



TEST REPORT

No. I21N00721-RLAN

TCL Communication Ltd.

Tablet PC

Model Name: 9080G

with

Hardware Version: P10

Software Version: 6A58

FCC ID: 2ACCJB152

Issued Date: 2021-05-08

Designation Number: CN1210

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	9080G
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

Please refer to 5.2 Test Results.

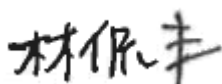
1.4. Testing Location

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:	2021-03-15
Testing End Date:	2021-03-26

1.6. Signature



Lin Kanfeng
(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.
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Contact Person: Gong Zhizhou
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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
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Fax: 0086-755-36612000-81722

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

3.1. About EUT

Description	Tablet PC
Model Name	9080G
RLAN Frequency Range	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz
RLAN Protocol	IEEE 802.11a,802.11n-HT20/40,802.11ac-VHT20/40/80
Type of modulation	OFDM
Antenna Type	Integrated
Antenna Gain	1.7 dBi
Power Supply	3.9V DC by Battery
FCC ID	2ACCJB152
Condition of EUT as received	No abnormality in appearance

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
UT04aa	353864600001343	PIO	6A58	2021-03-05
UT06aa	353864600001285	PIO	6A58	2021-03-08

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

*UT04aa is used for Conduction test; UT06aa is used for Radiation test and AC Power line Conducted Emission test.

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Battery	CAC5360010C1
AE2	Battery	CAC7800002CA
AE3	Charger	CBA0064BGTC1
AE4	Charger	CBA0064BGTC5

AE1

Model	TLp053C1
Manufacturer	BYD
Capacity	7800mAh
Nominal Voltage	3.85v

AE2

Model	TLp078AA
Manufacturer	TIANMAO
Capacity	7800mAh
Nominal Voltage	3.85v

AE3

Model	QC13US
Manufacturer	BYD



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AE4

Model	QC13US
Manufacturer	PUAN

*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 and Charger.

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 Part 15E	Verdict
1	Maximum Output Power	15.407	P
2	Power Spectral Density	15.407	P
3	Occupied 26dB Bandwidth	15.403	P
4	99% Occupied Bandwidth	15.403	P
5	Band Edge Compliance	15.209	P
6	Transmitter Spurious Emissions	15.407, 15.205	P
7	AC Power line Conducted Emission	15.107, 15.207	P
8	Frequency Stability	15.407	P
9	Transmit Power Control	15.407	NA

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

5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacture as listed in section 5.2 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

6. Test Equipments Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2021-12-30	1 year
2	Power Sensor	U2021XA	MY55430013	Agilent	2022-01-13	1 year
3	Data Acquisition	U2531A	TW55443507	Agilent	/	/
4	Climate chamber	SU-242	93008165	ESPEC	2022-03-14	1 year
5	DC Power Supply	ZUP60-14	6MY-847Z13-0001	TDK-Lambda	2022-02-25	1 year

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Date	Calibration Period
1	LISN	ESH2-Z5	100196	R&S	2022-01-01	1 year
2	Test Receiver	ESCI	100701	R&S	2021-08-05	1 year
3	Loop Antenna	HLA6120	35779	TESEQ	2022-05-01	3 year
4	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2024-02-15	3 year
5	Horn Antenna	3117	00066585	ETS-Lindgren	2022-03-04	3 year
6	Test Receiver	ESR7	101675	R&S	2021-07-17	1 year
7	Spectrum Analyzer	FSP 40	100378	R&S	2021-12-11	1 year
8	Chamber	FACT5-2.0	4166	ETS-Lindgren	2021-05-12	3 year
9	Antenna	QSH-SL-1 8-26-S-20	17013	Q-par	2024-01-13	3 year
10	Antenna	QSH-SL-2 6-40-K-20	17014	Q-par	2024-01-09	3 year

Test software

No.	Equipment	Manufacturer	Version
1	TechMgr Software	CAICT	2.1.1
2	EMC32	Rohde & Schwarz	8.53.0
3	EMC32	Rohde & Schwarz	10.01.00

EUT is engineering software provided by the customer to control the transmitting signal. The EUT was programmed to be in continuously transmitting mode.

Anechoic chamber

Fully anechoic chamber by ETS-Lindgren

7. Laboratory Environment

Semi-anechoic chamber

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2M Ω
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	> 2M Ω
Ground system resistance	< 4 Ω

Fully-anechoic chamber

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2M Ω
Ground system resistance	< 4 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 18 GHz, 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

8. Measurement Uncertainty

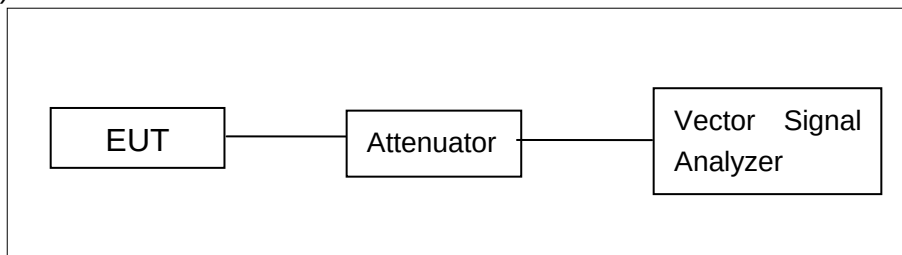
Test Name	Uncertainty ($k=2$)	
1. RF Output Power - Conducted	1.32dB	
2. Power Spectral Density - Conducted	2.32dB	
3. Occupied channel bandwidth - Conducted	66Hz	
4. Transmitter Spurious Emission - Conducted	$30\text{MHz} \leq f < 1\text{GHz}$	1.41dB
	$1\text{GHz} \leq f < 7\text{GHz}$	1.92dB
	$7\text{GHz} \leq f < 13\text{GHz}$	2.31dB
	$13\text{GHz} \leq f \leq 26\text{GHz}$	2.61dB
5. Transmitter Spurious Emission - Radiated	$9\text{kHz} \leq f < 30\text{MHz}$	1.70dB
	$30\text{MHz} \leq f < 1\text{GHz}$	4.90dB
	$1\text{GHz} \leq f < 18\text{GHz}$	4.60dB
	$18\text{GHz} \leq f \leq 40\text{GHz}$	4.10dB
6. AC Power line Conducted Emission	$150\text{kHz} \leq f \leq 30\text{MHz}$	3.00dB

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

Conducted Measurements

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

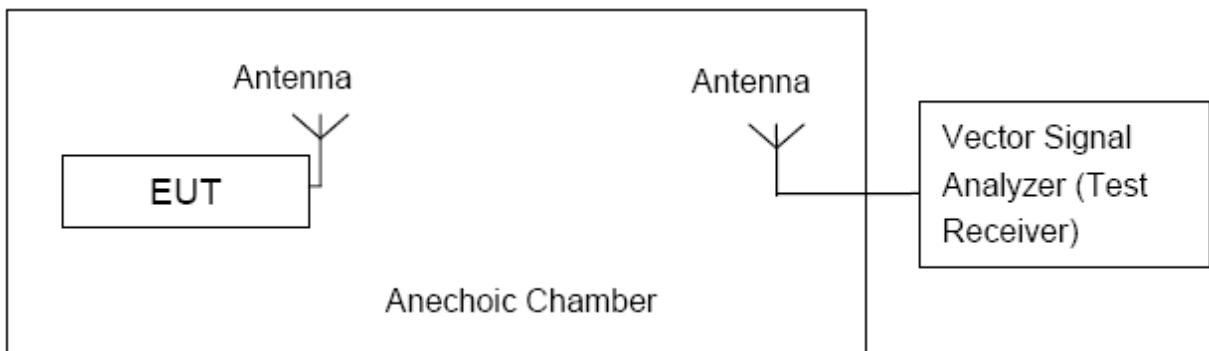


Radiated Emission Measurements

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

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

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



The measurement is made according to KDB 789033.

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

A.2. Maximum Output Power

Measurement Limit and Method:

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

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:

802.11a mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz(Ch36)	12.07	12.02	11.98	11.96	11.93	11.92	11.90	11.87
	5200MHz(Ch40)	12.10	/	/	/	/	/	/	/
	5240MHz(Ch48)	11.93	/	/	/	/	/	/	/
	5260MHz(Ch52)	11.88	/	/	/	/	/	/	/
	5280MHz(Ch56)	11.86	/	/	/	/	/	/	/
	5320MHz(Ch64)	11.77	/	/	/	/	/	/	/

802.11n-HT20 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz(Ch36)	12.01	11.99	11.96	11.95	11.91	11.86	11.82	11.83
	5200MHz(Ch40)	12.02	/	/	/	/	/	/	/
	5240MHz(Ch48)	11.85	/	/	/	/	/	/	/
	5260MHz(Ch52)	11.82	/	/	/	/	/	/	/
	5280MHz(Ch56)	11.79	/	/	/	/	/	/	/
	5320MHz(Ch64)	11.72	/	/	/	/	/	/	/

802.11ac-VHT20 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7

802.11ac (VHT20)	5180MHz(Ch36)	11.95	11.92	11.90	11.87	11.83	11.83	11.80	11.78
	5200MHz(Ch40)	11.96	/	/	/	/	/	/	/
	5240MHz(Ch48)	11.83	/	/	/	/	/	/	/
	5260MHz(Ch52)	11.75	/	/	/	/	/	/	/
	5280MHz(Ch56)	11.71	/	/	/	/	/	/	/
	5320MHz(Ch64)	11.69	/	/	/	/	/	/	/

802.11n-HT40 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz(Ch38)	11.76	11.71	11.67	11.66	11.63	11.58	11.55	11.57
	5230MHz(Ch46)	11.58	/	/	/	/	/	/	/
	5270MHz(Ch54)	11.64	/	/	/	/	/	/	/
	5310MHz(Ch62)	11.61	/	/	/	/	/	/	/

802.11ac-VHT40 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (VHT40)	5190MHz(Ch38)	11.67	11.63	11.62	11.59	11.55	11.56	11.52	11.50
	5230MHz(Ch46)	11.53	/	/	/	/	/	/	/
	5270MHz(Ch54)	11.55	/	/	/	/	/	/	/
	5310MHz(Ch62)	11.52	/	/	/	/	/	/	/

802.11ac-VHT80 mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Index)							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (VHT80)	5210MHz(Ch42)	11.79	11.77	11.72	11.70	11.69	11.65	11.64	11.61
	5290MHz(Ch58)	11.63	/	/	/	/	/	/	/

Note: The data rate 6Mbps (11a mode), MCS0 (11n mode) and MCS0 (11ac mode) are selected as the worst case. 802.11a, 802.11n-HT40 and 802.11ac-VHT80 modes are selected as the worst case. The following cases and test graphs are performed with this condition. The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

A.3. Peak Power Spectral Density

Measurement Limit:

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

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

Measurement Results:

5.2GHz Band (UNII-1)

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180MHz(Ch36)	0.52	P
	5200MHz(Ch40)	0.37	P
	5240MHz(Ch48)	0.15	P
802.11n HT40	5190MHz(Ch38)	-2.85	P
	5230MHz(Ch46)	-3.29	P
802.11ac VHT80	5210MHz(Ch42)	-6.62	P

5.3GHz Band (UNII-2A)

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5260MHz(Ch52)	0.16	P
	5280MHz(Ch56)	-0.25	P
	5320MHz(Ch64)	-0.17	P
802.11n HT40	5270MHz(Ch54)	-3.63	P
	5310MHz(Ch62)	-3.62	P
802.11ac VHT80	5290MHz(Ch58)	-6.94	P

Conclusion: PASS

A.4. Occupied 26dB Bandwidth

Measurement Limit:

Standard	Limit (MHz)
FCC 47 CFR Part 15.403	/

The measurement is made according to KDB 789033.

Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth (MHz)		Conclusion
802.11a	5180MHz(Ch36)	Fig.1	20.65	P
	5200MHz(Ch40)	Fig.2	20.60	P
	5240MHz(Ch48)	Fig.3	20.50	P
	5260MHz(Ch52)	Fig.4	20.55	P
	5280MHz(Ch56)	Fig.5	20.60	P
	5320MHz(Ch64)	Fig.6	20.60	P
802.11n HT40	5190MHz(Ch38)	Fig.7	40.80	P
	5230MHz(Ch46)	Fig.8	41.04	P
	5270MHz(Ch54)	Fig.9	40.96	P
	5310MHz(Ch62)	Fig.10	41.04	P
802.11ac VHT80	5210MHz(Ch42)	Fig.11	81.12	P
	5290MHz(Ch58)	Fig.12	81.44	P

Conclusion: PASS

Test graphs as below:

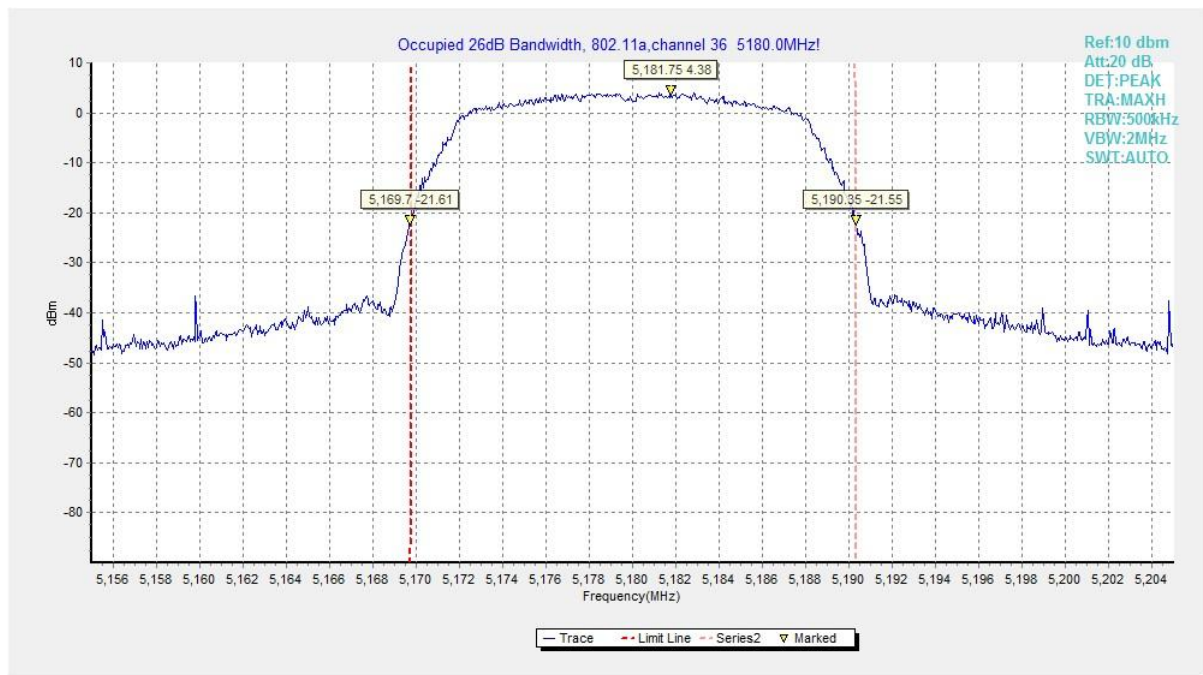


Fig. 1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

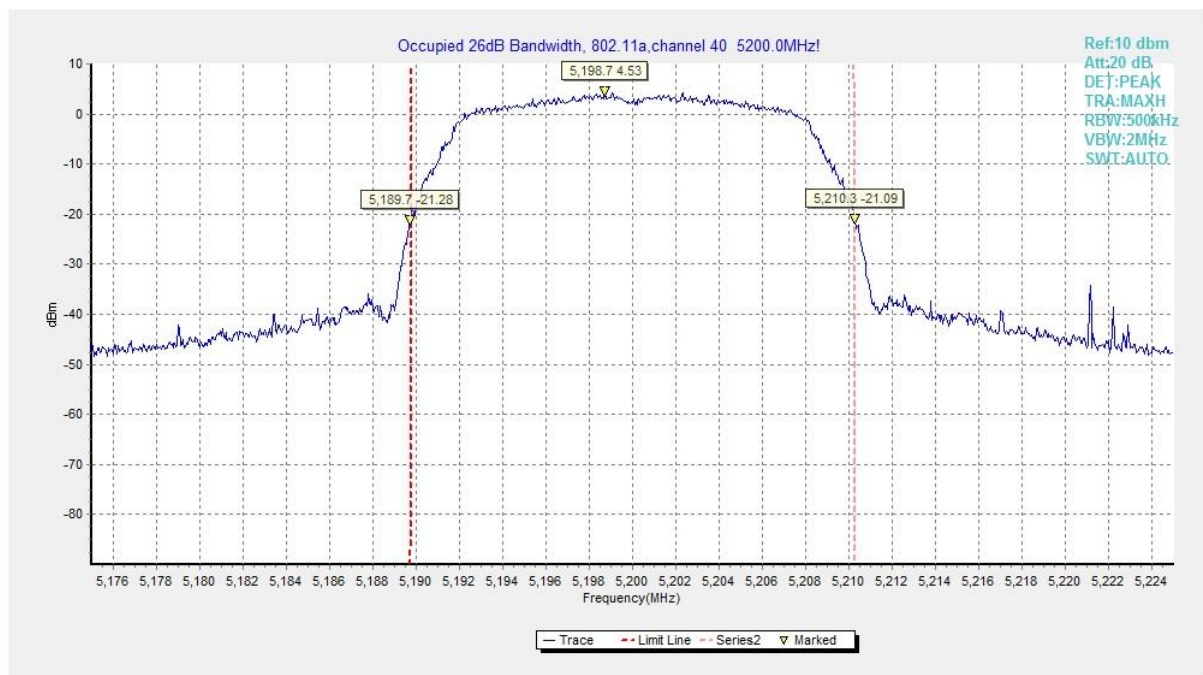


Fig. 2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

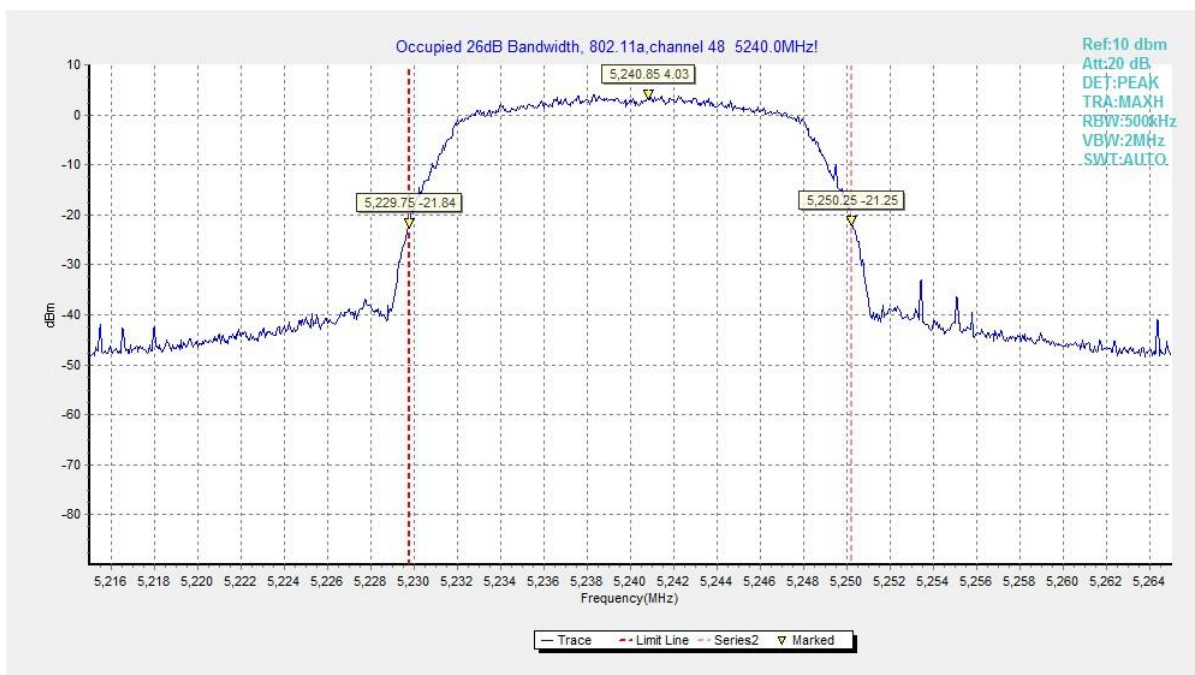


Fig. 3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

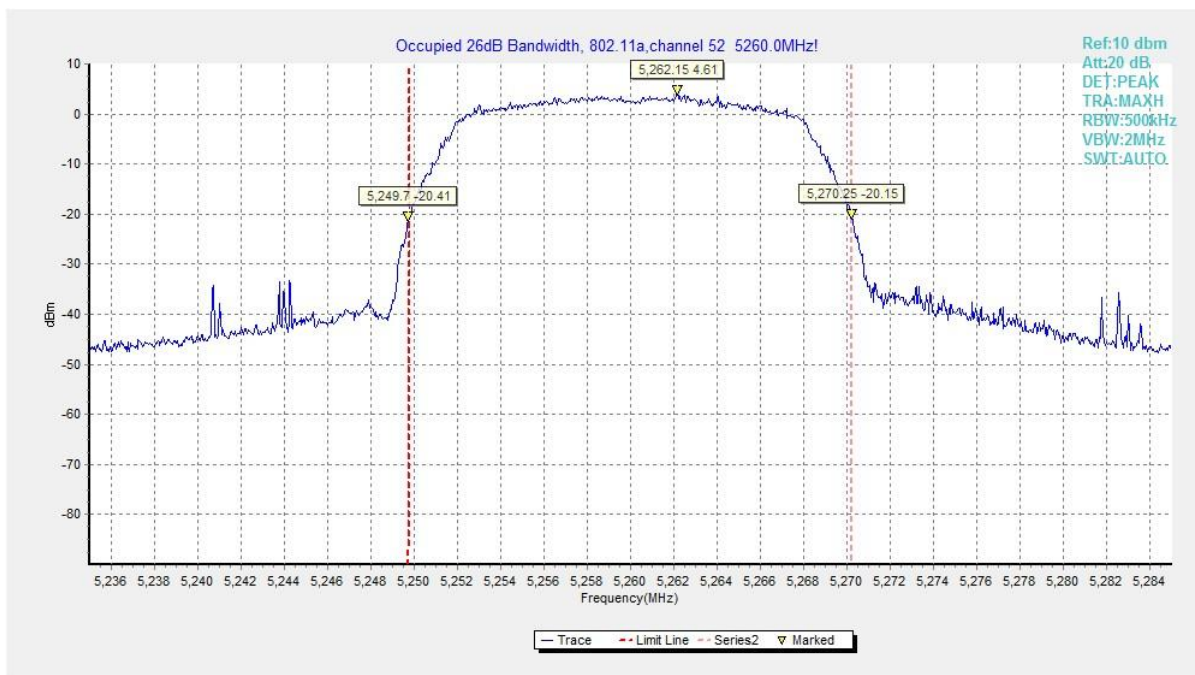


Fig. 4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

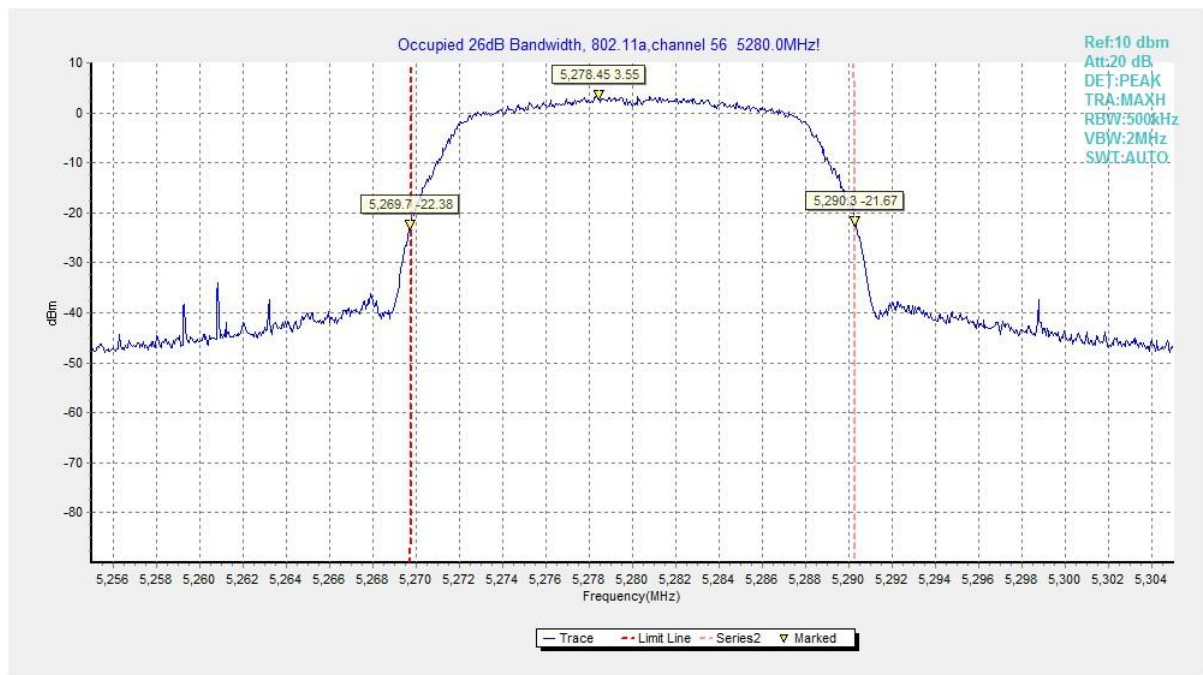


Fig. 5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

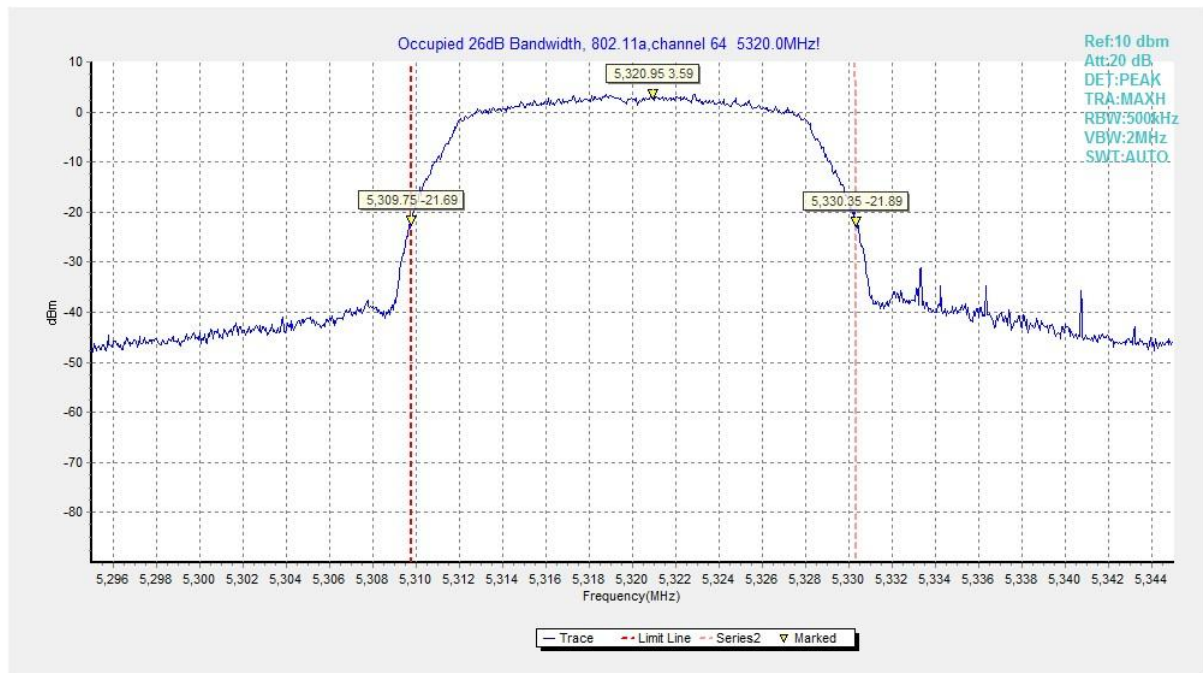


Fig. 6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

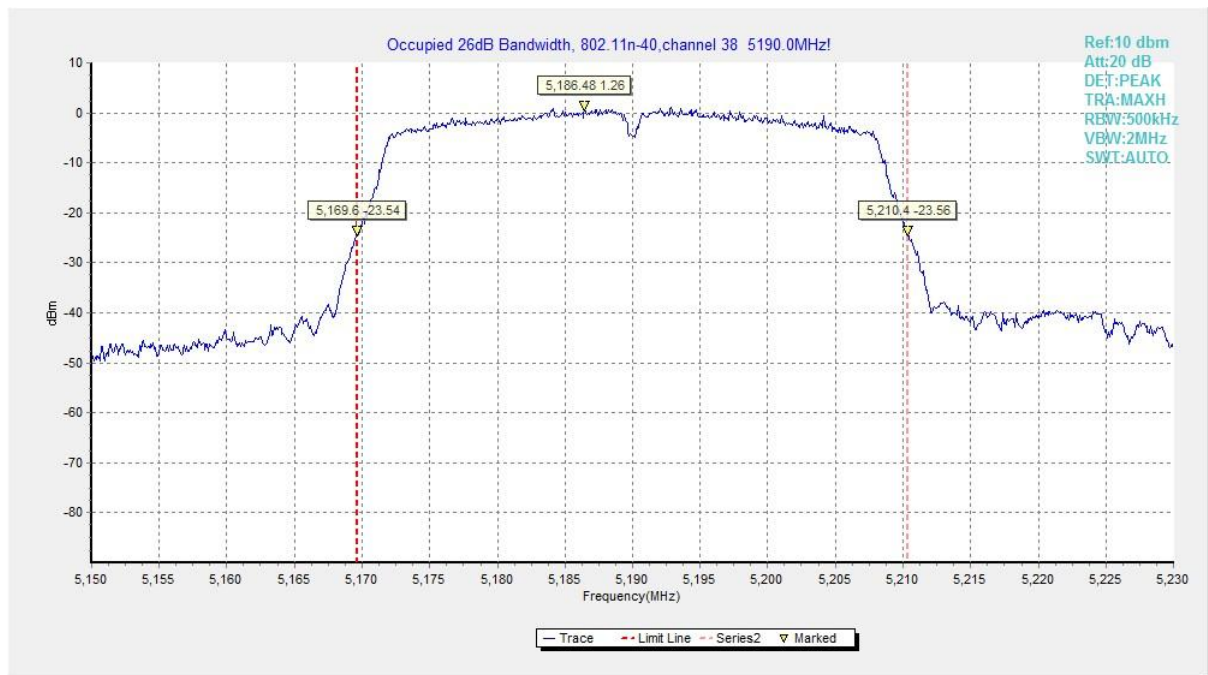


Fig. 7 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

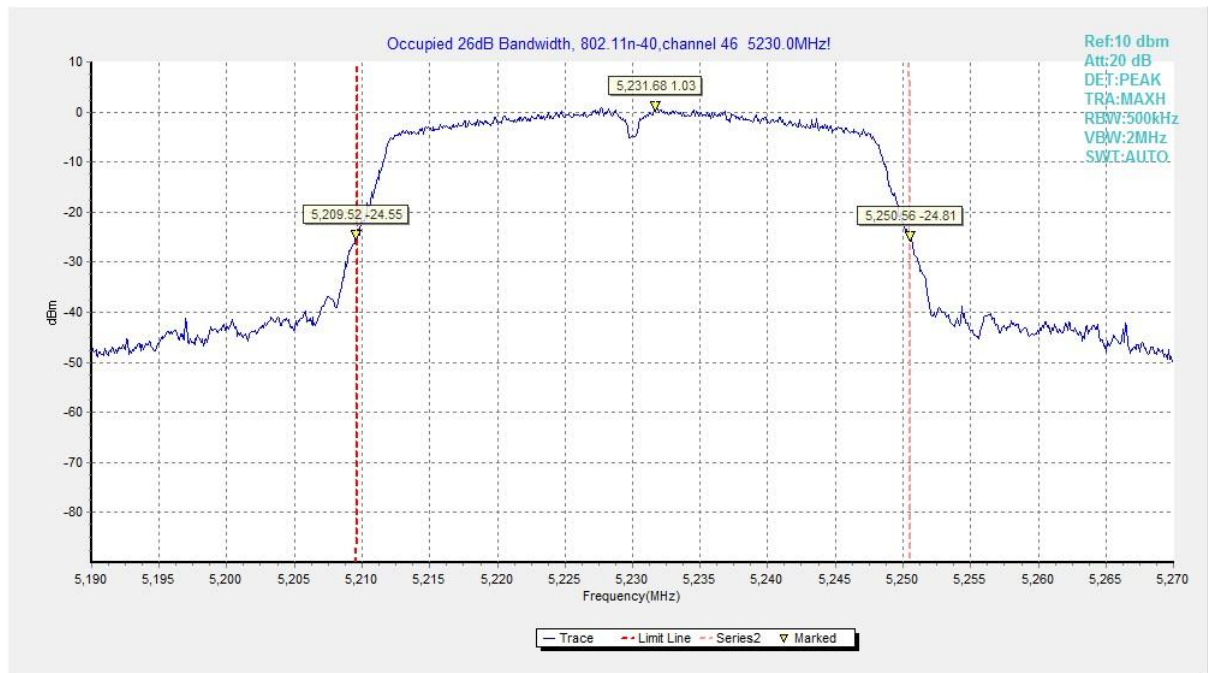


Fig. 8 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

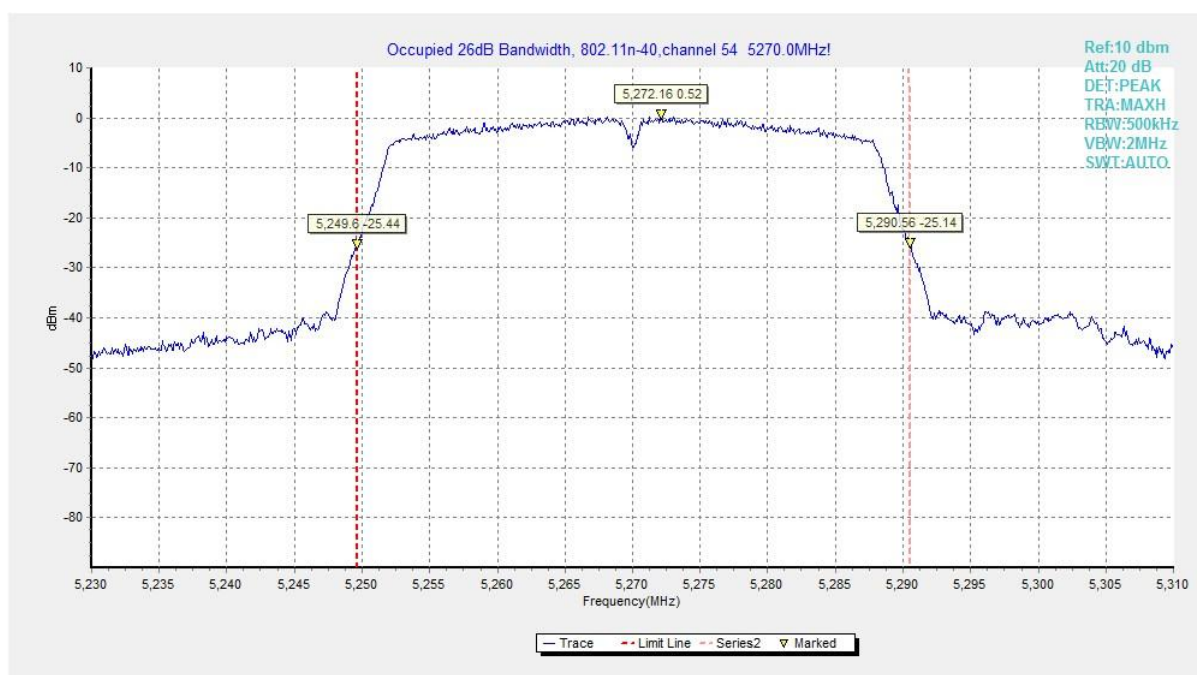


Fig. 9 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)

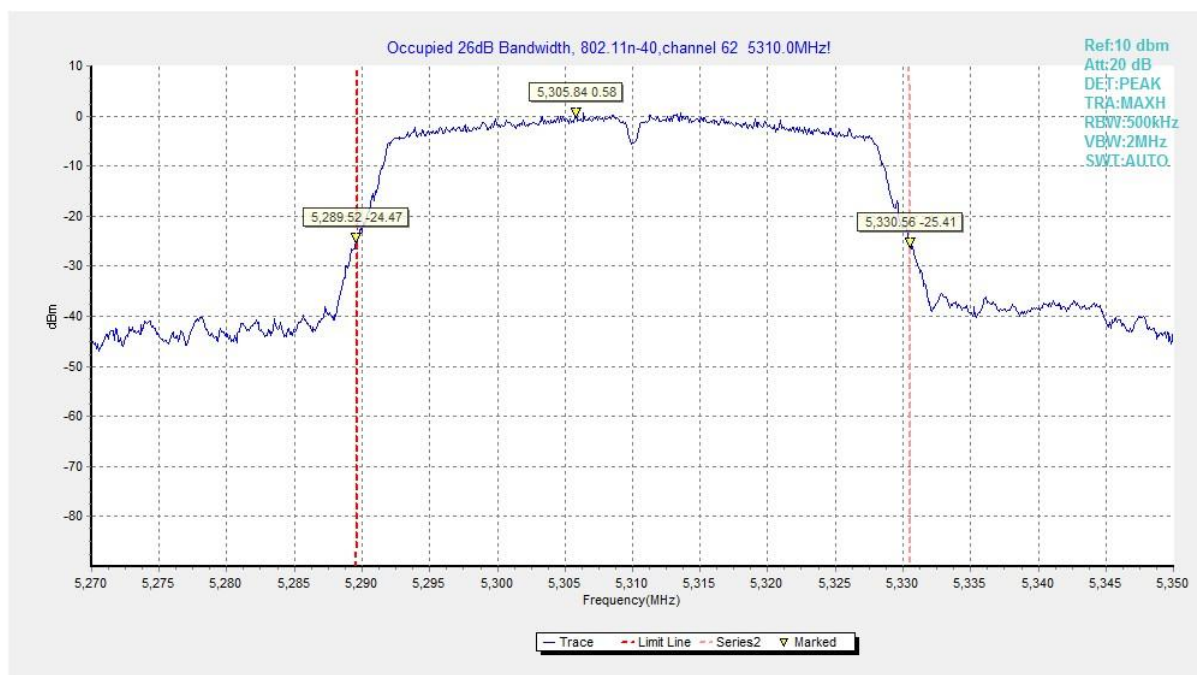


Fig. 10 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

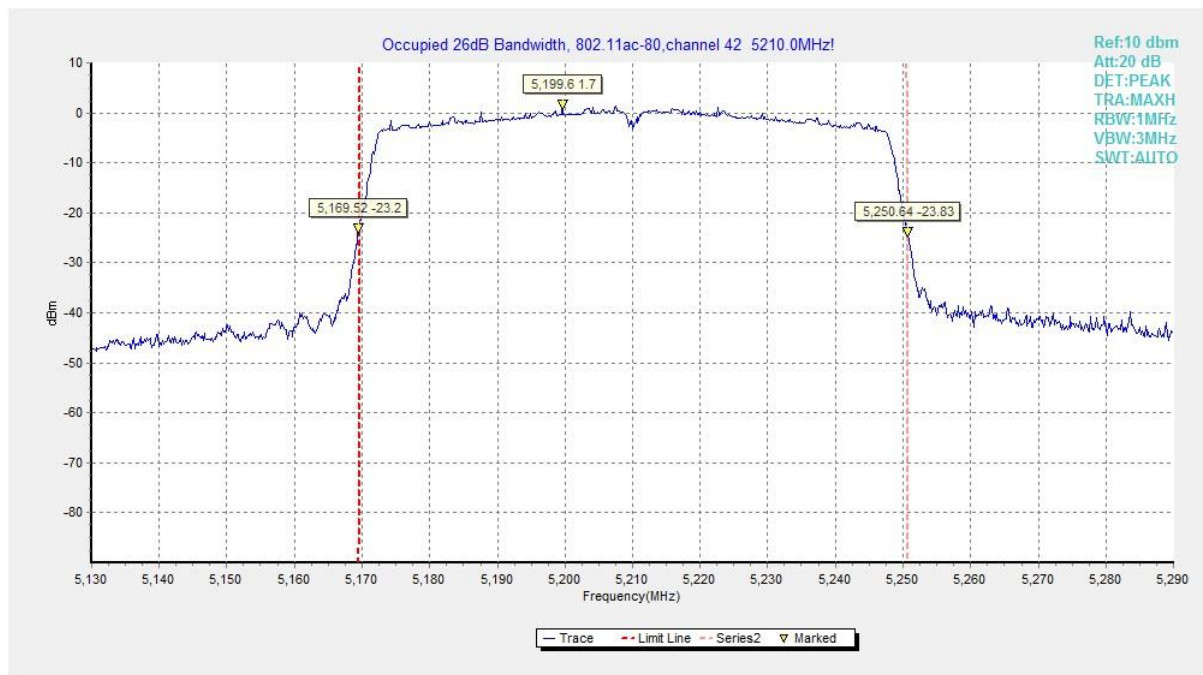


Fig. 11 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5210MHz)

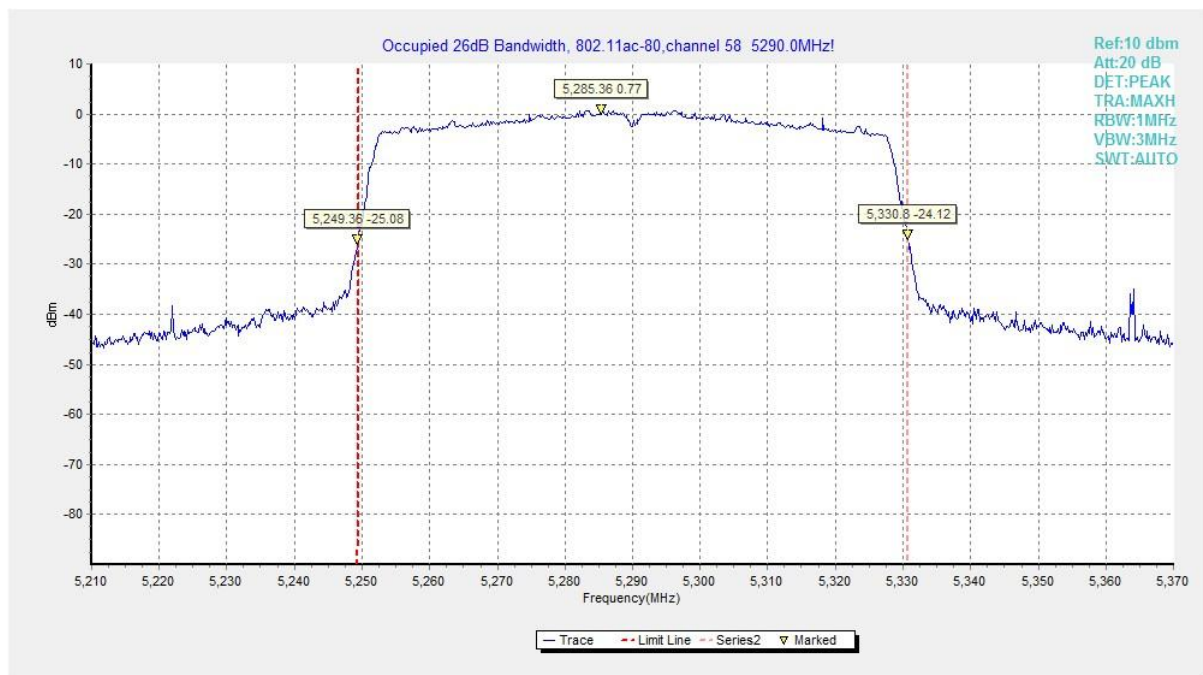


Fig. 12 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5290MHz)

A.5. 99% Occupied Bandwidth

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
802.11a	5180MHz(Ch36)	Fig.13	17.18	P
	5200MHz(Ch40)	Fig.14	17.14	P
	5240MHz(Ch48)	Fig.15	17.18	P
	5260MHz(Ch52)	Fig.16	17.26	P
	5280MHz(Ch56)	Fig.17	17.18	P
	5320MHz(Ch64)	Fig.18	17.26	P
802.11n HT40	5190MHz(Ch38)	Fig.19	36.12	P
	5230MHz(Ch46)	Fig.20	36.12	P
	5270MHz(Ch54)	Fig.21	36.20	P
	5310MHz(Ch62)	Fig.22	36.12	P
802.11ac VHT80	5210MHz(Ch42)	Fig.23	75.28	P
	5290MHz(Ch58)	Fig.24	75.28	P

Conclusion: PASS

Test graphs as below:

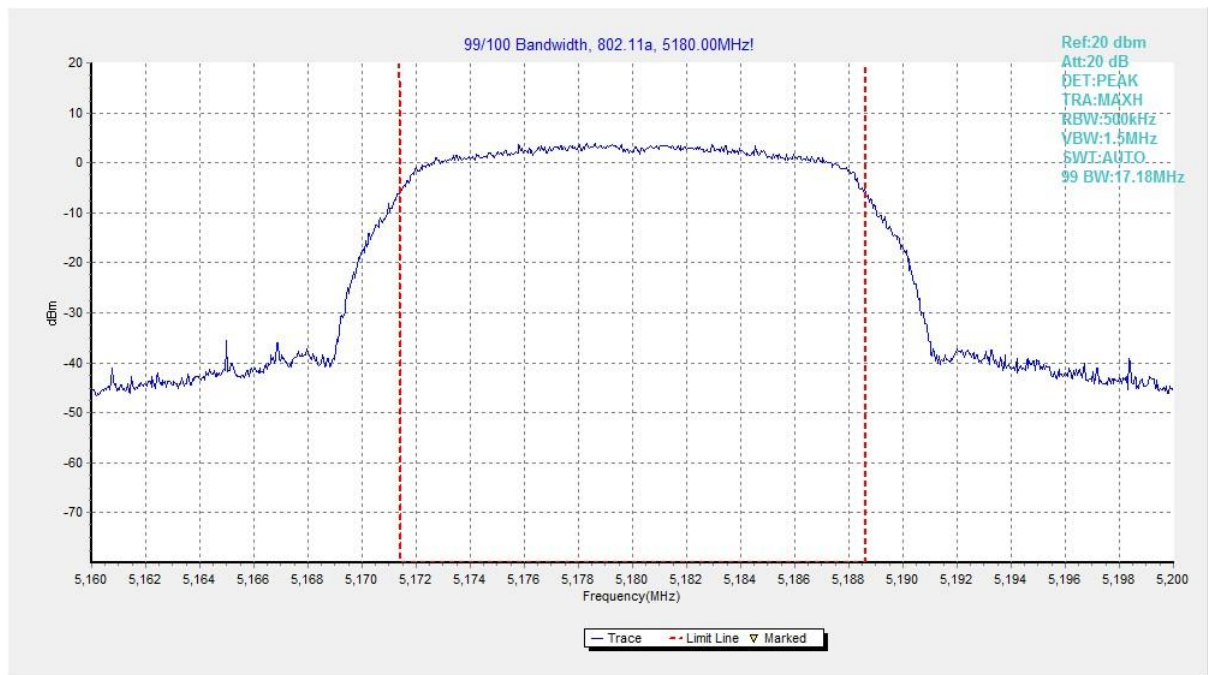


Fig. 13 99% Occupied Bandwidth (802.11a, 5180MHz)

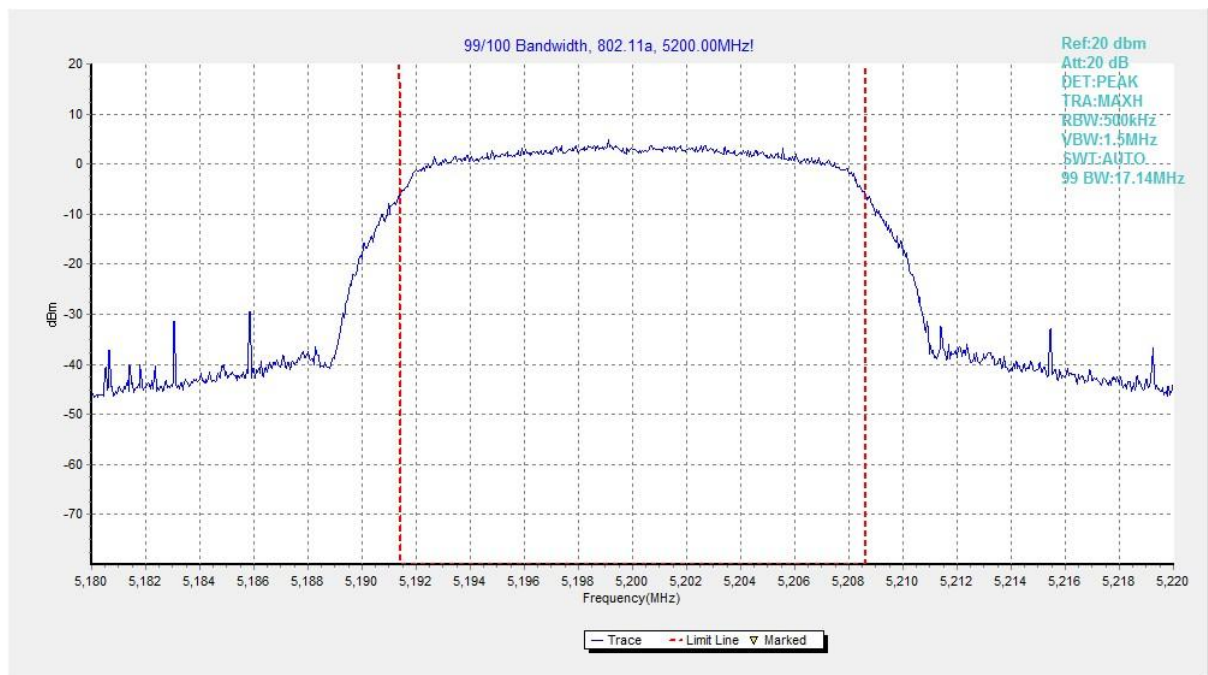


Fig. 14 99% Occupied Bandwidth (802.11a, 5200MHz)

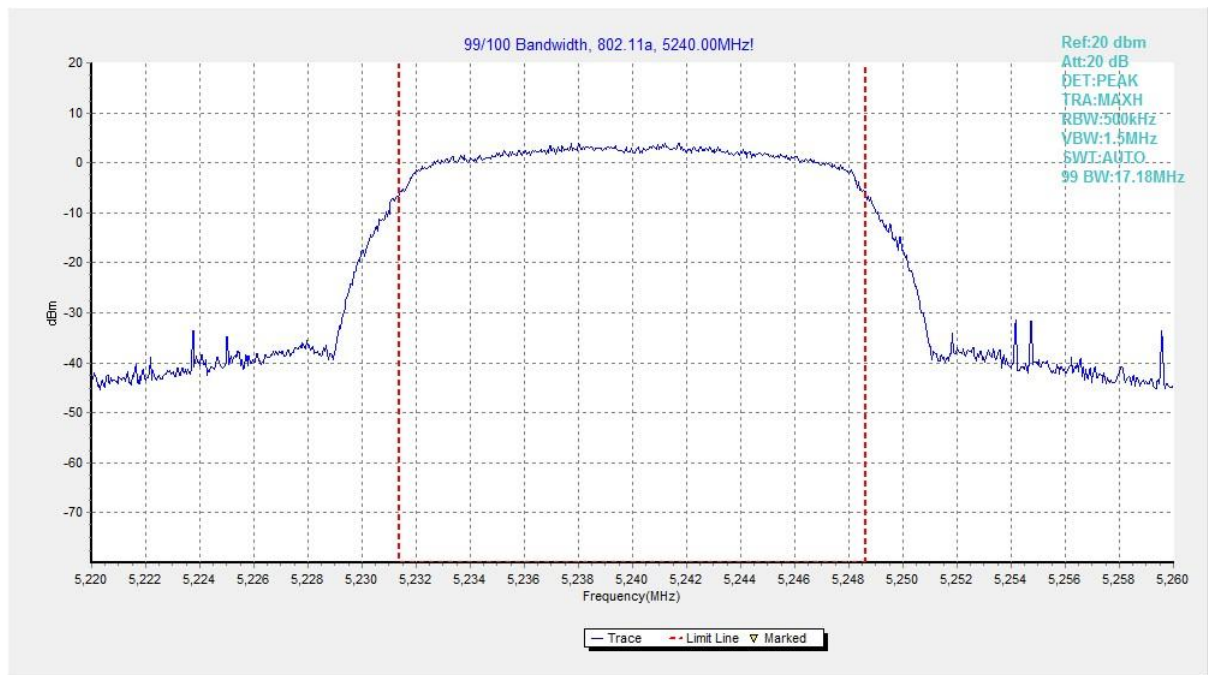


Fig. 15 99% Occupied Bandwidth (802.11a, 5240MHz)

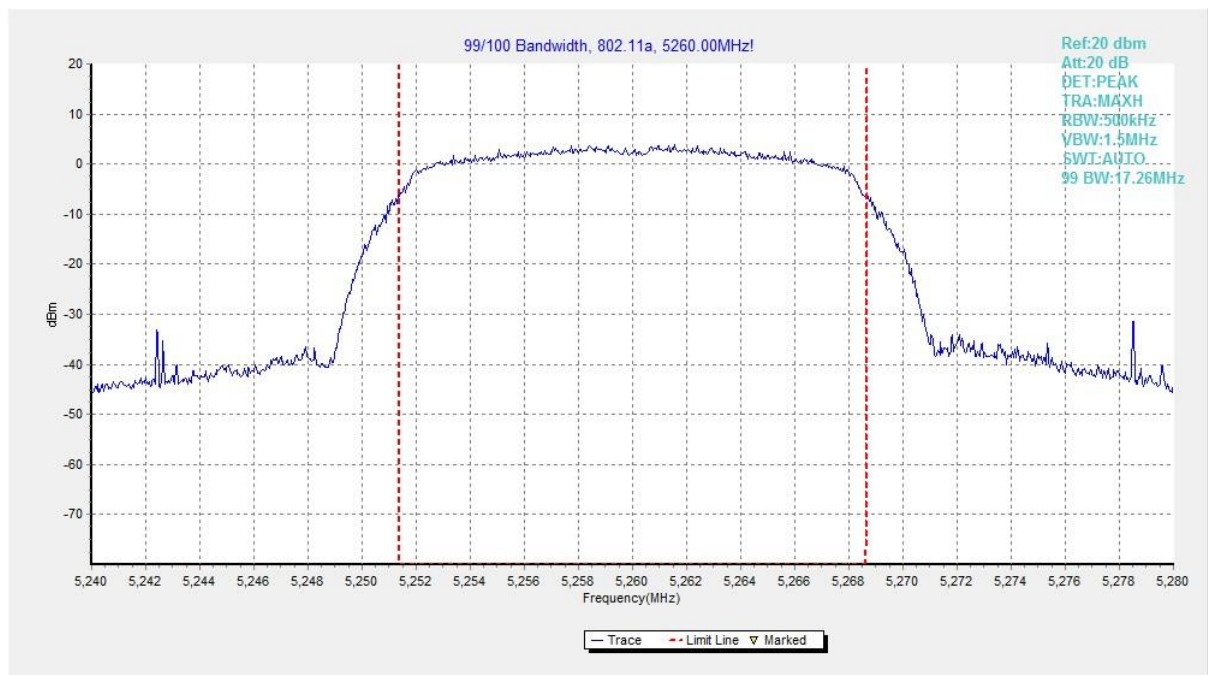


Fig. 16 99% Occupied Bandwidth (802.11a, 5260MHz)

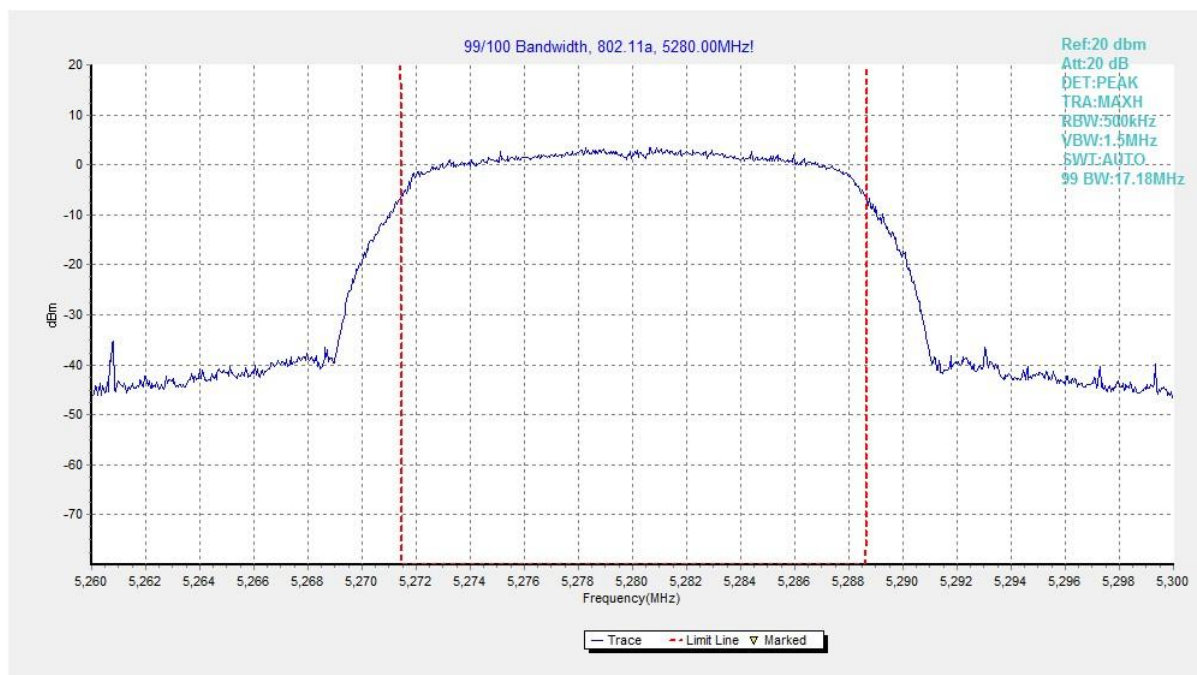


Fig. 17 99% Occupied Bandwidth (802.11a, 5280MHz)

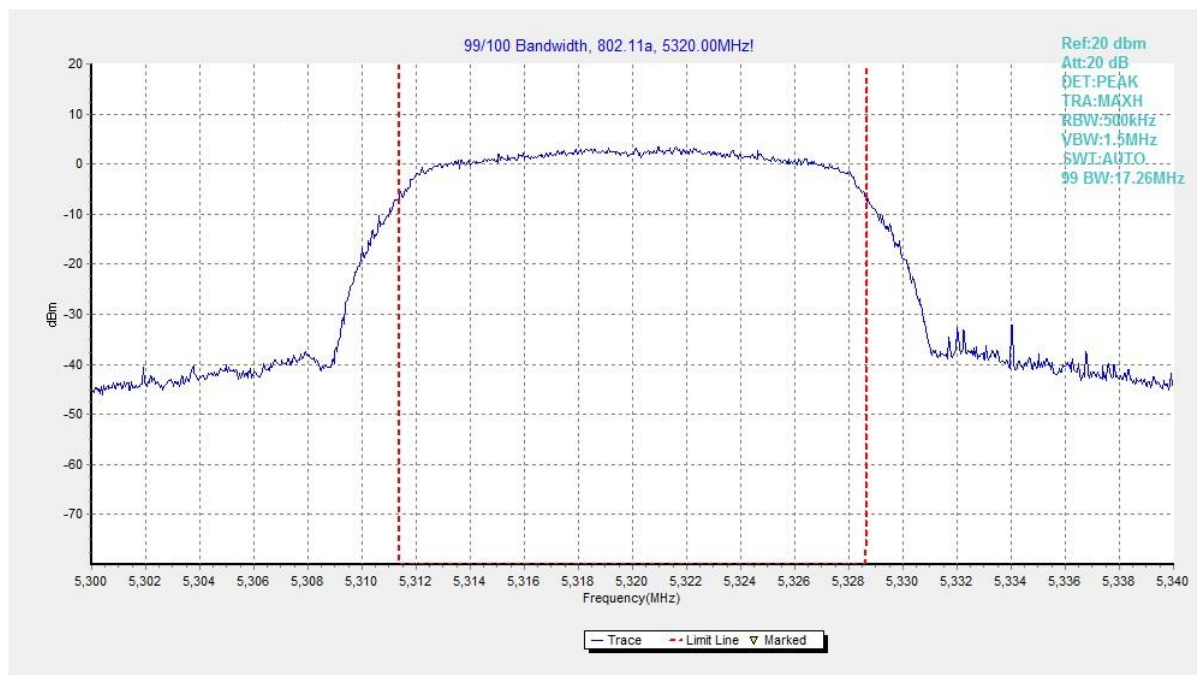


Fig. 18 99% Occupied Bandwidth (802.11a, 5320MHz)

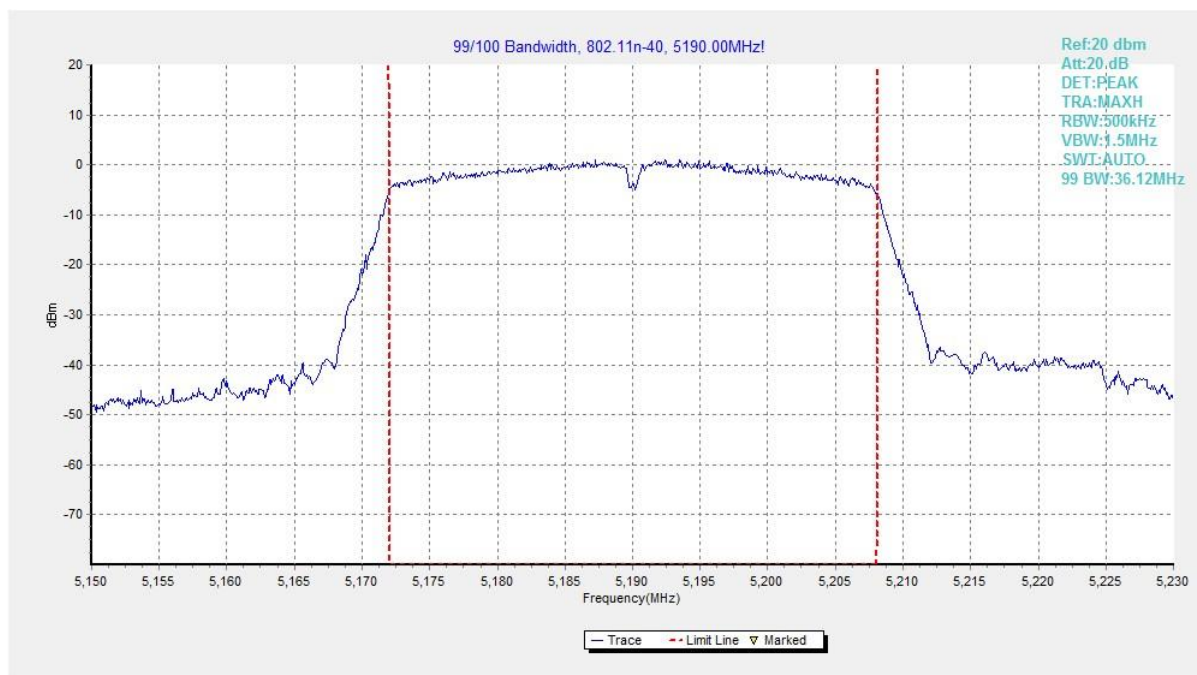


Fig. 19 99% Occupied Bandwidth (802.11n-HT40, 5190MHz)

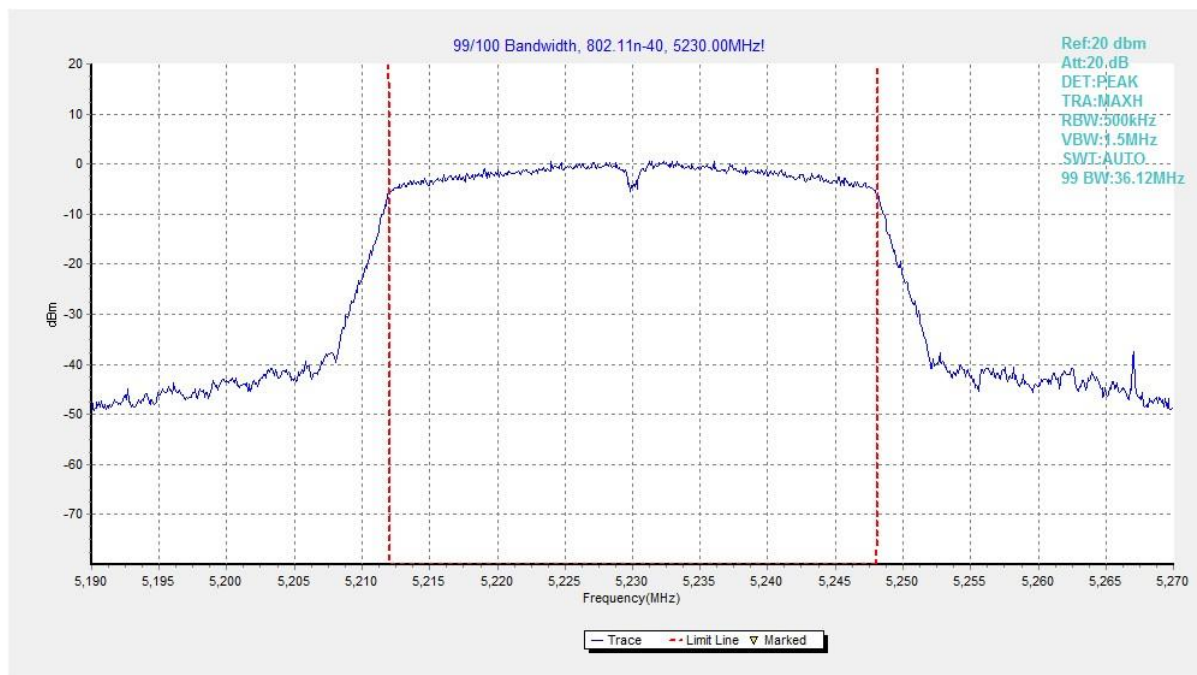


Fig. 20 99% Occupied Bandwidth (802.11n-HT40, 5230MHz)

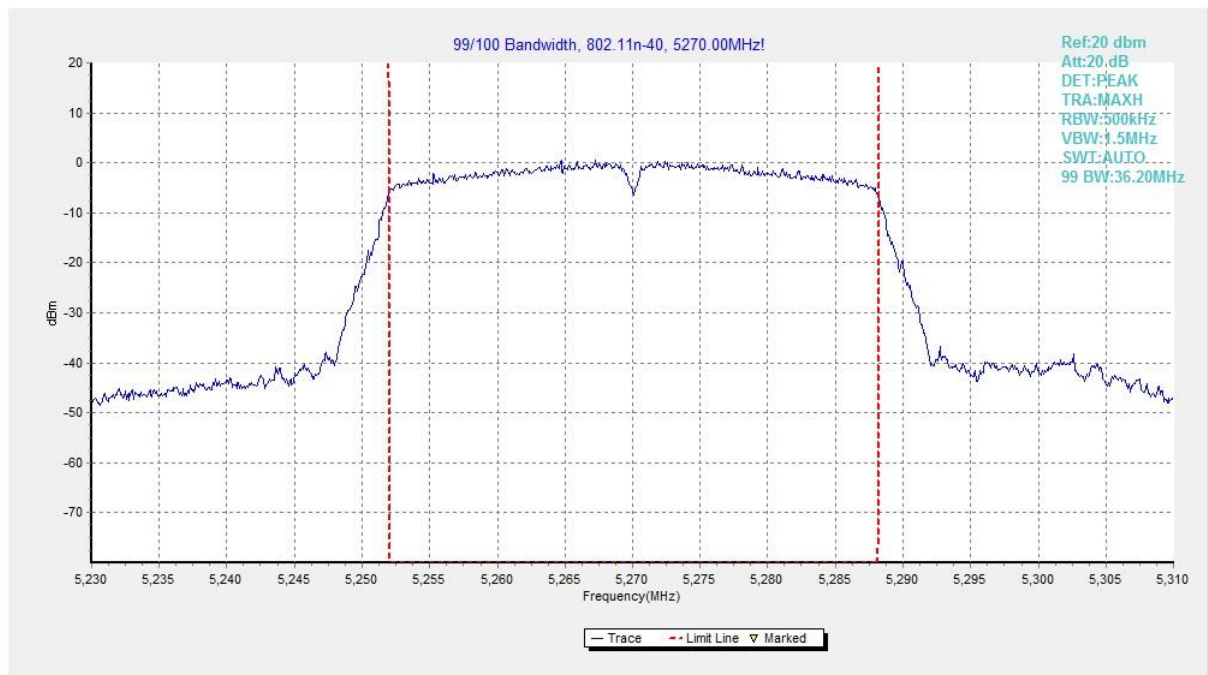


Fig. 21 99% Occupied Bandwidth (802.11n-HT40, 5270MHz)

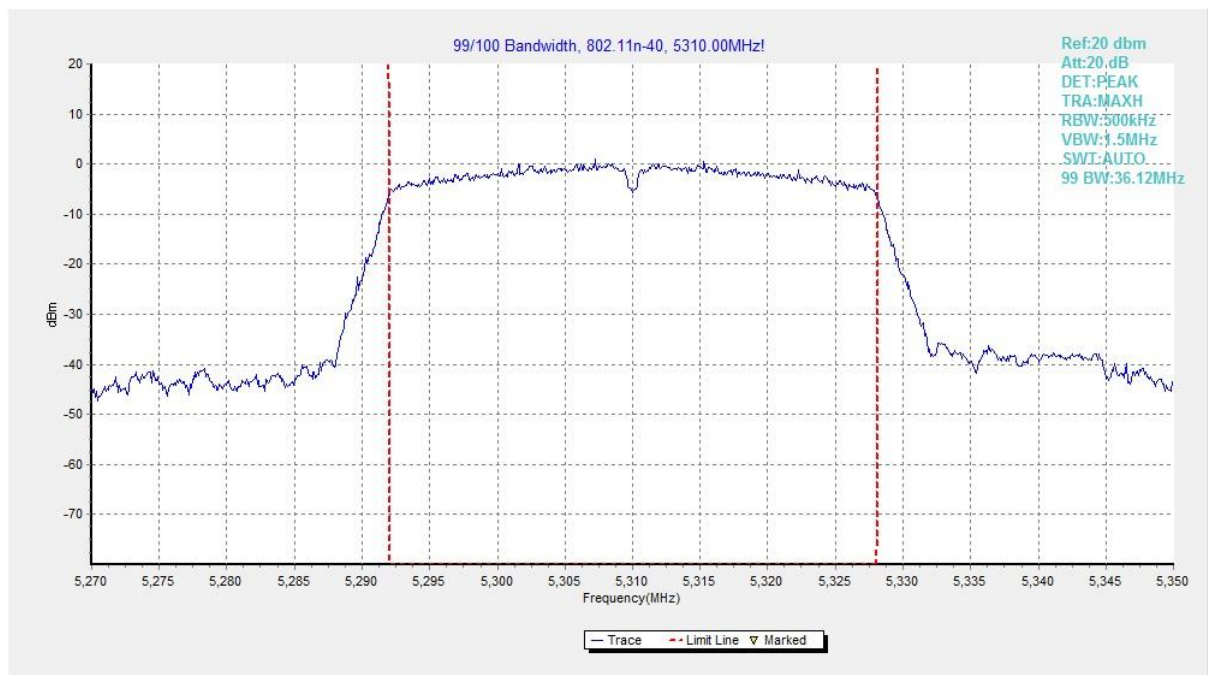


Fig. 22 99% Occupied Bandwidth (802.11n-HT40, 5310MHz)

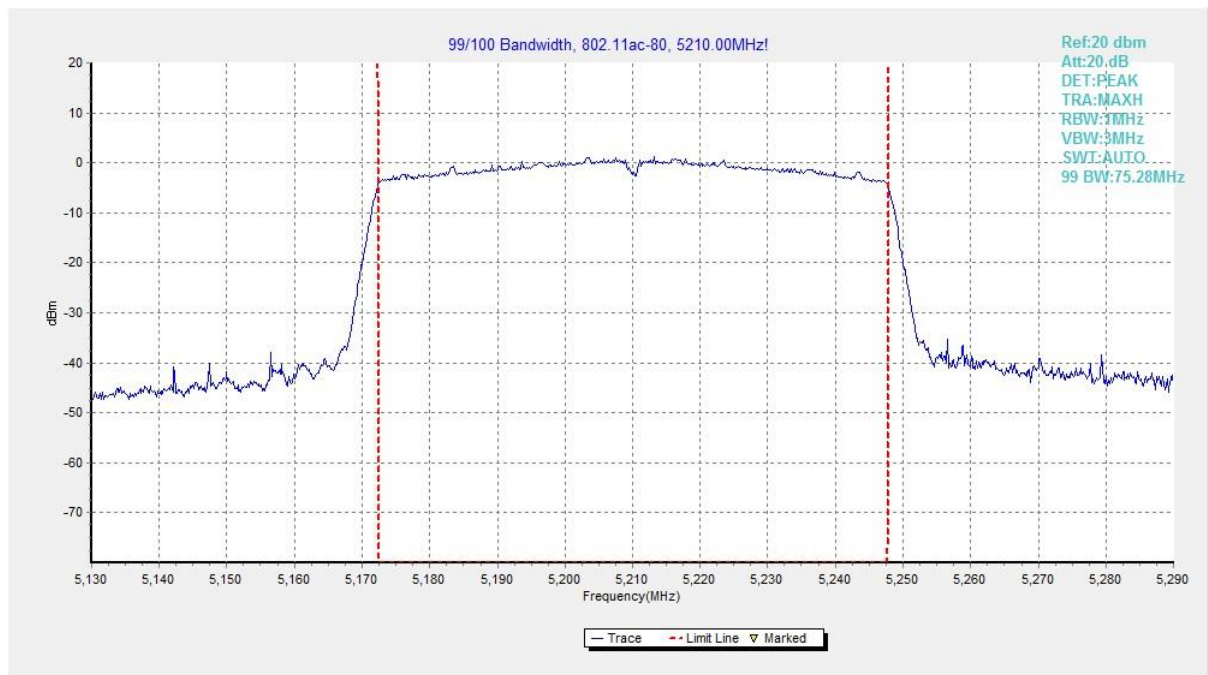


Fig. 23 99% Occupied Bandwidth (802.11ac-VHT80, 5210MHz)

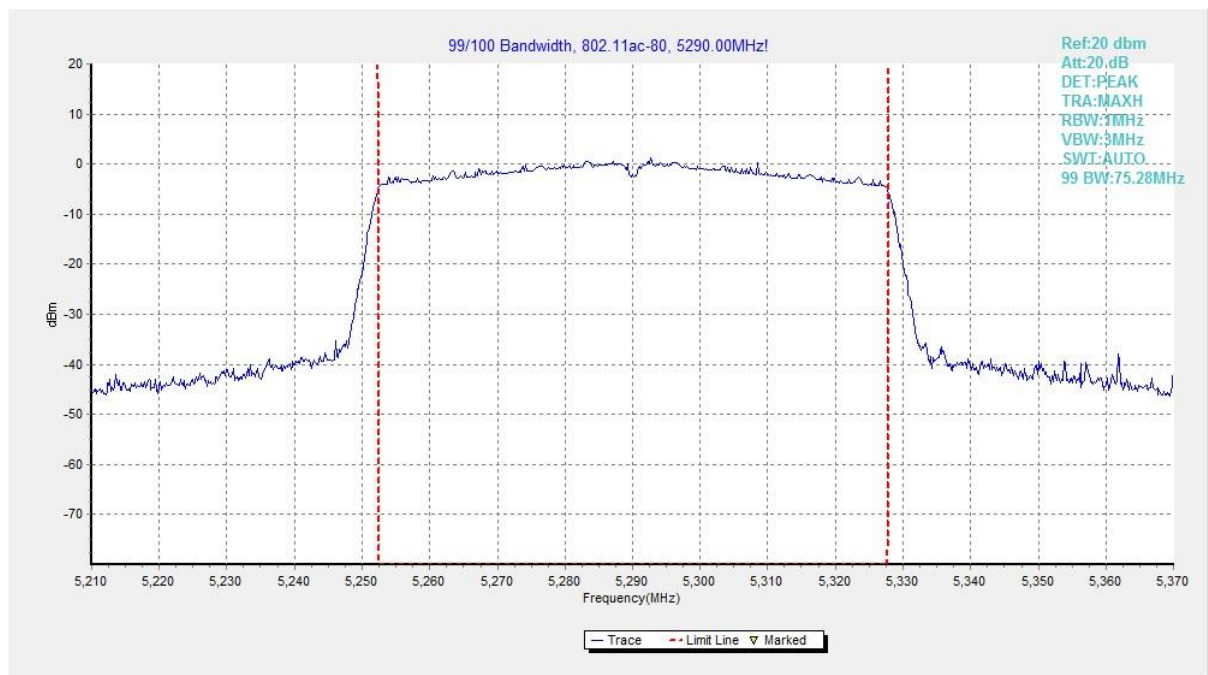


Fig. 24 99% Occupied Bandwidth (802.11ac-VHT80, 5290MHz)

A.6. Band Edges Compliance**Measurement Limit:**

Standard	Limit (dBuV/m)	
	Peak	74
	Average	54

The measurement is made according to KDB 789033.

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz (CH36)	Fig.25	P
	5320 MHz (CH64)	Fig.26	P
802.11n HT40	5190 MHz (CH38)	Fig.27	P
	5310 MHz (CH62)	Fig.28	P
802.11ac VHT80	5210 MHz (CH42)	Fig.29	P
	5290 MHz (CH58)	Fig.30	P

Conclusion: PASS

Test graphs as below:

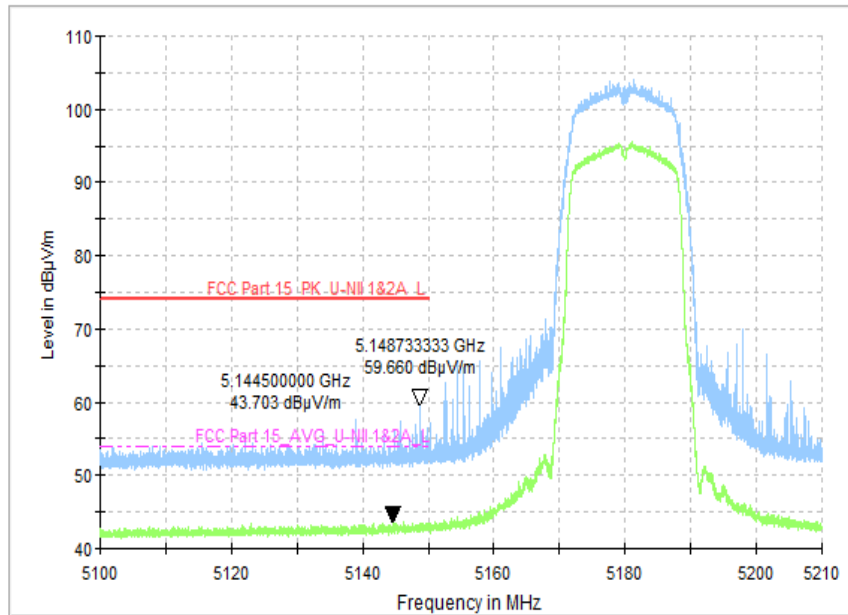


Fig. 25 Band Edges (802.11a, CH36 5180MHz)

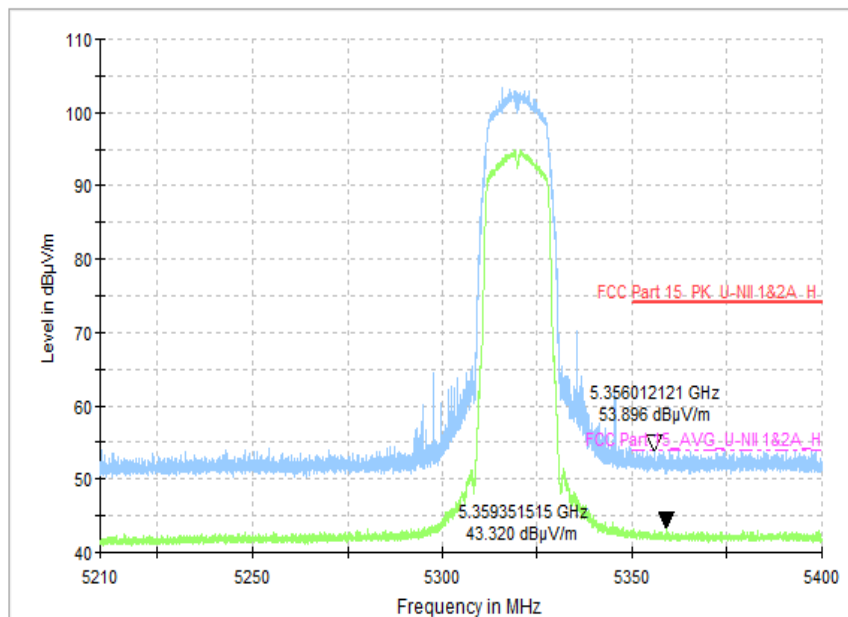


Fig. 26 Band Edges (802.11a, CH64 5320MHz)

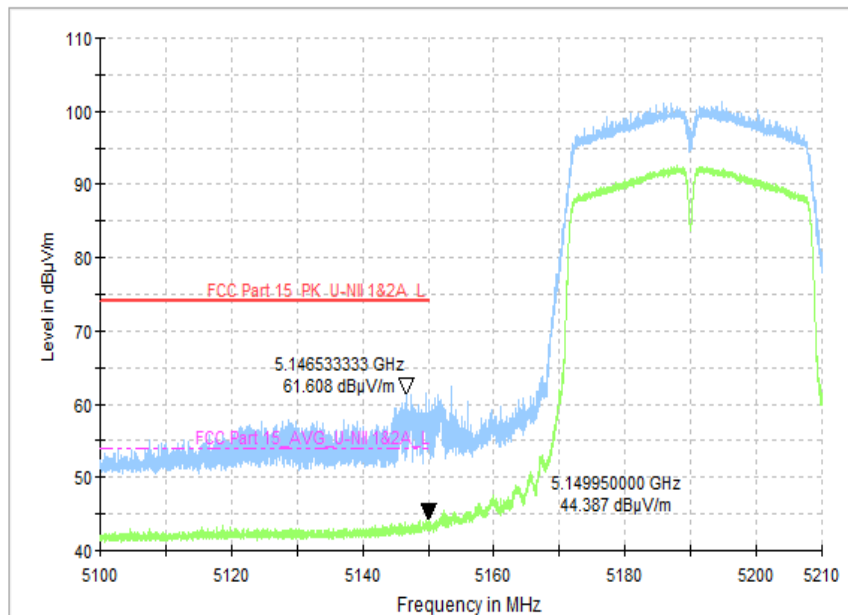


Fig. 27 Band Edges (802.11n-HT40, CH38 5190MHz)

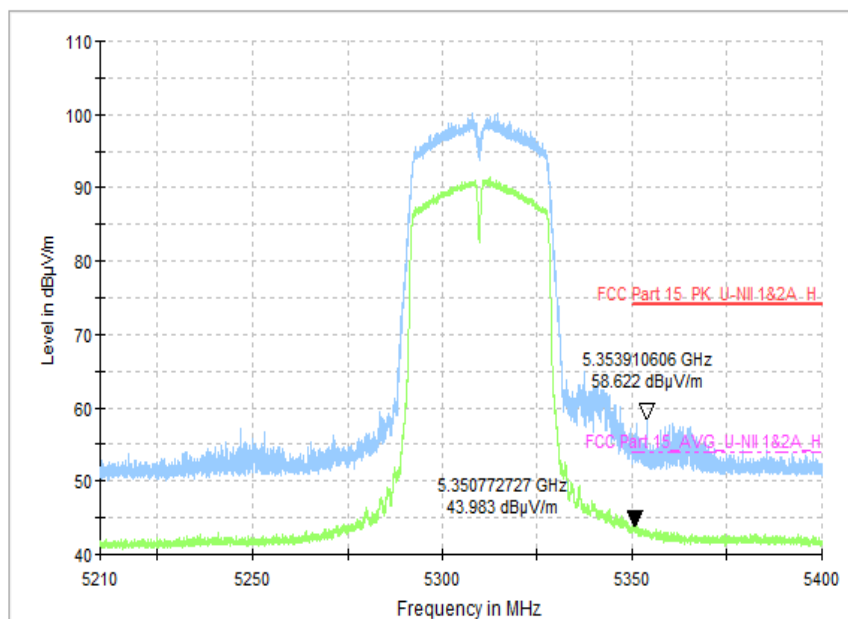


Fig. 28 Band Edges (802.11n-HT40, CH62 5310MHz)

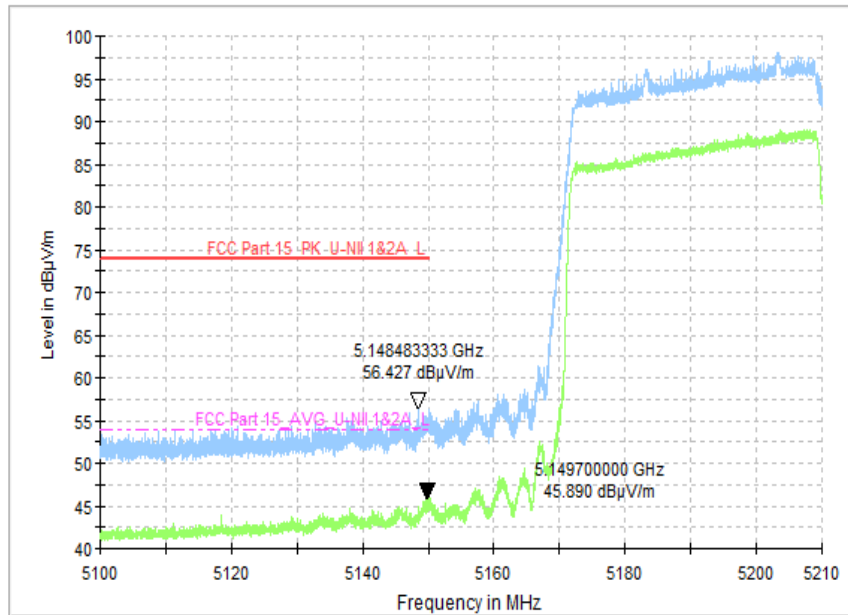


Fig. 29 Band Edges (802.11ac-VHT80, CH42 5210MHz)

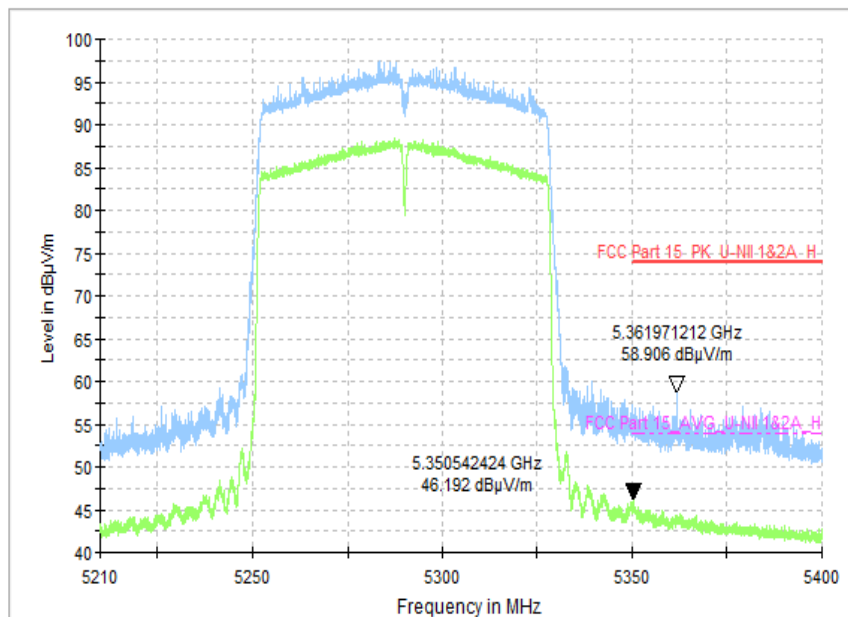


Fig. 30 Band Edges (802.11ac-VHT80, CH58 5290MHz)

A.7. Transmitter Spurious Emission

Measurement Limit:

Standard	Limit (dBm/MHz)
FCC 47 CFR Part 15.407, 15.205	< -27

The measurement is made according to KDB 789033.

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength (dBμV/m)	Measurement distance (m)
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

Note: For frequency range below 960MHz, the limit in 15.209 is defined in 10m test distance. The limit used above is calculated from 10m to 3m.

Measurement Result:

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	5180MHz (Ch36)	1 GHz ~ 18 GHz	Fig.31	P
	5200MHz (Ch40)	1 GHz ~ 18 GHz	Fig.32	P
	5240MHz (Ch48)	1 GHz ~ 18 GHz	Fig.33	P
	5260MHz (Ch52)	1 GHz ~ 18 GHz	Fig.34	P
	5280MHz (Ch56)	1 GHz ~ 18 GHz	Fig.35	P
	5320MHz (Ch64)	1 GHz ~ 18 GHz	Fig.36	P
802.11n HT40	5190MHz (Ch38)	1 GHz ~ 18 GHz	Fig.37	P
	5230MHz (Ch46)	1 GHz ~ 18 GHz	Fig.38	P
	5270MHz (Ch54)	1 GHz ~ 18 GHz	Fig.39	P
	5310MHz (Ch62)	1 GHz ~ 18 GHz	Fig.40	P
802.11ac VHT80	5210MHz (Ch42)	1 GHz ~ 18 GHz	Fig.41	P
	5290MHz (Ch58)	1 GHz ~ 18 GHz	Fig.42	P
All channels		30 MHz ~ 1 GHz	Fig.43	P
		18 GHz ~ 26.5 GHz	Fig.44	P
		26.5 GHz ~ 40 GHz	Fig.45	P

Conclusion: PASS

Test graphs as below:

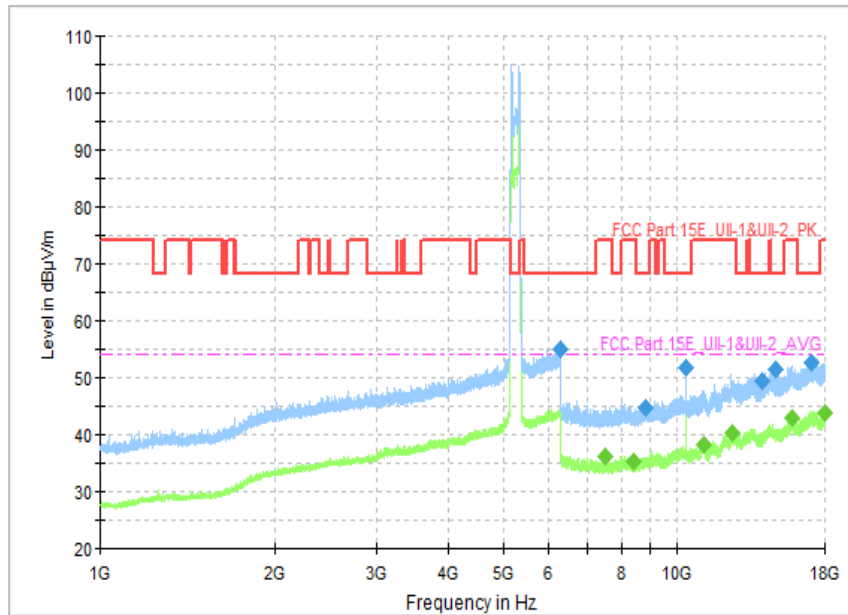


Fig. 31 Transmitter Spurious Emission (802.11a, CH36 5180MHz)

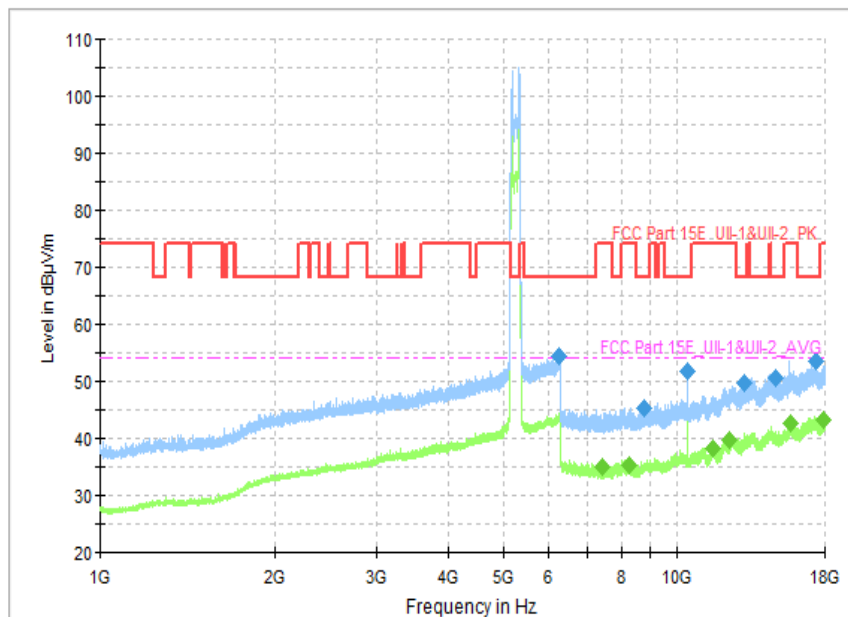


Fig. 32 Transmitter Spurious Emission (802.11a, CH40 5200MHz)

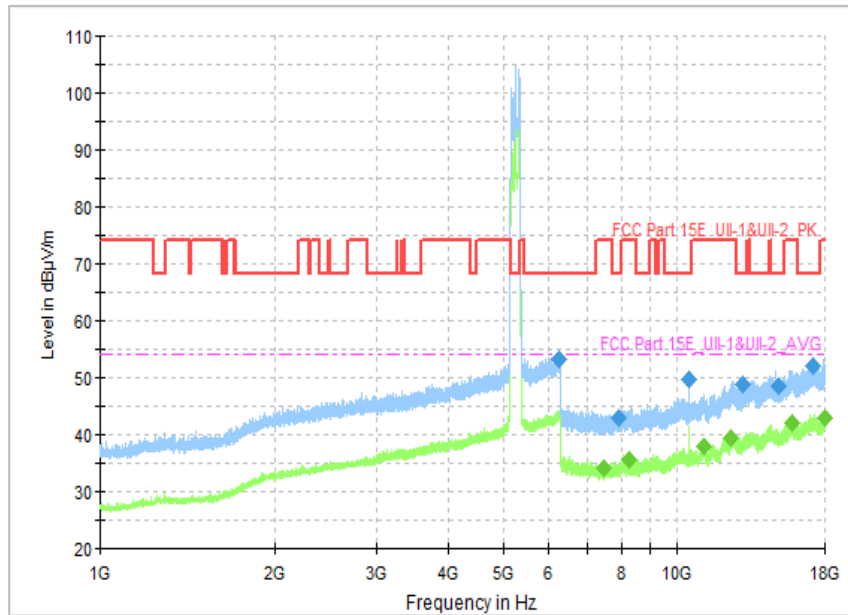


Fig. 33 Transmitter Spurious Emission (802.11a, CH48 5240MHz)

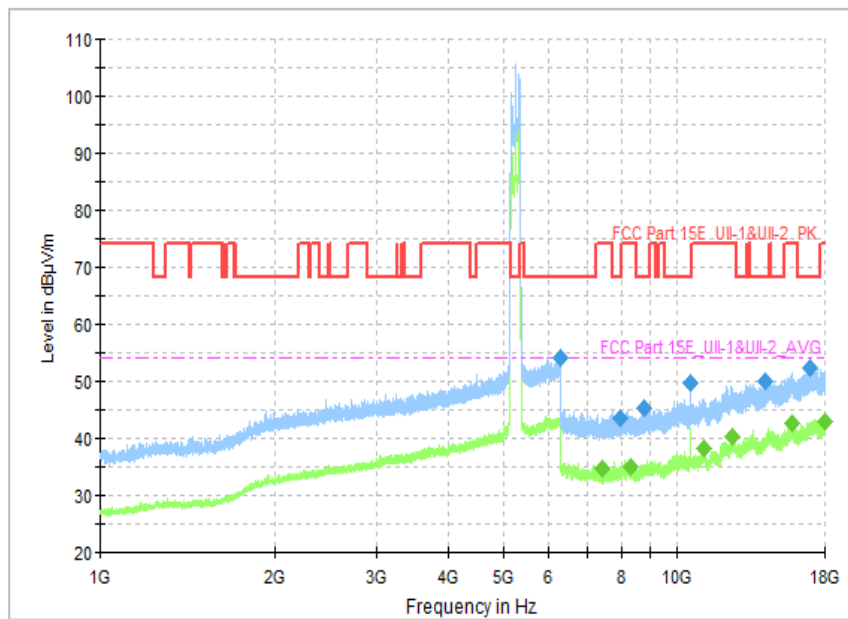


Fig. 34 Transmitter Spurious Emission (802.11a, CH52 5260MHz)

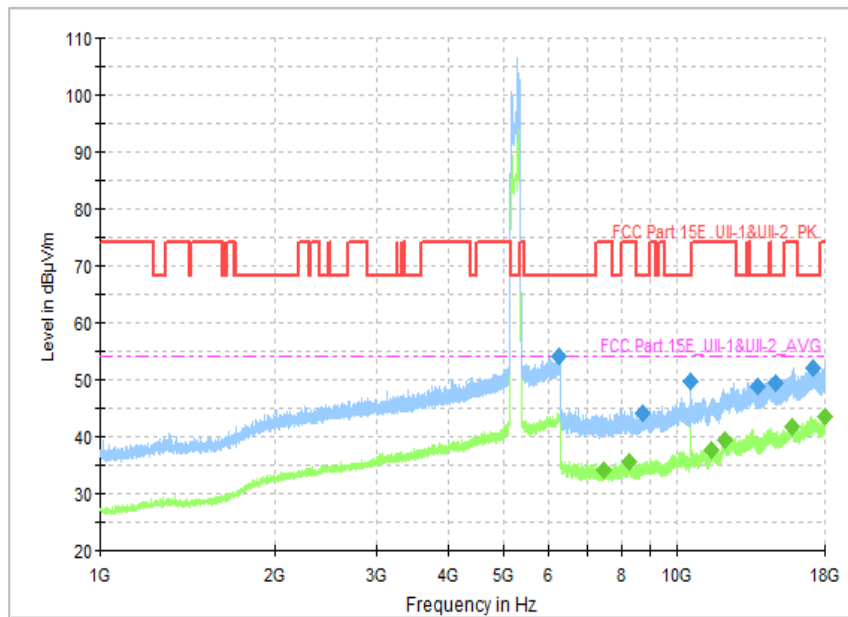


Fig. 35 Transmitter Spurious Emission (802.11a, CH56 5280MHz)

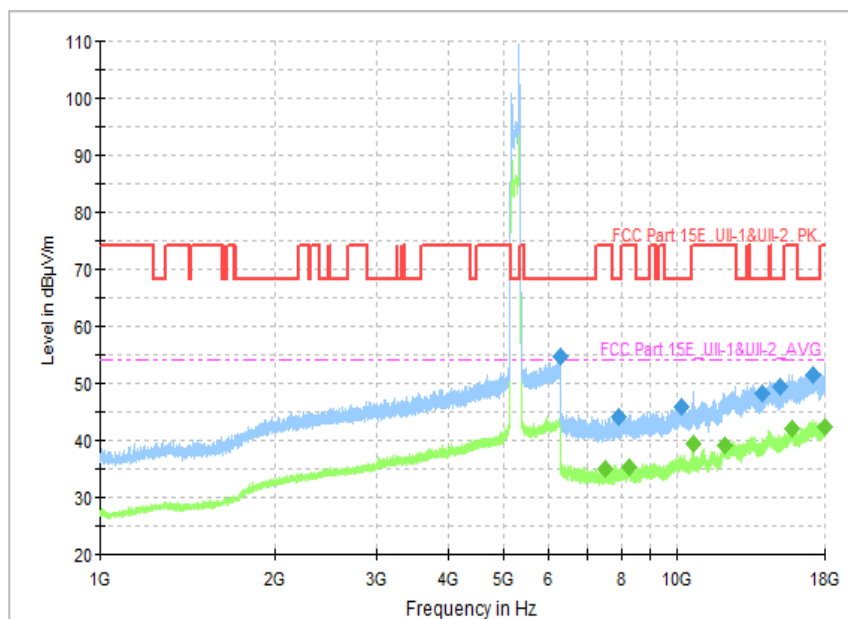


Fig. 36 Transmitter Spurious Emission (802.11a, CH64 5320MHz)

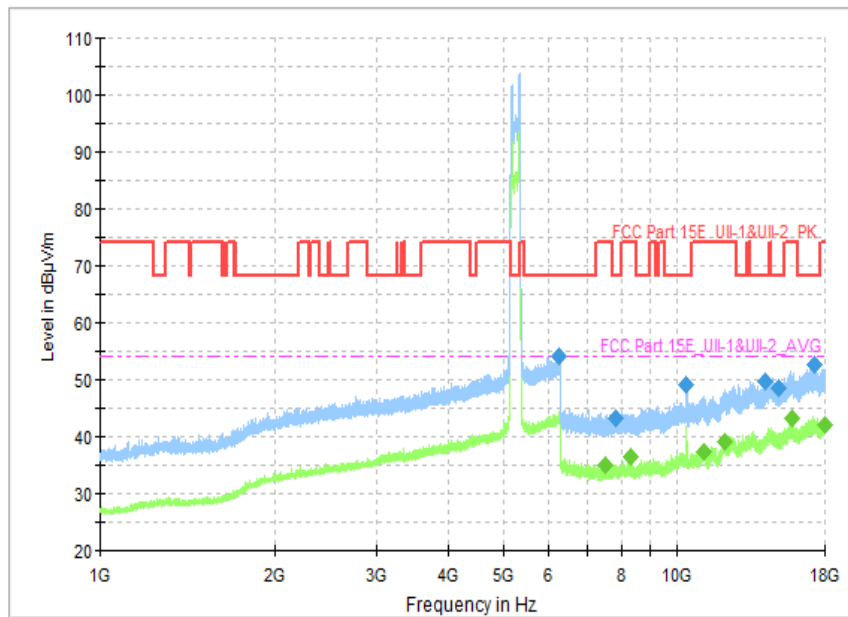


Fig. 37 Transmitter Spurious Emission (802.11n-HT40, CH38 5190MHz)

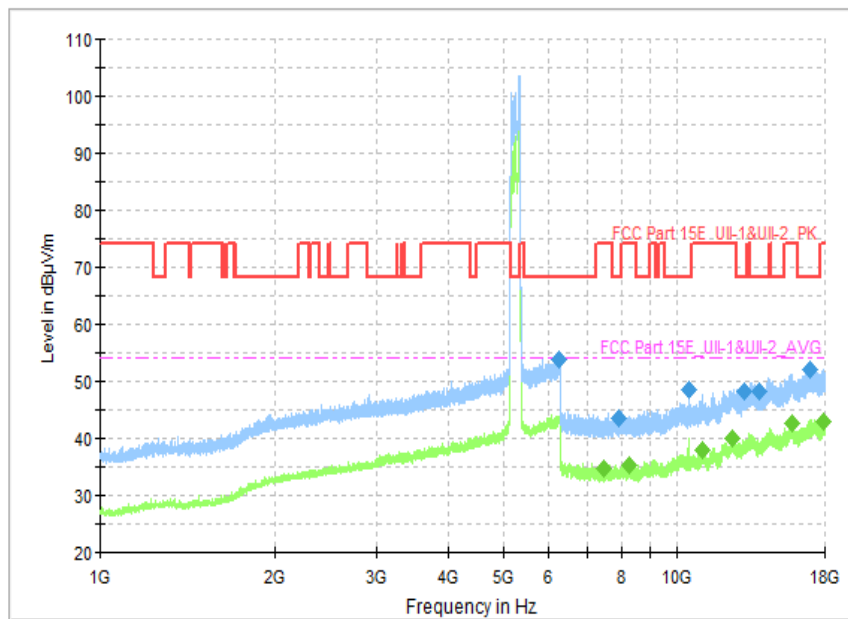


Fig. 38 Transmitter Spurious Emission (802.11n-HT40, CH46 5230MHz)

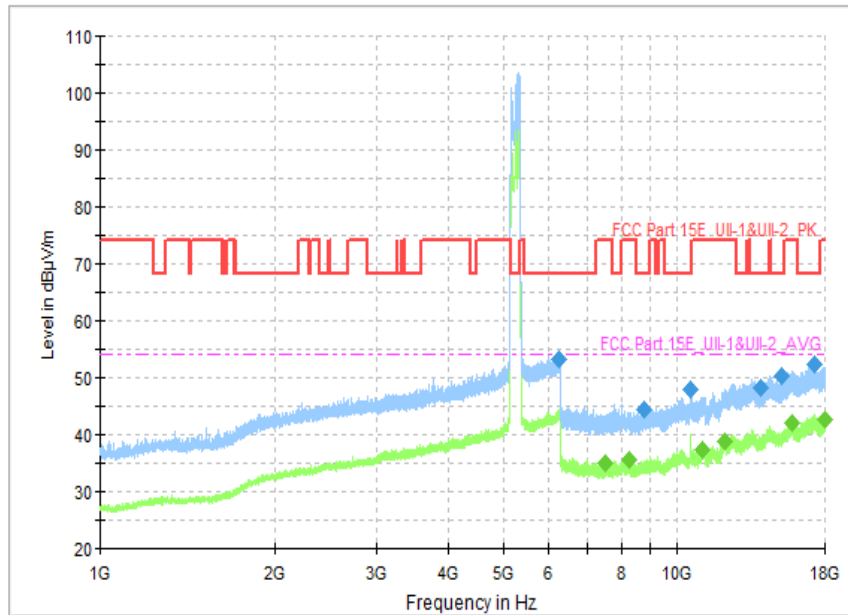


Fig. 39 Transmitter Spurious Emission (802.11n-HT40, CH54 5270MHz)

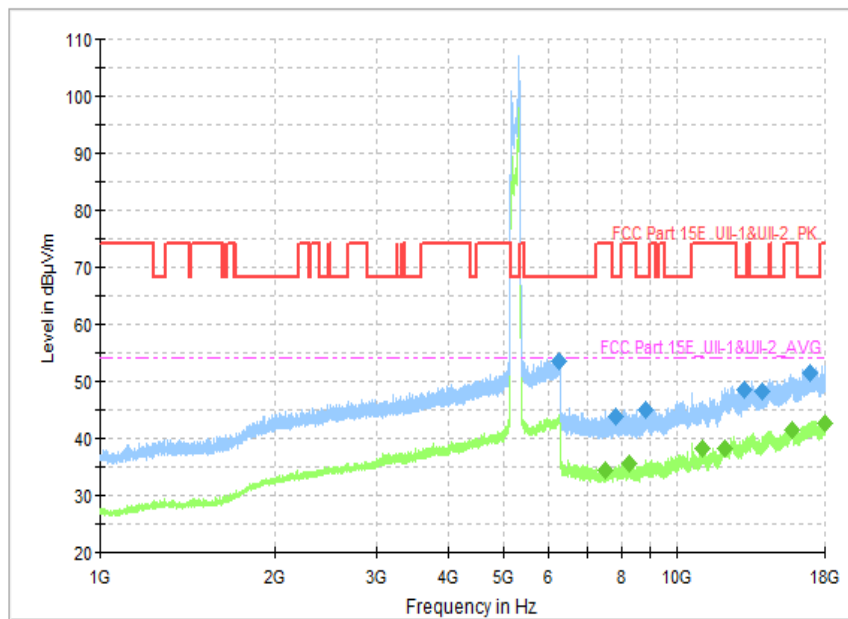


Fig. 40 Transmitter Spurious Emission (802.11n-HT40, CH62 5310MHz)

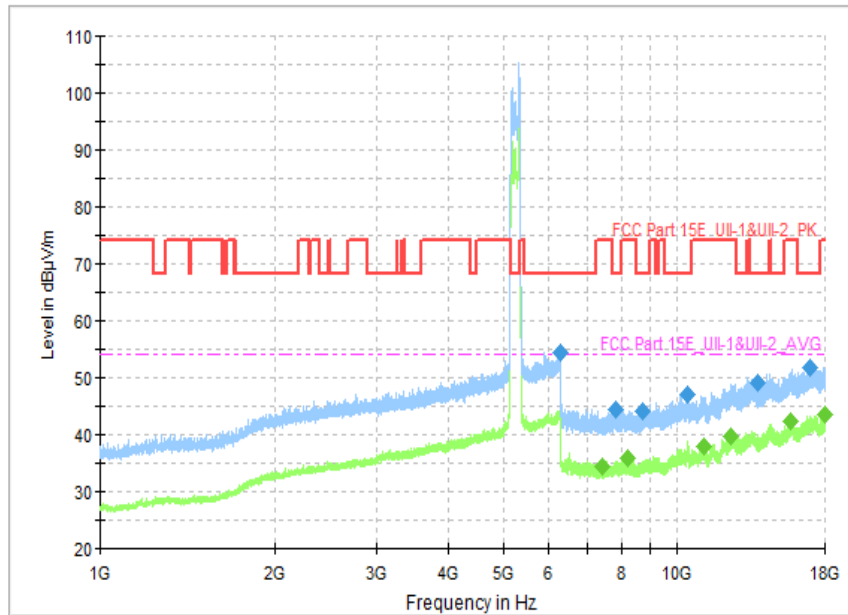


Fig. 41 Transmitter Spurious Emission (802. 11ac-VHT80, CH42 5210MHz)

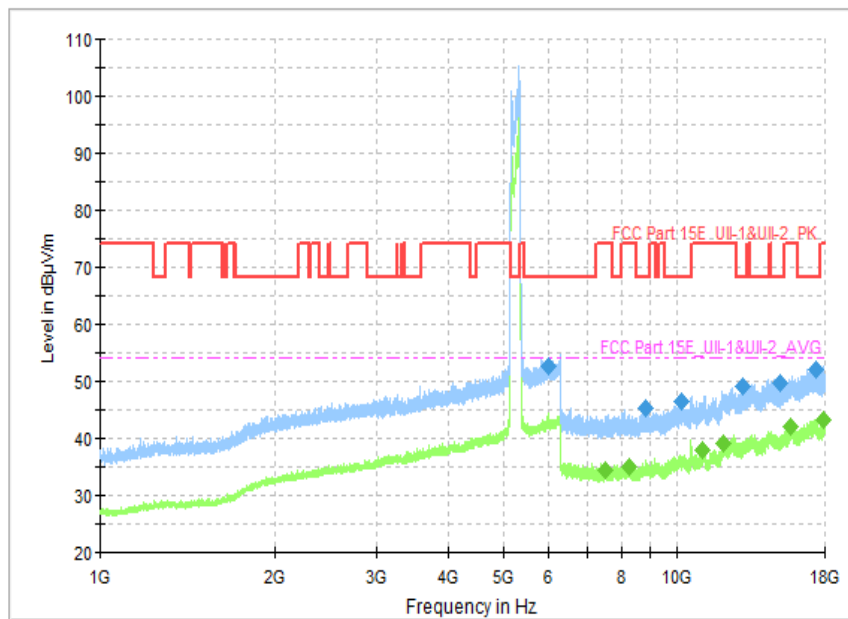


Fig. 42 Transmitter Spurious Emission (802. 11ac-VHT80, CH58 5290MHz)

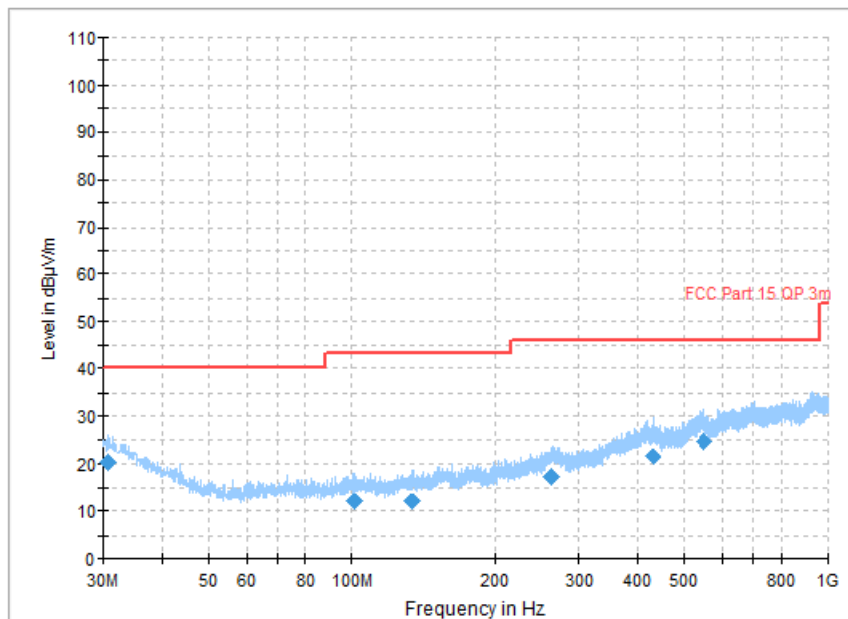


Fig. 43 Transmitter Spurious Emission (All channel, 30MHz~1GHz)

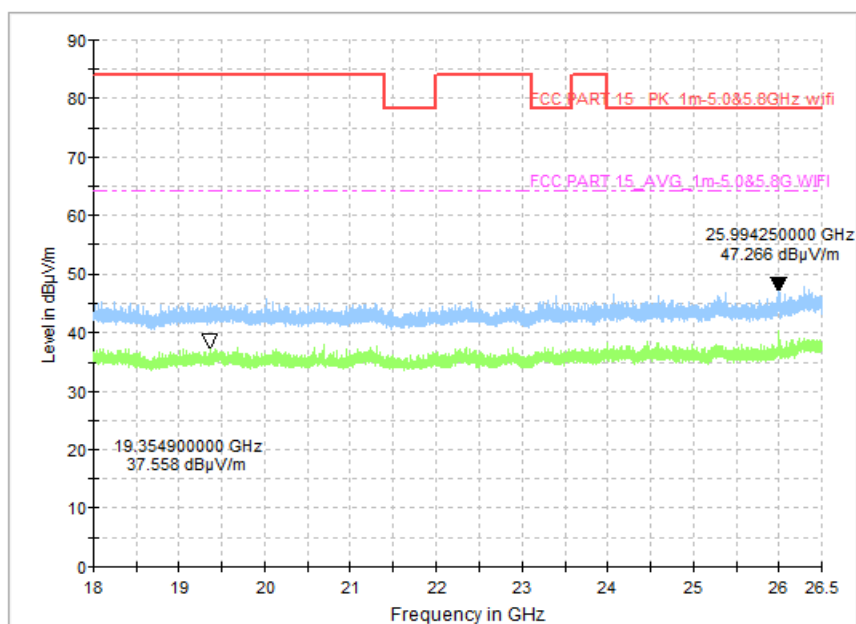


Fig. 44 Transmitter Spurious Emission (All channel, 18GHz~26.5GHz)

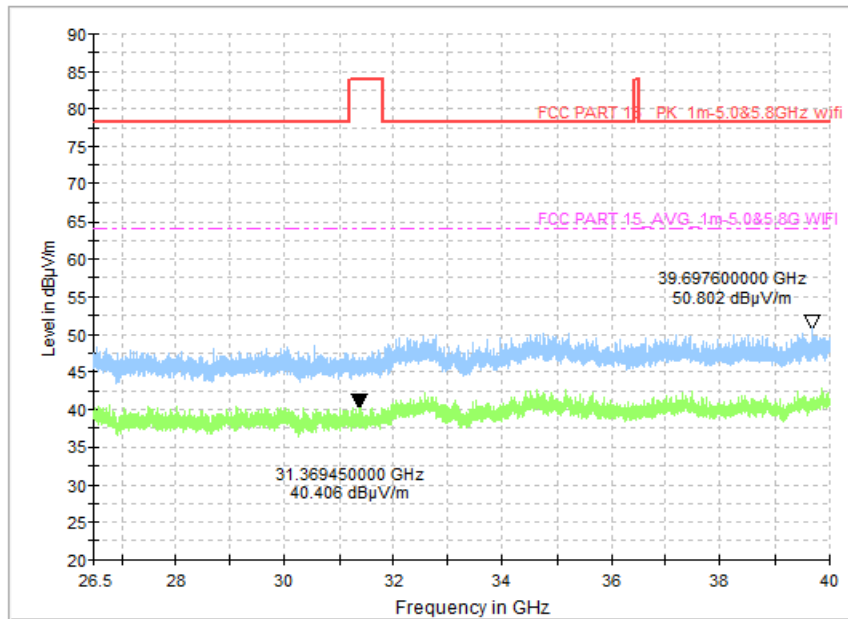


Fig. 45 Transmitter Spurious Emission (All channel, 26.5GHz~40GHz)

Worst Case Result
802.11a CH40

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
6235.500000	54.48	68.20	13.72	H	18.9
8756.375000	45.17	68.20	23.03	H	5.8
10396.287500	51.70	68.20	16.50	H	7.4
13045.312500	49.72	68.20	18.48	V	12.1
14834.687500	50.57	68.20	17.63	H	12.8
17337.625000	53.63	68.20	14.57	V	17.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7440.037500	34.97	54.00	19.03	H	5.2
8261.875000	35.44	54.00	18.56	H	6.2
11527.187500	38.14	54.00	15.86	V	9.6
12328.600000	39.58	54.00	14.42	V	11.4
15691.312500	42.55	54.00	11.45	V	14.2
17941.812500	43.23	54.00	10.77	V	16.6

802.11a CH52

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
6273.000000	53.99	68.20	14.21	V	18.9
7950.662500	43.64	68.20	24.56	V	5.5
8760.137500	45.19	68.20	23.01	H	5.8
10519.375000	49.66	68.20	18.54	H	7.6
14216.500000	49.94	68.20	18.26	V	12.7
17005.125000	52.25	68.20	15.95	H	16.5

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7426.062500	34.77	54.00	19.23	V	5.2
8289.825000	35.14	54.00	18.86	V	6.1
11126.750000	38.33	54.00	15.67	V	8.5
12469.425000	40.15	54.00	13.85	H	11.4
15781.000000	42.64	54.00	11.36	H	14.5
17954.937500	42.99	54.00	11.01	V	16.5

802.11n HT40 CH38

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
6257.500000	53.97	68.20	14.23	H	18.9
7846.387500	43.16	68.20	25.04	H	5.7
10379.087500	49.02	68.20	19.18	H	7.4
14227.437500	49.70	68.20	18.50	V	12.7
14983.437500	48.62	68.20	19.58	V	12.7
17238.750000	52.53	68.20	15.67	V	17.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7494.862500	34.90	54.00	19.10	V	5.3
8303.800000	36.54	54.00	17.46	V	6.1
11118.150000	37.26	54.00	16.74	V	8.5
12110.912500	38.98	54.00	15.02	V	10.9
15788.875000	43.19	54.00	10.81	H	14.6
17998.250000	42.19	54.00	11.81	H	16.5

802.11n HT40 CH54

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
6253.500000	53.29	68.20	14.91	V	18.9
8785.937500	44.29	68.20	23.91	V	5.8
10534.425000	47.97	68.20	20.23	H	7.6
13926.000000	48.19	68.20	20.01	V	12.0
15128.687500	50.21	68.20	17.99	H	12.9
17262.812500	52.32	68.20	15.88	H	16.9

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7523.350000	35.14	54.00	18.86	V	5.3
8250.587500	35.66	54.00	18.34	H	6.2
11083.212500	37.50	54.00	16.50	V	8.4
12071.137500	38.70	54.00	15.30	H	10.8
15754.312500	42.05	54.00	11.95	V	14.4
17953.187500	42.53	54.00	11.47	H	16.5

802.11ac VHT80 CH42

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
6283.500000	54.44	68.20	13.76	H	18.9
7825.425000	44.51	68.20	23.69	H	5.7
8688.112500	44.15	68.20	24.05	H	5.7
10425.312500	46.97	68.20	21.23	H	7.4
13745.312500	49.07	68.20	19.13	H	12.0
16998.125000	51.88	68.20	16.32	V	16.5

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7412.087500	34.55	54.00	19.45	H	5.2
8225.325000	36.01	54.00	17.99	H	6.2
11150.400000	38.09	54.00	15.91	V	8.5
12382.887500	39.72	54.00	14.28	V	11.4
15735.500000	42.26	54.00	11.74	H	14.3
17972.000000	43.49	54.00	10.51	H	16.5

802.11ac VHT80 CH58

Frequency (MHz)	Max Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
6003.000000	52.66	68.20	15.54	H	18.2
8792.387500	45.24	68.20	22.96	H	5.8
10160.862500	46.61	68.20	21.59	H	7.2
13014.687500	49.16	68.20	19.04	H	12.0
15021.062500	49.59	68.20	18.61	V	12.8
17330.187500	51.96	68.20	16.24	H	16.9

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7525.500000	34.55	54.00	19.45	V	5.4
8279.612500	35.08	54.00	18.92	V	6.1
11059.562500	37.85	54.00	16.15	V	8.4
12029.750000	38.98	54.00	15.02	V	10.6
15723.687500	42.19	54.00	11.81	V	14.3
17898.500000	43.11	54.00	10.89	V	16.6

Note: A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument. The measurement results are obtained as described below: $Result = P_{Mea} + A_{Rpl} = P_{Mea} + Cable Loss + Antenna Factor$

A.8. Radiated Spurious Emissions < 30MHz

Measurement Limit (15.209, 9kHz-30MHz):

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Measurement distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30

The measurement is made according to KDB 789033.

Note: The measurement distance during the test is 3m. The limit used in plots recalculated based on the extrapolation factor of 40 dB/decade.

Measurement Result:

Channel	Frequency Range	Test Results	Conclusion
All Channel	9 kHz ~ 30 MHz	Fig.46	P

Conclusion: PASS

Test graphs as below:

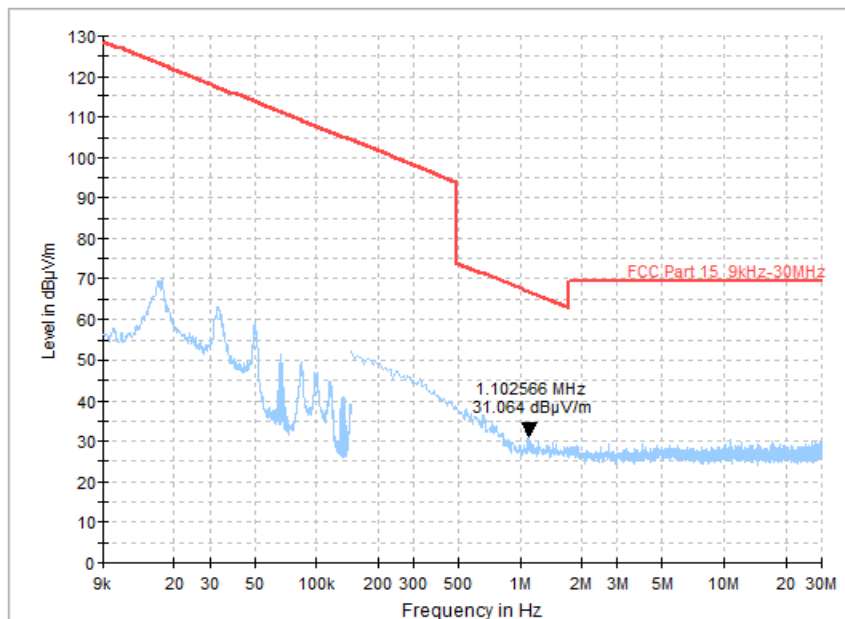


Fig. 46 Radiated Spurious Emission (All Channel, 9 kHz ~30 MHz)

A.9. AC Power Line Conducted Emission

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

RLAN (Quasi-peak Limit) - AE3

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.47	Fig.48	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

RLAN (Average Limit) - AE3

Frequency range (MHz)	Average-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.47	Fig.48	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

RLAN (Quasi-peak Limit) - AE4

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.49	Fig.50	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

RLAN (Average Limit) - AE4

Frequency range (MHz)	Average-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.49	Fig.50	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.



No. I21N00721-RLAN

Note: The measurement results include the L1 and N measurements.

Conclusion: PASS

Test graphs as below:

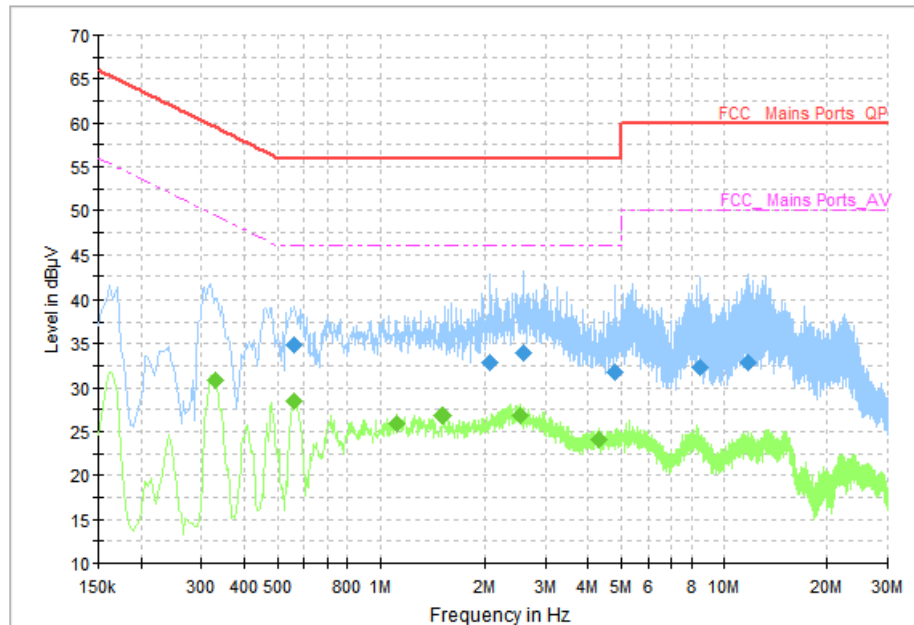


Fig. 47 AC Power line Conducted Emission (Traffic)

Measurement Result: Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.562000	34.90	56.00	21.10	L1	ON	10
2.074000	32.93	56.00	23.07	N	ON	10
2.594000	34.01	56.00	21.99	N	ON	10
4.806000	31.68	56.00	24.32	N	ON	10
8.462000	32.31	60.00	27.69	N	ON	10
11.794000	32.95	60.00	27.05	N	ON	10

Measurement Result: Average

Frequency (MHz)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.330000	30.81	49.45	18.64	L1	ON	10
0.558000	28.56	46.00	17.44	L1	ON	10
1.118000	25.96	46.00	20.04	L1	ON	10
1.506000	26.89	46.00	19.11	L1	ON	10
2.522000	26.80	46.00	19.20	L1	ON	10
4.310000	24.03	46.00	21.97	L1	ON	10

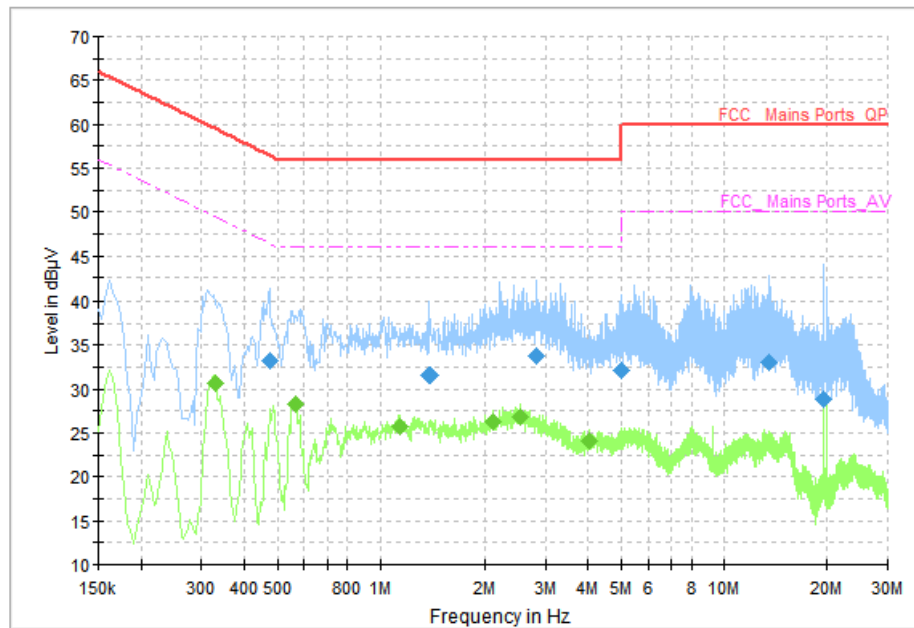


Fig. 48 AC Power line Conducted Emission (Idle)

Measurement Result: Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.474000	33.24	56.44	23.20	N	ON	10
1.378000	31.55	56.00	24.45	N	ON	10
2.822000	33.75	56.00	22.25	N	ON	10
4.994000	32.20	56.00	23.80	N	ON	10
13.478000	33.07	60.00	26.93	N	ON	10
19.522000	28.83	60.00	31.17	L1	ON	10

Measurement Result: Average

Frequency (MHz)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.330000	30.65	49.45	18.80	L1	ON	10
0.566000	28.35	46.00	17.65	L1	ON	10
1.138000	25.82	46.00	20.18	L1	ON	10
2.114000	26.24	46.00	19.76	L1	ON	10
2.530000	26.79	46.00	19.21	L1	ON	10
4.018000	24.03	46.00	21.97	L1	ON	10

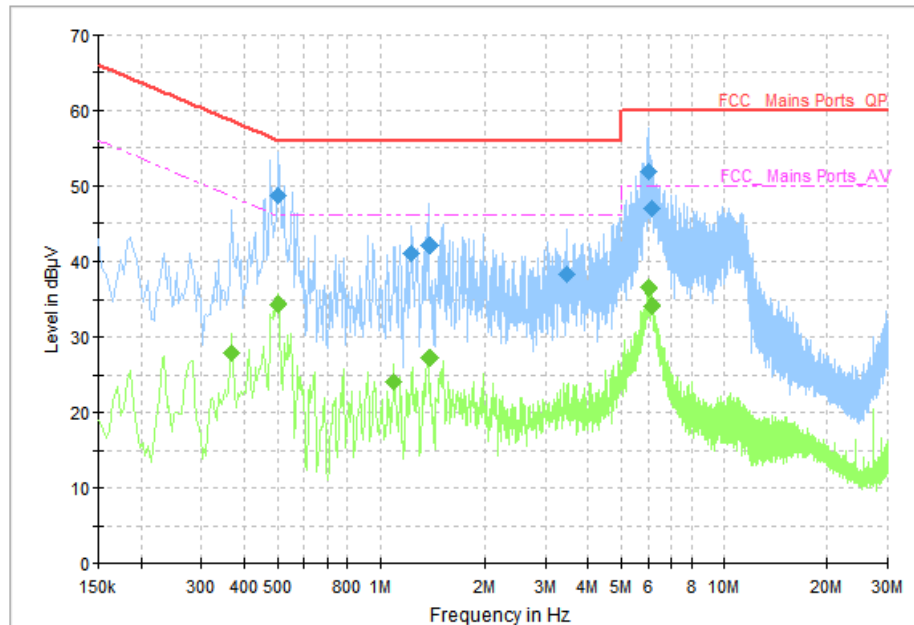


Fig. 49 AC Power line Conducted Emission (Traffic)

Measurement Result: Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.502000	48.56	56.00	7.44	N	ON	10
1.234000	40.93	56.00	15.07	N	ON	10
1.378000	41.99	56.00	14.01	N	ON	10
3.450000	38.15	56.00	17.85	N	ON	10
5.982000	51.78	60.00	8.22	L1	ON	10
6.154000	46.86	60.00	13.14	N	ON	10

Measurement Result: Average

Frequency (MHz)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.366000	28.04	48.59	20.55	N	ON	10
0.502000	34.39	46.00	11.61	L1	ON	10
1.098000	24.07	46.00	21.93	N	ON	10
1.378000	27.34	46.00	18.66	L1	ON	10
5.982000	36.50	50.00	13.50	N	ON	10
6.142000	34.16	50.00	15.84	N	ON	10

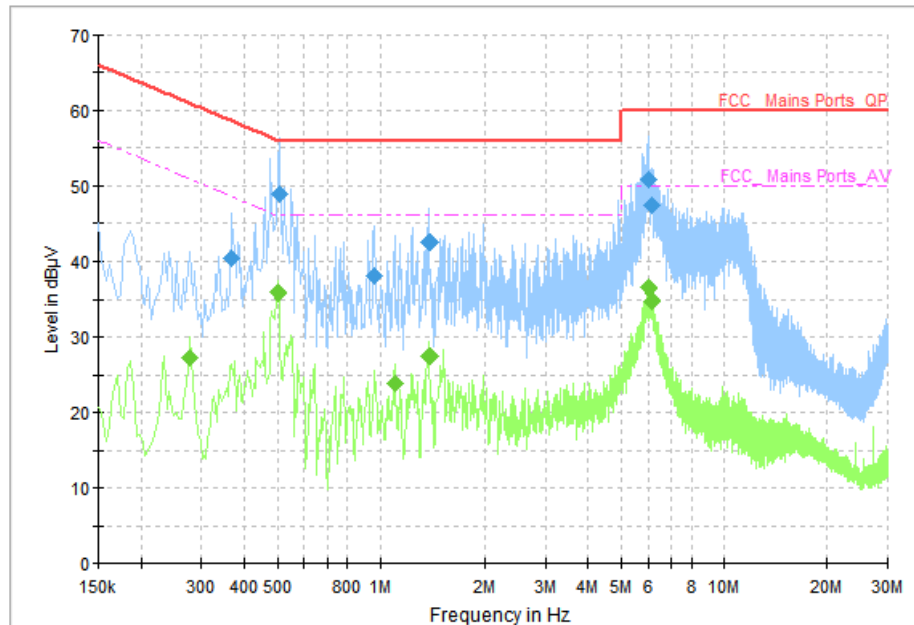


Fig. 50 AC Power line Conducted Emission (Idle)

Measurement Result: Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.366000	40.31	58.59	18.28	N	ON	10
0.506000	48.86	56.00	7.14	N	ON	10
0.958000	38.06	56.00	17.94	N	ON	10
1.382000	42.57	56.00	13.43	N	ON	10
5.986000	50.69	60.00	9.31	N	ON	10
6.170000	47.41	60.00	12.59	N	ON	10

Measurement Result: Average

Frequency (MHz)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.278000	27.25	50.88	23.63	N	ON	10
0.502000	35.81	46.00	10.19	N	ON	10
1.102000	23.97	46.00	22.03	N	ON	10
1.378000	27.50	46.00	18.50	N	ON	10
5.986000	36.42	50.00	13.58	N	ON	10
6.154000	34.74	50.00	15.26	N	ON	10

A.10. Frequency Stability

Manufacturers ensured the EUT meet the requirement of frequency stability, such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

Measurement Condition:

T min = 0°C T nom = 25°C T max = 45°C
V min = 3.6V V nom = 3.9V V max = 4.3V

Measurement Result:

Mode	Channel	Condition		Frequency	Conclusion
802.11a	5180 MHz (CH36)	T nom	V nom	5179.9831	P
		T max	V nom	5179.9853	P
		T min	V nom	5179.9845	P
		T nom	V max	5179.9831	P
		T nom	V min	5179.9773	P
802.11n HT40	5190 MHz (CH38)	T nom	V nom	5189.9131	P
		T max	V nom	5189.9638	P
		T min	V nom	5189.9684	P
		T nom	V max	5189.9658	P
		T nom	V min	5189.9652	P
802.11ac VHT80	5210 MHz (CH42)	T nom	V nom	5209.9831	P
		T max	V nom	5209.9752	P
		T min	V nom	5209.9754	P
		T nom	V max	5209.9842	P
		T nom	V min	5209.9753	P

A.11. Power Control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500mW).

*** END OF REPORT BODY ***