FCC Test Report

Report No.:	RF160817C08-1
FCC ID:	2AJRV-TORCH1
Test Model:	Torch Router
Received Date:	Aug. 17, 2016
Test Date:	Aug. 30 ~ Sep. 14, 2016
Issued Date:	Sep. 20, 2016
Applicant:	Vesta Technologies Inc.
Address:	800 Market St, Suite 200, Chattanooga, Tennessee, 37402, 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.)

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF160817C08-1	Original release	Sep. 20, 2016

1 Certificate of Conformity

Product:	Wireless Device
Brand:	Torch
Test Model:	Torch Router
Sample Status:	Engineering sample
Applicant:	Vesta Technologies Inc.
Test Date:	Aug. 30 ~ Sep. 14, 2016
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:** Sep. 20, 2016

Polly Chien / Specialist

Approved by : _____ , **Date:** Sep. 20, 2016

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 -9.11dB at 0.15391MHz.
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 -1.2dB at 5150.00MHz, 10480.00MHz.
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	2.44 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 Device
Brand	Torch
Test Model	Torch Router
Status of EUT	Engineering sample
Power Supply Rating	12Vdc (adapter)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	5180 ~ 5240MHz: 249.980mW 5745 ~ 5825MHz: 285.021mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Adapter
Data Cable Supplied	1m shielded LAN cable without core

Note:

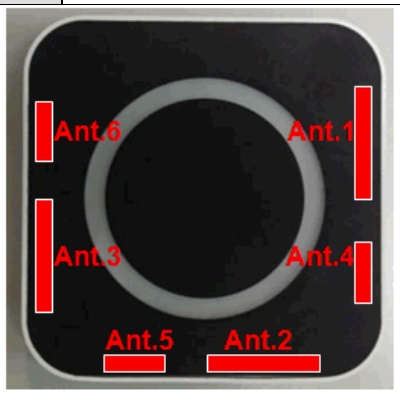
1. The EUT incorporates a MIMO function. Physically, the EUT provides 3 completed transmitters and 3 receivers.

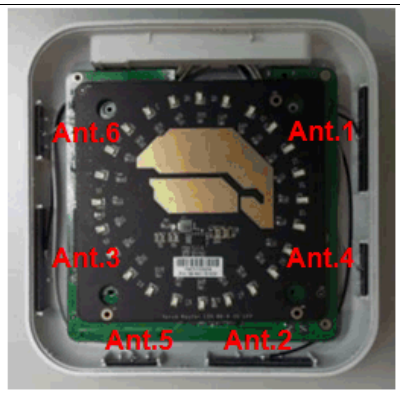
Modulation Mode	TX Function
802.11a	3TX
802.11n (HT20)	3TX
802.11n (HT40)	3TX
802.11ac (VHT20)	3TX
802.11ac (VHT40)	3TX
802.11ac (VHT80)	3TX

* 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)

2. The EUT uses following antennas.

Ant. No.	1	2	3	4	5	6
Ant. Type	PCB					
Frequency (MHz)	2400-2500			5150-5850		
Gain (dBi)	4.0	2.8	3.6	5.8	4.3	5.9
Connector	IPEX					





3. The EUT consumes power from the following adapter.

Adapter	
Brand	THXIN
Model	THX-120200KD
Input Power	100-240Vac, 50/60Hz, 0.65A MAX
Output Power	12Vdc, 2A
Power Line	1.45m cable without core attached on adapter

4. WLAN 2.4GHz and WLAN 5GHz technologies can transmit at same time.
5. Spurious emission of the simultaneous operation (WLAN 2.4GHz and WLAN 5GHz) has been evaluated and no non-compliance was found.

3.2 Description of Test Modes

For 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

For 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥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 X-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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
-	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11ac (VHT80)		42	42	OFDM	BPSK	97.5
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	15.0
-	802.11ac (VHT80)		155	155	OFDM	BPSK	97.5

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	5180-5240	36 to 48	149	OFDM	BPSK	7.2
		5745-5825	149 to 165				

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	5180-5240	36 to 48	149	OFDM	BPSK	7.2
		5745-5825	149 to 165				

Antenna Port Conducted Measurement:

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

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
-	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11ac (VHT80)		42	42	OFDM	BPSK	97.5
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	15.0
-	802.11ac (VHT80)		155	155	OFDM	BPSK	97.5

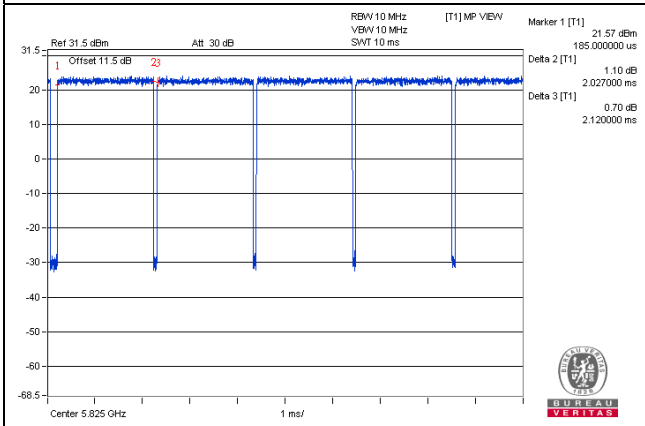
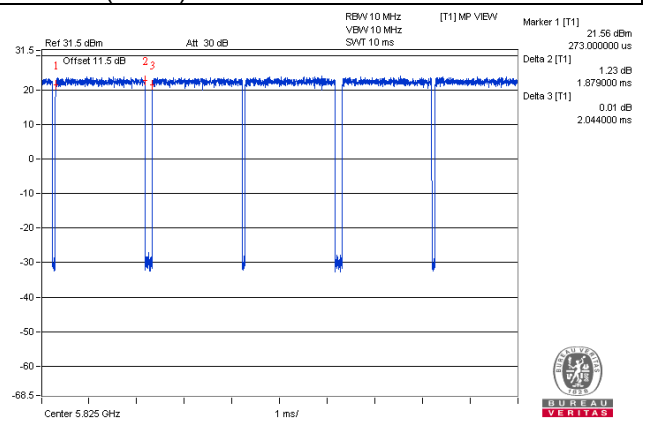
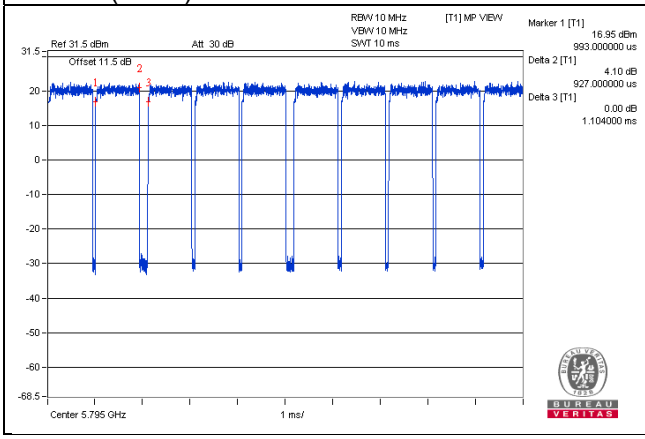
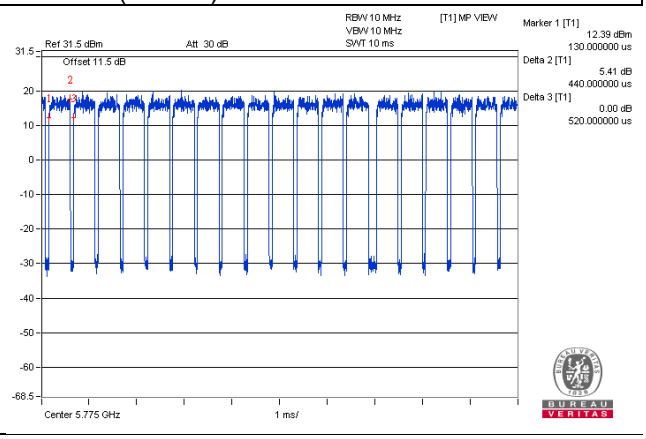
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	19 deg. C, 70% RH	120Vac, 60Hz	James Yang
RE<1G	19 deg. C, 70% RH	120Vac, 60Hz	Jones Chang
PLC	25 deg. C, 66% RH	120Vac, 60Hz	James Yang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Antony Lee

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = 2.027/2.120 = 0.956, Duty factor = 10 * log(1/0.956) = 0.19
802.11n (HT20): Duty cycle = 1.879/2.044 = 0.919, Duty factor = 10 * log(1/0.919) = 0.37
802.11n (HT40): Duty cycle = 0.927/1.104 = 0.840, Duty factor = 10 * log(1/0.840) = 0.76
802.11ac (VHT80): Duty cycle = 0.440/0.520 = 0.846, Duty factor = 10 * log(1/0.846) = 0.73

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.

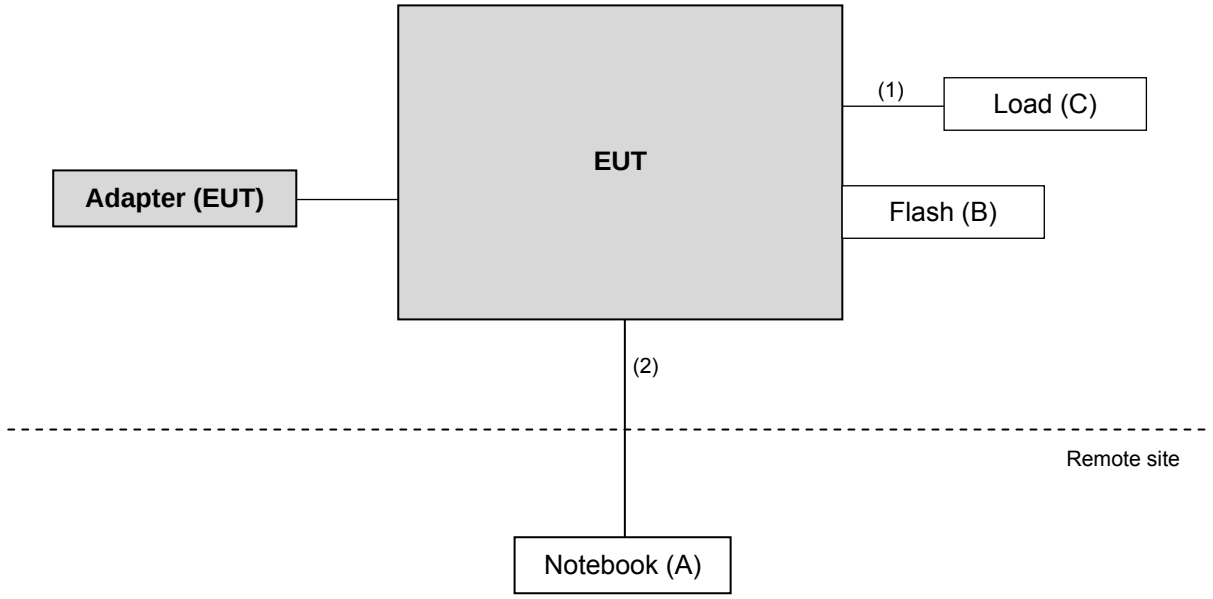
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	USB Flash	HP	v250w	01	FCC DoC Approved	-
C.	Load	NA	NA	NA	NA	-

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	1	1.8	N	0	-
2.	RJ45	1	5	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 v01r03

KDB 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 v01r03</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	Apr. 18, 2016	Apr. 17, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 16, 2016	Aug. 15, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	9120D	209	Jan. 20, 2016	Jan. 19, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Preamplifier Agilent	8447D	2944A10738	Aug. 22, 2016	Aug. 21, 2017
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (214378)	Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 106	Cable-CH3-03 (309224+12738)	Aug. 22, 2016	Aug. 21, 2017
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. 21, 2016	Aug. 20, 2017
Power Sensor	MA2411B	0738171	Aug. 11, 2016	Aug. 10, 2017
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2015	Oct. 17, 2016
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 08, 2016	Jun. 07, 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 Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 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:

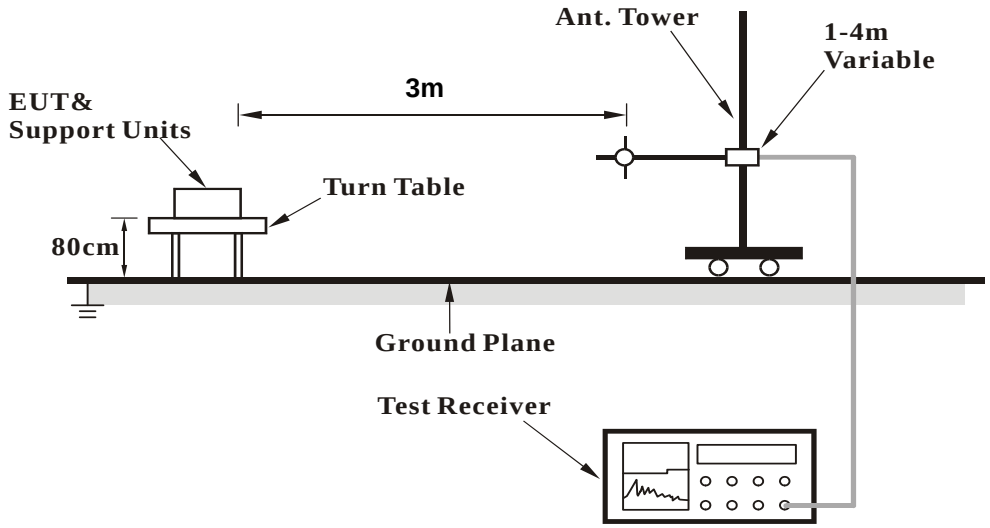
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

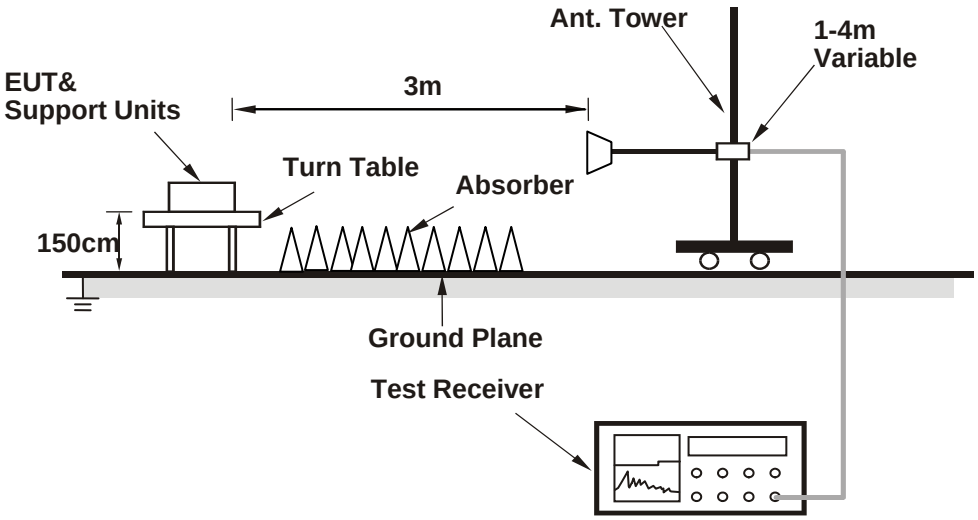
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range 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".
e. The necessary accessories enable the system in full functions.

4.1.7 Test Results

Above 1GHz Worst-Case Data:

802.11a

CHANNEL	TX Channel 36	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	70.3 PK	74.0	-3.7	1.95 H	322	65.50	4.80
2	5150.00	52.5 AV	54.0	-1.5	1.95 H	322	47.70	4.80
3	*5180.00	115.3 PK			3.17 H	267	76.60	38.70
4	*5180.00	104.4 AV			3.17 H	267	65.70	38.70
5	#10360.00	59.0 PK	74.0	-15.0	1.55 H	122	41.40	17.60
6	#10360.00	46.3 AV	54.0	-7.7	1.55 H	122	28.70	17.60
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	5150.00	58.9 PK	74.0	-15.1	2.80 V	68	54.10	4.80
2	5150.00	44.3 AV	54.0	-9.7	2.80 V	68	39.50	4.80
3	*5180.00	108.3 PK			2.70 V	104	69.60	38.70
4	*5180.00	98.0 AV			2.70 V	104	59.30	38.70
5	#10360.00	62.4 PK	74.0	-11.6	2.25 V	35	44.80	17.60
6	#10360.00	48.6 AV	54.0	-5.4	2.25 V	35	31.00	17.60

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 40	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	*5200.00	116.3 PK			3.03 H	243	77.60	38.70
2	*5200.00	105.5 AV			3.03 H	243	66.80	38.70
3	#10400.00	66.4 PK	74.0	-7.6	3.37 H	167	48.80	17.60
4	#10400.00	51.7 AV	54.0	-2.3	3.37 H	167	34.10	17.60
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	*5200.00	109.9 PK			2.96 V	199	71.20	38.70
2	*5200.00	98.8 AV			2.96 V	199	60.10	38.70
3	#10400.00	67.5 PK	74.0	-6.5	2.27 V	34	49.90	17.60
4	#10400.00	52.4 AV	54.0	-1.6	2.27 V	34	34.80	17.60

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 48	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	*5240.00	117.2 PK			2.96 H	277	78.30	38.90
2	*5240.00	106.9 AV			2.96 H	277	68.00	38.90
3	5350.00	57.8 PK	74.0	-16.2	2.57 H	249	52.30	5.50
4	5350.00	44.7 AV	54.0	-9.3	2.57 H	249	39.20	5.50
5	#10480.00	66.3 PK	74.0	-7.7	2.99 H	173	47.90	18.40
6	#10480.00	51.7 AV	54.0	-2.3	2.99 H	173	33.30	18.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	109.4 PK			2.70 V	150	70.50	38.90
2	*5240.00	98.9 AV			2.70 V	150	60.00	38.90
3	5350.00	56.6 PK	74.0	-17.4	2.19 V	143	51.10	5.50
4	5350.00	43.8 AV	54.0	-10.2	2.19 V	143	38.30	5.50
5	#10480.00	67.3 PK	74.0	-6.7	2.59 V	34	48.90	18.40
6	**#10480.00**	**52.8 AV**	**54.0**	**-1.2**	**2.59 V**	**34**	**34.40**	**18.40**

REMARKS:

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

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) 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	#5617.60	58.1 PK	68.2	-10.1	3.17 H	48	52.00	6.10
2	*5745.00	118.1 PK			3.17 H	48	78.10	40.00
3	*5745.00	107.3 AV			3.17 H	48	67.30	40.00
4	#5943.20	59.1 PK	68.2	-9.1	3.17 H	48	52.50	6.60
5	11490.00	61.2 PK	74.0	-12.8	2.74 H	176	41.90	19.30
6	11490.00	48.6 AV	54.0	-5.4	2.74 H	176	29.30	19.30
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	#5632.00	57.7 PK	68.2	-10.5	3.05 V	356	51.60	6.10
2	*5745.00	113.6 PK			3.05 V	356	73.60	40.00
3	*5745.00	102.8 AV			3.05 V	356	62.80	40.00
4	#5993.60	58.7 PK	68.2	-9.5	3.05 V	356	52.00	6.70
5	11490.00	65.9 PK	74.0	-8.1	2.75 V	112	46.60	19.30
6	11490.00	52.2 AV	54.0	-1.8	2.75 V	112	32.90	19.30

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 157	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	#5634.40	58.2 PK	68.2	-10.0	2.64 H	51	52.10	6.10
2	*5785.00	116.4 PK			2.64 H	51	76.30	40.10
3	*5785.00	106.1 AV			2.64 H	51	66.00	40.10
4	#5926.40	59.3 PK	68.2	-8.9	2.64 H	51	52.70	6.60
5	11570.00	61.0 PK	74.0	-13.0	2.25 H	208	41.80	19.20
6	11570.00	47.8 AV	54.0	-6.2	2.25 H	208	28.60	19.20
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	#5632.00	58.2 PK	68.2	-10.0	2.34 V	186	52.10	6.10
2	*5785.00	110.1 PK			2.34 V	186	70.00	40.10
3	*5785.00	101.3 AV			2.34 V	186	61.20	40.10
4	#5944.80	58.9 PK	68.2	-9.3	2.34 V	186	52.30	6.60
5	11570.00	64.6 PK	74.0	-9.4	2.35 V	112	45.40	19.20
6	11570.00	51.3 AV	54.0	-2.7	2.35 V	112	32.10	19.20

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 165	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	#5614.40	59.1 PK	68.2	-9.1	2.42 H	93	53.00	6.10
2	*5825.00	116.1 PK			2.42 H	93	76.00	40.10
3	*5825.00	105.7 AV			2.42 H	93	65.60	40.10
4	#5993.60	59.3 PK	68.2	-8.9	2.42 H	93	52.60	6.70
5	11650.00	60.4 PK	74.0	-13.6	2.13 H	260	41.10	19.30
6	11650.00	48.0 AV	54.0	-6.0	2.13 H	260	28.70	19.30
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	#5640.00	57.8 PK	68.2	-10.4	2.71 V	355	51.70	6.10
2	*5825.00	111.6 PK			2.71 V	355	71.50	40.10
3	*5825.00	101.0 AV			2.71 V	355	60.90	40.10
4	#5986.40	58.8 PK	68.2	-9.4	2.71 V	355	52.10	6.70
5	11650.00	64.6 PK	74.0	-9.4	2.74 V	112	45.30	19.30
6	11650.00	51.5 AV	54.0	-2.5	2.74 V	112	32.20	19.30

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.

802.11n (HT20)

CHANNEL	TX Channel 36	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	68.9 PK	74.0	-5.1	2.38 H	274	64.10	4.80
2	5150.00	52.6 AV	54.0	-1.4	2.38 H	274	47.80	4.80
3	*5180.00	115.4 PK			2.69 H	280	76.70	38.70
4	*5180.00	103.9 AV			2.69 H	280	65.20	38.70
5	#10360.00	58.9 PK	74.0	-15.1	2.50 H	137	41.30	17.60
6	#10360.00	46.1 AV	54.0	-7.9	2.50 H	137	28.50	17.60
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	5150.00	64.1 PK	74.0	-9.9	2.96 V	196	59.30	4.80
2	5150.00	47.2 AV	54.0	-6.8	2.96 V	196	42.40	4.80
3	*5180.00	109.5 PK			3.14 V	353	70.80	38.70
4	*5180.00	98.6 AV			3.14 V	353	59.90	38.70
5	#10360.00	61.0 PK	74.0	-13.0	2.43 V	40	43.40	17.60
6	#10360.00	48.4 AV	54.0	-5.6	2.43 V	40	30.80	17.60

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 40	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	*5200.00	114.8 PK			3.27 H	280	76.10	38.70
2	*5200.00	103.9 AV			3.27 H	280	65.20	38.70
3	#10400.00	66.3 PK	74.0	-7.7	3.28 H	168	48.70	17.60
4	#10400.00	51.5 AV	54.0	-2.5	3.28 H	168	33.90	17.60
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	*5200.00	109.6 PK			2.87 V	92	70.90	38.70
2	*5200.00	99.3 AV			2.87 V	92	60.60	38.70
3	#10400.00	67.9 PK	74.0	-6.1	2.47 V	37	50.30	17.60
4	#10400.00	52.4 AV	54.0	-1.6	2.47 V	37	34.80	17.60

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 48	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	*5240.00	117.3 PK			2.97 H	278	78.40	38.90
2	*5240.00	106.9 AV			2.97 H	278	68.00	38.90
3	5350.00	57.9 PK	74.0	-16.1	2.47 H	263	52.40	5.50
4	5350.00	44.9 AV	54.0	-9.1	2.47 H	263	39.40	5.50
5	#10480.00	67.5 PK	74.0	-6.5	3.35 H	174	49.10	18.40
6	#10480.00	52.1 AV	54.0	-1.9	3.35 H	174	33.70	18.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	108.2 PK			2.49 V	114	69.30	38.90
2	*5240.00	97.8 AV			2.49 V	114	58.90	38.90
3	5350.00	56.8 PK	74.0	-17.2	1.65 V	178	51.30	5.50
4	5350.00	44.4 AV	54.0	-9.6	1.65 V	178	38.90	5.50
5	#10480.00	68.6 PK	74.0	-5.4	2.16 V	33	50.20	18.40
6	#10480.00	52.7 AV	54.0	-1.3	2.16 V	33	34.30	18.40

REMARKS:

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

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) 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	#5632.80	58.2 PK	68.2	-10.0	1.28 H	57	52.10	6.10
2	*5745.00	116.1 PK			1.28 H	57	76.10	40.00
3	*5745.00	105.9 AV			1.28 H	57	65.90	40.00
4	#5965.60	59.8 PK	68.2	-8.4	1.28 H	57	53.10	6.70
5	11490.00	61.4 PK	74.0	-12.6	1.68 H	286	42.10	19.30
6	11490.00	48.1 AV	54.0	-5.9	1.68 H	286	28.80	19.30
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	#5645.60	57.7 PK	68.2	-10.5	3.50 V	147	51.60	6.10
2	*5745.00	112.7 PK			3.50 V	147	72.70	40.00
3	*5745.00	102.1 AV			3.50 V	147	62.10	40.00
4	#5968.00	58.6 PK	68.2	-9.6	3.50 V	147	51.90	6.70
5	11490.00	63.8 PK	74.0	-10.2	2.82 V	112	44.50	19.30
6	11490.00	50.8 AV	54.0	-3.2	2.82 V	112	31.50	19.30

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 157	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	#5632.80	57.7 PK	68.2	-10.5	1.15 H	55	51.60	6.10
2	*5785.00	117.2 PK			1.15 H	55	77.10	40.10
3	*5785.00	106.9 AV			1.15 H	55	66.80	40.10
4	#5940.00	59.4 PK	68.2	-8.8	1.15 H	55	52.80	6.60
5	11570.00	60.9 PK	74.0	-13.1	1.54 H	239	41.70	19.20
6	11570.00	47.9 AV	54.0	-6.1	1.54 H	239	28.70	19.20
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	#5624.80	57.6 PK	68.2	-10.6	2.63 V	326	51.50	6.10
2	*5785.00	110.7 PK			2.63 V	326	70.60	40.10
3	*5785.00	100.4 AV			2.63 V	326	60.30	40.10
4	#5937.60	59.0 PK	68.2	-9.2	2.63 V	326	52.40	6.60
5	11570.00	63.4 PK	74.0	-10.6	2.66 V	115	44.20	19.20
6	11570.00	49.8 AV	54.0	-4.2	2.66 V	115	30.60	19.20

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 165	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	#5632.00	58.8 PK	68.2	-9.4	1.14 H	55	52.70	6.10
2	*5825.00	116.3 PK			1.14 H	55	76.20	40.10
3	*5825.00	106.3 AV			1.14 H	55	66.20	40.10
4	#5933.60	59.0 PK	68.2	-9.2	1.14 H	55	52.40	6.60
5	11650.00	60.2 PK	74.0	-13.8	1.87 H	149	40.90	19.30
6	11650.00	47.9 AV	54.0	-6.1	1.87 H	149	28.60	19.30
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	#5629.60	57.6 PK	68.2	-10.6	2.74 V	127	51.50	6.10
2	*5825.00	111.2 PK			2.74 V	127	71.10	40.10
3	*5825.00	100.9 AV			2.74 V	127	60.80	40.10
4	#5968.80	58.2 PK	68.2	-10.0	2.74 V	127	51.50	6.70
5	11650.00	64.2 PK	74.0	-9.8	1.18 V	105	44.90	19.30
6	11650.00	50.6 AV	54.0	-3.4	1.18 V	105	31.30	19.30

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.

802.11n (HT40)

CHANNEL	TX Channel 38	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	66.4 PK	74.0	-7.6	2.53 H	253	61.60	4.80
2	5150.00	52.6 AV	54.0	-1.4	2.53 H	253	47.80	4.80
3	*5190.00	109.5 PK			2.82 H	275	70.80	38.70
4	*5190.00	99.1 AV			2.82 H	275	60.40	38.70
5	#10380.00	58.6 PK	74.0	-15.4	2.98 H	181	41.00	17.60
6	#10380.00	46.0 AV	54.0	-8.0	2.98 H	181	28.40	17.60
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	5150.00	61.3 PK	74.0	-12.7	3.49 V	286	56.50	4.80
2	5150.00	48.2 AV	54.0	-5.8	3.49 V	286	43.40	4.80
3	*5190.00	105.6 PK			3.45 V	196	66.90	38.70
4	*5190.00	94.8 AV			3.45 V	196	56.10	38.70
5	#10380.00	59.4 PK	74.0	-14.6	2.76 V	229	41.80	17.60
6	#10380.00	46.2 AV	54.0	-7.8	2.76 V	229	28.60	17.60

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 46	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	63.2 PK	74.0	-10.8	2.86 H	272	58.40	4.80
2	5150.00	48.5 AV	54.0	-5.5	2.86 H	272	43.70	4.80
3	*5230.00	114.4 PK			2.81 H	290	75.50	38.90
4	*5230.00	104.1 AV			2.81 H	290	65.20	38.90
5	#10460.00	62.9 PK	74.0	-11.1	2.85 H	165	44.70	18.20
6	#10460.00	50.3 AV	54.0	-3.7	2.85 H	165	32.10	18.20
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	60.4 PK	74.0	-13.6	2.91 V	194	55.60	4.80
2	5150.00	46.3 AV	54.0	-7.7	2.91 V	194	41.50	4.80
3	*5230.00	108.0 PK			2.90 V	196	69.10	38.90
4	*5230.00	97.3 AV			2.90 V	196	58.40	38.90
5	#10460.00	66.0 PK	74.0	-8.0	3.25 V	39	47.80	18.20
6	#10460.00	52.4 AV	54.0	-1.6	3.25 V	39	34.20	18.20

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 151	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	#5619.20	58.3 PK	68.2	-9.9	1.14 H	54	52.20	6.10
2	*5755.00	113.8 PK			1.14 H	54	73.80	40.00
3	*5755.00	103.3 AV			1.14 H	54	63.30	40.00
4	#5978.40	59.1 PK	68.2	-9.1	1.14 H	54	52.40	6.70
5	11510.00	60.6 PK	74.0	-13.4	1.76 H	193	41.30	19.30
6	11510.00	47.6 AV	54.0	-6.4	1.76 H	193	28.30	19.30
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	#5612.80	58.6 PK	68.2	-9.6	3.25 V	320	52.50	6.10
2	*5755.00	109.2 PK			3.25 V	320	69.20	40.00
3	*5755.00	99.0 AV			3.25 V	320	59.00	40.00
4	#5977.60	59.2 PK	68.2	-9.0	3.25 V	320	52.50	6.70
5	11510.00	61.3 PK	74.0	-12.7	2.46 V	284	42.00	19.30
6	11510.00	48.0 AV	54.0	-6.0	2.46 V	284	28.70	19.30

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 159	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	#5612.80	57.6 PK	68.2	-10.6	1.07 H	58	51.50	6.10
2	*5795.00	112.9 PK			1.07 H	58	72.80	40.10
3	*5795.00	102.3 AV			1.07 H	58	62.20	40.10
4	#5981.60	58.4 PK	68.2	-9.8	1.07 H	58	51.70	6.70
5	11590.00	60.9 PK	74.0	-13.1	1.39 H	264	41.70	19.20
6	11590.00	47.6 AV	54.0	-6.4	1.39 H	264	28.40	19.20
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	#5620.80	57.7 PK	68.2	-10.5	3.15 V	324	51.60	6.10
2	*5795.00	109.3 PK			3.15 V	324	69.20	40.10
3	*5795.00	98.9 AV			3.15 V	324	58.80	40.10
4	#5976.80	58.8 PK	68.2	-9.4	3.15 V	324	52.10	6.70
5	11590.00	61.5 PK	74.0	-12.5	1.68 V	254	42.30	19.20
6	11590.00	49.2 AV	54.0	-4.8	1.68 V	254	30.00	19.20

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.

802.11ac (VHT80)

CHANNEL	TX Channel 42	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	66.8 PK	74.0	-7.2	2.86 H	320	62.00	4.80
2	**5150.00**	**52.8 AV**	**54.0**	**-1.2**	**2.86 H**	**320**	**48.00**	**4.80**
3	*5210.00	105.6 PK			2.82 H	291	66.90	38.70
4	*5210.00	94.3 AV			2.82 H	291	55.60	38.70
5	5350.00	56.9 PK	74.0	-17.1	2.63 H	351	51.40	5.50
6	5350.00	44.6 AV	54.0	-9.4	2.63 H	351	39.10	5.50
7	#10420.00	59.1 PK	74.0	-14.9	1.96 H	143	41.30	17.80
8	#10420.00	46.3 AV	54.0	-7.7	1.96 H	143	28.50	17.80
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	5150.00	61.1 PK	74.0	-12.9	3.26 V	165	56.30	4.80
2	5150.00	48.5 AV	54.0	-5.5	3.26 V	165	43.70	4.80
3	*5210.00	99.8 PK			3.14 V	83	61.10	38.70
4	*5210.00	87.3 AV			3.14 V	83	48.60	38.70
5	5350.00	56.4 PK	74.0	-17.6	2.97 V	154	50.90	5.50
6	5350.00	44.8 AV	54.0	-9.2	2.97 V	154	39.30	5.50
7	#10420.00	59.3 PK	74.0	-14.7	2.48 V	256	41.50	17.80
8	#10420.00	46.2 AV	54.0	-7.8	2.48 V	256	28.40	17.80

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.

CHANNEL	TX Channel 155	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	#5643.00	63.9 PK	68.2	-4.3	1.37 H	51	57.80	6.10
2	#5643.20	64.8 PK	68.2	-3.4	1.07 H	55	58.70	6.10
3	*5775.00	109.9 PK			1.07 H	55	69.90	40.00
4	*5775.00	98.4 AV			1.07 H	55	58.40	40.00
5	#5924.00	66.8 PK	68.3	-1.5	1.09 H	56	60.20	6.60
6	#5924.80	65.5 PK	68.3	-2.8	1.07 H	55	58.90	6.60
7	11550.00	60.8 PK	74.0	-13.2	1.52 H	194	41.60	19.20
8	11550.00	47.5 AV	54.0	-6.5	1.52 H	194	28.30	19.20
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	#5632.00	58.9 PK	68.2	-9.3	3.10 V	320	52.80	6.10
2	*5775.00	106.0 PK			3.10 V	320	66.00	40.00
3	*5775.00	94.0 AV			3.10 V	320	54.00	40.00
4	#5977.60	58.8 PK	68.2	-9.4	3.10 V	320	52.10	6.70
5	11550.00	60.5 PK	74.0	-13.5	2.47 V	293	41.30	19.20
6	11550.00	47.5 AV	54.0	-6.5	2.47 V	293	28.30	19.20

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.

Below 1GHz Worst-Case Data: 802.11n (HT20)

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	29.9 QP	40.0	-10.1	2.00 H	120	44.50	-14.60
2	214.61	27.6 QP	43.5	-15.9	1.50 H	259	43.60	-16.00
3	370.15	41.0 QP	46.0	-5.0	1.00 H	120	51.60	-10.60
4	599.58	40.6 QP	46.0	-5.4	1.50 H	311	46.00	-5.40
5	751.23	39.2 QP	46.0	-6.8	1.00 H	188	41.40	-2.20
6	875.67	41.6 QP	46.0	-4.4	1.00 H	185	41.70	-0.10
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	43.51	37.8 QP	40.0	-2.2	1.00 V	346	52.60	-14.80
2	374.04	36.2 QP	46.0	-9.8	1.49 V	197	46.70	-10.50
3	562.64	40.5 QP	46.0	-5.5	1.00 V	268	47.20	-6.70
4	599.58	43.9 QP	46.0	-2.1	1.00 V	255	49.30	-5.40
5	751.23	35.5 QP	46.0	-10.5	1.49 V	173	37.70	-2.20
6	875.67	39.0 QP	46.0	-7.0	1.00 V	110	39.10	-0.10

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

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

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 23, 2015	Dec. 22, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 26, 2015	Dec. 25, 2016
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 11, 2016	Jan. 10, 2017
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 26, 2016	Jul. 25, 2017
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.

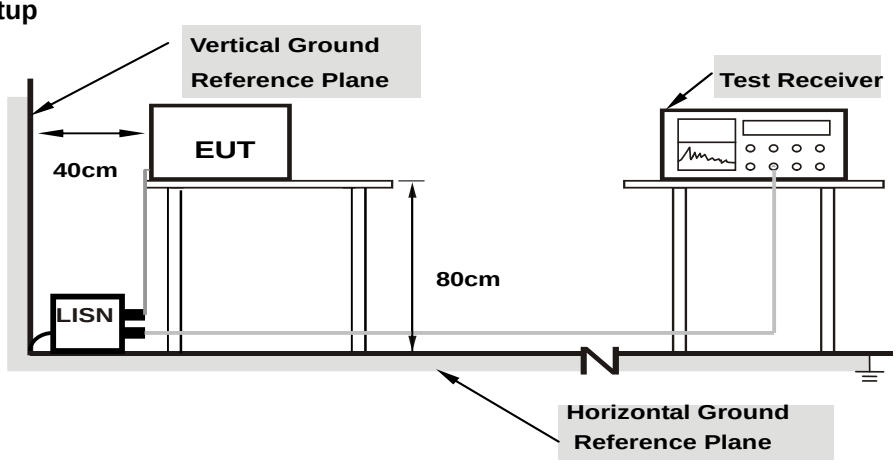
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

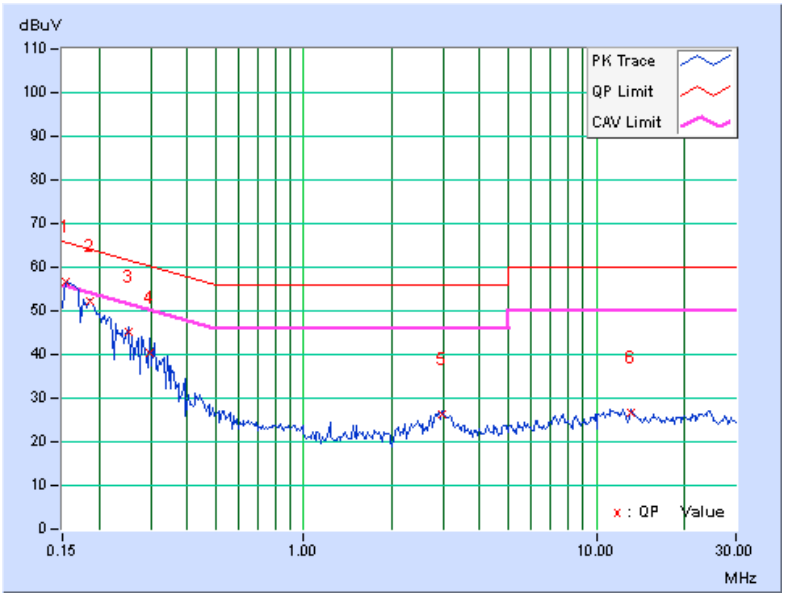
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.12	46.37	26.00	56.49	36.12	65.79	55.79	-9.30	-19.67
2	0.18516	10.15	42.10	25.71	52.25	35.86	64.25	54.25	-12.00	-18.39
3	0.25156	10.17	35.07	15.27	45.24	25.44	61.71	51.71	-16.47	-26.27
4	0.29844	10.17	30.06	16.19	40.23	26.36	60.29	50.29	-20.06	-23.93
5	2.97656	10.31	16.09	8.55	26.40	18.86	56.00	46.00	-29.60	-27.14
6	13.14844	10.52	16.20	1.54	26.72	12.06	60.00	50.00	-33.28	-37.94

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.

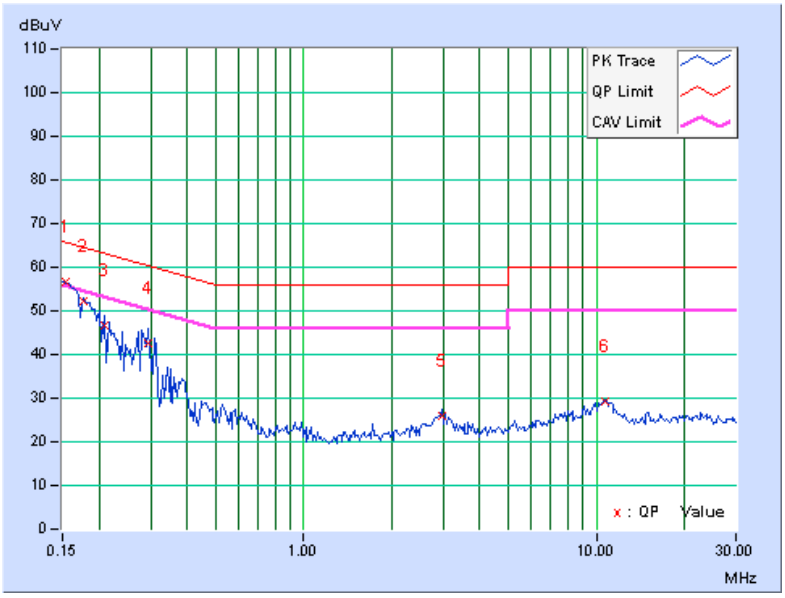


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	**0.15391**	**10.13**	**46.55**	**26.39**	**56.68**	**36.52**	**65.79**	**55.79**	**-9.11**	**-19.27**
2	0.17734	10.15	42.08	23.59	52.23	33.74	64.61	54.61	-12.38	-20.87
3	0.20859	10.16	36.68	22.77	46.84	32.93	63.26	53.26	-16.42	-20.33
4	0.29453	10.17	32.45	20.22	42.62	30.39	60.40	50.40	-17.78	-20.01
5	2.96484	10.34	15.68	7.23	26.02	17.57	56.00	46.00	-29.98	-28.43
6	10.74219	10.57	18.59	8.57	29.16	19.14	60.00	50.00	-30.84	-30.86

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

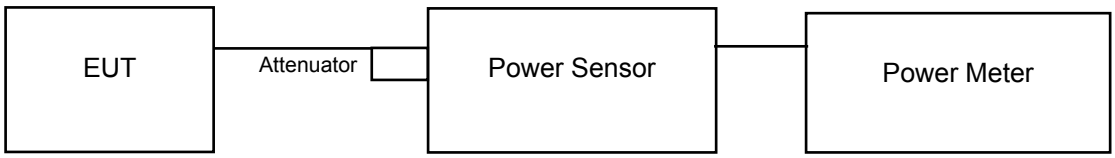
Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client 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

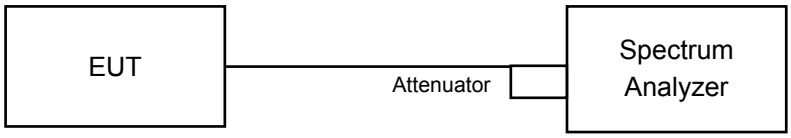
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz 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

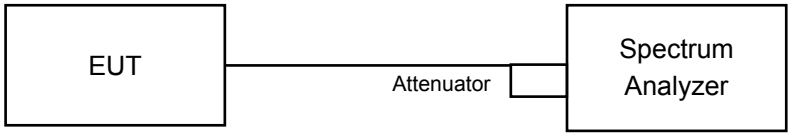
For Power Output Measurement
802.11a, 802.11n (HT20), 802.11n (HT40)



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 fromTest 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

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	18.22	17.22	17.52	175.591	22.45	30	Pass
40	5200	18.35	17.94	18.39	199.645	23.00	30	Pass
48	5240	18.80	18.60	18.65	221.584	23.46	30	Pass
149	5745	20.27	19.65	18.92	276.654	24.42	30	Pass
157	5785	20.32	19.72	18.93	279.566	24.46	30	Pass
165	5825	20.40	19.10	18.71	265.233	24.24	30	Pass

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	Chain 2				
36	5180	17.63	17.41	17.73	172.317	22.36	30	Pass
40	5200	18.13	17.92	18.24	193.638	22.87	30	Pass
48	5240	18.69	18.87	19.25	235.191	23.71	30	Pass
149	5745	20.27	19.84	19.15	**285.021**	24.55	30	Pass
157	5785	20.22	19.92	18.99	282.621	24.51	30	Pass
165	5825	19.77	18.97	19.23	257.481	24.11	30	Pass

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	Chain 2				
38	5190	15.54	14.98	15.31	101.250	20.05	30	Pass
46	5230	18.96	19.08	19.56	**249.980**	23.98	30	Pass
151	5755	19.75	19.66	19.32	272.383	24.35	30	Pass
159	5795	19.94	19.84	19.42	282.509	24.51	30	Pass

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	Chain 2				
42	5210	14.86	14.50	14.45	86.665	19.38	30	Pass
155	5775	19.12	18.59	18.41	223.278	23.49	30	Pass

26dB Bandwidth:

802.11a

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	27.29	23.78	23.76	Pass
40	5200	30.13	24.33	25.29	Pass
48	5240	28.75	25.68	26.44	Pass

802.11n (HT20)

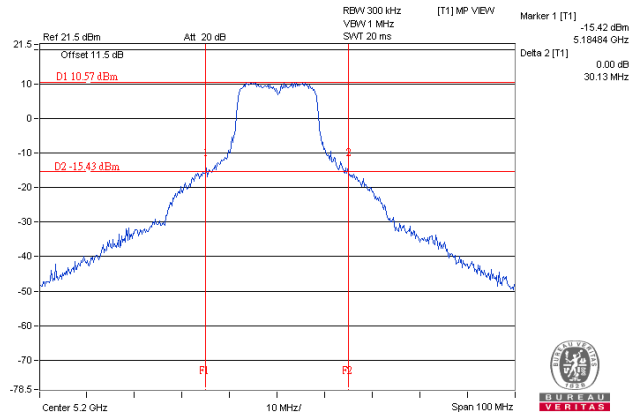
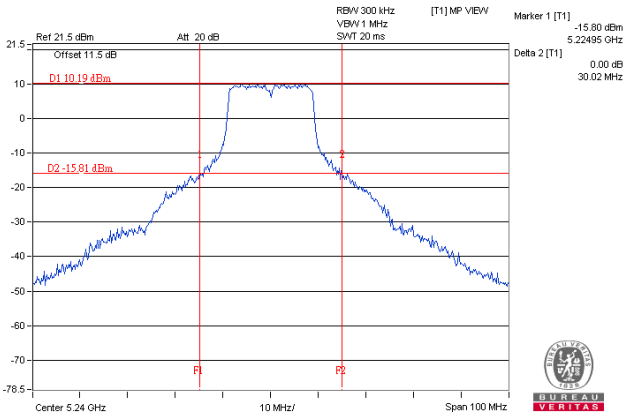
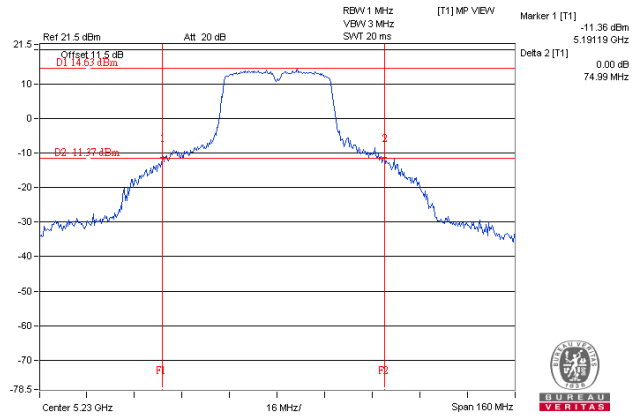
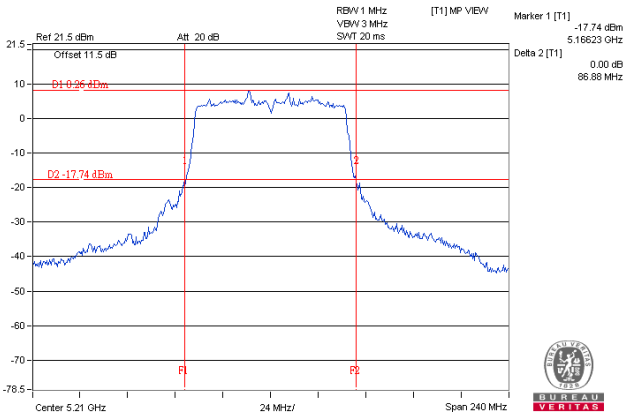
Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	28.47	24.68	25.10	Pass
40	5200	29.64	24.30	25.50	Pass
48	5240	30.02	24.77	25.88	Pass

802.11n (HT40)

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
38	5190	47.14	45.33	45.36	Pass
46	5230	74.99	67.96	62.01	Pass

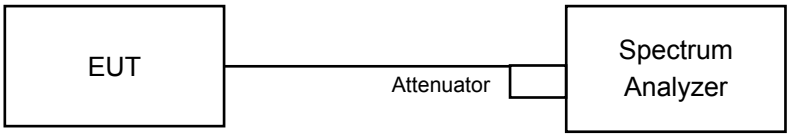
802.11ac (VHT80)

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
42	5210	86.69	86.88	86.33	Pass

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

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 Sample. 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	Chain 2
36	5180	17.04	16.92	16.80
40	5200	17.16	16.92	16.80
48	5240	17.16	16.92	16.92
149	5745	18.00	17.47	17.13
157	5785	18.48	17.88	17.04
165	5825	18.96	17.40	17.16

802.11n (HT20)

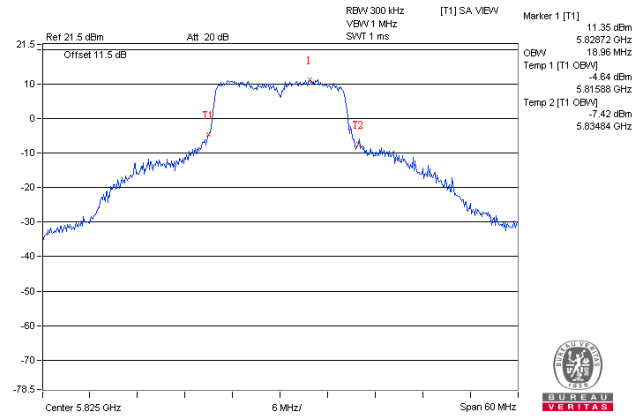
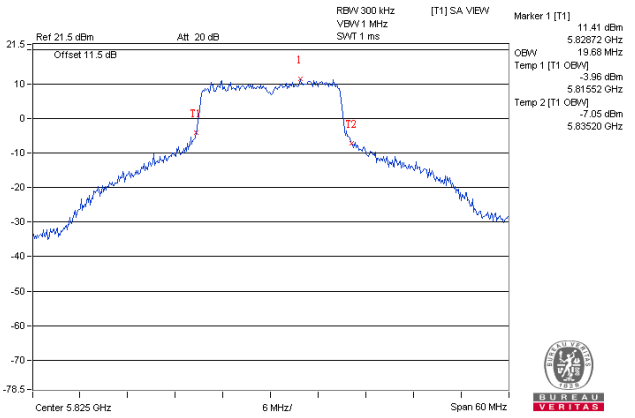
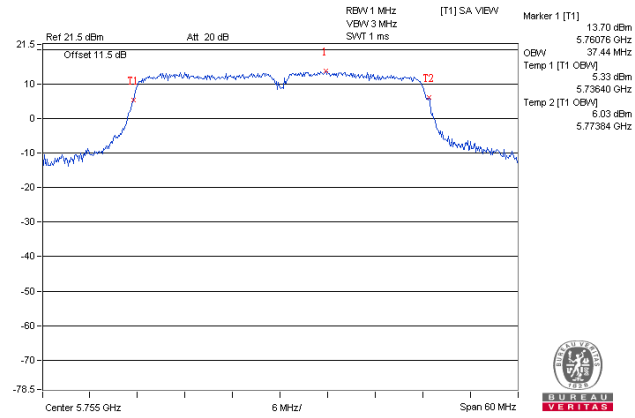
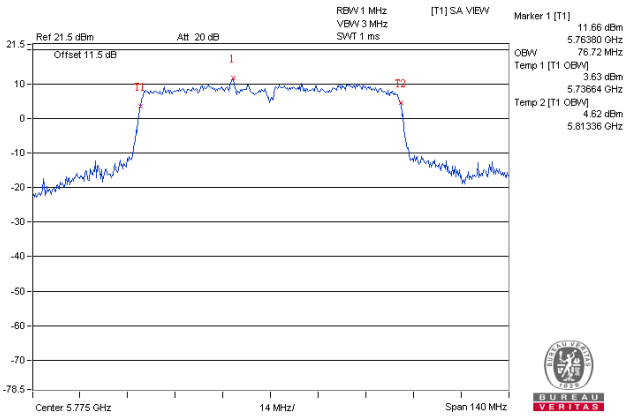
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
36	5180	18.00	18.00	17.76
40	5200	18.12	17.88	17.88
48	5240	18.24	18.00	18.00
149	5745	18.84	18.72	18.12
157	5785	19.32	18.48	18.12
165	5825	19.68	18.12	18.24

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
38	5190	36.96	36.96	36.84
46	5230	37.32	37.08	37.20
151	5755	37.44	37.44	37.32
159	5795	37.44	37.32	37.08

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
42	5210	76.16	76.16	76.16
155	5775	76.72	76.44	76.16

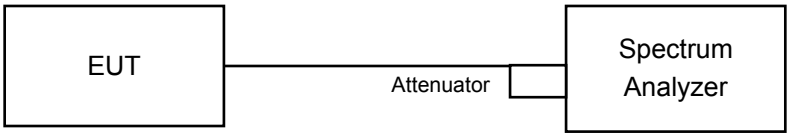
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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-1 band:
Using method SA-2

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 and add 10 log (1/duty cycle)

For U-NII-3 band:

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 and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as Item 4.3.6.

4.5.7 Test Results

For U-NII-1 Band

802.11a

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
36	5180	5.10	5.51	4.83	9.93	0.19	10.12	12.33	Pass
40	5200	6.24	5.02	5.84	10.51	0.19	10.70	12.33	Pass
48	5240	6.03	6.23	6.10	10.90	0.19	11.09	12.33	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.9dBi + 10log(3) = 10.67dBi > 6dBi , so the power density limit shall be reduced to 17-(10.67-6) =12.33dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
36	5180	4.45	5.05	4.31	9.38	0.37	9.75	12.33	Pass
40	5200	5.03	5.80	5.48	10.22	0.37	10.59	12.33	Pass
48	5240	5.69	5.42	5.90	10.44	0.37	10.81	12.33	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.9dBi + 10log(3) = 10.67dBi > 6dBi , so the power density limit shall be reduced to 17-(10.67-6) =12.33dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

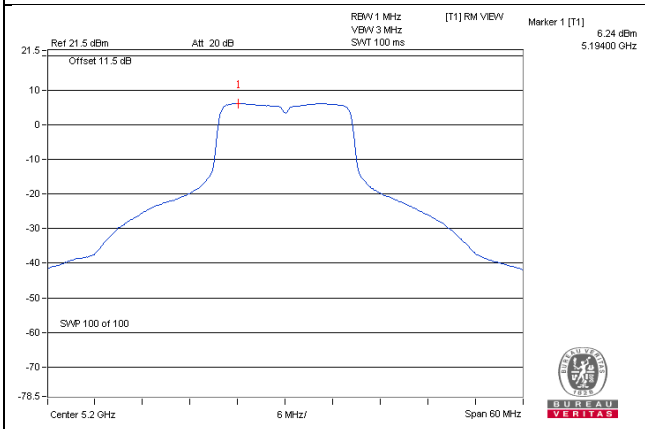
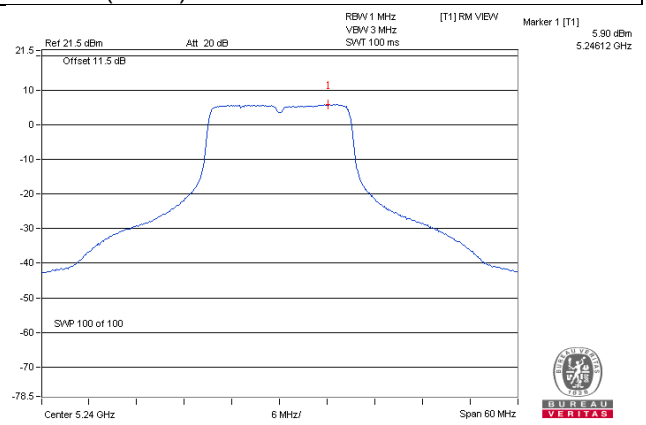
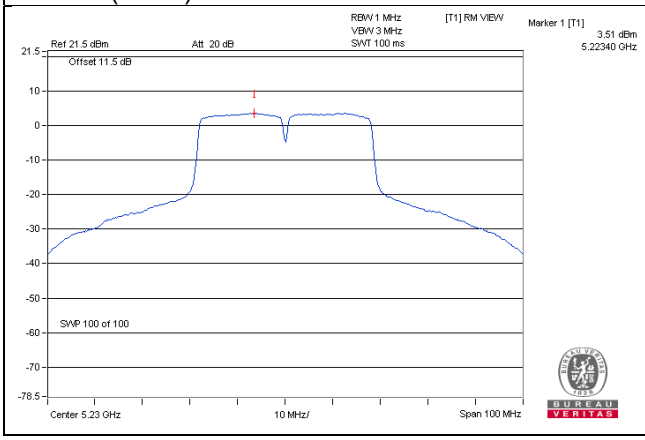
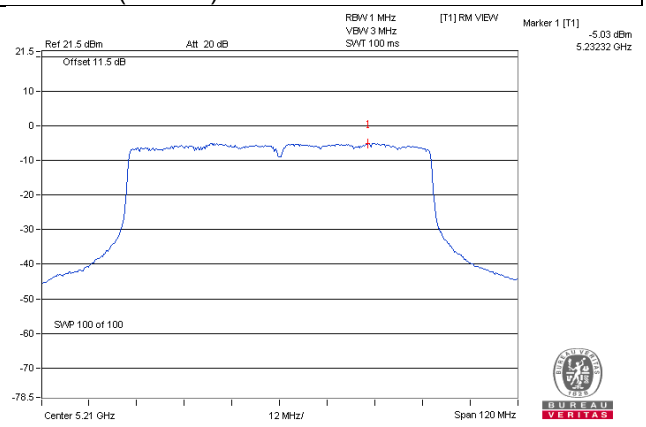
Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
38	5190	-1.19	-1.80	-0.76	3.54	0.76	4.30	12.33	Pass
46	5230	3.19	3.29	3.40	8.06	0.76	8.82	12.33	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.9dBi + 10log(3) = 10.67dBi > 6dBi , so the power density limit shall be reduced to 17-(10.67-6) =12.33dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
42	5210	-5.33	-5.51	-5.10	-0.54	0.73	0.19	12.33	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.9dBi + 10log(3) = 10.67dBi > 6dBi , so the power density limit shall be reduced to 17-(10.67-6) =12.33dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 0 / CH 40	802.11n (HT20) / Chain 2 / CH 48
	
802.11n (HT40) / Chain 2 / CH 46	802.11ac (VHT80) / Chain 2 / CH 42
	

For U-NII-3 Band

802.11a

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=3) dB	Duty Factor	Total PSD (dBm /500kHz)	Limit (dBm /500kHz)	Pass /Fail
0	149	5745	-1.08	1.14	4.77	0.19	6.10	25.33	Pass
	157	5785	-1.04	1.18	4.77	0.19	6.14	25.33	Pass
	165	5825	-0.88	1.34	4.77	0.19	6.30	25.33	Pass
1	149	5745	-1.66	0.56	4.77	0.19	5.52	25.33	Pass
	157	5785	-0.97	1.25	4.77	0.19	6.21	25.33	Pass
	165	5825	-1.61	0.61	4.77	0.19	5.57	25.33	Pass
2	149	5745	-2.64	-0.42	4.77	0.19	4.54	25.33	Pass
	157	5785	-2.71	-0.49	4.77	0.19	4.47	25.33	Pass
	165	5825	-2.49	-0.27	4.77	0.19	4.69	25.33	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.9dBi + 10log(3) = 10.67dBi > 6dBi , so the power density limit shall be reduced to 30-(10.67-6) = 25.33dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=3) dB	Duty Factor	Total PSD (dBm /500kHz)	Limit (dBm /500kHz)	Pass /Fail
0	149	5745	-1.79	0.43	4.77	0.37	5.57	25.33	Pass
	157	5785	-1.42	0.80	4.77	0.37	5.94	25.33	Pass
	165	5825	-1.14	1.08	4.77	0.37	6.22	25.33	Pass
1	149	5745	-2.05	0.17	4.77	0.37	5.31	25.33	Pass
	157	5785	-1.71	0.51	4.77	0.37	5.65	25.33	Pass
	165	5825	-2.57	-0.35	4.77	0.37	4.79	25.33	Pass
2	149	5745	-3.29	-1.07	4.77	0.37	4.07	25.33	Pass
	157	5785	-3.24	-1.02	4.77	0.37	4.12	25.33	Pass
	165	5825	-2.85	-0.63	4.77	0.37	4.51	25.33	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.9dBi + 10log(3) = 10.67dBi > 6dBi , so the power density limit shall be reduced to 30-(10.67-6) = 25.33dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

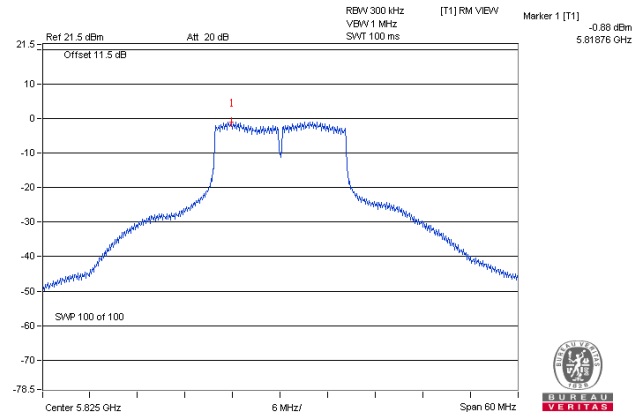
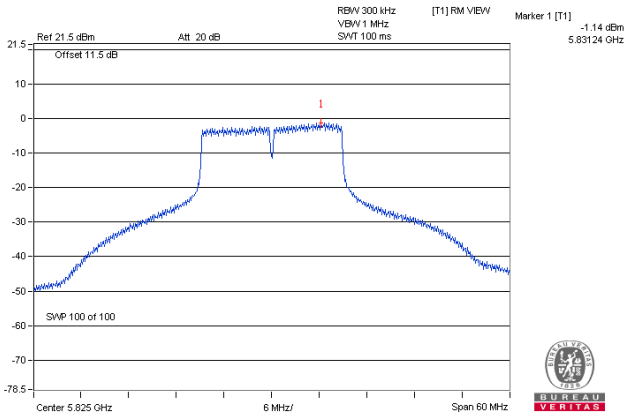
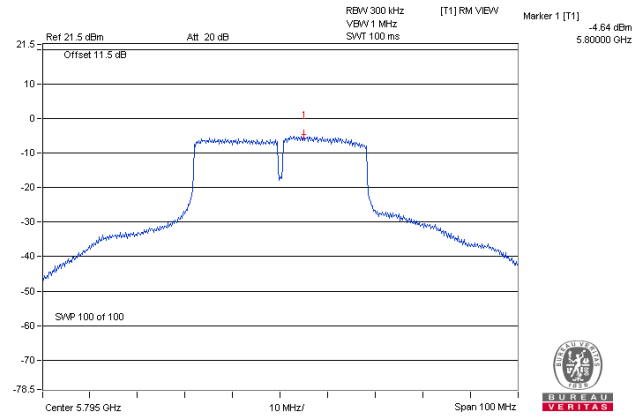
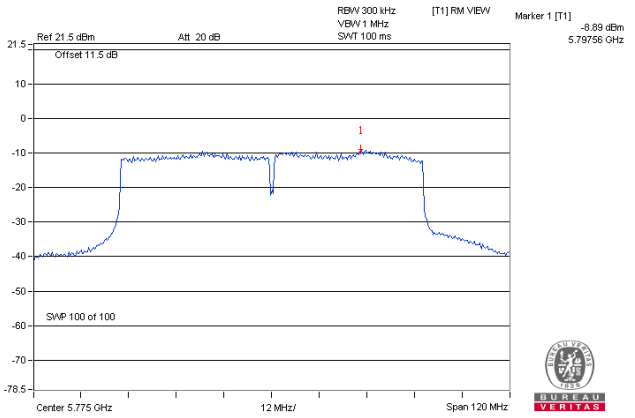
TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=3) dB	Duty Factor	Total PSD (dBm /500kHz)	Limit (dBm /500kHz)	Pass /Fail
0	151	5755	-5.22	-3.00	4.77	0.76	2.53	25.33	Pass
	159	5795	-4.64	-2.42	4.77	0.76	3.11	25.33	Pass
1	151	5755	-5.58	-3.36	4.77	0.76	2.17	25.33	Pass
	159	5795	-5.10	-2.88	4.77	0.76	2.65	25.33	Pass
2	151	5755	-5.96	-3.74	4.77	0.76	1.79	25.33	Pass
	159	5795	-5.86	-3.64	4.77	0.76	1.89	25.33	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.9dBi + 10log(3) = 10.67dBi > 6dBi , so the power density limit shall be reduced to 30-(10.67-6) = 25.33dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=3) dB	Duty Factor	Total PSD (dBm /500kHz)	Limit (dBm /500kHz)	Pass /Fail
0	155	5775	-8.89	-6.67	4.77	0.73	-1.17	25.33	Pass
1	155	5775	-9.65	-7.43	4.77	0.73	-1.93	25.33	Pass
2	155	5775	-9.88	-7.66	4.77	0.73	-2.16	25.33	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.9dBi + 10log(3) = 10.67dBi > 6dBi , so the power density limit shall be reduced to 30-(10.67-6) = 25.33dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

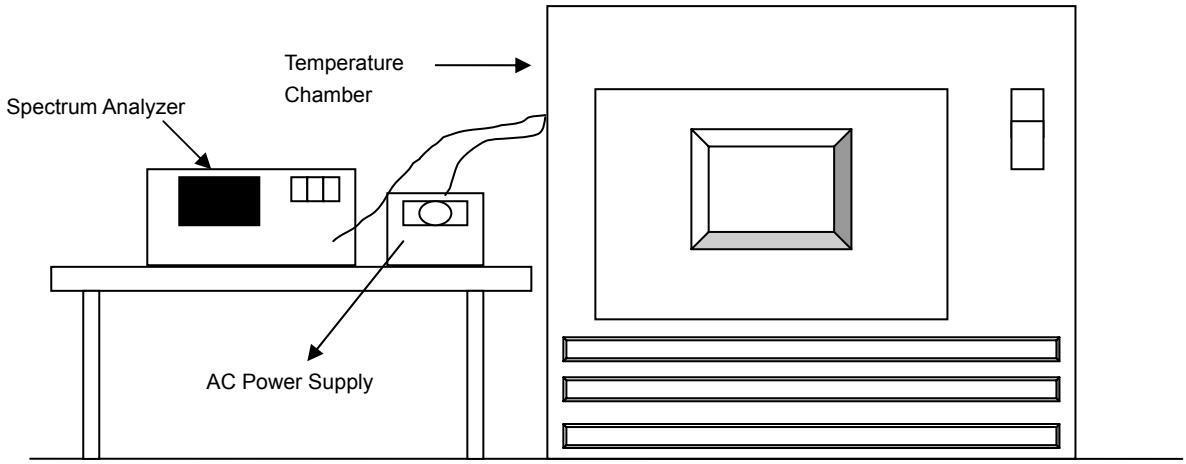
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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 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.

4.6.4 Deviation from Test Standard

No deviation.

4.6.5 EUT Operating Condition

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

4.6.6 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
50	120	5179.9838	-0.00031	5179.9836	-0.00032	5179.9818	-0.00035	5179.9823	-0.00034
40	120	5180.0259	0.00050	5180.0251	0.00048	5180.0234	0.00045	5180.0246	0.00047
30	120	5179.9855	-0.00028	5179.987	-0.00025	5179.9902	-0.00019	5179.9901	-0.00019
20	120	5180.0228	0.00044	5180.0225	0.00043	5180.0228	0.00044	5180.026	0.00050
10	120	5179.9982	-0.00003	5179.9969	-0.00006	5179.9961	-0.00008	5179.9956	-0.00008
0	120	5179.9978	-0.00004	5179.9954	-0.00009	5179.9956	-0.00008	5179.9952	-0.00009
-10	120	5180.0016	0.00003	5180.0016	0.00003	5180.0059	0.00011	5180.0011	0.00002
-20	120	5180.0036	0.00007	5180.0021	0.00004	5180.0043	0.00008	5180.0071	0.00014
-30	120	5180.0105	0.00020	5180.0111	0.00021	5180.0097	0.00019	5180.0113	0.00022

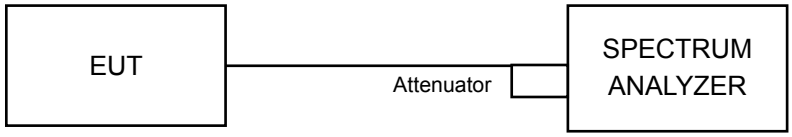
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0236	0.00046	5180.0229	0.00044	5180.023	0.00044	5180.0267	0.00052
	120	5180.0228	0.00044	5180.0225	0.00043	5180.0228	0.00044	5180.026	0.00050
	102	5180.0231	0.00045	5180.0235	0.00045	5180.0233	0.00045	5180.0264	0.00051

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

Chan.	Freq. (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	16.32	16.35	16.35	0.5	Pass
157	5785	16.37	15.76	16.36	0.5	Pass
165	5825	16.12	16.36	16.39	0.5	Pass

802.11n (HT20)

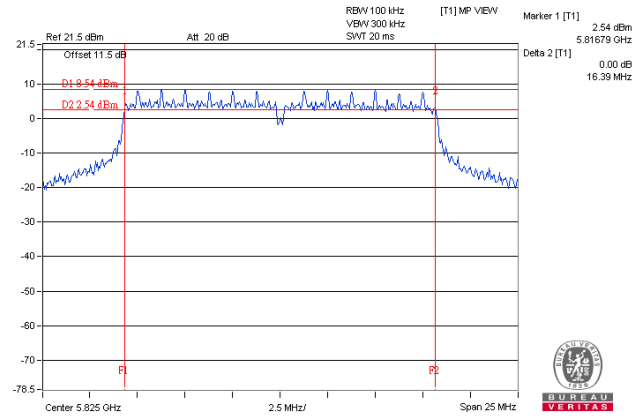
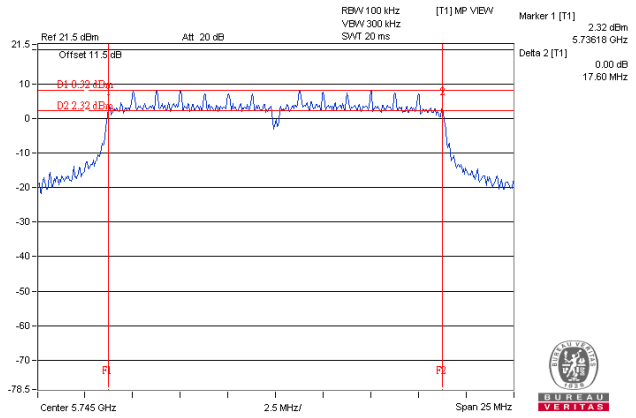
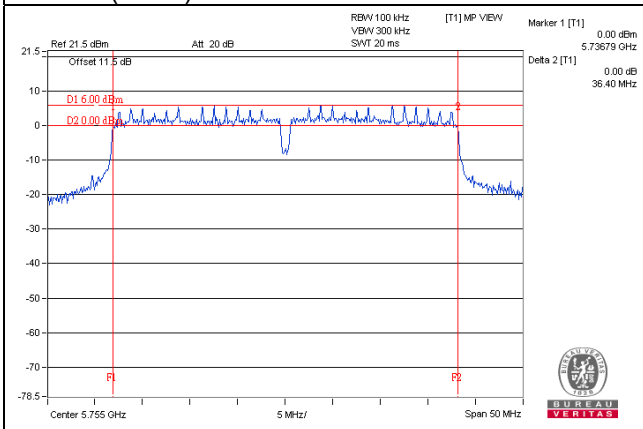
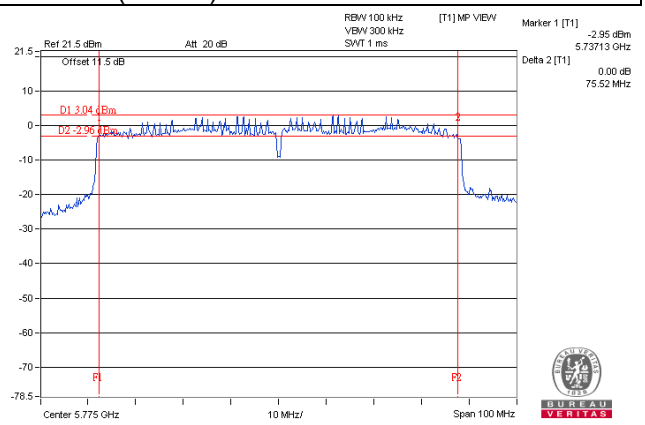
Chan.	Freq. (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	17.31	17.56	17.60	0.5	Pass
157	5785	16.96	17.31	17.60	0.5	Pass
165	5825	16.95	17.05	17.16	0.5	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
151	5755	36.40	35.60	35.89	0.5	Pass
159	5795	36.11	35.29	35.87	0.5	Pass

802.11ac (VHT80)

Chan.	Freq. (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
155	5775	75.52	72.93	73.31	0.5	Pass

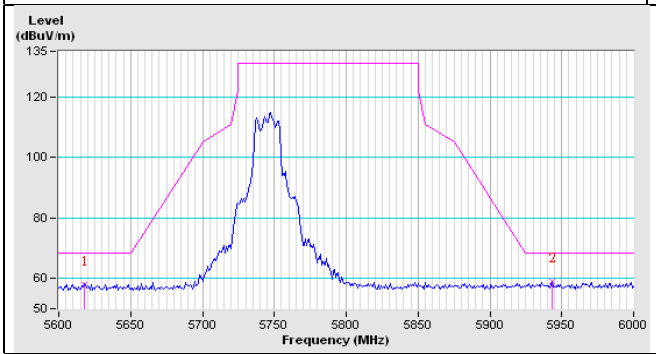
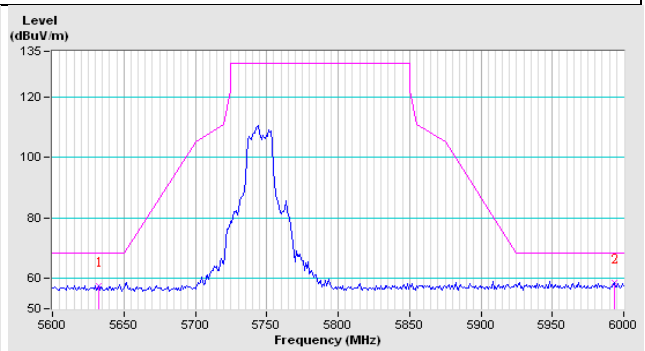
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

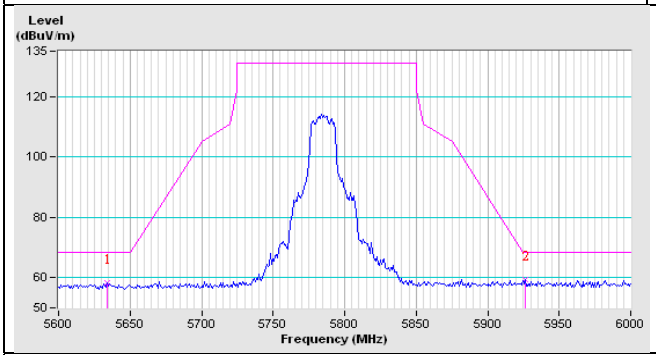
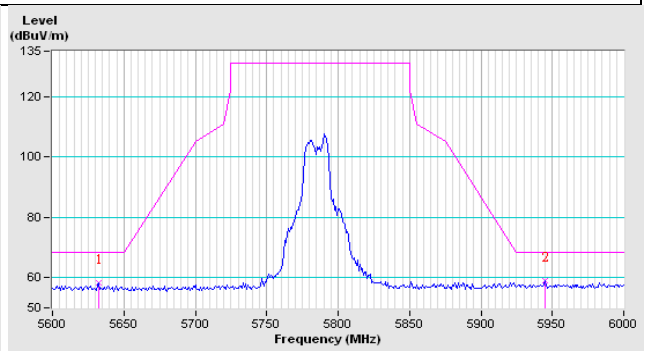
5 Pictures of Test Arrangements

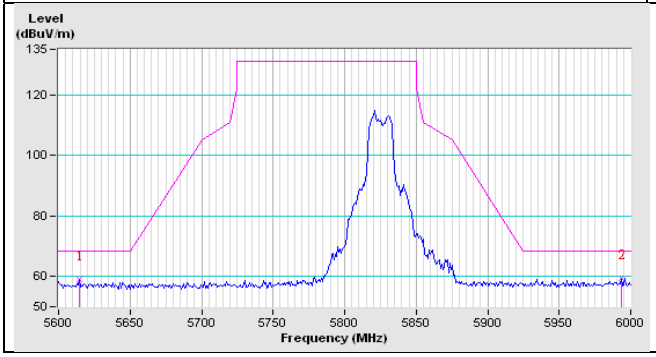
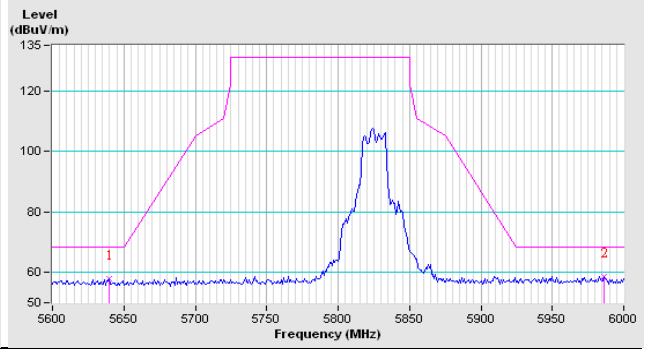
Please refer to the attached file (Test Setup Photo).

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

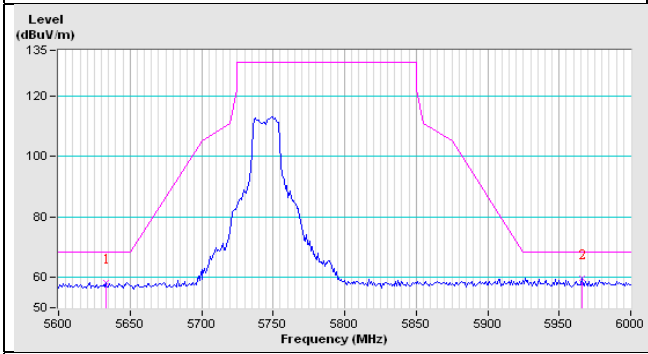
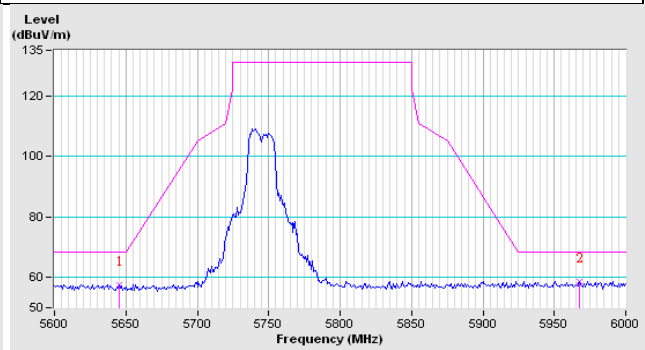
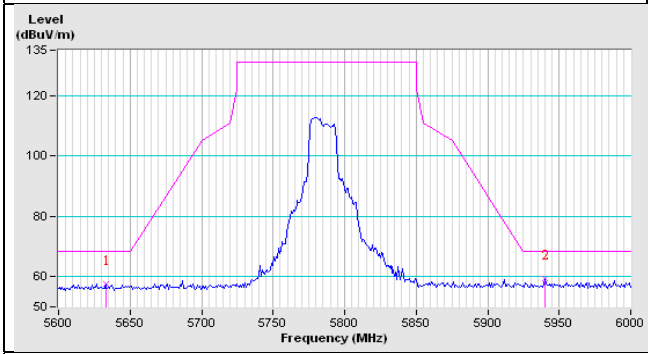
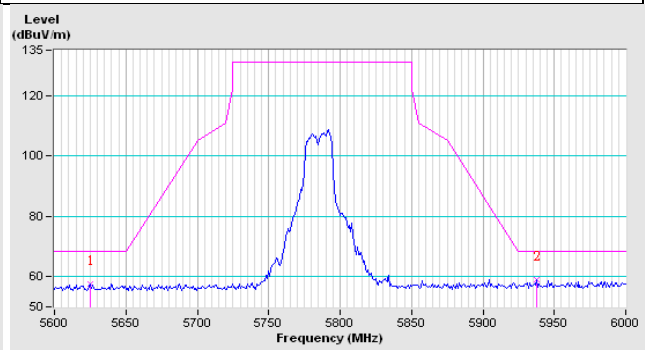
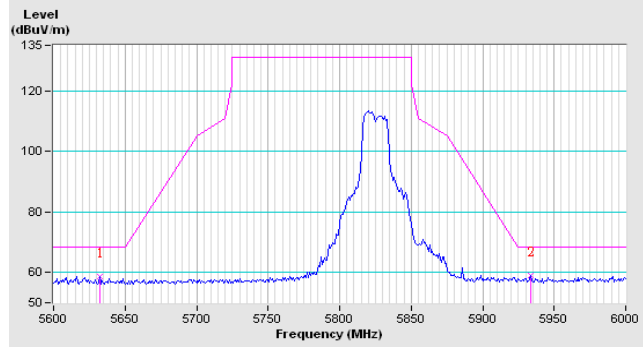
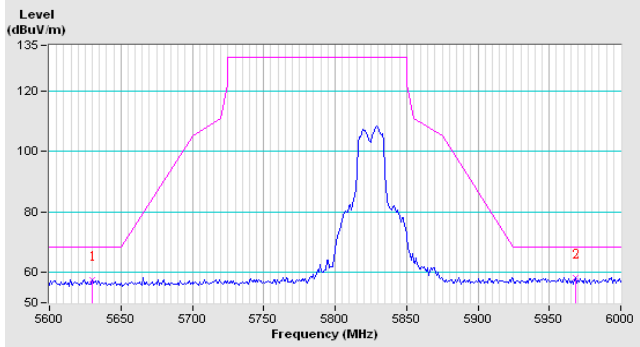
802.11a

CH149	
Horizontal	Vertical
	

CH157	
Horizontal	Vertical
	

CH165	
Horizontal	Vertical
	

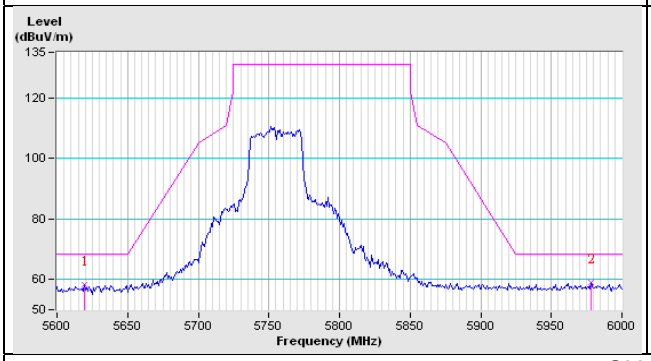
802.11n (HT20)

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

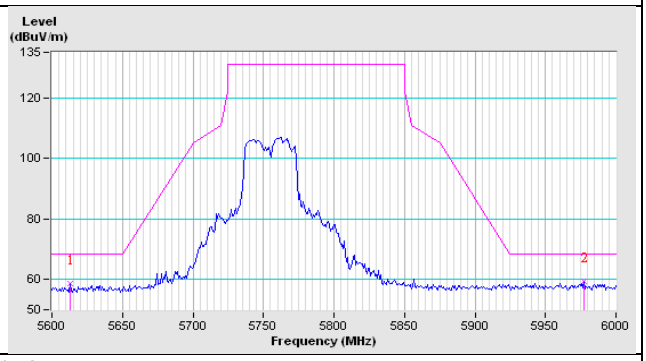
802.11n (HT40)

CH151

Horizontal

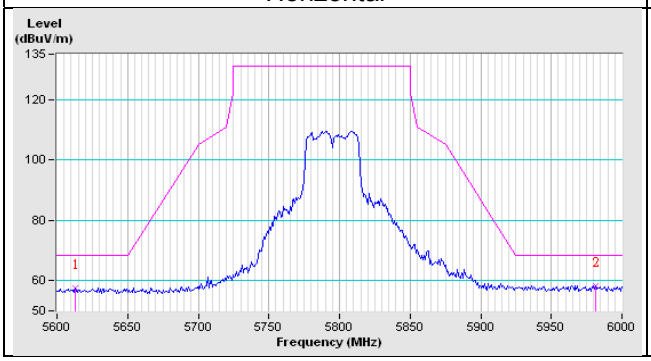


Vertical

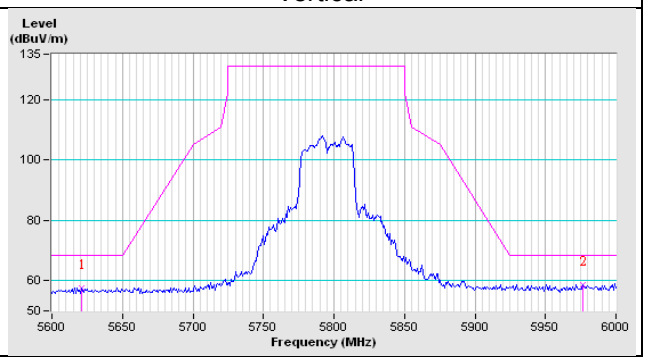


CH159

Horizontal



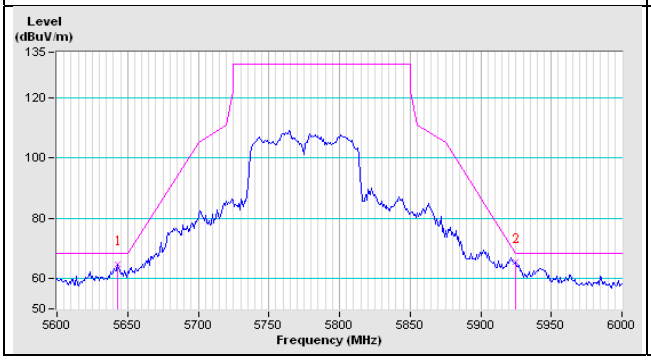
Vertical



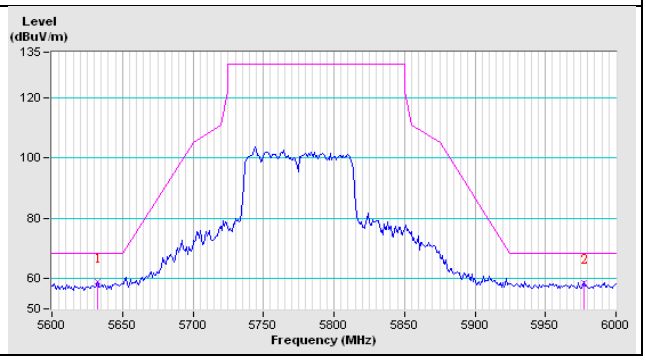
802.11ac (VHT80)

CH155

Horizontal



Vertical



Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

--- END ---