

FCC Test Report (Co-Located)

Report No.: RF171005C05A-1

FCC ID: REP-8020-1

Test Model: HotPort 8020

Received Date: Oct. 05, 2017

Test Date: Nov. 17 ~ Dec. 05, 2017

Issued Date: Jan. 03, 2018

Applicant: Firetide Inc.

Address: Firetide Inc. A Division of UNICOM GLOBAL 2105, South Bascom Avenue, Suite 220, Campbell, California, United States, 950008

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RF171005C05A-1	Original release.	Jan. 03, 2018

1 Certificate of Conformity

Product: Firetide Wireless Mesh Node
Brand: Firetide
Test Model: HotPort 8020
Sample Status: Engineering sample
Applicant: Firetide Inc.
Test Date: Nov. 17 ~ Dec. 05, 2017
Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2013
FCC Part 90, Subpart Y
FCC Part 2

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : *Suntee Liu* , **Date:** Jan. 03, 2018
Suntee Liu / Specialist

Approved by : *Bruce Chen* , **Date:** Jan. 03, 2018
Bruce Chen / Project Engineer

2 Summary of Test Results

Applied Standard	47 CFR FCC Part 15, Subpart E (Section 15.407) FCC Part 90 & Part 2		
FCC Clause	Test Item	Result	Remarks
15.407(b) (1/2/3/4(i/ii)/6) Part 2.1053 Part 90.210	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -0.4dB at 191.28MHz.

*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB test plots were recorded in Annex A.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

WLAN 5GHz

Product	Firetide Wireless Mesh Node
Brand	Firetide
Test Model	HotPort 8020
Sample Status	Engineering sample
Power Supply Rating	54Vdc (POE)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 600Mbps 802.11ac: up to 1734Mbps
Operating Frequency	5180~5240MHz, 5745~5825MHz
Number of Channel	5180~5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5260~5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500~5720MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 12 802.11n (HT40), 802.11ac (VHT40): 6 802.11ac (VHT80): 3 5745~5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	Refer to Note
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Cable Supplied	1.8m non-shielded ground cable without core

WLAN 4.9GHz

Product	Firetide Wireless Mesh Node
Brand	Firetide
Test Model	HotPort 8020
Status of EUT	Engineering sample
Power Supply Rating	54Vdc (POE)
Modulation Type & Data Rate	<p>Channel Bandwidth 5MHz: BPSK: 1.5 and 2.25Mbps QPSK: 3 and 4.5Mbps 16QAM: 6 and 9Mbps 64QAM: 12 and 13.5Mbps</p> <p>Channel Bandwidth 10MHz: BPSK: 3 and 4.5Mbps QPSK: 6 and 9Mbps 16QAM: 12 and 18Mbps 64QAM: 24 and 27Mbps</p> <p>Channel Bandwidth 20MHz: BPSK: 6 and 9Mbps QPSK: 12 and 18Mbps 16QAM: 24 and 36Mbps 64QAM: 48 and 54Mbps</p>
Operating Frequency	<p>Channel Bandwidth 5MHz: 4942.5~4987.5MHz Channel Bandwidth 10MHz: 4945~4985MHz Channel Bandwidth 20MHz: 4950~4980MHz</p>
Number of Channel	<p>Channel Bandwidth 5MHz: 10 Channel Bandwidth 10MHz: 9 Channel Bandwidth 20MHz: 7</p>
Conducted Output Power	<p>Radio 1, Antenna 1 & 2: Channel Bandwidth 5MHz: 16.64dBm (0.046W) Channel Bandwidth 10MHz: 14.54dBm (0.028W) Channel Bandwidth 20MHz: 17.62dBm (0.058W) Radio 2, Antenna 1 & 2: Channel Bandwidth 5MHz: 17.22dBm (0.053W) Channel Bandwidth 10MHz: 15.00dBm (0.032W) Channel Bandwidth 20MHz: 19.15dBm (0.082W)</p>
Emission Designator	<p>Radio 1, Antenna 1 & 2: Channel Bandwidth 5MHz: 4M17G7D Channel Bandwidth 10MHz: 8M44G7D Channel Bandwidth 20MHz: 16M7G7D Radio 2, Antenna 1 & 2: Channel Bandwidth 5MHz: 4M21G7D Channel Bandwidth 10MHz: 8M44G7D Channel Bandwidth 20MHz: 16M6G7D</p>
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA

Cable Supplied	1.8m non-shielded ground cable without core
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Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the original report (BV CPS report no.: RF171005C05-2) is adding 5.26GHz to 5.32GHz and 5.50GHz to 5.72GHz by software.
2. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Modulation Mode	TX Function	Beamforming
802.11a	4TX	Not Support
802.11n (HT20)	4TX	Support
802.11n (HT40)	4TX	Support
802.11ac (VHT20)	4TX	Support
802.11ac (VHT40)	4TX	Support
802.11ac (VHT80)	4TX	Support

* The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

* CDD mode is the worst case for final tests after pretesting CDD mode and beamforming mode except output power test.

3. The EUT consumes power from following POE. (Support units only)

POE	
Brand	EnGenius
Model	EPA5006GAT
Input Power	100-240Vac, 0.8A, 50-60Hz
Output Power	54Vdc, 0.6A
Power Cable	0.5m non-shielded AC cable without core

4. The EUT uses following antennas.

No.	Function	Antenna Type	Connector	Gain (dBi)		Remark
				4.9G	5G	
1	WLAN	Dipole	N Plug	6.5	7	Radio 1 / Radio 2
2	WLAN	Panel	N Plug	17.5	18.5	Radio 1 / Radio 2

5. Radio 1, 5GHz & Radio 2, 5GHz / Radio 1, 4.9GHz & Radio 2, 4.9GHz can transmit at same time but cannot transmit at same channel.

6. Spurious emission of the simultaneous operation (Radio 1, 5GHz & Radio 2, 5GHz / Radio 1, 4.9GHz & Radio 2, 4.9GHz) has been evaluated and no non-compliance was found.

3.2 Description of Test Modes

WLAN 5GHz

For 5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

5260~5320MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

5500~5720MHz:

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz
138	5690 MHz		

5745~5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

WLAN 4.9GHz

10 channels are for the Channel Bandwidth 5MHz bandwidth of EUT:

Channel	Frequency (MHz)
1	4942.5
2	4947.5
3	4952.5
4	4957.5
5	4962.5
6	4967.5
7	4972.5
8	4977.5
9	4982.5
10	4987.5

9 channels are for the Channel Bandwidth 10MHz bandwidth of EUT:

Channel	Frequency (MHz)
11	4945
12	4950
13	4955
14	4960
15	4965
16	4970
17	4975
18	4980
19	4985

7 channels are for the Channel Bandwidth 20MHz bandwidth of EUT:

Channel	Frequency (MHz)
20	4950
21	4955
22	4960
23	4965
24	4970
25	4975
26	4980

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to		Description
	RE \geq 1G	RE<1G	
-	√	√	-

Where RE \geq 1G: Radiated Emission above 1GHz & Bandedge Measurement RE<1G: Radiated Emission below 1GHz

Radiated Emission Test (Above 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Antenna	Radio	Mode	Tested Channel	Remark
1	1	1	802.11a	116	-
		2	802.11a	52	-
2	1	1	802.11a	116	-
		2	802.11a	149	-
3	1	1	802.11n (HT20)	157	-
		2	802.11a	52	-
4	1	1	802.11a	116	-
		2	4.9G, 5MHz	1	-
5	1	1	4.9G, 5MHz	5	-
		2	802.11a	52	-
6	2	1	802.11a	149	-
		2	802.11n (HT20)	64	-
7	2	1	802.11a	64	-
		2	802.11a	149	-
8	2	1	802.11a	64	-
		2	802.11n (HT20)	60	-
9	2	1	802.11a	64	-
		2	4.9G, 5MHz	10	-
10	2	1	4.9G, 5MHz	1	-
		2	802.11n (HT20)	64	-

Radiated Emission Test (Below 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Antenna	Radio	Mode	Tested Channel	Remark
1	1	1	802.11a	116	-
		2	802.11a	52	-
2	1	1	802.11a	116	-
		2	802.11a	149	-
3	1	1	802.11n (HT20)	157	-
		2	802.11a	52	-
4	1	1	802.11a	116	-
		2	4.9G, 5MHz	1	-
5	1	1	4.9G, 5MHz	5	-
		2	802.11a	52	-
6	2	1	802.11a	149	-
		2	802.11n (HT20)	64	-
7	2	1	802.11a	64	-
		2	802.11a	149	-
8	2	1	802.11a	64	-
		2	802.11n (HT20)	60	-
9	2	1	802.11a	64	-
		2	4.9G, 5MHz	10	-
10	2	1	4.9G, 5MHz	1	-
		2	802.11n (HT20)	64	-

Test Condition:

Applicable to	Environmental Conditions	Input Power (system)	Tested by
RE≥1G	23 deg. C, 69% RH	120Vac, 60Hz	Willy Cheng
RE<1G	21 deg. C, 66% RH	120Vac, 60Hz	Adair Peng

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

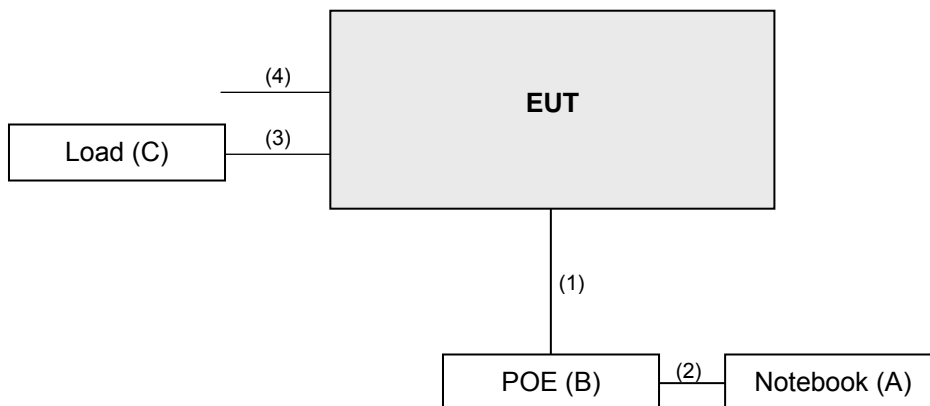
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	POE	EnGenius	EPA5006GAT	NA	NA	Supplied by the manufacturer
C.	Load	NA	NA	NA	NA	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45, Cat5e	1	10	N	0	-
2.	RJ45, Cat5e	1	1.5	N	0	-
3.	RJ45, Cat5e	1	1.5	N	0	-
4.	RJ45, Cat5e	1	1.5	N	0	-

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specification of the EUT declared by the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)

ANSI C63.10:2013

FCC 47 CFR Part 2

FCC 47 CFR Part 90

ANSI/TIA/EIA-603-D 2010

All test items have been performed and recorded as per the above standards.

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power.

FCC PART 15.209:

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Applicable To		Limit	
789033 D02 General UNII Test Procedure New Rules v02r01		Field Strength at 3m	
		PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
Frequency Band	Applicable To	EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2(dBµV/m)
5250~5350 MHz	15.407(b)(2)		
5470~5725 MHz	15.407(b)(3)		
5725~5850 MHz	<input checked="" type="checkbox"/> 15.407(b)(4)(i)	PK: -27 (dBm/MHz) ^{*1} PK: 10 (dBm/MHz) ^{*2} PK: 15.6 (dBm/MHz) ^{*3} PK: 27 (dBm/MHz) ^{*4}	PK: 68.2(dBµV/m) ^{*1} PK: 105.2 (dBµV/m) ^{*2} PK: 110.8(dBµV/m) ^{*3} PK: 122.2 (dBµV/m) ^{*4}
	<input type="checkbox"/> 15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
^{*1} beyond 75 MHz or more above of the band edge.		^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.	
^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.		^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000 \sqrt{30P}}{3} \mu\text{V/m, where } P \text{ is the eirp (Watts).}$$

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 02, 2017	May 01, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 18, 2017	Aug. 17, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	9120D	209	Dec. 15, 2016	Dec. 14, 2017
			Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 21, 2017	Aug. 20, 2018
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Apr. 05, 2017	Apr. 04, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 21, 2017	Aug. 20, 2018
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM-8 000	Cable-CH3-03 (309224+170907)	Sep.11, 2017	Sep. 10, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
26GHz ~ 40GHz Amplifier Agilent	8449B	3008A1960	Aug. 08, 2017	Aug. 07, 2018
High Speed Peak Power Meter	ML2495A	0824012	Aug. 18, 2017	Aug. 17, 2018
Power Sensor	MA2411B	0738171	Aug. 18, 2017	Aug. 17, 2018
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 07, 2017	Jun. 06, 2018

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
5. The IC Site Registration No. is IC 7450F-3.

4.1.3 Test Procedures

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 meter 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.

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 meter 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 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:

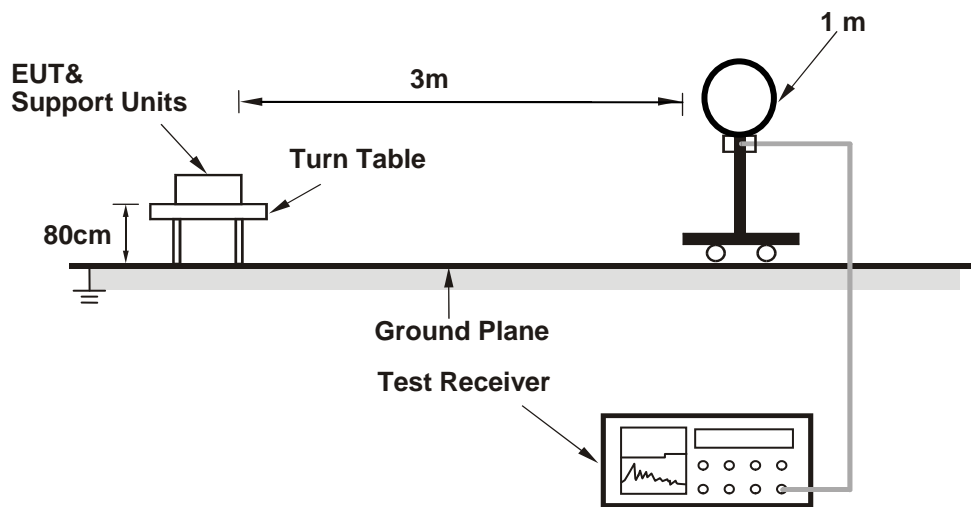
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (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.

4.1.4 Deviation from Test Standard

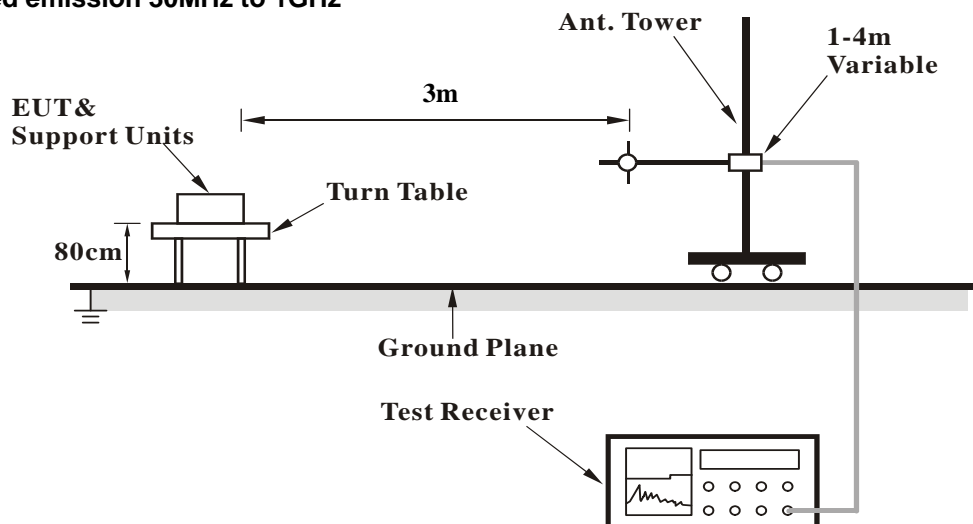
No deviation.

4.1.5 Test Setup

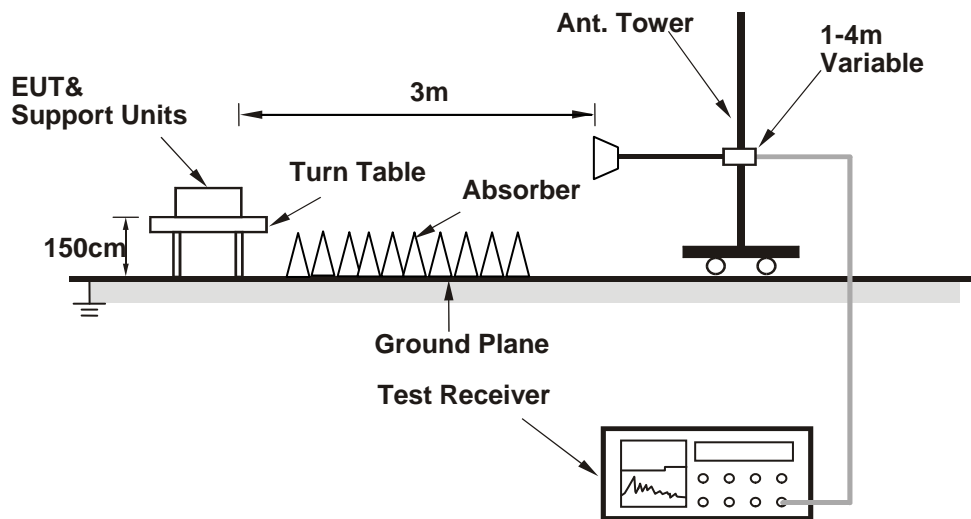
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

- a. Placed the EUT on the testing table.
- b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
- c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- d. The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz data:

Mode 1

Antenna 1,

Radio 1, 802.11a, CH 116 +

Radio 2, 802.11a, CH 52

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.9 PK	74.0	-16.1	1.61 H	346	54.3	3.6
2	5150.00	46.8 AV	54.0	-7.2	1.61 H	346	43.2	3.6
3	*5260.00	121.3 PK			2.02 H	342	81.7	39.6
4	*5260.00	110.4 AV			2.02 H	342	70.8	39.6
5	5460.00	57.4 PK	74.0	-16.6	1.50 H	345	53.4	4.0
6	5460.00	44.7 AV	54.0	-9.3	1.50 H	345	40.7	4.0
7	#5470.00	59.3 PK	74.0	-14.7	1.50 H	345	55.3	4.0
8	#5470.00	45.7 AV	54.0	-8.3	1.50 H	345	41.7	4.0
9	*5580.00	126.0 PK			1.82 H	351	85.9	40.1
10	*5580.00	115.1 AV			1.82 H	351	75.0	40.1
11	#10520.00	65.4 PK	74.0	-8.6	2.24 H	344	48.4	17.0
12	#10520.00	51.5 AV	54.0	-2.5	2.24 H	344	34.5	17.0
13	11160.00	61.8 PK	74.0	-12.2	1.86 H	346	43.1	18.7
14	11160.00	48.5 AV	54.0	-5.5	1.86 H	346	29.8	18.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.8 PK	74.0	-17.2	2.04 V	138	53.2	3.6
2	5150.00	43.1 AV	54.0	-10.9	2.04 V	138	39.5	3.6
3	*5260.00	103.8 PK			3.83 V	41	64.2	39.6
4	*5260.00	92.5 AV			3.83 V	41	52.9	39.6
5	5460.00	56.3 PK	74.0	-17.7	2.60 V	331	52.3	4.0
6	5460.00	42.9 AV	54.0	-11.1	2.60 V	331	38.9	4.0
7	#5470.00	55.9 PK	74.0	-18.1	2.60 V	331	51.9	4.0
8	#5470.00	42.8 AV	54.0	-11.2	2.60 V	331	38.8	4.0
9	*5580.00	108.2 PK			3.86 V	43	68.1	40.1
10	*5580.00	97.6 AV			3.86 V	43	57.5	40.1
11	#10520.00	60.5 PK	74.0	-13.5	2.79 V	177	43.5	17.0
12	#10520.00	47.1 AV	54.0	-6.9	2.79 V	177	30.1	17.0
13	11160.00	60.8 PK	74.0	-13.2	2.07 V	118	42.1	18.7
14	11160.00	47.1 AV	54.0	-6.9	2.07 V	118	28.4	18.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Mode 2

Antenna 1,

Radio 1, 802.11a, CH 116 +

Radio 2, 802.11a, CH 149

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.4 PK	74.0	-16.6	1.57 H	355	53.4	4.0
2	5460.00	45.0 AV	54.0	-9.0	1.57 H	355	41.0	4.0
3	#5470.00	58.6 PK	74.0	-15.4	1.57 H	355	54.6	4.0
4	#5470.00	46.3 AV	54.0	-7.7	1.57 H	355	42.3	4.0
5	*5580.00	126.1 PK			1.38 H	343	86.0	40.1
6	*5580.00	115.7 AV			1.38 H	343	75.6	40.1
7	*5745.00	131.7 PK			1.88 H	353	91.3	40.4
8	*5745.00	121.1 AV			1.88 H	353	80.7	40.4
9	#5825.00	66.1 PK	74.0	-7.9	1.46 H	352	61.4	4.7
10	#5825.00	48.6 AV	54.0	-5.4	1.46 H	352	43.9	4.7
11	11160.00	63.2 PK	74.0	-10.8	1.19 H	358	44.5	18.7
12	11160.00	49.3 AV	54.0	-4.7	1.19 H	358	30.6	18.7
13	11490.00	65.8 PK	74.0	-8.2	1.31 H	351	47.6	18.2
14	11490.00	52.9 AV	54.0	-1.1	1.31 H	351	34.7	18.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	48.2 PK	74.0	-25.8	3.31 V	48	44.2	4.0
2	5460.00	43.6 AV	54.0	-10.4	3.31 V	48	39.6	4.0
3	#5470.00	55.3 PK	74.0	-18.7	3.31 V	48	51.3	4.0
4	#5470.00	44.4 AV	54.0	-9.6	3.31 V	48	40.4	4.0
5	*5580.00	110.2 PK			3.84 V	98	70.1	40.1
6	*5580.00	100.0 AV			3.84 V	98	59.9	40.1
7	*5745.00	116.1 PK			3.76 V	54	75.7	40.4
8	*5745.00	105.3 AV			3.76 V	54	64.9	40.4
9	#5825.00	47.0 PK	74.0	-27.0	2.96 V	138	42.3	4.7
10	#5825.00	43.9 AV	54.0	-10.1	2.96 V	138	39.2	4.7
11	11160.00	62.4 PK	74.0	-11.6	2.44 V	269	43.7	18.7
12	11160.00	48.9 AV	54.0	-5.1	2.44 V	269	30.2	18.7
13	11490.00	65.1 PK	74.0	-8.9	1.92 V	287	46.9	18.2
14	11490.00	51.3 AV	54.0	-2.7	1.92 V	287	33.1	18.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Mode 3

Antenna 1,

Radio 1, 802.11n (HT20), CH 157 +

Radio 2, 802.11a, CH 52

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	61.8 PK	74.0	-12.2	1.78 H	203	58.2	3.6
2	5150.00	50.1 AV	54.0	-3.9	1.78 H	203	46.5	3.6
3	*5260.00	128.2 PK			1.99 H	222	88.6	39.6
4	*5260.00	118.0 AV			1.99 H	222	78.4	39.6
5	#5640.80	55.5 PK	68.2	-12.7	1.93 H	302	51.2	4.3
6	*5785.00	131.9 PK			1.93 H	302	91.4	40.5
7	*5785.00	121.3 AV			1.93 H	302	80.8	40.5
8	#5936.00	56.6 PK	68.2	-11.6	1.93 H	302	51.6	5.0
9	#10520.00	60.5 PK	74.0	-13.5	2.29 H	238	43.5	17.0
10	#10520.00	47.1 AV	54.0	-6.9	2.29 H	238	30.1	17.0
11	11570.00	64.0 PK	74.0	-10.0	2.93 H	190	45.7	18.3
12	11570.00	51.6 AV	54.0	-2.4	2.93 H	190	33.3	18.3

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.8 PK	74.0	-17.2	2.22 V	311	53.2	3.6
2	5150.00	44.2 AV	54.0	-9.8	2.22 V	311	40.6	3.6
3	*5260.00	108.2 PK			2.51 V	355	68.6	39.6
4	*5260.00	95.9 AV			2.51 V	355	56.3	39.6
5	#5629.60	54.5 PK	68.2	-13.7	1.99 V	355	50.2	4.3
6	*5785.00	114.7 PK			1.99 V	355	74.2	40.5
7	*5785.00	104.1 AV			1.99 V	355	63.6	40.5
8	#5944.00	57.1 PK	68.2	-11.1	1.99 V	355	52.0	5.1
9	#10520.00	60.2 PK	74.0	-13.8	2.31 V	311	43.2	17.0
10	#10520.00	47.5 AV	54.0	-6.5	2.31 V	311	30.5	17.0
11	11570.00	63.9 PK	74.0	-10.1	1.93 V	254	45.6	18.3
12	11570.00	50.7 AV	54.0	-3.3	1.93 V	254	32.4	18.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Mode 4

Antenna 1,

Radio 1, 802.11a, CH 116 +

Radio 2, 4.9G, 5MHz, CH 1

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	128.0 PK			1.87 H	341	87.9	40.1
2	*5580.00	117.1 AV			1.87 H	341	77.0	40.1
3	11160.00	63.3 PK	74.0	-10.7	2.03 H	299	44.6	18.7
4	11160.00	50.1 AV	54.0	-3.9	2.03 H	299	31.4	18.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	106.6 PK			1.92 V	213	66.5	40.1
2	*5580.00	96.4 AV			1.92 V	213	56.3	40.1
3	11160.00	62.0 PK	74.0	-12.0	2.09 V	245	43.3	18.7
4	11160.00	49.1 AV	54.0	-4.9	2.09 V	245	30.4	18.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Frequency Range	Above 1000MHz
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Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	9885.00	-57.22	-33.75	3.75	-30.00	-27.71	-2.29
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	9885.00	-59.66	-37.15	3.75	-33.40	-27.71	-5.69

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).
3. Limit = EIRP 22.29dBm - 50dB = -27.71dBm.

Mode 5

Antenna 1,

Radio 1, 4.9G, 5MHz, CH 5 +

Radio 2, 802.11a, CH 52

Frequency Range	Above 1000MHz
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Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	9925.00	-58.29	-34.71	3.71	-31.00	-30.18	-0.82
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	9925.00	-59.88	-37.41	3.71	-33.70	-30.18	-3.52

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).
3. Limit = EIRP 19.82dBm - 50dB = -30.18dBm.

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.5 PK	74.0	-16.5	1.60 H	345	53.9	3.6
2	5150.00	46.5 AV	54.0	-7.5	1.60 H	345	42.9	3.6
3	*5260.00	121.1 PK			1.88 H	333	81.5	39.6
4	*5260.00	110.0 AV			1.88 H	333	70.4	39.6
5	#10520.00	61.3 PK	74.0	-12.7	2.21 H	293	44.3	17.0
6	#10520.00	48.1 AV	54.0	-5.9	2.21 H	293	31.1	17.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.6 PK	74.0	-17.4	2.02 V	133	53.0	3.6
2	5150.00	43.7 AV	54.0	-10.3	2.02 V	133	40.1	3.6
3	*5260.00	99.9 PK			1.93 V	203	60.3	39.6
4	*5260.00	90.0 AV			1.93 V	203	50.4	39.6
5	#10520.00	60.5 PK	74.0	-13.5	1.98 V	256	43.5	17.0
6	#10520.00	47.4 AV	54.0	-6.6	1.98 V	256	30.4	17.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Mode 6

Antenna 2,

Radio 1, 802.11a, CH 149 +

Radio 2, 802.11n (HT20), CH 64

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	102.4 PK			2.85 H	26	62.7	39.7
2	*5320.00	91.3 AV			2.85 H	26	51.6	39.7
3	5350.00	53.0 PK	74.0	-21.0	2.78 H	282	49.1	3.9
4	5350.00	40.1 AV	54.0	-13.9	2.78 H	282	36.2	3.9
5	*5745.00	125.1 PK			1.73 H	344	84.7	40.4
6	*5745.00	114.1 AV			1.73 H	344	73.7	40.4
7	10640.00	55.5 PK	74.0	-18.5	1.60 H	343	38.2	17.3
8	10640.00	41.4 AV	54.0	-12.6	1.60 H	343	24.1	17.3
9	11490.00	56.3 PK	74.0	-17.7	2.02 H	330	38.1	18.2
10	11490.00	43.4 AV	54.0	-10.6	2.02 H	330	25.2	18.2
11	#5609.60	54.3 PK	68.2	-13.9	1.73 H	344	50.0	4.3
12	#5979.20	55.0 PK	68.2	-13.2	1.73 H	344	49.8	5.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	102.4 PK			2.86 V	20	60.2	39.7
2	*5320.00	91.3 AV			2.86 V	20	49.0	39.7
3	5350.00	53.8 PK	74.0	-20.2	1.68 V	357	49.9	3.9
4	5350.00	41.6 AV	54.0	-12.4	1.68 V	357	37.7	3.9
5	#5631.20	54.4 PK	68.2	-13.8	1.80 V	352	50.1	4.3
6	*5745.00	123.0 PK			1.80 V	352	82.6	40.4
7	*5745.00	112.1 AV			1.80 V	352	71.7	40.4
8	#5970.40	55.0 PK	68.2	-13.2	1.80 V	352	49.8	5.2
9	10640.00	56.2 PK	74.0	-17.8	1.24 V	318	38.9	17.3
10	10640.00	41.7 AV	54.0	-12.3	1.24 V	318	24.4	17.3
11	11490.00	57.2 PK	74.0	-16.8	2.11 V	308	39.0	18.2
12	11490.00	43.7 AV	54.0	-10.3	2.11 V	308	25.5	18.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Mode 7

Antenna 2,

Radio 1, 802.11a, CH 64 +

Radio 2, 802.11a, CH 149

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	118.0 PK			1.62 H	344	78.3	39.7
2	*5320.00	107.1 AV			1.62 H	344	67.4	39.7
3	5350.00	53.4 PK	74.0	-20.6	1.65 H	349	49.5	3.9
4	5350.00	39.6 AV	54.0	-14.4	1.65 H	349	35.7	3.9
5	#5605.60	52.9 PK	68.2	-15.3	1.61 H	359	48.6	4.3
6	*5745.00	124.4 PK			1.61 H	359	84.0	40.4
7	*5745.00	113.2 AV			1.61 H	359	72.8	40.4
8	#5967.20	54.0 PK	68.2	-14.2	1.61 H	359	48.8	5.2
9	10640.00	53.6 PK	74.0	-20.4	2.18 H	333	36.3	17.3
10	10640.00	40.1 AV	54.0	-13.9	2.18 H	333	22.8	17.3
11	11490.00	55.5 PK	74.0	-18.5	1.38 H	263	37.3	18.2
12	11490.00	41.9 AV	54.0	-12.1	1.38 H	263	23.7	18.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	115.9 PK			1.77 V	357	76.2	39.7
2	*5320.00	105.2 AV			1.77 V	357	65.5	39.7
3	5350.00	41.8 PK	74.0	-32.2	2.08 V	284	37.9	3.9
4	5350.00	38.5 AV	54.0	-15.5	2.08 V	284	34.6	3.9
5	#5612.00	54.5 PK	68.2	-13.7	1.68 V	357	50.2	4.3
6	*5745.00	123.6 PK			1.68 V	357	83.2	40.4
7	*5745.00	112.3 AV			1.68 V	357	71.9	40.4
8	#5952.80	56.5 PK	68.2	-11.7	1.68 V	357	51.4	5.1
9	10640.00	54.7 PK	74.0	-19.3	1.81 V	302	37.4	17.3
10	10640.00	40.6 AV	54.0	-13.4	1.81 V	302	23.3	17.3
11	11490.00	55.8 PK	74.0	-18.2	1.44 V	351	37.6	18.2
12	11490.00	42.1 AV	54.0	-11.9	1.44 V	351	23.9	18.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Mode 8

Antenna 2,

Radio 1, 802.11a, CH 64 +

Radio 2, 802.11n (HT20), CH 60

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	118.1 PK			1.58 H	1	78.5	39.6
2	*5300.00	106.5 AV			1.58 H	1	66.9	39.6
3	*5320.00	117.9 PK			1.64 H	343	78.2	39.7
4	*5320.00	107.0 AV			1.64 H	343	67.3	39.7
5	5350.00	53.5 PK	74.0	-20.5	1.76 H	351	49.6	3.9
6	5350.00	39.7 AV	54.0	-14.3	1.76 H	351	35.8	3.9
7	10600.00	54.5 PK	74.0	-19.5	2.53 H	316	37.4	17.1
8	10600.00	41.4 AV	54.0	-12.6	2.53 H	316	24.3	17.1
9	10640.00	54.4 PK	74.0	-19.6	2.95 H	348	37.1	17.3
10	10640.00	41.2 AV	54.0	-12.8	2.95 H	348	23.9	17.3

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	117.4 PK			1.44 V	356	77.8	39.6
2	*5300.00	106.2 AV			1.44 V	356	66.6	39.6
3	*5320.00	116.0 PK			1.71 V	357	76.3	39.7
4	*5320.00	105.4 AV			1.71 V	357	65.7	39.7
5	5350.00	51.7 PK	74.0	-22.3	2.29 V	348	47.8	3.9
6	5350.00	38.8 AV	54.0	-15.2	2.29 V	348	34.9	3.9
7	10600.00	54.0 PK	74.0	-20.0	1.56 V	318	36.9	17.1
8	10600.00	40.8 AV	54.0	-13.2	1.56 V	318	23.7	17.1
9	10640.00	54.6 PK	74.0	-19.4	2.01 V	297	37.3	17.3
10	10640.00	40.8 AV	54.0	-13.2	2.01 V	297	23.5	17.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Mode 9

Antenna 2,

Radio 1, 802.11a, CH 64 +

Radio 2, 4.9G, 5MHz, CH 10

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	118.4 PK			1.63 H	347	78.7	39.7
2	*5320.00	107.1 AV			1.63 H	347	67.4	39.7
3	5350.00	52.7 PK	74.0	-21.3	1.73 H	349	48.8	3.9
4	5350.00	41.1 AV	54.0	-12.9	1.73 H	349	37.2	3.9
5	10640.00	54.2 PK	74.0	-19.8	1.79 H	223	36.9	17.3
6	10640.00	41.1 AV	54.0	-12.9	1.79 H	223	23.8	17.3

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	116.6 PK			2.04 V	348	76.9	39.7
2	*5320.00	105.6 AV			2.04 V	348	65.9	39.7
3	5350.00	60.3 PK	74.0	-13.7	1.78 V	355	56.4	3.9
4	5350.00	49.4 AV	54.0	-4.6	1.78 V	355	45.5	3.9
5	10640.00	55.1 PK	74.0	-18.9	1.41 V	233	37.8	17.3
6	10640.00	41.5 AV	54.0	-12.5	1.41 V	233	24.2	17.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Frequency Range	Above 1000MHz
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Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	9975.00	-60.79	-36.85	3.55	-33.30	-16.71	-16.59
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	9975.00	-61.09	-38.55	3.55	-35.00	-16.71	-18.29

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).
3. Limit = EIRP 33.29dBm - 50dB = -16.71dBm.

Mode 10

Antenna 2,

Radio 1, 4.9G, 5MHz, CH 1 +

Radio 2, 802.11n (HT20), CH 64

Frequency Range	Above 1000MHz
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Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	9885.00	-60.22	-36.75	3.75	-33.00	-19.18	-13.82
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	9885.00	-59.36	-36.85	3.75	-33.10	-19.18	-13.92

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).
3. Limit = EIRP 30.82dBm - 50dB = -19.18dBm.

Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	120.4 PK			1.62 H	356	80.7	39.7
2	*5320.00	109.3 AV			1.62 H	356	69.6	39.7
3	5350.00	60.3 PK	74.0	-13.7	1.88 H	347	56.4	3.9
4	5350.00	48.9 AV	54.0	-5.1	1.88 H	347	45.0	3.9
5	10640.00	61.8 PK	74.0	-12.2	1.97 H	110	44.5	17.3
6	10640.00	47.4 AV	54.0	-6.6	1.97 H	110	30.1	17.3

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	118.8 PK			2.11 V	359	79.1	39.7
2	*5320.00	108.1 AV			2.11 V	359	68.4	39.7
3	5350.00	59.0 PK	74.0	-15.0	1.87 V	344	55.1	3.9
4	5350.00	46.8 AV	54.0	-7.2	1.87 V	344	42.9	3.9
5	10640.00	60.6 PK	74.0	-13.4	1.79 V	301	43.3	17.3
6	10640.00	47.0 AV	54.0	-7.0	1.79 V	301	29.7	17.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz data:

Mode 1

Antenna 1,

Radio 1, 802.11a, CH 116 +

Radio 2, 802.11a, CH 52

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	26.5 QP	40.0	-13.5	1.99 H	144	41.1	-14.6
2	119.34	25.3 QP	43.5	-18.2	1.49 H	132	41.5	-16.2
3	187.39	40.2 QP	43.5	-3.3	1.49 H	170	56.3	-16.1
4	374.04	22.0 QP	46.0	-24.0	1.99 H	262	33.6	-11.6
5	716.23	24.5 QP	46.0	-21.5	1.49 H	71	30.4	-5.9
6	842.61	27.1 QP	46.0	-18.9	1.00 H	133	31.0	-3.9

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	61.01	31.5 QP	40.0	-8.5	1.01 V	32	46.5	-15.0
2	111.56	23.1 QP	43.5	-20.4	1.50 V	99	40.3	-17.2
3	191.28	36.1 QP	43.5	-7.4	1.01 V	54	52.5	-16.4
4	339.04	26.5 QP	46.0	-19.5	2.00 V	81	38.6	-12.1
5	568.47	25.3 QP	46.0	-20.7	1.50 V	224	33.7	-8.4
6	718.18	24.2 QP	46.0	-21.8	1.50 V	113	30.1	-5.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Mode 2

Antenna 1,

Radio 1, 802.11a, CH 116 +

Radio 2, 802.11a, CH 149

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	27.8 QP	40.0	-12.2	2.00 H	242	42.4	-14.6
2	113.50	29.2 QP	43.5	-14.3	1.50 H	246	46.0	-16.8
3	189.33	40.8 QP	43.5	-2.7	1.50 H	18	57.0	-16.2
4	346.82	23.8 QP	46.0	-22.2	1.01 H	91	36.0	-12.2
5	533.47	24.7 QP	46.0	-21.3	1.50 H	18	33.9	-9.2
6	794.01	26.3 QP	46.0	-19.7	2.00 H	11	30.7	-4.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	27.2 QP	40.0	-12.8	1.01 V	322	41.8	-14.6
2	107.67	24.7 QP	43.5	-18.8	1.01 V	55	42.3	-17.6
3	191.28	36.1 QP	43.5	-7.4	1.01 V	106	52.5	-16.4
4	374.04	21.9 QP	46.0	-24.1	1.50 V	6	33.5	-11.6
5	533.47	22.1 QP	46.0	-23.9	1.01 V	108	31.3	-9.2
6	844.56	26.1 QP	46.0	-19.9	1.01 V	294	30.0	-3.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Mode 3

Antenna 1,

Radio 1, 802.11n (HT20), CH 157 +

Radio 2, 802.11a, CH 52

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	86.28	24.9 QP	40.0	-15.1	1.99 H	297	44.5	-19.6
2	204.89	38.7 QP	43.5	-4.8	1.49 H	160	55.5	-16.8
3	249.60	26.4 QP	46.0	-19.6	1.00 H	340	41.0	-14.6
4	428.48	21.2 QP	46.0	-24.8	1.99 H	251	31.7	-10.5
5	527.64	22.4 QP	46.0	-23.6	1.49 H	340	31.6	-9.2
6	724.01	24.4 QP	46.0	-21.6	1.00 H	130	30.1	-5.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	29.9 QP	40.0	-10.1	1.01 V	7	44.5	-14.6
2	111.56	23.1 QP	43.5	-20.4	1.50 V	99	40.3	-17.2
3	158.22	33.9 QP	43.5	-9.6	1.01 V	195	47.7	-13.8
4	333.21	23.6 QP	46.0	-22.4	1.50 V	320	35.6	-12.0
5	560.69	21.6 QP	46.0	-24.4	1.01 V	348	30.1	-8.5
6	704.57	24.0 QP	46.0	-22.0	2.00 V	36	30.0	-6.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Mode 4

Antenna 1,

Radio 1, 802.11a, CH 116 +

Radio 2, 4.9G, 5MHz, CH 1

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	74.62	22.3 QP	40.0	-17.7	1.99 H	123	39.4	-17.1
2	179.61	36.8 QP	43.5	-6.7	1.49 H	290	51.9	-15.1
3	228.22	31.5 QP	46.0	-14.5	1.49 H	156	47.9	-16.4
4	344.87	19.8 QP	46.0	-26.2	1.99 H	19	31.9	-12.1
5	572.36	22.9 QP	46.0	-23.1	1.99 H	240	31.1	-8.2
6	809.56	26.0 QP	46.0	-20.0	1.49 H	326	30.2	-4.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	29.90	32.1 QP	40.0	-7.9	1.01 V	234	48.5	-16.4
2	154.33	33.9 QP	43.5	-9.6	1.01 V	218	47.8	-13.9
3	218.50	32.0 QP	46.0	-14.0	1.01 V	60	48.1	-16.1
4	344.87	24.1 QP	46.0	-21.9	1.50 V	13	36.2	-12.1
5	580.13	22.8 QP	46.0	-23.2	2.00 V	343	30.8	-8.0
6	762.90	24.8 QP	46.0	-21.2	2.00 V	175	29.5	-4.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	39.72	-59.89	-47.11	-10.93	-58.04	-27.71	-30.33
2	115.53	-51.85	-60.46	0.26	-60.20	-27.71	-32.49
3	203.01	-39.74	-53.10	5.46	-47.64	-27.71	-19.93
4	267.15	-53.86	-63.48	5.31	-58.17	-27.71	-30.46
5	296.31	-57.54	-65.15	5.15	-60.00	-27.71	-32.29
6	445.99	-66.04	-71.08	5.10	-65.98	-27.71	-38.27

Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	37.78	-43.51	-41.63	-11.18	-52.81	-27.71	-25.10
2	55.27	-49.76	-48.01	-8.62	-56.63	-27.71	-28.92
3	156.35	-56.55	-59.00	0.19	-58.81	-27.71	-31.10
4	203.01	-37.65	-44.33	5.46	-38.87	-27.71	-11.16
5	325.47	-53.08	-58.17	5.16	-53.01	-27.71	-25.30
6	445.99	-61.49	-66.21	5.10	-61.11	-27.71	-33.40

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).
3. Limit = EIRP 22.29dBm - 50dB = -27.71dBm.

Mode 5

Antenna 1,

Radio 1, 4.9G, 5MHz, CH 5 +

Radio 2, 802.11a, CH 52

Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	39.72	-59.87	-47.09	-10.93	-58.02	-30.18	-27.84
2	111.64	-52.36	-61.05	0.41	-60.64	-30.18	-30.46
3	168.02	-52.49	-60.64	1.40	-59.24	-30.18	-29.06
4	203.01	-41.37	-54.73	5.46	-49.27	-30.18	-19.09
5	288.54	-57.46	-65.88	5.18	-60.70	-30.18	-30.52
6	626.77	-65.87	-68.12	4.65	-63.47	-30.18	-33.29

Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	33.89	-43.53	-40.57	-11.68	-52.25	-30.18	-22.07
2	57.21	-49.98	-48.73	-8.20	-56.93	-30.18	-26.75
3	181.62	-45.88	-52.42	3.12	-49.30	-30.18	-19.12
4	203.01	-39.57	-46.25	5.46	-40.79	-30.18	-10.61
5	346.85	-59.57	-65.29	5.21	-60.08	-30.18	-29.90
6	447.94	-63.23	-67.92	5.08	-62.84	-30.18	-32.66

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).
3. Limit = EIRP 19.82dBm - 50dB = -30.18dBm.

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	119.34	25.3 QP	43.5	-18.2	1.49 H	132	41.5	-16.2
2	199.05	37.4 QP	43.5	-6.1	1.49 H	181	54.0	-16.6
3	288.49	24.8 QP	46.0	-21.2	1.00 H	19	37.8	-13.0
4	418.76	18.8 QP	46.0	-27.2	1.49 H	15	29.7	-10.9
5	510.14	21.5 QP	46.0	-24.5	1.49 H	15	30.7	-9.2
6	786.23	24.7 QP	46.0	-21.3	1.49 H	109	29.3	-4.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	109.62	23.9 QP	43.5	-19.6	1.50 V	99	41.3	-17.4
2	171.83	33.2 QP	43.5	-10.3	1.01 V	7	47.6	-14.4
3	339.04	26.5 QP	46.0	-19.5	2.00 V	81	38.6	-12.1
4	539.30	20.9 QP	46.0	-25.1	1.01 V	26	30.0	-9.1
5	642.35	24.3 QP	46.0	-21.7	1.01 V	207	31.1	-6.8
6	757.06	24.8 QP	46.0	-21.2	1.50 V	275	29.6	-4.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Mode 6

Antenna 2,

Radio 1, 802.11a, CH 149 +

Radio 2, 802.11n (HT20), CH 64

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	39.62	23.6 QP	40.0	-16.4	2.00 H	355	38.9	-15.3
2	144.61	32.0 QP	43.5	-11.5	2.00 H	296	46.1	-14.1
3	193.22	40.6 QP	43.5	-2.9	1.01 H	293	57.1	-16.5
4	280.71	24.5 QP	46.0	-21.5	1.01 H	224	37.6	-13.1
5	564.58	21.8 QP	46.0	-24.2	1.51 H	213	30.2	-8.4
6	809.56	26.6 QP	46.0	-19.4	1.51 H	115	30.8	-4.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.68	32.3 QP	40.0	-7.7	1.00 V	59	47.8	-15.5
2	146.56	30.0 QP	43.5	-13.5	2.00 V	180	44.1	-14.1
3	181.55	35.8 QP	43.5	-7.7	1.00 V	52	51.2	-15.4
4	374.04	22.1 QP	46.0	-23.9	1.50 V	181	33.7	-11.6
5	519.86	23.9 QP	46.0	-22.1	1.00 V	203	33.0	-9.1
6	832.89	25.7 QP	46.0	-20.3	1.50 V	244	29.7	-4.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Mode 7

Antenna 2,

Radio 1, 802.11a, CH 64 +

Radio 2, 802.11a, CH 149

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	26.7 QP	40.0	-13.3	2.00 H	25	41.3	-14.6
2	187.92	42.8 QP	43.5	-0.7	1.22 H	280	59.0	-16.2
3	195.16	38.9 QP	43.5	-4.6	2.00 H	7	55.5	-16.6
4	307.93	29.2 QP	46.0	-16.8	1.01 H	209	41.8	-12.6
5	405.15	21.8 QP	46.0	-24.2	1.50 H	215	33.0	-11.2
6	500.42	26.0 QP	46.0	-20.0	1.50 H	192	35.5	-9.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.51	33.3 QP	40.0	-6.7	1.00 V	300	48.0	-14.7
2	154.33	32.0 QP	43.5	-11.5	1.00 V	183	45.9	-13.9
3	191.28	39.3 QP	43.5	-4.2	1.00 V	21	55.7	-16.4
4	307.93	23.6 QP	46.0	-22.4	1.00 V	230	36.2	-12.6
5	500.42	27.3 QP	46.0	-18.7	1.00 V	197	36.8	-9.5
6	716.23	30.5 QP	46.0	-15.5	1.00 V	21	36.4	-5.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Mode 8

Antenna 2,

Radio 1, 802.11a, CH 64 +

Radio 2, 802.11n (HT20), CH 60

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	74.62	29.9 QP	40.0	-10.1	1.51 H	77	47.0	-17.1
2	154.33	32.7 QP	43.5	-10.8	1.51 H	209	46.6	-13.9
3	185.48	43.0 QP	43.5	-0.5	1.49 H	292	58.9	-15.9
4	305.99	27.2 QP	46.0	-18.8	1.01 H	200	39.8	-12.6
5	500.42	24.2 QP	46.0	-21.8	1.51 H	188	33.7	-9.5
6	624.85	24.1 QP	46.0	-21.9	1.01 H	135	31.1	-7.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.68	32.3 QP	40.0	-7.7	1.00 V	59	47.8	-15.5
2	107.67	29.3 QP	43.5	-14.2	1.00 V	292	46.9	-17.6
3	189.33	38.3 QP	43.5	-5.2	2.00 V	78	54.5	-16.2
4	307.93	24.0 QP	46.0	-22.0	1.00 V	252	36.6	-12.6
5	582.08	24.0 QP	46.0	-22.0	1.00 V	4	32.0	-8.0
6	801.78	26.1 QP	46.0	-19.9	1.00 V	4	30.5	-4.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Mode 9

Antenna 2,

Radio 1, 802.11a, CH 64 +

Radio 2, 4.9G, 5MHz, CH 10

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.51	19.3 QP	40.0	-20.7	1.49 H	13	34.0	-14.7
2	80.45	25.5 QP	40.0	-14.5	2.00 H	158	44.1	-18.6
3	177.67	40.4 QP	43.5	-3.1	1.49 H	302	55.2	-14.8
4	453.75	20.9 QP	46.0	-25.1	1.00 H	104	31.0	-10.1
5	663.74	22.2 QP	46.0	-23.8	1.49 H	13	28.9	-6.7
6	762.90	24.2 QP	46.0	-21.8	2.00 H	82	28.9	-4.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	45.45	29.7 QP	40.0	-10.3	1.01 V	13	44.4	-14.7
2	181.55	35.2 QP	43.5	-8.3	1.01 V	36	50.6	-15.4
3	228.22	29.4 QP	46.0	-16.6	1.01 V	127	45.8	-16.4
4	407.09	20.3 QP	46.0	-25.7	1.01 V	111	31.4	-11.1
5	574.30	23.4 QP	46.0	-22.6	1.01 V	339	31.5	-8.1
6	716.23	23.9 QP	46.0	-22.1	2.00 V	297	29.8	-5.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	39.72	-61.93	-49.15	-10.93	-60.08	-16.71	-43.37
2	61.1	-57.95	-55.93	-7.31	-63.24	-16.71	-46.53
3	148.58	-47.80	-52.27	-0.19	-52.46	-16.71	-35.75
4	187.45	-38.80	-51.14	3.88	-47.26	-16.71	-30.55
5	238	-47.98	-60.57	5.42	-55.15	-16.71	-38.44
6	469.32	-61.84	-67.10	5.00	-62.10	-16.71	-45.39

Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	55.27	-50.06	-48.31	-8.62	-56.93	-16.71	-40.22
2	148.58	-51.58	-54.03	-0.19	-54.22	-16.71	-37.51
3	187.45	-39.64	-46.55	3.88	-42.67	-16.71	-25.96
4	245.77	-53.85	-59.18	5.41	-53.77	-16.71	-37.06
5	339.08	-60.81	-66.24	5.19	-61.05	-16.71	-44.34
6	504.31	-62.71	-66.90	4.87	-62.03	-16.71	-45.32

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).
3. Limit = EIRP 33.29dBm - 50dB = -16.71dBm.

Mode 10

Antenna 2,

Radio 1, 4.9G, 5MHz, CH 1 +

Radio 2, 802.11n (HT20), CH 64

Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-58.65	-44.30	-11.93	-56.23	-19.18	-37.05
2	148.58	-50.75	-55.22	-0.19	-55.41	-19.18	-36.23
3	187.45	-42.16	-54.50	3.88	-50.62	-19.18	-31.44
4	238	-53.28	-65.87	5.42	-60.45	-19.18	-41.27
5	274.93	-63.48	-72.76	5.26	-67.50	-19.18	-48.32
6	624.83	-66.96	-69.25	4.64	-64.61	-19.18	-45.43

Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	41.66	-51.28	-49.40	-10.61	-60.01	-19.18	-40.83
2	154.41	-53.52	-56.11	0.09	-56.02	-19.18	-36.84
3	195.23	-45.91	-53.30	4.87	-48.43	-19.18	-29.25
4	280.76	-63.15	-66.85	5.23	-61.62	-19.18	-42.44
5	395.45	-66.71	-71.99	5.26	-66.73	-19.18	-47.55
6	508.2	-65.76	-69.78	4.85	-64.93	-19.18	-45.75

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).
3. Limit = EIRP 30.82dBm - 50dB = -19.18dBm.

Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.57	20.1 QP	40.0	-19.9	1.49 H	13	35.1	-15.0
2	191.28	43.1 QP	43.5	-0.4	1.49 H	291	59.5	-16.4
3	259.33	26.3 QP	46.0	-19.7	1.00 H	121	40.4	-14.1
4	461.53	20.9 QP	46.0	-25.1	1.49 H	86	31.0	-10.1
5	632.63	23.6 QP	46.0	-22.4	2.00 H	94	30.4	-6.8
6	737.62	24.1 QP	46.0	-21.9	1.49 H	148	29.2	-5.1

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.68	31.2 QP	40.0	-8.8	1.01 V	252	46.7	-15.5
2	64.90	23.3 QP	40.0	-16.7	1.51 V	14	38.8	-15.5
3	195.16	36.7 QP	43.5	-6.8	1.01 V	13	53.3	-16.6
4	405.15	20.7 QP	46.0	-25.3	2.00 V	9	31.9	-11.2
5	564.58	23.4 QP	46.0	-22.6	1.01 V	160	31.8	-8.4
6	850.39	25.9 QP	46.0	-20.1	1.01 V	225	29.8	-3.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

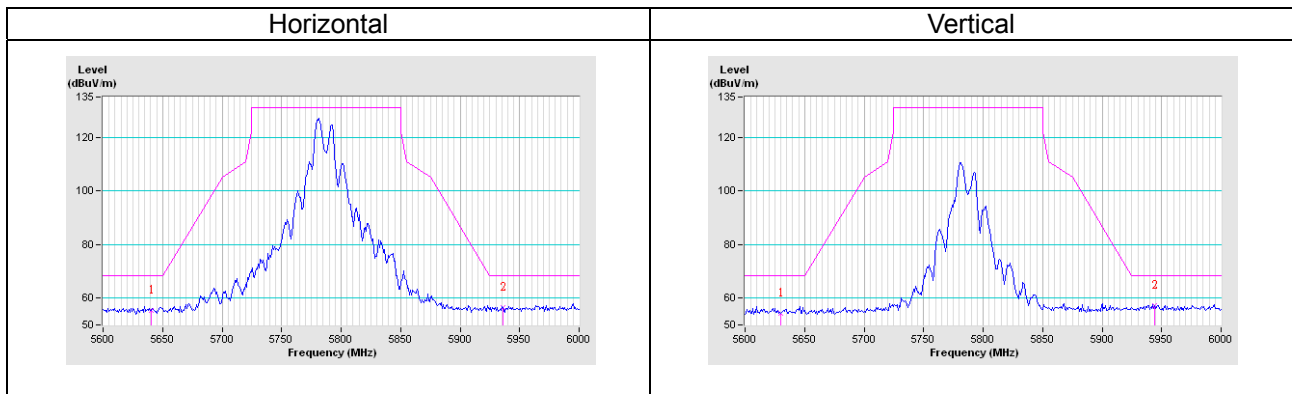
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

Mode 3

Antenna 1,

Radio 1, 802.11n (HT20), CH 157 +

Radio 2, 802.11a, CH 52

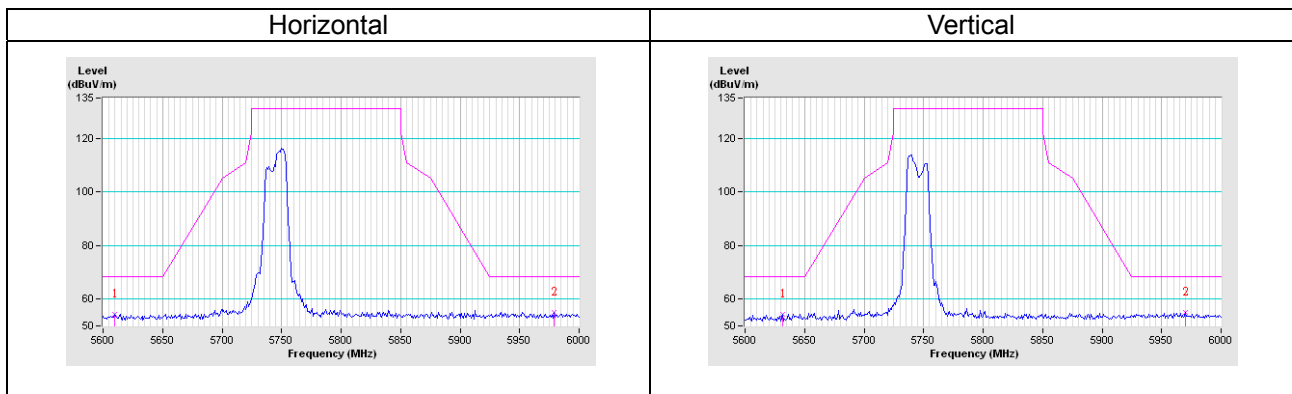


Mode 6

Antenna 2,

Radio 1, 802.11a, CH 149 +

Radio 2, 802.11n (HT20), CH 64

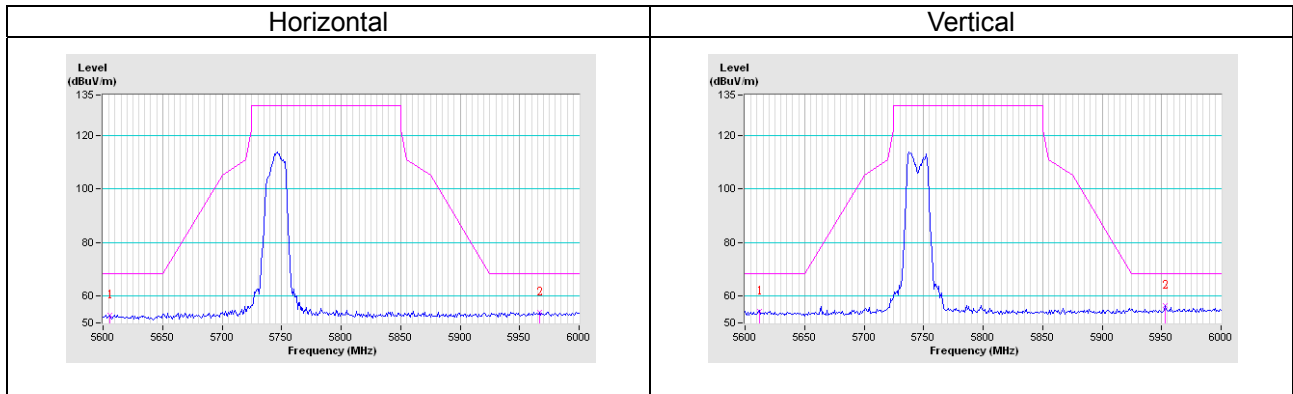


Mode 7

Antenna 2,

Radio 1, 802.11a, CH 64 +

Radio 2, 802.11a, CH 149



Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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