FCC Test Report

Report No.:	RF170926C17-1
FCC ID:	S9E-121300
Test Model:	121300
Received Date:	Sep. 26, 2017
Test Date:	Oct. 24, 2017 ~ Nov. 03, 2017
Issued Date:	Nov. 16, 2017
Applicant:	Trimble Navigation Limited
Address:	345 SW Avery Ave Corvallis, Oregon, United States, 97333
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 (1):	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan, R.O.C.
Test Location (2):	No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C

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Release Control Record

Issue No.	Description	Date Issued
RF170926C17-1	Original Release	Nov. 16, 2017

1 Certificate of Conformity

Product:	Handheld PC
Brand:	Trimble
Test Model:	121300
Applicant:	Trimble Navigation Limited
Test Date:	Oct. 24, 2017 ~ Nov. 03, 2017
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

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

Prepared by : Rona Chen , **Date:** Nov. 16, 2017

Rona Chen / Specialist

Approved by : , **Date:** Nov. 16, 2017

Dylan Chiou / 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 -19.66 dB at 0.57228 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.04 dB at 5470.32 MHz. and 5145.05 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is I-pex.

*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	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Handheld PC		
Brand	Trimble		
Test Model	121300		
Power Supply Rating	19.0 Vdc (Adapter) 7.27 Vdc (Li-ion battery)		
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK		
Modulation Technology	OFDM		
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to MCS7 802.11ac: up to V9		
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5700 MHz, 5745 ~ 5825 MHz		
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5700 MHz: 12 for 802.11a, 802.11n (HT20) 6 for 802.11n (HT40) 3 for 802.11ac (VHT80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)		
Output Power	62.818 mW for 5180 ~ 5240 MHz 153.188 mW for 5260 ~ 5320 MHz 157.621 mW for 5500 ~ 5700 MHz 156.445 mW for 5745 ~ 5825 MHz		
Antenna Type	PIFA antenna with	-0.19 dBi gain (Main) -4.04 dBi gain (Aux.)	(5180 ~ 5240 MHz)
		-0.28 dBi gain (Main) -4.20 dBi gain (Aux.)	(5260 ~ 5320 MHz)
		-0.52 dBi gain (Main) -3.09 dBi gain (Aux.)	(5500 ~ 5700 MHz)
		-0.64 dBi gain (Main) -3.09 dBi gain (Aux.)	(5745 ~ 5825 MHz)
Antenna Connector	I-pex		
Accessory Device	Refer to Note as below		
Data Cable Supplied	Refer to Note as below		

Note:

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

Modulation Mode	Tx Function
802.11a	1TX
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 802.11n mode for HT20 / HT40 and 802.11ac mode for HT20 / HT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	DELTA ELECTRONICS, INC.	ADP-90MD H	I/P: 100-240 Vac, 50-60 Hz, 1.5 A O/P: 19 Vdc, 4.74 A
Battery	Trimble	121300	3.27 Vdc, 3150 mAh, 22.9 Wh
BT/WLAN Module	Qualcomm Atheros	QCNFA364A	--

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

For 5180 ~ 5240 MHz

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

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

For 5260 ~ 5320 MHz

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

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	62	5310

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5700 MHz

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

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

6 channels are provided for 802.11n (HT40):

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

3 channels are provided for 802.11ac (VHT80):

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

For 5745 ~ 5825 MHz:

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

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	SISO
B	√	-	-	√	MIMO

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

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
2. "-" means no effect.

Radiated Emission Test (Above 1 GHz):

☒ 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	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	5180-5240	802.11a	36 to 48	36, 44, 48	OFDM	BPSK	6.0
B		802.11n (HT20)	36 to 48	36, 44, 48	OFDM	BPSK	MCS0
		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	MCS0
		802.11ac (VHT80)	42	42	OFDM	BPSK	MCS0
A	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
B		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	MCS0
		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	MCS0
		802.11ac (VHT80)	58	58	OFDM	BPSK	MCS0
A	5500-5700	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
B		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	MCS0
		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	MCS0
		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	MCS0
A	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
B		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	MCS0
		802.11ac (VHT80)	155	155	OFDM	BPSK	MCS0

Radiated Emission Test (Below 1 GHz):

☒ 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	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
B	5180-5240	802.11ac (VHT80)	42	42	OFDM	BPSK	MCS0
	5260-5320	802.11n (HT40)	54 to 62	62	OFDM	BPSK	MCS0
	5500-5700	802.11n (HT40)	102 to 134	102	OFDM	BPSK	MCS0
	5745-5825	802.11n (HT40)	151 to 159	159	OFDM	BPSK	MCS0

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	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
B	5180-5320	802.11a	36 to 64	62	OFDM	BPSK	6.0

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	5180-5240	802.11a	36 to 48	36, 44, 48	OFDM	BPSK	6.0
B		802.11n (HT20)	36 to 48	36, 44, 48	OFDM	BPSK	MCS0
		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	MCS0
		802.11ac (VHT80)	42	42	OFDM	BPSK	MCS0
A	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
B		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	MCS0
		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	MCS0
		802.11ac (VHT80)	58	58	OFDM	BPSK	MCS0
A	5500-5700	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
B		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	MCS0
		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	MCS0
		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	MCS0
A	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
B		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	MCS0
		802.11ac (VHT80)	155	155	OFDM	BPSK	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang
APCM	25 deg. C, 65 % RH	7.27 Vdc	Luke Chen

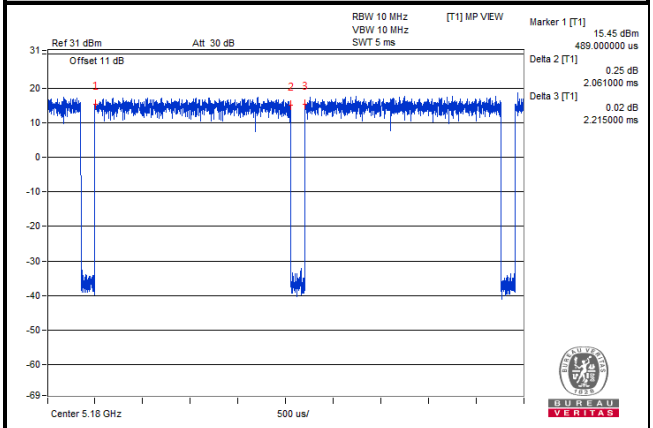
3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

Mode A

802.11a: Duty cycle = 2.061/2.215 = 0.930, Duty factor = 10 * log(1/0.930) = 0.31

802.11a



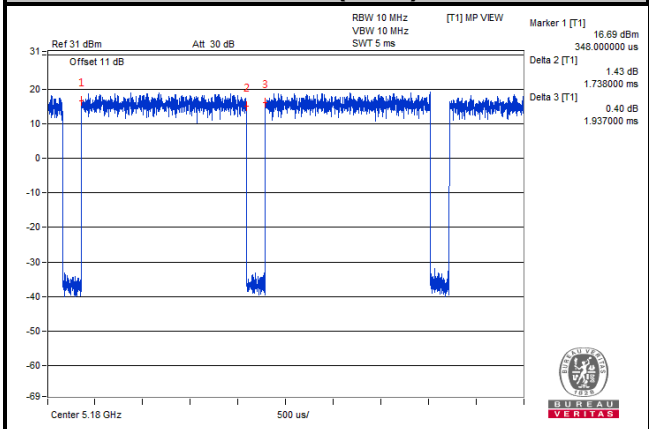
Mode B

802.11n (HT20): Duty cycle = 1.738/1.937 = 0.897, Duty factor = 10 * log(1/0.897) = 0.47

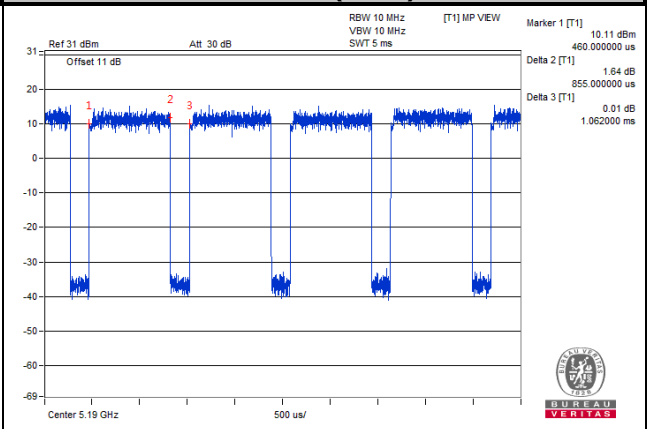
802.11n (HT40): Duty cycle = 0.855/1.062 = 0.805, Duty factor = 10 * log(1/0.805) = 0.94

802.11ac (VHT80): Duty cycle = 0.419/0.619 = 0.677, Duty factor = 10 * log(1/0.677) = 1.69

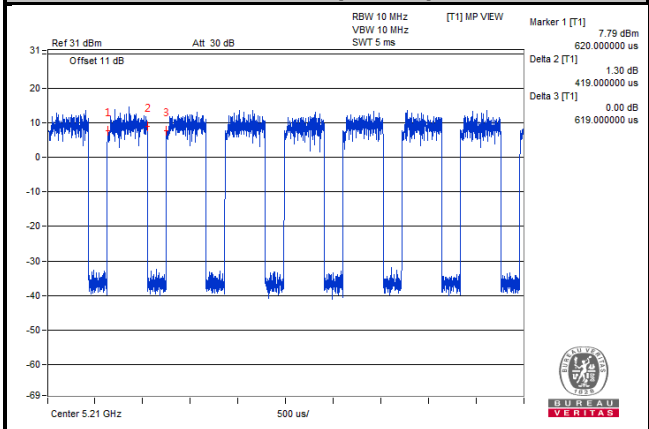
802.11n (HT20)



802.11n (HT40)



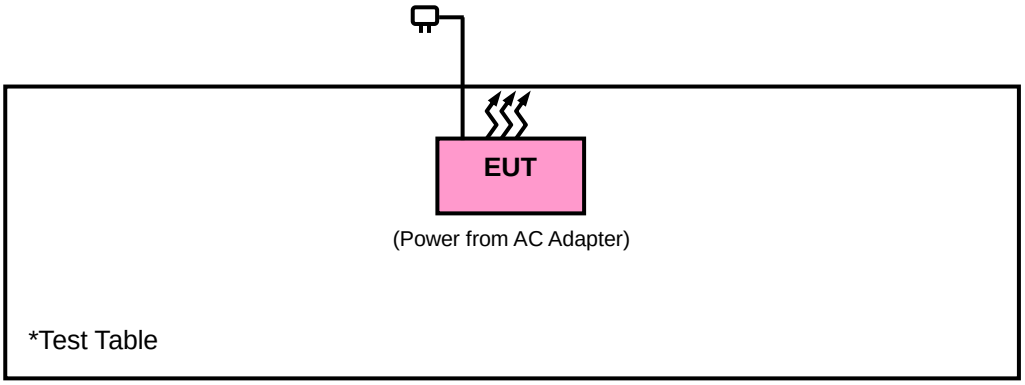
802.11ac (VHT80)



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

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)
789033 D02 General UNII Test Procedures New Rules v01r04
644545 D01 Guidance for IEEE 802 11ac v01r02
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

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 1000 MHz, 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 20 dB under any condition of modulation.

4.1.2 Limits of Unwanted Emission Out of the Restricted Bands

Applicable To		Limit	
789033 D02 General UNII Test Procedures New Rules v01r04		Field Strength at 3 m	
		PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Frequency Band	**Applicable To**	**EIRP Limit**	**Equivalent Field Strength at 3 m**
5150~5250 MHz	15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
5250~5350 MHz	15.407(b)(2)		
5470~5725 MHz	15.407(b)(3)		
5725~5850 MHz	15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2 (dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8 (dBμV/m) *3 PK:122.2 (dBμV/m) *4
	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	

*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.

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).

4.1.3 Test Instruments

Description & Manaufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Jul. 05, 2017	Jul. 04, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 16, 2016	Dec. 15, 2017
HORN Antenna ETS-Lindgren	3117	00143293	Dec. 29, 2016	Dec. 28, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 14, 2016	Dec. 13, 2017
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 17, 2017	Apr. 16, 2018
Bluetooth Tester	CBT	100980	Jun. 28, 2017	Jun. 27, 2019
Loop Antenna	HLA 6121	45745	May 19, 2017	May 18, 2018
Preamplifier Agilent	310N	187226	Jun. 23, 2017	Jun. 22, 2018
Preamplifier Agilent	83017A	MY39501357	Jun. 23, 2017	Jun. 22, 2018
Power Meter Anritsu	ML2495A	1012010	Aug. 15, 2017	Aug. 14, 2018
Power Sensor Anritsu	MA2411B	1315050	Aug. 15, 2017	Aug. 14, 2018
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 23, 2017	Jun. 22, 2018
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 23, 2017	Jun. 22, 2018
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 08, 2017	Sep. 07, 2018
DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2018
Digital Multimeter Fluke	87-III	70360742	Jun. 30, 2017	Jun. 29, 2018

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HsinTien Chamber 1.

3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.

4. The FCC Designation Number is TW0011. The number will be varied with the Lab location and scope as attached.

5. The IC Site Registration No. is IC7450I-1.

4.1.4 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) 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 detected 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:

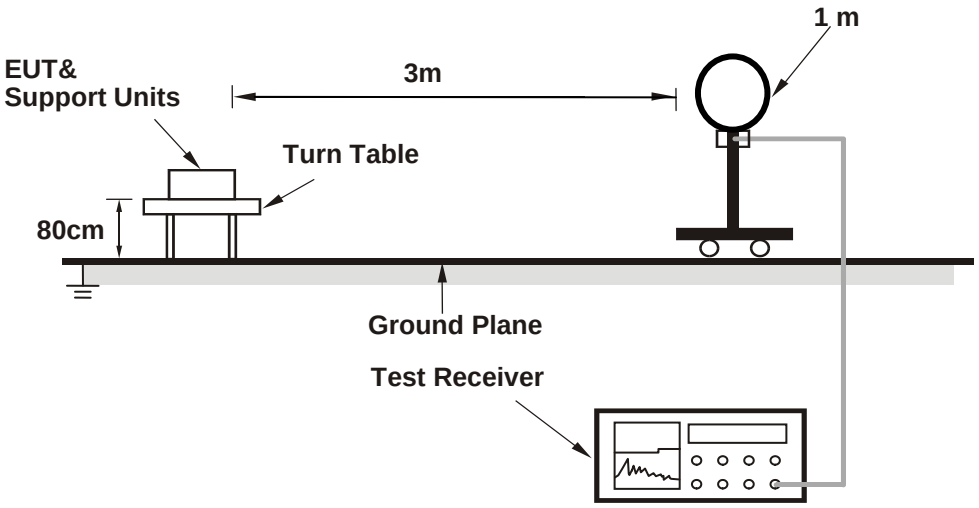
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1/T for Average (Duty cycle < 98 %) detection at frequency above 1 GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

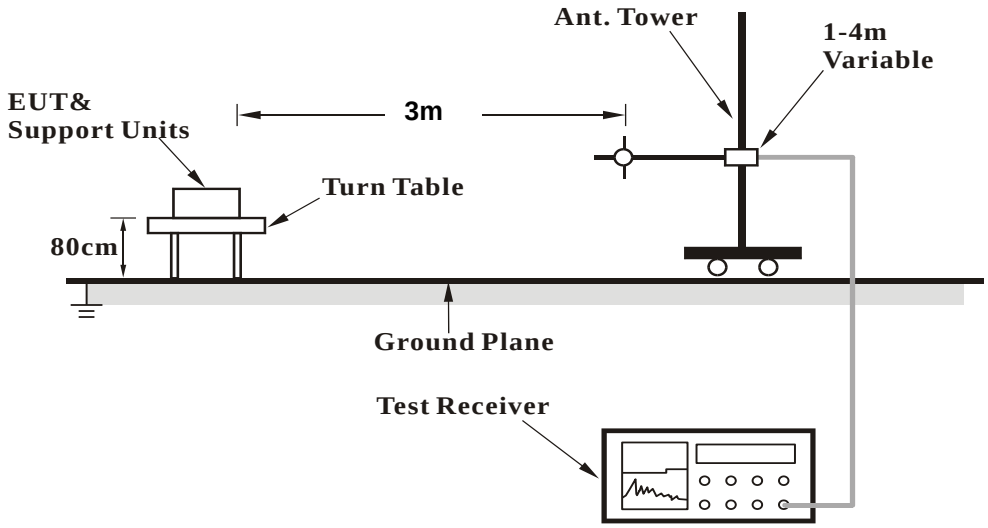
No deviation.

4.1.6 Test Set Up

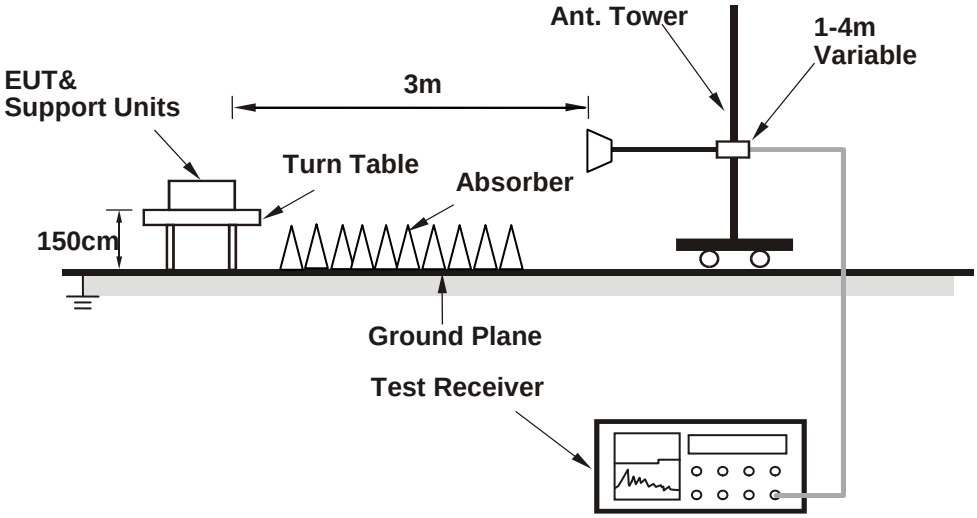
<Radiated emission below 30 MHz>



<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



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

4.1.7 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.8 Test Results

Above 1 GHz Data：

Mode A

802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 36	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.8	44.68	36.43	54	-9.32	34.12	8.13	34	235	140	Average
5148.8	55	46.75	74	-19	34.12	8.13	34	235	140	Peak
5180	100.35	92.04			34.15	8.16	34	235	140	Average
5180	107.07	98.76			34.15	8.16	34	235	140	Peak
*10360	56.48	42.18	68.2	-11.72	37.12	12.3	35.12	119	213	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	43.22	34.97	54	-10.78	34.12	8.13	34	100	119	Average
5150	54.12	45.87	74	-19.88	34.12	8.13	34	100	119	Peak
5180	97.13	88.82			34.15	8.16	34	100	119	Average
5180	104.7	96.39			34.15	8.16	34	100	119	Peak
*10360	56.71	42.41	68.2	-11.49	37.12	12.3	35.12	109	75	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 44	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5117.45	43.13	34.93	54	-10.87	34.09	8.1	33.99	235	140	Average
5117.45	54.04	45.84	74	-19.96	34.09	8.1	33.99	235	140	Peak
5220	100	91.61			34.17	8.22	34	235	140	Average
5220	107.01	98.62			34.17	8.22	34	235	140	Peak
5445.26	42.88	34.06	54	-11.12	34.35	8.51	34.04	235	140	Average
5445.26	53.96	45.14	74	-20.04	34.35	8.51	34.04	235	140	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5140.85	42.83	34.57	54	-11.17	34.12	8.13	33.99	100	119	Average
5140.85	53.65	45.39	74	-20.35	34.12	8.13	33.99	100	119	Peak
5220	97.08	88.69			34.17	8.22	34	100	119	Average
5220	104.19	95.8			34.17	8.22	34	100	119	Peak
5428.76	42.91	34.12	54	-11.09	34.35	8.48	34.04	100	119	Average
5428.76	53.9	45.11	74	-20.1	34.35	8.48	34.04	100	119	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5220 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 48	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	100.06	91.62			34.19	8.26	34.01	235	140	Average
5240	107.11	98.67			34.19	8.26	34.01	235	140	Peak
5459.12	42.88	34.06	54	-11.12	34.36	8.51	34.05	235	140	Average
5459.12	53.69	44.87	74	-20.31	34.36	8.51	34.05	235	140	Peak
*10480	56.55	42.04	68.2	-11.65	37.19	12.53	35.21	116	161	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	97.63	89.19			34.19	8.26	34.01	100	119	Average
5240	104.77	96.33			34.19	8.26	34.01	100	119	Peak
5459.01	42.91	34.09	54	-11.09	34.36	8.51	34.05	100	119	Average
5459.01	53.64	44.82	74	-20.36	34.36	8.51	34.05	100	119	Peak
*10480	58.36	43.85	68.2	-9.84	37.19	12.53	35.21	115	57	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 52	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5137.55	43.01	34.76	54	-10.99	34.11	8.13	33.99	235	140	Average
5137.55	53.78	45.53	74	-20.22	34.11	8.13	33.99	235	140	Peak
5260	103.65	95.19			34.21	8.26	34.01	235	140	Average
5260	110.32	101.86			34.21	8.26	34.01	235	140	Peak
*10520	57.17	42.58	68.2	-11.03	37.21	12.61	35.23	198	112	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5141	42.74	34.48	54	-11.26	34.12	8.13	33.99	100	119	Average
5141	53.35	45.09	74	-20.65	34.12	8.13	33.99	100	119	Peak
5260	100.41	91.95			34.21	8.26	34.01	100	119	Average
5260	107.14	98.68			34.21	8.26	34.01	100	119	Peak
*10520	56.64	42.05	68.2	-11.56	37.21	12.61	35.23	164	274	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 60	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5136.95	42.89	34.64	54	-11.11	34.11	8.13	33.99	235	140	Average
5136.95	53.34	45.09	74	-20.66	34.11	8.13	33.99	235	140	Peak
5300	103.55	95.01			34.24	8.32	34.02	235	140	Average
5300	110.75	102.21			34.24	8.32	34.02	235	140	Peak
5350.22	43.34	34.71	54	-10.66	34.28	8.38	34.03	235	140	Average
5350.22	53.84	45.21	74	-20.16	34.28	8.38	34.03	235	140	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5121.65	42.61	34.41	54	-11.39	34.09	8.1	33.99	100	119	Average
5121.65	53.79	45.59	74	-20.21	34.09	8.1	33.99	100	119	Peak
5300	100.42	91.88			34.24	8.32	34.02	100	119	Average
5300	107.04	98.5			34.24	8.32	34.02	100	119	Peak
5350.55	43.07	34.44	54	-10.93	34.28	8.38	34.03	100	119	Average
5350.55	53.64	45.01	74	-20.36	34.28	8.38	34.03	100	119	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 64	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	101.17	92.59			34.25	8.35	34.02	235	140	Average
5320	108.56	99.98			34.25	8.35	34.02	235	140	Peak
5350.33	45.41	36.78	54	-8.59	34.28	8.38	34.03	235	140	Average
5350.33	55.1	46.47	74	-18.9	34.28	8.38	34.03	235	140	Peak
10640	46.72	31.99	54	-7.28	37.31	12.71	35.29	132	335	Average
10640	57	42.27	74	-17	37.31	12.71	35.29	132	335	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	98.76	90.18			34.25	8.35	34.02	100	119	Average
5320	105.41	96.83			34.25	8.35	34.02	100	119	Peak
5350	44.41	35.78	54	-9.59	34.28	8.38	34.03	100	119	Average
5350	53.72	45.09	74	-20.28	34.28	8.38	34.03	100	119	Peak
10640	47.52	32.79	54	-6.48	37.31	12.71	35.29	159	126	Average
10640	56.83	42.1	74	-17.17	37.31	12.71	35.29	159	126	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 100	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5449.04	44.09	35.26	54	-9.91	34.36	8.51	34.04	219	120	Average
5449.04	54.98	46.15	74	-19.02	34.36	8.51	34.04	219	120	Peak
*5469.68	59.33	50.5	68.2	-8.87	34.37	8.51	34.05	219	120	Peak
5500	103.28	94.36			34.4	8.57	34.05	219	127	Average
5500	110.42	101.5			34.4	8.57	34.05	219	127	Peak
11000	48.15	33.07	54	-5.85	37.6	12.96	35.48	172	218	Average
11000	57.76	42.68	74	-16.24	37.6	12.96	35.48	172	218	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.76	43.25	34.43	54	-10.75	34.36	8.51	34.05	257	25	Average
5459.76	53.55	44.73	74	-20.45	34.36	8.51	34.05	257	25	Peak
*5470.48	53.53	44.7	68.2	-14.67	34.37	8.51	34.05	257	25	Peak
5500	99.94	91.02			34.4	8.57	34.05	257	36	Average
5500	107.39	98.47			34.4	8.57	34.05	257	36	Peak
11000	47.57	32.49	54	-6.43	37.6	12.96	35.48	149	131	Average
11000	57.55	42.47	74	-16.45	37.6	12.96	35.48	149	131	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 116	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5357.04	42.99	34.36	54	-11.01	34.28	8.38	34.03	211	122	Average
5357.04	54.21	45.58	74	-19.79	34.28	8.38	34.03	211	122	Peak
*5470.32	53.45	44.62	68.2	-14.75	34.37	8.51	34.05	211	122	Peak
5580	105.03	96.04			34.47	8.6	34.08	211	122	Average
5580	111.82	102.83			34.47	8.6	34.08	211	122	Peak
*5724.92	52.77	43.61	68.2	-15.43	34.62	8.65	34.11	211	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5450.8	42.8	33.98	54	-11.2	34.36	8.51	34.05	250	36	Average
5450.8	53.98	45.16	74	-20.02	34.36	8.51	34.05	250	36	Peak
*5470.8	52.42	43.56	68.2	-15.78	34.37	8.54	34.05	250	36	Peak
5580	101.8	92.81			34.47	8.6	34.08	250	36	Average
5580	109.58	100.59			34.47	8.6	34.08	250	36	Peak
*5724.36	52.48	43.32	68.2	-15.72	34.62	8.65	34.11	250	36	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 140	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	101.05	91.92			34.59	8.64	34.1	234	121	Average
5700	109.12	99.99			34.59	8.64	34.1	234	121	Peak
*5724.28	58.17	49.01	68.2	-10.03	34.62	8.65	34.11	234	121	Peak
11400	47.33	32.23	54	-6.67	37.84	12.67	35.41	139	257	Average
11400	57.66	42.56	74	-16.34	37.84	12.67	35.41	139	257	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	98.09	88.96			34.59	8.64	34.1	276	26	Average
5700	106.39	97.26			34.59	8.64	34.1	276	26	Peak
*5724.2	55.7	46.54	68.2	-12.5	34.62	8.65	34.11	276	26	Peak
11400	46.75	31.65	54	-7.25	37.84	12.67	35.41	128	34	Average
11400	56.85	41.75	74	-17.15	37.84	12.67	35.41	128	34	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 144	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5422.48	42.93	34.16	54	-11.07	34.33	8.48	34.04	232	120	Average
5422.48	53.35	44.58	74	-20.65	34.33	8.48	34.04	232	120	Peak
*5470.64	52.96	44.13	68.2	-15.24	34.37	8.51	34.05	232	120	Peak
5720	102.52	93.36			34.62	8.65	34.11	232	120	Average
5720	109.78	100.62			34.62	8.65	34.11	232	120	Peak
*5860	57.73	48.41	78.2	-20.47	34.76	8.7	34.14	232	120	Peak
*5862	57.9	48.57	68.2	-10.3	34.76	8.71	34.14	232	120	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5389.52	42.74	34.06	54	-11.26	34.31	8.41	34.04	256	28	Average
5389.52	54.13	45.45	74	-19.87	34.31	8.41	34.04	256	28	Peak
*5469.52	51.95	43.12	68.2	-16.25	34.37	8.51	34.05	256	28	Peak
5720	99.85	90.69			34.62	8.65	34.11	256	28	Average
5720	107.59	98.43			34.62	8.65	34.11	256	28	Peak
*5854	57.53	48.21	78.2	-20.67	34.76	8.7	34.14	256	28	Peak
*5866	57.74	48.41	68.2	-10.46	34.76	8.71	34.14	256	28	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	100.94	91.75			34.64	8.66	34.11	209	110	Average
5745	107.91	98.72			34.64	8.66	34.11	209	110	Peak
11490	47.48	32.36	54	-6.52	37.89	12.62	35.39	124	215	Average
11490	56.89	41.77	74	-17.11	37.89	12.62	35.39	124	215	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	98.75	89.56			34.64	8.66	34.11	248	27	Average
5745	106.37	97.18			34.64	8.66	34.11	248	27	Peak
11490	47.11	31.99	54	-6.89	37.89	12.62	35.39	187	5	Average
11490	57.4	42.28	74	-16.6	37.89	12.62	35.39	187	5	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5612.875	53.65	44.62	68.2	-14.55	34.5	8.61	34.08	209	110	Peak
5654.35	54.33	45.24	71.42	-17.09	34.56	8.63	34.1	209	110	Peak
5922.625	51.71	42.31	69.96	-18.25	34.83	8.73	34.16	209	110	Peak
*6021.325	54.44	44.93	68.2	-13.76	34.92	8.77	34.18	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5506.3	54.53	45.62	68.2	-13.67	34.4	8.57	34.06	248	27	Peak
5652.25	50.05	40.96	69.86	-19.81	34.56	8.62	34.09	248	27	Peak
5922.625	51.87	42.47	69.96	-18.09	34.83	8.73	34.16	248	27	Peak
*6001.375	53.88	44.39	68.2	-14.32	34.9	8.76	34.17	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 157	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	102.83	93.6			34.68	8.68	34.13	209	110	Average
5785	110.06	100.83			34.68	8.68	34.13	209	110	Peak
11570	47.46	32.15	54	-6.54	38	12.68	35.37	124	202	Average
11570	57.28	41.97	74	-16.72	38	12.68	35.37	124	202	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	100.3	91.07			34.68	8.68	34.13	248	27	Average
5785	108.05	98.82			34.68	8.68	34.13	248	27	Peak
11570	47.54	32.23	54	-6.46	38	12.68	35.37	125	255	Average
11570	57.19	41.88	74	-16.81	38	12.68	35.37	125	255	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5604.475	53.37	44.34	68.2	-14.83	34.5	8.61	34.08	209	110	Peak
5652.25	50.41	41.32	69.86	-19.45	34.56	8.62	34.09	209	110	Peak
5922.625	51.13	41.73	69.96	-18.83	34.83	8.73	34.16	209	110	Peak
*6015.025	53.84	44.34	68.2	-14.36	34.92	8.76	34.18	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5618.65	53.55	44.5	68.2	-14.65	34.52	8.61	34.08	248	27	Peak
5652.25	50.89	41.8	69.86	-18.97	34.56	8.62	34.09	248	27	Peak
5923.15	50.47	41.07	69.57	-19.1	34.83	8.73	34.16	248	27	Peak
*5931.025	53.6	44.2	68.2	-14.6	34.83	8.73	34.16	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 165	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	102.46	93.17			34.73	8.69	34.13	209	110	Average
5825	110.29	101			34.73	8.69	34.13	209	110	Peak
11650	47.7	32.17	54	-6.3	38.09	12.8	35.36	102	104	Average
11650	57.7	42.17	74	-16.3	38.09	12.8	35.36	102	104	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	100.52	91.23			34.73	8.69	34.13	248	27	Average
5825	108.05	98.76			34.73	8.69	34.13	248	27	Peak
11650	47.77	32.24	54	-6.23	38.09	12.8	35.36	153	230	Average
11650	58.43	42.9	74	-15.57	38.09	12.8	35.36	153	230	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5569.3	53.96	44.97	68.2	-14.24	34.47	8.59	34.07	209	110	Peak
5656.975	52.92	43.83	73.36	-20.44	34.56	8.63	34.1	209	110	Peak
5921.575	52.9	43.5	70.73	-17.83	34.83	8.73	34.16	209	110	Peak
*6008.2	54.67	45.16	68.2	-13.53	34.92	8.76	34.17	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5628.1	54.02	44.96	68.2	-14.18	34.52	8.62	34.08	248	27	Peak
5652.25	52.14	43.05	69.86	-17.72	34.56	8.62	34.09	248	27	Peak
5919.475	52.72	43.34	72.29	-19.57	34.81	8.73	34.16	248	27	Peak
*5991.925	54.22	44.73	68.2	-13.98	34.9	8.76	34.17	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band

Mode B

802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 36	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.95	44.75	36.5	54	-9.25	34.12	8.13	34	235	140	Average
5148.95	54.32	46.07	74	-19.68	34.12	8.13	34	235	140	Peak
5180	99.55	91.24			34.15	8.16	34	235	140	Average
5180	106.59	98.28			34.15	8.16	34	235	140	Peak
*10360	56.32	42.02	68.2	-11.88	37.12	12.3	35.12	100	188	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.1	43.44	35.19	54	-10.56	34.12	8.13	34	100	119	Average
5149.1	53.02	44.77	74	-20.98	34.12	8.13	34	100	119	Peak
5180	96.34	88.03			34.15	8.16	34	100	119	Average
5180	103.19	94.88			34.15	8.16	34	100	119	Peak
*10360	56.43	42.13	68.2	-11.77	37.12	12.3	35.12	105	274	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 44	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5146.1	43.06	34.81	54	-10.94	34.12	8.13	34	235	140	Average
5146.1	54.5	46.25	74	-19.5	34.12	8.13	34	235	140	Peak
5220	99.47	91.08			34.17	8.22	34	235	140	Average
5220	106.73	98.34			34.17	8.22	34	235	140	Peak
5447.02	42.89	34.06	54	-11.11	34.36	8.51	34.04	235	140	Average
5447.02	53.22	44.39	74	-20.78	34.36	8.51	34.04	235	140	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5147.9	42.72	34.47	54	-11.28	34.12	8.13	34	100	119	Average
5147.9	53.22	44.97	74	-20.78	34.12	8.13	34	100	119	Peak
5220	96.46	88.07			34.17	8.22	34	100	119	Average
5220	103.26	94.87			34.17	8.22	34	100	119	Peak
5445.92	42.82	33.99	54	-11.18	34.36	8.51	34.04	100	119	Average
5445.92	53.24	44.41	74	-20.76	34.36	8.51	34.04	100	119	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5220 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 48	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	99.36	90.92			34.19	8.26	34.01	235	140	Average
5240	106.44	98			34.19	8.26	34.01	235	140	Peak
5426.89	43	34.23	54	-11	34.33	8.48	34.04	235	140	Average
5426.89	52.95	44.18	74	-21.05	34.33	8.48	34.04	235	140	Peak
*10480	56.19	41.68	68.2	-12.01	37.19	12.53	35.21	119	325	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	96.19	87.75			34.19	8.26	34.01	100	119	Average
5240	103.84	95.4			34.19	8.26	34.01	100	119	Peak
5441.96	42.75	33.96	54	-11.25	34.35	8.48	34.04	100	119	Average
5441.96	53.73	44.94	74	-20.27	34.35	8.48	34.04	100	119	Peak
*10480	58	43.49	68.2	-10.2	37.19	12.53	35.21	102	104	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 52	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5141.6	42.88	34.62	54	-11.12	34.12	8.13	33.99	235	140	Average
5141.6	53.35	45.09	74	-20.65	34.12	8.13	33.99	235	140	Peak
5260	102.55	94.09			34.21	8.26	34.01	235	140	Average
5260	109.51	101.05			34.21	8.26	34.01	235	140	Peak
*10520	56.83	42.24	68.2	-11.37	37.21	12.61	35.23	163	305	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5115.65	42.76	34.56	54	-11.24	34.09	8.1	33.99	100	119	Average
5115.65	54.67	46.47	74	-19.33	34.09	8.1	33.99	100	119	Peak
5260	99.49	91.03			34.21	8.26	34.01	100	119	Average
5260	106.53	98.07			34.21	8.26	34.01	100	119	Peak
*10520	56.43	41.84	68.2	-11.77	37.21	12.61	35.23	125	101	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 60	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5133.2	42.71	34.46	54	-11.29	34.11	8.13	33.99	235	119	Average
5133.2	53.43	45.18	74	-20.57	34.11	8.13	33.99	235	119	Peak
5300	102.49	93.95			34.24	8.32	34.02	235	119	Average
5300	109.2	100.66			34.24	8.32	34.02	235	119	Peak
5350.11	43.35	34.72	54	-10.65	34.28	8.38	34.03	235	119	Average
5350.11	53.41	44.78	74	-20.59	34.28	8.38	34.03	235	119	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5144	42.74	34.49	54	-11.26	34.12	8.13	34	100	119	Average
5144	53.45	45.2	74	-20.55	34.12	8.13	34	100	119	Peak
5300	99.75	91.21			34.24	8.32	34.02	100	119	Average
5300	106.91	98.37			34.24	8.32	34.02	100	119	Peak
5350.33	42.9	34.27	54	-11.1	34.28	8.38	34.03	100	119	Average
5350.33	52.98	44.35	74	-21.02	34.28	8.38	34.03	100	119	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 64	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	102.49	93.91			34.25	8.35	34.02	235	140	Average
5320	109.1	100.52			34.25	8.35	34.02	235	140	Peak
5350	47.65	39.02	54	-6.35	34.28	8.38	34.03	235	119	Average
5350	57.8	49.17	74	-16.2	34.28	8.38	34.03	235	119	Peak
10640	46.55	31.82	54	-7.45	37.31	12.71	35.29	112	263	Average
10640	56.39	41.66	74	-17.61	37.31	12.71	35.29	112	263	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	99.43	90.85			34.25	8.35	34.02	100	119	Average
5320	106.47	97.89			34.25	8.35	34.02	100	119	Peak
5350.33	45.36	36.73	54	-8.64	34.28	8.38	34.03	100	119	Average
5350.33	55.4	46.77	74	-18.6	34.28	8.38	34.03	100	119	Peak
10640	46.26	31.53	54	-7.74	37.31	12.71	35.29	182	75	Average
10640	56.62	41.89	74	-17.38	37.31	12.71	35.29	182	75	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 100	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.16	44.3	35.48	54	-9.7	34.36	8.51	34.05	182	107	Average
5458.16	54.96	46.14	74	-19.04	34.36	8.51	34.05	182	107	Peak
*5470.96	59.01	50.15	68.2	-9.19	34.37	8.54	34.05	182	107	Peak
5500	103.27	94.35			34.4	8.57	34.05	219	127	Average
5500	109.68	100.76			34.4	8.57	34.05	219	127	Peak
11000	48.39	33.31	54	-5.61	37.6	12.96	35.48	121	108	Average
11000	57.62	42.54	74	-16.38	37.6	12.96	35.48	121	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.92	43.22	34.4	54	-10.78	34.36	8.51	34.05	263	42	Average
5459.92	53.31	44.49	74	-20.69	34.36	8.51	34.05	263	42	Peak
*5470.48	55.85	47.02	68.2	-12.35	34.37	8.51	34.05	263	42	Peak
5500	99.8	90.88			34.4	8.57	34.05	257	36	Average
5500	107.24	98.32			34.4	8.57	34.05	257	36	Peak
11000	47.6	32.52	54	-6.4	37.6	12.96	35.48	142	177	Average
11000	57.48	42.4	74	-16.52	37.6	12.96	35.48	142	177	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 116	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5439.76	43.01	34.22	54	-10.99	34.35	8.48	34.04	211	122	Average
5439.76	53.44	44.65	74	-20.56	34.35	8.48	34.04	211	122	Peak
*5469.52	51.89	43.06	68.2	-16.31	34.37	8.51	34.05	211	122	Peak
5580	104.7	95.71			34.47	8.6	34.08	211	122	Average
5580	111.91	102.92			34.47	8.6	34.08	211	122	Peak
*5725.96	52.86	43.7	68.2	-15.34	34.62	8.65	34.11	211	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5356.08	42.81	34.18	54	-11.19	34.28	8.38	34.03	250	36	Average
5356.08	53.84	45.21	74	-20.16	34.28	8.38	34.03	250	36	Peak
*5469.68	52.25	43.42	68.2	-15.95	34.37	8.51	34.05	250	36	Peak
5580	101.8	92.81			34.47	8.6	34.08	250	36	Average
5580	109.11	100.12			34.47	8.6	34.08	250	36	Peak
*5725.64	52.86	43.7	68.2	-15.34	34.62	8.65	34.11	250	36	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 140	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	99.79	90.66			34.59	8.64	34.1	234	121	Average
5700	108.17	99.04			34.59	8.64	34.1	234	121	Peak
*5723.96	56.72	47.56	68.2	-11.48	34.62	8.65	34.11	234	121	Peak
11400	47.32	32.22	54	-6.68	37.84	12.67	35.41	195	253	Average
11400	57.48	42.38	74	-16.52	37.84	12.67	35.41	195	253	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	96.93	87.8			34.59	8.64	34.1	276	26	Average
5700	105.54	96.41			34.59	8.64	34.1	276	26	Peak
*5724.84	54.78	45.62	68.2	-13.42	34.62	8.65	34.11	276	26	Peak
11400	46.83	31.73	54	-7.17	37.84	12.67	35.41	147	192	Average
11400	57.03	41.93	74	-16.97	37.84	12.67	35.41	147	192	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 144	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5444.56	42.89	34.1	54	-11.11	34.35	8.48	34.04	232	112	Average
5444.56	53.49	44.7	74	-20.51	34.35	8.48	34.04	232	112	Peak
*5469.84	53.45	44.62	68.2	-14.75	34.37	8.51	34.05	232	112	Peak
5720	103.07	93.91			34.62	8.65	34.11	232	112	Average
5720	110.43	101.27			34.62	8.65	34.11	232	112	Peak
*5856	57.94	48.62	78.2	-20.26	34.76	8.7	34.14	232	112	Peak
*5862	57.81	48.48	68.2	-10.39	34.76	8.71	34.14	232	112	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5457.52	42.78	33.96	54	-11.22	34.36	8.51	34.05	256	28	Average
5457.52	53.21	44.39	74	-20.79	34.36	8.51	34.05	256	28	Peak
*5470.16	51.71	42.88	68.2	-16.49	34.37	8.51	34.05	256	28	Peak
5720	99.7	90.54			34.62	8.65	34.11	256	28	Average
5720	107.83	98.67			34.62	8.65	34.11	256	28	Peak
*5854	58.62	49.3	78.2	-19.58	34.76	8.7	34.14	256	28	Peak
*5862	57.85	48.52	68.2	-10.35	34.76	8.71	34.14	256	28	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	100.54	91.35			34.64	8.66	34.11	209	110	Average
5745	108.49	99.3			34.64	8.66	34.11	209	110	Peak
11490	47.01	31.89	54	-6.99	37.89	12.62	35.39	124	118	Average
11490	56.89	41.77	74	-17.11	37.89	12.62	35.39	124	118	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	99.28	90.09			34.64	8.66	34.11	248	27	Average
5745	107.03	97.84			34.64	8.66	34.11	248	27	Peak
11490	47.14	32.02	54	-6.86	37.89	12.62	35.39	124	195	Average
11490	57.4	42.28	74	-16.6	37.89	12.62	35.39	124	195	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5567.725	54.64	45.65	68.2	-13.56	34.47	8.59	34.07	209	110	Peak
5652.25	51.91	42.82	69.86	-17.95	34.56	8.62	34.09	209	110	Peak
5923.15	52.56	43.16	69.57	-17.01	34.83	8.73	34.16	209	110	Peak
*5997.7	53.99	44.5	68.2	-14.21	34.9	8.76	34.17	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5592.4	53.99	44.98	68.2	-14.21	34.49	8.6	34.08	248	27	Peak
5652.25	49.89	40.8	69.86	-19.97	34.56	8.62	34.09	248	27	Peak
5922.625	51.16	41.76	69.96	-18.8	34.83	8.73	34.16	248	27	Peak
*5984.575	54.18	44.72	68.2	-14.02	34.88	8.75	34.17	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 157	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	102.59	93.36			34.68	8.68	34.13	209	110	Average
5785	110.2	100.97			34.68	8.68	34.13	209	110	Peak
11570	47.43	32.12	54	-6.57	38	12.68	35.37	102	147	Average
11570	57.28	41.97	74	-16.72	38	12.68	35.37	102	147	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	101.48	92.25			34.68	8.68	34.13	248	27	Average
5785	109.45	100.22			34.68	8.68	34.13	248	27	Peak
11570	47.33	32.02	54	-6.67	38	12.68	35.37	165	222	Average
11570	57.19	41.88	74	-16.81	38	12.68	35.37	165	222	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5644.375	53.72	44.65	68.2	-14.48	34.54	8.62	34.09	209	110	Peak
5652.775	51.26	42.16	70.25	-18.99	34.56	8.63	34.09	209	110	Peak
5923.675	51.47	42.07	69.18	-17.71	34.83	8.73	34.16	209	110	Peak
*5976.175	53.96	44.5	68.2	-14.24	34.88	8.75	34.17	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5624.425	53	43.95	68.2	-15.2	34.52	8.61	34.08	248	27	Peak
5652.25	50.08	40.99	69.86	-19.78	34.56	8.62	34.09	248	27	Peak
5922.625	49.22	39.82	69.96	-20.74	34.83	8.73	34.16	248	27	Peak
*5986.15	54.17	44.71	68.2	-14.03	34.88	8.75	34.17	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 165	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	102.52	93.23			34.73	8.69	34.13	209	110	Average
5825	110.45	101.16			34.73	8.69	34.13	209	110	Peak
11650	47.64	32.11	54	-6.36	38.09	12.8	35.36	111	147	Average
11650	57.7	42.17	74	-16.3	38.09	12.8	35.36	111	147	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	100.29	91			34.73	8.69	34.13	248	27	Average
5825	108.25	98.96			34.73	8.69	34.13	248	27	Peak
11650	47.53	32	54	-6.47	38.09	12.8	35.36	153	332	Average
11650	58.43	42.9	74	-15.57	38.09	12.8	35.36	153	332	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5632.825	53.34	44.27	68.2	-14.86	34.54	8.62	34.09	209	110	Peak
5654.35	51.39	42.3	71.42	-20.03	34.56	8.63	34.1	209	110	Peak
5921.575	52.94	43.54	70.73	-17.79	34.83	8.73	34.16	209	110	Peak
*5930.5	54.36	44.96	68.2	-13.84	34.83	8.73	34.16	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5535.7	53.19	44.25	68.2	-15.01	34.43	8.58	34.07	248	27	Peak
5653.825	52.66	43.57	71.03	-18.37	34.56	8.63	34.1	248	27	Peak
5921.05	53.39	44.01	71.12	-17.73	34.81	8.73	34.16	248	27	Peak
*5987.2	53.97	44.51	68.2	-14.23	34.88	8.75	34.17	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	50.24	41.99	54	-3.76	34.12	8.13	34	235	134	Average
5150	60.82	52.57	74	-13.18	34.12	8.13	34	235	134	Peak
5190	96.66	88.32			34.15	8.19	34	235	140	Average
5190	103.38	95.04			34.15	8.19	34	235	140	Peak
5391.47	43.37	34.69	54	-10.63	34.31	8.41	34.04	235	140	Average
5391.47	55.16	46.48	74	-18.84	34.31	8.41	34.04	235	140	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.85	48.39	40.14	54	-5.61	34.12	8.13	34	100	119	Average
5149.85	59.73	51.48	74	-14.27	34.12	8.13	34	100	119	Peak
5190	93.95	85.61			34.15	8.19	34	100	119	Average
5190	100.99	92.65			34.15	8.19	34	100	119	Peak
5436.79	43.37	34.58	54	-10.63	34.35	8.48	34.04	100	119	Average
5436.79	54.52	45.73	74	-19.48	34.35	8.48	34.04	100	119	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 46	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.2	43.34	35.09	54	-10.66	34.12	8.13	34	235	140	Average
5148.2	57.81	49.56	74	-16.19	34.12	8.13	34	235	140	Peak
5230	96.22	87.82			34.19	8.22	34.01	235	140	Average
5230	103.7	95.3			34.19	8.22	34.01	235	140	Peak
5428.1	42.88	34.11	54	-11.12	34.33	8.48	34.04	235	140	Average
5428.1	54.92	46.15	74	-19.08	34.33	8.48	34.04	235	140	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5144.3	42.86	34.61	54	-11.14	34.12	8.13	34	100	119	Average
5144.3	53.57	45.32	74	-20.43	34.12	8.13	34	100	119	Peak
5230	93.62	85.22			34.19	8.22	34.01	100	119	Average
5230	100.84	92.44			34.19	8.22	34.01	100	119	Peak
5460	42.76	33.94	54	-11.24	34.36	8.51	34.05	100	119	Average
5460	53.72	44.9	74	-20.28	34.36	8.51	34.05	100	119	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5230 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 54	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5145.65	42.9	34.65	54	-11.1	34.12	8.13	34	235	143	Average
5145.65	54.88	46.63	74	-19.12	34.12	8.13	34	235	143	Peak
5270	97.2	88.71			34.21	8.29	34.01	235	143	Average
5270	105.44	96.95			34.21	8.29	34.01	235	143	Peak
5355.17	43.14	34.51	54	-10.86	34.28	8.38	34.03	240	134	Average
5355.17	58.09	49.46	74	-15.91	34.28	8.38	34.03	240	134	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5132.15	43.13	34.91	54	-10.87	34.11	8.1	33.99	102	121	Average
5132.15	53.46	45.24	74	-20.54	34.11	8.1	33.99	102	121	Peak
5270	96.07	87.58			34.21	8.29	34.01	102	121	Average
5270	103.59	95.1			34.21	8.29	34.01	102	121	Peak
5351.1	43.35	34.72	54	-10.65	34.28	8.38	34.03	104	126	Average
5351.1	58.03	49.4	74	-15.97	34.28	8.38	34.03	104	126	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5270 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 62	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5123.6	42.76	34.54	54	-11.24	34.11	8.1	33.99	225	130	Average
5123.6	52.45	44.23	74	-21.55	34.11	8.1	33.99	225	130	Peak
5310	97.65	89.1			34.25	8.32	34.02	225	130	Average
5310	104.49	95.94			34.25	8.32	34.02	225	130	Peak
5351.54	52.23	43.6	54	-1.77	34.28	8.38	34.03	225	130	Average
5351.54	62.07	53.44	74	-11.93	34.28	8.38	34.03	225	130	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5038.4	42.86	34.79	54	-11.14	34.04	8	33.97	261	285	Average
5038.4	53.48	45.41	74	-20.52	34.04	8	33.97	261	285	Peak
5310	95.86	87.31			34.25	8.32	34.02	261	285	Average
5310	102.98	94.43			34.25	8.32	34.02	261	285	Peak
5351.21	51.24	42.61	54	-2.76	34.28	8.38	34.03	261	285	Average
5351.21	60.62	51.99	74	-13.38	34.28	8.38	34.03	261	285	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 102	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5457.36	47.79	38.97	54	-6.21	34.36	8.51	34.05	199	246	Average
5457.36	59.07	50.25	74	-14.93	34.36	8.51	34.05	199	246	Peak
*5470.16	63.93	55.1	68.2	-4.27	34.37	8.51	34.05	199	246	Peak
5510	97.78	88.87			34.4	8.57	34.06	228	285	Average
5510	103.81	94.9			34.4	8.57	34.06	228	285	Peak
*5724.76	52.22	43.06	68.2	-15.98	34.62	8.65	34.11	228	285	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.76	49.61	40.79	54	-4.39	34.36	8.51	34.05	225	122	Average
5459.76	61.55	52.73	74	-12.45	34.36	8.51	34.05	209	122	Peak
***5470.32**	**67.16**	**58.33**	**68.2**	**-1.04**	**34.37**	**8.51**	**34.05**	**209**	**122**	**Peak**
5510	99.02	90.11			34.4	8.57	34.06	225	122	Average
5510	105.86	96.95			34.4	8.57	34.06	225	122	Peak
*5725.88	51.85	42.69	68.2	-16.35	34.62	8.65	34.11	225	122	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 110	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5454.8	44.02	35.2	54	-9.98	34.36	8.51	34.05	211	122	Average
5454.8	58.79	49.97	74	-15.21	34.36	8.51	34.05	211	122	Peak
*5469.52	56.72	47.89	68.2	-11.48	34.37	8.51	34.05	211	122	Peak
5550	101.9	92.93			34.45	8.59	34.07	211	122	Average
5550	108.54	99.57			34.45	8.59	34.07	211	122	Peak
*5724.52	54.78	45.62	68.2	-13.42	34.62	8.65	34.11	211	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5452.24	43.24	34.42	54	-10.76	34.36	8.51	34.05	250	36	Average
5452.24	56.88	48.06	74	-17.12	34.36	8.51	34.05	250	36	Peak
*5468.88	58.34	49.51	68.2	-9.86	34.37	8.51	34.05	250	36	Peak
5550	98.47	89.5			34.45	8.59	34.07	250	36	Average
5550	105.31	96.34			34.45	8.59	34.07	250	36	Peak
*5725.8	54.61	45.45	68.2	-13.59	34.62	8.65	34.11	250	36	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 134	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5448.56	43.48	34.65	54	-10.52	34.36	8.51	34.04	234	121	Average
5448.56	54.7	45.87	74	-19.3	34.36	8.51	34.04	234	121	Peak
*5468.4	52.3	43.47	68.2	-15.9	34.37	8.51	34.05	234	121	Peak
5670	101.4	92.3			34.57	8.63	34.1	234	121	Average
5670	108.2	99.1			34.57	8.63	34.1	234	121	Peak
*5724.52	60.56	51.4	68.2	-7.64	34.62	8.65	34.11	206	115	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5421.04	43.26	34.49	54	-10.74	34.33	8.48	34.04	276	26	Average
5421.04	54.15	45.38	74	-19.85	34.33	8.48	34.04	276	26	Peak
*5468.24	52.73	43.9	68.2	-15.47	34.37	8.51	34.05	276	26	Peak
5670	98.53	89.43			34.57	8.63	34.1	276	26	Average
5670	105.66	96.56			34.57	8.63	34.1	276	26	Peak
*5726.04	57.7	48.54	68.2	-10.5	34.62	8.65	34.11	276	38	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5670 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 142	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5433.52	42.99	34.2	54	-11.01	34.35	8.48	34.04	232	112	Average
5433.52	54.02	45.23	74	-19.98	34.35	8.48	34.04	232	112	Peak
*5469.36	52.56	43.73	68.2	-15.64	34.37	8.51	34.05	232	112	Peak
5710	98.97	89.82			34.61	8.65	34.11	232	112	Average
5710	106.39	97.24			34.61	8.65	34.11	232	112	Peak
*5852	57.65	48.35	78.2	-20.55	34.74	8.7	34.14	232	112	Peak
*5862	57.85	48.52	68.2	-10.35	34.76	8.71	34.14	232	112	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5448.08	42.82	33.99	54	-11.18	34.36	8.51	34.04	256	28	Average
5448.08	53.45	44.62	74	-20.55	34.36	8.51	34.04	256	28	Peak
*5470.16	52.1	43.27	68.2	-16.1	34.37	8.51	34.05	256	28	Peak
5710	96.87	87.72			34.61	8.65	34.11	256	28	Average
5710	104.45	95.3			34.61	8.65	34.11	256	28	Peak
*5856	58.36	49.04	78.2	-19.84	34.76	8.7	34.14	256	28	Peak
*5866	58.41	49.08	68.2	-9.79	34.76	8.71	34.14	256	28	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5710 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 151	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5755	95.46	86.25			34.66	8.66	34.11	209	110	Average
5755	102.96	93.75			34.66	8.66	34.11	209	110	Peak
11510	47.76	32.65	54	-6.24	37.9	12.6	35.39	105	37	Average
11510	57.69	42.58	74	-16.31	37.9	12.6	35.39	105	37	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5755	94.4	85.19			34.66	8.66	34.11	248	27	Average
5755	101.62	92.41			34.66	8.66	34.11	248	27	Peak
11510	47.58	32.47	54	-6.42	37.9	12.6	35.39	138	95	Average
11510	57.06	41.95	74	-16.94	37.9	12.6	35.39	138	95	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5615.5	53.41	44.36	68.2	-14.79	34.52	8.61	34.08	209	110	Peak
5652.25	50.74	41.65	69.86	-19.12	34.56	8.62	34.09	209	110	Peak
5922.625	50.62	41.22	69.96	-19.34	34.83	8.73	34.16	209	110	Peak
*5934.7	53.68	44.28	68.2	-14.52	34.83	8.73	34.16	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5639.125	54.24	45.17	68.2	-13.96	34.54	8.62	34.09	248	27	Peak
5651.725	51.11	42.02	69.48	-18.37	34.56	8.62	34.09	248	27	Peak
5922.625	51.17	41.77	69.96	-18.79	34.83	8.73	34.16	248	27	Peak
*6000.85	53.79	44.3	68.2	-14.41	34.9	8.76	34.17	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5755 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 159	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5795	100.51	91.27			34.69	8.68	34.13	209	110	Average
5795	107.6	98.36			34.69	8.68	34.13	209	110	Peak
11590	47.95	32.58	54	-6.05	38.02	12.72	35.37	159	322	Average
11590	56.9	41.53	74	-17.1	38.02	12.72	35.37	159	322	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5795	99.72	90.48			34.69	8.68	34.13	248	27	Average
5795	106.4	97.16			34.69	8.68	34.13	248	27	Peak
11590	47.92	32.55	54	-6.08	38.02	12.72	35.37	154	245	Average
11590	57.12	41.75	74	-16.88	38.02	12.72	35.37	154	245	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5638.075	53.95	44.88	68.2	-14.25	34.54	8.62	34.09	209	110	Peak
5652.25	51.02	41.93	69.86	-18.84	34.56	8.62	34.09	209	110	Peak
5922.625	51.21	41.81	69.96	-18.75	34.83	8.73	34.16	209	110	Peak
*5958.325	53.98	44.53	68.2	-14.22	34.87	8.74	34.16	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5619.7	53.72	44.67	68.2	-14.48	34.52	8.61	34.08	248	27	Peak
5652.25	51.67	42.58	69.86	-18.19	34.56	8.62	34.09	248	27	Peak
5922.625	51.44	42.04	69.96	-18.52	34.83	8.73	34.16	248	27	Peak
*5984.05	54.39	44.93	68.2	-13.81	34.88	8.75	34.17	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5795 MHz: Fundamental Frequency
3. *: Out of Restricted Band

802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 42	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5145.05	**52.96**	**44.71**	**54**	**-1.04**	**34.12**	**8.13**	**34**	**235**	**141**	**Average**
5145.05	63.33	55.08	74	-10.67	34.12	8.13	34	235	141	Peak
5210	94.44	86.08			34.17	8.19	34	235	140	Average
5210	101.5	93.14			34.17	8.19	34	235	140	Peak
5352.31	44.12	35.49	54	-9.88	34.28	8.38	34.03	235	141	Average
5352.31	54.19	45.56	74	-19.81	34.28	8.38	34.03	235	141	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	50.7	42.45	54	-3.3	34.12	8.13	34	100	119	Average
5150	60.08	51.83	74	-13.92	34.12	8.13	34	100	119	Peak
5210	91.74	83.38			34.17	8.19	34	100	119	Average
5210	98.82	90.46			34.17	8.19	34	100	119	Peak
5356.93	43.61	34.98	54	-10.39	34.28	8.38	34.03	100	119	Average
5356.93	54.33	45.7	74	-19.67	34.28	8.38	34.03	100	119	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 58	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.8	43.22	34.97	54	-10.78	34.12	8.13	34	236	120	Average
5148.8	53.82	45.57	74	-20.18	34.12	8.13	34	236	120	Peak
5290	91.67	83.14			34.23	8.32	34.02	236	120	Average
5290	99.13	90.6			34.23	8.32	34.02	236	120	Peak
5350	49.48	40.85	54	-4.52	34.28	8.38	34.03	222	119	Average
5350	59.47	50.84	74	-14.53	34.28	8.38	34.03	222	119	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5145.95	43.12	34.87	54	-10.88	34.12	8.13	34	100	119	Average
5145.95	53.43	45.18	74	-20.57	34.12	8.13	34	100	119	Peak
5290	89.07	80.54			34.23	8.32	34.02	100	119	Average
5290	97.35	88.82			34.23	8.32	34.02	100	119	Peak
5352.42	47.33	38.7	54	-6.67	34.28	8.38	34.03	105	123	Average
5352.42	57.74	49.11	74	-16.26	34.28	8.38	34.03	105	123	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5290 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 106	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.6	50.32	41.5	54	-3.68	34.36	8.51	34.05	188	105	Average
5459.6	61.1	52.28	74	-12.9	34.36	8.51	34.05	188	105	Peak
*5468.88	60.21	51.38	68.2	-7.99	34.37	8.51	34.05	188	105	Peak
5530	94.03	85.1			34.42	8.58	34.07	198	127	Average
5530	101.5	92.57			34.42	8.58	34.07	198	127	Peak
*5725.88	52.96	43.8	68.2	-15.24	34.62	8.65	34.11	198	127	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5457.36	46.35	37.53	54	-7.65	34.36	8.51	34.05	252	36	Average
5457.36	56.42	47.6	74	-17.58	34.36	8.51	34.05	252	36	Peak
*5468.72	59.01	50.18	68.2	-9.19	34.37	8.51	34.05	237	36	Peak
5530	91.01	82.08			34.42	8.58	34.07	237	36	Average
5530	98.39	89.46			34.42	8.58	34.07	237	36	Peak
*5726.04	52.5	43.34	68.2	-15.7	34.62	8.65	34.11	237	36	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5530 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 122	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5453.36	44.7	35.88	54	-9.3	34.36	8.51	34.05	211	122	Average
5453.36	55.42	46.6	74	-18.58	34.36	8.51	34.05	211	122	Peak
*5469.52	54.72	45.89	68.2	-13.48	34.37	8.51	34.05	211	122	Peak
5610	97.18	88.15			34.5	8.61	34.08	211	122	Average
5610	104.53	95.5			34.5	8.61	34.08	211	122	Peak
*5725.4	55.84	46.68	68.2	-12.36	34.62	8.65	34.11	211	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5439.12	43.8	35.01	54	-10.2	34.35	8.48	34.04	250	36	Average
5439.12	54.04	45.25	74	-19.96	34.35	8.48	34.04	250	36	Peak
*5468.08	54.17	45.34	68.2	-14.03	34.37	8.51	34.05	250	36	Peak
5610	93.63	84.6			34.5	8.61	34.08	250	36	Average
5610	101.27	92.24			34.5	8.61	34.08	250	36	Peak
*5724.04	53.58	44.42	68.2	-14.62	34.62	8.65	34.11	250	36	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5610 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 138	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5445.68	43.04	34.21	54	-10.96	34.36	8.51	34.04	232	112	Average
5445.68	53.69	44.86	74	-20.31	34.36	8.51	34.04	232	112	Peak
*5468.56	51.87	43.04	68.2	-16.33	34.37	8.51	34.05	232	112	Peak
5690	96.19	87.06			34.59	8.64	34.1	232	112	Average
5690	104.11	94.98			34.59	8.64	34.1	232	112	Peak
*5856	57.48	48.16	78.2	-20.72	34.76	8.7	34.14	232	112	Peak
*5868	58.45	49.12	68.2	-9.75	34.76	8.71	34.14	232	112	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5431.76	42.79	34	54	-11.21	34.35	8.48	34.04	256	28	Average
5431.76	53.12	44.33	74	-20.88	34.35	8.48	34.04	256	28	Peak
*5468.24	52.11	43.28	68.2	-16.09	34.37	8.51	34.05	256	28	Peak
5690	94.36	85.23			34.59	8.64	34.1	256	28	Average
5690	102.36	93.23			34.59	8.64	34.1	256	28	Peak
*5856	58.79	49.47	78.2	-19.41	34.76	8.7	34.14	256	28	Peak
*5862	57.26	47.93	68.2	-10.94	34.76	8.71	34.14	256	28	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5690 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 155	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5775	92.07	82.84			34.68	8.67	34.12	209	110	Average
5775	99.38	90.15			34.68	8.67	34.12	209	110	Peak
11550	47.95	32.68	54	-6.05	37.97	12.68	35.38	116	245	Average
11550	58.23	42.96	74	-15.77	37.97	12.68	35.38	116	245	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5775	90.35	81.12			34.68	8.67	34.12	248	27	Average
5775	97.85	88.62			34.68	8.67	34.12	248	27	Peak
11550	47.56	32.29	54	-6.44	37.97	12.68	35.38	189	157	Average
11550	57.29	42.02	74	-16.71	37.97	12.68	35.38	189	157	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5637.55	54.37	45.3	68.2	-13.83	34.54	8.62	34.09	209	110	Peak
5652.25	56.85	47.76	69.86	-13.01	34.56	8.62	34.09	209	110	Peak
5922.625	52.49	43.09	69.96	-17.47	34.83	8.73	34.16	209	110	Peak
*5980.375	54.01	44.55	68.2	-14.19	34.88	8.75	34.17	209	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5648.05	55.04	45.97	68.2	-13.16	34.54	8.62	34.09	248	27	Peak
5652.25	50.98	41.89	69.86	-18.88	34.56	8.62	34.09	248	27	Peak
5922.625	51.46	42.06	69.96	-18.5	34.83	8.73	34.16	248	27	Peak
*6000.85	53.5	44.01	68.2	-14.7	34.9	8.76	34.17	248	27	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5775 MHz: Fundamental Frequency
3. *: Out of Restricted Band

9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

Mode B

802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 42	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
94.26	17.54	36.97	43.5	-25.96	11.39	1.11	31.93	115	145	Peak
186.6	16.26	36.62	43.5	-27.24	10.28	1.61	32.25	103	346	Peak
240.87	19.44	37.62	46	-26.56	12.1	1.85	32.13	120	204	Peak
425.3	13.78	28.27	46	-32.22	15.28	2.41	32.18	125	252	Peak
655.6	18.32	28.93	46	-27.68	18.54	2.99	32.14	170	181	Peak
815.9	20.23	28.3	46	-25.77	20.58	3.32	31.97	159	116	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
39.45	30.23	48.31	40	-9.77	13.41	0.74	32.23	124	306	Peak
196.86	20.88	40.55	43.5	-22.62	11	1.61	32.28	129	109	Peak
228.99	18.73	37.34	46	-27.27	11.72	1.85	32.18	117	124	Peak
527.5	16.41	29.15	46	-29.59	16.71	2.7	32.15	108	167	Peak
620.6	17.03	28.13	46	-28.97	18.14	2.93	32.17	134	301	Peak
949.6	23.75	29.49	46	-22.25	21.75	3.62	31.11	129	326	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 62	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
94.53	17.68	36.94	43.5	-25.82	11.62	1.11	31.99	176	154	Peak
190.11	17.14	37.16	43.5	-26.36	10.62	1.61	32.25	105	246	Peak
241.41	19.28	37.44	46	-26.72	12.12	1.85	32.13	182	227	Peak
426.7	14.32	28.8	46	-31.68	15.29	2.41	32.18	102	110	Peak
649.3	18.24	28.97	46	-27.76	18.43	2.99	32.15	162	193	Peak
806.8	20.03	28.29	46	-25.97	20.44	3.32	32.02	124	210	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
37.02	26.99	45.83	40	-13.01	12.65	0.74	32.23	179	149	Peak
179.31	23.21	44.16	43.5	-20.29	9.68	1.61	32.24	106	132	Peak
220.35	18.95	38.18	46	-27.05	11.34	1.65	32.22	125	288	Peak
416.9	14.42	29.01	46	-31.58	15.2	2.41	32.2	151	243	Peak
642.3	17.89	28.74	46	-28.11	18.32	2.99	32.16	124	130	Peak
734	19.99	29.31	46	-26.01	19.65	3.16	32.13	199	198	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 102	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
91.02	14.85	34.82	43.5	-28.65	10.69	1.11	31.77	191	2	Peak
187.41	17.15	37.42	43.5	-26.35	10.37	1.61	32.25	103	357	Peak
244.11	20.17	38.25	46	-25.83	12.19	1.85	32.12	126	148	Peak
433	14.3	28.63	46	-31.7	15.35	2.49	32.17	136	99	Peak
834.8	21.28	28.94	46	-24.72	20.83	3.38	31.87	120	240	Peak
913.2	22.41	28.73	46	-23.59	21.53	3.53	31.38	135	116	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
38.1	28.53	47.07	40	-11.47	12.95	0.74	32.23	181	246	Peak
197.94	19.39	39.05	43.5	-24.11	11.02	1.61	32.29	110	230	Peak
239.79	17.44	35.65	46	-28.56	12.08	1.85	32.14	174	44	Peak
444.2	14.39	28.57	46	-31.61	15.48	2.49	32.15	141	118	Peak
729.1	19.32	28.67	46	-26.68	19.61	3.16	32.12	132	321	Peak
815.9	20.38	28.45	46	-25.62	20.58	3.32	31.97	187	205	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 159	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
102.36	20.28	38.9	43.5	-23.22	12.36	1.28	32.26	124	202	Peak
212.79	13.61	33.01	43.5	-29.89	11.2	1.65	32.25	127	173	Peak
264.09	19.37	36.99	46	-26.63	12.55	1.94	32.11	124	109	Peak
440.7	14.51	28.76	46	-31.49	15.42	2.49	32.16	114	113	Peak
651.4	18.4	29.08	46	-27.6	18.48	2.99	32.15	105	106	Peak
734	20.44	29.76	46	-25.56	19.65	3.16	32.13	155	39	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
37.29	27.62	46.16	40	-12.38	12.95	0.74	32.23	162	228	Peak
192	23.78	43.68	43.5	-19.72	10.75	1.61	32.26	187	75	Peak
235.74	17.57	35.92	46	-28.43	11.95	1.85	32.15	135	162	Peak
439.3	14.85	29.11	46	-31.15	15.41	2.49	32.16	142	109	Peak
600.3	16.65	28.04	46	-29.35	17.93	2.87	32.19	168	166	Peak
778.8	19.27	27.97	46	-26.73	20.12	3.27	32.09	119	195	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 21, 2016	Nov. 20, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ENV216	101196	Apr. 20, 2017	Apr. 19, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 Test Procedures

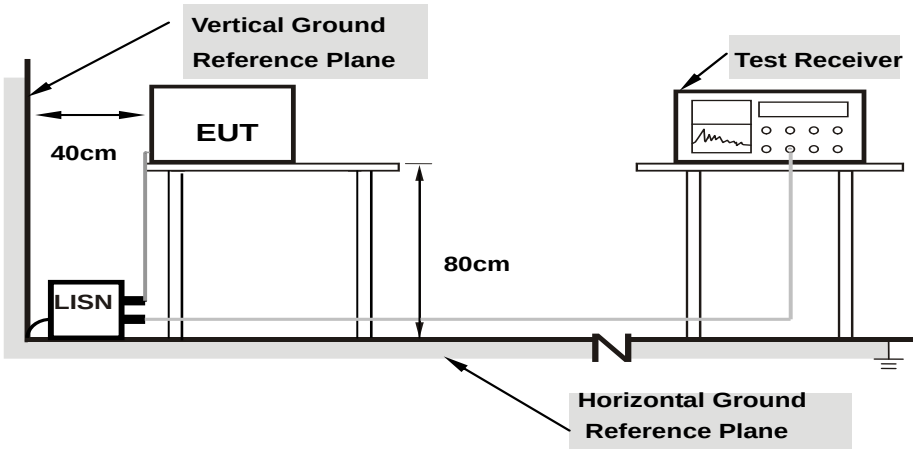
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit -20 dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

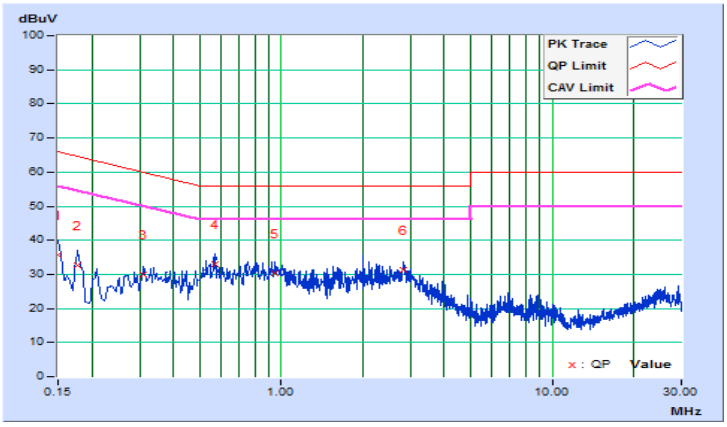
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/11/3

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.39	25.27	14.06	35.66	24.45	66.00	56.00	-30.34	-31.55
2	0.17737	10.39	22.26	10.04	32.65	20.43	64.61	54.61	-31.96	-34.18
3	0.31031	10.40	19.54	10.30	29.94	20.70	59.96	49.96	-30.02	-29.26
4	**0.57228**	**10.41**	**22.60**	**15.93**	**33.01**	**26.34**	**56.00**	**46.00**	**-22.99**	**-19.66**
5	0.94373	10.42	20.04	13.19	30.46	23.61	56.00	46.00	-25.54	-22.39
6	2.83617	10.50	20.96	14.95	31.46	25.45	56.00	46.00	-24.54	-20.55

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

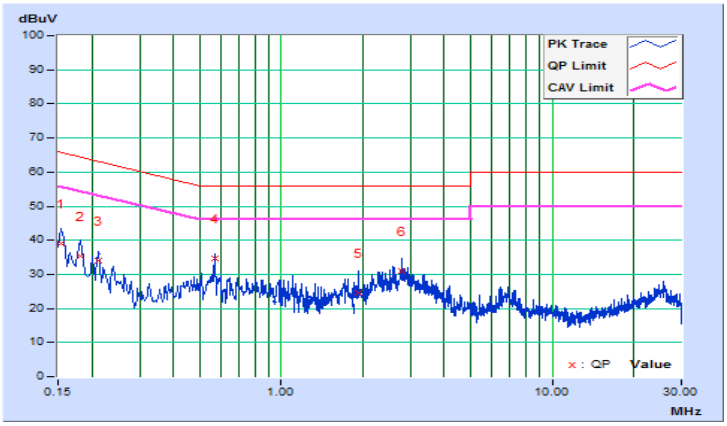


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/11/3

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.15	29.02	19.21	39.17	29.36	65.79	55.79	-26.62	-26.43
2	0.18122	10.16	25.32	16.79	35.48	26.95	64.43	54.43	-28.95	-27.48
3	0.21226	10.16	23.79	14.11	33.95	24.27	63.12	53.12	-29.17	-28.85
4	0.56837	10.17	24.37	15.42	34.54	25.59	56.00	46.00	-21.46	-20.41
5	1.92123	10.23	14.47	7.04	24.70	17.27	56.00	46.00	-31.30	-28.73
6	2.80489	10.27	20.69	14.07	30.96	24.34	56.00	46.00	-25.04	-21.66

Remarks:

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



4.3 Transmit Power Measurment

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125 mW (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	250 mW (24 dBm)
U-NII-2A	√		250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C	√		250 mW (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 $N_{ANT} \leq 4$;

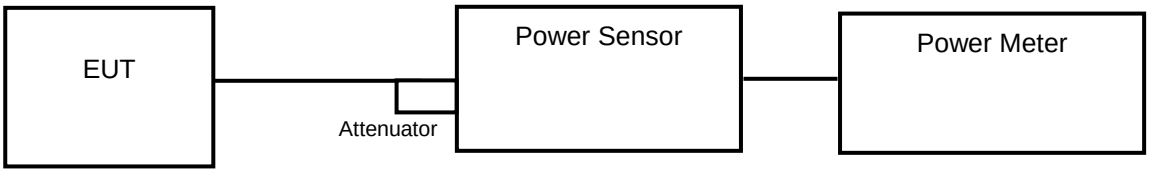
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

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

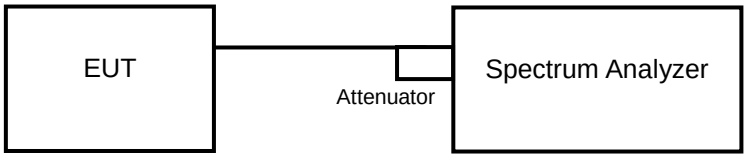
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

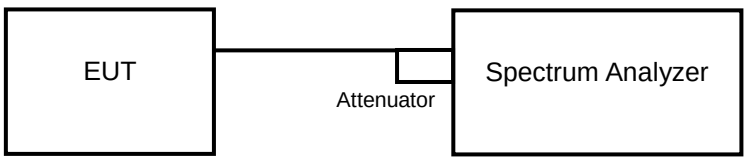
<Power Output Measurement>



or



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

<802.11a, 802.11n (HT20), 802.11n (HT40)>

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

<802.11ac (VHT80)>

Method SA-1 is used to perform output power measurement, trigger and gating function of spectrum analyzer is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

26 dB Bandwidth

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

4.3.5 Deviation fromTest 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:

Mode A

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	30.69	14.87	24	Pass
44	5220	31.261	14.95	24	Pass
48	5240	30.269	14.81	24	Pass
52	5260	77.446	18.89	24	Pass
60	5300	76.208	18.82	24	Pass
64	5320	49.204	16.92	23.87	Pass
100	5500	49.431	16.94	24	Pass
116	5580	77.983	18.92	24	Pass
140	5700	44.055	16.44	23.88	Pass
144	5720 (U-NII-2C)	18.072	12.57	23.25	Pass
144	5720 (U-NII-3)	3.133	4.96	30	Pass
149	5745	49.545	16.95	30	Pass
157	5785	77.983	18.92	30	Pass
165	5825	79.068	18.98	30	Pass

Note:

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

1. 11 dBm + 10log (21.26) = 24.28 dBm > 24 dBm.
2. 11 dBm + 10log (21.26) = 24.28 dBm > 24 dBm.
3. 11 dBm + 10log (19.36) = 23.87 dBm < 24 dBm.
4. 11 dBm + 10log (19.96) = 24.00 dBm = 24 dBm.
5. 11 dBm + 10log (23.40) = 24.69 dBm > 24 dBm.
6. 11 dBm + 10log (19.40) = 23.88 dBm < 24 dBm.
7. 11 dBm + 10log (5725-5708.21) = 23.25 dBm < 24 dBm.

Mode B

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Cunducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	14.77	15.11	62.426	17.95	24	Pass
44	5220	14.70	15.03	61.354	17.88	24	Pass
48	5240	14.80	15.11	62.634	17.97	24	Pass
52	5260	18.83	18.93	154.547	21.89	24	Pass
60	5300	18.77	18.83	151.72	21.81	24	Pass
64	5320	16.87	17.02	98.991	19.96	24	Pass
100	5500	16.89	16.99	98.868	19.95	24	Pass
116	5580	18.88	19.05	157.621	21.98	24	Pass
140	5700	15.78	15.98	77.472	18.89	24	Pass
144	5720 (U-NII-2C)	10.10	10.42	21.248	13.27	23.16	Pass
144	5720 (U-NII-3)	3.56	4.15	4.87	6.88	30	Pass
149	5745	16.78	16.89	96.508	19.85	30	Pass
157	5785	18.65	19.14	155.317	21.91	30	Pass
165	5825	18.72	19.03	154.456	21.89	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (22.22) = 24.47 dBm > 24 dBm.
2. 11 dBm + 10log (22.00) = 24.42 dBm > 24 dBm.
3. 11 dBm + 10log (21.01) = 24.22 dBm > 24 dBm.
4. 11 dBm + 10log (20.88) = 24.20 dBm > 24 dBm.
5. 11 dBm + 10log (28.71) = 25.58 dBm > 24 dBm.
6. 11 dBm + 10log (20.21) = 24.06 dBm > 24 dBm.
7. 11 dBm + 10log (5725-5707.77) = 23.36 dBm < 24 dBm.

Chain 1

1. 11 dBm + 10log (27.95) = 25.46 dBm > 24 dBm.
2. 11 dBm + 10log (27.84) = 25.45 dBm > 24 dBm.
3. 11 dBm + 10log (21.97) = 24.42 dBm > 24 dBm.
4. 11 dBm + 10log (21.89) = 24.40 dBm > 24 dBm.
5. 11 dBm + 10log (26.42) = 25.22 dBm > 24 dBm.
6. 11 dBm + 10log (20.48) = 24.11 dBm > 24 dBm.
7. 11 dBm + 10log (5725-5708.54) = 23.16 dBm < 24 dBm.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Cunducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	14.60	14.97	60.245	17.80	24	Pass
46	5230	14.93	15.01	62.813	17.98	24	Pass
54	5270	18.71	18.97	153.188	21.85	24	Pass
62	5310	16.89	16.90	97.843	19.91	24	Pass
102	5510	16.87	17.05	99.34	19.97	24	Pass
110	5550	18.87	18.92	155.073	21.91	24	Pass
134	5670	18.88	18.95	155.792	21.93	24	Pass
142	5710 (U-NII-2C)	6.56	6.61	9.11	9.60	24	Pass
142	5710 (U-NII-3)	-5.22	-5.32	0.5944	-2.26	30	Pass
151	5755	14.23	14.67	55.794	17.47	30	Pass
159	5795	18.76	19.10	156.445	21.94	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (43.33) = 27.37 dBm > 24 dBm.
2. 11 dBm + 10log (41.70) = 27.20 dBm > 24 dBm.
3. 11 dBm + 10log (42.22) = 27.26 dBm > 24 dBm.
4. 11 dBm + 10log (52.54) = 28.20 dBm > 24 dBm.
5. 11 dBm + 10log (53.47) = 28.28 dBm > 24 dBm.
6. 11 dBm + 10log (5725-5684.96) = 40.04 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (50.11) = 28.00 dBm > 24 dBm.
2. 11 dBm + 10log (42.07) = 27.24 dBm > 24 dBm.
3. 11 dBm + 10log (42.46) = 27.28 dBm > 24 dBm.
4. 11 dBm + 10log (47.33) = 27.75 dBm > 24 dBm.
5. 11 dBm + 10log (51.12) = 28.09 dBm > 24 dBm.
6. 11 dBm + 10log (5725-5685.98) = 26.91 dBm > 24 dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Cunducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	14.90	15.04	62.818	17.98	24	Pass
58	5290	13.86	14.04	49.673	16.96	24	Pass
106	5530	14.32	14.54	55.485	17.44	24	Pass
122	5610	17.67	18.23	125.006	20.97	24	Pass
138	5690 (U-NII-2C)	0.12	0.39	2.122	3.27	24	Pass
138	5690 (U-NII-3)	-14.36	-13.63	0.08	-10.97	30	Pass
155	5775	13.89	14.03	49.784	16.97	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (83.32) = 30.21 dBm > 24 dBm.
2. 11 dBm + 10log (82.94) = 30.19 dBm > 24 dBm.
3. 11 dBm + 10log (88.27) = 30.46 dBm > 24 dBm.
4. 11 dBm + 10log (5725-5643.72) = 30.10 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (82.57) = 30.17 dBm > 24 dBm.
2. 11 dBm + 10log (82.67) = 30.17 dBm > 24 dBm.
3. 11 dBm + 10log (85.87) = 30.34 dBm > 24 dBm.
4. 11 dBm + 10log (5725-5646.99) = 29.92 dBm > 24 dBm.

26 dB Bandwidth:

Mode A

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	19.22
44	5220	19.25
48	5240	19.23
52	5260	21.26
60	5300	21.26
64	5320	19.36
100	5500	19.96
116	5580	23.40
140	5700	19.40
144	5720 (U-NII-2C)	16.79
144	5720 (U-NII-3)	6.01

Mode B

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	20.21	20.43
44	5220	20.19	19.21
48	5240	20.16	20.65
52	5260	22.22	27.95
60	5300	22.00	27.84
64	5320	21.01	21.97
100	5500	20.88	21.89
116	5580	28.71	26.42
140	5700	20.21	20.48
144	5720 (U-NII-2C)	17.23	16.46
144	5720 (U-NII-3)	9.76	6.38

802.11n (HT40)

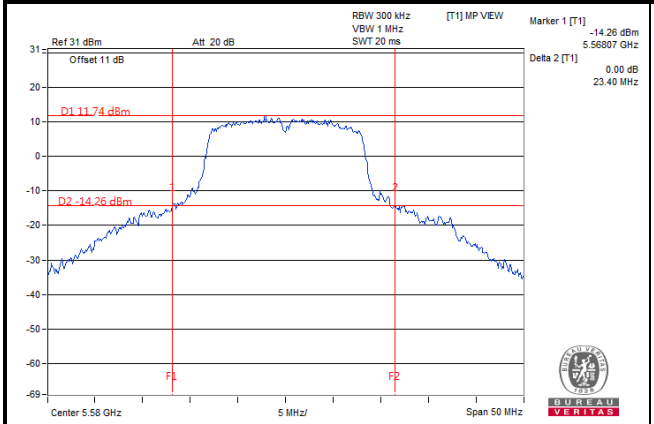
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	41.71	41.27
46	5230	41.34	41.13
54	5270	43.33	50.11
62	5310	41.70	42.07
102	5510	42.22	42.46
110	5550	52.54	47.33
134	5670	53.47	51.12
142	5710 (U-NII-2C)	40.04	39.02
142	5710 (U-NII-3)	10.66	7.60

802.11ac (VHT80)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	83.00	82.96
58	5290	83.32	82.57
106	5530	82.94	82.67
122	5610	88.27	85.87
138	5690 (U-NII-2C)	81.28	78.01
138	5690 (U-NII-3)	10.31	6.18

Spectrum Plot of Worst Value

802.11a



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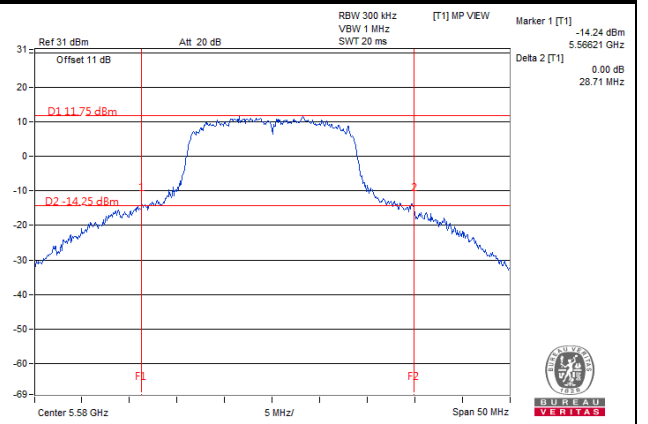

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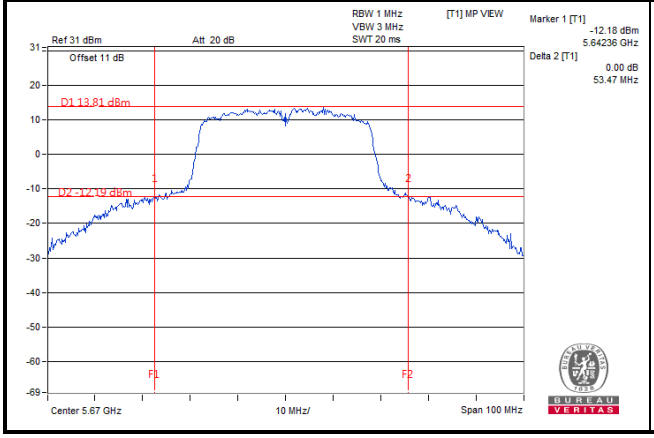
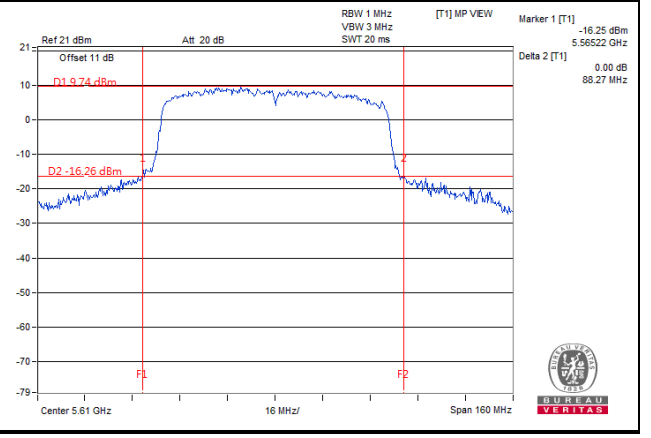
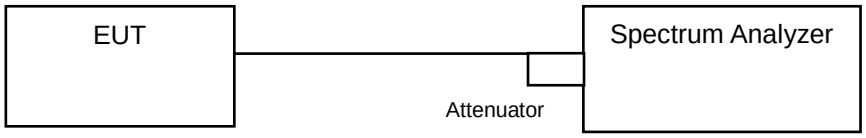


802.11ac (VHT80)



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 SAMPLE. 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 Results

Mode A

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	16.34
40	5200	16.34
48	5240	16.34
52	5260	16.39
60	5300	16.44
64	5320	16.39
100	5500	16.34
116	5580	16.49
140	5700	16.34
144	5720 (U-NII-2C)	13.28
144	5720 (U-NII-3)	3.04
149	5745	16.34
157	5785	16.50
165	5825	16.50

Mode B

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.45	17.45
40	5200	17.45	16.29
48	5240	17.45	17.45
52	5260	17.54	17.69
60	5300	17.54	17.64
64	5320	17.45	17.54
100	5500	17.45	17.50
116	5580	17.69	17.59
140	5700	17.45	17.45
144	5720 (U-NII-2C)	13.88	13.88
144	5720 (U-NII-3)	3.64	3.76
149	5745	17.45	17.50
157	5785	17.65	16.40
165	5825	17.65	17.55

802.11n (HT40)

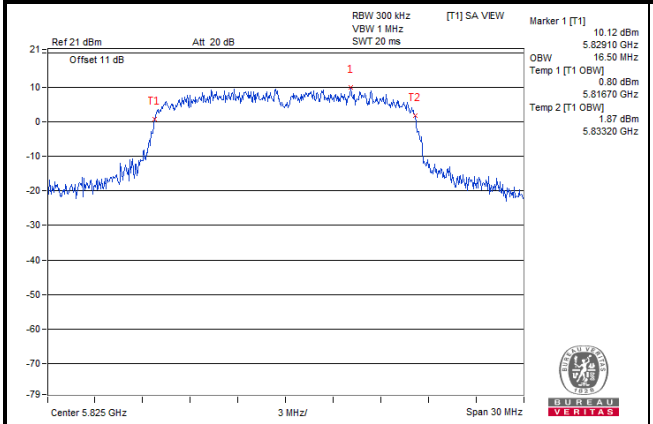
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.02	36.15
46	5230	36.02	36.02
54	5270	36.28	36.41
62	5310	36.02	36.15
102	5510	36.15	36.15
110	5550	36.53	36.41
134	5670	36.53	36.53
142	5710 (U-NII-2C)	33.36	33.24
142	5710 (U-NII-3)	3.12	3.00
151	5755	35.89	36.05
159	5795	36.50	36.33

802.11ac (VHT80)

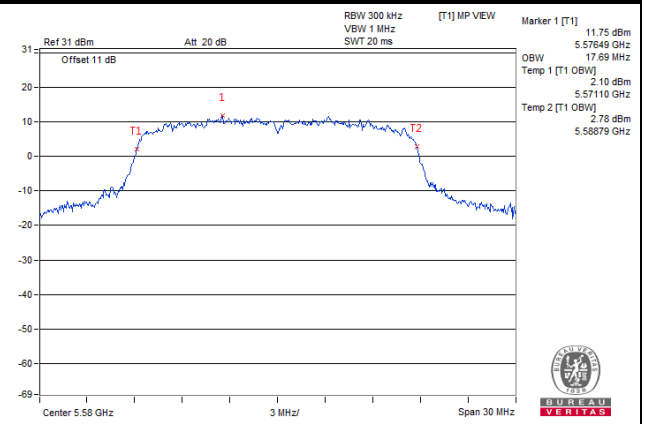
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.32	75.16
58	5290	75.00	75.32
106	5530	75.32	75.32
122	5610	75.16	75.32
138	5690 (U-NII-2C)	72.92	73.16
138	5690 (U-NII-3)	2.44	2.44
155	5775	75.16	75.16

Spectrum Plot of Worst Value

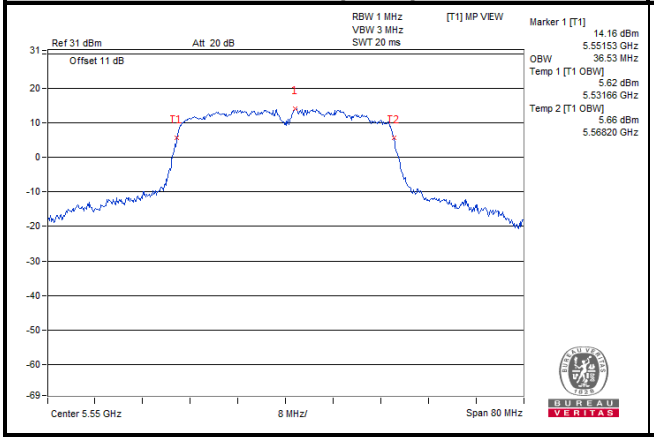
802.11a



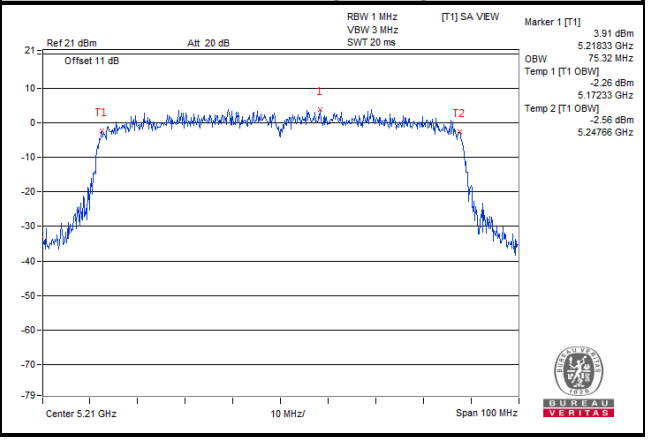
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

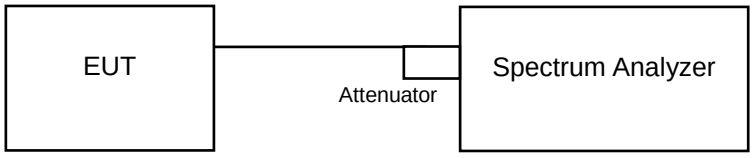


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 Test Procedures

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

Using method SA-2

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

※For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
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)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

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

4.5.7 Test Results

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

Mode A

802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	1.65	0.31	1.96	11	Pass
44	5220	1.97	0.31	2.28	11	Pass
48	5240	1.87	0.31	2.18	11	Pass
52	5260	6.12	0.31	6.43	11	Pass
60	5300	6.69	0.31	7.00	11	Pass
64	5320	4.78	0.31	5.09	11	Pass
100	5500	6.34	0.31	6.65	11	Pass
116	5580	7.67	0.31	7.98	11	Pass
140	5700	4.02	0.31	4.33	11	Pass
144	5720	2.92	0.31	3.23	11	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

Mode B

802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	2.22	2.85	0.47	6.01	11	Pass
44	5220	1.88	3.18	0.47	6.00	11	Pass
48	5240	2.33	2.97	0.47	6.11	11	Pass
52	5260	6.37	6.53	0.47	9.86	11	Pass
60	5300	6.64	6.82	0.47	10.13	11	Pass
64	5320	5.64	5.91	0.47	9.20	11	Pass
100	5500	6.36	6.72	0.47	10.02	11	Pass
116	5580	7.10	7.60	0.47	10.81	11	Pass
140	5700	3.08	3.09	0.47	6.53	11	Pass
144	5720	2.49	3.03	0.47	6.25	11	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 1.11$ dBi < 6 dBi, so the limit no need to reduced.
   For U-NII-2A Band:
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 0.99$ dBi < 6 dBi, so the limit no need to reduced.
   For U-NII-2C Band:
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 1.30$ dBi < 6 dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-0.88	-0.20	0.94	3.38	11	Pass
46	5230	-0.47	0.14	0.94	3.75	11	Pass
54	5270	3.30	3.51	0.94	7.35	11	Pass
62	5310	1.72	2.26	0.94	5.94	11	Pass
102	5510	3.50	4.10	0.94	7.76	11	Pass
110	5550	5.10	5.33	0.94	9.15	11	Pass
134	5670	4.10	4.42	0.94	8.20	11	Pass
142	5710	-1.05	-0.70	0.94	3.08	11	Pass

Note:

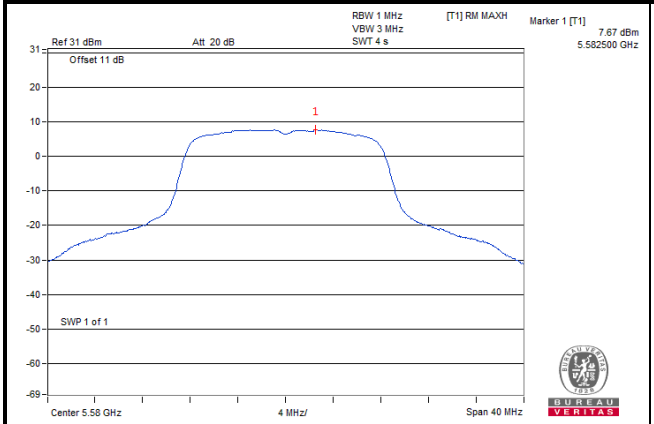
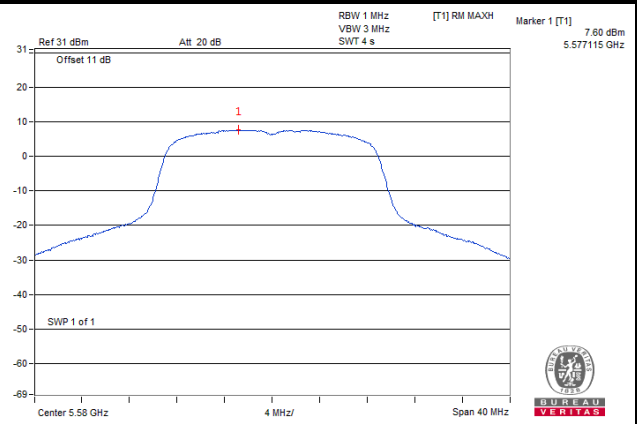
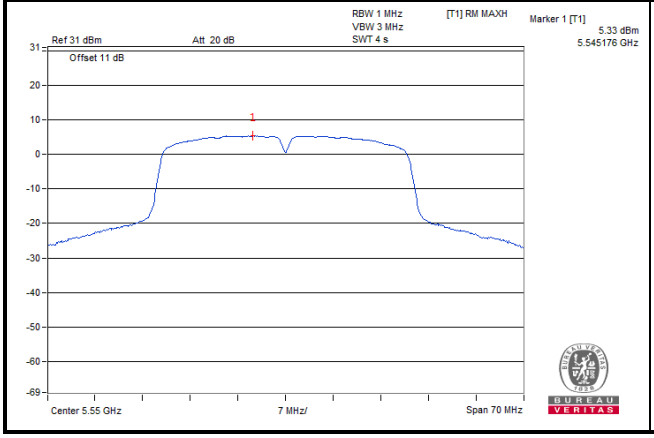
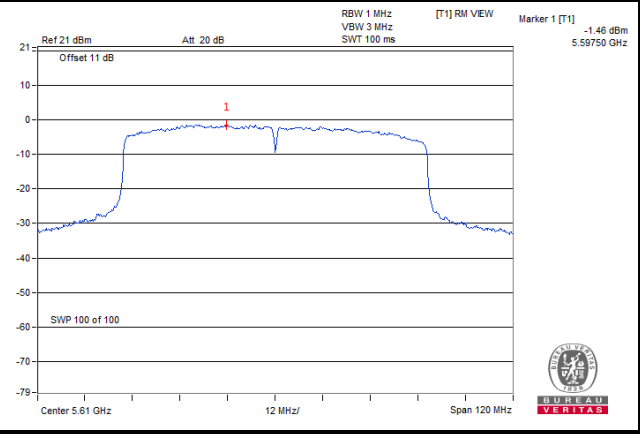
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 1.11 dBi < 6 dBi, so the limit no need to reduced.
   For U-NII-2A Band:
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 0.99 dBi < 6 dBi, so the limit no need to reduced.
   For U-NII-2C Band:
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 1.30 dBi < 6 dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-5.39	-4.58	1.69	-0.35	11	Pass
58	5290	-5.21	-4.85	1.69	-0.35	11	Pass
106	5530	-4.62	-4.09	1.69	0.29	11	Pass
122	5610	-1.46	-1.87	1.69	3.04	11	Pass
138	5690	-5.76	-4.95	1.69	-0.63	11	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 1.11$ dBi < 6 dBi, so the limit no need to reduced.
   For U-NII-2A Band:
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 0.99$ dBi < 6 dBi, so the limit no need to reduced.
   For U-NII-2C Band:
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 1.30$ dBi < 6 dBi, so the limit no need to 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)
	

For U-NII-3 Band

Mode A

802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
144	5720	2.10	0.31	2.41	30	Pass
149	5745	0.66	0.31	0.97	30	Pass
157	5785	3.18	0.31	3.49	30	Pass
165	5825	3.98	0.31	4.29	30	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

Mode B

802.11n (HT20)

TX Chain	Channel	Frequency (MHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	144	5720	1.41	3.01	0.47	4.89	30	Pass
	149	5745	0.95	3.01	0.47	4.43	30	Pass
	157	5785	3.12	3.01	0.47	6.60	30	Pass
	165	5825	3.83	3.01	0.47	7.31	30	Pass
1	144	5720	1.78	3.01	0.47	5.26	30	Pass
	149	5745	1.12	3.01	0.47	4.60	30	Pass
	157	5785	3.75	3.01	0.47	7.23	30	Pass
	165	5825	3.84	3.01	0.47	7.32	30	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 1.23$ dBi < 6 dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX Chain	Channel	Frequency (MHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	142	5710	-3.94	3.01	0.94	0.01	30	Pass
	151	5755	-5.19	3.01	0.94	-1.24	30	Pass
	159	5795	-0.38	3.01	0.94	3.57	30	Pass
1	142	5710	-3.61	3.01	0.94	0.34	30	Pass
	151	5755	-5.01	3.01	0.94	-1.06	30	Pass
	159	5795	-0.29	3.01	0.94	3.66	30	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 1.23$ dBi < 6 dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

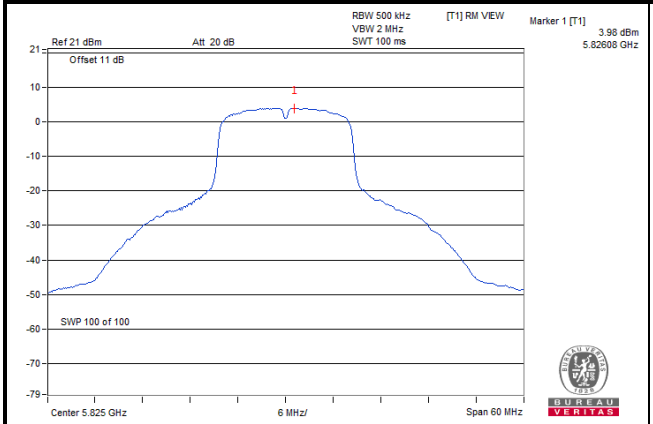
TX Chain	Channel	Frequency (MHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	138	5690	-9.68	3.01	1.69	-4.98	30	Pass
	155	5775	-9.62	3.01	1.69	-4.92	30	Pass
1	138	5690	-9.26	3.01	1.69	-4.56	30	Pass
	155	5775	-9.27	3.01	1.69	-4.57	30	Pass

Note:

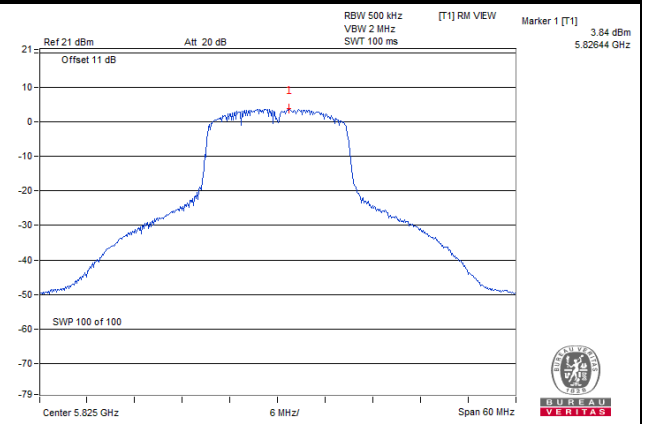
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 1.23$ dBi < 6 dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

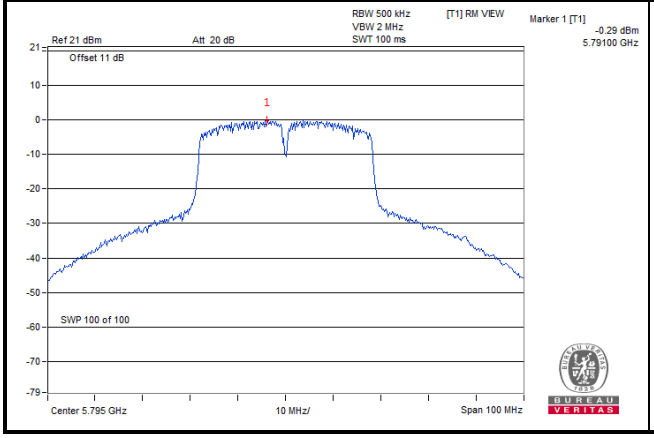
802.11a



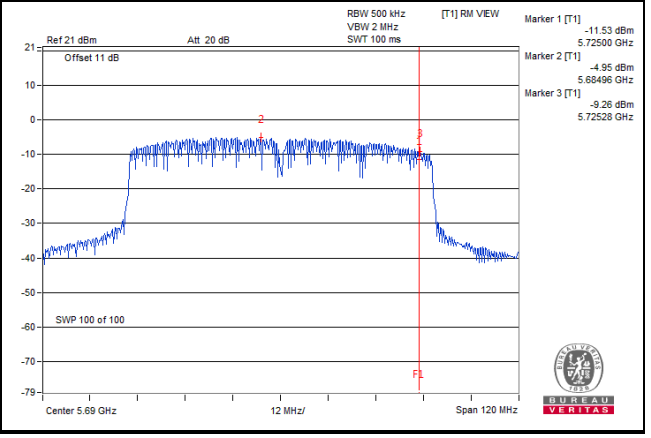
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

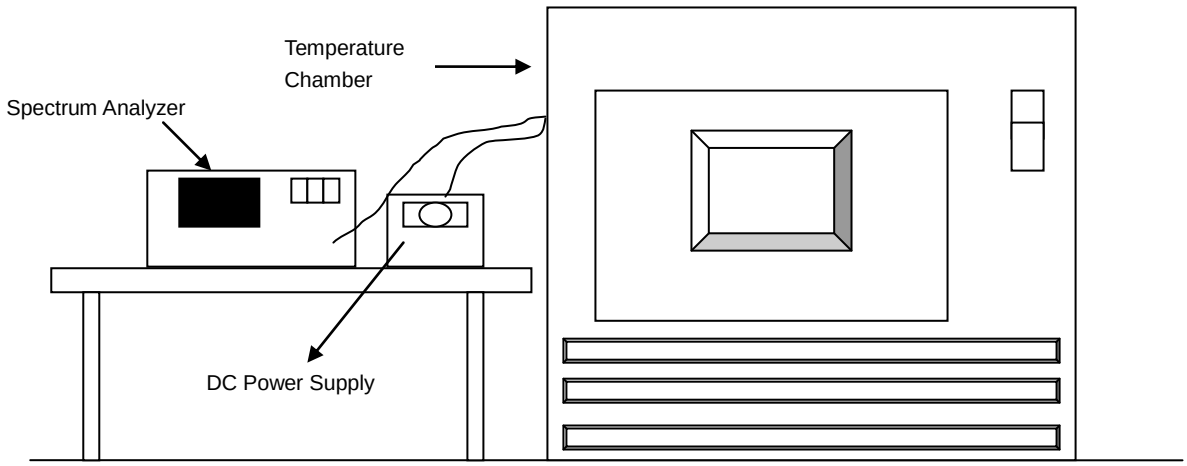


4.6 Frequency Stability

4.6.1 Limit of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.6.4 Test Procedure

a. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

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: 5180 MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
60	7.27	5179.9989	-0.00002	5179.9983	-0.00003	5179.9982	-0.00003	5179.9986	-0.00003
50	7.27	5179.9943	-0.00011	5179.994	-0.00012	5179.9937	-0.00012	5179.9936	-0.00012
40	7.27	5180.0012	0.00002	5180.0045	0.00009	5180.0061	0.00012	5180.0056	0.00011
30	7.27	5179.991	-0.00017	5179.9926	-0.00014	5179.9941	-0.00011	5179.9901	-0.00019
20	7.27	5179.9779	-0.00043	5179.9798	-0.00039	5179.9797	-0.00039	5179.9779	-0.00043
10	7.27	5180.0038	0.00007	5180.0049	0.00009	5180.007	0.00014	5180.0064	0.00012
0	7.27	5179.9784	-0.00042	5179.9773	-0.00044	5179.9777	-0.00043	5179.9772	-0.00044
-10	7.27	5180.0072	0.00014	5180.0104	0.00020	5180.0086	0.00017	5180.01	0.00019
-20	7.27	5179.978	-0.00042	5179.9789	-0.00041	5179.9764	-0.00046	5179.9776	-0.00043
-30	7.27	5179.9907	-0.00018	5179.9914	-0.00017	5179.992	-0.00015	5179.9931	-0.00013

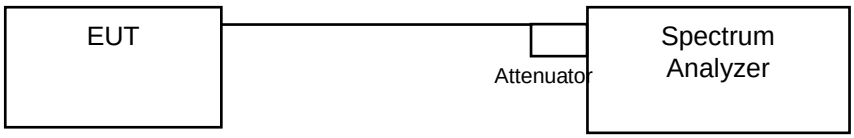
Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	8.361	5179.9785	-0.00042	5179.9802	-0.00038	5179.9804	-0.00038	5179.9787	-0.00041
	7.27	5179.9779	-0.00043	5179.9798	-0.00039	5179.9797	-0.00039	5179.9779	-0.00043
	6.18	5179.9778	-0.00043	5179.9799	-0.00039	5179.9788	-0.00041	5179.9788	-0.00041

4.7 6 dB Bandwidth Measurment

4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

a. Set resolution bandwidth (RBW) = 100 kHz
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

Mode A

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
144	5720	2.52	0.5	Pass
149	5745	15.17	0.5	Pass
157	5785	15.17	0.5	Pass
165	5825	15.13	0.5	Pass

Mode B

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720	2.55	2.53	0.5	Pass
149	5745	15.15	15.14	0.5	Pass
157	5785	15.14	15.18	0.5	Pass
165	5825	15.15	15.17	0.5	Pass

802.11n (HT40)

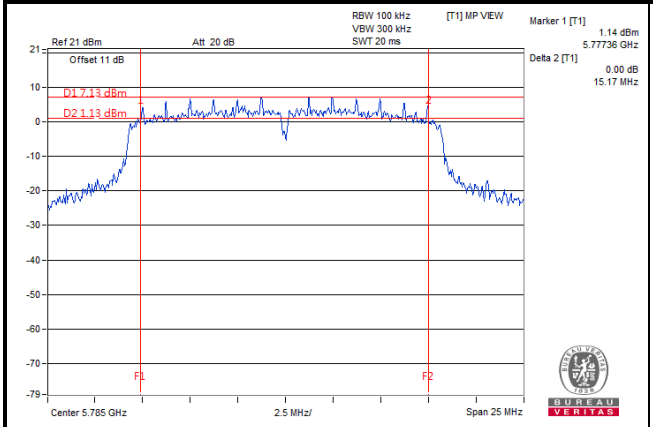
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710	2.61	2.56	0.5	Pass
151	5755	35.20	35.22	0.5	Pass
159	5795	35.13	35.13	0.5	Pass

802.11ac (VHT80)

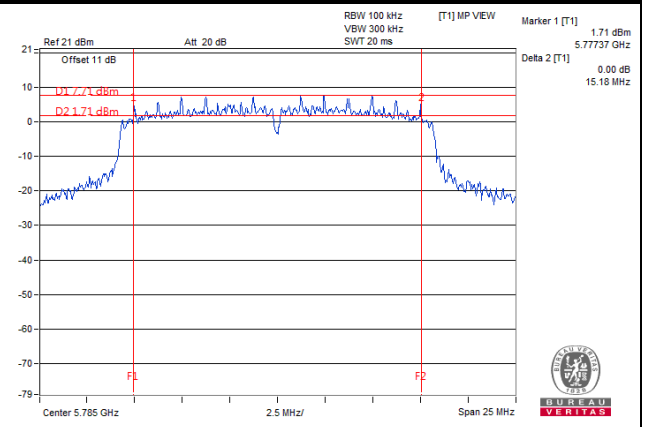
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690	2.63	2.62	0.5	Pass
155	5775	75.33	75.31	0.5	Pass

Spectrum Plot of Worst Value

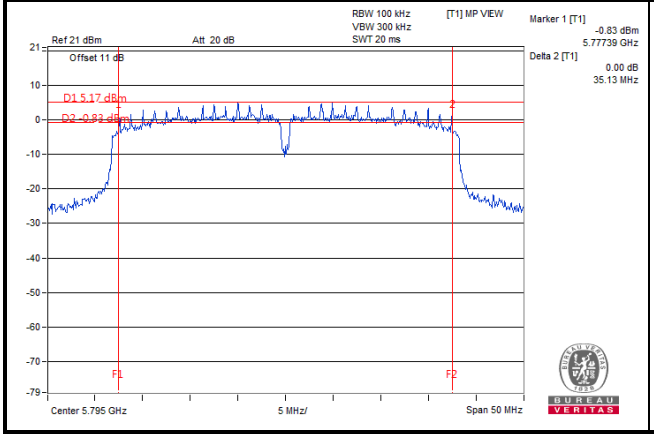
802.11a



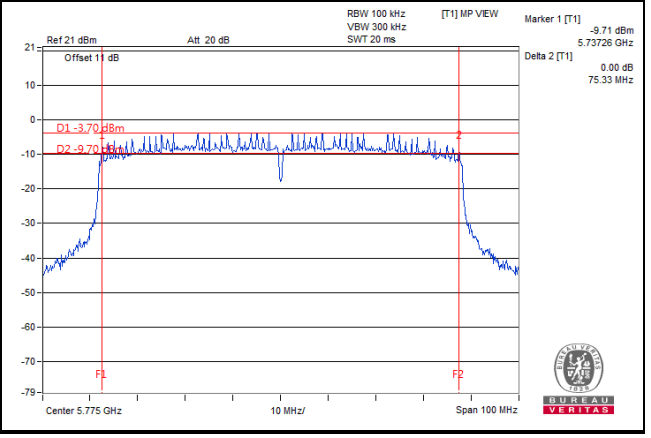
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



5 Pictures of Test Arrangements

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

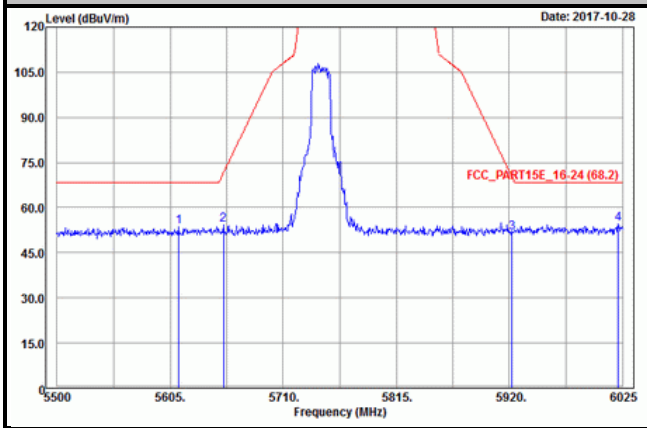
Annex A- Radiated Out of Band Emisison (OOBE) Measurement (For U-NII-3 band)

Mode A

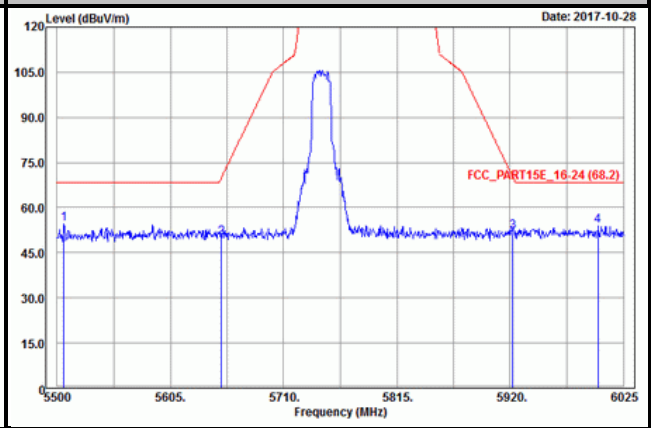
802.11a

Ch 149

Horizontal

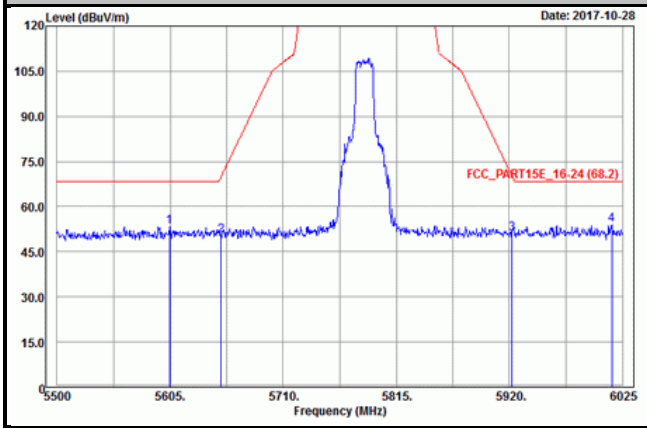


Vertical

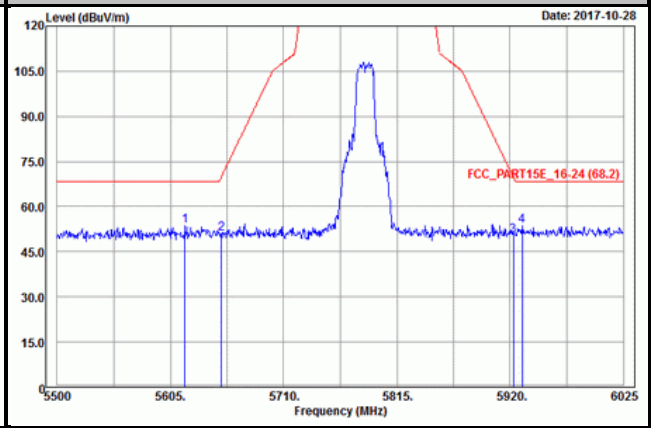


Ch 157

Horizontal

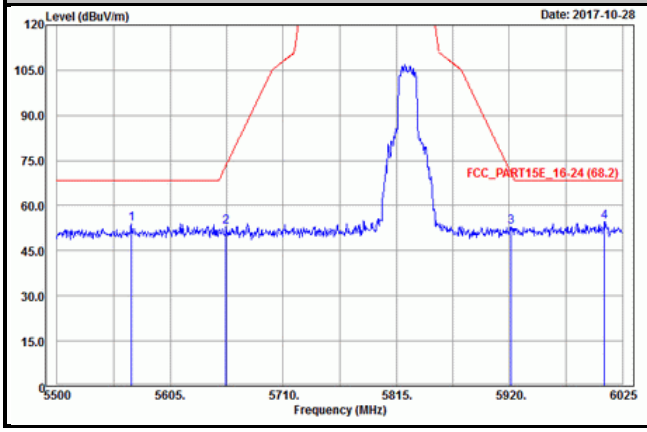


Vertical

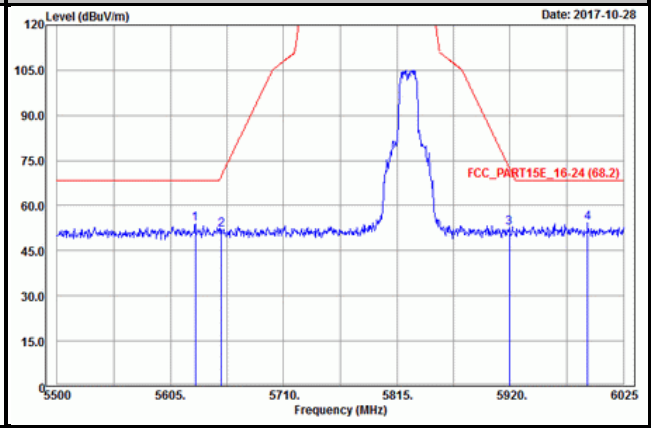


Ch 165

Horizontal

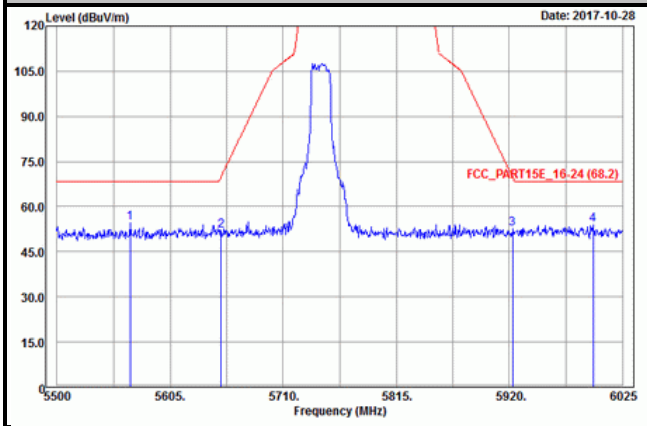
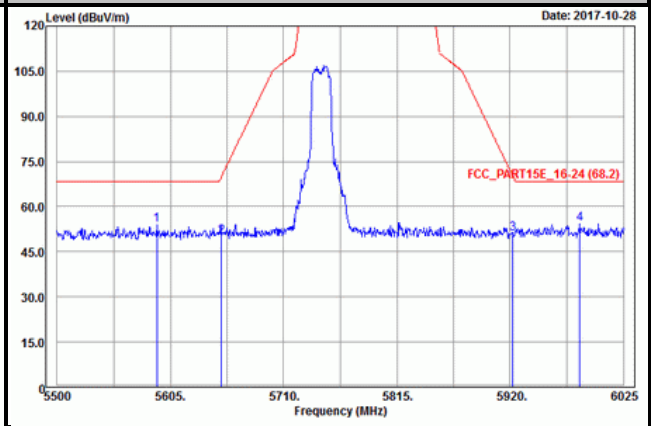
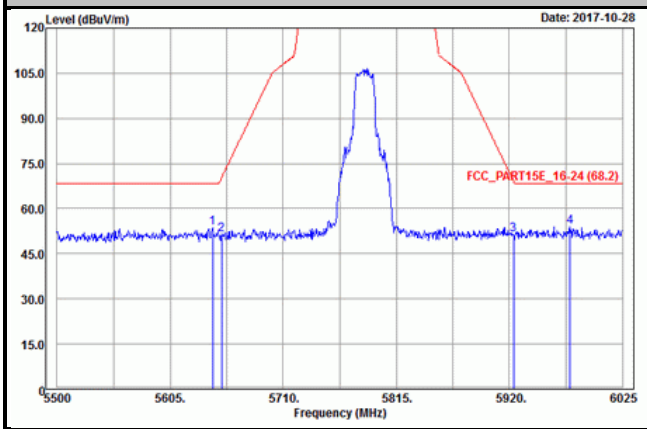
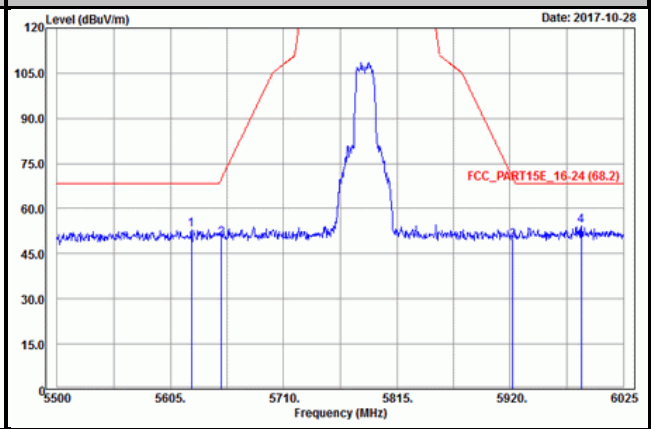
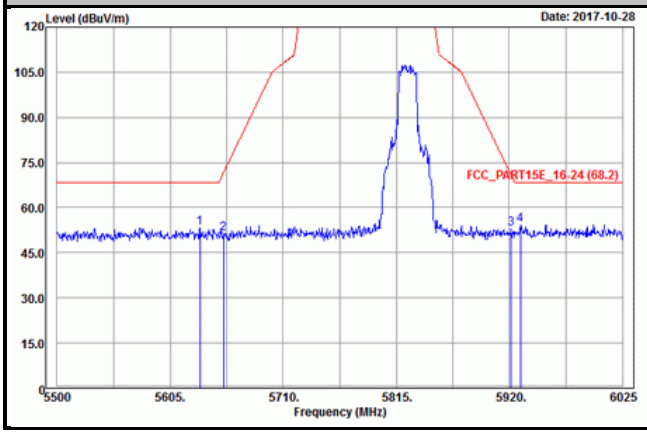
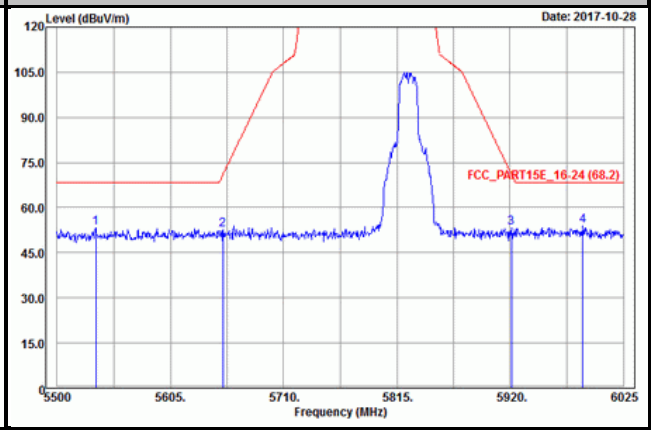


Vertical

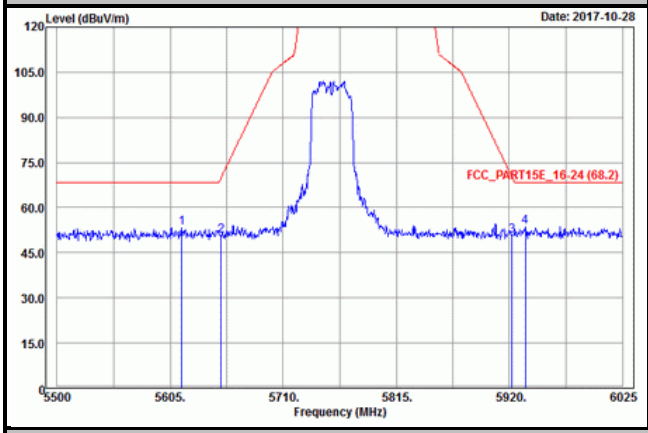
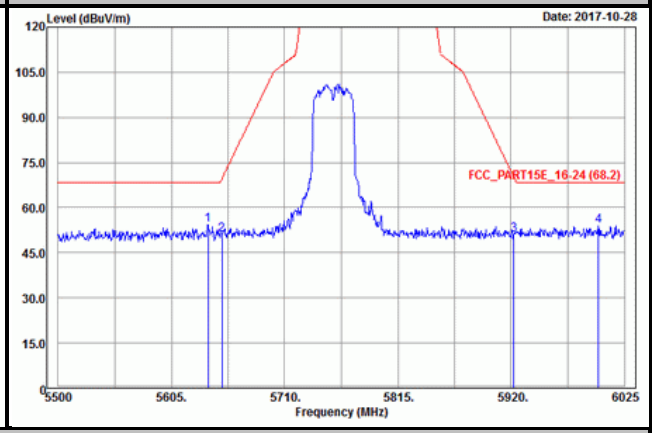
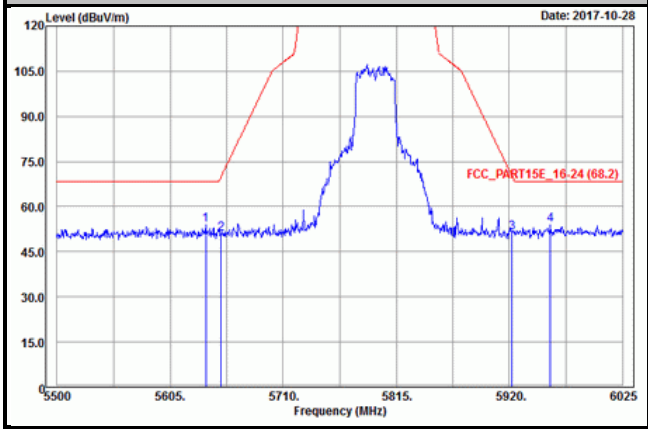
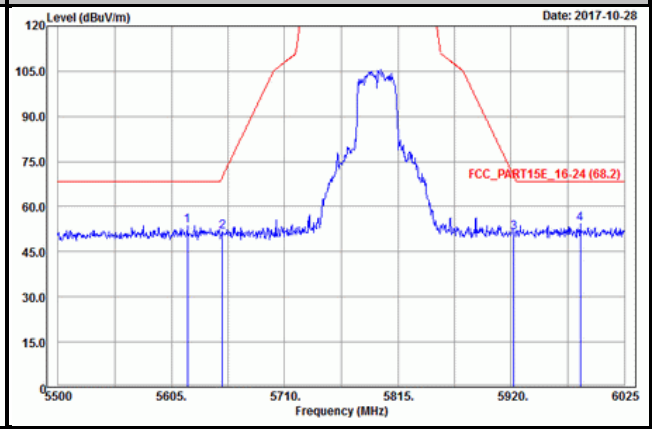


Mode B

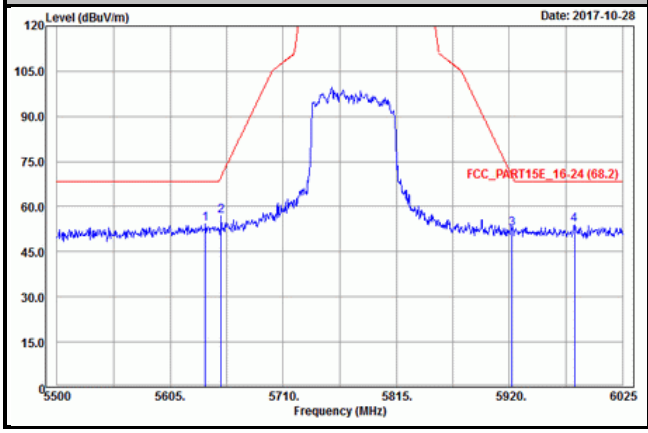
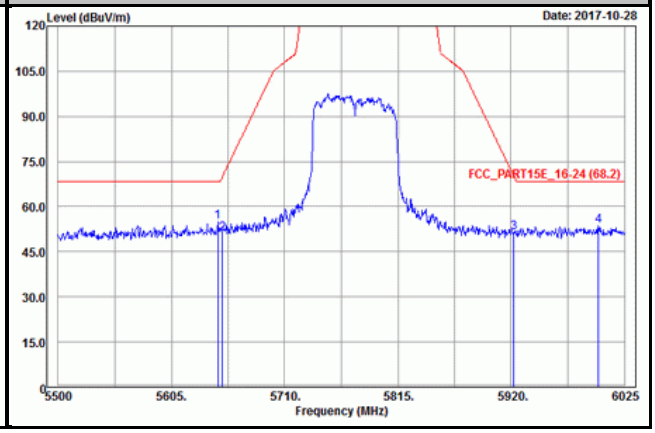
802.11n (HT20)

Ch 149	
Horizontal	Vertical
	
Ch 157	
Horizontal	Vertical
	
Ch 165	
Horizontal	Vertical
	

802.11n (HT40)

Ch 151	
Horizontal	Vertical
	
Ch 159	
Horizontal	Vertical
	

802.11ac (VHT80)

Ch 155	
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 according to ISO/IEC 17025.

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

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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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