FCC Test Report

Report No.:	RF170110C39-1
FCC ID:	I88WAP7205
Model:	WAP7205
Series Model:	WAP6606
Received Date:	Jan. 10, 2017
Test Date:	Jan. 17 ~ Feb. 15, 2017
Issued Date:	Feb. 24, 2017
Applicant:	Zyxel Communications Corporation
Address:	No. 2 Industry East RD. IX, Hsinchu Science Park, Hsinchu 30075, Taiwan
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
RF170110C39-1	Original release	Feb. 24, 2017

1 Certificate of Conformity

Product:	AC1300 Gigabit Ethernet MoCA Extender
Brand:	ZYXEL
Model:	WAP7205
Series Model:	WAP6606
Sample Status:	Engineering sample
Applicant:	Zyxel Communications Corporation
Test Date:	Jan. 17 ~ Feb. 15, 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:** Feb. 24, 2017

Pettie Chen / Senior Specialist

Approved by : _____ , **Date:** Feb. 24, 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 -11.03dB at 0.26328MHz
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.4dB at 5647.20MHz
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	3.63 dB
	200MHz ~1000MHz	3.64 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	AC1300 Gigabit Ethernet MoCA Extender
Brand	ZYXEL
Model	WAP7205
Series Model	WAP6606
Model Difference	Refer to note as below
Status of EUT	Engineering sample
Test Software	QRCT
CPU Model	IPQ4019
RF Chip Model	IPQ4019
Firmware Version	ABHH0C0
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 300Mbps 802.11ac: up to 867Mbps
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	CDD Mode 5180 ~ 5240MHz: 310.155mW 5745 ~ 5825MHz: 378.665mW Beamforming Mode 5180 ~ 5240MHz: 309.803mW 5745 ~ 5825MHz: 378.665mW
Antenna Type	PCB Antenna with 3.2dBi gain
Antenna Connector	IPEX
Accessory Device	Stand (Brand: Chung Hua Plastic Industry Co., Ltd., P/N: 13BK-1UB0201), Adapter
Data Cable Supplied	NA

Note:

1. All models are listed as below. Model WAP7205 is the representatives for final test.

Brand	Model	Difference
ZYXEL	WAP7205	With MoCA function (with High Band MoCA PCB board & Full Band MoCA PCB board)
ZYXEL	WAP6606	Without MoCA function

* After pretesting, the EUT with High Band MoCA PCB board was the worst for the final tests.

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 HT20/HT40 and 802.11ac mode for VHT20/VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

* For 5GHz band, CDD mode is the worst case for final radiated emission below 1GHz and power line conducted emission tests after pretesting CDD mode and beamforming mode.

3. The EUT consumes power from the following adapter.

Brand	Asian Power Devices Inc.
Model	WB-18D12R
Input Power	100-240V~50-60Hz 0.5A Max
Output Power	12V/ 1.5A
Power Line	1.8m non-shielded power cable without core

4. 2.4GHz, 5GHz technology can transmit at same time.

5. Spurious emission of the simultaneous operation (2.4GHz, 5GHz) has been evaluated and no non-compliance was found.

6. The power settings are list as below.

CDD Mode						
	802.11a	802.11n (HT20)		802.11n (HT40)		802.11ac (VHT80)
CH 36	21	20	CH 38	18	CH 42	17.5
CH 40	23	23	CH 46	22	CH 155	20.5
CH 48	22	22	CH 151	23		
CH 149	23	23	CH 159	23		
CH 157	23	23				
CH 165	23	23				
Beamforming Mode						
	802.11n (HT20)			802.11n (HT40)		802.11ac (VHT80)
CH 36	20		CH 38	18	CH 42	17.5
CH 40	23		CH 46	22	CH 155	20
CH 48	22		CH 151	23		
CH 149	23		CH 159	23		
CH 157	23					
CH 165	23					

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 **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	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	6.5
-	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
-	802.11ac (VHT80)		42	42	OFDM	BPSK	58.5
-	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	6.5
-	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	13.5
-	802.11ac (VHT80)		155	155	OFDM	BPSK	58.5

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)
-	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6.0
	802.11a	5745-5825	149 to 165		OFDM	BPSK	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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6.0
	802.11a	5745-5825	149 to 165		OFDM	BPSK	6.0

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	6.5
-	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
-	802.11ac (VHT80)		42	42	OFDM	BPSK	58.5
-	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	6.5
-	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	13.5
-	802.11ac (VHT80)		155	155	OFDM	BPSK	58.5

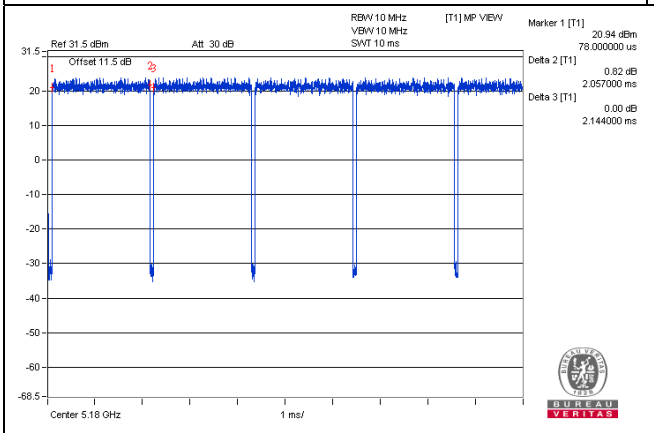
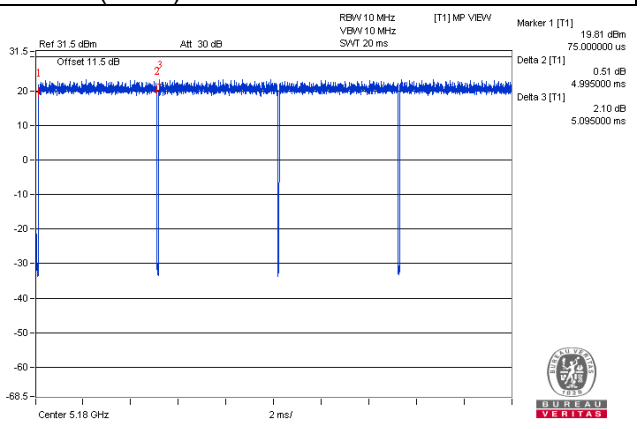
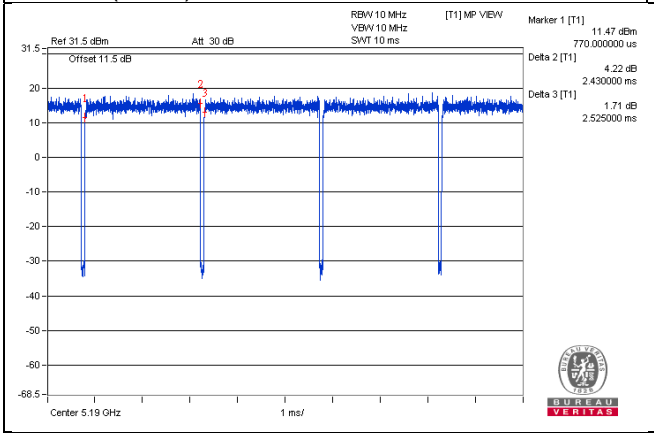
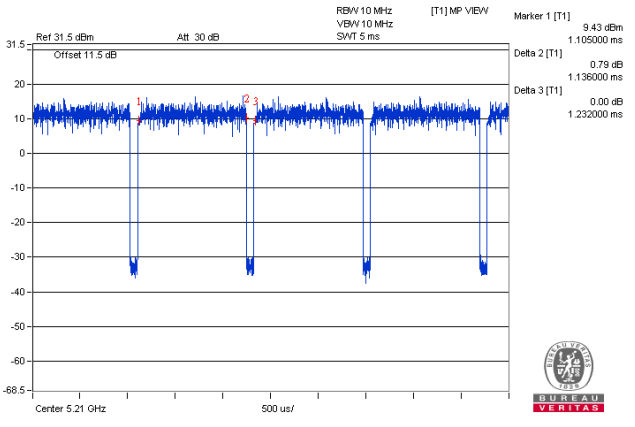
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Matthew Yang
RE<1G	24deg. C, 68%RH	120Vac, 60Hz	Matthew Yang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Matthew Yang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Leo Tsai, Antony Lee

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 = 2.057/2.144 = 0.959, Duty factor = 10 * log(1/0.959) = 0.18
802.11n (HT20): Duty cycle = 4.995/5.095 = 0.980
802.11n (HT40): Duty cycle = 2.43/2.525 = 0.962, Duty factor = 10 * log(1/0.962) = 0.17
802.11ac (VHT80): Duty cycle = 1.136/1.232 = 0.922, Duty factor = 10 * log(1/0.922) = 0.35

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.

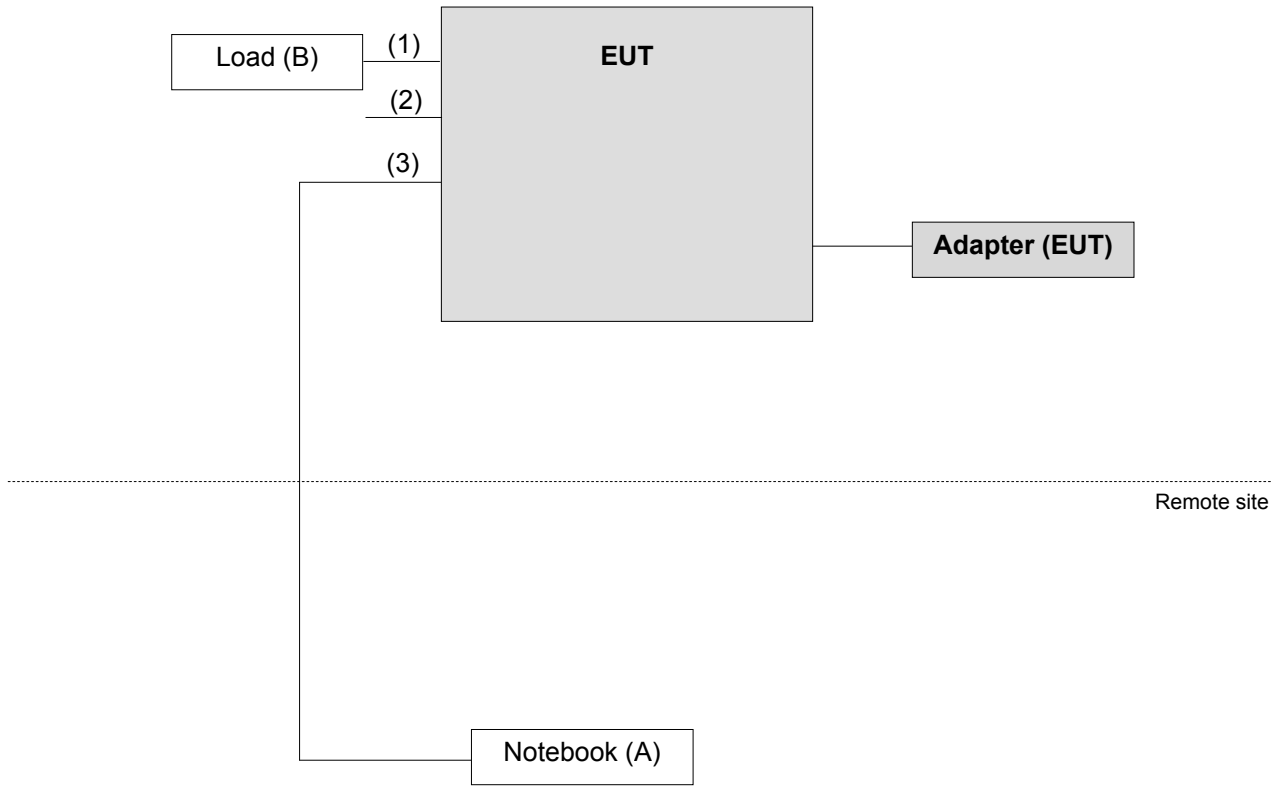
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	Load	N/A	N/A	N/A	N/A	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45 Cable	1	1.8	N	0	Cat5e
2.	Coaxial Cable	1	2	N	0	-
3.	RJ45 Cable	1	3	N	0	Cat5e

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 is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It 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	ESCI	100424	Oct. 24, 2016	Oct. 23, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 16, 2016	Aug. 15, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Dec. 15, 2016	Dec. 14, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier Agilent	8449B	3008A01960	Aug. 09, 2016	Aug. 08, 2017
Preamplifier Agilent	8447D	2944A10631	Aug. 09, 2016	Aug. 08, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Aug. 09, 2016	Aug. 08, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Aug. 09, 2016	Aug. 08, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
High Speed Peak Power Meter	ML2495A	0824012	Aug. 11, 2016	Aug. 10, 2017
Power Sensor	MA2411B	0738171	Aug. 11, 2016	Aug. 10, 2017
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 17, 2016	Oct. 16, 2017
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2016	Jul. 08, 2017
Power Sensor	MA2411B	0738171	Jul. 09, 2016	Jul. 08, 2017
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

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:

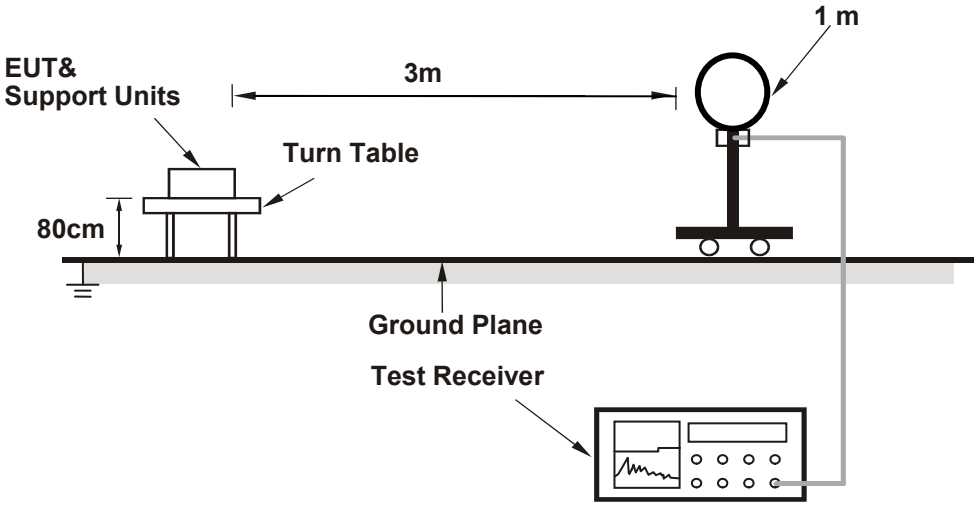
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

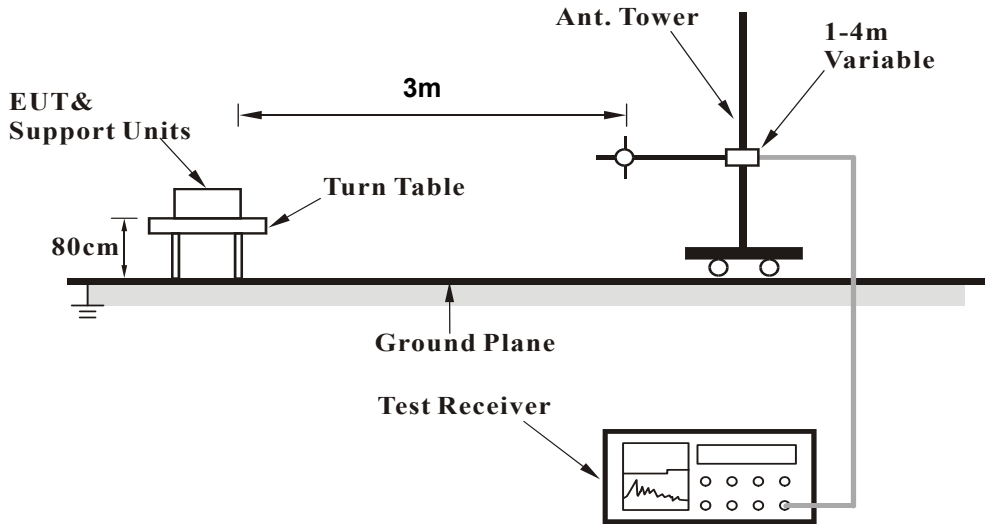
No deviation.

4.1.5 Test Set Up

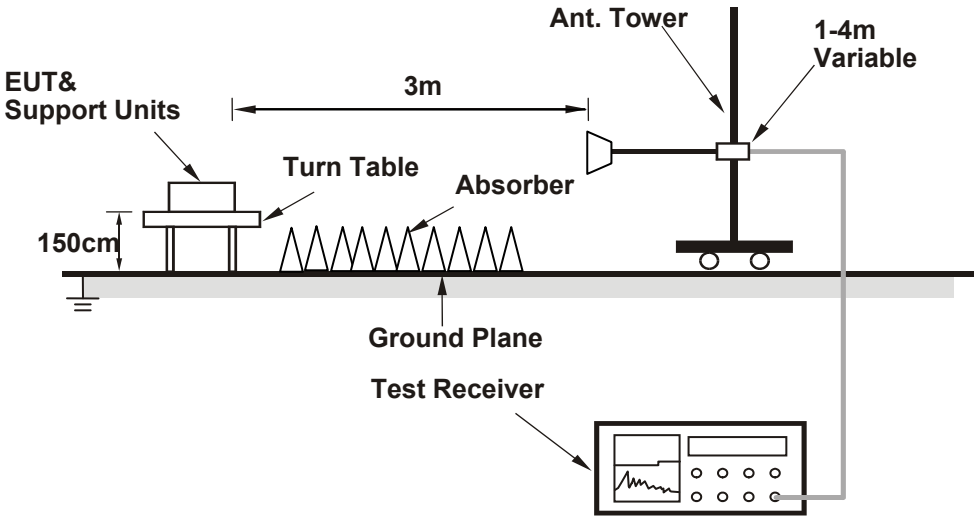
For Radiated emission below 30MHz



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 (QRCT) 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 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	66.7 PK	74.0	-7.3	1.55 H	281	60.6	6.1
2	5150.00	52.0 AV	54.0	-2.0	1.55 H	281	45.9	6.1
3	*5180.00	116.0 PK			1.54 H	278	75.8	40.2
4	*5180.00	105.9 AV			1.54 H	278	65.7	40.2
5	#10360.00	58.5 PK	74.0	-15.5	1.45 H	87	40.6	17.9
6	#10360.00	46.3 AV	54.0	-7.7	1.45 H	87	28.4	17.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.1 PK	74.0	-5.9	1.18 V	14	62.0	6.1
2	5150.00	53.1 AV	54.0	-0.9	1.18 V	14	47.0	6.1
3	*5180.00	117.7 PK			1.18 V	276	77.5	40.2
4	*5180.00	108.0 AV			1.18 V	276	67.8	40.2
5	#10360.00	59.5 PK	74.0	-14.5	1.56 V	97	41.6	17.9
6	#10360.00	48.3 AV	54.0	-5.7	1.56 V	97	30.4	17.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	118.5 PK			1.54 H	277	78.3	40.2
2	*5200.00	108.4 AV			1.54 H	277	68.2	40.2
3	#10400.00	58.7 PK	74.0	-15.3	1.32 H	68	40.5	18.2
4	#10400.00	47.9 AV	54.0	-6.1	1.32 H	68	29.7	18.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	120.0 PK			1.28 V	279	79.8	40.2
2	*5200.00	110.4 AV			1.28 V	279	70.2	40.2
3	#10400.00	59.7 PK	74.0	-14.3	1.52 V	67	41.5	18.2
4	#10400.00	48.1 AV	54.0	-5.9	1.52 V	67	29.9	18.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	118.6 PK			1.84 H	274	78.2	40.4
2	*5240.00	109.1 AV			1.84 H	274	68.7	40.4
3	5350.00	58.5 PK	74.0	-15.5	1.47 H	305	52.0	6.5
4	5350.00	46.5 AV	54.0	-7.5	1.47 H	305	40.0	6.5
5	#10480.00	58.9 PK	74.0	-15.1	1.63 H	97	40.5	18.4
6	#10480.00	46.9 AV	54.0	-7.1	1.63 H	97	28.5	18.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	120.3 PK			1.43 V	281	79.9	40.4
2	*5240.00	110.7 AV			1.43 V	281	70.3	40.4
3	5350.00	60.4 PK	74.0	-13.6	1.68 V	297	53.9	6.5
4	5350.00	48.4 AV	54.0	-5.6	1.68 V	297	41.9	6.5
5	#10480.00	59.7 PK	74.0	-14.3	1.47 V	45	41.3	18.4
6	#10480.00	48.5 AV	54.0	-5.5	1.47 V	45	30.1	18.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5603.20	59.2 PK	68.2	-9.0	2.52 H	270	52.3	6.9
2	*5745.00	119.7 PK			2.52 H	270	78.1	41.6
3	*5745.00	109.6 AV			2.52 H	270	68.0	41.6
4	#5976.80	59.8 PK	68.2	-8.4	2.52 H	270	51.9	7.9
5	11490.00	61.4 PK	74.0	-12.6	1.48 H	125	41.1	20.3
6	11490.00	48.1 AV	54.0	-5.9	1.48 H	125	27.8	20.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5628.00	59.6 PK	68.2	-8.6	1.38 V	287	52.6	7.0
2	*5745.00	120.1 PK			1.38 V	287	78.5	41.6
3	*5745.00	110.5 AV			1.38 V	287	68.9	41.6
4	#5993.60	60.5 PK	68.2	-7.7	1.38 V	287	52.6	7.9
5	11490.00	61.2 PK	74.0	-12.8	1.09 V	321	40.9	20.3
6	11490.00	48.0 AV	54.0	-6.0	1.09 V	321	27.7	20.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5643.20	59.8 PK	68.2	-8.4	2.60 H	273	52.7	7.1
2	*5785.00	118.9 PK			2.60 H	273	77.3	41.6
3	*5785.00	108.7 AV			2.60 H	273	67.1	41.6
4	#5952.00	60.4 PK	68.2	-7.8	2.60 H	273	52.6	7.8
5	11570.00	61.4 PK	74.0	-12.6	1.44 H	133	41.3	20.1
6	11570.00	48.3 AV	54.0	-5.7	1.44 H	133	28.2	20.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5640.00	58.8 PK	68.2	-9.4	1.53 V	293	51.8	7.0
2	*5785.00	119.9 PK			1.53 V	293	78.3	41.6
3	*5785.00	109.9 AV			1.53 V	293	68.3	41.6
4	#5972.80	59.5 PK	68.2	-8.7	1.53 V	293	51.6	7.9
5	11570.00	61.1 PK	74.0	-12.9	1.07 V	325	41.0	20.1
6	11570.00	48.1 AV	54.0	-5.9	1.07 V	325	28.0	20.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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	#5620.00	59.0 PK	68.2	-9.2	2.60 H	271	52.1	6.9
2	*5825.00	118.6 PK			2.60 H	271	76.8	41.8
3	*5825.00	108.4 AV			2.60 H	271	66.6	41.8
4	#5949.60	60.3 PK	68.2	-7.9	2.60 H	271	52.5	7.8
5	11650.00	61.3 PK	74.0	-12.7	1.42 H	131	41.5	19.8
6	11650.00	48.2 AV	54.0	-5.8	1.42 H	131	28.4	19.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5611.20	59.9 PK	68.2	-8.3	1.51 V	288	53.0	6.9
2	*5825.00	120.1 PK			1.51 V	288	78.3	41.8
3	*5825.00	110.1 AV			1.51 V	288	68.3	41.8
4	#5936.80	60.2 PK	68.2	-8.0	1.51 V	288	52.4	7.8
5	11650.00	61.1 PK	74.0	-12.9	1.10 V	332	41.3	19.8
6	11650.00	48.1 AV	54.0	-5.9	1.10 V	332	28.3	19.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	70.6 PK	74.0	-3.4	2.72 H	263	64.5	6.1
2	5150.00	52.3 AV	54.0	-1.7	2.72 H	263	46.2	6.1
3	*5180.00	115.8 PK			2.70 H	280	75.6	40.2
4	*5180.00	105.2 AV			2.70 H	280	65.0	40.2
5	#10360.00	59.7 PK	74.0	-14.3	1.55 H	59	41.8	17.9
6	#10360.00	46.5 AV	54.0	-7.5	1.55 H	59	28.6	17.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.7 PK	74.0	-2.3	1.45 V	293	65.6	6.1
2	5150.00	53.3 AV	54.0	-0.7	1.45 V	293	47.2	6.1
3	*5180.00	117.0 PK			1.39 V	285	76.8	40.2
4	*5180.00	106.8 AV			1.39 V	285	66.6	40.2
5	#10360.00	59.5 PK	74.0	-14.5	1.15 V	185	41.6	17.9
6	#10360.00	46.6 AV	54.0	-7.4	1.15 V	185	28.7	17.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	118.6 PK			2.66 H	287	78.4	40.2
2	*5200.00	108.5 AV			2.66 H	287	68.3	40.2
3	#10400.00	60.1 PK	74.0	-13.9	1.50 H	61	41.9	18.2
4	#10400.00	46.8 AV	54.0	-7.2	1.50 H	61	28.6	18.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	120.1 PK			1.35 V	284	79.9	40.2
2	*5200.00	110.0 AV			1.35 V	284	69.8	40.2
3	#10400.00	60.4 PK	74.0	-13.6	1.17 V	190	42.2	18.2
4	#10400.00	47.1 AV	54.0	-6.9	1.17 V	190	28.9	18.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	119.4 PK			2.70 H	283	79.0	40.4
2	*5240.00	109.1 AV			2.70 H	283	68.7	40.4
3	5350.00	57.5 PK	74.0	-16.5	2.55 H	300	51.0	6.5
4	5350.00	45.4 AV	54.0	-8.6	2.55 H	300	38.9	6.5
5	#10480.00	60.0 PK	74.0	-14.0	1.48 H	65	41.6	18.4
6	#10480.00	46.8 AV	54.0	-7.2	1.48 H	65	28.4	18.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	120.4 PK			1.40 V	281	80.0	40.4
2	*5240.00	110.3 AV			1.40 V	281	69.9	40.4
3	5350.00	58.6 PK	74.0	-15.4	1.48 V	293	52.1	6.5
4	5350.00	45.6 AV	54.0	-8.4	1.48 V	293	39.1	6.5
5	#10480.00	60.4 PK	74.0	-13.6	1.14 V	196	42.0	18.4
6	#10480.00	47.3 AV	54.0	-6.7	1.14 V	196	28.9	18.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5612.80	58.4 PK	68.2	-9.8	2.49 H	265	51.5	6.9
2	*5745.00	119.2 PK			2.48 H	265	77.6	41.6
3	*5745.00	108.4 AV			2.48 H	265	66.8	41.6
4	#5977.60	59.7 PK	68.2	-8.5	2.49 H	265	51.8	7.9
5	11490.00	61.9 PK	74.0	-12.1	1.77 H	340	41.6	20.3
6	11490.00	48.7 AV	54.0	-5.3	1.77 H	340	28.4	20.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5641.60	58.6 PK	68.2	-9.6	1.46 V	284	51.5	7.1
2	*5745.00	119.7 PK			1.46 V	284	78.1	41.6
3	*5745.00	109.5 AV			1.46 V	284	67.9	41.6
4	#5935.20	60.1 PK	68.2	-8.1	1.46 V	284	52.3	7.8
5	11490.00	62.0 PK	74.0	-12.0	1.25 V	150	41.7	20.3
6	11490.00	48.8 AV	54.0	-5.2	1.25 V	150	28.5	20.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5618.40	61.1 PK	68.2	-7.1	2.62 H	276	54.2	6.9
2	*5785.00	118.2 PK			2.62 H	276	76.6	41.6
3	*5785.00	107.8 AV			2.62 H	276	66.2	41.6
4	#5971.20	61.0 PK	68.2	-7.2	2.62 H	276	53.1	7.9
5	11570.00	60.8 PK	74.0	-13.2	1.58 H	338	40.7	20.1
6	11570.00	47.7 AV	54.0	-6.3	1.58 H	338	27.6	20.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5602.40	60.5 PK	68.2	-7.7	1.45 V	288	53.6	6.9
2	*5785.00	120.7 PK			1.45 V	288	79.1	41.6
3	*5785.00	110.2 AV			1.45 V	288	68.6	41.6
4	#5947.20	61.4 PK	68.2	-6.8	1.45 V	288	53.6	7.8
5	11570.00	61.2 PK	74.0	-12.8	1.23 V	156	41.1	20.1
6	11570.00	47.9 AV	54.0	-6.1	1.23 V	156	27.8	20.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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	#5608.00	59.2 PK	68.2	-9.0	2.52 H	280	52.3	6.9
2	*5825.00	118.1 PK			2.52 H	280	76.3	41.8
3	*5825.00	108.0 AV			2.52 H	280	66.2	41.8
4	#5987.20	59.8 PK	68.2	-8.4	2.52 H	280	51.9	7.9
5	11650.00	61.0 PK	74.0	-13.0	1.74 H	344	41.2	19.8
6	11650.00	47.7 AV	54.0	-6.3	1.74 H	344	27.9	19.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5635.20	58.7 PK	68.2	-9.5	1.47 V	288	51.7	7.0
2	*5825.00	120.5 PK			1.47 V	288	78.7	41.8
3	*5825.00	110.2 AV			1.47 V	288	68.4	41.8
4	#5975.20	61.0 PK	68.2	-7.2	1.47 V	288	53.1	7.9
5	11650.00	61.2 PK	74.0	-12.8	1.22 V	146	41.4	19.8
6	11650.00	47.9 AV	54.0	-6.1	1.22 V	146	28.1	19.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	67.6 PK	74.0	-6.4	2.89 H	304	61.5	6.1
2	5150.00	51.7 AV	54.0	-2.3	2.89 H	304	45.6	6.1
3	*5190.00	109.8 PK			2.68 H	265	69.6	40.2
4	*5190.00	100.5 AV			2.68 H	265	60.3	40.2
5	#10380.00	59.7 PK	74.0	-14.3	1.62 H	72	41.7	18.0
6	#10380.00	46.3 AV	54.0	-7.7	1.62 H	72	28.3	18.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.7 PK	74.0	-4.3	1.33 V	271	63.6	6.1
2	5150.00	53.3 AV	54.0	-0.7	1.33 V	271	47.2	6.1
3	*5190.00	111.5 PK			1.48 V	287	71.3	40.2
4	*5190.00	102.1 AV			1.48 V	287	61.9	40.2
5	#10380.00	59.5 PK	74.0	-14.5	1.20 V	199	41.5	18.0
6	#10380.00	46.5 AV	54.0	-7.5	1.20 V	199	28.5	18.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	65.8 PK	74.0	-8.2	2.78 H	296	59.7	6.1
2	5150.00	51.7 AV	54.0	-2.3	2.78 H	296	45.6	6.1
3	*5230.00	115.7 PK			2.65 H	271	75.3	40.4
4	*5230.00	106.2 AV			2.65 H	271	65.8	40.4
5	#10460.00	59.9 PK	74.0	-14.1	1.66 H	78	41.7	18.2
6	#10460.00	46.5 AV	54.0	-7.5	1.66 H	78	28.3	18.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.4 PK	74.0	-7.6	1.33 V	273	60.3	6.1
2	5150.00	53.2 AV	54.0	-0.8	1.33 V	273	47.1	6.1
3	*5230.00	116.4 PK			1.48 V	283	76.0	40.4
4	*5230.00	107.2 AV			1.48 V	283	66.8	40.4
5	#10460.00	60.1 PK	74.0	-13.9	1.22 V	215	41.9	18.2
6	#10460.00	47.0 AV	54.0	-7.0	1.22 V	215	28.8	18.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5642.40	63.4 PK	68.2	-4.8	2.50 H	273	56.3	7.1
2	*5755.00	116.0 PK			2.50 H	273	74.4	41.6
3	*5755.00	106.3 AV			2.50 H	273	64.7	41.6
4	#5985.60	60.9 PK	68.2	-7.3	2.50 H	273	53.0	7.9
5	11510.00	61.6 PK	74.0	-12.4	1.69 H	23	41.4	20.2
6	11510.00	48.6 AV	54.0	-5.4	1.69 H	23	28.4	20.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5640.00	64.2 PK	68.2	-4.0	1.44 V	287	57.2	7.0
2	*5755.00	117.1 PK			1.44 V	287	75.5	41.6
3	*5755.00	107.3 AV			1.44 V	287	65.7	41.6
4	#5991.20	60.7 PK	68.2	-7.5	1.44 V	287	52.8	7.9
5	11510.00	60.9 PK	74.0	-13.1	1.11 V	25	40.7	20.2
6	11510.00	48.4 AV	54.0	-5.6	1.11 V	25	28.2	20.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5648.80	59.2 PK	68.2	-9.0	2.58 H	273	52.1	7.1
2	*5795.00	115.4 PK			2.58 H	273	73.7	41.7
3	*5795.00	105.6 AV			2.58 H	273	63.9	41.7
4	#5944.80	60.2 PK	68.2	-8.0	2.58 H	273	52.4	7.8
5	11590.00	61.2 PK	74.0	-12.8	1.66 H	19	41.1	20.1
6	11590.00	48.3 AV	54.0	-5.7	1.66 H	19	28.2	20.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5616.00	58.7 PK	68.2	-9.5	1.42 V	287	51.8	6.9
2	*5795.00	116.9 PK			1.42 V	287	75.2	41.7
3	*5795.00	107.4 AV			1.42 V	287	65.7	41.7
4	#5943.20	61.1 PK	68.2	-7.1	1.42 V	287	53.3	7.8
5	11590.00	61.3 PK	74.0	-12.7	1.17 V	28	41.2	20.1
6	11590.00	48.2 AV	54.0	-5.8	1.17 V	28	28.1	20.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	67.3 PK	74.0	-6.7	2.90 H	297	61.2	6.1
2	5150.00	53.4 AV	54.0	-0.6	2.90 H	297	47.3	6.1
3	*5210.00	108.0 PK			3.26 H	278	67.7	40.3
4	*5210.00	96.8 AV			3.26 H	278	56.5	40.3
5	5350.00	58.7 PK	74.0	-15.3	2.88 H	280	52.2	6.5
6	5350.00	46.9 AV	54.0	-7.1	2.88 H	280	40.4	6.5
7	#10420.00	59.1 PK	74.0	-14.9	1.78 H	156	41.0	18.1
8	#10420.00	46.6 AV	54.0	-7.4	1.78 H	156	28.5	18.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.3 PK	74.0	-6.7	2.07 V	306	61.2	6.1
2	5150.00	53.2 AV	54.0	-0.8	2.07 V	306	47.1	6.1
3	*5210.00	106.7 PK			2.10 V	307	66.4	40.3
4	*5210.00	96.6 AV			2.10 V	307	56.3	40.3
5	5350.00	58.4 PK	74.0	-15.6	1.89 V	296	51.9	6.5
6	5350.00	46.3 AV	54.0	-7.7	1.89 V	296	39.8	6.5
7	#10420.00	59.6 PK	74.0	-14.4	1.44 V	252	41.5	18.1
8	#10420.00	46.4 AV	54.0	-7.6	1.44 V	252	28.3	18.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5650.40	67.7 PK	68.5	-0.8	2.33 H	291	60.6	7.1
2	*5775.00	112.1 PK			2.33 H	291	70.5	41.6
3	*5775.00	100.4 AV			2.33 H	291	58.8	41.6
4	#5936.00	63.3 PK	68.2	-4.9	2.33 H	291	55.5	7.8
5	11550.00	61.1 PK	74.0	-12.9	1.54 H	155	40.9	20.2
6	11550.00	49.2 AV	54.0	-4.8	1.54 H	155	29.0	20.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	**#5647.20**	**67.8 PK**	**68.2**	**-0.4**	**1.57 V**	**307**	**60.7**	**7.1**
2	*5775.00	111.8 PK			1.57 V	307	70.2	41.6
3	*5775.00	100.7 AV			1.57 V	307	59.1	41.6
4	#5929.60	64.5 PK	68.2	-3.7	1.57 V	307	56.7	7.8
5	11550.00	60.8 PK	74.0	-13.2	1.28 V	183	40.6	20.2
6	11550.00	48.5 AV	54.0	-5.5	1.28 V	183	28.3	20.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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 36	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	37.66	26.1 QP	40.0	-13.9	1.50 H	108	41.2	-15.1
2	101.69	33.3 QP	43.5	-10.2	1.50 H	337	51.5	-18.2
3	392.75	22.7 QP	46.0	-23.3	1.00 H	332	33.2	-10.5
4	592.62	24.2 QP	46.0	-21.8	1.50 H	22	30.7	-6.5
5	747.85	33.4 QP	46.0	-12.6	1.50 H	268	36.4	-3.0
6	951.59	32.7 QP	46.0	-13.3	2.00 H	13	32.6	0.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.66	31.9 QP	40.0	-8.1	1.50 V	256	47.0	-15.1
2	101.69	32.3 QP	43.5	-11.2	1.50 V	170	50.5	-18.2
3	427.68	24.0 QP	46.0	-22.0	1.00 V	95	33.6	-9.6
4	499.48	25.0 QP	46.0	-21.0	1.00 V	216	33.5	-8.5
5	792.48	27.0 QP	46.0	-19.0	1.50 V	43	29.3	-2.3
6	939.95	32.4 QP	46.0	-13.6	1.00 V	154	32.5	-0.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	ESCS 30	100288	Aug. 18, 2016	Aug. 17, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 22, 2016	Dec. 21, 2017
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 17, 2017	Jan. 16, 2018
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.

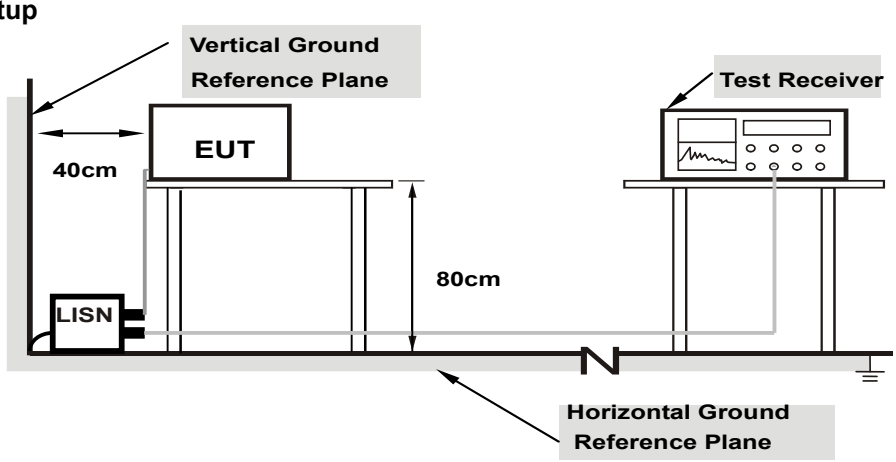
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

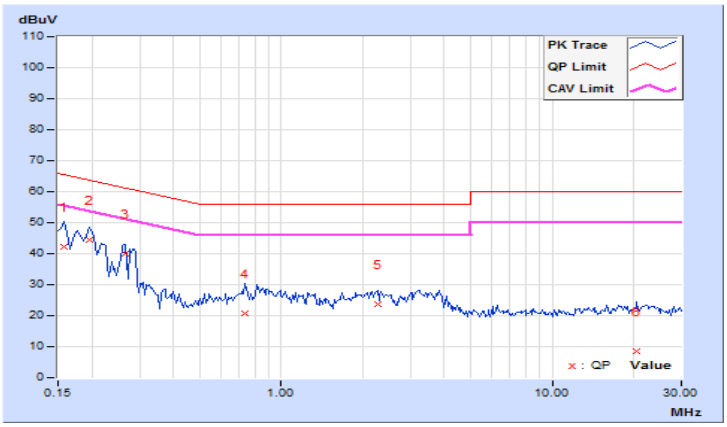
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [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	9.99	32.18	22.29	42.17	32.28	65.58	55.58	-23.41	-23.30
2	0.19687	10.02	34.37	32.00	44.39	42.02	63.74	53.74	-19.35	-11.72
3	0.26719	10.02	29.80	25.93	39.82	35.95	61.20	51.20	-21.38	-15.25
4	0.73594	10.06	10.67	9.49	20.73	19.55	56.00	46.00	-35.27	-26.45
5	2.26172	10.12	13.73	8.55	23.85	18.67	56.00	46.00	-32.15	-27.33
6	20.47656	10.44	-1.97	-6.83	8.47	3.61	60.00	50.00	-51.53	-46.39

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.

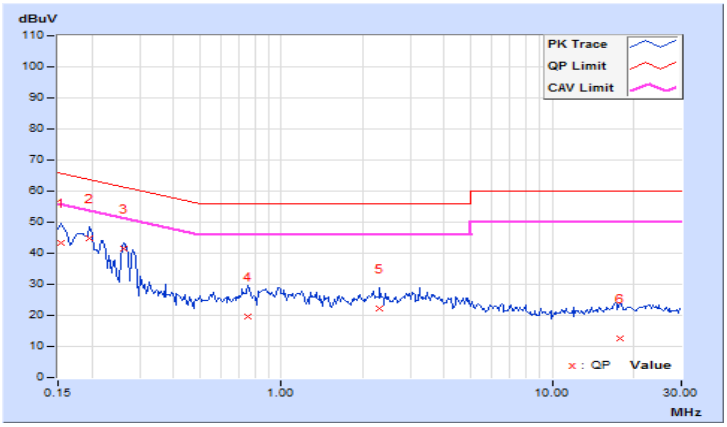


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	10.02	33.36	22.57	43.38	32.59	65.79	55.79	-22.41	-23.20
2	0.19687	9.95	34.69	31.94	44.64	41.89	63.74	53.74	-19.10	-11.85
3	**0.26328**	**9.96**	**31.52**	**30.34**	**41.48**	**40.30**	**61.33**	**51.33**	**-19.85**	**-11.03**
4	0.75547	10.06	9.51	4.41	19.57	14.47	56.00	46.00	-36.43	-31.53
5	2.31641	10.07	12.11	6.99	22.18	17.06	56.00	46.00	-33.82	-28.94
6	17.80469	10.48	1.96	-2.76	12.44	7.72	60.00	50.00	-47.56	-42.28

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

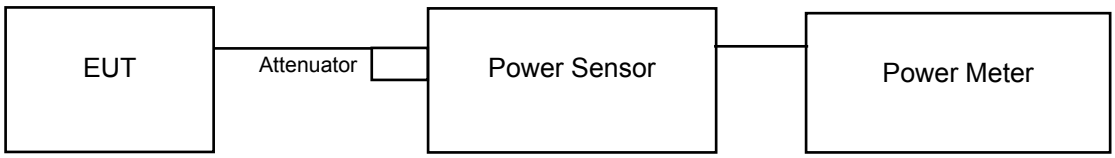
Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client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

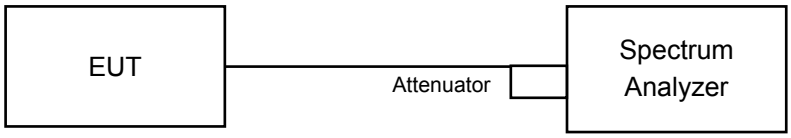
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz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

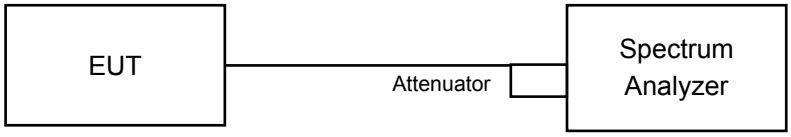
For Power Output Measurement
802.11a, 802.11n (HT20), 802.11n (HT40)



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

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				
36	5180	19.66	19.81	188.189	22.75	30	Pass
40	5200	21.84	21.97	**310.155**	24.92	30	Pass
48	5240	21.38	21.42	276.080	24.41	30	Pass
149	5745	22.60	22.40	355.750	25.51	30	Pass
157	5785	22.85	22.54	372.225	25.71	30	Pass
165	5825	22.95	22.46	373.440	25.72	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				
36	5180	18.56	18.83	148.163	21.71	30	Pass
40	5200	21.83	21.97	309.803	24.91	30	Pass
48	5240	21.25	21.46	273.311	24.37	30	Pass
149	5745	22.73	22.49	364.918	25.62	30	Pass
157	5785	22.87	22.65	377.719	25.77	30	Pass
165	5825	22.97	22.46	374.351	25.73	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				
38	5190	16.36	16.58	88.750	19.48	30	Pass
46	5230	20.92	21.03	250.360	23.99	30	Pass
151	5755	22.76	22.46	364.997	25.62	30	Pass
159	5795	22.91	22.63	**378.665**	25.78	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				
42	5210	15.96	16.25	81.616	19.12	30	Pass
155	5775	20.16	19.68	196.650	22.94	30	Pass

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				
36	5180	18.56	18.83	148.163	21.71	29.79	Pass
40	5200	21.83	21.97	**309.803**	24.91	29.79	Pass
48	5240	21.25	21.46	273.311	24.37	29.79	Pass
149	5745	22.73	22.49	364.918	25.62	29.79	Pass
157	5785	22.87	22.65	377.719	25.77	29.79	Pass
165	5825	22.97	22.46	374.351	25.73	29.79	Pass

Note: Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power limit shall be reduced to 30-(6.21-6) = 29.79dBm.

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				
38	5190	16.36	16.58	88.750	19.48	29.79	Pass
46	5230	20.92	21.03	250.360	23.99	29.79	Pass
151	5755	22.76	22.46	364.997	25.62	29.79	Pass
159	5795	22.91	22.63	**378.665**	25.78	29.79	Pass

Note: Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power limit shall be reduced to 30-(6.21-6) = 29.79dBm.

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				
42	5210	15.96	16.25	81.616	19.12	29.79	Pass
155	5775	19.69	19.27	177.639	22.50	29.79	Pass

Note: Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power limit shall be reduced to 30-(6.21-6) = 29.79dBm.

26dB Bandwidth:

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	27.59	29.92	Pass
40	5200	37.16	36.70	Pass
48	5240	38.35	39.39	Pass

802.11n (HT20)

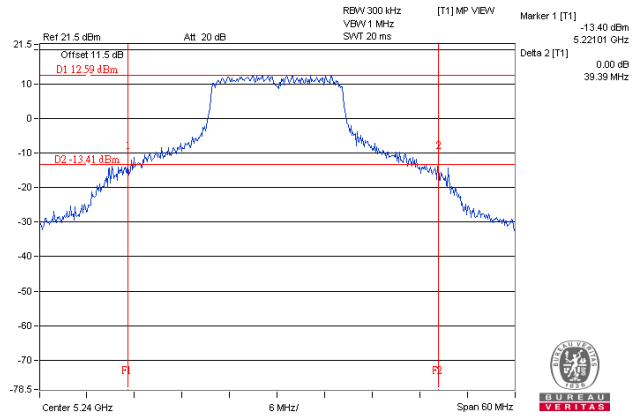
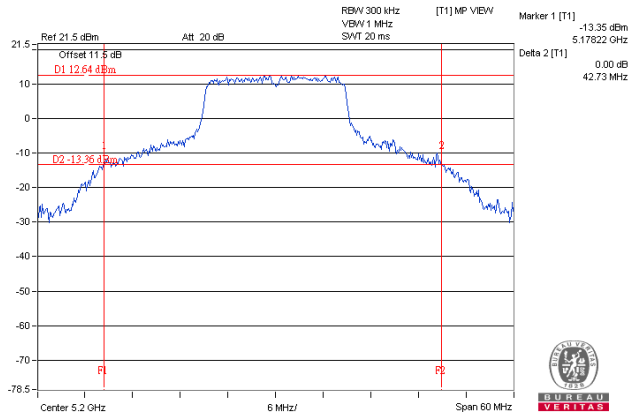
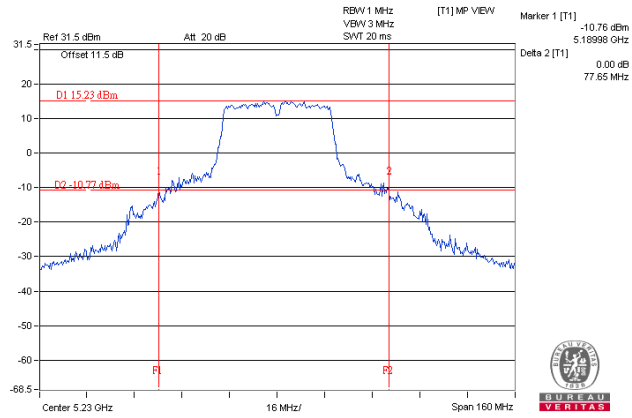
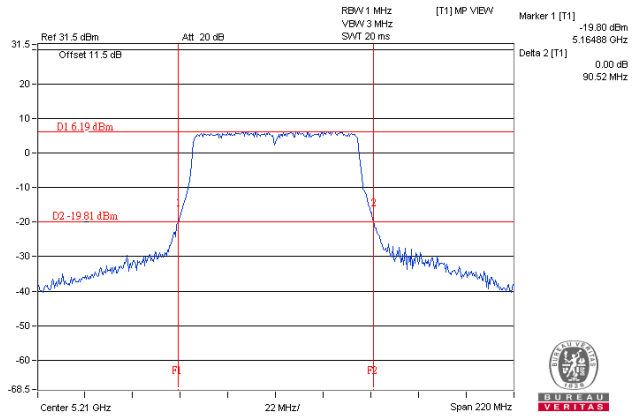
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	24.21	23.77	Pass
40	5200	42.73	42.57	Pass
48	5240	42.32	41.67	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
38	5190	46.03	46.14	Pass
46	5230	75.94	77.65	Pass

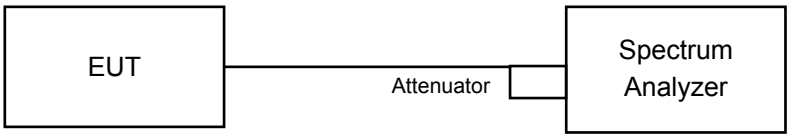
802.11ac (VHT80)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
42	5210	90.52	89.14	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
36	5180	17.04	16.80
40	5200	20.28	19.68
48	5240	17.88	18.12
149	5745	30.60	27.00
157	5785	31.44	28.08
165	5825	30.00	27.72

802.11n (HT20)

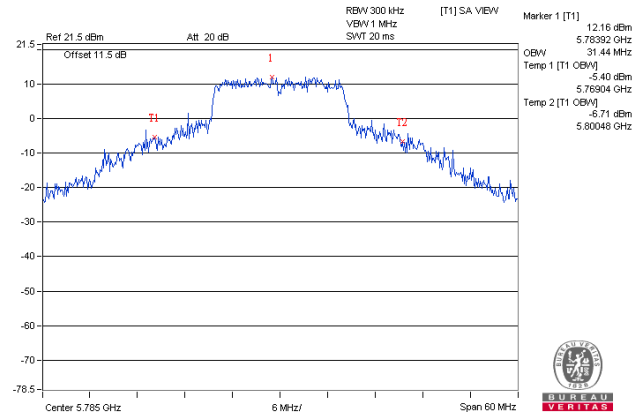
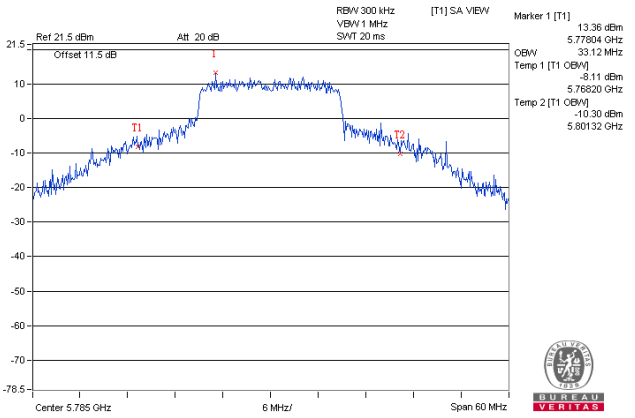
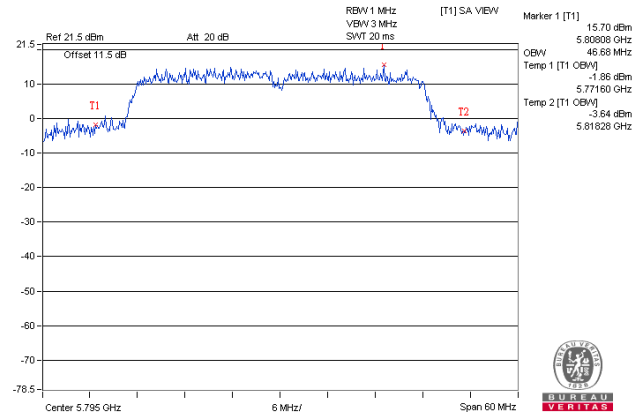
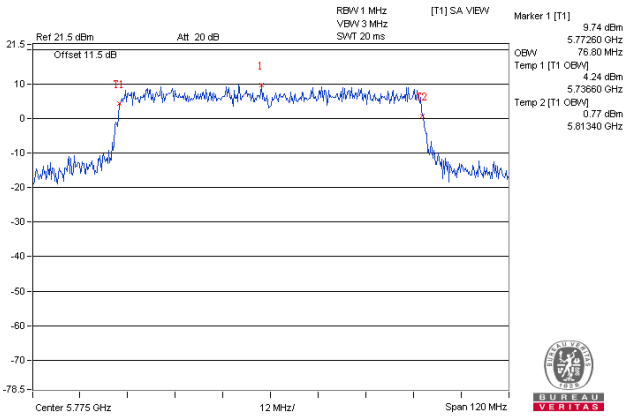
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.88	18.12
40	5200	21.48	22.08
48	5240	18.84	19.32
149	5745	31.92	28.44
157	5785	33.12	30.24
165	5825	32.16	28.56

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.96	36.84
46	5230	37.56	37.56
151	5755	45.96	42.60
159	5795	46.68	44.16

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.56	76.32
155	5775	76.80	76.56

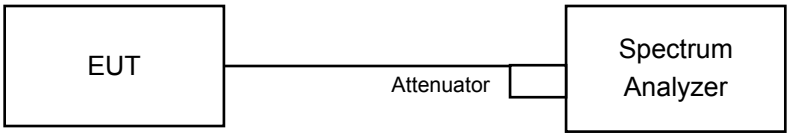
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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-1, Duty cycle >98%:

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

Using method SA-2, Duty cycle <98%

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:
Duty cycle >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 <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 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/MHz)		Total PSD w/o duty factor (dBm/MHz)	Duty factor	Total PSD with duty factor (dBm/MHz)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1					
36	5180	5.28	5.30	8.30	0.18	8.48	16.79	Pass
40	5200	7.75	7.51	10.64	0.18	10.82	16.79	Pass
48	5240	7.13	6.99	10.07	0.18	10.25	16.79	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 = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power density limit shall be reduced to 17-(6.21-6) = 16.79dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
36	5180	4.04	4.70	7.39	16.79	Pass
40	5200	7.38	7.77	10.59	16.79	Pass
48	5240	6.71	6.74	9.74	16.79	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 = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power density limit shall be reduced to 17-(6.21-6) = 16.79dBm.

802.11n (HT40)

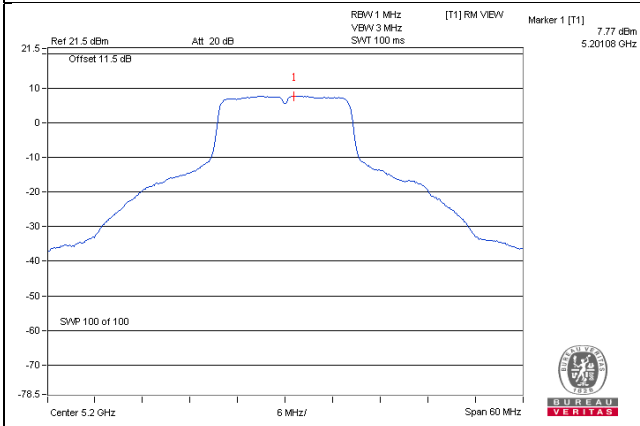
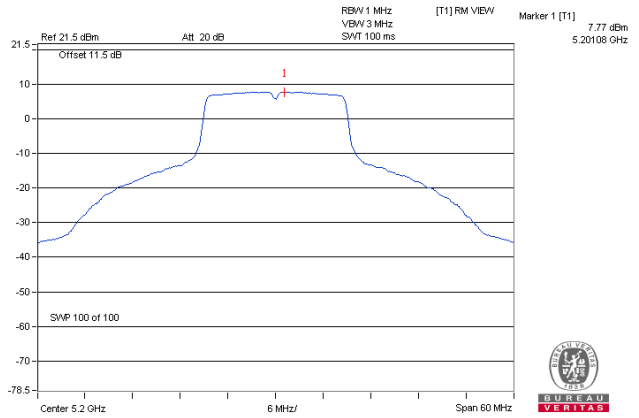
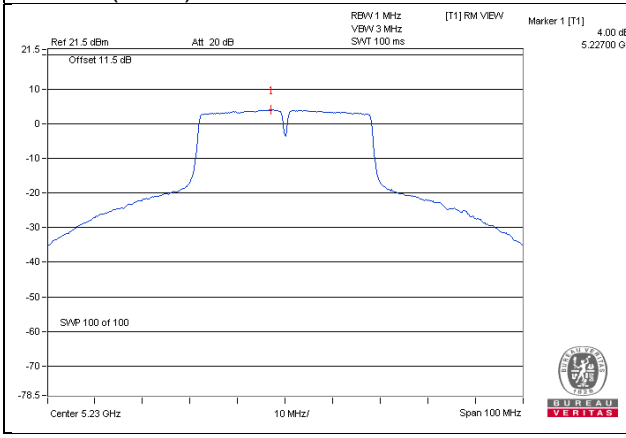
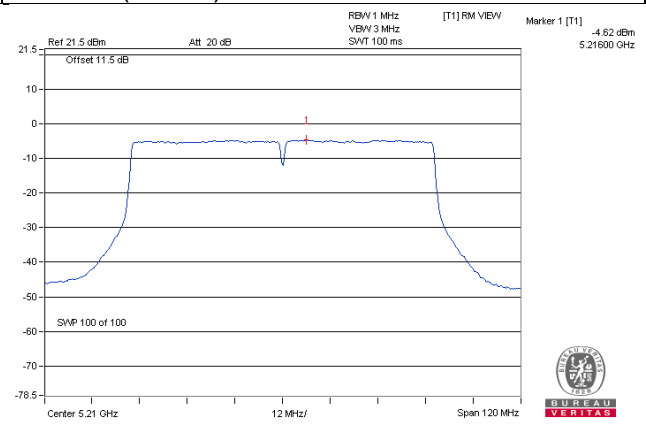
Chan.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD w/o duty factor (dBm/MHz)	Duty factor	Total PSD with duty factor (dBm/MHz)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1					
38	5190	-1.08	-0.57	2.19	0.17	2.36	16.79	Pass
46	5230	3.63	3.91	6.78	0.17	6.95	16.79	Pass

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 = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power density limit shall be reduced to 17-(6.21-6) = 16.79dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD w/o duty factor (dBm/MHz)	Duty factor	Total PSD with duty factor (dBm/MHz)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1					
42	5210	-4.62	-5.17	-1.87	0.35	-1.52	16.79	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 = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power density limit shall be reduced to 17-(6.21-6) = 16.79dBm.
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 1 / CH 40
	
802.11n (HT40)/ Chain 1 / CH 46	802.11ac (VHT80) / Chain 0 / CH 42
	

For U-NII-3 Band

802.11a

Chan.	Freq. (MHz)	PSD (dBm/300kHz)		PSD (dBm/500kHz)		Duty factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1				
149	5745	0.73	0.33	2.95	2.55	0.18	5.95	29.79	Pass
157	5785	0.49	0.10	2.71	2.32	0.18	5.71	29.79	Pass
165	5825	-0.14	-0.42	2.08	1.80	0.18	5.13	29.79	Pass

Note:
1. Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi , so the power density limit shall be reduced to 30-(6.21-6) = 29.79dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm/300kHz)		PSD (dBm/500kHz)		Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1			
149	5745	0.32	0.00	2.54	2.22	5.39	29.79	Pass
157	5785	0.00	-0.23	2.22	1.99	5.12	29.79	Pass
165	5825	-0.42	-0.81	1.80	1.41	4.62	29.79	Pass

Note:
1. Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi , so the power density limit shall be reduced to 30-(6.21-6) = 29.79dBm.

802.11n (HT40)

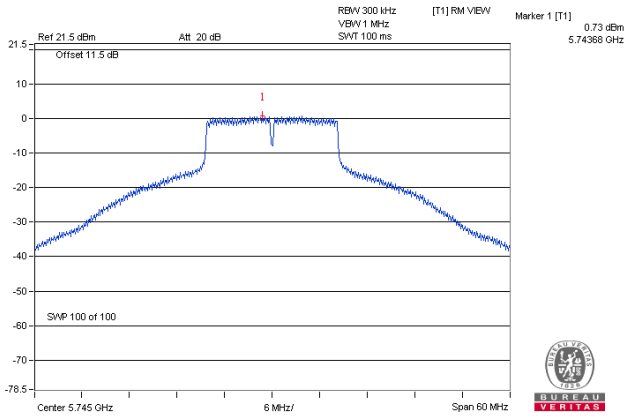
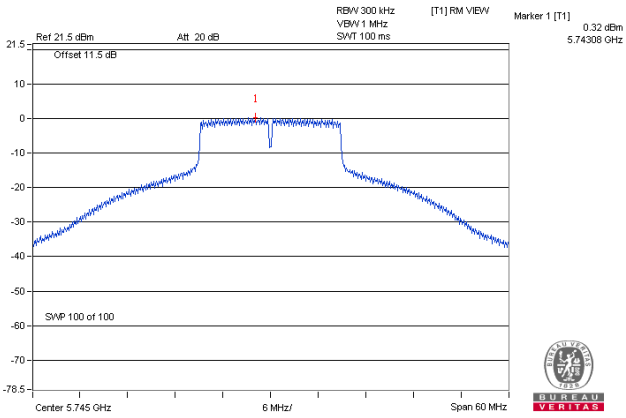
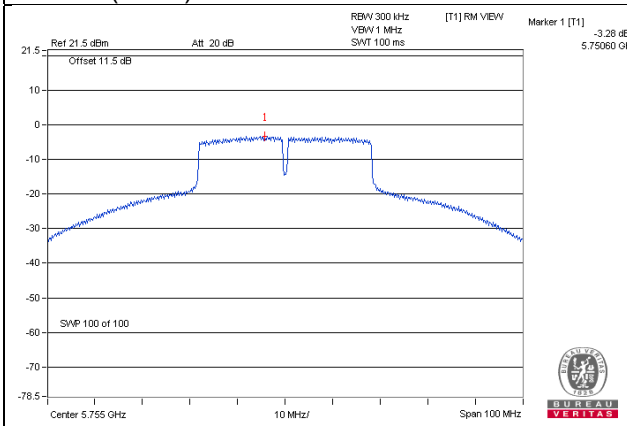
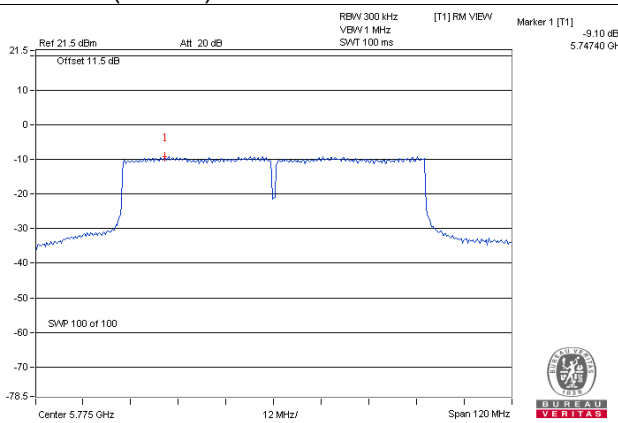
Chan.	Freq. (MHz)	PSD (dBm/300kHz)		PSD (dBm/500kHz)		Duty factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1				
151	5755	-3.28	-3.58	-1.06	-1.36	0.17	1.97	29.79	Pass
159	5795	-3.41	-3.76	-1.19	-1.54	0.17	1.82	29.79	Pass

Note:
1. Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi , so the power density limit shall be reduced to 30-(6.21-6) = 29.79dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD (dBm/300kHz)		PSD (dBm/500kHz)		Duty factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1				
151	5755	-9.10	-10.06	-6.88	-7.84	0.35	-3.97	29.79	Pass

Note:
1. Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi , so the power density limit shall be reduced to 30-(6.21-6) = 29.79dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

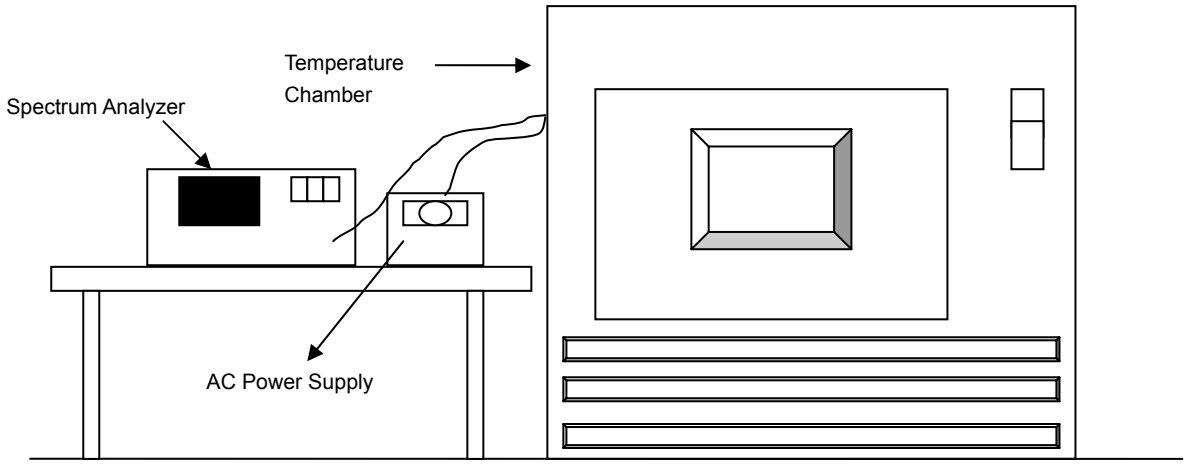
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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	5180.0052	0.00010	5180.0080	0.00015	5180.0039	0.00008	5180.0065	0.00013
40	120	5180.0015	0.00003	5180.0052	0.00010	5180.0059	0.00011	5180.0041	0.00008
30	120	5180.0122	0.00024	5180.0102	0.00020	5180.0072	0.00014	5180.0078	0.00015
20	120	5179.9834	-0.00032	5179.9828	-0.00033	5179.9816	-0.00036	5179.9805	-0.00038
10	120	5179.9917	-0.00016	5179.9917	-0.00016	5179.9885	-0.00022	5179.9902	-0.00019
0	120	5179.9825	-0.00034	5179.9817	-0.00035	5179.9825	-0.00034	5179.9845	-0.00030
-10	120	5179.9948	-0.00010	5179.9943	-0.00011	5179.9942	-0.00011	5179.9950	-0.00010
-20	120	5179.9919	-0.00016	5179.9897	-0.00020	5179.9916	-0.00016	5179.9916	-0.00016
-30	120	5179.9937	-0.00012	5179.9943	-0.00011	5179.9944	-0.00011	5179.9917	-0.00016

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	5179.9827	-0.00033	5179.9824	-0.00034	5179.9816	-0.00036	5179.9807	-0.00037
	120	5179.9834	-0.00032	5179.9828	-0.00033	5179.9816	-0.00036	5179.9805	-0.00038
	102	5179.9833	-0.00032	5179.9824	-0.00034	5179.9814	-0.00036	5179.9797	-0.00039

Frequency Stability Versus Temp.									
Operating Frequency: 5745MHz									
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	5744.9770	-0.00040	5744.9727	-0.00048	5744.9748	-0.00044	5744.9764	-0.00041
40	120	5745.0147	0.00026	5745.0103	0.00018	5745.0150	0.00026	5745.0140	0.00024
30	120	5745.0051	0.00009	5745.0053	0.00009	5745.0019	0.00003	5745.0041	0.00007
20	120	5744.9770	-0.00040	5744.9786	-0.00037	5744.9778	-0.00039	5744.9765	-0.00041
10	120	5745.0280	0.00049	5745.0235	0.00041	5745.0235	0.00041	5745.0280	0.00049
0	120	5744.9869	-0.00023	5744.9876	-0.00022	5744.9853	-0.00026	5744.9872	-0.00022
-10	120	5744.9853	-0.00026	5744.9860	-0.00024	5744.9835	-0.00029	5744.9873	-0.00022
-20	120	5744.9879	-0.00021	5744.9844	-0.00027	5744.9856	-0.00025	5744.9838	-0.00028
-30	120	5745.0121	0.00021	5745.0102	0.00018	5745.0138	0.00024	5745.0134	0.00023

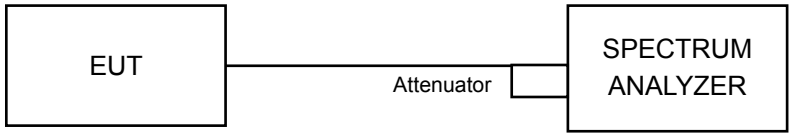
Frequency Stability Versus Voltage									
Operating Frequency: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5744.9771	-0.00040	5744.9794	-0.00036	5744.9774	-0.00039	5744.9775	-0.00039
	120	5744.9770	-0.00040	5744.9786	-0.00037	5744.9778	-0.00039	5744.9765	-0.00041
	102	5744.9768	-0.00040	5744.9782	-0.00038	5744.9769	-0.00040	5744.9772	-0.00040

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		
149	5745	16.38	16.36	0.5	Pass
157	5785	16.39	16.39	0.5	Pass
165	5825	16.37	16.37	0.5	Pass

802.11n (HT20)

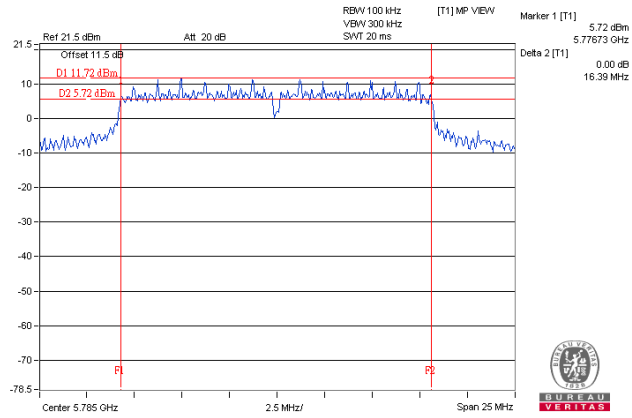
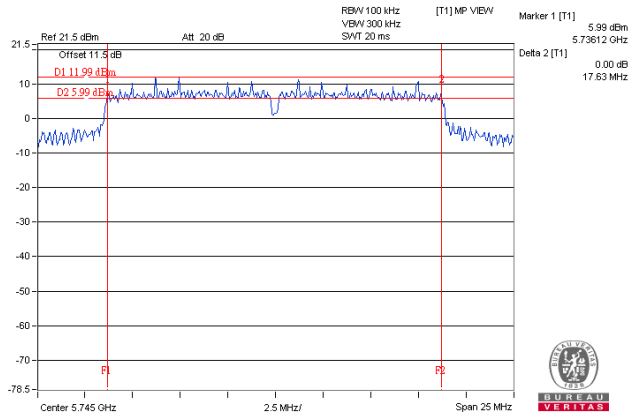
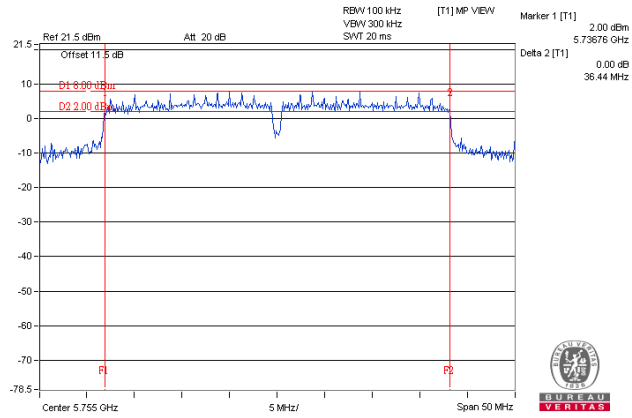
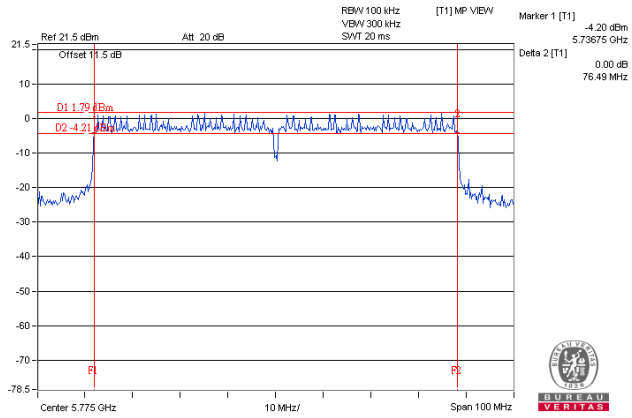
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.63	17.63	0.5	Pass
157	5785	17.22	17.58	0.5	Pass
165	5825	17.63	17.62	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	36.44	36.34	0.5	Pass
159	5795	36.14	36.31	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	76.28	76.49	0.5	Pass

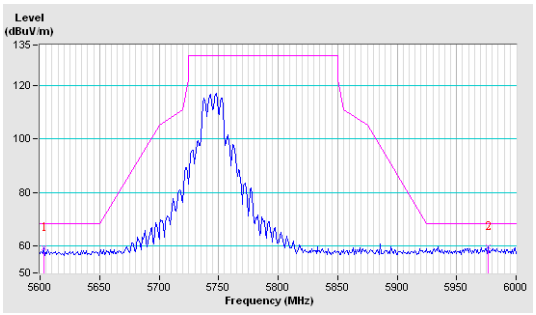
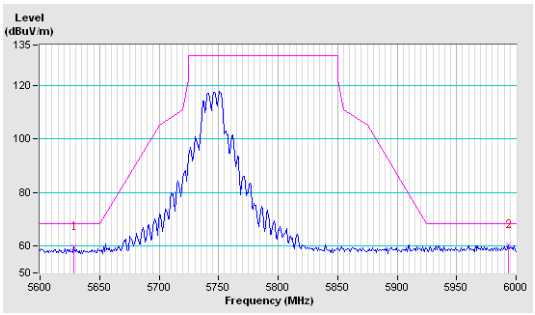
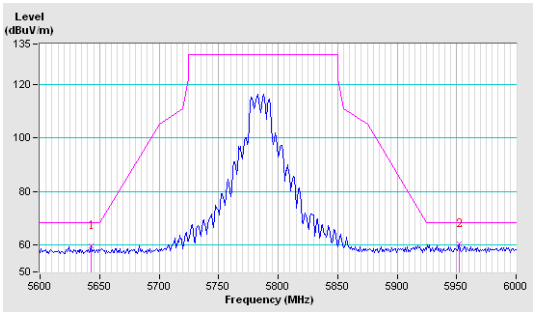
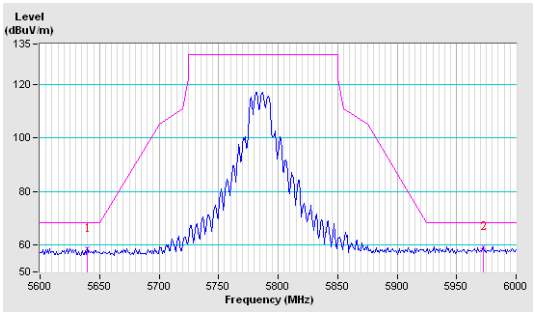
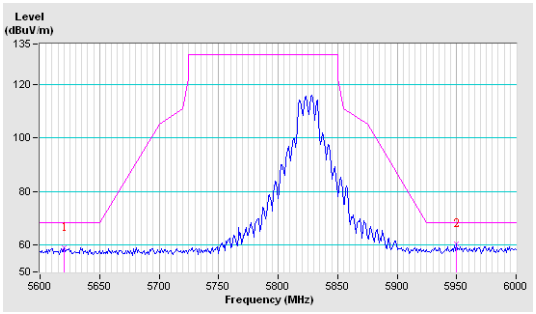
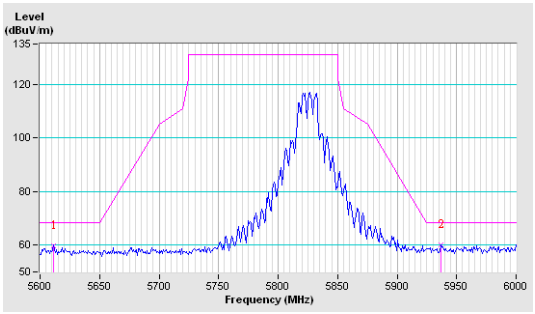
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

5 Pictures of Test Arrangements

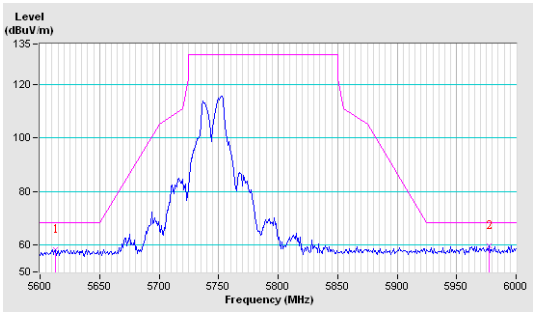
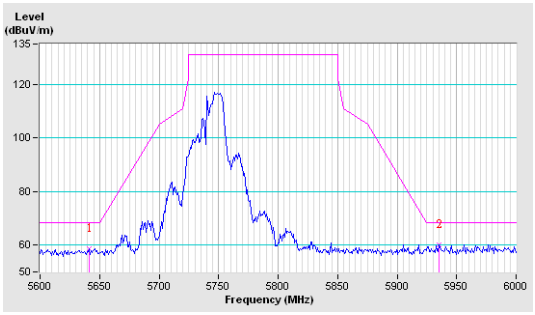
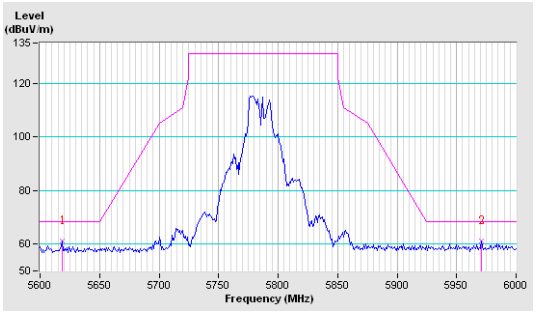
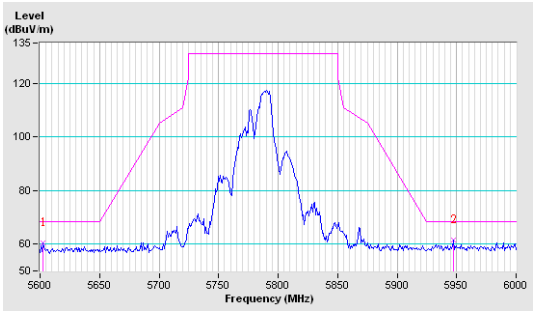
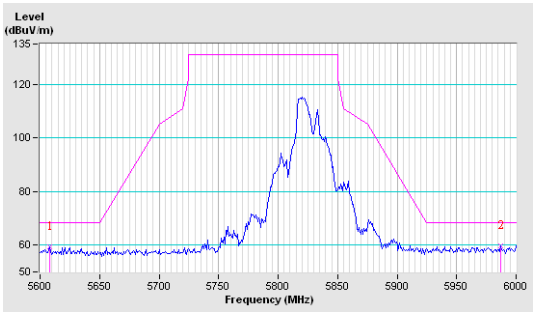
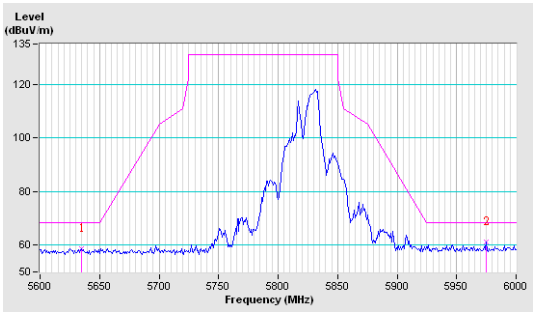
Please refer to the attached file (Test Setup Photo).

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

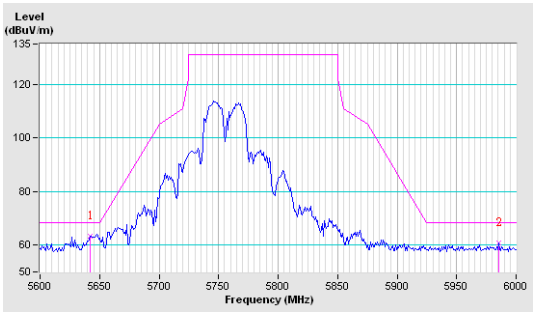
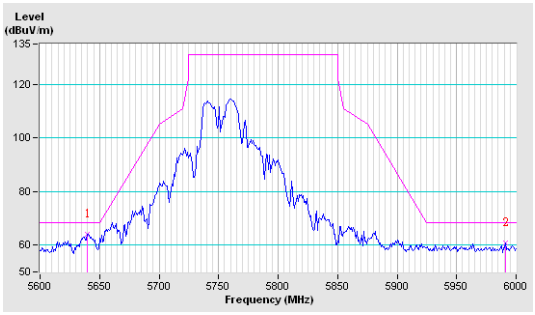
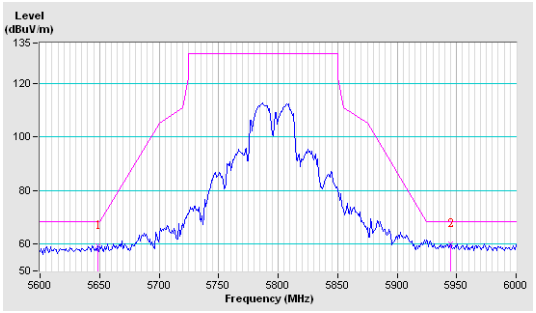
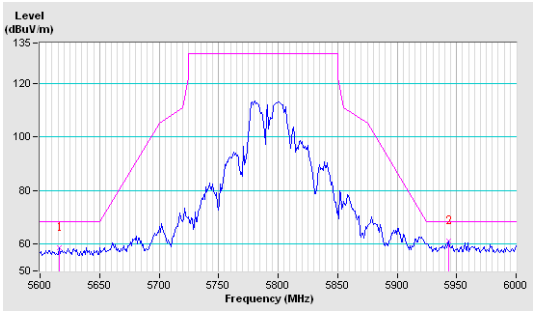
802.11a

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

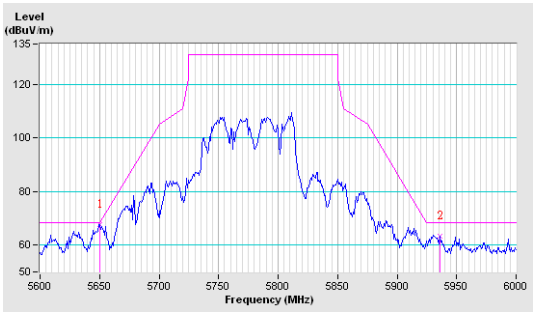
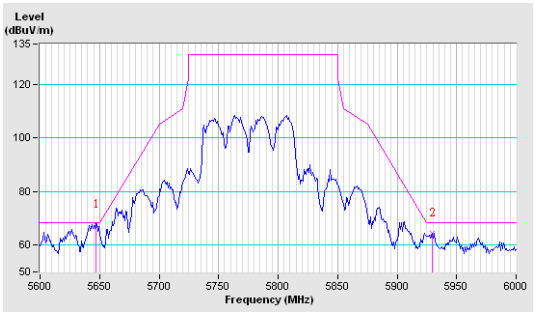
802.11n (HT20)

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 ---