

**Qingdao Intelligent&Precise Electronics Co., Ltd**

# RF TEST REPORT

**Report Type:**

FCC Part 15.407 & ISED RSS-247 RF report

**Model:**

ZDRK8812CU

**REPORT NUMBER:**

221101783SHA-002

**ISSUE DATE:**

December 25, 2022

**DOCUMENT CONTROL NUMBER:**

TTRF15.407\_V1 © 2018 Intertek



**Applicant:** Qingdao Intelligent&Precise Electronics Co., Ltd  
No.218, Qianwangang Road, Qingdao Economic&Technological Development Zone, Shandong, China

**Manufacturer:** Qingdao Intelligent&Precise Electronics Co., Ltd  
No.218, Qianwangang Road, Qingdao Economic&Technological Development Zone, Shandong, China

**Product Name:** Wireless Module

**Type/Model:** ZDRK8812CU

**FCC ID:** 2AJVQ-RK8812CU

**IC:** 22470-RK8812CU

### SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

**47CFR Part 15 (2019):** Radio Frequency Devices (Subpart E)

**ANSI C63.10 (2013):** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

**RSS-247 Issue 2 (February 2017):** Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

**RSS-Gen Issue 5 (March 2019) Amendment 1:** General Requirements for Compliance of Radio Apparatus

### PREPARED BY:



Project Engineer  
Dylan Tang

### REVIEWED BY:



Reviewer  
Wakeyou Wang

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

## Content

<b>REVISION HISTORY.....</b>	<b>4</b>
<b>MEASUREMENT RESULT SUMMARY .....</b>	<b>5</b>
<b>1 GENERAL INFORMATION .....</b>	<b>6</b>
1.1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT) .....	6
1.2 TECHNICAL SPECIFICATION .....	6
1.3 WORKING FREQUENCIES FOR THIS REPORT .....	7
1.4 ANTENNA INFORMATION.....	8
1.5 DESCRIPTION OF TEST FACILITY .....	9
<b>2 TEST SPECIFICATIONS.....</b>	<b>10</b>
2.1 STANDARDS OR SPECIFICATION .....	10
2.2 MODE OF OPERATION DURING THE TEST.....	10
2.3 TEST SOFTWARE LIST .....	12
2.4 TEST PERIPHERALS LIST .....	12
2.5 TEST ENVIRONMENT CONDITION:.....	12
2.6 INSTRUMENT LIST .....	13
2.7 MEASUREMENT UNCERTAINTY .....	13
<b>3 99% OCCUPIED BANDWIDTH .....</b>	<b>15</b>
3.1 LIMIT .....	15
3.2 MEASUREMENT PROCEDURE .....	15
3.3 TEST CONFIGURATION .....	16
3.4 THE RESULTS OF 99% OCCUPIED BANDWIDTH .....	16
<b>4 MAXIMUM CONDUCTED OUTPUT POWER AND E.I.R.P.....</b>	<b>18</b>
4.1 LIMIT .....	18
4.2 MEASUREMENT PROCEDURE .....	19
4.3 TEST CONFIGURATION .....	19
4.4 TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER AND E.I.R.P.....	19
<b>5 RADIATED EMISSIONS .....</b>	<b>22</b>
5.1 LIMIT .....	22
5.2 MEASUREMENT PROCEDURE .....	23
5.3 TEST CONFIGURATION .....	24
5.4 TEST RESULTS OF RADIATED EMISSIONS .....	26
<b>6 ANTENNA REQUIREMENT .....</b>	<b>39</b>

## Revision History

Report No.	Version	Description	Issued Date
221101783SHA-002	Rev. 01	Initial issue of report	December 25, 2022

## Measurement result summary

TEST ITEM	FCC REFERENCE	IC REFERENCE	RESULT
26 dB Bandwidth & 99% Occupied Bandwidth	15.407(a)	RSS-247 Issue 2 Clause 6	Verified
Minimum 6dB Bandwidth	15.407(e)	RSS-247 Issue 2 Clause 6	NA
Maximum Conducted Output Power	15.407(a)	RSS-247 Issue 2 Clause 6	Verified
Power spectral density	15.407(a)	RSS-247 Issue 2 Clause 6	NA
Radiated emission	15.407(b) 15.205 15.209	RSS-247 Issue 2 Clause 6 RSS-Gen Issue 5 Clause 8.9&8.10	Pass
Power line conducted emission	15.407(b) 15.207	RSS-Gen Issue 5 Clause 8.8	NA
Frequency Stability	15.407(g)	RSS-Gen Issue 5 Clause 8.11	NA
Antenna requirement	15.203	-	Pass

Notes: 1: NA =Not Applicable

2. Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.

3: Additions, Deviations and Exclusions from Standards: None.

4. Verified= This report is based on the previous report. For specific changes, need to verified power.

**TEST REPORT**

**1 GENERAL INFORMATION**

**1.1 Description of Equipment Under Test (EUT)**

Product name:	Wireless Module
Type/Model:	ZDRK8812CU
Description of EUT:	EUT is a Wireless Module with WiFi function, there is only one model.
Rating:	DC 3.3V
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Product Marketing Name:	ZDRK8812CU
HVIN:	ZDRK8812CU
Software Version:	/
Hardware Version:	V1.00
Serial numbers:	0221228-02-001(for radiation sample), 0221228-02-002(for conduction sample)
Sample received date:	November 10, 2022
Date of test:	November 10, 2022 ~ December 18, 2022

**1.2 Technical Specification**

FCC

Frequency Range:	5150 ~ 5250MHz 5250 ~ 5350MHz 5470 ~ 5725MHz 5725 ~ 5850MHz
Support Standards:	802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80),
Type of Modulation:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM,1024QAM)
Channel Number:	For 5180 ~ 5240MHz band: Channel 36 - 48 For 5260 ~ 5320MHz Band: Channel 52 - 64 For 5500 ~ 5700MHz Band: Channel 100 - 140 For 5745 ~ 5825MHz band: Channel 149 - 165

IC

Frequency Range:	5150 ~ 5250MHz 5250 ~ 5350MHz 5470 ~ 5600MHz 5650~ 5725MHz 5725 ~ 5850MHz
Support Standards:	802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80),
Type of Modulation:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

**TEST REPORT**

	OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Channel Number:	For 5180 ~ 5240MHz band: Channel 36 - 48 For 5260 ~ 5320MHz Band: Channel 52 - 64 For 5500 ~ 5590MHz Band: Channel 100 - 118 For 5660 ~ 5700MHz Band: Channel 132 - 140 For 5745 ~ 5825MHz band: Channel 149 - 165

**1.3 Working Frequencies for this report**

FCC

802.11a/n(HT20)/ac(HT20)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz
48	5240MHz	52	5260 MHz	56	5280 MHz
60	5300 MHz	64	5320 MHz	100	5500 MHz
104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz	124	5620 MHz
128	5640 MHz	132	5660 MHz	136	5680 MHz
140	5700 MHz	149	5745 MHz	153	5765 MHz
157	5785 MHz	161	5805 MHz	165	5825 MHz
802.11n(HT40)/ac(HT40)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550MHz
118	5590 MHz	126	5630 MHz	134	5670 MHz
151	5755 MHz	159	5795 MHz	-	-
802.11ac(HT80)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210MHz	58	5290MHz	106	5530 MHz
112	5610 MHz	155	5775 MHz	-	-

IC

802.11a/n(HT20)/ac(HT20)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz
48	5240MHz	52	5260 MHz	56	5280 MHz
60	5300 MHz	64	5320 MHz	100	5500 MHz
104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	132	5660 MHz	136	5680 MHz

**TEST REPORT**

140	5700 MHz	149	5745 MHz	153	5765 MHz
157	5785 MHz	161	5805 MHz	165	5825 MHz
<b>802.11n(HT40)/ac(HT40)</b>					
Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550MHz
134	5670 MHz	151	5755 MHz	159	5795 MHz
<b>802.11ac(HT80)</b>					
Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210MHz	58	5290MHz	106	5530 MHz
155	5775 MHz	-	-	-	-

**1.4 Antenna information**

No.	Antenna Type	Gain	Note
0	PCB Antenna	1.81dBi	External type
1	PCB Antenna	3.07dBi	On Board type

Mode	Tx/Rx Function	Beamforming function	CDD function	Directional gain (dBi)
802.11a	1Tx/1Rx	NO	NO	
802.11n(HT20)	2Tx/2Rx	NO	NO	2.486
802.11n(HT40)	2Tx/1Rx	NO	NO	2.486
802.11ac(HT20)	2Tx/2Rx	NO	NO	2.486
802.11ac(HT40)	2Tx/1Rx	NO	NO	2.486
802.11ac(HT80)	2Tx/1Rx	NO	NO	2.486

Note: For 802.11a mode, it only supports 1TX.

For 802.11n and 802.11ac modes, it can support 2TX, all the two transmit signals are completely uncorrelated with each other, so the directional gain =  $10 \log ((10^{G1/10} + 10^{G2/10} + \dots + 10^{Gn/10}) / N_{ANT})$



**TEST REPORT****1.5 Description of Test Facility**

<b>Name:</b>	Intertek Testing Services Shanghai
<b>Address:</b>	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
<b>Telephone:</b>	86 21 61278200
<b>Telefax:</b>	86 21 54262353

<b>The test facility is recognized, certified, or accredited by these organizations:</b>	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

## 2 TEST SPECIFICATIONS

### 2.1 Standards or specification

47CFR Part 15 (2019)  
 ANSI C63.10 (2013)  
 RSS-247 Issue 2 (February 2017)  
 RSS-Gen Issue 5 (March 2019) Amendment 1  
 KDB 789033 D02 v02r01

### 2.2 Mode of operation during the test

While testing transmitting mode of EUT, the continuously transmission was applied by following software.

Software name	Manufacturer	Version	Supplied by
MPTool	-	-	Client

The lowest, middle and highest channel for the following modes were tested as representatives.

Frequency Band (MHz)	Mode	Lowest (MHz)	Middle (MHz)	Highest (MHz)
5150 - 5250	802.11a	5180	5200	5240
	802.11n(HT20)	5180	5200	5240
	802.11n(HT40)	5190	/	5230
	802.11ac(VHT20)	5180	5200	5240
	802.11ac(VHT40)	5190	/	5230
	802.11ax(HE80)	5210	/	/
5250 - 5350	802.11a	5260	5300	5320
	802.11n(HT20)	5260	5300	5320
	802.11n(HT40)	5270	/	5310
	802.11ac(VHT20)	5260	5300	5320
	802.11ac(VHT40)	5270	/	5310
	802.11ac(HT80)	5290	/	/
5470 - 5725	802.11a	5500	5580	5700
	802.11n(HT20)	5500	5580	5700
	802.11n(HT40)	5510	5550	5670
	802.11ac(VHT20)	5500	5580	5700
	802.11ac(VHT40)	5510	5550	5670
	802.11ac(HT80)	5530	/	/
5725 - 5850	802.11a	5745	5785	5825

**TEST REPORT**

	802.11n(HT20)	5745	5785	5825
	802.11n(HT40)	5755	/	5795
	802.11ac(VHT20)	5745	5785	5825
	802.11ac(VHT40)	5755	/	5795
	802.11ac(HT80)	5775	/	/

**Data rate and Power setting:**

The pre-scan for the conducted power with all data rates in each modulation and band was used, and the worst case was found and used in all test cases. After this pre-scan, we choose the following table of the data rate as the worst case.

Frequency Band (MHz)	Mode	Worst case data rate
5150 - 5250	802.11a	6Mbps
	802.11n(HT20)	MCS0
	802.11n(HT40)	MCS0
	802.11ac(VHT20)	MCS0
	802.11ac(VHT40)	MCS0
	802.11ac(VHT80)	MCS0
5250 - 5350	802.11a	6Mbps
	802.11n(HT20)	MCS0
	802.11n(HT40)	MCS0
	802.11ac(VHT20)	MCS0
	802.11ac(VHT40)	MCS0
	802.11ac(VHT80)	MCS0
5500 - 5725	802.11a	6Mbps
	802.11n(HT20)	MCS0
	802.11n(HT40)	MCS0
	802.11ac(VHT20)	MCS0
	802.11ac(VHT40)	MCS0
	802.11ac(VHT80)	MCS0
5725 - 5850	802.11a	6Mbps
	802.11n(HT20)	MCS0
	802.11n(HT40)	MCS0
	802.11ac(VHT20)	MCS0
	802.11ac(VHT40)	MCS0
	802.11ac(VHT80)	MCS0

**TEST REPORT**

**2.3 Test software list**

Test Items	Software	Manufacturer	Version
Conducted emission	ESxS-K1	R&S	V2.1.0
Radiated emission	ES-K1	R&S	V1.71

**2.4 Test peripherals list**

Item No.	Name	Band and Model	Description
1	Laptop computer	DELL 5480	-
2	RF cable	/	0.2m length; 0.5dB loss
3	DC REGULATED POWER SUPPLY	QJE/QJ3003H	0-30V 0-3A

**2.5 Test environment condition:**

Test items	Temperature	Humidity
26 dB Bandwidth & 99% Occupied Bandwidth	19°C	53% RH
Minimum 6dB Bandwidth		
Maximum Conducted Output Power		
Power spectral density		
Radiated Emissions in restricted frequency bands	20°C	53% RH
Power line conducted emission	20°C	53% RH

**TEST REPORT**

**2.6 Instrument list**

Radiated Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Test Receiver	R&S	ESIB 26	EC 3045	2023-07-18
<input checked="" type="checkbox"/>	Test Receiver	Keysight	N9030B	EC 6078	2023-06-04
<input checked="" type="checkbox"/>	Bilog Antenna	TESEQ	CBL 6112B	EC 6411	2023-08-23
<input checked="" type="checkbox"/>	TRILOG broadband Antenna	Schwarzbeck	VULB9168	EC 6402	2023-01-17
<input checked="" type="checkbox"/>	Horn antenna	ETS	3117	EC 4792-1	2023-08-28
<input checked="" type="checkbox"/>	Horn antenna	ETS	3116C	EC 5955	2023-06-17
<input checked="" type="checkbox"/>	Horn antenna	TOYO	HAP18-26W	EC 4792-3	2023-07-29
<input checked="" type="checkbox"/>	Pre-amplifier	R&S	AFS42-00101800-25-S-42	EC 5262	2023-06-04
<input checked="" type="checkbox"/>	Semi-anechoic chamber	Albatross project	-	EC 3048	2023-07-08
RF test					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	PXA Signal Analyzer	Keysight	N9030A	EC 5338	2023-03-14
<input type="checkbox"/>	PXA Signal Analyzer	Keysight	N9030B	EC 6078	2022-06-10
<input type="checkbox"/>	Power sensor	Agilent	U2021XA	EC 5338-1	2023-03-14
<input type="checkbox"/>	Vector Signal Generator	Agilent	N5182B	EC 5175	2023-03-14
<input type="checkbox"/>	MXG Analog Signal Generator	Agilent	N5181A	EC 5338-2	2023-03-14
<input type="checkbox"/>	Test Receiver	R&S	ESCI 7	EC 4501	2023-12-08
<input type="checkbox"/>	Universal Radio Communication Tester	R&S	CMW500	EC5944	2023-01-20
<input type="checkbox"/>	Universal Radio Communication Tester	R&S	CMW500	EC 6209	2023-01-20
<input type="checkbox"/>	Signal generator	Agilent	N5182A	EC 6172	2023-08-09
<input type="checkbox"/>	Signal generator	Agilent	N5181A	EC 6171	2023-08-09
<input checked="" type="checkbox"/>	Climate chamber	GWS	MT3065	EC 6021	2023-03-06
Additional instrument					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3783	2023-03-24
<input checked="" type="checkbox"/>	Pressure meter	YM3	Shanghai Mengde	EC 4620	2023-09-13

**2.7 Measurement uncertainty**

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

**TEST REPORT**

Test item	Measurement uncertainty
Maximum peak output power	$\pm 0.74\text{dB}$
26 dB Bandwidth & 99% Occupied Bandwidth	
Minimum 6dB Bandwidth	
Power spectral density	
Radiated Emissions in restricted frequency bands below 1GHz	$\pm 4.90\text{dB}$
Radiated Emissions in restricted frequency bands above 1GHz	$\pm 5.02\text{dB}$
Emission outside the frequency band	$\pm 2.89\text{dB}$
Power line conducted emission	$\pm 3.19\text{dB}$

**TEST REPORT****3 99% Occupied Bandwidth****Test result: Pass****3.1 Limit**

None

**3.2 Measurement Procedure**

The EUT was tested according to test procedure of "KDB789033 D02 General UNII Test Procedures New Rules"

**26 dB Bandwidth**

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

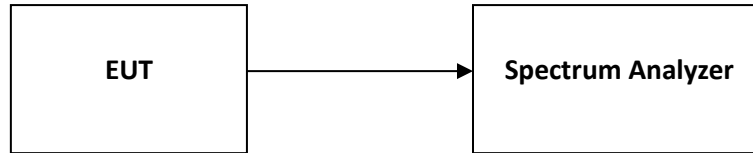
**99% Occupied Bandwidth**

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW  $\geq 3 \cdot$  RBW
5. 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.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. 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% occupied bandwidth is the difference between these two frequencies.

TEST REPORT

### 3.3 Test Configuration



### 3.4 The results of 99% Occupied Bandwidth

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.644	5171.164	5188.808	---	---
	Ant2	5180	16.579	5171.697	5188.276	---	---
	Ant1	5200	16.704	5191.684	5208.388	---	---
	Ant2	5200	16.554	5191.714	5208.268	---	---
	Ant1	5240	16.698	5231.639	5248.337	---	---
	Ant2	5240	16.530	5231.738	5248.268	---	---
	Ant1	5260	16.689	5251.677	5268.366	---	---
	Ant2	5260	16.515	5251.751	5268.266	---	---
	Ant1	5300	16.941	5291.558	5308.499	---	---
	Ant2	5300	16.583	5291.704	5308.287	---	---
	Ant1	5320	16.631	5311.690	5328.321	---	---
	Ant2	5320	16.547	5311.720	5328.267	---	---
	Ant1	5500	16.592	5491.739	5508.331	---	---
	Ant2	5500	16.877	5491.602	5508.479	---	---
	Ant1	5600	16.762	5591.609	5608.371	---	---
	Ant2	5600	16.695	5591.635	5608.330	---	---
	Ant1	5700	16.683	5691.608	5708.291	---	---
	Ant2	5700	16.866	5691.590	5708.456	---	---
	Ant1	5745	16.536	5736.721	5753.257	---	---
	Ant2	5745	16.581	5736.680	5753.261	---	---
Ant1	5785	16.571	5776.668	5793.239	---	---	
Ant2	5785	16.646	5776.648	5793.294	---	---	
Ant1	5825	16.565	5816.685	5833.250	---	---	
Ant2	5825	16.639	5816.667	5833.306	---	---	
11N20MIMO	Ant1	5180	17.654	5171.186	5188.840	---	---
	Ant2	5180	17.609	5171.187	5188.796	---	---
	Ant1	5200	17.694	5191.164	5208.858	---	---
	Ant2	5200	17.630	5191.157	5208.787	---	---
	Ant1	5240	17.666	5231.159	5248.825	---	---
	Ant2	5240	17.652	5231.165	5248.817	---	---
	Ant1	5260	17.730	5251.167	5268.897	---	---
	Ant2	5260	17.640	5251.182	5268.822	---	---
	Ant1	5300	17.675	5291.178	5308.853	---	---
	Ant2	5300	17.647	5291.170	5308.817	---	---
	Ant1	5320	17.683	5311.179	5328.862	---	---
	Ant2	5320	17.637	5311.177	5328.814	---	---
	Ant1	5500	17.617	5491.204	5508.821	---	---
	Ant2	5500	17.821	5491.146	5508.967	---	---
	Ant1	5600	17.635	5591.201	5608.836	---	---
	Ant2	5600	17.660	5591.185	5608.845	---	---
	Ant1	5700	17.641	5691.185	5708.826	---	---
	Ant2	5700	17.639	5691.209	5708.848	---	---
	Ant1	5745	17.658	5736.182	5753.840	---	---
	Ant2	5745	17.618	5736.190	5753.808	---	---



**TEST REPORT**

	Ant1	5785	17.650	5776.173	5793.823	---	---
	Ant2	5785	17.654	5776.192	5793.846	---	---
	Ant1	5825	17.665	5816.172	5833.837	---	---
	Ant2	5825	17.783	5816.143	5833.926	---	---
11N40MIMO	Ant1	5190	36.282	5171.901	5208.183	---	---
	Ant2	5190	36.168	5171.868	5208.036	---	---
	Ant1	5230	36.256	5211.853	5248.109	---	---
	Ant2	5230	36.196	5211.901	5248.097	---	---
	Ant1	5270	36.325	5251.910	5288.235	---	---
	Ant2	5270	36.195	5251.870	5288.065	---	---
	Ant1	5310	36.361	5291.869	5328.230	---	---
	Ant2	5310	36.227	5291.803	5328.030	---	---
	Ant1	5510	36.215	5491.957	5528.172	---	---
	Ant2	5510	36.452	5491.946	5528.398	---	---
	Ant1	5590	36.243	5571.908	5608.151	---	---
	Ant2	5590	36.240	5571.953	5608.193	---	---
	Ant1	5670	36.250	5651.908	5688.158	---	---
	Ant2	5670	36.282	5651.833	5688.115	---	---
	Ant1	5755	36.420	5736.934	5773.354	---	---
	Ant2	5755	36.308	5736.875	5773.183	---	---
	Ant1	5795	36.312	5776.886	5813.198	---	---
	Ant2	5795	36.260	5776.946	5813.206	---	---
11AC80MIMO	Ant1	5210	74.760	5172.732	5247.492	---	---
	Ant2	5210	74.781	5172.577	5247.358	---	---
	Ant1	5290	74.807	5252.897	5327.704	---	---
	Ant2	5290	74.755	5252.576	5327.331	---	---
	Ant1	5530	74.612	5492.906	5567.518	---	---
	Ant2	5530	74.610	5493.024	5567.634	---	---
	Ant1	5610	74.776	5572.660	5647.436	---	---
	Ant2	5610	74.426	5572.908	5647.334	---	---
	Ant1	5775	74.551	5737.827	5812.378	---	---
	Ant2	5775	75.028	5737.652	5812.680	---	---

## 4 Maximum conducted output power and e.i.r.p.

Test result: Pass

### 4.1 Limit

For an outdoor access point operating in the band 5.15-5.25GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W provided the maximum antenna gain does not exceed 6dBi.

The maximum e.i.r.p. at any elevation angle above 30 degrees from the horizon must not exceed 125mW (21 dBm).

For an indoor access point operating in the band 5.15-5.25GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6dBi.

For fixed point-to-point access points operating in the band 5.15-5.25GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W.

For client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi. (FCC Limit)

For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or  $11\text{dBm} + 10\log B$ , where B is the 26dB emission bandwidth in megahertz. (FCC limit)

For the band 5.725-5.85GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W. (FCC limit)

For Frequency Band 5150-5250 MHz, the maximum e.i.r.p. shall not exceed  $200\text{ mW}$  or  $10 + 10\log 10B$ , dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. (IC limit)

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of  $250\text{ mW}$  or  $11\text{ dBm} + 10\log B$ , where B is the 99% emission bandwidth in megahertz. (IC limit)

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum e.i.r.p. shall not exceed  $1.0\text{ W}$  or  $17 + 10\log 10B$ , dBm, whichever is less. B is the 99% emission bandwidth in megahertz. (IC limit)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed  $1\text{ W}$ . (IC limit)

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

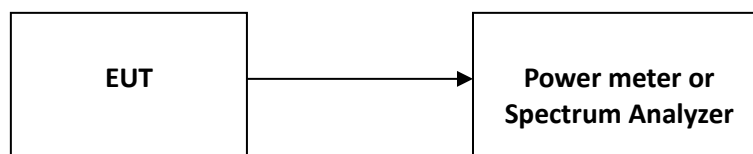
**TEST REPORT**

**4.2 Measurement Procedure**

The EUT was tested according to test procedure of “KDB789033 D02 General UNII Test Procedures New Rules”

- (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (ii) Set RBW = 1 MHz.
- (iii) Set VBW ≥ 3 MHz.
- (iv) Number of points in sweep ≥ 2 × span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
- (v) Sweep time = auto.
- (vi) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
- (vii) If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run.”
- (viii) Trace average at least 100 traces in power averaging (rms) mode.
- (ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

**4.3 Test Configuration**



**4.4 Test Results of Maximum conducted output power and e.i.r.p.**

Test Mode	Antenna	Frequency [MHz]	Max Power [dBm]	Total Power (dBm)	Limit [dBm]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11A	Ant0	5180	14.62	14.62	≤23.98	16.43	≤22	PASS
	Ant1	5180	15.01	15.01	≤23.98	18.08	≤22	PASS
	Ant0	5200	14.94	14.94	≤23.98	16.75	≤22	PASS
	Ant1	5200	15.23	15.23	≤23.98	18.30	≤22	PASS
	Ant0	5240	15.42	15.42	≤23.98	17.23	≤22	PASS

**TEST REPORT**

	Ant1	5240	14.71	14.71	≤23.98	17.78	≤22	PASS
	Ant0	5260	14.30	14.30	≤23.98	16.11	≤23	PASS
	Ant1	5260	14.38	14.38	≤23.60	17.45	≤23	PASS
	Ant0	5300	14.95	14.95	≤23.98	16.76	≤23	PASS
	Ant1	5300	13.67	13.67	≤23.98	16.74	≤23	PASS
	Ant0	5320	14.22	14.22	≤23.98	16.03	≤23	PASS
	Ant1	5320	13.49	13.49	≤23.70	16.56	≤23	PASS
	Ant0	5500	14.36	14.36	≤23.98	16.17	≤23	PASS
	Ant1	5500	13.90	13.90	≤23.98	16.97	≤23	PASS
	Ant0	5600	14.98	14.98	≤23.98	16.79	≤23	PASS
	Ant1	5600	14.43	14.43	≤23.98	17.5	≤23	PASS
	Ant0	5700	14.35	14.35	≤23.98	16.16	≤23	PASS
	Ant1	5700	14.12	14.12	≤23.98	17.19	≤23	PASS
	Ant0	5745	14.24	14.24	≤30.00	16.05	≤30	PASS
	Ant1	5745	14.34	14.34	≤30.00	17.41	≤30	PASS
	Ant0	5785	14.55	14.55	≤30.00	16.36	≤30	PASS
	Ant1	5785	14.44	14.44	≤30.00	17.51	≤30	PASS
	Ant0	5825	14.46	14.46	≤30.00	16.27	≤30	PASS
Ant1	5825	14.71	14.71	≤30.00	17.78	≤30	PASS	
11N20MIMO	Ant0	5180	14.00	17.44	≤23.98	19.93	≤22	PASS
	Ant1	5180	14.82					PASS
	Ant0	5200	14.48	17.31	≤23.98	19.80	≤22	PASS
	Ant1	5200	14.12					PASS
	Ant0	5240	14.11	18.00	≤23.98	20.49	≤22	PASS
	Ant1	5240	15.72					PASS
	Ant0	5260	14.35	17.11	≤23.98	19.60	≤23	PASS
	Ant1	5260	13.83					PASS
	Ant0	5300	14.06	16.66	≤23.88	19.15	≤23	PASS
	Ant1	5300	13.19					PASS
	Ant0	5320	14.30	16.66	≤23.98	19.15	≤23	PASS
	Ant1	5320	12.88					PASS
	Ant0	5500	13.84	16.74	≤23.88	19.23	≤23	PASS
	Ant1	5500	13.61					PASS
	Ant0	5600	13.54	16.67	≤23.86	19.16	≤23	PASS
	Ant1	5600	13.78					PASS
	Ant0	5700	13.79	16.62	≤23.88	19.11	≤23	PASS
	Ant1	5700	13.43					PASS
	Ant0	5745	14.75	17.42	≤30.00	19.91	≤30	PASS
	Ant1	5745	14.03					PASS
Ant0	5785	14.60	16.76	≤30.00	19.25	≤30	PASS	
Ant1	5785	12.70					PASS	
Ant0	5825	14.81	17.24	≤30.00	19.73	≤30	PASS	
Ant1	5825	13.57					PASS	
11N40MIMO	Ant0	5190	14.41	17.50	≤23.98	19.99	≤23	PASS
	Ant1	5190	14.56					PASS
	Ant0	5230	14.81	17.60	≤23.98	20.09	≤23	PASS
	Ant1	5230	14.36					PASS
	Ant0	5270	13.16	16.18	≤23.98	18.67	≤24	PASS
	Ant1	5270	13.17					PASS
	Ant0	5310	14.02	16.25	≤23.98	18.74	≤24	PASS
	Ant1	5310	12.29					PASS
	Ant0	5510	13.77	16.44	≤23.98	18.93	≤24	PASS
	Ant1	5510	13.07					PASS
	Ant0	5590	13.54	16.80	≤23.98	19.29	≤24	PASS
	Ant1	5590	14.02					PASS
	Ant0	5670	13.57	16.04	≤23.98	18.53	≤24	PASS
	Ant1	5670	12.41					PASS
	Ant0	5755	13.48	16.97	≤30.00	19.46	≤30	PASS
	Ant1	5755	14.40					PASS
Ant0	5795	13.35	16.58	≤30.00	19.07	≤30	PASS	
Ant1	5795	13.77					PASS	

**TEST REPORT**

11AC80MIMO	Ant0	5210	13.90	16.96	≤23.98	19.45	≤23	PASS
	Ant1	5210	13.99					PASS
	Ant0	5290	13.43	16.20	≤23.98	18.69	≤24	PASS
	Ant1	5290	12.93					PASS
	Ant0	5530	12.57	15.44	≤23.98	17.93	≤24	PASS
	Ant1	5530	12.28					PASS
	Ant0	5610	13.07	16.00	≤23.98	18.49	≤24	PASS
	Ant1	5610	12.91					PASS
	Ant0	5775	13.35	16.42	≤30.00	18.91	≤30	PASS
	Ant1	5775	13.46					PASS

## 5 Radiated Emissions

Test result: Pass

### 5.1 Limit

The radiated emissions which fall in the restricted bands, and the radiated emissions below 1GHz, must comply with the radiated emission limits specified showed as below:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

The radiated emissions which fall outside the restrict bands, should comply with the EIRP limit as below:

For transmitters operating in the 5.15 - 5.25 / 5.25 - 5.35 / 5.47 - 5.725GHz band:

Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBμV/m)
<5150	-27	68.20
>5350		
<5470		
>5725		

For transmitters operating in the 5.725 - 5.85GHz band:

Frequency (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength (3m) (dBμV/m)
<5650	-27	68.20
5650 ~ 5700	-27 ~ 10	68.20 ~ 105.20
5700 ~ 5720	10 ~ 15.6	105.20 ~ 110.80
5720 ~ 5725	15.6 ~ 27	110.80 ~ 122.20
5850 ~ 5855	27 ~ 15.6	122.20 ~ 110.80
5855 ~ 5875	15.6 ~ 10	110.80 ~ 105.20
5875 ~ 5925	10 ~ -27	105.20 ~ 68.20
>5925	-27	68.20

**TEST REPORT****5.2 Measurement Procedure****For Radiated emission below 30MHz:**

- a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) Both X and Y axes of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to peak or quasi-peak detect function and specified bandwidth with maximum hold mode.

**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

**For Radiated emission above 30MHz:**

- a) The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meters chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to peak or quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

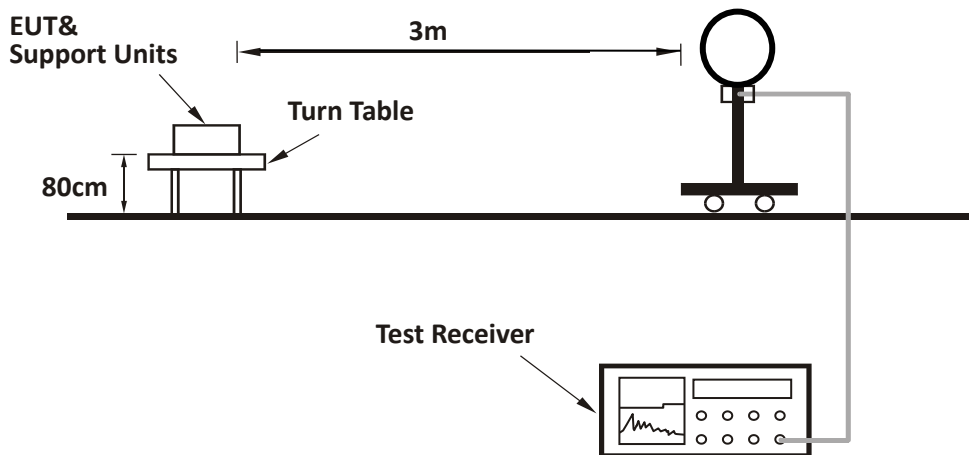
**Note:**

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for peak or quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz at frequency above 1GHz for peak detection above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 3 x RBW (Duty cycle  $\geq 98\%$ ) for average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

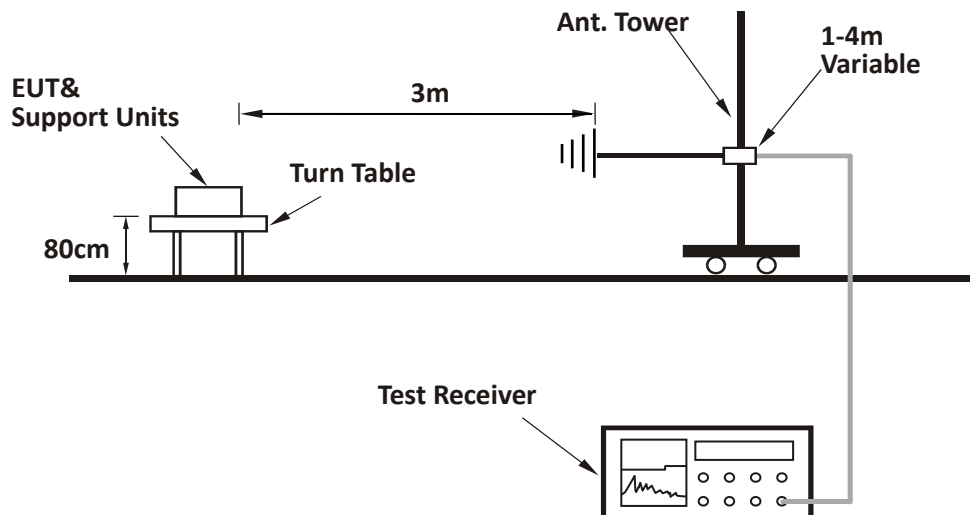
**TEST REPORT**

**5.3 Test Configuration**

**For Radiated emission below 30MHz:**



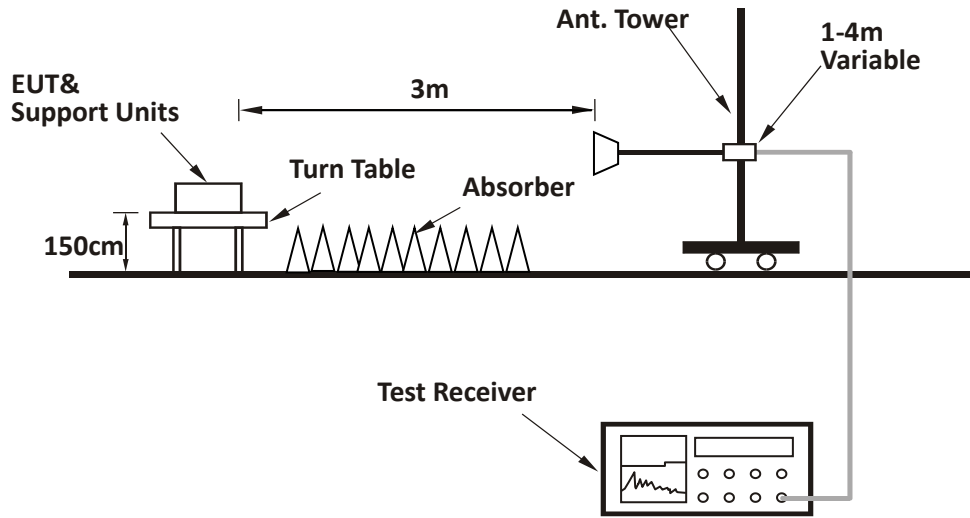
**For Radiated emission 30MHz to 1GHz:**





**TEST REPORT**

**For Radiated emission above 1GHz:**

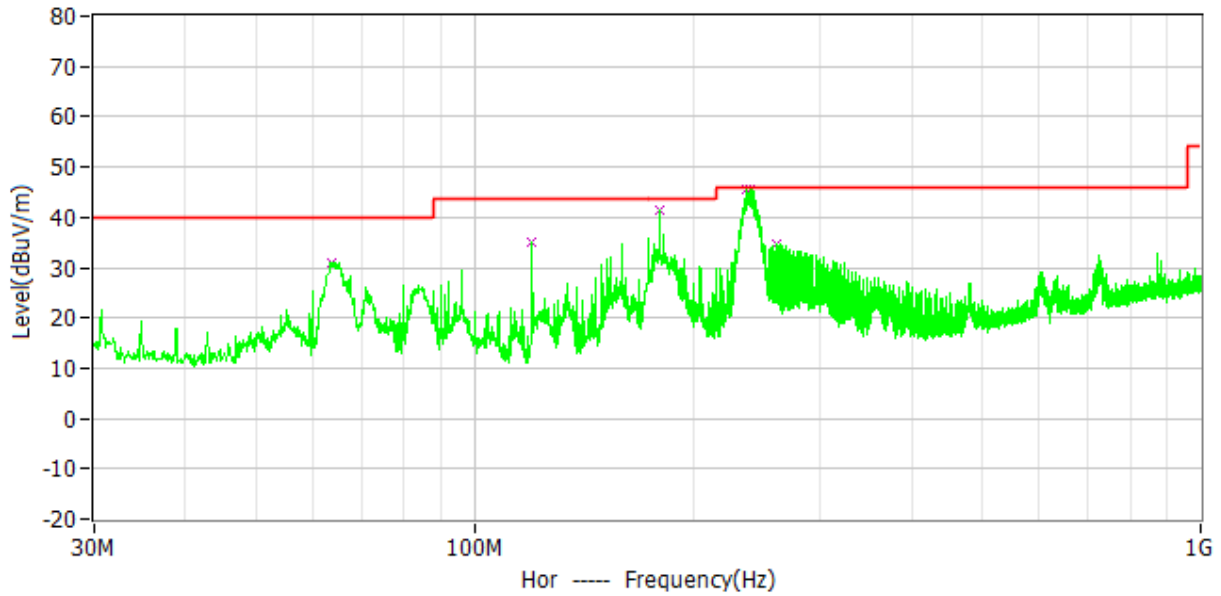


**TEST REPORT**

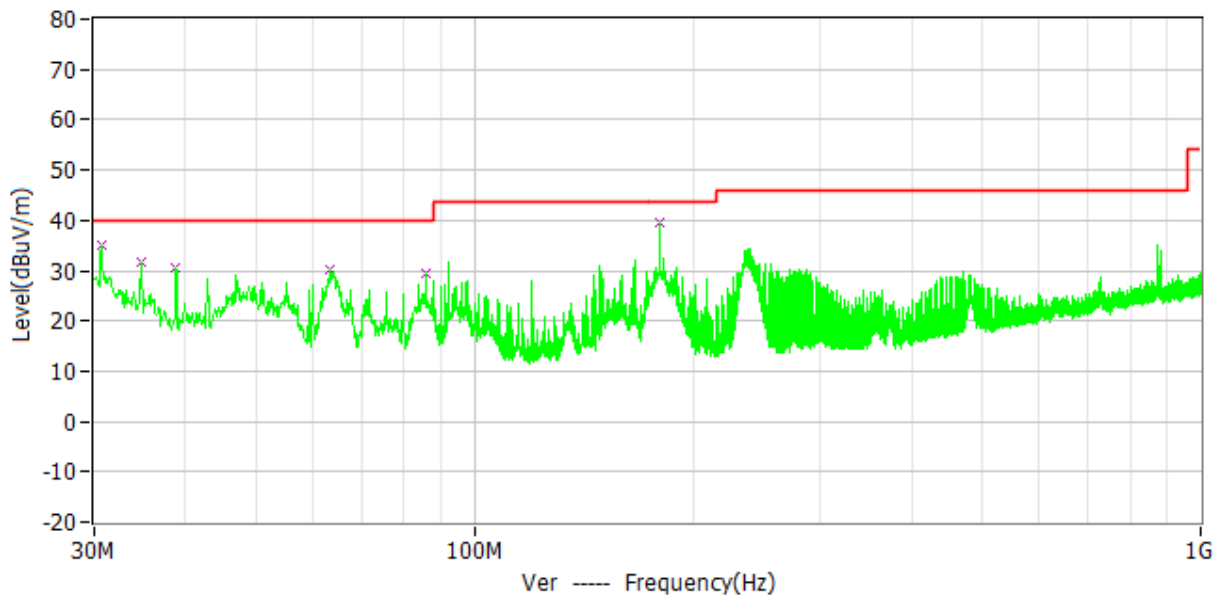
**5.4 Test Results of Radiated Emissions**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Horizontal



Vertical



**TEST REPORT**

**Test data below 1GHz**

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	63.562	31.1	13.6	40.0	8.9	PK
H	120.016	35.1	11.6	43.5	8.4	PK
H	179.962	41.5	13.1	43.5	2.0	PK
H	237.677	45.6	12.9	46.0	0.4	PK
H	239.714	45.6	13.0	46.0	0.4	PK
H	260.084	34.6	13.8	46.0	11.4	PK
V	30.679	35.2	12.9	40.0	4.8	PK
V	34.753	31.8	13.3	40.0	8.2	PK
V	38.827	30.4	13.7	40.0	9.6	PK
V	63.465	30.1	13.6	40.0	9.9	PK
V	85.872	29.3	9.2	40.0	10.7	PK
V	179.962	39.5	13.1	43.5	4.0	PK

**TEST REPORT**

**Test result above 1GHz:**

The emission was conducted from 1GHz to 40GHz

**U-NII-1 Band:**

802.11a

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5180.00	108.5	40.9	Fundamental	/	PK
	V	5180.00	102.0	40.9	Fundamental	/	PK
	H	5150.00	68.2	40.9	74.00	5.8	PK
	H	5150.00	53.5	40.9	54.00	0.5	AV
	V	5150.00	62.7	40.9	74.00	11.3	PK
	V	5150.00	51.0	40.9	54.00	3.0	AV
	H	10360.00	45.8	-3.9	68.20	22.4	PK
	H	15540.00	47.7	-2.5	68.20	20.5	PK
	V	10360.00	50.7	-3.9	68.20	17.5	PK
	V	15540.00	53.2	-2.5	68.20	15	PK
M	H	10440.00	46.1	-3.9	68.20	22.1	PK
	H	15660.00	48.6	-2.5	68.20	19.6	PK
	V	10440.00	47.7	-3.9	68.20	20.5	PK
	V	15660.00	47.7	-2.5	68.20	20.5	PK
H	H	5240.00	108.5	40.9	Fundamental	/	PK
	V	5240.00	103.0	40.9	Fundamental	/	PK
	H	5350.00	59.8	41.0	74.00	14.2	PK
	H	5350.00	48.5	41.0	54.00	5.5	AV
	V	5350.00	59.2	41.0	74.00	14.8	PK
	V	5350.00	48.5	41.0	54.00	5.5	AV
	H	10480.00	45.3	-3.8	68.20	22.9	PK
	H	15720.00	50.9	-2.7	68.20	17.3	PK
	V	10480.00	49.7	-3.8	68.20	18.5	PK
	V	15720.00	53.9	-2.7	68.20	14.3	PK

802.11n20

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5180.00	108.7	40.9	Fundamental	/	PK
	V	5180.00	105.8	40.9	Fundamental	/	PK
	H	5150.00	66.9	40.9	74.00	7.1	PK
	H	5150.00	50.3	40.9	54.00	3.7	AV
	V	5150.00	63.5	40.9	74.00	10.5	PK
	V	5150.00	49.7	40.9	54.00	4.3	AV
	H	10360.00	45.9	-3.9	68.20	22.3	PK
	H	15540.00	48.2	-2.5	68.20	20.0	PK
	V	10360.00	47.1	-3.9	68.20	21.1	PK
	V	15540.00	53.4	-2.5	68.20	14.8	PK
M	H	10440.00	46.3	-3.9	68.20	21.9	PK
	H	15660.00	48.2	-2.5	68.20	20.0	PK
	V	10440.00	49.1	-3.9	68.20	19.1	PK
	V	15660.00	51.8	-2.5	68.20	16.4	PK
H	H	5240.00	110.1	40.9	Fundamental	/	PK
	V	5240.00	105.2	40.9	Fundamental	/	PK
	H	5350.00	60.2	41.0	74.00	13.8	PK
	H	5350.00	48.7	41.0	54.00	5.3	AV
	V	5350.00	60.1	41.0	74.00	13.9	PK
	V	5350.00	48.5	41.0	54.00	5.5	AV
	H	10480.00	47.1	-3.8	68.20	21.1	PK
	H	15720.00	49.7	-2.7	68.20	18.5	PK
	V	10480.00	48.5	-3.8	68.20	19.7	PK
	V	15720.00	53.9	-2.7	68.20	14.3	PK

**TEST REPORT**

802.11n40

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5190.00	104.6	40.9	Fundamental	/	PK
	V	5190.00	100.9	40.9	Fundamental	/	PK
	H	5150.00	64.6	40.9	74.00	9.4	PK
	H	5150.00	53.6	40.9	54.00	0.4	AV
	V	5150.00	63.1	40.9	74.00	10.9	PK
	V	5150.00	52.0	40.9	54.00	2.0	AV
	H	10380.00	43.0	-3.9	68.20	25.2	PK
	H	15570.00	42.5	-2.5	68.20	25.7	PK
	V	10380.00	45.3	-3.9	68.20	22.9	PK
	V	15570.00	49.3	-2.5	68.20	18.9	PK
H	H	5230.00	106.1	40.9	Fundamental	/	PK
	V	5230.00	102.3	40.9	Fundamental	/	PK
	H	5350.00	59.6	41.0	74.00	14.4	PK
	H	5350.00	48.7	41.0	54.00	5.3	AV
	V	5350.00	59.5	41.0	74.00	14.5	PK
	V	5350.00	48.5	41.0	54.00	5.5	AV
	H	10460.00	42.9	-3.8	68.20	25.3	PK
	H	15690.00	46.8	-2.7	68.20	21.4	PK
	V	10460.00	46.2	-3.8	68.20	22.0	PK
	V	15690.00	48.2	-2.7	68.20	20.0	PK

802.11ac80

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5210.00	101.8	40.9	Fundamental	/	PK
	V	5210.00	98.4	40.9	Fundamental	/	PK
	H	5150.00	66.3	40.9	74.00	7.7	PK

**TEST REPORT**

	H	5150.00	53.7	40.9	54.00	0.3	AV
	V	5150.00	63.4	40.9	74.00	10.6	PK
	V	5150.00	53.1	40.9	54.00	0.9	AV
	H	10420.00	42.6	-3.9	68.20	25.6	PK
	H	15630.00	41.3	-2.6	68.20	26.9	PK
	V	10420.00	44.1	-3.9	68.20	24.1	PK
	V	15630.00	46.9	-2.6	68.20	21.3	PK

**U-NII-2A Band:  
802.11a**

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	10520.00	45.5	-3.9	68.20	22.7	PK
	H	15780.00	47.8	-2.7	68.20	20.4	PK
	V	10520.00	48.7	-3.9	68.20	19.5	PK
	V	15780.00	50.6	-2.7	68.20	17.6	PK
M	H	10600.00	44.9	-3.9	68.20	23.3	PK
	H	15900.00	49.7	-2.6	68.20	18.5	PK
	V	10600.00	50.2	-3.9	68.20	18.0	PK
	V	15900.00	55.0	-2.6	68.20	13.2	PK
H	H	5320.00	104.4	41.0	Fundamental	/	PK
	V	5320.00	99.1	41.0	Fundamental	/	PK
	H	5350.00	70.9	41.0	74.00	3.1	PK
	H	5350.00	53.8	41.0	54.00	0.2	AV
	V	5350.00	65.6	41.0	74.00	8.4	PK
	V	5350.00	51.0	41.0	54.00	3.0	AV
	H	10640.00	46.1	-3.9	68.20	22.1	PK
	H	15960.00	45.9	-2.6	68.20	22.3	PK
	V	10640.00	47.1	-3.9	68.20	21.1	PK
	V	15960.00	50.2	-2.6	68.20	18.0	PK

**TEST REPORT**

802.11n20

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	10520.00	48.6	-3.9	68.20	19.6	PK
	H	15780.00	49.3	-2.7	68.20	18.9	PK
	V	10520.00	48.0	-3.9	68.20	20.2	PK
	V	15780.00	54.2	-2.7	68.20	14.0	PK
M	H	10600.00	47.0	-3.9	68.20	21.2	PK
	H	15900.00	49.6	-2.6	68.20	18.6	PK
	V	10600.00	47.1	-3.9	68.20	21.1	PK
	V	15900.00	53.3	-2.6	68.20	14.9	PK
H	H	5320.00	108.0	41.0	Fundamental	/	PK
	V	5320.00	104.0	41.0	Fundamental	/	PK
	H	5350.00	70.2	41.0	74.00	3.8	PK
	H	5350.00	53.8	41.0	54.00	0.2	AV
	V	5350.00	65.6	41.0	74.00	8.4	PK
	V	5350.00	50.8	41.0	54.00	3.2	AV
	H	10640.00	44.5	-3.9	68.20	23.7	PK
	H	15960.00	47.4	-2.6	68.20	20.8	PK
	V	10640.00	48.4	-3.9	68.20	19.8	PK
	V	15960.00	49.7	-2.6	68.20	18.5	PK

802.11n40

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	10540.00	44.9	-3.9	68.20	23.3	PK
	H	15810.00	44.0	-2.6	68.20	24.2	PK
	V	10540.00	48.4	-3.9	68.20	19.8	PK
	V	15810.00	49.2	-2.6	68.20	19.0	PK
H	H	5310.00	104.9	41.0	Fundamental	/	PK
	V	5310.00	101.3	41.0	Fundamental	/	PK



**TEST REPORT**

	H	5350.00	70.4	41.0	74.00	3.6	PK
	H	5350.00	53.6	41.0	54.00	0.4	AV
	V	5350.00	67.2	41.0	74.00	6.8	PK
	V	5350.00	52.1	41.0	54.00	1.9	AV
	H	10620.00	44.3	-3.9	68.20	23.9	PK
	H	15930.00	48.8	-2.6	68.20	19.4	PK
	V	10620.00	44.9	-3.9	68.20	23.3	PK
	V	15930.00	50.7	-2.6	68.20	17.5	PK

802.11ac80

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5290.00	101.8	41.0	Fundamental	/	PK
	V	5290.00	98.5	41.0	Fundamental	/	PK
	H	5350.00	69.2	41.0	74.00	4.8	PK
	H	5350.00	53.8	41.0	54.00	0.2	AV
	V	5350.00	66.4	41.0	74.00	7.6	PK
	V	5350.00	52.5	41.0	54.00	1.5	AV
	H	10580.00	42.6	-4.0	68.20	25.6	PK
	H	15870.00	44.9	-2.6	68.20	23.3	PK
	V	10580.00	43.9	-4.0	68.20	24.3	PK
	V	15870.00	46.6	-2.6	68.20	21.6	PK

**U-NII-2C Band:**

802.11a

Channel	Polarity	Frequency	Corrected Reading	Correct Factor	Limit	Margin	Detector
		(MHz)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
L	H	5500.00	106.2	40.9	Fundamental	/	PK
	V	5500.00	102.2	40.9	Fundamental	/	PK
	H	5460.00	66.1	40.9	74.00	7.9	PK
	H	5460.00	52.7	40.9	54.00	1.3	AV

**TEST REPORT**

	V	5460.00	62.2	40.9	74.00	11.8	PK
	V	5460.00	50.6	40.9	54.00	3.4	AV
	H	16500.00	41.0	-3.9	68.20	27.2	PK
	H	11000.00	50.0	-2.3	68.20	18.2	PK
	V	16500.00	42.3	-3.9	68.20	25.9	PK
	V	11000.00	53.9	-2.3	68.20	14.3	PK
M	H	11160.00	42.4	-3.3	68.20	25.8	PK
	H	16740.00	40.0	-2.8	68.20	28.2	PK
	V	11160.00	44.2	-3.3	68.20	24.0	PK
	V	16740.00	41.4	-2.8	68.20	26.8	PK
H	H	11400.00	42.5	-3.3	68.20	25.7	PK
	H	17100.00	39.3	-2.6	68.20	28.9	PK
	V	11400.00	46.3	-3.3	68.20	21.9	PK
	V	17100.00	42.5	-2.6	68.20	25.7	PK

802.11n20

Channel	Polarity	Frequency	Corrected Reading	Correct Factor	Limit	Margin	Detector
		(MHz)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
L	H	5500.00	109.6	40.9	Fundamental	/	PK
	V	5500.00	106.4	40.9	Fundamental	/	PK
	H	5460.00	65.6	40.9	74.00	8.4	PK
	H	5460.00	51.5	40.9	54.00	2.5	AV
	V	5460.00	62.5	40.9	74.00	11.5	PK
	V	5460.00	50.8	40.9	54.00	3.2	AV
	H	16500.00	41.6	-3.9	68.20	26.6	PK
	H	11000.00	47.8	-2.2	68.20	20.4	PK
	V	16500.00	42.6	-3.9	68.20	25.6	PK
	V	11000.00	52.2	-2.2	68.20	16.0	PK
M	H	11160.00	41.3	-3.3	68.20	26.9	PK
	H	16740.00	39.6	-2.8	68.20	28.6	PK

**TEST REPORT**

	V	11160.00	42.4	-3.3	68.20	25.8	PK
	V	16740.00	44.4	-2.8	68.20	23.8	PK
H	H	11400.00	42.2	-3.4	68.20	26.0	PK
	H	17100.00	39.1	-2.6	68.20	29.1	PK
	V	11400.00	46.6	-3.4	68.20	21.6	PK
	V	17100.00	40.5	-2.6	68.20	27.7	PK

802.11n40

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5510.00	105.1	40.9	Fundamental	/	PK
	V	5510.00	100.5	40.9	Fundamental	/	PK
	H	5460.00	69.7	40.9	74.00	4.3	PK
	H	5460.00	53.8	40.9	54.00	0.2	AV
	V	5460.00	64.3	40.9	74.00	9.7	PK
	V	5460.00	51.9	40.9	54.00	2.1	AV
	H	11020.00	41.5	-3.9	68.20	26.7	PK
	H	16530.00	41.9	-2.3	68.20	26.3	PK
	V	11020.00	41.3	-3.9	68.20	26.9	PK
	V	16530.00	48.2	-2.3	68.20	20.0	PK
M	H	11100.00	41.3	-3.3	68.20	26.9	PK
	H	16650.00	39.4	-2.7	68.20	28.8	PK
	V	11100.00	41.8	-3.3	68.20	26.4	PK
	V	16650.00	38.8	-2.7	68.20	29.4	PK
H	H	11340.00	41.9	-3.5	68.20	26.3	PK
	H	17010.00	39.3	-3.0	68.20	28.9	PK
	V	11340.00	41.6	-3.5	68.20	26.6	PK
	V	17010.00	40.9	-3.0	68.20	27.3	PK

**TEST REPORT**

802.11ac80

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5530.00	99.8	40.9	Fundamental	/	PK
	V	5530.00	96.2	40.9	Fundamental	/	PK
	H	5460.00	68.2	40.9	74.00	5.8	PK
	H	5460.00	53.8	40.9	54.00	0.2	AV
	V	5460.00	64.3	40.9	74.00	9.7	PK
	V	5460.00	53.1	40.9	54.00	0.9	AV
	H	11060.00	41.5	-3.8	68.20	26.7	PK
	H	16590.00	40.3	-2.4	68.20	27.9	PK
	V	11060.00	41.8	-3.8	68.20	26.4	PK
	V	16590.00	44.0	-2.4	68.20	24.2	PK

**U-NII-3 Band:**

802.11a

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5745.00	106.1	41.7	Fundamental	/	PK
	V	5745.00	102.0	41.7	Fundamental	/	PK
	H	11490.00	43.3	-3.3	68.20	24.9	PK
	H	17235.00	39.7	-2.1	68.20	28.5	PK
	V	11490.00	44.9	-3.3	68.20	23.3	PK
	V	17235.00	40.2	-2.1	68.20	28.0	PK
M	H	11570.00	42.7	-3.6	68.20	25.5	PK
	H	17355.00	41.0	-1.9	68.20	27.2	PK
	V	11570.00	48.0	-3.6	68.20	20.2	PK
	V	17355.00	43.9	-1.9	68.20	24.3	PK
H	H	5825.00	104.8	42.0	Fundamental	/	PK
	V	5825.00	101.8	42.0	Fundamental	/	PK

**TEST REPORT**

	H	11650.00	42.1	-3.6	68.20	26.1	PK
	H	17475.00	37.9	-1.9	68.20	30.3	PK
	V	11650.00	47.1	-3.6	68.20	21.1	PK
	V	17475.00	39.4	-1.9	68.20	28.8	PK

802.11n20

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5745.00	107.5	41.7	Fundamental	/	PK
	V	5745.00	103.8	41.7	Fundamental	/	PK
	H	11490.00	42.1	-3.3	68.20	26.1	PK
	H	17235.00	39.0	-2.1	68.20	29.2	PK
	V	11490.00	44.7	-3.3	68.20	23.5	PK
	V	17235.00	40.2	-2.1	68.20	28.0	PK
M	H	11570.00	42.8	-3.5	68.20	25.4	PK
	H	17355.00	40.1	-1.9	68.20	28.1	PK
	V	11570.00	45.6	-3.5	68.20	22.6	PK
	V	17355.00	39.9	-1.9	68.20	28.3	PK
H	H	5825.00	107.6	42.0	Fundamental	/	PK
	V	5825.00	105.1	42.0	Fundamental	/	PK
	H	11650.00	41.6	-3.6	68.20	26.6	PK
	H	17475.00	36.7	-1.9	68.20	31.5	PK
	V	11650.00	47.7	-3.6	68.20	20.5	PK
	V	17475.00	40.3	-1.9	68.20	27.9	PK

802.11n40

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5755.00	104.3	41.7	Fundamental	/	PK
	V	5755.00	101.5	41.7	Fundamental	/	PK

**TEST REPORT**

	H	11510.00	42.4	-3.3	68.20	25.8	PK
	H	17265.00	39.8	-2.1	68.20	28.4	PK
	V	11510.00	43.8	-3.3	68.20	24.4	PK
	V	17265.00	41.8	-2.1	68.20	26.4	PK
H	H	5795.00	105.0	41.9	Fundamental	/	PK
	V	5795.00	101.3	41.9	Fundamental	/	PK
	H	11590.00	42.4	-3.3	68.20	25.8	PK
	H	17385.00	39.6	-2.1	68.20	28.6	PK
	V	11590.00	43.7	-3.3	68.20	24.5	PK
	V	17385.00	44.2	-2.1	68.20	24.0	PK

802.11ac80

Channel	Polarity	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	5775.00	100.5	41.8	Fundamental	/	PK
	V	5775.00	97.6	41.8	Fundamental	/	PK
	H	11550.00	41.4	-3.5	68.20	26.8	PK
	H	17325.00	38.7	-2.0	68.20	29.5	PK
	V	11550.00	41.9	-3.5	68.20	26.3	PK
	V	17325.00	39.1	-2.0	68.20	29.1	PK

- Remark: 1. Correct Factor = Antenna Factor + Cable Loss (- Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.  
 2. Corrected Reading = Original Receiver Reading + Correct Factor  
 3. Margin = Limit - Corrected Reading  
 4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,  
 Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV,  
 Limit = 40.00dBuV/m.  
 Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;  
 Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m;  
 Margin = 40.00dBuV/m - 10.20dBuV/m = 29.80dB.

## 6 Antenna requirement

**Requirement:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

**Result:**

EUT use of a permanently attached antenna and a unique coupling to the intentional radiator, so it can comply with the provisions of this section.

\*\*\*\*\* END \*\*\*\*\*