

FCC Test Report

Report No.: RF170428C28-3

FCC ID: QYL8260GAINB300

Test Model: B300

Received Date: Apr. 28, 2017

Test Date: Jul. 12, 2017 ~ Jul. 19, 2017

Issued Date: Jul. 25, 2017

Applicant: Getac Technology Corporation.

Address: 5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang Dist., Taipei City
11568, Taiwan, R.O.C.

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
(R.O.C)

Test Location: No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, Taiwan, R.O.C.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty.....	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes.....	8
3.2.1 Test Mode Applicability and Tested Channel Detail.....	9
3.3 Duty Cycle of Test Signal	11
3.4 Description of Support Units	12
3.4.1 Configuration of System under Test	12
3.5 General Description of Applied Standards.....	12
4 Test Types and Results	13
4.1 Radiated Emission and Bandedge Measurement	13
4.1.1 Limits of Radiated Emission and Bandedge Measurement	13
4.1.2 Limits of Unwanted Emission Out of the Restricted Bands	14
4.1.3 Test Instruments	15
4.1.4 Test Procedures.....	17
4.1.5 Deviation from Test Standard	17
4.1.6 Test Set Up	18
4.1.7 EUT Operating Conditions.....	19
4.1.8 Test Results	20
4.2 Conducted Emission Measurement.....	40
4.2.1 Limits of Conducted Emission Measurement	40
4.2.2 Test Instruments	40
4.2.3 Test Procedures.....	41
4.2.4 Deviation from Test Standard	41
4.2.5 Test Setup.....	41
4.2.6 EUT Operating Conditions.....	41
4.2.7 Test Results	42
4.3 Transmit Power Measurement.....	44
4.3.1 Limits of Transmit Power Measurement	44
4.3.2 Test Setup.....	44
4.3.3 Test Instruments	45
4.3.4 Test Procedure	45
4.3.5 Deviation from Test Standard	45
4.3.6 EUT Operating Conditions.....	45
4.3.7 Test Result	46
4.4 Peak Power Spectral Density Measurement	51
4.4.1 Limits of Peak Power Spectral Density Measurement	51
4.4.2 Test Setup.....	51
4.4.3 Test Instruments	51
4.4.4 Test Procedures.....	51
4.4.5 Deviation from Test Standard	52
4.4.6 EUT Operating Conditions.....	52
4.4.7 Test Results	53
4.5 Frequency Stability	57
4.5.1 Limit of Frequency Stability Measurement	57
4.5.2 Test Setup.....	57
4.5.3 Test Instruments	57
4.5.4 Test Procedure	57
4.5.5 Deviation from Test Standard	57

4.5.6 EUT Operating Condition	57
4.5.7 Test Results	58
4.6 6 dB Bandwidth Measurement.....	59
4.6.1 Limits of 6 dB Bandwidth Measurement.....	59
4.6.2 Test Setup.....	59
4.6.3 Test Instruments	59
4.6.4 Test Procedure	59
4.6.5 Deviation from Test Standard	59
4.6.6 EUT Operating Condition	59
4.6.7 Test Results	60
5 Pictures of Test Arrangements.....	62
Annex A- Radiated Out of Band Emisison (OOBE) Measurement (For U-NII-3 band)	63
Appendix – Information on the Testing Laboratories	66

Release Control Record

Issue No.	Description	Date Issued
RF170428C28-3	Original Release	Jul. 25, 2017

1 Certificate of Conformity

Product: Industrial Notebook

Brand: Getac

Test Model: B300

Sample Status: Production Unit

Applicant: Getac Technology Corporation.

Test Date: Jul. 12, 2017 ~ Jul. 19, 2017

Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2013

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

Prepared by :

Rona Chen

, **Date:**

Jul. 25, 2017

Rona Chen / Specialist

Approved by :

David Huang

, **Date:**

Jul. 25, 2017

David Huang / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -15.91 dB at 0.36094 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -6.9 dB at 5150 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.

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

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	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	Industrial Notebook
Brand	Getac
Test Model	B300
Status of EUT	Production Unit
Power Supply Rating	19 Vdc (Adapter) 10.8 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	59.704 mW for 5180 ~ 5240 MHz 88.92 mW for 5745 ~ 5825 MHz
Antenna Type	PIFA antenna with -4.39 dBi gain (5180 ~ 5240 MHz) PIFA antenna with 0.69 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:

- The EUT provides 1 completed transmitter and 1 receiver.

Modulation Mode	Tx Function
802.11a	1TX
802.11n (HT20)	1TX
802.11n (HT40)	1TX
802.11ac (VHT80)	1TX

* 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)

- The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	Chicony	A10-090P3A	I/P: 100-240Vac, 50-60Hz, 1.5A O/P: 19Vdc, 4.74A 1.8m shielded cable with 1 core
Battery	Getac	BP3S3P2900	10.8Vdc

- 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 \geq 1G	RE $<$ 1G	PLC	APCM	
-	√	√	√	√	-

Where **RE \geq 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 effects

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)
-	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	MCS0
-	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	MCS0

Radiated Emission Test (Below 1 GHz):

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11n (HT20)	36 to 48	36	OFDM	BPSK	MCS0
-	5745-5825	802.11a	149 to 165	149	OFDM	BPSK	6.0

Power Line Conducted Emission Test:

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

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

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	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	MCS0
-	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	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE \geq 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	Getaz Yang
APCM	25 deg. C, 65 % RH	10.8 Vdc	Carlos Chen

3.3 Duty Cycle of Test Signal

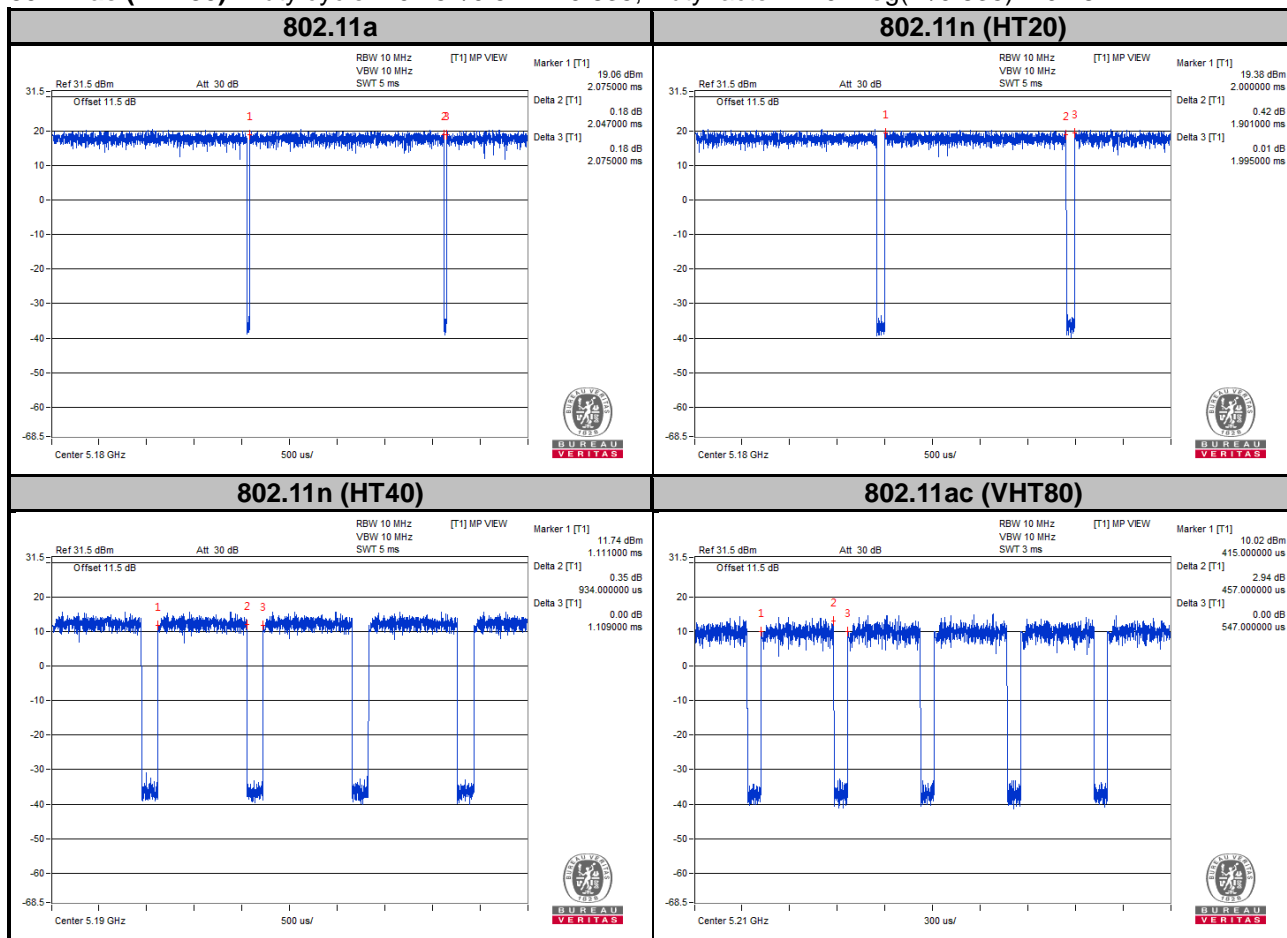
MODULATION TYPE: BPSK

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

802.11n (HT20): Duty cycle = $1.901/1.995 = 0.953$, Duty factor = $10 * \log(1/0.953) = 0.21$

802.11n (HT40): Duty cycle = $0.934/1.109 = 0.842$, Duty factor = $10 * \log(1/0.842) = 0.75$

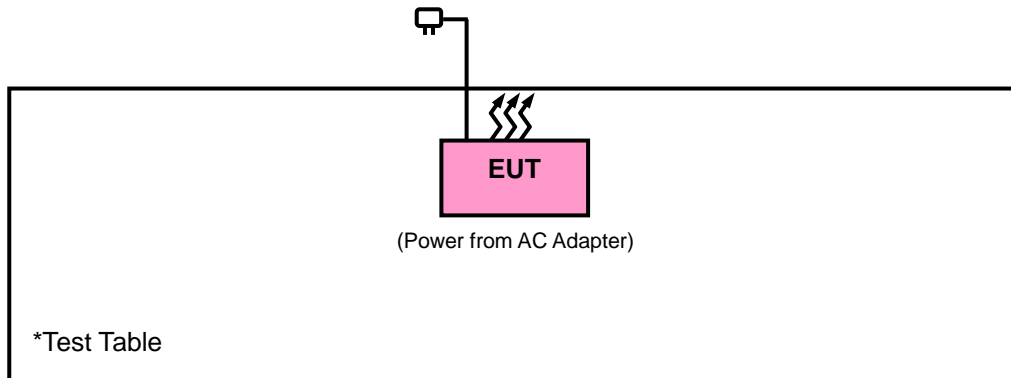
802.11ac (VHT80): Duty cycle = $0.457/0.547 = 0.835$, Duty factor = $10 * \log(1/0.835) = 0.78$



3.4 Description of Support Units

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart E (15.407)

789033 D02 General UNII Test Procedures New Rules v01r04

644545 D01 Guidance for IEEE 802 11ac v01r02

ANSI C63.10-2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Limits of Unwanted Emission Out of the Restricted Bands

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

^{*1} beyond 75 MHz or more above of the band edge.

^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note:

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

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

4.1.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Feb. 17, 2017	Feb. 16, 2018
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 16, 2016	Dec. 15, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 26, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 12, 2016	Dec. 13, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier EMCI	EMC 012645	980115	Oct. 21, 2016	Oct. 20, 2017
Preamplifier EMCI	EMC 184045	980116	Oct. 21, 2016	Oct. 20, 2017
Preamplifier EMCI	EMC 330H	980112	Oct. 21, 2016	Oct. 20, 2017
Power Meter Anritsu	ML2495A	1232002	Sep. 08, 2016	Sep. 07, 2017
Power Sensor Anritsu	MA2411B	1207325	Sep. 08, 2016	Sep. 07, 2017
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 21, 2016	Oct. 20, 2017
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 21, 2016	Oct. 20, 2017
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 21, 2016	Oct. 20, 2017
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
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 02, 2016	Sep. 01, 2017
DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2017
Digital Multimeter Fluke	87-III	70360742	Jun. 30, 2017	Jun. 29, 2018

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

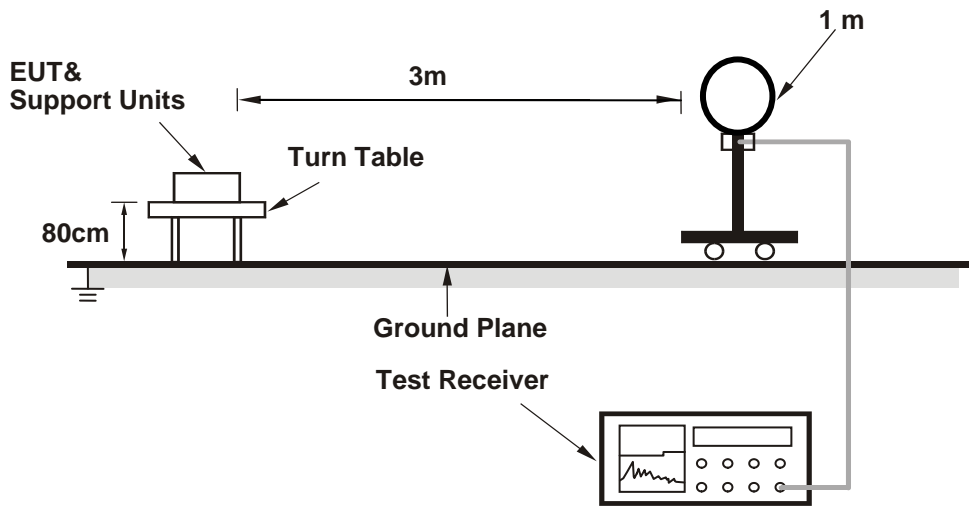
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency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

4.1.5 Deviation from Test Standard

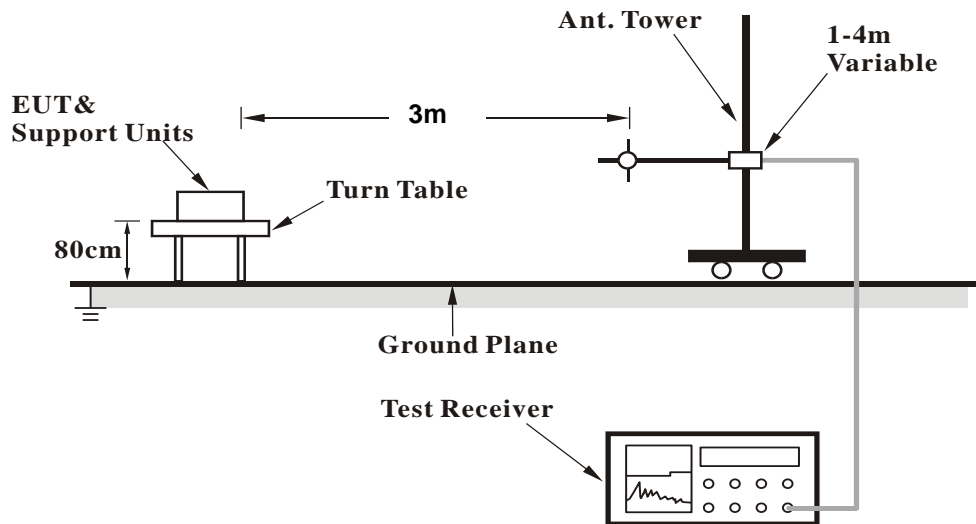
No deviation.

4.1.6 Test Set Up

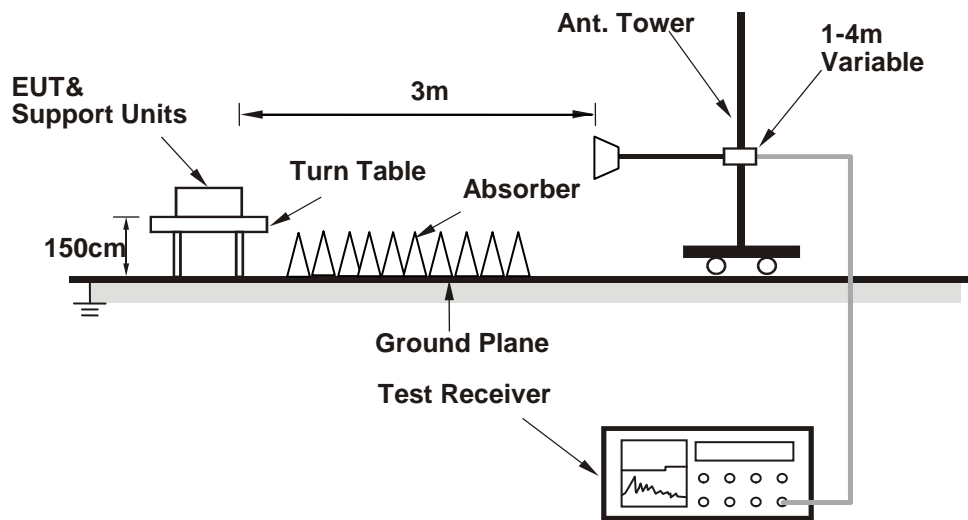
<Radiated emission below 30MHz>



<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



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

4.1.7 EUT Operating Conditions

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

4.1.8 Test Results
 Above 1 GHz Data :
 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)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.4	60.7	60.5	74	-13.3	31.32	6.2	37.32	170	111	Peak
5150	45.95	45.75	54	-8.05	31.32	6.2	37.32	170	111	Average
5180	95.79	95.56			31.35	6.22	37.34	170	111	Average
5180	105.55	105.32			31.35	6.22	37.34	170	111	Peak
*10360	53.94	57.84	68.2	-14.26	39.19	9.05	52.14	103	122	Peak

Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.55	56.81	56.61	74	-17.19	31.32	6.2	37.32	232	149	Peak
5150	43.67	43.47	54	-10.33	31.32	6.2	37.32	232	149	Average
5180	93.61	93.38			31.35	6.22	37.34	232	149	Average
5180	102.22	101.99			31.35	6.22	37.34	232	149	Peak
*10360	53.7	57.6	68.2	-14.5	39.19	9.05	52.14	101	144	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5067.8	39.94	39.79	54	-14.06	31.25	6.17	37.27	154	115	Average
5147	51.09	50.89	74	-22.91	31.32	6.2	37.32	154	115	Peak
5220	94.32	94.07			31.37	6.24	37.36	154	115	Average
5220	104.01	103.76			31.37	6.24	37.36	154	115	Peak
5371.12	41.71	41.09	54	-12.29	31.49	6.31	37.18	154	115	Average
5451.53	52.97	52.15	74	-21.03	31.56	6.34	37.08	154	115	Peak
*10440	53.01	57.11	68.2	-15.19	39.29	9.09	52.48	100	162	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5139.35	39.58	39.37	54	-14.42	31.31	6.2	37.3	230	145	Average
5146.4	52.41	52.21	74	-21.59	31.32	6.2	37.32	230	145	Peak
5220	94.16	93.91			31.37	6.24	37.36	230	145	Average
5220	103.16	102.91			31.37	6.24	37.36	230	145	Peak
5369.36	42.45	41.83	54	-11.55	31.49	6.31	37.18	230	145	Average
5369.69	53.87	53.25	74	-20.13	31.49	6.31	37.18	230	145	Peak
*10440	52.83	56.93	68.2	-15.37	39.29	9.09	52.48	100	155	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5087.75	51.18	50.99	74	-22.82	31.27	6.19	37.27	172	112	Peak
5090	40.27	40.07	54	-13.73	31.28	6.19	37.27	172	112	Average
5240	94.47	94.15			31.39	6.25	37.32	172	112	Average
5240	104.3	103.98			31.39	6.25	37.32	172	112	Peak
5390.59	42.24	41.6	54	-11.76	31.51	6.31	37.18	172	112	Average
5391.91	53.21	52.57	74	-20.79	31.51	6.31	37.18	172	112	Peak
*10480	53.38	57.63	68.2	-14.82	39.37	9.09	52.71	100	178	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5081.45	51.2	51.03	74	-22.8	31.27	6.17	37.27	229	148	Peak
5089.7	39.07	38.87	54	-14.93	31.28	6.19	37.27	229	148	Average
5240	92.59	92.27			31.39	6.25	37.32	229	148	Average
5240	101.65	101.33			31.39	6.25	37.32	229	148	Peak
5389.49	40.6	39.96	54	-13.4	31.51	6.31	37.18	229	148	Average
5399.61	52.2	51.54	74	-21.8	31.52	6.32	37.18	229	148	Peak
*10480	54	58.25	68.2	-14.2	39.37	9.09	52.71	103	222	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	94.57	93.3			31.99	6.75	37.47	201	57	Average
5745	103.64	102.37			31.99	6.75	37.47	201	57	Peak
11490	45.76	48.65	54	-8.24	39.91	10.03	52.83	116	133	Average
11490	56.46	59.35	74	-17.54	39.91	10.03	52.83	116	133	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	93	91.73			31.99	6.75	37.47	144	141	Average
5745	102.75	101.48			31.99	6.75	37.47	144	141	Peak
11490	44.75	47.64	54	-9.25	39.91	10.03	52.83	107	145	Average
11490	54.8	57.69	74	-19.2	39.91	10.03	52.83	107	145	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5588	52.04	50.97	68.2	-16.16	31.74	6.49	37.16	201	57	Peak
5653.075	47.49	46.3	70.49	-23	31.85	6.62	37.28	201	57	Peak
5924.3	49.67	47.87	68.72	-19.05	32.29	7.01	37.5	201	57	Peak
5978.45	52.41	50.47	68.2	-15.79	32.37	7.08	37.51	201	57	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5591.325	52.12	51.05	68.2	-16.08	31.74	6.49	37.16	144	141	Peak
5651.65	47.28	46.09	69.43	-22.15	31.85	6.62	37.28	144	141	Peak
5924.3	47.98	46.18	68.72	-20.74	32.29	7.01	37.5	144	141	Peak
5948.525	51.18	49.28	68.2	-17.02	32.32	7.08	37.5	144	141	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5745 MHz: Fundamental Frequency
- *: 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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	93.96	92.64			32.04	6.82	37.54	152	75	Average
5785	103.96	102.64			32.04	6.82	37.54	152	75	Peak
11570	44.76	48.22	54	-9.24	39.78	10.09	53.33	130	169	Average
11570	54.57	58.03	74	-19.43	39.78	10.09	53.33	130	169	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	92.96	91.64			32.04	6.82	37.54	144	141	Average
5785	102.43	101.11			32.04	6.82	37.54	144	141	Peak
11570	42.16	45.62	54	-11.84	39.78	10.09	53.33	118	155	Average
11570	53.97	57.43	74	-20.03	39.78	10.09	53.33	118	155	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5636.925	53.38	52.28	68.2	-14.82	31.82	6.56	37.28	152	75	Peak
5654.025	49.21	48.08	71.19	-21.98	31.85	6.62	37.34	152	75	Peak
5924.3	49.76	47.96	68.72	-18.96	32.29	7.01	37.5	152	75	Peak
6016.45	55.36	53.27	68.2	-12.84	32.45	7.14	37.5	152	75	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5627.9	53.53	52.4	68.2	-14.67	31.79	6.56	37.22	144	141	Peak
5654.025	49.05	47.92	71.19	-22.14	31.85	6.62	37.34	144	141	Peak
5923.35	50.71	48.91	69.42	-18.71	32.29	7.01	37.5	144	141	Peak
6014.55	54.06	51.97	68.2	-14.14	32.45	7.14	37.5	144	141	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785 MHz: Fundamental Frequency
- *: 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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	93.59	92.12			32.12	6.88	37.53	158	77	Average
5825	103.16	101.69			32.12	6.88	37.53	158	77	Peak
11650	44.57	48.12	54	-9.43	39.65	10.15	53.35	174	111	Average
11650	54.28	57.83	74	-19.72	39.65	10.15	53.35	174	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	92.86	91.39			32.12	6.88	37.53	146	140	Average
5825	101.61	100.14			32.12	6.88	37.53	146	140	Peak
11650	43.51	47.06	54	-10.49	39.65	10.15	53.35	122	114	Average
11650	54.02	57.57	74	-19.98	39.65	10.15	53.35	122	114	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5609.375	52.13	51.02	68.2	-16.07	31.77	6.56	37.22	158	77	Peak
5654.025	49.87	48.74	71.19	-21.32	31.85	6.62	37.34	158	77	Peak
5923.35	50.24	48.44	69.42	-19.18	32.29	7.01	37.5	158	77	Peak
5982.725	53.23	51.29	68.2	-14.97	32.37	7.08	37.51	158	77	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5597.025	52.07	51	68.2	-16.13	31.74	6.49	37.16	146	140	Peak
5654.025	47.21	46.08	71.19	-23.98	31.85	6.62	37.34	146	140	Peak
5922.4	49.63	47.83	70.12	-20.49	32.29	7.01	37.5	146	140	Peak
5984.625	52.84	50.84	68.2	-15.36	32.37	7.14	37.51	146	140	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825 MHz: Fundamental Frequency
- *: 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)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.35	63.7	63.5	74	-10.3	31.32	6.2	37.32	158	108	Peak
5150	47.78	47.58	54	-6.22	31.32	6.2	37.32	158	108	Average
5180	94.76	94.53			31.35	6.22	37.34	158	108	Average
5180	104.37	104.14			31.35	6.22	37.34	158	108	Peak
*10360	55.59	59.49	68.2	-12.61	39.19	9.05	52.14	107	44	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.85	59.56	59.36	74	-14.44	31.32	6.2	37.32	236	129	Peak
5150	47.1	46.9	54	-6.9	31.32	6.2	37.32	236	129	Average
5180	93.19	92.96			31.35	6.22	37.34	236	129	Average
5180	102.39	102.16			31.35	6.22	37.34	236	129	Peak
*10360	55.53	59.43	68.2	-12.67	39.19	9.05	52.14	108	111	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5069.15	40.24	40.09	54	-13.76	31.25	6.17	37.27	155	110	Average
5138	52.92	52.71	74	-21.08	31.31	6.2	37.3	155	110	Peak
5220	94.46	94.21			31.37	6.24	37.36	155	110	Average
5220	103.45	103.2			31.37	6.24	37.36	155	110	Peak
5374.09	53.19	52.57	74	-20.81	31.49	6.31	37.18	155	110	Peak
5376.95	41.78	41.16	54	-12.22	31.49	6.31	37.18	155	110	Average
*10440	55.83	59.93	68.2	-12.37	39.29	9.09	52.48	108	99	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5071.1	39.62	39.47	54	-14.38	31.25	6.17	37.27	287	128	Average
5140.55	51.13	50.91	74	-22.87	31.32	6.2	37.3	287	128	Peak
5220	92.25	92			31.37	6.24	37.36	287	128	Average
5220	99.67	99.42			31.37	6.24	37.36	287	128	Peak
5370.13	40.31	39.69	54	-13.69	31.49	6.31	37.18	287	128	Average
5445.26	51.48	50.72	74	-22.52	31.55	6.34	37.13	287	128	Peak
*10440	56.32	60.42	68.2	-11.88	39.29	9.09	52.48	108	55	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5084.45	39.99	39.82	54	-14.01	31.27	6.17	37.27	172	110	Average
5087	51.09	50.92	74	-22.91	31.27	6.17	37.27	172	110	Peak
5240	94.22	93.9			31.39	6.25	37.32	172	110	Average
5240	103.53	103.21			31.39	6.25	37.32	172	110	Peak
5395.21	41.21	40.56	54	-12.79	31.52	6.31	37.18	172	110	Average
5395.21	52.37	51.72	74	-21.63	31.52	6.31	37.18	172	110	Peak
*10480	55.76	60.01	68.2	-12.44	39.37	9.09	52.71	103	66	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5089.1	51.24	51.04	74	-22.76	31.28	6.19	37.27	196	128	Peak
5090.3	39.19	38.99	54	-14.81	31.28	6.19	37.27	196	128	Average
5240	94.22	93.9			31.39	6.25	37.32	196	128	Average
5240	102.71	102.39			31.39	6.25	37.32	196	128	Peak
5389.93	51.99	51.35	74	-22.01	31.51	6.31	37.18	196	128	Peak
5396.09	40.82	40.17	54	-13.18	31.52	6.31	37.18	196	128	Average
*10480	54.8	59.05	68.2	-13.4	39.37	9.09	52.71	105	184	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	93.98	92.71			31.99	6.75	37.47	199	110	Average
5745	103.39	102.12			31.99	6.75	37.47	199	110	Peak
11490	44.21	47.1	54	-9.79	39.91	10.03	52.83	117	135	Average
11490	55.48	58.37	74	-18.52	39.91	10.03	52.83	117	135	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	93.51	92.24			31.99	6.75	37.47	202	140	Average
5745	102.81	101.54			31.99	6.75	37.47	202	140	Peak
11490	45.21	48.1	54	-8.79	39.91	10.03	52.83	105	142	Average
11490	55.47	58.36	74	-18.53	39.91	10.03	52.83	105	142	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5590.375	53.44	52.37	68.2	-14.76	31.74	6.49	37.16	199	110	Peak
5653.075	50.3	49.11	70.49	-20.19	31.85	6.62	37.28	199	110	Peak
5922.4	51.55	49.75	70.12	-18.57	32.29	7.01	37.5	199	110	Peak
5976.075	53.14	51.2	68.2	-15.06	32.37	7.08	37.51	199	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5594.65	53.95	52.88	68.2	-14.25	31.74	6.49	37.16	202	140	Peak
5653.075	49.97	48.78	70.49	-20.52	31.85	6.62	37.28	202	140	Peak
5920.5	49.35	47.58	71.52	-22.17	32.26	7.01	37.5	202	140	Peak
5973.7	53.56	51.62	68.2	-14.64	32.37	7.08	37.51	202	140	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5745 MHz: Fundamental Frequency
- *: 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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	95.07	93.75			32.04	6.82	37.54	201	108	Average
5785	103.6	102.28			32.04	6.82	37.54	201	108	Peak
11570	44.89	48.35	54	-9.11	39.78	10.09	53.33	117	135	Average
11570	53.17	56.63	74	-20.83	39.78	10.09	53.33	117	135	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	93.82	92.5			32.04	6.82	37.54	209	140	Average
5785	102.57	101.25			32.04	6.82	37.54	209	140	Peak
11570	44.08	47.54	54	-9.92	39.78	10.09	53.33	108	151	Average
11570	53.99	57.45	74	-20.01	39.78	10.09	53.33	108	151	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5558.55	55.61	54.56	68.2	-12.59	31.68	6.49	37.12	201	108	Peak
5655.45	48.93	47.8	72.25	-23.32	31.85	6.62	37.34	201	108	Peak
5922.4	50.69	48.89	70.12	-19.43	32.29	7.01	37.5	201	108	Peak
6009.8	53.54	51.46	68.2	-14.66	32.45	7.14	37.51	201	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5632.65	56.27	55.17	68.2	-11.93	31.82	6.56	37.28	209	140	Peak
5654.025	49.2	48.07	71.19	-21.99	31.85	6.62	37.34	209	140	Peak
5922.4	49.19	47.39	70.12	-20.93	32.29	7.01	37.5	209	140	Peak
5939.025	53.95	52.12	68.2	-14.25	32.32	7.01	37.5	209	140	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785 MHz: Fundamental Frequency
- *: 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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	93.26	91.79			32.12	6.88	37.53	192	110	Average
5825	102.95	101.48			32.12	6.88	37.53	192	110	Peak
11650	44.09	47.64	54	-9.91	39.65	10.15	53.35	113	137	Average
11650	53.7	57.25	74	-20.3	39.65	10.15	53.35	113	137	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	93.85	92.38			32.12	6.88	37.53	209	140	Average
5825	102.56	101.09			32.12	6.88	37.53	209	140	Peak
11650	43.99	47.54	54	-10.01	39.65	10.15	53.35	108	144	Average
11650	54	57.55	74	-20	39.65	10.15	53.35	108	144	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5596.55	54.1	53.03	68.2	-14.1	31.74	6.49	37.16	192	110	Peak
5654.975	49.07	47.94	71.9	-22.83	31.85	6.62	37.34	192	110	Peak
5922.875	48.47	46.67	69.77	-21.3	32.29	7.01	37.5	192	110	Peak
5983.2	53.51	51.57	68.2	-14.69	32.37	7.08	37.51	192	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5593.225	54.45	53.38	68.2	-13.75	31.74	6.49	37.16	209	140	Peak
5653.075	50.63	49.44	70.49	-19.86	31.85	6.62	37.28	209	140	Peak
5922.875	49.57	47.77	69.77	-20.2	32.29	7.01	37.5	209	140	Peak
5982.725	53.54	51.6	68.2	-14.66	32.37	7.08	37.51	209	140	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825 MHz: Fundamental Frequency
- *: 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)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.05	55.01	54.81	74	-18.99	31.32	6.2	37.32	154	107	Peak
5150	44.04	43.84	54	-9.96	31.32	6.2	37.32	154	107	Average
5190	88.84	88.61			31.35	6.22	37.34	154	107	Average
5190	98.79	98.56			31.35	6.22	37.34	154	107	Peak
5350.77	51.41	50.82	74	-22.59	31.48	6.29	37.18	154	107	Peak
5431.4	39.96	39.22	54	-14.04	31.55	6.32	37.13	154	107	Average
*10380	55.61	59.6	68.2	-12.59	39.21	9.05	52.25	103	162	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5121.65	43.02	42.84	54	-10.98	31.29	6.19	37.3	200	121	Average
5149.4	55.25	55.05	74	-18.75	31.32	6.2	37.32	200	121	Peak
5190	88.68	88.45			31.35	6.22	37.34	200	121	Average
5190	96.15	95.92			31.35	6.22	37.34	200	121	Peak
5353.85	39.56	38.97	54	-14.44	31.48	6.29	37.18	200	121	Average
5359.68	51.25	50.64	74	-22.75	31.48	6.31	37.18	200	121	Peak
*10380	55.71	59.7	68.2	-12.49	39.21	9.05	52.25	103	162	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5130.05	51.31	51.1	74	-22.69	31.31	6.2	37.3	179	113	Peak
5148.05	39.06	38.86	54	-14.94	31.32	6.2	37.32	179	113	Average
5230	88.97	88.66			31.39	6.24	37.32	179	113	Average
5230	97.61	97.3			31.39	6.24	37.32	179	113	Peak
5371.67	39.74	39.12	54	-14.26	31.49	6.31	37.18	179	113	Average
5447.57	51.9	51.13	74	-22.1	31.56	6.34	37.13	179	113	Peak
*10460	55.32	59.51	68.2	-12.88	39.32	9.09	52.6	102	250	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5134.85	50.96	50.75	74	-23.04	31.31	6.2	37.3	192	126	Peak
5135.9	38.87	38.66	54	-15.13	31.31	6.2	37.3	192	126	Average
5230	86.36	86.05			31.39	6.24	37.32	192	126	Average
5230	96.3	95.99			31.39	6.24	37.32	192	126	Peak
5372.66	51.81	51.19	74	-22.19	31.49	6.31	37.18	192	126	Peak
5385.75	39.46	38.82	54	-14.54	31.51	6.31	37.18	192	126	Average
*10460	56.14	60.33	68.2	-12.06	39.32	9.09	52.6	100	111	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	91.15	89.86			32.01	6.75	37.47	193	108	Average
5755	99.6	98.31			32.01	6.75	37.47	193	108	Peak
11510	44.51	47.65	54	-9.49	39.9	10.03	53.07	114	139	Average
11510	55.1	58.24	74	-18.9	39.9	10.03	53.07	114	139	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	88.31	87.02			32.01	6.75	37.47	202	136	Average
5755	98.85	97.56			32.01	6.75	37.47	202	136	Peak
11510	44.29	47.43	54	-9.71	39.9	10.03	53.07	109	147	Average
11510	55.18	58.32	74	-18.82	39.9	10.03	53.07	109	147	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5603.675	53.39	52.28	68.2	-14.81	31.77	6.56	37.22	193	108	Peak
5654.025	50	48.87	71.19	-21.19	31.85	6.62	37.34	193	108	Peak
5922.4	50.53	48.73	70.12	-19.59	32.29	7.01	37.5	193	108	Peak
5982.25	53.03	51.09	68.2	-15.17	32.37	7.08	37.51	193	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5610.8	53.28	52.17	68.2	-14.92	31.77	6.56	37.22	202	136	Peak
5653.55	49.2	48.01	70.84	-21.64	31.85	6.62	37.28	202	136	Peak
5923.35	49.66	47.86	69.42	-19.76	32.29	7.01	37.5	202	136	Peak
5973.225	52.86	50.92	68.2	-15.34	32.37	7.08	37.51	202	136	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5755 MHz: Fundamental Frequency
- *: 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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	89.25	87.9			32.07	6.82	37.54	197	110	Average
5795	99.31	97.96			32.07	6.82	37.54	197	110	Peak
11590	44.12	47.62	54	-9.88	39.74	10.09	53.33	117	134	Average
11590	55.11	58.61	74	-18.89	39.74	10.09	53.33	117	134	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	88.21	86.86			32.07	6.82	37.54	202	112	Average
5795	98.31	96.96			32.07	6.82	37.54	202	112	Peak
11590	44.06	47.56	54	-9.94	39.74	10.09	53.33	105	149	Average
11590	53.1	56.6	74	-20.9	39.74	10.09	53.33	105	149	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5645	52.98	51.82	68.2	-15.22	31.82	6.62	37.28	197	110	Peak
5654.025	51.15	50.02	71.19	-20.04	31.85	6.62	37.34	197	110	Peak
5923.35	51.01	49.21	69.42	-18.41	32.29	7.01	37.5	197	110	Peak
5999.35	52.73	50.7	68.2	-15.47	32.4	7.14	37.51	197	110	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5643.575	52.1	50.94	68.2	-16.1	31.82	6.62	37.28	202	112	Peak
5653.075	50.86	49.67	70.49	-19.63	31.85	6.62	37.28	202	112	Peak
5920.975	49.05	47.28	71.17	-22.12	32.26	7.01	37.5	202	112	Peak
5935.7	52.41	50.61	68.2	-15.79	32.29	7.01	37.5	202	112	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5795 MHz: Fundamental Frequency
- *: 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)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5126.6	58.64	58.43	74	-15.36	31.31	6.2	37.3	152	110	Peak
5127.35	45.73	45.52	54	-8.27	31.31	6.2	37.3	152	110	Average
5210	76.14	75.89			31.37	6.24	37.36	152	110	Average
5210	95.49	95.24			31.37	6.24	37.36	152	110	Peak
5360.89	39.45	38.83	54	-14.55	31.49	6.31	37.18	152	110	Average
5414.35	51.79	51.12	74	-22.21	31.53	6.32	37.18	152	110	Peak
*10420	56.83	60.83	68.2	-11.37	39.27	9.09	52.36	171	62	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5124.5	56.29	56.09	74	-17.71	31.31	6.19	37.3	176	152	Peak
5127.35	43.45	43.24	54	-10.55	31.31	6.2	37.3	176	152	Average
5210	73.52	73.27			31.37	6.24	37.36	176	152	Average
5210	92.62	92.37			31.37	6.24	37.36	176	152	Peak
5358.14	52.33	51.72	74	-21.67	31.48	6.31	37.18	176	152	Peak
5358.69	39.16	38.55	54	-14.84	31.48	6.31	37.18	176	152	Average
*10420	55.96	59.96	68.2	-12.24	39.27	9.09	52.36	122	324	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	89.35	87.99			32.04	6.82	37.5	198	109	Average
5775	98.13	96.77			32.04	6.82	37.5	198	109	Peak
11550	44.97	48.31	54	-9.03	39.81	10.09	53.24	117	135	Average
11550	56.01	59.35	74	-17.99	39.81	10.09	53.24	117	135	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	87.63	86.27			32.04	6.82	37.5	200	116	Average
5775	97.02	95.66			32.04	6.82	37.5	200	116	Peak
11550	44.86	48.2	54	-9.14	39.81	10.09	53.24	108	149	Average
11550	55.97	59.31	74	-18.03	39.81	10.09	53.24	108	149	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5637.875	53.4	52.3	68.2	-14.8	31.82	6.56	37.28	198	109	Peak
5653.55	51.54	50.35	70.84	-19.3	31.85	6.62	37.28	198	109	Peak
5922.875	53.39	51.59	69.77	-16.38	32.29	7.01	37.5	198	109	Peak
5942.825	52.13	50.23	68.2	-16.07	32.32	7.08	37.5	198	109	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5620.3	52.83	51.7	68.2	-15.37	31.79	6.56	37.22	200	116	Peak
5654.5	51.2	50.07	71.54	-20.34	31.85	6.62	37.34	200	116	Peak
5923.825	50.04	48.24	69.07	-19.03	32.29	7.01	37.5	200	116	Peak
5940.925	52.87	50.97	68.2	-15.33	32.32	7.08	37.5	200	116	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5775 MHz: Fundamental Frequency
- *: 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:

802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 36	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)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
42.61	31.35	48.19	40	-8.65	13.58	0.66	31.08	101	159	Peak
55.22	27.34	45.47	40	-12.66	12.45	0.75	31.33	128	148	Peak
161.92	22.6	40.77	43.5	-20.9	12.54	1.14	31.85	136	149	Peak
323.91	25.45	42.09	46	-20.55	13.52	1.7	31.86	140	87	Peak
555.74	22.78	34.03	46	-23.22	18.59	2.18	32.02	105	215	Peak
854.5	28.07	34.33	46	-17.93	22.93	2.69	31.88	109	301	Peak

Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
42.61	32.39	49.23	40	-7.61	13.58	0.66	31.08	106	307	Peak
107.6	18.49	39.45	43.5	-25.01	9.81	1.09	31.86	122	195	Peak
161.92	22.4	40.57	43.5	-21.1	12.54	1.14	31.85	109	313	Peak
314.21	21.43	38.4	46	-24.57	13.29	1.67	31.93	101	159	Peak
564.47	21.8	32.88	46	-24.2	18.79	2.2	32.07	128	193	Peak
779.81	26.59	33.5	46	-19.41	21.94	2.58	31.43	103	78	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

802.11a

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)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
41.64	32.28	49.11	40	-7.72	13.56	0.66	31.05	103	33	Peak
55.22	27.37	45.5	40	-12.63	12.45	0.75	31.33	135	102	Peak
161.92	23	41.17	43.5	-20.5	12.54	1.14	31.85	107	358	Peak
322.94	27.27	43.94	46	-18.73	13.5	1.7	31.87	120	271	Peak
576.11	23.37	34.19	46	-22.63	19.06	2.22	32.1	103	14	Peak
788.54	26.62	33.36	46	-19.38	22.07	2.6	31.41	107	26	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
42.61	31.48	48.32	40	-8.52	13.58	0.66	31.08	129	295	Peak
55.22	27.33	45.46	40	-12.67	12.45	0.75	31.33	136	356	Peak
161.92	22.55	40.72	43.5	-20.95	12.54	1.14	31.85	112	261	Peak
323.91	22.55	39.19	46	-23.45	13.52	1.7	31.86	114	126	Peak
584.84	22.55	33.19	46	-23.45	19.26	2.23	32.13	117	4	Peak
793.39	26.34	33.01	46	-19.66	22.13	2.61	31.41	130	360	Peak

Remarks:

- 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	ESCS 30	100288	Aug. 18, 2016	Aug. 17, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 22, 2016	Dec. 21, 2017
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 17, 2017	Jan. 16, 2018
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 26, 2016	Jul. 25, 2017
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- Note:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 2.
 3. The VCCI Site Registration No. is C-2047.

4.2.3 Test Procedures

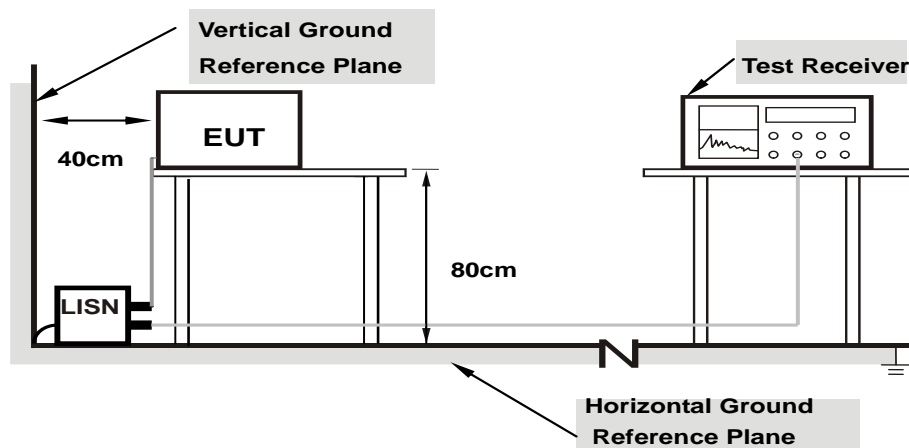
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

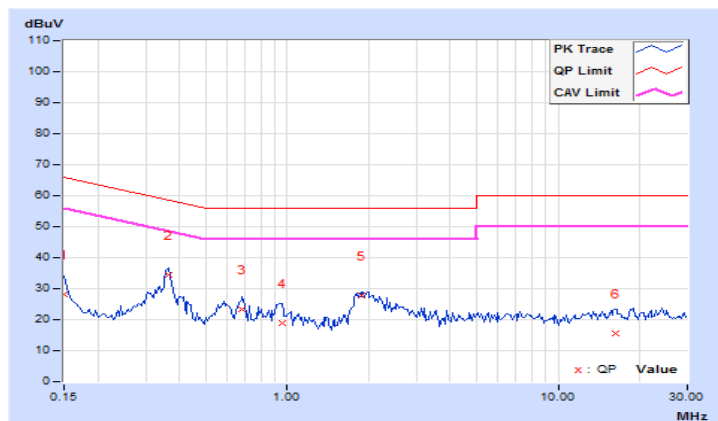
4.2.7 Test Results

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.06	18.11	10.42	28.17	20.48	66.00	56.00	-37.83	-35.52
2	0.36484	9.91	24.69	21.71	34.60	31.62	58.62	48.62	-24.02	-17.00
3	0.68125	9.96	13.47	8.21	23.43	18.17	56.00	46.00	-32.57	-27.83
4	0.95469	10.00	8.96	3.59	18.96	13.59	56.00	46.00	-37.04	-32.41
5	1.87500	9.95	17.77	12.87	27.72	22.82	56.00	46.00	-28.28	-23.18
6	16.30078	10.25	5.44	0.72	15.69	10.97	60.00	50.00	-44.31	-39.03

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

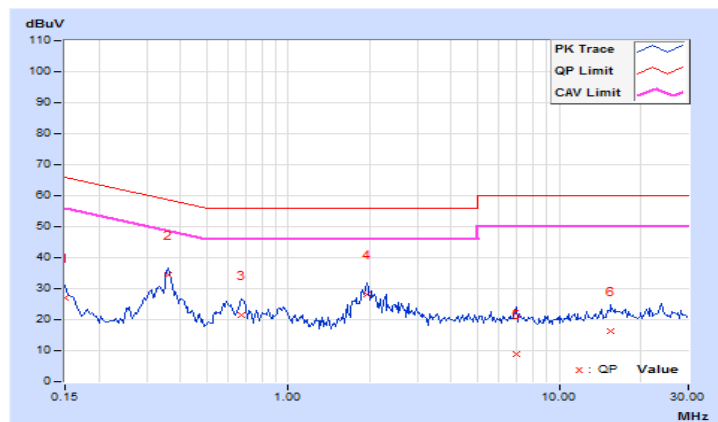


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Getaz Yang		

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	9.89	17.27	9.95	27.16	19.84	66.00	56.00	-38.84	-36.16
2	0.36094	9.92	24.45	22.88	34.37	32.80	58.71	48.71	-24.34	-15.91
3	0.67344	9.94	11.50	7.67	21.44	17.61	56.00	46.00	-34.56	-28.39
4	1.94141	9.98	18.25	13.55	28.23	23.53	56.00	46.00	-27.77	-22.47
5	6.96875	10.13	-1.09	-2.87	9.04	7.26	60.00	50.00	-50.96	-42.74
6	15.57422	10.31	5.88	1.55	16.19	11.86	60.00	50.00	-43.81	-38.14

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p \leq 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 $N_{ANT} \leq 4$;

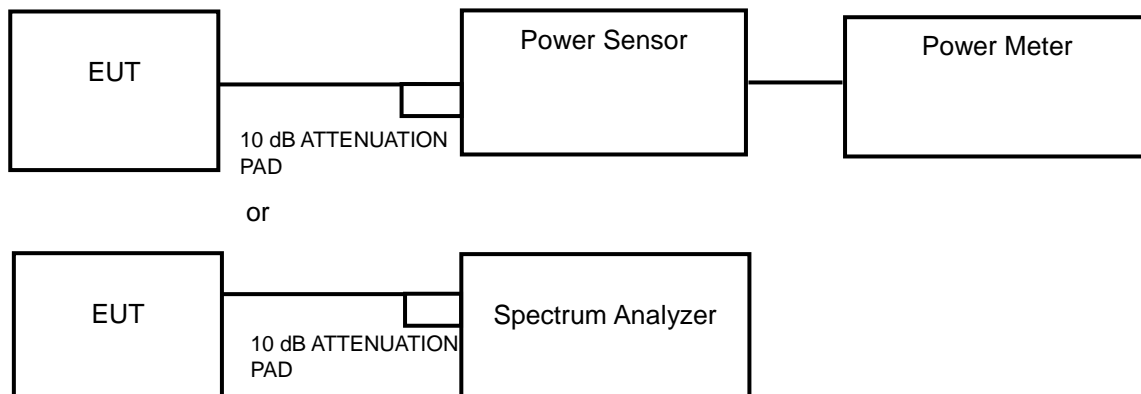
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

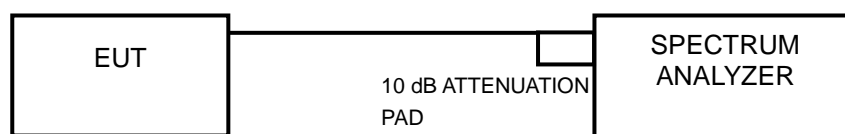
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

<Power Output Measurement>



<26 dB Bandwidth / Occupied 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 %.

Occupied Bandwidth

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

Power Output:

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	54.20	17.34	24	Pass
44	5220	55.463	17.44	24	Pass
48	5240	53.088	17.25	24	Pass
149	5745	76.56	18.84	30	Pass
157	5785	88.92	19.49	30	Pass
165	5825	82.985	19.19	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	59.156	17.72	24	Pass
44	5220	59.704	17.76	24	Pass
48	5240	57.943	17.63	24	Pass
149	5745	77.983	18.92	30	Pass
157	5785	88.716	19.48	30	Pass
165	5825	81.658	19.12	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	34.119	15.33	24	Pass
46	5230	34.995	15.44	24	Pass
151	5755	50.35	17.02	30	Pass
159	5795	57.28	17.58	30	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
42	5210	32.81	15.16	24	Pass
155	5775	33.497	15.25	30	Pass

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	29.04
44	5220	29.82
48	5240	33.75

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	37.88
44	5220	37.92
48	5240	40.56

802.11n (HT40)

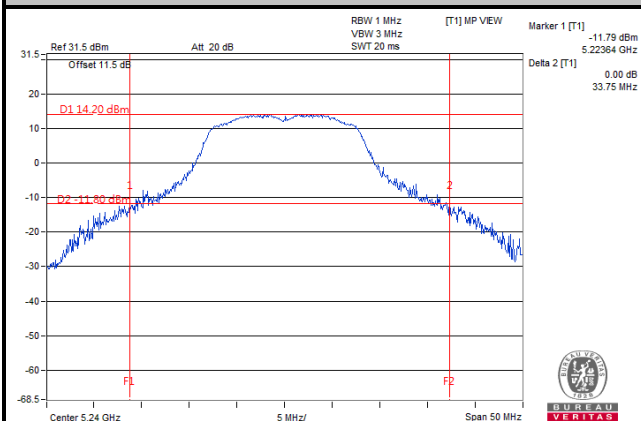
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
38	5190	46.16
46	5230	46.54

802.11ac (VHT80)

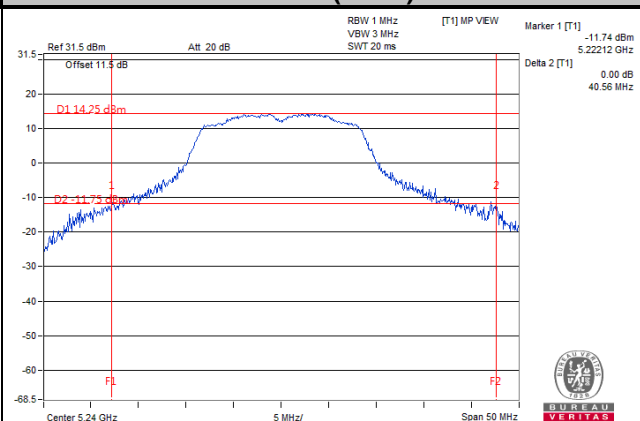
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
42	5210	113.78

Spectrum Plot of Worst Value

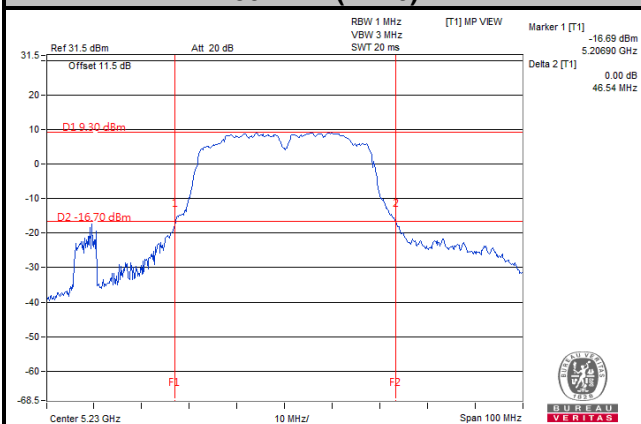
802.11a



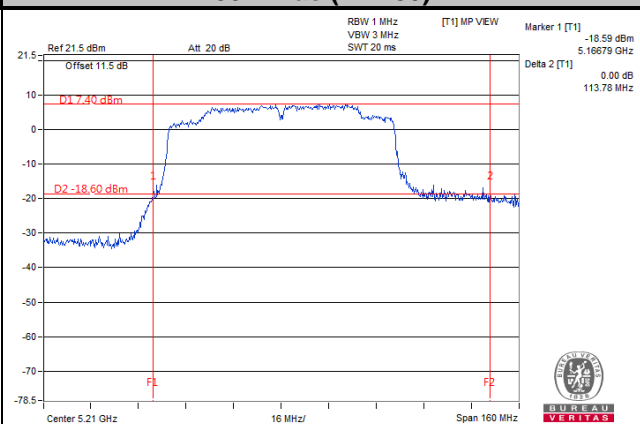
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



Occupied Bandwidth

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
36	5180	17.35	Pass
44	5220	17.30	Pass
48	5240	17.30	Pass
149	5745	20.24	Pass
157	5785	21.50	Pass
165	5825	20.75	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
36	5180	18.46	Pass
44	5220	18.50	Pass
48	5240	18.41	Pass
149	5745	20.04	Pass
157	5785	21.55	Pass
165	5825	20.80	Pass

802.11n (HT40)

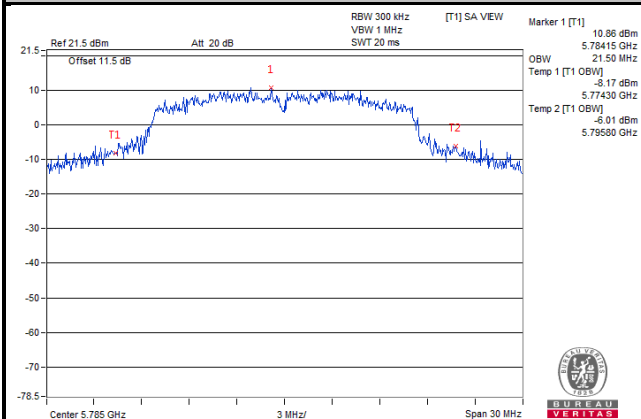
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
38	5190	36.53	Pass
46	5230	36.66	Pass
151	5755	36.69	Pass
159	5795	36.66	Pass

802.11ac (VHT80)

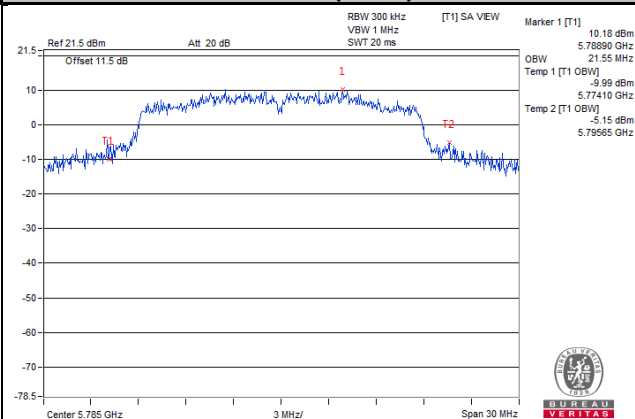
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
42	5210	75.16	Pass
155	5775	75.32	Pass

Spectrum Plot of Worst Value

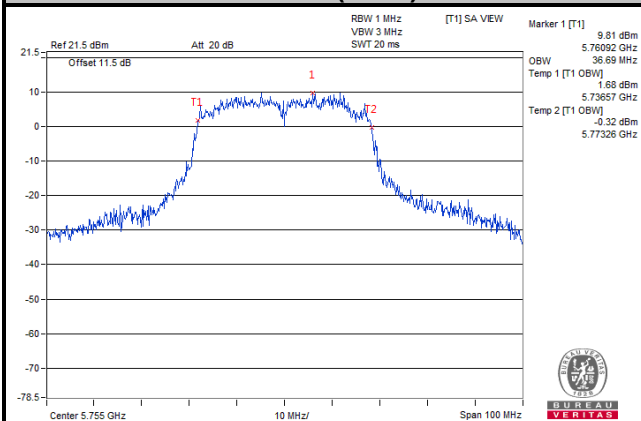
802.11a



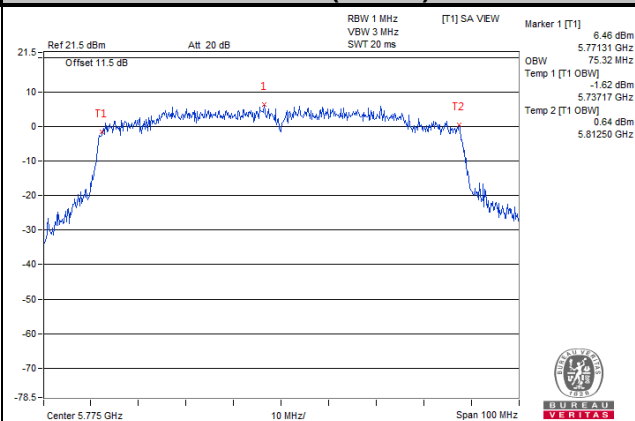
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

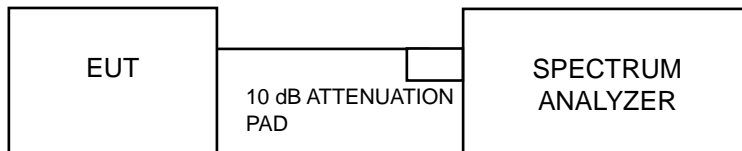


4.4 Peak Power Spectral Density Measurement

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:

Using method SA-2

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

802.11a

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	5.18	11	Pass
44	5220	5.41	11	Pass
48	5240	5.49	11	Pass

802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	5.03	0.21	5.24	11	Pass
44	5220	5.25	0.21	5.46	11	Pass
48	5240	5.38	0.21	5.59	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/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
38	5190	-0.80	0.75	-0.05	11	Pass
46	5230	-0.53	0.75	0.22	11	Pass

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

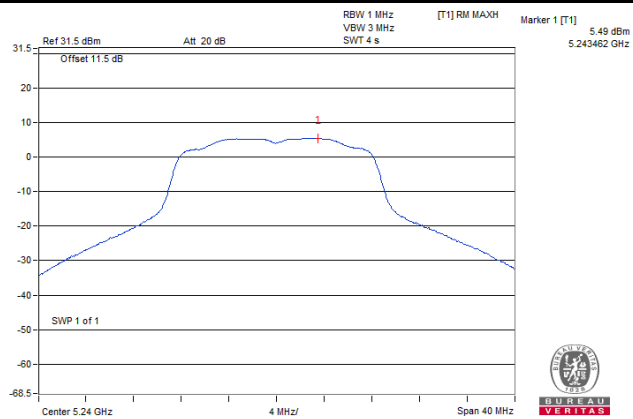
802.11ac (VHT80)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
42	5210	-3.11	0.78	-2.33	11	Pass

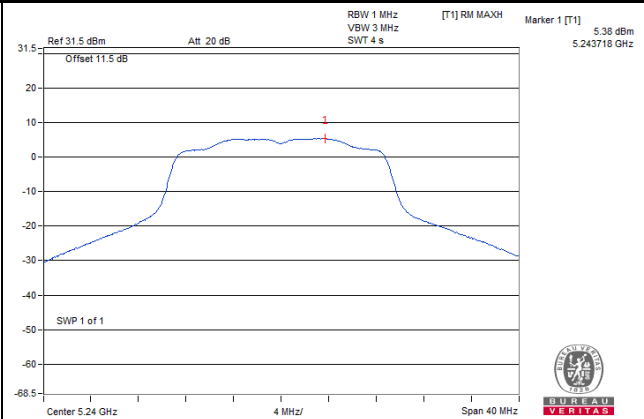
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

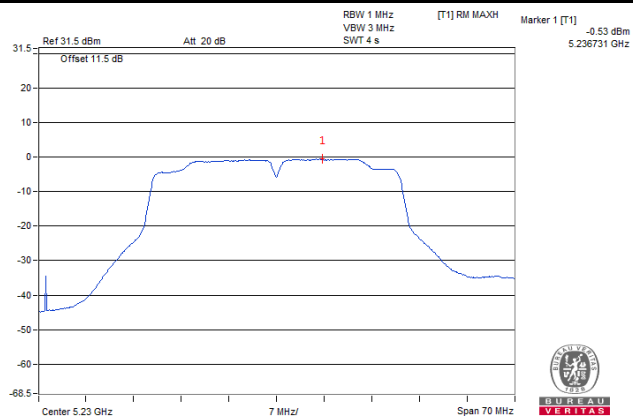
802.11a



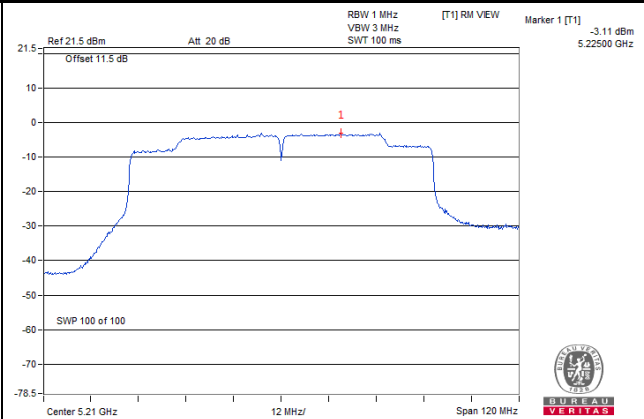
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



For U-NII-3 Band

802.11a

Channel	Freq. (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	4.33	30	Pass
157	5785	4.73	30	Pass
165	5825	4.25	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	2.79	0.21	3.00	30	Pass
157	5785	3.79	0.21	4.00	30	Pass
165	5825	3.08	0.21	3.29	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/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
151	5755	-2.92	0.75	-2.17	30	Pass
159	5795	-1.52	0.75	-0.77	30	Pass

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

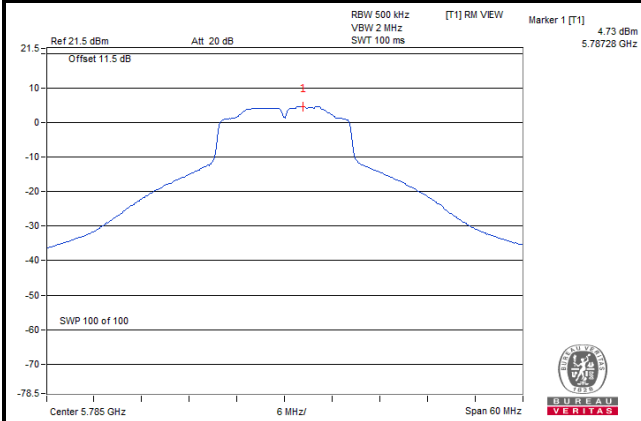
802.11ac (VHT80)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
155	5775	-5.83	0.78	-5.05	30	Pass

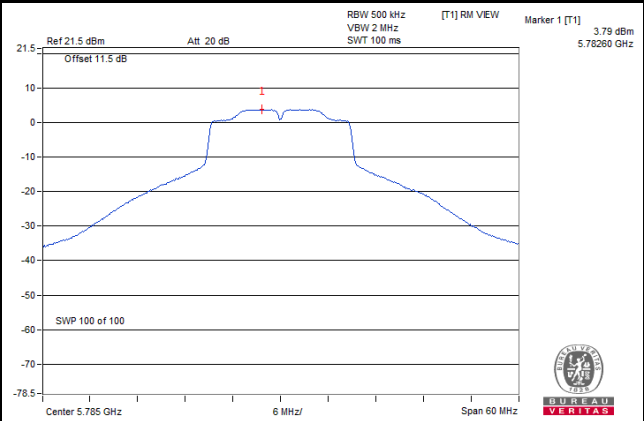
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

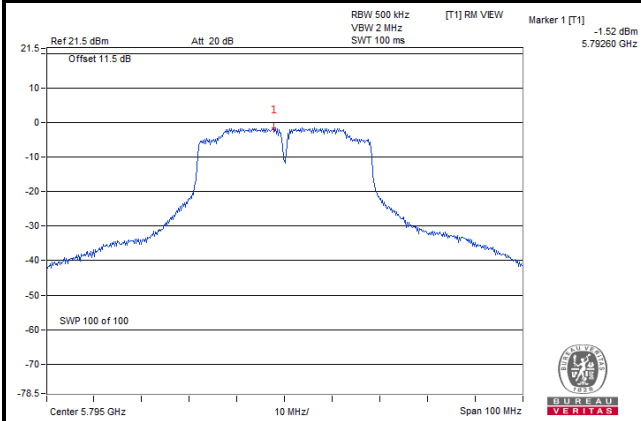
802.11a



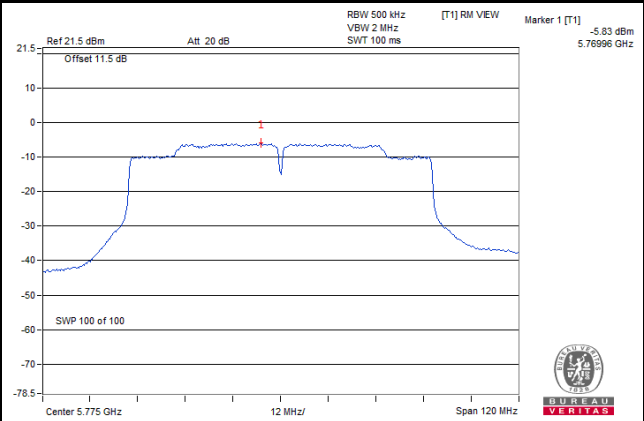
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

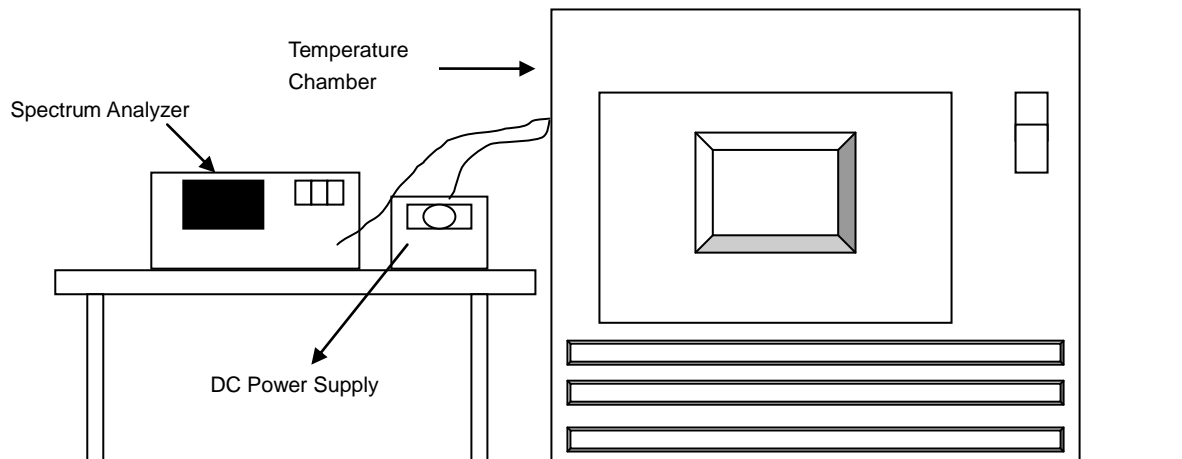


4.5 Frequency Stability

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. (°C)	Power Supply (Vac)	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	120	5180.023	4.44000	5180.0234	4.52000	5180.0272	5.25000	5180.0251	4.85000
40	120	5179.9852	-2.86000	5179.9869	-2.53000	5179.9866	-2.59000	5179.9884	-2.24000
30	120	5179.9888	-2.16000	5179.9846	-2.97000	5179.989	-2.12000	5179.9859	-2.72000
20	120	5180.0042	0.81000	5180.0068	1.31000	5180.0044	0.85000	5180.0076	1.47000
10	120	5180.0226	4.36000	5180.0253	4.88000	5180.025	4.83000	5180.0214	4.13000
0	120	5180.0119	2.30000	5180.0159	3.07000	5180.0159	3.07000	5180.0157	3.03000
-10	120	5179.9868	-2.55000	5179.9876	-2.39000	5179.9894	-2.05000	5179.9877	-2.37000
-20	120	5179.9979	-0.41000	5179.9962	-0.73000	5179.9948	-1.00000	5179.9949	-0.98000
-30	120	5179.9896	-2.01000	5179.9853	-2.84000	5179.9854	-2.82000	5179.986	-2.70000

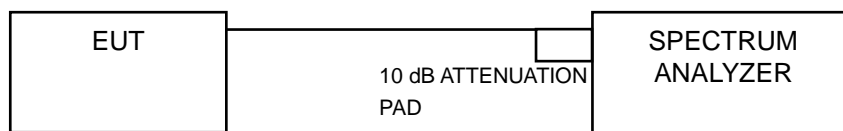
Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5180.0035	0.68000	5180.0067	1.29000	5180.0043	0.83000	5180.007	1.35000
	120	5180.0042	0.81000	5180.0068	1.31000	5180.0044	0.85000	5180.0076	1.47000
	102	5180.004	0.77000	5180.007	1.35000	5180.0035	0.68000	5180.0076	1.47000

4.6 6 dB Bandwidth Measurement

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

- Set resolution bandwidth (RBW) = 100 kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- 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

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.40	0.5	Pass
157	5785	16.30	0.5	Pass
165	5825	15.48	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.51	0.5	Pass
157	5785	16.28	0.5	Pass
165	5825	15.15	0.5	Pass

802.11n (HT40)

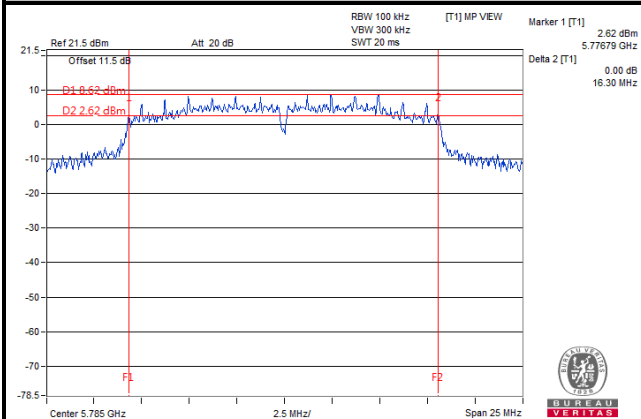
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	35.21	0.5	Pass
159	5795	35.17	0.5	Pass

802.11ac (VHT80)

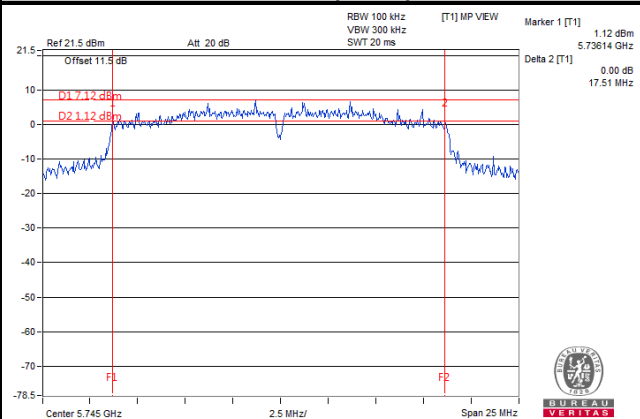
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
155	5775	72.81	0.5	Pass

Spectrum Plot of Worst Value

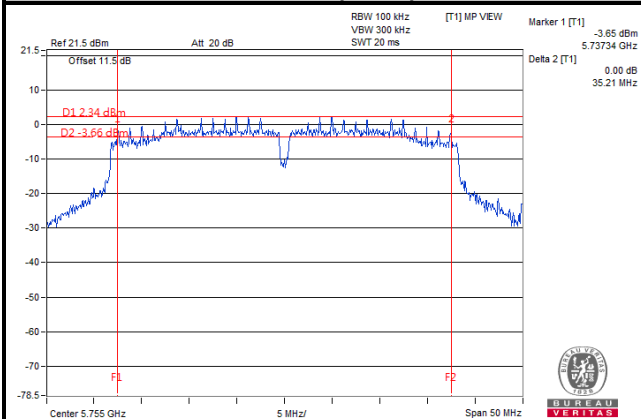
802.11a



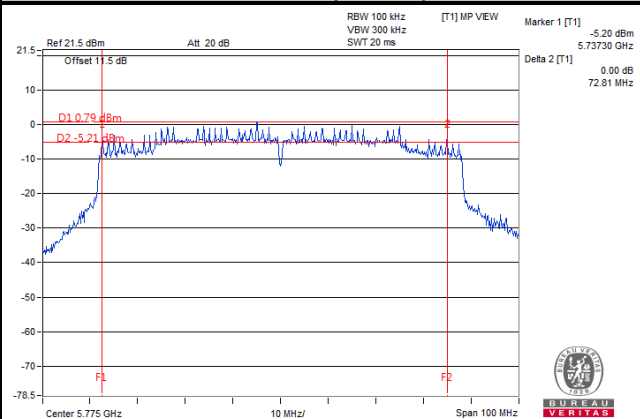
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

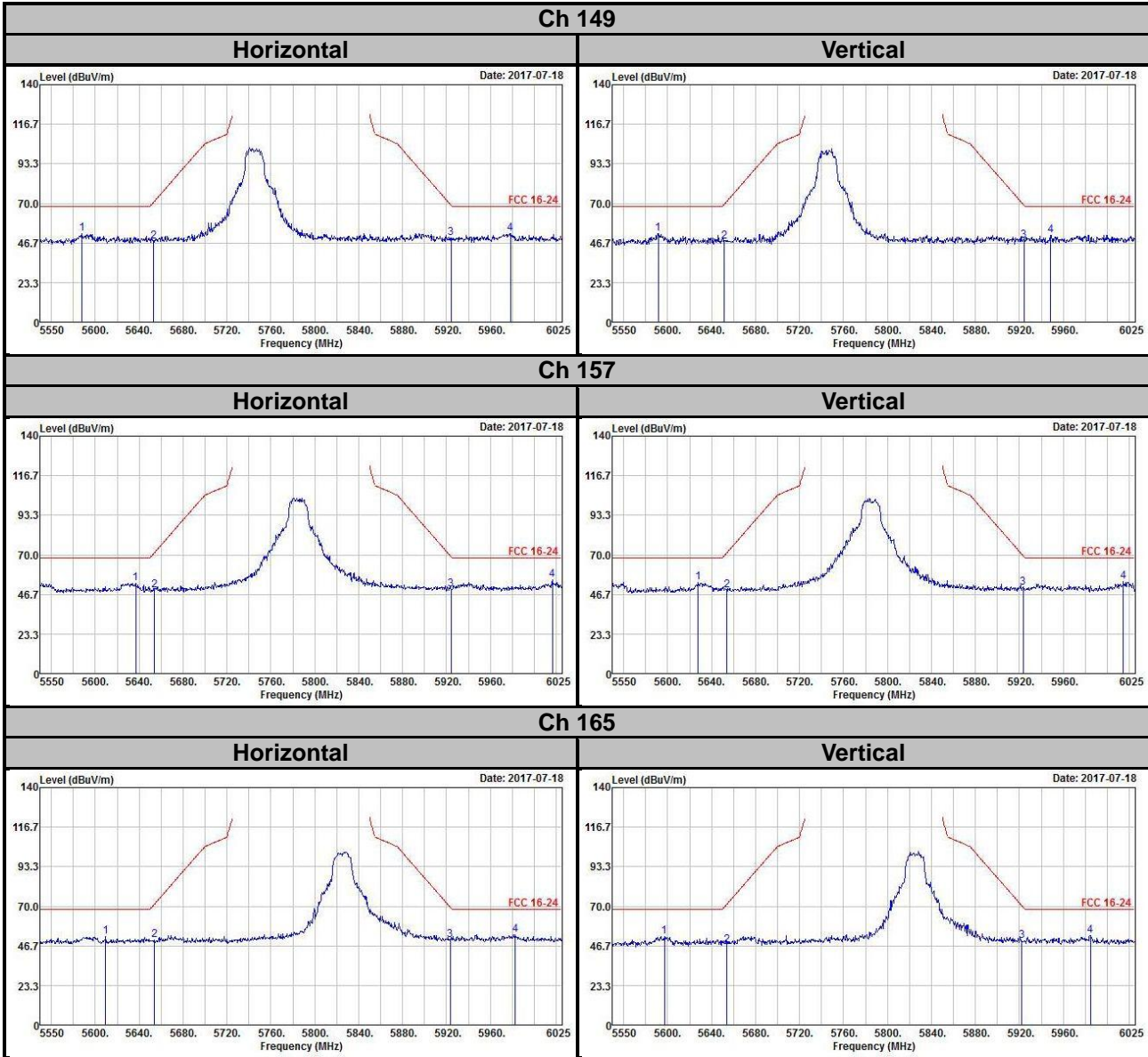


5 Pictures of Test Arrangements

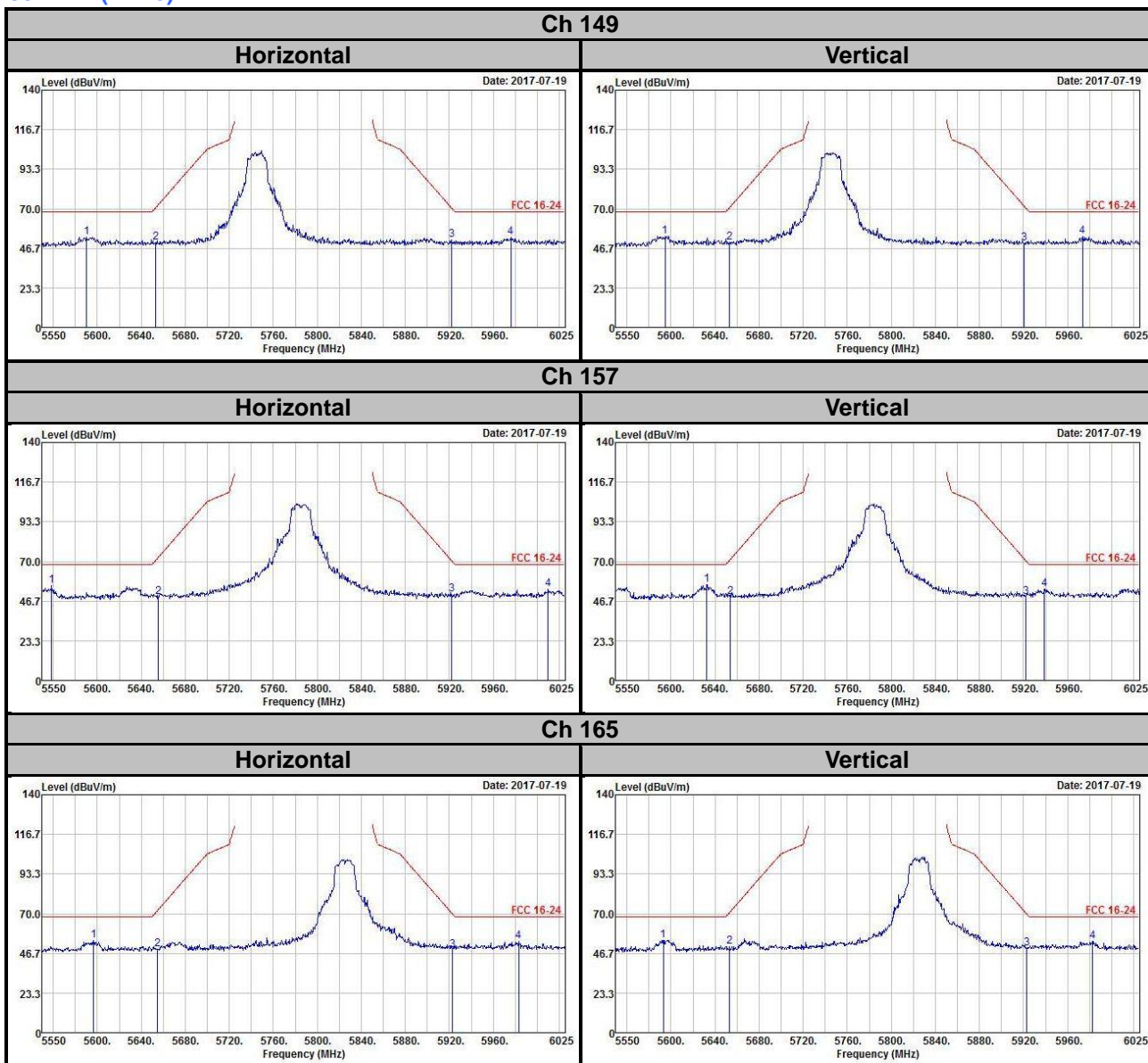
Please refer to the attached file (Test Setup Photo).

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

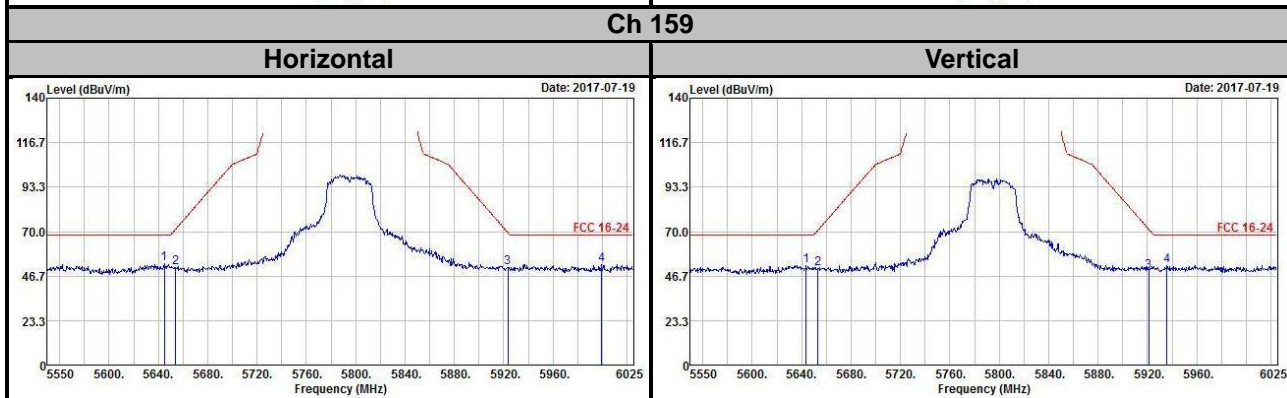
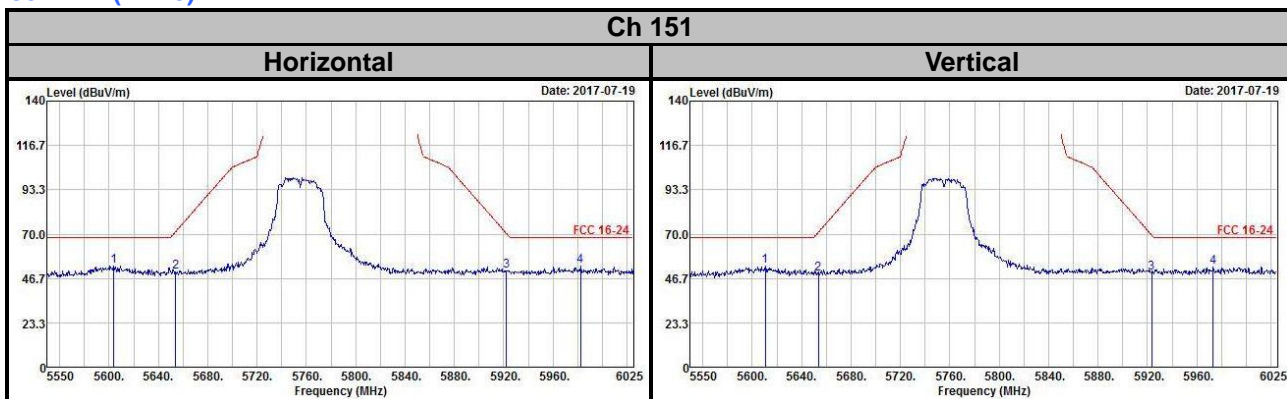
802.11a



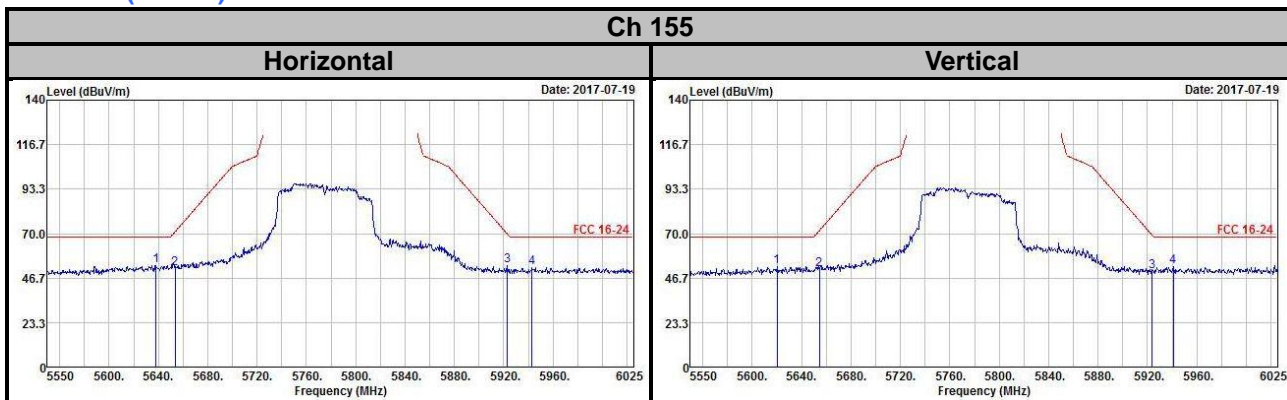
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---