FCC Test Report

Report No.:	RF150703E06-1
FCC ID:	U8G-P1AC1
Test Model:	AP One Enterprise
Series Model:	Pismo AC1
Received Date:	July 03, 2015
Test Date:	Aug. 13 to 17, 2015
Issued Date:	Aug. 24, 2015
Applicant:	Pismo Labs Technology Limited
Address:	FLAT/RM A5, 5/F, HK SPINNERS IND BLDG PHASE 6, 481 CASTLE PEAK ROAD, CHEUNG SHA WAN, HONG KONG.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.
Test Location (1):	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.
Test Location (3):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF150703E06-1	Original release.	Aug. 24, 2015

1 Certificate of Conformity

Product:	Pepwave / Peplink / Pismo Wireless Product
Brand:	Pepwave / Peplink / Pismo
Test Model:	AP One Enterprise
Series Model:	Pismo AC1
Sample Status:	MASS-PRODUCTION
Applicant:	Pismo Labs Technology Limited
Test Date:	Aug. 13 to 17, 2015
Standard:	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 : Phoenix Huang , **Date:** Aug. 24, 2015

Phoenix Huang / Specialist

Approved by : , **Date:** Aug. 24, 2015

May Chen / 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 -6.71dB at 0.70859MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5725.00MHz, 10360.00MHz & 11650.00MHz.
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.

NOTE: 1. The EUT was operating in 2.4 ~ 2.4835GHz, 5.15~5.25GHz and 5.725~5.85GHz frequencies band. This report was recorded the RF parameters including 5.15~5.25GHz and 5.725~5.85GHz. For the 2.4 ~ 2.4835GHz RF parameters was recorded in another test report.

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	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.72 dB
	6GHz ~ 18GHz	4.00 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Pepwave / Peplink / Pismo Wireless Product
Brand	Pepwave / Peplink / Pismo
Test Model	AP One Enterprise
Series Model	Pismo AC1
Status of EUT	MASS-PRODUCTION
Power Supply Rating	DC 56V from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	**2.4GHz:** 2.412GHz ~ 2.462GHz **5GHz:** 5.18GHz ~ 5.24GHz, 5.745GHz ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:** 802.11b: 16.35mW 802.11g: 243.811mW 802.11n (HT20): 270.521mW 802.11n (HT40): 149.958mW **5GHz:** 802.11a: 49.682mW 802.11ac (VHT20): 92.581mW 802.11ac (VHT40): 121.128mW 802.11ac (VHT80): 35.532mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. 2.4GHz and 5GHz technology can transmit at same time.
2. The EUT has below model names, which are identical to each other in all aspects except for the following table:

Product Name	Brand Name	Model No.	Description
Pepwave / Peplink / Pismo Wireless Product	Pepwave / Peplink / Pismo	AP One Enterprise	for marketing requirement
		Pismo AC1	
From the above models, model: **AP One Enterprise** was selected as representative model for the test and its data was recorded in this report.			

3. The antennas provided to the EUT, please refer to the following table:

Antenna No.	Brand	Model	Ant. Gain (dBi) <Include cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connecter Type	Cable Length (cm)
1	Walsin	RFPCA351710IMAB301	4.1	2.4~2.4835	PCB	i-pex(MHF)	10
2	Walsin	RFPCA351710IMAB301	3.9	2.4~2.4835	PCB	i-pex(MHF)	17
3	Walsin	RFPCA351710IMAB301	3.9	2.4~2.4835	PCB	i-pex(MHF)	18
4	Walsin	RFPCA240617IM5B301	5.7	5.15~5.85	PCB	i-pex(MHF)	17.5
5	Walsin	RFPCA240617IM5B301	5.7	5.15~5.85	PCB	i-pex(MHF)	17.5
6	Walsin	RFPCA240610IM5B301	6.0	5.15~5.85	PCB	i-pex(MHF)	10.5

4. The EUT must be supplied with a POE (only for test not for sale) as following table:

Brand Name	Model No.	Spec.
PHIHONG	POE31U-1AT	Input: 100-240V, 0.8A, 50-60Hz Output: 56V, 0.536A

5. The EUT incorporates a MIMO function.

For 2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	3TX	3RX
802.11g	1 ~ 11Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
For 5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11ac (VHT20)	MCS 0~8, Nss=1	3TX	3RX
	MCS 0~8, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
802.11ac (VHT40)	MCS 0~9, Nss=1	3TX	3RX
	MCS 0~9, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
802.11ac (VHT80)	MCS 0~9, Nss=1	3TX	3RX
	MCS 0~9, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
Note: 1. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)			

6. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
7. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

FOR 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

NOTE:
1. The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane** (below 1GHz) and **Y-plane** (above 1GHz).

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.

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
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT40)	5180-5240, 5745-5825	38 to 46, 151 to 159	46	OFDM	BPSK	13.5

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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT40)	5180-5240, 5745-5825	38 to 46, 151 to 159	46	OFDM	BPSK	13.5

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.

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
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

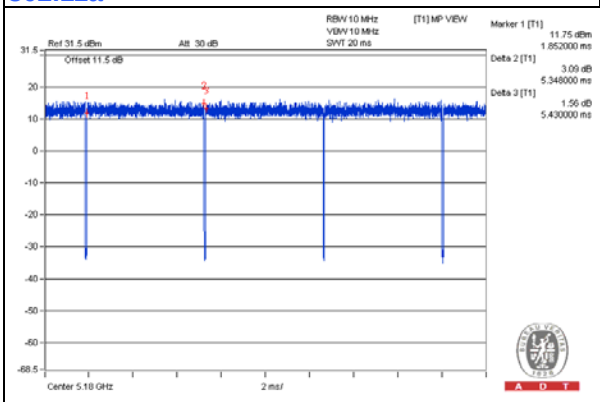
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (System)	TESTED BY
RE≥1G	23deg. C, 68%RH	120Vac, 60Hz	Tim Ho
RE<1G	22deg. C, 67%RH	120Vac, 60Hz	Weiwei Lo
PLC	25deg. C, 58%RH	120Vac, 60Hz	Mike Hsie
APCM	25deg. C, 60%RH	120Vac, 60Hz	Gary Cheng

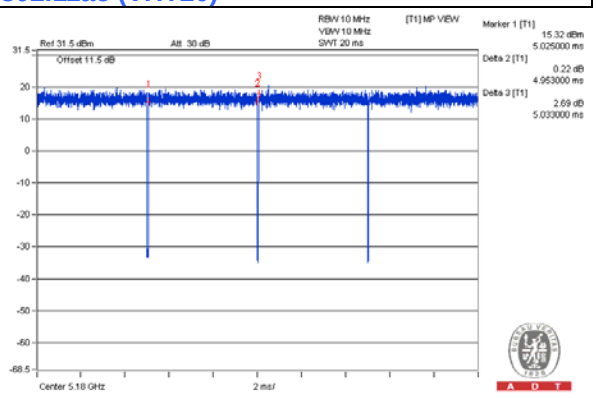
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 5.348 ms/5.43 ms = 0.985
802.11ac (VHT20): Duty cycle = 4.953 ms/5.033 ms = 0.984
802.11ac (VHT40): Duty cycle = 2.408 ms/2.468 ms = 0.976, Duty factor = 10 * log(1/0.976) = 0.11
802.11ac (VHT80): Duty cycle = 1.135 ms/1.21 ms = 0.938, Duty factor = 10 * log(1/0.938) = 0.28

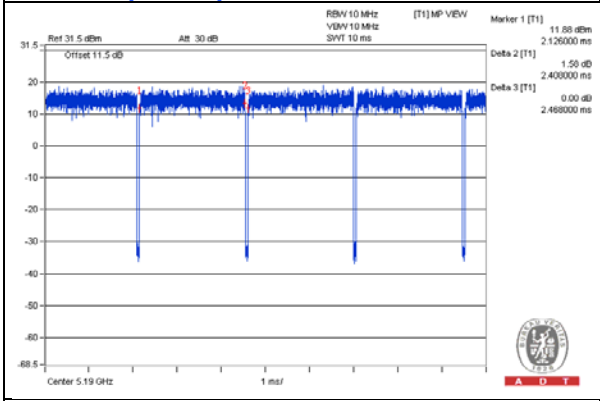
802.11a



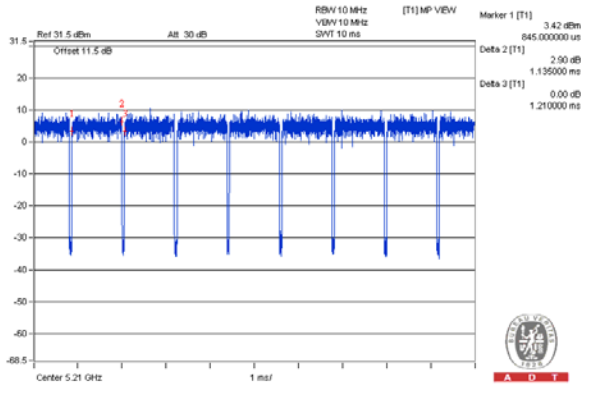
802.11ac (VHT20)



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.

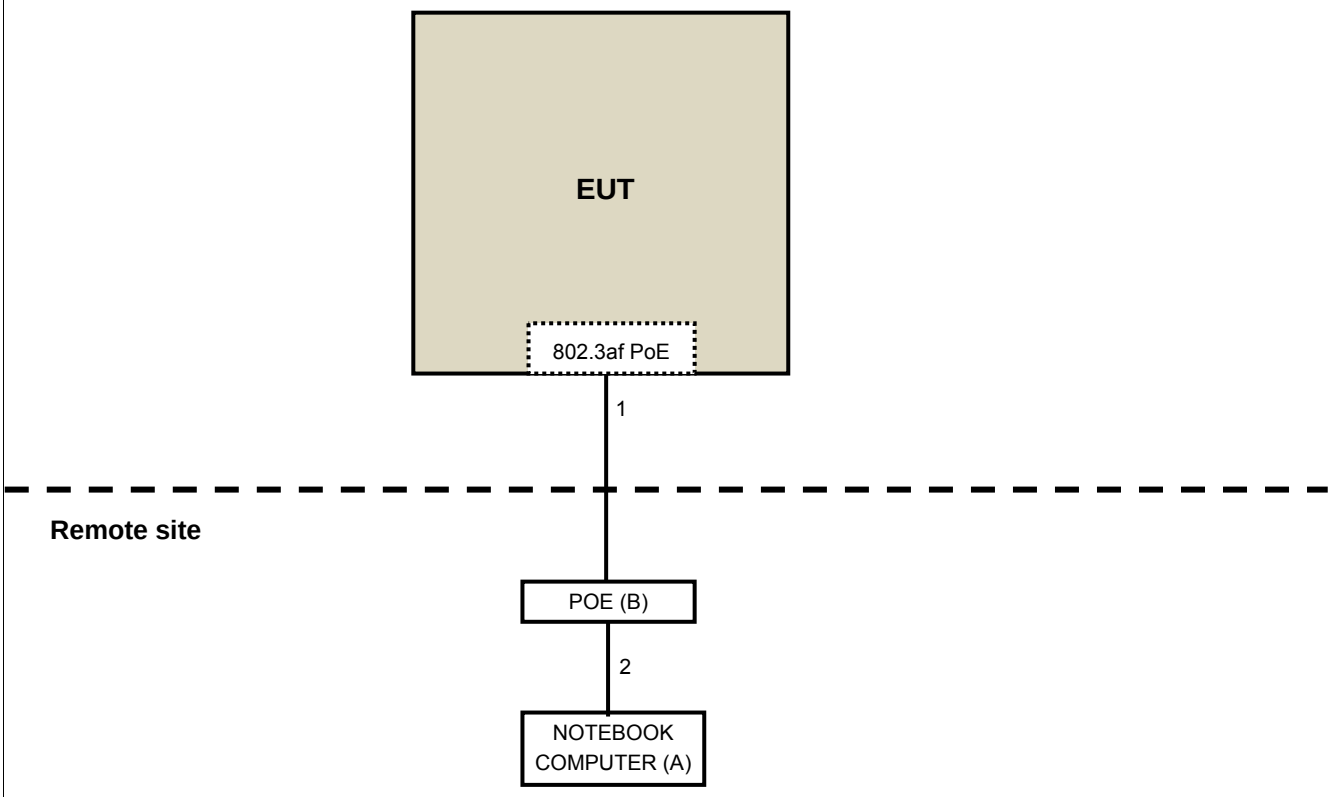
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	POE	PHIHONG	POE31U-1AT	NA	NA	Supplied by Client

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45	1	10	No	0	Provided by Lab
2.	RJ-45	1	3	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

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 Procedure New Rules v01
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

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 Procedure 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

For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Feb. 06, 2015	Feb. 05, 2016
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131213 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	Jun. 26, 2015	Jun 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2015	May 07, 2016
Power meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-SP-AR	MAA0812-008	Jan. 12, 2015	Jan. 11, 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 966 Chamber No. H.
3. The FCC Site Registration No. is 797305.
4. The CANADA Site Registration No. is IC 7450H-3.
5. Tested Date: Aug. 13 to 14, 2015

For Below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210105	July 24, 2015	July 23, 2016
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	8D-FB	CHGCAB-001-1 CHGCAB-001-2	Oct. 04, 2014	Oct. 03, 2015
	RF-141	CHGCAB-004	Oct. 04, 2014	Oct. 03, 2015
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The CANADA Site Registration No. is IC 7450H-2.
5. Tested Date: Aug. 14, 2015

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:

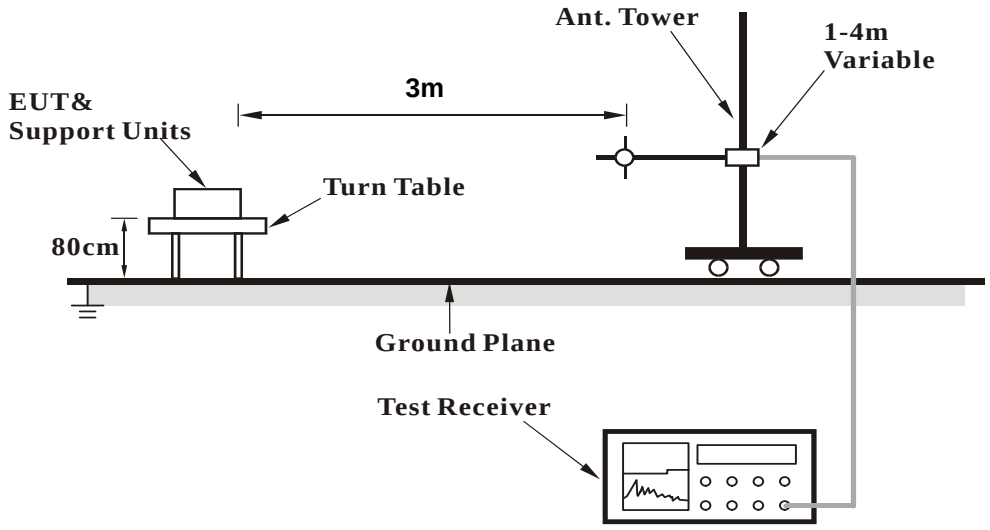
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

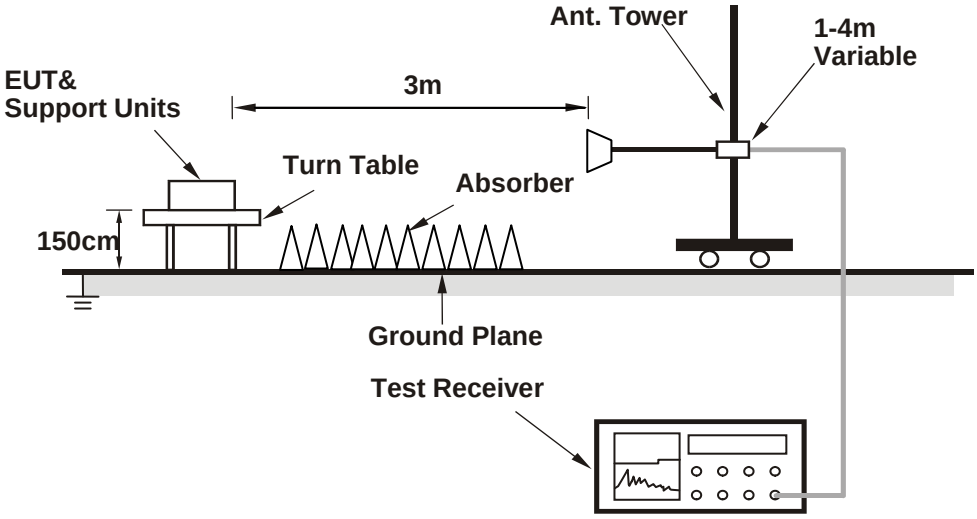
No deviation.

4.1.5 Test Setup

<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

1. Placed the EUT on the testing table.
2. Connect the EUT with the support unit A (Notebook Computer) which is placed in remote site.
3. The communication partner runs test program “artgui.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

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	53.3 PK	74.0	-20.7	1.43 H	187	48.19	5.11
2	5150.00	43.4 AV	54.0	-10.6	1.43 H	187	38.29	5.11
3	*5180.00	106.9 PK			1.43 H	187	101.68	5.22
4	*5180.00	98.6 AV			1.43 H	187	93.38	5.22
5	#10360.00	67.2 PK	68.2	-1.0	1.92 H	152	55.14	12.06
6	15540.00	54.9 PK	74.0	-19.1	2.17 H	360	38.88	16.02
7	15540.00	43.0 AV	54.0	-11.0	2.17 H	360	26.98	16.02
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	53.3 PK	74.0	-20.7	1.70 V	152	48.19	5.11
2	5150.00	43.3 AV	54.0	-10.7	1.70 V	152	38.19	5.11
3	*5180.00	108.0 PK			1.70 V	152	102.78	5.22
4	*5180.00	99.7 AV			1.70 V	152	94.48	5.22
5	**#10360.00**	**68.1 PK**	**68.2**	**-0.1**	**1.00 V**	**89**	**56.04**	**12.06**
6	15540.00	54.9 PK	74.0	-19.1	2.17 V	360	38.88	16.02
7	15540.00	44.3 AV	54.0	-9.7	2.17 V	360	28.28	16.02

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	51.7 PK	74.0	-22.3	1.39 H	181	46.59	5.11
2	5150.00	41.8 AV	54.0	-12.2	1.39 H	181	36.69	5.11
3	*5200.00	107.6 PK			1.39 H	181	102.30	5.30
4	*5200.00	98.7 AV			1.39 H	181	93.40	5.30
5	5350.00	52.8 PK	74.0	-21.2	1.39 H	181	47.20	5.60
6	5350.00	42.9 AV	54.0	-11.1	1.39 H	181	37.30	5.60
7	#10400.00	64.3 PK	68.2	-3.9	1.72 H	181	52.22	12.08
8	15600.00	55.0 PK	74.0	-19.0	2.13 H	349	39.39	15.61
9	15600.00	43.2 AV	54.0	-10.8	2.13 H	349	27.59	15.61
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	52.8 PK	74.0	-21.2	1.78 V	135	47.69	5.11
2	5150.00	43.1 AV	54.0	-10.9	1.78 V	135	37.99	5.11
3	*5200.00	108.2 PK			1.78 V	135	102.90	5.30
4	*5200.00	99.6 AV			1.78 V	135	94.30	5.30
5	5350.00	53.3 PK	74.0	-20.7	1.78 V	135	47.70	5.60
6	5350.00	43.5 AV	54.0	-10.5	1.78 V	135	37.90	5.60
7	#10400.00	67.3 PK	68.2	-0.9	1.00 V	160	55.22	12.08
8	15600.00	54.3 PK	74.0	-19.7	2.17 V	360	38.69	15.61
9	15600.00	43.9 AV	54.0	-10.1	2.17 V	360	28.29	15.61

REMARKS:

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

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	108.8 PK			1.38 H	182	103.43	5.37
2	*5240.00	100.5 AV			1.38 H	182	95.13	5.37
3	5350.00	52.5 PK	74.0	-21.5	1.38 H	182	46.90	5.60
4	5350.00	42.2 AV	54.0	-11.8	1.38 H	182	36.60	5.60
5	#10480.00	65.0 PK	68.2	-3.2	1.75 H	184	52.96	12.04
6	15720.00	55.3 PK	74.0	-18.7	2.21 H	360	39.09	16.21
7	15720.00	43.1 AV	54.0	-10.9	2.21 H	360	26.89	16.21
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	110.0 PK			1.85 V	146	104.63	5.37
2	*5240.00	101.5 AV			1.85 V	146	96.13	5.37
3	5350.00	53.4 PK	74.0	-20.6	1.85 V	146	47.80	5.60
4	5350.00	43.2 AV	54.0	-10.8	1.85 V	146	37.60	5.60
5	#10480.00	67.0 PK	68.2	-1.2	1.00 V	91	54.96	12.04
6	15720.00	55.1 PK	74.0	-18.9	2.20 V	360	38.89	16.21
7	15720.00	44.7 AV	54.0	-9.3	2.20 V	360	28.49	16.21

REMARKS:

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

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	65.9 PK	74.0	-8.1	1.48 H	173	59.98	5.92
2	#5715.00	52.8 AV	54.0	-1.2	1.48 H	173	46.88	5.92
3	#5725.00	76.7 PK	78.2	-1.5	1.48 H	173	70.79	5.91
4	*5745.00	116.4 PK			1.48 H	173	110.51	5.89
5	*5745.00	107.7 AV			1.48 H	173	101.81	5.89
6	11490.00	61.0 PK	74.0	-13.0	1.87 H	131	48.61	12.39
7	11490.00	50.9 AV	54.0	-3.1	1.87 H	131	38.51	12.39
8	#17235.00	54.1 PK	74.0	-19.9	2.18 H	348	33.11	20.99
9	#17235.00	42.5 AV	54.0	-11.5	2.18 H	348	21.51	20.99
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	#5715.00	66.7 PK	74.0	-7.3	1.81 V	179	60.78	5.92
2	#5715.00	53.3 AV	54.0	-0.7	1.81 V	179	47.38	5.92
3	**#5725.00**	**78.1 PK**	**78.2**	**-0.1**	**1.54 V**	**185**	**72.19**	**5.91**
4	*5745.00	117.3 PK			1.88 V	125	111.41	5.89
5	*5745.00	108.5 AV			1.88 V	125	102.61	5.89
6	11490.00	62.7 PK	74.0	-11.3	1.87 V	191	50.31	12.39
7	11490.00	53.3 AV	54.0	-0.7	1.87 V	191	40.91	12.39
8	#17235.00	55.1 PK	74.0	-18.9	2.18 V	360	34.11	20.99
9	#17235.00	44.4 AV	54.0	-9.6	2.18 V	360	23.41	20.99

REMARKS:

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

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	56.6 PK	74.0	-17.4	1.49 H	190	50.68	5.92
2	#5715.00	46.1 AV	54.0	-7.9	1.49 H	190	40.18	5.92
3	#5725.00	58.2 PK	78.2	-20.0	1.49 H	190	52.29	5.91
4	*5785.00	116.7 PK			1.49 H	190	110.85	5.85
5	*5785.00	108.0 AV			1.49 H	190	102.15	5.85
6	#5850.00	57.2 PK	78.2	-21.0	1.49 H	190	51.47	5.73
7	#5860.00	56.5 PK	74.0	-17.5	1.49 H	190	50.80	5.70
8	#5860.00	45.5 AV	54.0	-8.5	1.49 H	190	39.80	5.70
9	11570.00	61.1 PK	74.0	-12.9	1.91 H	132	48.78	12.32
10	11570.00	50.1 AV	54.0	-3.9	1.91 H	132	37.78	12.32
11	#17355.00	55.1 PK	74.0	-18.9	2.19 H	360	33.83	21.27
12	#17355.00	43.4 AV	54.0	-10.6	2.19 H	360	22.13	21.27
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	#5715.00	57.8 PK	74.0	-16.2	1.31 V	184	51.88	5.92
2	#5715.00	47.1 AV	54.0	-6.9	1.31 V	184	41.18	5.92
3	#5725.00	58.9 PK	78.2	-19.3	1.31 V	184	52.99	5.91
4	*5785.00	117.8 PK			1.55 V	182	111.95	5.85
5	*5785.00	109.0 AV			1.55 V	182	103.15	5.85
6	#5850.00	58.0 PK	78.2	-20.2	1.25 V	175	52.27	5.73
7	#5860.00	57.6 PK	74.0	-16.4	1.25 V	175	51.90	5.70
8	#5860.00	46.8 AV	54.0	-7.2	1.25 V	175	41.10	5.70
9	11570.00	63.1 PK	74.0	-10.9	1.91 V	8	50.78	12.32
10	11570.00	53.5 AV	54.0	-0.5	1.91 V	8	41.18	12.32
11	#17355.00	55.0 PK	74.0	-19.0	2.13 V	360	33.73	21.27
12	#17355.00	44.4 AV	54.0	-9.6	2.13 V	360	23.13	21.27

REMARKS:

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

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	118.4 PK			1.41 H	195	112.62	5.78
2	*5825.00	108.5 AV			1.41 H	195	102.72	5.78
3	#5850.00	67.5 PK	78.2	-10.7	1.41 H	195	61.77	5.73
4	#5860.00	57.7 PK	74.0	-16.3	1.41 H	195	52.00	5.70
5	#5860.00	47.7 AV	54.0	-6.3	1.41 H	195	42.00	5.70
6	11650.00	61.1 PK	74.0	-12.9	1.81 H	132	48.74	12.36
7	11650.00	52.6 AV	54.0	-1.4	1.81 H	132	40.24	12.36
8	#17475.00	54.9 PK	74.0	-19.1	2.13 H	360	33.73	21.17
9	#17475.00	43.2 AV	54.0	-10.8	2.13 H	360	22.03	21.17
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	119.9 PK			1.42 V	210	114.12	5.78
2	*5825.00	109.9 AV			1.42 V	210	104.12	5.78
3	#5850.00	68.7 PK	78.2	-9.5	1.31 V	210	62.97	5.73
4	#5860.00	58.6 PK	74.0	-15.4	1.31 V	210	52.90	5.70
5	#5860.00	48.5 AV	54.0	-5.5	1.31 V	210	42.80	5.70
6	11650.00	64.8 PK	74.0	-9.2	1.85 V	10	52.44	12.36
7	**11650.00**	**53.9 AV**	**54.0**	**-0.1**	**1.85 V**	**10**	**41.54**	**12.36**
8	#17475.00	55.2 PK	74.0	-18.8	2.16 V	360	34.03	21.17
9	#17475.00	44.8 AV	54.0	-9.2	2.16 V	360	23.63	21.17

REMARKS:

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

802.11ac (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	58.1 PK	74.0	-15.9	1.47 H	198	52.99	5.11
2	5150.00	44.2 AV	54.0	-9.8	1.47 H	198	39.09	5.11
3	*5180.00	113.0 PK			1.47 H	198	107.78	5.22
4	*5180.00	103.4 AV			1.47 H	198	98.18	5.22
5	#10360.00	68.0 PK	68.2	-0.2	1.86 H	153	55.94	12.06
6	15540.00	55.1 PK	74.0	-18.9	2.19 H	350	39.08	16.02
7	15540.00	43.1 AV	54.0	-10.9	2.19 H	350	27.08	16.02
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	58.7 PK	74.0	-15.3	1.55 V	166	53.59	5.11
2	5150.00	45.0 AV	54.0	-9.0	1.55 V	166	39.89	5.11
3	*5180.00	114.4 PK			1.55 V	131	109.18	5.22
4	*5180.00	104.6 AV			1.55 V	131	99.38	5.22
5	#10360.00	63.0 PK	68.2	-5.2	1.88 V	94	50.94	12.06
6	15540.00	55.7 PK	74.0	-18.3	2.10 V	360	39.68	16.02
7	15540.00	44.8 AV	54.0	-9.2	2.10 V	360	28.78	16.02

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	53.3 PK	74.0	-20.7	1.49 H	192	48.19	5.11
2	5150.00	42.2 AV	54.0	-11.8	1.49 H	192	37.09	5.11
3	*5200.00	111.3 PK			1.49 H	192	106.00	5.30
4	*5200.00	103.1 AV			1.49 H	192	97.80	5.30
5	5350.00	54.1 PK	74.0	-19.9	1.49 H	192	48.50	5.60
6	5350.00	44.0 AV	54.0	-10.0	1.49 H	192	38.40	5.60
7	#10400.00	67.7 PK	68.2	-0.5	1.87 H	146	55.62	12.08
8	15600.00	54.9 PK	74.0	-19.1	2.12 H	360	39.29	15.61
9	15600.00	43.1 AV	54.0	-10.9	2.12 H	360	27.49	15.61
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	54.5 PK	74.0	-19.5	1.46 V	181	49.39	5.11
2	5150.00	43.6 AV	54.0	-10.4	1.46 V	181	38.49	5.11
3	*5200.00	111.8 PK			1.64 V	132	106.50	5.30
4	*5200.00	103.6 AV			1.64 V	132	98.30	5.30
5	5350.00	55.0 PK	74.0	-19.0	1.46 V	180	49.40	5.60
6	5350.00	45.0 AV	54.0	-9.0	1.46 V	180	39.40	5.60
7	#10400.00	65.4 PK	68.2	-2.8	1.86 V	94	53.32	12.08
8	15600.00	54.8 PK	74.0	-19.2	2.11 V	360	39.19	15.61
9	15600.00	44.2 AV	54.0	-9.8	2.11 V	360	28.59	15.61

REMARKS:

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

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	110.9 PK			1.44 H	201	105.53	5.37
2	*5240.00	102.6 AV			1.44 H	201	97.23	5.37
3	5350.00	54.6 PK	74.0	-19.4	1.44 H	201	49.00	5.60
4	5350.00	43.9 AV	54.0	-10.1	1.44 H	201	38.30	5.60
5	#10480.00	67.9 PK	68.2	-0.3	1.86 H	145	55.86	12.04
6	15720.00	55.2 PK	74.0	-18.8	2.21 H	360	38.99	16.21
7	15720.00	43.1 AV	54.0	-10.9	2.21 H	360	26.89	16.21
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	112.1 PK			1.37 V	165	106.73	5.37
2	*5240.00	103.5 AV			1.37 V	165	98.13	5.37
3	5350.00	55.7 PK	74.0	-18.3	1.12 V	131	50.10	5.60
4	5350.00	44.8 AV	54.0	-9.2	1.12 V	131	39.20	5.60
5	#10480.00	65.0 PK	68.2	-3.2	1.86 V	98	52.96	12.04
6	15720.00	54.8 PK	74.0	-19.2	2.17 V	360	38.59	16.21
7	15720.00	44.1 AV	54.0	-9.9	2.17 V	360	27.89	16.21

REMARKS:

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

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	62.4 PK	74.0	-11.6	1.42 H	183	56.48	5.92
2	#5715.00	50.7 AV	54.0	-3.3	1.42 H	183	44.78	5.92
3	#5725.00	77.4 PK	78.2	-0.8	1.42 H	183	71.49	5.91
4	*5745.00	115.0 PK			1.42 H	183	109.11	5.89
5	*5745.00	106.4 AV			1.42 H	183	100.51	5.89
6	11490.00	60.3 PK	74.0	-13.7	1.91 H	299	47.91	12.39
7	11490.00	50.0 AV	54.0	-4.0	1.91 H	299	37.61	12.39
8	#17235.00	54.6 PK	74.0	-19.4	2.21 H	360	33.61	20.99
9	#17235.00	42.9 AV	54.0	-11.1	2.21 H	360	21.91	20.99
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	#5715.00	63.6 PK	74.0	-10.4	1.60 V	128	57.68	5.92
2	#5715.00	51.6 AV	54.0	-2.4	1.60 V	128	45.68	5.92
3	**#5725.00**	**78.1 PK**	**78.2**	**-0.1**	**1.70 V**	**186**	**72.19**	**5.91**
4	*5745.00	116.3 PK			1.62 V	183	110.41	5.89
5	*5745.00	107.5 AV			1.62 V	183	101.61	5.89
6	11490.00	62.4 PK	74.0	-11.6	1.92 V	7	50.01	12.39
7	11490.00	50.8 AV	54.0	-3.2	1.92 V	7	38.41	12.39
8	#17235.00	55.3 PK	74.0	-18.7	2.11 V	360	34.31	20.99
9	#17235.00	44.7 AV	54.0	-9.3	2.11 V	360	23.71	20.99

REMARKS:

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

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5715.00	57.3 PK	74.0	-16.7	1.42 H	190	51.38	5.92
2	#5715.00	46.6 AV	54.0	-7.4	1.42 H	190	40.68	5.92
3	#5725.00	58.5 PK	78.2	-19.7	1.42 H	190	52.59	5.91
4	*5785.00	117.6 PK			1.42 H	190	111.75	5.85
5	*5785.00	108.5 AV			1.42 H	190	102.65	5.85
6	#5850.00	56.1 PK	78.2	-22.1	1.42 H	190	50.37	5.73
7	#5860.00	56.3 PK	74.0	-17.7	1.42 H	190	50.60	5.70
8	#5860.00	45.2 AV	54.0	-8.8	1.42 H	190	39.50	5.70
9	11570.00	62.7 PK	74.0	-11.3	1.96 H	331	50.38	12.32
10	11570.00	50.4 AV	54.0	-3.6	1.96 H	331	38.08	12.32
11	#17355.00	54.5 PK	74.0	-19.5	2.22 H	360	33.23	21.27
12	#17355.00	42.6 AV	54.0	-11.4	2.22 H	360	21.33	21.27
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	#5715.00	58.4 PK	74.0	-15.6	1.59 V	131	52.48	5.92
2	#5715.00	47.8 AV	54.0	-6.2	1.59 V	131	41.88	5.92
3	#5725.00	59.6 PK	78.2	-18.6	1.59 V	131	53.69	5.91
4	*5785.00	118.1 PK			1.59 V	157	112.25	5.85
5	*5785.00	109.2 AV			1.59 V	157	103.35	5.85
6	#5850.00	57.6 PK	78.2	-20.6	1.59 V	131	51.87	5.73
7	#5860.00	56.8 PK	74.0	-17.2	1.59 V	131	51.10	5.70
8	#5860.00	45.7 AV	54.0	-8.3	1.59 V	131	40.00	5.70
9	11570.00	65.3 PK	74.0	-8.7	1.90 V	8	52.98	12.32
10	11570.00	53.8 AV	54.0	-0.2	1.90 V	8	41.48	12.32
11	#17355.00	54.3 PK	74.0	-19.7	2.09 V	360	33.03	21.27
12	#17355.00	44.0 AV	54.0	-10.0	2.09 V	360	22.73	21.27

REMARKS:

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

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	117.6 PK			1.44 H	172	111.82	5.78
2	*5825.00	109.2 AV			1.44 H	172	103.42	5.78
3	#5850.00	77.4 PK	78.2	-0.8	1.44 H	172	71.67	5.73
4	#5860.00	57.7 PK	74.0	-16.3	1.44 H	172	52.00	5.70
5	#5860.00	47.5 AV	54.0	-6.5	1.44 H	172	41.80	5.70
6	11650.00	62.3 PK	74.0	-11.7	1.90 H	181	49.94	12.36
7	11650.00	51.3 AV	54.0	-2.7	1.90 H	181	38.94	12.36
8	#17475.00	55.1 PK	74.0	-18.9	2.13 H	356	33.93	21.17
9	#17475.00	43.2 AV	54.0	-10.8	2.13 H	356	22.03	21.17
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	118.1 PK			1.34 V	151	112.32	5.78
2	*5825.00	109.8 AV			1.34 V	151	104.02	5.78
3	#5850.00	77.8 PK	78.2	-0.4	1.48 V	136	72.07	5.73
4	#5860.00	59.3 PK	74.0	-14.7	1.41 V	129	53.60	5.70
5	#5860.00	48.9 AV	54.0	-5.1	1.41 V	129	43.20	5.70
6	11650.00	63.0 PK	74.0	-11.0	1.90 V	8	50.64	12.36
7	11650.00	51.9 AV	54.0	-2.1	1.90 V	8	39.54	12.36
8	#17475.00	55.3 PK	74.0	-18.7	2.12 V	360	34.13	21.17
9	#17475.00	44.8 AV	54.0	-9.2	2.12 V	360	23.63	21.17

REMARKS:

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

802.11ac (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	62.7 PK	74.0	-11.3	1.42 H	200	57.59	5.11
2	5150.00	52.1 AV	54.0	-1.9	1.42 H	200	46.99	5.11
3	*5190.00	109.4 PK			1.42 H	200	104.15	5.25
4	*5190.00	100.8 AV			1.42 H	200	95.55	5.25
5	5350.00	52.8 PK	74.0	-21.2	1.42 H	200	47.20	5.60
6	5350.00	43.0 AV	54.0	-11.0	1.42 H	200	37.40	5.60
7	#10380.00	66.3 PK	68.2	-1.9	2.06 H	156	54.23	12.07
8	15570.00	55.3 PK	74.0	-18.7	2.19 H	360	39.49	15.81
9	15570.00	43.3 AV	54.0	-10.7	2.19 H	360	27.49	15.81
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	63.9 PK	74.0	-10.1	1.34 V	164	58.79	5.11
2	5150.00	53.5 AV	54.0	-0.5	1.34 V	164	48.39	5.11
3	*5190.00	110.4 PK			1.81 V	145	105.15	5.25
4	*5190.00	102.1 AV			1.81 V	145	96.85	5.25
5	5350.00	54.1 PK	74.0	-19.9	1.89 V	161	48.50	5.60
6	5350.00	44.0 AV	54.0	-10.0	1.89 V	161	38.40	5.60
7	#10380.00	65.1 PK	68.2	-3.1	1.91 V	91	53.03	12.07
8	15570.00	54.8 PK	74.0	-19.2	2.18 V	360	38.99	15.81
9	15570.00	44.0 AV	54.0	-10.0	2.18 V	360	28.19	15.81

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	110.8 PK			1.48 H	185	105.45	5.35
2	*5230.00	101.8 AV			1.48 H	185	96.45	5.35
3	5350.00	54.0 PK	74.0	-20.0	1.48 H	185	48.40	5.60
4	5350.00	44.6 AV	54.0	-9.4	1.48 H	185	39.00	5.60
5	#10460.00	67.6 PK	68.2	-0.6	2.06 H	155	55.55	12.05
6	15690.00	54.7 PK	74.0	-19.3	2.15 H	347	38.63	16.07
7	15690.00	43.0 AV	54.0	-11.0	2.15 H	347	26.93	16.07
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	112.1 PK			1.98 V	144	106.75	5.35
2	*5230.00	103.2 AV			1.98 V	144	97.85	5.35
3	5350.00	55.0 PK	74.0	-19.0	1.98 V	144	49.40	5.60
4	5350.00	45.5 AV	54.0	-8.5	1.98 V	144	39.90	5.60
5	#10460.00	66.0 PK	68.2	-2.2	1.90 V	94	53.95	12.05
6	15690.00	55.1 PK	74.0	-18.9	2.09 V	360	39.03	16.07
7	15690.00	44.4 AV	54.0	-9.6	2.09 V	360	28.33	16.07

REMARKS:

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

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	66.6 PK	74.0	-7.4	1.47 H	184	60.68	5.92
2	#5715.00	52.1 AV	54.0	-1.9	1.47 H	184	46.18	5.92
3	#5725.00	75.1 PK	78.2	-3.1	1.47 H	184	69.19	5.91
4	*5755.00	109.2 PK			1.47 H	184	103.32	5.88
5	*5755.00	99.6 AV			1.47 H	184	93.72	5.88
6	11510.00	56.3 PK	74.0	-17.7	1.10 H	179	43.94	12.36
7	11510.00	45.0 AV	54.0	-9.0	1.10 H	179	32.64	12.36
8	#17265.00	55.1 PK	74.0	-18.9	2.10 H	360	34.31	20.79
9	#17265.00	44.9 AV	54.0	-9.1	2.10 H	360	24.11	20.79
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	#5715.00	67.7 PK	74.0	-6.3	1.83 V	169	61.78	5.92
2	#5715.00	53.4 AV	54.0	-0.6	1.83 V	169	47.48	5.92
3	#5725.00	75.8 PK	78.2	-2.4	1.75 V	182	69.89	5.91
4	*5755.00	110.0 PK			1.74 V	150	104.12	5.88
5	*5755.00	100.4 AV			1.74 V	150	94.52	5.88
6	11510.00	56.0 PK	74.0	-18.0	1.22 V	155	43.64	12.36
7	11510.00	44.9 AV	54.0	-9.1	1.22 V	155	32.54	12.36
8	#17265.00	55.4 PK	74.0	-18.6	2.06 V	360	34.61	20.79
9	#17265.00	44.9 AV	54.0	-9.1	2.06 V	360	24.11	20.79

REMARKS:

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

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	116.6 PK			1.42 H	179	110.76	5.84
2	*5795.00	107.1 AV			1.42 H	179	101.26	5.84
3	#5850.00	69.6 PK	78.2	-8.6	1.42 H	179	63.87	5.73
4	#5860.00	66.3 PK	74.0	-7.7	1.42 H	179	60.60	5.70
5	#5860.00	52.3 AV	54.0	-1.7	1.42 H	179	46.60	5.70
6	11590.00	61.1 PK	74.0	-12.9	1.18 H	185	48.78	12.32
7	11590.00	50.1 AV	54.0	-3.9	1.18 H	185	37.78	12.32
8	#17385.00	55.5 PK	74.0	-18.5	2.21 H	345	33.87	21.63
9	#17385.00	43.5 AV	54.0	-10.5	2.21 H	345	21.87	21.63
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	117.8 PK			1.53 V	157	111.96	5.84
2	*5795.00	108.5 AV			1.53 V	157	102.66	5.84
3	#5850.00	70.1 PK	78.2	-8.1	1.47 V	204	64.37	5.73
4	#5860.00	67.6 PK	74.0	-6.4	1.57 V	206	61.90	5.70
5	#5860.00	53.4 AV	54.0	-0.6	1.57 V	206	47.70	5.70
6	11590.00	62.4 PK	74.0	-11.6	1.18 V	149	50.08	12.32
7	11590.00	51.3 AV	54.0	-2.7	1.18 V	149	38.98	12.32
8	#17385.00	55.0 PK	74.0	-19.0	2.17 V	360	33.37	21.63
9	#17385.00	44.5 AV	54.0	-9.5	2.17 V	360	22.87	21.63

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	62.4 PK	74.0	-11.6	1.48 H	178	57.29	5.11
2	5150.00	52.3 AV	54.0	-1.7	1.48 H	178	47.19	5.11
3	*5210.00	103.5 PK			1.48 H	178	98.18	5.32
4	*5210.00	94.0 AV			1.48 H	178	88.68	5.32
5	5350.00	51.9 PK	74.0	-22.1	1.48 H	178	46.30	5.60
6	5350.00	42.3 AV	54.0	-11.7	1.48 H	178	36.70	5.60
7	#10420.00	56.6 PK	68.2	-11.6	1.22 H	185	44.54	12.06
8	15630.00	54.9 PK	74.0	-19.1	2.14 H	343	39.13	15.77
9	15630.00	44.6 AV	54.0	-9.4	2.14 H	343	28.83	15.77
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	62.9 PK	74.0	-11.1	1.40 V	171	57.79	5.11
2	5150.00	53.1 AV	54.0	-0.9	1.40 V	171	47.99	5.11
3	*5210.00	104.4 PK			1.97 V	144	99.08	5.32
4	*5210.00	94.7 AV			1.97 V	144	89.38	5.32
5	5350.00	52.7 PK	74.0	-21.3	1.97 V	144	47.10	5.60
6	5350.00	42.9 AV	54.0	-11.1	1.97 V	144	37.30	5.60
7	#10420.00	56.2 PK	68.2	-12.0	1.23 V	143	44.14	12.06
8	15630.00	55.2 PK	74.0	-18.8	2.11 V	360	39.43	15.77
9	15630.00	44.9 AV	54.0	-9.1	2.11 V	360	29.13	15.77

REMARKS:

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

CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#5715.00	66.4 PK	74.0	-7.6	1.46 H	190	60.48	5.92
2	#5715.00	51.8 AV	54.0	-2.2	1.46 H	190	45.88	5.92
3	#5725.00	72.7 PK	78.2	-5.5	1.46 H	190	66.79	5.91
4	*5775.00	102.5 PK			1.46 H	190	96.64	5.86
5	*5775.00	91.5 AV			1.46 H	190	85.64	5.86
6	#5850.00	54.7 PK	78.2	-23.5	1.46 H	190	48.97	5.73
7	#5860.00	53.4 PK	74.0	-20.6	1.46 H	190	47.70	5.70
8	#5860.00	43.1 AV	54.0	-10.9	1.46 H	190	37.40	5.70
9	11550.00	56.6 PK	74.0	-17.4	1.16 H	169	44.26	12.34
10	11550.00	45.4 AV	54.0	-8.6	1.16 H	169	33.06	12.34
11	#17325.00	55.1 PK	74.0	-18.9	2.15 H	355	34.21	20.89
12	#17325.00	45.0 AV	54.0	-9.0	2.15 H	355	24.11	20.89
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	#5715.00	67.8 PK	74.0	-6.2	1.80 V	166	61.88	5.92
2	#5715.00	53.3 AV	54.0	-0.7	1.80 V	166	47.38	5.92
3	#5725.00	73.6 PK	78.2	-4.6	1.82 V	149	67.69	5.91
4	*5775.00	103.8 PK			1.66 V	151	97.94	5.86
5	*5775.00	92.8 AV			1.66 V	151	86.94	5.86
6	#5850.00	55.9 PK	78.2	-22.3	1.80 V	166	50.17	5.73
7	#5860.00	54.9 PK	74.0	-19.1	1.80 V	166	49.20	5.70
8	#5860.00	44.4 AV	54.0	-9.6	1.80 V	166	38.70	5.70
9	11550.00	56.5 PK	74.0	-17.5	1.28 V	131	44.16	12.34
10	11550.00	45.4 AV	54.0	-8.6	1.28 V	131	33.06	12.34
11	#17325.00	55.0 PK	74.0	-19.0	2.17 V	360	34.11	20.89
12	#17325.00	44.8 AV	54.0	-9.2	2.17 V	360	23.91	20.89

REMARKS:

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

Below 1GHz Data

802.11ac (VHT40)

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 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	51.15	35.7 QP	40.0	-4.3	1.00 H	255	48.87	-13.18
2	167.50	30.3 QP	43.5	-13.2	1.00 H	89	43.68	-13.37
3	225.02	34.5 QP	46.0	-11.5	1.50 H	73	50.34	-15.81
4	327.50	32.9 QP	46.0	-13.1	1.00 H	54	44.01	-11.15
5	460.29	28.1 QP	46.0	-17.9	2.00 H	341	35.74	-7.66
6	625.00	36.0 QP	46.0	-10.0	1.00 H	59	39.70	-3.74
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	90.00	36.0 QP	43.5	-7.5	1.50 V	199	54.78	-18.80
2	167.45	30.3 QP	43.5	-13.2	1.00 V	238	43.68	-13.37
3	220.02	32.2 QP	46.0	-13.8	1.50 V	4	47.91	-15.74
4	375.03	32.1 QP	46.0	-13.9	1.00 V	356	42.10	-9.97
5	460.34	32.2 QP	46.0	-13.8	1.00 V	306	39.89	-7.65
6	625.00	35.7 QP	46.0	-10.3	1.00 V	236	39.41	-3.74

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: Aug. 17, 2015

4.2.3 Test Procedures

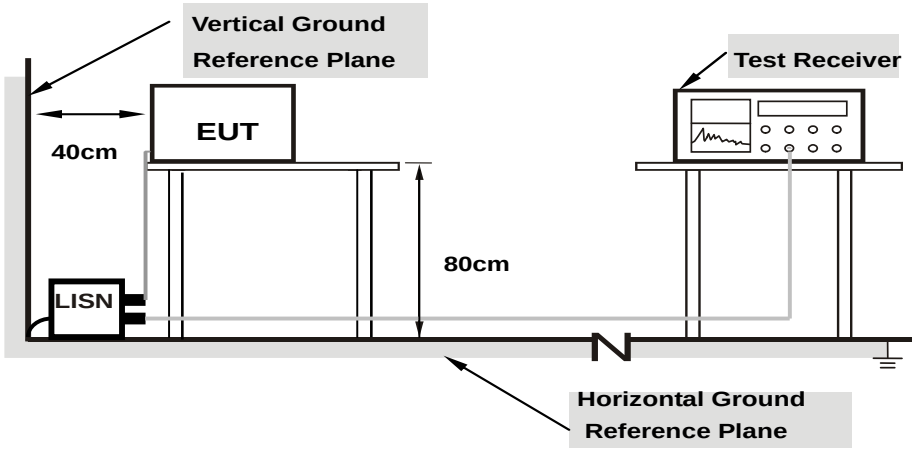
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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: All modes of operation were investigated and the worst-case emissions are reported.

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.

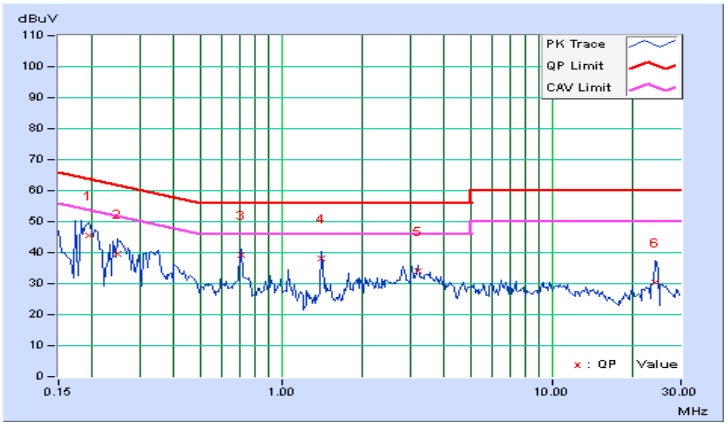
4.2.7 Test Results

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

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.09	45.40	27.21	45.49	27.30	63.91	53.91	-18.42	-26.61
2	0.24766	0.09	39.58	18.95	39.67	19.04	61.84	51.84	-22.16	-32.79
3	0.70859	0.12	39.26	38.98	39.38	39.10	56.00	46.00	-16.62	-6.90
4	1.41406	0.15	37.93	37.48	38.08	37.63	56.00	46.00	-17.92	-8.37
5	3.18359	0.20	34.03	31.52	34.23	31.72	56.00	46.00	-21.77	-14.28
6	24.05469	0.79	29.61	25.88	30.40	26.67	60.00	50.00	-29.60	-23.33

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

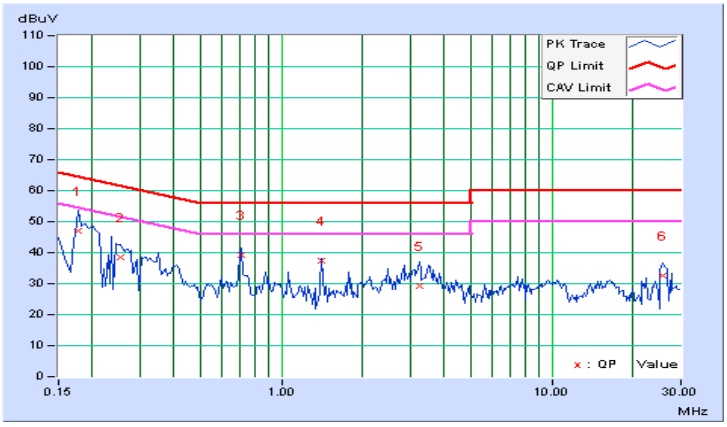


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	0.08	46.82	23.82	46.90	23.90	64.61	54.61	-17.71	-30.71
2	0.25547	0.09	38.49	19.05	38.58	19.14	61.58	51.58	-23.00	-32.44
3	**0.70859**	**0.12**	**39.20**	**39.17**	**39.32**	**39.29**	**56.00**	**46.00**	**-16.68**	**-6.71**
4	1.41406	0.15	37.30	36.81	37.45	36.96	56.00	46.00	-18.55	-9.04
5	3.22656	0.21	29.07	23.65	29.28	23.86	56.00	46.00	-26.72	-22.14
6	25.83984	0.88	31.76	24.57	32.64	25.45	60.00	50.00	-27.36	-24.55

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,

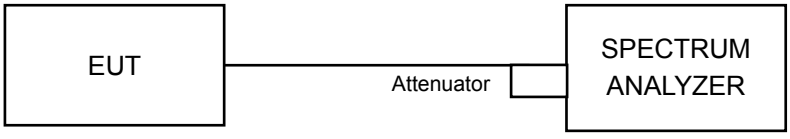
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT

FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

FOR AVERAGE POWER MEASUREMENT

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 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	9.53	9.52	10.65	29.542	14.70	30	Pass
40	5200	9.68	9.73	9.42	27.437	14.38	30	Pass
48	5240	10.32	10.02	9.50	29.724	14.73	30	Pass
149	5745	11.17	11.51	11.16	40.312	16.05	30	Pass
157	5785	11.59	12.61	12.31	49.682	16.96	30	Pass
165	5825	11.06	11.70	13.19	48.4	16.85	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	14.08	14.87	14.77	86.268	19.36	30	Pass
40	5200	14.32	15.09	14.95	90.586	19.57	30	Pass
48	5240	14.57	14.82	14.74	88.766	19.48	30	Pass
149	5745	10.65	11.04	10.31	35.06	15.45	30	Pass
157	5785	11.79	13.05	12.88	54.694	17.38	30	Pass
165	5825	14.00	15.23	15.33	92.581	19.67	30	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	16.15	16.18	14.41	110.311	20.43	30	Pass
46	5230	16.17	16.09	15.92	121.128	20.83	30	Pass
151	5755	6.22	6.44	6.15	12.715	11.04	30	Pass
159	5795	13.04	14.27	14.15	72.869	18.63	30	Pass

802.11ac (VHT80)

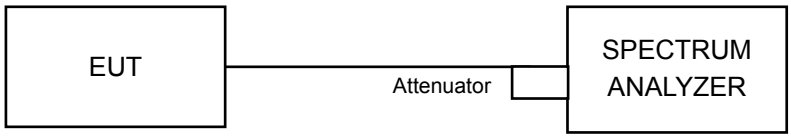
Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	10.77	10.86	10.57	35.532	15.51	30	Pass
155	5775	2.76	3.52	3.39	6.32	8.01	30	Pass

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 802.11a, 802.11ac (VHT20):

For U-NII-1

Using method SA-1

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep time = auto, trigger set to “free run”.
d. Trace average at least 100 traces in power averaging mode.
e. Record the max value

For U-NII-3:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)
e. Sweep time = auto, trigger set to “free run”.
f. Trace average at least 100 traces in power averaging mode.
g. Record the max value

For 802.11ac (VHT40) & 802.11ac (VHT80):

For U-NII-1

Using method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep time = auto, trigger set to “free run”.
d. Trace average at least 100 traces in power averaging mode.
e. Record the max value and add 10 log (1/duty cycle)

For U-NII-3:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)
e. Sweep time = auto, trigger set to “free run”.
f. Trace average at least 100 traces in power averaging mode.
g. Record the max value and add 10 log (1/duty cycle)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

For U-NII-1:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
36	5180	-3.70	-1.58	-3.99	1.82	12.43	Pass
40	5200	-2.67	-1.54	-3.88	2.18	12.43	Pass
48	5240	-2.53	-2.38	-4.24	1.80	12.43	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 10.57dBi > 6dBi , so the power density limit shall be reduced to 17-(10.57-6) = 12.43dBm.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
36	5180	0.06	-0.17	1.00	5.10	12.43	Pass
40	5200	0.46	1.66	1.20	5.91	12.43	Pass
48	5240	0.06	2.28	1.66	6.20	12.43	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 10.57dBi > 6dBi , so the power density limit shall be reduced to 17-(10.57-6) = 12.43dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)			Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	-1.33	-1.51	-0.08	0.11	3.95	12.43	Pass
46	5230	-1.35	-0.31	-1.17	0.11	3.96	12.43	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 10.57dBi > 6dBi , so the power density limit shall be reduced to 17-(10.57-6) = 12.43dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)			Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	-9.88	-8.32	-9.21	0.28	-4.04	12.43	Pass

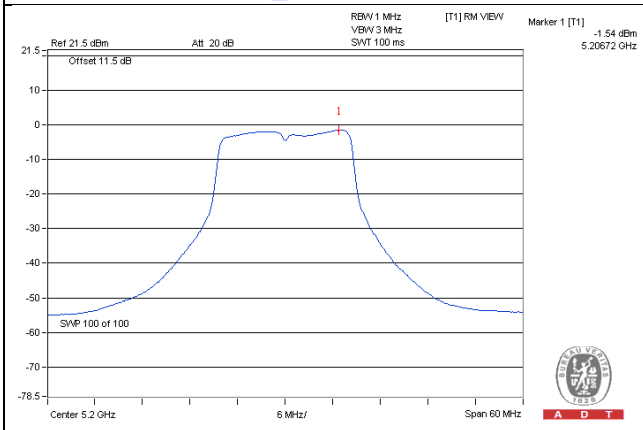
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^2 / 3] = 10.57dBi > 6dBi , so the power density limit shall be reduced to 17-(10.57-6) = 12.43dBm.

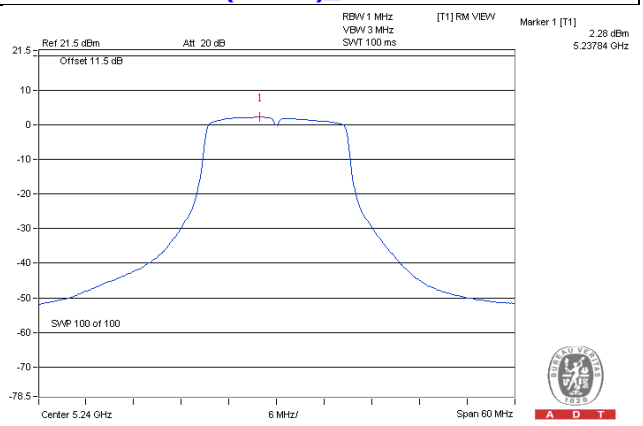
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

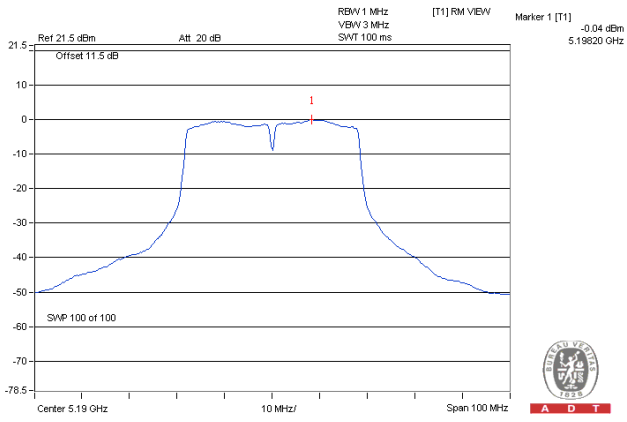
802.11a_Chain 1 / CH40



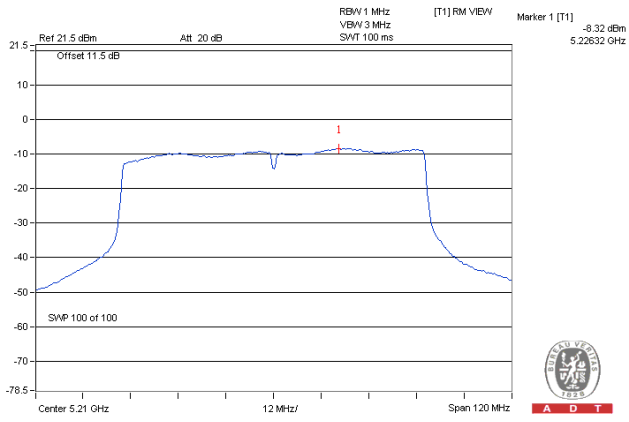
802.11ac (VHT20)_Chain 1 / CH48



8802.11ac (VHT40) _Chain 2 / CH38



802.11ac (VHT80) _Chain 1 / CH42



For U-NII-3:

802.11a

TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	149	5745	-9.87	-7.65	4.77	-2.88	25.43	Pass
	157	5785	-9.21	-6.99	4.77	-2.22	25.43	Pass
	165	5825	-8.22	-6.00	4.77	-1.23	25.43	Pass
1	149	5745	-9.53	-7.31	4.77	-2.54	25.43	Pass
	157	5785	-8.50	-6.28	4.77	-1.51	25.43	Pass
	165	5825	-8.24	-6.02	4.77	-1.25	25.43	Pass
2	149	5745	-9.50	-7.28	4.77	-2.51	25.43	Pass
	157	5785	-9.57	-7.35	4.77	-2.58	25.43	Pass
	165	5825	-8.00	-5.78	4.77	-1.01	25.43	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 10.57dBi > 6dBi , so the power density limit shall be reduced to 30-(10.57-6) = 25.43dBm.

802.11ac (VHT20)

TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	149	5745	-11.12	-8.90	4.77	-4.13	25.43	Pass
	157	5785	-8.18	-5.96	4.77	-1.19	25.43	Pass
	165	5825	-6.60	-4.38	4.77	0.39	25.43	Pass
1	149	5745	-10.10	-7.88	4.77	-3.11	25.43	Pass
	157	5785	-8.92	-6.70	4.77	-1.93	25.43	Pass
	165	5825	-6.59	-4.37	4.77	0.40	25.43	Pass
2	149	5745	-10.43	-8.21	4.77	-3.44	25.43	Pass
	157	5785	-9.96	-7.74	4.77	-2.97	25.43	Pass
	165	5825	-6.16	-3.94	4.77	0.83	25.43	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 10.57dBi > 6dBi , so the power density limit shall be reduced to 30-(10.57-6) = 25.43dBm.

802.11ac (VHT40)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=3) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5745	-17.69	-15.47	4.77	0.11	-10.59	25.43	Pass
	159	5785	-10.16	-7.94	4.77	0.11	-3.06	25.43	Pass
1	151	5745	-18.87	-16.65	4.77	0.11	-11.77	25.43	Pass
	159	5785	-11.35	-9.13	4.77	0.11	-4.25	25.43	Pass
2	151	5745	-18.80	-16.58	4.77	0.11	-11.70	25.43	Pass
	159	5785	-11.19	-8.97	4.77	0.11	-4.09	25.43	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 10.57dBi > 6dBi , so the power density limit shall be reduced to 30-(10.57-6) = 25.43dBm.

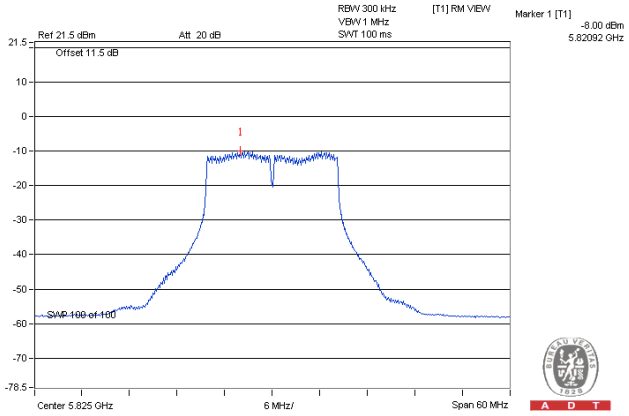
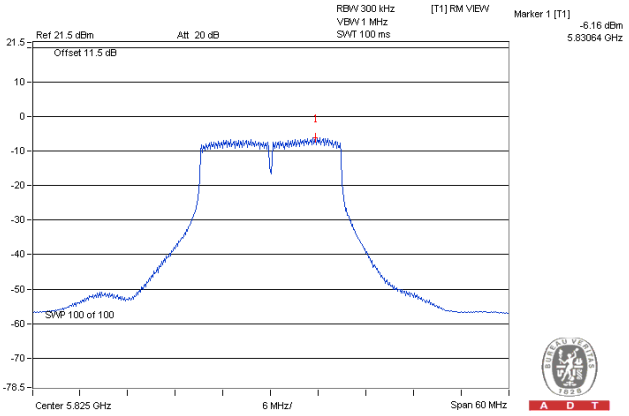
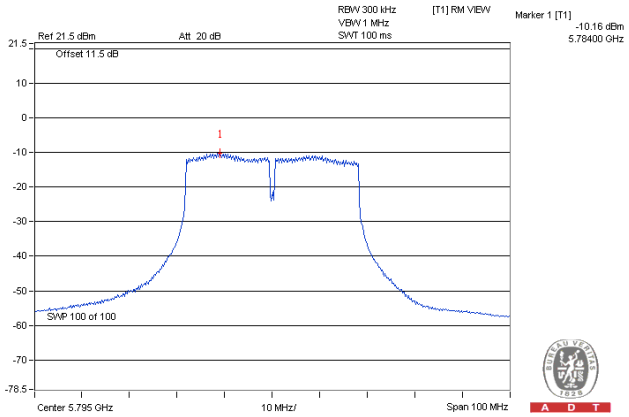
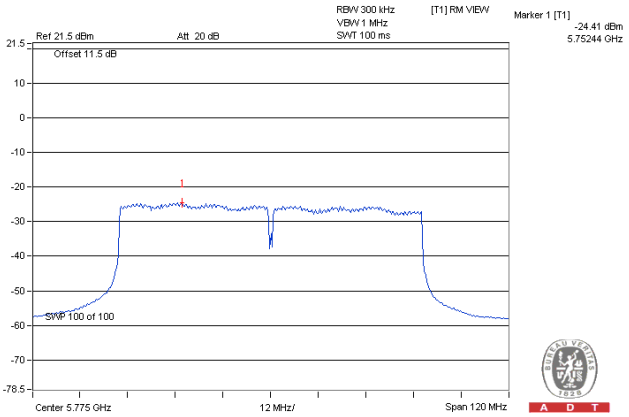
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=3) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5745	-25.13	-22.91	4.77	0.28	-17.86	25.43	Pass
1	155	5745	-25.38	-23.16	4.77	0.28	-18.11	25.43	Pass
2	155	5745	-24.41	-22.19	4.77	0.28	-17.14	25.43	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 10.57dBi > 6dBi , so the power density limit shall be reduced to 30-(10.57-6) = 25.43dBm.

2. Refer to section 3.3 for duty cycle spectrum plot.

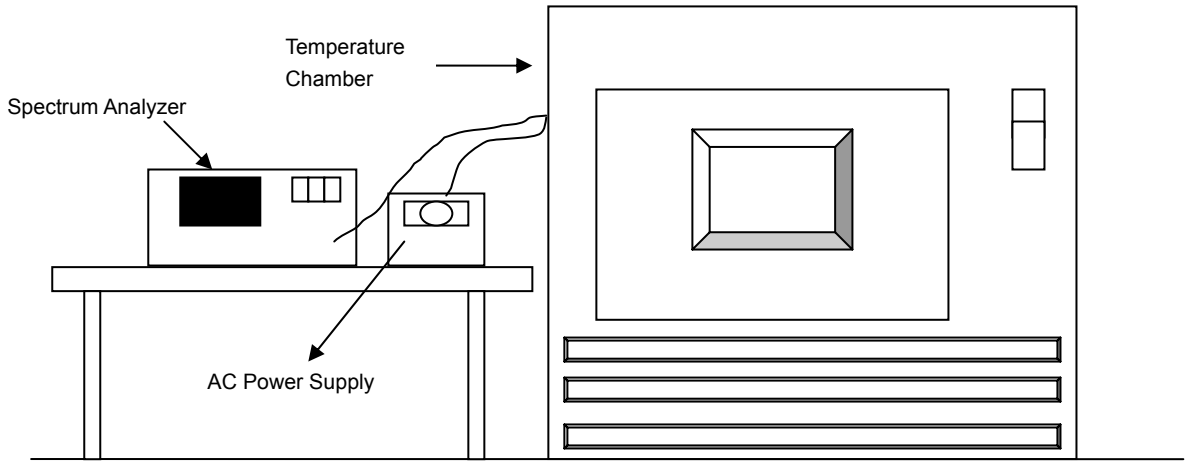
Spectrum Plot of Worst Value	
802.11a_Chain 2 / CH165	**802.11ac (VHT20)_Chain 2 / CH165**
	
8802.11ac (VHT40) _Chain 0 / CH159	**802.11ac (VHT80) _Chain 2 / CH155**
	

4.5 Frequency Stability Measurement

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 Procedures

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 Conditions

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	5179.9862	-0.00027	5179.9894	-0.00020	5179.9882	-0.00023	5179.9861	-0.00027
40	120	5180.0048	0.00009	5180.0044	0.00008	5180.0059	0.00011	5180.0056	0.00011
30	120	5180.011	0.00021	5180.0124	0.00024	5180.0137	0.00026	5180.0155	0.00030
20	120	5179.974	-0.00050	5179.9739	-0.00050	5179.9752	-0.00048	5179.9756	-0.00047
10	120	5179.9978	-0.00004	5180.0014	0.00003	5180.0018	0.00003	5180.002	0.00004
0	120	5179.9779	-0.00043	5179.9785	-0.00042	5179.979	-0.00041	5179.9807	-0.00037
-10	120	5179.9846	-0.00030	5179.982	-0.00035	5179.9868	-0.00025	5179.9821	-0.00035
-20	120	5180.0045	0.00009	5180.0056	0.00011	5180.0068	0.00013	5180.0077	0.00015
-30	120	5179.9909	-0.00018	5179.9902	-0.00019	5179.9878	-0.00024	5179.9915	-0.00016

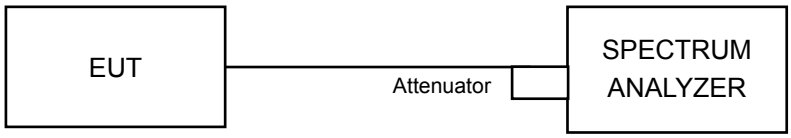
Frequemcy Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5179.9743	-0.00050	5179.9737	-0.00051	5179.9743	-0.00050	5179.9751	-0.00048
	120	5179.974	-0.00050	5179.9739	-0.00050	5179.9752	-0.00048	5179.9756	-0.00047
	102	5179.974	-0.00050	5179.973	-0.00052	5179.9747	-0.00049	5179.9751	-0.00048

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 Procedures

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 Conditions

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

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	16.42	16.38	16.40	0.5	Pass
157	5785	16.48	16.40	16.45	0.5	Pass
165	5825	16.38	16.39	16.39	0.5	Pass

802.11ac (VHT20)

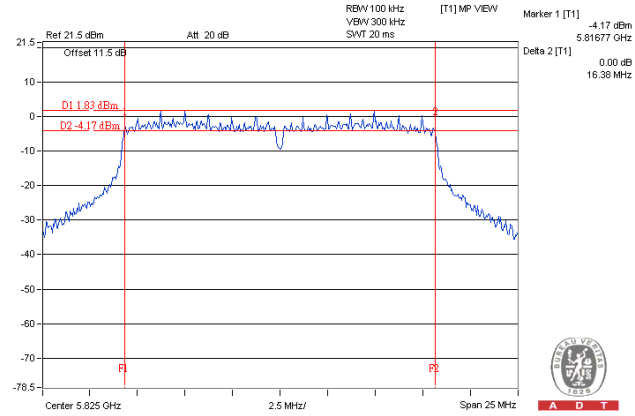
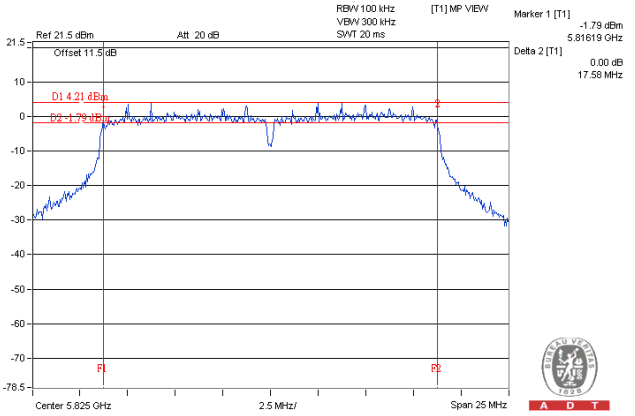
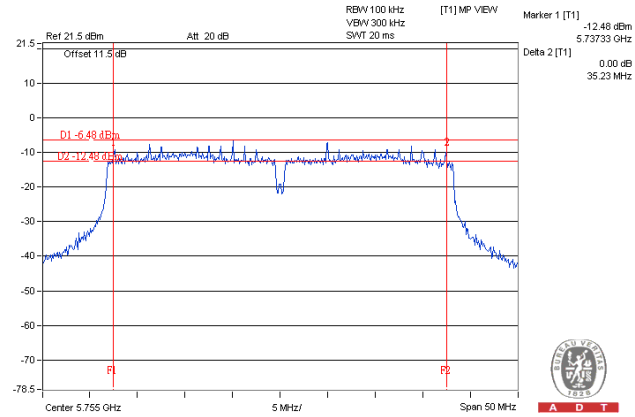
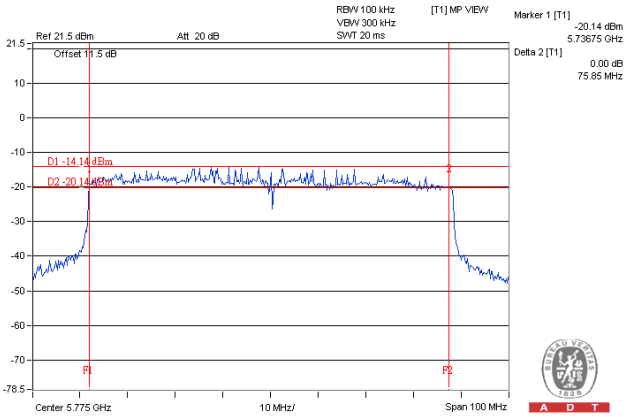
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	17.63	17.62	17.65	0.5	Pass
157	5785	17.62	17.63	17.62	0.5	Pass
165	5825	17.61	17.64	17.58	0.5	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
151	5755	35.23	36.45	36.46	0.5	Pass
159	5795	35.49	36.37	35.84	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
155	5775	76.52	76.54	75.85	0.5	Pass

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH165	**802.11ac (VHT20)_Chain 2 / CH165**
	
802.11ac (VHT40) __Chain 0 / CH151	**802.11ac (VHT80) _Chain 2 / CH155**
	

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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