FCC Test Report

Report No.:	RF150326C26E
FCC ID:	TE7C3200
Test Model:	Archer C3200
Received Date:	May 10, 2016
Test Date:	Feb. 02, 2016 (For conducted emissions) May 29 ~ Jun. 07, 2016 (For all test items except conducted emissions)
Issued Date:	Jun. 14, 2016
Applicant:	TP-LINK TECHNOLOGIES CO., LTD.
Address:	Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
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
RF150326C26E	Original release	Jun. 14, 2016

1 Certificate of Conformity

Product:	AC3200 Wireless Tri-Band Gigabit Router
Brand:	TP-LINK
Test Model:	Archer C3200
Sample Status:	Prototype
Applicant:	TP-LINK TECHNOLOGIES CO., LTD.
Test Date:	Feb. 02, 2016 (For conducted emissions) May 29 ~ Jun. 07, 2016 (For all test items except conducted emissions)
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 : Celine Chou , **Date:** Jun. 14, 2016

Celine Chou / Specialist

Approved by : Ken Liu , **Date:** Jun. 14, 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 -16.34dB at 14.06569MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5647.20MHz and 5926.40MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
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 i-pex MHF not a standard connector.

*For U-NII-3 band compliance with rule part 15.407(b)(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	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 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	AC3200 Wireless Tri-Band Gigabit Router
Brand	TP-LINK
Test Model	Archer C3200
Status of EUT	Prototype
Power Supply Rating	12Vdc from 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 450.0Mbps 802.11ac: up to 1300Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz), 802.11ac (20MHz) 2 for 802.11n (40MHz), 802.11ac (40MHz) 1 for 802.11ac (80MHz) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (20MHz), 802.11ac (20MHz) 2 for 802.11n (40MHz), 802.11ac (40MHz) 1 for 802.11ac (80MHz)
Output Power	Beamforming off Mode: 5745 ~ 5825MHz: 997.782mW Beamforming on Mode: 5180 ~ 5240MHz: 487.105mW 5745 ~ 5825MHz: 848.997mW
Antenna Type	Omni-Directional antenna with 1.8dBi gain
Antenna Connector	i-pex MHF
Accessory Device	1.4m non-shielded AC power cable without core, adapter
Data Cable Supplied	N/A

Note:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report of BV ADT report no.: RF150326C26C and RF150326C26C-1. The difference compared with the original design are updating standard to new rule version for U-NII-3 band and adding Beamforming mode for U-NII-1 & U-NII-3 Band. All test items had been re-tested except conducted emissions for this addendum and the original test data was kept in this report.

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

Modulation Mode	TX Function	Beamforming Mode
802.11a	3TX	Not Support
802.11n (20MHz)	3TX	Not Support
802.11n (40MHz)	3TX	Not Support
802.11ac (20MHz)	3TX	Support
802.11ac (40MHz)	3TX	Support
802.11ac (80MHz)	3TX	Support

* The modulation and bandwidth are similar for 802.11n mode for 20MHz//40MHz and 802.11ac mode for 20MHz//40MHz, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

3. The EUT uses following adapter.

Adapter 1	
Brand	Huntkey
Model	HKA06012050-7C (Energy Star V)
Input Power	100-240Vac, 1.5A, 50/60Hz
Output Power	12.0Vdc, 5A
Power Line	1.8m cable without core attached on adapter

Adapter 2	
Brand	Huntkey
Model	HKA06012050-7G (Energy Star VI)
Input Power	100-240Vac, 1.5A, 50/60Hz
Output Power	12.0Vdc, 5A
Power Line	1.2m cable with one core attached on adapter

* Adapter 2 was chosen for final test

3.2 Description of Test Modes

For 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

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

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (80MHz):

Channel	Frequency
42	5210MHz

For 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

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

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (80MHz):

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	
-	√	√	√	√	Power from adapter 2

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)
-	802.11ac (20MHz)	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	7.2
-	802.11ac (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11ac (80MHz)		42	42	OFDM	BPSK	87.8
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	15.0
	802.11ac (40MHz)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
	802.11ac (80MHz)		151 to 159	151, 159	OFDM	BPSK	15.0
-	802.11ac (80MHz)		155	155	OFDM	BPSK	87.8

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	5745-5825	149 to 165	149	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	5745-5825	149 to 165	149	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)
-	802.11ac (20MHz)	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	7.2
-	802.11ac (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11ac (80MHz)		42	42	OFDM	BPSK	87.8
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	15.0
	802.11ac (40MHz)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
	802.11ac (80MHz)		151 to 159	151, 159	OFDM	BPSK	15.0
-	802.11ac (80MHz)		155	155	OFDM	BPSK	87.8

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 66%RH	120Vac, 60Hz	Tank Wu
RE<1G	22deg. C, 66%RH	120Vac, 60Hz	Bayu Chen
PLC	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Leo Tsai

3.3 Duty Cycle of Test Signal

Beamforming off Mode

802.11a, 802.11n (20MHz): Duty cycle of test signal is > 98 %, duty factor is not required.

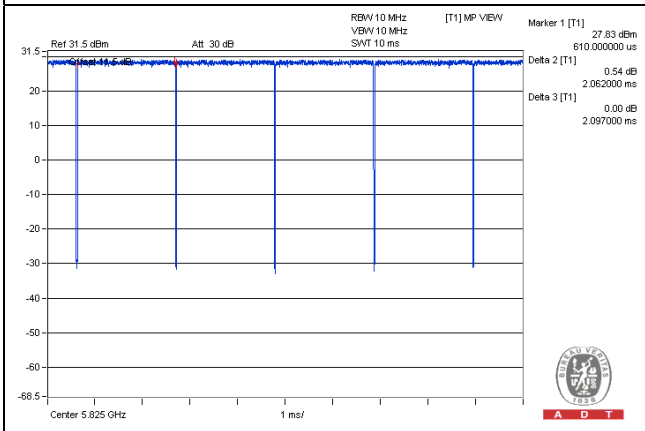
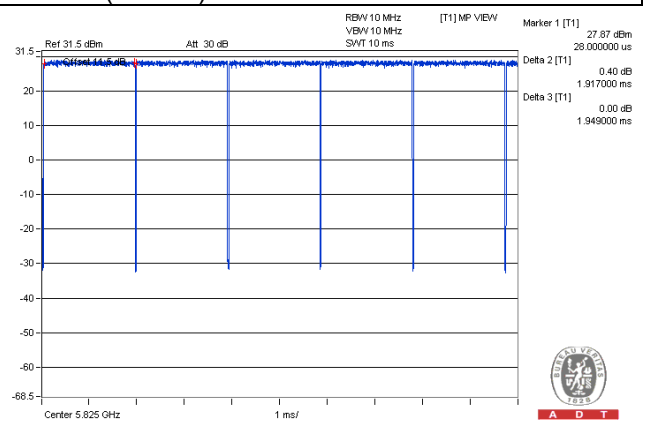
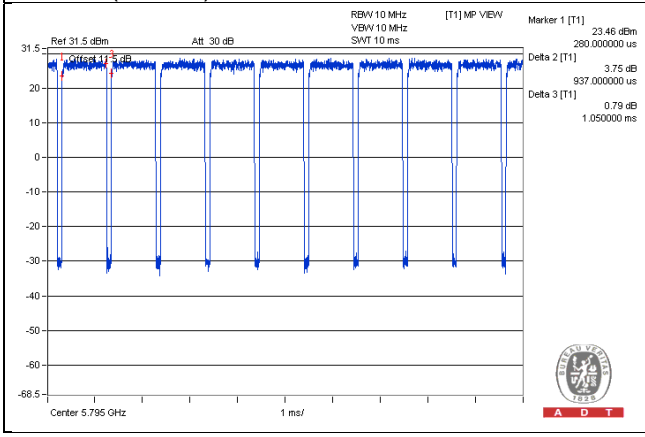
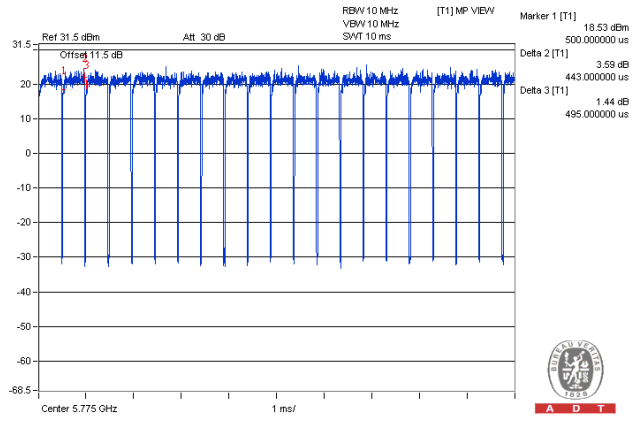
802.11n (40MHz), 802.11ac (80MHz): Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = 2.062/2.097 = 0.983

802.11n (20MHz): Duty cycle = 1.917/1.949 = 0.984

802.11n (40MHz): Duty cycle = 0.937/1.050 = 0.892, Duty factor = 10 * log(1/0.892) = 0.49

802.11ac (80MHz): Duty cycle = 0.443/0.495 = 0.895, Duty factor = 10 * log(1/0.895) = 0.48

802.11a	802.11n (20MHz)
	
802.11n (40MHz)	802.11ac (80MHz)
	

Beamforming on Mode

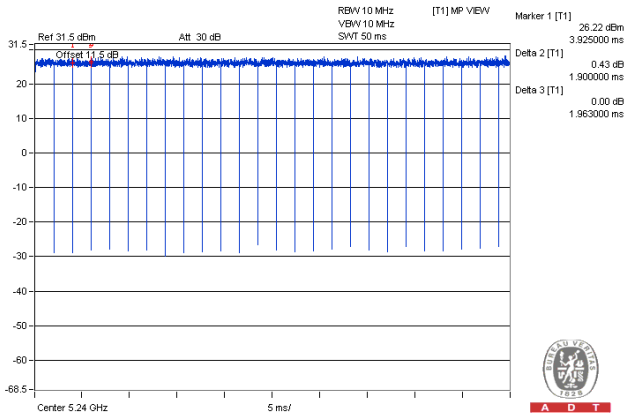
Duty cycle of test signal is < 98 %, duty factor is required.

802.11ac (20MHz): Duty cycle = 1.900/1.963 = 0.969, Duty factor = 10 * log(1/0.969) = 0.14

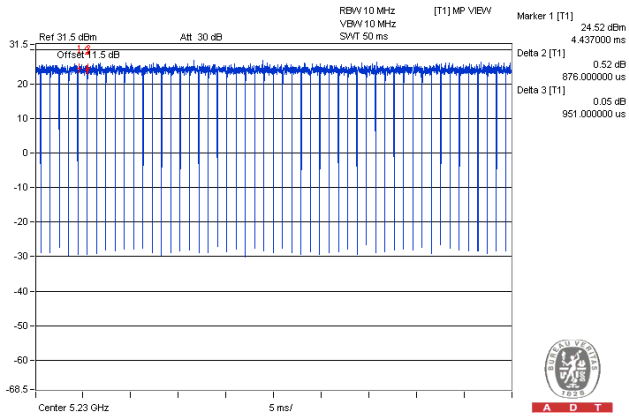
802.11ac (40MHz): Duty cycle = 0.876/0.951 = 0.921, Duty factor = 10 * log(1/0.921) = 0.36

802.11ac (80MHz): Duty cycle = 0.437/0.487 = 0.897, Duty factor = 10 * log(1/0.897) = 0.47

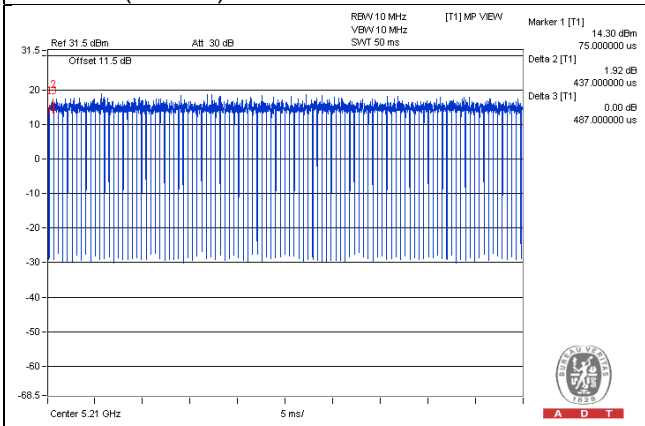
802.11ac (20MHz)



802.11ac (40MHz)



802.11ac (80MHz)



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.

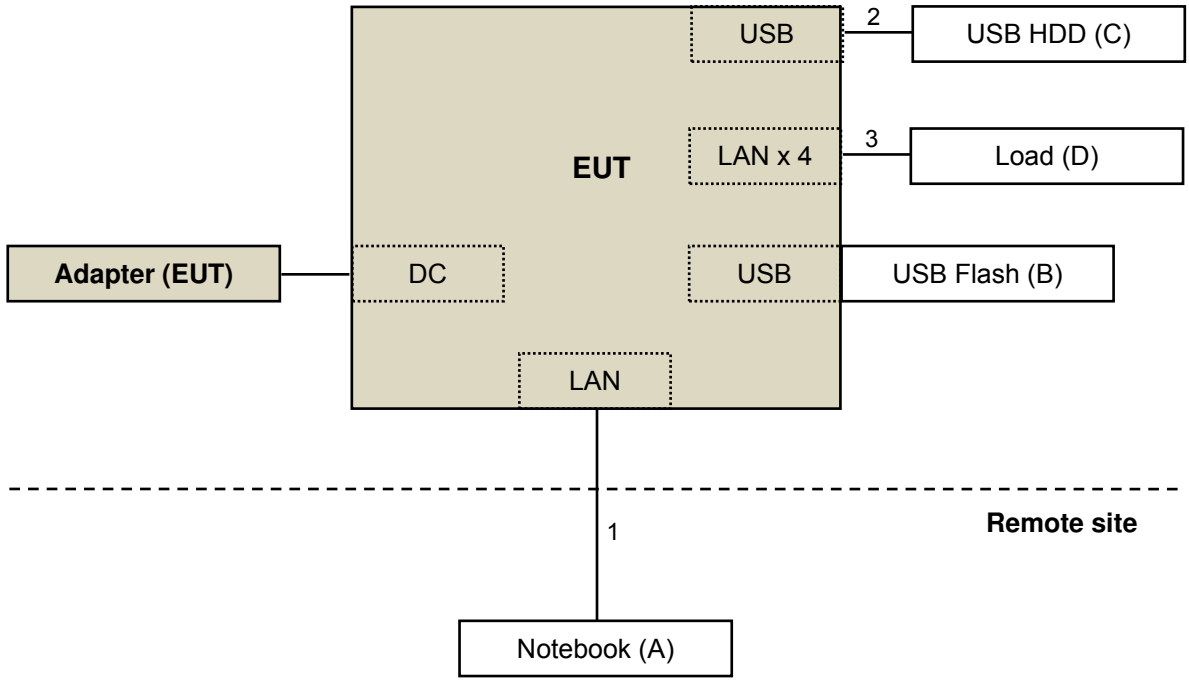
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	C654YM1	FCC DoC Approved	-
B.	USB Flash	HP	v250W	01	FCC DoC Approved	-
C.	USB HDD	TOSHIBA	DTB305	X4RBCC3RT3ZB	FCC DoC Approved	-
D.	Load	NA	NA	NA	NA	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ 45	1	10	N	0	-
2.	USB	1	1.8	Y	0	-
3.	RJ 45	4	1.8	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart E (15.407)
789033 D02 General UNII Test Procedures New Rules v01r02
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

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01r02	FIELD STRENGTH AT 3m	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK:122.2 (dBμV/m) *4
15.407(b)(4)(ii)	FIELD STRENGTH at 3m / § 15.247(d),	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)

*1 beyond 75 MHz or more above of the band edge.

*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

$$E = \frac{1000000\sqrt{30P}}{3}$$ 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. 12, 2015	Oct. 11, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 08, 2015	Jul. 07, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Jan. 08, 2016	Jan. 07, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Preamplifier Agilent	8449B	3008A01960	Aug. 09, 2015	Aug. 08, 2016
Preamplifier Agilent	8447D	2944A10631	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-02(295012+ 309220)	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03(250724)	Aug. 09, 2015	Aug. 08, 2016
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
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2015	Oct. 17, 2016
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2015	Jul. 08, 2016
Power Sensor	MA2411B	0738171	Jul. 09, 2015	Jul. 08, 2016
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 08, 2015	Jun. 07, 2016

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 4.
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 460141.
5. The IC Site Registration No. is IC7450F-4.

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:

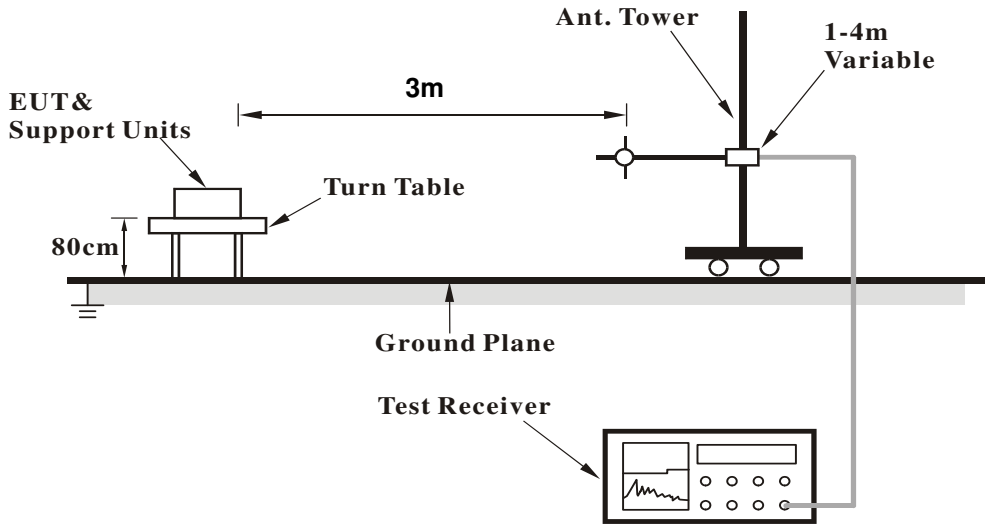
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

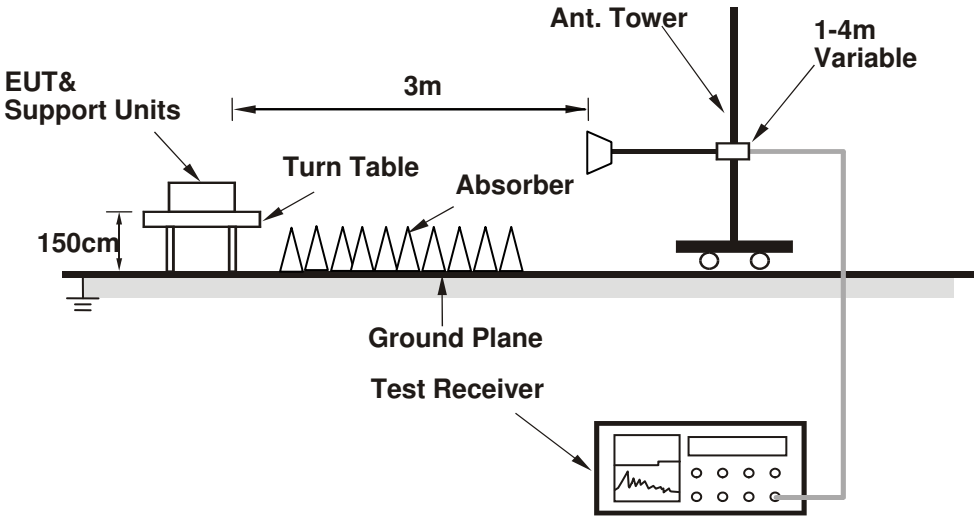
No deviation.

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 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:

Beamforming off Mode

802.11a

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	#5627.20	59.8 PK	68.2	-8.4	1.69 H	85	53.7	6.1
2	*5745.00	122.9 PK			1.60 H	81	82.5	40.4
3	*5745.00	113.1 AV			1.60 H	81	72.7	40.4
4	#5974.40	60.7 PK	68.2	-7.5	1.69 H	85	54.0	6.7
5	11490.00	62.7 PK	74.0	-11.3	1.04 H	234	43.4	19.3
6	11490.00	49.4 AV	54.0	-4.6	1.04 H	234	30.1	19.3
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	#5634.40	59.0 PK	68.2	-9.2	1.00 V	67	52.9	6.1
2	*5745.00	112.6 PK			1.00 V	66	72.2	40.4
3	*5745.00	102.7 AV			1.00 V	66	62.3	40.4
4	#5945.60	57.9 PK	68.2	-10.3	1.00 V	67	51.2	6.7
5	11490.00	61.4 PK	74.0	-12.6	1.52 V	296	42.1	19.3
6	11490.00	47.5 AV	54.0	-6.5	1.52 V	296	28.2	19.3

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	#5623.20	65.1 PK	68.2	-3.1	1.50 H	87	59.0	6.1
2	*5785.00	122.7 PK			1.55 H	82	82.2	40.5
3	*5785.00	113.1 AV			1.55 H	82	72.6	40.5
4	#5944.00	65.3 PK	68.2	-2.9	1.50 H	87	58.6	6.7
5	11570.00	62.9 PK	74.0	-11.1	1.00 H	231	43.9	19.0
6	11570.00	49.8 AV	54.0	-4.2	1.00 H	231	30.8	19.0
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	#5626.40	59.4 PK	68.2	-8.8	1.16 V	63	53.3	6.1
2	*5785.00	112.5 PK			1.11 V	69	72.0	40.5
3	*5785.00	102.7 AV			1.11 V	69	62.2	40.5
4	#5948.00	59.5 PK	68.2	-8.7	1.16 V	63	52.7	6.8
5	11570.00	61.7 PK	74.0	-12.3	1.51 V	299	42.7	19.0
6	11570.00	47.9 AV	54.0	-6.1	1.51 V	299	28.9	19.0

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.

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	#5636.00	58.8 PK	68.2	-9.4	1.72 H	87	52.7	6.1
2	*5825.00	121.9 PK			1.71 H	84	81.3	40.6
3	*5825.00	112.3 AV			1.71 H	84	71.7	40.6
4	#5983.20	65.2 PK	68.2	-3.0	1.72 H	87	58.5	6.7
5	11650.00	62.4 PK	74.0	-11.6	1.05 H	239	43.9	18.5
6	11650.00	49.0 AV	54.0	-5.0	1.05 H	239	30.5	18.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5618.40	58.2 PK	68.2	-10.0	1.66 V	10	52.1	6.1
2	*5825.00	111.7 PK			1.65 V	15	71.1	40.6
3	*5825.00	102.0 AV			1.65 V	15	61.4	40.6
4	#5943.20	57.7 PK	68.2	-10.5	1.66 V	10	51.0	6.7
5	11650.00	61.2 PK	74.0	-12.8	1.56 V	290	42.7	18.5
6	11650.00	47.4 AV	54.0	-6.6	1.56 V	290	28.9	18.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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 (20MHz)

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	#5632.00	59.6 PK	68.2	-8.6	1.82 H	84	53.5	6.1
2	*5745.00	123.3 PK			1.85 H	80	82.9	40.4
3	*5745.00	113.1 AV			1.85 H	80	72.7	40.4
4	#5955.20	59.2 PK	68.2	-9.0	1.85 H	80	52.5	6.7
5	11490.00	62.1 PK	74.0	-11.9	1.08 H	243	42.8	19.3
6	11490.00	48.8 AV	54.0	-5.2	1.08 H	243	29.5	19.3
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	#5632.00	57.8 PK	68.2	-10.4	1.29 V	62	51.7	6.1
2	*5745.00	113.0 PK			1.26 V	64	72.6	40.4
3	*5745.00	102.5 AV			1.26 V	64	62.1	40.4
4	#5940.00	57.4 PK	68.2	-10.8	1.29 V	62	50.7	6.7
5	11490.00	61.3 PK	74.0	-12.7	1.57 V	213	42.0	19.3
6	11490.00	47.3 AV	54.0	-6.7	1.57 V	213	28.0	19.3

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	#5625.60	64.3 PK	68.2	-3.9	1.98 H	81	58.2	6.1
2	*5785.00	124.3 PK			1.93 H	83	83.8	40.5
3	*5785.00	113.8 AV			1.93 H	83	73.3	40.5
4	#5936.80	64.9 PK	68.2	-3.3	1.96 H	82	58.2	6.7
5	11570.00	62.7 PK	74.0	-11.3	1.07 H	239	43.7	19.0
6	11570.00	49.6 AV	54.0	-4.4	1.07 H	239	30.6	19.0
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	#5622.40	59.0 PK	68.2	-9.2	1.42 V	51	52.9	6.1
2	*5785.00	114.3 PK			1.49 V	57	73.8	40.5
3	*5785.00	104.1 AV			1.49 V	57	63.6	40.5
4	#5953.60	58.4 PK	68.2	-9.8	1.42 V	51	51.7	6.7
5	11570.00	61.1 PK	74.0	-12.9	1.53 V	291	42.1	19.0
6	11570.00	47.7 AV	54.0	-6.3	1.53 V	291	28.7	19.0

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 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	#5630.40	59.5 PK	68.2	-8.7	1.79 H	80	53.4	6.1
2	*5825.00	122.7 PK			1.79 H	80	82.1	40.6
3	*5825.00	112.4 AV			1.79 H	80	71.8	40.6
4	#5992.00	64.8 PK	68.2	-3.4	1.72 H	85	58.1	6.7
5	11650.00	62.3 PK	74.0	-11.7	1.03 H	237	43.8	18.5
6	11650.00	48.9 AV	54.0	-5.1	1.03 H	237	30.4	18.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5630.40	58.1 PK	68.2	-10.1	1.56 V	56	52.0	6.1
2	*5825.00	112.9 PK			1.56 V	56	72.3	40.6
3	*5825.00	102.6 AV			1.56 V	56	62.0	40.6
4	#5993.60	59.3 PK	68.2	-8.9	1.56 V	56	52.6	6.7
5	11650.00	61.1 PK	74.0	-12.9	1.50 V	281	42.6	18.5
6	11650.00	47.2 AV	54.0	-6.8	1.50 V	281	28.7	18.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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 (40MHz)

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	#5601.60	62.1 PK	68.2	-6.1	1.76 H	75	56.2	5.9
2	*5755.00	120.2 PK			1.76 H	75	79.7	40.5
3	*5755.00	110.0 AV			1.76 H	75	69.5	40.5
4	#5932.00	62.6 PK	68.2	-5.6	1.76 H	74	55.9	6.7
5	11510.00	61.6 PK	74.0	-12.4	1.53 H	271	42.5	19.1
6	11510.00	48.5 AV	54.0	-5.5	1.53 H	271	29.4	19.1
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	#5624.80	58.0 PK	68.2	-10.2	1.00 V	53	51.9	6.1
2	*5755.00	110.1 PK			1.00 V	57	69.6	40.5
3	*5755.00	99.6 AV			1.00 V	57	59.1	40.5
4	#5943.20	58.4 PK	68.2	-9.8	1.00 V	53	51.7	6.7
5	11550.00	60.7 PK	74.0	-13.3	1.51 V	233	41.7	19.0
6	11550.00	46.7 AV	54.0	-7.3	1.51 V	233	27.7	19.0

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 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	#5620.00	60.4 PK	68.2	-7.8	1.45 H	53	54.3	6.1
2	*5795.00	119.0 PK			1.45 H	53	78.5	40.5
3	*5795.00	108.9 AV			1.45 H	53	68.4	40.5
4	#5970.40	61.9 PK	68.2	-6.3	1.48 H	59	55.2	6.7
5	11590.00	61.9 PK	74.0	-12.1	1.27 H	265	43.2	18.7
6	11590.00	48.7 AV	54.0	-5.3	1.27 H	265	30.0	18.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5611.20	58.0 PK	68.2	-10.2	1.00 V	354	52.0	6.0
2	*5795.00	110.4 PK			1.00 V	351	69.9	40.5
3	*5795.00	100.2 AV			1.00 V	351	59.7	40.5
4	#5952.80	57.6 PK	68.2	-10.6	1.00 V	354	50.9	6.7
5	11590.00	60.8 PK	74.0	-13.2	1.57 V	295	42.1	18.7
6	11590.00	46.9 AV	54.0	-7.1	1.57 V	295	28.2	18.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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 (80MHz)

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	**#5647.20**	**68.1 PK**	**68.2**	**-0.1**	**1.72 H**	**74**	**62.0**	**6.1**
2	#5652.00	68.7 PK	69.7	-1.0	1.72 H	78	62.6	6.1
3	*5775.00	115.7 PK			1.72 H	78	75.2	40.5
4	*5775.00	105.6 AV			1.72 H	78	65.1	40.5
5	#5932.80	66.1 PK	68.2	-2.1	1.72 H	78	59.4	6.7
6	11550.00	61.3 PK	74.0	-12.7	1.57 H	76	42.3	19.0
7	11550.00	48.1 AV	54.0	-5.9	1.57 H	76	29.1	19.0
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	#5614.40	58.7 PK	68.2	-9.5	1.00 V	64	52.6	6.1
2	*5775.00	106.9 PK			1.00 V	60	66.4	40.5
3	*5775.00	96.5 AV			1.00 V	60	56.0	40.5
4	#5936.80	58.7 PK	68.2	-9.5	1.00 V	64	52.0	6.7
5	11550.00	60.3 PK	74.0	-13.7	1.50 V	213	41.3	19.0
6	11550.00	46.1 AV	54.0	-7.9	1.50 V	213	27.1	19.0

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.

Beamforming on Mode

802.11ac (20MHz)

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	59.9 PK	74.0	-14.1	1.61 H	117	54.4	5.5
2	5150.00	47.6 AV	54.0	-6.4	1.61 H	117	42.1	5.5
3	*5180.00	118.4 PK			1.62 H	120	78.9	39.5
4	*5180.00	109.2 AV			1.62 H	120	69.7	39.5
5	#10360.00	67.7 PK	74.0	-6.3	1.10 H	94	50.2	17.5
6	#10360.00	53.6 AV	54.0	-0.4	1.10 H	94	36.1	17.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.4 PK	74.0	-17.6	1.00 V	309	50.9	5.5
2	5150.00	44.5 AV	54.0	-9.5	1.00 V	309	39.0	5.5
3	*5180.00	110.6 PK			1.00 V	310	71.1	39.5
4	*5180.00	101.8 AV			1.00 V	310	62.3	39.5
5	#10360.00	61.7 PK	74.0	-12.3	1.00 V	8	44.2	17.5
6	#10360.00	49.5 AV	54.0	-4.5	1.00 V	8	32.0	17.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	118.1 PK			1.66 H	130	78.5	39.6
2	*5200.00	108.8 AV			1.66 H	130	69.2	39.6
3	#10400.00	67.9 PK	74.0	-6.1	1.15 H	57	49.9	18.0
4	#10400.00	53.6 AV	54.0	-0.4	1.15 H	57	35.6	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	*5200.00	111.6 PK			1.00 V	309	72.0	39.6
2	*5200.00	102.0 AV			1.00 V	309	62.4	39.6
3	#10400.00	66.2 PK	74.0	-7.8	1.00 V	350	48.2	18.0
4	#10400.00	52.2 AV	54.0	-1.8	1.00 V	350	34.2	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 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	118.4 PK			1.60 H	125	78.8	39.6
2	*5240.00	109.3 AV			1.60 H	125	69.7	39.6
3	5350.00	59.5 PK	74.0	-14.5	1.62 H	128	53.8	5.7
4	5350.00	48.7 AV	54.0	-5.3	1.62 H	128	43.0	5.7
5	#10480.00	67.6 PK	74.0	-6.4	1.22 H	38	49.6	18.0
6	#10480.00	53.6 AV	54.0	-0.4	1.22 H	38	35.6	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	*5240.00	112.4 PK			1.04 V	306	72.8	39.6
2	*5240.00	102.2 AV			1.04 V	306	62.6	39.6
3	5350.00	57.2 PK	74.0	-16.8	1.00 V	307	51.5	5.7
4	5350.00	44.3 AV	54.0	-9.7	1.00 V	307	38.6	5.7
5	#10480.00	64.6 PK	74.0	-9.4	1.00 V	327	46.6	18.0
6	#10480.00	51.8 AV	54.0	-2.2	1.00 V	327	33.8	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 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	#5615.20	59.6 PK	68.2	-8.6	1.51 H	88	53.5	6.1
2	*5745.00	122.6 PK			1.57 H	83	82.2	40.4
3	*5745.00	113.8 AV			1.57 H	83	73.4	40.4
4	#5984.80	60.6 PK	68.2	-7.6	1.51 H	88	53.9	6.7
5	11490.00	62.4 PK	74.0	-11.6	1.42 H	228	43.1	19.3
6	11490.00	49.7 AV	54.0	-4.3	1.42 H	228	30.4	19.3
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	#5644.80	58.1 PK	68.2	-10.1	1.06 V	77	52.0	6.1
2	*5745.00	112.4 PK			1.00 V	70	72.0	40.4
3	*5745.00	103.6 AV			1.00 V	70	63.2	40.4
4	#5936.80	58.6 PK	68.2	-9.6	1.06 V	77	51.9	6.7
5	11409.00	61.2 PK	74.0	-12.8	1.48 V	281	41.5	19.7
6	11409.00	48.0 AV	54.0	-6.0	1.48 V	281	28.3	19.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5625.60	64.7 PK	68.2	-3.5	1.45 H	76	58.6	6.1
2	*5785.00	123.5 PK			1.48 H	79	83.0	40.5
3	*5785.00	114.2 AV			1.48 H	79	73.7	40.5
4	#5946.40	65.1 PK	68.2	-3.1	1.45 H	76	58.4	6.7
5	11570.00	62.7 PK	74.0	-11.3	1.00 H	212	43.7	19.0
6	11570.00	49.9 AV	54.0	-4.1	1.00 H	212	30.9	19.0
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	#5632.80	59.4 PK	68.2	-8.8	1.05 V	73	53.3	6.1
2	*5785.00	113.6 PK			1.00 V	69	73.1	40.5
3	*5785.00	106.8 AV			1.00 V	69	66.3	40.5
4	#5953.60	59.0 PK	68.2	-9.2	1.05 V	73	52.3	6.7
5	11570.00	61.9 PK	74.0	-12.1	1.44 V	311	42.9	19.0
6	11570.00	47.7 AV	54.0	-6.3	1.44 V	311	28.7	19.0

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 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	#5628.80	58.8 PK	68.2	-9.4	1.64 H	80	52.7	6.1
2	*5825.00	120.1 PK			1.63 H	90	79.5	40.6
3	*5825.00	110.3 AV			1.63 H	90	69.7	40.6
4	#5988.80	64.1 PK	68.2	-4.1	1.64 H	80	57.4	6.7
5	11650.00	62.6 PK	74.0	-11.4	1.10 H	207	44.1	18.5
6	11650.00	48.9 AV	54.0	-5.1	1.10 H	207	30.4	18.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5605.60	58.3 PK	68.2	-9.9	1.03 V	33	52.3	6.0
2	*5825.00	110.3 PK			1.00 V	26	69.7	40.6
3	*5825.00	101.5 AV			1.00 V	26	60.9	40.6
4	#5984.80	58.9 PK	68.2	-9.3	1.03 V	33	52.2	6.7
5	11650.00	61.4 PK	74.0	-12.6	1.51 V	279	42.9	18.5
6	11650.00	47.3 AV	54.0	-6.7	1.51 V	279	28.8	18.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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 (40MHz)

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	68.0 PK	74.0	-6.0	1.20 H	301	62.5	5.5
2	5150.00	53.7 AV	54.0	-0.3	1.20 H	301	48.2	5.5
3	*5190.00	112.4 PK			1.28 H	300	72.9	39.5
4	*5190.00	102.9 AV			1.28 H	300	63.4	39.5
5	#10380.00	60.1 PK	74.0	-13.9	1.16 H	59	42.3	17.8
6	#10380.00	47.3 AV	54.0	-6.7	1.16 H	59	29.5	17.8
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	5150.00	56.8 PK	74.0	-17.2	1.00 V	307	51.3	5.5
2	5150.00	44.4 AV	54.0	-9.6	1.00 V	307	38.9	5.5
3	*5190.00	107.7 PK			1.00 V	309	68.2	39.5
4	*5190.00	97.0 AV			1.00 V	309	57.5	39.5
5	#10380.00	59.4 PK	74.0	-14.6	1.00 V	35	41.6	17.8
6	#10380.00	46.7 AV	54.0	-7.3	1.00 V	35	28.9	17.8

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.

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	*5230.00	117.4 PK			1.24 H	300	77.8	39.6
2	*5230.00	107.2 AV			1.24 H	300	67.6	39.6
3	5350.00	59.8 PK	74.0	-14.2	1.28 H	304	54.1	5.7
4	5350.00	48.2 AV	54.0	-5.8	1.28 H	304	42.5	5.7
5	#10460.00	68.5 PK	74.0	-5.5	1.38 H	31	50.5	18.0
6	#10460.00	53.8 AV	54.0	-0.2	1.38 H	31	35.8	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	*5230.00	112.8 PK			1.00 V	308	73.2	39.6
2	*5230.00	102.7 AV			1.00 V	308	63.1	39.6
3	5350.00	57.6 PK	74.0	-16.4	1.00 V	308	51.9	5.7
4	5350.00	45.3 AV	54.0	-8.7	1.00 V	308	39.6	5.7
5	#10460.00	62.0 PK	74.0	-12.0	1.00 V	16	44.0	18.0
6	#10460.00	50.8 AV	54.0	-3.2	1.00 V	16	32.8	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 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	#5608.80	64.5 PK	68.2	-3.7	1.28 H	91	58.5	6.0
2	*5755.00	123.2 PK			1.31 H	83	82.7	40.5
3	*5755.00	112.9 AV			1.31 H	83	72.4	40.5
4	#5929.60	65.5 PK	68.2	-2.7	1.28 H	91	58.8	6.7
5	11510.00	61.8 PK	74.0	-12.2	1.49 H	258	42.7	19.1
6	11510.00	48.4 AV	54.0	-5.6	1.49 H	258	29.3	19.1
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	#5626.40	58.1 PK	68.2	-10.1	1.09 V	66	52.0	6.1
2	*5755.00	110.8 PK			1.18 V	72	70.3	40.5
3	*5755.00	100.3 AV			1.18 V	72	59.8	40.5
4	#5928.00	58.7 PK	68.2	-9.5	1.09 V	66	52.0	6.7
5	11550.00	60.9 PK	74.0	-13.1	1.40 V	199	41.9	19.0
6	11550.00	46.6 AV	54.0	-7.4	1.40 V	199	27.6	19.0

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 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	#5626.40	62.0 PK	68.2	-6.2	1.47 H	81	55.9	6.1
2	*5795.00	120.0 PK			1.50 H	77	79.5	40.5
3	*5795.00	110.4 AV			1.50 H	77	69.9	40.5
4	#5944.00	62.8 PK	68.2	-5.4	1.47 H	81	56.1	6.7
5	11590.00	62.1 PK	74.0	-11.9	1.20 H	258	43.4	18.7
6	11590.00	48.6 AV	54.0	-5.4	1.20 H	258	29.9	18.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5624.00	58.5 PK	68.2	-9.7	1.19 V	62	52.4	6.1
2	*5795.00	110.2 PK			1.23 V	70	69.7	40.5
3	*5795.00	100.9 AV			1.23 V	70	60.4	40.5
4	#5939.20	58.8 PK	68.2	-9.4	1.19 V	62	52.1	6.7
5	11590.00	60.9 PK	74.0	-13.1	1.52 V	302	42.2	18.7
6	11590.00	46.8 AV	54.0	-7.2	1.52 V	302	28.1	18.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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 (80MHz)

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	67.1 PK	74.0	-6.9	1.63 H	296	61.6	5.5
2	5150.00	53.6 AV	54.0	-0.4	1.63 H	296	48.1	5.5
3	*5210.00	109.1 PK			1.61 H	304	69.5	39.6
4	*5210.00	98.9 AV			1.61 H	304	59.3	39.6
5	#10420.00	59.6 PK	74.0	-14.4	1.28 H	75	41.6	18.0
6	#10420.00	47.7 AV	54.0	-6.3	1.28 H	75	29.7	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	58.1 PK	74.0	-15.9	1.00 V	308	52.6	5.5
2	5150.00	46.4 AV	54.0	-7.6	1.00 V	308	40.9	5.5
3	*5210.00	105.6 PK			1.00 V	308	66.0	39.6
4	*5210.00	94.8 AV			1.00 V	308	55.2	39.6
5	#10420.00	58.6 PK	74.0	-15.4	1.00 V	235	40.6	18.0
6	#10420.00	46.2 AV	54.0	-7.8	1.00 V	235	28.2	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 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	#5644.00	63.3 PK	68.2	-4.9	1.00 H	85	57.2	6.1
2	*5775.00	117.0 PK			1.09 H	83	76.5	40.5
3	*5775.00	107.5 AV			1.09 H	83	67.0	40.5
4	**#5926.40**	**68.1 PK**	**68.2**	**-0.1**	**1.00 H**	**85**	**61.4**	**6.7**
5	11550.00	61.5 PK	74.0	-12.5	1.45 H	92	42.5	19.0
6	11550.00	48.0 AV	54.0	-6.0	1.45 H	92	29.0	19.0
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	#5648.00	60.0 PK	68.2	-8.2	1.18 V	55	53.9	6.1
2	*5775.00	110.7 PK			1.12 V	71	70.2	40.5
3	*5775.00	97.9 AV			1.12 V	71	57.4	40.5
4	#5948.80	60.0 PK	68.2	-8.2	1.18 V	55	53.2	6.8
5	11550.00	60.6 PK	74.0	-13.4	1.33 V	189	41.6	19.0
6	11550.00	46.0 AV	54.0	-8.0	1.33 V	189	27.0	19.0

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.

Below 1GHz Worst-Case Data:

802.11a

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	181.25	24.7 QP	43.5	-18.8	1.25 H	267	40.0	-15.3
2	243.34	27.2 QP	46.0	-18.8	1.25 H	267	42.0	-14.8
3	375.29	28.3 QP	46.0	-17.7	1.00 H	35	39.8	-11.5
4	412.16	26.8 QP	46.0	-19.2	1.99 H	341	37.8	-11.0
5	800.24	27.6 QP	46.0	-18.4	1.00 H	213	30.6	-3.0
6	934.13	30.9 QP	46.0	-15.1	1.00 H	6	31.8	-0.9
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	60.95	31.6 QP	40.0	-8.4	1.25 V	77	46.2	-14.6
2	97.81	27.4 QP	43.5	-16.1	2.00 V	158	46.2	-18.8
3	386.93	28.6 QP	46.0	-17.4	1.25 V	358	40.0	-11.4
4	518.88	24.3 QP	46.0	-21.7	1.00 V	188	33.4	-9.1
5	800.24	27.2 QP	46.0	-18.8	1.25 V	187	30.2	-3.0
6	932.19	31.5 QP	46.0	-14.5	1.00 V	173	32.5	-1.0

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

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	ESCI	100613	Nov. 16, 2015	Nov. 15, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 26, 2015	Dec. 25, 2016
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 26, 2016	Feb. 25, 2017
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 24, 2015	Jul. 23, 2016
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 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

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

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

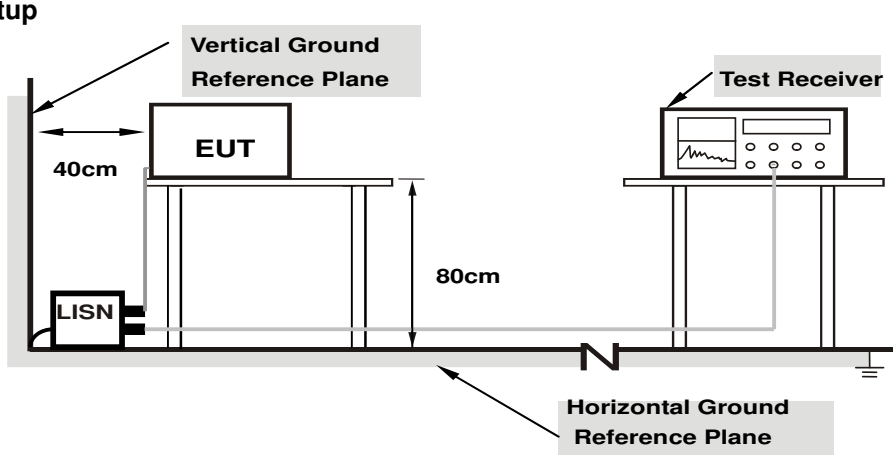
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

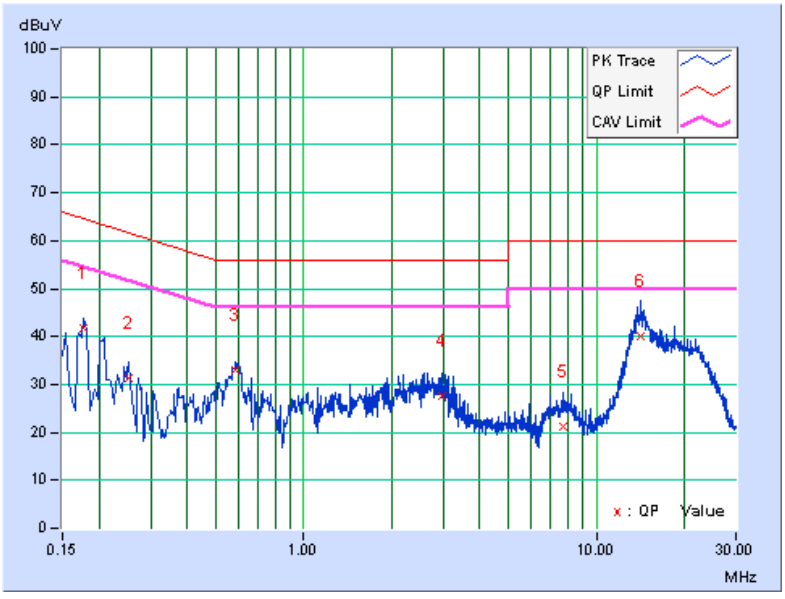
Worst-Case Data: 802.11a

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17744	10.07	31.67	19.81	41.74	29.88	64.60	54.60	-22.86	-24.72
2	0.25166	10.12	21.23	6.88	31.35	17.00	61.70	51.70	-30.35	-34.70
3	0.58401	10.18	22.81	14.52	32.99	24.70	56.00	46.00	-23.01	-21.30
4	2.97302	10.35	17.26	8.24	27.61	18.59	56.00	46.00	-28.39	-27.41
5	7.65720	10.61	10.62	3.56	21.23	14.17	60.00	50.00	-38.77	-35.83
6	14.14780	10.89	29.10	22.24	39.99	33.13	60.00	50.00	-20.01	-16.87

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.

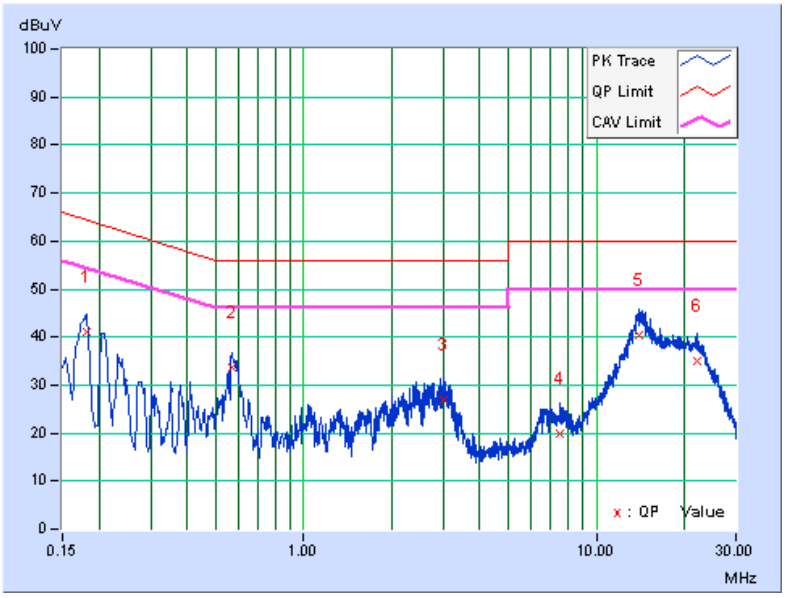


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.18122	10.03	30.96	15.01	40.99	25.04	64.43	54.43	-23.44	-29.39
2	0.56837	10.17	23.55	12.31	33.72	22.48	56.00	46.00	-22.28	-23.52
3	3.00821	10.37	16.60	5.48	26.97	15.85	56.00	46.00	-29.03	-30.15
4	7.50471	10.54	9.47	3.16	20.01	13.70	60.00	50.00	-39.99	-36.30
5	**14.06569**	**10.75**	**29.72**	**22.91**	**40.47**	**33.66**	**60.00**	**50.00**	**-19.53**	**-16.34**
6	21.98735	11.01	24.02	18.15	35.03	29.16	60.00	50.00	-24.97	-20.84

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

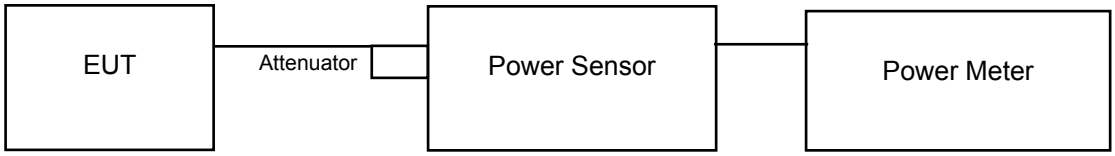
4.3.1 Limits of Transmit Power Measurement

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)

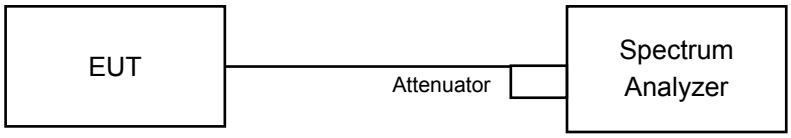
*B is the 26 dB emission bandwidth in megahertz

4.3.2 Test Setup

For 802.11a, 802.11n (20MHz), 802.11n (40MHz), 802.11ac (20MHz), 802.11ac (40MHz)



For 802.11ac (80MHz)



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 (20MHz), 802.11n (40MHz)
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 (80MHz)

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.

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:

Beamforming off 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	Chain 2				
149	5745	26.03	24.79	24.66	994.583	29.98	30	Pass
157	5785	26.08	24.83	24.55	994.700	29.98	30	Pass
165	5825	25.66	24.65	24.52	943.011	29.75	30	Pass

802.11n (20MHz)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
149	5745	26.18	24.74	24.54	997.252	29.99	30	Pass
157	5785	26.24	24.67	24.48	994.359	29.98	30	Pass
165	5825	26.08	24.75	24.64	995.119	29.98	30	Pass

802.11n (40MHz)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
151	5755	26.22	24.65	24.53	994.329	29.98	30	Pass
159	5795	25.99	24.84	24.71	**997.782**	29.99	30	Pass

802.11ac (80MHz)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
155	5775	24.47	24.29	23.38	766.203	28.84	30	Pass

Beamforming on Mode

802.11ac (20MHz)

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	20.14	20.43	20.51	326.144	25.13	29.43	Pass
40	5200	20.76	20.55	20.66	349.038	25.43	29.43	Pass
48	5240	21.22	21.09	21.84	413.720	26.17	29.43	Pass
149	5745	25.51	24.03	23.81	**848.997**	29.29	29.43	Pass
157	5785	25.59	23.90	23.72	843.219	29.26	29.43	Pass
165	5825	25.40	24.03	23.90	845.138	29.27	29.43	Pass

Note: Directional gain = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power limit shall be reduced to 30-(6.57-6) = 29.43dBm.

802.11ac (40MHz)

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	16.18	16.34	16.77	132.082	21.21	29.43	Pass
46	5230	22.12	21.69	22.47	**487.105**	26.88	29.43	Pass
151	5755	25.41	23.95	23.86	839.069	29.24	29.43	Pass
159	5795	25.31	24.11	23.98	847.292	29.28	29.43	Pass

Note: Directional gain = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power limit shall be reduced to 30-(6.57-6) = 29.43dBm.

802.11ac (80MHz)

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	15.37	15.23	15.96	107.224	20.30	29.43	Pass
155	5775	24.41	24.21	23.31	753.98	28.77	29.43	Pass

Note: Directional gain = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power limit shall be reduced to 30-(6.57-6) = 29.43dBm.

26dB Bandwidth:

Beamforming on Mode

802.11ac (20MHz)

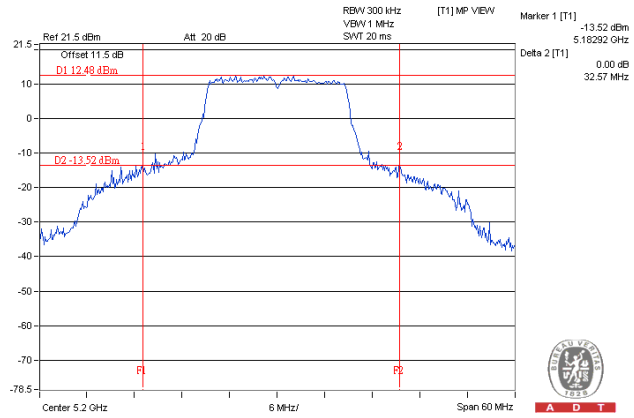
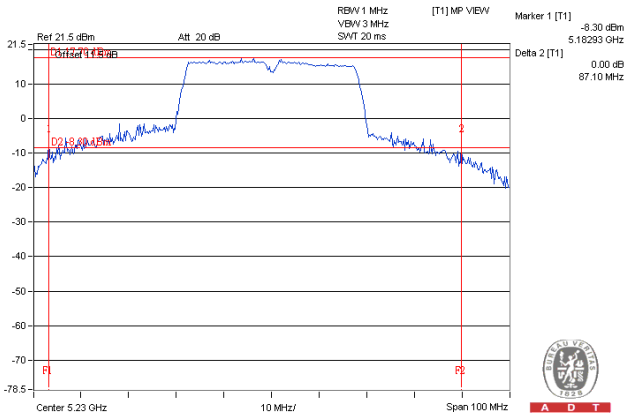
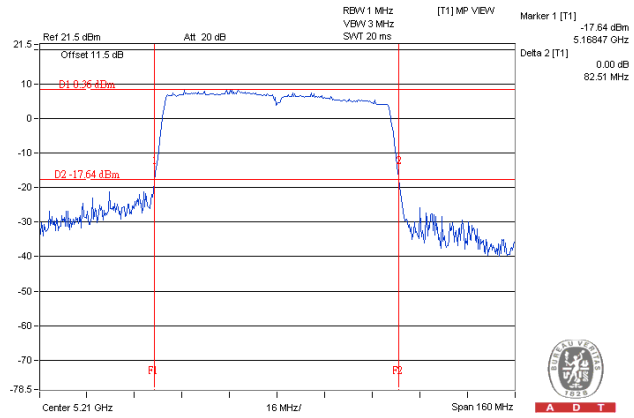
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	31.30	21.19	29.87	Pass
40	5200	32.57	21.78	28.88	Pass
48	5240	30.01	21.88	29.46	Pass

802.11ac (40MHz)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
38	5190	41.21	41.15	40.87	Pass
46	5230	87.10	50.92	72.46	Pass

802.11ac (80MHz)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
42	5210	82.51	81.97	81.49	Pass

Spectrum Plot of Worst Value	
802.11ac (20MHz)	802.11ac (40MHz)
	
802.11ac (80MHz)	
	

Occupied Bandwidth:

Beamforming off Mode

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
149	5745	29.13	19.48	18.43
157	5785	29.64	19.68	18.48
165	5825	28.32	19.80	18.96

802.11n (20MHz)

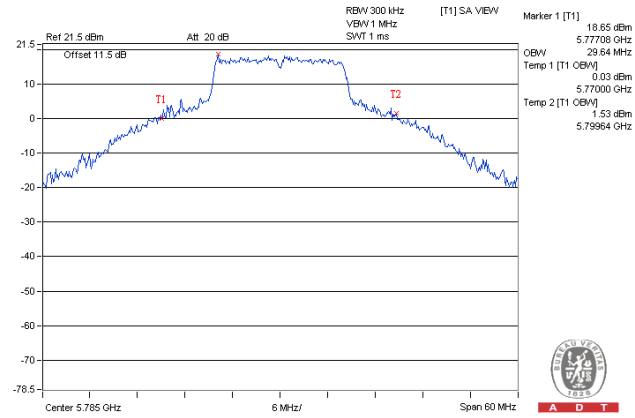
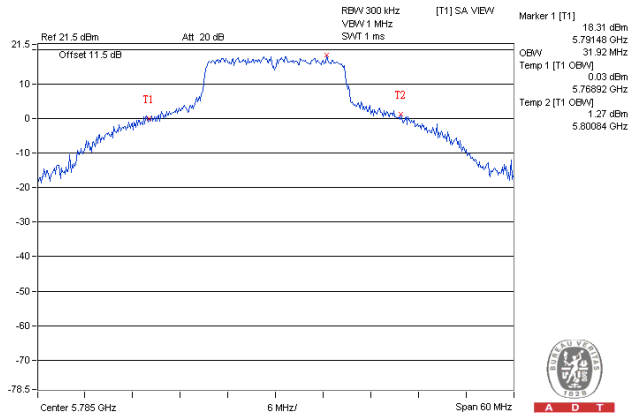
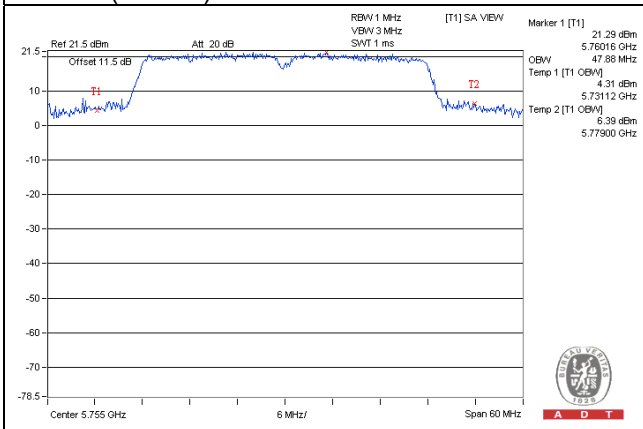
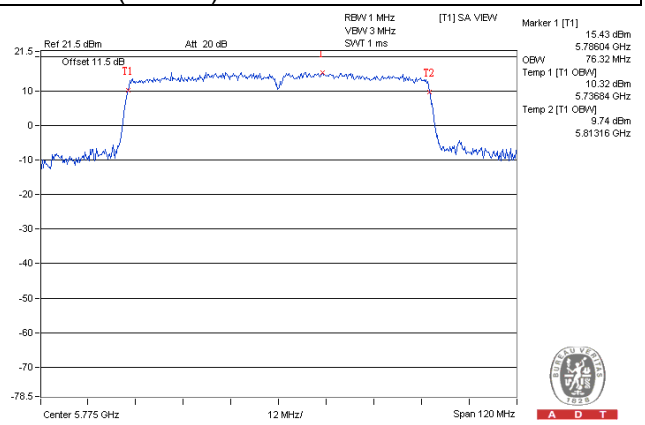
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
149	5745	22.68	20.52	19.80
157	5785	31.92	20.76	19.92
165	5825	30.36	20.88	20.04

802.11n (40MHz)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
151	5755	47.88	37.44	37.80
159	5795	47.16	37.68	38.04

802.11ac (80MHz)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
155	5775	76.08	76.32	76.32

Spectrum Plot of Worst Value	
802.11a	802.11n (20MHz)
	
802.11n (40MHz)	802.11ac (80MHz)
	

Beamforming on Mode

802.11ac (20MHz)

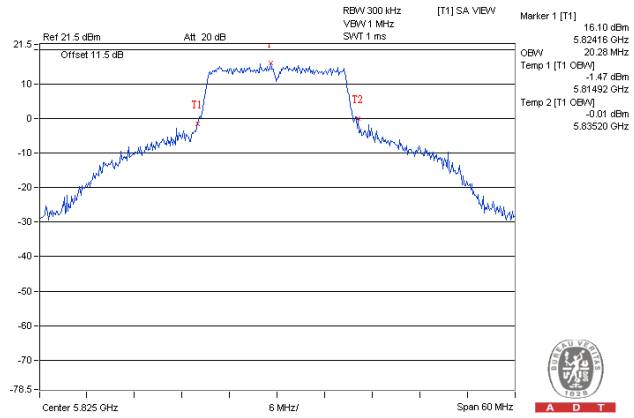
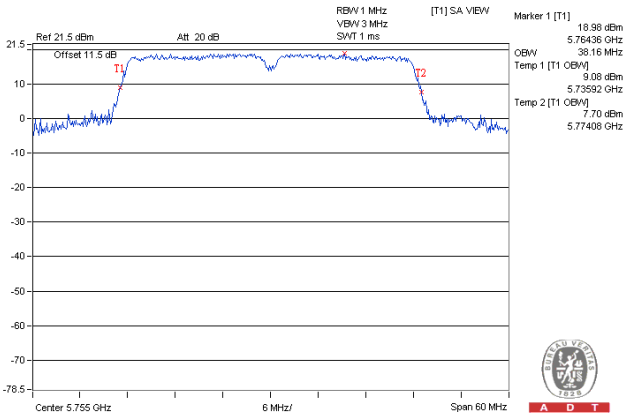
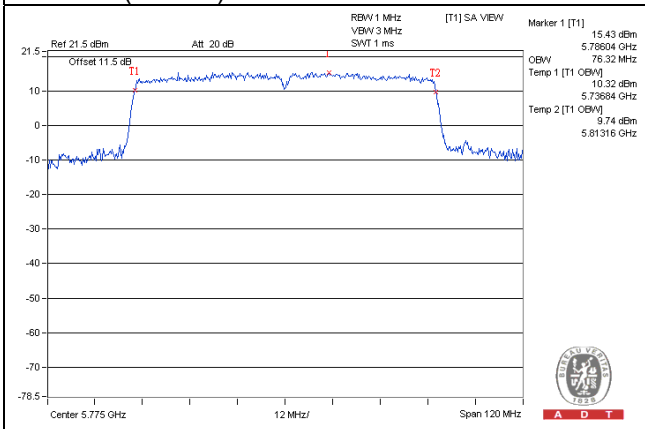
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
36	5180	18.36	17.88	18.12
40	5200	18.24	17.88	18.12
48	5240	18.24	17.88	18.12
149	5745	19.92	19.57	18.78
157	5785	19.56	18.96	18.12
165	5825	20.28	18.72	18.84

802.11ac (40MHz)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
38	5190	36.72	36.60	36.60
46	5230	37.44	36.84	37.08
151	5755	38.16	37.32	37.32
159	5795	37.92	37.32	37.44

802.11ac (80MHz)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
42	5210	75.84	75.84	75.60
155	5775	76.08	76.32	76.32

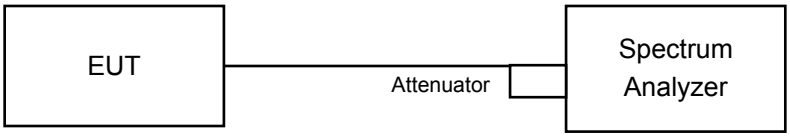
Spectrum Plot of Worst Value	
802.11ac (20MHz)	802.11ac (40MHz)
	
802.11ac (80MHz)	
	

4.4 Peak Power Spectral Density Measurement

4.4.1 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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 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:
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)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

Beamforming off Mode

For U-NII-3 Band

802.11a

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	6.01	8.23	4.77	13.00	29.43	Pass
	157	5785	6.03	8.25	4.77	13.02	29.43	Pass
	165	5825	5.36	7.58	4.77	12.35	29.43	Pass
1	149	5745	3.71	5.93	4.77	10.70	29.43	Pass
	157	5785	4.07	6.29	4.77	11.06	29.43	Pass
	165	5825	3.61	5.83	4.77	10.60	29.43	Pass
2	149	5745	2.90	5.12	4.77	9.89	29.43	Pass
	157	5785	3.16	5.38	4.77	10.15	29.43	Pass
	165	5825	2.79	5.01	4.77	9.78	29.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 30-(6.57-6) = 29.43dBm.

802.11n (20MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	4.11	6.33	4.77	11.10	29.43	Pass
	157	5785	5.43	7.65	4.77	12.42	29.43	Pass
	165	5825	4.90	7.12	4.77	11.89	29.43	Pass
1	149	5745	3.10	5.32	4.77	10.09	29.43	Pass
	157	5785	3.17	5.39	4.77	10.16	29.43	Pass
	165	5825	3.25	5.47	4.77	10.24	29.43	Pass
2	149	5745	2.56	4.78	4.77	9.55	29.43	Pass
	157	5785	2.50	4.72	4.77	9.49	29.43	Pass
	165	5825	2.51	4.73	4.77	9.50	29.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 30-(6.57-6) = 29.43dBm.

802.11n (40MHz)

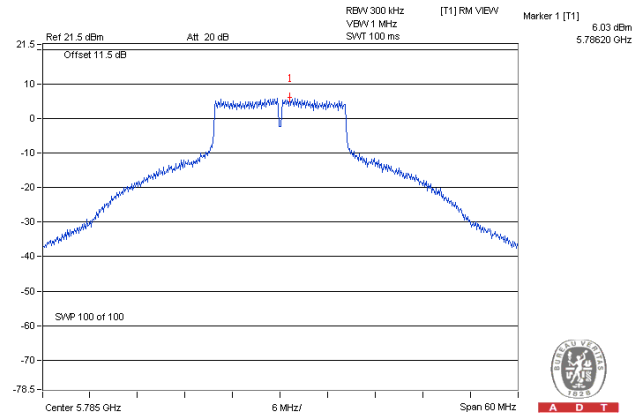
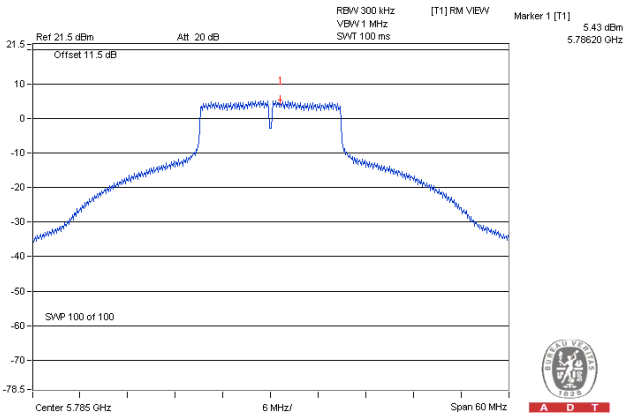
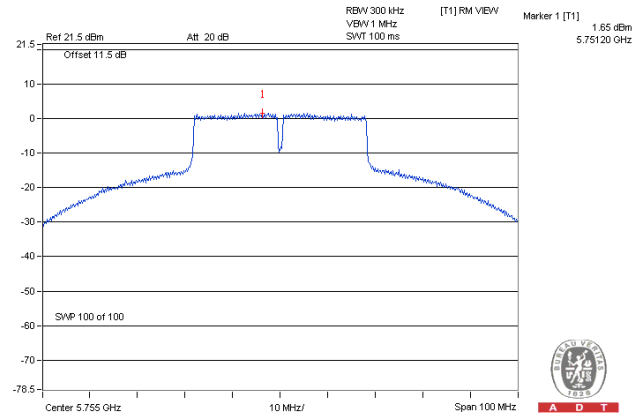
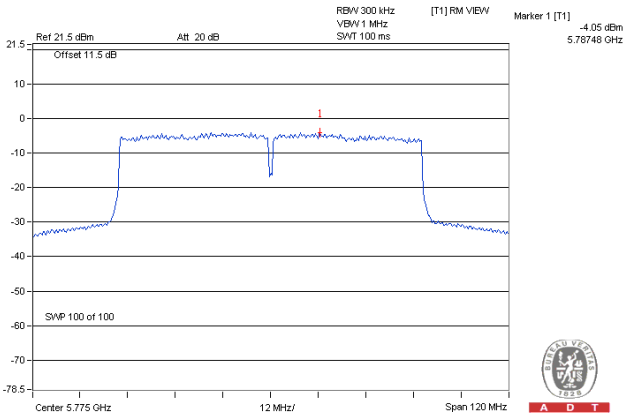
TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	151	5755	1.65	3.87	4.77	0.49	9.13	29.43	Pass
	159	5795	1.52	3.74	4.77	0.49	9.00	29.43	Pass
1	151	5755	-0.68	1.54	4.77	0.49	6.80	29.43	Pass
	159	5795	-0.47	1.75	4.77	0.49	7.01	29.43	Pass
2	151	5755	-0.66	1.56	4.77	0.49	6.82	29.43	Pass
	159	5795	-0.69	1.53	4.77	0.49	6.79	29.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 30-(6.57-6) = 29.43dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	155	5775	-4.05	-1.83	4.77	0.48	3.42	29.43	Pass
1	155	5775	-4.16	-1.94	4.77	0.48	3.31	29.43	Pass
2	155	5775	-5.14	-2.92	4.77	0.48	2.33	29.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 30-(6.57-6) = 29.43dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a	802.11n (20MHz)
	
802.11n (40MHz)	802.11ac (80MHz)
	

Beamforming on Mode

For U-NII-1 Band

802.11ac (20MHz)

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	6.71	6.97	6.42	11.47	0.14	11.61	16.43	Pass
40	5200	7.27	7.29	7.22	12.03	0.14	12.17	16.43	Pass
48	5240	8.53	8.10	8.06	13.00	0.14	13.14	16.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 17-(6.57-6) = 29.43dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (40MHz)

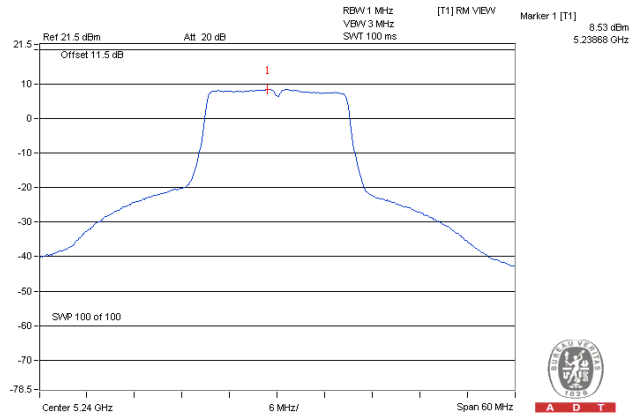
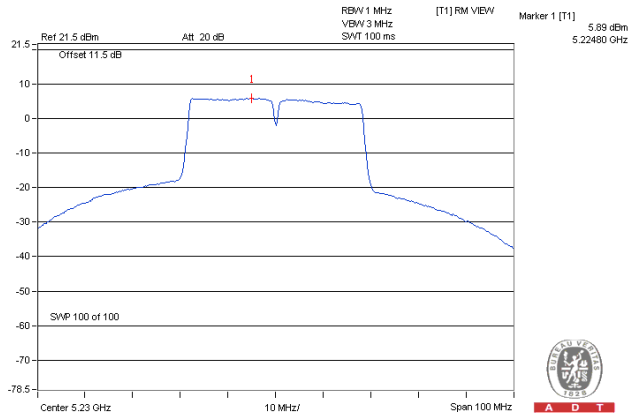
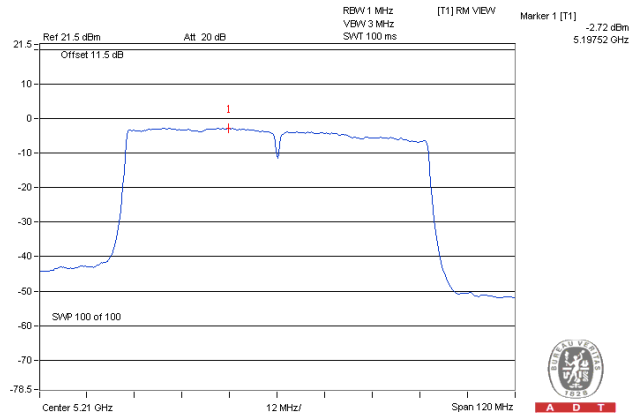
Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o duty factor (dBm)	Duty factor	Total PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
38	5190	-0.08	-0.59	-0.80	4.29	0.36	4.65	16.43	Pass
46	5230	5.83	5.39	5.41	10.32	0.36	10.68	16.43	Pass

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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 17-(6.57-6) = 29.43dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

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	-2.72	-3.14	-3.19	1.76	0.47	2.23	16.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 17-(6.57-6) = 29.43dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11ac (20MHz) / Chain 0 / CH 48	802.11ac (40MHz) / Chain 0 / CH 46
	
802.11ac (80MHz) / Chain 0 / CH 42	
	

For U-NII-3 Band

802.11ac (20MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	3.64	5.86	4.77	0.14	10.77	29.43	Pass
	157	5785	3.70	5.92	4.77	0.14	10.83	29.43	Pass
	165	5825	3.27	5.49	4.77	0.14	10.40	29.43	Pass
1	149	5745	3.05	5.27	4.77	0.14	10.18	29.43	Pass
	157	5785	2.51	4.73	4.77	0.14	9.64	29.43	Pass
	165	5825	2.50	4.72	4.77	0.14	9.63	29.43	Pass
2	149	5745	2.24	4.46	4.77	0.14	9.37	29.43	Pass
	157	5785	0.56	2.78	4.77	0.14	7.69	29.43	Pass
	165	5825	2.03	4.25	4.77	0.14	9.16	29.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 30-(6.57-6) = 29.43dBm.

802.11ac (40MHz)

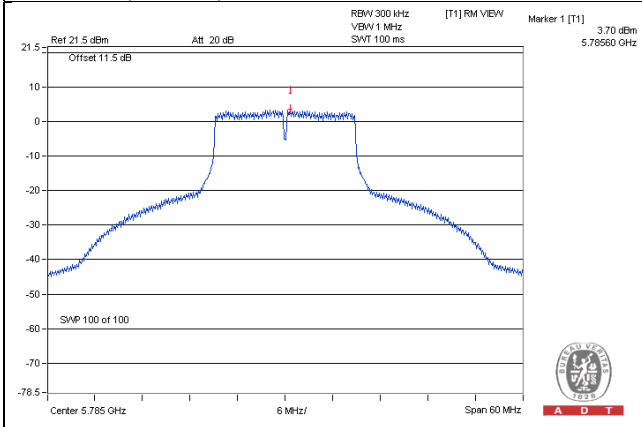
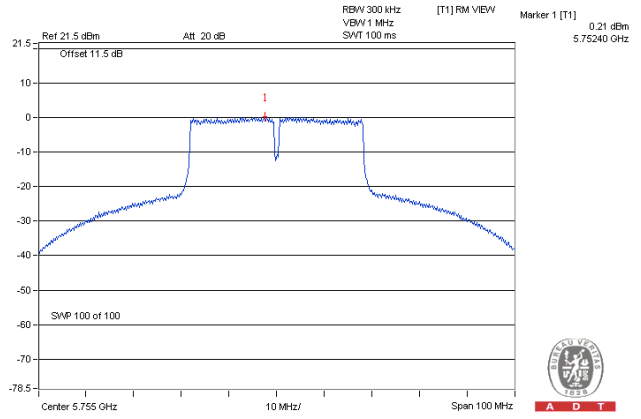
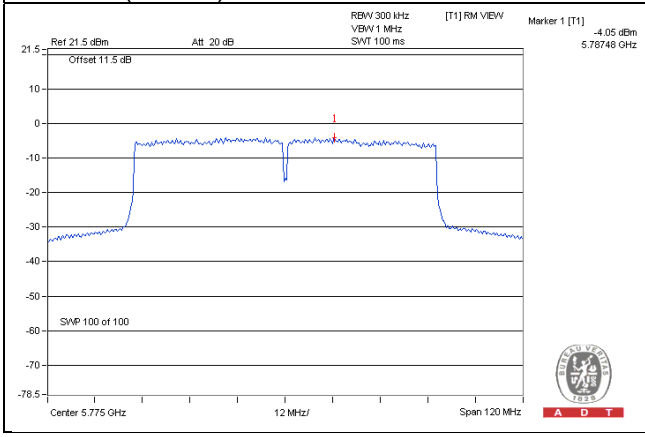
TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	151	5755	0.21	2.43	4.77	0.36	7.56	29.43	Pass
	159	5795	0.03	2.25	4.77	0.36	7.38	29.43	Pass
1	151	5755	-1.05	1.17	4.77	0.36	6.30	29.43	Pass
	159	5795	-0.86	1.36	4.77	0.36	6.49	29.43	Pass
2	151	5755	-1.31	0.91	4.77	0.36	6.04	29.43	Pass
	159	5795	-1.19	1.03	4.77	0.36	6.16	29.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 30-(6.57-6) = 29.43dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=3) dB	Duty factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	155	5775	-4.05	-1.83	4.77	0.47	3.41	29.43	Pass
1	155	5775	-4.16	-1.94	4.77	0.47	3.30	29.43	Pass
2	155	5775	-5.14	-2.92	4.77	0.47	2.32	29.43	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 = 1.8dBi + 10log(3) = 6.57dBi > 6dBi, so the power density limit shall be reduced to 30-(6.57-6) = 29.43dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

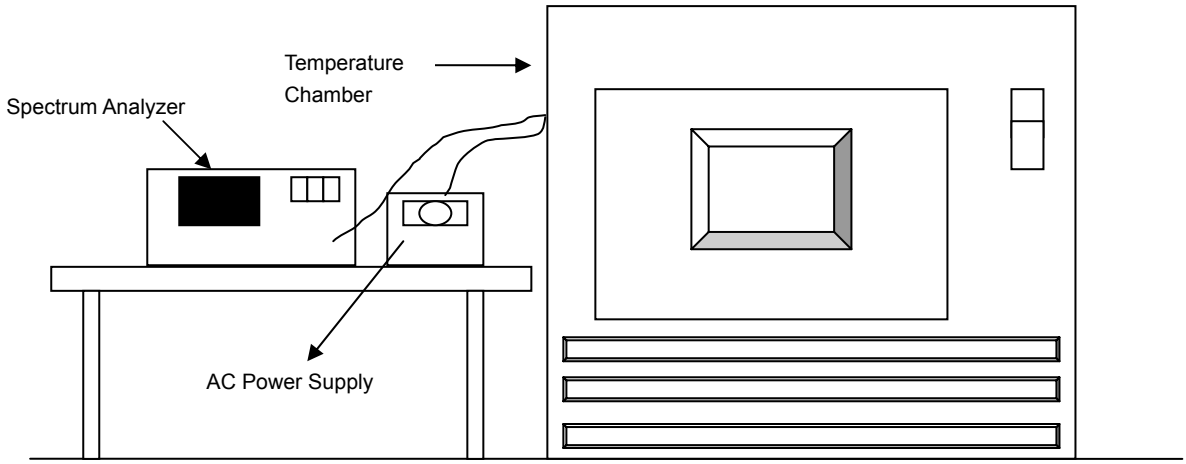
Spectrum Plot of Worst Value	
802.11ac (20MHz)	802.11ac (40MHz)
	
802.11ac (80MHz)	
	

4.5 Frequency Stability

4.5.1 Limits of Frequency Stability Measurement

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

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 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5745.0001	0.00000	5744.9987	-0.00002	5744.9983	-0.00003	5744.9997	-0.00001
40	120	5744.9993	-0.00001	5744.9972	-0.00005	5744.9987	-0.00002	5744.9968	-0.00006
30	120	5745.0255	0.00044	5745.0253	0.00044	5745.0297	0.00052	5745.0292	0.00051
20	120	5745.0148	0.00026	5745.0181	0.00032	5745.0158	0.00028	5745.0138	0.00024
10	120	5745.0006	0.00001	5744.9976	-0.00004	5744.9995	-0.00001	5745.0016	0.00003
0	120	5744.9989	-0.00002	5745.0023	0.00004	5745.0011	0.00002	5745.0001	0.00000
-10	120	5744.9892	-0.00019	5744.9919	-0.00014	5744.9898	-0.00018	5744.9905	-0.00017
-20	120	5745.0118	0.00021	5745.0111	0.00019	5745.013	0.00023	5745.01	0.00017
-30	120	5744.9902	-0.00017	5744.9913	-0.00015	5744.9866	-0.00023	5744.9919	-0.00014

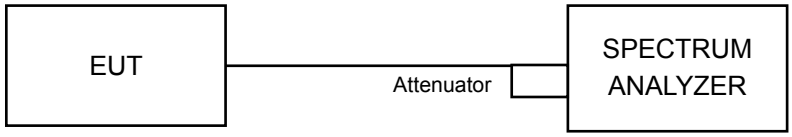
Frequency Stability Versus Voltage									
Operating Frequency: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5745.0154	0.00027	5745.0186	0.00032	5745.0165	0.00029	5745.0129	0.00022
	120	5745.0148	0.00026	5745.0181	0.00032	5745.0158	0.00028	5745.0138	0.00024
	102	5745.0155	0.00027	5745.018	0.00031	5745.0152	0.00026	5745.0139	0.00024

4.6 6dB Bandwidth Measurement

4.6.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Beamforming off Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	16.37	16.41	16.40	0.5	Pass
157	5785	16.40	16.43	16.44	0.5	Pass
165	5825	16.41	16.44	16.44	0.5	Pass

802.11n (20MHz)

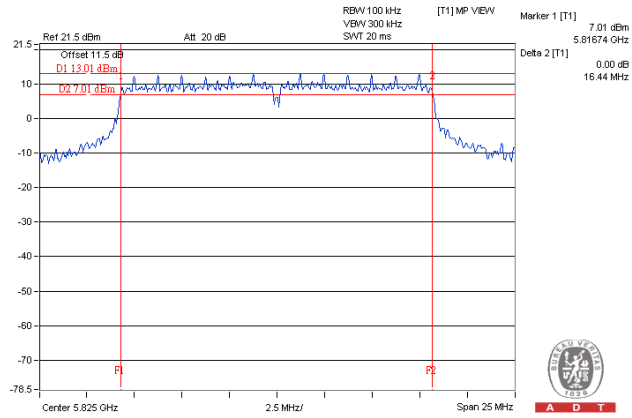
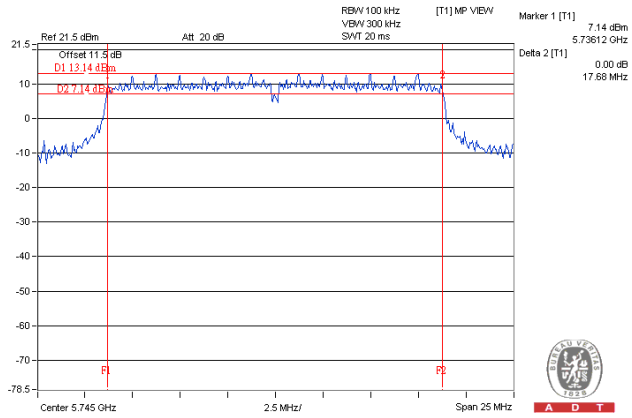
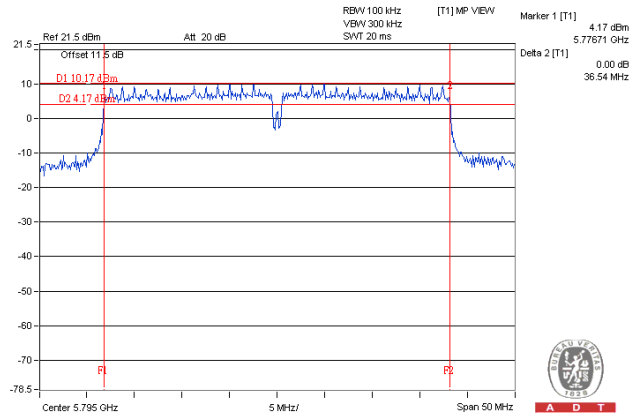
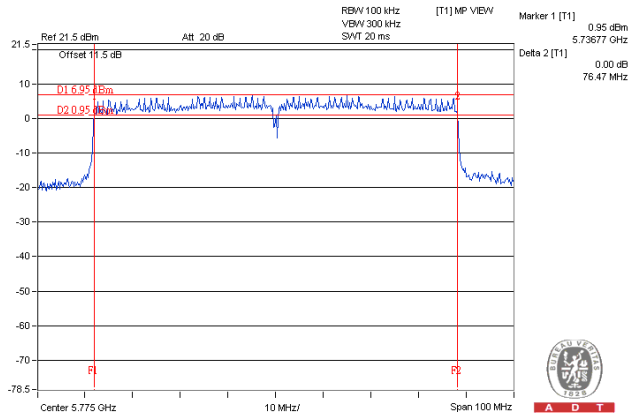
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	17.64	17.68	17.66	0.5	Pass
157	5785	17.63	17.68	17.66	0.5	Pass
165	5825	17.62	17.68	17.68	0.5	Pass

802.11n (40MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
151	5755	36.46	36.50	36.50	0.5	Pass
159	5795	36.43	36.54	36.49	0.5	Pass

802.11ac (80MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
155	5775	76.31	76.47	76.14	0.5	Pass

Spectrum Plot of Worst Value	
802.11a	802.11n (20MHz)
	
802.11n (40MHz)	802.11ac (80MHz)
	

Beamforming on Mode

802.11ac (20MHz)

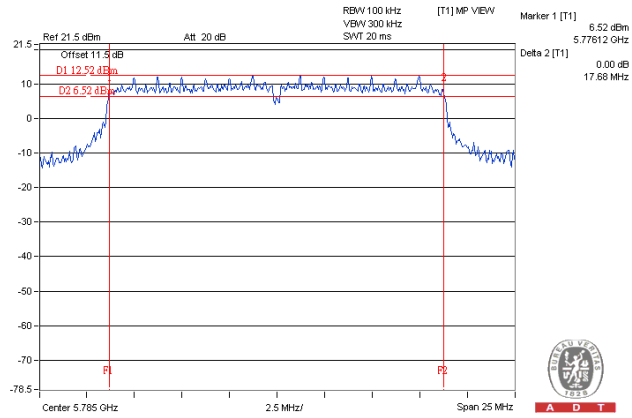
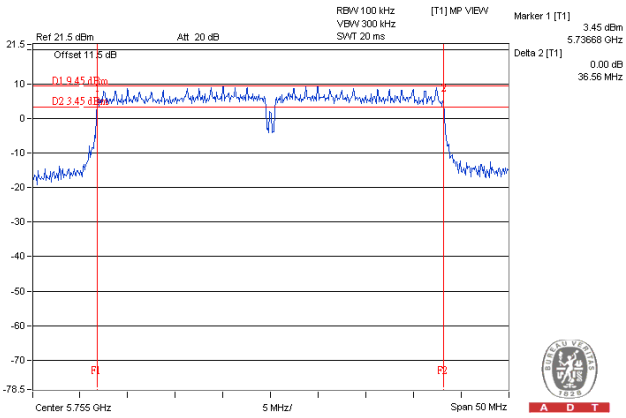
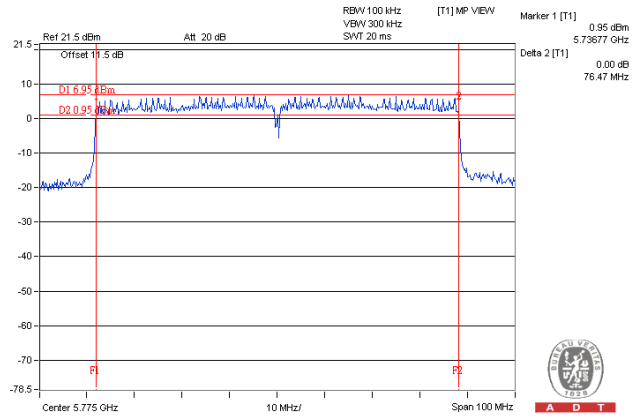
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	17.64	17.66	17.66	0.5	Pass
157	5785	17.65	17.68	17.68	0.5	Pass
165	5825	17.63	17.68	17.66	0.5	Pass

802.11ac (40MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
151	5755	36.46	36.56	36.51	0.5	Pass
159	5795	36.43	36.54	36.51	0.5	Pass

802.11ac (80MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
155	5775	76.31	76.47	76.14	0.5	Pass

Spectrum Plot of Worst Value	
802.11ac (20MHz)	802.11ac (40MHz)
	
802.11ac (80MHz)	
	

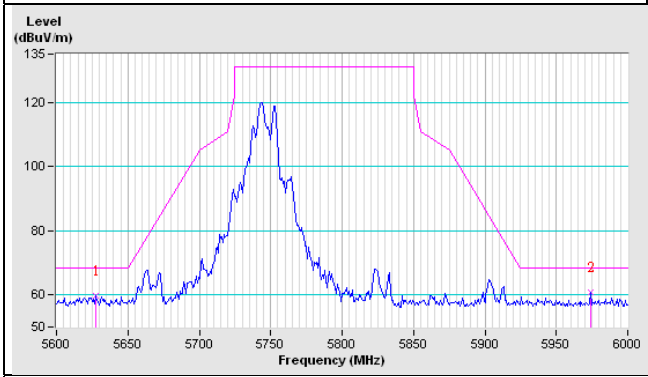
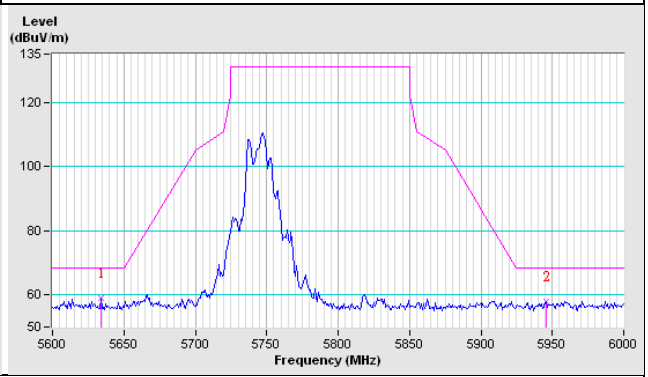
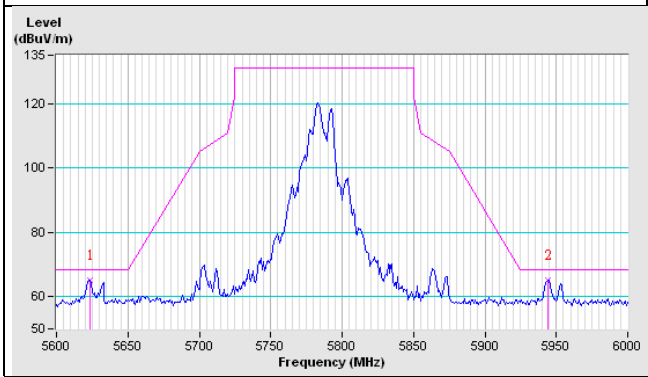
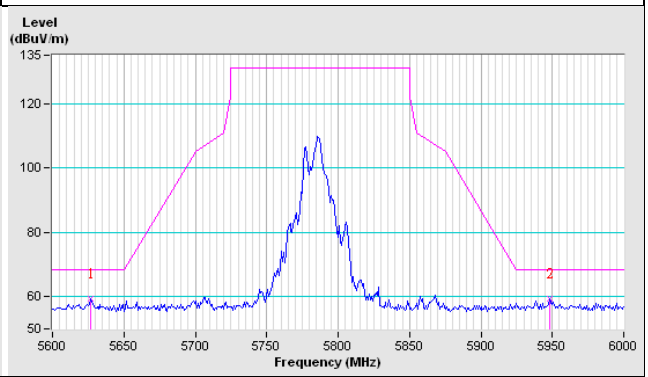
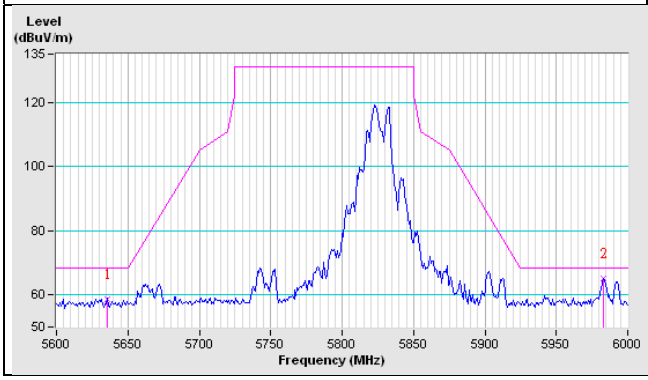
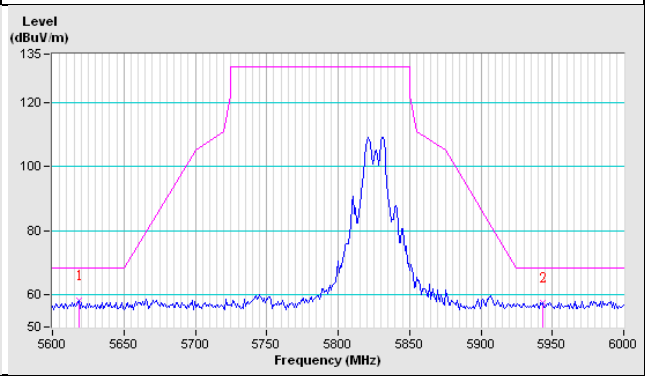
5 Pictures of Test Arrangements

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

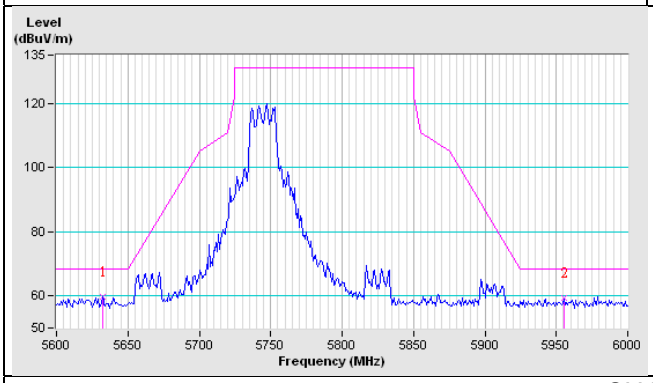
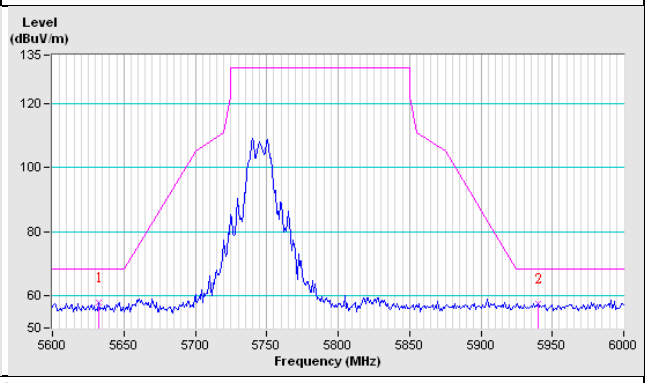
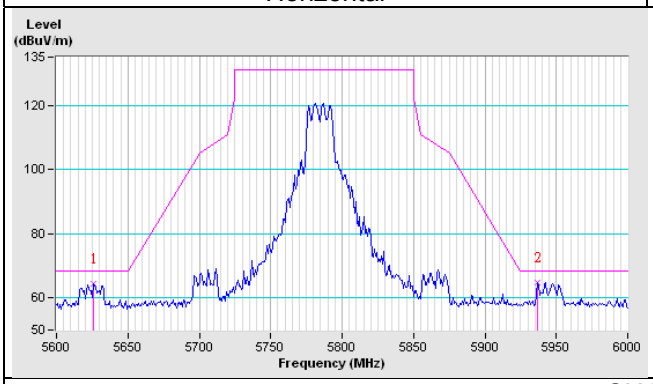
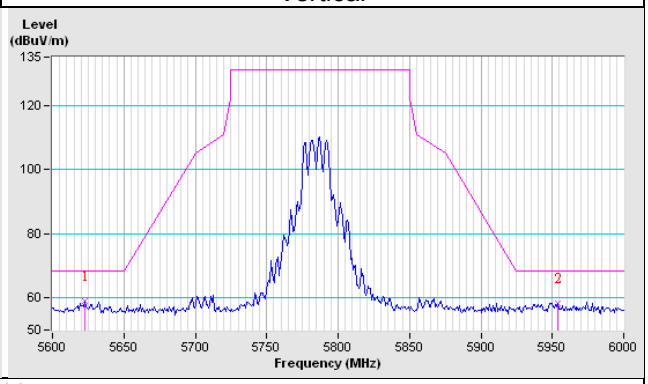
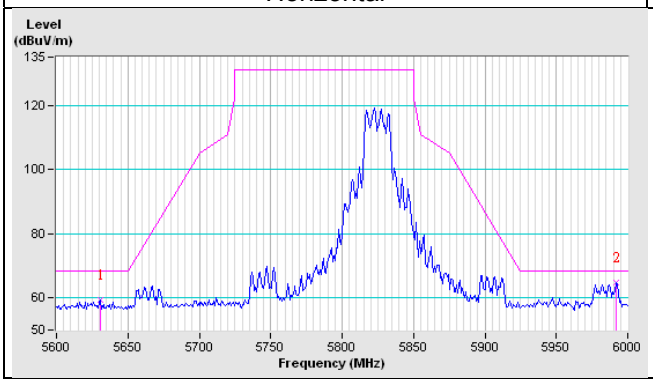
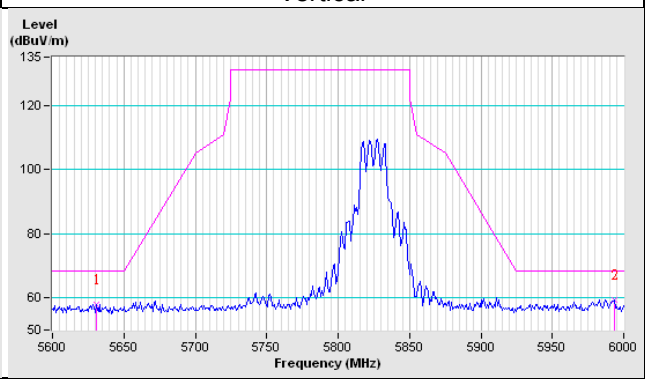
Annex A- Radiated Out of Band Emisison (OOBE) Measurement (For U-NII-3 band)

Beamforming off Mode

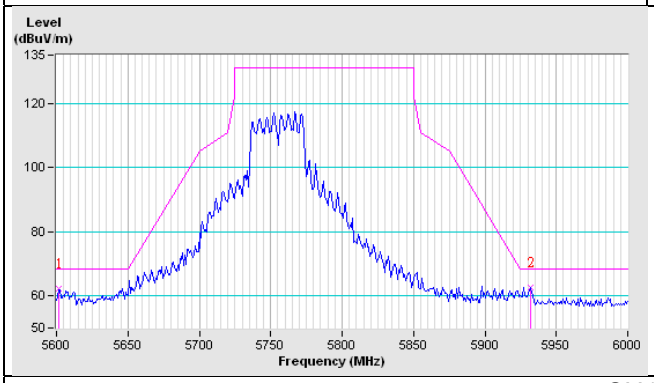
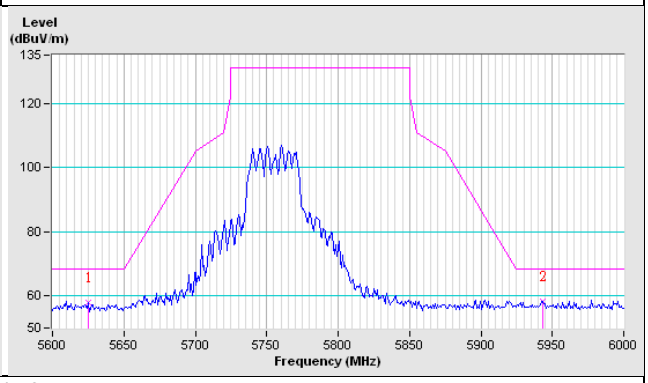
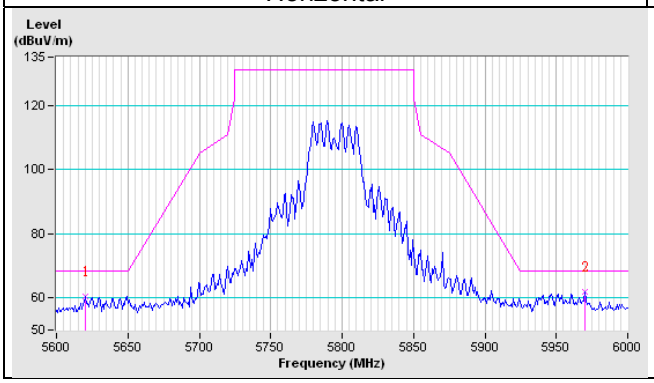
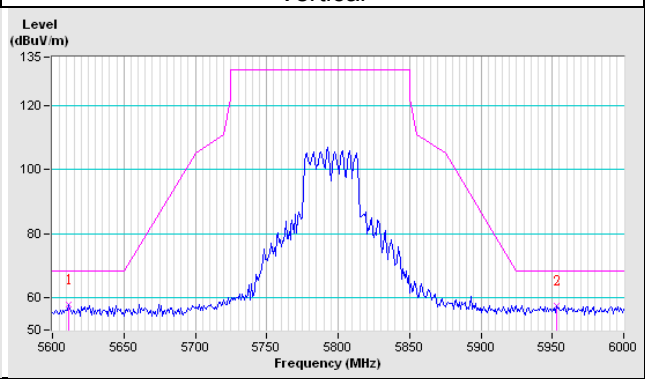
802.11a

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

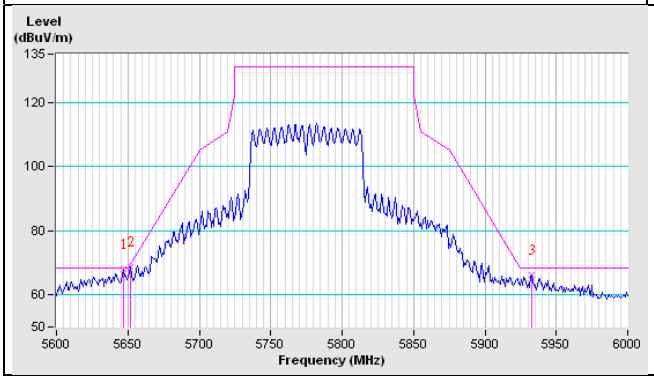
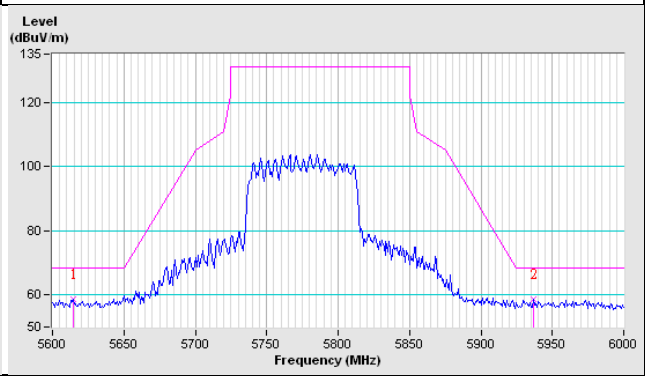
802.11n (20MHz)

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

802.11n (40MHz)

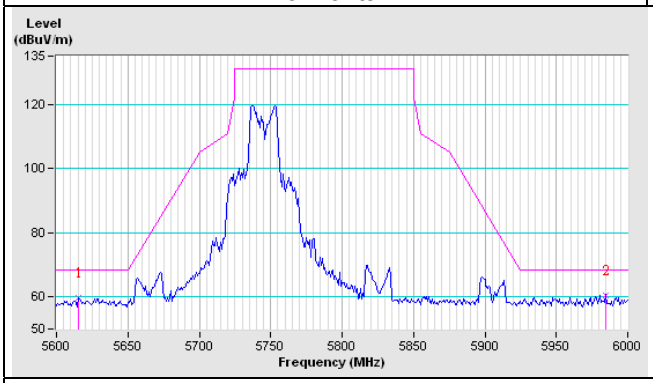
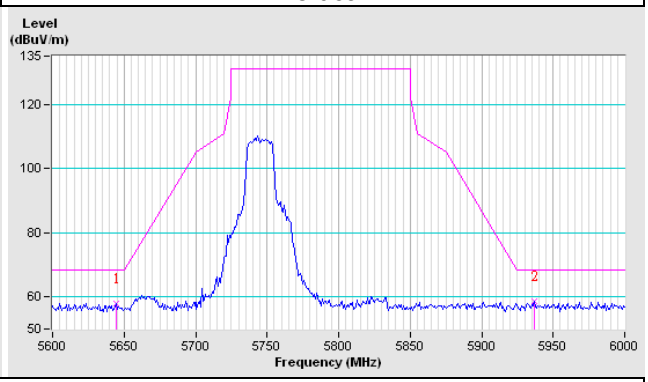
CH151	
Horizontal	Vertical
	
CH159	
Horizontal	Vertical
	

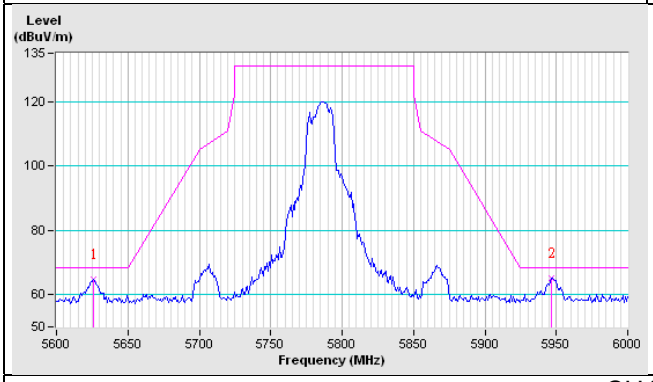
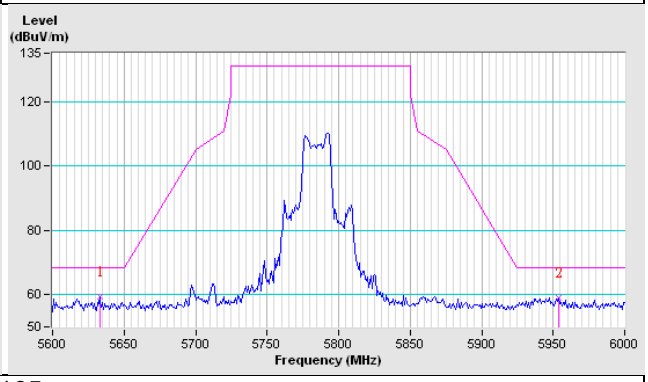
802.11ac (80MHz)

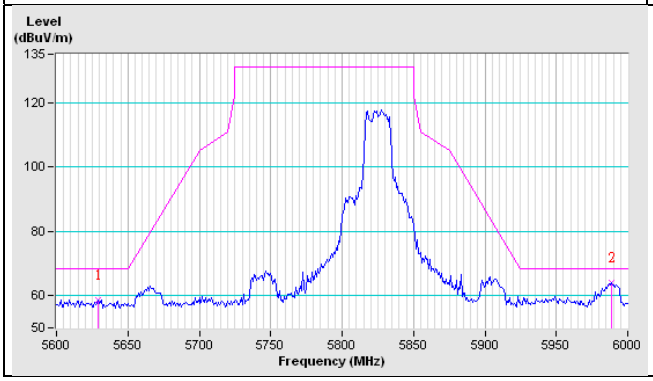
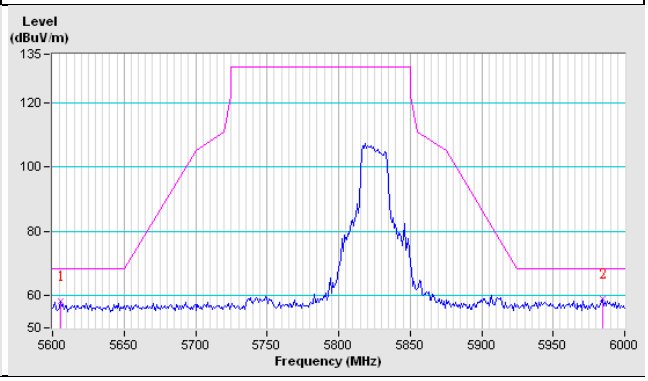
CH155	
Horizontal	Vertical
	

Beamforming on Mode

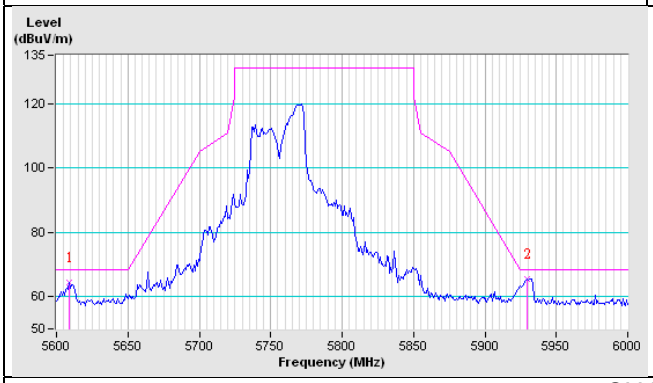
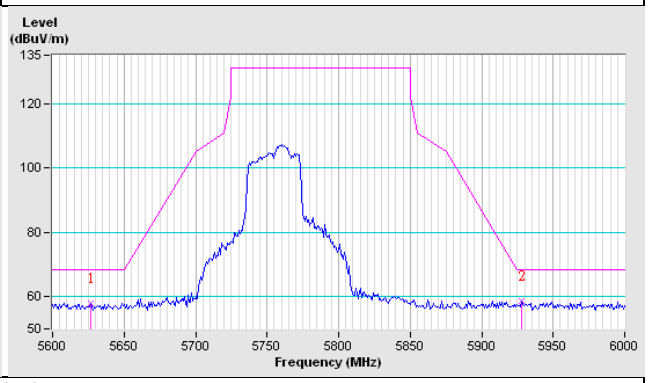
802.11ac (20MHz)

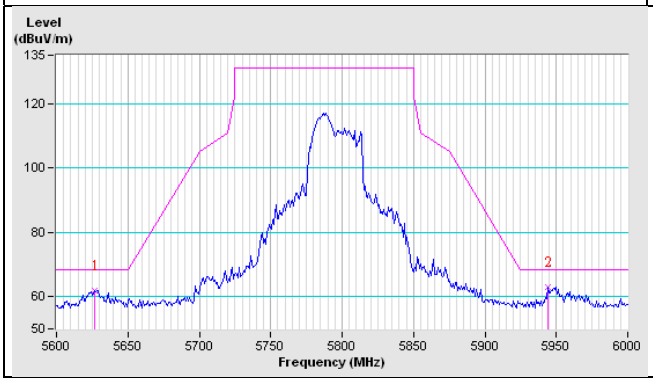
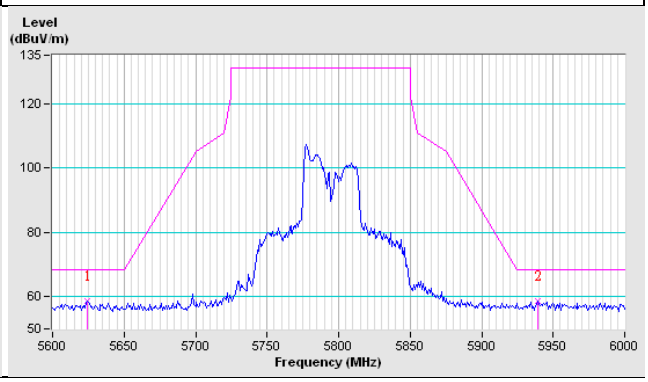
CH149	
Horizontal	Vertical
	

CH157	
Horizontal	Vertical
	

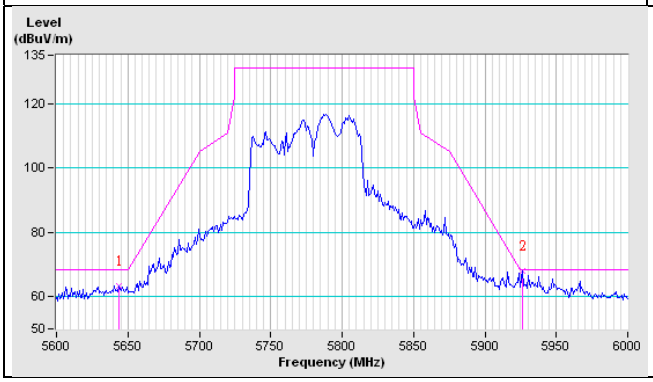
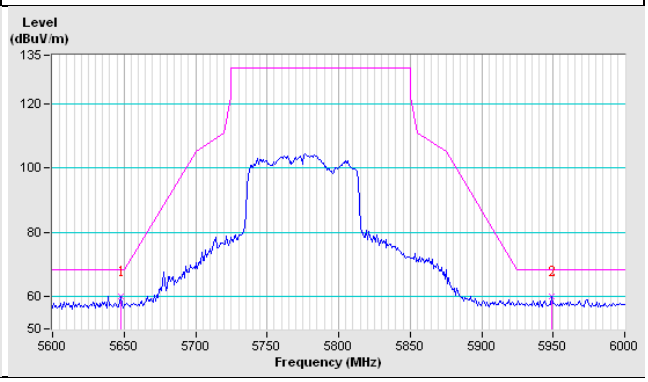
CH165	
Horizontal	Vertical
	

802.11ac (40MHz)

CH151	
Horizontal	Vertical
	

CH159	
Horizontal	Vertical
	

802.11ac (80MHz)

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.

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