FCC RF Test Report

(U-NII)

Applicant:	INFINIX MOBILITY LIMITED
Address of Applicant:	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG

Equipment Under Test (EUT)

Product Name:	Mobile Phone
Model No.:	X666B
Trade Mark:	Infinix
FCC ID:	2AIZN-X666B
Applicable Standards:	FCC CFR Title 47 Part 15E (§15.407)
Date of Sample Receipt:	09 Oct., 2022
Date of Test:	10 Oct., to 28 Oct., 2022
Date of Report Issued:	08 Nov., 2022
Test Result:	PASS

Tested by:	Mike.ou ***Test Engineer***	***Date:***	*08 Nov., 2022*
Reviewed by:	Winner Zhang ***Project Engineer***	***Date:***	*08 Nov., 2022*
Approved by:	Manager ***Manager***	***Date:***	*08 Nov., 2022*

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

2 Version

Version No.	Date	Description
00	*31 Oct., 2022*	*Original*
01	*08 Nov., 2022*	*Update Page 10*

3 Contents

Page

4 General Information

4.1 Client Information

Applicant:	INFINIX MOBILITY LIMITED
Address:	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG
Manufacturer:	INFINIX MOBILITY LIMITED
Address:	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG
Factory:	SHENZHEN TECNO TECHNOLOGY CO., LTD.
Address:	101, Building 24, Waijing Industrial Park, Fumin Community, Fucheng Street, Longhua District, Shenzhen City, P.R.China

4.2 General Description of E.U.T.

Product Name:	Mobile Phone
Model No.:	X666B
Operation Frequency:	Band 1: 5150 MHz - 5250 MHz
	Band 4: 5725 MHz - 5850 MHz
Channel Numbers:	Band 1: 4 , Band 4: 5 (802.11a, n-HT20, ac-VHT20)
	Band 1, 4: 2 (802.11n-HT40, ac-VHT40)
	Band 1, 4: 1 (802.11ac-VHT80)
Modulation Technology: (IEEE 802.11a/802.11n)	OFDM-BPSK, QPSK, 16QAM, 64QAM
Modulation Technology: (IEEE 802.11ac)	OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna Type:	Internal Antenna
Antenna Gain:	-2.3 dBi
Antenna Transmit Mode:	SISO (1TX, 1RX)
Power Supply:	Rechargeable Li-ion Polymer Battery DC3.85V, 4900mAh
AC Adapter:	Model: U180XSA Input: AC100-240V, 50/60Hz, 0.6A Output: DC 5.0V, 2.4A or 7.5V, 2.4A 18.0W Max
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

4.3 Test Mode and Environment

Test Mode:	
Transmitting mode:	Keep the EUT in continuous transmitting with modulation

Per-scan all kind of data rate, the follow list were the worst case:

Mode	Data rate
802.11a	6.0 Mbps
802.11n-HT20	6.5 Mbps
802.11n-HT40	13.5 Mbps
802.11ac-VHT20	6.5 Mbps
802.11ac-VHT40	13.5 Mbps
802.11ac-VHT80	29.3 Mbps

Remark: *For AC power line conducted emission and radiated spurious emission (below 1GHz), pre-scan 802.11a, n, ac modulation, Adapter 1 & Adapter 2 mode, found 802.11a modulation + Adapter 1 mode was worse case mode. The report only reflects the test data of worst mode.*

Operating Environment:	
Temperature:	15℃ ~ 35℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1010 mbar
Voltage:	Nominal: 3.85 Vdc, Extreme: Low 3.50 Vdc, High 4.40 Vdc

4.4 Description of Test Auxiliary Equipment

The EUT has been tested as an independent unit.

4.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Conducted Emission for LISN (9kHz ~ 150kHz)	±3.11 dB
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.62 dB
Radiated Emission (30MHz ~ 1GHz) (3m SAC)	±4.45 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	±5.34 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	±5.34 dB

Note: *All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.*

4.6 Additions to, Deviations, or Exclusions from the Method

No

4.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

- **A2LA - Registration No.: 4346.01**

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. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

4.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://jyt.lets.com

4.9 Test Instruments List

Radiated Emission(3m SAC):

Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	WXJ001-1	04-14-2021	04-13-2024
Loop Antenna	Schwarzbeck	FMZB 1519 B	WXJ002-4	03-07-2022	03-06-2023
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	03-08-2022	03-07-2023
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-2	03-08-2022	03-07-2023
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-5	04-07-2022	04-06-2023
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXJ001-2	01-20-2022	01-19-2023
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXJ001-3	01-20-2022	01-19-2023
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXJ002-7	03-30-2022	03-29-2023
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	03-05-2022	03-04-2023
Spectrum Analyzer	Rohde & Schwarz	FSP 30	WXJ004	01-20-2022	01-19-2023
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	10-27-2021	10-26-2022
				10-17-2022	10-16-2023
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	01-20-2022	01-19-2023
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG001-5	01-20-2022	01-19-2023
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG001-7	01-20-2022	01-19-2023
Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/A	
Test Software	Tonscend	TS+	Version: 3.0.0.1		

Conducted Method:

Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9010B	WXJ004-3	10-27-2021	10-26-2022
				10-17-2022	10-16-2023
Temperature Humidity Chamber	ZHONG ZHI	CZ-A-80D	WXJ032-3	03-19-2021	03-18-2023
Power Detector Box	MWRFTEST	MW100-PSB	WXJ007-4	11-19-2021	11-18-2022
DC Power Supply	Keysight	E3642A	WXJ025-2	N/A	
RF Control Unit	MWRFTEST	MW100-RFCB	WXG006	N/A	
Test Software	MWRFTEST	MTS 8310	Version: 2.0.0.0		

5 Measurement Setup and Procedure

5.1 Test Channel

According to ANSI C63.10-2013 chapter 5.6.1 Table 4 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

Operation frequency: 5150 MHz – 5250 MHz

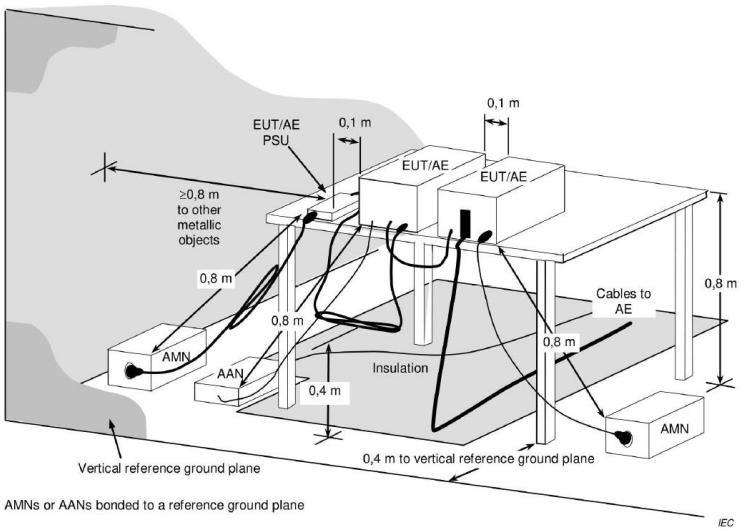
Modulation mode	Lowest channel		Middle channel		Highest channel	
	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
802.11a, n-HT20, ac-VHT20	36	5180	40	5200	48	5240
802.11n-HT40, ac-VHT40	38	5190	/	/	46	5230
802.11ac-VHT80	/	/	42	5210	/	/

Operation frequency: 5725 MHz – 5850 MHz

Modulation mode	Lowest channel		Middle channel		Highest channel	
	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
802.11a, n-HT20, ac-VHT20	149	5745	157	5785	165	5825
802.11n-HT40, ac-VHT40	151	5755	/	/	159	5795
802.11ac-VHT80	/	/	155	5775	/	/

5.2 Test Setup

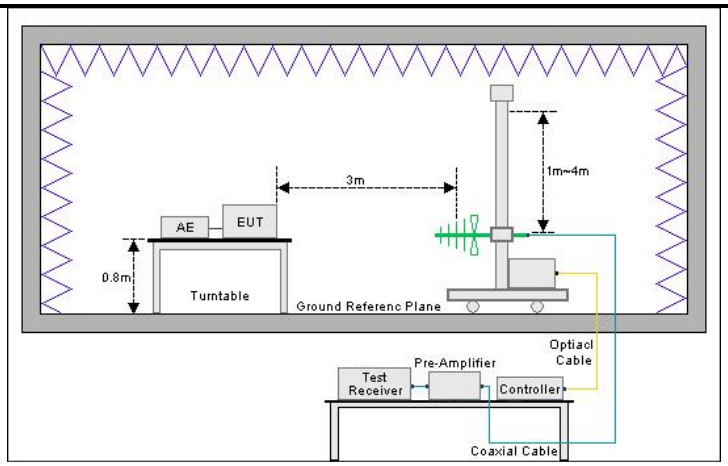
1) Conducted emission measurement:



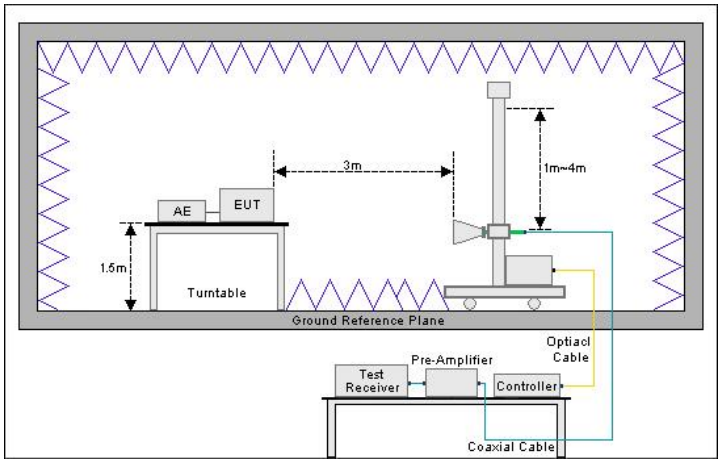
Note: The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

2) Radiated emission measurement:

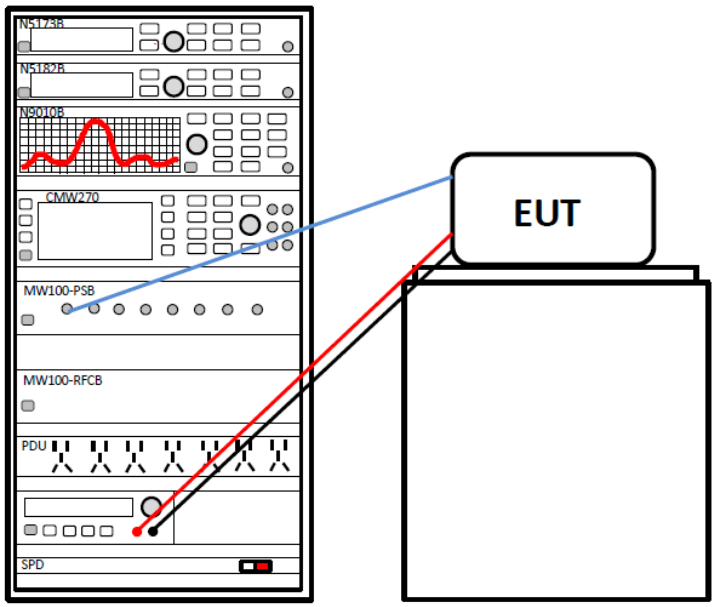
Below 1GHz (3m SAC)



Above 1GHz (3m SAC)



3) Conducted test method



5.3 Test Procedure

Test method	Test step
Conducted emission	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
Radiated emission	**For below 1GHz:** 1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. **For above 1GHz:** 1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method	1. The Wi-Fi antenna port of EUT was connected to the test port of the test system through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

6 Test Results

6.1 Summary

6.1.1 Clause and Data Summary

This report was amended on FCC ID: 2AIZN-X666. The original report: JYTSZ-R12-2201222, issued by JianYan Testing Group Shenzhen Co., Ltd. The X666B and the original model were identical inside, the electrical circuit design, layout, components used and internal wiring, the differences between them as below: Update the applicant and manufacturer addresses, update the model. Updated adapter and added NFC, So not need to retest.

Test items	Standard clause	Test data	Result
Antenna Requirement	15.203	Please refer to JYTSZ-R12-2201222 report	Pass*
AC Power Line Conducted Emission	15.207 15.407 (b)(9)	Please refer to JYTSZ-R12-2201222 report	Pass*
Duty Cycle	ANSI C63.10-2013	Please refer to JYTSZ-R12-2201222 report	Pass*
Conducted Peak Output Power Power Spectral Density	15.407 (a)(1)(iv), (a)(3)(i)	Please refer to JYTSZ-R12-2201222 report, See Section 6.2.1 of this report	Pass*
26dB Emission Bandwidth 99% Occupied Bandwidth	15.407 (a)(12)	Please refer to JYTSZ-R12-2201222 report	Pass*
6dB Emission Bandwidth	15.407 (e)	Please refer to JYTSZ-R12-2201222 report	Pass*
Unwanted Emissions	15.205 15.209 15.407 (b)(1), (4), (9), (10)	Please refer to JYTSZ-R12-2201222 report, See Section 6.2.2 of this report	Pass*
Frequency Stability	15.407 (g)	Please refer to JYTSZ-R12-2201222 report	Pass*
Remark: *1. Pass*: Please refer to JYTSZ-R12-2201222 report, issued by JianYan Testing Group Shenzhen Co., Ltd.*			
Test Method:	*ANSI C63.10-2013* *KDB 789033 D02 General U-NII Test Procedures New Rules v02r01*		

6.1.2 Test Limit

<table>
<tr><th>Test items</th><th>Limit</th></tr>
<tr><td>AC Power Line Conducted Emission</td><td>
<table>
<tr><th rowspan="2">Frequency (MHz)</th><th colspan="2">Limit (dBµV)</th></tr>
<tr><th>Quasi-Peak</th><th>Average</th></tr>
<tr><td>0.15 – 0.5</td><td>66 to 56 Note 1</td><td>56 to 46 Note 1</td></tr>
<tr><td>0.5 – 5</td><td>56</td><td>46</td></tr>
<tr><td>5 – 30</td><td>60</td><td>50</td></tr>
<tr><td colspan="3">Note 1: The limit level in dBµV decreases linearly with the logarithm of frequency.
Note 2: The more stringent limit applies at transition frequencies.</td></tr>
</table>
</td></tr>
<tr><td>Conducted Peak Output Power

Power Spectral Density</td><td>For the 5.15-5.25 GHz band:
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.895 GHz:
For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, Fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.</td></tr>
<tr><td>26dB Emission Bandwidth
99% Occupied Bandwidth</td><td>N/A</td></tr>
<tr><td>6dB Emission Bandwidth</td><td>Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.</td></tr>
</table>

<table>
<tr>
<td>Unwanted Emissions</td>
<td>
(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 solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
(3) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. The provisions of § 15.205 apply to intentional radiators operating under this section:
<table>
<tr><th rowspan="2">Frequency (MHz)</th><th colspan="2">Limit (dBμV/m)</th><th rowspan="2">Detector</th></tr>
<tr><th>@ 3m</th><th>@ 10m</th></tr>
<tr><td>30 – 88</td><td>40.0</td><td>30.0</td><td>Quasi-peak</td></tr>
<tr><td>88 – 216</td><td>43.5</td><td>33.5</td><td>Quasi-peak</td></tr>
<tr><td>216 – 960</td><td>46.0</td><td>36.0</td><td>Quasi-peak</td></tr>
<tr><td>960 – 1000</td><td>54.0</td><td>44.0</td><td>Quasi-peak</td></tr>
<tr><td colspan="4">Note: The more stringent limit applies at transition frequencies.</td></tr>
<tr><th rowspan="2">Frequency</th><th colspan="3">Limit (dBμV/m) @ 3m</th></tr>
<tr><th colspan="2">Average</th><th>Peake</th></tr>
<tr><td>Above 1 GHz</td><td colspan="2">54.0</td><td>74.0</td></tr>
<tr><td colspan="4">Note: The measurement bandwidth shall be 1 MHz or greater.</td></tr>
</table>
</td>
</tr>
<tr>
<td>Frequency Stability</td>
<td>Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.</td>
</tr>
</table>

6.2 Test Results

6.2.1 RF Output Power Spot-check.

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	16.34	0	16.34	24	Pass
NVNT	a	5200	Ant1	16.31	0	16.31	24	Pass
NVNT	a	5240	Ant1	16.21	0	16.21	24	Pass
NVNT	ac20	5180	Ant1	14.71	0	14.71	24	Pass
NVNT	ac20	5200	Ant1	14.82	0	14.82	24	Pass
NVNT	ac20	5240	Ant1	14.62	0	14.62	24	Pass
NVNT	ac40	5190	Ant1	14.82	0	14.82	24	Pass
NVNT	ac40	5230	Ant1	14.63	0	14.63	24	Pass
NVNT	ac80	5210	Ant1	13.58	0	13.58	24	Pass
NVNT	n20	5180	Ant1	14.81	0	14.81	24	Pass
NVNT	n20	5200	Ant1	14.75	0	14.75	24	Pass
NVNT	n20	5240	Ant1	14.63	0	14.63	24	Pass
NVNT	n40	5190	Ant1	14.84	0	14.84	24	Pass
NVNT	n40	5230	Ant1	14.58	0	14.58	24	Pass

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	Ant1	15.83	0	15.83	30	Pass
NVNT	a	5785	Ant1	16.39	0	16.39	30	Pass
NVNT	a	5825	Ant1	16.78	0	16.78	30	Pass
NVNT	ac20	5745	Ant1	14.85	0	14.85	30	Pass
NVNT	ac20	5785	Ant1	15.36	0	15.36	30	Pass
NVNT	ac20	5825	Ant1	15.35	0	15.35	30	Pass
NVNT	ac40	5755	Ant1	14.93	0	14.93	30	Pass
NVNT	ac40	5795	Ant1	14.85	0	14.85	30	Pass
NVNT	ac80	5775	Ant1	13.78	0	13.78	30	Pass
NVNT	n20	5745	Ant1	14.37	0	14.37	30	Pass
NVNT	n20	5785	Ant1	15.36	0	15.36	30	Pass
NVNT	n20	5825	Ant1	15.35	0	15.35	30	Pass
NVNT	n40	5755	Ant1	14.45	0	14.45	30	Pass
NVNT	n40	5795	Ant1	15.28	0	15.28	30	Pass

6.2.2 Radiated spurious emissions Spot-check.

Band 1: 5150 MHz - 5250 MHz, 802.11a						
Test channel: Lowest channel Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
10360.00	44.32	5.24	49.56	68.20	18.64	Vertical
10360.00	44.30	5.24	49.54	68.20	18.66	Horizontal
Remark: *1. Level = Reading + Factor.*						

Band 4: 5725 MHz - 5825 MHz, 802.11a						
Test channel: Lowest channel Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
11490.00	44.10	7.21	51.31	74.00	22.69	Vertical
11490.00	43.71	7.21	50.92	74.00	23.08	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
11490.00	37.18	7.21	44.39	54.00	9.61	Vertical
11490.00	36.93	7.21	44.14	54.00	9.86	Horizontal
Remark: *1. Level = Reading + Factor.*						

------End of report------