FCC Test Report

Report No.:	RF150107C25A-1
FCC ID:	AUH-7500-M2
Test Model:	WiP7500
Received Date:	Oct. 08, 2015
Test Date:	Oct. 23 ~ Nov. 11, 2015
Issued Date:	Nov. 16, 2015
Applicant:	Wi3 Inc
Address:	P.O. Box 1123 Pittsford, NY 14534
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

Table of Contents

Release Control Record 4

1 Certificate of Conformity 5

2 Summary of Test Results 6

2.1 Measurement Uncertainty 6
2.2 Modification Record 6

3 General Information 7

3.1 General Description of EUT 7
3.2 Description of Test Modes 9
3.2.1 Test Mode Applicability and Tested Channel Detail 10
3.3 Duty Cycle of Test Signal 12
3.4 Description of Support Units 14
3.4.1 Configuration of System under Test 14
3.5 General Description of Applied Standards 15

4 Test Types and Results 16

4.1 Radiated Emission and Bandedge Measurement 16
4.1.1 Limits of Radiated Emission and Bandedge Measurement 16
4.1.2 Test Instruments 17
4.1.3 Test Procedures 18
4.1.4 Deviation from Test Standard 18
4.1.5 Test Set Up 19
4.1.6 EUT Operating Conditions 19
4.1.7 Test Results 20
4.2 Conducted Emission Measurement 39
4.2.1 Limits of Conducted Emission Measurement 39
4.2.2 Test Instruments 39
4.2.3 Test Procedures 40
4.2.4 Deviation from Test Standard 40
4.2.5 Test Setup 40
4.2.6 EUT Operating Conditions 40
4.2.7 Test Results 41
4.3 Transmit Power Measurment 43
4.3.1 Limits of Transmit Power Measurement 43
4.3.2 Test Setup 43
4.3.3 Test Instruments 43
4.3.4 Test Procedure 44
4.3.5 Deviation fromTest Standard 44
4.3.6 EUT Operating Conditions 44
4.3.7 Test Result 45
4.4 Peak Power Spectral Density Measurement 55
4.4.1 Limits of Peak Power Spectral Density Measurement 55
4.4.2 Test Setup 55
4.4.3 Test Instruments 55
4.4.4 Test Procedures 56
4.4.5 Deviation from Test Standard 56
4.4.6 EUT Operating Conditions 56
4.4.7 Test Results 57
4.5 Frequency Stability 65
4.5.1 Limits of Frequency Stability Measurement 65
4.5.2 Test Setup 65
4.5.3 Test Instruments 65
4.5.4 Test Procedure 65
4.5.5 Deviation from Test Standard 65
4.5.6 EUT Operating Condition 65

4.5.7 Test Results 66
4.6 6dB Bandwidth Measurment 67
4.6.1 Limits of 6dB Bandwidth Measurement 67
4.6.2 Test Setup 67
4.6.3 Test Instruments 67
4.6.4 Test Procedure 67
4.6.5 Deviation from Test Standard 67
4.6.6 EUT Operating Condition 67
4.6.7 Test Results 68
5 Pictures of Test Arrangements 72
Appendix – Information on the Testing Laboratories 73

Release Control Record

Issue No.	Description	Date Issued
RF150107C25A-1	Original release	Nov. 16, 2015

1 Certificate of Conformity

Product:	Adapter, coax bridge
Test Model:	WiP7500
Sample Status:	Engineering sample
Applicant:	Wi3 Inc
Test Date:	Oct. 23 ~ Nov. 11, 2015
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Nov. 16, 2015

Polly Chien / Specialist

Approved by : _____ , **Date:** Nov. 16, 2015

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 -15.93dB at 0.36484MHz
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.5dB at 5150.00MHz.
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.

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	3.63 dB
	200MHz ~1000MHz	3.64 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Adapter, coax bridge
Test Model	WiP7500
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from adapter
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
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 300.0Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	CDD Mode: 5180 ~ 5240MHz: 99.058mW 5745 ~ 5825MHz: 106.289mW Beamforming Mode: 5180 ~ 5240MHz: 74.536mW 5745 ~ 5825MHz: 106.289mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter, cover
Data Cable Supplied	NA

Note:

1. The device will automatically discontinue transmission in case of either the absence of information to transmit or operational failure.
2. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	Beamforming Mode	TX Function
802.11a	Not Support	1TX
802.11n(HT20)	Support	2TX
802.11n(HT40)	Support	2TX
802.11ac(VHT20)	Support	2TX
802.11ac(VHT40)	Support	2TX
802.11ac(VHT80)	Support	2TX

* For 802.11a, the EUT doesn't support Beamforming mode.

*The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

* For 5GHz band 802.11n and 802.11ac, after pre-tested two modes (with beamforming mode and CDD mode) found CDD mode was the worst, therefore chosen for final test for radiated emission and power line conducted emission test and presented in the test report.

3. The EUT uses following adapter.

Brand	Asian Power Devices Inc.
Model	WA-24Q12FU
Input Power	100-240Vac, 50-60Hz, 0.7A Max.
Output Power	12Vdc, 2A
Power Line	1.45m DC cable without core attached on adapter

4. The following antennas provided to this EUT.

Ant.	Antenna Type	Model	Gain (dBi) Including cable loss		Antenna Connector
			2.4GHz Band	5GHz Band	
1	External Dipole	EDA-8709-25GR2-A3	2.47	3.00	i-pex (MHF)
2	External Dipole	EDA-8709-25GR2-A3	2.73	3.50	i-pex (MHF)

* The maximum antenna gain is chosen for final test.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210 MHz

FOR 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

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

Radiated Emission Test (Above 1GHz):

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

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
-	802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11ac (VHT80)		42	42	OFDM	BPSK	65.5
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	15.0
-	802.11ac (VHT80)		155	155	OFDM	BPSK	65.5

Radiated Emission Test (Below 1GHz):

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

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11ac (VHT20)	5180-5240	36 to 48	48	OFDM	BPSK	7.2
		5745-5825	149 to 165		OFDM	BPSK	7.2

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)
-	802.11ac (VHT20)	5180-5240	36 to 48	48	OFDM	BPSK	7.2
		5745-5825	149 to 165		OFDM	BPSK	7.2

Antenna Port Conducted Measurement:

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

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

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
-	802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11ac (VHT80)		42	42	OFDM	BPSK	65.5
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	15.0
-	802.11ac (VHT80)		155	155	OFDM	BPSK	65.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Bayu Chen
	25deg. C, 65%RH	120Vac, 60Hz	Tank Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Tank Wu
PLC	25deg. C, 60%RH	120Vac, 60Hz	Tank Wu
APCM	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui

3.3 Duty Cycle of Test Signal

CDD Mode

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

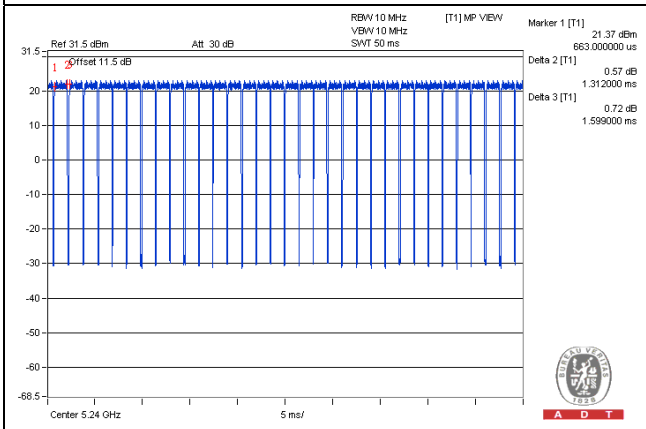
802.11a: Duty cycle = 1.312/1.599 = 0.821, Duty factor = 10 * log(1/0.821) = 0.86

802.11ac (VHT20): Duty cycle = 1.275/1.400 = 0.911, Duty factor = 10 * log(1/0.911) = 0.41

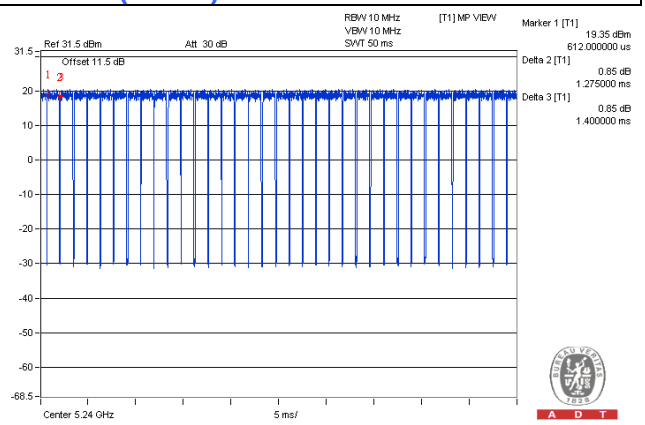
802.11ac (VHT40): Duty cycle = 0.588/0.862 = 0.682 , Duty factor = 10 * log(1/0.682) = 1.66

802.11ac (VHT80): Duty cycle = 0.288/0.512 =0.563, Duty factor = 10 * log(1/0.563) = 2.49

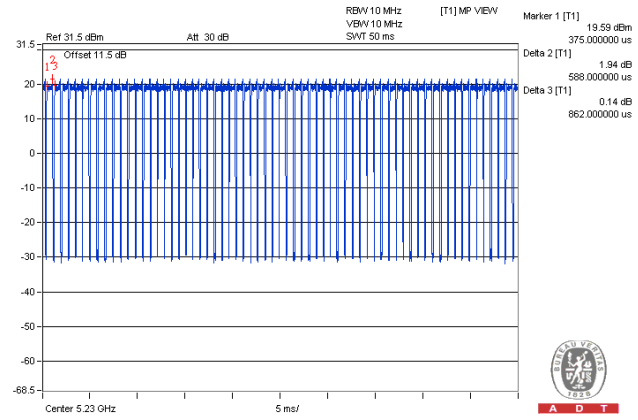
802.11a



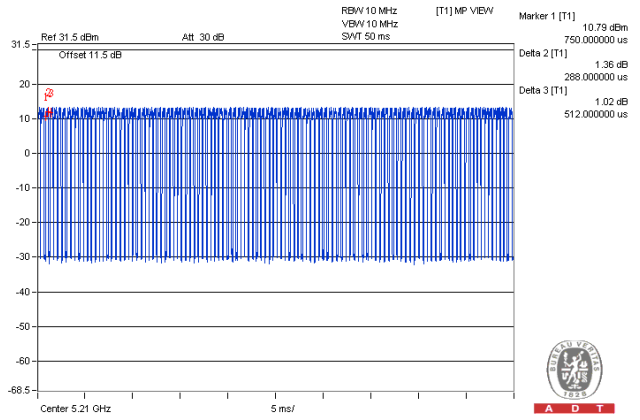
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



Beamforming Mode

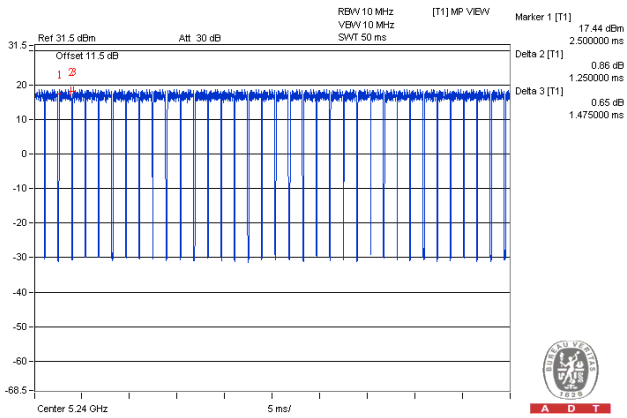
Duty cycle of test signal is < 98 %, duty factor is required

802.11ac (VHT20): Duty cycle = 1.250/1.475 = 0.847, Duty factor = 10 * log(1/0.847) = 0.72

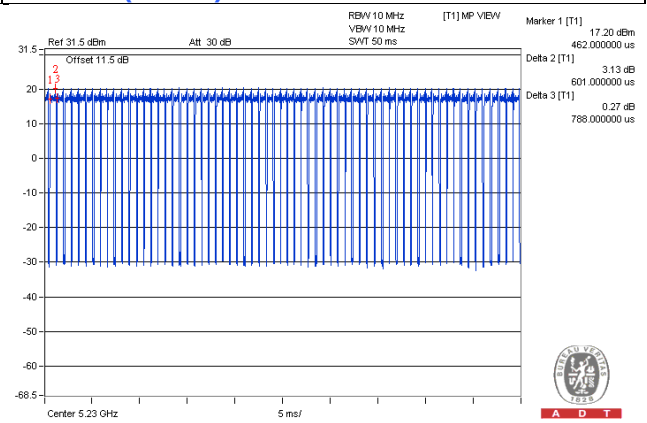
802.11ac (VHT40): Duty cycle = 0.601/0.788 =0.763, Duty factor = 10 * log(1/0.763) = 1.18

802.11ac (VHT80): Duty cycle = 0.287/0.487 =0.589, Duty factor = 10 * log(1/0.589) = 2.30

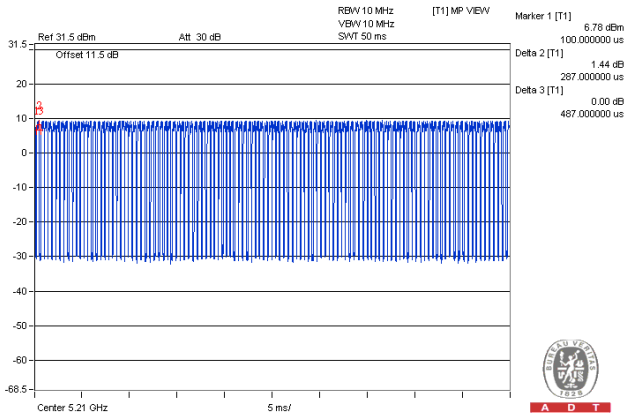
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

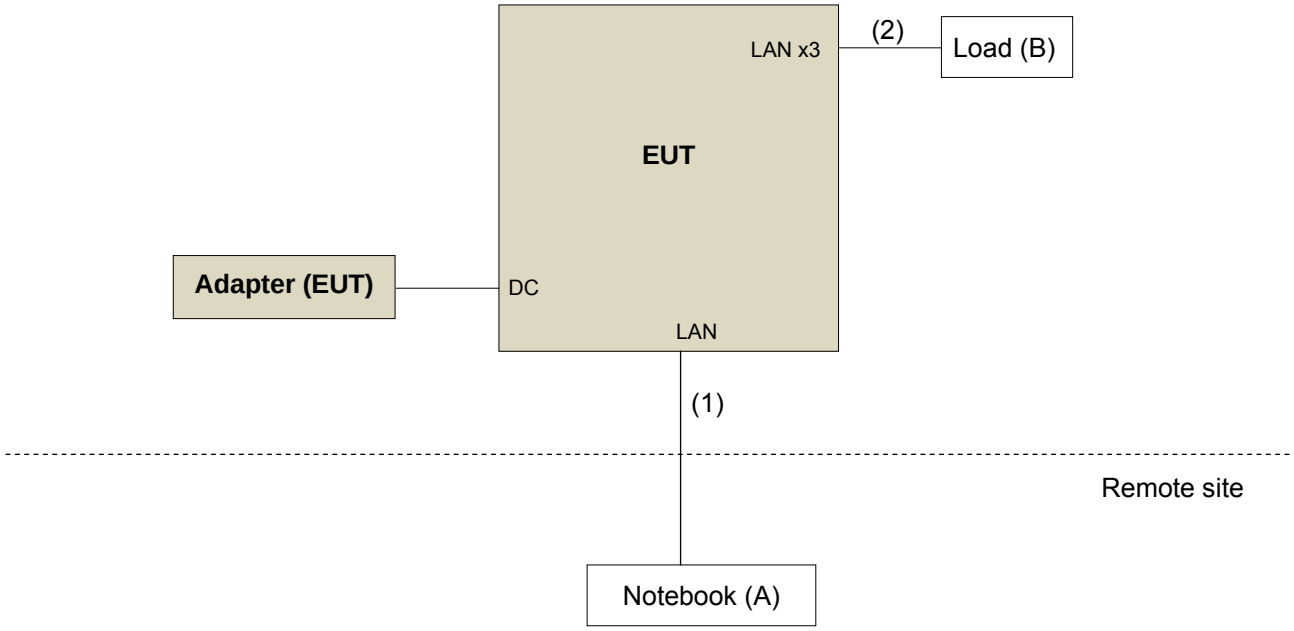
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	D531	CN-0XM006-48643-81U-2610	QDS-BRCM1020	-
B.	Load	N/A	N/A	N/A	N/A	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN cable	1	10	N	0	Cat5e
2.	LAN cable	3	1.8	N	0	Cat.5e

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 v01
662911 D01 Multiple Transmitter Output v02r01
644545 D03 Guidance for IEEE 802.11ac New Rules v01
ANSI C63.10-2013

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01	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)	PK:-27 (dBm/MHz) *1 PK:-17 (dBm/MHz) *2	PK: 68.2(dBμV/m) *1 PK: 78.2 (dBμV/m) *2

NOTE: *1 beyond 10MHz of the band edge *2 within 10 MHz of band edge

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	ESCS30	100289	Dec. 01, 2014	Nov. 30, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Mar. 30, 2015	Mar. 29, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 06, 2015	Feb. 05, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Feb. 09, 2015	Feb. 08, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8449B	3008A01911	Aug. 09, 2015	Aug. 08, 2016
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-02(309222 +248780)	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-03(274092)	Aug. 09, 2015	Aug. 08, 2016
RF signal cable Woken	8D-FB	Cable-CH9-01	Aug. 11, 2015	Aug. 10, 2016
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	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

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 9.
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 215374.
5. The IC Site Registration No. is IC 7450F-9.

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:

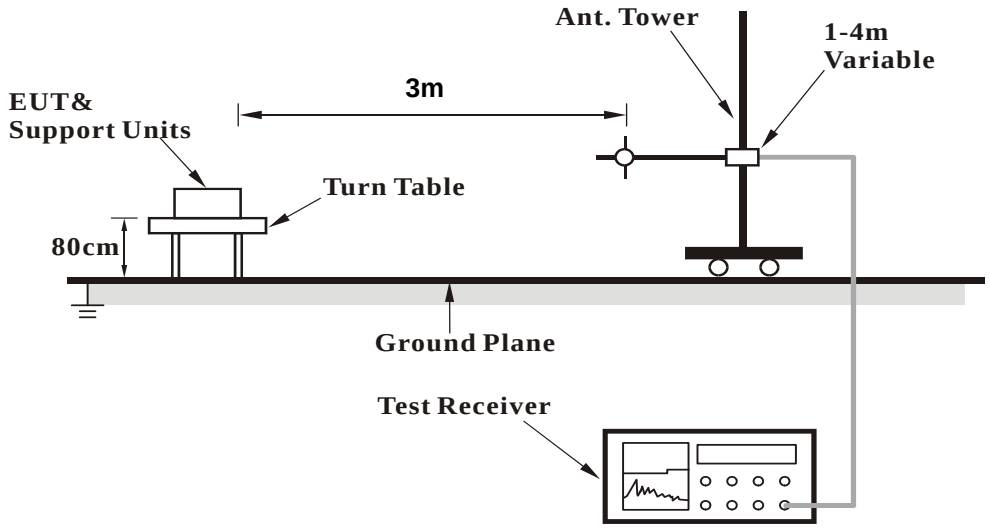
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

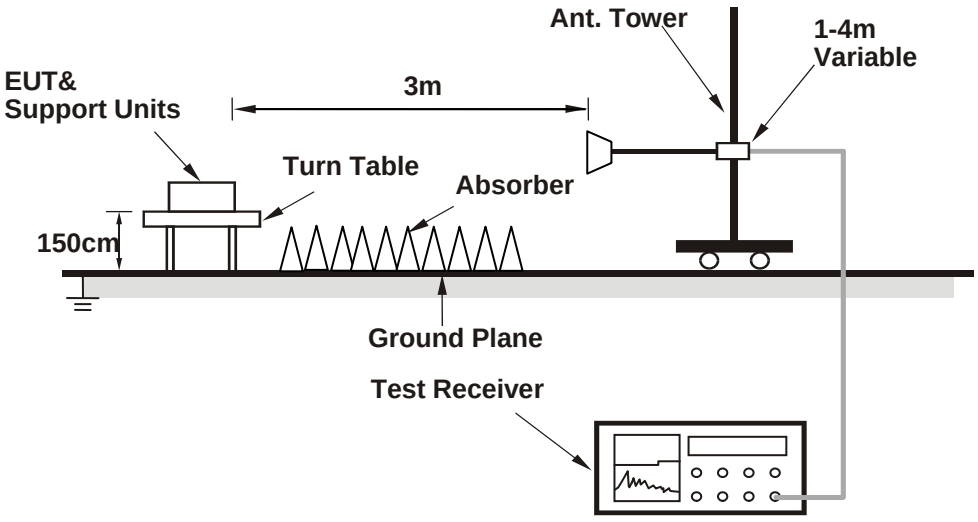
No deviation.

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 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 data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.6 PK	74.0	-8.4	2.51 H	352	61.70	3.90
2	5150.00	51.0 AV	54.0	-3.0	2.51 H	352	47.10	3.90
3	*5180.00	106.8 PK			2.51 H	352	65.30	41.50
4	*5180.00	97.4 AV			2.51 H	352	55.90	41.50
5	#10380.00	64.5 PK	74.0	-9.5	1.00 H	42	49.10	15.40
6	#10380.00	51.2 AV	54.0	-2.8	1.00 H	42	35.80	15.40
7	15540.00	67.6 PK	74.0	-6.4	1.49 H	354	52.20	15.40
8	15540.00	52.9 AV	54.0	-1.1	1.49 H	354	37.50	15.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.9 PK	74.0	-15.1	1.26 V	100	55.00	3.90
2	5150.00	46.6 AV	54.0	-7.4	1.26 V	100	42.70	3.90
3	*5180.00	100.1 PK			1.26 V	100	58.60	41.50
4	*5180.00	90.4 AV			1.26 V	100	48.90	41.50
5	#10360.00	60.5 PK	74.0	-13.5	1.00 V	20	45.20	15.30
6	#10360.00	47.4 AV	54.0	-6.6	1.00 V	20	32.10	15.30
7	15540.00	64.2 PK	74.0	-9.8	1.00 V	357	48.80	15.40
8	15540.00	50.8 AV	54.0	-3.2	1.00 V	357	35.40	15.40

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	107.3 PK			2.46 H	352	65.80	41.50
2	*5200.00	97.1 AV			2.46 H	352	55.60	41.50
3	#10400.00	65.1 PK	74.0	-8.9	1.17 H	42	49.60	15.50
4	#10400.00	52.2 AV	54.0	-1.8	1.17 H	42	36.70	15.50
5	15600.00	68.0 PK	74.0	-6.0	1.18 H	355	53.40	14.60
6	15600.00	52.9 AV	54.0	-1.1	1.18 H	355	38.30	14.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	101.1 PK			1.30 V	101	59.60	41.50
2	*5200.00	91.2 AV			1.30 V	101	49.70	41.50
3	#10400.00	61.2 PK	74.0	-12.8	1.18 V	23	45.70	15.50
4	#10400.00	48.4 AV	54.0	-5.6	1.18 V	23	32.90	15.50
5	15600.00	66.2 PK	74.0	-7.8	1.00 V	1	51.60	14.60
6	15600.00	50.7 AV	54.0	-3.3	1.00 V	1	36.10	14.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	5150.00	59.1 PK	74.0	-14.9	2.41 H	351	55.20	3.90
2	5150.00	46.6 AV	54.0	-7.4	2.41 H	351	42.70	3.90
3	*5240.00	108.0 PK			2.41 H	351	66.40	41.60
4	*5240.00	98.2 AV			2.41 H	351	56.60	41.60
5	#10480.00	66.4 PK	74.0	-7.6	1.00 H	40	50.60	15.80
6	#10480.00	52.0 AV	54.0	-2.0	1.00 H	40	36.20	15.80
7	15720.00	67.3 PK	74.0	-6.7	1.59 H	357	53.00	14.30
8	15720.00	52.7 AV	54.0	-1.3	1.59 H	357	38.40	14.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.5 PK	74.0	-15.5	1.23 V	110	54.60	3.90
2	5150.00	46.0 AV	54.0	-8.0	1.23 V	110	42.10	3.90
3	*5240.00	101.7 PK			1.23 V	110	60.10	41.60
4	*5240.00	91.9 AV			1.23 V	110	50.30	41.60
5	#10480.00	62.7 PK	74.0	-11.3	1.05 V	38	46.90	15.80
6	#10480.00	48.1 AV	54.0	-5.9	1.05 V	38	32.30	15.80
7	15720.00	65.0 PK	74.0	-9.0	1.68 V	3	50.70	14.30
8	15720.00	50.4 AV	54.0	-3.6	1.68 V	3	36.10	14.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5714.90	67.0 PK	74.0	-7.0	2.62 H	3	62.60	4.40
2	#5714.90	49.9 AV	54.0	-4.1	2.62 H	3	45.50	4.40
3	#5722.90	77.2 PK	78.2	-1.0	2.63 H	3	72.80	4.40
4	#5725.00	62.4 PK	78.2	-15.8	2.62 H	3	58.00	4.40
5	*5745.00	110.8 PK			2.62 H	3	68.60	42.20
6	*5745.00	100.6 AV			2.62 H	3	58.40	42.20
7	11490.00	65.0 PK	74.0	-9.0	2.33 H	336	49.50	15.50
8	11490.00	51.8 AV	54.0	-2.2	2.33 H	336	36.30	15.50
9	#17235.00	66.4 PK	74.0	-7.6	1.53 H	343	45.30	21.10
10	#17235.00	52.9 AV	54.0	-1.1	1.53 H	343	31.80	21.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.90	61.5 PK	74.0	-12.5	1.01 V	218	57.10	4.40
2	#5714.90	46.5 AV	54.0	-7.5	1.01 V	218	42.10	4.40
3	#5722.90	72.5 PK	78.2	-5.7	1.01 V	218	68.10	4.40
4	#5725.00	57.0 PK	78.2	-21.2	1.01 V	218	52.60	4.40
5	*5745.00	101.7 PK			1.01 V	218	59.50	42.20
6	*5745.00	92.9 AV			1.01 V	218	50.70	42.20
7	11490.00	62.4 PK	74.0	-11.6	1.32 V	337	46.90	15.50
8	11490.00	48.8 AV	54.0	-5.2	1.32 V	337	33.30	15.50
9	#17235.00	63.9 PK	74.0	-10.1	1.53 V	26	42.80	21.10
10	#17235.00	51.6 AV	54.0	-2.4	1.53 V	26	30.50	21.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	*5785.00	106.5 PK			1.85 H	6	64.20	42.30
2	*5785.00	97.1 AV			1.85 H	6	54.80	42.30
3	11570.00	63.5 PK	74.0	-10.5	2.34 H	334	48.40	15.10
4	11570.00	50.3 AV	54.0	-3.7	2.34 H	334	35.20	15.10
5	#17355.00	67.2 PK	68.2	-1.0	1.54 H	346	45.60	21.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	98.9 PK			1.00 V	219	56.60	42.30
2	*5785.00	89.9 AV			1.00 V	219	47.60	42.30
3	11570.00	60.9 PK	74.0	-13.1	2.03 V	332	45.80	15.10
4	11570.00	50.6 AV	54.0	-3.4	2.03 V	332	35.50	15.10
5	#17355.00	64.6 PK	68.2	-3.6	1.52 V	33	43.00	21.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	*5825.00	108.7 PK			1.79 H	5	66.40	42.30
2	*5825.00	98.8 AV			1.79 H	5	56.50	42.30
3	#5850.00	52.6 PK	78.2	-25.6	1.79 H	5	47.90	4.70
4	#5852.10	70.4 PK	78.2	-7.8	1.79 H	5	65.70	4.70
5	#5860.10	62.9 PK	74.0	-11.1	1.79 H	5	58.20	4.70
6	#5860.10	47.8 AV	54.0	-6.2	1.79 H	5	43.10	4.70
7	11650.00	59.1 PK	74.0	-14.9	1.71 H	300	43.80	15.30
8	11650.00	46.0 AV	54.0	-8.0	1.71 H	300	30.70	15.30
9	#17475.00	67.1 PK	74.0	-6.9	1.45 H	346	45.30	21.80
10	#17475.00	53.0 AV	54.0	-1.0	1.45 H	346	31.20	21.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	97.6 PK			1.00 V	218	55.30	42.30
2	*5825.00	87.8 AV			1.00 V	218	45.50	42.30
3	#5850.00	46.5 PK	78.2	-31.7	1.00 V	218	41.80	4.70
4	#5852.10	60.4 PK	78.2	-17.8	1.00 V	218	55.70	4.70
5	#5860.10	58.9 PK	74.0	-15.1	1.00 V	218	54.20	4.70
6	#5860.10	45.1 AV	54.0	-8.9	1.00 V	218	40.40	4.70
7	11650.00	59.6 PK	74.0	-14.4	1.41 V	266	44.30	15.30
8	11650.00	45.9 AV	54.0	-8.1	1.41 V	266	30.60	15.30
9	#17450.00	66.8 PK	74.0	-7.2	1.55 V	231	44.90	21.90
10	#17450.00	52.4 AV	54.0	-1.6	1.55 V	231	30.50	21.90

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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 (VHT20)

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	57.8 PK	74.0	-16.2	1.16 H	109	53.90	3.90
2	5150.00	45.3 AV	54.0	-8.7	1.16 H	109	41.40	3.90
3	*5180.00	98.9 PK			1.01 H	166	57.40	41.50
4	*5180.00	88.9 AV			1.01 H	166	47.40	41.50
5	#10360.00	61.2 PK	74.0	-12.8	1.10 H	318	45.90	15.30
6	#10360.00	47.9 AV	54.0	-6.1	1.10 H	318	32.60	15.30
7	15540.00	66.3 PK	74.0	-7.7	2.88 H	317	50.90	15.40
8	15540.00	51.8 AV	54.0	-2.2	2.88 H	317	36.40	15.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	62.1 PK	74.0	-11.9	2.66 V	26	58.20	3.90
2	5150.00	48.9 AV	54.0	-5.1	2.66 V	26	45.00	3.90
3	*5180.00	108.6 PK			1.96 V	4	67.10	41.50
4	*5180.00	98.9 AV			1.96 V	4	57.40	41.50
5	#10360.00	64.8 PK	74.0	-9.2	3.65 V	10	49.50	15.30
6	#10360.00	50.7 AV	54.0	-3.3	3.65 V	10	35.40	15.30
7	15540.00	66.9 PK	74.0	-7.1	2.68 V	10	51.50	15.40
8	15540.00	52.8 AV	54.0	-1.2	2.68 V	10	37.40	15.40

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	97.2 PK			1.00 H	270	55.70	41.50
2	*5200.00	87.8 AV			1.00 H	270	46.30	41.50
3	#10400.00	60.8 PK	74.0	-13.2	1.21 H	302	45.30	15.50
4	#10400.00	47.1 AV	54.0	-6.9	1.21 H	302	31.60	15.50
5	15600.00	66.1 PK	74.0	-7.9	2.51 H	303	51.50	14.60
6	15600.00	52.6 AV	54.0	-1.4	2.51 H	303	38.00	14.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	107.0 PK			2.01 V	40	65.50	41.50
2	*5200.00	96.8 AV			2.01 V	40	55.30	41.50
3	#10400.00	62.9 PK	74.0	-11.1	3.91 V	10	47.40	15.50
4	#10400.00	49.5 AV	54.0	-4.5	3.91 V	10	34.00	15.50
5	15600.00	68.1 PK	74.0	-5.9	2.61 V	8	53.50	14.60
6	15600.00	52.8 AV	54.0	-1.2	2.61 V	8	38.20	14.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	98.4 PK			1.01 H	268	56.80	41.60
2	*5240.00	89.2 AV			1.01 H	268	47.60	41.60
3	5350.00	58.7 PK	74.0	-15.3	1.84 H	38	54.70	4.00
4	5350.00	45.8 AV	54.0	-8.2	1.84 H	38	41.80	4.00
5	#10480.00	60.8 PK	74.0	-13.2	1.11 H	318	45.00	15.80
6	#10480.00	47.5 AV	54.0	-6.5	1.11 H	318	31.70	15.80
7	15720.00	61.9 PK	74.0	-12.1	1.70 H	2	47.60	14.30
8	15720.00	49.2 AV	54.0	-4.8	1.70 H	2	34.90	14.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	108.0 PK			2.43 V	22	66.40	41.60
2	*5240.00	97.8 AV			2.43 V	22	56.20	41.60
3	5350.00	58.4 PK	74.0	-15.6	1.15 V	16	54.40	4.00
4	5350.00	46.4 AV	54.0	-7.6	1.15 V	16	42.40	4.00
5	#10480.00	65.0 PK	74.0	-9.0	3.96 V	6	49.20	15.80
6	#10480.00	50.6 AV	54.0	-3.4	3.96 V	6	34.80	15.80
7	15720.00	67.6 PK	74.0	-6.4	1.91 V	9	53.30	14.30
8	15720.00	52.9 AV	54.0	-1.1	1.91 V	9	38.60	14.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5714.90	63.4 PK	74.0	-10.6	1.77 H	296	59.00	4.40
2	#5714.90	47.7 AV	54.0	-6.3	1.77 H	296	43.30	4.40
3	#5722.90	68.6 PK	78.2	-9.6	1.73 H	294	64.20	4.40
4	#5725.00	54.1 PK	78.2	-24.1	1.78 H	290	49.70	4.40
5	*5745.00	103.1 PK			1.16 H	334	60.90	42.20
6	*5745.00	93.6 AV			1.16 H	334	51.40	42.20
7	11490.00	66.4 PK	74.0	-7.6	1.00 H	312	50.90	15.50
8	11490.00	53.0 AV	54.0	-1.0	1.00 H	312	37.50	15.50
9	#17235.00	65.6 PK	74.0	-8.4	1.50 H	315	44.50	21.10
10	#17235.00	52.8 AV	54.0	-1.2	1.50 H	315	31.70	21.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.90	69.9 PK	74.0	-4.1	1.88 V	151	65.50	4.40
2	#5714.90	53.0 AV	54.0	-1.0	1.88 V	151	48.60	4.40
3	#5722.90	77.4 PK	78.2	-0.8	2.07 V	152	73.00	4.40
4	#5725.00	63.2 PK	78.2	-15.0	2.06 V	152	58.80	4.40
5	*5745.00	112.0 PK			2.05 V	180	69.80	42.20
6	*5745.00	102.4 AV			2.05 V	180	60.20	42.20
7	11490.00	64.3 PK	74.0	-9.7	2.99 V	31	48.80	15.50
8	11490.00	50.2 AV	54.0	-3.8	2.99 V	31	34.70	15.50
9	#17235.00	65.2 PK	74.0	-8.8	1.29 V	18	44.10	21.10
10	#17235.00	52.3 AV	54.0	-1.7	1.29 V	18	31.20	21.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	*5785.00	105.5 PK			1.33 H	306	63.20	42.30
2	*5785.00	94.9 AV			1.33 H	306	52.60	42.30
3	11570.00	62.6 PK	74.0	-11.4	1.06 H	314	47.50	15.10
4	11570.00	48.8 AV	54.0	-5.2	1.06 H	314	33.70	15.10
5	#17355.00	65.1 PK	68.2	-3.1	1.00 H	72	43.50	21.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	107.8 PK			2.01 V	340	65.50	42.30
2	*5785.00	101.7 AV			2.01 V	340	59.40	42.30
3	11570.00	61.6 PK	74.0	-12.4	1.00 V	54	46.50	15.10
4	11570.00	48.0 AV	54.0	-6.0	1.00 V	54	32.90	15.10
5	#17355.00	67.1 PK	68.2	-1.1	2.54 V	16	45.50	21.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	*5825.00	104.9 PK			1.35 H	305	62.60	42.30
2	*5825.00	94.5 AV			1.35 H	305	52.20	42.30
3	#5850.00	50.4 PK	78.2	-27.8	1.33 H	249	45.70	4.70
4	#5852.10	67.0 PK	78.2	-11.2	1.49 H	345	62.30	4.70
5	#5860.10	60.9 PK	74.0	-13.1	1.24 H	288	56.20	4.70
6	#5860.10	46.3 AV	54.0	-7.7	1.24 H	288	41.60	4.70
7	11650.00	63.1 PK	74.0	-10.9	1.45 H	228	47.80	15.30
8	11650.00	48.8 AV	54.0	-5.2	1.45 H	228	33.50	15.30
9	#17475.00	65.0 PK	68.2	-3.2	1.65 H	248	43.20	21.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	113.3 PK			2.11 V	74	71.00	42.30
2	*5825.00	103.6 AV			2.11 V	74	61.30	42.30
3	#5850.00	57.8 PK	78.2	-20.4	1.76 V	31	53.10	4.70
4	#5852.10	75.4 PK	78.2	-2.8	1.78 V	32	70.70	4.70
5	#5860.10	68.2 PK	74.0	-5.8	2.06 V	14	63.50	4.70
6	#5860.10	50.6 AV	54.0	-3.4	2.06 V	14	45.90	4.70
7	11650.00	61.9 PK	74.0	-12.1	1.00 V	214	46.60	15.30
8	11650.00	47.9 AV	54.0	-6.1	1.00 V	214	32.60	15.30
9	#17475.00	67.2 PK	68.2	-1.0	1.84 V	350	45.40	21.80

REMARKS:

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

802.11ac (VHT40)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK) 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	59.2 PK	74.0	-14.8	1.23 H	168	55.30	3.90
2	5150.00	46.5 AV	54.0	-7.5	1.23 H	168	42.60	3.90
3	*5190.00	96.5 PK			1.00 H	157	55.00	41.50
4	*5190.00	86.0 AV			1.00 H	157	44.50	41.50
5	#10380.00	61.4 PK	74.0	-12.6	1.03 H	219	46.00	15.40
6	#10380.00	47.8 AV	54.0	-6.2	1.03 H	219	32.40	15.40
7	15570.00	63.9 PK	74.0	-10.1	2.41 H	303	48.90	15.00
8	15570.00	50.8 AV	54.0	-3.2	2.41 H	303	35.80	15.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.9 PK	74.0	-6.1	2.34 V	156	64.00	3.90
2	**5150.00**	**53.5 AV**	**54.0**	**-0.5**	**2.34 V**	**156**	**49.60**	**3.90**
3	*5190.00	105.6 PK			2.27 V	71	64.10	41.50
4	*5190.00	95.0 AV			2.27 V	71	53.50	41.50
5	#10380.00	61.2 PK	74.0	-12.8	1.00 V	0	45.80	15.40
6	#10380.00	48.3 AV	54.0	-5.7	1.00 V	0	32.90	15.40
7	15570.00	65.0 PK	74.0	-9.0	1.91 V	357	50.00	15.00
8	15570.00	51.7 AV	54.0	-2.3	1.91 V	357	36.70	15.00

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.5 PK	74.0	-14.5	1.13 H	165	55.60	3.90
2	5150.00	46.7 AV	54.0	-7.3	1.13 H	165	42.80	3.90
3	*5230.00	101.4 PK			1.00 H	188	59.80	41.60
4	*5230.00	91.1 AV			1.00 H	188	49.50	41.60
5	#10460.00	64.1 PK	74.0	-9.9	1.54 H	216	48.60	15.50
6	#10460.00	49.9 AV	54.0	-4.1	1.54 H	216	34.40	15.50
7	15690.00	64.6 PK	74.0	-9.4	1.34 H	227	50.20	14.40
8	15690.00	51.8 AV	54.0	-2.2	1.34 H	227	37.40	14.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.2 PK	74.0	-13.8	1.89 V	34	56.30	3.90
2	5150.00	47.4 AV	54.0	-6.6	1.89 V	34	43.50	3.90
3	*5230.00	110.3 PK			2.20 V	21	68.70	41.60
4	*5230.00	99.7 AV			2.20 V	21	58.10	41.60
5	#10460.00	64.9 PK	74.0	-9.1	1.80 V	31	49.40	15.50
6	#10460.00	50.5 AV	54.0	-3.5	1.80 V	31	35.00	15.50
7	15690.00	65.8 PK	74.0	-8.2	2.64 V	2	51.40	14.40
8	15690.00	52.7 AV	54.0	-1.3	2.64 V	2	38.30	14.40

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5714.90	67.2 PK	74.0	-6.8	1.77 H	245	62.80	4.40
2	#5714.90	49.4 AV	54.0	-4.6	1.77 H	245	45.00	4.40
3	#5722.90	72.4 PK	78.2	-5.8	1.89 H	342	68.00	4.40
4	#5725.00	53.1 PK	78.2	-25.1	2.04 H	315	48.70	4.40
5	*5755.00	102.1 PK			2.02 H	293	59.90	42.20
6	*5755.00	91.4 AV			2.02 H	293	49.20	42.20
7	11510.00	61.4 PK	74.0	-12.6	2.00 H	51	46.20	15.20
8	11510.00	47.6 AV	54.0	-6.4	2.00 H	51	32.40	15.20
9	#17265.00	63.6 PK	74.0	-10.4	1.00 H	160	42.40	21.20
10	#17265.00	50.8 AV	54.0	-3.2	1.00 H	160	29.60	21.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.90	72.1 PK	74.0	-1.9	1.94 V	129	67.70	4.40
2	#5714.90	52.9 AV	54.0	-1.1	1.94 V	129	48.50	4.40
3	#5722.90	74.6 PK	78.2	-3.6	2.08 V	14	70.20	4.40
4	#5725.00	59.4 PK	78.2	-18.8	2.17 V	154	55.00	4.40
5	*5755.00	107.4 PK			2.03 V	314	65.20	42.20
6	*5755.00	97.0 AV			2.03 V	314	54.80	42.20
7	11510.00	60.5 PK	74.0	-13.5	1.00 V	38	45.30	15.20
8	11510.00	47.0 AV	54.0	-7.0	1.00 V	38	31.80	15.20
9	#17265.00	64.4 PK	74.0	-9.6	1.00 V	27	43.20	21.20
10	#17265.00	50.8 AV	54.0	-3.2	1.00 V	27	29.60	21.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	*5795.00	106.3 PK			1.67 H	335	64.00	42.30
2	*5795.00	96.4 AV			1.67 H	335	54.10	42.30
3	#5850.00	51.9 PK	78.2	-26.3	1.88 H	247	47.20	4.70
4	#5852.10	72.2 PK	78.2	-6.0	2.01 H	351	67.50	4.70
5	#5860.10	67.1 PK	74.0	-6.9	1.59 H	229	62.40	4.70
6	#5860.10	49.2 AV	54.0	-4.8	1.59 H	229	44.50	4.70
7	11590.00	59.6 PK	74.0	-14.4	1.00 H	247	44.50	15.10
8	11590.00	46.4 AV	54.0	-7.6	1.00 H	247	31.30	15.10
9	#17385.00	66.1 PK	68.2	-2.1	2.26 H	158	44.50	21.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	111.3 PK			1.75 V	30	69.00	42.30
2	*5795.00	100.9 AV			1.75 V	30	58.60	42.30
3	#5850.00	58.0 PK	78.2	-20.2	1.87 V	13	53.30	4.70
4	#5852.10	74.6 PK	78.2	-3.6	1.86 V	14	69.90	4.70
5	#5860.10	71.3 PK	74.0	-2.7	1.88 V	314	66.60	4.70
6	#5860.10	53.0 AV	54.0	-1.0	1.88 V	314	48.30	4.70
7	11590.00	60.3 PK	74.0	-13.7	1.03 V	117	45.20	15.10
8	11590.00	47.0 AV	54.0	-7.0	1.03 V	117	31.90	15.10
9	#17385.00	67.0 PK	68.2	-1.2	2.45 V	22	45.40	21.60

REMARKS:

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

802.11ac (VHT80)

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.3 PK	74.0	-15.7	1.04 H	101	54.40	3.90
2	5150.00	45.5 AV	54.0	-8.5	1.04 H	101	41.60	3.90
3	*5210.00	91.8 PK			1.02 H	164	50.20	41.60
4	*5210.00	79.7 AV			1.02 H	164	38.10	41.60
5	#10420.00	61.0 PK	74.0	-13.0	1.26 H	275	45.50	15.50
6	#10420.00	47.2 AV	54.0	-6.8	1.26 H	275	31.70	15.50
7	15630.00	62.8 PK	74.0	-11.2	2.24 H	316	48.20	14.60
8	15630.00	49.8 AV	54.0	-4.2	2.24 H	316	35.20	14.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.3 PK	74.0	-6.7	2.66 V	2	63.40	3.90
2	5150.00	52.9 AV	54.0	-1.1	2.66 V	2	49.00	3.90
3	*5210.00	102.7 PK			2.41 V	18	61.10	41.60
4	*5210.00	90.7 AV			2.41 V	18	49.10	41.60
5	#10420.00	60.6 PK	74.0	-13.4	1.72 V	39	45.10	15.50
6	#10420.00	47.5 AV	54.0	-6.5	1.72 V	39	32.00	15.50
7	15630.00	62.7 PK	74.0	-11.3	1.39 V	12	48.10	14.60
8	15630.00	49.8 AV	54.0	-4.2	1.39 V	12	35.20	14.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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	#5714.90	65.7 PK	74.0	-8.3	1.00 H	169	61.30	4.40
2	#5714.90	48.4 AV	54.0	-5.6	1.00 H	169	44.00	4.40
3	#5722.90	66.5 PK	78.2	-11.7	1.03 H	225	62.10	4.40
4	#5725.00	50.1 PK	78.2	-28.1	1.30 H	325	45.70	4.40
5	*5775.00	97.7 PK			1.00 H	294	55.50	42.20
6	*5775.00	86.9 AV			1.00 H	294	44.70	42.20
7	#5852.00	47.3 PK	78.2	-30.9	1.48 H	301	42.60	4.70
8	#5852.10	60.8 PK	78.2	-17.4	1.23 H	250	56.10	4.70
9	#5860.10	61.2 PK	74.0	-12.8	1.34 H	268	56.50	4.70
10	#5860.10	46.7 AV	54.0	-7.3	1.34 H	268	42.00	4.70
11	11550.00	58.5 PK	74.0	-15.5	1.00 H	168	43.40	15.10
12	11550.00	45.2 AV	54.0	-8.8	1.00 H	168	30.10	15.10
13	#17325.00	66.0 PK	74.0	-8.0	2.26 H	347	44.50	21.50
14	#17325.00	52.2 AV	54.0	-1.8	2.26 H	347	30.70	21.50
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	#5714.90	69.5 PK	74.0	-4.5	1.77 V	269	65.10	4.40
2	#5714.90	51.4 AV	54.0	-2.6	1.77 V	269	47.00	4.40
3	#5722.90	71.6 PK	78.2	-6.6	1.99 V	15	67.20	4.40
4	#5725.00	53.5 PK	78.2	-24.7	2.01 V	326	49.10	4.40
5	*5775.00	104.5 PK			1.92 V	316	62.30	42.20
6	*5775.00	92.2 AV			1.92 V	316	50.00	42.20
7	#5850.00	54.4 PK	78.2	-23.8	1.88 V	28	49.70	4.70
8	#5852.10	69.8 PK	78.2	-8.4	1.96 V	14	65.10	4.70
9	#5860.10	69.7 PK	74.0	-4.3	1.84 V	315	65.00	4.70
10	#5860.10	53.0 AV	54.0	-1.0	1.84 V	315	48.30	4.70
11	11550.00	58.9 PK	74.0	-15.1	1.00 V	22	43.80	15.10
12	11550.00	45.9 AV	54.0	-8.1	1.00 V	22	30.80	15.10
13	#17325.00	66.6 PK	74.0	-7.4	2.58 V	21	45.10	21.50
14	#17325.00	52.6 AV	54.0	-1.4	2.58 V	21	31.10	21.50

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:

802.11ac (VHT20)

CHANNEL	TX Channel 48	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	51.34	34.5 QP	40.0	-5.5	1.01 H	28	48.80	-14.30
2	125.06	33.7 QP	43.5	-9.8	1.51 H	229	49.70	-16.00
3	173.56	30.8 QP	43.5	-12.7	1.26 H	301	45.20	-14.40
4	249.22	36.5 QP	46.0	-9.5	1.01 H	148	50.90	-14.40
5	499.48	37.3 QP	46.0	-8.7	1.51 H	152	45.90	-8.60
6	875.84	37.9 QP	46.0	-8.1	1.01 H	15	39.60	-1.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.28	33.1 QP	40.0	-6.9	1.24 V	326	47.20	-14.10
2	109.54	39.4 QP	43.5	-4.1	1.24 V	221	56.60	-17.20
3	173.56	36.7 QP	43.5	-6.8	1.00 V	294	51.10	-14.40
4	249.22	39.0 QP	46.0	-7.0	1.24 V	162	53.40	-14.40
5	499.48	40.3 QP	46.0	-5.7	1.49 V	19	48.90	-8.60
6	625.58	39.4 QP	46.0	-6.6	1.24 V	16	45.20	-5.80

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS 30	100288	Apr. 27, 2015	Apr. 26, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2014	Dec. 29, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 21, 2015	Jul. 20, 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 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 Test Procedures

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

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

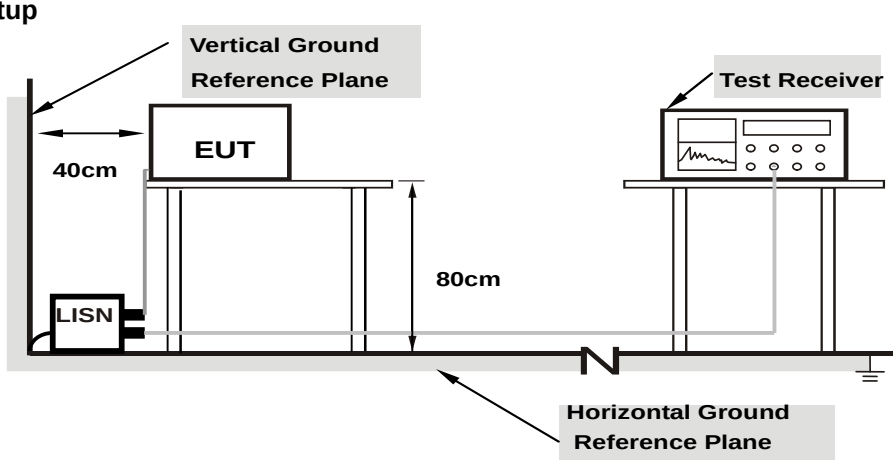
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

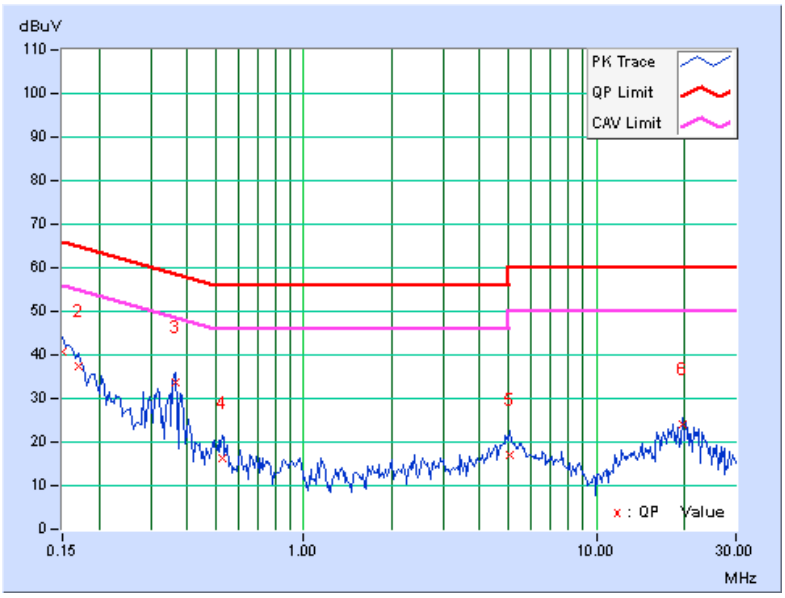
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.16	40.58	27.94	40.74	28.10	66.00	56.00	-25.26	-27.90
2	0.16953	0.17	37.06	25.00	37.23	25.17	64.98	54.98	-27.76	-29.82
3	**0.36484**	**0.18**	**33.66**	**32.51**	**33.84**	**32.69**	**58.62**	**48.62**	**-24.78**	**-15.93**
4	0.52500	0.19	16.13	11.75	16.32	11.94	56.00	46.00	-39.68	-34.06
5	5.08203	0.37	16.75	9.08	17.12	9.45	60.00	50.00	-42.88	-40.55
6	19.71094	0.62	23.47	19.40	24.09	20.02	60.00	50.00	-35.91	-29.98

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.

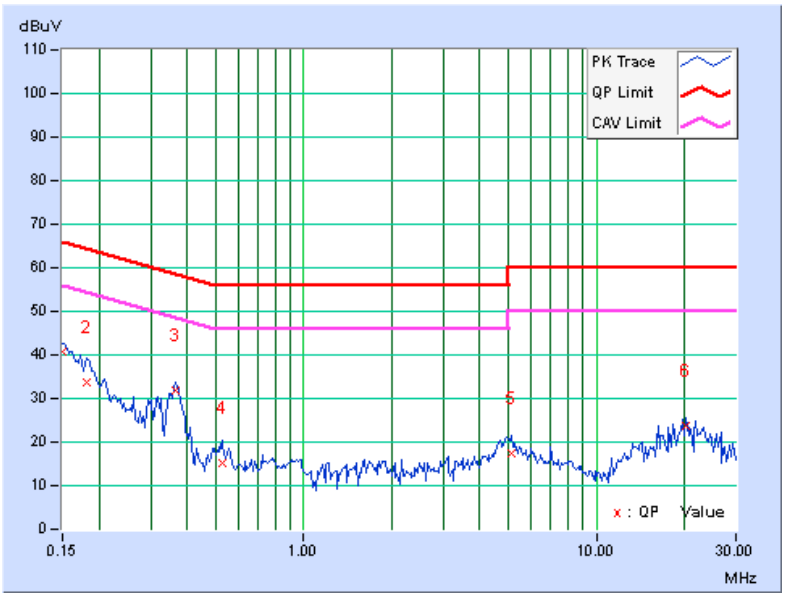


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	0.17	40.56	27.49	40.73	27.66	66.00	56.00	-25.27	-28.34
2	0.18125	0.18	33.34	22.32	33.52	22.50	64.43	54.43	-30.91	-31.93
3	0.36484	0.20	31.49	28.17	31.69	28.37	58.62	48.62	-26.93	-20.25
4	0.52500	0.21	14.85	10.34	15.06	10.55	56.00	46.00	-40.94	-35.45
5	5.13672	0.41	17.14	8.92	17.55	9.33	60.00	50.00	-42.45	-40.67
6	20.32031	0.78	22.81	18.67	23.59	19.45	60.00	50.00	-36.41	-30.55

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 Measurment

4.3.1 Limits of Transmit Power Measurement

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

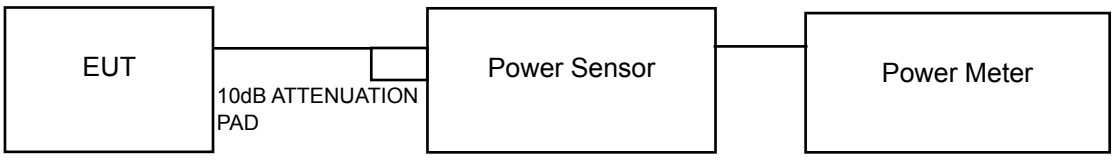
*B is the 26 dB emission bandwidth in megahertz

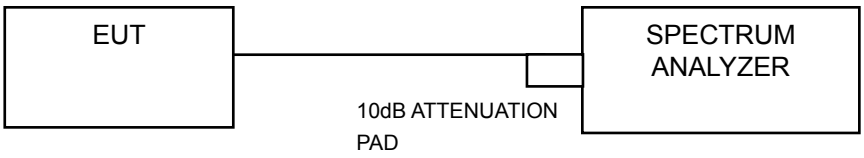
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.3.2 Test Setup





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, 802.11ac (VHT20), 802.11ac (VHT40)

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

For 802.11ac (VHT80)

1) Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
2) Set sweep trigger to “free run”.
3) Set RBW = 1 MHz.
4) Set VBW ≥ 3 MHz
5) Number of points in sweep ≥ 2 Span / RBW.
6) Sweep time ≤ (number of points in sweep) * T
7) Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
8) Detector = RMS.
9) Trace mode = max hold.
10) Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

FOR OCCUPIED BANDWIDTH

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

4.3.5 Deviation fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

POWER OUTPUT:

CDD Mode

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	47.863	16.80	30	Pass
40	5200	44.259	16.46	30	Pass
48	5240	63.973	18.06	30	Pass
149	5745	65.917	18.19	30	Pass
157	5785	41.115	16.14	30	Pass
165	5825	44.055	16.44	30	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	12.89	10.93	31.842	15.03	30	Pass
40	5200	13.73	12.06	39.674	15.99	30	Pass
48	5240	15.12	13.28	53.790	17.31	30	Pass
149	5745	14.47	14.89	58.822	17.70	30	Pass
157	5785	15.27	15.57	69.709	18.43	30	Pass
165	5825	16.35	16.06	83.517	19.22	30	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (dBm)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 0				
38	5190	13.00	11.40	33.757	15.28	30	Pass
46	5230	17.72	16.01	**99.058**	19.96	30	Pass
151	5755	14.01	14.13	51.059	17.08	30	Pass
159	5795	17.45	17.05	**106.289**	20.26	30	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (dBm)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 0				
42	5210	14.14	12.36	43.161	16.35	30	Pass
155	5775	13.29	13.30	42.710	16.31	30	Pass

Beamforming Mode

802.11ac (VHT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	11.60	11.33	28.037	14.48	29.49	Pass
40	5200	11.35	11.43	27.546	14.40	29.49	Pass
48	5240	13.34	12.77	40.500	16.07	29.49	Pass
149	5745	14.47	14.89	58.822	17.70	29.49	Pass
157	5785	15.27	15.57	69.709	18.43	29.49	Pass
165	5825	16.35	16.06	83.517	19.22	29.49	Pass

Note: Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power limit shall be reduced to 30-(6.51-6) = 29.49dBm.

802.11ac (VHT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	10.38	10.24	21.482	13.32	29.49	Pass
46	5230	15.88	15.54	**74.536**	18.72	29.49	Pass
151	5755	13.90	13.84	48.757	16.88	29.49	Pass
159	5795	17.45	17.05	**106.289**	20.26	29.49	Pass

Note: Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power limit shall be reduced to 30-(6.51-6) = 29.49dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	10.13	10.42	21.319	13.29	29.49	Pass
155	5775	13.20	12.95	40.617	16.09	29.49	Pass

Note: Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power limit shall be reduced to 30-(6.51-6) = 29.49dBm.

26dB BANDWIDTH:

CDD Mode

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	Pass / Fail
36	5180	24.86	Pass
40	5200	25.01	Pass
48	5240	32.68	Pass

802.11ac (VHT20)

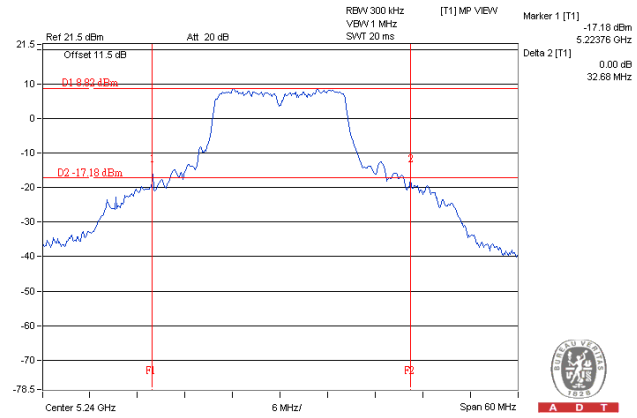
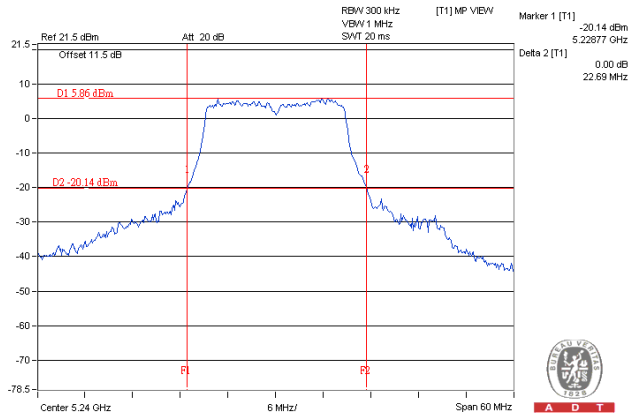
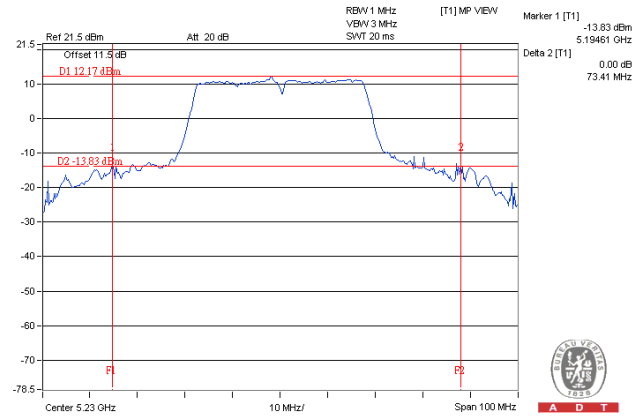
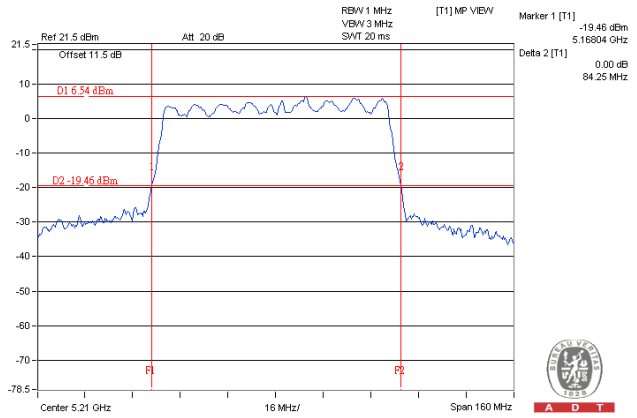
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	22.54	22.28	Pass
40	5200	22.42	22.30	Pass
48	5240	22.69	22.39	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
38	5190	44.92	44.70	Pass
46	5230	73.41	60.85	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
42	5210	84.25	83.98	Pass

SPECTRUM PLOT OF WORST VALUE	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	

Beamforming Mode

802.11ac (VHT20)

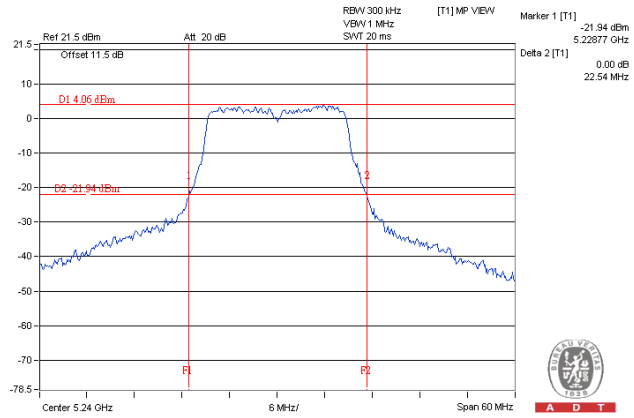
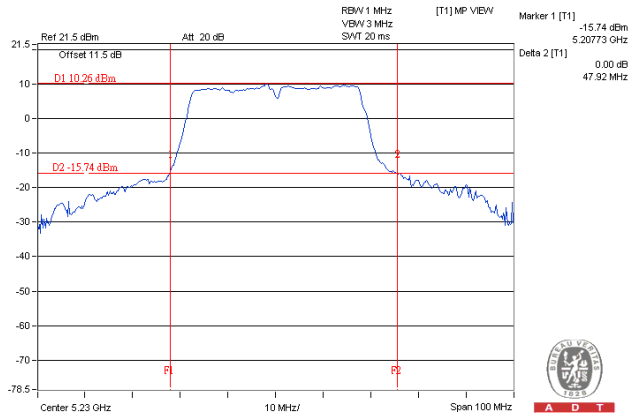
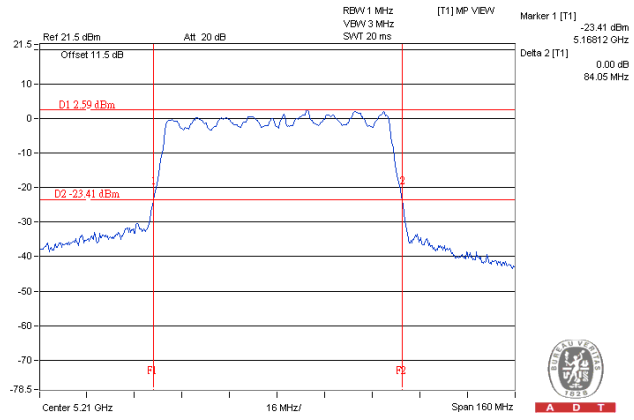
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	22.43	22.33	Pass
40	5200	22.33	22.27	Pass
48	5240	22.54	22.34	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
38	5190	44.84	44.87	Pass
46	5230	45.38	47.92	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
42	5210	84.05	83.93	Pass

SPECTRUM PLOT OF WORST VALUE	
802.11ac (VHT20)	802.11ac (VHT40)
	
802.11ac (VHT80)	
	

OCCUPIED BANDWIDTH:

CDD Mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.04
40	5200	17.04
48	5240	17.52
149	5745	18.09
157	5785	17.04
165	5825	17.16

802.11ac (VHT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.88	17.88
40	5200	18.00	17.88
48	5240	17.88	17.88
149	5745	18.12	17.91
157	5785	18.12	18.00
165	5825	18.12	18.00

802.11ac (VHT40)

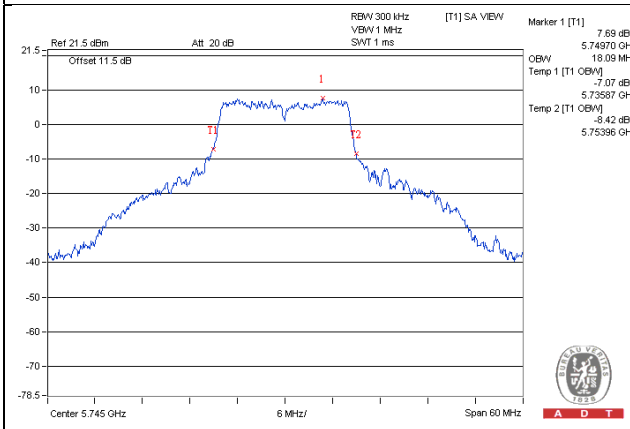
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.08	36.96
46	5230	37.44	37.20
151	5755	37.08	37.08
159	5795	37.32	37.32

802.11ac (VHT80)

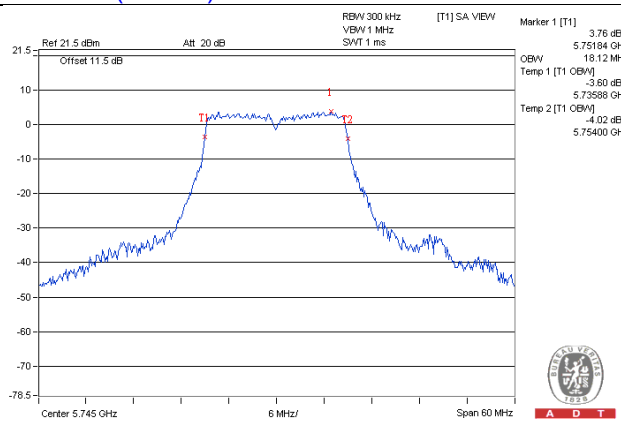
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.84	76.08
155	5775	75.84	76.08

SPECTRUM PLOT OF WORST VALUE

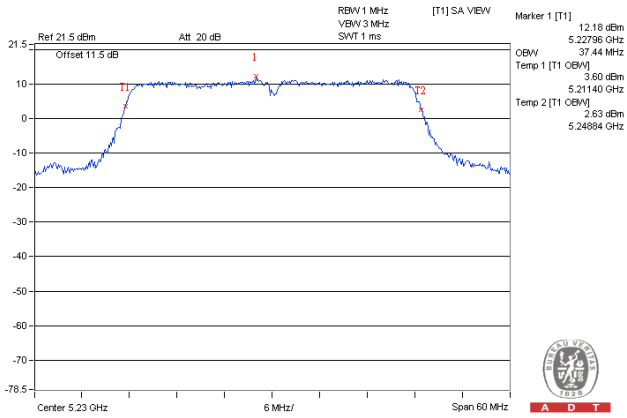
802.11a



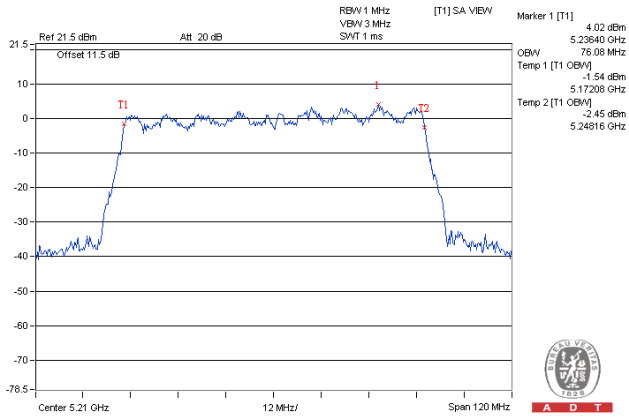
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



Beamforming Mode

802.11ac (VHT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.88	17.88
40	5200	17.88	17.88
48	5240	18.00	18.00
149	5745	18.00	18.00
157	5785	18.12	18.12
165	5825	18.12	18.12

802.11ac (VHT40)

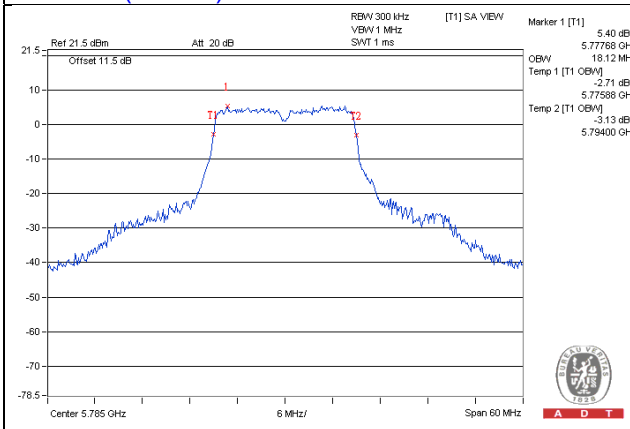
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.96	36.96
46	5230	37.08	37.20
151	5755	37.20	37.20
159	5795	37.56	37.44

802.11ac (VHT80)

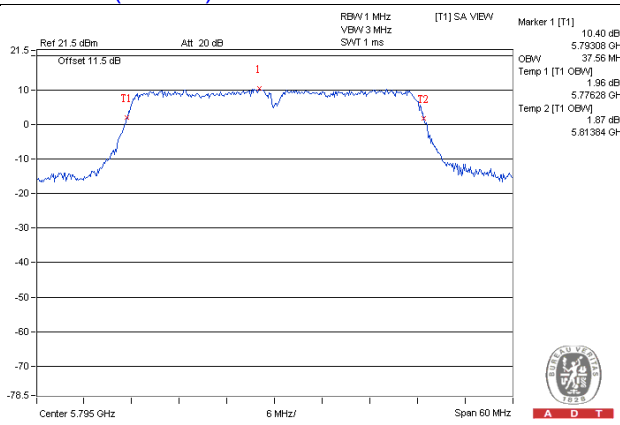
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.84	76.08
155	5775	75.84	76.08

SPECTRUM PLOT OF WORST VALUE

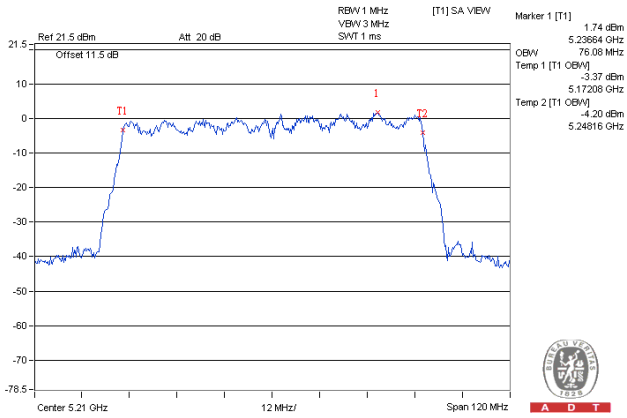
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

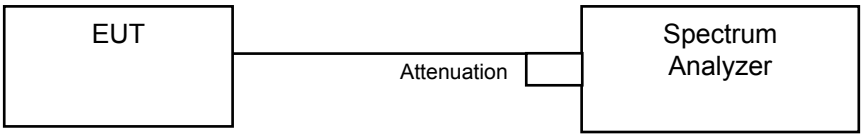


4.4 Peak Power Spectral Density Measurement

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 = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Set Channel power measure = 1MHz

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

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

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

For U-NII-3 band:

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

b. Set RBW = 300 kHz, Set VBW ≥ 3 RBW, 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)

f. 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)

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

For U-NII-1 Band

CDD Mode

802.11a

Chan.	Frequency (MHz)	PSD (dBm/MHz)	Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	2.89	0.86	3.75	17.00	Pass
40	5200	3.07	0.86	3.93	17.00	Pass
48	5240	4.51	0.86	5.37	17.00	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. **For U-NII-1:** Directional gain = 3.5dBi < 6dBi, so the power density limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Frequency (MHz)	PSD (dBm/MHz)		Total PSD W/O Duty Factor (dBm/MHz)	Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1					
36	5180	-0.81	-2.61	1.39	0.41	1.80	16.49	Pass
40	5200	0.22	-1.81	2.33	0.41	2.74	16.49	Pass
48	5240	0.83	-0.29	3.31	0.41	3.72	16.49	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. **For U-NII-1:** Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 17-(6.51-6) = 16.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

Chan.	Frequency (MHz)	PSD (dBm/MHz)		Total PSD W/O Duty Factor (dBm/MHz)	Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1					
38	5190	-3.75	-5.78	-1.64	1.66	0.02	16.49	Pass
46	5230	0.87	-0.69	3.17	1.66	4.83	16.49	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. **For U-NII-1:** Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 17-(6.51-6) = 16.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

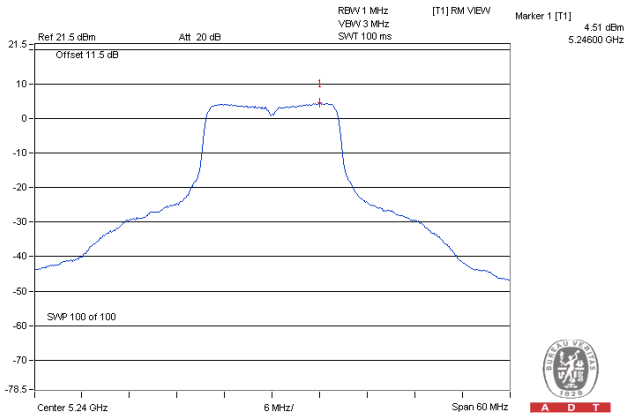
Chan.	Frequency (MHz)	PSD (dBm/MHz)		Total PSD W/O Duty Factor (dBm/MHz)	Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1					
42	5210	-6.10	-7.42	-3.70	2.49	-1.21	16.49	Pass

Note:

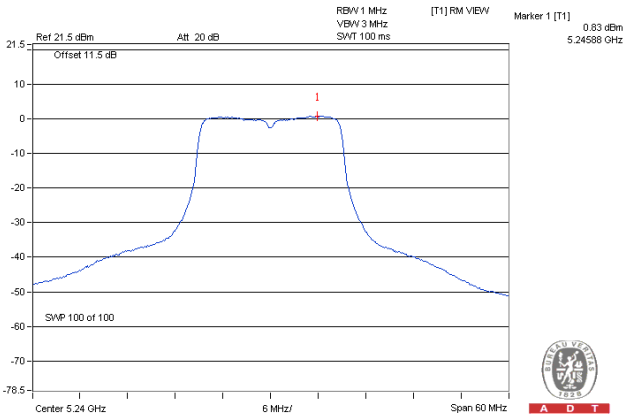
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1:** Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 17-(6.51-6) = 16.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

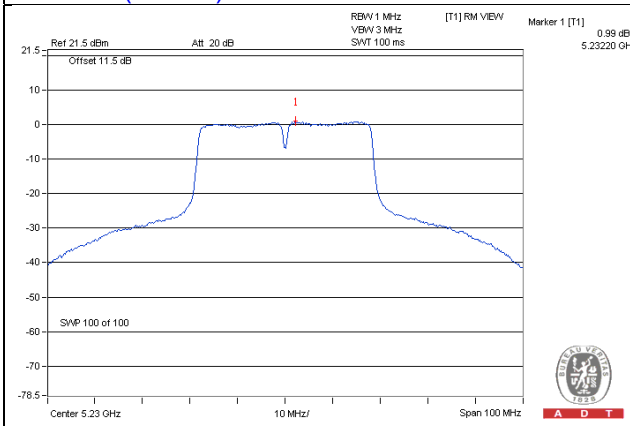
802.11a / Ch48



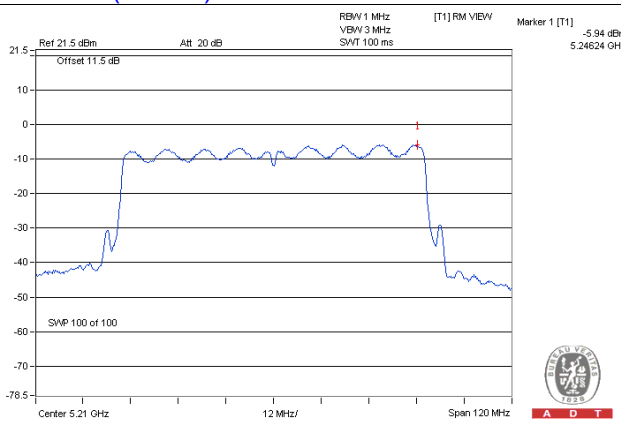
802.11ac (VHT20) / Ch 48 / Chain 0



802.11ac (VHT40) / Ch 46 / Chain 0



802.11ac (VHT80) / Ch 42 / Chain 0



Beamforming Mode

802.11ac (VHT20)

Chan.	Frequency (MHz)	PSD (dBm/MHz)		Total PSD W/O Duty Factor (dBm/MHz)	Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1					
36	5180	-2.44	-2.74	0.43	0.72	1.15	16.49	Pass
40	5200	-3.33	-2.60	0.07	0.72	0.79	16.49	Pass
48	5240	-0.58	-1.52	1.99	0.72	2.71	16.49	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. **For U-NII-1:** Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 17-(6.51-6) = 16.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

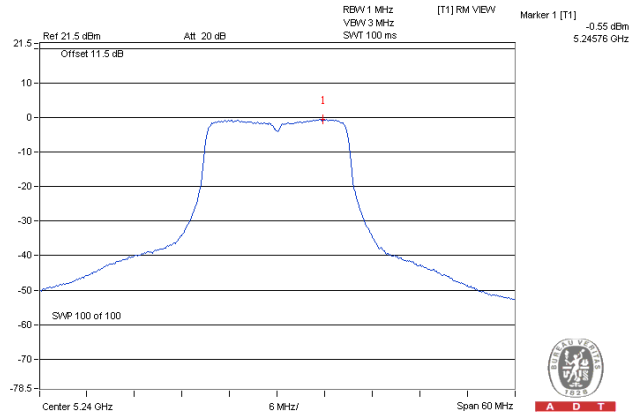
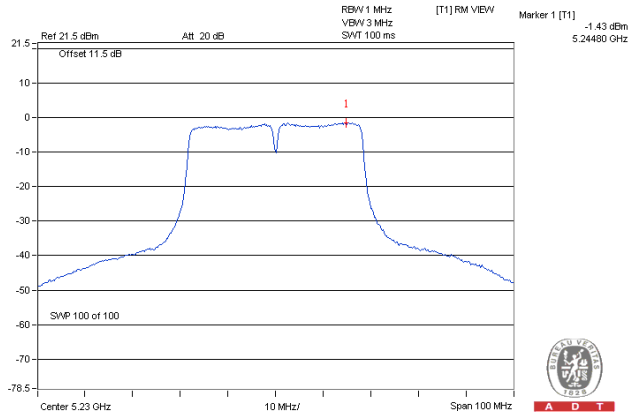
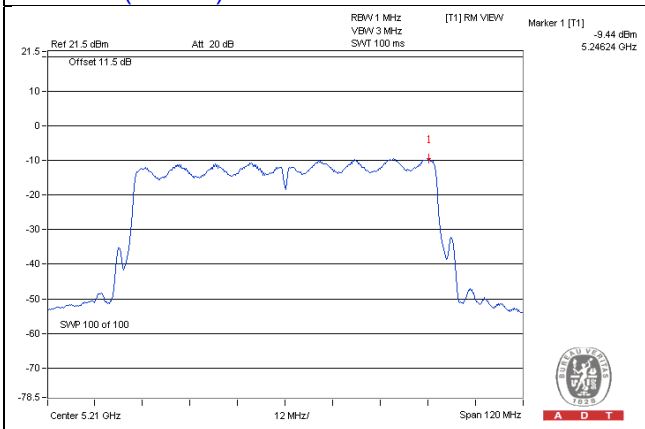
Chan.	Frequency (MHz)	PSD (dBm/MHz)		Total PSD W/O Duty Factor (dBm/MHz)	Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1					
38	5190	-7.22	-6.78	-3.99	1.18	-2.81	16.49	Pass
46	5230	-1.84	-1.44	1.37	1.18	2.55	16.49	Pass

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. **For U-NII-1:** Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 17-(6.51-6) = 16.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Frequency (MHz)	PSD (dBm/MHz)		Total PSD W/O Duty Factor (dBm/MHz)	Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1					
42	5210	-9.69	-9.49	-6.58	2.30	-4.28	16.49	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. **For U-NII-1:** Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 17-(6.51-6) = 16.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE	
802.11ac (VHT20) / Ch 48 / Chain 0	802.11ac (VHT40) / Ch 46 / Chain 1
	
802.11ac (VHT80) / Ch 42 / Chain 1	
	

For U-NII-3 Band

CDD Mode

802.11a

Channel	Freq. (MHz)	PSD (dBm/ 300kHz)	PSD (dBm/ 500kHz)	Duty Factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
149	5745	-5.22	-3.00	0.86	-2.14	30.00	Pass
157	5785	-6.60	-4.38	0.86	-3.52	30.00	Pass
165	5825	-6.08	-3.86	0.86	-3.00	30.00	Pass

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/ 300kHz)	PSD (dBm/ 500kHz)	10 log (N=2) dB	Duty Factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
0	149	5745	-8.71	-6.49	3.01	0.41	-3.07	29.49	Pass
	157	5785	-7.58	-5.36	3.01	0.41	-1.94	29.49	Pass
	165	5825	-6.64	-4.42	3.01	0.41	-1.00	29.49	Pass
1	149	5745	-9.19	-6.97	3.01	0.41	-3.55	29.49	Pass
	157	5785	-8.40	-6.18	3.01	0.41	-2.76	29.49	Pass
	165	5825	-7.56	-5.34	3.01	0.41	-1.92	29.49	Pass

Note:
1. Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 30-(6.51-6) = 29.49dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

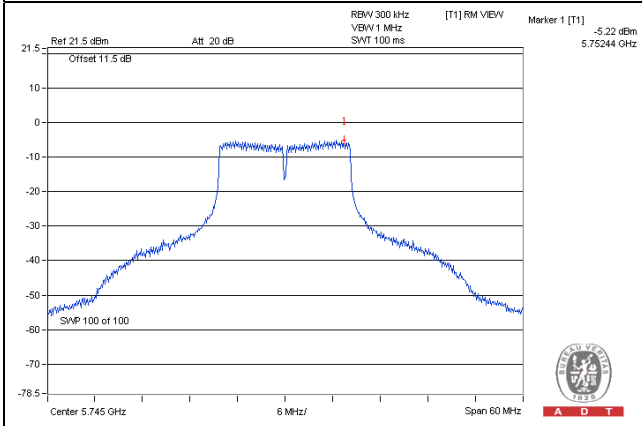
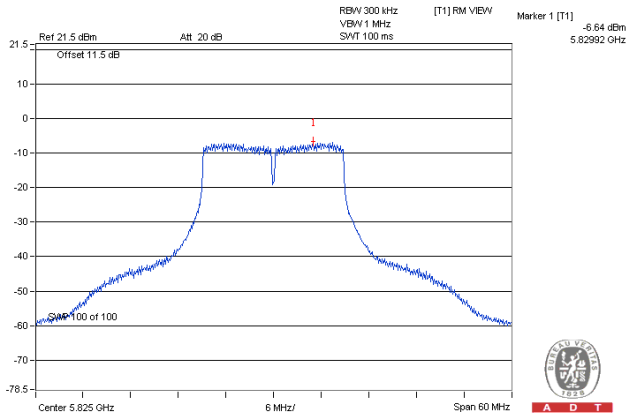
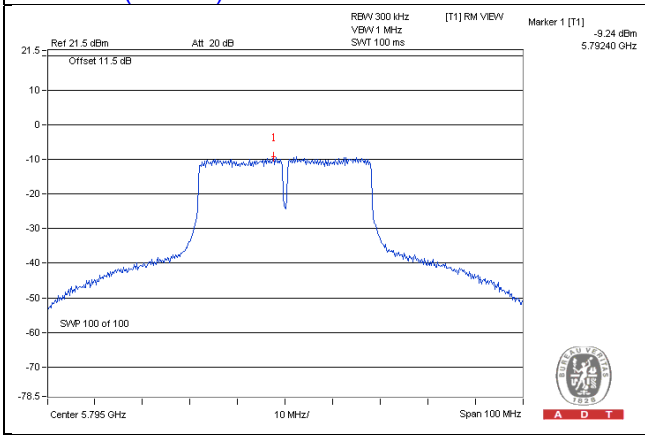
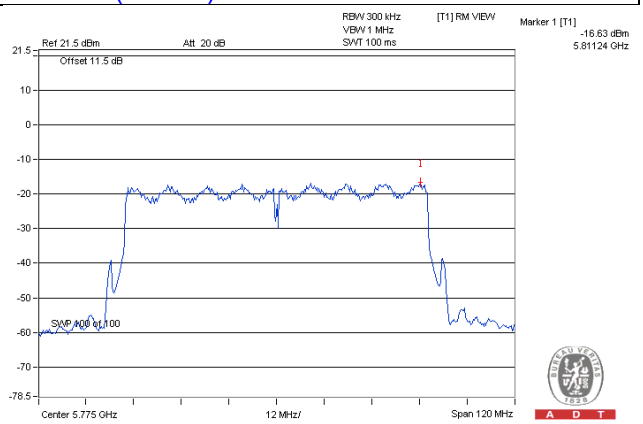
TX chain	Channel	Freq. (MHz)	PSD (dBm/ 300kHz)	PSD (dBm/ 500kHz)	10 log (N=2) dB	Duty Factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
0	151	5755	-12.31	-10.09	3.01	1.66	-5.42	29.49	Pass
	159	5795	-9.24	-7.02	3.01	1.66	-2.35	29.49	Pass
1	151	5755	-13.51	-11.29	3.01	1.66	-6.62	29.49	Pass
	159	5795	-11.07	-8.85	3.01	1.66	-4.18	29.49	Pass

Note:
1. Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 30-(6.51-6) = 29.49dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Channel	Freq. (MHz)	PSD (dBm/ 300kHz)	PSD (dBm/ 500kHz)	10 log (N=2) dB	Duty Factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
0	155	5775	-16.63	-14.41	3.01	2.49	-8.91	29.49	Pass
1	155	5775	-17.55	-15.33	3.01	2.49	-9.83	29.49	Pass

Note:
1. Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 30-(6.51-6) = 29.49dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	

Beamforming Mode

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/ 300kHz)	PSD (dBm/ 500kHz)	10 log (N=2) dB	Duty Factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
0	149	5745	-7.90	-5.68	3.01	0.72	-1.95	29.49	Pass
	157	5785	-6.65	-4.43	3.01	0.72	-0.70	29.49	Pass
	165	5825	-6.01	-3.79	3.01	0.72	-0.06	29.49	Pass
1	149	5745	-8.22	-6.00	3.01	0.72	-2.27	29.49	Pass
	157	5785	-6.68	-4.46	3.01	0.72	-0.73	29.49	Pass
	165	5825	-6.35	-4.13	3.01	0.72	-0.40	29.49	Pass

Note:
1. Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 30-(6.51-6) = 29.49dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

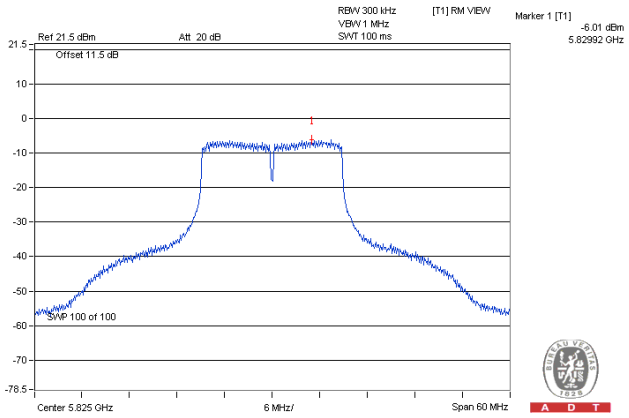
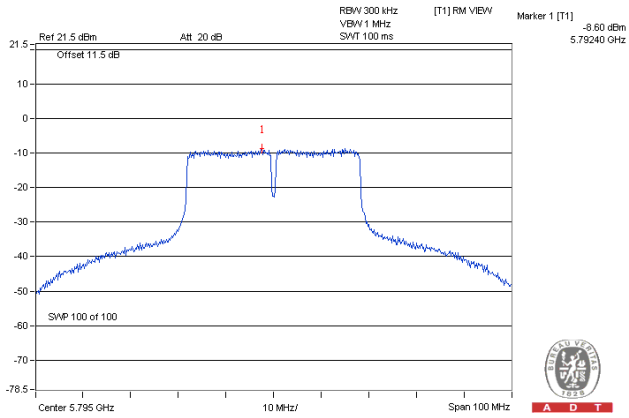
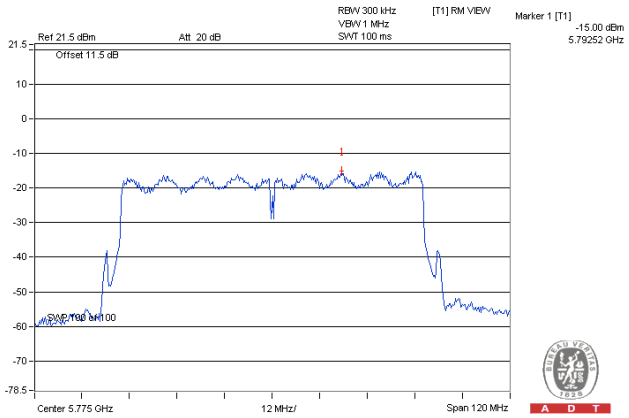
TX chain	Channel	Freq. (MHz)	PSD (dBm/ 300kHz)	PSD (dBm/ 500kHz)	10 log (N=2) dB	Duty Factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
0	151	5755	-12.19	-9.97	3.01	1.18	-5.78	29.49	Pass
	159	5795	-8.60	-6.38	3.01	1.18	-2.19	29.49	Pass
1	151	5755	-11.84	-9.62	3.01	1.18	-5.43	29.49	Pass
	159	5795	-9.15	-6.93	3.01	1.18	-2.74	29.49	Pass

Note:
1. Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 30-(6.51-6) = 29.49dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Channel	Freq. (MHz)	PSD (dBm/ 300kHz)	PSD (dBm/ 500kHz)	10 log (N=2) dB	Duty Factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass /Fail
0	155	5775	-15.00	-12.78	3.01	2.30	-7.47	29.49	Pass
1	155	5775	-15.58	-13.36	3.01	2.30	-8.05	29.49	Pass

Note:
1. Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi, so the power density limit shall be reduced to 30-(6.51-6) = 29.49dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

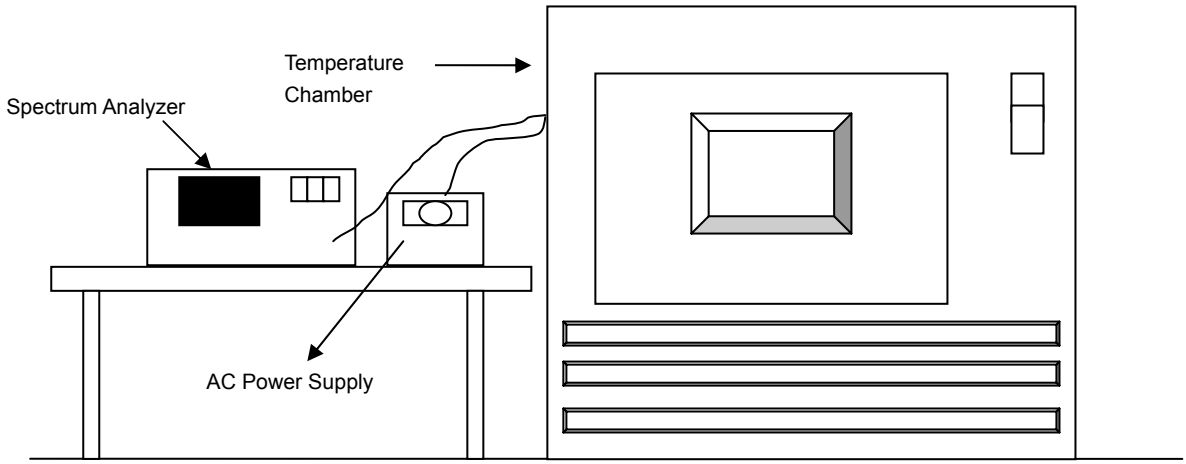
SPECTRUM PLOT OF WORST VALUE	
802.11ac (VHT20)	802.11ac (VHT40)
	
802.11ac (VHT80)	
	

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

Frequemcy Stability Versus Temp.									
Operating Frequency: 5180MHz									
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	5179.9894	-0.00020	5179.9877	-0.00024	5179.9914	-0.00017	5179.9883	-0.00023
40	120	5179.9935	-0.00013	5179.9925	-0.00014	5179.9939	-0.00012	5179.9894	-0.00020
30	120	5179.9751	-0.00048	5179.9748	-0.00049	5179.9764	-0.00046	5179.9754	-0.00047
20	120	5179.9874	-0.00024	5179.9863	-0.00026	5179.9833	-0.00032	5179.987	-0.00025
10	120	5179.9957	-0.00008	5179.9975	-0.00005	5179.9989	-0.00002	5179.9991	-0.00002
0	120	5180.0256	0.00049	5180.0258	0.00050	5180.0255	0.00049	5180.025	0.00048
-10	120	5180.0136	0.00026	5180.0148	0.00029	5180.0142	0.00027	5180.0134	0.00026
-20	120	5180.0136	0.00026	5180.0135	0.00026	5180.0165	0.00032	5180.0124	0.00024
-30	120	5179.9866	-0.00026	5179.9872	-0.00025	5179.9867	-0.00026	5179.9879	-0.00023

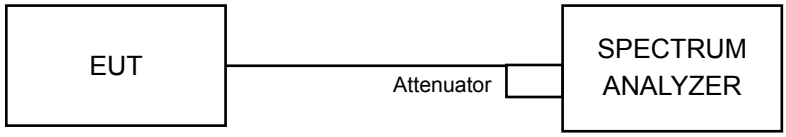
Frequemcy Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5179.988	-0.00023	5179.987	-0.00025	5179.9835	-0.00032	5179.9863	-0.00026
	120	5179.9874	-0.00024	5179.9863	-0.00026	5179.9833	-0.00032	5179.987	-0.00025
	102	5179.9875	-0.00024	5179.9873	-0.00025	5179.9837	-0.00031	5179.9864	-0.00026

4.6 6dB Bandwidth Measurment

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

CDD Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.37	0.5	Pass
157	5785	16.39	0.5	Pass
165	5825	16.39	0.5	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.62	17.59	0.5	Pass
157	5785	17.64	17.57	0.5	Pass
165	5825	17.63	17.57	0.5	Pass

802.11ac (VHT40)

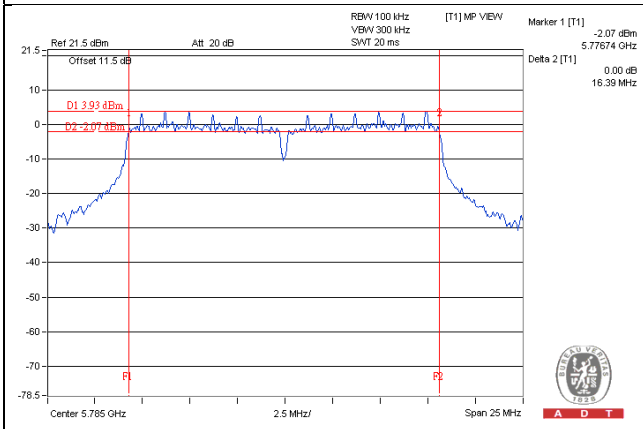
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	36.08	36.43	0.5	Pass
159	5795	36.08	36.14	0.5	Pass

802.11ac (VHT80)

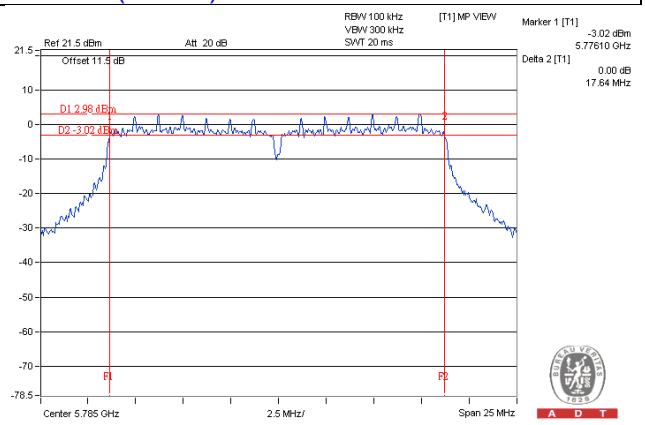
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.82	75.70	0.5	Pass

SPECTRUM PLOT OF WORST VALUE

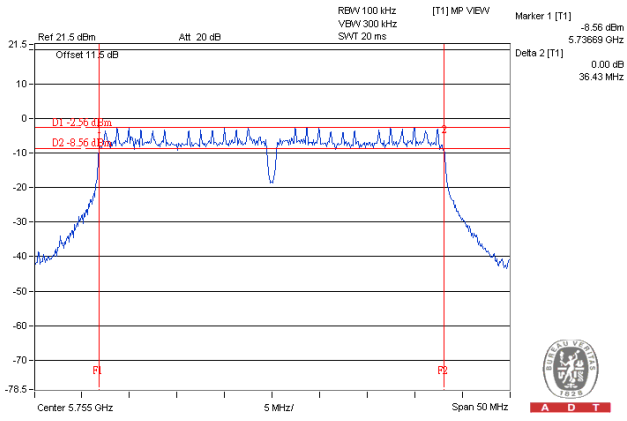
802.11a



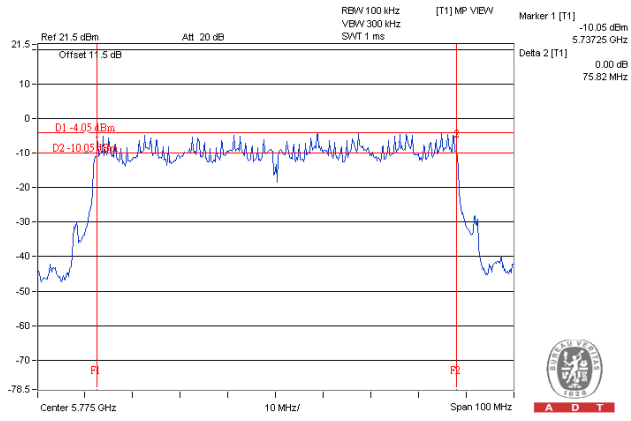
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



Beamforming Mode

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.57	17.60	0.5	Pass
157	5785	17.58	17.61	0.5	Pass
165	5825	17.39	17.59	0.5	Pass

802.11ac (VHT40)

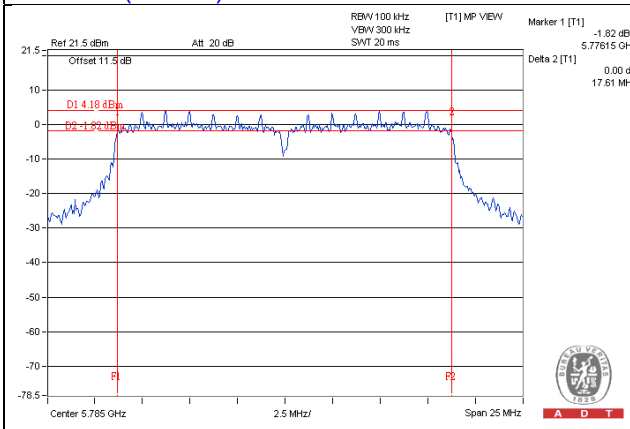
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	36.05	36.12	0.5	Pass
159	5795	35.86	36.31	0.5	Pass

802.11ac (VHT80)

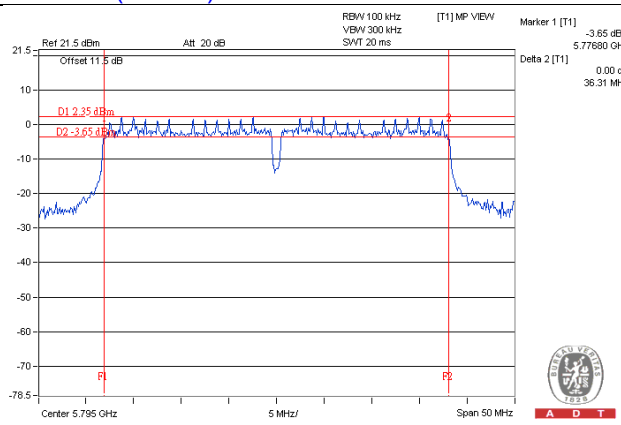
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.73	75.88	0.5	Pass

SPECTRUM PLOT OF WORST VALUE

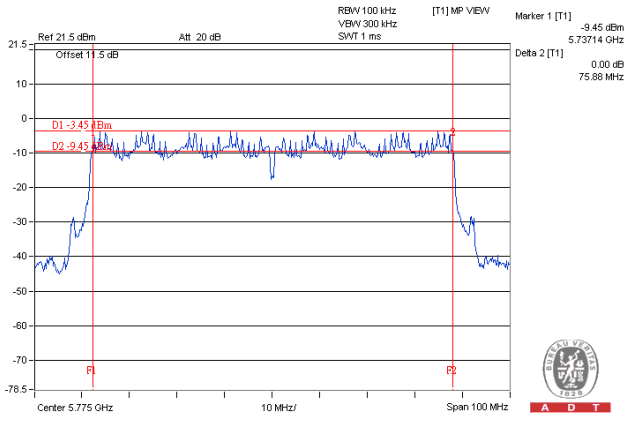
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are 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 Lab/Telecom Lab
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety
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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