FCC Test Report

Report No.:	RF170731C08A
FCC ID:	QXO-AP3917I
Test Model:	AP3917i
Series Model:	AP7662i (refer to item 3.1 for more details)
Received Date:	Jul. 31, 2017
Test Date:	Aug. 30 ~ Sep. 18, 2017
Issued Date:	Oct. 06, 2017
Applicant:	Extreme Networks, Inc.
Address:	6480 VIA DEL ORO SAN JOSE CA 95119 USA
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.)

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Release Control Record

Issue No.	Description	Date Issued
RF170731C08A	Original release.	Oct. 06, 2017

1 Certificate of Conformity

Product:	Wireless 802.11 a/ac+b/g/n Access Point
Brand:	Extreme Networks
Test Model:	AP3917i
Series Model:	AP7662i (refer to item 3.1 for more details)
Sample Status:	Engineering sample
Applicant:	Extreme Networks, Inc.
Test Date:	Aug. 30 ~ Sep. 18, 2017
Standards:	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 : _____ , **Date:** Oct. 06, 2017
Polly Chien / Specialist

Approved by : _____ , **Date:** Oct. 06, 2017
Ken Liu / Senior 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)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -2.50dB at 0.50156MHz.
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 -1.4dB at 5350.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is IPEX not a standard connector.

*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE 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) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
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

Product	Wireless 802.11 a/ac+b/g/n Access Point
Brand	Extreme Networks
Test Model	AP3917i
Series Model	AP7662i
Model Difference	Refer to note for more details
Sample Status	Engineering sample
Power Supply Rating	54Vdc from 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 300Mbps 802.11ac: up to 867Mbps
Operating Frequency	5260~5320MHz, 5500~5720MHz
Number of Channel	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
Output Power	CDD Mode: 5260~5320MHz: 216.855mW 5500~5720MHz: 225.613mW Beamforming Mode: 5260~5320MHz: 216.855mW 5500~5720MHz: 225.613mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the original report (BV ADT report no.: RF170731C08-1) is adding 5.26GHz to 5.32GHz and 5.50GHz to 5.70GHz by software.

2. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX Function	Beamforming
802.11a	2TX	Not Support
802.11n (HT20)	2TX	Support
802.11n (HT40)	2TX	Support
802.11ac (VHT20)	2TX	Support
802.11ac (VHT40)	2TX	Support
802.11ac (VHT80)	2TX	Support

* The modulation and bandwidth are similar for 802.11n mode for 20MHz/40MHz and 802.11ac mode for 20MHz/40MHz, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)
* For 802.11n and 802.11ac, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

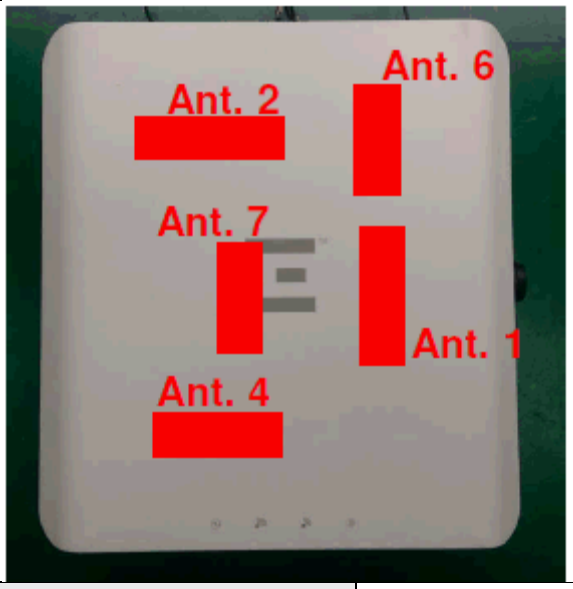
3. All models are listed as below. Model: AP3917i was chosen for final test.

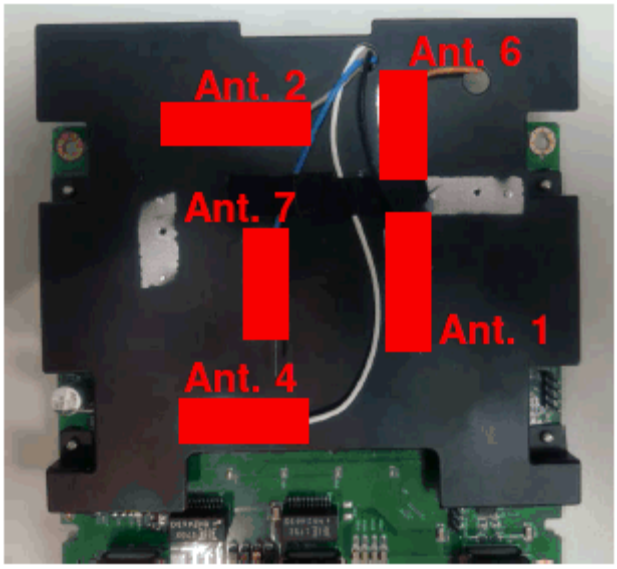
Brand	Model	Difference
Extreme Networks	AP3917i	All models are electrically identical, only cover printing different.
	AP7662i	

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

POE	
Brand	EnGenius
Model	EPA5006GP
Input Power	100-240Vac, 50-60Hz, 0.8A
Output Power	54Vdc, 0.6A Pin 4, 5: 54Vdc Pin 7, 8: Return

5. The following antennas were provided to the EUT.





Antenna Type	PIFA	Antenna Connector	IPEX
Gain (dBi)	Frequency (MHz)		
	2400-2500	4900-5850	
1	4.06	-	
2	3.94	-	
4	-	6.18	
6	-	6.00	
7 (BT LE / Zigbee)	3.53	-	

* Ant. was cross-polarized antenna.

6. Power Setting as below.

CDD Mode						
	802.11a	802.11n (HT20)		802.11n (HT40)		802.11ac (VHT80)
CH 52	19.5	20	CH 54	20	CH 58	17
CH 60	19.5	20	CH 62	18	CH 106	16.5
CH 64	19.5	20	CH 102	15.5	CH 122	19.5
CH 100	18.5	19	CH 110	20	CH 138 For 5500~5720MHz	20
CH 116	19	19.5	CH 134	18	CH 138 For 5745~5825MHz	20
CH 140	17	16	CH 142 For 5500~5720MHz	20		
CH 144 For 5500~5720MHz	19.5	20	CH 142 For 5745~5825MHz	20		
CH 144 For 5745~5825MHz	19.5	20				

Beamforming Mode					
	802.11n (HT20)		802.11n (HT40)		802.11ac (VHT80)
CH 52	20	CH 54	20	CH 58	17
CH 60	20	CH 62	18	CH 106	16.5
CH 64	20	CH 102	15.5	CH 122	19.5
CH 100	19	CH 110	20	CH 138 For 5500~5720MHz	20
CH 116	19.5	CH 134	18	CH 138 For 5745~5825MHz	20
CH 140	16	CH 142 For 5500~5720MHz	20		
CH 144 For 5500~5720MHz	20	CH 142 For 5745~5825MHz	20		
CH 144 For 5745~5825MHz	20				

7. 2.4GHz & 4.9GHz/5GHz & BT LE or 2.4GHz & 4.9GHz/5GHz & Zigbee technology can transmit at same time. BT LE and Zigbee cannot transmit simultaneously.
8. Spurious emission of the simultaneous operation (2.4GHz & 4.9GHz/5GHz & BT LE or 2.4GHz & 4.9GHz/5GHz & Zigbee) has been evaluated and no non-compliance was found.

3.2 Description of Test Modes

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		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement
RE<1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-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.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
-	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11n (HT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3

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	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52	OFDM	6.0
	802.11a	5500-5720	100 to 144		OFDM	6.0

Power Line Conducted Emission Test:

☒ 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	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52	OFDM	6.0
	802.11a	5500-5720	100 to 144		OFDM	6.0

Transmit Power 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.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
CDD Mode						
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
-	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11n (HT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3
Beamforming Mode						
-	802.11n (HT20)	5260-5320	52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
-	802.11n (HT20)	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3

Peak Power Spectral Density, Bandwidth and Frequency Stability 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.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
-	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11n (HT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3

Test Condition:

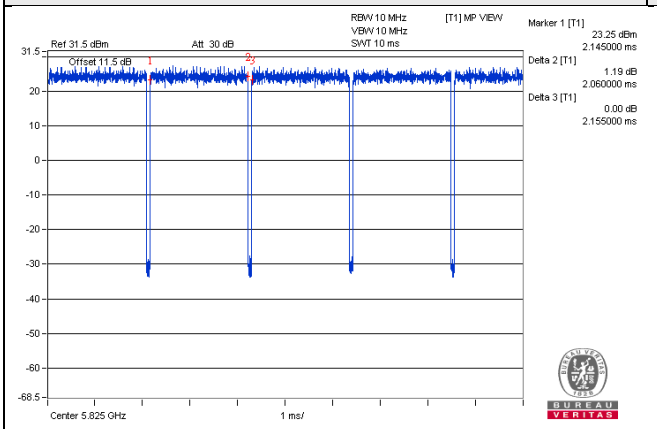
Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE≥1G	23 deg. C, 69% RH	120Vac, 60Hz	Jones Chang
RE<1G	24 deg. C, 68% RH	120Vac, 60Hz	Willy Cheng
PLC	23 deg. C, 64% RH	120Vac, 60Hz	Willy Cheng
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Edward Lin

3.3 Duty Cycle of Test Signal

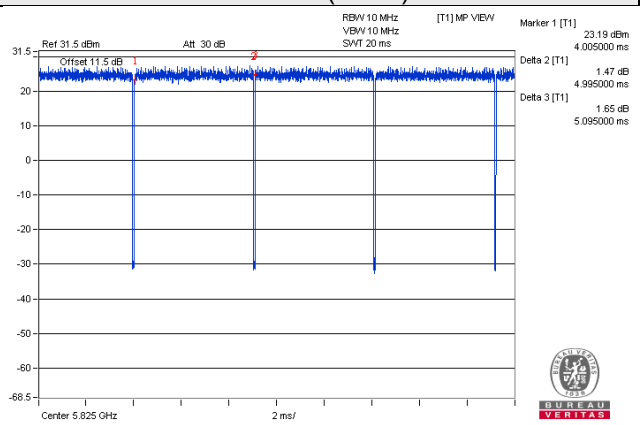
Duty cycle of test signal is ≥ 98%, duty factor is not required.
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 2.060/2.155 = 0.956, Duty factor = 10 * log(1/0.956) = 0.20
802.11n (HT20): Duty cycle = 4.995/5.095 = 0.9803
802.11n (HT40): Duty cycle = 2.417/2.512 = 0.962, Duty factor = 10 * log(1/0.962) = 0.17
802.11ac (VHT80): Duty cycle = 1.143/1.229 = 0.930, Duty factor = 10 * log(1/0.930) = 0.32

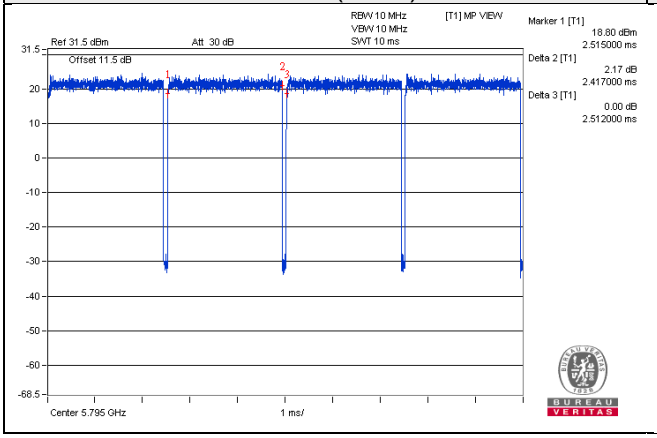
802.11a



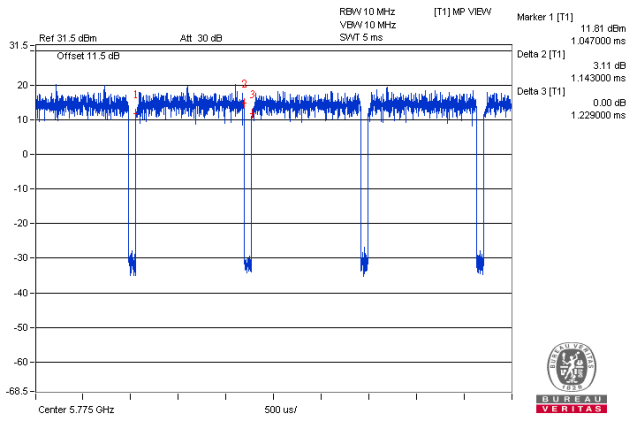
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



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.

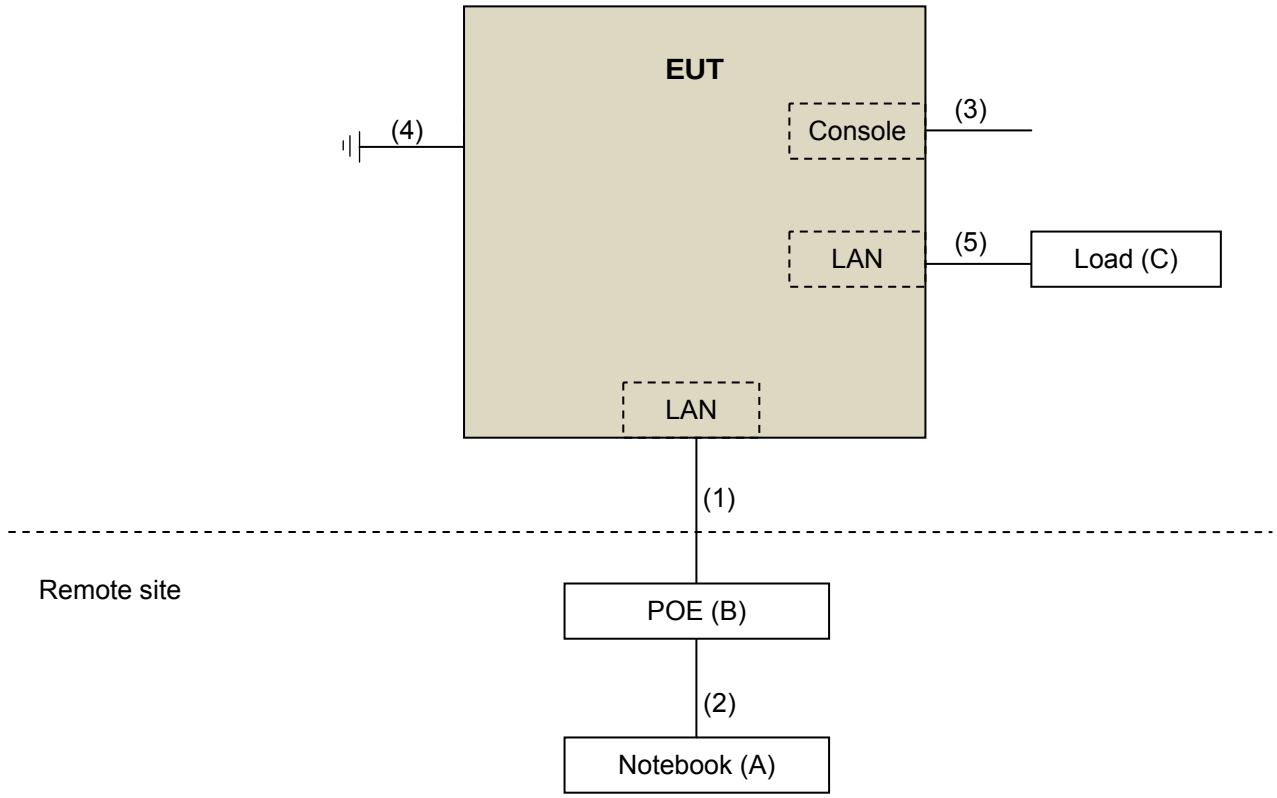
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	POE	EnGenius	EPA5006GP	NA	NA	Provided by manufacturer
C.	Load	NA	NA	NA	NA	-

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	3	N	0	-
2.	RJ45, Cat5e	1	1.8	N	0	-
3.	Console cable	1	1	N	0	Provided by manufacturer
4.	Ground cable	1	1.75	N	0	Accessory Device
5.	RJ45, Cat5e	1	1.8	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10:2013

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.

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

<table>
<tr><td colspan="3">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="3" rowspan="2">789033 D02 General UNII Test Procedure New Rules v01r04</td><td colspan="2">Field Strength at 3m</td></tr>
<tr><td>PK: 74 (dBμV/m)</td><td>AV: 54 (dBμV/m)</td></tr>
<tr><td>Frequency Band</td><td colspan="2">Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3m</td></tr>
<tr><td>5150~5250 MHz</td><td colspan="2">15.407(b)(1)</td><td rowspan="3">PK: -27 (dBm/MHz)</td><td rowspan="3">PK: 68.2(dBμV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td colspan="2">15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td colspan="2">15.407(b)(3)</td></tr>
<tr><td rowspan="2">5725~5850 MHz</td><td>☒</td><td>15.407(b)(4)(i)</td><td>PK: -27 (dBm/MHz) *1
PK: 10 (dBm/MHz) *2
PK: 15.6 (dBm/MHz) *3
PK: 27 (dBm/MHz) *4</td><td>PK: 68.2(dBμV/m) *1
PK: 105.2 (dBμV/m) *2
PK: 110.8(dBμV/m) *3
PK: 122.2 (dBμV/m) *4</td></tr>
<tr><td>☐</td><td>15.407(b)(4)(ii)</td><td colspan="2">Emission limits in section 15.247(d)</td></tr>
<tr><td colspan="5">*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.</td></tr>
</table>

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

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P 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	100041	Nov. 16, 2016	Nov. 15, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	9120D	209	Dec. 27, 2016	Dec. 26, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent	8447D	2944A10738	Aug. 21, 2017	Aug. 20, 2018
Preamplifier Agilent	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 106	Cable-CH3-03 (309224+12738)	Aug. 21, 2017	Aug. 20, 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
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. 08, 2017	Jun. 07, 2018
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 17, 2016	Oct. 16, 2017

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 IC7450F-4.

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:

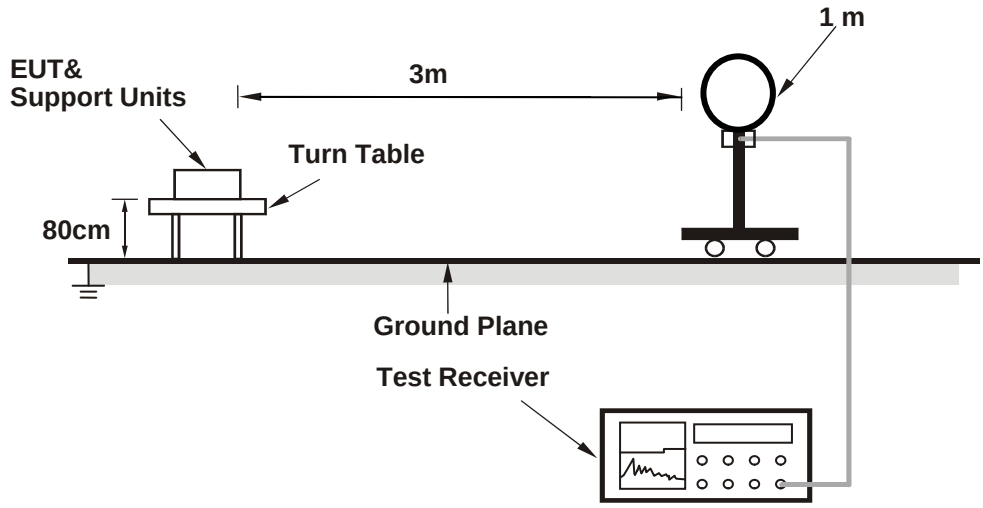
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

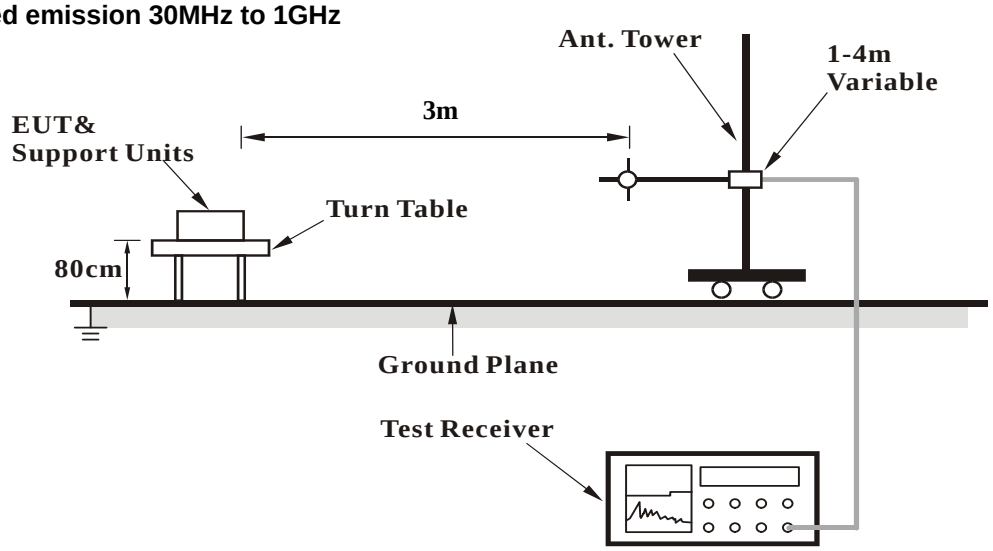
No deviation.

4.1.5 Test Setup

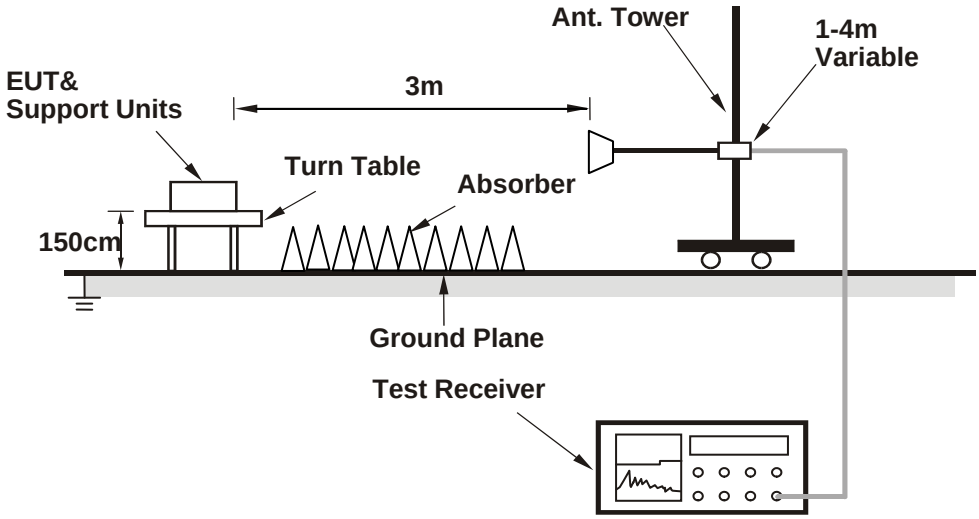
For Radiated emission below 30MHz



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:

802.11a

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

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	55.9 PK	74.0	-18.1	1.60 H	290	54.20	1.70
2	5150.00	43.0 AV	54.0	-11.0	1.60 H	290	41.30	1.70
3	*5260.00	116.2 PK			1.79 H	287	76.50	39.70
4	*5260.00	106.4 AV			1.79 H	287	66.70	39.70
5	#10520.00	58.0 PK	74.0	-16.0	1.78 H	247	44.00	14.00
6	#10520.00	45.1 AV	54.0	-8.9	1.78 H	247	31.10	14.00
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	55.3 PK	74.0	-18.7	3.46 V	33	53.60	1.70
2	5150.00	42.3 AV	54.0	-11.7	3.46 V	33	40.60	1.70
3	*5260.00	114.4 PK			3.95 V	10	74.70	39.70
4	*5260.00	103.8 AV			3.95 V	10	64.10	39.70
5	#10520.00	56.2 PK	74.0	-17.8	2.96 V	43	42.20	14.00
6	#10520.00	44.8 AV	54.0	-9.2	2.96 V	43	30.80	14.00

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	116.0 PK			2.41 H	294	76.20	39.80
2	*5300.00	105.8 AV			2.41 H	294	66.00	39.80
3	10600.00	58.4 PK	74.0	-15.6	2.12 H	256	44.20	14.20
4	10600.00	45.3 AV	54.0	-8.7	2.12 H	256	31.10	14.20
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	114.4 PK			3.74 V	7	74.60	39.80
2	*5300.00	104.3 AV			3.74 V	7	64.50	39.80
3	10600.00	58.0 PK	74.0	-16.0	3.53 V	16	43.80	14.20
4	10600.00	45.0 AV	54.0	-9.0	3.53 V	16	30.80	14.20

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

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	119.7 PK			3.25 H	52	79.80	39.90
2	*5320.00	108.7 AV			3.25 H	52	68.80	39.90
3	5350.00	66.2 PK	74.0	-7.8	2.41 H	53	64.30	1.90
4	5350.00	52.2 AV	54.0	-1.8	2.41 H	53	50.30	1.90
5	10640.00	58.7 PK	74.0	-15.3	2.76 H	88	44.50	14.20
6	10640.00	45.6 AV	54.0	-8.4	2.76 H	88	31.40	14.20
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	114.0 PK			3.89 V	7	74.10	39.90
2	*5320.00	104.0 AV			3.89 V	7	64.10	39.90
3	5350.00	60.0 PK	74.0	-14.0	3.24 V	12	58.10	1.90
4	5350.00	48.0 AV	54.0	-6.0	3.24 V	12	46.10	1.90
5	10640.00	60.3 PK	74.0	-13.7	2.98 V	23	46.10	14.20
6	10640.00	46.2 AV	54.0	-7.8	2.98 V	23	32.00	14.20

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

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	62.7 PK	74.0	-11.3	2.99 H	53	60.70	2.00
2	5460.00	48.2 AV	54.0	-5.8	2.99 H	53	46.20	2.00
3	#5470.00	66.5 PK	74.0	-7.5	2.82 H	50	64.50	2.00
4	#5470.00	52.3 AV	54.0	-1.7	2.82 H	50	50.30	2.00
5	*5500.00	119.4 PK			2.45 H	55	79.40	40.00
6	*5500.00	108.2 AV			2.45 H	55	68.20	40.00
7	11000.00	59.5 PK	74.0	-14.5	3.13 H	84	43.60	15.90
8	11000.00	46.1 AV	54.0	-7.9	3.13 H	84	30.20	15.90
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	57.8 PK	74.0	-16.2	1.51 V	29	55.80	2.00
2	5460.00	45.4 AV	54.0	-8.6	1.51 V	29	43.40	2.00
3	#5470.00	62.6 PK	74.0	-11.4	1.46 V	16	60.60	2.00
4	#5470.00	48.8 AV	54.0	-5.2	1.46 V	16	46.80	2.00
5	*5500.00	115.8 PK			1.50 V	20	75.80	40.00
6	*5500.00	105.7 AV			1.50 V	20	65.70	40.00
7	11000.00	59.5 PK	74.0	-14.5	1.76 V	59	43.60	15.90
8	11000.00	46.4 AV	54.0	-7.6	1.76 V	59	30.50	15.90

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	118.7 PK			2.72 H	55	78.50	40.20
2	*5580.00	108.2 AV			2.72 H	55	68.00	40.20
3	11160.00	60.6 PK	74.0	-13.4	2.55 H	77	45.30	15.30
4	11160.00	47.1 AV	54.0	-6.9	2.55 H	77	31.80	15.30
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	118.6 PK			1.48 V	17	78.40	40.20
2	*5580.00	108.1 AV			1.48 V	17	67.90	40.20
3	11160.00	60.3 PK	74.0	-13.7	1.59 V	25	45.00	15.30
4	11160.00	46.9 AV	54.0	-7.1	1.59 V	25	31.60	15.30

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	116.2 PK			2.57 H	58	75.60	40.60
2	*5700.00	106.0 AV			2.57 H	58	65.40	40.60
3	#5725.00	66.5 PK	74.0	-7.5	2.48 H	56	63.70	2.80
4	#5725.00	52.3 AV	54.0	-1.7	2.48 H	56	49.50	2.80
5	11400.00	60.6 PK	74.0	-13.4	2.69 H	67	45.70	14.90
6	11400.00	46.9 AV	54.0	-7.1	2.69 H	67	32.00	14.90
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	114.0 PK			1.50 V	17	73.40	40.60
2	*5700.00	104.1 AV			1.50 V	17	63.50	40.60
3	#5725.00	64.1 PK	74.0	-9.9	1.45 V	24	61.30	2.80
4	#5725.00	51.3 AV	54.0	-2.7	1.45 V	24	48.50	2.80
5	11400.00	59.0 PK	74.0	-15.0	1.62 V	33	44.10	14.90
6	11400.00	46.4 AV	54.0	-7.6	1.62 V	33	31.50	14.90

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 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	55.9 PK	74.0	-18.1	2.18 H	57	53.90	2.00
2	#5470.00	42.5 AV	54.0	-11.5	2.18 H	57	40.50	2.00
3	*5720.00	123.2 PK			2.08 H	57	82.50	40.70
4	*5720.00	112.6 AV			2.08 H	57	71.90	40.70
5	#5825.00	57.5 PK	74.0	-16.5	1.92 H	39	54.60	2.90
6	#5825.00	44.5 AV	54.0	-9.5	1.92 H	39	41.60	2.90
7	11440.00	60.1 PK	74.0	-13.9	1.97 H	61	45.10	15.00
8	11440.00	47.0 AV	54.0	-7.0	1.97 H	61	32.00	15.00
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	56.2 PK	74.0	-17.8	1.52 V	25	54.20	2.00
2	#5470.00	42.7 AV	54.0	-11.3	1.52 V	25	40.70	2.00
3	*5720.00	116.7 PK			1.43 V	19	76.00	40.70
4	*5720.00	107.0 AV			1.43 V	19	66.30	40.70
5	#5825.00	58.0 PK	74.0	-16.0	1.83 V	29	55.10	2.90
6	#5825.00	43.8 AV	54.0	-10.2	1.83 V	29	40.90	2.90
7	11440.00	59.4 PK	74.0	-14.6	1.77 V	45	44.40	15.00
8	11440.00	46.9 AV	54.0	-7.1	1.77 V	45	31.90	15.00

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.

802.11n (HT20)

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

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	55.0 PK	74.0	-19.0	2.33 H	62	53.30	1.70
2	5150.00	42.5 AV	54.0	-11.5	2.33 H	62	40.80	1.70
3	*5260.00	118.2 PK			2.53 H	53	78.50	39.70
4	*5260.00	107.7 AV			2.53 H	53	68.00	39.70
5	#10520.00	57.5 PK	74.0	-16.5	2.69 H	101	43.50	14.00
6	#10520.00	44.8 AV	54.0	-9.2	2.69 H	101	30.80	14.00
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	55.7 PK	74.0	-18.3	3.32 V	19	54.00	1.70
2	5150.00	42.9 AV	54.0	-11.1	3.32 V	19	41.20	1.70
3	*5260.00	116.9 PK			3.96 V	14	77.20	39.70
4	*5260.00	105.4 AV			3.96 V	14	65.70	39.70
5	#10520.00	58.9 PK	74.0	-15.1	3.31 V	8	44.90	14.00
6	#10520.00	46.2 AV	54.0	-7.8	3.31 V	8	32.20	14.00

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	118.5 PK			3.25 H	50	78.70	39.80
2	*5300.00	108.9 AV			3.25 H	50	69.10	39.80
3	10600.00	58.9 PK	74.0	-15.1	2.87 H	65	44.70	14.20
4	10600.00	45.4 AV	54.0	-8.6	2.87 H	65	31.20	14.20
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	114.8 PK			3.72 V	6	75.00	39.80
2	*5300.00	104.6 AV			3.72 V	6	64.80	39.80
3	10600.00	58.2 PK	74.0	-15.8	3.54 V	9	44.00	14.20
4	10600.00	45.6 AV	54.0	-8.4	3.54 V	9	31.40	14.20

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

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	119.0 PK			3.12 H	54	79.10	39.90
2	*5320.00	108.2 AV			3.12 H	54	68.30	39.90
3	5350.00	66.4 PK	74.0	-7.6	3.81 H	63	64.50	1.90
4	5350.00	52.2 AV	54.0	-1.8	3.81 H	63	50.30	1.90
5	10640.00	58.5 PK	74.0	-15.5	2.99 H	67	44.30	14.20
6	10640.00	44.7 AV	54.0	-9.3	2.99 H	67	30.50	14.20
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	115.2 PK			3.72 V	5	75.30	39.90
2	*5320.00	104.8 AV			3.72 V	5	64.90	39.90
3	5350.00	61.5 PK	74.0	-12.5	3.42 V	11	59.60	1.90
4	5350.00	46.4 AV	54.0	-7.6	3.42 V	11	44.50	1.90
5	10640.00	58.4 PK	74.0	-15.6	3.62 V	17	44.20	14.20
6	10640.00	44.3 AV	54.0	-9.7	3.62 V	17	30.10	14.20

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

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	60.4 PK	74.0	-13.6	3.43 H	41	58.40	2.00
2	5460.00	46.5 AV	54.0	-7.5	3.43 H	41	44.50	2.00
3	#5470.00	67.0 PK	74.0	-7.0	3.60 H	59	65.00	2.00
4	#5470.00	52.2 AV	54.0	-1.8	3.60 H	59	50.20	2.00
5	*5500.00	120.2 PK			2.99 H	54	80.20	40.00
6	*5500.00	109.0 AV			2.99 H	54	69.00	40.00
7	11000.00	61.0 PK	74.0	-13.0	3.42 H	55	45.10	15.90
8	11000.00	47.9 AV	54.0	-6.1	3.42 H	55	32.00	15.90
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	58.0 PK	74.0	-16.0	1.47 V	19	56.00	2.00
2	5460.00	45.3 AV	54.0	-8.7	1.47 V	19	43.30	2.00
3	#5470.00	63.7 PK	74.0	-10.3	1.53 V	10	61.70	2.00
4	#5470.00	48.9 AV	54.0	-5.1	1.53 V	10	46.90	2.00
5	*5500.00	115.7 PK			1.63 V	17	75.70	40.00
6	*5500.00	105.6 AV			1.63 V	17	65.60	40.00
7	11000.00	60.3 PK	74.0	-13.7	1.61 V	22	44.40	15.90
8	11000.00	47.8 AV	54.0	-6.2	1.61 V	22	31.90	15.90

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	121.6 PK			2.37 H	55	81.40	40.20
2	*5580.00	110.3 AV			2.37 H	55	70.10	40.20
3	11160.00	60.4 PK	74.0	-13.6	2.53 H	63	45.10	15.30
4	11160.00	47.3 AV	54.0	-6.7	2.53 H	63	32.00	15.30
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	118.6 PK			1.48 V	19	78.40	40.20
2	*5580.00	108.2 AV			1.48 V	19	68.00	40.20
3	11160.00	60.1 PK	74.0	-13.9	1.67 V	11	44.80	15.30
4	11160.00	46.8 AV	54.0	-7.2	1.67 V	11	31.50	15.30

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	116.8 PK			2.37 H	60	76.20	40.60
2	*5700.00	105.7 AV			2.37 H	60	65.10	40.60
3	#5725.00	55.7 PK	74.0	-18.3	2.66 H	70	52.90	2.80
4	#5725.00	52.3 AV	54.0	-1.7	2.66 H	70	49.50	2.80
5	11400.00	59.5 PK	74.0	-14.5	2.45 H	99	44.60	14.90
6	11400.00	47.1 AV	54.0	-6.9	2.45 H	99	32.20	14.90
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	113.0 PK			1.41 V	19	72.40	40.60
2	*5700.00	102.5 AV			1.41 V	19	61.90	40.60
3	#5725.00	62.5 PK	74.0	-11.5	1.23 V	3	59.70	2.80
4	#5725.00	49.3 AV	54.0	-4.7	1.23 V	3	46.50	2.80
5	11400.00	60.3 PK	74.0	-13.7	1.52 V	19	45.40	14.90
6	11400.00	47.6 AV	54.0	-6.4	1.52 V	19	32.70	14.90

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 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	56.3 PK	74.0	-17.7	2.22 H	55	54.30	2.00
2	#5470.00	43.4 AV	54.0	-10.6	2.22 H	55	41.40	2.00
3	*5720.00	119.5 PK			2.10 H	63	78.80	40.70
4	*5720.00	108.2 AV			2.10 H	63	67.50	40.70
5	#5825.00	57.5 PK	74.0	-16.5	1.98 H	37	54.60	2.90
6	#5825.00	44.2 AV	54.0	-9.8	1.98 H	37	41.30	2.90
7	11440.00	59.9 PK	74.0	-14.1	2.00 H	43	44.90	15.00
8	11440.00	47.0 AV	54.0	-7.0	2.00 H	43	32.00	15.00
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	55.8 PK	74.0	-18.2	1.50 V	33	53.80	2.00
2	#5470.00	42.7 AV	54.0	-11.3	1.50 V	33	40.70	2.00
3	*5720.00	121.6 PK			1.38 V	18	80.90	40.70
4	*5720.00	110.8 AV			1.38 V	18	70.10	40.70
5	#5825.00	57.2 PK	74.0	-16.8	1.63 V	19	54.30	2.90
6	#5825.00	43.6 AV	54.0	-10.4	1.63 V	19	40.70	2.90
7	11440.00	59.7 PK	74.0	-14.3	1.47 V	51	44.70	15.00
8	11440.00	46.9 AV	54.0	-7.1	1.47 V	51	31.90	15.00

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.

802.11n (HT40)

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

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	55.1 PK	74.0	-18.9	2.63 H	40	53.40	1.70
2	5150.00	42.4 AV	54.0	-11.6	2.63 H	40	40.70	1.70
3	*5270.00	114.8 PK			2.49 H	57	75.10	39.70
4	*5270.00	105.4 AV			2.49 H	57	65.70	39.70
5	#10540.00	57.8 PK	74.0	-16.2	2.14 H	65	43.70	14.10
6	#10540.00	45.3 AV	54.0	-8.7	2.14 H	65	31.20	14.10
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	55.0 PK	74.0	-19.0	3.64 V	32	53.30	1.70
2	5150.00	42.2 AV	54.0	-11.8	3.64 V	32	40.50	1.70
3	*5270.00	110.7 PK			3.95 V	22	71.00	39.70
4	*5270.00	101.5 AV			3.95 V	22	61.80	39.70
5	#10540.00	58.2 PK	74.0	-15.8	3.39 V	26	44.10	14.10
6	#10540.00	44.8 AV	54.0	-9.2	3.39 V	26	30.70	14.10

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	112.8 PK			2.93 H	58	73.00	39.80
2	*5310.00	103.2 AV			2.93 H	58	63.40	39.80
3	5350.00	64.6 PK	74.0	-9.4	2.71 H	60	62.70	1.90
4	**5350.00**	**52.6 AV**	**54.0**	**-1.4**	**2.71 H**	**60**	**50.70**	**1.90**
5	10620.00	57.5 PK	74.0	-16.5	3.32 H	54	43.30	14.20
6	10620.00	44.7 AV	54.0	-9.3	3.32 H	54	30.50	14.20
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	108.8 PK			3.86 V	13	69.00	39.80
2	*5310.00	99.7 AV			3.86 V	13	59.90	39.80
3	5350.00	61.2 PK	74.0	-12.8	3.87 V	8	59.30	1.90
4	5350.00	48.8 AV	54.0	-5.2	3.87 V	8	46.90	1.90
5	10620.00	58.3 PK	74.0	-15.7	3.76 V	19	44.10	14.20
6	10620.00	45.3 AV	54.0	-8.7	3.76 V	19	31.10	14.20

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

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	58.9 PK	74.0	-15.1	2.61 H	43	56.90	2.00
2	5460.00	47.2 AV	54.0	-6.8	2.61 H	43	45.20	2.00
3	#5470.00	65.3 PK	74.0	-8.7	2.52 H	48	63.30	2.00
4	#5470.00	52.4 AV	54.0	-1.6	2.52 H	48	50.40	2.00
5	*5510.00	112.6 PK			2.43 H	52	72.50	40.10
6	*5510.00	102.9 AV			2.43 H	52	62.80	40.10
7	11020.00	60.5 PK	74.0	-13.5	2.22 H	54	44.80	15.70
8	11020.00	46.4 AV	54.0	-7.6	2.22 H	54	30.70	15.70
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	56.5 PK	74.0	-17.5	1.62 V	22	54.50	2.00
2	5460.00	46.5 AV	54.0	-7.5	1.62 V	22	44.50	2.00
3	#5470.00	60.5 PK	74.0	-13.5	1.42 V	16	58.50	2.00
4	#5470.00	47.9 AV	54.0	-6.1	1.42 V	16	45.90	2.00
5	*5510.00	110.5 PK			1.50 V	22	70.40	40.10
6	*5510.00	100.8 AV			1.50 V	22	60.70	40.10
7	11020.00	60.7 PK	74.0	-13.3	1.77 V	29	45.00	15.70
8	11020.00	46.7 AV	54.0	-7.3	1.77 V	29	31.00	15.70

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	116.7 PK			2.44 H	54	76.60	40.10
2	*5550.00	107.7 AV			2.44 H	54	67.60	40.10
3	11100.00	60.2 PK	74.0	-13.8	2.19 H	10	45.20	15.00
4	11100.00	46.7 AV	54.0	-7.3	2.19 H	10	31.70	15.00
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	114.7 PK			1.52 V	18	74.60	40.10
2	*5550.00	104.8 AV			1.52 V	18	64.70	40.10
3	11100.00	61.1 PK	74.0	-12.9	1.79 V	32	46.10	15.00
4	11100.00	47.0 AV	54.0	-7.0	1.79 V	32	32.00	15.00

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	114.4 PK			2.30 H	49	73.90	40.50
2	*5670.00	105.2 AV			2.30 H	49	64.70	40.50
3	#5725.00	66.4 PK	74.0	-7.6	2.22 H	54	63.60	2.80
4	#5725.00	52.4 AV	54.0	-1.6	2.22 H	54	49.60	2.80
5	11340.00	59.6 PK	74.0	-14.4	2.58 H	82	44.40	15.20
6	11340.00	46.8 AV	54.0	-7.2	2.58 H	82	31.60	15.20
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	113.4 PK			1.43 V	19	72.90	40.50
2	*5670.00	104.0 AV			1.43 V	19	63.50	40.50
3	#5725.00	63.8 PK	74.0	-10.2	1.53 V	18	61.00	2.80
4	#5725.00	51.1 AV	54.0	-2.9	1.53 V	18	48.30	2.80
5	11340.00	59.9 PK	74.0	-14.1	1.77 V	40	44.70	15.20
6	11340.00	46.8 AV	54.0	-7.2	1.77 V	40	31.60	15.20

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 142	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	55.8 PK	74.0	-18.2	2.31 H	33	53.80	2.00
2	#5470.00	42.6 AV	54.0	-11.4	2.31 H	33	40.60	2.00
3	*5710.00	115.4 PK			2.32 H	61	74.70	40.70
4	*5710.00	105.7 AV			2.32 H	61	65.00	40.70
5	#5825.00	56.7 PK	74.0	-17.3	2.43 H	29	53.80	2.90
6	#5825.00	43.6 AV	54.0	-10.4	2.43 H	29	40.70	2.90
7	11420.00	59.9 PK	74.0	-14.1	2.22 H	49	45.10	14.80
8	11420.00	46.7 AV	54.0	-7.3	2.22 H	49	31.90	14.80
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	55.8 PK	74.0	-18.2	1.68 V	29	53.80	2.00
2	#5470.00	42.6 AV	54.0	-11.4	1.68 V	29	40.60	2.00
3	*5710.00	113.5 PK			1.45 V	19	72.80	40.70
4	*5710.00	103.8 AV			1.45 V	19	63.10	40.70
5	#5825.00	57.6 PK	74.0	-16.4	1.57 V	33	54.70	2.90
6	#5825.00	43.9 AV	54.0	-10.1	1.57 V	33	41.00	2.90
7	11420.00	59.5 PK	74.0	-14.5	1.33 V	21	44.70	14.80
8	11420.00	46.9 AV	54.0	-7.1	1.33 V	21	32.10	14.80

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 (VHT80)

CHANNEL	TX Channel 58	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	57.3 PK	74.0	-16.7	2.51 H	48	55.60	1.70
2	5150.00	44.0 AV	54.0	-10.0	2.51 H	48	42.30	1.70
3	*5290.00	109.2 PK			2.42 H	51	69.40	39.80
4	*5290.00	99.1 AV			2.42 H	51	59.30	39.80
5	5350.00	65.4 PK	74.0	-8.6	3.14 H	52	63.50	1.90
6	**5350.00**	**52.6 AV**	**54.0**	**-1.4**	**3.14 H**	**52**	**50.70**	**1.90**
7	#10580.00	59.1 PK	74.0	-14.9	1.33 H	177	44.90	14.20
8	#10580.00	45.8 AV	54.0	-8.2	1.33 H	177	31.60	14.20
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	56.0 PK	74.0	-18.0	3.15 V	353	54.30	1.70
2	5150.00	42.8 AV	54.0	-11.2	3.15 V	353	41.10	1.70
3	*5290.00	104.9 PK			3.89 V	14	65.10	39.80
4	*5290.00	95.5 AV			3.89 V	14	55.70	39.80
5	5350.00	61.5 PK	74.0	-12.5	3.85 V	9	59.60	1.90
6	5350.00	49.0 AV	54.0	-5.0	3.85 V	9	47.10	1.90
7	#10580.00	59.0 PK	74.0	-15.0	2.99 V	71	44.80	14.20
8	#10580.00	45.5 AV	54.0	-8.5	2.99 V	71	31.30	14.20

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 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	60.2 PK	74.0	-13.8	2.67 H	22	58.20	2.00
2	5460.00	47.8 AV	54.0	-6.2	2.67 H	22	45.80	2.00
3	#5470.00	65.2 PK	74.0	-8.8	2.40 H	49	63.20	2.00
4	#5470.00	52.5 AV	54.0	-1.5	2.40 H	49	50.50	2.00
5	*5530.00	110.2 PK			2.67 H	56	70.10	40.10
6	*5530.00	100.3 AV			2.67 H	56	60.20	40.10
7	#5725.00	58.9 PK	74.0	-15.1	2.54 H	55	56.10	2.80
8	#5725.00	45.1 AV	54.0	-8.9	2.54 H	55	42.30	2.80
9	11060.00	60.8 PK	74.0	-13.2	2.47 H	45	45.50	15.30
10	11060.00	47.4 AV	54.0	-6.6	2.47 H	45	32.10	15.30
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	60.5 PK	74.0	-13.5	1.31 V	13	58.50	2.00
2	5460.00	49.3 AV	54.0	-4.7	1.31 V	13	47.30	2.00
3	#5470.00	62.3 PK	74.0	-11.7	1.32 V	20	60.30	2.00
4	#5470.00	50.2 AV	54.0	-3.8	1.32 V	20	48.20	2.00
5	*5530.00	107.3 PK			1.55 V	19	67.20	40.10
6	*5530.00	97.4 AV			1.55 V	19	57.30	40.10
7	#5725.00	57.8 PK	74.0	-16.2	1.67 V	34	55.00	2.80
8	#5725.00	45.0 AV	54.0	-9.0	1.67 V	34	42.20	2.80
9	11060.00	59.5 PK	74.0	-14.5	1.57 V	22	44.20	15.30
10	11060.00	46.7 AV	54.0	-7.3	1.57 V	22	31.40	15.30

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 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	57.7 PK	74.0	-16.3	2.33 H	44	55.70	2.00
2	5460.00	45.4 AV	54.0	-8.6	2.33 H	44	43.40	2.00
3	#5470.00	62.3 PK	74.0	-11.7	2.43 H	40	60.30	2.00
4	#5470.00	47.7 AV	54.0	-6.3	2.43 H	40	45.70	2.00
5	*5610.00	112.0 PK			2.35 H	51	71.60	40.40
6	*5610.00	101.2 AV			2.35 H	51	60.80	40.40
7	#5725.00	68.2 PK	74.0	-5.8	2.21 H	51	65.40	2.80
8	#5725.00	52.2 AV	54.0	-1.8	2.21 H	51	49.40	2.80
9	11220.00	59.4 PK	74.0	-14.6	2.01 H	67	43.80	15.60
10	11220.00	45.9 AV	54.0	-8.1	2.01 H	67	30.30	15.60
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	56.8 PK	74.0	-17.2	1.66 V	24	54.80	2.00
2	5460.00	43.8 AV	54.0	-10.2	1.66 V	24	41.80	2.00
3	#5470.00	60.3 PK	74.0	-13.7	1.58 V	19	58.30	2.00
4	#5470.00	45.8 AV	54.0	-8.2	1.58 V	19	43.80	2.00
5	*5610.00	110.8 PK			1.51 V	15	70.40	40.40
6	*5610.00	101.2 AV			1.51 V	15	60.80	40.40
7	#5725.00	64.1 PK	74.0	-9.9	1.40 V	16	61.30	2.80
8	#5725.00	50.5 AV	54.0	-3.5	1.40 V	16	47.70	2.80
9	11220.00	59.1 PK	74.0	-14.9	1.71 V	29	43.50	15.60
10	11220.00	45.7 AV	54.0	-8.3	1.71 V	29	30.10	15.60

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 138	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	56.6 PK	74.0	-17.4	2.47 H	53	54.60	2.00
2	#5470.00	43.4 AV	54.0	-10.6	2.47 H	53	41.40	2.00
3	*5690.00	112.2 PK			2.56 H	60	71.60	40.60
4	*5690.00	101.8 AV			2.56 H	60	61.20	40.60
5	#5825.00	63.7 PK	74.0	-10.3	2.60 H	51	60.80	2.90
6	#5825.00	49.3 AV	54.0	-4.7	2.60 H	51	46.40	2.90
7	11380.00	60.0 PK	74.0	-14.0	2.79 H	69	45.10	14.90
8	11380.00	46.9 AV	54.0	-7.1	2.79 H	69	32.00	14.90
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	56.5 PK	74.0	-17.5	1.54 V	37	54.50	2.00
2	#5470.00	42.6 AV	54.0	-11.4	1.54 V	37	40.60	2.00
3	*5690.00	105.5 PK			2.00 V	326	64.90	40.60
4	*5690.00	95.3 AV			2.00 V	326	54.70	40.60
5	#5825.00	60.9 PK	74.0	-13.1	2.21 V	14	58.00	2.90
6	#5825.00	47.5 AV	54.0	-6.5	2.21 V	14	44.60	2.90
7	11380.00	59.1 PK	74.0	-14.9	1.77 V	25	44.20	14.90
8	11380.00	46.6 AV	54.0	-7.4	1.77 V	25	31.70	14.90

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 Worst-Case 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	57.12	28.2 QP	40.0	-11.8	1.99 H	237	42.80	-14.60
2	70.73	25.0 QP	40.0	-15.0	1.99 H	279	41.40	-16.40
3	307.93	24.0 QP	46.0	-22.0	1.00 H	142	36.60	-12.60
4	484.86	25.0 QP	46.0	-21.0	1.99 H	280	34.70	-9.70
5	747.34	28.1 QP	46.0	-17.9	1.00 H	219	33.00	-4.90
6	935.94	28.1 QP	46.0	-17.9	1.00 H	172	30.70	-2.60
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	28.8 QP	40.0	-11.2	1.00 V	101	43.50	-14.70
2	57.12	22.4 QP	40.0	-17.6	1.00 V	26	37.00	-14.60
3	309.88	22.4 QP	46.0	-23.6	1.50 V	14	35.00	-12.60
4	329.32	27.4 QP	46.0	-18.6	1.50 V	190	39.50	-12.10
5	673.46	25.7 QP	46.0	-20.3	1.50 V	10	32.20	-6.50
6	935.94	28.6 QP	46.0	-17.4	2.00 V	161	31.20	-2.60

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 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Tested date: Sep. 11, 2017

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS 30	100288	Aug. 17, 2017	Aug. 16, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 08, 2017	Sep. 07, 2018
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 17, 2017	Jan. 16, 2018
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 02, 2017	Aug. 01, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	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 test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

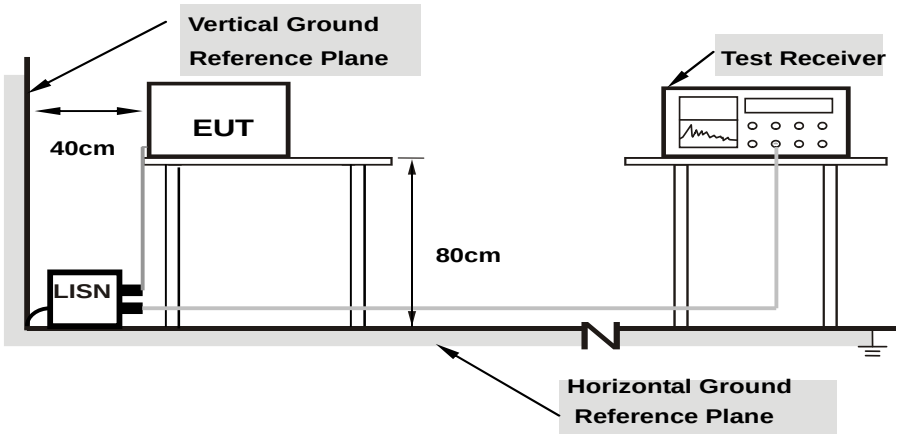
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

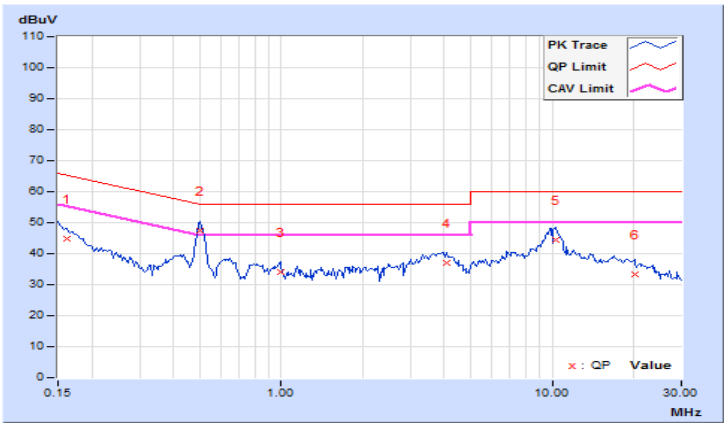
Worst-case data: 802.11a

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	10.40	34.34	21.30	44.74	31.70	65.38	55.38	-20.64	-23.68
2	**0.50156**	**10.42**	**37.14**	**33.08**	**47.56**	**43.50**	**56.00**	**46.00**	**-8.44**	**-2.50**
3	0.99375	10.48	23.52	19.64	34.00	30.12	56.00	46.00	-22.00	-15.88
4	4.08594	10.60	26.43	21.92	37.03	32.52	56.00	46.00	-18.97	-13.48
5	10.32031	10.71	33.67	29.47	44.38	40.18	60.00	50.00	-15.62	-9.82
6	20.13281	10.89	22.35	17.80	33.24	28.69	60.00	50.00	-26.76	-21.31

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

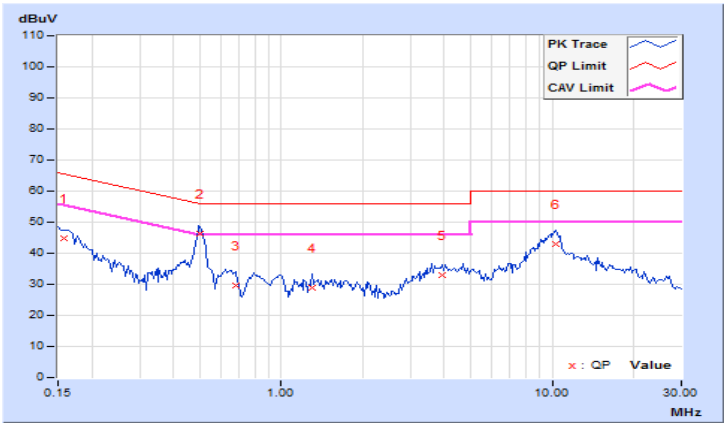


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	10.42	34.30	19.88	44.72	30.30	65.58	55.58	-20.86	-25.28
2	0.50156	10.39	35.82	31.52	46.21	41.91	56.00	46.00	-9.79	-4.09
3	0.67734	10.43	19.28	12.51	29.71	22.94	56.00	46.00	-26.29	-23.06
4	1.30469	10.50	18.34	13.14	28.84	23.64	56.00	46.00	-27.16	-22.36
5	3.92578	10.60	22.36	17.04	32.96	27.64	56.00	46.00	-23.04	-18.36
6	10.28906	10.66	32.14	27.63	42.80	38.29	60.00	50.00	-17.20	-11.71

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



4.3 Transmit Power Measurement

4.3.1 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 ≦ 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

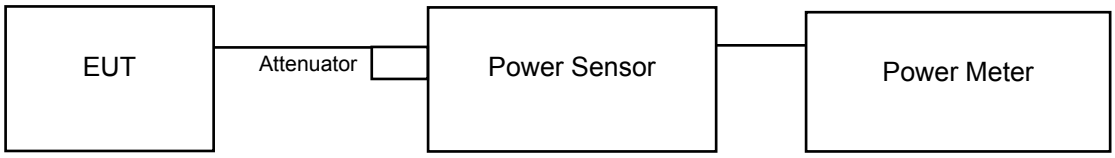
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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 $N_{ANT} \geq 5$.

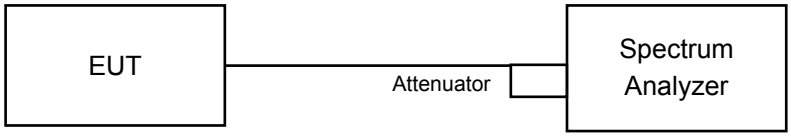
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

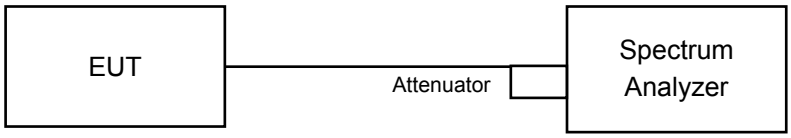
For Power Output
802.11a, 802.11n (HT20), 802.11n (HT40)



802.11ac (VHT80)



For 26dB Bandwidth



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement

For 802.11a, 802.11n (HT20), 802.11n (HT40)

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. Duty factor is not added to measured value.

For 802.11ac (VHT80)

a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

b. Set sweep trigger to “free run”.

c. Set RBW = 1 MHz.

d. Set VBW ≥ 3 MHz.

e. Number of points in sweep ≥ 2 Span / RBW.

f. Sweep time ≤ (number of points in sweep) * T

g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.

h. Detector = RMS.

i. Trace mode = max hold.

j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

k. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

For 26dB Bandwidth

a. Set RBW = approximately 1% of the emission bandwidth.

b. Set the VBW > RBW.

c. Detector = Peak.

d. Trace mode = max hold.

e. Measure the maximum width of the emission that is 26 dB down from the 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%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

Power Output:

CDD Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.14	19.68	196.173	22.93	23.82	Pass
60	5300	19.98	19.61	190.952	22.81	23.82	Pass
64	5320	19.77	19.92	193.017	22.86	23.82	Pass
100	5500	18.95	19.16	160.938	22.07	23.82	Pass
116	5580	19.41	19.48	176.013	22.46	23.82	Pass
140	5700	17.22	17.12	104.246	20.18	23.82	Pass
144	5720 For U-NII-2C	18.69	18.38	142.826	21.55	22.68	Pass
144	5720 For U-NII-3	13.91	13.66	47.863	16.80	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. U-NII-2A & U-NII-2C: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 24-(6.18-6) = 23.82dBm.
2. U-NII-3: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 30-(6.18-6) = 29.82dBm.

Chain 0
1. 11dBm + 10log (19.66) = 23.94 dBm > 23.82dBm
2. 11dBm + 10log (19.72) = 23.95 dBm > 23.82dBm
3. 11dBm + 10log (19.69) = 23.94 dBm > 23.82dBm
4. 11dBm + 10log (19.46) = 23.89 dBm > 23.82dBm
5. 11dBm + 10log (19.53) = 23.91 dBm > 23.82dBm
6. 11dBm + 10log (19.39) = 23.88 dBm > 23.82dBm
7. 11dBm + 10log (5725.00 - 5710.28) = 22.68 dBm < 23.82dBm

Chain 1
1. 11dBm + 10log (19.43) = 23.88 dBm > 23.82dBm
2. 11dBm + 10log (19.50) = 23.90 dBm > 23.82dBm
3. 11dBm + 10log (19.21) = 23.84 dBm > 23.82dBm
4. 11dBm + 10log (19.26) = 23.85 dBm > 23.82dBm
5. 11dBm + 10log (19.33) = 23.86 dBm > 23.82dBm
6. 11dBm + 10log (19.34) = 23.86 dBm > 23.82dBm
7. 11dBm + 10log (5725.00 - 5710.01) = 22.76 dBm < 23.82dBm

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.15	19.65	195.771	22.92	23.82	Pass
60	5300	20.09	19.69	195.205	22.90	23.82	Pass
64	5320	20.30	20.39	216.548	23.36	23.82	Pass
100	5500	19.51	19.44	177.233	22.49	23.82	Pass
116	5580	20.07	19.98	201.166	23.04	23.82	Pass
140	5700	16.48	16.00	84.274	19.26	23.82	Pass
144	5720 For U-NII-2C	19.10	18.63	154.229	21.88	22.83	Pass
144	5720 For U-NII-3	14.42	14.24	54.200	17.34	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. U-NII-2A & U-NII-2C: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 24-(6.18-6) = 23.82dBm.
2. U-NII-3: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 30-(6.18-6) = 29.82dBm.

Chain 0
1. 11dBm + 10log (20.59) = 24.14 dBm > 23.82dBm
2. 11dBm + 10log (20.46) = 24.11 dBm > 23.82dBm
3. 11dBm + 10log (20.52) = 24.12 dBm > 23.82dBm
4. 11dBm + 10log (20.51) = 24.12 dBm > 23.82dBm
5. 11dBm + 10log (20.49) = 24.12 dBm > 23.82dBm
6. 11dBm + 10log (20.35) = 24.09 dBm > 23.82dBm
7. 11dBm + 10log (5725.00 - 5709.75) = 22.83 dBm < 23.82dBm

Chain 1
1. 11dBm + 10log (20.49) = 24.12 dBm > 23.82dBm
2. 11dBm + 10log (20.20) = 24.05 dBm > 23.82dBm
3. 11dBm + 10log (20.72) = 24.16 dBm > 23.82dBm
4. 11dBm + 10log (20.66) = 24.15 dBm > 23.82dBm
5. 11dBm + 10log (20.49) = 24.12 dBm > 23.82dBm
6. 11dBm + 10log (20.35) = 24.09 dBm > 23.82dBm
7. 11dBm + 10log (5725.00 - 5709.64) = 22.86 dBm < 23.82dBm

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.46	20.24	**216.855**	23.36	23.82	Pass
62	5310	18.56	18.52	142.900	21.55	23.82	Pass
102	5510	16.23	16.17	83.376	19.21	23.82	Pass
110	5550	20.69	20.35	**225.613**	23.53	23.82	Pass
134	5670	18.33	18.25	134.911	21.30	23.82	Pass
142	5710 For U-NII-2C	19.83	19.59	187.152	22.72	23.82	Pass
142	5710 For U-NII-3	11.67	11.98	30.465	14.84	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. U-NII-2A & U-NII-2C: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 24-(6.18-6) = 23.82dBm.
2. U-NII-3: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 30-(6.18-6) = 29.82dBm.

Chain 0
1. 11dBm + 10log (40.95) = 27.12 dBm > 23.82dBm
2. 11dBm + 10log (40.78) = 27.10 dBm > 23.82dBm
3. 11dBm + 10log (40.79) = 27.11 dBm > 23.82dBm
4. 11dBm + 10log (40.95) = 27.12 dBm > 23.82dBm
5. 11dBm + 10log (40.83) = 27.11 dBm > 23.82dBm
6. 11dBm + 10log (5725.00 - 5689.55) = 26.50 dBm > 23.82dBm

Chain 1
1. 11dBm + 10log (40.68) = 27.09 dBm > 23.82dBm
2. 11dBm + 10log (40.78) = 27.10 dBm > 23.82dBm
3. 11dBm + 10log (40.80) = 27.11 dBm > 23.82dBm
4. 11dBm + 10log (40.96) = 27.12 dBm > 23.82dBm
5. 11dBm + 10log (40.85) = 27.11 dBm > 23.82dBm
6. 11dBm + 10log (5725.00 - 5689.08) = 26.55 dBm > 23.82dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	17.21	17.24	105.568	20.24	23.82	Pass
106	5530	16.95	16.93	98.862	19.95	23.82	Pass
122	5610	19.94	19.83	194.789	22.90	23.82	Pass
138	5690 For U-NII-2C	19.80	19.71	189.040	22.77	23.82	Pass
138	5690 For U-NII-3	9.38	9.28	17.142	12.34	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. U-NII-2A & U-NII-2C: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 24-(6.18-6) = 23.82dBm.
2. U-NII-3: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 30-(6.18-6) = 29.82dBm.

Chain 0
1. 11dBm + 10log (84.02) = 30.24 dBm > 23.82dBm
2. 11dBm + 10log (84.03) = 30.24 dBm > 23.82dBm
3. 11dBm + 10log (83.27) = 30.20 dBm > 23.82dBm
4. 11dBm + 10log (5725.00 - 5647.88) = 29.87 dBm > 23.82dBm

Chain 1
1. 11dBm + 10log (83.47) = 30.22 dBm > 23.82dBm
2. 11dBm + 10log (83.85) = 30.24 dBm > 23.82dBm
3. 11dBm + 10log (83.85) = 30.24 dBm > 23.82dBm
4. 11dBm + 10log (5725.00 - 5648.23) = 29.85 dBm > 23.82dBm

Beamforming Mode

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.15	19.65	195.771	22.92	23.82	Pass
60	5300	20.09	19.69	195.205	22.90	23.82	Pass
64	5320	20.30	20.39	216.548	23.36	23.82	Pass
100	5500	19.51	19.44	177.233	22.49	23.82	Pass
116	5580	20.07	19.98	201.166	23.04	23.82	Pass
140	5700	16.48	16.00	84.274	19.26	23.82	Pass
144	5720 For U-NII-2C	19.10	18.63	154.229	21.88	22.83	Pass
144	5720 For U-NII-3	14.42	14.24	54.2150	17.34	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. U-NII-2A & U-NII-2C: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 24-(6.18-6) = 23.82dBm.
2. U-NII-3: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 30-(6.18-6) = 29.82dBm.

Chain 0
1. 11dBm + 10log (20.59) = 24.14 dBm > 23.82dBm
2. 11dBm + 10log (20.46) = 24.11 dBm > 23.82dBm
3. 11dBm + 10log (20.52) = 24.12 dBm > 23.82dBm
4. 11dBm + 10log (20.51) = 24.12 dBm > 23.82dBm
5. 11dBm + 10log (20.49) = 24.12 dBm > 23.82dBm
6. 11dBm + 10log (20.35) = 24.09 dBm > 23.82dBm
7. 11dBm + 10log (5725.00 - 5709.75) = 22.83 dBm < 23.82dBm

Chain 1
1. 11dBm + 10log (20.49) = 24.12 dBm > 23.82dBm
2. 11dBm + 10log (20.20) = 24.05 dBm > 23.82dBm
3. 11dBm + 10log (20.72) = 24.16 dBm > 23.82dBm
4. 11dBm + 10log (20.66) = 24.15 dBm > 23.82dBm
5. 11dBm + 10log (20.49) = 24.12 dBm > 23.82dBm
6. 11dBm + 10log (20.35) = 24.09 dBm > 23.82dBm
7. 11dBm + 10log (5725.00 - 5709.64) = 22.86 dBm < 23.82dBm

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.46	20.24	**216.855**	23.36	23.82	Pass
62	5310	18.56	18.52	142.900	21.55	23.82	Pass
102	5510	16.23	16.17	83.376	19.21	23.82	Pass
110	5550	20.69	20.35	**225.613**	23.53	23.82	Pass
134	5670	18.33	18.25	134.911	21.30	23.82	Pass
142	5710 For U-NII-2C	19.83	19.59	187.152	22.72	23.82	Pass
142	5710 For U-NII-3	11.67	11.98	30.465	14.84	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. U-NII-2A & U-NII-2C: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 24-(6.18-6) = 23.82dBm.
2. U-NII-3: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 30-(6.18-6) = 29.82dBm.

Chain 0
1. 11dBm + 10log (40.95) = 27.12 dBm > 23.82dBm
2. 11dBm + 10log (40.78) = 27.10 dBm > 23.82dBm
3. 11dBm + 10log (40.79) = 27.11 dBm > 23.82dBm
4. 11dBm + 10log (40.95) = 27.12 dBm > 23.82dBm
5. 11dBm + 10log (40.83) = 27.11 dBm > 23.82dBm
6. 11dBm + 10log (5725.00 - 5689.55) = 26.50 dBm > 23.82dBm

Chain 1
1. 11dBm + 10log (40.68) = 27.09 dBm > 23.82dBm
2. 11dBm + 10log (40.78) = 27.10 dBm > 23.82dBm
3. 11dBm + 10log (40.80) = 27.11 dBm > 23.82dBm
4. 11dBm + 10log (40.96) = 27.12 dBm > 23.82dBm
5. 11dBm + 10log (40.85) = 27.11 dBm > 23.82dBm
6. 11dBm + 10log (5725.00 - 5689.08) = 26.55 dBm > 23.82dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	17.21	17.24	105.568	20.24	23.82	Pass
106	5530	16.95	16.93	98.862	19.95	23.82	Pass
122	5610	19.94	19.83	194.789	22.90	23.82	Pass
138	5690 For U-NII-2C	19.80	19.71	189.040	22.77	23.82	Pass
138	5690 For U-NII-3	9.38	9.28	17.142	12.34	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. U-NII-2A & U-NII-2C: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 24-(6.18-6) = 23.82dBm.
2. U-NII-3: Gain = 6.18dBi > 6dBi, so the limit shall be reduced to 30-(6.18-6) = 29.82dBm.

Chain 0
1. 11dBm + 10log (84.02) = 30.24 dBm > 23.82dBm
2. 11dBm + 10log (84.03) = 30.24 dBm > 23.82dBm
3. 11dBm + 10log (83.27) = 30.20 dBm > 23.82dBm
4. 11dBm + 10log (5725.00 - 5647.88) = 29.87 dBm > 23.82dBm

Chain 1
1. 11dBm + 10log (83.47) = 30.22 dBm > 23.82dBm
2. 11dBm + 10log (83.85) = 30.24 dBm > 23.82dBm
3. 11dBm + 10log (83.85) = 30.24 dBm > 23.82dBm
4. 11dBm + 10log (5725.00 - 5648.23) = 29.85 dBm > 23.82dBm

26dB Bandwidth:

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.66	19.43
60	5300	19.72	19.50
64	5320	19.69	19.21
100	5500	19.46	19.26
116	5580	19.53	19.33
140	5700	19.39	19.34
144	5720 For U-NII-2C	14.72	14.99
144	5720 For U-NII-3	4.90	5.06

802.11n (HT20)

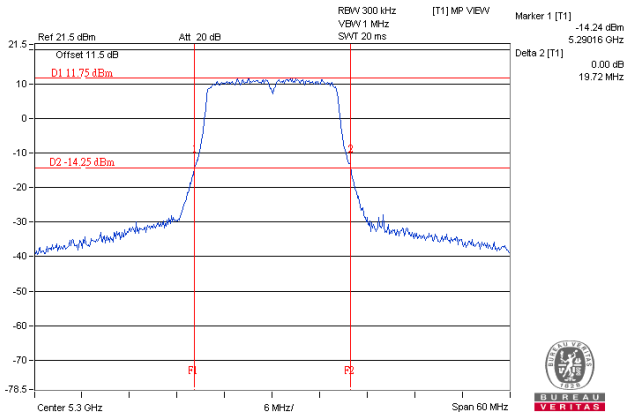
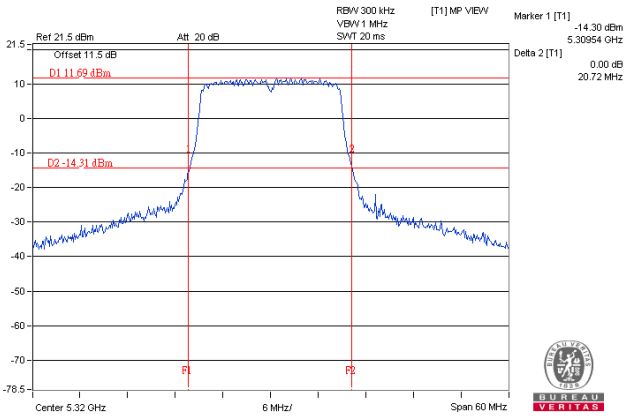
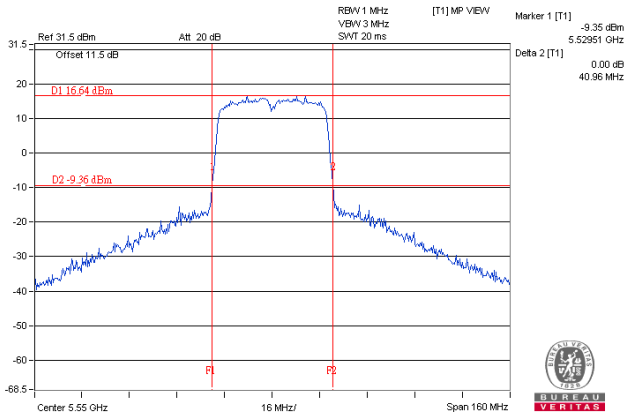
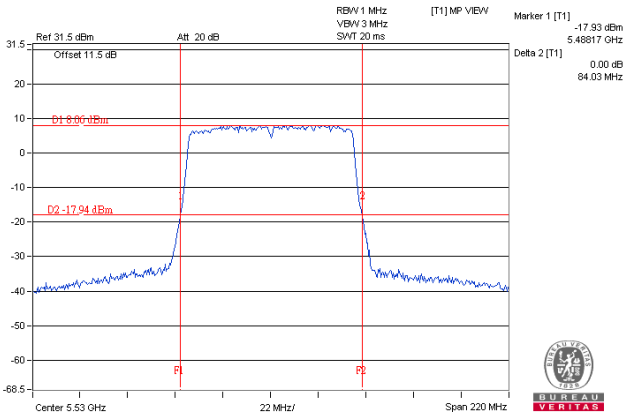
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.59	20.49
60	5300	20.46	20.20
64	5320	20.52	20.72
100	5500	20.51	20.66
116	5580	20.49	20.49
140	5700	20.35	20.35
144	5720 For U-NII-2C	15.26	15.37
144	5720 For U-NII-3	5.18	5.57

802.11n (HT40)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	40.95	40.68
62	5310	40.78	40.78
102	5510	40.79	40.80
110	5550	40.95	40.96
134	5670	40.83	40.85
142	5710 For U-NII-2C	35.45	35.92
142	5710 For U-NII-3	5.41	6.23

802.11ac (VHT80)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	84.02	83.47
106	5530	84.03	83.85
122	5610	83.27	83.85
138	5690 For U-NII-2C	77.12	76.77
138	5690 For U-NII-3	7.00	6.95

Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

EUT Maximum Conducted Power

CDD Mode

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	196.173	22.93
5470~5725	176.013	22.46

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	216.548	23.36
5470~5725	201.166	23.04

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	216.855	23.36
5470~5725	225.613	23.53

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	105.568	20.24
5470~5725	194.789	22.90

Beamforming Mode

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	216.548	23.36
5470~5725	201.166	23.04

802.11n (HT40)

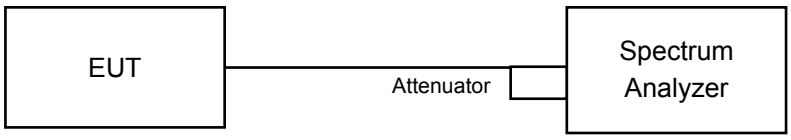
Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	216.855	23.36
5470~5725	225.613	23.53

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	105.568	20.24
5470~5725	194.789	22.90

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Test Result

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	16.44	16.44
60	5300	16.44	16.44
64	5320	16.44	16.44
100	5500	16.44	16.44
116	5580	16.44	16.44
140	5700	16.44	16.44
144	5720 For U-NII-2C	13.28	13.28
144	5720 For U-NII-3	3.16	3.16

802.11n (HT20)

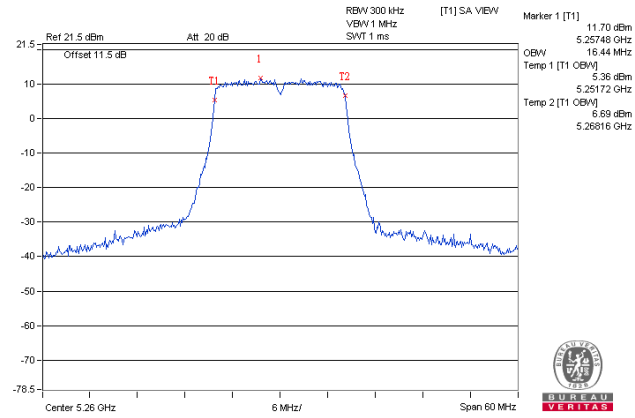
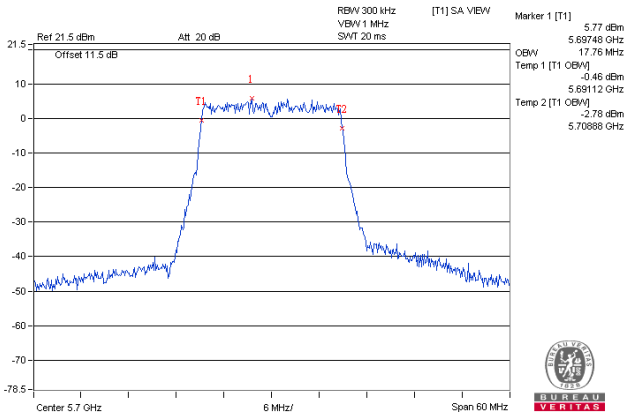
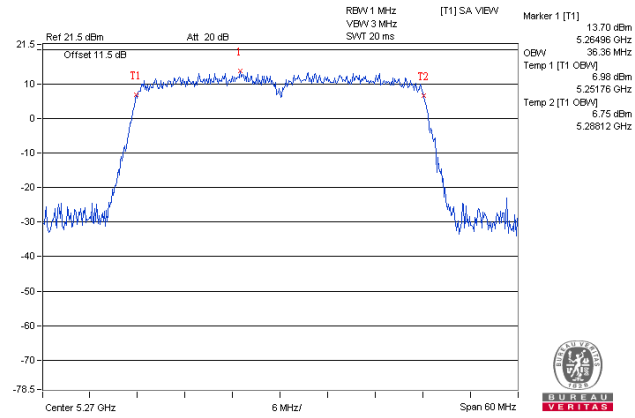
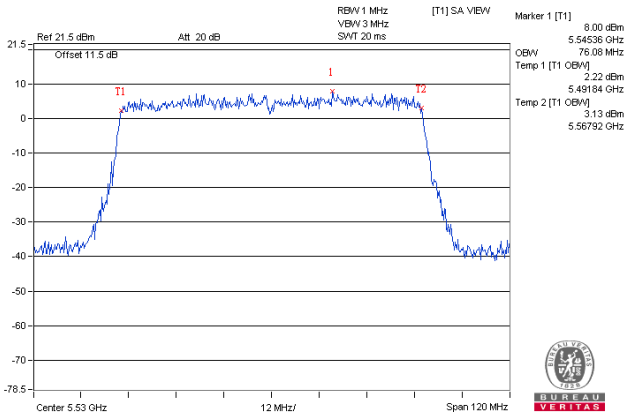
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.64	17.64
60	5300	17.64	17.64
64	5320	17.64	17.64
100	5500	17.64	17.64
116	5580	17.64	17.64
140	5700	17.64	17.76
144	5720 For U-NII-2C	13.76	13.88
144	5720 For U-NII-3	3.76	3.76

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	36.36	36.36
62	5310	36.24	36.24
102	5510	36.24	36.36
110	5550	36.36	36.24
134	5670	36.24	36.24
142	5710 For U-NII-2C	33.24	33.12
142	5710 For U-NII-3	3.00	3.00

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	75.84	75.84
106	5530	76.08	76.08
122	5610	75.84	76.08
138	5690 For U-NII-2C	73.16	72.92
138	5690 For U-NII-3	2.68	2.92

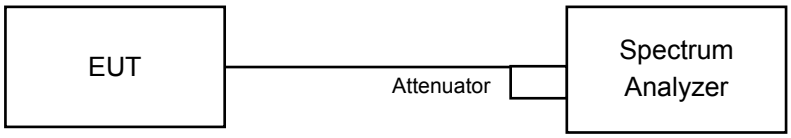
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-2A, U-NII-2C band:

Duty cycle of test signal is > 98%

Using method SA-1

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Sweep time = auto, trigger set to “free run”.

d. Trace average at least 100 traces in power averaging mode.

e. Record the max value

Duty cycle of test signal is < 98%

Using method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Set Channel power measure = 1MHz

d. Sweep time = auto, trigger set to “free run”.

e. Trace average at least 100 traces in power averaging mode.

f. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

Duty cycle of test signal is > 98%

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value

Duty cycle of test signal is < 98%

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

For U-NII-2A, U-NII-2C band:

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	7.04	6.75	0.20	10.10	10.82	Pass
60	5300	7.08	6.59	0.20	10.05	10.82	Pass
64	5320	6.98	6.66	0.20	10.03	10.82	Pass
100	5500	5.67	5.63	0.20	8.86	10.82	Pass
116	5580	5.58	5.83	0.20	8.91	10.82	Pass
140	5700	2.41	2.48	0.20	5.65	10.82	Pass
144	5720 For U-NII-2C	5.33	4.20	0.20	8.01	10.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. Gain = 6.18dBi > 6dBi, so the power density limit shall be reduced to 11-(6.18-6) = 10.82dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Total PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
52	5260	7.30	6.92	10.12	10.82	Pass
60	5300	7.16	7.00	10.09	10.82	Pass
64	5320	7.11	6.98	10.06	10.82	Pass
100	5500	6.00	5.92	8.97	10.82	Pass
116	5580	6.02	6.25	9.15	10.82	Pass
140	5700	1.66	0.75	4.24	10.82	Pass
144	5720 For U-NII-2C	7.57	6.36	10.02	10.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. Gain = 6.18dBi > 6dBi, so the power density limit shall be reduced to 11-(6.18-6) = 10.82dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

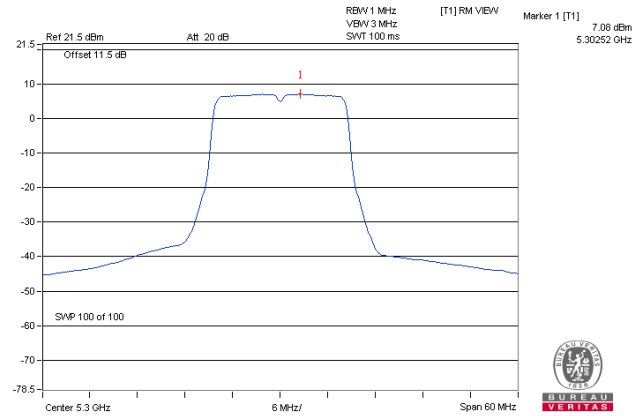
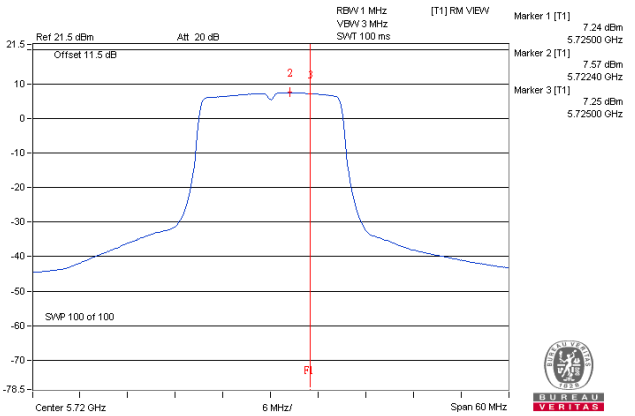
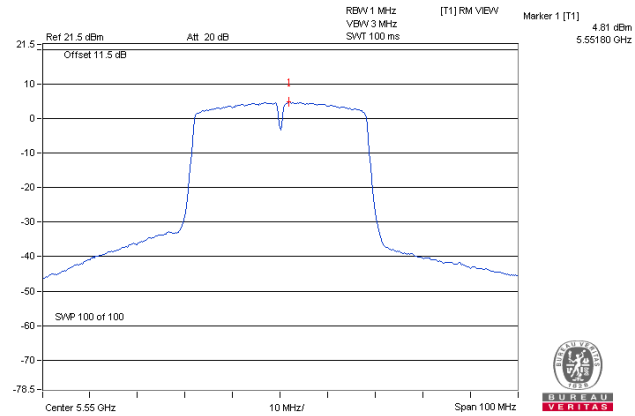
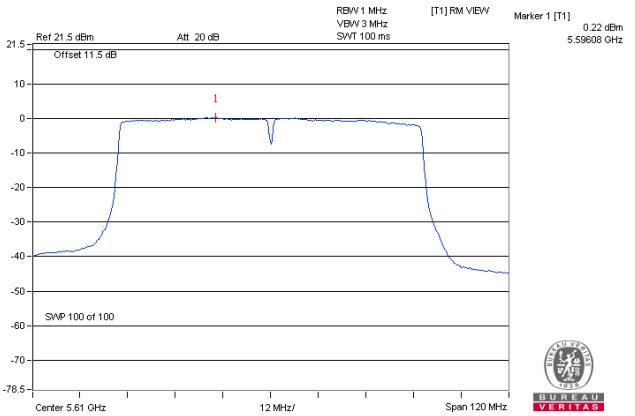
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
54	5270	3.35	2.99	0.17	6.35	10.82	Pass
62	5310	1.23	1.39	0.17	4.49	10.82	Pass
102	5510	-0.04	0.27	0.17	3.30	10.82	Pass
110	5550	4.71	4.54	0.17	7.80	10.82	Pass
134	5670	0.91	1.18	0.17	4.23	10.82	Pass
142	5710 For U-NII-2C	3.16	3.02	0.17	6.27	10.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. Gain = 6.18dBi > 6dBi, so the power density limit shall be reduced to 11-(6.18-6) = 10.82dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
58	5290	-3.18	-3.56	0.32	-0.04	10.82	Pass
106	5530	-2.82	-2.73	0.32	0.55	10.82	Pass
122	5610	-0.15	0.24	0.32	3.37	10.82	Pass
138	5690 For U-NII-2C	-0.70	-0.78	0.32	2.59	10.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. Gain = 6.18dBi > 6dBi, so the power density limit shall be reduced to 11-(6.18-6) = 10.82dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 0 / CH 60	802.11n (HT20) / Chain 0 / CH 144
	
802.11n (HT40) / Chain 0 / CH 110	802.11ac (VHT80) / Chain 0 / CH 122
	

For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	144	5720 For U-NII-3	-2.63	-0.41	3.01	0.20	2.80	29.82	Pass
1	144	5720 For U-NII-3	-3.36	-1.14	3.01	0.20	2.07	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. Gain = 6.18dBi > 6dBi, so the power density limit shall be reduced to 30-(6.18-6) = 29.82dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	144	5720 For U-NII-3	-1.17	1.05	3.01	4.06	29.82	Pass
1	144	5720 For U-NII-3	-1.96	0.26	3.01	3.27	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. Gain = 6.18dBi > 6dBi, so the power density limit shall be reduced to 30-(6.18-6) = 29.82dBm.

802.11n (HT40)

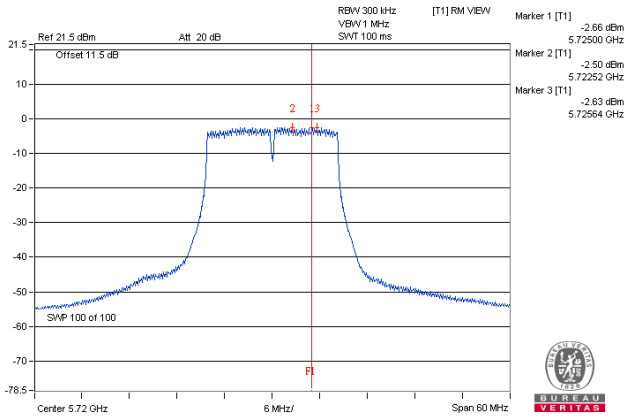
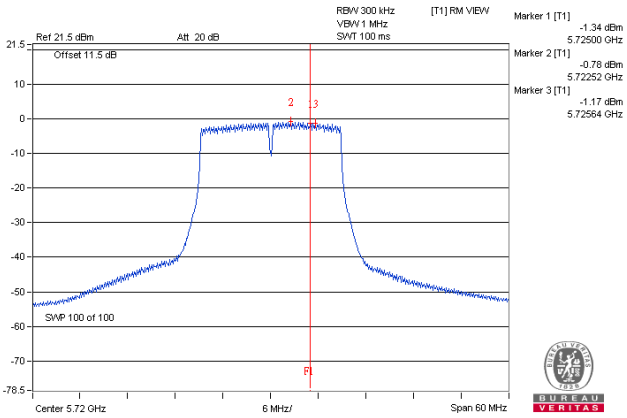
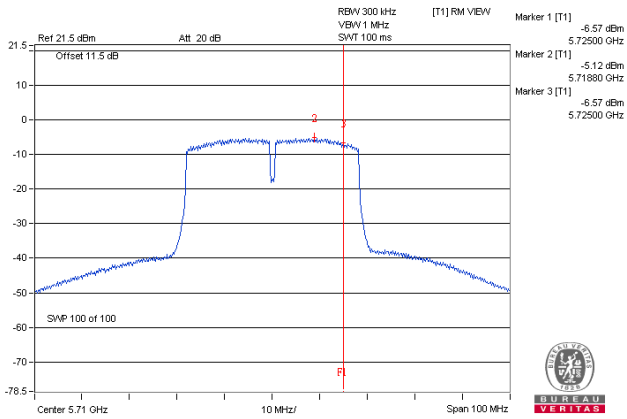
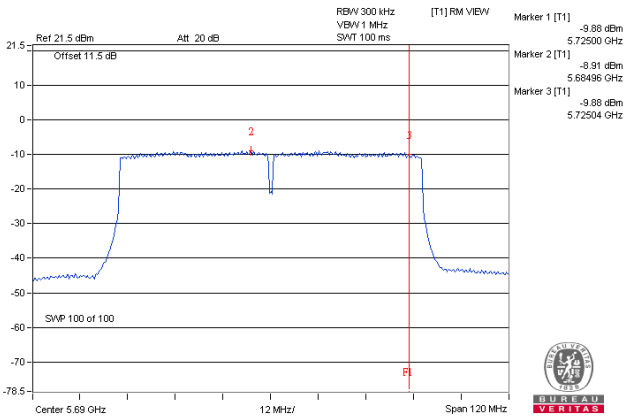
TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	142	5710 For U-NII-3	-6.99	-4.77	3.01	0.17	-1.59	29.82	Pass
1	142	5710 For U-NII-3	-6.57	-4.35	3.01	0.17	-1.17	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. Gain = 6.18dBi > 6dBi, so the power density limit shall be reduced to 30-(6.18-6) = 29.82dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	138	5690 For U-NII-3	-10.61	-8.39	3.01	0.32	-5.06	29.82	Pass
1	138	5690 For U-NII-3	-9.88	-7.66	3.01	0.32	-4.33	29.82	Pass

Note:
1. This antenna was cross-polarized antenna.
2. Gain = 6.18dBi > 6dBi, so the power density limit shall be reduced to 30-(6.18-6) = 29.82dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

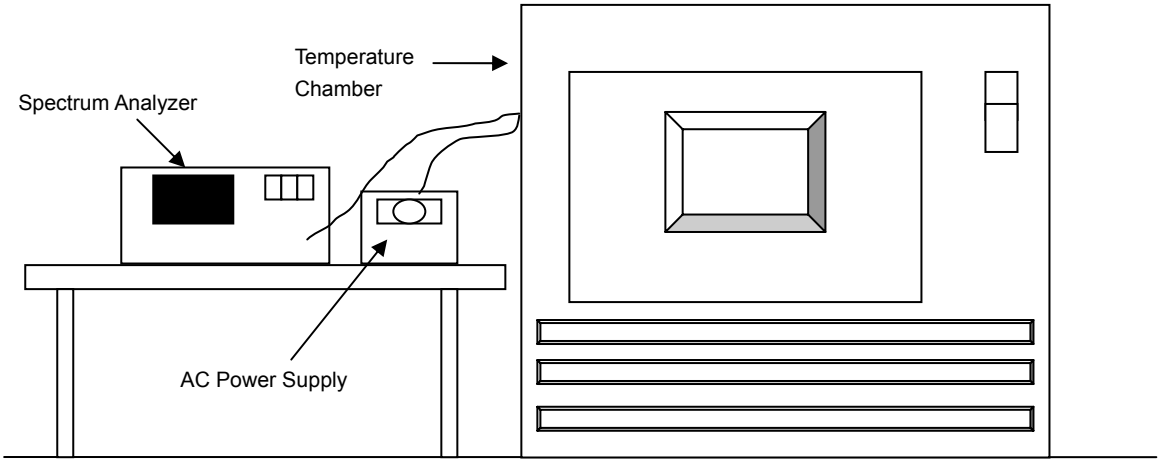
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.

e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5500MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5499.9855	-0.00026	5499.9839	-0.00029	5499.9858	-0.00026	5499.9839	-0.00029
40	120	5499.9742	-0.00047	5499.9778	-0.00040	5499.9746	-0.00046	5499.9747	-0.00046
30	120	5499.9857	-0.00026	5499.9842	-0.00029	5499.9814	-0.00034	5499.9822	-0.00032
20	120	5500.0195	0.00035	5500.0187	0.00034	5500.0182	0.00033	5500.0174	0.00032
10	120	5499.9957	-0.00008	5499.9975	-0.00005	5500.0008	0.00001	5499.9993	-0.00001
0	120	5499.9852	-0.00027	5499.9871	-0.00023	5499.988	-0.00022	5499.9901	-0.00018
-10	120	5500.0218	0.00040	5500.0179	0.00033	5500.0202	0.00037	5500.0177	0.00032
-20	120	5500.0186	0.00034	5500.0205	0.00037	5500.0174	0.00032	5500.0188	0.00034
-30	120	5499.9799	-0.00037	5499.9771	-0.00042	5499.9794	-0.00037	5499.9755	-0.00045

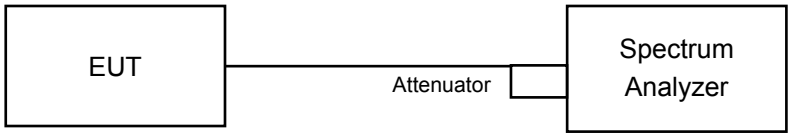
Frequency Stability Versus Voltage									
Operating Frequency: 5500MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5500.0205	0.00037	5500.0179	0.00033	5500.0182	0.00033	5500.0171	0.00031
	120	5500.0195	0.00035	5500.0187	0.00034	5500.0182	0.00033	5500.0174	0.00032
	102	5500.0194	0.00035	5500.0196	0.00036	5500.0184	0.00033	5500.0167	0.00030

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

Measurement Procedure REF

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 For U-NII-3	3.18	3.19	0.5	Pass

802.11n (HT20)

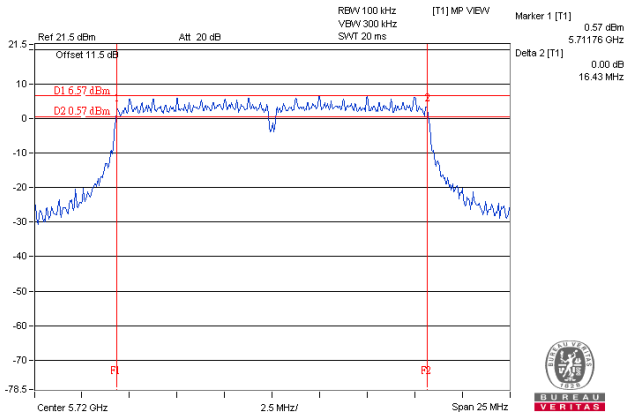
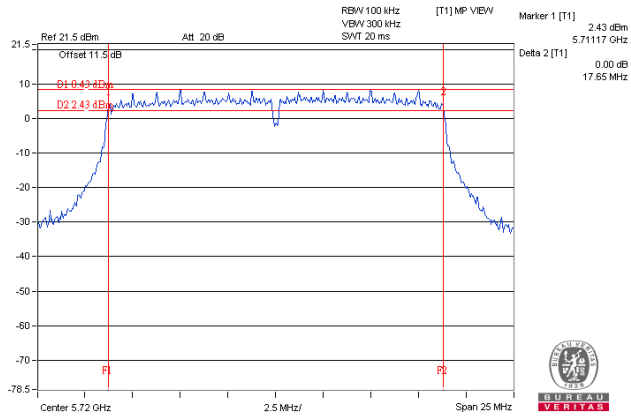
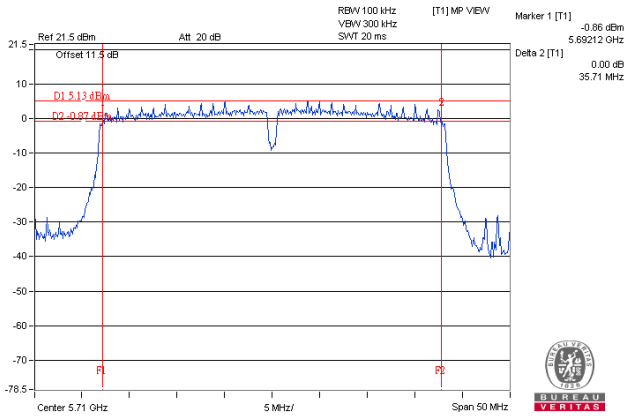
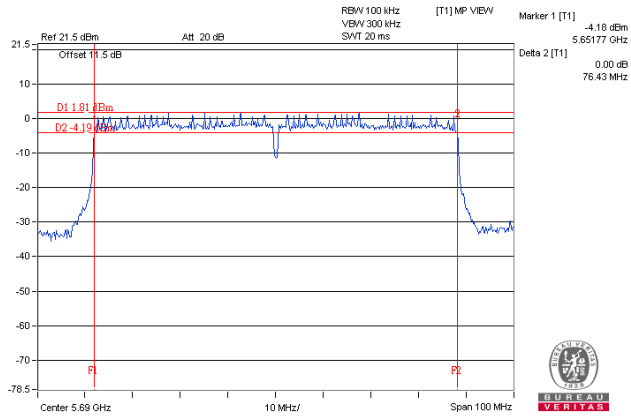
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 For U-NII-3	3.82	3.82	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 For U-NII-3	2.83	2.69	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690 For U-NII-3	3.18	3.20	0.5	Pass

Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

Note:

For CH144 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

For CH142 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

For CH138 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

5 Pictures of Test Arrangements

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

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

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