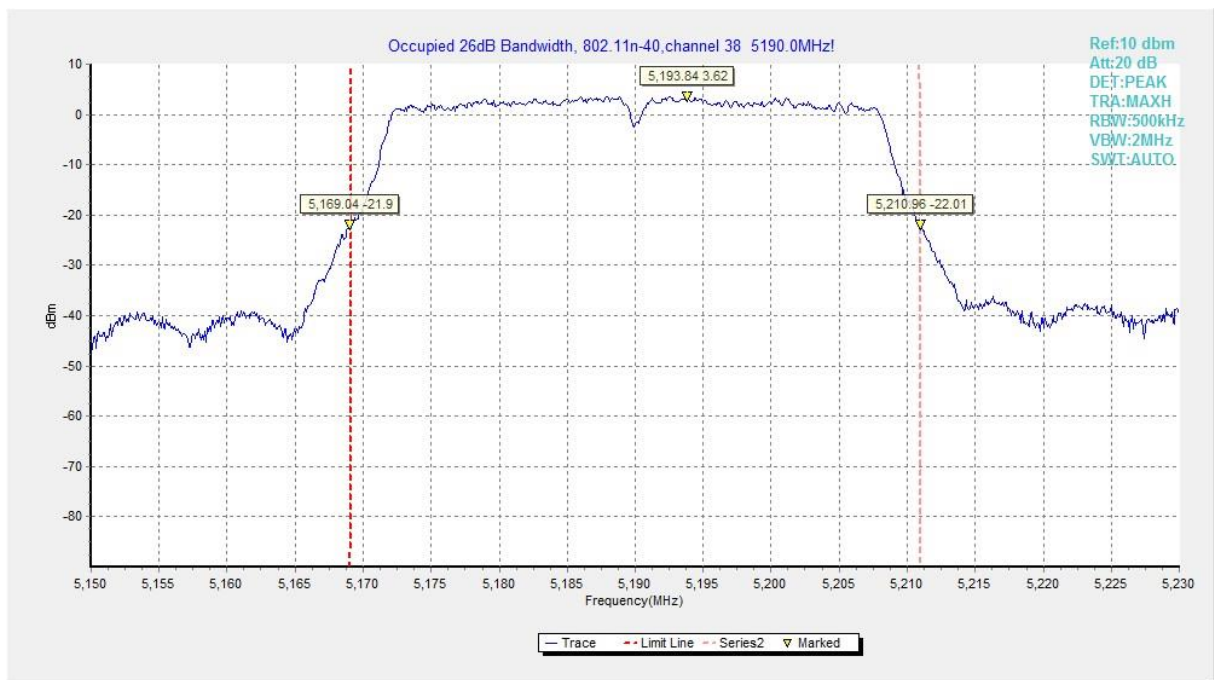


Fig. 10 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

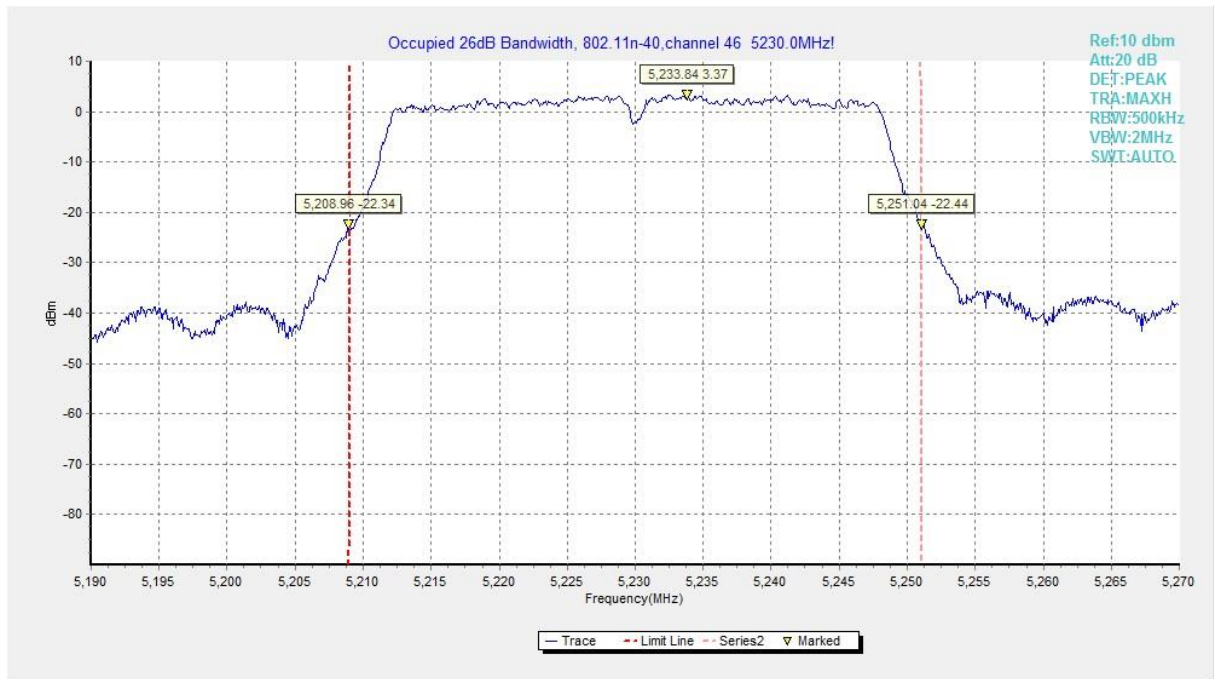


Fig. 11 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

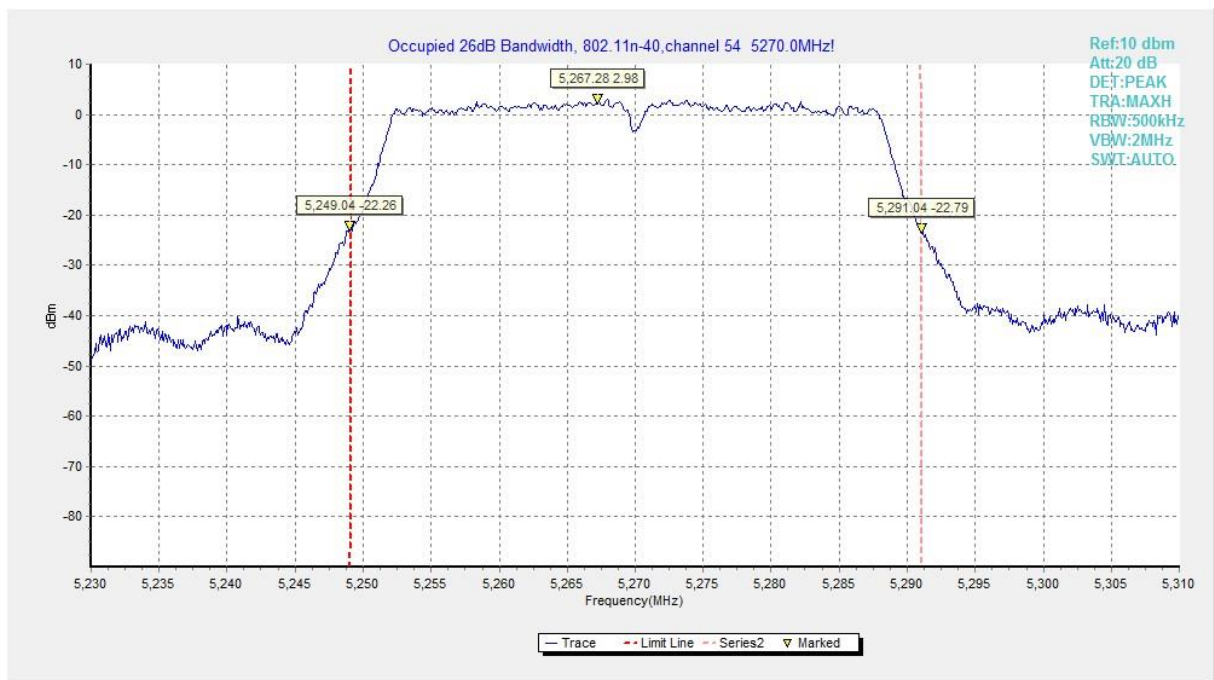


Fig. 12 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)

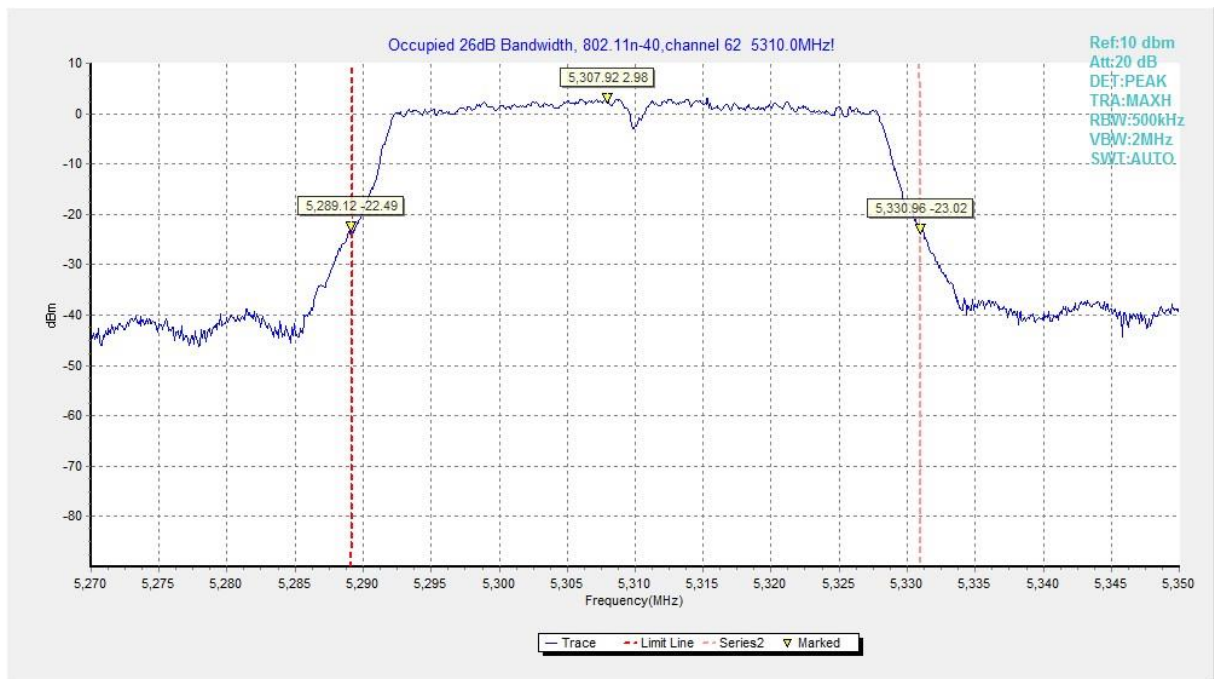


Fig. 13 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

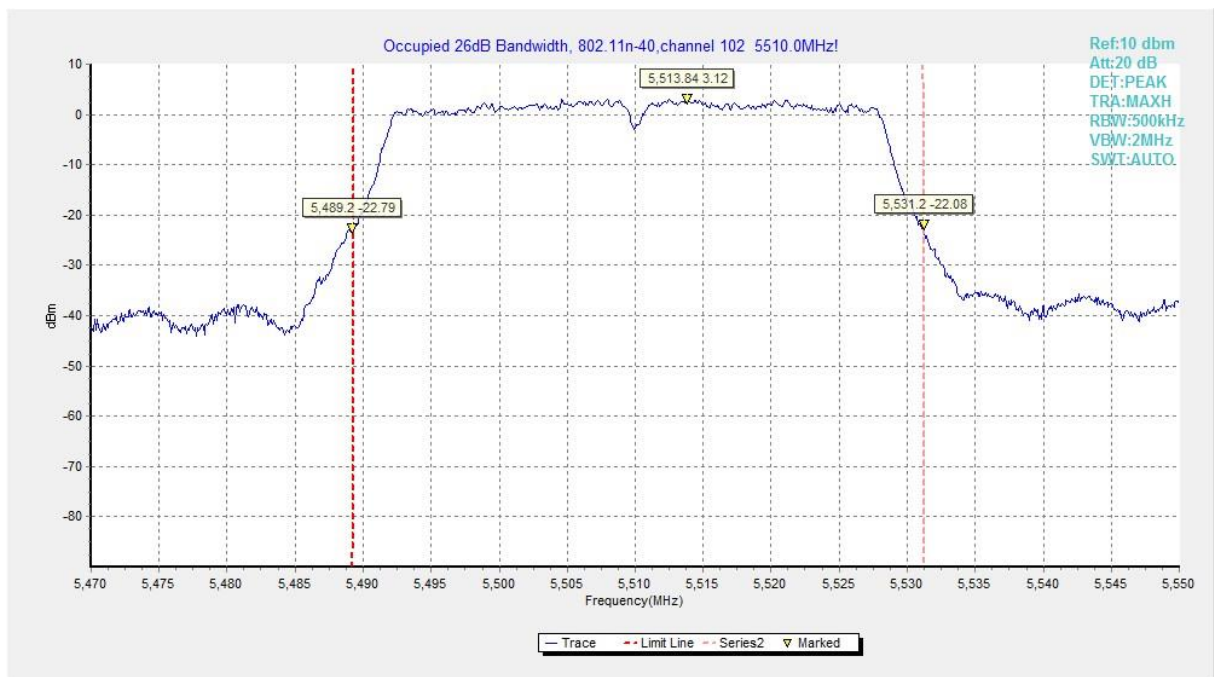


Fig. 14 Occupied 26dB Bandwidth (802.11n-HT40, 5510MHz)

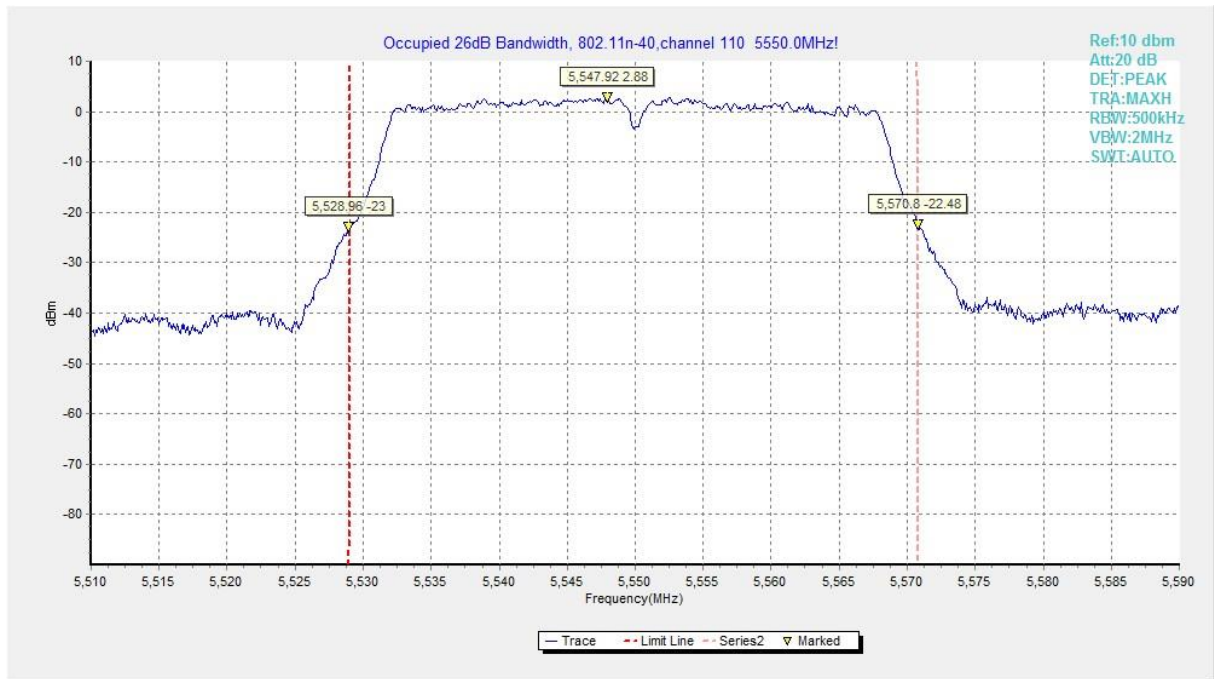


Fig. 15 Occupied 26dB Bandwidth (802.11n-HT40, 5550MHz)

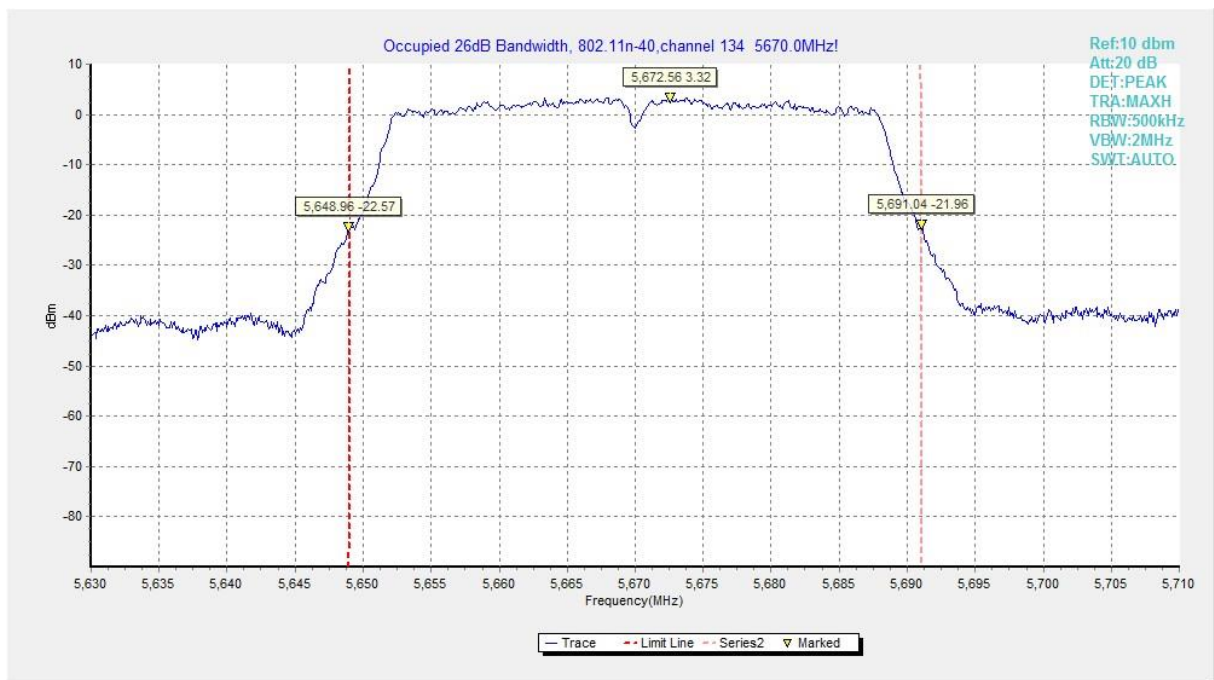


Fig. 16 Occupied 26dB Bandwidth (802.11n-HT40, 5670MHz)

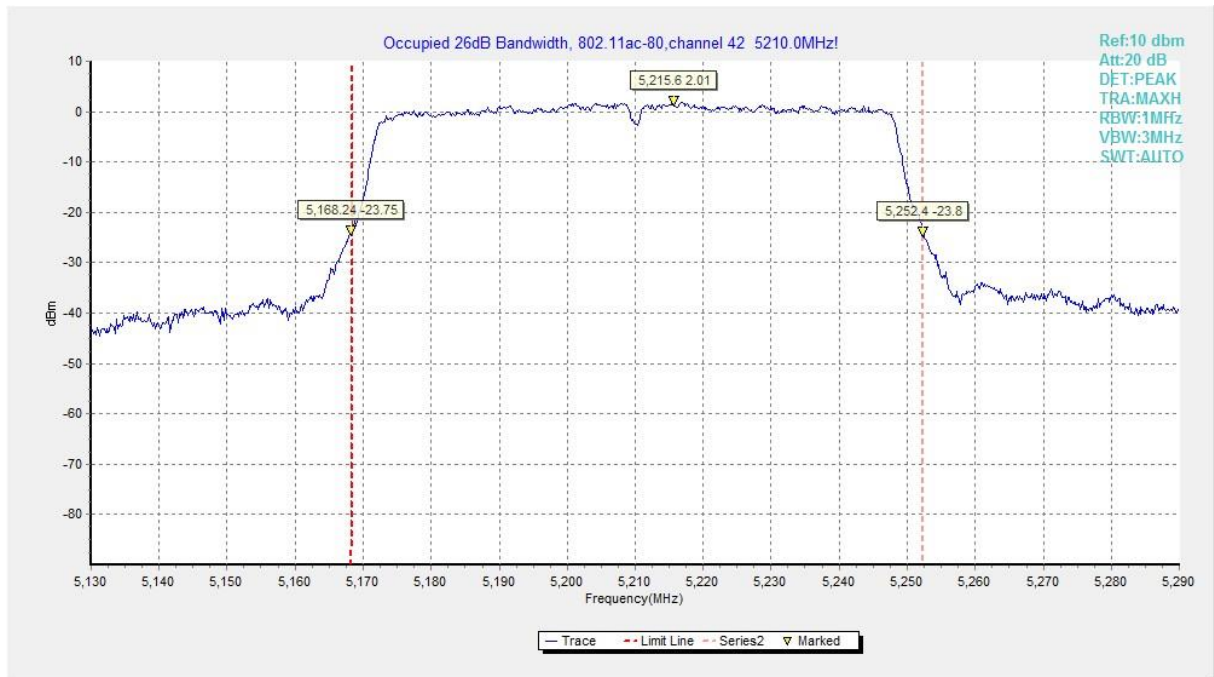


Fig. 17 Occupied 26dB Bandwidth (802.11ac-VHT80, 5210MHz)

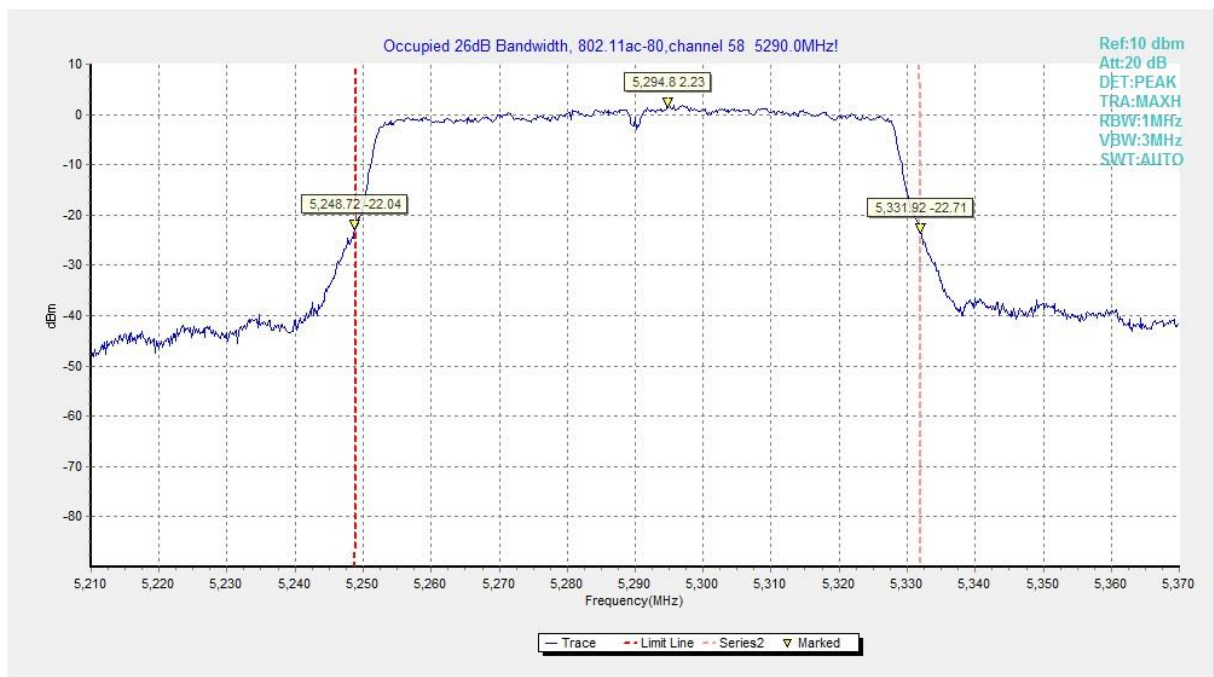


Fig. 18 Occupied 26dB Bandwidth (802.11ac-VHT80, 5290MHz)

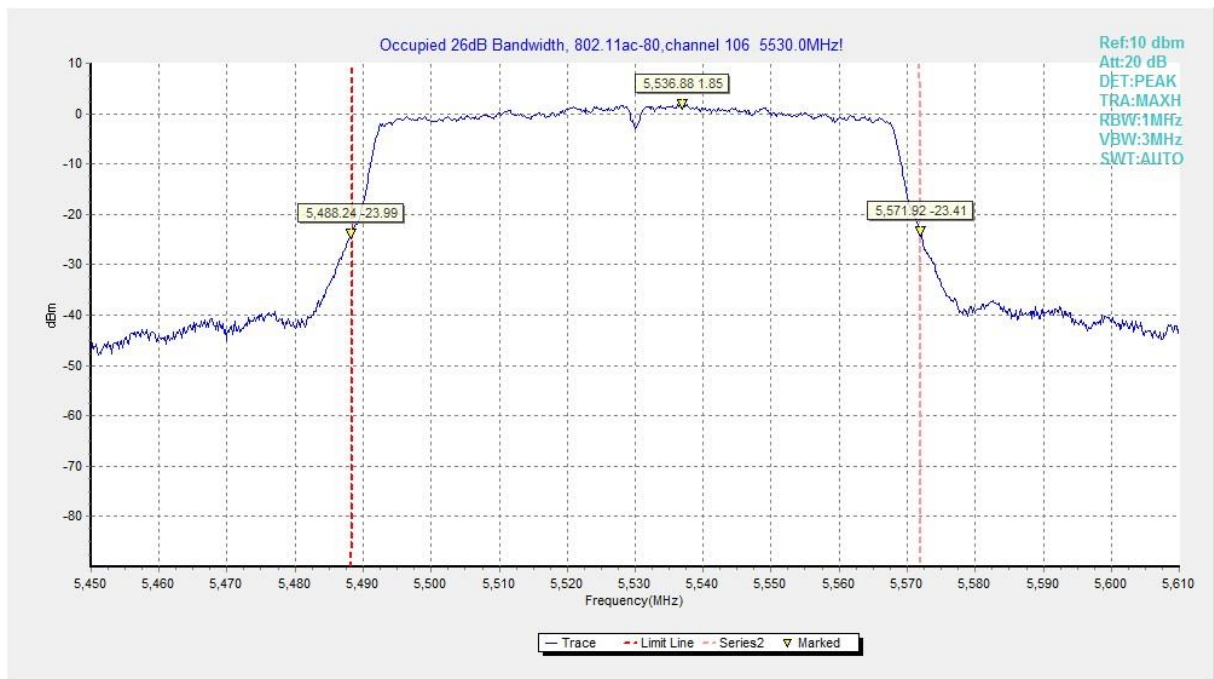


Fig. 19 Occupied 26dB Bandwidth (802.11ac-VHT80, 5530MHz)

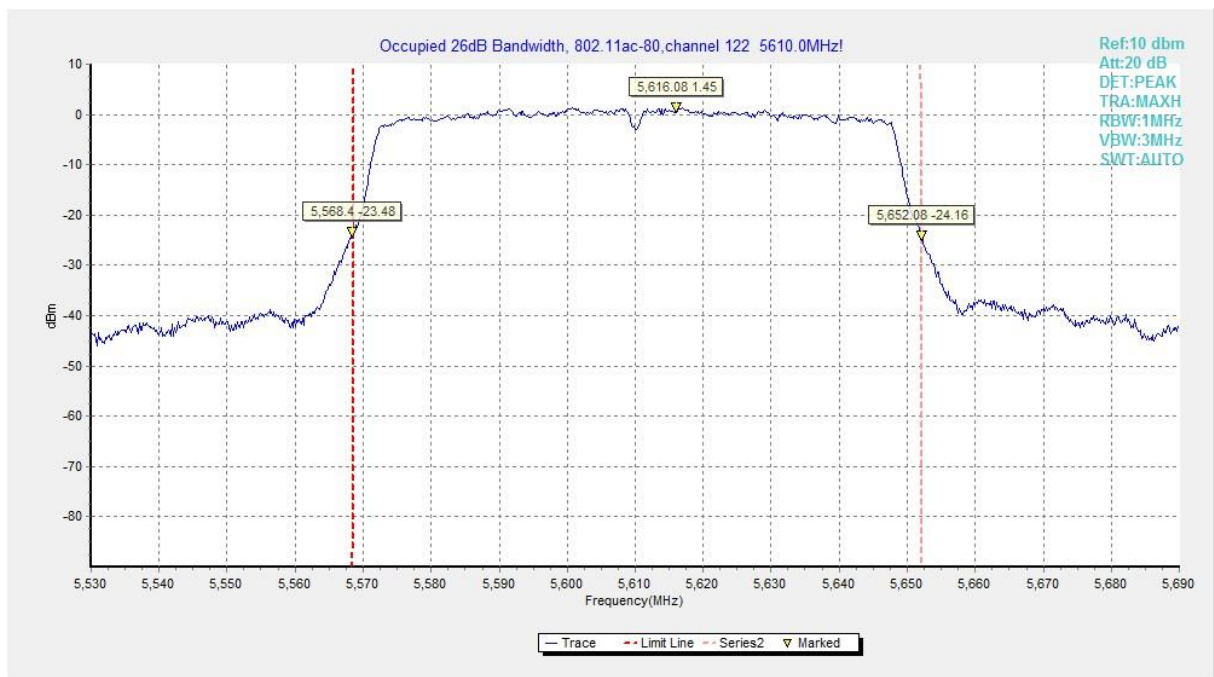


Fig. 20 Occupied 26dB Bandwidth (802.11ac-VHT80, 5610MHz)

A.5. Occupied 6dB Bandwidth (conducted)

Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.407 (e)	≥ 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	15.55	P
	5785MHz(Ch157)	Fig.22	15.80	P
	5825MHz(Ch165)	Fig.23	15.50	P
802.11n-HT40	5755MHz(Ch151)	Fig.24	35.92	P
	5795MHz(Ch159)	Fig.25	36.32	P
802.11ac-VHT80	5775MHz(Ch155)	Fig.26	75.20	P

See below for test graphs.

Conclusion: PASS

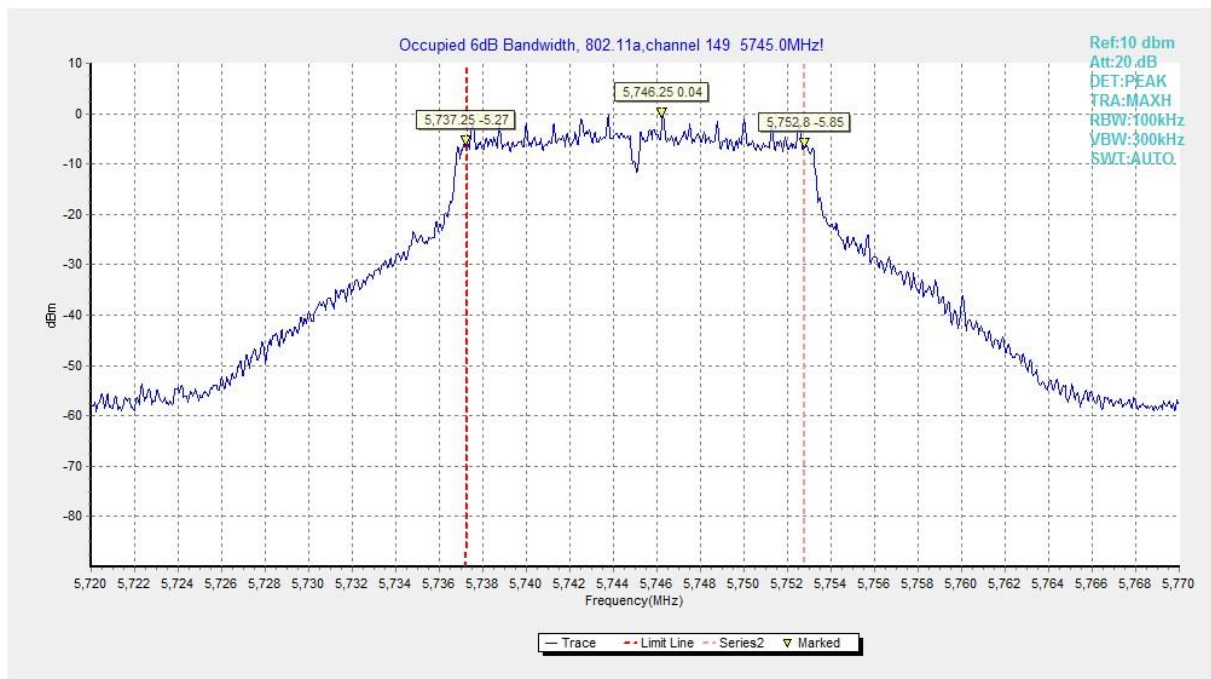


Fig. 21 Occupied 6dB Bandwidth (802.11a, 5745MHz)

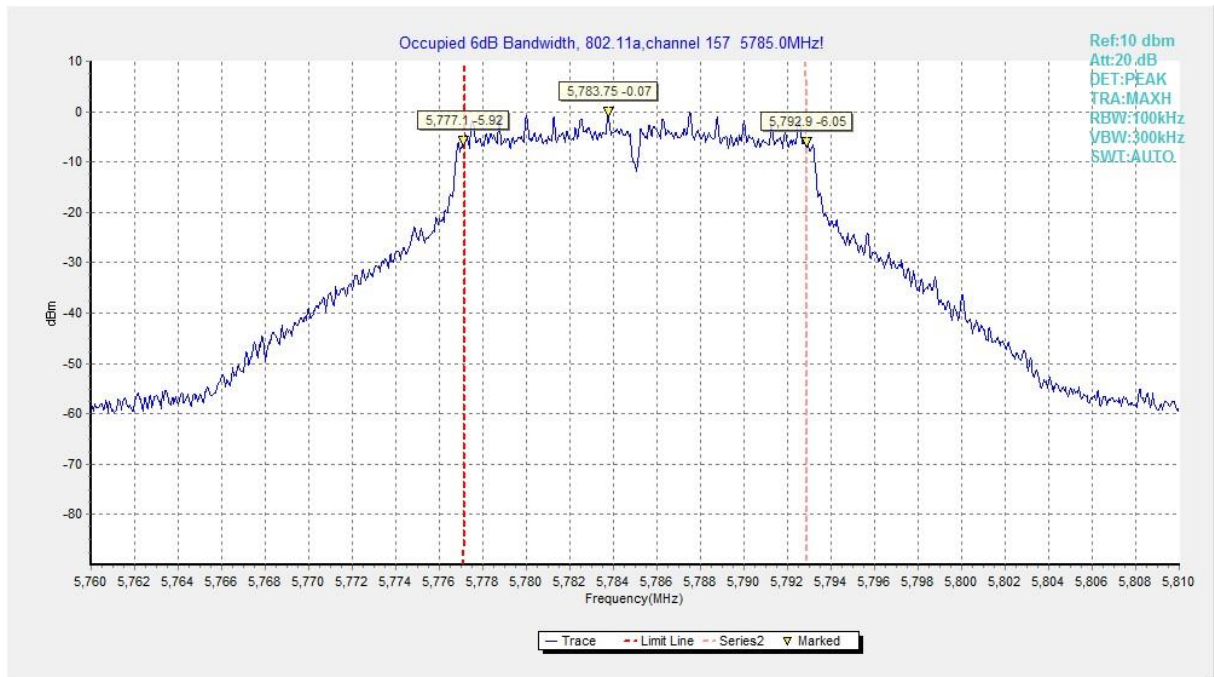


Fig. 22 Occupied 6dB Bandwidth (802.11a, 5785MHz)

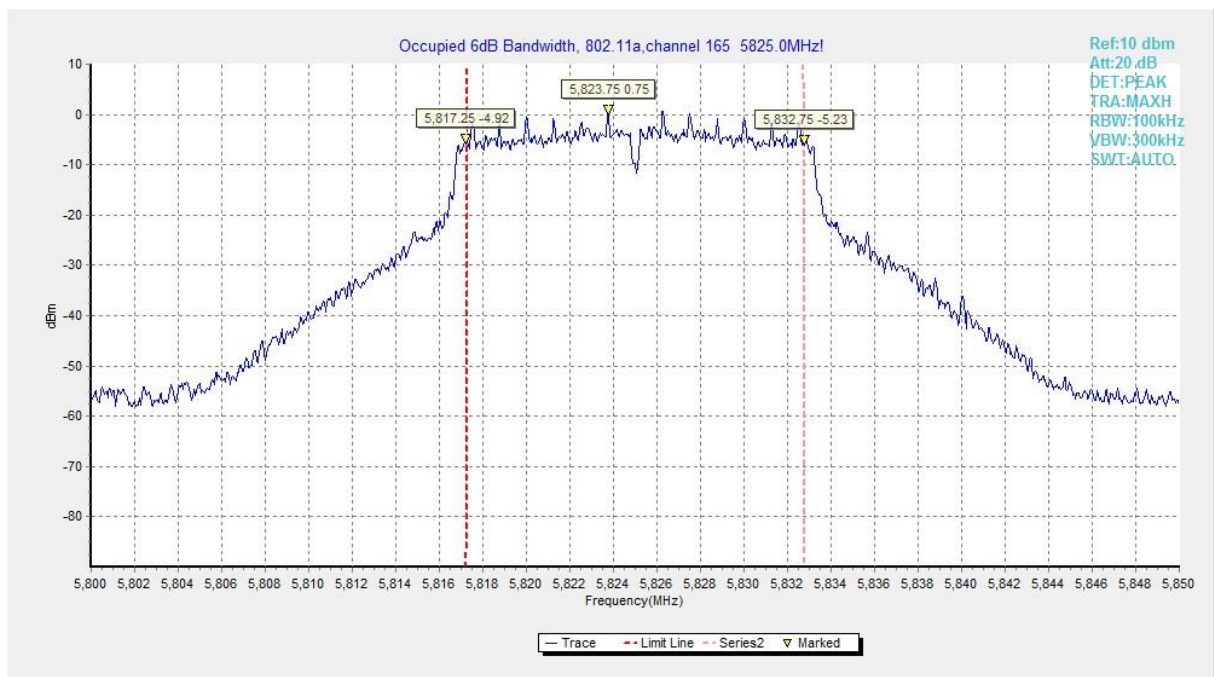


Fig. 23 Occupied 6dB Bandwidth (802.11a, 5825MHz)

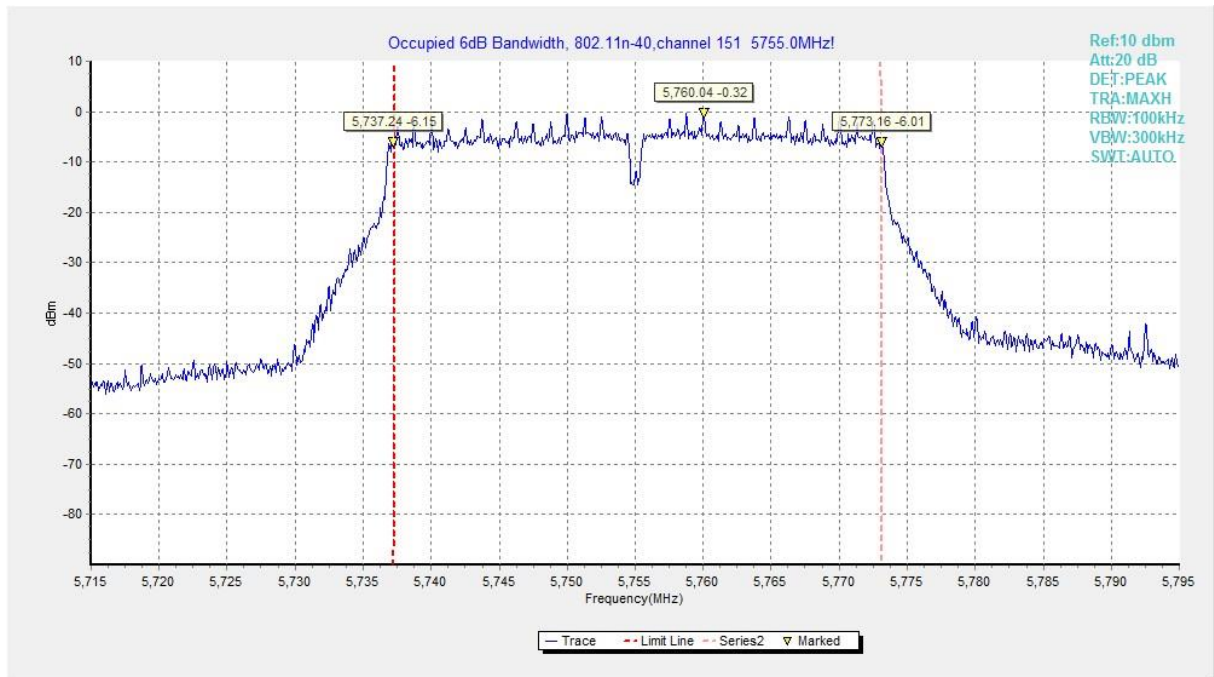


Fig. 24 Occupied 6dB Bandwidth (802.11n-HT40, 5755MHz)

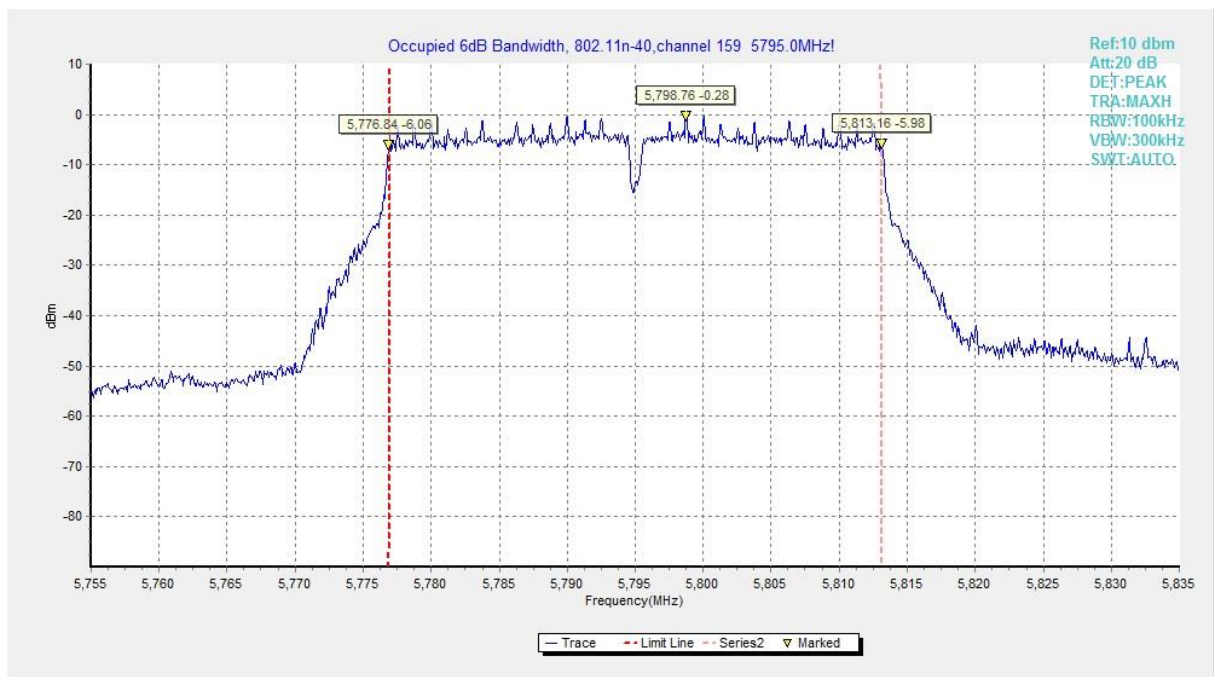


Fig. 25 Occupied 6dB Bandwidth (802.11n-HT40, 5795MHz)

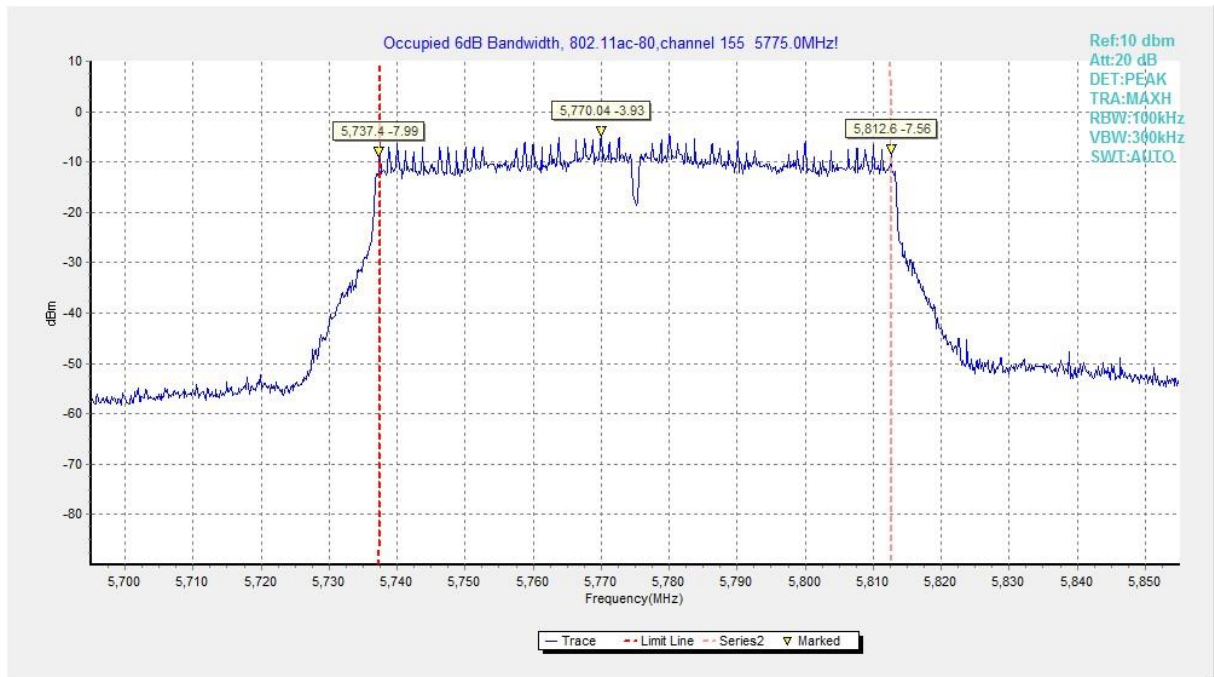


Fig. 26 Occupied 6dB Bandwidth (802.11ac-VHT80, 5775MHz)

A.6. 99% Occupied Bandwidth (conducted)

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	17.10	/
	5200MHz(Ch40)	Fig.28	17.14	/
	5240MHz(Ch48)	Fig.29	17.10	/
	5260MHz(Ch52)	Fig.30	17.18	/
	5280MHz(Ch56)	Fig.31	17.18	/
	5320MHz(Ch64)	Fig.32	17.14	/
	5500MHz(Ch100)	Fig.33	17.10	/
	5580MHz(Ch116)	Fig.34	17.06	/
	5700MHz(Ch140)	Fig.35	17.18	/
802.11n-HT40	5190MHz(Ch38)	Fig.36	36.28	/
	5230MHz(Ch46)	Fig.37	36.36	/
	5270MHz(Ch54)	Fig.38	36.44	/
	5310MHz(Ch62)	Fig.39	36.28	/
	5510MHz(Ch102)	Fig.40	36.36	/
	5550MHz(Ch110)	Fig.41	36.36	/
	5670MHz(Ch134)	Fig.42	36.28	/
802.11 ac-VHT80	5210MHz(Ch42)	Fig.43	75.76	/
	5290MHz(Ch58)	Fig.44	75.76	/
	5530MHz(Ch106)	Fig.45	75.60	/
	5610MHz(Ch122)	Fig.46	75.60	/

See below for test graphs.

Conclusion: PASS

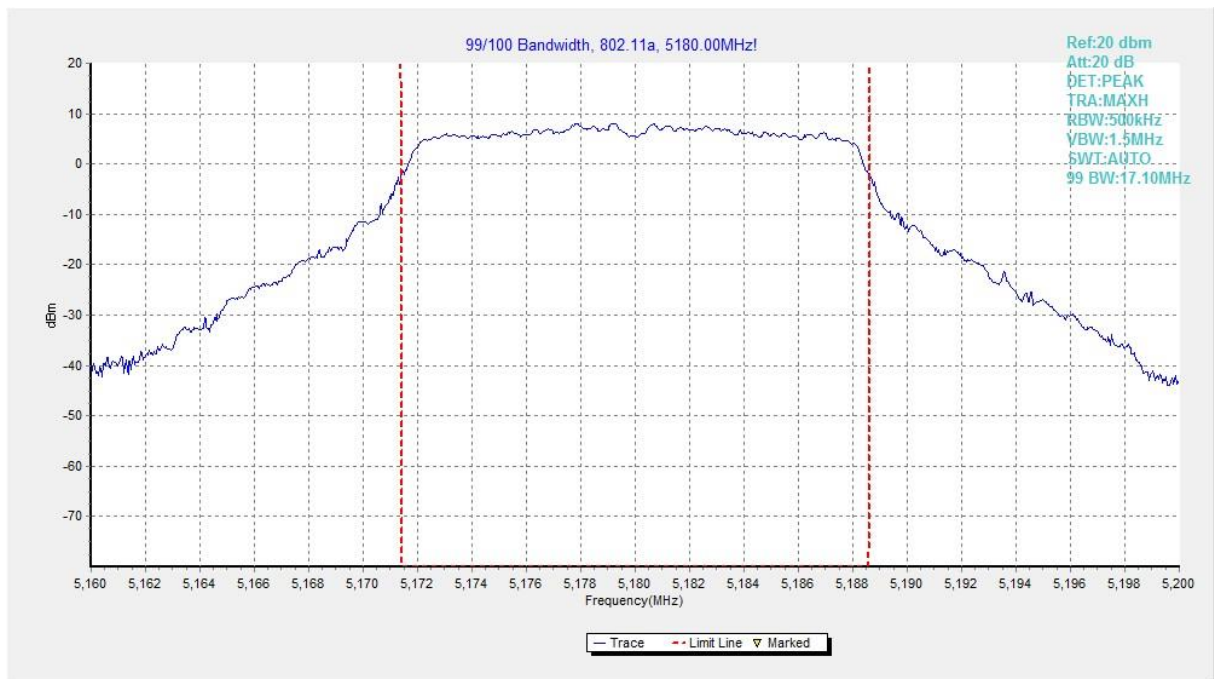


Fig. 27 99% Occupied Bandwidth (802.11a, 5180MHz)

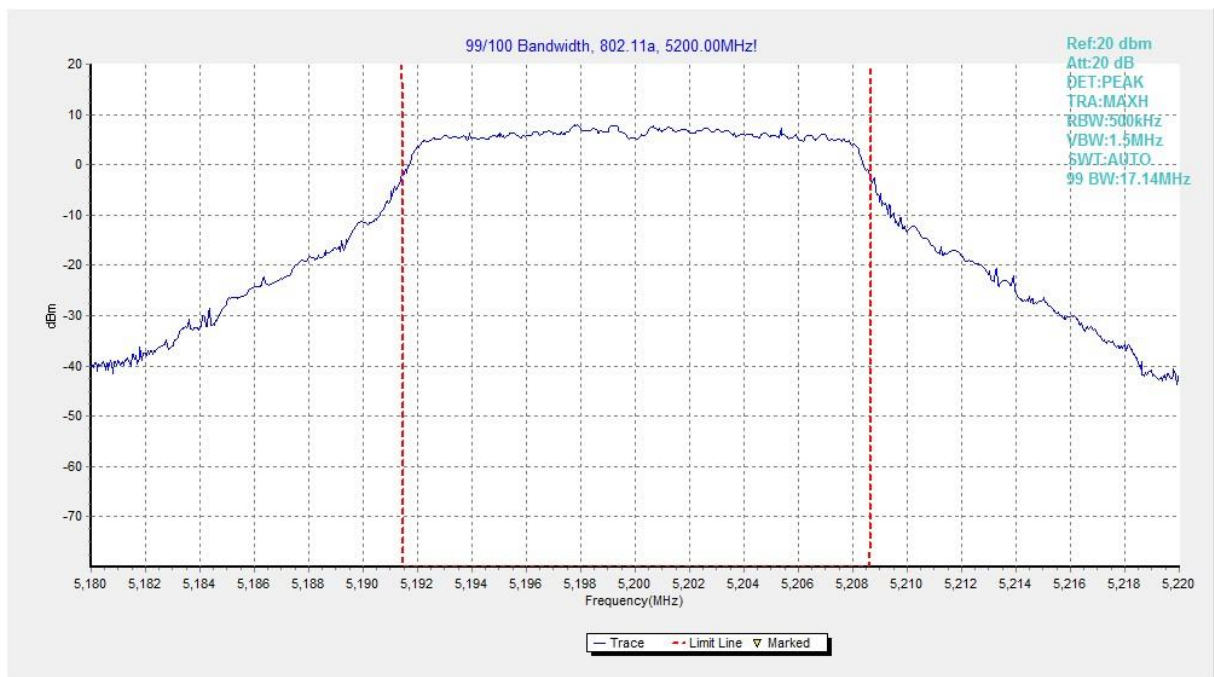


Fig. 28 99% Occupied Bandwidth (802.11a, 5200MHz)

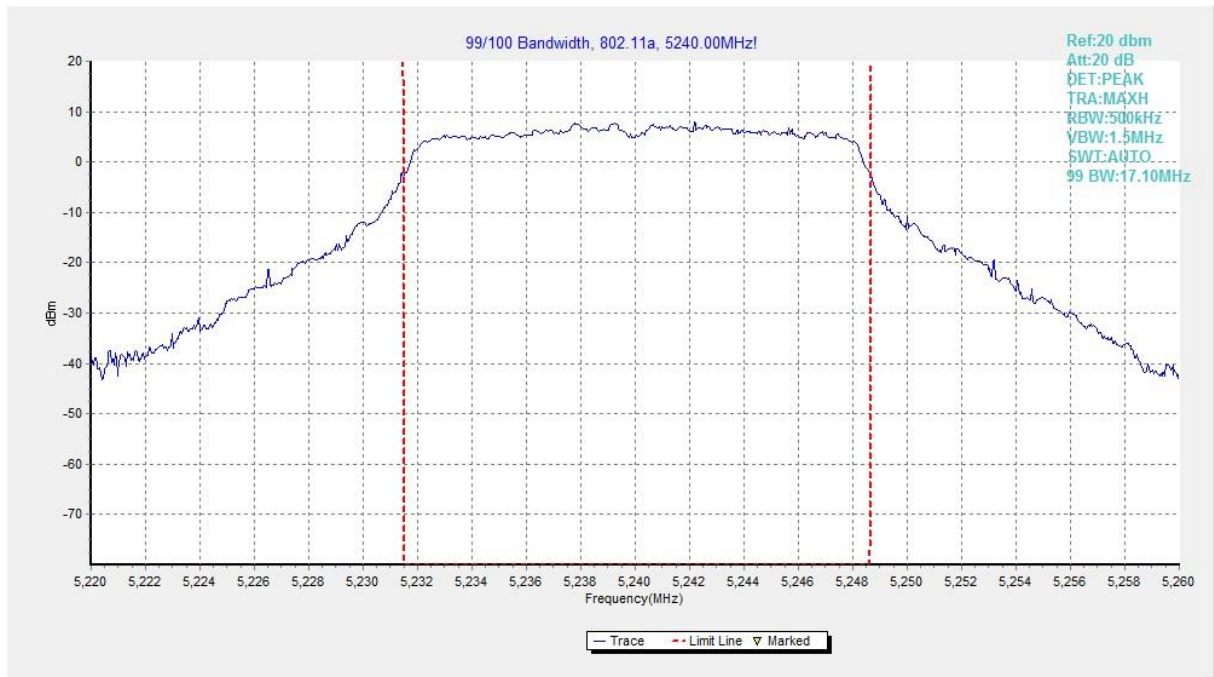


Fig. 29 99% Occupied Bandwidth (802.11a, 5240MHz)

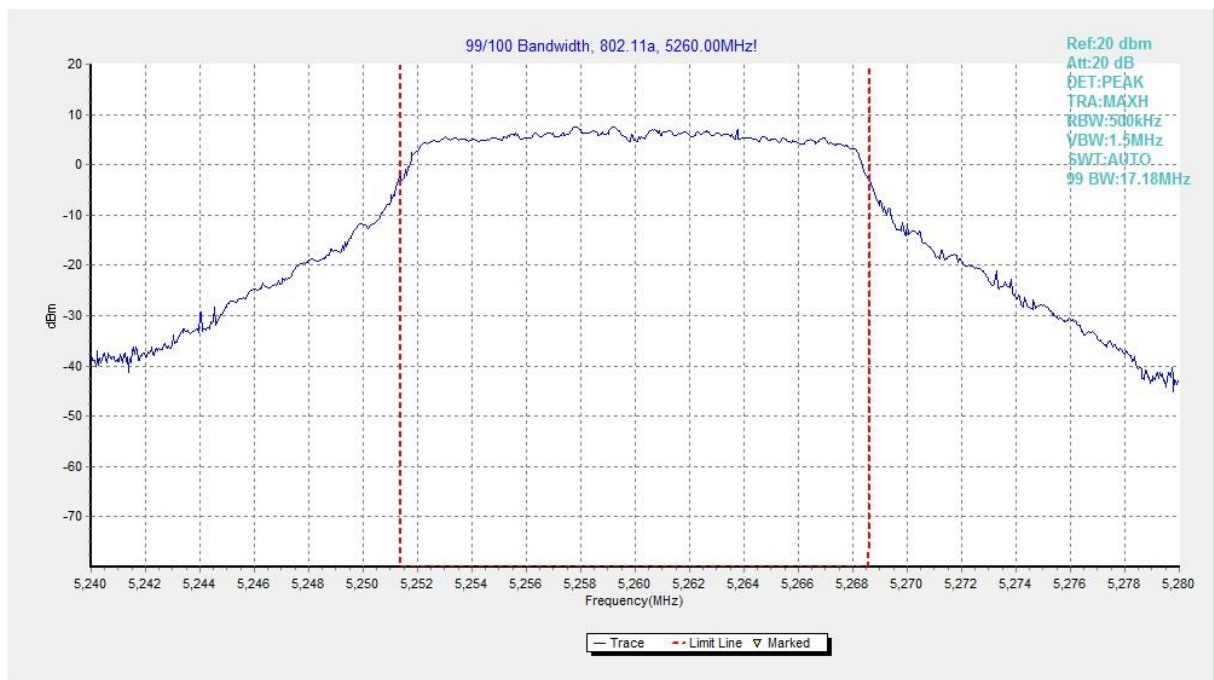


Fig. 30 99% Occupied Bandwidth (802.11a, 5260MHz)

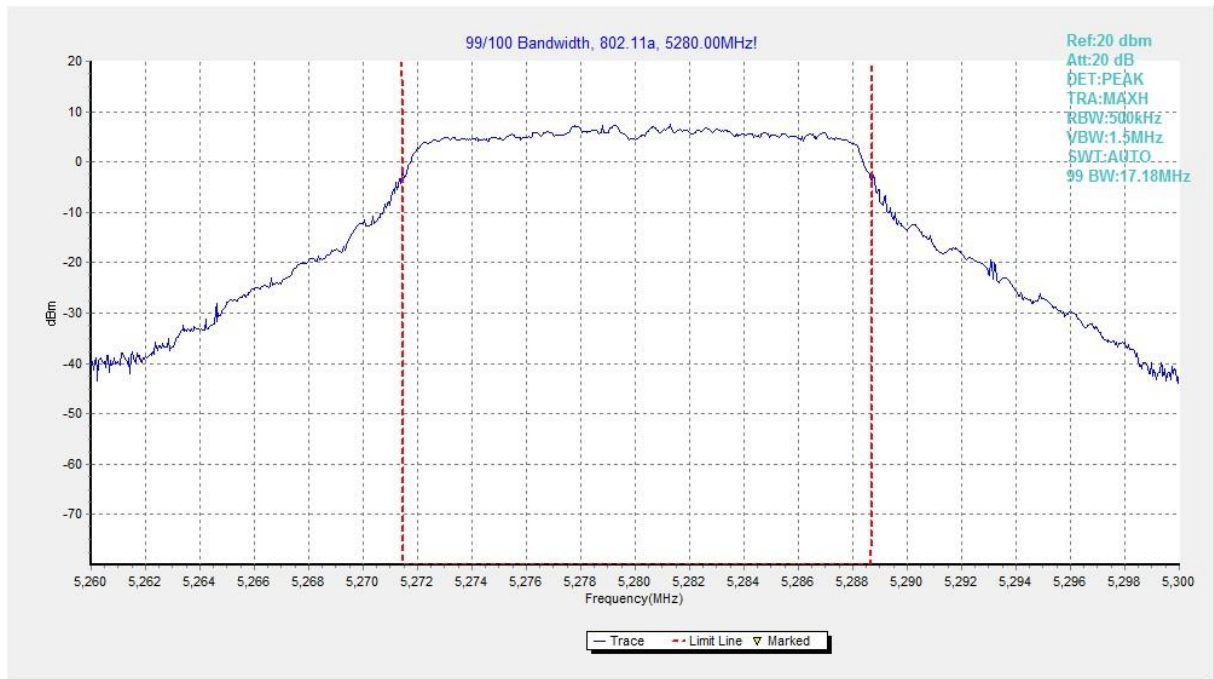


Fig. 31 99% Occupied Bandwidth (802.11a, 5280MHz)

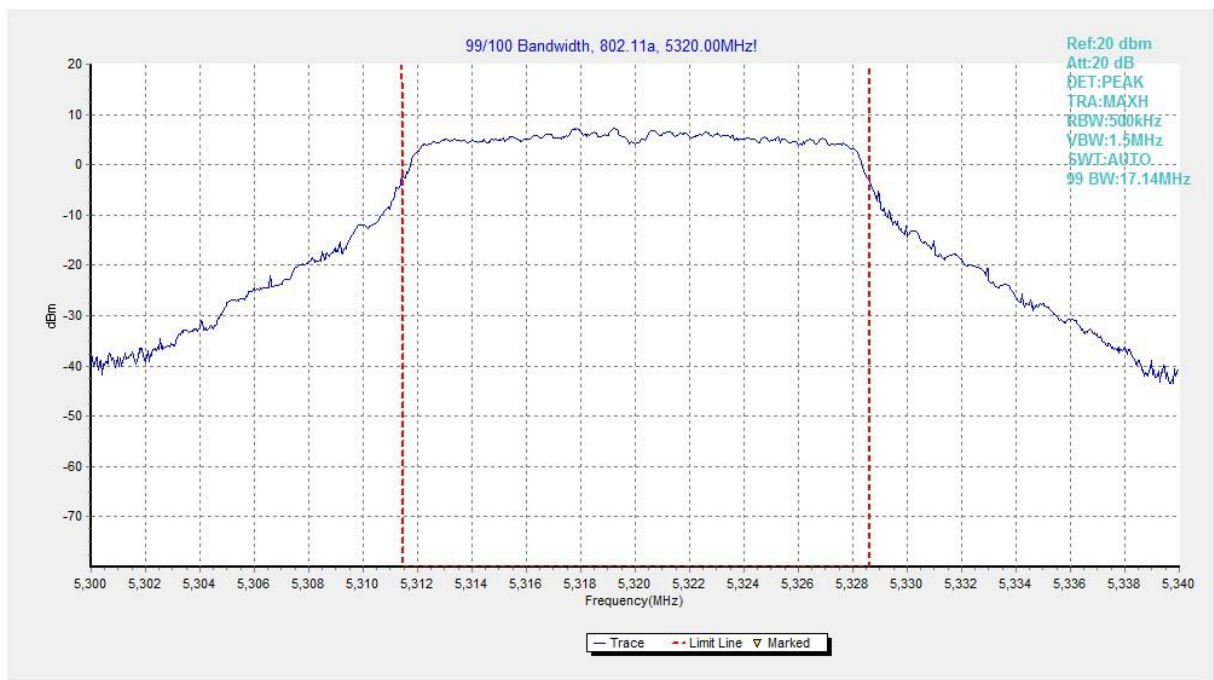


Fig. 32 99% Occupied Bandwidth (802.11a, 5320MHz)

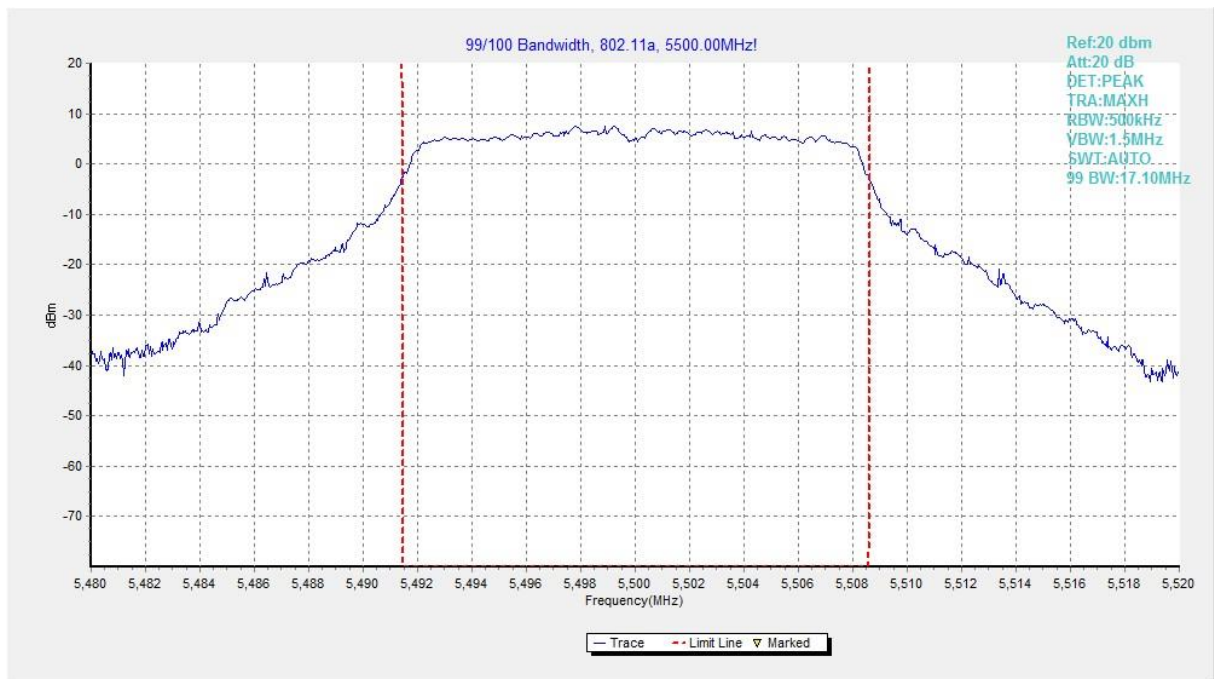


Fig. 33 99% Occupied Bandwidth (802.11a, 5500MHz)

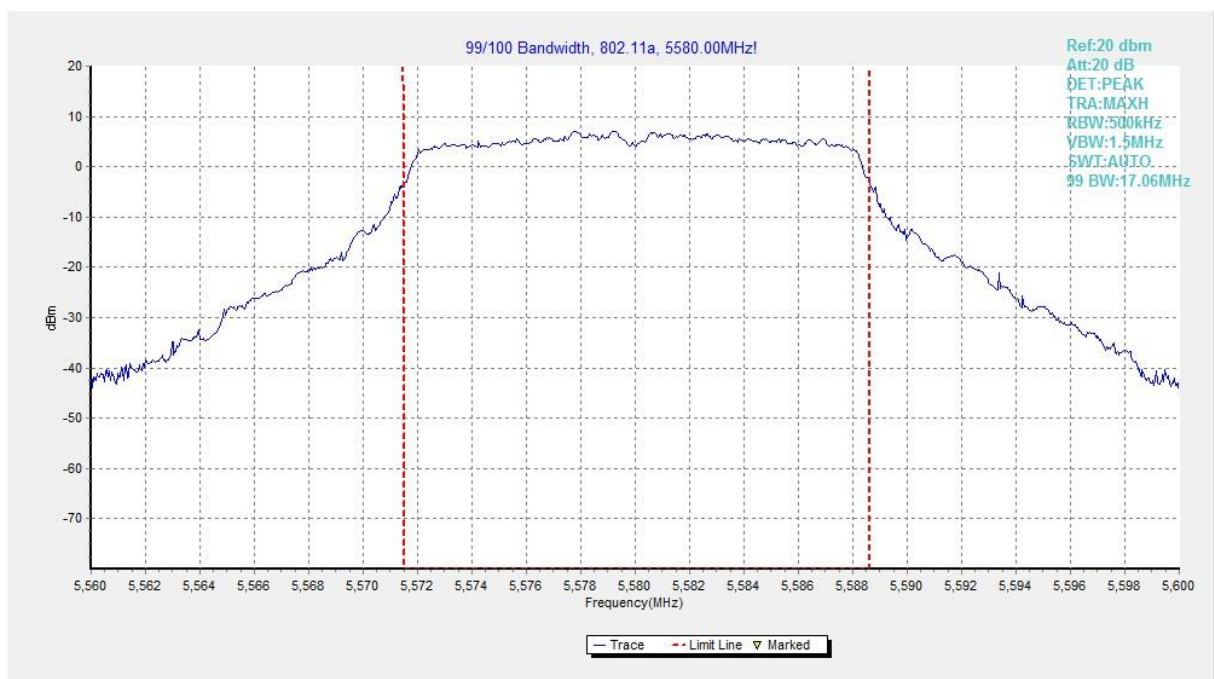


Fig. 34 99% Occupied Bandwidth (802.11a, 5580MHz)

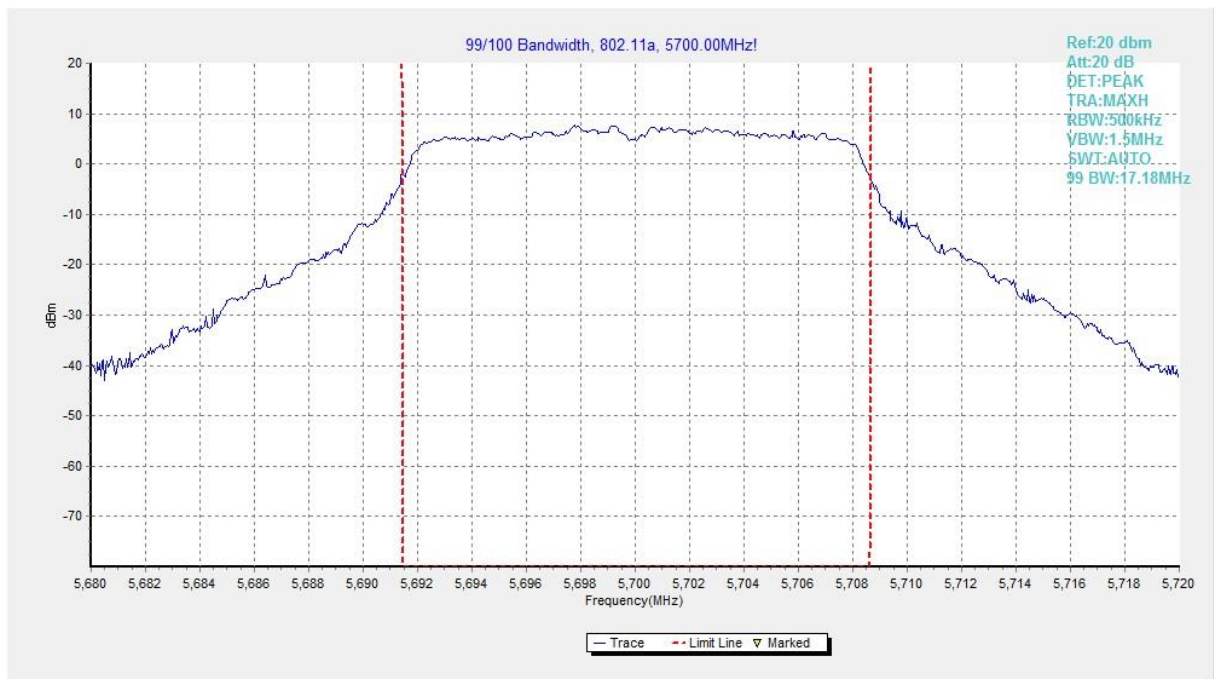


Fig. 35 99% Occupied Bandwidth (802.11a, 5700MHz)

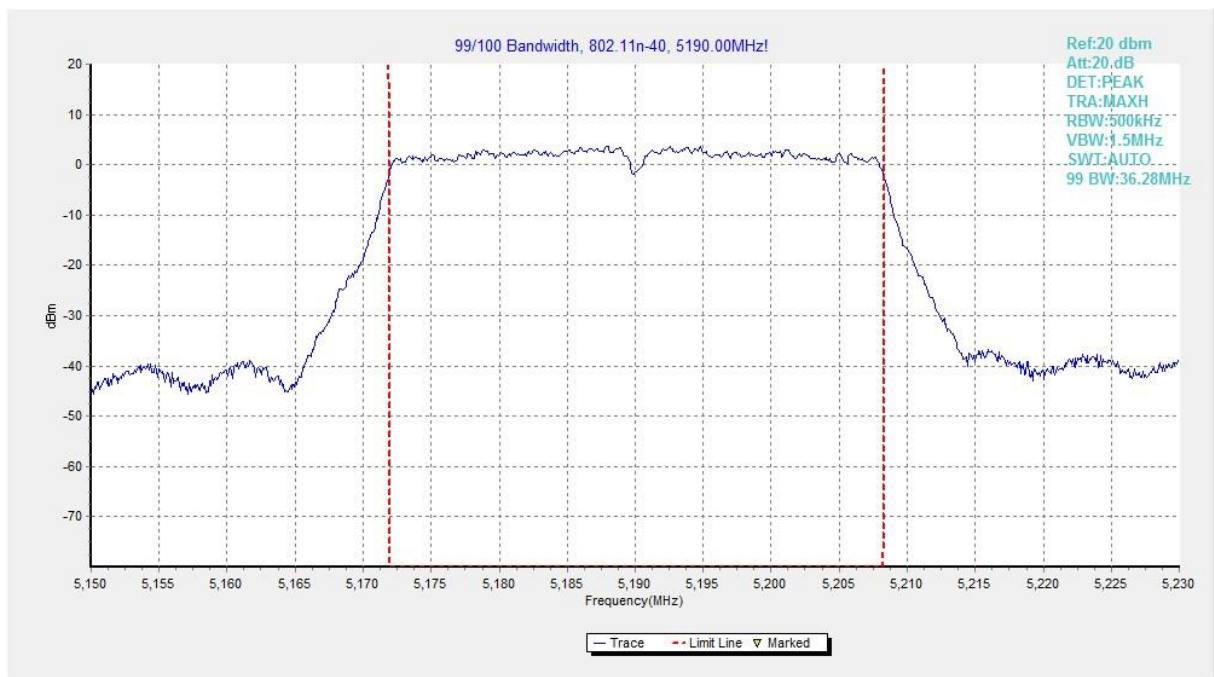


Fig. 36 99% Occupied Bandwidth (802.11n-HT40, 5190MHz)