



**FCC PART 15
TEST REPORT
No.I19Z61344-IOT03**

for

Client name:OnePlus Technology (Shenzhen) Co., Ltd.

Product name:Smart Phone

Model name:HD1925

With

FCC ID: 2ABZ2-EE143

Hardware Version: 46

Software Version: Oxygen OS 10.0.HD61CB

Issued Date: 2019-11-03

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 CTTL.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z61344-IOT03	Rev.0	1st edition	2019-10-22
I19Z61344-IOT03	Rev.1	Update About EUT in page 8; Update Reference Documents for testing in page 9; Update Voltage; Add the results of 11a(Ant0+Ant1).	2019-11-03

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1. TEST LABORATORY

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Conducted testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

Radiated testing Location: CTTL(BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology
Development Area, Beijing, P. R. China 100176

Radiated testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

1.3. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2019-09-15

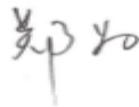
Testing End Date: 2019-10-31

1.5. Signature



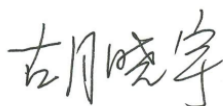
Xie Fangfang

(Prepared this test report)



Zheng Wei

(Reviewed this test report)



Hu Xiaoyu

(Approved this test report)



2. CLIENT INFORMATION

2.1. Applicant Information

Company Name: OnePlus Technology (shenzhen) Co., Ltd
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City: Shenzhen
Postal Code: /
Country: China
Telephone: 13823398081
Fax: /

2.2. Manufacturer Information

Company Name: OnePlus Technology (shenzhen) Co., Ltd
Address: 18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen
City: Shenzhen
Postal Code: /
Country: China
Telephone: 13823398081
Fax: /

3. EQUIPMENT UNDER TEST (EUT) AND

ANCILLARY EQUIPMENT (AE)

3.1. About EUT

Description	Smart Phone		
Model name	HD1925		
FCC ID	2ABZ2-EE143		
WLAN Frequency Range	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz		
Antenna type	PIFA		
Antenna 0 Gain	-3.00dBi(5150~5250MHz),-3.50dBi(5250~5350MHz&5470~5725MHz)		
Antenna 1 Gain	-4.00dBi(5150~5250MHz),-3.00dBi(5250~5350MHz&5470~5725MHz)		
Type of modulation	OFDM		
Voltage	3.87V		
Antenna Function Description	802.11a/n/ac MIMO	Ant0	Ant1

Note: The 5G WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT3	990013820049927	46	Oxygen OS 10.0.HD61CB
EUT2	990013820050545	46	Oxygen OS 10.0.HD61CB

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

3.3. Internal Identification of AE used during the test

AE ID*	Description	Type	SN
AE1	Battery	/	Inbuilt
AE2	Charger	/	CH007/008
AE3	USB Cable	/	/
AE4	Charger	/	CH019/021

AE1

Model	BLP745
Manufacturer	Sunwoda Electronic Co.,Ltd.
Capacitance	4010mAh
Nominal voltage	3.87V

AE2

Model	WC0506A5HK
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO.,LTD.
Length of cable	/

AE3

Model	/
-------	---

Manufacturer	/
Length of cable	/
AE4	
Model	WC0506A52GB
Manufacturer	/
Length of cable	/

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

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.11	EUT3+ AE1+ AE2+ AE3	BT &WIFI
Set.12	EUT3+ AE1+ AE3+ AE4	ADD Charger

3.5. General Description

The Equipment under Test (EUT) is a model of Smart Phone with integrated antenna and inbuilt battery.

It has Bluetooth (EDR)function.

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.

3.6. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor k=2.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

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.

FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2018
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12
KDB 662911	Federal Communications Commission Office of Engineering and Technology Laboratory Division Emissions Testing of Transmitters with Multiple Outputs in the Same Band	2013



Federal Communications Commission Office of
 Engineering and Technology Laboratory Division
 GUIDANCE FOR COMPLIANCE MEASUREMENTS ON
 KDB 558074 D01 DIGITAL TRANSMISSION SYSTEM, FREQUENCY 2019
 HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID
 SYSTEM DEVICES OPERATING UNDER SECTION
 15.247 OF THE FCC RULES

5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room. EMC performance testing is performed in Semi-anechoic chamber.

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Output Power	15.407	/	P
Power Spectral Density	15.407	/	P
Occupied 26dB Bandwidth	15.403	/	P
Band edge compliance	15.209	/	P
Transmitter spurious emissions radiated	15.407	/	P
Spurious emissions radiated < 30 MHz	15.407	/	P
Spurious emissions conducted < 30 MHz	15.407	/	P
Frequency Stability	15.407	/	P
Transmit Power Control	15.407	/	NA

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

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

CTTL has evaluated the test cases requested by the client/manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

This report only deals with the WLAN function among the features described in section 3.

6.3. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	26°C
Voltage	3.87V
Humidity	44%

7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2020-05-15
2	Test Receiver	ESCI	100344	Rohde & Schwarz	1 year	2020-03-14
3	LISN	ENV216	101200	Rohde & Schwarz	1 year	2020-02-14
4	Shielding room	NQ(3.2*5.5*2.7)M	P1154	hankering	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100235	Rohde & Schwarz	1 year	2020-03-01
2	BiLog Antenna	VULB9163	9163-1222	Schwarzbeck	1 year	2020-03-14
3	Dual-Ridge Waveguide Horn Antenna	3115	6914	ETS-Lindgren	1year	2020-01-03
4	EMI Antenna	3116	2661	ETS-Lindgren	1 Year	2020-10-14
5	Vector Signal Analyzer	FSV40	101047	Rohde & Schwarz	1 year	2020-05-16

8. Measurement Uncertainty

8.1 Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

8.2 Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

8.3 Occupied Channel Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4 Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

8.5 Spurious Emissions

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
$30\text{MHz} \leq f \leq 2\text{GHz}$	1.22
$2\text{GHz} \leq f \leq 3.6\text{GHz}$	1.22
$3.6\text{GHz} \leq f \leq 8\text{GHz}$	1.22
$8\text{GHz} \leq f \leq 12.75\text{GHz}$	1.51
$12.75\text{GHz} \leq f \leq 26\text{GHz}$	1.51
$26\text{GHz} \leq f \leq 40\text{GHz}$	1.59

Radiated (k=2)

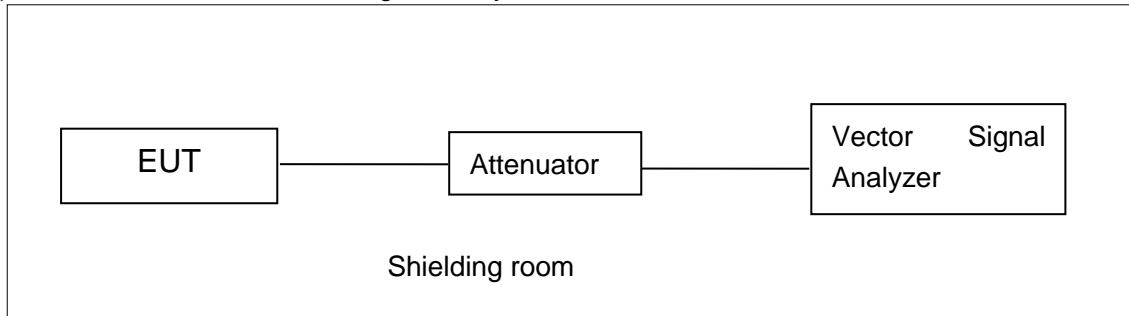
Frequency Range	Uncertainty(dB)
9kHz-30MHz	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.40
$1\text{GHz} \leq f \leq 18\text{GHz}$	4.32
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.26

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

A.1.1. 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. Vector Signal Analyzer

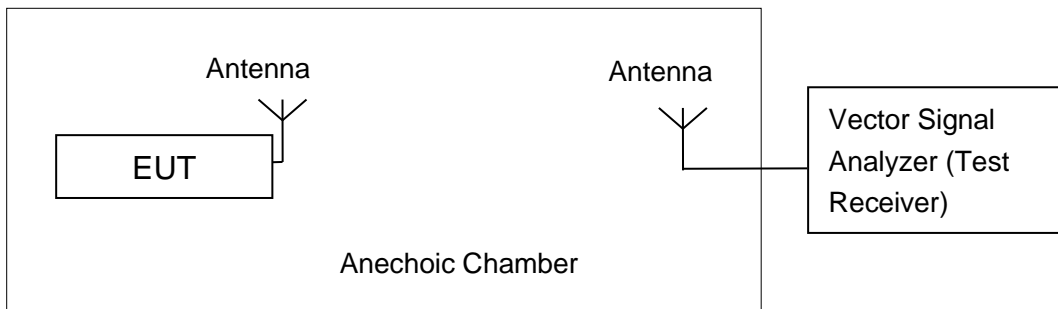


A.1.2. Radiated Emission Measurements

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

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

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



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	24dBm
	5250MHz~5350MHz	24dBm or 11+10logB
	5470MHz~5725MHz	24dBm or 11+10logB

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

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

Note:

Ant1:

For straddle channel 20MHz Bandwidth 5720MHz, Conducted Output Power Limit:

802.11a=11+10*log(B)=23.39, B=24.70/2+5=17.35MHz,

802.11n-HT20=11+10*log(B)=23.14, B=22.72/2+5=16.38MHz,

802.11ac-VHT20=11+10*log(B)=23.42, B=24.90/2+5=17.45MHz,

For straddle channel 40/80MHz Bandwidth, conducted output power limit=24 dBm

802.11n-HT40: B=48.32/2+15=39.16MHz,

802.11ac-VHT40: B=46.08/2+15=38.04MHz,

802.11ac-VHT80: B=84.00/2+35=77.00MHz,

Measurement Results:

Duty Cycle:

11a	6	9	12	18	24	36	48	54		
	98.29%	97.47%	97.11%	96.41%	95.15%	93.18%	91.09%	88.54%		
11n-20	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7		
	98.16%	96.47%	94.91%	92.88%	90.75%	88.35%	87.32%	86.36%		
11n-40	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7		
	96.45%	93.01%	90.45%	88.00%	83.93%	80.42%	79.55%	78.05%		
11ac-20	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	
	98.22%	96.30%	95.06%	93.67%	91.12%	88.61%	87.50%	86.57%	84.75%	
11ac-40	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
	96.25%	93.07%	90.79%	88.49%	84.21%	81.25%	80.00%	78.57%	76.32%	75.68%
11ac-80	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
	92.61%	87.50%	83.64%	80.43%	75.68%	71.97%	70.97%	70.00%	68.75%	66.67%

Ant0+Ant1:
802.11a

Mode	Channel	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	18.88	18.76	18.51	18.76	18.77	18.54	18.05	18.07
	5200MHz	18.47	/	/	/	/	/	/	/
	5240MHz	18.72	/	/	/	/	/	/	/
	5260MHz	18.61	/	/	/	/	/	/	/
	5280MHz	18.55	/	/	/	/	/	/	/
	5320MHz	18.42	/	/	/	/	/	/	/
	5500MHz	18.85	/	/	/	/	/	/	/
	5580MHz	18.56	/	/	/	/	/	/	/
	5700MHz	18.20	/	/	/	/	/	/	/
	5720MHz	18.27	/	/	/	/	/	/	/

The data rate 6Mbps is selected as worse condition, and the following cases are performed with this condition.

802.11n-HT20

Mode	Channel	Test Result (dBm)							
		Data Rate							
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
802.11n (HT20)	5180MHz	19.26	19.29	19.40	19.43	19.41	17.50	16.93	15.58
	5200MHz	/	/	/	19.42	/	/	/	/
	5240MHz	/	/	/	19.17	/	/	/	/
	5260MHz	/	/	/	19.23	/	/	/	/
	5280MHz	/	/	/	19.05	/	/	/	/
	5320MHz	/	/	/	18.76	/	/	/	/
	5500MHz	/	/	/	19.19	/	/	/	/
	5580MHz	/	/	/	19.21	/	/	/	/
	5700MHz	/	/	/	19.24	/	/	/	/
	5720MHz	/	/	/	18.97	/	/	/	/

The data rate MCS11 is selected as worse condition, and the following cases are performed with this condition.

802.11ac-HT20

Mode	Channel	Test Result (dBm)								
		Data Rate								
		MCS9	MCS 10	MCS 11	MCS 12	MCS 13	MCS 14	MCS 15	MCS 16	MCS 17
802.11ac (HT20)	5180MHz	19.14	19.25	19.18	19.28	19.23	17.11	16.30	15.09	15.14
	5200MHz	/	/	/	19.18	/	/	/	/	/
	5240MHz	/	/	/	19.20	/	/	/	/	/

	5260MHz	/	/	/	19.05	/	/	/	/	/
	5280MHz	/	/	/	18.96	/	/	/	/	/
	5320MHz	/	/	/	18.63	/	/	/	/	/
	5500MHz	/	/	/	19.09	/	/	/	/	/
	5580MHz	/	/	/	19.27	/	/	/	/	/
	5700MHz	/	/	/	19.08	/	/	/	/	/
	5720MHz	/	/	/	19.13	/	/	/	/	/

The data rate MCS12 is selected as worse condition, and the following cases are performed with this condition.

802.11n-HT40

Mode	Channel	Test Result (dBm)							
		Data Rate							
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
802.11n (HT40)	5190MHz	19.17	19.24	19.08	19.02	19.15	17.27	16.63	14.78
	5230MHz	/	19.08	/	/	/	/	/	/
	5270MHz	/	19.03	/	/	/	/	/	/
	5310MHz	/	18.64	/	/	/	/	/	/
	5510MHz	/	18.87	/	/	/	/	/	/
	5550MHz	/	19.25	/	/	/	/	/	/
	5670MHz	/	19.23	/	/	/	/	/	/
	5710MHz	/	18.96	/	/	/	/	/	/

The data rate MCS9 is selected as worse condition, and the following cases are performed with this condition.

802.11ac-HT40

Mode	Channel	Test Result (dBm)									
		Data Rate									
		MCS 10	MCS 11	MCS 12	MCS 13	MCS 14	MCS 15	MCS 16	MCS 17	MCS 18	MCS 19
802.11ac (HT40)	5190MHz	19.17	19.10	19.09	18.98	19.43	17.18	15.95	15.45	15.24	14.22
	5230MHz	/	/	/	/	19.07	/	/	/	/	/
	5270MHz	/	/	/	/	19.09	/	/	/	/	/
	5310MHz	/	/	/	/	18.79	/	/	/	/	/
	5510MHz	/	/	/	/	19.17	/	/	/	/	/
	5550MHz	/	/	/	/	19.19	/	/	/	/	/
	5670MHz	/	/	/	/	19.09	/	/	/	/	/
	5710MHz	/	/	/	/	19.12	/	/	/	/	/

The data rate MCS14 is selected as worse condition, and the following cases are performed with this condition.

802.11ac-HT80 mode

Mode	Channel	Test Result (dBm)									
		Data Rate									
		MCS 10	MCS 11	MCS 12	MCS 13	MCS 14	MCS 15	MCS 16	MCS 17	MCS 18	MCS 19
802.11ac (HT80)	5210MHz	17.93	18.00	17.95	17.16	17.09	17.05	16.01	15.05	14.99	14.00
	5290MHz	/	17.88	/	/	/	/	/	/	/	/
	5530MHz	/	17.79	/	/	/	/	/	/	/	/
	5610MHz	/	18.02	/	/	/	/	/	/	/	/
	5690MHz	/	18.08	/	/	/	/	/	/	/	/

The data rate MCS11 is selected as worse condition, and the following cases are performed with this condition.

Ant0+Ant1:

5GHz Band									
Mode	Date Rate	Chnanel	Freq.(MHz)	Maximum output Power (dBm)			Maximum output Power Limit(dBm)		Pass/Fail
				Ant0	Ant1	SUM	Ant0	Ant1	
11a	6Mbps	36	5180 MHz	15.89	15.86	18.88	24.00	Pass	
11a	6Mbps	40	5200 MHz	15.35	15.57	18.47	24.00	Pass	
11a	6Mbps	48	5240 MHz	15.79	15.64	18.72	24.00	Pass	
11a	6Mbps	52	5260 MHz	15.23	15.95	18.61	24.00	Pass	
11a	6Mbps	56	5280 MHz	15.29	15.77	18.55	24.00	Pass	
11a	6Mbps	64	5320 MHz	15.14	15.67	18.42	24.00	Pass	
11a	6Mbps	100	5500 MHz	15.37	16.27	18.85	24.00	Pass	
11a	6Mbps	116	5580 MHz	15.09	15.96	18.56	24.00	Pass	
11a	6Mbps	140	5700 MHz	15.27	15.11	18.20	24.00	Pass	
11a	6Mbps	144	5720 MHz	15.16	15.35	18.27	23.39	Pass	
11n-20	MCS11	36	5180 MHz	16.30	16.54	19.43	24.00	Pass	
11n-20	MCS11	40	5200 MHz	16.42	16.40	19.42	24.00	Pass	
11n-20	MCS11	48	5240 MHz	16.23	16.09	19.17	24.00	Pass	
11n-20	MCS11	52	5260 MHz	16.48	15.94	19.23	24.00	Pass	
11n-20	MCS11	56	5280 MHz	16.29	15.77	19.05	24.00	Pass	
11n-20	MCS11	64	5320 MHz	16.01	15.47	18.76	24.00	Pass	
11n-20	MCS11	100	5500 MHz	16.13	16.23	19.19	24.00	Pass	
11n-20	MCS11	116	5580 MHz	15.96	16.43	19.21	24.00	Pass	
11n-20	MCS11	140	5700 MHz	16.07	16.38	19.24	24.00	Pass	
11n-20	MCS11	144	5720 MHz	16.10	15.82	18.97	23.14	Pass	
11ac-20	MCS12	36	5180 MHz	16.11	16.42	19.28	24.00	Pass	
11ac-20	MCS12	40	5200 MHz	16.35	15.98	19.18	24.00	Pass	
11ac-20	MCS12	48	5240 MHz	16.45	15.91	19.20	24.00	Pass	

11ac-20	MCS12	52	5260 MHz	16.63	15.36	19.05	24.00	Pass
11ac-20	MCS12	56	5280 MHz	16.38	15.47	18.96	24.00	Pass
11ac-20	MCS12	64	5320 MHz	16.23	14.91	18.63	24.00	Pass
11ac-20	MCS12	100	5500 MHz	16.10	16.06	19.09	24.00	Pass
11ac-20	MCS12	116	5580 MHz	15.96	16.54	19.27	24.00	Pass
11ac-20	MCS12	140	5700 MHz	15.89	16.24	19.08	24.00	Pass
11ac-20	MCS12	144	5720 MHz	16.16	16.08	19.13	23.42	Pass
11n-40	MCS9	38	5190 MHz	16.38	16.06	19.24	24.00	Pass
11n-40	MCS9	46	5230 MHz	16.52	15.56	19.08	24.00	Pass
11n-40	MCS9	54	5270 MHz	16.26	15.76	19.03	24.00	Pass
11n-40	MCS9	62	5310 MHz	16.01	15.20	18.64	24.00	Pass
11n-40	MCS9	102	5510 MHz	16.30	15.36	18.87	24.00	Pass
11n-40	MCS9	110	5550 MHz	15.92	16.53	19.25	24.00	Pass
11n-40	MCS9	134	5670 MHz	16.11	16.32	19.23	24.00	Pass
11n-40	MCS9	142	5710 MHz	16.35	15.50	18.96	24.00	Pass
11ac-40	MCS14	38	5190 MHz	16.16	16.67	19.43	24.00	Pass
11ac-40	MCS14	46	5230 MHz	16.03	16.09	19.07	24.00	Pass
11ac-40	MCS14	54	5270 MHz	16.11	16.05	19.09	24.00	Pass
11ac-40	MCS14	62	5310 MHz	16.21	15.30	18.79	24.00	Pass
11ac-40	MCS14	102	5510 MHz	16.36	15.95	19.17	24.00	Pass
11ac-40	MCS14	110	5550 MHz	16.12	16.24	19.19	24.00	Pass
11ac-40	MCS14	134	5670 MHz	16.20	15.95	19.09	24.00	Pass
11ac-40	MCS14	142	5710 MHz	16.51	15.67	19.12	24.00	Pass
11ac-80	MCS11	42	5210MHz	15.28	14.69	18.00	24.00	Pass
11ac-80	MCS11	58	5290MHz	15.12	14.61	17.88	24.00	Pass
11ac-80	MCS11	106	5530MHz	15.42	14.04	17.79	24.00	Pass
11ac-80	MCS11	122	5610MHz	15.30	14.71	18.02	24.00	Pass
11ac-80	MCS11	138	5690 MHz	15.44	14.67	18.08	24.00	Pass

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	11
	5250MHz~5350MHz	11
	5470MHz~5725MHz	11

The output power measurement method Section F is made according to KDB 789033

Measurement Results:

Ant0+Ant1:

5GHz Band									
Mode	Data Rate	Channel	Freq.(MHz)	Peak Power Spectral Density (dBm/MHz)			Peak Power Spectral Density Limit(dBm/MHz)		Pass/Fail
				Ant0	Ant1	SUM	Ant0	Ant1	
11a	6Mbps	36	5180 MHz	7.06	6.91	10.00	11.00		Pass
11a	6Mbps	40	5200 MHz	6.70	6.79	9.76	11.00		Pass
11a	6Mbps	48	5240 MHz	7.32	6.46	9.92	11.00		Pass
11a	6Mbps	52	5260 MHz	6.76	6.96	9.87	11.00		Pass
11a	6Mbps	56	5280 MHz	6.58	6.89	9.75	11.00		Pass
11a	6Mbps	64	5320 MHz	6.20	6.61	9.42	11.00		Pass
11a	6Mbps	100	5500 MHz	6.49	7.52	10.05	11.00		Pass
11a	6Mbps	116	5580 MHz	6.28	6.77	9.54	11.00		Pass
11a	6Mbps	140	5700 MHz	6.51	6.33	9.43	11.00		Pass
11a	6Mbps	144	5720 MHz	6.38	6.22	9.31	11.00		Pass
11n-20	MCS11	36	5180 MHz	6.62	7.33	10.00	11.00		Pass
11n-20	MCS11	40	5200 MHz	6.35	7.30	9.86	11.00		Pass
11n-20	MCS11	48	5240 MHz	6.11	7.25	9.73	11.00		Pass
11n-20	MCS11	52	5260 MHz	6.70	7.72	10.25	11.00		Pass
11n-20	MCS11	56	5280 MHz	6.59	7.71	10.20	11.00		Pass
11n-20	MCS11	64	5320 MHz	6.43	7.47	9.99	11.00		Pass
11n-20	MCS11	100	5500 MHz	7.15	8.06	9.68	11.00		Pass
11n-20	MCS11	116	5580 MHz	6.83	8.28	9.86	11.00		Pass
11n-20	MCS11	140	5700 MHz	7.32	7.33	9.32	11.00		Pass
11n-20	MCS11	144	5720 MHz	7.18	7.06	10.13	11.00		Pass
11ac-20	MCS12	36	5180 MHz	6.78	5.65	9.26	11.00		Pass
11ac-20	MCS12	40	5200 MHz	5.70	5.74	8.73	11.00		Pass
11ac-20	MCS12	48	5240 MHz	5.81	5.55	8.69	11.00		Pass
11ac-20	MCS12	52	5260 MHz	6.71	6.02	9.39	11.00		Pass
11ac-20	MCS12	56	5280 MHz	6.57	6.01	9.31	11.00		Pass
11ac-20	MCS12	64	5320 MHz	5.68	5.89	8.80	11.00		Pass

11ac-20	MCS12	100	5500 MHz	6.19	6.97	9.61	11.00	Pass
11ac-20	MCS12	116	5580 MHz	5.93	7.07	9.55	11.00	Pass
11ac-20	MCS12	140	5700 MHz	6.13	5.93	9.04	11.00	Pass
11ac-20	MCS12	144	5720 MHz	6.31	5.99	9.16	11.00	Pass
11n-40	MCS9	38	5190 MHz	3.26	3.04	6.16	11.00	Pass
11n-40	MCS9	46	5230 MHz	2.61	2.96	5.80	11.00	Pass
11n-40	MCS9	54	5270 MHz	3.39	3.54	6.48	11.00	Pass
11n-40	MCS9	62	5310 MHz	3.12	3.40	6.27	11.00	Pass
11n-40	MCS9	102	5510 MHz	3.68	4.07	6.89	11.00	Pass
11n-40	MCS9	110	5550 MHz	3.56	4.31	6.96	11.00	Pass
11n-40	MCS9	134	5670 MHz	3.91	3.52	6.73	11.00	Pass
11n-40	MCS9	142	5710 MHz	3.24	3.13	6.20	11.00	Pass
11ac-40	MCS14	38	5190 MHz	2.52	2.57	5.56	11.00	Pass
11ac-40	MCS14	46	5230 MHz	1.98	2.44	5.23	11.00	Pass
11ac-40	MCS14	54	5270 MHz	2.79	3.03	5.92	11.00	Pass
11ac-40	MCS14	62	5310 MHz	2.47	2.67	5.58	11.00	Pass
11ac-40	MCS14	102	5510 MHz	2.93	3.35	6.16	11.00	Pass
11ac-40	MCS14	110	5550 MHz	3.05	3.98	6.55	11.00	Pass
11ac-40	MCS14	134	5670 MHz	3.33	2.46	5.93	11.00	Pass
11ac-40	MCS14	142	5710 MHz	3.43	2.51	6.00	11.00	Pass
11ac-80	MCS11	42	5210MHz	0.44	-0.11	3.18	11.00	Pass
11ac-80	MCS11	58	5290MHz	-0.29	0.09	2.91	11.00	Pass
11ac-80	MCS11	106	5530MHz	0.10	0.95	3.56	11.00	Pass
11ac-80	MCS11	122	5610MHz	0.51	1.10	3.83	11.00	Pass
11ac-80	MCS11	138	5690 MHz	0.57	0.41	3.50	11.00	Pass

Conclusion: PASS

A.4. Occupied 26dB Bandwidth(conducted)

Measurement Limit:

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

The measurement is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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Measurement Result:

The Ant1 is selected as worse condition of Ant0+Ant1.

Mode	Channel	Occupied 26dB Bandwidth (MHz)		conclusion
		Fig.	Value	
802.11a	5180 MHz	Fig.1	23.95	P
	5200 MHz	Fig.2	23.35	P
	5240 MHz	Fig.3	24.00	P
	5260 MHz	Fig.4	23.80	P
	5280 MHz	Fig.5	23.30	P
	5320 MHz	Fig.6	23.80	P
	5500 MHz	Fig.7	24.05	P
	5580 MHz	Fig.8	24.40	P
	5700 MHz	Fig.9	24.45	P
	5720 MHz	Fig.10	24.70	P
802.11n HT20	5180 MHz	Fig.11	22.35	P
	5200 MHz	Fig.12	22.65	P
	5240 MHz	Fig.13	22.75	P
	5260 MHz	Fig.14	22.75	P
	5280 MHz	Fig.15	24.80	P
	5320 MHz	Fig.16	22.35	P
	5500 MHz	Fig.17	23.20	P
	5580 MHz	Fig.18	22.70	P
	5700 MHz	Fig.19	22.25	P
	5720 MHz	Fig.20	22.75	P

802.11ac HT20	5180 MHz	Fig.21	25.35	P
	5200 MHz	Fig.22	24.95	P
	5240 MHz	Fig.23	24.70	P
	5260 MHz	Fig.24	25.15	P
	5280 MHz	Fig.25	24.65	P
	5320 MHz	Fig.26	24.60	P
	5500 MHz	Fig.27	24.85	P
	5580 MHz	Fig.28	25.05	P

	5700 MHz	Fig.29	25.15	P
	5720 MHz	Fig.30	24.90	P

802.11n HT40	5190 MHz	Fig.31	46.24	P
	5230 MHz	Fig.32	44.88	P
	5270 MHz	Fig.33	45.60	P
	5310 MHz	Fig.34	45.44	P
	5510 MHz	Fig.35	46.08	P
	5550 MHz	Fig.36	57.84	P
	5670 MHz	Fig.37	58.00	P
	5710 MHz	Fig.38	48.32	P

802.11ac HT40	5190 MHz	Fig.39	45.76	P
	5230 MHz	Fig.40	44.96	P
	5270 MHz	Fig.41	45.44	P
	5310 MHz	Fig.42	45.28	P
	5510 MHz	Fig.43	45.28	P
	5550 MHz	Fig.44	49.84	P
	5670 MHz	Fig.45	49.76	P
	5710 MHz	Fig.46	46.08	P

802.11ac HT80	5210MHz	Fig.47	84.32	P
	5290MHz	Fig.48	84.00	P
	5530MHz	Fig.49	83.84	P
	5610MHz	Fig.50	84.00	P
	5690 MHz	Fig.51	84.00	P

Conclusion: PASS

Test graphs as below:

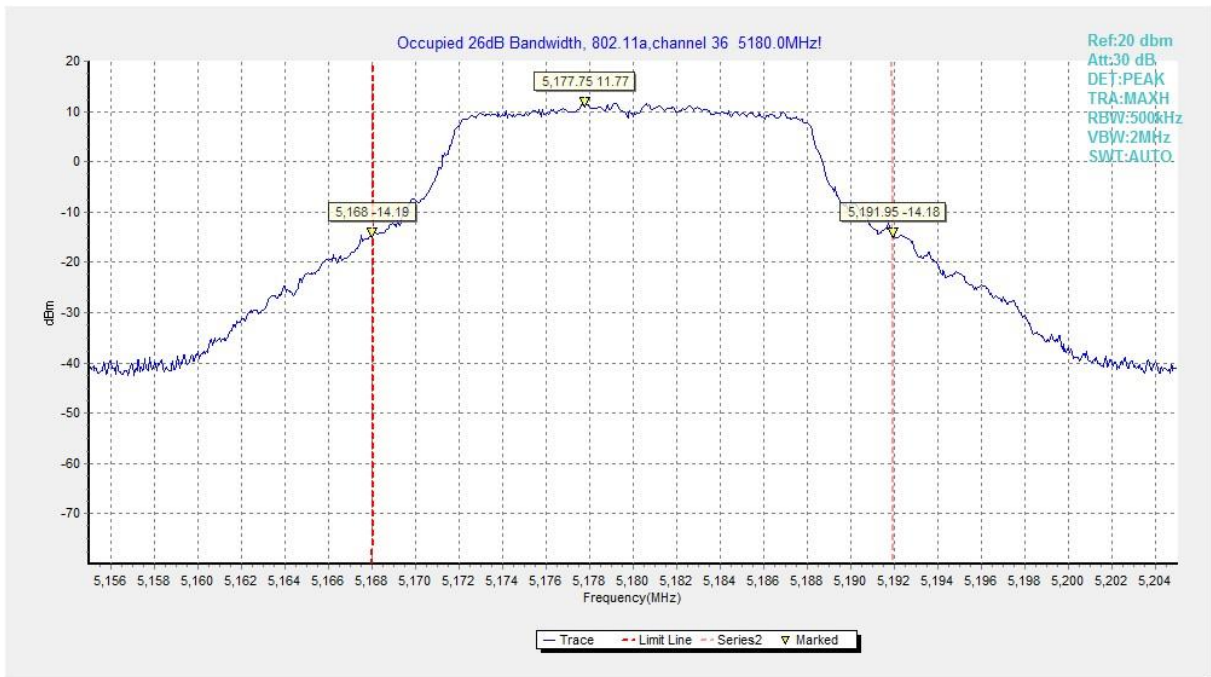


Fig.1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

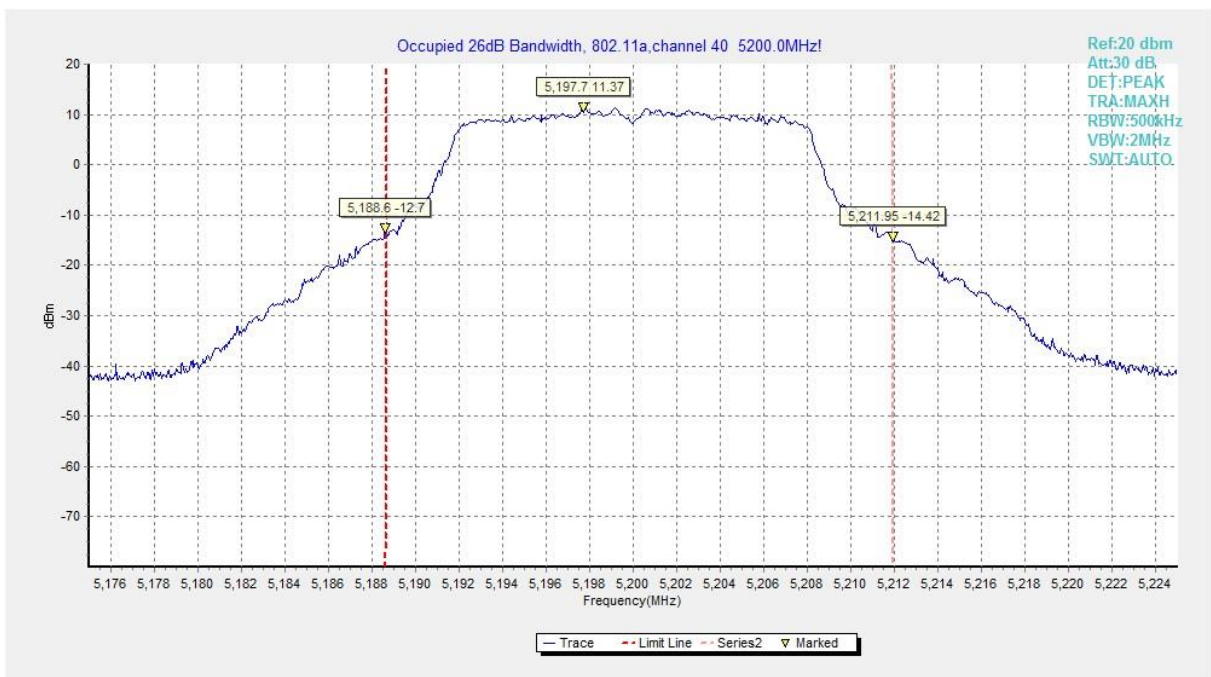


Fig.2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

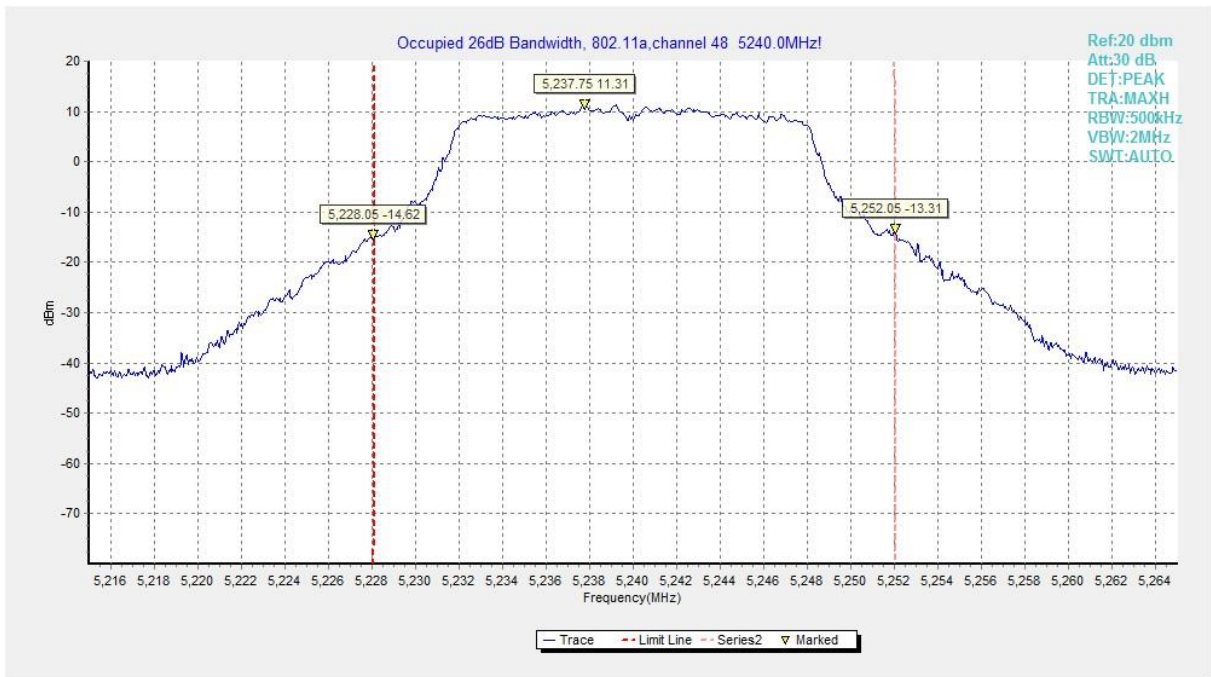


Fig.3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

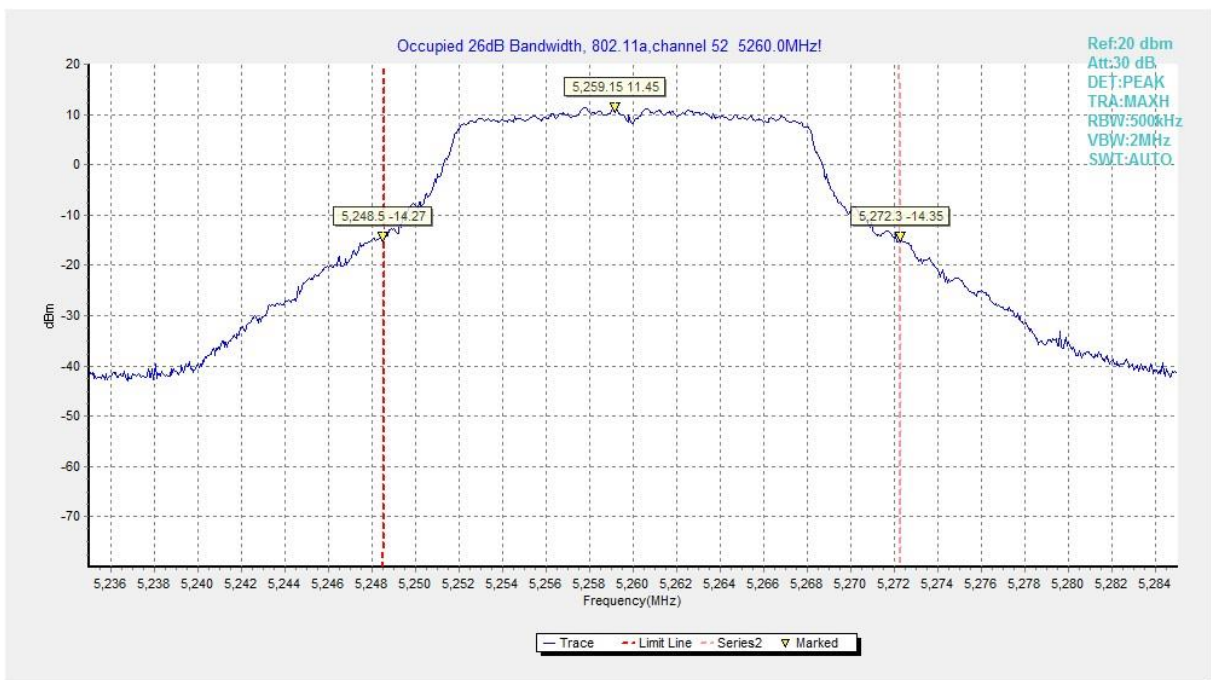


Fig.4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

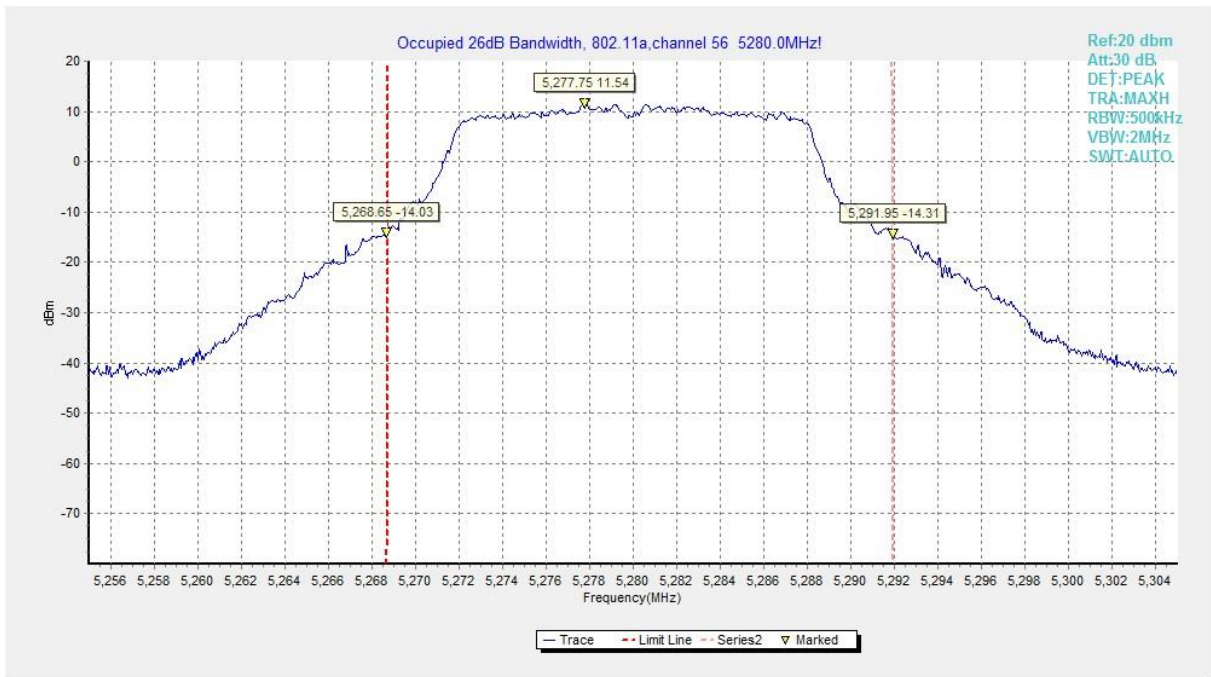


Fig.5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

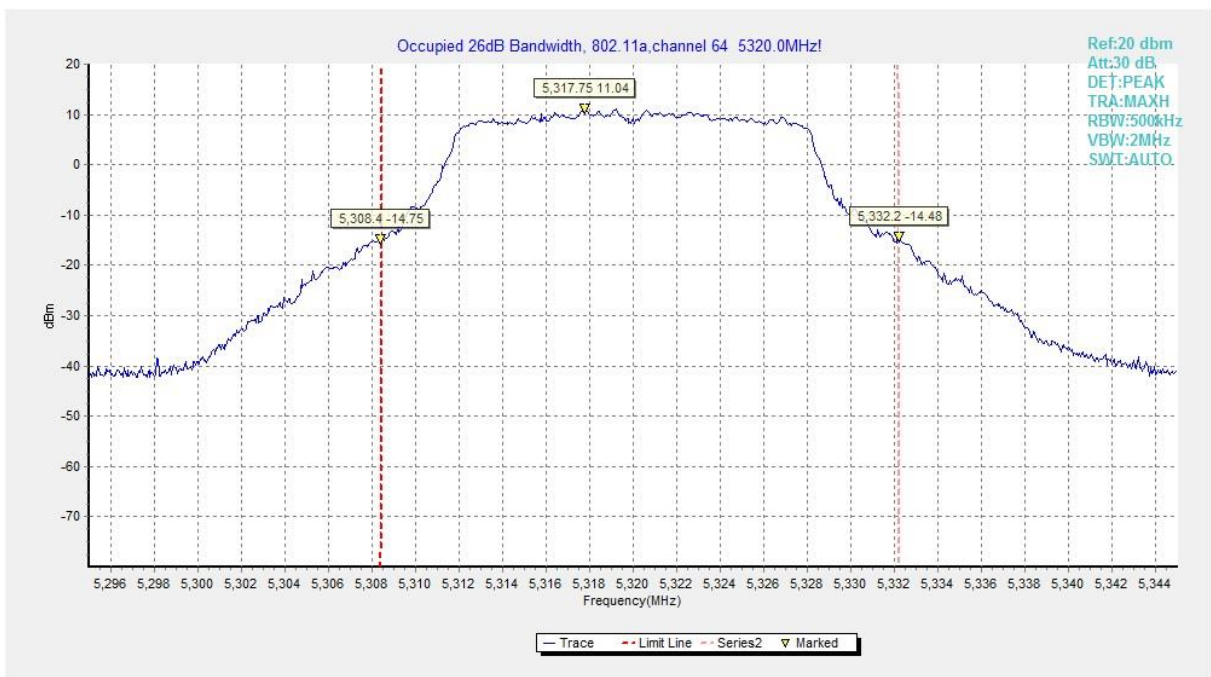


Fig.6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

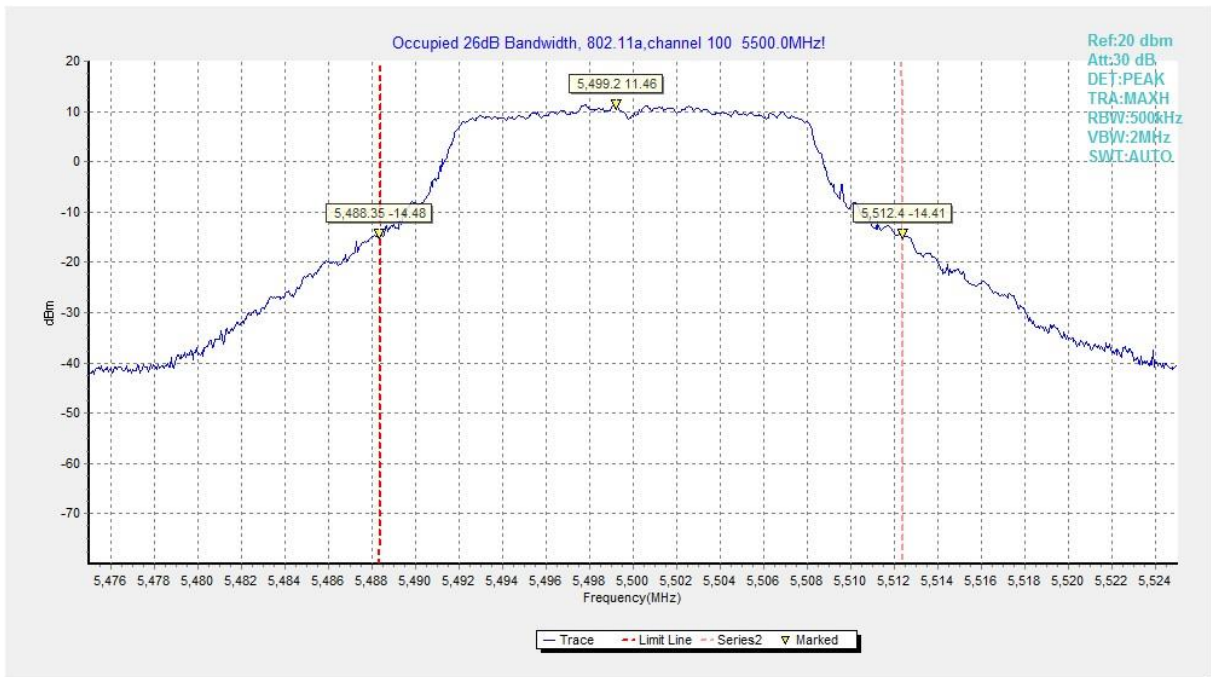


Fig.7 Occupied 26dB Bandwidth (802.11a, 5500MHz)

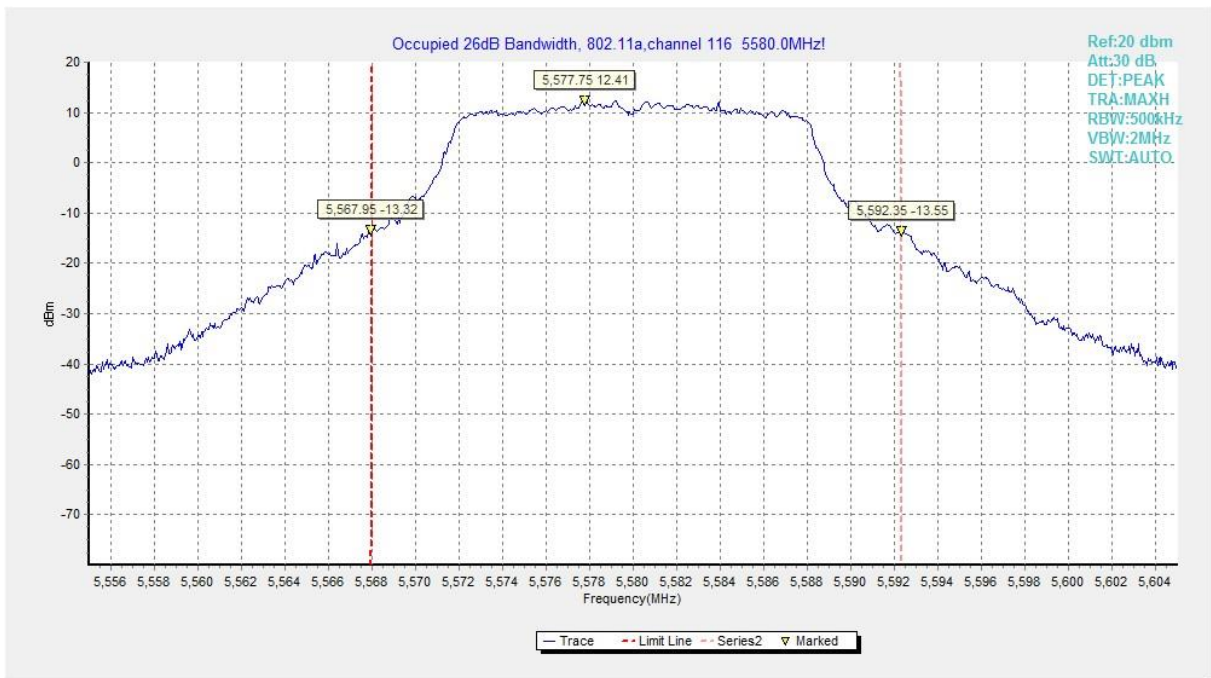


Fig.8 Occupied 26dB Bandwidth (802.11a, 5580MHz)

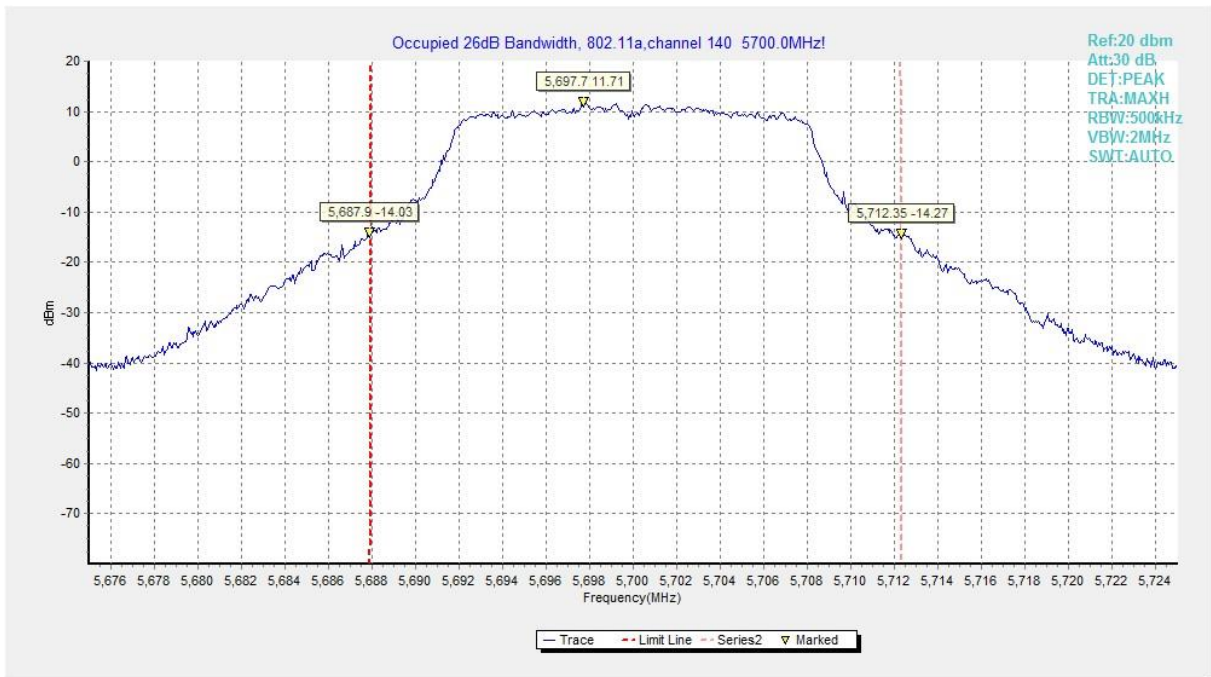


Fig.9 Occupied 26dB Bandwidth (802.11a, 5700MHz)

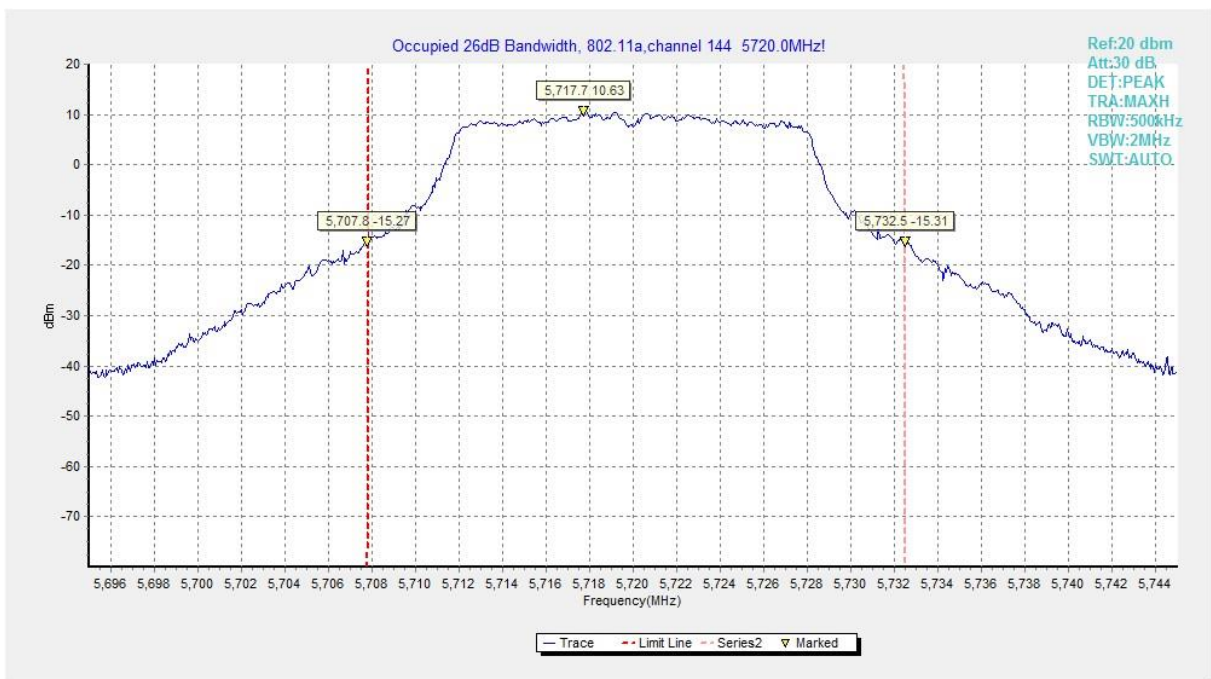


Fig.10 Occupied 26dB Bandwidth (802.11a, 5720MHz)

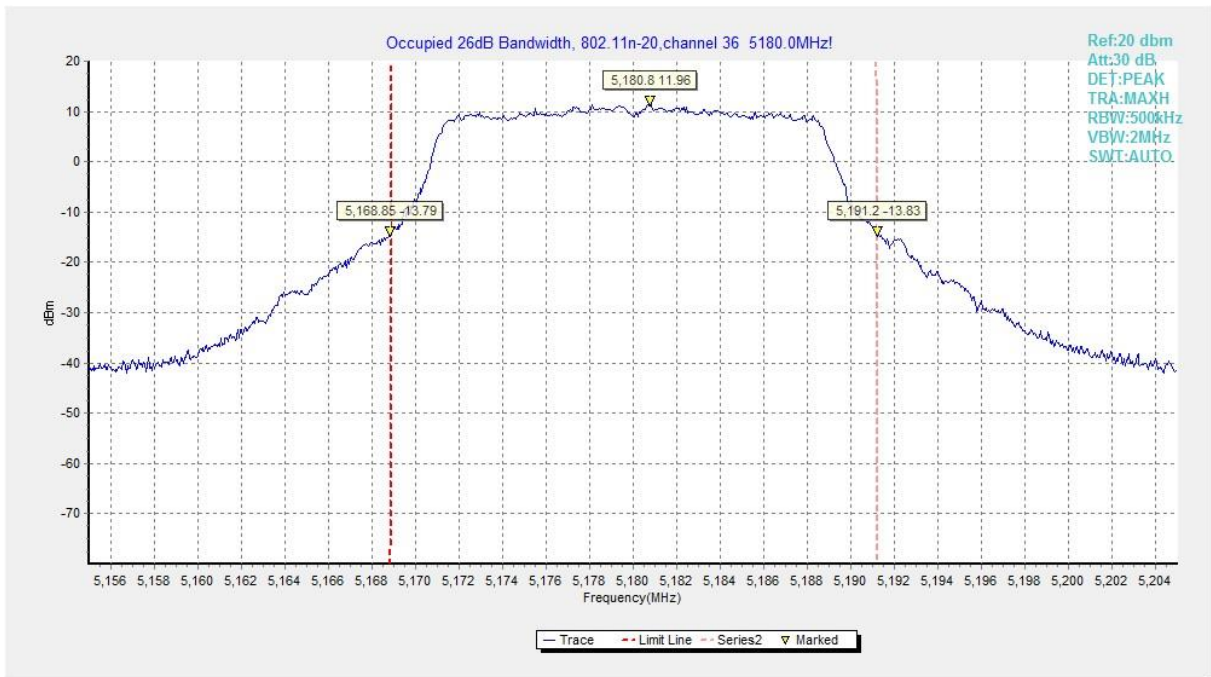


Fig.11 Occupied 26dB Bandwidth (802.11n-HT20, 5180MHz)

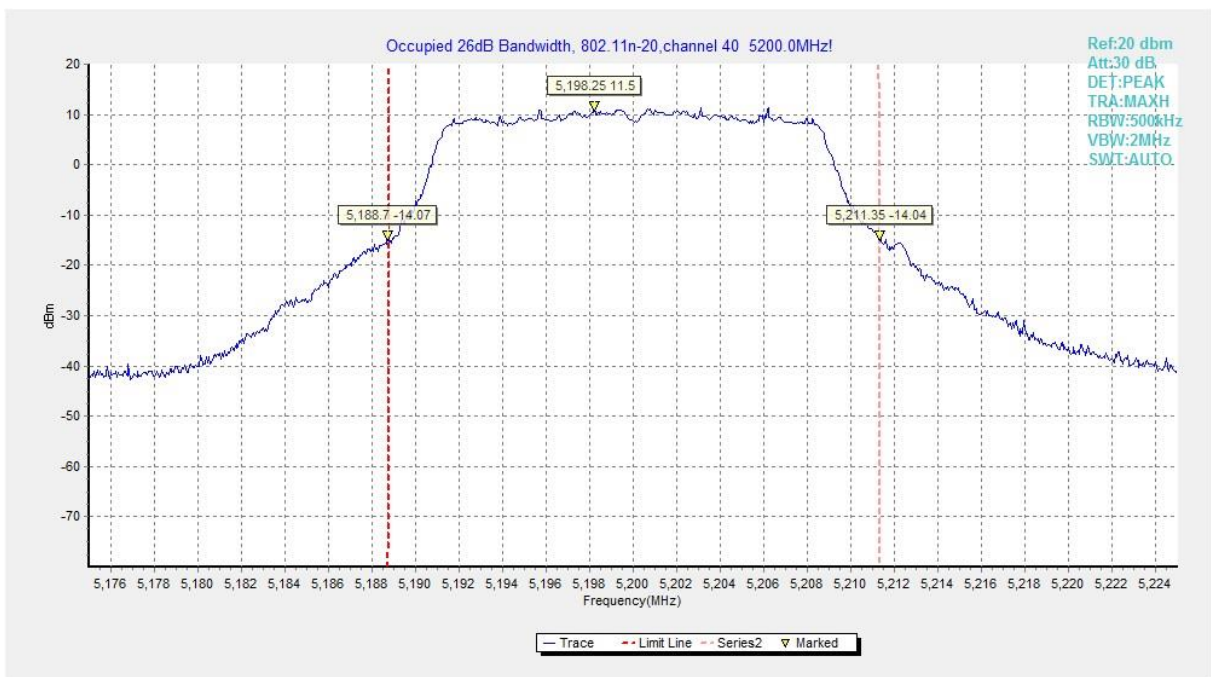


Fig.12 Occupied 26dB Bandwidth (802.11n-HT20, 5200MHz)

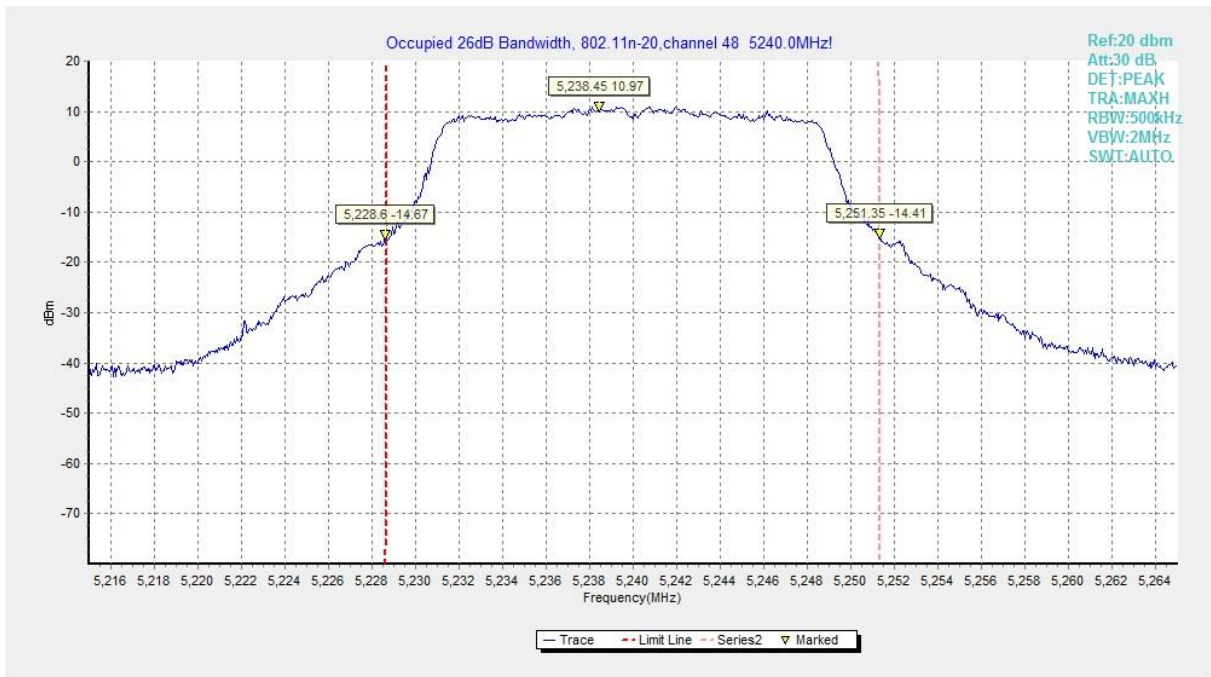


Fig.13 Occupied 26dB Bandwidth (802.11n-HT20, 5240MHz)

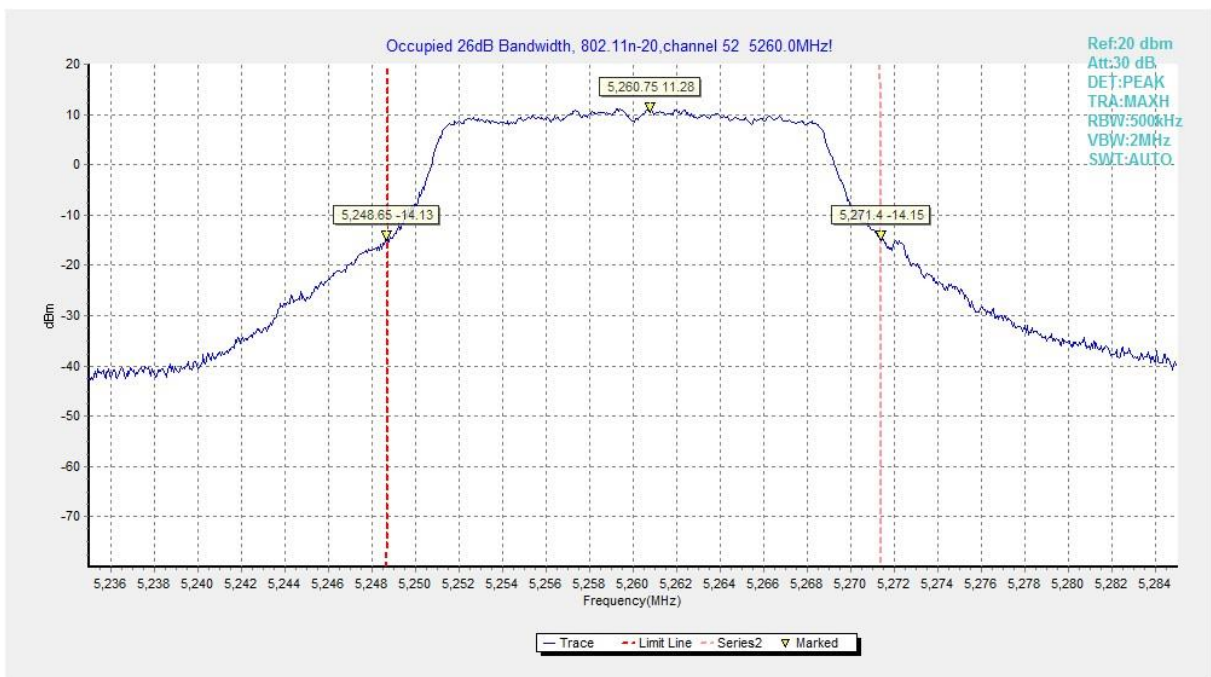


Fig.14 Occupied 26dB Bandwidth (802.11n-HT20, 5260MHz)

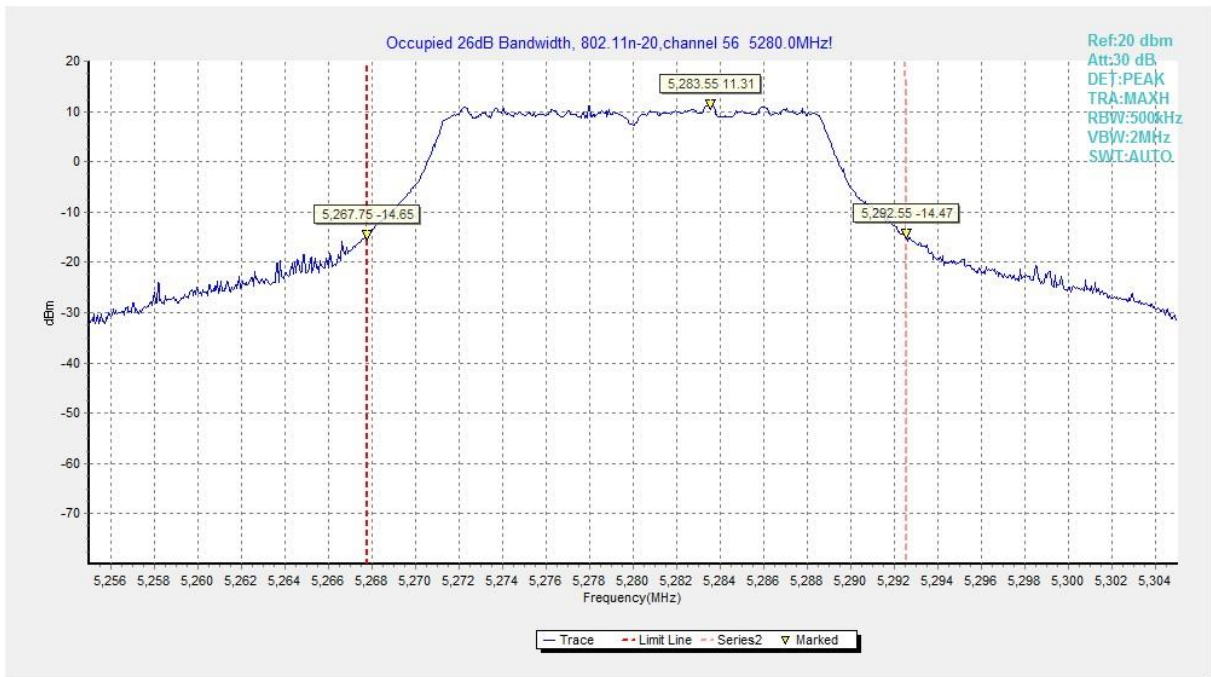


Fig.15 Occupied 26dB Bandwidth (802.11n-HT20, 5280MHz)

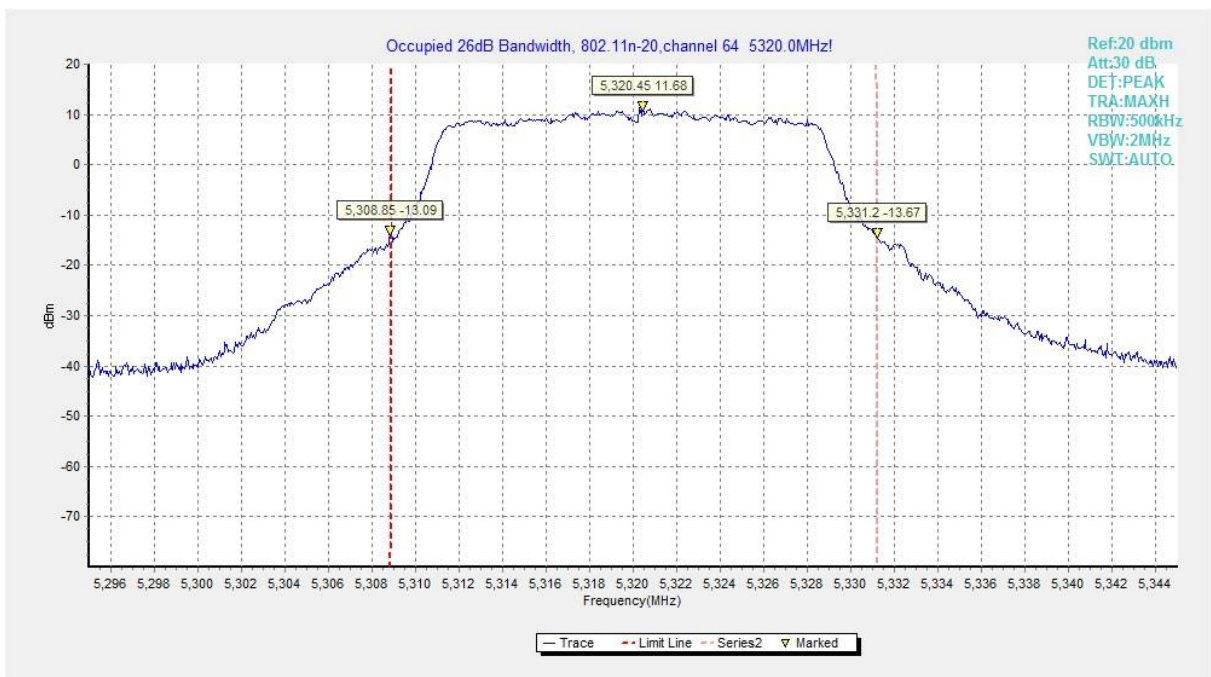


Fig.16 Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)

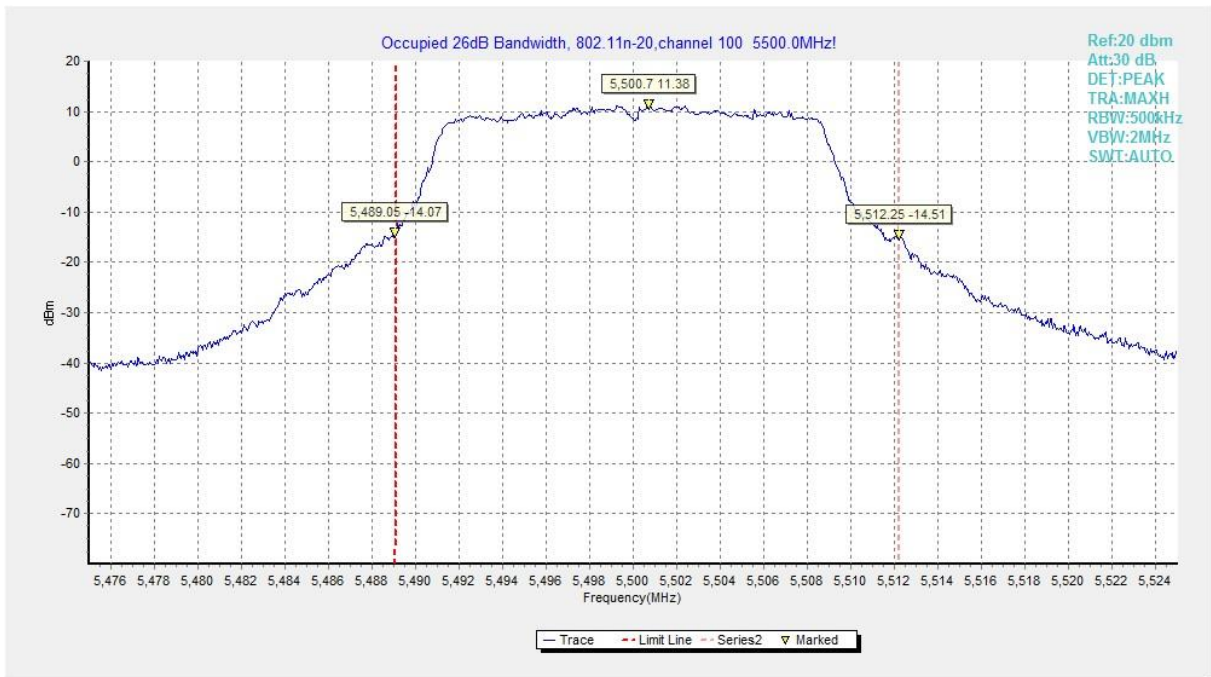


Fig.17 Occupied 26dB Bandwidth (802. 11n-HT20, 5500MHz)

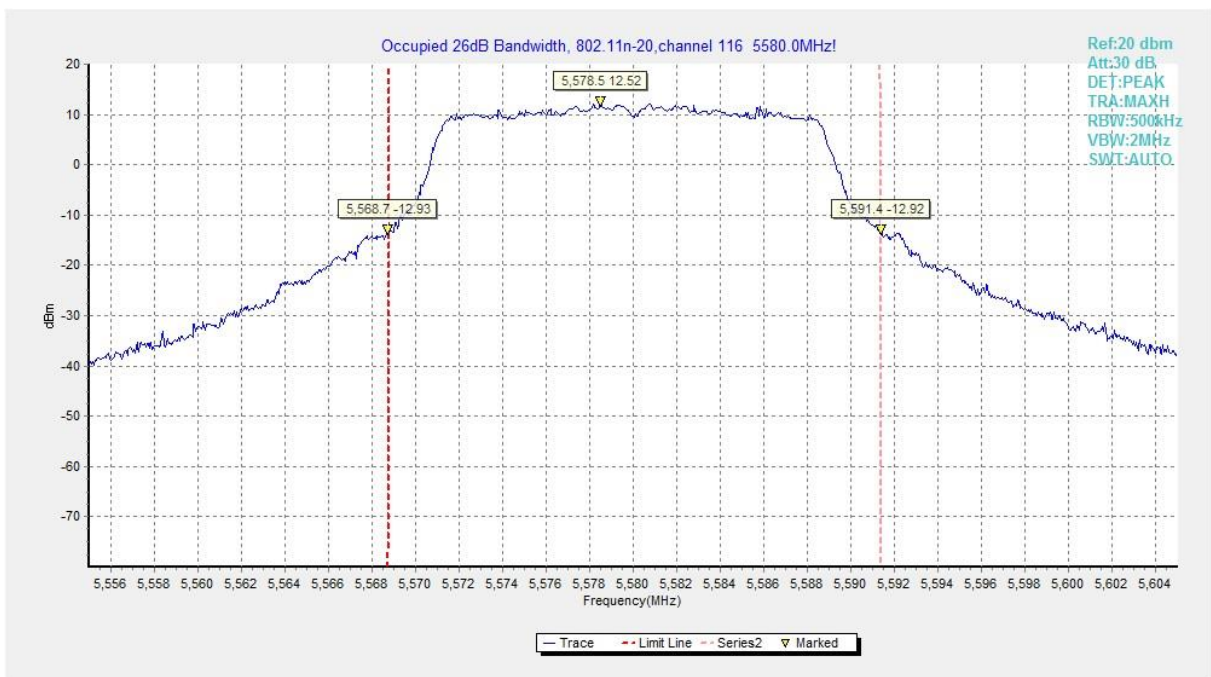


Fig.18 Occupied 26dB Bandwidth (802. 11n-HT20, 5580MHz)

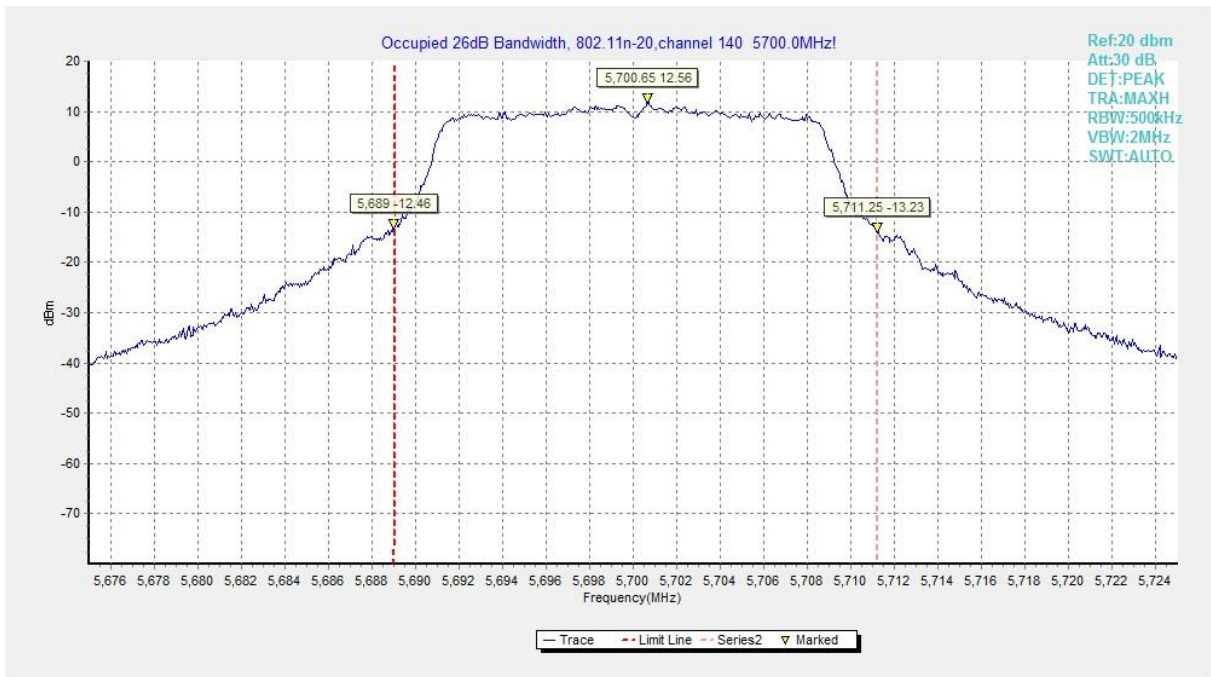


Fig.19 Occupied 26dB Bandwidth (802. 11n-HT20, 5700MHz)

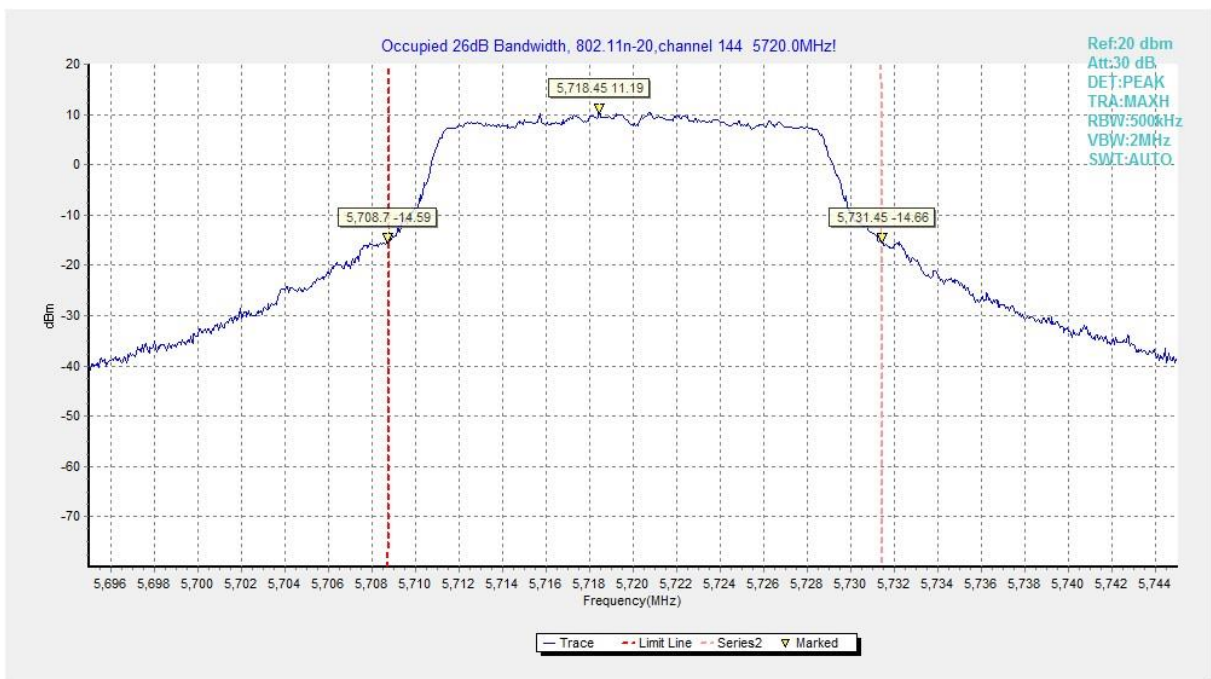


Fig.20 Occupied 26dB Bandwidth (802. 11n-HT20, 5720MHz)

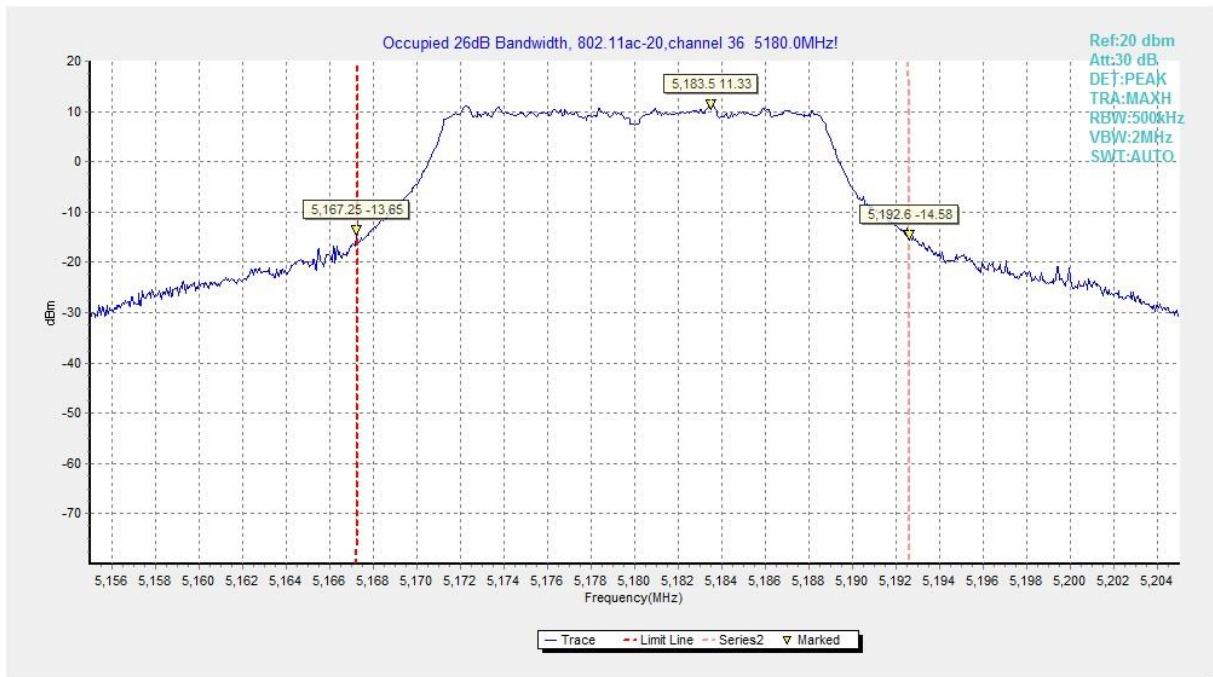


Fig.21 Occupied 26dB Bandwidth (802.11ac-HT20, 5180MHz)

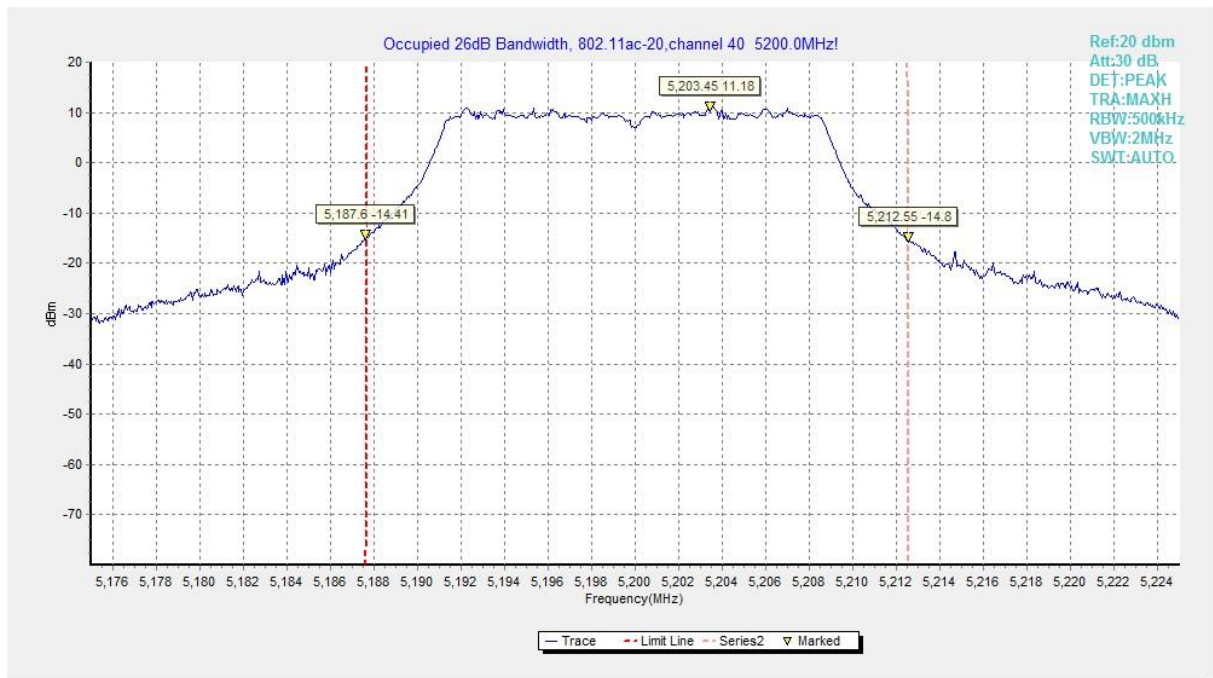


Fig.22 Occupied 26dB Bandwidth (802.11ac-HT20, 5200MHz)

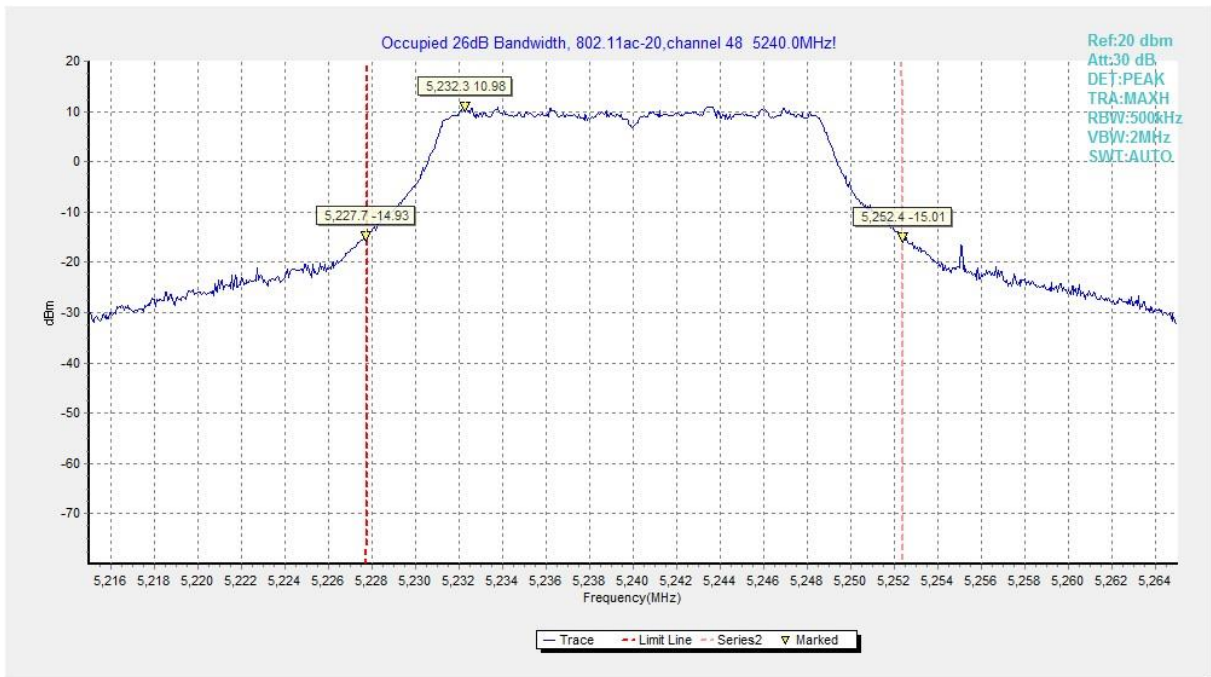


Fig.23 Occupied 26dB Bandwidth (802.11ac-HT20, 5240MHz)

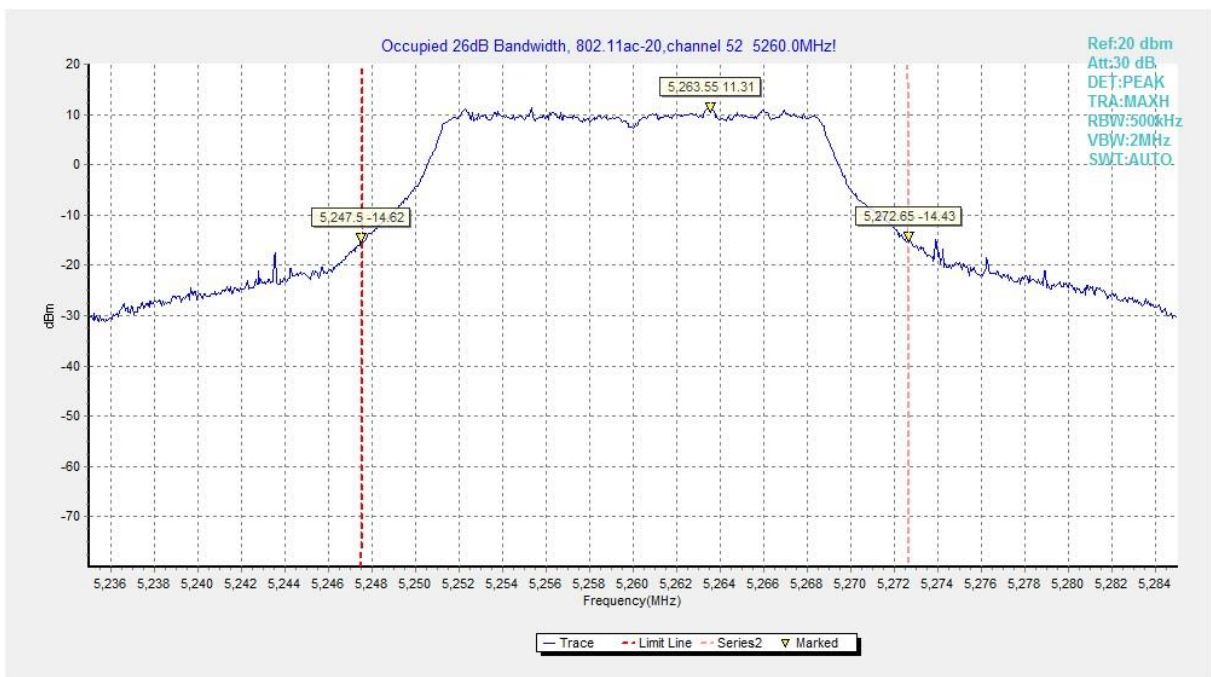


Fig.24 Occupied 26dB Bandwidth (802.11ac-HT20, 5260MHz)

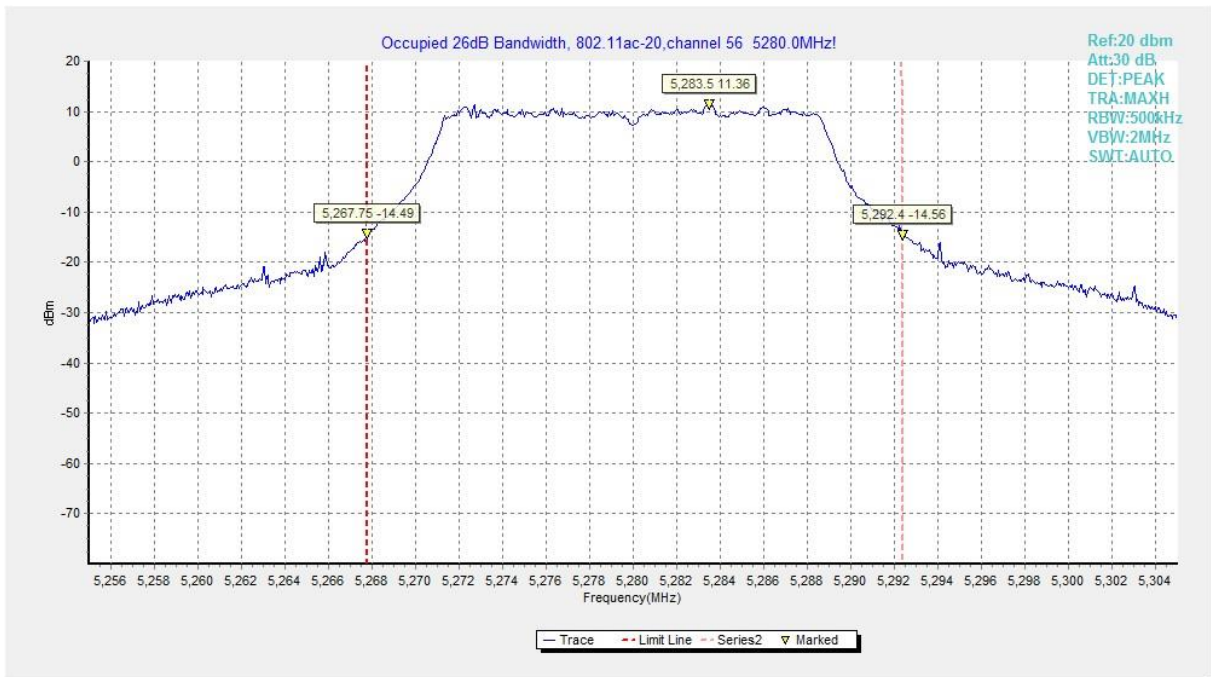


Fig.25 Occupied 26dB Bandwidth (802.11ac-HT20, 5280MHz)

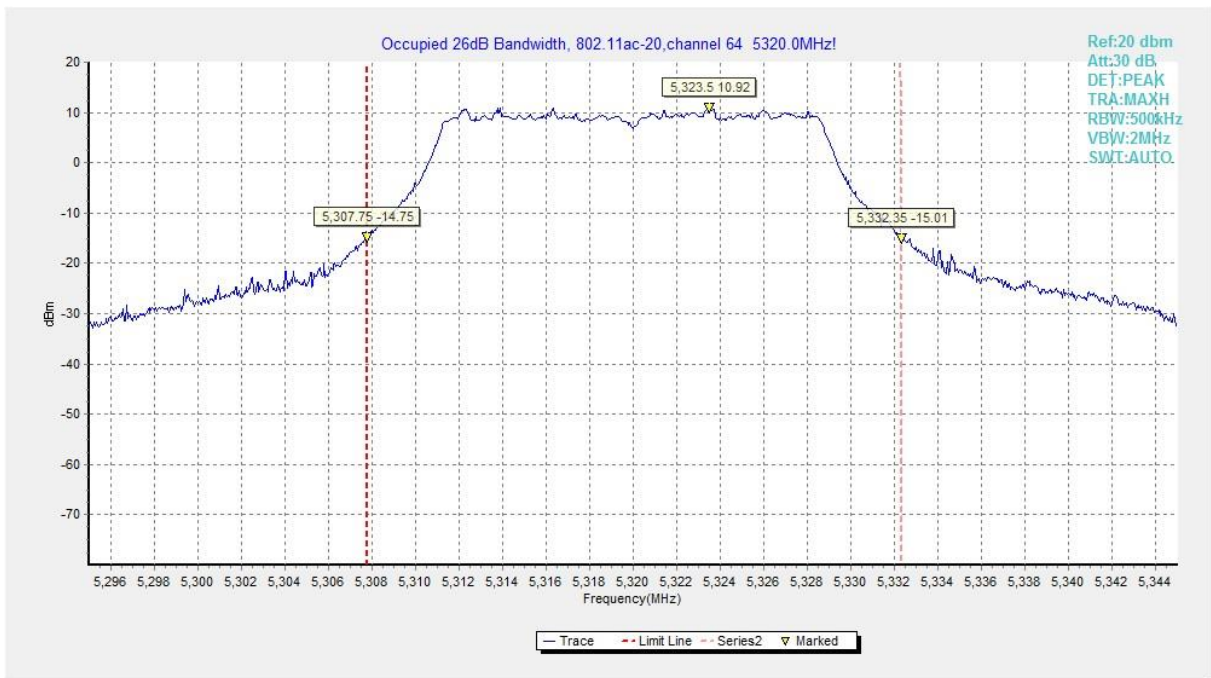


Fig.26 Occupied 26dB Bandwidth (802.11ac-HT20, 5320MHz)

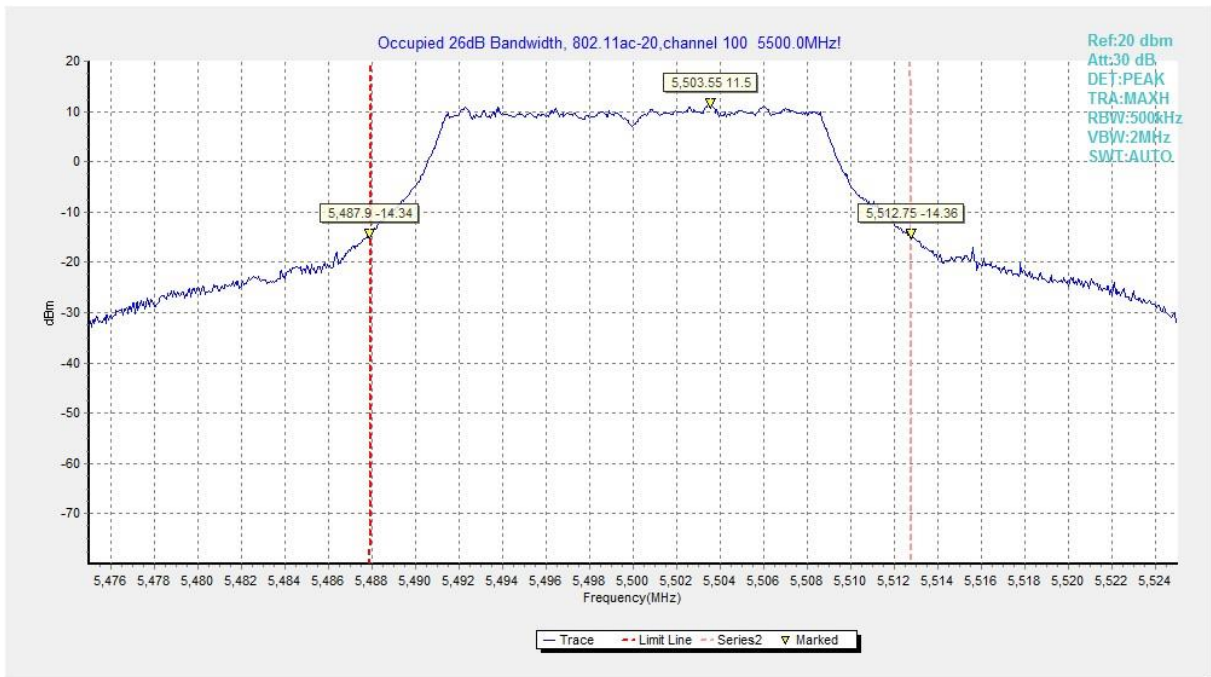


Fig.27 Occupied 26dB Bandwidth (802. 11ac-HT20, 5500MHz)

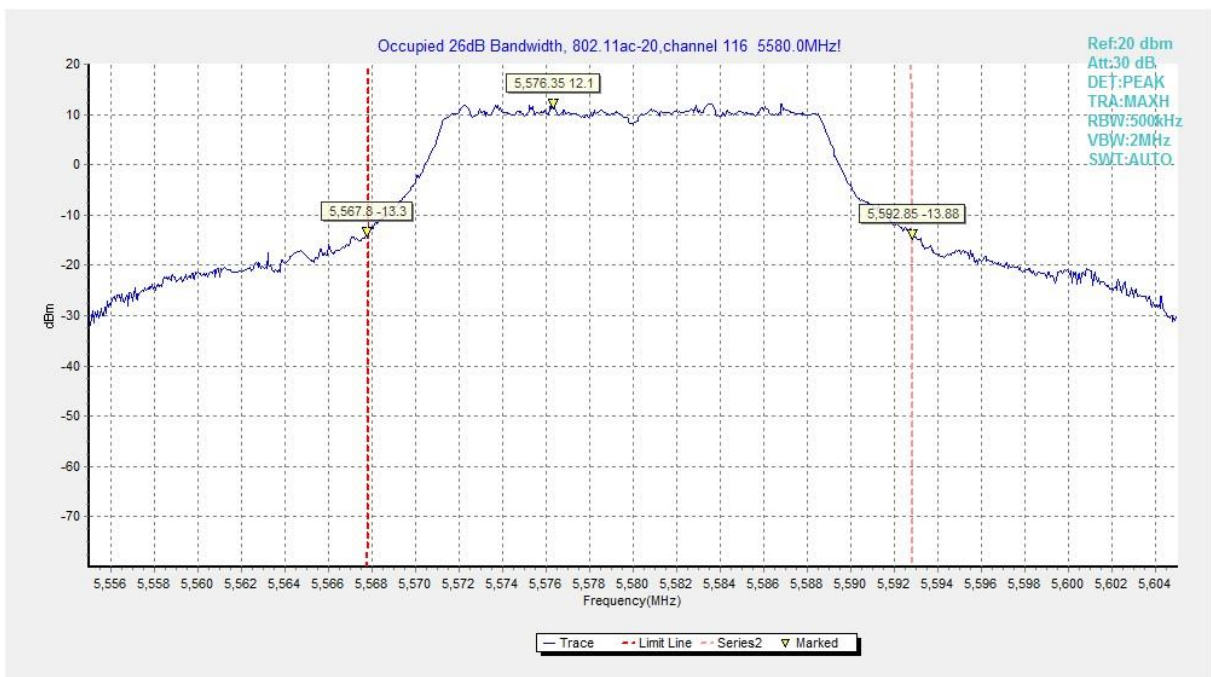


Fig.28 Occupied 26dB Bandwidth (802. 11ac-HT20, 5580MHz)

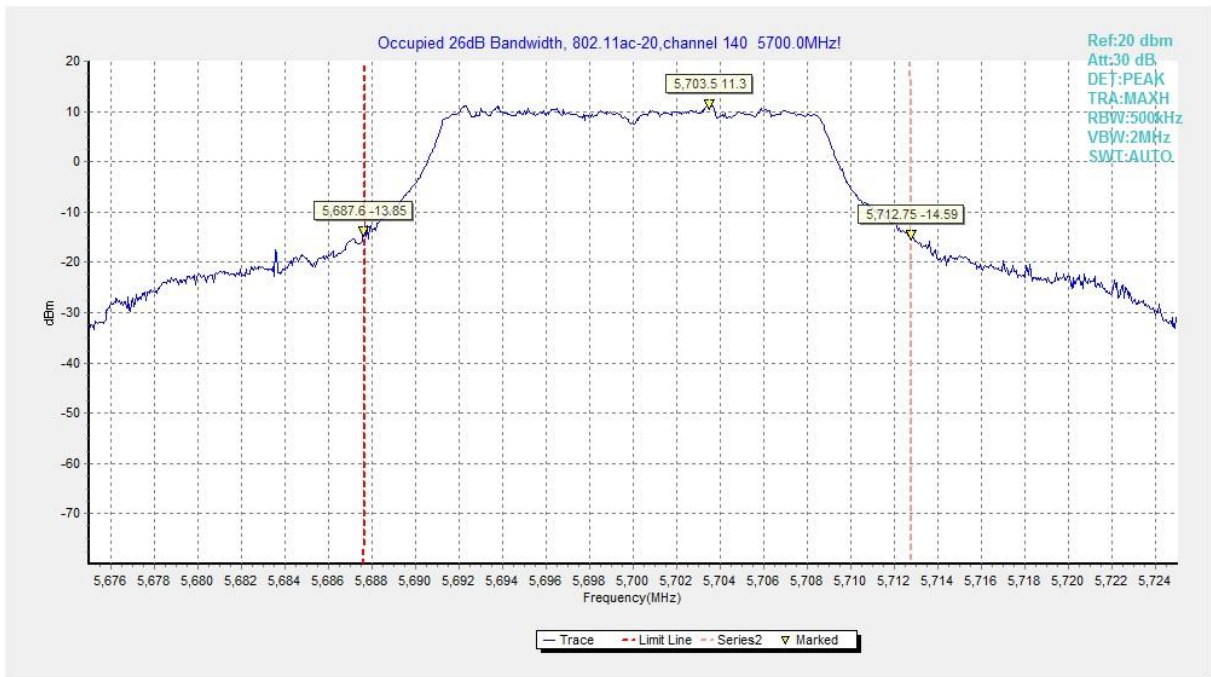


Fig.29 Occupied 26dB Bandwidth (802. 11ac-HT20, 5700MHz)

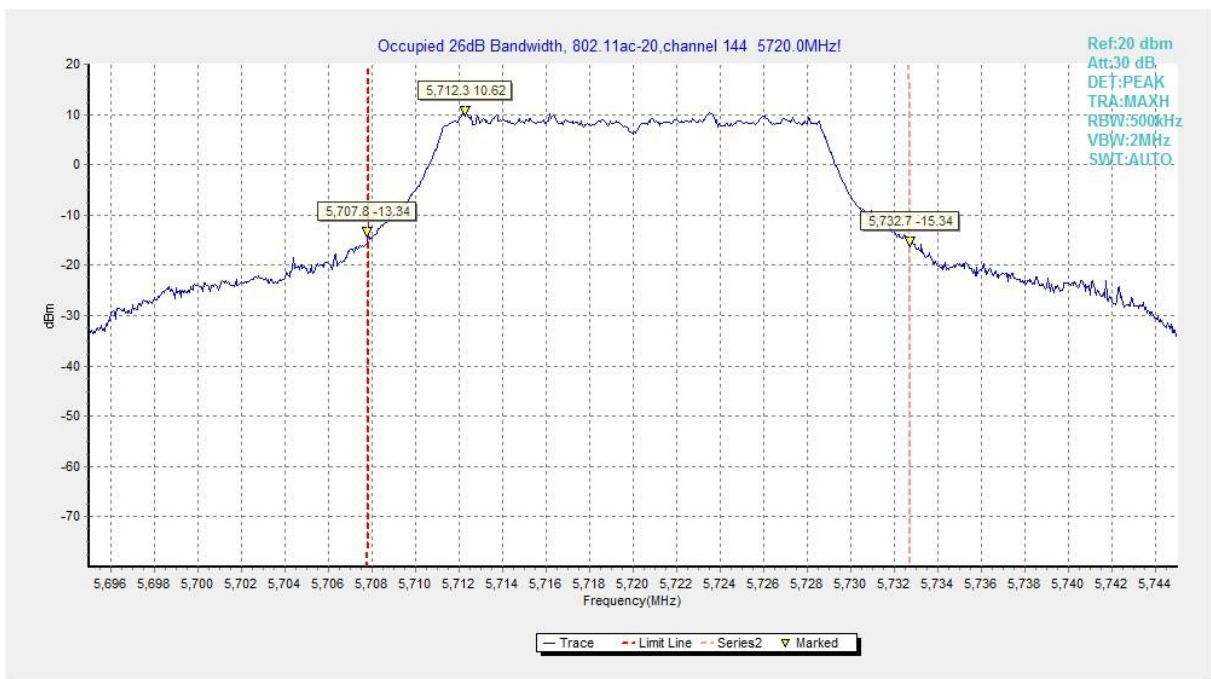


Fig.30 Occupied 26dB Bandwidth (802. 11ac-HT20, 5720MHz)

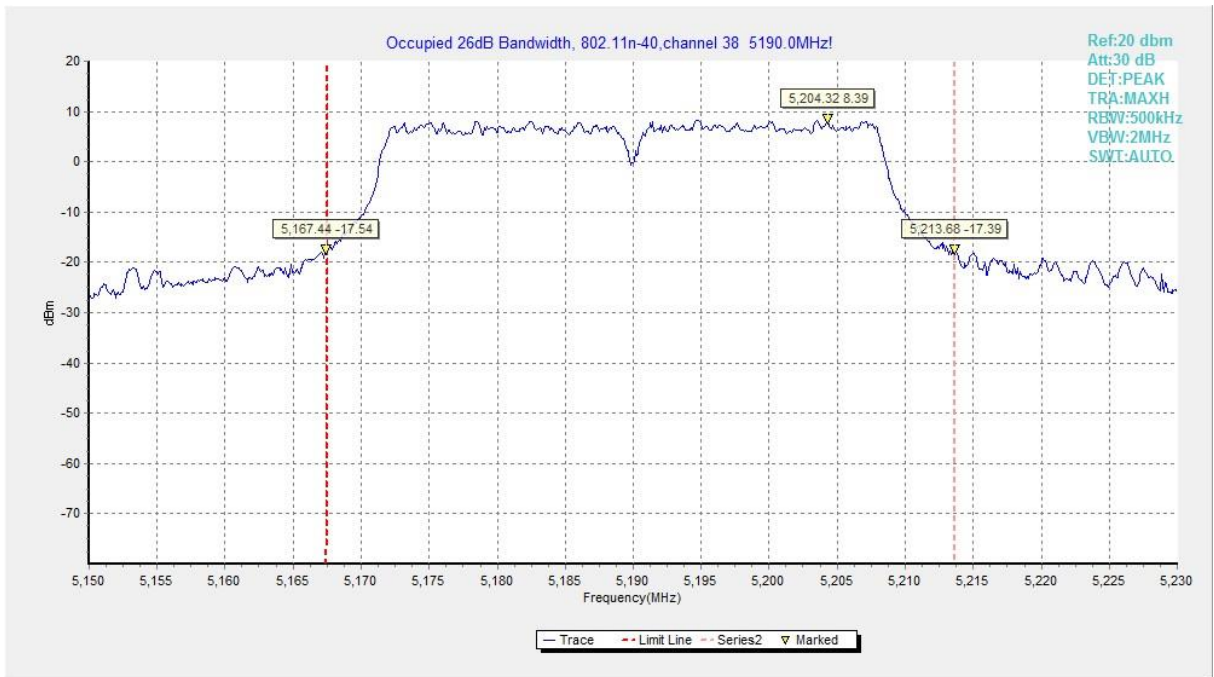


Fig.31 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

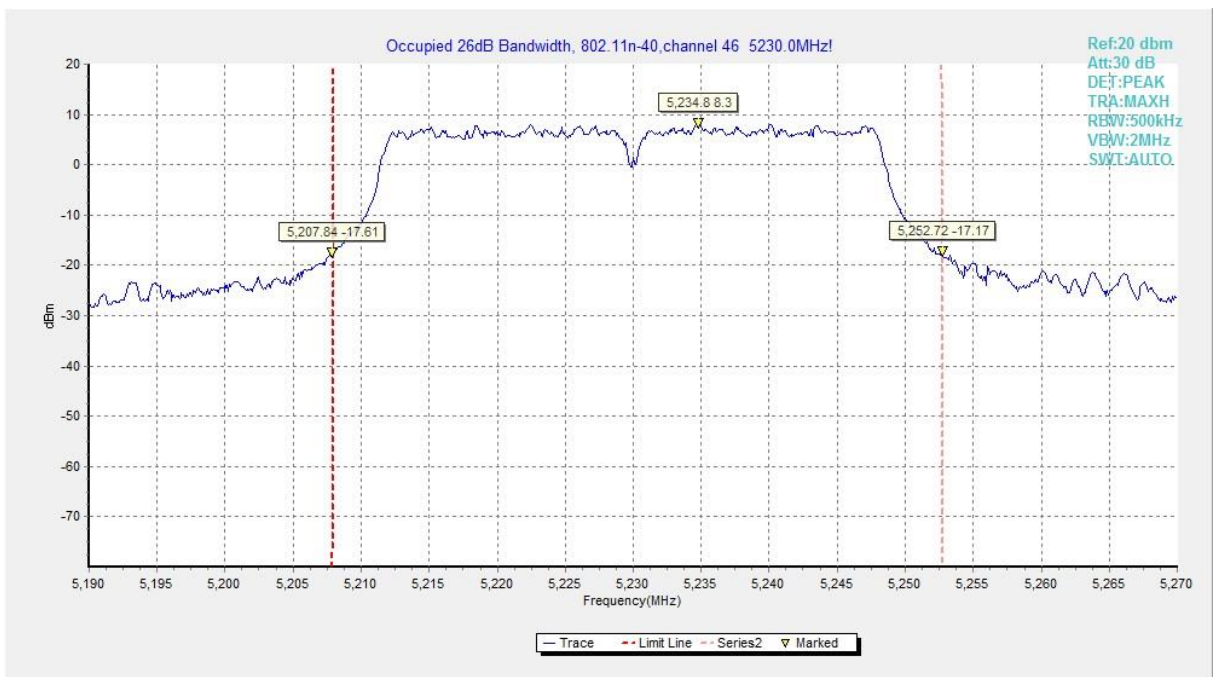


Fig.32 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

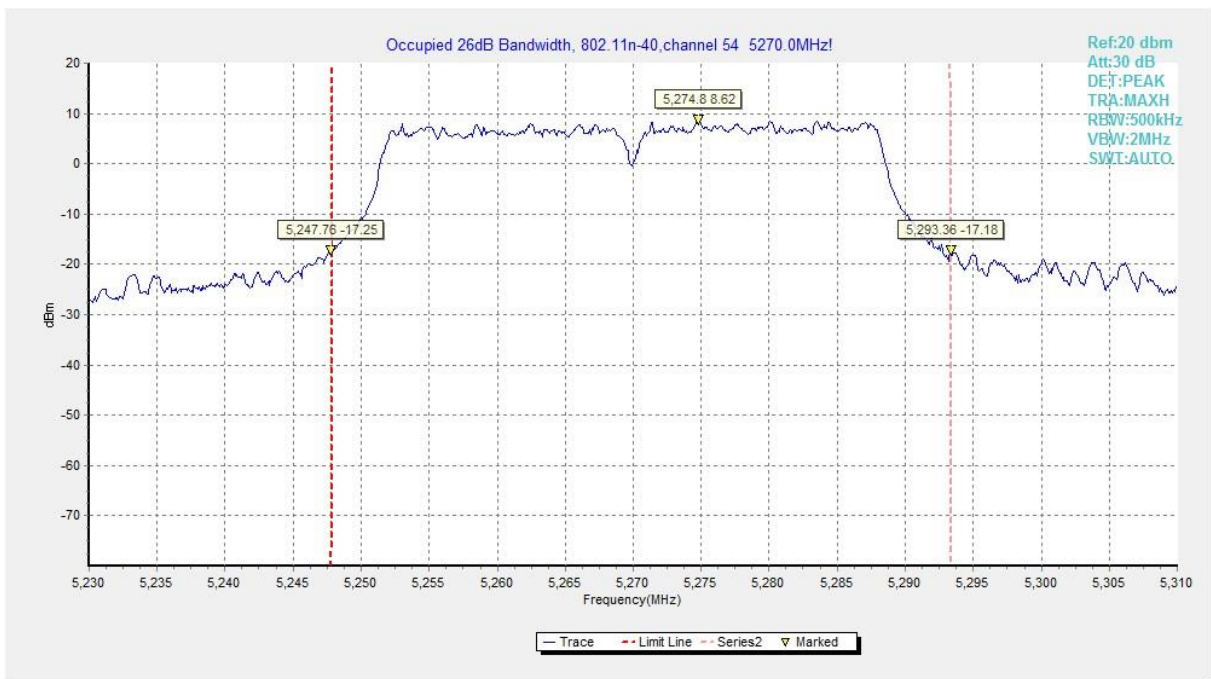


Fig.33 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)

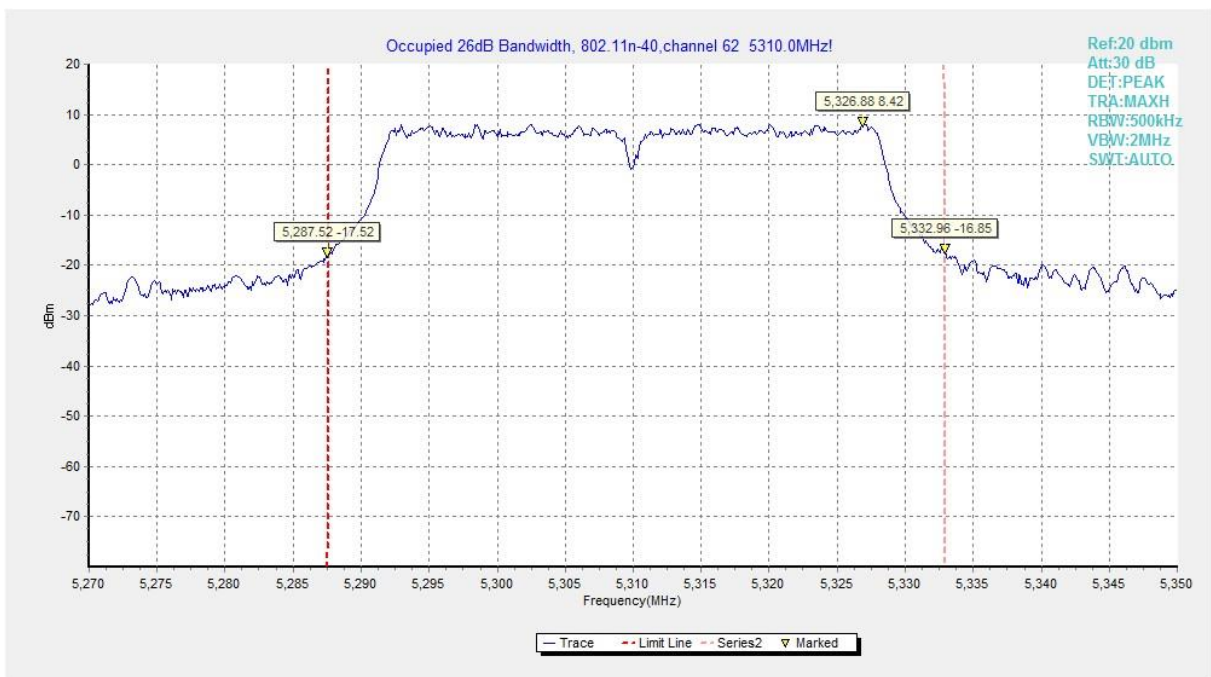


Fig.34 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

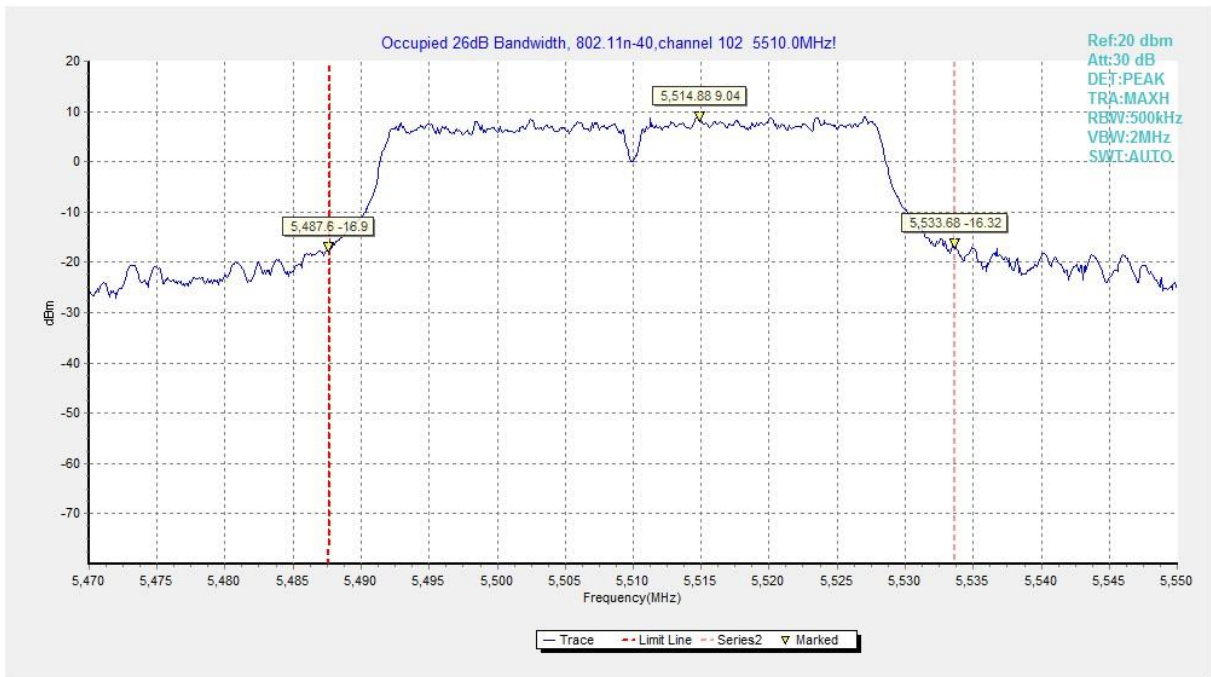


Fig.35 Occupied 26dB Bandwidth (802. 11n-HT40, 5510MHz)

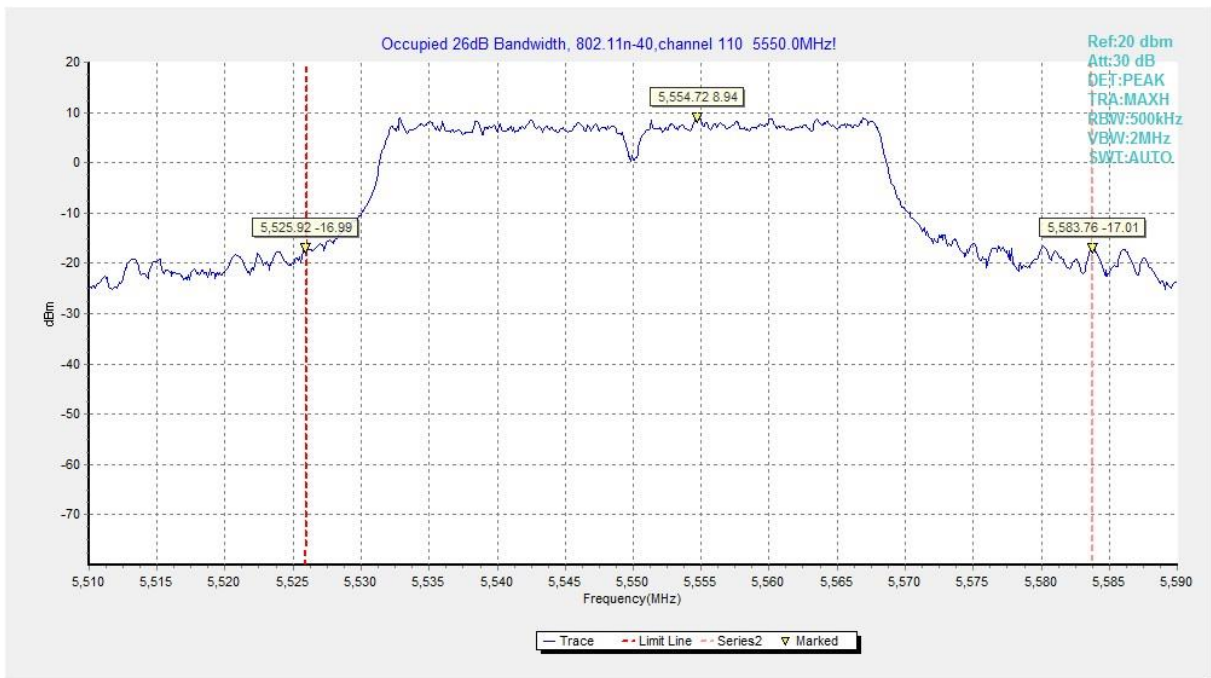


Fig.36 Occupied 26dB Bandwidth (802. 11n-HT40, 5590MHz)