FCC Test Report

Report No.:	RF180912C10-1
FCC ID:	M82-ZENOCCU000
Test Model:	ZenoCCU
Received Date:	Aug. 28, 2018
Test Date:	Aug. 30 ~ Nov. 22, 2018
Issued Date:	Nov. 27, 2018
Applicant:	ADVANTECH CO., LTD
Address:	No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei, Taiwan 114
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

Table of Contents

Release Control Record 4

1 Certificate of Conformity 5

2 Summary of Test Results 6

2.1 Measurement Uncertainty 6
2.2 Modification Record 6

3 General Information 7

3.1 General Description of EUT 7
3.2 Description of Test Modes 9
3.2.1 Test Mode Applicability and Tested Channel Detail 11
3.3 Duty Cycle of Test Signal 13
3.4 Description of Support Units 14
3.4.1 Configuration of System under Test 14
3.5 General Description of Applied Standards 14

4 Test Types and Results 15

4.1 Radiated Emission and Bandedge Measurement 15
4.1.1 Limits of Radiated Emission and Bandedge Measurement 15
4.1.2 Test Instruments 16
4.1.3 Test Procedures 17
4.1.4 Deviation from Test Standard 18
4.1.5 Test Setup 18
4.1.6 EUT Operating Conditions 19
4.1.7 Test Results 20
4.2 Conducted Emission Measurement 60
4.2.1 Limits of Conducted Emission Measurement 60
4.2.2 Test Instruments 60
4.2.3 Test Procedures 61
4.2.4 Deviation from Test Standard 61
4.2.5 Test Setup 61
4.2.6 EUT Operating Conditions 61
4.2.7 Test Results 62
4.3 Transmit Power Measurement 64
4.3.1 Limits of Transmit Power Measurement 64
4.3.2 Test Setup 64
4.3.3 Test Instruments 65
4.3.4 Test Procedure 65
4.3.5 Deviation from Test Standard 65
4.3.6 EUT Operating Conditions 65
4.3.7 Test Result 66
4.4 Occupied Bandwidth Measurement 72
4.4.1 Test Setup 72
4.4.2 Test Instruments 72
4.4.3 Test Procedure 72
4.4.4 Test Result 73
4.5 Peak Power Spectral Density Measurement 76
4.5.1 Limits of Peak Power Spectral Density Measurement 76
4.5.2 Test Setup 76
4.5.3 Test Instruments 76
4.5.4 Test Procedures 77
4.5.5 Deviation from Test Standard 77
4.5.6 EUT Operating Conditions 77
4.5.7 Test Results 78
4.6 Frequency Stability 84
4.6.1 Limits of Frequency Stability Measurement 84

4.6.2 Test Setup 84
4.6.3 Test Instruments 84
4.6.4 Test Procedure 84
4.6.5 Deviation from Test Standard 85
4.6.6 EUT Operating Condition 85
4.6.7 Test Results 85
4.7 6dB Bandwidth Measurement 86
4.7.1 Limits of 6dB Bandwidth Measurement 86
4.7.2 Test Setup 86
4.7.3 Test Instruments 86
4.7.4 Test Procedure 86
4.7.5 Deviation from Test Standard 86
4.7.6 EUT Operating Condition 86
4.7.7 Test Results 87

5 Pictures of Test Arrangements 89

Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band) 90

Appendix – Information on the Testing Laboratories 93

Release Control Record

Issue No.	Description	Date Issued
RF180912C10-1	Original release.	Nov. 27, 2018

1 Certificate of Conformity

Product:	IPC
Brand:	Zenoway
Test Model:	ZenoCCU
Sample Status:	Engineering Sample
Applicant:	ADVANTECH CO., LTD
Test Date:	Aug. 30 ~ Nov. 22, 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 : Pettie Chen , **Date:** Nov. 27, 2018

Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Nov. 27, 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 -24.77dB at 8.57850MHz.
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 -2.2dB at 5470.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is RP-SMA(M) 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	IPC
Brand	Zenoway
Test Model	ZenoCCU
Sample Status	Engineering sample
Power Supply Rating	9-60Vdc
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 866.7Mbps
Operating Frequency	5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 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 5260~5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500~5700MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 11 802.11n (HT40), 802.11ac (VHT40): 5 802.11ac (VHT80): 2 5745~5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	5180~5240MHz: 113.649mW 5260~5320MHz: 107.470mW 5500~5700MHz: 103.316mW 5745~5825MHz: 130.929mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	NA

Note:

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

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

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

2. The EUT uses following antenna.

Antenna 1							
Type	Monopole						
Connector	RP-SMA(M)						
Straight position							
Frequency (MHz)	2400	2450	2500	5150	5350	5750	5850
Gain (dBi)	1.04	1.25	0.82	0.85	1.38	0.28	1.04
Bent position 90°							
Frequency (MHz)	2400	2450	2500	5150	5350	5750	5850
Gain (dBi)	1.19	1.57	2.57	0.66	1.03	0.59	1.19

Antenna 2		
Type	Monopole	
Connector	SMA Male Reverse	
Frequency (MHz)	2400~2500	5150~5850
Gain (dBi)	1.64	-2.9

* The antenna 1 (Straight position) is the worst case for final tests.

3. The computing device complies with Part 15 class A rules and SDoC report is issued separately.

3.2 Description of Test Modes

5180~5240MHz:

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210 MHz

5260~5320MHz:

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290 MHz

5500~5700MHz:

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

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

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

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz

5745~5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

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

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)	Remark
-	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	-
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0	-
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5	-
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5	-
	802.11ac (VHT80)		58	58	OFDM	29.3	-
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0	-
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	6.5	-
	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	13.5	-
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	29.3	-
	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)	Remark
-	802.11n (HT20)	5180-5240	36 to 48	165	OFDM	6.5	-
		5260-5320	52 to 64		OFDM	6.5	-
		5500-5700	100 to 140		OFDM	6.5	-
		5745-5825	149 to 165		OFDM	6.5	-

Power Line Conducted Emission Test:

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)	Remark
-	802.11n (HT20)	5180-5240	36 to 48	165	OFDM	6.5	-
		5260-5320	52 to 64		OFDM	6.5	-
		5500-5700	100 to 140		OFDM	6.5	-
		5745-5825	149 to 165		OFDM	6.5	-

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)	Remark
-	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	-
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0	-
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5	-
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5	-
	802.11ac (VHT80)		58	58	OFDM	29.3	-
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0	-
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	6.5	-
	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	13.5	-
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	29.3	-
	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	-

Test Condition:

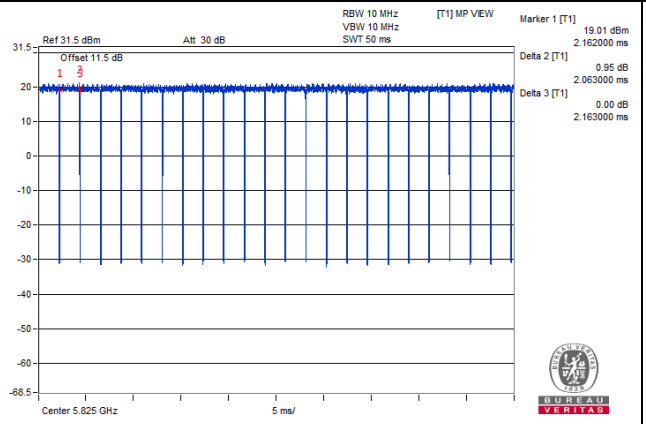
Applicable to	Environmental Conditions	Input Power (system)	Tested by
RE≥1G	24deg. C, 66%RH	120Vac, 60Hz	Adair Peng
RE<1G	24deg. C, 66%RH	120Vac, 60Hz	Adair Peng
PLC	25deg. C, 66%RH	120Vac, 60Hz	Willy Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu

3.3 Duty Cycle of Test Signal

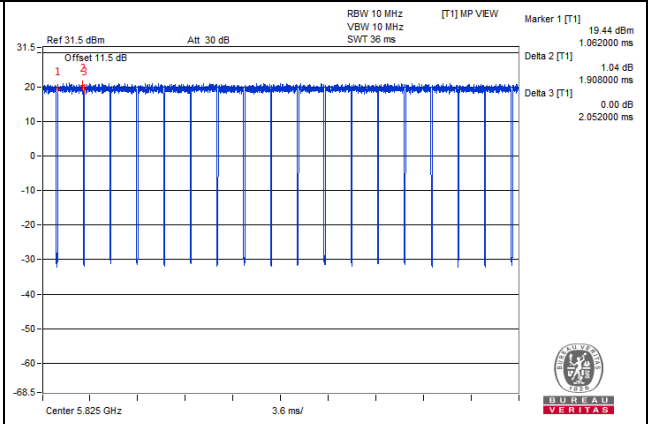
Duty cycle of test signal is ≥ 98%, duty factor is not required.
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = 2.063/2.163 = 0.954, Duty factor = 10 * log(1/0.954) = 0.20
802.11n (HT20): Duty cycle = 1.908/2.052 = 0.930, Duty factor = 10 * log(1/0.930) = 0.32
802.11n (HT40): Duty cycle = 0.945/1.085 = 0.871, Duty factor = 10 * log(1/0.871) = 0.60
802.11ac (VHT80): Duty cycle = 0.462/0.556 = 0.831, Duty factor = 10 * log(1/0.831) = 0.80

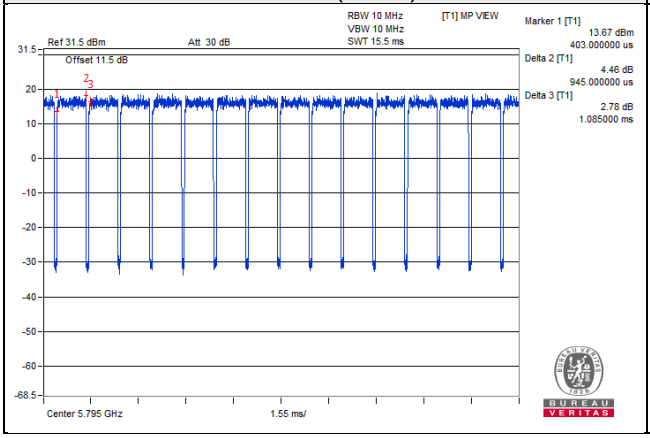
802.11a



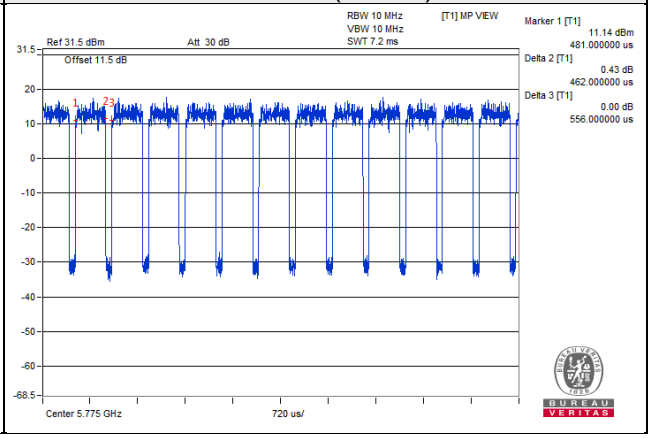
802.11n (HT20)



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.

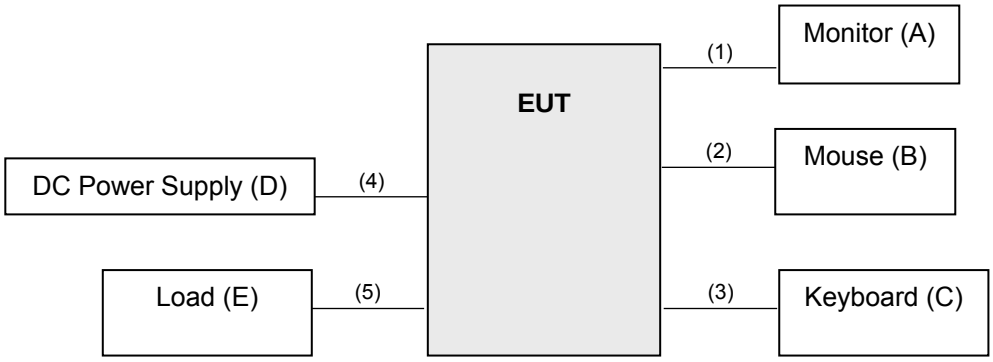
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Monitor	ViewSonic	VX2457-MHD	UG0182942330	FCC DoC Approved	-
B.	Mouse	DELL	MS111-P	CN-011D3V-71581-1CJ-0936	FCC DoC Approved	-
C.	Keyboard	DELL	RT7D50	CN-0J4624-37172-44T-000M	FCC DoC Approved	-
D.	DC Power Supply	Topward	33010D	807748	NA	-
E.	Load	NA	NA	NA	NA	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Display cable	1	1.6	N	0	-
2.	USB cable	1	1.6	Y	0	-
3.	USB cable	1	1.6	Y	0	-
4.	Power cable	1	1.0	N	0	-
5.	RJ45 cable	3	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	ESIB7	100187	May 29, 2018	May 28, 2019
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	Sep. 07, 2018	Sep. 06, 2019
Preamplifier Loop	EMC001340	980201	Jan. 23, 2018	Jan. 22, 2019
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 21, 2018	Aug. 20, 2019
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Apr. 03, 2018	Apr. 02, 2019
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 21, 2018	Aug. 20, 2019
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-S M-8000	Cable-CH3-03 (309224+170907)	Aug. 21, 2018	Aug. 20, 2019
RF signal cable WOKEN	8D-FB	Cable-CH3-01	Aug. 21, 2018	Aug. 20, 2019
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
USB Wideband Power Meter KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/MY 55210005	Jul. 17, 2018	Jul. 16, 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:

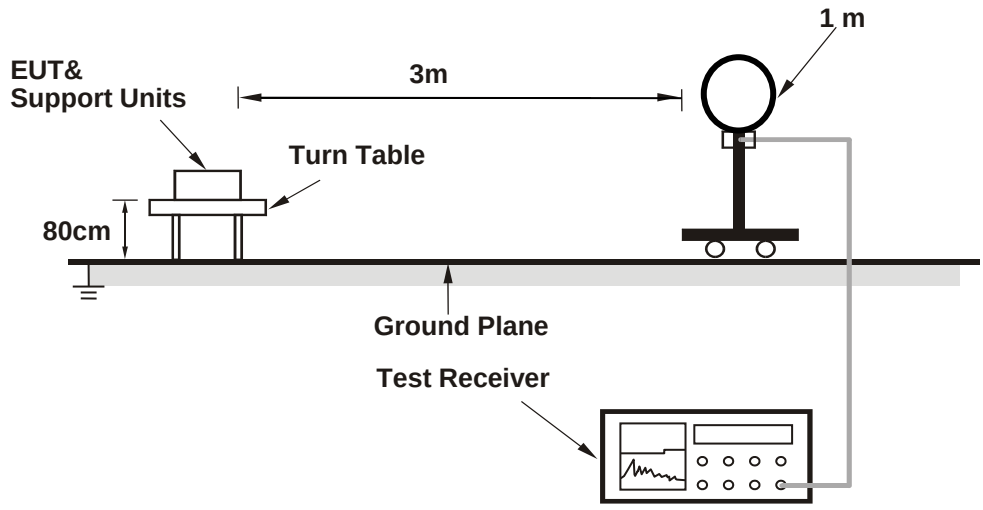
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

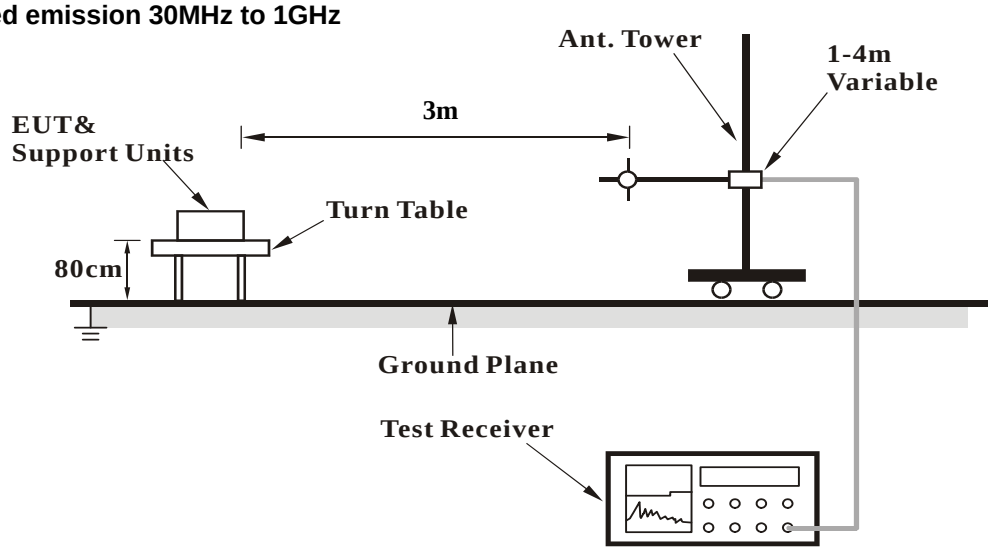
No deviation.

4.1.5 Test Setup

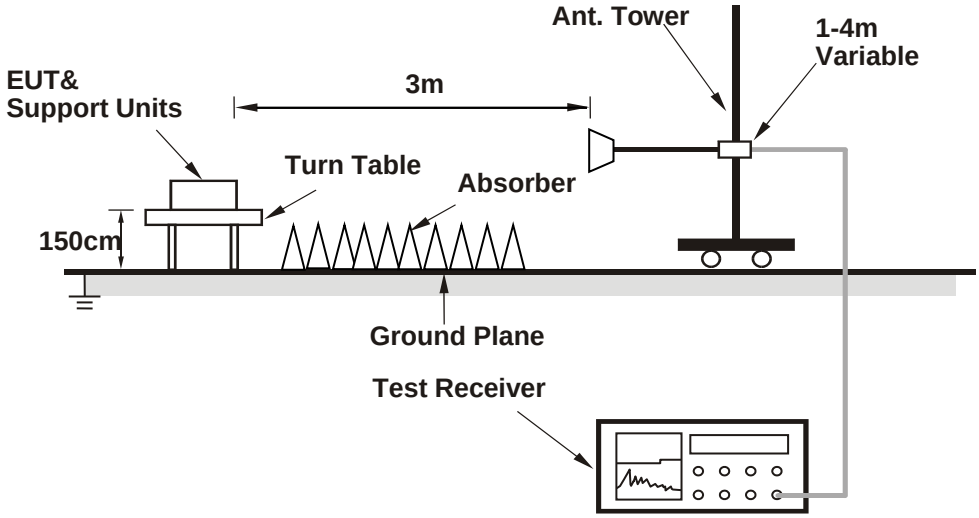
For Radiated emission below 30MHz



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. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.6 PK	74.0	-13.4	1.52 H	28	57.1	3.5
2	5150.00	44.3 AV	54.0	-9.7	1.52 H	28	40.8	3.5
3	*5180.00	108.3 PK			1.43 H	26	69.1	39.2
4	*5180.00	98.2 AV			1.43 H	26	59.0	39.2
5	#10360.00	55.5 PK	68.2	-12.7	2.69 H	189	40.1	15.4
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	61.8 PK	74.0	-12.2	2.59 V	52	58.3	3.5
2	5150.00	45.9 AV	54.0	-8.1	2.59 V	52	42.4	3.5
3	*5180.00	111.5 PK			2.67 V	51	72.3	39.2
4	*5180.00	101.1 AV			2.67 V	51	61.9	39.2
5	#10360.00	56.0 PK	68.2	-12.2	2.18 V	136	40.6	15.4

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 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	109.4 PK			1.25 H	27	70.1	39.3
2	*5200.00	98.5 AV			1.25 H	27	59.2	39.3
3	#10400.00	56.4 PK	68.2	-11.8	1.96 H	252	40.8	15.6
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	*5200.00	111.9 PK			2.78 V	53	72.6	39.3
2	*5200.00	100.9 AV			2.78 V	53	61.6	39.3
3	#10400.00	56.8 PK	68.2	-11.4	2.49 V	174	41.2	15.6

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	109.5 PK			1.53 H	27	70.4	39.1
2	*5240.00	99.1 AV			1.53 H	27	60.0	39.1
3	5350.00	56.5 PK	74.0	-17.5	1.66 H	84	52.8	3.7
4	5350.00	43.3 AV	54.0	-10.7	1.66 H	84	39.6	3.7
5	#10480.00	57.0 PK	68.2	-11.2	2.55 H	296	40.8	16.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	111.0 PK			2.59 V	53	71.9	39.1
2	*5240.00	100.2 AV			2.59 V	53	61.1	39.1
3	5350.00	57.6 PK	74.0	-16.4	2.64 V	78	53.9	3.7
4	5350.00	43.5 AV	54.0	-10.5	2.64 V	78	39.8	3.7
5	#10480.00	57.2 PK	68.2	-11.0	1.76 V	178	41.0	16.2

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.7 PK	74.0	-19.3	1.55 H	71	51.2	3.5
2	5150.00	41.9 AV	54.0	-12.1	1.55 H	71	38.4	3.5
3	*5260.00	110.0 PK			1.48 H	31	71.0	39.0
4	*5260.00	99.6 AV			1.48 H	31	60.6	39.0
5	#10520.00	57.5 PK	68.2	-10.7	3.02 H	208	41.2	16.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.9 PK	74.0	-19.1	2.76 V	58	51.4	3.5
2	5150.00	41.7 AV	54.0	-12.3	2.76 V	58	38.2	3.5
3	*5260.00	110.5 PK			2.55 V	49	71.5	39.0
4	*5260.00	100.3 AV			2.55 V	49	61.3	39.0
5	#10520.00	57.9 PK	68.2	-10.3	2.64 V	155	41.6	16.3

Remarks:

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

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	110.2 PK			1.67 H	27	71.2	39.0
2	*5300.00	99.9 AV			1.67 H	27	60.9	39.0
3	10600.00	58.4 PK	74.0	-15.6	1.86 H	132	41.8	16.6
4	10600.00	45.1 AV	54.0	-8.9	1.86 H	132	28.5	16.6
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	*5300.00	111.4 PK			2.66 V	62	72.4	39.0
2	*5300.00	100.9 AV			2.66 V	62	61.9	39.0
3	10600.00	59.1 PK	74.0	-14.9	2.84 V	241	42.5	16.6
4	10600.00	45.5 AV	54.0	-8.5	2.84 V	241	28.9	16.6

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	109.2 PK			1.68 H	29	70.1	39.1
2	*5320.00	98.5 AV			1.68 H	29	59.4	39.1
3	5350.00	55.9 PK	74.0	-18.1	1.79 H	43	52.2	3.7
4	5350.00	44.0 AV	54.0	-10.0	1.79 H	43	40.3	3.7
5	10640.00	57.7 PK	74.0	-16.3	2.99 H	265	41.2	16.5
6	10640.00	44.8 AV	54.0	-9.2	2.99 H	265	28.3	16.5
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	*5320.00	110.2 PK			2.64 V	52	71.1	39.1
2	*5320.00	99.7 AV			2.64 V	52	60.6	39.1
3	5350.00	58.2 PK	74.0	-15.8	2.99 V	84	54.5	3.7
4	5350.00	45.1 AV	54.0	-8.9	2.99 V	84	41.4	3.7
5	10640.00	58.3 PK	74.0	-15.7	2.88 V	179	41.8	16.5
6	10640.00	45.0 AV	54.0	-9.0	2.88 V	179	28.5	16.5

Remarks:

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

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.7 PK	74.0	-15.3	1.59 H	29	54.7	4.0
2	5460.00	43.9 AV	54.0	-10.1	1.59 H	29	39.9	4.0
3	#5470.00	57.4 PK	68.2	-10.8	1.61 H	35	53.4	4.0
4	*5500.00	110.1 PK			1.46 H	27	70.5	39.6
5	*5500.00	99.6 AV			1.46 H	27	60.0	39.6
6	11000.00	59.6 PK	74.0	-14.4	3.09 H	258	41.7	17.9
7	11000.00	46.2 AV	54.0	-7.8	3.09 H	258	28.3	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	5460.00	57.5 PK	74.0	-16.5	3.33 V	176	53.5	4.0
2	5460.00	43.5 AV	54.0	-10.5	3.33 V	176	39.5	4.0
3	#5470.00	57.5 PK	68.2	-10.7	3.23 V	174	53.5	4.0
4	*5500.00	109.6 PK			3.52 V	183	70.0	39.6
5	*5500.00	99.5 AV			3.52 V	183	59.9	39.6
6	11000.00	59.3 PK	74.0	-14.7	2.83 V	161	41.4	17.9
7	11000.00	46.0 AV	54.0	-8.0	2.83 V	161	28.1	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 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	110.8 PK			1.23 H	27	71.2	39.6
2	*5580.00	100.3 AV			1.23 H	27	60.7	39.6
3	11160.00	59.5 PK	74.0	-14.5	2.96 H	258	42.8	16.7
4	11160.00	46.2 AV	54.0	-7.8	2.96 H	258	29.5	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	*5580.00	110.6 PK			3.58 V	222	71.0	39.6
2	*5580.00	99.8 AV			3.58 V	222	60.2	39.6
3	11160.00	59.2 PK	74.0	-14.8	2.91 V	157	42.5	16.7
4	11160.00	46.0 AV	54.0	-8.0	2.91 V	157	29.3	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 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	107.1 PK			1.39 H	27	67.5	39.6
2	*5700.00	96.6 AV			1.39 H	27	57.0	39.6
3	#5725.00	55.9 PK	68.2	-12.3	1.59 H	30	51.8	4.1
4	11400.00	58.1 PK	74.0	-15.9	3.03 H	279	41.5	16.6
5	11400.00	44.4 AV	54.0	-9.6	3.03 H	279	27.8	16.6
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	*5700.00	107.2 PK			3.54 V	227	67.6	39.6
2	*5700.00	96.9 AV			3.54 V	227	57.3	39.6
3	#5725.00	56.2 PK	68.2	-12.0	3.69 V	201	52.1	4.1
4	11400.00	58.2 PK	74.0	-15.8	2.93 V	179	41.6	16.6
5	11400.00	44.1 AV	54.0	-9.9	2.93 V	179	27.5	16.6

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 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	#5621.79	56.7 PK	68.2	-11.5	1.63 H	27	52.5	4.2
2	*5745.00	111.0 PK			1.63 H	27	71.2	39.8
3	*5745.00	100.8 AV			1.63 H	27	61.0	39.8
4	#5986.54	58.1 PK	68.2	-10.1	1.63 H	27	53.1	5.0
5	11490.00	57.6 PK	74.0	-16.4	2.49 H	193	40.8	16.8
6	11490.00	43.3 AV	54.0	-10.7	2.49 H	193	26.5	16.8
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	#5614.10	55.4 PK	68.2	-12.8	2.52 V	119	51.2	4.2
2	*5745.00	107.4 PK			2.52 V	119	67.6	39.8
3	*5745.00	96.5 AV			2.52 V	119	56.7	39.8
4	#5995.51	57.3 PK	68.2	-10.9	2.52 V	119	52.3	5.0
5	11490.00	57.3 PK	74.0	-16.7	2.03 V	155	40.5	16.8
6	11490.00	43.2 AV	54.0	-10.8	2.03 V	155	26.4	16.8

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 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	#5621.15	55.8 PK	68.2	-12.4	1.63 H	27	51.6	4.2
2	*5785.00	112.3 PK			1.63 H	27	72.2	40.1
3	*5785.00	101.6 AV			1.63 H	27	61.5	40.1
4	#5969.23	58.4 PK	68.2	-9.8	1.63 H	27	53.5	4.9
5	11570.00	58.5 PK	74.0	-15.5	2.53 H	201	41.5	17.0
6	11570.00	44.8 AV	54.0	-9.2	2.53 H	201	27.8	17.0
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	#5608.33	55.3 PK	68.2	-12.9	2.88 V	244	51.1	4.2
2	*5785.00	109.8 PK			2.88 V	244	69.7	40.1
3	*5785.00	99.3 AV			2.88 V	244	59.2	40.1
4	#5933.97	57.7 PK	68.2	-10.5	2.88 V	244	52.8	4.9
5	11570.00	58.3 PK	74.0	-15.7	2.13 V	160	41.3	17.0
6	11570.00	44.5 AV	54.0	-9.5	2.13 V	160	27.5	17.0

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 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	#5646.15	55.2 PK	68.2	-13.0	1.52 H	26	50.9	4.3
2	*5825.00	113.0 PK			1.52 H	26	72.7	40.3
3	*5825.00	102.5 AV			1.52 H	26	62.2	40.3
4	#5992.31	58.7 PK	68.2	-9.5	1.52 H	26	53.7	5.0
5	11650.00	58.4 PK	74.0	-15.6	2.41 H	189	41.8	16.6
6	11650.00	44.2 AV	54.0	-9.8	2.41 H	189	27.6	16.6
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	#5600.64	56.1 PK	68.2	-12.1	2.89 V	243	51.9	4.2
2	*5825.00	111.3 PK			2.89 V	243	71.0	40.3
3	*5825.00	101.1 AV			2.89 V	243	60.8	40.3
4	#5986.54	59.0 PK	68.2	-9.2	2.89 V	243	54.0	5.0
5	11650.00	58.1 PK	74.0	-15.9	2.22 V	160	41.5	16.6
6	11650.00	43.9 AV	54.0	-10.1	2.22 V	160	27.3	16.6

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.

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	59.6 PK	74.0	-14.4	1.59 H	56	56.1	3.5
2	5150.00	43.5 AV	54.0	-10.5	1.59 H	56	40.0	3.5
3	*5180.00	108.5 PK			1.51 H	32	69.3	39.2
4	*5180.00	98.3 AV			1.51 H	32	59.1	39.2
5	#10360.00	55.6 PK	68.2	-12.6	2.98 H	234	40.2	15.4
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	60.7 PK	74.0	-13.3	2.81 V	51	57.2	3.5
2	5150.00	45.3 AV	54.0	-8.7	2.81 V	51	41.8	3.5
3	*5180.00	110.5 PK			2.92 V	50	71.3	39.2
4	*5180.00	99.9 AV			2.92 V	50	60.7	39.2
5	#10360.00	56.4 PK	68.2	-11.8	2.12 V	133	41.0	15.4

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 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	109.7 PK			1.26 H	31	70.4	39.3
2	*5200.00	99.4 AV			1.26 H	31	60.1	39.3
3	#10400.00	56.1 PK	68.2	-12.1	2.51 H	226	40.5	15.6
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	*5200.00	111.2 PK			2.68 V	51	71.9	39.3
2	*5200.00	100.7 AV			2.68 V	51	61.4	39.3
3	#10400.00	56.9 PK	68.2	-11.3	2.25 V	114	41.3	15.6

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	108.7 PK			1.46 H	23	69.6	39.1
2	*5240.00	98.6 AV			1.46 H	23	59.5	39.1
3	5350.00	54.8 PK	74.0	-19.2	1.62 H	47	51.1	3.7
4	5350.00	42.9 AV	54.0	-11.1	1.62 H	47	39.2	3.7
5	#10480.00	56.5 PK	68.2	-11.7	2.97 H	151	40.3	16.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	111.3 PK			2.74 V	51	72.2	39.1
2	*5240.00	100.6 AV			2.74 V	51	61.5	39.1
3	5350.00	56.4 PK	74.0	-17.6	2.96 V	71	52.7	3.7
4	5350.00	43.2 AV	54.0	-10.8	2.96 V	71	39.5	3.7
5	#10480.00	58.0 PK	68.2	-10.2	2.42 V	183	41.8	16.2

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	55.0 PK	74.0	-19.0	1.63 H	45	51.5	3.5
2	5150.00	41.5 AV	54.0	-12.5	1.63 H	45	38.0	3.5
3	*5260.00	110.2 PK			1.47 H	27	71.2	39.0
4	*5260.00	99.6 AV			1.47 H	27	60.6	39.0
5	#10520.00	58.5 PK	68.2	-9.7	2.79 H	244	42.2	16.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.9 PK	74.0	-19.1	2.83 V	167	51.4	3.5
2	5150.00	41.6 AV	54.0	-12.4	2.83 V	167	38.1	3.5
3	*5260.00	109.9 PK			2.79 V	183	70.9	39.0
4	*5260.00	100.4 AV			2.79 V	183	61.4	39.0
5	#10520.00	58.5 PK	68.2	-9.7	2.51 V	155	42.2	16.3

Remarks:

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

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	111.1 PK			1.45 H	26	72.1	39.0
2	*5300.00	100.3 AV			1.45 H	26	61.3	39.0
3	10600.00	59.4 PK	74.0	-14.6	2.81 H	260	42.8	16.6
4	10600.00	46.3 AV	54.0	-7.7	2.81 H	260	29.7	16.6
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	*5300.00	110.5 PK			2.36 V	174	71.5	39.0
2	*5300.00	99.9 AV			2.36 V	174	60.9	39.0
3	10600.00	59.6 PK	74.0	-14.4	2.44 V	161	43.0	16.6
4	10600.00	45.8 AV	54.0	-8.2	2.44 V	161	29.2	16.6

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	108.7 PK			1.53 H	28	69.6	39.1
2	*5320.00	97.9 AV			1.53 H	28	58.8	39.1
3	5350.00	57.2 PK	74.0	-16.8	1.65 H	40	53.5	3.7
4	5350.00	44.9 AV	54.0	-9.1	1.65 H	40	41.2	3.7
5	10640.00	59.4 PK	74.0	-14.6	2.81 H	255	42.9	16.5
6	10640.00	46.0 AV	54.0	-8.0	2.81 H	255	29.5	16.5
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	*5320.00	108.3 PK			2.59 V	174	69.2	39.1
2	*5320.00	97.8 AV			2.59 V	174	58.7	39.1
3	5350.00	57.2 PK	74.0	-16.8	2.73 V	153	53.5	3.7
4	5350.00	44.8 AV	54.0	-9.2	2.73 V	153	41.1	3.7
5	10640.00	59.0 PK	74.0	-15.0	2.39 V	149	42.5	16.5
6	10640.00	46.0 AV	54.0	-8.0	2.39 V	149	29.5	16.5

Remarks:

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

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.6 PK	74.0	-16.4	1.58 H	47	53.6	4.0
2	5460.00	43.9 AV	54.0	-10.1	1.58 H	47	39.9	4.0
3	#5470.00	60.4 PK	68.2	-7.8	1.61 H	30	56.4	4.0
4	*5500.00	110.5 PK			1.48 H	28	70.9	39.6
5	*5500.00	100.2 AV			1.48 H	28	60.6	39.6
6	11000.00	60.2 PK	74.0	-13.8	3.13 H	273	42.3	17.9
7	11000.00	45.9 AV	54.0	-8.1	3.13 H	273	28.0	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	5460.00	57.9 PK	74.0	-16.1	3.29 V	221	53.9	4.0
2	5460.00	44.5 AV	54.0	-9.5	3.29 V	221	40.5	4.0
3	#5470.00	58.7 PK	68.2	-9.5	3.39 V	203	54.7	4.0
4	*5500.00	111.1 PK			3.17 V	226	71.5	39.6
5	*5500.00	100.6 AV			3.17 V	226	61.0	39.6
6	11000.00	60.7 PK	74.0	-13.3	2.91 V	179	42.8	17.9
7	11000.00	46.2 AV	54.0	-7.8	2.91 V	179	28.3	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 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	110.8 PK			1.22 H	26	71.2	39.6
2	*5580.00	100.6 AV			1.22 H	26	61.0	39.6
3	11160.00	59.5 PK	74.0	-14.5	2.97 H	270	42.8	16.7
4	11160.00	45.8 AV	54.0	-8.2	2.97 H	270	29.1	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	*5580.00	112.0 PK			3.11 V	187	72.4	39.6
2	*5580.00	101.7 AV			3.11 V	187	62.1	39.6
3	11160.00	59.6 PK	74.0	-14.4	2.79 V	169	42.9	16.7
4	11160.00	46.1 AV	54.0	-7.9	2.79 V	169	29.4	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 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	106.8 PK			1.30 H	25	67.2	39.6
2	*5700.00	96.1 AV			1.30 H	25	56.5	39.6
3	#5725.00	56.8 PK	68.2	-11.4	1.53 H	39	52.7	4.1
4	11400.00	57.9 PK	74.0	-16.1	3.03 H	266	41.3	16.6
5	11400.00	44.5 AV	54.0	-9.5	3.03 H	266	27.9	16.6
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	*5700.00	107.4 PK			3.06 V	221	67.8	39.6
2	*5700.00	96.8 AV			3.06 V	221	57.2	39.6
3	#5725.00	56.9 PK	68.2	-11.3	3.33 V	191	52.8	4.1
4	11400.00	58.4 PK	74.0	-15.6	2.91 V	173	41.8	16.6
5	11400.00	44.6 AV	54.0	-9.4	2.91 V	173	28.0	16.6

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 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	#5619.87	56.5 PK	68.2	-11.7	1.61 H	26	52.3	4.2
2	*5745.00	110.5 PK			1.61 H	26	70.7	39.8
3	*5745.00	100.5 AV			1.61 H	26	60.7	39.8
4	#5984.62	58.1 PK	68.2	-10.1	1.61 H	26	53.1	5.0
5	11490.00	57.2 PK	74.0	-16.8	2.63 H	197	40.4	16.8
6	11490.00	43.3 AV	54.0	-10.7	2.63 H	197	26.5	16.8
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	#5634.62	54.7 PK	68.2	-13.5	2.90 V	348	50.5	4.2
2	*5745.00	109.0 PK			2.90 V	348	69.2	39.8
3	*5745.00	98.5 AV			2.90 V	348	58.7	39.8
4	#5997.44	57.1 PK	68.2	-11.1	2.90 V	348	52.1	5.0
5	11490.00	57.8 PK	74.0	-16.2	1.97 V	156	41.0	16.8
6	11490.00	43.3 AV	54.0	-10.7	1.97 V	156	26.5	16.8

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 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	#5617.95	55.3 PK	68.2	-12.9	1.62 H	26	51.1	4.2
2	*5785.00	111.7 PK			1.62 H	26	71.6	40.1
3	*5785.00	101.4 AV			1.62 H	26	61.3	40.1
4	#5981.41	58.0 PK	68.2	-10.2	1.62 H	26	53.0	5.0
5	11570.00	58.3 PK	74.0	-15.7	2.61 H	187	41.3	17.0
6	11570.00	44.6 AV	54.0	-9.4	2.61 H	187	27.6	17.0
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	#5610.90	56.1 PK	68.2	-12.1	2.87 V	243	51.9	4.2
2	*5785.00	109.9 PK			2.87 V	243	69.8	40.1
3	*5785.00	99.5 AV			2.87 V	243	59.4	40.1
4	#5960.90	58.9 PK	68.2	-9.3	2.87 V	243	54.1	4.8
5	11570.00	58.1 PK	74.0	-15.9	2.19 V	169	41.1	17.0
6	11570.00	44.5 AV	54.0	-9.5	2.19 V	169	27.5	17.0

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 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	#5631.41	55.7 PK	68.2	-12.5	1.52 H	28	51.5	4.2
2	*5825.00	113.2 PK			1.52 H	28	72.9	40.3
3	*5825.00	102.5 AV			1.52 H	28	62.2	40.3
4	#5963.46	57.5 PK	68.2	-10.7	1.52 H	28	52.7	4.8
5	11650.00	58.3 PK	74.0	-15.7	2.47 H	199	41.7	16.6
6	11650.00	44.2 AV	54.0	-9.8	2.47 H	199	27.6	16.6
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	#5604.49	55.0 PK	68.2	-13.2	2.88 V	242	50.8	4.2
2	*5825.00	111.7 PK			2.88 V	242	71.4	40.3
3	*5825.00	101.2 AV			2.88 V	242	60.9	40.3
4	#5989.10	57.7 PK	68.2	-10.5	2.88 V	242	52.7	5.0
5	11650.00	58.1 PK	74.0	-15.9	2.01 V	159	41.5	16.6
6	11650.00	43.8 AV	54.0	-10.2	2.01 V	159	27.2	16.6

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.

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	61.8 PK	74.0	-12.2	1.55 H	46	58.3	3.5
2	5150.00	43.6 AV	54.0	-10.4	1.55 H	46	40.1	3.5
3	*5190.00	102.5 PK			1.49 H	31	63.2	39.3
4	*5190.00	92.6 AV			1.49 H	31	53.3	39.3
5	#10380.00	56.3 PK	68.2	-11.9	2.64 H	158	40.8	15.5
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	5150.00	65.2 PK	74.0	-8.8	2.74 V	51	61.7	3.5
2	5150.00	45.2 AV	54.0	-8.8	2.74 V	51	41.7	3.5
3	*5190.00	103.8 PK			2.92 V	50	64.5	39.3
4	*5190.00	93.9 AV			2.92 V	50	54.6	39.3
5	#10380.00	56.7 PK	68.2	-11.5	2.08 V	251	41.2	15.5

Remarks:

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

CHANNEL	TX Channel 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	105.5 PK			1.46 H	32	66.4	39.1
2	*5230.00	95.9 AV			1.46 H	32	56.8	39.1
3	5350.00	59.0 PK	74.0	-15.0	1.79 H	102	55.3	3.7
4	5350.00	42.9 AV	54.0	-11.1	1.79 H	102	39.2	3.7
5	#10460.00	57.5 PK	68.2	-10.7	1.96 H	235	41.5	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	*5230.00	107.2 PK			2.74 V	53	68.1	39.1
2	*5230.00	97.2 AV			2.74 V	53	58.1	39.1
3	5350.00	60.4 PK	74.0	-13.6	2.57 V	69	56.7	3.7
4	5350.00	43.0 AV	54.0	-11.0	2.57 V	69	39.3	3.7
5	#10460.00	57.9 PK	68.2	-10.3	2.03 V	171	41.9	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 54	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.9 PK	74.0	-16.1	1.69 H	29	54.4	3.5
2	5150.00	42.8 AV	54.0	-11.2	1.69 H	29	39.3	3.5
3	*5270.00	105.6 PK			1.56 H	25	66.6	39.0
4	*5270.00	95.9 AV			1.56 H	25	56.9	39.0
5	#10540.00	59.1 PK	68.2	-9.1	2.66 H	261	42.7	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	58.0 PK	74.0	-16.0	2.79 V	169	54.5	3.5
2	5150.00	42.7 AV	54.0	-11.3	2.79 V	169	39.2	3.5
3	*5270.00	107.4 PK			2.63 V	187	68.4	39.0
4	*5270.00	97.3 AV			2.63 V	187	58.3	39.0
5	#10540.00	59.3 PK	68.2	-8.9	2.29 V	139	42.9	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 62	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	104.2 PK			1.77 H	25	65.2	39.0
2	*5310.00	94.6 AV			1.77 H	25	55.6	39.0
3	5350.00	66.7 PK	74.0	-7.3	1.51 H	28	63.0	3.7
4	5350.00	50.2 AV	54.0	-3.8	1.51 H	28	46.5	3.7
5	10620.00	59.2 PK	74.0	-14.8	2.73 H	254	42.6	16.6
6	10620.00	45.7 AV	54.0	-8.3	2.73 H	254	29.1	16.6
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	*5310.00	105.6 PK			2.72 V	187	66.6	39.0
2	*5310.00	95.7 AV			2.72 V	187	56.7	39.0
3	5350.00	67.3 PK	74.0	-6.7	2.68 V	187	63.6	3.7
4	5350.00	51.0 AV	54.0	-3.0	2.68 V	187	47.3	3.7
5	10620.00	59.5 PK	74.0	-14.5	2.44 V	151	42.9	16.6
6	10620.00	46.1 AV	54.0	-7.9	2.44 V	151	29.5	16.6

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	63.4 PK	74.0	-10.6	1.32 H	18	59.4	4.0
2	5460.00	44.7 AV	54.0	-9.3	1.32 H	18	40.7	4.0
3	**#5470.00**	**66.0 PK**	**68.2**	**-2.2**	**1.11 H**	**26**	**62.0**	**4.0**
4	*5510.00	104.2 PK			1.36 H	28	64.5	39.7
5	*5510.00	94.5 AV			1.36 H	28	54.8	39.7
6	11020.00	59.5 PK	74.0	-14.5	2.36 H	155	41.9	17.6
7	11020.00	45.6 AV	54.0	-8.4	2.36 H	155	28.0	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	5460.00	63.4 PK	74.0	-10.6	2.36 V	71	59.4	4.0
2	5460.00	46.3 AV	54.0	-7.7	2.36 V	71	42.3	4.0
3	#5470.00	65.6 PK	68.2	-2.6	2.50 V	57	61.6	4.0
4	*5510.00	104.1 PK			2.51 V	55	64.4	39.7
5	*5510.00	94.3 AV			2.51 V	55	54.6	39.7
6	11020.00	60.3 PK	74.0	-13.7	1.87 V	264	42.7	17.6
7	11020.00	45.8 AV	54.0	-8.2	1.87 V	264	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 110	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	107.8 PK			1.30 H	27	68.2	39.6
2	*5550.00	98.2 AV			1.30 H	27	58.6	39.6
3	11100.00	58.8 PK	74.0	-15.2	2.65 H	188	42.0	16.8
4	11100.00	44.9 AV	54.0	-9.1	2.65 H	188	28.1	16.8
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	*5550.00	106.5 PK			3.01 V	44	66.9	39.6
2	*5550.00	96.5 AV			3.01 V	44	56.9	39.6
3	11100.00	59.7 PK	74.0	-14.3	2.41 V	157	42.9	16.8
4	11100.00	45.6 AV	54.0	-8.4	2.41 V	157	28.8	16.8

Remarks:

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

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	107.8 PK			2.35 H	60	68.0	39.8
2	*5670.00	98.0 AV			2.35 H	60	58.2	39.8
3	#5725.00	64.6 PK	68.2	-3.6	2.16 H	60	60.5	4.1
4	11340.00	59.8 PK	74.0	-14.2	1.69 H	141	43.0	16.8
5	11340.00	46.1 AV	54.0	-7.9	1.69 H	141	29.3	16.8
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	*5670.00	104.3 PK			2.68 V	47	64.5	39.8
2	*5670.00	94.8 AV			2.68 V	47	55.0	39.8
3	#5725.00	63.2 PK	68.2	-5.0	2.41 V	59	59.1	4.1
4	11340.00	59.3 PK	74.0	-14.7	2.64 V	213	42.5	16.8
5	11340.00	45.4 AV	54.0	-8.6	2.64 V	213	28.6	16.8

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 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	#5607.05	58.2 PK	68.2	-10.0	1.71 H	25	54.0	4.2
2	*5755.00	107.8 PK			1.71 H	25	68.0	39.8
3	*5755.00	97.9 AV			1.71 H	25	58.1	39.8
4	#5998.08	57.9 PK	68.2	-10.3	1.71 H	25	52.9	5.0
5	11510.00	57.0 PK	74.0	-17.0	2.39 H	191	40.1	16.9
6	11510.00	43.9 AV	54.0	-10.1	2.39 H	191	27.0	16.9
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	#5623.08	55.3 PK	68.2	-12.9	2.37 V	233	51.1	4.2
2	*5755.00	106.4 PK			2.37 V	233	66.4	40.0
3	*5755.00	96.2 AV			2.37 V	233	56.2	40.0
4	#5994.23	57.6 PK	68.2	-10.6	2.37 V	233	52.6	5.0
5	11510.00	58.0 PK	74.0	-16.0	2.19 V	169	41.1	16.9
6	11510.00	44.1 AV	54.0	-9.9	2.19 V	169	27.2	16.9

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 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	#5617.95	55.4 PK	68.2	-12.8	1.57 H	26	51.2	4.2
2	*5795.00	109.2 PK			1.54 H	26	69.1	40.1
3	*5795.00	99.0 AV			1.54 H	26	58.9	40.1
4	#5941.03	57.3 PK	68.2	-10.9	1.54 H	26	52.5	4.8
5	11590.00	58.8 PK	74.0	-15.2	2.39 H	188	41.8	17.0
6	11590.00	45.4 AV	54.0	-8.6	2.39 H	188	28.4	17.0
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	#5607.69	55.2 PK	68.2	-13.0	2.45 V	235	51.0	4.2
2	*5795.00	108.1 PK			2.45 V	235	68.0	40.1
3	*5795.00	97.8 AV			2.45 V	235	57.7	40.1
4	#5928.21	58.0 PK	68.2	-10.2	2.45 V	235	53.1	4.9
5	11590.00	58.6 PK	74.0	-15.4	2.01 V	159	41.6	17.0
6	11590.00	45.1 AV	54.0	-8.9	2.01 V	159	28.1	17.0

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.

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	58.7 PK	74.0	-15.3	3.04 H	34	55.2	3.5
2	5150.00	46.1 AV	54.0	-7.9	3.04 H	34	42.6	3.5
3	*5210.00	98.7 PK			3.08 H	58	59.5	39.2
4	*5210.00	88.4 AV			3.08 H	58	49.2	39.2
5	5350.00	57.3 PK	74.0	-16.7	2.74 H	55	53.6	3.7
6	5350.00	44.1 AV	54.0	-9.9	2.74 H	55	40.4	3.7
7	#10420.00	55.4 PK	68.2	-12.8	2.79 H	220	39.7	15.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	61.5 PK	74.0	-12.5	2.72 V	53	58.0	3.5
2	5150.00	48.1 AV	54.0	-5.9	2.72 V	53	44.6	3.5
3	*5210.00	100.0 PK			2.79 V	51	60.8	39.2
4	*5210.00	90.7 AV			2.79 V	51	51.5	39.2
5	5350.00	56.9 PK	74.0	-17.1	2.95 V	71	53.2	3.7
6	5350.00	44.9 AV	54.0	-9.1	2.95 V	71	41.2	3.7
7	#10420.00	56.6 PK	68.2	-11.6	1.99 V	231	40.9	15.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.4 PK	74.0	-19.6	1.71 H	33	50.9	3.5
2	5150.00	41.6 AV	54.0	-12.4	1.71 H	33	38.1	3.5
3	*5290.00	98.7 PK			1.53 H	27	59.7	39.0
4	*5290.00	89.2 AV			1.53 H	27	50.2	39.0
5	5350.00	61.8 PK	74.0	-12.2	1.63 H	39	58.1	3.7
6	5350.00	47.9 AV	54.0	-6.1	1.63 H	39	44.2	3.7
7	#10580.00	59.2 PK	68.2	-9.0	2.87 H	269	42.5	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	5150.00	55.2 PK	74.0	-18.8	2.69 V	189	51.7	3.5
2	5150.00	42.4 AV	54.0	-11.6	2.69 V	189	38.9	3.5
3	*5290.00	99.5 PK			2.70 V	187	60.5	39.0
4	*5290.00	90.2 AV			2.70 V	187	51.2	39.0
5	5350.00	62.3 PK	74.0	-11.7	2.55 V	179	58.6	3.7
6	5350.00	48.8 AV	54.0	-5.2	2.55 V	179	45.1	3.7
7	#10580.00	59.5 PK	68.2	-8.7	2.39 V	159	42.8	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 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.7 PK	74.0	-14.3	1.96 H	14	55.7	4.0
2	5460.00	46.9 AV	54.0	-7.1	1.96 H	14	42.9	4.0
3	#5470.00	59.4 PK	68.2	-8.8	1.87 H	44	55.4	4.0
4	*5530.00	100.7 PK			2.07 H	27	61.0	39.7
5	*5530.00	91.2 AV			2.07 H	27	51.5	39.7
6	#5725.00	54.9 PK	68.2	-13.3	2.18 H	79	50.8	4.1
7	11060.00	59.5 PK	74.0	-14.5	3.05 H	199	42.3	17.2
8	11060.00	46.2 AV	54.0	-7.8	3.05 H	199	29.0	17.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	60.6 PK	74.0	-13.4	2.61 V	55	56.6	4.0
2	5460.00	47.7 AV	54.0	-6.3	2.61 V	55	43.7	4.0
3	#5470.00	60.6 PK	68.2	-7.6	2.74 V	45	56.6	4.0
4	*5530.00	102.3 PK			2.63 V	56	62.6	39.7
5	*5530.00	92.3 AV			2.63 V	56	52.6	39.7
6	#5725.00	54.8 PK	68.2	-13.4	2.95 V	73	50.7	4.1
7	11060.00	59.3 PK	74.0	-14.7	2.58 V	192	42.1	17.2
8	11060.00	46.4 AV	54.0	-7.6	2.58 V	192	29.2	17.2

Remarks:

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

CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.2 PK	74.0	-15.8	1.88 H	26	54.2	4.0
2	5460.00	45.8 AV	54.0	-8.2	1.88 H	26	41.8	4.0
3	#5470.00	59.3 PK	68.2	-8.9	2.01 H	26	55.3	4.0
4	*5610.00	104.8 PK			1.62 H	27	65.0	39.8
5	*5610.00	95.0 AV			1.62 H	27	55.2	39.8
6	#5725.00	57.3 PK	68.2	-10.9	1.64 H	37	53.2	4.1
7	11220.00	59.5 PK	74.0	-14.5	1.78 H	156	42.7	16.8
8	11220.00	47.0 AV	54.0	-7.0	1.78 H	156	30.2	16.8
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	5460.00	57.6 PK	74.0	-16.4	2.71 V	59	53.6	4.0
2	5460.00	45.7 AV	54.0	-8.3	2.71 V	59	41.7	4.0
3	#5470.00	60.2 PK	68.2	-8.0	2.89 V	51	56.2	4.0
4	*5610.00	103.5 PK			2.86 V	46	63.7	39.8
5	*5610.00	93.8 AV			2.86 V	46	54.0	39.8
6	#5725.00	57.2 PK	68.2	-11.0	2.64 V	68	53.1	4.1
7	11220.00	60.3 PK	74.0	-13.7	2.63 V	251	43.5	16.8
8	11220.00	47.0 AV	54.0	-7.0	2.63 V	251	30.2	16.8

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 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	#5648.08	58.5 PK	68.2	-9.7	1.53 H	26	54.2	4.3
2	#5650.00	58.4 PK	68.2	-9.8	1.63 H	29	54.1	4.3
3	*5775.00	104.8 PK			1.53 H	26	64.8	40.0
4	*5775.00	95.3 AV			1.53 H	26	55.3	40.0
5	#5925.00	58.8 PK	68.2	-9.4	1.59 H	25	53.9	4.9
6	#5969.87	57.6 PK	68.2	-10.6	1.53 H	26	52.7	4.9
7	11550.00	58.1 PK	74.0	-15.9	2.53 H	203	41.1	17.0
8	11550.00	45.5 AV	54.0	-8.5	2.53 H	203	28.5	17.0
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	#5612.18	56.7 PK	68.2	-11.5	2.84 V	151	52.5	4.2
2	#5650.00	57.2 PK	68.2	-11.0	2.56 V	133	52.9	4.3
3	*5775.00	102.6 PK			2.84 V	151	62.6	40.0
4	*5775.00	92.5 AV			2.84 V	151	52.5	40.0
5	#5925.00	59.4 PK	68.2	-8.8	2.69 V	159	54.5	4.9
6	#5981.41	57.4 PK	68.2	-10.8	2.84 V	151	52.4	5.0
7	11550.00	58.0 PK	74.0	-16.0	1.99 V	150	41.0	17.0
8	11550.00	45.4 AV	54.0	-8.6	1.99 V	150	28.4	17.0

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.

Below 1GHz worst-case data:

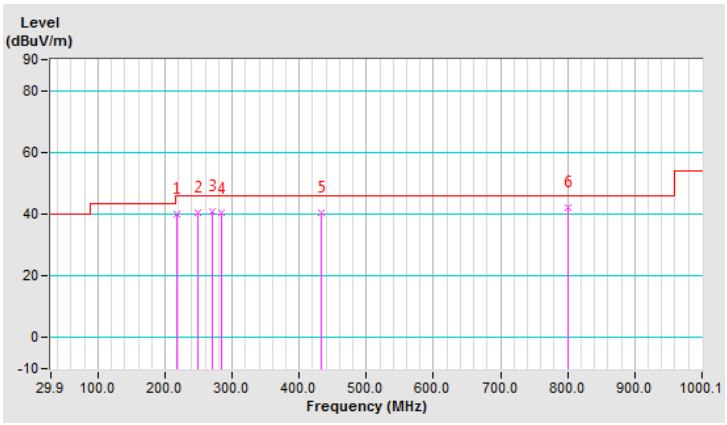
802.11n (HT20)

CHANNEL	TX Channel 165	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	218.50	40.1 QP	46.0	-5.9	1.00 H	179	51.4	-11.3
2	249.60	40.4 QP	46.0	-5.6	1.00 H	174	49.8	-9.4
3	270.99	40.7 QP	46.0	-5.3	1.00 H	228	49.0	-8.3
4	284.60	40.2 QP	46.0	-5.8	1.00 H	225	47.8	-7.6
5	432.37	40.4 QP	46.0	-5.6	1.49 H	152	44.9	-4.5
6	799.84	42.0 QP	46.0	-4.0	1.00 H	126	39.7	2.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20dB below the permissible value to be report.

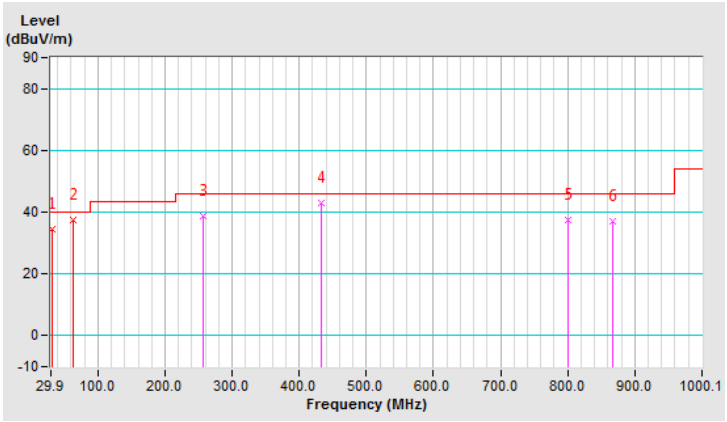


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	31.90	34.5 QP	40.0	-5.5	2.00 V	129	45.5	-11.0
2	62.92	37.3 QP	40.0	-2.7	1.01 V	307	47.4	-10.1
3	257.38	38.8 QP	46.0	-7.2	2.00 V	151	48.0	-9.2
4	432.37	43.0 QP	46.0	-3.0	1.01 V	132	47.5	-4.5
5	799.84	37.4 QP	46.0	-8.6	1.50 V	115	35.1	2.3
6	867.89	37.1 QP	46.0	-8.9	1.50 V	212	33.8	3.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20dB below the permissible value to be report.



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	ESR3	102412	Feb. 08, 2018	Feb. 07, 2019
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 05, 2018	Sep. 04, 2019
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Feb. 05, 2018	Feb. 04, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 13, 2018	Aug. 12, 2019
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 2.
3. The VCCI Site Registration No. is C-2047.

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.

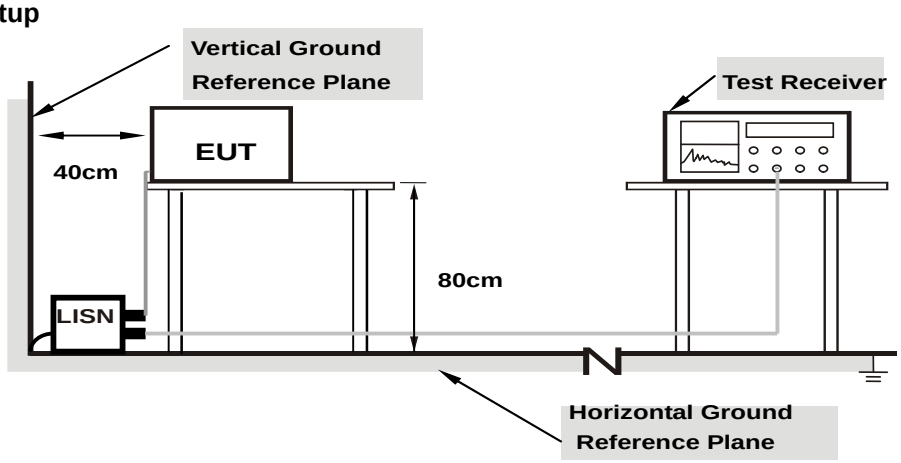
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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 item 4.1.6.

4.2.7 Test Results

Worst-case data:

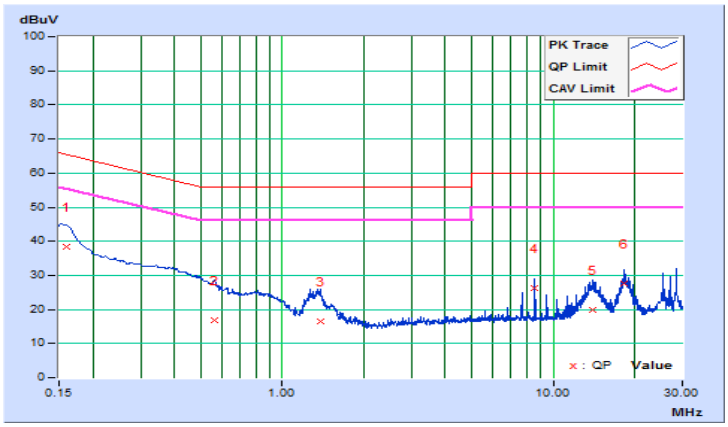
802.11n (HT20)

Channel	TX Channel 165	Detector Function	Quasi-Peak (QP) / Average (AV)
Phase	Line (L)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15900	10.05	28.38	4.08	38.43	14.13	65.52	55.52	-27.09	-41.39
2	0.55959	10.06	6.78	3.04	16.84	13.10	56.00	46.00	-39.16	-32.90
3	1.38050	10.07	6.43	1.54	16.50	11.61	56.00	46.00	-39.50	-34.39
4	8.57625	10.26	16.02	14.26	26.28	24.52	60.00	50.00	-33.72	-25.48
5	13.98300	10.39	9.37	3.36	19.76	13.75	60.00	50.00	-40.24	-36.25
6	18.24225	10.48	17.06	13.39	27.54	23.87	60.00	50.00	-32.46	-26.13

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.

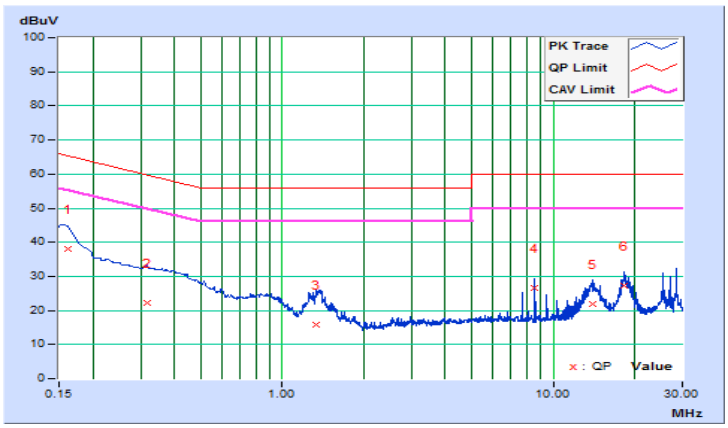


Channel	TX Channel 165	Detector Function	Quasi-Peak (QP) / Average (AV)
Phase	Neutral (N)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16125	10.06	27.93	3.55	37.99	13.61	65.40	55.40	-27.41	-41.79
2	0.31553	10.07	12.19	2.54	22.26	12.61	59.82	49.82	-37.56	-37.21
3	1.34250	10.08	5.61	1.33	15.69	11.41	56.00	46.00	-40.31	-34.59
4	**8.57850**	**10.31**	**16.26**	**14.92**	**26.57**	**25.23**	**60.00**	**50.00**	**-33.43**	**-24.77**
5	14.00100	10.49	11.26	6.15	21.75	16.64	60.00	50.00	-38.25	-33.36
6	18.24225	10.62	16.61	13.39	27.23	24.01	60.00	50.00	-32.77	-25.99

REMARKS:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

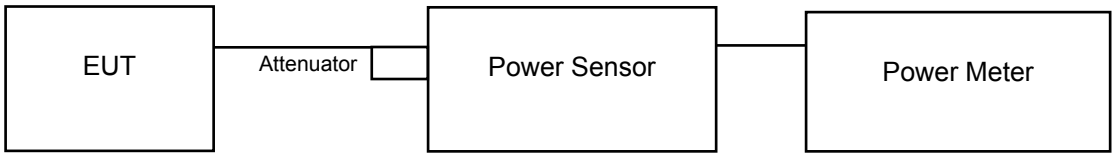
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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

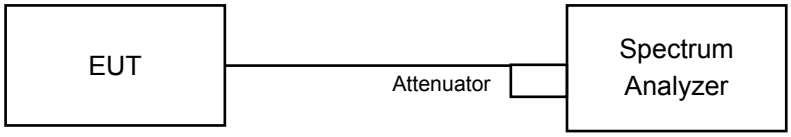
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

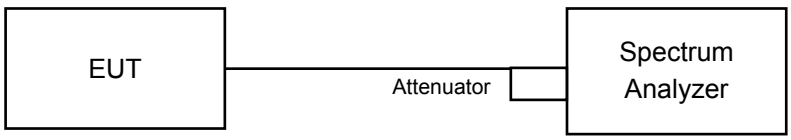
For Power Output
802.11a, 802.11n (HT20), 802.11n (HT40)



802.11ac (VHT80)



For Bandwidth



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement

For 802.11a, 802.11n (HT20), 802.11n (HT40)
Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

For 802.11ac (VHT80)
a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
b. Set sweep trigger to “free run”.
c. Set RBW = 1 MHz
d. Set VBW ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS
i. Trace mode = max hold
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
k. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

For 26dB Bandwidth
a. Set RBW = approximately 1% of the emission bandwidth.
b. Set the VBW > RBW.
c. Detector = Peak.
d. Trace mode = max hold.
e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

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:

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.03	17.06	101.282	20.06	24.00	Pass
40	5200	17.15	16.83	100.075	20.00	24.00	Pass
48	5240	17.00	17.29	103.699	20.16	24.00	Pass
52	5260	17.03	16.89	99.331	19.97	24.00	Pass
60	5300	17.10	16.73	98.384	19.93	24.00	Pass
64	5320	15.32	15.10	66.400	18.22	23.79	Pass
100	5500	14.93	14.67	60.426	17.81	23.80	Pass
116	5580	16.54	16.43	89.036	19.50	24.00	Pass
140	5700	14.36	14.31	54.267	17.35	23.81	Pass
149	5745	17.83	18.15	125.987	21.00	30.00	Pass
157	5785	18.17	18.02	129.002	21.11	30.00	Pass
165	5825	18.15	18.05	129.139	21.11	30.00	Pass

Note: Max. Gain = 1.38dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz
Chain 0
1. 11dBm + 10log(20.98) = 24.22 dBm > 24dBm
2. 11dBm + 10log(21.63) = 24.35 dBm > 24dBm
3. 11dBm + 10log(19.22) = 23.84 dBm < 24dBm
4. 11dBm + 10log(19.30) = 23.86 dBm < 24dBm
5. 11dBm + 10log(20.48) = 24.11 dBm > 24dBm
6. 11dBm + 10log(19.13) = 23.82 dBm < 24dBm

Chain 1
1. 11dBm + 10log(20.65) = 24.15 dBm > 24dBm
2. 11dBm + 10log(21.17) = 24.26 dBm > 24dBm
3. 11dBm + 10log(19.04) = 23.79 dBm < 24dBm
4. 11dBm + 10log(19.09) = 23.80 dBm < 24dBm
5. 11dBm + 10log(20.43) = 24.10 dBm > 24dBm
6. 11dBm + 10log(19.12) = 23.81 dBm < 24dBm

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.05	16.85	99.116	19.96	24.00	Pass
40	5200	17.62	17.26	111.021	20.45	24.00	Pass
48	5240	17.60	17.49	**113.649**	20.56	24.00	Pass
52	5260	17.45	17.15	**107.470**	20.31	24.00	Pass
60	5300	17.43	17.17	107.454	20.31	24.00	Pass
64	5320	14.82	14.34	57.503	17.60	24.00	Pass
100	5500	15.67	15.21	70.087	18.46	24.00	Pass
116	5580	17.24	17.02	**103.316**	20.14	24.00	Pass
140	5700	14.19	14.13	52.124	17.17	24.00	Pass
149	5745	18.15	18.01	128.554	21.09	30.00	Pass
157	5785	18.06	18.14	129.136	21.11	30.00	Pass
165	5825	18.18	18.14	**130.929**	21.17	30.00	Pass

Note: Max. Gain = 1.38dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz
Chain 0
1. 11dBm + 10log(23.01) = 24.62 dBm > 24dBm
2. 11dBm + 10log(23.10) = 24.64 dBm > 24dBm
3. 11dBm + 10log(20.68) = 24.16 dBm > 24dBm
4. 11dBm + 10log(20.48) = 24.11 dBm > 24dBm
5. 11dBm + 10log(22.47) = 24.52 dBm > 24dBm
6. 11dBm + 10log(20.43) = 24.10 dBm > 24dBm

Chain 1
1. 11dBm + 10log(22.80) = 24.58 dBm > 24dBm
2. 11dBm + 10log(23.02) = 24.62 dBm > 24dBm
3. 11dBm + 10log(20.45) = 24.11 dBm > 24dBm
4. 11dBm + 10log(20.53) = 24.12 dBm > 24dBm
5. 11dBm + 10log(22.58) = 24.54 dBm > 24dBm
6. 11dBm + 10log(20.39) = 24.09 dBm > 24dBm

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	13.83	13.54	46.749	16.70	24.00	Pass
46	5230	16.62	16.47	90.281	19.56	24.00	Pass
54	5270	16.67	16.47	90.813	19.58	24.00	Pass
62	5310	14.80	14.45	58.061	17.64	24.00	Pass
102	5510	13.57	13.43	44.780	16.51	24.00	Pass
110	5550	16.90	16.89	97.843	19.91	24.00	Pass
134	5670	16.82	16.60	93.793	19.72	24.00	Pass
151	5755	17.96	18.09	126.934	21.04	30.00	Pass
159	5795	18.11	18.14	129.877	21.14	30.00	Pass

Note: Max. Gain = 1.38dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz
Chain 0
1. 11dBm + 10log(42.80) = 27.31 dBm > 24dBm
2. 11dBm + 10log(42.00) = 27.23 dBm > 24dBm
3. 11dBm + 10log(42.14) = 27.25 dBm > 24dBm
4. 11dBm + 10log(42.99) = 27.33 dBm > 24dBm
5. 11dBm + 10log(44.19) = 27.45 dBm > 24dBm

Chain 1
1. 11dBm + 10log(42.66) = 27.30 dBm > 24dBm
2. 11dBm + 10log(42.37) = 27.27 dBm > 24dBm
3. 11dBm + 10log(42.05) = 27.24 dBm > 24dBm
4. 11dBm + 10log(42.77) = 27.31 dBm > 24dBm
5. 11dBm + 10log(44.67) = 27.50 dBm > 24dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	13.02	12.83	39.232	15.94	24.00	Pass
58	5290	12.03	11.75	30.921	14.90	24.00	Pass
106	5530	12.45	12.18	34.099	15.33	24.00	Pass
122	5610	16.15	16.01	81.112	19.09	24.00	Pass
155	5775	18.17	17.97	128.276	21.08	30.00	Pass

Note: Max. Gain = 1.38dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz
Chain 0
1. 11dBm + 10log(82.95) = 30.19 dBm > 24dBm
2. 11dBm + 10log(82.94) = 30.19 dBm > 24dBm
3. 11dBm + 10log(84.49) = 30.27 dBm > 24dBm
Chain 1
1. 11dBm + 10log(83.08) = 30.19 dBm > 24dBm
2. 11dBm + 10log(83.21) = 30.20 dBm > 24dBm
3. 11dBm + 10log(85.08) = 30.30 dBm > 24dBm

26dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	21.17	20.63
40	5200	20.98	20.76
48	5240	21.11	21.07
52	5260	20.98	20.65
60	5300	21.63	21.17
64	5320	19.22	19.04
100	5500	19.30	19.09
116	5580	20.48	20.43
140	5700	19.13	19.12

802.11n (HT20)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	22.33	21.72
40	5200	23.00	22.63
48	5240	22.59	22.93
52	5260	23.01	22.80
60	5300	23.10	23.02
64	5320	20.68	20.45
100	5500	20.48	20.53
116	5580	22.47	22.58
140	5700	20.43	20.39

802.11n (HT40)

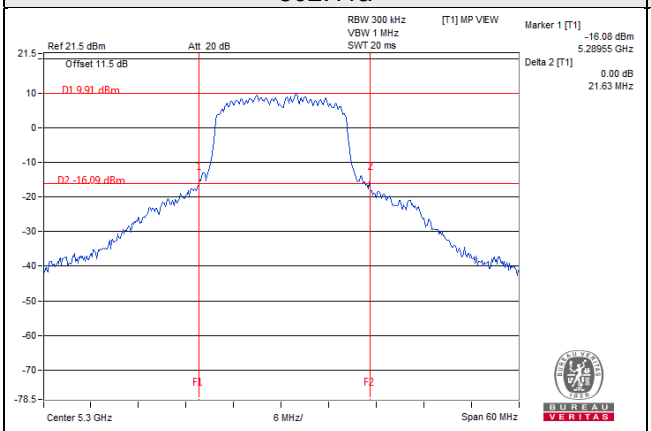
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	41.94	41.94
46	5230	42.60	42.42
54	5270	42.80	42.66
62	5310	42.00	42.37
102	5510	42.14	42.05
110	5550	42.99	42.77
134	5670	44.19	44.67

802.11ac (VHT80)

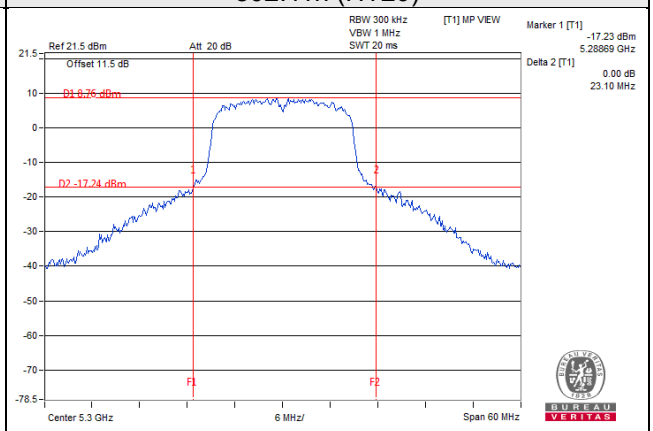
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	83.03	83.51
58	5290	82.95	83.08
106	5530	82.94	83.21
122	5610	84.49	85.08

Spectrum Plot of Worst Value

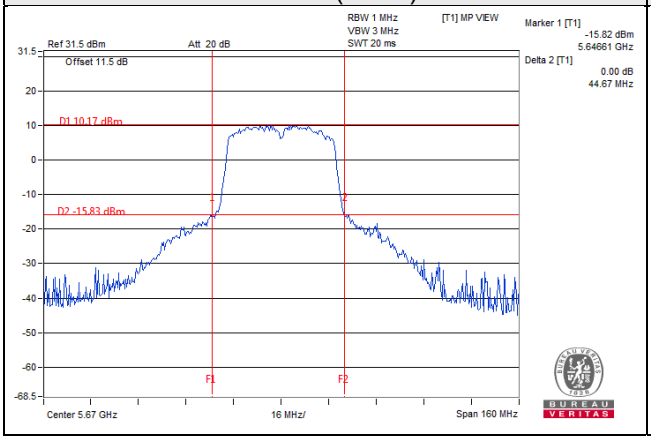
802.11a



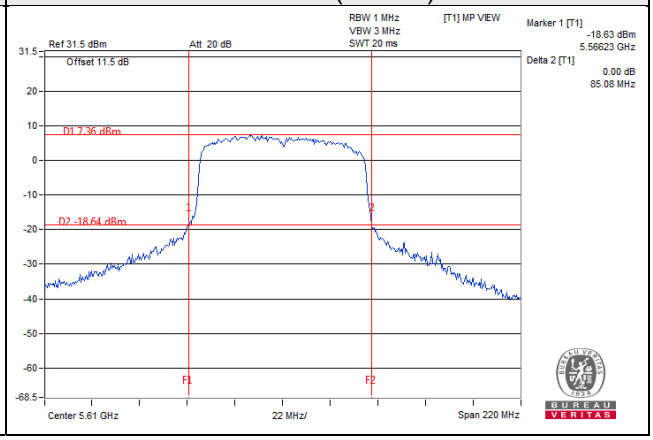
802.11n (HT20)



802.11n (HT40)

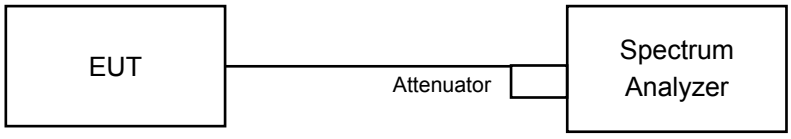


802.11ac (VHT80)



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Result

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.32	16.32
40	5200	16.44	16.44
48	5240	16.44	16.32
52	5260	16.44	16.44
60	5300	16.44	16.32
64	5320	16.32	16.32
100	5500	16.32	16.32
116	5580	16.32	16.32
140	5700	16.32	16.32
149	5745	16.68	16.68
157	5785	16.80	16.80
165	5825	16.92	16.92

802.11n (HT20)

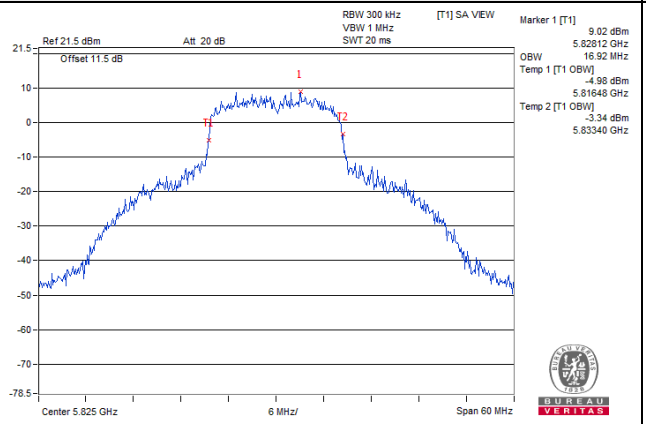
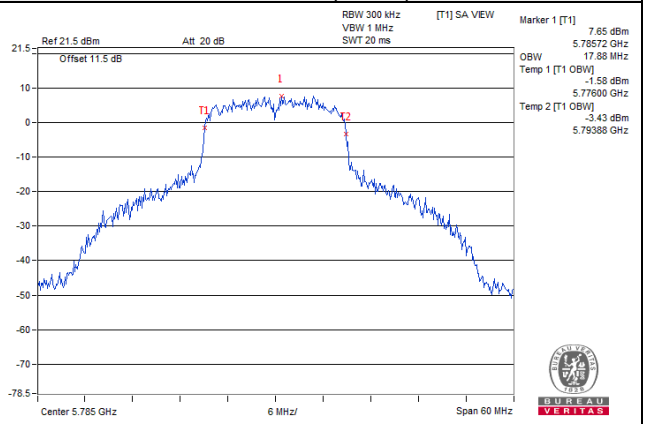
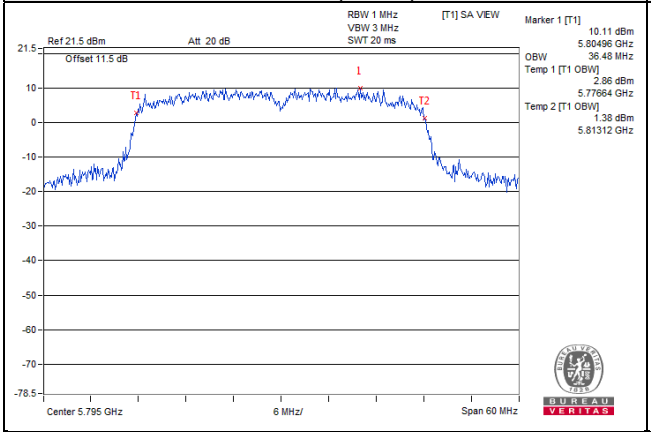
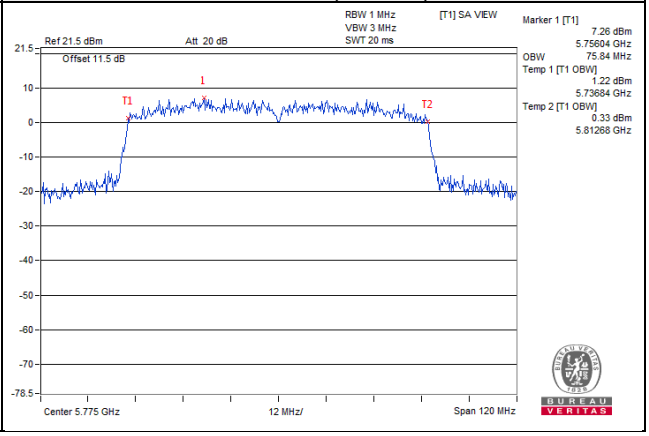
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.52	17.52
40	5200	17.64	17.52
48	5240	17.64	17.64
52	5260	17.64	17.52
60	5300	17.64	17.52
64	5320	17.52	17.52
100	5500	17.52	17.52
116	5580	17.52	17.52
140	5700	17.52	17.52
149	5745	17.76	17.76
157	5785	17.76	17.88
165	5825	17.76	17.76

802.11n (HT40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.00	36.12
46	5230	36.12	36.24
54	5270	36.12	36.12
62	5310	36.12	36.00
102	5510	36.12	36.12
110	5550	36.24	36.24
134	5670	36.24	36.36
151	5755	36.48	36.36
159	5795	36.48	36.48

802.11ac (VHT80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.12	75.12
58	5290	75.12	75.12
106	5530	75.36	75.36
122	5610	75.12	75.12
155	5775	75.84	75.84

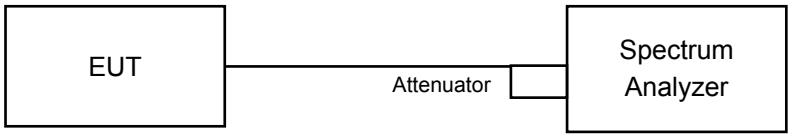
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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

Duty cycle of test signal is < 98%
Using method SA-2
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS.
3) Set Channel power measure = 1MHz.
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Record the max value and add 10 log (1/duty cycle).

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

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as item 4.3.6.

4.5.7 Test Results

For U-NII-1, U-NII-2A, U-NII-2C band

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	2.70	2.54	0.20	5.83	11.00	Pass
40	5200	2.93	2.79	0.20	6.07	11.00	Pass
48	5240	3.45	3.26	0.20	6.57	11.00	Pass
52	5260	3.42	3.32	0.20	6.58	11.00	Pass
60	5300	3.32	3.22	0.20	6.48	11.00	Pass
64	5320	1.80	1.65	0.20	4.94	11.00	Pass
100	5500	1.75	1.78	0.20	4.98	11.00	Pass
116	5580	3.62	3.52	0.20	6.78	11.00	Pass
140	5700	-0.55	-0.29	0.20	2.79	11.00	Pass

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = 1.38dBi + 10log(2) = 4.39dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

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	2.24	2.42	0.32	5.66	11.00	Pass
40	5200	2.94	3.06	0.32	6.33	11.00	Pass
48	5240	3.35	3.37	0.32	6.69	11.00	Pass
52	5260	3.42	3.41	0.32	6.75	11.00	Pass
60	5300	3.10	3.24	0.32	6.50	11.00	Pass
64	5320	0.70	0.77	0.32	4.07	11.00	Pass
100	5500	2.09	2.24	0.32	5.50	11.00	Pass
116	5580	3.77	3.89	0.32	7.16	11.00	Pass
140	5700	-0.96	-0.77	0.32	2.47	11.00	Pass

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = 1.38dBi + 10log(2) = 4.39dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

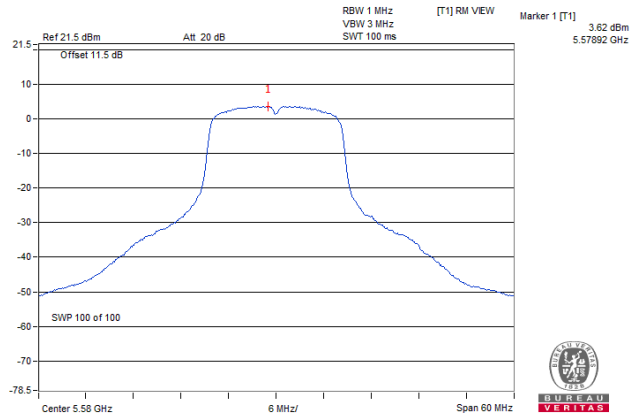
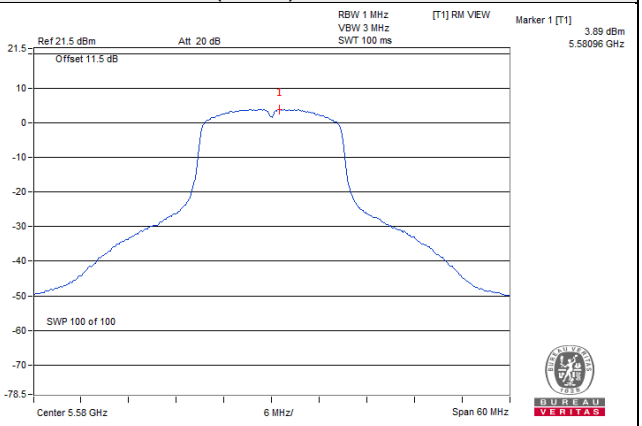
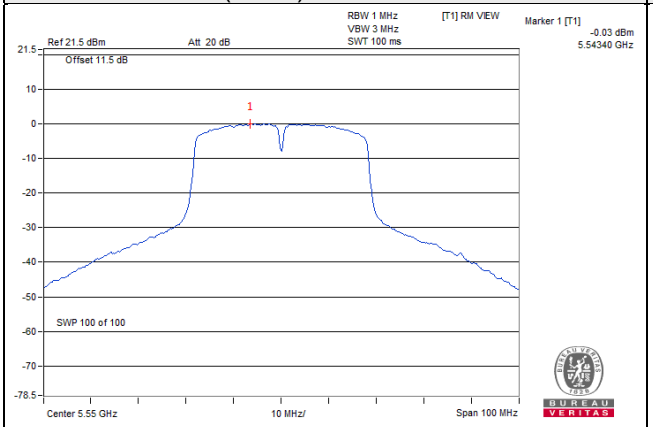
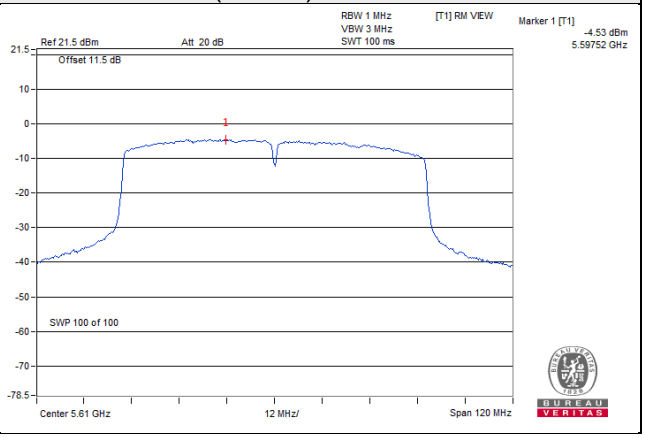
Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-4.32	-4.13	0.60	-0.61	11.00	Pass
46	5230	-1.05	-0.92	0.60	2.63	11.00	Pass
54	5270	-0.83	-0.84	0.60	2.78	11.00	Pass
62	5310	-2.66	-2.67	0.60	0.95	11.00	Pass
102	5510	-3.79	-3.77	0.60	-0.17	11.00	Pass
110	5550	-0.06	-0.04	0.60	3.56	11.00	Pass
134	5670	-1.10	-1.04	0.60	2.54	11.00	Pass

Note:
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = 1.38dBi + 10log(2) = 4.39dBi < 6dBi, so the limit no need to be reduced.
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	-8.24	-8.17	0.80	-4.39	11.00	Pass
58	5290	-8.96	-8.83	0.80	-5.08	11.00	Pass
106	5530	-8.16	-8.16	0.80	-4.35	11.00	Pass
122	5610	-4.73	-4.53	0.80	-0.82	11.00	Pass

Note:
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = 1.38dBi + 10log(2) = 4.39dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 0 / CH 116	802.11n (HT20) / Chain 1 / CH 116
	
802.11n (HT40) / Chain 1 / CH 110	802.11ac (VHT80) / Chain 1 / CH 122
	

For U-NII-3 band

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	-3.86	-1.64	3.01	0.20	1.57	30.00	Pass
	157	5785	-4.19	-1.97	3.01	0.20	1.24	30.00	Pass
	165	5825	-4.25	-2.03	3.01	0.20	1.18	30.00	Pass
1	149	5745	-3.81	-1.59	3.01	0.20	1.62	30.00	Pass
	157	5785	-4.11	-1.89	3.01	0.20	1.32	30.00	Pass
	165	5825	-3.96	-1.74	3.01	0.20	1.47	30.00	Pass

Note:

1. Method c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional Gain = 1.38dBi + 10log(2) = 4.39dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

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	-4.71	-2.49	3.01	0.32	0.84	30.00	Pass
	157	5785	-4.43	-2.21	3.01	0.32	1.12	30.00	Pass
	165	5825	-4.39	-2.17	3.01	0.32	1.16	30.00	Pass
1	149	5745	-4.10	-1.88	3.01	0.32	1.45	30.00	Pass
	157	5785	-4.31	-2.09	3.01	0.32	1.24	30.00	Pass
	165	5825	-4.25	-2.03	3.01	0.32	1.30	30.00	Pass

Note:

1. Method c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional Gain = 1.38dBi + 10log(2) = 4.39dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

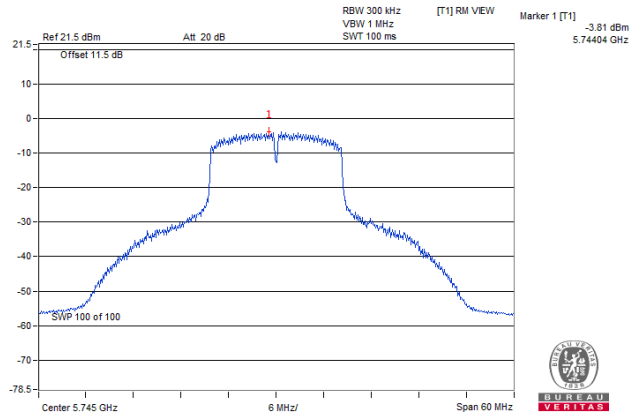
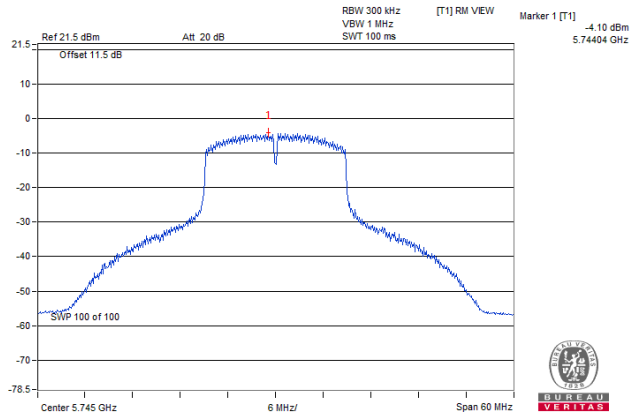
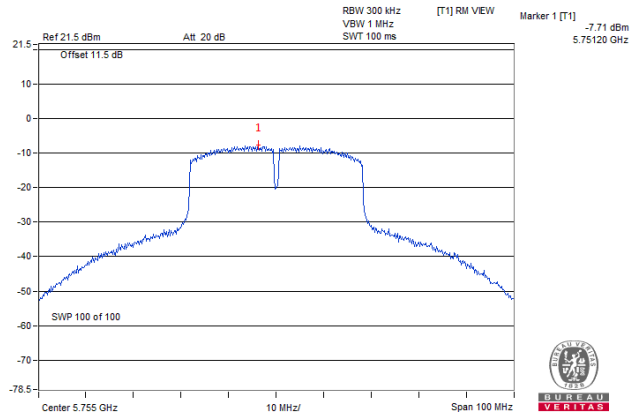
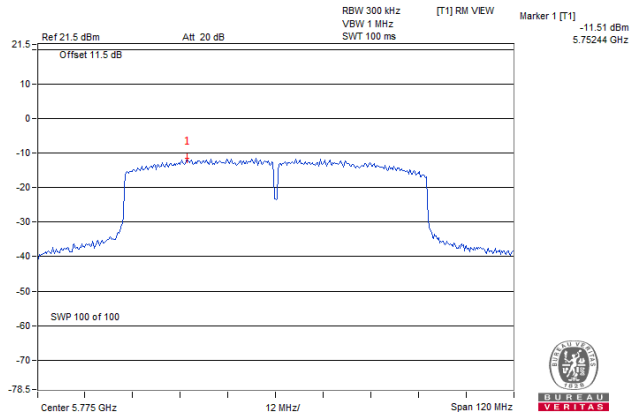
TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-8.02	-5.80	3.01	0.60	-2.19	30.00	Pass
	159	5795	-8.00	-5.78	3.01	0.60	-2.17	30.00	Pass
1	151	5755	-7.71	-5.49	3.01	0.60	-1.88	30.00	Pass
	159	5795	-7.94	-5.72	3.01	0.60	-2.11	30.00	Pass

Note:
1. Method c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional Gain = 1.38dBi + 10log(2) = 4.39dBi < 6dBi, so the limit no need to be reduced.
3. 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	-11.54	-9.32	3.01	0.80	-5.51	30.00	Pass
1	155	5775	-11.51	-9.29	3.01	0.80	-5.48	30.00	Pass

Note:
1. Method c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional Gain = 1.38dBi + 10log(2) = 4.39dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

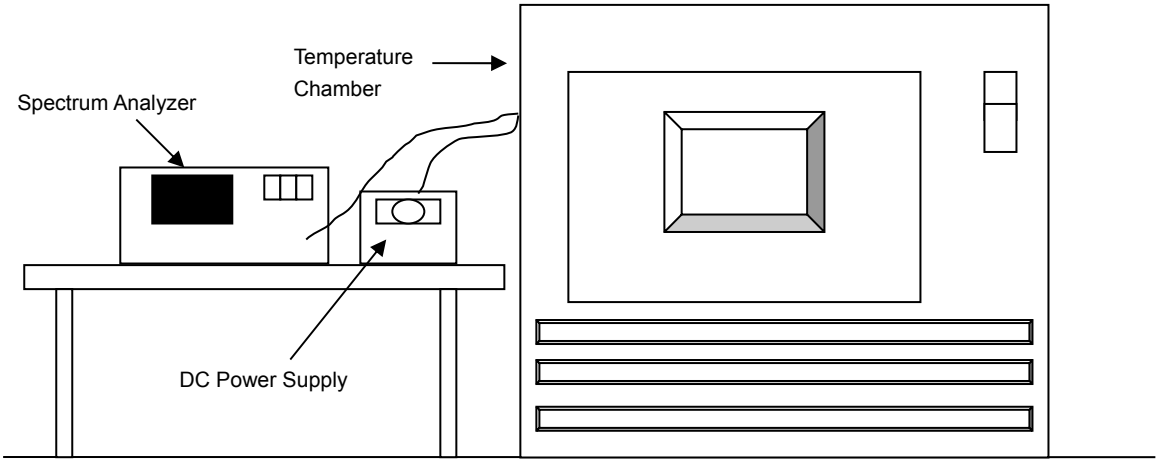
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 11, 2018	Jun. 10, 2019
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 04, 2018	Jun. 03, 2019
Digital Multimeter Fluke	87-III	70360742	Jun. 29, 2018	Jun. 28, 2019
DC Power Supply Topward	6603D	700637	NA	NA

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 (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.
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: 5180MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
45	36	5180.0221	PASS	5180.0235	PASS	5180.0246	PASS	5180.0243	PASS
30	36	5179.9810	PASS	5179.9803	PASS	5179.9809	PASS	5179.9778	PASS
20	36	5180.0157	PASS	5180.0153	PASS	5180.0163	PASS	5180.0148	PASS
10	36	5179.9955	PASS	5179.9960	PASS	5179.9967	PASS	5179.9959	PASS
0	36	5180.0073	PASS	5180.0117	PASS	5180.0118	PASS	5180.0111	PASS
-10	36	5179.9913	PASS	5179.9903	PASS	5179.9940	PASS	5179.9910	PASS
-20	36	5180.0094	PASS	5180.0095	PASS	5180.0062	PASS	5180.0060	PASS

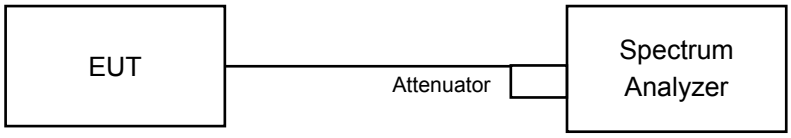
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	41.4	5179.9948	PASS	5179.9969	PASS	5179.9962	PASS	5179.9963	PASS
	36	5179.9955	PASS	5179.9960	PASS	5179.9967	PASS	5179.9959	PASS
	30.6	5179.9949	PASS	5179.9964	PASS	5179.9958	PASS	5179.9959	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

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.18	15.21	0.5	Pass
157	5785	15.19	15.18	0.5	Pass
165	5825	15.19	15.15	0.5	Pass

802.11n (HT20)

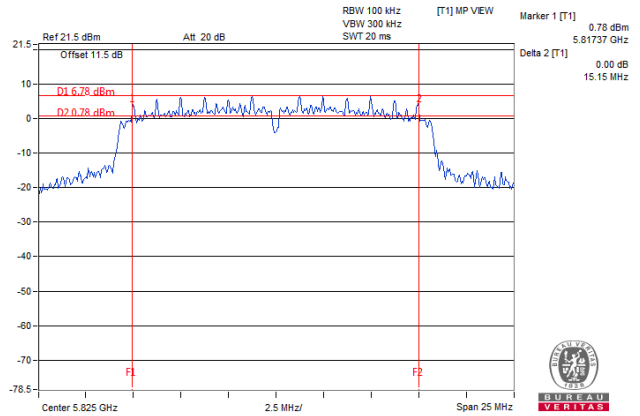
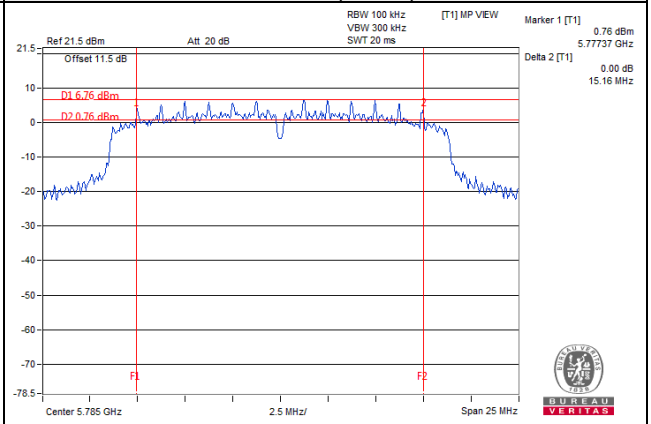
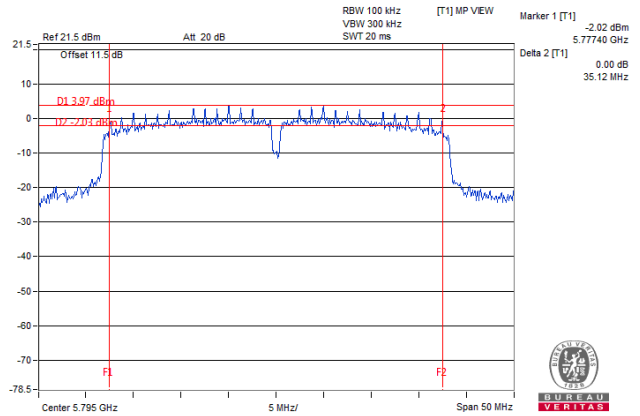
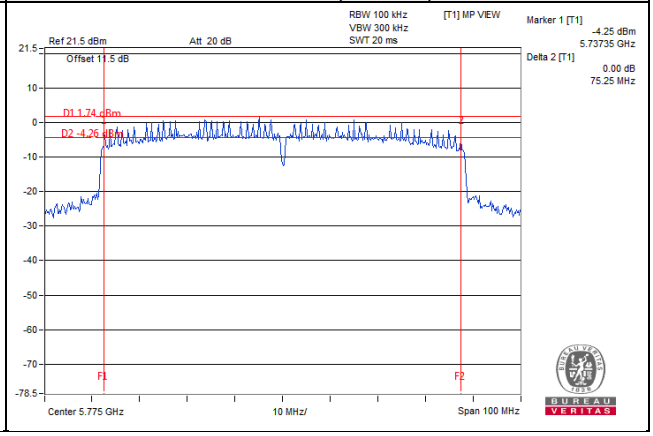
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.18	15.18	0.5	Pass
157	5785	15.18	15.16	0.5	Pass
165	5825	15.17	15.17	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.16	35.16	0.5	Pass
159	5795	35.12	35.14	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.29	75.25	0.5	Pass

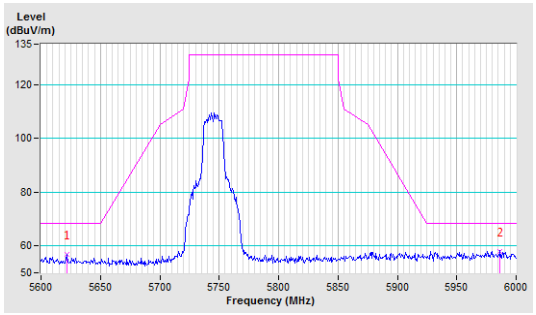
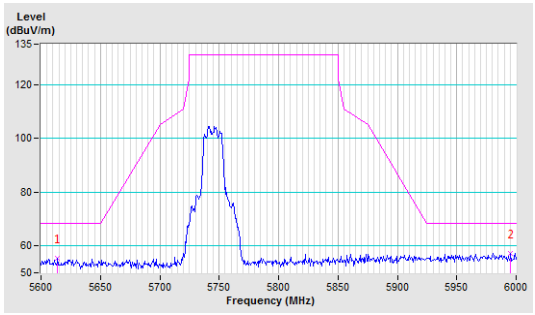
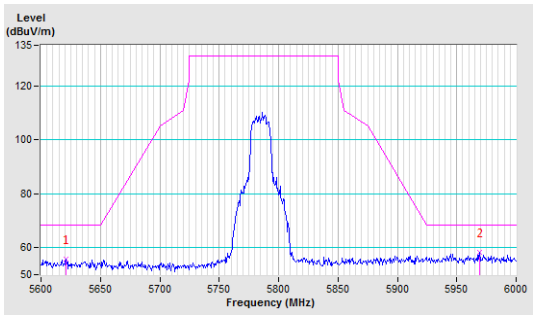
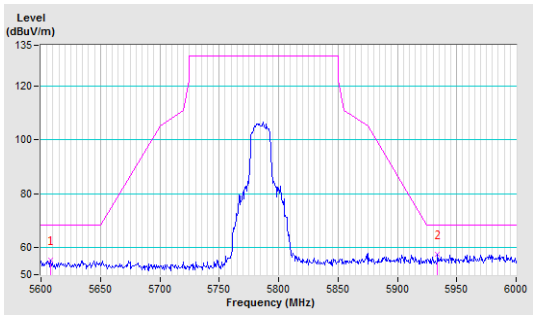
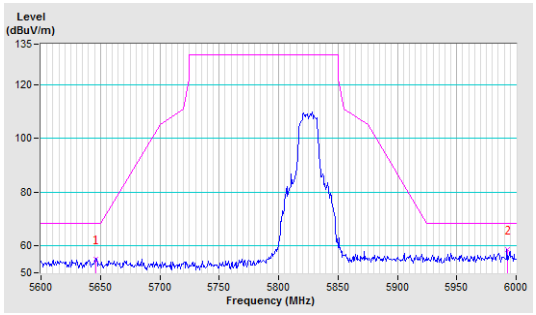
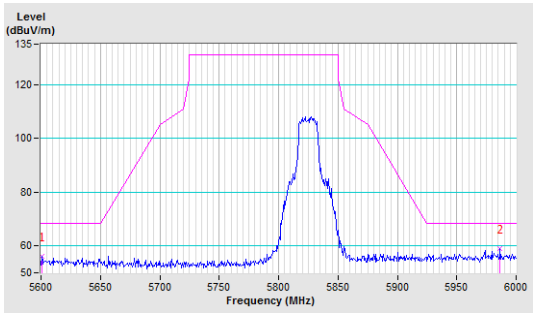
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

5 Pictures of Test Arrangements

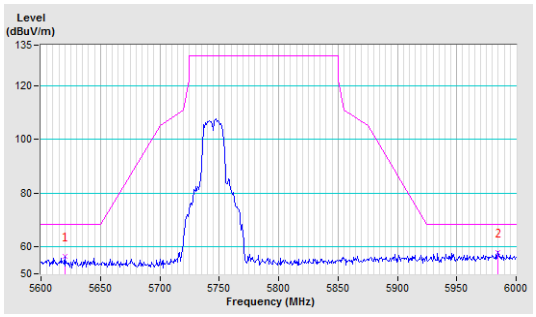
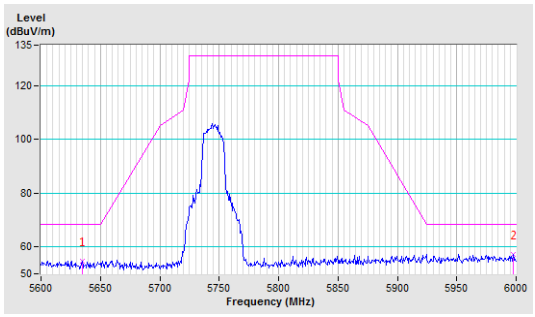
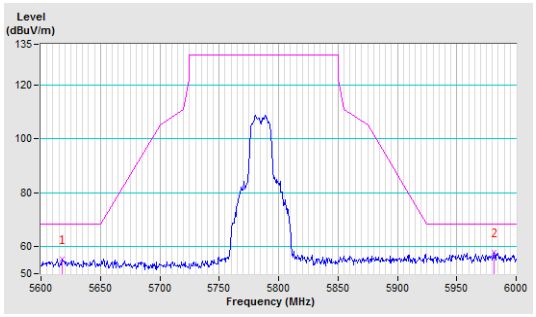
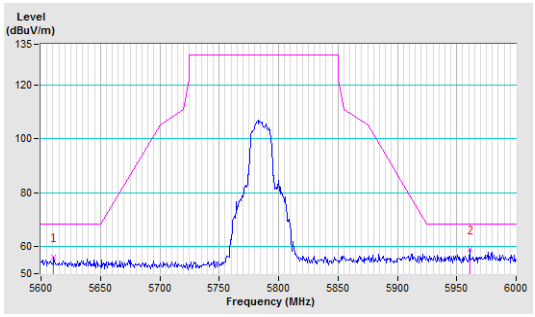
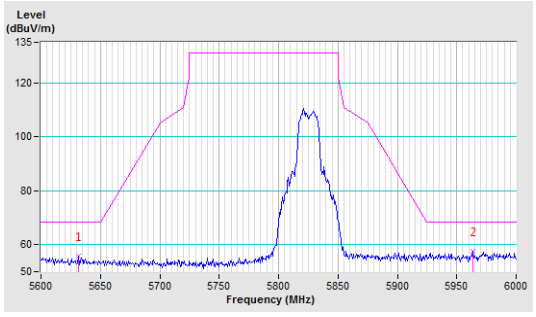
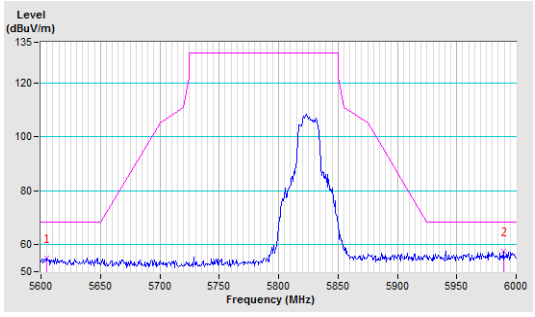
Please refer to the attached file (Test Setup Photo).

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

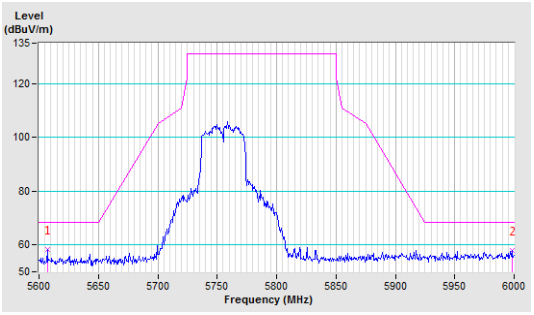
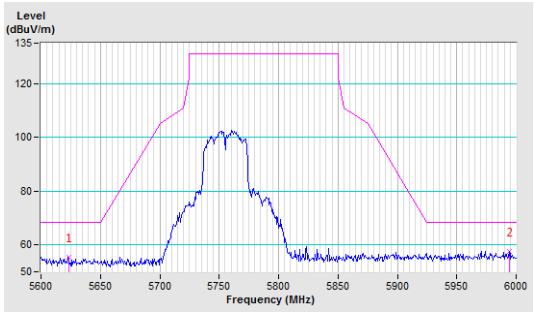
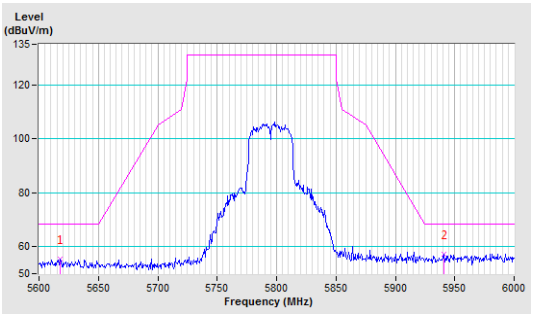
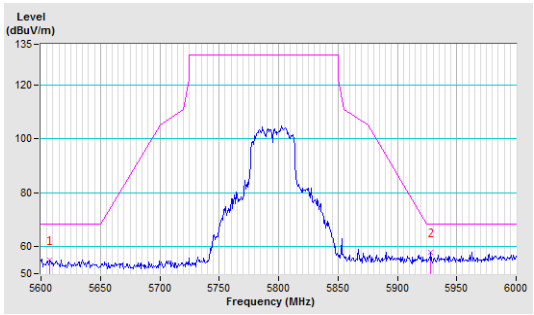
802.11a

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

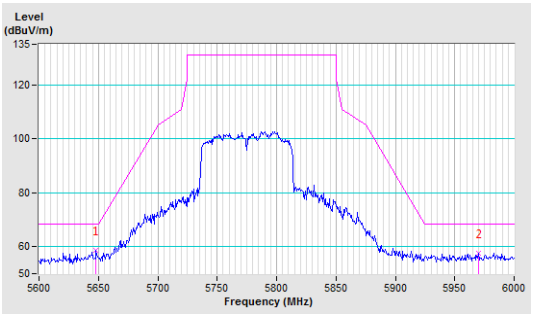
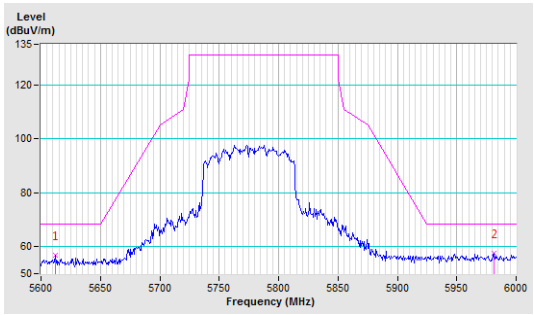
802.11n (HT20)

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.

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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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