

FCC Test Report

Report No.: RF171205C01-1

FCC ID: ASU-CLIW200

Test Model: CLI-W200WXXX, CLI-W200BXXX (XXX Can be 0-9, - or Blank.)
(Refer to item 3.1 for more details)

Received Date: Dec. 05, 2017

Test Date: Dec. 22, 2017 ~ Jan. 10, 2018

Issued Date: Jan. 10, 2018

Applicant: Savant Systems LLC

Address: 45 Perseverance Way, Hyannis MA 02601 USA

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

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

Test Location: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan
Hsien 333, Taiwan, R.O.C.

FCC Registration /
Designation Number: 788550 / TW0003



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Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results.....	6
2.1 Measurement Uncertainty.....	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes.....	9
3.2.1 Test Mode Applicability and Tested Channel Detail.....	11
3.3 Duty Cycle of Test Signal	13
3.4 Description of Support Units	14
3.4.1 Configuration of System under Test	14
3.5 General Description of Applied Standards.....	14
4 Test Types and Results	15
4.1 Radiated Emission and Bandedge Measurement	15
4.1.1 Limits of Radiated Emission and Bandedge Measurement	15
4.1.2 Limits of Unwanted Emission Out of the Restricted Bands	16
4.1.3 Test Instruments	17
4.1.4 Deviation from Test Standard	18
4.1.5 Test Set Up	19
4.1.6 EUT Operating Conditions.....	20
4.1.7 Test Results	21
4.2 Conducted Emission Measurement.....	55
4.2.1 Limits of Conducted Emission Measurement	55
4.2.2 Test Instruments	55
4.2.3 Test Procedures.....	56
4.2.4 Deviation from Test Standard	56
4.2.5 Test Setup.....	56
4.2.6 EUT Operating Conditions.....	56
4.2.7 Test Results	57
4.3 Transmit Power Measurement.....	59
4.3.1 Limits of Transmit Power Measurement	59
4.3.2 Test Setup.....	59
4.3.3 Test Instruments	60
4.3.4 Test Procedure	60
4.3.5 Deviation from Test Standard	60
4.3.6 EUT Operating Conditions.....	60
4.3.7 Test Result	61
4.4 Occupied Bandwidth Measurement.....	66
4.4.1 Test Setup.....	66
4.4.2 Test Instruments	66
4.4.3 Test Procedure	66
4.4.4 Test Results	67
4.5 Peak Power Spectral Density Measurement	69
4.5.1 Limits of Peak Power Spectral Density Measurement	69
4.5.2 Test Setup.....	69
4.5.3 Test Instruments	69
4.5.4 Test Procedures.....	69
4.5.5 Deviation from Test Standard	70
4.5.6 EUT Operating Conditions.....	70
4.5.7 Test Results	71
4.6 Frequency Stability	75
4.6.1 Limit of Frequency Stability Measurement	75

4.6.2	Test Setup	75
4.6.3	Test Instruments	75
4.6.4	Test Procedure	75
4.6.5	Deviation from Test Standard	75
4.6.6	EUT Operating Condition	75
4.6.7	Test Results	76
4.7	6 dB Bandwidth Measurement.....	77
4.7.1	Limits of 6 dB Bandwidth Measurement.....	77
4.7.2	Test Setup.....	77
4.7.3	Test Instruments	77
4.7.4	Test Procedure	77
4.7.5	Deviation from Test Standard	77
4.7.6	EUT Operating Condition	77
4.7.7	Test Results	78
5	Pictures of Test Arrangements.....	80
	Annex A- Radiated Out of Band Emisison (OOBE) Measurement (For U-NII-3 band)	81
	Appendix – Information on the Testing Laboratories	84

Release Control Record

Issue No.	Description	Date Issued
RF171205C01-1	Original Release	Jan. 10, 2018

1 Certificate of Conformity

Product: Savant WiFi Thermostat With Touchscreen

Brand: SAVANT

Test Model: CLI-W200WXXX, CLI-W200BXXX (XXX Can be 0-9, - or Blank.)
(Refer to item 3.1 for more details)

Sample Status: Identical Prototype

Applicant: Savant Systems LLC

Test Date: Dec. 22, 2017 ~ Jan. 10, 2018

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

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

Prepared by : Gina Liu, **Date:** Jan. 10, 2018
Gina Liu / Specialist

Approved by : Dylan Chiou, **Date:** Jan. 10, 2018
Dylan Chiou / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -5.95 dB at 18.68340 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 -0.76 dB at 5150 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	No antenna connector is used.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Savant WiFi Thermostat With Touchscreen
Brand	SAVANT
Test Model	CLI-W200WXXX, CLI-W200BXXX (XXX Can be 0-9, - or Blank.)
Status of EUT	Identical Prototype
Power Supply Rating	24 Vac (adapter)
Modulation Type	64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to MCS7
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) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 5500 ~ 5700 MHz: 11 for 802.11a, 802.11n (HT20) 5 for 802.11n (HT40) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)
Output Power	69.984 mW for 5180 ~ 5240 MHz 69.183 mW for 5260 ~ 5320 MHz 68.077 mW for 5500 ~ 5700 MHz 66.834 mW for 5745 ~ 5825 MHz
Antenna Type	PIFA antenna with 2.34 dBi gain (5180 ~ 5240 MHz) PIFA antenna with 2.34 dBi gain (5260 ~ 5320 MHz) PIFA antenna with 2.48 dBi gain (5500 ~ 5700 MHz) PIFA antenna with 2.57 dBi gain (5745 ~ 5825 MHz)
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. The EUT provides one completed transmitter and one receiver.

Modulation Mode	Tx Function
802.11a	1TX
802.11n (HT20)	1TX
802.11n (HT40)	1TX
802.11ac (VHT20)	1TX
802.11ac (VHT40)	1TX

* 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. All models are listed as below.

Brand	Model	Difference
SAVANT	CLI-W200WXXX	SAVANT WI-FI THERMOSTAT WITH TOUCHSCREEN - WHITE
	CLI-W200BXXX	SAVANT WI-FI THERMOSTAT WITH TOUCHSCREEN - BLACK

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	TDC power	DA-60-24	I/P: 120 VA, 60 Hz, 70 VA O/P: 24 VAC, 2.5 A, 60 VA 1.85m/ 0 core
BT/WLAN Module	Qualcomm Atheros	QCA6234	

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

3.2 Description of Test Modes

For 5180 ~ 5240 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

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

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		

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

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 **Y-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, 44, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 44, 48	OFDM	BPSK	MCS0
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	MCS0
-	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	MCS0
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	MCS0
-	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	MCS0
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	MCS0
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	MCS0

Radiated Emission Test (Below 1 GHz):

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11n (HT40)	38 to 46	38	OFDM	BPSK	MCS0

Power Line Conducted Emission Test:

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11n (HT40)	38 to 46	38	OFDM	BPSK	MCS0

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36, 44, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 44, 48	OFDM	BPSK	MCS0
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	MCS0
-	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	MCS0
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	MCS0
-	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	MCS0
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	MCS0
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang, Jisyong Wang
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Carlos Chen

3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

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

802.11n (HT20): Duty cycle of test signal is > 98 %, duty factor is not required.

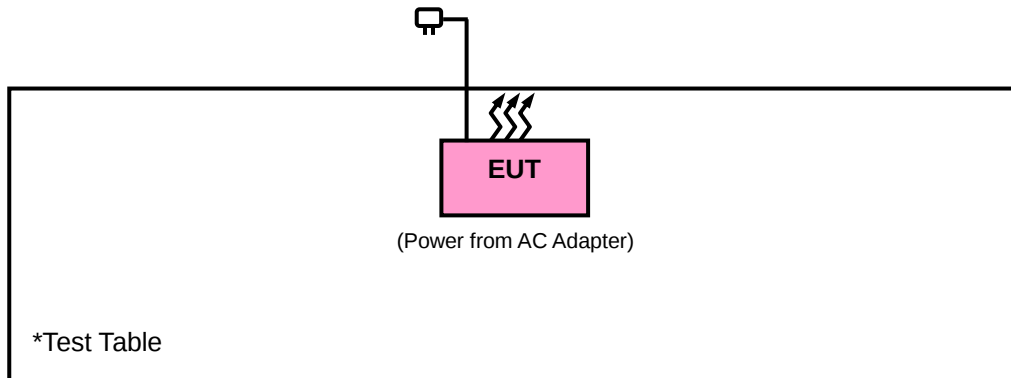
802.11n (HT40): Duty cycle = $0.942/0.978 = 0.963$, Duty factor = $10 * \log(1/0.963) = 0.16$



3.4 Description of Support Units

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart E (15.407)

789033 D02 General UNII Test Procedures New Rules v02r01

ANSI C63.10-2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Limits of Unwanted Emission Out of the Restricted Bands

Applicable To		Limit	
789033 D02 General UNII Test Procedures New Rules 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	N9038A	MY51210203	Feb. 17, 2017	Feb. 16, 2018
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Nov. 23, 2017	Nov. 22, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 06, 2017	Dec. 05, 2018
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 01, 2017	Nov. 30, 2018
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 17, 2017	Apr. 16, 2018
Loop Antenna	HLA 6121	45745	May 19, 2017	May 18, 2018
Preamplifier EMCI	EMC001340	980201	Nov. 01, 2017	Oct. 30, 2018
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
Power Meter Anritsu	ML2495A	1012010	Aug. 15, 2017	Aug. 14, 2018
Power Sensor Anritsu	MA2411B	1315050	Aug. 15, 2017	Aug. 14, 2018
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-800 0&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1 000(140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Attenuator Woken	MDCS18N-10	MDCS18N-10-02	Apr. 17, 2017	Apr. 16, 2018

- Note:
1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 10.
 3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
 4. The IC Site Registration No. is IC7450F-10.

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

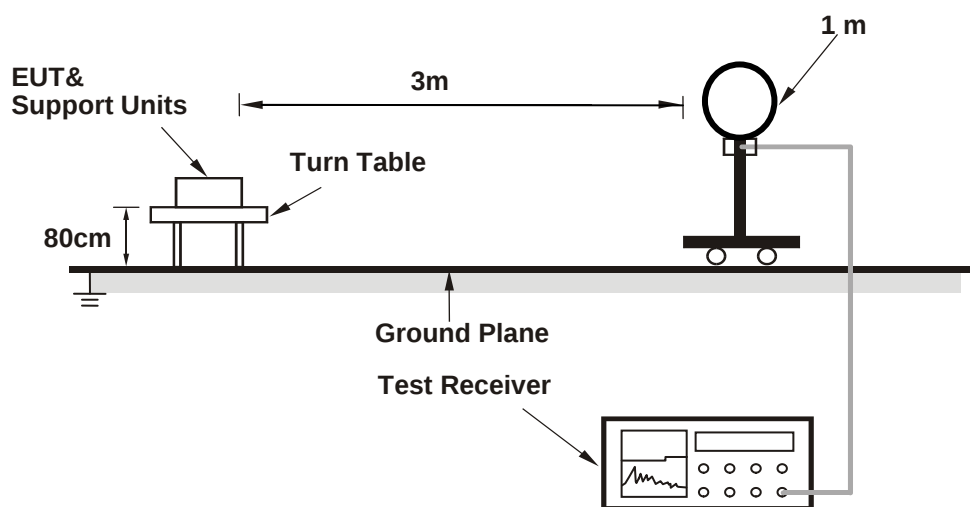
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency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

4.1.4 Deviation from Test Standard

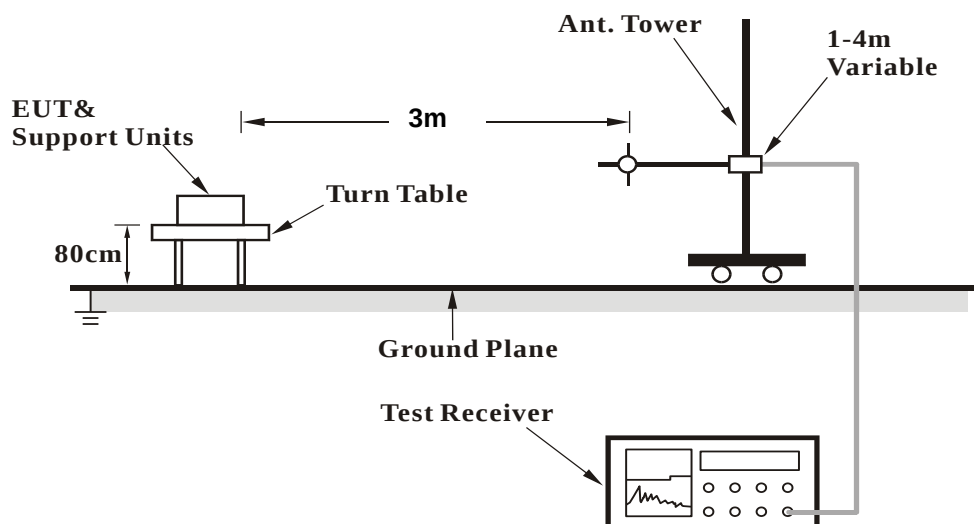
No deviation.

4.1.5 Test Set Up

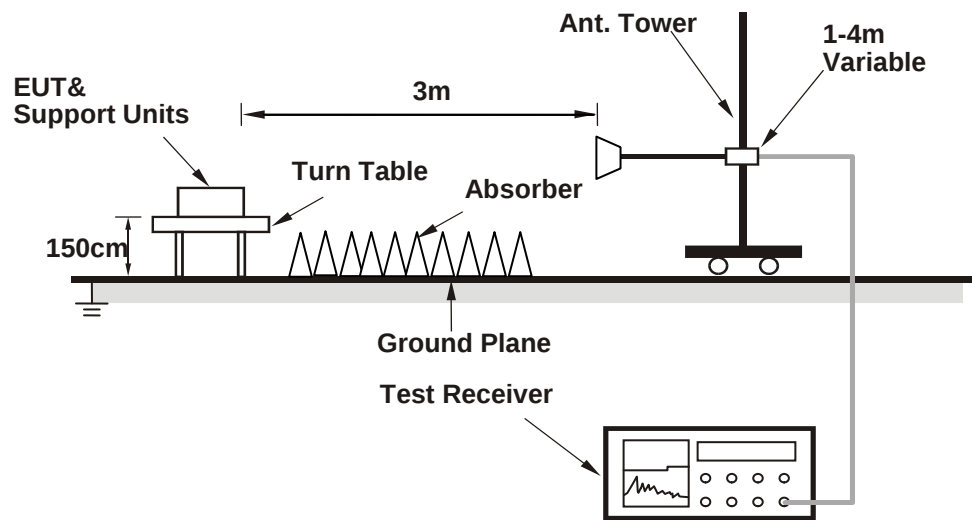
<Radiated emission below 30 MHz>



<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



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

4.1.6 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.

4.1.7 Test Results

Above 1 GHz Data :

802.11a

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.94	48.05	47.47	54	-5.95	31.56	6.34	37.32	221	331	Average
5149.94	62.46	61.88	74	-11.54	31.56	6.34	37.32	221	331	Peak
5180	93.81	93.19			31.59	6.37	37.34	221	331	Average
5180	103.06	102.44			31.59	6.37	37.34	221	331	Peak
*10360	51.99	54.75	68.2	-16.21	39.48	10.21	52.45	251	452	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.94	43.82	43.24	54	-10.18	31.56	6.34	37.32	216	280	Average
5149.94	57.72	57.14	74	-16.28	31.56	6.34	37.32	216	280	Peak
5180	90.21	89.59			31.59	6.37	37.34	216	280	Average
5180	99.07	98.45			31.59	6.37	37.34	216	280	Peak
*10360	55.16	57.92	68.2	-13.04	39.48	10.21	52.45	102	251	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5117.36	39.02	38.51	54	-14.98	31.51	6.27	37.27	209	334	Average
5117.36	50.56	49.99	74	-23.44	31.54	6.31	37.28	209	334	Peak
5220	95.22	94.57			31.61	6.4	37.36	209	334	Average
5220	104.65	104			31.61	6.4	37.36	209	334	Peak
5407.97	40.48	39.44	54	-13.52	31.74	6.48	37.18	209	334	Average
5407.97	52.5	51.49	74	-21.5	31.72	6.47	37.18	209	334	Peak
*10440	53.15	55.89	68.2	-15.05	39.51	10.2	52.45	222	274	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5136.98	38.51	37.93	54	-15.49	31.55	6.33	37.3	226	281	Average
5136.98	51.21	50.71	74	-22.79	31.51	6.26	37.27	226	281	Peak
5220	89.48	88.83			31.61	6.4	37.36	226	281	Average
5220	98.24	97.59			31.61	6.4	37.36	226	281	Peak
5407.97	39.7	38.66	54	-14.3	31.74	6.48	37.18	226	281	Average
5407.97	51.33	50.32	74	-22.67	31.72	6.47	37.18	226	281	Peak
*10440	53.29	56.03	68.2	-14.91	39.51	10.2	52.45	325	265	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5114.3	39.19	38.65	54	-14.81	31.53	6.29	37.28	223	328	Average
5114.3	50.37	49.81	74	-23.63	31.54	6.3	37.28	223	328	Peak
5240	95.02	94.3			31.62	6.42	37.32	223	328	Average
5240	104.13	103.41			31.62	6.42	37.32	223	328	Peak
5407.97	41.05	40.01	54	-12.95	31.74	6.48	37.18	223	328	Average
5407.97	51.55	50.52	74	-22.45	31.74	6.47	37.18	223	328	Peak
*10480	54.02	56.86	68.2	-14.18	39.6	10.22	52.66	235	185	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5108.54	38.53	38.05	54	-15.47	31.49	6.24	37.25	224	280	Average
5108.54	50.42	49.86	74	-23.58	31.54	6.3	37.28	224	280	Peak
5240	91.22	90.5			31.62	6.42	37.32	224	280	Average
5240	100.46	99.74			31.62	6.42	37.32	224	280	Peak
5437.56	39.94	38.9	54	-14.06	31.74	6.48	37.18	224	280	Average
5437.56	52.1	50.97	74	-21.9	31.76	6.5	37.13	224	280	Peak
*10480	52.68	55.52	68.2	-15.52	39.6	10.22	52.66	222	256	Peak

Remarks:

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

EUT Test Condition		Measurement Detail	
Channel	Channel 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5109.2	40.26	39.7	54	-13.74	31.54	6.3	37.28	205	350	Average
5109.2	50.59	50.03	74	-23.41	31.54	6.3	37.28	205	350	Peak
5260	95.33	94.52			31.65	6.43	37.27	205	350	Average
5260	103.54	102.73			31.65	6.43	37.27	205	350	Peak
5389.27	40.84	39.82	54	-13.16	31.73	6.47	37.18	205	350	Average
5389.27	51.88	50.86	74	-22.12	31.73	6.47	37.18	205	350	Peak
*10520	51.68	54.48	68.2	-16.52	39.66	10.27	52.73	102	254	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5051.15	39.36	38.87	54	-14.64	31.49	6.25	37.25	103	96	Average
5051.15	51.28	50.79	74	-22.72	31.49	6.25	37.25	103	96	Peak
5260	88.06	87.25			31.65	6.43	37.27	103	96	Average
5260	95.42	94.61			31.65	6.43	37.27	103	96	Peak
5438.44	39.78	38.65	54	-14.22	31.76	6.5	37.13	103	96	Average
5438.44	52.52	51.39	74	-21.48	31.76	6.5	37.13	103	96	Peak
*10520	51.46	54.26	68.2	-16.74	39.66	10.27	52.73	111	125	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5056.25	40.42	39.9	54	-13.58	31.51	6.26	37.25	222	334	Average
5056.25	51.55	51.03	74	-22.45	31.51	6.26	37.25	222	334	Peak
5300	94.99	94.05			31.67	6.46	37.19	222	334	Average
5300	103.78	102.84			31.67	6.46	37.19	222	334	Peak
5397.52	40.62	39.59	54	-13.38	31.74	6.47	37.18	222	334	Average
5397.52	51.4	50.37	74	-22.6	31.74	6.47	37.18	222	334	Peak
10600	44.03	46.86	54	-9.97	39.85	10.43	53.11	251	185	Average
10600	52.26	55.09	74	-21.74	39.85	10.43	53.11	251	185	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5138.6	39.32	38.74	54	-14.68	31.55	6.33	37.3	103	101	Average
5138.6	51.19	50.61	74	-22.81	31.55	6.33	37.3	103	101	Peak
5300	89.65	88.71			31.67	6.46	37.19	103	101	Average
5300	95.7	94.76			31.67	6.46	37.19	103	101	Peak
5455.16	39.86	38.66	54	-14.14	31.77	6.51	37.08	103	101	Average
5455.16	51.26	50.06	74	-22.74	31.77	6.51	37.08	103	101	Peak
10600	41.7	44.53	54	-12.3	39.85	10.43	53.11	252	325	Average
10600	52.14	54.97	74	-21.86	39.85	10.43	53.11	252	325	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	94.11	93.16			31.68	6.46	37.19	232	338	Average
5320	103.77	102.82			31.68	6.46	37.19	232	338	Peak
5350.11	42.96	41.97	54	-11.04	31.7	6.47	37.18	232	338	Average
5350.11	54.24	53.25	74	-19.76	31.7	6.47	37.18	232	338	Peak
10640	43.08	45.86	54	-10.92	39.93	10.36	53.07	166	258	Average
10640	51.62	54.4	74	-22.38	39.93	10.36	53.07	166	258	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	87	86.05			31.68	6.46	37.19	109	95	Average
5320	95.1	94.15			31.68	6.46	37.19	109	95	Peak
5350.99	40.09	39.1	54	-13.91	31.7	6.47	37.18	109	95	Average
5350.99	51.99	51	74	-22.01	31.7	6.47	37.18	109	95	Peak
10640	42.08	44.86	54	-11.92	39.93	10.36	53.07	222	285	Average
10640	51.2	53.98	74	-22.8	39.93	10.36	53.07	222	285	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.28	45.49	44.29	54	-8.51	31.77	6.51	37.08	197	175	Average
5459.28	62.03	60.83	74	-11.97	31.77	6.51	37.08	197	175	Peak
*5468.4	67.86	66.63	68.2	-0.34	31.79	6.52	37.08	197	175	Peak
5500	98.32	97			31.81	6.54	37.03	197	175	Average
5500	105.42	104.1			31.81	6.54	37.03	197	175	Peak
*5725.48	50.7	49.19	68.2	-17.5	32.18	6.76	37.43	197	175	Peak
11000	43.62	45.52	54	-10.38	40.73	10.4	53.03	201	251	Average
11000	53.04	54.94	74	-20.96	40.73	10.4	53.03	201	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.92	42.72	41.52	54	-11.28	31.77	6.51	37.08	126	200	Average
5459.92	59.44	58.24	74	-14.56	31.77	6.51	37.08	126	200	Peak
*5469.52	65.9	64.67	68.2	-2.3	31.79	6.52	37.08	126	200	Peak
5500	94.01	92.69			31.81	6.54	37.03	126	200	Average
5500	102.55	101.23			31.81	6.54	37.03	126	200	Peak
*5726.44	50.91	49.4	68.2	-17.29	32.18	6.76	37.43	126	200	Peak
11000	42.96	44.86	54	-11.04	40.73	10.4	53.03	325	265	Average
11000	52.36	54.26	74	-21.64	40.73	10.4	53.03	325	265	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5411.28	40.04	39	54	-13.96	31.74	6.48	37.18	169	176	Average
5411.28	50.77	49.73	74	-23.23	31.74	6.48	37.18	169	176	Peak
*5465.2	50.05	48.82	68.2	-18.15	31.79	6.52	37.08	169	176	Peak
5580	97.54	96.13			31.92	6.65	37.16	169	176	Average
5580	105.24	103.83			31.92	6.65	37.16	169	176	Peak
*5727.16	50.8	49.29	68.2	-17.4	32.18	6.76	37.43	169	176	Peak
11160	42.43	44.13	54	-11.57	40.56	10.52	52.78	325	124	Average
11160	52.41	54.11	74	-21.59	40.56	10.52	52.78	325	124	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5449.04	39.6	38.46	54	-14.4	31.77	6.5	37.13	150	201	Average
5449.04	51.51	50.37	74	-22.49	31.77	6.5	37.13	150	201	Peak
*5467.6	50.83	49.6	68.2	-17.37	31.79	6.52	37.08	150	201	Peak
5580	92.83	91.42			31.92	6.65	37.16	150	201	Average
5580	102.49	101.08			31.92	6.65	37.16	150	201	Peak
*5728.6	50.86	49.35	68.2	-17.34	32.18	6.76	37.43	150	201	Peak
11160	42.32	44.02	54	-11.68	40.56	10.52	52.78	222	214	Average
11160	52.29	53.99	74	-21.71	40.56	10.52	52.78	222	214	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5407.76	39.6	38.56	54	-14.4	31.74	6.48	37.18	190	203	Average
5407.76	50.92	49.88	74	-23.08	31.74	6.48	37.18	190	203	Peak
*5460.56	50.03	48.83	68.2	-18.17	31.77	6.51	37.08	190	203	Peak
5700	94.71	93.26			32.12	6.73	37.4	190	203	Average
5700	102.91	101.46			32.12	6.73	37.4	190	203	Peak
*5727.56	67.16	65.65	68.2	-1.04	32.18	6.76	37.43	190	203	Peak
11400	42.63	44.53	54	-11.37	40.33	10.47	52.7	111	155	Average
11400	52.16	54.06	74	-21.84	40.33	10.47	52.7	111	155	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5368.4	38.84	37.83	54	-15.16	31.72	6.47	37.18	130	156	Average
5368.4	51.55	50.54	74	-22.45	31.72	6.47	37.18	130	156	Peak
*5468.88	51.06	49.83	68.2	-17.14	31.79	6.52	37.08	130	156	Peak
5700	90.71	89.26			32.12	6.73	37.4	130	156	Average
5700	99.05	97.6			32.12	6.73	37.4	130	156	Peak
*5727.64	66.4	64.89	68.2	-1.8	32.18	6.76	37.43	130	156	Peak
11400	42.12	44.02	54	-11.88	40.33	10.47	52.7	111	154	Average
11400	52.09	53.99	74	-21.91	40.33	10.47	52.7	111	154	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	97.87	96.35			32.21	6.78	37.47	185	35	Average
5745	107.14	105.62			32.21	6.78	37.47	185	35	Peak
11490	46.88	48.75	54	-7.12	40.25	10.66	52.78	116	78	Average
11490	55.05	56.92	74	-18.95	40.25	10.66	52.78	116	78	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	94.08	92.56			32.21	6.78	37.47	205	69	Average
5745	103.33	101.81			32.21	6.78	37.47	205	69	Peak
11490	45.88	47.75	54	-8.12	40.25	10.66	52.78	130	115	Average
11490	54.92	56.79	74	-19.08	40.25	10.66	52.78	130	115	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5564.25	51.02	49.62	68.2	-17.18	31.89	6.63	37.12	185	35	Peak
5651.65	50.14	48.65	69.43	-19.29	32.06	6.71	37.28	185	35	Peak
5923.35	50.06	48.18	69.42	-19.36	32.52	6.86	37.5	185	35	Peak
6006.95	52.58	50.53	68.2	-15.62	32.67	6.89	37.51	185	35	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5627.9	51.13	49.65	68.2	-17.07	32.01	6.69	37.22	205	69	Peak
5652.6	49.45	47.96	70.13	-20.68	32.06	6.71	37.28	205	69	Peak
5923.825	49.9	48.02	69.07	-19.17	32.52	6.86	37.5	205	69	Peak
5933.8	52.13	50.25	68.2	-16.07	32.52	6.86	37.5	205	69	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	98.7	97.16			32.26	6.82	37.54	182	35	Average
5785	108.38	106.84			32.26	6.82	37.54	182	35	Peak
11570	46.84	48.96	54	-7.16	40.13	10.76	53.01	118	77	Average
11570	56.16	58.28	74	-17.84	40.13	10.76	53.01	118	77	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	94.97	93.43			32.26	6.82	37.54	202	72	Average
5785	103.57	102.03			32.26	6.82	37.54	202	72	Peak
11570	45.02	47.14	54	-8.98	40.13	10.76	53.01	133	119	Average
11570	55.65	57.77	74	-18.35	40.13	10.76	53.01	133	119	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5564.725	51.67	50.24	68.2	-16.53	31.92	6.63	37.12	182	35	Peak
5652.6	49.94	48.45	70.13	-20.19	32.06	6.71	37.28	182	35	Peak
5922.875	51.74	49.86	69.77	-18.03	32.52	6.86	37.5	182	35	Peak
6013.6	51.54	49.47	68.2	-16.66	32.67	6.9	37.5	182	35	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5608.9	51.5	50.06	68.2	-16.7	31.98	6.68	37.22	202	72	Peak
5651.65	50.13	48.64	69.43	-19.3	32.06	6.71	37.28	202	72	Peak
5922.4	48.62	46.74	70.12	-21.5	32.52	6.86	37.5	202	72	Peak
5973.225	51.27	49.3	68.2	-16.93	32.6	6.88	37.51	202	72	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	99.39	97.73			32.35	6.84	37.53	197	34	Average
5825	108.44	106.78			32.35	6.84	37.53	197	34	Peak
11650	47.69	50	54	-6.31	40.03	10.8	53.14	112	74	Average
11650	60.39	62.7	74	-13.61	40.03	10.8	53.14	112	74	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	95.59	93.93			32.35	6.84	37.53	200	72	Average
5825	105.12	103.46			32.35	6.84	37.53	200	72	Peak
11650	47.58	49.89	54	-6.42	40.03	10.8	53.14	133	111	Average
11650	57.54	59.85	74	-16.46	40.03	10.8	53.14	133	111	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5601.775	51.52	50.02	68.2	-16.68	31.98	6.68	37.16	197	34	Peak
5651.175	49.08	47.59	69.07	-19.99	32.06	6.71	37.28	197	34	Peak
5922.4	49.25	47.37	70.12	-20.87	32.52	6.86	37.5	197	34	Peak
5974.175	51.76	49.79	68.2	-16.44	32.6	6.88	37.51	197	34	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5590.85	51.49	50.03	68.2	-16.71	31.95	6.67	37.16	200	72	Peak
5651.65	50.02	48.53	69.43	-19.41	32.06	6.71	37.28	200	72	Peak
5922.875	49.72	47.84	69.77	-20.05	32.52	6.86	37.5	200	72	Peak
5982.725	52.44	50.47	68.2	-15.76	32.6	6.88	37.51	200	72	Peak

Remarks:

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

802.11n (HT20)

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.76	52.04	51.46	54	-1.96	31.56	6.34	37.32	205	331	Average
5149.76	66.77	66.19	74	-7.23	31.56	6.34	37.32	205	331	Peak
5180	95.16	94.54			31.59	6.37	37.34	205	331	Average
5180	104.58	103.96			31.59	6.37	37.34	205	331	Peak
*10360	51.98	54.74	68.2	-16.22	39.48	10.21	52.45	250	148	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.97	47.57	46.99	54	-6.43	31.56	6.34	37.32	215	276	Average
5149.97	61.75	61.17	74	-12.25	31.56	6.34	37.32	215	276	Peak
5180	91.55	90.93			31.59	6.37	37.34	215	276	Average
5180	100.83	100.21			31.59	6.37	37.34	215	276	Peak
*10360	56.58	59.34	68.2	-11.62	39.48	10.21	52.45	251	254	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5095.94	39.91	39.37	54	-14.09	31.53	6.29	37.28	219	333	Average
5095.94	51.17	50.68	74	-22.83	31.49	6.25	37.25	219	333	Peak
5220	96.97	96.32			31.61	6.4	37.36	219	333	Average
5220	105.42	104.77			31.61	6.4	37.36	219	333	Peak
5407.97	40.18	39.14	54	-13.82	31.74	6.48	37.18	219	333	Average
5407.97	51.41	50.4	74	-22.59	31.72	6.47	37.18	219	333	Peak
*10400	53.54	56.28	68.2	-14.66	39.51	10.2	52.45	258	314	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5124.92	38.88	38.34	54	-15.12	31.53	6.29	37.28	224	282	Average
5124.92	51.41	50.85	74	-22.59	31.55	6.31	37.3	224	282	Peak
5220	91.59	90.94			31.61	6.4	37.36	224	282	Average
5220	101.19	100.54			31.61	6.4	37.36	224	282	Peak
5408.08	39.69	38.65	54	-14.31	31.74	6.48	37.18	224	282	Average
5408.08	51.26	50.25	74	-22.74	31.72	6.47	37.18	224	282	Peak
*10400	53.67	56.41	68.2	-14.53	39.51	10.2	52.45	325	326	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5142.74	39.3	38.76	54	-14.7	31.53	6.29	37.28	220	333	Average
5142.74	51.37	50.78	74	-22.63	31.56	6.33	37.3	220	333	Peak
5240	96.42	95.7			31.62	6.42	37.32	220	333	Average
5240	105.61	104.89			31.62	6.42	37.32	220	333	Peak
5408.52	40.02	38.98	54	-13.98	31.74	6.48	37.18	220	333	Average
5408.52	51.03	49.99	74	-22.97	31.74	6.48	37.18	220	333	Peak
*10480	52.28	55.12	68.2	-15.92	39.6	10.22	52.66	265	284	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.14	38.48	37.9	54	-15.52	31.56	6.34	37.32	214	279	Average
5148.14	50.71	50.15	74	-23.29	31.54	6.3	37.28	214	279	Peak
5240	92.29	91.57			31.62	6.42	37.32	214	279	Average
5240	101.41	100.69			31.62	6.42	37.32	214	279	Peak
5407.86	39.61	38.57	54	-14.39	31.74	6.48	37.18	214	279	Average
5407.86	51.42	50.41	74	-22.58	31.72	6.47	37.18	214	279	Peak
*10480	52.6	55.44	68.2	-15.6	39.6	10.22	52.66	325	321	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5020.85	39.38	38.91	54	-14.62	31.48	6.23	37.24	176	353	Average
5020.85	50.91	50.44	74	-23.09	31.48	6.23	37.24	176	353	Peak
5260	96.1	95.29			31.65	6.43	37.27	176	353	Average
5260	104.15	103.34			31.65	6.43	37.27	176	353	Peak
5355.94	40.58	39.59	54	-13.42	31.7	6.47	37.18	176	353	Average
5355.94	51.42	50.43	74	-22.58	31.7	6.47	37.18	176	353	Peak
*10520	52.42	55.22	68.2	-15.78	39.66	10.27	52.73	254	147	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5125.1	39.23	38.66	54	-14.77	31.55	6.32	37.3	103	96	Average
5125.1	49.09	48.52	74	-24.91	31.55	6.32	37.3	103	96	Peak
5260	88.6	87.79			31.65	6.43	37.27	103	96	Average
5260	96.41	95.6			31.65	6.43	37.27	103	96	Peak
5370.9	39.44	38.43	54	-14.56	31.72	6.47	37.18	103	96	Average
5370.9	51.51	50.5	74	-22.49	31.72	6.47	37.18	103	96	Peak
*10520	52.21	55.01	68.2	-15.99	39.66	10.27	52.73	265	33	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5048.75	39.36	38.87	54	-14.64	31.49	6.25	37.25	221	341	Average
5048.75	51.41	50.92	74	-22.59	31.49	6.25	37.25	221	341	Peak
5300	97.39	96.45			31.67	6.46	37.19	221	341	Average
5300	105.68	104.74			31.67	6.46	37.19	221	341	Peak
5355.94	40.65	39.66	54	-13.35	31.7	6.47	37.18	221	341	Average
5355.94	51.17	50.18	74	-22.83	31.7	6.47	37.18	221	341	Peak
10600	42.03	44.86	54	-11.97	39.85	10.43	53.11	188	96	Average
10600	51.04	53.87	74	-22.96	39.85	10.43	53.11	188	96	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5070.65	39.12	38.61	54	-14.88	31.51	6.27	37.27	103	96	Average
5070.65	50.56	50.05	74	-23.44	31.51	6.27	37.27	103	96	Peak
5300	88.66	87.72			31.67	6.46	37.19	103	96	Average
5300	96.56	95.62			31.67	6.46	37.19	103	96	Peak
5450.1	39.69	38.49	54	-14.31	31.77	6.51	37.08	103	96	Average
5450.1	50.72	49.52	74	-23.28	31.77	6.51	37.08	103	96	Peak
10600	40.03	42.86	54	-13.97	39.85	10.43	53.11	325	214	Average
10600	49.83	52.66	74	-24.17	39.85	10.43	53.11	325	214	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	96	95.05			31.68	6.46	37.19	176	353	Average
5320	104.87	103.92			31.68	6.46	37.19	176	353	Peak
5350.22	46.27	45.28	54	-7.73	31.7	6.47	37.18	176	353	Average
5350.22	58.67	57.68	74	-15.33	31.7	6.47	37.18	176	353	Peak
10640	42.08	44.86	54	-11.92	39.93	10.36	53.07	251	174	Average
10640	51.27	54.05	74	-22.73	39.93	10.36	53.07	251	174	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	88.8	87.85			31.68	6.46	37.19	109	97	Average
5320	96.8	95.85			31.68	6.46	37.19	109	97	Peak
5350	42.53	41.54	54	-11.47	31.7	6.47	37.18	109	97	Average
5350	54.63	53.64	74	-19.37	31.7	6.47	37.18	109	97	Peak
10640	41.75	44.53	54	-12.25	39.93	10.36	53.07	325	285	Average
10640	50.81	53.59	74	-23.19	39.93	10.36	53.07	325	285	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.28	44.99	43.79	54	-9.01	31.77	6.51	37.08	177	182	Average
5459.28	60.57	59.37	74	-13.43	31.77	6.51	37.08	177	182	Peak
*5469.04	67.49	66.26	68.2	-0.71	31.79	6.52	37.08	177	182	Peak
5500	96.21	94.89			31.81	6.54	37.03	177	182	Average
5500	104.83	103.51			31.81	6.54	37.03	177	182	Peak
*5725	51.04	49.53	68.2	-17.16	32.18	6.76	37.43	177	182	Peak
11000	42.63	44.53	54	-11.37	40.73	10.4	53.03	222	254	Average
11000	52.86	54.76	74	-21.14	40.73	10.4	53.03	222	254	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.64	41.76	40.56	54	-12.24	31.77	6.51	37.08	119	194	Average
5458.64	54.88	53.68	74	-19.12	31.77	6.51	37.08	119	194	Peak
*5468.08	63.78	62.55	68.2	-4.42	31.79	6.52	37.08	119	194	Peak
5500	93.32	92			31.81	6.54	37.03	119	194	Average
5500	101.97	100.65			31.81	6.54	37.03	119	194	Peak
*5727.32	50.44	48.93	68.2	-17.76	32.18	6.76	37.43	119	194	Peak
11000	42.69	44.59	54	-11.31	40.73	10.4	53.03	325	158	Average
11000	52.22	54.12	74	-21.78	40.73	10.4	53.03	325	158	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5407.76	39.68	38.64	54	-14.32	31.74	6.48	37.18	190	209	Average
5407.76	51.23	50.19	74	-22.77	31.74	6.48	37.18	190	209	Peak
*5465.84	50.41	49.18	68.2	-17.79	31.79	6.52	37.08	190	209	Peak
5580	96.43	57.86			31.92	6.65	0	190	209	Average
5580	105.38	66.81			31.92	6.65	0	190	209	Peak
*5729.96	51.2	49.69	68.2	-17	32.18	6.76	37.43	190	209	Peak
11160	44.16	45.86	54	-9.84	40.56	10.52	52.78	102	214	Average
11160	53.68	55.38	74	-20.32	40.56	10.52	52.78	201	51	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5434.48	38.76	37.64	54	-15.24	31.76	6.49	37.13	123	201	Average
5434.48	51.51	50.39	74	-22.49	31.76	6.49	37.13	123	201	Peak
*5461.2	50.73	49.53	68.2	-17.47	31.77	6.51	37.08	123	201	Peak
5580	92.1	90.69			31.92	6.65	37.16	123	201	Average
5580	102.48	101.07			31.92	6.65	37.16	123	201	Peak
*5727.32	52.26	50.75	68.2	-15.94	32.18	6.76	37.43	123	201	Peak
11160	43.16	44.86	54	-10.84	40.56	10.52	52.78	201	154	Average
11160	53.16	54.86	74	-20.84	40.56	10.52	52.78	201	154	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5356.08	40.04	39.05	54	-13.96	31.7	6.47	37.18	246	209	Average
5356.08	51.04	50.05	74	-22.96	31.7	6.47	37.18	246	209	Peak
*5460.08	50.34	49.14	68.2	-17.86	31.77	6.51	37.08	246	209	Peak
5700	91.38	89.93			32.12	6.73	37.4	246	209	Average
5700	99.43	97.98			32.12	6.73	37.4	246	209	Peak
*5725.08	67.39	65.88	68.2	-0.81	32.18	6.76	37.43	246	209	Peak
11400	41.69	43.59	54	-12.31	40.33	10.47	52.7	222	214	Average
11400	51.52	53.42	74	-22.48	40.33	10.47	52.7	222	214	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5377.36	38.95	37.94	54	-15.05	31.72	6.47	37.18	120	203	Average
5377.36	50.65	49.64	74	-23.35	31.72	6.47	37.18	120	203	Peak
*5464.56	50.38	49.15	68.2	-17.82	31.79	6.52	37.08	120	203	Peak
5700	88.71	87.26			32.12	6.73	37.4	120	203	Average
5700	97.05	95.6			32.12	6.73	37.4	120	203	Peak
*5725	63.8	62.29	68.2	-4.4	32.18	6.76	37.43	120	203	Peak
11400	41.12	43.02	54	-12.88	40.33	10.47	52.7	254	145	Average
11400	51.24	53.14	74	-22.76	40.33	10.47	52.7	254	145	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	98.7	97.18			32.21	6.78	37.47	185	36	Average
5745	108.95	107.43			32.21	6.78	37.47	185	36	Peak
11490	46.11	47.98	54	-7.89	40.25	10.66	52.78	115	88	Average
11490	56.33	58.2	74	-17.67	40.25	10.66	52.78	115	88	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	95.28	93.76			32.21	6.78	37.47	196	73	Average
5745	104.46	102.94			32.21	6.78	37.47	196	73	Peak
11490	45.86	47.73	54	-8.14	40.25	10.66	52.78	131	110	Average
11490	55.88	57.75	74	-18.12	40.25	10.66	52.78	131	110	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5649.75	50.93	49.45	68.2	-17.27	32.06	6.7	37.28	185	36	Peak
5651.65	49.79	48.3	69.43	-19.64	32.06	6.71	37.28	185	36	Peak
5923.825	50.27	48.39	69.07	-18.8	32.52	6.86	37.5	185	36	Peak
6007.425	51.74	49.69	68.2	-16.46	32.67	6.89	37.51	185	36	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5643.575	52.06	50.6	68.2	-16.14	32.04	6.7	37.28	196	73	Peak
5651.175	50.47	48.98	69.07	-18.6	32.06	6.71	37.28	196	73	Peak
5923.35	49.82	47.94	69.42	-19.6	32.52	6.86	37.5	196	73	Peak
6016.45	52.36	50.29	68.2	-15.84	32.67	6.9	37.5	196	73	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	99.01	97.47			32.26	6.82	37.54	192	35	Average
5785	108.3	106.76			32.26	6.82	37.54	192	35	Peak
11570	46.77	48.89	54	-7.23	40.13	10.76	53.01	115	75	Average
11570	55.91	58.03	74	-18.09	40.13	10.76	53.01	115	75	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	95.28	93.74			32.26	6.82	37.54	191	71	Average
5785	104.76	103.22			32.26	6.82	37.54	191	71	Peak
11570	45.23	47.35	54	-8.77	40.13	10.76	53.01	130	116	Average
11570	55.23	57.35	74	-18.77	40.13	10.76	53.01	130	116	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5576.6	51.69	50.24	68.2	-16.51	31.92	6.65	37.12	192	35	Peak
5652.6	48.85	47.36	70.13	-21.28	32.06	6.71	37.28	192	35	Peak
5922.875	50.16	48.28	69.77	-19.61	32.52	6.86	37.5	192	35	Peak
5995.075	52.18	50.17	68.2	-16.02	32.63	6.89	37.51	192	35	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5579.925	51.54	50.13	68.2	-16.66	31.92	6.65	37.16	191	71	Peak
5651.175	47.77	46.28	69.07	-21.3	32.06	6.71	37.28	191	71	Peak
5924.3	52.52	50.64	68.72	-16.2	32.52	6.86	37.5	191	71	Peak
5961.35	51.42	49.49	68.2	-16.78	32.57	6.87	37.51	191	71	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	99.69	98.03			32.35	6.84	37.53	180	35	Average
5825	108.28	106.62			32.35	6.84	37.53	180	35	Peak
11650	47.38	49.69	54	-6.62	40.03	10.8	53.14	119	86	Average
11650	58.22	60.53	74	-15.78	40.03	10.8	53.14	119	86	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	96.5	94.84			32.35	6.84	37.53	200	71	Average
5825	105.6	103.94			32.35	6.84	37.53	200	71	Peak
11650	45.38	47.69	54	-8.62	40.03	10.8	53.14	128	119	Average
11650	55.33	57.64	74	-18.67	40.03	10.8	53.14	128	119	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5551.425	52.03	50.62	68.2	-16.17	31.89	6.61	37.09	180	35	Peak
5651.65	48.88	47.39	69.43	-20.55	32.06	6.71	37.28	180	35	Peak
5922.875	50.2	48.32	69.77	-19.57	32.52	6.86	37.5	180	35	Peak
5992.225	52.06	50.05	68.2	-16.14	32.63	6.89	37.51	180	35	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5632.65	51.53	50.07	68.2	-16.67	32.04	6.7	37.28	200	71	Peak
5652.125	49.16	47.67	69.78	-20.62	32.06	6.71	37.28	200	71	Peak
5923.35	47.94	46.06	69.42	-21.48	32.52	6.86	37.5	200	71	Peak
6002.2	52.76	50.75	68.2	-15.44	32.63	6.89	37.51	200	71	Peak

Remarks:

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

802.11n (HT40)

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	53.24	52.66	54	-0.76	31.56	6.34	37.32	212	331	Average
5150	65.13	64.55	74	-8.87	31.56	6.34	37.32	212	331	Peak
5190	88.27	87.64			31.59	6.38	37.34	212	331	Average
5190	97.31	96.68			31.59	6.38	37.34	212	331	Peak
5416.77	41.34	40.32	54	-12.66	31.73	6.47	37.18	212	331	Average
5416.77	51.76	50.71	74	-22.24	31.75	6.48	37.18	212	331	Peak
*10380	50.53	53.27	68.2	-17.67	39.5	10.21	52.45	265	147	Peak

Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.7	47.43	46.85	54	-6.57	31.56	6.34	37.32	223	253	Average
5149.7	58.5	57.92	74	-15.5	31.56	6.34	37.32	223	253	Peak
5190	95.22	94.59			31.59	6.38	37.34	223	253	Average
5190	94.7	94.07			31.59	6.38	37.34	223	253	Peak
5418.64	40.48	39.46	54	-13.52	31.73	6.47	37.18	223	253	Average
5418.64	51.26	50.21	74	-22.74	31.75	6.48	37.18	223	253	Peak
*10380	52.52	55.26	68.2	-15.68	39.5	10.21	52.45	251	147	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5001.95	40.01	39.57	54	-13.99	31.46	6.21	37.23	214	334	Average
5001.95	50.13	49.69	74	-23.87	31.46	6.21	37.23	214	334	Peak
5230	87.66	86.95			31.62	6.41	37.32	214	334	Average
5230	97.42	96.71			31.62	6.41	37.32	214	334	Peak
5383.33	42.08	41.06	54	-11.92	31.73	6.47	37.18	214	334	Average
5383.33	51.44	50.42	74	-22.56	31.73	6.47	37.18	214	334	Peak
10460	52.83	55.63	74	-21.17	39.57	10.22	52.59	232	285	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5138	39.06	38.48	54	-14.94	31.55	6.33	37.3	233	254	Average
5138	50.52	49.94	74	-23.48	31.55	6.33	37.3	233	254	Peak
5230	83.88	83.17			31.62	6.41	37.32	233	254	Average
5230	93.29	92.58			31.62	6.41	37.32	233	254	Peak
5428.65	40.48	39.36	54	-13.52	31.76	6.49	37.13	233	254	Average
5428.65	51.14	50.02	74	-22.86	31.76	6.49	37.13	233	254	Peak
10460	54.36	57.16	74	-19.64	39.57	10.22	52.59	251	254	Peak

Remarks:

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

EUT Test Condition		Measurement Detail	
Channel	Channel 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5121.8	40.13	39.58	54	-13.87	31.54	6.31	37.3	191	20	Average
5121.8	50.79	50.23	74	-23.21	31.54	6.3	37.28	191	20	Peak
5270	86.5	85.68			31.65	6.44	37.27	191	20	Average
5270	94.92	94.1			31.65	6.44	37.27	191	20	Peak
5408.3	42.48	41.49	54	-11.52	31.7	6.47	37.18	191	20	Average
5408.3	51.94	50.9	74	-22.06	31.74	6.48	37.18	191	20	Peak
*10540	52.67	55.52	68.2	-15.53	39.7	10.31	52.86	188	258	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5145.95	38.85	38.32	54	-15.15	31.52	6.28	37.27	196	87	Average
5145.95	50.37	49.79	74	-23.63	31.56	6.34	37.32	196	87	Peak
5270	81.41	80.59			31.65	6.44	37.27	196	87	Average
5270	90.19	89.37			31.65	6.44	37.27	196	87	Peak
5378.93	39.82	38.83	54	-14.18	31.7	6.47	37.18	196	87	Average
5378.93	50.88	49.86	74	-23.12	31.73	6.47	37.18	196	87	Peak
*10540	52.54	55.39	68.2	-15.66	39.7	10.31	52.86	214	39	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5121.8	40.33	39.78	54	-13.67	31.54	6.31	37.3	181	22	Average
5121.8	51.34	50.83	74	-22.66	31.51	6.25	37.25	181	22	Peak
5310	85.92	84.97			31.68	6.46	37.19	181	22	Average
5310	95.59	94.64			31.68	6.46	37.19	181	22	Peak
5350.33	47.35	46.36	54	-6.65	31.7	6.47	37.18	181	22	Average
5350.33	58.39	57.4	74	-15.61	31.7	6.47	37.18	181	22	Peak
10620	42.16	44.97	54	-11.84	39.89	10.39	53.09	214	299	Average
10620	53.9	56.71	74	-20.1	39.89	10.39	53.09	214	299	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5135.6	38.82	38.24	54	-15.18	31.55	6.33	37.3	191	85	Average
5135.6	51.07	50.5	74	-22.93	31.55	6.32	37.3	191	85	Peak
5310	82.27	81.32			31.68	6.46	37.19	191	85	Average
5310	90.86	89.91			31.68	6.46	37.19	191	85	Peak
5355.83	43.2	42.21	54	-10.8	31.7	6.47	37.18	181	22	Peak
5355.83	52.49	51.5	74	-21.51	31.7	6.47	37.18	181	22	Peak
10620	43.34	46.15	54	-10.66	39.89	10.39	53.09	177	55	Average
10620	54.27	57.08	74	-19.73	39.89	10.39	53.09	177	55	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460.08	44.64	43.44	54	-9.36	31.77	6.51	37.08	189	46	Average
5460.08	59.33	58.13	74	-14.67	31.77	6.51	37.08	189	46	Peak
*5469.68	66.96	65.73	68.2	-1.24	31.79	6.52	37.08	189	46	Peak
5510	88.19	86.89			31.81	6.55	37.06	189	46	Average
5510	97.2	95.9			31.81	6.55	37.06	189	46	Peak
*5730.04	50.64	49.13	68.2	-17.56	32.18	6.76	37.43	189	46	Peak
11020	43.83	45.66	54	-10.17	40.71	10.41	52.95	214	156	Average
11020	54.47	56.3	74	-19.53	40.71	10.41	52.95	214	156	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460.08	42.78	41.58	54	-11.22	31.77	6.51	37.08	199	80	Average
5460.08	55.43	54.23	74	-18.57	31.77	6.51	37.08	199	80	Peak
*5469.84	63.33	62.1	68.2	-4.87	31.79	6.52	37.08	199	80	Peak
5510	86.27	84.97			31.81	6.55	37.06	199	80	Average
5510	95.74	94.44			31.81	6.55	37.06	199	80	Peak
*5727.72	50.02	48.51	68.2	-18.18	32.18	6.76	37.43	199	80	Peak
11020	43.03	44.86	54	-10.97	40.71	10.41	52.95	126	59	Average
11020	53.96	55.79	74	-20.04	40.71	10.41	52.95	126	59	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5455	44.64	43.44	54	-9.36	31.77	6.51	37.08	189	46	Average
5455	59.33	58.13	74	-14.67	31.77	6.51	37.08	189	46	Peak
*5468.526	66.96	65.73	68.2	-1.24	31.79	6.52	37.08	189	46	Peak
5550	87.43	86.13			31.81	6.55	37.06	189	46	Average
5550	96.32	95.02			31.81	6.55	37.06	189	46	Peak
*5728.526	50.64	49.13	68.2	-17.56	32.18	6.76	37.43	189	46	Peak
11100	43.19	45.02	54	-10.81	40.71	10.41	52.95	214	156	Average
11100	54.16	55.99	74	-19.84	40.71	10.41	52.95	214	156	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5457	42.78	41.58	54	-11.22	31.77	6.51	37.08	199	80	Average
5457	55.43	54.23	74	-18.57	31.77	6.51	37.08	199	80	Peak
*5465.526	63.33	62.1	68.2	-4.87	31.79	6.52	37.08	199	80	Peak
5550	85.83	84.53			31.81	6.55	37.06	199	80	Average
5550	95.16	93.86			31.81	6.55	37.06	199	80	Peak
*5726.526	50.02	48.51	68.2	-18.18	32.18	6.76	37.43	199	80	Peak
11100	42.19	44.02	54	-11.81	40.71	10.41	52.95	126	59	Average
11100	53.14	54.97	74	-20.86	40.71	10.41	52.95	126	59	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5446.64	39.99	38.95	54	-14.01	31.74	6.48	37.18	206	44	Average
5446.64	51.06	49.92	74	-22.94	31.77	6.5	37.13	206	44	Peak
*5466.48	50.8	49.57	68.2	-17.4	31.79	6.52	37.08	206	44	Peak
5670	87.28	85.81			32.09	6.72	37.34	206	44	Average
5670	95.96	94.49			32.09	6.72	37.34	206	44	Peak
*5726.6	53.52	52.01	68.2	-14.68	32.18	6.76	37.43	206	44	Peak
11340	44.07	45.87	54	-9.93	40.4	10.52	52.72	159	357	Average
11340	54.56	56.36	74	-19.44	40.4	10.52	52.72	159	357	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5394.16	39.41	38.42	54	-14.59	31.7	6.47	37.18	202	74	Average
5394.16	50.24	49.22	74	-23.76	31.73	6.47	37.18	202	74	Peak
*5466.32	50.29	49.06	68.2	-17.91	31.79	6.52	37.08	202	74	Peak
5670	82.87	81.4			32.09	6.72	37.34	202	74	Average
5670	92.13	90.66			32.09	6.72	37.34	202	74	Peak
*5725.32	52.18	50.67	68.2	-16.02	32.18	6.76	37.43	202	74	Peak
11340	43.95	45.75	54	-10.05	40.4	10.52	52.72	125	68	Average
11340	53.23	55.03	74	-20.77	40.4	10.52	52.72	125	68	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	92.67	91.12			32.23	6.79	37.47	193	36	Average
5755	102.3	100.75			32.23	6.79	37.47	193	36	Peak
11510	46.8	48.69	54	-7.2	40.23	10.69	52.81	112	84	Average
11510	55.56	57.45	74	-18.44	40.23	10.69	52.81	112	84	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	89.03	87.48			32.23	6.79	37.47	203	75	Average
5755	97.89	96.34			32.23	6.79	37.47	203	75	Peak
11510	45.86	47.75	54	-8.14	40.23	10.69	52.81	133	111	Average
11510	54.83	56.72	74	-19.17	40.23	10.69	52.81	133	111	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5635.975	52.04	50.58	68.2	-16.16	32.04	6.7	37.28	193	36	Peak
5651.65	49.51	48.02	69.43	-19.92	32.06	6.71	37.28	193	36	Peak
5922.875	49.57	47.69	69.77	-20.2	32.52	6.86	37.5	193	36	Peak
5992.225	52.38	50.37	68.2	-15.82	32.63	6.89	37.51	193	36	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5635.5	51.39	49.93	68.2	-16.81	32.04	6.7	37.28	203	75	Peak
5650.7	49.36	47.87	68.72	-19.36	32.06	6.71	37.28	203	75	Peak
5923.35	49.11	47.23	69.42	-20.31	32.52	6.86	37.5	203	75	Peak
5957.55	52.1	50.16	68.2	-16.1	32.57	6.87	37.5	203	75	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	93.1	91.52			32.29	6.83	37.54	197	36	Average
5795	102.37	100.79			32.29	6.83	37.54	197	36	Peak
11590	46.53	48.65	54	-7.47	40.11	10.78	53.01	114	74	Average
11590	56.86	58.98	74	-17.14	40.11	10.78	53.01	114	74	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	90.13	88.55			32.29	6.83	37.54	200	73	Average
5795	98.44	96.86			32.29	6.83	37.54	200	73	Peak
11590	44.99	47.11	54	-9.01	40.11	10.78	53.01	129	118	Average
11590	55.94	58.06	74	-18.06	40.11	10.78	53.01	129	118	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5627.425	50.95	49.47	68.2	-17.25	32.01	6.69	37.22	197	36	Peak
5650.7	49.84	48.35	68.72	-18.88	32.06	6.71	37.28	197	36	Peak
5922.875	50.7	48.82	69.77	-19.07	32.52	6.86	37.5	197	36	Peak
6017.875	51.61	49.54	68.2	-16.59	32.67	6.9	37.5	197	36	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5552.85	51.22	49.84	68.2	-16.98	31.89	6.61	37.12	200	73	Peak
5651.65	49.29	47.8	69.43	-20.14	32.06	6.71	37.28	200	73	Peak
5923.825	48.45	46.57	69.07	-20.62	32.52	6.86	37.5	200	73	Peak
6024.525	51.95	49.83	68.2	-16.25	32.72	6.9	37.5	200	73	Peak

Remarks:

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

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 38	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	Jisyong Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
40.67	20.87	37.85	40	-19.13	13.55	0.49	31.02	111	184	Peak
127	27.8	47.33	43.5	-15.7	11.48	0.88	31.89	201	325	Peak
273.47	37.66	55.9	46	-8.34	12.17	1.54	31.95	222	274	Peak
445.16	21.51	35.01	46	-24.49	16.23	2.26	31.99	145	125	Peak
792.42	29.21	34.86	46	-16.79	22.12	3.64	31.41	201	125	Peak
983.51	29.89	33.27	54	-24.11	23.98	4.38	31.74	321	145	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
30	34.62	53.34	40	-5.38	11.98	0.44	31.14	201	145	Peak
38.73	34.01	51.14	40	-5.99	13.39	0.48	31	111	145	Peak
281.23	29.45	47.28	46	-16.55	12.4	1.58	31.81	222	285	Peak
355.92	22.19	37.92	46	-23.81	14.29	1.9	31.92	111	184	Peak
445.16	21.99	35.49	46	-24.01	16.23	2.26	31.99	326	254	Peak
934.04	29.49	33.59	46	-16.51	23.7	4.17	31.97	111	147	Peak

Remarks:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ENV216	101196	Apr. 20, 2017	Apr. 19, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 Test Procedures

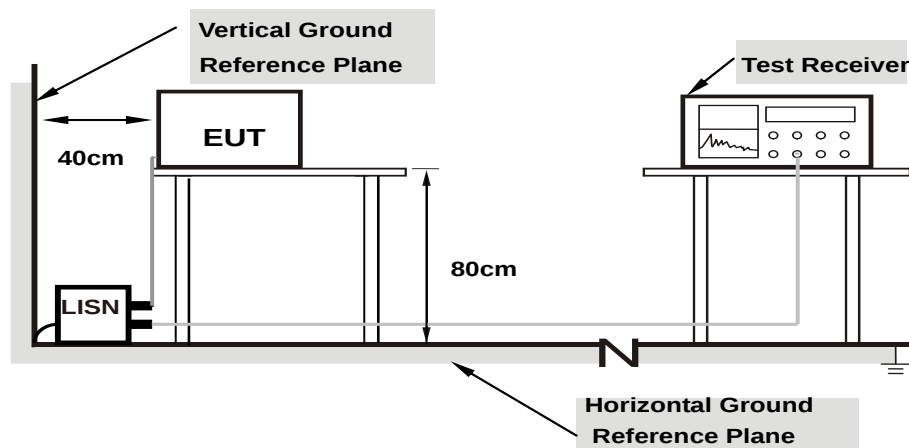
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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:** 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT Operating Conditions

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

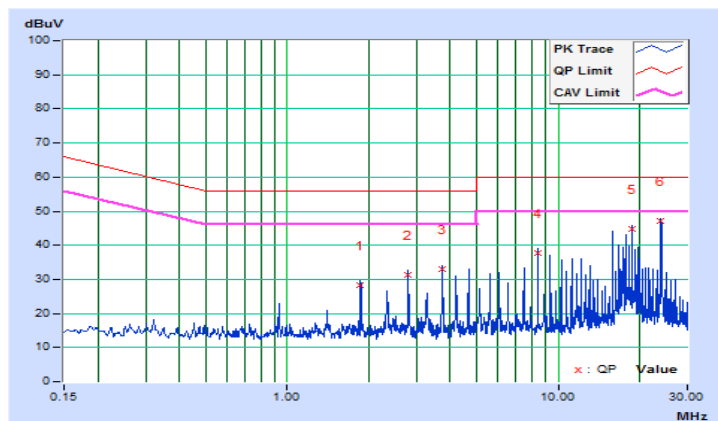
4.2.7 Test Results

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	Getaz Yang	Test Date	2018/1/10

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	1.86649	10.46	17.78	17.65	28.24	28.11	56.00	46.00	-27.76	-17.89
2	2.80098	10.50	20.85	20.22	31.35	30.72	56.00	46.00	-24.65	-15.28
3	3.73547	10.54	22.37	20.31	32.91	30.85	56.00	46.00	-23.09	-15.15
4	8.40792	10.78	26.87	19.63	37.65	30.41	60.00	50.00	-22.35	-19.59
5	18.68340	11.29	33.56	32.76	44.85	44.05	60.00	50.00	-15.15	-5.95
6	24.00100	11.51	35.46	30.98	46.97	42.49	60.00	50.00	-13.03	-7.51

Remarks:

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

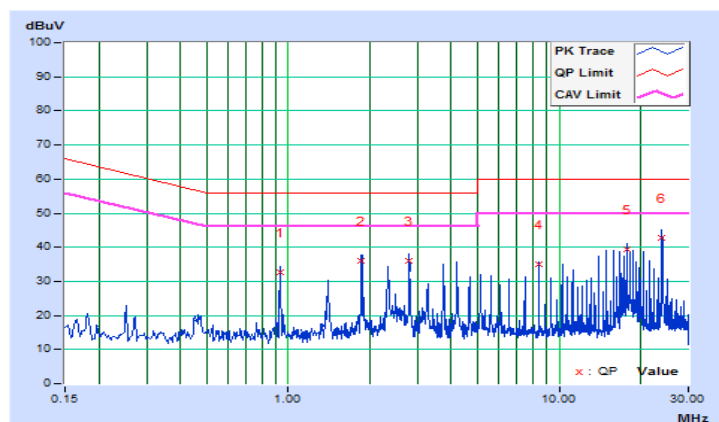


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Getaz Yang	Test Date	2018/1/10

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	0.93568	10.19	22.45	21.56	32.64	31.75	56.00	46.00	-23.36	-14.25
2	1.86649	10.23	25.96	23.44	36.19	33.67	56.00	46.00	-19.81	-12.33
3	2.80489	10.27	25.76	25.22	36.03	35.49	56.00	46.00	-19.97	-10.51
4	8.40792	10.51	24.47	21.10	34.98	31.61	60.00	50.00	-25.02	-18.39
5	17.75282	10.88	28.45	25.77	39.33	36.65	60.00	50.00	-20.67	-13.35
6	24.00491	11.08	31.57	26.62	42.65	37.70	60.00	50.00	-17.35	-12.30

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

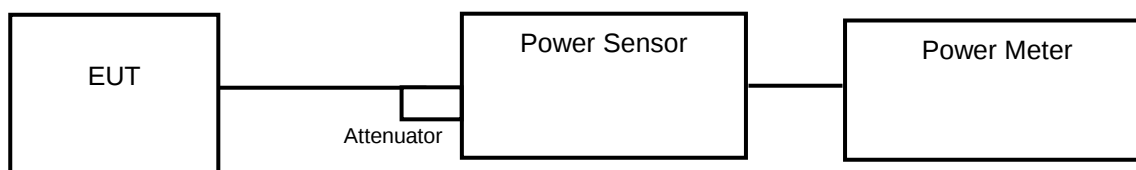
4.3.1 Limits of Transmit Power Measurement

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)

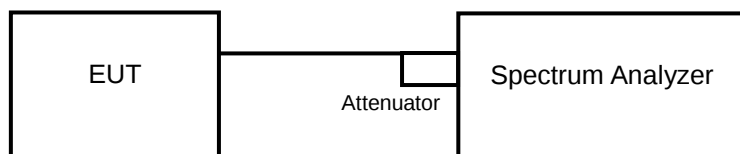
*B is the 26 dB emission bandwidth in megahertz

4.3.2 Test Setup

<Power Output Measurement>



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

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

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

26 dB Bandwidth

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

Power Output:

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	53.088	17.25	24	Pass
44	5220	52.360	17.19	24	Pass
48	5240	52.602	17.21	24	Pass
52	5260	52.481	17.20	24	Pass
60	5300	55.719	17.46	24	Pass
64	5320	54.576	17.37	24	Pass
100	5500	52.845	17.23	24	Pass
116	5580	54.325	17.35	24	Pass
140	5700	45.082	16.54	24	Pass
149	5745	52.481	17.20	30	Pass
157	5785	54.325	17.35	30	Pass
165	5825	51.286	17.10	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log (38.48) = 26.85\text{dBm} > 24 \text{ dBm}.$
2. $11 \text{ dBm} + 10\log (39.21) = 26.93\text{dBm} > 24 \text{ dBm}.$
3. $11 \text{ dBm} + 10\log (39.38) = 26.95\text{dBm} > 24 \text{ dBm}.$
4. $11 \text{ dBm} + 10\log (40.19) = 27.04\text{dBm} > 24 \text{ dBm}.$
5. $11 \text{ dBm} + 10\log (42.77) = 27.31\text{dBm} > 24 \text{ dBm}.$
6. $11 \text{ dBm} + 10\log (42.47) = 27.28\text{dBm} > 24 \text{ dBm}.$

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	66.834	18.25	24	Pass
44	5220	68.077	18.33	24	Pass
48	5240	69.984	18.45	24	Pass
52	5260	66.222	18.21	24	Pass
60	5300	69.183	18.40	24	Pass
64	5320	68.549	18.36	24	Pass
100	5500	68.077	18.33	24	Pass
116	5580	65.464	18.16	24	Pass
140	5700	29.580	14.71	24	Pass
149	5745	66.834	18.25	30	Pass
157	5785	64.565	18.10	30	Pass
165	5825	63.680	18.04	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log(44.45) = 27.48\text{dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(45.46) = 27.58\text{dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(45.19) = 27.55\text{dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(46.34) = 27.66\text{dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(48.47) = 27.85\text{dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(41.45) = 27.18\text{dBm} > 24 \text{ dBm}$.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	27.164	14.34	24	Pass
46	5230	27.040	14.32	24	Pass
54	5270	27.416	14.38	24	Pass
62	5310	26.915	14.30	24	Pass
102	5510	27.102	14.33	24	Pass
110	5550	27.542	14.40	24	Pass
134	5670	26.363	14.21	24	Pass
151	5755	26.363	14.21	30	Pass
159	5795	26.062	14.16	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log (45.24) = 27.56\text{dBm} > 24 \text{ dBm}.$
2. $11 \text{ dBm} + 10\log (44.88) = 27.52\text{dBm} > 24 \text{ dBm}.$
3. $11 \text{ dBm} + 10\log (47.41) = 27.76\text{dBm} > 24 \text{ dBm}.$
4. $11 \text{ dBm} + 10\log (47.97) = 27.81\text{dBm} > 24 \text{ dBm}.$
5. $11 \text{ dBm} + 10\log (53.27) = 28.26\text{dBm} > 24 \text{ dBm}.$

26 dB Bandwidth:
802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	38.46
44	5220	39.12
48	5240	38.52
52	5260	38.48
60	5300	39.21
64	5320	39.38
100	5500	40.19
116	5580	42.77
140	5700	42.47

802.11n (HT20)

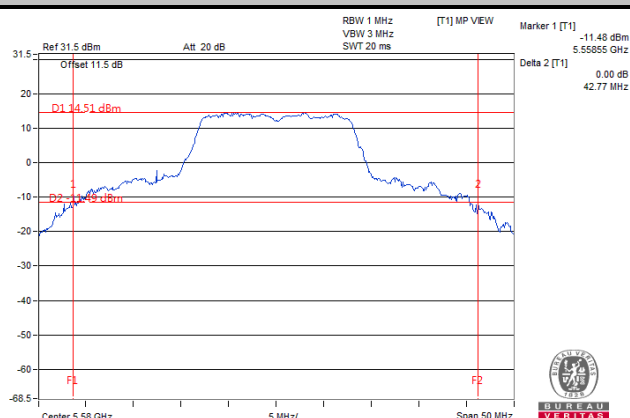
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	42.85
44	5220	45.10
48	5240	46.44
52	5260	44.45
60	5300	45.46
64	5320	45.19
100	5500	46.34
116	5580	48.47
140	5700	41.45

802.11n (HT40)

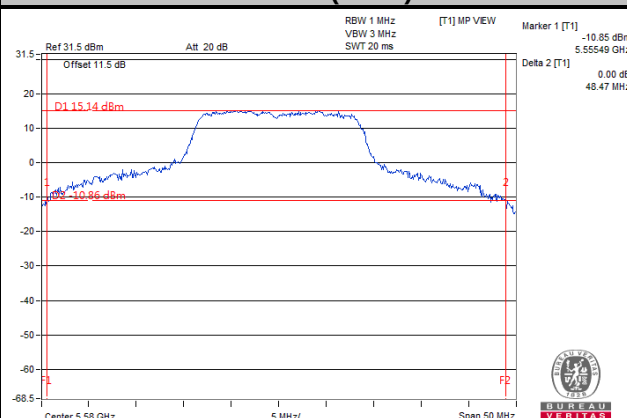
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
38	5190	47.34
46	5230	45.57
54	5270	45.24
62	5310	44.88
102	5510	47.41
110	5550	47.97
134	5670	53.27

Spectrum Plot of Worst Value

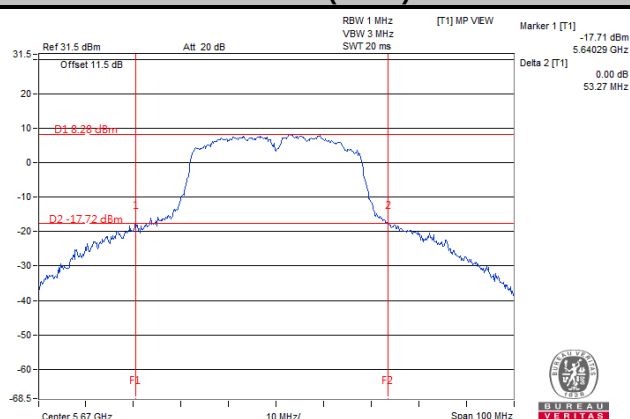
802.11a



802.11n (HT20)

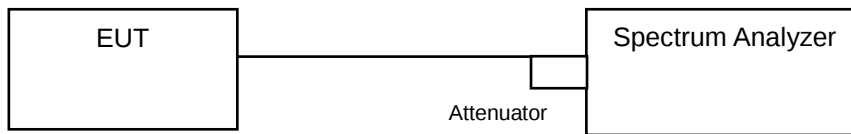


802.11n (HT40)



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)
36	5180	17.25
40	5200	17.50
48	5240	17.35
52	5260	17.35
60	5300	17.45
64	5320	17.35
100	5500	17.78
116	5580	19.61
140	5700	20.19
149	5745	22.45
157	5785	21.70
165	5825	23.80

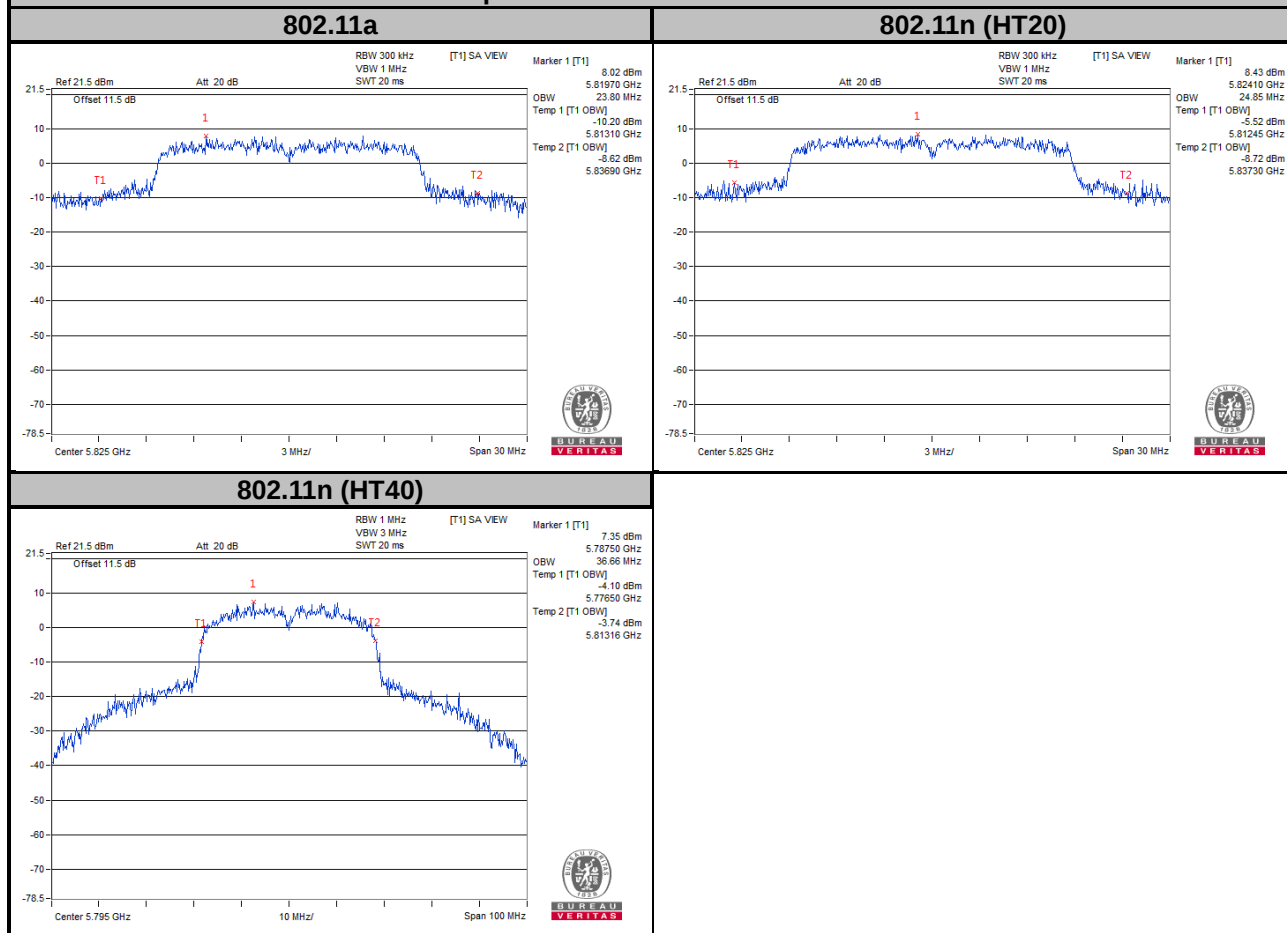
802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	18.60
40	5200	19.85
48	5240	19.66
52	5260	19.37
60	5300	19.51
64	5320	19.32
100	5500	20.43
116	5580	22.35
140	5700	18.26
149	5745	23.60
157	5785	23.75
165	5825	24.85

802.11n (HT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	36.28
46	5230	36.28
54	5270	36.28
62	5310	36.15
102	5510	36.15
110	5550	36.28
134	5670	36.41
151	5755	36.37
159	5795	36.66

Spectrum Plot of Worst Value

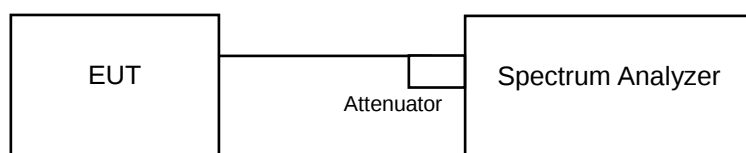


4.5 Peak Power Spectral Density Measurement

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:

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

※For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 500 kHz, Set VBW $\geq$ 3 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
4. Sweep time = auto, trigger set to "free run".
5. Trace average at least 100 traces in power averaging mode.
6. Record the max value and add 10 log (1/duty cycle)

4.5.5 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)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	3.48	11	Pass
44	5220	3.87	11	Pass
48	5240	3.66	11	Pass
52	5260	3.89	11	Pass
60	5300	4.33	11	Pass
64	5320	4.44	11	Pass
100	5500	5.83	11	Pass
116	5580	5.92	11	Pass
140	5700	3.93	11	Pass

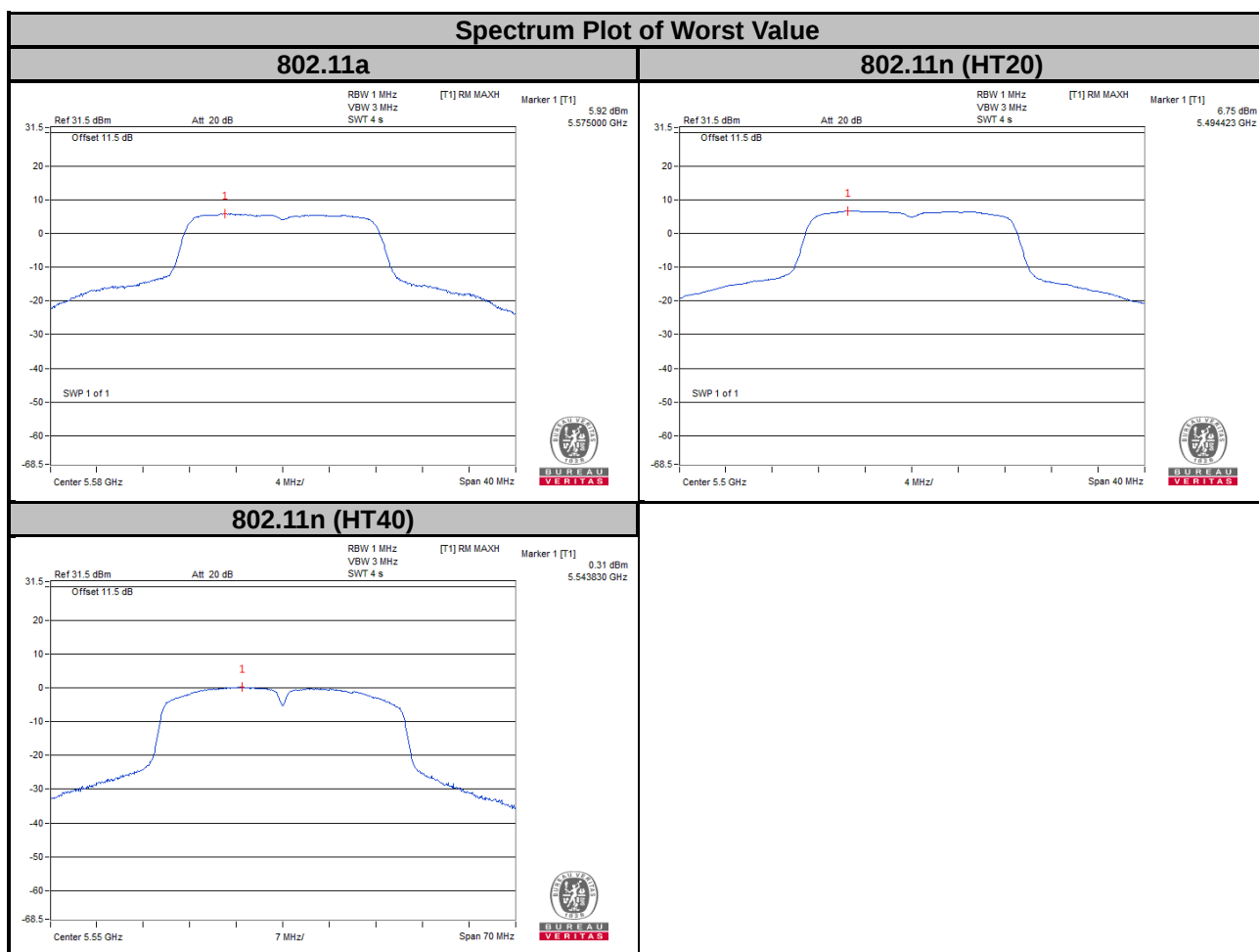
802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	4.06	11	Pass
44	5220	5.09	11	Pass
48	5240	5.07	11	Pass
52	5260	4.82	11	Pass
60	5300	5.33	11	Pass
64	5320	5.27	11	Pass
100	5500	6.75	11	Pass
116	5580	6.56	11	Pass
140	5700	2.23	11	Pass

802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
38	5190	-1.32	0.16	-1.16	11	Pass
46	5230	-2.02	0.16	-1.86	11	Pass
54	5270	-1.76	0.16	-1.60	11	Pass
62	5310	-1.28	0.16	-1.12	11	Pass
102	5510	0.27	0.16	0.43	11	Pass
110	5550	0.31	0.16	0.47	11	Pass
134	5670	-1.13	0.16	-0.97	11	Pass

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



For U-NII-3 Band

802.11a

Channel	Freq. (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	0.95	30	Pass
157	5785	1.10	30	Pass
165	5825	1.77	30	Pass

802.11n (HT20)

Channel	Freq. (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	1.74	30	Pass
157	5785	1.64	30	Pass
165	5825	2.54	30	Pass

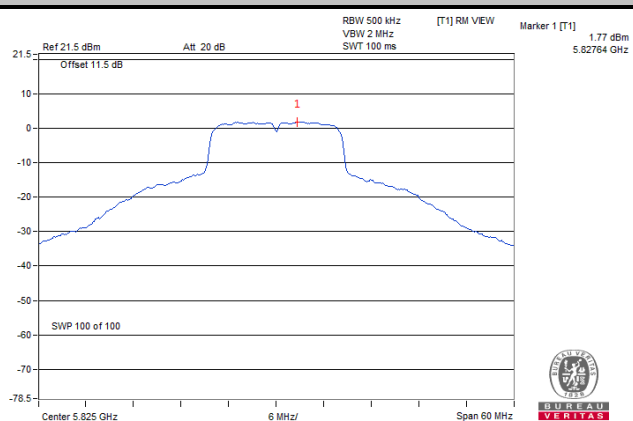
802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
151	5755	-5.02	0.16	-4.86	30	Pass
159	5795	-4.06	0.16	-3.90	30	Pass

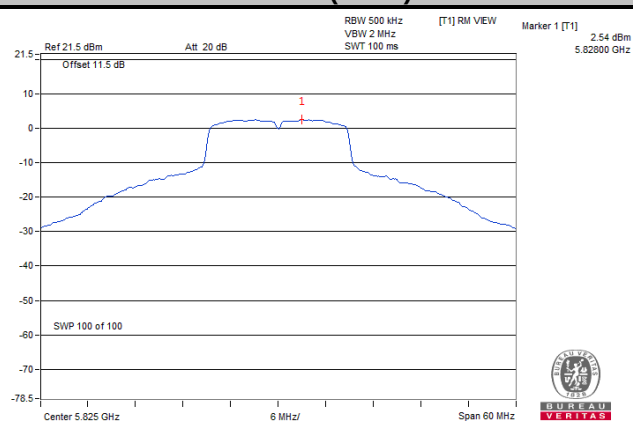
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

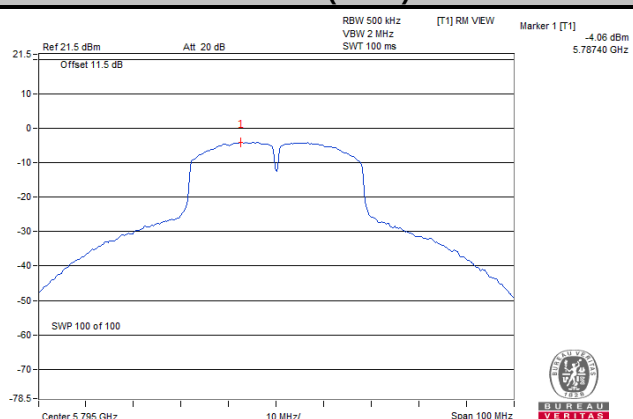
802.11a



802.11n (HT20)



802.11n (HT40)

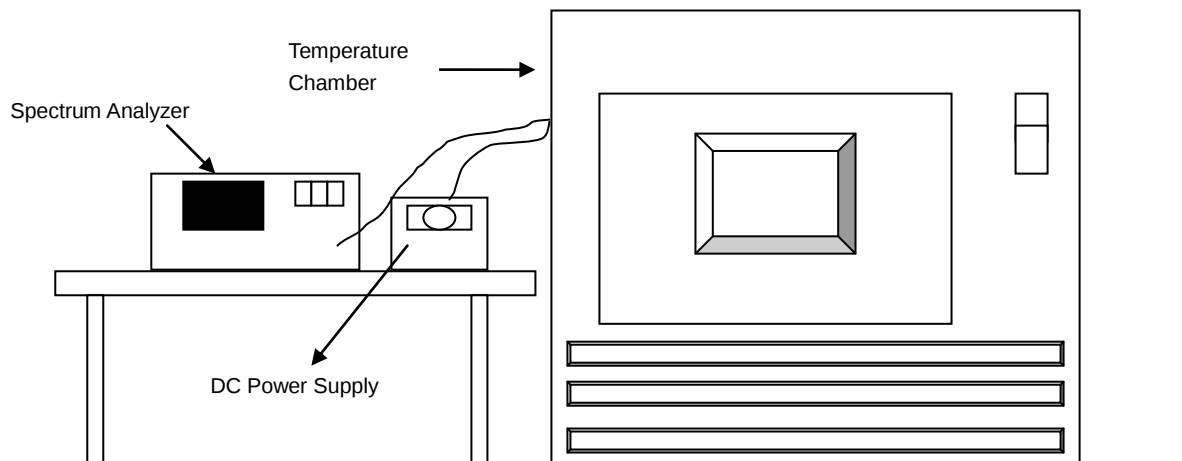


4.6 Frequency Stability

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

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	120	5179.9768	-4.48000	5179.9738	-5.06000	5179.9738	-5.06000	5179.9731	-5.19000
40	120	5180.0205	3.96000	5180.021	4.05000	5180.0246	4.75000	5180.0241	4.65000
30	120	5179.9952	-0.93000	5179.9965	-0.68000	5179.9938	-1.20000	5179.9944	-1.08000
20	120	5179.9774	-4.36000	5179.9772	-4.40000	5179.9759	-4.65000	5179.9772	-4.40000
10	120	5179.9912	-1.70000	5179.9872	-2.47000	5179.9879	-2.34000	5179.9868	-2.55000
0	120	5179.984	-3.09000	5179.9836	-3.17000	5179.9816	-3.55000	5179.9814	-3.59000
-10	120	5179.994	-1.16000	5179.9937	-1.22000	5179.9925	-1.45000	5179.9926	-1.43000
-20	120	5179.9778	-4.29000	5179.975	-4.83000	5179.9744	-4.94000	5179.979	-4.05000
-30	120	5179.9995	-0.10000	5180.0011	0.21000	5180.0007	0.14000	5179.9981	-0.37000

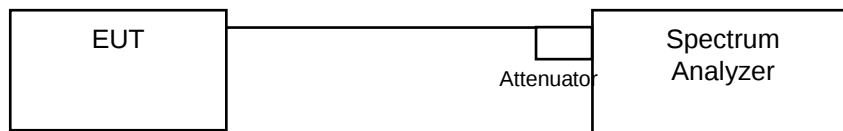
Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5179.9783	-4.19000	5179.9769	-4.46000	5179.9756	-4.71000	5179.9782	-4.21000
	120	5179.9774	-4.36000	5179.9772	-4.40000	5179.9759	-4.65000	5179.9772	-4.40000
	102	5179.978	-4.25000	5179.978	-4.25000	5179.9763	-4.58000	5179.9782	-4.21000

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
149	5745	15.31	0.5	Pass
157	5785	15.36	0.5	Pass
165	5825	15.72	0.5	Pass

802.11n (HT20)

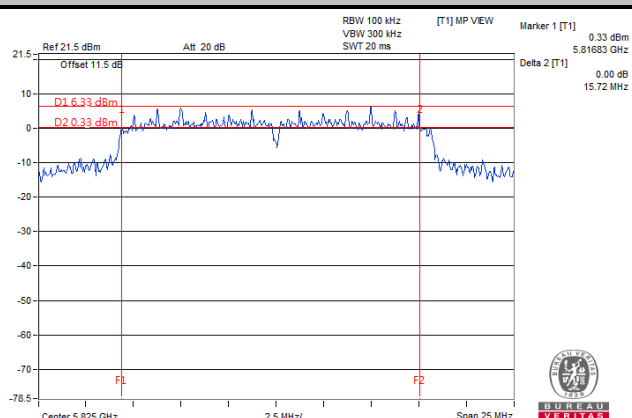
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.91	0.5	Pass
157	5785	17.26	0.5	Pass
165	5825	16.83	0.5	Pass

802.11n (HT40)

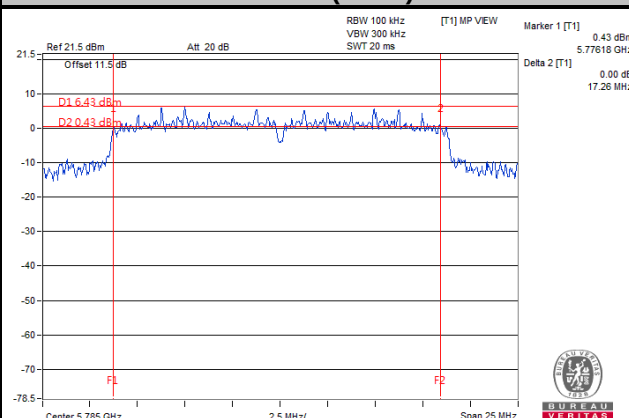
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	32.66	0.5	Pass
159	5795	32.66	0.5	Pass

Spectrum Plot of Worst Value

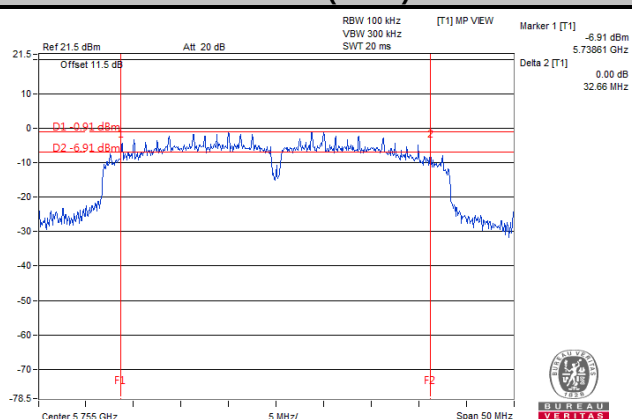
802.11a



802.11n (HT20)



802.11n (HT40)

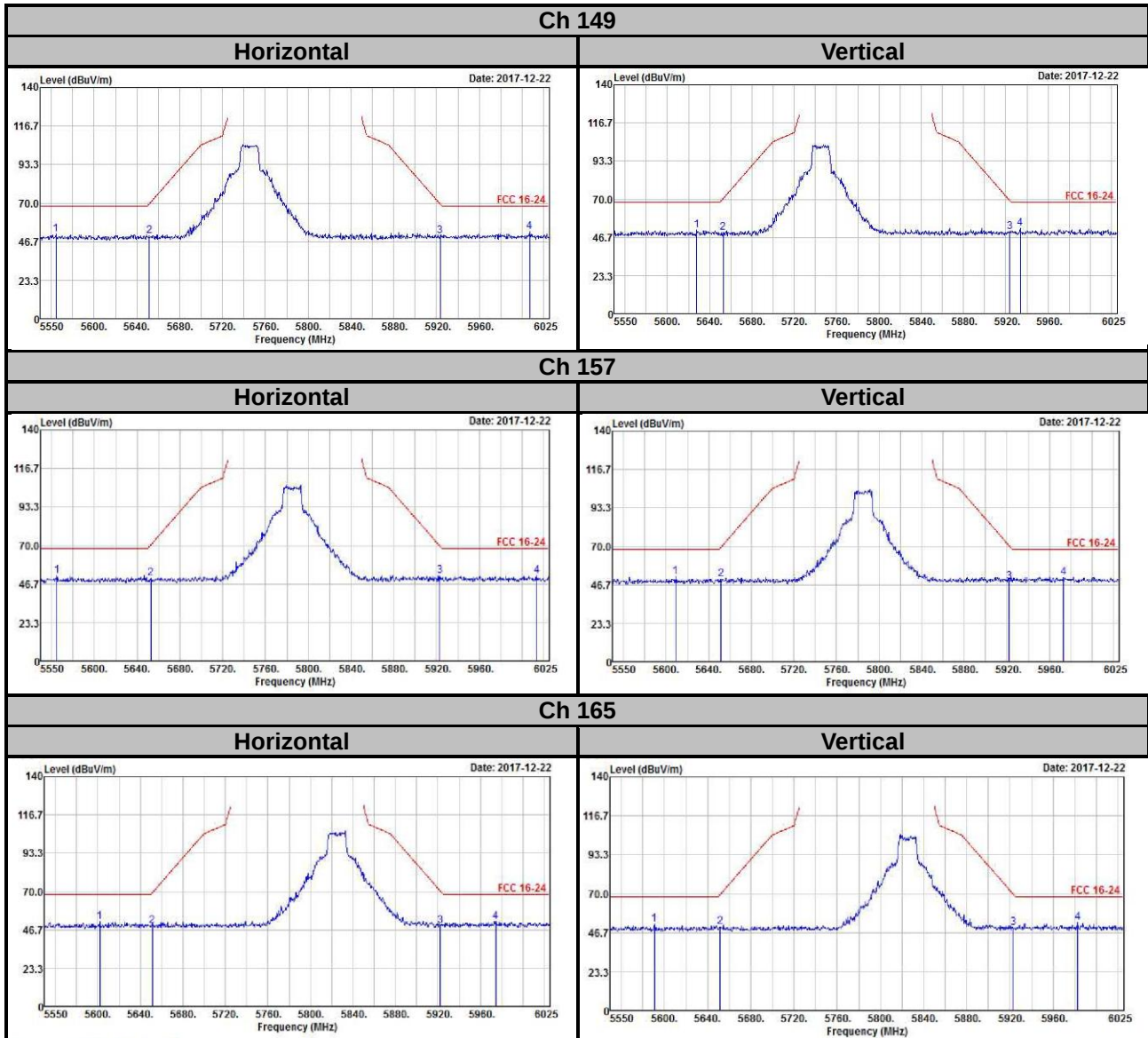


5 Pictures of Test Arrangements

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

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

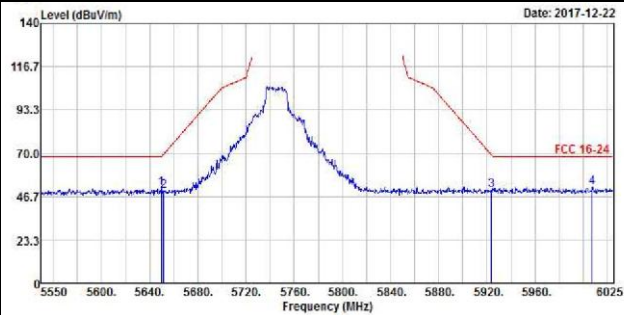
802.11a



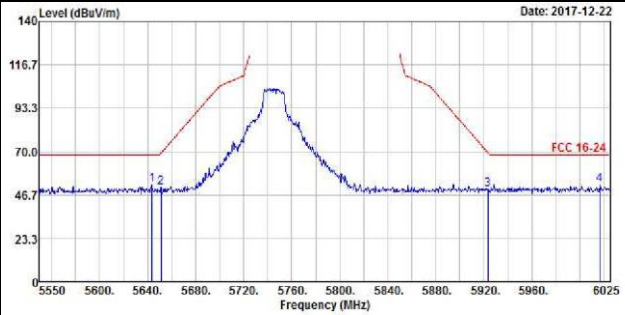
802.11n (HT20)

Ch 149

Horizontal

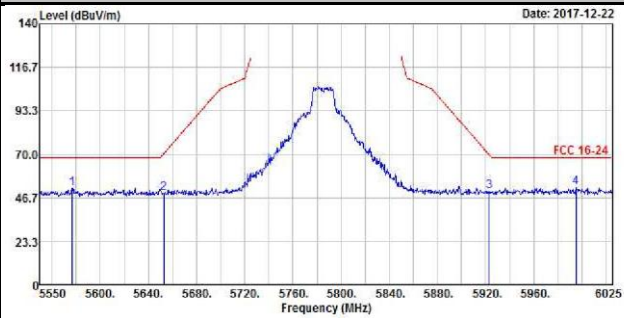


Vertical

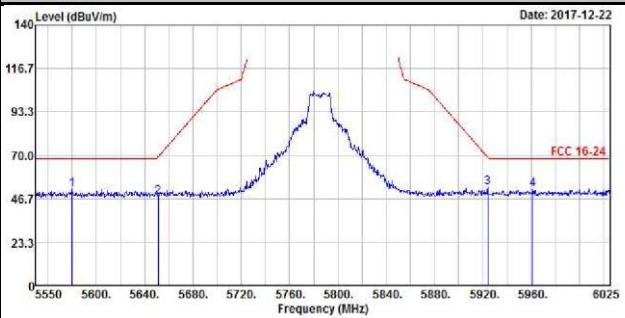


Ch 157

Horizontal

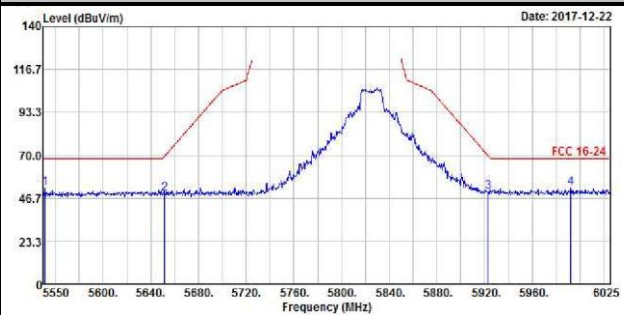


Vertical

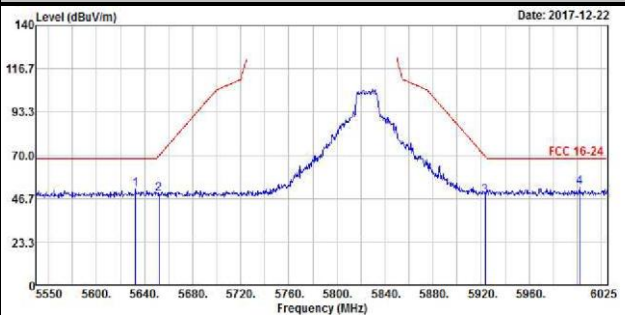


Ch 165

Horizontal



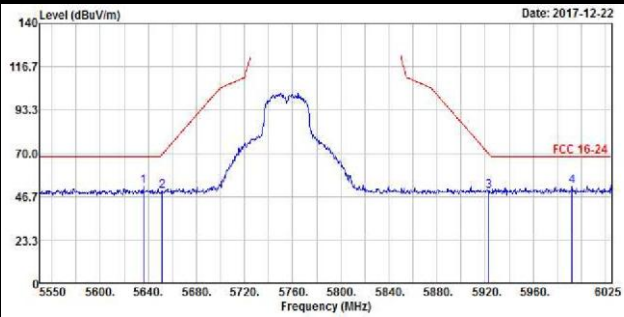
Vertical



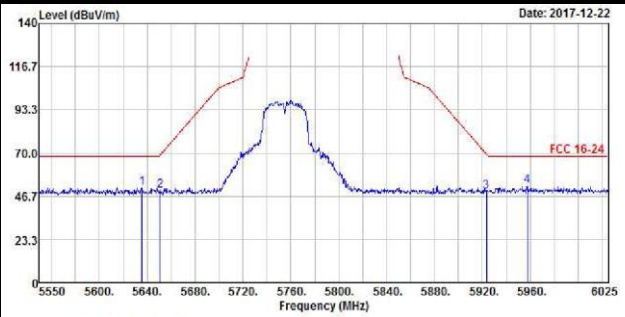
802.11n (HT40)

Ch 151

Horizontal

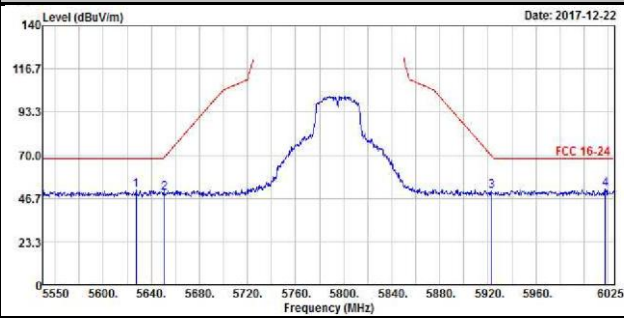


Vertical

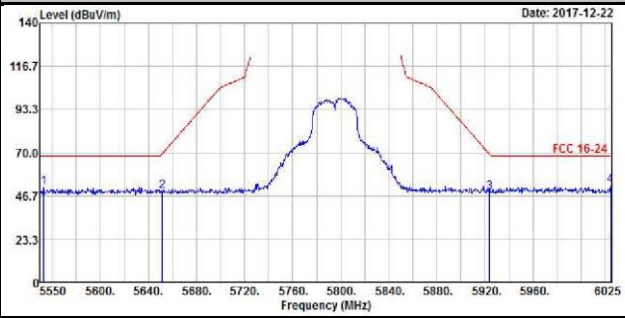


Ch 159

Horizontal



Vertical



Appendix – Information on the Testing Laboratories

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

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Web Site: www.bureauveritas-adt.com

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

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