



FCC PART 15E TEST REPORT No.25T04Z100997-002

for

Shenzhen Tinno Mobile Technology Corp.

Mobile Hotspot

B331MA, B331MC

FCC ID: XD6B331MA

with

Hardware Version: V1.0

Software Version: B331MAV01.02.10(for B331MA),

B331MCV01.12.10(for B331MC)

Issued Date: 2025-07-07

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.

Test Laboratory:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
25T04Z100997-002	Rev.0	1st edition	2025-07-07

Note: the latest revision of the test report supersedes all previous version.

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2. Testing Location

Conducted testing Location:CTTL(Gaolizhang Road)

Address: Cuihu Cloud Center, No.1, Gaolizhang Road, Wenquan,
Haidian District, Beijing, 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: 2025-05-20

Testing End Date: 2025-07-07

1.5. Signature



Yao Xingyu

(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: Shenzhen Tinno Mobile Technology Corp.
27-001, South Side of Tianlong Mobile Headquarters Building,
Address: Tongfa South Road, Xili Community, Xili Street, Nanshan District,
Shenzhen ,PRC
City: Shenzhen
Postal Code: /
Country: China
Telephone: 0755-86095550
Fax: 0755-86095551

2.2. Manufacturer Information

Company Name: Shenzhen Tinno Mobile Technology Corp.
27-001, South Side of Tianlong Mobile Headquarters Building,
Address: Tongfa South Road, Xili Community, Xili Street, Nanshan District,
Shenzhen ,PRC
City: Shenzhen
Postal Code: /
Country: China
Telephone: 0755-86095550
Fax: 0755-86095551

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Mobile Hotspot
Model name	B331MA, B331MC
FCC ID	XD6B331MA
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Normal Voltage	3.85V
Extreme High Voltage	4.4V
Extreme Low Voltage	3.6V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
UT02a	862519070002171	V1.0	B331MAV01.02.10	2025-05-20
UT44a	862519070006370	V1.0	B331MAV01.04.10	2025-05-29

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

UT02a is used for Conduction test, UT44a is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	Manufacturer
AE1	Battery1	TNO496386AG-N1	Guangdong Fenghua New Energy Co.,Ltd.
AE2	Charger1	TN-050200U3	Dong Guan City GangQi Electronic Co., Ltd
AE3	USB Cable	T365-011B-1	Shenzhen Yihuaxing Electronics Co. Ltd.

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

3.4. General Description

The Equipment under Test (EUT) is a model of Mobile Hotspot with integrated antenna and inbuilt battery.

It consists of normal options: travel charger, USB cable.

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

Samples undergoing test were selected by the client.

3.5. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor $k=2$.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

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;	
	15.207 Conducted limits;	2021
	15.209 Radiated emission limits, general requirements;	
	15.403 Definitions;	
	15.407 General technical requirements.	
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

Note:UNII: KDB 789033 D02 is not in the scope of ISO/IEC 17025 accreditation by A2LA.

5. Laboratory Environment

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. Test Results

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15C/E	Sub-clause of IC	Verdict
Maximum Output Power	15.407	/	P
Peak Power Spectral Density	15.407	/	P
26dB Emission Bandwidth	15.403	/	P
Radiated Unwanted Emission	15.407, 15.205, 15.209	/	P
AC Powerline Conducted Emission	15.207	/	P
99% Occupied bandwidth	/	/	P
Transmit Power Control	15.407	/	NA

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 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.

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 Facilities Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSW67	104051	Rohde & Schwarz	1 year	2026-06-09
2	LISN	ENV216	101200	Rohde & Schwarz	1 year	2026-06-05
3	Test Receiver	ESCI	100344	Rohde & Schwarz	1 year	2026-04-01
4	Attenuator	10dB/2W	/	Rosenberger	/	/
5	Shielding Room	S81	/	ETS-Lindgren	/	/
6	DC Power Supply	NGSM	5311	Rohde & Schwarz	1 year	2026-06-09

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	FSW67	103290	Rohde & Schwarz	1 year	2026-03-23
2	EMI Antenna	VULB9163	01222	Schwarzbeck	1 year	2025-09-11
3	EMI Antenna	3115	6914	ETS-Lindgren	1 year	2026-03-31
4	EMI Antenna	3116	2663	ETS-Lindgren	1 year	2026-03-03

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 26dB Emission 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

8.6 Radiated Unwanted Emission

Frequency Range	Uncertainty(dB) (k=2)
9kHz-30MHz	4.92
$30\text{MHz} \leq f \leq 1\text{GHz}$	4.72
$1\text{GHz} \leq f \leq 18\text{GHz}$	4.84
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.12

8.7 AC Power-line Conducted Emission

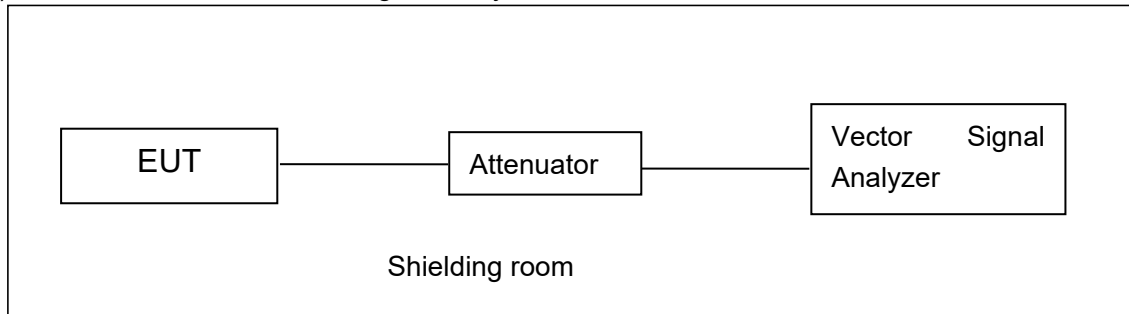
Measurement Uncertainty : 3.08dB,k=2

ANNEX A: Detailed Test 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

Measurement performed according to Clause 6.4, 6.5, 6.6 in ANSI C63.10-2013 and II.G.4, II.G.5, II.G.6 in KDB 789033.

The radiated emission test is performed in semi-anechoic chamber. The EUT was placed on a non-conductive table with 80cm above the ground plane for measurement below 1GHz and 1.5m above the ground plane for measurement above 1GHz. 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 from 0° to 360° and the measurement antenna is moved from 1m to 4m to get the maximization result. The maximization process was repeated with the EUT positioned in each of its three orthogonal orientations

A.2. Maximum output Power

Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	24dBm
	5250MHz~5350MHz	24dBm or 11+10logB
	5470MHz~5725MHz	24dBm or 11+10logB

Limit use the less value, and B is the 26dB bandwidth.

The measurement method SA-2 is made according to KDB 789033

A.2.1 Antenna Gain

Antenna gain is -0.1dBi and the value is supplied by the applicant or manufacturer.

A.2.2 Maximum output Power-Conducted

EUT ID: UT02a

Measurement Results:

802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	18.00	/	/	/	/	/	/	/
	5200MHz	18.58	/	/	/	/	/	/	/
	5240MHz	18.78	/	/	/	/	/	/	/

The data rate 6Mbps is selected as worst condition, and the following cases are performed with this condition.

802.11n-HT20 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz	18.30	/	/	/	/	/	/	/
	5200MHz	18.24	/	/	/	/	/	/	/
	5240MHz	18.64	/	/	/	/	/	/	/

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

802.11ac-VHT20 mode

Mode	Frequency	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11ac (VHT20)	5180MHz	18.32	/	/	/	/	/	/	/	/
	5200MHz	18.11	/	/	/	/	/	/	/	/
	5240MHz	18.11	/	/	/	/	/	/	/	/

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

802.11n-HT40 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz	18.34	/	/	/	/	/	/	/
	5230MHz	18.58	/	/	/	/	/	/	/

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

802.11ac-VHT40 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT40)	5190MHz	17.96	/	/	/	/	/	/	/	/	/
	5230MHz	18.16	/	/	/	/	/	/	/	/	/

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

802.11ac-VHT80 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT80)	5210MHz	16.54	/	/	/	/	/	/	/	/	/

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



16:53:46 07.06.2025

Maximum output Power: 11a CH48

The duty cycle of all mode are

TestMode	Frequency[MHz]	Duty Cycle [%]
11A	5180	97.20
	5200	97.20
	5240	97.20
11N20SISO	5180	90.00
	5200	87.80
	5240	90.00
11N40SISO	5190	89.19
	5230	89.19
11AC20SISO	5180	90.00
	5200	90.00
	5240	92.50
11AC40SISO	5190	89.74
	5230	89.74
11AC80SISO	5210	88.89
	5775	88.89



Duty cycle

Conclusion: PASS

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

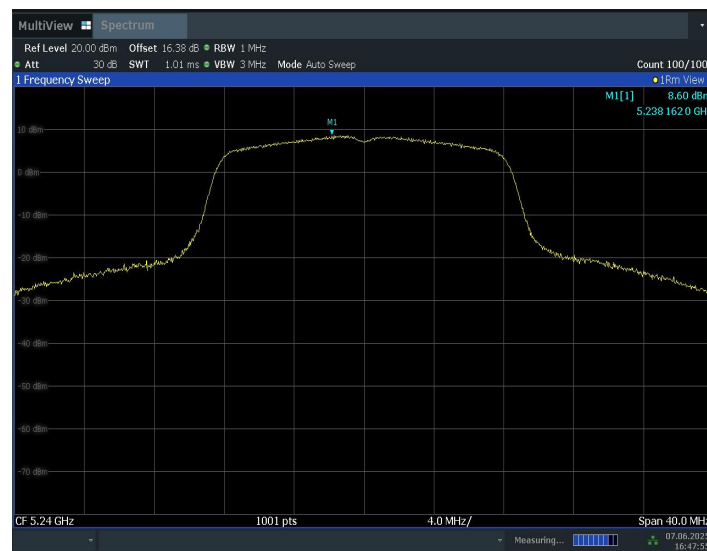
Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	11
	5250MHz~5350MHz	11
	5470MHz~5725MHz	11

The output power measurement method Section F is made according to KDB 789033

EUT ID: UT02a

Measurement Results:

TestMode	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	5180	7.65	≤11.00	PASS
	5200	8.35	≤11.00	PASS
	5240	8.60	≤11.00	PASS
11N20SISO	5180	7.90	≤11.00	PASS
	5200	7.95	≤11.00	PASS
	5240	8.43	≤11.00	PASS
11N40SISO	5190	5.12	≤11.00	PASS
	5230	5.49	≤11.00	PASS
11AC80SISO	5210	0.12	≤11.00	PASS



Peak Power Spectral Density:11a CH48

Conclusion: PASS

A.4. 26dB Emission Bandwidth (conducted)

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.403 (i)	/

The measurement is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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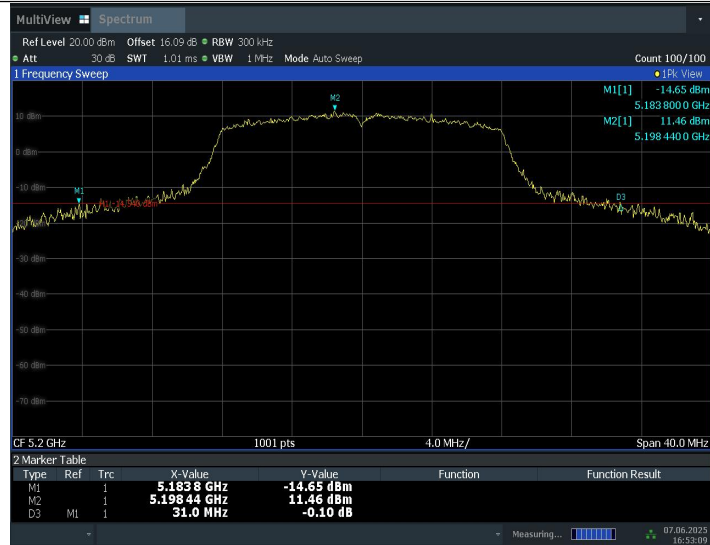
EUT ID: UT02a

Measurement Result:

TestMode	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	5180	30.92	5163.84	5194.76	---	---
	5200	31.00	5183.80	5214.80	---	---
	5240	31.88	5224.04	5255.92	---	---
11N20SISO	5180	31.52	5165.88	5197.40	---	---
	5200	31.60	5183.36	5214.96	---	---
	5240	32.60	5224.72	5257.32	---	---
11N40SISO	5190	64.48	5156.72	5221.20	---	---
	5230	67.76	5197.20	5264.96	---	---
11AC80SISO	5210	119.52	5153.36	5272.88	---	---

Test graphs as below:





16:53:10 07.06.2025

11A_5240



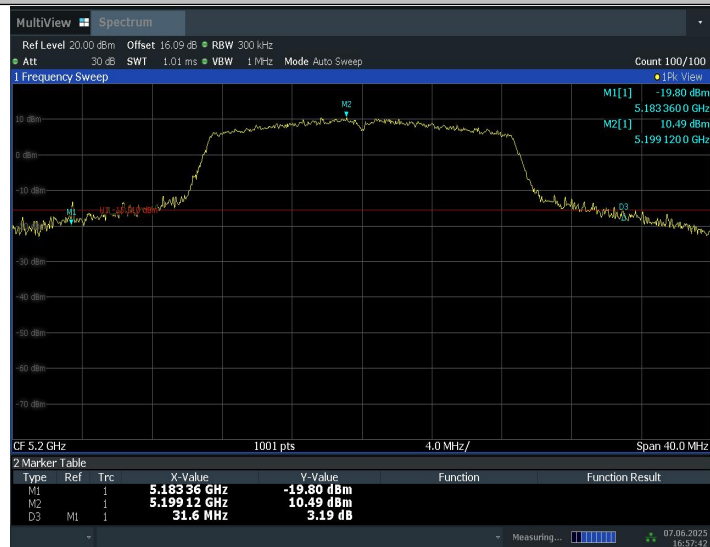
16:53:31 07.06.2025

11N20SISO_5180



17:03:57 07.06.2025

11N20SISO_5200



16:57:43 07.06.2025

11N20SISO_5240



16:58:44 07.06.2025

11N40SISO_5190



17:15:48 07.06.2025

11N40SISO_5230



17:12:27 07.06.2025

11AC80SISO_5210



17:28:01 07.06.2025

Conclusion: PASS

A.5. Radiated Unwanted Emission

A.5.1 Limits

Unwanted Emissions in the unrestricted bands shall not exceed the limits that shown in 15.407:

Standard	Limit
FCC 47 CFR Part 15.407	(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

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 (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

Note: When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor (as defined in KDB 789033 II.G.2.d).

A.5.2 Test setup

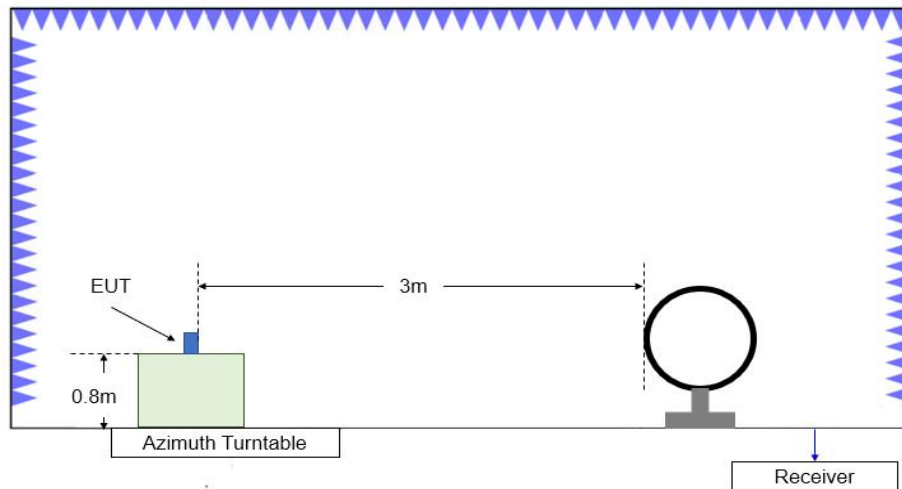


Figure A.5.1. Test Site Diagram (9kHz-30MHz)

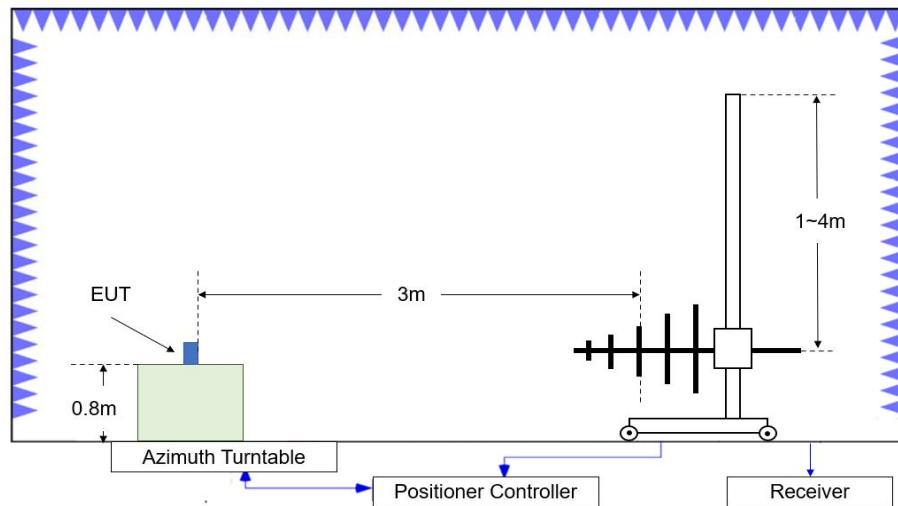


Figure A.5.2. Test Site Diagram (30MHz-1GHz)

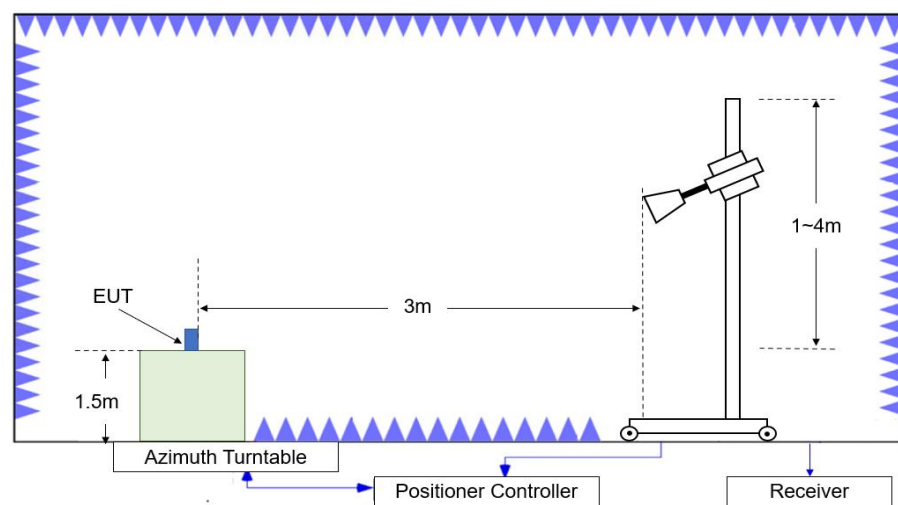


Figure A.5.3. Test Site Diagram (1GHz-40GHz)

A.5.3 Test Procedures

Radiated unwanted emissions from the EUT were measured according to ANSI C63.10 and KDB 789033 D02 v02r01.

Test setting

Frequency of emission (MHz)	RBW/VBW
30-1000	100kHz/300kHz
1000-4000	1MHz/3MHz
4000-18000	1MHz/3MHz
18000-26500	1MHz/3MHz
26500-40000	1MHz/3MHz

A.5.4 Calculation

1. The measurement results reported below is calculated by:

Measurement Results (dB μ V/m) = $P_{\text{measurement}}$ (dB μ V) + Cable Loss(dB) + Antenna Factor (dB/m)

Where: $P_{\text{measurement}}$ is the field strength recorded from the instrument

2. 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

Test note

1. The EUT is operating at its maximum duty cycle and its maximum power control level.
2. Investigation has been done on all modes and modulations/data rates. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.
3. Spurious emissions for all channels were investigated and almost the same below 1GHz. According to FCC 47 CFR §15.31, emission levels are not report much lower than the limit by over 20dB
4. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept.
5. EUT in each of three orthogonal axis emissions had been tested out only the worst case (axis data) recorded in the report.
6. Measurement frequencies were performed from 9 kHz to the 10th harmonic of highest fundamental frequency or 40GHz, whichever is lower.
7. No spurious emissions were detected within 20dB of the limit below 30MHz. OFS and semi-chamber comparison testing had been performed and the result came out very similar. (KDB 414788)

Measurement Results:
Average Results:
802.11n-HT20

Channel 36

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)
17965.350	48.01	-25.55	45.40	28.16	54.00	5.99	H
17935.650	47.97	-25.55	45.40	28.12	54.00	6.03	H
14495.950	40.48	-28.78	41.80	27.46	54.00	13.52	V
14494.850	40.47	-28.78	41.80	27.45	54.00	13.53	H
5148.960	52.67	-27.27	34.00	45.94	54.00	1.33	H
5149.540	52.67	-27.27	34.00	45.94	54.00	1.33	H

802.11n-HT40

Channel 38

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)
17958.750	48.32	-25.55	45.40	28.47	54.00	5.68	H
17956.000	48.23	-25.55	45.40	28.38	54.00	5.77	V
14499.800	40.58	-28.78	41.80	27.56	54.00	13.42	H
14482.750	40.24	-28.78	41.80	27.22	54.00	13.76	H
5149.960	50.40	-27.27	34.00	43.67	54.00	3.60	H
5148.400	50.28	-27.34	33.90	43.72	54.00	3.72	H

802.11ac-HT20

Channel 36

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)
17948.850	48.16	-25.55	45.40	28.31	54.00	5.84	H
17917.500	48.03	-25.55	45.40	28.18	54.00	5.97	H
14486.050	40.29	-28.78	41.80	27.27	54.00	13.71	V
14476.700	40.27	-28.78	41.80	27.25	54.00	13.73	H
5149.100	51.89	-27.27	34.00	45.16	54.00	2.11	H
5149.160	51.66	-27.27	34.00	44.93	54.00	2.34	H

802.11ac-HT40

Channel 38

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)
17941.700	48.22	-25.55	45.40	28.37	54.00	5.78	H
17955.450	48.10	-25.55	45.40	28.25	54.00	5.90	H
14497.600	40.53	-28.78	41.80	27.51	54.00	13.47	V
14477.250	40.42	-28.78	41.80	27.40	54.00	13.58	H
5147.400	52.45	-27.34	33.90	45.89	54.00	1.55	H
5149.140	52.42	-27.27	34.00	45.69	54.00	1.58	H

802.11ac-HT80

Channel 42

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17940.050	48.12	-25.55	45.40	28.27	54.00	5.88	H
17941.700	48.08	-25.55	45.40	28.23	54.00	5.92	V
14494.850	40.55	-28.78	41.80	27.53	54.00	13.45	H
14481.100	40.35	-28.78	41.80	27.33	54.00	13.65	H
5149.720	47.01	-27.27	34.00	40.28	54.00	6.99	H
5149.860	46.61	-27.27	34.00	39.88	54.00	7.39	H

PEAK Results:

802.11n-HT20

Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17967.550	59.22	-25.55	45.40	39.37	74.00	14.78	H
17942.250	58.95	-25.55	45.40	39.10	74.00	15.05	V
14198.950	52.91	-28.86	41.70	40.07	68.20	15.29	H
14216.000	52.35	-28.86	41.70	39.51	68.20	15.85	V
5148.820	69.70	-27.27	34.00	62.97	74.00	4.30	H
5149.660	69.69	-27.27	34.00	62.96	74.00	4.31	H

802.11n-HT40

Channel 38

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)
17950.500	58.87	-25.55	45.40	39.02	74.00	15.13	V
17934.550	58.71	-25.55	45.40	38.86	74.00	15.29	H
14089.500	52.87	-28.98	41.80	40.05	68.20	15.33	V
14627.950	52.69	-28.77	41.70	39.76	68.20	15.51	V
5149.960	72.66	-27.27	34.00	65.93	74.00	1.34	H
5149.680	71.69	-27.27	34.00	64.96	74.00	2.31	H

802.11ac-HT20

Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17967.000	59.02	-25.55	45.40	39.17	74.00	14.98	H
17926.850	58.96	-25.55	45.40	39.11	74.00	15.04	V
14142.850	52.42	-28.86	41.80	39.48	68.20	15.78	V
14205.550	52.10	-28.86	41.70	39.26	68.20	16.10	V
5149.240	71.47	-27.27	34.00	64.74	74.00	2.53	H
5149.600	69.48	-27.27	34.00	62.75	74.00	4.52	H

802.11ac-HT40

Channel 38

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)
17889.450	59.14	-25.55	45.40	39.29	74.00	14.86	V
17930.150	59.07	-25.55	45.40	39.22	74.00	14.93	V
14622.450	52.92	-28.77	41.70	39.99	68.20	15.28	V
14160.450	52.18	-28.86	41.70	39.34	68.20	16.02	H
5147.580	71.27	-27.34	33.90	64.71	74.00	2.73	H
5149.180	70.22	-27.27	34.00	63.49	74.00	3.78	H

802.11ac-HT80

Channel 42

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)
17933.450	59.34	-25.55	45.40	39.49	74.00	14.66	V
17918.050	59.23	-25.55	45.40	39.38	74.00	14.77	H
14564.700	52.19	-28.77	41.70	39.26	68.20	16.01	V
14082.900	52.06	-28.98	41.80	39.24	68.20	16.14	H
5146.240	68.00	-27.34	33.90	61.44	74.00	6.00	H
5145.340	67.36	-27.34	33.90	60.80	74.00	6.64	H

Conclusion: PASS

Band edge compliance

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.1	P
802.11n HT20	5180 MHz	Fig.2	P
802.11ac HT20	5180 MHz	Fig.3	P
802.11ac HT40	5190 MHz	Fig.4	P
802.11ac HT80	5210MHz	Fig.5	P

Conclusion: PASS

Test graphs as below:

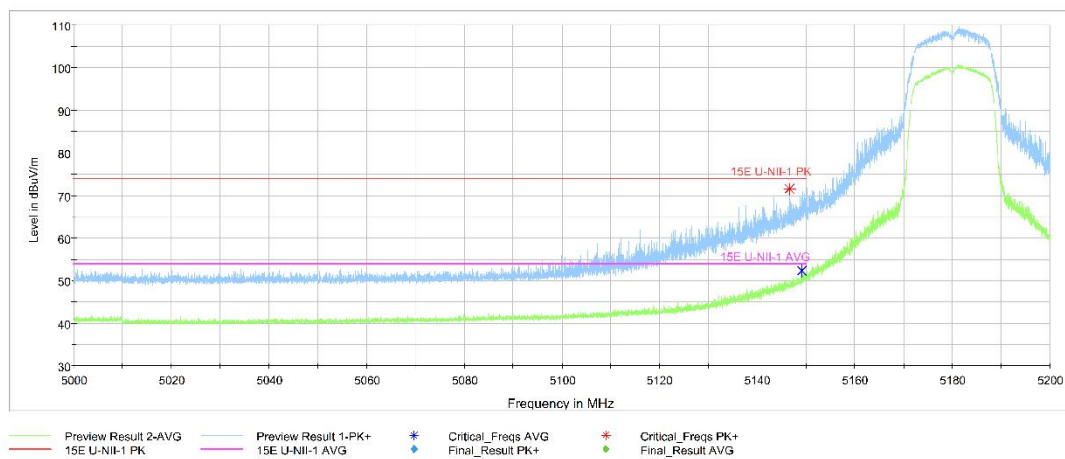


Fig. 1 Band Edges (802.11a Ch36, 5180MHz)

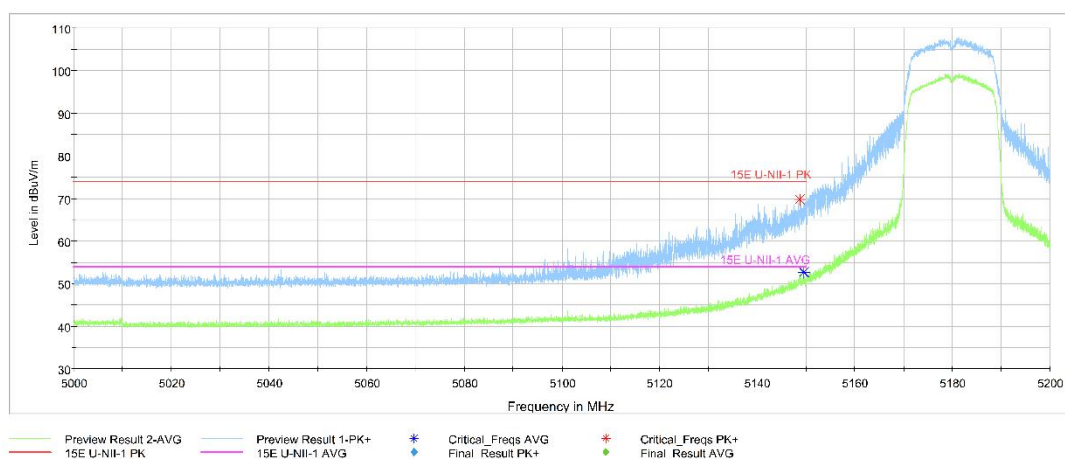


Fig. 2 Band Edges (802.11n-HT20 Ch36, 5180MHz)

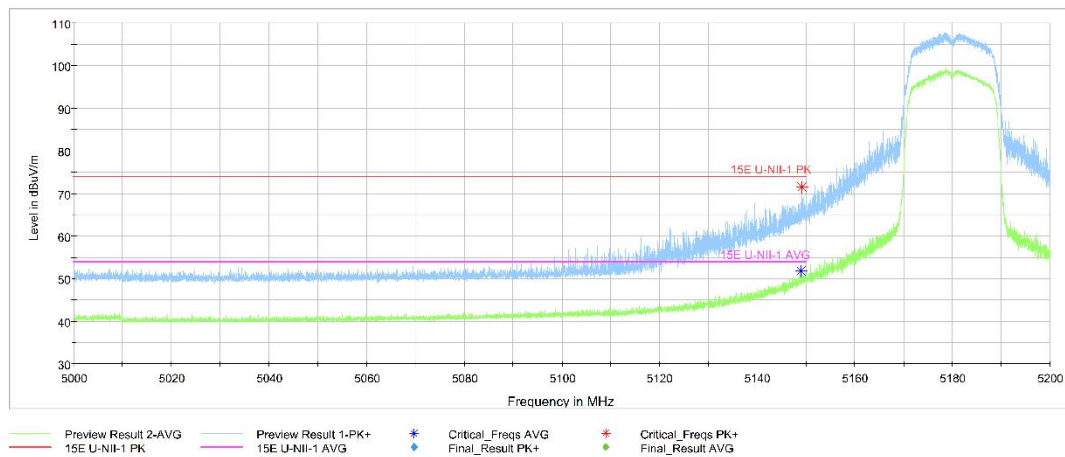


Fig. 3 Band Edges (802.11ac-HT20 Ch36, 5180MHz)

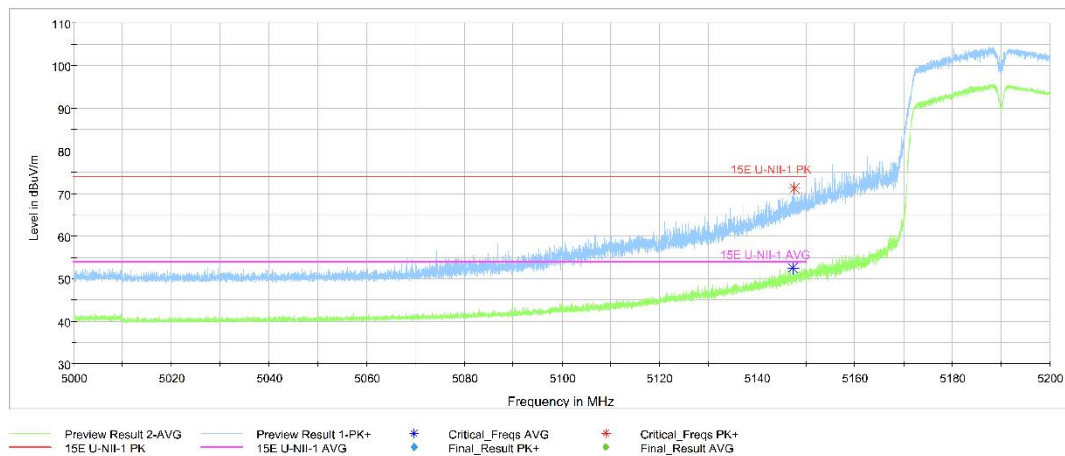


Fig. 4 Band Edges (802.11ac-HT40 Ch38, 5190MHz)

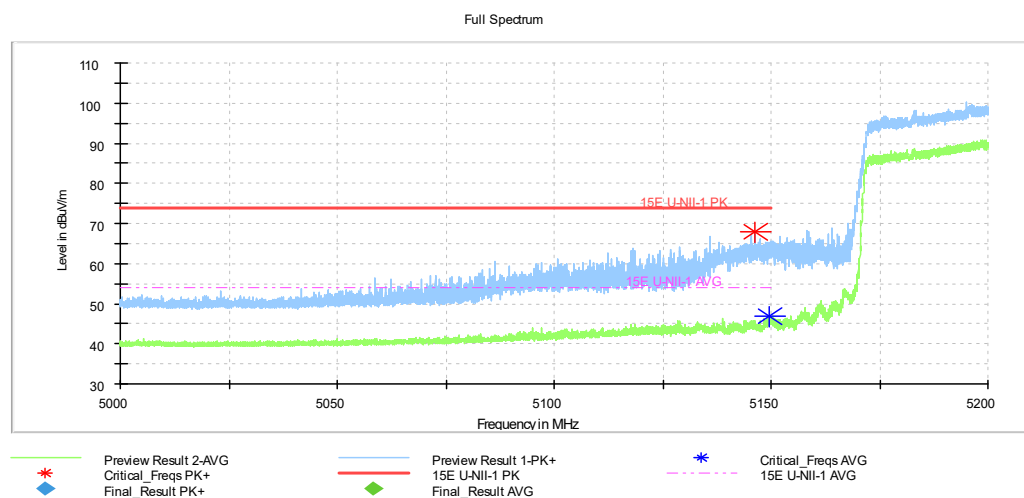


Fig. 5 Band Edges (802.11ac-HT80 Ch42, 5210MHz)

A.6. AC Powerline Conducted Emission (150kHz- 30MHz)

A.6.1 Summary

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section

A.6.2 Method of Measurement

See Clause 6.2 of ANSI C63.10 specifically.

See Clause 4 and Clause 5 of ANSI C63.10 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.

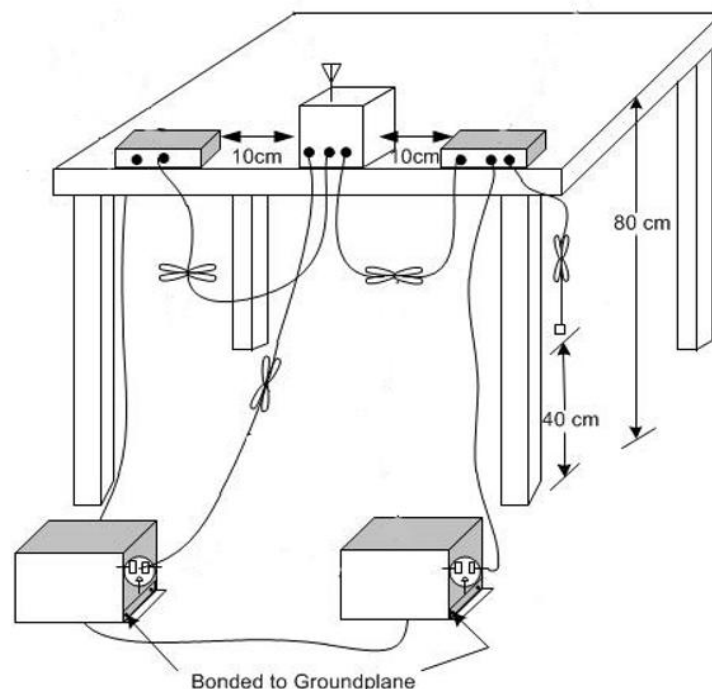
The measurement bandwidth is:

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

A.6.3 Test Condition

Voltage (V)	Frequency (Hz)
120	60

A.6.4 Test setup



Measurement Result and limit:
WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.6	Fig.7	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 (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.6	Fig.7	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.

Conclusion: PASS

Test graphs as below:

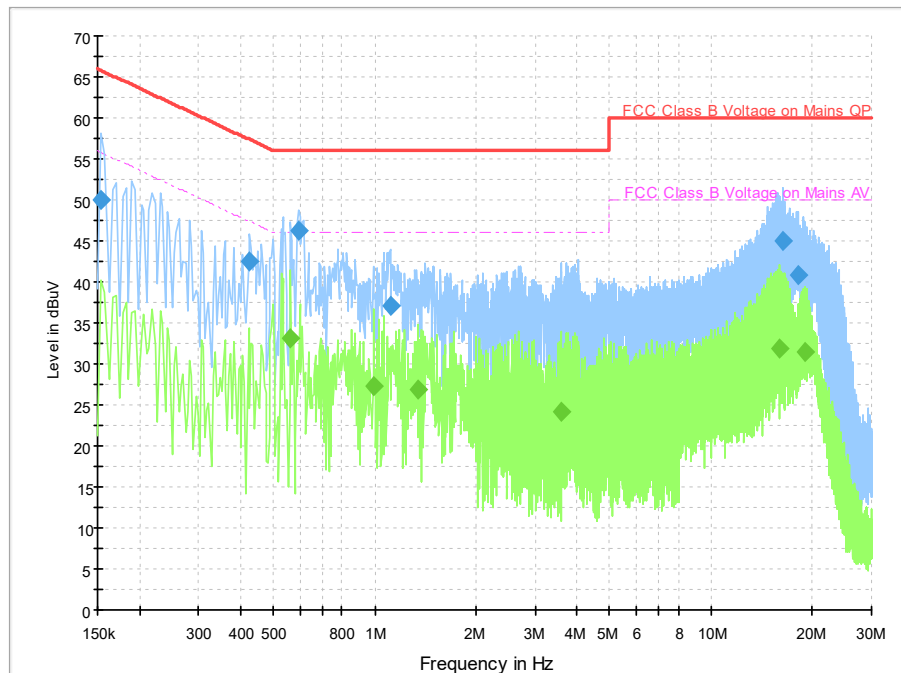


Fig.6 Conducted Emission(802.11a, Ch36, TX)

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154000	50.0	2000.0	9.000	On	L1	20.0	15.8	65.8	
0.426000	42.5	2000.0	9.000	On	N	19.9	14.9	57.3	
0.594000	46.3	2000.0	9.000	On	L1	20.0	9.7	56.0	
1.110000	37.1	2000.0	9.000	On	L1	19.9	18.9	56.0	
16.282000	45.0	2000.0	9.000	On	L1	20.0	15.0	60.0	
18.214000	40.8	2000.0	9.000	On	N	19.8	19.2	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.562000	33.1	2000.0	9.000	On	L1	20.0	12.9	46.0	
0.994000	27.2	2000.0	9.000	On	L1	19.9	18.8	46.0	
1.346000	26.9	2000.0	9.000	On	L1	19.9	19.1	46.0	
3.566000	24.2	2000.0	9.000	On	L1	19.8	21.8	46.0	
15.958000	31.8	2000.0	9.000	On	L1	20.0	18.2	50.0	
18.994000	31.5	2000.0	9.000	On	L1	20.0	18.5	50.0	

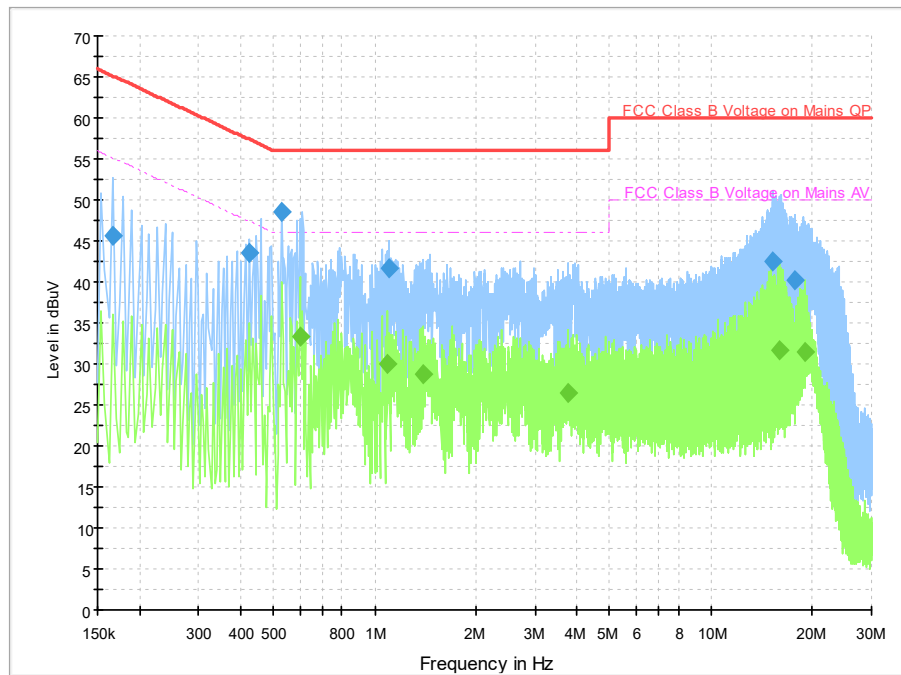


Fig.7 Conducted Emission(802.11a, IDLE)

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.166000	45.6	2000.0	9.000	On	N	19.8	19.5	65.2	
0.426000	43.4	2000.0	9.000	On	N	19.9	13.9	57.3	
0.530000	48.5	2000.0	9.000	On	L1	20.0	7.5	56.0	
1.102000	41.6	2000.0	9.000	On	L1	19.9	14.4	56.0	
15.254000	42.5	2000.0	9.000	On	N	19.8	17.5	60.0	
17.806000	40.2	2000.0	9.000	On	N	19.8	19.8	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.598000	33.3	2000.0	9.000	On	L1	20.0	12.7	46.0	
1.090000	30.0	2000.0	9.000	On	L1	19.9	16.0	46.0	
1.394000	28.7	2000.0	9.000	On	L1	19.9	17.3	46.0	
3.766000	26.4	2000.0	9.000	On	L1	19.8	19.6	46.0	
16.018000	31.8	2000.0	9.000	On	L1	20.0	18.2	50.0	
18.938000	31.5	2000.0	9.000	On	L1	20.0	18.5	50.0	

A.7. 99% Occupied bandwidth

Method of Measurement: See ANSI C63.10-2013-clause 12.4.2.

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Measurement Uncertainty:

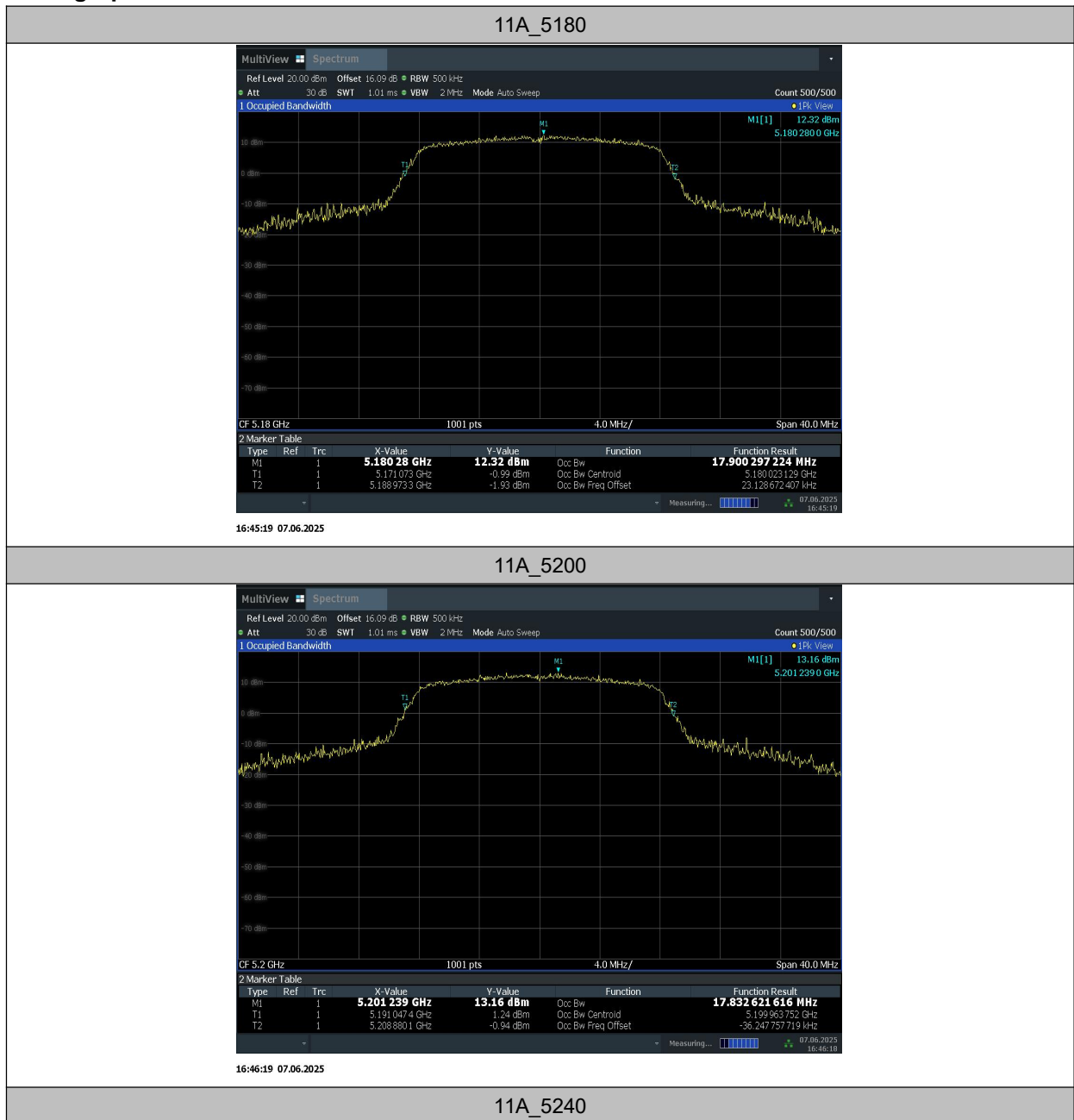
Measurement Uncertainty	60.80Hz
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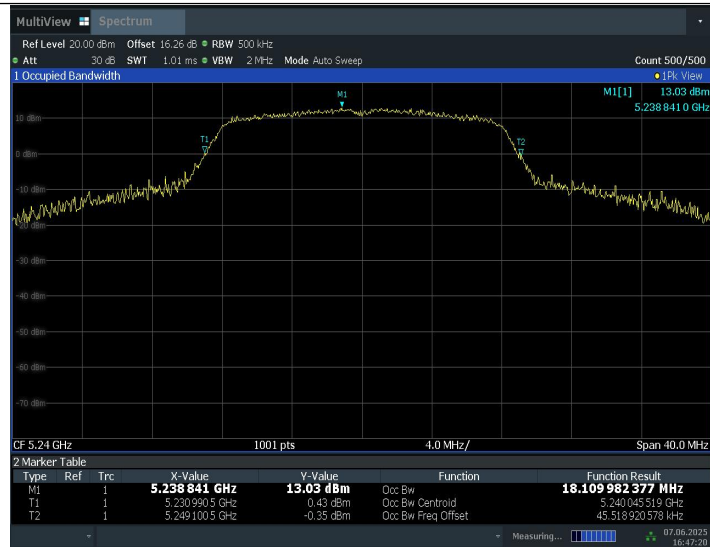
EUT ID: UT02a

Measurement Result:

TestMode	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	5180	17.900	5171.0730	5188.9733	---	---
	5200	17.833	5191.0474	5208.8801	---	---
	5240	18.110	5230.9905	5249.1005	---	---
11N20SISO	5180	18.720	5170.7027	5189.4225	---	---
	5200	18.536	5190.7446	5209.2810	---	---
	5240	18.660	5230.7126	5249.3723	---	---
11N40SISO	5190	37.285	5171.4215	5208.7067	---	---
	5230	37.220	5211.4112	5248.6312	---	---
11AC80SISO	5210	75.766	5172.1300	5247.8959	---	---

Test graphs as below:





16:47:20 07.06.2025

11N20SISO_5180



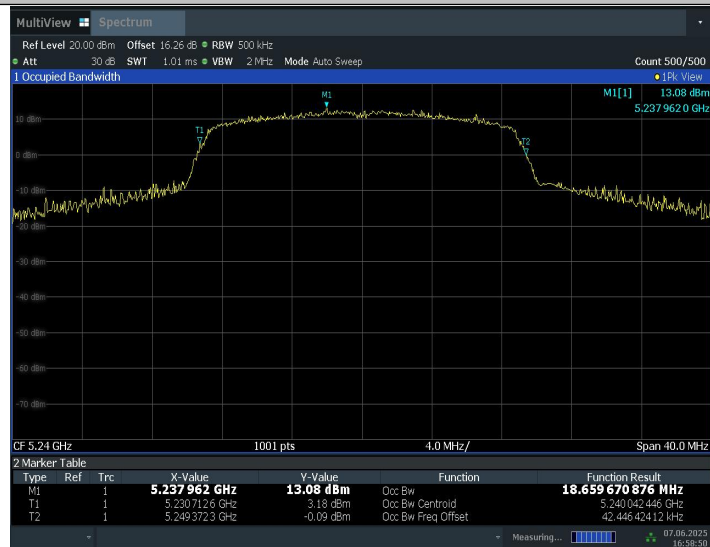
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11N20SISO_5200



16:57:50 07.06.2025

11N20ISO_5240



16:58:51 07.06.2025

11N40ISO_5190



17:11:37 07.06.2025

11N40SISO_5230



17:12:34 07.06.2025

11AC80SISO_5210



Conclusion: PASS

A.8. Antenna Requirement

The antenna of the device is permanently attached. There are no provisions for connection to an external antenna.

The unit complies with the requirement of FCC Part 15.203.

A.9. Power control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500 mW).

ANNEX B: EUT parameters

Disclaimer: The antenna gain and worse case 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



Accredited Laboratory

A2LA has accredited

TELECOMMUNICATION TECHNOLOGY LABS, CAICT

Beijing, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 23rd day of July 2024.



Mr. Trace McInturf, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 7049.01
Valid to July 31, 2026

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

*** END OF REPORT BODY ***