FCC PART 15E & RSS 247
TEST REPORT
No. I18N01184-RLAN

for

Spectralink Corp

GSM Quad-band/UMTS five-band/LTE/CA Mobile phone

9640

with

Hardware Version: PIO

Software Version: vF03

FCC ID: IYG96XX

IC: 2128B-96XX

Issued Date: 2018-09-14

Designation Number: CN1210

ISED Assigned Code: 23289

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.

Test Laboratory:

Shenzhen Academy of Information and Communications Technology

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I18N01184-RLAN	Rev.0	1st edition	2018-09-14

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1. TEST LATORATORY

1.1. Testing Location

Location: Shenzhen Academy of Information and Communications Technology
Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong Province ,China
Postal Code: 518026
Telephone: +86(0)755-33322000
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1.2. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2018-08-29
Testing End Date: 2018-09-12

1.4. Signature

An Ran

(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:	Spectralink Corp
Address:	2560 55th Street Boulder, CO 80301 USA
Contact Person	Andrew Duncan
E-Mail	Andrew.duncan@spectralink.com
Telephone:	+1 720-925-0480
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2.2. Manufacturer Information

Company Name:	Spectralink Corp
Address:	2560 55th Street Boulder, CO 80301 USA
Contact Person	Andrew Duncan
E-Mail	Andrew.duncan@spectralink.com
Telephone:	+1 720-925-0480
Fax:	/

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

3.1. About EUT

Description	GSM Quad-band/UMTS five-band/LTE/CA Mobile phone
Model Name	9640
Market Name	Versity
RLAN Frequency Range	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz(FCC)/ 5470 MHz ~5600MHz and 5650 MHz ~5725MHz(IC) -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	0.7dBi(ANT0),0.8dBi(ANT1)
Power Supply	3.7V DC by Battery
FCC ID	IYG96XX
IC number	2128B-96XX
Condition of EUT as received	No abnormality in appearance

Note:
Devices subject to this RSS-247 shall not be capable of transmitting in the band 5600-5650 MHz.
Components list, please refer to documents of the manufacturer

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
EUT1	/	PIO	VF03	2018-05-14

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

3.3. Internal Identification of AE

AE ID*	Description	Mode	Manufacturer
AE1	Switching Adapter	ASUC71w-050912300	Aquil Star Precision Industrial (ShenZhen) Co., Ltd

*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 Tablet with integrated antenna and inbuilt battery.
It consists of normal options: travel charger, 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 FCC CFR 47,Part 15,Subpart E	2017
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
RSS-247	Spectrum Management and Telecommunications Radio Standards Specification Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices	Issue 2 February, 2017
RSS-Gen	Spectrum Management and Telecommunications Radio Standards Specification General Requirements for Compliance of Radio Apparatus	Issue 5 April, 2018
KDB 662911	D01 Multiple Transmitter Output	v02r01

Note: DFS is a separate report.

5. SUMMARY OF TEST RESULTS

5.1. Summary of Test Results

No.	Test cases	Sub-clause of Part15E	Sub-clause of IC	Verdict
0	Maximum Output Power	15.407(a)	RSS-247 section 6.2	**P**
1	Power Spectral Density	15.407(a)	RSS-247 section 6.2	**P**
2	Occupied 26dB Bandwidth	15.407(a)	RSS-247 section 6.2	**P**
3	Occupied 6dB Bandwidth	15.407(e)	RSS-247 section 6.2.4	**P**
4	99% Occupied Bandwidth	15.407	RSS-247 section 6.2	**P**
5	Band edge compliance	15.407	RSS-247 section 6.2	**P**
6	Radiated Spurious Emissions	15.407	RSS-GEN 8.9	**P**
7	AC Power line Conducted	15.207	RSS-GEN 8.8	**P**
8	Frequency Stability	15.407	**/**	**P**
9	Transmit Power Control	15.407	**/**	**NA**

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

5.2. Statements

CTTL has evaluated the test cases requested by the applicant/manufacturer as listed in section 5.1 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2

5.3. Terms used in the result table

Terms used in Verdict column

P	Pass
NA	Not Available
F	Fail

Abbreviations

AC	Alternating Current
AFH	Adaptive Frequency Hopping
BW	Band Width
E.I.R.P.	equivalent isotropic radiated power
ISM	Industrial, Scientific and Medical
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
Tx	Transmitter

5.4. Laboratory Environment

Semi-anechoic Chamber did not exceed following limits along the EMC testing

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ±4dB, 3m/10m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Shielded room did not exceed following limits along the EMC testing

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

Fully-anechoic Chamber did not exceed following limits along the EMC testing

Temperature	Min. = 15 ˚C, Max. = 30 ˚C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Voltage Standing Wave Ratio (VSWR)	≤6dB, from 1 to 18 GHz,3m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

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	2019-01-17	1 year
2	Power Sensor	U2021XA	MY55430013	Agilent	2019-02-01	1 year
3	Test Receiver	ESCI	100702	Rohde & Schwarz	2019-06-20	1 year
4	LISN	ENV216	102067	Rohde & Schwarz	2018-07-18	1 year

Radiated test system

NO.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Loop Antenna	HLA6120	35779	TESEQ	2019-05-02	3 years
2	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2020-02-27	3 years
3	Horn Antenna	3142E	00224831	ETS-Lindgren	2021-05-17	3 years
4	Test Receiver	ESR7	101676	Rohde & Schwarz	2018-11-29	1 year
5	Spectrum Analyser	FSV40	101192	Rohde & Schwarz	2019-05-21	1 year
6	Chamber	FACT3-2.0	1285	ETS-Lindgren	2020-07-20	3 years
7	Antenna	QSH-SL-18-26-S-20	17013	Q-par	2020-01-15	3 years
8	Antenna	QSH-SL-26-40-K-20	17014	Q-par	2020-01-11	3 years

Test software

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

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

Anechoic chamber

Fully anechoic chamber by ETS-Lindgren

7. Measurement Uncertainty

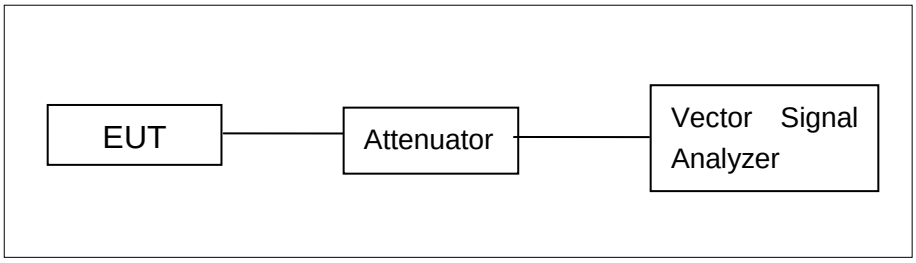
Test Name	Uncertainty	
1. RF Output Power - Conducted	±1.32dB	
2.Power Spectral Density - Conducted	±2.32dB	
3.Occupied channel bandwidth - Conducted	±66Hz	
4 Transmitter Spurious Emission - Conducted	30MHz≤f≤1GHz	±1.41dB
	1GHz≤f≤7GHz	±1.92dB
	7GHz≤f≤13GHz	±2.31dB
	13GHz≤f≤26GHz	±2.61dB
5. Transmitter Spurious Emission - Radiated	9kHz≤f≤30MHz	±1.84dB
	30MHz≤f≤1GHz	±4.90dB
	1GHz≤f≤18GHz	±5.12dB
	18GHz≤f≤40GHz	±4.66dB
6. AC Power line Conducted Emission	150kHz≤f≤30MHz	±3.10dB

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

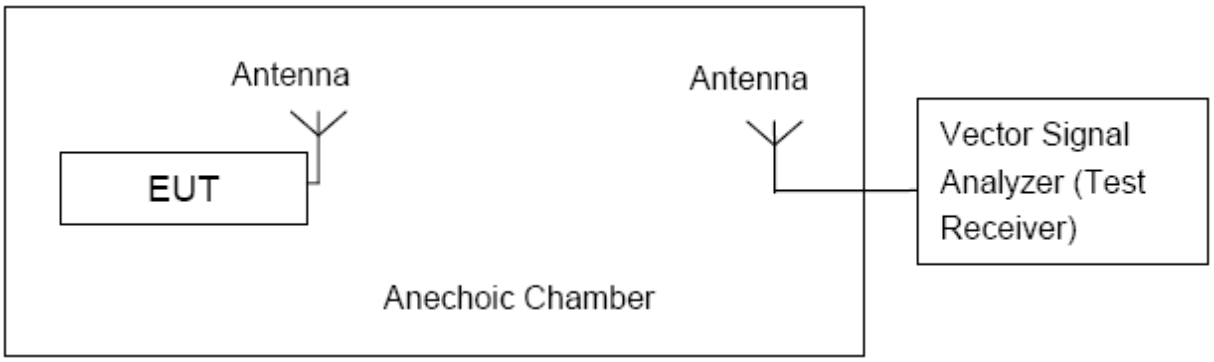
Conducted Measurements

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(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.

Standard	Frequency (MHz)	Limit (dBm)
RSS-247 6.2	5150MHz~5250MHz	23 (EIRP) or 10+10logB(EIRP)
	5250MHz~5350MHz	24 or 11+10logB
	5470MHz~5600MHz	24 or 11+10logB
	5650MHz~5725MHz	24 or 11+10logB
	5725MHz~5850MHz	30

Limit use the less value, and B is the 99% 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)	Average power (dBm)		Conclusion
				Ant0	Ant1	
5.2GHz Band (UNII-1)	802.11a	CH 36	5180	13.41	14.12	P
		CH 40	5200	13.65	13.89	P
		CH 48	5240	13.57	13.67	P
	802.11n-HT20	CH 36	5180	13.50	14.05	P
		CH 40	5200	13.59	13.76	P
		CH 48	5240	13.35	13.54	P
	802.11n-HT40	CH 38	5190	13.61	13.82	P
		CH 46	5230	13.83	13.67	P
	802.11ac-VHT20	CH 36	5180	13.38	14.11	P
		CH 40	5200	13.51	13.89	P
		CH 48	5240	13.67	13.85	P
	802.11ac-VHT40	CH 38	5190	13.32	13.78	P
		CH 46	5230	13.39	13.23	P
	802.11ac-VHT80	CH 42	5210	13.12	13.21	P

U–NII Band	Mode	Channel	Frequency (MHz)	E.I.R.P (dBm)		Conclusion
				Ant0	Ant1	
5.2GHz Band (UNII-1)	802.11a	CH 36	5180	14.11	14.92	P
		CH 40	5200	14.35	14.69	P
		CH 48	5240	14.27	14.47	P
	802.11n-HT20	CH 36	5180	14.20	14.85	P
		CH 40	5200	14.29	14.56	P
		CH 48	5240	14.05	14.34	P
	802.11n-HT40	CH 38	5190	14.31	14.62	P
		CH 46	5230	14.53	14.47	P
	802.11ac-VHT20	CH 36	5180	14.08	14.91	P
		CH 40	5200	14.21	14.69	P
		CH 48	5240	14.37	14.65	P
	802.11ac-VHT40	CH 38	5190	14.02	14.58	P
		CH 46	5230	14.09	14.03	P
	802.11ac-VHT80	CH 42	5210	13.82	14.01	P

Note: E.I.R.P value= Conducted values (with conducted samples) + Antenna Gain.

U–NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)		Conclusion
				Ant0	Ant1	
5.3GHz Band (UNII-2A)	802.11a	CH 52	5260	13.78	13.70	P
		CH 56	5280	13.57	14.13	P
		CH 64	5320	13.63	13.83	P
	802.11n-HT20	CH 52	5260	13.72	13.83	P
		CH 56	5280	13.52	13.85	P
		CH 64	5320	13.27	13.68	P
	802.11n-HT40	CH 54	5270	13.32	13.46	P
		CH 62	5310	13.25	13.25	P
	802.11ac-VHT20	CH 52	5260	13.61	13.95	P
		CH 56	5280	13.49	13.65	P
		CH 64	5320	13.31	13.76	P
	802.11ac-VHT40	CH 54	5270	13.21	13.47	P
		CH 62	5310	13.23	13.27	P
	802.11ac-VHT80	CH 58	5290	13.25	13.31	P

U–NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)		Conclusion
				Ant0	Ant1	
5.5GHz Band (UNII-2C)	802.11a	CH 100	5500	13.61	13.97	P
		CH 116	5580	13.86	14.06	P
		CH 140	5700	13.72	13.88	P
	802.11n-HT20	CH 100	5500	13.71	13.65	P
		CH 116	5580	13.82	13.43	P
		CH 140	5700	13.70	13.72	P
	802.11n-HT40	CH 102	5510	12.95	13.43	P
		CH 110	5550	13.33	13.59	P
		CH 134	5670	13.42	13.27	P
	802.11ac-VHT20	CH 100	5500	13.65	13.56	P
		CH 116	5580	13.93	13.63	P
		CH 140	5700	13.78	13.42	P
	802.11ac-VHT40	CH 102	5510	12.92	13.43	P
		CH 110	5550	13.25	13.32	P
		CH 134	5670	13.35	13.17	P
	802.11ac-VHT80	CH 106	5530	13.11	13.23	P
		CH 122	5610	13.21	13.15	P

U–NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)		Conclusion
				Ant0	Ant1	
5.8GHz Band (UNII-3)	802.11a	CH 149	5745	12.65	12.56	P
		CH 157	5785	12.91	12.12	P
		CH 165	5825	13.25	12.15	P
	802.11n-HT20	CH 149	5745	12.13	11.97	P
		CH 157	5785	12.86	12.07	P
		CH 165	5825	12.81	12.21	P
	802.11n-HT40	CH 151	5755	12.23	11.95	P
		CH 159	5795	12.20	12.38	P
	802.11ac-VHT20	CH 149	5745	12.25	12.21	P
		CH 157	5785	12.86	12.82	P
		CH 165	5825	12.73	12.93	P
	802.11ac-VHT40	CH 151	5755	12.39	11.83	P
		CH 159	5795	12.88	12.32	P
	802.11ac-VHT80	CH 155	5775	12.43	12.10	P

MIMO：

U–NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)			Conclusion
				ANT0	ANT1	MIMO	
5.2GHz Band (UNII-1)	802.11n-HT20	CH 36	5180	13.73	14.32	17.04	P
		CH 40	5200	13.66	14.42	17.07	P
		CH 48	5240	13.71	14.12	16.93	P
	802.11n-HT40	CH 38	5190	13.22	13.85	16.56	P
		CH 46	5230	13.58	13.76	16.68	P
	802.11ac-VHT20	CH 36	5180	13.84	14.28	17.08	P
		CH 40	5200	13.87	14.32	17.11	P
		CH 48	5240	13.75	14.13	16.95	P
	802.11ac-VHT40	CH 38	5190	13.12	13.88	16.53	P
		CH 46	5230	13.25	13.78	16.53	P
	802.11ac-VHT80	CH 42	5210	13.05	13.66	16.38	P

U–NII Band	Mode	Channel	Frequency (MHz)	E.I.R.P (dBm)	Conclusion
				MIMO	
5.2GHz Band (UNII-1)	802.11n-HT20	CH 36	5180	17.84	P
		CH 40	5200	17.87	P
		CH 48	5240	17.73	P
	802.11n-HT40	CH 38	5190	17.36	P
		CH 46	5230	17.48	P
	802.11ac-VHT20	CH 36	5180	17.88	P
		CH 40	5200	17.91	P
		CH 48	5240	17.75	P
	802.11ac-VHT40	CH 38	5190	17.33	P
		CH 46	5230	17.33	P
	802.11ac-VHT80	CH 42	5210	17.18	P

Note: E.I.R.P value= Conducted values (with conducted samples) + Antenna Gain.

U–NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)			Conclusion
				ANT0	ANT1	MIMO	
5.3GHz Band (UNII-2 A)	802.11n-HT20	CH 52	5260	13.81	13.98	16.91	P
		CH 56	5280	13.86	13.87	16.88	P
		CH 64	5320	13.79	13.74	16.78	P
	802.11n-HT40	CH 54	5270	13.37	13.65	16.52	P
		CH 62	5310	13.44	13.36	16.41	P
	802.11ac-VHT20	CH 52	5260	13.94	14.07	17.02	P
		CH 56	5280	13.68	13.85	16.78	P
		CH 64	5320	13.78	13.68	16.74	P
	802.11ac-VHT40	CH 54	5270	13.23	13.54	16.40	P
		CH 62	5310	13.34	13.28	16.32	P
	802.11ac-VHT80	CH 58	5290	13.27	13.14	16.22	P

U–NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)			Conclusion
				ANT0	ANT1	MIMO	
5.5GHz Band (UNII-2 C)	802.11n-HT20	CH 100	5500	13.80	13.96	16.89	P
		CH 116	5580	13.87	13.92	16.91	P
		CH 140	5700	13.87	13.71	16.80	P
	802.11n-HT40	CH 102	5510	13.28	13.54	16.42	P
		CH 110	5550	13.24	13.63	16.45	P
		CH 134	5670	13.48	13.41	16.46	P
	802.11ac-VHT20	CH 100	5500	13.76	13.94	16.86	P
		CH 116	5580	13.97	14.00	17.00	P
		CH 140	5700	13.88	13.79	16.84	P
	802.11ac-VHT40	CH 102	5510	13.19	13.44	16.33	P
		CH 110	5550	13.26	13.58	16.43	P
		CH 134	5670	13.49	13.21	16.36	P
	802.11ac-VHT80	CH 106	5530	13.22	13.58	16.41	P
		CH 122	5610	13.35	13.43	16.40	P

U–NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)			Conclusion
				ANT0	ANT1	MIMO	
5.8GHz Band (UNII-3)	802.11n-HT20	CH 149	5745	12.76	13.13	15.96	**P**
		CH 157	5785	13.27	12.32	15.83	**P**
		CH 165	5825	13.34	12.28	15.85	**P**
	802.11n-HT40	CH 151	5755	12.46	12.21	15.35	**P**
		CH 159	5795	12.42	12.23	15.34	**P**
	802.11ac-VHT20	CH 149	5745	12.85	12.93	15.90	**P**
		CH 157	5785	13.42	12.72	16.09	**P**
		CH 165	5825	13.31	12.67	16.01	**P**
	802.11ac-VHT40	CH 151	5755	12.38	12.26	15.33	**P**
		CH 159	5795	12.43	12.35	15.40	**P**
	802.11ac-VHT80	CH 155	5775	12.71	12.31	15.52	**P**

Note:

Worst-case data rates as provided by the client were: 54Mbps (802.11a), MCS7 (802.11n), MCS8 (802.11ac). 802.11a, 802.11n-HT40 and 802.11ac-VHT80 modes are selected as the worst-case.

For SISO modes, there are two transmission antennas, used in any given time can be either Ant0 or Ant1. Both antenna ports have the same power class, output power measurement for SISO modes on both antennas are reported. The Ant1 transmits higher out power as worst-case.

For MIMO modes, both Ant0 and Ant1 used at the same time.

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 (conducted)

Measurement Limit:

Standard	Frequency (MHz)	Limit
FCC CRF Part 15.407(a)&RSS-247 6.2	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 (Antenna 1):

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180MHz(Ch36)	6.85	P
	5200MHz(Ch40)	7.49	P
	5240MHz(Ch48)	7.65	P
	5260MHz(Ch52)	7.05	P
	5280MHz(Ch56)	6.82	P
	5320MHz(Ch64)	6.50	P
	5500MHz(Ch100)	7.27	P
	5580MHz(Ch116)	7.00	P
	5700MHz(Ch140)	6.23	P

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11n HT40	5190MHz(Ch38)	3.78	P
	5230MHz(Ch46)	4.31	P
	5270MHz(Ch54)	3.80	P
	5310MHz(Ch62)	4.06	P
	5510MHz(Ch102)	4.52	P
	5550MHz(Ch110)	4.45	P
	5670MHz(Ch134)	3.98	P

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11ac VHT80	5210MHz(Ch42)	1.55	P
	5290MHz(Ch58)	1.00	P
	5530MHz(Ch106)	1.60	P
	5610MHz(Ch122)	1.80	P

MIMO:

Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/MHz)			Conclusion
			ANT0	ANT1	MIMO	
802.11n HT20	Ch36	5180MHz	5.13	5.86	8.52	P
	Ch40	5200MHz	5.14	6.21	8.72	P
	Ch48	5240MHz	5.90	6.05	8.99	P
	Ch52	5260MHz	5.85	5.59	8.73	P
	Ch56	5280MHz	5.91	5.70	8.82	P
	Ch64	5320MHz	5.09	4.96	8.04	P
	Ch100	5500MHz	5.74	5.85	8.81	P
	Ch116	5580MHz	6.08	5.61	8.86	P
	Ch140	5700MHz	4.41	5.09	7.77	P
802.11n HT40	Ch38	5190MHz	3.67	3.80	6.75	P
	Ch46	5230MHz	4.13	3.87	7.01	P
	Ch54	5270MHz	3.54	3.09	6.33	P
	Ch62	5310MHz	2.98	2.45	5.73	P
	Ch102	5510MHz	4.37	4.03	7.21	P
	Ch110	5550MHz	3.90	4.00	6.96	P
	Ch134	5670MHz	3.26	3.03	6.16	P
802.11ac-VHT80	Ch42	5210MHz	1.55	1.06	4.32	P
	Ch58	5290MHz	2.22	0.80	4.58	P
	Ch106	5530MHz	2.19	1.08	4.68	P
	Ch122	5610MHz	2.25	1.86	5.07	P

U–NII Band	Mode	Channel	Frequency (MHz)	E.I.R.P Spectral Density (dBm)		Conclusion
				SISO	MIMO	
5.2GHz Band (UNII-1)	802.11a	CH 36	5180	7.65	9.32	P
		CH 40	5200	8.29	9.52	P
		CH 48	5240	8.45	9.79	P
	802.11n-HT40	CH 38	5190	4.58	7.55	P
		CH 46	5230	5.11	7.81	P
	802.11ac-VHT80	CH 42	5210	2.35	2.35	P

Note: E.I.R.P value= Conducted values (with conducted samples) + Antenna Gain.

5.8GHz Band (UNII-3)

SISO (Antenna 1):

U–NII Band	Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/500kHz)	Conclusion
5.8GHz Band (UNII-3)	802.11a	CH 149	5745	5.97	**P**
		CH 157	5785	6.52	**P**
		CH 165	5825	7.13	**P**
	802.11n-HT40	CH 151	5755	3.01	**P**
		CH 159	5795	4.18	**P**
	802.11ac-VHT80	CH 155	5775	0.93	**P**

MIMO:

U–NII Band	Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Conclusion
				ANT0	ANT1	MIMO	
5.8GHz Band (UNII-3)	802.11n HT20	CH 149	5745	4.46	3.75	7.13	**P**
		CH 157	5785	5.18	4.74	7.98	**P**
		CH 165	5825	5.69	4.52	8.15	**P**
	802.11n HT40	CH 151	5755	5.36	3.35	7.48	**P**
		CH 159	5795	6.36	4.66	8.60	**P**
	802.11ac-VHT80	CH 155	5775	0.44	-1.58	2.56	**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	22.65	**P**
	5200MHz(Ch40)	Fig.2	22.75	**P**
	5240MHz(Ch48)	Fig.3	22.65	**P**
	5260MHz(Ch52)	Fig.4	22.95	**P**
	5280MHz(Ch56)	Fig.5	22.70	**P**
	5320MHz(Ch64)	Fig.6	22.55	**P**
	5500MHz(Ch100)	Fig.7	22.65	**P**
	5580MHz(Ch116)	Fig.8	22.70	**P**
	5700MHz(Ch140)	Fig.9	22.80	**P**
802.11n HT40	5190MHz(Ch38)	Fig.10	41.28	**P**
	5230MHz(Ch46)	Fig.11	41.60	**P**
	5270MHz(Ch54)	Fig.12	41.68	**P**
	5310MHz(Ch62)	Fig.13	41.60	**P**
	5510MHz(Ch102)	Fig.14	41.76	**P**
	5550MHz(Ch110)	Fig.15	41.52	**P**
	5670MHz(Ch134)	Fig.16	41.60	**P**
802.11 ac VHT80	5210MHz(Ch42)	Fig.17	84.48	**P**
	5290MHz(Ch58)	Fig.18	84.96	**P**
	5530MHz(Ch106)	Fig.19	84.64	**P**
	5610MHz(Ch122)	Fig.20	84.80	**P**

Conclusion: PASS

Test graphs as below:

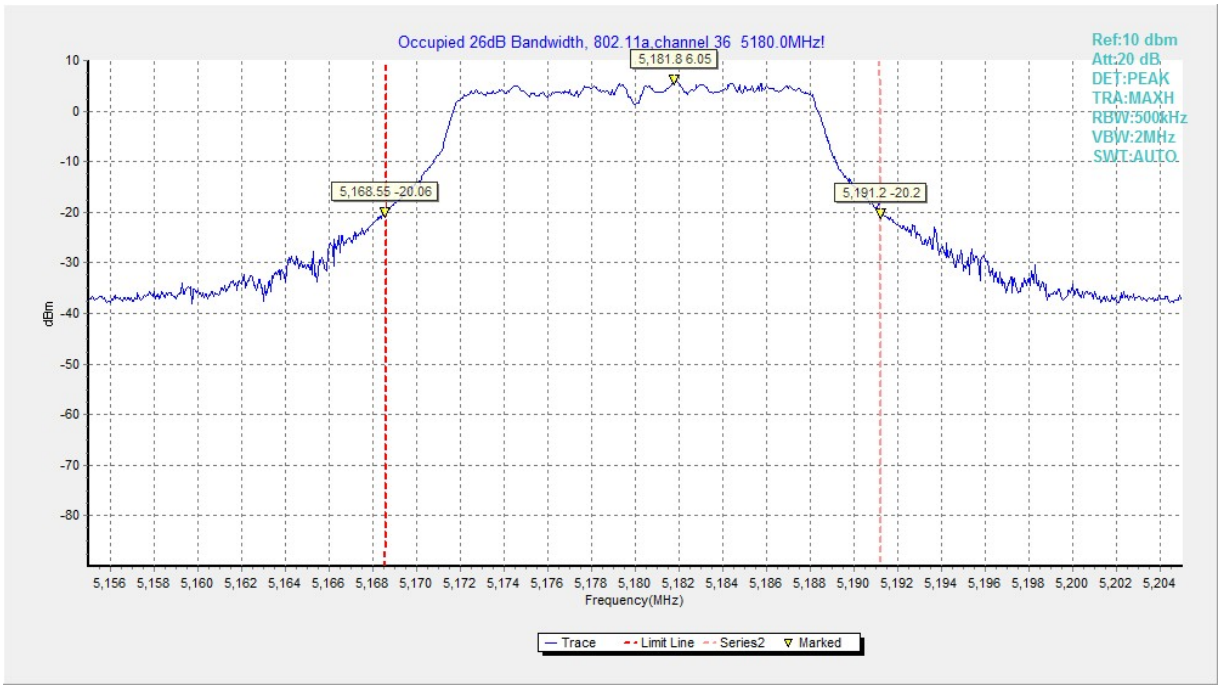


Fig. 1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

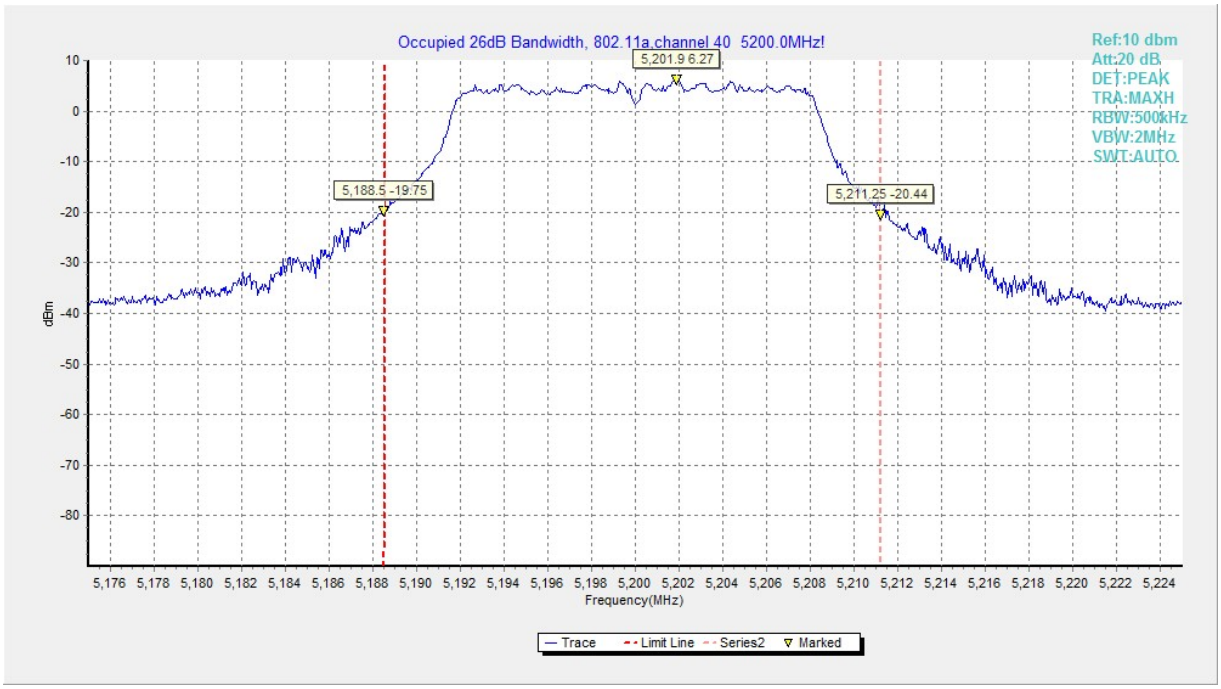


Fig. 2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

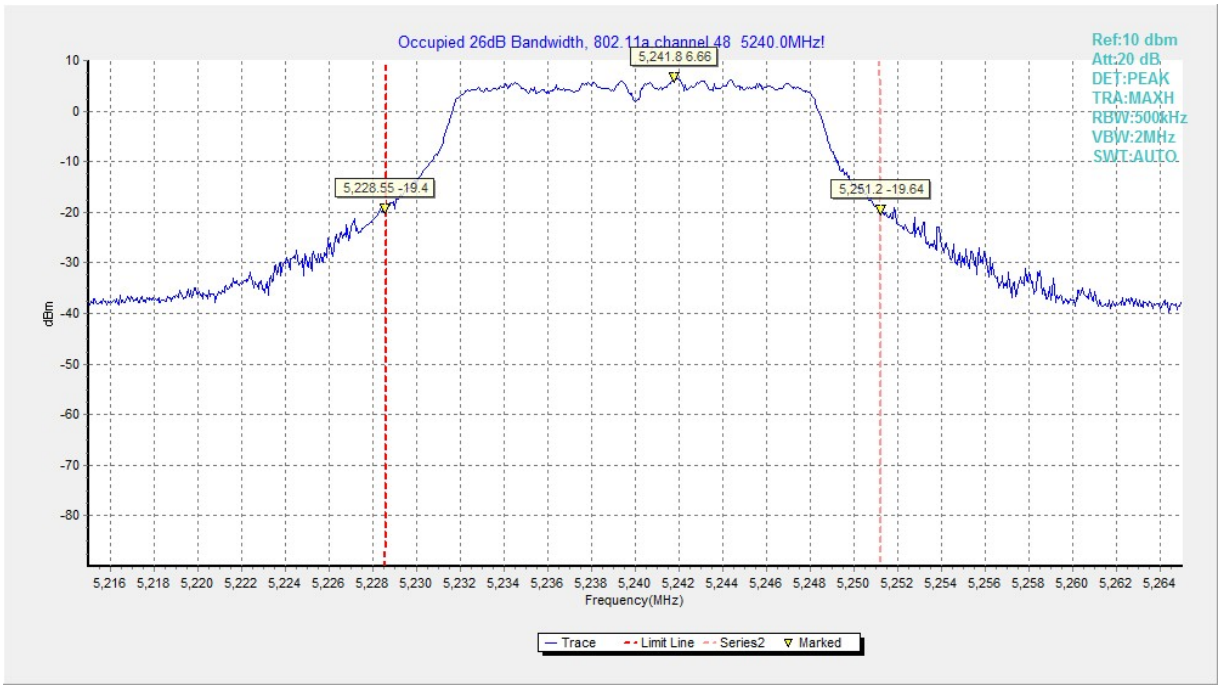


Fig. 3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

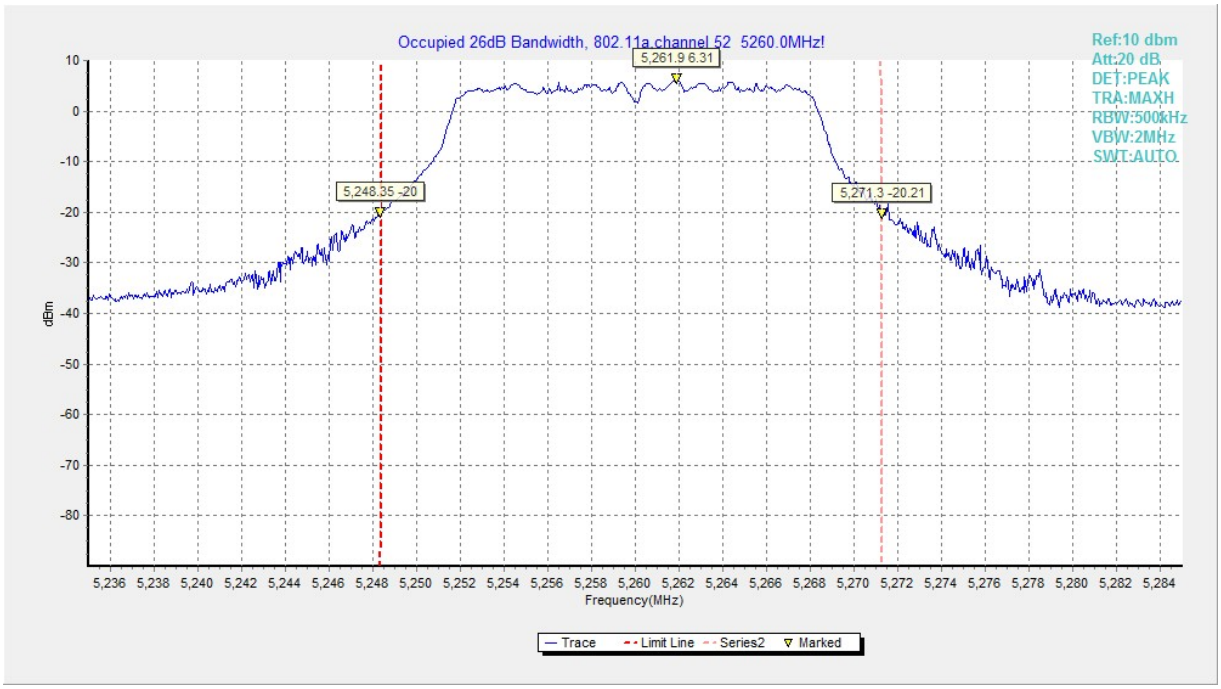


Fig. 4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

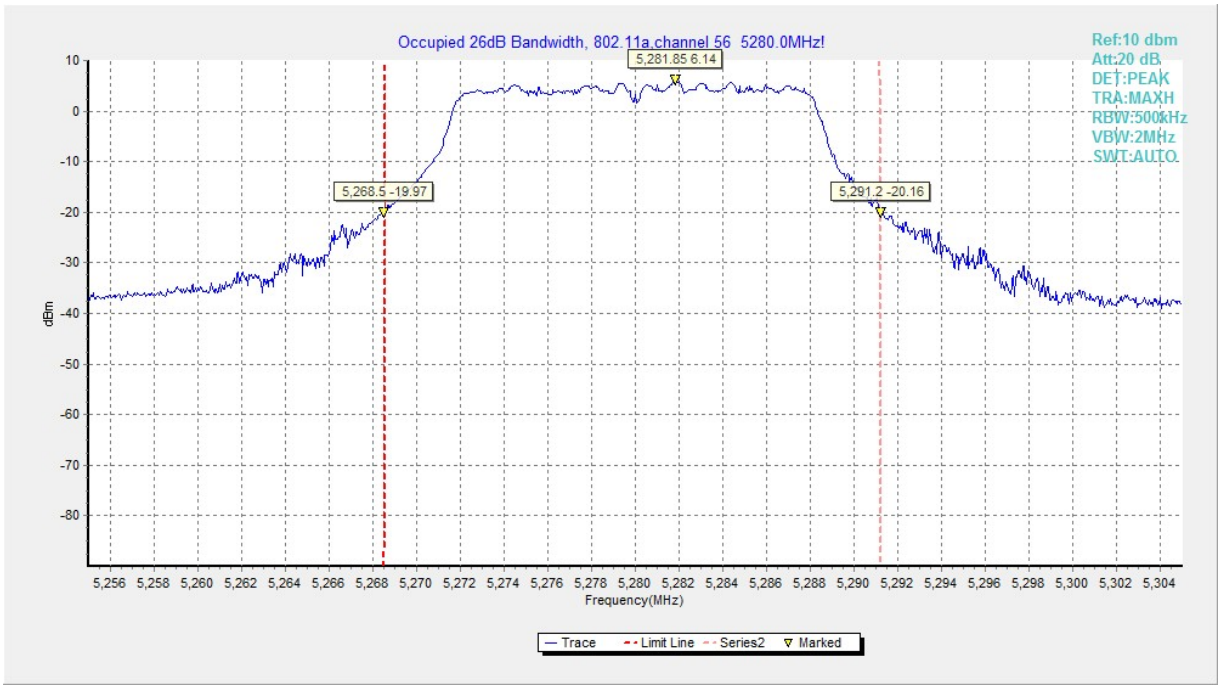


Fig. 5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

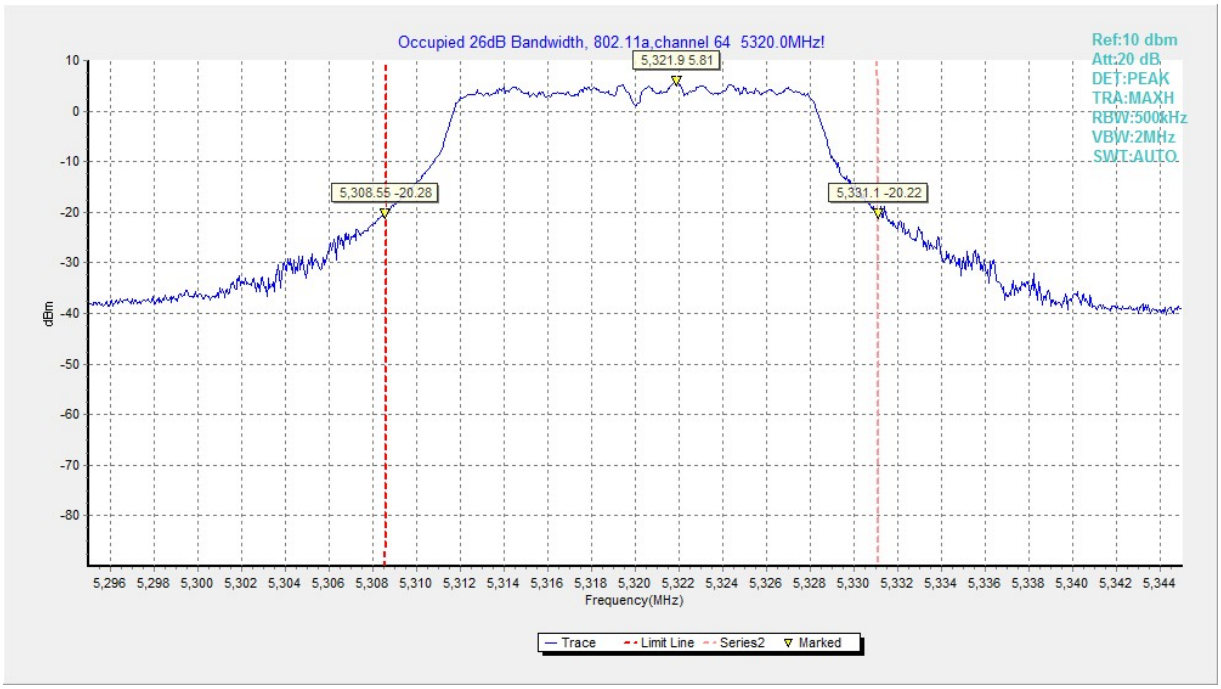


Fig. 6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

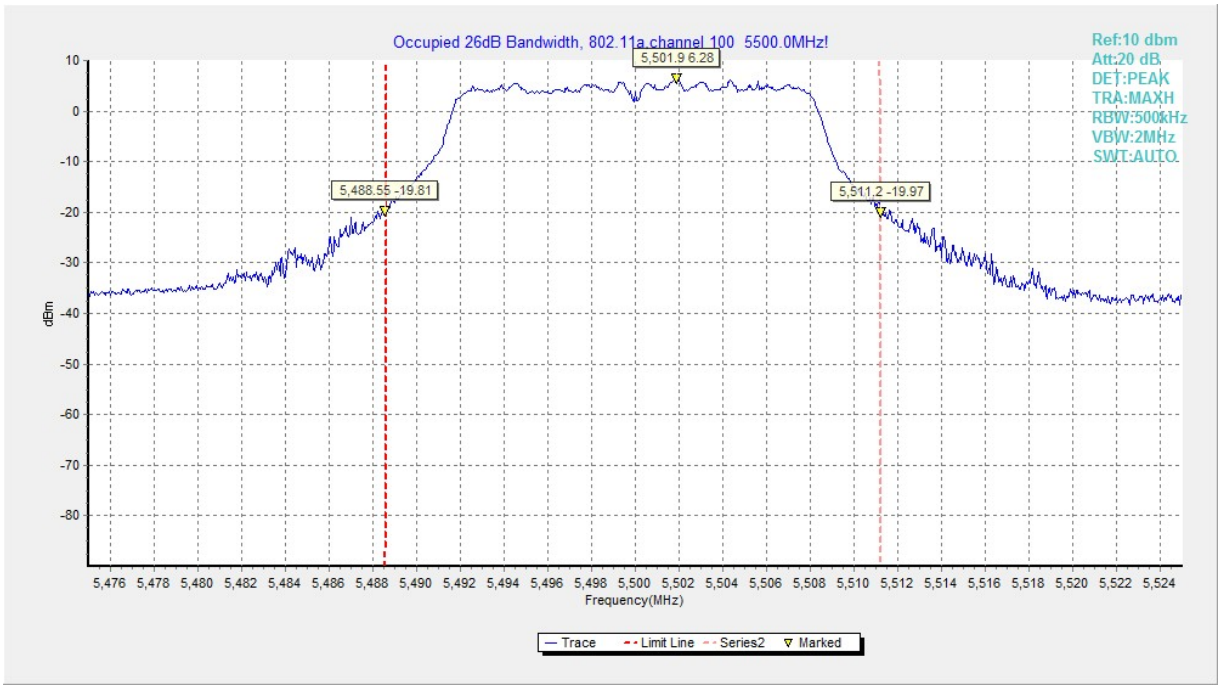


Fig. 7 Occupied 26dB Bandwidth (802. 11a, 5500MHz)

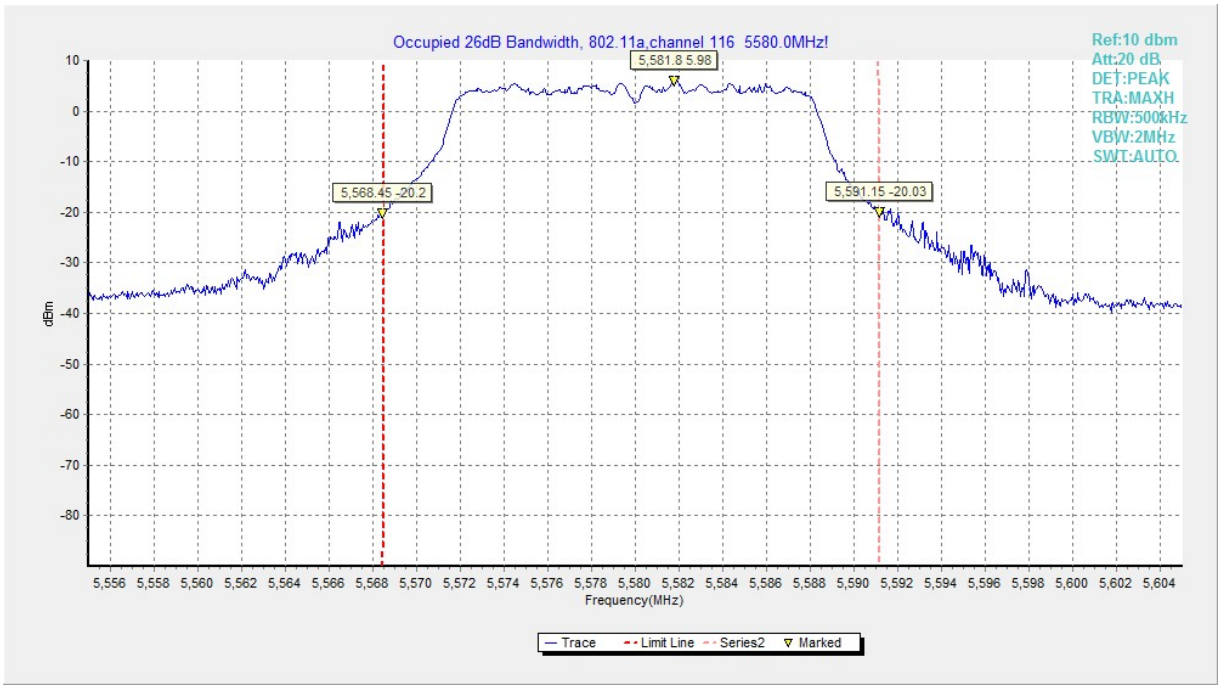


Fig. 8 Occupied 26dB Bandwidth (802. 11a, 5600MHz)

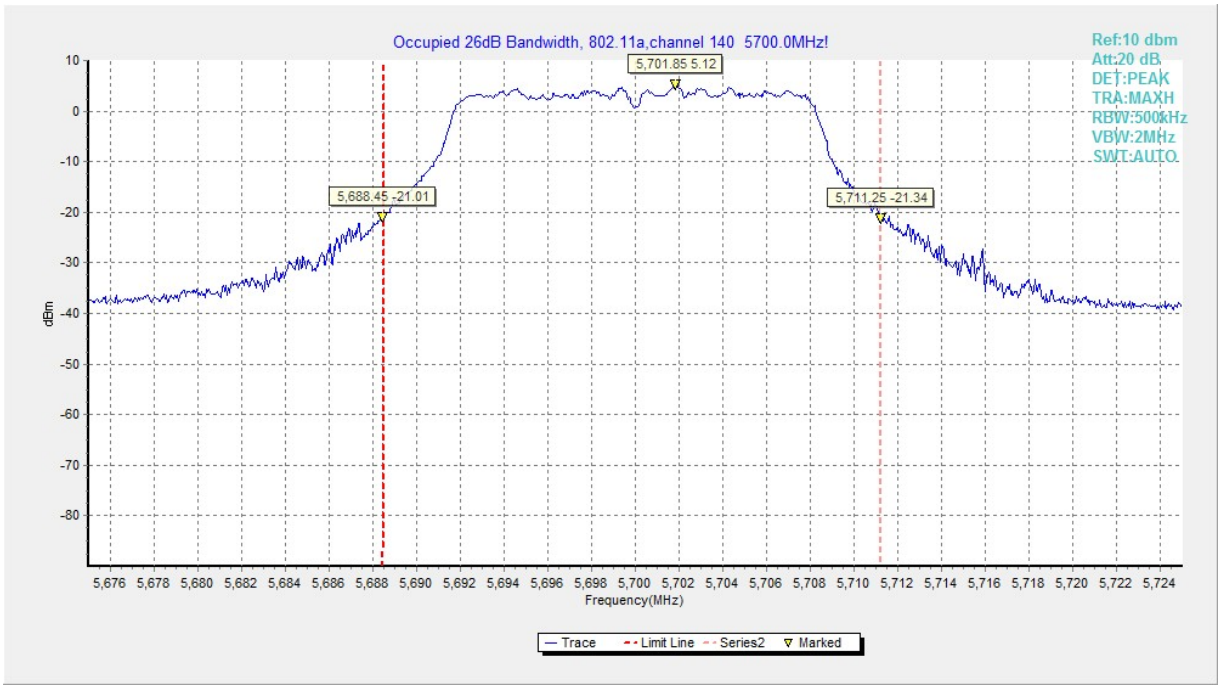


Fig. 9 Occupied 26dB Bandwidth (802. 11a, 5700MHz)

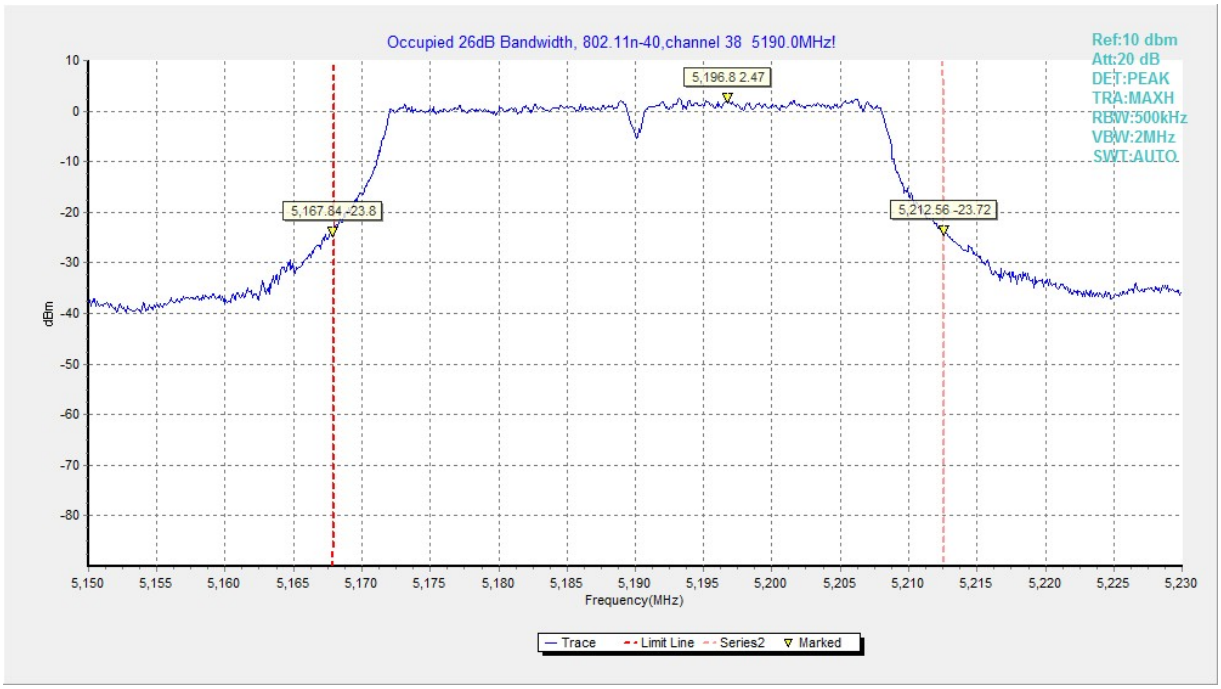


Fig. 10 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

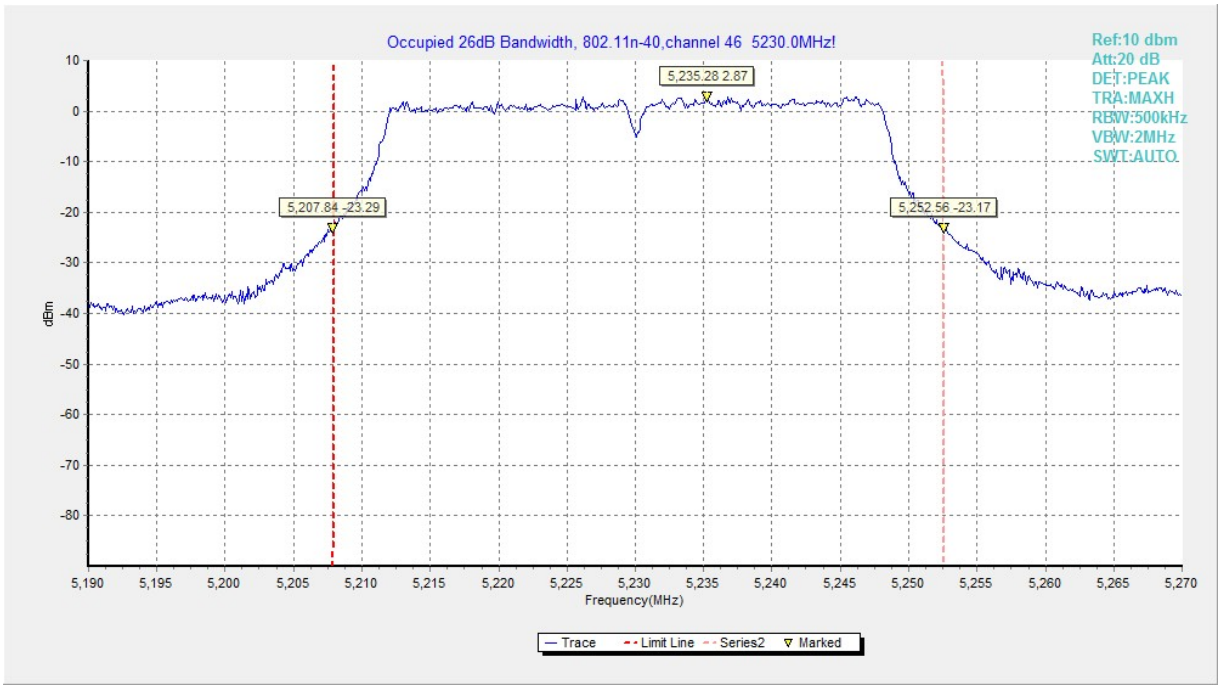


Fig. 11 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

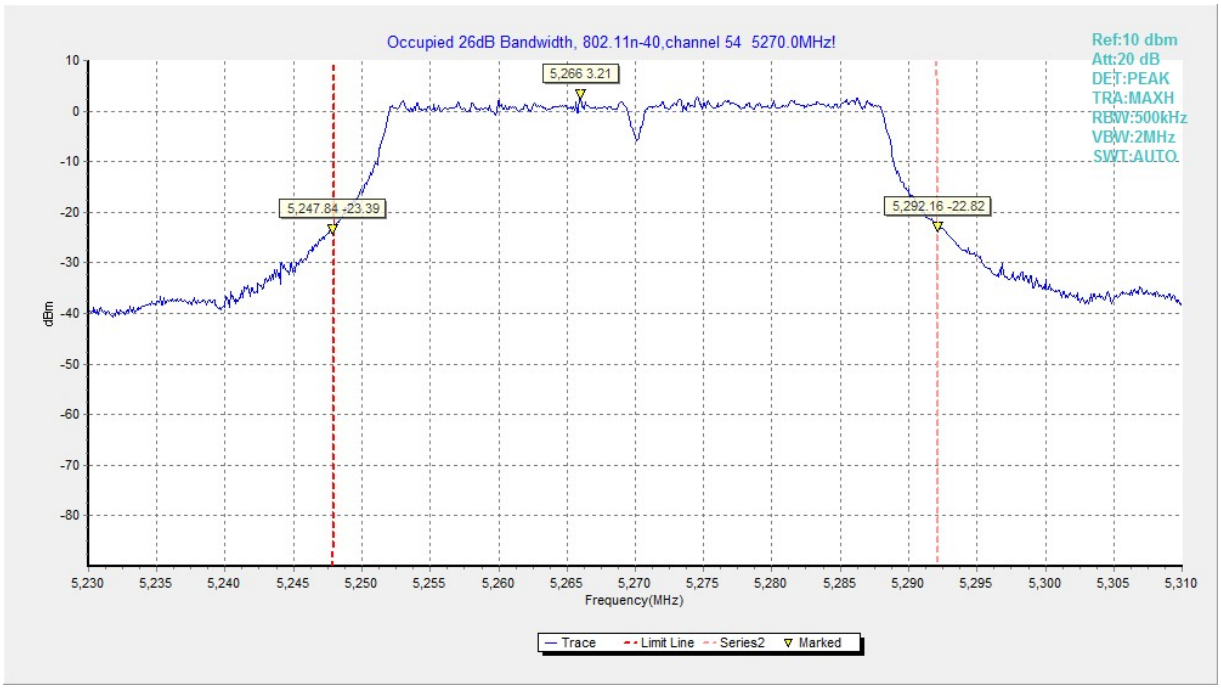


Fig. 12 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)

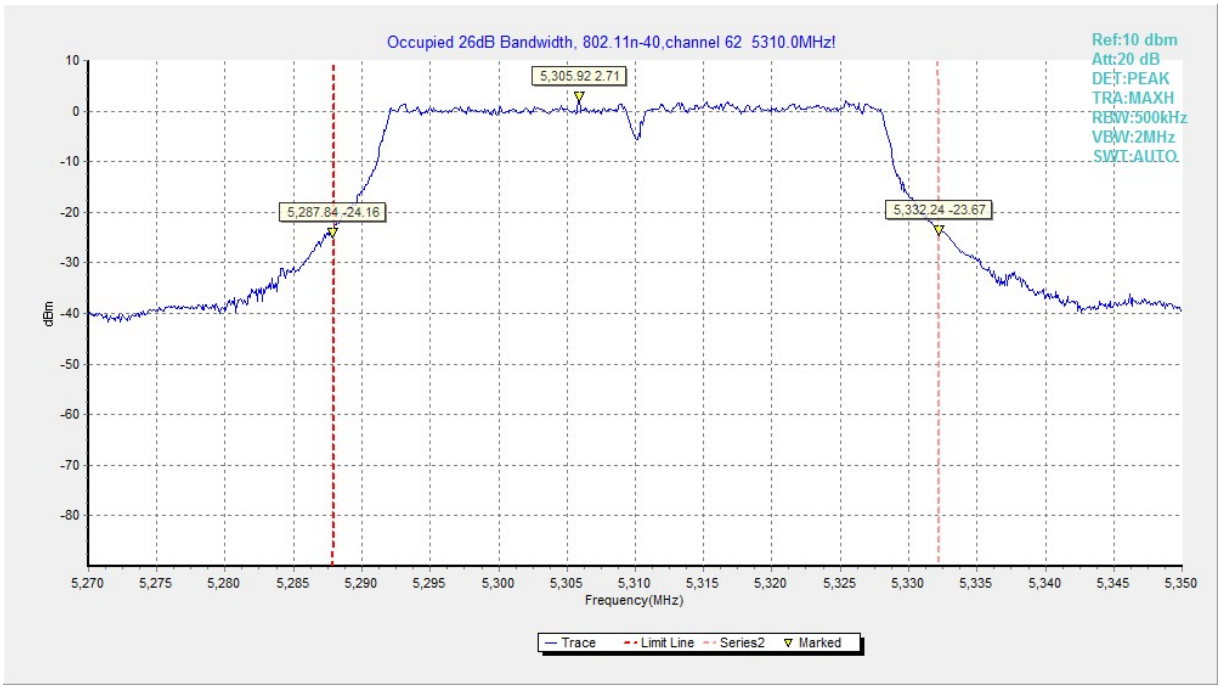


Fig. 13 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

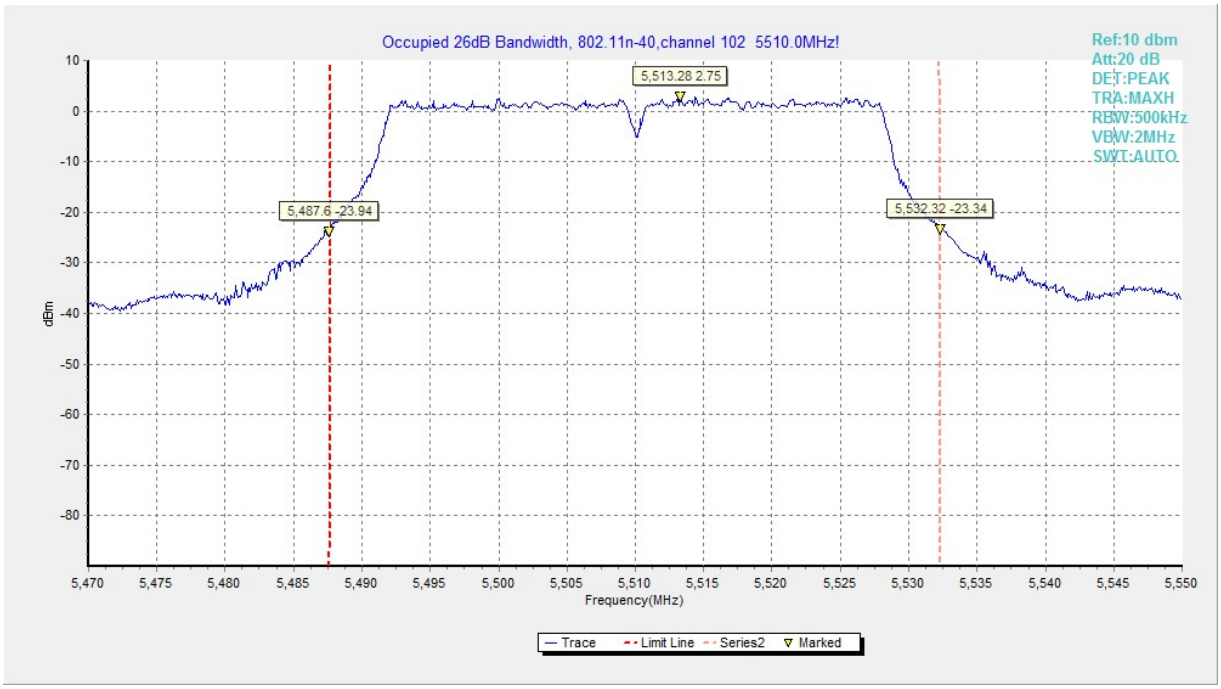


Fig. 14 Occupied 26dB Bandwidth (802. 11n-HT40, 5510MHz)

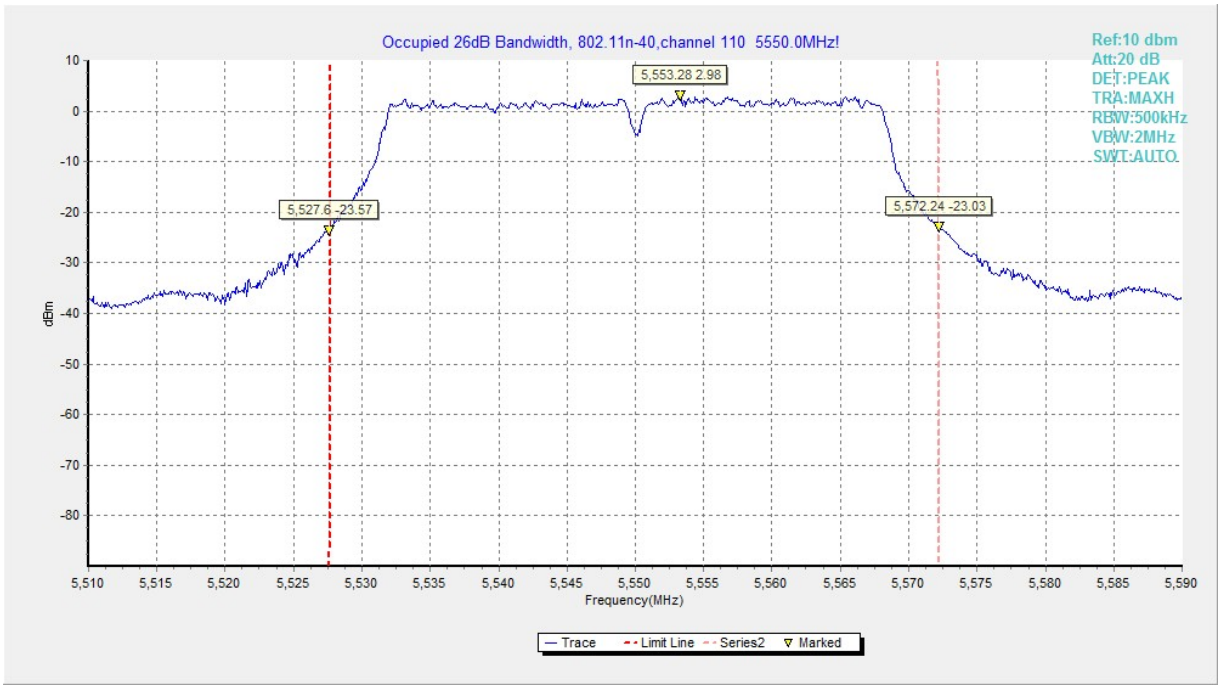


Fig. 15 Occupied 26dB Bandwidth (802. 11n-HT40, 5590MHz)

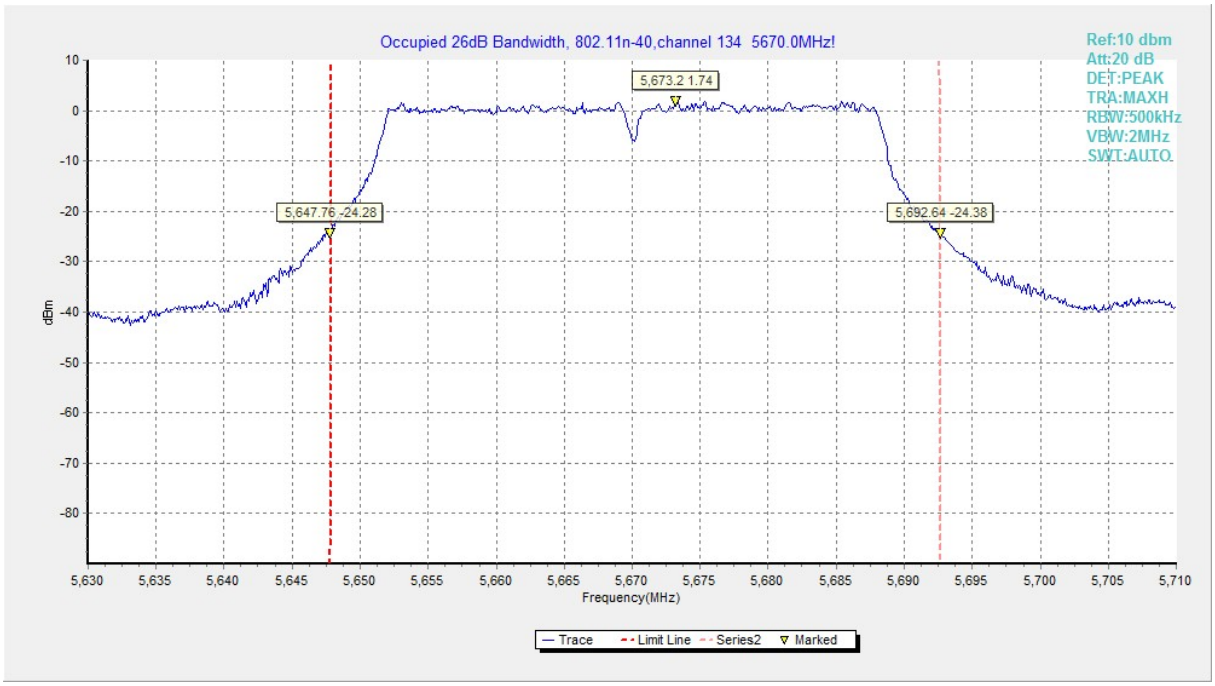


Fig. 16 Occupied 26dB Bandwidth (802. 11n-HT40, 5670MHz)

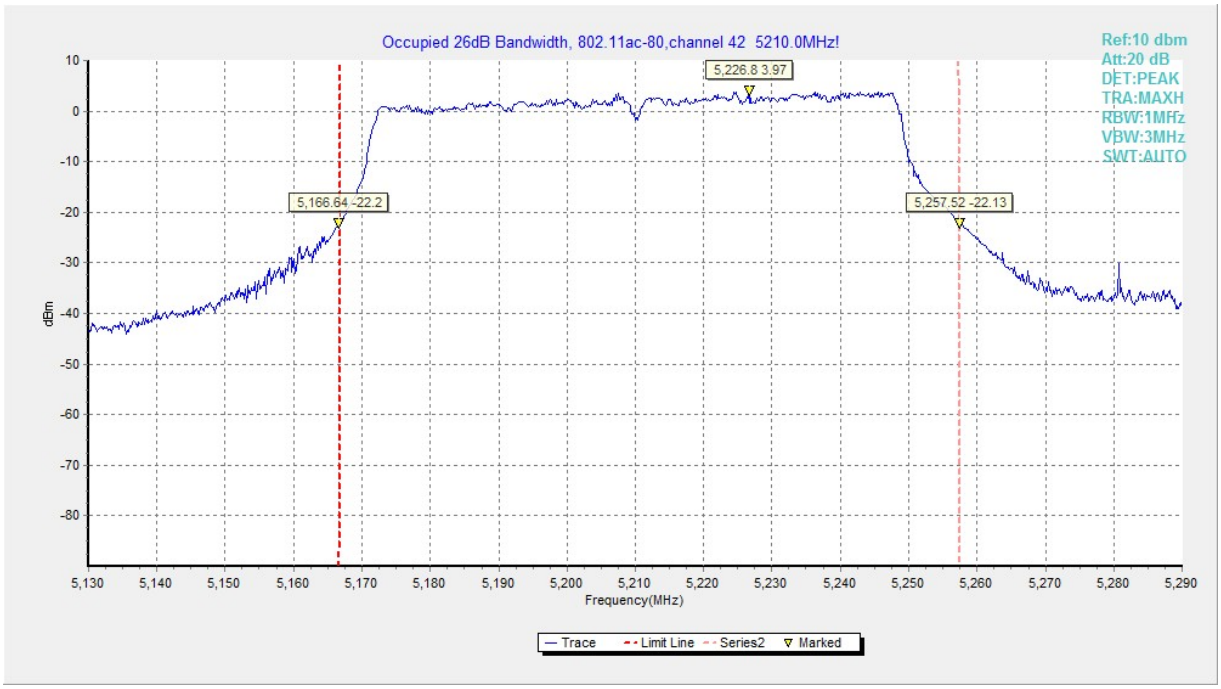


Fig. 17 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5210MHz)

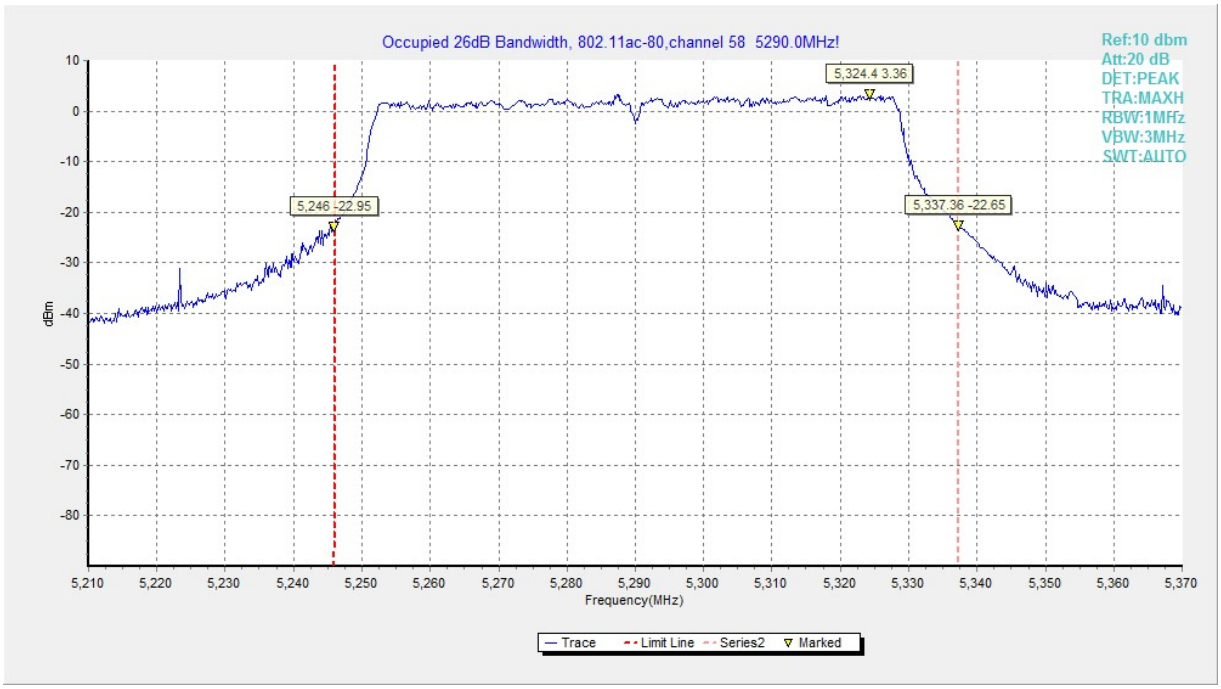


Fig. 18 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5290MHz)

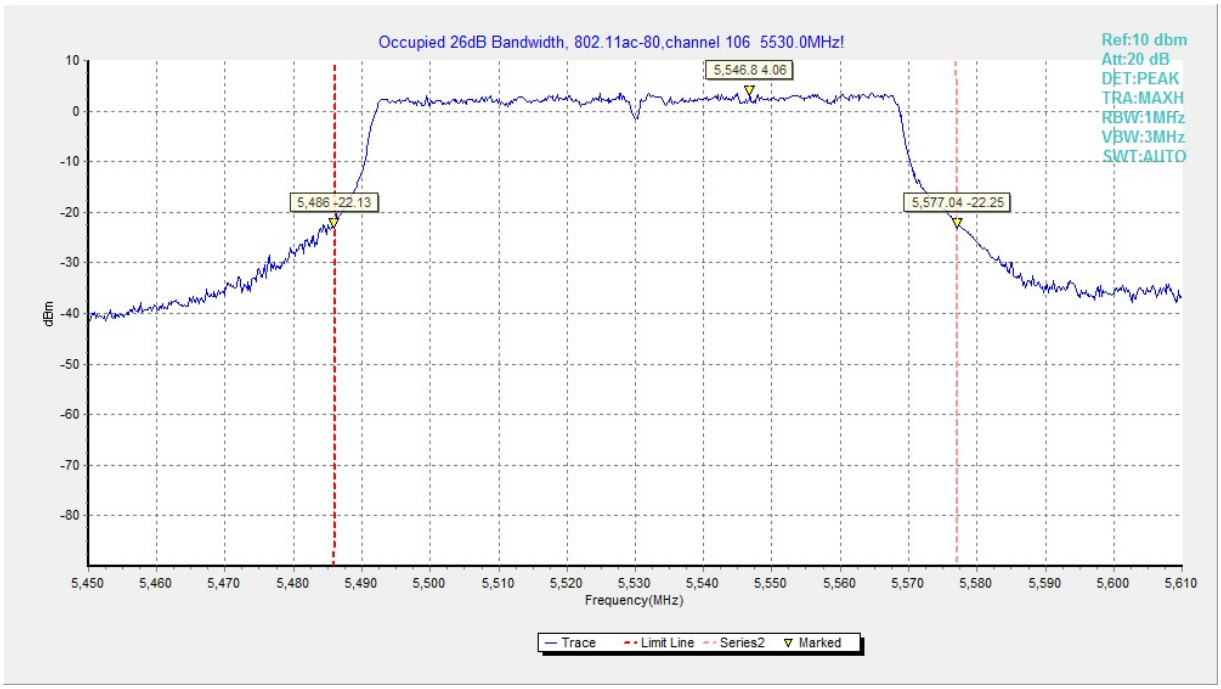


Fig. 19 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5530MHz)

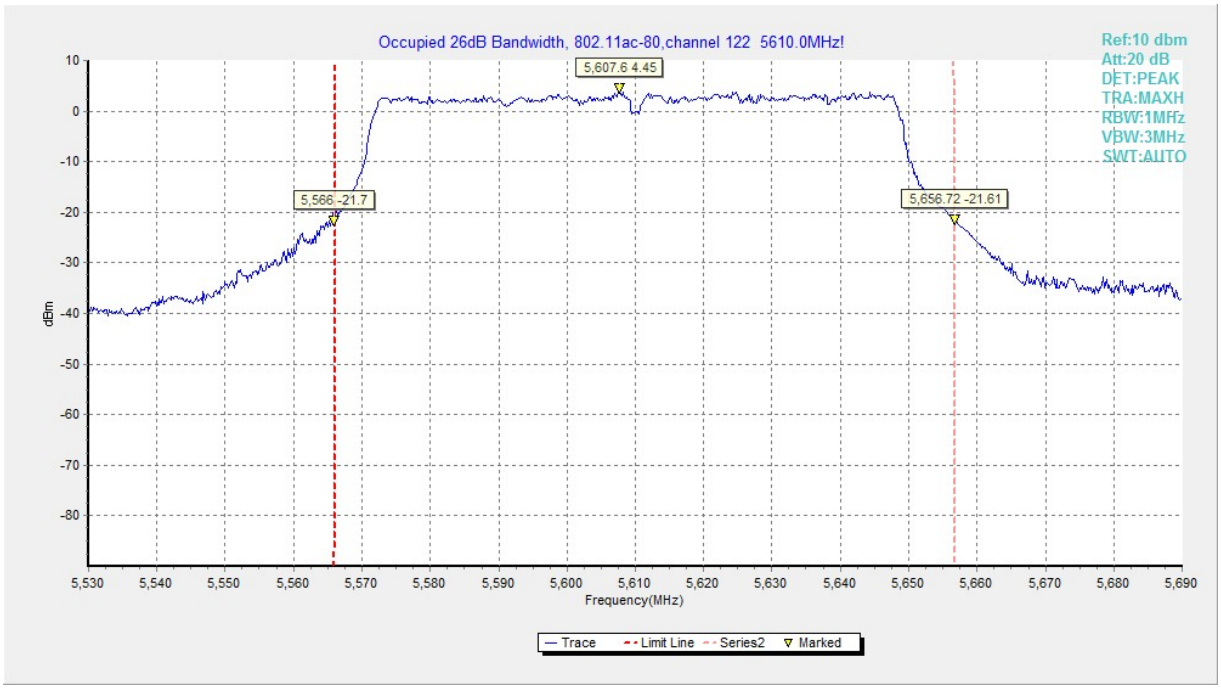


Fig. 20 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5610MHz)

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	16.55	**P**
	5785MHz(Ch157)	Fig.22	15.55	**P**
	5825MHz(Ch165)	Fig.23	16.55	**P**
802.11n HT40	5755MHz(Ch151)	Fig.24	36.64	**P**
	5795MHz(Ch159)	Fig.25	36.64	**P**
802.11ac VHT80	5775MHz(Ch155)	Fig.26	74.24	**P**

Conclusion: PASS

Test graphs as below:

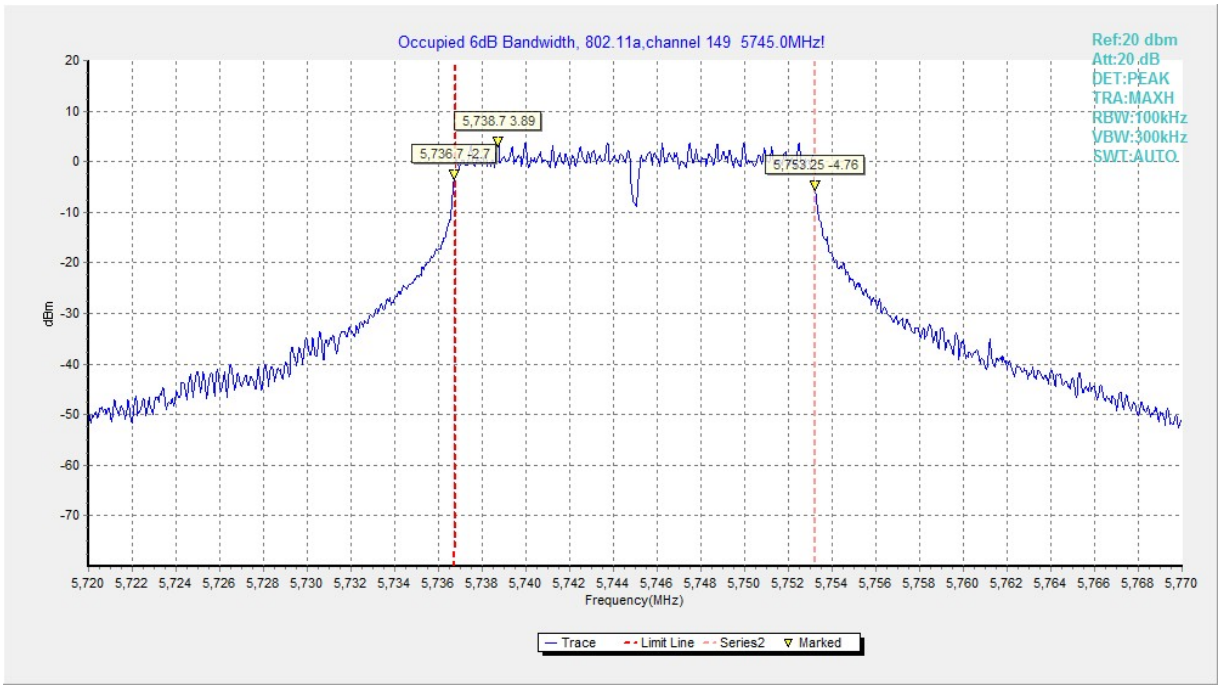


Fig. 21 Occupied 6dB Bandwidth (802.11a, 5745MHz)

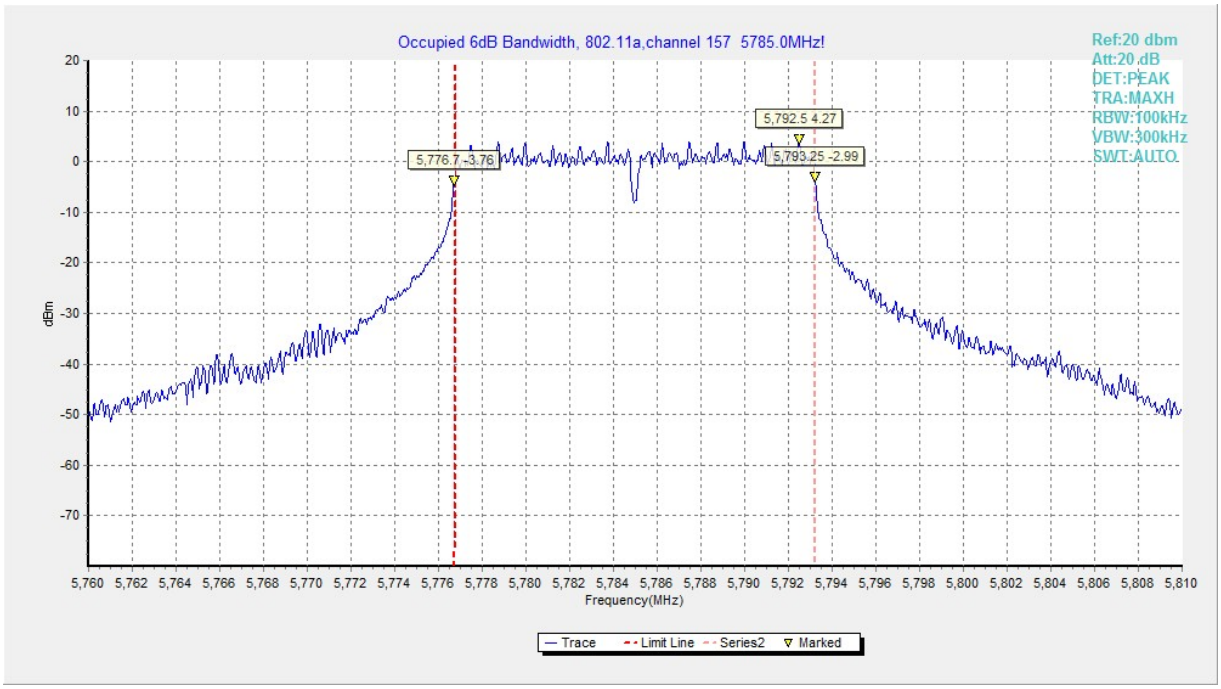


Fig. 22 Occupied 6dB Bandwidth (802.11a, 5785MHz)

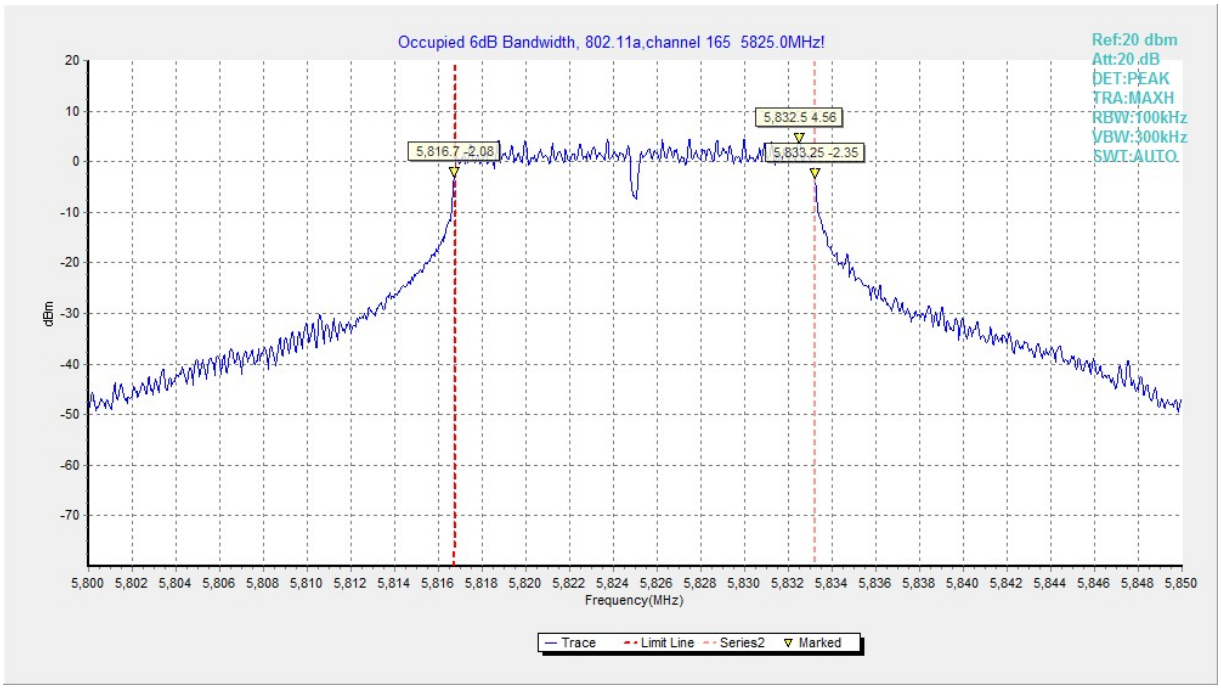


Fig. 23 Occupied 6dB Bandwidth (802.11a, 5825MHz)

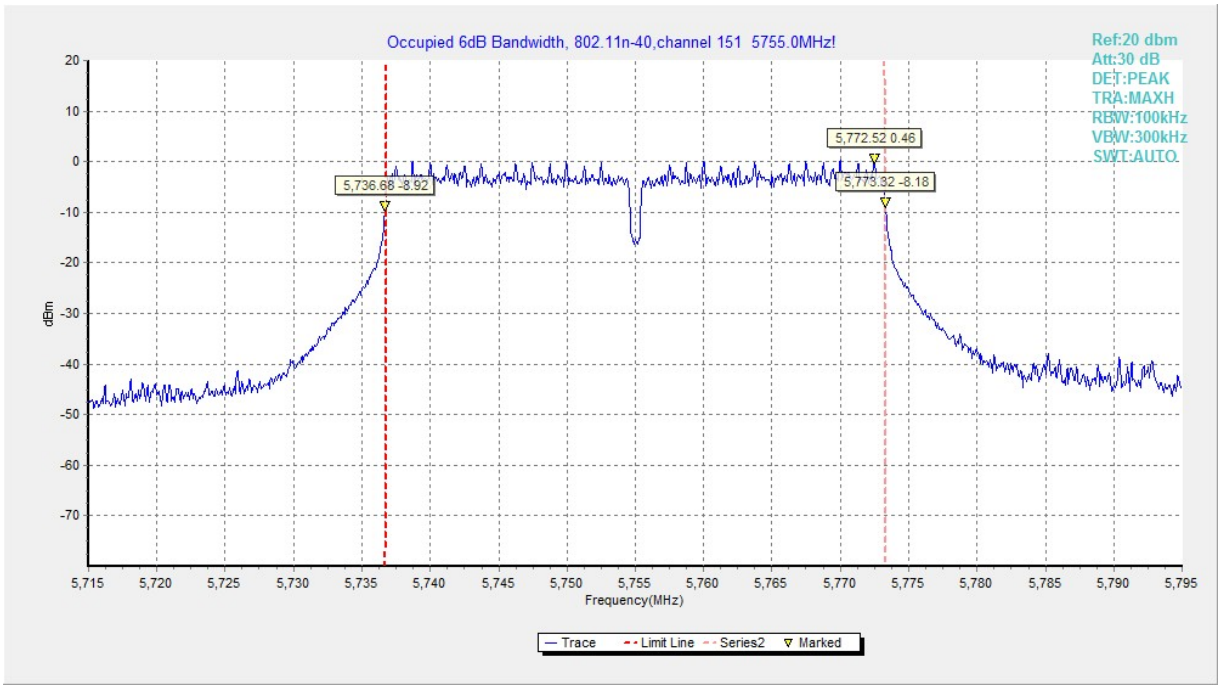


Fig. 24 Occupied 6dB Bandwidth (802.11n-HT40, 5755MHz)

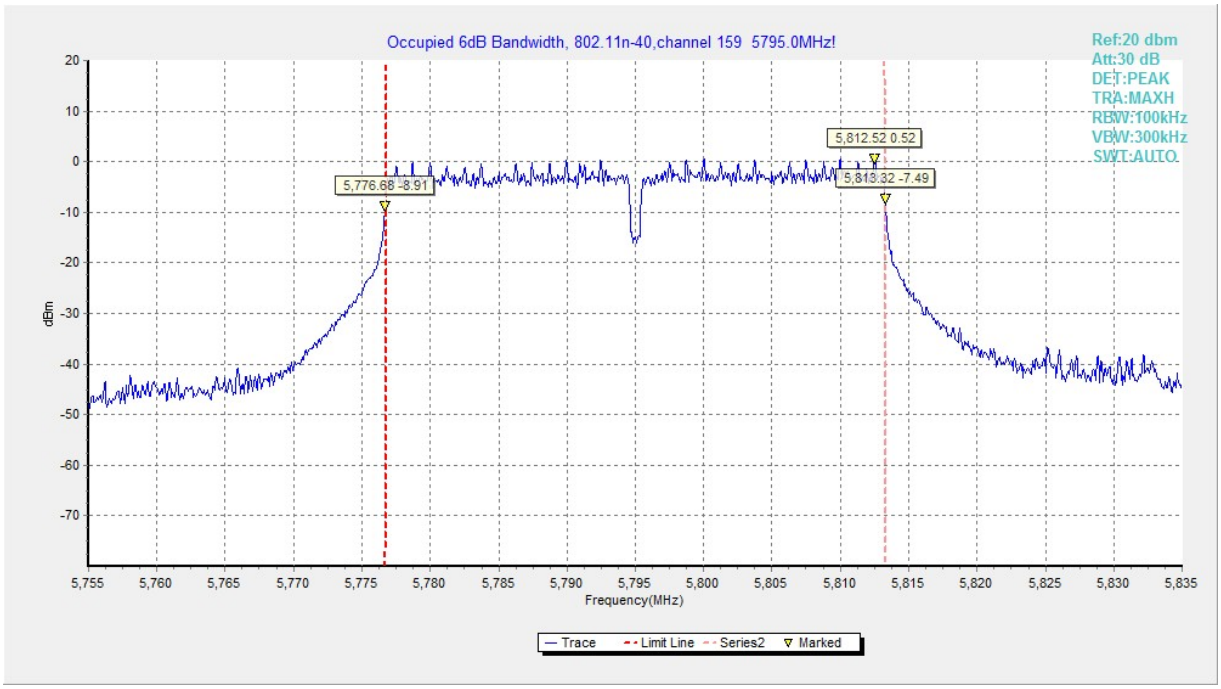


Fig. 25 Occupied 6dB Bandwidth (802.11n-HT40, 5795MHz)

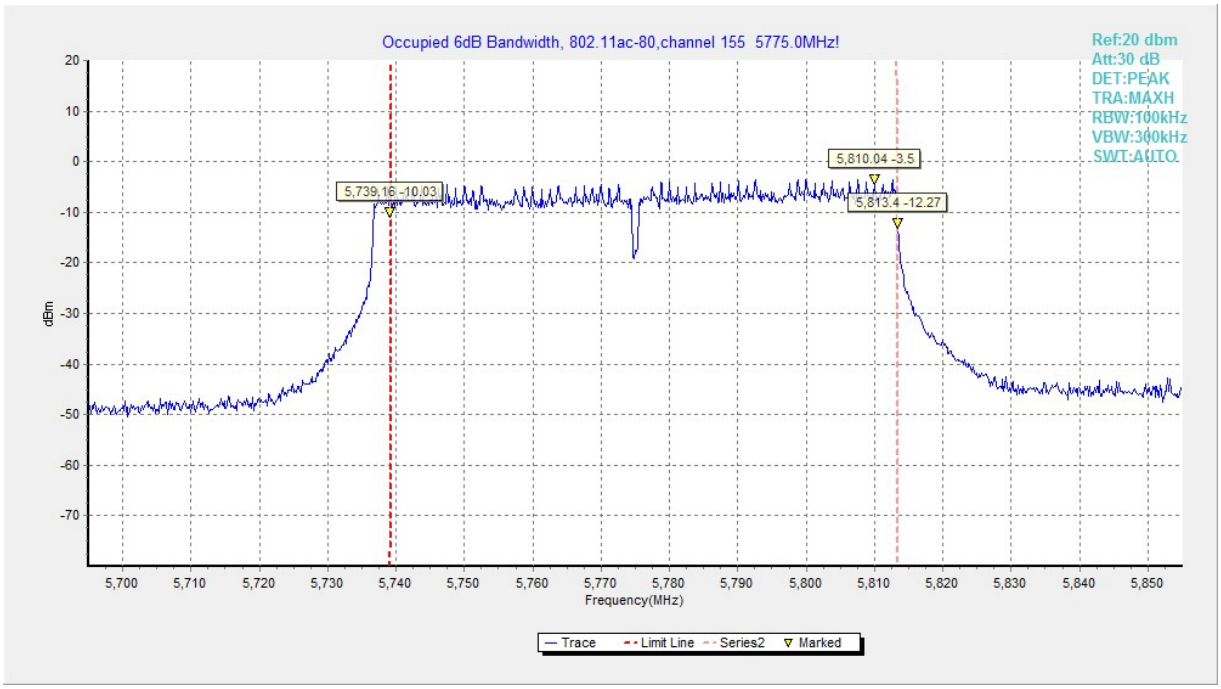


Fig. 26 Occupied 6dB Bandwidth (802.11ac-VHT80, 5775MHz)

A.6. 99% Occupied Bandwidth(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	17.14	**P**
	5200MHz(Ch40)	Fig.28	17.28	**P**
	5240MHz(Ch48)	Fig.29	17.10	**P**
	5260MHz(Ch52)	Fig.30	17.18	**P**
	5280MHz(Ch56)	Fig.31	17.14	**P**
	5320MHz(Ch64)	Fig.32	17.14	**P**
	5500MHz(Ch100)	Fig.33	17.14	**P**
	5580MHz(Ch116)	Fig.34	17.18	**P**
	5700MHz(Ch140)	Fig.35	17.14	**P**
802.11n HT40	5190MHz(Ch38)	Fig.36	36.28	**P**
	5230MHz(Ch46)	Fig.37	36.36	**P**
	5270MHz(Ch54)	Fig.38	36.36	**P**
	5310MHz(Ch62)	Fig.39	36.36	**P**
	5510MHz(Ch102)	Fig.40	36.36	**P**
	5550MHz(Ch110)	Fig.41	36.36	**P**
	5670MHz(Ch134)	Fig.42	36.28	**P**
802.11 ac VHT80	5210MHz(Ch42)	Fig.43	75.76	**P**
	5290MHz(Ch58)	Fig.44	75.76	**P**
	5530MHz(Ch106)	Fig.45	75.76	**P**
	5610MHz(Ch122)	Fig.46	75.76	**P**

Conclusion: PASS

Test graphs as below:

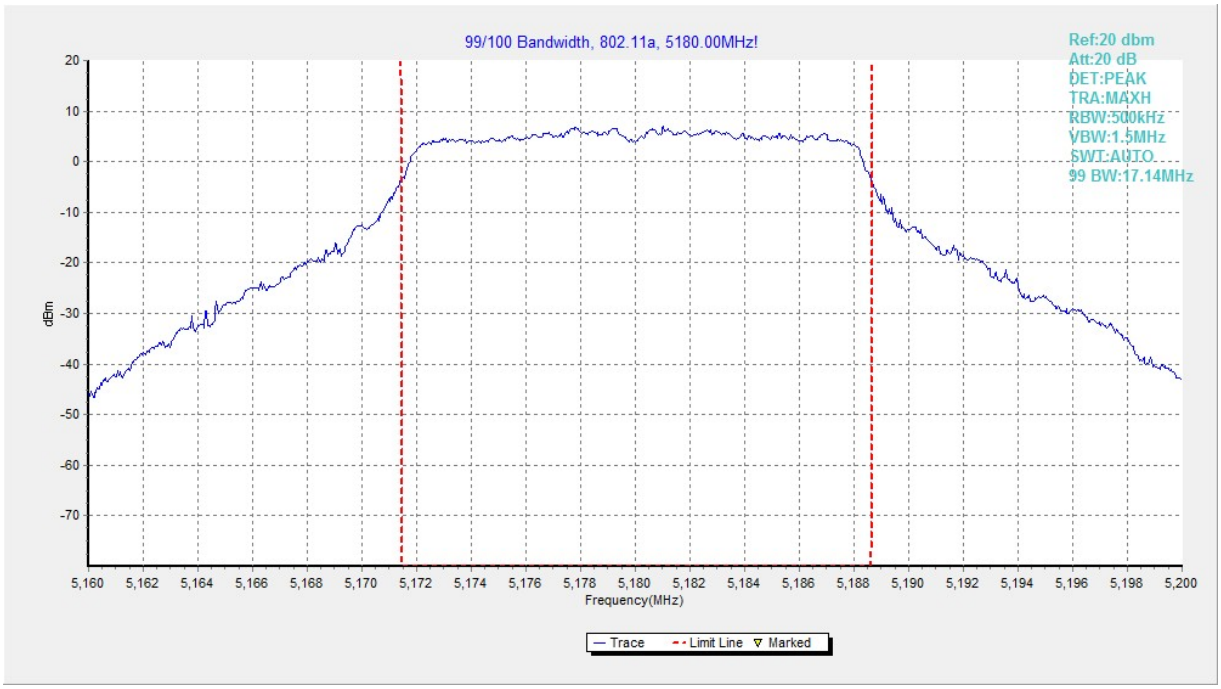


Fig. 27 99% Occupied Bandwidth (802.11a, 5180MHz)

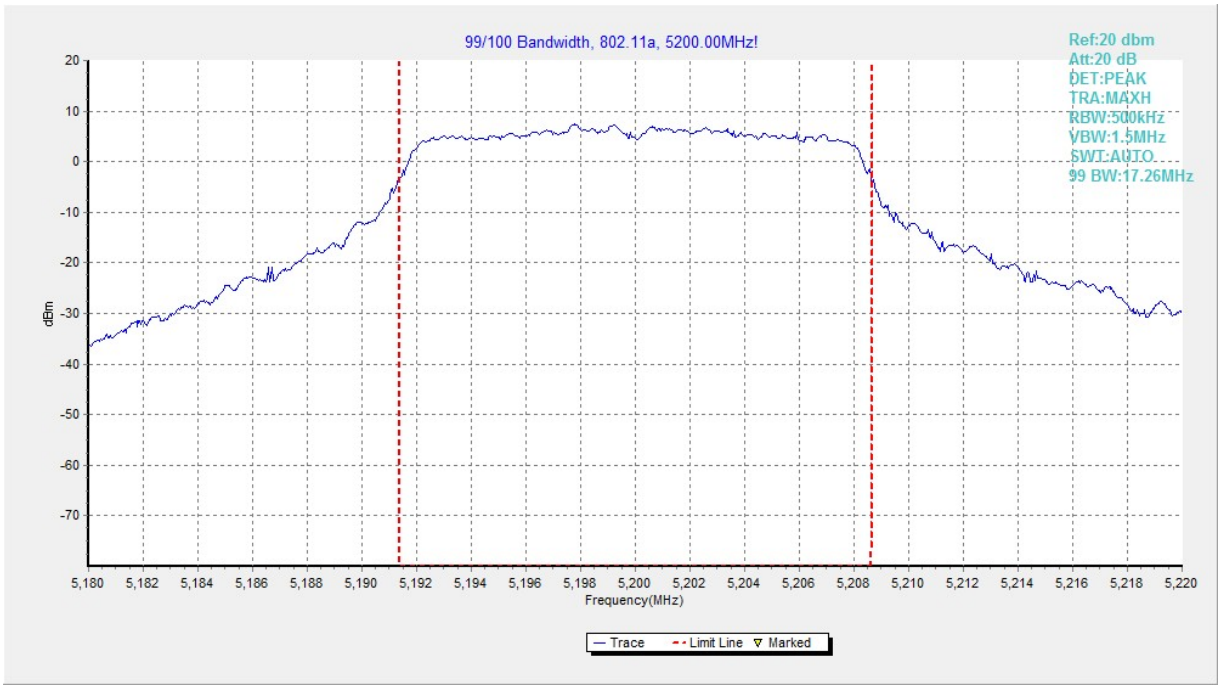


Fig. 28 99% Occupied Bandwidth (802.11a, 5200MHz)

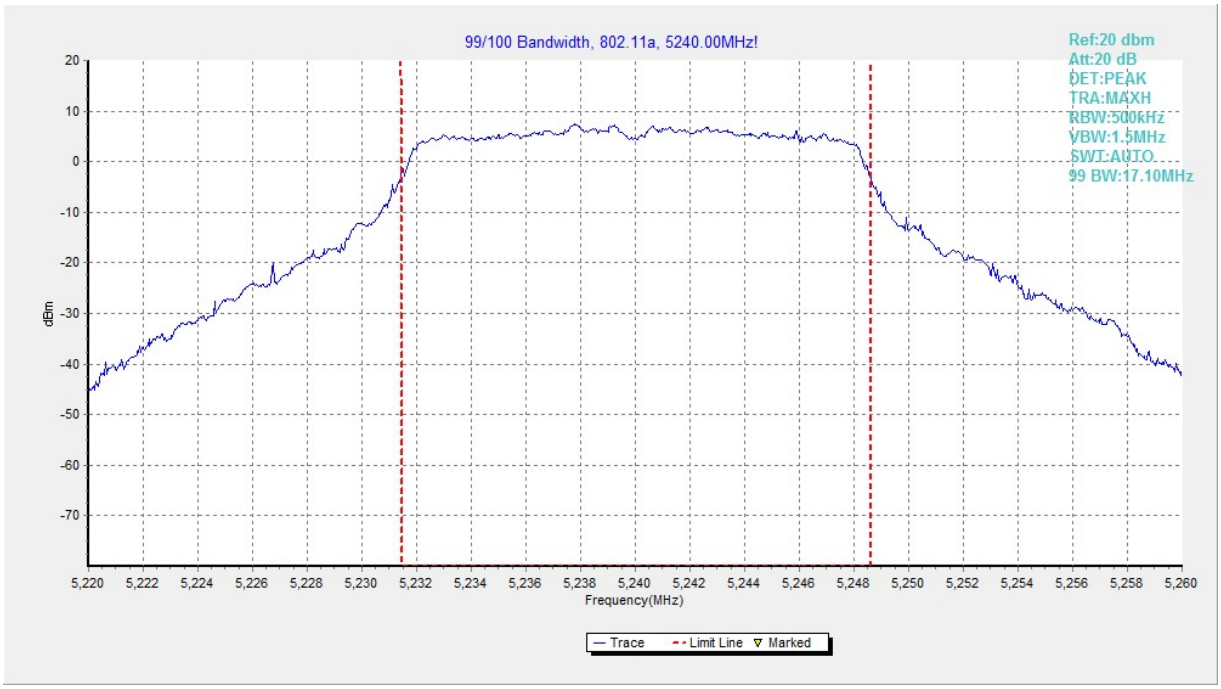


Fig. 29 99% Occupied Bandwidth (802.11a, 5240MHz)

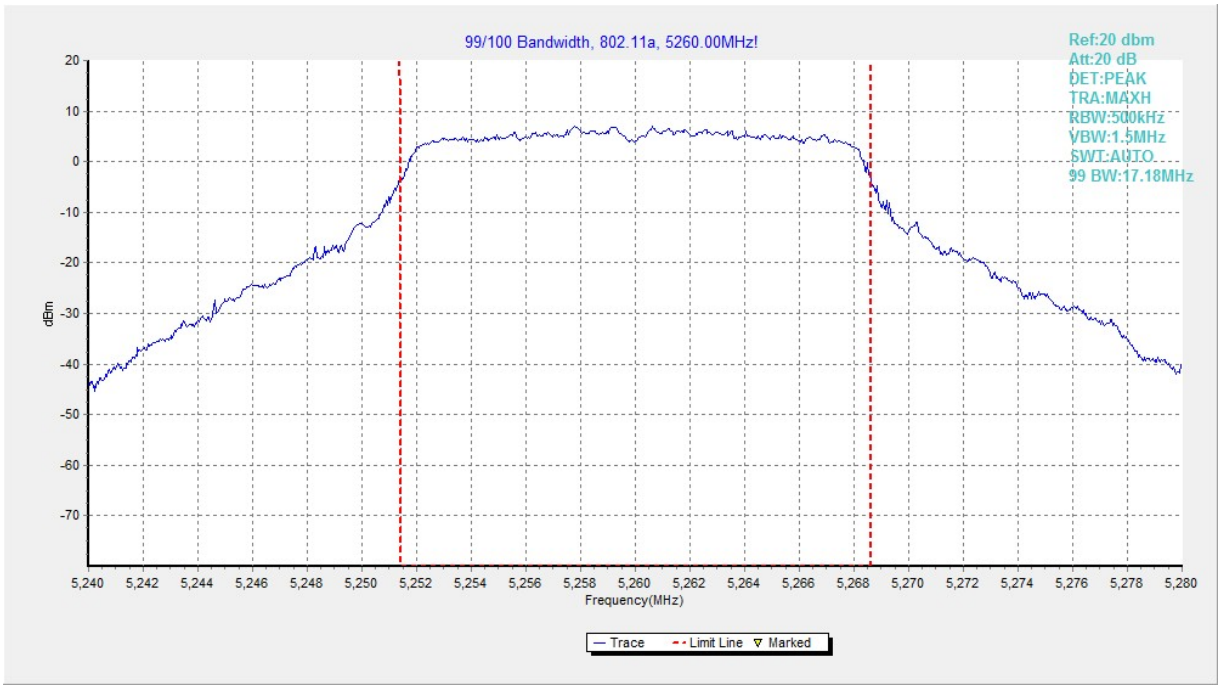


Fig. 30 99% Occupied Bandwidth (802.11a, 5260MHz)

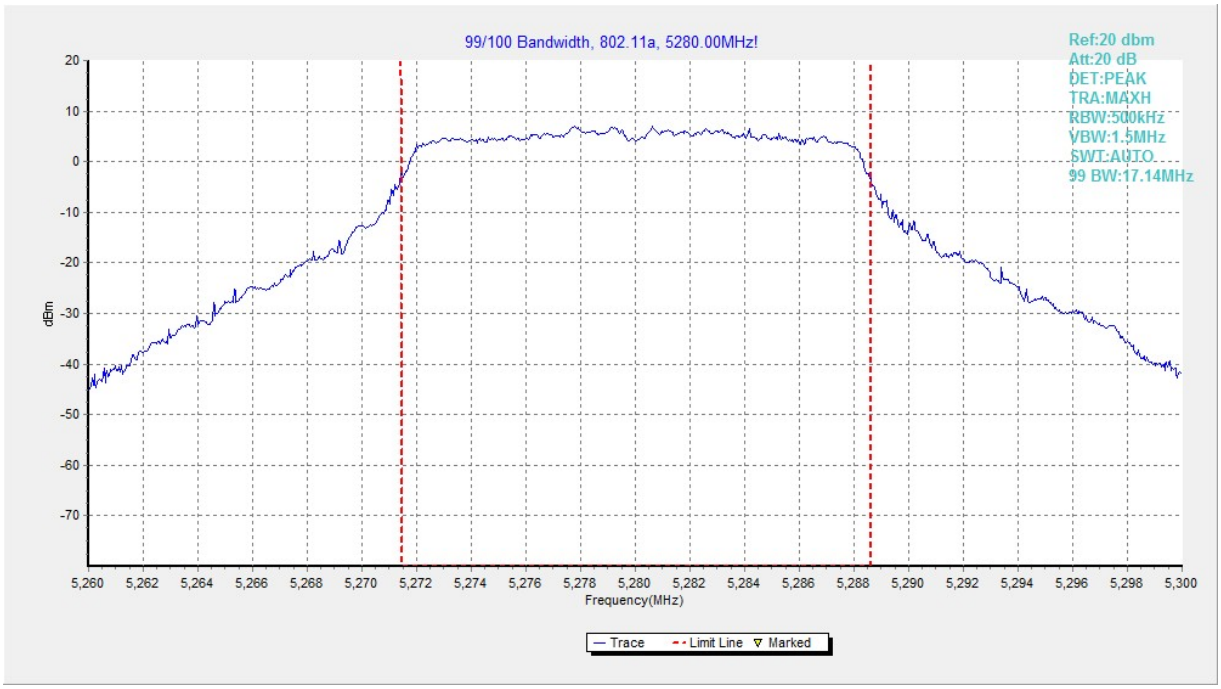


Fig. 31 99% Occupied Bandwidth (802.11a, 5280MHz)

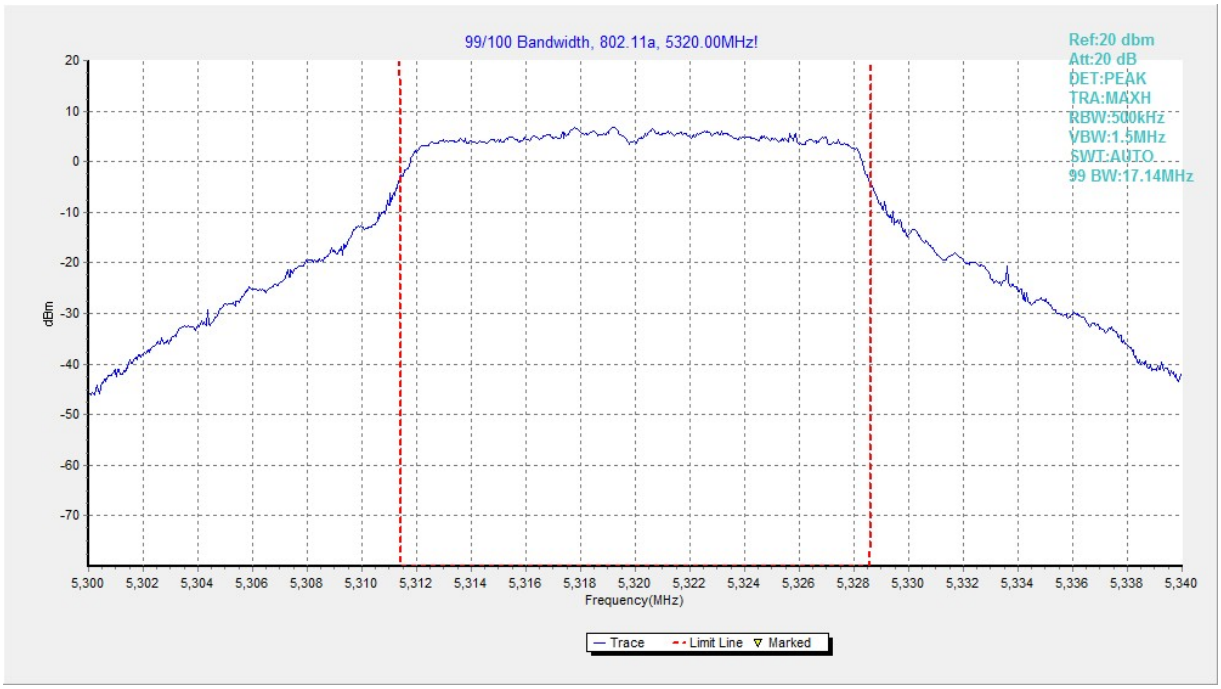


Fig. 32 99% Occupied Bandwidth (802.11a, 5320MHz)

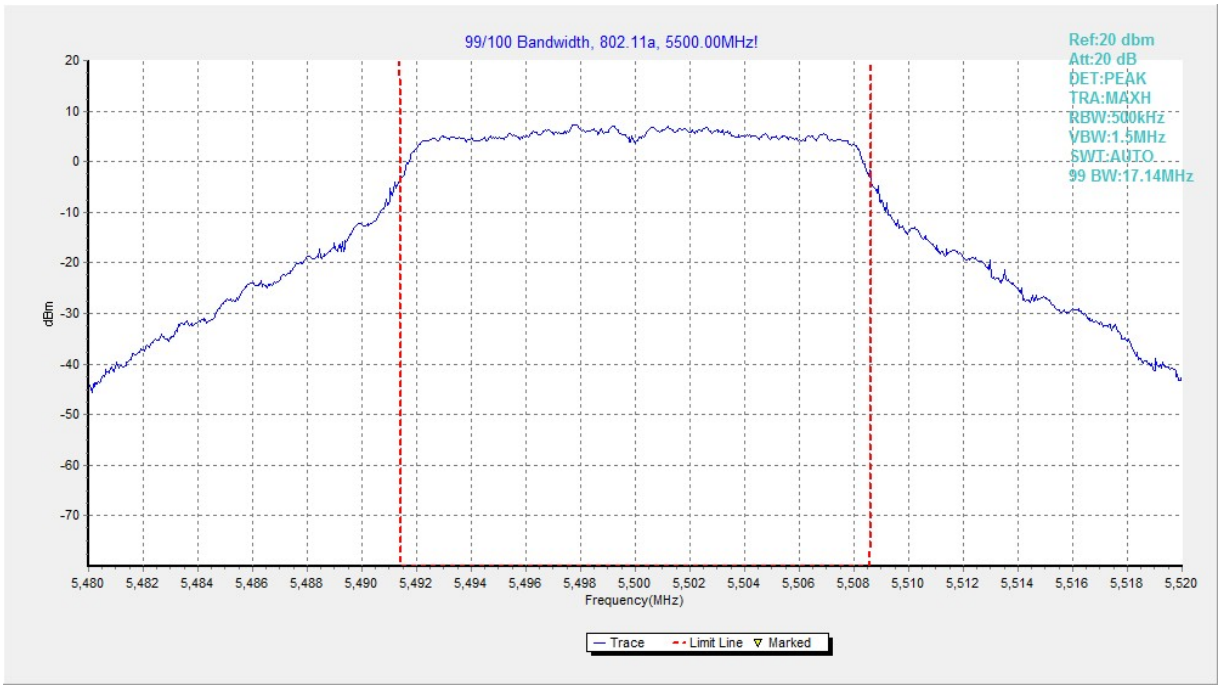


Fig. 33 99% Occupied Bandwidth (802. 11a, 5500MHz)

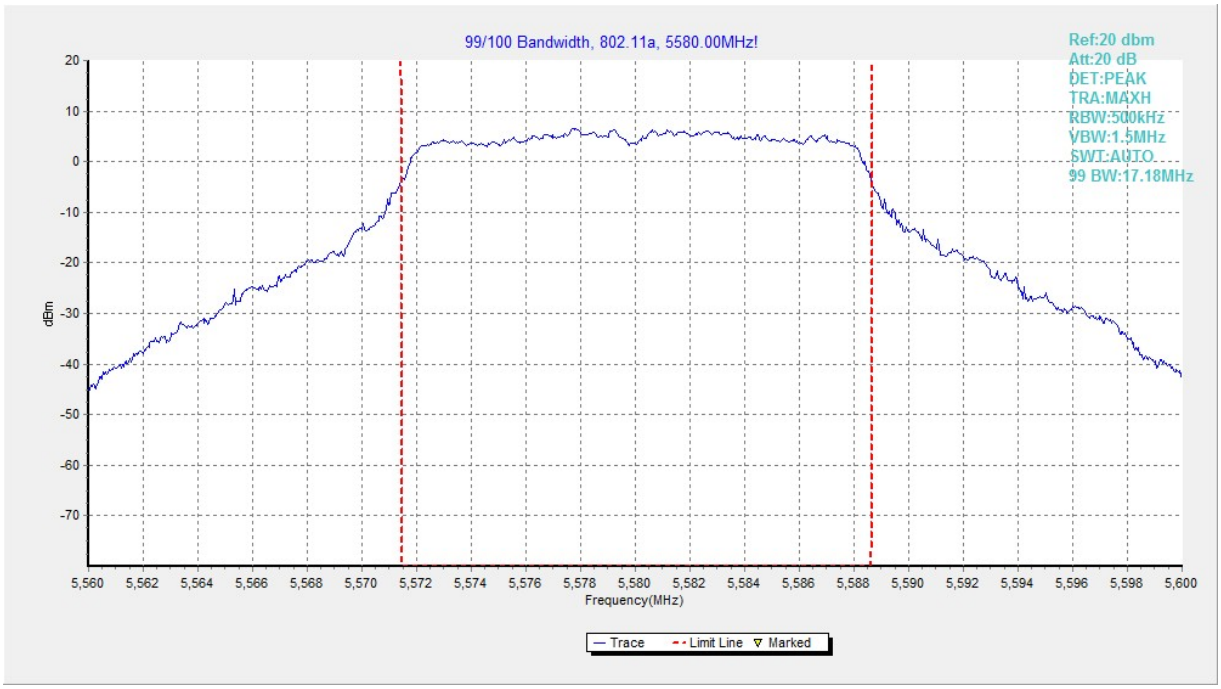


Fig. 34 99% Occupied Bandwidth (802. 11a, 5600MHz)

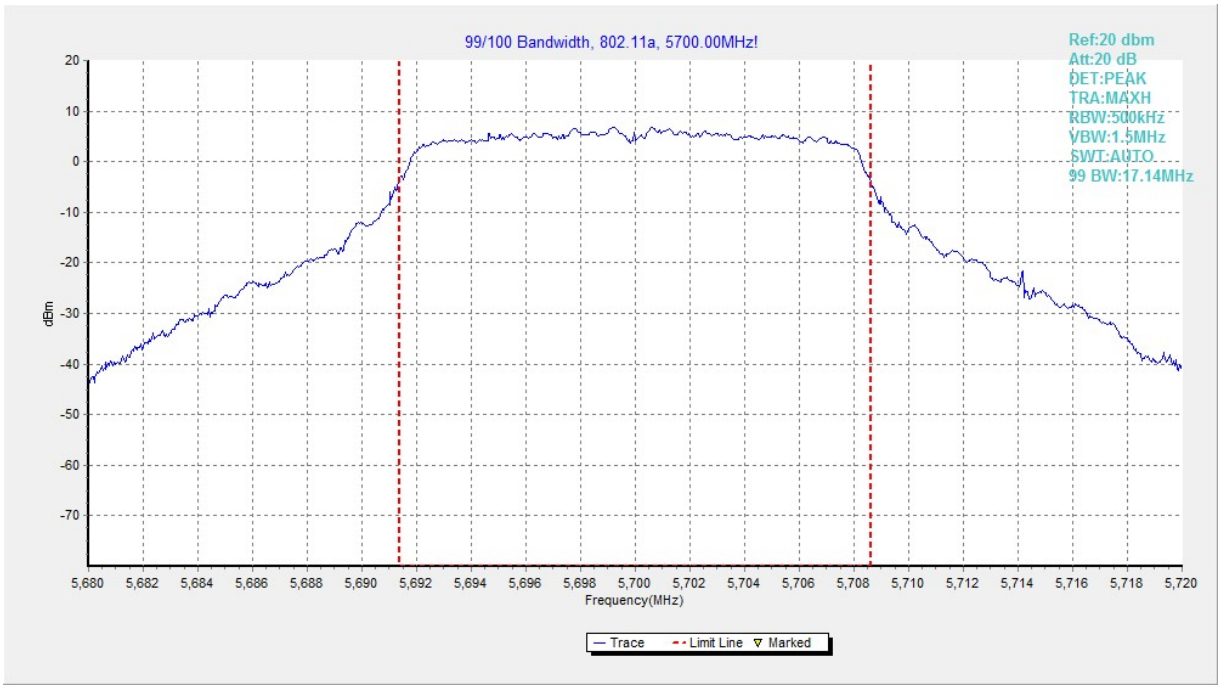


Fig. 35 99% Occupied Bandwidth (802. 11a, 5700MHz)

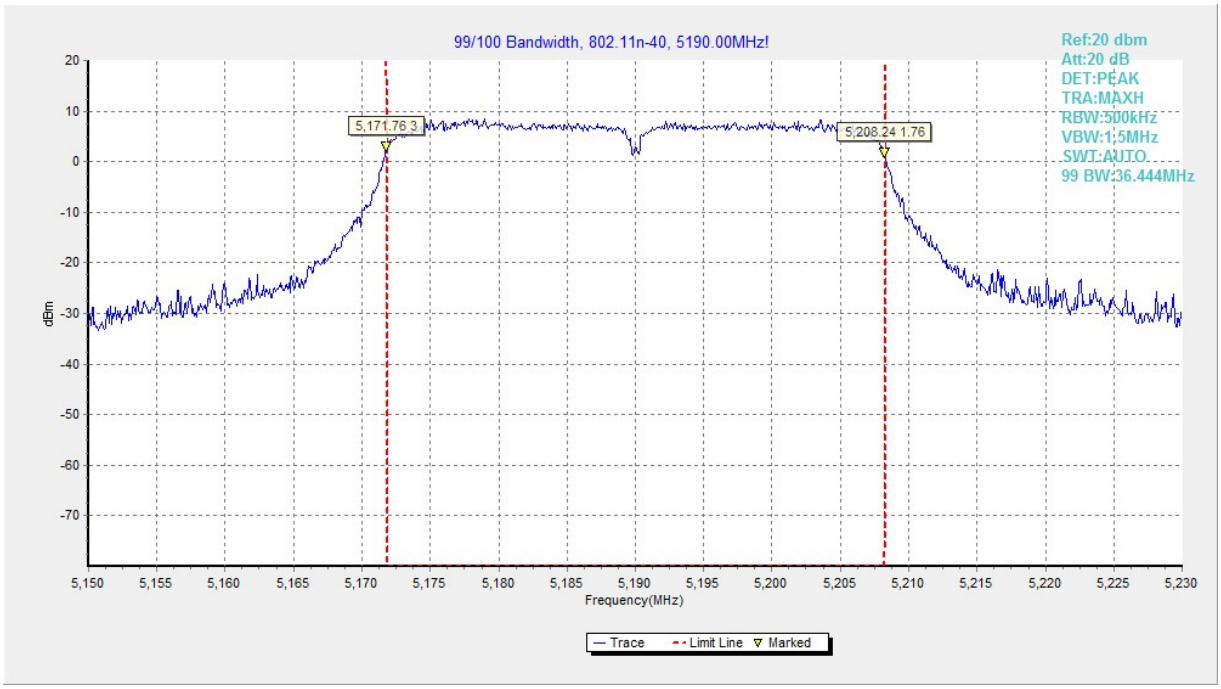


Fig. 36 99% Occupied Bandwidth (802.11n-HT40, 5190MHz)