



FCC PART 15C TEST REPORT No.I22Z70343-IOT05

for

SAMSUNG Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN

SM-A146P/DSN, SM-A146P/N

With

FCC ID: ZCASMA146PN

Hardware Version: REV1.0

Software Version: A146P.001

Issued Date: 2022-11-30

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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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

Report Number	Revision	Description	Issue Date
I22Z70343-IOT05	Rev.0	1st edition	2022-11-09
I22Z70343-IOT05	Rev.1	Remove KDB 558074 on page 10.	2022-11-30

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1. TEST LATORATORY

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

Radiated testing Location:CTTL(huayuan North Road)

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

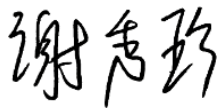
1.3. Testing Environment

Normal Temperature: 15-35°C
Relative Humidity: 20-75%

1.4. Project date

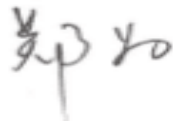
Testing Start Date: 2022-09-15
Testing End Date: 2022-11-09

1.5. Signature



Xie Xiuzhen

(Prepared this test report)



Zheng Wei

(Reviewed this test report)



Pang Shuai

(Approved this test report)



2. CLIENT INFORMATION

2.1. Applicant Information

Company Name: SAMSUNG Electronics Co., Ltd.
Address /Post: 19 Chapin Rd.,Building D Pine Brook, NJ 07058
Contact: Jenni Chun
Email: j1.chun@samsung.com
Telephone: +1-201-937-4203

2.2. Manufacturer Information

Company Name: Samsung Electronics Co., Ltd.
Address /Post: 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

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY

EQUIPMENT(AE)

3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN
Model name	SM-A146P/DSN, SM-A146P/N
FCC ID	ZCASA146PN
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
UT06a	2270343UT06a	REV1.0	A146P.001
UT25a	2270343UT25a	REV1.0	A146P.001

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

UT06a is used for Conduction test, UT25a is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Remark
AE1	Adapter	/
AE2	USB Cable1	/
AE3	USB Cable2	/
AE4	USB Cable3	/
AE5	USB Cable4	/
AE6	Headset	/
AE7	Battery1	/
AE8	Battery2	/

AE1

Model	EP-T1510
Manufacturer	HAEM Co.,Ltd
Length of cable	/

AE2

Model	EP-DT725BWE
Manufacturer	RFTECH Co., Ltd..
Length of cable	/

AE3

Model	EP-DN980BWZ
Manufacturer	RFTECH Co., Ltd.
Length of cable	/

AE4

Model	EP-DT725BWE
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Manufacturer	CRESYN HANOI Co., Ltd
Length of cable	/
AE5	
Model	EP-DN980BWE
Manufacturer	Guangxi Broad Telecommunication Co.,Ltd.
Length of cable	/
AE6	
Model	EHS61ASFWE
Manufacturer	Shenzhen Grandsound Electronics Co.,Ltd
Length of cable	/
AE7	
Model	WT-S-W1
Type	Secondary Li-ion Polymer Battery
Manufacturer	SCUD (Fujian) Electronics CO.,LTD
AE8	
Model	SCUD-WT-W1
Type	Secondary Li-ion Polymer Battery
Manufacturer	SCUD (Fujian) Electronics CO.,LTD

*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/5G NR 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/matrix 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	Manufacturer	Serial Number	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	R&S	100376	1 year	2023-09-22
2	Test Receiver	ESW44	R&S	103015	1 year	2023-02-23
3	Test Receiver	ESU26	R&S	100235	1 year	2023-03-08
4	Loop Antenna	HFH2-Z2	R&S	829324/007	1 year	2022-12-22
5	EMI Antenna	VULB9163	Schwarzbeck	01176	1 year	2022-11-15
6	EMI Antenna	3117	ETS-Lindgren	00119024	1 year	2023-06-07
7	EMI Antenna	3115	ETS-Lindgren	00167252	1 year	2022-12-26
8	EMI Antenna	LB-180400-25-C-KF	A-INFO	J211060826	1 year	2023-02-27

AC Power Line Conducted Emission

No.	Equipment	Model	Manufacturer	Serial Number	Calibration Period	Calibration Due date
1	LISN	ENV216	R&S	101459	1 year	2023-03-26
2	Test Receiver	ESCI	R&S	100766	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	4.92
$30\text{MHz} \leq f \leq 1\text{GHz}$	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

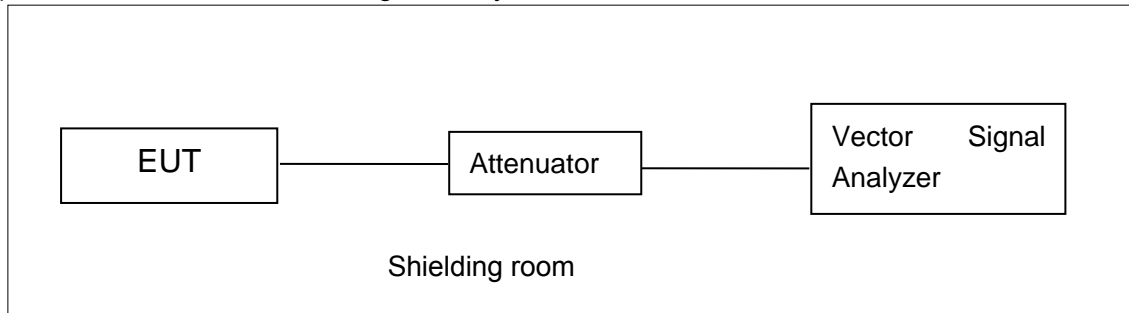
Measurement Uncertainty: 3.10dB, k=2

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

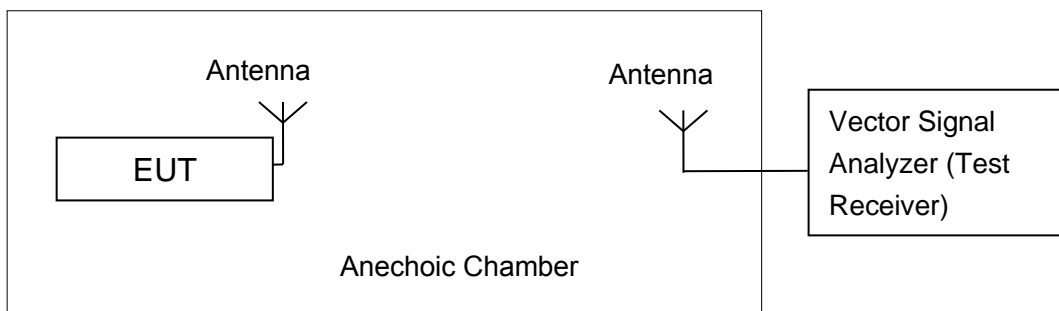


A.1.2. Radiated Emission Measurements

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 = 3MHz;



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 -1.97dBi 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	18.39	18.35	18.04
	9	17.96	/	/
	12	17.45	/	/
	18	17.38	/	/
	24	16.95	/	/
	36	16.83	/	/
	48	16.19	/	/
	54	15.98	/	/

The data rate 6Mbps is selected as worst 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	16.16	16.21	16.02
	MCS1	15.89	/	/
	MCS2	15.65	/	/
	MCS3	15.04	/	/
	MCS4	15.24	/	/
	MCS5	14.77	/	/
	MCS6	14.20	/	/
	MCS7	13.63	/	/

The data rate MCS0 is selected as worst 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	16.22	16.17	16.11
	MCS1	16.10	/	/
	MCS2	15.62	/	/
	MCS3	15.18	/	/
	MCS4	14.98	/	/
	MCS5	14.39	/	/
	MCS6	13.75	/	/
	MCS7	13.29	/	/
	MCS8	12.65	/	/

The data rate MCS0 is selected as worst 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	16.13	16.24
	MCS1	15.73	/
	MCS2	15.67	/
	MCS3	14.85	/
	MCS4	14.25	/
	MCS5	14.13	/
	MCS6	13.53	/
	MCS7	12.67	/

The data rate MCS0 is selected as worst 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	16.11	16.05
	MCS1	16.31	/
	MCS2	16.18	/
	MCS3	15.54	/
	MCS4	15.33	/
	MCS5	14.70	/
	MCS6	14.14	/
	MCS7	13.66	/

	MCS8	13.19	/
	MCS9	12.56	/

The data rate MCS0 is selected as worst 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	15.77
	MCS1	15.65
	MCS2	15.45
	MCS3	14.95
	MCS4	14.89
	MCS5	13.94
	MCS6	13.45
	MCS7	12.95
	MCS8	11.63
	MCS9	11.77

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

The duty cycle of all mode are 100%

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	2.71	P
	157	2.84	P
	165	2.78	P
802.11ac HT20	149	2.59	P
	157	2.53	P
	165	2.46	P
802.11n HT40	151	-0.35	P
	159	-0.37	P
802.11ac HT80	155	-3.92	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
802.11a	149	Fig.1	16.30	P
	157	Fig.2	16.30	P
	165	Fig.3	16.30	P
802.11ac HT20	149	Fig.4	17.55	P
	157	Fig.5	17.60	P
	165	Fig.6	17.60	P
802.11n HT40	151	Fig.7	36.32	P
	159	Fig.8	36.32	P
802.11ac HT80	155	Fig.9	76.48	P

Conclusion: PASS

Test graphs as below:

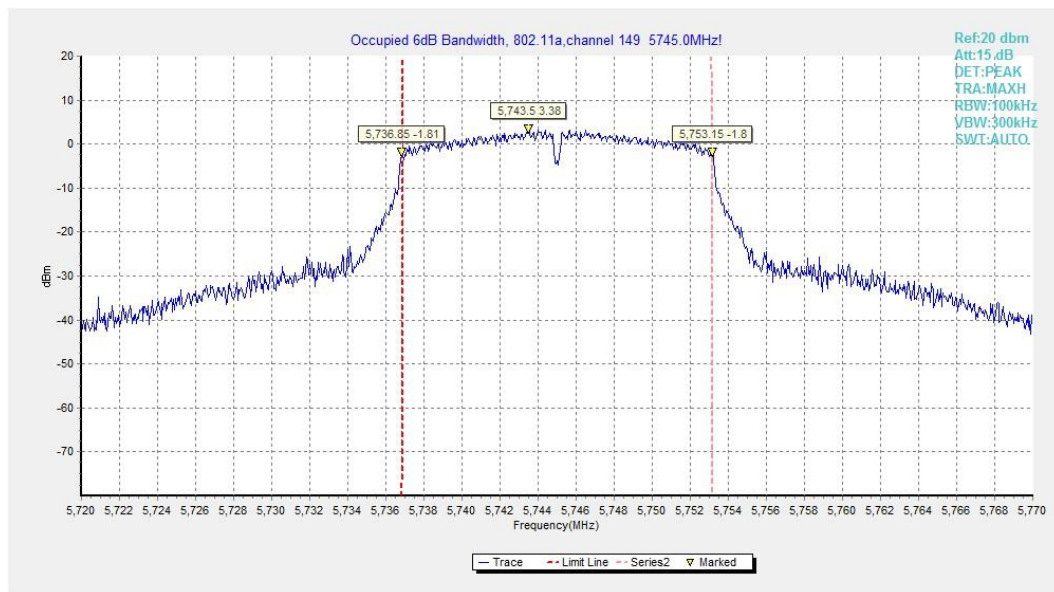


Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)

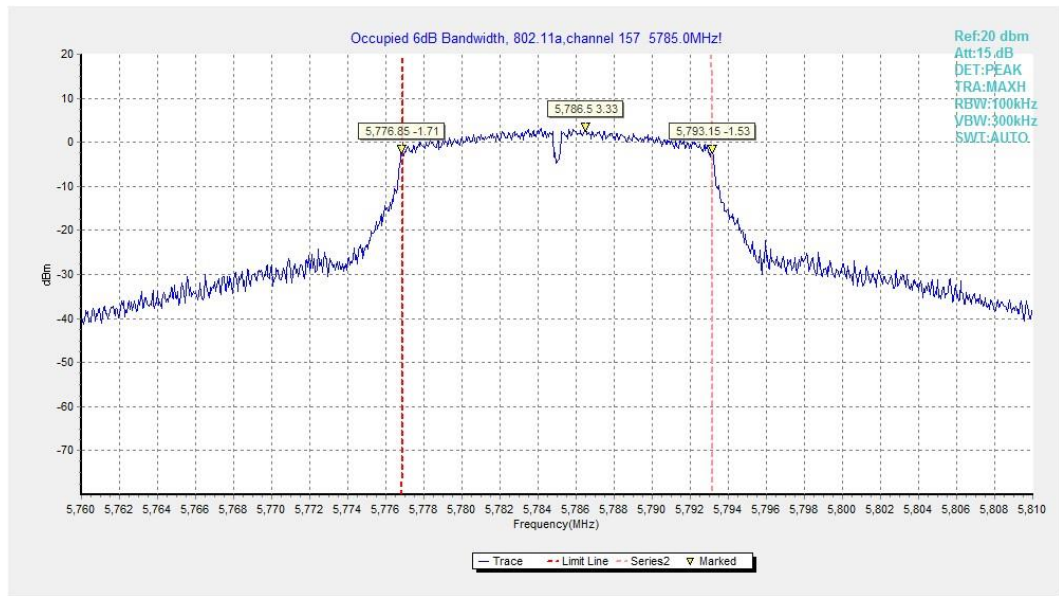


Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)

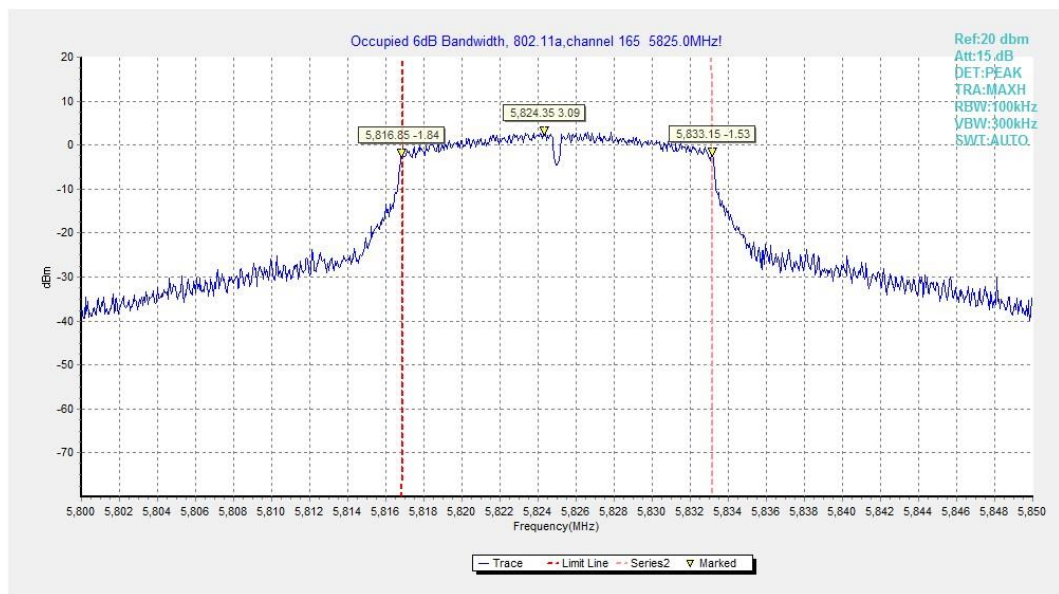


Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)

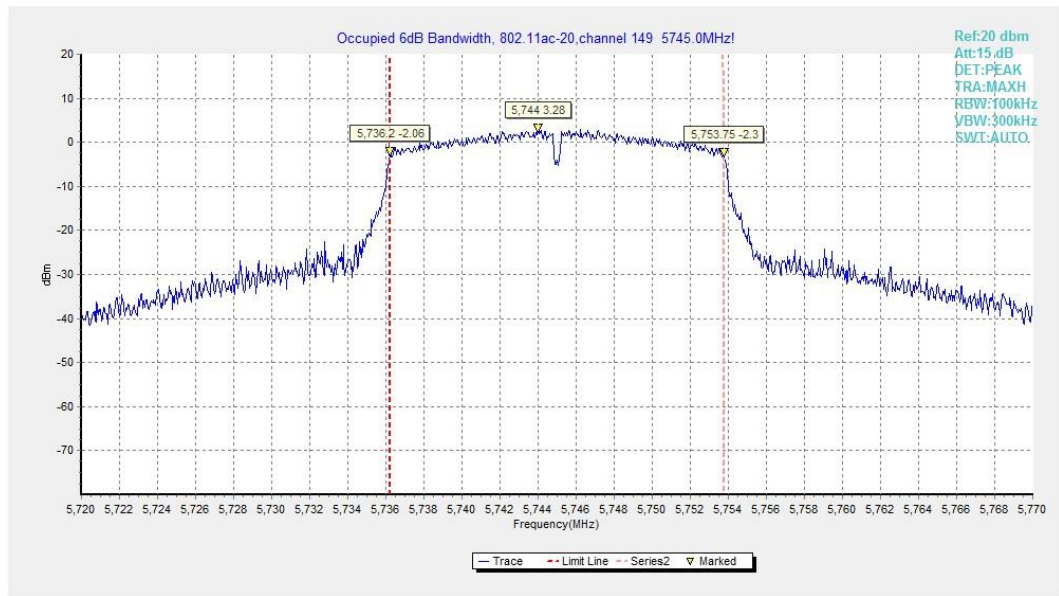


Fig. 4 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 149)

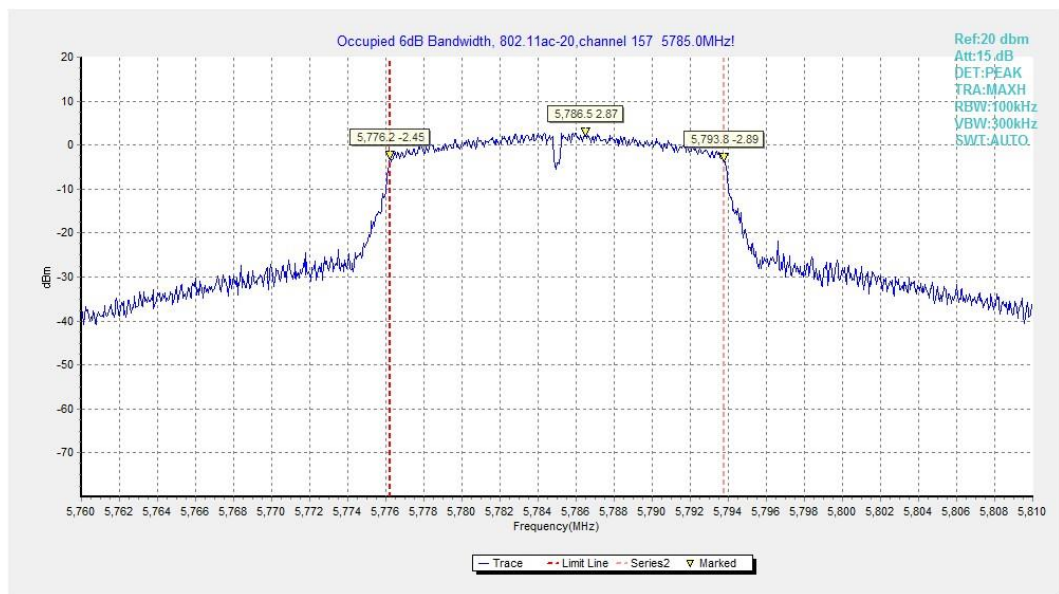


Fig. 5 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 157)

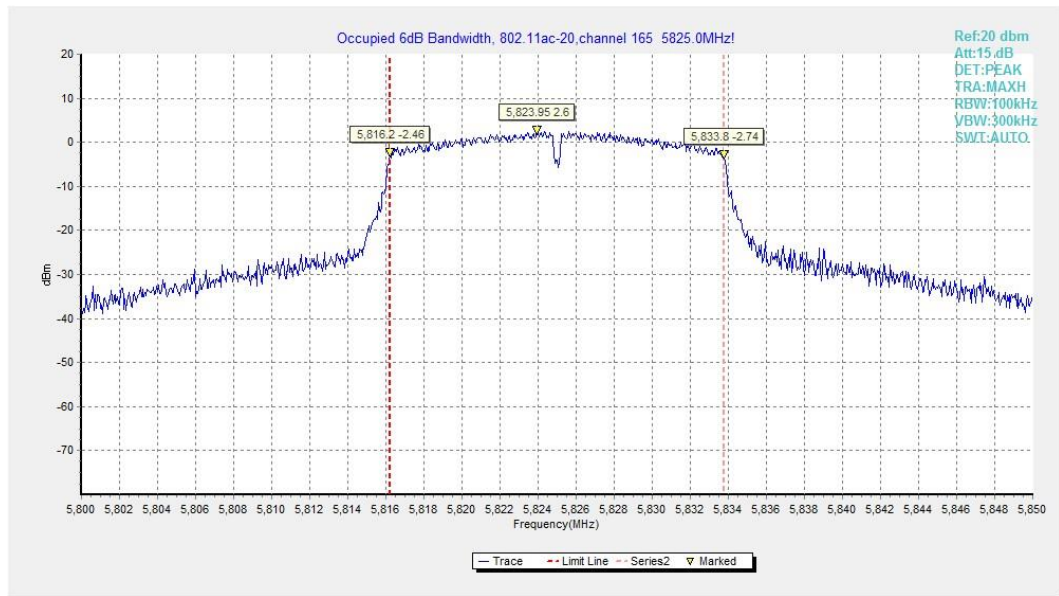


Fig. 6 Occupied 6dB Bandwidth (802.11ac-HT20, Ch 165)

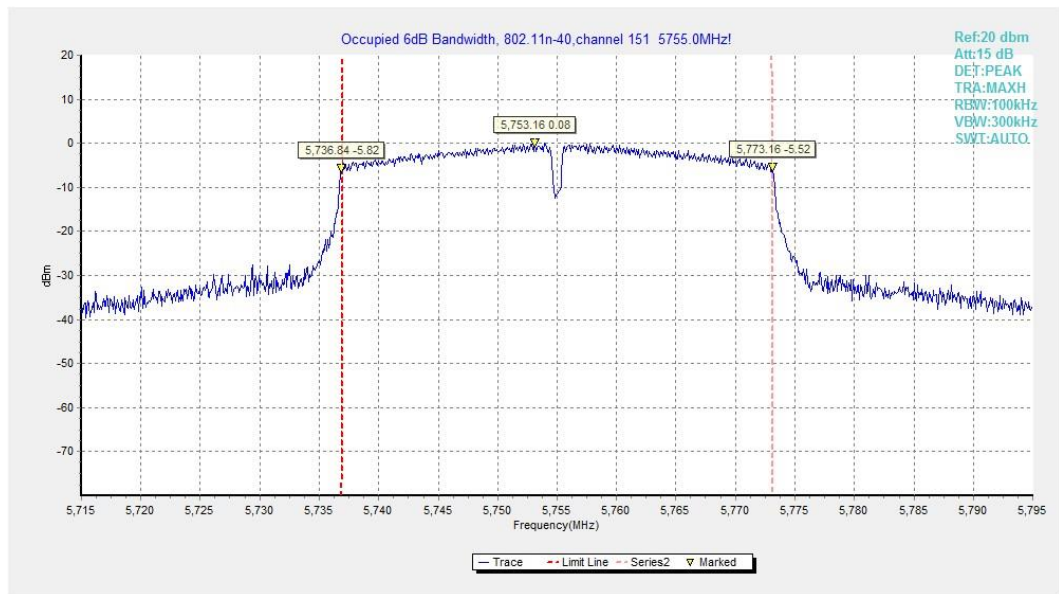


Fig. 7 Occupied 6dB Bandwidth (802.11n-HT40, Ch 151)

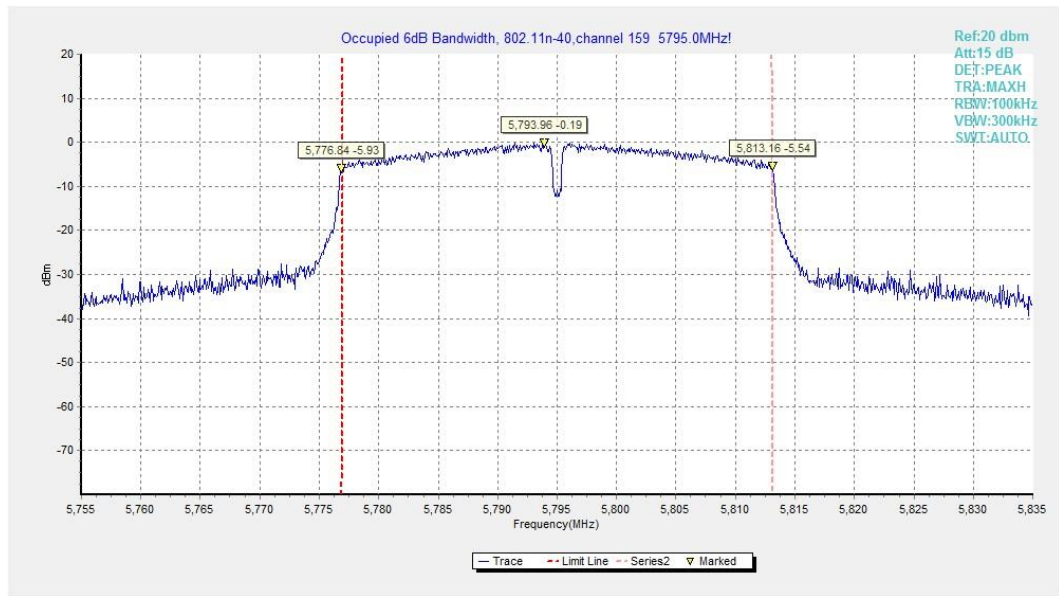


Fig. 8 Occupied 6dB Bandwidth (802.11n-HT40, Ch 159)

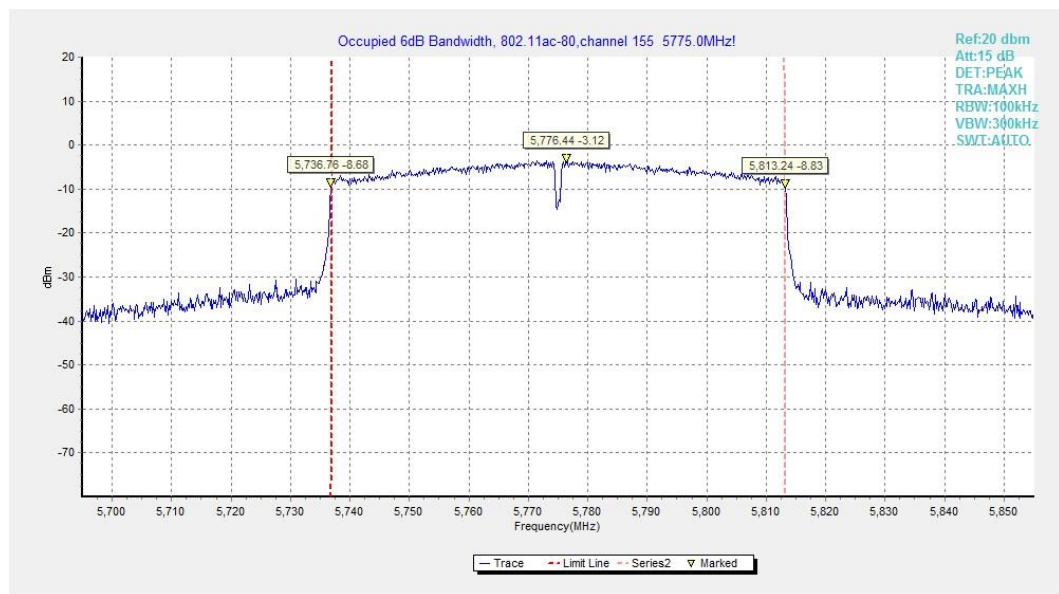


Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT80, Ch 155)

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(kHz)	300
0.490 - 1.705	24000/F(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:

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

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
		26.5 GHz~ 40 GHz	---	P
		165	1 GHz ~ 3 GHz	---
	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
	159	26.5 GHz~ 40 GHz	---	P
		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)
5419.200	40.20	-25.58	34.39	31.39	54.00	13.80	H
5427.000	40.18	-25.53	34.40	31.31	54.00	13.82	H
11490.200	31.70	-32.54	38.00	26.24	54.00	22.30	H
15842.900	34.82	-28.17	40.18	22.81	54.00	19.18	H
17961.500	35.27	-26.09	40.25	21.11	54.00	18.73	V
17986.800	35.37	-26.03	40.22	21.18	54.00	18.63	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)
5432.200	40.21	-25.50	34.41	31.30	54.00	13.79	H
5446.400	40.21	-25.41	34.43	31.19	54.00	13.79	V
11570.500	31.96	-32.29	38.11	26.14	54.00	22.04	V
15927.600	35.73	-27.79	40.24	23.28	54.00	18.27	V
17957.100	36.33	-26.10	40.25	22.18	54.00	17.67	V
17985.700	36.22	-26.03	40.22	22.03	54.00	17.78	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)
5411.400	40.19	-25.63	34.38	31.44	54.00	13.81	H
5425.600	40.28	-25.54	34.40	31.42	54.00	13.72	H
11649.700	32.75	-32.11	38.24	26.62	54.00	21.25	H
15936.400	36.10	-27.75	40.25	23.60	54.00	17.90	V
17751.400	35.73	-26.52	40.50	21.75	54.00	18.27	V
17956.000	36.58	-26.10	40.25	22.43	54.00	17.42	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)
5410.600	39.87	-25.64	34.38	31.13	54.00	14.13	H
5424.400	40.07	-25.55	34.40	31.22	54.00	13.93	H
11490.200	32.06	-32.54	38.00	26.60	54.00	21.94	H
15857.200	35.68	-28.11	40.19	23.60	54.00	18.32	V
17769.000	35.49	-26.49	40.48	21.50	54.00	18.51	H
17958.200	36.30	-26.10	40.25	22.15	54.00	17.70	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)
5421.200	40.04	-25.57	34.39	31.22	54.00	13.96	V
5432.000	40.18	-25.50	34.41	31.27	54.00	13.82	V
11570.500	32.03	-32.29	38.11	26.21	54.00	21.97	H
15847.300	35.52	-28.15	40.18	23.49	54.00	18.48	H
17775.600	35.53	-26.48	40.47	21.54	54.00	18.47	H
17969.200	36.00	-26.07	40.24	21.83	54.00	18.00	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)
5413.800	40.09	-25.62	34.38	31.33	54.00	13.91	V
5442.400	40.16	-25.43	34.42	31.17	54.00	13.84	V
11649.700	32.30	-32.11	38.24	26.16	54.00	21.70	H
15930.900	35.45	-27.78	40.25	22.99	54.00	18.55	H
17742.600	35.46	-26.53	40.51	21.48	54.00	18.54	V
17964.800	35.85	-26.08	40.24	21.69	54.00	18.15	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)
5428.800	39.89	-25.52	34.40	31.01	54.00	14.11	V
5431.400	40.03	-25.50	34.41	31.13	54.00	13.97	V
11510.000	31.64	-32.50	38.02	26.12	54.00	22.36	H
15849.500	35.28	-28.14	40.18	23.24	54.00	18.72	V
17747.000	35.34	-26.52	40.50	21.36	54.00	18.66	H
17957.100	35.78	-26.10	40.25	21.63	54.00	18.22	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)
5440.800	40.01	-25.44	34.42	31.03	54.00	13.99	V
5453.400	39.92	-25.36	34.44	30.84	54.00	14.08	V
11590.300	31.89	-32.23	38.15	25.97	54.00	22.11	H
15845.100	35.14	-28.16	40.18	23.12	54.00	18.86	V
17742.600	35.30	-26.53	40.51	21.33	54.00	18.70	V
17957.100	35.84	-26.10	40.25	21.68	54.00	18.16	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)
5432.400	40.04	-25.50	34.41	31.12	54.00	13.96	V
5456.400	40.12	-25.35	34.44	31.03	54.00	13.88	V
11490.200	31.77	-32.54	38.00	26.31	54.00	22.23	V
15862.700	35.28	-28.08	40.19	23.17	54.00	18.72	V
17763.500	35.25	-26.50	40.48	21.27	54.00	18.75	H
17971.400	35.80	-26.06	40.23	21.63	54.00	18.20	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)
5424.200	40.14	-25.55	34.40	31.29	54.00	13.86	V
5451.000	40.24	-25.38	34.43	31.19	54.00	13.76	V
11570.500	31.91	-32.29	38.11	26.09	54.00	22.09	H
15849.500	35.39	-28.14	40.18	23.35	54.00	18.61	H
17742.600	35.40	-26.53	40.51	21.42	54.00	18.60	V
17959.300	35.97	-26.09	40.25	21.81	54.00	18.03	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)
5400.600	40.04	-25.70	34.37	31.37	54.00	13.96	V
5441.400	40.03	-25.44	34.42	31.05	54.00	13.97	V
11649.700	32.32	-32.11	38.24	26.19	54.00	21.68	V
15859.400	35.39	-28.10	40.19	23.30	54.00	18.61	H
17749.200	35.42	-26.52	40.50	21.44	54.00	18.58	V
17981.300	35.84	-26.04	40.22	21.66	54.00	18.16	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)
5442.600	39.67	-25.43	34.42	30.68	54.00	14.33	V
5453.800	39.91	-25.36	34.44	30.83	54.00	14.09	V
11510.000	31.63	-32.50	38.02	26.11	54.00	22.37	H
15849.500	35.15	-28.14	40.18	23.11	54.00	18.85	H
17744.800	35.31	-26.52	40.50	21.33	54.00	18.69	H
17979.100	35.79	-26.05	40.22	21.61	54.00	18.21	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)
5398.200	40.19	-25.72	34.36	31.54	54.00	13.81	V
5421.000	40.24	-25.57	34.39	31.41	54.00	13.76	V
11590.300	31.98	-32.23	38.15	26.06	54.00	22.02	V
15929.800	35.22	-27.78	40.24	22.76	54.00	18.78	V
17744.800	35.29	-26.52	40.50	21.31	54.00	18.71	V
17958.200	35.67	-26.10	40.25	21.51	54.00	18.33	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)
5412.800	39.73	-25.62	34.38	30.97	48.30	8.57	V
5419.200	39.69	-25.58	34.39	30.88	48.30	8.61	V
11549.600	31.55	-32.37	38.08	25.83	48.30	16.75	H
15949.600	35.21	-27.70	40.26	22.65	48.30	13.09	V
17744.800	35.40	-26.52	40.50	21.42	48.30	12.90	V
17956.000	35.72	-26.10	40.25	21.57	48.30	12.58	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)
5650.230	54.31	-24.77	34.69	44.40	68.30	13.98	H
5650.496	54.30	-24.77	34.69	44.39	68.30	14.00	H
11490.200	42.55	-32.54	38.00	37.10	68.30	25.75	H
17234.950	48.17	-26.91	40.96	34.12	68.30	20.13	V
17285.000	49.49	-26.89	40.93	35.45	68.30	18.81	V
17310.300	49.56	-26.87	40.91	35.52	68.30	18.74	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)
5722.400	60.08	-24.80	34.77	50.11	68.30	8.22	V
5830.800	60.38	-24.97	34.90	50.45	68.30	7.92	H
11569.950	43.50	-32.30	38.11	37.68	68.30	24.80	H
17169.500	50.02	-26.93	41.00	35.95	68.30	18.28	H
17234.950	50.35	-26.91	40.96	36.30	68.30	17.95	V
17354.850	49.00	-26.84	40.89	34.95	68.30	19.30	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)
5924.324	53.86	-25.21	35.01	44.06	68.30	14.44	V
5924.777	54.07	-25.21	35.01	44.27	68.30	14.23	H
11650.250	44.46	-32.11	38.24	38.32	74.00	29.54	V
17474.750	48.24	-26.75	40.81	34.17	68.30	20.06	H
17555.600	50.38	-26.71	40.73	36.35	68.30	17.92	H
17661.750	49.75	-26.63	40.60	35.78	68.30	18.55	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)
5650.208	54.57	-24.77	34.69	44.66	68.30	13.73	V
5650.331	54.70	-24.77	34.69	44.79	68.30	13.60	V
11490.200	44.63	-32.54	38.00	39.18	74.00	29.37	V
17234.950	47.80	-26.91	40.96	33.75	68.30	20.50	H
17395.550	49.94	-26.80	40.86	35.88	68.30	18.36	V
17653.500	49.46	-26.64	40.61	35.49	68.30	18.84	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)
5735.000	60.78	-24.79	34.79	50.78	68.30	7.52	H
5828.400	61.65	-24.96	34.90	51.71	68.30	6.65	V
11569.950	44.06	-32.30	38.11	38.24	74.00	29.94	V
17354.850	48.19	-26.84	40.89	34.13	68.30	20.11	V
17681.550	48.13	-26.61	40.58	34.16	68.30	20.17	H
17553.950	49.70	-26.71	40.73	35.67	68.30	18.60	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)
5924.669	53.48	-25.21	35.01	43.68	68.30	14.82	H
5924.885	53.84	-25.21	35.01	44.03	68.30	14.46	V
11650.250	44.03	-32.11	38.24	37.90	74.00	29.97	H
17474.750	47.16	-26.75	40.81	33.09	68.30	21.14	V
17572.100	48.83	-26.70	40.71	34.82	68.30	19.47	H
17656.250	48.73	-26.64	40.61	34.76	68.30	19.57	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)
5650.668	56.88	-24.77	34.69	46.97	68.30	11.42	V
5651.330	56.48	-24.77	34.69	46.57	68.30	11.82	H
11510.000	43.06	-32.50	38.02	37.55	74.00	30.94	H
17265.200	47.47	-26.90	40.94	33.42	68.30	20.83	H
17447.000	49.11	-26.76	40.83	35.04	68.30	19.19	V
17663.400	49.60	-26.63	40.60	35.62	68.30	18.70	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)
5924.669	53.76	-25.21	35.01	43.96	68.30	14.54	H
5924.684	54.21	-25.21	35.01	44.41	68.30	14.09	V
11589.750	44.04	-32.23	38.15	38.12	74.00	29.96	H
17385.100	46.77	-26.81	40.87	32.71	68.30	21.53	V
17576.500	48.81	-26.70	40.71	34.80	68.30	19.49	H
17695.850	48.63	-26.59	40.56	34.65	68.30	19.67	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)
5650.086	54.97	-24.77	34.69	45.06	68.30	13.33	H
5650.776	55.34	-24.77	34.69	45.42	68.30	12.96	V
11490.200	43.31	-32.54	38.00	37.85	74.00	30.69	H
17234.950	48.01	-26.91	40.96	33.96	68.30	20.29	V
17336.400	49.36	-26.85	40.90	35.32	68.30	18.94	H
17665.600	48.54	-26.63	40.60	34.57	68.30	19.76	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)
5727.200	60.28	-24.80	34.78	50.31	68.30	8.02	H
5832.800	58.85	-24.98	34.91	48.93	68.30	9.45	V
11569.950	43.28	-32.30	38.11	37.46	74.00	30.72	V
17354.850	47.50	-26.84	40.89	33.45	68.30	20.80	V
17536.350	49.34	-26.72	40.76	35.30	68.30	18.96	H
17662.850	48.75	-26.63	40.60	34.77	68.30	19.55	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)
5924.152	54.30	-25.21	35.01	44.50	68.30	14.00	H
5924.720	54.91	-25.21	35.01	45.11	68.30	13.39	V
11650.250	43.83	-32.11	38.24	37.69	74.00	30.17	V
17474.750	47.99	-26.75	40.81	33.93	68.30	20.31	H
17595.200	48.21	-26.69	40.68	34.21	68.30	20.09	H
17684.300	48.68	-26.60	40.58	34.70	68.30	19.62	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)
5650.180	57.35	-24.77	34.69	47.44	68.30	10.95	V
5650.237	57.82	-24.77	34.69	47.91	68.30	10.48	V
11510.000	43.58	-32.50	38.02	38.06	74.00	30.42	V
17265.200	47.38	-26.90	40.94	33.34	68.30	20.92	V
17505.550	48.92	-26.73	40.79	34.86	68.30	19.38	H
17671.100	48.18	-26.62	40.59	34.21	68.30	20.12	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)
5924.813	53.74	-25.21	35.01	43.93	68.30	14.56	V
5924.921	53.65	-25.21	35.01	43.85	68.30	14.65	H
11589.750	44.29	-32.23	38.15	38.37	74.00	29.71	H
17385.100	46.97	-26.81	40.87	32.91	68.30	21.33	H
17513.800	48.61	-26.73	40.78	34.56	68.30	19.69	V
17657.350	49.57	-26.64	40.61	35.60	68.30	18.73	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)
5650.201	64.03	-24.77	34.69	54.12	68.30	4.27	V
5650.323	61.54	-24.77	34.69	51.63	68.30	6.76	V
11550.150	43.64	-32.36	38.08	37.92	74.00	30.36	H
17325.150	47.09	-26.86	40.90	33.05	68.30	21.20	V
17544.600	49.44	-26.71	40.75	35.41	68.30	18.86	V
17663.950	48.60	-26.63	40.60	34.63	68.30	19.70	H

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:

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

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:

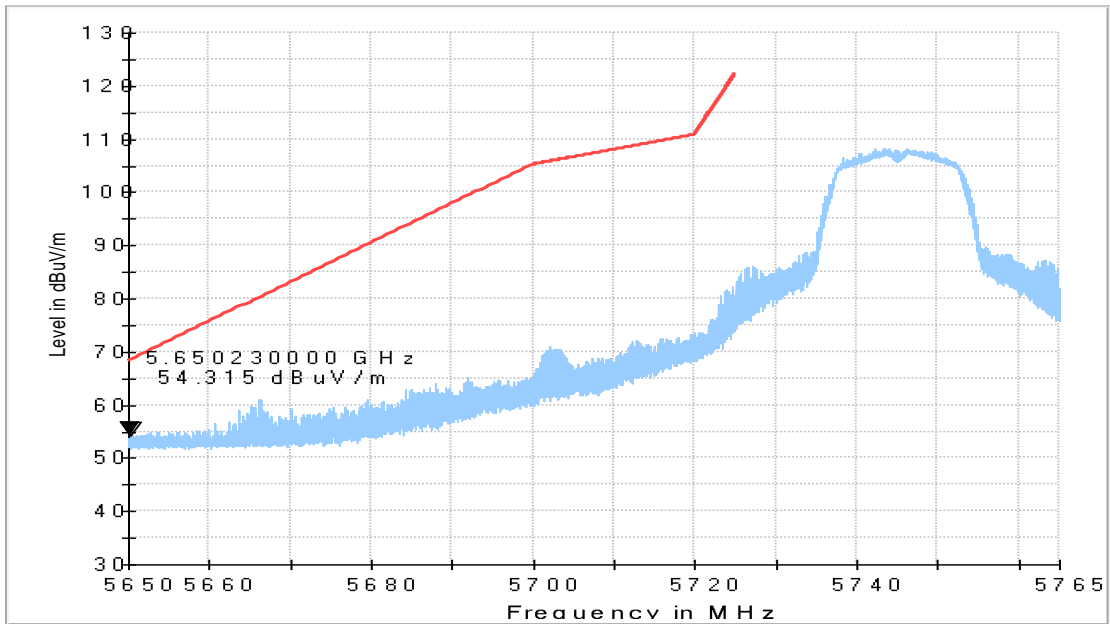


Fig. 10 Band Edges (802.11a Ch149,5745MHz)

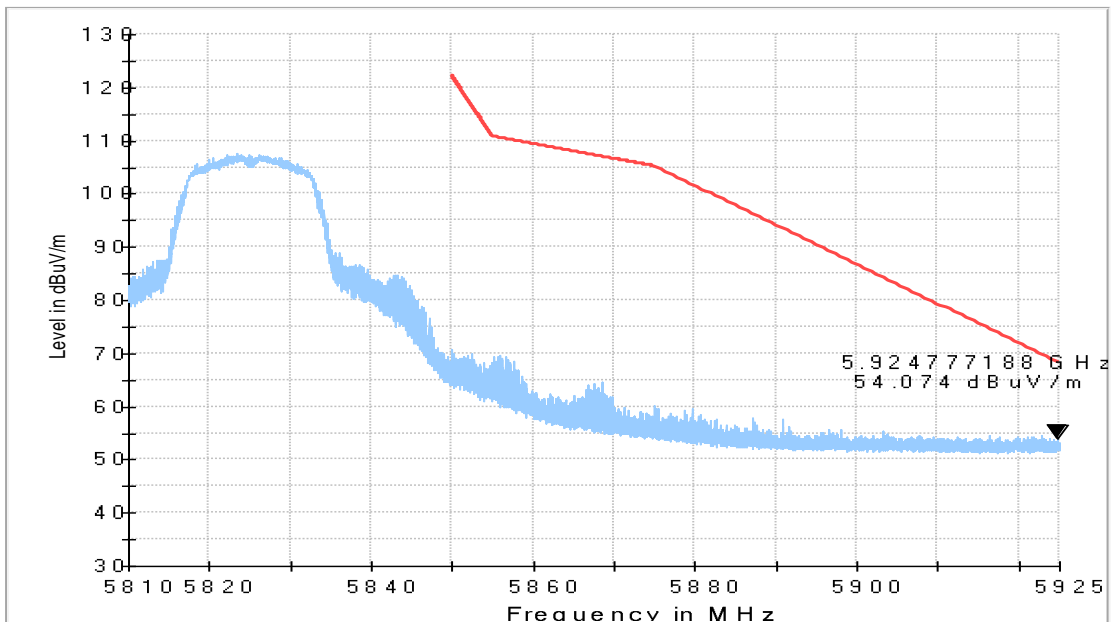


Fig. 11 Band Edges (802.11a Ch165, 5825MHz)

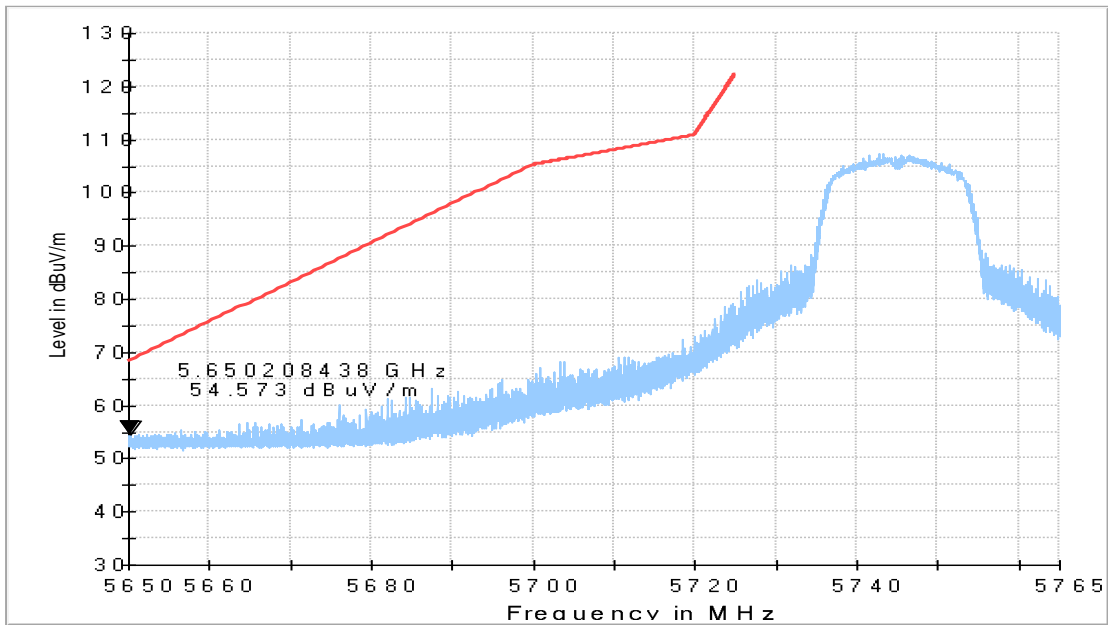


Fig. 12 Band Edges (802.11n-HT20 Ch149, 5745MHz)

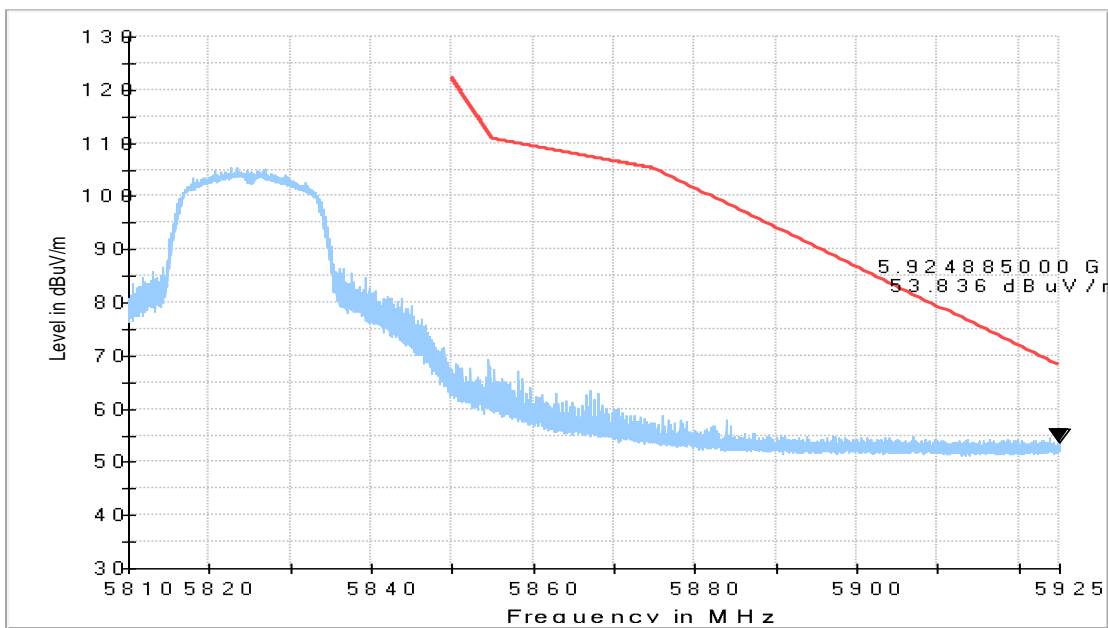


Fig. 13 Band Edges (802.11n-HT20 Ch165, 5825MHz)

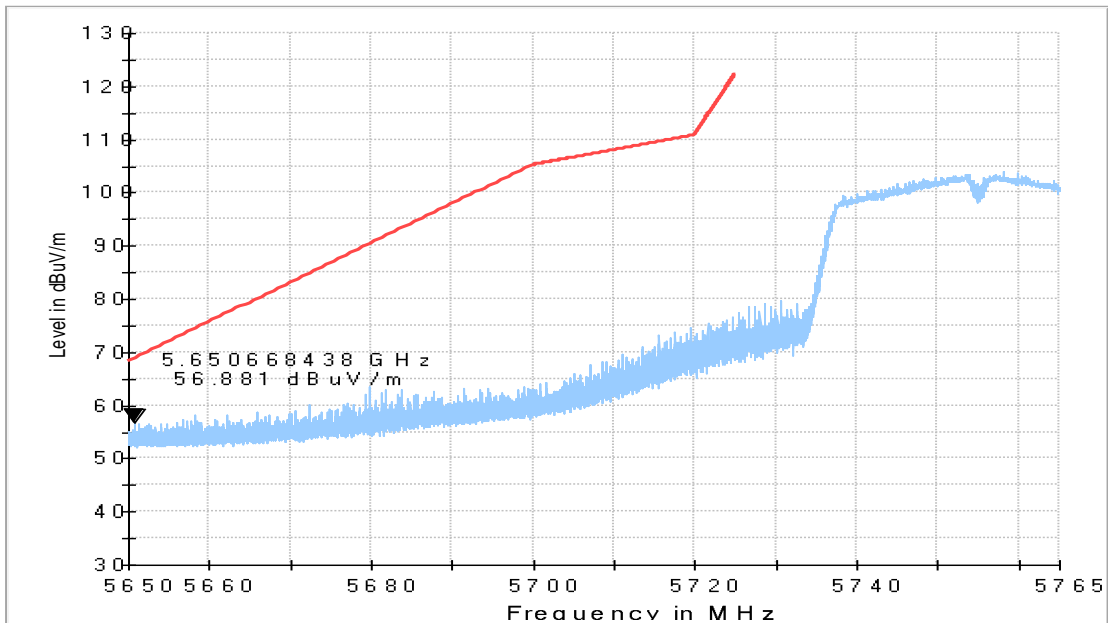


Fig. 14 Band Edges (802.11n-HT40 Ch151, 5755MHz)

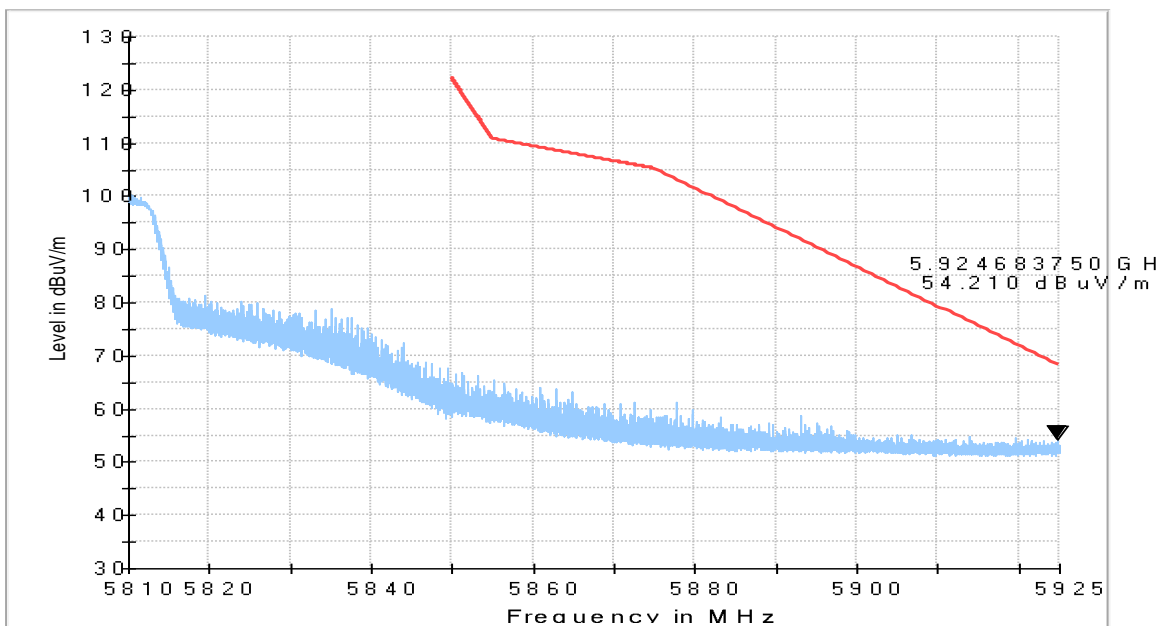


Fig. 15 Band Edges (802.11n-HT40 Ch159, 5795MHz)

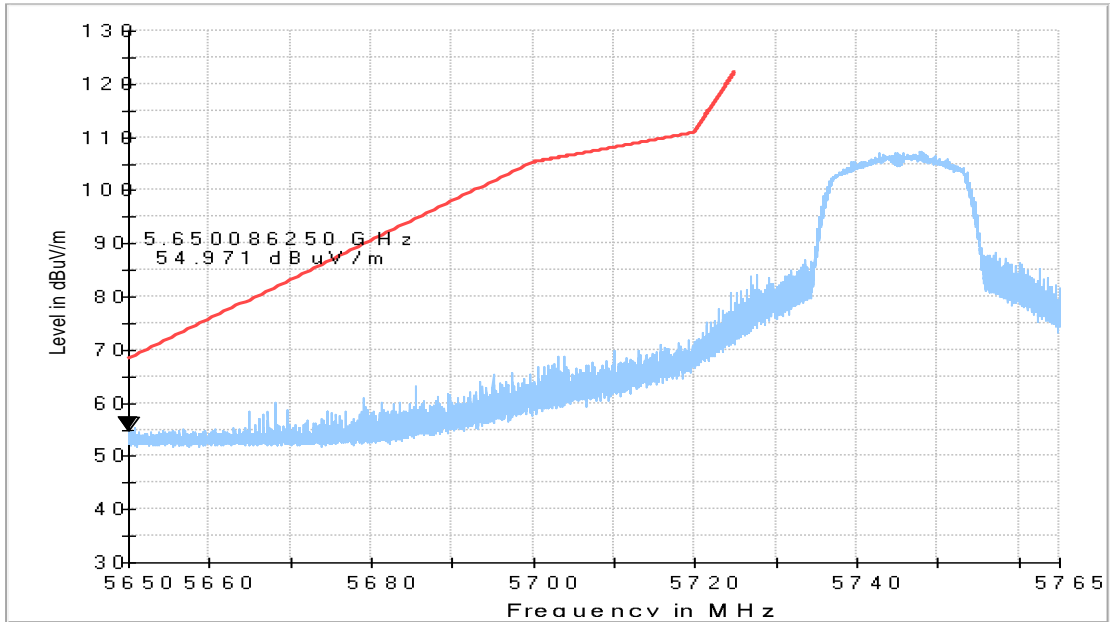


Fig. 16 Band Edges (802.11ac-HT20 Ch149, 5745MHz)

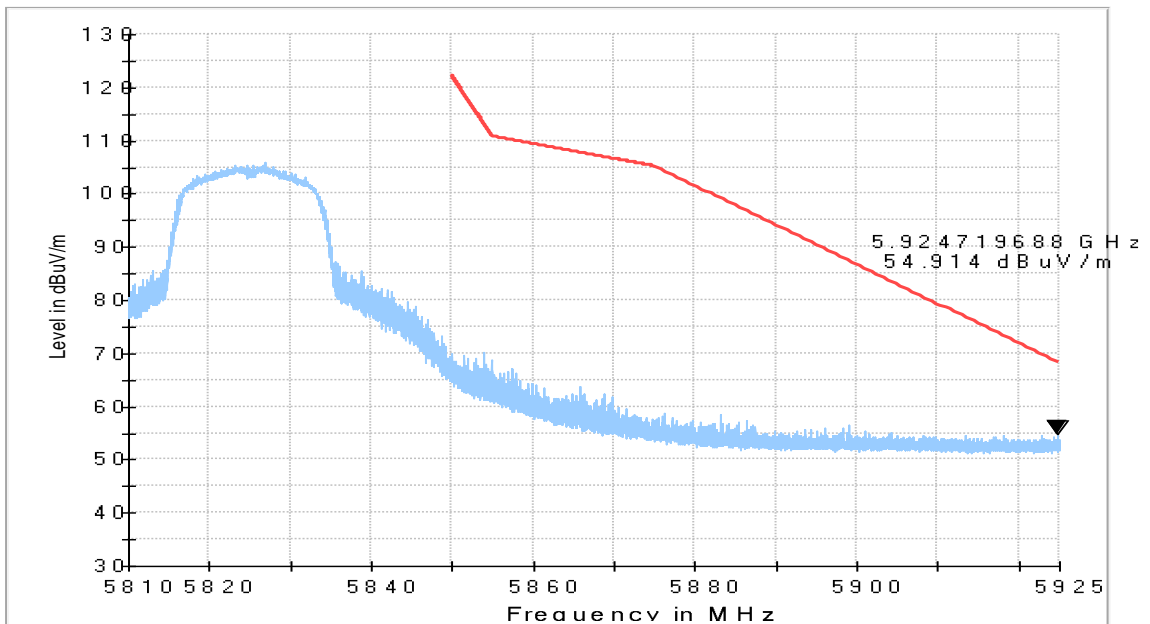


Fig. 17 Band Edges (802.11ac-HT20 Ch165, 5825MHz)

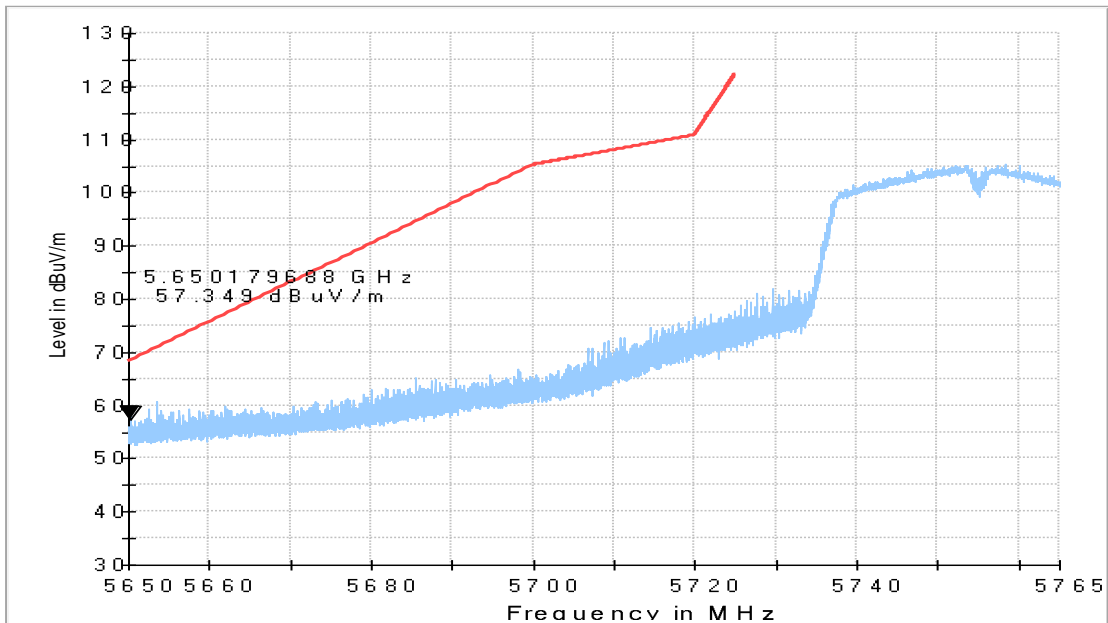


Fig. 18 Band Edges (802.11ac-HT40 Ch151, 5755MHz)

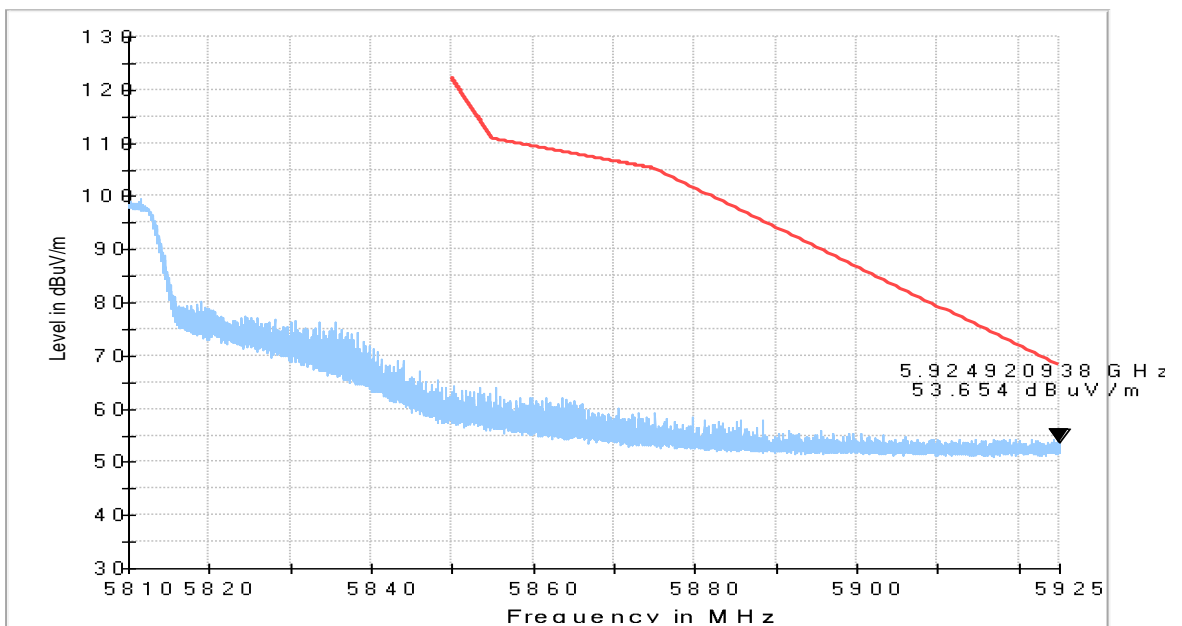


Fig. 19 Band Edges (802.11ac-HT40 Ch159, 5795MHz)

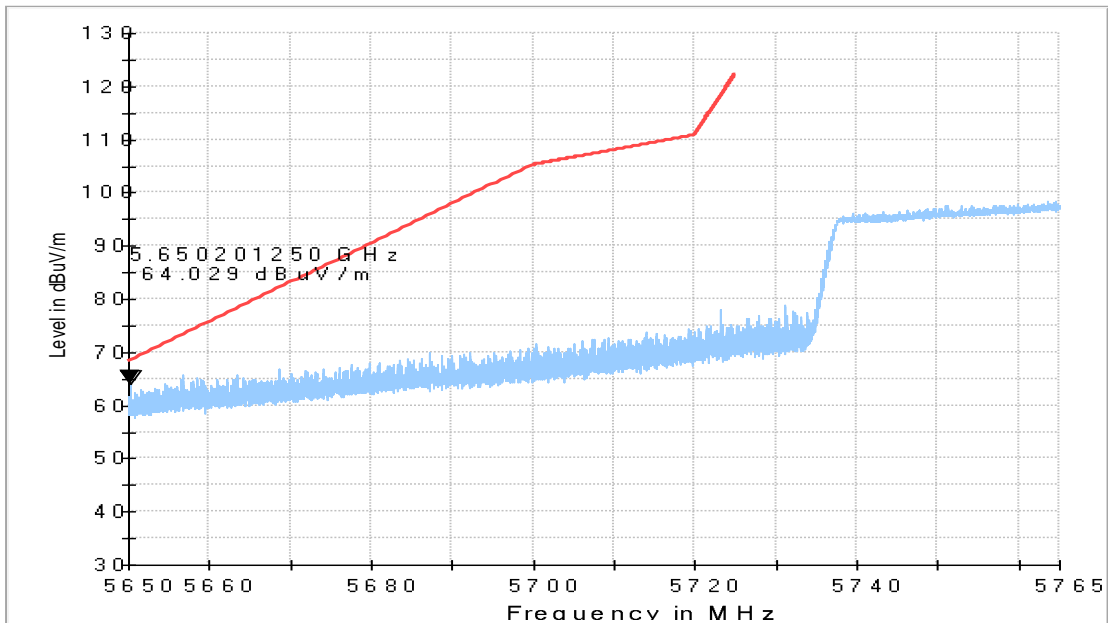


Fig. 20 Band Edges (802.11ac-HT80 Ch155, 5775MHz)

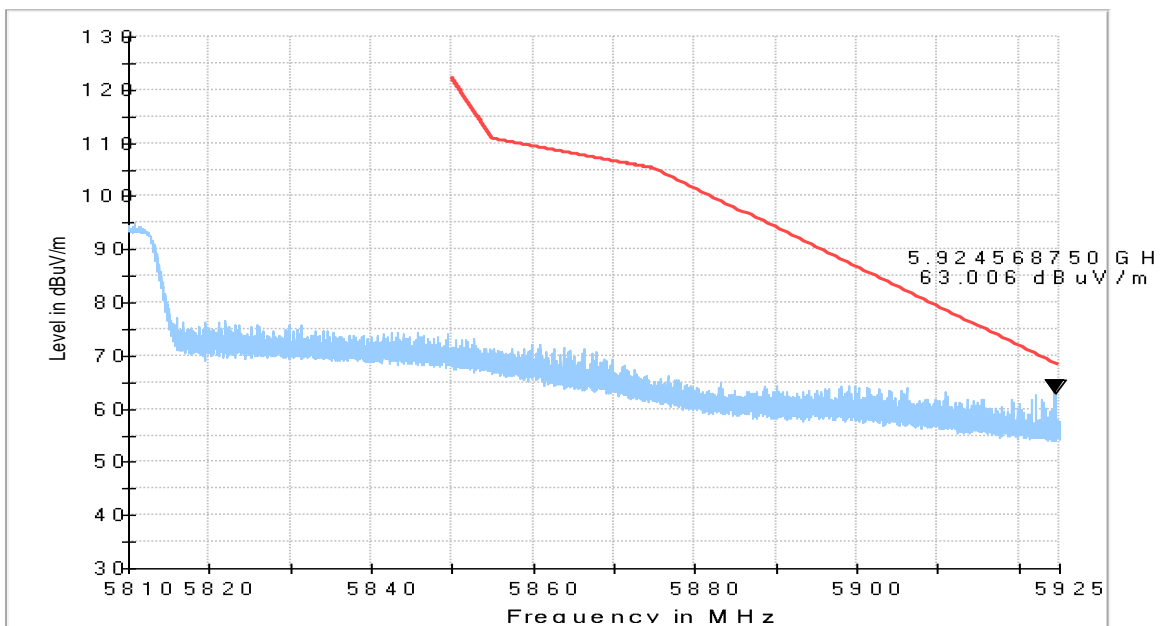


Fig. 21 Band Edges (802.11ac-HT80 Ch155, 5775MHz)

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.

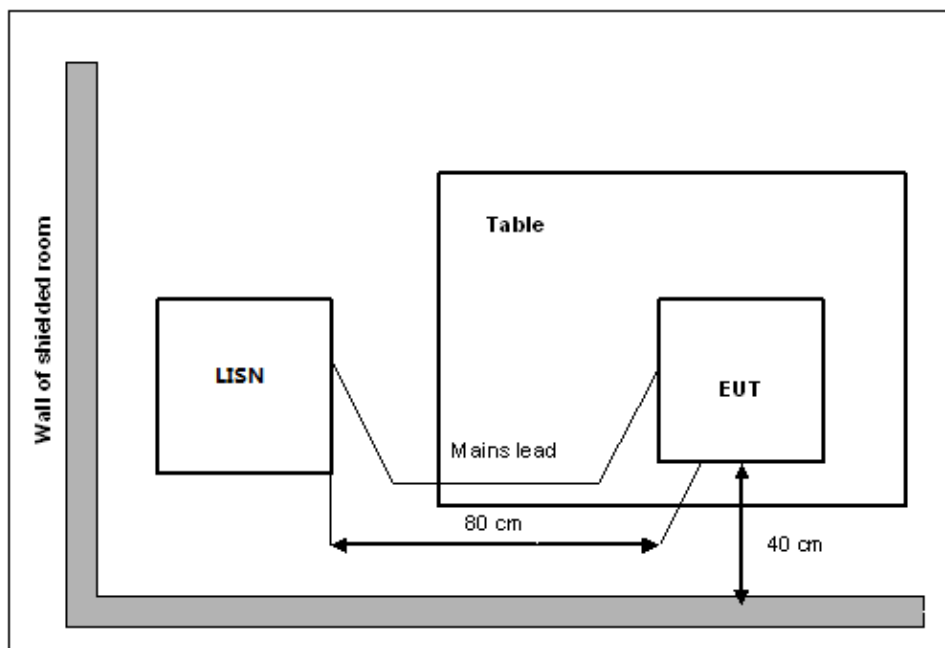
The measurement bandwidth is:

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:

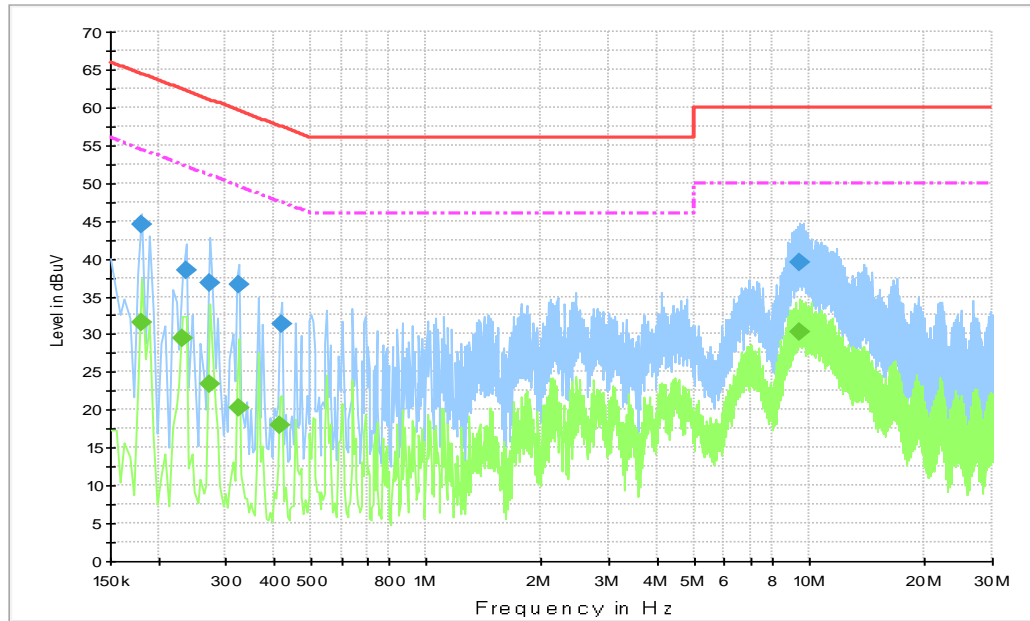


Fig.22 AC Power line Conducted Emission-802.11a

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)
0.181500	44.5	3000	9.000	On	N	19.8	19.9	64.4
0.235500	38.4	3000	9.000	On	L1	19.8	23.8	62.3
0.271500	36.9	3000	9.000	On	L1	19.8	24.2	61.1
0.325500	36.6	3000	9.000	On	N	19.7	22.9	59.6
0.420000	31.4	3000	9.000	On	L1	19.8	26.0	57.4
9.420000	39.5	3000	9.000	On	N	19.8	20.5	60.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.181500	31.7	3000	9.000	On	N	19.8	22.8	54.4
0.231000	29.5	3000	9.000	On	L1	19.8	22.9	52.4
0.271500	23.5	3000	9.000	On	N	19.8	27.6	51.1
0.325500	20.4	3000	9.000	On	L1	19.7	29.2	49.6
0.415500	18.1	3000	9.000	On	N	19.8	29.5	47.5
9.420000	30.4	3000	9.000	On	N	19.8	19.6	50.0

Idle:

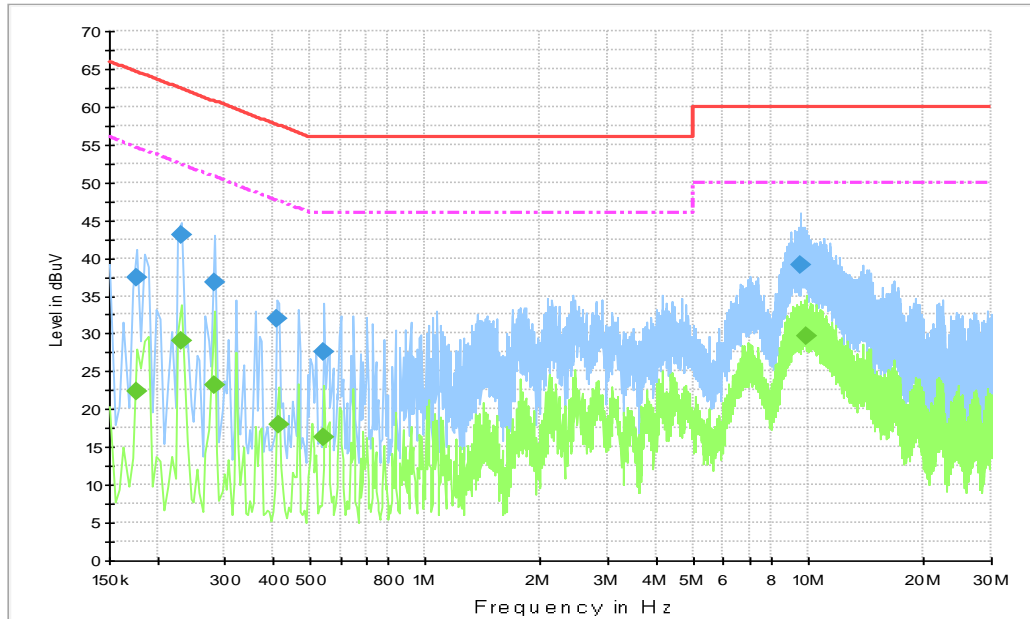


Fig.23 AC Power line Conducted Emission-Idle

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

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.177000	37.5	3000	9.000	On	N	19.8	27.2	64.6
0.231000	43.1	3000	9.000	On	N	19.8	19.3	62.4
0.280500	36.8	3000	9.000	On	L1	19.7	24.0	60.8
0.411000	32.0	3000	9.000	On	L1	19.8	25.6	57.6
0.546000	27.5	3000	9.000	On	N	19.8	28.5	56.0
9.510000	39.2	3000	9.000	On	N	19.8	20.8	60.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.177000	22.3	3000.0	9.000	On	N	19.8	32.3	54.6
0.231000	29.0	3000.0	9.000	On	L1	19.8	23.4	52.4
0.280500	23.3	3000.0	9.000	On	L1	19.7	27.5	50.8
0.415500	17.9	3000.0	9.000	On	N	19.8	29.6	47.5
0.546000	16.3	3000.0	9.000	On	N	19.8	29.7	46.0
9.843000	29.6	3000.0	9.000	On	L1	19.8	20.4	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

<p>United States Department of Commerce National Institute of Standards and Technology</p>  	
<hr/> Certificate of Accreditation to ISO/IEC 17025:2017 <hr/>	
NVLAP LAB CODE: 600118-0	
Telecommunication Technology Labs, CAICT Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
Electromagnetic Compatibility & Telecommunications	
<i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i>	
<hr/> 2022-10-01 through 2023-09-30 <i>Effective Dates</i>	  <i>For the National Voluntary Laboratory Accreditation Program</i>

*** END OF REPORT BODY ***