FCC Test Report (WLAN 5GHz)

Report No.:	RF151111D09-4
FCC ID:	P27NA502
Test Model:	NA502
Series Model:	NA502xxxxxxxx, G450xxxxx, VeraPlusxxxxx (The “x” in model name can be 0 to 9, A to Z, blank or “-“ , for marking purpose)
Received Date:	Nov. 11, 2015
Test Date:	Nov. 16 ~ Dec. 18, 2015
Issued Date:	Dec. 25, 2015
Applicant:	Sercomm Corp.
Address:	8F, No. 3-1, YuangQu St., NanKang, Taipei 115, Taiwan, R.O.C. (NanKang Software Park)
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

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Release Control Record

Issue No.	Description	Date Issued
RF151111D09-4	Original release.	Dec. 25, 2015

1 Certificate of Conformity

Product:	Multiple RF Home Gateway
Brand:	Sercomm, MiOS
Test Model:	NA502
Series Model:	NA502xxxxxxxx, G450xxxxx, VeraPlusxxxxx (The “x” in model name can be 0 to 9, A to Z, blank or “-“ , for marking purpose)
Sample Status:	Engineering sample
Applicant:	Sercomm Corp.
Test Date:	Nov. 16 ~ Dec. 18, 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 : Annie Chang , **Date:** Dec. 25, 2015

Annie Chang / Senior Specialist

Approved by : Rex. Lai , **Date:** Dec. 25, 2015

Rex Lai / Assistant 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 -8.24 dB at 0.26328 MHz
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5714.99, 5860.01 & 11650.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is I-PEX not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.78 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	Multiple RF Home Gateway
Brand	Sercomm, MiOS
Test Model	NA502
Series Model	NA502xxxxxxxx, G450xxxxx, VeraPlusxxxxx (The “x” in model name can be 0 to 9, A to Z, blank or “-“ , for marking purpose)
Model Difference	Refer to note as below
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK 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 433Mbps
Operating Frequency	5180 ~ 5240MHz 5745 ~ 5825MHz
Number of Channel	**5180 ~ 5240MHz** 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) **5745 ~ 5825MHz** 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
Output Power	**5180 ~ 5240MHz** 99.786 mW **5745 ~ 5825MHz** 76.203mW
Antenna Type	Ant. 1: Dipole antenna with 4.0dBi gain Ant. 2: Dipole antenna with 3.8dBi gain
Antenna Connector	I-PEX connector
Accessory Device	Adapter
Data Cable Supplied	N/A

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	TX FUNCTION
802.11a	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11ac (VHT20)	2TX
802.11ac (VHT40)	2TX
802.11ac (VHT80)	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)

2. All models are listed as below.

Brand	Model	Difference
Sercomm	NA502xxxxxxxx	The “x” in model name can be 0 to 9, A to Z, blank or “-“ , for marking purpose
MiOS	G450xxxxx, VeraPlusxxxxx	

3. The EUT uses following adapter.

Adapter	1	2
Brand	APD	LEI
Model	WB-18D12FG-ELAA	MU18A2120150-C5
AC Input Power	100~240V, 0.5A, 50-60Hz	100~240V, 0.5A, 50/60Hz
DC Output Power	12V, 1.5A	12V, 1.5A
Plug Type	EU Plug	EU Plug
Power Cord	Non-shielded DC cable (1.5m)	Non-shielded DC cable (1.5m)

After pre-tested, the **Adapter 1** was the worst case, therefore, only its test data was recorded in this report.

4. 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

Radiated Emission Test (Above 1GHz):

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
-	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
-	802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
-	802.11n (HT40)		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.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT40)	5180-5240	38 to 46	46	OFDM	BPSK	13.5

Power Line Conducted Emission Test:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT40)	5180-5240	38 to 46	46	OFDM	BPSK	13.5

Antenna Port Conducted Measurement:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
-	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
-	802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
-	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	13.5
-	802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

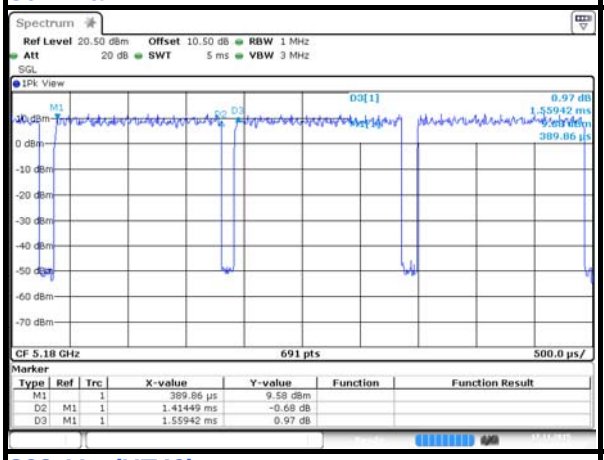
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	24deg. C, 70%RH	120Vac, 60Hz	Aaron You
RE<1G	24deg. C, 70%RH	120Vac, 60Hz	Aaron You
PLC	27deg. C, 81%RH	120Vac, 60Hz	Kobe Lu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Dalen Dai

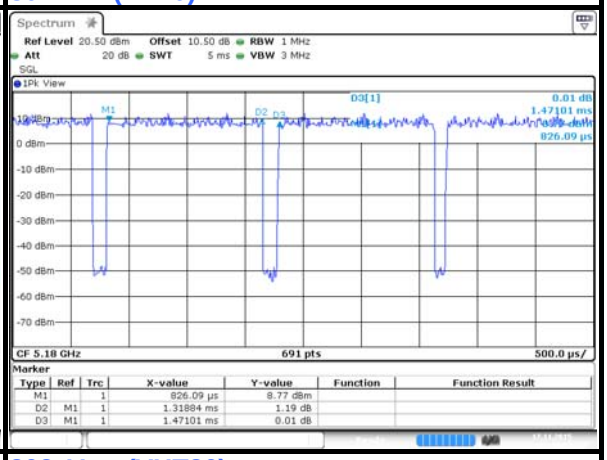
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is < 98 %, duty factor is required
802.11a: Duty cycle = 1.41449/1.55942 = 0.907, Duty factor = 10 * log(1/0.907) = 0.42
802.11n (HT20): Duty cycle = 1.31884/1.47101 = 0.897, Duty factor = 10 * log(1/0.897) = 0.47
802.11n (HT40): Duty cycle = 0.63478/0.75942 = 0.836, Duty factor = 10 * log(1/0.836) = 0.78
802.11ac (VHT80): Duty cycle = 0.29855/0.42609 = 0.701, Duty factor = 10 * log(1/0.701) = 1.54

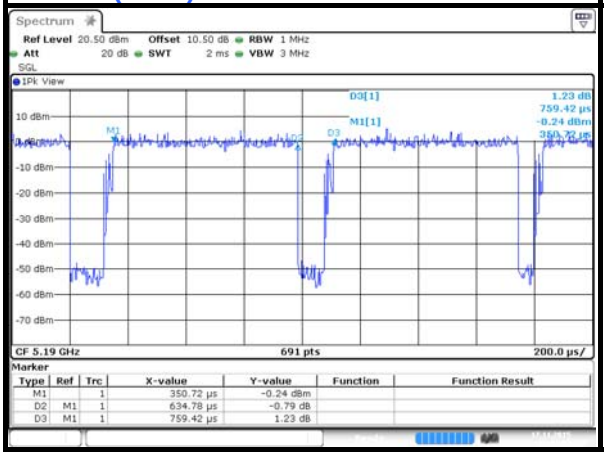
802.11a



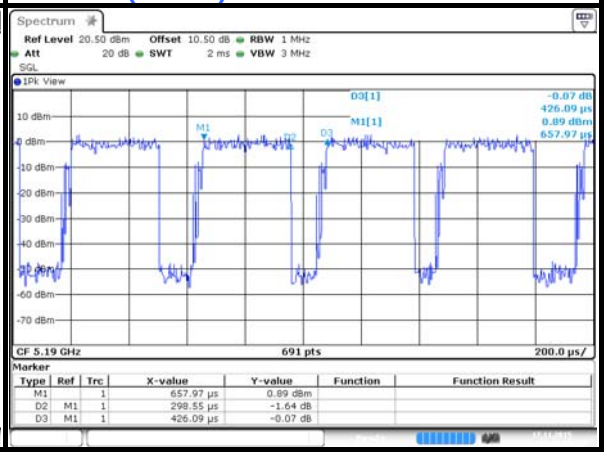
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	USB 3.0 Flash Drive	HP	v250w	N/A	FCC DoC Approved	Provided by Lab
B.	RJ45 Connector	N/A	N/A	N/A	N/A	Provided by Lab
C.	Notebook PC	SONY	SVS151A12P	275548477001024	FCC DoC Approved	Provided by Lab
D.	Wireless Broadband Router	D-LINK	DIR-815	PVK21B1000238	KA2IR815A1	Provided by Lab
E.	Z-Wave	EVERSPRING	AD131-2	N/A	N/A	Supplied by client
F.	Zigbee	N/A	CK77 94V-0	N/A	N/A	Supplied by client
G.	BLE	N/A	SmartRF V2.6	N/A	N/A	Supplied by client
H.	Notebook PC	SONY	SVS151A12P	275548477001087	FCC DoC Approved	Provided by Lab
I.	Notebook PC	DELL	PP27L	8SNZ12S	FCC DoC Approved	Provided by Lab

Note:

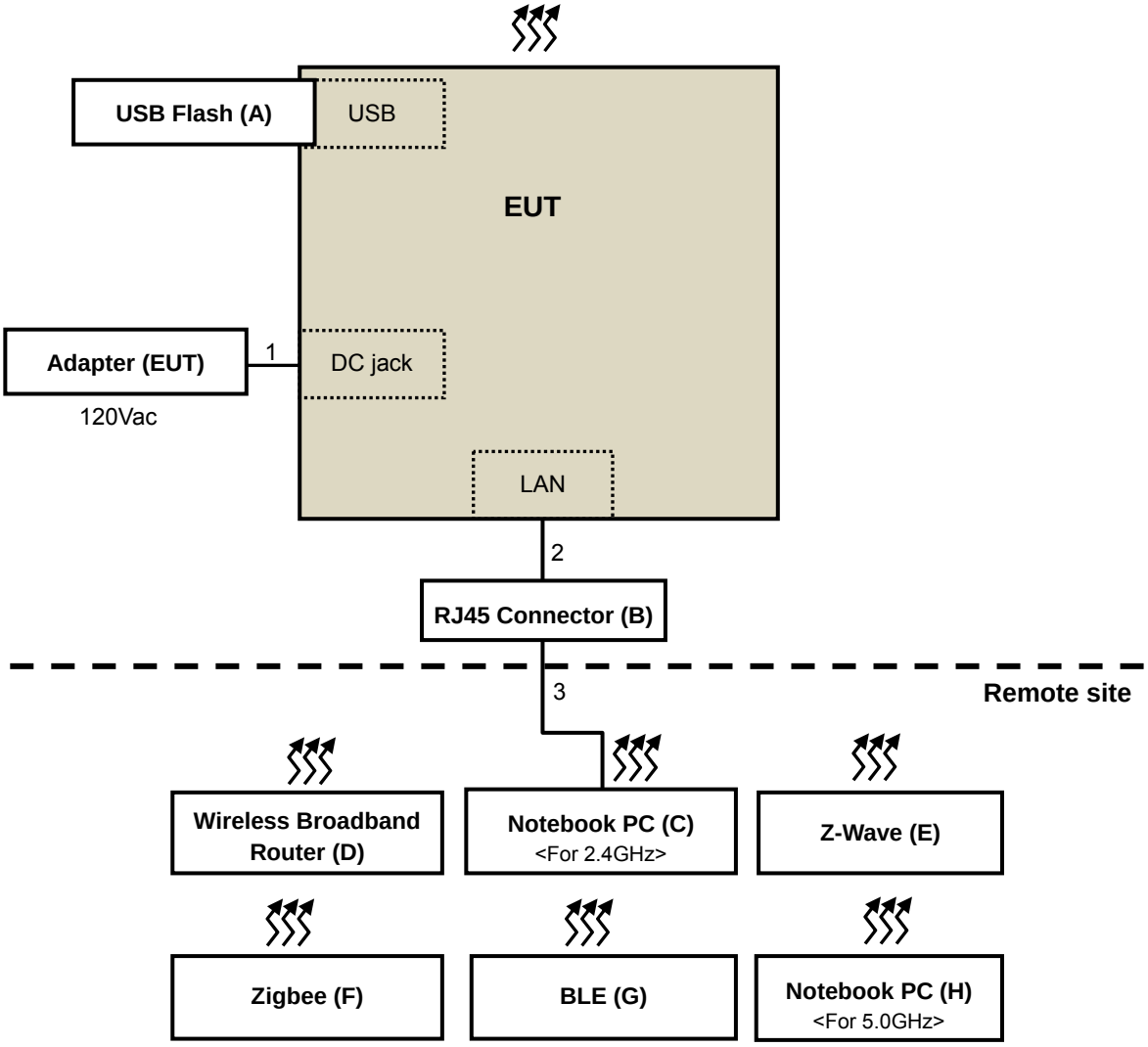
1. All power cords of the above support units are non-shielded (1.8m).
2. Items C~I acted as communication partners to transfer data.

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

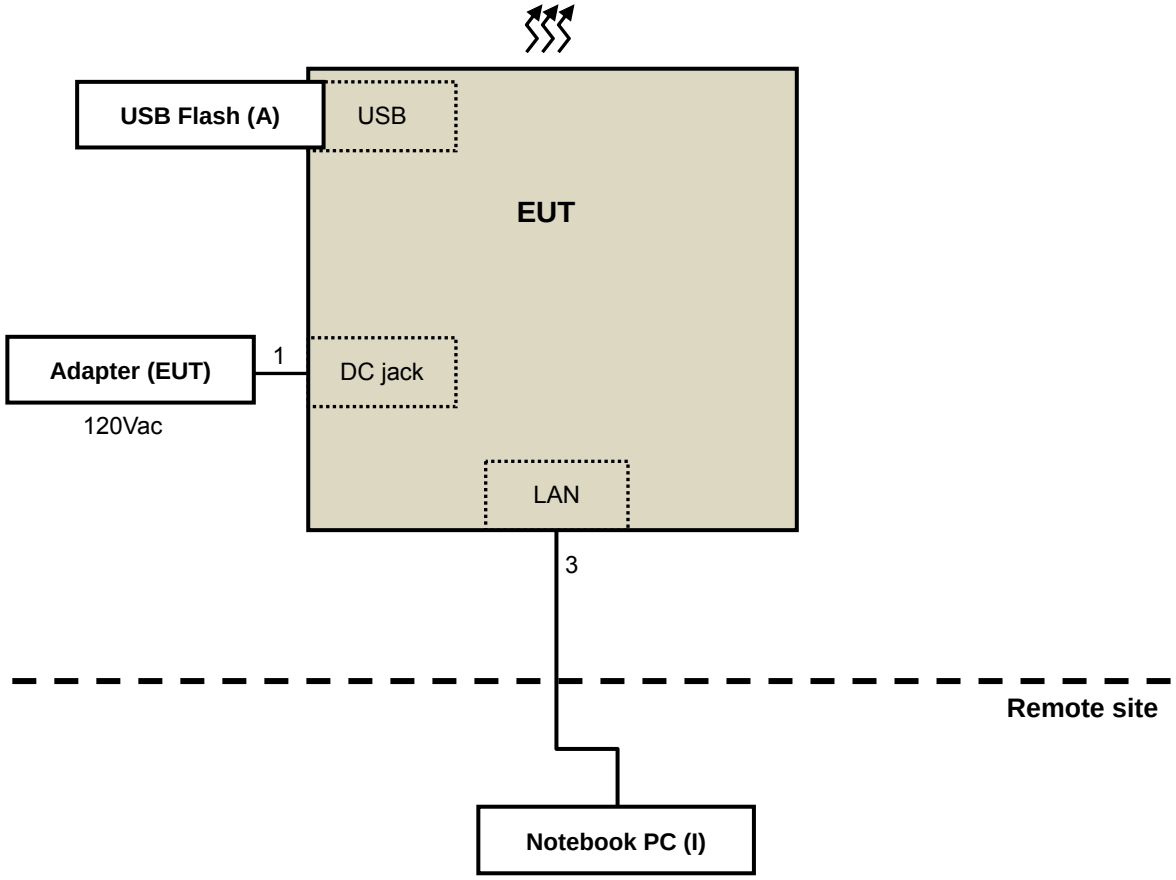
Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test

For Conduction emission test only:



For Radiated emission 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 v01r01
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	**LIMIT**	
789033 D02 General UNII Test Procedure New Rules v01r01	FIELD STRENGTH AT 3m	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)
APPLICABLE TO	**EIRP LIMIT**	**EQUIVALENT FIELD STRENGTH AT 3m**
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) [*1] PK:-17 (dBm/MHz) [*2]	PK: 68.2(dBμV/m) [*1] PK:78.2 (dBμV/m) [*2]

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

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

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	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		
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
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	May 04, 2015	May 03, 2016
KEYSIGHT Spectrum Analyzer	N9030A	MY54490260	Jul. 14, 2015	Jul. 13, 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:

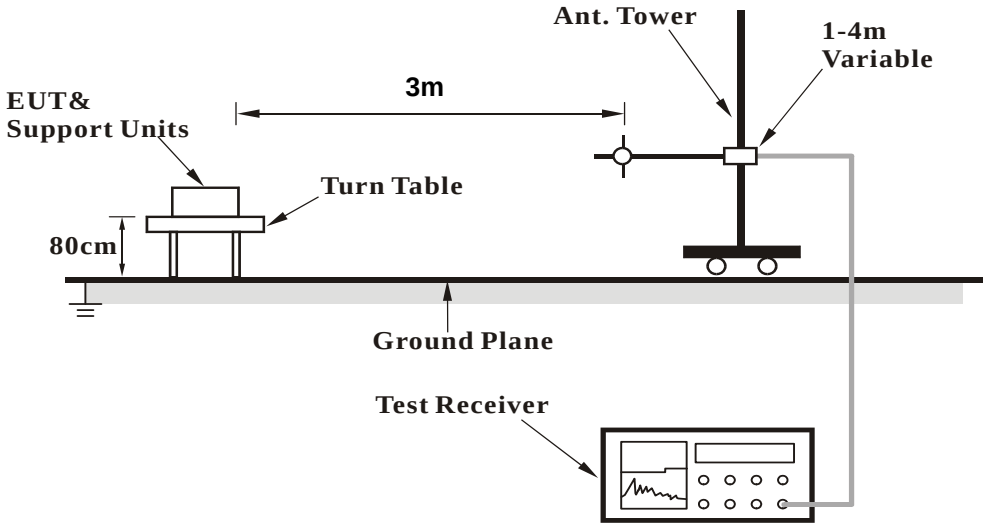
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

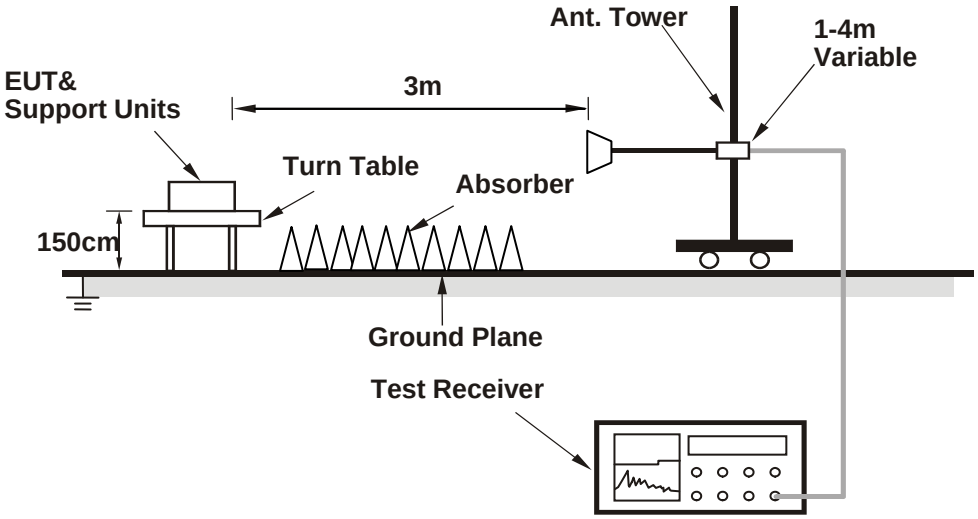
No deviation.

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

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

4.1.7 Test Results

ABOVE 1GHz DATA

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	64.4 PK	74.0	-9.6	1.61 H	19	55.98	8.43
2	5150.00	48.3 AV	54.0	-5.7	1.61 H	19	39.85	8.43
3	*5180.00	110.0 PK			1.61 H	19	101.41	8.54
4	*5180.00	100.9 AV			1.61 H	19	92.35	8.54
5	#10360.00	66.8 PK	74.0	-7.2	1.59 H	270	46.96	19.88
6	#10360.00	52.9 AV	54.0	-1.1	1.59 H	270	33.06	19.88
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	60.6 PK	74.0	-13.4	1.88 V	267	52.19	8.43
2	5150.00	47.3 AV	54.0	-6.7	1.88 V	267	38.86	8.43
3	*5180.00	104.4 PK			1.88 V	267	95.87	8.54
4	*5180.00	95.2 AV			1.88 V	267	86.66	8.54
5	#10360.00	64.2 PK	74.0	-9.8	2.90 V	313	44.35	19.88
6	#10360.00	51.5 AV	54.0	-2.5	2.90 V	313	31.66	19.88

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	*5200.00	106.6 PK			2.14 H	20	97.96	8.60
2	*5200.00	97.4 AV			2.14 H	20	88.84	8.60
3	#10400.00	66.8 PK	74.0	-7.2	2.05 H	273	46.91	19.93
4	#10400.00	52.7 AV	54.0	-1.3	2.05 H	273	32.74	19.93
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	*5200.00	101.7 PK			1.54 V	283	93.06	8.60
2	*5200.00	92.2 AV			1.54 V	283	83.57	8.60
3	#10400.00	63.8 PK	74.0	-10.2	2.62 V	244	43.91	19.93
4	#10400.00	50.5 AV	54.0	-3.5	2.62 V	244	30.58	19.93

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	109.6 PK			2.04 H	1	100.88	8.70
2	*5240.00	100.5 AV			2.04 H	1	91.82	8.70
3	5350.00	60.7 PK	74.0	-13.3	2.04 H	1	51.73	8.96
4	5350.00	47.2 AV	54.0	-6.8	2.04 H	1	38.22	8.96
5	#10480.00	67.2 PK	74.0	-6.8	1.94 H	271	47.06	20.13
6	#10480.00	52.7 AV	54.0	-1.3	1.94 H	271	32.59	20.13
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	*5240.00	104.3 PK			1.43 V	268	95.58	8.70
2	*5240.00	95.1 AV			1.43 V	268	86.43	8.70
3	5350.00	59.2 PK	74.0	-14.8	1.43 V	268	50.26	8.96
4	5350.00	46.1 AV	54.0	-7.9	1.43 V	268	37.15	8.96
5	#10480.00	63.4 PK	74.0	-10.6	2.52 V	242	43.24	20.13
6	#10480.00	49.9 AV	54.0	-4.1	2.52 V	242	29.81	20.13

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	#5714.99	62.9 PK	68.2	-5.3	2.66 H	130	53.15	9.79
2	#5725.00	70.0 PK	78.2	-8.2	2.66 H	130	60.23	9.80
3	*5745.00	106.1 PK			2.66 H	130	96.27	9.85
4	*5745.00	96.7 AV			2.66 H	130	86.83	9.85
5	11490.00	65.1 PK	74.0	-8.9	1.73 H	275	43.69	21.38
6	11490.00	52.9 AV	54.0	-1.1	1.73 H	275	31.51	21.38
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	#5714.99	60.7 PK	68.2	-7.5	1.34 V	130	50.95	9.79
2	#5725.00	63.9 PK	78.2	-14.3	1.34 V	130	54.08	9.80
3	*5745.00	99.9 PK			1.34 V	130	90.06	9.85
4	*5745.00	90.7 AV			1.34 V	130	80.81	9.85
5	11490.00	61.6 PK	74.0	-12.4	1.43 V	225	40.18	21.38
6	11490.00	48.4 AV	54.0	-5.7	1.43 V	225	26.97	21.38

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	105.3 PK			1.23 H	357	95.31	9.94
2	*5785.00	95.9 AV			1.23 H	357	85.92	9.94
3	11570.00	66.3 PK	74.0	-7.8	1.64 H	274	44.81	21.44
4	11570.00	52.9 AV	54.0	-1.1	1.64 H	274	31.49	21.44
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	100.1 PK			1.68 V	273	90.18	9.94
2	*5785.00	90.6 AV			1.68 V	273	80.69	9.94
3	11570.00	63.0 PK	74.0	-11.0	1.48 V	207	41.63	21.38
4	11570.00	50.1 AV	54.0	-3.9	1.48 V	207	28.73	21.38

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.

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	107.9 PK			2.57 H	130	97.89	10.04
2	*5825.00	98.4 AV			2.57 H	130	88.39	10.04
3	#5850.00	68.7 PK	78.2	-9.6	2.57 H	130	58.58	10.07
4	#5860.01	63.2 PK	68.2	-5.0	2.57 H	130	53.11	10.09
5	11650.00	66.8 PK	74.0	-7.2	1.49 H	275	45.88	20.90
6	11650.00	52.9 AV	54.0	-1.1	1.49 H	275	31.99	20.90
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	*5825.00	100.0 PK			1.35 V	130	89.96	10.04
2	*5825.00	90.9 AV			1.35 V	130	80.88	10.04
3	#5850.00	63.7 PK	78.2	-14.5	1.35 V	132	53.66	10.07
4	#5860.01	61.2 PK	68.2	-7.0	1.35 V	132	51.10	10.09
5	11650.00	63.2 PK	74.0	-10.8	1.48 V	200	42.32	20.90
6	11650.00	49.6 AV	54.0	-4.4	1.48 V	200	28.73	20.90

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.

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.7 PK	74.0	-7.4	2.66 H	2	58.22	8.43
2	5150.00	48.4 AV	54.0	-5.6	2.66 H	2	39.94	8.43
3	*5180.00	108.4 PK			2.66 H	2	99.86	8.54
4	*5180.00	99.0 AV			2.66 H	2	90.48	8.54
5	#10360.00	66.6 PK	74.0	-7.4	2.02 H	271	46.68	19.88
6	#10360.00	52.6 AV	54.0	-1.4	2.02 H	271	32.75	19.88
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	62.6 PK	74.0	-11.5	1.05 V	269	54.12	8.43
2	5150.00	47.0 AV	54.0	-7.0	1.05 V	269	38.57	8.43
3	*5180.00	103.9 PK			1.05 V	269	95.31	8.54
4	*5180.00	94.8 AV			1.05 V	269	86.21	8.54
5	#10360.00	66.0 PK	74.0	-8.0	2.86 V	227	46.15	19.88
6	#10360.00	51.8 AV	54.0	-2.2	2.86 V	227	31.91	19.88

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	*5200.00	107.3 PK			3.08 H	18	98.74	8.60
2	*5200.00	97.7 AV			3.08 H	18	89.09	8.60
3	#10400.00	66.8 PK	74.0	-7.2	1.75 H	268	46.85	19.93
4	#10400.00	52.8 AV	54.0	-1.3	1.75 H	268	32.82	19.93
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	*5200.00	100.9 PK			1.53 V	282	92.33	8.60
2	*5200.00	91.8 AV			1.53 V	282	83.20	8.60
3	#10400.00	64.2 PK	74.0	-9.8	2.47 V	245	44.31	19.93
4	#10400.00	50.1 AV	54.0	-3.9	2.47 V	245	30.19	19.93

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	108.8 PK			2.68 H	0	100.11	8.70
2	*5240.00	100.0 AV			2.68 H	0	91.25	8.70
3	5350.00	62.4 PK	74.0	-11.6	2.68 H	0	53.42	8.96
4	5350.00	47.4 AV	54.0	-6.6	2.68 H	0	38.48	8.96
5	#10480.00	67.2 PK	74.0	-6.8	1.97 H	273	47.08	20.13
6	#10480.00	52.7 AV	54.0	-1.4	1.97 H	273	32.52	20.13
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	*5240.00	104.8 PK			1.45 V	274	96.12	8.70
2	*5240.00	95.2 AV			1.45 V	274	86.47	8.70
3	5350.00	61.1 PK	74.0	-12.9	1.45 V	274	52.11	8.96
4	5350.00	46.2 AV	54.0	-7.8	1.45 V	274	37.23	8.96
5	#10480.00	65.0 PK	74.0	-9.0	2.46 V	244	44.84	20.13
6	#10480.00	51.2 AV	54.0	-2.8	2.46 V	244	31.09	20.13

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	#5714.99	65.0 PK	68.2	-3.3	3.16 H	122	55.18	9.79
2	#5725.00	77.1 PK	78.2	-1.1	3.16 H	122	67.32	9.80
3	*5745.00	108.6 PK			3.16 H	122	98.70	9.85
4	*5745.00	98.9 AV			3.16 H	122	89.04	9.85
5	11490.00	67.1 PK	74.0	-6.9	1.84 H	274	45.70	21.38
6	11490.00	52.9 AV	54.0	-1.1	1.84 H	274	31.56	21.38
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	#5714.99	62.8 PK	68.2	-5.4	3.25 V	257	53.02	9.79
2	#5725.00	73.8 PK	78.2	-4.4	3.25 V	257	64.03	9.80
3	*5745.00	104.8 PK			3.25 V	257	94.91	9.85
4	*5745.00	96.0 AV			3.25 V	257	86.13	9.85
5	11490.00	61.5 PK	74.0	-12.5	2.20 V	108	40.08	21.38
6	11490.00	49.2 AV	54.0	-4.8	2.20 V	108	27.78	21.38

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	108.6 PK			2.63 H	134	98.62	9.94
2	*5785.00	98.6 AV			2.63 H	134	88.66	9.94
3	11570.00	68.1 PK	74.0	-5.9	1.69 H	275	46.62	21.44
4	11570.00	53.0 AV	54.0	-1.1	1.69 H	275	31.51	21.44
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	104.3 PK			3.19 V	257	94.38	9.94
2	*5785.00	95.5 AV			3.19 V	257	85.58	9.94
3	11570.00	61.7 PK	74.0	-12.3	2.27 V	103	40.27	21.44
4	11570.00	49.4 AV	54.0	-4.6	2.27 V	103	27.96	21.44

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) 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	105.7 PK			3.36 H	88	95.68	10.04
2	*5825.00	96.0 AV			3.36 H	88	85.96	10.04
3	#5850.00	66.3 PK	78.2	-11.9	3.36 H	88	56.25	10.07
4	#5860.01	63.5 PK	68.2	-4.7	3.36 H	88	53.41	10.09
5	11650.00	67.8 PK	74.0	-6.2	1.81 H	275	46.94	20.90
6	**11650.00**	**53.0 AV**	**54.0**	**-1.0**	**1.81 H**	**275**	**32.08**	**20.90**
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	*5825.00	102.7 PK			3.25 V	277	92.61	10.04
2	*5825.00	93.0 AV			3.25 V	277	82.96	10.04
3	#5850.00	65.7 PK	78.2	-12.5	3.25 V	277	55.61	10.07
4	#5860.01	61.9 PK	68.2	-6.3	3.25 V	277	51.83	10.09
5	11650.00	62.7 PK	74.0	-11.4	2.17 V	112	41.75	20.90
6	11650.00	47.9 AV	54.0	-6.1	2.17 V	112	27.03	20.90

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.

802.11n (40MHz)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.6 PK	74.0	-2.4	1.48 H	17	63.15	8.43
2	5150.00	52.9 AV	54.0	-1.1	1.48 H	17	44.49	8.43
3	*5190.00	103.1 PK			1.48 H	17	94.48	8.57
4	*5190.00	94.1 AV			1.48 H	17	85.53	8.57
5	#10380.00	64.1 PK	74.0	-9.9	2.02 H	274	44.18	19.90
6	#10380.00	50.3 AV	54.0	-3.7	2.02 H	274	30.37	19.90
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	67.9 PK	74.0	-6.1	2.67 V	220	59.49	8.43
2	5150.00	50.4 AV	54.0	-3.6	2.67 V	220	41.97	8.43
3	*5190.00	99.6 PK			2.67 V	220	91.03	8.57
4	*5190.00	90.6 AV			2.67 V	220	82.04	8.57
5	#10380.00	60.2 PK	74.0	-13.8	2.39 V	240	40.29	19.90
6	#10380.00	48.6 AV	54.0	-5.5	2.39 V	240	28.65	19.90

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	106.5 PK			2.21 H	4	97.81	8.67
2	*5230.00	97.2 AV			2.21 H	4	88.56	8.67
3	5350.00	62.4 PK	74.0	-11.6	2.21 H	4	53.43	8.96
4	5350.00	47.6 AV	54.0	-6.4	2.21 H	4	38.68	8.96
5	#10460.00	66.9 PK	74.0	-7.1	1.79 H	272	46.81	20.08
6	#10460.00	52.9 AV	54.0	-1.1	1.79 H	272	32.78	20.08
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	*5230.00	100.8 PK			1.24 V	271	92.10	8.67
2	*5230.00	92.1 AV			1.24 V	271	83.47	8.67
3	5350.00	61.0 PK	74.0	-13.0	1.24 V	271	52.01	8.96
4	5350.00	46.1 AV	54.0	-7.9	1.24 V	271	37.11	8.96
5	#10460.00	63.0 PK	74.0	-11.0	2.41 V	248	42.89	20.08
6	#10460.00	50.3 AV	54.0	-3.7	2.41 V	248	30.26	20.08

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	**#5714.99**	**67.2 PK**	**68.2**	**-1.0**	**2.61 H**	**133**	**57.37**	**9.79**
2	#5725.00	69.9 PK	78.2	-8.4	2.61 H	133	60.05	9.80
3	*5755.00	101.4 PK			2.61 H	133	91.51	9.88
4	*5755.00	93.4 AV			2.61 H	133	83.48	9.88
5	11510.00	63.1 PK	74.0	-10.9	1.89 H	275	41.72	21.42
6	11510.00	50.7 AV	54.0	-3.3	1.89 H	275	29.32	21.42
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	65.5 PK	68.2	-2.7	2.39 V	181	55.73	9.79
2	#5725.00	67.8 PK	78.2	-10.4	2.39 V	181	58.02	9.80
3	*5755.00	97.1 PK			2.39 V	181	87.20	9.88
4	*5755.00	88.1 AV			2.39 V	181	78.20	9.88
5	11510.00	61.4 PK	74.0	-12.7	2.31 V	127	39.93	21.42
6	11510.00	49.2 AV	54.0	-4.8	2.31 V	127	27.82	21.42

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	105.8 PK			2.64 H	137	95.81	9.96
2	*5795.00	96.9 AV			2.64 H	137	86.95	9.96
3	#5850.00	66.4 PK	78.2	-11.8	2.64 H	137	56.31	10.07
4	#5860.01	63.8 PK	68.2	-4.4	2.64 H	137	53.73	10.09
5	11590.00	65.1 PK	74.0	-8.9	1.87 H	274	43.66	21.45
6	11590.00	52.8 AV	54.0	-1.2	1.87 H	274	31.31	21.45
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	103.3 PK			3.80 V	257	93.33	9.96
2	*5795.00	94.3 AV			3.80 V	257	84.29	9.96
3	#5850.00	63.8 PK	78.2	-14.4	3.80 V	257	53.71	10.07
4	#5860.01	62.0 PK	68.2	-6.2	3.80 V	257	51.93	10.09
5	11590.00	61.7 PK	74.0	-12.3	2.45 V	130	40.26	21.45
6	11590.00	49.6 AV	54.0	-4.4	2.45 V	130	28.15	21.45

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 BW80

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	71.6 PK	74.0	-2.4	2.74 H	19	63.13	8.43
2	5150.00	52.9 AV	54.0	-1.1	2.74 H	19	44.51	8.43
3	*5210.00	100.7 PK			2.74 H	19	92.07	8.62
4	*5210.00	90.7 AV			2.74 H	19	82.07	8.62
5	5350.00	62.2 PK	74.0	-11.8	2.74 H	19	53.25	8.96
6	5350.00	47.3 AV	54.0	-6.7	2.74 H	19	38.32	8.96
7	#10420.00	60.2 PK	74.0	-13.8	1.82 H	267	40.24	19.98
8	#10420.00	49.8 AV	54.0	-4.3	1.82 H	267	29.77	19.98
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.5 PK	74.0	-6.5	1.50 V	269	59.06	8.43
2	5150.00	50.5 AV	54.0	-3.5	1.50 V	269	42.09	8.43
3	*5210.00	96.3 PK			1.50 V	269	87.66	8.62
4	*5210.00	86.4 AV			1.50 V	269	77.79	8.62
5	5350.00	60.2 PK	74.0	-13.8	1.50 V	269	51.24	8.96
6	5350.00	46.3 AV	54.0	-7.7	1.50 V	269	37.30	8.96
7	#10420.00	59.2 PK	74.0	-14.8	2.28 V	239	39.21	19.98
8	#10420.00	47.8 AV	54.0	-6.2	2.28 V	239	27.83	19.98

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	**#5714.99**	**67.2 PK**	**68.2**	**-1.0**	**3.17 H**	**121**	**57.41**	**9.79**
2	#5725.00	69.9 PK	78.2	-8.3	3.17 H	121	60.06	9.80
3	*5775.00	98.1 PK			3.17 H	121	88.21	9.93
4	*5775.00	88.3 AV			3.17 H	121	78.34	9.93
5	#5850.00	71.2 PK	78.2	-7.0	3.17 H	121	61.10	10.07
6	**#5860.01**	**67.2 PK**	**68.2**	**-1.0**	**3.17 H**	**121**	**57.07**	**10.09**
7	11550.00	64.3 PK	74.0	-9.7	1.83 H	269	42.86	21.43
8	11550.00	52.6 AV	54.0	-1.5	1.83 H	269	31.12	21.43
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	64.8 PK	68.2	-3.4	1.45 V	132	55.02	9.79
2	#5725.00	67.6 PK	78.2	-10.6	1.45 V	132	57.82	9.80
3	*5775.00	95.2 PK			1.45 V	132	85.26	9.93
4	*5775.00	85.2 AV			1.45 V	132	75.26	9.93
5	#5850.00	63.7 PK	78.2	-14.5	1.45 V	132	53.59	10.07
6	#5860.01	62.8 PK	68.2	-5.4	1.45 V	132	52.70	10.09
7	11550.00	61.4 PK	74.0	-12.6	2.24 V	118	40.01	21.43
8	11550.00	49.1 AV	54.0	-4.9	2.24 V	118	27.63	21.43

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 WORST-CASE DATA

802.11n (40MHz)

CHANNEL	TX Channel 46	**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	32.09	24.9 QP	40.0	-15.1	4.00 H	288	35.62	-10.70
2	152.71	27.1 QP	43.5	-16.4	4.00 H	251	35.52	-8.44
3	194.54	27.0 QP	43.5	-16.5	4.00 H	96	37.97	-10.96
4	500.01	35.0 QP	46.0	-11.0	1.53 H	230	37.65	-2.66
5	854.06	33.7 QP	46.0	-12.4	1.00 H	214	30.30	3.35
6	959.99	35.4 QP	46.0	-10.6	1.00 H	321	29.69	5.68
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	35.29	33.6 QP	40.0	-6.4	1.05 V	62	43.80	-10.23
2	93.05	27.5 QP	43.5	-16.0	1.00 V	280	41.67	-14.19
3	211.97	23.5 QP	43.5	-20.0	1.00 V	199	34.43	-10.95
4	500.01	32.9 QP	46.0	-13.1	1.92 V	211	35.56	-2.66
5	755.93	32.6 QP	46.0	-13.4	2.84 V	44	30.60	2.03
6	918.18	34.0 QP	46.0	-12.0	2.07 V	280	29.20	4.77

REMARKS:

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

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	100276	Apr. 01, 2015	Mar. 31, 2016
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ENV216	101197	Apr. 27, 2015	Apr. 26, 2016
LISN With Adapter (for EUT)	AD10	C10Ada-002	Apr. 27, 2015	Apr. 26, 2016
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Nov. 25, 2014	Nov. 24, 2015
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-C10.01	Feb. 17, 2015	Feb. 16, 2016
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-011484	May 19, 2015	May 18, 2016
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 13, 2015	Nov. 12, 2016
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 13, 2015	Nov. 12, 2016

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. 10.
3. The VCCI Site Registration No. C-1852.
4. Tested Date: Nov. 20, 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.

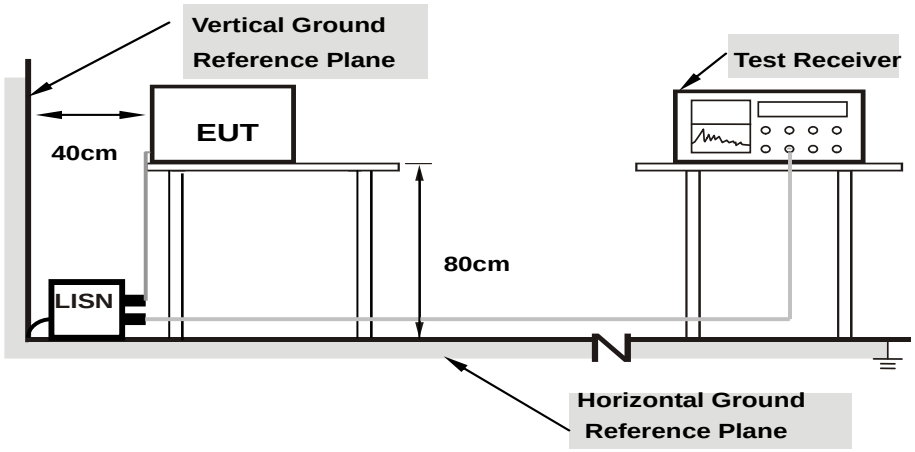
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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: 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 item 4.1.6.

4.2.7 Test Results

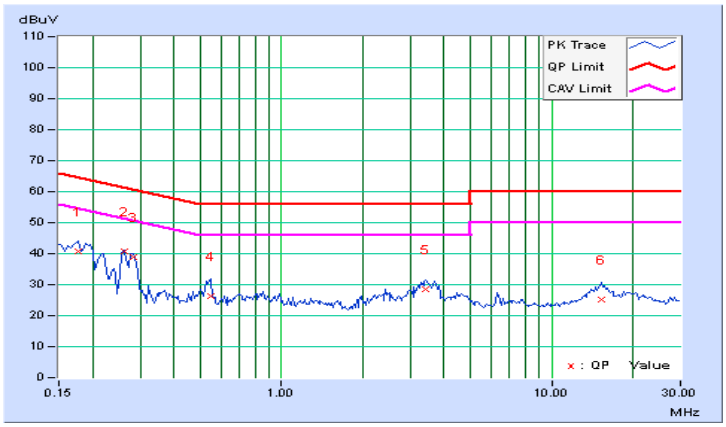
CONDUCTED WORST-CASE DATA

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	9.68	31.03	22.63	40.71	32.31	64.61	54.61	-23.90	-22.30
2	0.26328	9.68	31.22	27.68	40.90	37.36	61.33	51.33	-20.42	-13.96
3	0.28281	9.68	29.12	26.21	38.80	35.89	60.73	50.73	-21.93	-14.84
4	0.54844	9.71	16.70	7.28	26.41	16.99	56.00	46.00	-29.59	-29.01
5	3.42188	9.92	18.57	9.23	28.49	19.15	56.00	46.00	-27.51	-26.85
6	15.39453	10.12	14.97	9.24	25.09	19.36	60.00	50.00	-34.91	-30.64

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

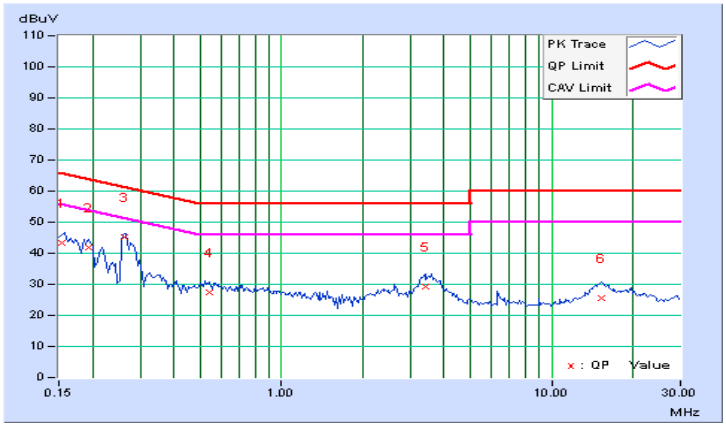


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
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	9.72	33.52	24.23	43.24	33.95	65.79	55.79	-22.55	-21.84
2	0.19297	9.73	32.12	26.11	41.85	35.84	63.91	53.91	-22.06	-18.07
3	**0.26328**	**9.73**	**35.60**	**33.35**	**45.33**	**43.08**	**61.33**	**51.33**	**-15.99**	**-8.24**
4	0.54063	9.75	17.60	11.38	27.35	21.13	56.00	46.00	-28.65	-24.87
5	3.39453	9.94	19.43	8.92	29.37	18.86	56.00	46.00	-26.63	-27.14
6	15.21484	10.20	15.26	9.91	25.46	20.11	60.00	50.00	-34.54	-29.89

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-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

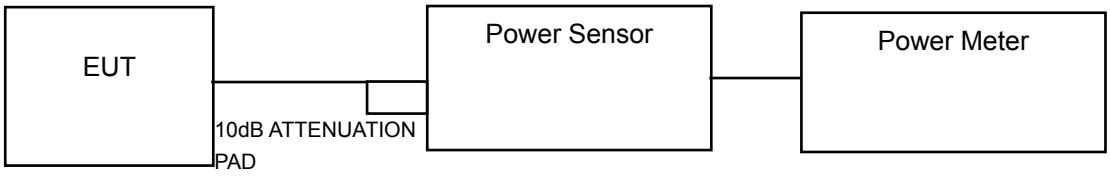
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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

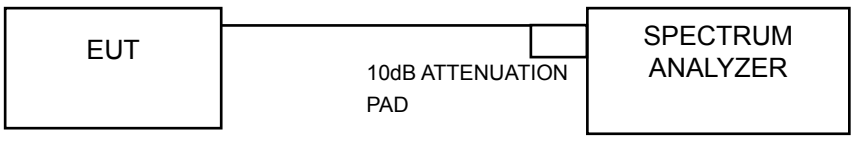
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT



FOR 26dB & OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR AVERAGE POWER MEASUREMENT

For 802.11a, 802.11n (HT20), 802.11n (HT40)

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

For 802.11ac (VHT80)

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

FOR 26 BANDWIDTH

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

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:

802.11a

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	16.01	15.97	79.439	19.00	30	PASS
40	5200	16.22	16.01	81.781	19.13	30	PASS
48	5240	16.39	15.93	82.725	19.18	30	PASS
149	5745	14.71	14.67	58.889	17.70	30	PASS
157	5785	14.78	14.84	60.540	17.82	30	PASS
165	5825	14.58	15.19	61.745	17.91	30	PASS

802.11n (HT20)

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	16.38	15.83	81.733	19.12	30	PASS
40	5200	16.24	16.01	81.975	19.14	30	PASS
48	5240	16.58	16.24	87.572	19.42	30	PASS
149	5745	15.61	16.00	**76.203**	18.82	30	PASS
157	5785	14.78	15.60	66.369	18.22	30	PASS
165	5825	14.07	14.32	52.567	17.21	30	PASS

802.11n (HT40)

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	15.05	13.93	56.706	17.54	30	PASS
46	5230	16.92	17.04	**99.786**	19.99	30	PASS
151	5755	12.80	13.83	43.210	16.36	30	PASS
159	5795	15.66	15.49	72.213	18.59	30	PASS

802.11ac (VHT80)

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
42	5210	13.78	13.21	44.819	16.51	30	PASS
155	5775	14.15	14.11	51.765	17.14	30	PASS

26dB BANDWIDTH:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	25.63	25.67	PASS
40	5200	26.07	25.55	PASS
48	5240	25.53	25.45	PASS

802.11n (HT20)

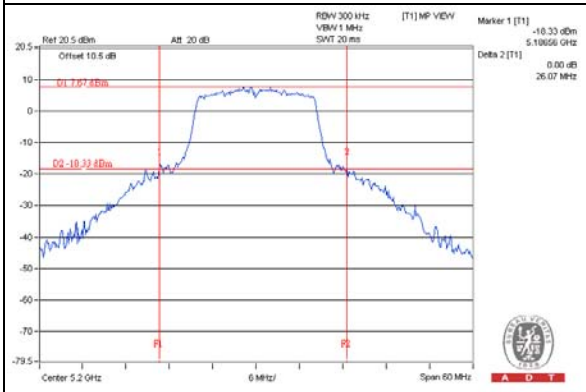
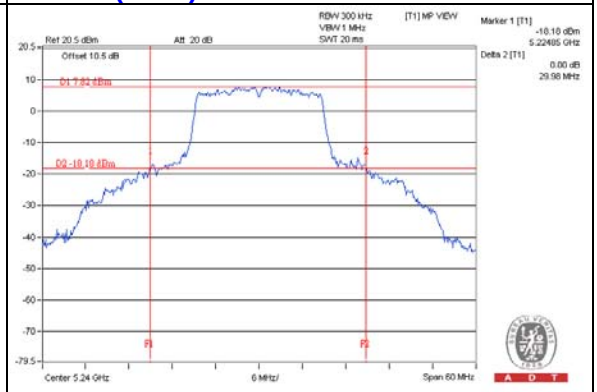
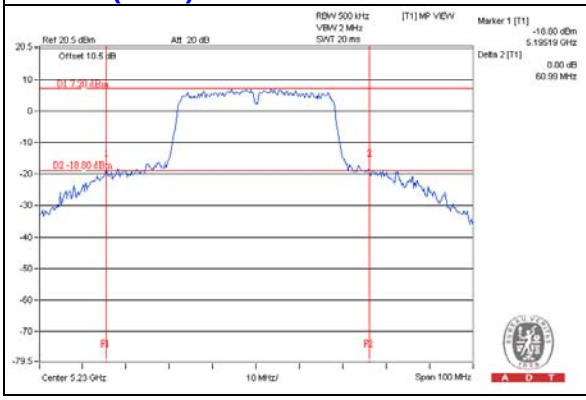
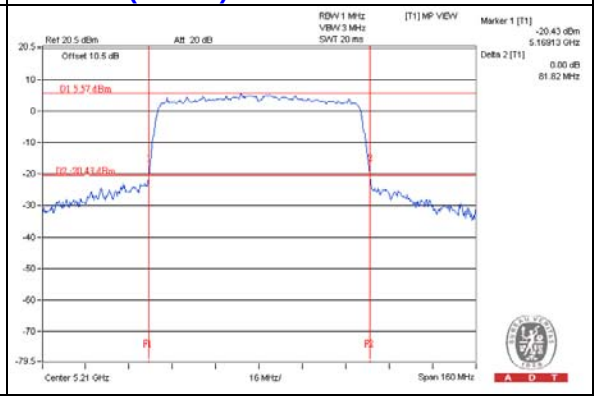
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	26.94	29.49	PASS
40	5200	29.40	26.41	PASS
48	5240	29.98	29.56	PASS

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	41.05	40.96	PASS
46	5230	58.35	60.99	PASS

802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
42	5210	81.82	81.82	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (HT20)**
	
802.11n (HT40)	**802.11ac (VHT80)**
	

OCCUPIED BANDWIDTH:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	16.92	16.92	PASS
40	5200	17.04	17.04	PASS
48	5240	17.04	17.04	PASS
149	5745	16.96	16.90	PASS
157	5785	16.90	16.90	PASS
165	5825	16.90	16.90	PASS

802.11n (HT20)

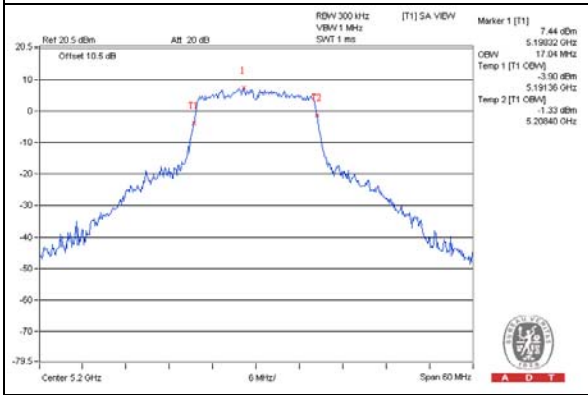
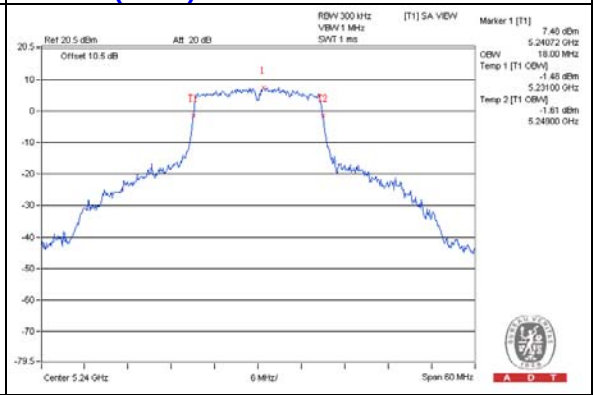
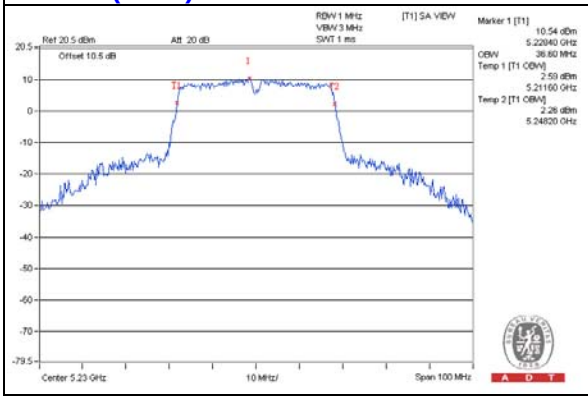
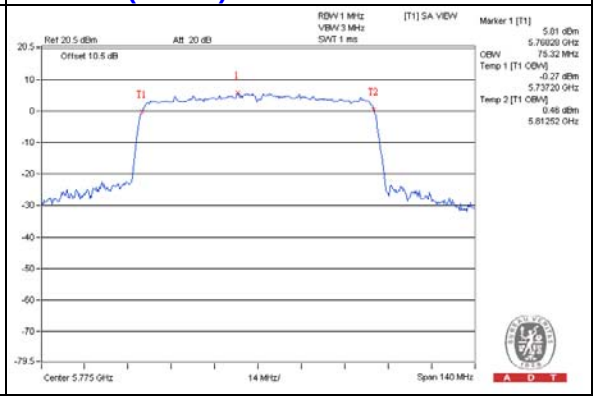
CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	17.88	17.88	PASS
40	5200	17.88	17.88	PASS
48	5240	18.00	17.88	PASS
149	5745	17.83	17.90	PASS
157	5785	17.80	17.80	PASS
165	5825	17.70	17.70	PASS

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	36.40	36.40	PASS
46	5230	36.60	36.60	PASS
151	5755	36.38	36.17	PASS
159	5795	36.50	36.50	PASS

802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
42	5210	75.12	75.12	PASS
155	5775	75.07	75.32	PASS

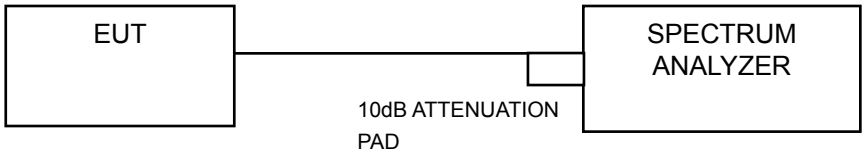
SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (HT20)**
	
802.11n (HT40)	**802.11ac (VHT80)**
	

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-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

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 = 500 kHz, Set VBW ≥ 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)

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

802.11a

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
36	5180	3.34	3.49	6.43	0.42	6.85	15.99	PASS
40	5200	3.66	3.43	6.56	0.42	6.98	15.99	PASS
48	5240	3.68	3.74	6.72	0.42	7.14	15.99	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**

   Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 17-(7.01-6) = 15.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
36	5180	3.10	3.37	6.25	0.47	6.72	15.99	PASS
40	5200	3.39	3.17	6.29	0.47	6.76	15.99	PASS
48	5240	3.83	3.83	6.84	0.47	7.31	15.99	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**

   Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 17-(7.01-6) = 15.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
38	5190	-1.70	-1.74	1.29	0.78	2.07	15.99	PASS
46	5230	0.55	0.54	3.55	0.78	4.33	15.99	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**

   Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 17-(7.01-6) = 15.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

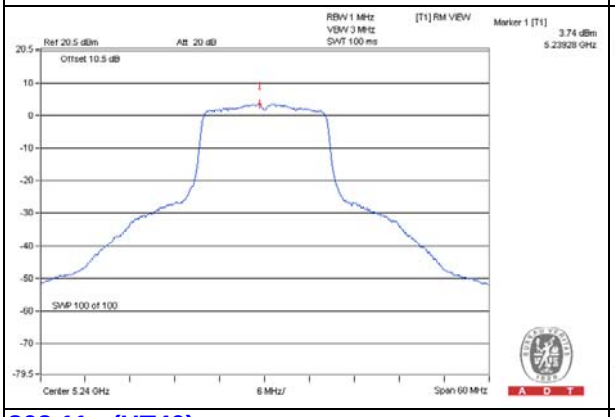
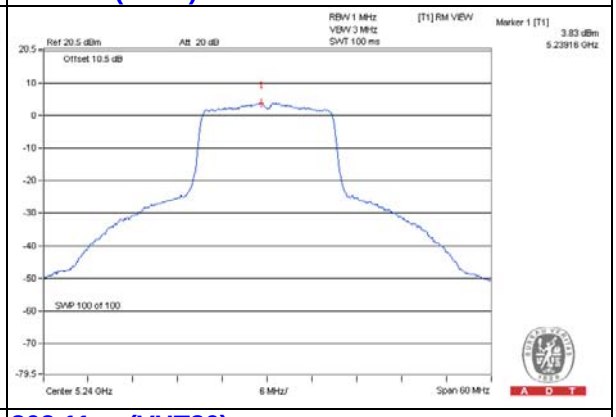
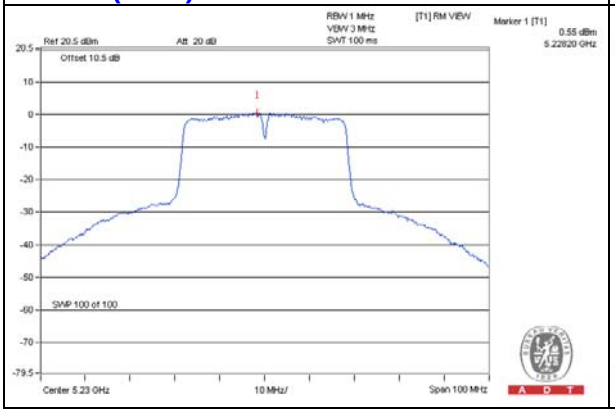
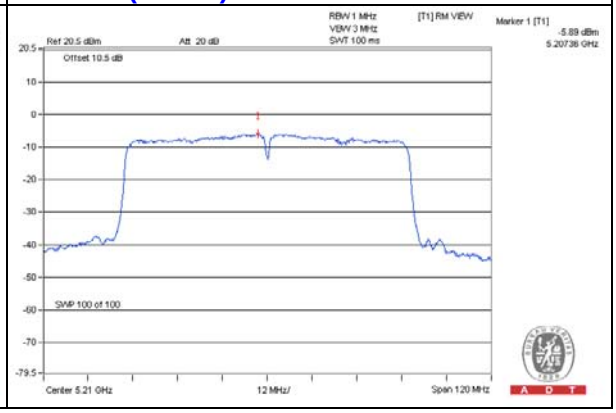
802.11ac (VHT80)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
42	5210	-5.89	-5.94	-2.9	1.54	-1.36	15.99	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**

   Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 17-(7.01-6) = 15.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (HT20)**
	
802.11n (HT40)	**802.11ac (VHT80)**
	

For U-NII-3 Band

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	DUTY FACTOR	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	8.60	3.01	0.42	12.03	28.99	PASS
	157	5785	8.84	3.01	0.42	12.27	28.99	PASS
	165	5825	9.05	3.01	0.42	12.48	28.99	PASS
1	149	5745	8.68	3.01	0.42	12.11	28.99	PASS
	157	5785	8.76	3.01	0.42	12.19	28.99	PASS
	165	5825	8.86	3.01	0.42	12.29	28.99	PASS

NOTE:

1. Directional gain = 4dBi + 10log(2) = 7.01 > 6dBi, so the power density limit shall be reduced to 30-(7.01-6) = 28.99dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	DUTY FACTOR	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	9.02	3.01	0.47	12.50	28.99	PASS
	157	5785	8.66	3.01	0.47	12.14	28.99	PASS
	165	5825	7.68	3.01	0.47	11.16	28.99	PASS
1	149	5745	9.40	3.01	0.47	12.88	28.99	PASS
	157	5785	8.65	3.01	0.47	12.13	28.99	PASS
	165	5825	7.65	3.01	0.47	11.13	28.99	PASS

NOTE:

1. Directional gain = 4dBi + 10log(2) = 7.01 > 6dBi, so the power density limit shall be reduced to 30-(7.01-6) = 28.99dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	DUTY FACTOR	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	151	5755	3.86	3.01	0.78	7.65	28.99	PASS
	159	5795	6.13	3.01	0.78	9.92	28.99	PASS
1	151	5755	3.83	3.01	0.78	7.62	28.99	PASS
	159	5795	7.01	3.01	0.78	10.80	28.99	PASS

NOTE:

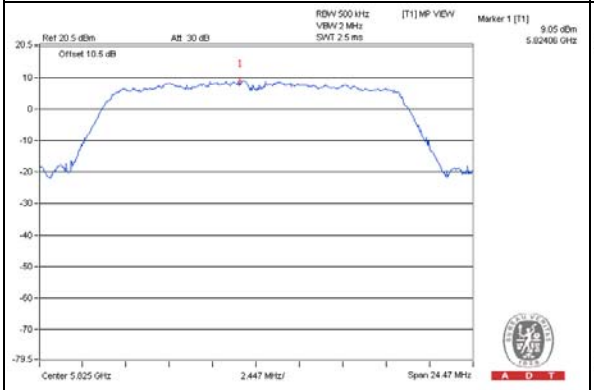
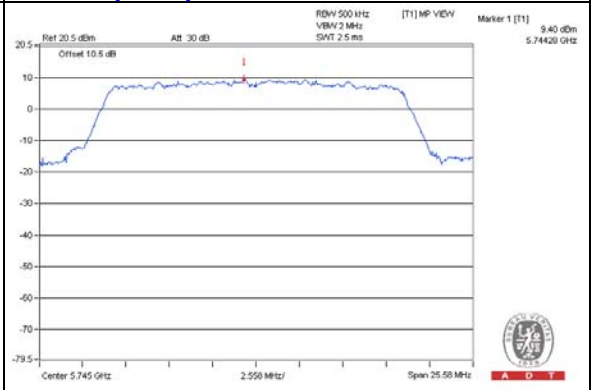
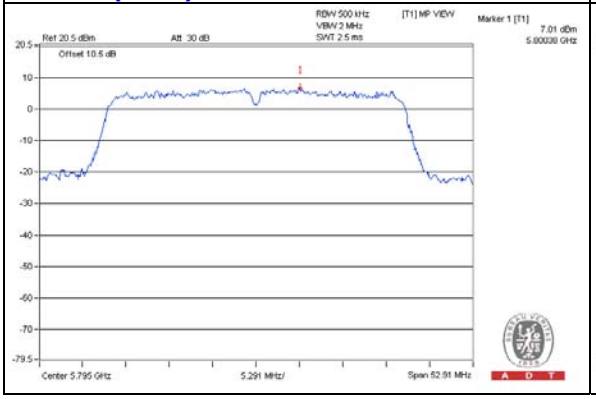
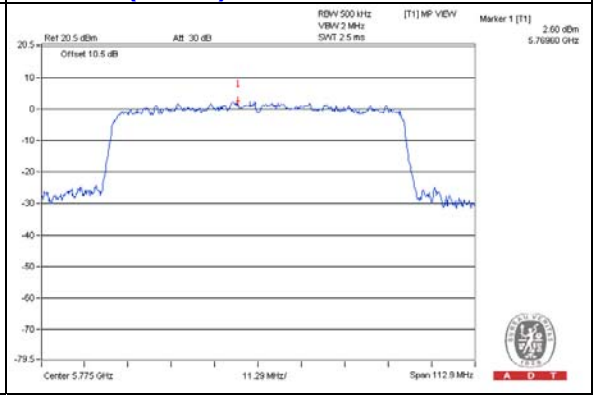
1. Directional gain = 4dBi + 10log(2) = 7.01 > 6dBi, so the power density limit shall be reduced to 30-(7.01-6) = 28.99dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	DUTY FACTOR	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	155	5775	2.60	3.01	1.54	7.15	28.99	PASS
1	155	5775	2.35	3.01	1.54	6.90	28.99	PASS

NOTE:

1. Directional gain = 4dBi + 10log(2) = 7.01 > 6dBi, so the power density limit shall be reduced to 30-(7.01-6) = 28.99dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

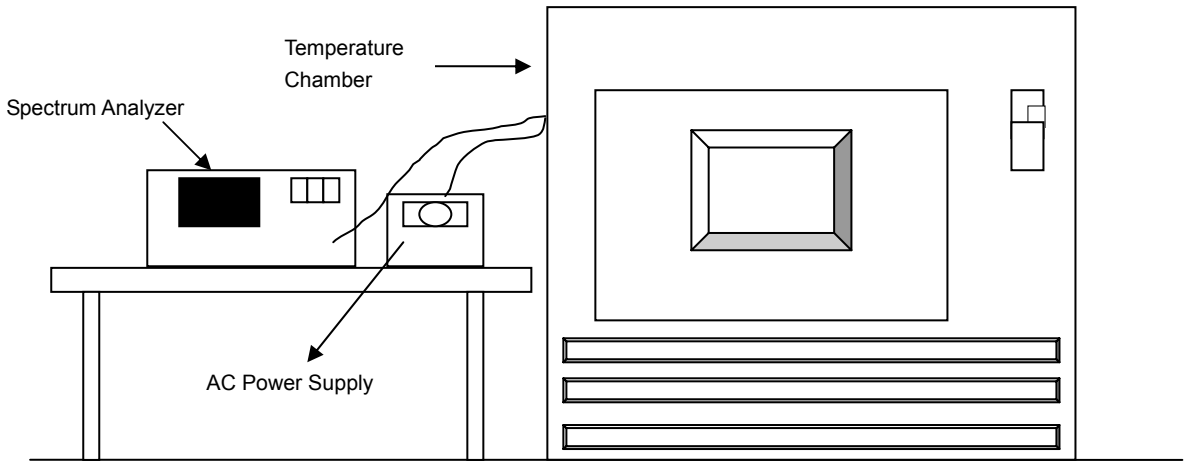
SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (HT20)**
	
802.11n (HT40)	**802.11ac (VHT80)**
	

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: 5180MHz									
TEMP. (℃)	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	5180.043511	8.3997490	5180.043069	8.3144788	5180.043088	8.3180962	5180.043337	8.3661759
40	120	5180.043144	8.3289854	5180.042905	8.2828185	5180.042990	8.2992177	5180.04242	8.1892800
30	120	5180.042532	8.2107858	5180.042493	8.2032819	5180.042571	8.2182520	5180.042961	8.2936988
20	120	5180.043165	8.3330067	5180.043096	8.3196911	5180.042757	8.2541921	5180.04328	8.3552687
10	120	5180.04303	8.3069479	5180.042685	8.2403475	5180.042969	8.2951715	5180.043171	8.3341205
0	120	5180.042679	8.2392727	5180.042887	8.2793436	5180.042689	8.2411336	5180.042787	8.2601129
-10	120	5180.042912	8.2841058	5180.043212	8.3420849	5180.043258	8.3508837	5180.042893	8.2804394
-20	120	5180.043212	8.3420478	5180.043293	8.3578134	5180.043424	8.3830503	5180.043437	8.3855214

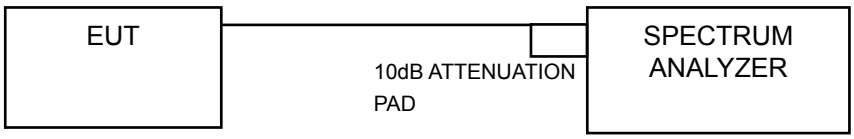
FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5180MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5180.042615	8.2269007	5180.042403	8.1859073	5180.042691	8.2415907	5180.042198	8.1462597
	120	5180.043165	8.3330067	5180.043096	8.3196911	5180.042757	8.2541921	5180.04328	8.3552687
	102	5180.042638	8.2313657	5180.042974	8.2961390	5180.042747	8.2523302	5180.042989	8.2990626

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

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.33	16.09	0.5	PASS
157	5785	16.34	16.28	0.5	PASS
165	5825	16.32	16.32	0.5	PASS

802.11n (HT20)

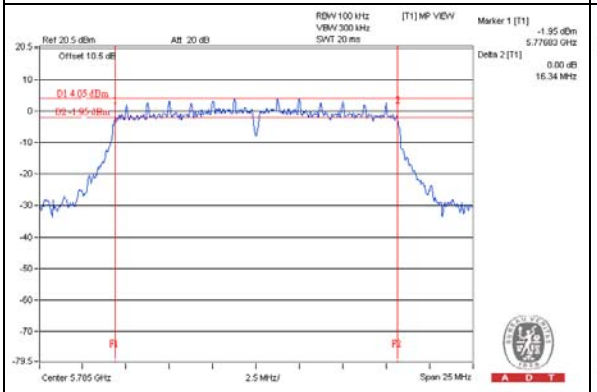
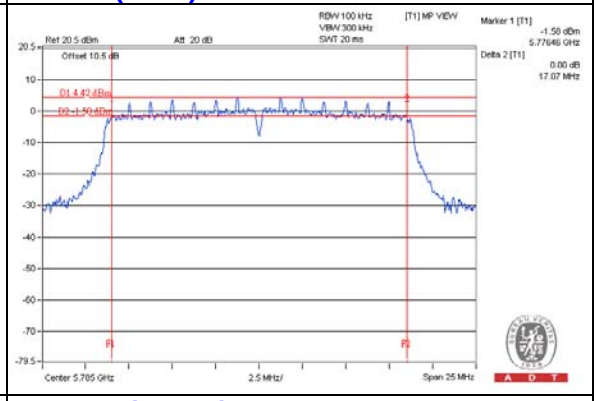
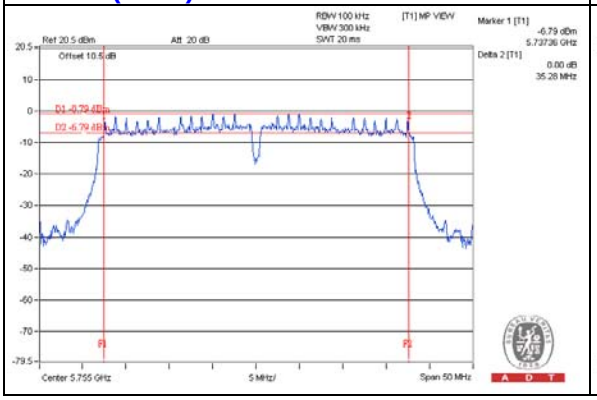
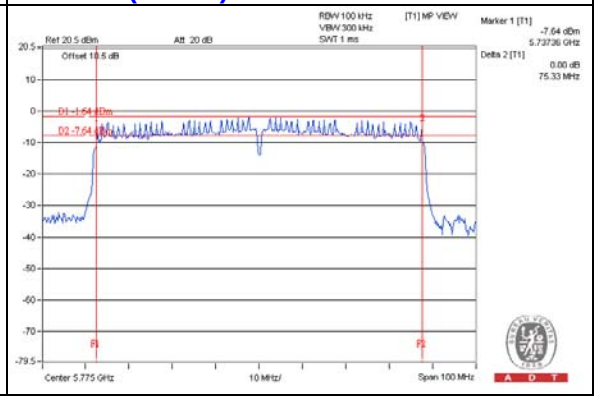
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.83	17.06	0.5	PASS
157	5785	17.07	16.96	0.5	PASS
165	5825	16.80	17.07	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	35.25	35.28	0.5	PASS
159	5795	35.27	35.28	0.5	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
155	5775	75.27	75.33	0.5	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (HT20)**
	
802.11n (HT40)	**802.11ac (VHT80)**
	

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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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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