Partial FCC Test Report

Report No.:	RF160429C29
FCC ID:	ACJ9TGWL15A
Test Model:	WL15A
Received Date:	Apr. 29, 2016
Test Date:	May 10, 2016 ~ May 18, 2016
Issued Date:	May 25, 2016
Applicant:	Panasonic Corporation of North America
Address:	Two Riverfront Plaza, 9th Floor, Newark, New Jersey, United States
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
Test Location:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF160429C29	Original Release	May 25, 2016

1 Certificate of Conformity

Product:	WLAN Module (Tested inside of Panasonic Personal Computer CF-54)
Brand:	Panasonic
Test Model:	WL15A
Sample Status:	Production Unit
Applicant:	Panasonic Corporation of North America
Test Date:	May 10, 2016 ~ May 18, 2016
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 : Evonne Liu , **Date:** May 25, 2016

Evonne Liu / Specialist

Approved by : Stanley Wu , **Date:** May 25, 2016

Stanley Wu / Assistant Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -22.08 dB at 0.46600 MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.57 dB at 5725 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	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	No antenna connector is used.

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	2.93 dB
	200 MHz ~1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	WLAN Module (Tested inside of Panasonic Personal Computer CF-54)
Brand	Panasonic
Test Model	WL15A
Status of EUT	Production Unit
Power Supply Rating	15.6 Vdc (adapter) 11.1 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) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
Output Power	87.30 mW for 5180 ~ 5240 MHz 96.83 mW for 5745 ~ 5825 MHz
Antenna Type	PIFA antenna with -0.09 dBi gain (5180 ~ 5240 MHz) PIFA antenna with 0.67 dBi gain (5745 ~ 5825 MHz)
Antenna Connector	N/A
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 (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	Panasonic	CF-AA5713A M3	I/P: 100-240 Vac, 50-60 Hz, 0.7-1.4 A O/P: 15.6 Vdc, 7.05 A 1.35m shielded cable w/ 1 core
Battery	Panasonic	CF-VZSU0PW	11.1 Vdc, 4200 mAh

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 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 (1TX)
B	√	-	-	√	MIMO (2TX)

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: "-" 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
		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	V0
	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
		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	V0
B	5180-5240	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	V0
	5745-5825	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	V0

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)
-	5180-5240	802.11ac (VHT80)	42	42	OFDM	BPSK	V0
-	5745-5825	802.11n (HT20)	149 to 165	149	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)
-	5745-5825	802.11n (HT20)	149 to 165	149	OFDM	BPSK	MCS0

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
		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	V0
	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
		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	V0
B	5180-5240	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	V0
	5745-5825	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	V0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Toby Tian
APCM	25 deg. C, 65 % RH	15.6 Vdc	Carlos Chen

3.3 Duty Cycle of Test Signal

Mode A (1TX)

MODULATION TYPE: BPSK

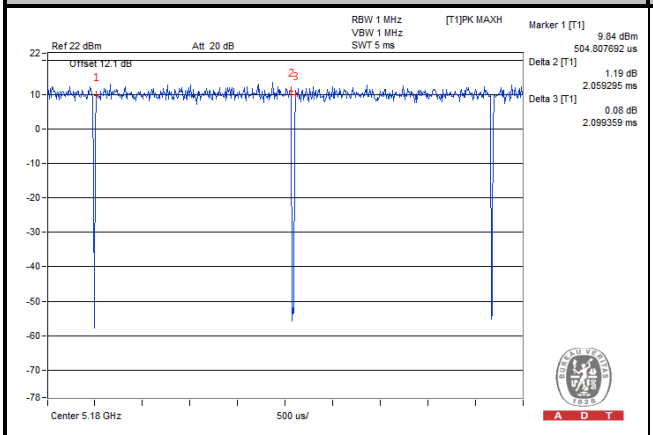
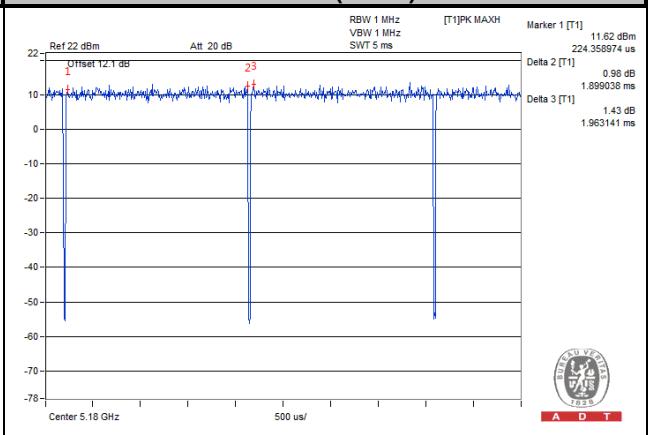
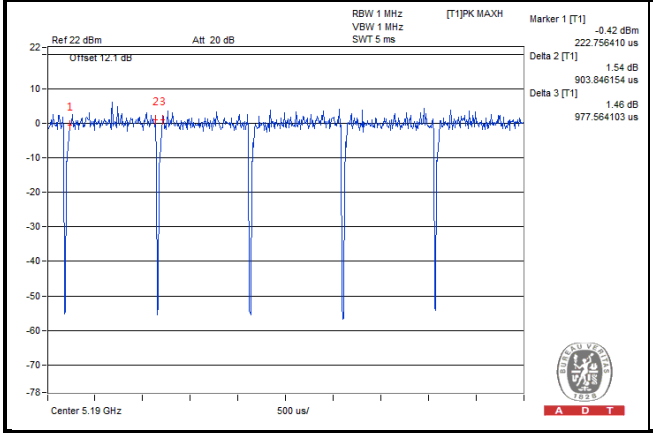
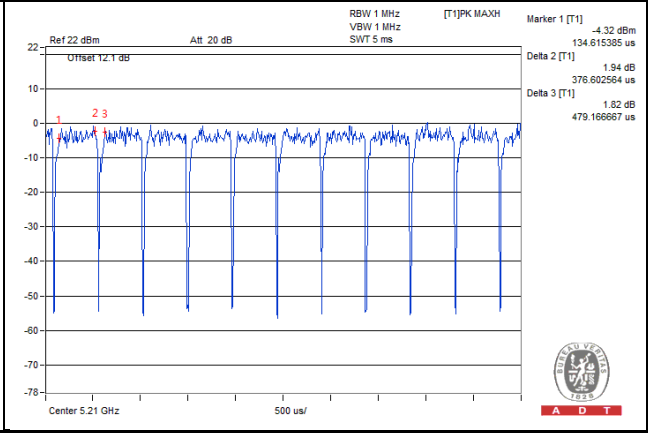
Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle of test signal is ≥ 98%, duty factor is not required.

802.11n (HT20): Duty cycle = 1.899/1.963 = 0.951, Duty factor = 10 * log(1/0.951) = 0.22

802.11n (HT40): Duty cycle = 903/977 = 0.924, Duty factor = 10 * log(1/0.924) = 0.34

802.11ac (VHT80): Duty cycle = 376/479 = 0.786, Duty factor = 10 * log(1/0.786) = 1.05

802.11a	802.11n (HT20)
	
802.11n (HT40)	**802.11ac (VHT80)**
	

MODULATION TYPE: QPSK

Duty cycle of test signal is < 98 %, duty factor is required.

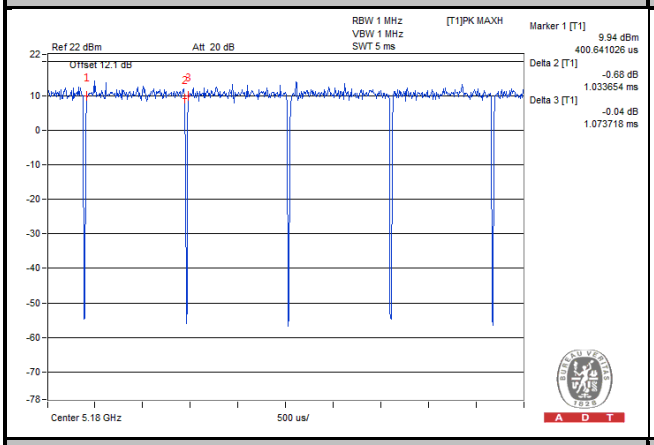
802.11a: Duty cycle = 1.033/1.073 = 0.962, Duty factor = 10 * log(1/0.962) = 0.17

802.11n (HT20): Duty cycle = 0.969/1.027 = 0.943, Duty factor = 10 * log(1/0.943) = 0.25

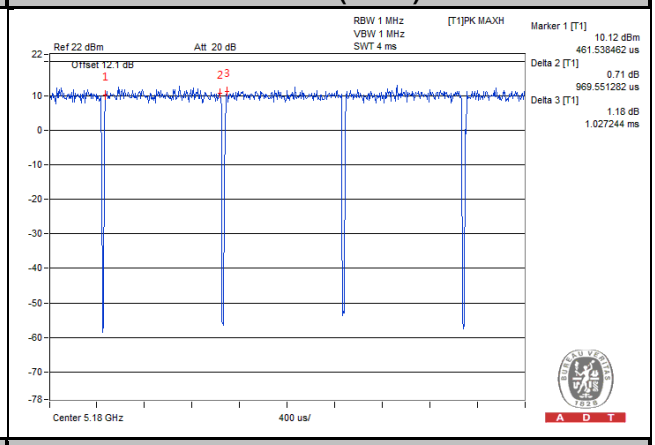
802.11n (HT40): Duty cycle = 461/528 = 0.872, Duty factor = 10 * log(1/0.872) = 0.59

802.11ac (VHT80): Duty cycle = 216/286 = 0.754, Duty factor = 10 * log(1/0.754) = 1.23

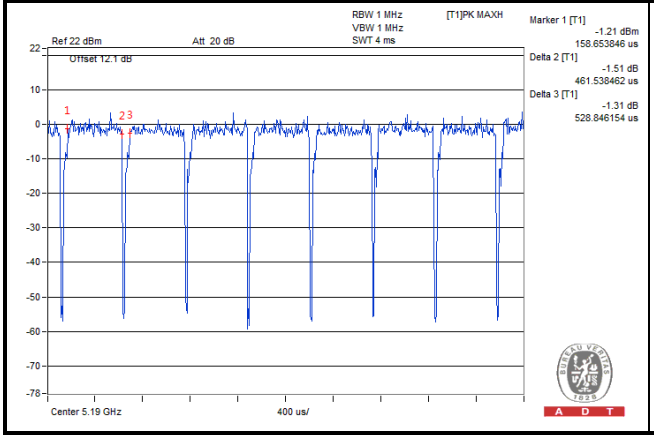
802.11a



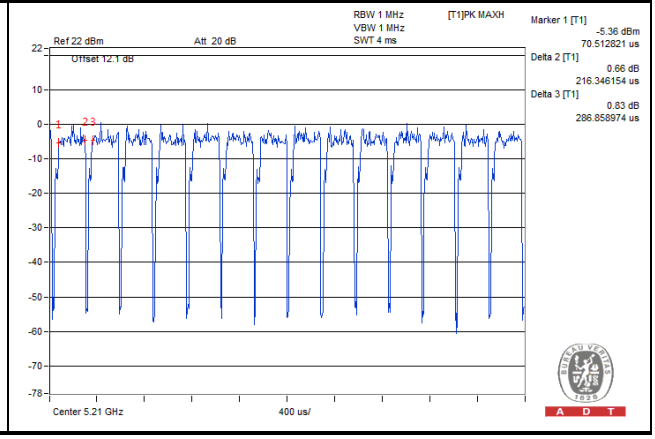
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



MODULATION TYPE: 16QAM

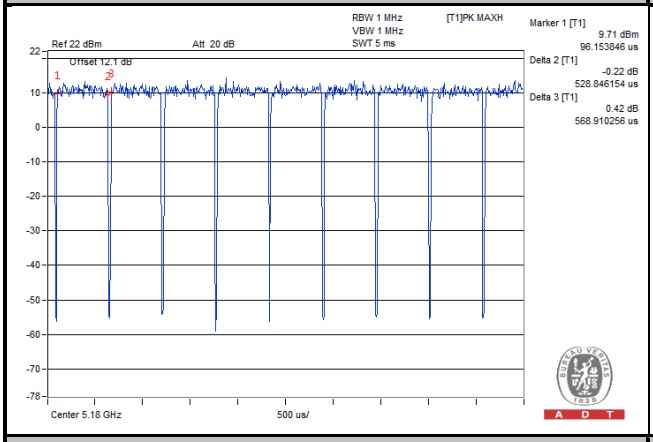
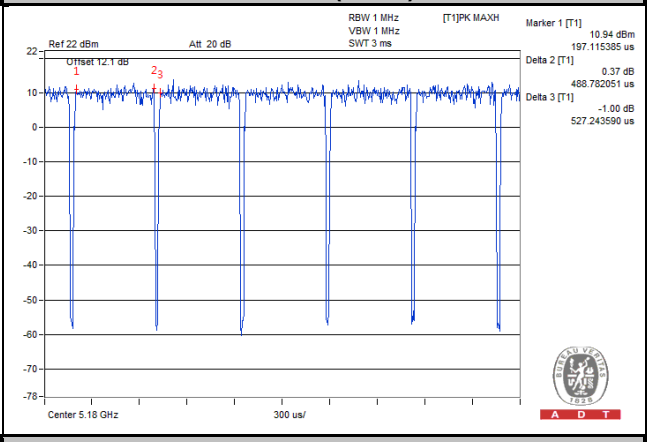
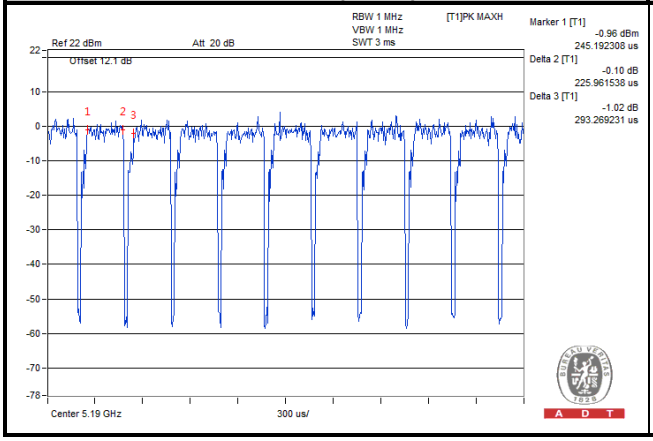
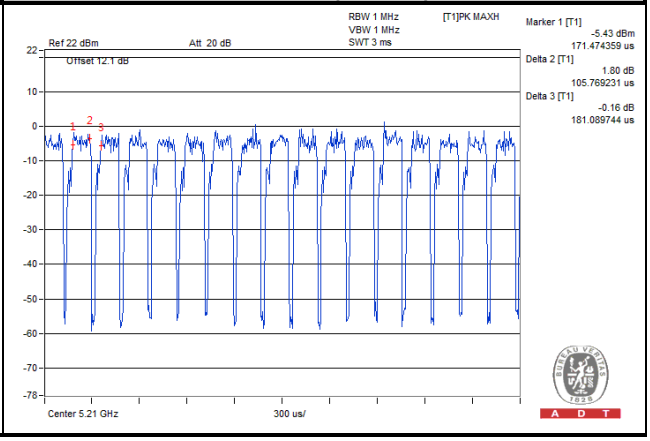
Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = 528/568 = 0.929, Duty factor = 10 * log(1/0.929) = 0.32

802.11n (HT20): Duty cycle = 488/527 = 0.927, Duty factor = 10 * log(1/0.927) = 0.33

802.11n (HT40): Duty cycle = 225/293 = 0.770, Duty factor = 10 * log(1/0.770) = 1.13

802.11ac (VHT80): Duty cycle = 105/181 = 0.584, Duty factor = 10 * log(1/0.584) = 2.34

802.11a	802.11n (HT20)
	
802.11n (HT40)	**802.11ac (VHT80)**
	

MODULATION TYPE: 64QAM

Duty cycle of test signal is < 98 %, duty factor is required.

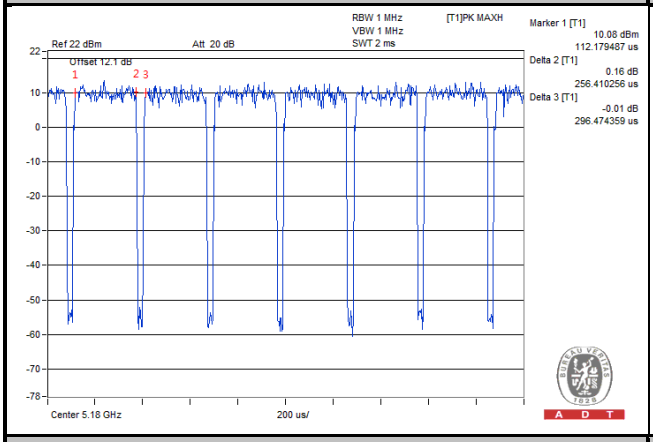
802.11a: Duty cycle = 256/296 = 0.864, Duty factor = 10 * log(1/0.864) = 0.63

802.11n (HT20): Duty cycle = 254/296 = 0.859, Duty factor = 10 * log(1/0.859) = 0.66

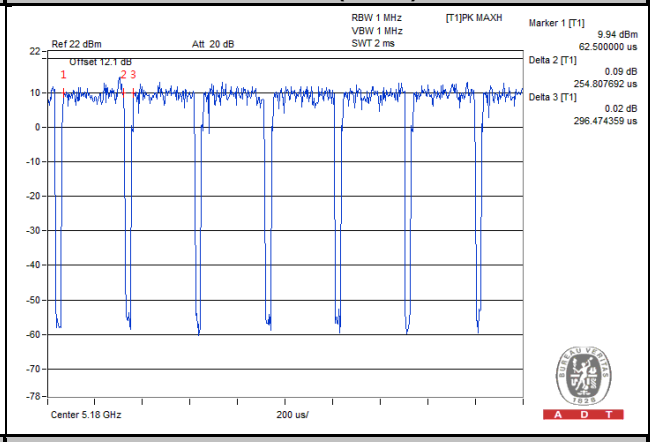
802.11n (HT40): Duty cycle = 110/184 = 0.600, Duty factor = 10 * log(1/0.600) = 2.22

802.11ac (VHT80): Duty cycle = 60/129 = 0.469, Duty factor = 10 * log(1/0.469) = 3.29

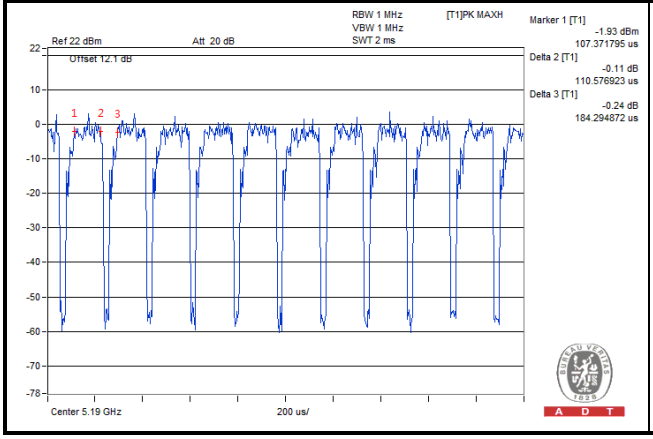
802.11a



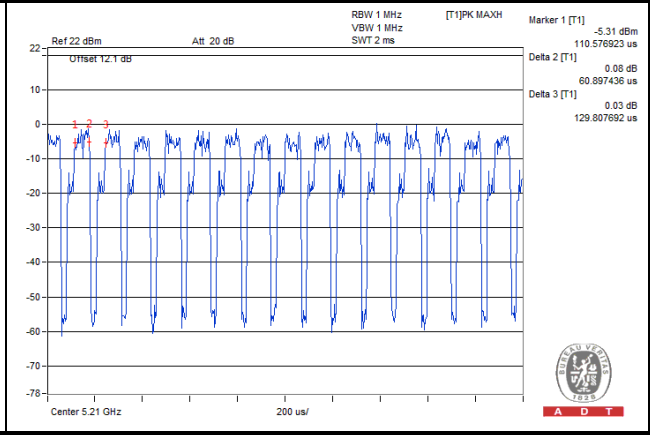
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

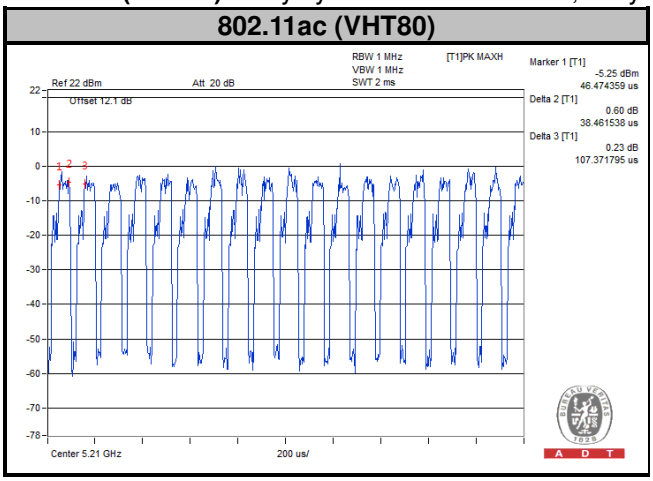


MODULATION TYPE: 256QAM

Duty cycle of test signal is < 98 %, duty factor is required.

802.11ac (VHT80): Duty cycle = 38/107 = 0.358, Duty factor = 10 * log(1/0.358) = 4.46

802.11ac (VHT80)



Mode B (2TX)

MODULATION TYPE: BPSK

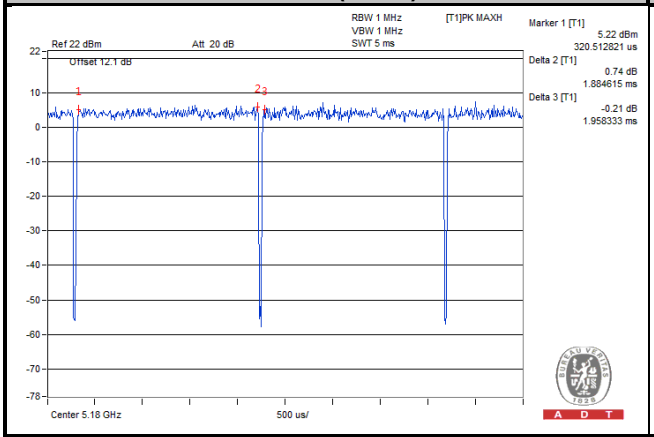
Duty cycle of test signal is < 98 %, duty factor is required.

802.11n (HT20): Duty cycle = 1.884/1.958 = 0.905, Duty factor = 10 * log(1/0.905) = 0.43

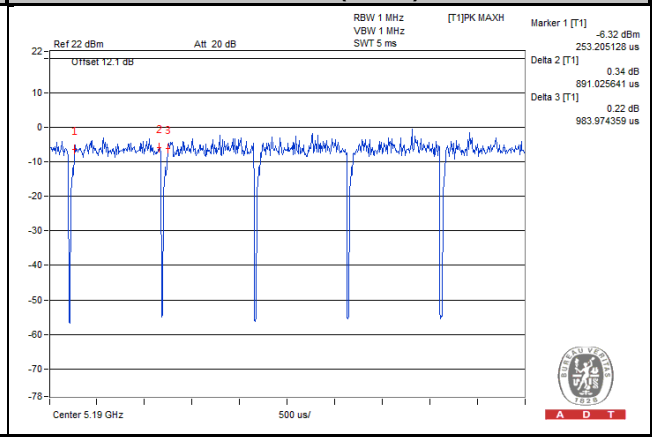
802.11n (HT40): Duty cycle = 891/983 = 0.924, Duty factor = 10 * log(1/0.924) = 0.34

802.11ac (VHT80): Duty cycle = 206/290 = 0.712, Duty factor = 10 * log(1/0.712) = 1.47

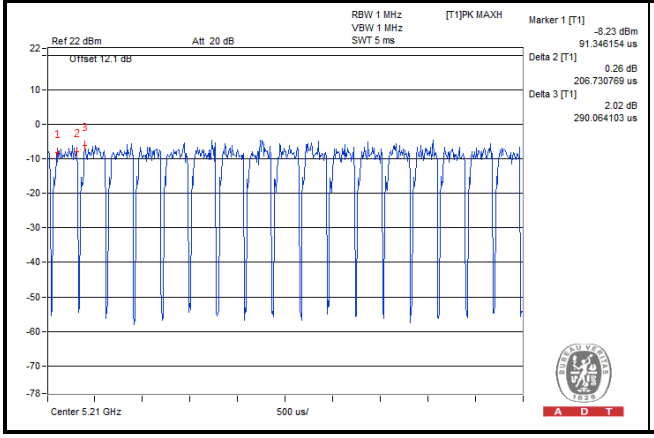
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



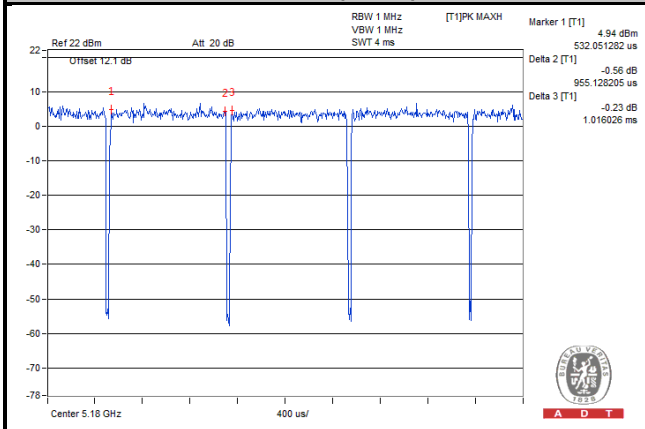
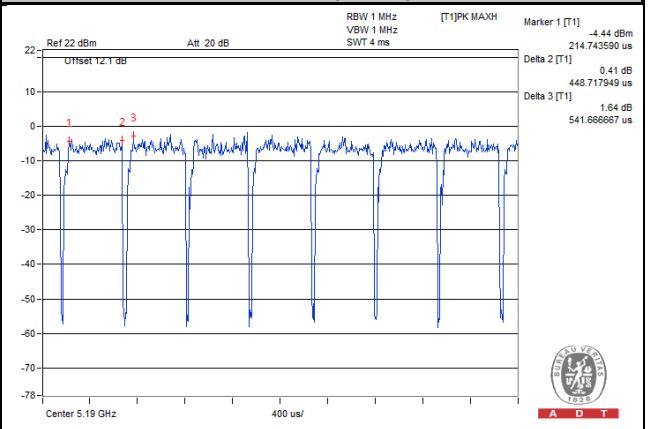
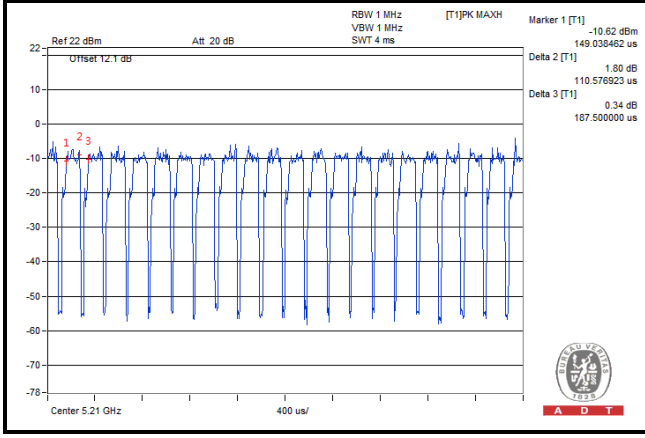
MODULATION TYPE: QPSK

Duty cycle of test signal is < 98 %, duty factor is required.

802.11n (HT20): Duty cycle = 0.955/1.016 = 0.828, Duty factor = 10 * log(1/0.828) = 0.82

802.11n (HT40): Duty cycle = 448/541 = 0.872, Duty factor = 10 * log(1/0.872) = 0.59

802.11ac (VHT80): Duty cycle = 110/187 = 0.589, Duty factor = 10 * log(1/0.589) = 2.29

802.11n (HT20)	802.11n (HT40)
	
802.11ac (VHT80)	
	

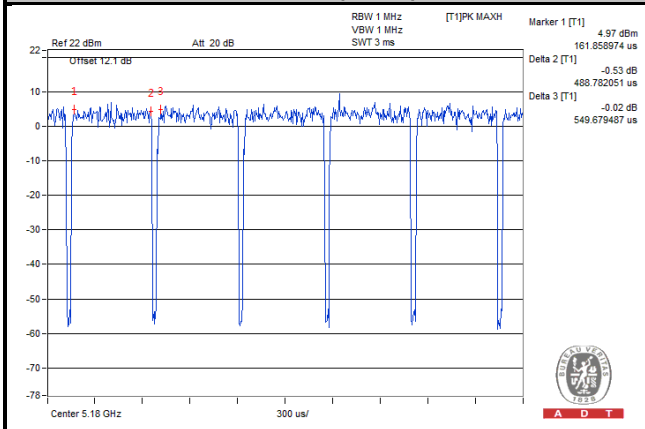
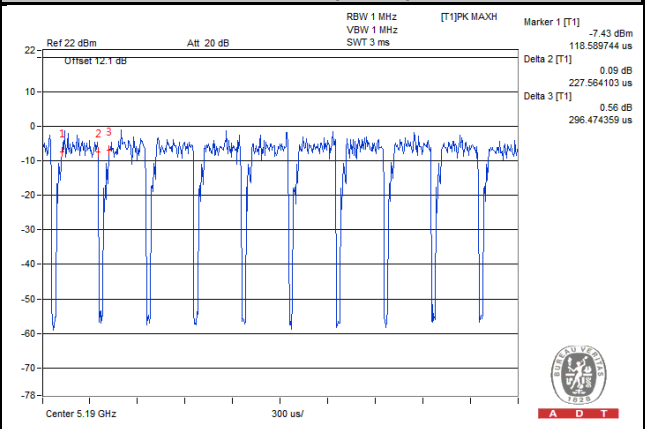
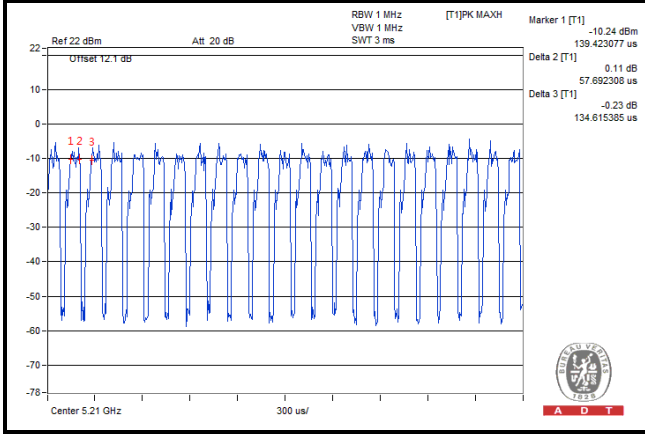
MODULATION TYPE: 16QAM

Duty cycle of test signal is < 98 %, duty factor is required.

802.11n (HT20): Duty cycle = 488/549 = 0.889, Duty factor = 10 * log(1/0.889) = 0.51

802.11n (HT40): Duty cycle = 227/296 = 0.767, Duty factor = 10 * log(1/0.767) = 1.15

802.11ac (VHT80): Duty cycle = 57/134 = 0.428, Duty factor = 10 * log(1/0.428) = 3.68

802.11n (HT20)	802.11n (HT40)
	
802.11ac (VHT80)	
	

MODULATION TYPE: 64QAM

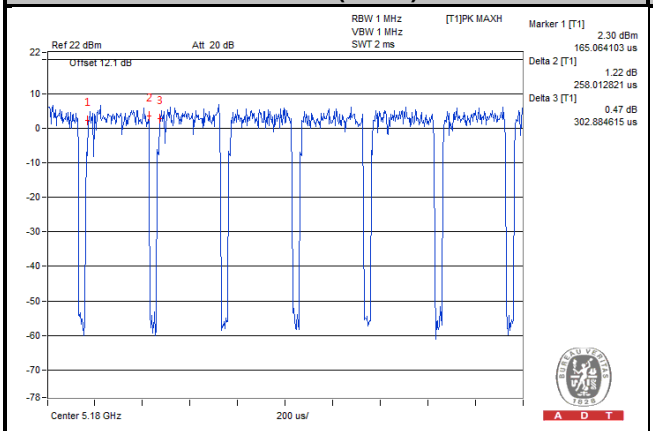
Duty cycle of test signal is < 98 %, duty factor is required.

802.11n (HT20): Duty cycle = 258/302 = 0.851, Duty factor = 10 * log(1/0.851) = 0.7

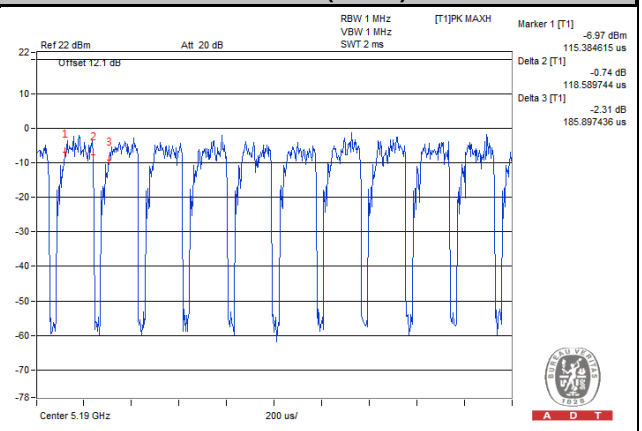
802.11n (HT40): Duty cycle = 118/185 = 0.637, Duty factor = 10 * log(1/0.637) = 1.95

802.11ac (VHT80): Duty cycle = 38/108 = 0.352, Duty factor = 10 * log(1/0.352) = 4.52

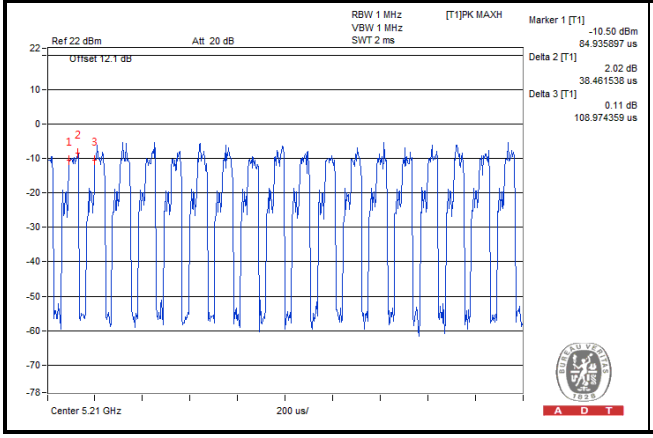
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

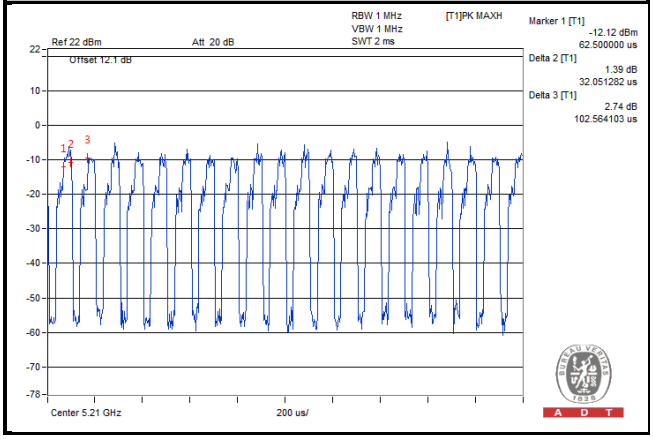


MODULATION TYPE: 256QAM

Duty cycle of test signal is < 98 %, duty factor is required.

802.11ac (VHT80): Duty cycle = 32/102 = 0.312, Duty factor = 10 * log(1/0.312) = 5.05

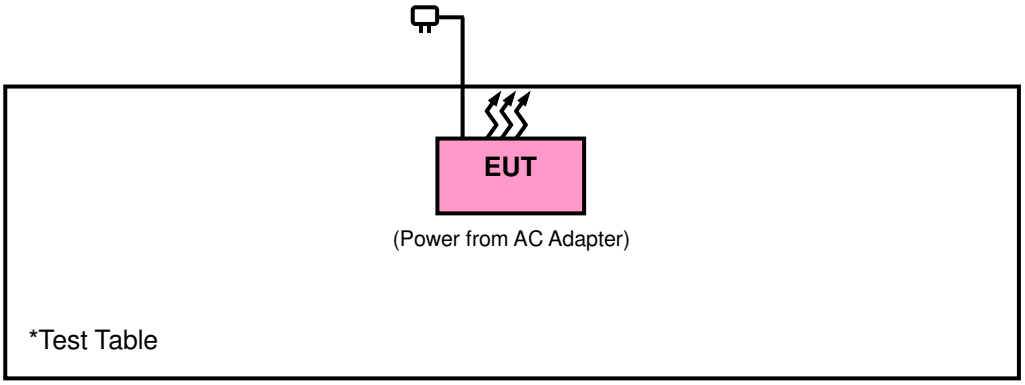
802.11ac (VHT80)



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 v01r02
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.

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 v01r02	Field Strength at 3 m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Applicable To	**EIRP Limit**	**Equivalent Field Strength at 3 m**
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK: -27 (dBm/MHz) [*1] PK: -17 (dBm/MHz) [*2]	PK: 68.2 (dBμV/m) [*1] PK: 78.2 (dBμV/m) [*2]

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

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

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

4.1.3 Test Instruments

Description & Manaufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Jan. 21, 2016	Jan. 20, 2017
Spectrum Analyzer Agilent	N9010A	MY52220314	Sep. 03, 2015	Sep. 02, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2015	Dec. 16, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 04, 2016	Jan. 03, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Jan. 08, 2016	Jan. 07, 2017
Loop Antenna	EM-6879	269	Jul. 31, 2015	Jul. 30, 2016
Bluetooth Tester	CBT	100980	Apr. 27, 2015	Apr. 26, 2017
Agilent Communications Tester-Wireless	8960 Series 10	MY53201073	Jul. 03, 2015	Jul. 02, 2017
Preamplifier EMCI	EMC 012645	980115	Dec. 21, 2015	Dec. 20, 2016
Preamplifier EMCI	EMC 184045	980116	Dec. 21, 2015	Dec. 20, 2016
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2015	Dec. 27, 2016
Power Meter Anritsu	ML2495A	1232002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor Anritsu	MA2411B	1207325	Sep. 21, 2015	Sep. 20, 2016
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 12, 2015	Oct. 11, 2016
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 12, 2015	Oct. 11, 2016
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 12, 2015	Oct. 11, 2016
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA

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 HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The FCC Site Registration No. is 690701.
5. The IC Site Registration No. is IC7450F-10.

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:

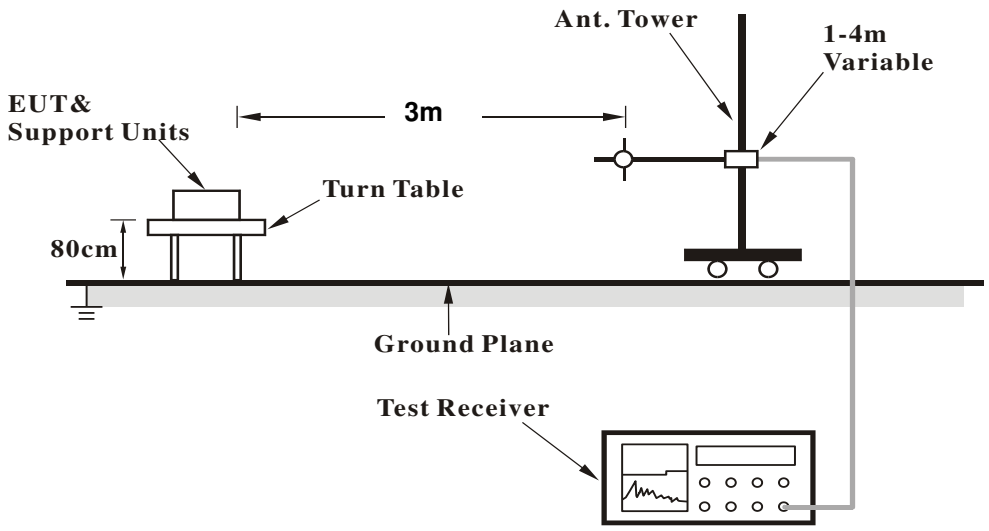
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for RMS Average (Duty cycle < 98 %) for Average detection (AV) at frequency above 1 GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 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

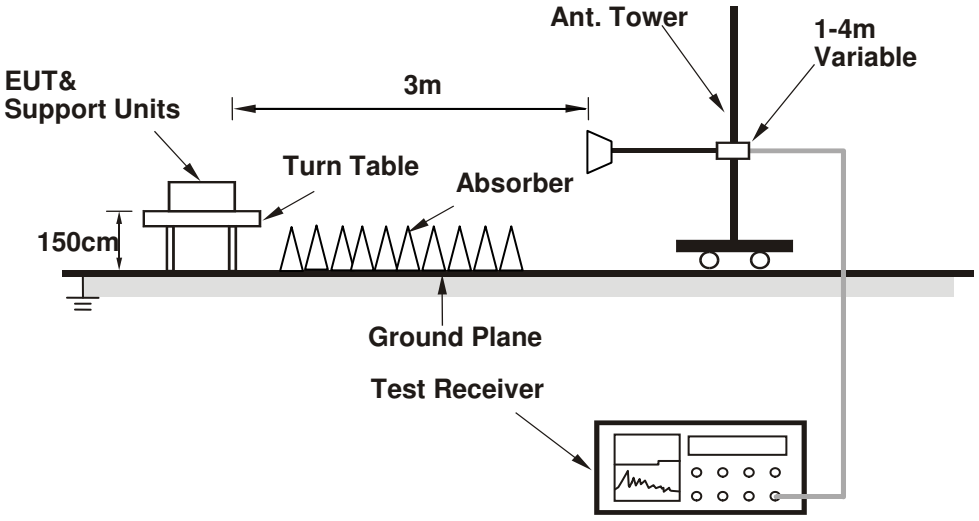
No deviation.

4.1.6 Test Set Up

<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

Mode A (1TX)

Above 1 GHz Data：

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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	50.15	49.95	54	-3.85	31.32	6.2	37.32	167	71	Average
5148	66.05	65.85	74	-7.95	31.32	6.2	37.32	167	71	Peak
5180	100.4	100.17			31.35	6.22	37.34	167	71	Average
5180	109.46	109.23			31.35	6.22	37.34	167	71	Peak
5408	46.53	45.87	54	-7.47	31.52	6.32	37.18	167	71	Average
5408	60.5	59.84	74	-13.5	31.52	6.32	37.18	167	71	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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	49.82	49.62	54	-4.18	31.32	6.2	37.32	200	357	Average
5150	65.04	64.84	74	-8.96	31.32	6.2	37.32	200	357	Peak
5180	99.66	99.43			31.35	6.22	37.34	200	357	Average
5180	108.51	108.28			31.35	6.22	37.34	200	357	Peak
5414	42.71	42.04	54	-11.29	31.53	6.32	37.18	200	357	Average
5414	60.51	59.84	74	-13.49	31.53	6.32	37.18	200	357	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5068	45.53	45.38	54	-8.47	31.25	6.17	37.27	167	70	Average
5068	60.82	60.67	74	-13.18	31.25	6.17	37.27	167	70	Peak
5220	100.57	100.32			31.37	6.24	37.36	167	70	Average
5220	109.9	109.65			31.37	6.24	37.36	167	70	Peak
5448	46.33	45.56	54	-7.67	31.56	6.34	37.13	167	70	Average
5448	62.53	61.76	74	-11.47	31.56	6.34	37.13	167	70	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5060	42.99	42.82	54	-11.01	31.25	6.17	37.25	197	357	Average
5060	59.6	59.43	74	-14.4	31.25	6.17	37.25	197	357	Peak
5220	98.64	98.39			31.37	6.24	37.36	197	357	Average
5220	108	107.75			31.37	6.24	37.36	197	357	Peak
5446	42.56	41.79	54	-11.44	31.56	6.34	37.13	197	357	Average
5446	60.56	59.79	74	-13.44	31.56	6.34	37.13	197	357	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5076	46.19	46.02	54	-7.81	31.27	6.17	37.27	162	71	Average
5076	61.14	60.97	74	-12.86	31.27	6.17	37.27	162	71	Peak
5240	100.38	100.06			31.39	6.25	37.32	162	71	Average
5240	109.11	108.79			31.39	6.25	37.32	162	71	Peak
5396	45.56	44.91	54	-8.44	31.52	6.31	37.18	162	71	Average
5396	60.78	60.13	74	-13.22	31.52	6.31	37.18	162	71	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5060	44.42	44.25	54	-9.58	31.25	6.17	37.25	196	356	Average
5060	59.99	59.82	74	-14.01	31.25	6.17	37.25	196	356	Peak
5240	99.42	99.1			31.39	6.25	37.32	196	356	Average
5240	108.15	107.83			31.39	6.25	37.32	196	356	Peak
5380	44.65	44.01	54	-9.35	31.51	6.31	37.18	196	356	Average
5380	59.64	59	74	-14.36	31.51	6.31	37.18	196	356	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	67.12	65.93	68.2	-1.08	31.93	6.69	37.43	156	73	Peak
*5725	76.97	75.69	78.2	-1.23	31.96	6.75	37.43	156	73	Peak
5745	101.2	99.93			31.99	6.75	37.47	156	73	Average
5745	110.75	109.48			31.99	6.75	37.47	156	73	Peak
*5850	59.03	57.51	78.2	-19.17	32.15	6.88	37.51	156	73	Peak
*5861	60.06	58.43	68.2	-8.14	32.18	6.95	37.5	156	73	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	66.78	65.59	68.2	-1.42	31.93	6.69	37.43	199	188	Peak
*5725	77.06	75.78	78.2	-1.14	31.96	6.75	37.43	199	188	Peak
5745	99.36	98.09			31.99	6.75	37.47	199	188	Average
5745	108.93	107.66			31.99	6.75	37.47	199	188	Peak
*5850	60.57	59.05	78.2	-17.63	32.15	6.88	37.51	199	188	Peak
*5861	59.14	57.51	68.2	-9.06	32.18	6.95	37.5	199	188	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	62.1	60.91	68.2	-6.1	31.93	6.69	37.43	157	68	Peak
*5725	62.27	60.99	78.2	-15.93	31.96	6.75	37.43	157	68	Peak
5785	101.55	100.23			32.04	6.82	37.54	157	68	Average
5785	110.9	109.58			32.04	6.82	37.54	157	68	Peak
*5850	61.52	60	78.2	-16.68	32.15	6.88	37.51	157	68	Peak
*5861	60.37	58.74	68.2	-7.83	32.18	6.95	37.5	157	68	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	61.45	60.26	68.2	-6.75	31.93	6.69	37.43	198	190	Peak
*5725	60.62	59.34	78.2	-17.58	31.96	6.75	37.43	198	190	Peak
5785	99.56	98.24			32.04	6.82	37.54	198	190	Average
5785	108.95	107.63			32.04	6.82	37.54	198	190	Peak
*5850	60.04	58.52	78.2	-18.16	32.15	6.88	37.51	198	190	Peak
*5861	59.63	58	68.2	-8.57	32.18	6.95	37.5	198	190	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	59.9	58.71	68.2	-8.3	31.93	6.69	37.43	155	61	Peak
*5725	60	58.72	78.2	-18.2	31.96	6.75	37.43	155	61	Peak
5825	101.54	100.07			32.12	6.88	37.53	155	61	Average
5825	110.86	109.39			32.12	6.88	37.53	155	61	Peak
*5850	71.44	69.92	78.2	-6.76	32.15	6.88	37.51	155	61	Peak
*5861	65.97	64.34	68.2	-2.23	32.18	6.95	37.5	155	61	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	60.51	59.32	68.2	-7.69	31.93	6.69	37.43	199	192	Peak
*5725	59.72	58.44	78.2	-18.48	31.96	6.75	37.43	199	192	Peak
5825	99.62	98.15			32.12	6.88	37.53	199	192	Average
5825	108.99	107.52			32.12	6.88	37.53	199	192	Peak
*5850	69.89	68.37	78.2	-8.31	32.15	6.88	37.51	199	192	Peak
*5861	65.73	64.1	68.2	-2.47	32.18	6.95	37.5	199	192	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 (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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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	50.1	49.9	54	-3.9	31.32	6.2	37.32	162	71	Average
5150	64.79	64.59	74	-9.21	31.32	6.2	37.32	162	71	Peak
5180	101.54	101.31			31.35	6.22	37.34	162	71	Average
5180	109.91	109.68			31.35	6.22	37.34	162	71	Peak
5416	46.74	46.07	54	-7.26	31.53	6.32	37.18	162	71	Average
5416	60.35	59.68	74	-13.65	31.53	6.32	37.18	162	71	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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	49.12	48.92	54	-4.88	31.32	6.2	37.32	199	358	Average
5148	62.48	62.28	74	-11.52	31.32	6.2	37.32	199	358	Peak
5180	99.69	99.46			31.35	6.22	37.34	199	358	Average
5180	108.98	108.75			31.35	6.22	37.34	199	358	Peak
5414	43.05	42.38	54	-10.95	31.53	6.32	37.18	199	358	Average
5414	59.61	58.94	74	-14.39	31.53	6.32	37.18	199	358	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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	44.85	44.65	54	-9.15	31.32	6.2	37.32	168	69	Average
5148	60.75	60.55	74	-13.25	31.32	6.2	37.32	168	69	Peak
5220	100.8	100.55			31.37	6.24	37.36	168	69	Average
5220	109.75	109.5			31.37	6.24	37.36	168	69	Peak
5414	45.75	45.08	54	-8.25	31.53	6.32	37.18	168	69	Average
5414	60.54	59.87	74	-13.46	31.53	6.32	37.18	168	69	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5024	42.91	42.77	54	-11.09	31.23	6.15	37.24	197	357	Average
5024	59.74	59.6	74	-14.26	31.23	6.15	37.24	197	357	Peak
5220	99.36	99.11			31.37	6.24	37.36	197	357	Average
5220	108.3	108.05			31.37	6.24	37.36	197	357	Peak
5406	42.35	41.69	54	-11.65	31.52	6.32	37.18	197	357	Average
5406	59.69	59.03	74	-14.31	31.52	6.32	37.18	197	357	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5082	45.95	45.78	54	-8.05	31.27	6.17	37.27	163	72	Average
5082	60.16	59.99	74	-13.84	31.27	6.17	37.27	163	72	Peak
5240	99.98	99.66			31.39	6.25	37.32	163	72	Average
5240	108.89	108.57			31.39	6.25	37.32	163	72	Peak
5392	45.36	44.72	54	-8.64	31.51	6.31	37.18	163	72	Average
5392	60.64	60	74	-13.36	31.51	6.31	37.18	163	72	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5032	43.79	43.65	54	-10.21	31.23	6.15	37.24	204	357	Average
5032	59.88	59.74	74	-14.12	31.23	6.15	37.24	204	357	Peak
5240	99.69	99.37			31.39	6.25	37.32	204	357	Average
5240	108.29	107.97			31.39	6.25	37.32	204	357	Peak
5448	44.47	43.7	54	-9.53	31.56	6.34	37.13	204	357	Average
5448	60.51	59.74	74	-13.49	31.56	6.34	37.13	204	357	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	66.62	65.43	68.2	-1.58	31.93	6.69	37.43	155	73	Peak
*5725	77.63	76.35	78.2	-0.57	31.96	6.75	37.43	155	73	Peak
5745	100.41	99.14			31.99	6.75	37.47	155	73	Average
5745	109.9	108.63			31.99	6.75	37.47	155	73	Peak
*5850	60.54	59.02	78.2	-17.66	32.15	6.88	37.51	155	73	Peak
*5861	59.97	58.34	68.2	-8.23	32.18	6.95	37.5	155	73	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	66.64	65.45	68.2	-1.56	31.93	6.69	37.43	200	185	Peak
*5725	76.38	75.1	78.2	-1.82	31.96	6.75	37.43	200	185	Peak
5745	98.94	97.67			31.99	6.75	37.47	200	185	Average
5745	108.45	107.18			31.99	6.75	37.47	200	185	Peak
*5850	59.51	57.99	78.2	-18.69	32.15	6.88	37.51	200	185	Peak
*5861	59.94	58.31	68.2	-8.26	32.18	6.95	37.5	200	185	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	60.8	59.61	68.2	-7.4	31.93	6.69	37.43	154	79	Peak
*5725	60.8	59.52	78.2	-17.4	31.96	6.75	37.43	154	79	Peak
5785	101.33	100.01			32.04	6.82	37.54	154	79	Average
5785	110.72	109.4			32.04	6.82	37.54	154	79	Peak
*5850	61.64	60.12	78.2	-16.56	32.15	6.88	37.51	154	79	Peak
*5861	61.88	60.25	68.2	-6.32	32.18	6.95	37.5	154	79	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	61.13	59.94	68.2	-7.07	31.93	6.69	37.43	197	183	Peak
*5725	61.2	59.92	78.2	-17	31.96	6.75	37.43	197	183	Peak
5785	99.6	98.28			32.04	6.82	37.54	197	183	Average
5785	108.99	107.67			32.04	6.82	37.54	197	183	Peak
*5850	60.16	58.64	78.2	-18.04	32.15	6.88	37.51	197	183	Peak
*5861	61.32	59.69	68.2	-6.88	32.18	6.95	37.5	197	183	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	59.96	58.77	68.2	-8.24	31.93	6.69	37.43	156	75	Peak
*5725	59.53	58.25	78.2	-18.67	31.96	6.75	37.43	156	75	Peak
5825	101.49	100.02			32.12	6.88	37.53	156	75	Average
5825	110.72	109.25			32.12	6.88	37.53	156	75	Peak
*5850	73.92	72.4	78.2	-4.28	32.15	6.88	37.51	156	75	Peak
*5861	66.02	64.39	68.2	-2.18	32.18	6.95	37.5	156	75	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	59.58	58.39	68.2	-8.62	31.93	6.69	37.43	198	191	Peak
*5725	59.58	58.3	78.2	-18.62	31.96	6.75	37.43	198	191	Peak
5825	99.58	98.11			32.12	6.88	37.53	198	191	Average
5825	108.97	107.5			32.12	6.88	37.53	198	191	Peak
*5850	73.07	71.55	78.2	-5.13	32.15	6.88	37.51	198	191	Peak
*5861	63.96	62.33	68.2	-4.24	32.18	6.95	37.5	198	191	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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	49.76	49.56	54	-4.24	31.32	6.2	37.32	159	72	Average
5150	61.7	61.5	74	-12.3	31.32	6.2	37.32	159	72	Peak
5190	94.48	94.25			31.35	6.22	37.34	159	72	Average
5190	103.56	103.33			31.35	6.22	37.34	159	72	Peak
5432	42.52	41.78	54	-11.48	31.55	6.32	37.13	159	72	Average
5432	61.56	60.82	74	-12.44	31.55	6.32	37.13	159	72	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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	48.35	48.15	54	-5.65	31.32	6.2	37.32	207	89	Average
5150	61.75	61.55	74	-12.25	31.32	6.2	37.32	207	89	Peak
5190	93.76	93.53			31.35	6.22	37.34	207	89	Average
5190	102.1	101.87			31.35	6.22	37.34	207	89	Peak
5418	41.23	40.56	54	-12.77	31.53	6.32	37.18	207	89	Average
5418	60.21	59.54	74	-13.79	31.53	6.32	37.18	207	89	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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	42.49	42.28	54	-11.51	31.31	6.2	37.3	159	72	Average
5132	60.31	60.1	74	-13.69	31.31	6.2	37.3	159	72	Peak
5230	94.71	94.4			31.39	6.24	37.32	159	72	Average
5230	103.87	103.56			31.39	6.24	37.32	159	72	Peak
5418	42.54	41.87	54	-11.46	31.53	6.32	37.18	159	72	Average
5418	60.56	59.89	74	-13.44	31.53	6.32	37.18	159	72	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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	41.01	40.86	54	-12.99	31.24	6.15	37.24	205	89	Average
5038	60.23	60.08	74	-13.77	31.24	6.15	37.24	205	89	Peak
5230	93.08	92.77			31.39	6.24	37.32	205	89	Average
5230	102.12	101.81			31.39	6.24	37.32	205	89	Peak
5428	41.04	40.32	54	-12.96	31.53	6.32	37.13	205	89	Average
5428	61.21	60.49	74	-12.79	31.53	6.32	37.13	205	89	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	67.05	65.86	68.2	-1.15	31.93	6.69	37.43	157	72	Peak
*5725	71.6	70.32	78.2	-6.6	31.96	6.75	37.43	157	72	Peak
5755	97.86	96.57			32.01	6.75	37.47	157	72	Average
5755	107.44	106.15			32.01	6.75	37.47	157	72	Peak
*5850	59.5	57.98	78.2	-18.7	32.15	6.88	37.51	157	72	Peak
*5861	59.9	58.27	68.2	-8.3	32.18	6.95	37.5	157	72	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	65.6	64.41	68.2	-2.6	31.93	6.69	37.43	198	181	Peak
*5725	68.51	67.23	78.2	-9.69	31.96	6.75	37.43	198	181	Peak
5755	95.95	94.66			32.01	6.75	37.47	198	181	Average
5755	105.62	104.33			32.01	6.75	37.47	198	181	Peak
*5850	60.43	58.91	78.2	-17.77	32.15	6.88	37.51	198	181	Peak
*5861	60.1	58.47	68.2	-8.1	32.18	6.95	37.5	198	181	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	63.3	62.11	68.2	-4.9	31.93	6.69	37.43	158	70	Peak
*5725	65.9	64.62	78.2	-12.3	31.96	6.75	37.43	158	70	Peak
5795	98.97	97.62			32.07	6.82	37.54	158	70	Average
5795	108.7	107.35			32.07	6.82	37.54	158	70	Peak
*5850	66.93	65.41	78.2	-11.27	32.15	6.88	37.51	158	70	Peak
*5861	65.43	63.8	68.2	-2.77	32.18	6.95	37.5	158	70	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	64.23	63.04	68.2	-3.97	31.93	6.69	37.43	193	200	Peak
*5725	66.59	65.31	78.2	-11.61	31.96	6.75	37.43	193	200	Peak
5795	97.23	95.88			32.07	6.82	37.54	193	200	Average
5795	106.91	105.56			32.07	6.82	37.54	193	200	Peak
*5850	64.39	62.87	78.2	-13.81	32.15	6.88	37.51	193	200	Peak
*5861	64	62.37	68.2	-4.2	32.18	6.95	37.5	193	200	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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	50.29	50.08	54	-3.71	31.31	6.2	37.3	159	70	Average
5132	63.62	63.41	74	-10.38	31.31	6.2	37.3	159	70	Peak
5210	89.79	89.54			31.37	6.24	37.36	159	70	Average
5210	99.23	98.98			31.37	6.24	37.36	159	70	Peak
5454	40.79	39.97	54	-13.21	31.56	6.34	37.08	159	70	Average
5454	60.49	59.67	74	-13.51	31.56	6.34	37.08	159	70	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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	47.9	47.7	54	-6.1	31.32	6.2	37.32	215	188	Average
5144	62.39	62.19	74	-11.61	31.32	6.2	37.32	215	188	Peak
5210	89.21	88.96			31.37	6.24	37.36	215	188	Average
5210	98.75	98.5			31.37	6.24	37.36	215	188	Peak
5426	39.97	39.25	54	-14.03	31.53	6.32	37.13	215	188	Average
5426	60.42	59.7	74	-13.58	31.53	6.32	37.13	215	188	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5714	64.83	63.64	68.2	-3.37	31.93	6.69	37.43	158	77	Peak
5725	68.33	67.05	78.2	-9.87	31.96	6.75	37.43	158	77	Peak
5775	94.83	93.47			32.04	6.82	37.5	158	77	Average
5775	104.28	102.92			32.04	6.82	37.5	158	77	Peak
5850	68.51	66.99	78.2	-9.69	32.15	6.88	37.51	158	77	Peak
5861	67.18	65.55	68.2	-1.02	32.18	6.95	37.5	158	77	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5714	64.84	63.65	68.2	-3.36	31.93	6.69	37.43	192	207	Peak
5725	67.82	66.54	78.2	-10.38	31.96	6.75	37.43	192	207	Peak
5775	93.32	91.96			32.04	6.82	37.5	192	207	Average
5775	102.67	101.31			32.04	6.82	37.5	192	207	Peak
5850	68.44	66.92	78.2	-9.76	32.15	6.88	37.51	192	207	Peak
5861	66.32	64.69	68.2	-1.88	32.18	6.95	37.5	192	207	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

Mode B (2TX)

Above 1 GHz Data：

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5096	44.05	43.86	54	-9.95	31.28	6.19	37.28	168	72	Average
5096	59.87	59.68	74	-14.13	31.28	6.19	37.28	168	72	Peak
5180	94.8	94.57			31.35	6.22	37.34	168	72	Average
5180	104.45	104.22			31.35	6.22	37.34	168	72	Peak
5460	42.58	41.76	54	-11.42	31.56	6.34	37.08	168	72	Average
5460	60.53	59.71	74	-13.47	31.56	6.34	37.08	168	72	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5118	43.58	43.38	54	-10.42	31.29	6.19	37.28	200	96	Average
5118	61.12	60.92	74	-12.88	31.29	6.19	37.28	200	96	Peak
5180	99.58	99.35			31.35	6.22	37.34	200	96	Average
5180	107.81	107.58			31.35	6.22	37.34	200	96	Peak
5414	42.96	42.29	54	-11.04	31.53	6.32	37.18	200	96	Average
5414	60.39	59.72	74	-13.61	31.53	6.32	37.18	200	96	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5092	41.92	41.72	54	-12.08	31.28	6.19	37.27	168	72	Average
5092	60.01	59.81	74	-13.99	31.28	6.19	37.27	168	72	Peak
5220	94.94	94.69			31.37	6.24	37.36	168	72	Average
5220	104.43	104.18			31.37	6.24	37.36	168	72	Peak
5458	42.84	42.02	54	-11.16	31.56	6.34	37.08	168	72	Average
5458	59.6	58.78	74	-14.4	31.56	6.34	37.08	168	72	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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	42.58	42.38	54	-11.42	31.32	6.2	37.32	200	100	Average
5148	60.04	59.84	74	-13.96	31.32	6.2	37.32	200	100	Peak
5220	97.27	97.02			31.37	6.24	37.36	200	100	Average
5220	107.53	107.28			31.37	6.24	37.36	200	100	Peak
5458	43.34	42.52	54	-10.66	31.56	6.34	37.08	200	100	Average
5458	60.38	59.56	74	-13.62	31.56	6.34	37.08	200	100	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5008	41.85	41.74	54	-12.15	31.21	6.13	37.23	169	70	Average
5008	59.41	59.3	74	-14.59	31.21	6.13	37.23	169	70	Peak
5240	96.23	95.91			31.39	6.25	37.32	169	70	Average
5240	104.6	104.28			31.39	6.25	37.32	169	70	Peak
5452	41.87	41.05	54	-12.13	31.56	6.34	37.08	169	70	Average
5452	60.06	59.24	74	-13.94	31.56	6.34	37.08	169	70	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5058	42.65	42.48	54	-11.35	31.25	6.17	37.25	200	100	Average
5058	59.83	59.66	74	-14.17	31.25	6.17	37.25	200	100	Peak
5240	98.33	98.01			31.39	6.25	37.32	200	100	Average
5240	107.82	107.5			31.39	6.25	37.32	200	100	Peak
5380	44.02	43.38	54	-9.98	31.51	6.31	37.18	200	100	Average
5380	60.4	59.76	74	-13.6	31.51	6.31	37.18	200	100	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	61.45	60.26	68.2	-6.75	31.93	6.69	37.43	154	74	Peak
*5725	61.35	60.07	78.2	-16.85	31.96	6.75	37.43	154	74	Peak
5745	95.53	94.26			31.99	6.75	37.47	154	74	Average
5745	104.97	103.7			31.99	6.75	37.47	154	74	Peak
*5850	60.1	58.58	78.2	-18.1	32.15	6.88	37.51	154	74	Peak
*5861	59.33	57.7	68.2	-8.87	32.18	6.95	37.5	154	74	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	60.21	59.02	68.2	-7.99	31.93	6.69	37.43	197	186	Peak
*5725	64.96	63.68	78.2	-13.24	31.96	6.75	37.43	197	186	Peak
5745	98.7	97.43			31.99	6.75	37.47	197	186	Average
5745	108.52	107.25			31.99	6.75	37.47	197	186	Peak
*5850	59.02	57.5	78.2	-19.18	32.15	6.88	37.51	197	186	Peak
*5861	59.82	58.19	68.2	-8.38	32.18	6.95	37.5	197	186	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	59.59	58.4	68.2	-8.61	31.93	6.69	37.43	155	71	Peak
*5725	60.44	59.16	78.2	-17.76	31.96	6.75	37.43	155	71	Peak
5785	95.65	94.33			32.04	6.82	37.54	155	71	Average
5785	104.98	103.66			32.04	6.82	37.54	155	71	Peak
*5850	60.42	58.9	78.2	-17.78	32.15	6.88	37.51	155	71	Peak
*5861	60.32	58.69	68.2	-7.88	32.18	6.95	37.5	155	71	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	59.92	58.73	68.2	-8.28	31.93	6.69	37.43	197	190	Peak
*5725	59.23	57.95	78.2	-18.97	31.96	6.75	37.43	197	190	Peak
5785	98.82	97.5			32.04	6.82	37.54	197	190	Average
5785	108.51	107.19			32.04	6.82	37.54	197	190	Peak
*5850	60.62	59.1	78.2	-17.58	32.15	6.88	37.51	197	190	Peak
*5861	61.83	60.2	68.2	-6.37	32.18	6.95	37.5	197	190	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	58.88	57.69	68.2	-9.32	31.93	6.69	37.43	180	68	Peak
*5725	59.53	58.25	78.2	-18.67	31.96	6.75	37.43	180	68	Peak
5825	95.88	94.41			32.12	6.88	37.53	180	68	Average
5825	105.09	103.62			32.12	6.88	37.53	180	68	Peak
*5850	61.18	59.66	78.2	-17.02	32.15	6.88	37.51	180	68	Peak
*5861	60.6	58.97	68.2	-7.6	32.18	6.95	37.5	180	68	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	61	59.81	68.2	-7.2	31.93	6.69	37.43	199	202	Peak
*5725	60.12	58.84	78.2	-18.08	31.96	6.75	37.43	199	202	Peak
5825	98.59	97.12			32.12	6.88	37.53	199	202	Average
5825	108.5	107.03			32.12	6.88	37.53	199	202	Peak
*5850	62.52	61	78.2	-15.68	32.15	6.88	37.51	199	202	Peak
*5861	61.97	60.34	68.2	-6.23	32.18	6.95	37.5	199	202	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5018	40.77	40.65	54	-13.23	31.21	6.15	37.24	167	72	Average
5018	59.93	59.81	74	-14.07	31.21	6.15	37.24	167	72	Peak
5190	88.13	87.9			31.35	6.22	37.34	167	72	Average
5190	97.52	97.29			31.35	6.22	37.34	167	72	Peak
5446	39.74	38.97	54	-14.26	31.56	6.34	37.13	167	72	Average
5446	60.05	59.28	74	-13.95	31.56	6.34	37.13	167	72	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5138	41.88	41.67	54	-12.12	31.31	6.2	37.3	200	100	Average
5138	59.82	59.61	74	-14.18	31.31	6.2	37.3	200	100	Peak
5190	89.43	89.2			31.35	6.22	37.34	200	100	Average
5190	100.08	99.85			31.35	6.22	37.34	200	100	Peak
5412	39.74	39.07	54	-14.26	31.53	6.32	37.18	200	100	Average
5412	59.98	59.31	74	-14.02	31.53	6.32	37.18	200	100	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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	40.14	39.99	54	-13.86	31.24	6.15	37.24	191	135	Average
5038	60.12	59.97	74	-13.88	31.24	6.15	37.24	191	135	Peak
5230	92.21	91.9			31.39	6.24	37.32	191	135	Average
5230	102.16	101.85			31.39	6.24	37.32	191	135	Peak
5454	40.76	39.94	54	-13.24	31.56	6.34	37.08	191	135	Average
5454	60.21	59.39	74	-13.79	31.56	6.34	37.08	191	135	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5112	41.98	41.78	54	-12.02	31.29	6.19	37.28	205	100	Average
5112	60.21	60.01	74	-13.79	31.29	6.19	37.28	205	100	Peak
5230	94.69	94.38			31.39	6.24	37.32	205	100	Average
5230	104.74	104.43			31.39	6.24	37.32	205	100	Peak
5430	42.04	41.3	54	-11.96	31.55	6.32	37.13	205	100	Average
5430	59.76	59.02	74	-14.24	31.55	6.32	37.13	205	100	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	60.43	59.24	68.2	-7.77	31.93	6.69	37.43	171	76	Peak
*5725	65.29	64.01	78.2	-12.91	31.96	6.75	37.43	171	76	Peak
5755	93.61	92.32			32.01	6.75	37.47	171	76	Average
5755	103.19	101.9			32.01	6.75	37.47	171	76	Peak
*5850	59.19	57.67	78.2	-19.01	32.15	6.88	37.51	171	76	Peak
*5861	59.46	57.83	68.2	-8.74	32.18	6.95	37.5	171	76	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	65.7	64.51	68.2	-2.5	31.93	6.69	37.43	198	191	Peak
*5725	64.83	63.55	78.2	-13.37	31.96	6.75	37.43	198	191	Peak
5755	96.95	95.66			32.01	6.75	37.47	198	191	Average
5755	106.42	105.13			32.01	6.75	37.47	198	191	Peak
*5850	61.7	60.18	78.2	-16.5	32.15	6.88	37.51	198	191	Peak
*5861	59.12	57.49	68.2	-9.08	32.18	6.95	37.5	198	191	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5714	61.48	60.29	68.2	-6.72	31.93	6.69	37.43	188	71	Peak
5725	59.47	58.19	78.2	-18.73	31.96	6.75	37.43	188	71	Peak
5795	95.14	93.79			32.07	6.82	37.54	188	71	Average
5795	104.83	103.48			32.07	6.82	37.54	188	71	Peak
5850	60.92	59.4	78.2	-17.28	32.15	6.88	37.51	188	71	Peak
5861	59.68	58.05	68.2	-8.52	32.18	6.95	37.5	188	71	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5714	61.46	60.27	68.2	-6.74	31.93	6.69	37.43	198	188	Peak
5725	61.36	60.08	78.2	-16.84	31.96	6.75	37.43	198	188	Peak
5795	98.12	96.77			32.07	6.82	37.54	198	188	Average
5795	108.01	106.66			32.07	6.82	37.54	198	188	Peak
5850	63.19	61.67	78.2	-15.01	32.15	6.88	37.51	198	188	Peak
5861	62.87	61.24	68.2	-5.33	32.18	6.95	37.5	198	188	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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
5134	41.71	41.5	54	-12.29	31.31	6.2	37.3	192	123	Average
5134	61.11	60.9	74	-12.89	31.31	6.2	37.3	192	123	Peak
5210	85.36	85.11			31.37	6.24	37.36	192	123	Average
5210	95.06	94.81			31.37	6.24	37.36	192	123	Peak
5426	40.11	39.39	54	-13.89	31.53	6.32	37.13	192	123	Average
5426	59.77	59.05	74	-14.23	31.53	6.32	37.13	192	123	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
5130	42.61	42.4	54	-11.39	31.31	6.2	37.3	201	97	Average
5130	60.22	60.01	74	-13.78	31.31	6.2	37.3	201	97	Peak
5210	87.35	87.1			31.37	6.24	37.36	201	97	Average
5210	97.48	97.23			31.37	6.24	37.36	201	97	Peak
5384	40.14	39.5	54	-13.86	31.51	6.31	37.18	201	97	Average
5384	61.33	60.69	74	-12.67	31.51	6.31	37.18	201	97	Peak

Remarks:

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

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	61.47	60.28	68.2	-6.73	31.93	6.69	37.43	190	86	Peak
*5725	61.47	60.19	78.2	-16.73	31.96	6.75	37.43	190	86	Peak
5775	91.19	89.83			32.04	6.82	37.5	190	86	Average
5775	100.93	99.57			32.04	6.82	37.5	190	86	Peak
*5850	63.58	62.06	78.2	-14.62	32.15	6.88	37.51	190	86	Peak
*5861	62.2	60.57	68.2	-6	32.18	6.95	37.5	190	86	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
*5714	65.07	63.88	68.2	-3.13	31.93	6.69	37.43	205	202	Peak
*5725	66.24	64.96	78.2	-11.96	31.96	6.75	37.43	205	202	Peak
5775	94.36	93			32.04	6.82	37.5	205	202	Average
5775	104.32	102.96			32.04	6.82	37.5	205	202	Peak
*5850	68.51	66.99	78.2	-9.69	32.15	6.88	37.51	205	202	Peak
*5861	66.05	64.42	68.2	-2.15	32.18	6.95	37.5	205	202	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:

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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
96.93	27.62	49.72	43.5	-15.88	8.83	1.03	31.96	112	90	Peak
154.16	38.98	56.87	43.5	-4.52	12.72	1.11	31.72	114	230	Peak
263.77	28.62	47.13	46	-17.38	11.88	1.53	31.92	131	290	Peak
322.94	35.29	51.96	46	-10.71	13.5	1.7	31.87	106	67	Peak
397.63	33.54	48.47	46	-12.46	15.28	1.9	32.11	115	20	Peak
798.24	42.35	48.96	46	-3.65	22.2	2.61	31.42	134	24	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
86.26	30.55	53.16	40	-9.45	8.23	0.94	31.78	127	39	Peak
159.98	35.95	53.95	43.5	-7.55	12.73	1.15	31.88	101	51	Peak
316.15	33.55	50.45	46	-12.45	13.33	1.68	31.91	121	163	Peak
398.6	34.81	49.72	46	-11.19	15.31	1.9	32.12	117	235	Peak
600.36	37.73	48.11	46	-8.27	19.61	2.26	32.25	121	316	Peak
800.18	41.08	47.67	46	-4.92	22.23	2.61	31.43	126	281	Peak

Remarks:

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

802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**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**	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emissino 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**
155.13	38.21	56.12	43.5	-5.29	12.72	1.11	31.74	135	253	Peak
324.88	34.94	51.55	46	-11.06	13.54	1.7	31.85	140	26	Peak
398.6	35.87	50.78	46	-10.13	15.31	1.9	32.12	101	288	Peak
599.39	29.18	39.57	46	-16.82	19.59	2.26	32.24	102	131	Peak
760.41	39.54	46.77	46	-6.46	21.67	2.55	31.45	112	119	Peak
797.27	37.55	44.17	46	-8.45	22.19	2.61	31.42	137	275	QP
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emissino 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**
84.32	31.02	53.58	40	-8.98	8.2	0.93	31.69	131	85	Peak
159.01	36.42	54.4	43.5	-7.08	12.73	1.14	31.85	120	239	Peak
321.97	33.06	49.77	46	-12.94	13.47	1.69	31.87	120	38	Peak
399.57	35.72	50.61	46	-10.28	15.33	1.91	32.13	100	33	Peak
600.36	36.51	46.89	46	-9.49	19.61	2.26	32.25	132	167	Peak
799.21	40.21	46.81	46	-5.79	22.22	2.61	31.43	124	328	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. 16, 2015	Nov. 15, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 26, 2015	Dec. 25, 2016
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 26, 2016	Feb. 25, 2017
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 24, 2015	Jul. 23, 2016
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

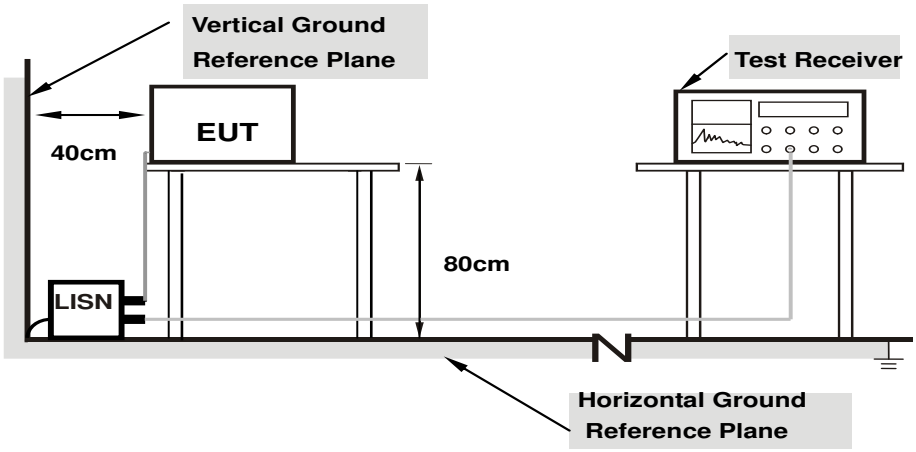
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

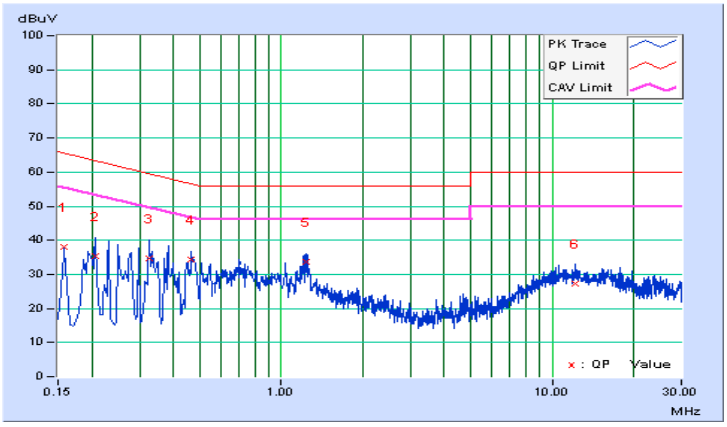
4.2.7 Test Results

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	Toby Tian	Test Date	2016/5/18

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	0.15800	10.02	28.07	4.13	38.09	14.15	65.57	55.57	-27.48	-41.42
2	0.20600	10.03	25.22	12.22	35.25	22.25	63.37	53.37	-28.11	-31.11
3	0.32600	10.09	24.53	12.70	34.62	22.79	59.55	49.55	-24.94	-26.77
4	**0.46600**	**10.13**	**24.38**	**13.80**	**34.51**	**23.93**	**56.58**	**46.58**	**-22.08**	**-22.66**
5	1.23000	10.22	23.31	13.16	33.53	23.38	56.00	46.00	-22.47	-22.62
6	12.23000	10.86	16.58	11.45	27.44	22.31	60.00	50.00	-32.56	-27.69

Remarks:

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

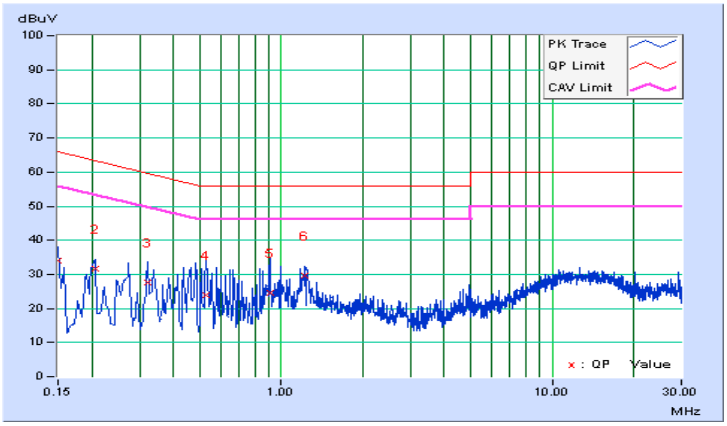


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Toby Tian	Test Date	2016/5/18

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	0.15000	10.03	24.04	3.03	34.07	13.06	66.00	56.00	-31.93	-42.94
2	0.20577	10.04	21.48	10.47	31.52	20.51	63.37	53.37	-31.85	-32.86
3	0.32203	10.09	17.45	7.85	27.54	17.94	59.65	49.65	-32.11	-31.71
4	0.52600	10.15	13.86	2.81	24.01	12.96	56.00	46.00	-31.99	-33.04
5	0.90600	10.20	14.34	7.65	24.54	17.85	56.00	46.00	-31.46	-28.15
6	1.21400	10.22	19.35	9.15	29.57	19.37	56.00	46.00	-26.43	-26.63

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 $N_{ANT} \leq 4$;

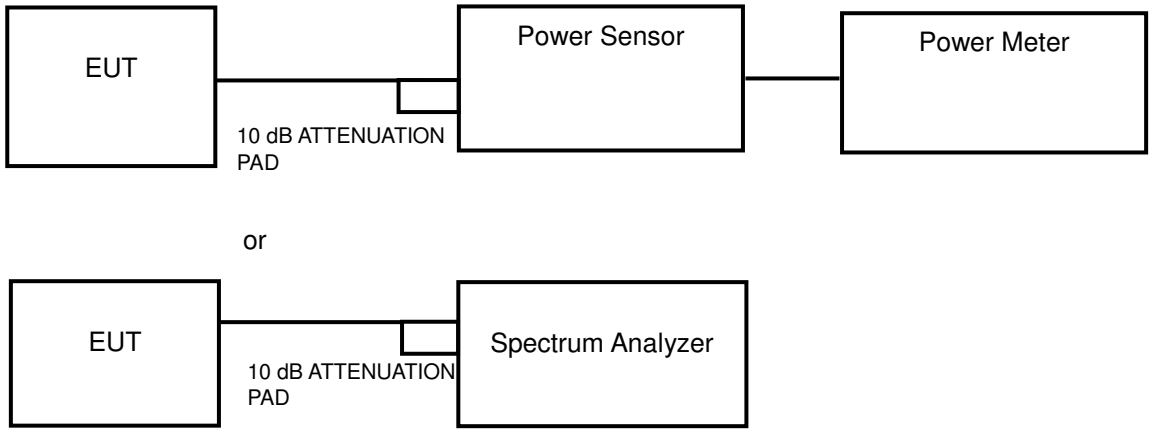
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

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

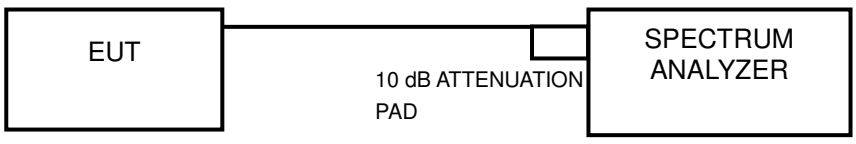
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

<Power Output Measurement>



<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 (1TX)

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	85.70	19.33	24	Pass
44	5220	87.30	19.41	24	Pass
48	5240	84.72	19.28	24	Pass
149	5745	90.36	19.56	30	Pass
157	5785	92.47	19.66	30	Pass
165	5825	96.83	19.86	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	84.72	19.28	24	Pass
44	5220	86.90	19.39	24	Pass
48	5240	83.95	19.24	24	Pass
149	5745	67.30	18.28	30	Pass
157	5785	88.10	19.45	30	Pass
165	5825	92.68	19.67	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	37.50	15.74	24	Pass
46	5230	39.17	15.93	24	Pass
151	5755	62.52	17.96	30	Pass
159	5795	92.04	19.64	30	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
42	5210	23.82	13.77	24	Pass
155	5775	54.95	17.4	30	Pass

Mode B (2TX)

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	14.33	13.94	51.88	17.15	24	Pass
44	5220	14.37	13.91	51.96	17.16	24	Pass
48	5240	14.34	13.92	51.82	17.15	24	Pass
149	5745	14.86	13.44	52.700	17.22	30	Pass
157	5785	15.32	13.93	58.758	17.69	30	Pass
165	5825	15.27	13.96	58.540	17.67	30	Pass

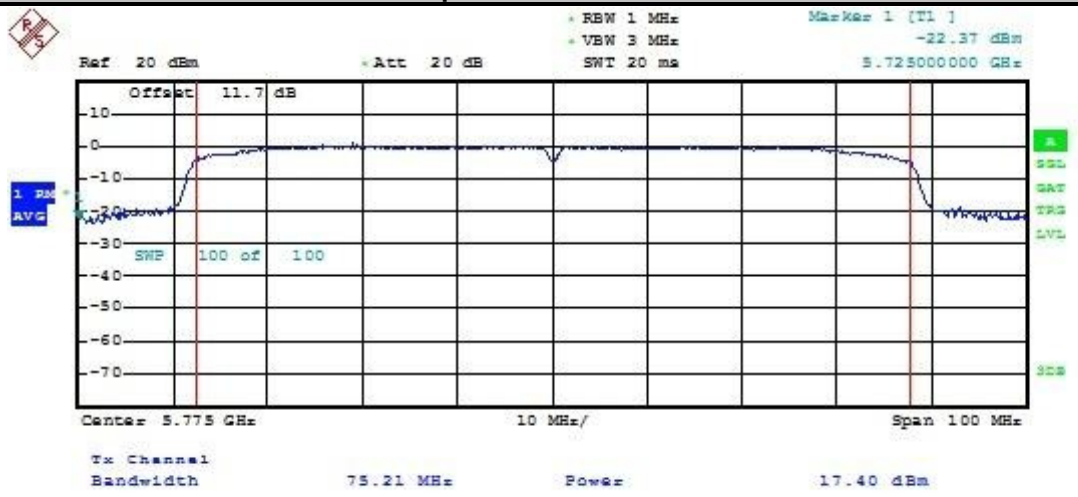
802.11n (HT40)

Channel	Frequency (MHz)	Maximum Cunducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	10.41	9.62	20.15	13.04	24	Pass
46	5230	14.64	13.78	52.99	17.24	24	Pass
151	5755	14.81	13.38	52.046	17.16	30	Pass
159	5795	16.98	15.97	89.425	19.51	30	Pass

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	8.77	7.78	13.53	11.31	24	Pass
155	5775	15.22	13.18	54.063	17.33	30	Pass

Spectrum Plot of Worst Value



26 dB Bandwidth:

Mode A (1TX)

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	39.53
44	5220	37.79
48	5240	38.76

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	42.80
44	5220	39.84
48	5240	39.60

802.11n (HT40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
38	5190	46.60
46	5230	45.53

802.11ac (VHT80)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
42	5210	86.63

Mode B (2TX)

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	25.26	25.05
44	5220	26.15	24.96
48	5240	25.18	24.52

802.11n (HT40)

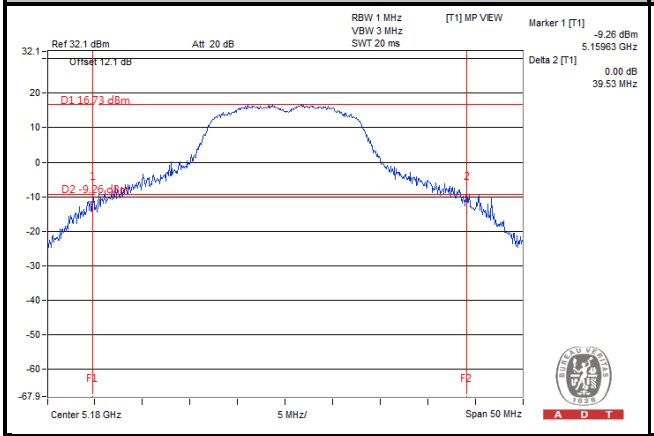
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	46.00	45.65
46	5230	46.01	46.70

802.11ac (VHT80)

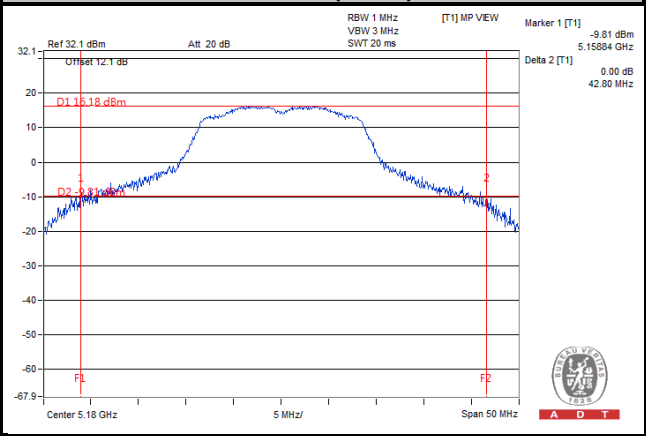
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	87.03	85.72

Spectrum Plot of Worst Value

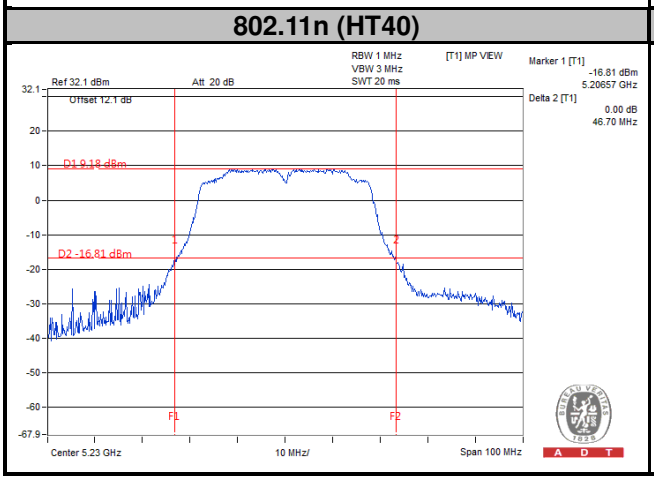
802.11a



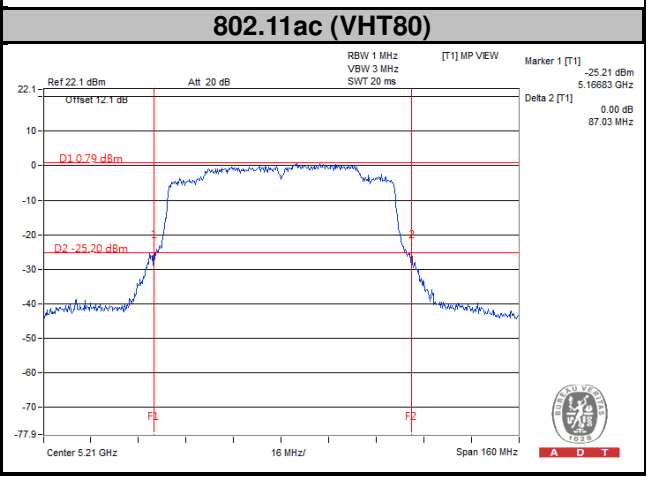
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

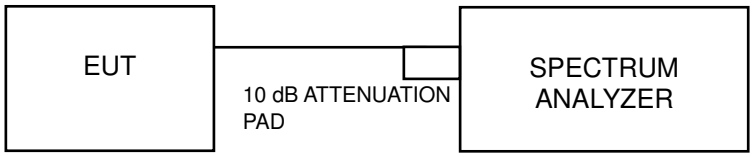


4.4 Peak Power Spectral Density Measurement

4.4.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.4.4 Test Procedures

For U-NII-1 band:

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 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)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

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

4.4.7 Test Results

For U-NII-1 Band

Mode A (1TX)

802.11a

Channel	Frequency (MHz)	PSD (dBm)	Maximum Limit (dBm)	Pass / Fail
36	5180	7.46	11	Pass
44	5220	7.66	11	Pass
48	5240	7.52	11	Pass

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

802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
36	5180	7.20	0.22	7.42	11	Pass
44	5220	7.42	0.22	7.64	11	Pass
48	5240	7.33	0.22	7.55	11	Pass

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

802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
38	5190	0.57	0.34	0.91	11	Pass
46	5230	0.94	0.34	1.28	11	Pass

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

802.11ac (VHT80)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
42	5210	-5.03	1.05	-3.98	11	Pass

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

Mode B (2TX)

802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm)		Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1					
36	5180	1.89	2.47	5.20	0.17	5.37	11	Pass
44	5220	2.23	2.82	5.55	0.17	5.71	11	Pass
48	5240	2.07	3.06	5.60	0.17	5.77	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. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm)		Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1					
38	5190	-5.11	-4.48	-1.77	0.43	-1.34	11	Pass
46	5230	-0.60	0.02	2.73	0.43	3.16	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. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

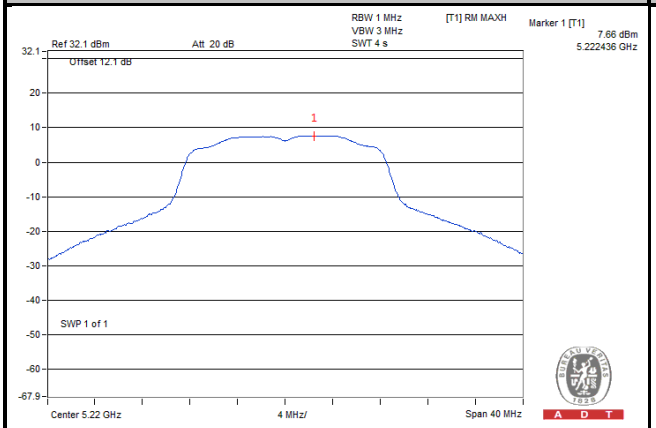
Channel	Frequency (MHz)	PSD (dBm)		Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1					
42	5210	-10.31	-8.94	-6.56	1.47	-5.09	11	Pass

Note:

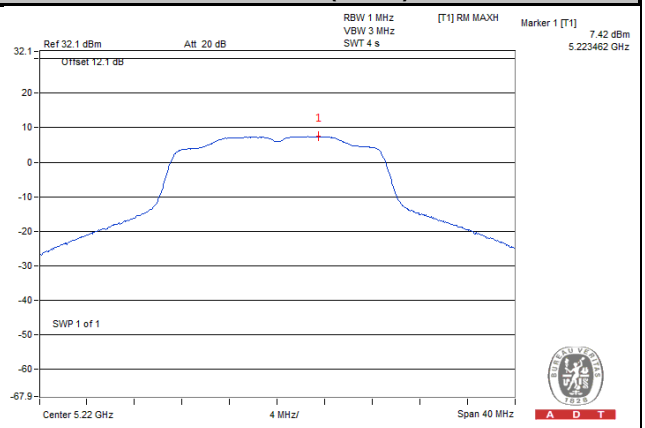
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

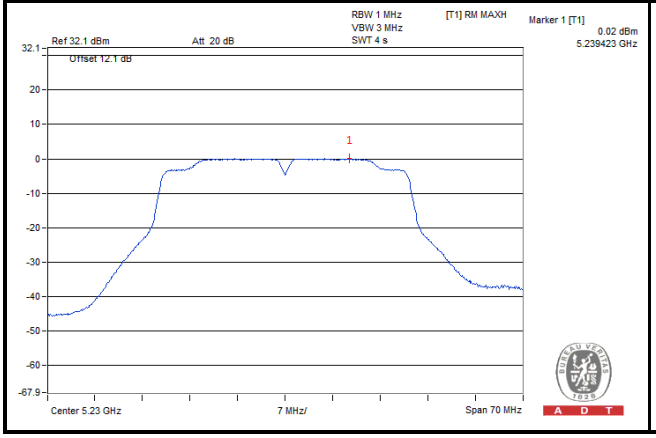
802.11a



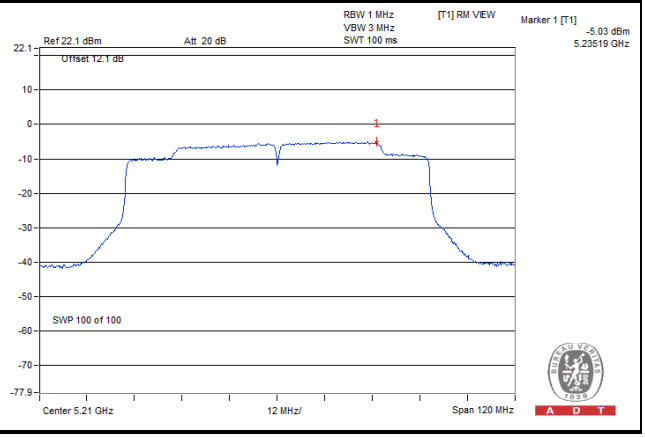
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



For U-NII-3 Band

Mode A (1TX)

802.11a

Channel	Freq. (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	4.50	30	Pass
157	5785	4.96	30	Pass
165	5825	5.68	30	Pass

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

802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor	PSD with Duty Factor (dBm)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	3.10	0.22	3.32	30	Pass
157	5785	4.76	0.22	4.98	30	Pass
165	5825	5.47	0.22	5.69	30	Pass

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

802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor	PSD with Duty Factor (dBm)	Limit (dBm/500 kHz)	Pass / Fail
151	5755	-0.86	0.34	-0.52	30	Pass
159	5795	1.93	0.34	2.27	30	Pass

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

802.11ac (VHT80)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor	PSD with Duty Factor (dBm)	Limit (dBm/500 kHz)	Pass / Fail
155	5775	-3.38	1.05	-2.33	30	Pass

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

Mode B (2TX)

802.11n (HT20)

TX Chain	Channel	Frequency (MHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/500 kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	0.16	3.01	3.17	0.17	3.34	30	Pass
	157	5785	0.57	3.01	3.58	0.17	3.75	30	Pass
	165	5825	1.27	3.01	4.28	0.17	4.45	30	Pass
1	149	5745	0.75	3.01	3.76	0.17	3.93	30	Pass
	157	5785	1.16	3.01	4.17	0.17	4.34	30	Pass
	165	5825	1.59	3.01	4.60	0.17	4.77	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. 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	Total PSD without Duty Factor (dBm/500 kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	151	5755	-3.61	3.01	-0.60	0.43	-0.17	30	Pass
	159	5795	-1.22	3.01	1.79	0.43	2.22	30	Pass
1	151	5755	-2.91	3.01	0.10	0.43	0.53	30	Pass
	159	5795	0.09	3.01	3.10	0.43	3.53	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. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

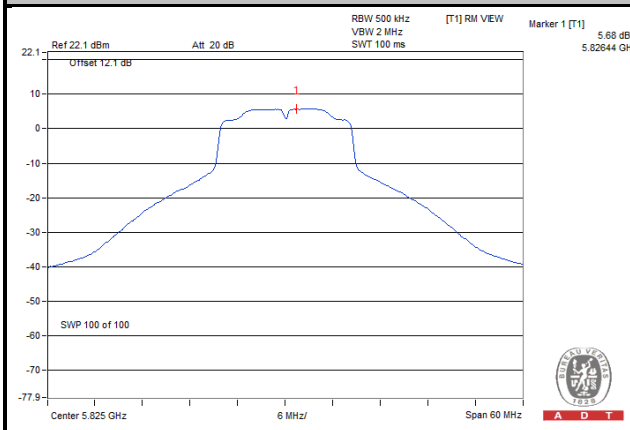
TX Chain	Channel	Frequency (MHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/500 kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	155	5775	-5.55	3.01	-2.54	1.47	-1.07	30	Pass
1	155	5775	-4.89	3.01	-1.88	1.47	-0.41	30	Pass

Note:

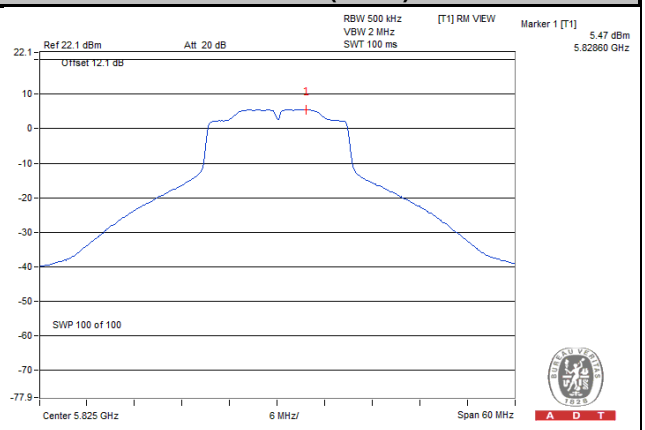
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

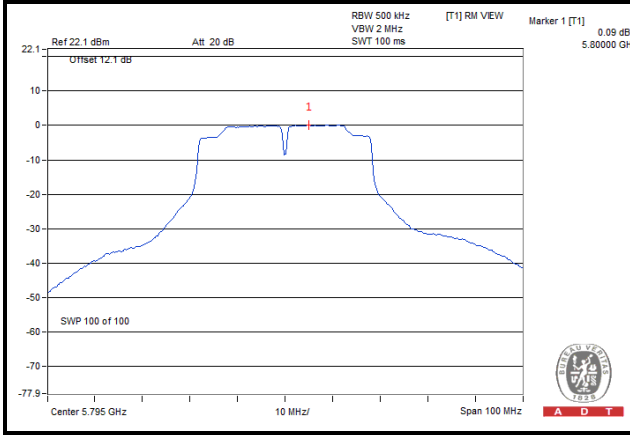
802.11a



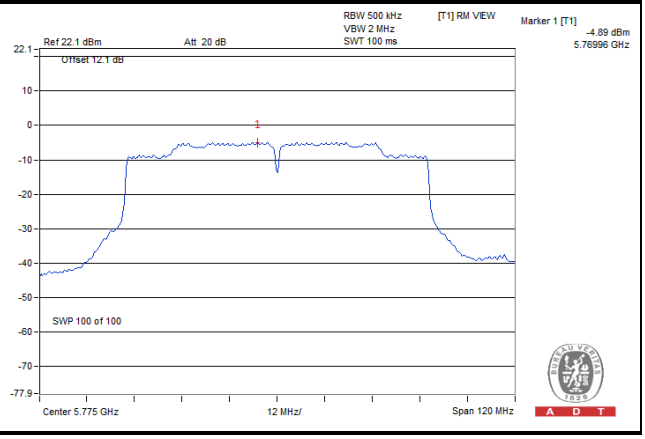
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

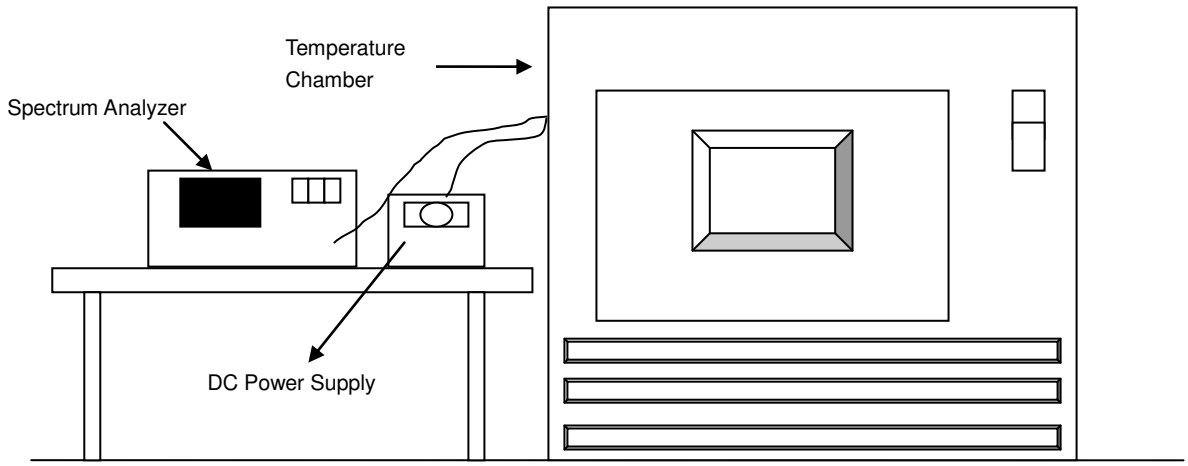


4.5 Frequency Stability

4.5.1 Limit of Frequency Stability Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.5.7 Test Results

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)
50	15.6	5180.020368	3.932	5180.020460	3.950	5180.020383	3.935	5180.020517	3.961
40	15.6	5180.020795	4.014	5180.020332	3.925	5180.020530	3.963	5180.020501	3.958
30	15.6	5180.021241	4.101	5180.021980	4.243	5180.022018	4.251	5180.021791	4.207
20	15.6	5180.022411	4.326	5180.022939	4.428	5180.022361	4.317	5180.022439	4.332
10	15.6	5180.024240	4.680	5180.024270	4.685	5180.024317	4.694	5180.024175	4.667
0	15.6	5180.022615	4.366	5180.022217	4.289	5180.022457	4.335	5180.022670	4.376
-10	15.6	5180.021350	4.122	5180.021341	4.120	5180.021088	4.071	5180.020827	4.021
-20	15.6	5180.020535	3.964	5180.020711	3.998	5180.020845	4.024	5180.020407	3.940
-30	15.6	5180.019077	3.683	5180.019729	3.809	5180.019350	3.736	5180.019575	3.779

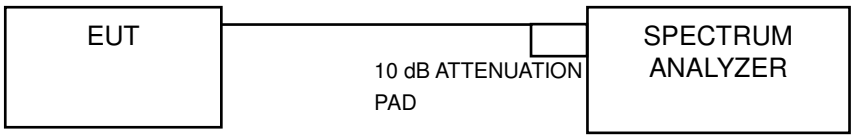
Frequency Stability Versus Temp.									
Operating Frequency: 5320 MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	13.26	5180.025549	4.932	5180.025532	4.929	5180.025225	4.870	5180.025399	4.903
	15.6	5180.022411	4.326	5180.022939	4.428	5180.022361	4.317	5180.022439	4.332
	17.94	5180.026941	5.201	5180.026845	5.182	5180.026923	5.197	5180.026768	5.168

4.6 6 dB Bandwidth Measurment

4.6.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

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

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Mode A (1TX)

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.17	0.5	Pass
157	5785	15.14	0.5	Pass
165	5825	15.16	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.18	0.5	Pass
157	5785	15.16	0.5	Pass
165	5825	15.92	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	35.20	0.5	Pass
159	5795	35.15	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
155	5775	75.21	0.5	Pass

Mode B (2TX)

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.45	15.44	0.5	Pass
157	5785	15.15	15.41	0.5	Pass
165	5825	15.18	15.38	0.5	Pass

802.11n (HT40)

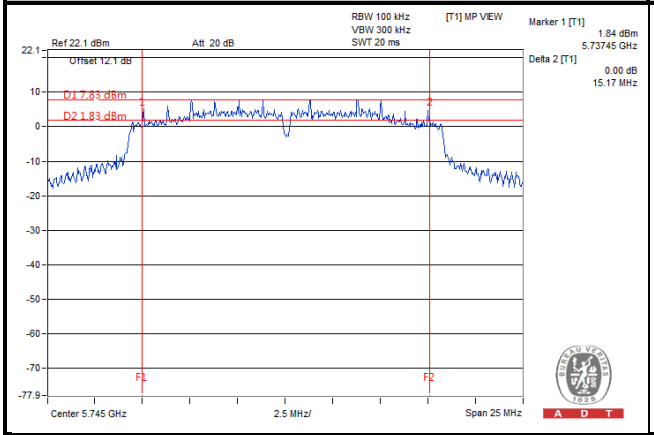
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.15	35.16	0.5	Pass
159	5795	35.17	35.12	0.5	Pass

802.11ac (VHT80)

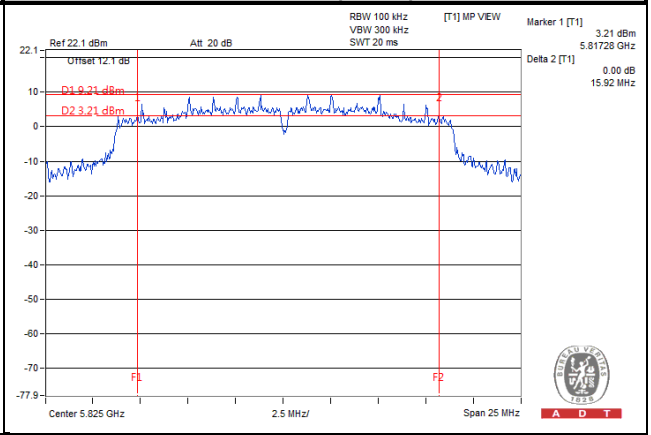
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	72.69	72.79	0.5	Pass

Spectrum Plot of Worst Value

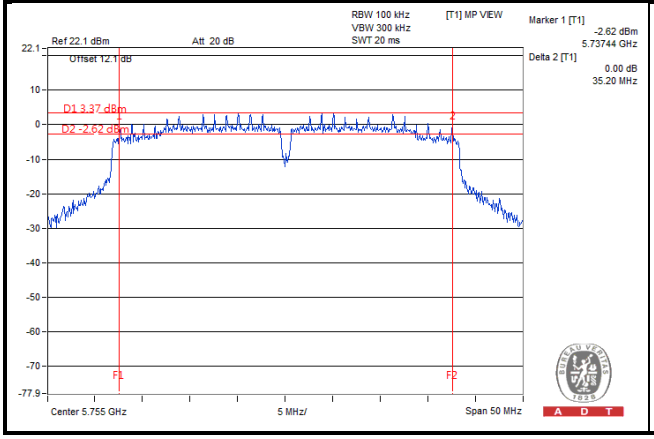
802.11a



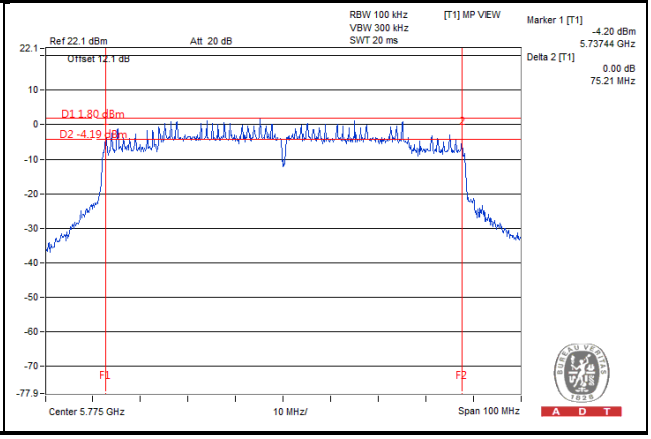
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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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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