

# TEST REPORT

Report No.: BCTC2203708244-4E

---

Applicant: ROCKPI TRADING LIMITED

---

Product Name: ROCK Pi E

---

Model/Type Ref.: ROCK Pi E D8W2

---

Tested Date: 2022-03-23 to 2022-04-02

---

Issued Date: 2022-04-02

---

**Shenzhen BCTC Testing Co., Ltd.**



# FCC ID: 2A3PA-ROCK-PI-E

Product Name: ROCK Pi E  
Trademark: N/A  
Model/Type Ref.: ROCK Pi E D8W2  
ROCK Pi E D8W2P, ROCK Pi E D4W1P  
Prepared For: ROCKPI TRADING LIMITED  
Address: Room 11, 27 / f, Ga wah international centre, 191 Javaroad, north point, Hong Kong, China  
Manufacturer: ROCKPI TRADING LIMITED  
Address: Room 11, 27 / f, Ga wah international centre, 191 Javaroad, north point, Hong Kong, China  
Prepared By: Shenzhen BCTC Testing Co., Ltd.  
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China  
Sample Received Date: 2022-03-23  
Sample tested Date: 2022-03-23 to 2022-04-02  
Issue Date: 2022-04-02  
Report No.: BCTC2203708244-4E  
Test Standards: FCC Part15 15.407  
ANSI C63.10-2013  
KDB 662911 D01 v02r01  
KDB 789033 D02 v02r01  
Test Results: PASS

Tested by:



Lei Chen/Project Handler

Approved by:



Zero Zhou/Reviewer

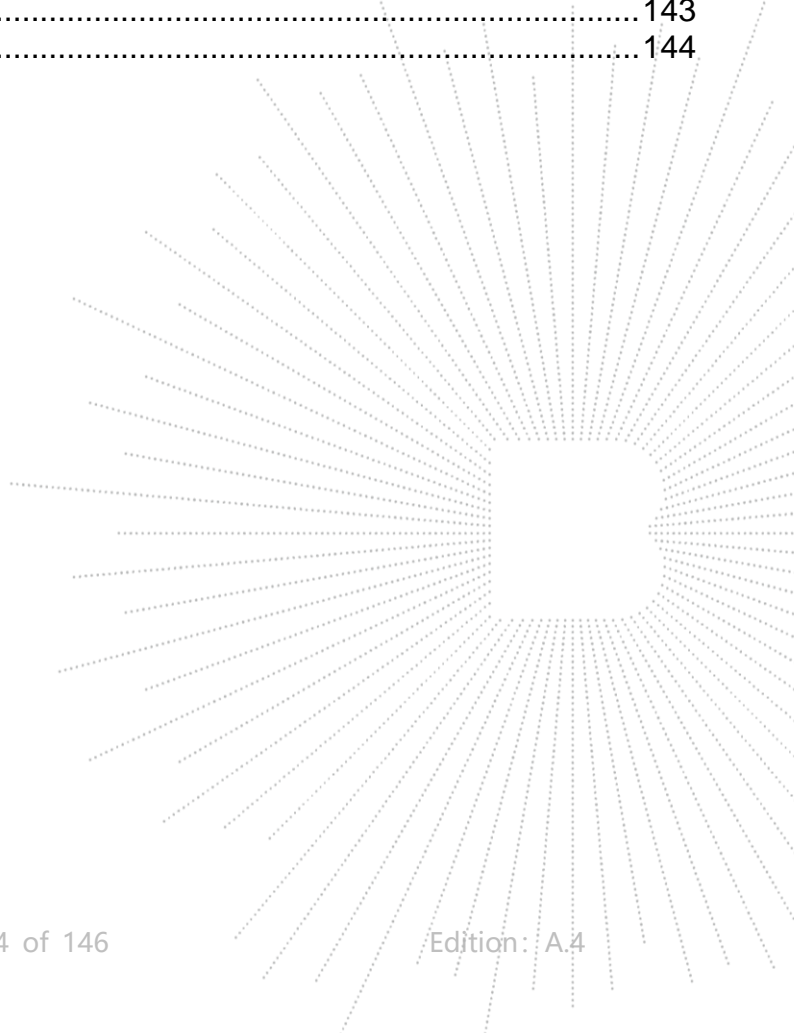
The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

## Table Of Content

Test Report Declaration	Page
1. Version .....	5
2. Test Summary .....	6
3. Measurement Uncertainty .....	7
4. Product Information And Test Setup .....	8
4.1 Product Information.....	8
4.2 Test Setup Configuration .....	8
4.3 Support Equipment .....	9
4.4 Channel List .....	9
4.5 Test Mode .....	10
4.6 Table Of Parameters Of Text Software Setting.....	11
5. Test Facility And Test Instrument Used.....	12
5.1 Test Facility.....	12
5.2 Test Instrument Used.....	12
6. Conducted Emissions.....	14
6.1 Block Diagram Of Test Setup.....	14
6.2 Limit .....	14
6.3 Test Procedure .....	14
6.4 EUT Operating Conditions .....	15
6.5 Test Result.....	16
7. Radiated Emissions.....	18
7.1 Block Diagram Of Test Setup.....	18
7.2 Limit .....	19
7.3 Test Procedure .....	20
7.4 EUT Operating Conditions .....	21
7.5 Test Result.....	21
8. Power Spectral Density Test .....	36
8.1 Block Diagram Of Test Setup.....	36
8.2 Limit .....	36
8.3 Test Procedure .....	37
8.4 EUT Operating Conditions .....	37
8.5 Test Result.....	38
9. 26dB & 6dB & 99% Emission Bandwidth .....	54
9.1 Block Diagram Of Test Setup.....	54
9.2 Limit .....	54
9.3 Test Procedure .....	54
9.4 EUT Operating Conditions .....	55
9.5 Test Result.....	55
10. Maximum Conducted Output Power.....	85
10.1 Block Diagram Of Test Setup.....	85
10.2 Limit .....	85
10.3 Test Procedure .....	85
10.4 EUT Operating Conditions .....	86
10.5 Test Result.....	87

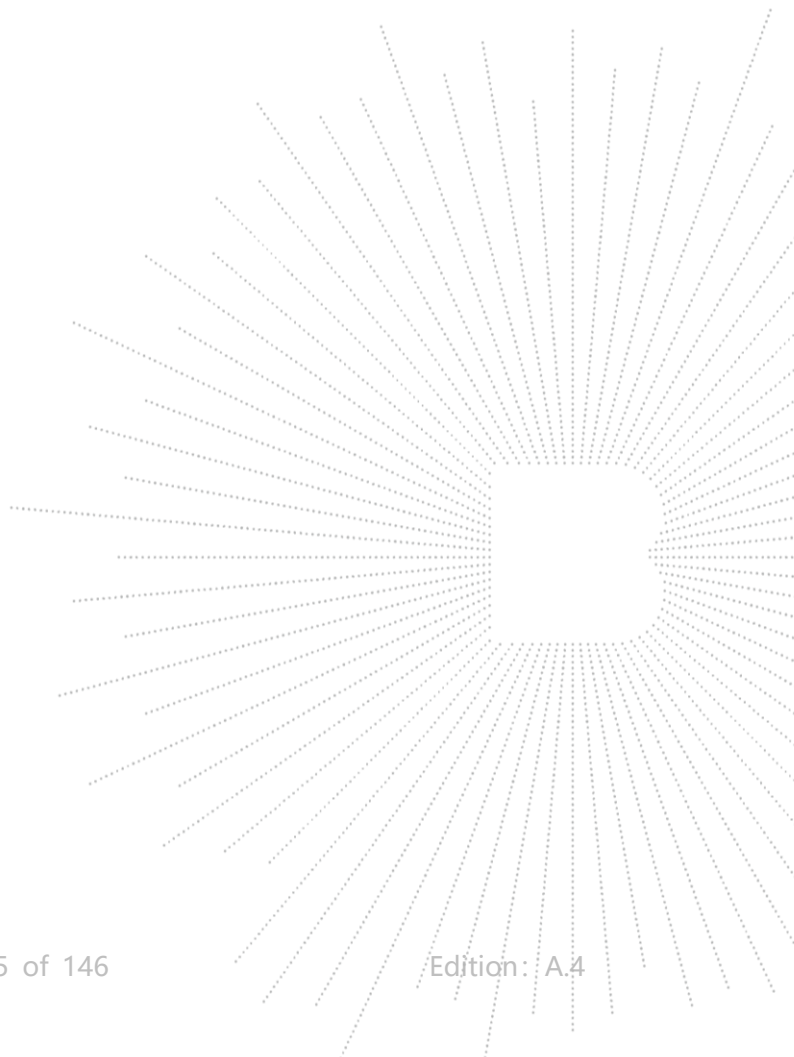
11. Out Of Band Emissions .....	89
11.1 Block Diagram Of Test Setup.....	89
11.2 Limit .....	89
11.3 Test Procedure .....	89
11.4 EUT Operating Conditions .....	89
11.5 Test Result.....	90
12. Spurious RF Conducted Emissions.....	104
12.1 Block Diagram Of Test Setup.....	104
12.2 Limit .....	104
12.3 Test Procedure .....	104
12.4 Test Result.....	104
13. Frequency Stability Measurement .....	119
13.1 Block Diagram Of Test Setup.....	119
13.2 Limit .....	119
13.3 Test Procedure .....	119
13.4 Test Result.....	120
14. Duty Cycle Of Test Signal .....	126
14.1 Standard Requirement .....	126
14.2 Formula.....	126
14.3 Test Procedure .....	126
14.4 Test Result.....	126
15. Antenna Requirement .....	142
15.1 Limit .....	142
15.2 Test Result.....	142
16. EUT Photographs.....	143
17. EUT Test Setup Photographs.....	144

(Note: N/A Means Not Applicable)



**1. Version**

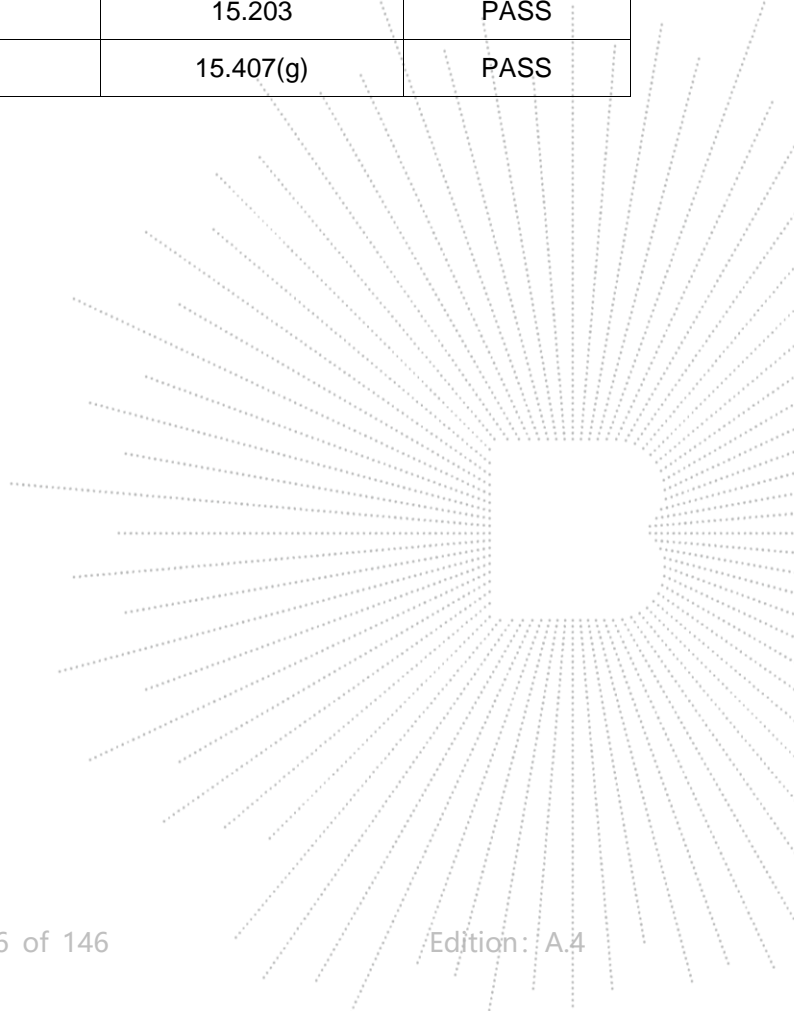
<b>Report No.</b>	<b>Issue Date</b>	<b>Description</b>	<b>Approved</b>
BCTC2203708244-4E	2022-04-02	Original	Valid



## 2. Test Summary

The Product has been tested according to the following specifications:

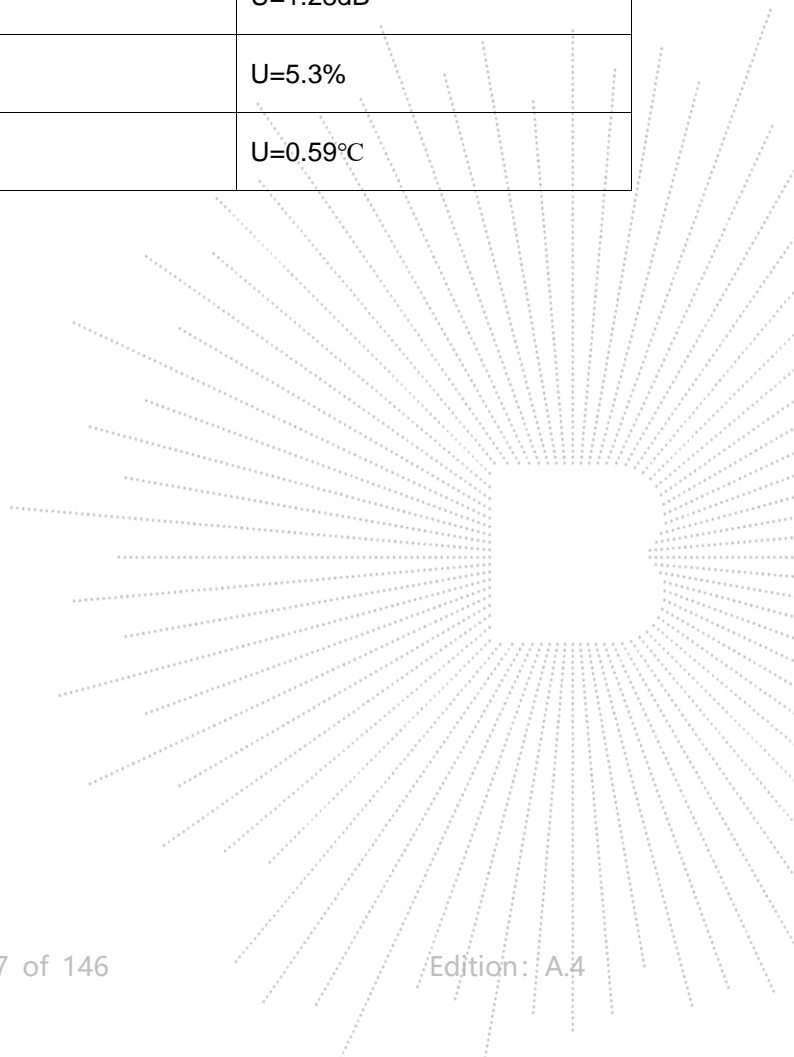
No.	Test Parameter	Clause No	Results
1	Spurious Radiated Emissions	15.209(a), 15.407 (b)(1) 15.407 (b)(4) 15.407 (b)(8) 15.407 (b)(9)	PASS
2	Conducted Emission	15.207	PASS
3	26 dB and 99% Emission Bandwidth	15.407 (a)(12) 15.1049	PASS
4	Minimum 6 dB bandwidth	15.407(e)	PASS
5	Maximum Conducted Output Power	15.407 (a)(1) 15.407 (a)(3)	PASS
6	Band Edge	2.1051, 15.407(b)(1) 15.407(b)(4)	PASS
7	Power Spectral Density	15.407 (a)(1) 15.407 (a)(3)	PASS
8	Spurious Emissions at Antenna Terminals	2.1051, 15.407(b)	PASS
9	Antenna Requirement	15.203	PASS
10	Frequency Stability	15.407(g)	PASS



### 3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9kHz-30MHz)	U=3.7dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission(150kHz-30MHz)	U=3.20dB
6	Conducted Adjacent channel power	U=1.38dB
7	Conducted output power uncertainty Above 1G	U=1.576dB
8	Conducted output power uncertainty below 1G	U=1.28dB
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U=0.59°C





## 4. Product Information And Test Setup

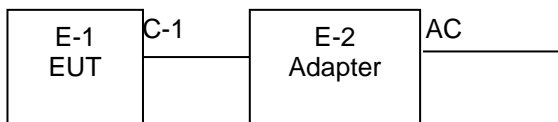
### 4.1 Product Information

Model/Type Ref.:	ROCK Pi E D8W2 ROCK Pi E D8W2P, ROCK Pi E D4W1P
Model differences:	All the model are the same circuit and RF module, except model names.
Hardware Version:	N/A
Software Version:	N/A
IEEE 802.11 WLAN	802.11a/n/ac(20MHz channel bandwidth) 802.11n/ac(40MHz channel bandwidth) 802.11ac(80MHz channel bandwidth)
Mode Supported	5180-5240MHz for 802.11a/n/ac(HT20); 5190-5230MHz for 802.11n/ac(HT40); 5210MHz for 802.11 ac80;
Operation Frequency:	5745-5825 MHz for 802.11a/n(HT20)/ac20; 5755-5795 MHz for 802.11a/n(HT40)/ac40;
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Number Of Channel	4 channels for 802.11a/n20 in the 5180-5240MHz band ; 2 channels for 802.11 n40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; 5 channels for 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ;
Antenna installation:	FPCB antenna
Antenna Gain:	2dBi
Ratings:	USB: DC 5V

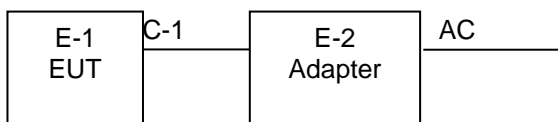
### 4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission:



Radiated Spurious Emission





### 4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	ROCK Pi E	N/A	ROCK Pi E D8W2	N/A	EUT
E-2	Adapter	N/A	BCTC001	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.5M	DC cable unshielded

**Notes:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

### 4.4 Channel List

#### 5.1G

802.11a/n/ac( 20MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	44	5220	48	5240

802.11n/ac (40MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	-	-	-	-

802.11ac (80MHz) Carrier Frequency Channel	
Channel	Frequency (MHz)
42	5210

#### 5.8G

802.11a/n/ac( 20MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

802.11n/ac (40MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-	-	-

802.11n/ac (80MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775	-	-	-	-	-	-

#### 4.5 Test Mode

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

##### 5.1G

Pretest Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48
Mode 2	802.11n/ ac40 CH38/ CH 46
Mode 3	802.11 ac80 CH 42
Mode 4	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48
Mode 2	802.11n/ ac40 CH38/ CH 46
Mode 3	802.11 ac80 CH 42/
Mode 4	Link Mode

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

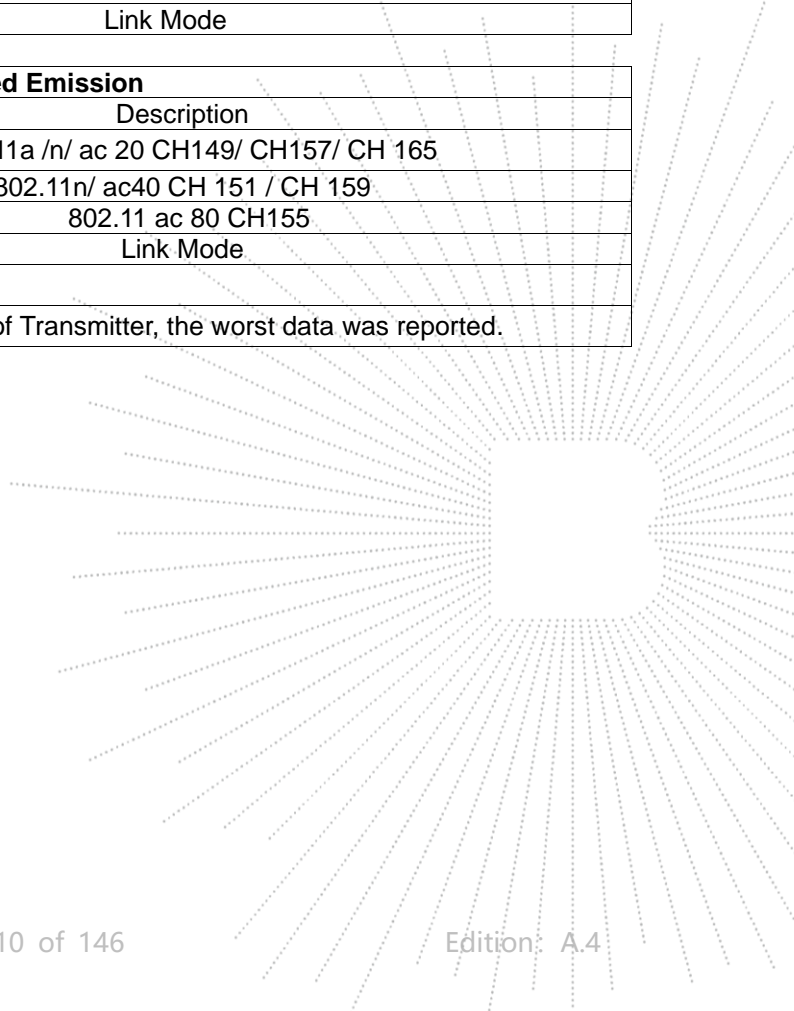
##### 5.8G

Pretest Mode	Description
Mode 1	802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac 80 CH155
Mode 4	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac 80 CH155
Mode 4	Link Mode

Note:

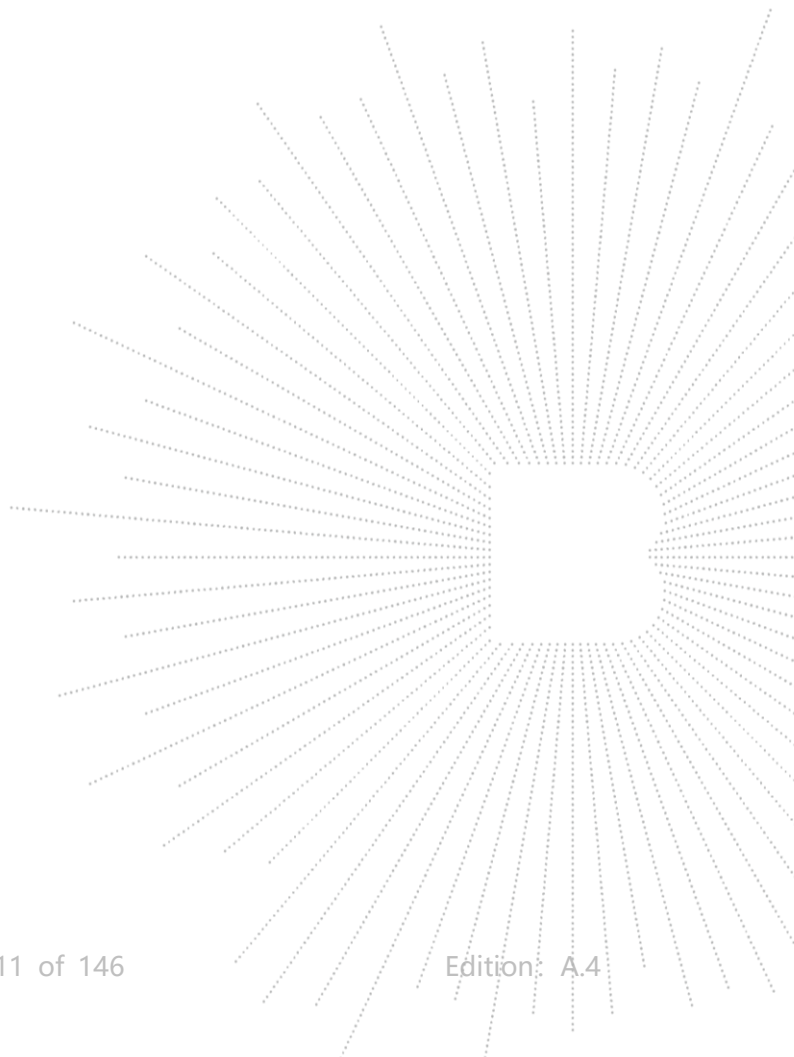
(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.



#### 4.6 Table Of Parameters Of Text Software Setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

Test software Version	SecureCRT		
Parameters	DEF	DEF	DEF



## 5. Test Facility And Test Instrument Used

### 5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address:1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

### 5.2 Test Instrument Used

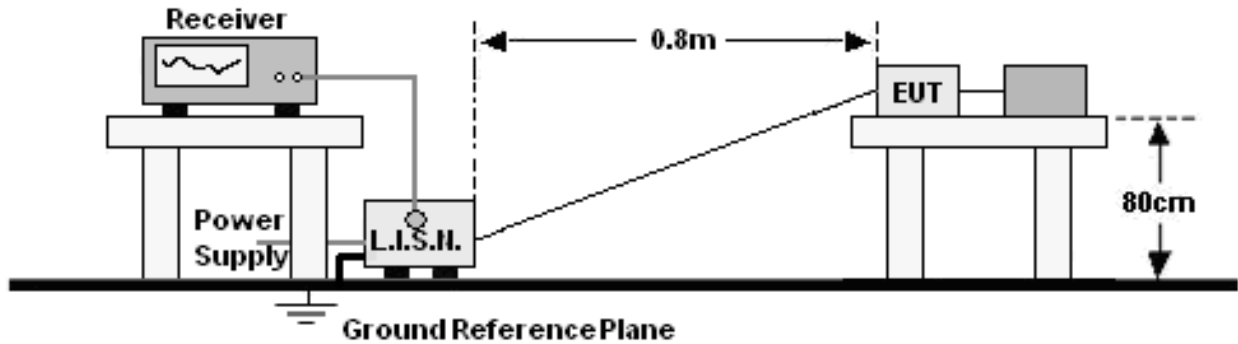
Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
LISN	R&S	ENV216	101375	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Attenuator	\	10dB DC-6GHz	1650	May 28, 2021	May 27, 2022

RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power Metter	Keysight	E4419	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9300A	\	May 28, 2021	May 27, 2022
Signal Analyzer20kHz- 26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer9kHz- 40GHz	R&S	FSP40	\	May 28, 2021	May 27, 2022

Radiated emissions Test (966 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
Receiver	R&S	ESRP	101154	May 28, 2021	May 27, 2022
Amplifier	SKET	LAPA_01G18 G-45dB	\	May 28, 2021	May 27, 2022
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 28, 2021	May 27, 2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	Jun. 01, 2021	May 31, 2022
Horn Antenna	Schwarzbeck	BBHA9120D	1541	Jun. 02, 2021	Jun. 01, 2022
Horn Antenn(18GHz -40GHz)	Schwarzbeck	BBHA9170	00822	Jun. 15, 2021	Jun. 14, 2022
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35- HG	2034381	May 28, 2021	May 27, 2022
Loop Antenna(9kHz -30MHz)	Schwarzbeck	FMZB1519B	00014	Jun. 02, 2021	Jun. 01, 2022
RF cables1(9kHz- 30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-00 08	May 28, 2021	May 27, 2022
RF cables2(30MH z-1GHz)	Huber+Suhnar	30MHz-1GH z	1486150	May 28, 2021	May 27, 2022
RF cables3(1GHz- 40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 28, 2021	May 27, 2022
Power Metter	Keysight	E4419	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9300A	\	May 28, 2021	May 27, 2022
Signal Analyzer20kHz -26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer9kHz- 40GHz	R&S	FSP40	\	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

## 6. Conducted Emissions

### 6.1 Block Diagram Of Test Setup



### 6.2 Limit

FREQUENCY (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Notes:

- \*Decreasing linearly with logarithm of frequency.
- The lower limit shall apply at the transition frequencies.

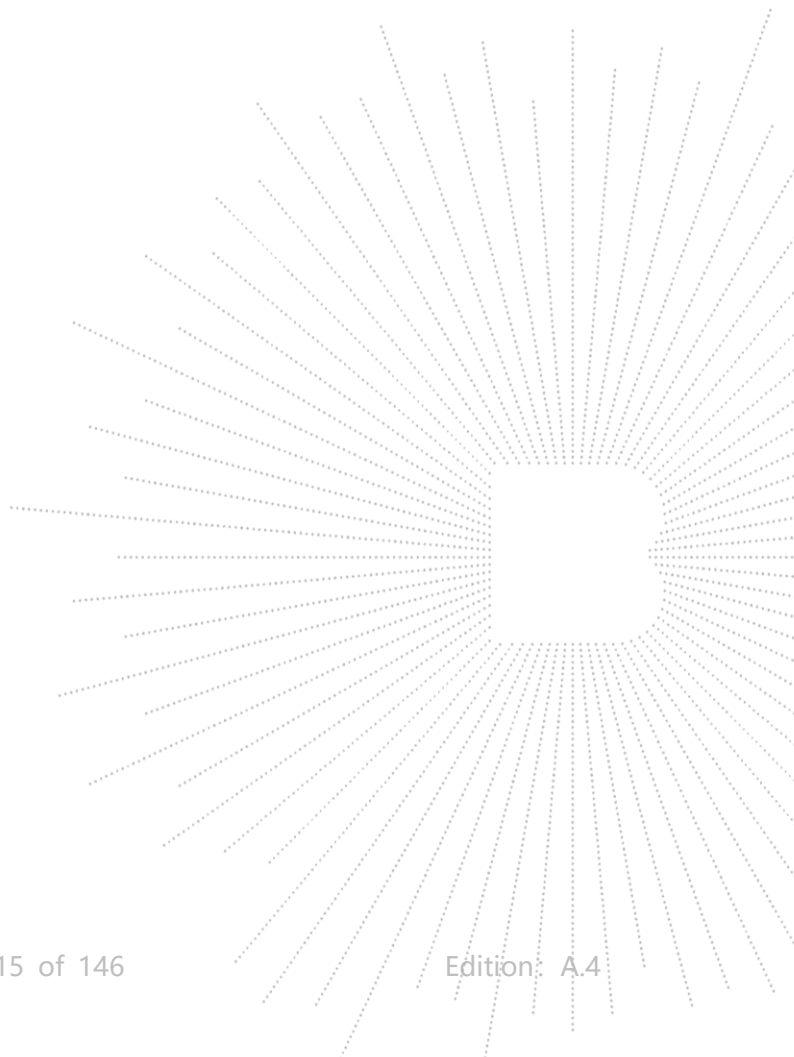
### 6.3 Test Procedure

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

## 6.4 EUT Operating Conditions

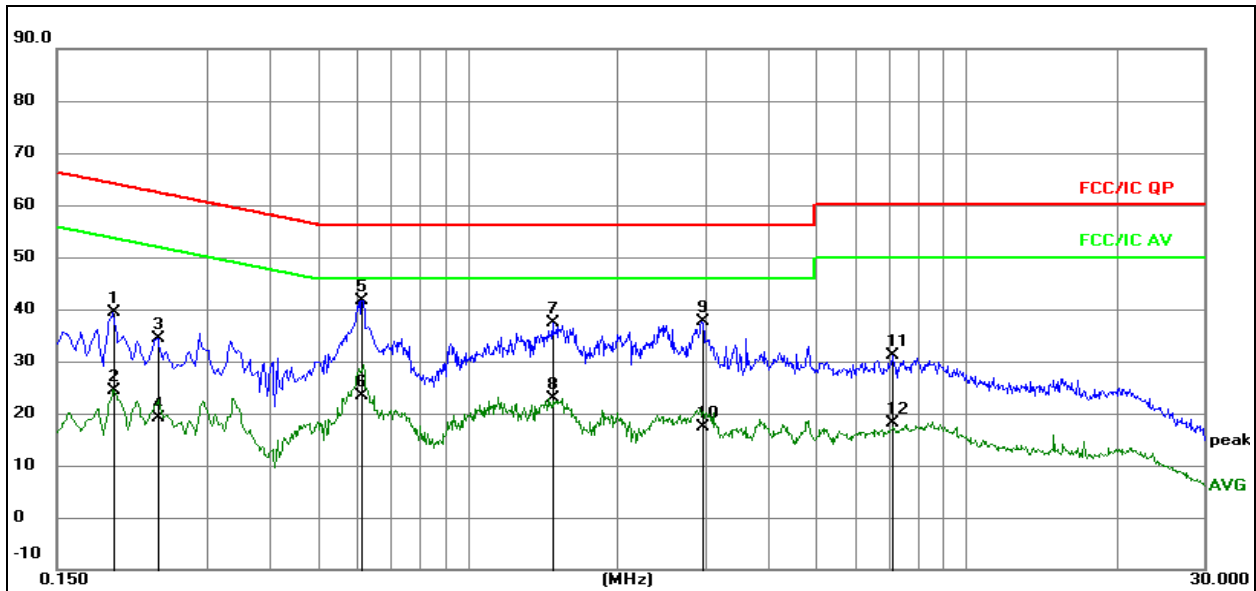
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.





### 6.5 Test Result

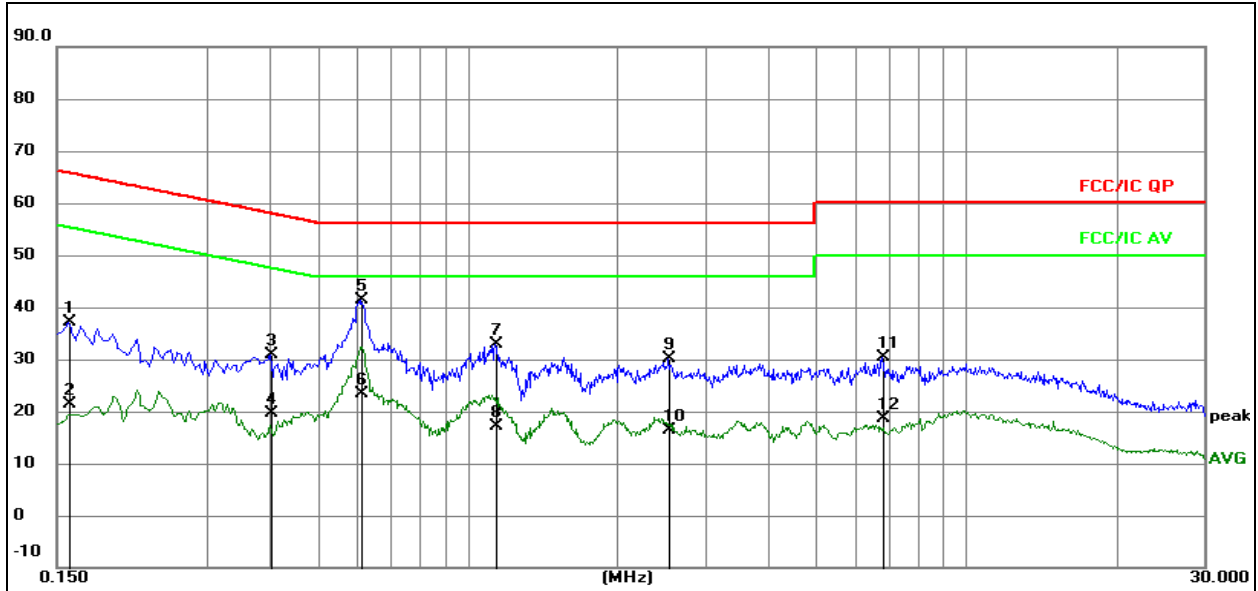
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4


**Remark:**

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over=Measurement-Limit

No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1945	19.69	19.60	39.29	63.84	-24.55	QP
2		0.1945	4.72	19.60	24.32	53.84	-29.52	AVG
3		0.2391	14.77	19.60	34.37	62.13	-27.76	QP
4		0.2391	-0.38	19.60	19.22	52.13	-32.91	AVG
5	*	0.6108	21.99	19.61	41.60	56.00	-14.40	QP
6		0.6108	3.86	19.61	23.47	46.00	-22.53	AVG
7		1.4796	17.66	19.62	37.28	56.00	-18.72	QP
8		1.4796	3.31	19.62	22.93	46.00	-23.07	AVG
9		2.9463	17.93	19.65	37.58	56.00	-18.42	QP
10		2.9463	-2.27	19.65	17.38	46.00	-28.62	AVG
11		7.0997	11.28	19.73	31.01	60.00	-28.99	QP
12		7.0997	-1.69	19.73	18.04	50.00	-31.96	AVG

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4


**Remark:**

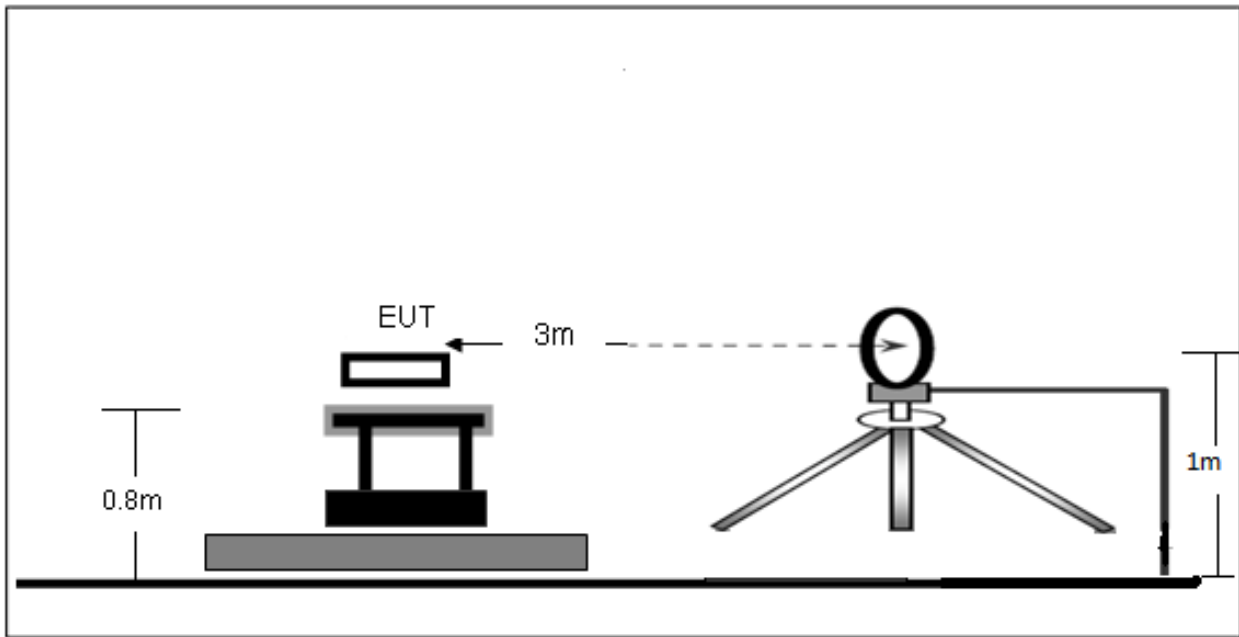
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over=Measurement-Limit

No. Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	0.1590	17.52	19.60	37.12	65.52	-28.40	QP
2	0.1590	1.76	19.60	21.36	55.52	-34.16	AVG
3	0.4020	11.26	19.61	30.87	57.81	-26.94	QP
4	0.4020	0.10	19.61	19.71	47.81	-28.10	AVG
5 *	0.6134	21.79	19.61	41.40	56.00	-14.60	QP
6	0.6134	3.80	19.61	23.41	46.00	-22.59	AVG
7	1.1355	13.19	19.62	32.81	56.00	-23.19	QP
8	1.1355	-2.54	19.62	17.08	46.00	-28.92	AVG
9	2.5350	10.57	19.63	30.20	56.00	-25.80	QP
10	2.5350	-3.22	19.63	16.41	46.00	-29.59	AVG
11	6.7785	10.65	19.73	30.38	60.00	-29.62	QP
12	6.7785	-1.02	19.73	18.71	50.00	-31.29	AVG

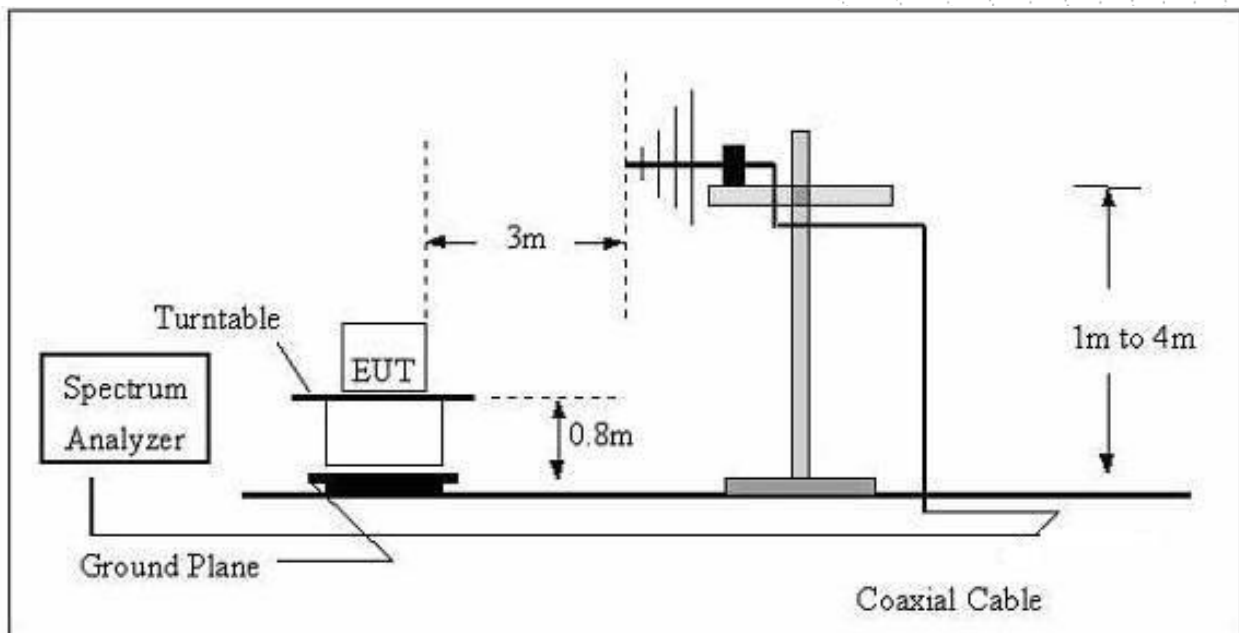
## 7. Radiated Emissions

### 7.1 Block Diagram Of Test Setup

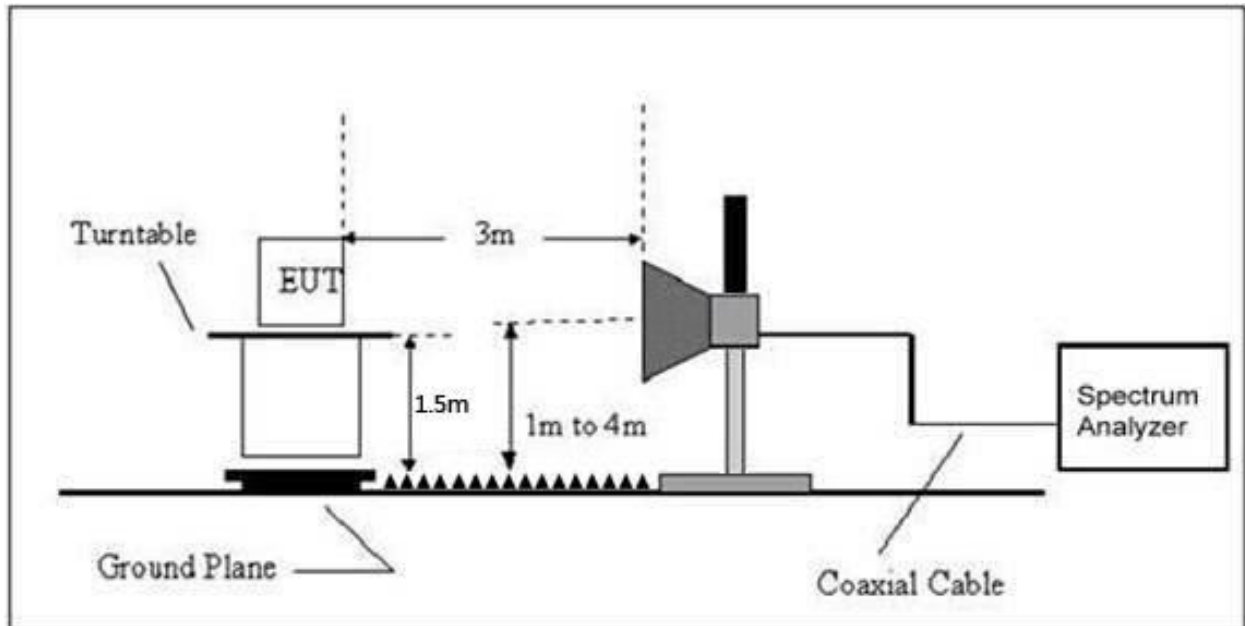
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



## (C) Radiated Emission Test-Up Frequency Above 1GHz



## 7.2 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency (MHz)	Field Strength uV/m	Distance (m)	Field Strength Limit at 3m Distance	
			uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

## LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

## Notes:

- (1)The limit for radiated test was performed according to FCC PART 15C.
- (2)The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

### 7.3 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205.

It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

## Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where  $RBWCF [dB] = 10 \cdot \lg(100 [kHz]/\text{narrower RBW [kHz]})$ . , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

## 7.4 EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

## 7.5 Test Result

Below 30MHz

Temperature:	26°C	Relative Humidity:	24%
Pressure:	101 kPa	Test Voltage :	AC120V/60Hz
Test Mode :	Mode 4	Polarization :	--

Freq. (MHz)	Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	State P/F
--	--	--	--	PASS
--	--	--	--	PASS

**Note:**

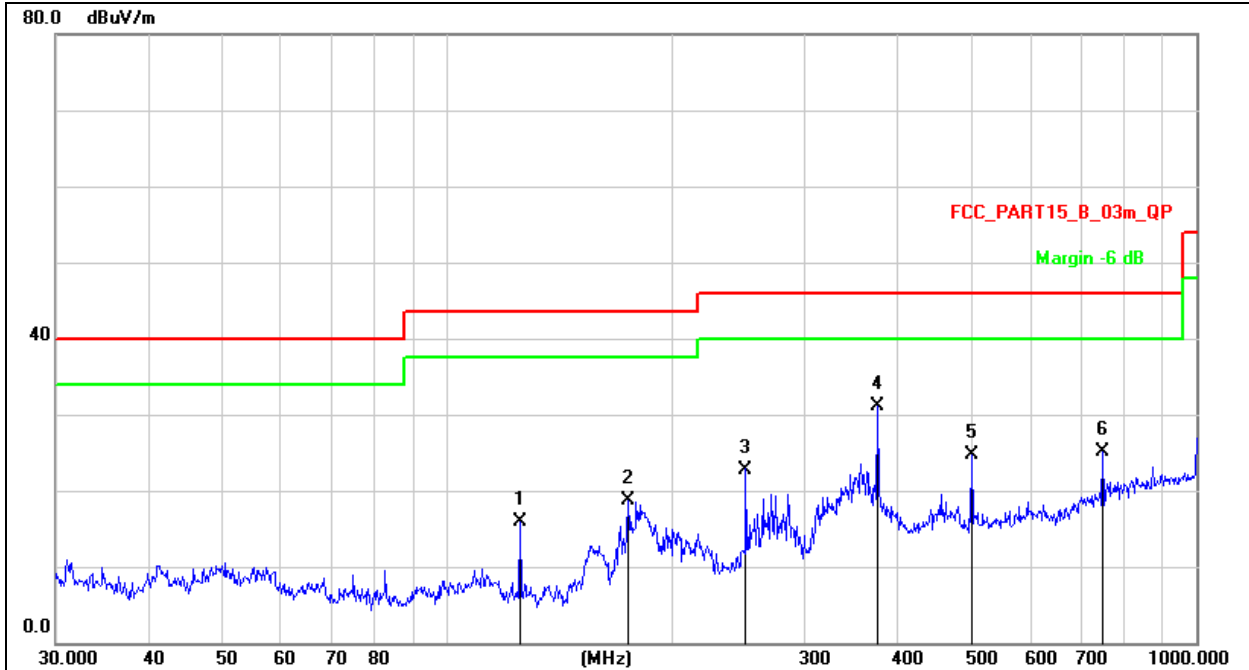
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log(\text{specific distance}/\text{test distance})(dB)$ ;

Limit line = specific limits(dBuv) + distance extrapolation factor.

Between 30MHz – 1GHz

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 4	Polarization :	Horizontal



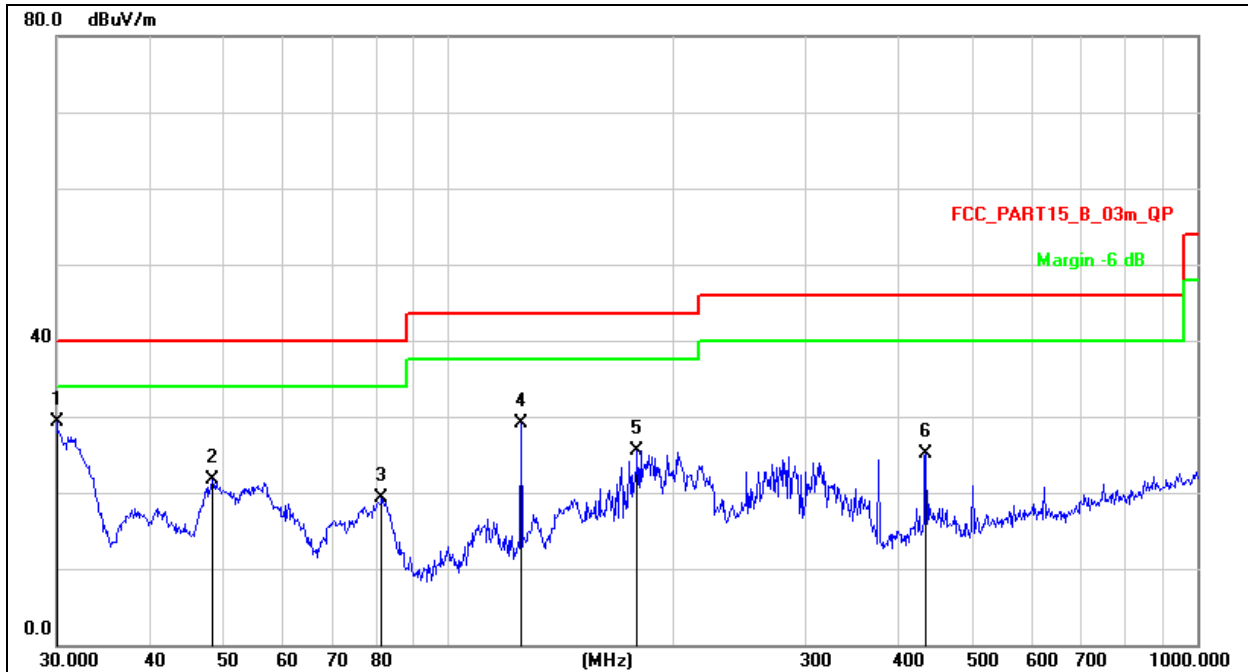
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over=Measurement-Limit

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		125.0066	33.87	-17.89	15.98	43.50	-27.52	QP
2		174.4241	36.69	-17.94	18.75	43.50	-24.75	QP
3		250.3012	37.94	-15.14	22.80	46.00	-23.20	QP
4	*	375.9385	42.77	-11.64	31.13	46.00	-14.87	QP
5		501.1790	33.53	-8.91	24.62	46.00	-21.38	QP
6		750.1083	29.42	-4.34	25.08	46.00	-20.92	QP



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kpa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 4	Polarization :	Vertical



Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1	*	30.0000	46.52	-17.28	29.24	40.00	-10.76	QP
2		48.5016	36.59	-14.93	21.66	40.00	-18.34	QP
3		81.4970	39.40	-20.06	19.34	40.00	-20.66	QP
4		125.0066	46.94	-17.89	29.05	43.50	-14.45	QP
5		178.7584	43.18	-17.66	25.52	43.50	-17.98	QP
6		434.0651	35.48	-10.33	25.15	46.00	-20.85	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.1G) - 802.11a
-------------	--------------------

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
V	4434.052	62.10	5.94	35.40	44.00	59.44	68.2	-8.76	PK
V	4434.052	43.40	5.94	35.40	44.00	40.74	54	-13.26	AV
V	10360.027	60.65	8.46	39.75	44.50	64.36	68.2	-3.84	PK
V	10360.027	43.09	8.46	39.75	44.50	46.80	54	-7.20	AV
V	15540.189	64.28	10.12	38.80	44.10	69.10	74	-4.90	PK
V	15540.189	43.44	10.12	38.80	42.70	49.66	54	-4.34	AV
H	4434.183	60.53	5.94	35.18	44.00	57.65	68.2	-10.55	PK
H	4434.183	43.28	5.94	35.18	44.00	40.40	54	-13.60	AV
H	10360.015	52.30	8.46	38.71	44.50	54.97	68.2	-13.23	PK
H	10360.015	44.27	8.46	38.71	44.50	46.94	54	-7.06	AV
H	15540.063	51.70	10.12	38.38	44.10	56.10	74	-17.90	PK
H	15540.063	40.52	10.12	38.38	44.10	44.92	54	-9.08	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.109	62.07	6.48	36.35	44.05	60.85	74	-13.15	PK
V	4592.109	43.06	6.48	36.35	44.05	41.84	54	-12.16	AV
V	10400.131	64.49	8.47	37.88	44.51	66.33	68.2	-1.87	PK
V	10400.131	43.33	8.47	37.88	44.51	45.17	54	-8.83	AV
V	15600.036	64.31	10.12	38.80	44.10	69.13	74	-4.87	PK
V	15600.036	43.91	10.12	38.80	42.70	50.13	54	-3.87	AV
H	4592.020	63.41	6.48	36.37	44.05	62.21	74	-11.79	PK
H	4592.020	43.96	6.48	36.37	44.05	42.76	54	-11.24	AV
H	10400.143	54.02	8.47	38.64	44.50	56.63	68.2	-11.57	PK
H	10400.143	41.47	8.47	38.64	44.50	44.08	54	-9.92	AV
H	15600.183	52.45	10.12	38.38	44.10	56.85	74	-17.15	PK
H	15600.183	44.54	10.12	38.38	44.10	48.94	54	-5.06	AV
High Channel (5240 MHz)-Above 1G									
V	4739.098	61.60	7.10	37.24	43.50	62.44	74	-11.56	PK
V	4739.098	43.43	7.10	37.24	43.50	44.27	54	-9.73	AV
V	10480.116	61.44	8.46	37.68	44.50	63.08	68.2	-5.12	PK
V	10480.116	43.75	8.46	37.68	44.50	45.39	54	-8.61	AV
V	15720.200	62.07	10.12	38.80	44.10	66.89	74	-7.11	PK
V	15720.200	43.35	10.12	38.80	42.70	49.57	54	-4.43	AV
H	4739.079	61.41	7.10	37.24	43.50	62.25	74	-11.75	PK
H	4739.079	43.34	7.10	37.24	43.50	44.18	54	-9.82	AV
H	10480.017	52.29	8.46	38.57	44.50	54.82	68.2	-13.38	PK
H	10480.017	40.83	8.46	38.57	44.50	43.36	54	-10.64	AV
H	15720.049	53.68	10.12	38.38	44.10	58.08	74	-15.92	PK
H	15720.049	44.75	10.12	38.38	44.10	49.15	54	-4.85	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11n-HT20
-------------	-------------------------

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
V	4434.013	63.81	5.94	35.40	44.00	61.15	68.2	-7.05	PK
V	4434.013	43.54	5.94	35.40	44.00	40.88	54	-13.12	AV
V	10360.178	60.07	8.46	39.75	44.50	63.78	68.2	-4.42	PK
V	10360.178	43.48	8.46	39.75	44.50	47.19	54	-6.81	AV
V	15540.178	60.14	10.12	38.80	44.10	64.96	74	-9.04	PK
V	15540.178	43.65	10.12	38.80	42.70	49.87	54	-4.13	AV
H	4434.023	61.40	5.94	35.18	44.00	58.52	68.2	-9.68	PK
H	4434.023	43.04	5.94	35.18	44.00	40.16	54	-13.84	AV
H	10360.094	53.72	8.46	38.71	44.50	56.39	68.2	-11.81	PK
H	10360.094	41.98	8.46	38.71	44.50	44.65	54	-9.35	AV
H	15540.107	53.08	10.12	38.38	44.10	57.48	74	-16.52	PK
H	15540.107	43.24	10.12	38.38	44.10	47.64	54	-6.36	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.067	64.69	6.48	36.35	44.05	63.47	74	-10.53	PK
V	4592.067	43.82	6.48	36.35	44.05	42.60	54	-11.40	AV
V	10400.113	61.14	8.47	37.88	44.51	62.98	68.2	-5.22	PK
V	10400.113	43.07	8.47	37.88	44.51	44.91	54	-9.09	AV
V	15600.005	64.86	10.12	38.80	44.10	69.68	74	-4.32	PK
V	15600.005	43.22	10.12	38.80	42.70	49.44	54	-4.56	AV
H	4592.091	61.69	6.48	36.37	44.05	60.49	74	-13.51	PK
H	4592.091	43.40	6.48	36.37	44.05	42.20	54	-11.80	AV
H	10400.188	50.41	8.47	38.64	44.50	53.02	68.2	-15.18	PK
H	10400.188	44.36	8.47	38.64	44.50	46.97	54	-7.03	AV
H	15600.157	51.46	10.12	38.38	44.10	55.86	74	-18.14	PK
H	15600.157	40.60	10.12	38.38	44.10	45.00	54	-9.00	AV
High Channel (5240 MHz)-Above 1G									
V	4739.014	62.10	7.10	37.24	43.50	62.94	74	-11.06	PK
V	4739.014	43.31	7.10	37.24	43.50	44.15	54	-9.85	AV
V	10480.047	64.84	8.46	37.68	44.50	66.48	68.2	-1.72	PK
V	10480.047	43.45	8.46	37.68	44.50	45.09	54	-8.91	AV
V	15720.082	64.89	10.12	38.80	44.10	69.71	74	-4.29	PK
V	15720.082	43.41	10.12	38.80	42.70	49.63	54	-4.37	AV
H	4739.053	61.20	7.10	37.24	43.50	62.04	74	-11.96	PK
H	4739.053	43.58	7.10	37.24	43.50	44.42	54	-9.58	AV
H	10480.188	54.47	8.46	38.57	44.50	57.00	68.2	-11.20	PK
H	10480.188	41.20	8.46	38.57	44.50	43.73	54	-10.27	AV
H	15720.153	52.32	10.12	38.38	44.10	56.72	74	-17.28	PK
H	15720.153	44.96	10.12	38.38	44.10	49.36	54	-4.64	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11n-HT40
-------------	-------------------------

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G									
V	4434.086	63.20	5.94	35.40	44.00	60.54	68.2	-7.66	PK
V	4434.086	43.35	5.94	35.40	44.00	40.69	54	-13.31	AV
V	10380.056	63.05	8.46	39.75	44.50	66.76	68.2	-1.44	PK
V	10380.056	43.50	8.46	39.75	44.50	47.21	54	-6.79	AV
V	15570.129	64.90	10.12	38.80	44.10	69.72	74	-4.28	PK
V	15570.129	43.23	10.12	38.80	42.70	49.45	54	-4.55	AV
H	4434.063	64.11	5.94	35.18	44.00	61.23	74	-12.77	PK
H	4434.063	43.91	5.94	35.18	44.00	41.03	54	-12.97	AV
H	10380.132	52.90	8.46	38.71	44.50	55.57	68.2	-12.63	PK
H	10380.132	41.29	8.46	38.71	44.50	43.96	54	-10.04	AV
H	15570.075	51.10	10.12	38.38	44.10	55.50	74	-18.50	PK
H	15570.075	40.93	10.12	38.38	44.10	45.33	54	-8.67	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.197	62.00	6.48	36.35	44.05	60.78	68.2	-7.42	PK
V	4739.197	43.80	6.48	36.35	44.05	42.58	54	-11.42	AV
V	10460.174	64.94	8.47	37.88	44.51	66.78	68.2	-1.42	PK
V	10460.174	43.73	8.47	37.88	44.51	45.57	54	-8.43	AV
V	15690.072	60.33	10.12	38.80	44.10	65.15	74	-8.85	PK
V	15690.072	43.13	10.12	38.80	42.70	49.35	54	-4.65	AV
H	4739.133	63.77	6.48	36.37	44.05	62.57	68.2	-5.63	PK
H	4739.133	43.02	6.48	36.37	44.05	41.82	54	-12.18	AV
H	10460.097	50.56	8.47	38.64	44.50	53.17	68.2	-15.03	PK
H	10460.097	42.21	8.47	38.64	44.50	44.82	54	-9.18	AV
H	15690.090	50.26	10.12	38.38	44.10	54.66	74	-19.34	PK
H	15690.090	42.67	10.12	38.38	44.10	47.07	54	-6.93	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11 AC20
-------------	------------------------

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
V	4434.070	63.85	5.94	35.40	44.00	61.19	68.2	-7.01	PK
V	4434.070	43.40	5.94	35.40	44.00	40.74	54	-13.26	AV
V	10360.133	63.03	8.46	39.75	44.50	66.74	68.2	-1.46	PK
V	10360.133	43.73	8.46	39.75	44.50	47.44	54	-6.56	AV
V	15540.174	64.63	10.12	38.80	44.10	69.45	74	-4.55	PK
V	15540.174	43.05	10.12	38.80	42.70	49.27	54	-4.73	AV
H	4434.198	61.52	5.94	35.18	44.00	58.64	68.2	-9.56	PK
H	4434.198	43.88	5.94	35.18	44.00	41.00	54	-13.00	AV
H	10360.172	54.56	8.46	38.71	44.50	57.23	68.2	-10.97	PK
H	10360.172	42.86	8.46	38.71	44.50	45.53	54	-8.47	AV
H	15540.079	53.05	10.12	38.38	44.10	57.45	74	-16.55	PK
H	15540.079	41.60	10.12	38.38	44.10	46.00	54	-8.00	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.000	62.20	6.48	36.35	44.05	60.98	74	-13.02	PK
V	4592.000	43.26	6.48	36.35	44.05	42.04	54	-11.96	AV
V	10400.104	60.98	8.47	37.88	44.51	62.82	68.2	-5.38	PK
V	10400.104	43.95	8.47	37.88	44.51	45.79	54	-8.21	AV
V	15600.091	64.44	10.12	38.80	44.10	69.26	74	-4.74	PK
V	15600.091	43.09	10.12	38.80	42.70	49.31	54	-4.69	AV
H	4592.030	64.48	6.48	36.37	44.05	63.28	74	-10.72	PK
H	4592.030	43.24	6.48	36.37	44.05	42.04	54	-11.96	AV
H	10400.174	52.08	8.47	38.64	44.50	54.69	68.2	-13.51	PK
H	10400.174	41.45	8.47	38.64	44.50	44.06	54	-9.94	AV
H	15600.027	51.53	10.12	38.38	44.10	55.93	74	-18.07	PK
H	15600.027	41.88	10.12	38.38	44.10	46.28	54	-7.72	AV
High Channel (5240 MHz)-Above 1G									
V	4739.063	62.07	7.10	37.24	43.50	62.91	74	-11.09	PK
V	4739.063	43.16	7.10	37.24	43.50	44.00	54	-10.00	AV
V	10480.005	62.90	8.46	37.68	44.50	64.54	68.2	-3.66	PK
V	10480.005	43.84	8.46	37.68	44.50	45.48	54	-8.52	AV
V	15720.060	64.81	10.12	38.80	44.10	69.63	74	-4.37	PK
V	15720.060	43.51	10.12	38.80	42.70	49.73	54	-4.27	AV
H	4739.142	61.22	7.10	37.24	43.50	62.06	74	-11.94	PK
H	4739.142	43.08	7.10	37.24	43.50	43.92	54	-10.08	AV
H	10480.157	50.18	8.46	38.57	44.50	52.71	68.2	-15.49	PK
H	10480.157	43.23	8.46	38.57	44.50	45.76	54	-8.24	AV
H	15720.179	53.38	10.12	38.38	44.10	57.78	74	-16.22	PK
H	15720.179	44.00	10.12	38.38	44.10	48.40	54	-5.60	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.



Test Mode :	TX(5.1G) - 802.11 AC40
-------------	------------------------

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G									
V	4434.005	64.33	5.94	35.40	44.00	61.67	68.2	-6.53	PK
V	4434.005	43.99	5.94	35.40	44.00	41.33	54	-12.67	AV
V	10380.113	60.01	8.46	39.75	44.50	63.72	68.2	-4.48	PK
V	10380.113	43.38	8.46	39.75	44.50	47.09	54	-6.91	AV
V	15570.175	64.08	10.12	38.80	44.10	68.90	74	-5.10	PK
V	15570.175	43.43	10.12	38.80	42.70	49.65	54	-4.35	AV
H	4434.132	61.25	5.94	35.18	44.00	58.37	74	-15.63	PK
H	4434.132	43.83	5.94	35.18	44.00	40.95	54	-13.05	AV
H	10380.200	53.13	8.46	38.71	44.50	55.80	68.2	-12.40	PK
H	10380.200	40.63	8.46	38.71	44.50	43.30	54	-10.70	AV
H	15570.130	53.47	10.12	38.38	44.10	57.87	74	-16.13	PK
H	15570.130	41.39	10.12	38.38	44.10	45.79	54	-8.21	AV
middle Channel (5230 MHz)-Above 1G									
V	4739.134	64.89	6.48	36.35	44.05	63.67	68.2	-4.53	PK
V	4739.134	43.91	6.48	36.35	44.05	42.69	54	-11.31	AV
V	10460.057	64.60	8.47	37.88	44.51	66.44	68.2	-1.76	PK
V	10460.057	43.91	8.47	37.88	44.51	45.75	54	-8.25	AV
V	15690.068	64.07	10.12	38.80	44.10	68.89	74	-5.11	PK
V	15690.068	43.03	10.12	38.80	42.70	49.25	54	-4.75	AV
H	4739.066	64.48	6.48	36.37	44.05	63.28	68.2	-4.92	PK
H	4739.066	43.05	6.48	36.37	44.05	41.85	54	-12.15	AV
H	10460.146	54.46	8.47	38.64	44.50	57.07	68.2	-11.13	PK
H	10460.146	41.08	8.47	38.64	44.50	43.69	54	-10.31	AV
H	15690.179	51.91	10.12	38.38	44.10	56.31	74	-17.69	PK
H	15690.179	44.35	10.12	38.38	44.10	48.75	54	-5.25	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX(5.1G) - 802.11 AC80
-------------	------------------------

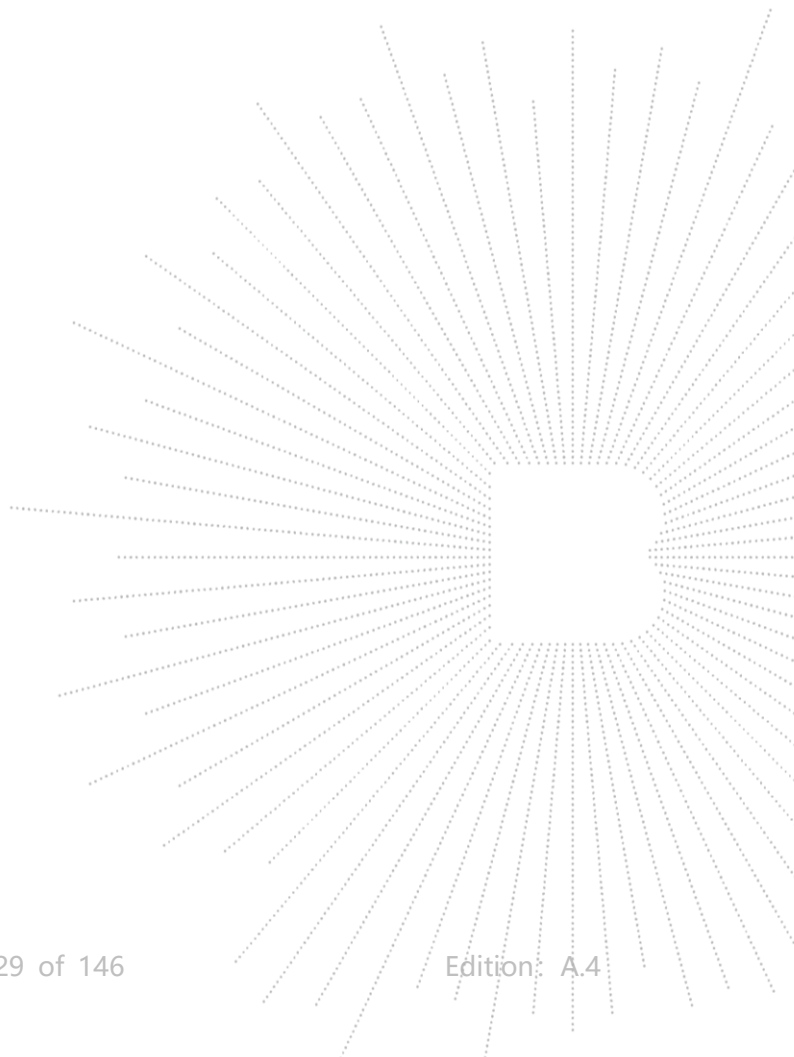
Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5210 MHz)-Above 1G									
V	4434.032	60.63	5.94	35.40	44.00	57.97	68.2	-10.23	PK
V	4434.032	43.22	5.94	35.40	44.00	40.56	54	-13.44	AV
V	10420.185	61.45	8.46	39.75	44.50	65.16	68.2	-3.04	PK
V	10420.185	43.19	8.46	39.75	44.50	46.90	54	-7.10	AV
V	15630.156	63.28	10.12	38.80	44.10	68.10	74	-5.90	PK
V	15630.156	43.40	10.12	38.80	42.70	49.62	54	-4.38	AV
H	4434.162	62.36	5.94	35.18	44.00	59.48	68.2	-8.72	PK
H	4434.162	43.59	5.94	35.18	44.00	40.71	54	-13.29	AV
H	10420.014	51.17	8.46	38.71	44.50	53.84	68.2	-14.36	PK
H	10420.014	43.44	8.46	38.71	44.50	46.11	54	-7.89	AV
H	15630.140	51.29	10.12	38.38	44.10	55.69	74	-18.31	PK
H	15630.140	43.69	10.12	38.38	44.10	48.09	54	-5.91	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.





Test Mode :	TX (5.8G) -- 802.11a
-------------	----------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detector Type
<b>Low Channel (5745 MHz)-Above 1G</b>									
V	4679.120	59.36	5.94	35.40	44.00	56.70	74	-17.30	PK
V	4679.120	43.09	5.94	35.40	44.00	40.43	54	-13.57	AV
V	11490.057	54.80	8.46	39.75	44.50	58.51	68.2	-9.69	PK
V	11490.057	43.31	8.46	39.75	44.50	47.02	54	-6.98	AV
V	17235.158	59.04	10.12	38.80	44.10	63.86	68.2	-4.34	PK
V	17235.158	43.85	10.12	38.80	42.70	50.07	54	-3.93	AV
H	4679.035	56.16	5.94	35.18	44.00	53.28	74	-20.72	PK
H	4679.035	43.20	5.94	35.18	44.00	40.32	54	-13.68	AV
H	11490.049	52.99	8.46	38.71	44.50	55.66	68.2	-12.54	PK
H	11490.049	43.86	8.46	38.71	44.50	46.53	54	-7.47	AV
H	17235.138	50.51	10.12	38.38	44.10	54.91	68.2	-13.29	PK
H	17235.138	44.50	10.12	38.38	44.10	48.90	54	-5.10	AV
<b>middle Channel (5785 MHz)-Above 1G</b>									
V	4592.003	58.06	6.48	36.35	44.05	56.84	74	-17.16	PK
V	4592.003	43.85	6.48	36.35	44.05	42.63	54	-11.37	AV
V	11570.190	57.67	8.47	37.88	44.51	59.51	68.2	-8.69	PK
V	11570.190	43.75	8.47	37.88	44.51	45.59	54	-8.41	AV
V	17355.084	57.00	10.12	38.80	44.10	61.82	68.2	-6.38	PK
V	17355.084	39.28	10.12	38.80	42.70	45.50	54	-8.50	AV
H	4592.165	57.75	6.48	36.37	44.05	56.55	74	-17.45	PK
H	4592.165	43.54	6.48	36.37	44.05	42.34	54	-11.66	AV
H	11570.077	54.44	8.47	38.64	44.50	57.05	68.2	-11.15	PK
H	11570.077	43.98	8.47	38.64	44.50	46.59	54	-7.41	AV
H	17355.139	53.30	10.12	38.38	44.10	57.70	68.2	-10.50	PK
H	17355.139	43.69	10.12	38.38	44.10	48.09	54	-5.91	AV
<b>High Channel (5825 MHz)-Above 1G</b>									
V	6039.081	60.99	7.10	37.24	43.50	61.83	68.2	-6.37	PK
V	6039.081	43.71	7.10	37.24	43.50	44.55	54	-9.45	AV
V	11650.187	59.50	8.46	37.68	44.50	61.14	74	-12.86	PK
V	11650.187	43.62	8.46	37.68	44.50	45.26	54	-8.74	AV
V	17475.126	57.40	10.12	38.80	44.10	62.22	68.2	-5.98	PK
V	17475.126	43.20	10.12	38.80	42.70	49.42	54	-4.58	AV
H	6039.049	55.63	7.10	37.24	43.50	56.47	68.2	-11.73	PK
H	6039.049	43.47	7.10	37.24	43.50	44.31	54	-9.69	AV
H	11650.124	52.42	8.46	38.57	44.50	54.95	74	-19.05	PK
H	11650.124	43.50	8.46	38.57	44.50	46.03	54	-7.97	AV
H	17475.134	53.14	10.12	38.38	44.10	57.54	68.2	-10.66	PK
H	17475.134	40.46	10.12	38.38	44.10	44.86	54	-9.14	AV

Note: PK value is lower than the Average value limit, So average didn't record.  
 The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.  
 Emission level (dBuV/m) = 20 log Emission level (uV/m).  
 Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) --802.11n-HT20
-------------	--------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detector Type
<b>Low Channel (5745 MHz)-Above 1G</b>									
V	4679.145	57.90	5.94	35.40	44.00	55.24	74	-18.76	PK
V	4679.145	43.31	5.94	35.40	44.00	40.65	54	-13.35	AV
V	11490.161	55.11	8.46	39.75	44.50	58.82	68.2	-9.38	PK
V	11490.161	43.23	8.46	39.75	44.50	46.94	54	-7.06	AV
V	17235.135	62.00	10.12	38.80	44.10	66.82	68.2	-1.38	PK
V	17235.135	43.82	10.12	38.80	42.70	50.04	54	-3.96	AV
H	4679.181	58.95	5.94	35.18	44.00	56.07	74	-17.93	PK
H	4679.181	43.13	5.94	35.18	44.00	40.25	54	-13.75	AV
H	11490.166	50.93	8.46	38.71	44.50	53.60	68.2	-14.60	PK
H	11490.166	44.74	8.46	38.71	44.50	47.41	54	-6.59	AV
H	17235.178	51.74	10.12	38.38	44.10	56.14	68.2	-12.06	PK
H	17235.178	41.10	10.12	38.38	44.10	45.50	54	-8.50	AV
<b>middle Channel (5785 MHz)-Above 1G</b>									
V	4592.134	60.44	6.48	36.35	44.05	59.22	74	-14.78	PK
V	4592.134	43.72	6.48	36.35	44.05	42.50	54	-11.50	AV
V	11570.131	58.76	8.47	37.88	44.51	60.60	68.2	-7.60	PK
V	11570.131	43.04	8.47	37.88	44.51	44.88	54	-9.12	AV
V	17355.053	59.60	10.12	38.80	44.10	64.42	68.2	-3.78	PK
V	17355.053	43.14	10.12	38.80	42.70	49.36	54	-4.64	AV
H	4592.144	60.61	6.48	36.37	44.05	59.41	74	-14.59	PK
H	4592.144	43.62	6.48	36.37	44.05	42.42	54	-11.58	AV
H	11570.128	52.20	8.47	38.64	44.50	54.81	68.2	-13.39	PK
H	11570.128	41.87	8.47	38.64	44.50	44.48	54	-9.52	AV
H	17355.031	53.05	10.12	38.38	44.10	57.45	68.2	-10.75	PK
H	17355.031	41.03	10.12	38.38	44.10	45.43	54	-8.57	AV
<b>High Channel (5825 MHz)-Above 1G</b>									
V	6039.110	57.22	7.10	37.24	43.50	58.06	68.2	-10.14	PK
V	6039.110	43.74	7.10	37.24	43.50	44.58	54	-9.42	AV
V	11650.189	58.76	8.46	37.68	44.50	60.40	74	-13.60	PK
V	11650.189	43.43	8.46	37.68	44.50	45.07	54	-8.93	AV
V	17475.062	57.99	10.12	38.80	44.10	62.81	68.2	-5.39	PK
V	17475.062	43.48	10.12	38.80	42.70	49.70	54	-4.30	AV
H	6039.143	56.75	7.10	37.24	43.50	57.59	68.2	-10.61	PK
H	6039.143	43.93	7.10	37.24	43.50	44.77	54	-9.23	AV
H	11650.191	54.64	8.46	38.57	44.50	57.17	74	-16.83	PK
H	11650.191	42.21	8.46	38.57	44.50	44.74	54	-9.26	AV
H	17475.041	52.78	10.12	38.38	44.10	57.18	68.2	-11.02	PK
H	17475.041	42.64	10.12	38.38	44.10	47.04	54	-6.96	AV

Note: PK value is lower than the Average value limit, So average didn't record.  
 The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.  
 Emission level (dBuV/m) = 20 log Emission level (uV/m).  
 Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) -- 802.11n-HT40
-------------	---------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detector Type
<b>Low Channel (5755 MHz)-Above 1G</b>									
V	4679.047	59.42	5.94	35.40	44.00	56.76	74	-17.24	PK
V	4679.047	43.25	5.94	35.40	44.00	40.59	54	-13.41	AV
V	11510.056	55.85	8.46	39.75	44.50	59.56	74	-14.44	PK
V	11510.056	43.28	8.46	39.75	44.50	46.99	54	-7.01	AV
V	17265.026	56.50	10.12	38.80	44.10	61.32	68.2	-6.88	PK
V	17265.026	2.00	10.12	38.80	42.70	8.22	54	-45.78	AV
H	4679.076	60.36	5.94	35.18	44.00	57.48	74	-16.52	PK
H	4679.076	43.62	5.94	35.18	44.00	40.74	54	-13.26	AV
H	11510.128	54.38	8.46	38.71	44.50	57.05	74	-16.95	PK
H	11510.128	41.59	8.46	38.71	44.50	44.26	54	-9.74	AV
H	17265.083	53.96	10.12	38.38	44.10	58.36	68.2	-9.84	PK
H	17265.083	42.18	10.12	38.38	44.10	46.58	54	-7.42	AV
<b>middle Channel (5795 MHz)-Above 1G</b>									
V	6039.091	56.77	6.48	36.35	44.05	55.55	68.2	-12.65	PK
V	6039.091	43.51	6.48	36.35	44.05	42.29	54	-11.71	AV
V	11590.008	59.34	8.47	37.88	44.51	61.18	74	-12.82	PK
V	11590.008	43.18	8.47	37.88	44.51	45.02	54	-8.98	AV
V	17385.185	55.22	10.12	38.80	44.10	60.04	68.2	-8.16	PK
V	17385.185	41.56	10.12	38.80	42.70	47.78	54	-6.22	AV
H	6039.105	58.34	6.48	36.37	44.05	57.14	68.2	-11.06	PK
H	6039.105	43.23	6.48	36.37	44.05	42.03	54	-11.97	AV
H	11590.176	52.48	8.47	38.64	44.50	55.09	74	-18.91	PK
H	11590.176	41.98	8.47	38.64	44.50	44.59	54	-9.41	AV
H	17385.138	54.00	10.12	38.38	44.10	58.40	68.2	-9.80	PK
H	17385.138	41.18	10.12	38.38	44.10	45.58	54	-8.42	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) --802.11AC20
-------------	------------------------

Polar (H/V)	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
<b>Low Channel (5745 MHz)-Above 1G</b>									
V	4679.126	58.35	5.94	35.40	44.00	55.69	74	-18.31	PK
V	4679.126	43.45	5.94	35.40	44.00	40.79	54	-13.21	AV
V	11490.035	56.20	8.46	39.75	44.50	59.91	68.2	-8.29	PK
V	11490.035	43.23	8.46	39.75	44.50	46.94	54	-7.06	AV
V	17235.121	61.79	10.12	38.80	44.10	66.61	68.2	-1.59	PK
V	17235.121	43.24	10.12	38.80	42.70	49.46	54	-4.54	AV
H	4679.098	59.46	5.94	35.18	44.00	56.58	74	-17.42	PK
H	4679.098	43.74	5.94	35.18	44.00	40.86	54	-13.14	AV
H	11490.172	48.69	8.46	38.71	44.50	51.36	68.2	-16.84	PK
H	11490.172	44.93	8.46	38.71	44.50	47.60	54	-6.40	AV
H	17235.067	51.32	10.12	38.38	44.10	55.72	68.2	-12.48	PK
H	17235.067	40.06	10.12	38.38	44.10	44.46	54	-9.54	AV
<b>middle Channel (5785 MHz)-Above 1G</b>									
V	4592.126	61.31	6.48	36.35	44.05	60.09	74	-13.91	PK
V	4592.126	43.45	6.48	36.35	44.05	42.23	54	-11.77	AV
V	11570.008	55.11	8.47	37.88	44.51	56.95	68.2	-11.25	PK
V	11570.008	43.27	8.47	37.88	44.51	45.11	54	-8.89	AV
V	17355.195	59.50	10.12	38.80	44.10	64.32	68.2	-3.88	PK
V	17355.195	43.67	10.12	38.80	42.70	49.89	54	-4.11	AV
H	4592.059	58.87	6.48	36.37	44.05	57.67	74	-16.33	PK
H	4592.059	43.48	6.48	36.37	44.05	42.28	54	-11.72	AV
H	11570.096	52.89	8.47	38.64	44.50	55.50	68.2	-12.70	PK
H	11570.096	41.74	8.47	38.64	44.50	44.35	54	-9.65	AV
H	17355.089	53.11	10.12	38.38	44.10	57.51	68.2	-10.69	PK
H	17355.089	43.13	10.12	38.38	44.10	47.53	54	-6.47	AV
<b>High Channel (5825 MHz)-Above 1G</b>									
V	6039.190	56.27	7.10	37.24	43.50	57.11	68.2	-11.09	PK
V	6039.190	43.72	7.10	37.24	43.50	44.56	54	-9.44	AV
V	11650.039	58.54	8.46	37.68	44.50	60.18	74	-13.82	PK
V	11650.039	43.16	8.46	37.68	44.50	44.80	54	-9.20	AV
V	17475.136	57.72	10.12	38.80	44.10	62.54	68.2	-5.66	PK
V	17475.136	43.75	10.12	38.80	42.70	49.97	54	-4.03	AV
H	6039.169	59.34	7.10	37.24	43.50	60.18	68.2	-8.02	PK
H	6039.169	43.26	7.10	37.24	43.50	44.10	54	-9.90	AV
H	11650.170	54.29	8.46	38.57	44.50	56.82	74	-17.18	PK
H	11650.170	43.48	8.46	38.57	44.50	46.01	54	-7.99	AV
H	17475.146	54.83	10.12	38.38	44.10	59.23	68.2	-8.97	PK
H	17475.146	42.67	10.12	38.38	44.10	47.07	54	-6.93	AV

Note: PK value is lower than the Average value limit, So average didn't record.  
 The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.  
 Emission level (dBuV/m) = 20 log Emission level (uV/m).  
 Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode :	TX (5.8G) -- 802.11AC40
-------------	-------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detector Type
<b>Low Channel (5755 MHz)-Above 1G</b>									
V	4679.154	58.99	5.94	35.40	44.00	56.33	74	-17.67	PK
V	4679.154	43.93	5.94	35.40	44.00	41.27	54	-12.73	AV
V	11510.166	55.74	8.46	39.75	44.50	59.45	74	-14.55	PK
V	11510.166	43.35	8.46	39.75	44.50	47.06	54	-6.94	AV
V	17265.144	59.75	10.12	38.80	44.10	64.57	68.2	-3.63	PK
V	17265.144	2.00	10.12	38.80	42.70	8.22	54	-45.78	AV
H	4679.131	59.67	5.94	35.18	44.00	56.79	74	-17.21	PK
H	4679.131	43.20	5.94	35.18	44.00	40.32	54	-13.68	AV
H	11510.064	50.68	8.46	38.71	44.50	53.35	74	-20.65	PK
H	11510.064	42.50	8.46	38.71	44.50	45.17	54	-8.83	AV
H	17265.186	50.68	10.12	38.38	44.10	55.08	68.2	-13.12	PK
H	17265.186	42.82	10.12	38.38	44.10	47.22	54	-6.78	AV
<b>middle Channel (5795 MHz)-Above 1G</b>									
V	6039.122	56.74	6.48	36.35	44.05	55.52	68.2	-12.68	PK
V	6039.122	43.99	6.48	36.35	44.05	42.77	54	-11.23	AV
V	11590.077	55.37	8.47	37.88	44.51	57.21	74	-16.79	PK
V	11590.077	43.52	8.47	37.88	44.51	45.36	54	-8.64	AV
V	17385.165	55.11	10.12	38.80	44.10	59.93	68.2	-8.27	PK
V	17385.165	41.59	10.12	38.80	42.70	47.81	54	-6.19	AV
H	6039.049	59.90	6.48	36.37	44.05	58.70	68.2	-9.50	PK
H	6039.049	43.77	6.48	36.37	44.05	42.57	54	-11.43	AV
H	11590.157	54.22	8.47	38.64	44.50	56.83	74	-17.17	PK
H	11590.157	44.49	8.47	38.64	44.50	47.10	54	-6.90	AV
H	17385.074	51.22	10.12	38.38	44.10	55.62	68.2	-12.58	PK
H	17385.074	40.50	10.12	38.38	44.10	44.90	54	-9.10	AV

Note: PK value is lower than the Average value limit, So average didn't record.  
 The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.  
 Emission level (dBuV/m) = 20 log Emission level (uV/m).  
 Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.



Test Mode :	TX (5.8G) -- 802.11AC80
-------------	-------------------------

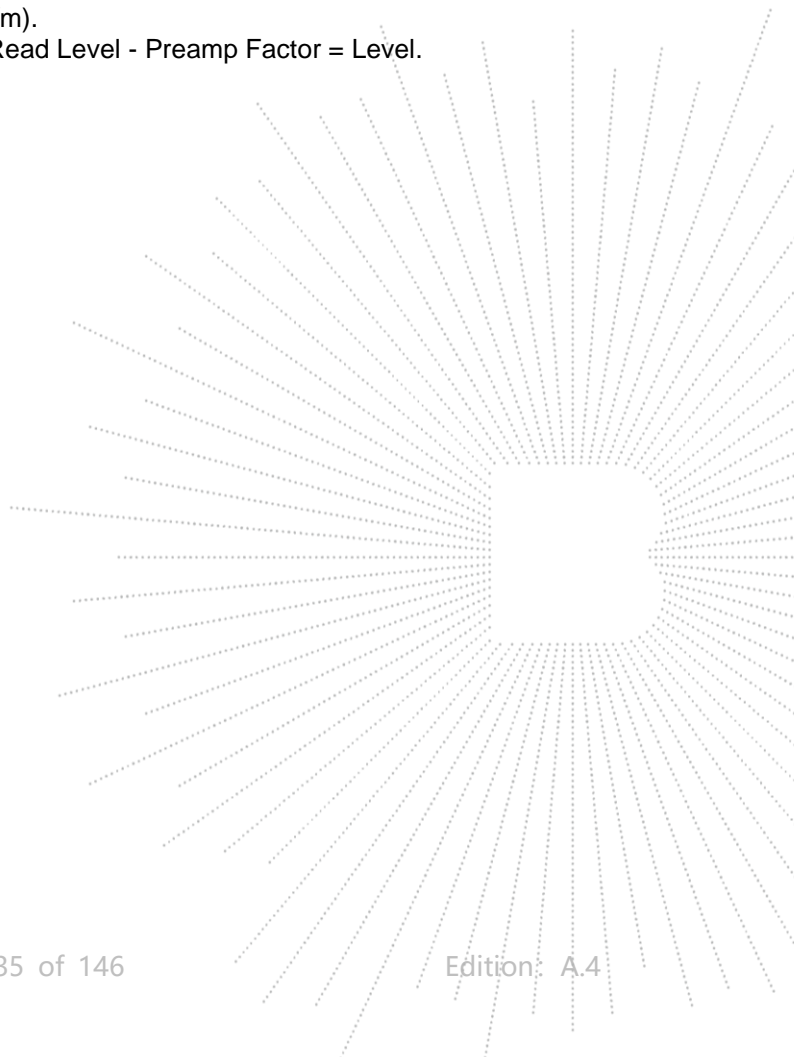
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detector Type
<b>Low Channel (5775 MHz)-Above 1G</b>									
V	4679.071	58.78	5.94	35.40	44.00	56.12	74	-17.88	PK
V	4679.071	43.74	5.94	35.40	44.00	41.08	54	-12.92	AV
V	11550.126	58.88	8.46	39.75	44.50	62.59	74	-11.41	PK
V	11550.126	42.01	8.46	39.75	44.50	45.72	54	-8.28	AV
V	17325.041	59.23	10.12	38.80	44.10	64.05	68.2	-4.15	PK
V	17325.041	41.52	10.12	38.80	42.70	47.74	54	-6.26	AV
H	4679.179	59.00	5.94	35.18	44.00	56.12	74	-17.88	PK
H	4679.179	43.17	5.94	35.18	44.00	40.29	54	-13.71	AV
H	11550.083	54.98	8.46	38.71	44.50	57.65	74	-16.35	PK
H	11550.083	42.03	8.46	38.71	44.50	44.70	54	-9.30	AV
H	17325.182	50.70	10.12	38.38	44.10	55.10	68.2	-13.10	PK
H	17325.182	42.66	10.12	38.38	44.10	47.06	54	-6.94	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

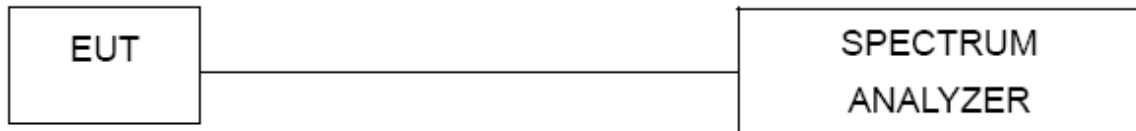
Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.



## 8. Power Spectral Density Test

### 8.1 Block Diagram Of Test Setup



### 8.2 Limit

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 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.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

(iv) For client devices in the 5.15-5.25 GHz band, 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 5.725-5.85 GHz

(3) For the band 5.725-5.85 GHz, 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.