



FCC PART 15C TEST REPORT No.I22Z70189-IOT05

for

Samsung Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE Tablet with Bluetooth, WLAN

SM-T509

With

FCC ID: ZCASMT509

Hardware Version: REV 1.0

Software Version: T509.001

Issued Date: 2022-08-16

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

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1. TEST LABORATORY

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

Conducted testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

Radiated testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

1.3. Testing Environment

Normal Temperature: 15-35°C

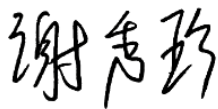
Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2022-07-11

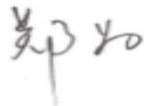
Testing End Date: 2022-08-16

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: SAMSUNG Electronics Co., Ltd.
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City: NJ
Postal Code: 07058
Country: America
Email: j1.chun@samsung.com
Telephone: +1-201-937-4203
Fax: /

2.2. Manufacturer Information

Company Name: SAMSUNG Electronics Co., Ltd.
Address: Samsung R5, Maetan dong 129, Samsung ro
Youngtong gu, Suwon city 443 742, Korea
City: Suwon
Postal Code: 443742
Country: Korea
Email: ggobi.cho@samsung.com
Telephone: +82-10-2722-4159
Fax: /

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY

EQUIPMENT(AE)

3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE Tablet with Bluetooth, WLAN
Model name	SM-T509
FCC ID	ZCASMT509
WLAN Frequency Band	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM
Voltage	3.8V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN	HW Version	SW Version
UT10a	2270189UT10a	REV 1.0	T509.001
UT08a	2270189UT08a	REV 1.0	T509.001

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

3.3. Internal Identification of AE used during the test

AE ID*	Description	Remark
AE1	Adapter1	/
AE2	Adapter 2	/
AE3	Adapter 3	/
AE4	Adapter 4	/
AE5	Adapter 5	/
AE6	USB cable1	/
AE7	USB cable2	/
AE8	USB cable3	/
AE9	Headset1	/
AE10	Headset2	/
AE11	Battery	/

AE1

Model	EP-TA50JWE
Manufacturer	HAEM Co.,Ltd
Length of cable	/

AE2

Model	EP-TA50EWE
Manufacturer	HAEM Co.,Ltd
Length of cable	/

AE3

Model	EP-TA50JWE
Manufacturer	RFTECH Co., Ltd
Length of cable	/
AE4	
Model	EP-TA50EWE
Manufacturer	RFTECH Co., Ltd
Length of cable	/
AE5	
Model	EP-TA50UWE
Manufacturer	HAEM Co.,Ltd
Length of cable	/
AE6	
Model	EP-DT725BWE
Manufacturer	RFTECH Co., Ltd.
Length of cable	/
AE7	
Model	EP-DT725BWE
Manufacturer	DONGGUAN KSD CO.,LTD
Length of cable	/
AE8	
Model	EP-DR140AWE
Manufacturer	CRESYN HANOI Co., Ltd
Length of cable	/
AE9	
Model	EHS64AVFWE
Manufacturer	DONGGUAN YOUNGBO ELECTRONICS CO.,LTD
Length of cable	/
AE10	
Model	EHS61ASFWE
Manufacturer	DONGGUAN YOUNGBO ELECTRONICS CO.,LTD
Length of cable	/

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

3.4. General Description

Equipment Under Test (EUT) is a model of Multi-band GSM/WCDMA/LTE Tablet with Bluetooth, WLAN with integrated antenna. It consists of normal options: 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.

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

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 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

6.2. 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.

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°C
Voltage	3.8V
Humidity	44%

7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2023-05-15
2	Test Receiver	ESCI	100344	R&S	1 year	2023-02-21
3	LISN	ENV216	101200	R&S	1 year	2023-06-29
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Manufacturer	Serial Number	Calibration Period	Calibration Due date
1	Test Receiver	ESW44	R&S	103023	1 year	2022-10-18
2	Test Receiver	ESW44	R&S	103015	1 year	2022-09-02
3	Test Receiver	ESU 26	R&S	100235	1 year	2023-03-08
4	EMI Antenna	VULB 9163	SCHWARZBECK	483	1 year	2022-08-24
5	EMI Antenna	3115	ETS-Lindgren	00167250	1 year	2023-06-20
6	EMI Antenna	3116	ETS-Lindgren	2663	1 year	2022-08-11
7	Loop Antenna	HFH2-Z2	R&S	829324/007	1 year	2022-12-22

Note: the EMI Antenna which Serial Number is 2663 was before Calibration Due date when used.

AC Power Line Conducted Emission

No.	Equipment	Model	Manufacturer	Serial Number	Calibration Period	Calibration Due date
1	LISN	ENV216	R&S	101200	1 year	2023-06-29
2	Test Receiver	ESCI	R&S	100344	1 year	2023-03-21

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 6dB 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	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.15
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.54
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.26

8.6. AC Power-line Conducted Emission

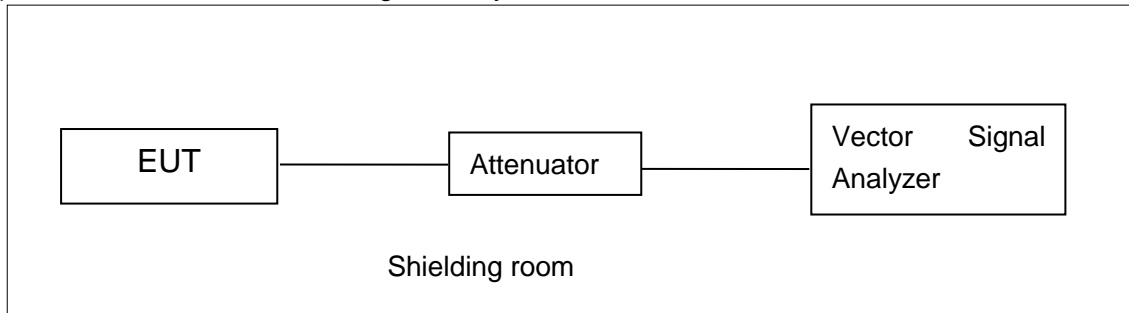
Measurement Uncertainty : 3.08dB,k=2

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

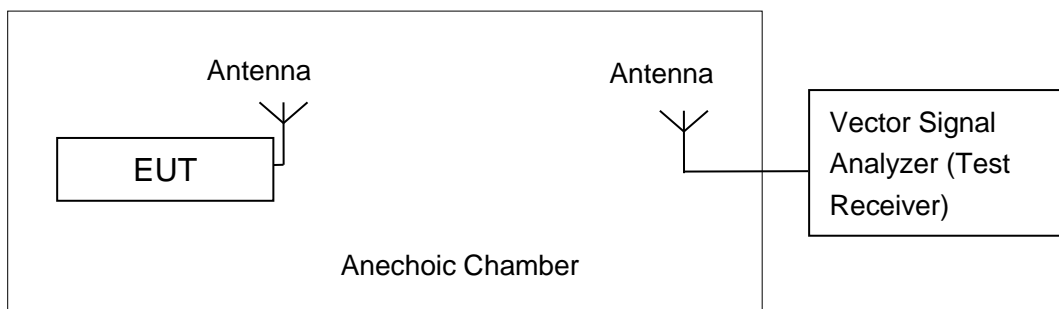


A.1.2. Radiated Emission Measurements

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. Maximum Peak Output Power

Measurement Limit and Method:

Standard	Limit (dBm)
FCC CRF Part 15.407(a)	< 30

A.2.1 Antenna Gain

Antenna gain is -2.01dBi and the value is supplied by the applicant or manufacturer.

A.2.2. Maximum Peak Output Power-conducted

Measurement Results:

802.11a mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11a	6	14.09	/	/
	9	14.20	15.20	13.42
	12	14.07	/	/
	18	14.05	/	/
	24	14.03	/	/
	36	14.00	/	/
	48	13.19	/	/
	54	13.08	/	/

The data rate 9Mbps is selected as worse condition, and the following cases are performed with this condition.

802.11n-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11n (20MHz)	MCS0	14.32	/	/
	MCS1	15.44	16.39	15.34
	MCS2	14.40	/	/
	MCS3	14.30	/	/
	MCS4	14.38	/	/
	MCS5	14.37	/	/
	MCS6	13.51	/	/
	MCS7	13.56	/	/

The data rate MCS1 is selected as worse condition, and the following cases are performed with this condition.

802.11ac-HT20 mode

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11ac (20MHz)	MCS0	14.49	15.54	13.77
	MCS1	14.41	/	/
	MCS2	13.38	/	/
	MCS3	13.33	/	/
	MCS4	12.40	/	/
	MCS5	12.53	/	/
	MCS6	12.58	/	/
	MCS7	11.60	/	/
	MCS8	11.69	/	/

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

802.11n-HT40 mode

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11n (40MHz)	MCS0	14.56	14.64
	MCS1	14.54	/
	MCS2	14.51	/
	MCS3	14.48	/
	MCS4	14.49	/
	MCS5	13.87	/
	MCS6	14.01	/
	MCS7	13.98	/

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

802.11ac-HT40 mode

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11ac (40MHz)	MCS0	14.67	14.28
	MCS1	14.14	/
	MCS2	13.27	/
	MCS3	13.07	/
	MCS4	12.86	/
	MCS5	12.96	/
	MCS6	13.06	/
	MCS7	12.46	/

	MCS8	12.55	/
	MCS9	11.52	/

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

802.11ac-HT80 mode

Mode	Data Rate (Index)	Test Result (dBm)
		5775MHz (Ch155)
802.11ac (80MHz)	MCS0	16.21
	MCS1	16.05
	MCS2	14.45
	MCS3	14.22
	MCS4	12.47
	MCS5	12.26
	MCS6	12.22
	MCS7	11.26
	MCS8	11.04
	MCS9	10.21

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

Duty Cycle

Mode	11a	11n20	11ac20	11n40	11ac40	11ac80
Duty Cycle	98%	97%	99%	99%	99%	98%

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	-0.14	P
	157	0.93	P
	165	-0.84	P
802.11n HT20	149	0.88	P
	157	1.89	P
	165	0.31	P
802.11ac HT40	151	-2.37	P
	159	-2.92	P
802.11ac HT80	155	-4.31	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 (MHz)		conclusion
		Fig.	Value	
802.11a	149	Fig.1	16.40	P
	157	Fig.2	16.40	P
	165	Fig.3	16.35	P
802.11n HT20	149	Fig.4	17.30	P
	157	Fig.5	17.25	P
	165	Fig.6	17.40	P
802.11ac HT40	151	Fig.7	35.84	P
	159	Fig.8	36.32	P
802.11ac HT80	155	Fig.9	75.52	P

Conclusion: PASS

Test graphs as below:

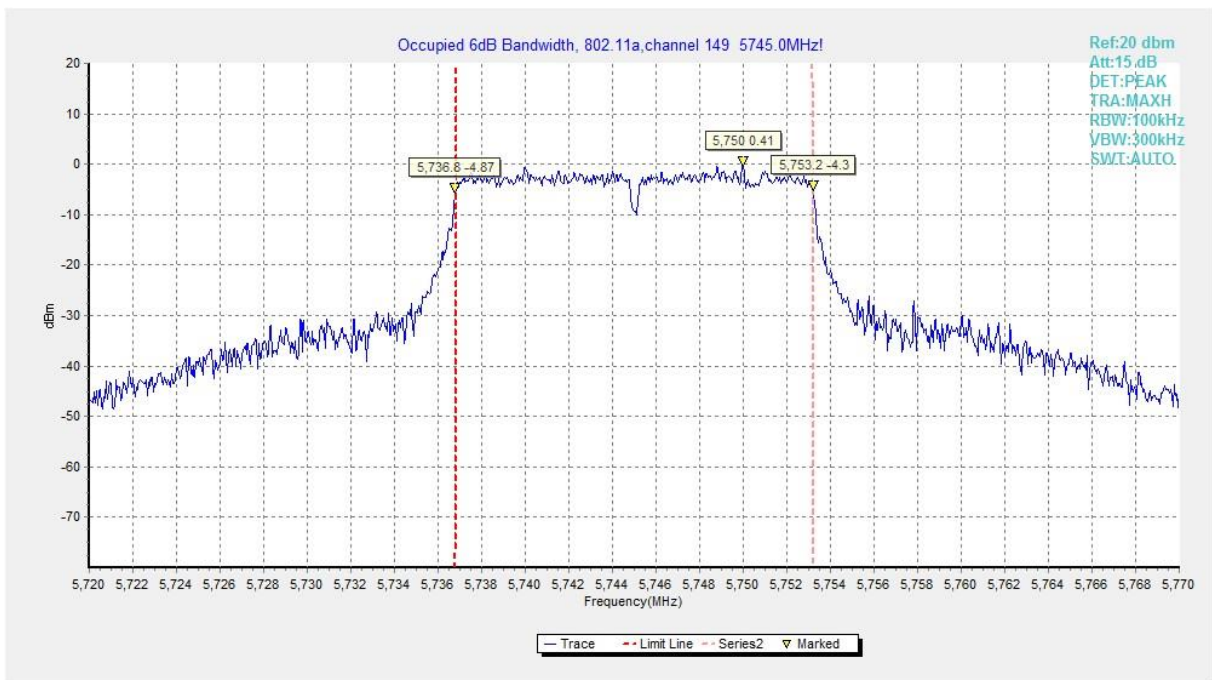


Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)

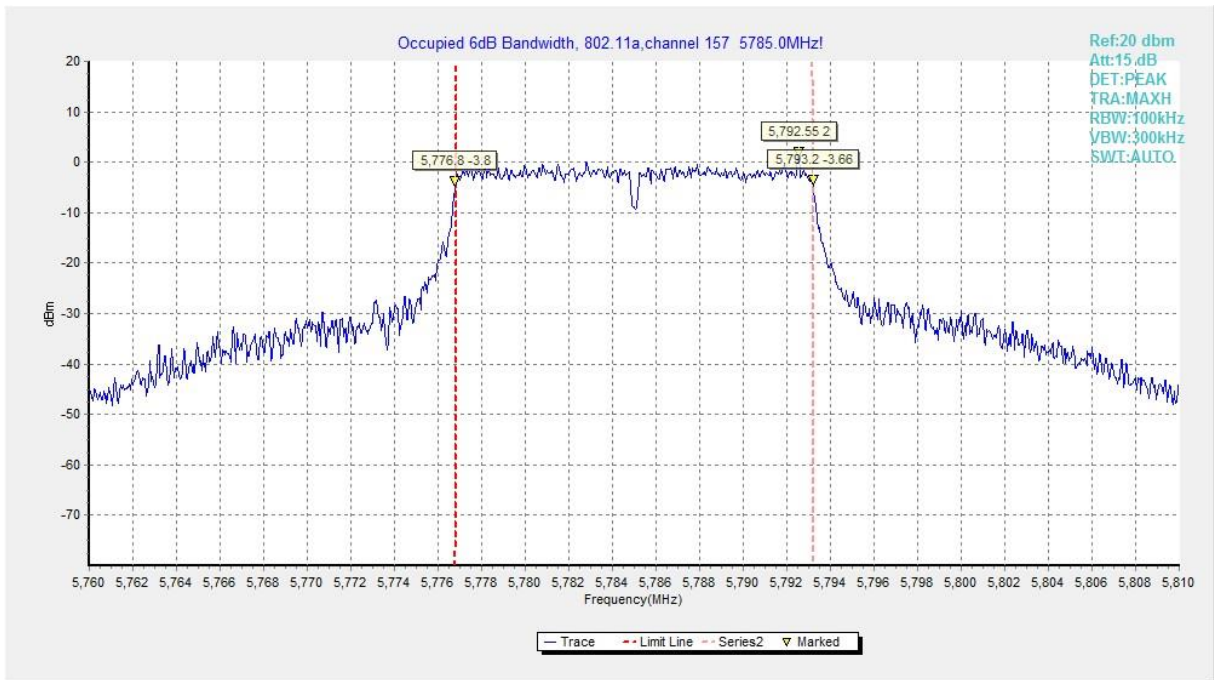


Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)

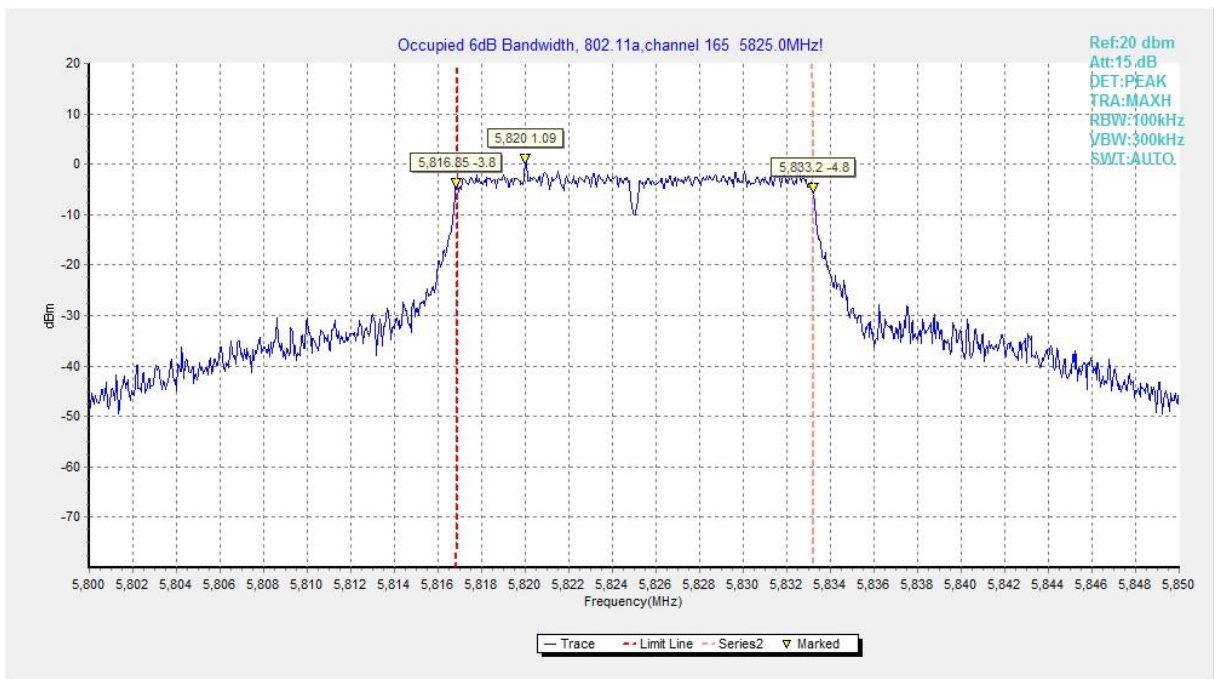


Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)

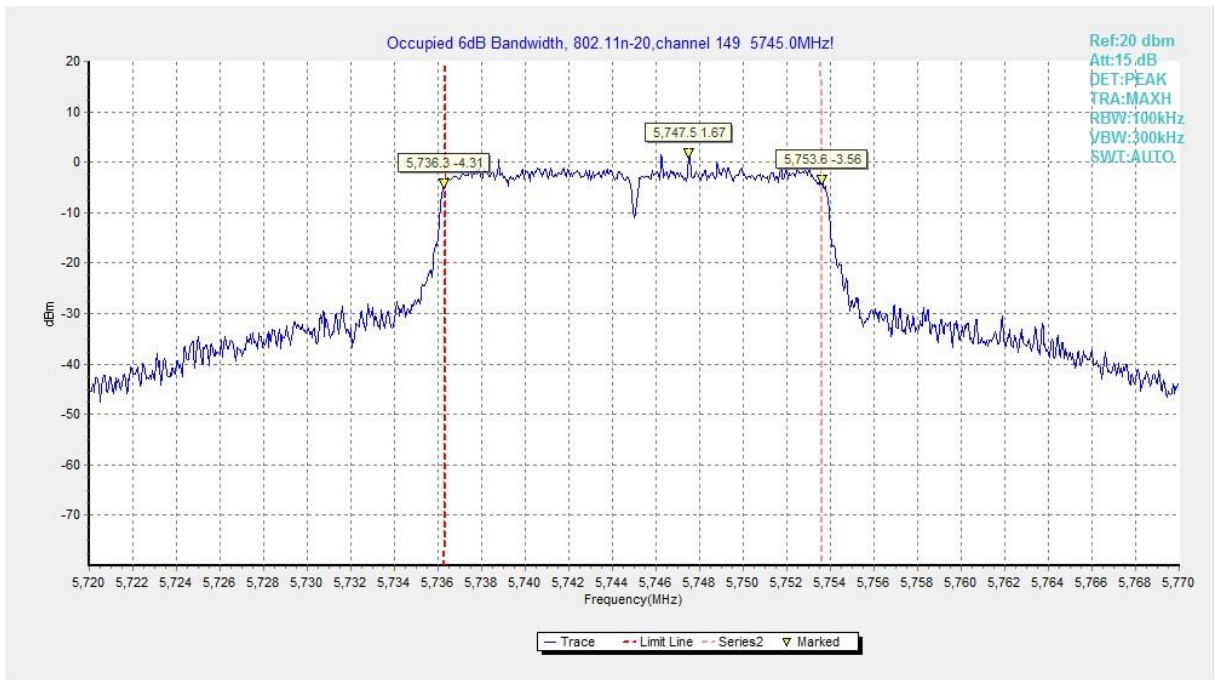


Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)

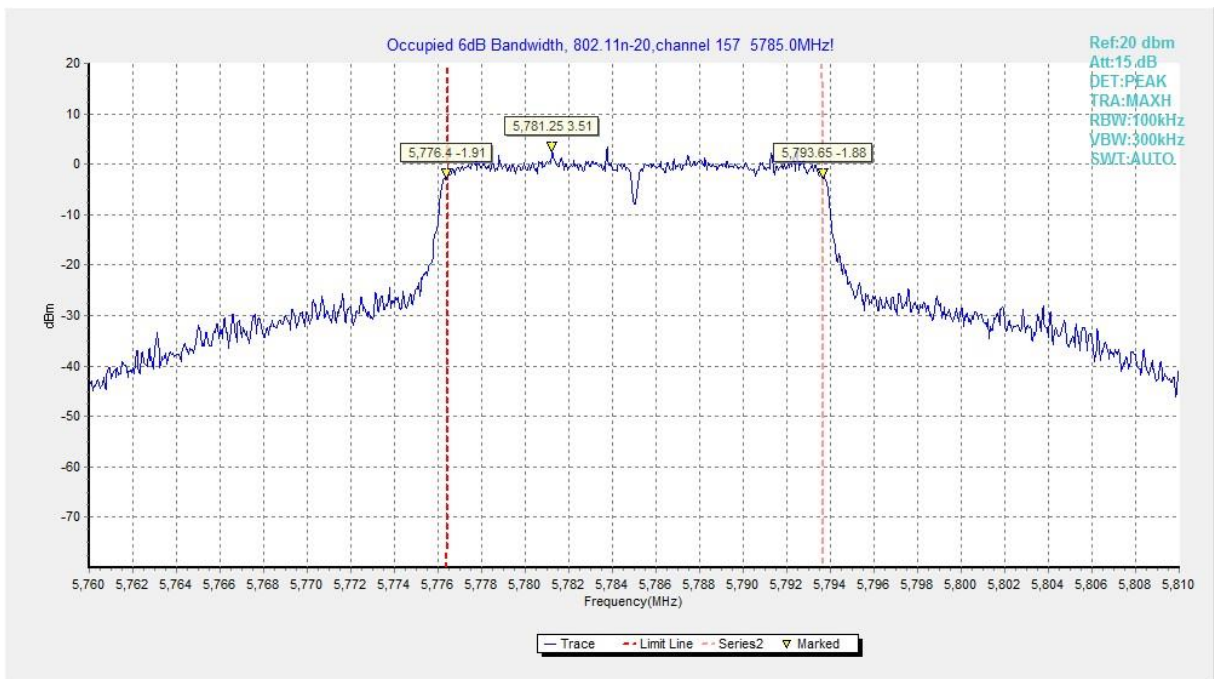


Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)

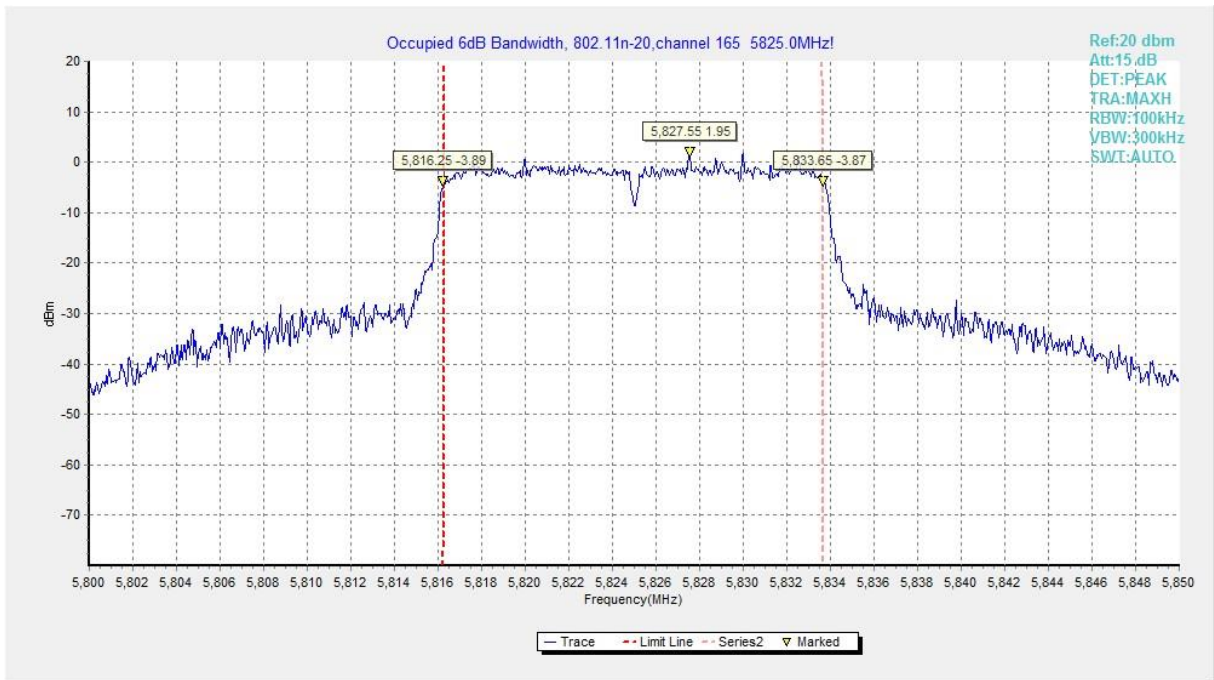


Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)

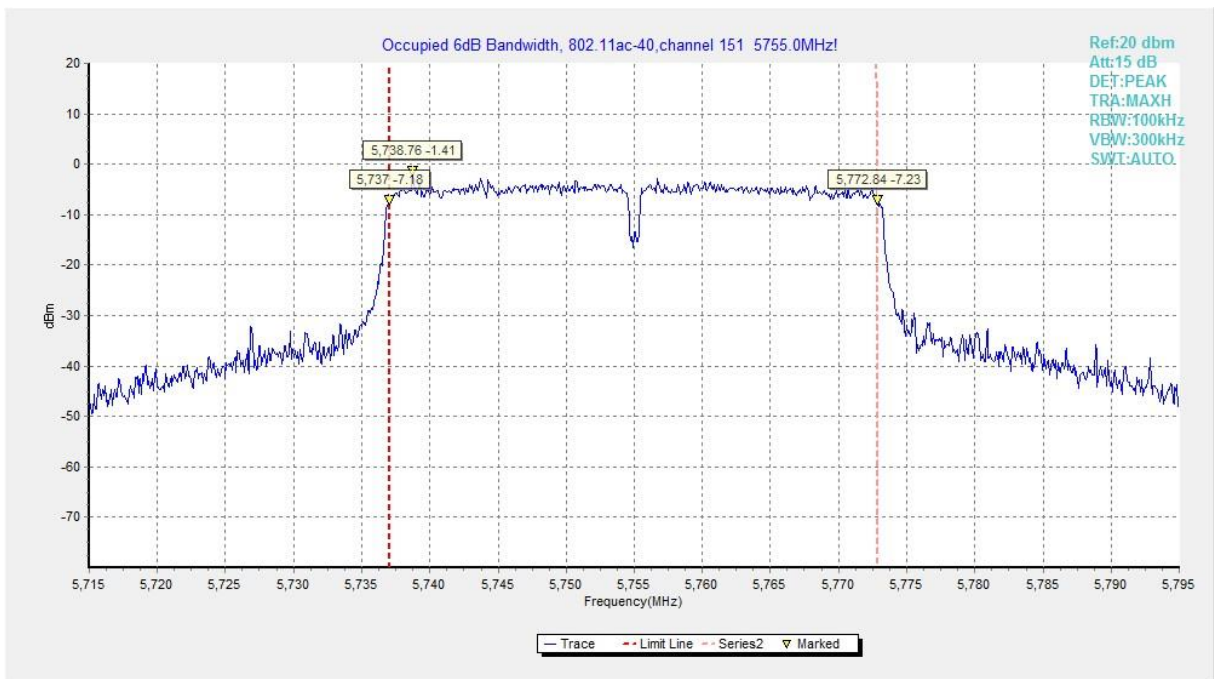


Fig. 7 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 151)

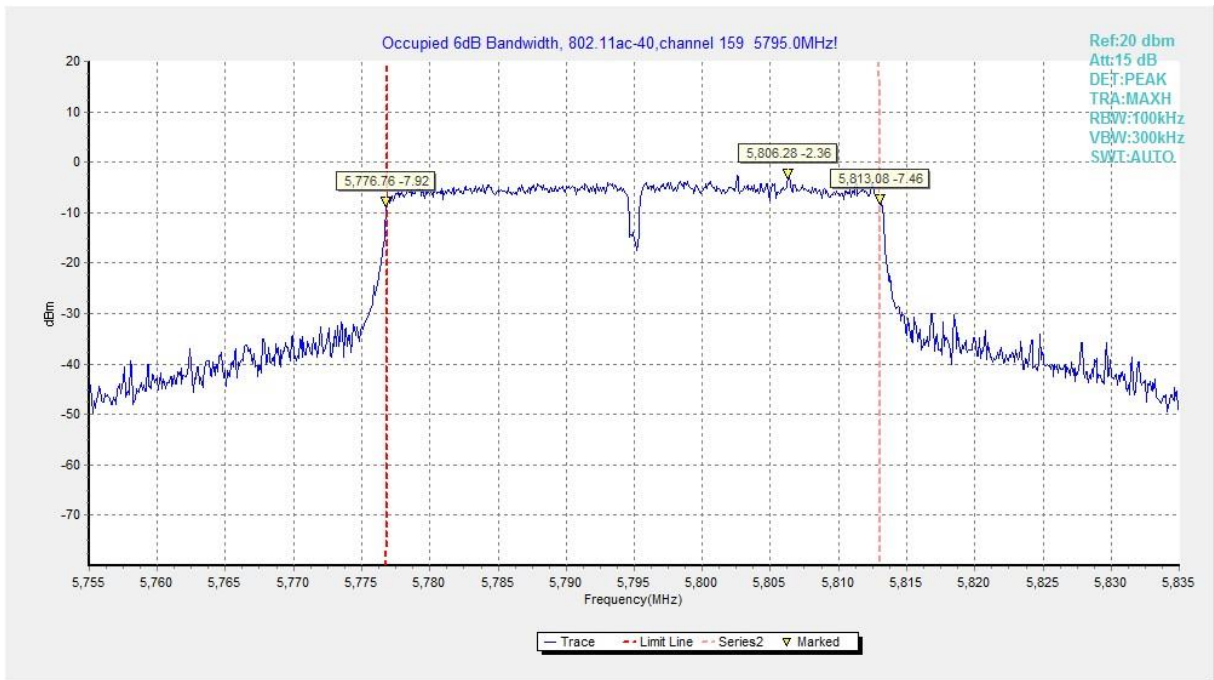


Fig. 8 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 159)

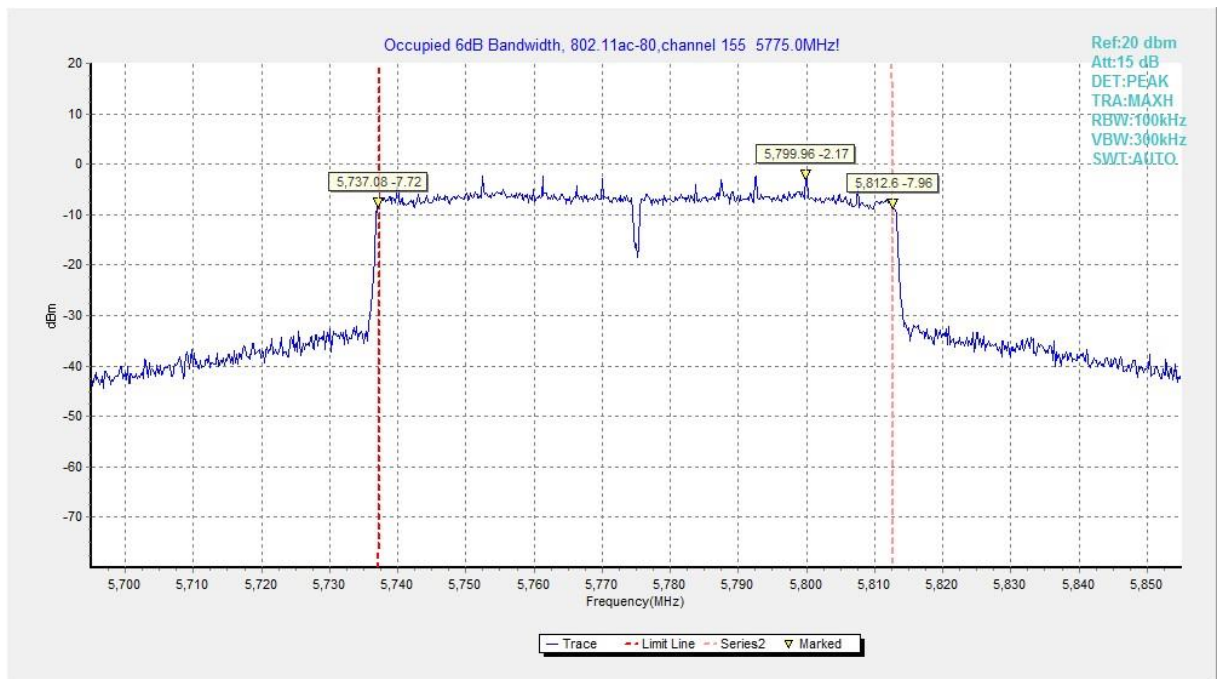


Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT80, Ch 155)

A.5. Transmitter Spurious Emission

A.5.1 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

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 (MHz)	Field strength($\mu\text{V}/\text{m}$)	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

Frequency of emission (MHz)	Field strength ($\mu\text{V}/\text{m}$)	Field strength (dBuV/m)	Measurement distance (m)
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Set up:

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m

The EUT and transmitting antenna shall be centered on the turntable.

Test Procedure

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. 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. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The receiver references:

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Sample Calculations

1. Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \sqrt{EIRP - 20 \log(D) + 104.77}$$

Where:

E is the field strength in dB μ V/m

D is the measurement distance in meters

EIRP is the equivalent isotropically radiated power in dbm

2. The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + \text{Cable Loss} + \text{Antenna Factor}$$

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.

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	9kHz ~30 MHz	---	P
		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-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (HT20)	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	9kHz ~30 MHz	---	P
		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	9kHz ~30 MHz	---	P
		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-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac (HT20)	149	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	157	9kHz ~30 MHz	---	P
		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
		165	1 GHz ~ 3 GHz	---
	3 GHz ~ 7 GHz		---	P
	7 GHz ~ 18 GHz		---	P

802.11ac-HT40 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac (HT40)	151	9kHz ~30 MHz	---	P
		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 (HT80)	155	9kHz ~30 MHz	---	P
		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

Conclusion: PASS

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)
17922.450	42.17	-25.50	46.66	21.01	54.00	11.83	V
17933.450	42.14	-25.50	46.66	20.98	54.00	11.86	H
16151.450	40.08	-26.77	38.93	27.92	54.00	13.92	H
16066.200	40.05	-26.77	38.93	27.89	54.00	13.95	H
11860.350	38.16	-31.85	39.05	30.96	54.00	15.84	H
10858.800	38.10	-32.33	38.59	31.84	54.00	15.90	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)
17939.500	42.18	-25.50	46.66	21.02	54.00	11.82	V
17965.350	42.18	-25.50	46.66	21.02	54.00	11.82	H
15973.800	39.86	-27.35	38.54	28.67	54.00	14.14	H
16136.600	39.54	-26.77	38.93	27.38	54.00	14.46	H
11830.100	37.92	-31.85	39.05	30.72	54.00	16.08	H
11869.700	37.84	-31.85	39.05	30.64	54.00	16.16	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)
17956.000	41.75	-25.50	46.66	20.59	54.00	12.25	H
17938.400	41.74	-25.50	46.66	20.58	54.00	12.26	V
15980.950	38.98	-27.35	38.54	27.79	54.00	15.02	V
15670.200	38.72	-27.23	38.61	27.34	54.00	15.28	H
11788.850	37.69	-31.99	38.98	30.70	54.00	16.31	V
11871.900	37.52	-31.85	39.05	30.32	54.00	16.48	H

802.11n-HT20

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)
17978.000	41.53	-25.50	46.66	20.37	54.00	12.47	V
17979.100	41.43	-25.50	46.66	20.27	54.00	12.57	V
14487.150	38.56	-28.59	42.46	24.69	54.00	15.44	V
13314.000	38.53	-29.49	39.71	28.31	54.00	15.47	V
11872.450	37.18	-31.85	39.05	29.98	54.00	16.82	H
11789.400	37.07	-31.99	38.98	30.08	54.00	16.93	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)
17931.250	41.50	-25.50	46.66	20.34	54.00	12.50	V
17952.700	41.38	-25.50	46.66	20.22	54.00	12.62	H
15947.950	38.31	-27.35	38.54	27.12	54.00	15.69	V
14486.050	38.26	-28.59	42.46	24.39	54.00	15.74	H
11853.750	37.45	-31.85	39.05	30.25	54.00	16.55	V
10857.700	37.37	-32.33	38.59	31.11	54.00	16.63	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)
17960.400	41.50	-25.50	46.66	20.34	54.00	12.50	H
17923.550	41.40	-25.50	46.66	20.24	54.00	12.60	V
14493.200	38.47	-28.59	42.46	24.60	54.00	15.53	V
15955.100	38.27	-27.35	38.54	27.08	54.00	15.73	V
11872.450	37.44	-31.85	39.05	30.24	54.00	16.56	H
11298.800	37.25	-32.36	38.77	30.85	54.00	16.75	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)
17925.200	41.62	-25.50	46.66	20.46	54.00	12.38	V
17953.250	41.38	-25.50	46.66	20.22	54.00	12.62	H
14498.150	38.35	-28.59	42.46	24.48	54.00	15.65	H
14497.600	38.23	-28.59	42.46	24.36	54.00	15.77	H
11872.450	37.12	-31.85	39.05	29.92	54.00	16.88	H
11802.050	37.10	-31.85	39.05	29.90	54.00	16.90	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)
17940.050	41.43	-25.50	46.66	20.27	54.00	12.57	H
17965.900	41.29	-25.50	46.66	20.13	54.00	12.71	H
14484.400	38.33	-28.59	42.46	24.46	54.00	15.67	V
13297.500	38.31	-29.49	39.71	28.09	54.00	15.69	V
11857.050	37.11	-31.85	39.05	29.91	54.00	16.89	V
11781.150	36.99	-31.99	38.98	30.00	54.00	17.01	V

802.11ac-HT20

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)
17916.950	41.75	-25.50	46.66	20.59	54.00	12.25	V
17995.050	41.72	-25.50	46.66	20.56	54.00	12.28	H
13342.600	39.06	-29.49	39.71	28.84	54.00	14.94	V
15960.600	38.53	-27.35	38.54	27.34	54.00	15.47	H
11869.700	37.23	-31.85	39.05	30.03	54.00	16.77	H
11786.650	37.20	-31.99	38.98	30.21	54.00	16.80	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)
17931.250	41.63	-25.50	46.66	20.47	54.00	12.37	V

17959.300	41.61	-25.50	46.66	20.45	54.00	12.39	V
16068.950	38.54	-26.77	38.93	26.38	54.00	15.46	H
14499.250	38.46	-28.59	42.46	24.59	54.00	15.54	H
11913.150	37.31	-31.48	39.09	29.70	54.00	16.69	V
11851.000	37.11	-31.85	39.05	29.91	54.00	16.89	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)
17993.950	41.49	-25.50	46.66	20.33	54.00	12.51	H
17984.600	41.46	-25.50	46.66	20.30	54.00	12.54	H
14489.900	38.57	-28.59	42.46	24.70	54.00	15.43	V
14492.100	38.44	-28.59	42.46	24.57	54.00	15.56	V
11789.400	37.14	-31.99	38.98	30.15	54.00	16.86	V
11852.100	37.09	-31.85	39.05	29.89	54.00	16.91	H

802.11ac-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)
17954.350	41.35	-25.50	46.66	20.19	54.00	12.65	H
17972.500	41.23	-25.50	46.66	20.07	54.00	12.77	V
13304.100	38.56	-29.49	39.71	28.34	54.00	15.44	H
14494.300	38.33	-28.59	42.46	24.46	54.00	15.67	H
11824.050	37.18	-31.85	39.05	29.98	54.00	16.82	V
11853.750	37.09	-31.85	39.05	29.89	54.00	16.91	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)
17918.600	41.54	-25.50	46.66	20.38	54.00	12.46	V
17902.650	41.52	-25.50	46.66	20.36	54.00	12.48	V
15974.900	38.42	-27.35	38.54	27.23	54.00	15.58	V
14495.950	38.13	-28.59	42.46	24.26	54.00	15.87	H
11781.700	37.09	-31.99	38.98	30.10	54.00	16.91	V
11942.300	36.93	-31.48	39.09	29.32	54.00	17.07	V

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)
17920.800	41.61	-25.50	46.66	20.45	54.00	12.39	H
17965.350	41.24	-25.50	46.66	20.08	54.00	12.76	H
13399.800	38.17	-29.49	39.71	27.95	54.00	15.83	V
13324.450	38.16	-29.49	39.71	27.94	54.00	15.84	V
11858.700	37.43	-31.85	39.05	30.23	54.00	16.57	H
11843.850	37.25	-31.85	39.05	30.05	54.00	16.75	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)
17330.650	53.49	-25.95	44.35	35.08	68.20	14.71	V
17949.950	53.30	-25.50	46.66	32.14	74.00	20.70	V
16843.900	53.28	-26.62	41.49	38.41	68.20	14.92	V
16935.750	53.02	-26.32	42.36	36.97	68.20	15.18	H
10868.700	49.37	-32.33	38.59	43.11	74.00	24.63	H
10969.900	49.32	-32.82	38.70	43.44	74.00	24.68	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)
17561.100	53.21	-26.85	45.25	34.81	68.20	14.99	V
17547.350	53.07	-26.85	45.25	34.67	68.20	15.13	V
16964.350	52.72	-26.32	42.36	36.67	68.20	15.48	H
16956.650	52.18	-26.32	42.36	36.13	68.20	16.02	H
11071.650	48.34	-32.49	38.72	42.10	74.00	25.66	H
10730.100	48.32	-32.77	38.49	42.60	74.00	25.68	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)
17234.400	53.06	-25.95	44.35	34.65	68.20	15.14	H
17361.450	53.01	-25.95	44.35	34.60	68.20	15.19	V
16945.650	52.03	-26.32	42.36	35.98	68.20	16.17	H
16837.300	51.71	-26.62	41.49	36.84	68.20	16.49	H
11868.050	48.28	-31.85	39.05	41.08	74.00	25.72	H
10761.450	48.09	-32.77	38.49	42.37	74.00	25.91	V

802.11n-HT20

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)
17942.250	52.79	-25.50	46.66	31.63	74.00	21.21	H
17229.450	52.16	-25.95	44.35	33.75	68.20	16.04	V
16649.200	51.60	-26.87	40.65	37.82	68.20	16.60	H

16475.950	51.59	-26.96	39.82	38.73	68.20	16.61	V
11145.900	48.07	-32.60	38.75	41.93	74.00	25.93	H
11860.900	47.49	-31.85	39.05	40.29	74.00	26.51	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)
17348.800	52.85	-25.95	44.35	34.44	68.20	15.35	V
17352.650	52.06	-25.95	44.35	33.65	68.20	16.14	V
16818.600	51.57	-26.62	41.49	36.70	68.20	16.63	H
16843.350	50.94	-26.62	41.49	36.07	68.20	17.26	H
11907.650	47.77	-31.85	39.05	40.57	74.00	26.23	H
11048.000	47.66	-32.49	38.72	41.42	74.00	26.34	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)
17217.900	52.98	-25.95	44.35	34.57	68.20	15.22	V
17418.100	52.94	-26.85	45.25	34.54	68.20	15.26	H
16775.700	51.78	-26.62	41.49	36.91	68.20	16.42	V
16837.850	51.21	-26.62	41.49	36.34	68.20	16.99	V
11270.200	47.82	-32.36	38.77	41.42	74.00	26.18	H
11852.650	47.80	-31.85	39.05	40.60	74.00	26.20	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)
17967.550	52.38	-25.50	46.66	31.22	74.00	21.62	V
17921.350	52.31	-25.50	46.66	31.15	74.00	21.69	V
16981.400	51.68	-26.32	42.36	35.63	68.20	16.52	H
16254.850	51.27	-27.10	39.31	39.06	68.20	16.93	V
11136.000	48.49	-32.60	38.75	42.35	74.00	25.51	H
10747.700	47.98	-32.77	38.49	42.26	74.00	26.02	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)
17457.700	53.04	-26.85	45.25	34.64	68.20	15.16	H
17643.600	52.64	-25.74	45.95	32.43	68.20	15.56	H
13639.600	51.32	-29.50	40.43	40.39	68.20	16.88	H
16952.250	51.29	-26.32	42.36	35.24	68.20	16.91	H
10839.550	47.77	-32.33	38.59	41.51	74.00	26.23	V
10736.700	47.58	-32.77	38.49	41.86	74.00	26.42	H

802.11ac-HT20

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)
17944.450	53.07	-25.50	46.66	31.91	74.00	20.93	V
17904.300	52.78	-25.50	46.66	31.62	74.00	21.22	V
16925.300	52.33	-26.32	42.36	36.28	68.20	15.87	H
16987.450	51.79	-26.32	42.36	35.74	68.20	16.41	H
11747.600	48.42	-31.99	38.98	41.43	74.00	25.58	V
10582.700	48.34	-32.76	38.38	42.72	68.20	19.86	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)
17344.950	52.64	-25.95	44.35	34.23	68.20	15.56	H
17903.750	52.17	-25.50	46.66	31.01	74.00	21.83	H
16849.400	51.71	-26.62	41.49	36.84	68.20	16.49	H
16854.900	51.40	-26.62	41.49	36.53	68.20	16.80	V
11853.200	48.59	-31.85	39.05	41.39	74.00	25.41	H
11960.450	47.91	-31.48	39.09	40.30	74.00	26.09	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)
17408.750	52.93	-26.85	45.25	34.53	68.20	15.27	V
17302.050	52.40	-25.95	44.35	33.99	68.20	15.80	V
16422.050	51.87	-26.96	39.82	39.01	68.20	16.33	H
16697.050	51.23	-26.87	40.65	37.45	68.20	16.97	V
11920.300	48.46	-31.48	39.09	40.85	74.00	25.54	V
10847.250	48.14	-32.33	38.59	41.88	74.00	25.86	V

802.11ac-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)
17312.500	52.11	-25.95	44.35	33.70	68.20	16.09	V
17342.750	52.07	-25.95	44.35	33.66	68.20	16.13	V
16504.000	51.84	-26.96	39.82	38.98	68.20	16.36	V
16860.400	51.15	-26.62	41.49	36.28	68.20	17.05	H
11805.350	47.79	-31.85	39.05	40.59	74.00	26.21	H
11873.000	47.76	-31.85	39.05	40.56	74.00	26.24	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)
17334.500	52.56	-25.95	44.35	34.15	68.20	15.64	V
17325.150	51.68	-25.95	44.35	33.27	68.20	16.52	V
16925.850	51.36	-26.32	42.36	35.31	68.20	16.84	V
16432.500	51.14	-26.96	39.82	38.28	68.20	17.06	H
11822.400	47.65	-31.85	39.05	40.45	74.00	26.35	V
10825.250	47.31	-32.33	38.59	41.05	74.00	26.69	V

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)
17339.450	52.14	-25.95	44.35	33.73	68.20	16.06	V
17984.050	52.09	-25.50	46.66	30.93	74.00	21.91	H
13708.350	51.16	-29.10	40.86	39.39	68.20	17.04	V
16449.000	51.06	-26.96	39.82	38.20	68.20	17.14	H
10845.600	48.07	-32.33	38.59	41.81	74.00	25.93	H
11427.500	47.76	-32.42	38.79	41.39	74.00	26.24	V

Note:

1. The spurious emission above 18G is noise only.
2. All emissions below 30MHz are more than 20 dB below the limit

A.6. Band Edges Compliance

A6.1 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.	

Set up:

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m and the table height shall be 1.5 m.

The EUT and transmitting antenna shall be centered on the turntable.

Test Procedure

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. 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. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The receiver references:

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Sample Calculations

Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20 \log(D) + 104.77 \quad \text{Where:}$$

E is the field strength in dB μ V/m

D is the measurement distance in meters

EIRP is the equivalent isotropically radiated power in dbm

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.10	P
	5825 MHz	Fig.11	P
802.11n HT20	5745 MHz	Fig.12	P
	5825 MHz	Fig.13	P
802.11n HT40	5755 MHz	Fig.14	P
	5795 MHz	Fig.15	P
802.11ac HT20	5745 MHz	Fig.16	P
	5825 MHz	Fig.17	P
802.11ac HT40	5755 MHz	Fig.18	P
	5795 MHz	Fig.19	P
802.11ac HT80	5775 MHz	Fig.20 Fig.21	P

Conclusion: PASS**Test graphs as below:**

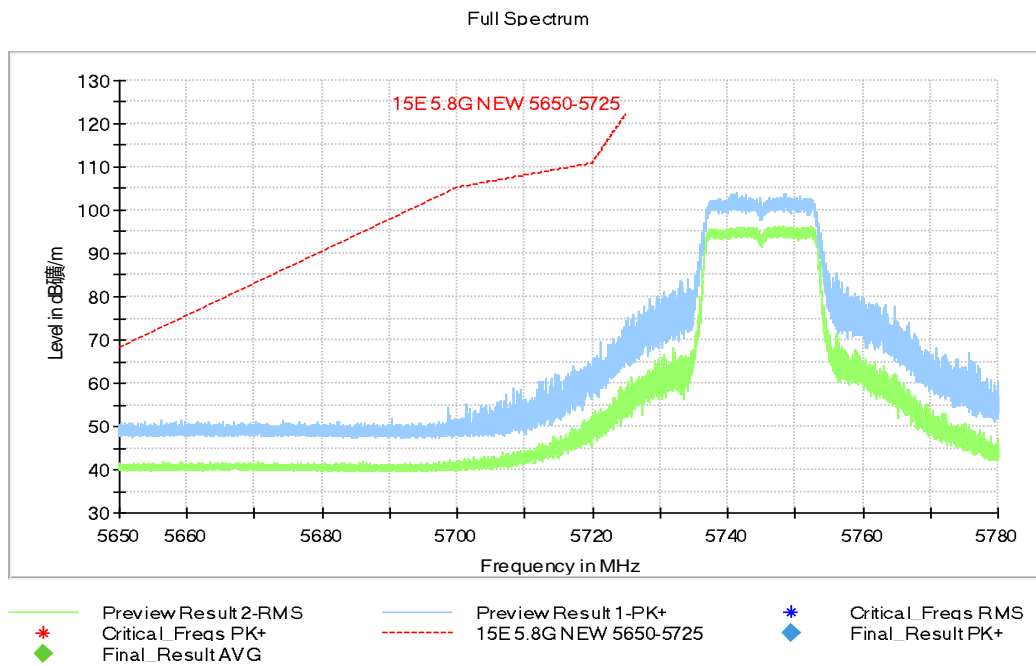


Fig. 10 Band Edges (802.11a Ch149,5745MHz)

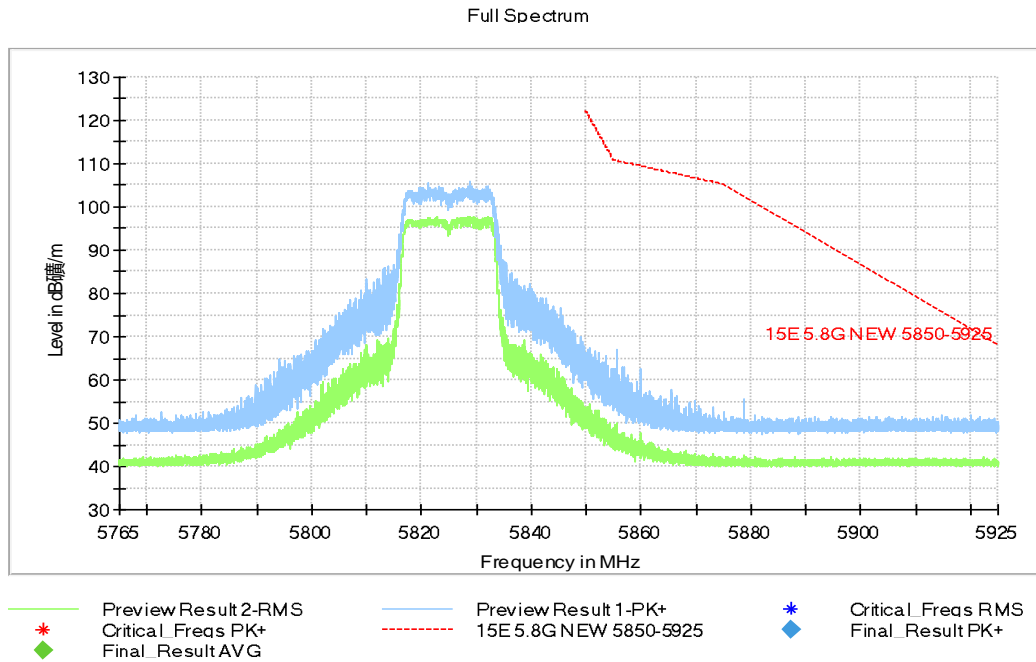


Fig. 11 Band Edges (802.11a Ch165, 5825MHz)

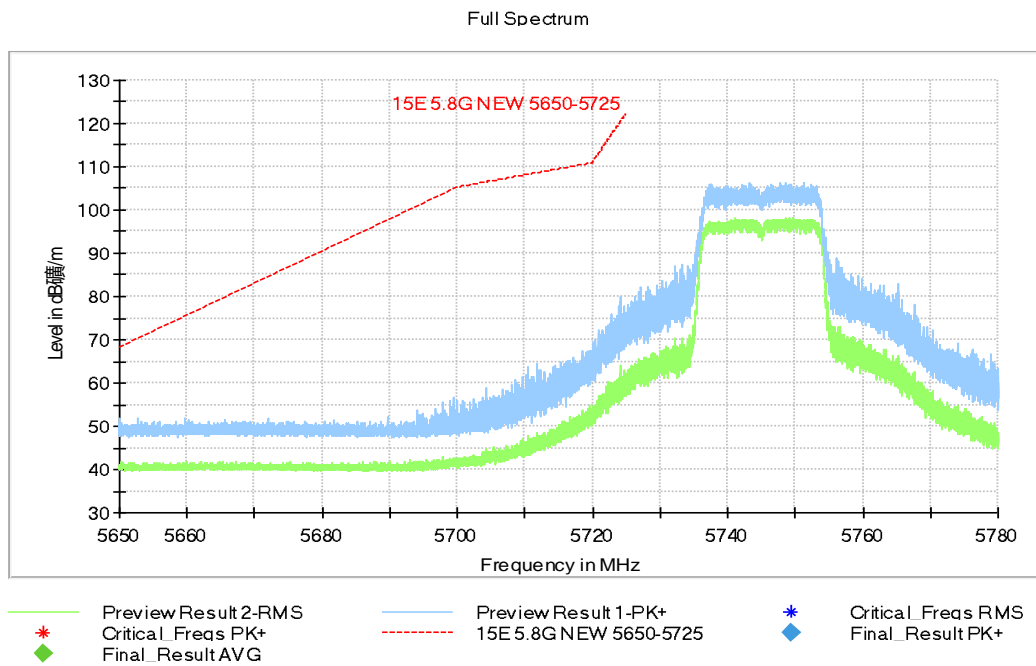


Fig. 12 Band Edges (802.11n-HT20 Ch149, 5745MHz)

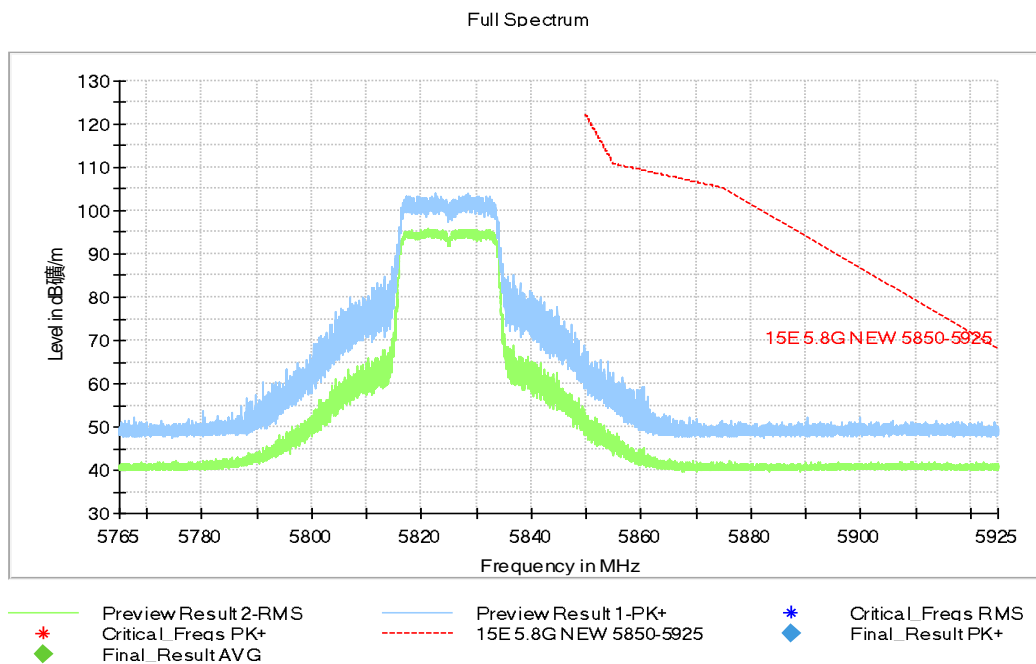


Fig. 13 Band Edges (802.11n-HT20 Ch165, 5825MHz)

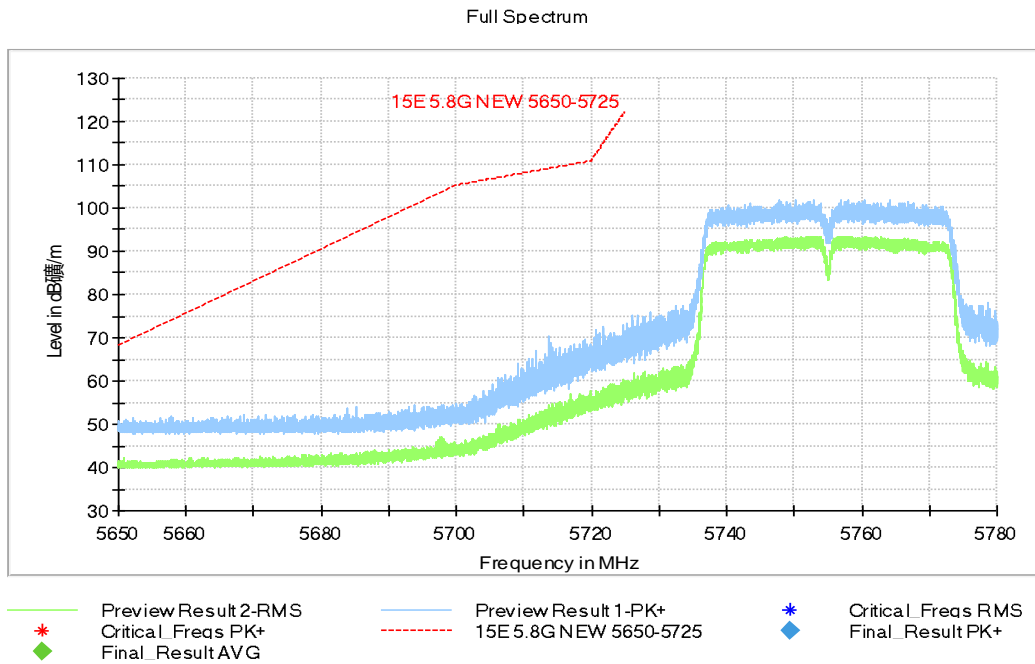


Fig. 14 Band Edges (802.11n-HT40 Ch151, 5755MHz)

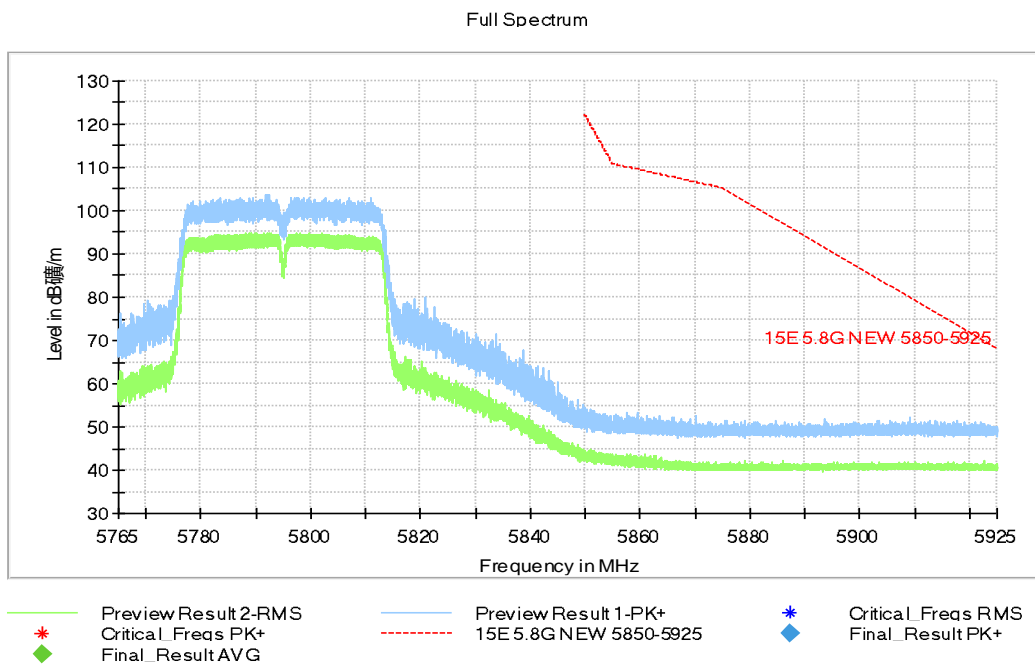


Fig. 15 Band Edges (802.11n-HT40 Ch159, 5795MHz)

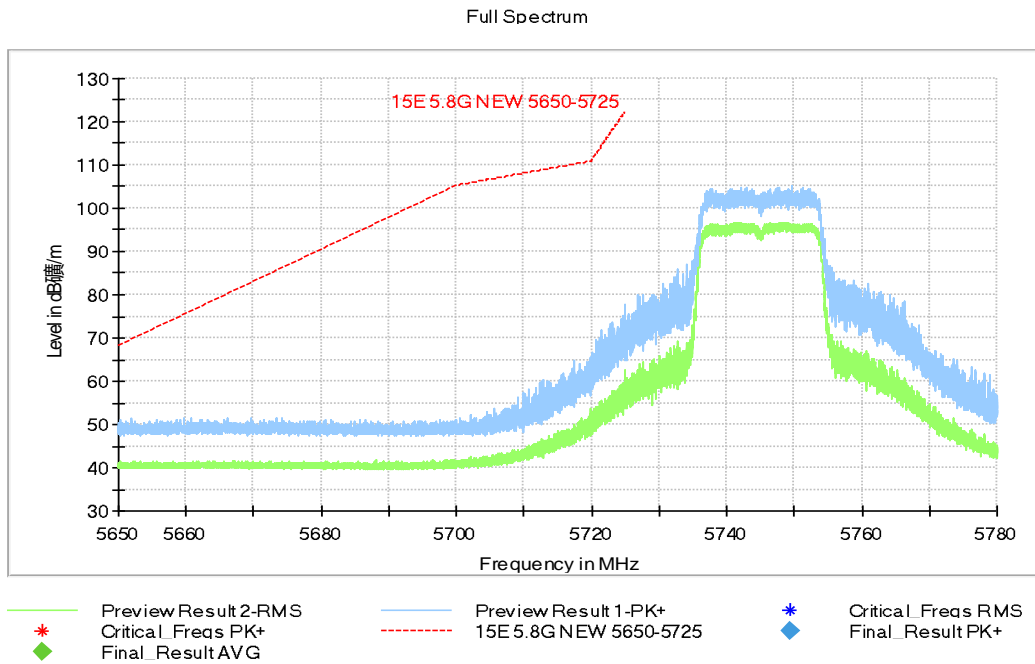


Fig. 16 Band Edges (802.11ac-HT20 Ch149, 5745MHz)

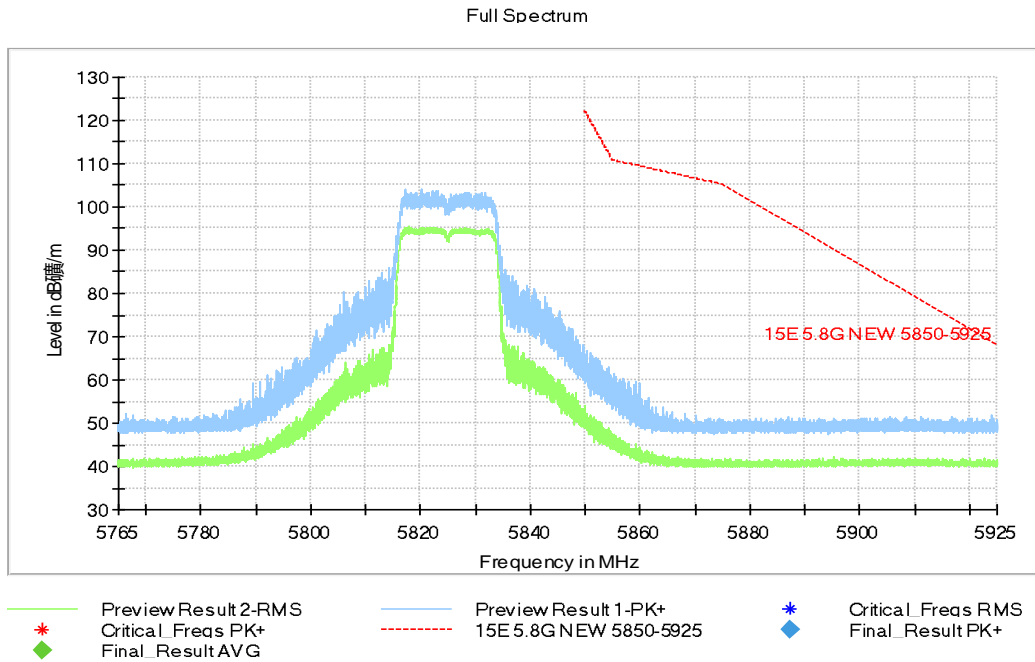


Fig. 17 Band Edges (802.11ac-HT20 Ch165, 5825MHz)

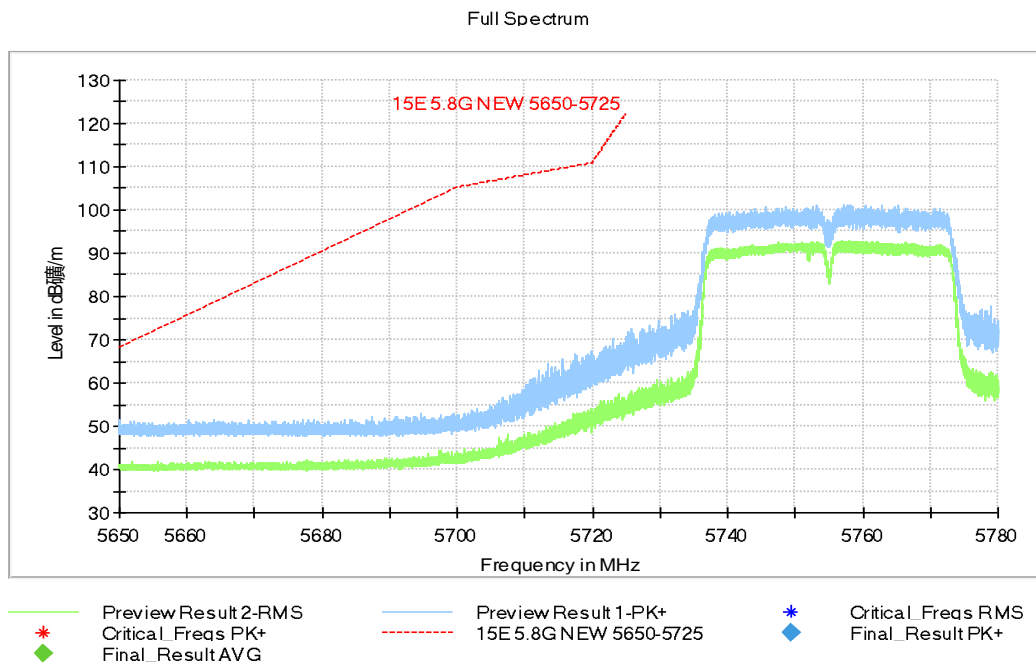


Fig. 18 Band Edges (802.11ac-HT40 Ch151, 5755MHz)

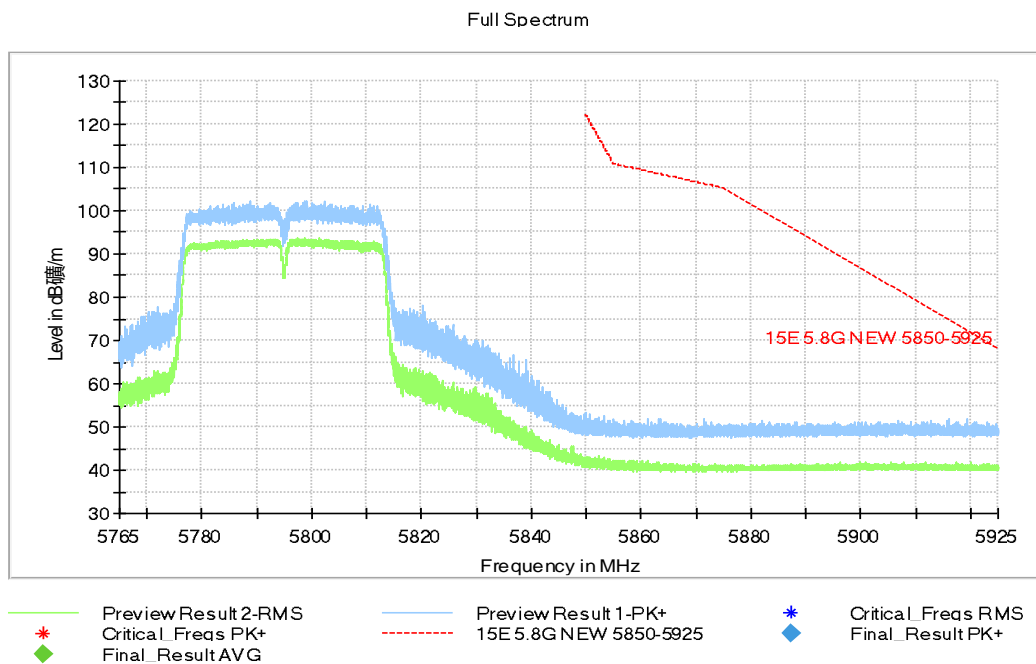


Fig. 19 Band Edges (802.11ac-HT40 Ch159, 5795MHz)

Full Spectrum

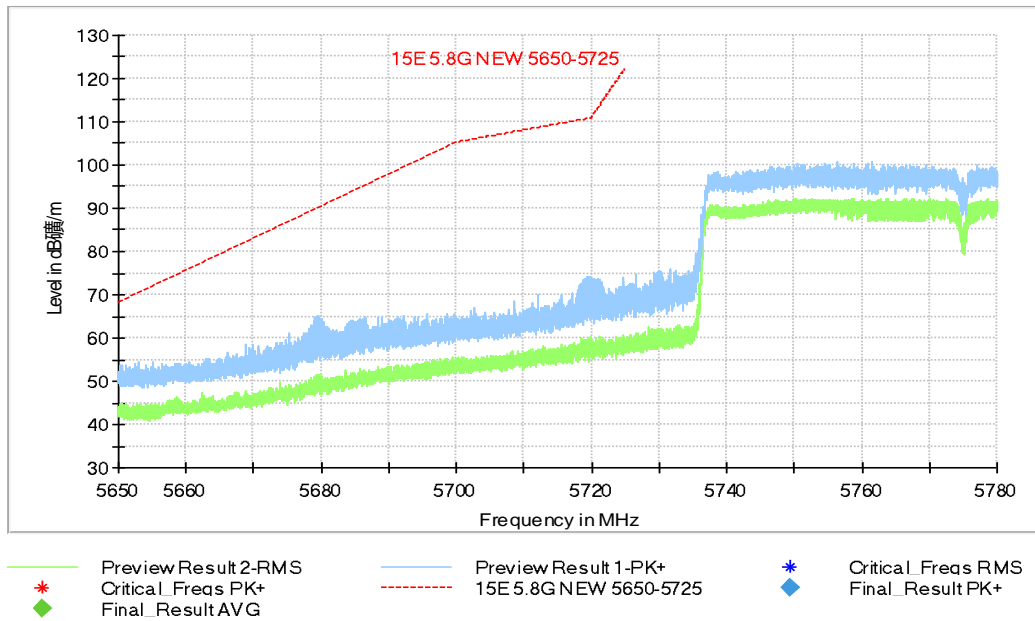


Fig. 20 Band Edges (802.11ac-HT80 Ch155, 5775MHz)

Full Spectrum

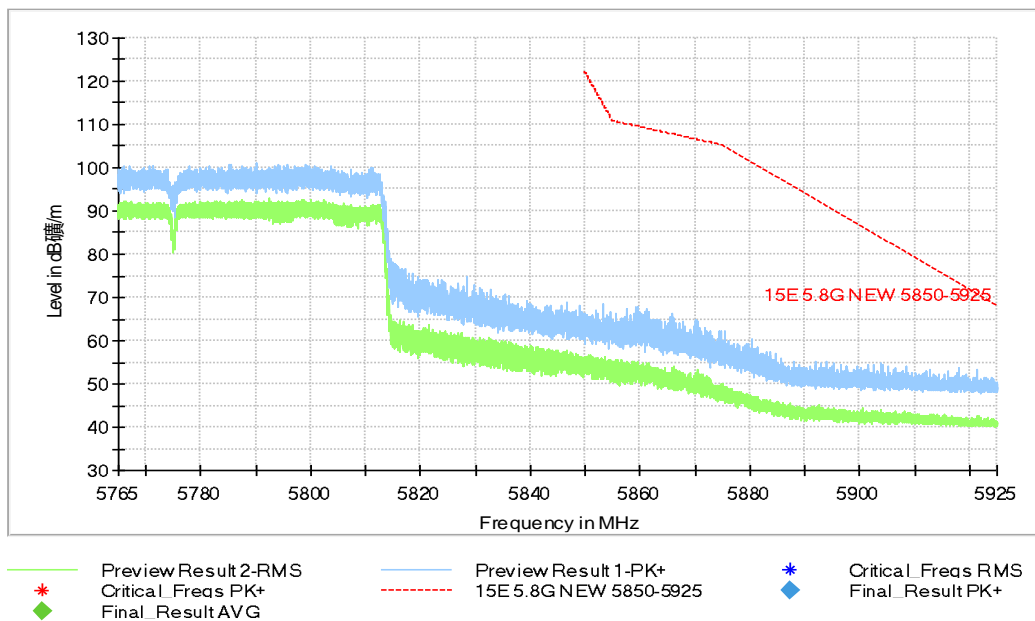


Fig. 21 Band Edges (802.11ac-HT80 Ch155, 5775MHz)

A.7. AC Powerline Conducted Emission

Method of Measurement:

See Clause 6.2 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

The conducted emissions from the AC port of the EUT are measured in a shielding room. The EUT is connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection was performed. The measurements were performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detector of the test receiver: Quasi-Peak / Average Detector.

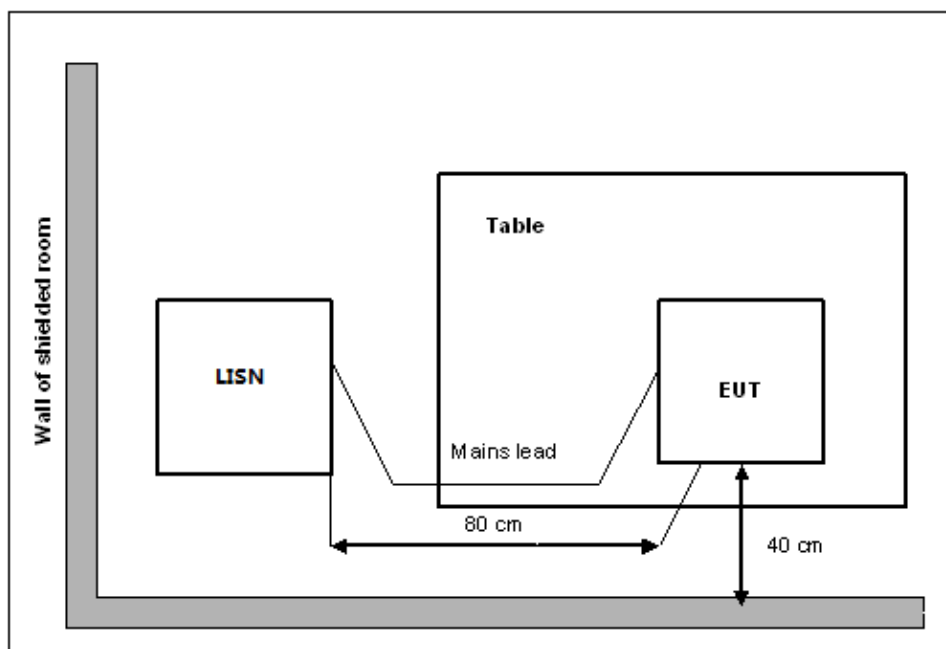
The measurement bandwidth is:

Frequency of Emission (MHz)	RBW/IF bandwidth
0.15-30	9kHz

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Setup



Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.22	Fig.23	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		
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.22	Fig.23	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
Test graphs as below:

Traffic:

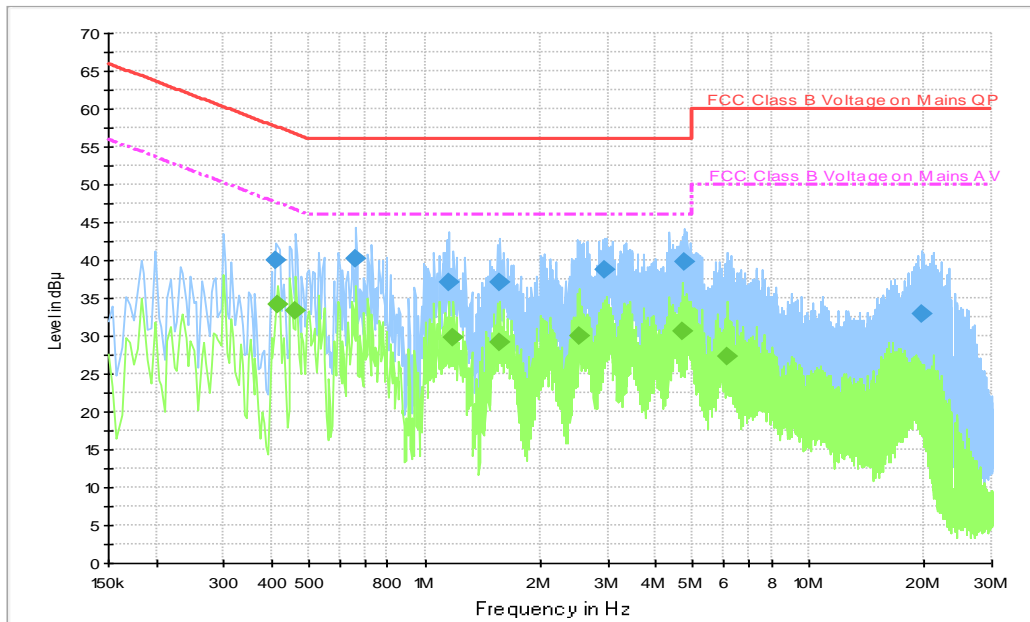


Fig. 22 AC Power line Conducted Emission-802.11a

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

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.410000	40.1	5000	9.000	On	L1	19.7	17.6	57.6
0.662000	40.1	5000	9.000	On	L1	19.6	15.9	56.0
1.158000	37.2	5000	9.000	On	L1	19.8	18.8	56.0
1.574000	37.1	5000	9.000	On	L1	19.6	18.9	56.0
2.926000	38.7	5000	9.000	On	L1	19.5	17.3	56.0
4.738000	39.8	5000	9.000	On	L1	19.6	16.2	56.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.414000	34.2	5000	9.000	On	L1	19.7	13.4	47.6
0.462000	33.3	5000	9.000	On	L1	19.8	13.3	46.7
1.190000	29.7	5000	9.000	On	L1	19.7	16.3	46.0
1.574000	29.2	5000	9.000	On	L1	19.6	16.8	46.0
2.518000	29.9	5000	9.000	On	L1	19.6	16.1	46.0
4.682000	30.6	5000	9.000	On	L1	19.6	15.4	46.0

Idle:

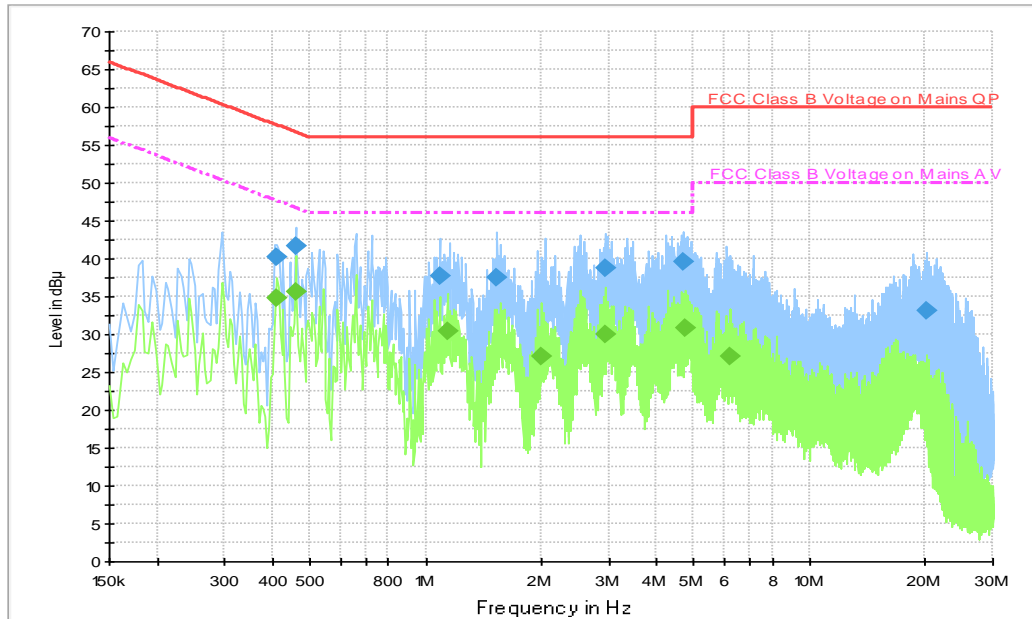


Fig. 23 AC Power line Conducted Emission-Idle

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

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.410000	40.3	5000	9.000	On	L1	19.7	17.3	57.6
0.458000	41.6	5000	9.000	On	L1	19.8	15.1	56.7
1.086000	37.8	5000	9.000	On	L1	19.8	18.2	56.0
1.538000	37.5	5000	9.000	On	L1	19.7	18.5	56.0
2.926000	38.7	5000	9.000	On	L1	19.5	17.3	56.0
4.710000	39.6	5000	9.000	On	L1	19.6	16.4	56.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.410000	34.9	5000.0	9.000	On	L1	19.7	12.8	47.6
0.458000	35.7	5000.0	9.000	On	L1	19.8	11.1	46.7
1.138000	30.5	5000.0	9.000	On	L1	19.7	15.5	46.0
1.994000	27.2	5000.0	9.000	On	L1	19.6	18.8	46.0
2.926000	30.0	5000.0	9.000	On	L1	19.5	16.0	46.0
4.770000	30.9	5000.0	9.000	On	L1	19.6	15.1	46.0

Note: The measurement results showed here are worst cases of the combination of different AE.

ANNEX B: EUT parameters

Disclaimer: The antenna gain provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX C: Accreditation Certificate

United States Department of Commerce National Institute of Standards and Technology	
	
<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 Communiqué dated January 2009).</i>	
<hr/> 2021-09-29 through 2022-09-30 Effective Dates	 For the National Voluntary Laboratory Accreditation Program

*** END OF REPORT BODY ***