



TEST REPORT

No. I20N01092-RLAN

TCL Communication Ltd.

TABLET PC

Model Name: 9013A

with

Hardware Version: PIO

Software Version: 1F12

FCC ID: 2ACCJBT18

Issued Date: 2020-06-10

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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1. Summary of Test Report

1.1. Test Items

Description	TABLET PC
Model Name	9013A
Applicant's name	TCL Communication Ltd.
Manufacturer's Name	TCL Communication Ltd.

1.2. Test Standards

FCC Part15-2019; ANSI C63.10-2013; 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:	2020-05-06
Testing End Date:	2020-05-29

1.6. Signature

An Ran

(Prepared this test report)

Tang Weisheng

(Reviewed this test report)

Zhang Bojun

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person: Gong Zhizhou
E-Mail: zhizhou.gong@tcl.com
Telephone: 0086-755-36611722
Fax: 0086-755-36612000-81722

2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person: Gong Zhizhou
E-Mail: zhizhou.gong@tcl.com
Telephone: 0086-755-36611722
Fax: 0086-755-36612000-81722

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

3.1. About EUT

Description	TABLET PC
Model Name	9013A
Brand Name	TCL
RLAN Frequency Range	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5725MHz~5850MHz
RLAN Protocol	IEEE 802.11a,802.11n-HT20/40,
Type of modulation	OFDM
Antenna Type	Integrated
Antenna Gain	-0.3dBi
Power Supply	3.8V DC by Battery
FCC ID	2ACCJBT18
Condition of EUT as received	No abnormality in appearance

Note1: 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
UT10aa	355827110200109	PIO	1F12	2020-04-30
UT11aa	355827110200117	PIO	1F12	2020-04-30

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

3.3. Internal Identification of AE

AE ID*	Description	Type
AE1	Battery	TLp025F7
AE2-1	Charger	UC11US(CBA0058AGAC5)
AE2-2	Charger	UC11US(CBA0058AGAC7)

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

3.4. General Description

The Equipment under Test (EUT) is a model of TABLET PC with integrated antenna and battery. It consists of normal options: Lithium Battery, Charger and USB Cable. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the client.



4. REFERENCE DOCUMENTS

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	FCC CFR 47,Part 15,Subpart C FCC CFR 47,Part 15,Subpart E	2019
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	Verdict
0	Maximum Output Power	15.407(a)	P
1	Power Spectral Density	15.407(a)	P
2	Occupied 26dB Bandwidth	15.407(a)	/
3	Occupied 6dB Bandwidth	15.407(e)	P
4	99% Occupied Bandwidth	15.407	/
5	Band edge compliance	15.407	P
6	Radiated Spurious Emissions	15.407	P
7	AC Power line Conducted	15.207	P
8	Transmit Power Control	15.407	NA

See **ANNEX A** for details.

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

SAICT has evaluated the test cases requested by the applicant/matrix 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 Due date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2021-01-01	1 year
2	Power Sensor	U2021XA	MY55430013	Agilent	2021-01-15	1 year
3	Test Receiver	ESCI	100702	Rohde & Schwarz	2021-01-14	1 year
4	LISN	ENV216	102067	Rohde & Schwarz	2020-07-17	1 year

Radiated test system

NO.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Loop Antenna	HLA6120	35779	TESEQ	2022-04-25	3 years
2	BiLog Antenna	3142E	00224831	ETS-Lindgren	2021-05-17	3 years
3	Horn Antenna	3117	00066577	ETS-Lindgren	2022-04-02	3 years
4	Test Receiver	ESR7	101676	Rohde & Schwarz	2020-11-27	1 year
5	Spectrum Analyser	FSV40	101192	Rohde & Schwarz	2021-01-14	1 year
6	Chamber	FACT3-2.0	1285	ETS-Lindgren	2021-07-19	3 years
7	Antenna	QSH-SL-18-26-S-20	17013	Q-par	2023-01-06	3 years
8	Antenna	QSH-SL-26-40-K-20	17014	Q-par	2023-01-06	3 years

Test software

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

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

Anechoic chamber

Fully anechoic chamber by ETS-Lindgren

7. 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

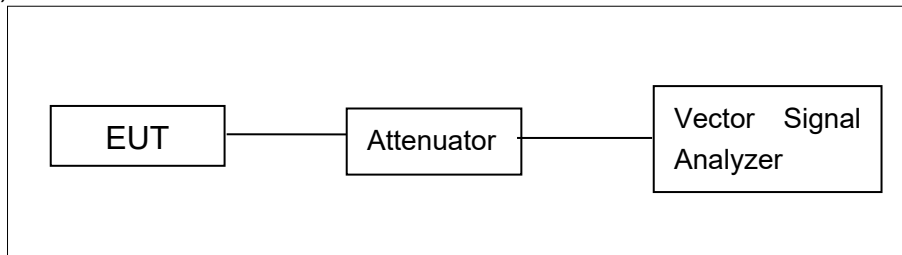
Test Name	Uncertainty ($k=2$)	
1. RF Output Power - Conducted	1.32dB	
2. Power Spectral Density - Conducted	2.32dB	
3. Occupied channel bandwidth - Conducted	$\pm 66\text{Hz}$	
4. Transmitter Spurious Emission - Conducted	$30\text{MHz} \leq f \leq 1\text{GHz}$	1.41dB
	$1\text{GHz} \leq f \leq 7\text{GHz}$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

A.1. Measurement Method

Conducted Measurements

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode.
- 3). Set the EUT to the required channel.
- 4). Set the spectrum analyzer to start measurement.
- 5). Record the values.

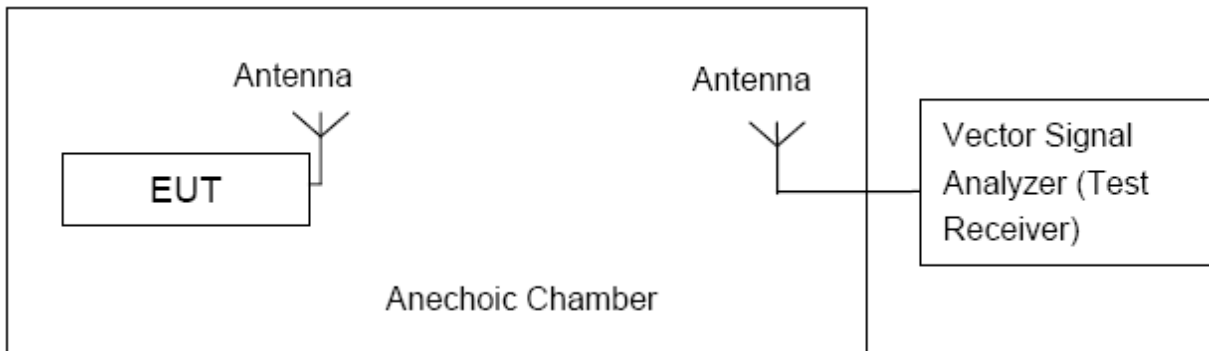


Radiated Emission Measurements

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

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

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



The measurement is made according to KDB 789033.

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

A.2. Maximum output Power

Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	24
	5250MHz~5350MHz	24 or 11+10logB
	5470MHz~5725MHz	24 or 11+10logB
	5725MHz~5850MHz	30

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

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	Channel	Frequency (MHz)	Average power (dBm)	Conclusion
5.2GHz Band (UNII-1)	802.11a	CH 36	5180	12.13	P
		CH 40	5200	12.09	P
		CH 48	5240	12.17	P
	802.11n-HT20	CH 36	5180	12.06	P
		CH 40	5200	12.16	P
		CH 48	5240	12.15	P
	802.11n-HT40	CH 38	5190	12.02	P
		CH 46	5230	11.98	P

U-NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)	Conclusion
5.3GHz Band (UNII-2A)	802.11a	CH 52	5260	11.85	P
		CH 56	5280	11.81	P
		CH 64	5320	11.79	P
	802.11n-HT20	CH 52	5260	11.86	P
		CH 56	5280	11.81	P
		CH 64	5320	11.72	P
	802.11n-HT40	CH 54	5270	11.82	P
		CH 62	5310	11.80	P



U-NII Band	Mode	Channel	Frequency (MHz)	Average power (dBm)	Conclusion
5.8GHz Band (UNII-3)	802.11a	CH 149	5745	11.52	P
		CH 157	5785	11.61	P
		CH 165	5825	11.72	P
	802.11n-HT20	CH 149	5745	11.64	P
		CH 157	5785	11.66	P
		CH 165	5825	11.74	P
	802.11n-HT40	CH 151	5755	11.67	P
		CH 159	5795	11.50	P

Note:

Worst-case data rates as provided by the client were: 6Mbps (802.11a), MCS0 (802.11n).

The following cases and test graphs are performed with this condition.

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

Standard	Frequency (MHz)	Limit
FCC CRF Part 15.407(a)	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:

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180MHz(Ch36)	5.99	P
	5200MHz(Ch40)	4.89	P
	5240MHz(Ch48)	5.45	P
	5260MHz(Ch52)	4.99	P
	5280MHz(Ch56)	5.30	P
	5320MHz(Ch64)	4.97	P

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11n-HT20	5180MHz(Ch36)	5.44	P
	5200MHz(Ch40)	5.30	P
	5240MHz(Ch48)	4.76	P
	5260MHz(Ch52)	5.56	P
	5280MHz(Ch56)	5.18	P
	5320MHz(Ch64)	5.15	P

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11n-HT40	5190MHz(Ch38)	2.21	P
	5230MHz(Ch46)	2.79	P
	5270MHz(Ch54)	2.19	P
	5310MHz(Ch62)	2.32	P

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

U-NII Band	Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/500kHz)	Conclusion
5.8GHz Band (UNII-3)	802.11a	CH 149	5745	3.12	P
		CH 157	5785	3.11	P
		CH 165	5825	3.42	P
	802.11n-HT20	CH 149	5745	2.91	P
		CH 157	5785	3.06	P
		CH 165	5825	3.31	P
	802.11n-HT40	CH 151	5755	3.35	P
		CH 159	5795	3.30	P

Conclusion: PASS

A.4. Occupied 26dB Bandwidth(conducted)

Measurement Limit:

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

The measurement is made according to KDB 789033

Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth(MHz)		Conclusion
		Fig.	Value	
802.11a	5180MHz(Ch36)	Fig.1	20.35	/
	5200MHz(Ch40)	Fig.2	20.35	/
	5240MHz(Ch48)	Fig.3	20.70	/
	5260MHz(Ch52)	Fig.4	20.30	/
	5280MHz(Ch56)	Fig.5	20.35	/
	5320MHz(Ch64)	Fig.6	20.30	/
802.11n-HT20	5180MHz(Ch36)	Fig.7	20.70	/
	5200MHz(Ch40)	Fig.8	20.75	/
	5240MHz(Ch48)	Fig.9	20.55	/
	5260MHz(Ch52)	Fig.10	21.40	/
	5280MHz(Ch56)	Fig.11	21.85	/
	5320MHz(Ch64)	Fig.12	20.65	/
802.11n-HT40	5190MHz(Ch38)	Fig.13	40.24	/
	5230MHz(Ch46)	Fig.14	40.16	/
	5270MHz(Ch54)	Fig.15	40.48	/
	5310MHz(Ch62)	Fig.16	40.40	/

Conclusion: PASS

Test graphs as below:

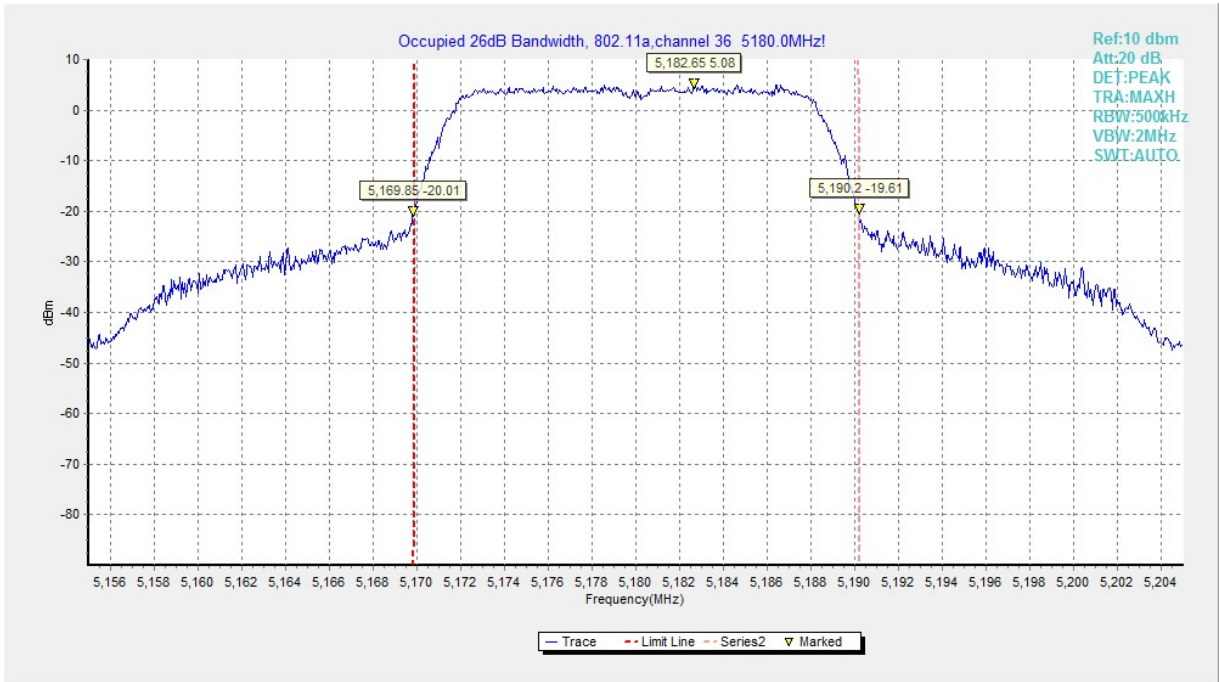


Fig. 1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

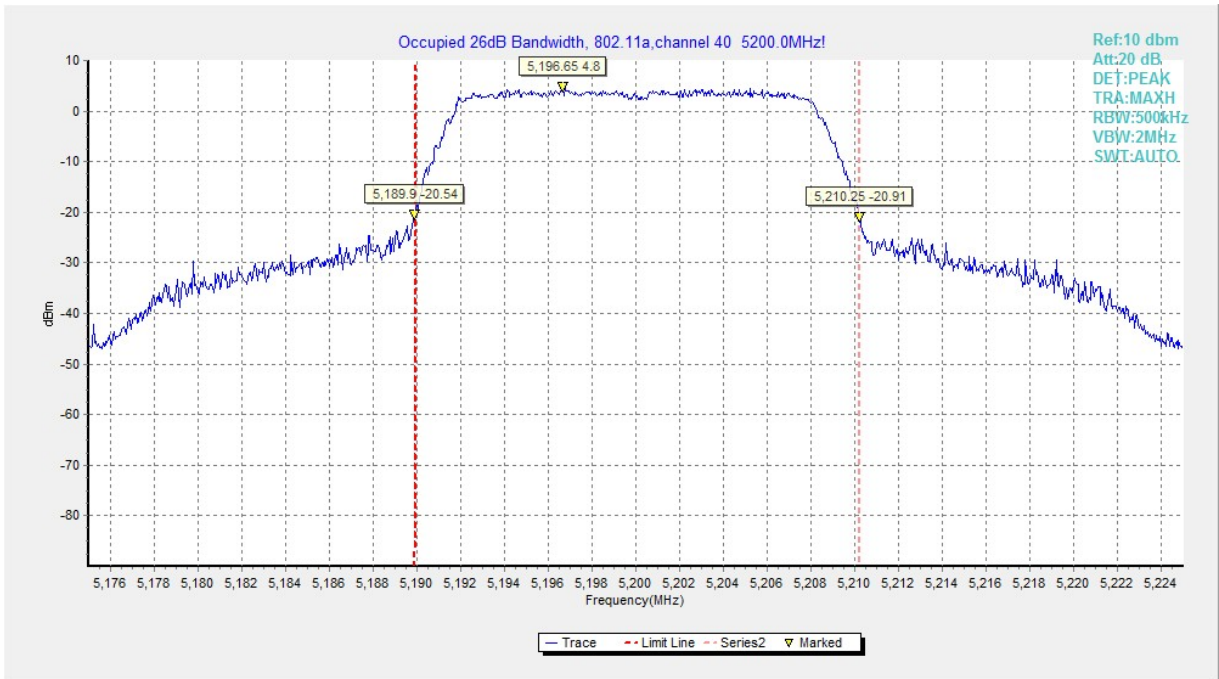


Fig. 2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

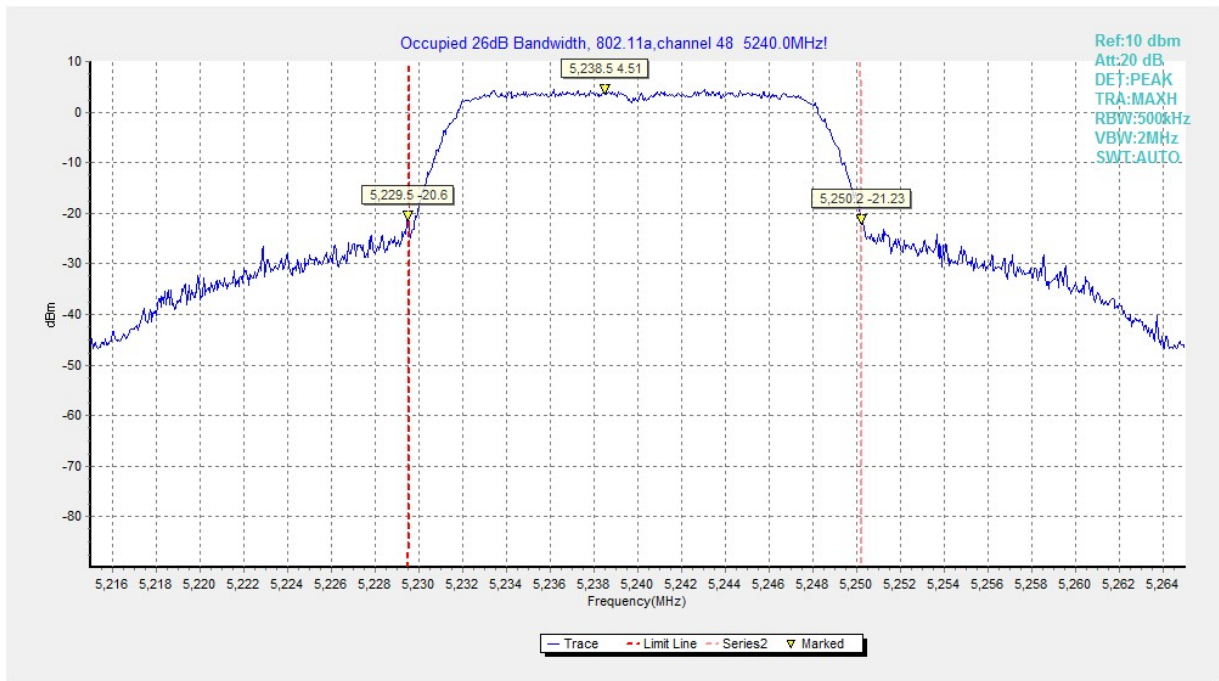


Fig. 3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

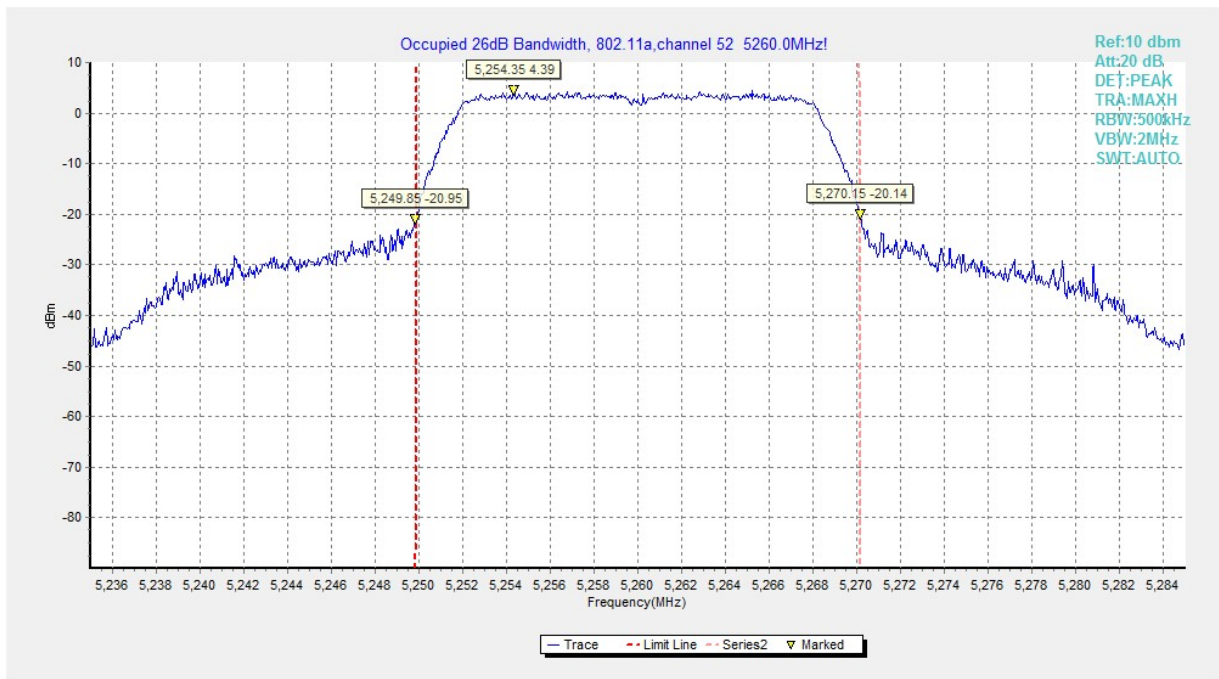


Fig. 4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

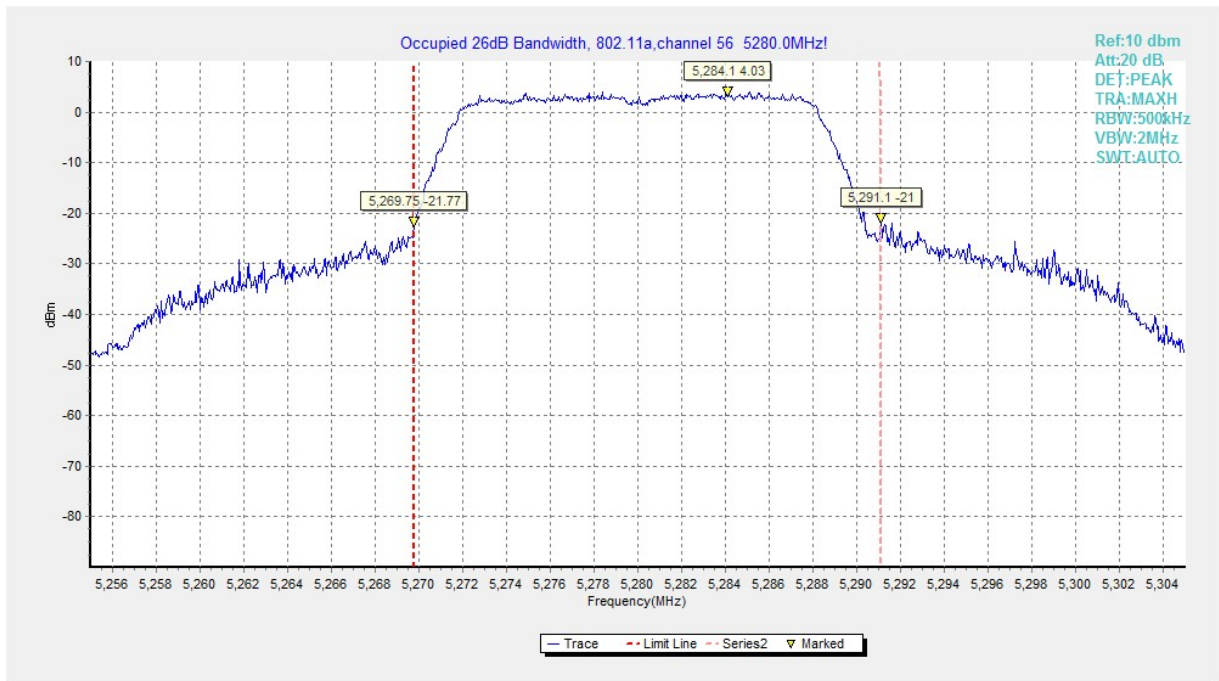


Fig. 5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

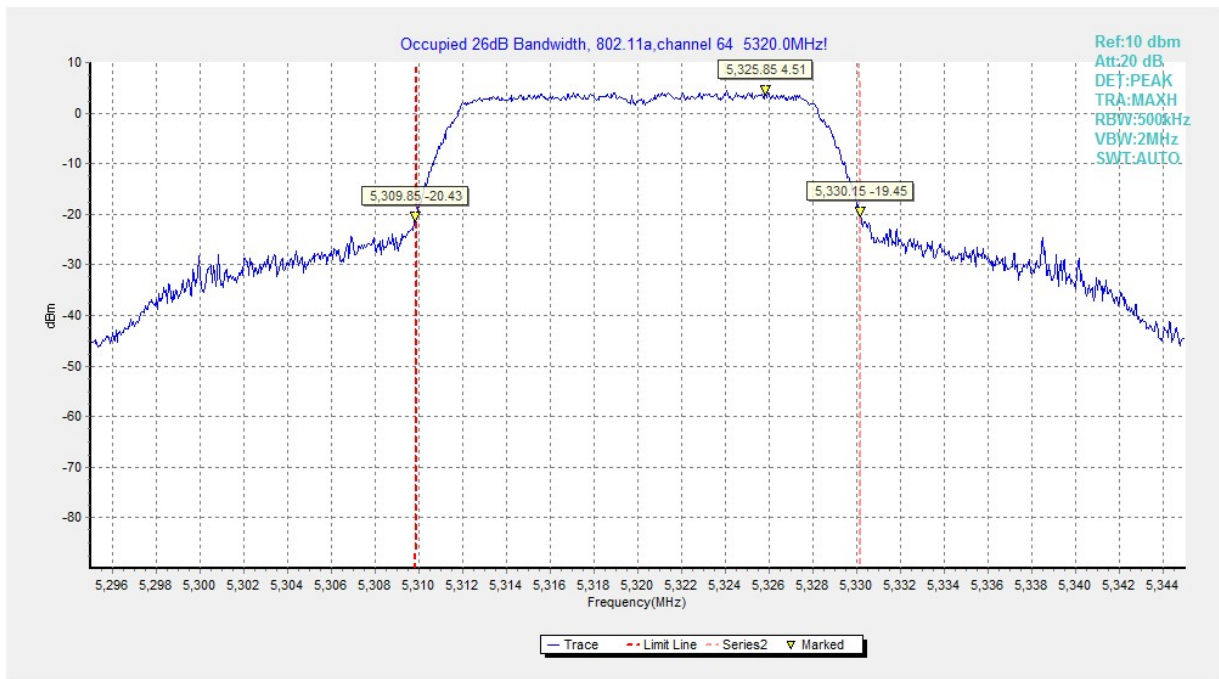


Fig. 6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

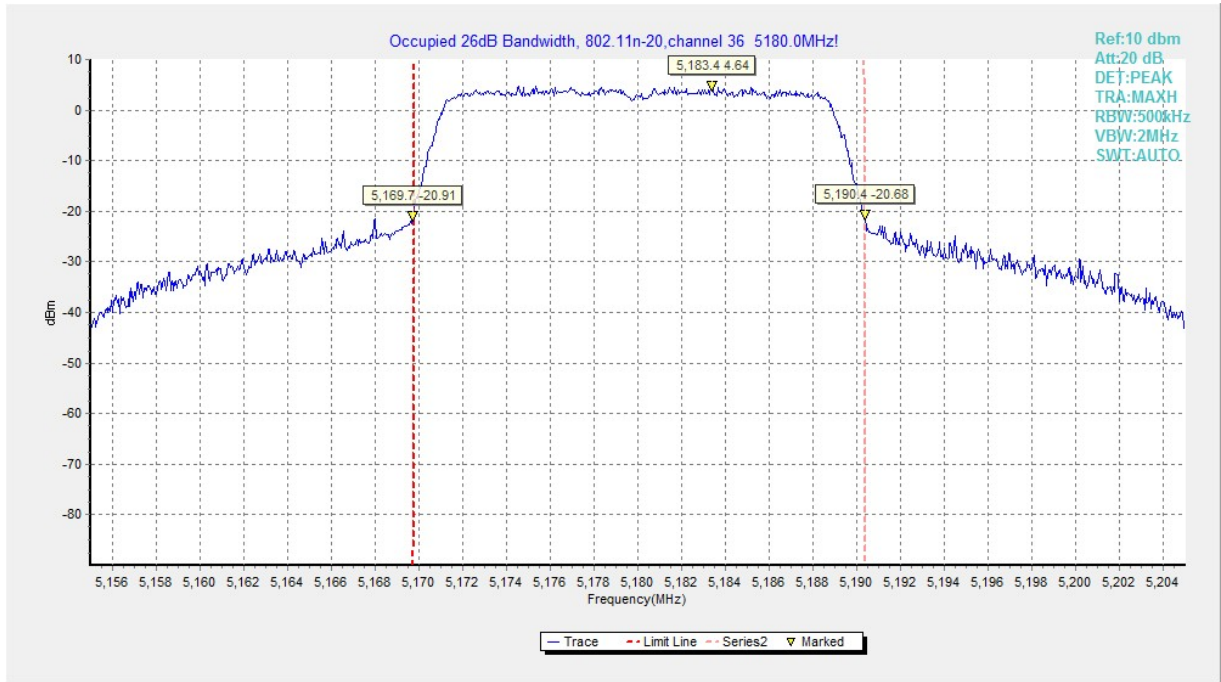


Fig. 7 Occupied 26dB Bandwidth (802.11n-HT20, 5180MHz)

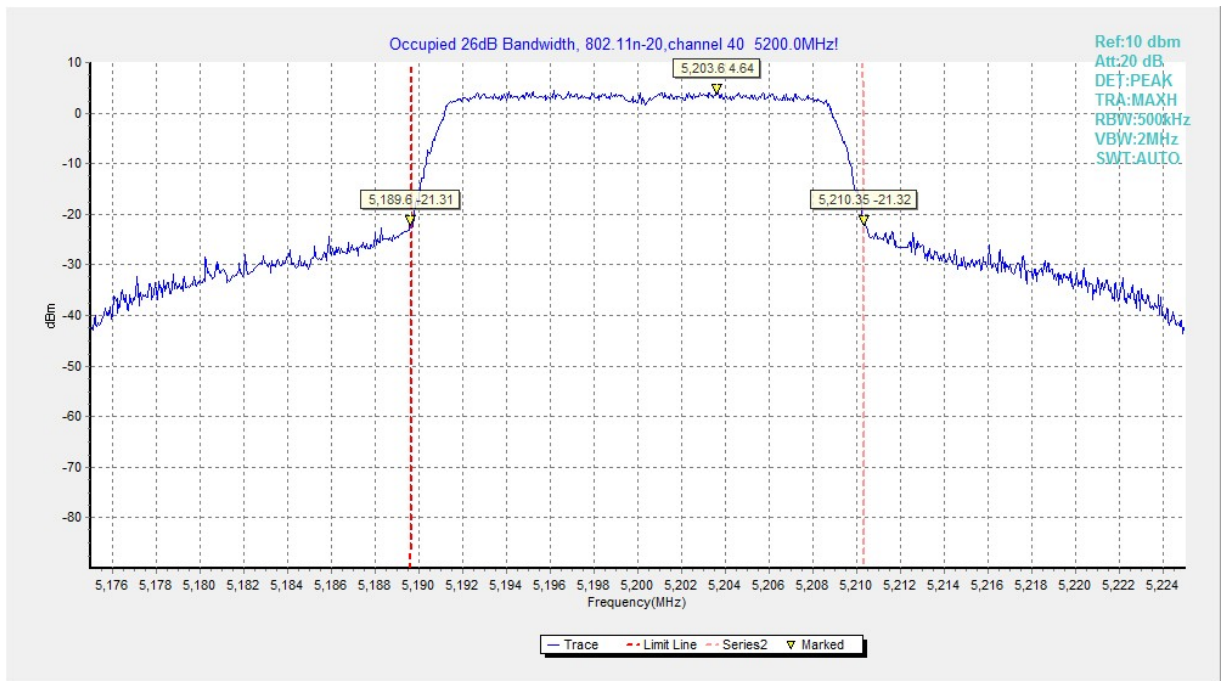


Fig. 8 Occupied 26dB Bandwidth (802.11n-HT20, 5200MHz)

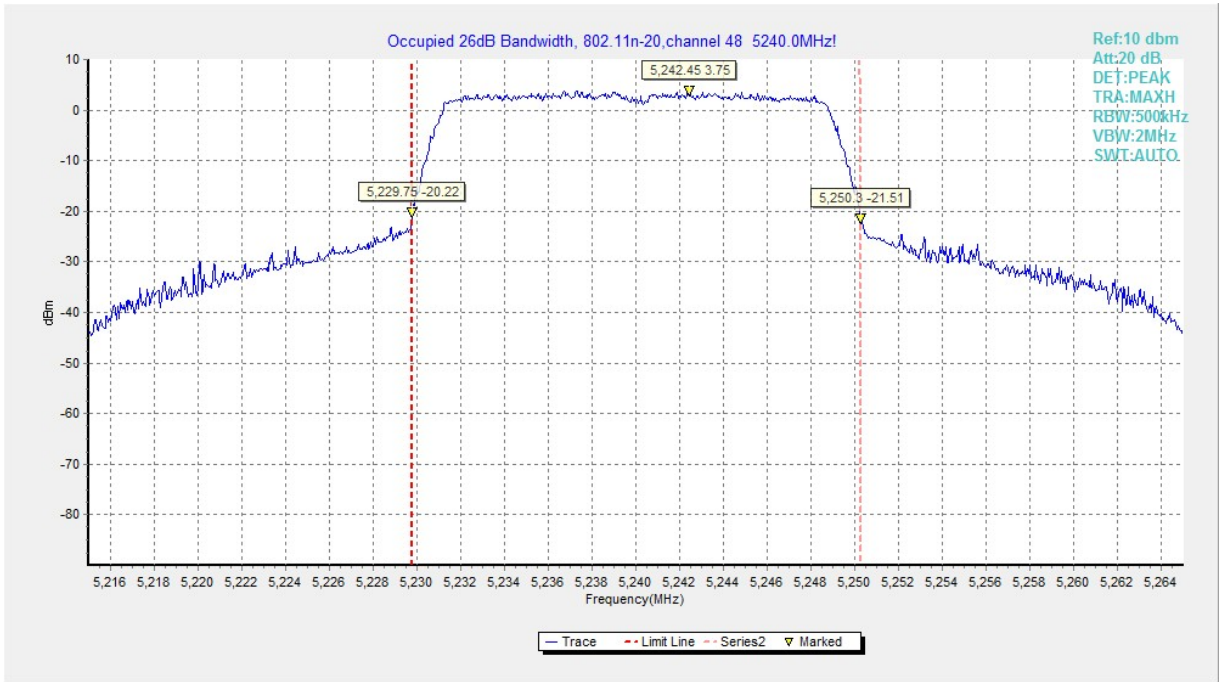


Fig. 9 Occupied 26dB Bandwidth (802.11n-HT20, 5240MHz)

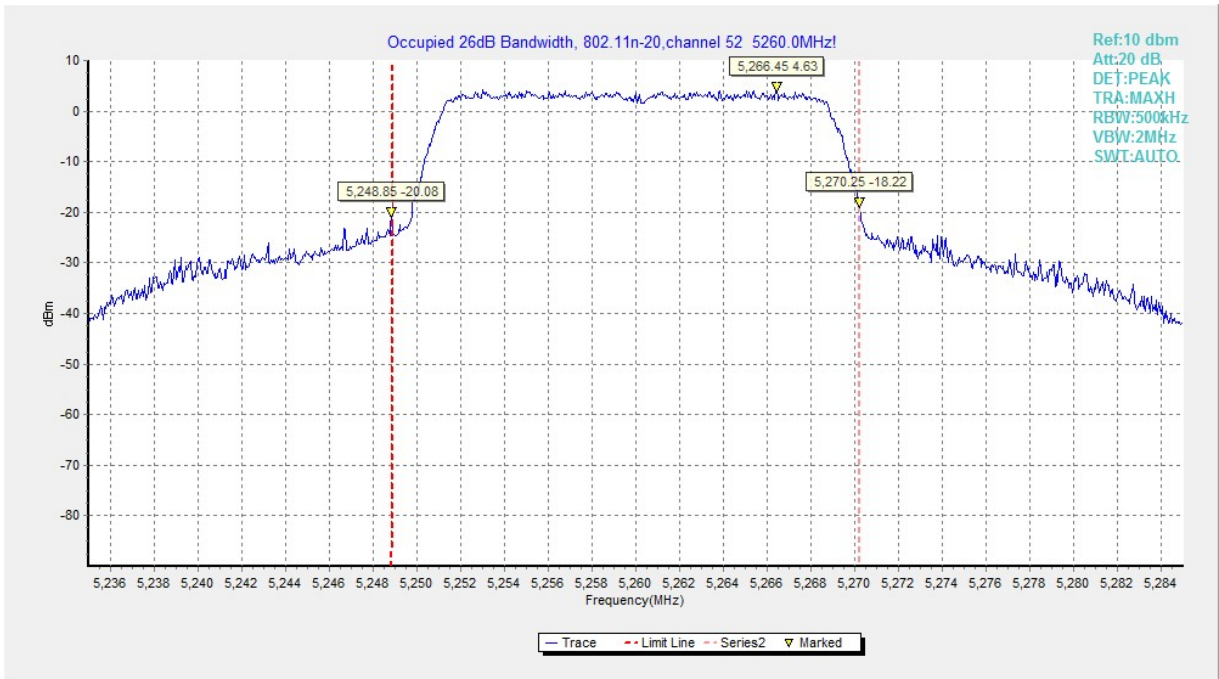


Fig. 10 Occupied 26dB Bandwidth (802.11n-HT20, 5260MHz)

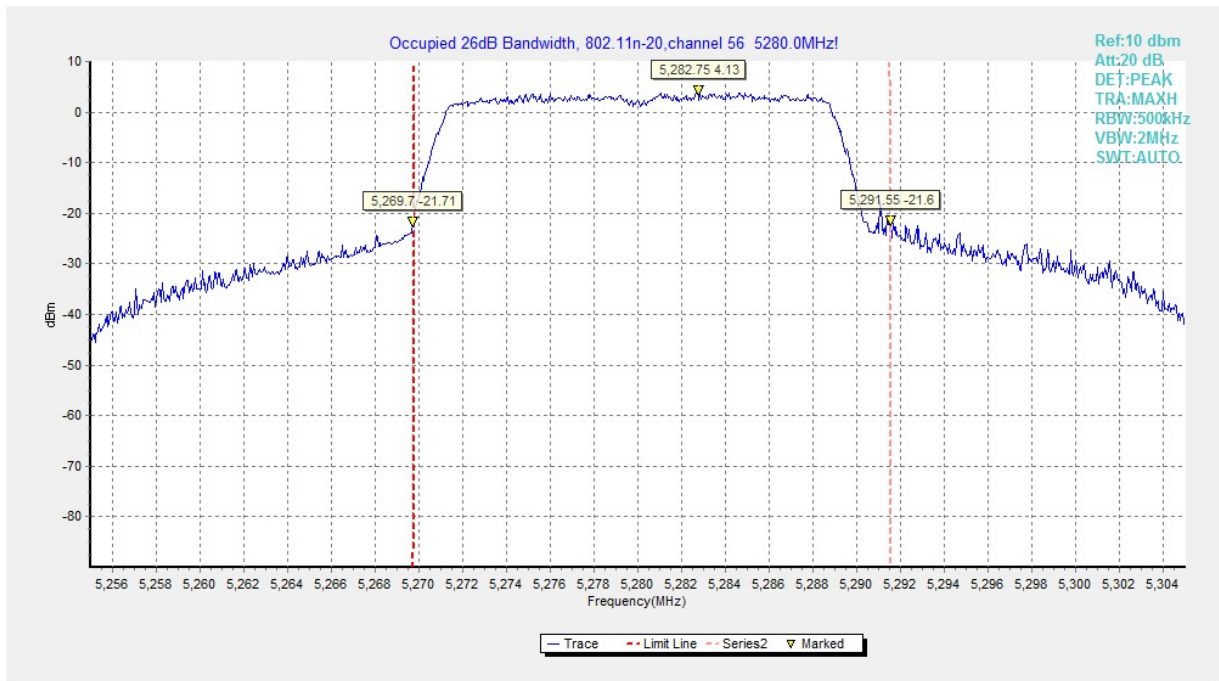


Fig. 11 Occupied 26dB Bandwidth (802.11n-HT20, 5280MHz)

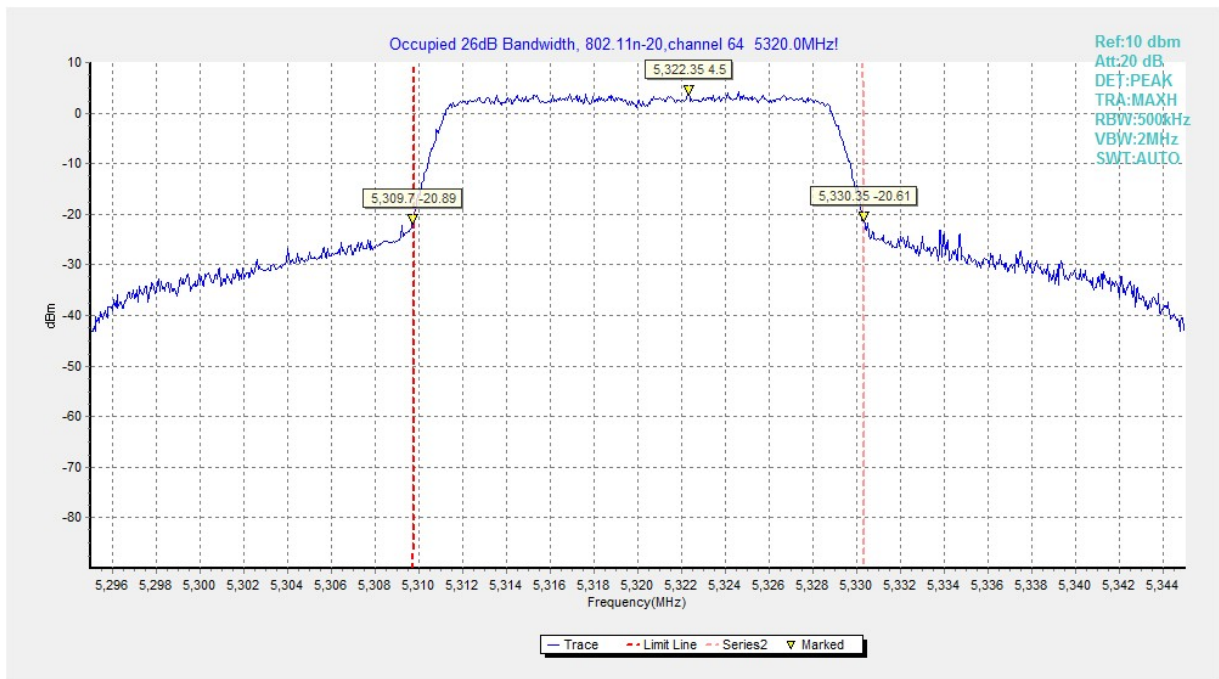


Fig. 12 Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)

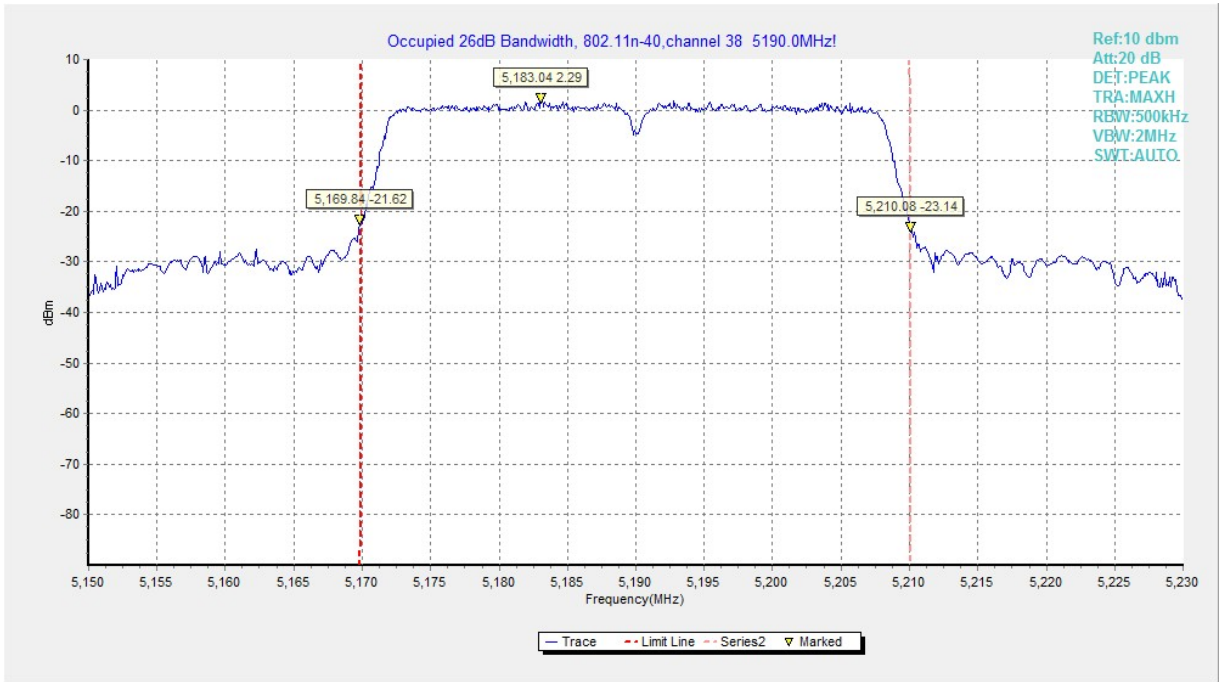


Fig. 13 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

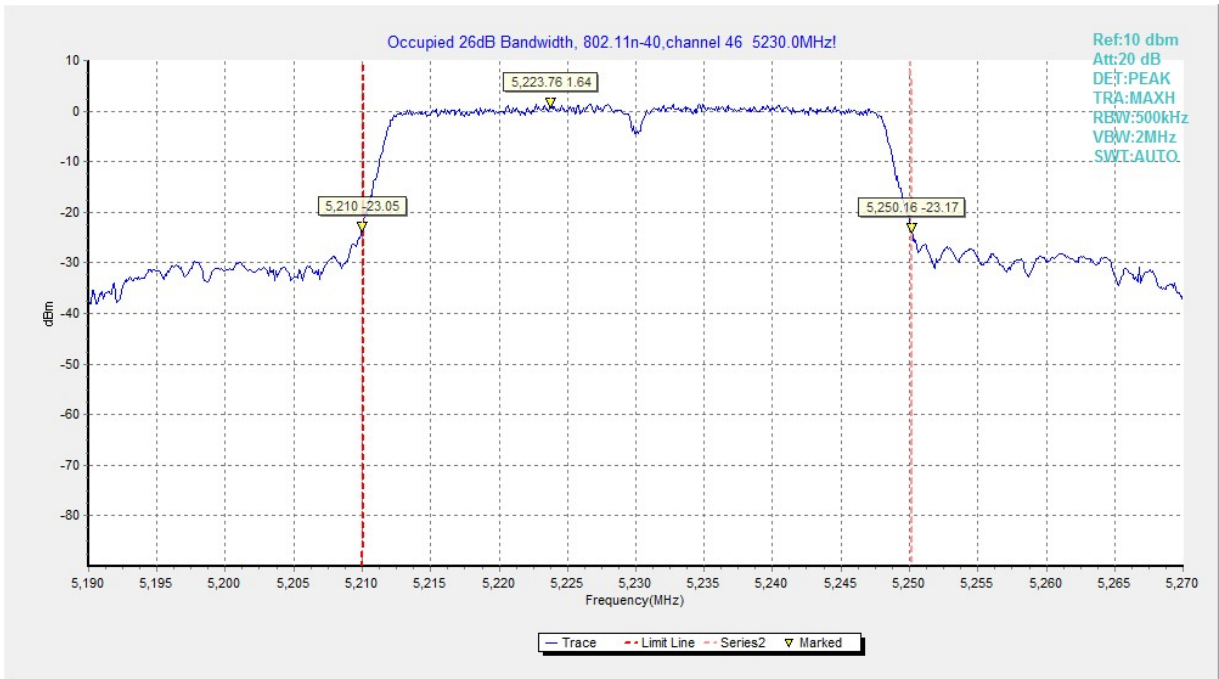


Fig. 14 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

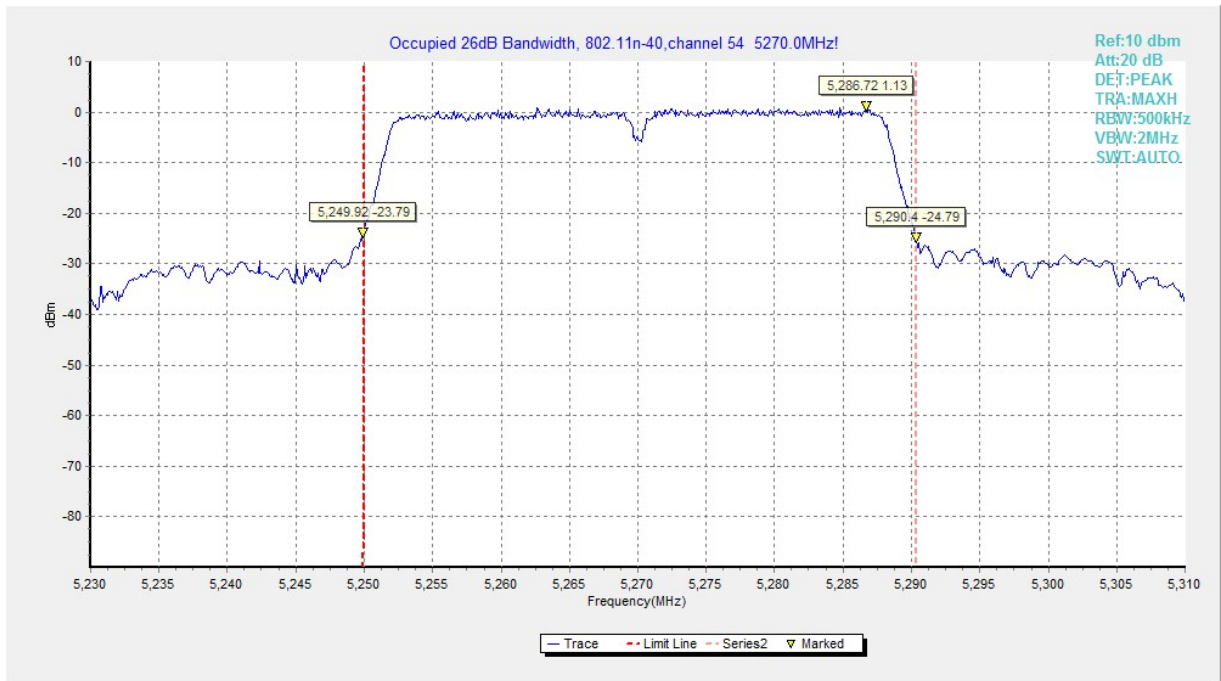


Fig. 15 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)

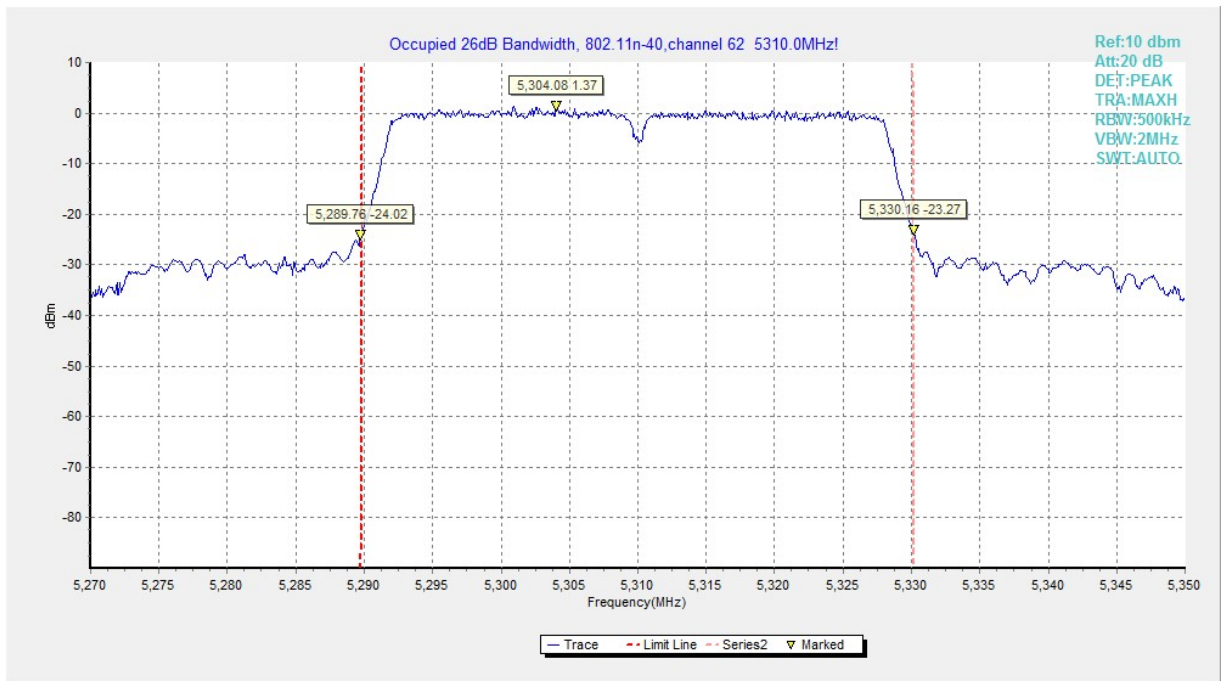


Fig. 16 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

**A.5. Occupied 6dB Bandwidth(conducted)****Measurement Limit:**

Standard	Limit (MHz)
FCC 47 CFR Part 15.407 (e)	≥ 0.5

The measurement is made according to KDB 789033

Measurement Result:

Mode	Channel	Occupied 6dB Bandwidth(MHz)		Conclusion
802.11a	5745MHz(Ch149)	Fig.17	16.35	P
	5785MHz(Ch157)	Fig.18	16.10	P
	5825MHz(Ch165)	Fig.19	16.40	P
802.11n-HT20	5745MHz(Ch149)	Fig.20	17.60	P
	5785MHz(Ch157)	Fig.21	17.55	P
	5825MHz(Ch165)	Fig.22	17.60	P
802.11n-HT40	5755MHz(Ch151)	Fig.23	35.20	P
	5795MHz(Ch159)	Fig.24	35.68	P

Conclusion: PASS

Test graphs as below:

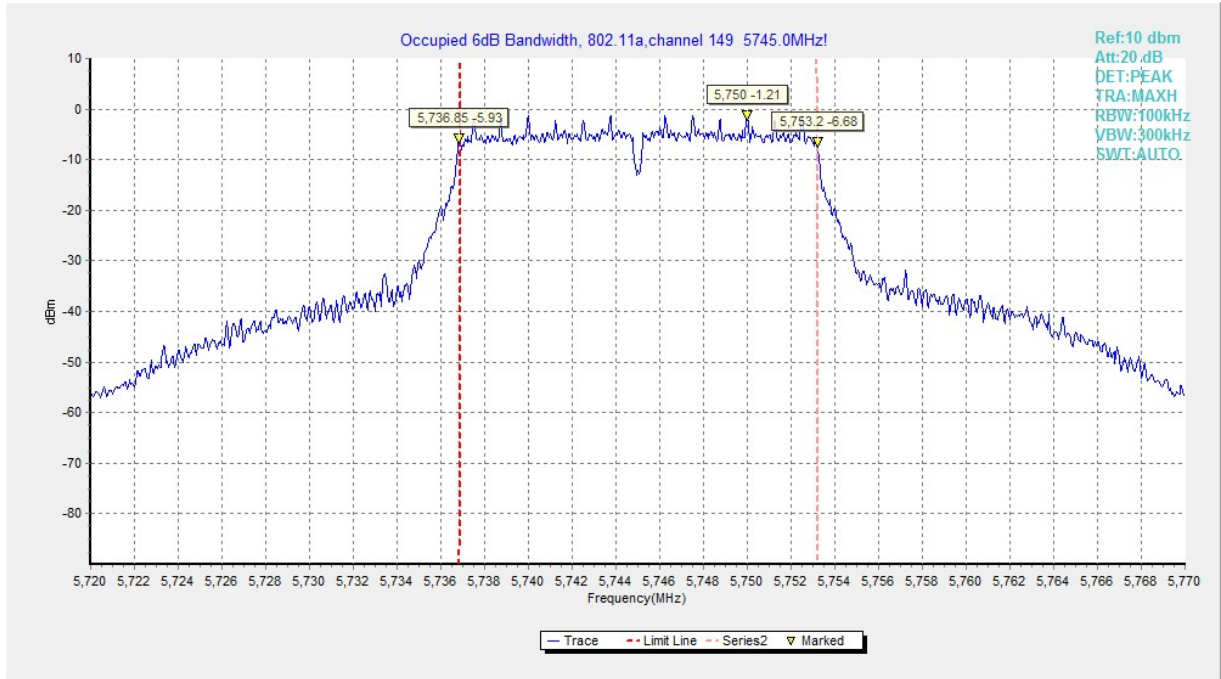


Fig. 17 Occupied 6dB Bandwidth (802.11a, 5745MHz)

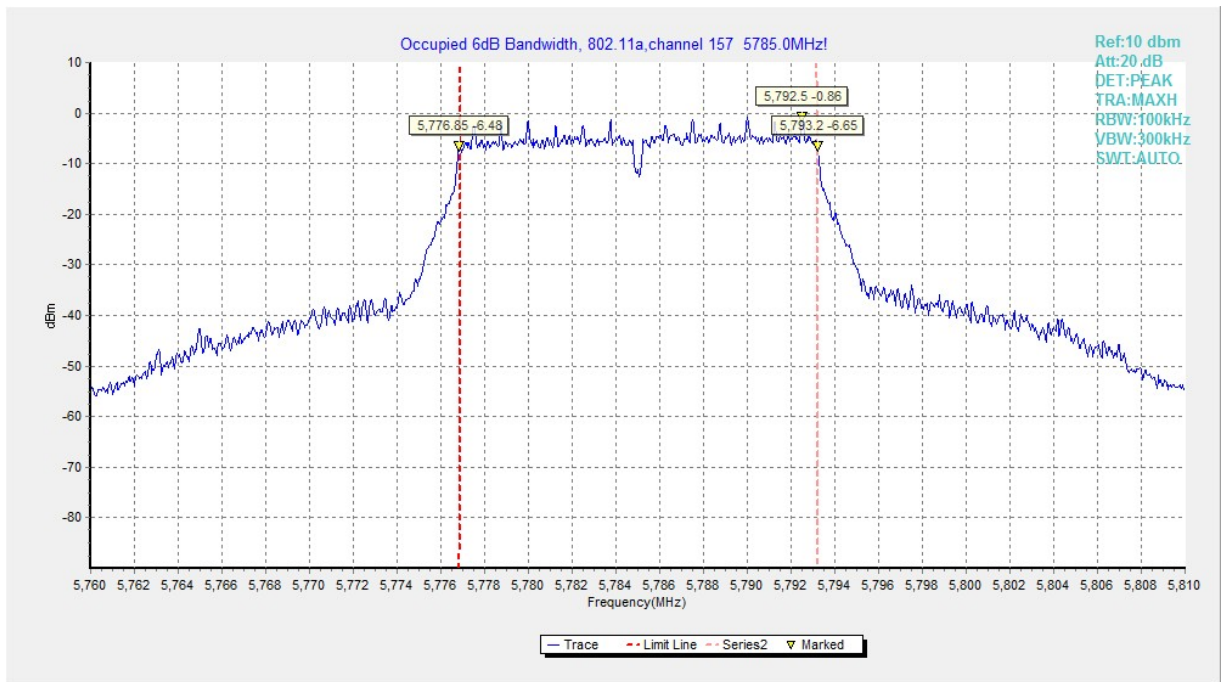


Fig. 18 Occupied 6dB Bandwidth (802.11a, 5785MHz)

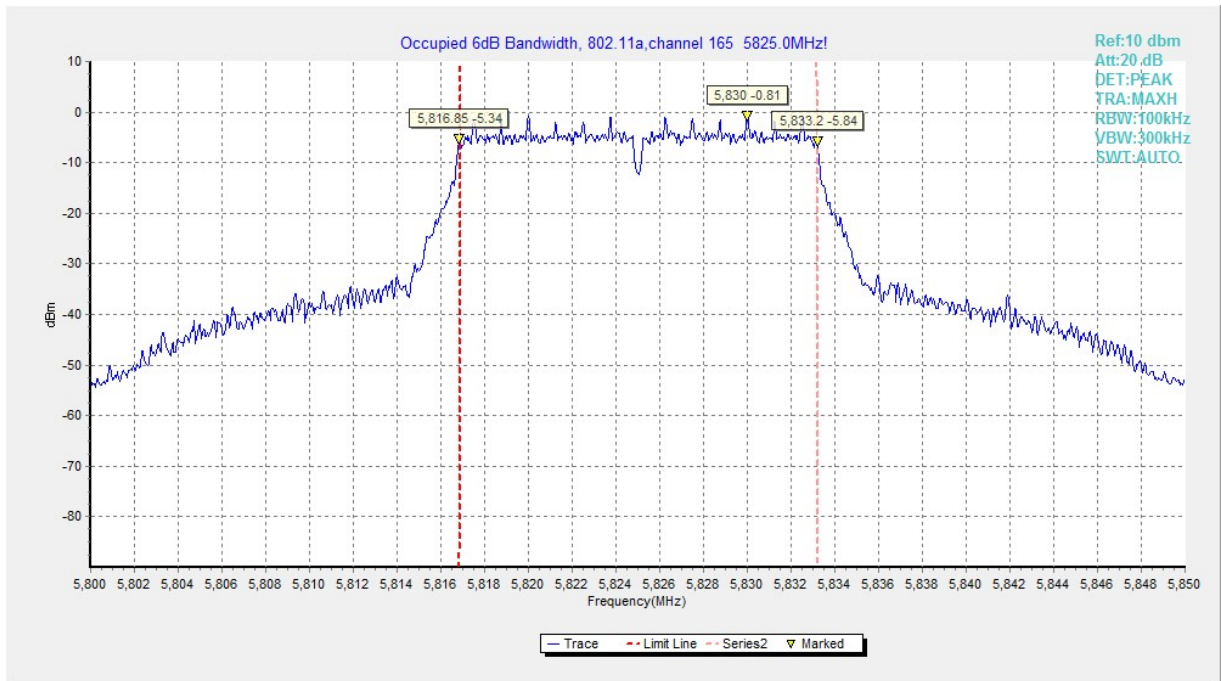


Fig. 19 Occupied 6dB Bandwidth (802.11a, 5825MHz)

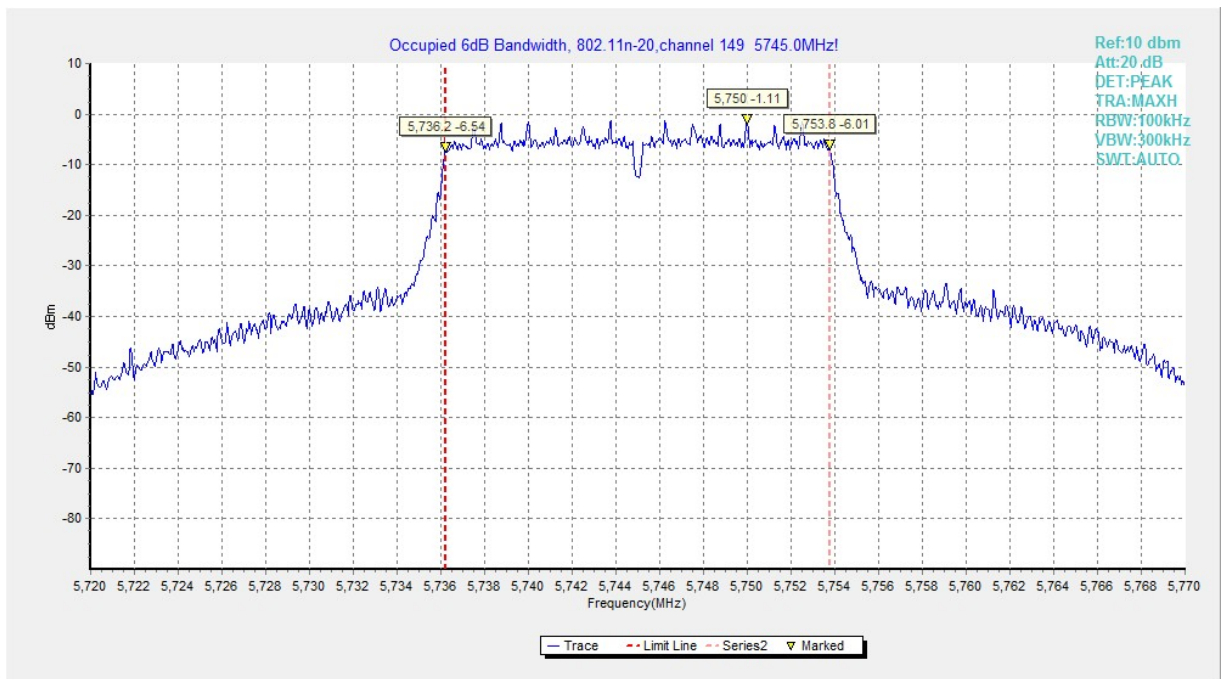


Fig. 20 Occupied 6dB Bandwidth (802.11n-HT20, 5745MHz)

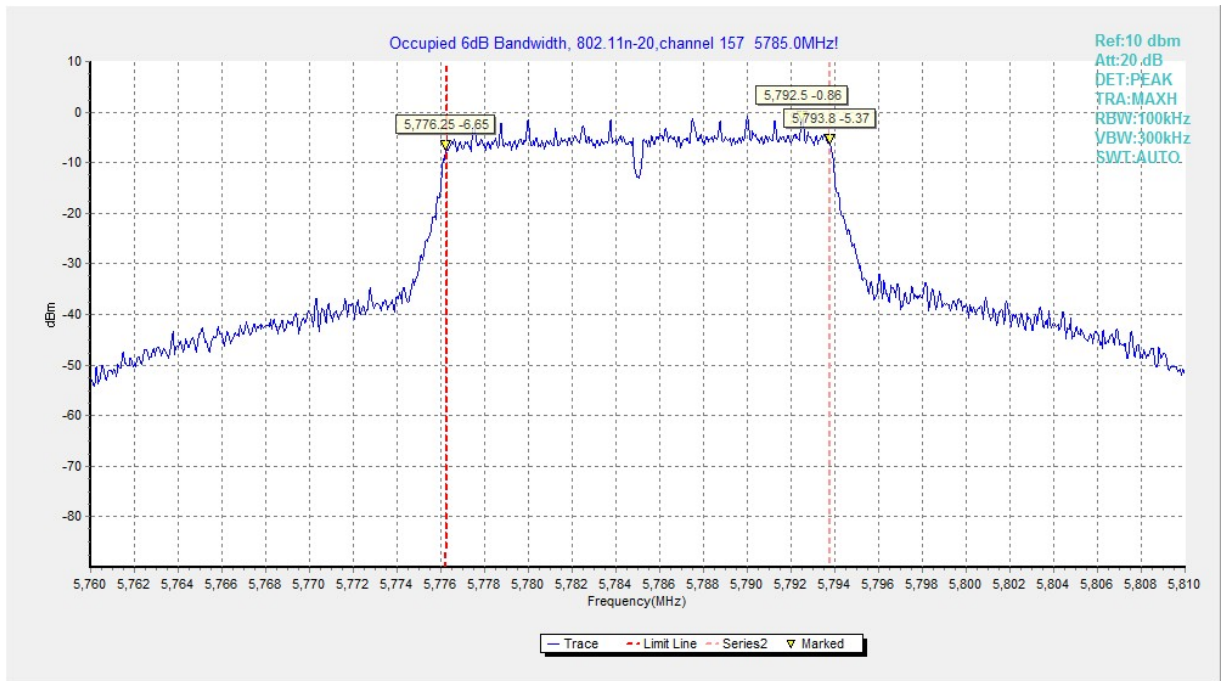


Fig. 21 Occupied 6dB Bandwidth (802.11n-HT20, 5785MHz)

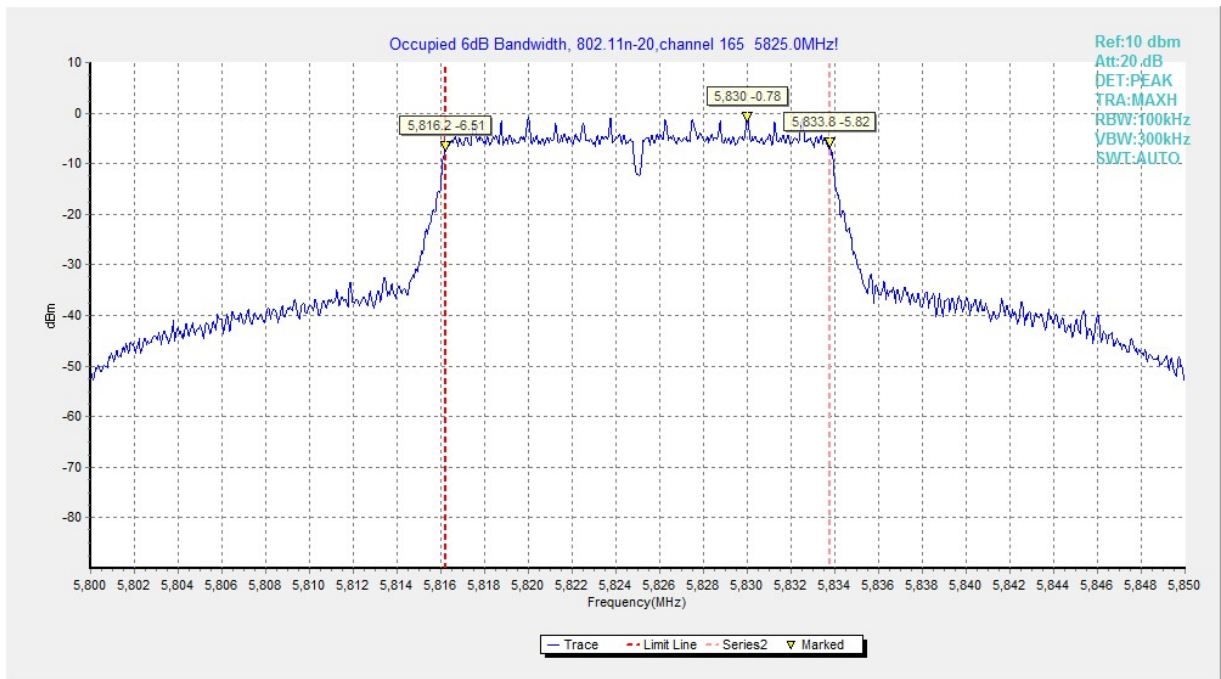


Fig. 22 Occupied 6dB Bandwidth (802.11n-HT20, 5825MHz)

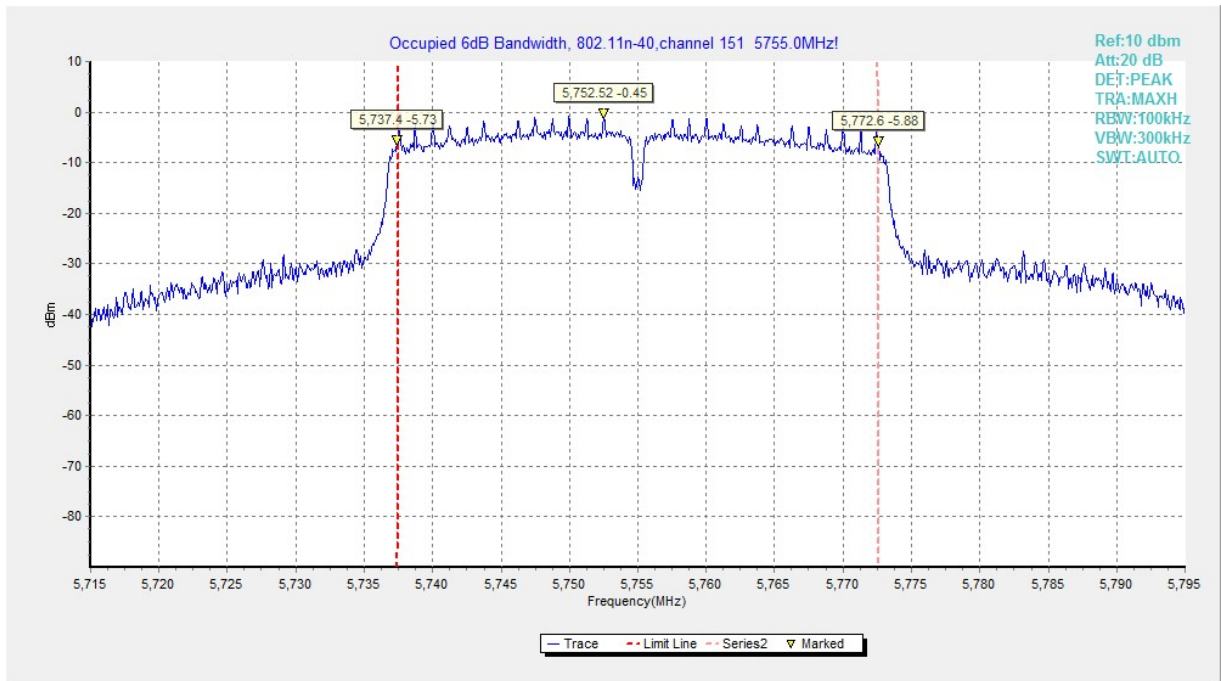


Fig. 23 Occupied 6dB Bandwidth (802.11n-HT40, 5755MHz)

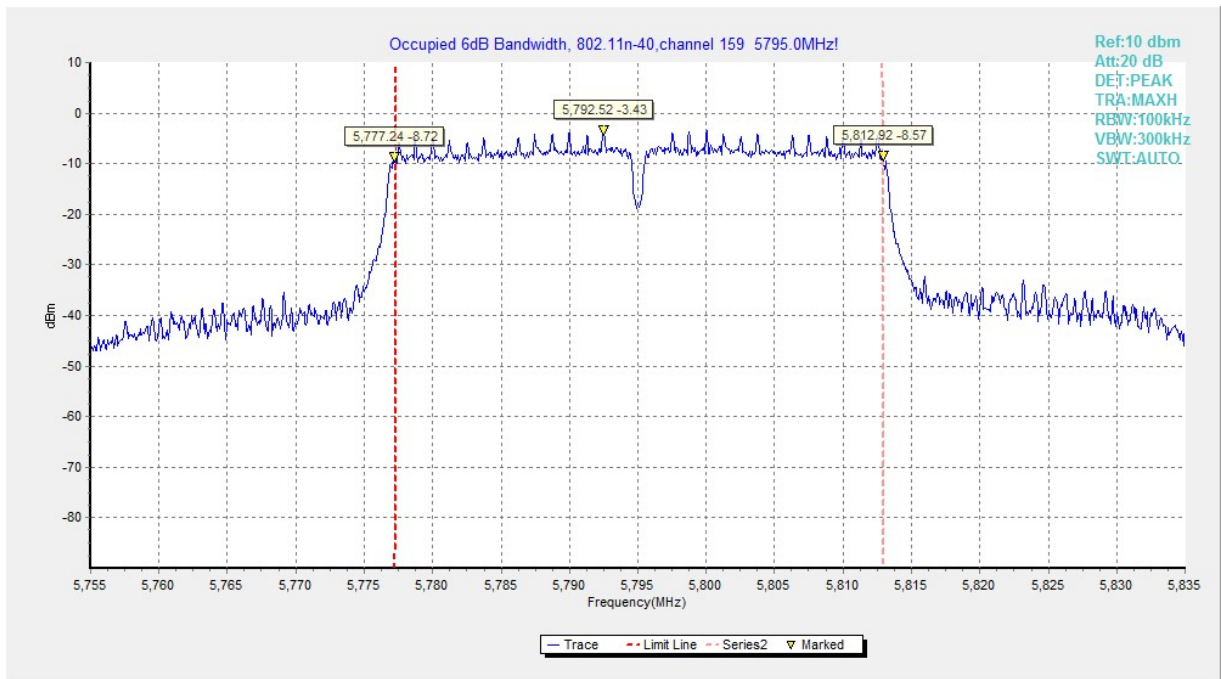


Fig. 24 Occupied 6dB Bandwidth (802.11n-HT40, 5795MHz)

A.6. 99% Occupied Bandwidth(conducted)

Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.403	/

The measurement is made according to KDB 789033

Measurement Result:

Mode	Channel	99% Occupied Bandwidth(MHz)		Conclusion
		Fig.	Value	
802.11a	5180MHz(Ch36)	Fig.25	17.50	/
	5200MHz(Ch40)	Fig.26	17.54	/
	5240MHz(Ch48)	Fig.27	17.50	/
	5260MHz(Ch52)	Fig.28	17.50	/
	5280MHz(Ch56)	Fig.29	17.58	/
	5320MHz(Ch64)	Fig.30	17.66	/
802.11n-HT20	5180MHz(Ch36)	Fig.31	18.22	/
	5200MHz(Ch40)	Fig.32	18.22	/
	5240MHz(Ch48)	Fig.33	18.22	/
	5260MHz(Ch52)	Fig.34	18.26	/
	5280MHz(Ch56)	Fig.35	18.26	/
	5320MHz(Ch64)	Fig.36	18.26	/
802.11n-HT40	5190MHz(Ch38)	Fig.37	36.36	/
	5230MHz(Ch46)	Fig.38	36.28	/
	5270MHz(Ch54)	Fig.39	36.44	/
	5310MHz(Ch62)	Fig.40	36.44	/

Conclusion: PASS

Test graphs as below:

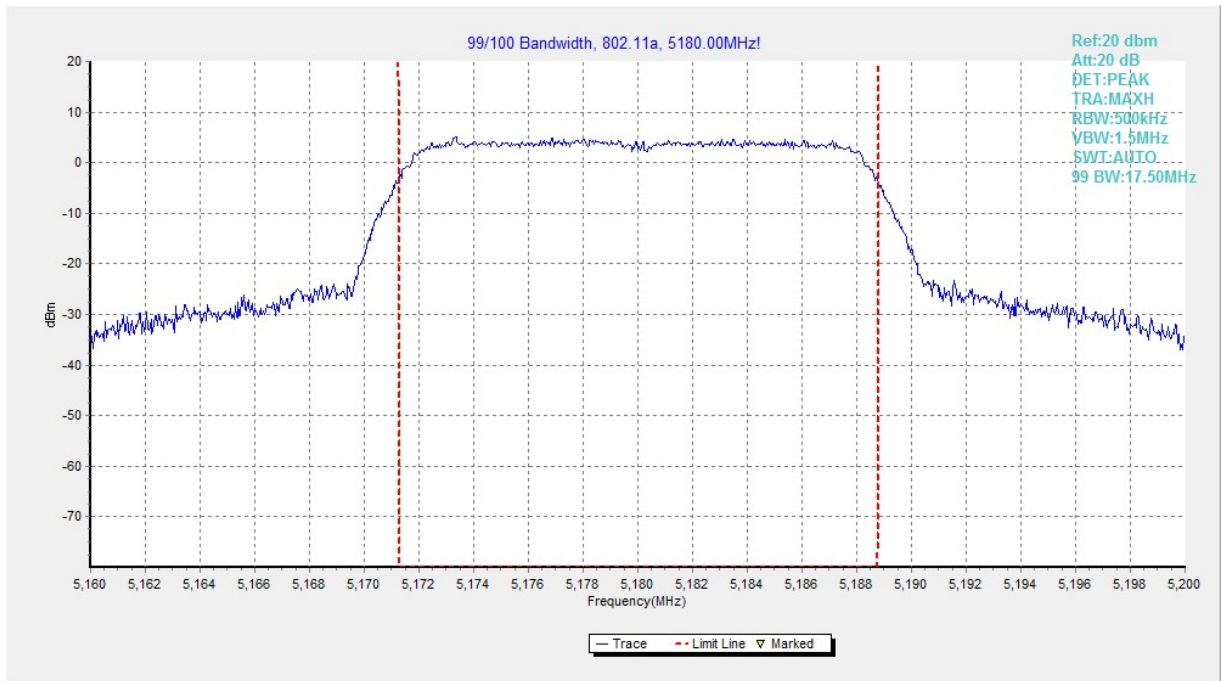


Fig. 25 99% Occupied Bandwidth (802.11a, 5180MHz)

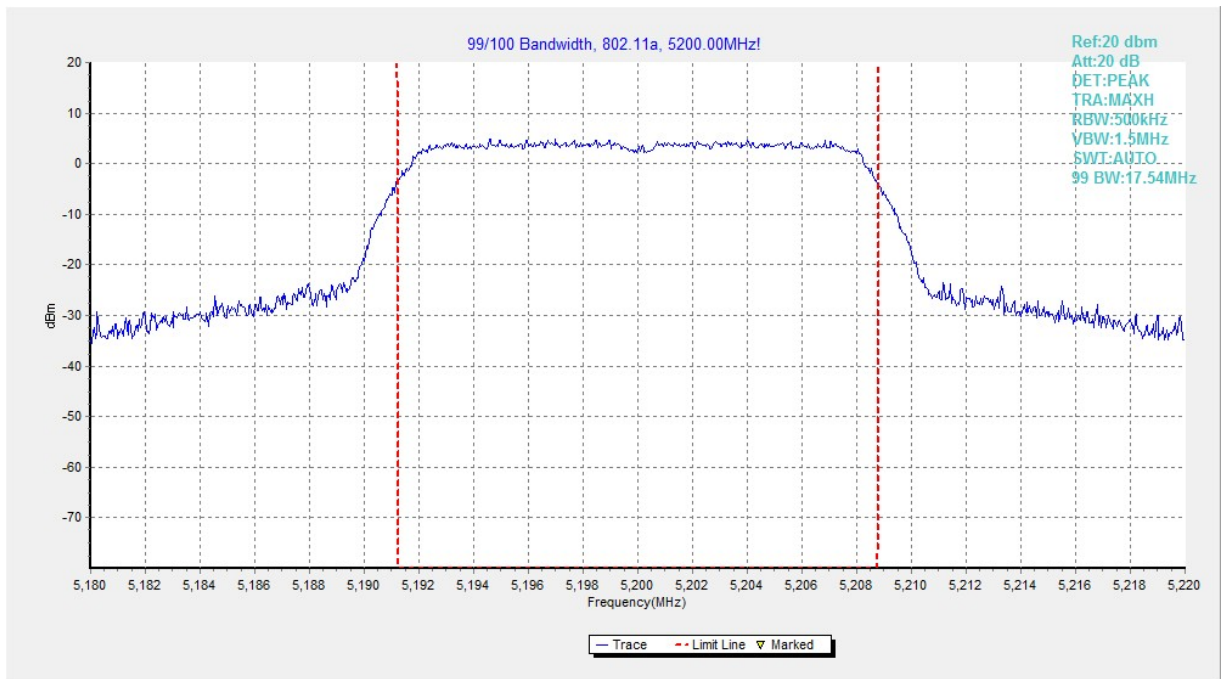


Fig. 26 99% Occupied Bandwidth (802.11a, 5200MHz)

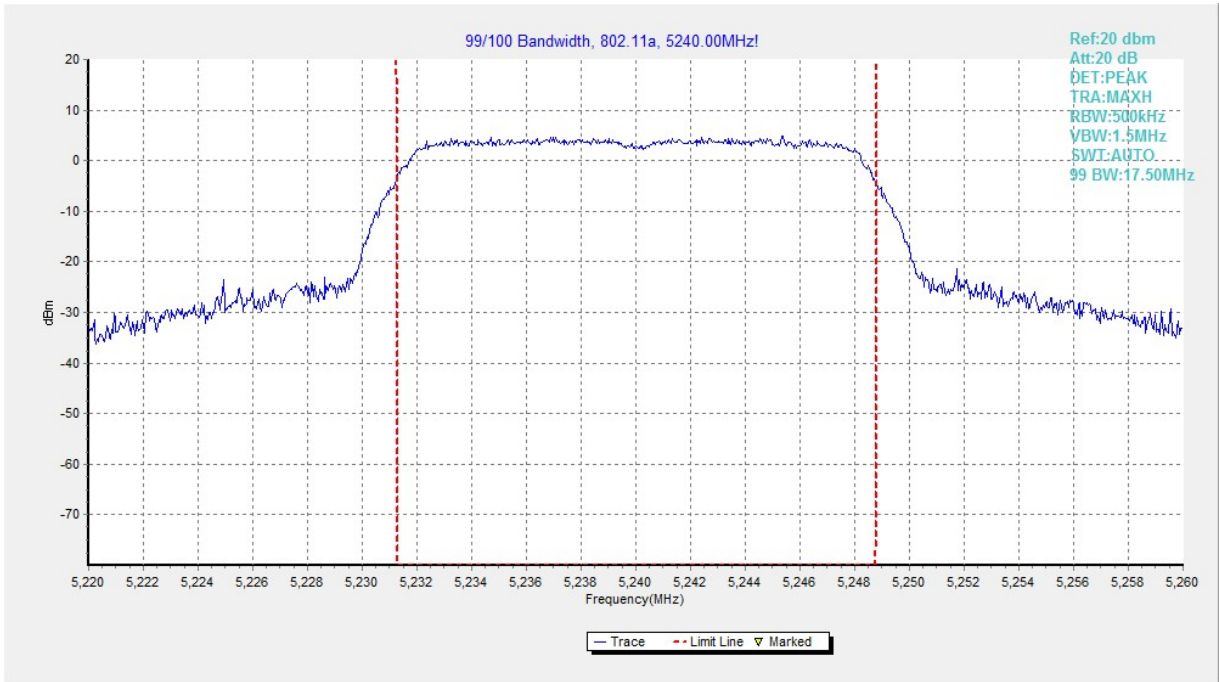


Fig. 27 99% Occupied Bandwidth (802.11a, 5240MHz)

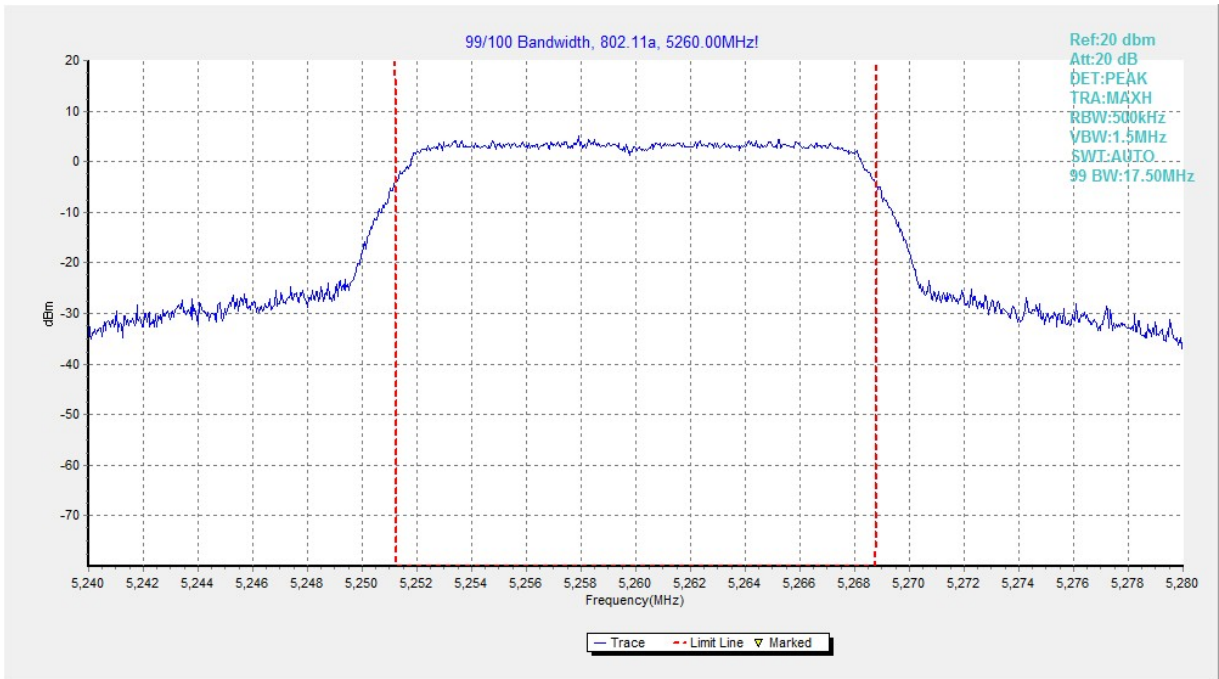


Fig. 28 99% Occupied Bandwidth (802.11a, 5260MHz)

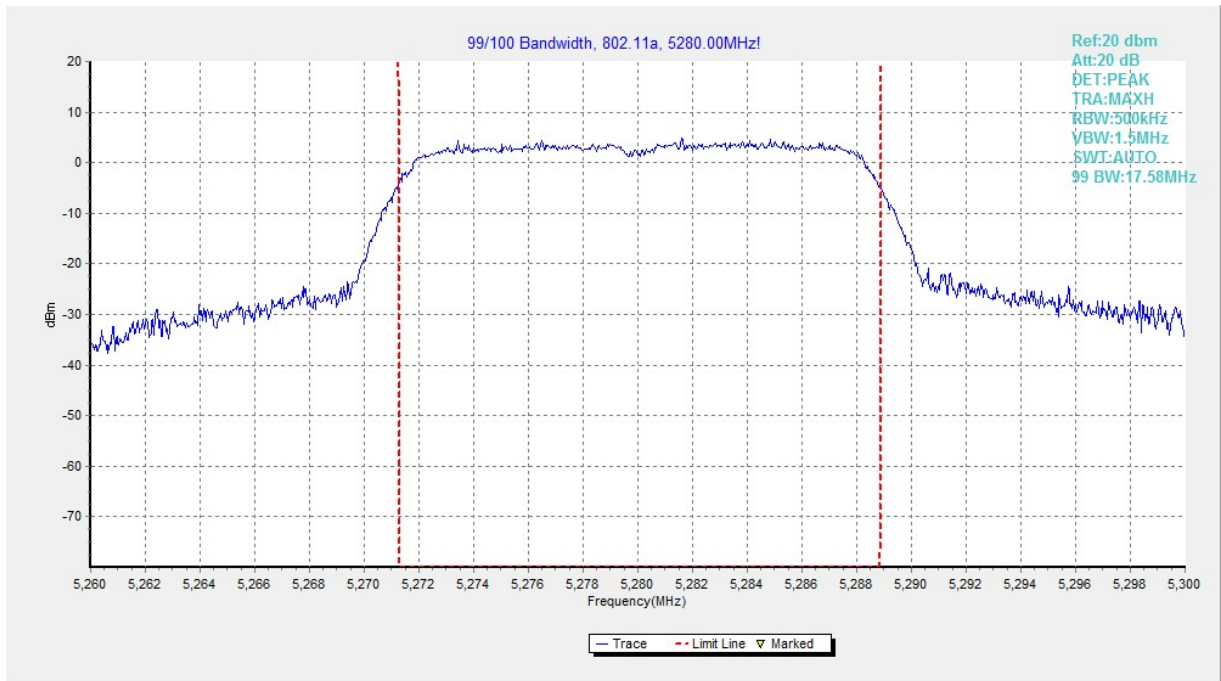


Fig. 29 99% Occupied Bandwidth (802.11a, 5280MHz)

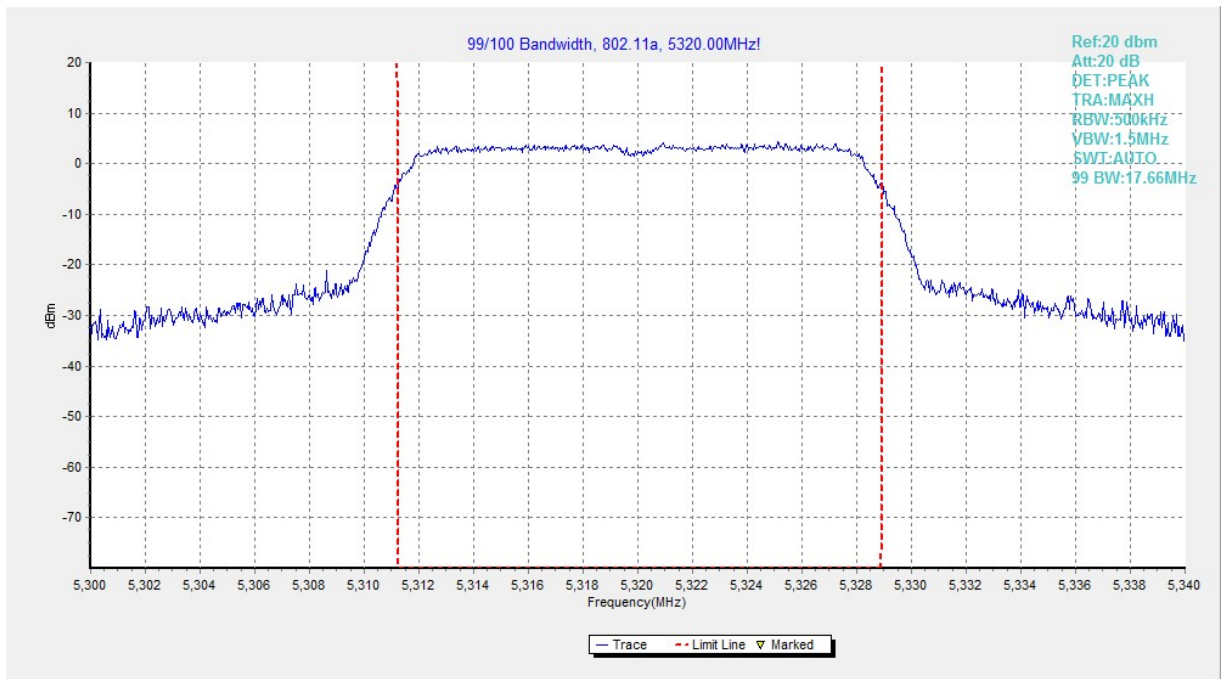


Fig. 30 99% Occupied Bandwidth (802.11a, 5320MHz)

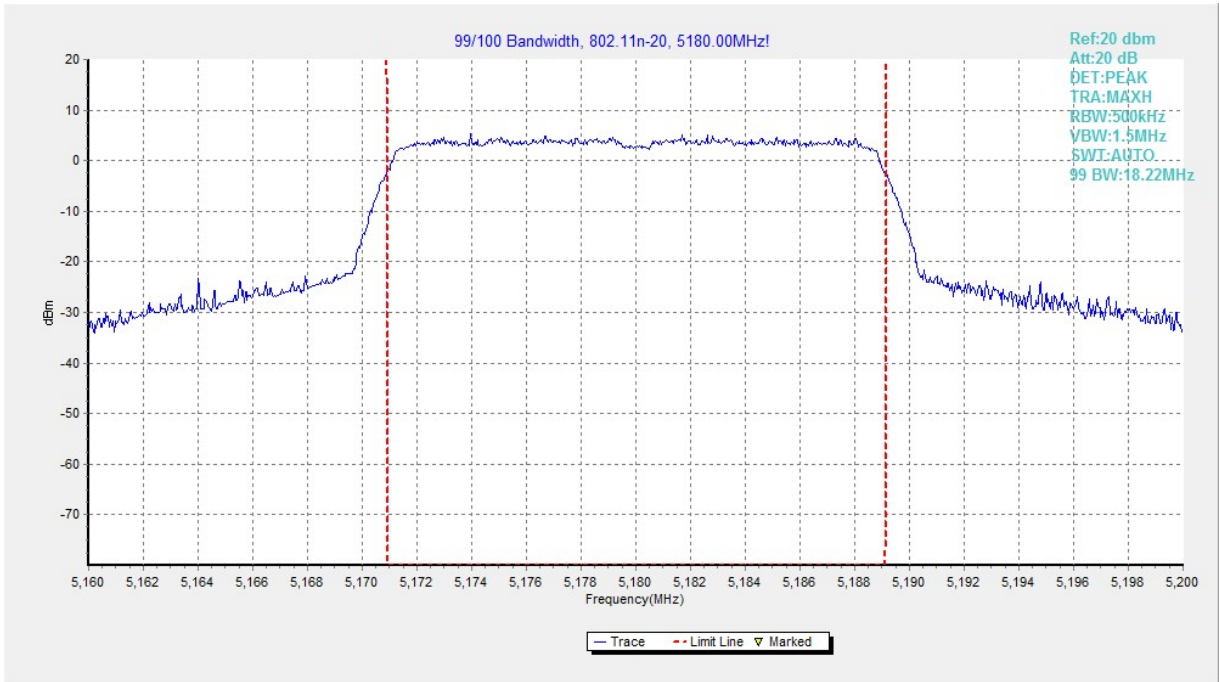


Fig. 31 99% Occupied Bandwidth (802.11n-HT20, 5180MHz)

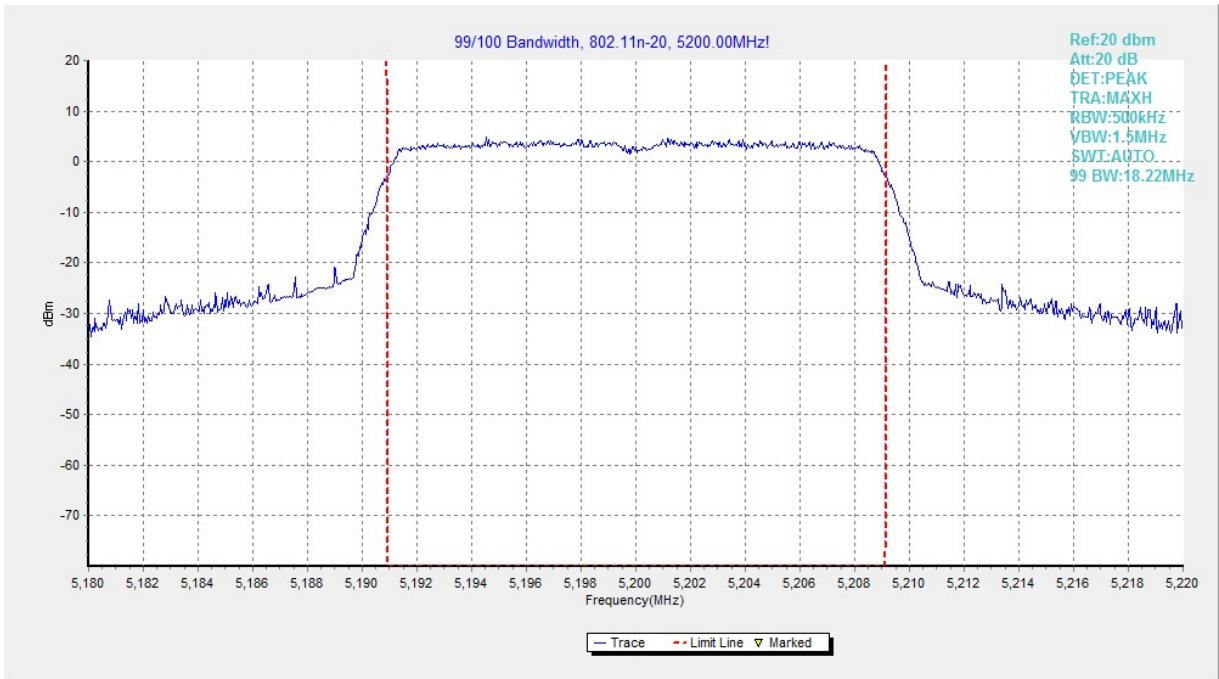


Fig. 32 99% Occupied Bandwidth (802.11n-HT20, 5200MHz)

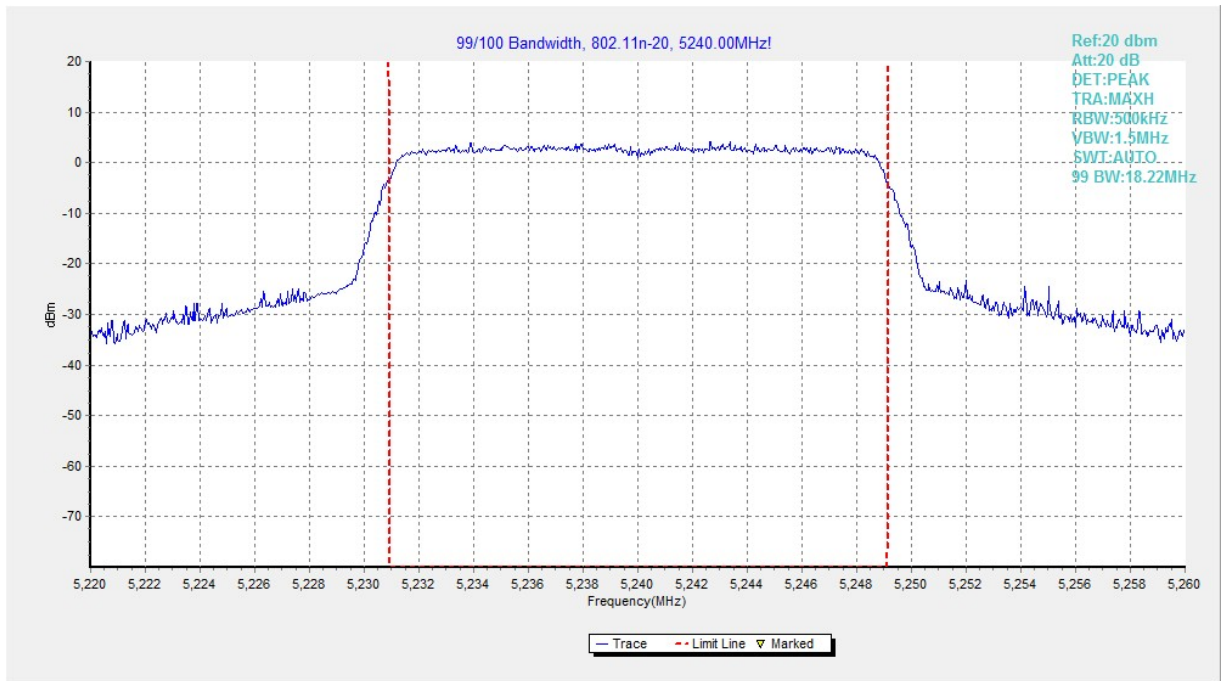


Fig. 33 99% Occupied Bandwidth (802.11n-HT20, 5240MHz)

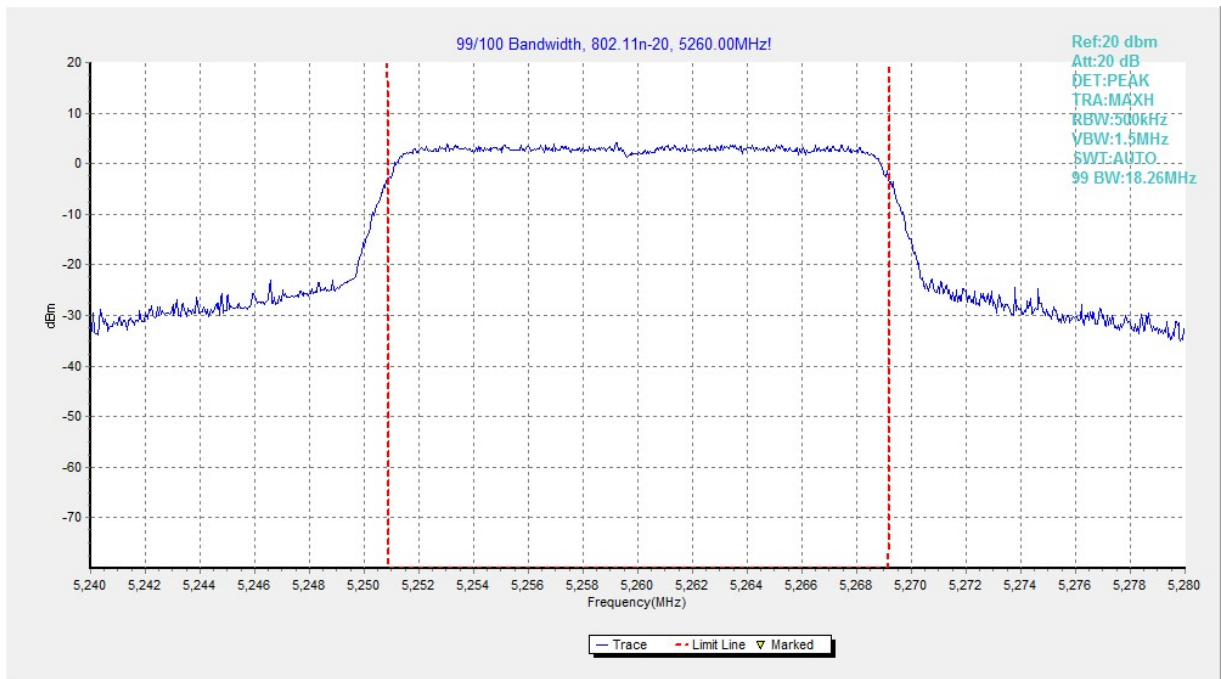


Fig. 34 99% Occupied Bandwidth (802.11n-HT20, 5260MHz)

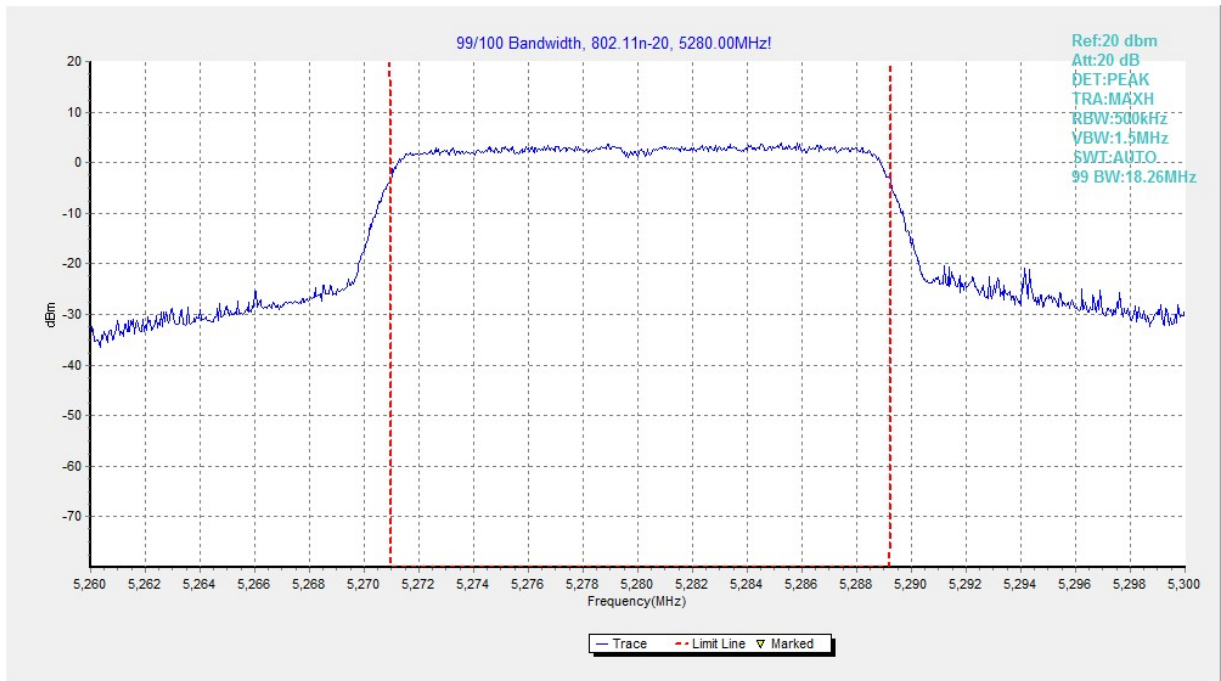


Fig. 35 99% Occupied Bandwidth (802.11n-HT20, 5280MHz)

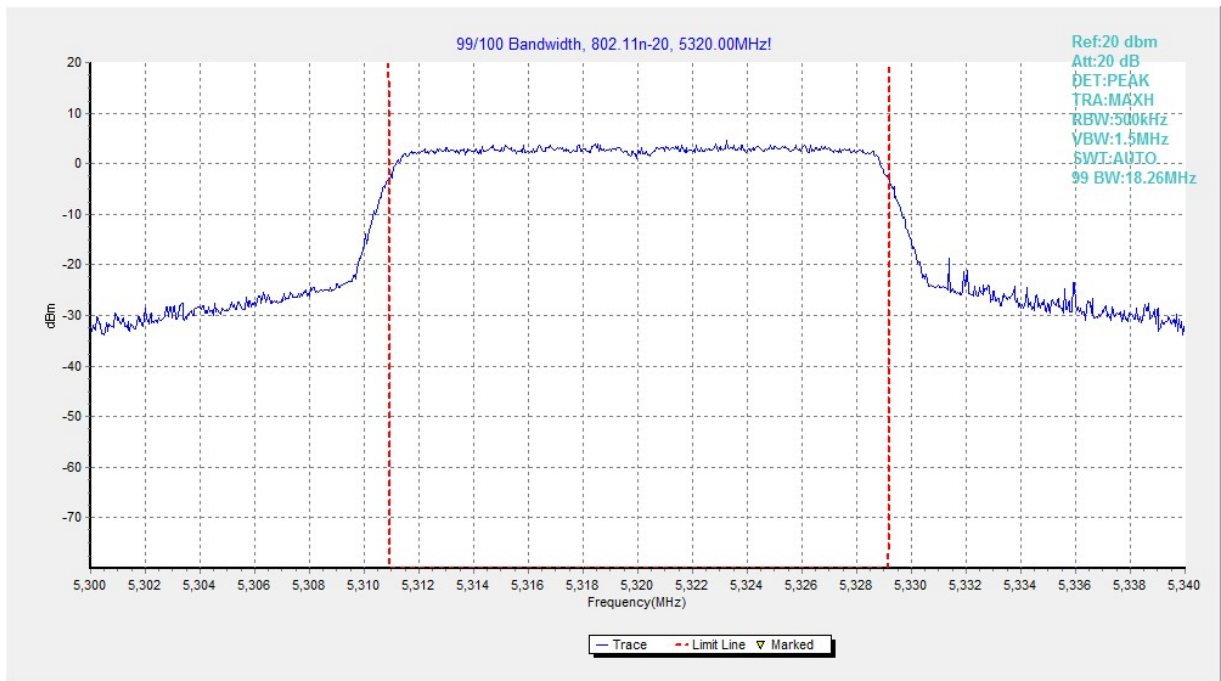


Fig. 36 99% Occupied Bandwidth (802.11n-HT20, 5320MHz)