FCC Test Report

Report No.:	RF180524C28-1
FCC ID:	2AKCZ-0D1
Test Model:	APL46-0D1
Received Date:	May 04, 2018
Test Date:	May 16 ~ Jun. 20, 2018
Issued Date:	Jul. 17, 2018
Applicant:	SonicWall Inc.
Address:	1033 McCarthy Blvd., Milpitas, CA 95035, 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.)
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF180524C28-1	Original release	Jul. 17, 2018

1 Certificate of Conformity

Product:	Wireless Access Point
Brand:	SONICWALL
Test Model:	APL46-0D1
Sample Status:	Engineering sample
Applicant:	SonicWall Inc.
Test Date:	May 16 ~ Jun. 20, 2018
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 RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Jul. 17, 2018

Celine Chou / Specialist

Approved by : Bruce Chen , **Date:** Jul. 17, 2018

Bruce Chen / Project Engineer

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 -5.30dB at 0.52130MHz.
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 5150.00MHz and 11650.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connectors are N-Type, N-jack and IPEX not a standard connector.

*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.

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	Wireless Access Point
Brand	SONICWALL
Test Model	APL46-0D1
Sample Status	Engineering sample
Power Supply Rating	54Vdc from 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	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	Radio 2, Dipole Ant.: CDD Mode: 5180 ~ 5240MHz: 208.302mW 5745 ~ 5825MHz: 199.393mW Beamforming Mode: 5180 ~ 5240MHz: 103.665mW 5745 ~ 5825MHz: 99.111mW Radio 2, Sector Ant.: CDD Mode: 5180 ~ 5240MHz: 25.886mW 5745 ~ 5825MHz: 136.479mW Beamforming Mode: 5180 ~ 5240MHz: 12.944mW 5745 ~ 5825MHz: 68.244mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	1.78m non-shielded ground cable without core

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	Beamforming Mode	TX Function	Remark
802.11a	Not Support	2TX	Radio 2
802.11n (HT20)	Support	2TX	
802.11n (HT40)	Support	2TX	
802.11ac (VHT20)	Support	2TX	
802.11ac (VHT40)	Support	2TX	
802.11ac (VHT80)	Support	2TX	

* The modulation and bandwidth are similar for 802.11n mode for 20MHz/40MHz and 802.11ac mode for 20MHz/40MHz, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

* For 802.11n and 802.11ac, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

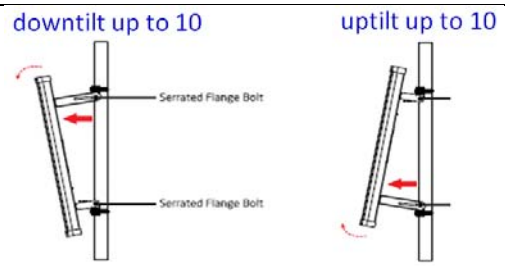
2. The EUT consumes power from the following PoE. (for support unit only)

PoE	
Brand	EnGenius
Model	EPA5006GAT
Input	100-240Vac, 50-60Hz, 0.8A
Output	54Vdc, 0.6A PIN 4,5: 54V PIN 7,8: RETURN

3. The following antennas were provided to the EUT.

No.	Antenna Model	Freq. Range	Type	Con nector	Gain (dBi)										Remark
					2400	2450	2500	5150	5250	5350	5500	5600	5725	5850	
1	DA2105	2.4G	Dipole	N-Type	4.1	4.2	4.5	-	-	-	-	-	-	-	Radio 1 (WLAN 2.4G: 2TX)
2	DA5107	5G	Dipole	N-Type	-	-	-	6.3	6.3	5.4	5.0	5.1	5.2	5.1	Radio 2 (WLAN 5G: 2TX)
					Ant.1 (2400-2500MHz)					Ant.2 (2400-2500MHz)					
3	SA2412-A	2.4G	Sector	N-jack	12.60					12.00					Radio 1 (WLAN 2.4G: 2TX)
					Ant.1 (5150-5850MHz)					Ant.2 (5150-5850MHz)					
4	SA5415-A	5G	Sector	N-jack	14.10					14.60					Radio 2 (WLAN 5G: 2TX)
					2400-2500MHz										
5	BLE Antenna	2.4G	PIFA	IPEX	3.69										Radio 4 (BTLE)
6	Scan Antenna	2.4G	PIFA	IPEX	3.67										Radio 3 (WLAN 2.4G: 1TX)

4. The EUT will install at outdoor area, the highest antenna gain from the horizon above 30 degrees as below, for more detail information please refer to antenna specification and user manual

Antenna Model	Antenna gain	Antenna install degree
D151-07	-3.89dBi	
Due to device will restricted installation position as above photo, thus consider to above 30 degrees from the horizon the highest antenna gain are chosen from antenna specification exhibits from 120 to 240 degrees, 300 to 60 degrees for U-NII-1 band		
S154-15	6.83dBi	
Due to device will restricted installation position as above photo, thus consider to above 30 degrees from the horizon the highest antenna gain are chosen from antenna specification exhibits from 290 to 70 degrees for U-NII-1 band		

3.2 Description of Test Modes

For 5180 ~ 5240MHz:

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

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

For 5745 ~ 5825MHz:

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

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	EUT (Radio 2) with dipole ant.
B	√	√	√	√	EUT (Radio 2) with sector ant.

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: The EUT 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)
A, B	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	29.3
A, B	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5
	802.11ac (VHT80)		155	155	OFDM	29.3

Radiated Emission Test (Below 1GHz):

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

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	149	OFDM	6.0
	802.11a	5745-5825	149 to 165		OFDM	6.0
B	802.11a	5180-5240	36 to 48	157	OFDM	6.0
	802.11a	5745-5825	149 to 165		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)
A	802.11a	5180-5240	36 to 48	149	OFDM	6.0
	802.11a	5745-5825	149 to 165		OFDM	6.0
B	802.11a	5180-5240	36 to 48	157	OFDM	6.0
	802.11a	5745-5825	149 to 165		OFDM	6.0

Peak Power Spectral Density, Bandwidth and Frequency Stability 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)
A, B	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	29.3
A, B	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5
	802.11ac (VHT80)		155	155	OFDM	29.3

Transmit Power 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)
CDD Mode						
A, B	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	29.3
A, B	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5
	802.11ac (VHT80)		155	155	OFDM	29.3
Beamforming Mode						
A, B	802.11n (HT20)	5180-5240	36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	29.3
A, B	802.11n (HT20)	5745-5825	149 to 165	149, 157, 165	OFDM	6.5
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5
	802.11ac (VHT80)		155	155	OFDM	29.3

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 70% RH	120Vac, 60Hz	Luis Lee
RE<1G	25 deg. C, 70% RH	120Vac, 60Hz	Luis Lee
PLC	24 deg. C, 66% RH	120Vac, 60Hz	Willy Cheng
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ted Chang

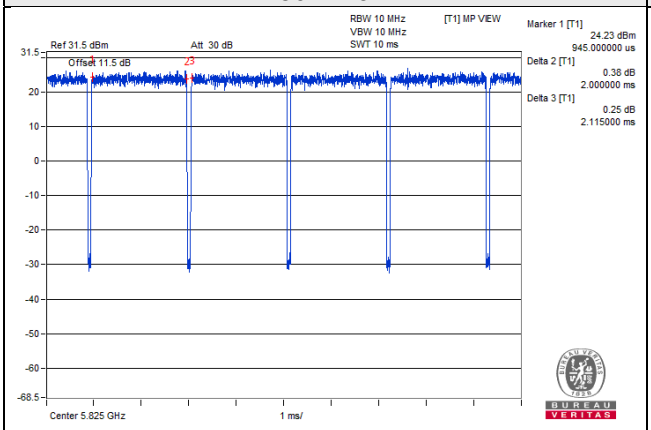
3.3 Duty Cycle of Test Signal

Test Mode A (Radio 2, Dipole Ant.)

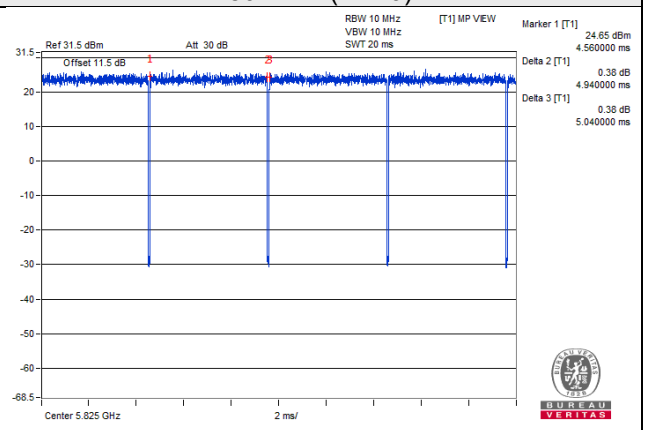
802.11n (HT20): Duty cycle of test signal is > 98%, duty factor is not required.
802.11a, 802.11n (HT40), 802.11ac (VHT80): Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 2.000/2.115 = 0.946, Duty factor = 10 * log (1/0.946) = 0.24
802.11n (HT20): Duty cycle = 4.940/5.040 = 0.980
802.11n (HT40): Duty cycle = 2.400/2.488 = 0.965, Duty factor = 10 * log (1/0.965) = 0.16
802.11ac (VHT80): Duty cycle = 0.941/1.042 = 0.903, Duty factor = 10 * log (1/0.903) = 0.44

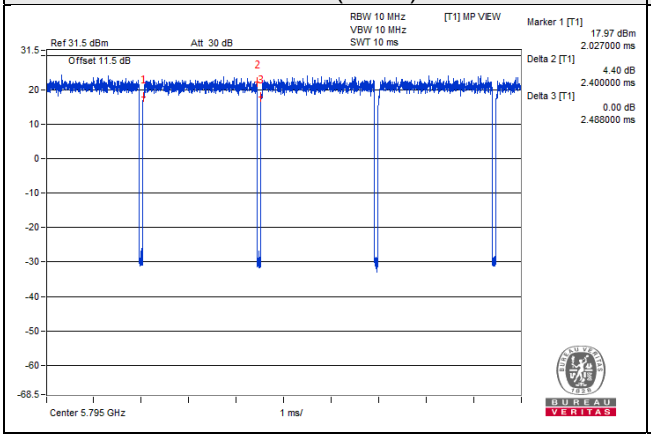
802.11a



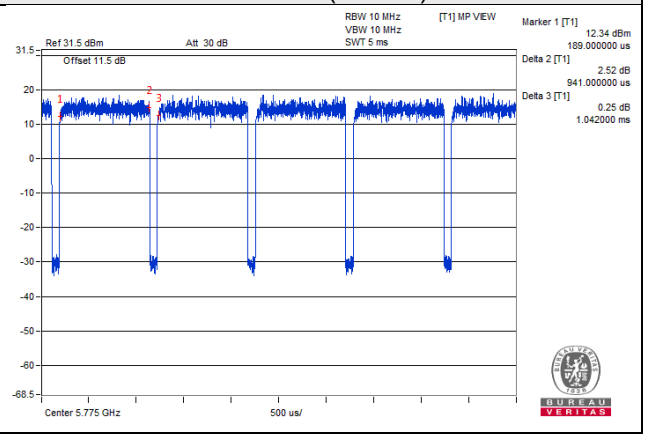
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

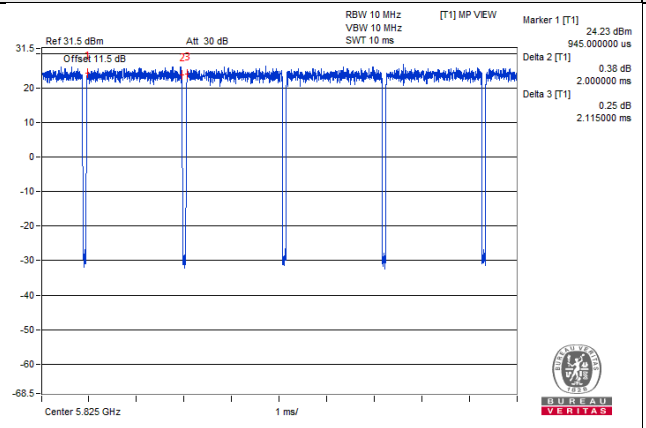


Test Mode B (Radio 2, Sector Ant.)

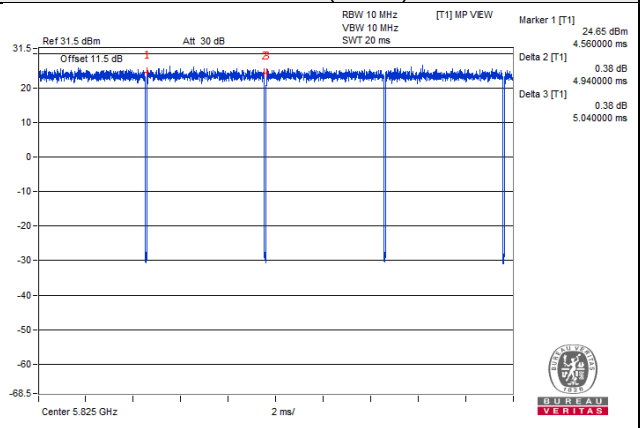
802.11n (HT20): Duty cycle of test signal is > 98%, duty factor is not required.
802.11a, 802.11n (HT40), 802.11ac (VHT80): Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 2.000/2.115 = 0.946, Duty factor = 10 * log (1/0.946) = 0.24
802.11n (HT20): Duty cycle = 4.940/5.040 = 0.980
802.11n (HT40): Duty cycle = 2.400/2.488 = 0.965, Duty factor = 10 * log (1/0.965) = 0.16
802.11ac (VHT80): Duty cycle = 0.941/1.042 = 0.903, Duty factor = 10 * log (1/0.903) = 0.44

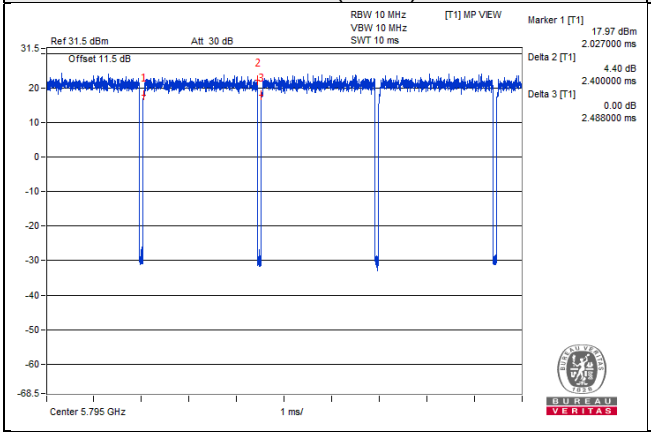
802.11a



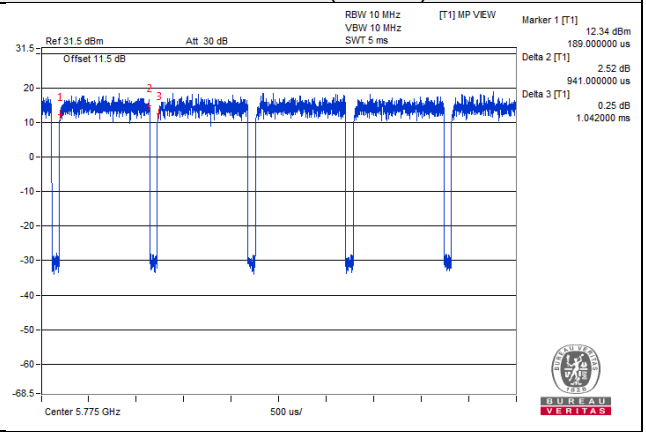
802.11n (HT20)



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.

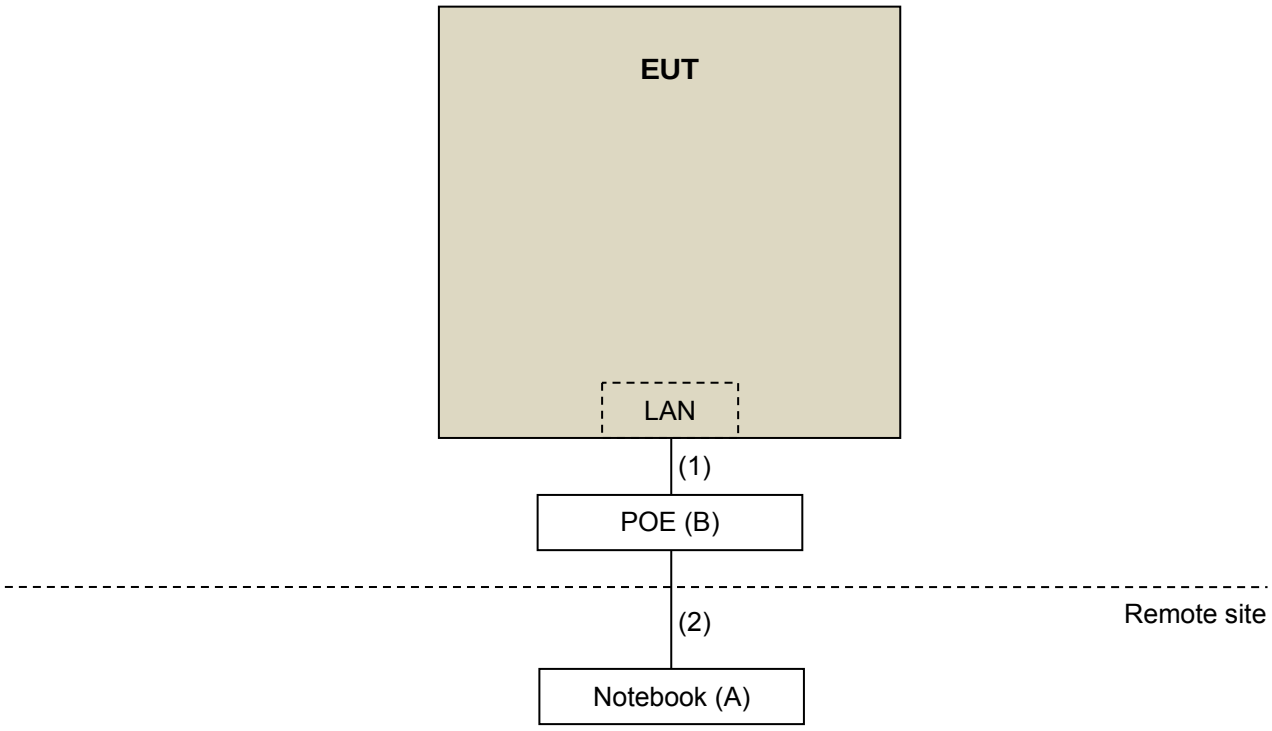
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	POE	EnGenius	EPA5006GAT	NA	NA	Provided by manufacturer

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, Cat5e	1	1	N	0	-
2.	RJ45, Cat5e	1	6	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 v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10:2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

Limits of unwanted emission out of the restricted bands

<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 v02r01</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	ESCI	100424	Oct. 17, 2017	Oct. 16, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Dec. 12, 2017	Dec. 11, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	9120D	209	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 21, 2017	Aug. 20, 2018
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Apr. 03, 2018	Apr. 02, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 21, 2017	Aug. 20, 2018
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM-8000	Cable-CH3-03 (309224+170907)	Sep.11, 2017	Sep. 10, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	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
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
26GHz ~ 40GHz Amplifier Agilent	8449B	3008A1960	Aug. 08, 2017	Aug. 07, 2018
High Speed Peak Power Meter	ML2495A	0824012	Aug. 18, 2017	Aug. 17, 2018
Power Sensor	MA2411B	0738171	Aug. 18, 2017	Aug. 17, 2018
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 07, 2017	Jun. 06, 2018
			Jun. 04, 2018	Jun. 03, 2019

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 FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
5. 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. Parallel, perpendicular, and ground-parallel orientations 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.

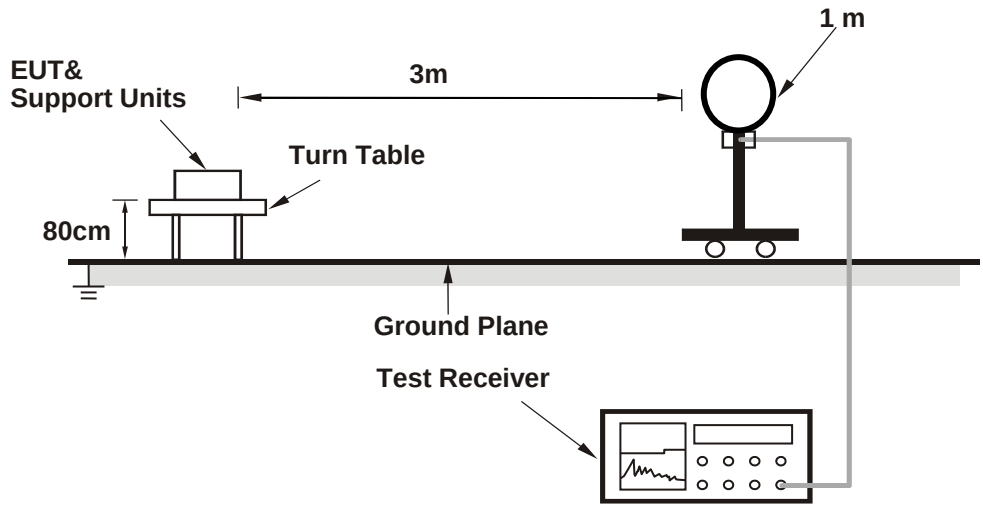
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

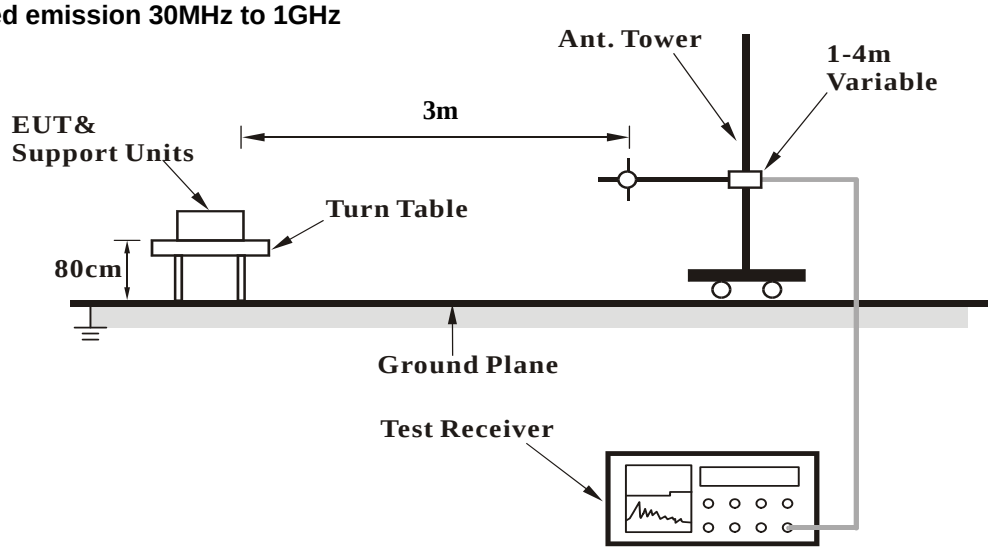
No deviation.

4.1.5 Test Setup

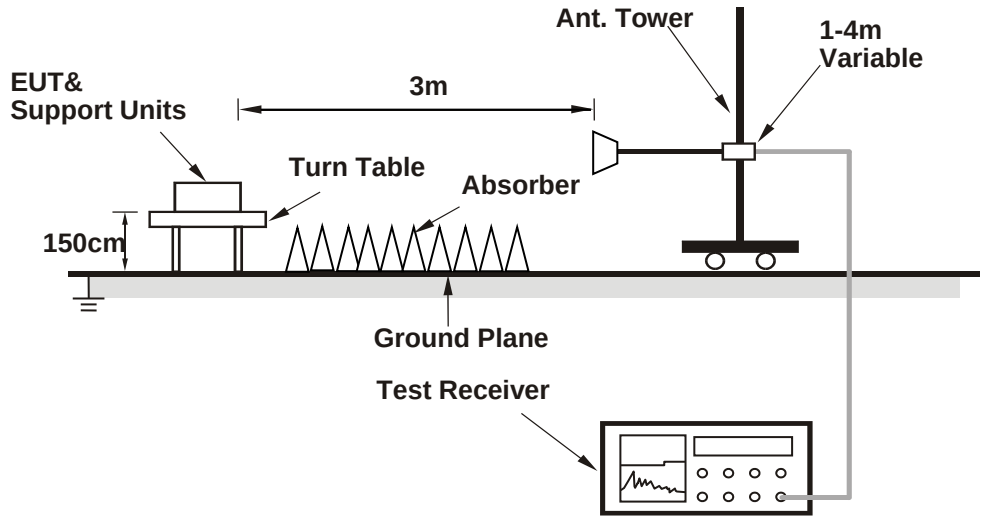
For Radiated emission below 30MHz



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 (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz data:

Test Mode A (Radio 2, Dipole Ant.)

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	55.9 PK	74.0	-18.1	1.88 H	197	52.0	3.9
2	5150.00	42.7 AV	54.0	-11.3	1.88 H	197	38.8	3.9
3	*5180.00	101.7 PK			1.75 H	189	62.1	39.6
4	*5180.00	90.9 AV			1.75 H	189	51.3	39.6
5	#10360.00	58.3 PK	74.0	-15.7	1.79 H	163	42.5	15.8
6	#10360.00	45.2 AV	54.0	-8.8	1.79 H	163	29.4	15.8
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	71.6 PK	74.0	-2.4	1.89 V	203	67.7	3.9
2	**5150.00**	**52.9 AV**	**54.0**	**-1.1**	**1.89 V**	**203**	**49.0**	**3.9**
3	*5180.00	120.4 PK			1.90 V	198	80.8	39.6
4	*5180.00	109.8 AV			1.90 V	198	70.2	39.6
5	#10360.00	58.6 PK	74.0	-15.4	1.77 V	155	42.8	15.8
6	#10360.00	45.5 AV	54.0	-8.5	1.77 V	155	29.7	15.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	101.8 PK			2.16 H	189	62.2	39.6
2	*5200.00	90.7 AV			2.16 H	189	51.1	39.6
3	#10400.00	58.6 PK	74.0	-15.4	1.85 H	122	42.7	15.9
4	#10400.00	45.3 AV	54.0	-8.7	1.85 H	122	29.4	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	*5200.00	121.1 PK			1.81 V	200	81.5	39.6
2	*5200.00	110.0 AV			1.81 V	200	70.4	39.6
3	#10400.00	58.9 PK	74.0	-15.1	1.68 V	188	43.0	15.9
4	#10400.00	45.8 AV	54.0	-8.2	1.68 V	188	29.9	15.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	101.9 PK			1.68 H	189	62.5	39.4
2	*5240.00	91.0 AV			1.68 H	189	51.6	39.4
3	5350.00	57.0 PK	74.0	-17.0	1.81 H	203	53.0	4.0
4	5350.00	43.6 AV	54.0	-10.4	1.81 H	203	39.6	4.0
5	#10480.00	59.3 PK	74.0	-14.7	1.92 H	183	42.6	16.7
6	#10480.00	45.9 AV	54.0	-8.1	1.92 H	183	29.2	16.7
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	*5240.00	121.3 PK			1.79 V	198	81.9	39.4
2	*5240.00	110.9 AV			1.79 V	198	71.5	39.4
3	5350.00	58.5 PK	74.0	-15.5	1.76 V	202	54.5	4.0
4	5350.00	46.3 AV	54.0	-7.7	1.76 V	202	42.3	4.0
5	#10480.00	59.9 PK	74.0	-14.1	1.99 V	129	43.2	16.7
6	#10480.00	46.7 AV	54.0	-7.3	1.99 V	129	30.0	16.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5622.40	55.6 PK	68.2	-12.6	1.95 H	27	51.1	4.5
2	*5745.00	101.4 PK			1.95 H	27	61.3	40.1
3	*5745.00	90.6 AV			1.95 H	27	50.5	40.1
4	#5937.60	56.7 PK	68.2	-11.5	1.95 H	27	51.6	5.1
5	11490.00	63.6 PK	74.0	-10.4	1.98 H	89	46.0	17.6
6	11490.00	51.0 AV	54.0	-3.0	1.98 H	89	33.4	17.6
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	#5628.80	56.8 PK	68.2	-11.4	1.92 V	208	52.3	4.5
2	*5745.00	119.6 PK			1.92 V	208	79.5	40.1
3	*5745.00	108.7 AV			1.92 V	208	68.6	40.1
4	#5997.60	58.0 PK	68.2	-10.2	1.92 V	208	52.7	5.3
5	11490.00	60.3 PK	74.0	-13.7	2.71 V	331	42.7	17.6
6	11490.00	46.5 AV	54.0	-7.5	2.71 V	331	28.9	17.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5613.60	56.5 PK	68.2	-11.7	2.28 H	322	52.0	4.5
2	*5785.00	102.3 PK			2.28 H	322	62.0	40.3
3	*5785.00	91.7 AV			2.28 H	322	51.4	40.3
4	#5968.80	57.1 PK	68.2	-11.1	2.28 H	322	51.8	5.3
5	11570.00	63.7 PK	74.0	-10.3	3.36 H	321	45.8	17.9
6	11570.00	50.5 AV	54.0	-3.5	3.36 H	321	32.6	17.9
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	#5642.40	57.2 PK	68.2	-11.0	1.82 V	352	52.6	4.6
2	*5785.00	119.1 PK			1.82 V	352	78.8	40.3
3	*5785.00	108.3 AV			1.82 V	352	68.0	40.3
4	#5928.80	58.8 PK	68.2	-9.4	1.82 V	352	53.6	5.2
5	11570.00	62.9 PK	74.0	-11.1	1.11 V	300	45.0	17.9
6	11570.00	49.7 AV	54.0	-4.3	1.11 V	300	31.8	17.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5613.60	55.2 PK	68.2	-13.0	2.20 H	320	50.7	4.5
2	*5825.00	103.6 PK			2.20 H	320	63.1	40.5
3	*5825.00	93.2 AV			2.20 H	320	52.7	40.5
4	#5960.80	56.3 PK	68.2	-11.9	2.20 H	320	51.1	5.2
5	11650.00	67.8 PK	74.0	-6.2	3.22 H	323	50.3	17.5
6	**11650.00**	**52.9 AV**	**54.0**	**-1.1**	**3.22 H**	**323**	**35.4**	**17.5**
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	#5642.40	57.6 PK	68.2	-10.6	1.64 V	313	53.0	4.6
2	*5825.00	119.4 PK			1.64 V	313	78.9	40.5
3	*5825.00	108.9 AV			1.64 V	313	68.4	40.5
4	#5964.80	57.9 PK	68.2	-10.3	1.64 V	313	52.7	5.2
5	11650.00	64.0 PK	74.0	-10.0	1.10 V	302	46.5	17.5
6	11650.00	50.4 AV	54.0	-3.6	1.10 V	302	32.9	17.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.4 PK	74.0	-17.6	1.80 H	201	52.5	3.9
2	5150.00	42.9 AV	54.0	-11.1	1.80 H	201	39.0	3.9
3	*5180.00	100.5 PK			1.73 H	191	60.9	39.6
4	*5180.00	89.6 AV			1.73 H	191	50.0	39.6
5	#10360.00	58.6 PK	74.0	-15.4	1.94 H	144	42.8	15.8
6	#10360.00	44.7 AV	54.0	-9.3	1.94 H	144	28.9	15.8
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	61.1 PK	74.0	-12.9	1.74 V	318	57.2	3.9
2	**5150.00**	**52.9 AV**	**54.0**	**-1.1**	**1.74 V**	**318**	**49.0**	**3.9**
3	*5180.00	119.3 PK			1.74 V	122	79.7	39.6
4	*5180.00	108.2 AV			1.74 V	122	68.6	39.6
5	#10360.00	59.1 PK	74.0	-14.9	1.88 V	166	43.3	15.8
6	#10360.00	45.3 AV	54.0	-8.7	1.88 V	166	29.5	15.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	101.2 PK			1.86 H	191	61.6	39.6
2	*5200.00	89.7 AV			1.86 H	191	50.1	39.6
3	#10400.00	58.5 PK	74.0	-15.5	2.04 H	166	42.6	15.9
4	#10400.00	45.0 AV	54.0	-9.0	2.04 H	166	29.1	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	*5200.00	121.4 PK			1.84 V	197	81.8	39.6
2	*5200.00	110.5 AV			1.84 V	197	70.9	39.6
3	#10400.00	58.8 PK	74.0	-15.2	1.92 V	188	42.9	15.9
4	#10400.00	45.6 AV	54.0	-8.4	1.92 V	188	29.7	15.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	101.6 PK			1.88 H	186	62.2	39.4
2	*5240.00	90.2 AV			1.88 H	186	50.8	39.4
3	5350.00	57.9 PK	74.0	-16.1	1.97 H	201	53.9	4.0
4	5350.00	43.8 AV	54.0	-10.2	1.97 H	201	39.8	4.0
5	#10480.00	59.0 PK	74.0	-15.0	1.88 H	163	42.3	16.7
6	#10480.00	46.1 AV	54.0	-7.9	1.88 H	163	29.4	16.7
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	*5240.00	121.9 PK			1.81 V	201	82.5	39.4
2	*5240.00	110.9 AV			1.81 V	201	71.5	39.4
3	5350.00	57.5 PK	74.0	-16.5	1.88 V	174	53.5	4.0
4	5350.00	46.0 AV	54.0	-8.0	1.88 V	174	42.0	4.0
5	#10480.00	59.2 PK	74.0	-14.8	1.93 V	188	42.5	16.7
6	#10480.00	46.4 AV	54.0	-7.6	1.93 V	188	29.7	16.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5613.60	55.1 PK	68.2	-13.1	1.97 H	84	50.6	4.5
2	*5745.00	100.2 PK			1.97 H	84	60.1	40.1
3	*5745.00	89.2 AV			1.97 H	84	49.1	40.1
4	#5984.80	57.2 PK	68.2	-11.0	1.97 H	84	51.9	5.3
5	11490.00	67.0 PK	74.0	-7.0	2.01 H	63	49.4	17.6
6	11490.00	52.7 AV	54.0	-1.3	2.01 H	63	35.1	17.6
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	#5643.20	56.6 PK	68.2	-11.6	1.77 V	349	52.0	4.6
2	*5745.00	120.0 PK			1.77 V	349	79.9	40.1
3	*5745.00	109.2 AV			1.77 V	349	69.1	40.1
4	#5926.40	58.1 PK	68.2	-10.1	1.77 V	349	52.9	5.2
5	11490.00	58.8 PK	74.0	-15.2	2.25 V	321	41.2	17.6
6	11490.00	46.4 AV	54.0	-7.6	2.25 V	321	28.8	17.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5613.60	56.8 PK	68.2	-11.4	2.77 H	57	52.3	4.5
2	*5785.00	99.7 PK			2.77 H	57	59.4	40.3
3	*5785.00	89.0 AV			2.77 H	57	48.7	40.3
4	#5935.20	57.2 PK	68.2	-11.0	2.77 H	57	52.1	5.1
5	11570.00	61.2 PK	74.0	-12.8	2.75 H	81	43.3	17.9
6	11570.00	48.5 AV	54.0	-5.5	2.75 H	81	30.6	17.9
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	#5630.40	56.8 PK	68.2	-11.4	1.68 V	0	52.3	4.5
2	*5785.00	119.5 PK			1.68 V	0	79.2	40.3
3	*5785.00	108.2 AV			1.68 V	0	67.9	40.3
4	#5932.80	57.5 PK	68.2	-10.7	1.68 V	0	52.3	5.2
5	11570.00	61.9 PK	74.0	-12.1	1.06 V	303	44.0	17.9
6	11570.00	48.7 AV	54.0	-5.3	1.06 V	303	30.8	17.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5607.20	56.0 PK	68.2	-12.2	2.72 H	148	51.5	4.5
2	*5825.00	100.6 PK			2.72 H	148	60.1	40.5
3	*5825.00	89.3 AV			2.72 H	148	48.8	40.5
4	#5944.00	57.0 PK	68.2	-11.2	2.72 H	148	51.8	5.2
5	11650.00	62.5 PK	74.0	-11.5	2.73 H	78	45.0	17.5
6	11650.00	49.2 AV	54.0	-4.8	2.73 H	78	31.7	17.5
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	#5612.00	57.3 PK	68.2	-10.9	1.67 V	353	52.8	4.5
2	*5825.00	119.9 PK			1.67 V	353	79.4	40.5
3	*5825.00	108.8 AV			1.67 V	353	68.3	40.5
4	#5956.80	57.2 PK	68.2	-11.0	1.67 V	353	52.0	5.2
5	11650.00	63.1 PK	74.0	-10.9	1.11 V	310	45.6	17.5
6	11650.00	49.8 AV	54.0	-4.2	1.11 V	310	32.3	17.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.4 PK	74.0	-17.6	1.87 H	200	52.5	3.9
2	5150.00	42.9 AV	54.0	-11.1	1.87 H	200	39.0	3.9
3	*5190.00	96.3 PK			1.71 H	191	56.7	39.6
4	*5190.00	85.6 AV			1.71 H	191	46.0	39.6
5	#10380.00	58.3 PK	74.0	-15.7	1.88 H	191	42.4	15.9
6	#10380.00	45.2 AV	54.0	-8.8	1.88 H	191	29.3	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	5150.00	69.0 PK	74.0	-5.0	1.85 V	116	65.1	3.9
2	5150.00	52.4 AV	54.0	-1.6	1.85 V	116	48.5	3.9
3	*5190.00	115.4 PK			1.86 V	199	75.8	39.6
4	*5190.00	105.3 AV			1.86 V	199	65.7	39.6
5	#10380.00	58.7 PK	74.0	-15.3	2.13 V	220	42.8	15.9
6	#10380.00	45.6 AV	54.0	-8.4	2.13 V	220	29.7	15.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.0 PK	74.0	-18.0	1.77 H	199	52.1	3.9
2	5150.00	43.2 AV	54.0	-10.8	1.77 H	199	39.3	3.9
3	*5230.00	99.7 PK			1.73 H	192	60.3	39.4
4	*5230.00	89.7 AV			1.73 H	192	50.3	39.4
5	5350.00	56.8 PK	74.0	-17.2	1.81 H	202	52.8	4.0
6	5350.00	43.8 AV	54.0	-10.2	1.81 H	202	39.8	4.0
7	#10460.00	59.1 PK	74.0	-14.9	1.88 H	180	42.7	16.4
8	#10460.00	45.2 AV	54.0	-8.8	1.88 H	180	28.8	16.4
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	5150.00	67.4 PK	74.0	-6.6	1.85 V	196	63.5	3.9
2	5150.00	51.1 AV	54.0	-2.9	1.85 V	196	47.2	3.9
3	*5230.00	118.2 PK			1.84 V	201	78.8	39.4
4	*5230.00	108.0 AV			1.84 V	201	68.6	39.4
5	5350.00	58.9 PK	74.0	-15.1	1.93 V	210	54.9	4.0
6	5350.00	45.7 AV	54.0	-8.3	1.93 V	210	41.7	4.0
7	#10460.00	59.4 PK	74.0	-14.6	1.79 V	177	43.0	16.4
8	#10460.00	45.5 AV	54.0	-8.5	1.79 V	177	29.1	16.4

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5647.20	55.3 PK	68.2	-12.9	1.95 H	33	50.7	4.6
2	*5755.00	96.6 PK			1.95 H	33	56.5	40.1
3	*5755.00	86.9 AV			1.95 H	33	46.8	40.1
4	#5972.80	56.9 PK	68.2	-11.3	1.95 H	33	51.6	5.3
5	11510.00	65.2 PK	74.0	-8.8	1.98 H	64	47.6	17.6
6	11510.00	51.9 AV	54.0	-2.1	1.98 H	64	34.3	17.6
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	#5640.00	56.5 PK	68.2	-11.7	1.89 V	169	52.0	4.5
2	*5755.00	116.0 PK			1.88 V	169	75.9	40.1
3	*5755.00	105.7 AV			1.88 V	169	65.6	40.1
4	#5961.60	57.4 PK	68.2	-10.8	1.89 V	169	52.2	5.2
5	11510.00	57.8 PK	74.0	-16.2	2.06 V	259	40.2	17.6
6	11510.00	45.8 AV	54.0	-8.2	2.06 V	259	28.2	17.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5626.40	57.2 PK	68.2	-11.0	2.67 H	48	52.7	4.5
2	*5795.00	98.1 PK			2.67 H	48	57.8	40.3
3	*5795.00	87.3 AV			2.67 H	48	47.0	40.3
4	#5932.80	58.3 PK	68.2	-9.9	2.67 H	48	53.1	5.2
5	11590.00	62.9 PK	74.0	-11.1	2.70 H	76	45.0	17.9
6	11590.00	48.5 AV	54.0	-5.5	2.70 H	76	30.6	17.9
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	#5644.80	56.9 PK	68.2	-11.3	1.69 V	1	52.3	4.6
2	*5795.00	116.1 PK			1.69 V	1	75.8	40.3
3	*5795.00	105.9 AV			1.69 V	1	65.6	40.3
4	#5954.40	58.9 PK	68.2	-9.3	1.69 V	1	53.7	5.2
5	11590.00	61.9 PK	74.0	-12.1	1.13 V	304	44.0	17.9
6	11590.00	48.5 AV	54.0	-5.5	1.13 V	304	30.6	17.9

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.

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.0 PK	74.0	-18.0	2.03 H	210	52.1	3.9
2	5150.00	42.8 AV	54.0	-11.2	2.03 H	210	38.9	3.9
3	*5210.00	90.2 PK			1.94 H	192	50.7	39.5
4	*5210.00	80.0 AV			1.94 H	192	40.5	39.5
5	5350.00	56.9 PK	74.0	-17.1	1.99 H	203	52.9	4.0
6	5350.00	43.8 AV	54.0	-10.2	1.99 H	203	39.8	4.0
7	#10420.00	58.0 PK	74.0	-16.0	1.67 H	154	42.0	16.0
8	#10420.00	45.4 AV	54.0	-8.6	1.67 H	154	29.4	16.0
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	65.9 PK	74.0	-8.1	1.90 V	201	62.0	3.9
2	5150.00	52.3 AV	54.0	-1.7	1.90 V	201	48.4	3.9
3	*5210.00	110.0 PK			1.85 V	201	70.5	39.5
4	*5210.00	99.8 AV			1.85 V	201	60.3	39.5
5	5350.00	59.9 PK	74.0	-14.1	1.83 V	197	55.9	4.0
6	5350.00	46.6 AV	54.0	-7.4	1.83 V	197	42.6	4.0
7	#10420.00	58.1 PK	74.0	-15.9	2.23 V	188	42.1	16.0
8	#10420.00	45.5 AV	54.0	-8.5	2.23 V	188	29.5	16.0

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5624.80	55.6 PK	68.2	-12.6	1.98 H	23	51.1	4.5
2	#5650.00	58.8 PK	68.2	-9.4	2.03 H	33	54.2	4.6
3	*5775.00	91.6 PK			1.98 H	23	51.4	40.2
4	*5775.00	81.7 AV			1.98 H	23	41.5	40.2
5	#5925.00	57.1 PK	68.2	-11.1	1.99 H	44	51.9	5.2
6	#5971.20	56.5 PK	68.2	-11.7	1.98 H	23	51.2	5.3
7	11550.00	62.9 PK	74.0	-11.1	2.00 H	62	45.1	17.8
8	11550.00	49.3 AV	54.0	-4.7	2.00 H	62	31.5	17.8
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	#5633.60	63.3 PK	68.2	-4.9	1.60 V	2	58.8	4.5
2	#5650.00	66.6 PK	68.2	-1.6	1.64 V	354	62.0	4.6
3	*5775.00	110.3 PK			1.60 V	2	70.1	40.2
4	*5775.00	99.9 AV			1.60 V	2	59.7	40.2
5	#5925.00	60.1 PK	68.2	-8.1	1.83 V	354	54.9	5.2
6	#5941.60	59.3 PK	68.2	-8.9	1.60 V	2	54.2	5.1
7	11550.00	58.5 PK	74.0	-15.5	1.92 V	263	40.7	17.8
8	11550.00	45.6 AV	54.0	-8.4	1.92 V	263	27.8	17.8

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.

Test Mode B (Radio 2, Sector Ant.)

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.7 PK	74.0	-16.3	2.06 H	348	53.8	3.9
2	5150.00	45.9 AV	54.0	-8.1	2.06 H	348	42.0	3.9
3	*5180.00	111.5 PK			1.95 H	343	71.9	39.6
4	*5180.00	100.2 AV			1.95 H	343	60.6	39.6
5	#10360.00	58.8 PK	74.0	-15.2	1.70 H	122	43.0	15.8
6	#10360.00	45.3 AV	54.0	-8.7	1.70 H	122	29.5	15.8
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	57.4 PK	74.0	-16.6	2.02 V	354	53.5	3.9
2	5150.00	43.9 AV	54.0	-10.1	2.02 V	354	40.0	3.9
3	*5180.00	111.4 PK			2.11 V	2	71.8	39.6
4	*5180.00	100.1 AV			2.11 V	2	60.5	39.6
5	#10360.00	58.2 PK	74.0	-15.8	1.93 V	166	42.4	15.8
6	#10360.00	45.1 AV	54.0	-8.9	1.93 V	166	29.3	15.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	112.3 PK			1.92 H	10	72.7	39.6
2	*5200.00	100.6 AV			1.92 H	10	61.0	39.6
3	#10400.00	58.9 PK	74.0	-15.1	1.79 H	144	43.0	15.9
4	#10400.00	45.4 AV	54.0	-8.6	1.79 H	144	29.5	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	*5200.00	109.1 PK			2.12 V	323	69.5	39.6
2	*5200.00	97.9 AV			2.12 V	323	58.3	39.6
3	#10400.00	58.7 PK	74.0	-15.3	1.97 V	183	42.8	15.9
4	#10400.00	45.3 AV	54.0	-8.7	1.97 V	183	29.4	15.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	111.6 PK			1.93 H	352	72.2	39.4
2	*5240.00	100.9 AV			1.93 H	352	61.5	39.4
3	5350.00	58.3 PK	74.0	-15.7	2.03 H	342	54.3	4.0
4	5350.00	46.0 AV	54.0	-8.0	2.03 H	342	42.0	4.0
5	#10480.00	59.3 PK	74.0	-14.7	1.68 H	199	42.6	16.7
6	#10480.00	46.0 AV	54.0	-8.0	1.68 H	199	29.3	16.7
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	*5240.00	111.6 PK			2.00 V	18	72.2	39.4
2	*5240.00	100.2 AV			2.00 V	18	60.8	39.4
3	5350.00	57.7 PK	74.0	-16.3	1.97 V	356	53.7	4.0
4	5350.00	44.6 AV	54.0	-9.4	1.97 V	356	40.6	4.0
5	#10480.00	59.0 PK	74.0	-15.0	1.85 V	201	42.3	16.7
6	#10480.00	45.8 AV	54.0	-8.2	1.85 V	201	29.1	16.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5618.40	57.0 PK	68.2	-11.2	1.96 H	22	52.5	4.5
2	*5745.00	117.9 PK			1.96 H	22	77.8	40.1
3	*5745.00	106.3 AV			1.96 H	22	66.2	40.1
4	#5959.20	58.1 PK	68.2	-10.1	1.96 H	22	52.9	5.2
5	11490.00	61.4 PK	74.0	-12.6	2.33 H	138	43.8	17.6
6	11490.00	48.2 AV	54.0	-5.8	2.33 H	138	30.6	17.6
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	#5645.60	59.3 PK	68.2	-8.9	2.05 V	4	54.7	4.6
2	*5745.00	117.3 PK			2.05 V	4	77.2	40.1
3	*5745.00	106.2 AV			2.05 V	4	66.1	40.1
4	#5984.00	58.6 PK	68.2	-9.6	2.05 V	4	53.3	5.3
5	11490.00	60.8 PK	74.0	-13.2	1.69 V	161	43.2	17.6
6	11490.00	47.5 AV	54.0	-6.5	1.69 V	161	29.9	17.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5628.00	57.3 PK	68.2	-10.9	1.95 H	19	52.8	4.5
2	*5785.00	119.0 PK			1.95 H	19	78.7	40.3
3	*5785.00	107.5 AV			1.95 H	19	67.2	40.3
4	#5941.60	58.7 PK	68.2	-9.5	1.95 H	19	53.6	5.1
5	11570.00	64.2 PK	74.0	-9.8	2.47 H	139	46.3	17.9
6	11570.00	50.5 AV	54.0	-3.5	2.47 H	139	32.6	17.9
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	#5643.20	57.1 PK	68.2	-11.1	2.07 V	346	52.5	4.6
2	*5785.00	120.8 PK			2.07 V	346	80.5	40.3
3	*5785.00	110.1 AV			2.07 V	346	69.8	40.3
4	#5969.60	58.1 PK	68.2	-10.1	2.07 V	346	52.8	5.3
5	11570.00	61.9 PK	74.0	-12.1	1.84 V	134	44.0	17.9
6	11570.00	48.8 AV	54.0	-5.2	1.84 V	134	30.9	17.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5604.80	57.3 PK	68.2	-10.9	1.99 H	10	52.8	4.5
2	*5825.00	117.5 PK			1.99 H	10	77.0	40.5
3	*5825.00	106.8 AV			1.99 H	10	66.3	40.5
4	#5978.40	58.8 PK	68.2	-9.4	1.99 H	10	53.5	5.3
5	11650.00	64.1 PK	74.0	-9.9	2.44 H	140	46.6	17.5
6	11650.00	51.2 AV	54.0	-2.8	2.44 H	140	33.7	17.5
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	#5611.20	57.3 PK	68.2	-10.9	2.08 V	344	52.8	4.5
2	*5825.00	120.3 PK			2.08 V	344	79.8	40.5
3	*5825.00	109.5 AV			2.08 V	344	69.0	40.5
4	#5948.80	59.3 PK	68.2	-8.9	2.08 V	344	54.1	5.2
5	11650.00	63.3 PK	74.0	-10.7	2.18 V	31	45.8	17.5
6	11650.00	50.3 AV	54.0	-3.7	2.18 V	31	32.8	17.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.7 PK	74.0	-16.3	2.04 H	357	53.8	3.9
2	5150.00	45.6 AV	54.0	-8.4	2.04 H	357	41.7	3.9
3	*5180.00	111.0 PK			1.93 H	10	71.4	39.6
4	*5180.00	99.2 AV			1.93 H	10	59.6	39.6
5	#10360.00	58.7 PK	74.0	-15.3	1.85 H	165	42.9	15.8
6	#10360.00	45.2 AV	54.0	-8.8	1.85 H	165	29.4	15.8
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	57.4 PK	74.0	-16.6	1.95 V	11	53.5	3.9
2	5150.00	44.1 AV	54.0	-9.9	1.95 V	11	40.2	3.9
3	*5180.00	110.8 PK			2.03 V	17	71.2	39.6
4	*5180.00	99.9 AV			2.03 V	17	60.3	39.6
5	#10360.00	58.3 PK	74.0	-15.7	1.77 V	193	42.5	15.8
6	#10360.00	44.9 AV	54.0	-9.1	1.77 V	193	29.1	15.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	111.5 PK			1.88 H	16	71.9	39.6
2	*5200.00	99.8 AV			1.88 H	16	60.2	39.6
3	#10400.00	58.5 PK	74.0	-15.5	1.81 H	143	42.6	15.9
4	#10400.00	45.3 AV	54.0	-8.7	1.81 H	143	29.4	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	*5200.00	111.8 PK			2.05 V	11	72.2	39.6
2	*5200.00	100.6 AV			2.05 V	11	61.0	39.6
3	#10400.00	58.2 PK	74.0	-15.8	1.85 V	204	42.3	15.9
4	#10400.00	44.9 AV	54.0	-9.1	1.85 V	204	29.0	15.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	111.4 PK			1.95 H	348	72.0	39.4
2	*5240.00	100.8 AV			1.95 H	348	61.4	39.4
3	5350.00	58.3 PK	74.0	-15.7	2.05 H	356	54.3	4.0
4	5350.00	46.1 AV	54.0	-7.9	2.05 H	356	42.1	4.0
5	#10480.00	59.1 PK	74.0	-14.9	1.93 H	187	42.4	16.7
6	#10480.00	46.1 AV	54.0	-7.9	1.93 H	187	29.4	16.7
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	*5240.00	112.6 PK			1.95 V	19	73.2	39.4
2	*5240.00	101.4 AV			1.95 V	19	62.0	39.4
3	5350.00	57.7 PK	74.0	-16.3	2.04 V	14	53.7	4.0
4	5350.00	44.4 AV	54.0	-9.6	2.04 V	14	40.4	4.0
5	#10480.00	58.8 PK	74.0	-15.2	1.87 V	169	42.1	16.7
6	#10480.00	45.8 AV	54.0	-8.2	1.87 V	169	29.1	16.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5646.40	57.7 PK	68.2	-10.5	1.86 H	347	53.1	4.6
2	*5745.00	118.0 PK			1.86 H	347	77.9	40.1
3	*5745.00	106.1 AV			1.86 H	347	66.0	40.1
4	#5980.80	57.7 PK	68.2	-10.5	1.86 H	347	52.4	5.3
5	11490.00	61.2 PK	74.0	-12.8	2.36 H	138	43.6	17.6
6	11490.00	47.6 AV	54.0	-6.4	2.36 H	138	30.0	17.6
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	#5623.20	57.1 PK	68.2	-11.1	2.07 V	348	52.6	4.5
2	*5745.00	118.8 PK			2.07 V	348	78.7	40.1
3	*5745.00	107.9 AV			2.07 V	348	67.8	40.1
4	#5964.80	57.7 PK	68.2	-10.5	2.07 V	348	52.5	5.2
5	11490.00	61.1 PK	74.0	-12.9	1.83 V	165	43.5	17.6
6	11490.00	47.7 AV	54.0	-6.3	1.83 V	165	30.1	17.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5631.20	57.1 PK	68.2	-11.1	2.00 H	12	52.6	4.5
2	*5785.00	118.6 PK			2.00 H	12	78.3	40.3
3	*5785.00	107.2 AV			2.00 H	12	66.9	40.3
4	#5964.80	57.8 PK	68.2	-10.4	2.00 H	12	52.6	5.2
5	11570.00	62.7 PK	74.0	-11.3	2.55 H	136	44.8	17.9
6	11570.00	49.4 AV	54.0	-4.6	2.55 H	136	31.5	17.9
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	#5632.00	57.0 PK	68.2	-11.2	2.07 V	348	52.5	4.5
2	*5785.00	120.8 PK			2.07 V	348	80.5	40.3
3	*5785.00	110.2 AV			2.07 V	348	69.9	40.3
4	#5956.80	57.9 PK	68.2	-10.3	2.07 V	348	52.7	5.2
5	11570.00	62.1 PK	74.0	-11.9	1.77 V	144	44.2	17.9
6	11570.00	49.1 AV	54.0	-4.9	1.77 V	144	31.2	17.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5649.60	57.5 PK	68.2	-10.7	1.99 H	2	52.9	4.6
2	*5825.00	118.1 PK			1.99 H	2	77.6	40.5
3	*5825.00	106.8 AV			1.99 H	2	66.3	40.5
4	#5949.60	58.1 PK	68.2	-10.1	1.99 H	2	52.9	5.2
5	11650.00	61.7 PK	74.0	-12.3	2.44 H	143	44.2	17.5
6	11650.00	50.0 AV	54.0	-4.0	2.44 H	143	32.5	17.5
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	#5616.80	57.5 PK	68.2	-10.7	2.10 V	346	53.0	4.5
2	*5825.00	120.2 PK			2.10 V	346	79.7	40.5
3	*5825.00	108.9 AV			2.10 V	346	68.4	40.5
4	#5961.60	58.2 PK	68.2	-10.0	2.10 V	346	53.0	5.2
5	11650.00	61.6 PK	74.0	-12.4	2.16 V	40	44.1	17.5
6	11650.00	48.8 AV	54.0	-5.2	2.16 V	40	31.3	17.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.8 PK	74.0	-16.2	2.04 H	333	53.9	3.9
2	5150.00	45.3 AV	54.0	-8.7	2.04 H	333	41.4	3.9
3	*5190.00	109.5 PK			1.87 H	346	69.9	39.6
4	*5190.00	99.2 AV			1.87 H	346	59.6	39.6
5	#10380.00	59.4 PK	74.0	-14.6	1.74 H	153	43.5	15.9
6	#10380.00	45.7 AV	54.0	-8.3	1.74 H	153	29.8	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	5150.00	58.5 PK	74.0	-15.5	1.98 V	352	54.6	3.9
2	5150.00	45.7 AV	54.0	-8.3	1.98 V	352	41.8	3.9
3	*5190.00	107.8 PK			2.06 V	5	68.2	39.6
4	*5190.00	97.5 AV			2.06 V	5	57.9	39.6
5	#10380.00	59.2 PK	74.0	-14.8	1.91 V	188	43.3	15.9
6	#10380.00	45.8 AV	54.0	-8.2	1.91 V	188	29.9	15.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	109.9 PK			1.90 H	349	70.5	39.4
2	*5230.00	99.2 AV			1.90 H	349	59.8	39.4
3	5350.00	57.9 PK	74.0	-16.1	2.13 H	354	53.9	4.0
4	5350.00	44.7 AV	54.0	-9.3	2.13 H	354	40.7	4.0
5	#10460.00	58.7 PK	74.0	-15.3	1.83 H	166	42.3	16.4
6	#10460.00	45.5 AV	54.0	-8.5	1.83 H	166	29.1	16.4
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	*5230.00	107.4 PK			2.05 V	355	68.0	39.4
2	*5230.00	97.3 AV			2.05 V	355	57.9	39.4
3	5350.00	57.6 PK	74.0	-16.4	1.91 V	349	53.6	4.0
4	5350.00	44.5 AV	54.0	-9.5	1.91 V	349	40.5	4.0
5	#10460.00	58.6 PK	74.0	-15.4	1.85 V	199	42.2	16.4
6	#10460.00	45.2 AV	54.0	-8.8	1.85 V	199	28.8	16.4

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5648.80	57.7 PK	68.2	-10.5	2.03 H	7	53.1	4.6
2	*5755.00	114.7 PK			2.03 H	7	74.6	40.1
3	*5755.00	104.0 AV			2.03 H	7	63.9	40.1
4	#5934.40	58.0 PK	68.2	-10.2	2.03 H	7	52.8	5.2
5	11510.00	60.5 PK	74.0	-13.5	1.99 H	151	42.9	17.6
6	11510.00	47.1 AV	54.0	-6.9	1.99 H	151	29.5	17.6
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	#5625.60	57.5 PK	68.2	-10.7	2.04 V	345	53.0	4.5
2	*5755.00	115.7 PK			2.04 V	345	75.6	40.1
3	*5755.00	105.3 AV			2.04 V	345	65.2	40.1
4	#5977.60	57.7 PK	68.2	-10.5	2.04 V	345	52.4	5.3
5	11510.00	60.8 PK	74.0	-13.2	1.76 V	162	43.2	17.6
6	11510.00	47.2 AV	54.0	-6.8	1.76 V	162	29.6	17.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5636.00	56.8 PK	68.2	-11.4	2.03 H	6	52.3	4.5
2	*5795.00	115.5 PK			2.03 H	6	75.2	40.3
3	*5795.00	104.8 AV			2.03 H	6	64.5	40.3
4	#5946.40	57.8 PK	68.2	-10.4	2.03 H	6	52.6	5.2
5	11590.00	61.8 PK	74.0	-12.2	1.87 H	133	43.9	17.9
6	11590.00	48.0 AV	54.0	-6.0	1.87 H	133	30.1	17.9
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	#5624.00	57.1 PK	68.2	-11.1	2.06 V	344	52.6	4.5
2	*5795.00	118.3 PK			2.06 V	344	78.0	40.3
3	*5795.00	108.2 AV			2.06 V	344	67.9	40.3
4	#5962.40	57.6 PK	68.2	-10.6	2.06 V	344	52.4	5.2
5	11590.00	62.2 PK	74.0	-11.8	1.88 V	177	44.3	17.9
6	11590.00	48.3 AV	54.0	-5.7	1.88 V	177	30.4	17.9

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.

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.0 PK	74.0	-15.0	2.02 H	351	55.1	3.9
2	5150.00	45.2 AV	54.0	-8.8	2.02 H	351	41.3	3.9
3	*5210.00	105.9 PK			1.91 H	343	66.4	39.5
4	*5210.00	95.6 AV			1.91 H	343	56.1	39.5
5	5350.00	58.5 PK	74.0	-15.5	1.99 H	349	54.5	4.0
6	5350.00	44.9 AV	54.0	-9.1	1.99 H	349	40.9	4.0
7	#10420.00	59.3 PK	74.0	-14.7	1.89 H	191	43.3	16.0
8	#10420.00	45.7 AV	54.0	-8.3	1.89 H	191	29.7	16.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.7 PK	74.0	-15.3	1.99 V	333	54.8	3.9
2	5150.00	45.1 AV	54.0	-8.9	1.99 V	333	41.2	3.9
3	*5210.00	103.2 PK			1.93 V	320	63.7	39.5
4	*5210.00	93.0 AV			1.93 V	320	53.5	39.5
5	5350.00	58.5 PK	74.0	-15.5	1.87 V	329	54.5	4.0
6	5350.00	44.5 AV	54.0	-9.5	1.87 V	329	40.5	4.0
7	#10420.00	58.6 PK	74.0	-15.4	2.05 V	188	42.6	16.0
8	#10420.00	45.5 AV	54.0	-8.5	2.05 V	188	29.5	16.0

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5649.60	63.2 PK	68.2	-5.0	2.03 H	12	58.6	4.6
2	#5650.00	65.7 PK	68.2	-2.5	2.07 H	5	61.1	4.6
3	*5775.00	111.2 PK			2.03 H	12	71.0	40.2
4	*5775.00	101.0 AV			2.03 H	12	60.8	40.2
5	#5925.00	60.2 PK	68.2	-8.0	2.00 H	359	55.0	5.2
6	#5952.00	58.9 PK	68.2	-9.3	2.03 H	12	53.7	5.2
7	11550.00	60.8 PK	74.0	-13.2	1.99 H	154	43.0	17.8
8	11550.00	47.4 AV	54.0	-6.6	1.99 H	154	29.6	17.8
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	#5649.60	64.1 PK	68.2	-4.1	2.06 V	344	59.5	4.6
2	#5650.00	66.7 PK	68.2	-1.5	2.05 V	344	62.1	4.6
3	*5775.00	113.9 PK			2.06 V	344	73.7	40.2
4	*5775.00	103.4 AV			2.06 V	344	63.2	40.2
5	#5924.80	60.9 PK	68.3	-7.4	2.06 V	344	55.7	5.2
6	#5925.00	63.0 PK	68.2	-5.2	2.00 V	349	57.8	5.2
7	11550.00	61.3 PK	74.0	-12.7	1.81 V	122	43.5	17.8
8	11550.00	48.3 AV	54.0	-5.7	1.81 V	122	30.5	17.8

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.

Below 1GHz Worst-Case Data:

Test Mode A (Radio 2, Dipole Ant.)

802.11a

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	57.12	27.0 QP	40.0	-13.0	2.00 H	62	41.4	-14.4
2	99.89	28.0 QP	43.5	-15.5	2.00 H	94	46.5	-18.5
3	249.60	31.1 QP	46.0	-14.9	1.01 H	87	45.7	-14.6
4	374.04	29.8 QP	46.0	-16.2	1.01 H	96	41.4	-11.6
5	445.98	27.0 QP	46.0	-19.0	1.50 H	193	37.2	-10.2
6	552.91	31.9 QP	46.0	-14.1	1.01 H	63	40.5	-8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	90.17	26.8 QP	43.5	-16.7	1.00 V	126	46.3	-19.5
2	185.44	30.2 QP	43.5	-13.3	1.00 V	159	46.0	-15.8
3	304.04	24.8 QP	46.0	-21.2	1.50 V	240	37.4	-12.6
4	374.04	29.2 QP	46.0	-16.8	1.00 V	242	40.8	-11.6
5	447.92	32.0 QP	46.0	-14.0	1.00 V	96	42.1	-10.1
6	554.86	38.0 QP	46.0	-8.0	1.00 V	323	46.6	-8.6

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

Test Mode B (Radio 2, Sector Ant.)

802.11a

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	82.40	29.9 QP	40.0	-10.1	1.99 H	268	43.7	-13.8
2	249.60	29.1 QP	46.0	-16.9	1.00 H	35	38.2	-9.1
3	282.66	21.8 QP	46.0	-24.2	1.00 H	67	29.4	-7.6
4	374.04	36.9 QP	46.0	-9.1	1.00 H	197	42.5	-5.6
5	549.03	39.1 QP	46.0	-6.9	1.49 H	76	41.0	-1.9
6	624.85	39.9 QP	46.0	-6.1	1.49 H	56	39.8	0.1
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	80.45	31.5 QP	40.0	-8.5	1.50 V	131	44.9	-13.4
2	156.28	26.7 QP	43.5	-16.8	1.01 V	145	35.3	-8.6
3	274.88	28.1 QP	46.0	-17.9	1.01 V	276	35.9	-7.8
4	374.04	37.2 QP	46.0	-8.8	1.50 V	346	42.8	-5.6
5	549.03	36.8 QP	46.0	-9.2	1.01 V	40	38.7	-1.9
6	624.85	37.0 QP	46.0	-9.0	2.00 V	233	36.9	0.1

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

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. 23, 2017	Nov. 22, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 06, 2018	Mar. 05, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.4	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.

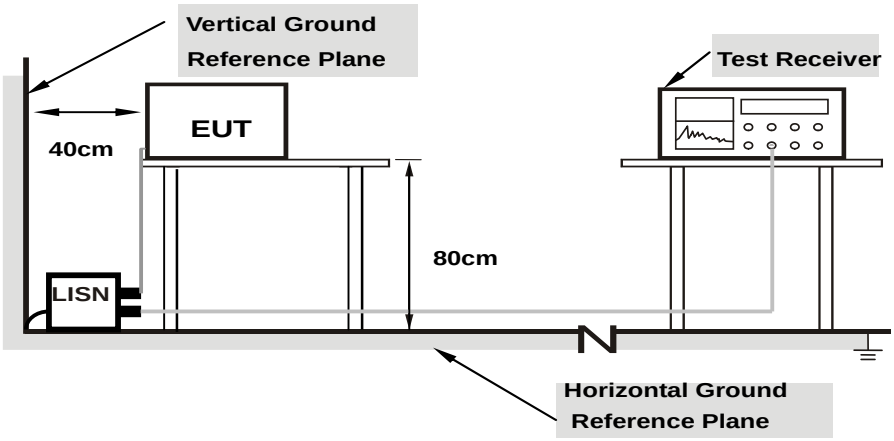
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

Worst-case data:

Test Mode A (Radio 2, Dipole Ant.)

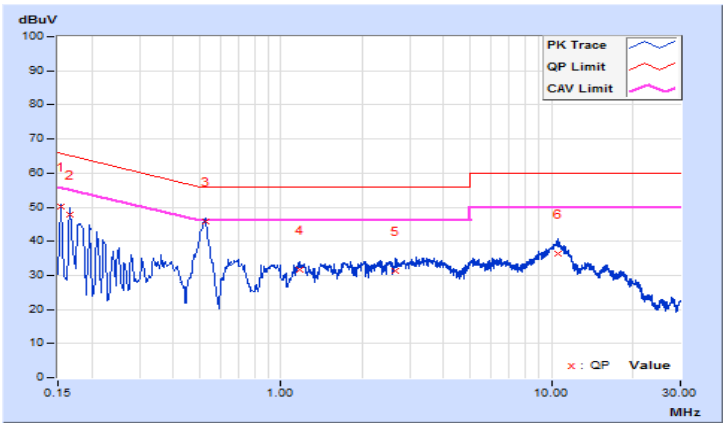
802.11a

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	0.15391	10.10	40.10	25.13	50.20	35.23	65.79	55.79	-15.59	-20.56
2	0.16569	10.10	37.74	22.19	47.84	32.29	65.17	55.17	-17.33	-22.88
3	0.52544	10.12	35.68	30.54	45.80	40.66	56.00	46.00	-10.20	-5.34
4	1.17833	10.15	21.63	18.43	31.78	28.58	56.00	46.00	-24.22	-17.42
5	2.63676	10.22	21.01	15.53	31.23	25.75	56.00	46.00	-24.77	-20.25
6	10.51932	10.65	25.83	20.66	36.48	31.31	60.00	50.00	-23.52	-18.69

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.

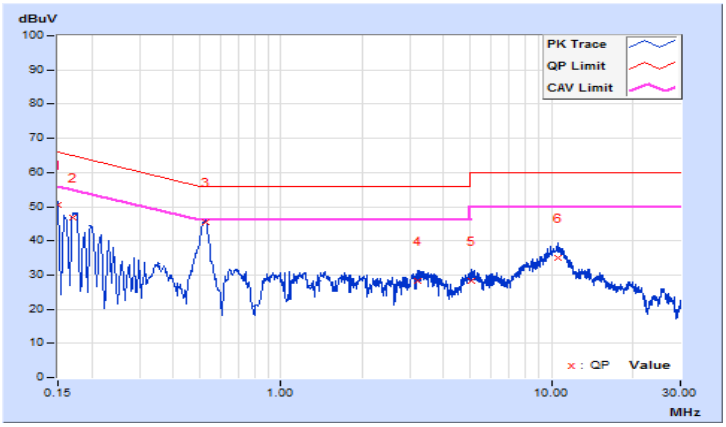


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	10.10	40.51	25.03	50.61	35.13	66.00	56.00	-15.39	-20.87
2	0.16967	10.10	36.69	21.02	46.79	31.12	64.98	54.98	-18.19	-23.86
3	0.52544	10.12	35.31	30.17	45.43	40.29	56.00	46.00	-10.57	-5.71
4	3.20275	10.23	17.91	11.39	28.14	21.62	56.00	46.00	-27.86	-24.38
5	5.07660	10.31	18.04	11.92	28.35	22.23	60.00	50.00	-31.65	-27.77
6	10.53887	10.54	24.41	19.10	34.95	29.64	60.00	50.00	-25.05	-20.36

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.



Test Mode B (Radio 2, Sector Ant.)

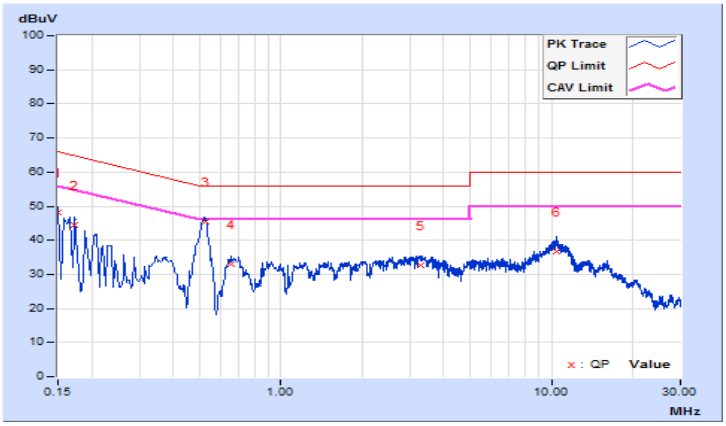
802.11a

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.10	38.15	23.79	48.25	33.89	66.00	56.00	-17.75	-22.11
2	0.17346	10.10	34.51	20.06	44.61	30.16	64.79	54.79	-20.18	-24.63
3	0.52536	10.12	35.43	30.37	45.55	40.49	56.00	46.00	-10.45	-5.51
4	0.65830	10.13	23.01	18.44	33.14	28.57	56.00	46.00	-22.86	-17.43
5	3.28191	10.25	22.41	17.64	32.66	27.89	56.00	46.00	-23.34	-18.11
6	10.43721	10.65	26.10	20.98	36.75	31.63	60.00	50.00	-23.25	-18.37

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.

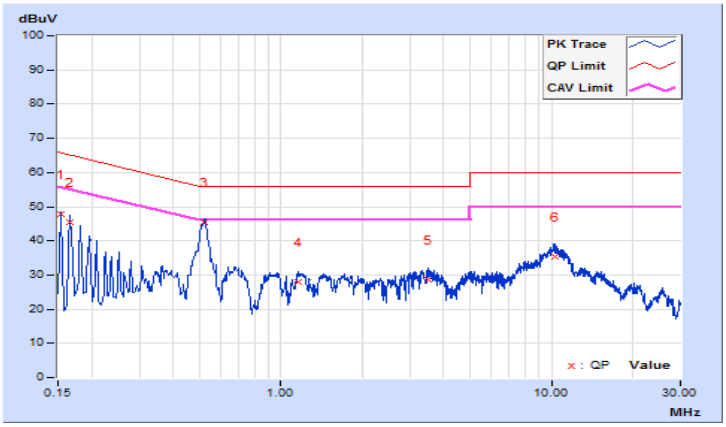


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15391	10.10	37.80	22.35	47.90	32.45	65.79	55.79	-17.89	-23.34
2	0.16564	10.10	35.39	19.01	45.49	29.11	65.18	55.18	-19.69	-26.07
3	**0.52130**	**10.12**	**35.21**	**30.58**	**45.33**	**40.70**	**56.00**	**46.00**	**-10.67**	**-5.30**
4	1.16269	10.14	17.94	14.46	28.08	24.60	56.00	46.00	-27.92	-21.40
5	3.52042	10.24	18.28	12.55	28.52	22.79	56.00	46.00	-27.48	-23.21
6	10.27299	10.53	24.74	19.37	35.27	29.90	60.00	50.00	-24.73	-20.10

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

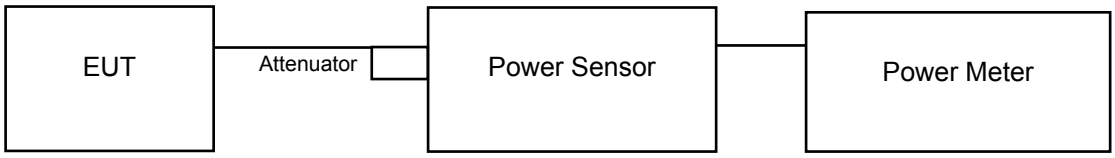
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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 $N_{ANT} \geq 5$.

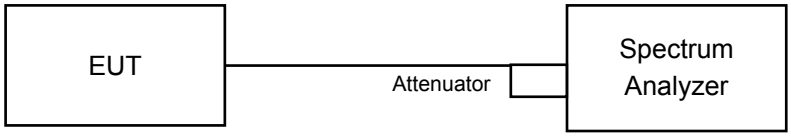
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

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



802.11ac (VHT80)



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

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 and set the detector to average. 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.

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:

For U-NII-1 Band (Outdoor Access Point)

Test Mode A (Radio 2, Dipole Ant., CDD Mode)

802.11a

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
36	5180	19.04	18.69	154.129	21.88	29.70	-3.89	17.99	21.00	Pass
40	5200	19.91	19.77	192.791	22.85	29.70	-3.89	18.96	21.00	Pass
48	5240	19.93	20.41	**208.302**	23.19	29.70	-3.89	19.30	21.00	Pass

Note:
1. Gain = 6.30dBi > 6dBi, so the power limit shall be reduced to 30-(6.30-6) = 29.70dBm.
2. Gain = -3.89dBi (above 30 degrees from the horizon).
3. EIRP = conducted power + (-3.89dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11n (HT20)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
36	5180	19.01	18.56	151.395	21.80	29.70	-3.89	17.91	21.00	Pass
40	5200	19.90	19.75	192.130	22.84	29.70	-3.89	18.95	21.00	Pass
48	5240	19.87	20.16	200.804	23.03	29.70	-3.89	19.14	21.00	Pass

Note:
1. Gain = 6.30dBi > 6dBi, so the power limit shall be reduced to 30-(6.30-6) = 29.70dBm.
2. Gain = -3.89dBi (above 30 degrees from the horizon).
3. EIRP = conducted power + (-3.89dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11n (HT40)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
38	5190	17.01	16.97	100.008	20.00	29.70	-3.89	16.11	21.00	Pass
46	5230	20.06	20.25	207.316	23.17	29.70	-3.89	19.28	21.00	Pass

Note:
1. Gain = 6.30dBi > 6dBi, so the power limit shall be reduced to 30-(6.30-6) = 29.70dBm.
2. Gain = -3.89dBi (above 30 degrees from the horizon).
3. EIRP = conducted power + (-3.89dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11ac (VHT80)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
42	5210	15.14	15.08	64.870	18.12	29.70	-3.89	14.23	21.00	Pass

Note:
1. Gain = 6.30dBi > 6dBi, so the power limit shall be reduced to 30-(6.30-6) = 29.70dBm.
2. Gain = -3.89dBi (above 30 degrees from the horizon).
3. EIRP = conducted power + (-3.89dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

Test Mode A (Radio 2, Dipole Ant., Beamforming Mode)

802.11n (HT20)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
36	5180	16.00	15.55	75.703	18.79	26.69	-3.89	17.91	21.00	Pass
40	5200	16.89	16.74	96.071	19.83	26.69	-3.89	18.95	21.00	Pass
48	5240	16.86	17.15	100.409	20.02	26.69	-3.89	19.14	21.00	Pass

Note:
1. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power limit shall be reduced to 30-(9.31-6) = 26.69dBm.
2. Gain = -3.89dBi (above 30 degrees from the horizon).
3. Beamforming gain = 3.01dBi
4. EIRP = conducted power + (-3.89dBi) + beamforming gain (3.01dBi).

802.11n (HT40)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
38	5190	14.00	13.96	50.008	16.99	26.69	-3.89	16.11	21.00	Pass
46	5230	17.05	17.24	**103.665**	20.16	26.69	-3.89	19.28	21.00	Pass

Note:
1. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power limit shall be reduced to 30-(9.31-6) = 26.69dBm.
2. Gain = -3.89dBi (above 30 degrees from the horizon).
3. Beamforming gain = 3.01dBi
4. EIRP = conducted power + (-3.89dBi) + beamforming gain (3.01dBi).

802.11ac (VHT80)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
42	5210	12.13	12.07	32.437	15.11	26.69	-3.89	14.23	21.00	Pass

Note:
1. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power limit shall be reduced to 30-(9.31-6) = 26.69dBm.
2. Gain = -3.89dBi (above 30 degrees from the horizon).
3. Beamforming gain = 3.01dBi
4. EIRP = conducted power + (-3.89dBi) + beamforming gain (3.01dBi).

Test Mode B (Radio 2, Sector Ant., CDD Mode)

802.11a

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
36	5180	10.54	10.81	23.374	13.69	21.40	6.83	20.52	21.00	Pass
40	5200	10.51	11.03	23.923	13.79	21.40	6.83	20.62	21.00	Pass
48	5240	10.57	11.36	25.079	13.99	21.40	6.83	20.82	21.00	Pass

Note:
1. Gain = 14.60dBi > 6dBi, so the power limit shall be reduced to 30-(14.60-6) = 21.40dBm.
2. Gain = 6.83dBi (above 30 degrees from the horizon).
3. EIRP = conducted power + (6.83dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11n (HT20)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
36	5180	10.60	10.68	23.177	13.65	21.40	6.83	20.48	21.00	Pass
40	5200	10.54	10.95	23.769	13.76	21.40	6.83	20.59	21.00	Pass
48	5240	10.47	11.32	24.695	13.93	21.40	6.83	20.76	21.00	Pass

Note:
1. Gain = 14.60dBi > 6dBi, so the power limit shall be reduced to 30-(14.60-6) = 21.40dBm.
2. Gain = 6.83dBi (above 30 degrees from the horizon).
3. EIRP = conducted power + (6.83dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11n (HT40)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
38	5190	10.54	10.91	23.655	13.74	21.40	6.83	20.57	21.00	Pass
46	5230	10.81	11.41	**25.886**	14.13	21.40	6.83	20.96	21.00	Pass

Note:
1. Gain = 14.60dBi > 6dBi, so the power limit shall be reduced to 30-(14.60-6) = 21.40dBm.
2. Gain = 6.83dBi (above 30 degrees from the horizon).
3. EIRP = conducted power + (6.83dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11ac (VHT80)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
42	5210	10.81	11.22	25.293	14.03	21.40	6.83	20.86	21.00	Pass

Note:
1. Gain = 14.60dBi > 6dBi, so the power limit shall be reduced to 30-(14.60-6) = 21.40dBm.
2. Gain = 6.83dBi (above 30 degrees from the horizon).
3. EIRP = conducted power + (6.83dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

Test Mode B (Radio 2, Sector Ant., Beamforming Mode)

802.11n (HT20)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
36	5180	7.59	7.67	11.589	10.64	18.39	6.83	20.48	21.00	Pass
40	5200	7.53	7.94	11.885	10.75	18.39	6.83	20.59	21.00	Pass
48	5240	7.46	8.31	12.348	10.92	18.39	6.83	20.76	21.00	Pass

Note:
1. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power limit shall be reduced to 30-(17.61-6) = 18.39dBm.
2. Gain = 6.83dBi (above 30 degrees from the horizon).
3. Beamforming gain = 3.01dBi
4. EIRP = conducted power + (6.83dBi) + beamforming gain (3.01dBi).

802.11n (HT40)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
38	5190	7.53	7.90	11.828	10.73	18.39	6.83	20.57	21.00	Pass
46	5230	7.80	8.40	**12.944**	11.12	18.39	6.83	20.96	21.00	Pass

Note:
1. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power limit shall be reduced to 30-(17.61-6) = 18.39dBm.
2. Gain = 6.83dBi (above 30 degrees from the horizon).
3. Beamforming gain = 3.01dBi
4. EIRP = conducted power + (6.83dBi) + beamforming gain (3.01dBi).

802.11ac (VHT80)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
42	5210	7.80	8.21	12.648	11.02	18.39	6.83	20.86	21.00	Pass

Note:
1. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power limit shall be reduced to 30-(17.61-6) = 18.39dBm.
2. Gain = 6.83dBi (above 30 degrees from the horizon).
3. Beamforming gain = 3.01dBi
4. EIRP = conducted power + (6.83dBi) + beamforming gain (3.01dBi).

For U-NII-3 Band

Test Mode A (Radio 2, Dipole Ant., CDD Mode)

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	20.11	19.86	**199.393**	23.00	29.70	Pass
157	5785	19.61	19.05	171.764	22.35	29.70	Pass
165	5825	19.41	19.11	168.767	22.27	29.70	Pass

Note: Gain = 6.30dBi > 6dBi, so the power limit shall be reduced to 30-(6.30-6) = 29.70dBm.

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				
149	5745	20.05	19.87	198.209	22.97	29.70	Pass
157	5785	19.54	19.20	173.126	22.38	29.70	Pass
165	5825	19.37	19.05	166.850	22.22	29.70	Pass

Note: Gain = 6.30dBi > 6dBi, so the power limit shall be reduced to 30-(6.30-6) = 29.70dBm.

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				
151	5755	20.03	19.83	196.854	22.94	29.70	Pass
159	5795	19.55	19.07	170.881	22.33	29.70	Pass

Note: Gain = 6.30dBi > 6dBi, so the power limit shall be reduced to 30-(6.30-6) = 29.70dBm.

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				
155	5775	17.21	17.02	102.952	20.13	29.70	Pass

Note: Gain = 6.30dBi > 6dBi, so the power limit shall be reduced to 30-(6.30-6) = 29.70dBm.

Test Mode A (Radio 2, Dipole Ant., Beamforming Mode)

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				
149	5745	17.04	16.86	**99.111**	19.96	26.69	Pass
157	5785	16.53	16.19	86.569	19.37	26.69	Pass
165	5825	16.36	16.04	83.430	19.21	26.69	Pass

Note: Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power limit shall be reduced to 30-(9.31-6) = 26.69dBm.

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				
151	5755	17.02	16.82	98.434	19.93	26.69	Pass
159	5795	16.54	16.06	85.447	19.32	26.69	Pass

Note: Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power limit shall be reduced to 30-(9.31-6) = 26.69dBm.

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				
155	5775	14.20	14.01	51.480	17.12	26.69	Pass

Note: Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power limit shall be reduced to 30-(9.31-6) = 26.69dBm.

Test Mode B (Radio 2, Sector Ant., CDD Mode)

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	18.28	18.23	133.825	21.27	21.40	Pass
157	5785	18.45	18.07	134.105	21.27	21.40	Pass
165	5825	18.42	18.12	134.365	21.28	21.40	Pass

Note: Gain = 14.60dBi > 6dBi, so the power limit shall be reduced to 30-(14.60-6) = 21.40dBm.

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				
149	5745	18.21	18.22	132.596	21.23	21.40	Pass
157	5785	18.44	18.11	134.537	21.29	21.40	Pass
165	5825	18.46	18.05	133.972	21.27	21.40	Pass

Note: Gain = 14.60dBi > 6dBi, so the power limit shall be reduced to 30-(14.60-6) = 21.40dBm.

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				
151	5755	18.23	18.15	131.840	21.20	21.40	Pass
159	5795	18.63	18.03	**136.479**	21.35	21.40	Pass

Note: Gain = 14.60dBi > 6dBi, so the power limit shall be reduced to 30-(14.60-6) = 21.40dBm.

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				
155	5775	17.81	17.41	115.476	20.62	21.40	Pass

Note: Gain = 14.60dBi > 6dBi, so the power limit shall be reduced to 30-(14.60-6) = 21.40dBm.

Test Mode B (Radio 2, Sector Ant., Beamforming Mode)

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				
149	5745	15.20	15.21	66.302	18.22	18.39	Pass
157	5785	15.43	15.10	67.273	18.28	18.39	Pass
165	5825	15.45	15.04	66.990	18.26	18.39	Pass

Note: Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power limit shall be reduced to 30-(17.61-6)= 18.39dBm.

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				
151	5755	15.22	15.14	65.925	18.19	18.39	Pass
159	5795	15.62	15.02	**68.244**	18.34	18.39	Pass

Note: Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power limit shall be reduced to 30-(17.61-6)= 18.39dBm.

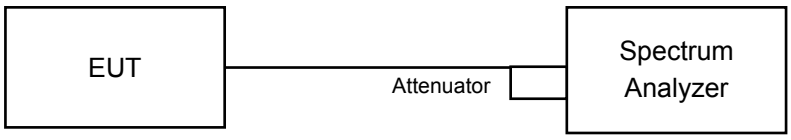
802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
155	5775	14.80	14.40	57.742	17.61	18.39	Pass

Note: Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power limit shall be reduced to 30-(17.61-6)= 18.39dBm.

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

Test Mode A (Radio 2, Dipole Ant.)

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.44	16.44
40	5200	16.44	16.44
48	5240	16.56	16.44
149	5745	16.56	16.56
157	5785	16.56	16.56
165	5825	16.56	16.56

802.11n (HT20)

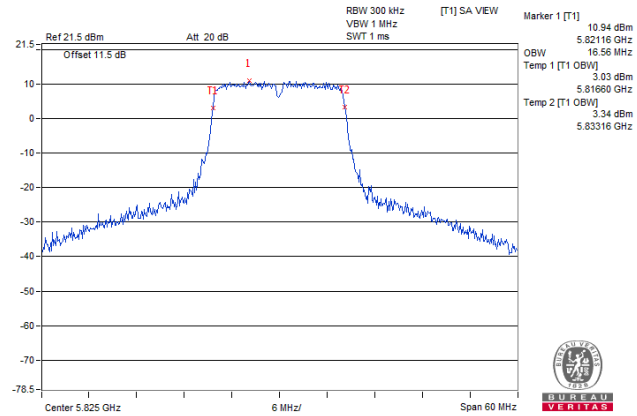
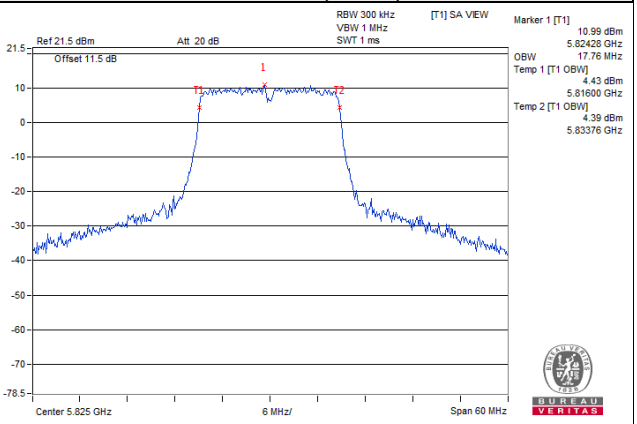
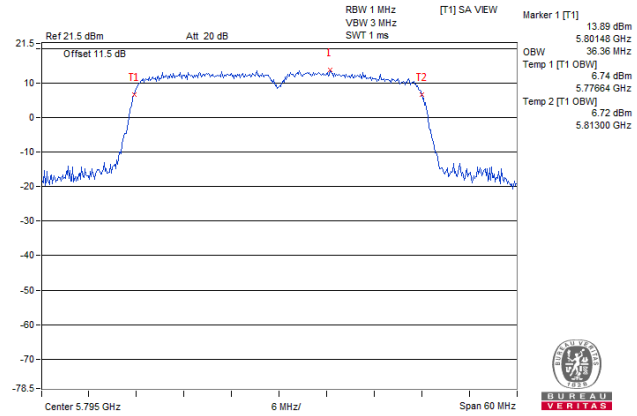
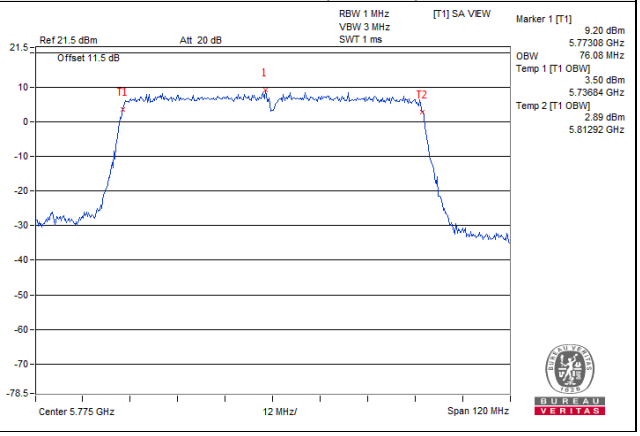
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.64	17.64
40	5200	17.64	17.64
48	5240	17.64	17.64
149	5745	17.64	17.64
157	5785	17.76	17.64
165	5825	17.76	17.76

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.12	36.12
46	5230	36.36	36.24
151	5755	36.24	36.24
159	5795	36.24	36.36

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.84	75.84
155	5775	76.08	75.84

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

Test Mode B (Radio 2, Sector Ant.)

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.44	16.44
40	5200	16.44	16.44
48	5240	16.44	16.44
149	5745	16.52	16.44
157	5785	16.56	16.44
165	5825	16.56	16.44

802.11n (HT20)

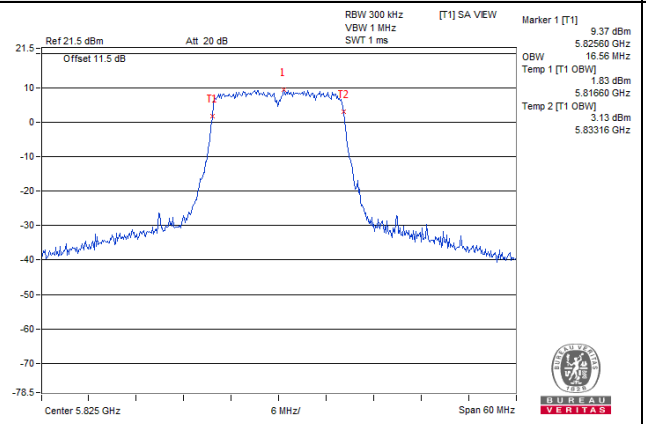
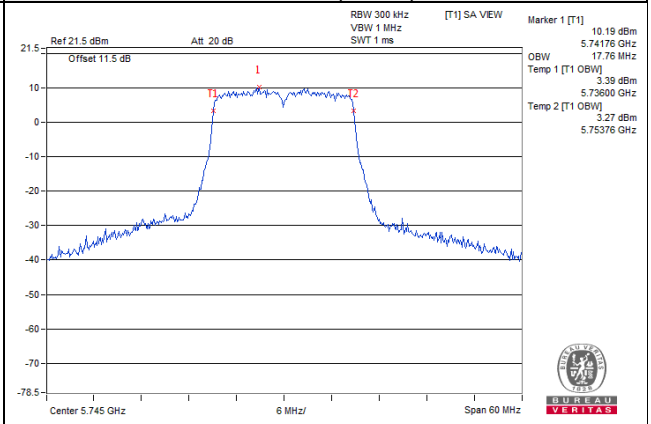
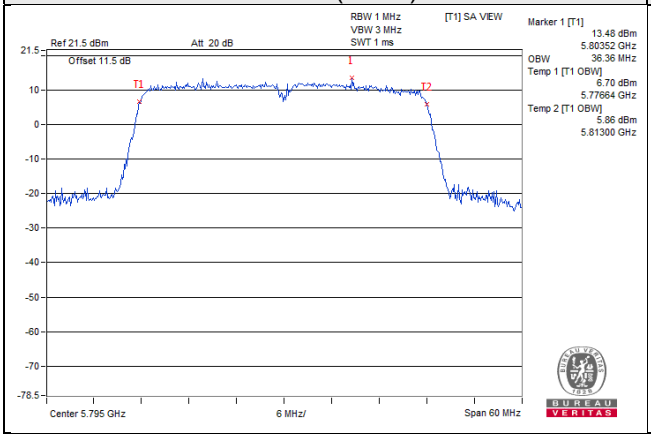
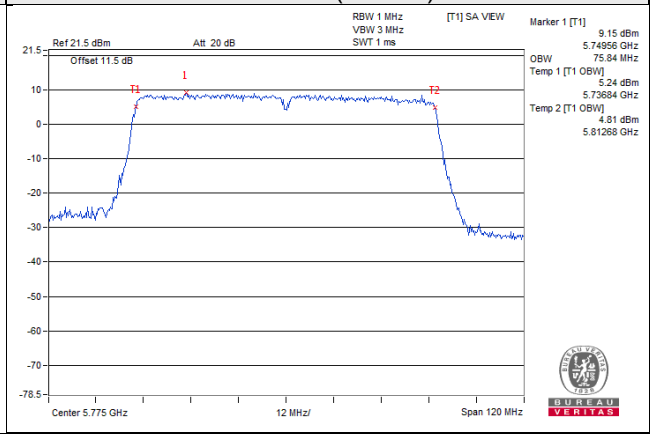
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.64	17.64
40	5200	17.64	17.64
48	5240	17.64	17.64
149	5745	17.76	17.64
157	5785	17.64	17.64
165	5825	17.64	17.76

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.12	36.12
46	5230	36.24	36.24
151	5755	36.24	36.24
159	5795	36.24	36.36

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.84	75.84
155	5775	75.84	75.84

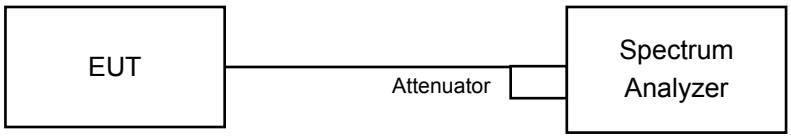
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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-1 band:

Duty cycle of test signal is > 98%

Using method SA-1

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Sweep time = auto, trigger set to “free run”.

d. Trace average at least 100 traces in power averaging mode.

e. Record the max value

Duty cycle of test signal is < 98%

Using method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Set Channel power measure = 1MHz

d. Sweep time = auto, trigger set to “free run”.

e. Trace average at least 100 traces in power averaging mode.

f. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

Duty cycle of test signal is > 98%

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value

Duty cycle of test signal is < 98%

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value and add 10 log (1/duty cycle)

4.5.5 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-1 band:

Test Mode A (Radio 2, Dipole Ant.)

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	5.21	5.16	0.24	8.44	13.69	Pass
40	5200	6.08	6.51	0.24	9.55	13.69	Pass
48	5240	6.25	7.02	0.24	9.91	13.69	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power density limit shall be reduced to 17-(9.31-6) = 13.69dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
36	5180	4.98	5.11	8.06	13.69	Pass
40	5200	5.93	6.39	9.18	13.69	Pass
48	5240	6.12	6.87	9.52	13.69	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power density limit shall be reduced to 17-(9.31-6) = 13.69dBm.

802.11n (HT40)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	0.31	0.62	0.16	3.63	13.69	Pass
46	5230	3.45	4.02	0.16	6.91	13.69	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power density limit shall be reduced to 17-(9.31-6) = 13.69dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

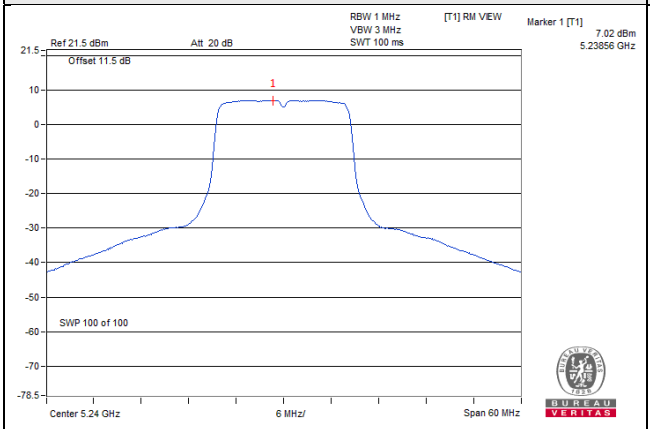
802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-5.29	-4.85	0.44	-1.61	13.69	Pass

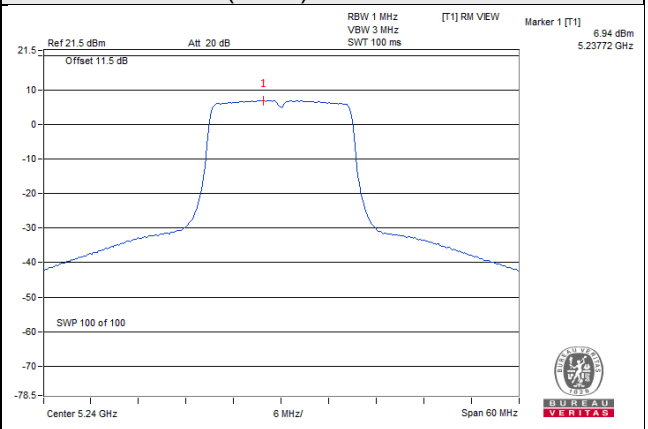
Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power density limit shall be reduced to 17-(9.31-6) = 13.69dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

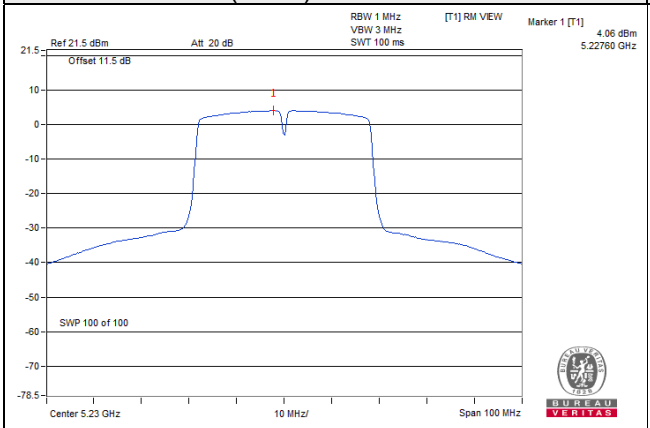
802.11a / Chain 1 / CH 48



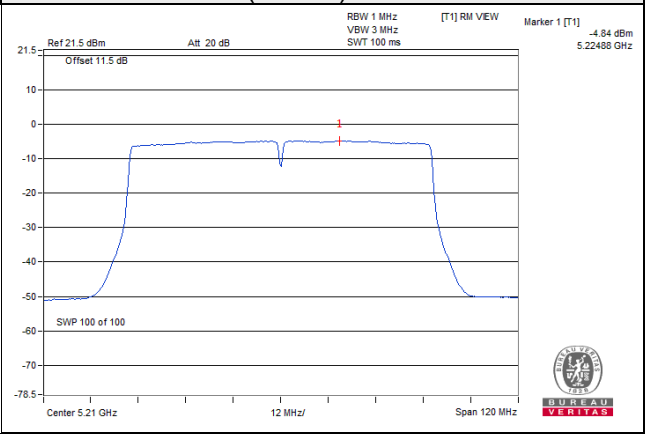
802.11n (HT20) / Chain 1 / CH 48



802.11n (HT40) / Chain 1 / CH 46



802.11ac (VHT80) / Chain 1 / 42



Test Mode B (Radio 2, Sector Ant.)

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	-2.88	-2.47	0.24	0.58	5.39	Pass
40	5200	-2.78	-2.16	0.24	0.79	5.39	Pass
48	5240	-2.43	-1.78	0.24	1.16	5.39	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power density limit shall be reduced to 17-(17.61-6) = 5.39dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
36	5180	-3.38	-2.58	0.05	5.39	Pass
40	5200	-3.18	-2.33	0.28	5.39	Pass
48	5240	-2.81	-1.75	0.76	5.39	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power density limit shall be reduced to 17-(17.61-6) = 5.39dBm.

802.11n (HT40)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-5.83	-5.14	0.16	-2.30	5.39	Pass
46	5230	-5.57	-4.44	0.16	-1.80	5.39	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power density limit shall be reduced to 17-(17.61-6) = 5.39dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

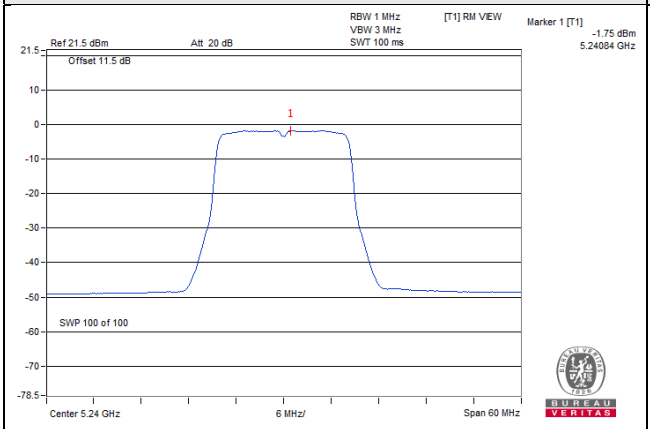
802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-9.55	-8.58	0.44	-5.58	5.39	Pass

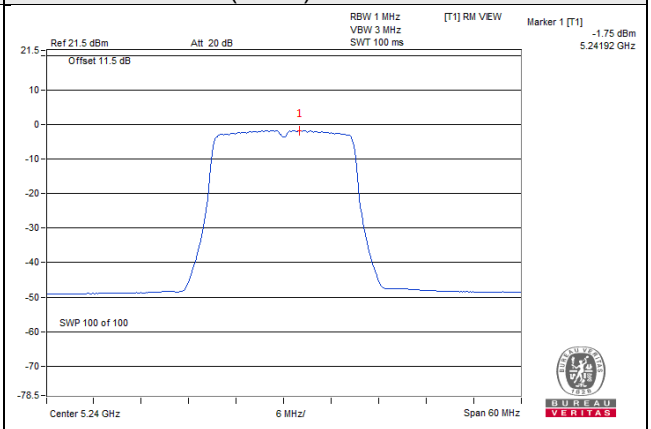
Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power density limit shall be reduced to 17-(17.61-6) = 5.39dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

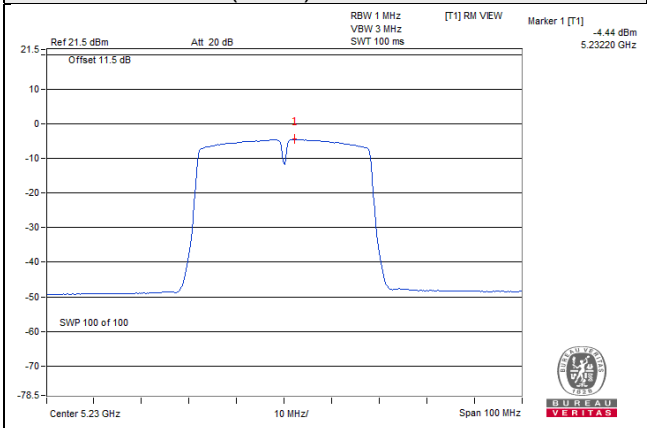
802.11a / Chain 1 / CH 48



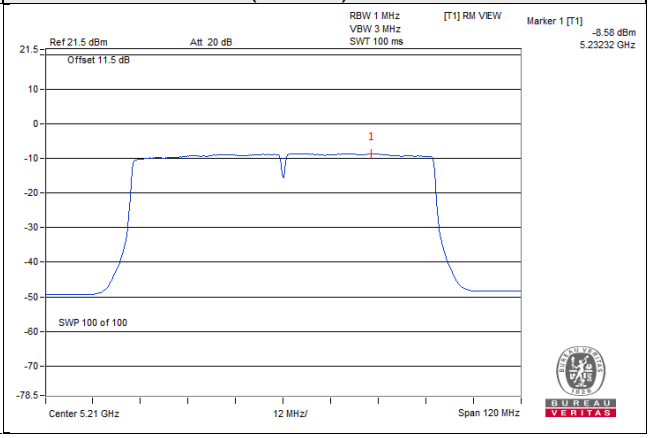
802.11n (HT20) / Chain 1 / CH 48



802.11n (HT40) / Chain 1 / CH 46



802.11ac (VHT80) / Chain 1 / 42



For U-NII-3 band:

Test Mode A (Radio 2, Dipole Ant.)

802.11a

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-1.18	1.04	3.01	0.24	4.29	26.69	Pass
	157	5785	-1.23	0.99	3.01	0.24	4.24	26.69	Pass
	165	5825	-1.48	0.74	3.01	0.24	3.99	26.69	Pass
1	149	5745	-1.58	0.64	3.01	0.24	3.89	26.69	Pass
	157	5785	-1.98	0.24	3.01	0.24	3.49	26.69	Pass
	165	5825	-2.49	-0.27	3.01	0.24	2.98	26.69	Pass

Note:
1. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power density limit shall be reduced to 30-(9.31-6) = 26.69dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	-1.82	0.40	3.01	3.41	26.69	Pass
	157	5785	-1.67	0.55	3.01	3.56	26.69	Pass
	165	5825	-1.89	0.33	3.01	3.34	26.69	Pass
1	149	5745	-2.15	0.07	3.01	3.08	26.69	Pass
	157	5785	-2.48	-0.26	3.01	2.75	26.69	Pass
	165	5825	-3.04	-0.82	3.01	2.19	26.69	Pass

Note: Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power density limit shall be reduced to 30-(9.31-6) = 26.69dBm.

802.11n (HT40)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-4.68	-2.46	3.01	0.16	0.71	26.69	Pass
	159	5795	-4.55	-2.33	3.01	0.16	0.84	26.69	Pass
1	151	5755	-5.12	-2.90	3.01	0.16	0.27	26.69	Pass
	159	5795	-5.52	-3.30	3.01	0.16	-0.13	26.69	Pass

Note:
1. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power density limit shall be reduced to 30-(9.31-6) = 26.69dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

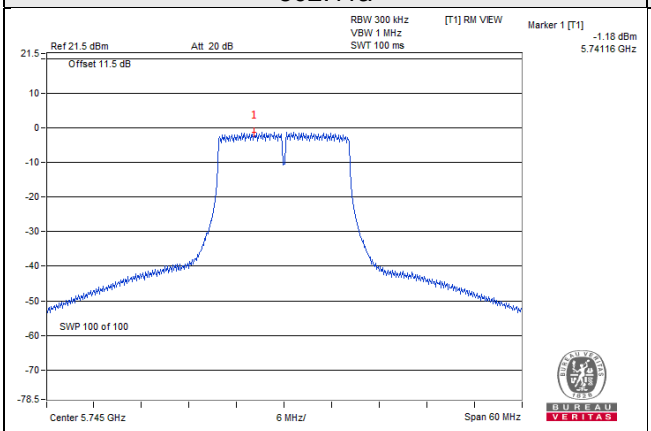
802.11ac (VHT80)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-11.02	-8.80	3.01	0.44	-5.35	26.69	Pass
1	155	5775	-11.30	-9.08	3.01	0.44	-5.63	26.69	Pass

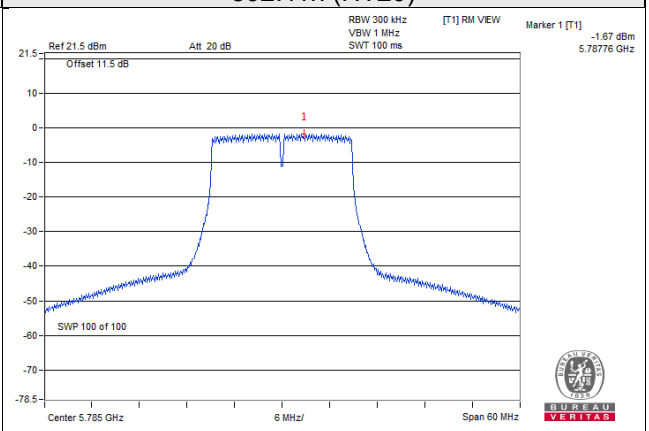
Note:
1. Directional gain = 6.30dBi + 10log(2) = 9.31dBi > 6dBi, so the power density limit shall be reduced to 30-(9.31-6) = 26.69dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

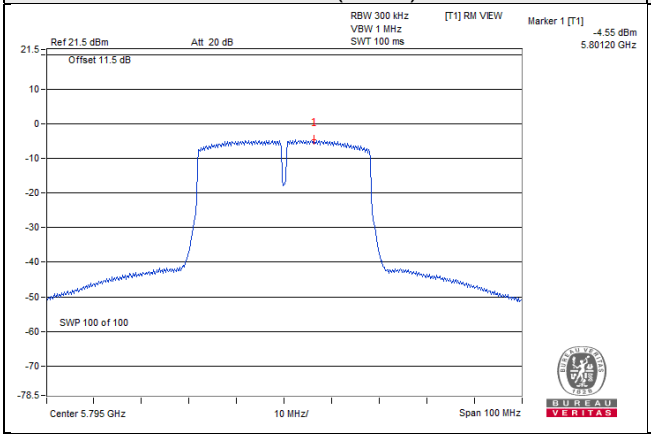
802.11a



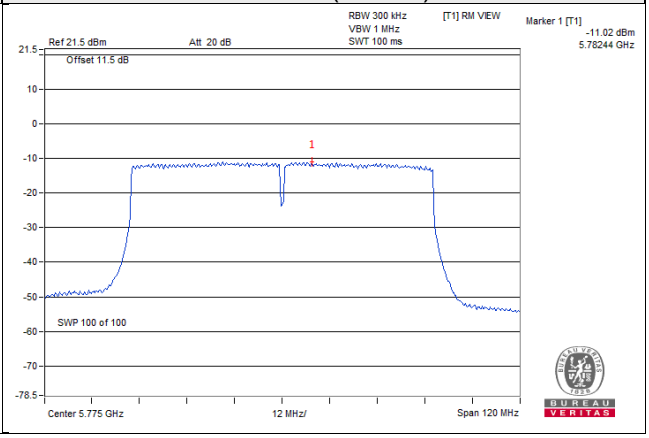
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



Test Mode B (Radio 2, Sector Ant.)

802.11a

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-2.74	-0.52	3.01	0.24	2.73	18.39	Pass
	157	5785	-2.63	-0.41	3.01	0.24	2.84	18.39	Pass
	165	5825	-2.89	-0.67	3.01	0.24	2.58	18.39	Pass
1	149	5745	-3.07	-0.85	3.01	0.24	2.40	18.39	Pass
	157	5785	-3.55	-1.33	3.01	0.24	1.92	18.39	Pass
	165	5825	-3.36	-1.14	3.01	0.24	2.11	18.39	Pass

Note:
1. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power density limit shall be reduced to 30-(17.61-6) = 18.39dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	-2.93	-0.71	3.01	2.30	18.39	Pass
	157	5785	-2.77	-0.55	3.01	2.46	18.39	Pass
	165	5825	-3.55	-1.33	3.01	1.68	18.39	Pass
1	149	5745	-3.74	-1.52	3.01	1.49	18.39	Pass
	157	5785	-3.69	-1.47	3.01	1.54	18.39	Pass
	165	5825	-3.73	-1.51	3.01	1.50	18.39	Pass

Note: Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power density limit shall be reduced to 30-(17.61-6) = 18.39dBm.

802.11n (HT40)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-6.09	-3.87	3.01	0.16	-0.70	18.39	Pass
	159	5795	-5.56	-3.34	3.01	0.16	-0.17	18.39	Pass
1	151	5755	-6.77	-4.55	3.01	0.16	-1.38	18.39	Pass
	159	5795	-6.54	-4.32	3.01	0.16	-1.15	18.39	Pass

Note:
1. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power density limit shall be reduced to 30-(17.61-6) = 18.39dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

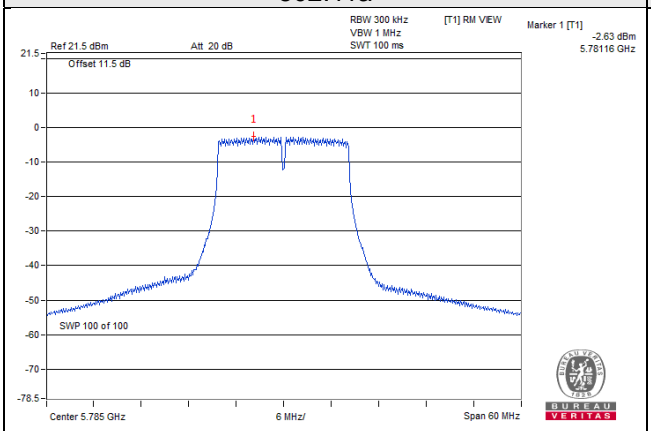
802.11ac (VHT80)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-10.07	-7.85	3.01	0.44	-4.40	18.39	Pass
1	155	5775	-10.54	-8.32	3.01	0.44	-4.87	18.39	Pass

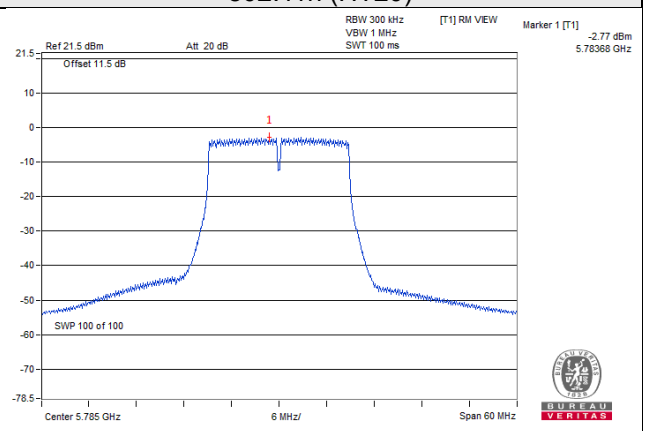
Note:
1. Directional gain = 14.60dBi + 10log(2) = 17.61dBi > 6dBi, so the power density limit shall be reduced to 30-(17.61-6) = 18.39dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

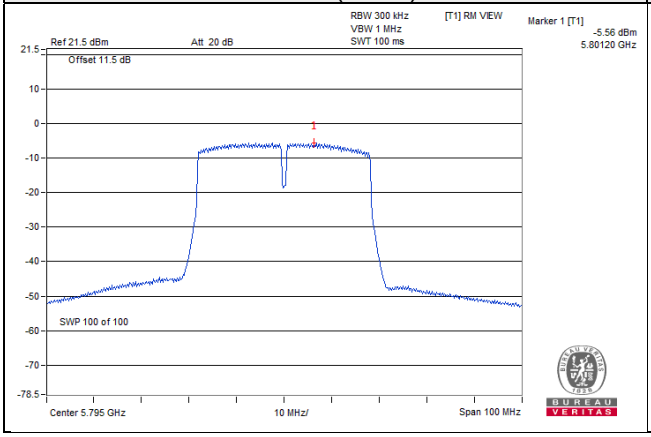
802.11a



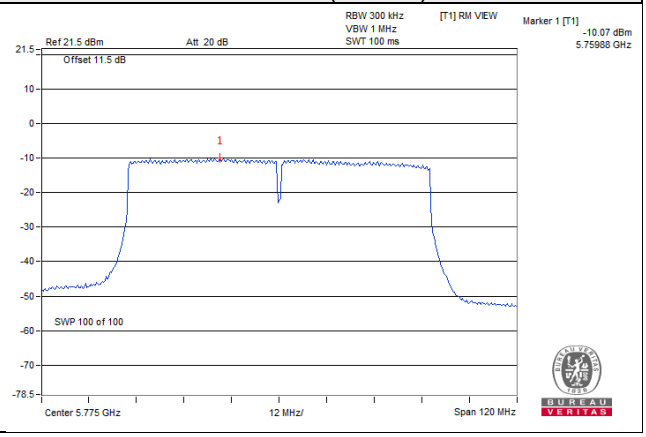
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

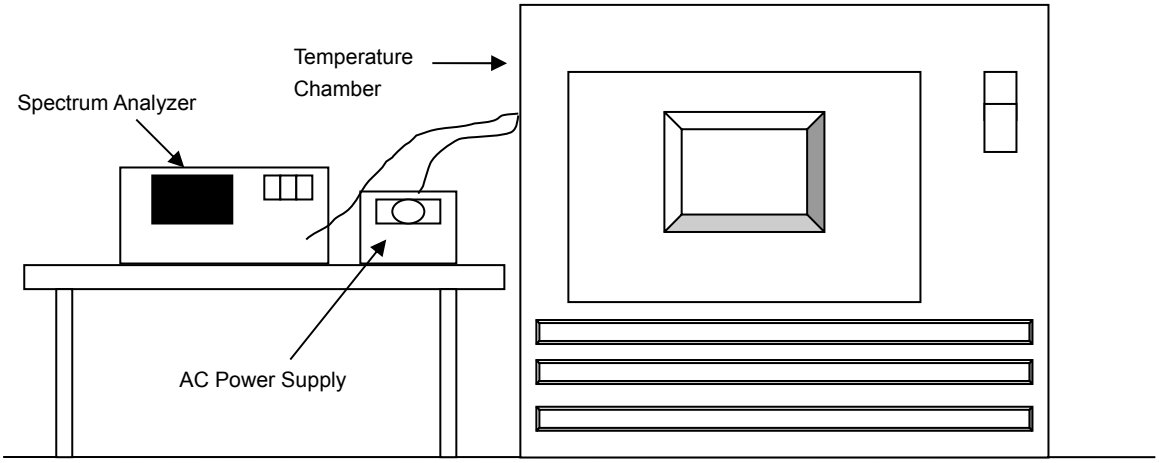


4.6 Frequency Stability

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: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
50	120	5744.981	Pass	5744.9858	Pass	5744.9821	Pass	5744.985	Pass
40	120	5744.9791	Pass	5744.9779	Pass	5744.9774	Pass	5744.9767	Pass
30	120	5744.999	Pass	5745.0003	Pass	5744.9966	Pass	5744.9992	Pass
20	120	5745.0098	Pass	5745.0108	Pass	5745.0095	Pass	5745.0132	Pass
10	120	5744.9843	Pass	5744.9834	Pass	5744.9856	Pass	5744.9815	Pass
0	120	5744.9948	Pass	5744.9909	Pass	5744.9915	Pass	5744.9912	Pass
-10	120	5744.9926	Pass	5744.9951	Pass	5744.9914	Pass	5744.9952	Pass
-20	120	5745.0029	Pass	5745.0005	Pass	5745.0039	Pass	5744.9991	Pass
-30	120	5745.0249	Pass	5745.0265	Pass	5745.0232	Pass	5745.0241	Pass

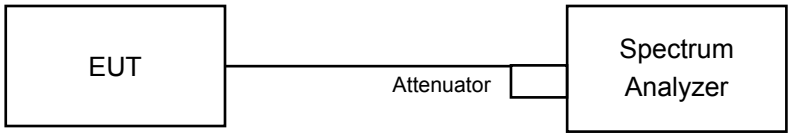
Frequency Stability Versus Voltage									
Operating Frequency: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5745.0092	Pass	5745.0114	Pass	5745.0097	Pass	5745.0123	Pass
	120	5745.0098	Pass	5745.0108	Pass	5745.0095	Pass	5745.0132	Pass
	102	5745.0092	Pass	5745.0119	Pass	5745.0096	Pass	5745.0128	Pass

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

Test Mode A (Radio 2, Dipole Ant.)

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.42	16.42	0.5	Pass
157	5785	16.42	16.41	0.5	Pass
165	5825	16.42	16.41	0.5	Pass

802.11n (HT20)

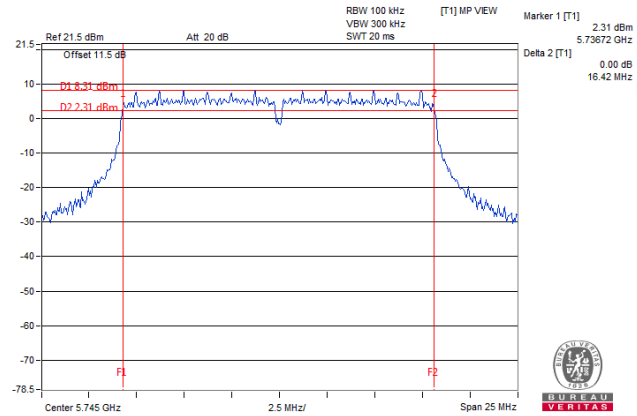
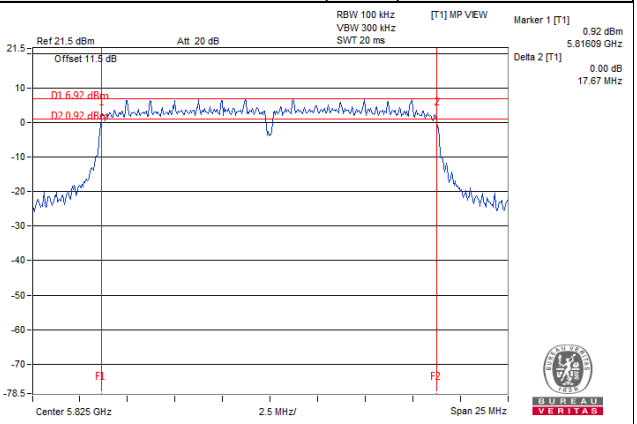
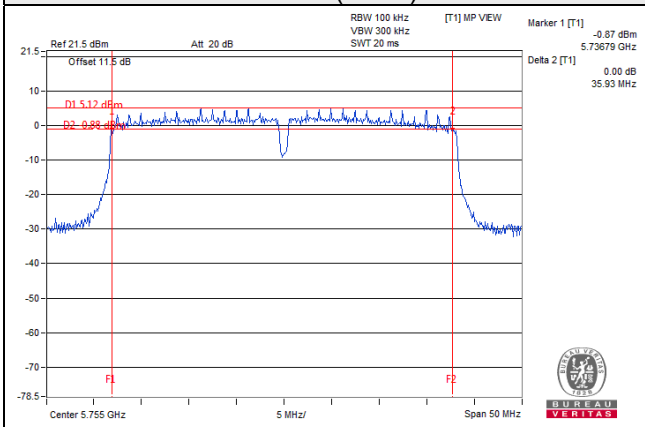
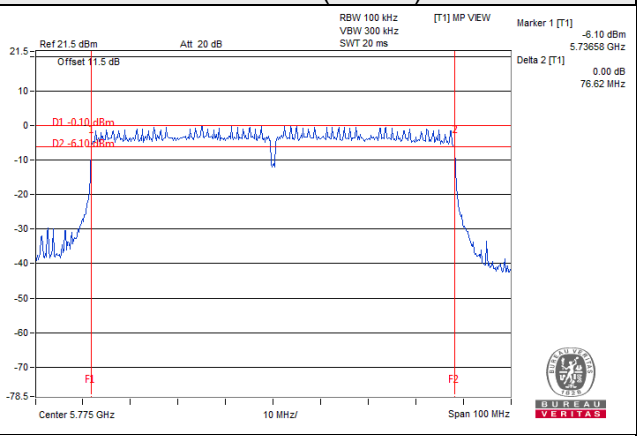
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.66	17.66	0.5	Pass
157	5785	17.66	17.66	0.5	Pass
165	5825	17.66	17.67	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.57	35.93	0.5	Pass
159	5795	35.66	35.54	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	76.62	76.20	0.5	Pass

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

Test Mode B (Radio 2, Sector Ant.)

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.40	16.41	0.5	Pass
157	5785	16.42	16.40	0.5	Pass
165	5825	16.42	16.40	0.5	Pass

802.11n (HT20)

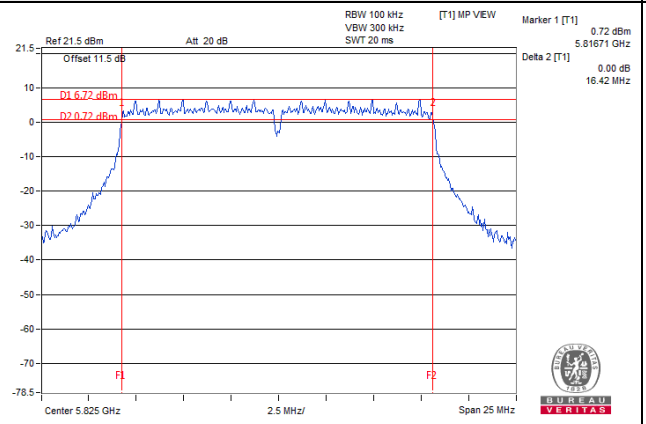
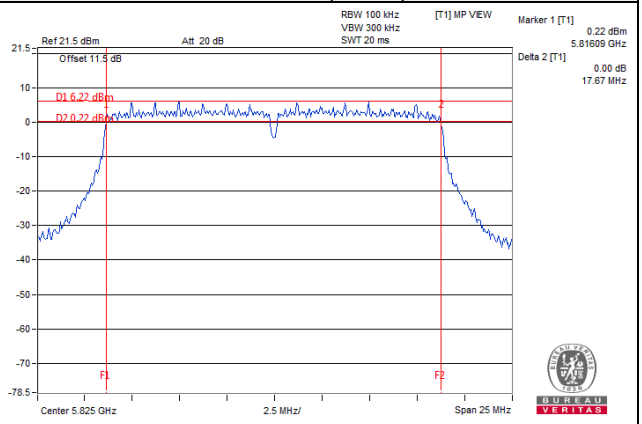
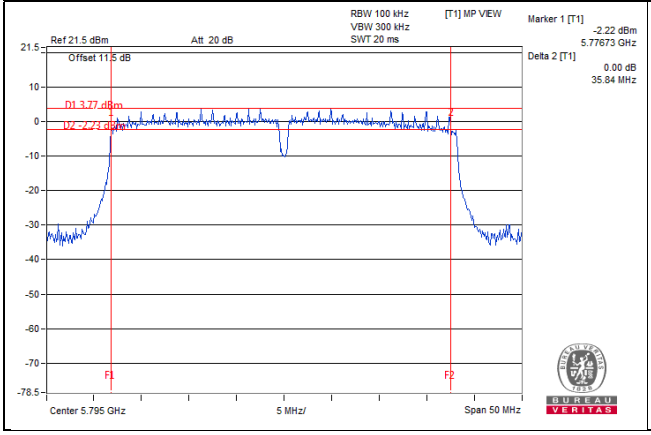
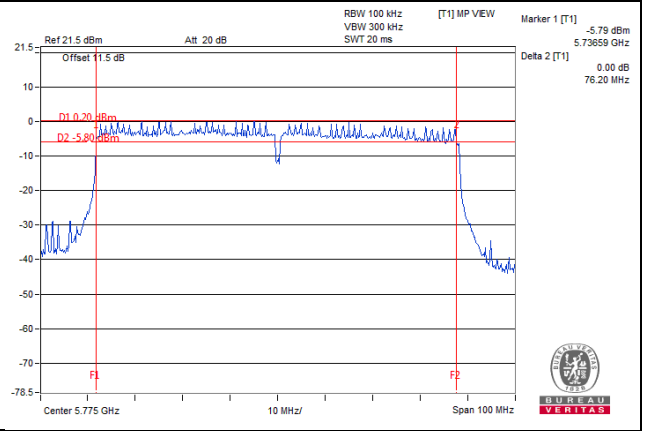
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.66	17.65	0.5	Pass
157	5785	17.66	17.65	0.5	Pass
165	5825	17.67	17.64	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.77	35.77	0.5	Pass
159	5795	35.49	35.84	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	76.17	76.20	0.5	Pass

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

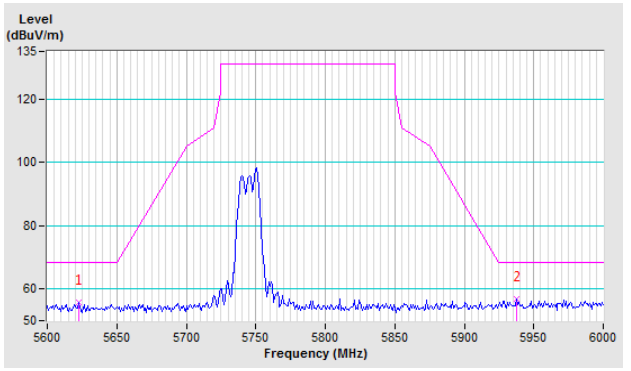
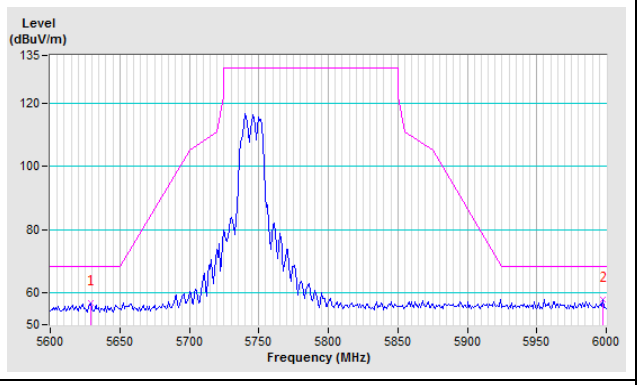
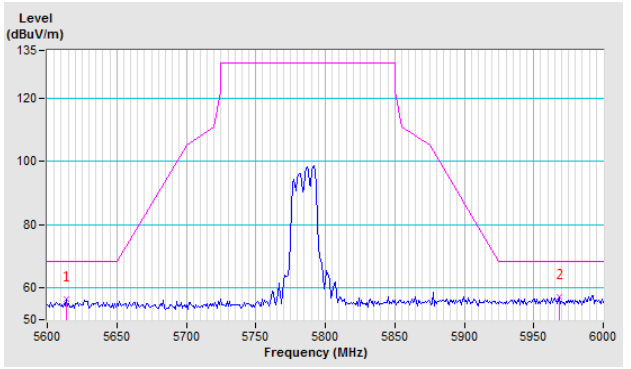
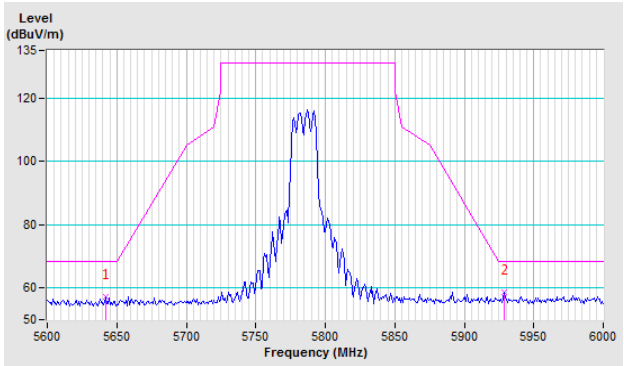
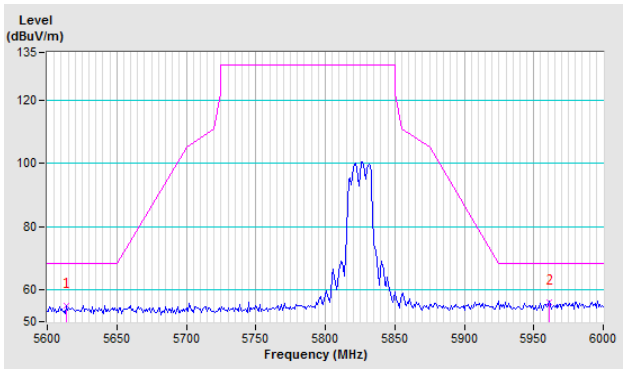
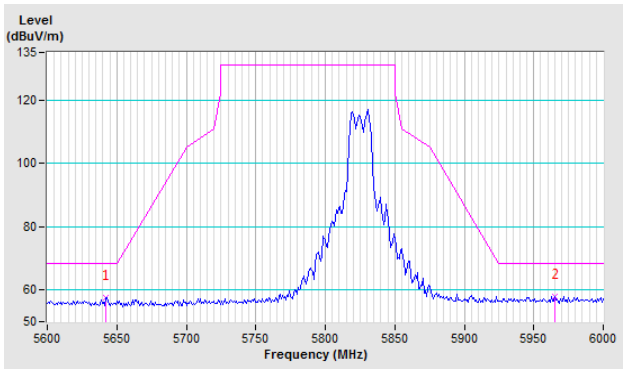
5 Pictures of Test Arrangements

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

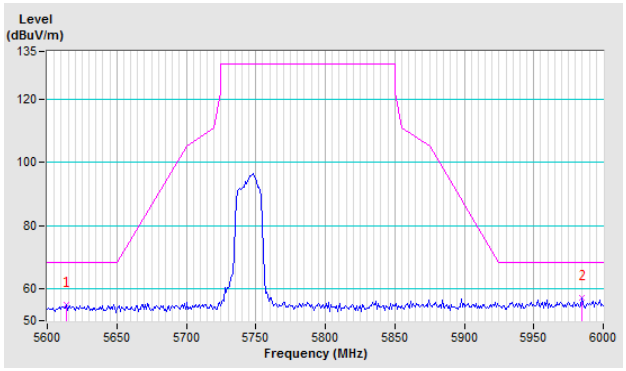
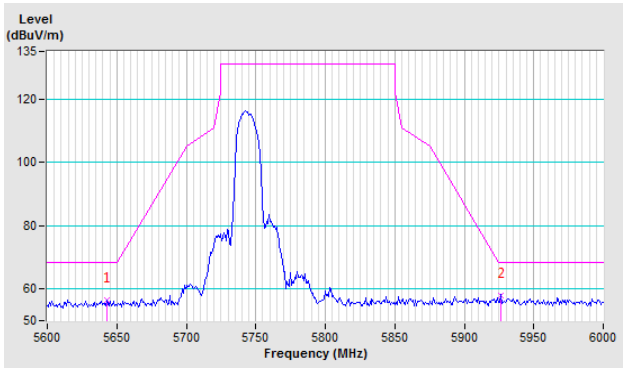
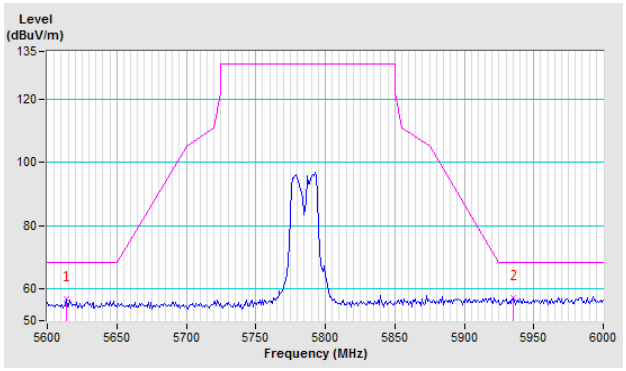
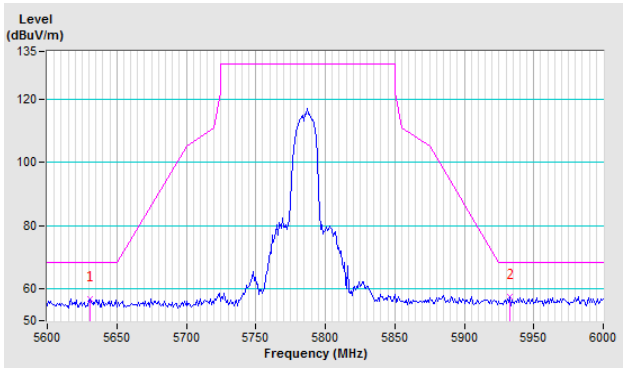
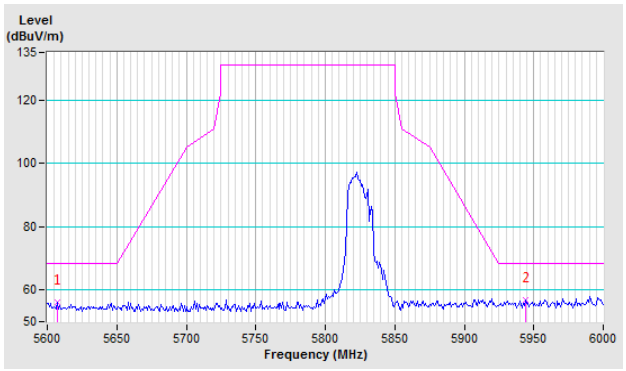
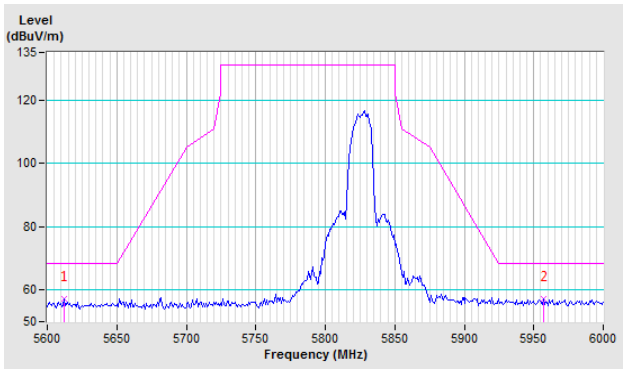
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

Test Mode A (Radio 2, Dipole Ant.)

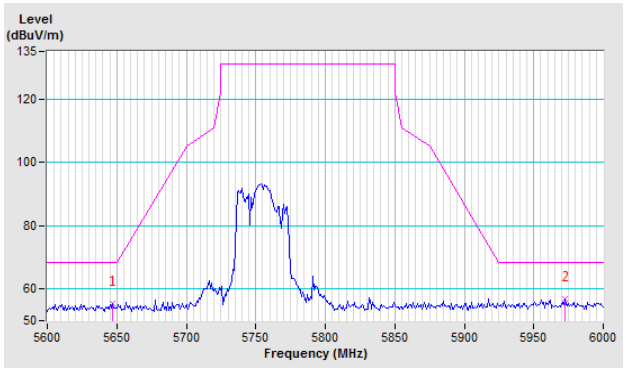
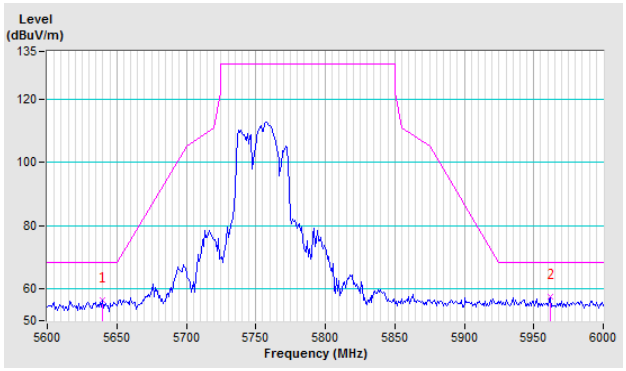
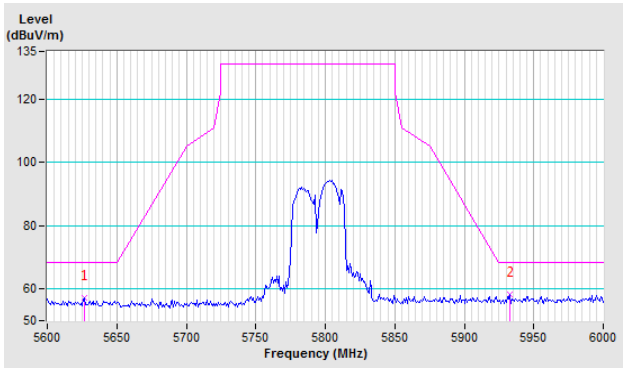
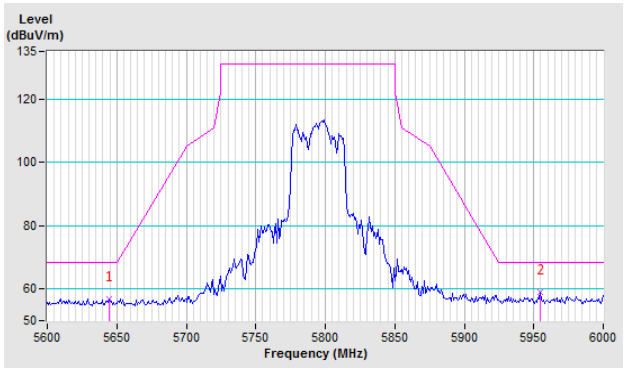
802.11a

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

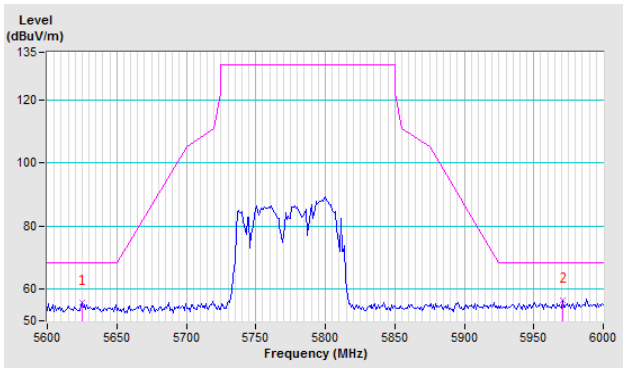
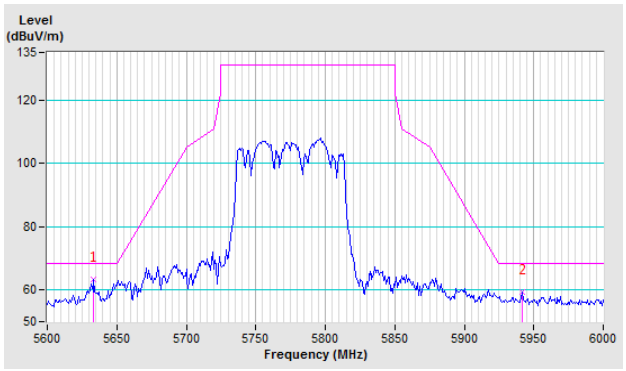
802.11n (HT20)

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

802.11n (HT40)

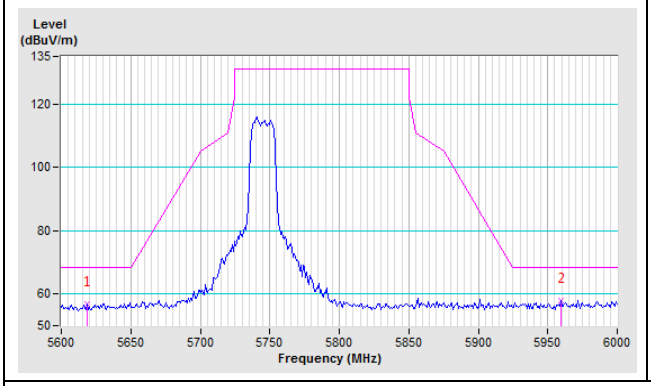
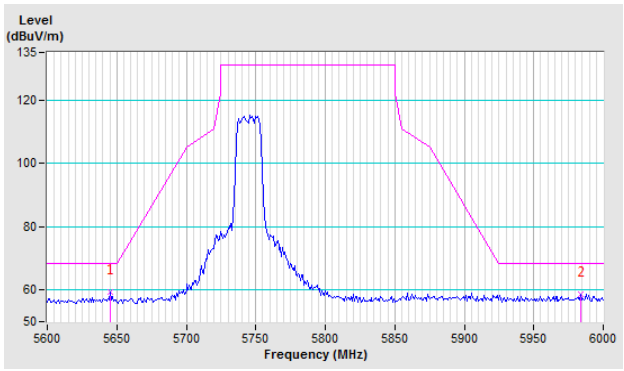
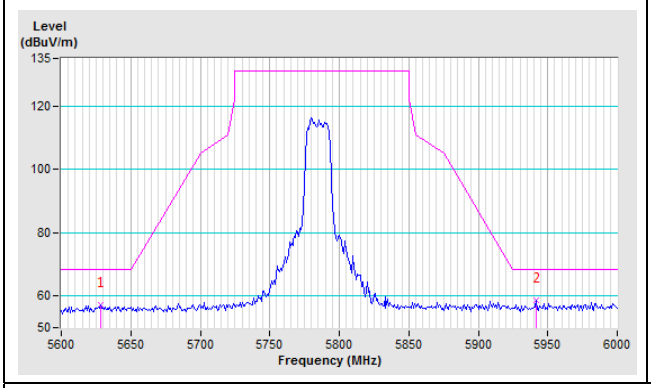
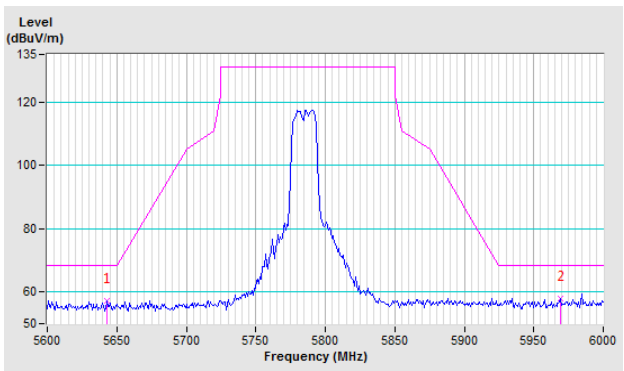
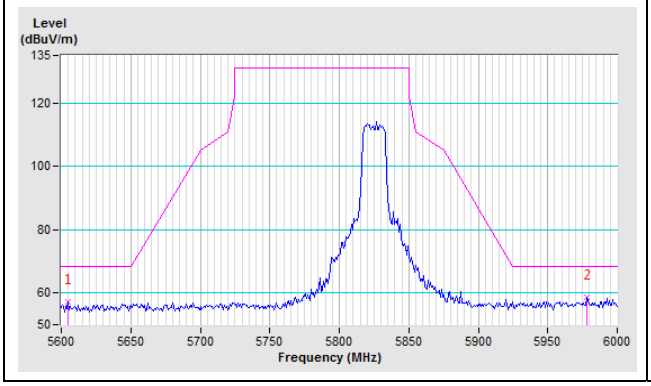
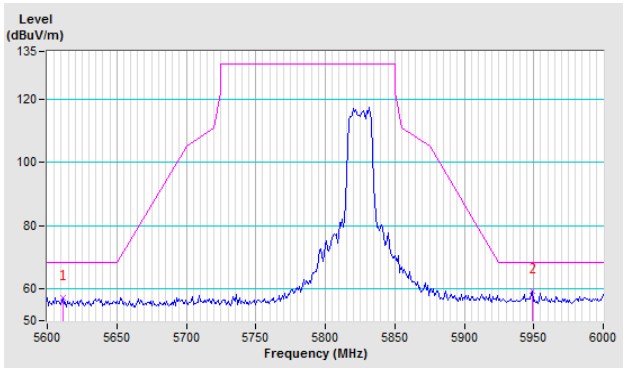
CH151	
Horizontal	Vertical
	
CH159	
Horizontal	Vertical
	

802.11ac (VHT80)

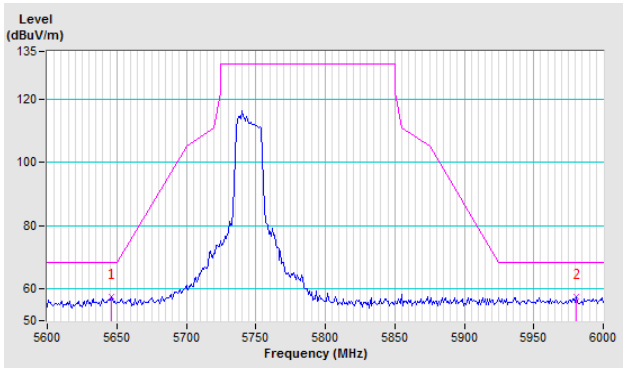
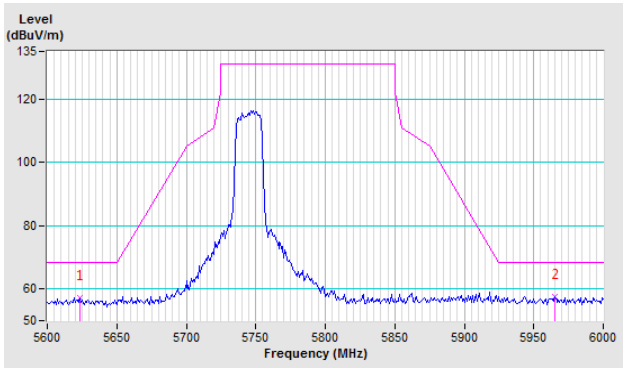
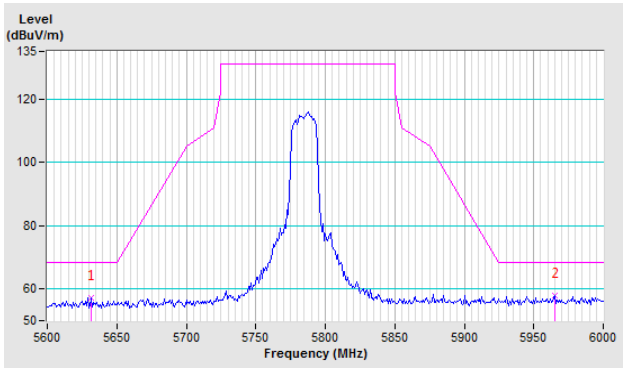
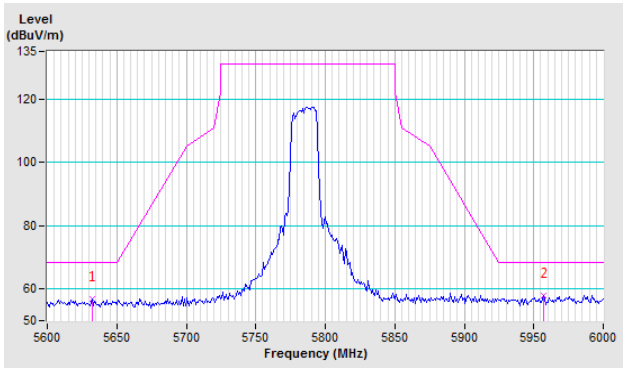
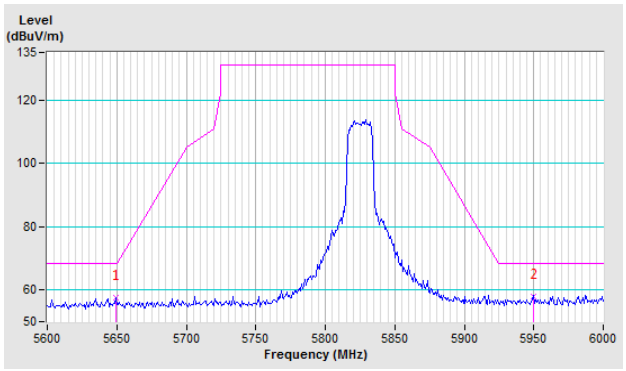
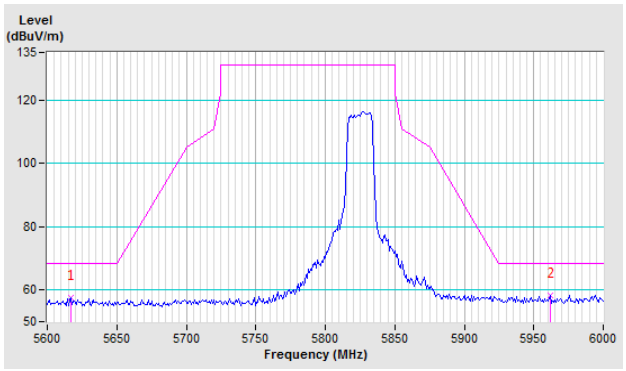
CH155	
Horizontal	Vertical
	

Test Mode B (Radio 2, Sector Ant.)

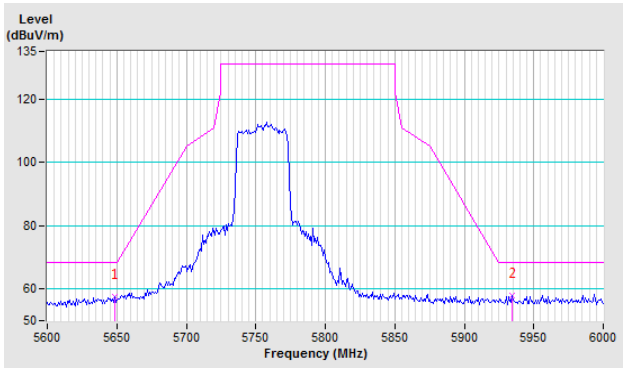
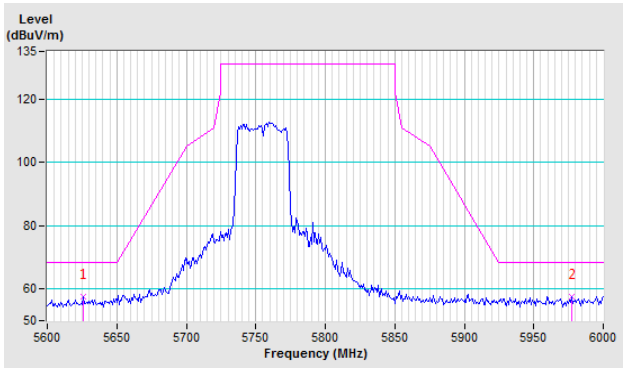
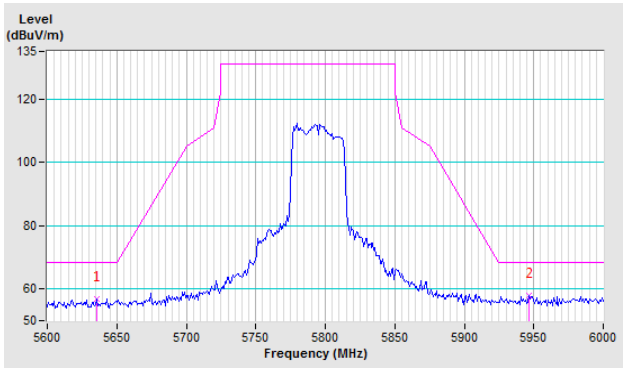
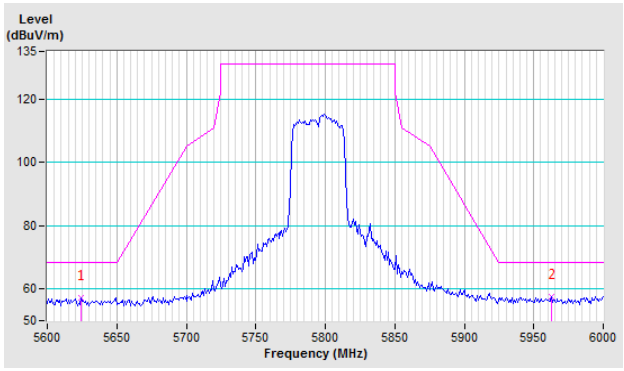
802.11a

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

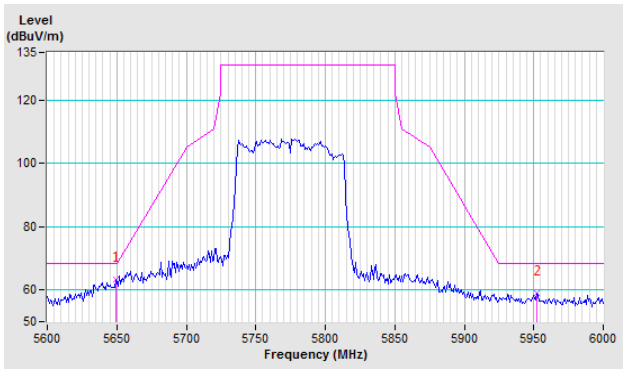
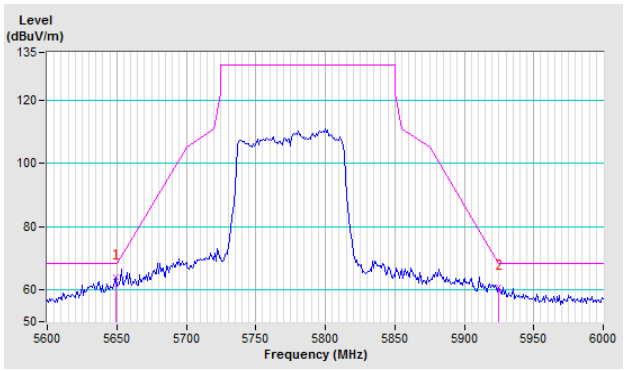
802.11n (HT20)

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

802.11n (HT40)

CH151	
Horizontal	Vertical
	
CH159	
Horizontal	Vertical
	

802.11ac (VHT80)

CH155	
Horizontal	Vertical
	

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 FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

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

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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