



# FCC PART 15 TEST REPORT No.I20Z70015-IOT12

for

**Client name: Samsung Electronics. Co., Ltd.**

**Product name: Mobile phone**

**Model name: SM-A115U**

**With**

**FCC ID: ZCASMA115U**

**Hardware Version: REV1.0**

**Software Version: A115U.001**

**Issued Date: 2020-04-28**

**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.

**Test Laboratory:**

**CTTL-Telecommunication Technology Labs, CAICT**

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: [ctl\\_terminals@caict.ac.cn](mailto:ctl_terminals@caict.ac.cn), website: [www.caict.ac.cn](http://www.caict.ac.cn)



## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I20Z70015-IOT12	Rev.0	1st edition	2020-04-28

## **CONTENTS**

<b>CONTENTS .....</b>	<b>3</b>
<b>1. TEST LATORATORY .....</b>	<b>5</b>
1.1. INTRODUCTION & ACCREDITATION .....	5
1.2. TESTING LOCATION .....	5
1.3. TESTING ENVIRONMENT.....	5
1.4. PROJECT DATE .....	5
1.5. SIGNATURE .....	6
<b>2. CLIENT INFORMATION.....</b>	<b>7</b>
2.1 APPLICANT INFORMATION .....	7
2.2 MANUFACTURER INFORMATION .....	7
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARYEQUIPMENT(AE) .....</b>	<b>8</b>
3.1. ABOUT EUT .....	8
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST .....	8
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST .....	8
3.4. GENERAL DESCRIPTION.....	9
3.5. INTERPRETATION OF THE TEST ENVIRONMENT.....	9
<b>4. REFERENCE DOCUMENTS .....</b>	<b>9</b>
4.1. DOCUMENTS SUPPLIED BY APPLICANT .....	9
4.2. REFERENCE DOCUMENTS FOR TESTING.....	9
<b>5. LABORATORY ENVIRONMENT.....</b>	<b>10</b>
<b>6. SUMMARY OF TEST RESULTS .....</b>	<b>10</b>
6.1. SUMMARY OF TEST RESULTS.....	10
6.2. STATEMENTS.....	10
6.3. EXPLANATION OF RE-USE OF TEST DATA.....	10
<b>7. TEST EQUIPMENTS UTILIZED .....</b>	<b>11</b>
<b>8. MEASUREMENT UNCERTAINTY .....</b>	<b>12</b>
8.1 TRANSMITTER OUTPUT POWER .....	12
8.2 PEAK POWER SPECTRAL DENSITY.....	12
8.3 OCCUPIED CHANNEL BANDWIDTH.....	12
8.4 BAND EDGES COMPLIANCE.....	12
8.5 SPURIOUS EMISSIONS .....	12
8.6 AC POWER-LINE CONDUCTED EMISSION.....	12
<b>ANNEX A: MEASUREMENT RESULTS.....</b>	<b>13</b>
A.1. MEASUREMENT METHOD .....	13
A.2. MAXIMUM OUTPUT POWER .....	14



A.3. PEAK POWER SPECTRAL DENSITY (CONDUCTED)..... 18

A.4. OCCUPIED 26dB BANDWIDTH(CONDUCTED)..... 20

A.5. BAND EDGES COMPLIANCE ..... 48

A5.1 BAND EDGES - RADIATED..... 48

A.6. TRANSMITTER SPURIOUS EMISSION ..... 68

A.7. AC POWERLINE CONDUCTED EMISSION (150kHz- 30MHz)..... 105

A.8. 99% OCCUPIED BANDWIDTH ..... 108

A.9. POWER CONTROL .....116

**ANNEX B: ACCREDITATION CERTIFICATE.....117**

## **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

### **1.3. Testing Environment**

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

### **1.4. Project date**

Testing Start Date: 2020-03-16

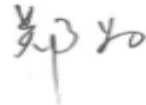
Testing End Date: 2020-04-28

## 1.5. Signature

谢秀珍

---

Xie Xiuzhen  
( Prepared this test report )



---

Zheng Wei  
(Reviewed this test report)

胡晓宇

---

Hu Xiaoyu  
(Approved this test report)



## **2. CLIENT INFORMATION**

### **2.1 Applicant Information**

Company Name: Samsung Electronics. Co., Ltd.  
Address: 19 Chapin Rd., Building D Pine Brook, NJ 07058  
Contact: Jenni Chun  
Email: j1.chun@samsung.com  
Telephone: +1-201-937-4203  
Fax: /

### **2.2 Manufacturer Information**

Company Name: Samsung Electronics. Co., Ltd  
Address: R5, A Tower 22 Floor A-1, (Maetan dong)  
129, Samsung-ro, Yeongtong-gu, Suwon-Si, Gyeonggi-do 16677,  
Korea  
Contact: JP KIM  
Email: jp426.kim@samsung.com  
Telephone: +82-10-4376-0326  
Fax: /

### 3. EQUIPMENT UNDER TEST (EUT) AND

#### ANCILLARY EQUIPMENT (AE)

#### 3.1. About EUT

Description	Mobile phone
Model name	SM-A115U
FCC ID	ZCASMA115U
WLAN Frequency Range	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Voltage	3.85V

#### 3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	/	REV1.0	A115U.001
EUT2	/	REV1.0	A115U.001

\*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	SN
AE1	Battery	/
AE2	Charger	/
AE3	USB Cable	/
AE1		
Model	HQ-70N	
Manufacturer	Ningde Amperex Technology Limited	
Capacitance	3900mAh/4000mAh	
Nominal voltage	3.85V	
AE2		
Model	EP-TA200	
Manufacturer	Samsung Electronics. Co., Ltd.	
Length of cable	/	
AE3		
Model	EP-DR140AWE	
Manufacturer	LUXSHARE-ICT (VIETNAM) LIMITED	
Length of cable	/	

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



### 3.4. General Description

The Equipment under Test (EUT) is a model of Mobile phone with integrated antenna and 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.

### 3.5. 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 558074 D01	Federal Communications Commission Office of Engineering and Technology Laboratory Division GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES	2019

## 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	/	BR
Peak Power Spectral Density	15.407	/	BR
Occupied 26dB Bandwidth	15.403	/	BR
Band edge compliance (Radiated)	15.209	/	BR
Transmitter spurious emissions (Radiated)	15.407	/	BR
AC Powerline Conducted Emission (150kHz- 30MHz)	15.407	/	BR
Frequency Stability	15.407	/	BR
99% Occupied bandwidth	/	/	BR
Transmit Power Control	15.407	/	BR

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
BR	Re-use test data from basic model report.
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. Explanation of re-use of test data

The Equipment Under Test (EUT) model SM-A115U (FCC ID: ZCASMA115U) is a variant product of SM-A115A (FCC ID: ZCASMA115A), according to the declaration of changes provided by the applicant and FCC KDB publication 484596 D01, spot check measurements were performed on this device, all the test results are derived from test report No.I20Z70045-IOT02.

For detail differences between two models please refer the Declaration of Changes document.

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                 3.85V  
 Humidity                44%

## **7. TEST EQUIPMENTS UTILIZED**

### **Conducted test system**

<b>No.</b>	<b>Equipment</b>	<b>Model</b>	<b>Serial Number</b>	<b>Manufacturer</b>	<b>Calibration Period</b>	<b>Calibration Due date</b>
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2020-05-15
2	LISN	ENV216	825562/028	R&S	1 year	2020-09-05
3	Test Receiver	ESCI	100766	R&S	1 year	2021-03-11
4	Shielding Room	S81	/	ETS-Lindgren	/	/

### **Radiated emission test system**

<b>No.</b>	<b>Equipment</b>	<b>Model</b>	<b>Serial Number</b>	<b>Manufacturer</b>	<b>Calibration Period</b>	<b>Calibration Due date</b>
1	Test Receiver	ESU26	100376	Rohde & Schwarz	1 year	2020-10-30
2	BiLog Antenna	VULB9163	9163-482	Schwarzbeck	1 year	2020-09-16
3	Dual-Ridge Waveguide Horn Antenna	3117	00139065	ETS-Lindgren	1 year	2020-11-10
4	Dual-Ridge Waveguide Horn Antenna	3116	2663	ETS-Lindgren	1 year	2020-06-18
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

### 8.6. AC Power-line Conducted Emission

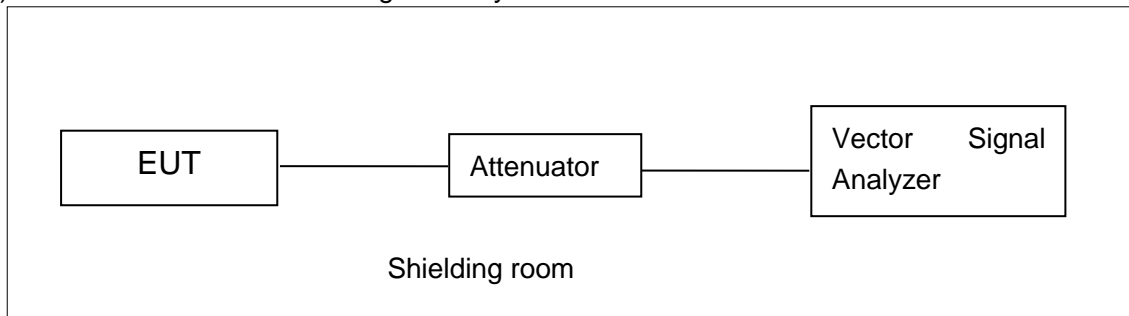
Measurement Uncertainty : 3.10dB,k=2

## 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

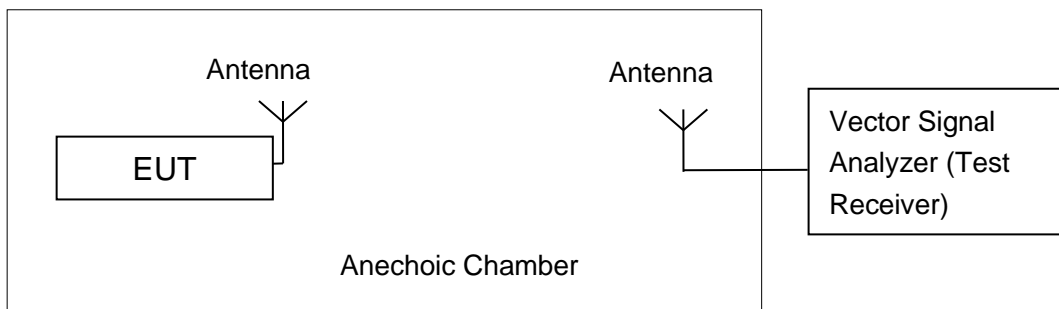


#### A.1.2. Radiated Emission Measurements

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-2 is made according to KDB 789033

Note:

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

802.11a=11+10\*log(B)=23.18, B=23.05/2+5=16.53MHz,

802.11n-HT20=11+10\*log(B)=23.22, B=23.35/2+5=16.68MHz,

802.11ac-VHT20=11+10\*log(B)=23.19, B=23.10/2+5=16.55MHz,

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

802.11n-HT40: B=44.00/2+15=37MHz,

802.11ac-VHT40: B=43.52/2+15=36.76MHz,

802.11ac-VHT80: B=84.32/2+35=77.16MHz,

### Duty Cycle

11a	6	9	12	18	24	36	48	54		
	99%	99%	98%	98%	98%	98%	98%	98%		
11n-20	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7		
	99%	98%	98%	98%	98%	98%	98%	98%		
11n-40	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7		
	98%	98%	98%	98%	97%	97%	96%	96%		
11ac-20	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	
	98%	98%	98%	97%	95%	94%	94%	94%	94%	
11ac-40	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
	98%	96%	94%	94%	93%	91%	90%	90%	90%	90%
11ac-80	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
	96%	94%	91%	89%	88%	88%	88%	88%	87%	87%

**Measurement Results:**
**802.11a mode**

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	17.22	17.17	17.18	17.17	16.60	16.66	16.08	15.57
	5200MHz	17.28	/	/	/	/	/	/	/
	5240MHz	17.42	/	/	/	/	/	/	/
	5260MHz	17.38	/	/	/	/	/	/	/
	5280MHz	17.33	/	/	/	/	/	/	/
	5320MHz	17.35	/	/	/	/	/	/	/
	5500MHz	17.55	/	/	/	/	/	/	/
	5580MHz	17.25	/	/	/	/	/	/	/
	5700MHz	17.23	/	/	/	/	/	/	/
	5720MHz	17.21	/	/	/	/	/	/	/

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

**802.11n-HT20 mode**

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz	17.36	17.35	17.34	17.32	16.81	16.23	16.21	15.71
	5200MHz	17.30	/	/	/	/	/	/	/
	5240MHz	17.43	/	/	/	/	/	/	/
	5260MHz	17.45	/	/	/	/	/	/	/
	5280MHz	17.36	/	/	/	/	/	/	/
	5320MHz	17.37	/	/	/	/	/	/	/
	5500MHz	17.58	/	/	/	/	/	/	/
	5580MHz	17.21	/	/	/	/	/	/	/
	5700MHz	17.24	/	/	/	/	/	/	/
	5720MHz	17.18	/	/	/	/	/	/	/

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-HT20 mode**

Mode	Frequency	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11ac (HT20)	5180MHz	17.41	17.30	17.28	17.24	16.74	16.33	16.25	15.23	15.07
	5200MHz	17.38	/	/	/	/	/	/	/	/
	5240MHz	17.51	/	/	/	/	/	/	/	/
	5260MHz	17.49	/	/	/	/	/	/	/	/
	5280MHz	17.40	/	/	/	/	/	/	/	/
	5320MHz	17.43	/	/	/	/	/	/	/	/
	5500MHz	17.66	/	/	/	/	/	/	/	/
	5580MHz	17.35	/	/	/	/	/	/	/	/
	5700MHz	17.35	/	/	/	/	/	/	/	/
	5720MHz	17.22	/	/	/	/	/	/	/	/

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11n-HT40 mode**

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz	17.30	/	/	/	/	/	/	/
	5230MHz	17.50	17.47	16.93	16.88	16.38	16.35	15.86	15.86
	5270MHz	17.59	/	/	/	/	/	/	/
	5310MHz	17.86	17.83	17.32	17.24	16.69	16.69	16.18	16.03
	5510MHz	17.49	/	/	/	/	/	/	/
	5550MHz	17.56	/	/	/	/	/	/	/
	5670MHz	17.86	/	/	/	/	/	/	/
	5710MHz	18.06	18.05	17.60	17.51	16.96	16.90	16.41	16.40

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.



**802.11ac-HT40 mode**

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (HT40)	5190MHz	17.39	17.44	17.58	17.45	16.99	16.99	16.06	14.98	15.00	13.92
	5230MHz	/	/	17.49	/	/	/	/	/	/	/
	5270MHz	/	/	17.51	/	/	/	/	/	/	/
	5310MHz	/	/	17.48	/	/	/	/	/	/	/
	5510MHz	/	/	17.62	/	/	/	/	/	/	/
	5550MHz	/	/	17.47	/	/	/	/	/	/	/
	5670MHz	/	/	17.56	/	/	/	/	/	/	/
5710MHz	/	/	17.40	/	/	/	/	/	/	/	

The data rate MCS2 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-HT80 mode**

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (HT80)	5210MHz	17.61	17.45	17.46	16.56	16.45	15.51	15.38	14.46	14.42	13.40
	5290MHz	17.61	/	/	/	/	/	/	/	/	/
	5530MHz	17.62	/	/	/	/	/	/	/	/	/
	5610MHz	17.66	/	/	/	/	/	/	/	/	/
	5690MHz	17.55	/	/	/	/	/	/	/	/	/

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

The spot check is 17.14dBm(11n-HT40 ch142 MCS0).

### 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:

Mode	Frequency	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	7.19	P
	5200 MHz	7.39	P
	5240 MHz	7.47	P
	5260 MHz	7.43	P
	5280 MHz	7.10	P
	5320 MHz	6.98	P
	5500 MHz	7.56	P
	5580 MHz	7.08	P
	5700 MHz	6.97	P
	5720 MHz	7.47	P
802.11n HT20	5180 MHz	7.15	P
	5200 MHz	7.10	P
	5240 MHz	7.10	P
	5260 MHz	7.15	P
	5280 MHz	6.94	P
	5320 MHz	6.88	P
	5500 MHz	7.03	P
	5580 MHz	6.89	P
	5700 MHz	6.79	P
	5720 MHz	6.73	P
802.11ac HT20	5180 MHz	6.69	P
	5200 MHz	6.54	P
	5240 MHz	6.77	P
	5260 MHz	6.96	P
	5280 MHz	6.80	P
	5320 MHz	6.99	P
	5500 MHz	6.87	P
	5580 MHz	6.78	P
	5700 MHz	6.78	P
	5720 MHz	6.73	P
802.11n	5190 MHz	4.41	P

HT40	5230 MHz	4.55	P
	5270 MHz	4.39	P
	5310 MHz	4.16	P
	5510 MHz	4.37	P
	5550 MHz	4.38	P
	5670 MHz	4.38	P
	5710 MHz	4.21	P
802.11ac HT40	5190 MHz	4.58	P
	5230 MHz	4.58	P
	5270 MHz	4.76	P
	5310 MHz	4.63	P
	5510 MHz	4.93	P
	5550 MHz	4.77	P
	5670 MHz	4.81	P
802.11ac HT80	5210 MHz	1.72	P
	5290 MHz	1.55	P
	5530 MHz	1.94	P
	5610 MHz	1.81	P
	5690 MHz	1.66	P

**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
-------------------------	---------

##### Measurement Result:

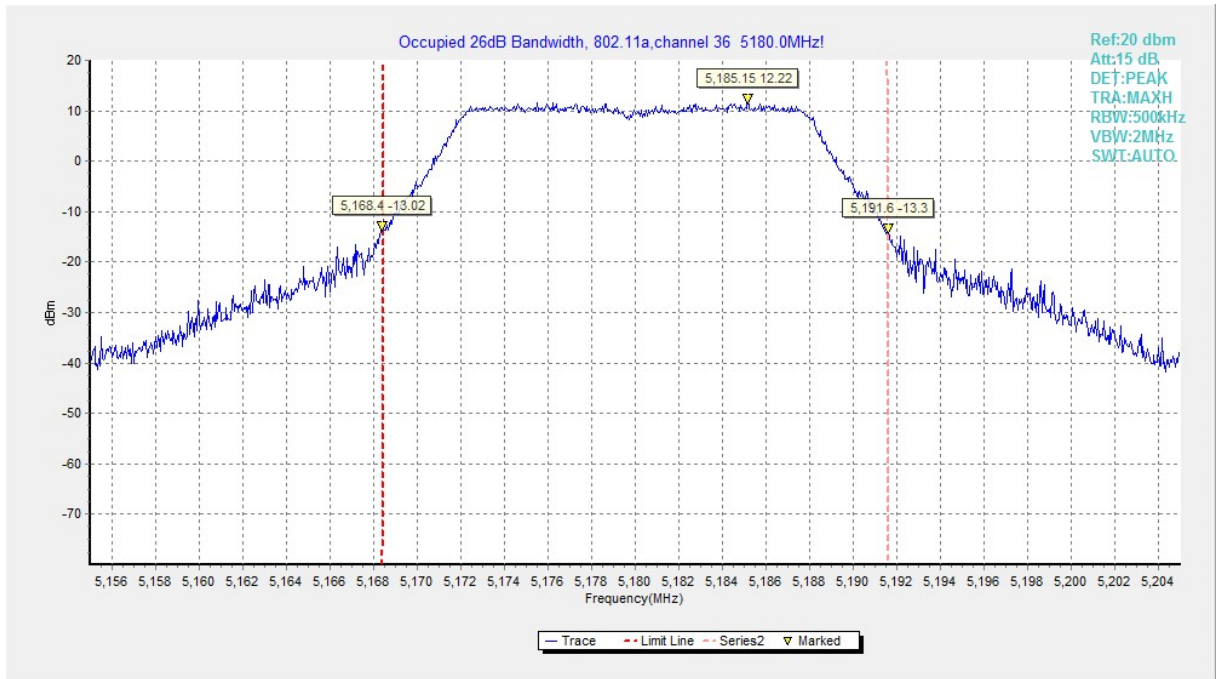
Mode	Frequency	Occupied 26dB Bandwidth ( MHz)		conclusion
802.11a	5180 MHz	Fig.1	23.20	P
	5200 MHz	Fig.2	22.95	P
	5240 MHz	Fig.3	23.00	P
	5260 MHz	Fig.4	23.15	P
	5280 MHz	Fig.5	23.25	P
	5320 MHz	Fig.6	23.15	P
	5500 MHz	Fig.7	23.05	P
	5580 MHz	Fig.8	23.20	P
	5700 MHz	Fig.9	23.45	P
	5720 MHz	Fig.10	23.05	P
802.11n HT20	5180 MHz	Fig.11	23.25	P
	5200 MHz	Fig.12	23.50	P
	5240 MHz	Fig.13	23.35	P
	5260 MHz	Fig.14	23.35	P
	5280 MHz	Fig.15	23.45	P
	5320 MHz	Fig.16	23.40	P
	5500 MHz	Fig.17	24.25	P
	5580 MHz	Fig.18	23.50	P
	5700 MHz	Fig.19	23.30	P
	5720 MHz	Fig.20	23.35	P

802.11ac HT20	5180 MHz	Fig.21	23.10	P
	5200 MHz	Fig.22	23.15	P
	5240 MHz	Fig.23	23.15	P
	5260 MHz	Fig.24	23.15	P
	5280 MHz	Fig.25	23.15	P
	5320 MHz	Fig.26	23.10	P
	5500 MHz	Fig.27	23.05	P
	5580 MHz	Fig.28	23.20	P
	5700 MHz	Fig.29	23.10	P

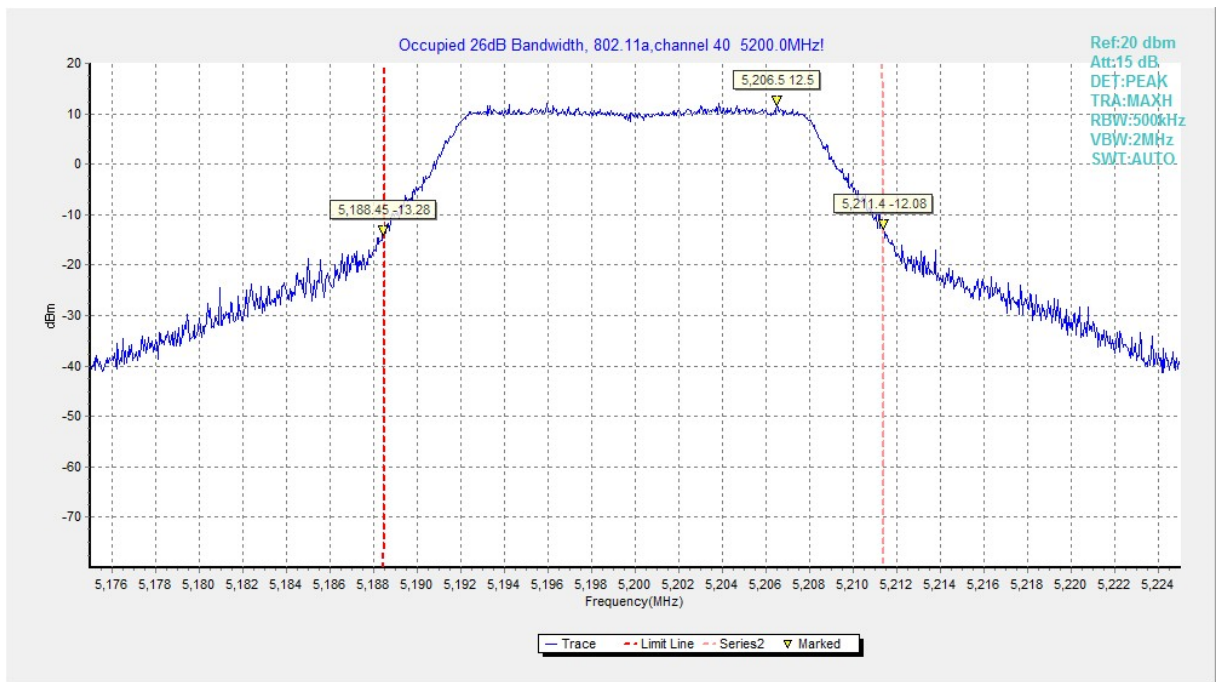
	5720 MHz	Fig.30	23.10	P
802.11n HT40	5190 MHz	Fig.31	44.16	P
	5230 MHz	Fig.32	44.56	P
	5270 MHz	Fig.33	44.00	P
	5310 MHz	Fig.34	44.56	P
	5510 MHz	Fig.35	43.84	P
	5550 MHz	Fig.36	44.00	P
	5670 MHz	Fig.37	44.72	P
802.11ac HT40	5190 MHz	Fig.39	43.68	P
	5230 MHz	Fig.40	43.52	P
	5270 MHz	Fig.41	43.60	P
	5310 MHz	Fig.42	43.68	P
	5510 MHz	Fig.43	43.44	P
	5550 MHz	Fig.44	43.60	P
	5670 MHz	Fig.45	43.52	P
802.11ac HT80	5210 MHz	Fig.47	84.80	P
	5290 MHz	Fig.48	84.64	P
	5530 MHz	Fig.49	84.48	P
	5610 MHz	Fig.50	84.48	P
	5690 MHz	Fig.51	84.32	P

**Conclusion: PASS**

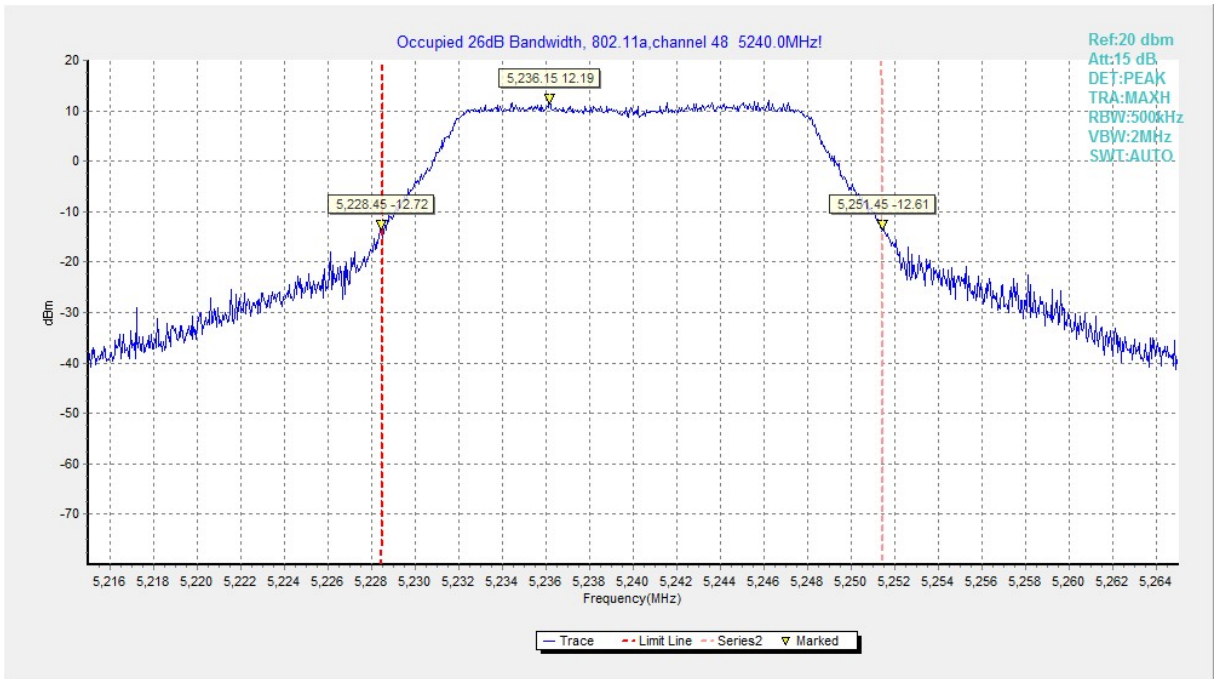
**Test graphs as below:**



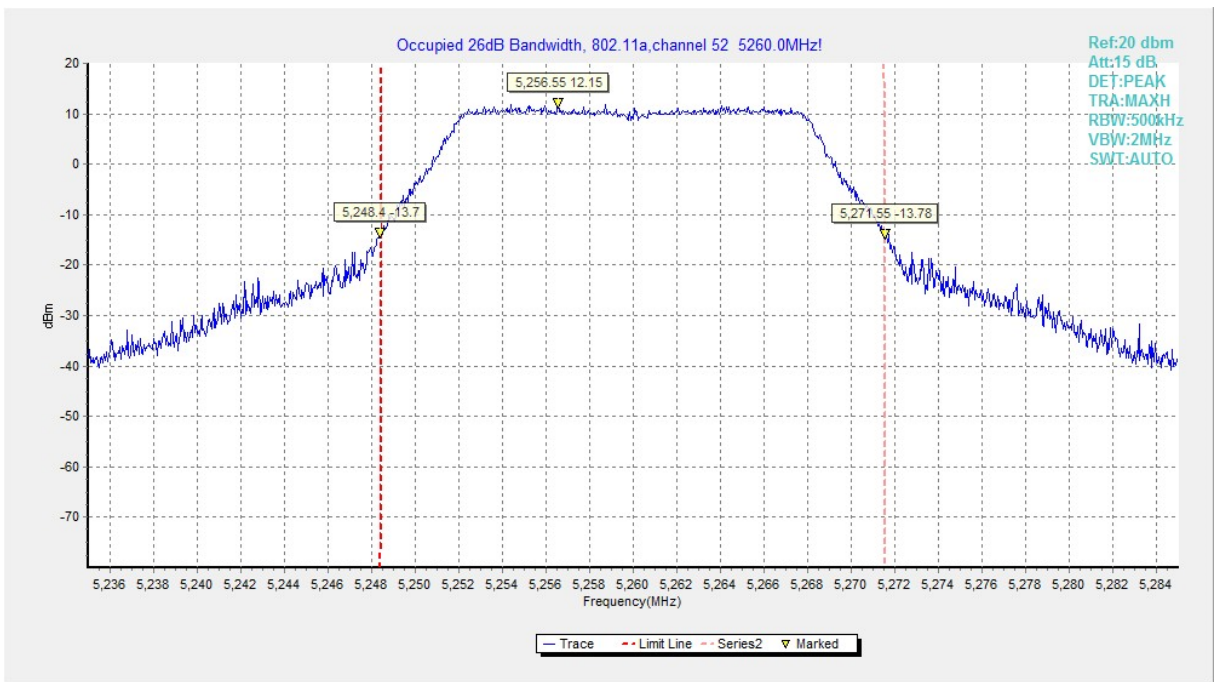
**Fig.1 Occupied 26dB Bandwidth (802.11a, 5180MHz)**



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

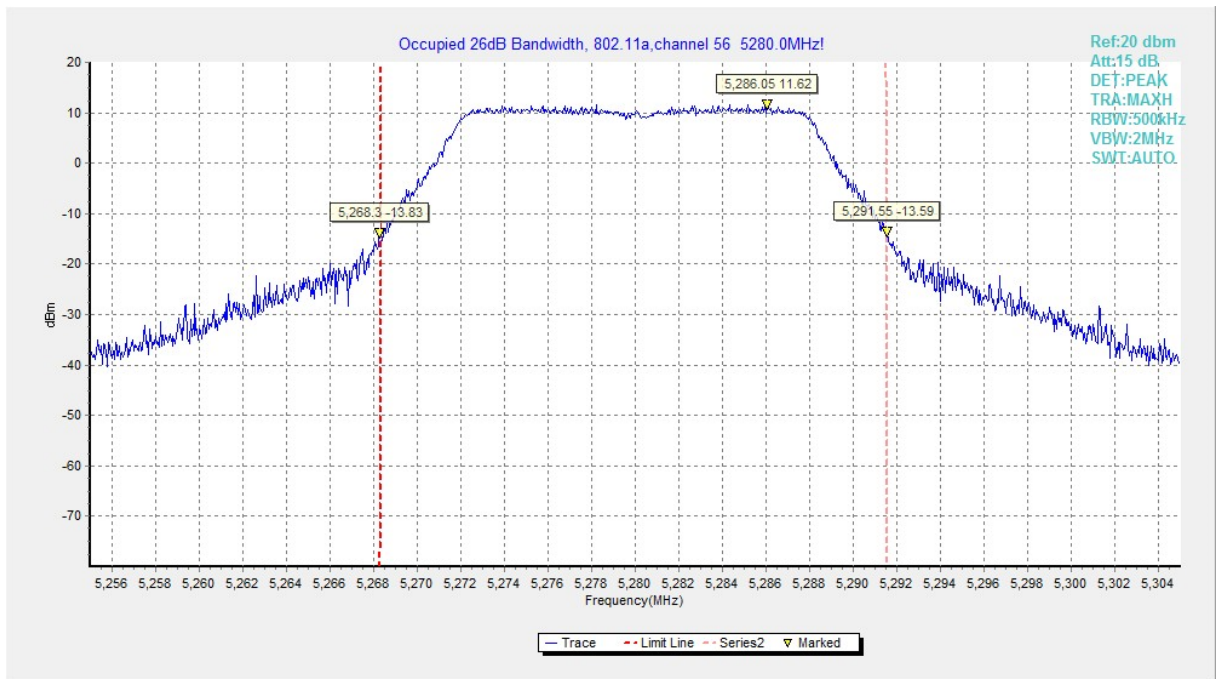


**Fig.3 Occupied 26dB Bandwidth (802.11a, 5240MHz)**

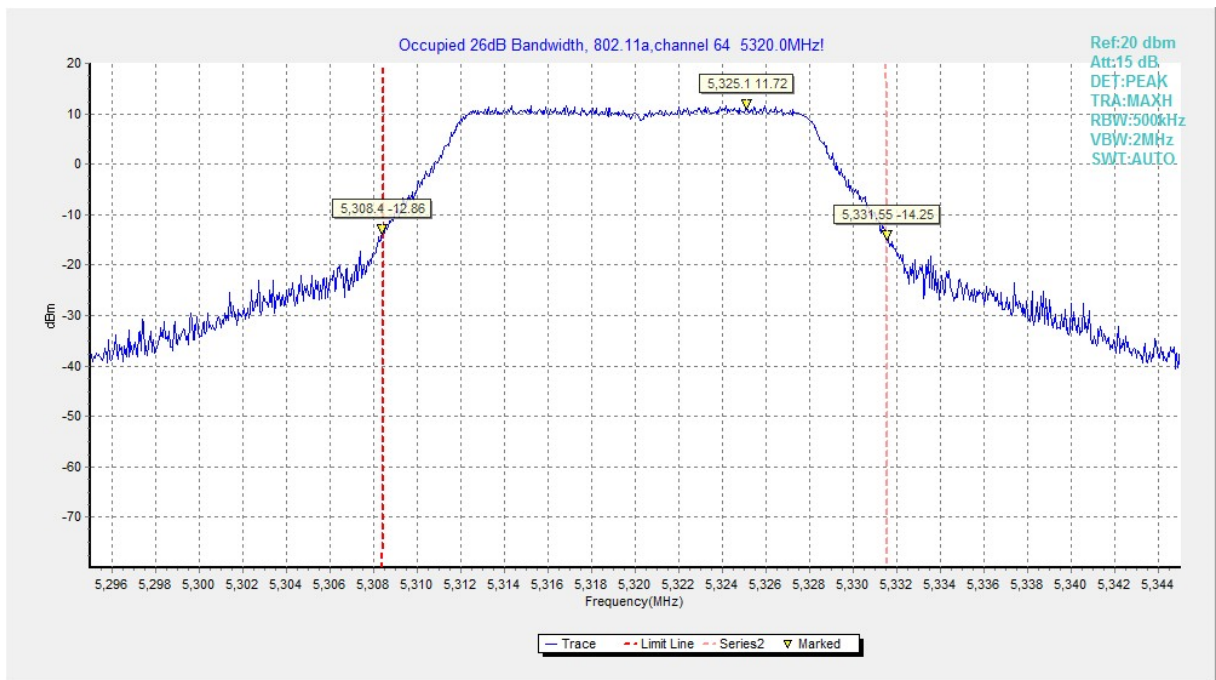


**Fig.4 Occupied 26dB Bandwidth (802.11a, 5260MHz)**



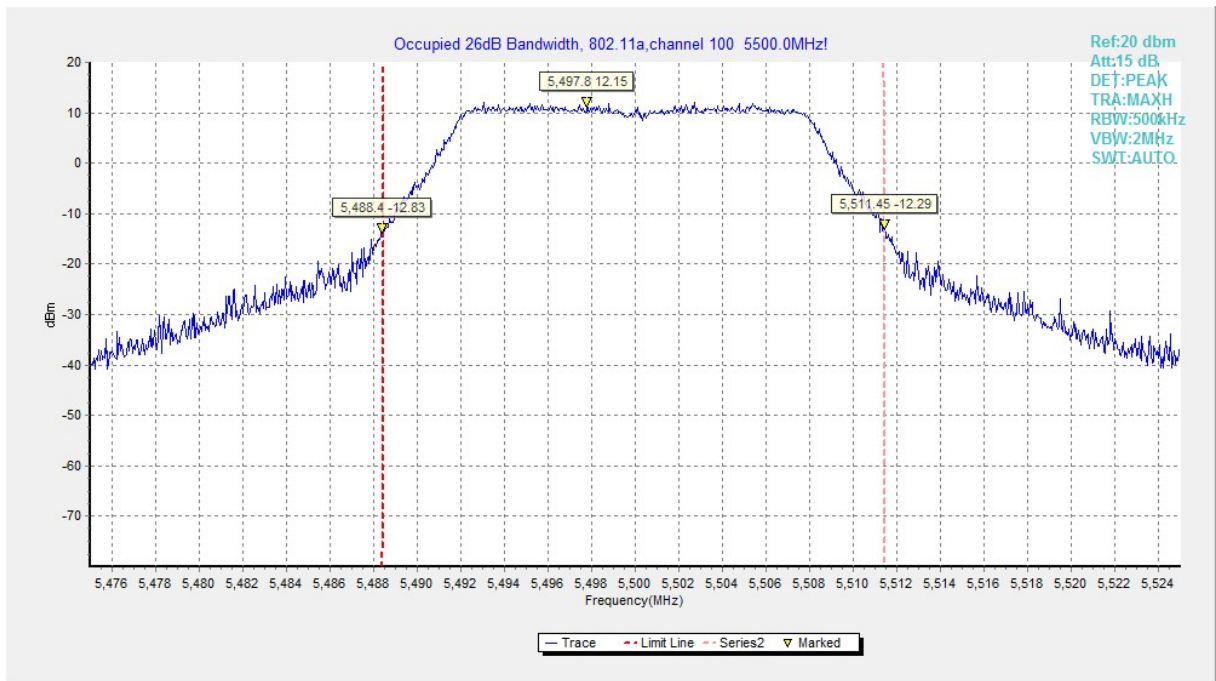


**Fig.5 Occupied 26dB Bandwidth (802.11a, 5280MHz)**

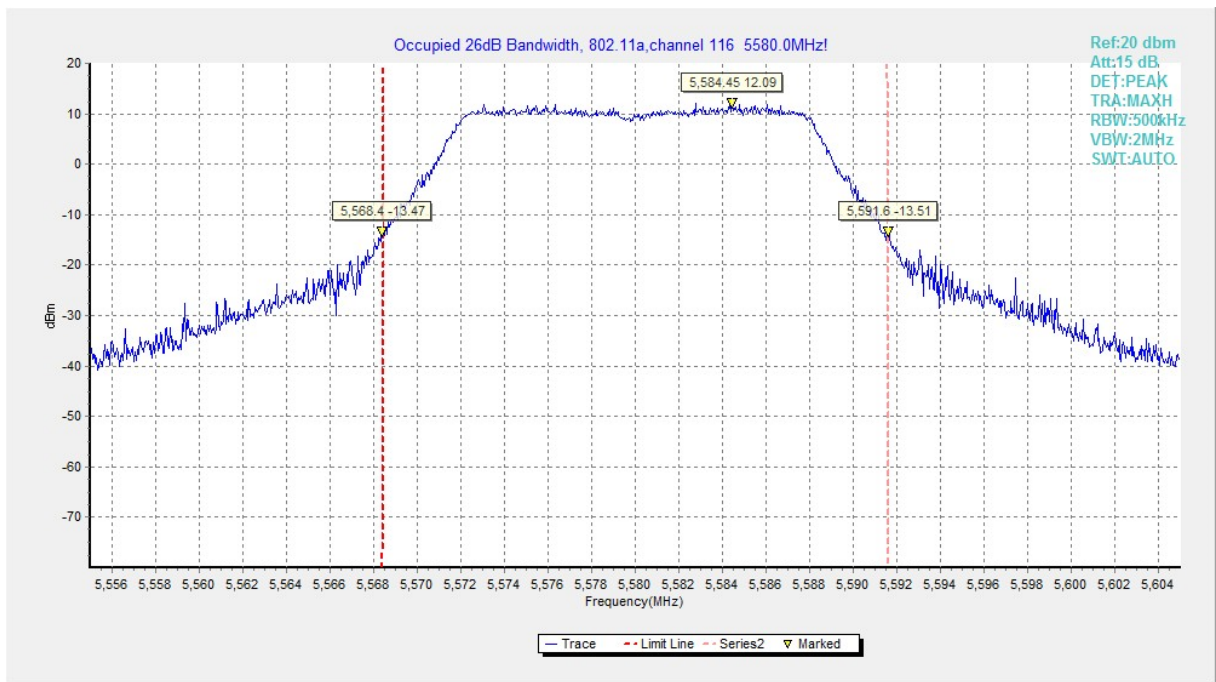


**Fig.6 Occupied 26dB Bandwidth (802.11a, 5320MHz)**

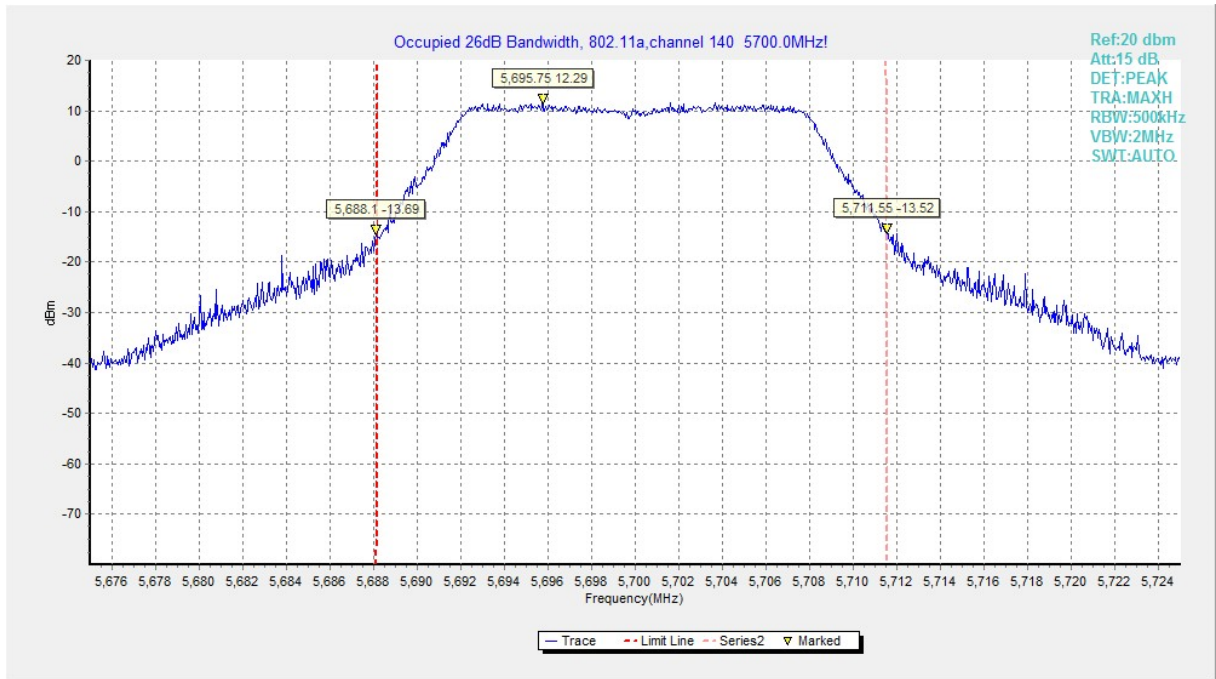




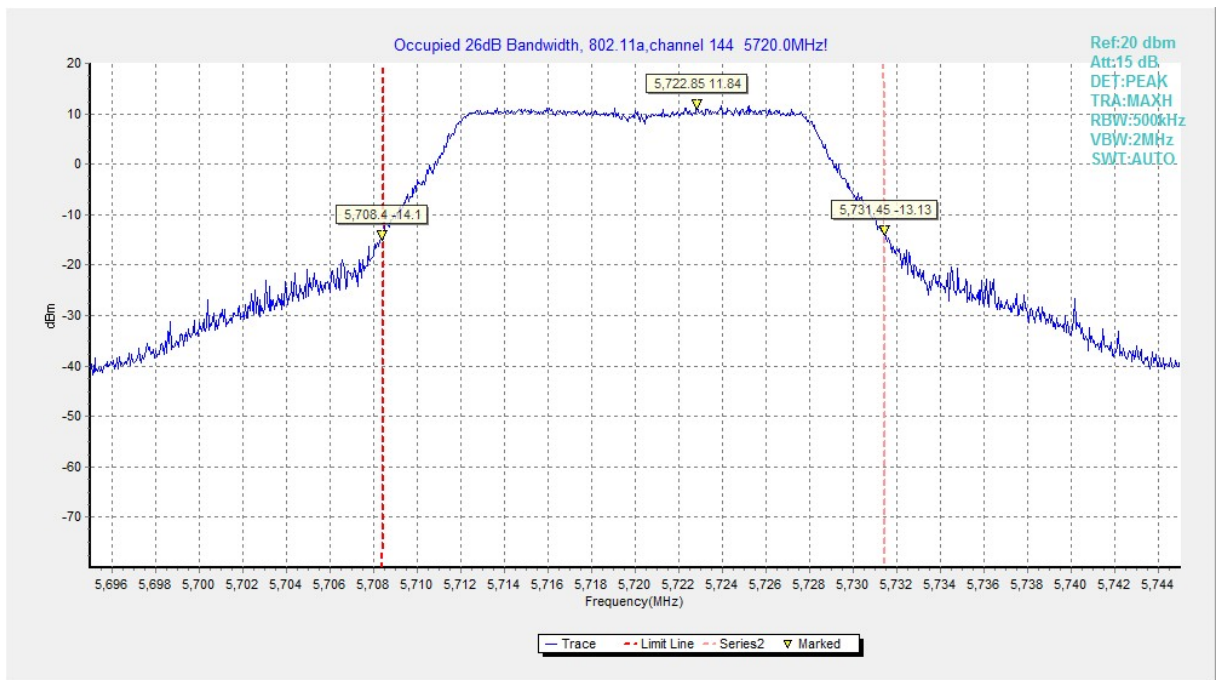
**Fig.7 Occupied 26dB Bandwidth (802.11a, 5500MHz)**



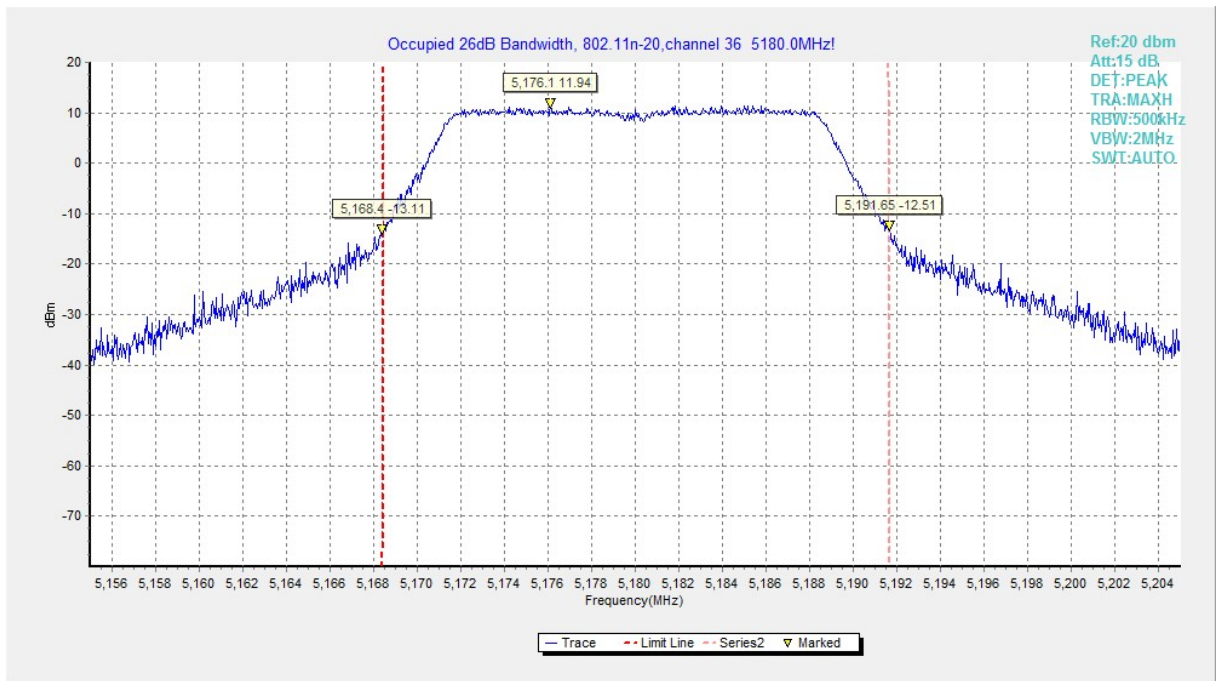
**Fig.8 Occupied 26dB Bandwidth (802.11a, 5580MHz)**



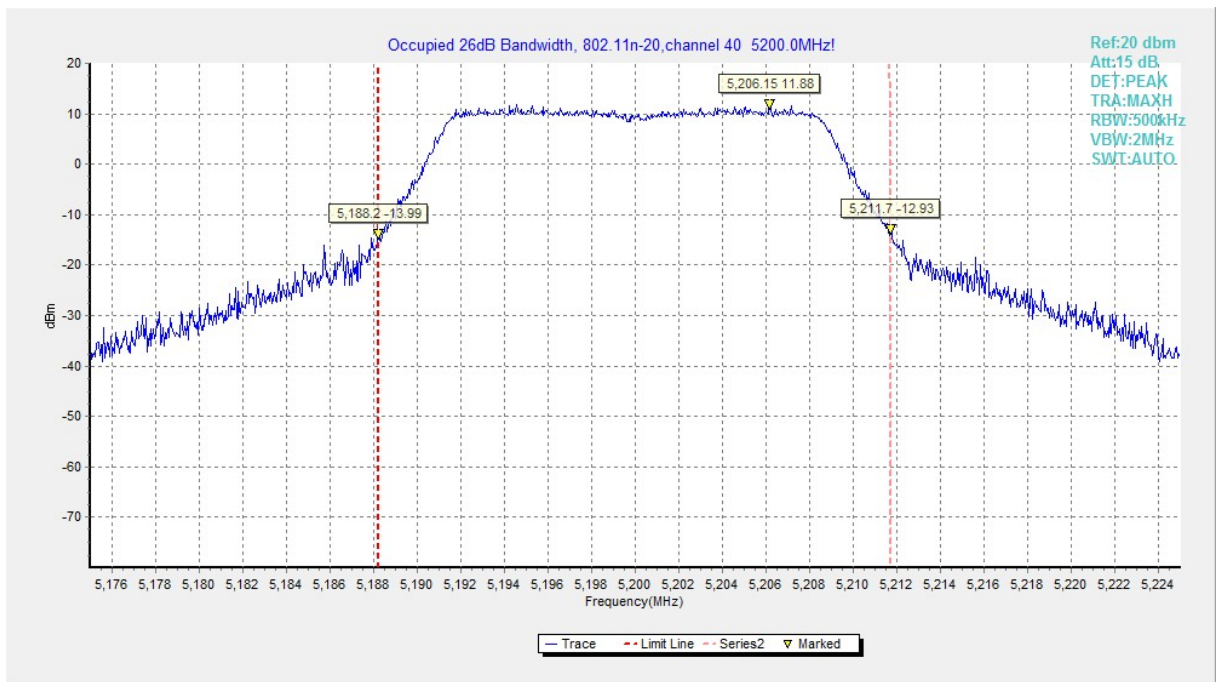
**Fig.9 Occupied 26dB Bandwidth (802.11a, 5700MHz)**



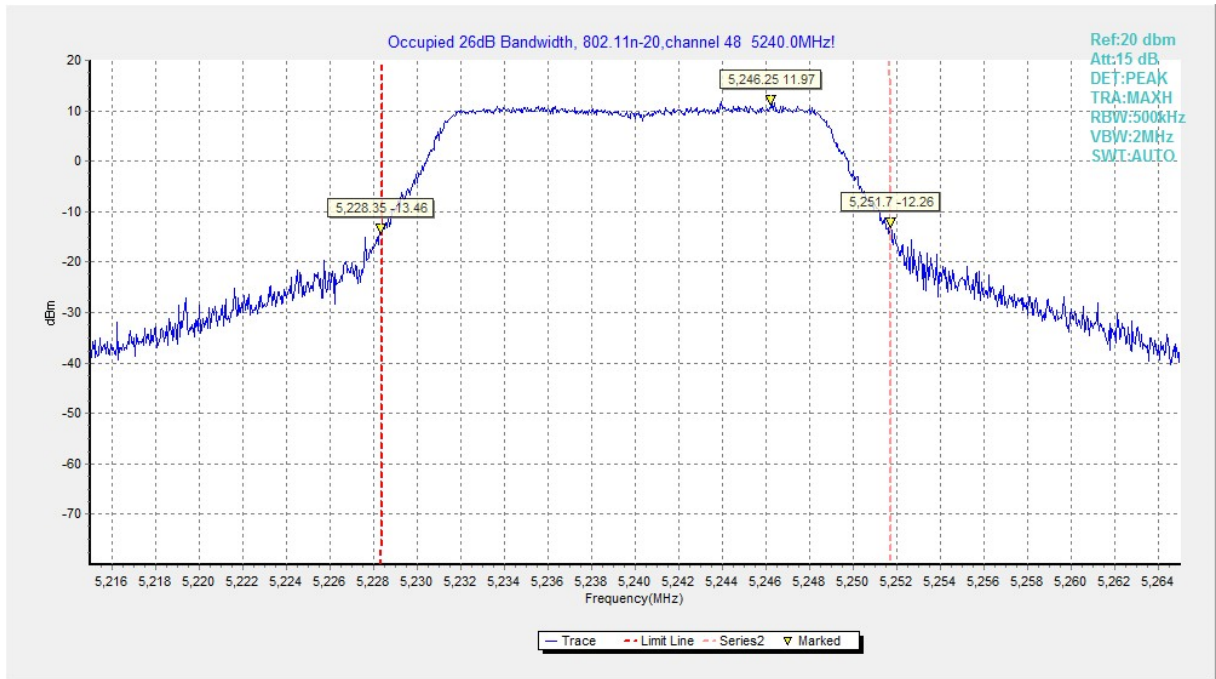
**Fig.10 Occupied 26dB Bandwidth (802.11a, 5720MHz)**



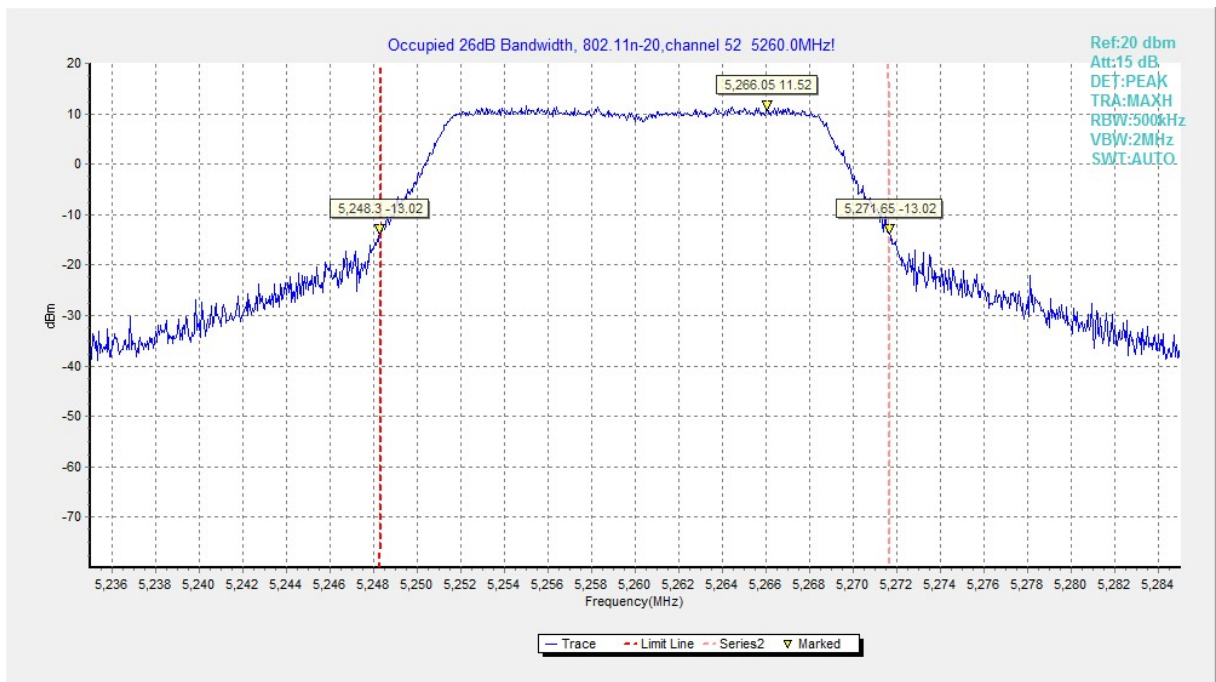
**Fig.11 Occupied 26dB Bandwidth (802.11n-HT20, 5180MHz)**



**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)**



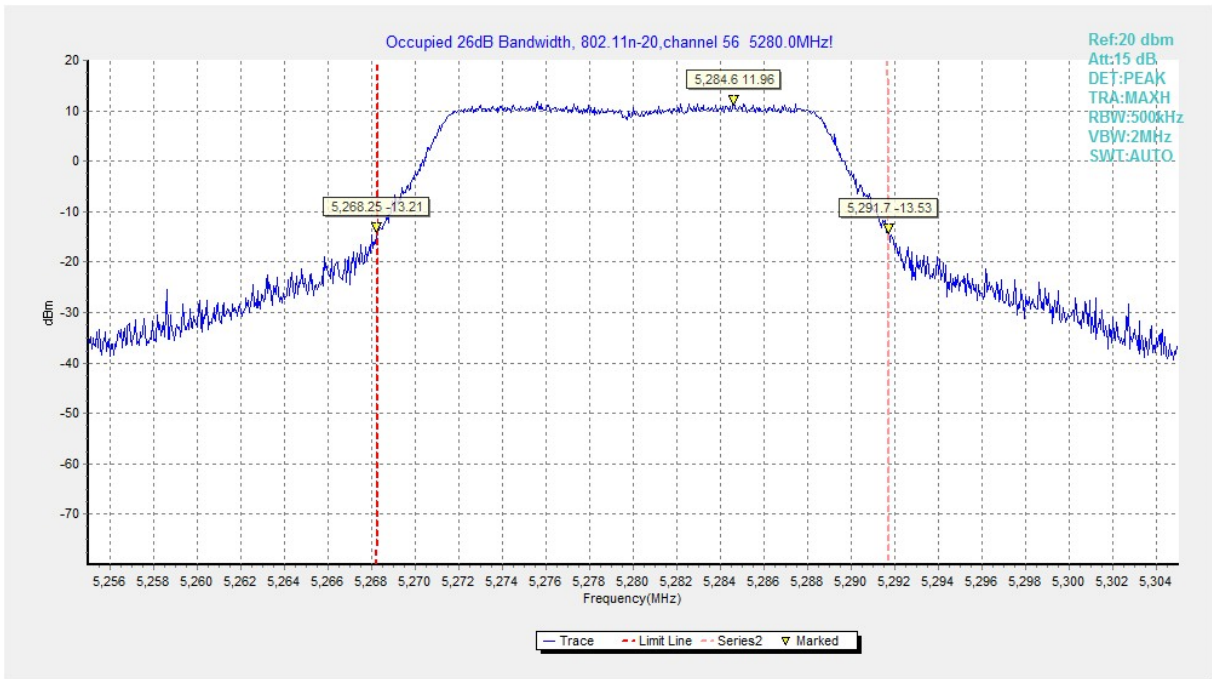


Fig.15 Occupied 26dB Bandwidth (802.11n-HT20, 5280MHz)

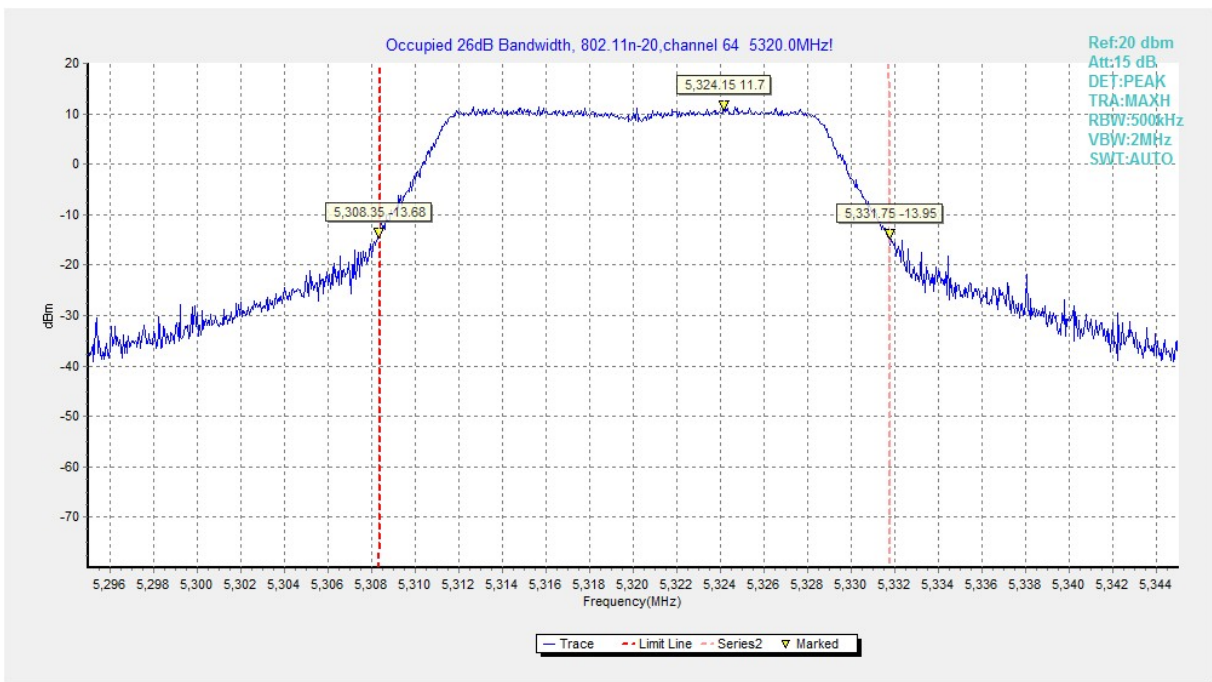


Fig.16 Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)

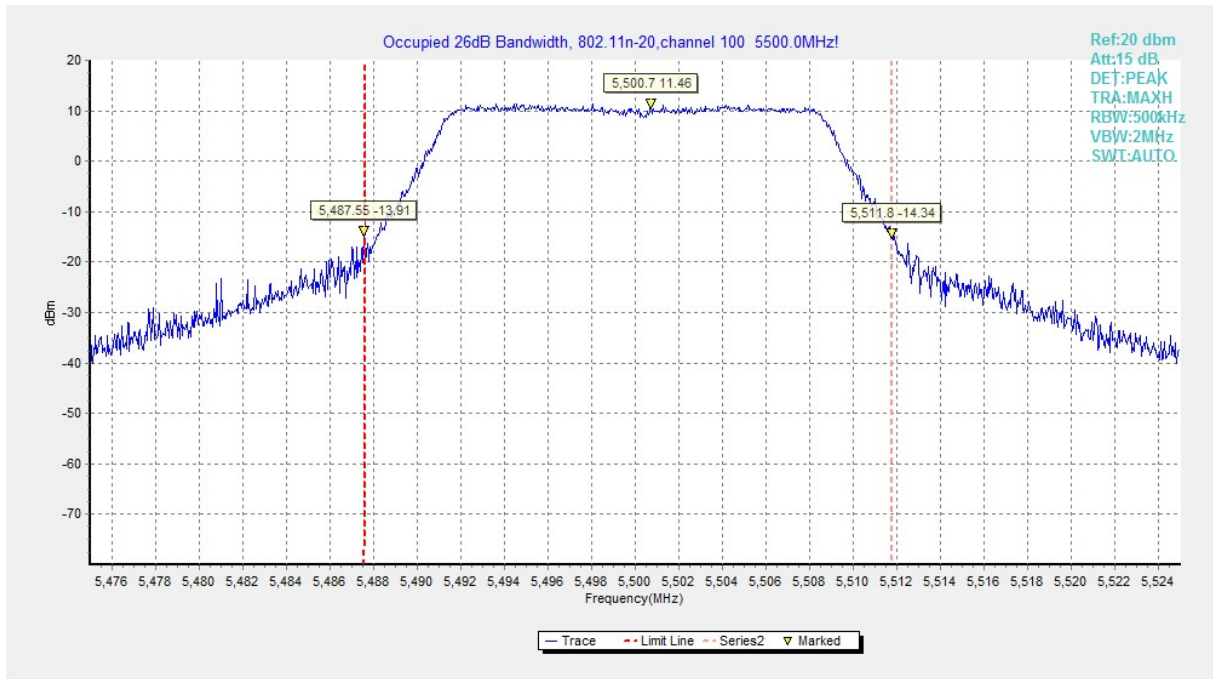


Fig.17 Occupied 26dB Bandwidth (802. 11n-HT20, 5500MHz)

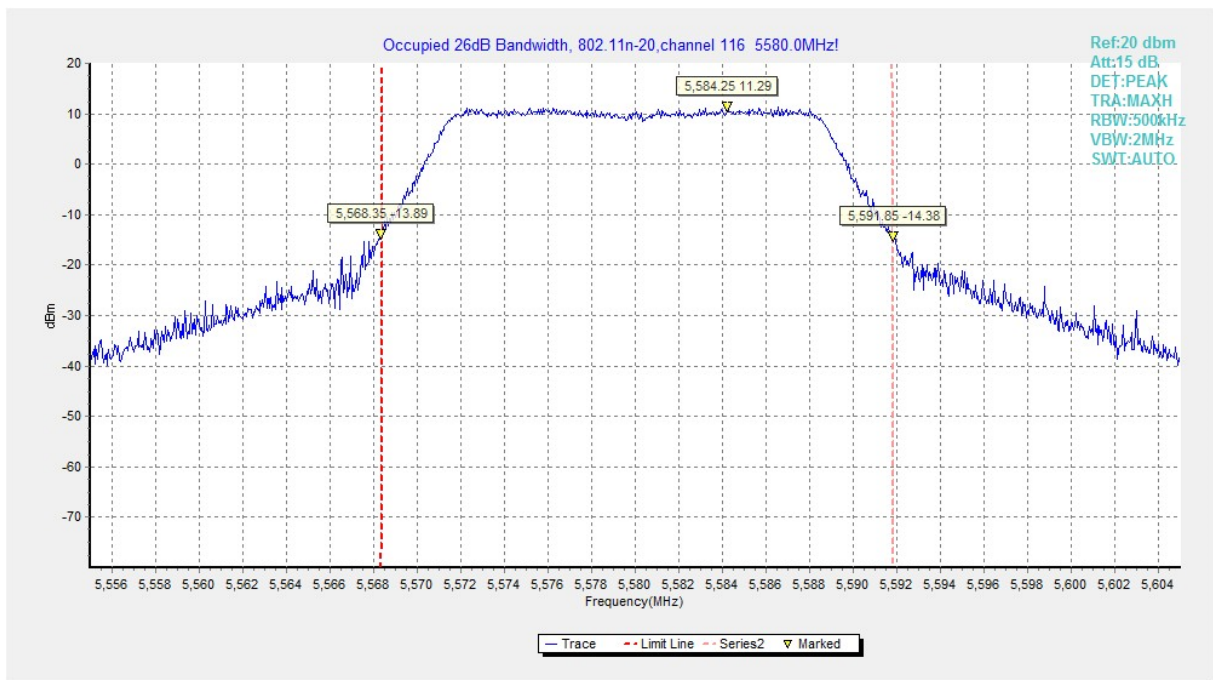
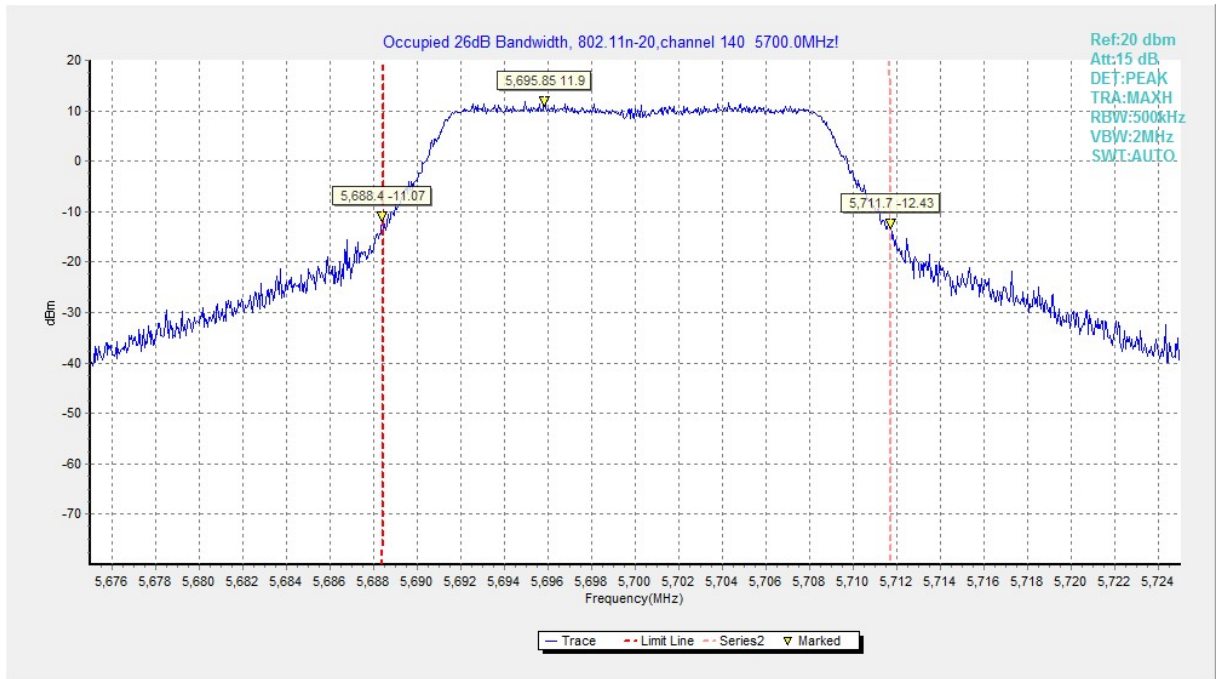
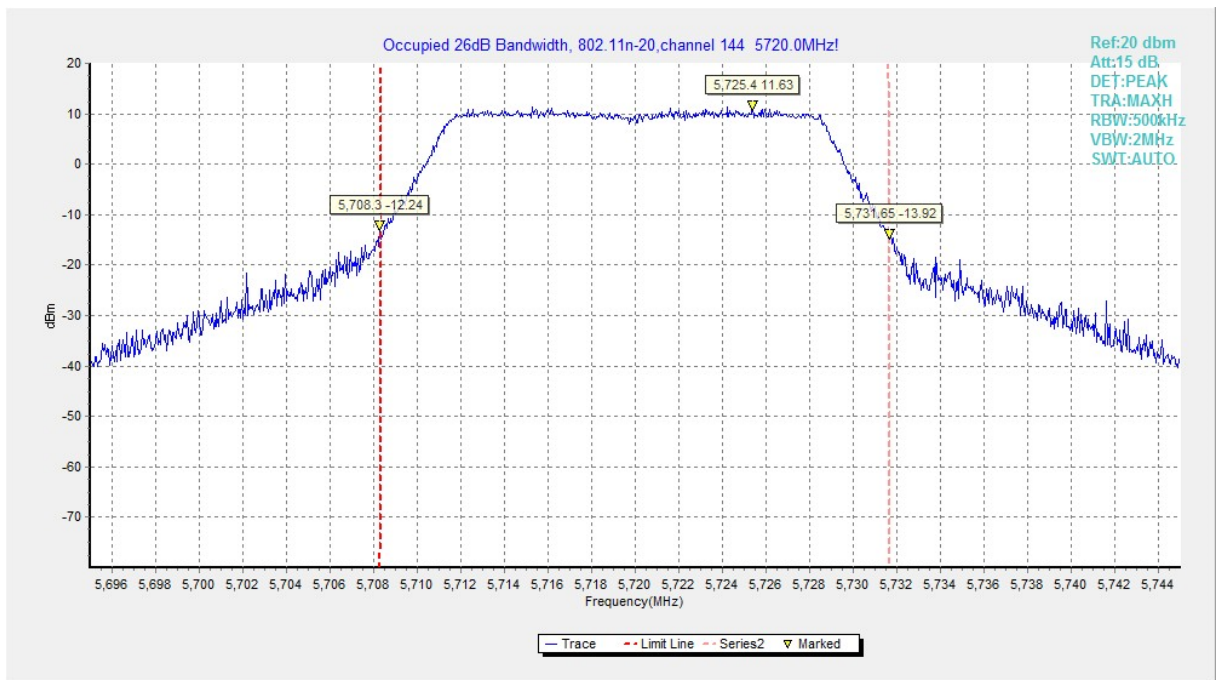


Fig.18 Occupied 26dB Bandwidth (802. 11n-HT20, 5580MHz)



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



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