



FCC PART 15 TEST REPORT No.I21Z61147-IOT03

for

HMD Global Oy

Smart Phone

TA-1399

With

FCC ID: 2AJOTTA-1399

Hardware Version: V1.0

Software Version: 04US_0_033

Issued Date: 2021-09-06

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
I21Z61147-IOT03	Rev.0	1st edition	2021-09-06
I21Z61147-IOT03	Rev.1	Change P.5.Testing Location 1	2021-09-09

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1. TEST LATORATORY

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 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 (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: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℃

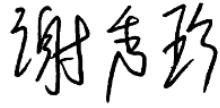
Relative Humidity: 20-75%

1.4. Project date

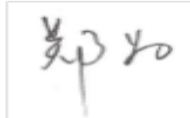
Testing Start Date: 2021-07-15

Testing End Date: 2021-09-06

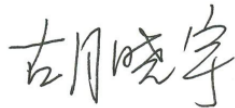
1.5. Signature



Xie Xiuzhen
(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: HMD Global Oy
Address: Bertel Jungin aukio 9, 02600 Espoo, Finland
City: /
Postal Code: /
Country: Finland
Telephone: +393 316272922
Fax: /

2.2 Manufacturer Information

Company Name: HMD Global Oy
Address: Bertel Jungin aukio 9, 02600 Espoo, Finland
City: /
Postal Code: /
Country: Finland
Telephone: +393 316272922
Fax: /

3. EQUIPMENT UNDER TEST (EUT) AND

ANCILLARY EQUIPMENT(AE)

3.1. About EUT

Description	Smart Phone
Model name	TA-1399
FCC ID	2AJOTTA-1399
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Voltage	3.8V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	354773220015030	V1.0	04US_0_033
EUT2	354773220017127	V1.0	04US_0_033

*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	NOTE
AE1	Battery	/
AE2	Adapter	/
AE3	USB Cable	/

AE1

Model	/
Manufacturer	TIANJIN LISHEN BATTERY JOINT-STOCK CO.,LTD.
Capacitance	4370mAh
Nominal voltage	3.87V

AE2

Model	1-CHUSQ302-097
Manufacturer	HUIZHOU PUAN ELECTRONICS CO.,LTD
Length	/

AE3

Model	/
Manufacturer	Huizhou Washin Electronics Co.,Ltd
Length	/

*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 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.

3.5. 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
KDB-662911 D01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g. MIMO Smart Antenna etc)	2013

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
Peak Power Spectral Density	15.407	/	P
Occupied 26dB Bandwidth	15.403	/	P
Band edge compliance (Radiated)	15.209	/	P
Transmitter spurious emissions (Radiated)	15.407	/	P
AC Powerline Conducted Emission (150kHz- 30MHz)	15.407	/	P
Frequency Stability	15.407	/	P
99% Occupied bandwidth	/	/	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℃
Voltage	3.8V
Humidity	44%

7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial	Manufacturer	Calibration	Calibration
-----	-----------	-------	--------	--------------	-------------	-------------

			Number		Period	Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2022-05-24
2	LISN	ENV216	101459	Rohde & Schwarz	1 year	2022-03-22
3	Test Receiver	ESCI	100766	Rohde & Schwarz	1 year	2022-03-09
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Antenna	3117	139065	ETS	1 year	2021-09-22
2	Antenna	VULB 9163	9163-482	SCHWARZBECK	1 year	2021-11-04
3	Test Receiver	ESU26	100376	R&S	1 year	2021-09-04
4	Test Receiver	FSV40	101047	R&S	1 year	2022-06-02
5	Universal Radio Communication Tester	CMW500	159408	R&S	1 year	2022-03-08
6	Test Receiver	FSV30	101525	R&S	1 year	2022-02-20
7	Antenna	LB-7180-NF	J203001300005	A-INFO	1 year	2022-02-28
8	Antenna	HFH2-Z2	829324	R&S	1 year	2021-12-10
9	Antenna	LB-180400-25-C-KF	2110084000006	A-INFO	1 year	2022-02-28
10	Anechoic Chamber	FACT-3	Ct000332-1074	ETS	1 year	2022-01-21

Note:

The test dates were before the calibration due dates of equipment used (the Test Receiver which series number is 100376).

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	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.84
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.82
$18\text{GHz} \leq f \leq 40\text{GHz}$	3.78

8.6. AC Power-line Conducted Emission

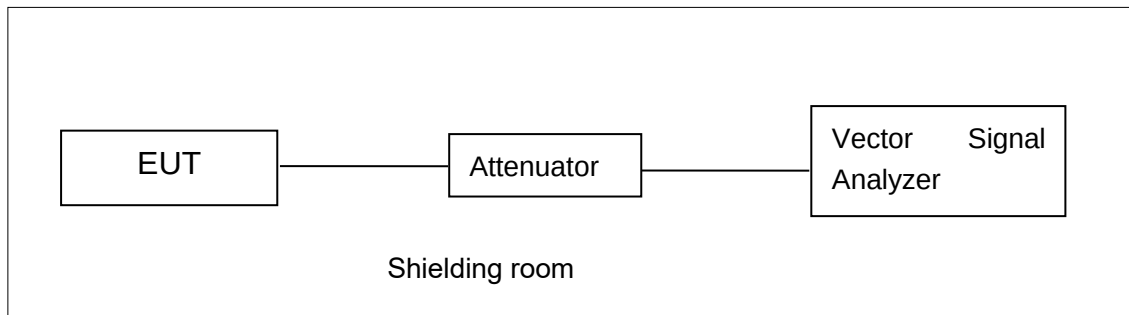
Measurement Uncertainty : 3.1,k=2

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

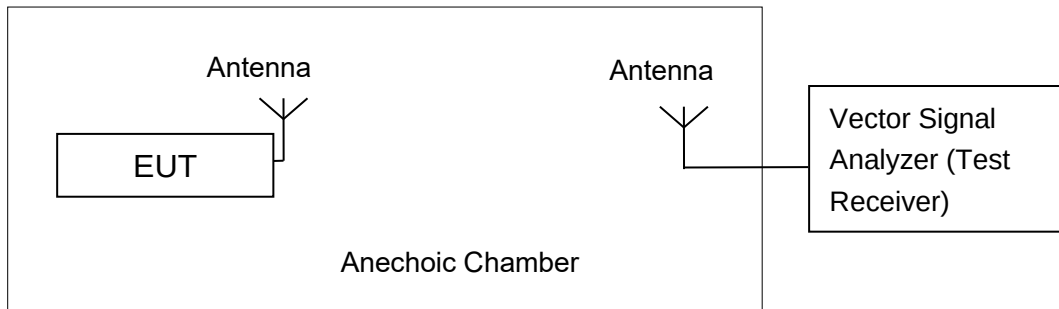


A.1.2. Radiated Emission Measurements

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)=23.11, B=22.50/2+5=16.25MHz,

802.11n-HT20=11+10*log(B)=23.29, B=23.85/2+5=16.925MHz,

802.11ac-VHT20=11+10*log(B)=23.31, B=24.05/2+5=17.025MHz,

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

802.11n-HT40: B=41.60/2+15=35.80MHz,

802.11ac-VHT40: B=41.55/2+15=35.775MHz,

802.11ac-VHT80: B=83.04/2+35=76.52MHz,

Measurement Results:

SISO-chain1

802.11a mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11a	6Mbps	16.56	16.55	16.13	16.24	16.15	16.54	16.41	15.78	16.10	16.31

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

802.11n-HT20 mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11n(HT20)	MCS0	16.39	16.31	16.26	16.35	16.24	16.32	16.16	15.65	15.90	16.14

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

802.11ac-HT20 mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11ac(VHT20)	MCS0	15.91	16.03	15.66	15.71	15.63	16.08	15.75	15.39	15.48	15.69

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

802.11n-HT40 mode

Mode	Rate	Test Result (dBm)							
		Frequency (MHz)							
		5190	5230	5270	5310	5510	5550	5670	5710
802.11n(HT40)	MCS0	16.24	16.03	16.03	16.16	16.07	16.04	16.03	15.98

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

802.11ac-HT40 mode

Mode	Rate	Test Result (dBm)							
		Frequency (MHz)							
		5190	5230	5270	5310	5510	5550	5670	5710
802.11ac(VHT40)	MCS0	15.53	15.47	15.55	15.60	15.50	15.40	15.41	15.39

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

802.11ac-HT80 mode

Mode	Rate	Test Result (dBm)				
		Frequency (MHz)				
		5210	5290	5530	5610	5690
802.11ac(VHT80)	MCS0	14.47	14.38	14.13	13.82	14.20

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

SISO-chain2

802.11a mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11a	6Mbps	16.11	16.16	16.25	16.39	16.37	16.65	16.09	16.41	16.74	16.61

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

802.11n-HT20 mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11n(HT20)	MCS0	16.41	16.36	16.22	16.29	16.12	16.36	16.08	15.88	16.40	16.37

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

802.11ac-HT20 mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11ac(VHT20)	MCS0	16.07	15.97	15.66	15.81	15.70	15.98	15.64	15.58	16.13	15.93

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

802.11n-HT40 mode

Mode	Rate	Test Result (dBm)							
		Frequency (MHz)							
		5190	5230	5270	5310	5510	5550	5670	5710
802.11n(HT40)	MCS0	16.28	16.07	16.05	15.93	16.06	15.63	15.96	16.36

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

802.11ac-HT40 mode

Mode	Rate	Test Result (dBm)							
		Frequency (MHz)							
		5190	5230	5270	5310	5510	5550	5670	5710
802.11ac(VHT40)	MCS0	15.50	15.69	15.73	15.69	15.50	15.09	15.30	15.73

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

802.11ac-HT80 mode

Mode	Rate	Test Result (dBm)				
		Frequency (MHz)				
		5210	5290	5530	5610	5690
802.11ac(VHT80)	MCS0	14.55	14.31	13.44	13.78	13.80

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

MIMO&CDD

802.11a mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11a	6Mbps	19.06	19.36	19.16	19.14	19.18	19.45	19.24	19.48	19.64	19.65

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

802.11n-HT20 mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11n(HT20)	MCS0	19.56	19.67	19.38	19.32	19.27	19.58	19.60	19.41	19.68	19.74

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

802.11ac-HT20 mode

Mode	Rate	Test Result (dBm)									
		Frequency (MHz)									
		5180	5200	5240	5260	5280	5320	5500	5580	5700	5720
802.11ac(VHT20)	MCS0	18.81	18.97	18.81	18.77	18.78	19.18	18.79	19.10	19.20	19.11

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

802.11n-HT40 mode

Mode	Rate	Test Result (dBm)							
		Frequency (MHz)							
		5190	5230	5270	5310	5510	5550	5670	5710
802.11n(HT40)	MCS0	18.69	18.77	18.50	18.73	18.80	18.78	19.09	19.17

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

802.11ac-HT40 mode

Mode	Rate	Test Result (dBm)							
		Frequency (MHz)							
		5190	5230	5270	5310	5510	5550	5670	5710
802.11ac(VHT40)	MCS0	18.83	18.69	18.58	18.75	18.87	18.86	19.02	18.90

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

802.11ac-HT80 mode

Mode	Rate	Test Result (dBm)				
		Frequency (MHz)				
		5210	5290	5530	5610	5690
802.11ac(VHT80)	MCS0	17.65	17.62	17.50	17.68	17.80

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

The duty cycle of all mode are greater than or equal to 98%.

Conclusion: 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:

SISO-chain2

Mode	Frequency	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	6.11	P
	5200 MHz	6.19	P
	5240 MHz	5.80	P
	5260 MHz	6.07	P
	5280 MHz	5.87	P
	5320 MHz	6.37	P
	5500 MHz	6.31	P
	5580 MHz	6.20	P
	5700 MHz	6.60	P
	5720 MHz	6.80	P
802.11n HT20	5180 MHz	5.61	P
	5200 MHz	5.75	P
	5240 MHz	5.40	P
	5260 MHz	5.57	P
	5280 MHz	5.50	P
	5320 MHz	5.93	P
	5500 MHz	5.89	P
	5580 MHz	5.79	P
	5700 MHz	6.13	P
	5720 MHz	6.32	P
802.11n HT40	5190 MHz	2.73	P
	5230 MHz	2.36	P
	5270 MHz	2.53	P
	5310 MHz	2.54	P
	5510 MHz	2.85	P
	5550 MHz	2.09	P
	5670 MHz	2.49	P
	5710 MHz	2.54	P
802.11ac HT80	5210MHz	-2.46	P
	5290MHz	-2.34	P
	5530MHz	-2.65	P
	5610MHz	-2.22	P

	5690MHz	-1.79	P
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MIMO&CDD

Mode	Frequency	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	8.97	P
	5200 MHz	9.16	P
	5240 MHz	8.64	P
	5260 MHz	9.06	P
	5280 MHz	9.12	P
	5320 MHz	9.38	P
	5500 MHz	9.31	P
	5580 MHz	9.03	P
	5700 MHz	9.39	P
	5720 MHz	8.92	P
802.11n HT20	5180 MHz	8.55	P
	5200 MHz	8.60	P
	5240 MHz	8.28	P
	5260 MHz	8.76	P
	5280 MHz	8.76	P
	5320 MHz	9.11	P
	5500 MHz	9.08	P
	5580 MHz	8.55	P
	5700 MHz	8.86	P
	5720 MHz	8.46	P
802.11n HT40	5190 MHz	5.78	P
	5230 MHz	5.41	P
	5270 MHz	5.50	P
	5310 MHz	5.51	P
	5510 MHz	6.06	P
	5550 MHz	4.80	P
	5670 MHz	5.47	P
	5710 MHz	5.75	P
802.11ac HT80	5210MHz	0.86	P
	5290MHz	0.68	P
	5530MHz	0.70	P
	5610MHz	-0.53	P
	5690MHz	0.72	P

Conclusion: PASS
A.4. Occupied 26dB Bandwidth(conducted)
Measurement Limit:

Standard	Limit (kHz)
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FCC 47 CFR Part 15.403 (i)	/
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The measurement is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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Measurement Result:

Mode	Frequency	Occupied 26dB Bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.1	24.05	P
	5200 MHz	Fig.2	24.40	P
	5240 MHz	Fig.3	24.50	P
	5260 MHz	Fig.4	23.20	P
	5280 MHz	Fig.5	23.40	P
	5320 MHz	Fig.6	23.25	P
	5500 MHz	Fig.7	22.40	P
	5580 MHz	Fig.8	22.10	P
	5700 MHz	Fig.9	22.75	P
	5720 MHz	Fig.10	22.50	P
802.11n HT20	5180 MHz	Fig.11	25.00	P
	5200 MHz	Fig.12	24.35	P
	5240 MHz	Fig.13	24.95	P
	5260 MHz	Fig.14	23.90	P
	5280 MHz	Fig.15	24.50	P
	5320 MHz	Fig.16	24.25	P
	5500 MHz	Fig.17	23.90	P
	5580 MHz	Fig.18	23.70	P
	5700 MHz	Fig.19	24.15	P
	5720 MHz	Fig.20	23.85	P
802.11n HT40	5190 MHz	Fig.21	41.68	P
	5230 MHz	Fig.22	41.52	P
	5270 MHz	Fig.23	41.52	P
	5310 MHz	Fig.24	41.52	P
	5510 MHz	Fig.25	41.36	P
	5550 MHz	Fig.26	41.52	P
	5670 MHz	Fig.27	41.76	P
	5710 MHz	Fig.28	41.60	P
802.11ac HT80	5210MHz	Fig.29	83.52	P
	5290MHz	Fig.30	83.04	P
	5530MHz	Fig.31	82.88	P
	5610MHz	Fig.32	83.36	P
	5690MHz	Fig.33	83.04	P

Conclusion: PASS
Test graphs as below:

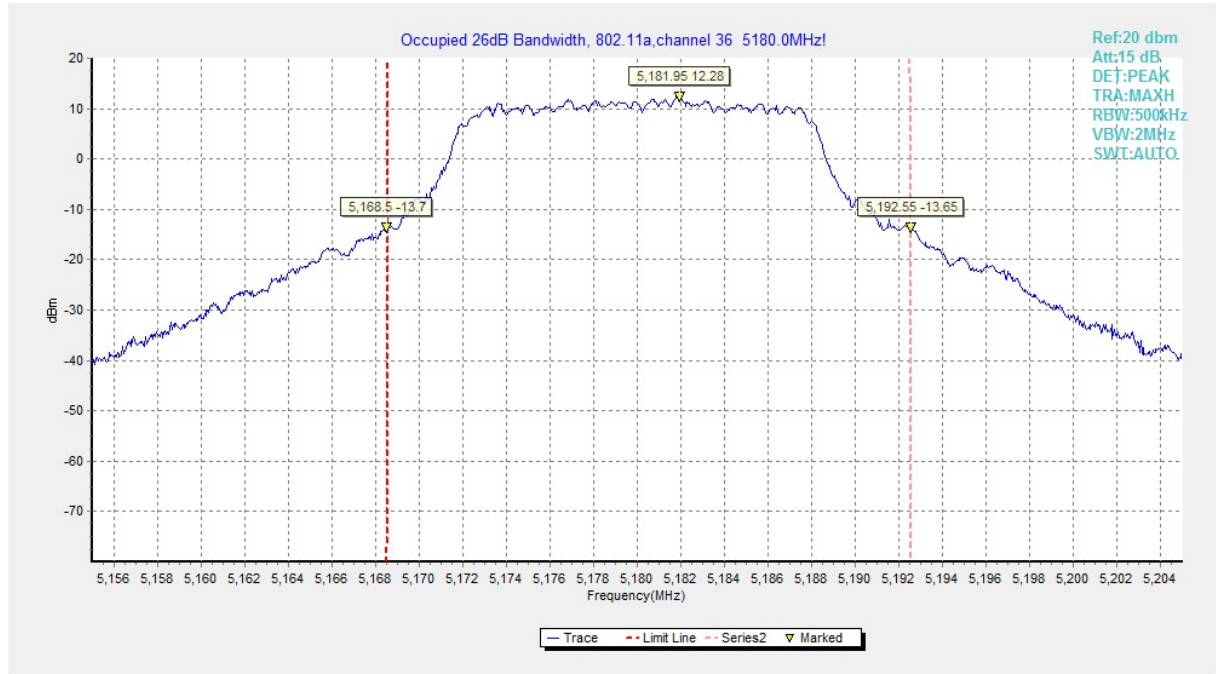


Fig.1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

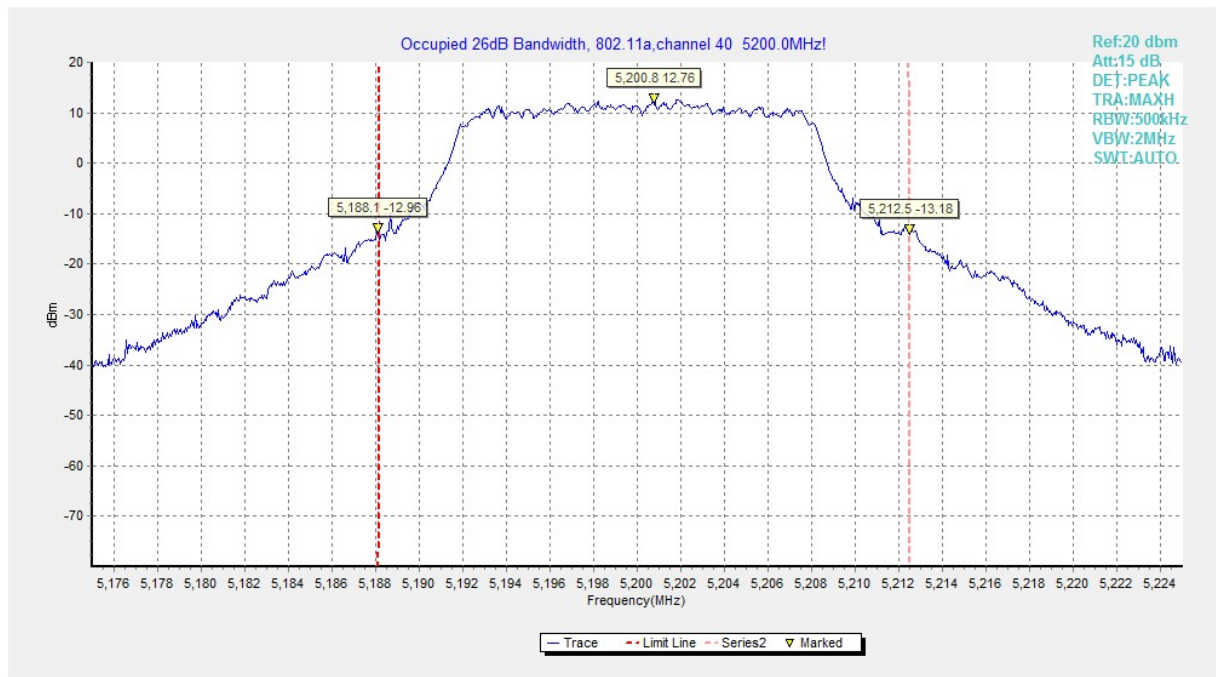


Fig.2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

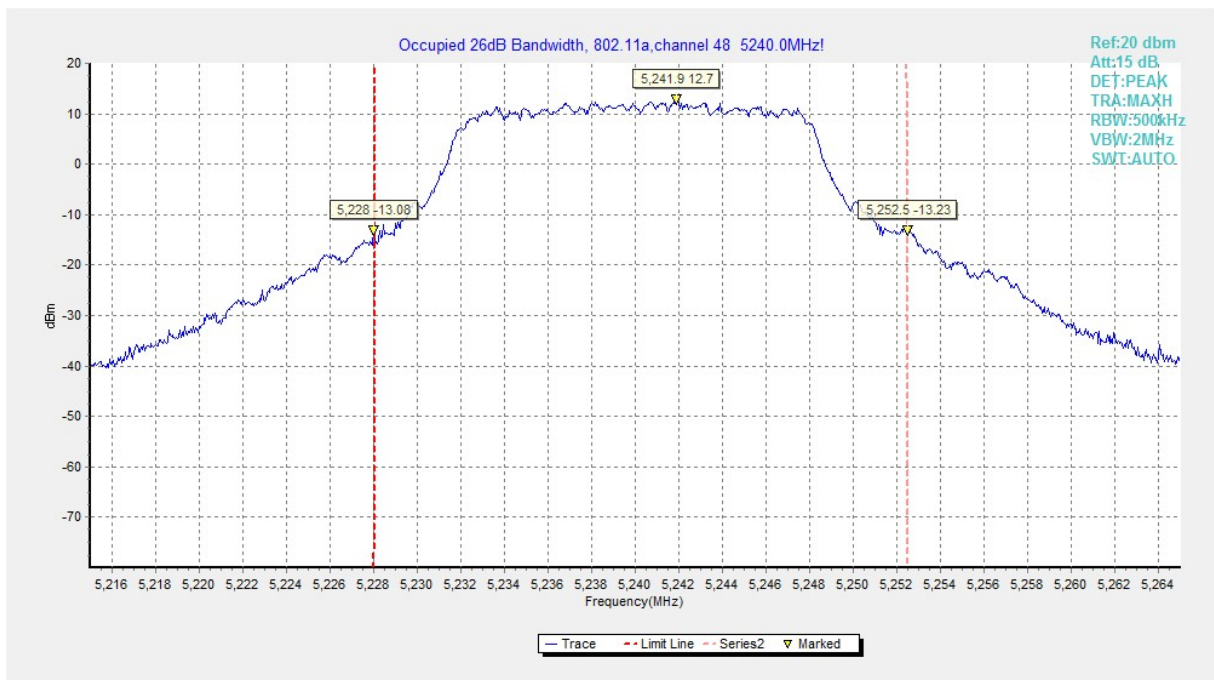


Fig.3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

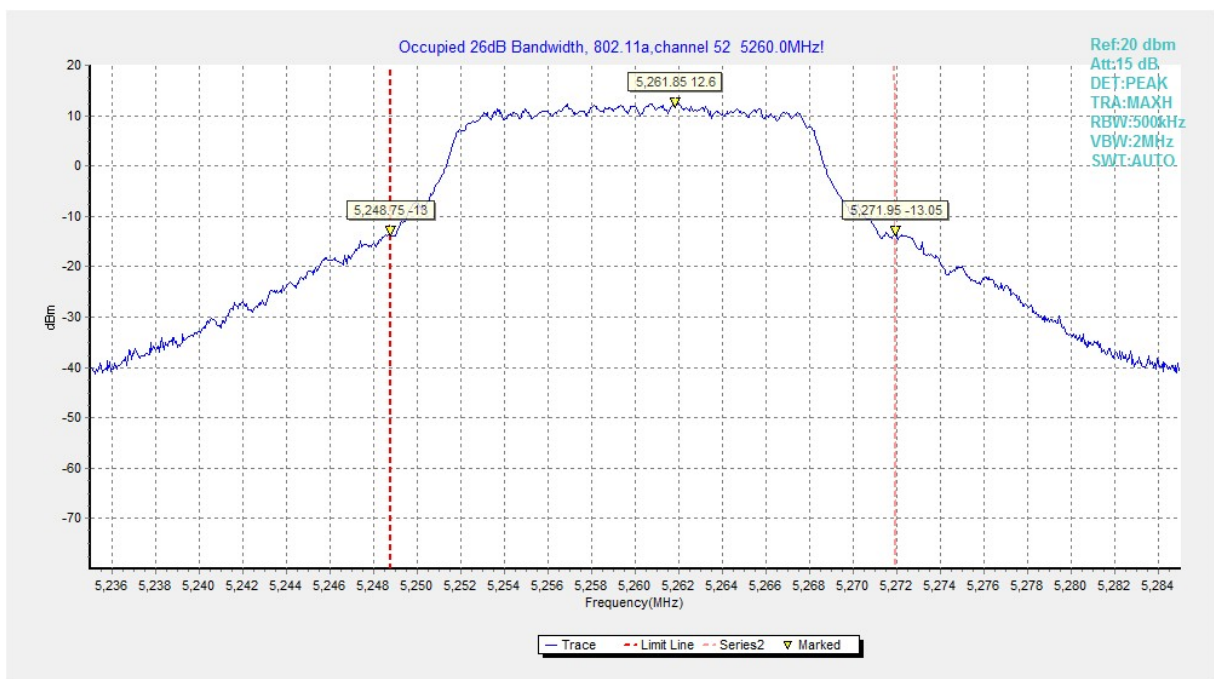


Fig.4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

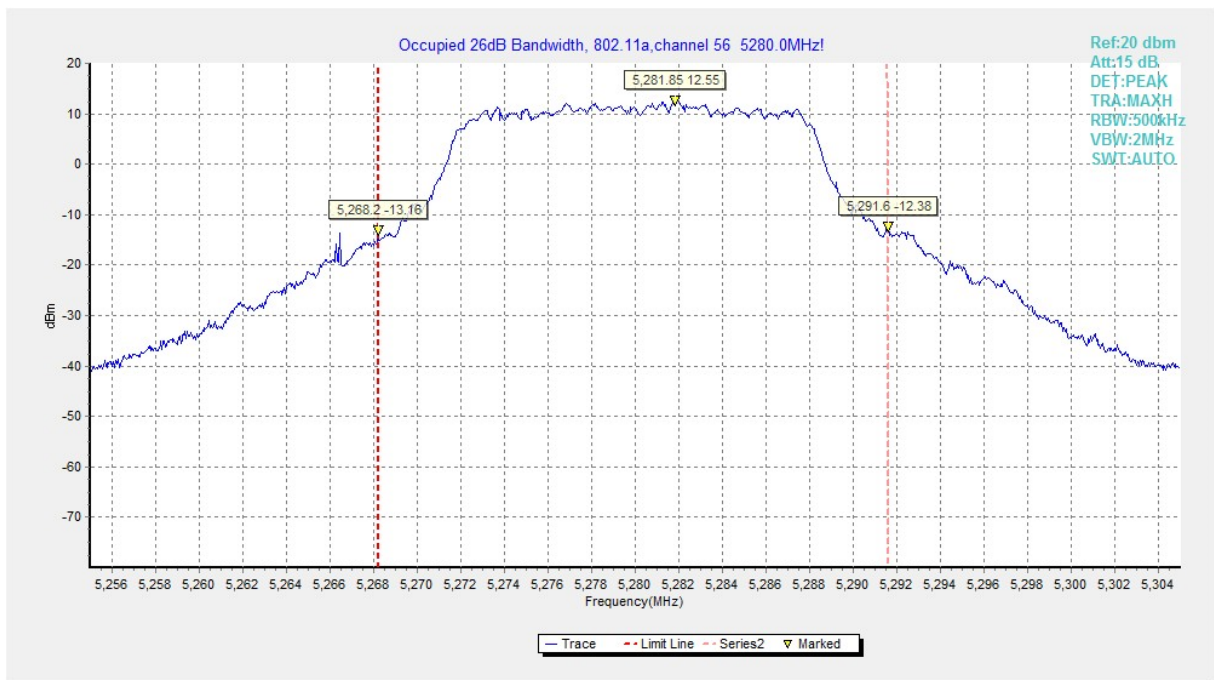


Fig.5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

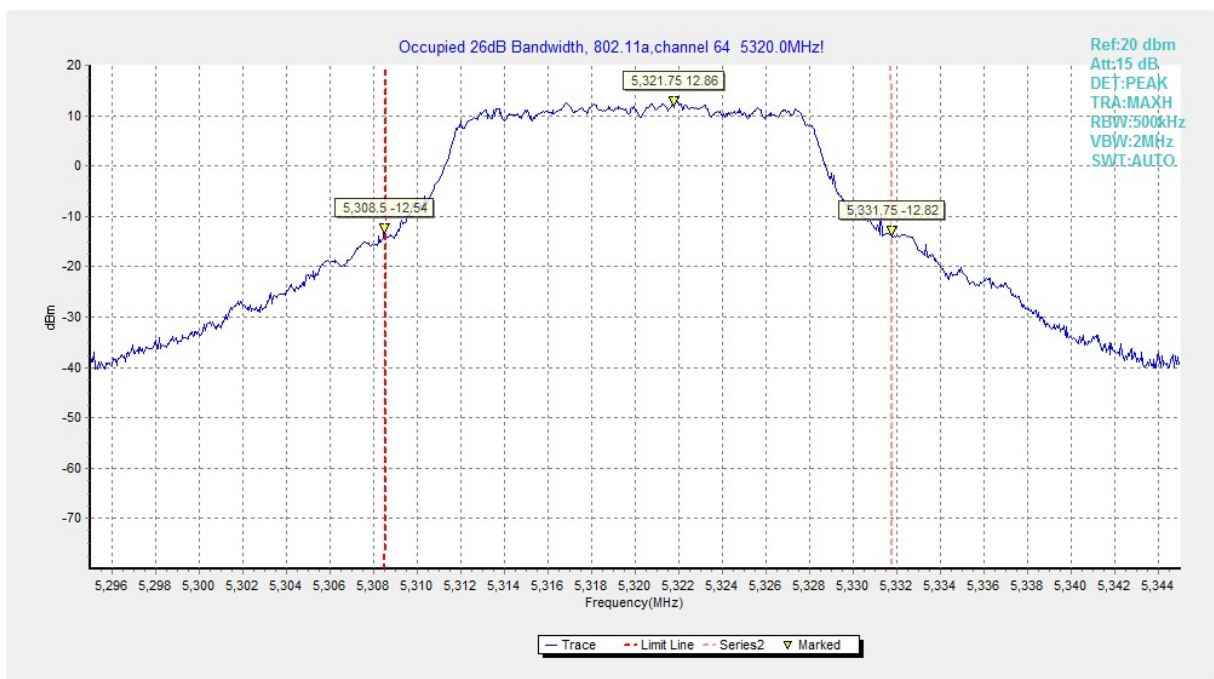


Fig.6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

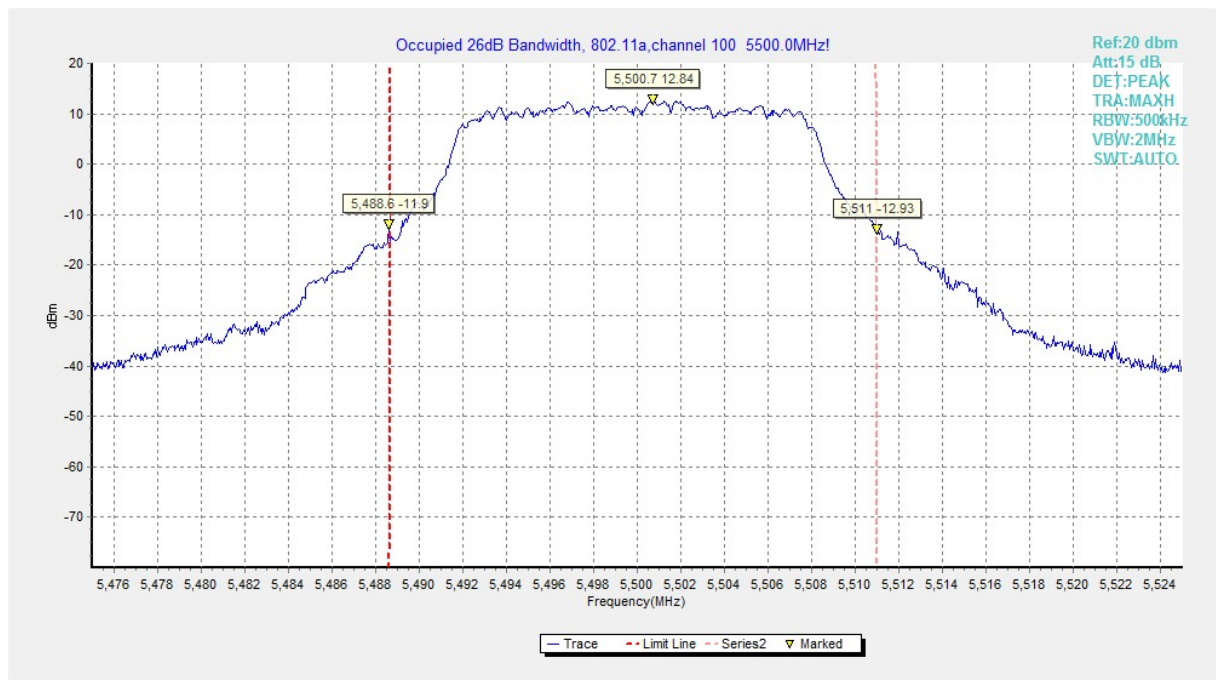


Fig.7 Occupied 26dB Bandwidth (802.11a, 5500MHz)

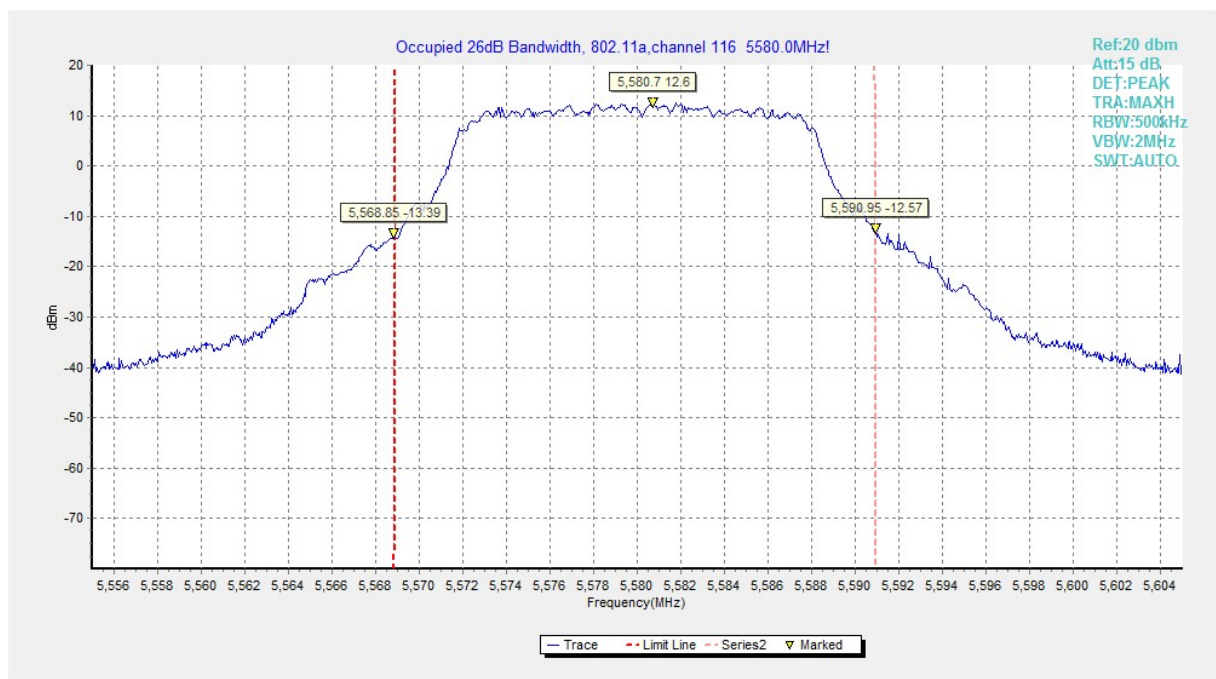


Fig.8 Occupied 26dB Bandwidth (802.11a, 5580MHz)

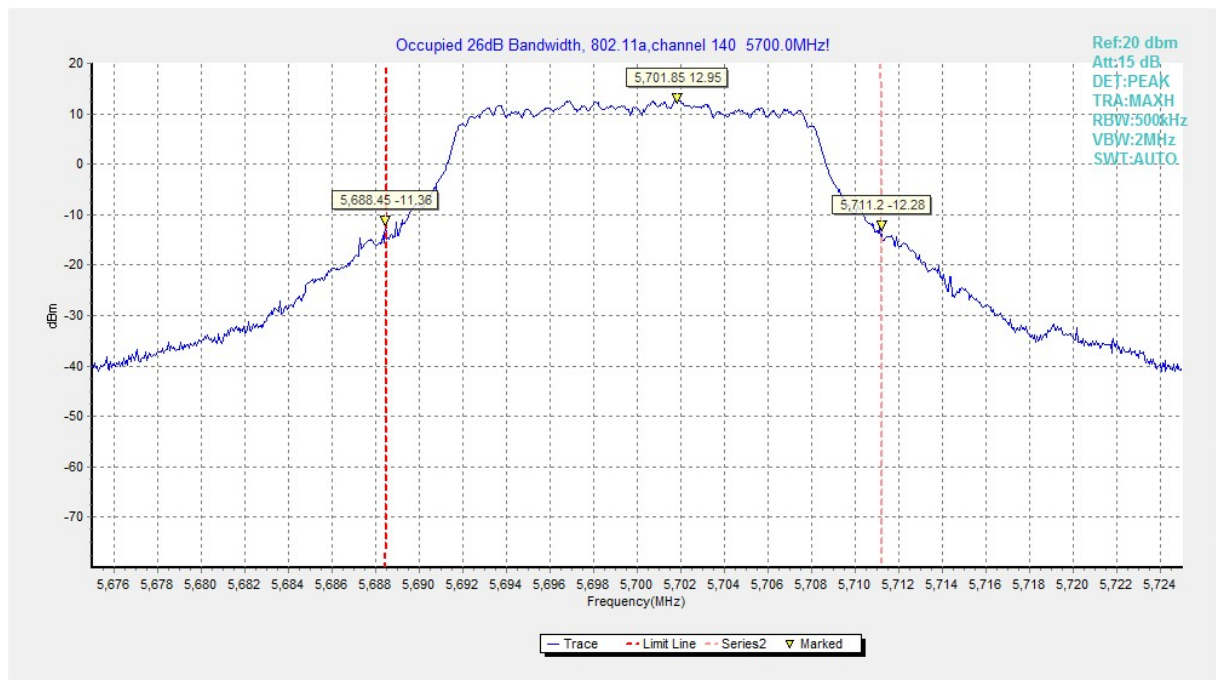


Fig.9 Occupied 26dB Bandwidth (802.11a, 5700MHz)

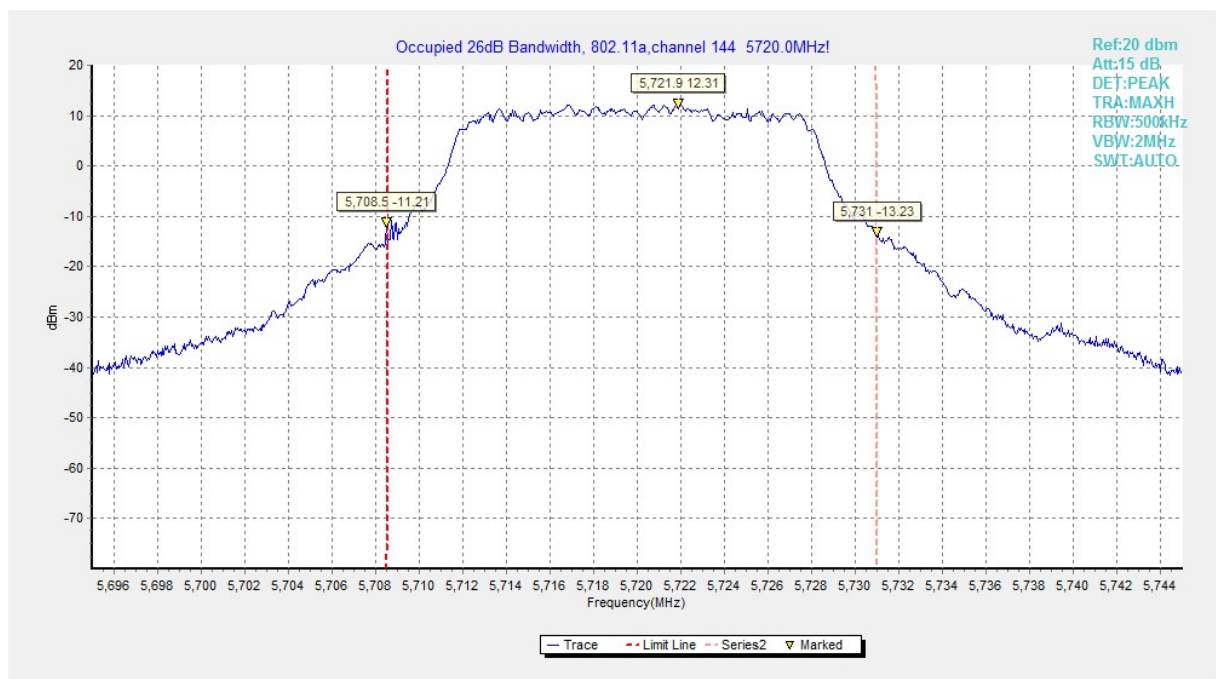


Fig.10 Occupied 26dB Bandwidth (802.11a, 5720MHz)

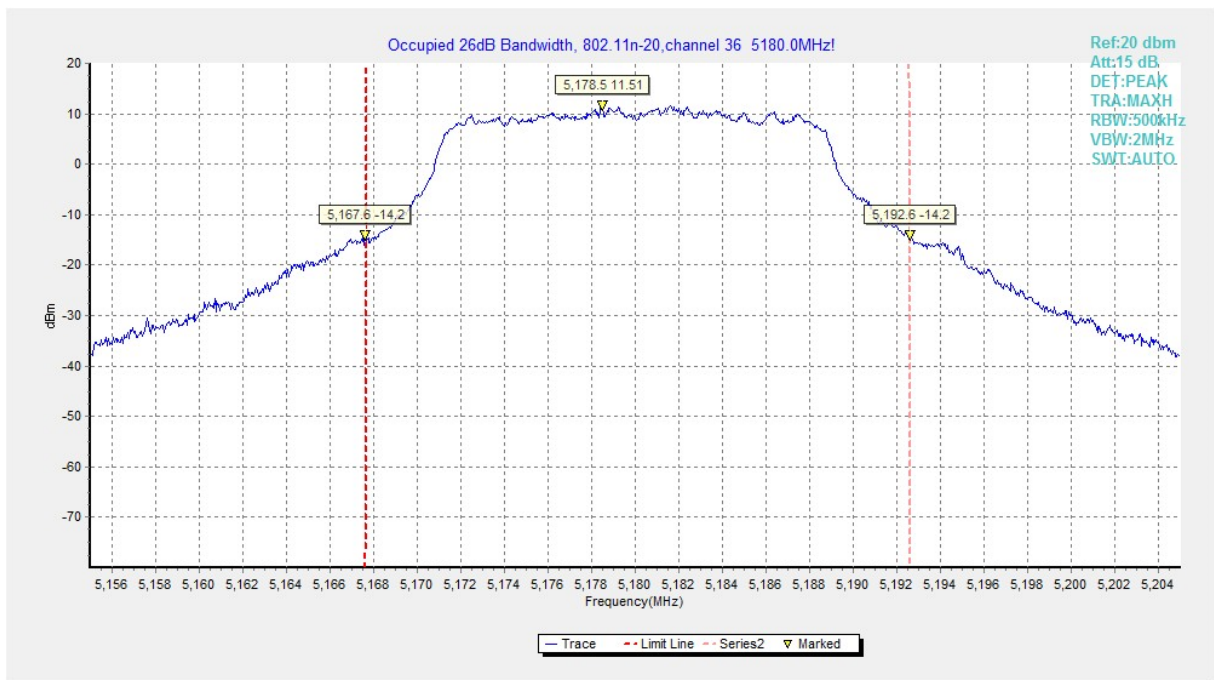


Fig.11 Occupied 26dB Bandwidth (802.11n-HT20, 5180MHz)

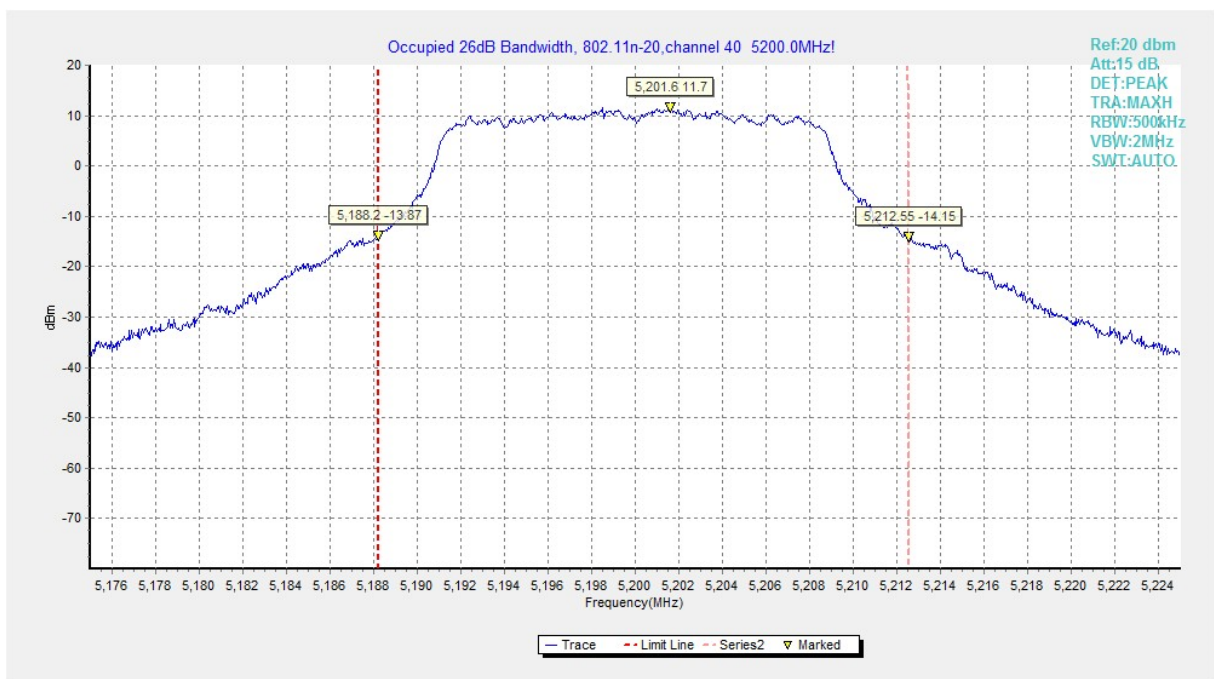


Fig.12 Occupied 26dB Bandwidth (802.11n-HT20, 5200MHz)

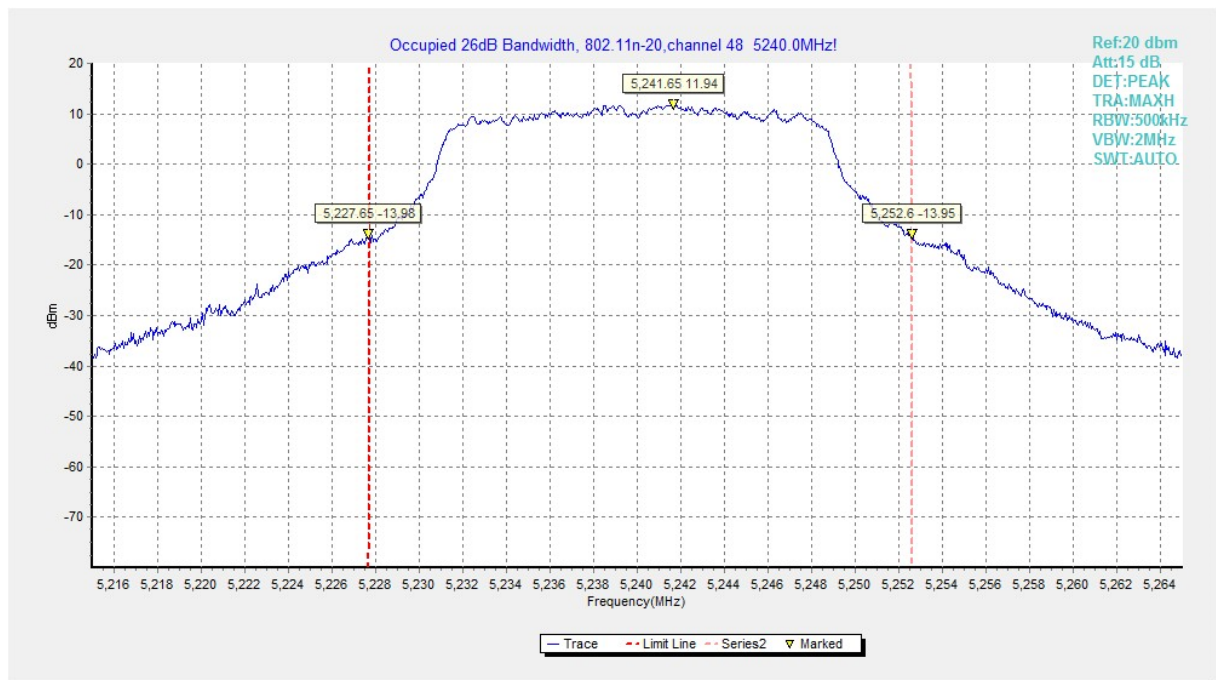


Fig.13 Occupied 26dB Bandwidth (802.11n-HT20, 5240MHz)

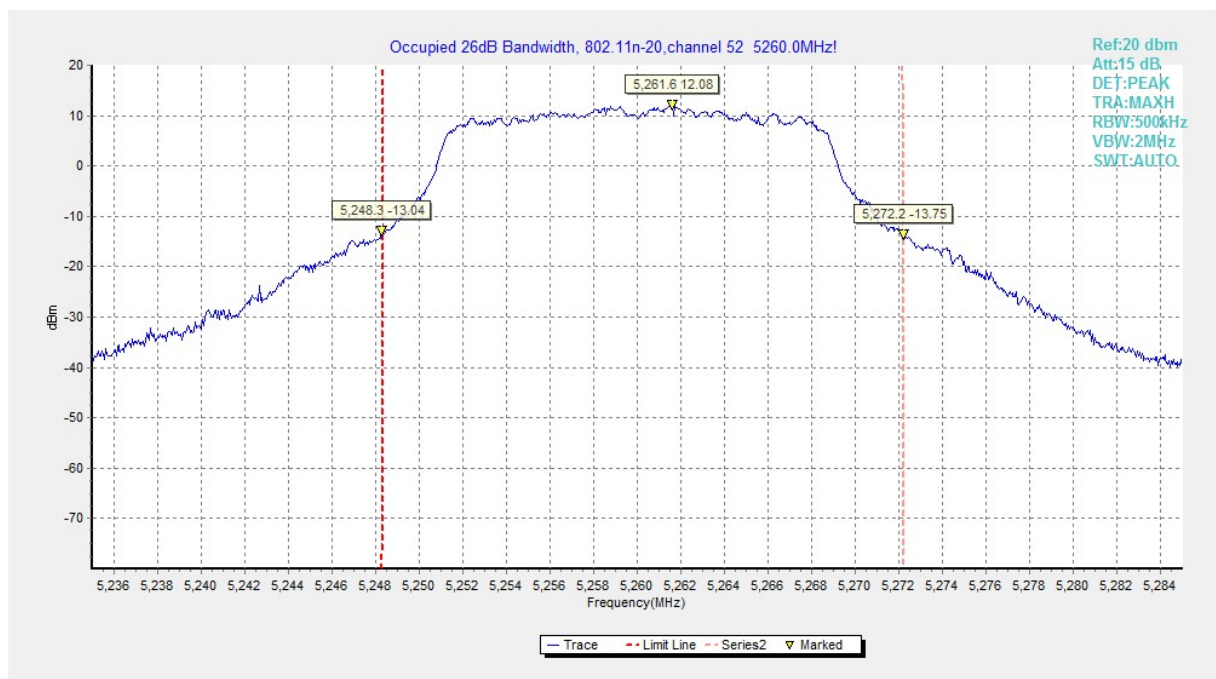


Fig.14 Occupied 26dB Bandwidth (802.11n-HT20, 5260MHz)

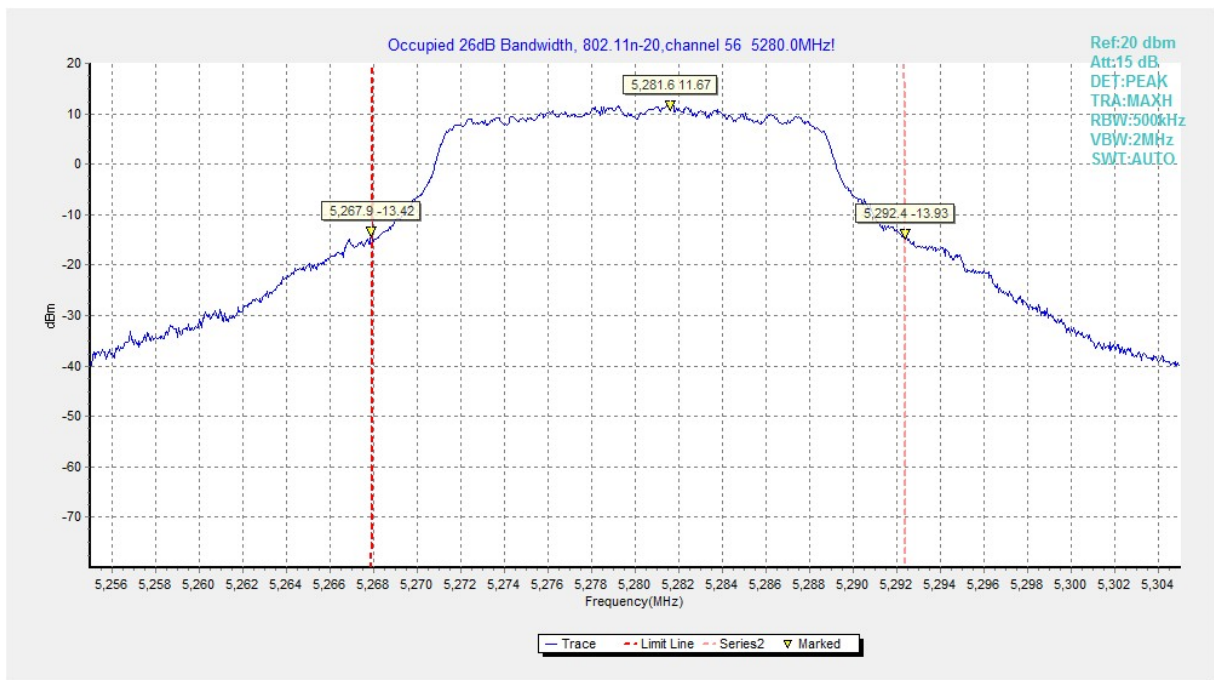


Fig.15 Occupied 26dB Bandwidth (802.11n-HT20, 5280MHz)

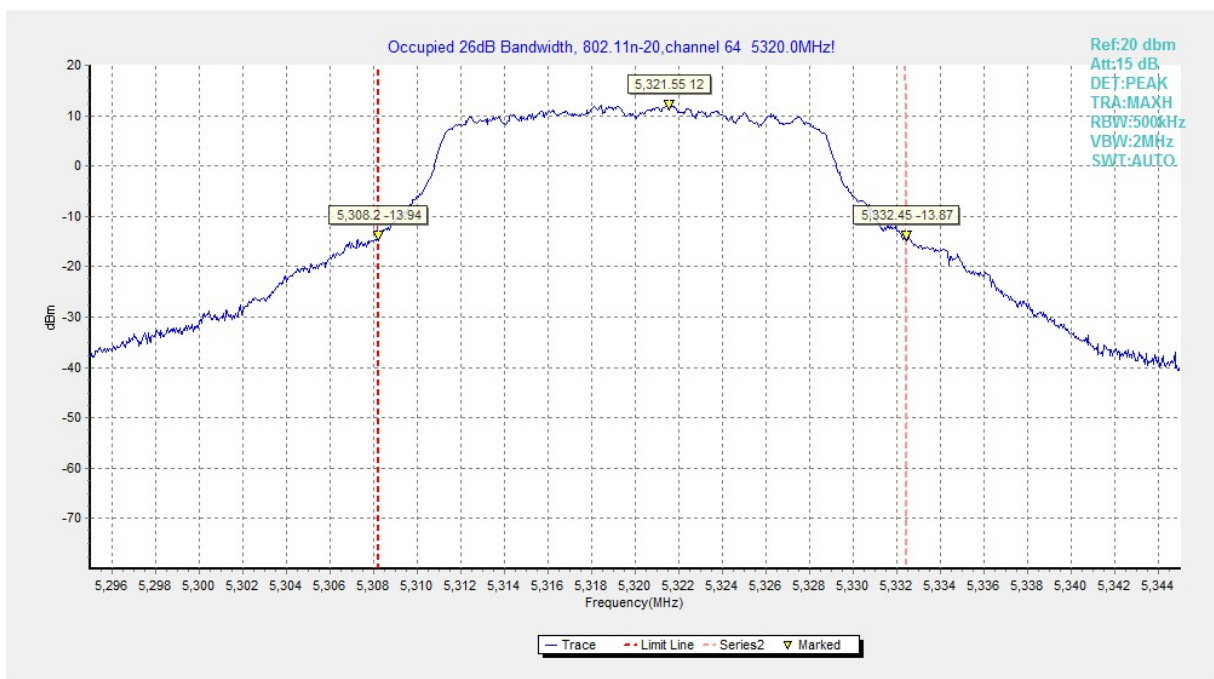


Fig.16 Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)

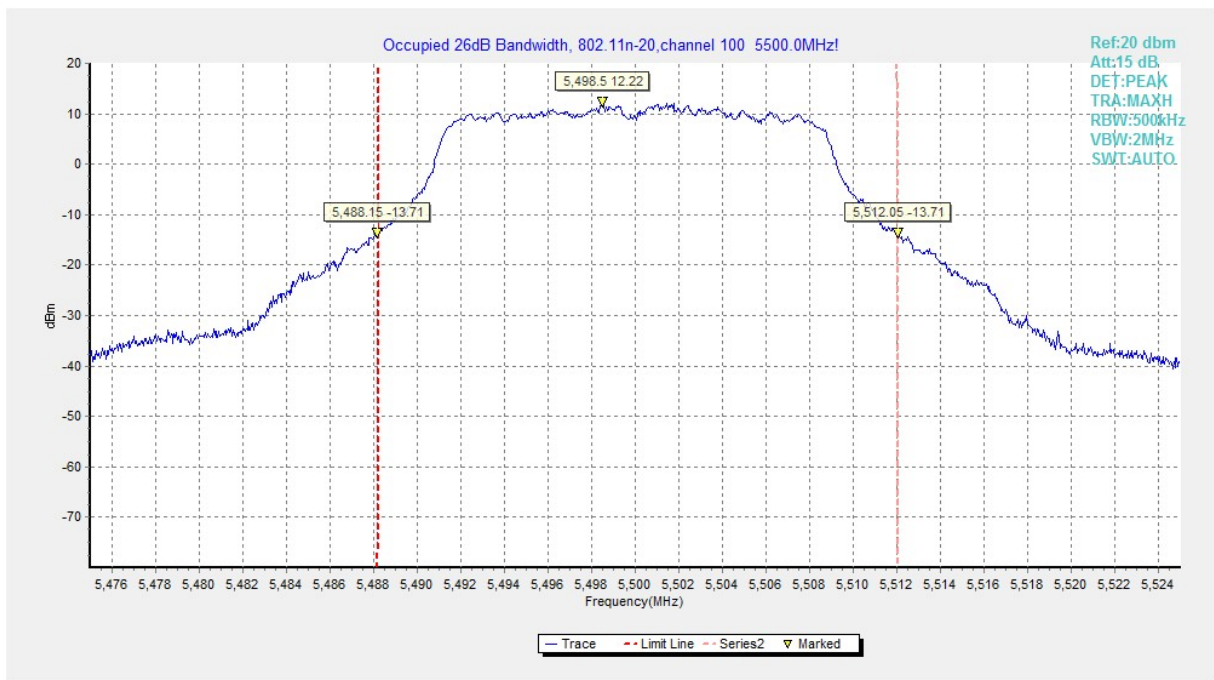


Fig.17 Occupied 26dB Bandwidth (802. 11n-HT20, 5500MHz)

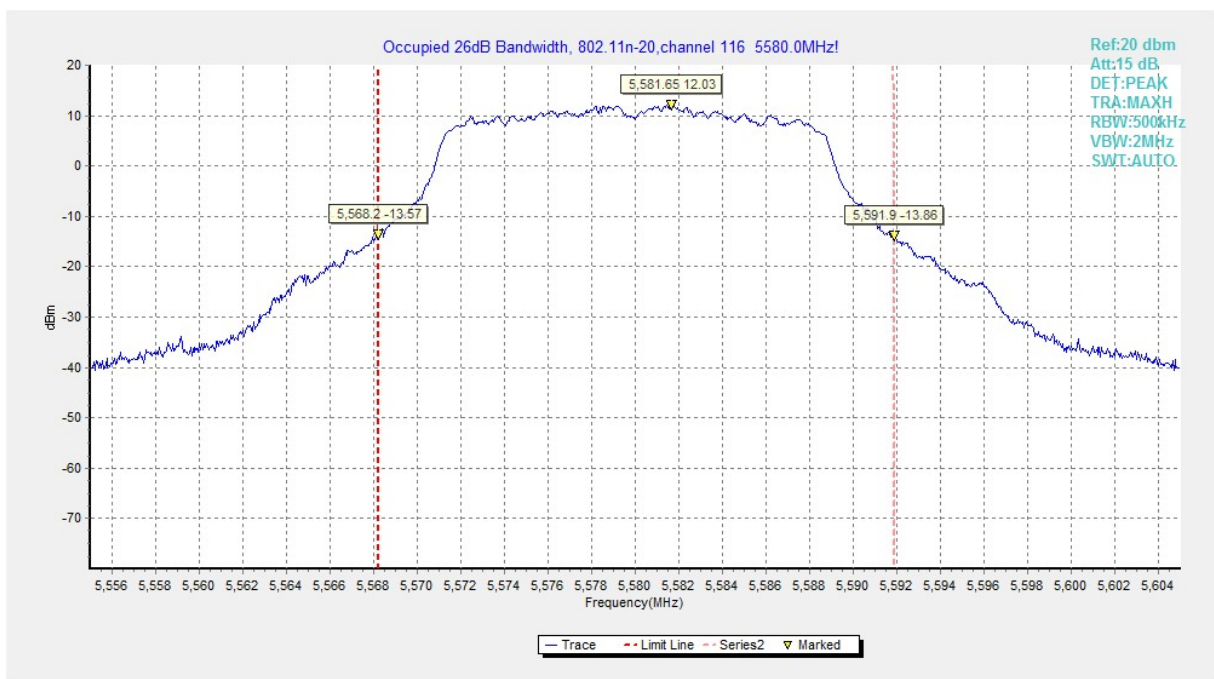


Fig.18 Occupied 26dB Bandwidth (802. 11n-HT20, 5580MHz)

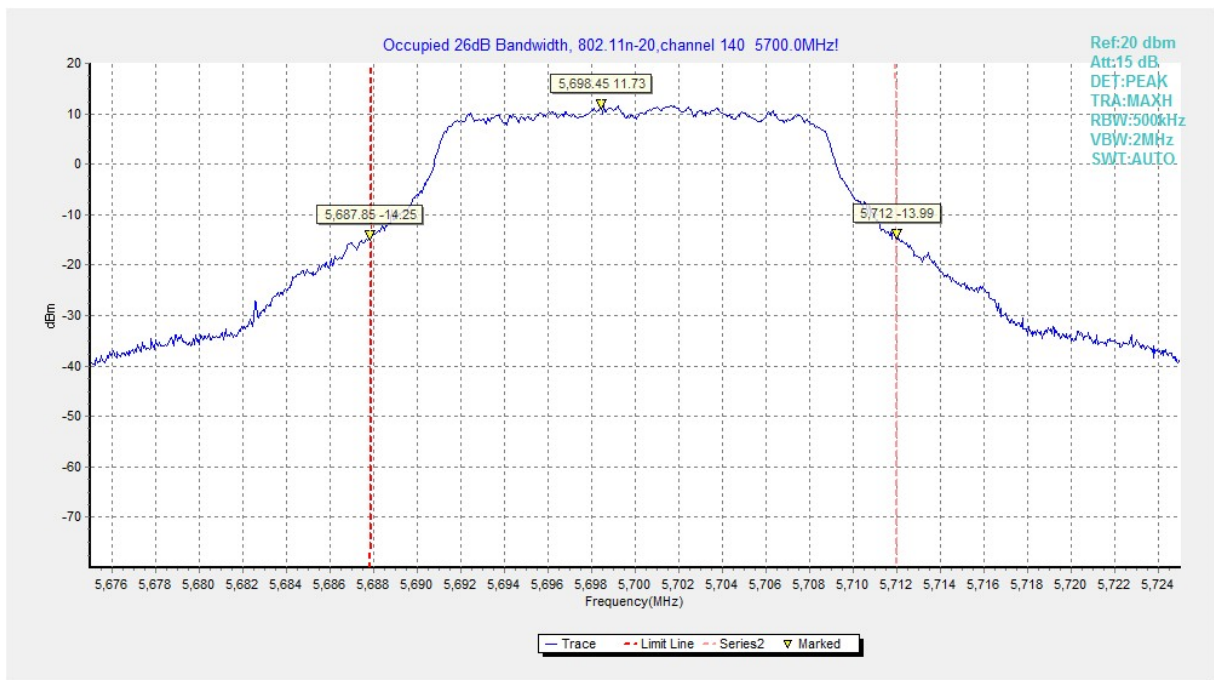


Fig.19 Occupied 26dB Bandwidth (802. 11n-HT20, 5700MHz)

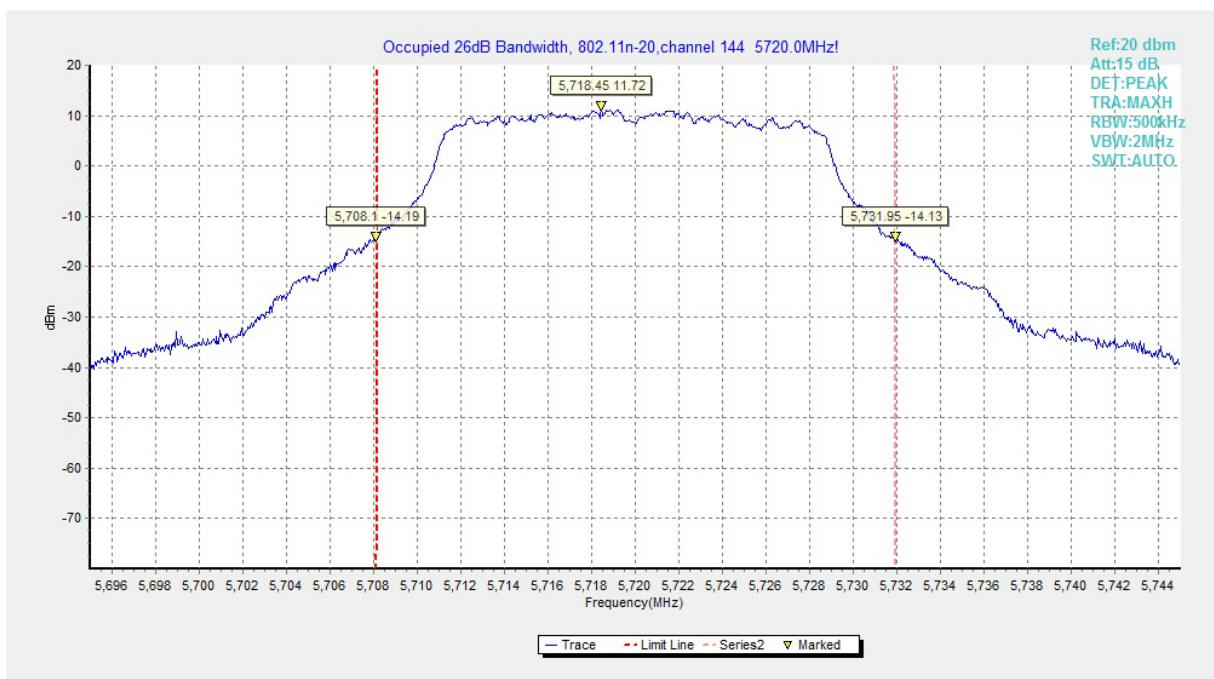


Fig.20 Occupied 26dB Bandwidth (802. 11n-HT20, 5720MHz)