

FCC Test Report

Report No.: RF170712E09A-1

FCC ID: 2AAAS-NM01

Test Model: NM01

Received Date: Aug. 21, 2017

Test Date: Aug. 26 to 31, 2017

Issued Date: Sep.07, 2017

Applicant: Vivint, Inc.

Address: 4931 North 300 West Provo, Utah 84604 United States

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

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Report Issue History Record	3
Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results	5
2.1 Measurement Uncertainty	5
2.2 Modification Record	5
3 General Information	6
3.1 General Description of EUT	6
3.2 Description of Test Modes	9
3.2.1 Test Mode Applicability and Tested Channel Detail	11
3.3 Duty Cycle of Test Signal	13
3.4 Description of Support Units	14
3.4.1 Configuration of System under Test	14
3.5 General Description of Applied Standard	15
4 Test Types and Results	16
4.1 Radiated Emission and Bandedge Measurement	16
4.1.1 Limits of Radiated Emission and Bandedge Measurement	16
4.1.2 Test Instruments	17
4.1.3 Test Procedure	18
4.1.4 Deviation from Test Standard	19
4.1.5 Test Setup	19
4.1.6 EUT Operating Condition	20
4.1.7 Test Results	21
4.2 Transmit Power Measurement	43
4.2.1 Limits of Transmit Power Measurement	43
4.2.2 Test Setup	44
4.2.3 Test Instruments	44
4.2.4 Test Procedure	44
4.2.5 Deviation from Test Standard	44
4.2.6 EUT Operating Condition	44
4.2.7 Test Result	45
5 Pictures of Test Arrangements	50
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)	51
Appendix – Information on the Testing Laboratories	53

Report Issue History Record

Attachment No.	Issue Date	Description
RF170712E09-1	Aug. 15, 2017	Original release.
RF170712E09A-1	Sep.07, 2017	Changed Diplexer.

Release Control Record

Issue No.	Description	Date Issued
RF170712E09A-1	Original release.	Sep.07, 2017

1 Certificate of Conformity

Product: Vivint 2.4GHz/5GHz WiFi Module

Brand: Vivint

Test Model: NM01

Sample Status: ENGINEERING SAMPLE

Applicant: Vivint, Inc.

Test Date: Aug. 26 to 31, 2017

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10: 2013

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 : Cindy Hsin , **Date:** Sep.07, 2017
Cindy Hsin / Specialist

Approved by : May Chen , **Date:** Sep.07, 2017
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 15600.00MHz, 15720.00MHz, 10520.00MHz, 16500.00MHz, 15690.00MHz, 10620.00MHz, 16530.00MHz, 16650.00MHz,
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is I-pex not a standard connector.

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

NOTE: This is a supplementary report. (Change Diplexer)

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) (±)
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.32 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.14 dB
	6GHz ~ 18GHz	5.04 dB
	18GHz ~ 40GHz	5.25 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Vivint 2.4GHz/5GHz WiFi Module
Brand	Vivint
Test Model	NM01
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 3.3V from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5 ~ 5.70GHz, 5.745 ~ 5.825GHz
Number of Channel	2.4GHz: 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 5GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 24 802.11n (HT40), 802.11ac (VHT40): 11 802.11ac (VHT80): 5
Output Power	2.4GHz: 499.746mW 5.18 ~ 5.24GHz: 89.413mW 5.26 ~ 5.32GHz: 92.483mW 5.50 ~ 5.70GHz: 68.637mW 5.745 ~ 5.825GHz: 72.062mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This is a supplementary report of Report No.: RF170712E09-1. The differences between them are as below information:

◆ Added 2nd source of diplexer as following table:

Original			
No.	Brand	P/N	Type
1	TDK	DPX165850DT-8017A1	-
	TDK	DPX165850DT-8117A1	-
Newly			
No.	Brand	P/N	Type
2	TDK	DPX165950DT-8018A1	mirror type
	TDK	DPX165950DT-8118A1	mirror type
3	MAG. LAYERS	LTD-1608-2G4S1-A1-AF	mirror type
	MAG. LAYERS	LTD-1608-2G4S1-A2-AF	mirror type

Note:

1. The EUT must be inserted with two diplexer

2. From the above 2nd source, the radiated emissions worse case was found in **No.3**. Therefore only the test data of the mode was recorded in this report.

2. According to the above condition, only Conducted power and Radiated emissions test item need to be performed. And all data was verified to meet the requirements.

3. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	WLAN 5GHz

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

4. The antennas provided to the EUT, please refer to the following table:

No.	PCB Chain No	Brand	Model	Antenna Gain(dBi)	Frequency range	Antenna Type	Connector type	Cable Length (mm)	Cable Loss (dB)	excluding cable loss Antenna Gain(dBi)
1	Chain 0	NA	TE 2108517-1	2.5	2.4~2.4835GHz	PIFA	I-pex	60	0.5	3
				2	5.15~5.85GHz				1	
2	Chain 1	NA	TE 2108517-1	2	2.4~2.4835GHz	PIFA	I-pex	230	1	3
				1.5	5.15~5.85GHz				1.5	

5. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
5GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
802.11ac (VHT40)	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX
802.11ac (VHT80)	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX

6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

FOR 5260 ~ 5320MHz

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

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

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

Channel	Frequency	Channel	Frequency
54	5270MHz	62	5310MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

FOR 5500 ~ 5700MHz:

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

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

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

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530MHz	122	5610MHz

FOR 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 (HT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

Where **RE \geq 1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz

APCM: Antenna Port Conducted Measurement

NOTE: In original report, the EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

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.

Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6
802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5

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.

Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	52	OFDM	BPSK	6
	5260-5320	52 to 64				
	5500-5700	100 to 140				
	5745-5825	149 to 165				

Antenna Port Conducted Measurement:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- 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.

Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106, 122	106, 122	OFDM	BPSK	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power (SYSTEM)	Tested By
RE \geq 1G	25deg. C, 69%RH	120Vac, 60Hz	Weiwei Lo
RE $<$ 1G	24deg. C, 69%RH	120Vac, 60Hz	Rey Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	Weiwei Lo

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.



3.4 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.

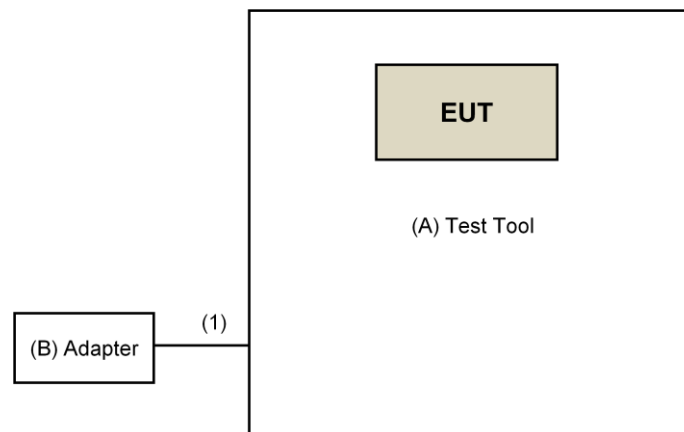
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Test Tool	TRANWO	NA	NA	NA	Supplied by client
B.	Adapter	HONOR	ADS-40SF-12 12030GPCU	NA	NA	Supplied by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.5	No	0	Supplied by client

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

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

FCC Part 15, Subpart E (15.407)

KDB 789033 D02 General UNII Test Procedure New Rules v01r04

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

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

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.

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 v01r04		Field Strength at 3m	
		PK:74 (dBuV/m)	AV:54 (dBuV/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(dBuV/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(dBuV/m) ^{*1} PK:105.2 (dBuV/m) ^{*2} PK: 110.8(dBuV/m) ^{*3} PK:122.2 (dBuV/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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2017	July 11, 2018
Pre-Amplifier ^(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna ^(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 06, 2017	May 05, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Dec. 29, 2016	Dec. 28, 2017
RF Cable	8D	966-3-1 966-3-2 966-3-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Oct. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Dec. 28, 2016	Dec. 27, 2017
Pre-Amplifier EMCI	EMC12630SE	980384	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160922 150317 150322	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Spectrum Analyzer Keysight	N9030A	MY54490679	July 25, 2017	July 24, 2018
Pre-Amplifier EMCI	EMC184045SE	980386	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The CANADA Site Registration No. is 20331-1
5. Tested Date: Aug. 26 to 30, 2017

4.1.3 Test Procedure

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 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:

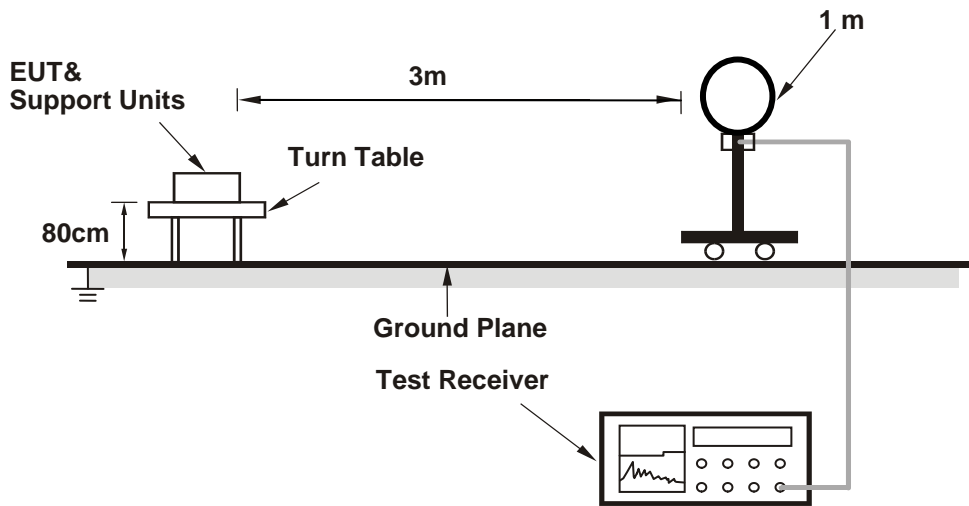
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

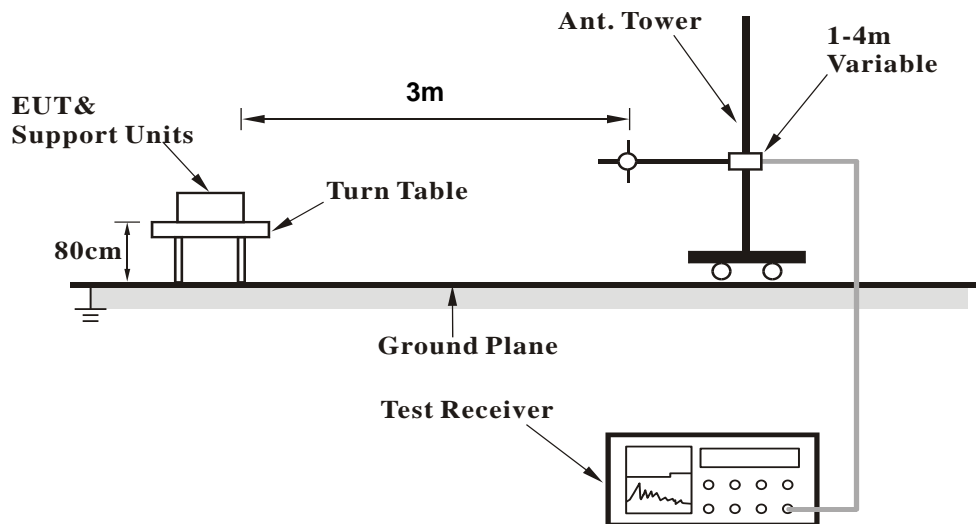
No deviation.

4.1.5 Test Setup

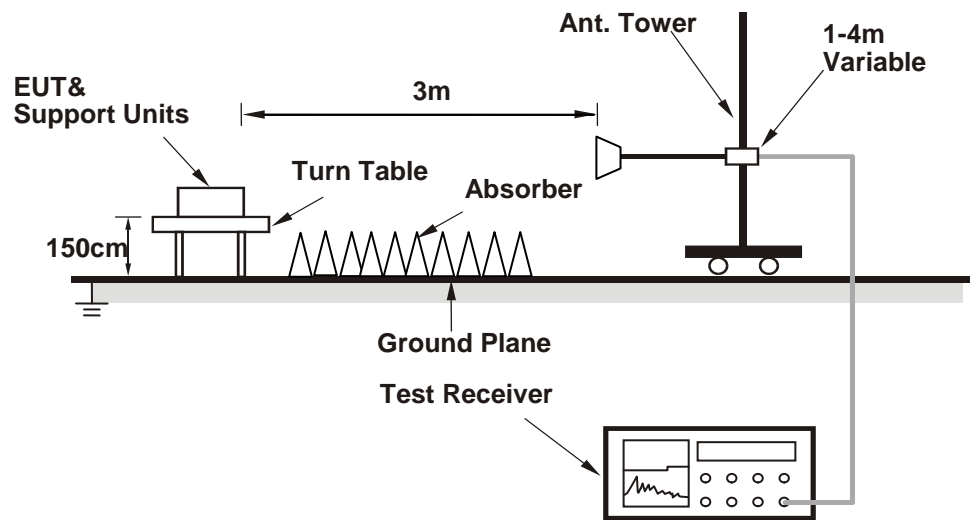
For Radiated Emission below 30MHz



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 Condition

- a. The EUT is placed on testing table.
- b. Controlling software (Telnet paste2.4G&5G.txt command) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data:

802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	59.4 PK	74.0	-14.6	1.17 H	187	55.7	3.7
2	5150.00	46.6 AV	54.0	-7.4	1.17 H	187	42.9	3.7
3	*5180.00	101.1 PK			1.17 H	187	97.4	3.7
4	*5180.00	92.1 AV			1.17 H	187	88.4	3.7
5	#10360.00	64.6 PK	74.0	-9.4	1.16 H	129	51.6	13.0
6	#10360.00	51.9 AV	54.0	-2.1	1.16 H	129	38.9	13.0
7	15540.00	66.9 PK	74.0	-7.1	1.32 H	241	53.8	13.1
8	15540.00	53.1 AV	54.0	-0.9	1.32 H	241	40.0	13.1

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	5150.00	60.1 PK	74.0	-13.9	3.02 V	135	56.4	3.7
2	5150.00	46.9 AV	54.0	-7.1	3.02 V	135	43.2	3.7
3	*5180.00	103.5 PK			3.02 V	135	99.8	3.7
4	*5180.00	93.6 AV			3.02 V	135	89.9	3.7
5	#10360.00	59.3 PK	74.0	-14.7	1.41 V	141	46.3	13.0
6	#10360.00	46.2 AV	54.0	-7.8	1.41 V	141	33.2	13.0
7	15540.00	65.6 PK	74.0	-8.4	2.69 V	360	52.5	13.1
8	15540.00	52.1 AV	54.0	-1.9	2.69 V	360	39.0	13.1

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.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5200.00	100.4 PK			1.17 H	198	96.7	3.7
2	*5200.00	91.7 AV			1.17 H	198	88.0	3.7
3	#10400.00	60.2 PK	74.0	-13.8	1.22 H	116	47.2	13.0
4	#10400.00	47.3 AV	54.0	-6.7	1.22 H	116	34.3	13.0
5	15600.00	63.8 PK	74.0	-10.2	2.28 H	232	50.5	13.3
6	15600.00	50.8 AV	54.0	-3.2	2.28 H	232	37.5	13.3

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	*5200.00	100.9 PK			3.03 V	139	97.2	3.7
2	*5200.00	92.3 AV			3.03 V	139	88.6	3.7
3	#10400.00	57.7 PK	74.0	-16.3	2.51 V	282	44.7	13.0
4	#10400.00	45.2 AV	54.0	-8.8	2.51 V	282	32.2	13.0
5	15600.00	66.8 PK	74.0	-7.2	3.53 V	355	53.5	13.3
6	15600.00	53.9 AV	54.0	-0.1	3.53 V	355	40.6	13.3

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.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5240.00	103.2 PK			1.15 H	202	99.4	3.8
2	*5240.00	94.6 AV			1.15 H	202	90.8	3.8
3	5350.00	58.9 PK	74.0	-15.1	1.15 H	202	54.8	4.1
4	5350.00	46.5 AV	54.0	-7.5	1.15 H	202	42.4	4.1
5	#10480.00	64.9 PK	74.0	-9.1	1.22 H	117	51.7	13.2
6	#10480.00	52.6 AV	54.0	-1.4	1.22 H	117	39.4	13.2
7	15720.00	67.8 PK	74.0	-6.2	2.22 H	233	54.2	13.6
8	15720.00	53.9 AV	54.0	-0.1	2.22 H	233	40.3	13.6

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	*5240.00	103.9 PK			2.99 V	136	100.1	3.8
2	*5240.00	94.9 AV			2.99 V	136	91.1	3.8
3	5350.00	59.4 PK	74.0	-14.6	2.99 V	136	55.3	4.1
4	5350.00	46.9 AV	54.0	-7.1	2.99 V	136	42.8	4.1
5	#10480.00	58.6 PK	74.0	-15.4	1.36 V	137	45.4	13.2
6	#10480.00	45.8 AV	54.0	-8.2	1.36 V	137	32.6	13.2
7	15720.00	66.4 PK	74.0	-7.6	2.65 V	360	52.8	13.6
8	15720.00	52.6 AV	54.0	-1.4	2.65 V	360	39.0	13.6

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.

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	59.2 PK	74.0	-14.8	1.02 H	202	55.5	3.7
2	5150.00	46.5 AV	54.0	-7.5	1.02 H	202	42.8	3.7
3	*5260.00	104.2 PK			1.02 H	202	100.2	4.0
4	*5260.00	95.4 AV			1.02 H	202	91.4	4.0
5	#10520.00	67.6 PK	74.0	-6.4	1.20 H	116	54.4	13.2
6	#10520.00	53.9 AV	54.0	-0.1	1.20 H	116	40.7	13.2
7	15780.00	66.8 PK	74.0	-7.2	2.11 H	205	53.2	13.6
8	15780.00	53.6 AV	54.0	-0.4	2.11 H	205	40.0	13.6

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	5150.00	58.9 PK	74.0	-15.1	2.93 V	118	55.2	3.7
2	5150.00	46.0 AV	54.0	-8.0	2.93 V	118	42.3	3.7
3	*5260.00	103.6 PK			2.93 V	118	99.6	4.0
4	*5260.00	95.1 AV			2.93 V	118	91.1	4.0
5	#10520.00	59.3 PK	74.0	-14.7	1.36 V	137	46.1	13.2
6	#10520.00	45.9 AV	54.0	-8.1	1.36 V	137	32.7	13.2
7	15780.00	65.2 PK	74.0	-8.8	2.65 V	353	51.6	13.6
8	15780.00	53.1 AV	54.0	-0.9	2.65 V	353	39.5	13.6

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.

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	102.8 PK			1.01 H	199	98.7	4.1
2	*5300.00	94.4 AV			1.01 H	199	90.3	4.1
3	10600.00	62.5 PK	74.0	-11.5	1.26 H	229	49.0	13.5
4	10600.00	50.9 AV	54.0	-3.1	1.26 H	229	37.4	13.5
5	15900.00	63.3 PK	74.0	-10.7	2.14 H	207	50.4	12.9
6	15900.00	50.3 AV	54.0	-3.7	2.14 H	207	37.4	12.9

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	*5300.00	102.6 PK			2.92 V	137	98.5	4.1
2	*5300.00	93.1 AV			2.92 V	137	89.0	4.1
3	10600.00	58.4 PK	74.0	-15.6	2.29 V	339	44.9	13.5
4	10600.00	48.1 AV	54.0	-5.9	2.29 V	339	34.6	13.5
5	15900.00	65.5 PK	74.0	-8.5	2.73 V	11	52.6	12.9
6	15900.00	53.8 AV	54.0	-0.2	2.73 V	11	40.9	12.9

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. " * ": Fundamental frequency.

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	102.9 PK			1.03 H	216	98.8	4.1
2	*5320.00	94.0 AV			1.03 H	216	89.9	4.1
3	5350.00	59.9 PK	74.0	-14.1	1.03 H	216	55.8	4.1
4	5350.00	46.6 AV	54.0	-7.4	1.03 H	216	42.5	4.1
5	10640.00	66.5 PK	74.0	-7.5	1.17 H	230	53.0	13.5
6	10640.00	53.7 AV	54.0	-0.3	1.17 H	230	40.2	13.5
7	15960.00	66.3 PK	74.0	-7.7	2.02 H	210	53.4	12.9
8	15960.00	52.4 AV	54.0	-1.6	2.02 H	210	39.5	12.9

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	*5320.00	102.2 PK			2.96 V	135	98.1	4.1
2	*5320.00	93.8 AV			2.96 V	135	89.7	4.1
3	5350.00	59.0 PK	74.0	-15.0	2.96 V	135	54.9	4.1
4	5350.00	45.6 AV	54.0	-8.4	2.96 V	135	41.5	4.1
5	10640.00	62.7 PK	74.0	-11.3	2.32 V	320	49.2	13.5
6	10640.00	52.0 AV	54.0	-2.0	2.32 V	320	38.5	13.5
7	15960.00	63.5 PK	74.0	-10.5	2.72 V	20	50.6	12.9
8	15960.00	51.4 AV	54.0	-2.6	2.72 V	20	38.5	12.9

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. " * ": Fundamental frequency.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5470.00	52.4 PK	74.0	-21.6	3.88 H	174	48.2	4.2
2	#5470.00	38.9 AV	54.0	-15.1	3.88 H	174	34.7	4.2
3	*5500.00	100.9 PK			3.88 H	174	96.7	4.2
4	*5500.00	92.4 AV			3.88 H	174	88.2	4.2
5	11000.00	61.6 PK	74.0	-12.4	1.40 H	265	47.5	14.1
6	11000.00	45.6 AV	54.0	-8.4	1.40 H	265	31.5	14.1
7	#16500.00	60.1 PK	74.0	-13.9	2.04 H	343	45.6	14.5
8	#16500.00	45.8 AV	54.0	-8.2	2.04 H	343	31.3	14.5

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	#5470.00	49.7 PK	74.0	-24.3	3.47 V	4	45.5	4.2
2	#5470.00	37.8 AV	54.0	-16.2	3.47 V	4	33.6	4.2
3	*5500.00	99.8 PK			3.47 V	4	95.6	4.2
4	*5500.00	91.2 AV			3.47 V	4	87.0	4.2
5	11000.00	64.2 PK	74.0	-9.8	2.87 V	325	50.1	14.1
6	11000.00	50.3 AV	54.0	-3.7	2.87 V	325	36.2	14.1
7	#16500.00	68.4 PK	74.0	-5.6	2.50 V	338	53.9	14.5
8	#16500.00	53.9 AV	54.0	-0.1	2.50 V	338	39.4	14.5

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.

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	100.6 PK			3.83 H	166	96.4	4.2
2	*5580.00	92.1 AV			3.83 H	166	87.9	4.2
3	11160.00	66.5 PK	74.0	-7.5	1.28 H	256	52.8	13.7
4	11160.00	53.4 AV	54.0	-0.6	1.28 H	256	39.7	13.7
5	#16740.00	62.1 PK	74.0	-11.9	2.68 H	338	46.4	15.7
6	#16740.00	48.3 AV	54.0	-5.7	2.68 H	338	32.6	15.7

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	99.7 PK			3.42 V	12	95.5	4.2
2	*5580.00	91.0 AV			3.42 V	12	86.8	4.2
3	11160.00	64.5 PK	74.0	-9.5	2.91 V	340	50.8	13.7
4	11160.00	50.4 AV	54.0	-3.6	2.91 V	340	36.7	13.7
5	#16740.00	68.2 PK	74.0	-5.8	2.46 V	329	52.5	15.7
6	#16740.00	53.8 AV	54.0	-0.2	2.46 V	329	38.1	15.7

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.

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5700.00	101.3 PK			2.23 H	180	96.8	4.5
2	*5700.00	92.8 AV			2.23 H	180	88.3	4.5
3	#5725.00	60.1 PK	74.0	-13.9	2.23 H	180	55.7	4.4
4	#5725.00	46.9 AV	54.0	-7.1	2.23 H	180	42.5	4.4
5	11400.00	66.4 PK	74.0	-7.6	1.28 H	258	52.8	13.6
6	11400.00	53.8 AV	54.0	-0.2	1.28 H	258	40.2	13.6
7	#17100.00	57.5 PK	74.0	-16.5	2.55 H	343	40.1	17.4
8	#17100.00	45.2 AV	54.0	-8.8	2.55 H	343	27.8	17.4

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	*5700.00	100.8 PK			2.98 V	126	96.3	4.5
2	*5700.00	94.1 AV			2.98 V	126	89.6	4.5
3	#5725.00	49.3 PK	74.0	-24.7	2.98 V	126	44.9	4.4
4	#5725.00	37.4 AV	54.0	-16.6	2.98 V	126	33.0	4.4
5	11400.00	62.0 PK	74.0	-12.0	2.28 V	313	48.4	13.6
6	11400.00	53.0 AV	54.0	-1.0	2.28 V	313	39.4	13.6
7	#17100.00	61.4 PK	74.0	-12.6	2.69 V	6	44.0	17.4
8	#17100.00	50.2 AV	54.0	-3.8	2.69 V	6	32.8	17.4

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5592.50	61.6 PK	68.2	-6.6	2.73 H	173	57.3	4.3
2	*5745.00	101.2 PK			2.73 H	173	96.8	4.4
3	*5745.00	92.5 AV			2.73 H	173	88.1	4.4
4	#5998.93	60.4 PK	68.2	-7.8	2.73 H	173	55.7	4.7
5	11490.00	66.5 PK	74.0	-7.5	1.31 H	258	53.0	13.5
6	11490.00	53.8 AV	54.0	-0.2	1.31 H	258	40.3	13.5
7	#17235.00	57.9 PK	74.0	-16.1	1.28 H	100	40.6	17.3
8	#17235.00	44.2 AV	54.0	-9.8	1.28 H	100	26.9	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	#5573.43	63.2 PK	68.2	-5.0	2.24 V	123	59.0	4.2
2	*5745.00	100.9 PK			2.24 V	123	96.5	4.4
3	*5745.00	91.9 AV			2.24 V	123	87.5	4.4
4	#5937.34	62.2 PK	68.2	-6.0	2.24 V	123	57.5	4.7
5	11490.00	59.7 PK	74.0	-14.3	2.25 V	297	46.2	13.5
6	11490.00	48.6 AV	54.0	-5.4	2.25 V	297	35.1	13.5
7	#17235.00	59.4 PK	74.0	-14.6	2.22 V	349	42.1	17.3
8	#17235.00	48.2 AV	54.0	-5.8	2.22 V	349	30.9	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.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5604.24	61.2 PK	68.2	-7.0	2.67 H	188	56.8	4.4
2	*5785.00	101.1 PK			2.67 H	188	96.7	4.4
3	*5785.00	92.3 AV			2.67 H	188	87.9	4.4
4	#5927.89	60.1 PK	68.2	-8.1	2.67 H	188	55.4	4.7
5	11570.00	65.9 PK	74.0	-8.1	1.27 H	261	52.4	13.5
6	11570.00	53.3 AV	54.0	-0.7	1.27 H	261	39.8	13.5
7	#17355.00	57.5 PK	74.0	-16.5	1.29 H	110	39.5	18.0
8	#17355.00	44.0 AV	54.0	-10.0	1.29 H	110	26.0	18.0

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	#5625.93	61.5 PK	68.2	-6.7	2.23 V	122	57.1	4.4
2	*5785.00	100.3 PK			2.23 V	122	95.9	4.4
3	*5785.00	91.6 AV			2.23 V	122	87.2	4.4
4	#6013.12	60.8 PK	68.2	-7.4	2.23 V	122	56.0	4.8
5	11570.00	59.6 PK	74.0	-14.4	2.28 V	299	46.1	13.5
6	11570.00	48.3 AV	54.0	-5.7	2.28 V	299	34.8	13.5
7	#17355.00	59.7 PK	74.0	-14.3	2.20 V	344	41.7	18.0
8	#17355.00	48.6 AV	54.0	-5.4	2.20 V	344	30.6	18.0

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.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5641.31	61.0 PK	68.2	-7.2	2.65 H	189	56.6	4.4
2	*5825.00	100.6 PK			2.65 H	189	96.2	4.4
3	*5825.00	91.8 AV			2.65 H	189	87.4	4.4
4	#5933.73	61.8 PK	68.2	-6.4	2.65 H	189	57.1	4.7
5	11650.00	68.1 PK	74.0	-5.9	1.23 H	246	54.4	13.7
6	11650.00	53.6 AV	54.0	-0.4	1.23 H	246	39.9	13.7
7	#17475.00	58.1 PK	74.0	-15.9	1.32 H	97	39.5	18.6
8	#17475.00	44.2 AV	54.0	-9.8	1.32 H	97	25.6	18.6

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	#5597.29	61.5 PK	68.2	-6.7	2.14 V	122	57.1	4.4
2	*5825.00	101.1 PK			2.14 V	122	96.7	4.4
3	*5825.00	92.0 AV			2.14 V	122	87.6	4.4
4	#6000.82	60.8 PK	68.2	-7.4	2.14 V	122	56.0	4.8
5	11650.00	59.2 PK	74.0	-14.8	2.30 V	295	45.5	13.7
6	11650.00	48.0 AV	54.0	-6.0	2.30 V	295	34.3	13.7
7	#17475.00	59.5 PK	74.0	-14.5	2.20 V	351	40.9	18.6
8	#17475.00	48.4 AV	54.0	-5.6	2.20 V	351	29.8	18.6

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.

802.11ac (VHT40)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	60.2 PK	74.0	-13.8	1.13 H	204	56.5	3.7
2	5150.00	48.8 AV	54.0	-5.2	1.13 H	204	45.1	3.7
3	*5190.00	100.3 PK			1.13 H	204	96.6	3.7
4	*5190.00	91.6 AV			1.13 H	204	87.9	3.7
5	5350.00	49.0 PK	74.0	-25.0	1.13 H	204	44.9	4.1
6	5350.00	36.2 AV	54.0	-17.8	1.13 H	204	32.1	4.1
7	#10380.00	56.9 PK	74.0	-17.1	1.07 H	151	43.8	13.1
8	#10380.00	47.2 AV	54.0	-6.8	1.07 H	151	34.1	13.1
9	15570.00	60.5 PK	74.0	-13.5	1.31 H	243	47.2	13.3
10	15570.00	49.7 AV	54.0	-4.3	1.31 H	243	36.4	13.3

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	61.3 PK	74.0	-12.7	1.46 V	315	57.6	3.7
2	5150.00	49.1 AV	54.0	-4.9	1.46 V	315	45.4	3.7
3	*5190.00	101.6 PK			1.46 V	315	97.9	3.7
4	*5190.00	92.6 AV			1.46 V	315	88.9	3.7
5	5350.00	49.3 PK	74.0	-24.7	1.46 V	315	45.2	4.1
6	5350.00	36.8 AV	54.0	-17.2	1.46 V	315	32.7	4.1
7	#10380.00	51.4 PK	74.0	-22.6	1.32 V	189	38.3	13.1
8	#10380.00	41.6 AV	54.0	-12.4	1.32 V	189	28.5	13.1
9	15570.00	64.7 PK	74.0	-9.3	2.39 V	312	51.4	13.3
10	15570.00	53.5 AV	54.0	-0.5	2.39 V	312	40.2	13.3

REMARKS:

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

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5230.00	99.7 PK			1.14 H	217	95.9	3.8
2	*5230.00	90.2 AV			1.14 H	217	86.4	3.8
3	5350.00	48.2 PK	74.0	-25.8	1.14 H	217	44.1	4.1
4	5350.00	36.2 AV	54.0	-17.8	1.14 H	217	32.1	4.1
5	#10460.00	56.8 PK	74.0	-17.2	1.03 H	153	43.7	13.1
6	#10460.00	47.2 AV	54.0	-6.8	1.03 H	153	34.1	13.1
7	15690.00	60.2 PK	74.0	-13.8	1.37 H	252	46.4	13.8
8	15690.00	49.4 AV	54.0	-4.6	1.37 H	252	35.6	13.8

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	*5230.00	100.6 PK			1.40 V	294	96.8	3.8
2	*5230.00	91.8 AV			1.40 V	294	88.0	3.8
3	5350.00	48.7 PK	74.0	-25.3	1.40 V	294	44.6	4.1
4	5350.00	36.5 AV	54.0	-17.5	1.40 V	294	32.4	4.1
5	#10460.00	57.6 PK	74.0	-16.4	1.28 V	188	44.5	13.1
6	#10460.00	46.5 AV	54.0	-7.5	1.28 V	188	33.4	13.1
7	15690.00	65.9 PK	74.0	-8.1	2.76 V	3	52.1	13.8
8	15690.00	53.9 AV	54.0	-0.1	2.76 V	3	40.1	13.8

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	49.2 PK	74.0	-24.8	1.11 H	217	45.5	3.7
2	5150.00	36.5 AV	54.0	-17.5	1.11 H	217	32.8	3.7
3	*5270.00	98.8 PK			1.11 H	217	94.8	4.0
4	*5270.00	89.7 AV			1.11 H	217	85.7	4.0
5	#10540.00	57.2 PK	74.0	-16.8	1.08 H	165	43.9	13.3
6	#10540.00	47.3 AV	54.0	-6.7	1.08 H	165	34.0	13.3
7	15810.00	61.0 PK	74.0	-13.0	1.35 H	234	47.6	13.4
8	15810.00	50.0 AV	54.0	-4.0	1.35 H	234	36.6	13.4

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	5150.00	48.7 PK	74.0	-25.3	1.40 V	301	45.0	3.7
2	5150.00	36.7 AV	54.0	-17.3	1.40 V	301	33.0	3.7
3	*5270.00	99.6 PK			1.40 V	301	95.6	4.0
4	*5270.00	90.6 AV			1.40 V	301	86.6	4.0
5	#10540.00	58.7 PK	74.0	-15.3	2.29 V	326	45.4	13.3
6	#10540.00	48.3 AV	54.0	-5.7	2.29 V	326	35.0	13.3
7	15810.00	65.3 PK	74.0	-8.7	2.75 V	0	51.9	13.4
8	15810.00	53.8 AV	54.0	-0.2	2.75 V	0	40.4	13.4

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5310.00	101.6 PK			1.05 H	174	97.5	4.1
2	*5310.00	92.2 AV			1.05 H	174	88.1	4.1
3	5350.00	63.0 PK	74.0	-11.0	1.05 H	174	58.9	4.1
4	5350.00	50.5 AV	54.0	-3.5	1.05 H	174	46.4	4.1
5	10620.00	67.0 PK	74.0	-7.0	1.14 H	220	53.5	13.5
6	10620.00	53.9 AV	54.0	-0.1	1.14 H	220	40.4	13.5
7	15930.00	66.5 PK	74.0	-7.5	2.02 H	203	53.7	12.8
8	15930.00	52.7 AV	54.0	-1.3	2.02 H	203	39.9	12.8

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	*5310.00	103.0 PK			1.41 V	307	98.9	4.1
2	*5310.00	92.2 AV			1.41 V	307	88.1	4.1
3	5350.00	64.3 PK	74.0	-9.7	1.41 V	307	60.2	4.1
4	5350.00	50.9 AV	54.0	-3.1	1.41 V	307	46.8	4.1
5	10620.00	62.3 PK	74.0	-11.7	2.35 V	330	48.8	13.5
6	10620.00	51.8 AV	54.0	-2.2	2.35 V	330	38.3	13.5
7	15930.00	63.7 PK	74.0	-10.3	2.70 V	8	50.9	12.8
8	15930.00	51.5 AV	54.0	-2.5	2.70 V	8	38.7	12.8

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
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5470.00	67.9 PK	74.0	-6.1	1.34 H	175	63.7	4.2
2	#5470.00	53.6 AV	54.0	-0.4	1.34 H	175	49.4	4.2
3	*5510.00	101.1 PK			1.34 H	175	96.9	4.2
4	*5510.00	91.8 AV			1.34 H	175	87.6	4.2
5	11020.00	61.8 PK	74.0	-12.2	2.34 H	341	47.8	14.0
6	11020.00	51.0 AV	54.0	-3.0	2.34 H	341	37.0	14.0
7	#16530.00	65.5 PK	74.0	-8.5	2.72 H	10	50.6	14.9
8	#16530.00	53.9 AV	54.0	-0.1	2.72 H	10	39.0	14.9

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	#5470.00	69.2 PK	74.0	-4.8	1.38 V	314	65.0	4.2
2	#5470.00	53.8 AV	54.0	-0.2	1.38 V	314	49.6	4.2
3	*5510.00	103.2 PK			1.38 V	314	99.0	4.2
4	*5510.00	92.5 AV			1.38 V	314	88.3	4.2
5	11020.00	58.7 PK	74.0	-15.3	2.38 V	328	44.7	14.0
6	11020.00	48.7 AV	54.0	-5.3	2.38 V	328	34.7	14.0
7	#16530.00	65.6 PK	74.0	-8.4	2.87 V	15	50.7	14.9
8	#16530.00	52.3 AV	54.0	-1.7	2.87 V	15	37.4	14.9

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. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5550.00	102.0 PK			1.09 H	179	97.8	4.2
2	*5550.00	92.5 AV			1.09 H	179	88.3	4.2
3	11100.00	56.9 PK	74.0	-17.1	1.04 H	149	43.1	13.8
4	11100.00	47.4 AV	54.0	-6.6	1.04 H	149	33.6	13.8
5	#16650.00	60.6 PK	74.0	-13.4	1.29 H	258	45.0	15.6
6	#16650.00	49.9 AV	54.0	-4.1	1.29 H	258	34.3	15.6

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	*5550.00	103.5 PK			1.36 V	327	99.3	4.2
2	*5550.00	92.5 AV			1.36 V	327	88.3	4.2
3	11100.00	61.2 PK	74.0	-12.8	2.35 V	327	47.4	13.8
4	11100.00	50.6 AV	54.0	-3.4	2.35 V	327	36.8	13.8
5	#16650.00	65.4 PK	74.0	-8.6	2.70 V	21	49.8	15.6
6	#16650.00	53.9 AV	54.0	-0.1	2.70 V	21	38.3	15.6

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.

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5670.00	101.3 PK			1.06 H	174	97.0	4.3
2	*5670.00	92.1 AV			1.06 H	174	87.8	4.3
3	#5725.00	62.9 PK	74.0	-11.1	1.06 H	174	58.5	4.4
4	#5725.00	50.3 AV	54.0	-3.7	1.06 H	174	45.9	4.4
5	11340.00	66.3 PK	74.0	-7.7	1.27 H	254	52.7	13.6
6	11340.00	53.7 AV	54.0	-0.3	1.27 H	254	40.1	13.6
7	#17010.00	57.7 PK	74.0	-16.3	2.60 H	345	40.6	17.1
8	#17010.00	45.2 AV	54.0	-8.8	2.60 H	345	28.1	17.1

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	*5670.00	103.4 PK			1.37 V	327	99.1	4.3
2	*5670.00	92.6 AV			1.37 V	327	88.3	4.3
3	#5725.00	67.3 PK	74.0	-6.7	1.34 V	315	62.9	4.4
4	#5725.00	51.4 AV	54.0	-2.6	1.34 V	315	47.0	4.4
5	11340.00	62.1 PK	74.0	-11.9	2.33 V	320	48.5	13.6
6	11340.00	53.2 AV	54.0	-0.8	2.33 V	320	39.6	13.6
7	#17010.00	61.6 PK	74.0	-12.4	2.70 V	17	44.5	17.1
8	#17010.00	50.6 AV	54.0	-3.4	2.70 V	17	33.5	17.1

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.

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5585.44	61.5 PK	68.2	-6.7	1.00 H	175	57.3	4.2
2	*5755.00	96.5 PK			1.00 H	175	92.1	4.4
3	*5755.00	86.7 AV			1.00 H	175	82.3	4.4
4	#6022.91	61.0 PK	68.2	-7.2	1.00 H	175	56.2	4.8
5	11510.00	67.5 PK	74.0	-6.5	1.19 H	256	53.9	13.6
6	11510.00	53.2 AV	54.0	-0.8	1.19 H	256	39.6	13.6
7	#17265.00	58.0 PK	74.0	-16.0	1.34 H	104	40.4	17.6
8	#17265.00	44.0 AV	54.0	-10.0	1.34 H	104	26.4	17.6

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	#5566.77	61.0 PK	68.2	-7.2	1.01 V	278	56.8	4.2
2	*5755.00	96.5 PK			1.01 V	278	92.1	4.4
3	*5755.00	86.7 AV			1.01 V	278	82.3	4.4
4	#6004.54	60.0 PK	68.2	-8.2	1.01 V	278	55.2	4.8
5	11510.00	60.0 PK	74.0	-14.0	2.32 V	284	46.4	13.6
6	11510.00	48.6 AV	54.0	-5.4	2.32 V	284	35.0	13.6
7	#17265.00	59.7 PK	74.0	-14.3	2.18 V	342	42.1	17.6
8	#17265.00	48.1 AV	54.0	-5.9	2.18 V	342	30.5	17.6

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.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5602.83	61.9 PK	68.2	-6.3	1.01 H	174	57.5	4.4
2	*5795.00	97.0 PK			1.01 H	174	92.6	4.4
3	*5795.00	88.4 AV			1.01 H	174	84.0	4.4
4	#5959.53	60.1 PK	68.2	-8.1	1.01 H	174	55.4	4.7
5	11590.00	68.5 PK	74.0	-5.5	1.25 H	252	55.0	13.5
6	11590.00	53.7 AV	54.0	-0.3	1.25 H	252	40.2	13.5
7	#17385.00	57.7 PK	74.0	-16.3	1.34 H	92	39.4	18.3
8	#17385.00	44.0 AV	54.0	-10.0	1.34 H	92	25.7	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	#5637.85	60.6 PK	68.2	-7.6	1.01 V	285	56.2	4.4
2	*5795.00	97.8 PK			1.01 V	285	93.4	4.4
3	*5795.00	88.6 AV			1.01 V	285	84.2	4.4
4	#5968.28	60.0 PK	68.2	-8.2	1.01 V	285	55.3	4.7
5	11590.00	59.6 PK	74.0	-14.4	2.29 V	288	46.1	13.5
6	11590.00	48.3 AV	54.0	-5.7	2.29 V	288	34.8	13.5
7	#17385.00	60.0 PK	74.0	-14.0	2.18 V	358	41.7	18.3
8	#17385.00	48.6 AV	54.0	-5.4	2.18 V	358	30.3	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.

Below 1GHz Data:

802.11a

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz~ 1GHz		

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	62.59	23.6 QP	40.0	-16.4	1.00 H	302	32.8	-9.2
2	172.18	30.3 QP	43.5	-13.2	1.50 H	77	39.5	-9.2
3	207.00	32.1 QP	43.5	-11.4	3.00 H	0	43.6	-11.5
4	272.35	30.8 QP	46.0	-15.2	1.50 H	81	39.4	-8.6
5	328.54	34.2 QP	46.0	-11.8	2.50 H	278	40.7	-6.5
6	414.56	28.7 QP	46.0	-17.3	1.50 H	53	33.7	-5.0

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	48.48	32.5 QP	40.0	-7.5	2.50 V	176	40.6	-8.1
2	169.73	30.1 QP	43.5	-13.4	1.00 V	119	39.0	-8.9
3	241.44	32.4 QP	46.0	-13.6	3.00 V	70	42.1	-9.7
4	329.27	30.0 QP	46.0	-16.0	1.50 V	360	36.5	-6.5
5	414.48	27.7 QP	46.0	-18.3	1.00 V	256	32.7	-5.0
6	644.35	27.6 QP	46.0	-18.4	2.00 V	66	27.8	-0.2

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

4.2 Transmit Power Measurement

4.2.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p \leq 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A		√	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C		√	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3		√	1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

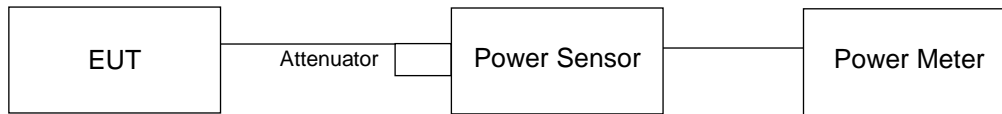
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

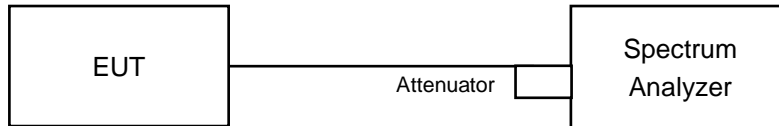
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.2.2 Test Setup

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedure

For Average Power Measurement

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to AVERAGE. Duty factor is not added to measured value.

FOR 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.2.7 Test Result

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	14.21	14.71	55.943	17.48	24.00	Pass
40	5200	13.97	14.64	54.053	17.33	24.00	Pass
48	5240	15.98	16.33	82.582	19.17	24.00	Pass
52	5260	16.19	16.25	83.761	19.23	24.00	Pass
60	5300	16.07	16.13	81.478	19.11	24.00	Pass
64	5320	15.36	15.56	70.331	18.47	24.00	Pass
100	5500	13.42	13.48	44.263	16.46	24.00	Pass
116	5580	13.31	13.11	41.893	16.22	24.00	Pass
140	5700	12.96	13.78	43.648	16.40	24.00	Pass
149	5745	12.98	13.10	40.278	16.05	30.00	Pass
157	5785	13.23	13.59	43.894	16.42	30.00	Pass
165	5825	12.96	13.12	40.282	16.05	30.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	24.11	23.52
60	5300	23.20	22.97
64	5320	20.33	20.74
100	5500	20.22	20.55
116	5580	20.31	20.37
140	5700	20.63	20.33

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	23.52	24.71 > 24
60	5300	22.97	24.61 > 24
64	5320	20.33	24.08 > 24
100	5500	20.22	24.05 > 24
116	5580	20.31	24.07 > 24
140	5700	20.33	24.08 > 24

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	14.33	15.22	60.368	17.81	24.00	Pass
40	5200	13.77	14.88	54.584	17.37	24.00	Pass
48	5240	16.22	16.77	89.413	19.51	24.00	Pass
52	5260	16.33	16.76	92.483	19.66	24.00	Pass
60	5300	15.12	15.42	67.343	18.28	24.00	Pass
64	5320	15.20	15.69	70.181	18.46	24.00	Pass
100	5500	13.43	13.47	44.262	16.46	24.00	Pass
116	5580	13.24	13.68	44.421	16.48	24.00	Pass
140	5700	13.23	13.33	42.566	16.29	24.00	Pass
149	5745	13.25	13.22	42.124	16.25	30.00	Pass
157	5785	13.16	13.33	42.229	16.26	30.00	Pass
165	5825	12.98	13.29	41.191	16.15	30.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.72	20.67
60	5300	20.36	20.21
64	5320	20.34	20.36
100	5500	20.46	20.41
116	5580	20.36	20.38
140	5700	20.47	20.36

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.67	24.15 > 24
60	5300	20.21	24.05 > 24
64	5320	20.34	24.08 > 24
100	5500	20.41	24.09 > 24
116	5580	20.36	24.08 > 24
140	5700	20.36	24.08 > 24

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	14.39	14.88	58.24	17.65	24.00	Pass
46	5230	13.82	14.34	51.263	17.10	24.00	Pass
54	5270	15.89	16.41	82.567	19.17	24.00	Pass
62	5310	14.98	14.83	61.886	17.92	24.00	Pass
102	5510	15.10	14.98	63.836	18.05	24.00	Pass
110	5550	14.88	15.11	63.195	18.01	24.00	Pass
134	5670	15.40	15.31	68.637	18.37	24.00	Pass
151	5755	15.30	15.22	67.15	18.27	30.00	Pass
159	5795	15.98	15.11	72.062	18.58	30.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	46.87	46.41
62	5310	43.28	42.23
102	5510	42.25	42.37
110	5550	42.33	43.31
134	5670	46.08	47.56

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	46.41	27.66 > 24
62	5310	42.23	27.25 > 24
102	5510	42.25	27.25 > 24
110	5550	42.33	27.26 > 24
134	5670	46.08	27.63 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	12.15	13.27	37.638	15.76	24.00	Pass
58	5290	14.66	14.55	57.752	17.62	24.00	Pass
106	5530	13.44	13.22	43.069	16.34	24.00	Pass
122	5610	15.16	15.47	68.047	18.33	24.00	Pass
155	5775	14.66	14.88	60.003	17.78	30.00	Pass

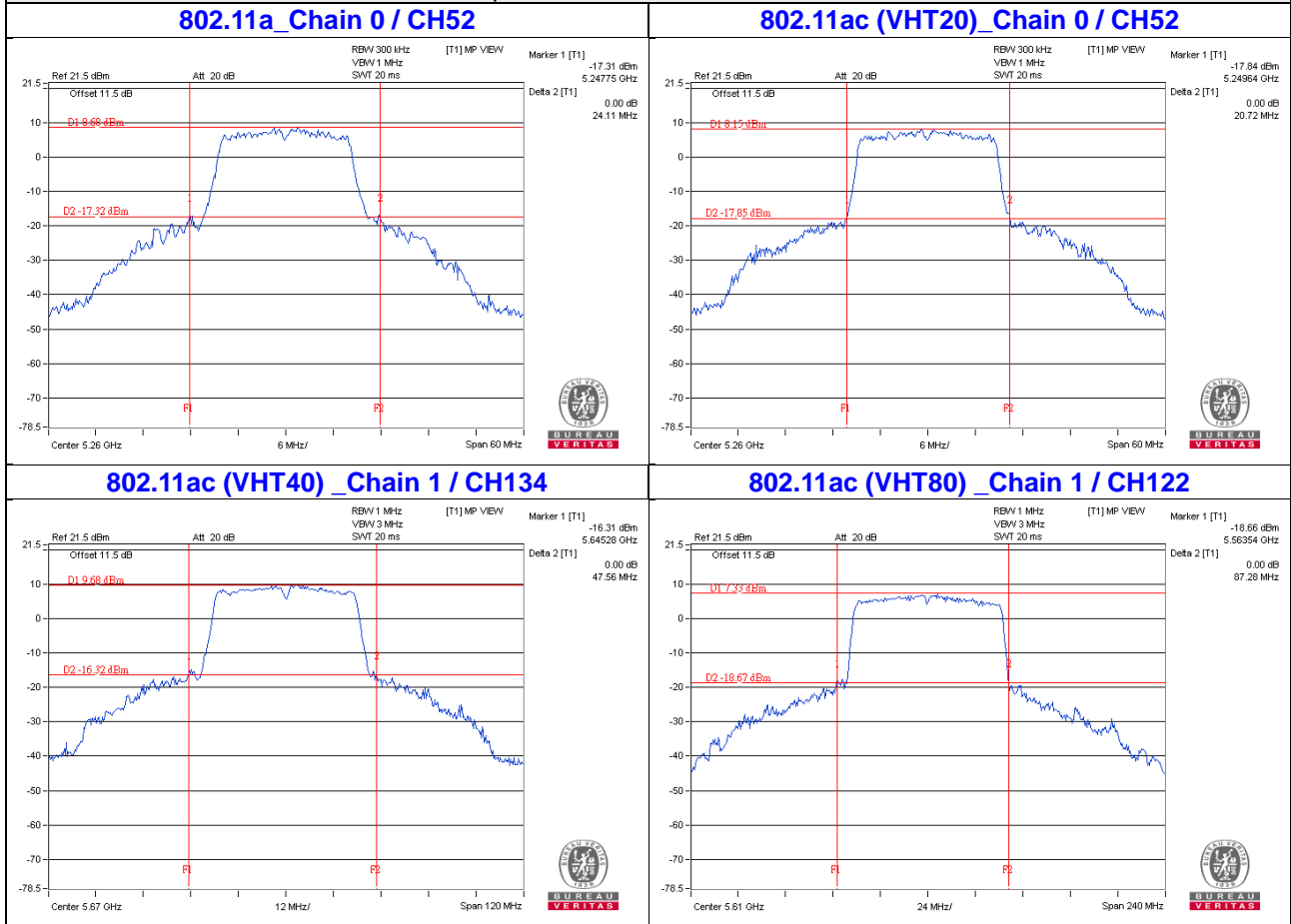
26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	81.76	81.87
106	5530	81.71	81.76
122	5610	86.95	87.28

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	81.76	30.12 > 24
106	5530	81.71	30.12 > 24
122	5610	86.95	30.39 > 24

Spectrum Plot of Worst Value



5 Pictures of Test Arrangements

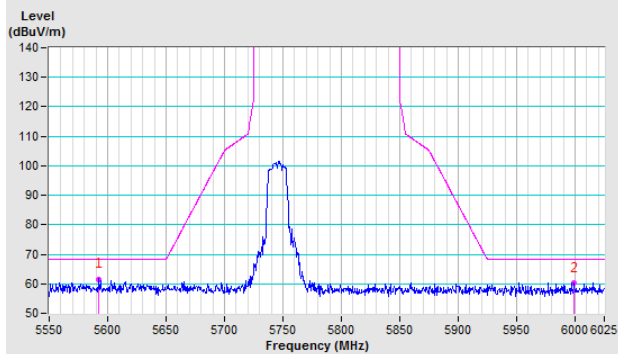
Please refer to the attached file (Test Setup Photo).

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

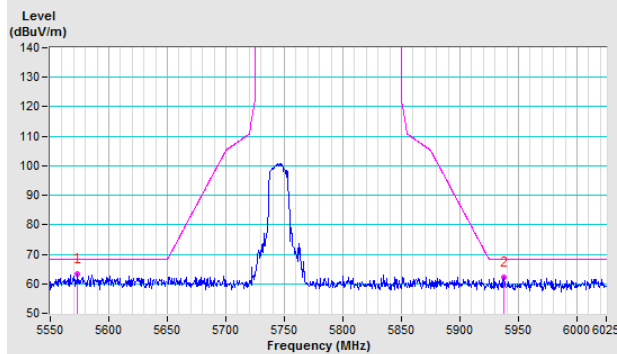
802.11a

CH 149 5745 MHz

Horizontal

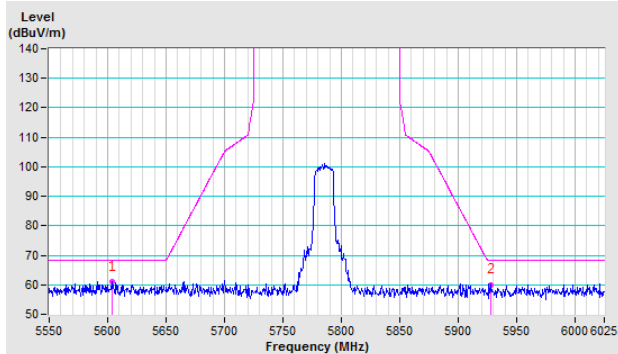


Vertical

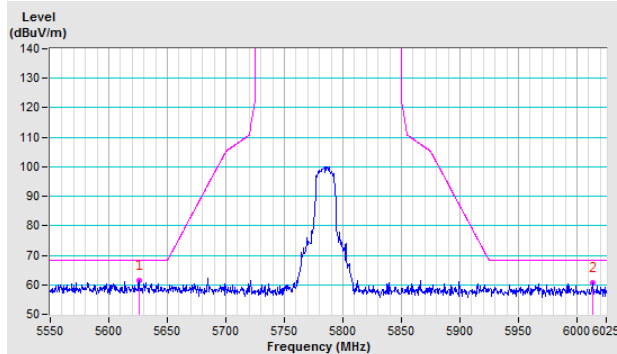


CH 157 5785 MHz

Horizontal

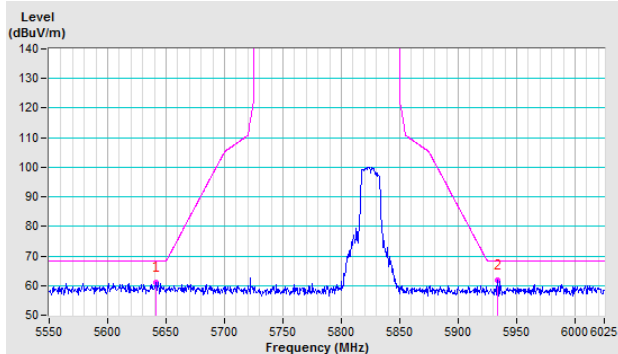


Vertical

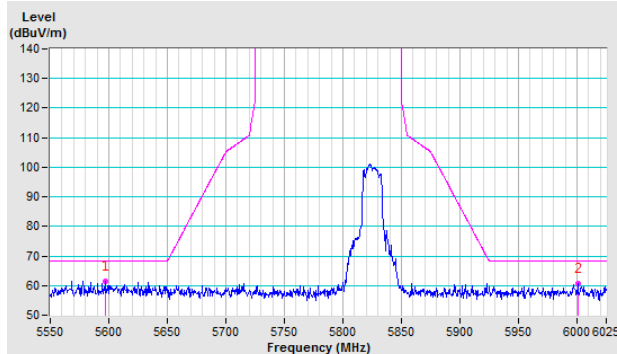


CH 165 5825 MHz

Horizontal



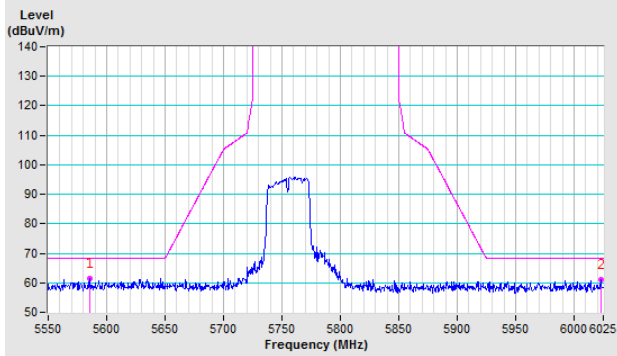
Vertical



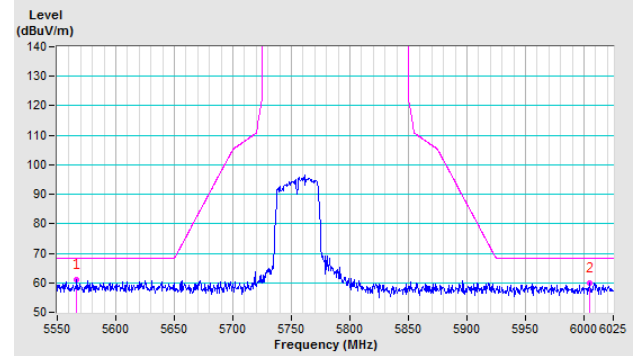
802.11ac (VHT40)

CH 151 5755 MHz

Horizontal

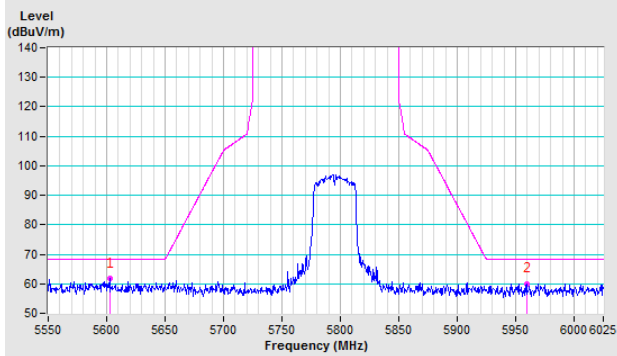


Vertical

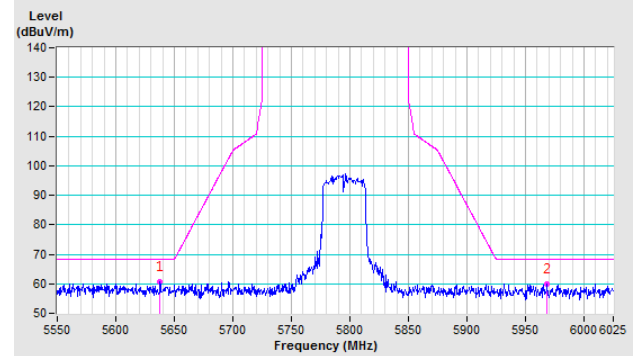


CH 159 5795 MHz

Horizontal



Vertical



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 accredited and approved according to ISO/IEC 17025.

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

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---