FCC Test Report

Report No.:	RF170505C01A
FCC ID:	TVE-141703
Test Model:	FortiAP 222E
Series Model:	FortiAP 222Exxxxxx, FAP-222Exxxxxx, FORTIAP-222Exxxxxx (where “x” can be used as “A-Z” or “0-9” or “-“ or blank for software changes or marketing purposes only)
Received Date:	May 05, 2017
Test Date:	May 19 ~ Jul. 24, 2017
Issued Date:	Jul. 25, 2017
Applicant:	Fortinet Inc.
Address:	899 Kifer Road Sunnyvale, CA 94086 USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF170505C01A	Original release.	Jul. 25, 2017

1 Certificate of Conformity

Product:	Secured Wireless Access Point
Brand:	Fortinet Inc.
Test Model:	FortiAP 222E
Series Model:	FortiAP 222Exxxxxx, FAP-222Exxxxxx, FORTIAP-222Exxxxxx (where “x” can be used as “A-Z” or “0-9” or “-“ or blank for software changes or marketing purposes only)
Sample Status:	Engineering sample
Applicant:	Fortinet Inc.
Test Date:	May 19 ~ Jul. 24, 2017
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

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

Prepared by : _____ , **Date:** Jul. 25, 2017

Pettie Chen / Senior Specialist

Approved by : _____ , **Date:** Jul. 25, 2017

Ken Liu / Senior Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -5.44dB at 0.47400MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.1dB at 5725.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is N-Type. (The device is professionally installed)

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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 dB
	200MHz ~1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Secured Wireless Access Point
Brand	Fortinet Inc.
Test Model	FortiAP 222E
Series model	FortiAP 222Exxxxxx, FAP-222Exxxxxx, FORTIAP-222Exxxxxx (where “x” can be used as “A-Z” or “0-9” or “-“ or blank for software changes or marketing purposes only)
Model Difference	Refer to Note
Power Supply Rating	54Vdc (POE)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps 802.11ac: up to 867Mbps
Operating Frequency	5260~5320MHz, 5500~5720MHz
Number of Channel	5260~5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500~5720MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 12 802.11n (HT40), 802.11ac (VHT40): 6 802.11ac (VHT80): 3
Output Power	CDD Mode: 5260~5320MHz: 137.248mW 5500~5700MHz: 109.907mW Beamforming Mode: 5260~5320MHz: 68.629mW 5500~5700MHz: 81.117mW
Antenna Type	Dipole antenna with 7dBi gain
Antenna Connector	N-Type (The device is professionally installed)
Accessory Device	PoE, wall mount
Cable Supplied	1.8m non-shielded Grounding Cable without core

Note:
1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report of BV CPS report no.: RF170505C01-2. Difference compared with the original report is adding 5260~5320MHz and 5500~5700MHz band. Therefore, the EUT was re-tested and presented in the test report.
2. All models are listed as below. Model FortiAP 222E is the representative for final test.

Brand	Model	Difference
Fortinet Inc.	FortiAP 222Exxxxxx	where “x” can be used as “A-Z” or “0-9” or “-“ or blank for software changes or marketing purposes only
	FAP-222Exxxxxx	
	FORTIAP-222Exxxxxx	

3. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitter and 2 receivers.

Band	Modulation Mode	CDD Mode	Beamforming Mode	TX Function
5GHz	802.11a	Support	Not Support	2TX
	802.11n (HT20)	Support	Support	2TX
	802.11n (HT40)	Support	Support	2TX
	802.11ac (VHT20)	Support	Support	2TX
	802.11ac (VHT40)	Support	Support	2TX
	802.11ac (VHT80)	Support	Support	2TX

* The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40. After pre-testing, 802.11ac (VHT20/VHT40) power is lower than 802.11n (HT20/HT40), therefore 802.11n (HT20/HT40) is the worst case to representative mode in test report. (Final test mode refer section 3.2.1)

4. The EUT consumes power from the following PoE.

PoE	
Brand	SENAO
Model	EPA5006GPR
Input Power	100-240Vac~0.8A, 50-60Hz
Output Power	54Vdc / 0.6A
Power Cord	0.5m non-shielded power cord without core

5. The WLAN & BT LE can transmit simultaneously.
6. 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

5260~5320MHz:

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

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

5500~5720MHz:

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

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

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz
138	5690 MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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

Note:

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

Radiated Emission Test (Above 1GHz):

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

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	58.5
-	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11n (HT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	58.5

Radiated Emission Test (Below 1GHz):

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

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	60	OFDM	6.0
		5500-5720	100 to 144		OFDM	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.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	60	OFDM	6.0
		5500-5720	100 to 144		OFDM	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.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	58.5
-	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11n (HT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	58.5

Test Condition:

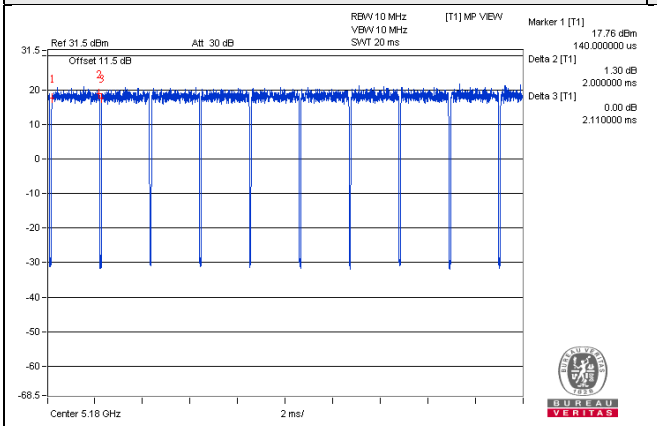
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	23deg. C, 66%RH	120Vac, 60Hz	Willy Cheng
RE<1G	25deg. C, 66%RH	120Vac, 60Hz	Jones Chang
PLC	25deg. C, 67%RH	120Vac, 60Hz	Jones Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu

3.3 Duty Cycle of Test Signal

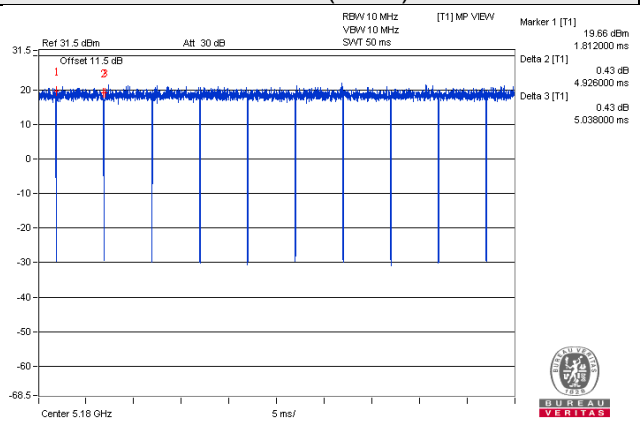
Duty cycle of test signal is > 98%, duty factor is not required
Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 2.0/2.11 = 0.948, Duty factor = 10 * log(1/0.948) = 0.23
802.11n (HT20): Duty cycle = 4.926/5.038 = 0.978, Duty factor = 10 * log(1/0.978) = 0.10
802.11n (HT40): Duty cycle = 2.397/2.495 = 0.961, Duty factor = 10 * log(1/0.961) = 0.17
802.11ac (VHT80): Duty cycle = 1.117/1.215 = 0.919, Duty factor = 10 * log(1/0.919) = 0.37

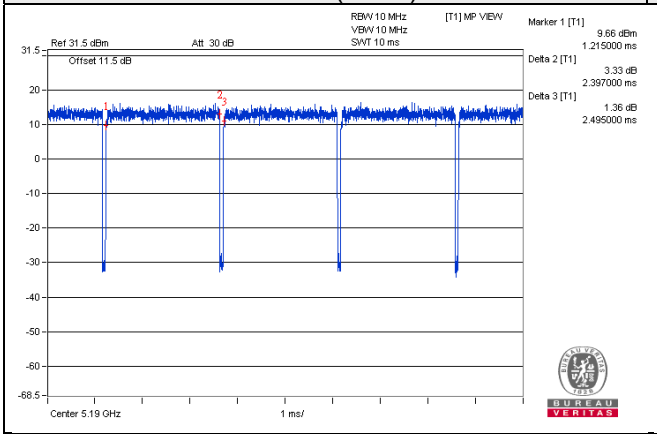
802.11a



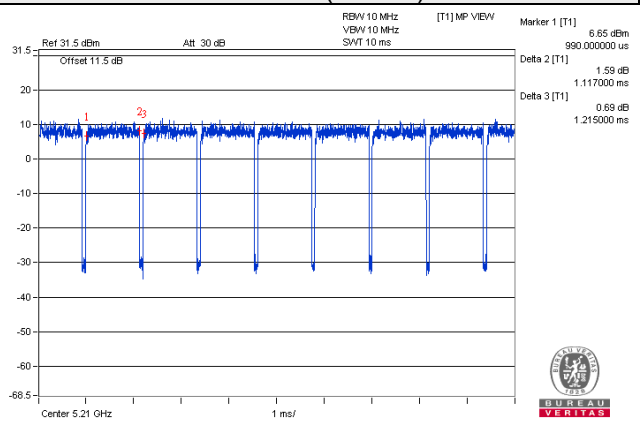
802.11n (HT20)



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.

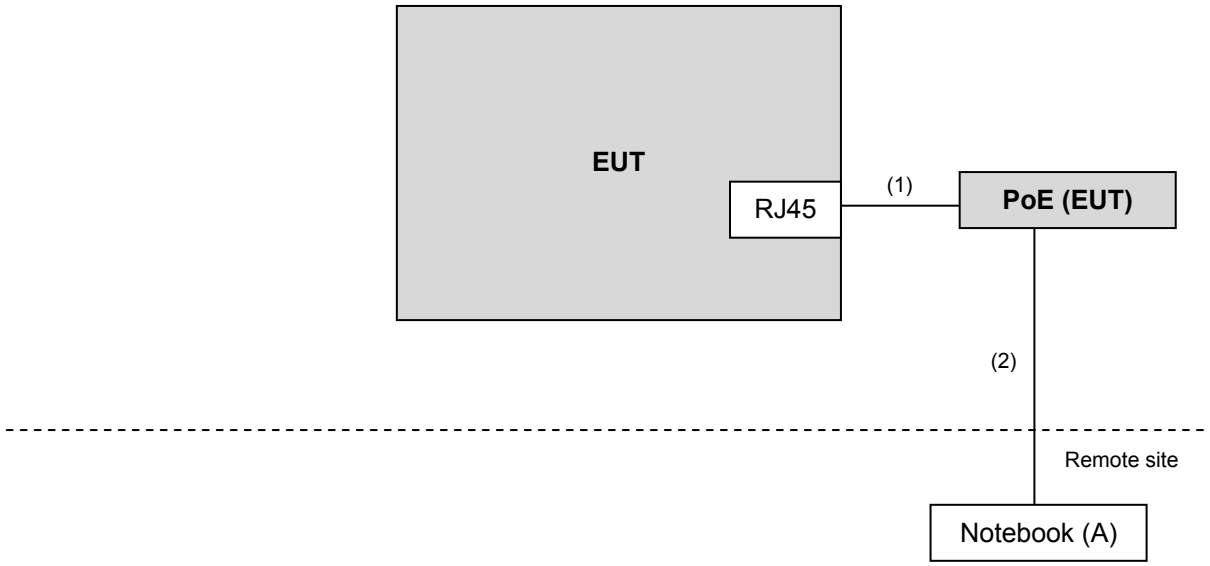
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45 cable	1	1.0	N	0	-
2.	RJ45 cable	1	10	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedure New Rules v01r04
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10:2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

<table>
<tr><td colspan="3">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="3" rowspan="2">789033 D02 General UNII Test Procedure New Rules v01r04</td><td colspan="2">Field Strength at 3m</td></tr>
<tr><td>PK: 74 (dBµV/m)</td><td>AV: 54 (dBµV/m)</td></tr>
<tr><td>Frequency Band</td><td colspan="2">Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3m</td></tr>
<tr><td>5150~5250 MHz</td><td colspan="2">15.407(b)(1)</td><td rowspan="3">PK: -27 (dBm/MHz)</td><td rowspan="3">PK: 68.2(dBµV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td colspan="2">15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td colspan="2">15.407(b)(3)</td></tr>
<tr><td rowspan="2">5725~5850 MHz</td><td>☐</td><td>15.407(b)(4)(i)</td><td>PK: -27 (dBm/MHz) *1
PK: 10 (dBm/MHz) *2
PK: 15.6 (dBm/MHz) *3
PK: 27 (dBm/MHz) *4</td><td>PK: 68.2(dBµV/m) *1
PK: 105.2 (dBµV/m) *2
PK: 110.8(dBµV/m) *3
PK: 122.2 (dBµV/m) *4</td></tr>
<tr><td>☐</td><td>15.407(b)(4)(ii)</td><td colspan="2">Emission limits in section 15.247(d)</td></tr>
<tr><td colspan="5">*1 beyond 75 MHz or more above of the band edge.
*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.
*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.
*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.</td></tr>
</table>

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

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 02, 2017	May 01, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Nov. 16, 2016	Nov. 15, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	9120D	209	Dec. 27, 2016	Dec. 26, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier Agilent	8447D	2944A10738	Aug. 22, 2016	Aug. 21, 2017
Preamplifier Agilent	8449B	3008A01922	Sep. 18, 2016	Sep. 17, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (214378)	Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 106	Cable-CH3-03 (309224+12738)	Aug. 22, 2016	Aug. 21, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
High Speed Peak Power Meter	ML2495A	0824012	Aug. 11, 2016	Aug. 10, 2017
Power Sensor	MA2411B	0738171	Aug. 11, 2016	Aug. 10, 2017
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 17, 2016	Oct. 16, 2017

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The IC Site Registration No. is IC 7450F-3.

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case 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.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 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 ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.

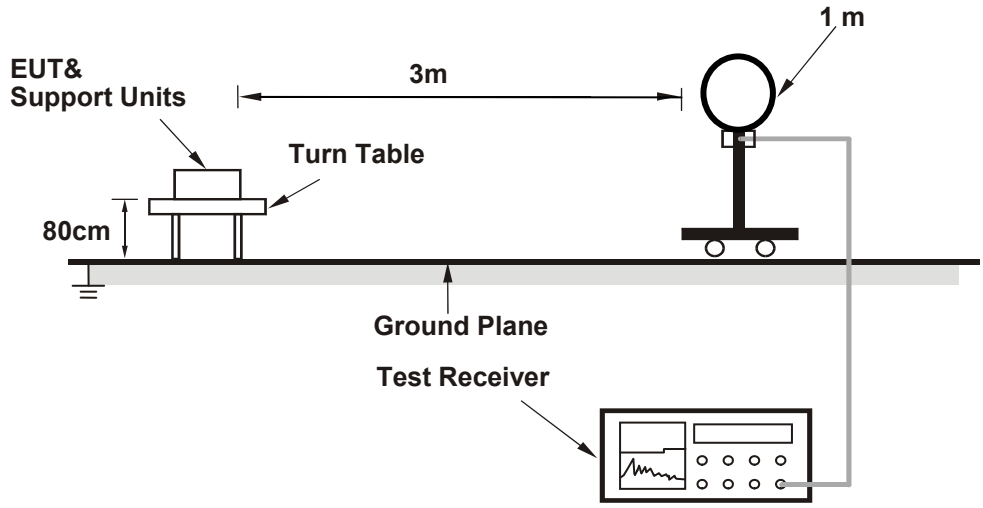
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

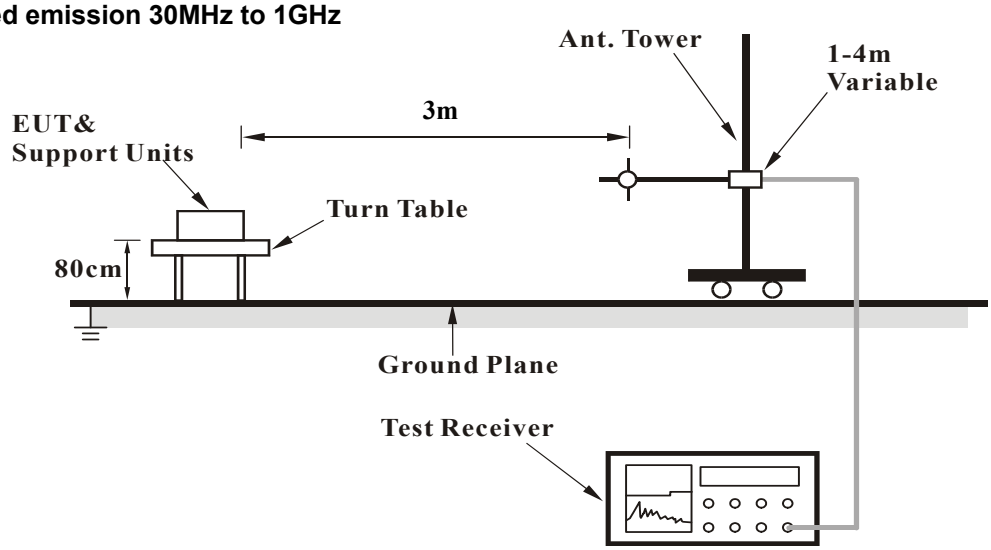
No deviation.

4.1.5 Test Set Up

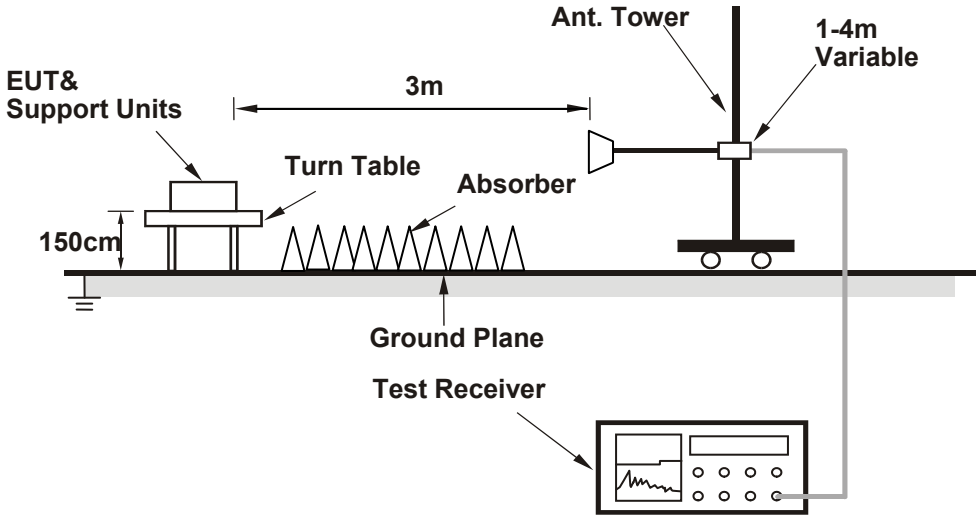
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Prepared a notebook to act as a 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 (QCARCT.exe) to enable EUT under transmission condition continuously at specific channel frequency.
d. The necessary accessories enable the system in full functions.

4.1.7 Test Results

Above 1GHz data:

802.11a

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	53.6 PK	74.0	-20.4	1.50 H	238	52.8	0.8
2	5150.00	41.0 AV	54.0	-13.0	1.50 H	238	40.2	0.8
3	*5260.00	100.8 PK			1.00 H	119	62.0	38.8
4	*5260.00	89.7 AV			1.00 H	119	50.9	38.8
5	#10520.00	57.3 PK	74.0	-16.7	1.90 H	212	43.6	13.7
6	#10520.00	44.4 AV	54.0	-9.6	1.90 H	212	30.7	13.7
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	55.6 PK	74.0	-18.4	1.57 V	2	54.8	0.8
2	5150.00	43.5 AV	54.0	-10.5	1.57 V	2	42.7	0.8
3	*5260.00	117.8 PK			1.38 V	22	79.0	38.8
4	*5260.00	107.4 AV			1.38 V	22	68.6	38.8
5	#10520.00	57.3 PK	74.0	-16.7	1.55 V	332	43.6	13.7
6	#10520.00	44.5 AV	54.0	-9.5	1.55 V	332	30.8	13.7

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 60	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	*5300.00	101.7 PK			1.80 H	217	62.8	38.9
2	*5300.00	91.5 AV			1.80 H	217	52.6	38.9
3	5350.00	54.6 PK	74.0	-19.4	1.16 H	221	53.5	1.1
4	5350.00	41.5 AV	54.0	-12.5	1.16 H	221	40.4	1.1
5	10600.00	57.2 PK	74.0	-16.8	1.37 H	336	43.4	13.8
6	10600.00	43.9 AV	54.0	-10.1	1.37 H	336	30.1	13.8
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	*5300.00	118.4 PK			1.34 V	0	79.5	38.9
2	*5300.00	108.1 AV			1.34 V	0	69.2	38.9
3	5350.00	66.0 PK	74.0	-8.0	1.33 V	359	64.9	1.1
4	5350.00	50.1 AV	54.0	-3.9	1.33 V	359	49.0	1.1
5	10600.00	57.5 PK	74.0	-16.5	1.33 V	233	43.7	13.8
6	10600.00	44.2 AV	54.0	-9.8	1.33 V	233	30.4	13.8

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 64	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	*5320.00	98.5 PK			1.05 H	133	59.5	39.0
2	*5320.00	87.9 AV			1.05 H	133	48.9	39.0
3	5350.00	54.8 PK	74.0	-19.2	1.38 H	309	53.7	1.1
4	5350.00	41.8 AV	54.0	-12.2	1.38 H	309	40.7	1.1
5	10640.00	57.4 PK	74.0	-16.6	1.85 H	343	43.5	13.9
6	10640.00	44.0 AV	54.0	-10.0	1.85 H	343	30.1	13.9
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	*5320.00	115.6 PK			1.52 V	164	76.6	39.0
2	*5320.00	104.9 AV			1.52 V	164	65.9	39.0
3	5350.00	68.9 PK	74.0	-5.1	1.34 V	321	67.8	1.1
4	5350.00	52.2 AV	54.0	-1.8	1.34 V	321	51.1	1.1
5	10640.00	57.3 PK	74.0	-16.7	1.98 V	237	43.4	13.9
6	10640.00	43.5 AV	54.0	-10.5	1.98 V	237	29.6	13.9

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 100	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	5460.00	51.5 PK	74.0	-22.5	1.69 H	279	50.3	1.2
2	5460.00	41.0 AV	54.0	-13.0	1.69 H	279	39.8	1.2
3	#5470.00	53.7 PK	74.0	-20.3	1.88 H	153	52.5	1.2
4	#5470.00	41.6 AV	54.0	-12.4	1.88 H	153	40.4	1.2
5	*5500.00	100.0 PK			1.56 H	21	60.7	39.3
6	*5500.00	90.0 AV			1.56 H	21	50.7	39.3
7	11000.00	60.7 PK	74.0	-13.3	2.22 H	202	45.4	15.3
8	11000.00	48.8 AV	54.0	-5.2	2.22 H	202	33.5	15.3
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	5460.00	61.5 PK	74.0	-12.5	1.66 V	340	60.3	1.2
2	5460.00	45.8 AV	54.0	-8.2	1.66 V	340	44.6	1.2
3	#5470.00	68.0 PK	74.0	-6.0	1.60 V	19	66.8	1.2
4	#5470.00	52.4 AV	54.0	-1.6	1.60 V	19	51.2	1.2
5	*5500.00	114.3 PK			1.56 V	164	75.0	39.3
6	*5500.00	103.9 AV			1.56 V	164	64.6	39.3
7	11000.00	58.1 PK	74.0	-15.9	2.34 V	83	42.8	15.3
8	11000.00	45.0 AV	54.0	-9.0	2.34 V	83	29.7	15.3

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 116	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	*5580.00	100.6 PK			1.00 H	210	61.1	39.5
2	*5580.00	89.8 AV			1.00 H	210	50.3	39.5
3	11160.00	58.0 PK	74.0	-16.0	1.33 H	309	43.1	14.9
4	11160.00	44.2 AV	54.0	-9.8	1.33 H	309	29.3	14.9
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	*5580.00	119.1 PK			1.53 V	355	79.6	39.5
2	*5580.00	108.9 AV			1.53 V	355	69.4	39.5
3	11160.00	57.6 PK	74.0	-16.4	1.27 V	313	42.7	14.9
4	11160.00	43.7 AV	54.0	-10.3	1.27 V	313	28.8	14.9

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 140	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	*5700.00	91.6 PK			2.39 H	113	51.8	39.8
2	*5700.00	81.1 AV			2.39 H	113	41.3	39.8
3	#5725.00	55.2 PK	74.0	-18.8	1.13 H	25	53.2	2.0
4	#5725.00	45.1 AV	54.0	-8.9	1.13 H	25	43.1	2.0
5	11400.00	58.9 PK	74.0	-15.1	1.46 H	189	44.4	14.5
6	11400.00	45.4 AV	54.0	-8.6	1.46 H	189	30.9	14.5
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	*5700.00	110.3 PK			1.65 V	354	70.5	39.8
2	*5700.00	99.9 AV			1.65 V	354	60.1	39.8
3	#5725.00	68.9 PK	74.0	-5.1	1.54 V	338	66.9	2.0
4	**#5725.00**	**52.9 AV**	**54.0**	**-1.1**	**1.54 V**	**338**	**50.9**	**2.0**
5	11400.00	59.7 PK	74.0	-14.3	1.07 V	132	45.2	14.5
6	11400.00	45.9 AV	54.0	-8.1	1.07 V	132	31.4	14.5

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 144	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	#5470.00	52.4 PK	74.0	-21.6	1.42 H	222	51.2	1.2
2	#5470.00	40.8 AV	54.0	-13.2	1.42 H	222	39.6	1.2
3	*5720.00	105.5 PK			1.42 H	133	65.6	39.9
4	*5720.00	94.5 AV			1.42 H	133	54.6	39.9
5	#5850.00	53.5 PK	74.0	-20.5	1.42 H	135	51.2	2.3
6	#5850.00	41.8 AV	54.0	-12.2	1.42 H	135	39.5	2.3
7	11440.00	58.8 PK	74.0	-15.2	1.69 H	289	44.3	14.5
8	11440.00	45.1 AV	54.0	-8.9	1.69 H	289	30.6	14.5
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	#5470.00	53.6 PK	74.0	-20.4	1.32 V	312	52.4	1.2
2	#5470.00	41.5 AV	54.0	-12.5	1.32 V	312	40.3	1.2
3	*5720.00	119.9 PK			1.38 V	354	80.0	39.9
4	*5720.00	109.7 AV			1.38 V	354	69.8	39.9
5	#5850.00	54.7 PK	74.0	-19.3	1.22 V	331	52.4	2.3
6	#5850.00	42.7 AV	54.0	-11.3	1.22 V	331	40.4	2.3
7	11440.00	58.4 PK	74.0	-15.6	1.22 V	339	43.9	14.5
8	11440.00	44.8 AV	54.0	-9.2	1.22 V	339	30.3	14.5

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 (HT20)

CHANNEL	TX Channel 52	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	54.0 PK	74.0	-20.0	2.16 H	312	53.2	0.8
2	5150.00	41.2 AV	54.0	-12.8	2.16 H	312	40.4	0.8
3	*5260.00	100.5 PK			1.54 H	104	61.7	38.8
4	*5260.00	89.7 AV			1.54 H	104	50.9	38.8
5	#10520.00	57.1 PK	74.0	-16.9	1.66 H	111	43.4	13.7
6	#10520.00	44.2 AV	54.0	-9.8	1.66 H	111	30.5	13.7
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	55.6 PK	74.0	-18.4	1.29 V	274	54.8	0.8
2	5150.00	43.0 AV	54.0	-11.0	1.29 V	274	42.2	0.8
3	*5260.00	118.7 PK			1.46 V	5	79.9	38.8
4	*5260.00	107.5 AV			1.46 V	5	68.7	38.8
5	#10520.00	57.4 PK	74.0	-16.6	1.45 V	287	43.7	13.7
6	#10520.00	44.3 AV	54.0	-9.7	1.45 V	287	30.6	13.7

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 60	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	*5300.00	101.0 PK			1.03 H	117	62.1	38.9
2	*5300.00	91.2 AV			1.03 H	117	52.3	38.9
3	5350.00	55.0 PK	74.0	-19.0	2.02 H	179	53.9	1.1
4	5350.00	41.2 AV	54.0	-12.8	2.02 H	179	40.1	1.1
5	10600.00	57.9 PK	74.0	-16.1	1.69 H	312	44.1	13.8
6	10600.00	44.5 AV	54.0	-9.5	1.69 H	312	30.7	13.8
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	*5300.00	118.7 PK			1.45 V	2	79.8	38.9
2	*5300.00	108.1 AV			1.45 V	2	69.2	38.9
3	5350.00	67.9 PK	74.0	-6.1	1.53 V	163	66.8	1.1
4	5350.00	50.6 AV	54.0	-3.4	1.53 V	163	49.5	1.1
5	10600.00	57.3 PK	74.0	-16.7	1.43 V	312	43.5	13.8
6	10600.00	44.2 AV	54.0	-9.8	1.43 V	312	30.4	13.8

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 64	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	*5320.00	97.4 PK			1.18 H	200	58.4	39.0
2	*5320.00	86.7 AV			1.18 H	200	47.7	39.0
3	5350.00	54.6 PK	74.0	-19.4	1.78 H	337	53.5	1.1
4	5350.00	41.4 AV	54.0	-12.6	1.78 H	337	40.3	1.1
5	10640.00	57.0 PK	74.0	-17.0	2.19 H	268	43.1	13.9
6	10640.00	43.7 AV	54.0	-10.3	2.19 H	268	29.8	13.9
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	*5320.00	115.0 PK			1.82 V	184	76.0	39.0
2	*5320.00	104.0 AV			1.82 V	184	65.0	39.0
3	5350.00	68.3 PK	74.0	-5.7	1.36 V	356	67.2	1.1
4	5350.00	52.3 AV	54.0	-1.7	1.36 V	356	51.2	1.1
5	10640.00	57.4 PK	74.0	-16.6	1.88 V	264	43.5	13.9
6	10640.00	44.0 AV	54.0	-10.0	1.88 V	264	30.1	13.9

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 100	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	5460.00	54.3 PK	74.0	-19.7	2.02 H	297	53.1	1.2
2	5460.00	41.0 AV	54.0	-13.0	2.02 H	297	39.8	1.2
3	#5470.00	54.7 PK	74.0	-19.3	2.17 H	279	53.5	1.2
4	#5470.00	41.3 AV	54.0	-12.7	2.17 H	279	40.1	1.2
5	*5500.00	95.8 PK			1.38 H	126	56.5	39.3
6	*5500.00	84.9 AV			1.38 H	126	45.6	39.3
7	11000.00	58.2 PK	74.0	-15.8	2.00 H	289	42.9	15.3
8	11000.00	44.7 AV	54.0	-9.3	2.00 H	289	29.4	15.3
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	5460.00	62.5 PK	74.0	-11.5	1.50 V	8	61.3	1.2
2	5460.00	47.2 AV	54.0	-6.8	1.50 V	8	46.0	1.2
3	#5470.00	69.2 PK	74.0	-4.8	1.65 V	356	68.0	1.2
4	#5470.00	52.3 AV	54.0	-1.7	1.65 V	356	51.1	1.2
5	*5500.00	115.9 PK			1.35 V	341	76.6	39.3
6	*5500.00	104.7 AV			1.35 V	341	65.4	39.3
7	11000.00	58.2 PK	74.0	-15.8	1.68 V	349	42.9	15.3
8	11000.00	44.6 AV	54.0	-9.4	1.68 V	349	29.3	15.3

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 116	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	*5580.00	101.3 PK			1.32 H	119	61.8	39.5
2	*5580.00	90.0 AV			1.32 H	119	50.5	39.5
3	11160.00	58.0 PK	74.0	-16.0	2.22 H	169	43.1	14.9
4	11160.00	44.4 AV	54.0	-9.6	2.22 H	169	29.5	14.9
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	*5580.00	121.3 PK			1.31 V	344	81.8	39.5
2	*5580.00	109.4 AV			1.31 V	344	69.9	39.5
3	11160.00	58.0 PK	74.0	-16.0	1.20 V	352	43.1	14.9
4	11160.00	44.1 AV	54.0	-9.9	1.20 V	352	29.2	14.9

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 140	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	*5700.00	95.9 PK			1.39 H	126	56.1	39.8
2	*5700.00	84.7 AV			1.39 H	126	44.9	39.8
3	#5725.00	53.2 PK	74.0	-20.8	1.48 H	195	51.2	2.0
4	#5725.00	42.2 AV	54.0	-11.8	1.48 H	195	40.2	2.0
5	11400.00	59.2 PK	74.0	-14.8	1.30 H	222	44.7	14.5
6	11400.00	44.9 AV	54.0	-9.1	1.30 H	222	30.4	14.5
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	*5700.00	113.7 PK			1.43 V	348	73.9	39.8
2	*5700.00	103.2 AV			1.43 V	348	63.4	39.8
3	#5725.00	68.3 PK	74.0	-5.7	1.29 V	338	66.3	2.0
4	#5725.00	52.7 AV	54.0	-1.3	1.29 V	338	50.7	2.0
5	11400.00	58.0 PK	74.0	-16.0	1.37 V	339	43.5	14.5
6	11400.00	44.7 AV	54.0	-9.3	1.37 V	339	30.2	14.5

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 144	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	#5470.00	52.4 PK	74.0	-21.6	1.32 H	261	51.2	1.2
2	#5470.00	40.7 AV	54.0	-13.3	1.32 H	261	39.5	1.2
3	*5720.00	105.2 PK			1.31 H	132	65.3	39.9
4	*5720.00	94.5 AV			1.31 H	132	54.6	39.9
5	#5850.00	53.2 PK	74.0	-20.8	1.23 H	243	50.9	2.3
6	#5850.00	41.9 AV	54.0	-12.1	1.23 H	243	39.6	2.3
7	11440.00	58.2 PK	74.0	-15.8	1.23 H	294	43.7	14.5
8	11440.00	44.6 AV	54.0	-9.4	1.23 H	294	30.1	14.5
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	#5470.00	54.3 PK	74.0	-19.7	1.17 V	335	53.1	1.2
2	#5470.00	41.4 AV	54.0	-12.6	1.17 V	335	40.2	1.2
3	*5720.00	119.8 PK			1.36 V	353	79.9	39.9
4	*5720.00	109.4 AV			1.36 V	353	69.5	39.9
5	#5850.00	54.3 PK	74.0	-19.7	1.42 V	308	52.0	2.3
6	#5850.00	42.9 AV	54.0	-11.1	1.42 V	308	40.6	2.3
7	11440.00	58.4 PK	74.0	-15.6	1.28 V	351	43.9	14.5
8	11440.00	44.7 AV	54.0	-9.3	1.28 V	351	30.2	14.5

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 (HT40)

CHANNEL	TX Channel 54	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	*5270.00	95.8 PK			1.81 H	165	56.9	38.9
2	*5270.00	86.4 AV			1.81 H	165	47.5	38.9
3	5350.00	51.6 PK	74.0	-22.4	2.20 H	144	50.5	1.1
4	5350.00	40.7 AV	54.0	-13.3	2.20 H	144	39.6	1.1
5	#10540.00	56.1 PK	74.0	-17.9	1.66 H	277	42.4	13.7
6	#10540.00	43.2 AV	54.0	-10.8	1.66 H	277	29.5	13.7
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	*5270.00	115.1 PK			1.46 V	19	76.2	38.9
2	*5270.00	105.6 AV			1.46 V	19	66.7	38.9
3	5350.00	66.6 PK	74.0	-7.4	1.52 V	6	65.5	1.1
4	5350.00	52.4 AV	54.0	-1.6	1.52 V	6	51.3	1.1
5	#10540.00	57.4 PK	74.0	-16.6	2.10 V	55	43.7	13.7
6	#10540.00	44.3 AV	54.0	-9.7	2.10 V	55	30.6	13.7

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 62	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	*5310.00	91.5 PK			1.19 H	156	52.6	38.9
2	*5310.00	82.0 AV			1.19 H	156	43.1	38.9
3	5350.00	53.6 PK	74.0	-20.4	1.68 H	198	52.5	1.1
4	5350.00	41.4 AV	54.0	-12.6	1.68 H	198	40.3	1.1
5	10620.00	55.9 PK	74.0	-18.1	1.70 H	34	42.1	13.8
6	10620.00	42.6 AV	54.0	-11.4	1.70 H	34	28.8	13.8
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	*5310.00	109.6 PK			1.66 V	5	70.7	38.9
2	*5310.00	100.6 AV			1.66 V	5	61.7	38.9
3	5350.00	66.0 PK	74.0	-8.0	1.57 V	6	64.9	1.1
4	5350.00	52.7 AV	54.0	-1.3	1.57 V	6	51.6	1.1
5	10620.00	56.5 PK	74.0	-17.5	2.11 V	345	42.7	13.8
6	10620.00	43.4 AV	54.0	-10.6	2.11 V	345	29.6	13.8

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 102	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	5460.00	55.5 PK	74.0	-18.5	1.76 H	199	54.3	1.2
2	5460.00	41.1 AV	54.0	-12.9	1.76 H	199	39.9	1.2
3	#5470.00	54.8 PK	74.0	-19.2	1.64 H	187	53.6	1.2
4	#5470.00	41.4 AV	54.0	-12.6	1.64 H	187	40.2	1.2
5	*5510.00	91.2 PK			3.73 H	291	51.9	39.3
6	*5510.00	81.7 AV			3.73 H	291	42.4	39.3
7	11020.00	58.7 PK	74.0	-15.3	1.41 H	348	43.5	15.2
8	11020.00	45.0 AV	54.0	-9.0	1.41 H	348	29.8	15.2
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	5460.00	63.0 PK	74.0	-11.0	1.32 V	331	61.8	1.2
2	5460.00	49.4 AV	54.0	-4.6	1.32 V	331	48.2	1.2
3	#5470.00	70.5 PK	74.0	-3.5	1.17 V	346	69.3	1.2
4	#5470.00	52.6 AV	54.0	-1.4	1.17 V	346	51.4	1.2
5	*5510.00	110.4 PK			1.30 V	348	71.1	39.3
6	*5510.00	101.0 AV			1.30 V	348	61.7	39.3
7	11020.00	57.8 PK	74.0	-16.2	1.46 V	313	42.6	15.2
8	11020.00	44.4 AV	54.0	-9.6	1.46 V	313	29.2	15.2

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 110	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	#5470.00	54.6 PK	74.0	-19.4	2.25 H	163	53.4	1.2
2	#5470.00	42.4 AV	54.0	-11.6	2.25 H	163	41.2	1.2
3	*5550.00	94.4 PK			1.10 H	303	55.1	39.3
4	*5550.00	84.7 AV			1.10 H	303	45.4	39.3
5	11100.00	58.4 PK	74.0	-15.6	2.49 H	98	43.6	14.8
6	11100.00	45.1 AV	54.0	-8.9	2.49 H	98	30.3	14.8
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	#5470.00	67.0 PK	74.0	-7.0	1.17 V	346	65.8	1.2
2	#5470.00	52.2 AV	54.0	-1.8	1.17 V	346	51.0	1.2
3	*5550.00	113.8 PK			1.35 V	350	74.5	39.3
4	*5550.00	103.8 AV			1.35 V	350	64.5	39.3
5	11100.00	57.3 PK	74.0	-16.7	1.22 V	319	42.5	14.8
6	11100.00	44.0 AV	54.0	-10.0	1.22 V	319	29.2	14.8

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 134	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	*5670.00	92.6 PK			1.11 H	107	52.9	39.7
2	*5670.00	83.0 AV			1.11 H	107	43.3	39.7
3	#5725.00	54.2 PK	74.0	-19.8	1.16 H	199	52.2	2.0
4	#5725.00	42.2 AV	54.0	-11.8	1.16 H	199	40.2	2.0
5	11340.00	58.4 PK	74.0	-15.6	1.25 H	79	43.7	14.7
6	11340.00	45.3 AV	54.0	-8.7	1.25 H	79	30.6	14.7
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	*5670.00	110.6 PK			1.36 V	353	70.9	39.7
2	*5670.00	101.1 AV			1.36 V	353	61.4	39.7
3	#5725.00	67.5 PK	74.0	-6.5	1.38 V	348	65.5	2.0
4	#5725.00	52.3 AV	54.0	-1.7	1.38 V	348	50.3	2.0
5	11340.00	57.6 PK	74.0	-16.4	1.29 V	314	42.9	14.7
6	11340.00	44.5 AV	54.0	-9.5	1.29 V	314	29.8	14.7

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 142	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	#5470.00	52.3 PK	74.0	-21.7	1.69 H	133	51.1	1.2
2	#5470.00	41.2 AV	54.0	-12.8	1.69 H	133	40.0	1.2
3	*5710.00	101.2 PK			1.40 H	131	61.3	39.9
4	*5710.00	91.3 AV			1.40 H	131	51.4	39.9
5	#5850.00	53.7 PK	74.0	-20.3	1.44 H	161	51.4	2.3
6	#5850.00	42.2 AV	54.0	-11.8	1.44 H	161	39.9	2.3
7	11420.00	58.1 PK	74.0	-15.9	1.33 H	168	43.7	14.4
8	11420.00	44.3 AV	54.0	-9.7	1.33 H	168	29.9	14.4
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	#5470.00	52.6 PK	74.0	-21.4	1.63 V	352	51.4	1.2
2	#5470.00	41.7 AV	54.0	-12.3	1.63 V	352	40.5	1.2
3	*5710.00	116.3 PK			1.34 V	354	76.4	39.9
4	*5710.00	106.3 AV			1.34 V	354	66.4	39.9
5	#5850.00	60.4 PK	74.0	-13.6	1.47 V	357	58.1	2.3
6	#5850.00	47.1 AV	54.0	-6.9	1.47 V	357	44.8	2.3
7	11420.00	59.2 PK	74.0	-14.8	1.42 V	339	44.8	14.4
8	11420.00	45.3 AV	54.0	-8.7	1.42 V	339	30.9	14.4

REMARKS:

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

802.11ac (VHT80)

CHANNEL	TX Channel 58	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	52.0 PK	74.0	-22.0	1.44 H	270	51.2	0.8
2	5150.00	40.7 AV	54.0	-13.3	1.44 H	270	39.9	0.8
3	*5290.00	85.2 PK			1.83 H	164	46.3	38.9
4	*5290.00	75.7 AV			1.83 H	164	36.8	38.9
5	5350.00	53.9 PK	74.0	-20.1	1.85 H	200	52.8	1.1
6	5350.00	41.6 AV	54.0	-12.4	1.85 H	200	40.5	1.1
7	#10580.00	55.7 PK	74.0	-18.3	1.58 H	32	41.9	13.8
8	#10580.00	42.7 AV	54.0	-11.3	1.58 H	32	28.9	13.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	53.9 PK	74.0	-20.1	1.60 V	0	53.1	0.8
2	5150.00	41.4 AV	54.0	-12.6	1.60 V	0	40.6	0.8
3	*5290.00	105.3 PK			1.60 V	12	66.4	38.9
4	*5290.00	95.7 AV			1.60 V	12	56.8	38.9
5	5350.00	66.5 PK	74.0	-7.5	1.56 V	5	65.4	1.1
6	5350.00	52.6 AV	54.0	-1.4	1.56 V	5	51.5	1.1
7	#10580.00	56.3 PK	74.0	-17.7	1.88 V	333	42.5	13.8
8	#10580.00	43.3 AV	54.0	-10.7	1.88 V	333	29.5	13.8

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 106	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	5460.00	52.0 PK	74.0	-22.0	1.83 H	223	50.8	1.2
2	5460.00	41.0 AV	54.0	-13.0	1.83 H	223	39.8	1.2
3	#5470.00	52.7 PK	74.0	-21.3	1.68 H	211	51.5	1.2
4	#5470.00	41.5 AV	54.0	-12.5	1.68 H	211	40.3	1.2
5	*5530.00	87.7 PK			1.62 H	217	48.4	39.3
6	*5530.00	77.7 AV			1.62 H	217	38.4	39.3
7	11060.00	58.8 PK	74.0	-15.2	2.22 H	175	43.9	14.9
8	11060.00	45.0 AV	54.0	-9.0	2.22 H	175	30.1	14.9
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	5460.00	67.0 PK	74.0	-7.0	1.32 V	359	65.8	1.2
2	5460.00	51.7 AV	54.0	-2.3	1.32 V	359	50.5	1.2
3	#5470.00	67.9 PK	74.0	-6.1	1.30 V	327	66.7	1.2
4	#5470.00	52.8 AV	54.0	-1.2	1.30 V	327	51.6	1.2
5	*5530.00	105.0 PK			1.34 V	336	65.7	39.3
6	*5530.00	94.7 AV			1.34 V	336	55.4	39.3
7	11060.00	58.4 PK	74.0	-15.6	1.57 V	308	43.5	14.9
8	11060.00	44.8 AV	54.0	-9.2	1.57 V	308	29.9	14.9

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 122	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	#5470.00	52.7 PK	74.0	-21.3	1.80 H	218	51.5	1.2
2	#5470.00	41.4 AV	54.0	-12.6	1.80 H	218	40.2	1.2
3	*5610.00	90.9 PK			1.57 H	134	51.3	39.6
4	*5610.00	81.0 AV			1.57 H	134	41.4	39.6
5	#5725.00	54.5 PK	74.0	-19.5	1.76 H	226	52.5	2.0
6	#5725.00	42.9 AV	54.0	-11.1	1.76 H	226	40.9	2.0
7	11220.00	58.0 PK	74.0	-16.0	1.64 H	231	42.9	15.1
8	11220.00	45.0 AV	54.0	-9.0	1.64 H	231	29.9	15.1
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	#5470.00	61.3 PK	74.0	-12.7	1.36 V	36	60.1	1.2
2	#5470.00	47.1 AV	54.0	-6.9	1.36 V	36	45.9	1.2
3	*5610.00	105.9 PK			1.35 V	331	66.3	39.6
4	*5610.00	96.3 AV			1.35 V	331	56.7	39.6
5	#5725.00	67.6 PK	74.0	-6.4	1.37 V	353	65.6	2.0
6	#5725.00	52.4 AV	54.0	-1.6	1.37 V	353	50.4	2.0
7	11220.00	58.7 PK	74.0	-15.3	1.31 V	358	43.6	15.1
8	11220.00	45.3 AV	54.0	-8.7	1.31 V	358	30.2	15.1

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 138	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	#5470.00	52.9 PK	74.0	-21.1	1.36 H	169	51.7	1.2
2	#5470.00	41.1 AV	54.0	-12.9	1.36 H	169	39.9	1.2
3	*5690.00	95.4 PK			1.57 H	137	55.6	39.8
4	*5690.00	85.8 AV			1.57 H	137	46.0	39.8
5	#5850.00	55.8 PK	74.0	-18.2	1.67 H	119	53.5	2.3
6	#5850.00	44.0 AV	54.0	-10.0	1.67 H	119	41.7	2.3
7	11380.00	58.0 PK	74.0	-16.0	1.38 H	221	43.5	14.5
8	11380.00	45.4 AV	54.0	-8.6	1.38 H	221	30.9	14.5
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	#5470.00	63.4 PK	74.0	-10.6	1.21 V	360	62.2	1.2
2	#5470.00	46.5 AV	54.0	-7.5	1.21 V	360	45.3	1.2
3	*5690.00	110.6 PK			1.48 V	351	70.8	39.8
4	*5690.00	101.0 AV			1.48 V	351	61.2	39.8
5	#5850.00	65.6 PK	74.0	-8.4	1.46 V	360	63.3	2.3
6	#5850.00	52.5 AV	54.0	-1.5	1.46 V	360	50.2	2.3
7	11380.00	59.9 PK	74.0	-14.1	1.36 V	349	45.4	14.5
8	11380.00	45.9 AV	54.0	-8.1	1.36 V	349	31.4	14.5

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: 802.11a

CHANNEL	TX Channel 60	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	29.90	27.6 QP	40.0	-12.4	1.99 H	8	44.0	-16.4
2	57.12	28.1 QP	40.0	-11.9	1.99 H	8	42.7	-14.6
3	103.78	36.4 QP	43.5	-7.1	1.99 H	279	54.4	-18.0
4	142.67	33.1 QP	43.5	-10.4	1.49 H	95	47.2	-14.1
5	167.94	30.8 QP	43.5	-12.7	1.49 H	104	44.7	-13.9
6	212.66	31.9 QP	43.5	-11.6	1.99 H	207	47.8	-15.9
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	30.49	36.1 QP	40.0	-3.9	1.00 V	313	52.5	-16.4
2	62.95	34.6 QP	40.0	-5.4	1.00 V	316	49.9	-15.3
3	103.78	35.6 QP	43.5	-7.9	1.50 V	273	53.6	-18.0
4	158.22	27.6 QP	43.5	-15.9	1.00 V	116	41.2	-13.6
5	212.66	30.8 QP	43.5	-12.7	1.00 V	214	46.7	-15.9
6	747.34	33.4 QP	46.0	-12.6	1.50 V	324	35.7	-2.3

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
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 21, 2016	Nov. 20, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 22, 2016	Dec. 21, 2017
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 28, 2016	Jul. 27, 2017
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

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

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

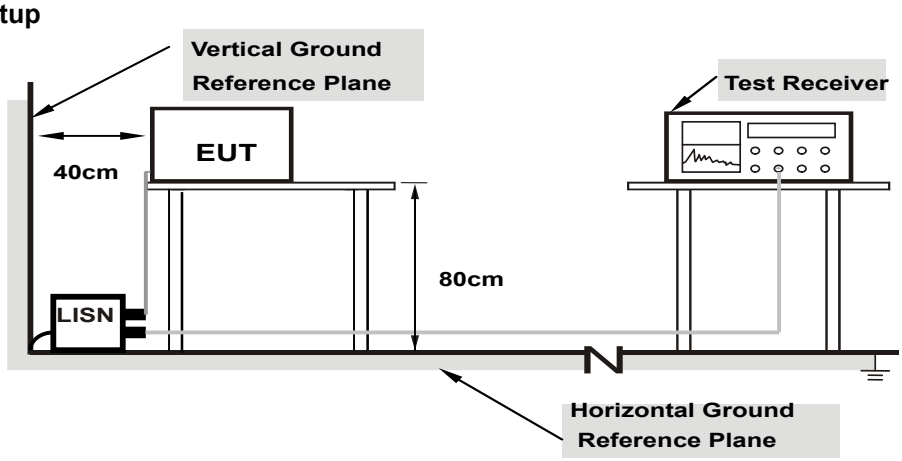
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

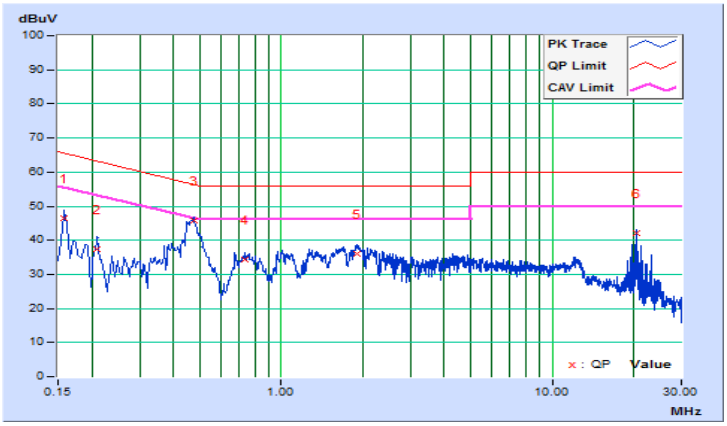
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15811	10.41	36.13	24.85	46.54	35.26	65.56	55.56	-19.02	-20.30
2	0.21000	10.43	27.01	16.68	37.44	27.11	63.21	53.21	-25.77	-26.10
3	**0.47400**	**10.50**	**35.30**	**30.50**	**45.80**	**41.00**	**56.44**	**46.44**	**-10.64**	**-5.44**
4	0.73800	10.48	23.94	19.55	34.42	30.03	56.00	46.00	-21.58	-15.97
5	1.90600	10.51	25.49	21.42	36.00	31.93	56.00	46.00	-20.00	-14.07
6	20.55400	11.45	30.66	30.55	42.11	42.00	60.00	50.00	-17.89	-8.00

REMARKS:

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

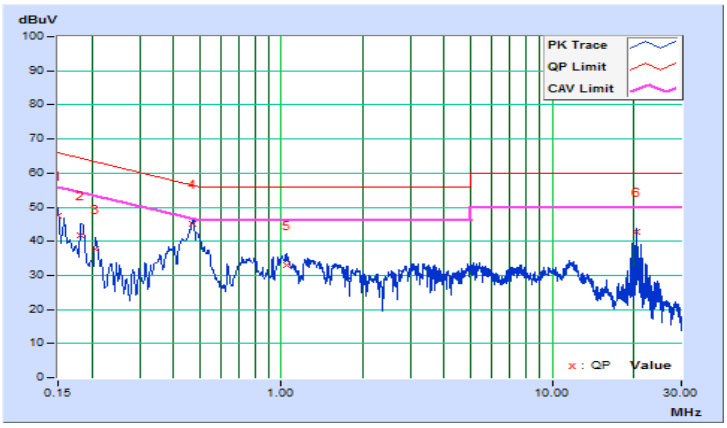


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.15	37.30	24.03	47.45	34.18	66.00	56.00	-18.55	-21.82
2	0.18228	10.18	31.70	20.77	41.88	30.95	64.38	54.38	-22.50	-23.43
3	0.20600	10.20	27.44	15.97	37.64	26.17	63.37	53.37	-25.73	-27.20
4	0.47309	10.23	34.88	30.32	45.11	40.55	56.46	46.46	-11.35	-5.91
5	1.05000	10.24	22.80	19.26	33.04	29.50	56.00	46.00	-22.96	-16.50
6	20.55400	11.07	31.54	31.18	42.61	42.25	60.00	50.00	-17.39	-7.75

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.



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 ≦ 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

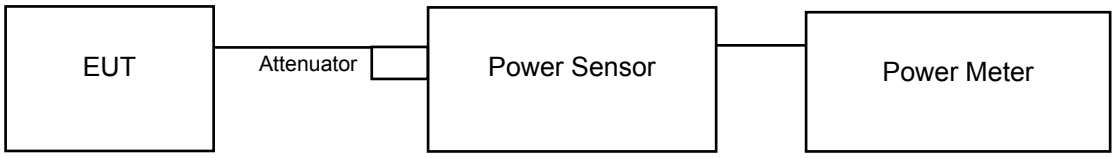
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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 $N_{ANT} \geq 5$.

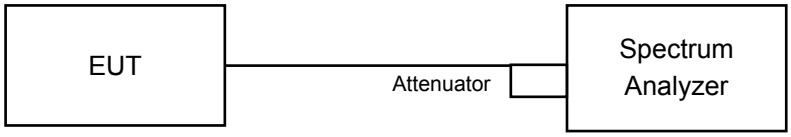
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

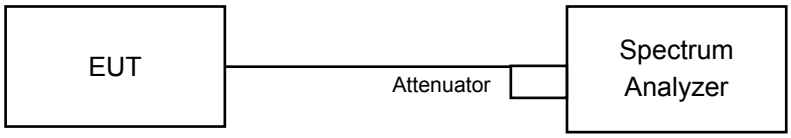
For Power Output
802.11a, 802.11n (HT20), 802.11n (HT40)



802.11ac (VHT80)



For 26dB and 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)
a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
b. Set sweep trigger to “free run”.
c. Set RBW = 1 MHz
d. Set VBW ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS
i. Trace mode = max hold
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
k. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

For 26dB Bandwidth
a. Set RBW = approximately 1% of the emission bandwidth.
b. Set the VBW > RBW.
c. Detector = Peak.
d. Trace mode = max hold.
e. 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 Sampling. 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 Conditions

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

4.3.7 Test Result

Power Output:

CDD Mode

For U-NII-2A, U-NII-2C Band

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	15.72	16.32	80.180	19.04	22.88	Pass
60	5300	16.03	16.53	85.065	19.30	22.86	Pass
64	5320	15.60	16.62	82.228	19.15	22.88	Pass
100	5500	14.52	16.20	70.001	18.45	22.94	Pass
116	5580	16.13	16.43	84.974	19.29	23.00	Pass
140	5700	8.16	10.19	16.993	12.30	22.87	Pass
144	5720 For U-NII-2C	15.49	15.80	73.419	18.66	21.72	Pass
144	5720 For U-NII-3	10.73	12.35	29.009	14.63	29.00	Pass

Note:
1. U-NII-2A and U-NII-2C Band: Gain = 7dBi > 6dBi, so the power limit shall be reduced to “Determined Limit-(7-6)”.
2. U-NII-3 Band: Gain = 7dBi > 6dBi, so the power limit shall be reduced to 30-(7-6) = 29.00dBm.

* Determined Limit means compare the minimum value after 24dBm and 11 dBm+10 log(26 dB bandwidth)

For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log(19.43) = 23.88 dBm < 24dBm
2. 11dBm + 10log(19.49) = 23.90 dBm < 24dBm
3. 11dBm + 10log(19.59) = 23.92 dBm < 24dBm
4. 11dBm + 10log(19.70) = 23.94 dBm < 24dBm
5. 11dBm + 10log(32.90) = 26.17 dBm > 24dBm
6. 11dBm + 10log(19.44) = 23.89 dBm < 24dBm
7. 11dBm + 10log(5725.00 - 5710.12) = 22.72 dBm < 24dBm.

Chain 1
1. 11dBm + 10log(19.42) = 23.88 dBm < 24dBm
2. 11dBm + 10log(19.32) = 23.86 dBm < 24dBm
3. 11dBm + 10log(19.44) = 23.88 dBm < 24dBm
4. 11dBm + 10log(20.92) = 24.21 dBm < 24dBm
5. 11dBm + 10log(38.05) = 26.80 dBm > 24dBm
6. 11dBm + 10log(19.39) = 23.87 dBm < 24dBm
7. 11dBm + 10log(5725.00 - 5708.16) = 23.26 dBm < 24dBm.

For Reference only-Power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
144	5720	102.428	20.10

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				
52	5260	16.48	16.42	88.316	19.46	23.00	Pass
60	5300	16.42	17.04	94.435	19.75	23.00	Pass
64	5320	15.47	17.15	87.117	19.40	23.00	Pass
100	5500	14.48	16.08	68.605	18.36	23.00	Pass
116	5580	16.13	16.62	86.940	19.39	23.00	Pass
140	5700	11.88	13.74	39.076	15.92	23.00	Pass
144	5720 For U-NII-2C	15.85	16.30	81.117	19.09	21.85	Pass
144	5720 For U-NII-3	11.15	14.02	38.267	15.83	29.00	Pass

Note:
1. U-NII-2A and U-NII-2C Band: Gain = 7dBi > 6dBi, so the power limit shall be reduced to “Determined Limit-(7-6)”.
2. U-NII-3 Band: Gain = 7dBi > 6dBi, so the power limit shall be reduced to 30-(7-6) = 29.00dBm.

* Determined Limit means compare the minimum value after 24dBm and 11 dBm+10 log(26 dB bandwidth)

For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log(20.57) = 24.13 dBm > 24dBm
2. 11dBm + 10log(20.61) = 24.14 dBm > 24dBm
3. 11dBm + 10log(20.52) = 24.12 dBm > 24dBm
4. 11dBm + 10log(20.62) = 24.14 dBm > 24dBm
5. 11dBm + 10log(33.90) = 26.30 dBm > 24dBm
6. 11dBm + 10log(20.57) = 24.13 dBm > 24dBm
7. 11dBm + 10log(5725.00 - 5709.68) = 22.85 dBm < 24dBm.

Chain 1
1. 11dBm + 10log(20.49) = 24.12 dBm > 24dBm
2. 11dBm + 10log(20.53) = 24.12 dBm > 24dBm
3. 11dBm + 10log(20.63) = 24.14 dBm > 24dBm
4. 11dBm + 10log(21.24) = 24.27 dBm > 24dBm
5. 11dBm + 10log(39.66) = 26.98 dBm > 24dBm
6. 11dBm + 10log(20.43) = 24.10 dBm > 24dBm
7. 11dBm + 10log(5725.00 - 5704.80) = 24.05 dBm > 24dBm.

For Reference only-Power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
144	5720	119.384	20.77

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				
54	5270	17.45	19.12	**137.248**	21.38	23.00	Pass
62	5310	13.63	15.13	55.651	17.45	23.00	Pass
102	5510	13.13	14.82	50.898	17.07	23.00	Pass
110	5550	16.28	17.91	104.264	20.18	23.00	Pass
134	5670	12.50	13.89	42.274	16.26	23.00	Pass
142	5710 For U-NII-2C	16.69	18.01	**109.907**	20.41	23.00	Pass
142	5710 For U-NII-3	13.97	15.34	59.144	17.72	29.00	Pass

Note:
1. U-NII-2A and U-NII-2C Band: Gain = 7dBi > 6dBi, so the power limit shall be reduced to “Determined Limit-(7-6)”.
2. U-NII-3 Band: Gain = 7dBi > 6dBi, so the power limit shall be reduced to 30-(7-6) = 29.00dBm.

* Determined Limit means compare the minimum value after 24dBm and 11 dBm+10 log(26 dB bandwidth)

For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log(54.16) = 28.34 dBm > 24dBm
2. 11dBm + 10log(40.74) = 27.10 dBm > 24dBm
3. 11dBm + 10log(40.57) = 27.08 dBm > 24dBm
4. 11dBm + 10log(79.17) = 29.99 dBm > 24dBm
5. 11dBm + 10log(40.65) = 27.09 dBm > 24dBm
6. 11dBm + 10log(5725.00 - 5669.48) = 28.44 dBm > 24dBm.

Chain 1
1. 11dBm + 10log(57.55) = 28.60 dBm > 24dBm
2. 11dBm + 10log(40.55) = 27.08 dBm > 24dBm
3. 11dBm + 10log(40.43) = 27.07 dBm > 24dBm
4. 11dBm + 10log(90.49) = 30.57 dBm > 24dBm
5. 11dBm + 10log(40.87) = 27.11 dBm > 24dBm
6. 11dBm + 10log(5725.00 - 5660.18) = 29.12 dBm > 24dBm.

For Reference only-Power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
142	5710	169.051	22.28

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				
58	5290	11.30	12.85	32.765	15.15	23.00	Pass
106	5530	11.71	13.12	35.337	15.48	23.00	Pass
122	5610	13.49	14.41	49.942	16.98	23.00	Pass
138	5690 For U-NII-2C	14.88	16.12	71.687	18.55	23.00	Pass
138	5690 For U-NII-3	11.13	13.23	34.010	15.32	29.00	Pass

Note:
1. U-NII-2A and U-NII-2C Band: Gain = 7dBi > 6dBi, so the power limit shall be reduced to “Determined Limit-(7-6)”.
2. U-NII-3 Band: Gain = 7dBi > 6dBi, so the power limit shall be reduced to 30-(7-6) = 29.00dBm.

* Determined Limit means compare the minimum value after 24dBm and 11 dBm+10 log(26 dB bandwidth)

For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log(83.37) = 30.21 dBm > 24dBm
2. 11dBm + 10log(84.26) = 30.26 dBm > 24dBm
3. 11dBm + 10log(83.26) = 30.20 dBm > 24dBm
4. 11dBm + 10log(5725.00 - 5624.94) = 31.00 dBm > 24dBm.

Chain 1
1. 11dBm + 10log(83.13) = 30.20 dBm > 24dBm
2. 11dBm + 10log(84.10) = 30.25 dBm > 24dBm
3. 11dBm + 10log(83.25) = 30.20 dBm > 24dBm
4. 11dBm + 10log(5725.00 - 5681.21) = 27.41 dBm > 24dBm.

For Reference only-Power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
138	5690	105.697	20.24

Beamforming Mode

For U-NII-2A, U-NII-2C Band

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				
52	5260	13.47	13.41	44.157	16.45	19.99	Pass
60	5300	13.41	14.03	47.206	16.74	19.99	Pass
64	5320	12.46	14.14	43.551	16.39	19.99	Pass
100	5500	11.47	13.07	34.277	15.35	19.99	Pass
116	5580	13.12	13.61	43.451	16.38	19.99	Pass
140	5700	8.87	10.73	19.543	12.91	19.99	Pass
144	5720 For U-NII-2C	15.85	16.30	**81.117**	19.09	18.84	Pass
144	5720 For U-NII-3	11.15	14.02	38.267	15.83	25.99	Pass

Note:
1. U-NII-2A and U-NII-2C Band: Directional gain = 7+10log (2) = 10.01dBi > 6dBi, so the power limit shall be reduced to “Determined Limit-(10.01-6)”.
2. U-NII-3 Band: Directional gain = 7+10log (2) = 10.01dBi > 6dBi, so the power limit shall be reduced to 30-(10.01-6) = 25.99dBm.

* Determined Limit means compare the minimum value after 24dBm and 11 dBm+10 log(26 dB bandwidth)

For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log(20.57) = 24.13 dBm > 24dBm
2. 11dBm + 10log(20.61) = 24.14 dBm > 24dBm
3. 11dBm + 10log(20.52) = 24.12 dBm > 24dBm
4. 11dBm + 10log(20.62) = 24.14 dBm > 24dBm
5. 11dBm + 10log(33.90) = 26.30 dBm > 24dBm
6. 11dBm + 10log(20.57) = 24.13 dBm > 24dBm
7. 11dBm + 10log(5725.00 - 5709.68) = 22.85 dBm < 24dBm.

Chain 1
1. 11dBm + 10log(20.49) = 24.12 dBm > 24dBm
2. 11dBm + 10log(20.53) = 24.12 dBm > 24dBm
3. 11dBm + 10log(20.63) = 24.14 dBm > 24dBm
4. 11dBm + 10log(21.24) = 24.27 dBm > 24dBm
5. 11dBm + 10log(39.66) = 26.98 dBm > 24dBm
6. 11dBm + 10log(20.43) = 24.10 dBm > 24dBm
7. 11dBm + 10log(5725.00 - 5704.80) = 24.05 dBm > 24dBm.

For Reference only-Power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
144	5720	119.384	20.77

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				
54	5270	14.44	16.11	**68.629**	18.37	19.99	Pass
62	5310	10.62	12.12	27.827	14.44	19.99	Pass
102	5510	10.12	11.81	25.451	14.06	19.99	Pass
110	5550	13.27	14.90	52.135	17.17	19.99	Pass
134	5670	9.49	10.88	21.138	13.25	19.99	Pass
142	5710 For U-NII-2C	13.68	15.00	54.954	17.40	19.99	Pass
142	5710 For U-NII-3	10.96	12.33	29.580	14.71	25.99	Pass

Note:
1. U-NII-2A and U-NII-2C Band: Directional gain = 7+10log (2) = 10.01dBi > 6dBi, so the power limit shall be reduced to “Determined Limit-(10.01-6)”.
2. U-NII-3 Band: Directional gain = 7+10log (2) = 10.01dBi > 6dBi, so the power limit shall be reduced to 30-(10.01-6) = 25.99dBm.

* Determined Limit means compare the minimum value after 24dBm and 11 dBm+10 log(26 dB bandwidth)

For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log(54.16) = 28.34 dBm > 24dBm
2. 11dBm + 10log(40.74) = 27.10 dBm > 24dBm
3. 11dBm + 10log(40.57) = 27.08 dBm > 24dBm
4. 11dBm + 10log(79.17) = 29.99 dBm > 24dBm
5. 11dBm + 10log(40.65) = 27.09 dBm > 24dBm
6. 11dBm + 10log(5725.00 - 5669.48) = 28.44 dBm > 24dBm.

Chain 1
1. 11dBm + 10log(57.55) = 28.60 dBm > 24dBm
2. 11dBm + 10log(40.55) = 27.08 dBm > 24dBm
3. 11dBm + 10log(40.43) = 27.07 dBm > 24dBm
4. 11dBm + 10log(90.49) = 30.57 dBm > 24dBm
5. 11dBm + 10log(40.87) = 27.11 dBm > 24dBm
6. 11dBm + 10log(5725.00 - 5660.18) = 29.12 dBm > 24dBm.

For Reference only-Power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
142	5710	84.534	19.27

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				
58	5290	8.29	9.84	16.384	12.14	19.99	Pass
106	5530	8.70	10.11	17.670	12.47	19.99	Pass
122	5610	10.48	11.40	24.972	13.97	19.99	Pass
138	5690 For U-NII-2C	11.87	13.11	35.810	15.54	19.99	Pass
138	5690 For U-NII-3	8.12	10.22	17.022	12.31	25.99	Pass

Note:
1. U-NII-2A and U-NII-2C Band: Directional gain = 7+10log (2) = 10.01dBi > 6dBi, so the power limit shall be reduced to “Determined Limit-(10.01-6)”.
2. U-NII-3 Band: Directional gain = 7+10log (2) = 10.01dBi > 6dBi, so the power limit shall be reduced to 30-(10.01-6) = 25.99dBm.

* Determined Limit means compare the minimum value after 24dBm and 11 dBm+10 log(26 dB bandwidth)

For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log(83.37) = 30.21 dBm > 24dBm
2. 11dBm + 10log(84.26) = 30.26 dBm > 24dBm
3. 11dBm + 10log(83.26) = 30.20 dBm > 24dBm
4. 11dBm + 10log(5725.00 - 5624.94) = 31.00 dBm > 24dBm.

Chain 1
1. 11dBm + 10log(83.13) = 30.20 dBm > 24dBm
2. 11dBm + 10log(84.10) = 30.25 dBm > 24dBm
3. 11dBm + 10log(83.25) = 30.20 dBm > 24dBm
4. 11dBm + 10log(5725.00 - 5681.21) = 27.41 dBm > 24dBm.

For Reference only-Power meter value
The power value was measured by power meter with average sensor

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)
138	5690	52.832	17.23

26dB Bandwidth:

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.43	19.42
60	5300	19.49	19.32
64	5320	19.59	19.44
100	5500	19.70	20.92
116	5580	32.90	38.05
140	5700	19.44	19.39
144	5720 For U-NII-2C	14.88	16.84

802.11n (HT20)

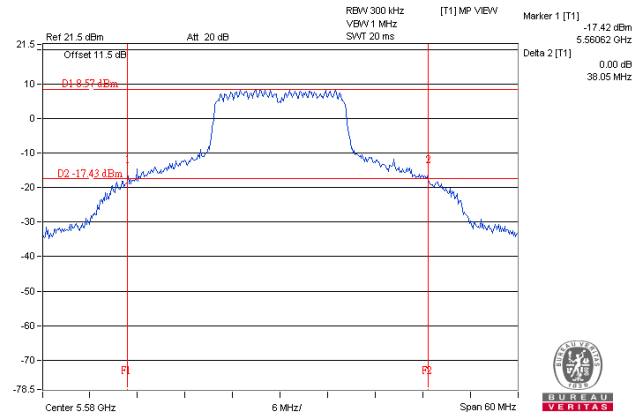
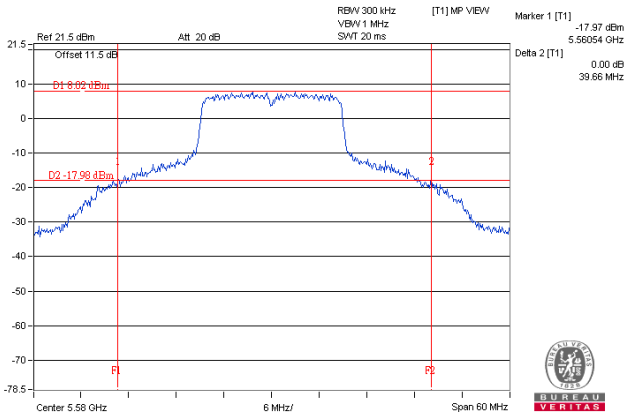
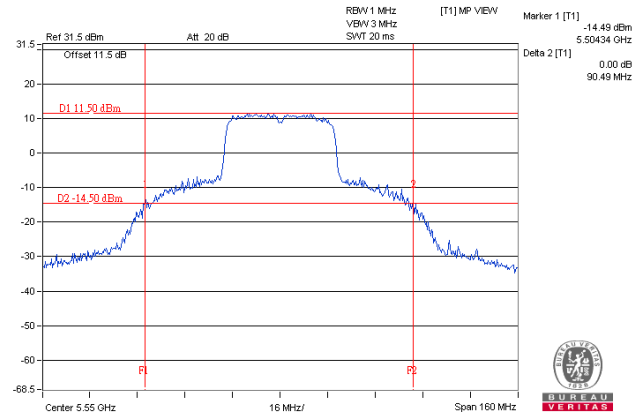
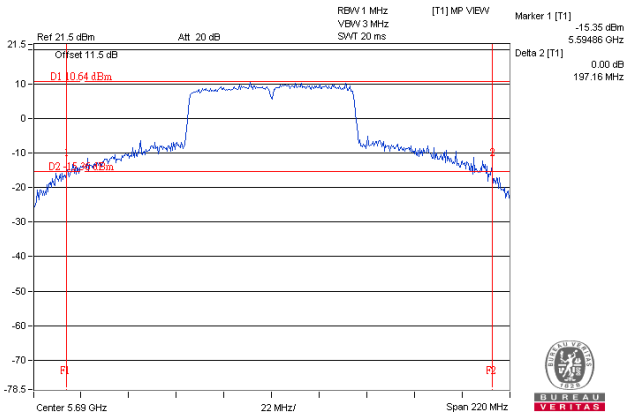
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.57	20.49
60	5300	20.61	20.53
64	5320	20.52	20.63
100	5500	20.62	21.24
116	5580	33.90	39.66
140	5700	20.57	20.43
144	5720 For U-NII-2C	15.32	20.20

802.11n (HT40)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	54.16	57.55
62	5310	40.74	40.55
102	5510	40.57	40.43
110	5550	79.17	90.49
134	5670	40.65	40.87
142	5710 For U-NII-2C	55.52	64.82

802.11ac (VHT80)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	83.37	83.13
106	5530	84.26	84.10
122	5610	83.26	83.25
138	5690 For U-NII-2C	100.06	130.14

Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

EUT Maximum Conducted Power

CDD Mode

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	85.065	19.30
5470~5725	84.974	19.29

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	94.435	19.75
5470~5725	86.940	19.39

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	137.248	21.38
5470~5725	109.907	20.41

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	32.765	15.15
5470~5725	71.687	18.55

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

Beamforming Mode

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	47.206	16.74
5470~5725	81.117	19.09

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	68.629	18.37
5470~5725	54.954	17.40

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

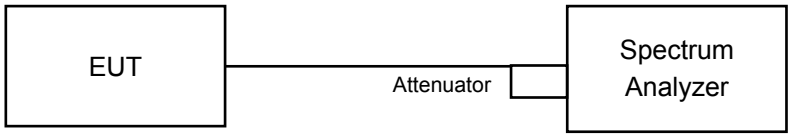
802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	16.384	12.14
5470~5725	35.810	15.54

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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 sampling. 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.

4.4.4 Test Result

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	16.56	16.44
60	5300	16.44	16.44
64	5320	16.56	16.44
100	5500	16.44	16.44
116	5580	17.04	19.80
140	5700	16.44	16.44
144	5720 For U-NII-2C	13.28	13.28
144	5720 For U-NII-3	3.16	3.16

802.11n (HT20)

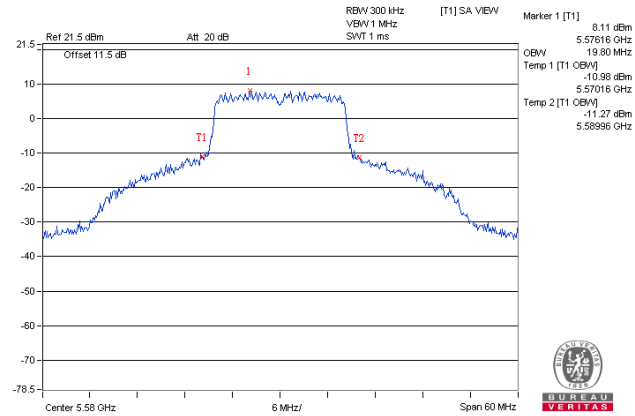
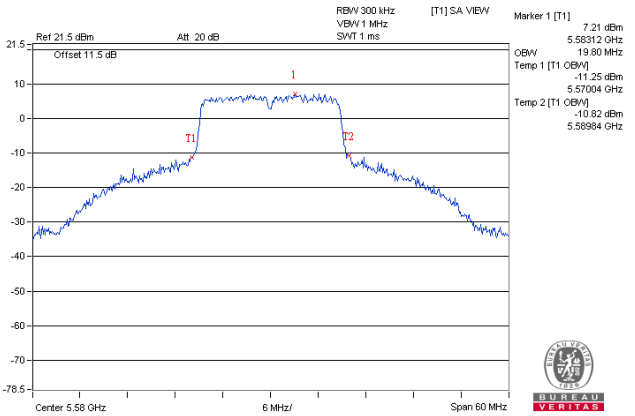
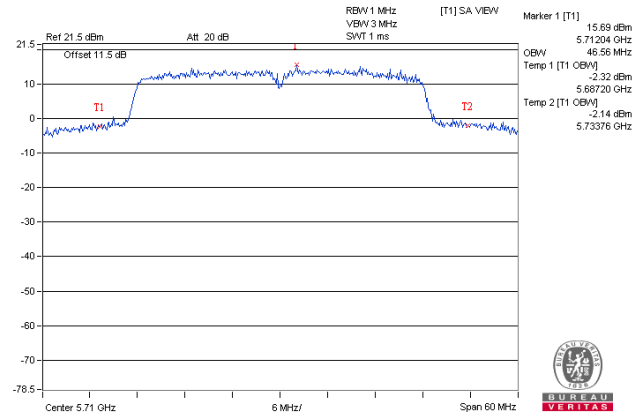
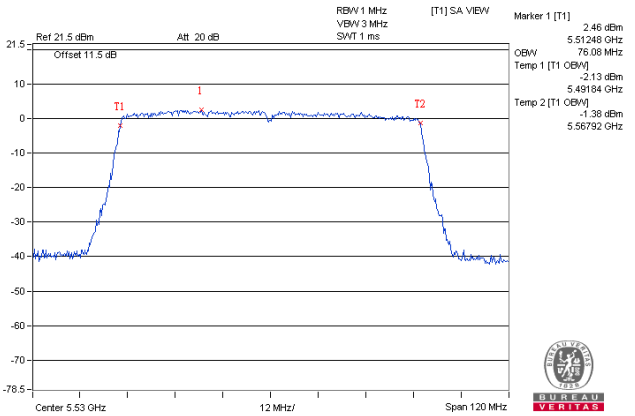
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.64	17.64
60	5300	17.64	17.64
64	5320	17.64	17.64
100	5500	17.64	17.64
116	5580	18.00	19.80
140	5700	17.64	17.64
144	5720 For U-NII-2C	13.88	13.88
144	5720 For U-NII-3	3.76	3.76

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	36.24	36.36
62	5310	36.12	36.12
102	5510	36.24	36.24
110	5550	36.60	37.44
134	5670	36.24	36.24
142	5710 For U-NII-2C	33.48	37.80
142	5710 For U-NII-3	3.48	8.76

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	75.60	75.84
106	5530	76.08	75.84
122	5610	75.84	76.08
138	5690 For U-NII-2C	73.16	74.12
138	5690 For U-NII-3	2.92	6.04

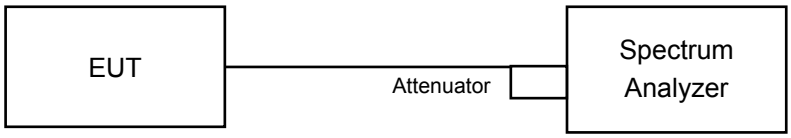
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

4.5 Peak Power Spectral Density Measurement

4.5.1 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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-2A, U-NII-2C band:
Duty cycle of test signal is ≥ 98%
Using method SA-1
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS
3) Set Channel power measure = 1MHz
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Record the max value

For U-NII-3 band:
Duty cycle of test signal is ≥ 98%
Using method SA-1
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS.
3) Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4) Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured 1) power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz).
5) Sweep time = auto, trigger set to “free run”.
6) Trace average at least 100 traces in power averaging mode.
7) Record the max value.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

For U-NII-2A, U-NII-2C band

802.11a

Chan.	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	2.93	3.16	0.23	6.29	6.99	Pass
60	5300	3.16	3.43	0.23	6.54	6.99	Pass
64	5320	2.72	3.31	0.23	6.27	6.99	Pass
100	5500	1.84	3.40	0.23	5.93	6.99	Pass
116	5580	3.31	3.96	0.23	6.89	6.99	Pass
140	5700	-3.10	-1.21	0.23	1.19	6.99	Pass
144	5720 For U-NII-2C	2.86	4.14	0.23	6.79	6.99	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-2A, U-NII-2C:** Directional gain = 7dBi +10log (2) = 10.01dBi > 6dBi, so the power density limit shall be reduced to 11-(10.01-6) = 6.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	3.09	4.37	0.10	6.88	6.99	Pass
60	5300	2.99	3.97	0.10	6.61	6.99	Pass
64	5320	2.98	4.56	0.10	6.95	6.99	Pass
100	5500	1.94	2.97	0.10	5.59	6.99	Pass
116	5580	3.19	3.82	0.10	6.62	6.99	Pass
140	5700	0.11	1.92	0.10	4.22	6.99	Pass
144	5720 For U-NII-2C	3.07	4.52	0.10	6.96	6.99	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-2A, U-NII-2C:** Directional gain = 7dBi +10log (2) = 10.01dBi > 6dBi, so the power density limit shall be reduced to 11-(10.01-6) = 6.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

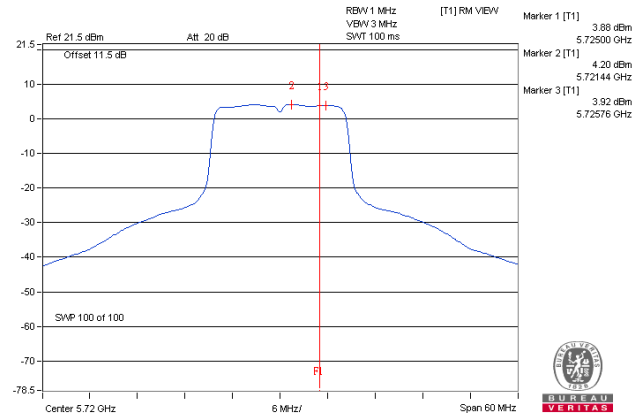
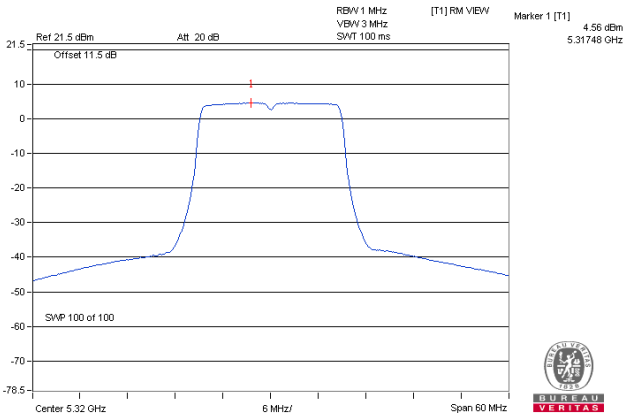
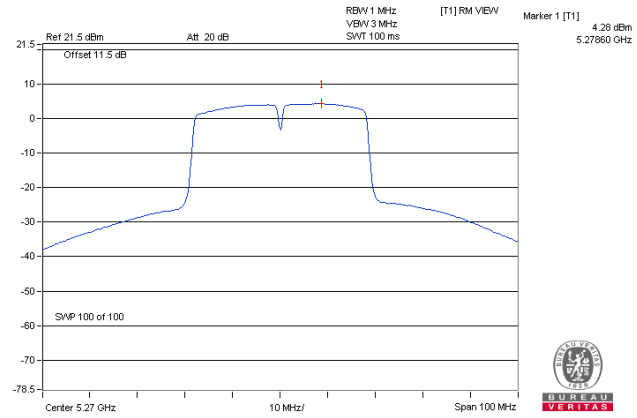
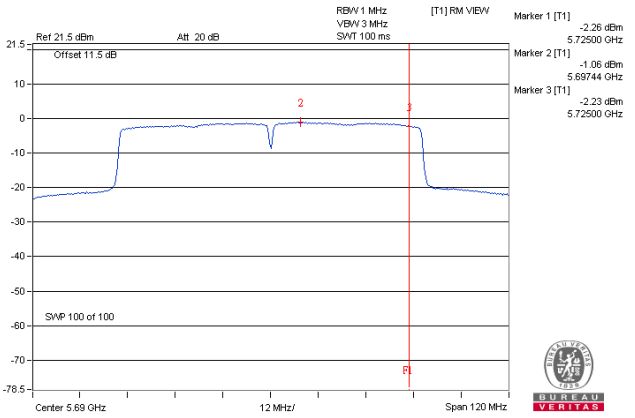
Chan.	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
54	5270	3.14	4.28	0.17	6.93	6.99	Pass
62	5310	-1.26	0.08	0.17	2.64	6.99	Pass
102	5510	-2.20	-1.14	0.17	1.55	6.99	Pass
110	5550	0.22	1.48	0.17	4.08	6.99	Pass
134	5670	-2.46	-0.98	0.17	1.53	6.99	Pass
142	5710 For U-NII-2C	3.08	4.08	0.17	6.79	6.99	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-2A, U-NII-2C:** Directional gain = 7dBi +10log (2) = 10.01dBi > 6dBi, so the power density limit shall be reduced to 11-(10.01-6) = 6.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor	Total PSD With Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
58	5290	-6.70	-6.04	0.37	-2.98	6.99	Pass
106	5530	-7.57	-7.18	0.37	-3.99	6.99	Pass
122	5610	-6.50	-5.50	0.37	-2.59	6.99	Pass
138	5690 For U-NII-2C	-2.28	-1.06	0.37	1.75	6.99	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-2A, U-NII-2C:** Directional gain = 7dBi +10log (2) = 10.01dBi > 6dBi, so the power density limit shall be reduced to 11-(10.01-6) = 6.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 1 / Ch 144	802.11n (HT20) / Chain 1 / Ch 64
	
802.11n (HT40) / Chain 1 / Ch 54	802.11ac (VHT80) / Chain 1 / Ch 138
	

For U-NII-3 band:

802.11a

Ch.	Freq. (MHz)	PSD (dBm/300kHz)		PSD (dBm/500kHz)		Duty factor	Total PSD (dBm /500 kHz)	Limit (dBm /500 kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1				
144	5720 For U-NII-3	-5.89	-4.48	-3.67	-2.26	0.23	0.33	25.99	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-3: Directional gain =7dBi + 10log(2)=10.01dBi > 6dBi, so the power density limit shall be reduced to 30-(10.01-6) = 25.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Ch.	Freq. (MHz)	PSD (dBm/300kHz)		PSD (dBm/500kHz)		Duty factor	Total PSD (dBm /500 kHz)	Limit (dBm /500 kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1				
144	5720 For U-NII-3	-5.59	-4.16	-3.37	-1.94	0.10	0.51	25.99	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-3: Directional gain =7dBi + 10log(2)=10.01dBi > 6dBi, so the power density limit shall be reduced to 30-(10.01-6) = 25.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

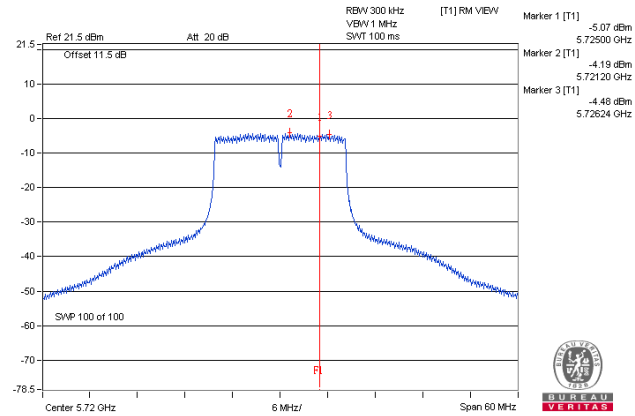
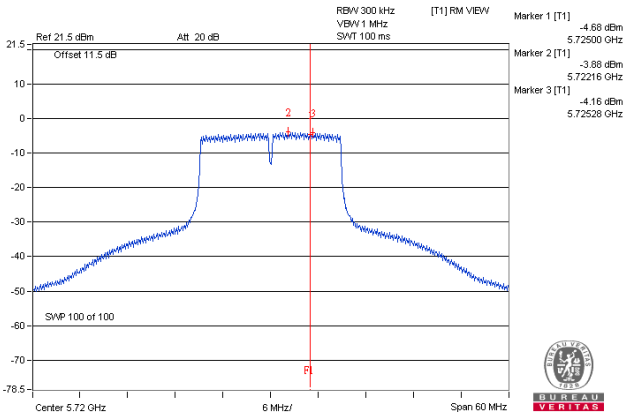
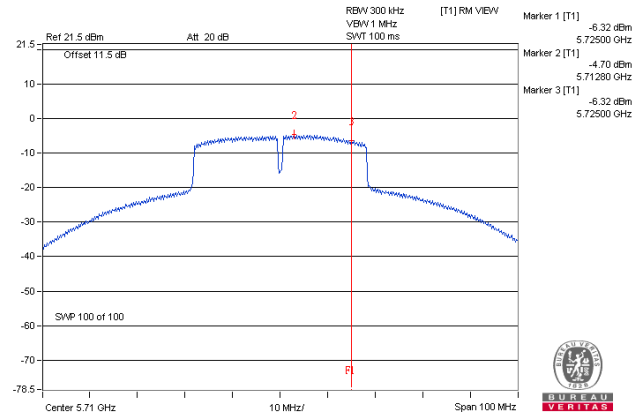
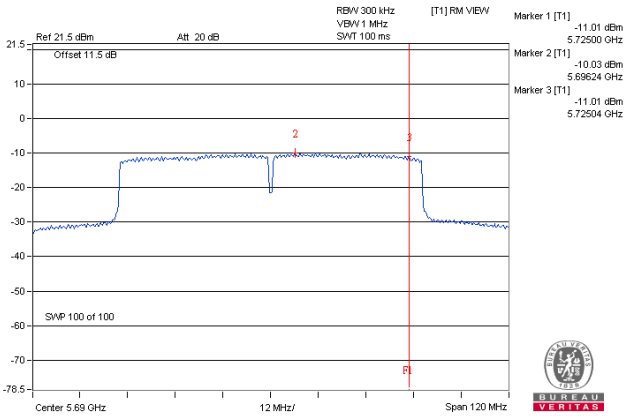
Ch.	Freq. (MHz)	PSD (dBm/300kHz)		PSD (dBm/500kHz)		Duty factor	Total PSD (dBm /500 kHz)	Limit (dBm /500 kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1				
142	5710 For U-NII-3	-7.11	-6.32	-4.89	-4.10	0.17	-1.30	25.99	Pass

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-3: Directional gain =7dBi + 10log(2)=10.01dBi > 6dBi, so the power density limit shall be reduced to 30-(10.01-6) = 25.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Ch.	Freq. (MHz)	PSD (dBm/300kHz)		PSD (dBm/500kHz)		Duty factor	Total PSD (dBm /500 kHz)	Limit (dBm /500 kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1				
138	5690 For U-NII-3	-12.14	-11.01	-9.92	-8.79	0.37	-5.94	25.99	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-3: Directional gain =7dBi + 10log(2)=10.01dBi > 6dBi, so the power density limit shall be reduced to 30-(10.01-6) = 25.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

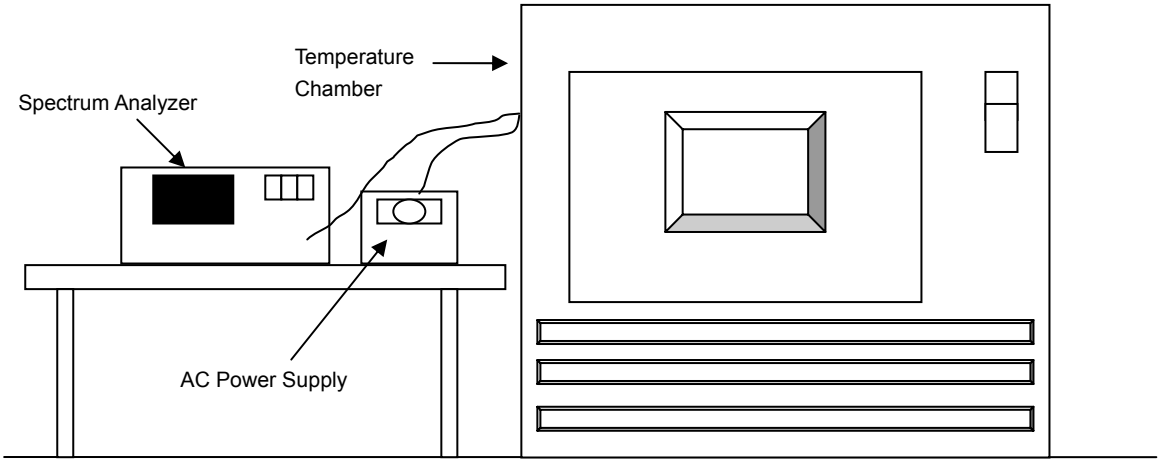
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

4.6 Frequency 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

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.

4.6.5 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: 5260MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5260.0224	0.00043	5260.0242	0.00046	5260.0231	0.00044	5260.0198	0.00038
40	120	5259.9809	-0.00036	5259.9808	-0.00037	5259.9835	-0.00031	5259.9812	-0.00036
30	120	5260.0171	0.00033	5260.0171	0.00033	5260.0196	0.00037	5260.0183	0.00035
20	120	5259.9946	-0.00010	5259.9948	-0.00010	5259.9943	-0.00011	5259.9952	-0.00009
10	120	5259.9865	-0.00026	5259.9900	-0.00019	5259.9893	-0.00020	5259.9895	-0.00020
0	120	5259.9908	-0.00017	5259.9905	-0.00018	5259.9877	-0.00023	5259.9891	-0.00021
-10	120	5260.0011	0.00002	5259.9994	-0.00001	5259.9998	0.00000	5260.0007	0.00001
-20	120	5259.9786	-0.00041	5259.9774	-0.00043	5259.9812	-0.00036	5259.9795	-0.00039
-30	120	5259.9765	-0.00045	5259.9799	-0.00038	5259.9759	-0.00046	5259.9753	-0.00047

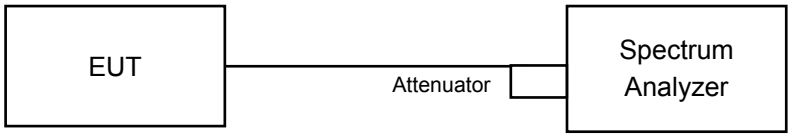
Frequency Stability Versus Voltage									
Operating Frequency: 5260MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5259.9936	-0.00012	5259.9948	-0.00010	5259.9948	-0.00010	5259.9960	-0.00008
	120	5259.9946	-0.00010	5259.9948	-0.00010	5259.9943	-0.00011	5259.9952	-0.00009
	102	5259.9956	-0.00008	5259.9954	-0.00009	5259.9940	-0.00011	5259.9951	-0.00009

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 For U-NII-3	3.17	3.17	0.5	Pass

802.11n (HT20)

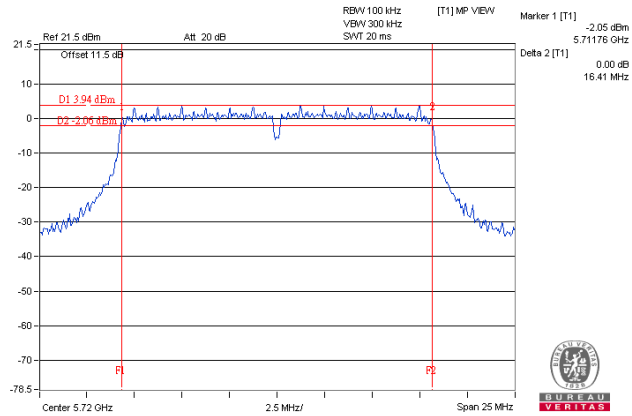
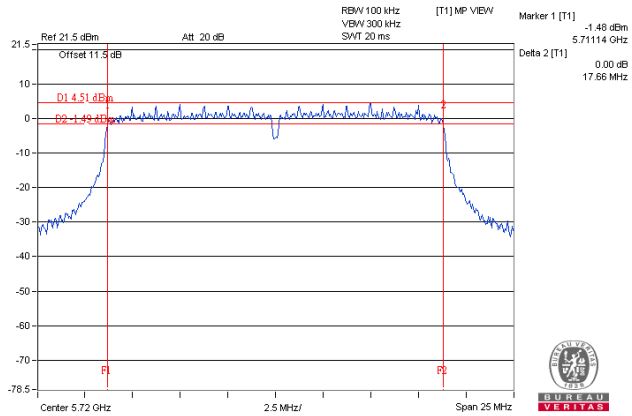
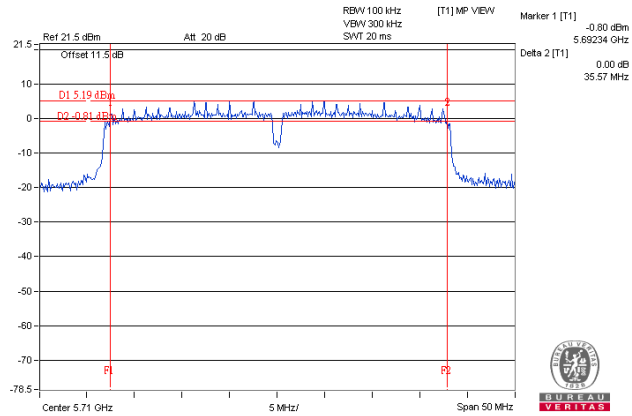
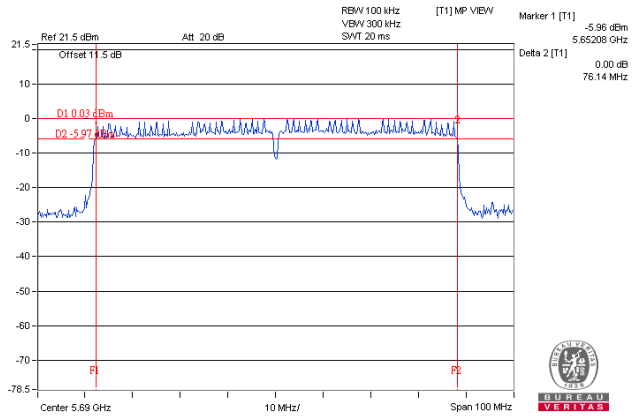
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 For U-NII-3	3.80	3.79	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 For U-NII-3	2.91	2.80	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690 For U-NII-3	3.22	2.76	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:

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

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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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