FCC Test Report

Report No.: RF150713E04

FCC ID: PY314100255

Test Model: 11AC-AR9880

Received Date: July 13, 2015

Test Date: July 28 to Aug. 06, 2015

Issued Date: Sep. 16, 2015

Applicant: NETGEAR, Inc.

Address: 350 East Plumeria Drive San Jose, CA 95134

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, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF150713E04	Original release.	Sep. 16, 2015

1 Certificate of Conformity

Product: 802.11ac PCI Express Card

Brand: NETGEAR

Test Model: 11AC-AR9880

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: July 28 to Aug. 06, 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 : _____ , **Date:** Sep. 16, 2015
Lori Chung / Specialist

Approved by : _____ , **Date:** Sep. 16, 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 -13.52dB at 0.15000MHz.
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, 15720.00MHz, 5150.00MHz & 5715.00MHz.
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: This report is prepared for FCC Class II change. (Upgrade the versions of the standard to section 15.407 under new rule.)

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	5.43 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.65 dB
	6GHz ~ 18GHz	3.88 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	802.11ac PCI Express Card
Brand	NETGEAR
Test Model	11AC-AR9880
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40) , 802.11ac (VHT40) 2 for 802.11ac (VHT80)
Output Power	**CDD Mode** 802.11a: 783.739mW **Beamforming Mode** 802.11ac (VHT20): 555.46mW 802.11ac (VHT40): 495.481mW 802.11ac (VHT80): 96.114mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC Class II change. The difference compared with the original report design is as the following:
   - ◆ Upgrade the versions of the standard to section 15.407 under new rule.
2. According to above conditions, all test items of U-NII-1 & U-NII-3 band need to be performed. And all data was verified to meet the requirements.
3. The antennas provided to the EUT, please refer to the following table:

Antenna No.	PCB Chain No.	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Ant. Type	Connecter Type
1	Chain (0)	NETGEAR	C6300	3.5	5.15~5.85	PIFA	i-pex(MHF)
2	Chain (1)	NETGEAR	C6300	4			
3	Chain (2)	NETGEAR	C6300	3.8			

4. The EUT incorporates a MIMO function with beamforming.

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)
2. From the above modulation modes, the 802.11a without beamforming.

5. 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. In original report, the EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

Radiated Emission Test (Above 1GHz):

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

CDD 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
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
Beamforming MODE						
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	5180-5240	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
802.11ac (VHT20)	5745-5825	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.

CDD MODE						
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	157	OFDM	BPSK	6

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.

CDD MODE						
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	157	OFDM	BPSK	6

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.

CDD 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
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
Beamforming MODE						
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	5180-5240	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
802.11ac (VHT20)	5745-5825	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

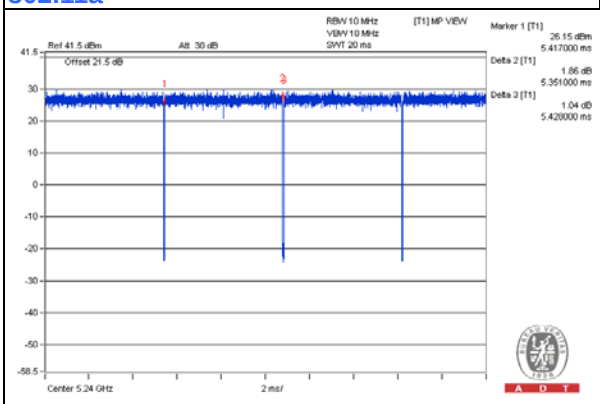
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	23deg. C, 67%RH	120Vac, 60Hz	Andy Ho
RE<1G	21deg. C, 65%RH	120Vac, 60Hz	Robert Cheng
PLC	27deg. C, 68%RH	120Vac, 60Hz	Timmy Hu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

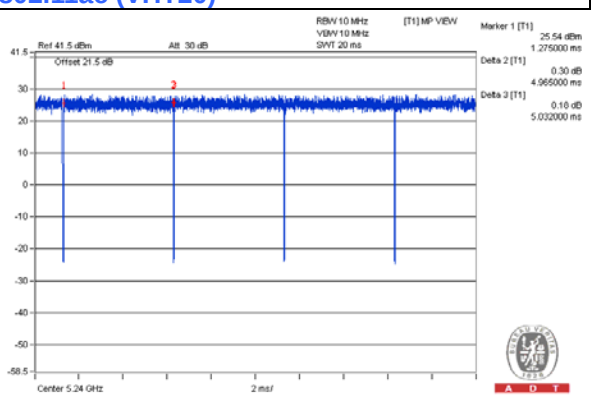
3.3 Duty Cycle of Test Signal

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 = 5.351 ms/5.428 ms = 0.986
802.11ac (VHT20): Duty cycle = 4.965 ms/5.032 ms = 0.987
802.11ac (VHT40): Duty cycle = 2.415 ms/2.475 ms = 0.976, Duty factor = 10 * log(1/0.976) = 0.11
802.11ac (VHT80): Duty cycle = 1.135 ms/1.205 ms = 0.942, Duty factor = 10 * log(1/0.942) = 0.26

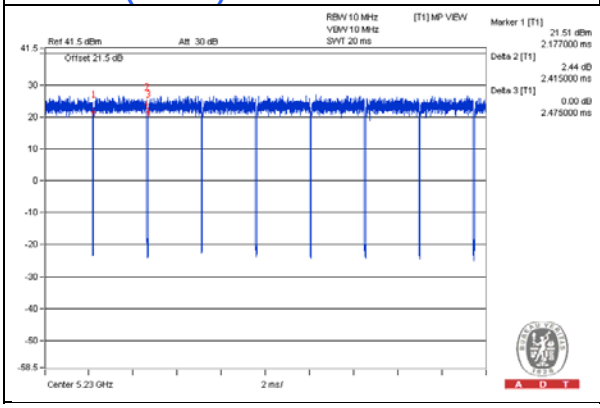
802.11a



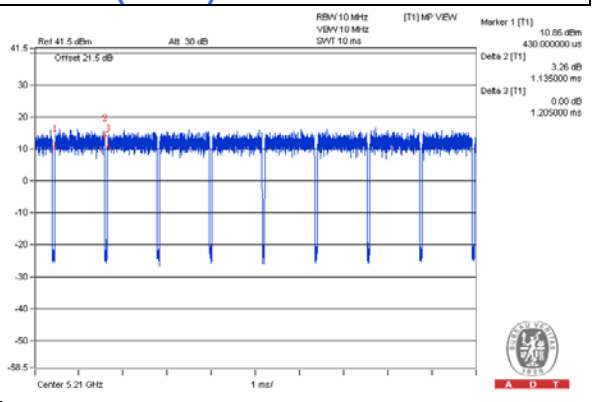
802.11ac (VHT20)



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.

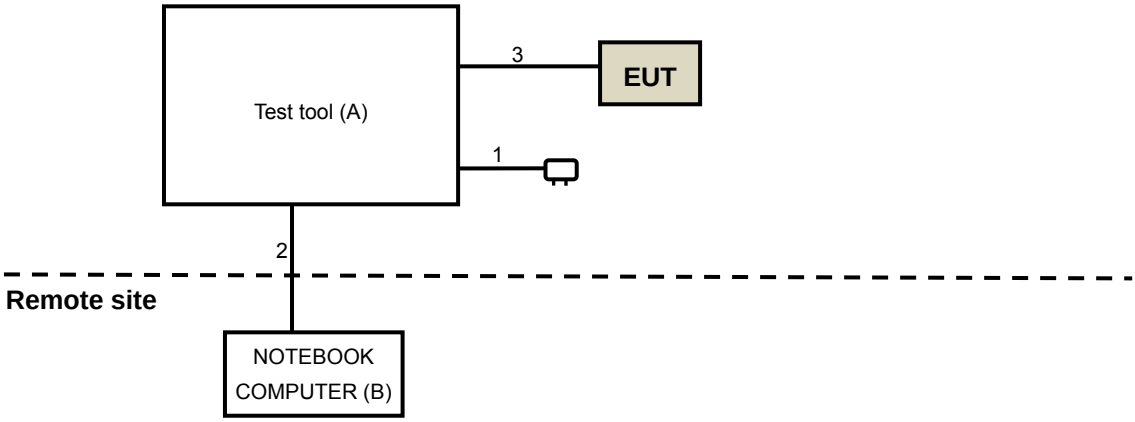
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	Test tool	HON HAI	NA	NA	NA	Supplied by Client
B	NOTEBOOK COMPUTER	DELL	PP32LA	GSLB32S	FCC DoC	Provided by Lab

NOTE:

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

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	DC	1	1.8	Yes	0	Supplied by Client
2	RJ45	1	10	No	0	Provided by Lab
3	Data	1	0.3	No	0	Supplied by Client

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.

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 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 test:

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
Horn_Antenna AISI	AIH.8018	0000320091110	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 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
Power Meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2015	May 07, 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. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: July 28 to Aug. 05, 2015

For below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 12, 2014	Dec. 11, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 09, 2015	Feb. 08, 2016
RF Cable	8D-FB	CHHCAB-001-1 CHHCAB-001-2	Oct. 05, 2014	Oct. 04, 2015
	RF-141	CHHCAB-004	Oct. 05, 2014	Oct. 04, 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	June 26, 2015	June 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

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. 06, 2015

4.1.3 Test Procedure

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:

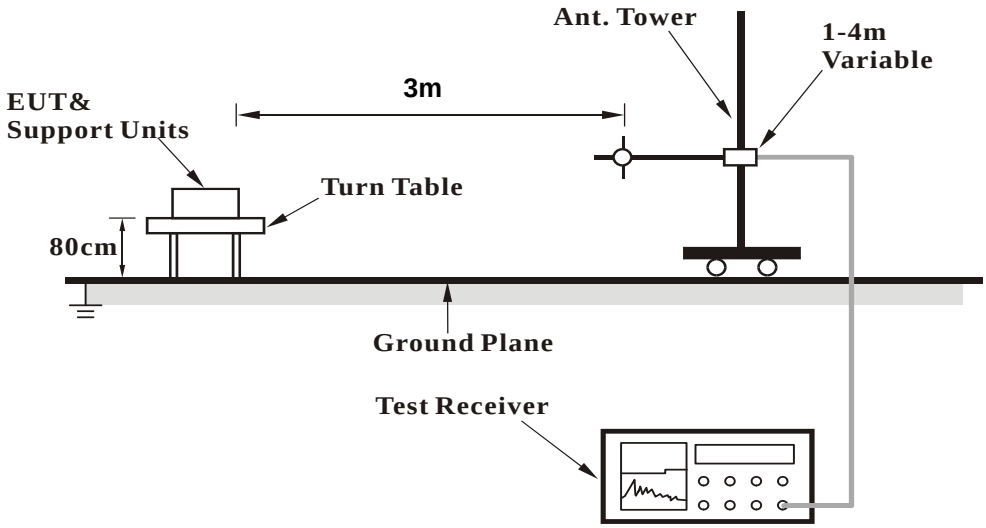
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

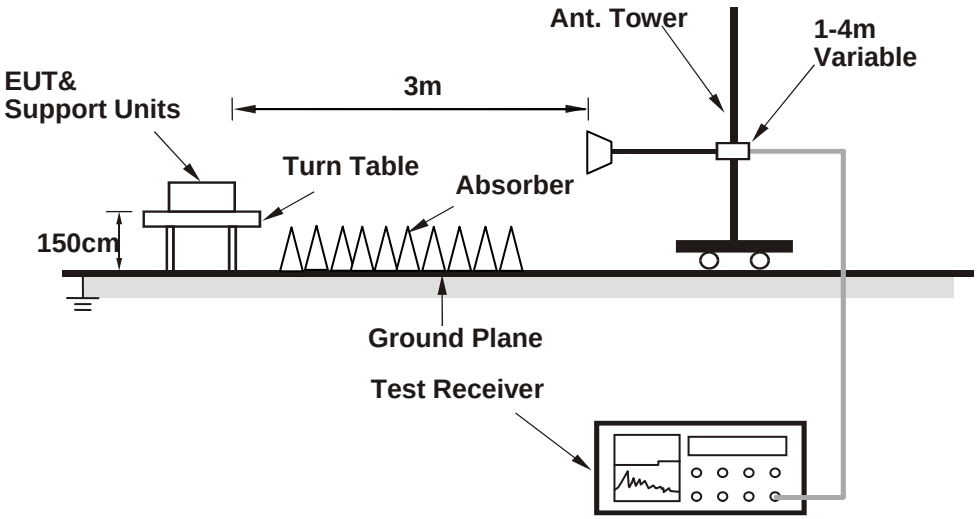
No deviation.

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 Condition

1. Connect the EUT with the support unit B (NOTEBOOK COMPUTER) which is placed on remote site.
2. Controlling software (artgui.exe[ver_4_9_536]) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data:

CDD Mode

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	69.8 PK	74.0	-4.2	1.48 H	137	61.47	8.33
2	5150.00	52.7 AV	54.0	-1.3	1.48 H	137	44.37	8.33
3	*5180.00	118.2 PK			1.48 H	137	109.73	8.47
4	*5180.00	106.0 AV			1.48 H	137	97.53	8.47
5	#10360.00	57.1 PK	74.0	-16.9	1.24 H	250	42.60	14.50
6	#10360.00	43.7 AV	54.0	-10.3	1.24 H	250	29.20	14.50
7	15540.00	63.5 PK	74.0	-10.5	1.41 H	194	44.82	18.68
8	15540.00	40.1 AV	54.0	-13.9	1.41 H	194	21.42	18.68
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	70.3 PK	74.0	-3.7	1.43 V	239	61.97	8.33
2	5150.00	53.2 AV	54.0	-0.8	1.43 V	239	44.87	8.33
3	*5180.00	118.9 PK			1.43 V	239	110.43	8.47
4	*5180.00	107.9 AV			1.43 V	239	99.43	8.47
5	#10360.00	60.4 PK	74.0	-13.6	1.13 V	182	45.90	14.50
6	#10360.00	47.3 AV	54.0	-6.7	1.13 V	182	32.80	14.50
7	15540.00	63.9 PK	74.0	-10.1	1.46 V	322	45.22	18.68
8	15540.00	48.5 AV	54.0	-5.5	1.46 V	322	29.82	18.68

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	71.3 PK	74.0	-2.7	1.46 H	147	62.97	8.33
2	5150.00	52.9 AV	54.0	-1.1	1.46 H	147	44.57	8.33
3	*5200.00	122.0 PK			1.46 H	147	113.46	8.54
4	*5200.00	109.3 AV			1.46 H	147	100.76	8.54
5	#10400.00	61.4 PK	74.0	-12.6	1.10 H	264	46.80	14.60
6	#10400.00	49.0 AV	54.0	-5.0	1.10 H	264	34.40	14.60
7	15600.00	67.2 PK	74.0	-6.8	1.52 H	31	48.30	18.90
8	15600.00	50.4 AV	54.0	-3.6	1.52 H	31	31.50	18.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.8 PK	74.0	-2.2	1.39 V	327	63.47	8.33
2	5150.00	53.4 AV	54.0	-0.6	1.39 V	327	45.07	8.33
3	*5200.00	122.7 PK			1.39 V	327	114.16	8.54
4	*5200.00	111.3 AV			1.39 V	327	102.76	8.54
5	#10400.00	63.4 PK	74.0	-10.6	1.20 V	272	48.80	14.60
6	#10400.00	50.1 AV	54.0	-3.9	1.20 V	272	35.50	14.60
7	15600.00	66.7 PK	74.0	-7.3	1.39 V	36	47.80	18.90
8	15600.00	51.4 AV	54.0	-2.6	1.39 V	36	32.50	18.90

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) – 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	5150.00	57.7 PK	74.0	-16.3	1.43 H	155	49.37	8.33
2	5150.00	44.7 AV	54.0	-9.3	1.43 H	155	36.37	8.33
3	*5240.00	121.8 PK			1.43 H	155	113.20	8.60
4	*5240.00	109.2 AV			1.43 H	155	100.60	8.60
5	5350.00	58.8 PK	74.0	-15.2	1.43 H	155	50.00	8.80
6	5350.00	45.1 AV	54.0	-8.9	1.43 H	155	36.30	8.80
7	#10480.00	61.2 PK	74.0	-12.8	1.11 H	250	46.73	14.47
8	#10480.00	48.6 AV	54.0	-5.4	1.11 H	250	34.13	14.47
9	15720.00	67.0 PK	74.0	-7.0	1.52 H	19	47.96	19.04
10	15720.00	52.1 AV	54.0	-1.9	1.52 H	19	33.06	19.04
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	58.2 PK	74.0	-15.8	1.23 V	223	49.87	8.33
2	5150.00	45.2 AV	54.0	-8.8	1.23 V	223	36.87	8.33
3	*5240.00	122.5 PK			1.23 V	223	113.90	8.60
4	*5240.00	111.2 AV			1.23 V	223	102.60	8.60
5	5350.00	59.3 PK	74.0	-14.7	1.23 V	223	50.50	8.80
6	5350.00	45.6 AV	54.0	-8.4	1.23 V	223	36.80	8.80
7	#10480.00	65.7 PK	74.0	-8.3	1.13 V	207	51.23	14.47
8	#10480.00	52.3 AV	54.0	-1.7	1.13 V	207	37.83	14.47
9	15720.00	69.0 PK	74.0	-5.0	1.42 V	340	49.96	19.04
10	15720.00	53.8 AV	54.0	-0.2	1.42 V	340	34.76	19.04

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	66.8 PK	74.0	-7.2	1.28 H	180	57.12	9.68
2	#5715.00	49.5 AV	54.0	-4.5	1.28 H	180	39.82	9.68
3	#5725.00	74.8 PK	78.2	-3.4	1.28 H	180	65.10	9.70
4	*5745.00	117.1 PK			1.28 H	180	107.34	9.76
5	*5745.00	104.5 AV			1.28 H	180	94.74	9.76
6	11490.00	57.0 PK	74.0	-17.0	1.22 H	244	42.14	14.86
7	11490.00	43.8 AV	54.0	-10.2	1.22 H	244	28.94	14.86
8	#17235.00	63.5 PK	74.0	-10.5	1.40 H	199	40.27	23.23
9	#17235.00	40.2 AV	54.0	-13.8	1.40 H	199	16.97	23.23
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	67.5 PK	74.0	-6.5	1.42 V	296	57.82	9.68
2	#5715.00	49.6 AV	54.0	-4.4	1.42 V	296	39.92	9.68
3	**#5725.00**	**78.1 PK**	**78.2**	**-0.1**	**1.42 V**	**296**	**68.40**	**9.70**
4	*5745.00	117.5 PK			1.42 V	296	107.74	9.76
5	*5745.00	106.0 AV			1.42 V	296	96.24	9.76
6	11490.00	60.4 PK	74.0	-13.6	1.09 V	191	45.54	14.86
7	11490.00	47.5 AV	54.0	-6.5	1.09 V	191	32.64	14.86
8	#17235.00	63.7 PK	74.0	-10.3	1.41 V	336	40.47	23.23
9	#17235.00	48.4 AV	54.0	-5.6	1.41 V	336	25.17	23.23

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	70.4 PK	74.0	-3.6	1.23 H	170	60.72	9.68
2	#5715.00	51.6 AV	54.0	-2.4	1.23 H	170	41.92	9.68
3	*5785.00	120.2 PK			1.23 H	170	110.35	9.85
4	*5785.00	109.2 AV			1.23 H	170	99.35	9.85
5	#5850.00	69.9 PK	78.2	-8.3	1.23 H	170	59.98	9.92
6	#5860.00	70.2 PK	74.0	-3.8	1.23 H	170	60.27	9.93
7	#5860.00	52.2 AV	54.0	-1.8	1.23 H	170	42.27	9.93
8	11570.00	60.1 PK	74.0	-13.9	1.17 H	237	44.90	15.20
9	11570.00	47.4 AV	54.0	-6.6	1.17 H	237	32.20	15.20
10	#17355.00	58.0 PK	74.0	-16.0	1.44 H	203	34.44	23.56
11	#17355.00	44.8 AV	54.0	-9.2	1.44 H	203	21.24	23.56
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	70.9 PK	74.0	-3.1	1.24 V	346	61.22	9.68
2	#5715.00	52.1 AV	54.0	-1.9	1.24 V	346	42.42	9.68
3	*5785.00	121.7 PK			1.24 V	346	111.85	9.85
4	*5785.00	110.7 AV			1.24 V	346	100.85	9.85
5	#5850.00	73.2 PK	78.2	-5.0	1.24 V	346	63.28	9.92
6	#5860.00	71.0 PK	74.0	-3.0	1.24 V	346	61.07	9.93
7	#5860.00	53.2 AV	54.0	-0.8	1.24 V	346	43.27	9.93
8	11570.00	64.6 PK	74.0	-9.4	1.02 V	304	49.40	15.20
9	11570.00	51.1 AV	54.0	-2.9	1.02 V	304	35.90	15.20
10	#17355.00	58.1 PK	74.0	-15.9	1.63 V	254	34.54	23.56
11	#17355.00	53.0 AV	54.0	-1.0	1.63 V	254	29.44	23.56

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	117.0 PK			1.24 H	172	107.09	9.91
2	*5825.00	105.9 AV			1.24 H	172	95.99	9.91
3	#5850.00	74.2 PK	78.2	-4.0	1.24 H	172	64.28	9.92
4	#5860.00	67.6 PK	74.0	-6.4	1.24 H	172	57.67	9.93
5	#5860.00	52.0 AV	54.0	-2.0	1.24 H	172	42.07	9.93
6	11650.00	61.8 PK	74.0	-12.2	1.14 H	268	46.40	15.40
7	11650.00	49.2 AV	54.0	-4.8	1.14 H	268	33.80	15.40
8	#17475.00	66.9 PK	74.0	-7.1	1.55 H	34	42.81	24.09
9	#17475.00	49.9 AV	54.0	-4.1	1.55 H	34	25.81	24.09
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	119.0 PK			1.41 V	350	109.09	9.91
2	*5825.00	107.9 AV			1.41 V	350	97.99	9.91
3	#5850.00	77.5 PK	78.2	-0.7	1.41 V	350	67.58	9.92
4	#5860.00	68.4 PK	74.0	-5.6	1.41 V	350	58.47	9.93
5	#5860.00	52.6 AV	54.0	-1.4	1.41 V	350	42.67	9.93
6	11650.00	63.7 PK	74.0	-10.3	1.19 V	272	48.30	15.40
7	11650.00	50.2 AV	54.0	-3.8	1.19 V	272	34.80	15.40
8	#17475.00	66.1 PK	74.0	-7.9	1.45 V	42	42.01	24.09
9	#17475.00	50.9 AV	54.0	-3.1	1.45 V	42	26.81	24.09

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.

Beamforming Mode

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	67.8 PK	74.0	-6.2	1.19 H	162	59.47	8.33
2	5150.00	52.8 AV	54.0	-1.2	1.19 H	162	44.47	8.33
3	*5180.00	117.3 PK			1.19 H	162	108.83	8.47
4	*5180.00	105.6 AV			1.19 H	162	97.13	8.47
5	#10360.00	57.1 PK	74.0	-16.9	1.17 H	247	42.60	14.50
6	#10360.00	43.8 AV	54.0	-10.2	1.17 H	247	29.30	14.50
7	15540.00	64.0 PK	74.0	-10.0	1.36 H	197	45.32	18.68
8	15540.00	40.6 AV	54.0	-13.4	1.36 H	197	21.92	18.68
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.6 PK	74.0	-5.4	1.35 V	328	60.27	8.33
2	5150.00	53.4 AV	54.0	-0.6	1.35 V	328	45.07	8.33
3	*5180.00	119.3 PK			1.35 V	328	110.83	8.47
4	*5180.00	107.6 AV			1.35 V	328	99.13	8.47
5	#10360.00	59.7 PK	74.0	-14.3	1.05 V	201	45.20	14.50
6	#10360.00	47.1 AV	54.0	-6.9	1.05 V	201	32.60	14.50
7	15540.00	63.7 PK	74.0	-10.3	1.36 V	326	45.02	18.68
8	15540.00	48.3 AV	54.0	-5.7	1.36 V	326	29.62	18.68

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	68.8 PK	74.0	-5.2	1.22 H	177	60.47	8.33
2	5150.00	52.8 AV	54.0	-1.2	1.22 H	177	44.47	8.33
3	*5200.00	120.4 PK			1.22 H	177	111.86	8.54
4	*5200.00	109.0 AV			1.22 H	177	100.46	8.54
5	#10400.00	61.1 PK	74.0	-12.9	1.15 H	275	46.50	14.60
6	#10400.00	48.7 AV	54.0	-5.3	1.15 H	275	34.10	14.60
7	15600.00	67.5 PK	74.0	-6.5	1.49 H	16	48.60	18.90
8	15600.00	50.6 AV	54.0	-3.4	1.49 H	16	31.70	18.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.8 PK	74.0	-4.2	1.36 V	327	61.47	8.33
2	5150.00	53.5 AV	54.0	-0.5	1.36 V	327	45.17	8.33
3	*5200.00	122.5 PK			1.36 V	327	113.96	8.54
4	*5200.00	111.0 AV			1.36 V	327	102.46	8.54
5	#10400.00	63.6 PK	74.0	-10.4	1.22 V	259	49.00	14.60
6	#10400.00	50.2 AV	54.0	-3.8	1.22 V	259	35.60	14.60
7	15600.00	67.2 PK	74.0	-6.8	1.36 V	26	48.30	18.90
8	15600.00	51.8 AV	54.0	-2.2	1.36 V	26	32.90	18.90

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) – 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	5150.00	60.0 PK	74.0	-14.0	1.17 H	168	51.67	8.33
2	5150.00	46.5 AV	54.0	-7.5	1.17 H	168	38.17	8.33
3	*5240.00	121.3 PK			1.17 H	168	112.70	8.60
4	*5240.00	110.3 AV			1.17 H	168	101.70	8.60
5	5350.00	59.9 PK	74.0	-14.1	1.17 H	168	51.10	8.80
6	5350.00	47.2 AV	54.0	-6.8	1.17 H	168	38.40	8.80
7	#10480.00	60.6 PK	74.0	-13.4	1.16 H	242	46.13	14.47
8	#10480.00	48.1 AV	54.0	-5.9	1.16 H	242	33.63	14.47
9	15720.00	66.9 PK	74.0	-7.1	1.51 H	30	47.86	19.04
10	15720.00	52.0 AV	54.0	-2.0	1.51 H	30	32.96	19.04
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	60.7 PK	74.0	-13.3	1.36 V	327	52.37	8.33
2	5150.00	47.1 AV	54.0	-6.9	1.36 V	327	38.77	8.33
3	*5240.00	123.3 PK			1.36 V	327	114.70	8.60
4	*5240.00	112.1 AV			1.36 V	327	103.50	8.60
5	5350.00	60.7 PK	74.0	-13.3	1.36 V	327	51.90	8.80
6	5350.00	47.8 AV	54.0	-6.2	1.36 V	327	39.00	8.80
7	#10480.00	68.5 PK	74.0	-5.5	1.04 V	281	54.03	14.47
8	#10480.00	53.5 AV	54.0	-0.5	1.04 V	281	39.03	14.47
9	15720.00	69.2 PK	74.0	-4.8	1.42 V	340	50.16	19.04
10	**15720.00**	**53.9 AV**	**54.0**	**-0.1**	**1.42 V**	**340**	**34.86**	**19.04**

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	65.1 PK	74.0	-8.9	1.33 H	256	55.42	9.68
2	#5715.00	49.3 AV	54.0	-4.7	1.33 H	256	39.62	9.68
3	#5725.00	74.0 PK	78.2	-4.2	1.33 H	256	64.30	9.70
4	*5745.00	114.4 PK			1.33 H	256	104.64	9.76
5	*5745.00	102.7 AV			1.33 H	256	92.94	9.76
6	11490.00	56.9 PK	74.0	-17.1	1.22 H	233	42.04	14.86
7	11490.00	43.8 AV	54.0	-10.2	1.22 H	233	28.94	14.86
8	#17235.00	64.2 PK	74.0	-9.8	1.34 H	210	40.97	23.23
9	#17235.00	40.8 AV	54.0	-13.2	1.34 H	210	17.57	23.23
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	66.1 PK	74.0	-7.9	1.45 V	347	56.42	9.68
2	#5715.00	50.5 AV	54.0	-3.5	1.45 V	347	40.82	9.68
3	**#5725.00**	**78.1 PK**	**78.2**	**-0.1**	**1.45 V**	**347**	**68.40**	**9.70**
4	*5745.00	117.5 PK			1.45 V	347	107.74	9.76
5	*5745.00	105.5 AV			1.45 V	347	95.74	9.76
6	11490.00	59.9 PK	74.0	-14.1	1.01 V	189	45.04	14.86
7	11490.00	47.0 AV	54.0	-7.0	1.01 V	189	32.14	14.86
8	#17235.00	64.0 PK	74.0	-10.0	1.35 V	312	40.77	23.23
9	#17235.00	48.4 AV	54.0	-5.6	1.35 V	312	25.17	23.23

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	65.4 PK	74.0	-8.6	1.31 H	253	55.72	9.68
2	#5715.00	48.2 AV	54.0	-5.8	1.31 H	253	38.52	9.68
3	#5725.00	70.7 PK	78.2	-7.5	1.31 H	253	61.00	9.70
4	*5785.00	119.1 PK			1.31 H	253	109.25	9.85
5	*5785.00	107.7 AV			1.31 H	253	97.85	9.85
6	#5850.00	68.6 PK	78.2	-9.6	1.31 H	253	58.68	9.92
7	#5860.00	63.4 PK	74.0	-10.6	1.31 H	253	53.47	9.93
8	#5860.00	47.9 AV	54.0	-6.1	1.31 H	253	37.97	9.93
9	11570.00	60.7 PK	74.0	-13.3	1.20 H	242	45.50	15.20
10	11570.00	48.3 AV	54.0	-5.7	1.20 H	242	33.10	15.20
11	#17355.00	66.3 PK	74.0	-7.7	1.51 H	19	42.74	23.56
12	#17355.00	51.6 AV	54.0	-2.4	1.51 H	19	28.04	23.56

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	68.3 PK	74.0	-5.7	1.21 V	350	58.62	9.68
2	#5715.00	52.7 AV	54.0	-1.3	1.21 V	350	43.02	9.68
3	#5725.00	74.3 PK	78.2	-3.9	1.21 V	350	64.60	9.70
4	*5785.00	121.5 PK			1.21 V	350	111.65	9.85
5	*5785.00	110.2 AV			1.21 V	350	100.35	9.85
6	#5850.00	72.8 PK	78.2	-5.4	1.00 V	0	62.88	9.92
7	#5860.00	71.1 PK	74.0	-2.9	1.21 V	350	61.17	9.93
8	#5860.00	53.4 AV	54.0	-0.6	1.21 V	350	43.47	9.93
9	11570.00	68.1 PK	74.0	-5.9	1.09 V	293	52.90	15.20
10	11570.00	53.0 AV	54.0	-1.0	1.09 V	293	37.80	15.20
11	#17355.00	68.7 PK	74.0	-5.3	1.45 V	343	45.14	23.56
12	#17355.00	53.3 AV	54.0	-0.7	1.45 V	343	29.74	23.56

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	115.6 PK			1.36 H	265	105.69	9.91
2	*5825.00	104.6 AV			1.36 H	265	94.69	9.91
3	#5850.00	76.4 PK	78.2	-1.8	1.36 H	265	66.48	9.92
4	#5860.00	68.4 PK	74.0	-5.6	1.36 H	265	58.47	9.93
5	#5860.00	47.9 AV	54.0	-6.1	1.36 H	265	37.97	9.93
6	11650.00	62.2 PK	74.0	-11.8	1.14 H	255	46.80	15.40
7	11650.00	49.4 AV	54.0	-4.6	1.14 H	255	34.00	15.40
8	#17475.00	66.5 PK	74.0	-7.5	1.49 H	34	42.41	24.09
9	#17475.00	51.4 AV	54.0	-2.6	1.49 H	34	27.31	24.09
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	117.6 PK			1.30 V	212	107.69	9.91
2	*5825.00	106.7 AV			1.30 V	212	96.79	9.91
3	#5850.00	77.3 PK	78.2	-0.9	1.30 V	212	67.38	9.92
4	#5860.00	69.2 PK	74.0	-4.8	1.30 V	212	59.27	9.93
5	#5860.00	48.5 AV	54.0	-5.5	1.30 V	212	38.57	9.93
6	11650.00	63.4 PK	74.0	-10.6	1.24 V	262	48.00	15.40
7	11650.00	49.8 AV	54.0	-4.2	1.24 V	262	34.40	15.40
8	#17475.00	66.4 PK	74.0	-7.6	1.48 V	46	42.31	24.09
9	#17475.00	51.3 AV	54.0	-2.7	1.48 V	46	27.21	24.09

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	69.6 PK	74.0	-4.4	1.30 H	274	61.27	8.33
2	5150.00	52.9 AV	54.0	-1.1	1.30 H	274	44.57	8.33
3	*5190.00	107.7 PK			1.30 H	274	99.20	8.50
4	*5190.00	95.8 AV			1.30 H	274	87.30	8.50
5	#10380.00	56.7 PK	74.0	-17.3	1.21 H	238	42.15	14.55
6	#10380.00	43.4 AV	54.0	-10.6	1.21 H	238	28.85	14.55
7	15570.00	64.7 PK	74.0	-9.3	1.30 H	218	45.91	18.79
8	15570.00	41.3 AV	54.0	-12.7	1.30 H	218	22.51	18.79
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	5150.00	70.5 PK	74.0	-3.5	1.59 V	326	62.17	8.33
2	5150.00	53.7 AV	54.0	-0.3	1.59 V	326	45.37	8.33
3	*5190.00	110.0 PK			1.59 V	326	101.50	8.50
4	*5190.00	98.2 AV			1.59 V	326	89.70	8.50
5	#10380.00	59.7 PK	74.0	-14.3	1.02 V	182	45.15	14.55
6	#10380.00	46.9 AV	54.0	-7.1	1.02 V	182	32.35	14.55
7	15570.00	64.0 PK	74.0	-10.0	1.39 V	314	45.21	18.79
8	15570.00	48.5 AV	54.0	-5.5	1.39 V	314	29.71	18.79

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 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	67.9 PK	74.0	-6.1	1.27 H	270	59.57	8.33
2	5150.00	52.4 AV	54.0	-1.6	1.27 H	270	44.07	8.33
3	*5230.00	116.7 PK			1.27 H	270	108.11	8.59
4	*5230.00	104.8 AV			1.27 H	270	96.21	8.59
5	#10460.00	61.5 PK	74.0	-12.5	1.13 H	278	46.99	14.51
6	#10460.00	49.0 AV	54.0	-5.0	1.13 H	278	34.49	14.51
7	15690.00	67.8 PK	74.0	-6.2	1.45 H	3	48.83	18.97
8	15690.00	51.2 AV	54.0	-2.8	1.45 H	3	32.23	18.97
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.5 PK	74.0	-5.5	1.20 V	327	60.17	8.33
2	5150.00	53.2 AV	54.0	-0.8	1.20 V	327	44.87	8.33
3	*5230.00	118.8 PK			1.20 V	327	110.21	8.59
4	*5230.00	106.8 AV			1.20 V	327	98.21	8.59
5	#10460.00	62.9 PK	74.0	-11.1	1.26 V	268	48.39	14.51
6	#10460.00	49.8 AV	54.0	-4.2	1.26 V	268	35.29	14.51
7	15690.00	67.3 PK	74.0	-6.7	1.32 V	14	48.33	18.97
8	15690.00	51.9 AV	54.0	-2.1	1.32 V	14	32.93	18.97

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	69.9 PK	74.0	-4.1	1.27 H	182	60.22	9.68
2	#5715.00	53.5 AV	54.0	-0.5	1.27 H	182	43.82	9.68
3	#5725.00	70.6 PK	78.2	-7.6	1.27 H	182	60.90	9.70
4	*5755.00	109.7 PK			1.27 H	182	99.93	9.77
5	*5755.00	98.2 AV			1.27 H	182	88.43	9.77
6	11510.00	56.6 PK	74.0	-17.4	1.23 H	235	41.75	14.85
7	11510.00	43.4 AV	54.0	-10.6	1.23 H	235	28.55	14.85
8	#17265.00	65.0 PK	74.0	-9.0	1.28 H	210	41.77	23.23
9	#17265.00	41.6 AV	54.0	-12.4	1.28 H	210	18.37	23.23
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	71.2 PK	74.0	-2.8	1.44 V	297	61.52	9.68
2	#5715.00	53.6 AV	54.0	-0.4	1.44 V	297	43.92	9.68
3	#5725.00	74.1 PK	78.2	-4.1	1.44 V	297	64.40	9.70
4	*5755.00	111.2 PK			1.44 V	297	101.43	9.77
5	*5755.00	98.8 AV			1.44 V	297	89.03	9.77
6	11510.00	59.4 PK	74.0	-14.6	1.05 V	170	44.55	14.85
7	11510.00	46.4 AV	54.0	-7.6	1.05 V	170	31.55	14.85
8	#17265.00	63.7 PK	74.0	-10.3	1.45 V	319	40.47	23.23
9	#17265.00	48.0 AV	54.0	-6.0	1.45 V	319	24.77	23.23

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	115.2 PK			1.17 H	96	105.32	9.88
2	*5795.00	102.7 AV			1.17 H	96	92.82	9.88
3	#5850.00	69.7 PK	78.2	-8.5	1.17 H	96	59.78	9.92
4	#5860.00	67.5 PK	74.0	-6.5	1.17 H	96	57.57	9.93
5	#5860.00	53.3 AV	54.0	-0.7	1.17 H	96	43.37	9.93
6	11590.00	61.7 PK	74.0	-12.3	1.15 H	263	46.39	15.31
7	11590.00	49.4 AV	54.0	-4.6	1.15 H	263	34.09	15.31
8	#17385.00	67.2 PK	74.0	-6.8	1.42 H	17	43.44	23.76
9	#17385.00	50.8 AV	54.0	-3.2	1.42 H	17	27.04	23.76
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	115.4 PK			1.51 V	303	105.52	9.88
2	*5795.00	103.2 AV			1.51 V	303	93.32	9.88
3	#5850.00	68.6 PK	78.2	-9.6	1.51 V	303	58.68	9.92
4	#5860.00	67.8 PK	74.0	-6.2	1.51 V	303	57.87	9.93
5	#5860.00	53.5 AV	54.0	-0.5	1.51 V	303	43.57	9.93
6	11590.00	62.7 PK	74.0	-11.3	1.28 V	275	47.39	15.31
7	11590.00	49.9 AV	54.0	-4.1	1.28 V	275	34.59	15.31
8	#17385.00	67.7 PK	74.0	-6.3	1.28 V	21	43.94	23.76
9	#17385.00	52.1 AV	54.0	-1.9	1.28 V	21	28.34	23.76

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	69.1 PK	74.0	-4.9	1.22 H	82	60.77	8.33
2	5150.00	52.8 AV	54.0	-1.2	1.22 H	82	44.47	8.33
3	*5210.00	105.4 PK			1.22 H	82	96.85	8.55
4	*5210.00	93.0 AV			1.22 H	82	84.45	8.55
5	5350.00	54.7 PK	74.0	-19.3	1.22 H	82	45.90	8.80
6	5350.00	41.2 AV	54.0	-12.8	1.22 H	82	32.40	8.80
7	#10420.00	56.9 PK	74.0	-17.1	1.21 H	227	42.33	14.57
8	#10420.00	43.4 AV	54.0	-10.6	1.21 H	227	28.83	14.57
9	15630.00	65.3 PK	74.0	-8.7	1.25 H	213	46.37	18.93
10	15630.00	41.9 AV	54.0	-12.1	1.25 H	213	22.97	18.93
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.9 PK	74.0	-7.1	1.40 V	328	58.57	8.33
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.40 V**	**328**	**45.57**	**8.33**
3	*5210.00	107.3 PK			1.40 V	328	98.75	8.55
4	*5210.00	96.1 AV			1.40 V	328	87.55	8.55
5	5350.00	55.5 PK	74.0	-18.5	1.40 V	328	46.70	8.80
6	5350.00	42.0 AV	54.0	-12.0	1.40 V	328	33.20	8.80
7	#10420.00	59.4 PK	74.0	-14.6	1.11 V	166	44.83	14.57
8	#10420.00	46.3 AV	54.0	-7.7	1.11 V	166	31.73	14.57
9	15630.00	63.9 PK	74.0	-10.1	1.43 V	316	44.97	18.93
10	15630.00	48.1 AV	54.0	-5.9	1.43 V	316	29.17	18.93

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	68.7 PK	74.0	-5.3	1.20 H	85	59.02	9.68
2	#5715.00	53.0 AV	54.0	-1.0	1.20 H	85	43.32	9.68
3	#5725.00	74.1 PK	78.2	-4.1	1.20 H	85	64.40	9.70
4	*5775.00	104.1 PK			1.20 H	85	94.27	9.83
5	*5775.00	91.3 AV			1.20 H	85	81.47	9.83
6	#5850.00	67.4 PK	78.2	-10.8	1.20 H	85	57.48	9.92
7	#5860.00	60.2 PK	74.0	-13.8	1.20 H	85	50.27	9.93
8	#5860.00	46.4 AV	54.0	-7.6	1.20 H	85	36.47	9.93
9	11550.00	57.0 PK	74.0	-17.0	1.22 H	218	41.91	15.09
10	11550.00	43.6 AV	54.0	-10.4	1.22 H	218	28.51	15.09
11	#17325.00	65.1 PK	74.0	-8.9	1.27 H	216	41.72	23.38
12	#17325.00	41.8 AV	54.0	-12.2	1.27 H	216	18.42	23.38

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	69.7 PK	74.0	-4.3	1.36 V	129	60.02	9.68
2	**#5715.00**	**53.9 AV**	**54.0**	**-0.1**	**1.36 V**	**129**	**44.22**	**9.68**
3	#5725.00	75.1 PK	78.2	-3.1	1.36 V	129	65.40	9.70
4	*5775.00	107.2 PK			1.36 V	129	97.37	9.83
5	*5775.00	94.1 AV			1.36 V	129	84.27	9.83
6	#5850.00	62.5 PK	78.2	-15.7	1.36 V	129	52.58	9.92
7	#5860.00	59.7 PK	74.0	-14.3	1.36 V	129	49.77	9.93
8	#5860.00	46.3 AV	54.0	-7.7	1.36 V	129	36.37	9.93
9	11550.00	59.7 PK	74.0	-14.3	1.15 V	151	44.61	15.09
10	11550.00	46.8 AV	54.0	-7.2	1.15 V	151	31.71	15.09
11	#17325.00	64.1 PK	74.0	-9.9	1.45 V	314	40.72	23.38
12	#17325.00	48.2 AV	54.0	-5.8	1.45 V	314	24.82	23.38

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:

CDD Mode

802.11a

CHANNEL	TX Channel 157	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	71.13	31.1 QP	40.0	-8.9	2.00 H	37	46.61	-15.50
2	104.98	36.3 QP	43.5	-7.2	2.00 H	233	52.92	-16.64
3	117.49	38.4 QP	43.5	-5.1	1.50 H	231	53.71	-15.34
4	135.00	35.2 QP	43.5	-8.3	2.00 H	252	49.03	-13.79
5	190.00	37.8 QP	43.5	-5.7	1.50 H	1	53.37	-15.58
6	249.85	40.7 QP	46.0	-5.3	1.50 H	178	54.60	-13.87
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	70.06	34.7 QP	40.0	-5.4	1.00 V	87	49.70	-15.05
2	102.70	32.9 QP	43.5	-10.6	1.50 V	140	50.01	-17.08
3	199.90	35.2 QP	43.5	-8.4	1.50 V	306	51.13	-15.98
4	375.03	37.9 QP	46.0	-8.2	1.00 V	338	48.07	-10.22
5	832.09	40.2 QP	46.0	-5.8	1.00 V	305	41.16	-0.93
6	874.97	39.7 QP	46.0	-6.3	1.00 V	319	40.05	-0.36

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. 06, 2015

4.2.3 Test Procedure

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.

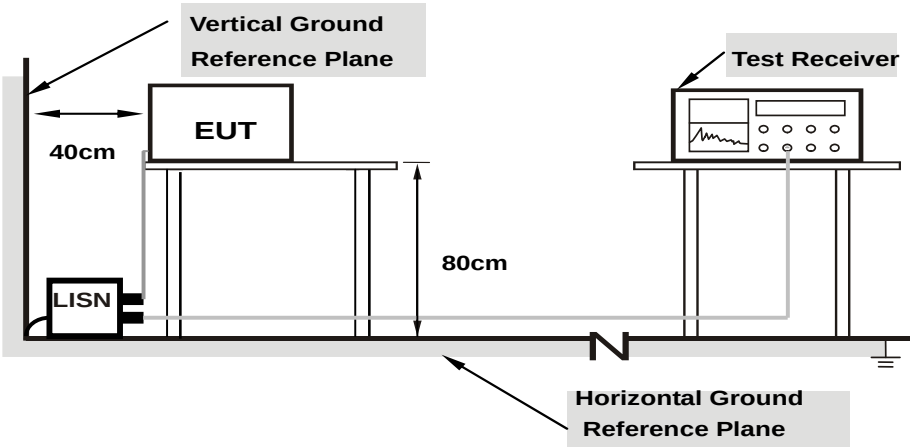
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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 Condition

Same as 4.1.6.

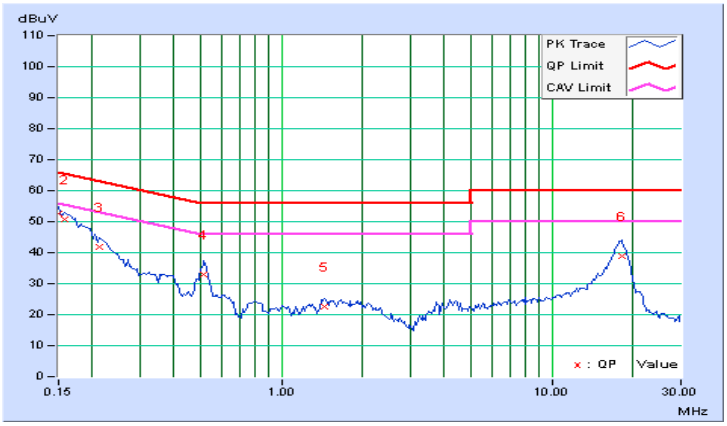
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**0.08**	**52.40**	**30.99**	**52.48**	**31.07**	**66.00**	**56.00**	**-13.52**	**-24.93**
2	0.15781	0.08	50.52	32.27	50.60	32.35	65.58	55.58	-14.98	-23.23
3	0.21250	0.09	41.80	24.75	41.89	24.84	63.11	53.11	-21.22	-28.27
4	0.51719	0.11	32.96	26.62	33.07	26.73	56.00	46.00	-22.93	-19.27
5	1.44141	0.15	22.43	15.22	22.58	15.37	56.00	46.00	-33.42	-30.63
6	18.22266	0.66	38.29	31.85	38.95	32.51	60.00	50.00	-21.05	-17.49

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.

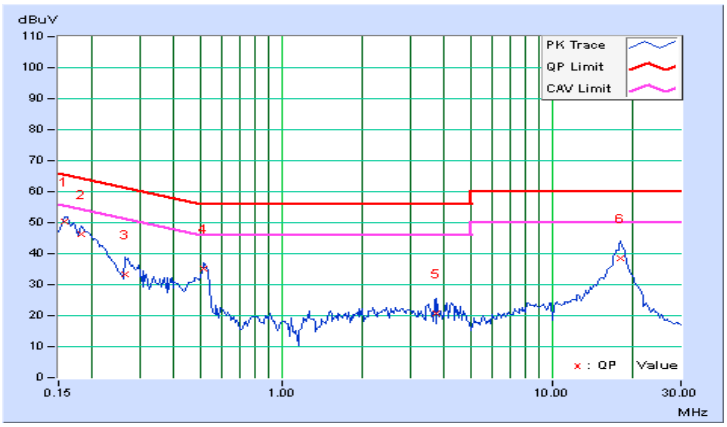


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.08	50.15	31.65	50.23	31.73	65.58	55.58	-15.35	-23.85
2	0.18125	0.08	46.32	28.91	46.40	28.99	64.43	54.43	-18.03	-25.44
3	0.26328	0.09	33.32	19.84	33.41	19.93	61.33	51.33	-27.92	-31.40
4	0.51719	0.11	34.99	28.04	35.10	28.15	56.00	46.00	-20.90	-17.85
5	3.75781	0.22	20.53	8.54	20.75	8.76	56.00	46.00	-35.25	-37.24
6	18.01172	0.68	37.97	31.47	38.65	32.15	60.00	50.00	-21.35	-17.85

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)

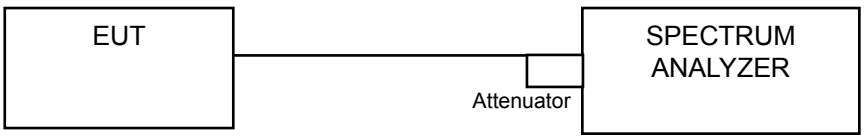
*B is the 26 dB emission bandwidth in megahertz

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

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.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Result

CDD Mode

POWER OUTPUT:

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
802.11a								
36	5180	19.78	20.15	20.79	318.524	25.03	30	Pass
40	5200	22.97	23.01	22.92	594.023	27.74	30	Pass
48	5240	22.97	23.13	22.05	564.067	27.51	30	Pass
149	5745	19.35	18.54	19.86	254.377	24.05	30	Pass
157	5785	24.12	23.52	24.78	783.739	28.94	30	Pass
165	5825	20.92	20.12	21.86	379.859	25.80	30	Pass

Beamforming Mode

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
802.11ac (VHT20)								
36	5180	19.44	19.80	21.03	310.166	24.92	27.46	Pass
40	5200	22.38	22.22	22.69	525.487	27.21	27.46	Pass
48	5240	22.69	22.86	22.36	551.164	27.41	27.46	Pass
149	5745	18.33	17.87	18.94	207.655	23.17	27.46	Pass
157	5785	22.75	22.23	23.01	555.46	27.45	27.46	Pass
165	5825	20.65	19.76	21.27	344.737	25.37	27.46	Pass
802.11ac (VHT40)								
38	5190	16.11	16.65	16.67	133.522	21.26	27.46	Pass
46	5230	22.04	22.99	21.35	495.481	26.95	27.46	Pass
151	5755	15.24	15.26	16.15	108.204	20.34	27.46	Pass
159	5795	21.10	20.28	21.81	387.19	25.88	27.46	Pass
802.11ac (VHT80)								
42	5210	14.67	15.49	14.97	96.114	19.83	27.46	Pass
155	5775	14.09	14.40	14.76	83.11	19.20	27.46	Pass

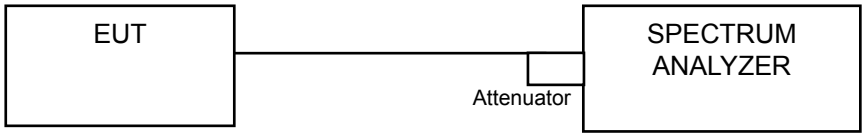
Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.54dBi > 6dBi , so the power limit shall be reduced to 30-(8.54-6) = 27.46dBm.

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 Procedure

802.11a & 802.11ac (VH20)

For U-NII-1 band:

Using method SA-1

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

For U-NII-3 band:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. 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)
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value

802.11ac (VHT40) & 802.11ac (VHT80)

For U-NII-1 band:

Using method SA-2

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

For U-NII-3 band:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. 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)
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. 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 Condition

Same as Item 4.3.6.

4.4.7 Test Results

For U-NII-1 Band

CDD Mode

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
802.11a							
36	5180	5.94	5.94	7.09	11.13	14.46	Pass
40	5200	9.37	8.93	9.65	14.10	14.46	Pass
48	5240	9.21	9.40	9.12	14.02	14.46	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] = 8.54dBi > 6dBi , so the power density limit shall be reduced to 17-(8.54-6) = 14.46dBm.

Beamforming Mode

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
802.11ac (VHT20)							
36	5180	5.82	5.56	6.59	10.78	14.46	Pass
40	5200	6.63	7.12	6.93	11.67	14.46	Pass
48	5240	7.81	7.58	6.36	12.07	14.46	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] = 8.54dBi > 6dBi , so the power density limit shall be reduced to 17-(8.54-6) = 14.46dBm.

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				
802.11ac (VHT40)								
38	5190	-0.40	-0.35	-0.46	0.11	4.47	14.46	Pass
46	5230	5.21	6.05	5.46	0.11	10.46	14.46	Pass
802.11ac (VHT80)								
42	5210	-1.95	-11.56	-4.15	0.26	0.64	14.46	Pass

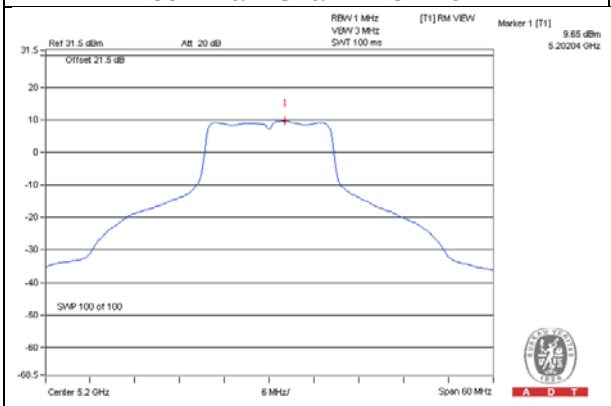
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.54dBi > 6dBi , so the power density limit shall be reduced to 17-(8.54-6) = 14.46dBm.

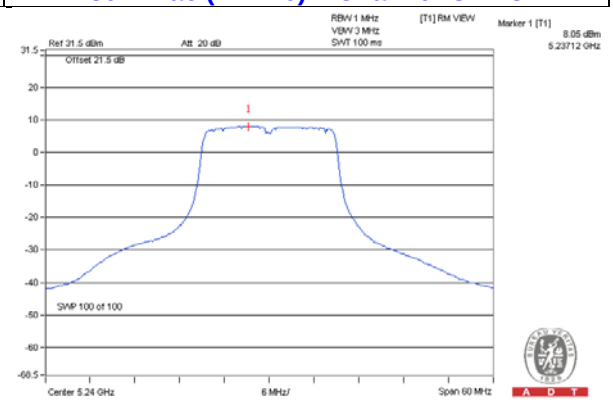
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

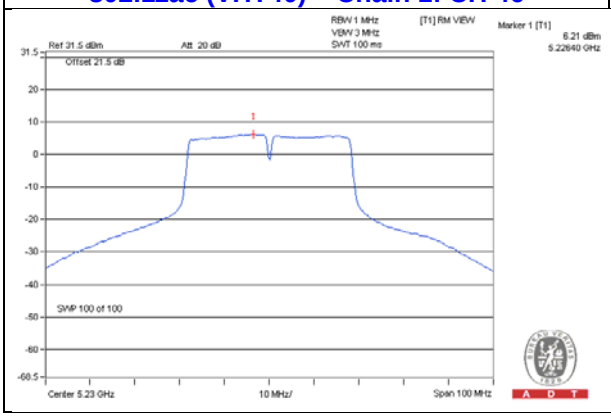
802.11a – Chain 2: CH 40



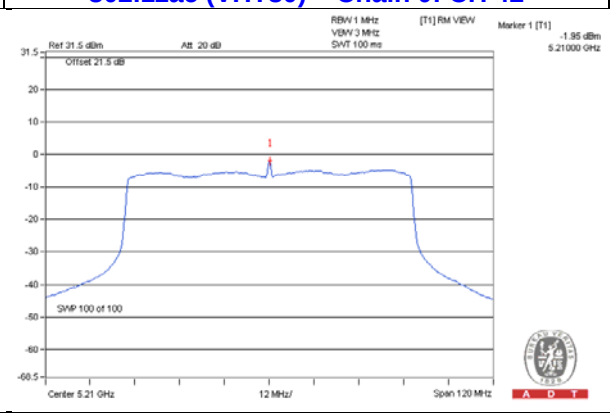
802.11ac (VHT20) – Chain 0: CH 48



802.11ac (VHT40) – Chain 1: CH 46



802.11ac (VHT80) – Chain 0: CH 42



For U-NII-3 Band

CDD Mode

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
802.11a								
0	149	5745	-2.25	-0.03	4.77	4.74	27.46	Pass
	157	5785	2.25	4.47	4.77	9.24	27.46	Pass
	165	5825	-0.02	2.20	4.77	6.97	27.46	Pass
1	149	5745	-2.20	0.02	4.77	4.79	27.46	Pass
	157	5785	1.68	3.90	4.77	8.67	27.46	Pass
	165	5825	-1.66	0.56	4.77	5.33	27.46	Pass
2	149	5745	-1.68	0.54	4.77	5.31	27.46	Pass
	157	5785	2.71	4.93	4.77	9.70	27.46	Pass
	165	5825	0.31	2.53	4.77	7.30	27.46	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.54dBi > 6dBi , so the power density limit shall be reduced to 30-(8.54-6) = 27.46dBm.

Beamforming Mode

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
802.11ac (VHT20)								
0	149	5745	-3.94	-1.72	4.77	3.05	27.46	Pass
	157	5785	0.62	2.84	4.77	7.61	27.46	Pass
	165	5825	-1.34	0.88	4.77	5.65	27.46	Pass
1	149	5745	-3.94	-1.72	4.77	3.05	27.46	Pass
	157	5785	0.41	2.63	4.77	7.40	27.46	Pass
	165	5825	-2.13	0.09	4.77	4.86	27.46	Pass
2	149	5745	-3.06	-0.84	4.77	3.93	27.46	Pass
	157	5785	1.37	3.59	4.77	8.36	27.46	Pass
	165	5825	-0.61	1.61	4.77	6.38	27.46	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.54dBi > 6dBi , so the power density limit shall be reduced to 30-(8.54-6) = 27.46dBm.

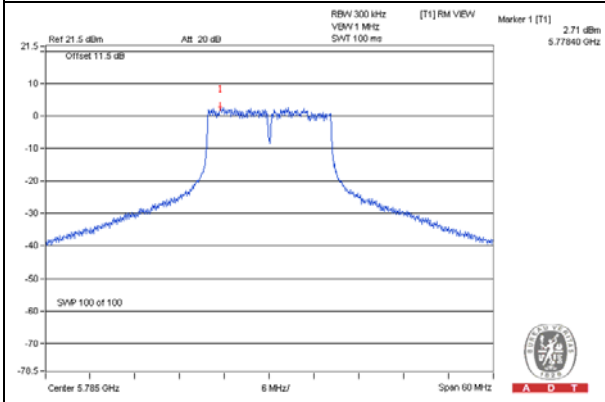
TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=3) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)					
802.11ac (VHT40)									
0	151	5755	-8.97	-6.75	4.77	0.11	-1.87	27.46	Pass
	159	5795	-4.57	-2.35	4.77	0.11	2.53	27.46	Pass
1	151	5755	-10.06	-7.84	4.77	0.11	-2.96	27.46	Pass
	159	5795	-4.91	-2.69	4.77	0.11	2.19	27.46	Pass
2	151	5755	-8.77	-6.55	4.77	0.11	-1.67	27.46	Pass
	159	5795	-3.84	-1.62	4.77	0.11	3.26	27.46	Pass
802.11ac (VHT80)									
0	155	5775	-14.77	-12.55	4.77	0.26	-7.52	27.46	Pass
1	155	5775	-13.95	-11.73	4.77	0.26	-6.70	27.46	Pass
2	155	5775	-13.91	-11.69	4.77	0.26	-6.66	27.46	Pass

Note: 1. Directional gain = Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.54dBi > 6dBi , so the power density limit shall be reduced to 30-(8.54-6) = 27.46dBm.

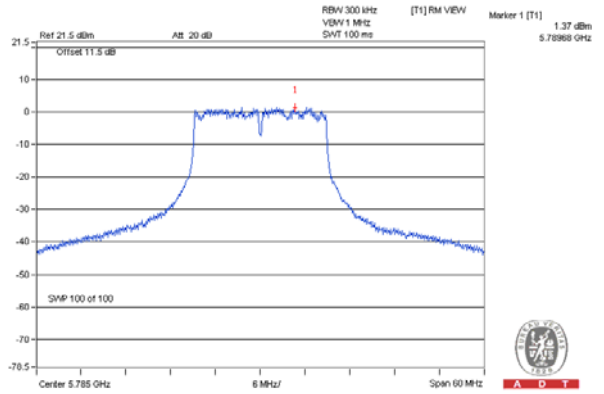
2. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

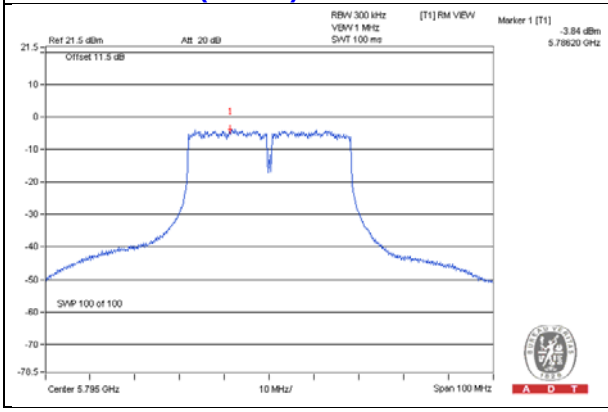
802.11a – Chain 2: CH 157



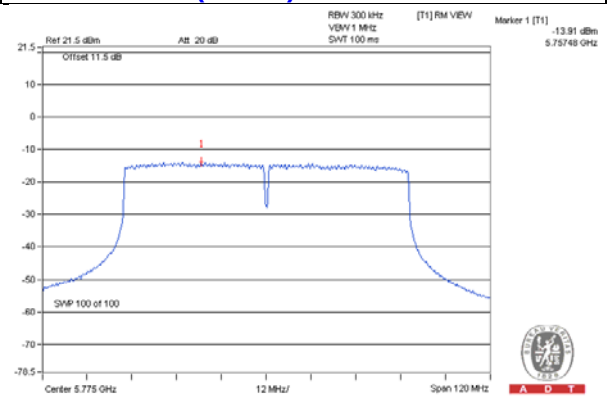
802.11ac (VHT20) – Chain 2: CH 157



802.11ac (VHT40) – Chain 2: CH 159



802.11ac (VHT80) – Chain 2: CH 155

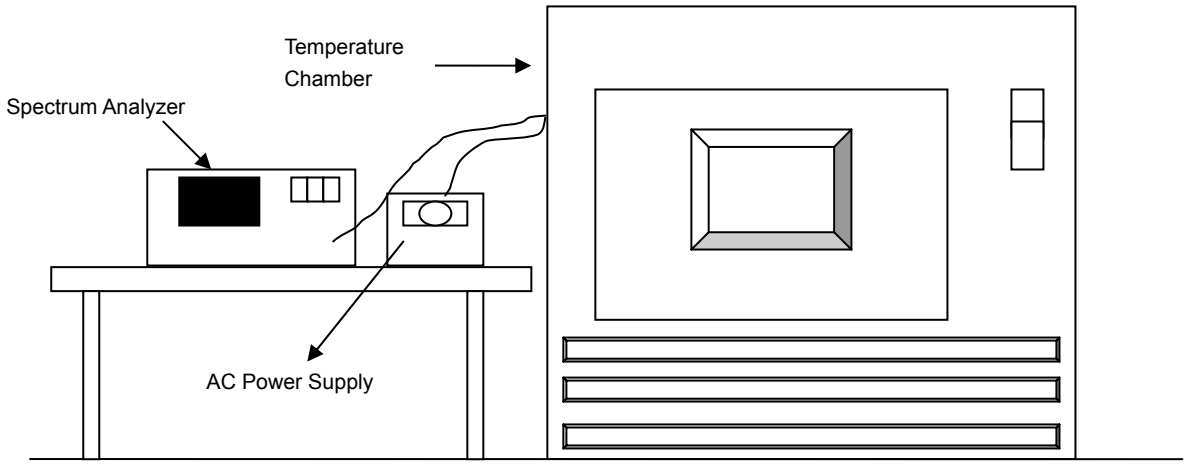


4.5 Frequency Stability Measurement

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 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: 5240MHz									
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	5240.0197	0.00038	5240.0216	0.00041	5240.0197	0.00038	5240.0227	0.00043
40	120	5240.0093	0.00018	5240.0064	0.00012	5240.008	0.00015	5240.008	0.00015
30	120	5240.018	0.00034	5240.0187	0.00036	5240.0173	0.00033	5240.0149	0.00028
20	120	5240.0111	0.00021	5240.0114	0.00022	5240.0149	0.00028	5240.0147	0.00028
10	120	5240.0035	0.00007	5240.0053	0.00010	5240.0013	0.00002	5240.0021	0.00004
0	120	5239.984	-0.00031	5239.9838	-0.00031	5239.9848	-0.00029	5239.9802	-0.00038
-10	120	5240.009	0.00017	5240.0084	0.00016	5240.0081	0.00015	5240.0115	0.00022
-20	120	5240.0219	0.00042	5240.0225	0.00043	5240.0233	0.00044	5240.0206	0.00039
-30	120	5240.0165	0.00031	5240.0201	0.00038	5240.0156	0.00030	5240.0185	0.00035

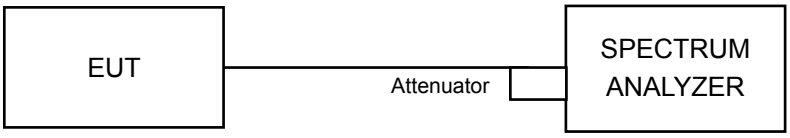
FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5240MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5240.0101	0.00019	5240.0111	0.00021	5240.0153	0.00029	5240.0147	0.00028
	120	5240.0111	0.00021	5240.0114	0.00022	5240.0149	0.00028	5240.0147	0.00028
	102	5240.0114	0.00022	5240.0108	0.00021	5240.0141	0.00027	5240.0156	0.00030

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

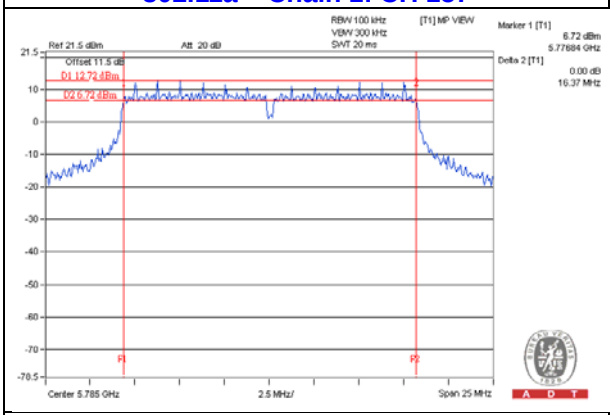
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
802.11a						
149	5745	16.39	16.41	16.41	0.5	Pass
157	5785	16.40	16.37	16.40	0.5	Pass
165	5825	16.41	16.40	16.41	0.5	Pass

Beanforming Mode

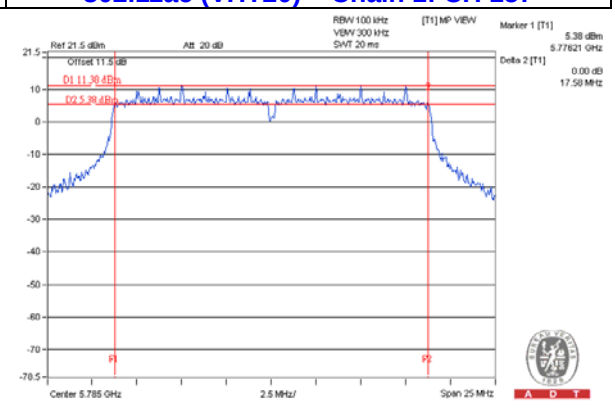
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
802.11ac (VHT20)						
149	5745	17.61	17.62	17.66	0.5	Pass
157	5785	17.63	17.58	17.64	0.5	Pass
165	5825	17.63	17.62	17.60	0.5	Pass
802.11ac (VHT40)						
151	5755	36.40	36.43	35.43	0.5	Pass
159	5795	36.13	35.78	36.08	0.5	Pass
802.11ac (VHT80)						
155	5775	75.93	75.89	75.87	0.5	Pass

SPECTRUM PLOT OF WORST VALUE

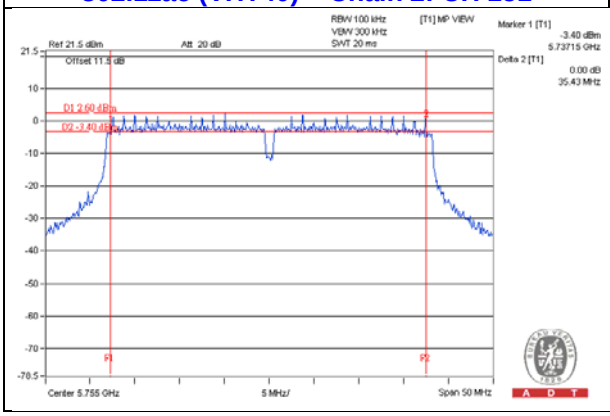
802.11a – Chain 1: CH 157



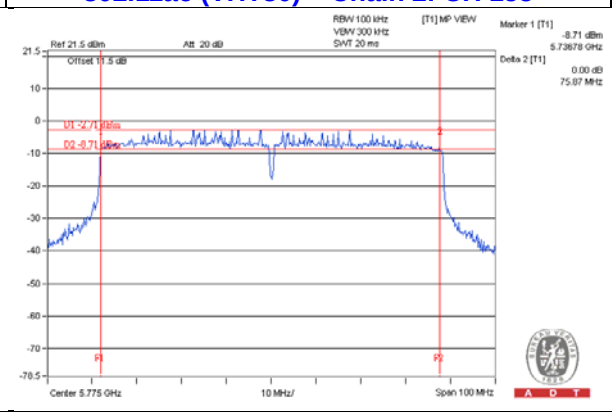
802.11ac (VHT20) – Chain 1: CH 157



802.11ac (VHT40) – Chain 2: CH 151



802.11ac (VHT80) – Chain 2: CH 155



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
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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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