



FCC PART 15C TEST REPORT No.I21Z70567-IOT03

for

SAMSUNG Electronics Co., Ltd.

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

SM-A226B/DSN

With

FCC ID: ZCASMA226BN1

Hardware Version: REV1.1

Software Version: A226B.001

Issued Date: 2021-12-09

Note:

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

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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
I21Z70567-IOT03	Rev.0	1st edition	2021-12-09

CONTENTS

CONTENTS	3
1. TEST LATORATORY.....	5
1.1. INTRODUCTION & ACCREDITATION	5
1.2. TESTING LOCATION	5
1.3. TESTING ENVIRONMENT	5
1.4. PROJECT DATE	5
1.5. SIGNATURE	6
2. CLIENT INFORMATION.....	7
2.1. APPLICANT INFORMATION	7
2.2. MANUFACTURER INFORMATION	7
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE)	8
3.1. ABOUT EUT	8
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	8
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	8
3.4. GENERAL DESCRIPTION.....	9
4. REFERENCE DOCUMENTS	10
4.1. DOCUMENTS SUPPLIED BY APPLICANT	10
4.2. REFERENCE DOCUMENTS FOR TESTING.....	10
5. LABORATORY ENVIRONMENT.....	10
6. SUMMARY OF TEST RESULTS	11
6.1. SUMMARY OF TEST RESULTS	11
6.2. STATEMENTS.....	11
6.3. EXPLANATION OF RE-USE OF TEST DATA	11
7. TEST EQUIPMENTS UTILIZED	12
8. MEASUREMENT UNCERTAINTY	13
8.1. TRANSMITTER OUTPUT POWER	13
8.2. PEAK POWER SPECTRAL DENSITY	13
8.3. OCCUPIED 6DB BANDWIDTH.....	13
8.4. BAND EDGES COMPLIANCE	13
8.5. SPURIOUS EMISSIONS	13
8.6. AC POWER-LINE CONDUCTED EMISSION	13
ANNEX A: EUT PARAMETERS.....	13
ANNEX B: MEASUREMENT RESULTS.....	14
B.1. MEASUREMENT METHOD	14
B.2. MAXIMUM PEAK OUTPUT POWER	15

B.2.1 ANTENNA GAIN.....	15
B.2.2. MAXIMUM AVERAGE OUTPUT POWER-CONDUCTED	15
B.3. PEAK POWER SPECTRAL DENSITY	18
B.4. OCCUPIED 6DB BANDWIDTH	19
B.5. TRANSMITTER SPURIOUS EMISSION.....	24
B.5.1 TRANSMITTER SPURIOUS EMISSION - RADIATED	24
B.6. BAND EDGES COMPLIANCE	37
B.6.1 BAND EDGES - RADIATED	37
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, 5775MHZ).....	43
B.7. AC POWERLINE CONDUCTED EMISSION	44
FIG. 22 AC POWER LINE CONDUCTED EMISSION-802.11A	45
FIG. 23 AC POWER LINE CONDUCTED EMISSION-IDLE.....	46
ANNEX C: ACCREDITATION CERTIFICATE	47

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, P. R. China 100176

Radiated testing Location: CTTL(huayuan North Road)

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

1.3. TestingEnvironment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2021-02-09

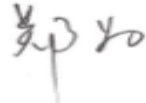
Testing End Date: 2021-12-09

1.5. Signature

谢秀珍

Xie Xiuzhen

(Prepared this test report)



Zheng Wei

(Reviewed this test report)

胡晓宇

Hu Xiaoyu

(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name: SAMSUNG Electronics Co., Ltd.
Address: Samsung R5, Maetan dong 129, Samsung ro
Youngtong gu, Suwon city 443 742, Korea
Contact: Kobe Cho
Email: ggobi.cho@samsung.com
Telephone: +82 - 10 - 2722 - 4159
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: Kobe 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/5G NR Phone with Bluetooth,WLAN
Model name	SM-A226B/DSN
FCC ID	ZCASMA226BN1
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
UT26a	/	REV1.1	A226B.001
UT33a	/	REV1.1	A226B.001
UT16a	/	REV1.1	A226B.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
AE1	Charger1
AE2	Charger2
AE3	Charger3
AE4	USB cable1
AE5	USB cable1
AE6	USB cable1
AE7	USB cable1
AE8	battery

AE1

Model	EP-TA200
Manufacturer	RFTECH
Length of cable	/

AE2

Model	EP-TA200
Manufacturer	Dongwon
Length of cable	/

AE3

Model	EP-TA200
Manufacturer	SOLUM
Length of cable	/

AE4

Model	EP-DR140AWE
Manufacturer	RFTECH Co., Ltd.
Length of cable	/

AE5

Model	EP-DR140AWE
Manufacturer	Ningbo Broad Telecommunication Co., Ltd
Length of cable	/

AE6

Model	EP-DR140AWE
Manufacturer	DONGGUAN KSD CO.,LTD
Length of cable	/

AE7

Model	EP-DR140AWE
Manufacturer	CRESYN HANOI Co.,Ltd
Length of cable	/

AE8

Model	SCUD-WT-W1
Manufacturer	SCUD(Fujian)Electronic Co.,Ltd.
Capacitance	4900mAh
Nominal voltage	3.85V

*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 Part15	FCC CFR 47, Part 15, Subpart C and E: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.407 General technical requirements	2018
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12
KDB 558074 D01	Federal Communications Commission Office of Engineering and Technology Laboratory Division GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES	2019

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)	/	BR
Peak Power Spectral Density	15.407 (a)	/	BR
Occupied 6dB Bandwidth	15.407 (e)	/	BR
Band Edges Compliance - Conducted& Radiated	15.407 (b)	/	BR
Transmitter Spurious Emission - Conducted	15.407	/	BR
Transmitter Spurious Emission - Radiated	15.407, 15.205, 15.209	/	BR
AC Powerline Conducted Emission	15.107, 15.207	/	BR

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
BR	Re-use test data from basic model report.
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. Explanation of re-use of test data

The Equipment Under Test (EUT) model SM-A226B/DSN (FCC ID: ZCASMA226BN1) is a variant product of SM-A226B/DSN (FCC ID: ZCASMA226BN), according to the declaration of changes provided by the applicant and FCC KDB publication 484596 D01, spot check measurements (output power and radiated spurious emission) were performed on this device, all the other test results are derived from test report No.I21Z70103-IOT12.

For detail differences between two models please refer the Declaration of Changes document.

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	2022-05-24
2	LISN	ENV216	101200	Rohde & Schwarz	1 year	2021-05-19
3	Test Receiver	ESCI 3	100344	Rohde & Schwarz	1 year	2022-02-23
4	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	2021-09-04
2	BiLog Antenna	VULB9163	9163-482	Schwarzbeck	1 year	2021-11-04
3	Dual-Ridge Waveguide Horn Antenna	3117	00139065	ETS-Lindgren	1 year	2021-10-11
4	Dual-Ridge Waveguide Horn Antenna	3116	2663	ETS-Lindgren	1 year	2021-08-05
5	Test Receiver	FSV40	101047	R&S	1 year	2021-5-18

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	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.16
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.44
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.28

8.6. AC Power-line Conducted Emission

Measurement Uncertainty : 3.08dB,k=2

ANNEX A: EUT parameters

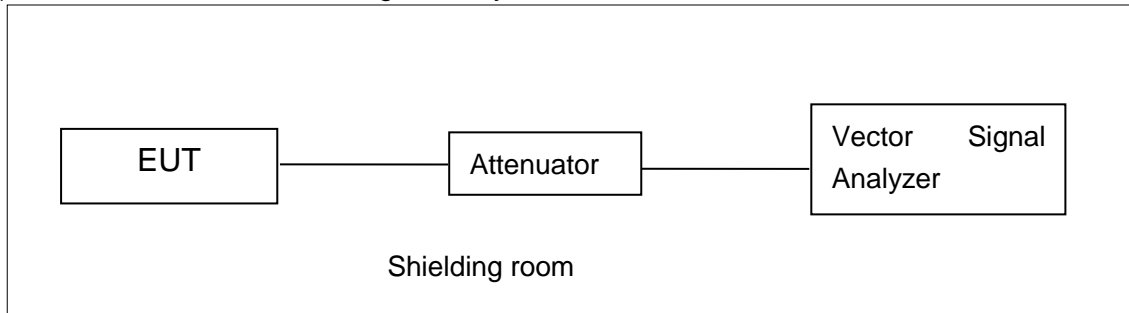
Disclaimer: the antenna gain provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX B: MEASUREMENT RESULTS

B.1. Measurement Method

B.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

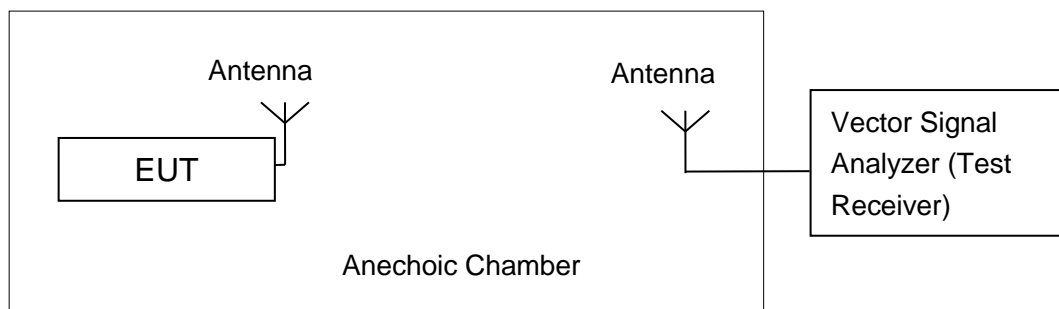


B.1.2. Radiated Emission Measurements

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.

B.2. Maximum Peak Output Power

Measurement Limit and Method:

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

B.2.1 Antenna Gain

Antenna gain is -2.466dBi and the value is supplied by the applicant or manufacturer.

B.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	16.96	17.55	17.27
	9	/	16.89	/
	12	/	16.41	/
	18	/	16.06	/
	24	/	15.95	/
	36	/	15.25	/
	48	/	15.24	/
	54	/	14.76	/

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	16.85	17.51	17.23
	MCS1	/	17.16	/
	MCS2	/	16.91	/
	MCS3	/	16.55	/
	MCS4	/	16.34	/
	MCS5	/	15.76	/
	MCS6	/	15.64	/
	MCS7	/	15.01	/

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	16.79	17.38	16.97
	MCS1	/	17.02	/
	MCS2	/	15.81	/
	MCS3	/	15.67	/
	MCS4	/	14.60	/
	MCS5	/	14.48	/
	MCS6	/	13.53	/
	MCS7	/	13.52	/
	MCS8	/	13.37	/

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	16.96	17.39
	MCS1	/	16.48
	MCS2	/	16.45
	MCS3	/	15.52
	MCS4	/	15.45
	MCS5	/	14.46
	MCS6	/	14.34
	MCS7	/	13.13

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	16.95	17.49
	MCS1	/	17.48
	MCS2	/	16.43
	MCS3	/	16.42
	MCS4	/	15.40
	MCS5	/	15.38
	MCS6	/	14.22
	MCS7	/	14.17

	MCS8	/	14.03
	MCS9	/	13.06

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

802.11ac-HT80 mode

Mode	Data Rate (Index)	Test Result (dBm)
		5775MHz (Ch155)
802.11ac (80MHz)	MCS0	16.21
	MCS1	16.09
	MCS2	16.07
	MCS3	15.61
	MCS4	15.37
	MCS5	14.33
	MCS6	14.21
	MCS7	13.15
	MCS8	12.15
	MCS9	11.42

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

The duty cycle of all mode are 100%.

The spot check result of average output power is 17.18dBm (802.11a 6Mbps ch157 prototype result: 17.55dBm).

Conclusion: PASS

B.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
-------------------------	--------

Measurement Results:

Mode	Channel	Power Spectral Density (dBm/500kHz)	Conclusion
802.11a	149	2.80	P
	157	2.78	P
	165	2.71	P
802.11n HT20	149	2.55	P
	157	2.46	P
	165	2.07	P
802.11ac HT40	151	-0.53	P
	159	-0.39	P
802.11ac HT80	155	-4.31	P

Conclusion: PASS

B.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
-------------------------	---------

Measurement Result:

Mode	Channel	Occupied 6dB Bandwidth (MHz)		conclusion
		Fig.	Value	
802.11a	149	Fig.1	16.35	P
	157	Fig.2	16.35	P
	165	Fig.3	16.35	P
802.11n HT20	149	Fig.4	17.55	P
	157	Fig.5	17.60	P
	165	Fig.6	17.60	P
802.11ac HT40	151	Fig.7	35.84	P
	159	Fig.8	36.24	P
802.11ac HT80	155	Fig.9	76.32	P

Conclusion: PASS

Test graphs as below:

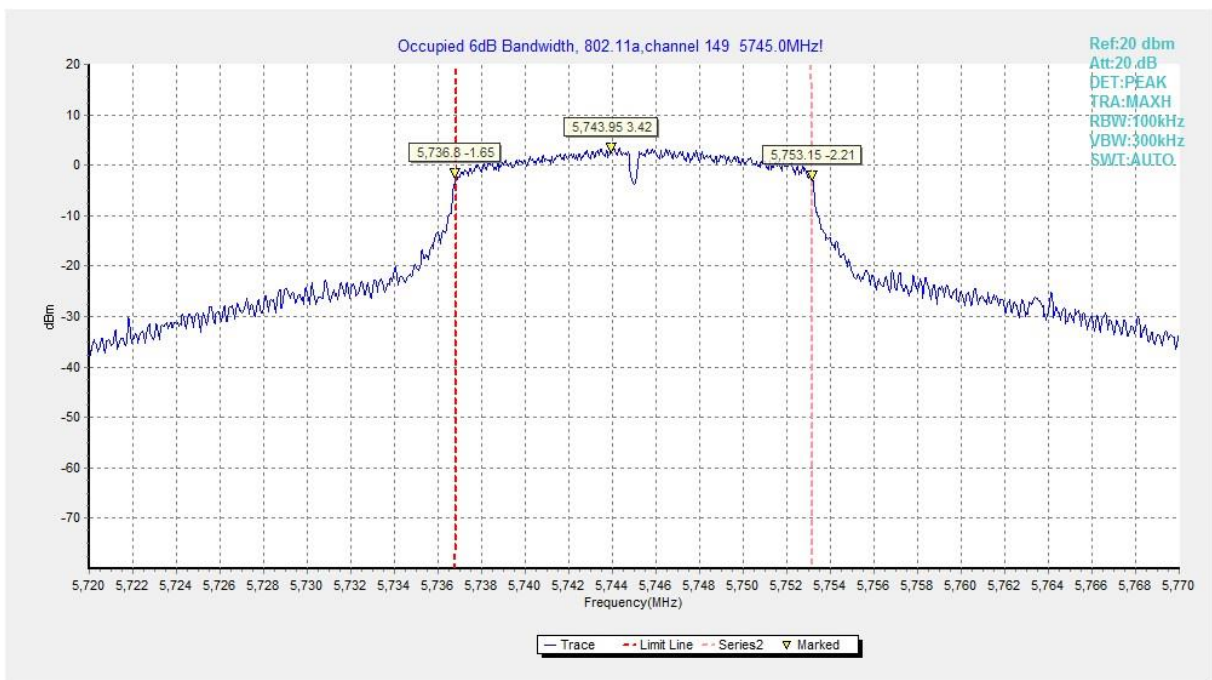


Fig. 1 Occupied 6dB Bandwidth (802.11a, Ch 149)

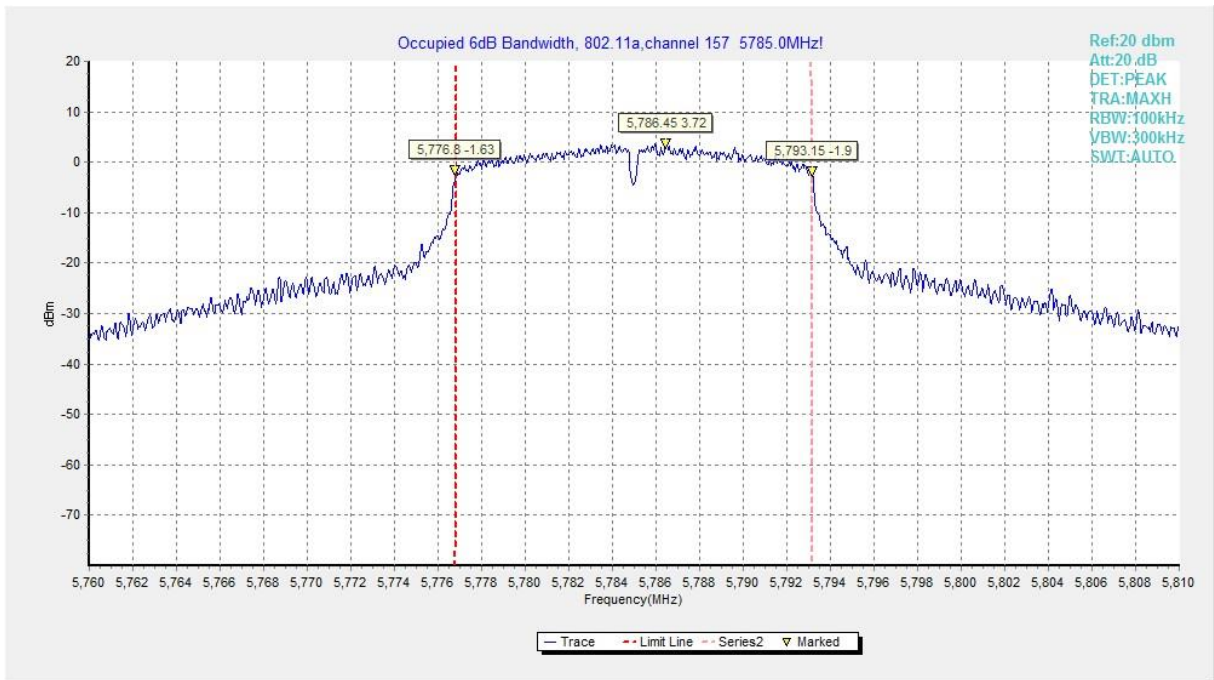


Fig. 2 Occupied 6dB Bandwidth (802.11a, Ch 157)

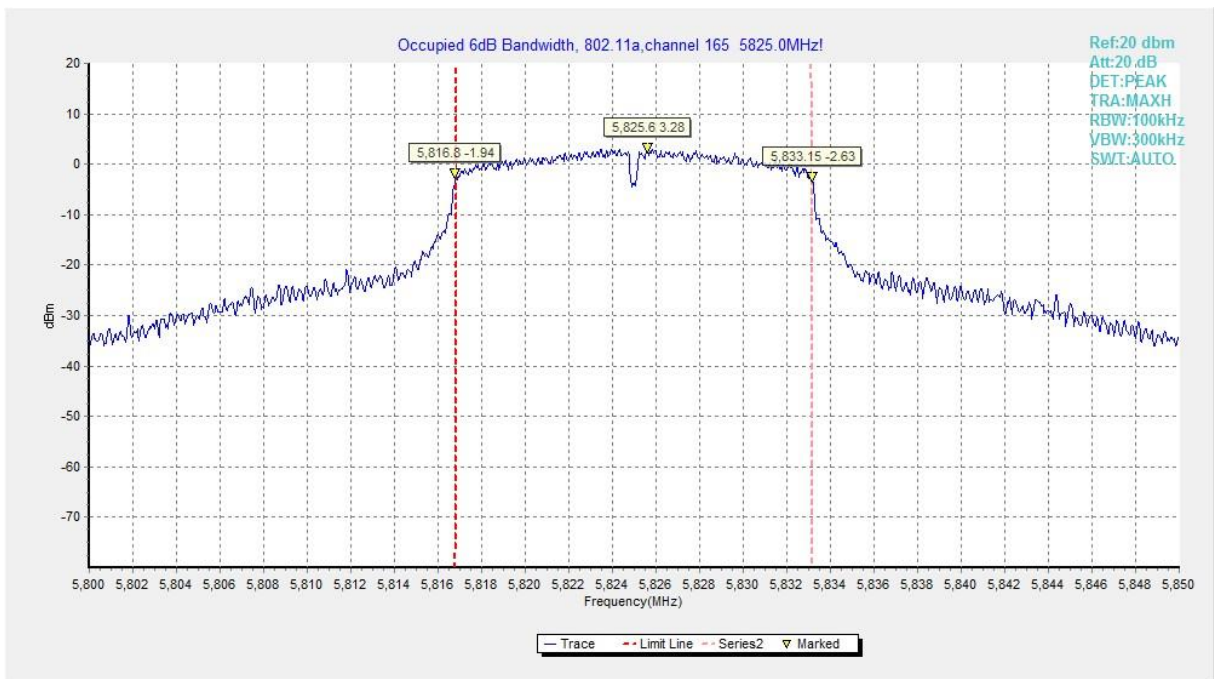


Fig. 3 Occupied 6dB Bandwidth (802.11a, Ch 165)

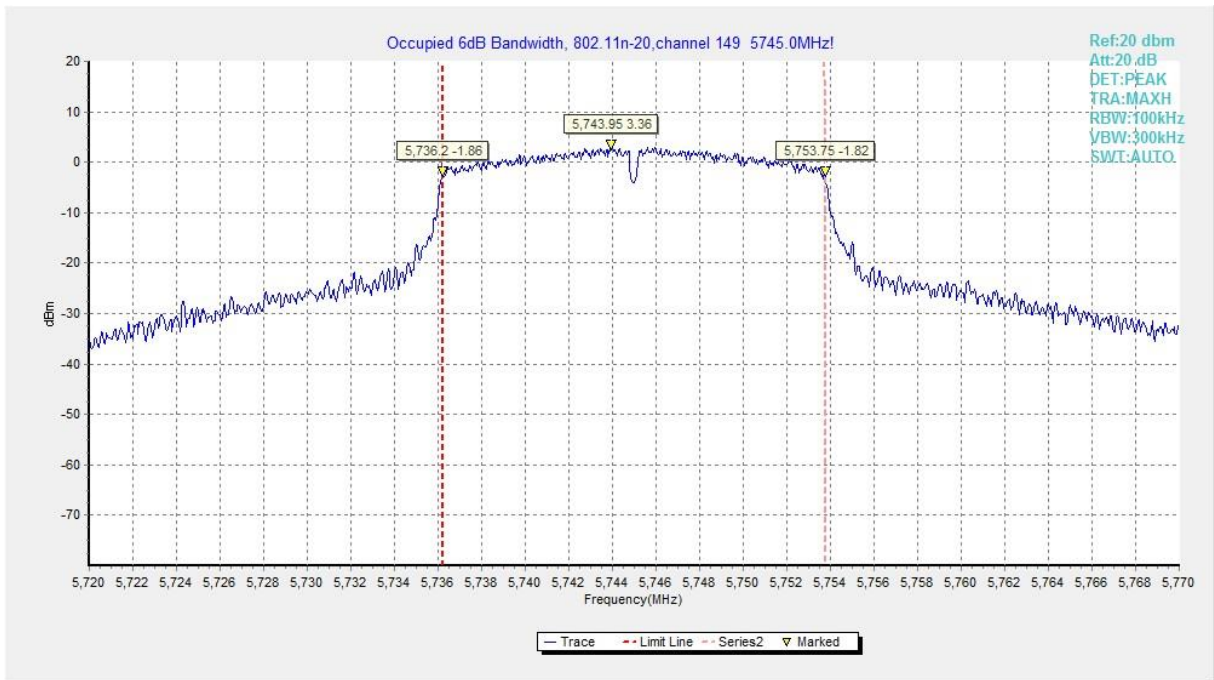


Fig. 4 Occupied 6dB Bandwidth (802.11n-HT20, Ch 149)

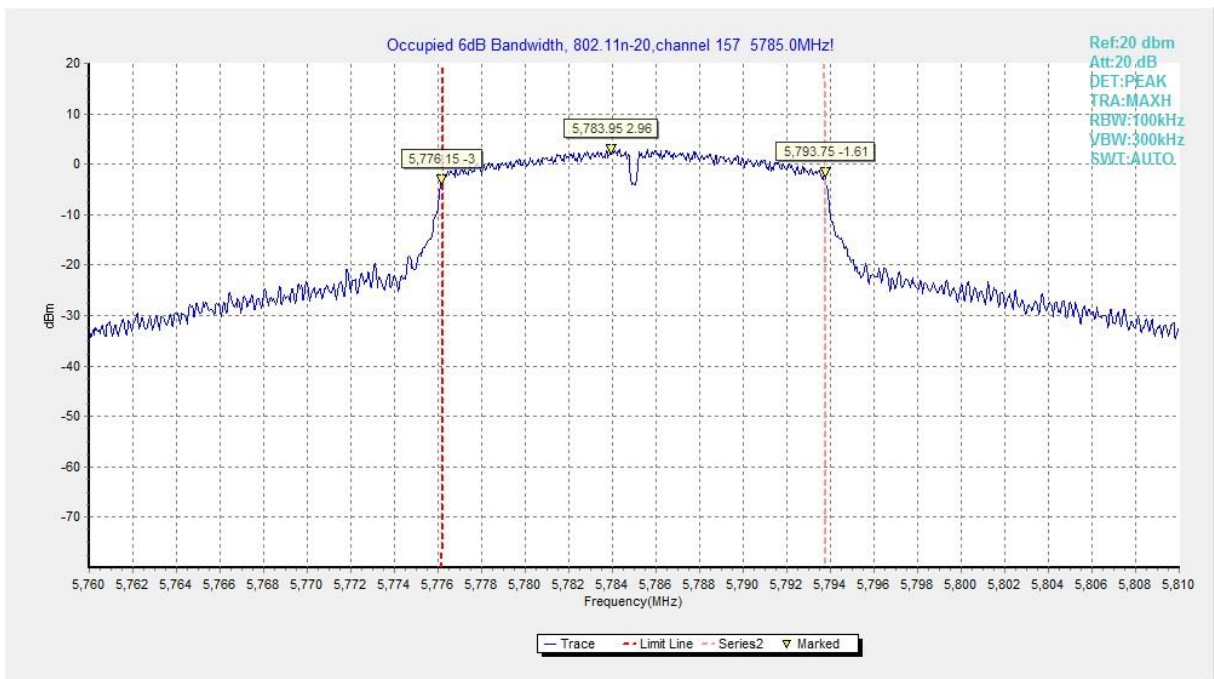


Fig. 5 Occupied 6dB Bandwidth (802.11n-HT20, Ch 157)

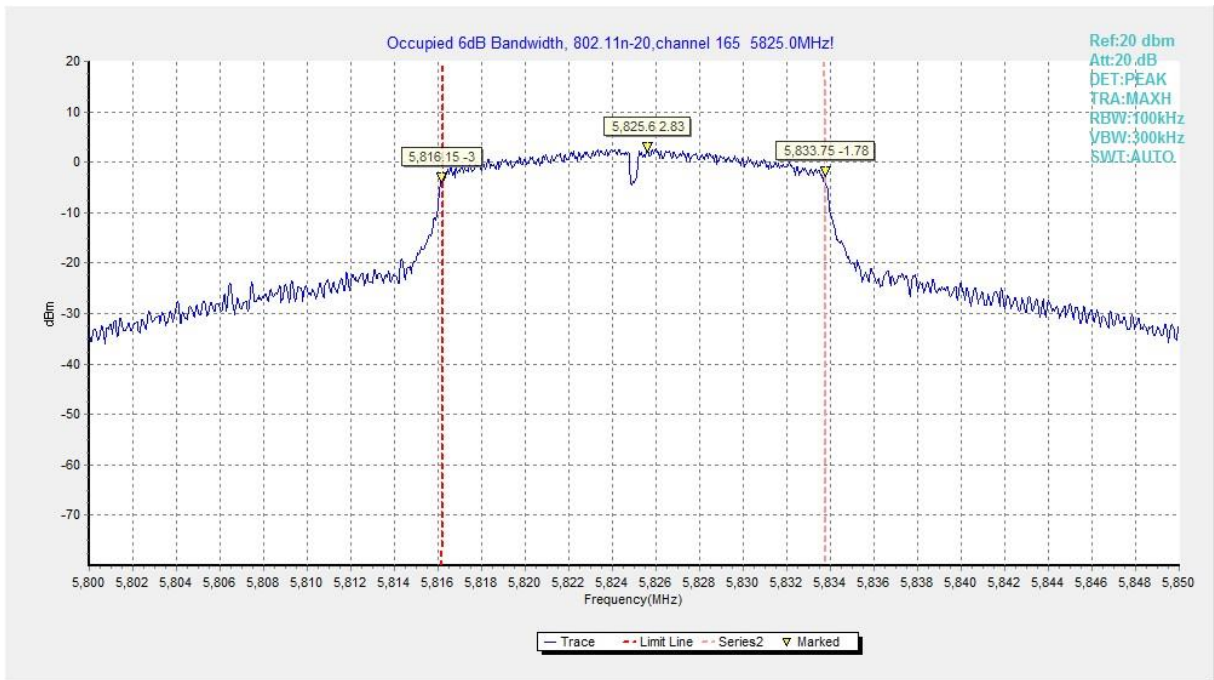


Fig. 6 Occupied 6dB Bandwidth (802.11n-HT20, Ch 165)

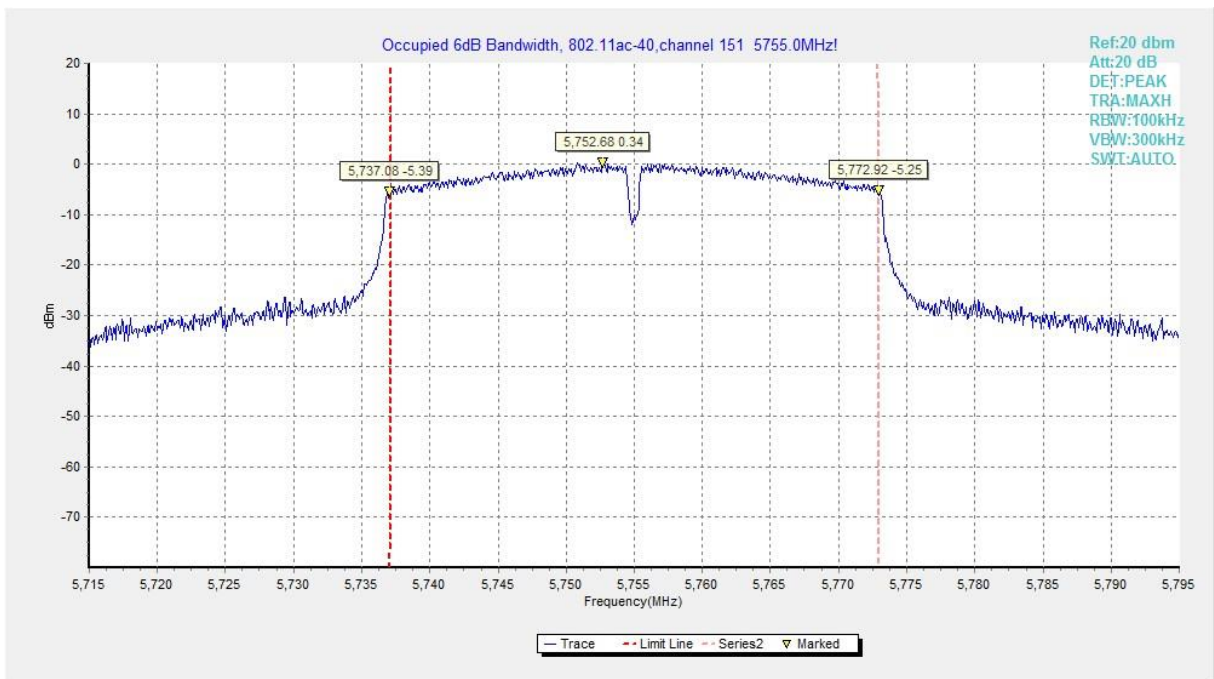


Fig. 7 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 151)

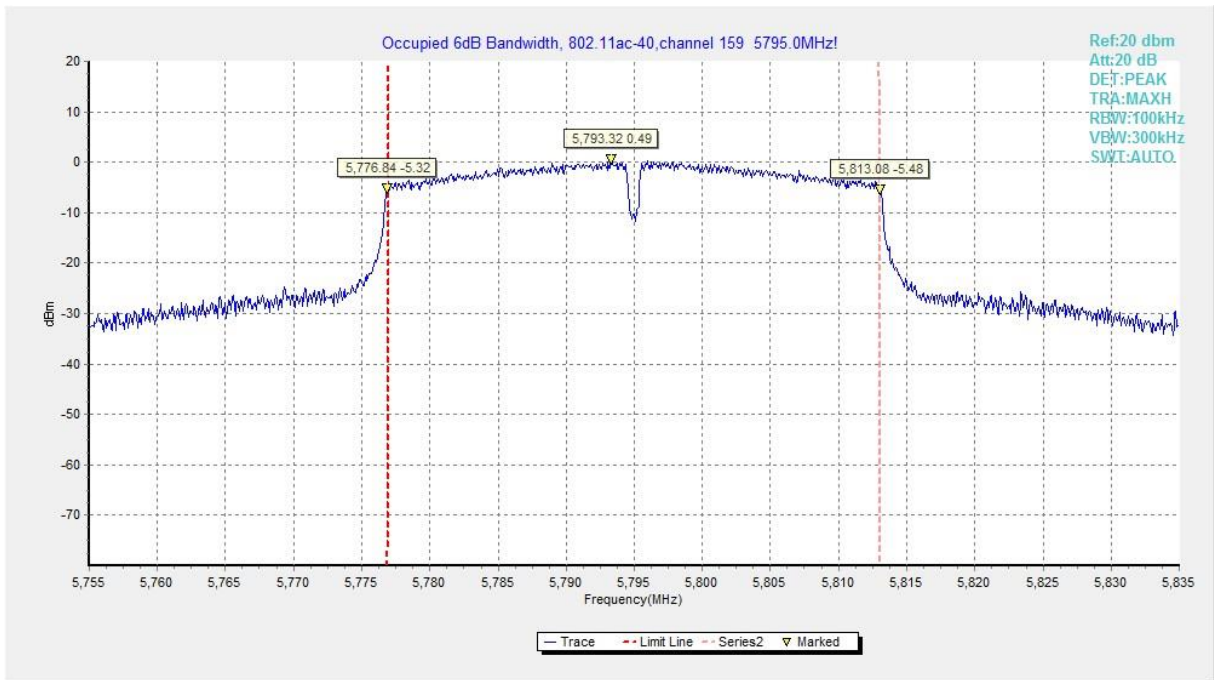


Fig. 8 Occupied 6dB Bandwidth (802.11ac-HT40, Ch 159)

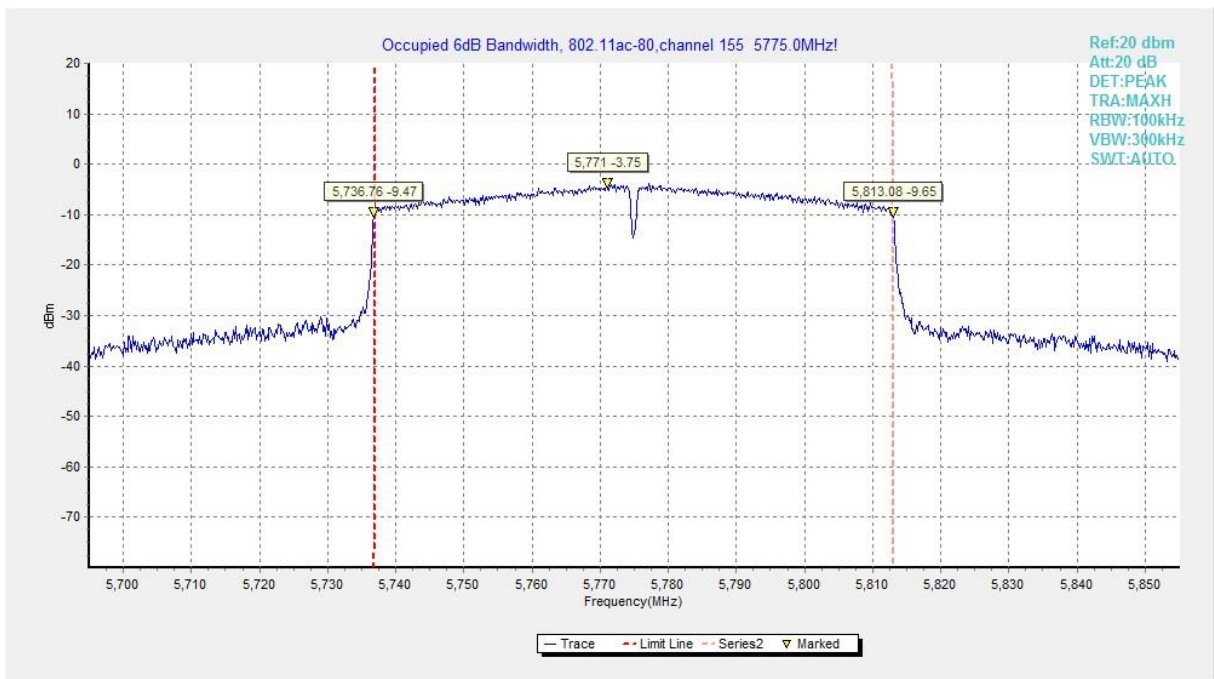


Fig. 9 Occupied 6dB Bandwidth (802.11ac-HT80, Ch 155)

B.5. Transmitter Spurious Emission

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC 47 CFR Part 15.407	5725MHz~5850MHz	< -27

The measurement is made according to ANSI C63.10 .

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

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Measurement Uncertainty:

Frequency Range	Uncertainty(dB)
30MHz ≤ f ≤ 2GHz	0.63
2GHz ≤ f ≤ 3.6GHz	0.82
3.6GHz ≤ f ≤ 8GHz	1.55
8GHz ≤ f ≤ 20GHz	1.86
20GHz ≤ f ≤ 22GHz	1.90
22GHz ≤ f ≤ 26GHz	2.20

B.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 ANSI C63.10-2013 and KDB 789033

Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Measurement Results:

802.11a mode

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

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	30 MHz ~1 GHz	---	P	
		1 GHz ~ 3 GHz	---	P	
		3 GHz ~ 7 GHz	---	P	
		7 GHz ~ 18 GHz	---	P	
		18 GHz ~ 26.5 GHz	---	P	
	165	26.5 GHz~ 40 GHz	---	P	
		1 GHz ~ 3 GHz	---	P	
		3 GHz ~ 7 GHz	---	P	
			7 GHz ~ 18 GHz	---	P

802.11n-HT40 mode

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

802.11ac-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	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	---

802.11ac-HT40 mode

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

802.11ac-HT80 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac (HT80)	155	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

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

Average Results:
802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5359.2	38.75	-32.29	34.35	36.7	48.3	9.55	V
5387.7	38.7	-32.29	34.36	36.63	48.3	9.6	V
11490.4	31.5	-29.15	38.2	22.45	48.3	16.8	H
17235.2	36.9	-22.85	41.92	17.83	48.3	11.41	H
17711.2	37.77	-22.2	41.56	18.42	48.3	10.53	V
17910.4	38.03	-22.64	41.52	19.16	48.3	10.27	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)
5362.5	38.62	-32.29	34.35	36.56	48.3	9.68	V
5392.8	38.68	-32.29	34.36	36.6	48.3	9.63	V
11570.4	31.38	-29.25	38.27	22.35	48.3	16.92	H
17355.2	36.43	-22.93	41.77	17.59	48.3	11.87	H
17725.6	37.66	-22.24	41.55	18.34	48.3	10.64	V
17827.2	37.73	-22.47	41.53	18.67	48.3	10.57	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)
5388	38.71	-32.29	34.36	36.64	48.3	9.59	V
5440.8	38.69	-32.63	34.38	36.95	48.3	9.61	V
11650.4	31.45	-29.41	38.35	22.51	48.3	16.85	H
17475.2	36.63	-23.07	41.63	18.06	48.3	11.67	V
17744	37.82	-22.28	41.55	18.54	48.3	10.49	V
17927.2	37.91	-22.67	41.51	19.07	48.3	10.39	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)
5389.5	38.88	-32.29	34.36	36.81	48.3	9.42	V
5396.4	38.78	-32.29	34.36	36.7	48.3	9.52	V
11490.4	31.46	-29.15	38.2	22.41	48.3	16.84	V
17235.2	36.85	-22.85	41.92	17.78	48.3	11.46	H
17736.8	37.86	-22.26	41.55	18.57	48.3	10.45	H
17904.8	37.99	-22.63	41.52	19.1	48.3	10.31	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)
5392.2	38.68	-32.29	34.36	36.61	48.3	9.62	V
5404.2	38.66	-32.35	34.36	36.65	48.3	9.64	V
11570.4	31.27	-29.25	38.27	22.24	48.3	17.03	H
17355.2	36.35	-22.93	41.77	17.51	48.3	11.95	V
17724	37.67	-22.23	41.55	18.35	48.3	10.63	H
17828.8	37.69	-22.47	41.53	18.63	48.3	10.61	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)
5385.3	38.87	-32.29	34.36	36.8	48.3	9.43	V
5398.8	38.76	-32.31	34.36	36.7	48.3	9.54	V
11650.4	31.41	-29.41	38.35	22.46	48.3	16.9	H
17475.2	36.6	-23.07	41.63	18.04	48.3	11.7	H
17744.8	37.75	-22.28	41.55	18.48	48.3	10.55	H
17911.2	37.8	-22.64	41.52	18.93	48.3	10.5	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)
5391	38.73	-32.29	34.36	36.66	48.3	9.57	V
5401.8	38.63	-32.33	34.36	36.59	48.3	9.67	V
11510.4	31.35	-29.15	38.21	22.29	48.3	16.95	V
17264.8	36.99	-22.8	41.88	17.91	48.3	11.31	V
17737.6	37.75	-22.27	41.55	18.47	48.3	10.55	H
17916	37.95	-22.65	41.52	19.09	48.3	10.35	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)
5361	38.82	-32.29	34.35	36.76	48.3	9.48	V
5391	38.87	-32.29	34.36	36.8	48.3	9.43	V
11590.4	31.53	-29.28	38.29	22.52	48.3	16.77	H
17384.8	36.46	-23	41.74	17.73	48.3	11.84	V
17728	37.73	-22.24	41.55	18.42	48.3	10.57	H
17903.2	37.91	-22.63	41.52	19.01	48.3	10.39	H

802.11ac-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5367	38.72	-32.29	34.35	36.66	48.3	9.58	V
5383.8	38.7	-32.29	34.36	36.63	48.3	9.6	V
11490.4	31.52	-29.15	38.2	22.47	48.3	16.79	V
17235.2	36.89	-22.85	41.92	17.82	48.3	11.41	H
17725.6	37.6	-22.24	41.55	18.28	48.3	10.7	V
17900	37.79	-22.62	41.52	18.89	48.3	10.51	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)
5394.6	38.7	-32.29	34.36	36.63	48.3	9.6	V
5404.2	38.69	-32.35	34.36	36.68	48.3	9.61	V
11570.4	31.37	-29.25	38.27	22.34	48.3	16.93	H
17355.2	36.44	-22.93	41.77	17.6	48.3	11.86	V
17737.6	37.8	-22.27	41.55	18.52	48.3	10.5	V
17912.8	37.97	-22.64	41.52	19.09	48.3	10.33	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)
5394.9	38.78	-32.29	34.36	36.71	48.3	9.52	V
5400.6	38.7	-32.32	34.36	36.66	48.3	9.6	V
11650.4	31.45	-29.41	38.35	22.5	48.3	16.85	V
17475.2	36.56	-23.07	41.63	18	48.3	11.74	V
17747.2	37.68	-22.29	41.55	18.41	48.3	10.62	V
17823.2	37.68	-22.46	41.54	18.61	48.3	10.62	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)
5366.1	38.66	-32.29	34.35	36.6	48.3	9.65	V
5395.8	38.66	-32.29	34.36	36.58	48.3	9.64	V
11510.4	31.38	-29.15	38.21	22.31	48.3	16.93	V
17324.8	36.57	-22.86	41.81	17.62	48.3	11.73	H
17718.4	37.77	-22.22	41.56	18.44	48.3	10.53	H
17916	37.99	-22.65	41.52	19.12	48.3	10.31	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)
5416.5	38.58	-32.44	34.37	36.65	48.3	9.72	V
5426.4	38.69	-32.52	34.37	36.84	48.3	9.61	V
11590.4	31.58	-29.28	38.29	22.57	48.3	16.72	H
17384.8	36.45	-23	41.74	17.71	48.3	11.85	H
17737.6	37.79	-22.27	41.55	18.51	48.3	10.51	H
17832	37.77	-22.48	41.53	18.72	48.3	10.53	H

802.11ac-HT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5389.800	38.8	-32.3	34.5	36.56	48.3	9.5	V
5431.200	38.6	-32.6	34.5	36.57	48.3	9.7	V
11550.400	31.4	-29.2	38.5	22.10	48.3	16.9	V
17324.800	36.5	-22.9	41.4	18.03	48.3	11.8	H
17823.200	37.7	-22.5	41.3	18.86	48.3	10.6	V
17930.400	38.0	-22.7	41.3	19.40	48.3	10.3	H

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)
5650.2645	53.85	-32.84	34.68	52.01	68.4	14.55	V
5650.7015	53.74	-32.84	34.68	51.9	68.72	14.98	H
11490.2	46.8	-29.15	38.2	37.75	74	27.2	H
17234.95	54.24	-22.85	41.92	35.18	68.3	14.06	V
17348.8	55.63	-22.92	41.78	36.77	68.3	12.67	V
17473.65	56.7	-23.08	41.63	38.15	68.3	11.6	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)
5697	53.65	-32.9	34.76	51.79	68.3	14.65	V
5888.8	54.2	-32.37	35.11	51.47	68.3	14.1	H
11569.95	46.08	-29.24	38.27	37.05	74	27.92	V
17354.85	53.36	-22.93	41.77	34.52	68.3	14.94	H
17516	56.96	-22.8	41.6	38.15	68.3	11.35	V
17898.25	56.98	-22.61	41.52	38.07	74	17.02	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)
5923.321	54.81	-32.22	35.17	51.87	69.44	14.63	H
5924.6	55.12	-32.21	35.17	52.16	68.5	13.38	V
11650.25	45.83	-29.41	38.35	36.89	74	28.17	H
17474.75	53.76	-23.07	41.63	35.2	68.3	14.54	V
17652.95	56.98	-22.07	41.57	37.47	68.3	11.33	H
17870.2	58.18	-22.56	41.53	39.21	74	15.83	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)
5650.253	53.58	-32.84	34.68	51.74	68.39	14.8	H
5650.943	53.86	-32.84	34.68	52.02	68.9	15.04	H
11490.2	45.87	-29.15	38.2	36.82	74	28.13	H
17234.95	55.09	-22.85	41.92	36.02	68.3	13.21	H
17539.1	56.99	-22.64	41.59	38.04	68.3	11.31	V
17926.3	57.51	-22.67	41.51	38.67	74	16.49	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)
5692.8	54.73	-32.89	34.76	52.87	68.3	13.57	V
5876.2	54.43	-32.39	35.08	51.74	68.3	13.87	V
11569.95	45.72	-29.24	38.27	36.69	74	28.28	V
17354.85	54.79	-22.93	41.77	35.95	68.3	13.51	H
17628.2	57.56	-22.05	41.57	38.03	68.3	10.75	H
17869.1	56.77	-22.56	41.53	37.8	74	17.23	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)
5923.068	54.72	-32.22	35.17	51.77	69.63	14.91	H
5924.448	54.41	-32.21	35.17	51.45	68.61	14.2	V
11650.25	46.74	-29.41	38.35	37.8	74	27.26	V
17474.75	54.51	-23.07	41.63	35.95	68.3	13.79	H
17663.95	56.51	-22.09	41.57	37.04	68.3	11.79	V
17959.85	57.08	-22.74	41.51	38.32	74	16.92	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)
5650.943	54.31	-32.84	34.68	52.47	68.9	14.59	V
5651.1415	54.14	-32.84	34.68	52.3	69.04	14.9	H
11510	45.21	-29.14	38.21	36.14	74	28.79	V
17265.2	53.72	-22.8	41.88	34.64	68.3	14.58	H
17513.8	56.68	-22.81	41.6	37.89	68.3	11.62	H
17935.65	57.71	-22.69	41.51	38.89	74	16.29	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)
5923.5625	54.46	-32.22	35.17	51.51	69.26	14.8	V
5924.3905	56.22	-32.21	35.17	53.26	68.65	12.43	H
11589.75	46.7	-29.28	38.29	37.69	74	27.3	V
17385.1	54.48	-23.01	41.74	35.75	68.3	13.82	V
17558.35	56.71	-22.52	41.59	37.64	68.3	11.59	V
17926.85	56.94	-22.67	41.51	38.1	74	17.06	H

802.11ac-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.391	53.48	-32.84	34.68	51.64	68.49	15.01	H
5651.242	53.35	-32.84	34.68	51.51	69.12	15.77	H
11490.2	45.46	-29.15	38.2	36.41	74	28.54	V
17234.95	54.13	-22.85	41.92	35.06	68.3	14.17	V
17504.45	56.73	-22.87	41.6	38.01	68.3	11.57	V
17926.85	57.17	-22.67	41.51	38.33	74	16.83	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)
5693.6	54.3	-32.89	34.76	52.43	68.3	14	H
5876.2	54.84	-32.39	35.08	52.15	68.3	13.46	H
11569.95	44.64	-29.24	38.27	35.61	74	29.36	H
17354.85	54.57	-22.93	41.77	35.73	68.3	13.73	H
17629.3	57.34	-22.05	41.57	37.81	68.3	10.96	H
17815.2	57.05	-22.44	41.54	37.96	74	16.95	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)
5923.781	55.31	-32.22	35.17	52.36	69.1	13.79	H
5924.77	54.62	-32.21	35.17	51.67	68.37	13.75	H
11650.25	45.85	-29.41	38.35	36.9	74	28.15	H
17474.75	53.7	-23.07	41.63	35.14	68.3	14.6	H
17704.65	56.78	-22.19	41.56	37.41	74	17.22	H
17907.05	58.17	-22.63	41.52	39.28	74	15.83	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)
5650.943	54.31	-32.84	34.68	52.47	68.9	14.59	V
5651.7825	54.02	-32.84	34.68	52.18	69.52	15.5	H
11510	45.28	-29.14	38.21	36.22	74	28.72	V
16752.6	56.92	-23.05	41.86	38.11	68.3	11.38	V
17265.2	53.69	-22.8	41.88	34.61	68.3	14.61	H
17873.5	56.66	-22.56	41.53	37.7	74	17.34	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5922.7345	54.92	-32.22	35.17	51.97	69.88	14.96	V
5924.4135	54.38	-32.21	35.17	51.43	68.63	14.25	H
11589.75	45.58	-29.28	38.29	36.57	74	28.42	H
17385.1	55.33	-23.01	41.74	36.59	68.3	12.97	H
17682.65	57.61	-22.14	41.56	38.18	68.3	10.69	V
17894.95	57.36	-22.61	41.52	38.45	74	16.64	H

802.11ac-HT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5650.633	56.6	-32.8	34.8	54.66	68.3	11.7	V
5651.426	56.5	-32.8	34.8	54.51	68.3	11.8	V
11550.150	47.4	-29.2	38.5	38.10	74.0	26.6	H
17325.150	53.6	-22.9	41.4	35.07	68.3	14.7	H
17480.800	57.0	-23.0	41.2	38.77	68.3	11.3	V
17921.900	57.3	-22.7	41.3	38.63	74.0	16.7	H

B.6. Band Edges Compliance

B.6.1 Band Edges - Radiated

Measurement Limit:

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

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.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:

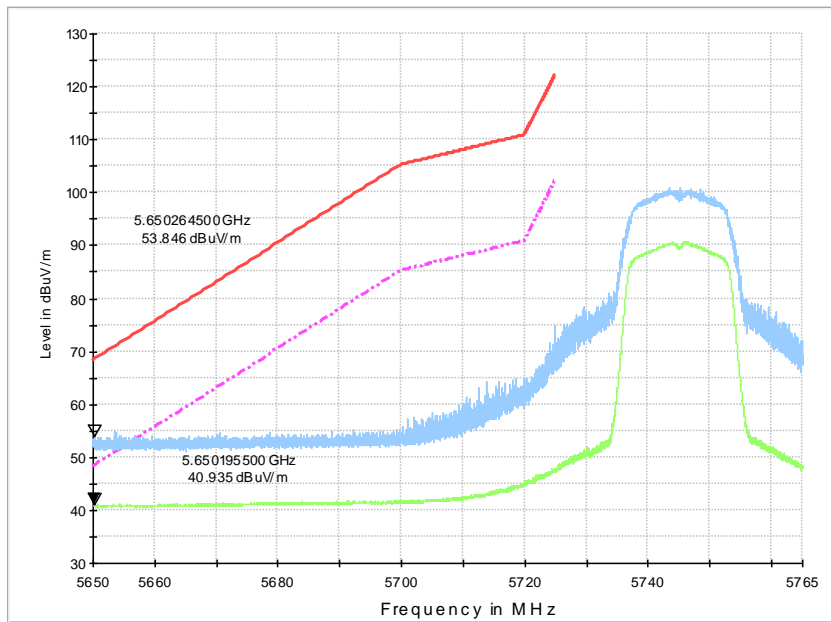


Fig. 10 Band Edges (802.11a Ch149,5745MHz)

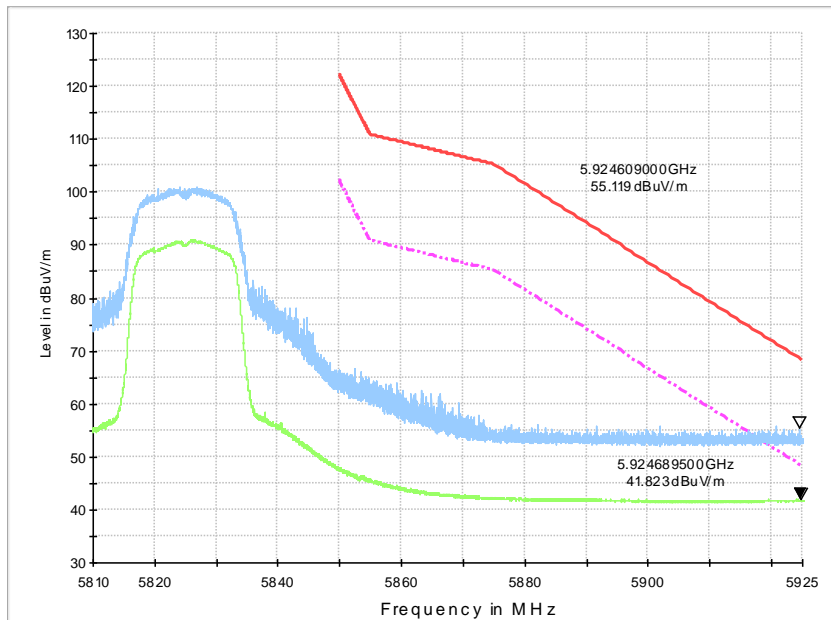


Fig. 11 Band Edges (802.11a Ch165, 5825MHz)

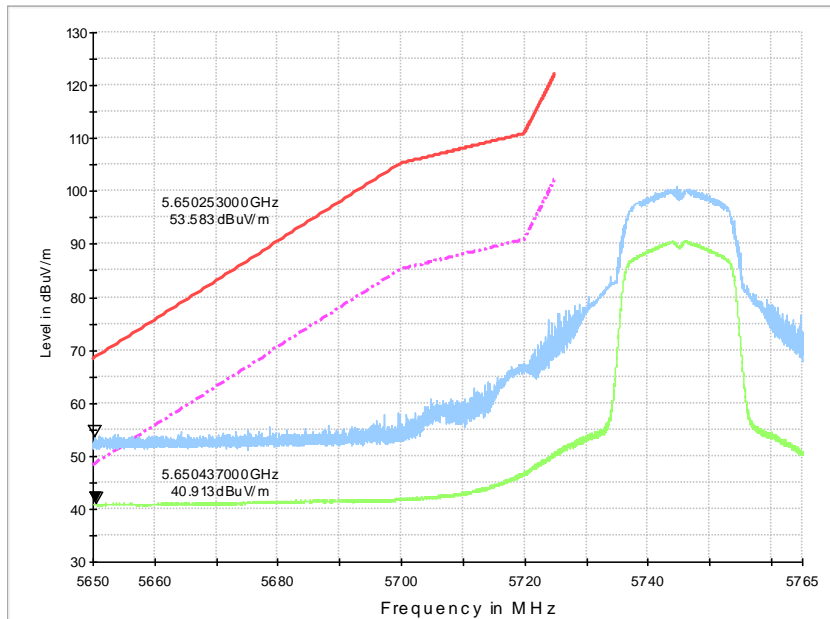


Fig. 12 Band Edges (802.11n-HT20 Ch149, 5745MHz)

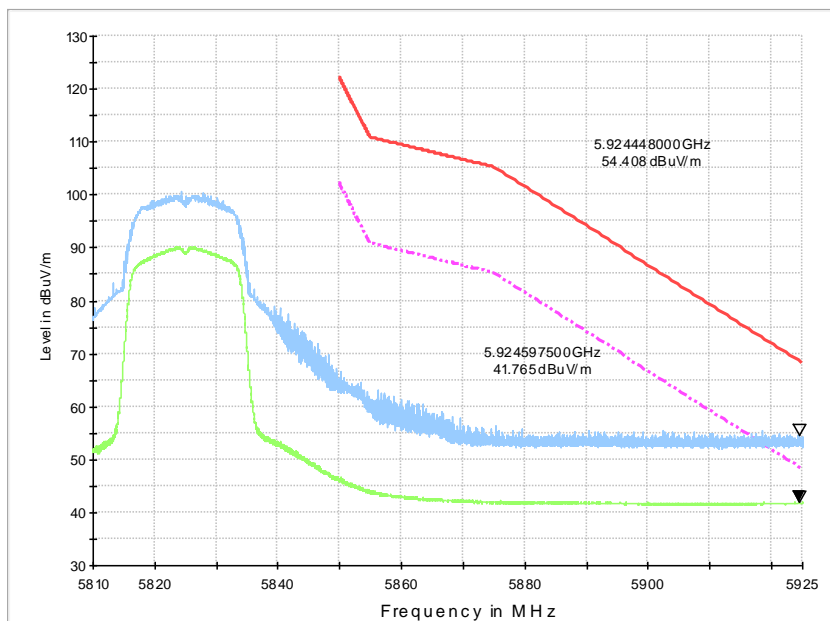


Fig. 13 Band Edges (802.11n-HT20 Ch165, 5825MHz)

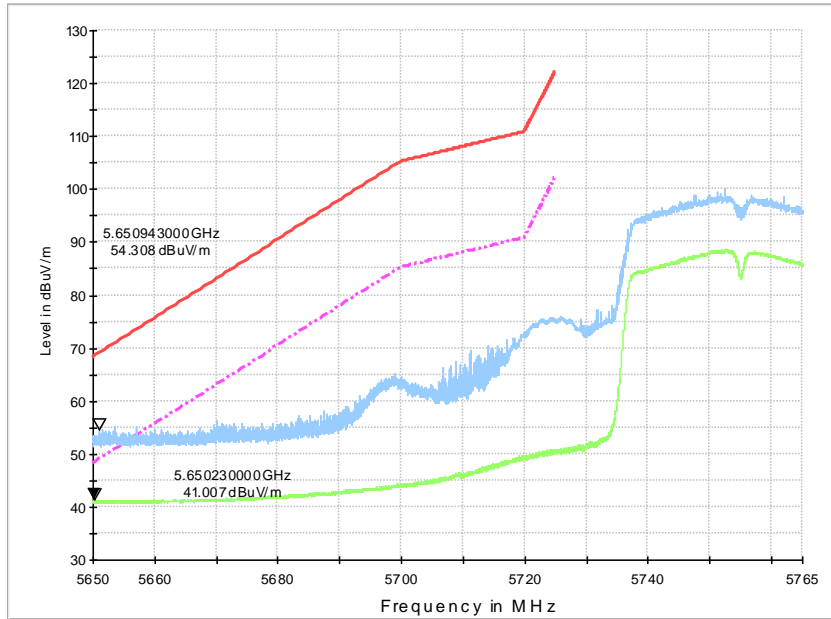


Fig. 14 Band Edges (802.11n-HT40 Ch151, 5755MHz)

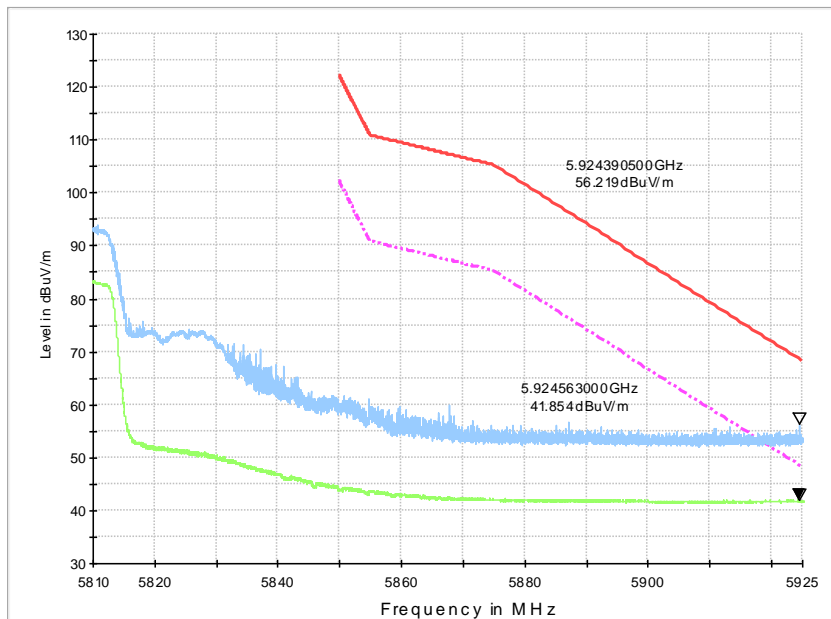


Fig. 15 Band Edges (802.11n-HT40 Ch159, 5795MHz)

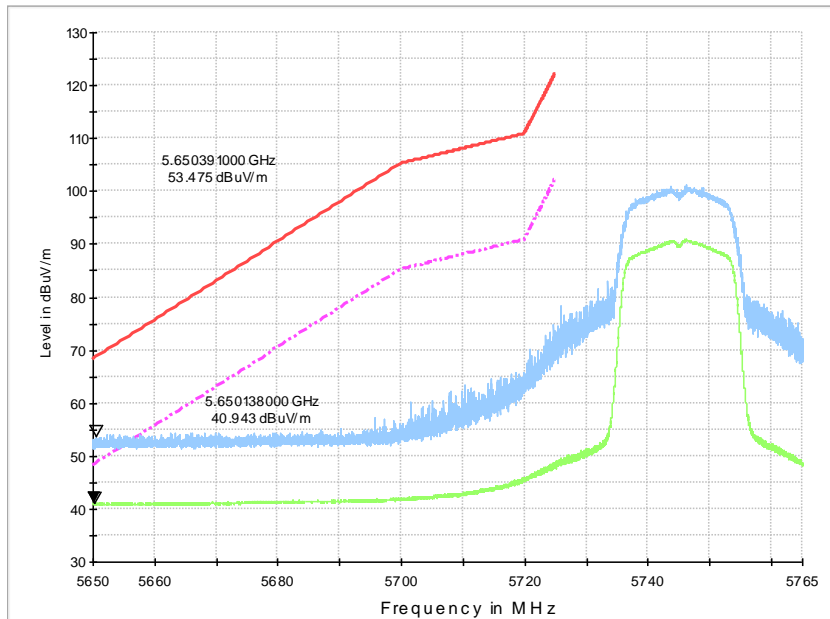


Fig. 16 Band Edges (802.11ac-HT20 Ch149, 5745MHz)

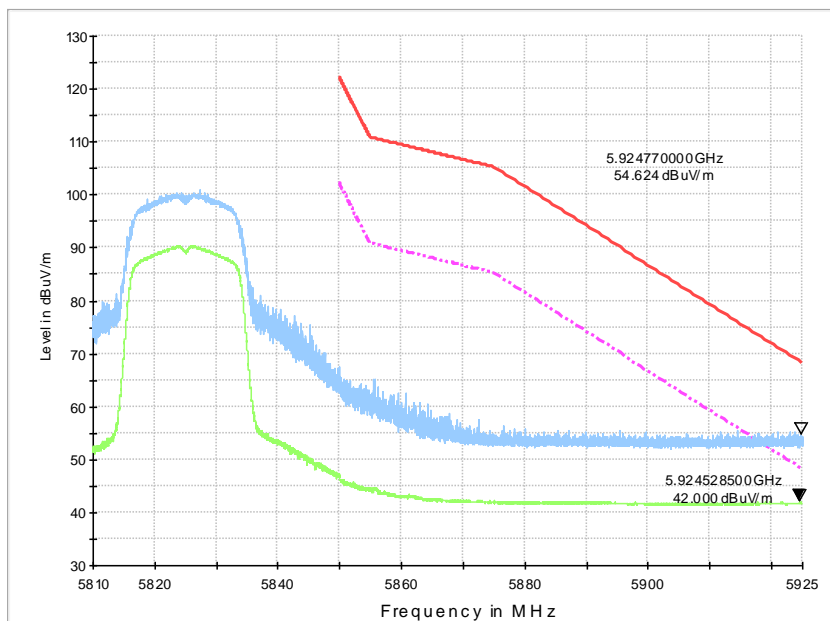


Fig. 17 Band Edges (802.11ac-HT20 Ch165, 5825MHz)

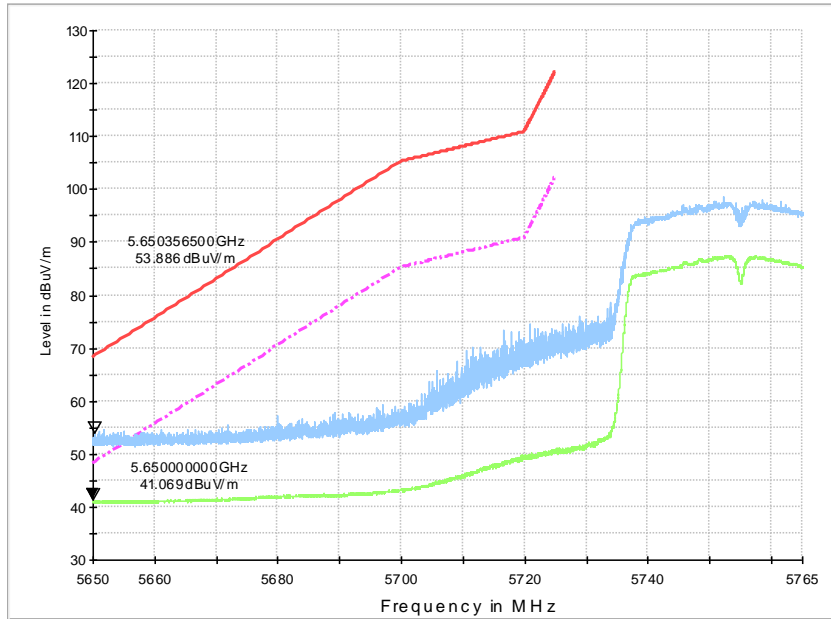


Fig. 18 Band Edges (802.11ac-HT40 Ch151, 5755MHz)

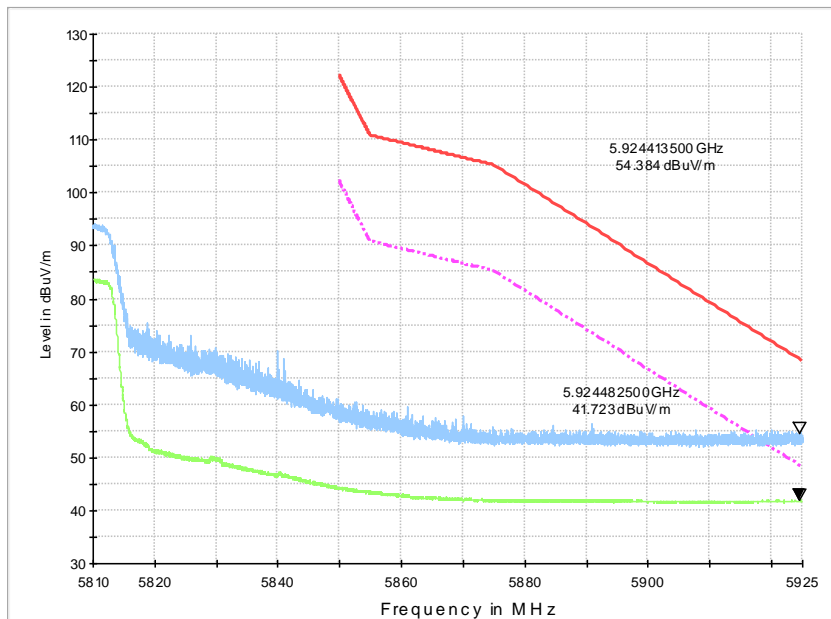


Fig. 19 Band Edges (802.11ac-HT40 Ch159, 5795MHz)

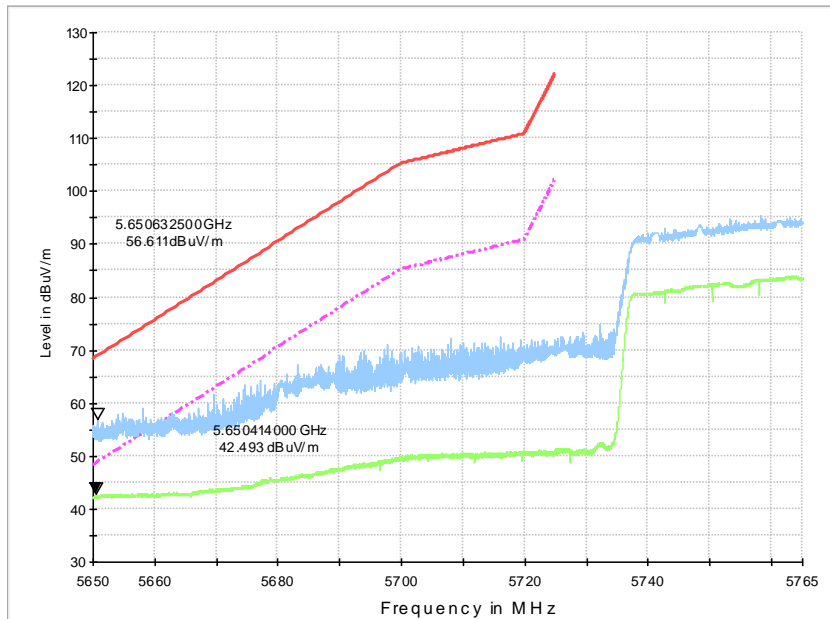


Fig. 20 Band Edges (802.11ac-HT80 Ch155, 5775MHz)

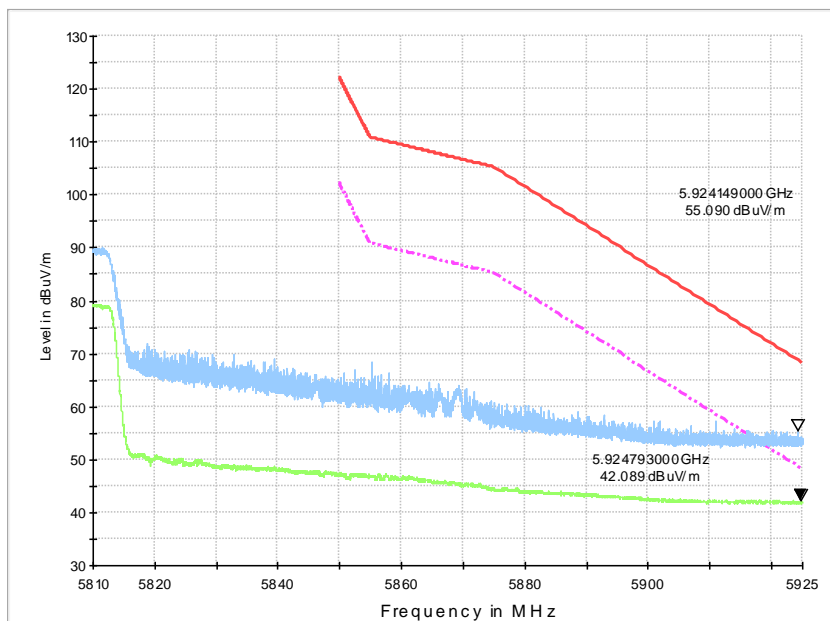


Fig. 21 Band Edges (802.11ac-HT80, 5775MHz)

B.7. AC Powerline Conducted Emission

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement uncertainty:

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

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		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:

Note: The measurement results showed here are worst cases.

Traffic:

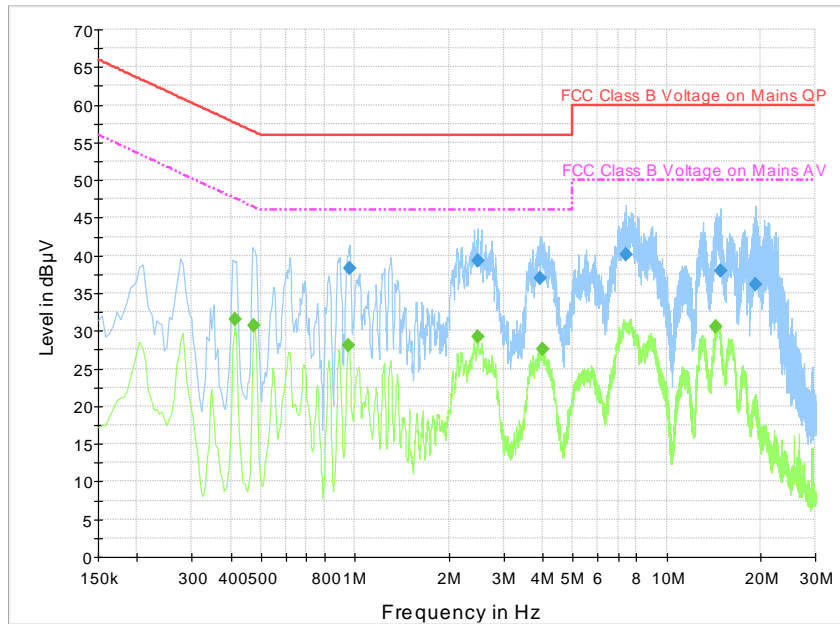


Fig. 22 AC Power line Conducted Emission-802.11a

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

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.964500	38.4	1000.0	9.000	On	L1	19.6	17.6	56.0
2.481000	39.3	1000.0	9.000	On	L1	19.6	16.7	56.0
3.930000	37.0	1000.0	9.000	On	L1	19.7	19.0	56.0
7.386000	40.1	1000.0	9.000	On	L1	19.7	19.9	60.0
14.883000	37.9	1000.0	9.000	On	L1	20.0	22.1	60.0
19.342500	36.2	1000.0	9.000	On	N	19.9	23.8	60.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.411000	31.6	1000.0	9.000	On	L1	19.6	16.1	47.6
0.474000	30.7	1000.0	9.000	On	L1	19.6	15.7	46.4
0.955500	28.1	1000.0	9.000	On	L1	19.6	17.9	46.0
2.472000	29.2	1000.0	9.000	On	L1	19.6	16.8	46.0
3.993000	27.5	1000.0	9.000	On	L1	19.7	18.5	46.0
14.437500	30.6	1000.0	9.000	On	L1	20.0	19.4	50.0

Note2: The measurement results showed here are worst cases of the combinations of different cables and chargers

Idle:

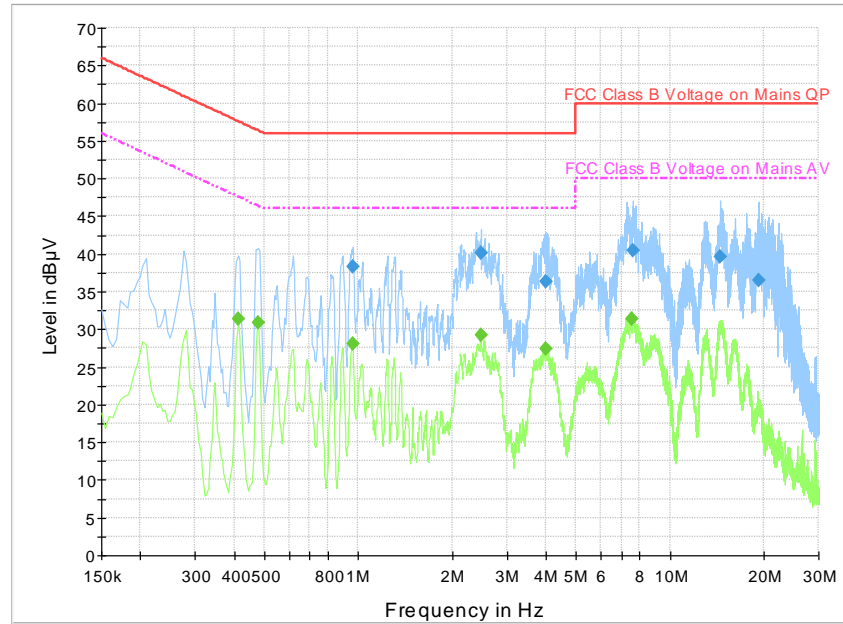


Fig. 23 AC Power line Conducted Emission-Idle

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)
0.964500	38.3	1000.0	9.000	On	L1	19.6	17.7	56.0
2.476500	40.2	1000.0	9.000	On	L1	19.6	15.8	56.0
3.997500	36.3	1000.0	9.000	On	L1	19.7	19.7	56.0
7.647000	40.5	1000.0	9.000	On	L1	19.7	19.5	60.0
14.532000	39.6	1000.0	9.000	On	L1	20.0	20.4	60.0
19.266000	36.5	1000.0	9.000	On	N	19.9	23.5	60.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.411000	31.3	1000.0	9.000	On	L1	19.6	16.3	47.6
0.478500	30.9	1000.0	9.000	On	L1	19.6	15.4	46.4
0.960000	28.1	1000.0	9.000	On	L1	19.6	17.9	46.0
2.476500	29.2	1000.0	9.000	On	L1	19.6	16.8	46.0
3.984000	27.4	1000.0	9.000	On	L1	19.7	18.6	46.0
7.530000	31.3	1000.0	9.000	On	L1	19.7	18.7	50.0

Note2: The measurement results showed here are worst cases of the combinations of different cables and chargers

ANNEX C: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p> <p>NVLAP[®] </p> <hr/> <p>Certificate of Accreditation to ISO/IEC 17025:2017</p> <hr/> <p>NVLAP LAB CODE: 600118-0</p> <p>Telecommunication Technology Labs, CAICT Beijing China</p> <p><i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i></p> <p>Electromagnetic Compatibility & Telecommunications</p> <p><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></p> <hr/> <p>2021-09-29 through 2022-09-30 <i>Effective Dates</i></p> <p style="text-align: center;"></p> <p style="text-align: right;"> For the National Voluntary Laboratory Accreditation Program</p>	
--	--

*** END OF REPORT BODY ***