

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

# RF TEST REPORT

**Report Type:**

FCC Part 15.247 & ISED RSS-247 RF report

**Model:**

ZDRK8812CU

**REPORT NUMBER:**

221101783SHA-001

**ISSUE DATE:**

December 25, 2022

**DOCUMENT CONTROL NUMBER:**

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**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 C)

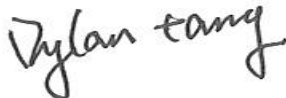
**ANSI C63.10 (2013):** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

**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 (February 2021) Amendment 2:** General Requirements for Compliance of Radio Apparatus

**PREPARED BY:**

**REVIEWED BY:**



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Reviewer

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**TEST REPORT**

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**TEST REPORT****Revision History**

<b>Report No.</b>	<b>Version</b>	<b>Description</b>	<b>Issued Date</b>
221101783SHA-001	Rev. 01	Initial issue of report	December 25, 2022

### Measurement result summary

TEST ITEM	FCC REFERENCE	IC REFERENCE	RESULT
Minimum 6dB Bandwidth	15.247(a)(2)	RSS-247 Issue 2 Clause 5.2	NA
Maximum conducted output power and e.i.r.p.	15.247(b)(3)	RSS-247 Issue 2 Clause 5.4	Verified
Power spectrum density	15.247(e)	RSS-247 Issue 2 Clause 5.2	NA
Emission outside the frequency band	15.247(d)	RSS-247 Issue 2 Clause 5.5	Pass
Radiated Emissions in restricted frequency bands	15.247(d), 15.205&15.209	RSS-Gen Issue 5 Clause 8.9&8.10	Pass
Power line conducted emission	15.207(a)	RSS-Gen Issue 5 Clause 8.8	NA
Occupied bandwidth	-	RSS-Gen Issue 5 Clause 6.6	Verified
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.

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## 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

Frequency Band:	2400MHz ~ 2483.5MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20), IEEE 802.11n(HT40)
Type of Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n(HT20): OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n(HT40): OFDM (64-QAM, 16-QAM, QPSK, BPSK)
Operating Frequency:	2412MHz to 2462MHz for IEEE 802.11b/g/n(HT20) 2422MHz to 2452MHz for IEEE 802.11n(HT40)
Channel Number:	11 Channels for 802.11b, 802.11g ,802.11n(HT20) 7 Channels for 802.11n(HT40)
Channel Separation:	5 MHz

### 1.3 Antenna information

No.	Antenna Type	Gain	Note
0	PIFA Antenna	1.06dBi	External type
1	PIFA Antenna	2.72dBi	On Board type

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Mode	Tx/Rx Function	Beamforming function	CDD function	Directional gain (dBi)
802.11b	1Tx/1Rx	NO	NO	-
802.11g	1Tx/1Rx	NO	NO	-
802.11n(HT20)	2Tx/2Rx	NO	NO	1.97
802.11n(HT40)	2Tx/2Rx	NO	NO	1.97

Note: For 802.11b and 802.11g mode, it only supports 1TX.  
 For 802.11n modes, it can support 2TX, all the two transmit signals are completely uncorrelated with each other, so the directional gain =  $10 \log ((10^{G1/10} + 10^{G2/10} + \dots + 10^{Gn/10}) / N_{ANT})$

### 1.4 Description of Test Facility

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

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



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## 2 TEST SPECIFICATIONS

### 2.1 Standards or specification

47CFR Part 15 (2019)  
 ANSI C63.10 (2013)  
 KDB 558074 (v05r02)  
 RSS-247 Issue 2 (February 2017)  
 RSS-Gen Issue 5 (February 2021) Amendment 2

### 2.2 Mode of operation during the test

While testing transmitting mode of EUT, the internal modulation and continuously transmission was applied.

Software name	Manufacturer	Version	Supplied by
MP Tool	-	-	Client

The lowest, middle and highest channel were tested as representatives.

Frequency Band (MHz)	Mode	Lowest (MHz)	Middle (MHz)	Highest (MHz)
2400-2483.5	802.11b	2412	2437	2462
	802.11g	2412	2437	2462
	802.11n(HT20)	2412	2437	2462
	802.11n(HT40)	2422	2437	2452

#### Data rate and Power setting:

The pre-scan for the conducted power with all rates in each modulation and bands 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
2400-2483.5	802.11b	1Mbps
	802.11g	6Mbps
	802.11n(HT20)	MCS0
	802.11n(HT40)	MCS0

### 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
Minimum 6dB Bandwidth	18°C	51%RH
Maximum conducted output power and e.i.r.p.		
Power spectrum density		
Emission outside the frequency band		
Occupied bandwidth		
Radiated Emissions in restricted frequency bands	19°C	52%RH
Power line conducted emission	19°C	52%RH

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**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"/>	Bilog Antenna	TESEQ	N9030B	EC 6078	2023-06-04
<input checked="" type="checkbox"/>	Horn antenna	R&S	CBL 6112B	EC 6411	2023-08-23
<input type="checkbox"/>	Horn antenna	ETS	3117	EC 4792-1	2023-08-28
<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

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**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 item	Measurement uncertainty
Maximum peak output power	± 0.74dB
Minimum 6dB bandwidth	
Power spectrum density	
Emission outside the frequency band	
Occupied bandwidth	
Radiated Emissions in restricted frequency bands below 1GHz	± 4.90dB
Radiated Emissions in restricted frequency bands above 1GHz	± 5.02dB
Emission outside the frequency band	± 2.89dB
Power line conducted emission	± 3.19dB

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

Test result: Pass

#### 3.1 Limit

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 W. (The e.i.r.p. shall not exceed 4 W)

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beam forming type, the limit should be the minimum of 30dBm and 30+ (6 –antenna gain-beam forming gain).

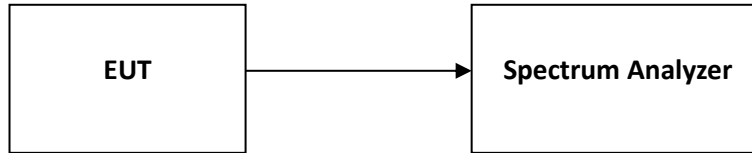
#### 3.2 Measurement Procedure

The EUT was tested according to Subclause 11.9.2.2 of ANSI C63.10.

- a) Measure the duty cycle,  $x$ , of the transmitter output signal as described in Section 6.0.
- b) Set span to at least  $1.5 \times \text{OBW}$ .
- c) Set RBW = 1 % to 5 % of the OBW, not to exceed 1 MHz.
- d) Set VBW  $\geq 3 \times \text{RBW}$ .
- e) Number of points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ . (This gives bin-to-bin spacing  $\leq \text{RBW}/2$ , so that narrowband signals are not lost between frequency bins.)
- f) Sweep time = auto.
- g) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- h) Do not use sweep triggering. Allow the sweep to “free run”.
- i) Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the on and off periods of the transmitter.
- j) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- k) Add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on- and off-times of the transmission). For example, add  $10 \log (1/0.25) = 6 \text{ dB}$  if the duty cycle is 25 %.

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**3.3 Test Configuration**



**3.4 Test Results of Maximum conducted output power**

Test Mode	Antenna	Frequency [MHz]	Max Power [dBm]	Total Max Power [dBm]	FCC Conducted Limit[dBm]	EIRP [dBm]	IC EIRP Limit[dBm]	Verdict
11B	Ant0	2412	16.22	16.22	≤30.00	17.28	≤36.00	PASS
	Ant1	2412	15.65	15.65	≤30.00	18.37	≤36.00	PASS
	Ant0	2437	15.93	15.93	≤30.00	16.99	≤36.00	PASS
	Ant1	2437	15.73	15.73	≤30.00	18.45	≤36.00	PASS
	Ant0	2462	15.84	15.84	≤30.00	16.90	≤36.00	PASS
	Ant1	2462	15.34	15.34	≤30.00	18.06	≤36.00	PASS
11G	Ant0	2412	14.64	14.64	≤30.00	15.70	≤36.00	PASS
	Ant1	2412	13.83	13.83	≤30.00	16.55	≤36.00	PASS
	Ant0	2437	14.04	14.04	≤30.00	15.10	≤36.00	PASS
	Ant1	2437	13.45	13.45	≤30.00	16.17	≤36.00	PASS
	Ant0	2462	13.71	13.71	≤30.00	14.77	≤36.00	PASS
	Ant1	2462	13.53	13.53	≤30.00	16.25	≤36.00	PASS
11N20MIMO	Ant0	2412	12.28	15.04	≤30.00	17.01	≤36.00	PASS
	Ant1	2412	11.76		≤30.00		≤36.00	PASS
	Ant0	2437	12.85	15.28	≤30.00	17.25	≤36.00	PASS
	Ant1	2437	11.60		≤30.00		≤36.00	PASS
	Ant0	2462	12.49	14.89	≤30.00	16.86	≤36.00	PASS
	Ant1	2462	11.16		≤30.00		≤36.00	PASS
11N40MIMO	Ant0	2422	11.28	14.34	≤30.00	16.31	≤36.00	PASS
	Ant1	2422	11.37		≤30.00		≤36.00	PASS
	Ant0	2437	10.41	13.71	≤30.00	15.68	≤36.00	PASS
	Ant1	2437	10.98		≤30.00		≤36.00	PASS
	Ant0	2452	10.66	14.60	≤30.00	16.67	≤36.00	PASS
	Ant1	2452	12.36		≤30.00		≤36.00	PASS

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## 4 Radiated Emissions in restricted frequency bands

**Test result:** Pass

### 4.1 Limit

The radiated emissions which fall in the restricted bands, must also 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

### 4.2 Measurement Procedure

The EUT was tested according to Subclause 11.12 of ANSI C63.10.

**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 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.

**TEST REPORT****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 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 detector 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:**

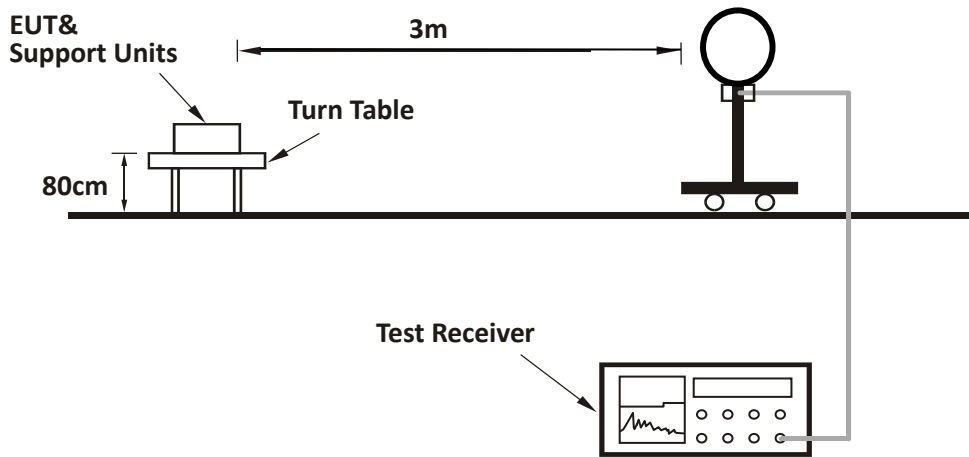
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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



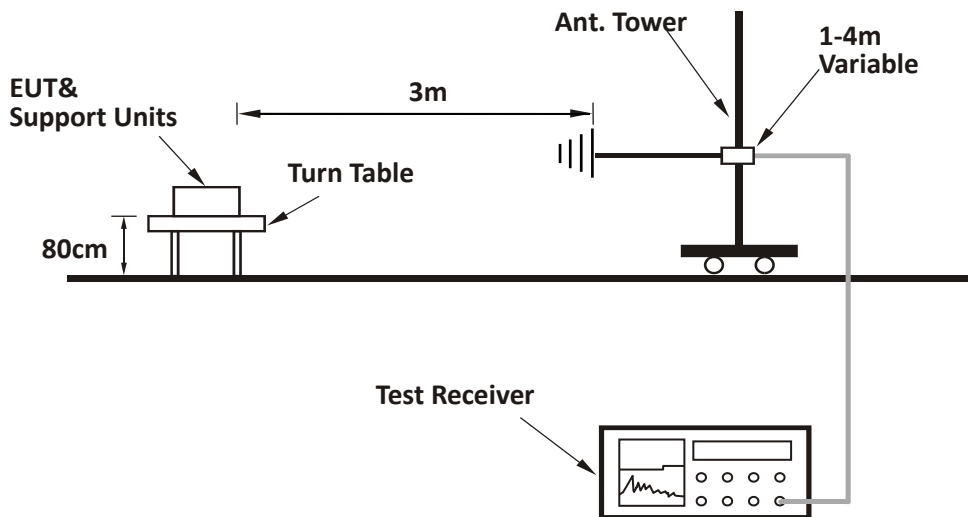
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**4.3 Test Configuration**

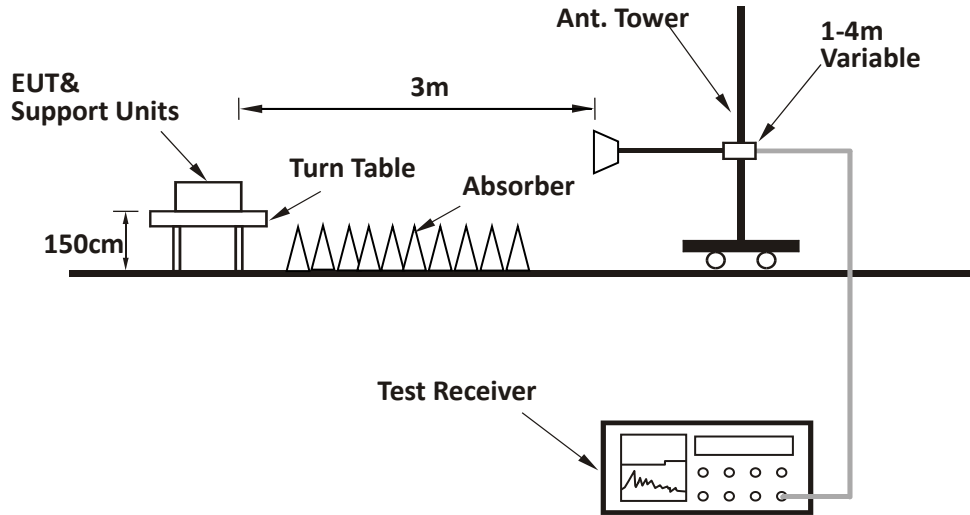
For Radiated emission below 30MHz:



For Radiated emission 30MHz to 1GHz:



**For Radiated emission above 1GHz:**

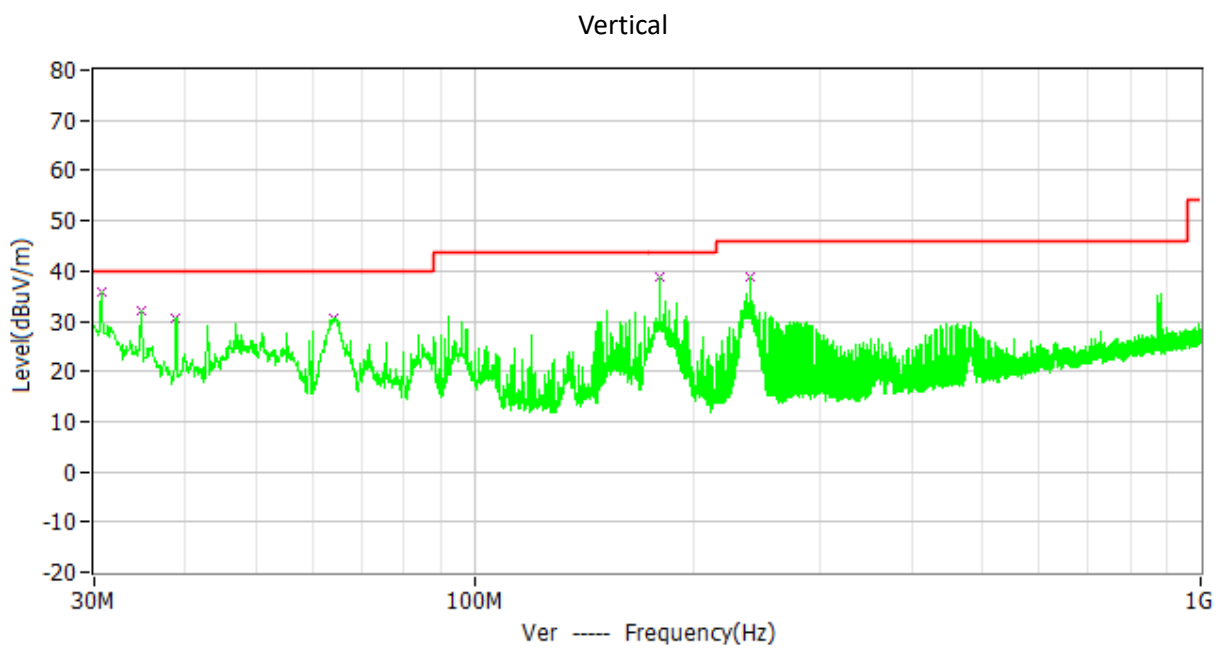
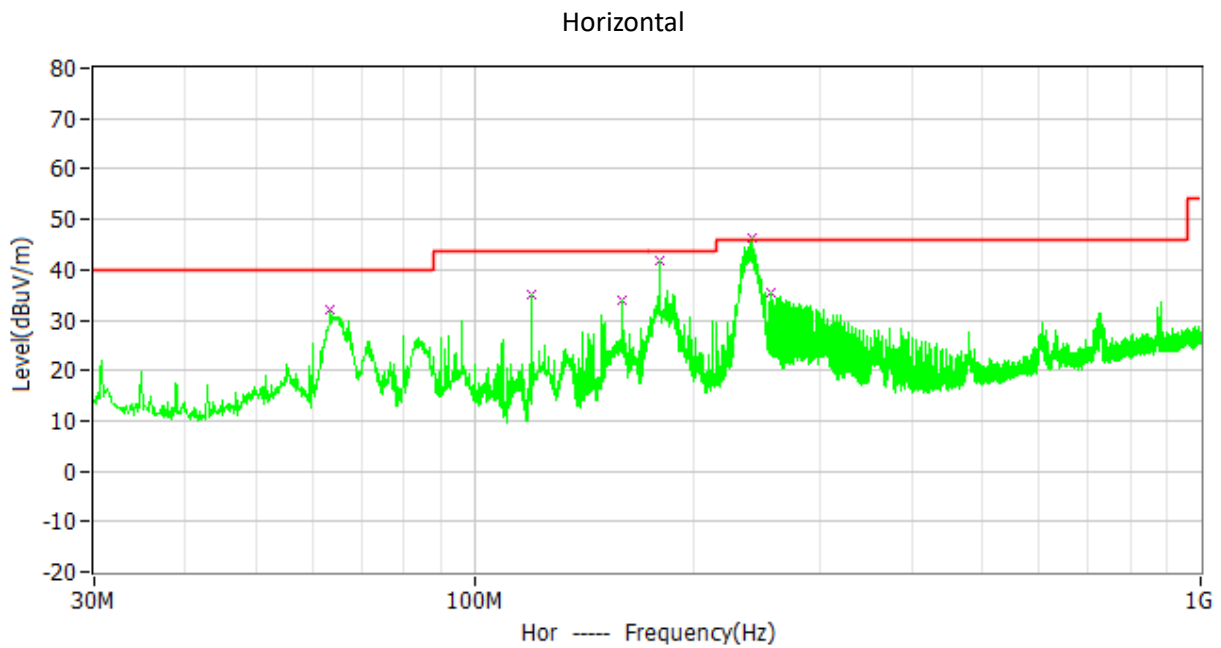


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### 4.4 Test Results of Radiated Emissions

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.

Test Voltage: 120V/60Hz



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**Test data below 1GHz**

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	63.465	31.9	13.6	40.0	8.1	PK
H	120.016	35.1	11.6	43.5	8.4	PK
H	159.980	34.0	14.9	43.5	9.5	PK
H	179.962	41.8	13.1	43.5	1.7	PK
H	241.654	45.7	13.1	46.0	0.3	PK
H	256.010	35.5	13.7	46.0	10.5	PK
V	30.679	35.7	12.9	40.0	4.3	PK
V	34.753	32.2	13.3	40.0	7.8	PK
V	38.827	30.7	13.7	40.0	9.3	PK
V	64.241	30.6	13.5	40.0	9.4	PK
V	179.962	38.8	13.1	43.5	4.7	PK
V	240.393	38.8	13.0	46.0	7.2	PK

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**Test result above 1GHz:**

The emission was conducted from 1GHz to 25GHz

802.11b

CH	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Type
L	H	2412.00	108.0	32.6	Fundamental	/	PK
	V	2412.00	103.9	32.6	Fundamental	/	PK
	H	2390.00	61.5	32.5	74.00	12.5	PK
	H	2390.00	53.4	32.5	54.00	0.6	AV
	V	2390.00	59.5	32.5	74.00	14.5	PK
	V	2390.00	49.5	32.5	54.00	4.5	AV
	H	4824.00	48.3	-14.2	74.00	25.7	PK
	H	7236.00	39.5	-8.6	74.00	34.5	PK
	V	4824.00	49.6	-14.2	74.00	24.4	PK
	V	7236.00	40.5	-8.6	74.00	33.5	PK
M	H	4874.00	46.1	-14.1	74.00	27.9	PK
	H	7311.00	40.6	-8.5	74.00	33.4	PK
	V	4874.00	46.3	-14.1	74.00	27.7	PK
	V	7311.00	41.1	-8.5	74.00	32.9	PK
H	H	2462.00	107.2	32.8	Fundamental	/	PK
	V	2462.00	101.6	32.8	Fundamental	/	PK
	H	2483.50	58.7	32.9	74.00	15.3	PK
	H	2483.50	48.3	32.9	54.00	5.7	AV
	V	2483.50	58.0	32.9	74.00	16.0	PK
	V	2483.50	47.6	32.9	54.00	6.4	AV
	H	4924.00	44.2	-13.9	74.00	29.8	PK
	H	7386.00	39.7	-8.5	74.00	34.3	PK
	V	4924.00	44.5	-13.9	74.00	29.5	PK
	V	7386.00	40.2	-8.5	74.00	33.8	PK

**TEST REPORT**

802.11g

CH	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Type
L	H	2412.00	107.1	32.6	Fundamental	/	PK
	V	2412.00	103.5	32.6	Fundamental	/	PK
	H	2390.00	68.8	32.5	74.00	5.2	PK
	H	2390.00	53.3	32.5	54.00	0.7	AV
	V	2390.00	64.8	32.5	74.00	9.2	PK
	V	2390.00	50.6	32.5	54.00	3.4	AV
	H	4824.00	44.9	-14.2	74.00	29.1	PK
	H	7236.00	41.0	-8.6	74.00	33.0	PK
	V	4824.00	44.6	-14.2	74.00	29.4	PK
	V	7236.00	40.2	-8.6	74.00	33.8	PK
M	H	4874.00	45.8	-14.1	74.00	28.2	PK
	H	7311.00	41.0	-8.5	74.00	33.0	PK
	V	4874.00	47.5	-14.1	74.00	26.5	PK
	V	7311.00	41.2	-8.5	74.00	32.8	PK
H	H	2462.00	105.9	32.7	Fundamental	/	PK
	V	2462.00	100.3	32.7	Fundamental	/	PK
	H	2483.50	66.1	32.9	74.00	7.9	PK
	H	2483.50	51.7	32.9	54.00	2.3	AV
	V	2483.50	61.6	32.9	74.00	12.4	PK
	V	2483.50	48.8	32.9	54.00	5.2	AV
	H	4924.00	44.1	-13.9	74.00	29.9	PK
	H	7386.00	40.3	-8.5	74.00	33.7	PK
	V	4924.00	43.7	-13.9	74.00	30.3	PK
	V	7386.00	40.0	-8.5	74.00	34.0	PK

**TEST REPORT**

802.11n(HT20)

CH	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Type
L	H	2412.00	108.9	32.6	Fundamental	/	PK
	V	2412.00	105.4	32.6	Fundamental	/	PK
	H	2390.00	64.2	32.5	74.00	9.8	PK
	H	2390.00	51.1	32.5	54.00	2.9	AV
	V	2390.00	62.3	32.5	74.00	11.7	PK
	V	2390.00	47.1	32.5	54.00	6.9	AV
	H	4824.00	41.4	-14.2	74.00	32.6	PK
	H	7236.00	40.6	-8.6	74.00	33.4	PK
	V	4824.00	42.9	-14.2	74.00	31.1	PK
	V	7236.00	39.8	-8.6	74.00	34.2	PK
M	H	4874.00	42.3	-14.1	74.00	31.7	PK
	H	7311.00	41.6	-8.5	74.00	32.4	PK
	V	4874.00	43.6	-14.1	74.00	30.4	PK
	V	7311.00	41.6	-8.5	74.00	32.4	PK
H	H	2462.00	105.6	32.8	Fundamental	/	PK
	V	2462.00	103.4	32.8	Fundamental	/	PK
	H	2483.50	63.6	32.9	74.00	10.4	PK
	H	2483.50	47.4	32.9	54.00	6.6	AV
	V	2483.50	58.1	32.9	74.00	15.9	PK
	V	2483.50	43.8	32.9	54.00	10.2	AV
	H	4924.00	41.0	-13.9	74.00	33.0	PK
	H	7386.00	40.8	-8.5	74.00	33.2	PK
	V	4924.00	41.4	-13.9	74.00	32.6	PK
	V	7386.00	40.1	-8.5	74.00	33.9	PK

**TEST REPORT**

802.11n (HT40):

CH	Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Type
L	H	2422.00	103.8	32.7	Fundamental	/	PK
	V	2422.00	100.6	32.7	Fundamental	/	PK
	H	2390.00	63.0	32.5	74.00	11.0	PK
	H	2390.00	49.9	32.5	54.00	4.1	AV
	V	2390.00	59.6	32.5	74.00	14.4	PK
	V	2390.00	47.3	32.5	54.00	6.7	AV
	H	4844.00	39.8	-14.1	74.00	34.2	PK
	H	7266.00	40.0	-8.5	74.00	34.0	PK
	V	4844.00	39.6	-14.1	74.00	34.4	PK
	V	7266.00	39.3	-8.5	74.00	34.7	PK
M	H	4874.00	39.9	-14.1	74.00	34.1	PK
	H	7311.00	40.5	-8.5	74.00	33.5	PK
	V	4874.00	41.6	-14.1	74.00	32.4	PK
	V	7311.00	41.7	-8.5	74.00	32.3	PK
H	H	2452.00	105.3	32.7	Fundamental	/	PK
	V	2452.00	101.1	32.7	Fundamental	/	PK
	H	2483.50	69.7	32.9	74.00	4.3	PK
	H	2483.50	52.2	32.9	54.00	1.8	AV
	V	2483.50	63.9	32.9	74.00	10.1	PK
	V	2483.50	48.8	32.9	54.00	5.2	AV
	H	4904.00	40.1	-14.0	74.00	33.9	PK
	H	7356.00	39.8	-8.5	74.00	34.2	PK
	V	4904.00	40.4	-14.0	74.00	33.6	PK
	V	7356.00	40.3	-8.5	74.00	33.7	PK

Note: Choose the worst power to test as representative.



**TEST REPORT**

Remark: 1. Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.

2. Level = Reading Level + Factor

3. Margin = Limit - Level

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 =  $30.20 + 2.00 - 32.00 = 0.20\text{dB/m}$ ;

Corrected Reading =  $10\text{dBuV} + 0.20\text{dB/m} = 10.20\text{dBuV/m}$ ;

Margin =  $40.00\text{dBuV/m} - 10.20\text{dBuV/m} = 29.80\text{dB}$

**TEST REPORT**

## 5 Occupied Bandwidth

Test result: **Pass**

### 5.1 Limit

None

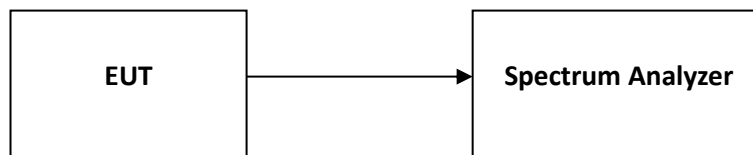
### 5.2 Measurement Procedure

The occupied bandwidth per RSS-Gen Issue 4 Clause 6.6 was measured using the Spectrum Analyzer.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

### 5.3 Test Configuration



### 5.4 The results of Occupied Bandwidth

TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant0	2412	14.572	2404.732	2419.304	---	---
	Ant1	2412	14.571	2404.730	2419.301	---	---
	Ant0	2437	14.668	2429.651	2444.319	---	---
	Ant1	2437	14.609	2429.699	2444.308	---	---
	Ant0	2462	14.685	2454.664	2469.349	---	---
	Ant1	2462	14.625	2454.667	2469.292	---	---
11G	Ant0	2412	16.768	2403.531	2420.299	---	---
	Ant1	2412	16.729	2403.542	2420.271	---	---
	Ant0	2437	16.788	2428.511	2445.299	---	---
	Ant1	2437	16.737	2428.541	2445.278	---	---
	Ant0	2462	16.764	2453.521	2470.285	---	---
	Ant1	2462	16.738	2453.521	2470.259	---	---
11N20MIMO	Ant0	2412	17.840	2403.079	2420.919	---	---
	Ant1	2412	17.865	2403.075	2420.940	---	---
	Ant0	2437	17.823	2428.104	2445.927	---	---
	Ant1	2437	17.861	2428.071	2445.932	---	---
	Ant0	2462	17.842	2453.055	2470.897	---	---

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	Ant1	2462	17.884	2453.050	2470.934	---	---
	Ant0	2422	36.511	2403.642	2440.153	---	---
11N40MIMO	Ant1	2422	36.412	2403.676	2440.088	---	---
	Ant0	2437	36.392	2418.676	2455.068	---	---
	Ant1	2437	36.394	2418.831	2455.225	---	---
	Ant0	2452	36.469	2433.886	2470.355	---	---
	Ant1	2452	36.385	2433.816	2470.201	---	---

**TEST REPORT**

**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 unique coupling to the intentional radiator, so it can comply with the provisions of this section.

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