



FCC PART 15C TEST REPORT No.I22Z70093-IOT05

for

Samsung Electronics Co., Ltd.

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

SM-A045F/DS, SM-A045F

With

FCC ID: ZCASMA045F

Hardware Version: REV1.0

Software Version: A045F.001

Issued Date: 2022-06-29

Note:

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Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: ctl_terminals@caict.ac.cn, website: www.caict.ac.cn



REPORT HISTORY

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CONTENTS

CONTENTS	3
1. TEST LATORATORY.....	5
1.1. INTRODUCTION & ACCREDITATION	5
1.2. TESTING LOCATION	5
1.1. TESTING ENVIRONMENT	5
1.2. PROJECT DATE	5
1.3. SIGNATURE	5
2. CLIENT INFORMATION.....	6
2.1. APPLICANT INFORMATION	6
2.2. MANUFACTURER INFORMATION	6
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE)	7
3.1. ABOUT EUT	7
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	7
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	7
3.4. GENERAL DESCRIPTION.....	8
4. REFERENCE DOCUMENTS	8
4.1. DOCUMENTS SUPPLIED BY APPLICANT	8
4.2. REFERENCE DOCUMENTS FOR TESTING.....	8
5. LABORATORY ENVIRONMENT	9
6. SUMMARY OF TEST RESULTS	9
6.1. SUMMARY OF TEST RESULTS	9
6.2. STATEMENTS.....	9
6.3. TEST CONDITIONS	9
7. TEST EQUIPMENTS UTILIZED	10
8. MEASUREMENT UNCERTAINTY	11
8.1. TRANSMITTER OUTPUT POWER	11
8.2. PEAK POWER SPECTRAL DENSITY	11
8.3. OCCUPIED 6DB BANDWIDTH.....	11
8.4. BAND EDGES COMPLIANCE	11
8.5. SPURIOUS EMISSIONS	11
8.6. AC POWER-LINE CONDUCTED EMISSION	11
ANNEX A: MEASUREMENT RESULTS.....	12
A.1. MEASUREMENT METHOD	12
A.2. MAXIMUM PEAK OUTPUT POWER	13
A.2.1 ANTENNA GAIN.....	13
A.2.2. MAXIMUM AVERAGE OUTPUT POWER-CONDUCTED	13

A.3. PEAK POWER SPECTRAL DENSITY	16
A.4. OCCUPIED 6DB BANDWIDTH	17
A.5. TRANSMITTER SPURIOUS EMISSION	22
A.5.1 TRANSMITTER SPURIOUS EMISSION - RADIATED	22
A.6. BAND EDGES COMPLIANCE	36
FIG. 10 BAND EDGES (802.11A CH149,5745MHZ).....	38
FIG. 11 BAND EDGES (802.11A CH165, 5825MHZ).....	38
FIG. 12 BAND EDGES (802.11N-HT20 CH149, 5745MHZ)	39
FIG. 13 BAND EDGES (802.11N-HT20 CH165, 5825MHZ)	39
FIG. 14 BAND EDGES (802.11N-HT40 CH151, 5755MHZ)	40
FIG. 15 BAND EDGES (802.11N-HT40 CH159, 5795MHZ)	40
FIG. 16 BAND EDGES (802.11AC-HT20 CH149, 5745MHZ).....	41
FIG. 17 BAND EDGES (802.11AC-HT20 CH165, 5825MHZ).....	41
FIG. 18 BAND EDGES (802.11AC-HT40 CH151, 5755MHZ).....	42
FIG. 19 BAND EDGES (802.11AC-HT40 CH159, 5795MHZ).....	42
FIG. 20 BAND EDGES (802.11AC-HT80 CH155, 5775MHZ).....	43
FIG. 21 BAND EDGES (802.11AC-HT80 CH155, 5775MHZ).....	43
A.7. AC POWERLINE CONDUCTED EMISSION	44
FIG. 22 AC POWER LINE CONDUCTED EMISSION-802.11A	46
FIG. 23 AC POWER LINE CONDUCTED EMISSION-IDLE.....	47
ANNEX B: EUT PARAMETERS.....	48
ANNEX C: ACCREDITATION CERTIFICATE	48

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 (BDA)

Address: No. 18A, Kangding Street, Beijing Economic-Technology
Development Area, Beijing, 100176, P.R. China

1.1. Testing Environment

Normal Temperature: 15-35°C

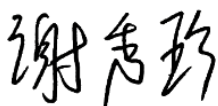
Relative Humidity: 20-75%

1.2. Project date

Testing Start Date: 2022-04-11

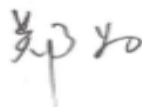
Testing End Date: 2022-06-29

1.3. Signature



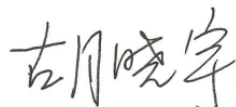
Xie Xiuzhen

(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.
Address: 19 Chapin Rd., Building D Pine Brook, NJ 07058
Contact: Jenni Chun
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
Contact: Sunghoon Cho
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 phone with Bluetooth, WLAN
Model name	SM-A045F/DS, SM-A045F
FCC ID	ZCASMA045F
WLAN Frequency Band	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM
Voltage	3.85V

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
UT17a	2270093UT17a	REV1.0	A045F.001
UT22a	2270093UT22a	REV1.0	A045F.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	Adapter2	/
AE3	Adapter3	/
AE4	Data Cable1	/
AE5	Data Cable2	/
AE6	Headset1	/
AE7	Headset2	
AE8	Battery	/
AE1		
Model		EP-TA200JWE
Manufacturer		HAEM Co.,Ltd
Length of cable		/
AE2		
Model		EP-TA200JWE
Manufacturer		SoluM Co.,Ltd.
Length of cable		/
AE3		
Model		EP-TA200JWE
Manufacturer		RFTECH Co., Ltd.
Length of cable		/
AE4		
Model		EP-DR140AWE
Manufacturer		DONGGUAN KSD CO.,LTD

Length of cable	/
AE5	
Model	EP-DR140AWE
Manufacturer	CRESYN HANOI Co., Ltd
Length of cable	/
AE6	
Model	EHS61ASFWE
Manufacturer	DONGGUAN YOUNGBO ELECTRONICS CO.,LTD
Length of cable	/
AE7	
Model	EHS61ASFWE
Manufacturer	Shenzhen Grandsound Electronics Co.,Ltd
Length of cable	/
AE8	
Model	/
Manufacturer	/
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 phone 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 CFR 47, Part 15, Subpart C and E:	
FCC Part15	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/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	3.85V
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	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100376	R&S	1 year	2022-09-15
2	Test Receiver	ESW44	103015	R&S	1 year	2022-09-02
3	EMI Antenna	VULB9163	01176	Schwarzbeck	1 year	2022-11-15
4	EMI Antenna	3117	00139065	ETS-Lindgren	1 year	2022-09-13
5	EMI Antenna	3115	00146404	ETS-Lindgren	1 year	2023-02-23
6	EMI Antenna	LB-180400-25-C-KF	J211060826	A-INFO	1 year	2023-02-27
7	Loop Antenna	HFH2-Z2	829324/007	R&S	1 year	2022-12-22

AC Power Line Conducted Emission

No.	Equipment	Model	Manufacturer	Serial Number	Calibration Period	Calibration Due date	
1	LISN	ENV216		101459	R&S	1 year	2023-03-26
2	Test Receiver	ESCI		100766	R&S	1 year	2023-03-02

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	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.73
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.58
$18\text{GHz} \leq f \leq 40\text{GHz}$	3.37

8.6. AC Power-line Conducted Emission

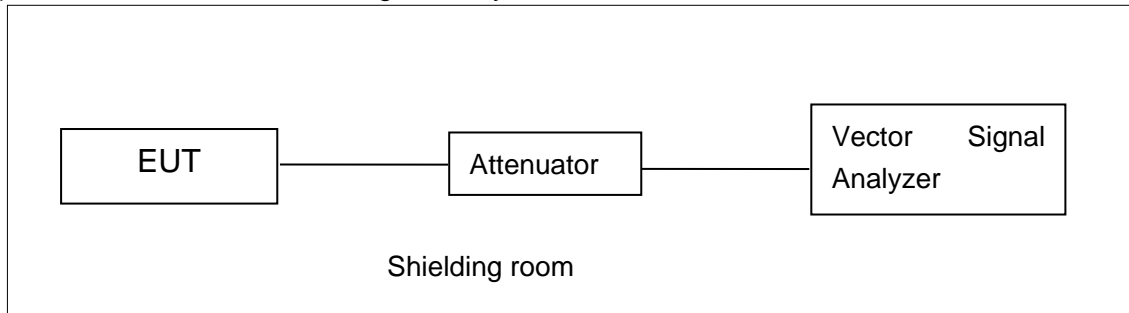
Measurement Uncertainty : 3.10dB,k=2

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

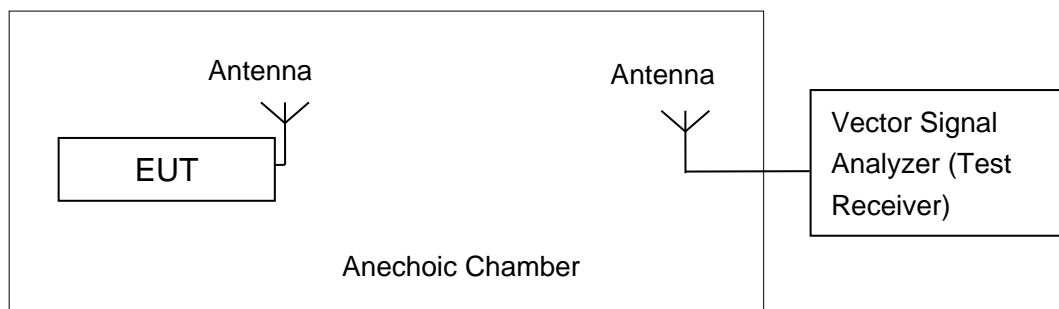


A.1.2. Radiated Emission Measurements

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 -1.91dBi and the value is supplied by the applicant or manufacturer.

A.2.2. Maximum Average Output Power-Conducted

Measurement Results:

802.11a mode

Mode	Data Rate (Mbps)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11a	6	14.29	14.35	14.26
	9	/	13.63	/
	12	/	13.72	/
	18	/	13.39	/
	24	/	13.44	/
	36	/	13.40	/
	48	/	13.49	/
	54	/	13.36	/

The data rate 6Mbps 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	14.20	14.22	14.19
	MCS1	/	13.54	/
	MCS2	/	13.44	/
	MCS3	/	13.39	/
	MCS4	/	13.43	/
	MCS5	/	13.23	/
	MCS6	/	13.31	/
	MCS7	/	13.19	/

The data rate MCS0 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	14.05	14.15	14.09
	MCS1	/	13.42	/
	MCS2	/	13.45	/
	MCS3	/	13.38	/
	MCS4	/	13.50	/
	MCS5	/	13.29	/
	MCS6	/	13.26	/
	MCS7	/	12.33	/
	MCS8	/	11.73	/

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	14.70	14.94
	MCS1	/	14.04
	MCS2	/	13.95
	MCS3	/	13.93
	MCS4	/	13.91
	MCS5	/	13.89
	MCS6	/	14.03
	MCS7	/	12.95

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	14.89	14.96
	MCS1	/	14.14
	MCS2	/	13.97
	MCS3	/	13.95
	MCS4	/	13.86
	MCS5	/	13.92
	MCS6	/	13.91
	MCS7	/	12.89

	MCS8	/	12.39
	MCS9	/	12.45

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	14.96
	MCS1	14.23
	MCS2	13.96
	MCS3	14.02
	MCS4	13.92
	MCS5	13.98
	MCS6	14.00
	MCS7	12.98
	MCS8	12.47
	MCS9	12.50

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

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	1.07	P
	157	1.26	P
	165	1.38	P
802.11n HT20	149	0.83	P
	157	0.93	P
	165	1.11	P
802.11ac HT40	151	-2.09	P
	159	-1.79	P
802.11ac HT80	155	-5.23	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	16.30	P
	157	Fig.2	16.30	P
	165	Fig.3	16.30	P
802.11n HT20	149	Fig.4	17.60	P
	157	Fig.5	17.60	P
	165	Fig.6	17.60	P
802.11ac HT40	151	Fig.7	36.32	P
	159	Fig.8	35.68	P
802.11ac HT80	155	Fig.9	76.16	P

Conclusion: PASS

Test graphs as below:

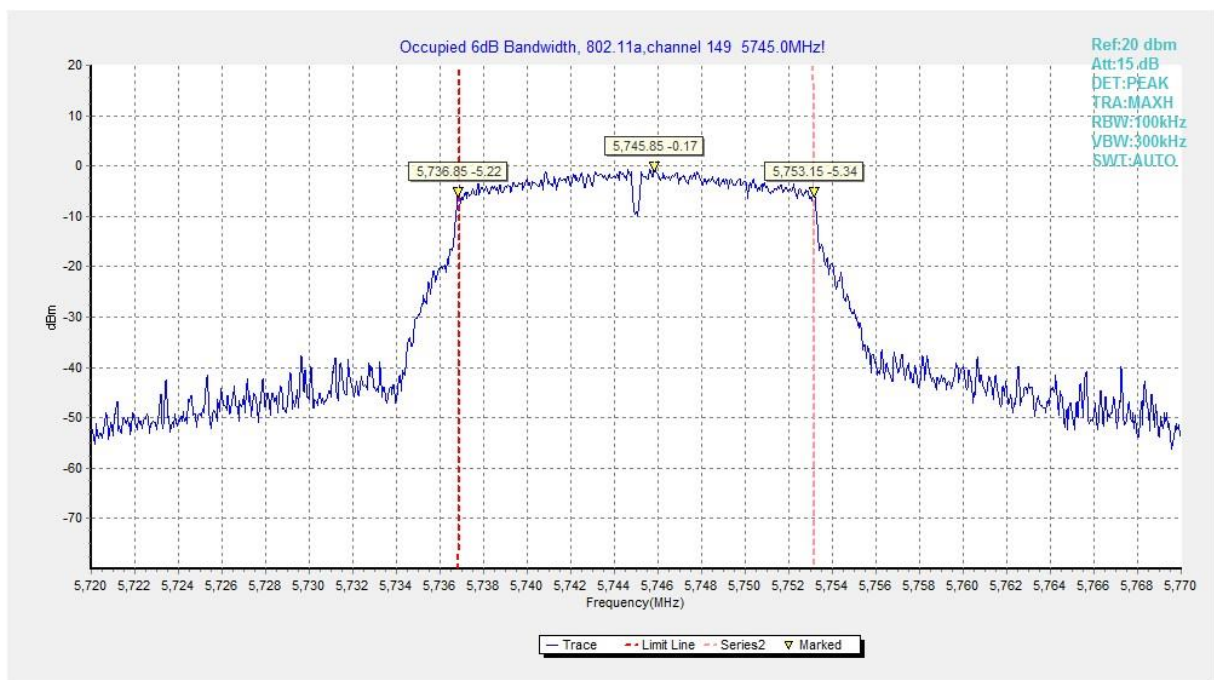


Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)

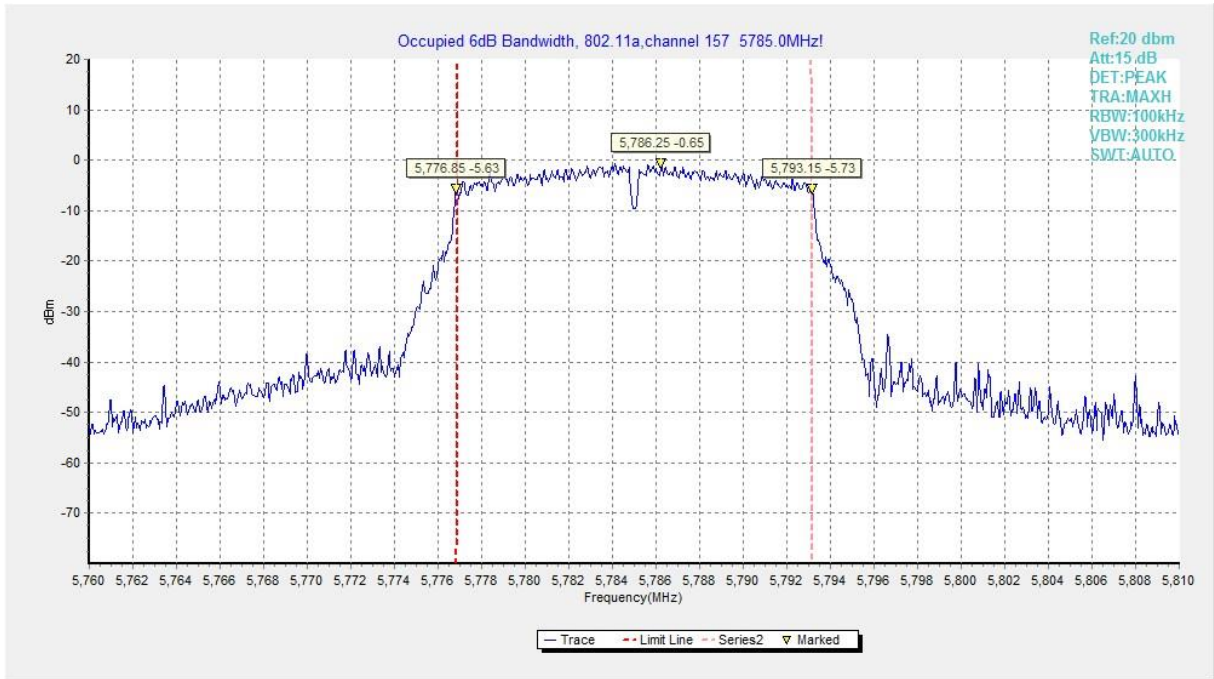


Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)

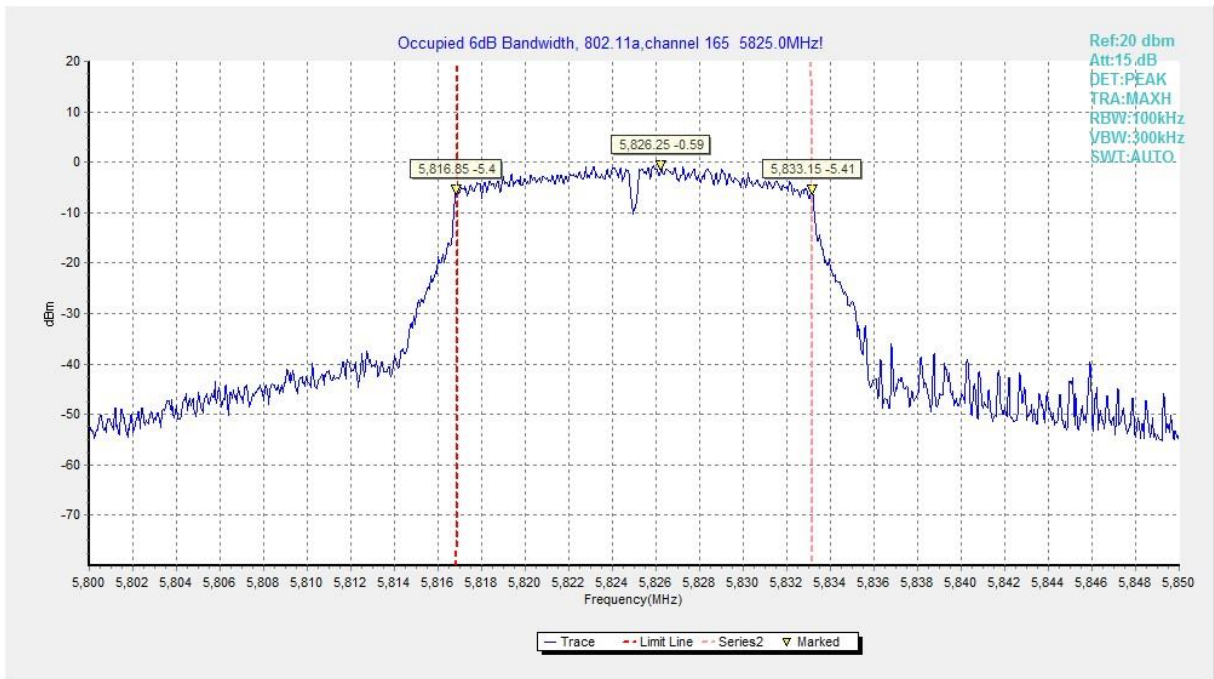


Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)

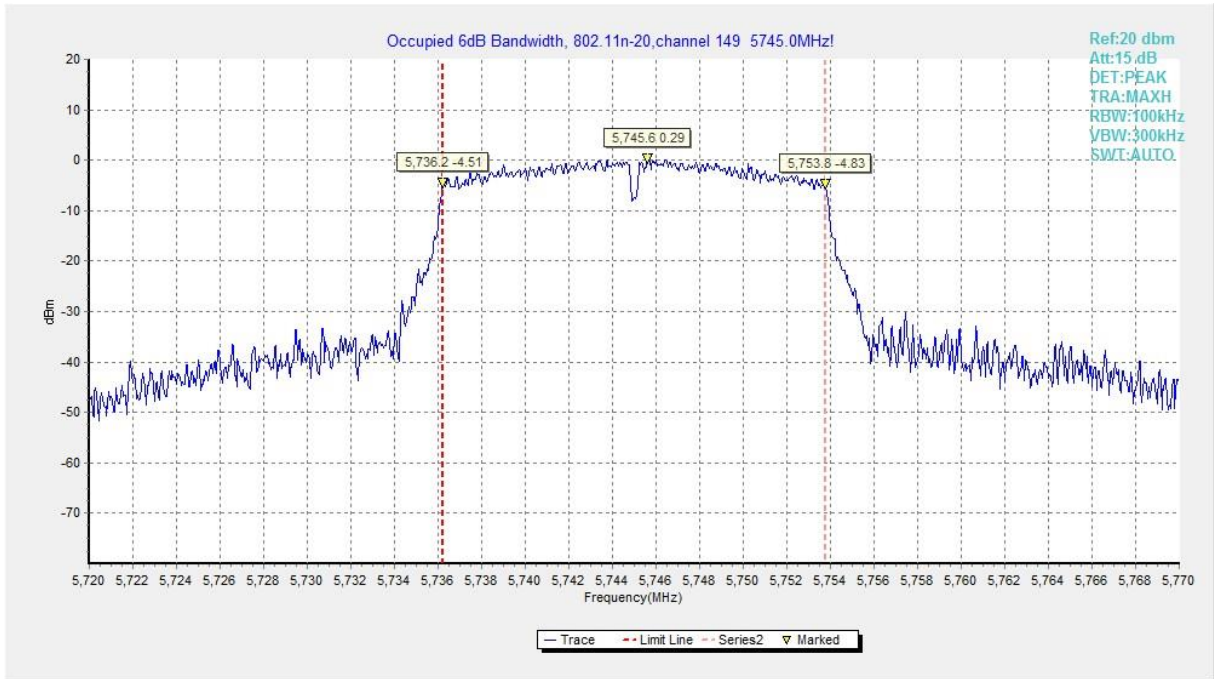


Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)

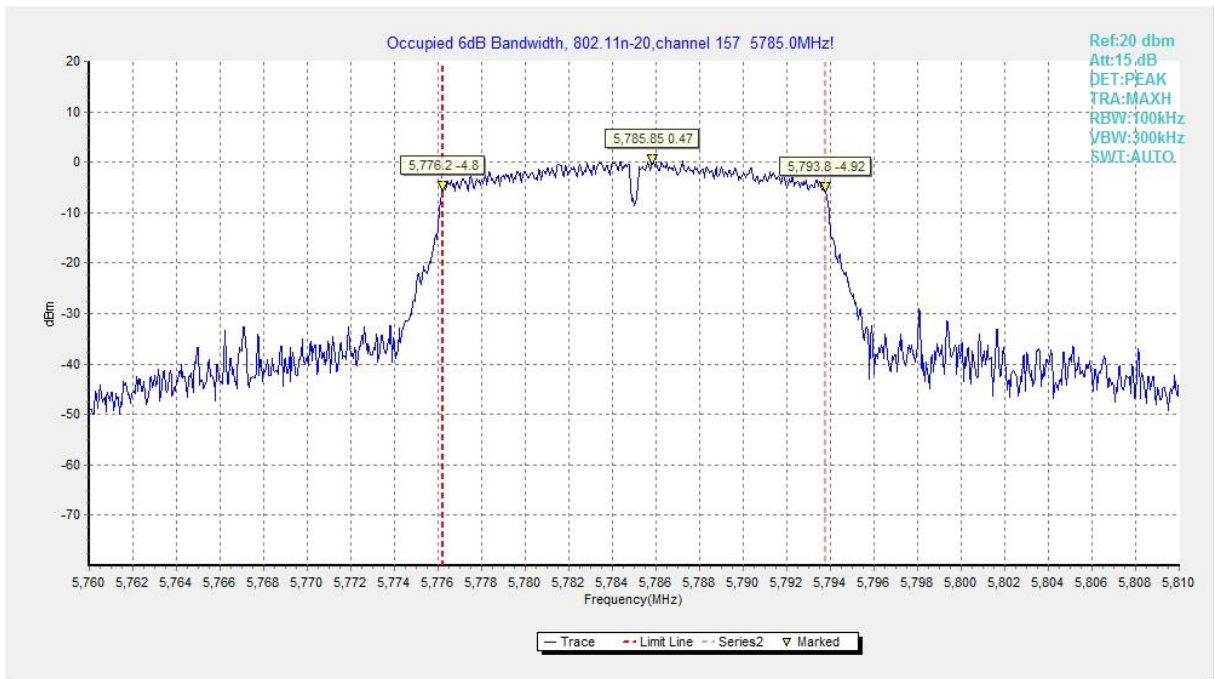


Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)

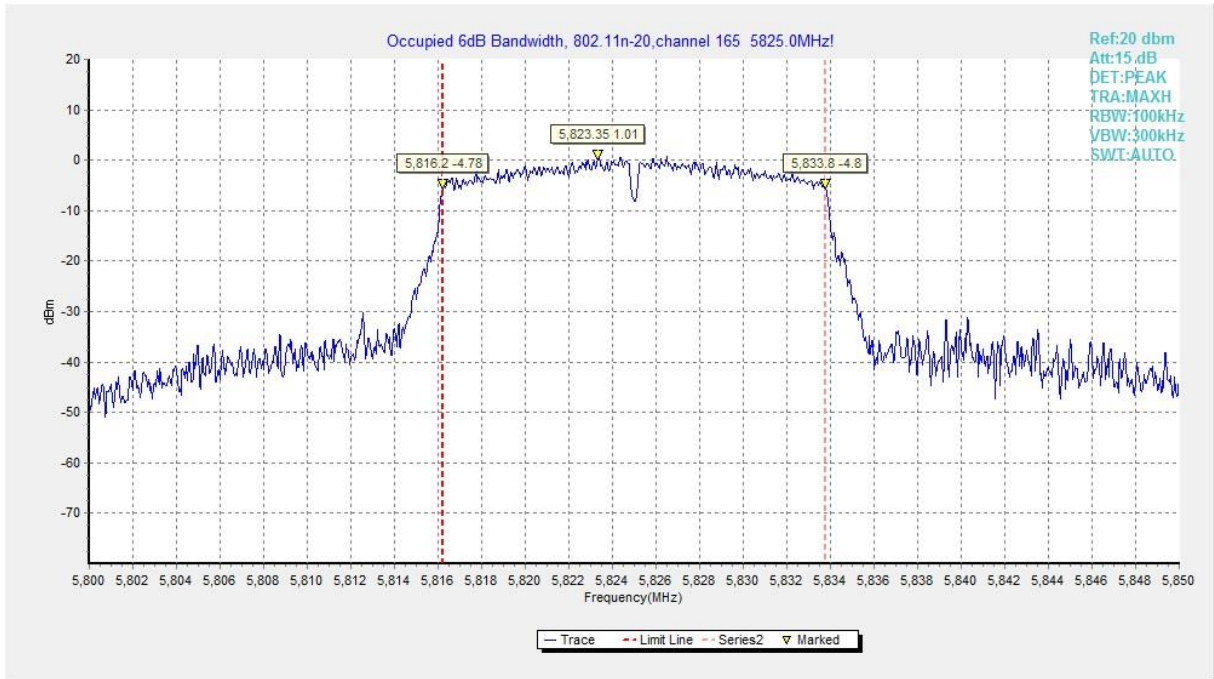


Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)

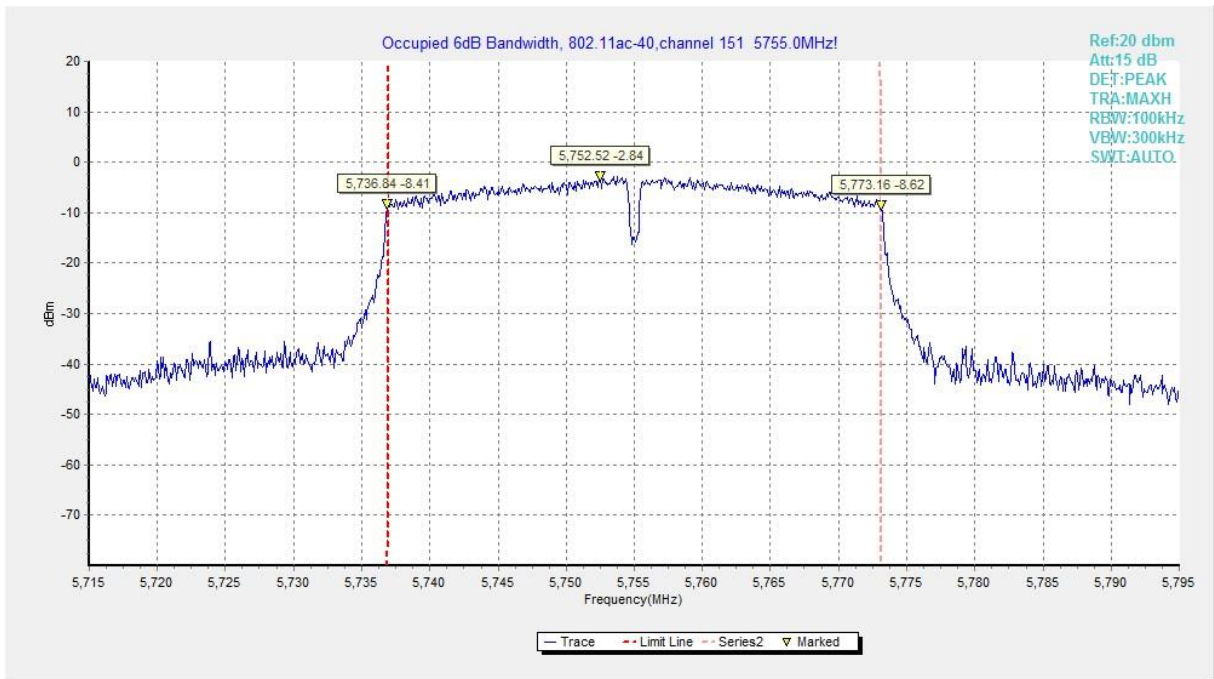


Fig. 7 Occupied 6Db Bandwidth (802.11ac-HT40, Ch 151)

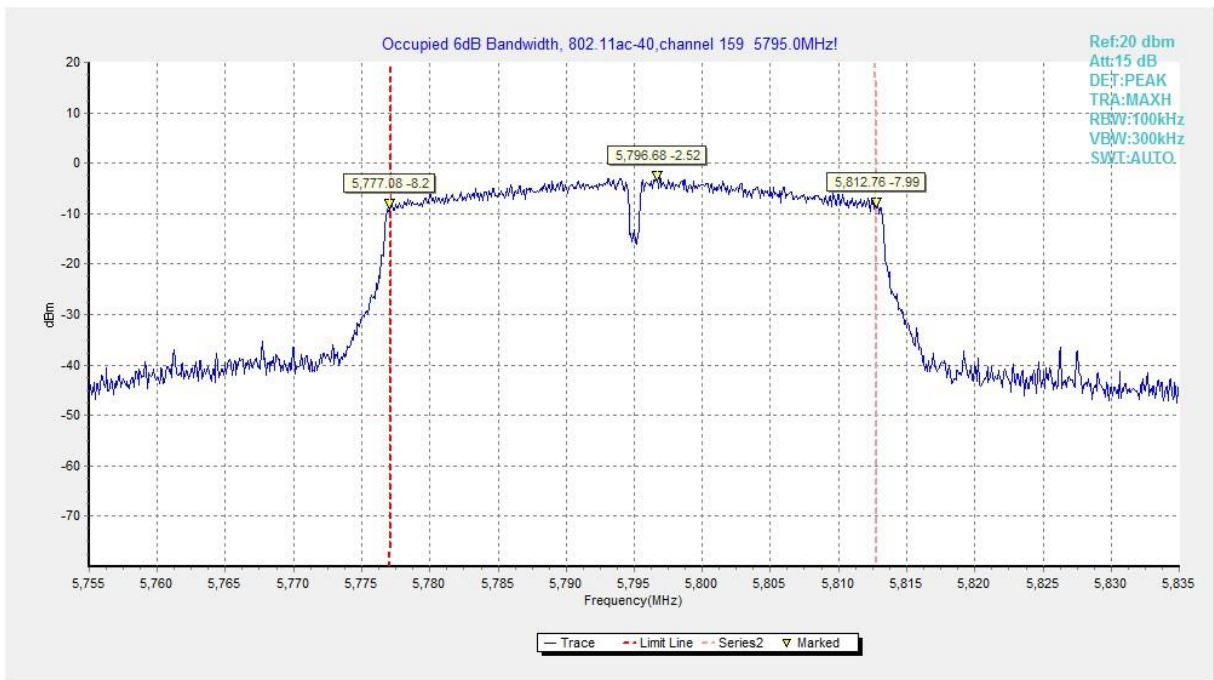


Fig. 8 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 159)

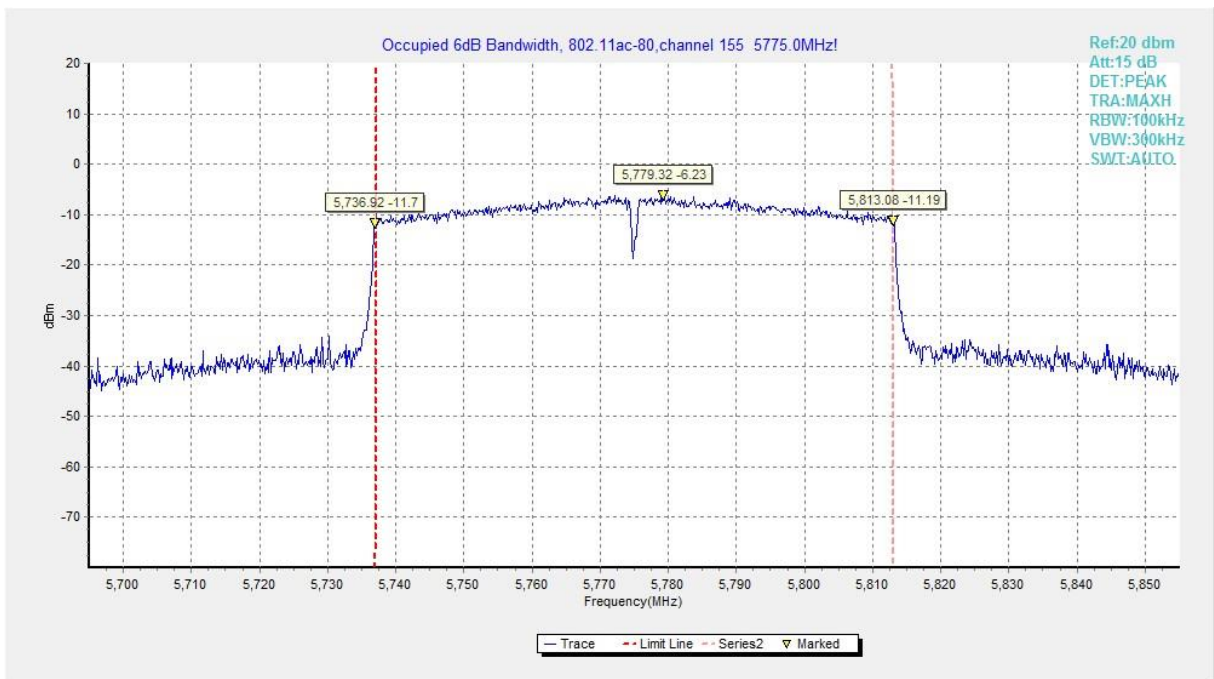


Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT80, Ch 155)

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(μ V/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

Frequency of emission (MHz)	Field strength (μ V/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
	165	26.5 GHz~ 40 GHz	---	P
		1 GHz ~ 3 GHz	---	P

		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)
5393.250	40.14	-25.73	34.50	31.38	54.00	13.86	V
5436.600	40.13	-25.47	34.54	31.06	54.00	13.87	V
11490.200	32.38	-32.54	38.19	26.72	54.00	21.62	V
16165.200	36.42	-28.00	40.87	23.56	54.00	17.58	V
17749.200	37.93	-26.52	41.10	23.35	54.00	16.07	V
17928.500	38.27	-26.16	41.24	23.19	54.00	15.73	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)
5387.550	40.23	-25.74	34.49	31.48	54.00	13.77	V
5441.100	39.97	-25.44	34.54	30.87	54.00	14.03	V
11570.500	31.84	-32.29	38.29	25.85	54.00	22.16	V
16155.300	36.43	-28.05	40.86	23.62	54.00	17.57	V
17762.400	37.75	-26.50	41.11	23.14	54.00	16.25	H
17910.900	38.34	-26.20	41.23	23.31	54.00	15.66	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)
5397.900	40.15	-25.72	34.50	31.37	54.00	13.85	V
5449.500	39.90	-25.39	34.55	30.73	54.00	14.10	V
11649.700	31.98	-32.11	38.38	25.70	54.00	22.02	H
16037.600	36.28	-27.89	40.74	23.44	54.00	17.72	V
17758.000	37.76	-26.51	41.11	23.16	54.00	16.24	H
17917.500	38.43	-26.19	41.23	23.38	54.00	15.57	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)
5398.050	40.28	-25.72	34.50	31.50	54.00	13.72	V
5429.850	40.08	-25.51	34.53	31.06	54.00	13.92	V
11490.200	32.48	-32.54	38.19	26.83	54.00	21.52	H
16146.500	36.47	-28.08	40.85	23.70	54.00	17.53	V
17749.200	37.95	-26.52	41.10	23.37	54.00	16.05	V
17919.700	38.26	-26.18	41.24	23.21	54.00	15.74	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)
5383.950	40.33	-25.74	34.49	31.58	54.00	13.67	V
5400.450	40.17	-25.70	34.50	31.37	54.00	13.83	V
11570.500	31.91	-32.29	38.29	25.92	54.00	22.09	H
16146.500	36.51	-28.08	40.85	23.74	54.00	17.49	V
17751.400	37.92	-26.52	41.10	23.33	54.00	16.08	H
17915.300	38.46	-26.19	41.23	23.42	54.00	15.54	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)
5386.950	39.15	-25.74	34.49	30.40	54.00	14.85	V
5434.350	39.05	-25.48	34.54	30.00	54.00	14.95	V
11649.700	32.01	-32.11	38.38	25.73	54.00	21.99	H
16060.700	36.32	-27.97	40.76	23.53	54.00	17.68	H
17749.200	37.95	-26.52	41.10	23.37	54.00	16.05	V
17902.100	38.29	-26.23	41.22	23.29	54.00	15.71	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)
5387.400	39.19	-25.74	34.49	30.44	54.00	14.81	V
5404.500	39.06	-25.68	34.51	30.24	54.00	14.94	V
11510.000	31.87	-32.50	38.21	26.16	54.00	22.13	V
16145.400	36.45	-28.09	40.85	23.69	54.00	17.55	V
17740.400	38.01	-26.53	41.09	23.44	54.00	15.99	V
17906.500	38.43	-26.22	41.23	23.42	54.00	15.57	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)
5397.600	39.24	-25.72	34.50	30.46	54.00	14.76	V
5410.350	39.10	-25.64	34.51	30.23	54.00	14.90	V
11590.300	32.17	-32.23	38.31	26.09	54.00	21.83	H
16029.900	36.32	-27.87	40.73	23.46	54.00	17.68	H
17731.600	37.98	-26.54	41.09	23.44	54.00	16.02	H
17906.500	38.46	-26.22	41.23	23.45	54.00	15.54	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)
5384.850	40.3	-25.7	34.5	31.52	54.0	13.7	V
5434.650	40.1	-25.5	34.5	31.07	54.0	13.9	V
11490.200	32.5	-32.5	38.2	26.80	54.0	21.5	H
16164.100	36.5	-28.0	40.9	23.62	54.0	17.5	V
17765.700	37.8	-26.5	41.1	23.21	54.0	16.2	H
17908.700	38.4	-26.2	41.2	23.40	54.0	15.6	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)
5388.450	40.4	-25.7	34.5	31.60	54.0	13.6	V
5405.550	40.2	-25.7	34.5	31.32	54.0	13.8	V
11570.500	32.0	-32.3	38.3	25.97	54.0	22.0	V
16165.200	36.5	-28.0	40.9	23.61	54.0	17.5	V
17740.400	37.9	-26.5	41.1	23.37	54.0	16.1	H
17912.000	38.4	-26.2	41.2	23.41	54.0	15.6	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)
5398.350	40.3	-25.7	34.5	31.55	54.0	13.7	V
5410.950	40.2	-25.6	34.5	31.31	54.0	13.8	V
11649.700	32.0	-32.1	38.4	25.73	54.0	22.0	H
16157.500	36.4	-28.0	40.9	23.60	54.0	17.6	V
17740.400	38.0	-26.5	41.1	23.47	54.0	16.0	V
17930.700	38.4	-26.2	41.2	23.36	54.0	15.6	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)
5390.700	39.3	-25.7	34.5	30.52	54.0	14.7	V
5405.100	39.1	-25.7	34.5	30.28	54.0	14.9	V
11510.000	32.0	-32.5	38.2	26.24	54.0	22.1	H
16145.400	36.5	-28.1	40.8	23.71	54.0	17.5	V
17765.700	37.8	-26.5	41.1	23.17	54.0	16.2	H
17919.700	38.5	-26.2	41.2	23.40	54.0	15.5	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)
5398.650	39.2	-25.7	34.5	30.38	54.0	14.8	V
5440.350	39.2	-25.4	34.5	30.07	54.0	14.8	V
11590.300	32.1	-32.2	38.3	26.03	54.0	21.9	H
16033.200	36.3	-27.9	40.7	23.42	54.0	17.7	V
17740.400	37.9	-26.5	41.1	23.36	54.0	16.1	H
17910.900	38.4	-26.2	41.2	23.41	54.0	15.6	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)
5457.200	39.9	-25.3	34.6	30.64	54.0	14.1	V
5459.650	40.0	-25.3	34.6	30.73	54.0	14.0	V
11549.600	33.2	-32.4	38.3	27.34	54.0	20.8	V
17748.100	37.7	-26.5	41.1	23.16	54.0	16.3	H
17859.200	38.1	-26.3	41.2	23.28	54.0	15.9	V
17962.600	38.2	-26.1	41.3	23.05	54.0	15.8	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)
5650.655	55.48	-24.77	34.76	45.49	68.69	13.21	H
5655.532	54.41	-24.76	34.76	44.41	72.29	17.88	V
11490.200	45.90	-32.54	38.19	40.25	74.00	28.10	H
16811.450	57.52	-27.29	41.51	43.29	68.30	10.78	H
17234.950	55.32	-26.91	41.32	40.90	68.30	12.98	H
17324.600	56.80	-26.86	41.18	42.48	68.30	11.50	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)
5758.000	53.81	-24.76	34.86	43.71	68.30	14.49	V
5817.600	55.42	-24.90	34.92	45.40	68.30	12.88	V
11569.950	45.99	-32.30	38.29	40.00	74.00	28.01	H
17031.450	57.21	-27.04	41.65	42.60	68.30	11.09	V
17117.250	56.55	-26.95	41.51	41.99	68.30	11.75	H
17354.850	55.13	-26.84	41.13	40.83	68.30	13.17	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)
5919.515	54.90	-25.21	35.02	45.09	72.26	17.36	V
5923.114	54.86	-25.21	35.03	45.05	69.60	14.73	V
11650.250	46.77	-32.11	38.38	40.50	74.00	27.23	H
17161.250	56.92	-26.93	41.44	42.42	68.30	11.38	V
17298.200	56.57	-26.88	41.22	42.23	68.30	11.73	V
17474.750	54.22	-26.75	40.94	40.02	68.30	14.08	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)
5650.897	53.79	-24.77	34.76	43.81	68.86	15.07	V
5664.973	55.48	-24.74	34.77	45.45	79.28	23.80	H
11490.200	46.08	-32.54	38.19	40.43	74.00	27.92	V
16566.150	56.21	-27.60	41.27	42.54	68.30	12.09	V
17234.950	56.21	-26.91	41.32	41.80	68.30	12.09	V
17450.550	57.01	-26.76	40.98	42.79	68.30	11.29	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)
5753.400	54.16	-24.77	34.86	44.07	68.30	14.14	H
5840.200	55.88	-25.02	34.94	45.96	68.30	12.42	H
11569.950	45.80	-32.30	38.29	39.81	74.00	28.20	H
16827.400	56.72	-27.27	41.53	42.46	68.30	11.58	H
17354.850	54.79	-26.84	41.13	40.49	68.30	13.51	H
17564.400	56.92	-26.70	40.95	42.67	68.30	11.38	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)
5920.814	54.69	-25.21	35.02	44.87	71.30	16.61	V
5921.596	55.23	-25.21	35.02	45.41	70.72	15.49	H
11650.250	46.10	-32.11	38.38	39.82	74.00	27.90	V
17027.600	56.67	-27.04	41.66	42.06	68.30	11.63	V
17474.750	54.60	-26.75	40.94	40.41	68.30	13.70	H
17661.750	57.21	-26.63	41.03	42.81	68.30	11.09	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)
5651.115	54.12	-24.77	34.76	44.14	69.03	14.91	H
5653.565	54.25	-24.77	34.76	44.26	70.84	16.59	V
11510.000	46.36	-32.50	38.21	40.64	74.00	27.64	H
16880.200	56.41	-27.21	41.58	42.03	68.30	11.89	H
17265.200	54.63	-26.90	41.27	40.25	68.30	13.67	H
17646.350	57.12	-26.65	41.02	42.75	68.30	11.18	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)
5917.894	54.59	-25.21	35.02	44.78	73.46	18.87	H
5922.712	55.06	-25.21	35.03	45.24	69.89	14.84	V
11589.750	45.42	-32.23	38.31	39.34	74.00	28.58	H
17084.250	56.98	-26.98	41.56	42.40	68.30	11.32	H
17385.100	55.12	-26.81	41.08	40.85	68.30	13.18	H
17402.150	57.20	-26.80	41.05	42.95	68.30	11.10	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)
5651.817	53.7	-24.8	34.8	43.69	69.5	15.9	H
5654.462	55.1	-24.8	34.8	45.15	71.5	16.4	V
11490.200	47.1	-32.5	38.2	41.49	74.0	26.9	V
17006.150	56.9	-27.1	41.7	42.29	68.3	11.4	H
17234.950	54.7	-26.9	41.3	40.31	68.3	13.6	V
17652.400	57.0	-26.6	41.0	42.65	68.3	11.3	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)
5760.400	55.5	-24.8	34.9	45.37	68.3	12.8	H
5811.000	57.9	-24.9	34.9	47.90	68.3	10.4	V
11569.950	46.0	-32.3	38.3	40.05	74.0	28.0	H
16845.000	56.7	-27.2	41.5	42.43	68.3	11.6	H
17354.850	54.1	-26.8	41.1	39.85	68.3	14.2	H
17465.950	56.9	-26.8	41.0	42.67	68.3	11.4	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)
5920.711	55.2	-25.2	35.0	45.38	71.4	16.2	H
5922.367	55.2	-25.2	35.0	45.34	70.1	15.0	V
11650.250	46.3	-32.1	38.4	40.00	74.0	27.7	V
16989.650	56.8	-27.1	41.7	42.23	68.3	11.5	H
17140.350	57.0	-26.9	41.5	42.46	68.3	11.3	V
17474.750	54.2	-26.7	40.9	39.96	68.3	14.1	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)
5654.106	53.9	-24.8	34.8	43.94	71.2	17.3	V
5658.000	54.1	-24.8	34.8	44.11	74.1	20.0	H
11510.000	46.0	-32.5	38.2	40.34	74.0	28.0	V
17052.900	57.0	-27.0	41.6	42.41	68.3	11.3	H
17265.200	54.2	-26.9	41.3	39.82	68.3	14.1	V
17585.300	56.9	-26.7	41.0	42.60	68.3	11.4	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)
5922.332	55.4	-25.2	35.0	45.62	70.2	14.7	H
5924.218	54.9	-25.2	35.0	45.06	68.8	13.9	V
11589.750	45.2	-32.2	38.3	39.17	74.0	28.8	V
17048.500	56.6	-27.0	41.6	41.97	68.3	11.7	H
17385.100	54.6	-26.8	41.1	40.32	68.3	13.7	V
17637.000	57.1	-26.7	41.0	42.75	68.3	11.2	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)
5651.846	58.0	-24.8	34.8	48.00	69.6	11.6	H
5924.856	58.9	-25.2	35.0	49.08	68.3	9.4	V
11550.150	44.9	-32.4	38.3	38.99	68.3	23.4	V
16496.300	51.3	-27.6	41.2	37.72	68.3	17.0	V
17096.350	52.1	-27.0	41.5	37.55	68.3	16.2	V
17325.150	49.2	-26.9	41.2	34.90	68.3	19.1	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

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:

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

E is the field strength in dBμV/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:

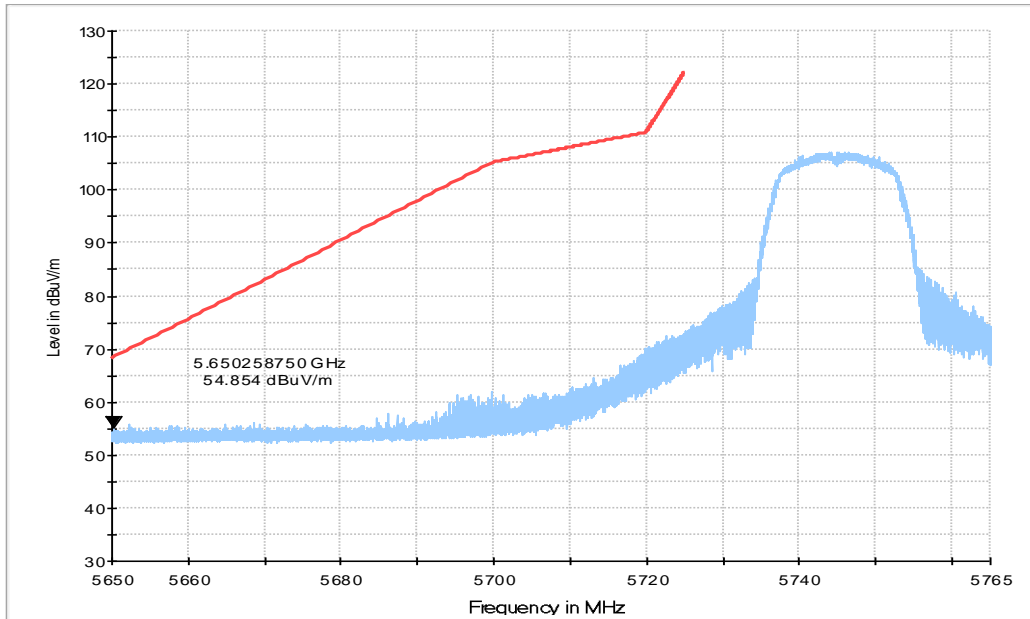


Fig. 10 Band Edges (802.11a Ch149,5745MHz)

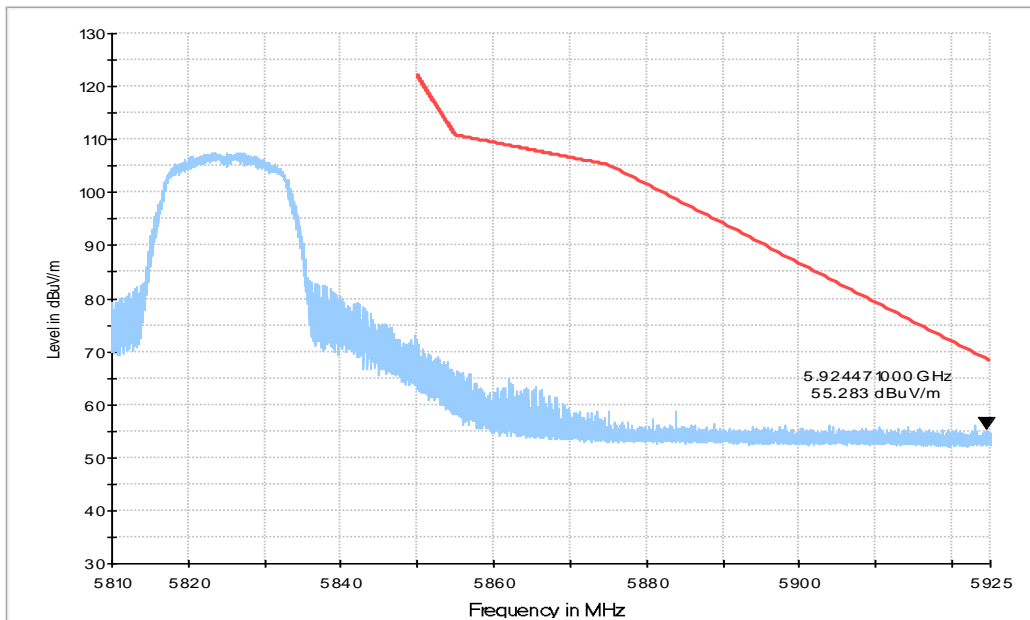


Fig. 11 Band Edges (802.11a Ch165, 5825MHz)

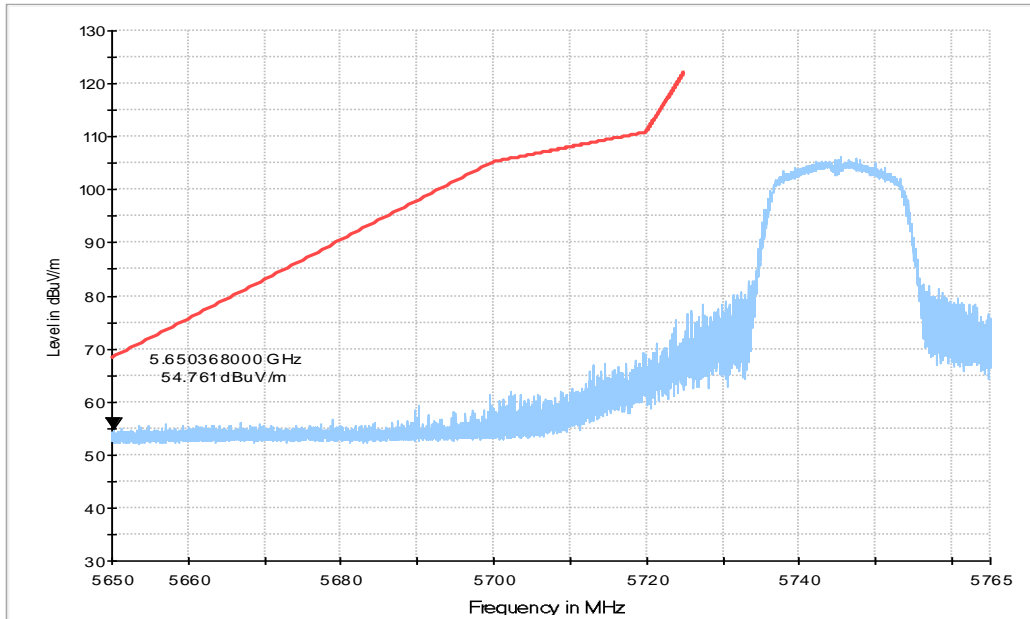


Fig. 12 Band Edges (802.11n-HT20 Ch149, 5745MHz)

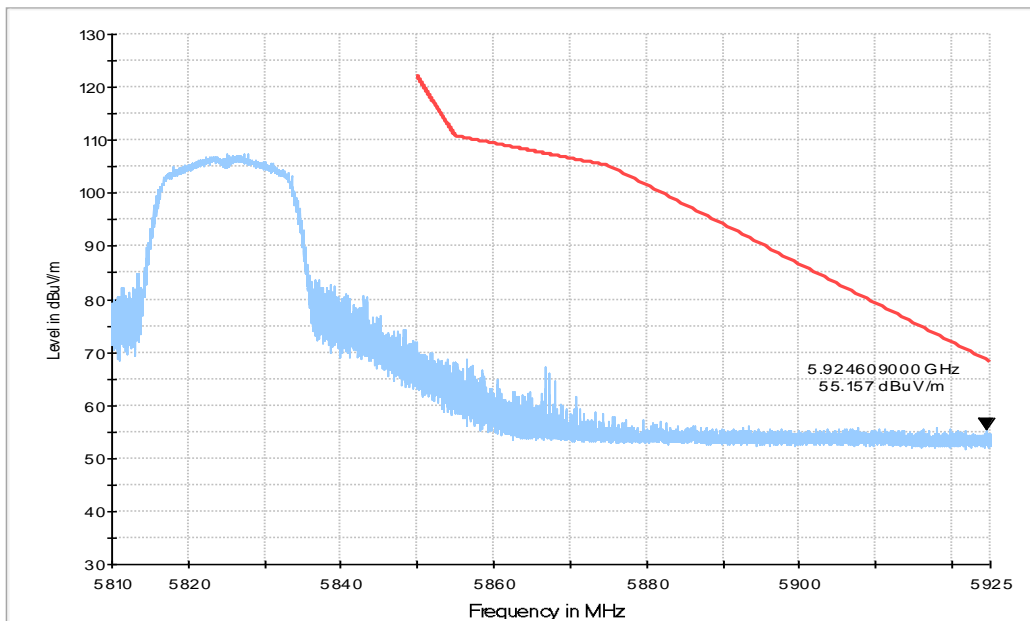


Fig. 13 Band Edges (802.11n-HT20 Ch165, 5825MHz)

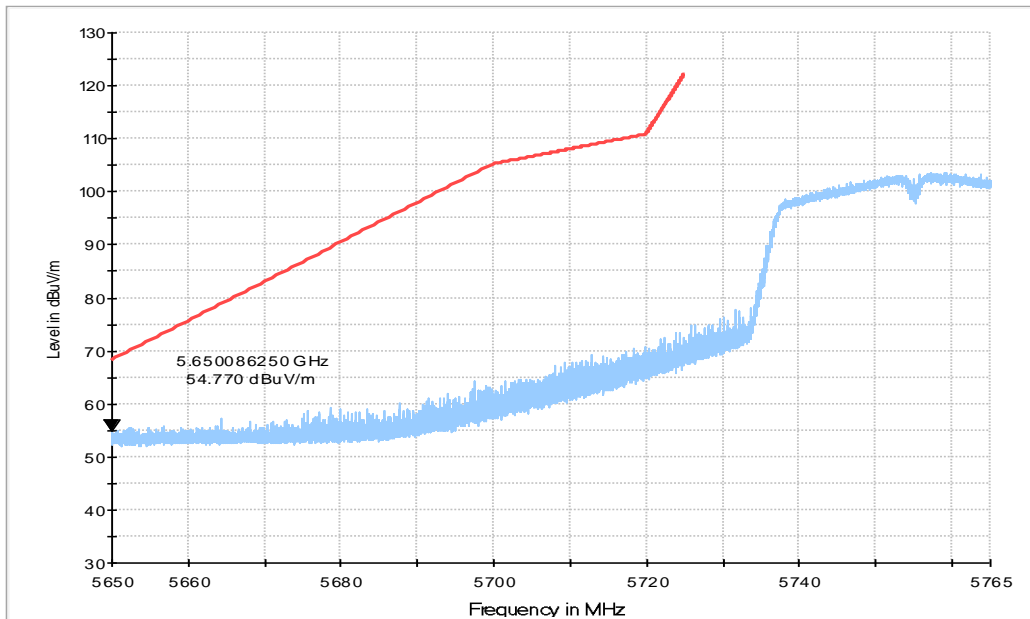


Fig. 14 Band Edges (802.11n-HT40 Ch151, 5755MHz)

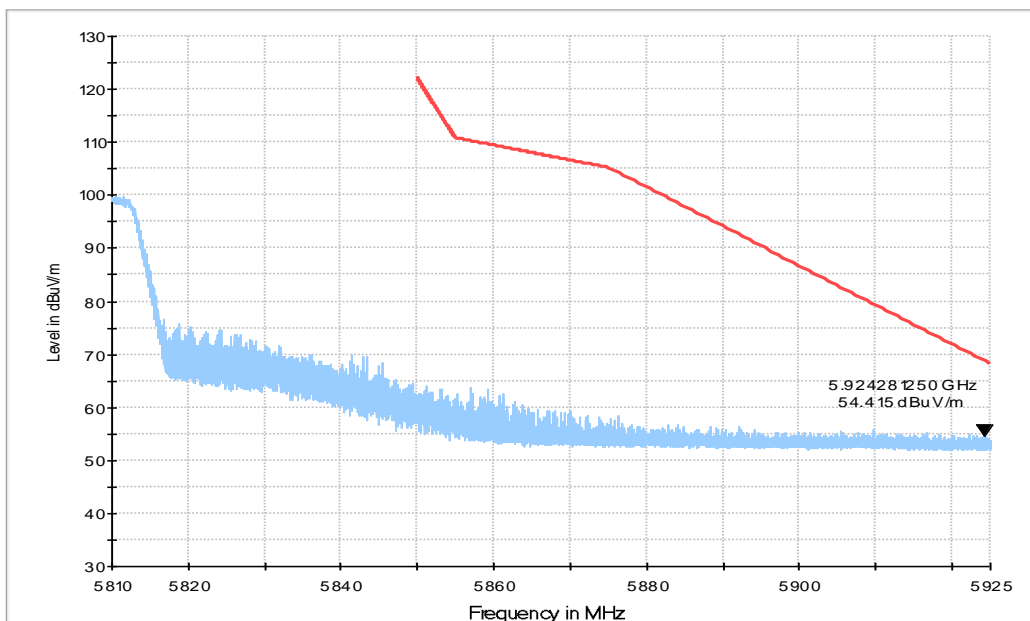


Fig. 15 Band Edges (802.11n-HT40 Ch159, 5795MHz)

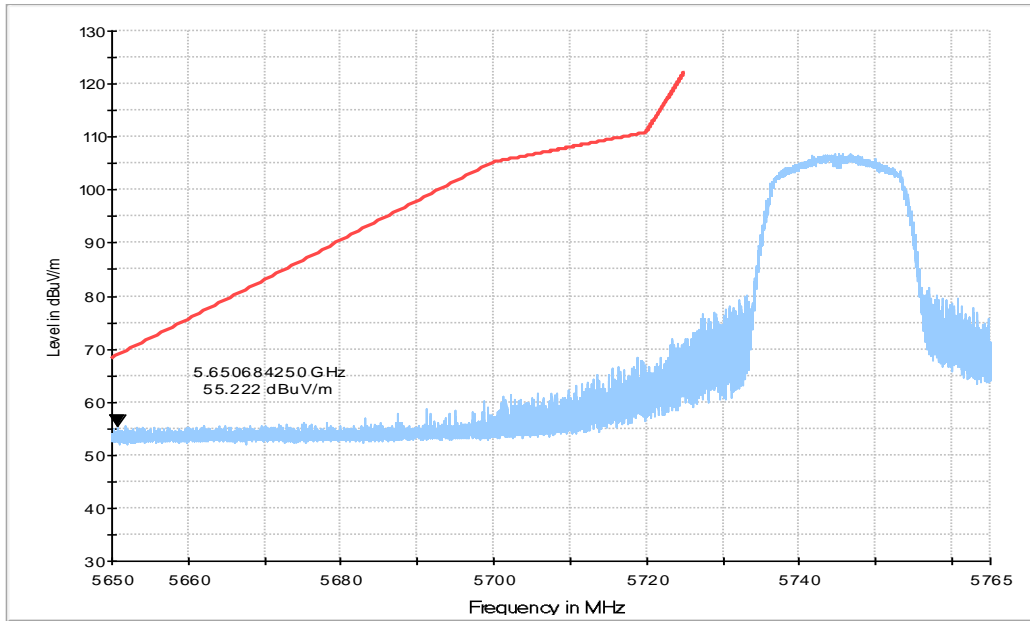


Fig. 16 Band Edges (802.11ac-HT20 Ch149, 5745MHz)

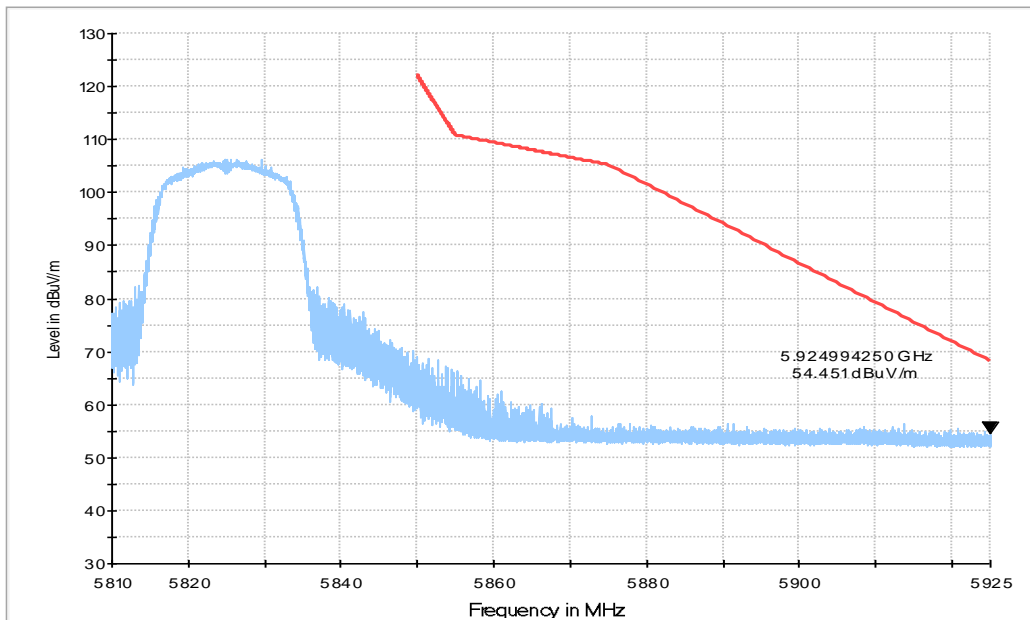


Fig. 17 Band Edges (802.11ac-HT20 Ch165, 5825MHz)

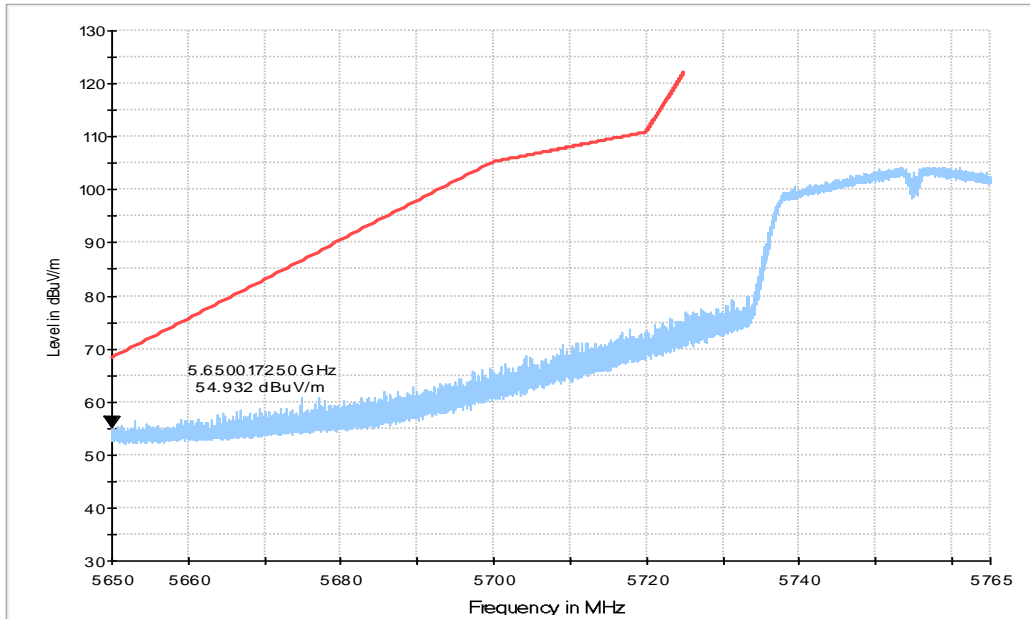


Fig. 18 Band Edges (802.11ac-HT40 Ch151, 5755MHz)

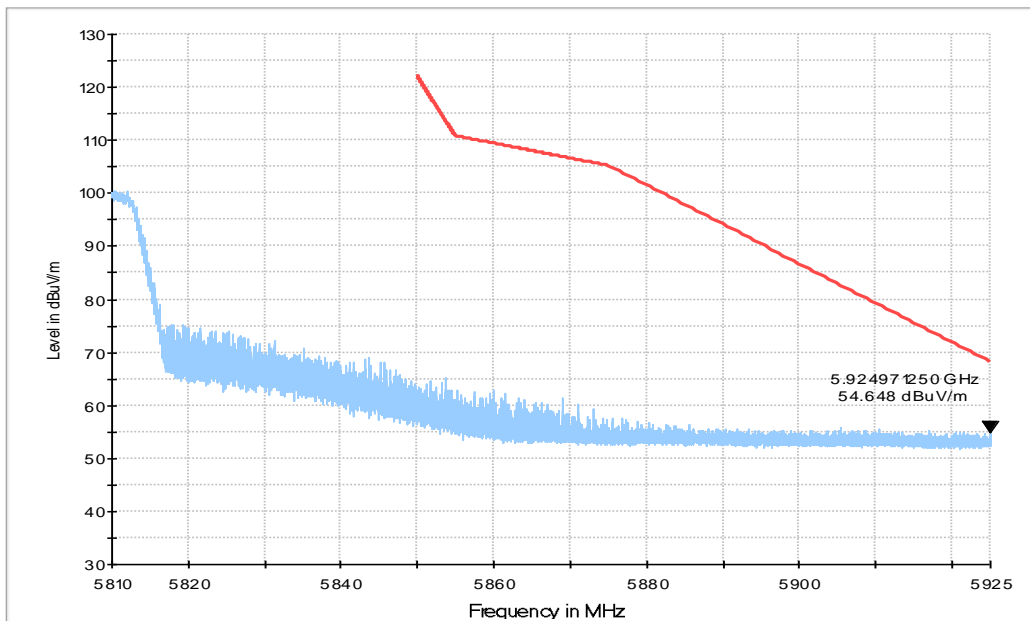


Fig. 19 Band Edges (802.11ac-HT40 Ch159, 5795MHz)

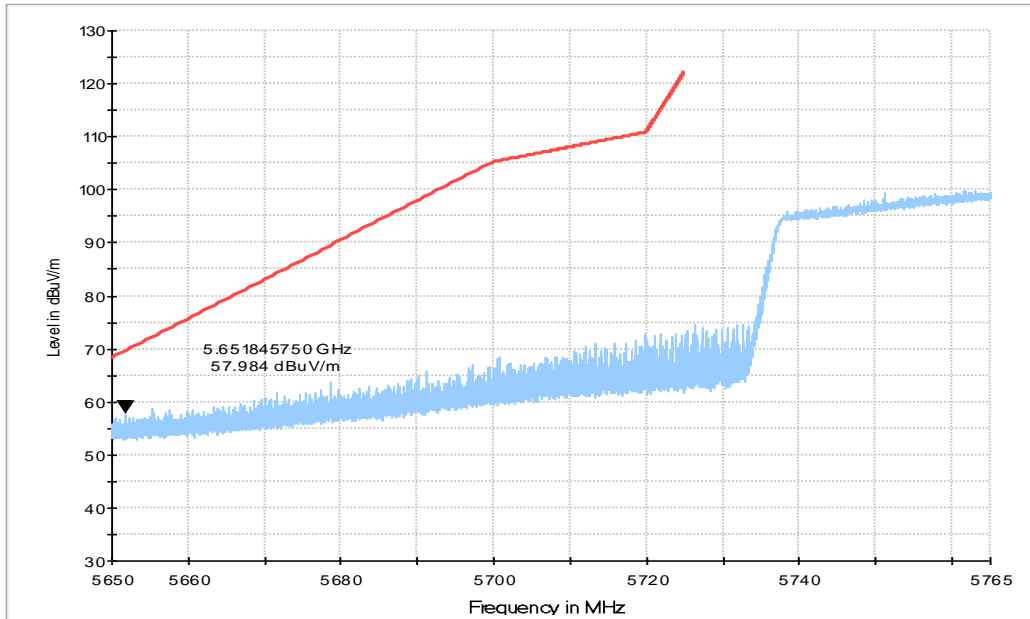


Fig. 20 Band Edges (802.11ac-HT80 Ch155, 5775MHz)

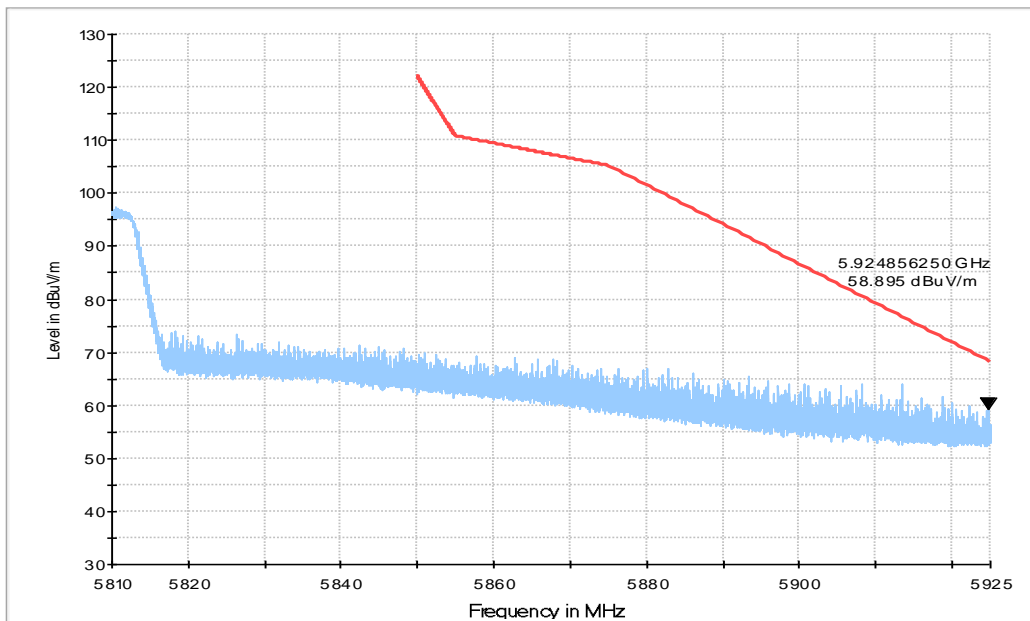


Fig. 21 Band Edges (802.11ac-HT80 Ch155, 5775MHz)

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.

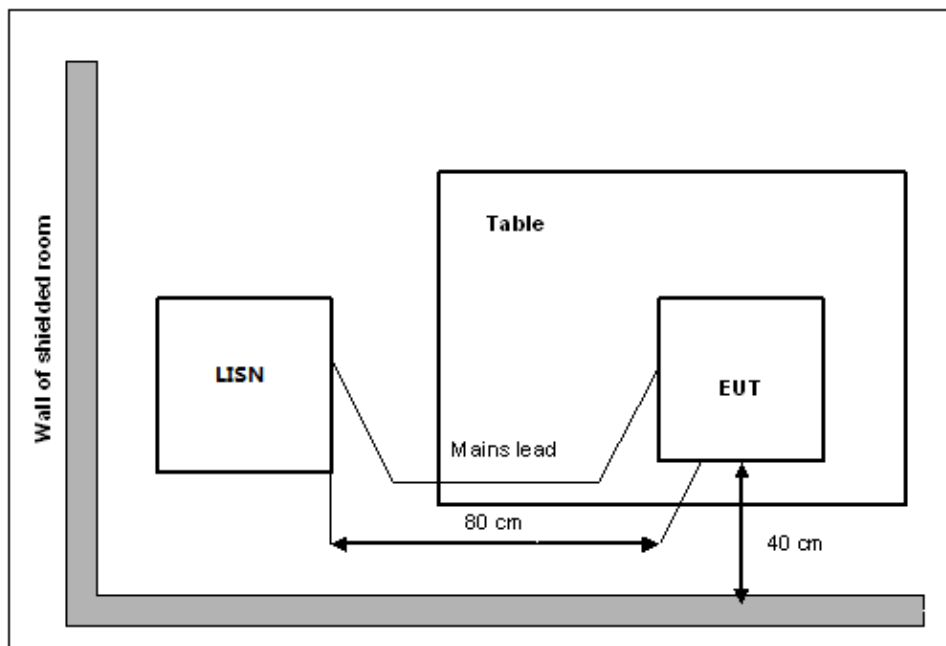
The measurement bandwidth is:

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:

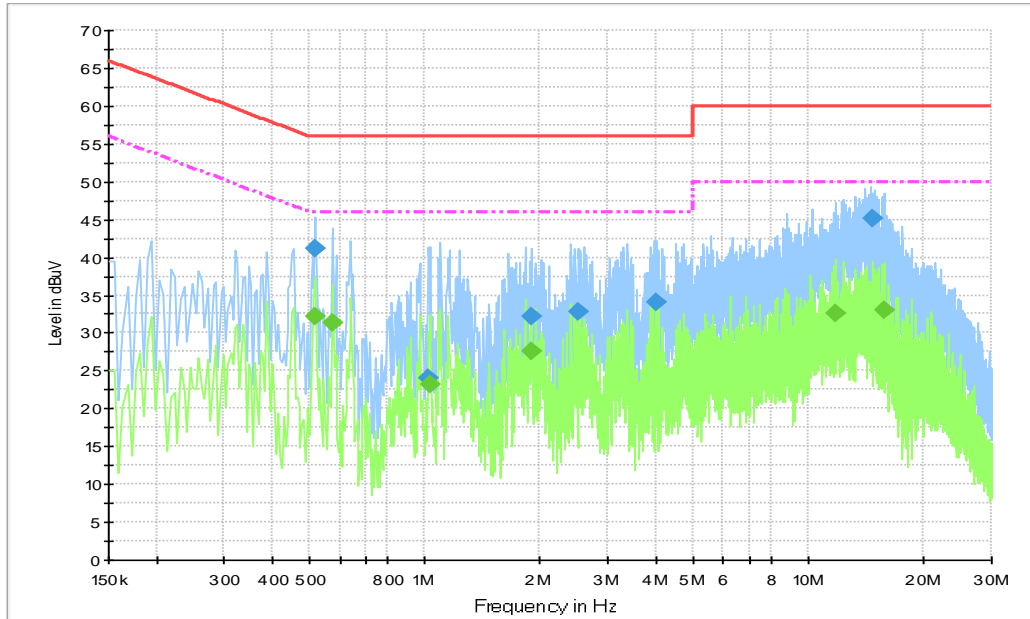


Fig. 22 AC Power line Conducted Emission-802.11a

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

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.519000	41.2	5000	9.000	On	L1	19.5	14.8	56.0
1.023000	24.0	5000	9.000	On	L1	19.5	32.0	56.0
1.900500	32.1	5000	9.000	On	N	19.6	23.9	56.0
2.526000	32.7	5000	9.000	On	N	19.6	23.3	56.0
4.011000	34.1	5000	9.000	On	N	19.6	21.9	56.0
14.73000	45.1	5000	9.000	On	L1	19.9	14.9	60.0

Final Result 2

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.519000	32.2	5000	9.000	On	L1	19.5	13.8	46.0
0.573000	31.4	5000	9.000	On	L1	19.5	14.6	46.0
1.032000	23.2	5000	9.000	On	N	19.6	22.8	46.0
1.891500	27.5	5000	9.000	On	L1	19.6	18.5	46.0
11.74650	32.6	5000	9.000	On	L1	19.8	17.4	50.0
15.68850	33.1	5000	9.000	On	N	19.8	16.9	50.0

Idle:

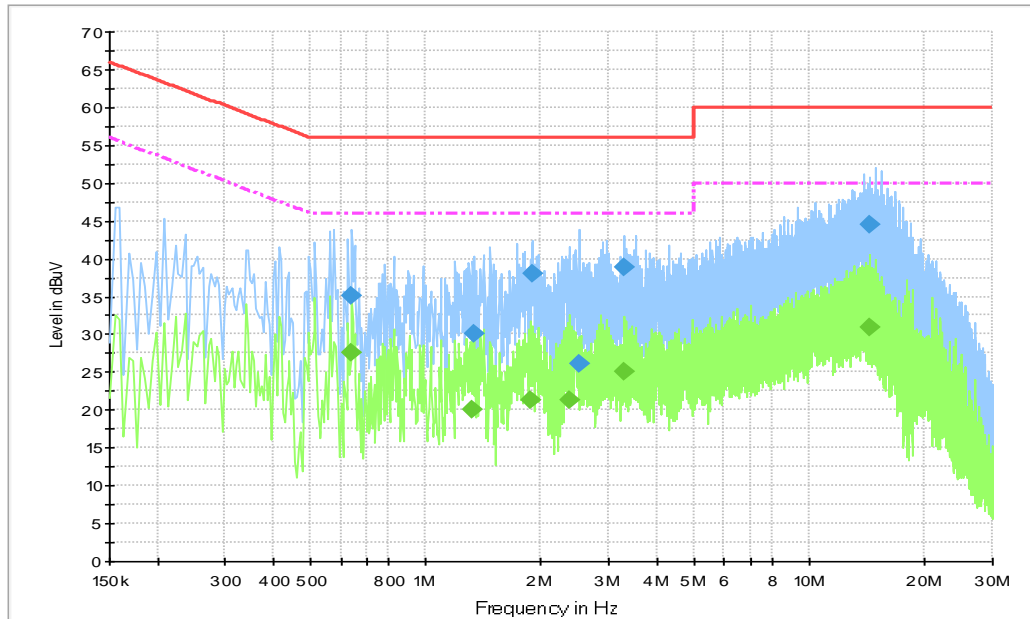


Fig. 23 AC Power line Conducted Emission-Idle

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)
0.640500	35.2	5000	9.000	On	N	19.8	20.8	56.0
1.338000	30.1	5000	9.000	On	L1	19.5	25.9	56.0
1.891500	38.1	5000	9.000	On	L1	19.6	17.9	56.0
2.503500	26.1	5000	9.000	On	N	19.6	29.9	56.0
3.300000	38.9	5000	9.000	On	L1	19.6	17.1	56.0
14.40600	44.5	5000	9.000	On	L1	19.9	15.5	60.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.640500	27.6	5000.0	9.000	On	N	19.8	18.4	46.0
1.324500	20.0	5000.0	9.000	On	L1	19.5	26.0	46.0
1.878000	21.4	5000.0	9.000	On	N	19.6	24.6	46.0
2.373000	21.4	5000.0	9.000	On	L1	19.6	24.6	46.0
3.300000	25.2	5000.0	9.000	On	N	19.6	20.8	46.0
14.406000	31.0	5000.0	9.000	On	N	19.8	19.0	50.0

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 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 ***