

FCC Test Report

Report No.: RF191202C10-4

FCC ID: K7SG1S0001

Test Model: G1S0001

Received Date: Dec. 02, 2019

Test Date: Dec. 12, 2019 ~ Jan. 16, 2020

Issued Date: Jan. 22, 2020

Applicant: Belkin International, Inc

Address: 12045 East Waterfront Drive, Playa Vista, USA, CA 90094

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

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

Test Location (1): No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, Taiwan

Test Location (2): B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan

FCC Registration / 788550 / TW0003

Designation Number: 427177 / TW0011



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.....	9
3.2.1 Test Mode Applicability and Tested Channel Detail.....	11
3.3 Duty Cycle of Test Signal	13
3.4 Description of Support Units	14
3.4.1 Configuration of System under Test	14
3.5 General Description of Applied Standards.....	14
4 Test Types and Results	15
4.1 Radiated Emission and Bandedge Measurement	15
4.1.1 Limits of Radiated Emission and Bandedge Measurement	15
4.1.2 Limits of Unwanted Emission Out of the Restricted Bands	16
4.1.3 Test Instruments	17
4.1.4 Test Procedures.....	18
4.1.5 Deviation from Test Standard	19
4.1.6 Test Setup.....	19
4.1.7 EUT Operating Conditions.....	20
4.1.8 Test Results	21
4.2 Conducted Emission Measurement.....	65
4.2.1 Limits of Conducted Emission Measurement	65
4.2.2 Test Instruments	65
4.2.3 Test Procedures.....	66
4.2.4 Deviation from Test Standard	66
4.2.5 Test Setup.....	66
4.2.6 EUT Operating Conditions.....	66
4.2.7 Test Results	67
4.3 Transmit Power Measurement.....	69
4.3.1 Limits of Transmit Power Measurement	69
4.3.2 Test Setup.....	69
4.3.3 Test Instruments	70
4.3.4 Test Procedure	70
4.3.5 Deviation from Test Standard	70
4.3.6 EUT Operating Conditions.....	70
4.3.7 Test Results	71
4.4 Occupied Bandwidth Measurement.....	79
4.4.1 Test Setup.....	79
4.4.2 Test Instruments	79
4.4.3 Test Procedure	79
4.4.4 Test Results	80
4.5 Peak Power Spectral Density Measurement	83
4.5.1 Limits of Peak Power Spectral Density Measurement	83
4.5.2 Test Setup.....	83
4.5.3 Test Instruments	83
4.5.4 Test Procedures.....	83
4.5.5 Deviation from Test Standard	84
4.5.6 EUT Operating Conditions.....	84
4.5.7 Test Results	85
4.6 Frequency Stability	93

4.6.1	Limit of Frequency Stability Measurement	93
4.6.2	Test Setup	93
4.6.3	Test Instruments	93
4.6.4	Test Procedure	93
4.6.5	Deviation from Test Standard	93
4.6.6	EUT Operating Condition	93
4.6.7	Test Results	94
4.7	6 dB Bandwidth Measurement.....	95
4.7.1	Limits of 6 dB Bandwidth Measurement.....	95
4.7.2	Test Setup.....	95
4.7.3	Test Instruments	95
4.7.4	Test Procedure	95
4.7.5	Deviation from Test Standard	95
4.7.6	EUT Operating Condition	95
4.7.7	Test Results	96
5	Pictures of Test Arrangements.....	98
	Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)	99
	Appendix – Information of the Testing Laboratories	102

Release Control Record

Issue No.	Description	Date Issued
RF191202C10-4	Original Release	Jan. 22, 2020

1 Certificate of Conformity

Product: Smart Speaker

Brand: belkin

Test Model: G1S0001

Sample Status: Engineering Sample

Applicant: Belkin International, Inc

Test Date: Dec. 12, 2019 ~ Jan. 16, 2020

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

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

Prepared by : Gina Liu, **Date:** Jan. 22, 2020
Gina Liu / Specialist

Approved by : Dylan Chiou, **Date:** Jan. 22, 2020
Dylan Chiou / Senior 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 -23.5 dB at 0.4628 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1 dB at 5469.52 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is Ipex 1 not a standard connector.

Note:

- For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB test plots were recorded in Annex A.
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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	2.94 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Smart Speaker
Brand	belkin
Test Model	G1S0001
Status of EUT	Engineering Sample
Power Supply Rating	19.0 Vdc (Adapter)
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 300.0 Mbps 802.11ac: up to 866.7 Mbps
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5500 ~ 5720 MHz: 12 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 6 for 802.11n (HT40), 802.11ac (VHT40) 3 for 802.11ac (VHT80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	96.175 mW for 5180 ~ 5240 MHz 94.336 mW for 5260 ~ 5320 MHz 100.036 mW for 5500 ~ 5720 MHz 85.973 mW for 5745 ~ 5825 MHz
Antenna Type	Dipole antenna with 4.38 dBi gain
Antenna Connector	Ipex 1
Accessory Device	Adapter
Data Cable Supplied	N/A

Note:

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

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

* The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40, 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
Switching Adapter	belkin	DSA-65PFB-19 FUS 190342	I/P: 100-240 Vac, 50/60 Hz, 1.5 A O/P: 19 Vdc, 3.42 A 1.45 meter, non-shielded cable, with one ferrite core

3. The antenna information is listed as below.

Antenna Type		Frequency (MHz)						
		2400	2450	2500	5150	5470	5725	5850
Dipole	Peak Gain (dBi) Antenna 1	3.75	4.16	4.34	4.38	4.13	3.59	3.96
	Peak Gain (dBi) Antenna 2	2.64	2.64	2.67	2.75	3.81	3.26	2.54

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers 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), 802.11ac (VHT20):

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

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

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

For 5260 ~ 5320 MHz

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

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

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

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5720 MHz

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

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

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

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

3 channels are provided for 802.11ac (VHT80):

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

For 5745 ~ 5825 MHz:

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

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

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

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

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, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-	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	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

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)
-	5500-5720	802.11n (HT20)	100 to 144	100	OFDM	BPSK	6.5

Power Line Conducted Emission Test:

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5720	802.11n (HT20)	100 to 144	100	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-	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	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Charles Hsiao, Karl Lee
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Harry Hsueh
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu

3.3 Duty Cycle of Test Signal

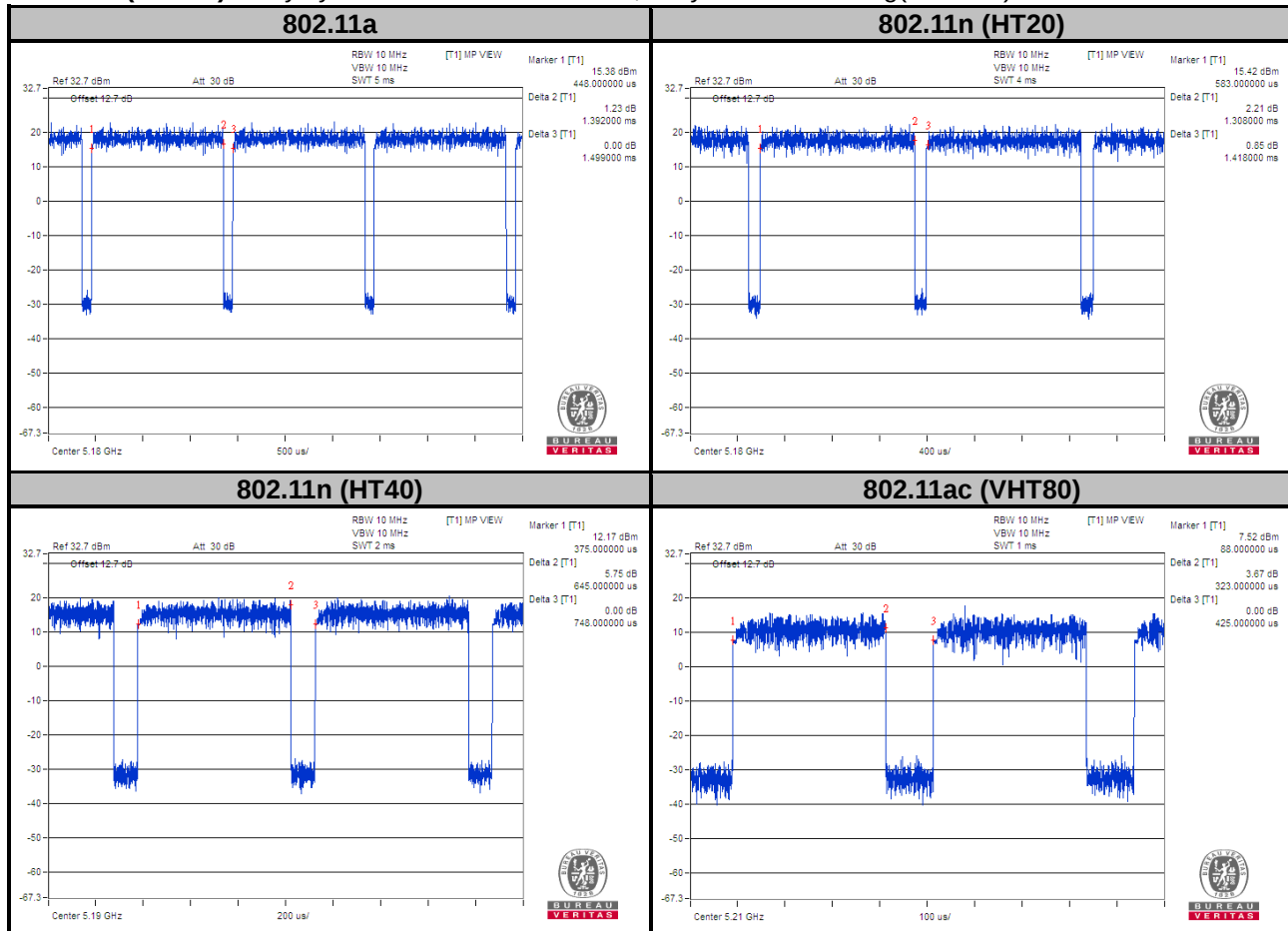
MODULATION TYPE: BPSK

802.11a: Duty cycle = $1.392/1.499 = 0.929$, Duty factor = $10 * \log(1/0.929) = 0.32$

802.11n (HT20): Duty cycle = $1.308/1.418 = 0.922$, Duty factor = $10 * \log(1/0.922) = 0.35$

802.11n (HT40): Duty cycle = $0.645/0.748 = 0.862$, Duty factor = $10 * \log(1/0.862) = 0.64$

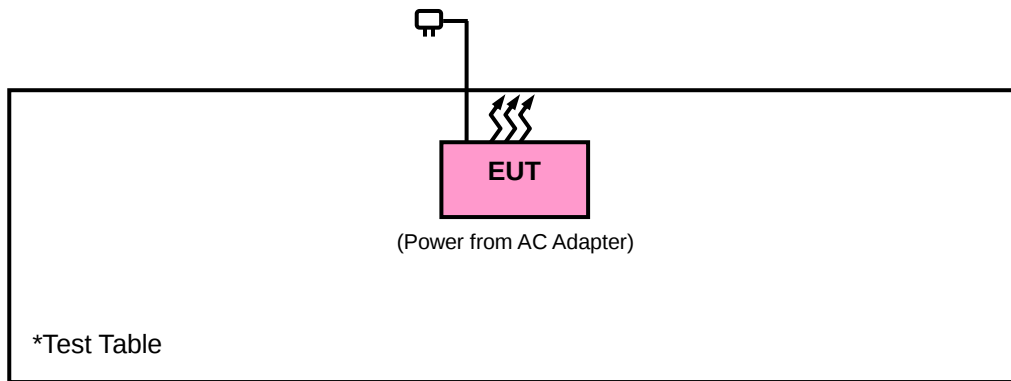
802.11ac (VHT80): Duty cycle = $0.323/0.425 = 0.760$, Duty factor = $10 * \log(1/0.760) = 1.19$



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 and references:

Test Standard:

FCC Part 15, Subpart E (15.407)

ANSI C63.10-2013

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

References Test Guidance:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 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 v02r01		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:

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

4.1.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Mar. 18, 2019	Mar. 17, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSW26	102023	Oct. 08, 2019	Oct. 07, 2020
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 12, 2019	Nov. 11, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 24, 2019	Nov. 23, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Loop Antenna	EM-6879	269	Sep. 16, 2019	Sep. 15, 2020
Preamplifier Agilent	310N	187226	Jun. 18, 2019	Jun. 17, 2020
Preamplifier Agilent	83017A	MY39501357	Jun. 18, 2019	Jun. 17, 2020
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 15, 2019	Jul. 14, 2020
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 18, 2019	Jun. 17, 2020
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 18, 2019	Jun. 17, 2020
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Temperature & Humidity Chamber	GTH-120-40-CP-A R	MAA1306-019	Sep. 06, 2019	Sep. 05, 2020
AC Power Source EEC	6905S	1991553	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 27, 2019	Jun. 26, 2020
Preamplifier EMCI	EMC 184045	980116	Oct. 08, 2019	Oct. 07, 2020

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 HsinTien Chamber 1.

4.1.4 Test Procedures

For Radiated Emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Both Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 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:

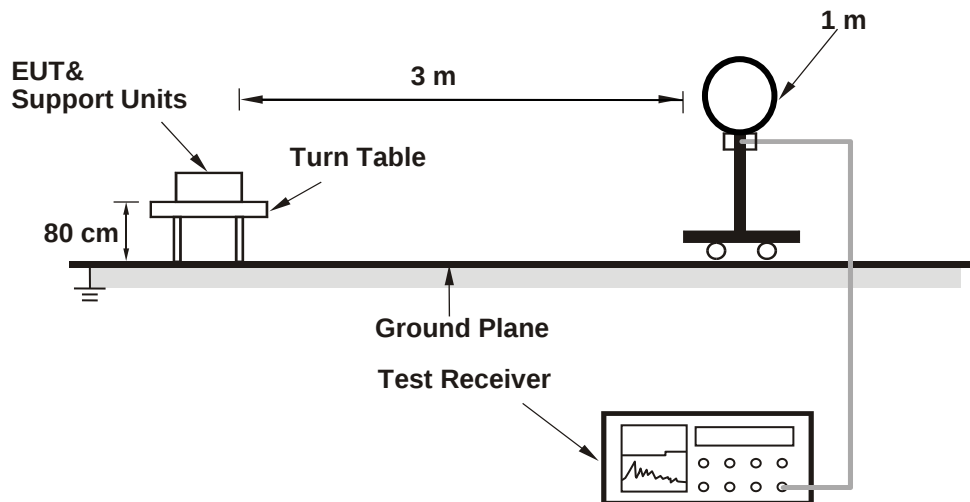
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
(11a: RBW = 1 MHz, VBW = 1 kHz ; 11n (HT20): RBW = 1 MHz, VBW = 1 kHz ;
11n (HT40): RBW = 1 MHz, VBW = 3 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 10 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

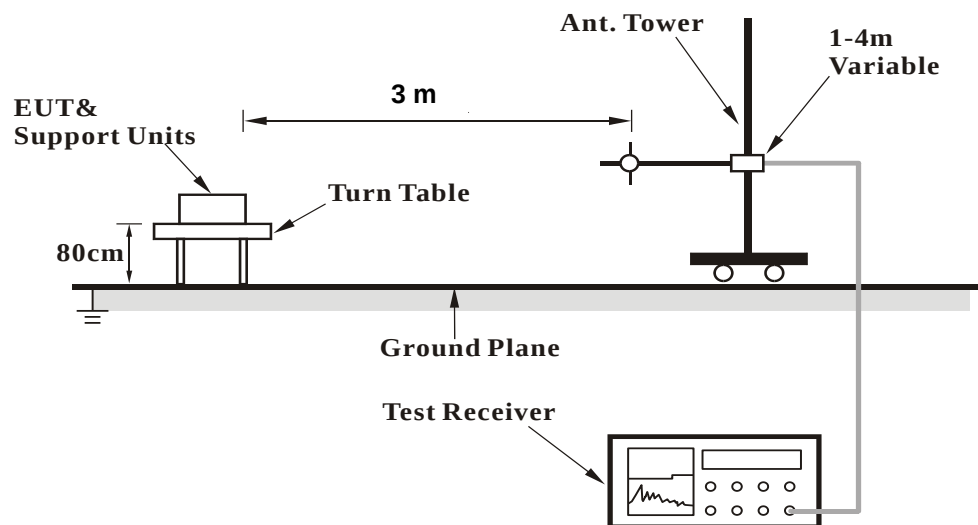
No deviation.

4.1.6 Test Setup

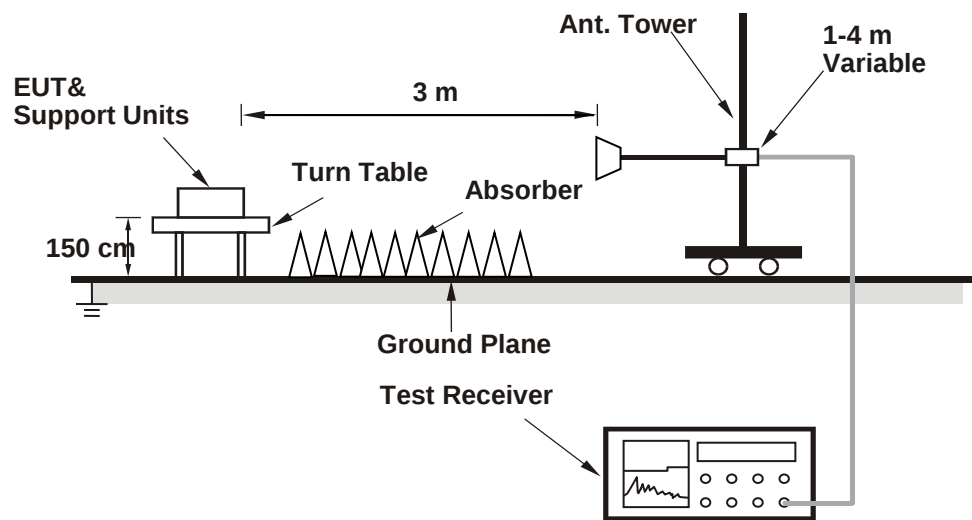
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

4.1.7 EUT Operating Conditions

- Placed the EUT on a testing table.
- 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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.85	47.45	37.4	10.05	54	-6.55	132	172	Average
5146.85	62.97	52.92	10.05	74	-11.03	132	172	Peak
5180	97.49	87.37	10.12			132	172	Average
5180	104.86	94.74	10.12			132	172	Peak
*10360	56.66	40.64	16.02	68.2	-11.54	135	55	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.7	52.97	42.92	10.05	54	-1.03	101	244	Average
5149.7	70.35	60.3	10.05	74	-3.65	101	244	Peak
5180	102.58	92.46	10.12			100	244	Average
5180	109.43	99.31	10.12			100	244	Peak
*10360	56.4	40.38	16.02	68.2	-11.8	140	155	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5180 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 40	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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.35	45.35	35.3	10.05	54	-8.65	132	172	Average
5148.35	59.85	49.8	10.05	74	-14.15	132	172	Peak
5200	98.59	88.43	10.16			132	172	Average
5200	105.71	95.55	10.16			132	172	Peak
5352.97	42.53	32.3	10.23	54	-11.47	132	172	Average
5352.97	52.83	42.6	10.23	74	-21.17	132	172	Peak
*10400	56.23	40.05	16.18	68.2	-11.97	114	164	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.55	52.88	42.83	10.05	54	-1.12	100	244	Average
5146.55	66.75	56.7	10.05	74	-7.25	100	244	Peak
5200	103.65	93.49	10.16			100	244	Average
5200	110.54	100.38	10.16			100	244	Peak
5424.69	42.58	32.13	10.45	54	-11.42	100	244	Average
5424.69	52.58	42.13	10.45	74	-21.42	100	244	Peak
*10400	56.45	40.27	16.18	68.2	-11.75	188	108	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5200 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240	99.86	89.72	10.14			132	172	Average
5240	106.35	96.21	10.14			132	172	Peak
5450.76	43.05	32.54	10.51	54	-10.95	132	172	Average
5450.76	53.09	42.58	10.51	74	-20.91	132	172	Peak
*10480	57.95	42.05	15.9	68.2	-10.25	195	255	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240	105.56	95.42	10.14			100	244	Average
5240	112.6	102.46	10.14			100	244	Peak
5450.87	44.03	33.52	10.51	54	-9.97	100	244	Average
5450.87	53.97	43.46	10.51	74	-20.03	100	244	Peak
*10480	58.44	42.54	15.9	68.2	-9.76	117	165	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5108.15	42.46	32.5	9.96	54	-11.54	100	57	Average
5108.15	52.66	42.7	9.96	74	-21.34	100	57	Peak
5260	99.65	89.53	10.12			100	57	Average
5260	106.82	96.7	10.12			100	57	Peak
*10520	56.62	40.74	15.88	68.2	-11.58	140	117	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5109.5	44.51	34.55	9.96	54	-9.49	101	23	Average
5109.5	55	45.04	9.96	74	-19	101	23	Peak
5260	106.65	96.53	10.12			101	23	Average
5260	113.7	103.58	10.12			101	23	Peak
*10520	57.77	41.89	15.88	68.2	-10.43	144	118	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.15	42.36	32.31	10.05	54	-11.64	100	57	Average
5147.15	53.24	43.19	10.05	74	-20.76	100	57	Peak
5300	97.84	87.78	10.06			100	57	Average
5300	104.63	94.57	10.06			100	57	Peak
5351.54	46.42	36.19	10.23	54	-7.58	100	57	Average
5351.54	59	48.77	10.23	74	-15	100	57	Peak
10600	47.17	31.41	15.76	54	-6.83	195	222	Average
10600	56.21	40.45	15.76	74	-17.79	195	222	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.7	44.27	34.22	10.05	54	-9.73	101	23	Average
5149.7	53.34	43.29	10.05	74	-20.66	101	23	Peak
5300	103.69	93.63	10.06			101	23	Average
5300	110.41	100.35	10.06			101	23	Peak
5350.22	52.53	42.3	10.23	54	-1.47	100	23	Average
5350.22	61.52	51.29	10.23	74	-12.48	100	23	Peak
10600	47.21	31.45	15.76	54	-6.79	118	326	Average
10600	57.5	41.74	15.76	74	-16.5	118	326	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	95.85	85.76	10.09			100	57	Average
5320	102.78	92.69	10.09			100	57	Peak
5350.77	44.53	34.3	10.23	54	-9.47	100	57	Average
5350.77	55.93	45.7	10.23	74	-18.07	100	57	Peak
10640	47.43	31.44	15.99	54	-6.57	164	226	Average
10640	57.29	41.3	15.99	74	-16.71	164	226	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	101.25	91.16	10.09			100	23	Average
5320	108.12	98.03	10.09			100	23	Peak
5350	52.79	42.56	10.23	54	-1.21	100	25	Average
5350	66.65	56.42	10.23	74	-7.35	100	25	Peak
10640	47.47	31.48	15.99	54	-6.53	118	325	Average
10640	57.22	41.23	15.99	74	-16.78	118	325	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.96	45.83	35.32	10.51	54	-8.17	100	100	Average
5458.96	56.13	45.62	10.51	74	-17.87	100	100	Peak
*5469.04	57.27	46.74	10.53	68.2	-10.93	100	100	Peak
5500	97.74	87.14	10.6			100	100	Average
5500	104.54	93.94	10.6			100	100	Peak
11000	47.43	31.3	16.13	54	-6.57	163	204	Average
11000	57.03	40.9	16.13	74	-16.97	163	204	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.48	49.98	39.47	10.51	54	-4.02	114	5	Average
5458.48	63.52	53.01	10.51	74	-10.48	114	5	Peak
*5469.52	66.91	56.38	10.53	68.2	-1.29	114	5	Peak
5500	102.47	91.87	10.6			120	4	Average
5500	109.12	98.52	10.6			120	4	Peak
11000	47.89	31.76	16.13	54	-6.11	131	44	Average
11000	57.53	41.4	16.13	74	-16.47	131	44	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5500 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5429.2	42.8	32.33	10.47	54	-11.2	100	100	Average
5429.2	53.7	43.23	10.47	74	-20.3	100	100	Peak
*5469.36	51.04	40.51	10.53	68.2	-17.16	100	100	Peak
5580	101.26	90.55	10.71			100	100	Average
5580	108.43	97.72	10.71			100	100	Peak
*5725	52.42	41.5	10.92	68.2	-15.78	100	100	Peak
11160	48.35	31.99	16.36	54	-5.65	151	204	Average
11160	58.02	41.66	16.36	74	-15.98	151	204	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5429.2	45.9	35.43	10.47	54	-8.1	120	4	Average
5429.2	54.79	44.32	10.47	74	-19.21	120	4	Peak
*5469.2	52.25	41.72	10.53	68.2	-15.95	120	4	Peak
5580	106.64	95.93	10.71			120	4	Average
5580	113.78	103.07	10.71			120	4	Peak
*5725.56	55.7	44.78	10.92	68.2	-12.5	120	4	Peak
11160	48.69	32.33	16.36	54	-5.31	181	342	Average
11160	58.13	41.77	16.36	74	-15.87	181	342	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	96.54	85.59	10.95			200	155	Average
5700	103.88	92.93	10.95			200	155	Peak
*5725.56	55.55	44.63	10.92	68.2	-12.65	200	155	Peak
11400	48.74	32.55	16.19	54	-5.26	182	166	Average
11400	58.47	42.28	16.19	74	-15.53	182	166	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	101.24	90.29	10.95			120	4	Average
5700	108.96	98.01	10.95			120	4	Peak
*5725.48	66.48	55.56	10.92	68.2	-1.72	120	4	Peak
11400	47.87	31.68	16.19	54	-6.13	126	235	Average
11400	57.48	41.29	16.19	74	-16.52	126	235	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5410.48	43.07	32.67	10.4	54	-10.93	220	53	Average
5410.48	52.64	42.24	10.4	74	-21.36	220	53	Peak
*5469.84	51.98	41.45	10.53	68.2	-16.22	220	53	Peak
5720	103.43	92.51	10.92			220	53	Average
5720	109.05	98.13	10.92			220	53	Peak
11440	47.61	31.32	16.29	54	-6.39	107	28	Average
11440	57.08	40.79	16.29	74	-16.92	107	28	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5440.4	43.35	32.87	10.48	54	-10.65	173	321	Average
5440.4	53.2	42.72	10.48	74	-20.8	173	321	Peak
*5469.36	50.74	40.21	10.53	68.2	-17.46	173	321	Peak
5720	106.58	95.66	10.92			173	321	Average
5720	114.19	103.27	10.92			173	321	Peak
11440	47.94	31.65	16.29	54	-6.06	178	135	Average
11440	57.6	41.31	16.29	74	-16.4	178	135	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5720 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	102.74	91.86	10.88			220	53	Average
5745	108.89	98.01	10.88			220	53	Peak
11490	47.34	30.87	16.47	54	-6.66	184	127	Average
11490	57.02	40.55	16.47	74	-16.98	184	127	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	107.94	97.06	10.88			173	225	Average
5745	113.65	102.77	10.88			173	225	Peak
11490	46.85	30.38	16.47	54	-7.15	137	225	Average
11490	56.49	40.02	16.47	74	-17.51	137	225	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5519.95	52.53	41.88	10.65	68.2	-15.67	220	53	Peak
5654.35	52.51	41.64	10.87	71.42	-18.91	220	53	Peak
5921.05	52.75	41.66	11.09	71.12	-18.37	220	53	Peak
*5964.625	53.2	41.97	11.23	68.2	-15	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5644.9	53.39	42.56	10.83	68.2	-14.81	173	225	Peak
5652.775	54.59	43.72	10.87	70.25	-15.66	173	225	Peak
5896.9	56.92	45.89	11.03	88.99	-32.07	173	225	Peak
*5963.05	54.25	43.02	11.23	68.2	-13.95	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5745 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	102.59	91.78	10.81			220	53	Average
5785	108.67	97.86	10.81			220	53	Peak
11570	47.34	30.85	16.49	54	-6.66	141	89	Average
11570	57	40.51	16.49	74	-17	141	89	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	107.22	96.41	10.81			173	225	Average
5785	113.47	102.66	10.81			173	225	Peak
11570	48.16	31.67	16.49	54	-5.84	164	131	Average
11570	57.75	41.26	16.49	74	-16.25	164	131	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5640.175	54.62	43.79	10.83	68.2	-13.58	220	53	Peak
5653.3	51.79	40.92	10.87	70.64	-18.85	220	53	Peak
5922.1	52.02	40.91	11.11	70.35	-18.33	220	53	Peak
*5948.875	54.85	43.67	11.18	68.2	-13.35	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5631.25	53.25	42.44	10.81	68.2	-14.95	173	225	Peak
5652.25	52.08	41.21	10.87	69.86	-17.78	173	225	Peak
5923.15	53.59	42.48	11.11	69.57	-15.98	173	225	Peak
*5932.6	55.67	44.56	11.11	68.2	-12.53	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5785 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	103.2	92.32	10.88			220	53	Average
5825	108.43	97.55	10.88			220	53	Peak
11650	48.32	31.54	16.78	54	-5.68	192	316	Average
11650	57.83	41.05	16.78	74	-16.17	192	316	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	107.45	96.57	10.88			173	225	Average
5825	113.79	102.91	10.88			173	225	Peak
11650	47.65	30.87	16.78	54	-6.35	120	46	Average
11650	57.42	40.64	16.78	74	-16.58	120	46	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5578.225	53.25	42.54	10.71	68.2	-14.95	220	53	Peak
5653.825	52.22	41.35	10.87	71.03	-18.81	220	53	Peak
5921.05	53.58	42.49	11.09	71.12	-17.54	220	53	Peak
*5986.15	54.91	43.62	11.29	68.2	-13.29	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5631.775	53.15	42.34	10.81	68.2	-15.05	173	225	Peak
5654.35	52.74	41.87	10.87	71.42	-18.68	173	225	Peak
5920.525	55.57	44.48	11.09	71.51	-15.94	173	225	Peak
*5980.375	57.28	46.02	11.26	68.2	-10.92	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5825 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.35	47.78	37.73	10.05	54	-6.22	132	172	Average
5148.35	64.44	54.39	10.05	74	-9.56	132	172	Peak
5180	96.41	86.29	10.12			132	172	Average
5180	103.34	93.22	10.12			132	172	Peak
*10360	55.97	39.95	16.02	68.2	-12.23	134	266	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.25	52.93	42.88	10.05	54	-1.07	102	244	Average
5149.25	65.25	55.2	10.05	74	-8.75	102	244	Peak
5180	101.26	91.14	10.12			100	244	Average
5180	108.35	98.23	10.12			100	244	Peak
*10360	56.47	40.45	16.02	68.2	-11.73	140	244	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5180 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 40	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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.1	47.5	37.45	10.05	54	-6.5	132	172	Average
5149.1	60.19	50.14	10.05	74	-13.81	132	172	Peak
5200	97.72	87.56	10.16			132	172	Average
5200	104.76	94.6	10.16			132	172	Peak
5350.77	42.55	32.32	10.23	54	-11.45	132	172	Average
5350.77	52.48	42.25	10.23	74	-21.52	132	172	Peak
*10400	56.83	40.65	16.18	68.2	-11.37	165	188	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.7	52.52	42.47	10.05	54	-1.48	100	244	Average
5149.7	66.73	56.68	10.05	74	-7.27	100	244	Peak
5200	102.43	92.27	10.16			100	244	Average
5200	109.11	98.95	10.16			100	244	Peak
5408.19	43.55	33.15	10.4	54	-10.45	100	244	Average
5408.19	53.29	42.89	10.4	74	-20.71	100	244	Peak
*10400	56.86	40.68	16.18	68.2	-11.34	165	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5200 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240	99.65	89.51	10.14			132	172	Average
5240	106.16	96.02	10.14			132	172	Peak
5449.99	42.8	32.29	10.51	54	-11.2	132	172	Average
5449.99	52.97	42.46	10.51	74	-21.03	132	172	Peak
*10480	56.19	40.29	15.9	68.2	-12.01	173	124	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240	104.17	94.03	10.14			100	244	Average
5240	111.42	101.28	10.14			100	244	Peak
5449.77	44.29	33.78	10.51	54	-9.71	100	244	Average
5449.77	53.64	43.13	10.51	74	-20.36	100	244	Peak
*10480	56.52	40.62	15.9	68.2	-11.68	113	46	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5109.2	42.22	32.26	9.96	54	-11.78	100	57	Average
5109.2	53.27	43.31	9.96	74	-20.73	100	57	Peak
5260	98.59	88.47	10.12			100	57	Average
5260	105.11	94.99	10.12			100	57	Peak
*10520	56.79	40.91	15.88	68.2	-11.41	134	177	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5111	44.35	34.39	9.96	54	-9.65	101	23	Average
5111	54.13	44.17	9.96	74	-19.87	101	23	Peak
5260	105.54	95.42	10.12			101	23	Average
5260	112.26	102.14	10.12			101	23	Peak
*10520	58.16	42.28	15.88	68.2	-10.04	118	325	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5260 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.85	42.19	32.14	10.05	54	-11.81	100	57	Average
5146.85	52.82	42.77	10.05	74	-21.18	100	57	Peak
5300	96.65	86.59	10.06			100	57	Average
5300	103.52	93.46	10.06			100	57	Peak
5350.44	47.23	37	10.23	54	-6.77	100	57	Average
5350.44	60.81	50.58	10.23	74	-13.19	100	57	Peak
10600	47.12	31.36	15.76	54	-6.88	112	326	Average
10600	56.42	40.66	15.76	74	-17.58	112	326	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.25	42.74	32.69	10.05	54	-11.26	101	23	Average
5149.25	52.77	42.72	10.05	74	-21.23	101	23	Peak
5300	102.14	92.08	10.06			101	23	Average
5300	109.09	99.03	10.06			101	23	Peak
5350	52.28	42.05	10.23	54	-1.72	101	23	Average
5350	62.06	51.83	10.23	74	-11.94	101	23	Peak
10600	47.28	31.52	15.76	54	-6.72	174	165	Average
10600	56.25	40.49	15.76	74	-17.75	174	165	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5300 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	94.94	84.85	10.09			100	57	Average
5320	101.11	91.02	10.09			100	57	Peak
5350.11	44.69	34.46	10.23	54	-9.31	100	57	Average
5350.11	61.2	50.97	10.23	74	-12.8	100	57	Peak
10640	47.61	31.62	15.99	54	-6.39	164	263	Average
10640	56.71	40.72	15.99	74	-17.29	164	263	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	100.46	90.37	10.09			100	23	Average
5320	107.19	97.1	10.09			100	23	Peak
5351.87	52.03	41.8	10.23	54	-1.97	101	23	Average
5351.87	69.29	59.06	10.23	74	-4.71	101	23	Peak
10640	47.41	31.42	15.99	54	-6.59	198	188	Average
10640	56.9	40.91	15.99	74	-17.1	198	188	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.32	44.01	33.5	10.51	54	-9.99	100	100	Average
5458.32	58.98	48.47	10.51	74	-15.02	100	100	Peak
*5470	54	43.47	10.53	68.2	-14.2	100	100	Peak
5500	96.58	85.98	10.6			100	100	Average
5500	103.21	92.61	10.6			100	100	Peak
11000	46.39	30.26	16.13	54	-7.61	162	157	Average
11000	55.92	39.79	16.13	74	-18.08	162	157	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.8	49.5	38.99	10.51	54	-4.5	104	4	Average
5458.8	65.55	55.04	10.51	74	-8.45	104	4	Peak
*5469.52	67.2	56.67	10.53	68.2	-1	104	4	Peak
5500	101.41	90.81	10.6			120	4	Average
5500	108.45	97.85	10.6			120	4	Peak
11000	46.82	30.69	16.13	54	-7.18	123	356	Average
11000	56.2	40.07	16.13	74	-17.8	123	356	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5500 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5427.44	43.09	32.64	10.45	54	-10.91	100	100	Average
5427.44	52.83	42.38	10.45	74	-21.17	100	100	Peak
*5469.84	52.12	41.59	10.53	68.2	-16.08	100	100	Peak
5580	100.54	89.83	10.71			100	100	Average
5580	107.42	96.71	10.71			100	100	Peak
*5725.4	52.18	41.26	10.92	68.2	-16.02	100	100	Peak
11160	47.74	31.38	16.36	54	-6.26	139	56	Average
11160	57.3	40.94	16.36	74	-16.7	139	56	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5430.96	44.89	34.41	10.48	54	-9.11	120	4	Average
5430.96	53.91	43.43	10.48	74	-20.09	120	4	Peak
*5469.52	52.02	41.49	10.53	68.2	-16.18	120	4	Peak
5580	105.56	94.85	10.71			120	4	Average
5580	112.32	101.61	10.71			120	4	Peak
*5725.08	54.06	43.14	10.92	68.2	-14.14	120	4	Peak
11160	47.35	30.99	16.36	54	-6.65	187	235	Average
11160	57.02	40.66	16.36	74	-16.98	187	235	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	96.84	85.89	10.95			200	155	Average
5700	103.09	92.14	10.95			200	155	Peak
*5725.8	56.96	46.04	10.92	68.2	-11.24	200	155	Peak
11400	47.82	31.63	16.19	54	-6.18	136	249	Average
11400	57.68	41.49	16.19	74	-16.32	136	249	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	101.84	90.89	10.95			120	4	Average
5700	108.15	97.2	10.95			120	4	Peak
*5725.08	66.5	55.58	10.92	68.2	-1.7	120	4	Peak
11400	46.69	30.5	16.19	54	-7.31	128	77	Average
11400	56.38	40.19	16.19	74	-17.62	128	77	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5444.24	43.21	32.73	10.48	54	-10.79	220	53	Average
5444.24	53.75	43.27	10.48	74	-20.25	220	53	Peak
5469.52	50.64	40.11	10.53	74	-23.36	220	53	Peak
5720	102.64	91.72	10.92			220	53	Average
5720	108.56	97.64	10.92			220	53	Peak
11440	47.36	31.07	16.29	54	-6.64	159	344	Average
11440	57.04	40.75	16.29	74	-16.96	159	344	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5451.28	43.36	32.85	10.51	54	-10.64	173	321	Average
5451.28	52.61	42.1	10.51	74	-21.39	173	321	Peak
5469.68	51.53	41	10.53	74	-22.47	173	321	Peak
5720	107.58	96.66	10.92			173	321	Average
5720	113.47	102.55	10.92			173	321	Peak
11440	46.83	30.54	16.29	54	-7.17	160	57	Average
11440	56.43	40.14	16.29	74	-17.57	160	57	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5720 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	102.13	91.25	10.88			220	53	Average
5745	108.06	97.18	10.88			220	53	Peak
11490	46.58	30.11	16.47	54	-7.42	162	294	Average
11490	56.27	39.8	16.47	74	-17.73	162	294	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	107.11	96.23	10.88			173	225	Average
5745	113.11	102.23	10.88			173	225	Peak
11490	46.57	30.1	16.47	54	-7.43	158	161	Average
11490	56.19	39.72	16.47	74	-17.81	158	161	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5606.05	53.29	42.54	10.75	68.2	-14.91	220	53	Peak
5653.825	53.44	42.57	10.87	71.03	-17.59	220	53	Peak
5921.05	52.61	41.52	11.09	71.12	-18.51	220	53	Peak
*5974.6	53.93	42.67	11.26	68.2	-14.27	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5648.575	53.74	42.89	10.85	68.2	-14.46	173	225	Peak
5656.975	54.78	43.91	10.87	73.36	-18.58	173	225	Peak
5919.475	52.5	41.41	11.09	72.29	-19.79	173	225	Peak
*5996.125	53.61	42.28	11.33	68.2	-14.59	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5745 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	102.41	91.6	10.81			220	53	Average
5785	108.44	97.63	10.81			220	53	Peak
11570	47.45	30.96	16.49	54	-6.55	123	82	Average
11570	57.03	40.54	16.49	74	-16.97	123	82	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	107.07	96.26	10.81			173	225	Average
5785	113.25	102.44	10.81			173	225	Peak
11570	46.49	30	16.49	54	-7.51	154	274	Average
11570	56.19	39.7	16.49	74	-17.81	154	274	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5629.15	52.67	41.86	10.81	68.2	-15.53	220	53	Peak
5651.725	51.86	40.99	10.87	69.48	-17.62	220	53	Peak
5917.9	52.63	41.54	11.09	73.45	-20.82	220	53	Peak
*5938.375	53.5	42.34	11.16	68.2	-14.7	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5632.825	53.76	42.93	10.83	68.2	-14.44	173	225	Peak
5652.25	52.82	41.95	10.87	69.86	-17.04	173	225	Peak
5921.05	52.37	41.28	11.09	71.12	-18.75	173	225	Peak
*5934.7	54.79	43.63	11.16	68.2	-13.41	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5785 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	102.56	91.68	10.88			220	53	Average
5825	108.07	97.19	10.88			220	53	Peak
11650	46.89	30.11	16.78	54	-7.11	181	76	Average
11650	56.54	39.76	16.78	74	-17.46	181	76	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	107.46	96.58	10.88			173	225	Average
5825	113.36	102.48	10.88			173	225	Peak
11650	48.25	31.47	16.78	54	-5.75	173	164	Average
11650	57.83	41.05	16.78	74	-16.17	173	164	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5579.275	53.66	42.95	10.71	68.2	-14.54	220	53	Peak
5651.725	52.05	41.18	10.87	69.48	-17.43	220	53	Peak
5921.575	52.53	41.42	11.11	70.73	-18.2	220	53	Peak
*5958.325	53.7	42.49	11.21	68.2	-14.5	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5609.2	52.58	41.83	10.75	68.2	-15.62	173	225	Peak
5654.875	52.7	41.83	10.87	71.81	-19.11	173	225	Peak
5918.425	54.35	43.26	11.09	73.07	-18.72	173	225	Peak
*5930.5	55.83	44.72	11.11	68.2	-12.37	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5825 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.95	45.63	35.58	10.05	54	-8.37	132	172	Average
5148.95	56.33	46.28	10.05	74	-17.67	132	172	Peak
5190	89.58	79.46	10.12			132	172	Average
5190	96.09	85.97	10.12			132	172	Peak
5392.02	42.58	32.24	10.34	54	-11.42	132	172	Average
5392.02	52.81	42.47	10.34	74	-21.19	132	172	Peak
*10380	56.76	40.66	16.1	68.2	-11.44	185	177	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	50.77	40.72	10.05	54	-3.23	100	245	Average
5150	60.94	50.89	10.05	74	-13.06	100	245	Peak
5190	94.58	84.46	10.12			100	244	Average
5190	101.39	91.27	10.12			100	244	Peak
5446.03	42.72	32.23	10.49	54	-11.28	100	244	Average
5446.03	53.1	42.61	10.49	74	-20.9	100	244	Peak
*10380	56.02	39.92	16.1	68.2	-12.18	113	254	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5190 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.3	46.09	36.04	10.05	54	-7.91	132	172	Average
5147.3	57.8	47.75	10.05	74	-16.2	132	172	Peak
5230	95.85	85.71	10.14			132	172	Average
5230	102.48	92.34	10.14			132	172	Peak
5384.65	42.77	32.43	10.34	54	-11.23	132	172	Average
5384.65	52.59	42.25	10.34	74	-21.41	132	172	Peak
*10460	55.86	39.86	16	68.2	-12.34	118	185	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.1	52.48	42.43	10.05	54	-1.52	100	244	Average
5149.1	62.59	52.54	10.05	74	-11.41	100	244	Peak
5230	100.36	90.22	10.14			100	244	Average
5230	107.83	97.69	10.14			100	244	Peak
5353.74	43.77	33.54	10.23	54	-10.23	100	244	Average
5353.74	54.34	44.11	10.23	74	-19.66	100	244	Peak
*10460	55.45	39.45	16	68.2	-12.75	118	214	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5230 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5117.75	42.57	32.61	9.96	54	-11.43	100	57	Average
5117.75	52.65	42.69	9.96	74	-21.35	100	57	Peak
5270	95.44	85.32	10.12			100	57	Average
5270	102.08	91.96	10.12			100	57	Peak
5352.42	45.26	35.03	10.23	54	-8.74	100	57	Average
5352.42	56.29	46.06	10.23	74	-17.71	100	57	Peak
*10540	56.25	40.42	15.83	68.2	-11.95	185	165	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	44.43	34.38	10.05	54	-9.57	101	23	Average
5150	53.81	43.76	10.05	74	-20.19	101	23	Peak
5270	100.25	90.13	10.12			101	23	Average
5270	107.63	97.51	10.12			101	23	Peak
5351.32	49.66	39.43	10.23	54	-4.34	101	23	Average
5351.32	59.89	49.66	10.23	74	-14.11	101	23	Peak
*10540	56.38	40.55	15.83	68.2	-11.82	118	241	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5270 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5121.35	42.59	32.62	9.97	54	-11.41	100	57	Average
5121.35	52.88	42.91	9.97	74	-21.12	100	57	Peak
5310	91.64	81.55	10.09			100	57	Average
5310	98.27	88.18	10.09			100	57	Peak
5350.77	46.93	36.7	10.23	54	-7.07	100	57	Average
5350.77	57.4	47.17	10.23	74	-16.6	100	57	Peak
10620	47.44	31.56	15.88	54	-6.56	174	44	Average
10620	57.39	41.51	15.88	74	-16.61	174	44	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5124.65	43.02	33.02	10	54	-10.98	100	23	Average
5124.65	53.03	43.03	10	74	-20.97	100	23	Peak
5310	96.55	86.46	10.09			100	23	Average
5310	103.61	93.52	10.09			100	23	Peak
5350.11	52.7	42.47	10.23	54	-1.3	101	23	Average
5350.11	63.55	53.32	10.23	74	-10.45	101	23	Peak
10620	47.56	31.68	15.88	54	-6.44	154	118	Average
10620	56.09	40.21	15.88	74	-17.91	154	118	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5310 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	47.09	36.58	10.51	54	-6.91	100	100	Average
5460	57.47	46.96	10.51	74	-16.53	100	100	Peak
*5470	60.7	50.17	10.53	68.2	-7.5	100	100	Peak
5510	92.49	81.89	10.6			100	100	Average
5510	99.89	89.29	10.6			100	100	Peak
*5725.16	52.03	41.11	10.92	68.2	-16.17	100	100	Peak
11020	47.84	31.68	16.16	54	-6.16	136	205	Average
11020	57.37	41.21	16.16	74	-16.63	136	205	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.76	51.25	40.74	10.51	54	-2.75	120	4	Average
5459.76	63.19	52.68	10.51	74	-10.81	120	4	Peak
*5469.36	66.53	56	10.53	68.2	-1.67	120	4	Peak
5510	97.84	87.24	10.6			120	4	Average
5510	104.18	93.58	10.6			120	4	Peak
*5725.96	51.56	40.64	10.92	68.2	-16.64	120	4	Peak
11020	46.92	30.76	16.16	54	-7.08	172	145	Average
11020	56.59	40.43	16.16	74	-17.41	172	145	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	46.35	35.84	10.51	54	-7.65	100	100	Average
5460	57.62	47.11	10.51	74	-16.38	100	100	Peak
*5469.52	59.65	49.12	10.53	68.2	-8.55	100	100	Peak
5550	96.59	85.91	10.68			100	100	Average
5550	103.4	92.72	10.68			100	100	Peak
*5725.32	51.83	40.91	10.92	68.2	-16.37	100	100	Peak
11100	47.26	30.99	16.27	54	-6.74	102	54	Average
11100	56.87	40.6	16.27	74	-17.13	102	54	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.64	52.66	42.15	10.51	54	-1.34	120	4	Average
5458.64	61.93	51.42	10.51	74	-12.07	120	4	Peak
*5470	61.9	51.37	10.53	68.2	-6.3	120	4	Peak
5550	101.14	90.46	10.68			120	4	Average
5550	108.36	97.68	10.68			120	4	Peak
*5725.16	51.86	40.94	10.92	68.2	-16.34	120	4	Peak
11100	48.69	32.42	16.27	54	-5.31	132	86	Average
11100	58.26	41.99	16.27	74	-15.74	132	86	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5450.32	42.56	32.05	10.51	54	-11.44	178	155	Average
5450.32	52.59	42.08	10.51	74	-21.41	178	155	Peak
*5469.68	50.78	40.25	10.53	68.2	-17.42	178	155	Peak
5670	94.59	83.69	10.9			178	155	Average
5670	101.37	90.47	10.9			178	155	Peak
*5725	55.11	44.19	10.92	68.2	-13.09	178	155	Peak
11340	47.62	31.2	16.42	54	-6.38	195	164	Average
11340	57.05	40.63	16.42	74	-16.95	195	164	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5447.12	42.79	32.3	10.49	54	-11.21	120	4	Average
5447.12	53.71	43.22	10.49	74	-20.29	120	4	Peak
*5469.36	51.19	40.66	10.53	68.2	-17.01	120	4	Peak
5670	99.85	88.95	10.9			120	4	Average
5670	106.2	95.3	10.9			120	4	Peak
*5725.56	66.91	55.99	10.92	68.2	-1.29	120	4	Peak
11340	47.32	30.9	16.42	54	-6.68	157	112	Average
11340	56.93	40.51	16.42	74	-17.07	157	112	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5670 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5450.16	43.14	32.63	10.51	54	-10.86	220	53	Average
5450.16	52.49	41.98	10.51	74	-21.51	220	53	Peak
*5469.84	52.25	41.72	10.53	68.2	-15.95	220	53	Peak
5710	99.23	88.32	10.91			220	53	Average
5710	105.71	94.8	10.91			220	53	Peak
11420	46.77	30.51	16.26	54	-7.23	103	99	Average
11420	56.48	40.22	16.26	74	-17.52	103	99	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5401.2	43.83	33.43	10.4	54	-10.17	173	321	Average
5401.2	53.05	42.65	10.4	74	-20.95	173	321	Peak
*5469.04	53.69	43.16	10.53	68.2	-14.51	173	321	Peak
5710	104.65	93.74	10.91			173	321	Average
5710	111.26	100.35	10.91			173	321	Peak
11420	46.83	30.57	16.26	54	-7.17	184	315	Average
11420	56.39	40.13	16.26	74	-17.61	184	315	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5710 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	99.56	88.66	10.9			220	53	Average
5755	105.39	94.49	10.9			220	53	Peak
11510	46.69	30.18	16.51	54	-7.31	136	268	Average
11510	56.14	39.63	16.51	74	-17.86	136	268	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	104.58	93.68	10.9			173	225	Average
5755	110.7	99.8	10.9			173	225	Peak
11510	46.98	30.47	16.51	54	-7.02	156	247	Average
11510	56.71	40.2	16.51	74	-17.29	156	247	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5622.325	53.96	43.17	10.79	68.2	-14.24	220	53	Peak
5654.875	54.68	43.81	10.87	71.81	-17.13	220	53	Peak
5920.525	52.77	41.68	11.09	71.51	-18.74	220	53	Peak
*5990.35	55.97	44.64	11.33	68.2	-12.23	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5649.1	57.57	46.72	10.85	68.2	-10.63	173	225	Peak
5655.4	60.46	49.59	10.87	72.2	-11.74	173	225	Peak
5922.1	54.43	43.32	11.11	70.35	-15.92	173	225	Peak
*5990.875	54.1	42.77	11.33	68.2	-14.1	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5755 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	99.68	88.86	10.82			220	53	Average
5795	105.22	94.4	10.82			220	53	Peak
11590	47.03	30.52	16.51	54	-6.97	131	87	Average
11590	56.58	40.07	16.51	74	-17.42	131	87	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	104.56	93.74	10.82			173	225	Average
5795	110.84	100.02	10.82			173	225	Peak
11590	46.65	30.14	16.51	54	-7.35	182	234	Average
11590	56.24	39.73	16.51	74	-17.76	182	234	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5638.075	52.96	42.13	10.83	68.2	-15.24	220	53	Peak
5652.25	52.45	41.58	10.87	69.86	-17.41	220	53	Peak
5921.575	52.33	41.22	11.11	70.73	-18.4	220	53	Peak
*5939.425	53.47	42.29	11.18	68.2	-14.73	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5644.375	53.71	42.88	10.83	68.2	-14.49	173	225	Peak
5653.3	51.3	40.43	10.87	70.64	-19.34	173	225	Peak
5923.675	54.79	43.68	11.11	69.18	-14.39	173	225	Peak
*5932.6	54.79	43.68	11.11	68.2	-13.41	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5795 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5144.75	47.85	37.8	10.05	54	-6.15	132	172	Average
5144.75	56.47	46.42	10.05	74	-17.53	132	172	Peak
5210	86.25	76.08	10.17			132	172	Average
5210	93.92	83.75	10.17			132	172	Peak
5359.79	43.18	32.93	10.25	54	-10.82	132	172	Average
5359.79	52.87	42.62	10.25	74	-21.13	132	172	Peak
*10420	56.35	40.19	16.16	68.2	-11.85	164	322	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.5	52.9	42.85	10.05	54	-1.1	100	244	Average
5148.5	61.84	51.79	10.05	74	-12.16	100	244	Peak
5210	91.68	81.51	10.17			100	244	Average
5210	98.48	88.31	10.17			100	244	Peak
5352.53	44.48	34.25	10.23	54	-9.52	100	244	Average
5352.53	55.6	45.37	10.23	74	-18.4	100	244	Peak
*10420	55.72	39.56	16.16	68.2	-12.48	118	27	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5210 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5136.65	43.09	33.09	10	54	-10.91	100	57	Average
5136.65	53.25	43.25	10	74	-20.75	100	57	Peak
5290	87.74	77.64	10.1			100	57	Average
5290	94.99	84.89	10.1			100	57	Peak
5353.85	48.3	38.07	10.23	54	-5.7	100	57	Average
5353.85	58.04	47.81	10.23	74	-15.96	100	57	Peak
*10580	55.98	40.27	15.71	68.2	-12.22	174	144	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.25	45.21	35.16	10.05	54	-8.79	100	23	Average
5149.25	54.3	44.25	10.05	74	-19.7	100	23	Peak
5290	93.64	83.54	10.1			100	23	Average
5290	100.62	90.52	10.1			100	23	Peak
5350.44	52.77	42.54	10.23	54	-1.23	101	23	Average
5350.44	62.91	52.68	10.23	74	-11.09	101	23	Peak
*10580	56.24	40.53	15.71	68.2	-11.96	119	325	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5290 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	47.73	37.22	10.51	54	-6.27	100	100	Average
5460	56.16	45.65	10.51	74	-17.84	100	100	Peak
*5470	56.5	45.97	10.53	68.2	-11.7	100	100	Peak
5530	87.45	76.82	10.63			100	100	Average
5530	94.09	83.46	10.63			100	100	Peak
*5725	51.06	40.14	10.92	68.2	-17.14	100	100	Peak
11160	47.63	31.27	16.36	54	-6.37	121	43	Average
11160	57.1	40.74	16.36	74	-16.9	121	43	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.6	52.92	42.41	10.51	54	-1.08	120	4	Average
5459.6	62.72	52.21	10.51	74	-11.28	120	4	Peak
*5469.2	62.11	51.58	10.53	68.2	-6.09	120	4	Peak
5530	92.58	81.95	10.63			120	4	Average
5530	99.1	88.47	10.63			120	4	Peak
*5725.16	54.09	43.17	10.92	68.2	-14.11	120	4	Peak
11060	47.94	31.71	16.23	54	-6.06	187	262	Average
11060	57.65	41.42	16.23	74	-16.35	187	262	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5530 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.96	44.83	34.32	10.51	54	-9.17	198	43	Average
5458.96	55.48	44.97	10.51	74	-18.52	198	43	Peak
*5469.04	54.8	44.27	10.53	68.2	-13.4	198	43	Peak
5610	93.65	82.88	10.77			198	43	Average
5610	100.26	89.49	10.77			198	43	Peak
*5725.88	53.9	42.98	10.92	68.2	-14.3	198	43	Peak
11220	48.61	32.19	16.42	54	-5.39	102	58	Average
11220	58.25	41.83	16.42	74	-15.75	102	58	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458	49.45	38.94	10.51	54	-4.55	120	4	Average
5458	60.74	50.23	10.51	74	-13.26	120	4	Peak
*5469.68	59.53	49	10.53	68.2	-8.67	120	4	Peak
5610	98.58	87.81	10.77			120	4	Average
5610	105.62	94.85	10.77			120	4	Peak
*5725.48	61.13	50.21	10.92	68.2	-7.07	120	4	Peak
11220	48.26	31.84	16.42	54	-5.74	154	127	Average
11220	57.78	41.36	16.42	74	-16.22	154	127	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5610 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5399.12	44.57	34.17	10.4	54	-9.43	220	53	Average
5399.12	52.96	42.56	10.4	74	-21.04	220	53	Peak
*5469.84	51.03	40.5	10.53	68.2	-17.17	220	53	Peak
5690	96	85.07	10.93			220	53	Average
5690	102.18	91.25	10.93			220	53	Peak
11380	46.49	30.22	16.27	54	-7.51	152	341	Average
11380	56.19	39.92	16.27	74	-17.81	152	341	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5438.48	45.55	35.07	10.48	54	-8.45	173	321	Average
5438.48	54.51	44.03	10.48	74	-19.49	173	321	Peak
*5469.84	53.86	43.33	10.53	68.2	-14.34	173	321	Peak
5690	101.64	90.71	10.93			173	321	Average
5690	108.04	97.11	10.93			173	321	Peak
11380	47.14	30.87	16.27	54	-6.86	148	162	Average
11380	56.77	40.5	16.27	74	-17.23	148	162	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5690 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	95.19	84.32	10.87			220	53	Average
5775	101.78	90.91	10.87			220	53	Peak
11550	47.87	31.37	16.5	54	-6.13	136	234	Average
11550	57.62	41.12	16.5	74	-16.38	136	234	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	101.52	90.65	10.87			173	225	Average
5775	107.65	96.78	10.87			173	225	Peak
11550	48.35	31.85	16.5	54	-5.65	118	274	Average
11550	58.06	41.56	16.5	74	-15.94	118	274	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5648.575	57.12	46.27	10.85	68.2	-11.08	220	53	Peak
5654.875	55.76	44.89	10.87	71.81	-16.05	220	53	Peak
5914.75	56.08	45.01	11.07	75.78	-19.7	220	53	Peak
*5950.975	54.51	43.33	11.18	68.2	-13.69	220	53	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5645.425	61.19	50.36	10.83	68.2	-7.01	173	225	Peak
5653.3	58.6	47.73	10.87	70.64	-12.04	173	225	Peak
5920	57.9	46.81	11.09	71.9	-14	173	225	Peak
*5927.875	57.12	46.01	11.11	68.2	-11.08	173	225	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5775 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

9 kHz ~ 30 MHz Data:

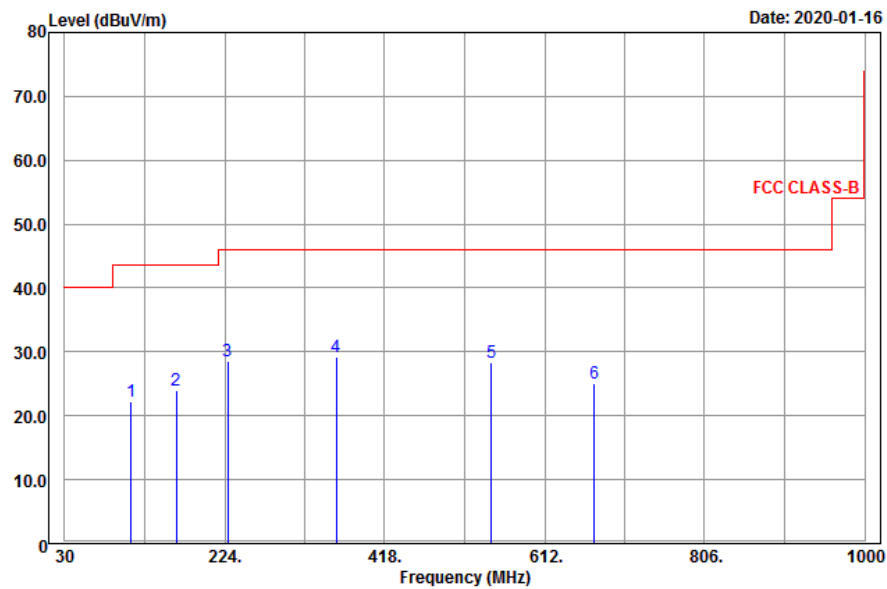
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

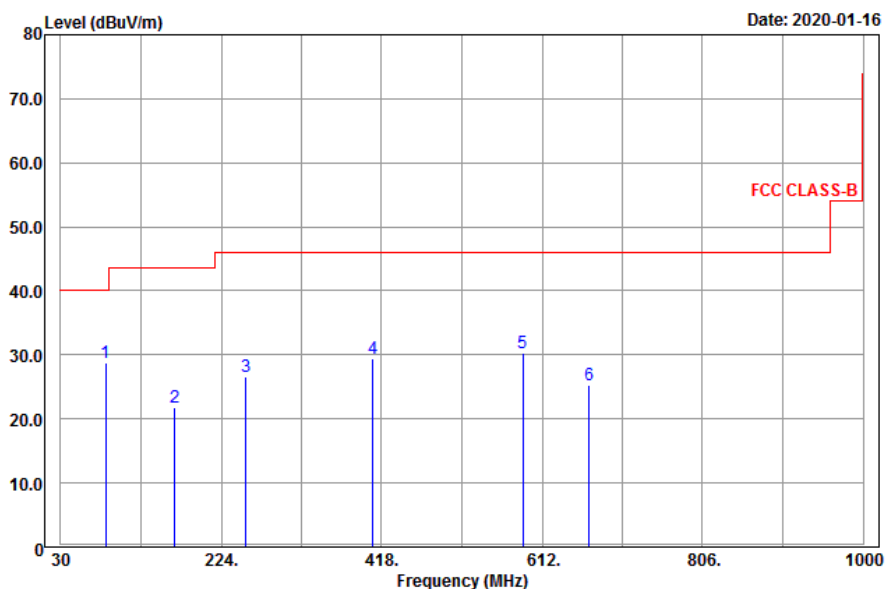
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 100	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	Harry Hsueh

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
110.73	22.17	39.84	-17.67	43.5	-21.33	119	342	Peak
165.54	24.01	44.44	-20.43	43.5	-19.49	150	241	Peak
227.64	28.54	46.02	-17.48	46	-17.46	155	5	Peak
359.5	29.25	43.84	-14.59	46	-16.75	165	253	Peak
547.1	28.25	39.87	-11.62	46	-17.75	170	124	Peak
672.4	25.09	34.7	-9.61	46	-20.91	164	250	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
84.54	28.72	49.26	-20.54	40	-11.28	154	117	Peak
168.24	21.7	42.06	-20.36	43.5	-21.8	156	253	Peak
253.83	26.69	43.47	-16.78	46	-19.31	188	85	Peak
407.8	29.37	43.18	-13.81	46	-16.63	189	95	Peak
588.4	30.31	41.21	-10.9	46	-15.69	105	163	Peak
668.9	25.37	35.01	-9.64	46	-20.63	117	45	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- The emission levels of other frequencies were very low against the limit

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	Dec. 11, 2019	Dec. 10, 2020
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100100	Jan. 30, 2019	Jan. 29, 2020
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

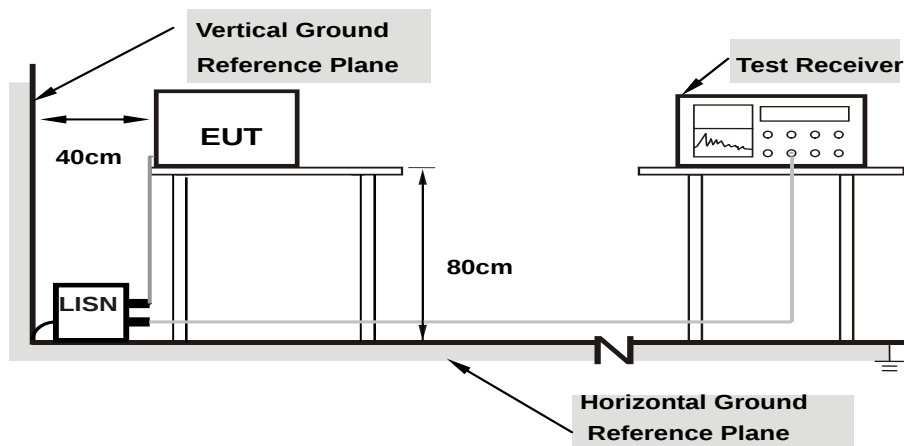
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- 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:**
- Support units were connected to second LISN.
 - Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm 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

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

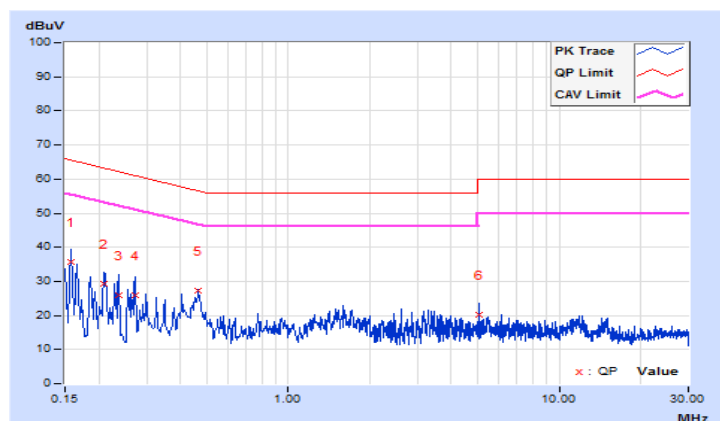
4.2.7 Test Results

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	Jisyong Wang	Test Date	2019/12/22

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	0.15782	9.67	25.90	21.47	35.57	31.14	65.58	55.58	-30.01	-24.44
2	0.20865	9.66	19.67	17.42	29.33	27.08	63.26	53.26	-33.93	-26.18
3	0.23602	9.67	16.21	12.52	25.88	22.19	62.24	52.24	-36.36	-30.05
4	0.27120	9.67	16.15	12.80	25.82	22.47	61.08	51.08	-35.26	-28.61
5	0.46280	9.69	17.72	13.45	27.41	23.14	56.64	46.64	-29.23	-23.50
6	5.07269	9.86	10.45	8.60	20.31	18.46	60.00	50.00	-39.69	-31.54

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

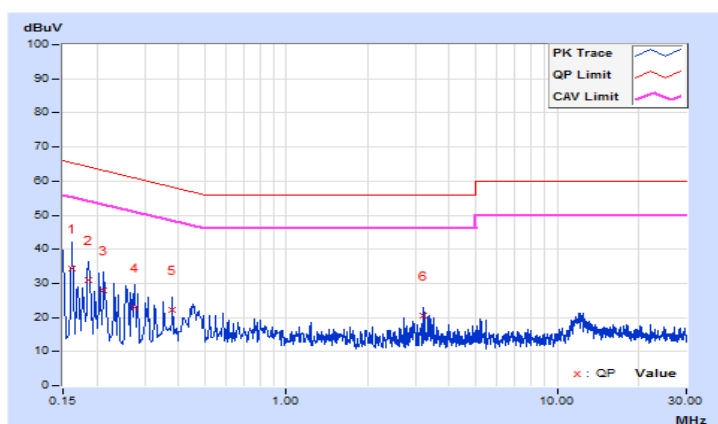


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Jisyong Wang	Test Date	2019/12/22

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	0.16173	9.64	24.73	21.26	34.37	30.90	65.37	55.37	-31.00	-24.47
2	0.18519	9.64	21.43	20.68	31.07	30.32	64.25	54.25	-33.18	-23.93
3	0.21256	9.64	18.15	16.07	27.79	25.71	63.10	53.10	-35.31	-27.39
4	0.27512	9.65	13.08	11.49	22.73	21.14	60.96	50.96	-38.23	-29.82
5	0.38069	9.66	12.57	10.92	22.23	20.58	58.26	48.26	-36.03	-27.68
6	3.21153	9.79	10.61	8.86	20.40	18.65	56.00	46.00	-35.60	-27.35

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 $N_{ANT} \leq 4$;

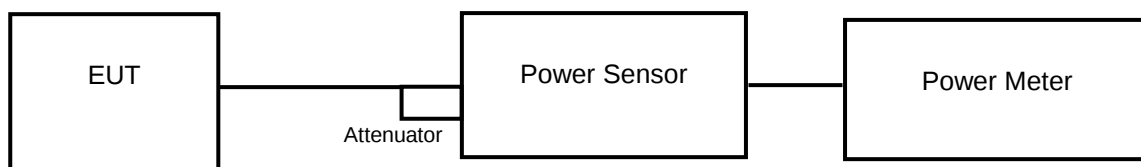
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

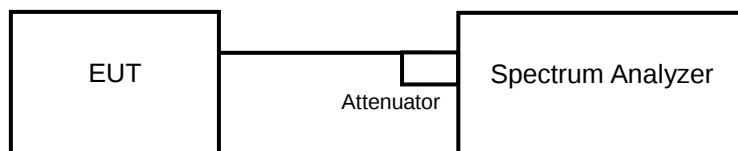
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

<Power Output Measurement>



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

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

For channel aggregation (channel 138, 142, 144) measurement refer to KDB 789033 D02 Section III. CHANNEL AGGREGATION.

26 dB Bandwidth

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

Power Output:

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	13.91	15.58	60.745	17.84	24	Pass
40	5200	14.86	16.37	73.971	18.69	24	Pass
48	5240	16.60	17.03	96.175	19.83	24	Pass
52	5260	16.19	17.10	92.877	19.68	24	Pass
60	5300	15.02	16.58	77.268	18.88	24	Pass
64	5320	13.16	14.65	49.875	16.98	24	Pass
100	5500	12.97	13.47	42.048	16.24	24	Pass
116	5580	16.28	17.60	100.006	20.00	24	Pass
140	5700	11.88	13.72	38.967	15.91	24	Pass
144	5720 (U-NII-2C)	11.04	13.94	37.48	15.74	23.18	Pass
144	5720 (U-NII-3)	3.48	4.74	5.207	7.17	30	Pass
149	5745	15.80	16.64	84.151	19.25	30	Pass
157	5785	15.98	16.66	85.973	19.34	30	Pass
165	5825	15.92	16.34	82.137	19.15	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log (21.60) = 24.34 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (21.63) = 24.35 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (21.67) = 24.36 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (21.82) = 24.39 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (21.62) = 24.35 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (21.84) = 24.39 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log (5725.00 - 5705.89) = 23.81 \text{ dBm} < 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log (22.62) = 24.54 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (23.18) = 24.65 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (21.73) = 24.37 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (25.49) = 25.06 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (23.87) = 24.78 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (21.79) = 24.38 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log (5725.00 - 5708.46) = 23.18 \text{ dBm} < 24 \text{ dBm}$.

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	12.59	14.33	45.257	16.56	24	Pass
40	5200	14.41	16.25	69.776	18.44	24	Pass
48	5240	16.31	16.85	91.173	19.60	24	Pass
52	5260	16.23	17.19	94.336	19.75	24	Pass
60	5300	14.67	16.45	73.466	18.66	24	Pass
64	5320	12.77	14.34	46.087	16.64	24	Pass
100	5500	11.07	12.49	30.536	14.85	24	Pass
116	5580	16.54	17.40	100.036	20.00	24	Pass
140	5700	11.67	13.83	38.844	15.89	24	Pass
144	5720 (U-NII-2C)	10.27	12.16	27.085	14.33	23.08	Pass
144	5720 (U-NII-3)	3.75	4.81	5.398	7.32	30	Pass
149	5745	15.74	16.12	78.423	18.94	30	Pass
157	5785	15.75	16.45	81.741	19.12	30	Pass
165	5825	15.80	16.34	81.072	19.09	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log (26.24) = 25.19 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (22.41) = 24.50 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (21.89) = 24.40 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (21.89) = 24.40 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (26.11) = 25.17 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (22.19) = 24.46 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log (5725.00 - 5708.83) = 23.08 \text{ dBm} < 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log (26.06) = 25.16 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (22.00) = 24.42 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (21.51) = 24.32 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (21.51) = 24.32 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (27.34) = 25.37 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (21.49) = 24.32 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log (5725.00 - 5707.46) = 23.44 \text{ dBm} < 24 \text{ dBm}$.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	9.12	9.48	17.038	12.31	24	Pass
46	5230	15.87	15.98	78.265	18.94	24	Pass
54	5270	15.45	16.43	79.029	18.98	24	Pass
62	5310	11.76	12.43	32.495	15.12	24	Pass
102	5510	10.65	12.33	28.714	14.58	24	Pass
110	5550	14.81	16.18	71.764	18.56	24	Pass
134	5670	12.41	14.15	43.42	16.38	24	Pass
142	5710 (U-NII-2C)	6.81	8.96	12.667	11.03	24	Pass
142	5710 (U-NII-3)	-2.60	-0.88	1.3661	1.35	30	Pass
151	5755	15.21	16.50	77.857	18.91	30	Pass
159	5795	15.13	16.02	72.578	18.61	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log (47.07) = 27.73 \text{ dBm} > 24 \text{ dBm}.$
2. $11 \text{ dBm} + 10\log (41.58) = 27.19 \text{ dBm} > 24 \text{ dBm}.$
3. $11 \text{ dBm} + 10\log (42.26) = 27.26 \text{ dBm} > 24 \text{ dBm}.$
4. $11 \text{ dBm} + 10\log (58.72) = 28.69 \text{ dBm} > 24 \text{ dBm}.$
5. $11 \text{ dBm} + 10\log (41.25) = 27.15 \text{ dBm} > 24 \text{ dBm}.$
6. $11 \text{ dBm} + 10\log (5725.00 - 5685.74) = 26.94 \text{ dBm} > 24 \text{ dBm}.$

Chain 1

1. $11 \text{ dBm} + 10\log (54.56) = 28.37 \text{ dBm} > 24 \text{ dBm}.$
2. $11 \text{ dBm} + 10\log (41.00) = 27.13 \text{ dBm} > 24 \text{ dBm}.$
3. $11 \text{ dBm} + 10\log (41.07) = 27.14 \text{ dBm} > 24 \text{ dBm}.$
4. $11 \text{ dBm} + 10\log (63.52) = 29.03 \text{ dBm} > 24 \text{ dBm}.$
5. $11 \text{ dBm} + 10\log (46.62) = 27.69 \text{ dBm} > 24 \text{ dBm}.$
6. $11 \text{ dBm} + 10\log (5725.00 - 5680.12) = 27.52 \text{ dBm} > 24 \text{ dBm}.$

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	6.47	8.54	11.581	10.64	24	Pass
58	5290	10.73	12.51	29.654	14.72	24	Pass
106	5530	6.93	8.37	11.803	10.72	24	Pass
122	5610	14.08	15.30	59.47	17.74	24	Pass
138	5690 (U-NII-2C)	1.33	2.57	3.165	5.00	24	Pass
138	5690 (U-NII-3)	-15.30	-13.75	0.0717	-11.44	30	Pass
155	5775	14.55	15.23	61.853	17.91	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log (81.75) = 30.12 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (82.50) = 30.16 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (82.03) = 30.14 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (5725.00 - 5648.87) = 29.82 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log (81.55) = 30.11 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (82.42) = 30.16 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (81.91) = 30.13 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (5725.00 - 5649.00) = 29.81 \text{ dBm} > 24 \text{ dBm}$.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	21.88	21.45
40	5200	21.65	21.70
48	5240	21.76	22.61
52	5260	21.60	22.62
60	5300	21.63	23.18
64	5320	21.67	21.73
100	5500	21.82	25.49
116	5580	21.62	23.87
140	5700	21.84	21.79
144	5720 (U-NII-2C)	19.11	16.54
144	5720 (U-NII-3)	6.76	7.47

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	21.83	21.71
40	5200	21.79	21.91
48	5240	24.56	22.85
52	5260	26.24	26.06
60	5300	22.41	22.00
64	5320	21.89	21.51
100	5500	21.89	21.51
116	5580	26.11	27.34
140	5700	22.19	21.49
144	5720 (U-NII-2C)	16.17	17.54
144	5720 (U-NII-3)	9.04	10.72

802.11n (HT40)

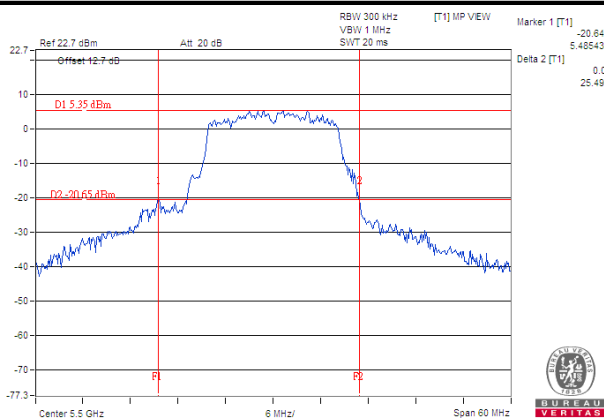
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	41.67	41.10
46	5230	44.54	66.42
54	5270	47.07	54.56
62	5310	41.58	41.00
102	5510	42.26	41.07
110	5550	58.72	63.52
134	5670	41.25	46.62
142	5710 (U-NII-2C)	39.26	44.88
142	5710 (U-NII-3)	16.44	25.00

802.11ac (VHT80)

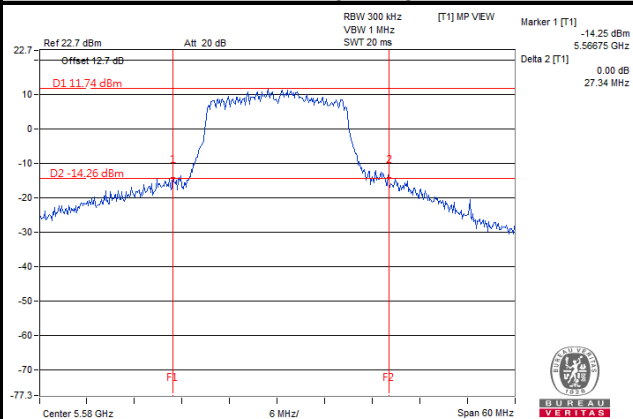
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	81.83	82.14
58	5290	81.75	81.55
106	5530	82.50	82.42
122	5610	82.03	81.91
138	5690 (U-NII-2C)	76.13	76.00
138	5690 (U-NII-3)	6.10	13.42

Spectrum Plot of Worst Value

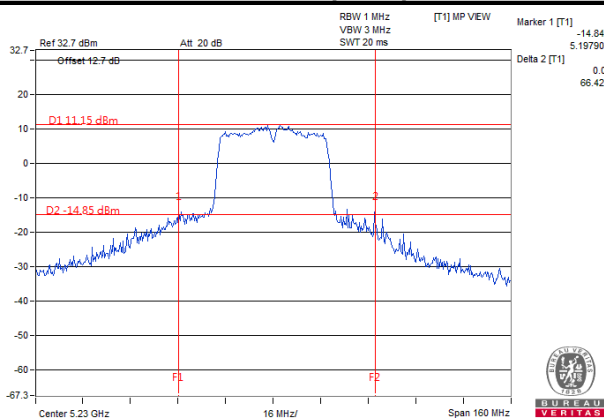
802.11a



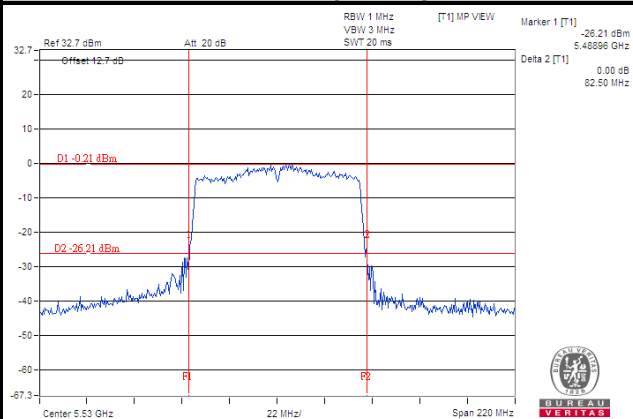
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



EUT Maximum Conducted Power

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	92.877	19.68
5470~5725	100.006	20.00

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	94.336	19.75
5470~5725	100.036	20.00

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	79.029	18.98
5470~5725	71.764	18.56

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

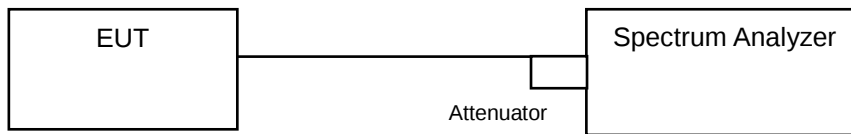
802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	29.654	14.72
5470~5725	59.47	17.74

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.92	16.80
40	5200	16.80	16.92
48	5240	16.92	17.04
52	5260	16.92	16.92
60	5300	16.80	16.80
64	5320	16.92	16.80
100	5500	16.80	16.92
116	5580	17.04	17.04
140	5700	16.80	16.80
144	5720 (U-NII-2C)	13.64	13.52
144	5720 (U-NII-3)	3.16	3.16
149	5745	16.93	17.02
157	5785	16.93	17.31
165	5825	16.93	17.21

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.88	17.88
40	5200	18.00	17.88
48	5240	18.00	18.12
52	5260	18.00	18.00
60	5300	18.12	18.00
64	5320	18.00	18.00
100	5500	18.00	17.88
116	5580	18.00	18.12
140	5700	18.00	17.88
144	5720 (U-NII-2C)	14.00	14.00
144	5720 (U-NII-3)	3.76	3.76
149	5745	18.07	18.17
157	5785	17.98	18.17
165	5825	18.07	18.17

802.11n (HT40)

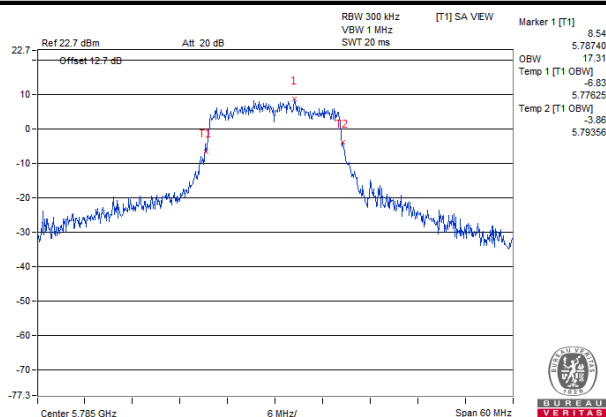
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.48	36.60
46	5230	36.48	36.48
54	5270	36.60	36.48
62	5310	36.60	36.48
102	5510	36.48	36.60
110	5550	36.60	36.60
134	5670	36.48	36.60
142	5710 (U-NII-2C)	33.48	33.48
142	5710 (U-NII-3)	3.12	3.36
151	5755	36.54	36.60
159	5795	36.48	36.72

802.11ac (VHT80)

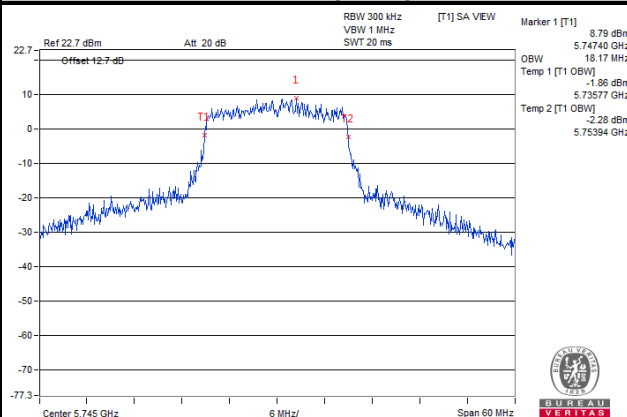
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.36	75.36
58	5290	75.60	75.60
106	5530	75.84	75.60
122	5610	75.60	75.60
138	5690 (U-NII-2C)	72.92	72.92
138	5690 (U-NII-3)	2.68	2.44
155	5775	75.77	75.57

Spectrum Plot of Worst Value

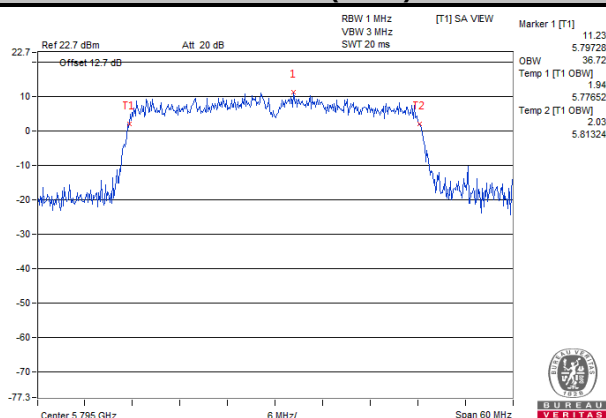
802.11a



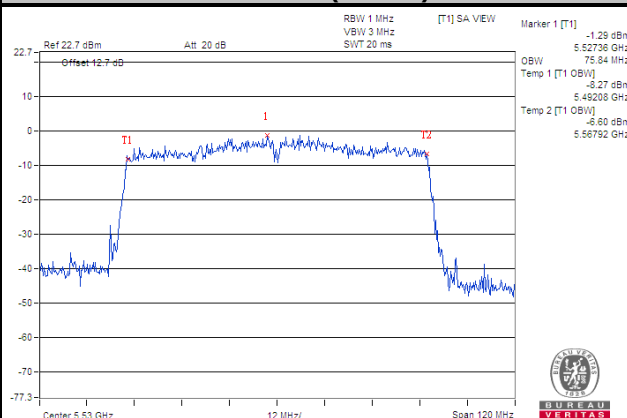
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

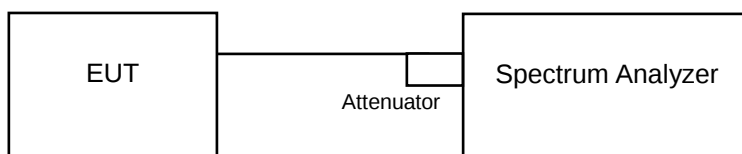


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 Test Procedures

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

Using method SA-2

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

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

4.5.7 Test Results

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

802.11a

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	-0.17	1.76	0.32	4.23	10.39	Pass
40	5200	0.94	2.52	0.32	5.13	10.39	Pass
48	5240	3.16	3.89	0.32	6.87	10.39	Pass
52	5260	3.11	3.95	0.32	6.88	10.39	Pass
60	5300	0.35	2.11	0.32	4.65	10.39	Pass
64	5320	-1.24	0.34	0.32	2.95	10.39	Pass
100	5500	-1.42	-0.32	0.32	2.50	10.02	Pass
116	5580	3.95	5.48	0.32	8.11	10.02	Pass
140	5700	-2.09	-0.01	0.32	2.40	10.02	Pass
144	5720 (U-NII-2C)	5.34	6.90	0.32	9.52	10.02	Pass

Note:

- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1, U-NII-2A Band:

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.61 \text{ dBi} > 6 \text{ dBi}$$
 so the power density limit shall be reduced to $11 - (6.61 - 6) = 10.39 \text{ dBm}$.
 For U-NII-2C Band:

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.98 \text{ dBi} > 6 \text{ dBi}$$
 so the power density limit shall be reduced to $11 - (6.98 - 6) = 10.02 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	-0.79	0.43	0.35	3.22	10.39	Pass
40	5200	1.01	2.07	0.35	4.93	10.39	Pass
48	5240	3.26	3.54	0.35	6.76	10.39	Pass
52	5260	3.23	3.90	0.35	6.94	10.39	Pass
60	5300	0.78	2.07	0.35	4.83	10.39	Pass
64	5320	-1.14	-0.47	0.35	2.57	10.39	Pass
100	5500	-2.49	-1.59	0.35	1.34	10.02	Pass
116	5580	3.72	5.22	0.35	7.89	10.02	Pass
140	5700	-1.49	-0.48	0.35	2.40	10.02	Pass
144	5720 (U-NII-2C)	5.02	6.75	0.35	9.33	10.02	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. For U-NII-1, U-NII-2A Band:

Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.61 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (6.61 - 6) = 10.39 \text{ dBm}$.

For U-NII-2C Band:

Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.98 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (6.98 - 6) = 10.02 \text{ dBm}$.

3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-7.66	-6.94	0.64	-3.63	10.39	Pass
46	5230	-1.40	-1.03	0.64	2.44	10.39	Pass
54	5270	-1.59	-0.41	0.64	2.69	10.39	Pass
62	5310	-4.70	-3.58	0.64	-0.45	10.39	Pass
102	5510	-6.40	-4.88	0.64	-1.92	10.02	Pass
110	5550	-2.00	-0.54	0.64	2.44	10.02	Pass
134	5670	-4.70	-2.58	0.64	0.14	10.02	Pass
142	5710 (U-NII-2C)	1.15	2.47	0.64	5.50	10.02	Pass

Note:

- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1, U-NII-2A Band:**

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.61 \text{ dBi} > 6 \text{ dBi}$$
 so the power density limit shall be reduced to $11 - (6.61 - 6) = 10.39 \text{ dBm}$.
For U-NII-2C Band:

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.98 \text{ dBi} > 6 \text{ dBi}$$
 so the power density limit shall be reduced to $11 - (6.98 - 6) = 10.02 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

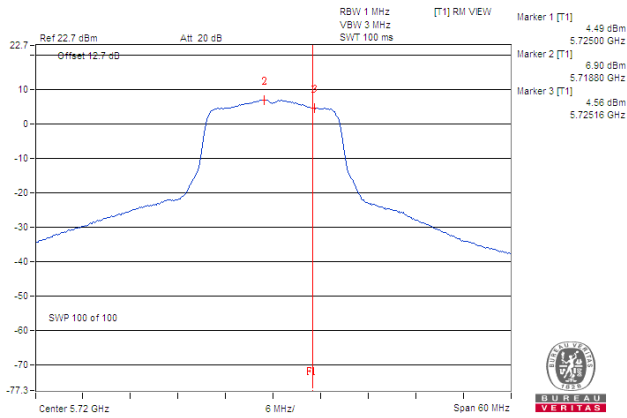
Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-13.16	-12.10	1.19	-8.40	10.39	Pass
58	5290	-8.53	-7.57	1.19	-3.82	10.39	Pass
106	5530	-12.28	-11.10	1.19	-7.45	10.02	Pass
122	5610	-4.79	-3.42	1.19	0.15	10.02	Pass
138	5690 (U-NII-2C)	-3.37	-1.99	1.19	1.58	10.02	Pass

Note:

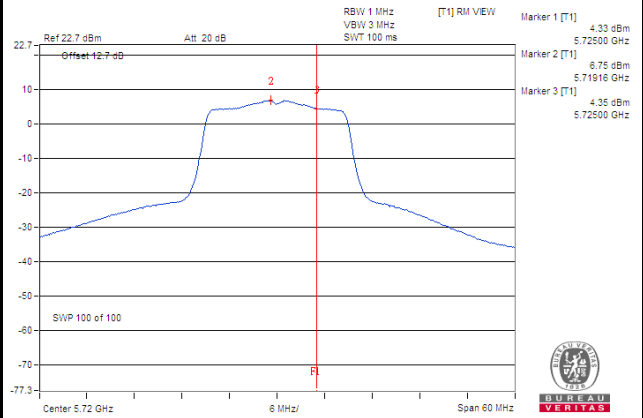
- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1, U-NII-2A Band:**
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.61 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (6.61 - 6) = 10.39 \text{ dBm}$.
For U-NII-2C Band:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.98 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (6.98 - 6) = 10.02 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

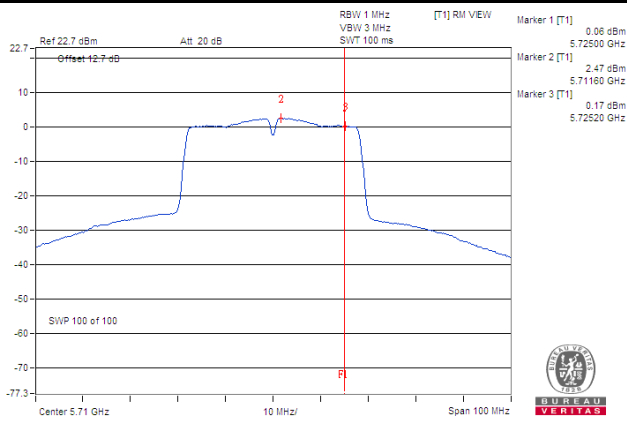
802.11a



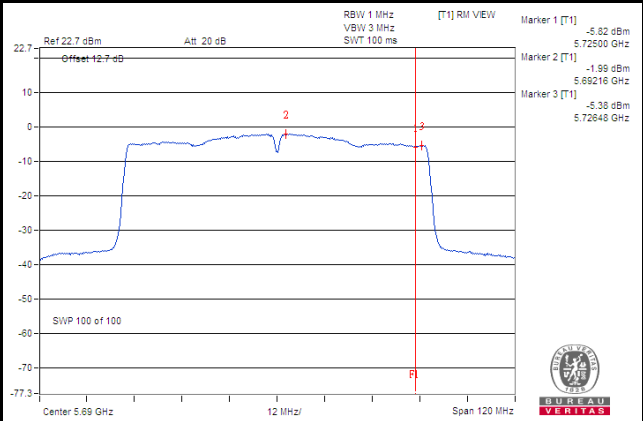
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



For U-NII-3:
802.11a

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	144	5720 (U-NII-3)	-2.02	0.20	3.01	0.32	3.53	29.37	Pass
	149	5745	-3.54	-1.32	3.01	0.32	2.01	29.37	Pass
	157	5785	-3.63	-1.41	3.01	0.32	1.92	29.37	Pass
	165	5825	-4.38	-2.16	3.01	0.32	1.17	29.37	Pass
1	144	5720 (U-NII-3)	-0.70	1.52	3.01	0.32	4.85	29.37	Pass
	149	5745	-2.85	-0.63	3.01	0.32	2.70	29.37	Pass
	157	5785	-3.17	-0.95	3.01	0.32	2.38	29.37	Pass
	165	5825	-3.65	-1.43	3.01	0.32	1.90	29.37	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.63 > 6$ dBi, so the power density limit shall be reduced to $30 - (6.63 - 6) = 29.37$ dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	144	5720 (U-NII-3)	-2.43	-0.21	3.01	0.35	3.15	29.37	Pass
	149	5745	-3.93	-1.71	3.01	0.35	1.65	29.37	Pass
	157	5785	-4.39	-2.17	3.01	0.35	1.19	29.37	Pass
	165	5825	-4.49	-2.27	3.01	0.35	1.09	29.37	Pass
1	144	5720 (U-NII-3)	-0.97	1.25	3.01	0.35	4.61	29.37	Pass
	149	5745	-3.09	-0.87	3.01	0.35	2.49	29.37	Pass
	157	5785	-3.57	-1.35	3.01	0.35	2.01	29.37	Pass
	165	5825	-3.78	-1.56	3.01	0.35	1.80	29.37	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.63 > 6$ dBi, so the power density limit shall be reduced to $30 - (6.63 - 6) = 29.37$ dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	142	5710 (U-NII-3)	-6.40	-4.18	3.01	0.64	-0.53	29.37	Pass
	151	5755	-9.44	-7.22	3.01	0.64	-3.57	29.37	Pass
	159	5795	-8.91	-6.69	3.01	0.64	-3.04	29.37	Pass
1	142	5710 (U-NII-3)	-4.90	-2.68	3.01	0.64	0.97	29.37	Pass
	151	5755	-7.62	-5.40	3.01	0.64	-1.75	29.37	Pass
	159	5795	-8.29	-6.07	3.01	0.64	-2.42	29.37	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.63 > 6$ dBi, so the power density limit shall be reduced to $30 - (6.63 - 6) = 29.37$ dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

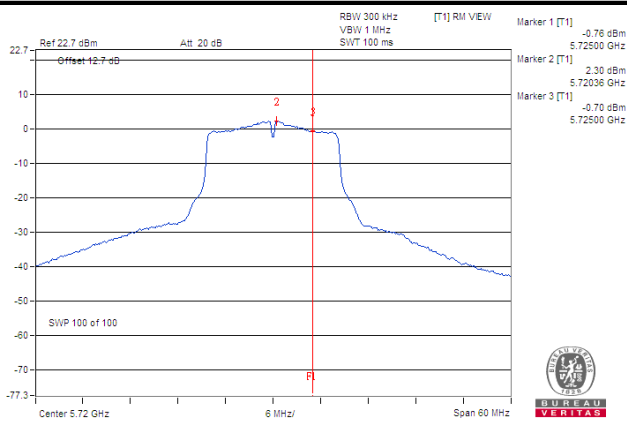
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	138	5690 (U-NII-3)	-11.52	-9.30	3.01	1.19	-5.10	29.37	Pass
	155	5775	-13.34	-11.12	3.01	1.19	-6.92	29.37	Pass
1	138	5690 (U-NII-3)	-10.03	-7.81	3.01	1.19	-3.61	29.37	Pass
	155	5775	-12.32	-10.10	3.01	1.19	-5.90	29.37	Pass

Note:

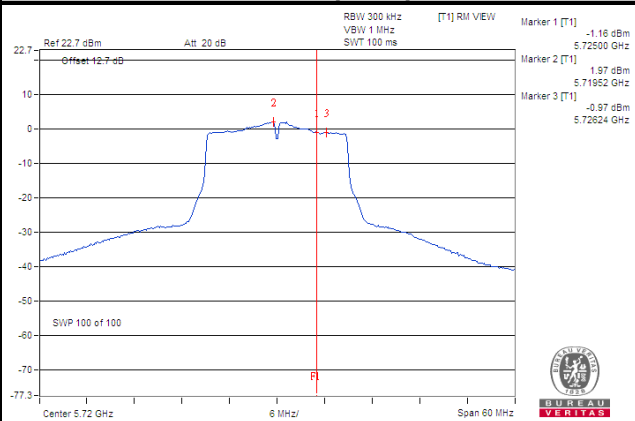
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.63 > 6$ dBi, so the power density limit shall be reduced to $30 - (6.63 - 6) = 29.37$ dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

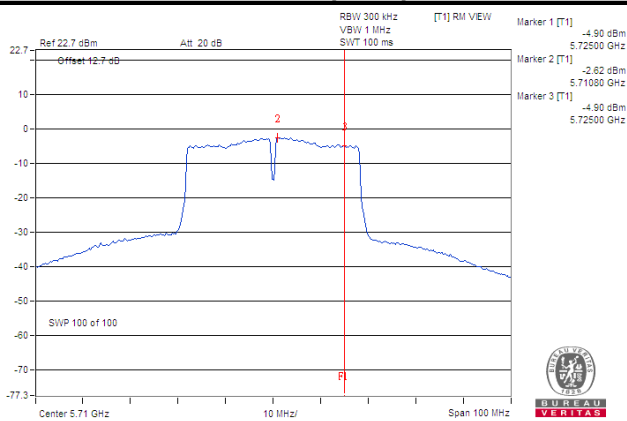
802.11a



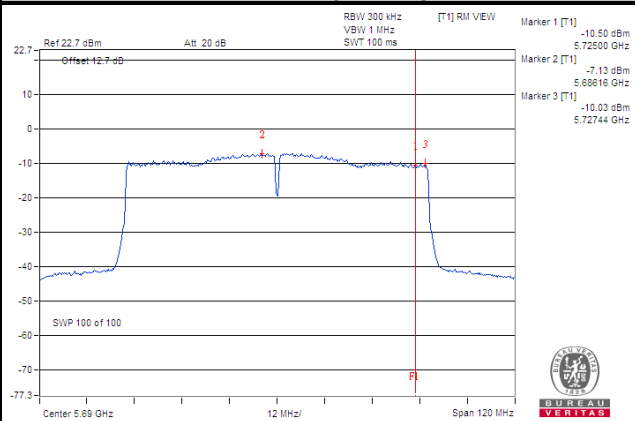
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

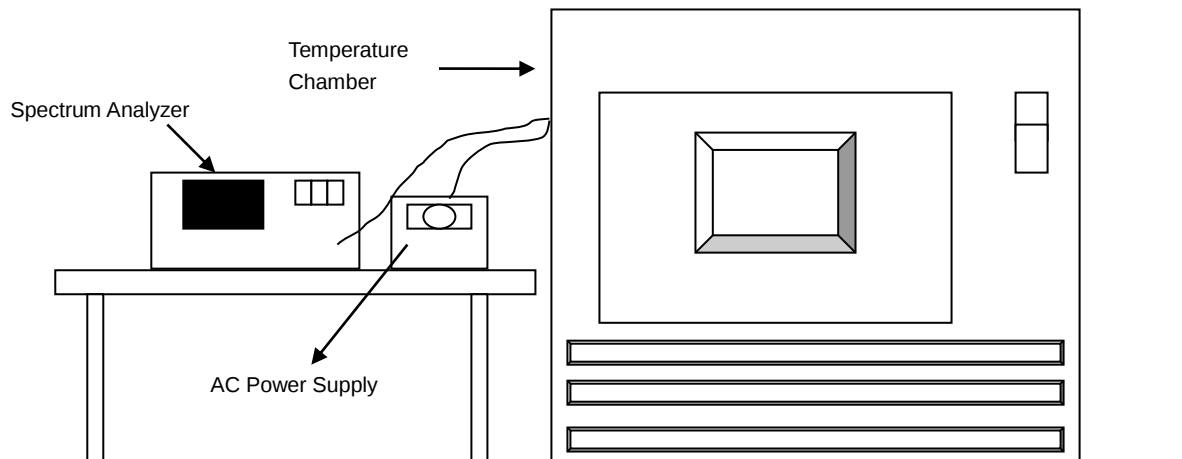


4.6 Frequency Stability

4.6.1 Limit of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.6.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
- Repeat step c and d with every 10 degrees reduction until the lowest temperature achieved.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
75	120	5179.9757	PASS	5179.9741	PASS	5179.9738	PASS	5179.9776	PASS
70	120	5180.0256	PASS	5180.0247	PASS	5180.0259	PASS	5180.0261	PASS
60	120	5180.0024	PASS	5180.0018	PASS	5180.0034	PASS	5180.0003	PASS
50	120	5179.9998	PASS	5180.0006	PASS	5180.0003	PASS	5179.9974	PASS
40	120	5180.0095	PASS	5180.0108	PASS	5180.01	PASS	5180.0067	PASS
30	120	5179.9798	PASS	5179.9765	PASS	5179.9768	PASS	5179.9788	PASS
20	120	5180.0187	PASS	5180.0171	PASS	5180.0187	PASS	5180.0194	PASS
10	120	5180.0119	PASS	5180.0111	PASS	5180.0088	PASS	5180.0118	PASS
0	120	5180.0267	PASS	5180.0241	PASS	5180.0245	PASS	5180.0232	PASS
-10	120	5180.0203	PASS	5180.0223	PASS	5180.0215	PASS	5180.0182	PASS
-20	120	5179.9921	PASS	5179.9908	PASS	5179.9951	PASS	5179.9921	PASS
-30	120	5180.0113	PASS	5180.0139	PASS	5180.0144	PASS	5180.0165	PASS

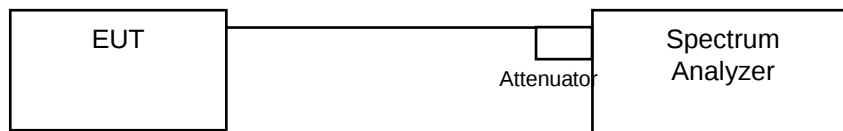
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0186	PASS	5180.0168	PASS	5180.0179	PASS	5180.0194	PASS
	120	5180.0187	PASS	5180.0171	PASS	5180.0187	PASS	5180.0194	PASS
	102	5180.0179	PASS	5180.0166	PASS	5180.0192	PASS	5180.02	PASS

4.7 6 dB Bandwidth Measurement

4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

- 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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	3.13	3.13	0.5	Pass
149	5745	16.35	16.38	0.5	Pass
157	5785	16.37	16.39	0.5	Pass
165	5825	16.35	16.36	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	3.73	3.76	0.5	Pass
149	5745	17.59	17.64	0.5	Pass
157	5785	17.59	17.61	0.5	Pass
165	5825	17.61	17.63	0.5	Pass

802.11n (HT40)

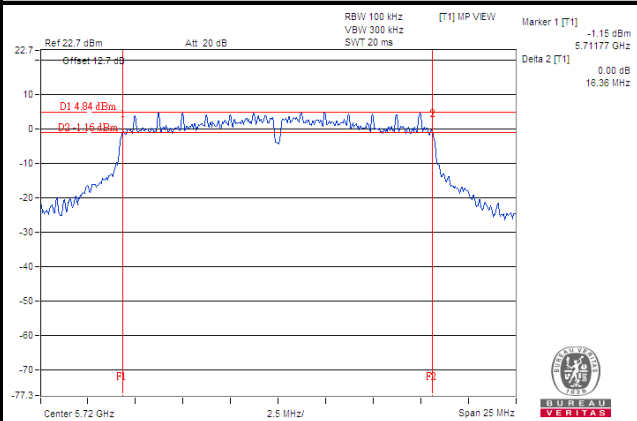
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 (U-NII-3)	2.91	3.13	0.5	Pass
151	5755	36.19	36.38	0.5	Pass
159	5795	36.18	36.38	0.5	Pass

802.11ac (VHT80)

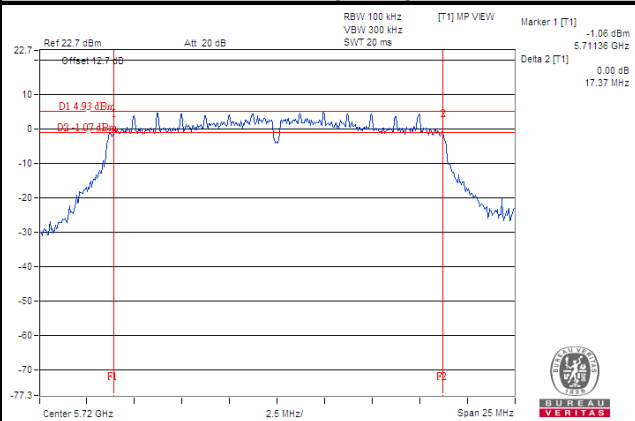
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690 (U-NII-3)	2.83	2.83	0.5	Pass
155	5775	75.57	75.61	0.5	Pass

Spectrum Plot of Worst Value

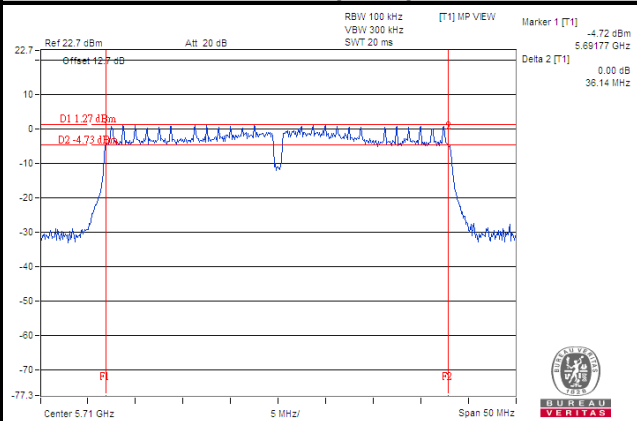
802.11a



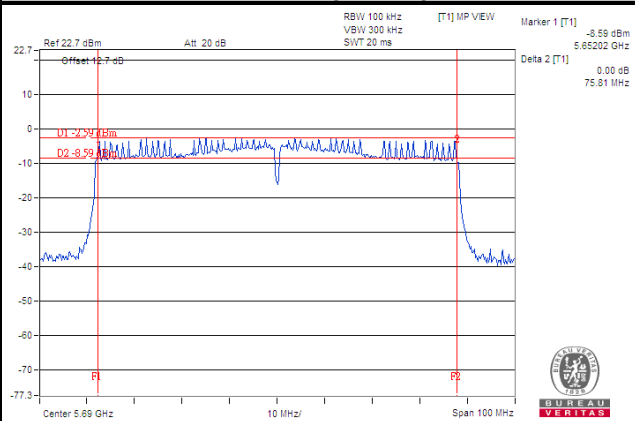
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



Note:

For CH144 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

For CH142 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

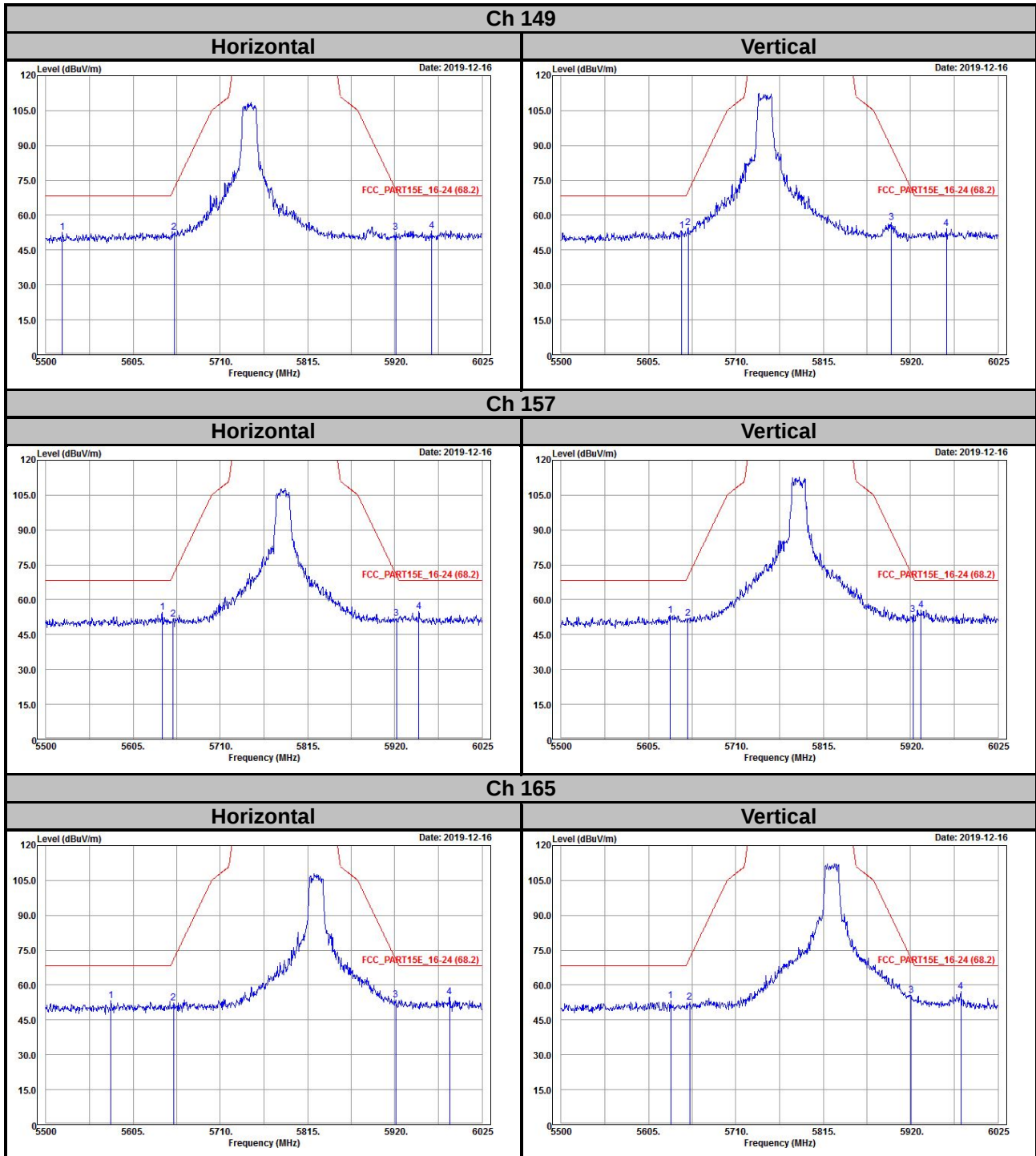
For CH138 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

5 Pictures of Test Arrangements

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

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

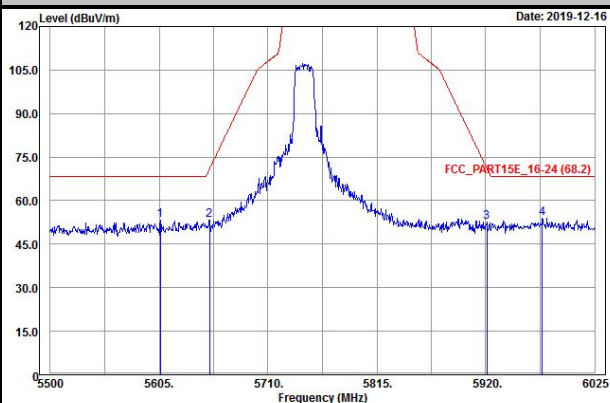
802.11a



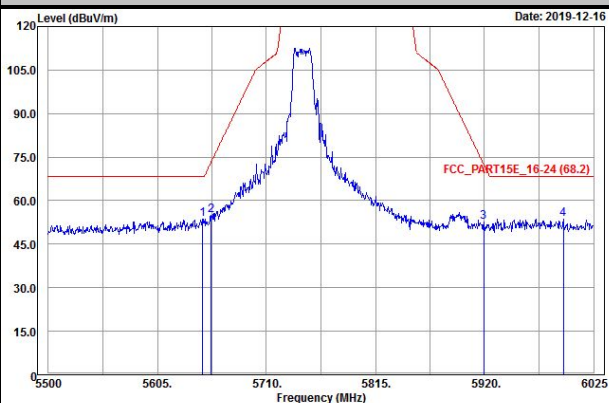
802.11n (HT20)

Ch 149

Horizontal

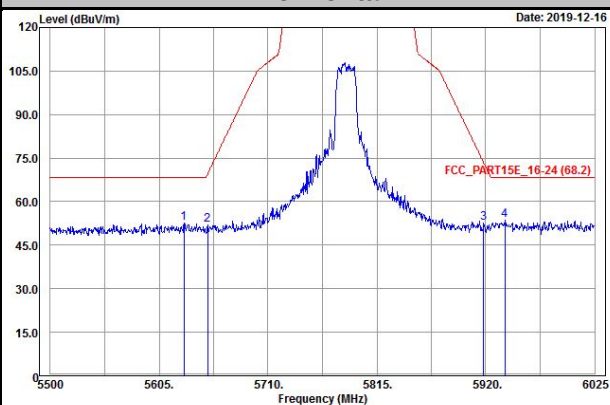


Vertical

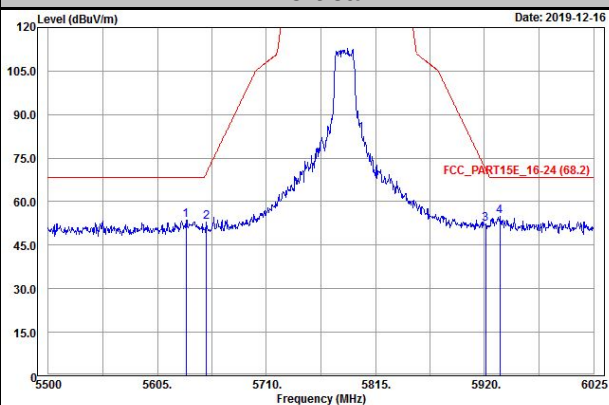


Ch 157

Horizontal

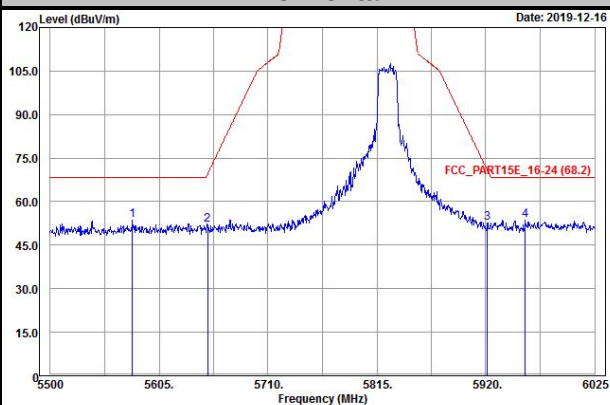


Vertical

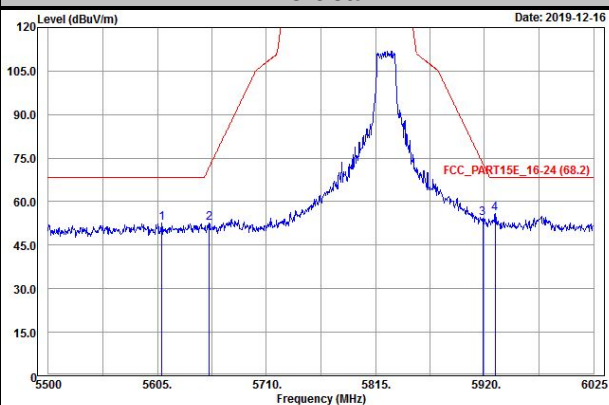


Ch 165

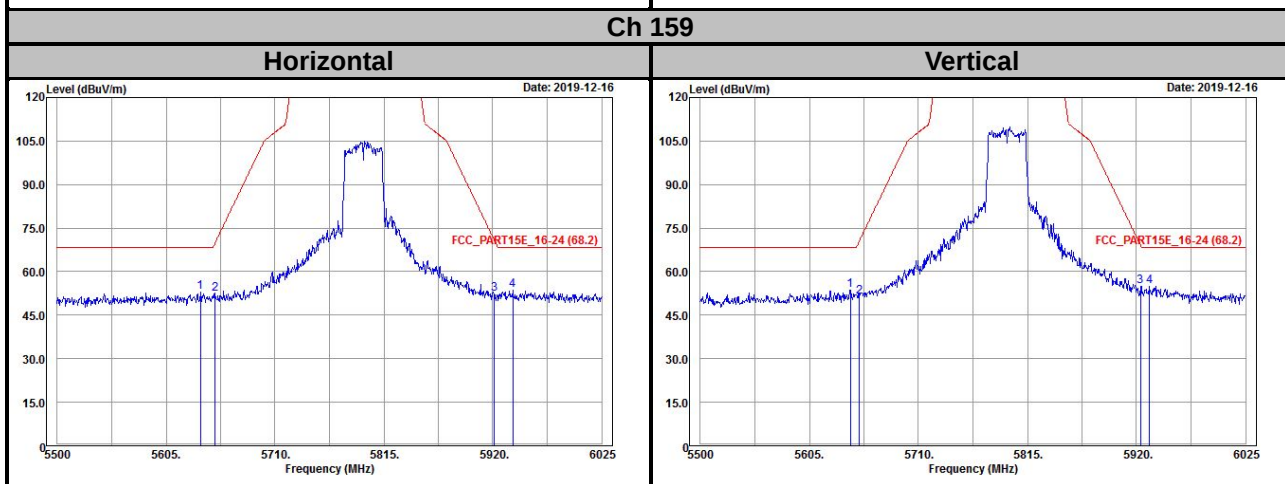
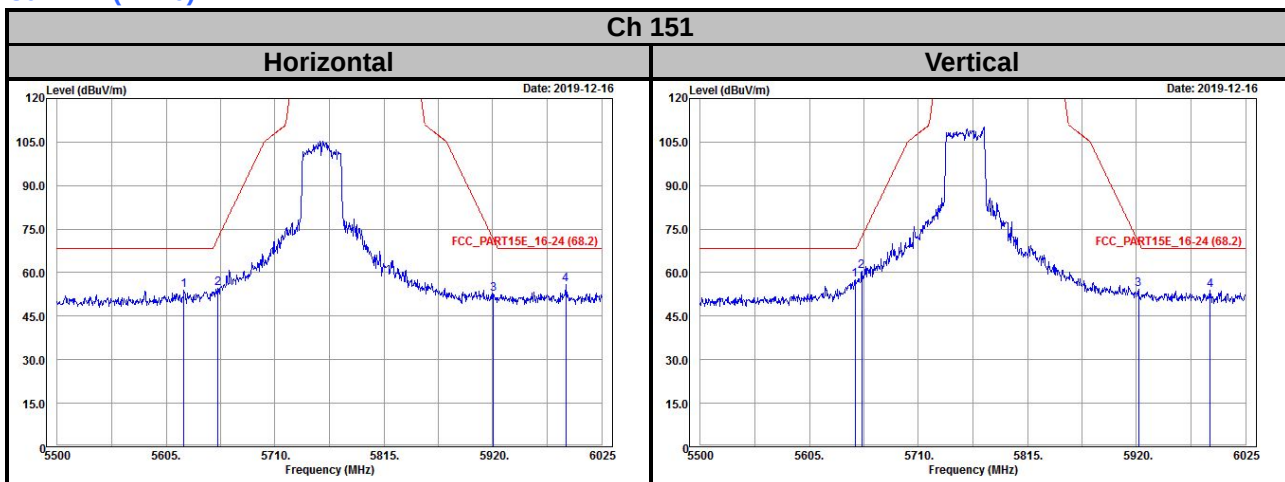
Horizontal



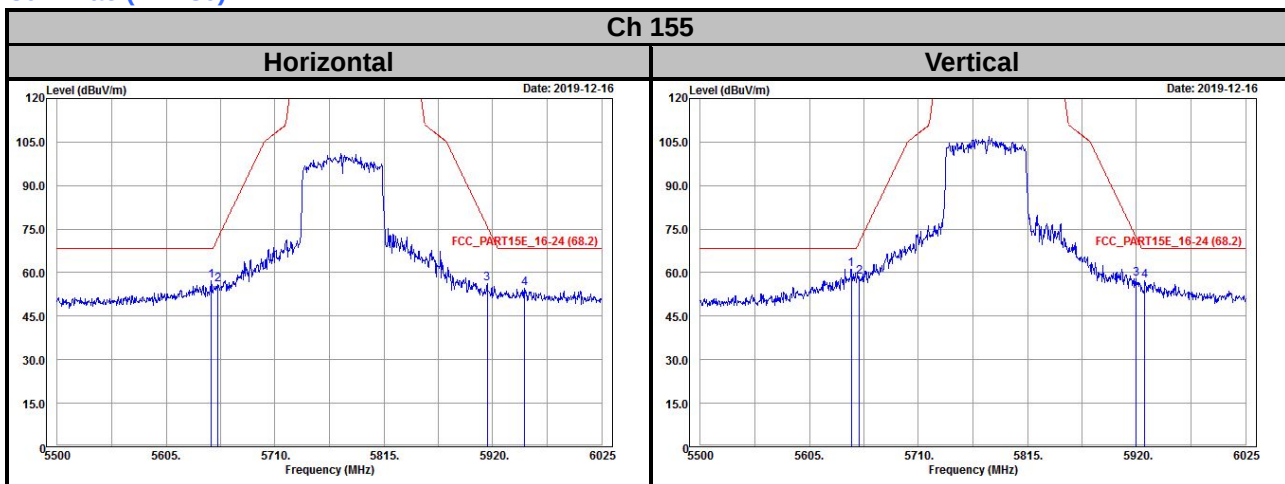
Vertical



802.11n (HT40)



802.11ac (VHT80)



Appendix – Information of the Testing Laboratories

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

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

Lin Kou 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 Lab

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 ---