

FCC Test Report

Report No.: RF150731D07

FCC ID: PY312400216

Test Model: D6200xxxxx
(The "x" in the model name can be 0 to 9, A to Z or blank, for marketing purpose)

Series Model: D6400

Received Date: Jul. 31, 2015

Test Date: Aug. 4 ~ Oct. 15, 2015

Issued Date: Oct. 15, 2015

Applicant: NETGEAR INC.

Address: 350 East Plumeria Drive, San Jose, CA 95134, USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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A D T

Release Control Record

Issue No.	Description	Date Issued
RF150731D07	Original release.	Oct. 15, 2015

1 Certificate of Conformity

Product: D6200 WiFi Modem Router

Brand: NETGEAR

Test Model: D6200xxxxx
(The "x" in the model name can be 0 to 9, A to Z or blank, for marketing purpose)

Series Model: D6400

Sample Status: Engineering sample

Applicant: NETGEAR INC.

Test Date: Aug. 4 ~ Oct. 15, 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 :



(Celia Chen / Supervisor)

, Date: Oct. 15, 2015

Approved by :



(Rex Lai / Assistant Manager)

, Date: Oct. 15, 2015

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -11.14dB at 0.29462MHz.
15.407(b)(1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 5714.99MHz, 5725.00MHz, 5860.01MHz.
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 not a standard connector.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	3.43 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1000MHz	4.00 dB
Radiated Emissions above 1 GHz	1GHz ~ 40GHz	3.36 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	D6200 WiFi Modem Router
Brand	NETGEAR
Test Model	D6200xxxxx (The "x" in the model name can be 0 to 9, A to Z or blank, for marketing purpose)
Series Model	D6400
Model Difference	For marketing purpose
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from Adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only.
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	5745 ~ 5825MHz
Number of Channel	5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	CDD Mode: 414.099mW Beamforming_NSS1 Mode: 414.099mW
Antenna Type	Refer to note 2 as below
Antenna Connector	Refer to note 2 as below
Accessory Device	Adapter
Data Cable Supplied	Non-shielded DC cable (1.8m) Non-shielded DS RJ11 cable (1.5m) Non-shielded HL RJ11 cable (1.5m) Shielded RJ45 cable (1.5m) Non-shielded RJ45 cable (1.5m)

Note:

1. This supplementary report is issued for upgrading the standard version to new rules for U-NII-3 Band only, therefore the EUT is re-tested in this report.
2. The EUT support the following antenna:

5G_Antenna	Brand	Model	Antenna Type	Antenna Connector	Gain (dBi)
1	WNC	D6200	PCB	I-PEX	4.70
2	WNC	D6200	PCB	I-PEX	3.94

3. The EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX Function	
	5.0GHz (Non-Beamforming)	5.0GHz (Beamforming)
802.11a	1TX	-
802.11n (HT20)	2TX	-
802.11n (HT40)	2TX	-
802.11ac (VHT20)	2TX	2TX
802.11ac (VHT40)	2TX	2TX
802.11ac (VHT80)	2TX	2TX

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

4. The EUT uses following adapter.

Adapter	1	2
Brand	NETGEAR	NETGEAR
Model	2ABL030F NA	ADS-40FPA-12 12030GPCU
P/N	332-10756-01	332-10757-01
AC Input Power	100-240V, 50/60Hz, 1.0A	100-240V, 50/60Hz, 1.0A
DC Output Power	12V, 2.5A	12V, 2.5A

After pre-tested above adapters, **adapter 2** was selected as a representative one and therefore only its test data was recorded in this report.

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

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 ³ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE³1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

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						
EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
Beamforming_NSS1 MODE						
EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	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.

CDD MODE						
EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	157	OFDM	BPSK	6.0

Power Line Conducted Emission Test:

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

CDD MODE						
EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	157	OFDM	BPSK	6.0

Antenna Port Conducted Measurement:

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

CDD MODE						
EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	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
Beamforming_NSS1 MODE						
EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	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	TESTED BY
RE ³ 1G	27deg. C, 73%RH	120Vac, 60Hz	Aaron You
RE<1G	27deg. C, 73%RH	120Vac, 60Hz	Aaron You
PLC	25deg. C, 66%RH	120Vac, 60Hz	Dalen Dai
APCM	25deg. C, 60%RH	120Vac, 60Hz	Saxon Lee

3.3 Duty Cycle of Test Signal

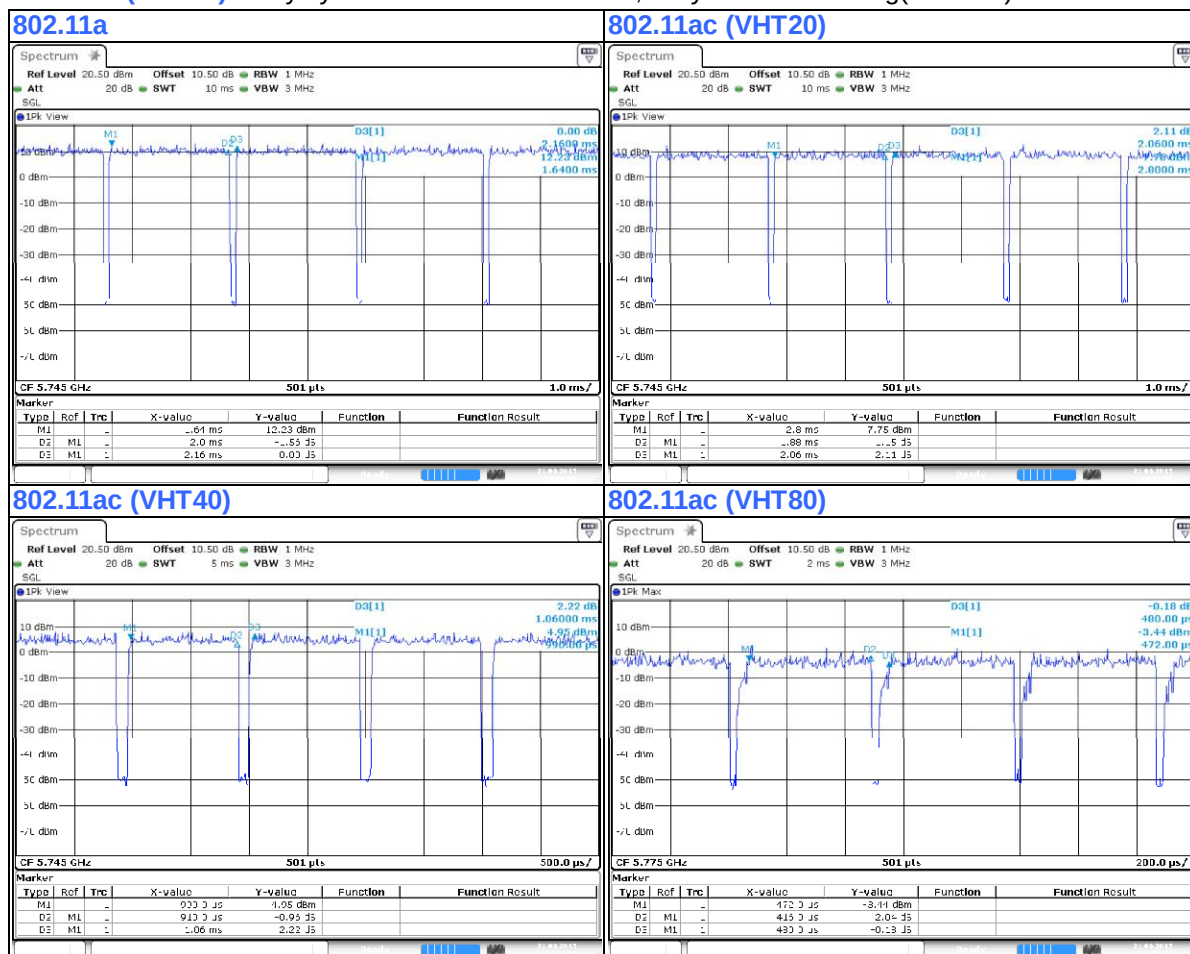
Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = $2.0/2.16 = 0.926$, Duty factor = $10 * \log(1/0.926) = 0.33$

802.11ac (VHT20): Duty cycle = $1.88/2.06 = 0.913$, Duty factor = $10 * \log(1/0.913) = 0.40$

802.11ac (VHT40): Duty cycle = $0.91/1.06 = 0.858$, Duty factor = $10 * \log(1/0.858) = 0.66$

802.11ac (VHT80): Duty cycle = $0.416/0.480 = 0.867$, Duty factor = $10 * \log(1/0.867) = 0.62$



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.	AC ADAPTER	NETGEAR	ADS-40FPA-12 12030GPCU	N/A	FCC DoC Approved	Supplied by client
B.	USB 3.0 Flash Drive	HP	v250w	N/A	FCC DoC Approved	Provided by Lab
C.	LAN Load*4	N/A	N/A	N/A	N/A	Provided by Lab
D.	RJ11 Load	N/A	N/A	N/A	N/A	Provided by Lab
E.	Notebook PC	DELL	PP27L	8SNZ12S	FCC DoC Approved	Provided by Lab
F.	Notebook PC	DELL	E6530	9331GV1	FCC DoC Approved	Provided by Lab

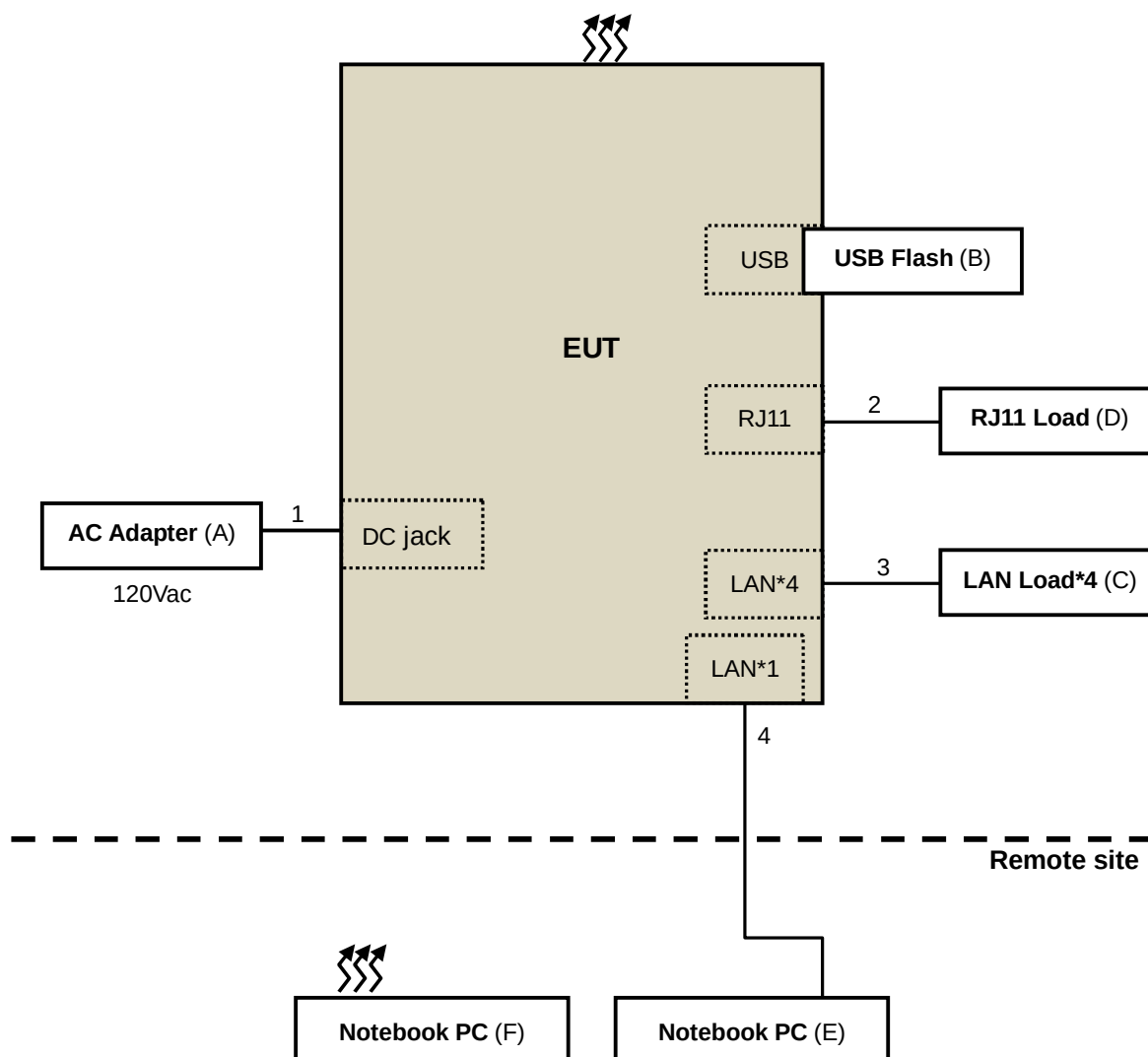
Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Items E~F acted as communication partners to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	1.8	N	0	Supplied by client
2.	RJ11 cable	1	1.5	N	0	Supplied by client
3.	RJ45 cable	4	1.8	N	0	Provided by Lab
4.	RJ45 cable	1	10	N	0	Provided by Lab

Note: The core(s) is(are) originally attached to the cable(s).

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:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 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 (dBuV/m)	AV:54 (dBuV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBuV/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(dBuV/m) ^{*1} PK:78.2 (dBuV/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:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 26, 2015	Feb. 25, 2016
HP Preamplifier	8449B	3008A01201	Feb. 26, 2015	Feb. 25, 2016
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Mar. 01, 2015	Feb. 28, 2016
Agilent Spectrum	E4446A	MY51100050	Oct. 24, 2014	Oct. 23, 2015
Agilent TEST RECEIVER	N9038A	MY51210129	Jan. 20, 2015	Jan. 19, 2016
Schwarzbeck Antenna	VULB 9168	139	Feb. 04, 2015	Feb. 03, 2016
Schwarzbeck Antenna	VHBA 9123	480	May 29, 2015	May 28, 2017
Schwarzbeck Horn Antenna	BBHA-9170	212	Feb. 09, 2015	Feb. 08, 2016
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Feb. 10, 2015	Feb. 09, 2016
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.4	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF104	CABLE-CH6	Aug. 15, 2015	Aug. 14, 2016
SUHNER RF cable With 3dB PAD	SF102	Cable-CH8-3.6m	Aug. 15, 2015	Aug. 14, 2016
EMCO Horn Antenna	3115	00028257	Feb. 05, 2015	Feb. 04, 2016
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 23, 2015	Sep. 22, 2016
Anritsu Power Sensor	MA2411B	0738404	Apr. 21, 2015	Apr. 20, 2016
Anritsu Power Meter	ML2495A	0842014	Apr. 21, 2015	Apr. 20, 2016

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
 2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in Chamber No. 6.
 4. The Industry Canada Reference No. IC 7450E-6.
 5. The FCC Site Registration No. is 447212.

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:

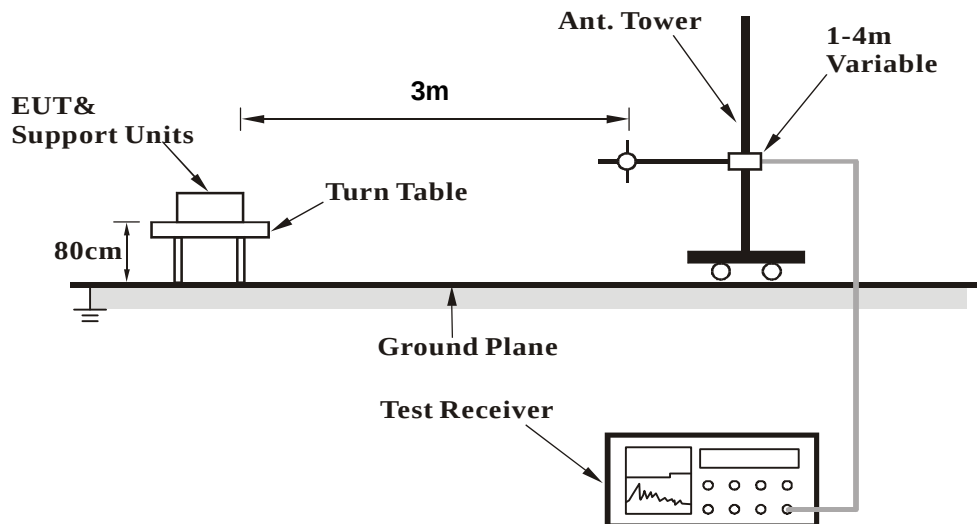
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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 ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) 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

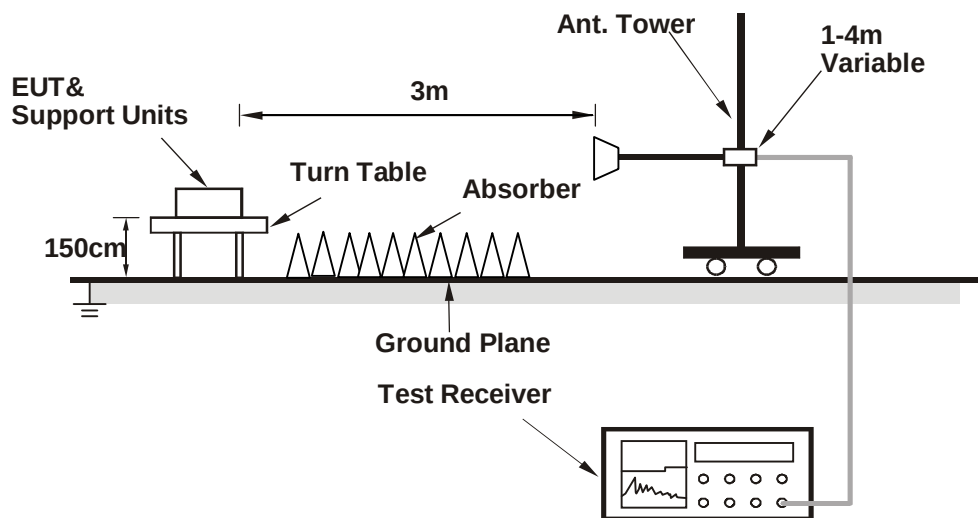
No deviation.

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

- Placed the EUT on the testing table.
- Prepared notebooks to act as communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".
- The necessary accessories enable the system in full functions.

4.1.7 Test Results

Above 1GHz Data :

CDD MODE

802.11a

CHANNEL	TX Channel 149	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	#5714.99	63.3 PK	68.2	-4.9	1.58 H	332	58.67	4.61
2	#5725.00	74.4 PK	78.2	-3.8	1.58 H	332	69.77	4.61
3	*5745.00	104.4 PK			1.58 H	332	99.74	4.66
4	*5745.00	94.3 AV			1.58 H	332	89.59	4.66
5	11490.00	57.8 PK	74.0	-16.2	1.02 H	231	44.12	13.66
6	11490.00	44.2 AV	54.0	-9.8	1.02 H	231	30.53	13.66
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.99	67.4 PK	68.2	-0.8	1.96 V	277	62.78	4.61
2	#5725.00	78.0 PK	78.2	-0.2	1.96 V	277	73.34	4.61
3	*5745.00	108.4 PK			1.96 V	277	103.78	4.66
4	*5745.00	99.0 AV			1.96 V	277	94.32	4.66
5	11490.00	60.9 PK	74.0	-13.1	1.39 V	137	47.25	13.66
6	11490.00	48.2 AV	54.0	-5.8	1.39 V	137	34.54	13.66

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.
- " # ": 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	*5785.00	108.8 PK			1.30 H	333	104.04	4.72
2	*5785.00	98.6 AV			1.30 H	333	93.83	4.72
3	11570.00	63.9 PK	74.0	-10.1	1.18 H	229	50.02	13.90
4	11570.00	50.5 AV	54.0	-3.5	1.18 H	229	36.64	13.90
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	*5785.00	113.5 PK			1.78 V	270	108.74	4.72
2	*5785.00	102.9 AV			1.78 V	270	98.20	4.72
3	11570.00	64.9 PK	74.0	-9.1	1.00 V	137	51.01	13.90
4	11570.00	52.8 AV	54.0	-1.2	1.00 V	137	38.89	13.90

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.

CHANNEL	TX Channel 165	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	*5825.00	108.3 PK			1.50 H	334	103.53	4.79
2	*5825.00	98.7 AV			1.50 H	334	93.90	4.79
3	#5850.00	77.7 PK	78.2	-0.5	1.50 H	334	72.89	4.80
4	#5860.01	65.1 PK	68.2	-3.1	1.50 H	334	60.27	4.82
5	11650.00	61.8 PK	74.0	-12.2	1.17 H	228	48.24	13.56
6	11650.00	48.8 AV	54.0	-5.2	1.17 H	228	35.21	13.56
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	*5825.00	109.1 PK			1.81 V	282	104.31	4.79
2	*5825.00	99.5 AV			1.81 V	282	94.71	4.79
3	#5850.00	77.9 PK	78.2	-0.3	1.81 V	282	73.09	4.80
4	#5860.01	66.6 PK	68.2	-1.6	1.81 V	282	61.80	4.82
5	11650.00	62.9 PK	74.0	-11.1	1.30 V	142	49.38	13.56
6	11650.00	51.1 AV	54.0	-2.9	1.30 V	142	37.55	13.56

REMARKS:

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

Beamforming_NSS1 MODE

802.11ac (VHT20)

CHANNEL	TX Channel 149	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	#5714.99	64.1 PK	68.2	-4.1	1.85 H	38	58.65	5.48
2	#5725.00	75.8 PK	78.2	-2.4	1.85 H	38	70.26	5.49
3	*5745.00	105.4 PK			1.85 H	28	99.81	5.54
4	*5745.00	94.9 AV			1.85 H	28	89.33	5.54
5	11490.00	59.1 PK	74.0	-14.9	1.27 H	263	42.04	17.04
6	11490.00	45.2 AV	54.0	-8.8	1.27 H	263	28.18	17.04
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	#5714.99	66.6 PK	68.2	-1.6	1.77 V	261	61.12	5.48
2	#5725.00	77.9 PK	78.2	-0.3	1.77 V	261	72.38	5.49
3	*5745.00	109.4 PK			1.77 V	261	103.81	5.54
4	*5745.00	97.8 AV			1.77 V	261	92.21	5.54
5	11490.00	64.8 PK	74.0	-9.3	1.14 V	202	47.71	17.04
6	11490.00	51.7 AV	54.0	-2.3	1.14 V	202	34.63	17.04

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.
- " # ": 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	*5785.00	110.5 PK			1.65 H	313	104.85	5.62
2	*5785.00	100.4 AV			1.65 H	313	94.74	5.62
3	11570.00	65.9 PK	74.0	-8.1	1.25 H	225	48.83	17.11
4	11570.00	51.7 AV	54.0	-2.3	1.25 H	225	34.58	17.11
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	115.8 PK			1.89 V	307	110.20	5.62
2	*5785.00	104.4 AV			1.89 V	307	98.73	5.62
3	11570.00	69.7 PK	74.0	-4.3	1.58 V	179	52.57	17.11
4	11570.00	53.6 AV	54.0	-0.4	1.58 V	179	36.52	17.11

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.

CHANNEL	TX Channel 165	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	*5825.00	107.6 PK			1.75 H	312	101.92	5.71
2	*5825.00	98.3 AV			1.75 H	312	92.56	5.71
3	#5850.00	77.6 PK	78.2	-0.6	1.75 H	312	71.83	5.74
4	#5860.01	66.4 PK	68.2	-1.8	1.75 H	312	60.61	5.77
5	11650.00	62.7 PK	74.0	-11.3	1.30 H	144	46.11	16.59
6	11650.00	48.6 AV	54.0	-5.4	1.30 H	144	32.05	16.59
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	110.0 PK			1.85 V	288	104.28	5.71
2	*5825.00	99.2 AV			1.85 V	288	93.52	5.71
3	#5850.00	77.9 PK	78.2	-0.3	1.85 V	288	72.17	5.74
4	#5860.01	67.7 PK	68.2	-0.5	1.85 V	288	61.90	5.77
5	11650.00	66.0 PK	74.0	-8.0	1.29 V	194	49.45	16.59
6	11650.00	52.4 AV	54.0	-1.6	1.29 V	194	35.77	16.59

REMARKS:

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

802.11ac (VHT40)

CHANNEL	TX Channel 151	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	#5714.99	67.6 PK	68.2	-0.6	2.01 H	212	62.13	5.48
2	#5725.00	73.6 PK	78.2	-4.6	2.01 H	212	68.07	5.49
3	*5755.00	104.0 PK			2.01 H	212	98.41	5.56
4	*5755.00	92.7 AV			2.01 H	212	87.14	5.56
5	11510.00	64.1 PK	74.0	-10.0	1.17 H	246	46.97	17.08
6	11510.00	50.1 AV	54.0	-4.0	1.17 H	246	32.97	17.08
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.99	67.9 PK	68.2	-0.3	1.80 V	284	62.45	5.48
2	#5725.00	76.7 PK	78.2	-1.5	1.80 V	284	71.21	5.49
3	*5755.00	105.7 PK			1.80 V	284	100.09	5.56
4	*5755.00	94.5 AV			1.80 V	284	88.93	5.56
5	11510.00	64.3 PK	74.0	-9.7	1.03 V	347	47.18	17.08
6	11510.00	50.6 AV	54.0	-3.4	1.03 V	347	33.51	17.08

REMARKS:

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

CHANNEL	TX Channel 159	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	*5795.00	105.1 PK			1.90 H	225	99.46	5.64
2	*5795.00	95.3 AV			1.90 H	225	89.67	5.64
3	#5850.00	67.1 PK	78.2	-11.1	1.90 H	225	61.37	5.74
4	#5860.01	64.7 PK	68.2	-3.5	1.90 H	225	58.94	5.77
5	11590.00	60.8 PK	74.0	-13.2	1.64 H	142	43.63	17.13
6	11590.00	45.7 AV	54.0	-8.3	1.64 H	142	28.57	17.13
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	108.3 PK			1.73 V	289	102.63	5.64
2	*5795.00	96.7 AV			1.73 V	289	91.09	5.64
3	#5850.00	69.3 PK	78.2	-8.9	1.73 V	289	63.56	5.74
4	#5860.01	67.9 PK	68.2	-0.3	1.73 V	289	62.14	5.77
5	11590.00	67.1 PK	74.0	-6.9	1.04 V	198	49.93	17.13
6	11590.00	49.8 AV	54.0	-4.2	1.04 V	198	32.67	17.13

REMARKS:

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

802.11ac (VHT80)

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	#5714.99	66.9 PK	68.2	-1.3	1.75 H	39	61.46	5.48
2	#5725.00	71.2 PK	78.2	-7.0	1.75 H	39	65.71	5.49
3	*5775.00	103.0 PK			1.75 H	39	97.38	5.61
4	*5775.00	89.2 AV			1.75 H	39	83.58	5.61
5	#5850.00	68.7 PK	78.2	-9.5	1.75 H	39	62.99	5.74
6	#5860.01	65.2 PK	68.2	-3.0	1.75 H	39	59.42	5.77
7	11550.00	56.7 PK	74.0	-17.3	1.06 H	217	39.56	17.10
8	11550.00	44.3 AV	54.0	-9.8	1.06 H	217	27.15	17.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.99	68.0 PK	68.2	-0.2	1.79 V	247	62.49	5.48
2	#5725.00	73.8 PK	78.2	-4.4	1.79 V	247	68.29	5.49
3	*5775.00	104.5 PK			1.79 V	247	98.93	5.61
4	*5775.00	95.2 AV			1.79 V	247	89.55	5.61
5	#5850.00	70.5 PK	78.2	-7.7	1.79 V	247	64.73	5.74
6	#5860.01	68.0 PK	68.2	-0.2	1.79 V	247	62.18	5.77
7	11550.00	60.3 PK	74.0	-13.7	1.24 V	256	43.17	17.10
8	11550.00	45.5 AV	54.0	-8.5	1.24 V	256	28.39	17.10

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.
- " # ": 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	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	70.45	30.6 QP	40.0	-9.4	4.00 H	255	46.09	-15.47
2	142.91	33.1 QP	43.5	-10.4	4.00 H	93	47.06	-13.96
3	291.32	29.9 QP	46.0	-16.1	3.44 H	64	42.04	-12.18
4	374.98	31.6 QP	46.0	-14.4	2.86 H	251	41.98	-10.35
5	500.01	36.0 QP	46.0	-10.0	1.77 H	0	43.73	-7.69
6	875.02	33.0 QP	46.0	-13.0	1.00 H	139	34.41	-1.38
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	43.47	32.7 QP	40.0	-7.3	1.18 V	86	46.70	-14.03
2	146.88	33.4 QP	43.5	-10.1	1.00 V	114	47.06	-13.64
3	333.37	34.3 QP	46.0	-11.7	1.62 V	279	45.47	-11.16
4	447.92	34.2 QP	46.0	-11.8	1.88 V	241	42.95	-8.73
5	625.04	35.2 QP	46.0	-10.8	2.11 V	246	40.15	-4.99
6	999.99	39.8 QP	54.0	-14.2	2.20 V	354	39.01	0.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	838251/021	Oct. 27, 2014	Oct. 26, 2015
ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ENV216	101195	Apr. 27, 2015	Apr. 26, 2016
LISN With Adapter (for EUT)	AD10	C03Ada-002	Apr. 27, 2015	Apr. 26, 2016
EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	Jul. 27, 2015	Jul. 26, 2016
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 06, 2015	May 05, 2016
Software	Cond_V7.3.7	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C03.01	Sep. 23, 2015	Sep. 22, 2016
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-300	Jan. 19, 2015	Jan. 18, 2016
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-301	Jan. 29, 2015	Jan. 28, 2016
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 20, 2014	Nov. 19, 2015
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 20, 2014	Nov. 19, 2015

Notes: 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 Shielded Room No. 3.

3. The VCCI Site Registration No. C-274.

4.2.3 Test Procedure

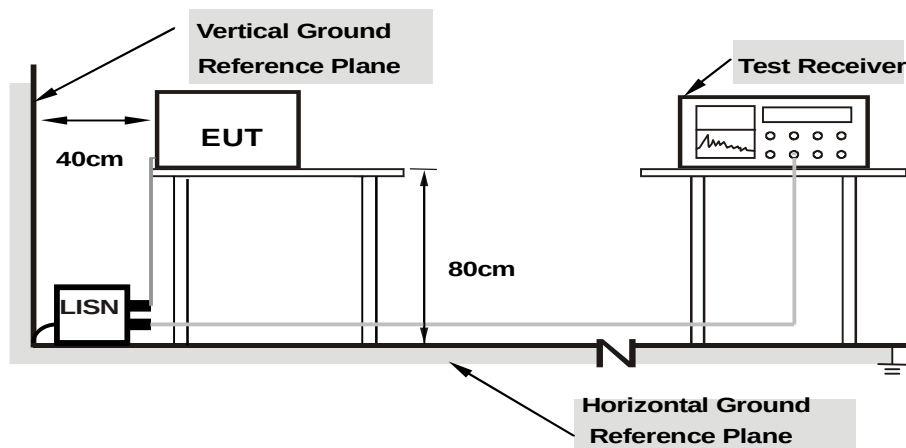
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT Operating Condition

Same as item 4.1.6.

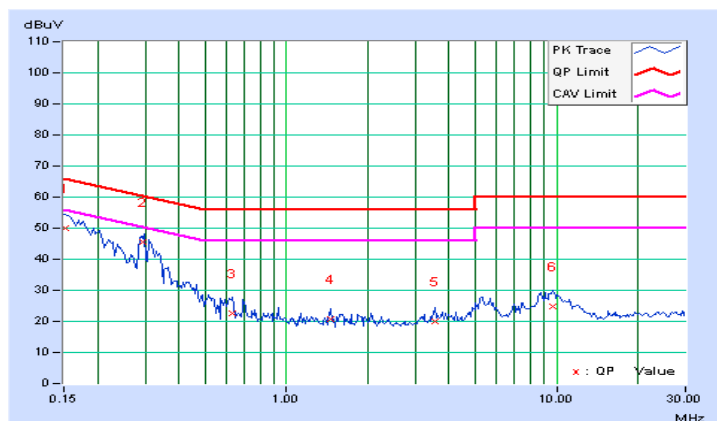
4.2.7 Test Results

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	0.15255	9.71	40.47	31.84	50.18	41.55	65.86	55.86	-15.68	-14.31
2	0.29462	9.73	35.66	29.52	45.39	39.25	60.39	50.39	-15.00	-11.14
3	0.63438	9.76	12.83	3.20	22.59	12.96	56.00	46.00	-33.41	-33.04
4	1.45703	9.82	11.07	4.26	20.89	14.08	56.00	46.00	-35.11	-31.92
5	3.53906	9.89	10.03	3.51	19.92	13.40	56.00	46.00	-36.08	-32.60
6	9.69141	10.05	14.82	10.20	24.87	20.25	60.00	50.00	-35.13	-29.75

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

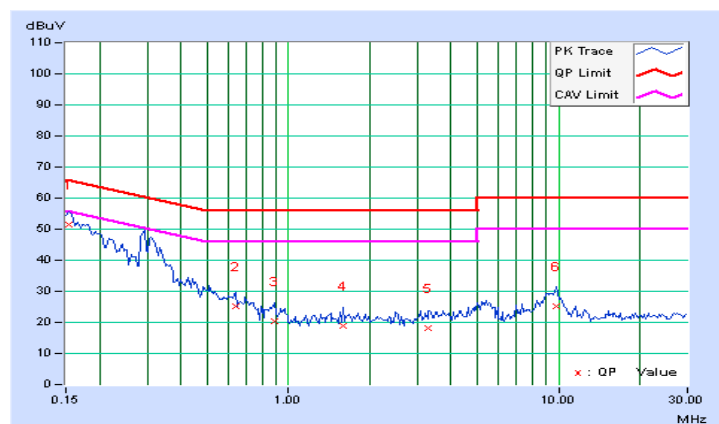


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

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	0.15391	9.66	41.81	31.99	51.47	41.65	65.79	55.79	-14.32	-14.14
2	0.63573	9.68	15.68	5.70	25.36	15.38	56.00	46.00	-30.64	-30.62
3	0.88828	9.69	10.78	2.36	20.47	12.05	56.00	46.00	-35.53	-33.95
4	1.60156	9.72	9.29	3.01	19.01	12.73	56.00	46.00	-36.99	-33.27
5	3.30859	9.77	8.49	2.89	18.26	12.66	56.00	46.00	-37.74	-33.34
6	9.75781	9.90	15.46	11.06	25.36	20.96	60.00	50.00	-34.64	-29.04

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 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 $N_{ANT} \leq 4$;

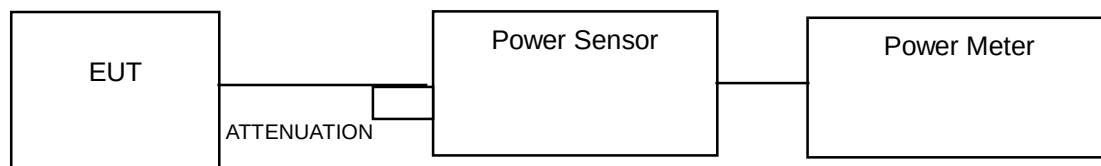
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

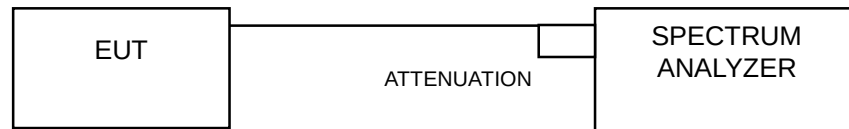
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT



FOR OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR AVERAGE POWER MEASUREMENT

For 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11n (HT40), 802.11ac (VHT40)

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

For 802.11ac (VHT80)

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

FOR OCCUPIED BANDWIDTH

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

4.3.5 Deviation 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

POWER OUTPUT:

CDD MODE

802.11a

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	17.15	17.77	111.721	20.48	30	PASS
157	5785	22.87	23.04	395.014	25.97	30	PASS
165	5825	19.16	19.71	175.955	22.45	30	PASS

802.11ac (VHT20)

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	15.37	15.53	70.162	18.46	30	PASS
157	5785	23.08	23.24	414.099	26.17	30	PASS
165	5825	17.79	17.96	122.634	20.89	30	PASS

802.11ac (VHT40)

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	15.03	15.17	64.727	18.11	30	PASS
159	5795	17.21	17.36	107.052	20.30	30	PASS

802.11ac (VHT80)

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
155	5775	14.58	14.78	58.769	17.69	30	PASS

Beamforming_NSS1 MODE

802.11ac (VHT20)

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	15.44	15.65	71.723	18.56	28.66	PASS
157	5785	23.08	23.24	414.099	26.17	28.66	PASS
165	5825	18.07	18.55	135.735	21.33	28.66	PASS

NOTE: Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{dBi} > 6 \text{dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{dBm}$.

802.11ac (VHT40)

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	15.15	15.29	66.54	18.23	28.66	PASS
159	5795	17.49	17.78	116.084	20.65	28.66	PASS

NOTE: Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{dBi} > 6 \text{dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{dBm}$.

802.11ac (VHT80)

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
155	5775	14.68	14.89	60.208	17.80	28.66	PASS

NOTE: Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{dBi} > 6 \text{dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{dBm}$.

OCCUPIED BANDWIDTH:

CDD MODE

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
149	5745	17.13	17.20	Pass
157	5785	23.40	23.10	Pass
165	5825	18.00	18.30	Pass

802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
149	5745	17.91	18.00	Pass
157	5785	21.40	21.50	Pass
165	5825	18.20	18.10	Pass

802.11ac (VHT40)

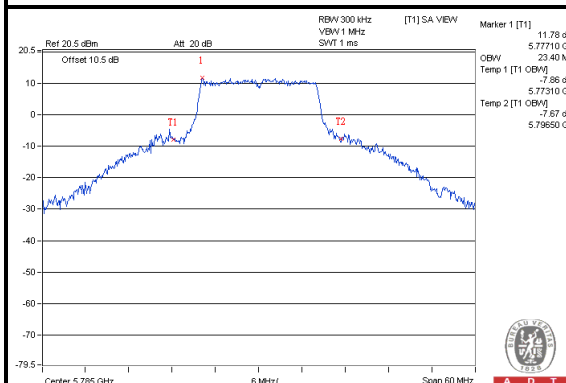
CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
151	5755	36.96	36.83	Pass
159	5795	37.50	37.50	Pass

802.11ac (VHT80)

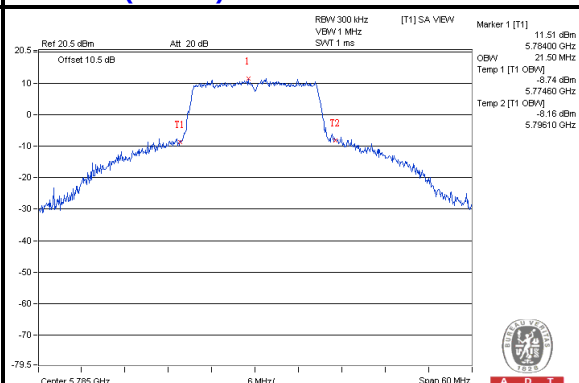
CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
155	5775	75.88	75.88	Pass

SPECTRUM PLOT OF WORST VALUE

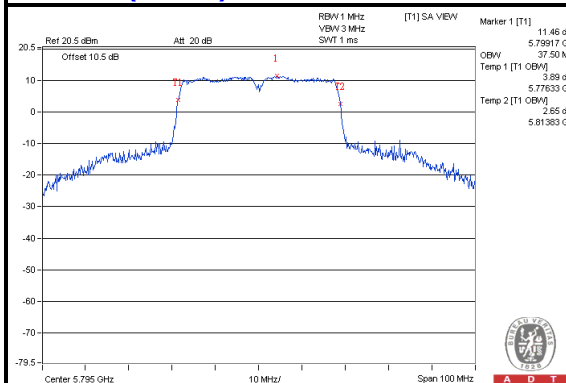
802.11a



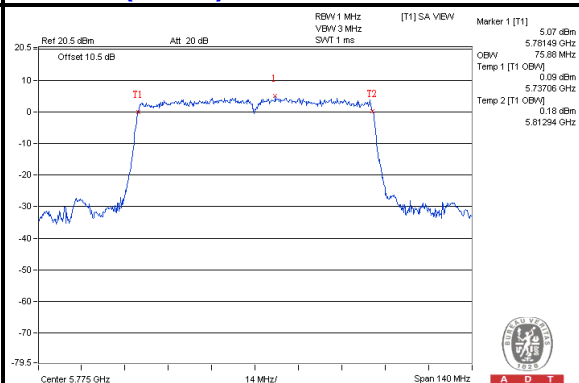
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



Beamforming_NSS1 MODE

802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
149	5745	18.00	18.00	Pass
157	5785	21.40	21.50	Pass
165	5825	18.20	18.20	Pass

802.11ac (VHT40)

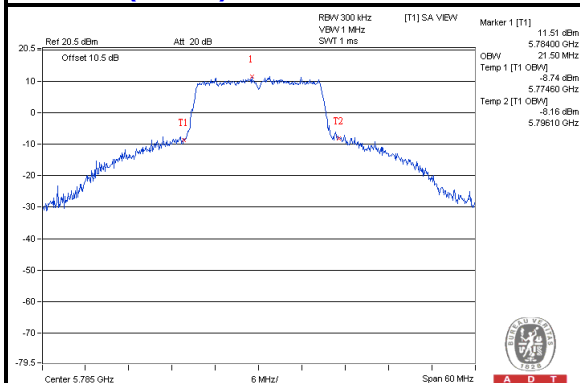
CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
151	5755	36.81	36.67	Pass
159	5795	37.17	37.17	Pass

802.11ac (VHT80)

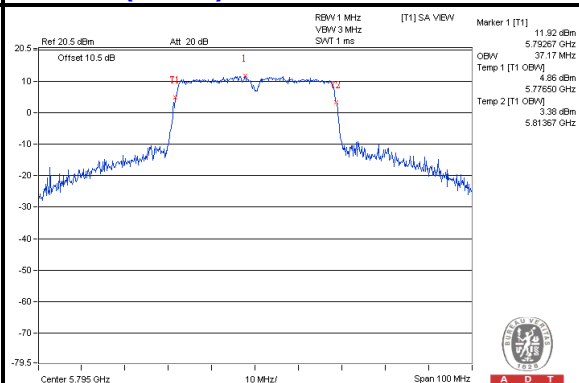
CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
155	5775	75.88	75.88	Pass

SPECTRUM PLOT OF WORST VALUE

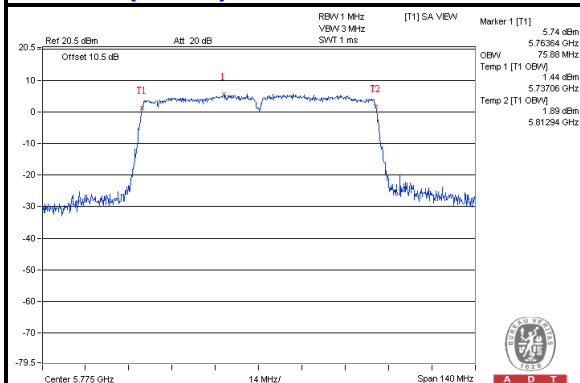
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

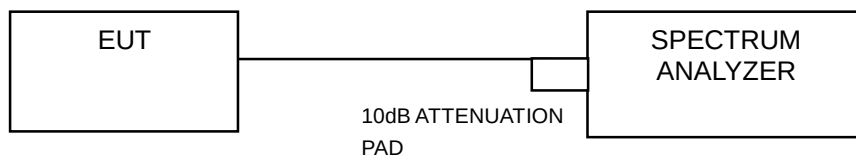


4.4 Peak Power Spectral Density Measurement

4.4.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A	---		11dBm/ MHz
U-NII-2C	---		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedure

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 500 kHz, Set VBW $\geq$ 3 RBW, 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)
- 6) 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 $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$

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

CDD MODE

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD W/O Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	10.89	3.01	13.90	0.33	14.23	28.66	PASS
	157	5785	14.33	3.01	17.34	0.33	17.67	28.66	PASS
	165	5825	13.09	3.01	16.10	0.33	16.43	28.66	PASS
1	149	5745	10.97	3.01	13.98	0.33	14.31	28.66	PASS
	157	5785	14.23	3.01	17.24	0.33	17.57	28.66	PASS
	165	5825	13.09	3.01	16.10	0.33	16.43	28.66	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{ dBi} > 6 \text{ dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD W/O Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	9.10	3.01	12.11	0.40	12.51	28.66	PASS
	157	5785	14.12	3.01	17.13	0.40	17.53	28.66	PASS
	165	5825	11.41	3.01	14.42	0.40	14.82	28.66	PASS
1	149	5745	9.09	3.01	12.10	0.40	12.50	28.66	PASS
	157	5785	14.28	3.01	17.29	0.40	17.69	28.66	PASS
	165	5825	11.73	3.01	14.74	0.40	15.14	28.66	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{ dBi} > 6 \text{ dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD W/O Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	151	5755	6.25	3.01	9.26	0.66	9.92	28.66	PASS
	159	5795	8.98	3.01	11.99	0.66	12.65	28.66	PASS
1	151	5755	6.25	3.01	9.26	0.66	9.92	28.66	PASS
	159	5795	9.47	3.01	12.48	0.66	13.14	28.66	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{ dBi} > 6 \text{ dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{ dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

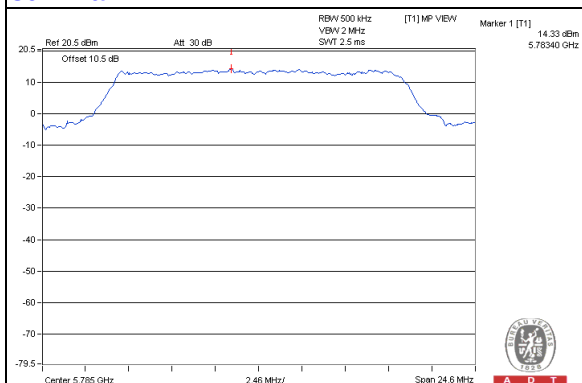
TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD W/O Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	155	5775	2.59	3.01	5.60	0.62	6.22	28.66	PASS
1	155	5775	2.70	3.01	5.71	0.62	6.33	28.66	PASS

NOTE:

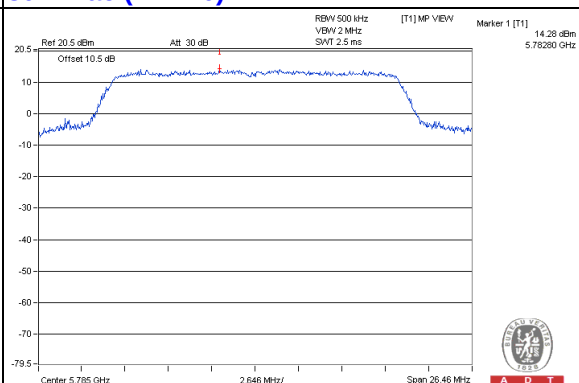
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{ dBi} > 6 \text{ dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{ dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

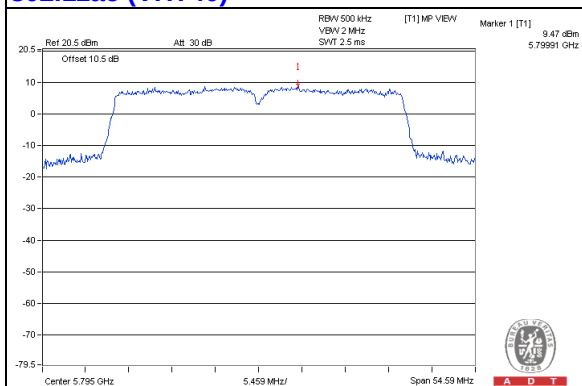
802.11a



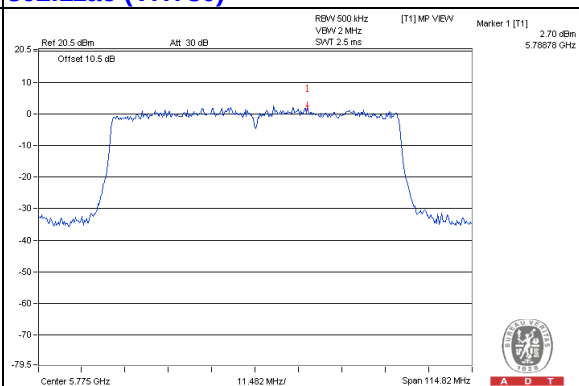
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



Beamforming_NSS1 MODE

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD W/O Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	9.94	3.01	12.95	0.40	13.35	28.66	PASS
	157	5785	14.12	3.01	17.13	0.40	17.53	28.66	PASS
	165	5825	12.22	3.01	15.23	0.40	15.63	28.66	PASS
1	149	5745	9.81	3.01	12.82	0.40	13.22	28.66	PASS
	157	5785	14.28	3.01	17.29	0.40	17.69	28.66	PASS
	165	5825	11.90	3.01	14.91	0.40	15.31	28.66	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{ dBi} > 6 \text{ dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD W/O Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	151	5755	6.65	3.01	9.66	0.66	10.32	28.66	PASS
	159	5795	9.38	3.01	12.39	0.66	13.05	28.66	PASS
1	151	5755	6.51	3.01	9.52	0.66	10.18	28.66	PASS
	159	5795	9.09	3.01	12.10	0.66	12.76	28.66	PASS

NOTE:

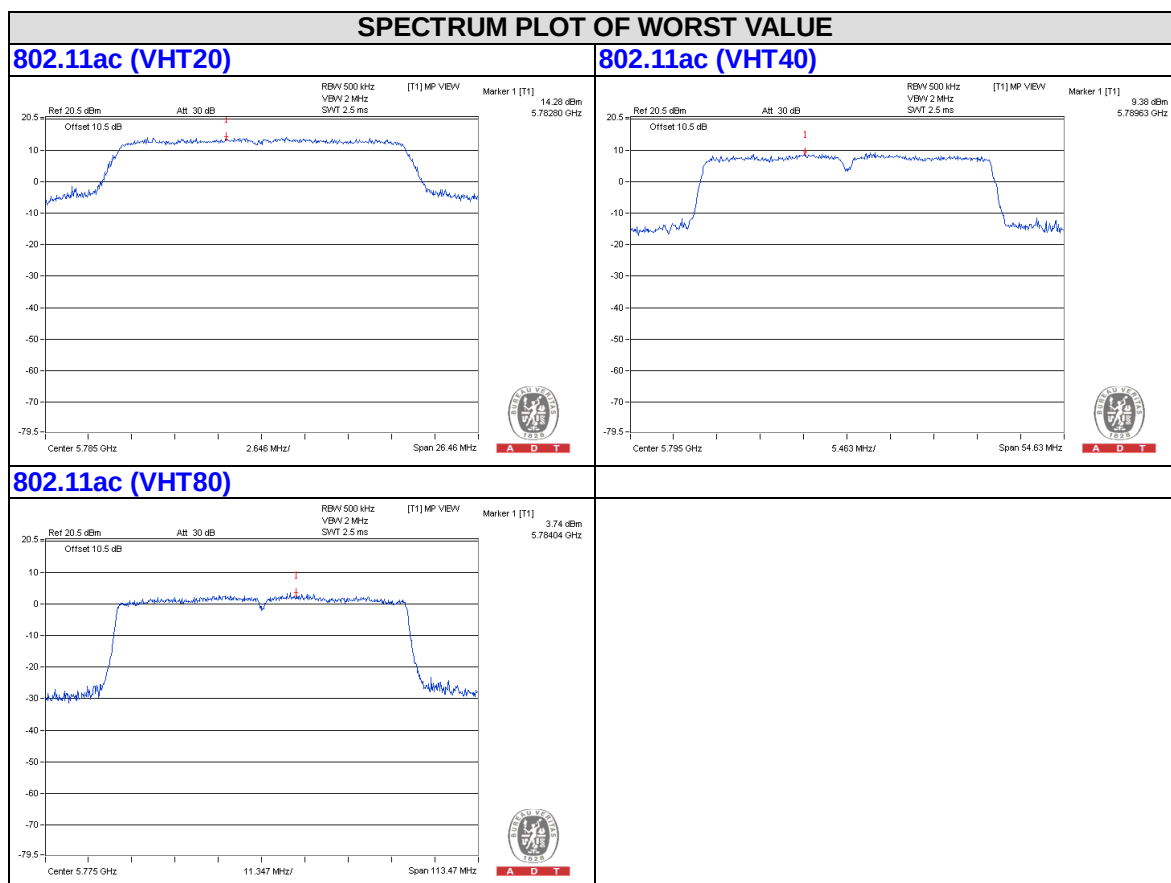
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{ dBi} > 6 \text{ dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD W/O Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	155	5775	3.74	3.01	6.75	0.62	7.37	28.66	PASS
1	155	5775	3.07	3.01	6.08	0.62	6.70	28.66	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{4.70/20} + 10^{3.94/20})^2 / 2] + 10 \log(2) = 7.34 \text{ dBi} > 6 \text{ dBi}$, so the conducted power limit shall be reduced to $30 - (7.34 - 6) = 28.66 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

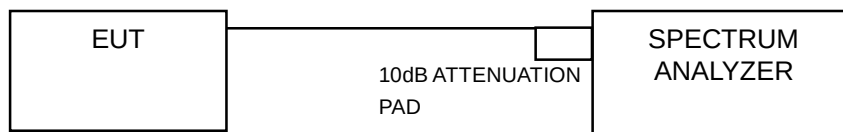


4.5 6dB Bandwidth Measurement

4.5.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

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

MEASUREMENT PROCEDURE REF

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- 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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 Test Results

CDD MODE

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.37	16.40	0.5	PASS
157	5785	16.41	16.40	0.5	PASS
165	5825	16.39	16.38	0.5	PASS

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.62	17.62	0.5	PASS
157	5785	17.62	17.64	0.5	PASS
165	5825	17.60	17.62	0.5	PASS

802.11ac (VHT40)

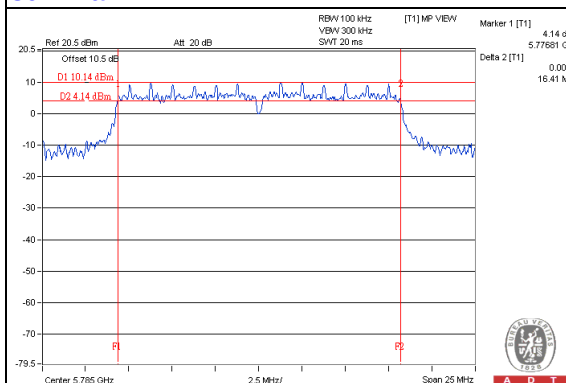
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.43	36.40	0.5	PASS
159	5795	36.40	36.39	0.5	PASS

802.11ac (VHT80)

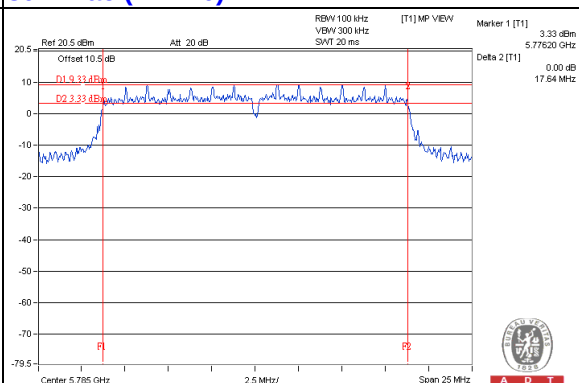
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
155	5775	76.45	76.55	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

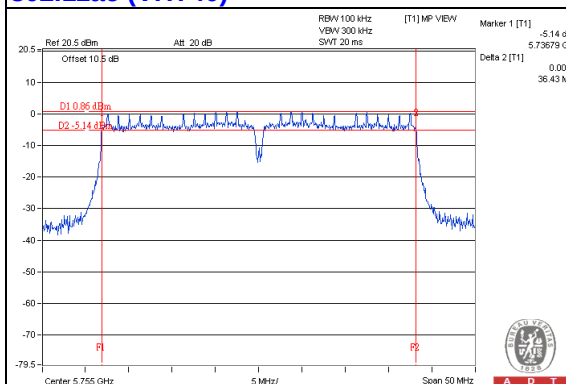
802.11a



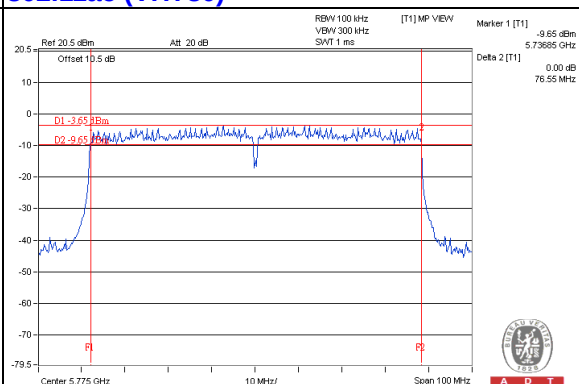
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



Beamforming_NSS1 MODE

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.61	17.64	0.5	PASS
157	5785	17.62	17.64	0.5	PASS
165	5825	17.63	17.63	0.5	PASS

802.11ac (VHT40)

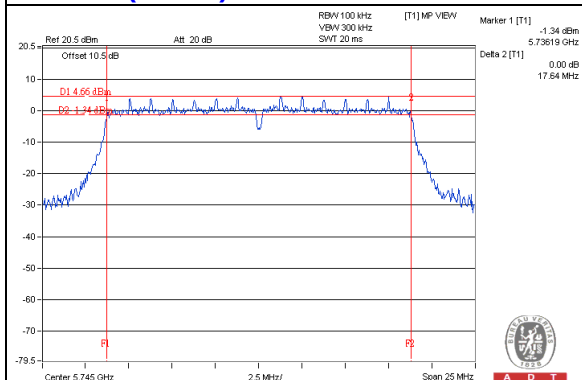
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.36	36.42	0.5	PASS
159	5795	36.42	36.40	0.5	PASS

802.11ac (VHT80)

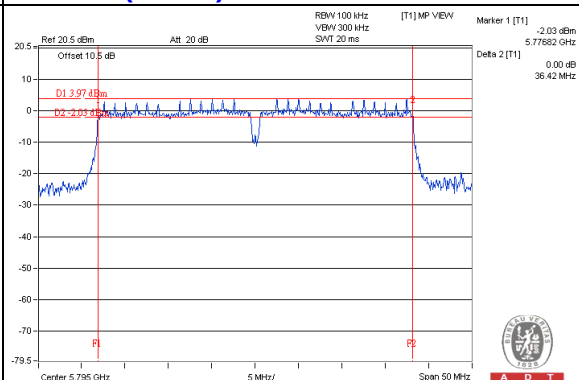
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
155	5775	75.65	75.80	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

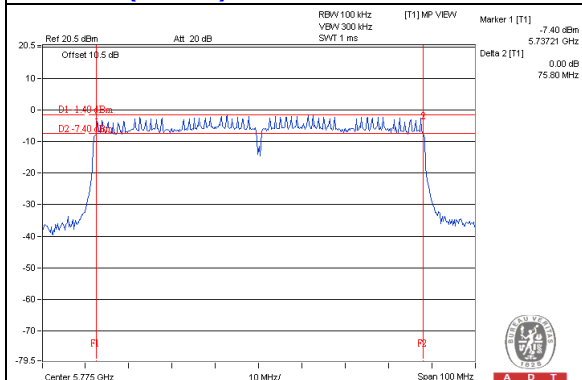
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

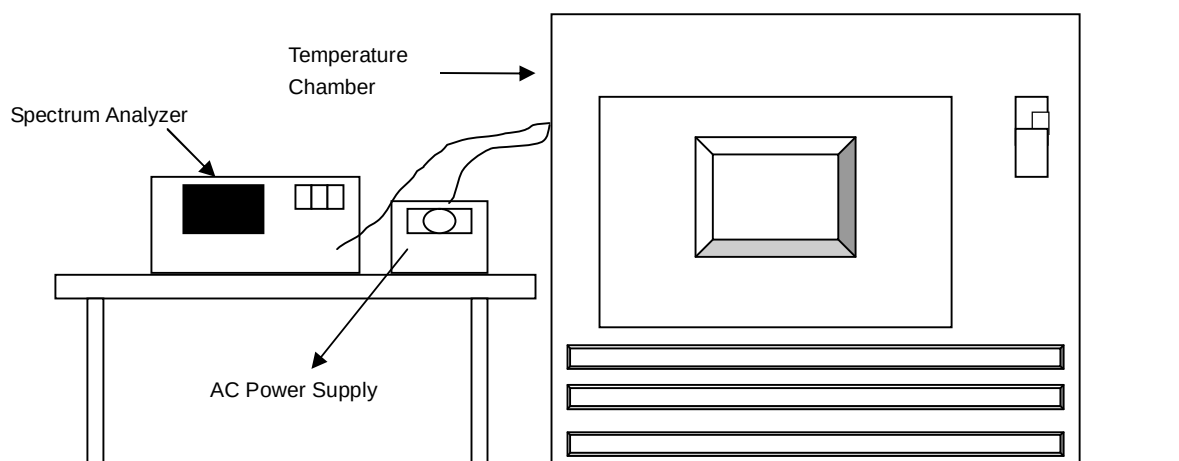


4.6 Frequency S stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- 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.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5745MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	120	5745.042955	7.4769365	5745.043293	7.5357702	5745.043060	7.4952132	5745.042842	7.4572672
40	120	5745.042361	7.3735422	5745.042721	7.4362054	5745.042929	7.4724108	5745.042435	7.3864230
30	120	5745.043475	7.5674500	5745.043546	7.5798085	5745.043506	7.5728460	5745.043576	7.5850305
20	120	5745.042527	7.4024369	5745.042532	7.4033072	5745.042528	7.4026110	5745.042583	7.4121845
10	120	5745.042949	7.4758921	5745.04274	7.4395126	5745.042884	7.4645779	5745.042808	7.4513490
0	120	5745.043498	7.5714534	5745.043391	7.5528285	5745.043658	7.5993037	5745.043393	7.5531767
-10	120	5745.043241	7.5267189	5745.042984	7.4819843	5745.043167	7.5138381	5745.043094	7.5011314
-20	120	5745.042823	7.4539600	5745.04293	7.4725849	5745.042747	7.4407311	5745.042847	7.4581375

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5745MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5745.043446	7.5624021	5745.043694	7.6055701	5745.043563	7.5827676	5745.043588	7.5871192
	120	5745.042527	7.4024369	5745.042532	7.4033072	5745.042528	7.4026110	5745.042583	7.4121845
	102	5745.042464	7.3914708	5745.042225	7.3498695	5745.042313	7.3651871	5745.042193	7.3442994

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:

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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab

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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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