



# TEST REPORT

No. B20N00042-RLAN

**i.safe MOBILE GmbH**

**LTE SMARTPHONE**

**Model Name: M33A01**

**with**

**Hardware Version: V1.00**

**Software Version:**

**LA6925(IS330)\_IS330\_EEA\_1.0.0.0.0\_1\_20200103\_MultiDownload\_2**

**02001101536\_user**

**FCC ID: 2AACZ-M33A01**

**IC: 11122A-M33A01**

**Issued Date: 2020-03-11**

**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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## **CONTENTS**

<b>1.</b>	<b>SUMMARY OF TEST REPORT.....</b>	<b>3</b>
1.1.	TEST ITEMS.....	3
1.2.	TEST STANDARDS .....	3
1.3.	TEST RESULT .....	3
1.4.	TESTING LOCATION .....	3
1.5.	PROJECT DATA .....	3
1.6.	SIGNATURE .....	3
<b>2.</b>	<b>CLIENT INFORMATION.....</b>	<b>4</b>
2.1.	APPLICANT INFORMATION .....	4
2.2.	MANUFACTURER INFORMATION .....	4
<b>3.</b>	<b>EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) .....</b>	<b>5</b>
3.1.	ABOUT EUT .....	5
3.2.	INTERNAL IDENTIFICATION OF EUT .....	5
3.3.	INTERNAL IDENTIFICATION OF AE.....	5
3.4.	GENERAL DESCRIPTION.....	6
<b>4.</b>	<b>REFERENCE DOCUMENTS .....</b>	<b>7</b>
4.1.	DOCUMENTS SUPPLIED BY APPLICANT .....	7
4.2.	REFERENCE DOCUMENTS FOR TESTING.....	7
<b>5.</b>	<b>TEST RESULTS.....</b>	<b>8</b>
5.1.	TESTING ENVIRONMENT.....	8
5.2.	TEST RESULTS .....	8
5.3.	STATEMENTS.....	8
<b>6.</b>	<b>TEST EQUIPMENTS UTILIZED .....</b>	<b>9</b>
<b>7.</b>	<b>LABORATORY ENVIRONMENT.....</b>	<b>10</b>
<b>8.</b>	<b>MEASUREMENT UNCERTAINTY .....</b>	<b>11</b>
	<b>ANNEX A: MEASUREMENT RESULTS.....</b>	<b>12</b>
A.1.	MEASUREMENT METHOD .....	12
A.2.	MAXIMUM OUTPUT POWER .....	13
A.3.	PEAK POWER SPECTRAL DENSITY .....	16
A.4.	OCCUPIED 26DB BANDWIDTH .....	18
A.5.	OCCUPIED 6DB BANDWIDTH .....	29
A.6.	99% OCCUPIED BANDWIDTH.....	33
A.7.	BAND EDGES COMPLIANCE .....	44
A.8.	TRANSMITTER SPURIOUS EMISSION .....	53
A.9.	RADIATED SPURIOUS EMISSIONS < 30MHZ.....	89
A.10.	AC POWER LINE CONDUCTED EMISSION.....	90
A.11.	FREQUENCY STABILITY.....	96
A.12.	POWER CONTROL .....	96

## 1. Summary of Test Report

### 1.1. Test Items

Description	LTE SMARTPHONE
Model Name	M33A01
Applicant's name	i.safe MOBILE GmbH
Manufacturer's Name	i.safe MOBILE GmbH

### 1.2. Test Standards

FCC Part15-2018; ANSI C63.10-2013; RSS-247 Issue 2; RSS-Gen Issue 5; KDB789033-V02r01

### 1.3. Test Result

**Pass**

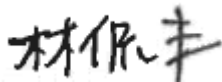
### 1.4. Testing Location

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:	2020-01-15
Testing End Date:	2020-02-03

### 1.6. Signature



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Lin Kanfeng  
(Prepared this test report)



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Tang Weisheng  
(Reviewed this test report)



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(Approved this test report)



## **2. Client Information**

### **2.1. Applicant Information**

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### **2.2. Manufacturer Information**

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Contact Person Dirk Amann  
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### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

#### **3.1. About EUT**

Description	LTE SMARTPHONE
Model Name	M33A01
Brand Name	i.safe MOBILE
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	0.9dBi
Power Supply	3.8V DC by Battery
FCC ID	2AACZ-M33A01
IC	11122A-M33A01
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
EUT1	359052100502739	V1.0.0	LA6925(IS330)_IS330_EEA_1 .0.0.0.0_1_20200103_MultiDo wnload_202001101536_user	2020-01-03

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

#### **3.3. Internal Identification of AE**

AE ID*	Description	SN
AE1	Charger	/
AE2	Battery	/

AE1

Model	ICP12-050-2000B
Manufacturer	SHENZHEN SHI YINGYUAN POWER SUPPLY TECHNOLOGY CO., LTD.

AE2

Model	MBP33A01
Manufacturer	Shenzhen 3Sun Electronics Co.,Ltd.
Capacitance	4050mAh



Nominal Voltage 3.7V

\*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 LTE SMARTPHONE with integrated antenna and battery.

It consists of normal options: Lithium Battery, Charger and Headset.

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.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part15	FCC CFR 47,Part 15,Subpart C FCC CFR 47,Part 15,Subpart E	2018
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
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	Sub-clause of IC	Verdict
1	Maximum Output Power	15.407	RSS-247 section 5.4	<b>P</b>
2	Power Spectral Density	15.407	RSS-247 section 5.2	<b>P</b>
3	Occupied 26dB Bandwidth	15.403	RSS-247 section 5.2	<b>P</b>
4	Occupied 6dB Bandwidth	15.407	RSS-247 section 5.2	<b>P</b>
5	99% Occupied Bandwidth	/	RSS-Gen section 6.7	<b>P</b>
6	Band edge compliance	15.209	RSS-247 section 5.5	<b>P</b>
7	Transmitter Spurious Emissions	15.407, 15.205	RSS-247 section 5.5/ RSS-Gen section 6.13	<b>P</b>
8	AC Power line Conducted	15.107, 15.207	RSS-Gen section 8.8	<b>P</b>
9	Frequency Stability	15.407	/	<b>P</b>
10	Transmit Power Control	15.407	/	<b>NA</b>

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

CTTL has evaluated the test cases requested by the applicant/manufacturer 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	2020-03-26	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	2021-01-02	1 year
2	Test Receiver	ESCI	100701	R&S	2020-08-06	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	2020-07-18	1 year
7	Spectrum Analyzer	FSP 40	100378	R&S	2020-12-12	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	2021-01-10	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 chambe

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

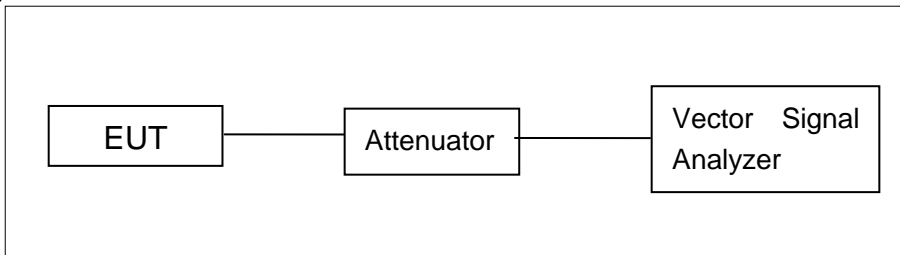
Test Name	Uncertainty ( $k=2$ )	
1. RF Output Power - Conducted	1.32dB	
2. Power Spectral Density - Conducted	2.32dB	
3. Occupied channel bandwidth - Conducted	66Hz	
4. Transmitter Spurious Emission - Conducted	$30\text{MHz} \leq f \leq 1\text{GHz}$	1.41dB
	$1\text{GHz} \leq f \leq 7\text{GHz}$	1.92dB
	$7\text{GHz} \leq f \leq 13\text{GHz}$	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.

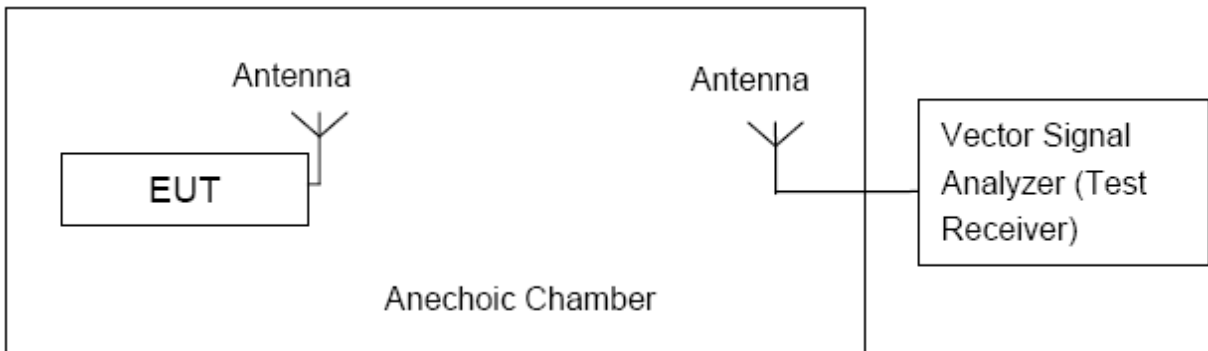


#### Radiated Emission Measurements

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.

Standard	Frequency (MHz)	Limit (dBm)
RSS-247 section 5.4	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:

U–NII Band	Mode	Frequency (MHz)	Average power (dBm)	E.I.R.P (dBm)	Conclusion
5.2GHz Band (UNII-1)	802.11a	5180 (CH 36)	14.58	15.48	P
		5200 (CH 40)	14.50	15.40	P
		5240 (CH 48)	14.80	15.70	P
	802.11n-HT20	5180 (CH 36)	14.42	15.32	P
		5200 (CH 40)	14.38	15.28	P
		5240 (CH 48)	14.61	15.51	P
	802.11n-HT40	5190 (CH 38)	14.35	15.25	P
		5230 (CH 46)	14.31	15.21	P
	802.11ac-VHT20	5180 (CH 36)	12.58	13.48	P
		5200 (CH 40)	12.52	13.42	P
		5240 (CH 48)	12.67	13.57	P
	802.11ac-VHT40	5190 (CH 38)	12.12	13.02	P
		5230 (CH 46)	12.25	13.15	P
	802.11ac-VHT80	5210 (CH 42)	12.48	13.38	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
5.3GHz Band (UNII-2A)	802.11a	CH 52	5260	14.75	P
		CH 56	5280	14.71	P
		CH 64	5320	14.71	P
	802.11n-HT20	CH 52	5260	14.60	P
		CH 56	5280	14.55	P
		CH 64	5320	14.65	P
	802.11n-HT40	CH 54	5270	14.28	P
		CH 62	5310	14.42	P
	802.11ac-VHT20	CH 52	5260	12.63	P
		CH 56	5280	12.74	P
		CH 64	5320	12.79	P
	802.11ac-VHT40	CH 54	5270	12.26	P
CH 62		5310	12.15	P	
802.11ac-VHT80	CH 58	5290	12.57	P	

U-NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)	Conclusion
5.5GHz Band (UNII-2C)	802.11a	CH 100	5500	14.67	P
		CH 116	5580	14.65	P
		CH 140	5700	14.74	P
	802.11n-HT20	CH 100	5500	14.55	P
		CH 116	5580	14.46	P
		CH 140	5700	14.55	P
	802.11n-HT40	CH 102	5510	14.37	P
		CH 110	5550	14.40	P
		CH 134	5670	14.46	P
	802.11ac-VHT20	CH 100	5500	12.62	P
		CH 116	5580	12.68	P
		CH 140	5700	12.83	P
	802.11ac-VHT40	CH 102	5510	12.18	P
		CH 110	5550	12.24	P
		CH 134	5670	12.21	P
	802.11ac-VHT80	CH 106	5530	12.25	P
		CH 122	5610	12.56	P

U-NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)	Conclusion
5.8GHz Band (UNII-3)	802.11a	CH 149	5745	14.85	P
		CH 157	5785	14.79	P
		CH 165	5825	14.81	P
	802.11n-HT20	CH 149	5745	14.80	P
		CH 157	5785	14.75	P
		CH 165	5825	14.64	P
	802.11n-HT40	CH 151	5755	14.58	P
		CH 159	5795	14.55	P
	802.11ac-VHT20	CH 149	5745	12.84	P
		CH 157	5785	12.82	P
		CH 165	5825	12.58	P
	802.11ac-VHT40	CH 151	5755	12.52	P
		CH 159	5795	12.41	P
	802.11ac-VHT80	CH 155	5775	12.69	P

**Note:**

Worst-case data rates as provided by the client were: 6Mbps (802.11a), MCS0 (802.11n), MCS0 (802.11ac). 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 & RSS-247 section 5.2	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:

##### 5.2GHz Band (UNII-1)

Mode	Channel	Power Spectral Density (dBm/MHz)	E.I.R.P Spectral Density (dBm)	Conclusion
802.11a	5180MHz(Ch36)	7.79	8.69	P
	5200MHz(Ch40)	7.58	8.48	P
	5240MHz(Ch48)	7.46	8.36	P
802.11n HT40	5190MHz(Ch38)	5.21	6.11	P
	5230MHz(Ch46)	5.20	6.10	P
802.11ac VHT80	5210MHz(Ch42)	0.19	1.09	P

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

##### 5.3GHz Band (UNII-2A)

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5260MHz(Ch52)	7.65	P
	5280MHz(Ch56)	7.24	P
	5320MHz(Ch64)	7.46	P
802.11n HT40	5270MHz(Ch54)	4.61	P
	5310MHz(Ch62)	4.85	P
802.11ac VHT80	5290MHz(Ch58)	0.01	P

##### 5.5GHz Band (UNII-2C)

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5500MHz(Ch100)	8.16	P
	5580MHz(Ch116)	8.21	P
	5700MHz(Ch140)	8.04	P
802.11n HT40	5510MHz(Ch102)	5.54	P
	5550MHz(Ch110)	5.45	P





	5670MHz(Ch134)	5.38	P
802.11ac VHT80	5530MHz(Ch106)	0.16	P
	5610MHz(Ch122)	0.75	P

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

Mode	Channel	Power Spectral Density (dBm/500kHz)	Conclusion
802.11a	5745MHz(CH149)	6.98	P
	5785MHz(CH157)	6.53	P
	5825MHz(CH165)	6.61	P
802.11n HT40	5755MHz(CH151)	3.58	P
	5795MHz(CH159)	3.91	P
802.11ac VHT80	5775MHz(CH155)	-1.64	P

**Conclusion: PASS****Test graphs as below:**

#### A.4. Occupied 26dB Bandwidth

##### Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.403 & RSS-247 section 5.2	/

The measurement is made according to KDB 789033.

##### Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth (MHz)		Conclusion
		Fig.	Value	
802.11a	5180MHz(Ch36)	Fig.1	24.65	P
	5200MHz(Ch40)	Fig.2	24.55	P
	5240MHz(Ch48)	Fig.3	24.80	P
	5260MHz(Ch52)	Fig.4	25.00	P
	5280MHz(Ch56)	Fig.5	24.55	P
	5320MHz(Ch64)	Fig.6	24.45	P
	5500MHz(Ch100)	Fig.7	24.60	P
	5580MHz(Ch116)	Fig.8	24.50	P
	5700MHz(Ch140)	Fig.9	24.55	P
802.11n HT40	5190MHz(Ch38)	Fig.10	41.68	P
	5230MHz(Ch46)	Fig.11	41.76	P
	5270MHz(Ch54)	Fig.12	41.76	P
	5310MHz(Ch62)	Fig.13	41.20	P
	5510MHz(Ch102)	Fig.14	41.52	P
	5550MHz(Ch110)	Fig.15	41.84	P
	5670MHz(Ch134)	Fig.16	42.00	P
802.11ac VHT80	5210MHz(Ch42)	Fig.17	84.00	P
	5290MHz(Ch58)	Fig.18	84.00	P
	5530MHz(Ch106)	Fig.19	84.48	P
	5610MHz(Ch122)	Fig.20	84.32	P

**Conclusion: PASS**

Test graphs as below:

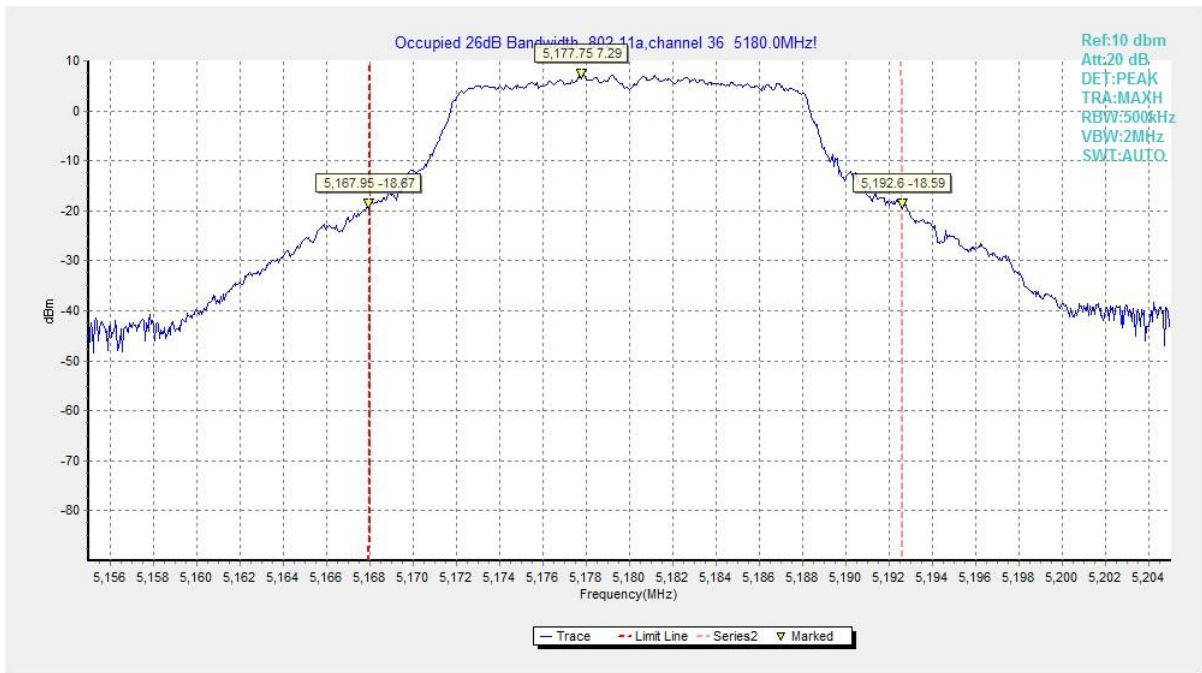


Fig. 1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

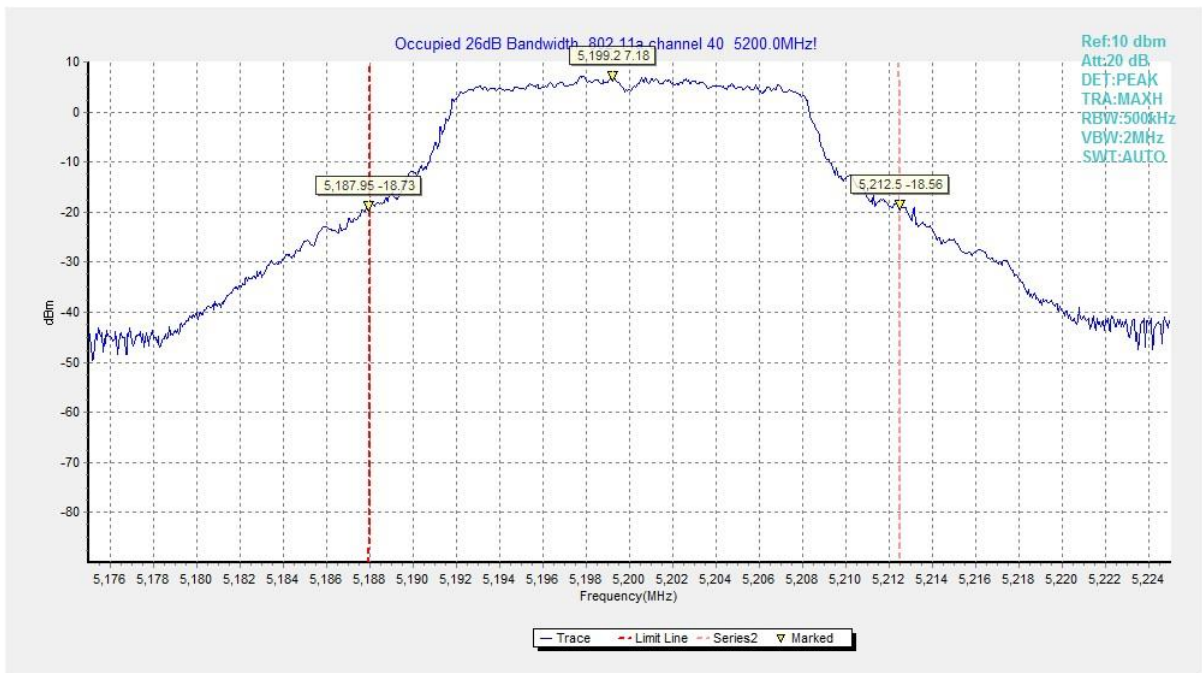


Fig. 2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

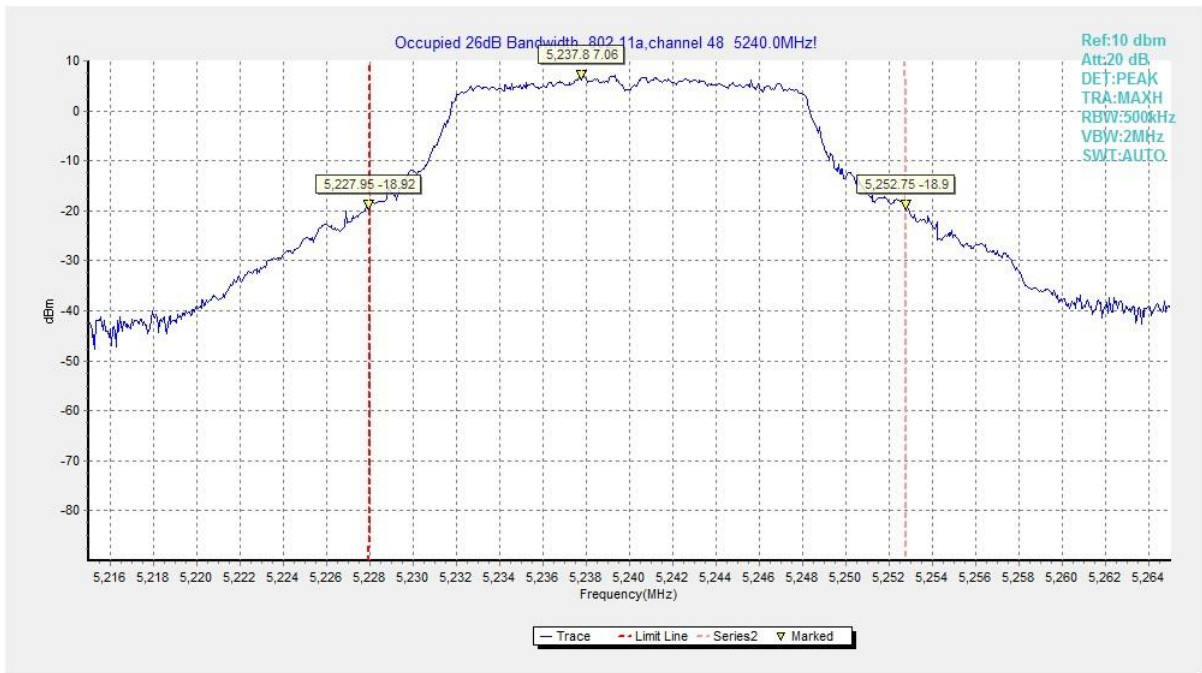


Fig. 3 Occupied 26dB Bandwidth (802.11a, 5240MHz)



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

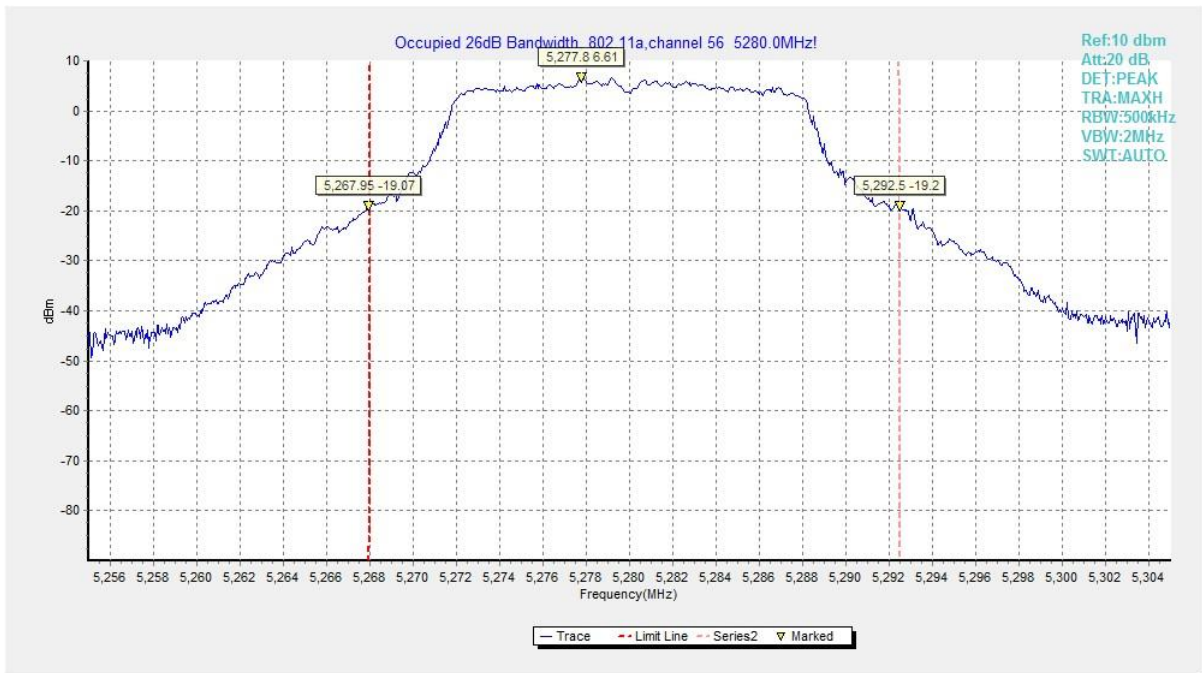


Fig. 5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

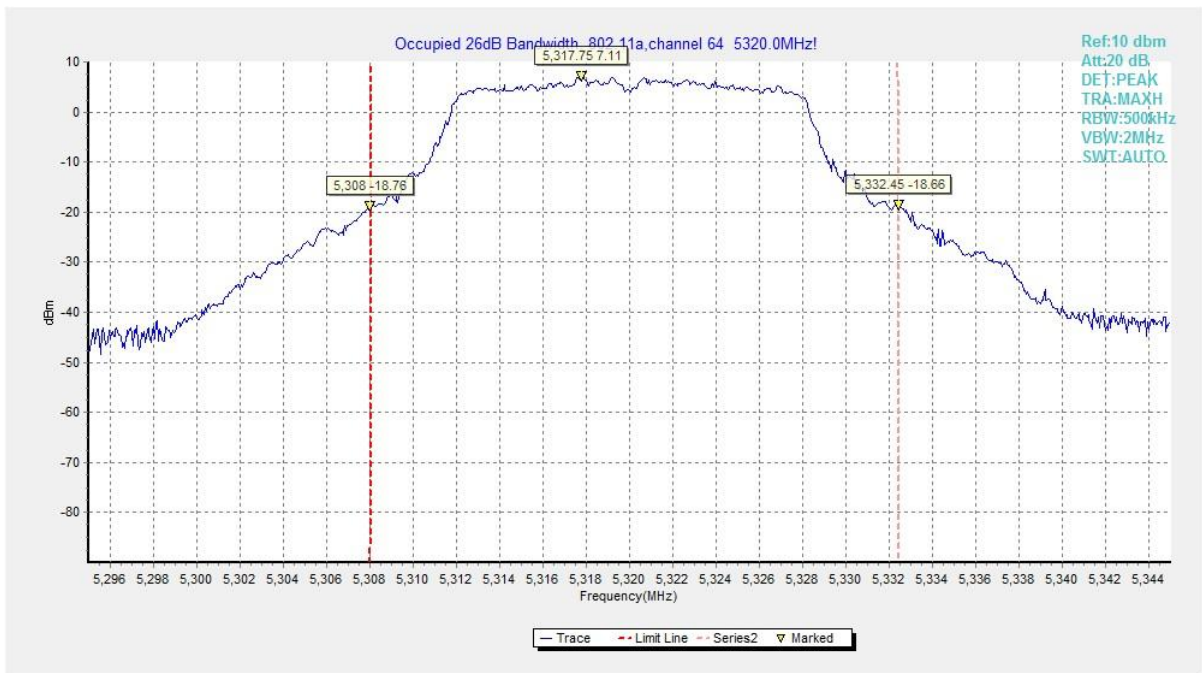


Fig. 6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

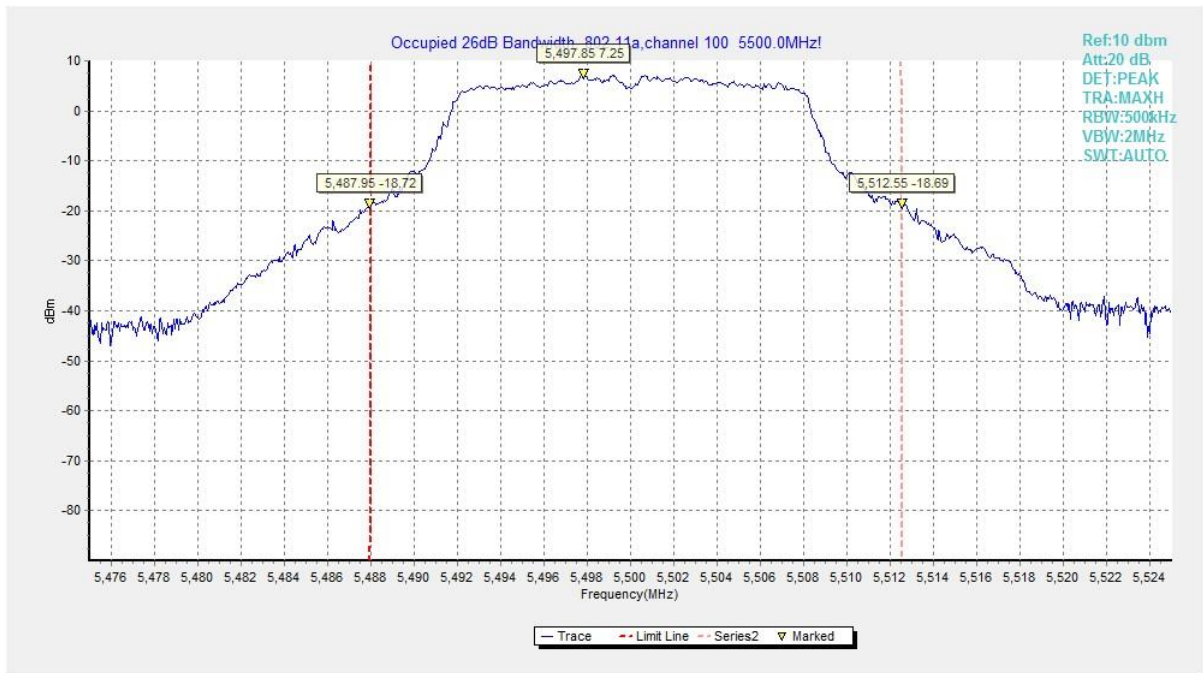


Fig. 7 Occupied 26dB Bandwidth (802. 11a, 5500MHz)

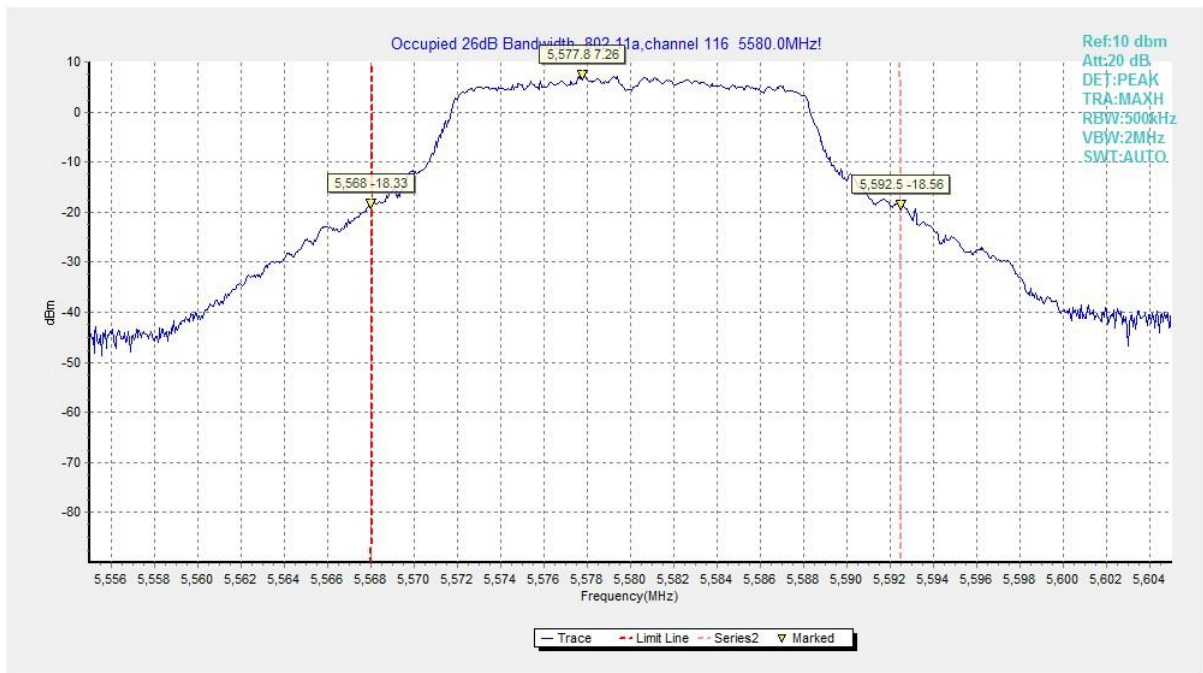


Fig. 8 Occupied 26dB Bandwidth (802. 11a, 5580MHz)

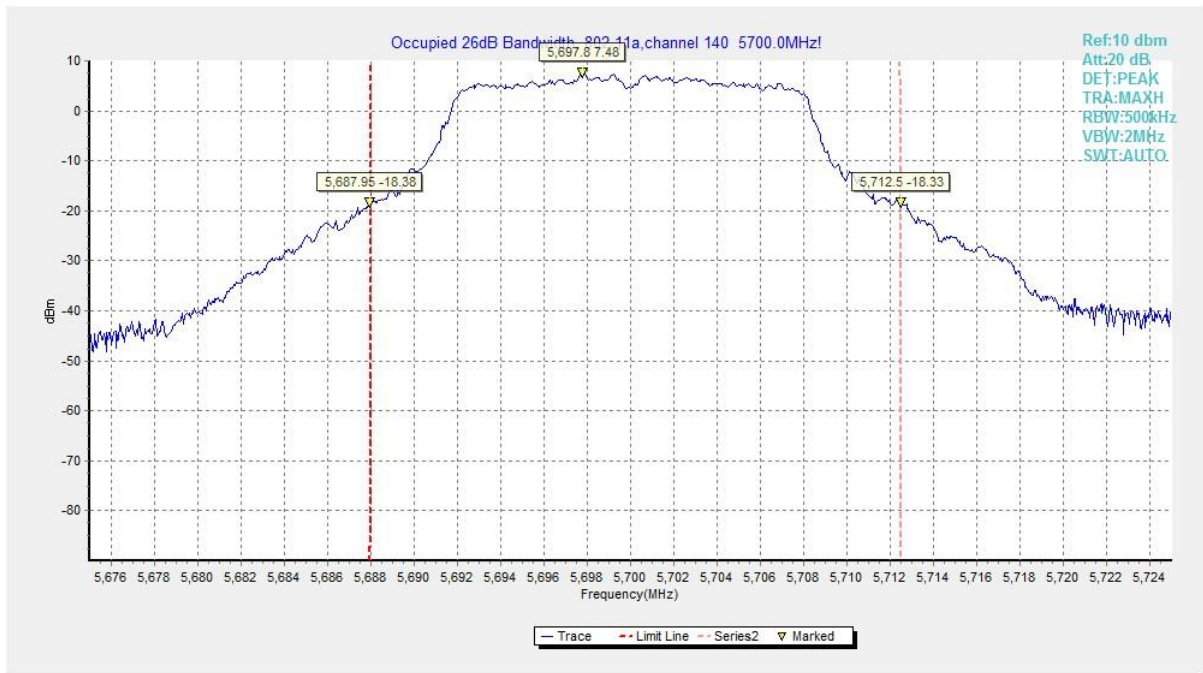


Fig. 9 Occupied 26dB Bandwidth (802.11a, 5700MHz)

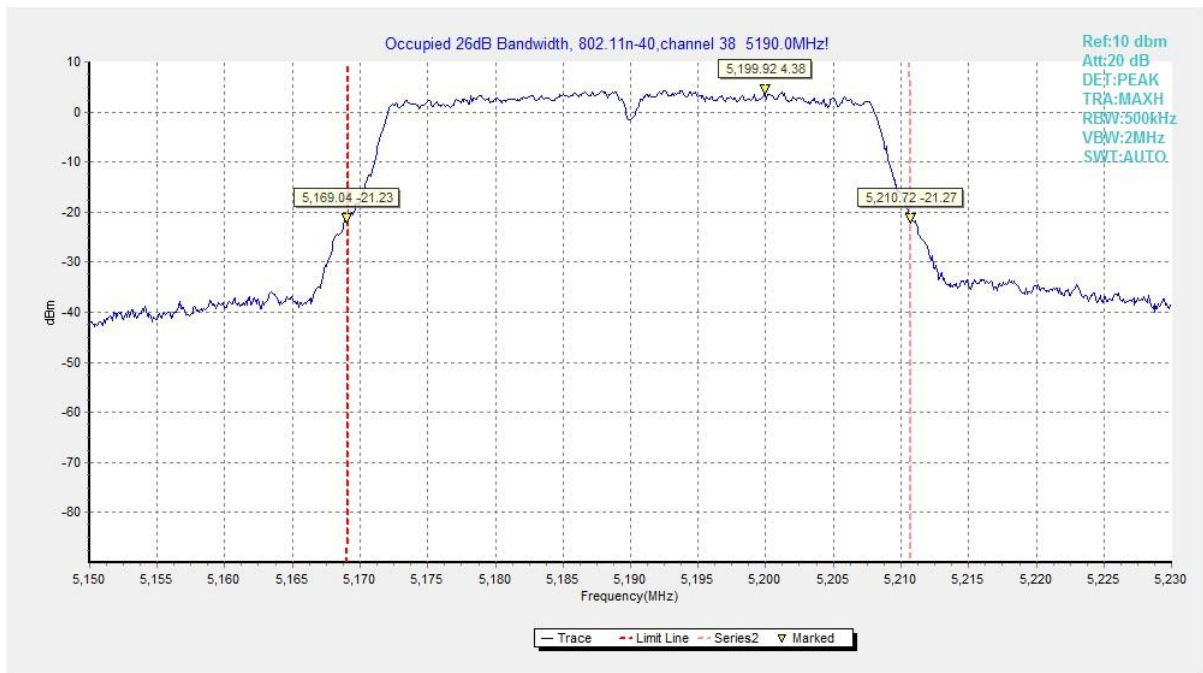


Fig. 10 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

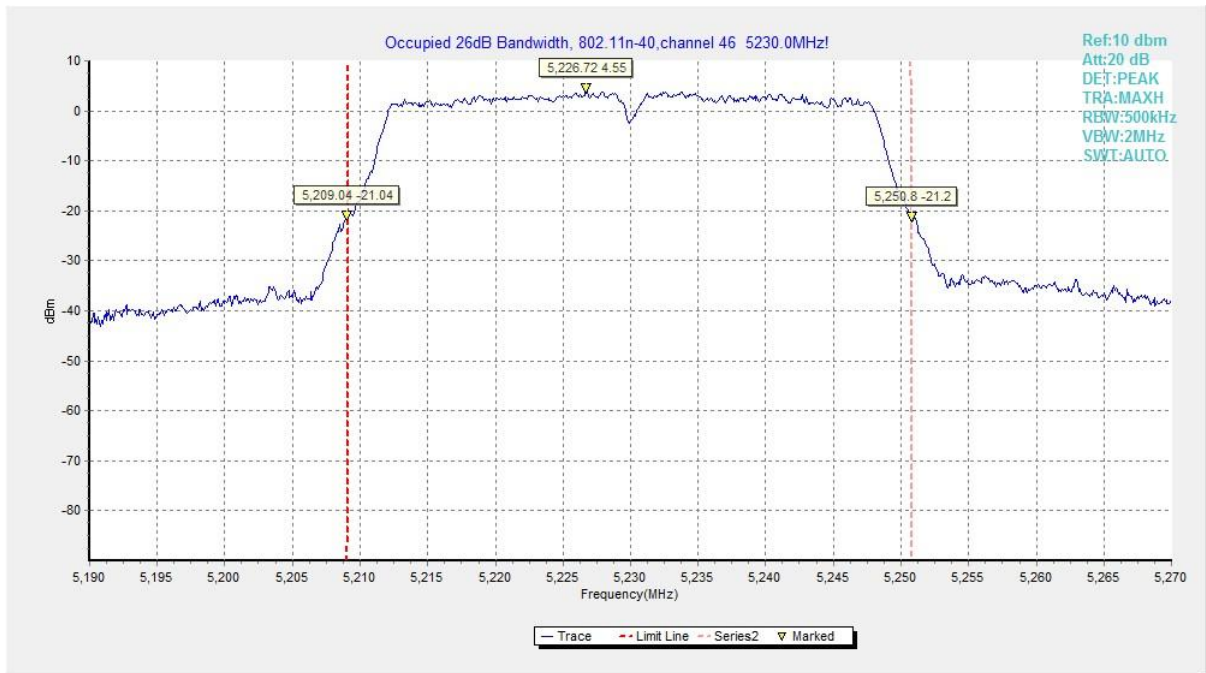


Fig. 11 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

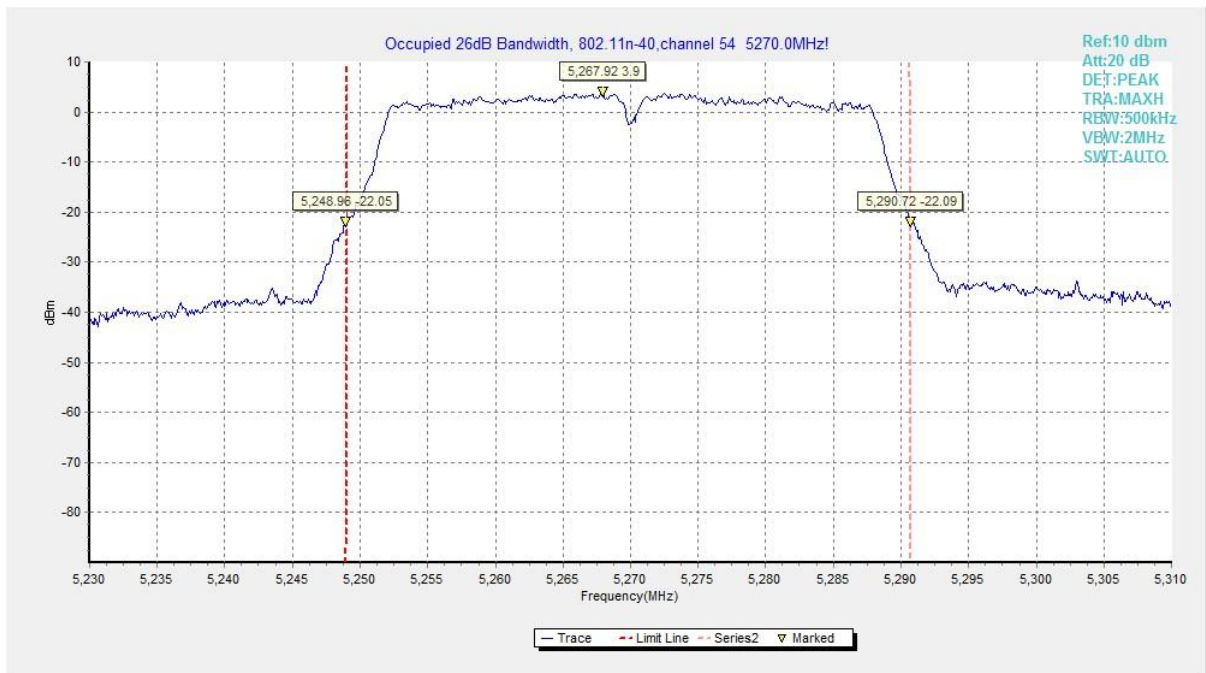


Fig. 12 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)



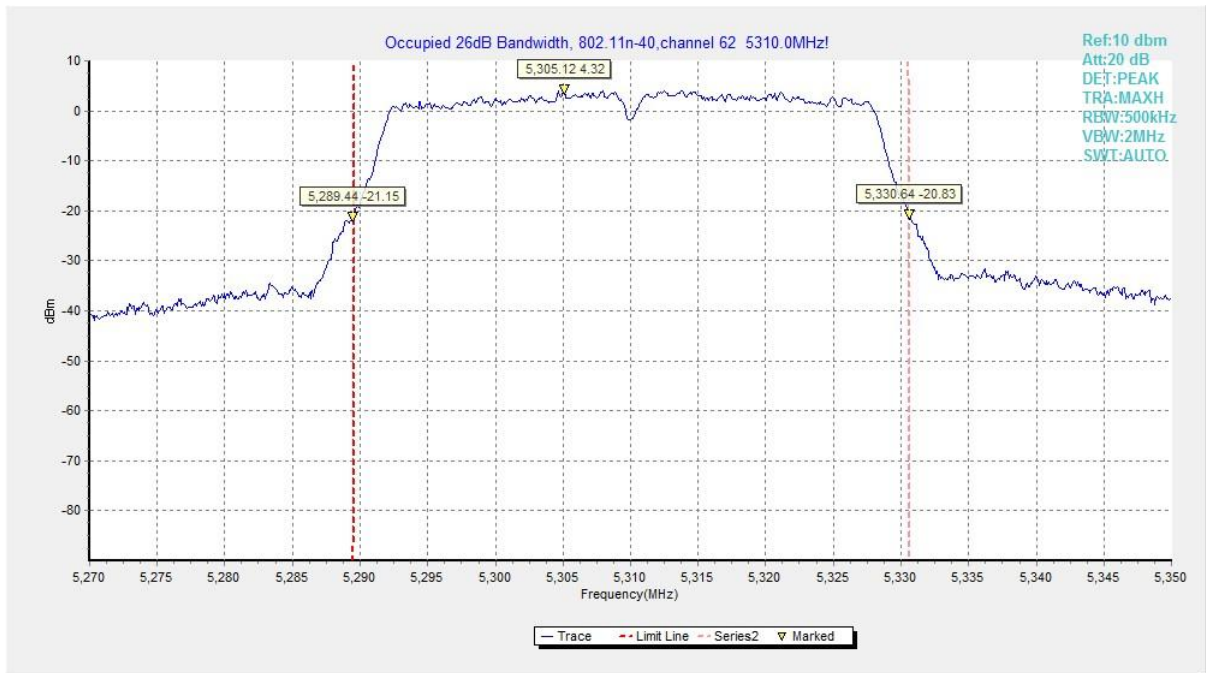


Fig. 13 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

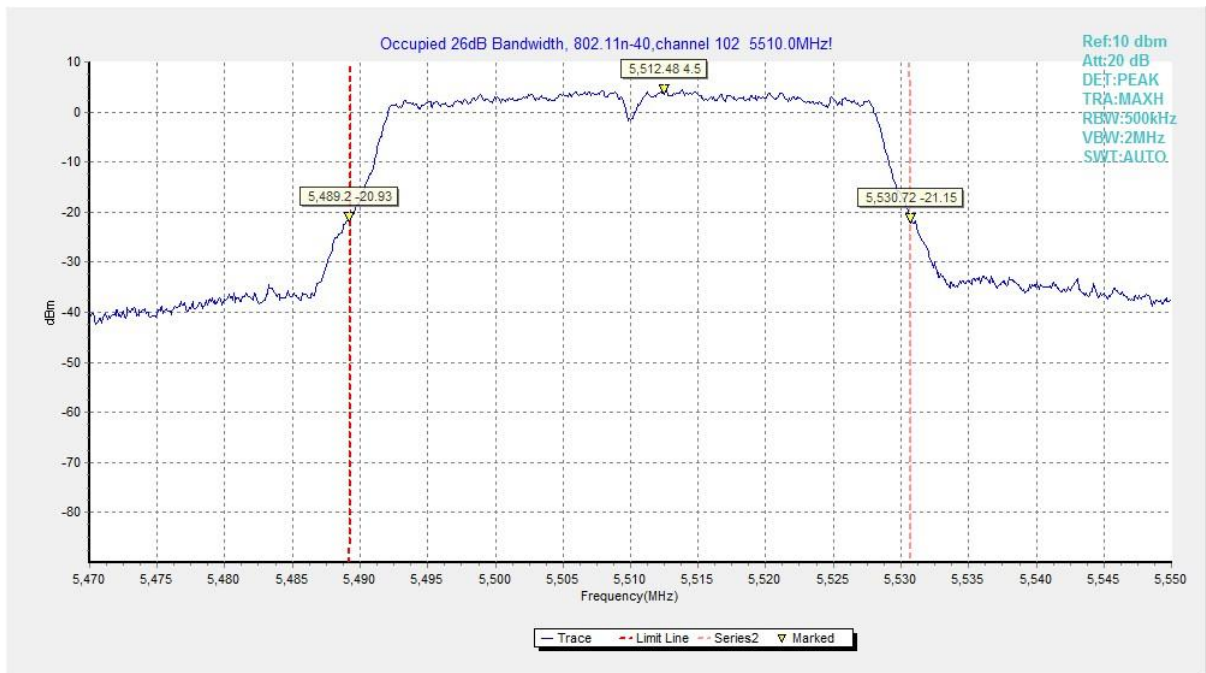


Fig. 14 Occupied 26dB Bandwidth (802.11n-HT40, 5510MHz)

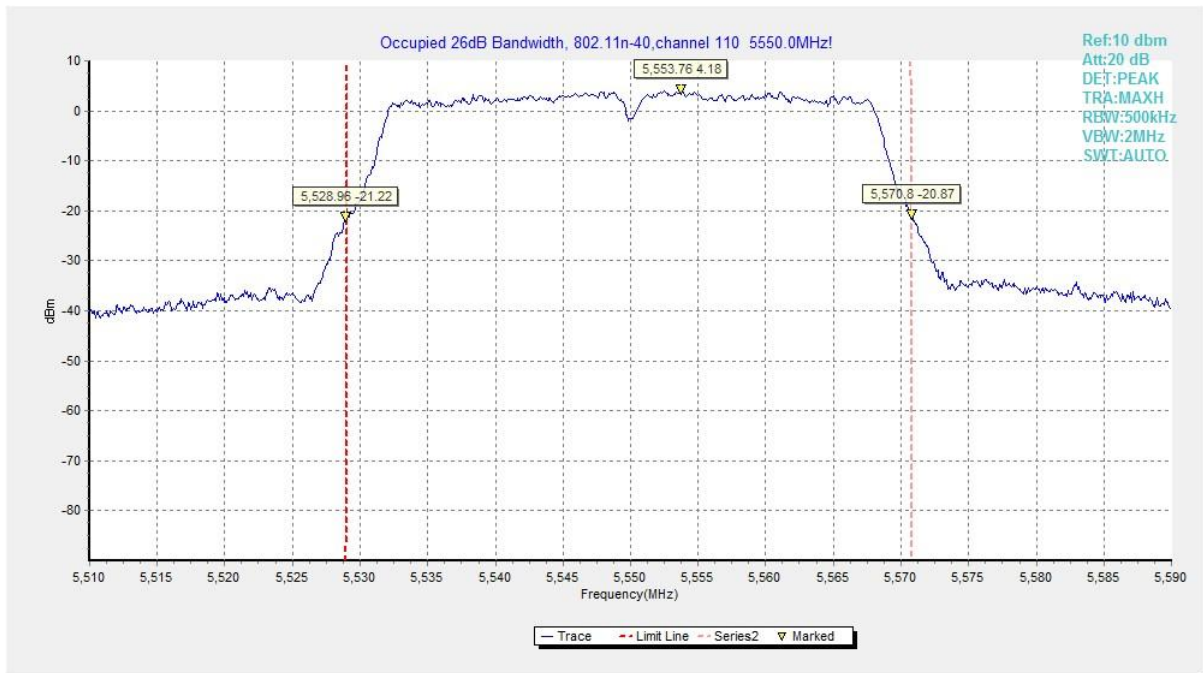


Fig. 15 Occupied 26dB Bandwidth (802. 11n-HT40, 5550MHz)

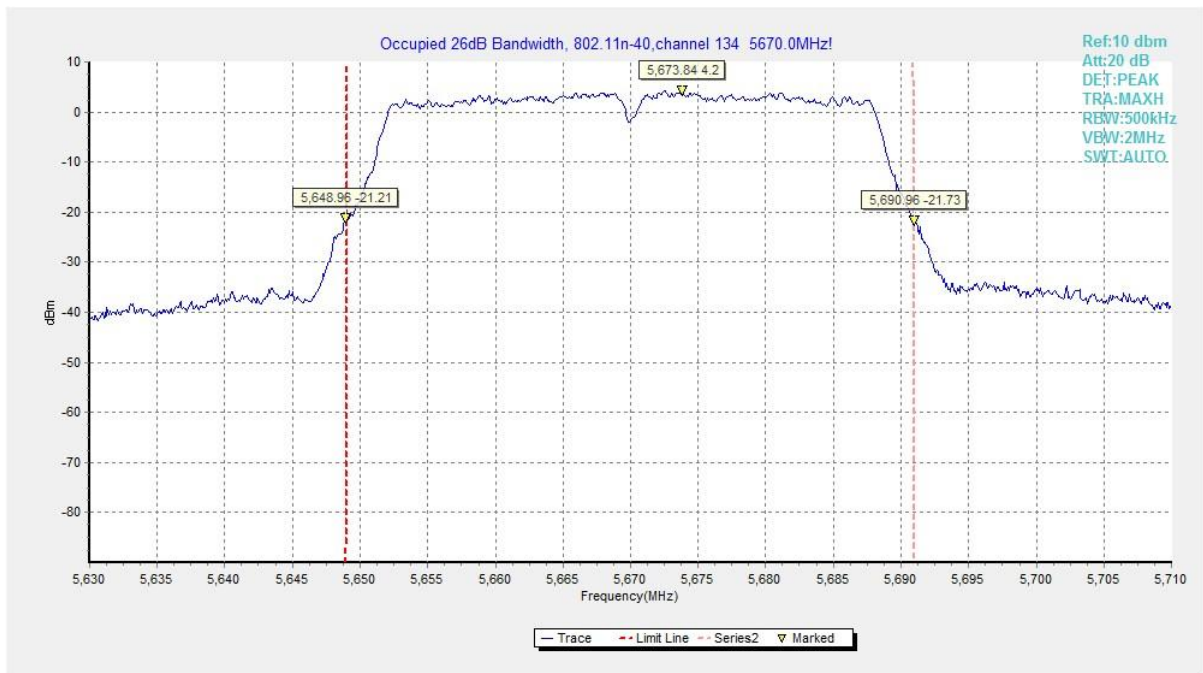


Fig. 16 Occupied 26dB Bandwidth (802. 11n-HT40, 5670MHz)

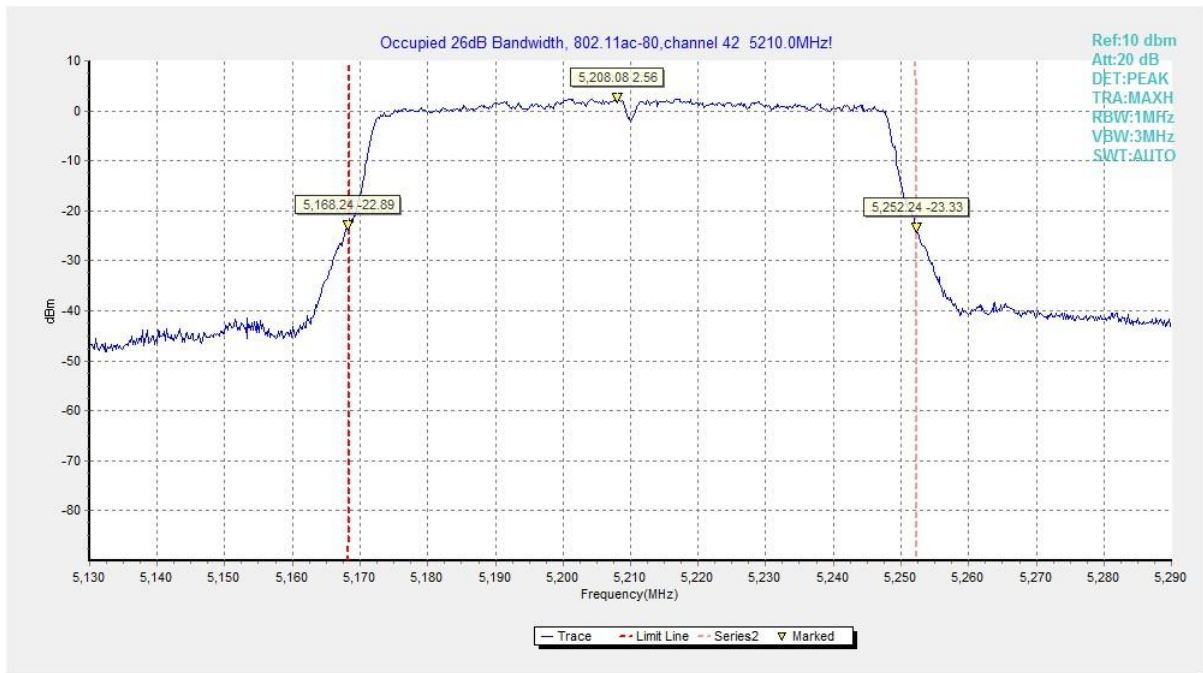


Fig. 17 Occupied 26dB Bandwidth (802.11ac-VHT80, 5210MHz)

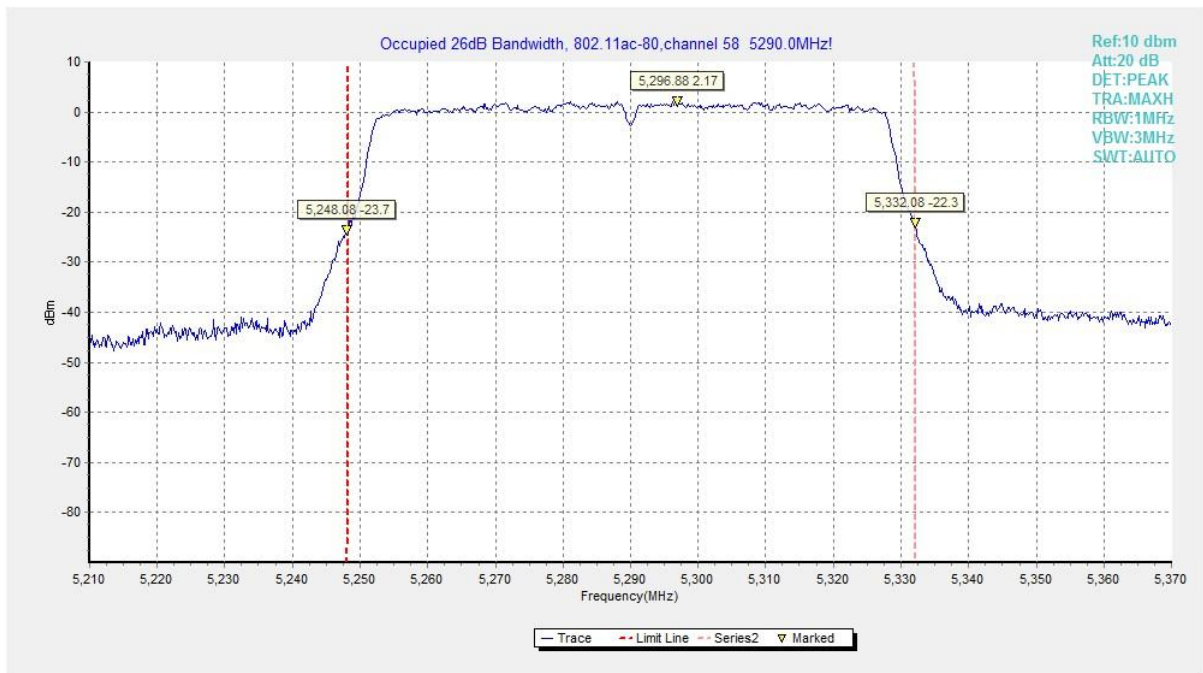


Fig. 18 Occupied 26dB Bandwidth (802.11ac-VHT80, 5290MHz)

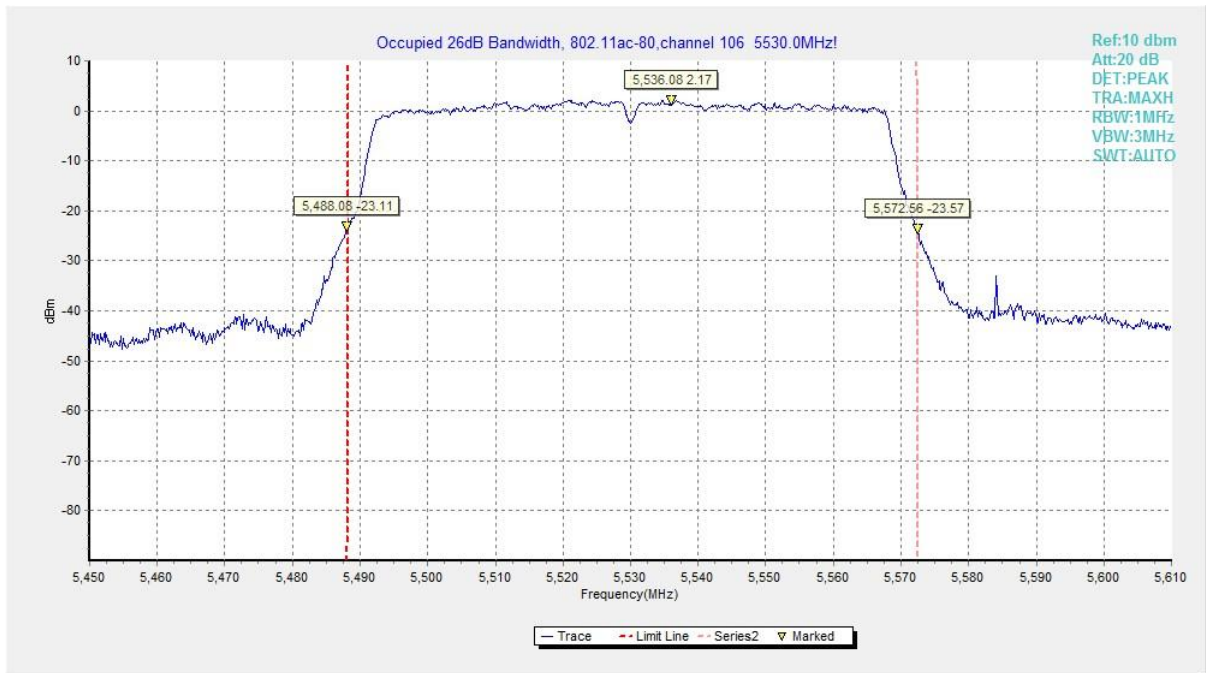


Fig. 19 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5530MHz)

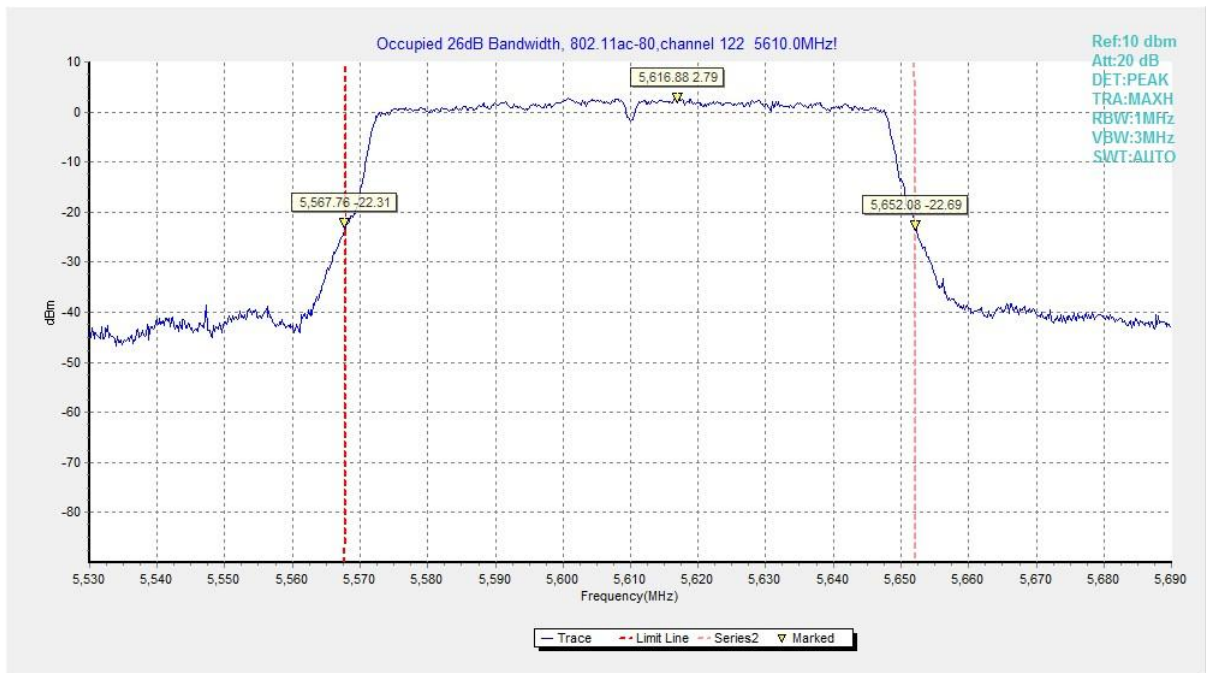


Fig. 20 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5610MHz)

### A.5. Occupied 6dB Bandwidth

**Measurement Limit:**

Standard	Limit (MHz)
FCC 47 CFR Part 15.407 & RSS-247 section 5.2	≥0.5

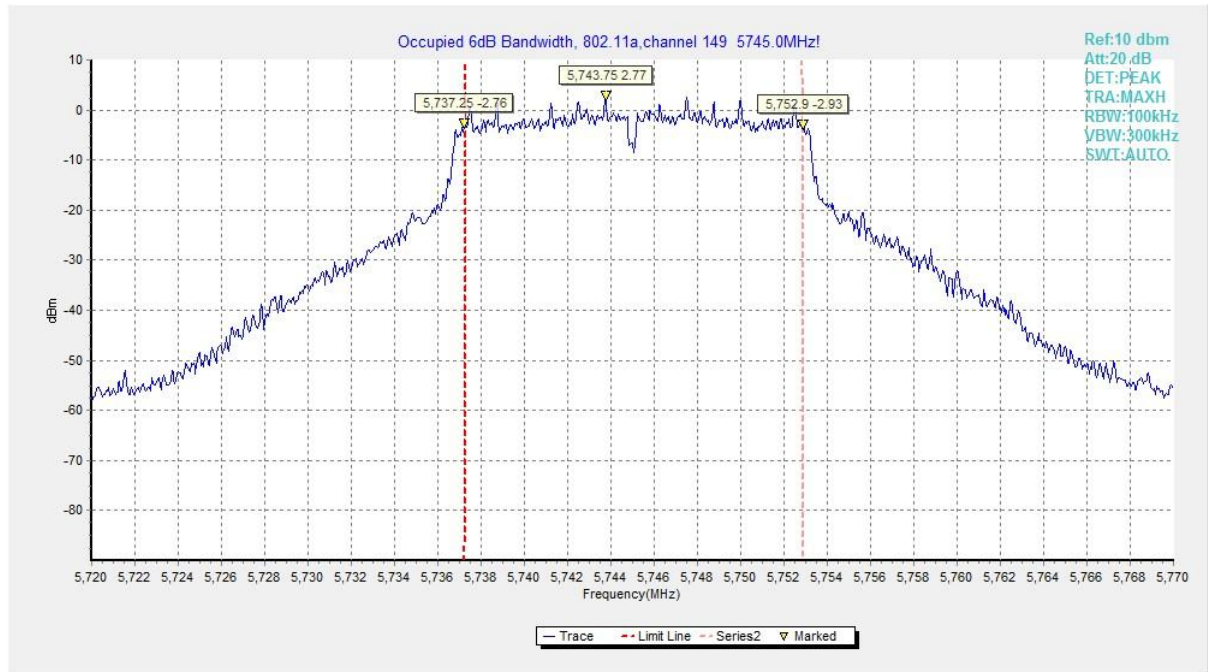
The measurement is made according to KDB 789033.

**Measurement Result:**

Mode	Channel	Occupied 6dB Bandwidth (MHz)		Conclusion
		Fig.	Value	
802.11a	5745MHz(Ch149)	Fig.21	15.65	P
	5785MHz(Ch157)	Fig.22	15.65	P
	5825MHz(Ch165)	Fig.23	15.65	P
802.11n HT40	5755MHz(Ch151)	Fig.24	35.28	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)**

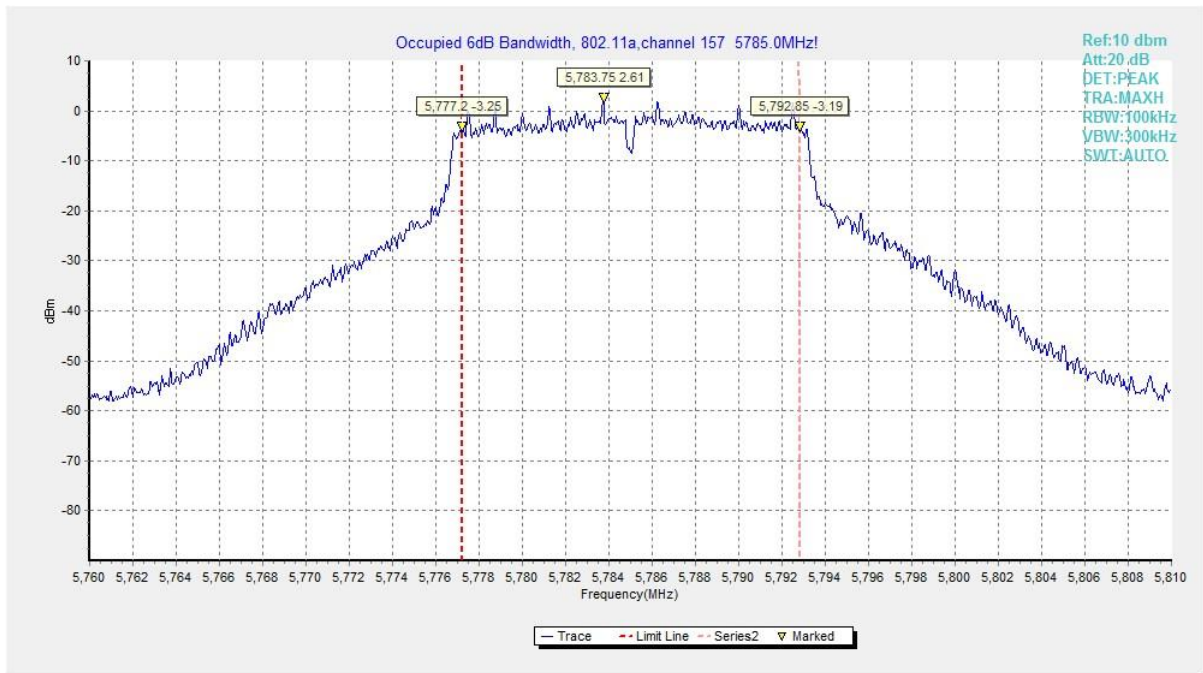


Fig. 22 Occupied 6dB Bandwidth (802.11a, 5785MHz)

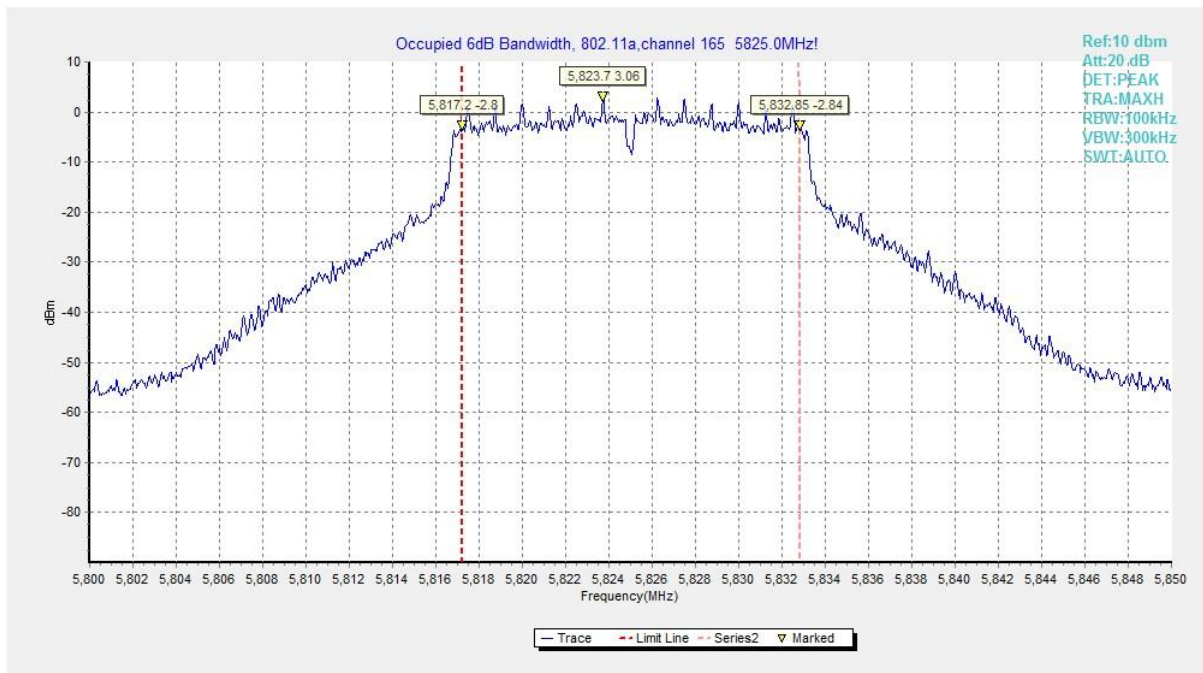


Fig. 23 Occupied 6dB Bandwidth (802.11a, 5825MHz)

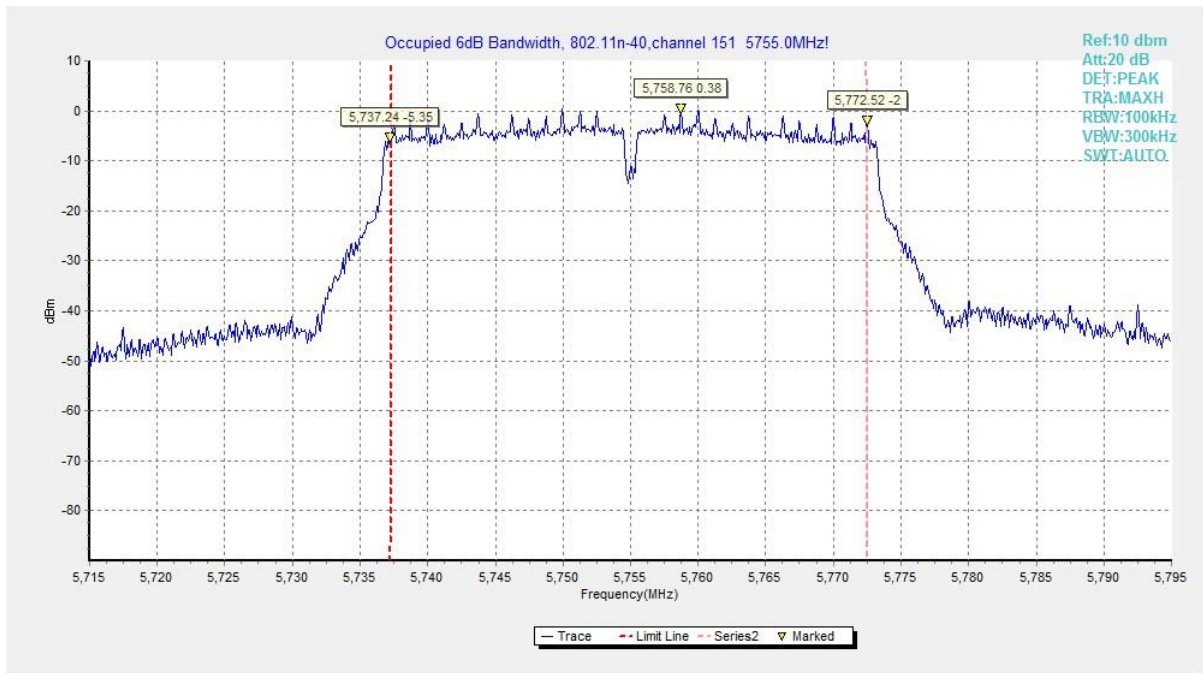


Fig. 24 Occupied 6dB Bandwidth (802.11n-HT40, 5755MHz)

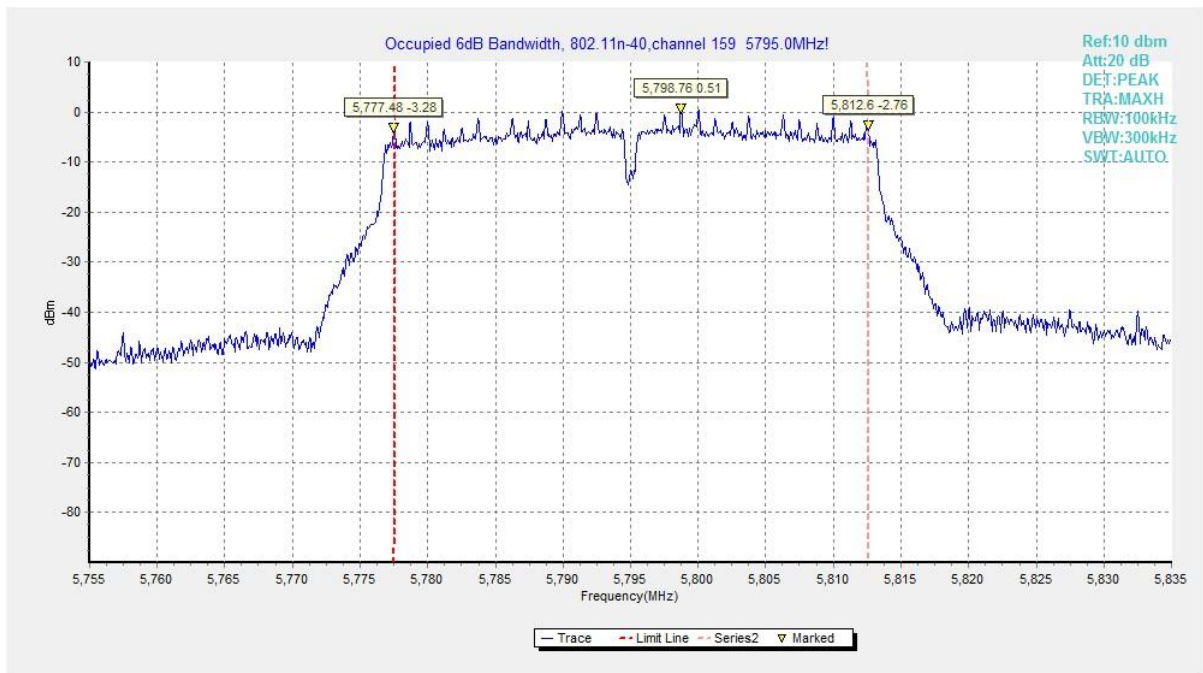


Fig. 25 Occupied 6dB Bandwidth (802.11n-HT40, 5795MHz)

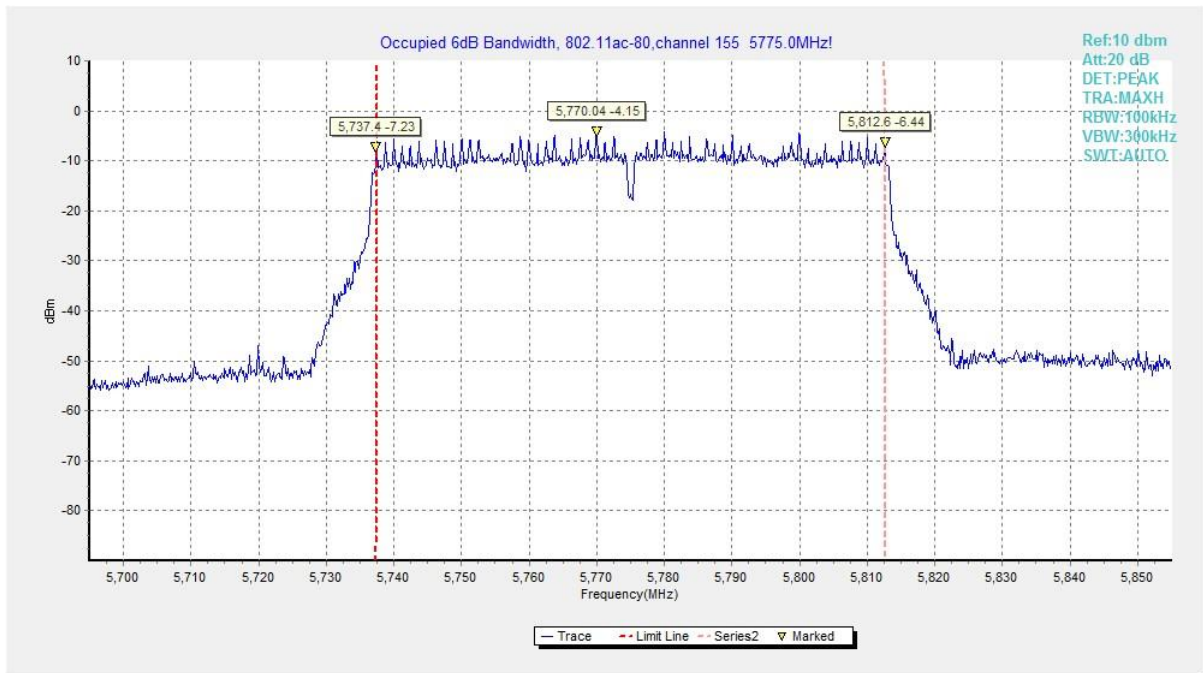


Fig. 26 Occupied 6dB Bandwidth (802.11ac-VHT80, 5775MHz)



## A.6. 99% Occupied Bandwidth

### Measurement Limit:

Standard	Limit (MHz)
RSS-Gen section 6.7	/

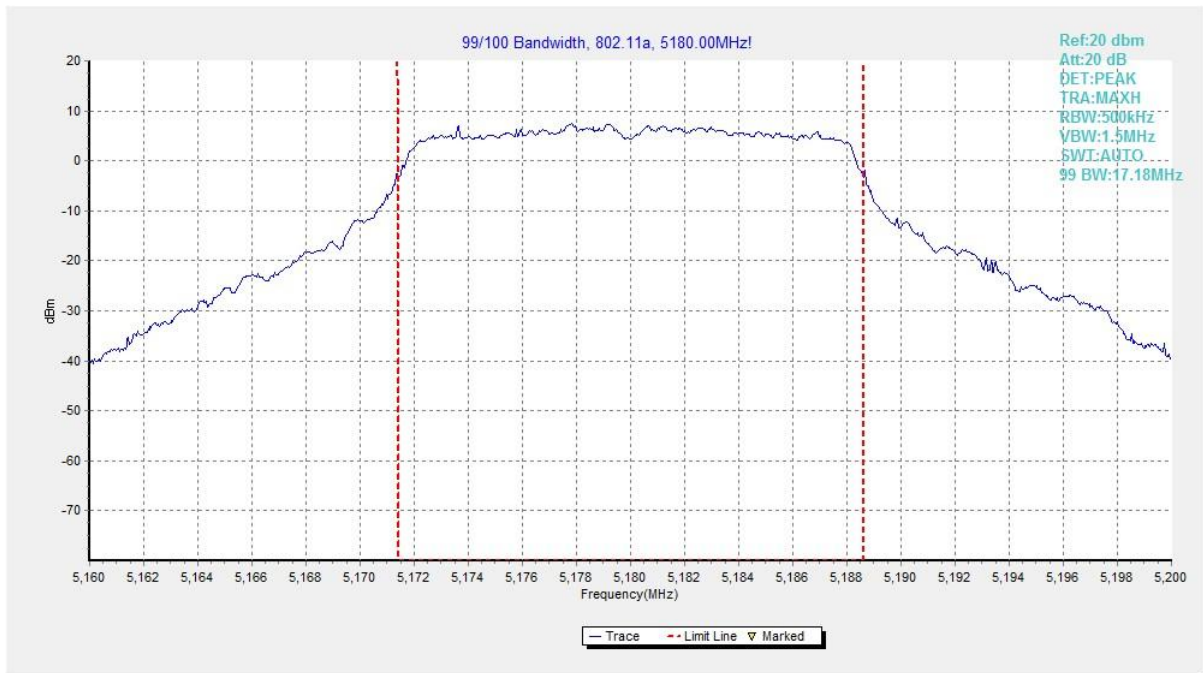
The measurement is made according to KDB 789033.

### Measurement Result:

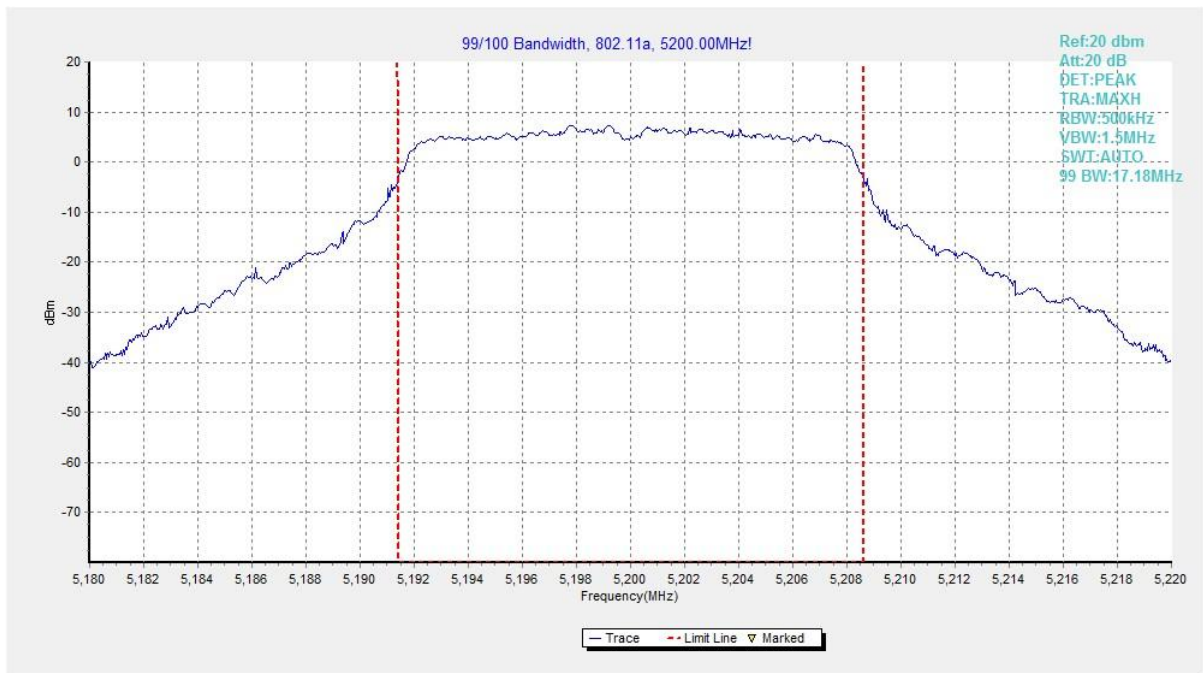
Mode	Channel	99% Occupied Bandwidth (MHz)		Conclusion
		Fig.	Value	
802.11a	5180MHz(Ch36)	Fig.27	17.18	P
	5200MHz(Ch40)	Fig.28	17.18	P
	5240MHz(Ch48)	Fig.29	17.26	P
	5260MHz(Ch52)	Fig.30	17.14	P
	5280MHz(Ch56)	Fig.31	17.22	P
	5320MHz(Ch64)	Fig.32	17.18	P
	5500MHz(Ch100)	Fig.33	17.14	P
	5580MHz(Ch116)	Fig.34	17.22	P
802.11n HT40	5700MHz(Ch140)	Fig.35	17.18	P
	5190MHz(Ch38)	Fig.36	36.36	P
	5230MHz(Ch46)	Fig.37	36.44	P
	5270MHz(Ch54)	Fig.38	36.36	P
	5310MHz(Ch62)	Fig.39	36.28	P
	5510MHz(Ch102)	Fig.40	36.28	P
	5550MHz(Ch110)	Fig.41	36.36	P
802.11ac VHT80	5670MHz(Ch134)	Fig.42	36.44	P
	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)**

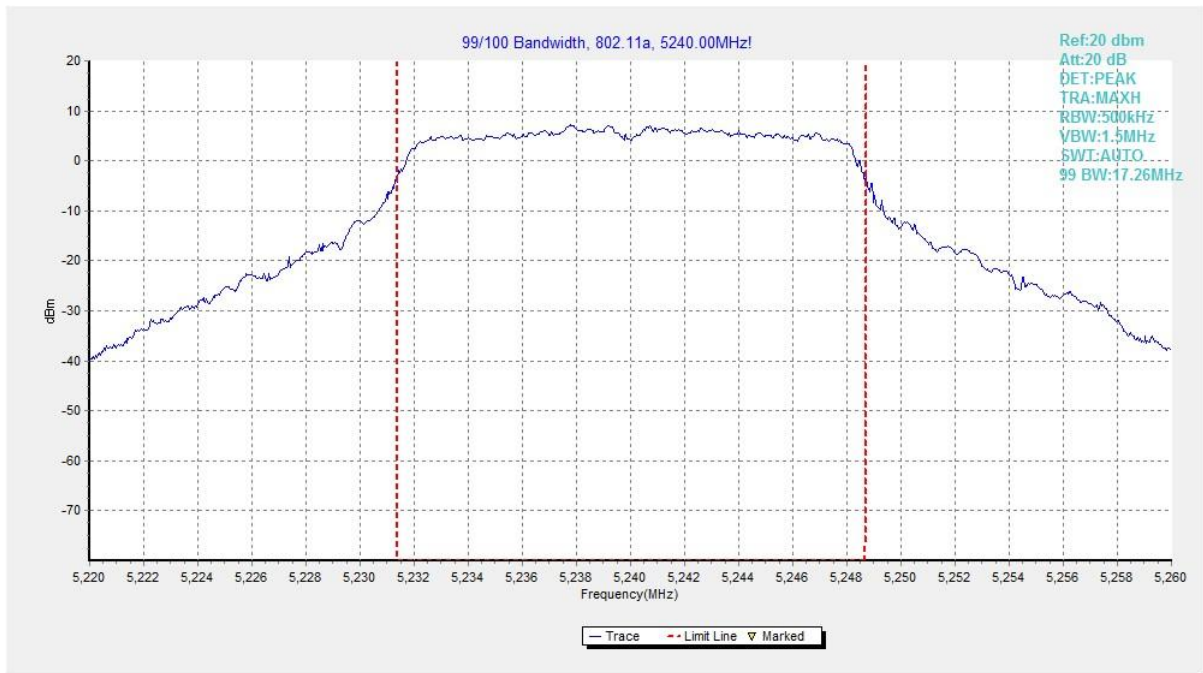


Fig. 29 99% Occupied Bandwidth (802.11a, 5240MHz)

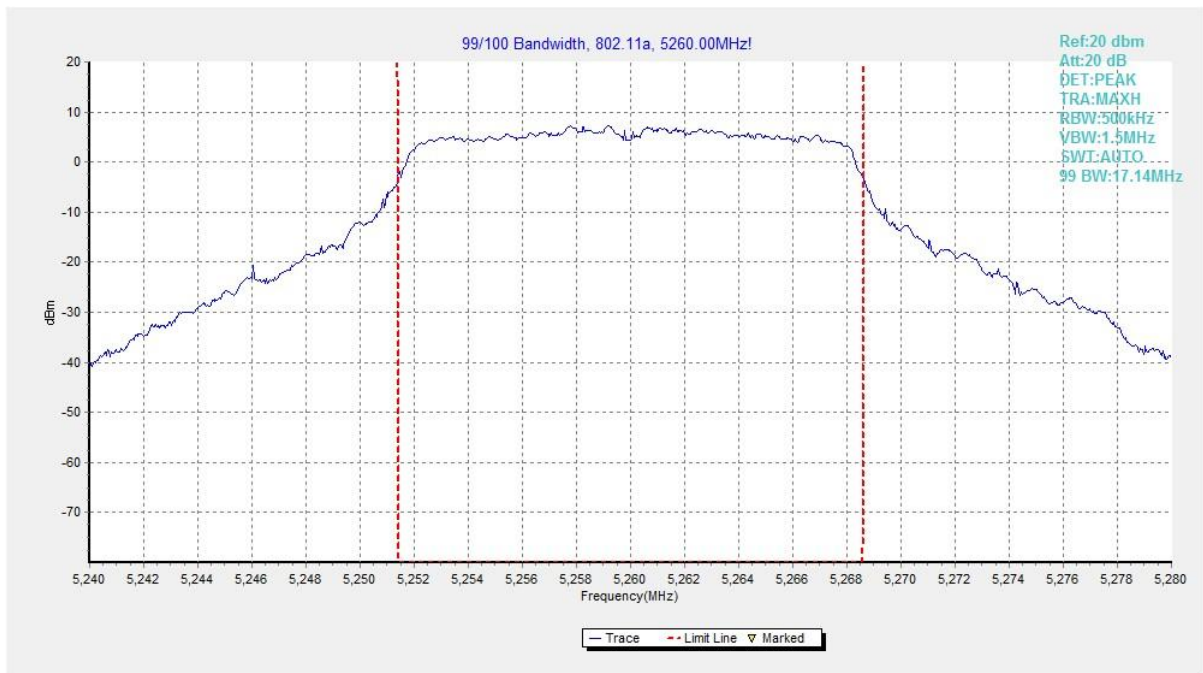
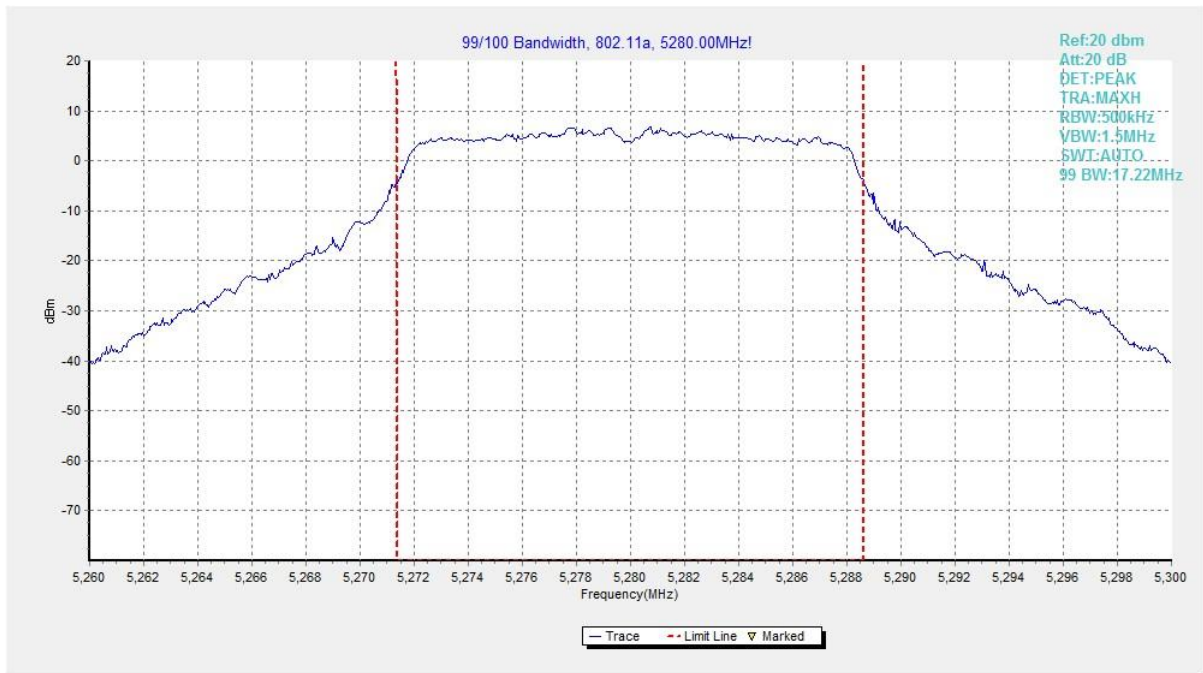
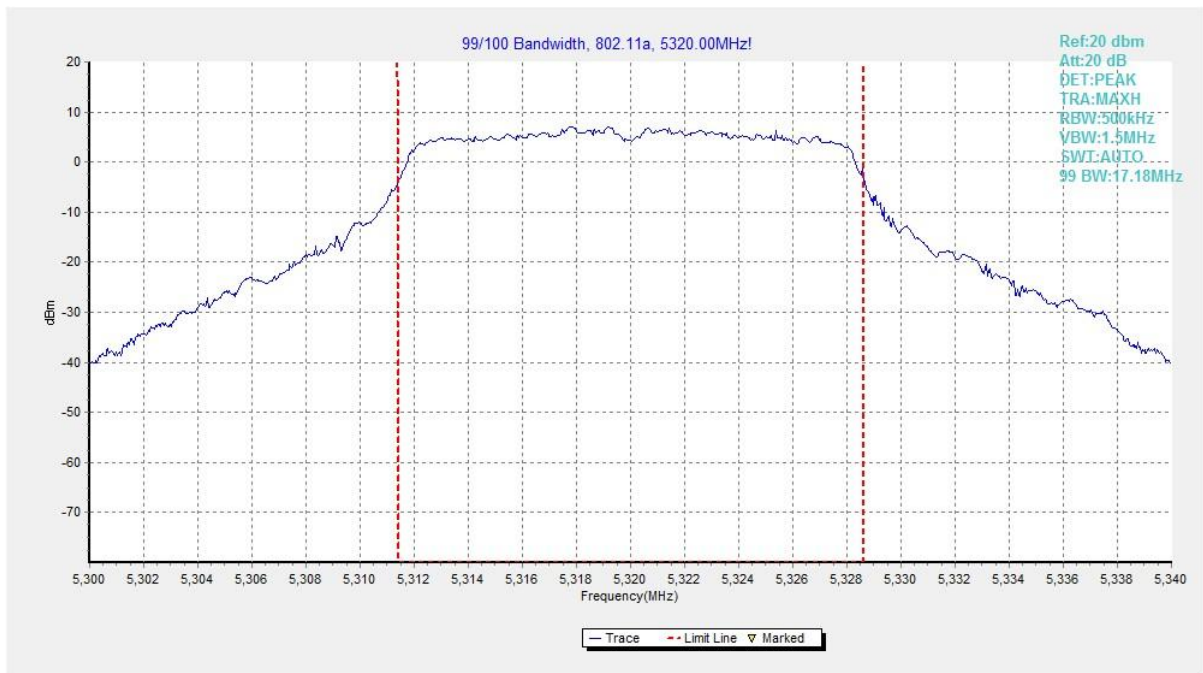


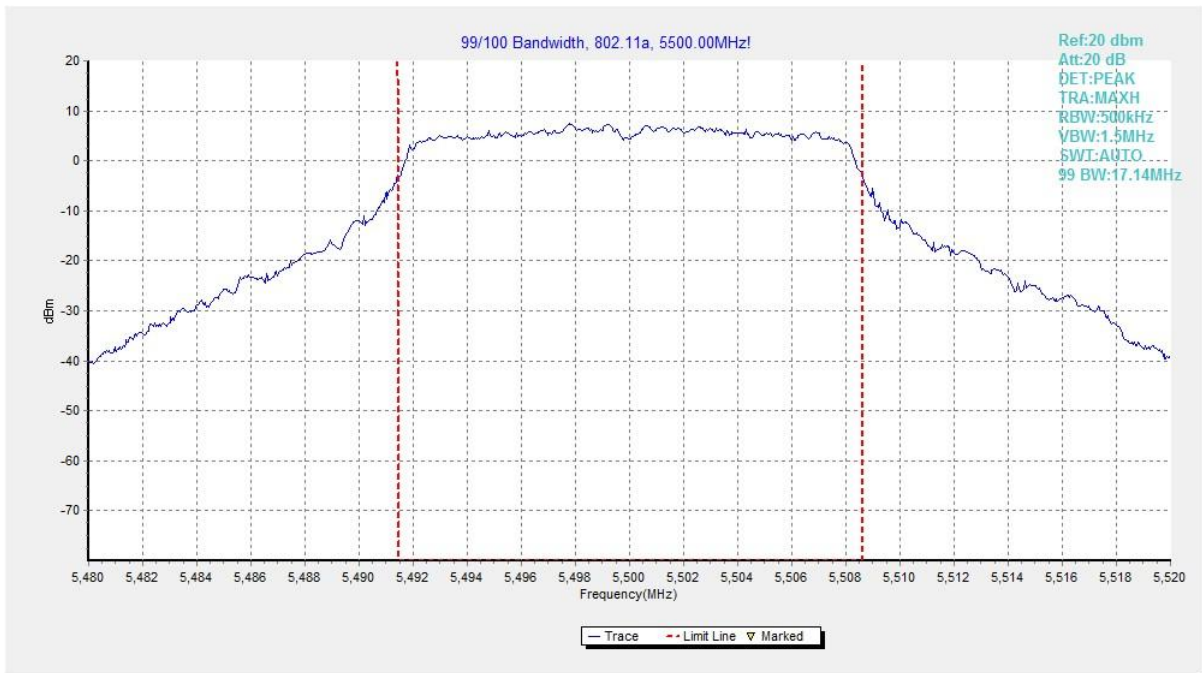
Fig. 30 99% Occupied Bandwidth (802.11a, 5260MHz)



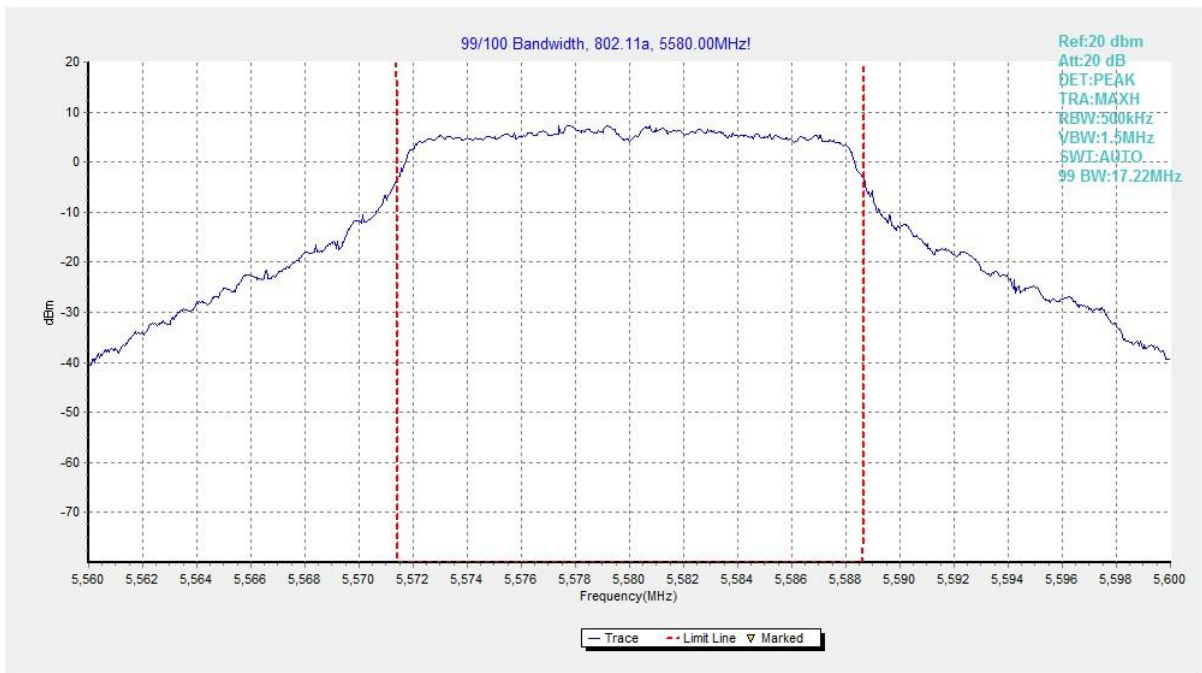
**Fig. 31 99% Occupied Bandwidth (802.11a, 5280MHz)**



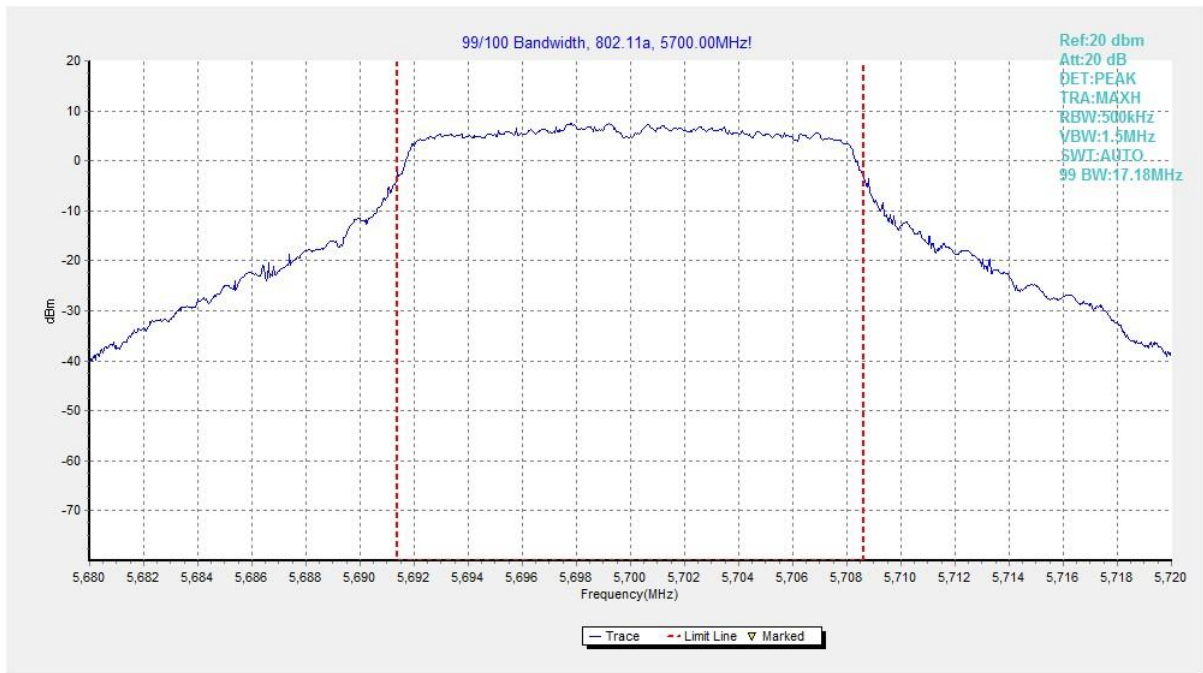
**Fig. 32 99% Occupied Bandwidth (802.11a, 5320MHz)**



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



**Fig. 34 99% Occupied Bandwidth (802. 11a, 5580MHz)**



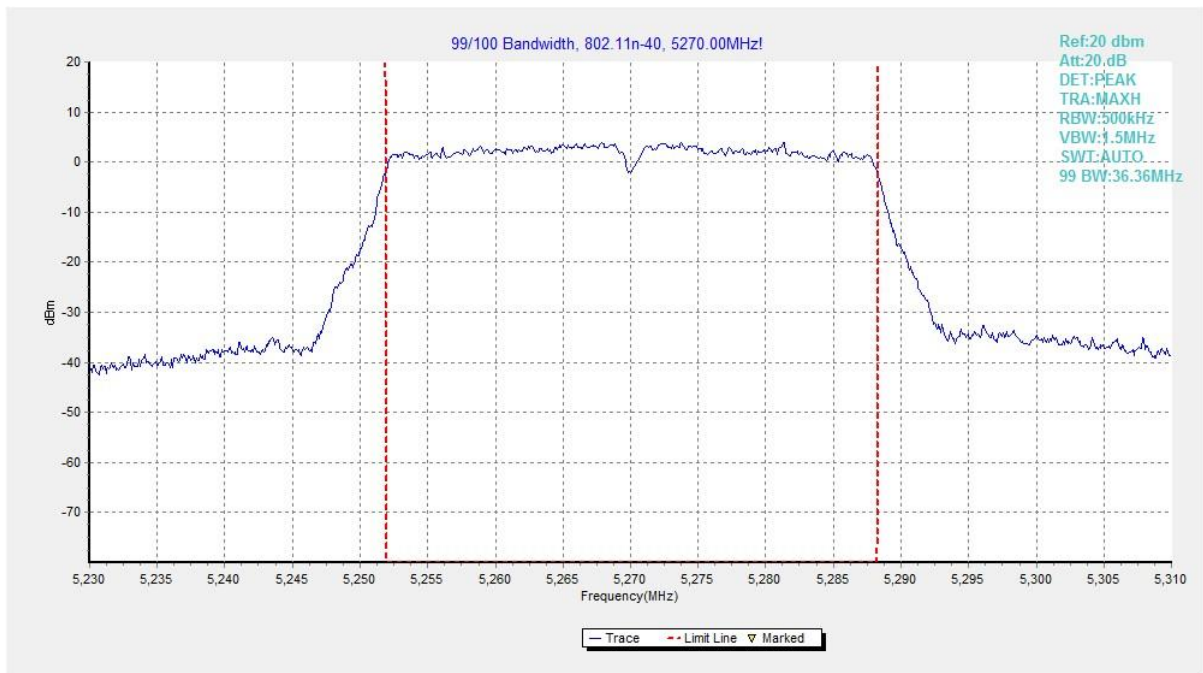
**Fig. 35 99% Occupied Bandwidth (802. 11a, 5700MHz)**



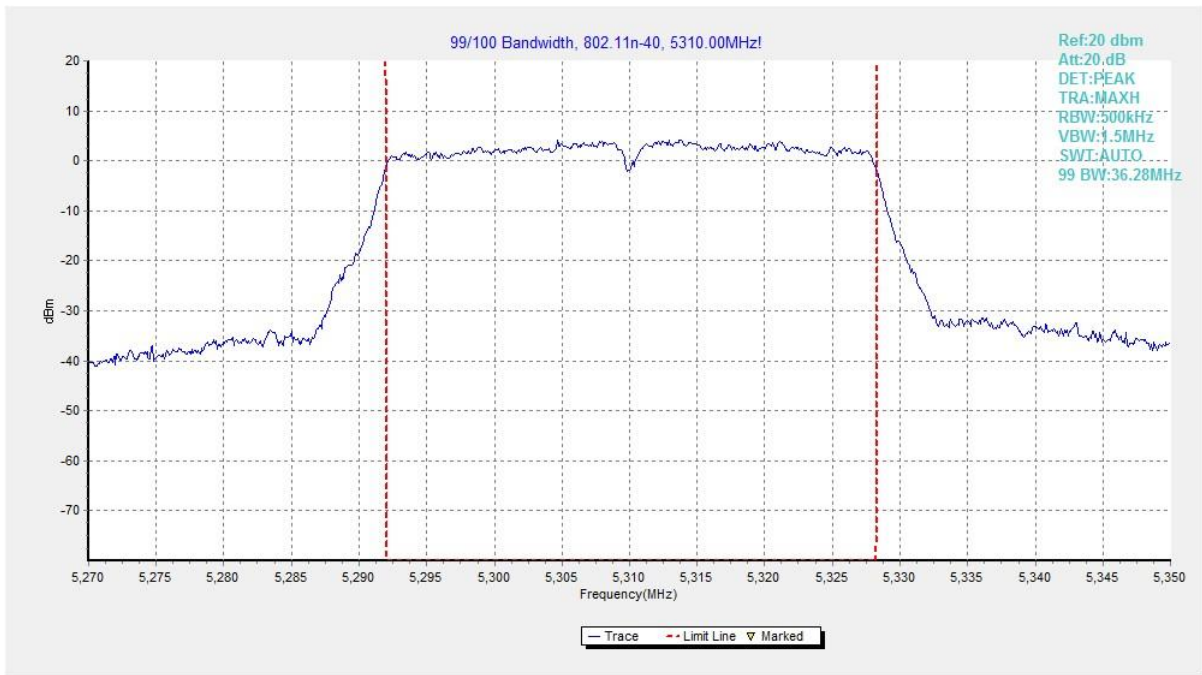
**Fig. 36 99% Occupied Bandwidth (802.11n-HT40, 5190MHz)**



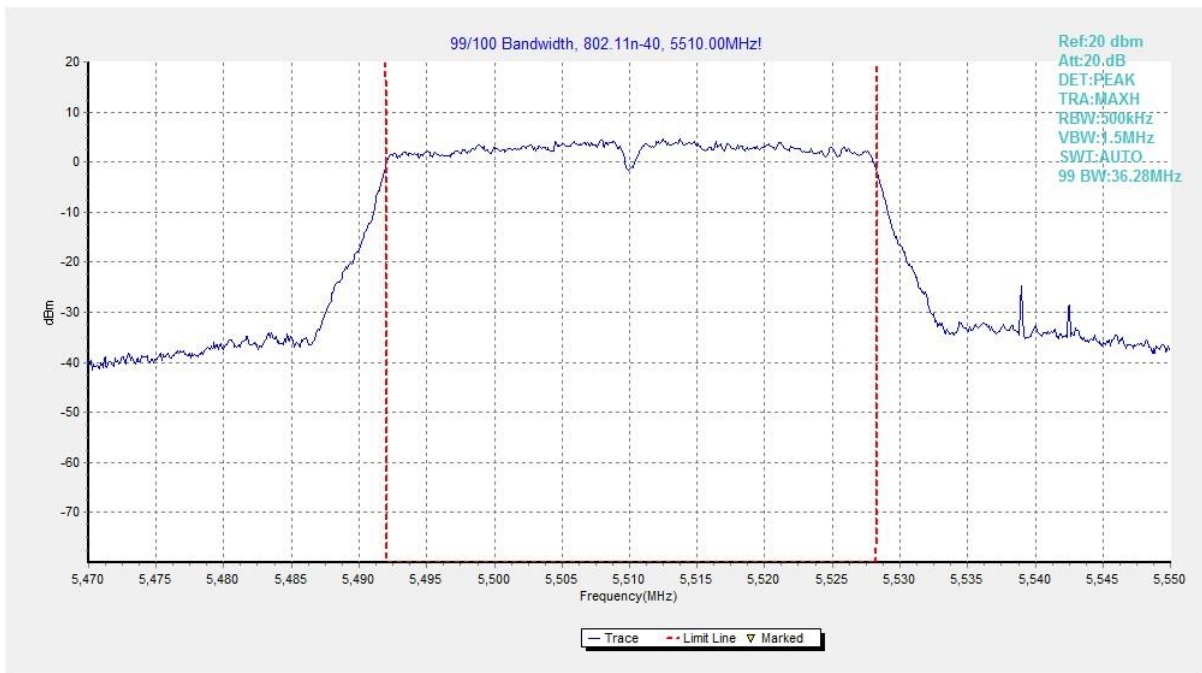
**Fig. 37 99% Occupied Bandwidth (802.11n-HT40, 5230MHz)**



**Fig. 38 99% Occupied Bandwidth (802.11n-HT40, 5270MHz)**

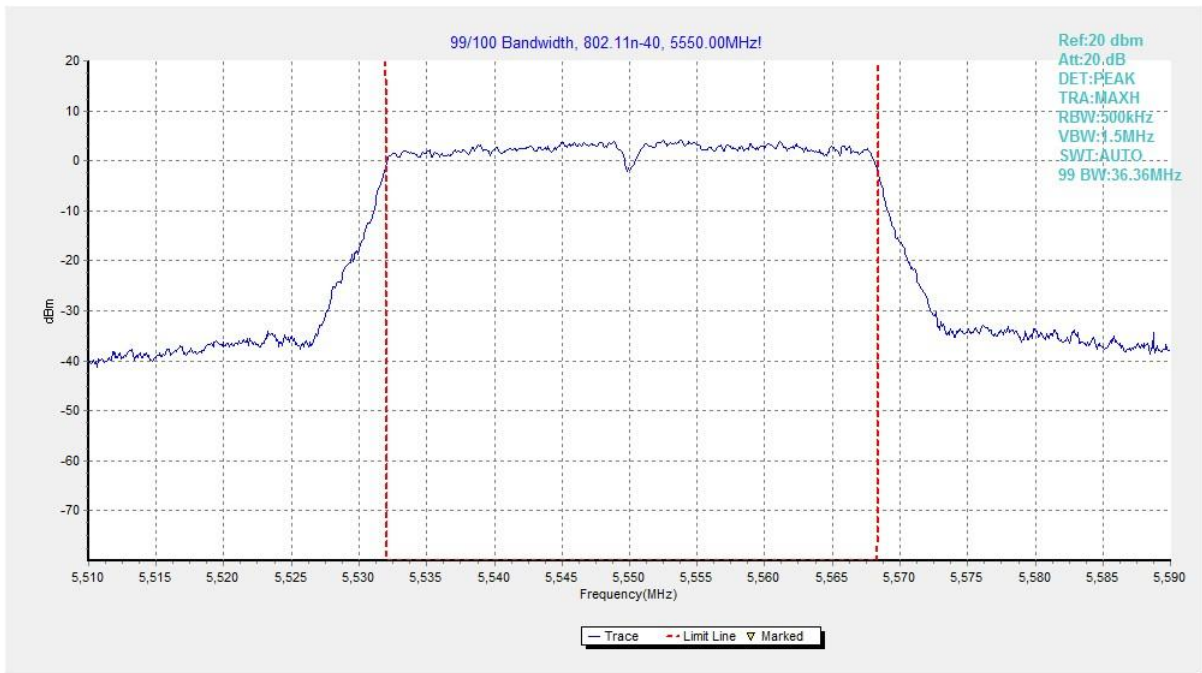


**Fig. 39 99% Occupied Bandwidth (802.11n-HT40, 5310MHz)**

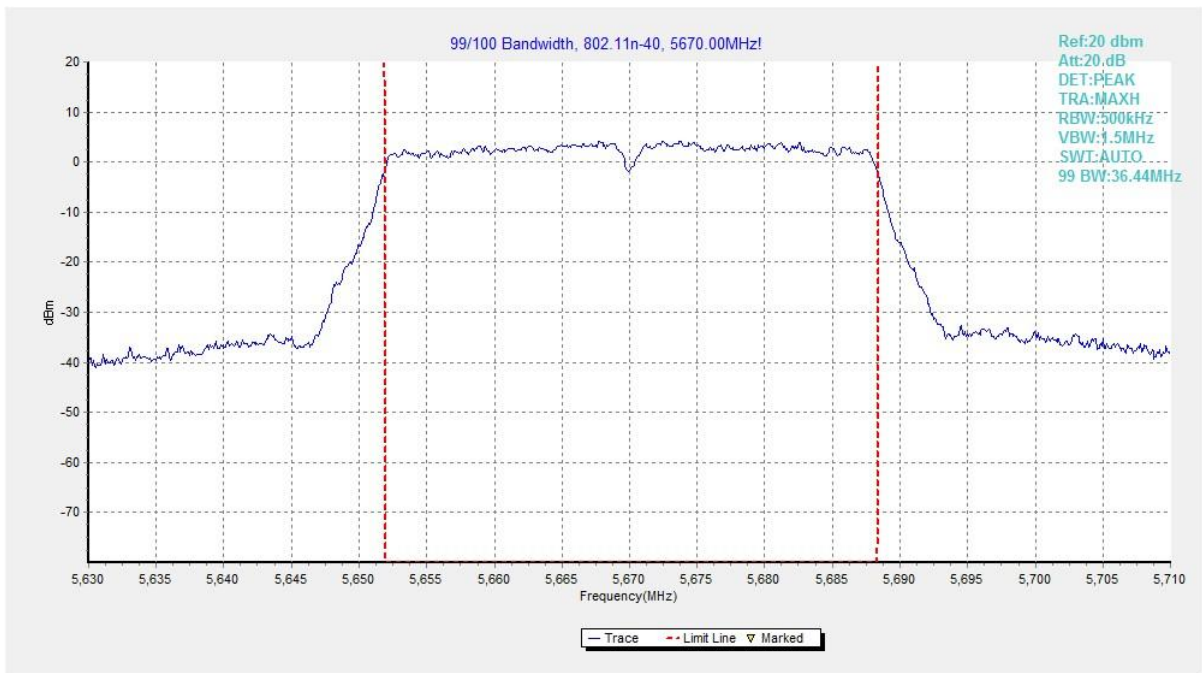


**Fig. 40 99% Occupied Bandwidth (802.11n-HT40, 5510MHz)**

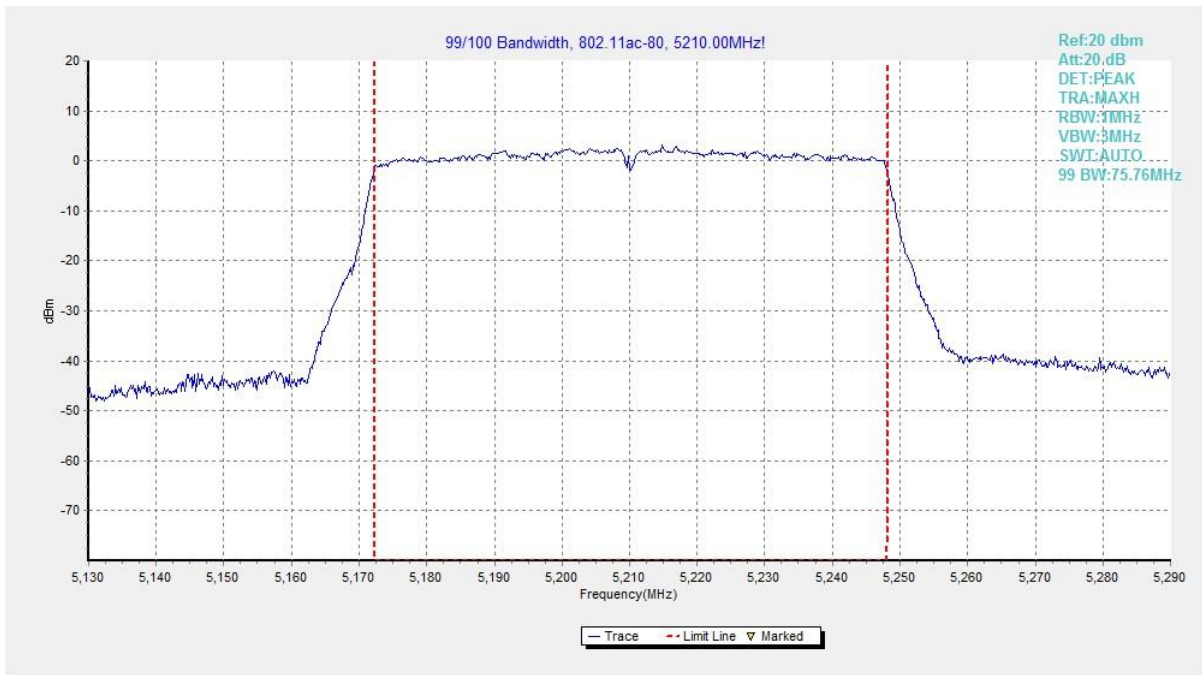




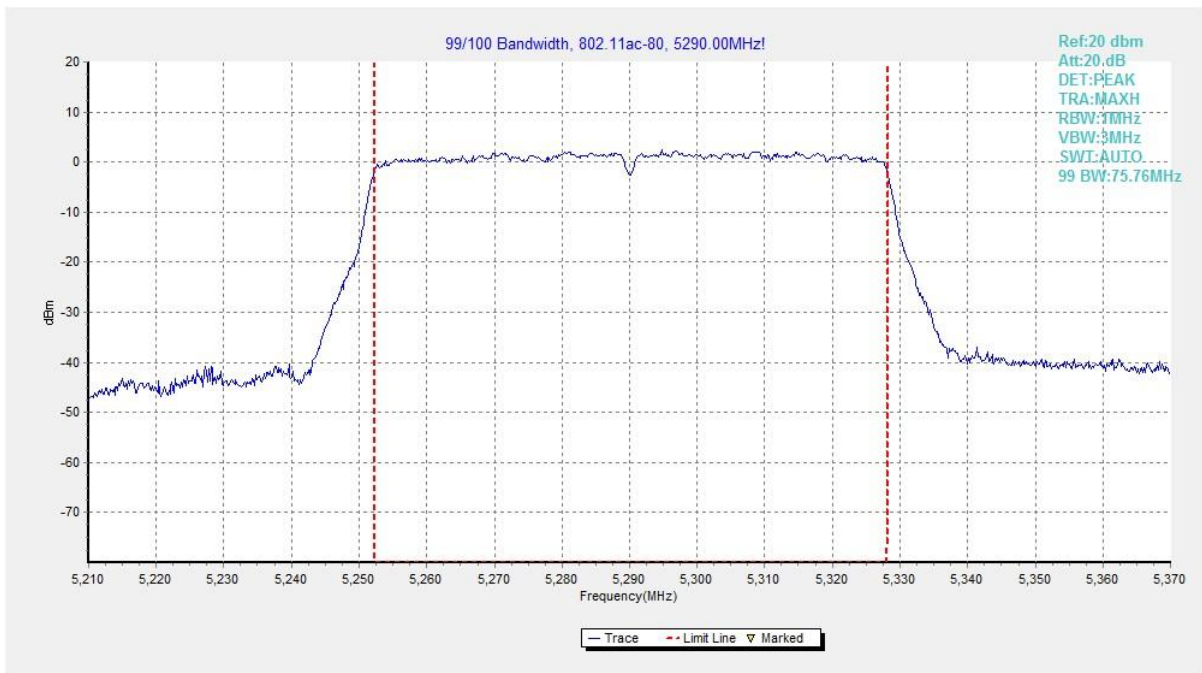
**Fig. 41 99% Occupied Bandwidth (802.11n-HT40, 5550MHz)**



**Fig. 42 99% Occupied Bandwidth (802.11n-HT40, 5670MHz)**



**Fig. 43 99% Occupied Bandwidth (802. 11ac-VHT80, 5210MHz)**



**Fig. 44 99% Occupied Bandwidth (802. 11ac-VHT80, 5290MHz)**



Fig. 45 99% Occupied Bandwidth (802.11ac-VHT80, 5530MHz)

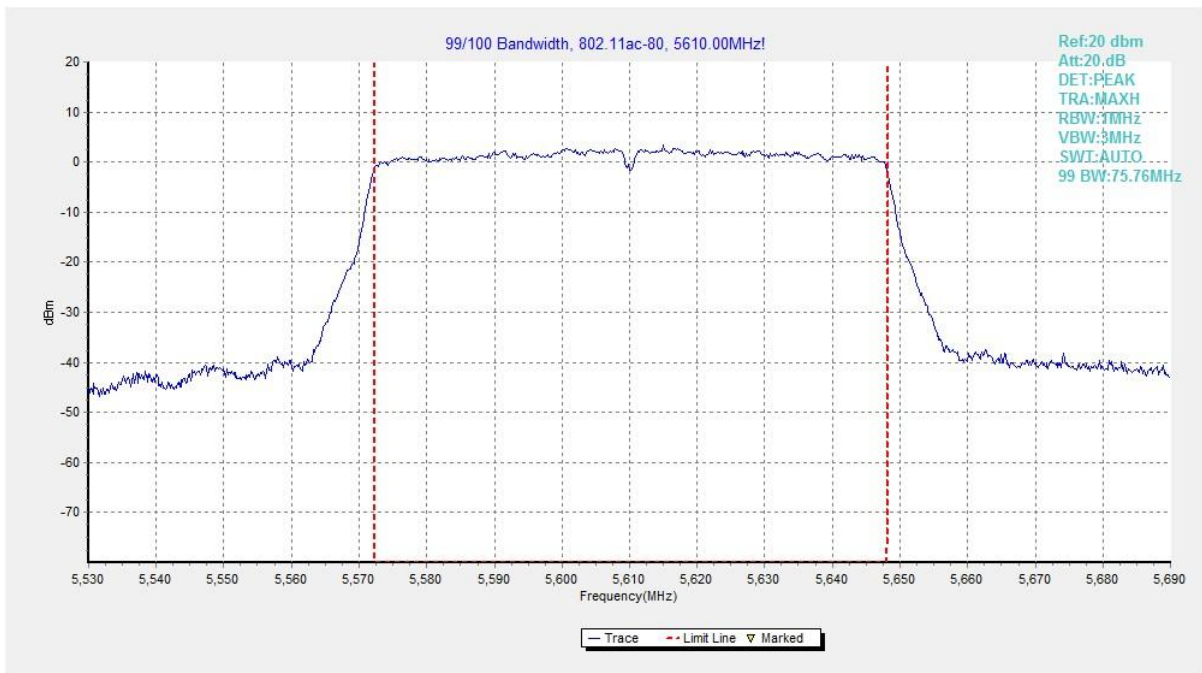


Fig. 46 99% Occupied Bandwidth (802.11ac-VHT80, 5610MHz)

## A.7. Band Edges Compliance

### Measurement Limit:

Standard	Limit (dBuV/m)	
	FCC 47 CFR Part 15.209 & RSS-247 section 5.5	Peak
	Average	54

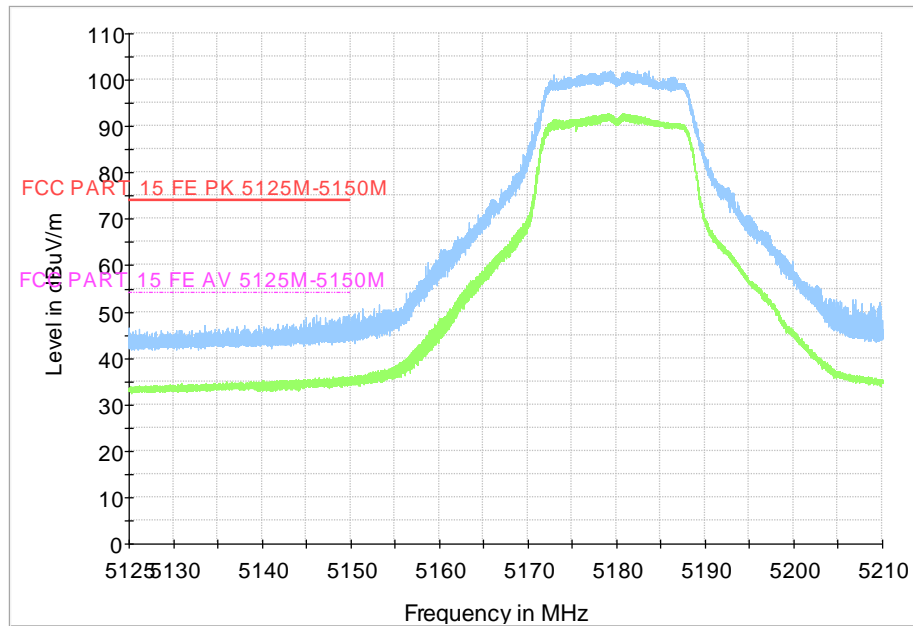
The measurement is made according to KDB 789033.

### Measurement Result:

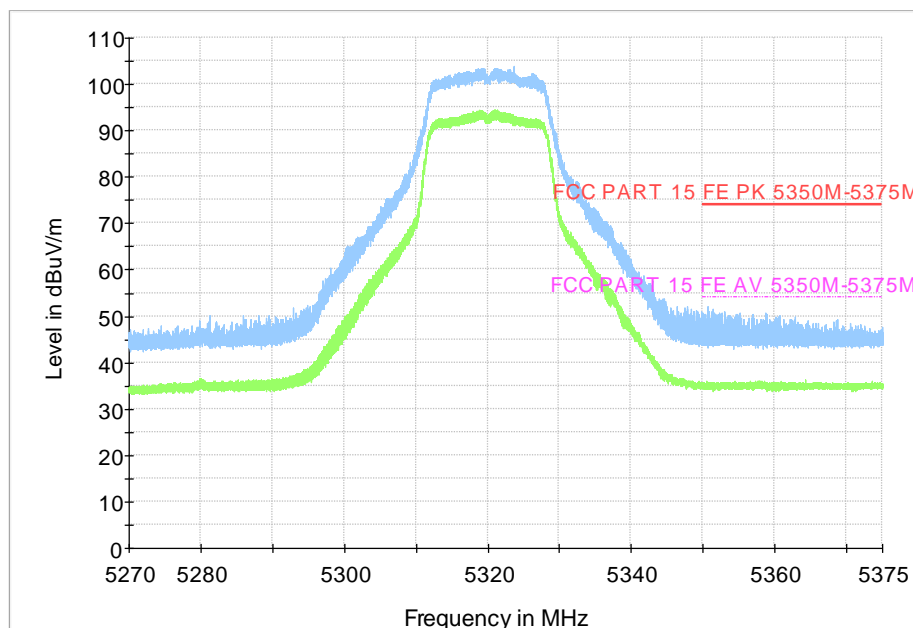
Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz(CH36)	Fig.47	P
	5320 MHz(CH64)	Fig.48	P
	5500 MHz(CH100)	Fig.49	P
	5700 MHz(CH140)	Fig.50	P
	5745 MHz(CH149)	Fig.51	P
	5825 MHz(CH165)	Fig.52	P
802.11n HT40	5190 MHz(CH38)	Fig.53	P
	5310 MHz(CH62)	Fig.54	P
	5510 MHz(CH102)	Fig.55	P
	5670 MHz(CH134)	Fig.56	P
	5755 MHz(CH151)	Fig.57	P
	5795 MHz(CH159)	Fig.58	P
802.11ac VHT80	5210 MHz(CH42)	Fig.59	P
	5290 MHz(CH58)	Fig.60	P
	5530 MHz(CH106)	Fig.61	P
	5775 MHz(CH155)	Fig.62	P

**Conclusion: PASS**

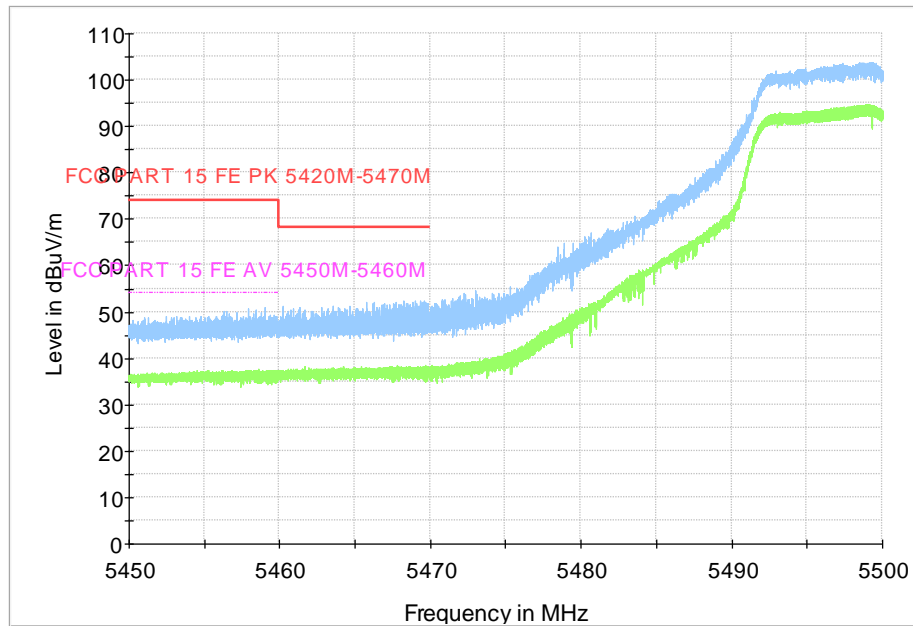
Test graphs as below:



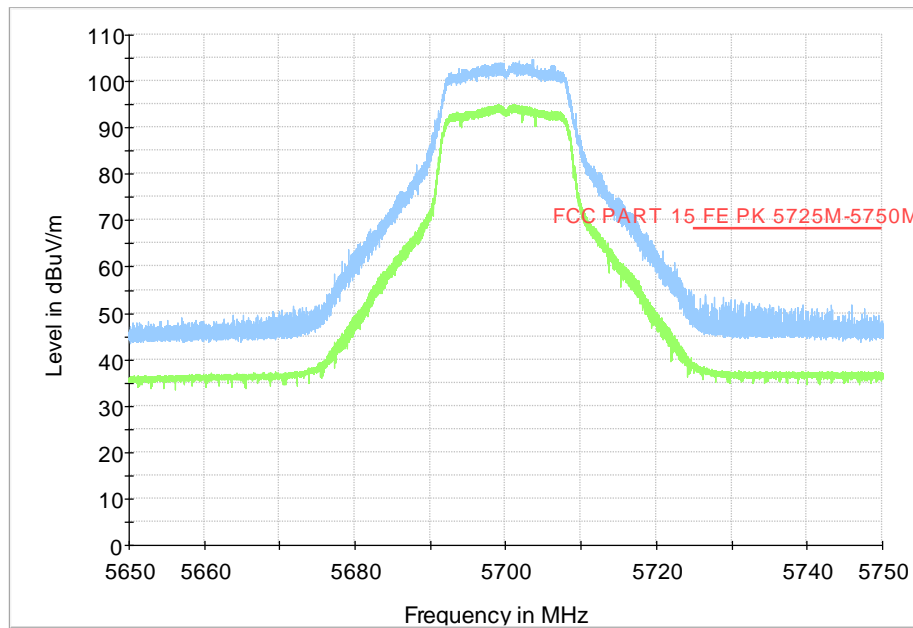
**Fig. 47 Band Edges (802.11a, CH36 5180MHz)**



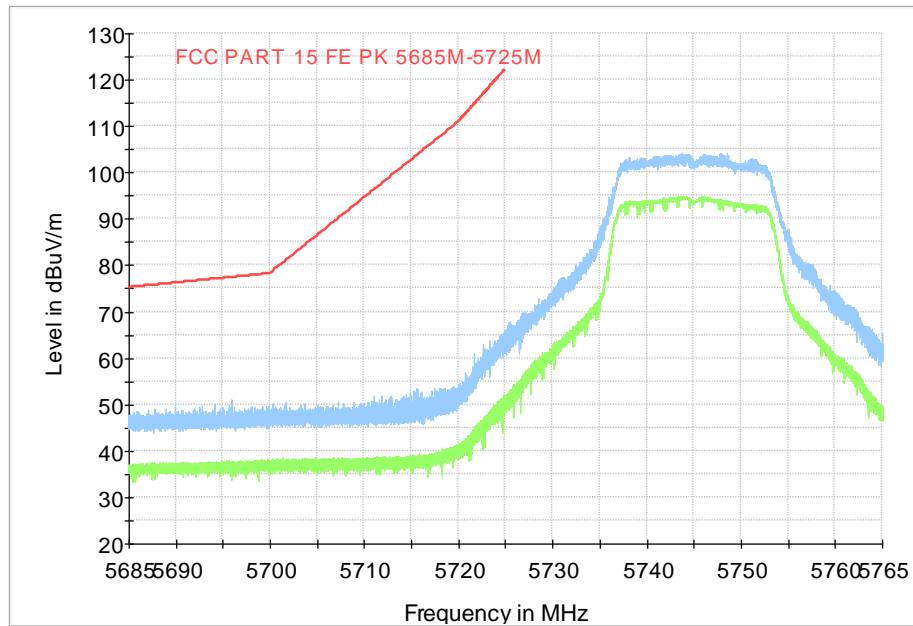
**Fig. 48 Band Edges (802.11a, CH64 5320MHz)**



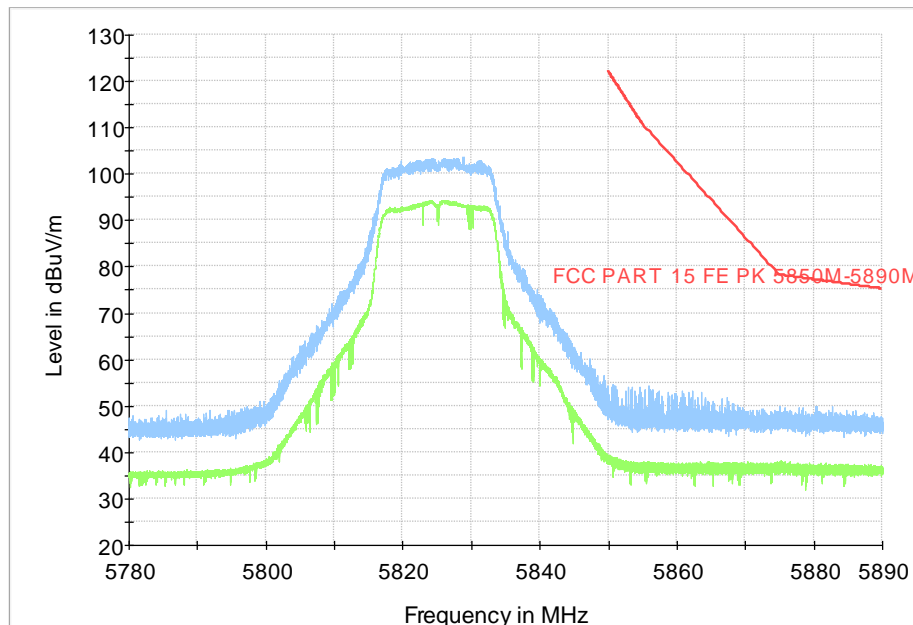
**Fig. 49 Band Edges (802.11a, CH100 5500MHz)**



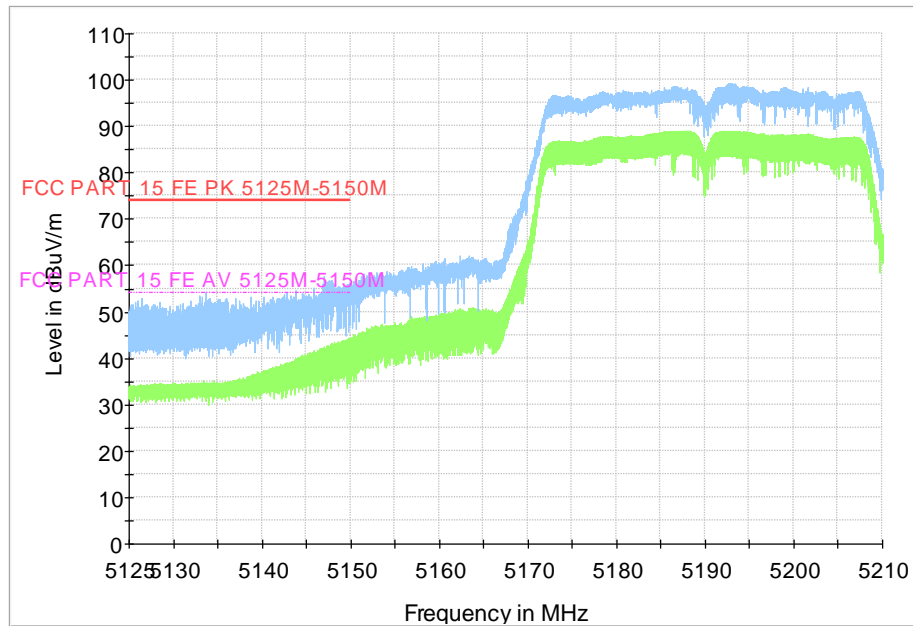
**Fig. 50 Band Edges (802.11a, CH140 5700MHz)**



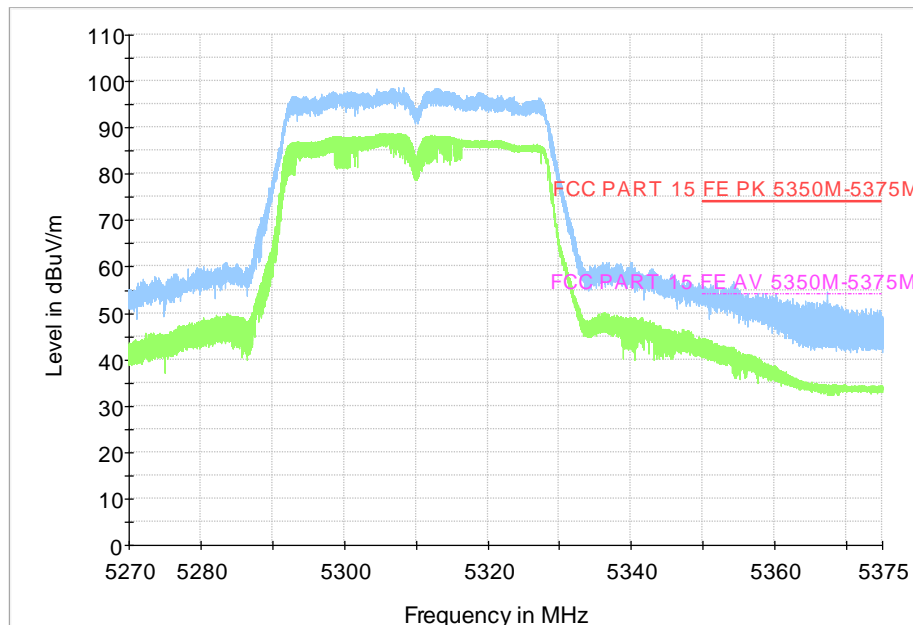
**Fig. 51 Band Edges (802.11a, CH149 5745MHz)**



**Fig. 52 Band Edges (802.11a, CH165 5825MHz)**

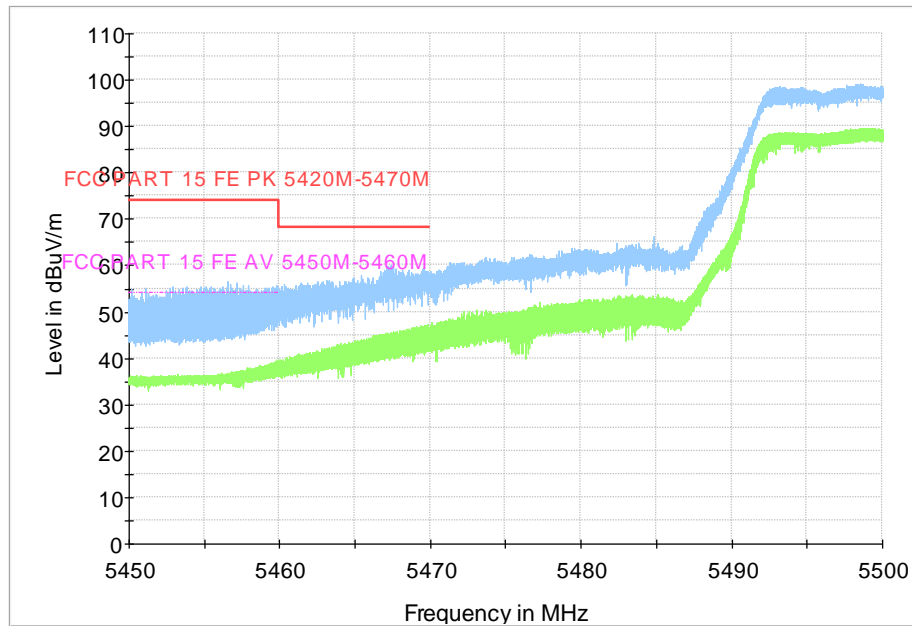


**Fig. 53 Band Edges (802.11n-HT40, CH38 5190MHz)**

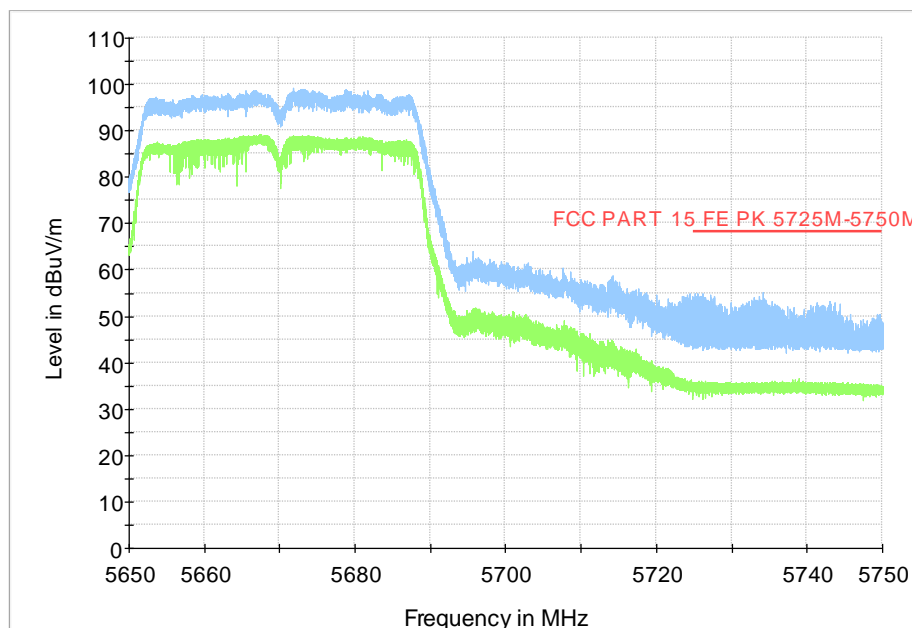


**Fig. 54 Band Edges (802.11n-HT40, CH62 5310MHz)**





**Fig. 55 Band Edges (802.11n-HT40, CH102 5510MHz)**



**Fig. 56 Band Edges (802.11n-HT40, CH134 5670MHz)**

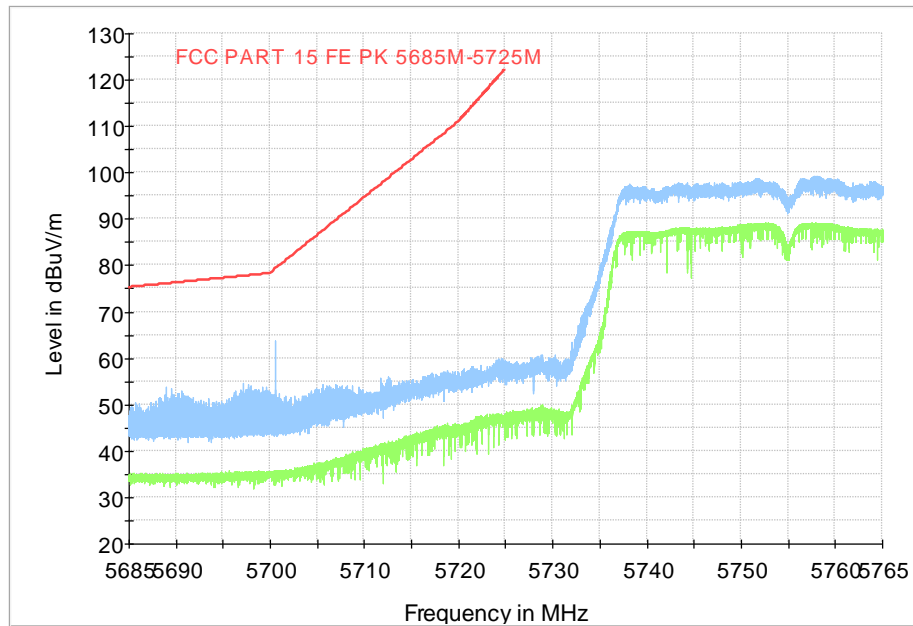


Fig. 57 Band Edges (802.11n-HT40, CH151 5755MHz)

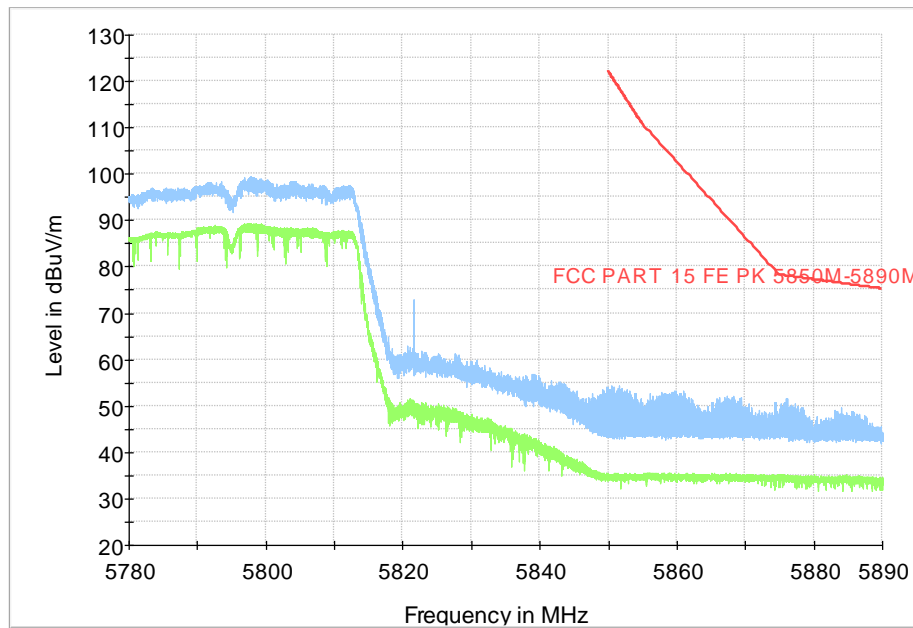


Fig. 58 Band Edges (802.11n-HT40, CH159 5795MHz)