



FCC PART 15C TEST REPORT No. I21Z62173-IOT06

for

Lenovo (Shanghai) Electronics Technology Co., Ltd.

Portable Tablet Computer

Lenovo TB-J606F

FCC ID : O57TBJ606F

with

Hardware Version: Lenovo TB-J606F

Software Version: TB-J606F_RF01_210805

Issued Date: 2021-12-06

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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z62173-IOT06	Rev.0	1st edition	2021-11-26
I21Z62173-IOT06	Rev.1	1.P.11 add the 7.2. Statements 2.All the reports has changed the Software Version	2021-12-02
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1. TEST LABORATORY

1.1. Introduction & Accreditation

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

1.2. Testing Location

Conducted testing Location: CTTL(huayuan North Road)

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

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
Extreme Temperature: -20/+55°C
Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2020-09-23
Testing End Date: 2021-11-26

1.5. Signature

封爱宇

Feng Aiyu
(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: Lenovo (Shanghai) Electronics Technology Co., Ltd.
Address: Section 304-305, Building No. 4, # 222, Meiyue Road, China
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City: Shanghai
Postal Code: /
Country: CHINA
Contact: Spring Zhou
Telephone: +86 18116118237
E-mail: zhoucb1@lenovo.com

2.2. Manufacturer Information

Company Name: Lenovo PC HK Limited
Address: 23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay,
Hong Kong, P.R.China
City: Hong Kong
Postal Code: /
Country: CHINA
Contact: Spring Zhou
Telephone: +86 18116118237
E-mail: zhoucb1@lenovo.com

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE)

3.1. About EUT

Description	Portable Tablet Computer
Model name	Lenovo TB-J606F
FCC ID	O57TBJ606F
WLAN Frequency Range	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM
Voltage	3.8 V

Note: Photographs of EUT are shown in ANNEX C of this test report. Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT3	HA1HE0L6	Lenovo TB-J606F	TB-J606F_RF01_210805
EUT4	HA1HFQ7R	Lenovo TB-J606F	TB-J606F_RF01_210805

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

3.1. Internal Identification of AE used during the test

4. AE ID*	Description	SN	Note
AE1-1	Charger	/	MC-201
AE1-2	Charger	/	MC-201
AE8	USB Cable	/	/
AE15	USB Cable	/	Liqi
AE9	Battery	/	SCUD
AE10	Battery	/	Sunwoda

AE1-1

Model	MC-201
Manufacturer	Acbel
Length of cable	/

AE1-2

Model	MC-201
Manufacturer	Chenyang
Length of cable	/

AE8



Model	USB Cable
Manufacturer	/
Length of cable	/

AE15

Model	L50B-05200100
Manufacturer	Liqi
Length of cable	/

AE9

Model	L20D2P32
Manufacturer	SCUD
Capacitance	7500mAh
Nominal voltage	3.86V

AE10

Model	L20D2P32
Manufacturer	Sunwoda
Capacitance	7500mAh
Nominal voltage	3.86V

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

*

4.1. General Description

The Equipment under Test (EUT) is a model of Portable Tablet Computer with Bluetooth, WLAN with integrated antenna and inbuilt battery..

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the Client.

5. REFERENCE DOCUMENTS

5.1. Documents supplied by applicant

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

5.2. Reference Documents for testing

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

FCC Part15	FCC CFR 47, Part 15, Subpart C and E: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.407 General technical requirements	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

6. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

7. SUMMARY OF TEST RESULTS

7.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.407 (a)	/	P
Peak Power Spectral Density	15.407 (a)	/	P
Occupied 6dB Bandwidth	15.407 (e)	/	P
Band Edges Compliance - Conducted& Radiated	15.407 (b)	/	P
Transmitter Spurious Emission - Conducted	15.407	/	P
Transmitter Spurious Emission - Radiated	15.407, 15.205, 15.209	/	P
AC Powerline Conducted Emission	15.107, 15.207	/	P

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

7.2. Statements

CTTL has evaluated the test cases requested by the client/matrix 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.

All the test results are derived from test report No.I20Z61660-IOT09, except the result of output power, transmitter spurious emission-radiated, band edges-radiated, ac power-line conducted emission.

7.3. Test Conditions

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

Temperature	26°C
Voltage	3.8 V
Humidity	44%

8. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	LISN	ENV216	101459	Rohde & Schwarz	1 year	2022-03-22
2	Test Receiver	ESCI	100766	Rohde & Schwarz	1 year	2022-03-09
3	Shielding Room	S81	/	ETS-Lindgren	/	/
4	Attenuator	10dB/2W	/	Rosenberger	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100376	Rohde & Schwarz	1 year	2022-09-15
2	BiLog Antenna	VULB9163	514	Schwarzbeck	1 year	2022-03-22
3	Dual-Ridge Waveguide Horn Antenna	3117	00119024	ETS-Lindgren	1 year	2022-04-11
4	Test Receiver	FSV40	101047	Rohde & Schwarz	1 year	2022-06-02
5	EMI Antenna	LB-180400-25C-KF	2110084000006	A-INFO	1 year	2022-02-28

9. Measurement Uncertainty

9.1. Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

9.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

9.3. Occupied 6dB Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

9.4. Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

9.5. 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

9.6. AC Power-line Conducted Emission

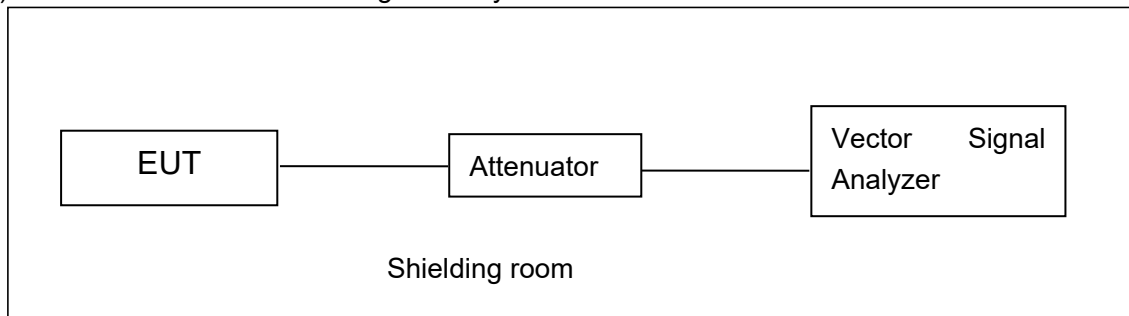
Measurement Uncertainty : 3.08dB,k=2

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

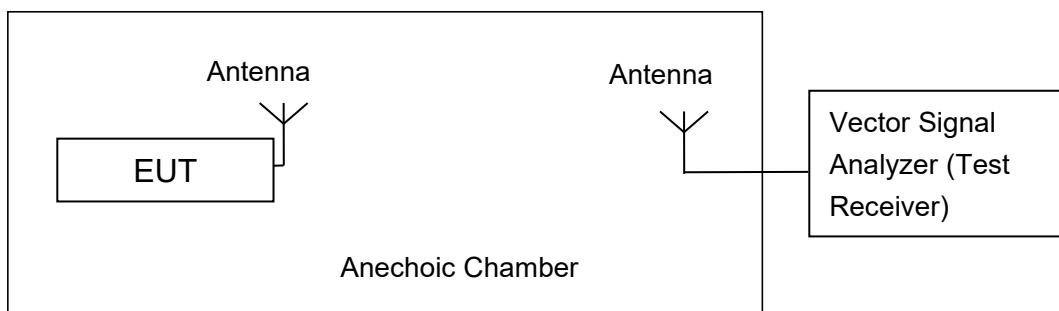


A.1.2. Radiated Emission Measurements

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 ANSI C63.10.

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.2.2. Maximum Average Output Power-Conducted

Method of Measurement: See ANSI C63.10-clause 12.3.2.2 Method SA-1

802.11a mode

Mode	Test Result (dBm)		
	5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11a	15.23	15.33	15.18

802.11n-HT20 mode

Mode	Test Result (dBm)		
	5745MHz (Ch149)	5785MHz (Ch157)	5825MHz(Ch165)
802.11n(20MHz)	14.56	14.64	14.49

802.11ac-HT20 mode

Mode	Test Result (dBm)		
	5745MHz (Ch149)	5785MHz (Ch157)	5825MHz(Ch165)
802.11ac(20MHz)	15.29	15.37	15.21

802.11n-HT40 mode

Mode	Test Result (dBm)	
	5755MHz (Ch151)	5795MHz(Ch159)
802.11n(40MHz)	15.07	15.18

802.11ac-HT40 mode

Mode	Test Result (dBm)	
	5755MHz (Ch151)	5795MHz(Ch159)
802.11ac(40MHz)	14.71	14.72

802.11ac-HT80 mode

Mode	Test Result (dBm)
	5775MHz (Ch155)
802.11ac(80MHz)	15.11

Conclusion: PASS

A.3. Peak Power Spectral Density

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407(a)	< 30 dBm/500 kHz

The measurement is made according to ANSI C63.10 and KDB789033 D02

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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Measurement Results:

Mode	Channel	Power Spectral Density (dBm/500kHz)	Conclusion
802.11a	149	9.47	P
	157	9.41	P
	165	9.19	P
802.11n HT20	149	10.02	P
	157	9.88	P
	165	9.58	P
802.11ac HT20	149	10.33	P
	157	10.76	P
	165	9.98	P
802.11n HT40	151	5.61	P
	159	5.59	P
802.11ac HT40	151	7.46	P
	159	7.35	P
802.11ac HT80	155	4.02	P

Conclusion: PASS

A.4. Occupied 6dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.407 (e)	≥ 500

The measurement is made according to KDB789033 D02 .

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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Measurement Result:

Mode	Channel	Occupied 6dB Bandwidth (KHz)		conclusion
		Fig.	Value	
802.11a	149	Fig.1	15.55	P
	157	Fig.2	15.65	P
	165	Fig.3	15.55	P
802.11n HT20	149	Fig.4	16.80	P
	157	Fig.5	16.50	P
	165	Fig.6	16.75	P
802.11ac HT20	149	Fig.7	16.50	P
	157	Fig.8	16.55	P
	165	Fig.9	16.50	P
802.11n HT40	151	Fig.10	35.92	P
	159	Fig.11	35.36	P
802.11ac HT40	151	Fig.12	35.36	P
	159	Fig.13	35.28	P
802.11ac HT80	155	Fig.14	75.20	P

Conclusion: PASS

Test graphs as below:

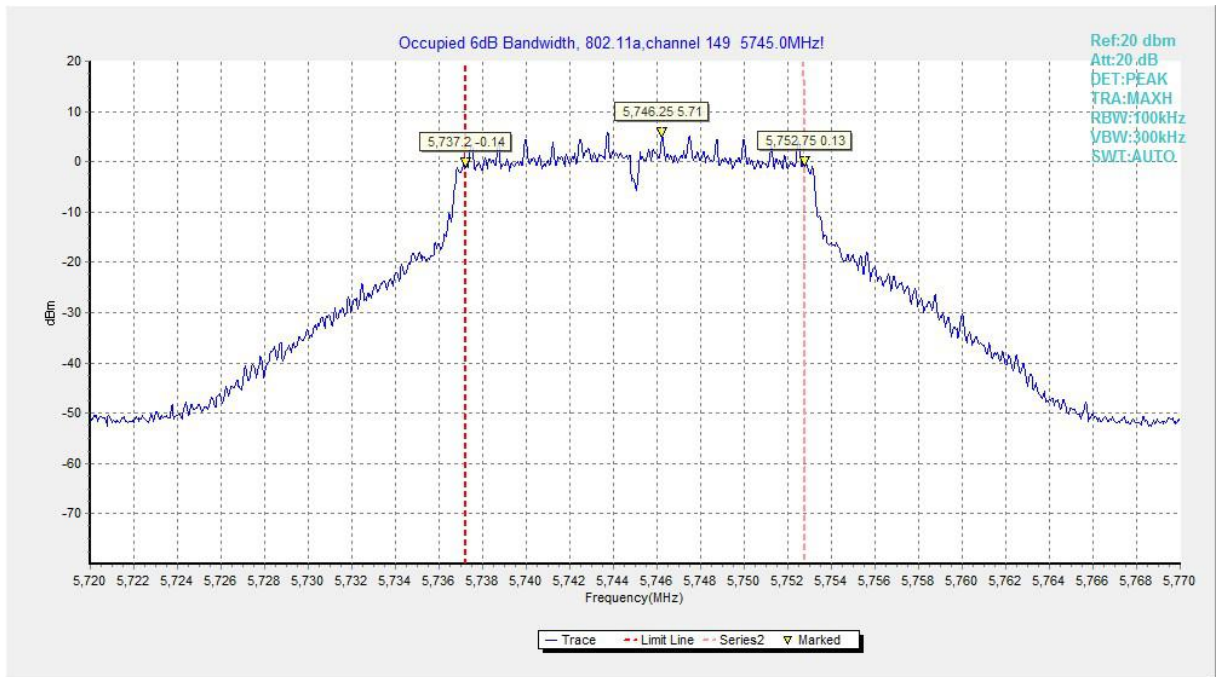


Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)

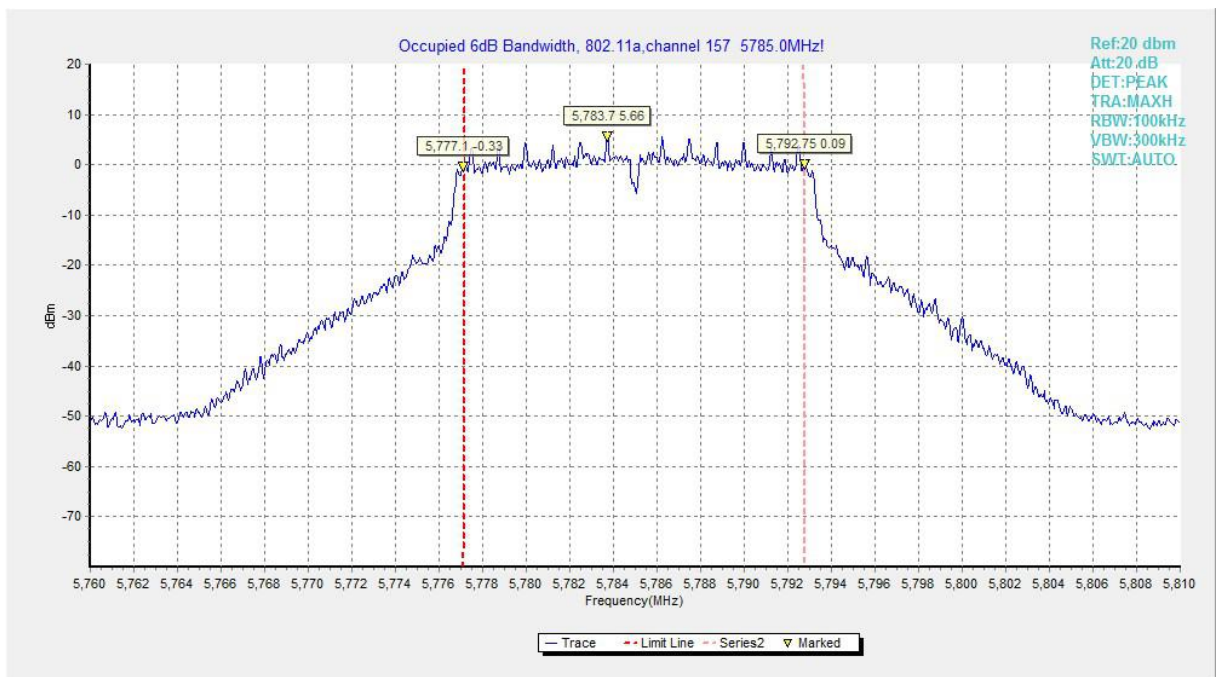


Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)

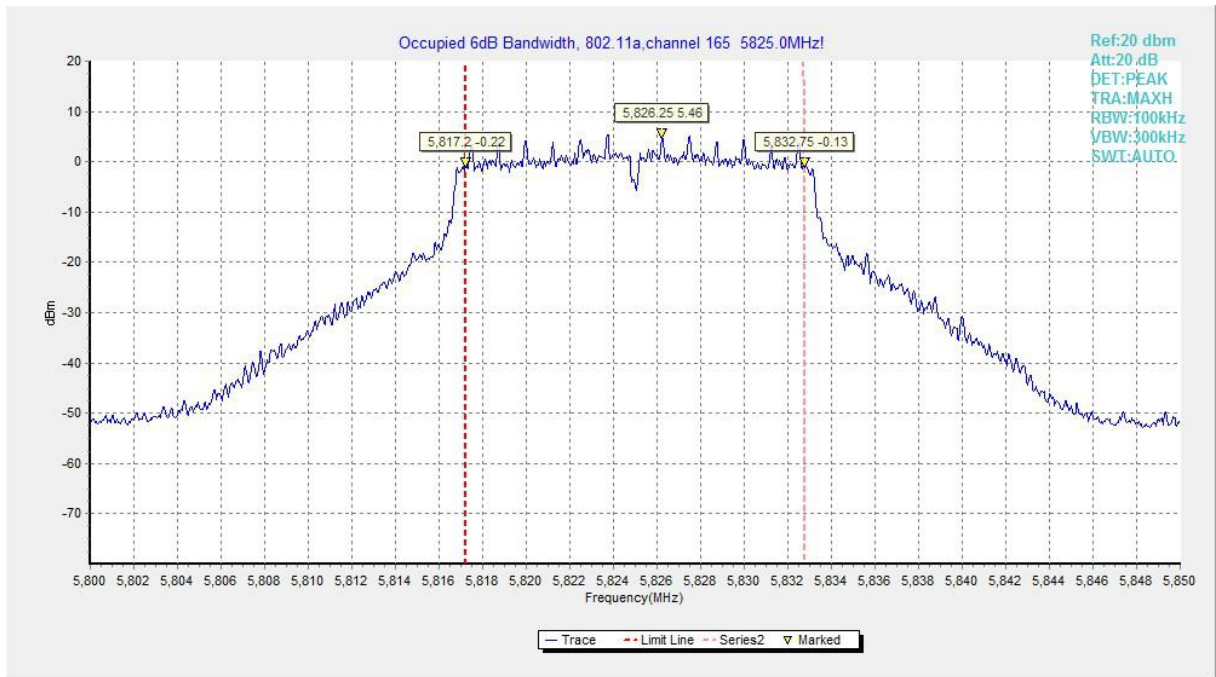


Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)

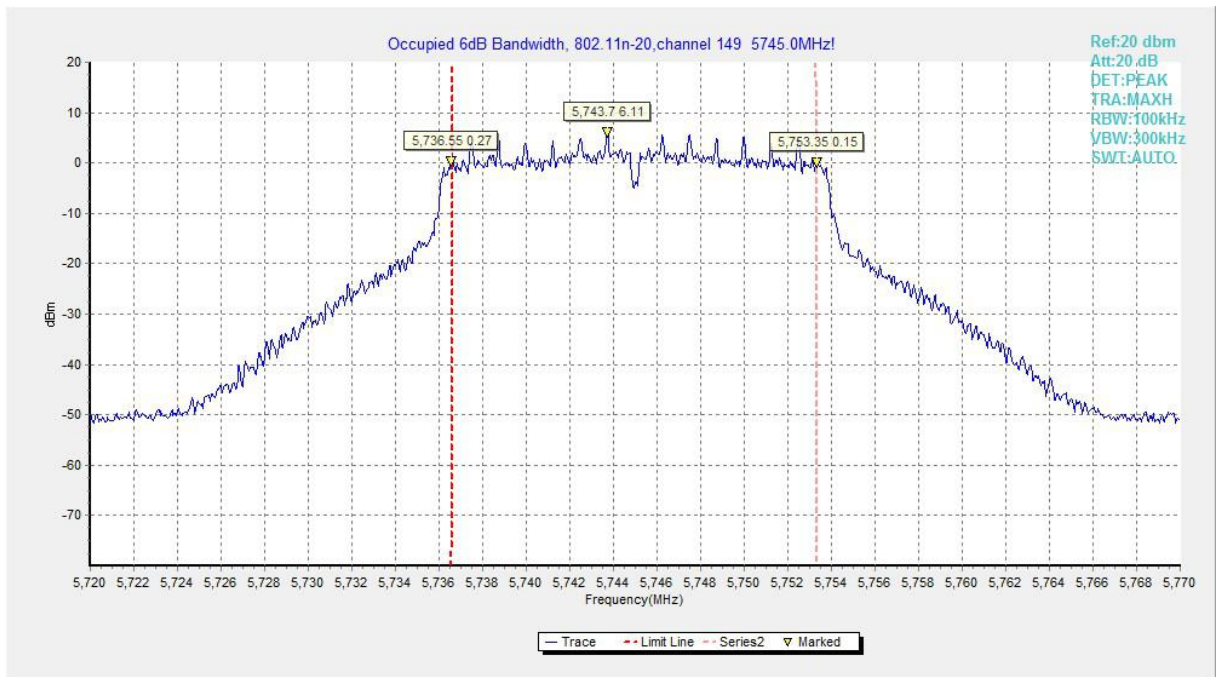


Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)

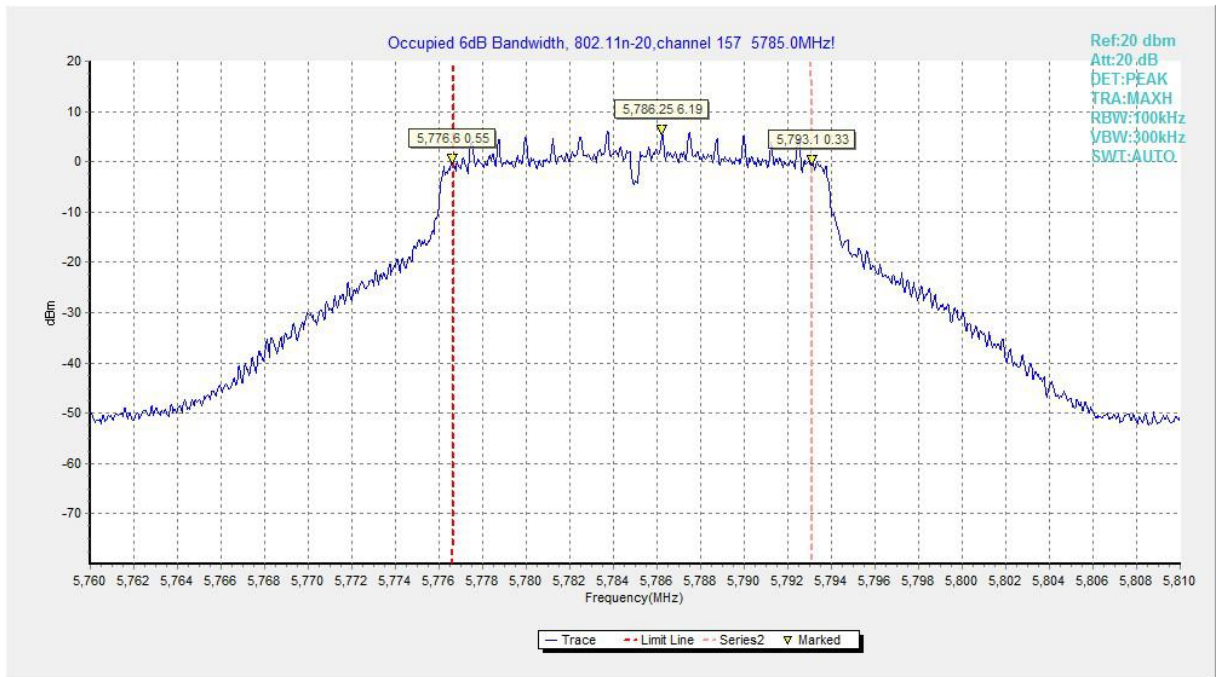


Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)

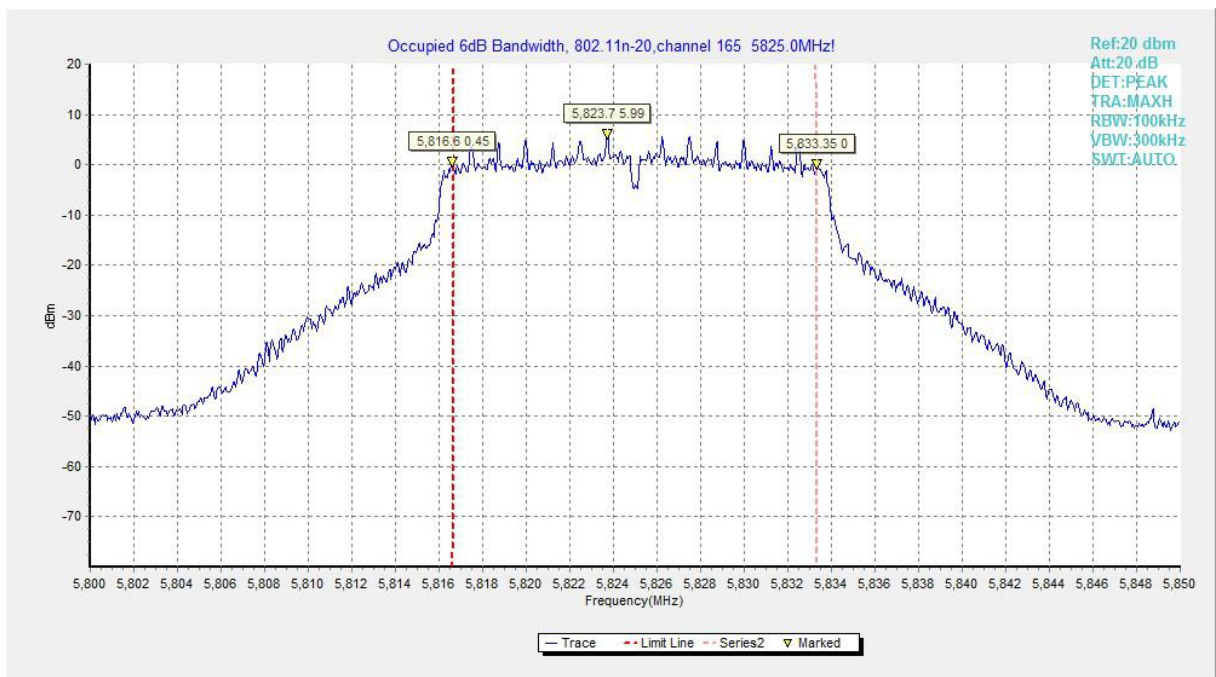


Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)

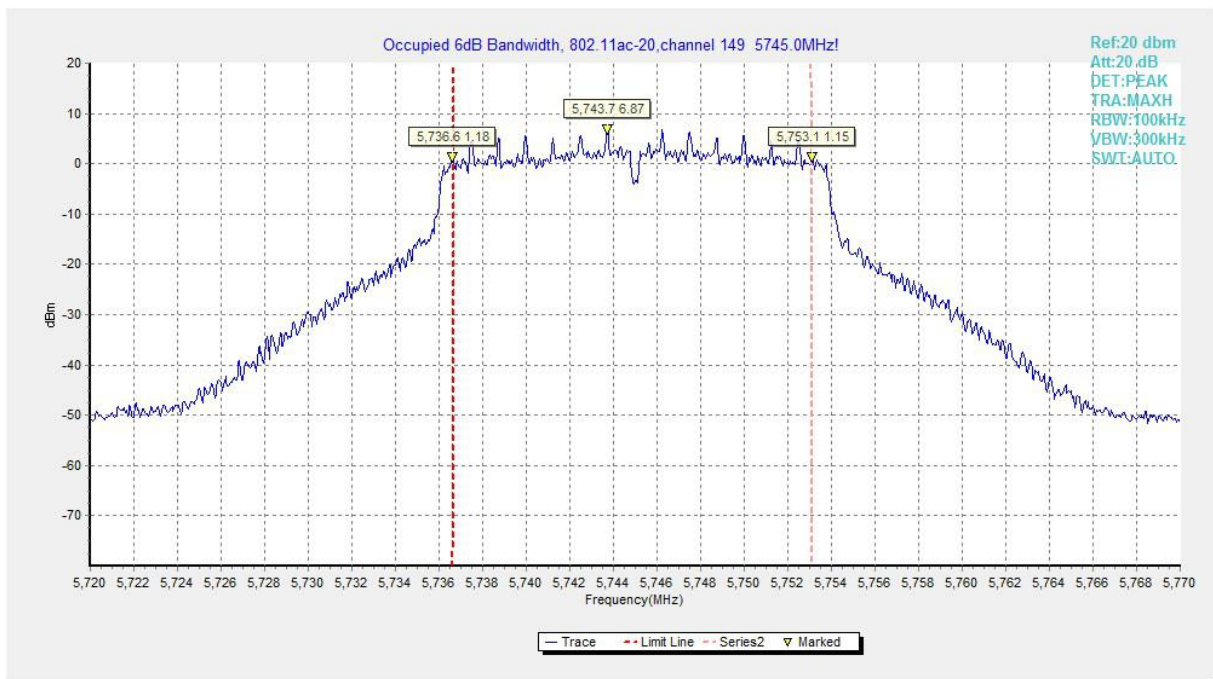


Fig. 7 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 149)

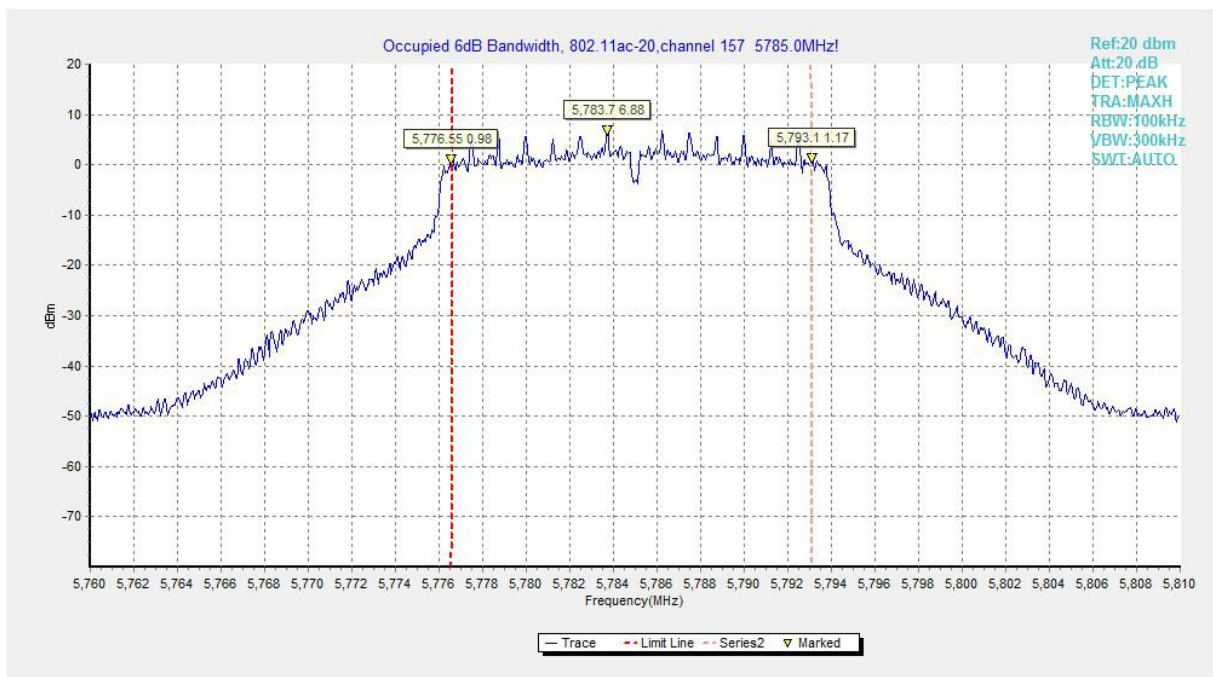


Fig. 8 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 157)

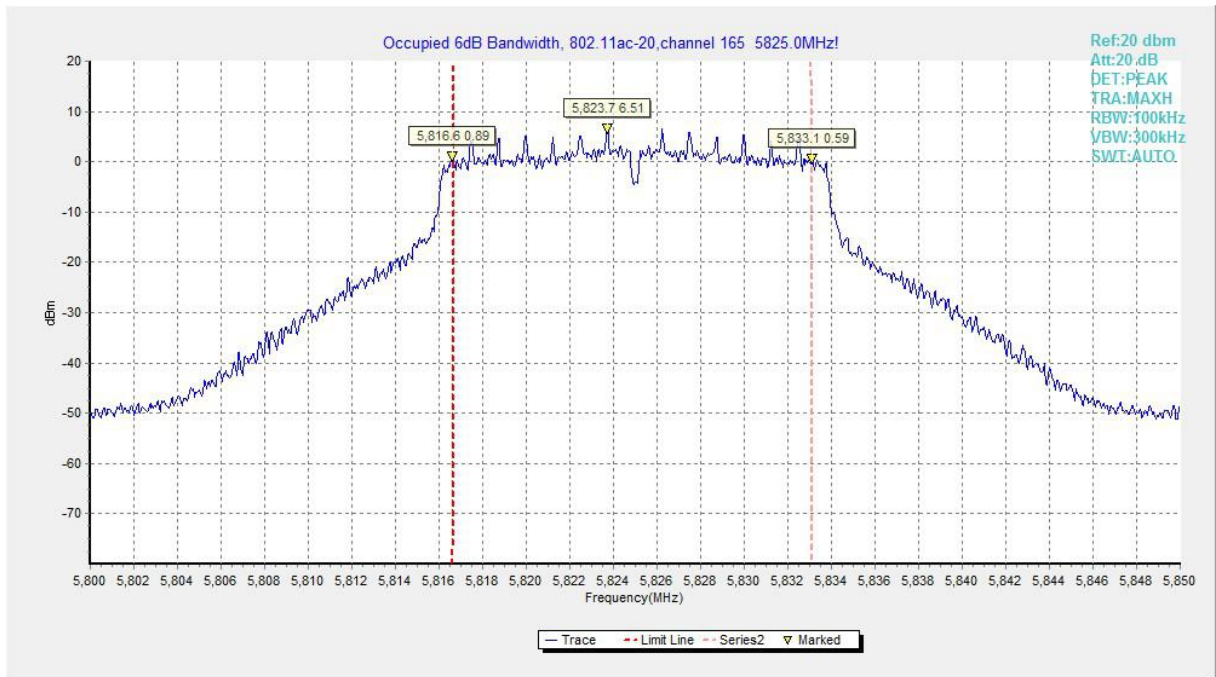


Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 165)

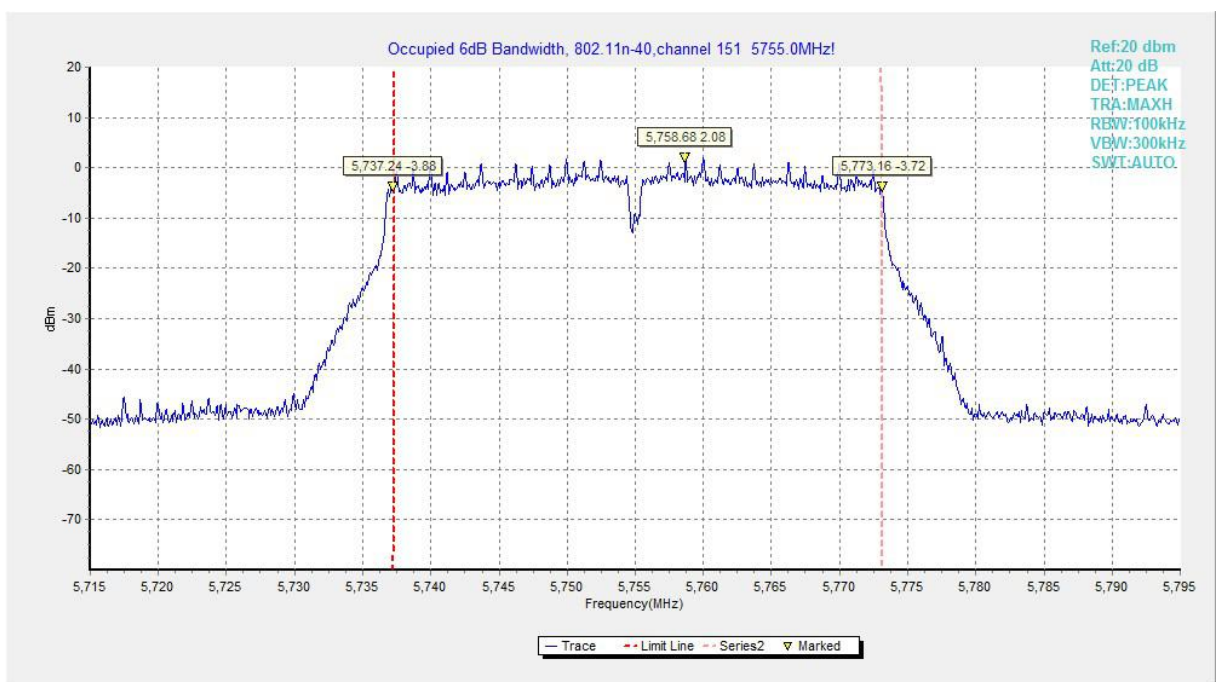


Fig. 10 Occupied 6dB Bandwidth (802.11n-HT40, Ch 151)

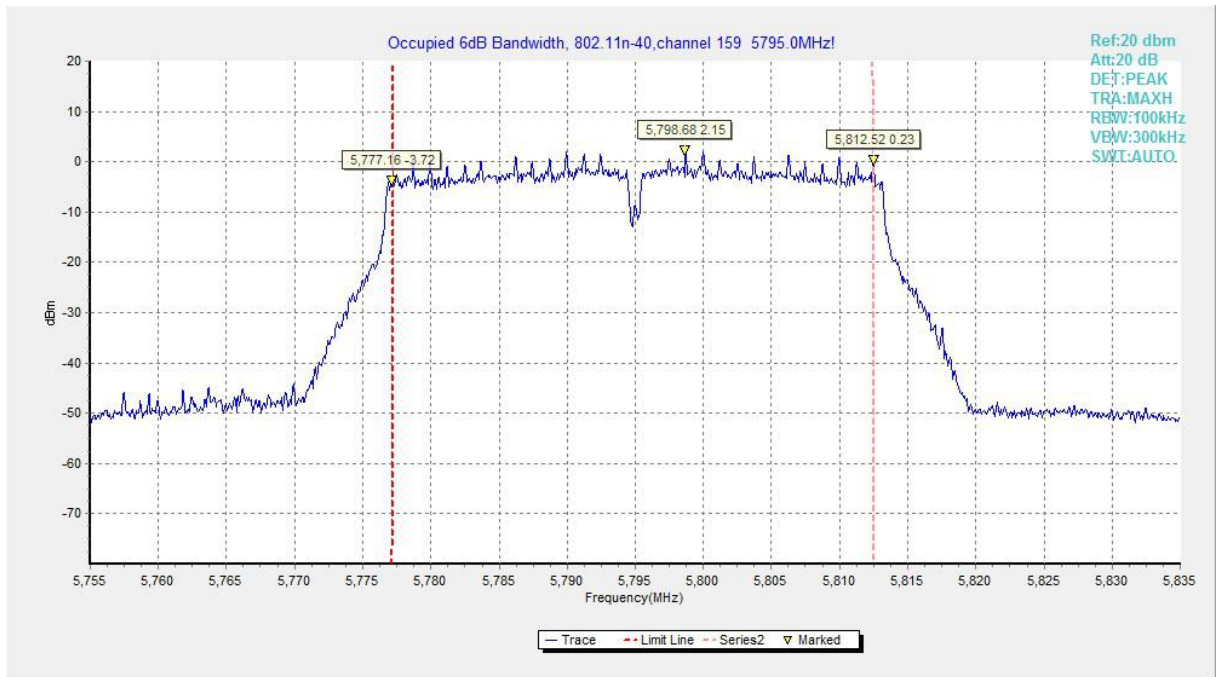


Fig. 11 Occupied 6dB Bandwidth (802.11n-HT40, Ch 159)

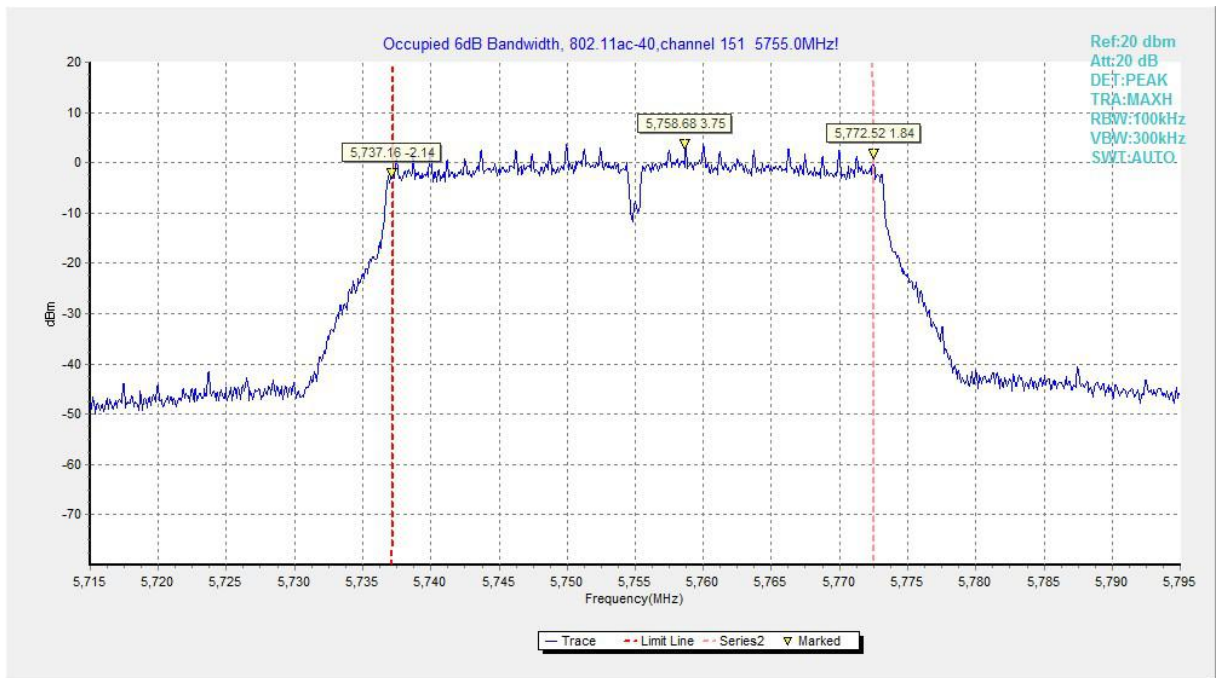


Fig. 12 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 151)

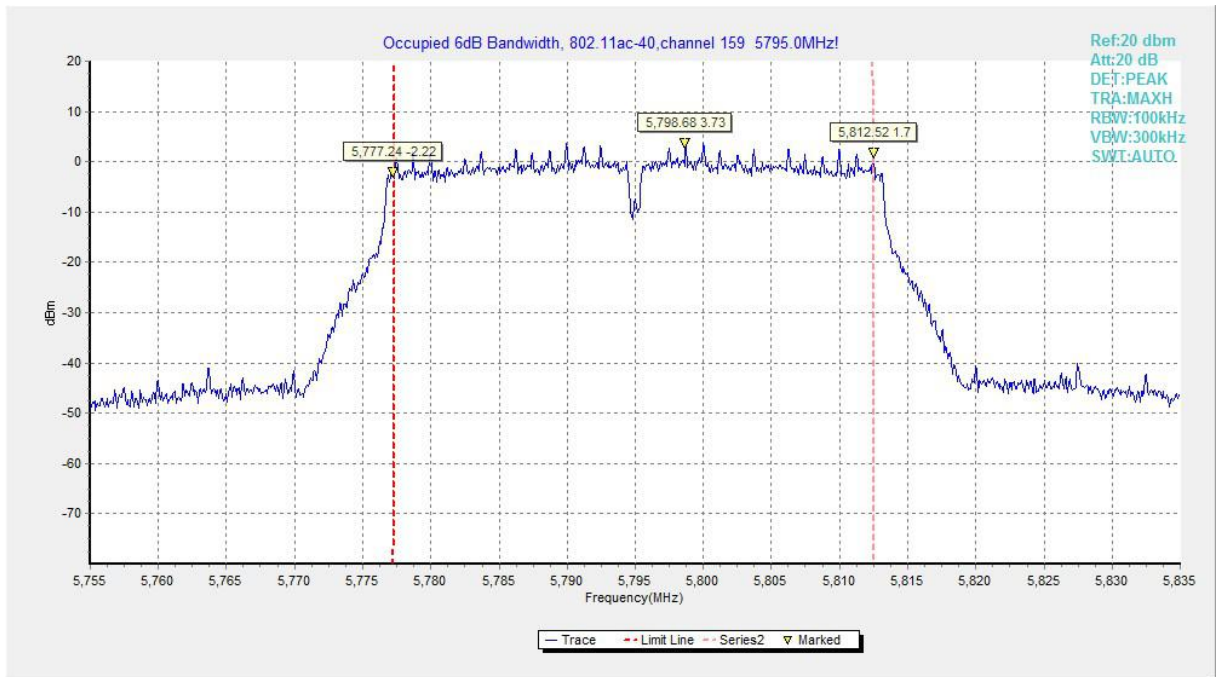


Fig. 13 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 159)

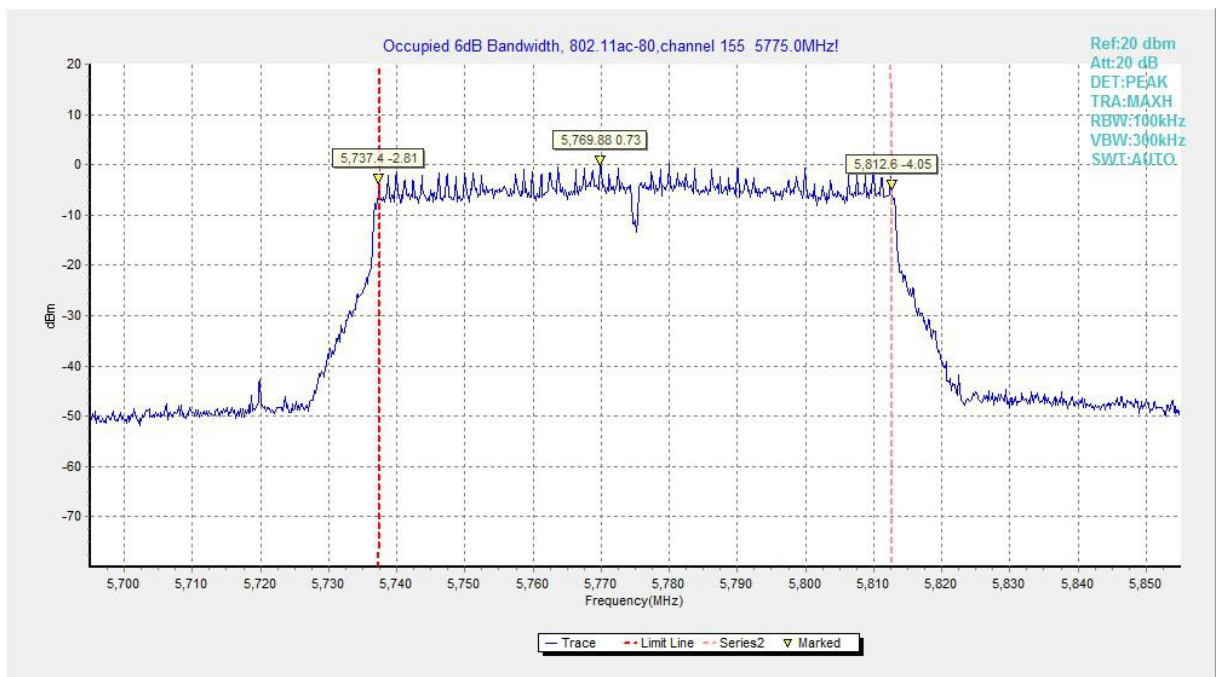


Fig. 14 Occupied 6dB Bandwidth (802.11ac-HT80, Ch 155)

A.5.2 Transmitter Spurious Emission - Radiated

Measurement Limit:

Standard	Limit (dBm/MHz)	
FCC 47 CFR Part 15.407	at the band edge	27
	at 5 MHz above or below the band edge	15.6
	at 25 MHz above or below the band edge	10
	at 75 MHz or more above or below the band edge	-27
	Note: Increasing linearly from point to point.	

The measurement is made according to KDB 789033

Measurement Results:

802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
	165	26.5 GHz~ 40 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

802.11n-HT40 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT40)	151	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz~ 40 GHz	---	P
	159	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

802.11ac-HT80 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac	155	30 MHz ~1 GHz	---	P

(HT80)	1 GHz ~ 3 GHz	---	P
	3 GHz ~ 7 GHz	---	P
	7 GHz ~ 18 GHz	---	P
	18 GHz ~ 26.5 GHz	---	P
	26.5 GHz~ 40 GHz	---	P

Conclusion: PASS

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.



Average Results:

802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5444.200	44.5	-15.0	34.4	25.07	54.0	9.5	V
5457.400	44.5	-15.0	34.5	25.08	54.0	9.5	V
11490.400	35.0	-25.8	38.2	22.55	54.0	19.0	V
16198.400	40.6	-19.7	40.9	19.39	54.0	13.4	V
17705.600	41.0	-19.0	40.5	19.47	54.0	13.0	H
17742.400	41.3	-18.9	40.5	19.65	54.0	12.7	V

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5448.600	45.1	-15.0	34.5	25.66	54.0	8.9	V
5457.000	45.2	-15.0	34.5	25.76	54.0	8.8	V
11570.400	36.1	-24.9	38.3	22.71	54.0	17.9	H
16196.000	40.5	-19.7	40.9	19.32	54.0	13.5	H
17706.400	41.0	-19.0	40.5	19.46	54.0	13.0	H
17735.200	41.2	-18.9	40.5	19.61	54.0	12.8	H

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5445.400	45.0	-15.0	34.4	25.61	54.0	9.0	V
5458.200	45.0	-15.0	34.5	25.61	54.0	9.0	V
11650.400	36.3	-24.6	38.4	22.48	54.0	17.7	V
16191.200	40.5	-19.8	40.9	19.31	54.0	13.5	H
17706.400	40.9	-19.0	40.5	19.34	54.0	13.1	V
17745.600	41.4	-18.8	40.5	19.78	54.0	12.6	V

802.11n-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5445.800	44.7	-15.0	34.4	25.26	54.0	9.3	V
5458.600	44.8	-15.0	34.5	25.35	54.0	9.2	V
11510.400	35.2	-25.6	38.2	22.59	54.0	18.8	H
16200.000	40.6	-19.7	40.9	19.34	54.0	13.4	H
17707.200	41.0	-19.0	40.5	19.42	54.0	13.0	H
17747.200	41.3	-18.8	40.5	19.58	54.0	12.8	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5449.800	44.7	-15.0	34.5	25.23	54.0	9.3	V
5457.000	44.7	-15.0	34.5	25.30	54.0	9.3	V
11590.400	35.5	-25.5	38.3	22.62	54.0	18.5	V
16180.000	40.4	-19.9	40.9	19.39	54.0	13.6	H
17703.200	41.0	-19.0	40.5	19.47	54.0	13.0	V
17740.000	41.2	-18.9	40.5	19.59	54.0	12.8	H

802.11ac-HT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5448.800	44.7	-15.0	34.5	25.29	54.0	9.3	V
5458.400	44.8	-15.0	34.5	25.40	54.0	9.2	V
11550.400	36.3	-24.4	38.3	22.44	54.0	17.7	V
16058.400	40.4	-20.0	40.8	19.73	54.0	13.6	H
17704.000	40.9	-19.0	40.5	19.39	54.0	13.1	H
17740.000	41.2	-18.9	40.5	19.56	54.0	12.8	V

Peak Results:
802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.132	60.2	-15.8	34.7	41.37	68.3	8.1	V
5651.455	59.8	-15.8	34.7	41.00	69.3	9.4	V
11490.200	46.8	-25.8	38.2	34.32	74.0	27.2	H
17091.400	56.5	-19.1	41.1	34.41	68.3	11.8	V
17234.950	52.6	-19.2	41.0	30.79	68.3	15.7	V
17503.350	55.4	-18.8	40.7	33.42	68.3	12.9	H

Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5758.600	60.5	-16.0	34.8	41.67	68.3	7.8	V
5836.000	61.3	-15.4	34.9	41.83	68.3	7.0	V
11569.950	48.0	-24.9	38.3	34.65	74.0	26.0	V
16368.700	55.4	-19.3	41.1	33.61	68.3	12.9	H
17102.950	55.4	-19.0	41.1	33.33	68.3	12.9	H
17354.850	53.7	-18.8	40.8	31.65	68.3	14.6	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5922.344	61.2	-15.0	35.0	41.19	70.2	8.9	V
5924.224	61.5	-14.9	35.0	41.41	68.8	7.3	V
11650.250	48.3	-24.6	38.4	34.49	74.0	25.7	V
17104.050	55.5	-19.0	41.1	33.43	68.3	12.8	V
17474.750	53.6	-18.9	40.7	31.78	68.3	14.7	V
17624.900	56.0	-18.2	40.6	33.53	68.3	12.3	H

802.11n-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.742	59.9	-15.8	34.7	41.10	68.7	8.8	V
5651.541	60.1	-15.8	34.7	41.22	69.3	9.3	V
11510.000	47.1	-25.7	38.2	34.49	74.0	26.9	V
16312.600	55.5	-19.4	41.0	33.93	68.3	12.8	V
17265.200	52.7	-19.2	40.9	30.90	68.3	15.6	H
17516.550	56.1	-18.7	40.7	34.12	68.3	12.2	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5922.792	61.8	-15.0	35.0	41.75	69.8	8.0	V
5924.074	62.6	-14.9	35.0	42.51	68.9	6.3	V
11589.750	46.7	-25.5	38.3	33.86	74.0	27.3	V
16907.700	55.9	-19.0	41.2	33.71	68.3	12.4	H
17385.100	53.2	-18.5	40.8	30.91	68.3	15.1	V
17511.600	56.1	-18.7	40.7	34.17	68.3	12.2	H

802.11ac-HT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.886	60.2	-15.8	34.7	41.35	68.3	8.1	V
5651.645	60.4	-15.8	34.7	41.56	68.3	7.9	V
11550.150	49.0	-24.4	38.3	35.14	74.0	25.0	V
16733.900	55.6	-19.0	41.2	33.47	68.3	12.7	V
17325.150	53.0	-18.8	40.9	30.92	68.3	15.3	V
17645.250	55.7	-18.2	40.6	33.32	68.3	12.6	H

A.6. Band Edges Compliance

A6.1 Band Edges - conducted

A6.2 Band Edges - Radiated

Measurement Limit:

Standard	Limit (dBm/MHz)	
FCC 47 CFR Part 15.407	at the band edge	27
	at 5 MHz above or below the band edge	15.6
	at 25 MHz above or below the band edge	10
	at 75 MHz or more above or below the band edge	-27
	Note: increasing linearly from point to point.	

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.15	P
	5825 MHz	Fig.16	P
802.11n HT40	5755 MHz	Fig.17	P
	5795 MHz	Fig.18	P
802.11ac HT80	5775 MHz	Fig.19 Fig.20	P

Conclusion: PASS

Test graphs as below:

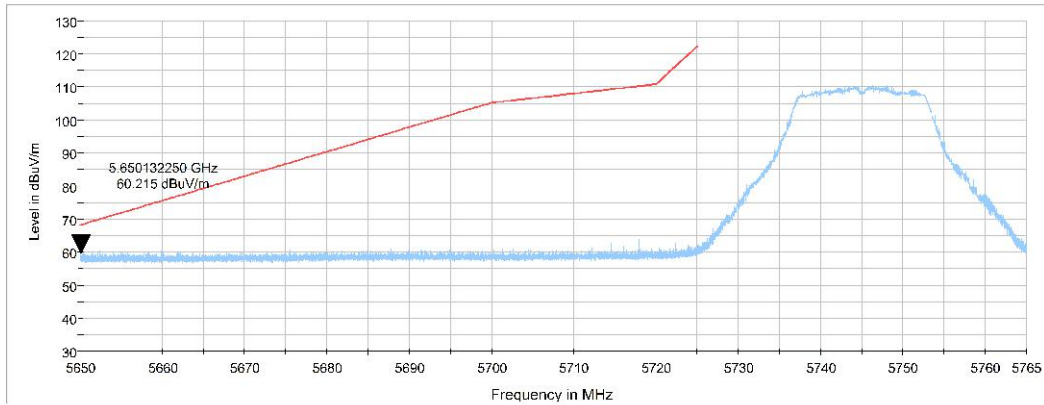


Fig. 15 Band Edges (802.11a Ch149,5745MHz)

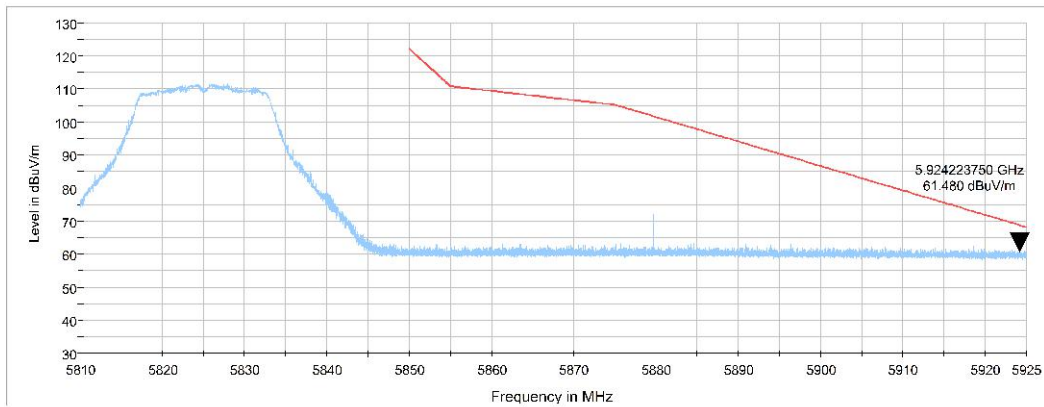


Fig. 16 Band Edges (802.11a Ch165, 5825MHz)

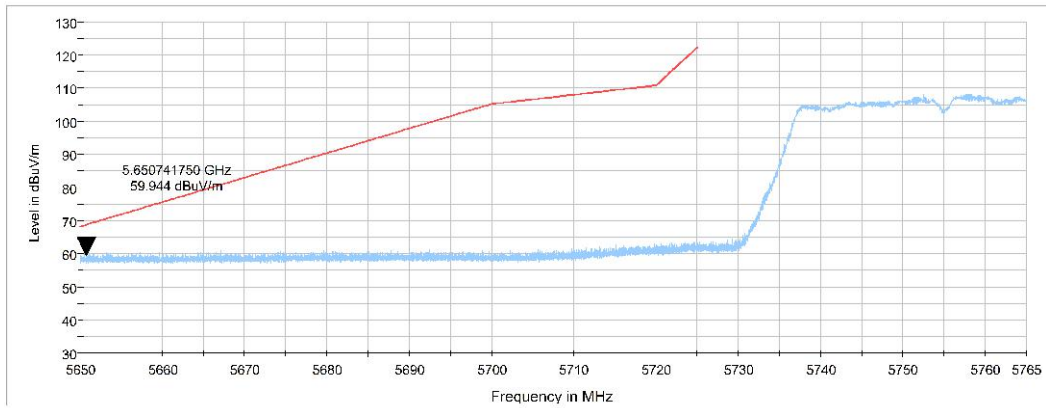


Fig. 17 Band Edges (802.11n-HT40 Ch151, 5755MHz)

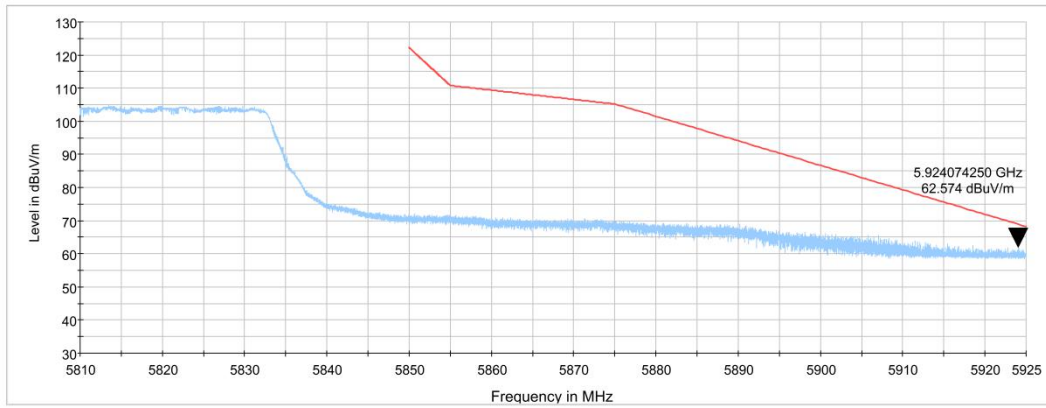


Fig. 18 Band Edges (802.11n-HT40 Ch159, 5795MHz)

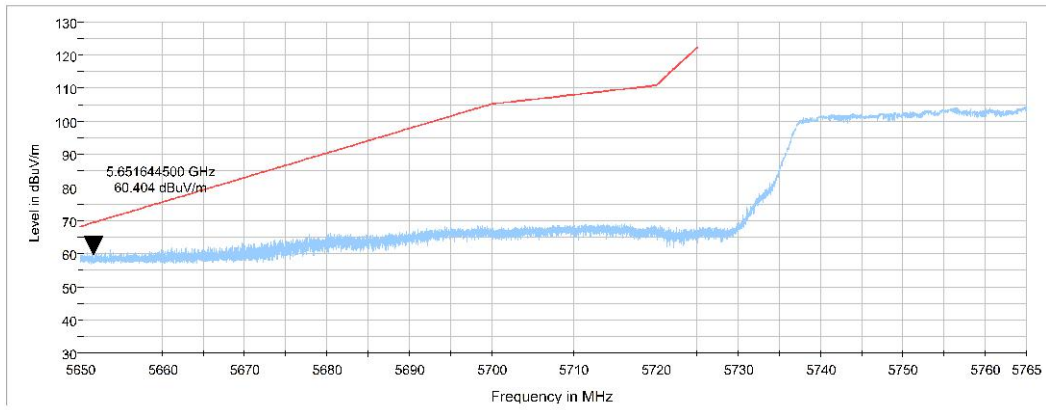


Fig. 19 Band Edges (802.11ac-HT80 Ch155, 5775MHz)

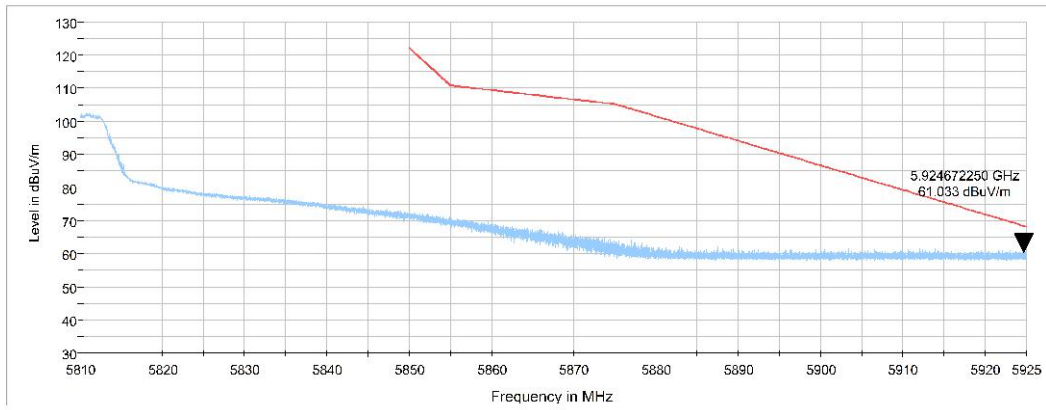


Fig. 20 Band Edges (802.11ac-HT80, 5775MHz)

A.7. AC Powerline Conducted Emission

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement uncertainty:

Expanded measurement uncertainty for this test item is $U = 3.08\text{dB}$, $k=2$.

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)	Conclusion
		With charger	
		Idle	
0.15 to 0.5	66 to 56	Fig.21	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.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
		With charger	
		Idle	
0.15 to 0.5	56 to 46	Fig.21	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.

The measurement is made according to ANSI C63.10 .

Conclusion: PASS

Idle:

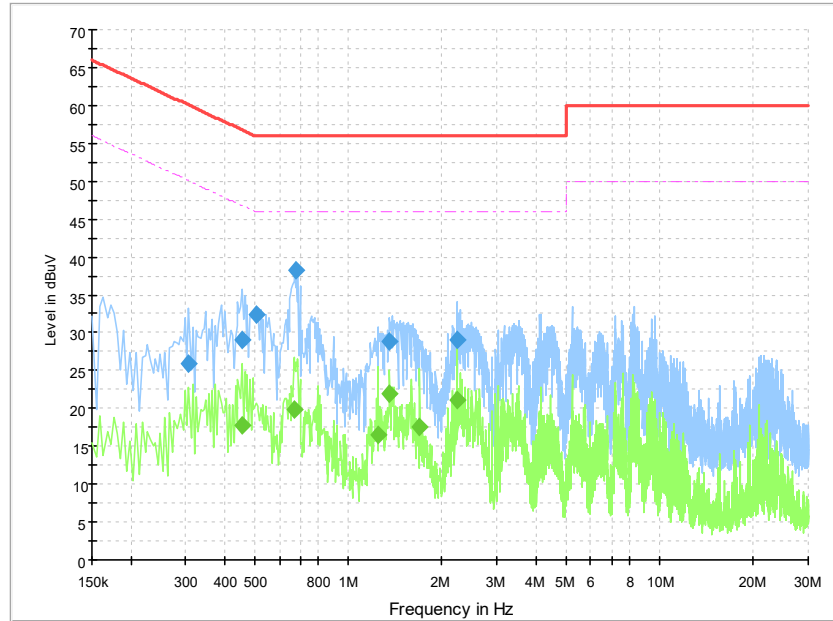


Fig. 21 AC Power line Conducted Emission-Idle

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.307500	25.9	3000.0	9.000	On	N	19.9	34.1	60.0
0.456000	29.0	3000.0	9.000	On	L1	19.9	27.8	56.8
0.505500	32.3	3000.0	9.000	On	L1	19.9	23.7	56.0
0.681000	38.3	3000.0	9.000	On	L1	19.8	17.7	56.0
1.356000	28.8	3000.0	9.000	On	L1	19.7	27.2	56.0
2.242500	29.0	3000.0	9.000	On	L1	19.6	27.0	56.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.456000	17.8	3000.0	9.000	On	L1	19.9	29.0	46.8
0.667500	19.9	3000.0	9.000	On	N	19.8	26.1	46.0
1.248000	16.5	3000.0	9.000	On	L1	19.7	29.5	46.0
1.356000	22.0	3000.0	9.000	On	L1	19.7	24.0	46.0
1.698000	17.7	3000.0	9.000	On	N	19.7	28.3	46.0
2.242500	21.0	3000.0	9.000	On	L1	19.6	25.0	46.0

Note2: The measurement results showed here are worst cases.

ANNEX B: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p>  	
<hr/> Certificate of Accreditation to ISO/IEC 17025:2017 <hr/>	
NVLAP LAB CODE: 600118-0	
Telecommunication Technology Labs, CAICT Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
Electromagnetic Compatibility & Telecommunications	
<i>This laboratory is accredited in accordance with the recognized international Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i>	
2021-09-29 through 2022-09-30 <i>Effective Dates</i>	  <i>For the National Voluntary Laboratory Accreditation Program</i>

*** END OF REPORT BODY ***