

FCC Test Report

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FCC ID: QYLWCN3990Z

Test Model: ZX70

Received Date: Nov. 11, 2019

Test Date: Nov. 24, 2019 ~ Jan. 21, 2020

Issued Date: Feb. 05, 2020

Applicant: Getac Technology Corporation

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FCC Registration / 788550 / TW0003

Designation Number: 427177 / TW0011



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Release Control Record

Issue No.	Description	Date Issued
RF191111C27-3	Original Release	Feb. 05, 2020

1 Certificate of Conformity

Product: Tablet

Brand: Getac

Test Model: ZX70

Sample Status: Mass product

Applicant: Getac Technology Corporation

Test Date: Nov. 24, 2019 ~ Jan. 21, 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 : _____, **Date:** Feb. 05, 2020
Lena Wang / Specialist


Approved by : _____, **Date:** Feb. 05, 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 -12.45 dB at 0.59000 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 -1.12 dB at 5350.77 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex (MHF).

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) ($\pm$)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 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	Tablet
Brand	Getac
Test Model	ZX70
Status of EUT	Mass product
Power Supply Rating	3.8 Vdc (Battery) 12.0 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 Mbps 802.11ac: up to 866.7 Mbps
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5700 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5700 MHz: 11 for 802.11a, 802.11n (HT20) 5 for 802.11n (HT40) 2 for 802.11ac (VHT80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
Output Power	7.042 mW for 5180 ~ 5240 MHz 7.805 mW for 5260 ~ 5320 MHz 15.683 mW for 5500 ~ 5700 MHz 11.154 mW for 5745 ~ 5825 MHz
Antenna Type	Refer to Note as below
Antenna Connector	Refer to Note as below
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

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

Modulation Mode	Tx Function
802.11a	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 antenna information is listed as below.

Antenna Type	Manufacturer	Model	Antenna Connector	Antenna Gain				
				WLAN 2.4 GHz	WLAN 5.15~5.25 GHz	WLAN 5.25~5.35 GHz	WLAN 5.47~5.725 GHz	WLAN 5.725~5.875 GHz
PIFA	SINBON	Main Ant/Ant0 :ZX70 WIFI	POGO pin	1.18	3.91	4.78	3.98	2.01
Dipole	Pulse	Aux Ant /Ant1 :422144300002	i-pex(MHF)	3.75	6.28	6.31	5.07	4.1

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter + Plugs	FSP	FSP025-DHAN3	I/P: 100-240 Vac, 50-60 Hz, 1.0 A O/P: 12 Vdc, Max. 25 W
Battery	Getac	BP1S2P4240L	3.8 Vdc, 8220 mAh
CPU	Qualcomm	SDA660	692 PIN
Storage	Samsung	KMDH6001DA-B422	64GB
WWAN Module	Sierra	EM7455	--
WiFi/BT Chip on board	Qualcomm	WCN3990	802.11 ac/ BT5.0 2x2 support
Front Camera	Truly	COD865-B8BF-E	8 MP, Fix Focus
Rear Camera	Truly	COD898-B12BA-E	12 MP, Auto focus
GPS	Locosys	MC-1010G	--
LCD	Truly	TDO-HD0698K61701	7" HD 720 x 1280
Barcode Reader	Honeywell	N6603	--
HF RFID Module	NXP	NQ310	--

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):

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

For 5260 ~ 5320 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5700 MHz

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

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

5 channels are provided for 802.11n (HT40):

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

2 channels are provided for 802.11ac (VHT80):

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

For 5745 ~ 5825 MHz:

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE $\geq$ 1G**: Radiated Emission above 1 GHz

RE<1G: Radiated Emission below 1 GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

Note:

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

Radiated Emission Test (Above 1 GHz):

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

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

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)
-	5260-5320	802.11n (HT40)	54 to 62	62	OFDM	BPSK	13.5

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
-	5500-5700	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 140	100, 116, 140	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 122	106, 122	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	Karl Lee
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
APCM	25 deg. C, 65 % RH	3.8 Vdc	Gavin Wu

3.3 Duty Cycle of Test Signal

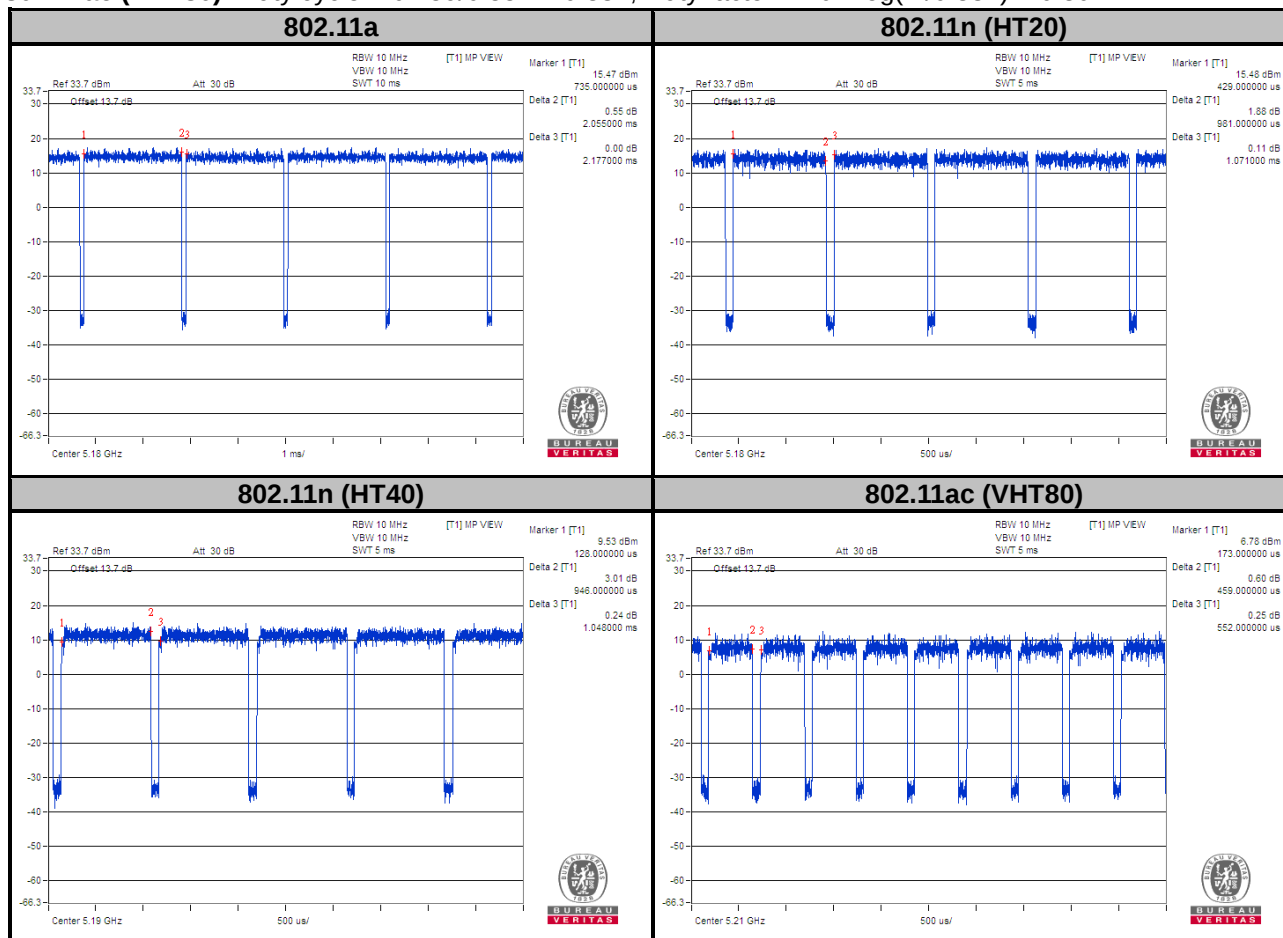
Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = $2.055/2.177 = 0.944$, Duty factor = $10 * \log(1/0.944) = 0.25$

802.11n (HT20): Duty cycle = $0.981/1.071 = 0.916$, Duty factor = $10 * \log(1/0.916) = 0.38$

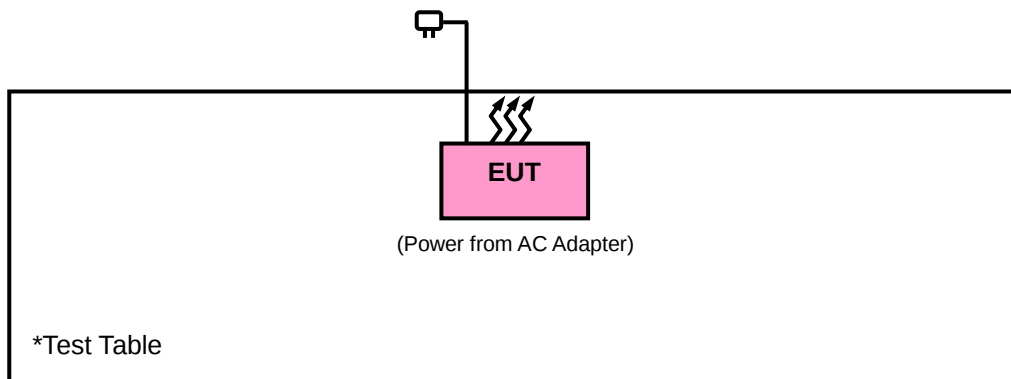
802.11n (HT40): Duty cycle = $0.946/1.048 = 0.903$, Duty factor = $10 * \log(1/0.903) = 0.44$

802.11ac (VHT80): Duty cycle = $0.459/0.552 = 0.832$, Duty factor = $10 * \log(1/0.832) = 0.80$



3.4 Description of Support Units

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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	Aug. 26, 2019	Aug. 25, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
HORN Antenna ETS-Lindgren	3117	00143293	Dec. 13, 2017	Dec. 12, 2018
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
Preamplifier EMCI	EMC 184045	980116	Oct. 08, 2019	Oct. 07, 2020
Power Meter Anritsu	ML2495A	1012010	Sep. 04, 2019	Sep. 03, 2020
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2019	Sep. 03, 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

- 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. 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:

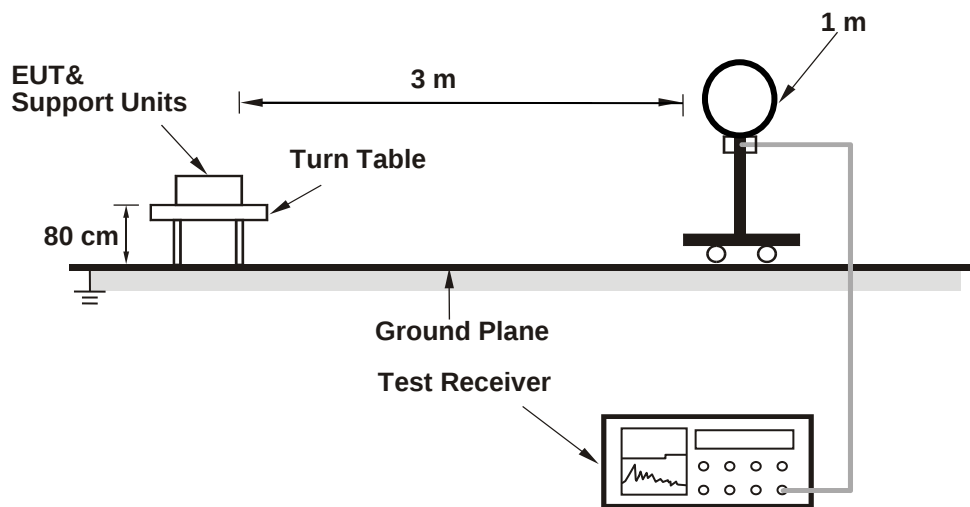
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) 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 = 3 kHz ;
11n (HT40): RBW = 1 MHz, VBW = 3 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 3 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

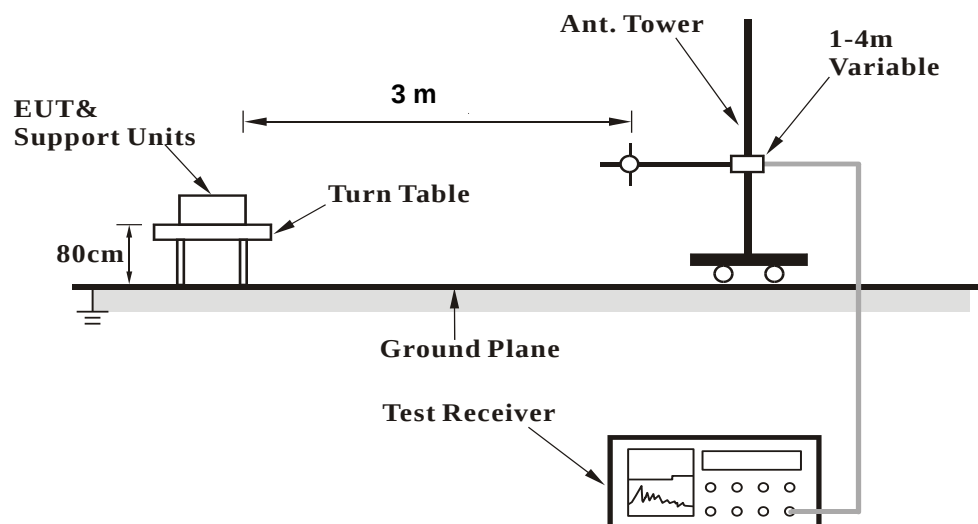
No deviation.

4.1.6 Test Setup

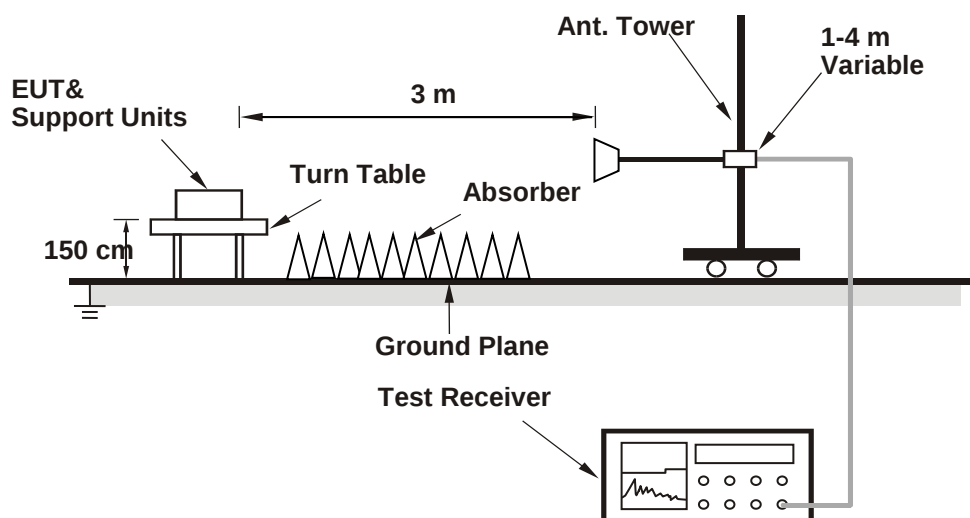
<Radiated Emission below 30 MHz>



<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
5141.15	43.04	33.03	10.01	54	-10.96	272	78	Average
5141.15	59.42	49.41	10.01	74	-14.58	272	78	Peak
5180	100.59	90.47	10.12			272	78	Average
5180	107.66	97.54	10.12			272	78	Peak
*10360	55.13	39.11	16.02	68.2	-13.07	142	107	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	45.63	35.58	10.05	54	-8.37	112	166	Average
5149.7	59.76	49.71	10.05	74	-14.24	112	166	Peak
5180	104.48	94.36	10.12			112	166	Average
5180	111.7	101.58	10.12			112	166	Peak
*10360	55.32	39.3	16.02	68.2	-12.88	167	152	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
5145.35	42.57	32.52	10.05	54	-11.43	272	78	Average
5145.35	57.75	47.7	10.05	74	-16.25	272	78	Peak
5200	100.37	90.21	10.16			272	78	Average
5200	107.26	97.1	10.16			272	78	Peak
5447.9	42.24	31.75	10.49	54	-11.76	272	78	Average
5447.9	53.22	42.73	10.49	74	-20.78	272	78	Peak
*10400	55.92	39.74	16.18	68.2	-12.28	197	35	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	44.14	34.09	10.05	54	-9.86	112	166	Average
5150	53.7	43.65	10.05	74	-20.3	112	166	Peak
5200	104.59	94.43	10.16			112	166	Average
5200	111.42	101.26	10.16			112	166	Peak
5350.88	42.58	32.35	10.23	54	-11.42	112	166	Average
5350.88	53.6	43.37	10.23	74	-20.4	112	166	Peak
*10400	55.86	39.68	16.18	68.2	-12.34	114	275	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	99.94	89.8	10.14			272	78	Average
5240	106.6	96.46	10.14			272	78	Peak
5445.81	42.31	31.82	10.49	54	-11.69	272	78	Average
5445.81	53.28	42.79	10.49	74	-20.72	272	78	Peak
*10480	55.73	39.83	15.9	68.2	-12.47	119	3	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	103.64	93.5	10.14			112	166	Average
5240	110.64	100.5	10.14			112	166	Peak
5353.85	42.91	32.68	10.23	54	-11.09	112	166	Average
5353.85	53.33	43.1	10.23	74	-20.67	112	166	Peak
*10480	55.8	39.9	15.9	68.2	-12.4	138	155	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5240 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 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
5135.3	42.45	32.45	10	54	-11.55	170	167	Average
5135.3	53.24	43.24	10	74	-20.76	170	167	Peak
5260	106.58	96.46	10.12			170	167	Average
5260	113.8	103.68	10.12			170	167	Peak
*10520	56.29	40.41	15.88	68.2	-11.91	140	118	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
5129.6	42.19	32.19	10	54	-11.81	212	153	Average
5129.6	53.19	43.19	10	74	-20.81	212	153	Peak
5260	101.25	91.13	10.12			212	153	Average
5260	108.02	97.9	10.12			212	153	Peak
*10520	57.58	41.7	15.88	68.2	-10.62	164	213	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
5129.15	42.4	32.4	10	54	-11.6	170	167	Average
5129.15	55.05	45.05	10	74	-18.95	170	167	Peak
5300	105.21	95.15	10.06			170	167	Average
5300	112.51	102.45	10.06			170	167	Peak
5350.11	47.46	37.23	10.23	54	-6.54	170	167	Average
5350.11	61.59	51.36	10.23	74	-12.41	170	167	Peak
10600	47.24	31.48	15.76	54	-6.76	187	7	Average
10600	56.4	40.64	15.76	74	-17.6	187	7	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
5103.05	42.14	32.21	9.93	54	-11.86	212	153	Average
5103.05	52.67	42.74	9.93	74	-21.33	212	153	Peak
5300	100.39	90.33	10.06			212	153	Average
5300	107.56	97.5	10.06			212	153	Peak
5351.32	43.62	33.39	10.23	54	-10.38	212	153	Average
5351.32	58.85	48.62	10.23	74	-15.15	212	153	Peak
10600	47.4	31.64	15.76	54	-6.6	131	114	Average
10600	56.71	40.95	15.76	74	-17.29	131	114	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	105.54	95.45	10.09			170	167	Average
5320	112.33	102.24	10.09			170	167	Peak
5353.08	48.81	38.58	10.23	54	-5.19	170	167	Average
5353.08	64.55	54.32	10.23	74	-9.45	170	167	Peak
10640	47.62	31.63	15.99	54	-6.38	140	44	Average
10640	56.36	40.37	15.99	74	-17.64	140	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
5320	100.55	90.46	10.09			212	153	Average
5320	107.92	97.83	10.09			212	153	Peak
5350.88	44.05	33.82	10.23	54	-9.95	212	153	Average
5350.88	59.95	49.72	10.23	74	-14.05	212	153	Peak
10640	47.56	31.57	15.99	54	-6.44	134	310	Average
10640	56.56	40.57	15.99	74	-17.44	134	310	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	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
5453.36	42.67	32.16	10.51	54	-11.33	110	223	Average
5453.36	53.9	43.39	10.51	74	-20.1	110	223	Peak
*5469.84	51.59	41.06	10.53	68.2	-16.61	110	223	Peak
5500	101.69	91.09	10.6			110	223	Average
5500	108.63	98.03	10.6			110	223	Peak
11000	47.61	31.48	16.13	54	-6.39	185	214	Average
11000	57.19	41.06	16.13	74	-16.81	185	214	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
5459.12	44.55	34.04	10.51	54	-9.45	201	199	Average
5459.12	60.93	50.42	10.51	74	-13.07	201	199	Peak
*5469.52	54.47	43.94	10.53	68.2	-13.73	201	199	Peak
5500	104.96	94.36	10.6			201	199	Average
5500	112.4	101.8	10.6			201	199	Peak
11000	46.95	30.82	16.13	54	-7.05	126	238	Average
11000	56.46	40.33	16.13	74	-17.54	126	238	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	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
5436.24	42.2	31.72	10.48	54	-11.8	110	223	Average
5436.24	52.48	42	10.48	74	-21.52	110	223	Peak
*5469.2	51.31	40.78	10.53	68.2	-16.89	110	223	Peak
5580	101.67	90.96	10.71			110	223	Average
5580	108.74	98.03	10.71			110	223	Peak
*5725.24	51.68	40.76	10.92	68.2	-16.52	110	223	Peak
11160	47.53	31.17	16.36	54	-6.47	137	204	Average
11160	57.29	40.93	16.36	74	-16.71	137	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
5456.4	42.41	31.9	10.51	54	-11.59	219	200	Average
5456.4	52.3	41.79	10.51	74	-21.7	219	200	Peak
*5469.36	52.09	41.56	10.53	68.2	-16.11	219	200	Peak
5580	105.25	94.54	10.71			219	200	Average
5580	112.84	102.13	10.71			219	200	Peak
*5725.96	51.82	40.9	10.92	68.2	-16.38	219	200	Peak
11160	47.71	31.35	16.36	54	-6.29	182	153	Average
11160	57.59	41.23	16.36	74	-16.41	182	153	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5580 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 140	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	99.87	88.92	10.95			110	223	Average
5700	107.39	96.44	10.95			110	223	Peak
*5725.96	54.69	43.77	10.92	68.2	-13.51	110	223	Peak
11400	46.85	30.66	16.19	54	-7.15	193	231	Average
11400	56.7	40.51	16.19	74	-17.3	193	231	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	104.73	93.78	10.95			234	203	Average
5700	111.75	100.8	10.95			234	203	Peak
*5726.04	61.23	50.31	10.92	68.2	-6.97	226	203	Peak
11400	46.38	30.19	16.19	54	-7.62	127	84	Average
11400	56.08	39.89	16.19	74	-17.92	127	84	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5700 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	Charles Hsiao

<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	102.55	91.67	10.88			205	158	Average
5745	109.04	98.16	10.88			205	158	Peak
11490	47.88	31.41	16.47	54	-6.12	187	279	Average
11490	56.94	40.47	16.47	74	-17.06	187	279	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	103.65	92.77	10.88			200	302	Average
5745	110.34	99.46	10.88			200	302	Peak
11490	47.86	31.39	16.47	54	-6.14	187	118	Average
11490	57.68	41.21	16.47	74	-16.32	187	118	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
*5620.75	53.4	42.61	10.79	68.2	-14.8	205	158	Peak
5655.4	51.42	40.55	10.87	72.2	-20.78	205	158	Peak
5920.525	52.06	40.97	11.09	71.51	-19.45	205	158	Peak
*5964.1	53.84	42.61	11.23	68.2	-14.36	205	158	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
*5565.625	52.61	41.91	10.7	68.2	-15.59	200	302	Peak
5658.025	52.86	41.99	10.87	74.14	-21.28	200	302	Peak
5917.9	52.38	41.29	11.09	73.45	-21.07	200	302	Peak
*5942.05	52.75	41.57	11.18	68.2	-15.45	200	302	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	Charles Hsiao

<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	102.47	91.66	10.81			205	158	Average
5785	109.67	98.86	10.81			205	158	Peak
11570	48.18	31.69	16.49	54	-5.82	199	168	Average
11570	56.52	40.03	16.49	74	-17.48	199	168	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	103.67	92.86	10.81			200	302	Average
5785	110.73	99.92	10.81			200	302	Peak
11570	48.07	31.58	16.49	54	-5.93	140	245	Average
11570	56.73	40.24	16.49	74	-17.27	140	245	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
*5563.525	53.27	42.59	10.68	68.2	-14.93	205	158	Peak
5653.3	51.95	41.08	10.87	70.64	-18.69	205	158	Peak
5915.275	53.77	42.68	11.09	75.4	-21.63	205	158	Peak
*6015.025	53.88	42.53	11.35	68.2	-14.32	205	158	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
*5589.775	53.33	42.6	10.73	68.2	-14.87	200	302	Peak
5652.25	50.85	39.98	10.87	69.86	-19.01	200	302	Peak
5921.05	52.63	41.54	11.09	71.12	-18.49	200	302	Peak
*5944.675	53.88	42.7	11.18	68.2	-14.32	200	302	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	Charles Hsiao

<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	102.74	91.86	10.88			205	158	Average
5825	109.24	98.36	10.88			205	158	Peak
11650	48.25	31.47	16.78	54	-5.75	188	344	Average
11650	57.68	40.9	16.78	74	-16.32	188	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
5825	103.1	92.22	10.88			200	302	Average
5825	110.38	99.5	10.88			200	302	Peak
11650	48.3	31.52	16.78	54	-5.7	158	260	Average
11650	58.6	41.82	16.78	74	-15.4	158	260	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
*5513.125	52.83	42.23	10.6	68.2	-15.37	205	158	Peak
5659.075	53.14	42.27	10.87	74.92	-21.78	205	158	Peak
5917.375	52.34	41.25	11.09	73.84	-21.5	205	158	Peak
*5996.125	53.4	42.07	11.33	68.2	-14.8	205	158	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
*5520.475	53.15	42.5	10.65	68.2	-15.05	200	302	Peak
5652.775	51.91	41.04	10.87	70.25	-18.34	200	302	Peak
5918.425	51.82	40.73	11.09	73.07	-21.25	200	302	Peak
*5939.95	53.55	42.37	11.18	68.2	-14.65	200	302	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
5149.7	42.81	32.76	10.05	54	-11.19	272	78	Average
5149.7	54.6	44.55	10.05	74	-19.4	272	78	Peak
5180	99.65	89.53	10.12			272	78	Average
5180	106.85	96.73	10.12			272	78	Peak
*10360	55.41	39.39	16.02	68.2	-12.79	119	348	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
5147.6	44.56	34.51	10.05	54	-9.44	112	166	Average
5147.6	62.44	52.39	10.05	74	-11.56	112	166	Peak
5180	103.48	93.36	10.12			112	166	Average
5180	110.76	100.64	10.12			112	166	Peak
*10360	56.74	40.72	16.02	68.2	-11.46	118	275	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
5144	42.65	32.6	10.05	54	-11.35	272	78	Average
5144	56.63	46.58	10.05	74	-17.37	272	78	Peak
5200	99.85	89.69	10.16			272	78	Average
5200	106.41	96.25	10.16			272	78	Peak
5432.94	42.19	31.71	10.48	54	-11.81	272	78	Average
5432.94	53.22	42.74	10.48	74	-20.78	272	78	Peak
*10400	55.75	39.57	16.18	68.2	-12.45	100	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
5150	44.13	34.08	10.05	54	-9.87	112	166	Average
5150	55.29	45.24	10.05	74	-18.71	112	166	Peak
5200	103.49	93.33	10.16			112	166	Average
5200	110.22	100.06	10.16			112	166	Peak
5414.24	42.54	32.12	10.42	54	-11.46	112	166	Average
5414.24	53.15	42.73	10.42	74	-20.85	112	166	Peak
*10400	55.84	39.66	16.18	68.2	-12.36	114	175	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	99.78	89.64	10.14			272	78	Average
5240	106.71	96.57	10.14			272	78	Peak
5445.59	42.35	31.86	10.49	54	-11.65	272	78	Average
5445.59	53.23	42.74	10.49	74	-20.77	272	78	Peak
*10480	56.11	40.21	15.9	68.2	-12.09	197	356	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	103.61	93.47	10.14			112	166	Average
5240	110.59	100.45	10.14			112	166	Peak
5352.53	43.03	32.8	10.23	54	-10.97	112	166	Average
5352.53	54.9	44.67	10.23	74	-19.1	112	166	Peak
*10480	56.91	41.01	15.9	68.2	-11.29	141	114	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
5147.6	42.27	32.22	10.05	54	-11.73	170	167	Average
5147.6	53	42.95	10.05	74	-21	170	167	Peak
5260	105.54	95.42	10.12			170	167	Average
5260	112.71	102.59	10.12			170	167	Peak
*10520	55.98	40.1	15.88	68.2	-12.22	197	118	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
5149.4	42.2	32.15	10.05	54	-11.8	212	153	Average
5149.4	53.56	43.51	10.05	74	-20.44	212	153	Peak
5260	100.64	90.52	10.12			212	153	Average
5260	107.06	96.94	10.12			212	153	Peak
*10520	55.72	39.84	15.88	68.2	-12.48	248	216	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
5146.7	42.26	32.21	10.05	54	-11.74	170	167	Average
5146.7	52.79	42.74	10.05	74	-21.21	170	167	Peak
5300	104.55	94.49	10.06			170	167	Average
5300	111.47	101.41	10.06			170	167	Peak
5351.65	46.62	36.39	10.23	54	-7.38	170	167	Average
5351.65	61.26	51.03	10.23	74	-12.74	170	167	Peak
10600	47.18	31.42	15.76	54	-6.82	175	14	Average
10600	55.65	39.89	15.76	74	-18.35	175	14	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
5140.55	42.13	32.12	10.01	54	-11.87	212	153	Average
5140.55	52.98	42.97	10.01	74	-21.02	212	153	Peak
5300	99.78	89.72	10.06			212	153	Average
5300	106.22	96.16	10.06			212	153	Peak
5350.11	43.64	33.41	10.23	54	-10.36	212	153	Average
5350.11	57.62	47.39	10.23	74	-16.38	212	153	Peak
10600	47.24	31.48	15.76	54	-6.76	140	187	Average
10600	56.75	40.99	15.76	74	-17.25	140	187	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	104.37	94.28	10.09			170	167	Average
5320	111.79	101.7	10.09			170	167	Peak
5350.77	47.2	36.97	10.23	54	-6.8	170	167	Average
5350.77	64.45	54.22	10.23	74	-9.55	170	167	Peak
10640	47.43	31.44	15.99	54	-6.57	117	148	Average
10640	57.12	41.13	15.99	74	-16.88	117	148	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	99.64	89.55	10.09			212	153	Average
5320	106.08	95.99	10.09			212	153	Peak
5350.66	44	33.77	10.23	54	-10	212	153	Average
5350.66	60.21	49.98	10.23	74	-13.79	212	153	Peak
10640	47.48	31.49	15.99	54	-6.52	155	87	Average
10640	56.61	40.62	15.99	74	-17.39	155	87	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5320 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 100	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	44.37	33.86	10.51	54	-9.63	110	223	Average
5460	59.46	48.95	10.51	74	-14.54	110	223	Peak
*5469.52	59.6	49.07	10.53	68.2	-8.6	110	223	Peak
5500	99.39	88.79	10.6			110	223	Average
5500	106.95	96.35	10.6			110	223	Peak
11000	46.74	30.61	16.13	54	-7.26	194	124	Average
11000	56.33	40.2	16.13	74	-17.67	194	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
5459.92	47.28	36.77	10.51	54	-6.72	201	199	Average
5459.92	62.8	52.29	10.51	74	-11.2	201	199	Peak
*5469.68	61.27	50.74	10.53	68.2	-6.93	201	199	Peak
5500	105.32	94.72	10.6			201	199	Average
5500	111.07	100.47	10.6			201	199	Peak
11000	45.63	29.5	16.13	54	-8.37	121	46	Average
11000	55.38	39.25	16.13	74	-18.62	121	46	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5500 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 116	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.16	43.24	32.73	10.51	54	-10.76	110	223	Average
5458.16	54.05	43.54	10.51	74	-19.95	110	223	Peak
*5469.68	50.96	40.43	10.53	68.2	-17.24	110	223	Peak
5580	100.9	90.19	10.71			110	223	Average
5580	107.74	97.03	10.71			110	223	Peak
*5725.08	53.72	42.8	10.92	68.2	-14.48	110	223	Peak
11160	46.68	30.32	16.36	54	-7.32	196	102	Average
11160	56.22	39.86	16.36	74	-17.78	196	102	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
5446	43.34	32.85	10.49	54	-10.66	219	200	Average
5446	53.17	42.68	10.49	74	-20.83	219	200	Peak
*5469.52	51.7	41.17	10.53	68.2	-16.5	219	200	Peak
5580	103.99	93.28	10.71			219	200	Average
5580	111.59	100.88	10.71			219	200	Peak
*5725.88	52.51	41.59	10.92	68.2	-15.69	219	200	Peak
11160	46.36	30	16.36	54	-7.64	154	128	Average
11160	55.99	39.63	16.36	74	-18.01	154	128	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5580 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 140	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	98.85	87.9	10.95			110	223	Average
5700	105.95	95	10.95			110	223	Peak
*5725.88	62.19	51.27	10.92	68.2	-6.01	110	223	Peak
11400	45.86	29.67	16.19	54	-8.14	135	316	Average
11400	55.39	39.2	16.19	74	-18.61	135	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
5700	103.02	92.07	10.95			222	227	Average
5700	110.13	99.18	10.95			222	227	Peak
*5725	66.95	56.03	10.92	68.2	-1.25	213	291	Peak
11400	47.15	30.96	16.19	54	-6.85	125	83	Average
11400	56.74	40.55	16.19	74	-17.26	125	83	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 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	Charles Hsiao

<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	102.26	91.38	10.88			205	158	Average
5745	109.13	98.25	10.88			205	158	Peak
11490	47.91	31.44	16.47	54	-6.09	189	288	Average
11490	56.96	40.49	16.47	74	-17.04	189	288	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	103.94	93.06	10.88			200	302	Average
5745	110.93	100.05	10.88			200	302	Peak
11490	48.01	31.54	16.47	54	-5.99	178	344	Average
11490	56.48	40.01	16.47	74	-17.52	178	344	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
*5529.925	53.74	43.11	10.63	68.2	-14.46	205	158	Peak
5651.725	53.12	42.25	10.87	69.48	-16.36	205	158	Peak
5916.85	52.8	41.71	11.09	74.23	-21.43	205	158	Peak
*5965.675	55.33	44.1	11.23	68.2	-12.87	205	158	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
*5620.225	53.6	42.81	10.79	68.2	-14.6	200	302	Peak
5652.25	50.06	39.19	10.87	69.86	-19.8	200	302	Peak
5918.95	50.48	39.39	11.09	72.68	-22.2	200	302	Peak
*5949.925	53.08	41.9	11.18	68.2	-15.12	200	302	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	Charles Hsiao

<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	102.47	91.66	10.81			205	158	Average
5785	109.18	98.37	10.81			205	158	Peak
11570	48.04	31.55	16.49	54	-5.96	178	288	Average
11570	56.72	40.23	16.49	74	-17.28	178	288	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	103.58	92.77	10.81			200	302	Average
5785	110.79	99.98	10.81			200	302	Peak
11570	47.95	31.46	16.49	54	-6.05	181	295	Average
11570	56.92	40.43	16.49	74	-17.08	181	295	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
*5613.4	53.05	42.28	10.77	68.2	-15.15	205	158	Peak
5654.35	50.97	40.1	10.87	71.42	-20.45	205	158	Peak
5922.625	53.3	42.19	11.11	69.96	-16.66	205	158	Peak
*5941.525	53.65	42.47	11.18	68.2	-14.55	205	158	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
*5596.6	52.75	42	10.75	68.2	-15.45	200	302	Peak
5659.6	52.58	41.71	10.87	75.3	-22.72	200	302	Peak
5913.7	53.49	42.42	11.07	76.56	-23.07	200	302	Peak
*5972.5	53.97	42.72	11.25	68.2	-14.23	200	302	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	Charles Hsiao

<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	102.34	91.46	10.88			205	158	Average
5825	109	98.12	10.88			205	158	Peak
11650	48.36	31.58	16.78	54	-5.64	187	189	Average
11650	56.97	40.19	16.78	74	-17.03	187	189	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	103.66	92.78	10.88			200	302	Average
5825	110.57	99.69	10.88			200	302	Peak
11650	48.34	31.56	16.78	54	-5.66	138	335	Average
11650	57.5	40.72	16.78	74	-16.5	138	335	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
*5561.425	52.6	41.92	10.68	68.2	-15.6	205	158	Peak
5656.45	53.22	42.35	10.87	72.97	-19.75	205	158	Peak
5923.15	52.89	41.78	11.11	69.57	-16.68	205	158	Peak
*5940.475	54.29	43.11	11.18	68.2	-13.91	205	158	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
*5626.525	53.08	42.29	10.79	68.2	-15.12	200	302	Peak
5658.55	51.87	41	10.87	74.53	-22.66	200	302	Peak
5917.9	52.43	41.34	11.09	73.45	-21.02	200	302	Peak
*5937.85	53.81	42.65	11.16	68.2	-14.39	200	302	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
5147.6	46.95	36.9	10.05	54	-7.05	272	78	Average
5147.6	56.87	46.82	10.05	74	-17.13	272	78	Peak
5190	96.44	86.32	10.12			272	78	Average
5190	103.29	93.17	10.12			272	78	Peak
5453.95	42.64	32.13	10.51	54	-11.36	272	78	Average
5453.95	53.7	43.19	10.51	74	-20.3	272	78	Peak
*10380	55.82	39.72	16.1	68.2	-12.38	155	277	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
5148.65	52.62	42.57	10.05	54	-1.38	112	151	Average
5148.65	60.4	50.35	10.05	74	-13.6	112	151	Peak
5190	100.67	90.55	10.12			112	166	Average
5190	107.58	97.46	10.12			112	166	Peak
5458.9	42.93	32.42	10.51	54	-11.07	112	166	Average
5458.9	53.81	43.3	10.51	74	-20.19	112	166	Peak
*10380	56.15	40.05	16.1	68.2	-12.05	119	325	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
5145.5	42.61	32.56	10.05	54	-11.39	272	78	Average
5145.5	53.45	43.4	10.05	74	-20.55	272	78	Peak
5230	96.89	86.75	10.14			272	78	Average
5230	103.58	93.44	10.14			272	78	Peak
5452.74	42.82	32.31	10.51	54	-11.18	272	78	Average
5452.74	52.96	42.45	10.51	74	-21.04	272	78	Peak
*10460	54.83	38.83	16	68.2	-13.37	167	7	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
5148.35	42.98	32.93	10.05	54	-11.02	112	166	Average
5148.35	54.15	44.1	10.05	74	-19.85	112	166	Peak
5230	100.74	90.6	10.14			112	166	Average
5230	107.34	97.2	10.14			112	166	Peak
5354.73	43.17	32.94	10.23	54	-10.83	112	166	Average
5354.73	53.23	43	10.23	74	-20.77	112	166	Peak
*10460	55.01	39.01	16	68.2	-13.19	118	348	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5230 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 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
5128.85	42.7	32.7	10	54	-11.3	170	167	Average
5128.85	52.72	42.72	10	74	-21.28	170	167	Peak
5270	101.87	91.75	10.12			170	167	Average
5270	108.3	98.18	10.12			170	167	Peak
5350.55	44.56	34.33	10.23	54	-9.44	170	167	Average
5350.55	56.67	46.44	10.23	74	-17.33	170	167	Peak
*10540	55.55	39.72	15.83	68.2	-12.65	154	145	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
5144.6	42.53	32.48	10.05	54	-11.47	212	153	Average
5144.6	53.43	43.38	10.05	74	-20.57	212	153	Peak
5270	96.58	86.46	10.12			212	153	Average
5270	103.99	93.87	10.12			212	153	Peak
5350.22	42.91	32.68	10.23	54	-11.09	212	153	Average
5350.22	52.71	42.48	10.23	74	-21.29	212	153	Peak
*10540	55.47	39.64	15.83	68.2	-12.73	188	118	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
5117.15	42.57	32.61	9.96	54	-11.43	170	167	Average
5117.15	53.33	43.37	9.96	74	-20.67	170	167	Peak
5310	97.87	87.78	10.09			170	167	Average
5310	104.12	94.03	10.09			170	167	Peak
5350.77	52.88	42.65	10.23	54	-1.12	170	162	Average
5350.77	61.42	51.19	10.23	74	-12.58	170	162	Peak
10620	47.88	32	15.88	54	-6.12	157	77	Average
10620	56.02	40.14	15.88	74	-17.98	157	77	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	42.65	32.65	10	54	-11.35	212	153	Average
5124.65	53.24	43.24	10	74	-20.76	212	153	Peak
5310	92.58	82.49	10.09			212	153	Average
5310	99.42	89.33	10.09			212	153	Peak
5350	46.91	36.68	10.23	54	-7.09	212	153	Average
5350	56.12	45.89	10.23	74	-17.88	212	153	Peak
10620	47.77	31.89	15.88	54	-6.23	119	65	Average
10620	56.64	40.76	15.88	74	-17.36	119	65	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	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
5459.44	45.51	35	10.51	54	-8.49	120	223	Average
5459.44	55.4	44.89	10.51	74	-18.6	120	223	Peak
*5469.84	61.16	50.63	10.53	68.2	-7.04	120	223	Peak
5510	97.26	86.66	10.6			120	223	Average
5510	103.88	93.28	10.6			120	223	Peak
*5725.24	51.46	40.54	10.92	68.2	-16.74	120	223	Peak
11020	46.29	30.13	16.16	54	-7.71	112	75	Average
11020	55.87	39.71	16.16	74	-18.13	112	75	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
5460	50.46	39.95	10.51	54	-3.54	196	199	Average
5460	60.06	49.55	10.51	74	-13.94	196	199	Peak
*5470	66.78	56.25	10.53	68.2	-1.42	196	199	Peak
5510	100.53	89.93	10.6			201	199	Average
5510	108	97.4	10.6			201	199	Peak
*5725.48	51.9	40.98	10.92	68.2	-16.3	196	199	Peak
11020	46.85	30.69	16.16	54	-7.15	165	229	Average
11020	56.48	40.32	16.16	74	-17.52	165	229	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5510 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 110	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.44	43.67	33.16	10.51	54	-10.33	110	223	Average
5459.44	52.92	42.41	10.51	74	-21.08	110	223	Peak
*5469.2	51.97	41.44	10.53	68.2	-16.23	110	223	Peak
5550	96.09	85.41	10.68			110	223	Average
5550	103.02	92.34	10.68			110	223	Peak
*5725.32	52.13	41.21	10.92	68.2	-16.07	110	223	Peak
11100	47.58	31.31	16.27	54	-6.42	129	134	Average
11100	57.24	40.97	16.27	74	-16.76	129	134	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
5460	43.35	32.84	10.51	54	-10.65	202	200	Average
5460	53.25	42.74	10.51	74	-20.75	202	200	Peak
*5469.84	53.88	43.35	10.53	68.2	-14.32	202	200	Peak
5550	102.28	91.6	10.68			202	200	Average
5550	109.14	98.46	10.68			202	200	Peak
*5726.04	51.52	40.6	10.92	68.2	-16.68	202	200	Peak
11100	46.37	30.1	16.27	54	-7.63	125	168	Average
11100	55.9	39.63	16.27	74	-18.1	125	168	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	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
5452.72	43.05	32.54	10.51	54	-10.95	110	223	Average
5452.72	52.7	42.19	10.51	74	-21.3	110	223	Peak
*5469.84	50.76	40.23	10.53	68.2	-17.44	110	223	Peak
5670	96.26	85.36	10.9			110	223	Average
5670	103.59	92.69	10.9			110	223	Peak
*5725.96	58.09	47.17	10.92	68.2	-10.11	110	223	Peak
11340	46.14	29.72	16.42	54	-7.86	123	99	Average
11340	55.66	39.24	16.42	74	-18.34	123	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
5452.4	43.07	32.56	10.51	54	-10.93	213	291	Average
5452.4	52.61	42.1	10.51	74	-21.39	213	291	Peak
*5469.04	50.84	40.31	10.53	68.2	-17.36	213	291	Peak
5670	99.32	88.42	10.9			213	291	Average
5670	106.5	95.6	10.9			213	291	Peak
*5725.16	63.75	52.83	10.92	68.2	-4.45	227	265	Peak
11340	46.88	30.46	16.42	54	-7.12	153	237	Average
11340	56.54	40.12	16.42	74	-17.46	153	237	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5670 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	Charles Hsiao

<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	99.87	88.97	10.9			205	158	Average
5755	106.29	95.39	10.9			205	158	Peak
11510	47.99	31.48	16.51	54	-6.01	178	188	Average
11510	56.76	40.25	16.51	74	-17.24	178	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
5755	100.52	89.62	10.9			200	302	Average
5755	107.49	96.59	10.9			200	302	Peak
11510	47.89	31.38	16.51	54	-6.11	124	335	Average
11510	56.74	40.23	16.51	74	-17.26	124	335	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
*5582.95	52.93	42.2	10.73	68.2	-15.27	205	158	Peak
5653.3	51.22	40.35	10.87	70.64	-19.42	205	158	Peak
5921.05	52.25	41.16	11.09	71.12	-18.87	205	158	Peak
*6007.675	53.1	41.75	11.35	68.2	-15.1	205	158	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
*5642.8	54.05	43.22	10.83	68.2	-14.15	200	302	Peak
5660.125	53.65	42.78	10.87	75.69	-22.04	200	302	Peak
5917.375	51.93	40.84	11.09	73.84	-21.91	200	302	Peak
*5956.75	54.01	42.8	11.21	68.2	-14.19	200	302	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	Charles Hsiao

<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	99.82	89	10.82			205	158	Average
5795	106.33	95.51	10.82			205	158	Peak
11590	48.09	31.58	16.51	54	-5.91	157	77	Average
11590	57.17	40.66	16.51	74	-16.83	157	77	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	100.01	89.19	10.82			200	302	Average
5795	107.22	96.4	10.82			200	302	Peak
11590	48.15	31.64	16.51	54	-5.85	174	4	Average
11590	57.29	40.78	16.51	74	-16.71	174	4	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
*5634.925	53.03	42.2	10.83	68.2	-15.17	205	158	Peak
5657.5	51.84	40.97	10.87	73.75	-21.91	205	158	Peak
5920.525	52.05	40.96	11.09	71.51	-19.46	205	158	Peak
*5973.55	53.35	42.09	11.26	68.2	-14.85	205	158	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
*5647	52.91	42.06	10.85	68.2	-15.29	200	302	Peak
5656.975	52.36	41.49	10.87	73.36	-21	200	302	Peak
5916.325	52.34	41.25	11.09	74.62	-22.28	200	302	Peak
*5966.2	53.79	42.56	11.23	68.2	-14.41	200	302	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
5145.95	47.69	37.64	10.05	54	-6.31	272	78	Average
5145.95	58.36	48.31	10.05	74	-15.64	272	78	Peak
5210	92.4	82.23	10.17			272	78	Average
5210	99.63	89.46	10.17			272	78	Peak
5449.66	42.9	32.41	10.49	54	-11.1	272	78	Average
5449.66	52.7	42.21	10.49	74	-21.3	272	78	Peak
*10420	56.13	39.97	16.16	68.2	-12.07	134	7	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
5138.3	52.19	42.19	10	54	-1.81	126	166	Average
5138.3	59.68	49.68	10	74	-14.32	126	166	Peak
5210	96.78	86.61	10.17			112	166	Average
5210	103.84	93.67	10.17			112	166	Peak
5351.98	43.26	33.03	10.23	54	-10.74	112	166	Average
5351.98	53.06	42.83	10.23	74	-20.94	112	166	Peak
*10420	55.43	39.27	16.16	68.2	-12.77	115	285	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
5141.6	42.98	32.97	10.01	54	-11.02	170	167	Average
5141.6	52.92	42.91	10.01	74	-21.08	170	167	Peak
5290	93.68	83.58	10.1			170	167	Average
5290	100.48	90.38	10.1			170	167	Peak
5350.88	52.41	42.18	10.23	54	-1.59	170	164	Average
5350.88	60.6	50.37	10.23	74	-13.4	170	164	Peak
*10580	55.67	39.96	15.71	68.2	-12.53	162	119	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
5143.55	42.94	32.91	10.03	54	-11.06	212	153	Average
5143.55	52.4	42.37	10.03	74	-21.6	212	153	Peak
5290	88.54	78.44	10.1			212	153	Average
5290	95.43	85.33	10.1			212	153	Peak
5368.48	46.32	36.06	10.26	54	-7.68	212	153	Average
5368.48	54.58	44.32	10.26	74	-19.42	212	153	Peak
*10580	56.47	40.76	15.71	68.2	-11.73	140	247	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	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
5460	47.74	37.23	10.51	54	-6.26	110	223	Average
5460	55.81	45.3	10.51	74	-18.19	110	223	Peak
*5469.68	58.99	48.46	10.53	68.2	-9.21	110	223	Peak
5530	93.9	83.27	10.63			110	223	Average
5530	101.27	90.64	10.63			110	223	Peak
*5725.72	51.66	40.74	10.92	68.2	-16.54	110	223	Peak
11060	46.58	30.35	16.23	54	-7.42	146	293	Average
11060	56.36	40.13	16.23	74	-17.64	146	293	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
5454.8	52.17	41.66	10.51	54	-1.83	187	199	Average
5454.8	60.93	50.42	10.51	74	-13.07	187	199	Peak
*5470	63.01	52.48	10.53	68.2	-5.19	187	199	Peak
5530	98.17	87.54	10.63			200	199	Average
5530	105.26	94.63	10.63			200	199	Peak
*5725.16	53.15	42.23	10.92	68.2	-15.05	187	199	Peak
11060	46.91	30.68	16.23	54	-7.09	123	46	Average
11060	56.55	40.32	16.23	74	-17.45	123	46	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5530 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 122	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.28	43.26	32.75	10.51	54	-10.74	110	223	Average
5459.28	53.16	42.65	10.51	74	-20.84	110	223	Peak
*5469.2	51.11	40.58	10.53	68.2	-17.09	110	223	Peak
5610	96.51	85.74	10.77			110	223	Average
5610	103.49	92.72	10.77			110	223	Peak
*5725.32	52.03	41.11	10.92	68.2	-16.17	110	223	Peak
11220	46.69	30.27	16.42	54	-7.31	184	215	Average
11220	56.18	39.76	16.42	74	-17.82	184	215	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
5452.72	43.82	33.31	10.51	54	-10.18	202	200	Average
5452.72	54.01	43.5	10.51	74	-19.99	202	200	Peak
*5469.68	54.31	43.78	10.53	68.2	-13.89	202	200	Peak
5610	100.01	89.24	10.77			202	200	Average
5610	107.45	96.68	10.77			202	200	Peak
*5725.48	54.34	43.42	10.92	68.2	-13.86	202	200	Peak
11220	47.62	31.2	16.42	54	-6.38	132	83	Average
11220	57.38	40.96	16.42	74	-16.62	132	83	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5610 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 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	Charles Hsiao

<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	96.36	85.49	10.87			205	158	Average
5775	103.75	92.88	10.87			205	158	Peak
11550	47.97	31.47	16.5	54	-6.03	140	14	Average
11550	56.93	40.43	16.5	74	-17.07	140	14	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	97.47	86.6	10.87			200	302	Average
5775	104.11	93.24	10.87			200	302	Peak
11550	48.13	31.63	16.5	54	-5.87	187	178	Average
11550	56.89	40.39	16.5	74	-17.11	187	178	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
*5643.85	53.73	42.9	10.83	68.2	-14.47	205	158	Peak
5658.55	53.24	42.37	10.87	74.53	-21.29	205	158	Peak
5918.95	53.38	42.29	11.09	72.68	-19.3	205	158	Peak
*5945.2	54.36	43.18	11.18	68.2	-13.84	205	158	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
*5623.9	53.87	43.08	10.79	68.2	-14.33	200	302	Peak
5657.5	51.69	40.82	10.87	73.75	-22.06	200	302	Peak
5921.05	51.52	40.43	11.09	71.12	-19.6	200	302	Peak
*5966.725	53.81	42.58	11.23	68.2	-14.39	200	302	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 (HT40)

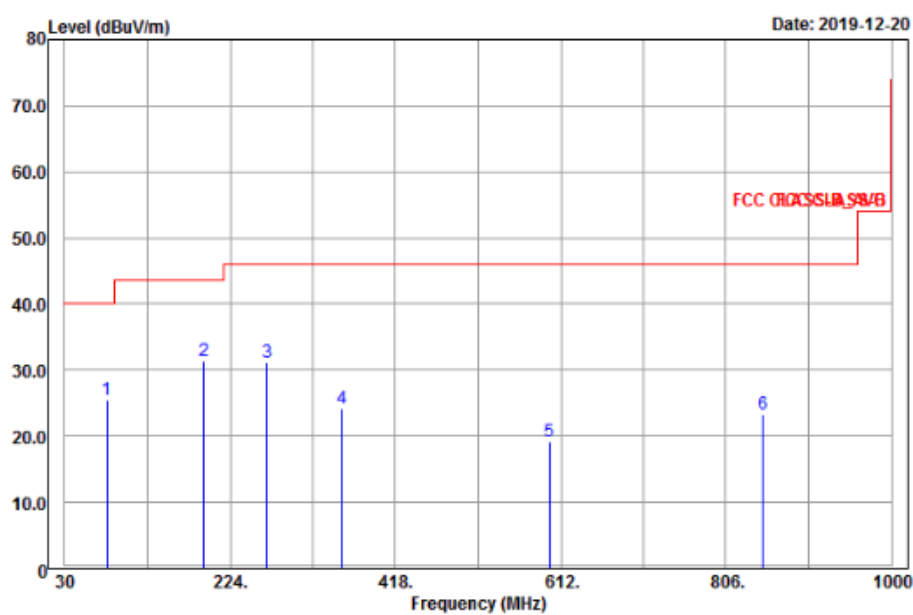
EUT Test Condition		Measurement Detail	
Channel	Channel 62	Frequency Range	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
79.41	25.56	46.89	-21.33	40	-14.44	137	128	Peak
192.81	31.41	49.93	-18.52	43.5	-12.09	191	310	Peak
267.6	31.09	47.65	-16.56	46	-14.91	136	229	Peak
355.3	24.24	38.9	-14.66	46	-21.76	175	134	Peak
598.9	19.08	29.68	-10.6	46	-26.92	108	231	Peak
849.5	23.22	30.04	-6.82	46	-22.78	150	39	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
44.85	31.74	47.16	-15.42	40	-8.26	113	54	Peak
94.8	20.62	38.47	-17.85	43.5	-22.88	151	4	Peak
217.38	33.5	51.42	-17.92	46	-12.5	196	81	Peak
403.6	22.73	36.6	-13.87	46	-23.27	167	233	Peak
579.3	26.35	37.29	-10.94	46	-19.65	149	261	Peak
855.8	26.32	32.99	-6.67	46	-19.68	152	273	Peak

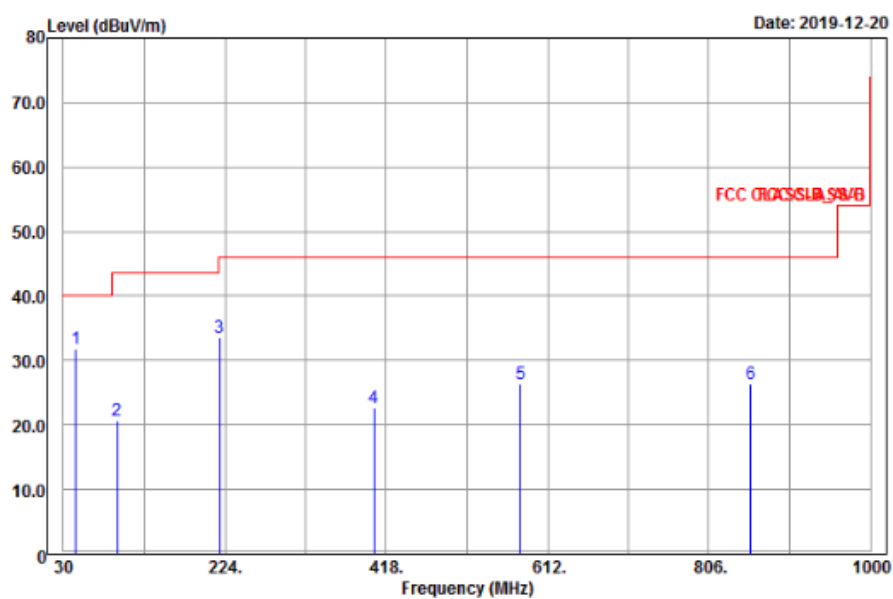
Remarks:

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

Horizontal



Vertical



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. 14, 2018	Dec. 13, 2019
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 22, 2019	Aug. 21, 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

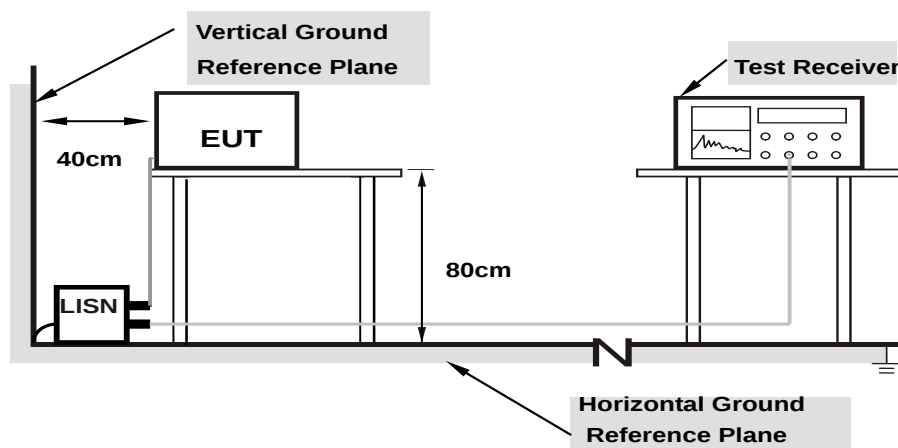
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

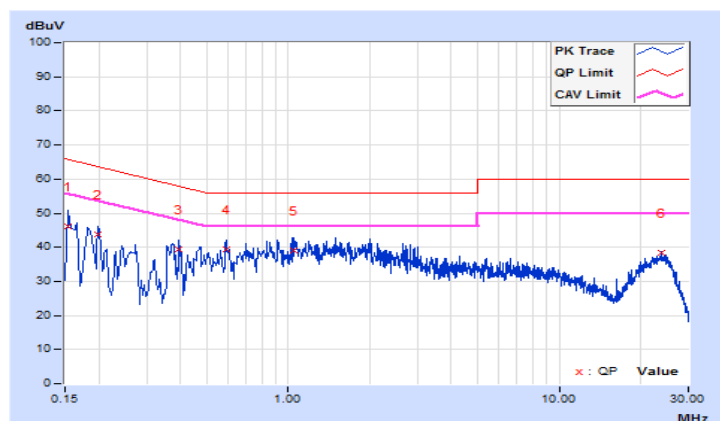
4.2.7 Test Results

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	Jisyoung Wang	Test Date	2019/11/24

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	0.15400	9.67	36.46	29.32	46.13	38.99	65.78	55.78	-19.65	-16.79
2	0.19800	9.66	33.97	29.00	43.63	38.66	63.69	53.69	-20.06	-15.03
3	0.39400	9.69	29.80	22.17	39.49	31.86	57.98	47.98	-18.49	-16.12
4	0.59000	9.70	29.62	23.85	39.32	33.55	56.00	46.00	-16.68	-12.45
5	1.05400	9.73	29.20	22.38	38.93	32.11	56.00	46.00	-17.07	-13.89
6	23.85400	10.00	28.54	24.95	38.54	34.95	60.00	50.00	-21.46	-15.05

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

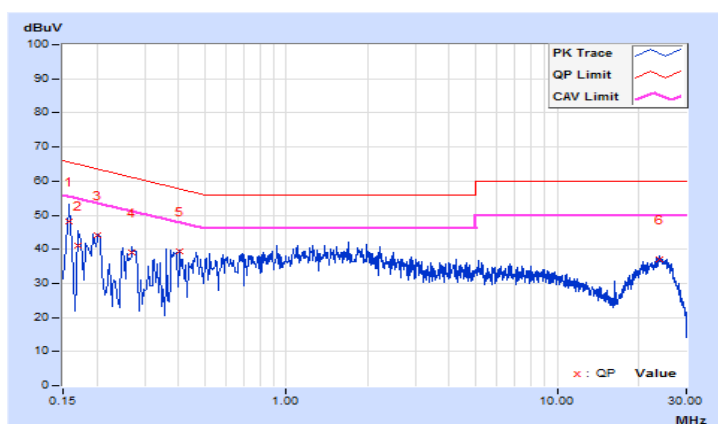


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Jisyong Wang	Test Date	2019/11/24

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	0.15800	9.64	38.67	31.86	48.31	41.50	65.57	55.57	-17.26	-14.07
2	0.17000	9.64	31.53	28.93	41.17	38.57	64.96	54.96	-23.79	-16.39
3	0.20200	9.64	34.32	30.26	43.96	39.90	63.53	53.53	-19.57	-13.63
4	0.26992	9.65	29.26	21.58	38.91	31.23	61.12	51.12	-22.21	-19.89
5	0.40600	9.66	29.77	21.52	39.43	31.18	57.73	47.73	-18.30	-16.55
6	23.85400	10.08	26.80	23.67	36.88	33.75	60.00	50.00	-23.12	-16.25

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 $N_{ANT} \leq 4$;

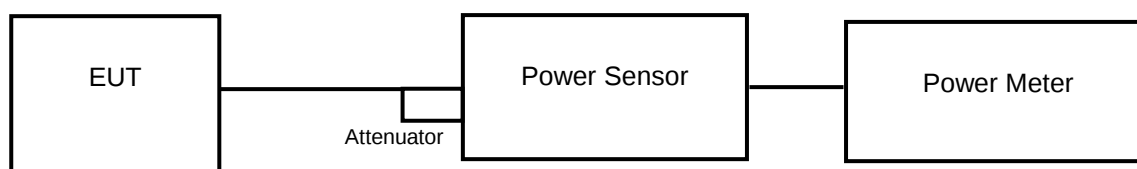
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

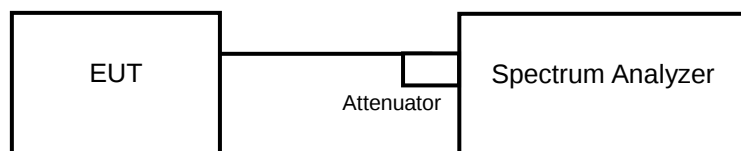
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

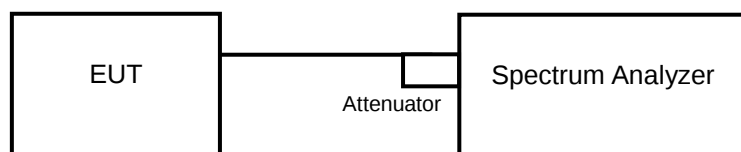
<Power Output Measurement>



or



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

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

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

<802.11ac (VHT80)>

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

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	5.34	4.95	6.546	8.16	24	Pass
40	5200	5.53	5.34	6.993	8.45	24	Pass
48	5240	5.24	5.43	6.833	8.35	24	Pass
52	5260	6.04	5.61	7.657	8.84	24	Pass
60	5300	6.09	5.73	7.805	8.92	24	Pass
64	5320	6.02	5.62	7.647	8.83	24	Pass
100	5500	9.46	8.13	15.332	11.86	24	Pass
116	5580	9.45	8.27	15.524	11.91	24	Pass
140	5700	9.28	8.58	15.683	11.95	24	Pass
149	5745	8.16	6.45	10.962	10.40	30	Pass
157	5785	8.19	6.17	10.732	10.31	30	Pass
165	5825	8.35	6.35	11.154	10.47	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(24.73) = 24.93 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(24.60) = 24.90 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(24.66) = 24.91 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(24.93) = 24.96 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(24.98) = 24.97 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(25.01) = 24.98 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(24.04) = 24.80 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(24.42) = 24.87 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(24.62) = 24.91 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(24.81) = 24.94 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(24.68) = 24.92 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(25.59) = 25.08 \text{ dBm} > 24 \text{ dBm}$.

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	5.43	5.34	6.911	8.40	24	Pass
40	5200	5.44	5.43	6.99	8.44	24	Pass
48	5240	5.35	5.45	6.936	8.41	24	Pass
52	5260	5.69	5.23	7.041	8.48	24	Pass
60	5300	5.78	5.03	6.968	8.43	24	Pass
64	5320	5.66	5.05	6.88	8.38	24	Pass
100	5500	9.10	7.11	13.268	11.23	24	Pass
116	5580	9.04	7.52	13.666	11.36	24	Pass
140	5700	8.75	8.02	13.838	11.41	24	Pass
149	5745	7.30	6.06	9.406	9.73	30	Pass
157	5785	7.05	6.30	9.336	9.70	30	Pass
165	5825	7.77	5.62	9.632	9.84	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log (25.02) = 24.98 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (25.50) = 25.06 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (25.64) = 25.09 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (26.63) = 25.25 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (25.73) = 25.10 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (25.46) = 25.05 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log (24.37) = 24.86 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (25.24) = 25.02 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (24.08) = 24.81 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (27.06) = 25.32 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (24.89) = 24.96 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (26.22) = 25.18 \text{ dBm} > 24 \text{ dBm}$.

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	5.36	5.57	7.042	8.48	24	Pass
46	5230	5.33	5.36	6.848	8.36	24	Pass
54	5270	5.42	5.34	6.903	8.39	24	Pass
62	5310	5.50	5.19	6.852	8.36	24	Pass
102	5510	9.34	6.80	13.376	11.26	24	Pass
110	5550	8.98	7.33	13.315	11.24	24	Pass
134	5670	8.44	8.12	13.468	11.29	24	Pass
151	5755	7.35	6.54	9.941	9.97	30	Pass
159	5795	7.44	5.55	9.135	9.61	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log (42.09) = 27.24 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (42.19) = 27.25 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (42.01) = 27.23 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (42.19) = 27.25 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (42.20) = 27.25 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log (42.53) = 27.28 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (42.26) = 27.25 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (42.25) = 27.25 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (42.68) = 27.30 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (42.76) = 27.31 \text{ dBm} > 24 \text{ dBm}$.

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	5.17	5.22	6.616	8.21	24	Pass
58	5290	5.54	5.34	7.001	8.45	24	Pass
106	5530	9.20	7.11	13.458	11.29	24	Pass
122	5610	8.35	7.96	13.091	11.17	24	Pass
155	5775	7.81	5.86	9.894	9.95	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(83.46) = 30.21 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(83.35) = 30.20 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(83.24) = 30.20 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(83.30) = 30.20 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(83.32) = 30.20 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(84.02) = 30.24 \text{ dBm} > 24 \text{ dBm}$.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	24.24	22.41
40	5200	24.99	23.87
48	5240	24.50	24.01
52	5260	24.73	24.04
60	5300	24.60	24.42
64	5320	24.66	24.62
100	5500	24.93	24.81
116	5580	24.98	24.68
140	5700	25.01	25.59

802.11n (HT20)

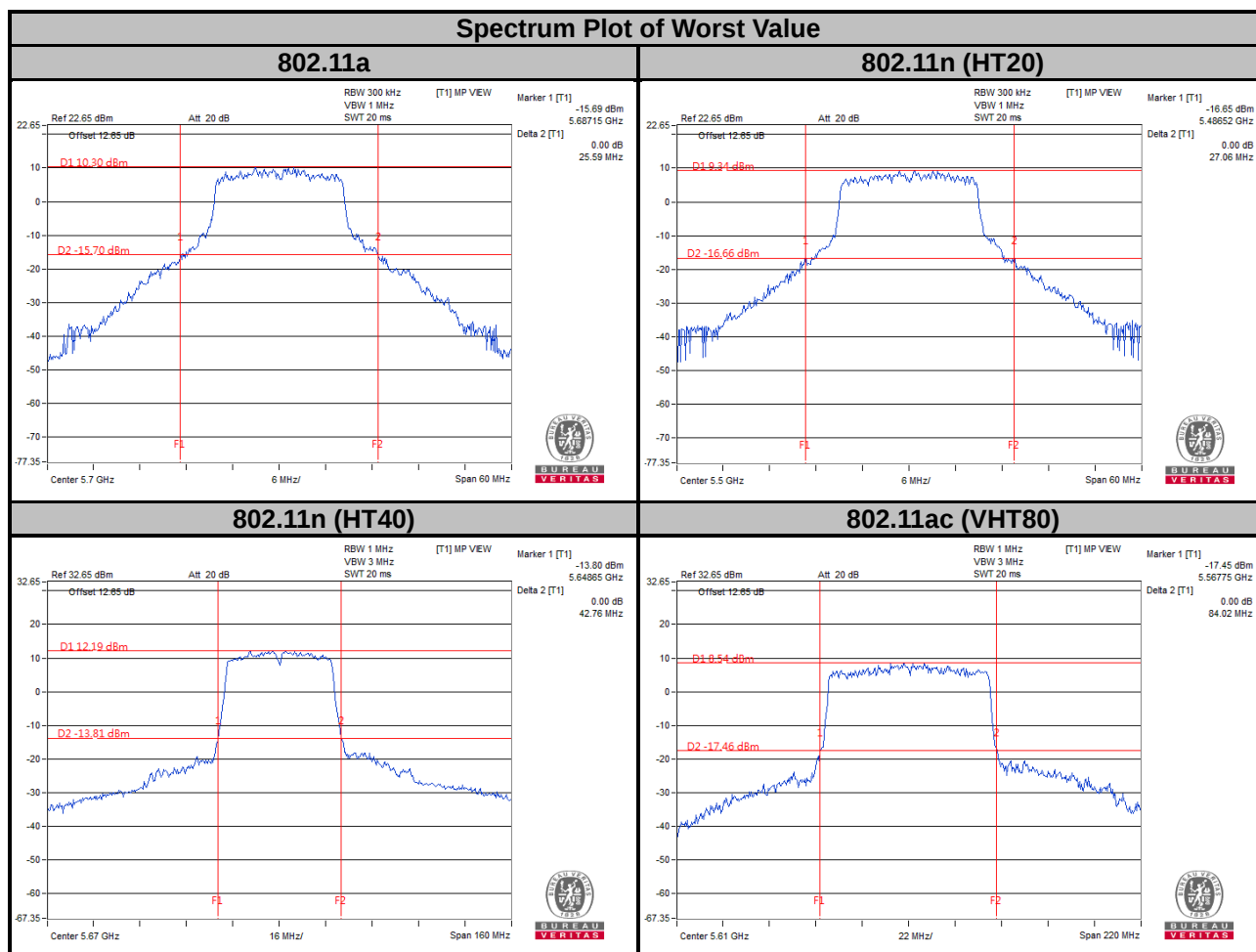
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	25.21	24.19
40	5200	25.43	24.52
48	5240	25.26	23.75
52	5260	25.02	24.37
60	5300	25.50	25.24
64	5320	25.64	24.08
100	5500	26.63	27.06
116	5580	25.73	24.89
140	5700	25.46	26.22

802.11n (HT40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	41.72	42.57
46	5230	42.21	42.72
54	5270	42.09	42.53
62	5310	42.19	42.26
102	5510	42.01	42.25
110	5550	42.19	42.68
134	5670	42.20	42.76

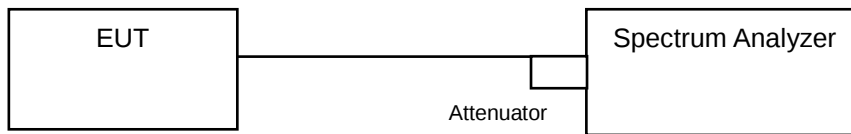
802.11ac (VHT80)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	83.60	83.10
58	5290	83.46	83.30
106	5530	83.35	83.32
122	5610	83.24	84.02



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.68	16.68
40	5200	16.80	16.80
48	5240	16.80	16.68
52	5260	16.92	16.68
60	5300	16.68	16.80
64	5320	16.92	16.68
100	5500	16.80	16.80
116	5580	16.80	16.92
140	5700	16.80	16.80
149	5745	16.83	16.83
157	5785	16.83	16.83
165	5825	16.83	16.83

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.00	17.88
40	5200	17.88	17.88
48	5240	17.88	17.88
52	5260	17.88	17.88
60	5300	17.88	17.88
64	5320	18.00	17.88
100	5500	17.88	17.88
116	5580	17.88	17.88
140	5700	17.88	17.88
149	5745	17.98	17.89
157	5785	17.98	17.98
165	5825	17.89	17.89

802.11n (HT40)

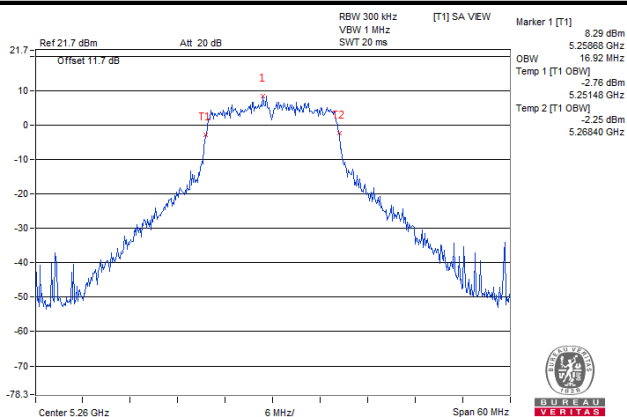
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.60	36.60
46	5230	36.60	36.48
54	5270	36.60	36.60
62	5310	36.60	36.48
102	5510	36.72	36.60
110	5550	36.60	36.60
134	5670	36.60	36.60
151	5755	36.72	36.48
159	5795	36.60	36.60

802.11ac (VHT80)

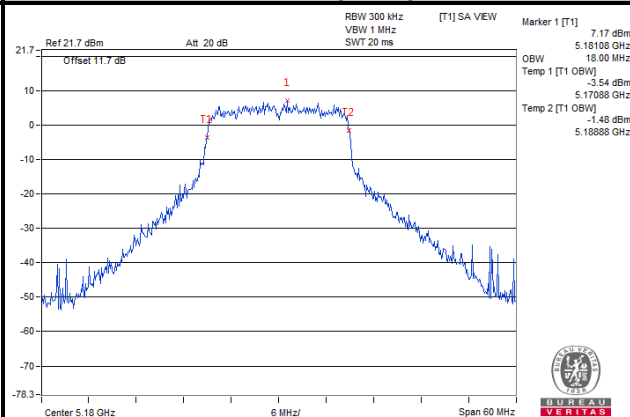
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.84	75.84
58	5290	75.84	75.84
106	5530	75.84	75.84
122	5610	76.08	75.84
155	5775	75.96	75.77

Spectrum Plot of Worst Value

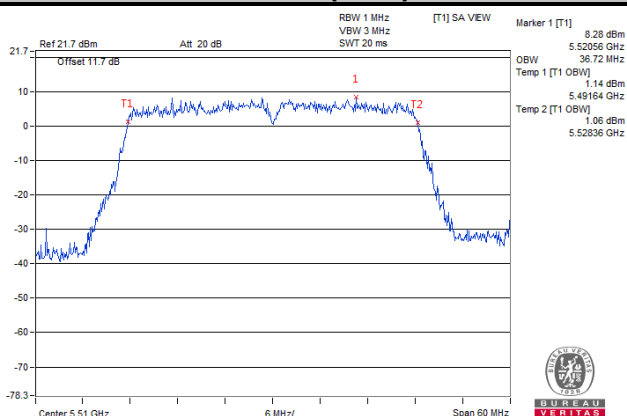
802.11a



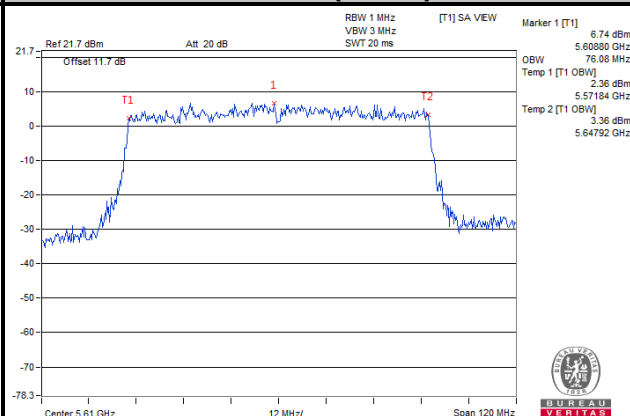
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

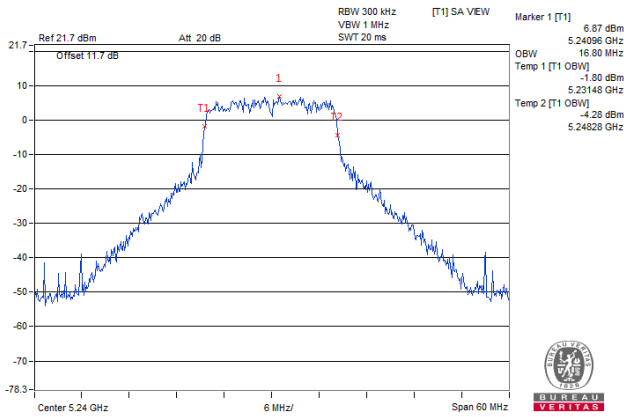


Chain 0

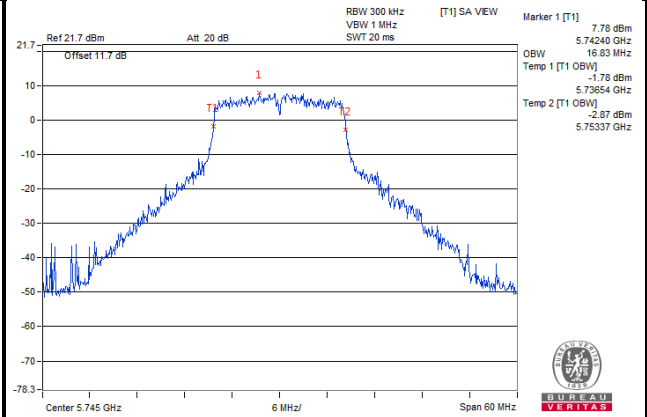
Spectrum Plot for Nearby DFS Band

802.11a

Ch 48 (5240 MHz)

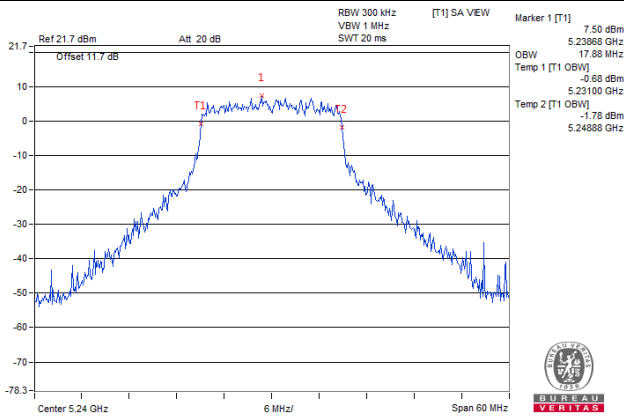


Ch 149 (5745 MHz)

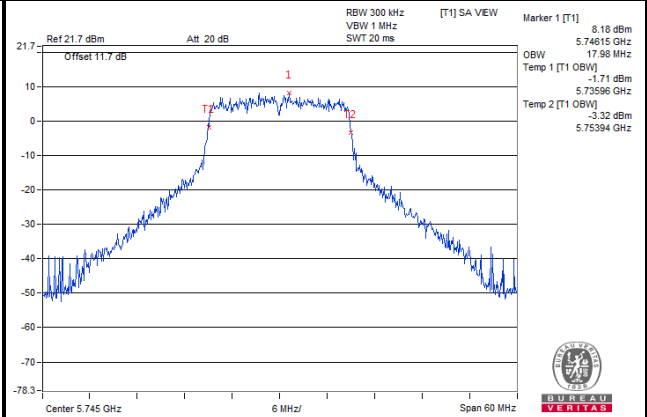


802.11n (HT20)

Ch 48 (5240 MHz)

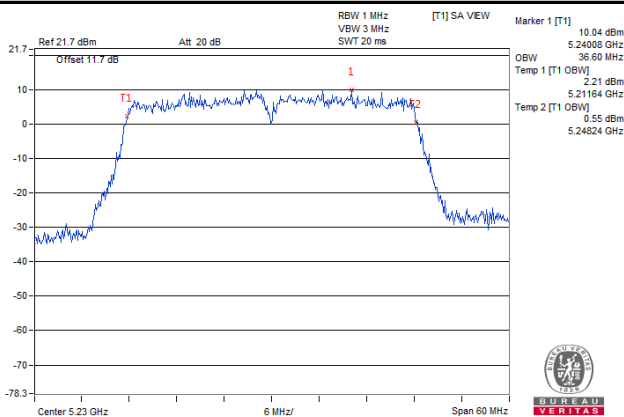


Ch 149 (5745 MHz)

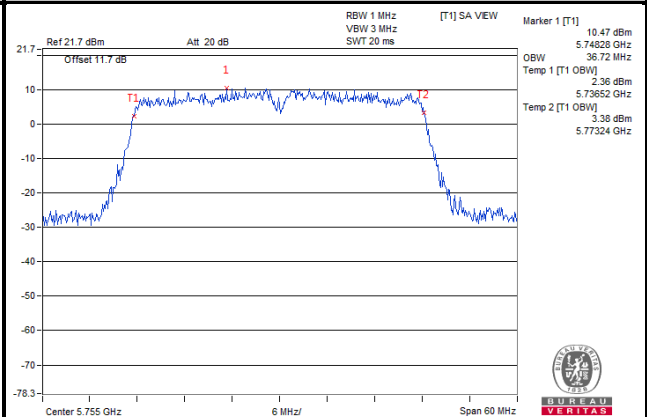


802.11n (HT40)

Ch 46 (5230 MHz)

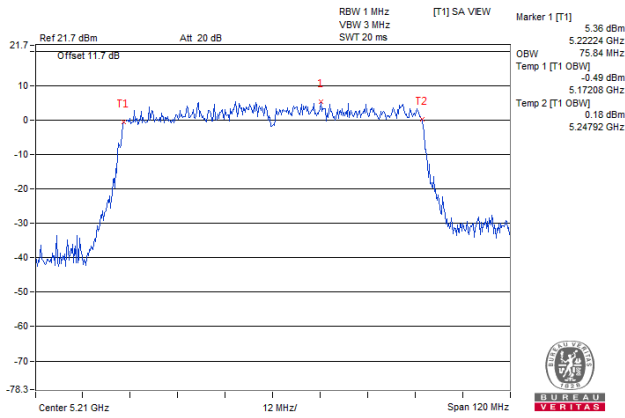


Ch 151 (5755 MHz)

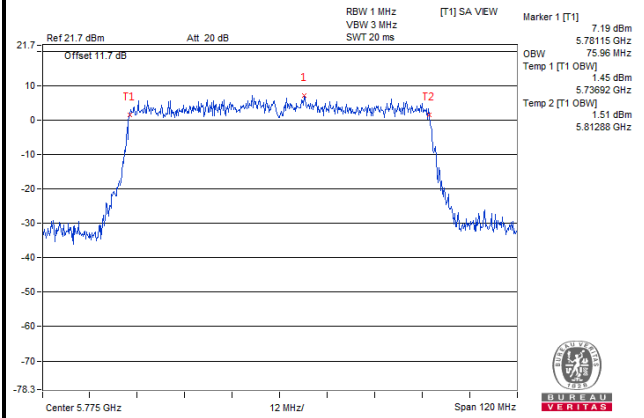


802.11ac (VHT80)

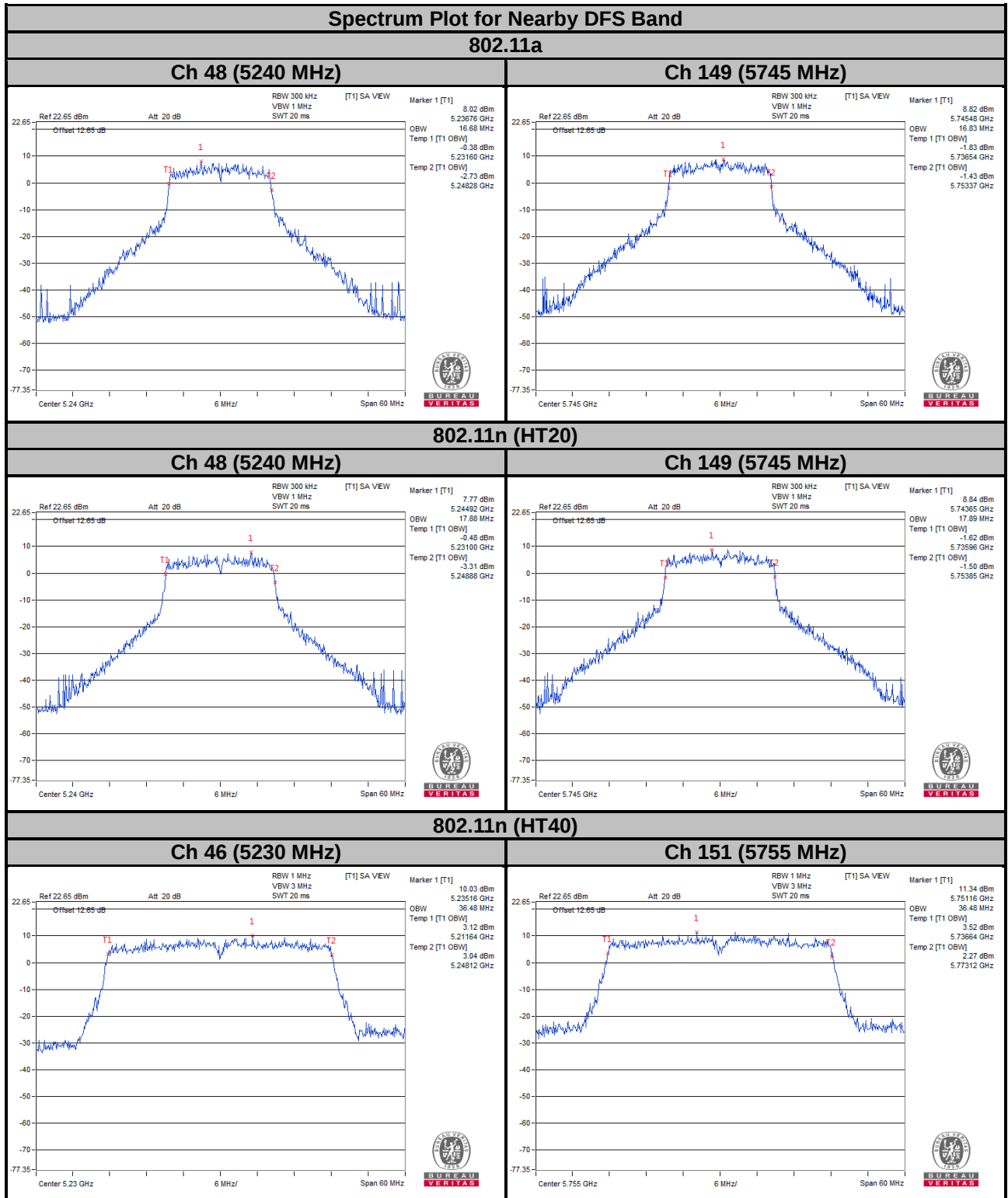
Ch 42 (5210 MHz)



Ch 155 (5775 MHz)

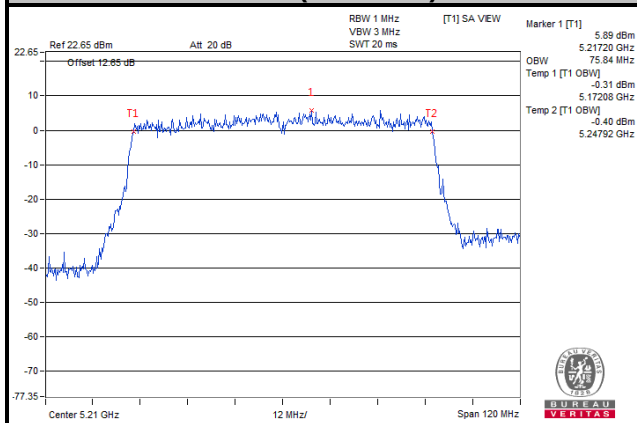


Chain 1

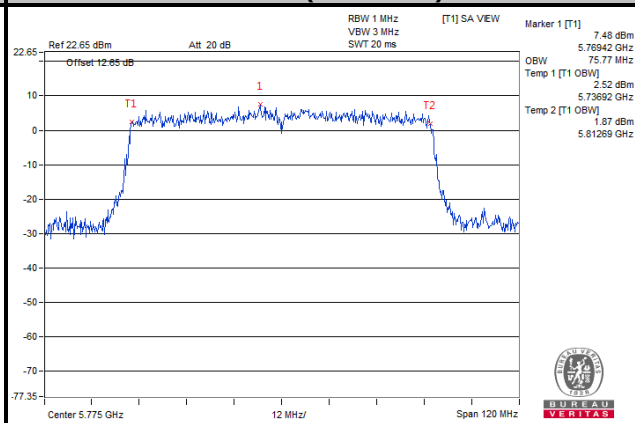


802.11ac (VHT80)

Ch 42 (5210 MHz)



Ch 155 (5775 MHz)

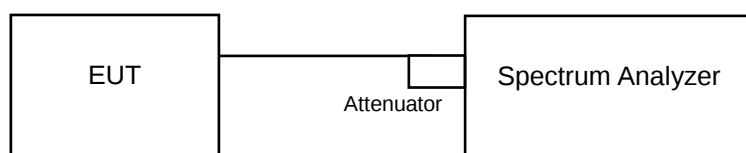


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 Test Procedures

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

Using method SA-2

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

※ For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 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 Band

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	3.72	3.55	0.25	6.90	8.81	Pass
40	5200	3.72	3.46	0.25	6.85	8.81	Pass
48	5240	3.66	3.28	0.25	6.73	8.81	Pass
52	5260	3.55	3.48	0.25	6.78	8.41	Pass
60	5300	3.65	3.57	0.25	6.87	8.41	Pass
64	5320	3.05	3.38	0.25	6.48	8.41	Pass
100	5500	4.09	3.98	0.25	7.30	9.45	Pass
116	5580	3.86	4.04	0.25	7.21	9.45	Pass
140	5700	3.93	4.24	0.25	7.35	9.45	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 Band:

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 8.19 \text{ dBi} > 6 \text{ dBi}$$
, so the power density limit shall be reduced to $11 - (8.19 - 6) = 8.81 \text{ dBm}$.
For U-NII-2A Band:

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 8.59 \text{ dBi} > 6 \text{ dBi}$$
, so the power density limit shall be reduced to $11 - (8.59 - 6) = 8.41 \text{ dBm}$.
For U-NII-2C Band:

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.55 \text{ dBi} > 6 \text{ dBi}$$
, so the power density limit shall be reduced to $11 - (7.55 - 6) = 9.45 \text{ dBm}$.
- 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	3.40	3.47	0.38	6.83	8.81	Pass
40	5200	3.44	3.57	0.38	6.90	8.81	Pass
48	5240	3.11	3.22	0.38	6.56	8.81	Pass
52	5260	3.33	3.63	0.38	6.87	8.41	Pass
60	5300	3.26	3.24	0.38	6.64	8.41	Pass
64	5320	3.10	3.30	0.38	6.59	8.41	Pass
100	5500	4.03	4.17	0.38	7.49	9.45	Pass
116	5580	3.78	3.74	0.38	7.15	9.45	Pass
140	5700	2.89	2.87	0.38	6.27	9.45	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 Band:**
 Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 8.19 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (8.19 - 6) = 8.81 \text{ dBm}$.
For U-NII-2A Band:
 Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 8.59 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (8.59 - 6) = 8.41 \text{ dBm}$.
For U-NII-2C Band:
 Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.55 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (7.55 - 6) = 9.45 \text{ dBm}$.
- 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	-1.04	-1.15	0.44	2.36	8.81	Pass
46	5230	-0.58	-0.60	0.44	2.86	8.81	Pass
54	5270	0.00	-0.08	0.44	3.41	8.41	Pass
62	5310	-4.24	-4.15	0.44	-0.74	8.41	Pass
102	5510	-1.86	-1.79	0.44	1.63	9.45	Pass
110	5550	0.93	0.97	0.44	4.40	9.45	Pass
134	5670	0.51	0.52	0.44	3.97	9.45	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 Band:**
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 8.19 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11-(8.19-6) = 8.81 \text{ dBm}$.
For U-NII-2A Band:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 8.59 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11-(8.59-6) = 8.41 \text{ dBm}$.
For U-NII-2C Band:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.55 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11-(7.55-6) = 9.45 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

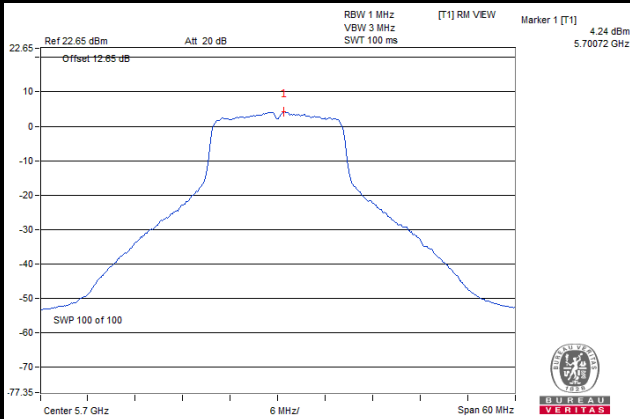
Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-4.88	-4.69	0.80	-0.97	8.81	Pass
58	5290	-9.15	-9.33	0.80	-5.43	8.41	Pass
106	5530	-5.49	-5.59	0.80	-1.73	9.45	Pass
122	5610	-3.29	-3.46	0.80	0.44	9.45	Pass

Note:

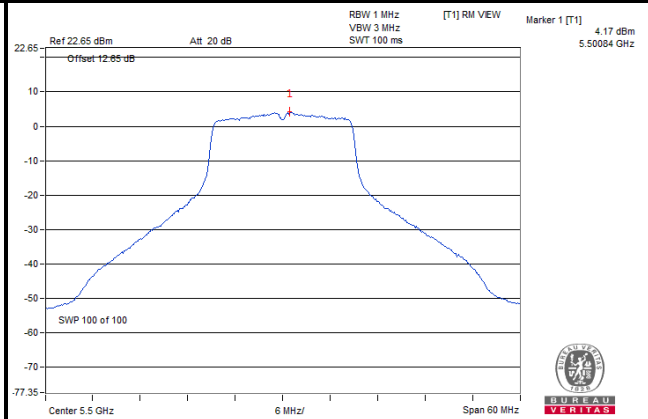
- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**
 Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 8.19 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (8.19 - 6) = 8.81 \text{ dBm}$.
For U-NII-2A Band:
 Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 8.59 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (8.59 - 6) = 8.41 \text{ dBm}$.
For U-NII-2C Band:
 Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.55 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $11 - (7.55 - 6) = 9.45 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

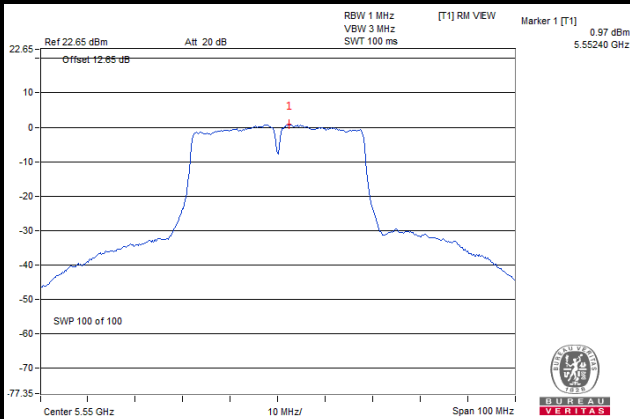
802.11a



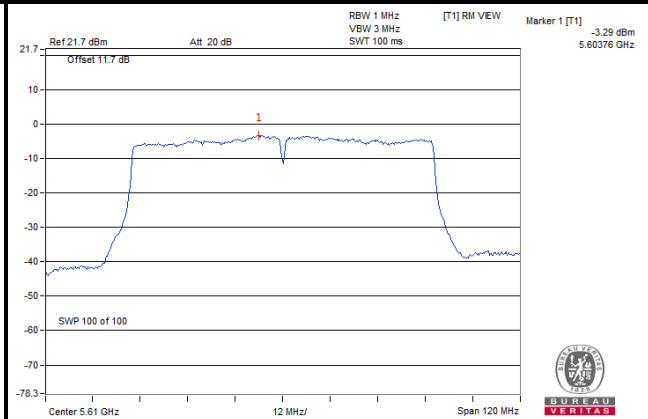
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



For U-NII-3 Band

802.11a

TX Chain	Channel	Frequency (MHz)	PSD w/o Duty Factor		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	149	5745	-3.37	-1.15	3.01	0.25	2.11	29.87	Pass
	157	5785	-3.54	-1.32	3.01	0.25	1.94	29.87	Pass
	165	5825	-3.88	-1.66	3.01	0.25	1.60	29.87	Pass
1	149	5745	-3.36	-1.14	3.01	0.25	2.12	29.87	Pass
	157	5785	-3.27	-1.05	3.01	0.25	2.21	29.87	Pass
	165	5825	-3.80	-1.58	3.01	0.25	1.68	29.87	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.13 > 6$ dBi, so the power density limit shall be reduced to $30 - (6.13 - 6) = 29.87$ 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	149	5745	-3.74	-1.52	3.01	0.38	1.87	29.87	Pass
	157	5785	-4.13	-1.91	3.01	0.38	1.48	29.87	Pass
	165	5825	-3.80	-1.58	3.01	0.38	1.81	29.87	Pass
1	149	5745	-3.91	-1.69	3.01	0.38	1.70	29.87	Pass
	157	5785	-4.14	-1.92	3.01	0.38	1.47	29.87	Pass
	165	5825	-3.67	-1.45	3.01	0.38	1.94	29.87	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.13 > 6$ dBi, so the power density limit shall be reduced to $30 - (6.13 - 6) = 29.87$ 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	151	5755	-7.92	-5.70	3.01	0.44	-2.25	29.87	Pass
	159	5795	-7.53	-5.31	3.01	0.44	-1.86	29.87	Pass
1	151	5755	-7.55	-5.33	3.01	0.44	-1.88	29.87	Pass
	159	5795	-7.34	-5.12	3.01	0.44	-1.67	29.87	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.13 > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (6.13 - 6) = 29.87 \text{ dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

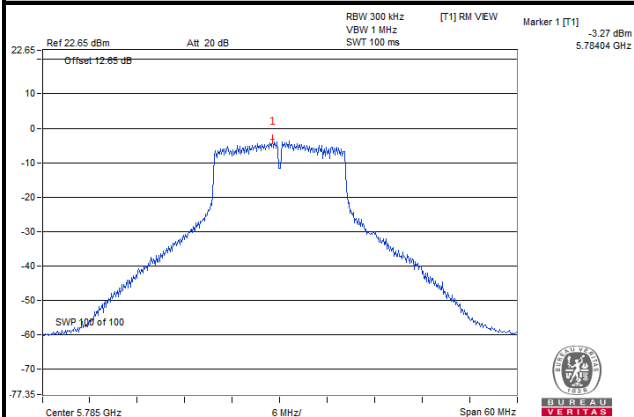
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	155	5775	-11.64	-9.42	3.01	0.80	-5.61	29.87	Pass
1	155	5775	-11.65	-9.43	3.01	0.80	-5.62	29.87	Pass

Note:

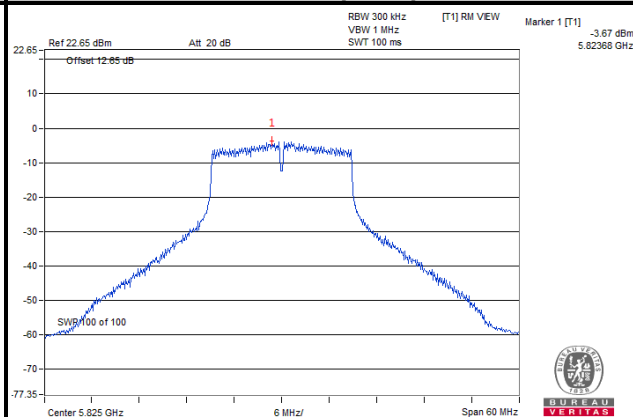
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 6.13 > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (6.13 - 6) = 29.87 \text{ dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

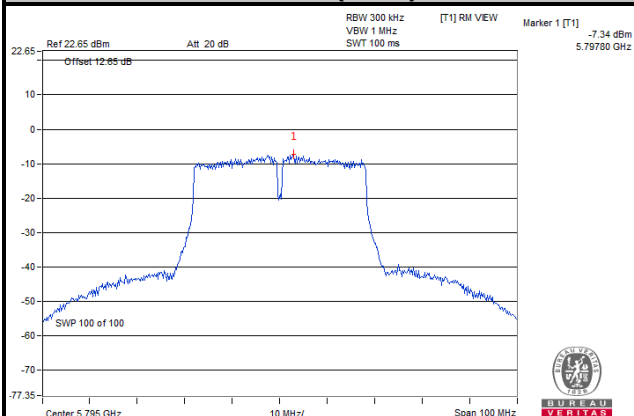
802.11a



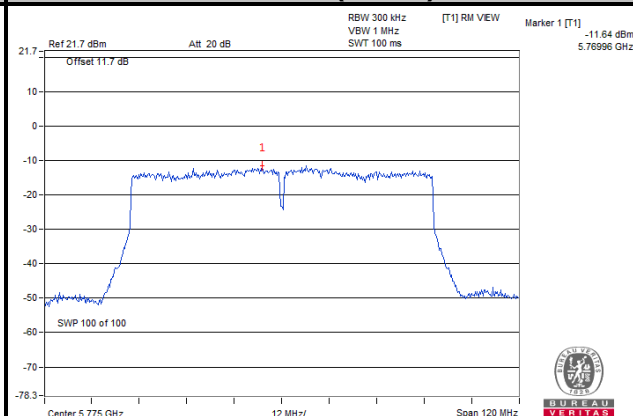
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

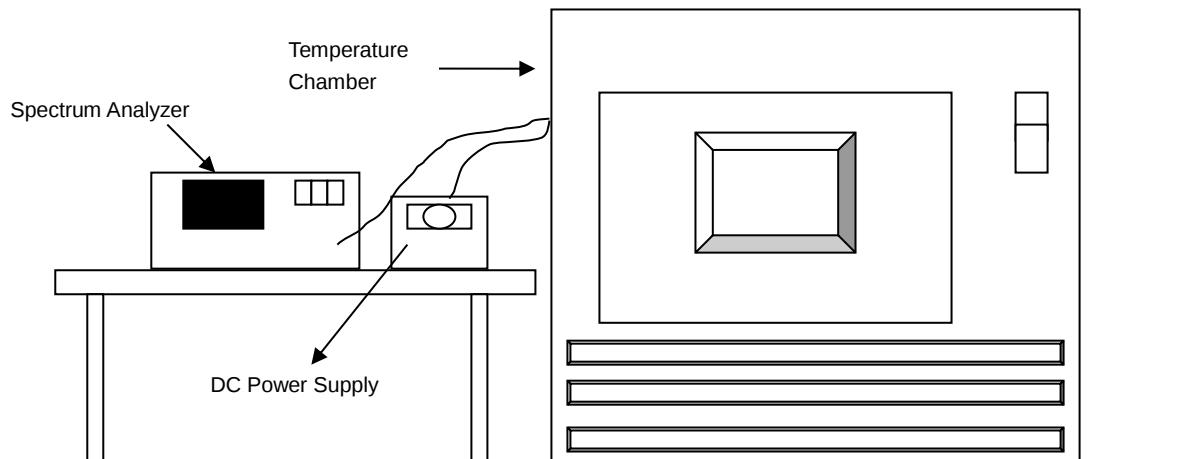


4.6 Frequency Stability

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 (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.
- 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 (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
60	12	5179.9919	PASS	5179.9949	PASS	5179.9923	PASS	5179.9951	PASS
50	12	5180.0195	PASS	5180.0166	PASS	5180.021	PASS	5180.0204	PASS
40	12	5179.9767	PASS	5179.9798	PASS	5179.979	PASS	5179.9776	PASS
30	12	5180.0128	PASS	5180.0141	PASS	5180.012	PASS	5180.0103	PASS
20	12	5180.0038	PASS	5180.0007	PASS	5180.0037	PASS	5180.0019	PASS
10	12	5179.9829	PASS	5179.9819	PASS	5179.9827	PASS	5179.9817	PASS
0	12	5179.98	PASS	5179.9832	PASS	5179.9843	PASS	5179.9808	PASS
-10	12	5180.0171	PASS	5180.0164	PASS	5180.0186	PASS	5180.0142	PASS
-20	12	5180.0173	PASS	5180.0172	PASS	5180.0163	PASS	5180.0161	PASS

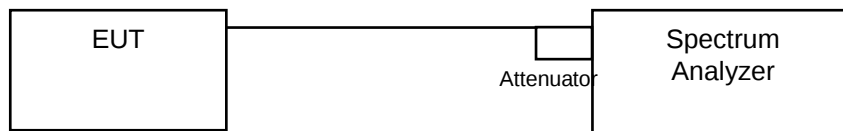
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	13.8	5180.004	PASS	5179.9999	PASS	5180.0032	PASS	5180.0009	PASS
	12	5180.0038	PASS	5180.0007	PASS	5180.0037	PASS	5180.0019	PASS
	10.2	5180.0034	PASS	5180.0007	PASS	5180.0045	PASS	5180.0018	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		
149	5745	15.59	15.68	0.5	Pass
157	5785	15.71	15.50	0.5	Pass
165	5825	15.69	15.20	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.49	16.58	0.5	Pass
157	5785	15.18	16.58	0.5	Pass
165	5825	15.20	16.69	0.5	Pass

802.11n (HT40)

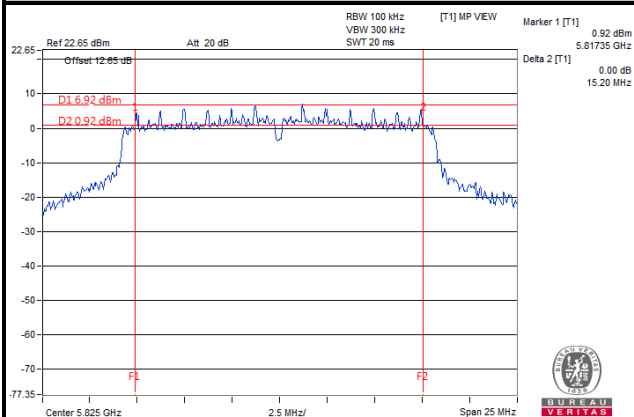
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.25	35.85	0.5	Pass
159	5795	35.78	36.31	0.5	Pass

802.11ac (VHT80)

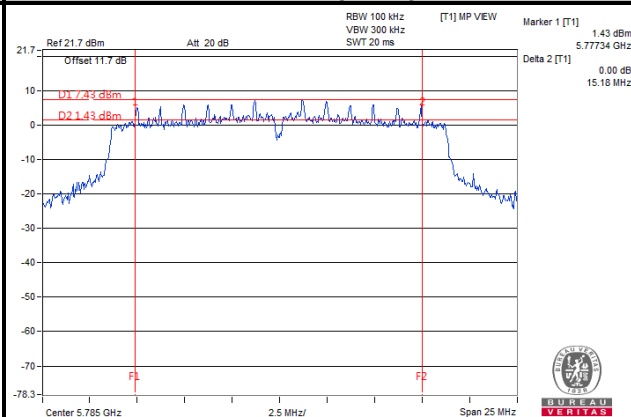
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.39	75.34	0.5	Pass

Spectrum Plot of Worst Value

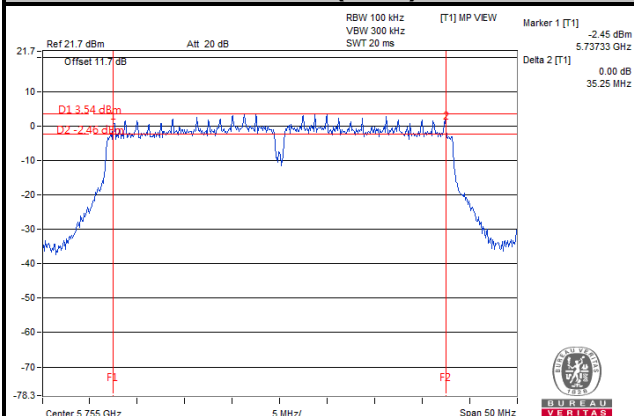
802.11a



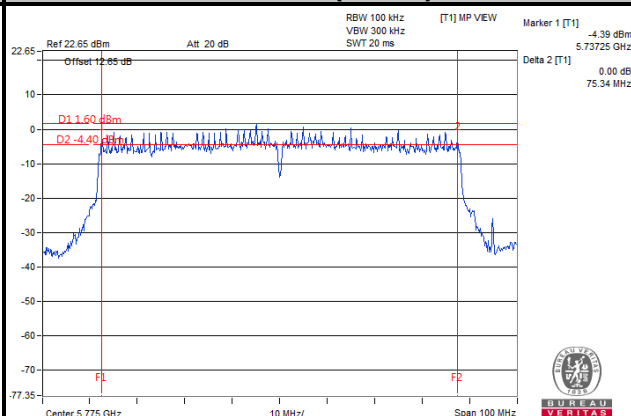
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

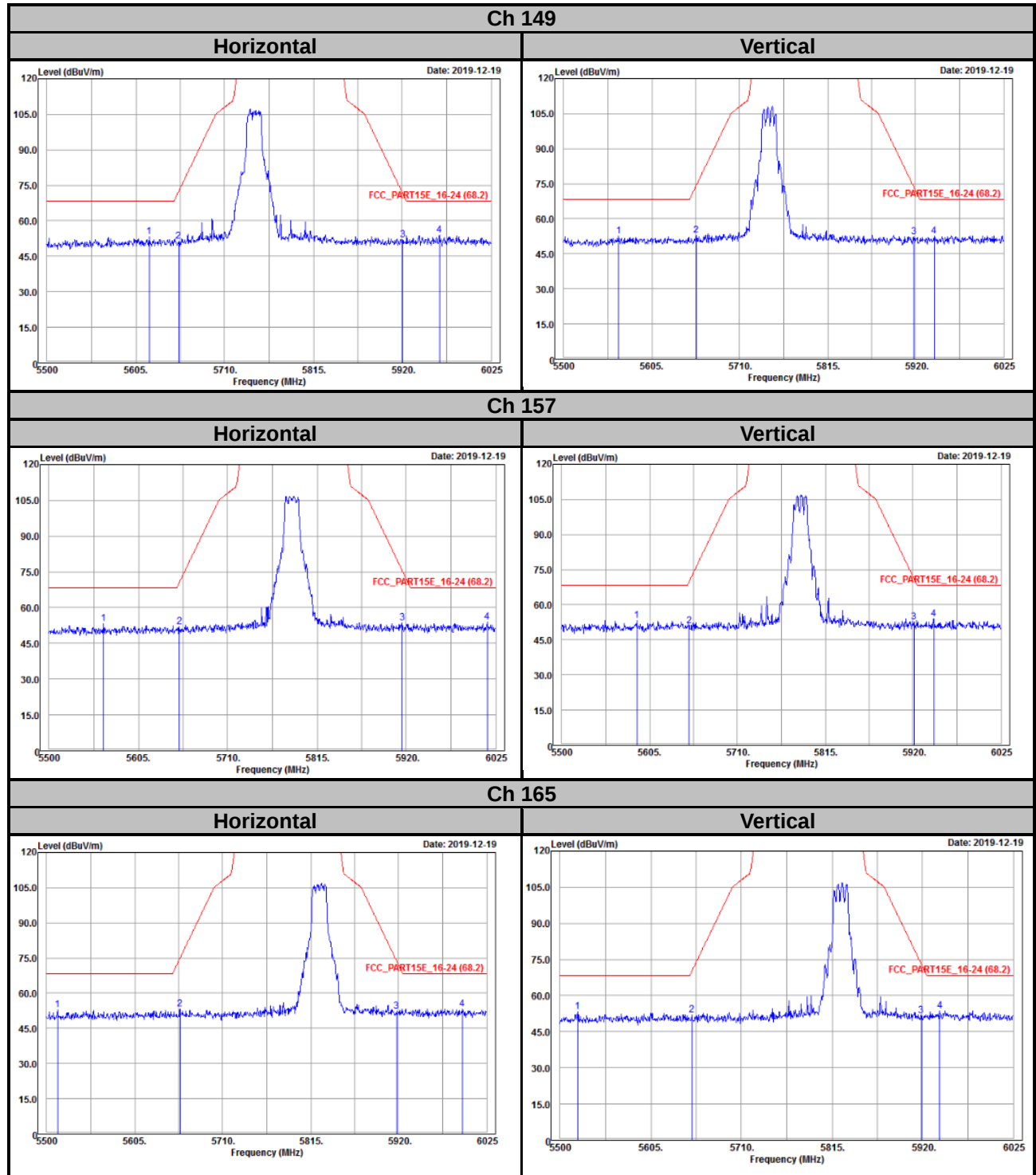


5 Pictures of Test Arrangements

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

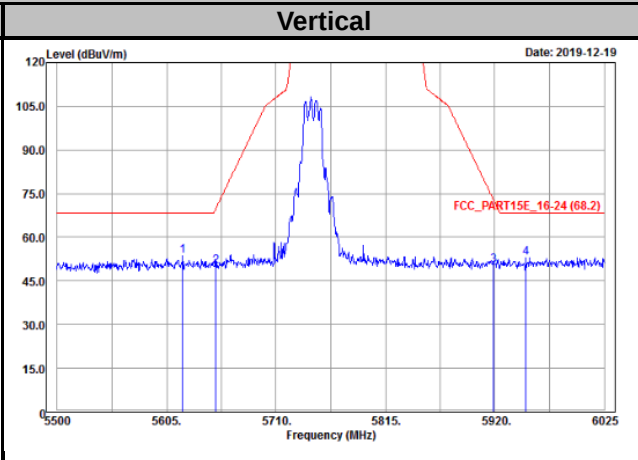
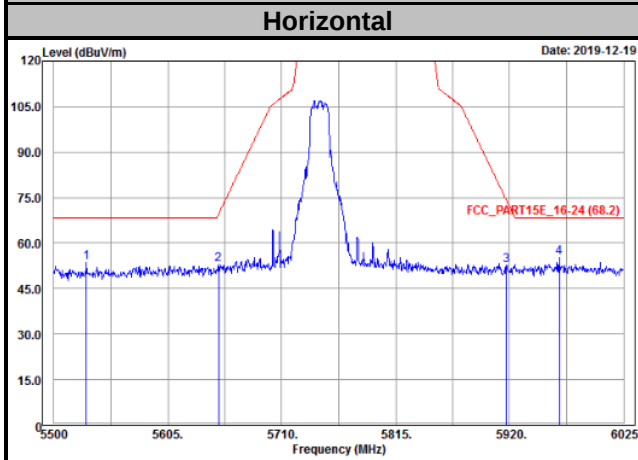
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

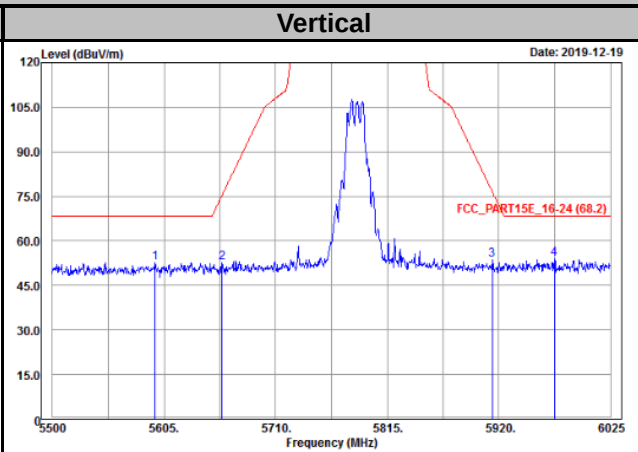
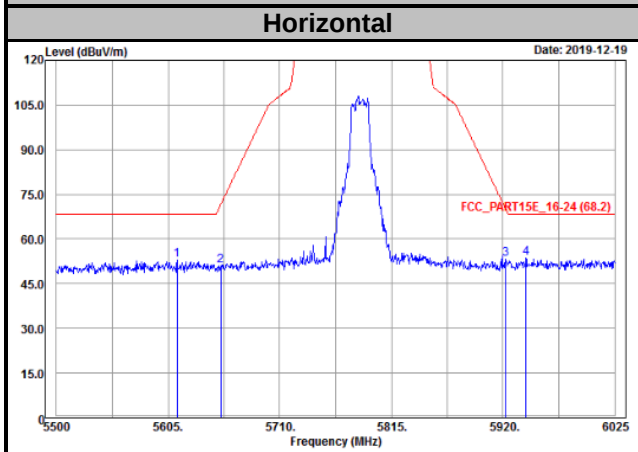


802.11n (HT20)

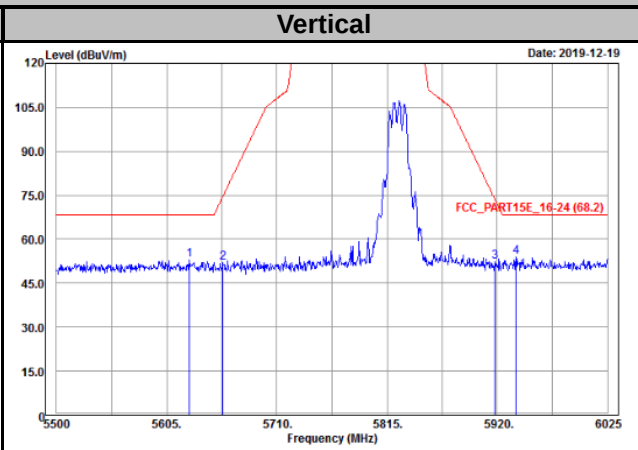
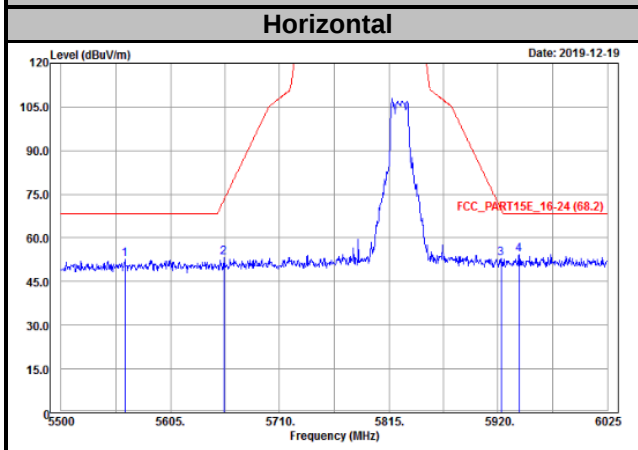
Ch 149



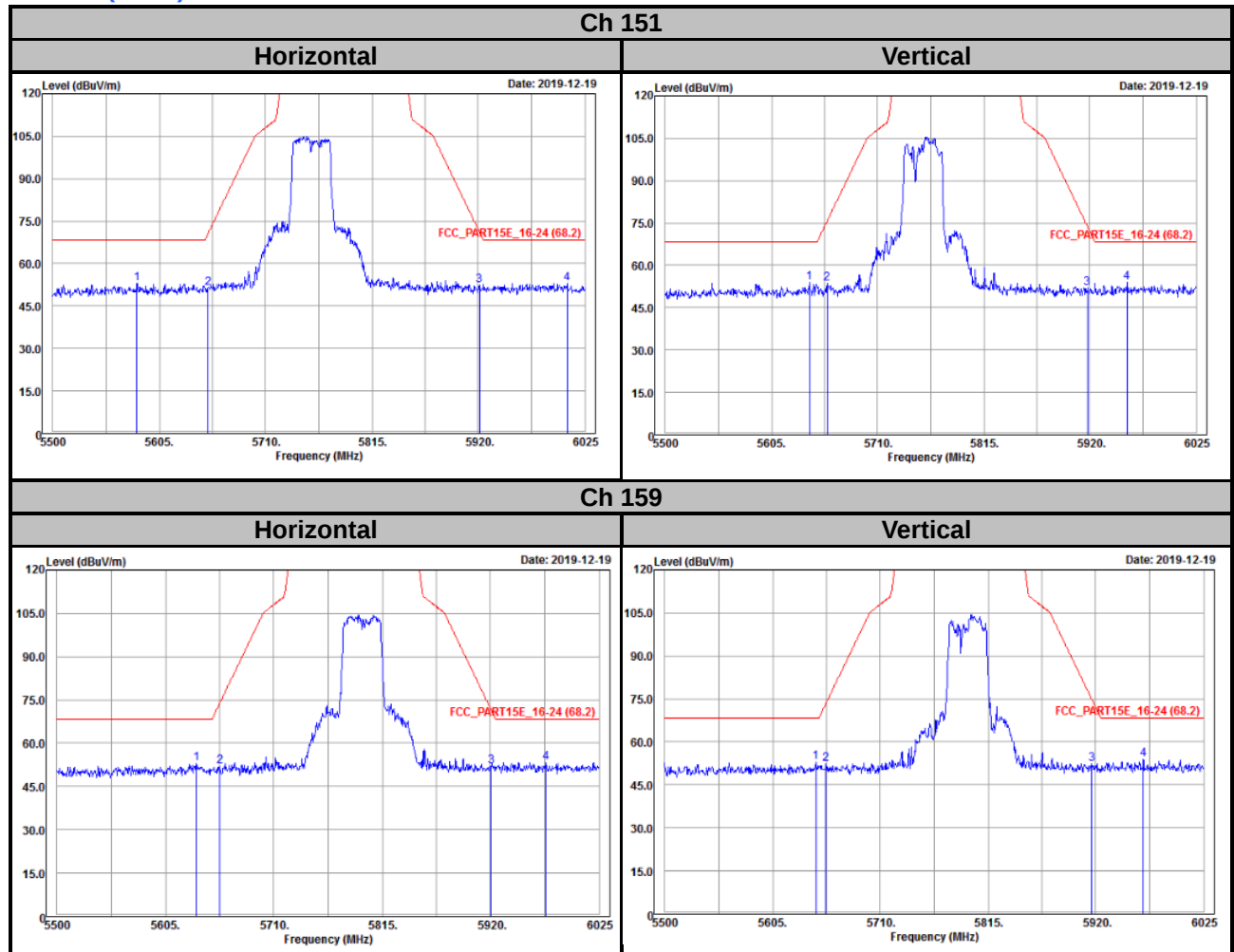
Ch 157



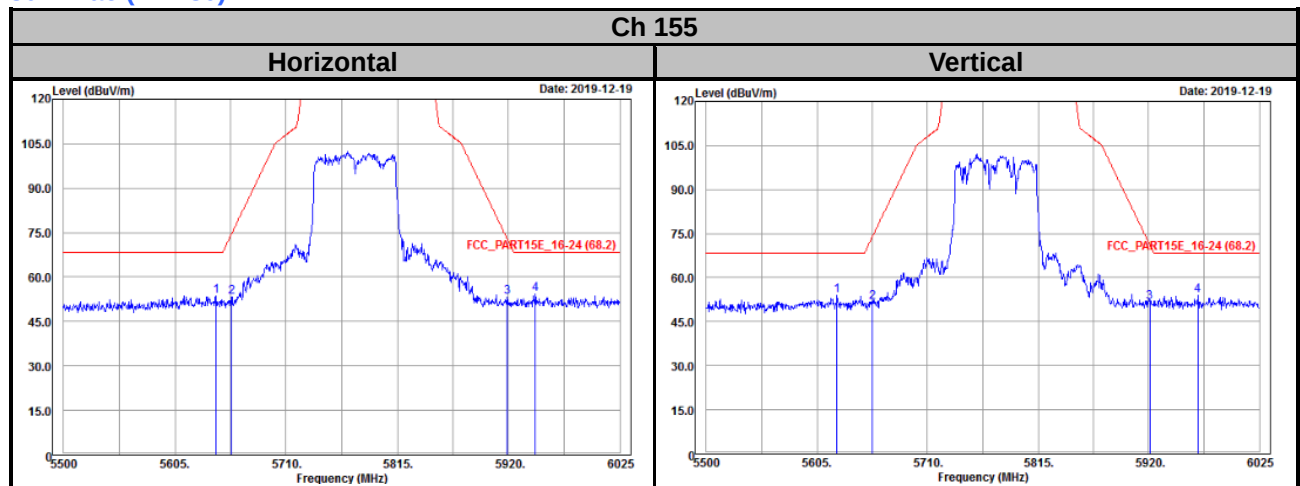
Ch 165



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:

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

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