

FCC Test Report

Report No.: RF180629C15-3

FCC ID: O57YOGAC630

Test Model: Lenovo YOGA C630-13Q50*****, 81JL*****, (*=0~9, A~Z, a~z, "-" or blank, for marketing use only, with no impact on RF compliance of the product)

Received Date: Jun. 19, 2018

Test Date: Jun. 23, 2018 ~ Sep. 03, 2018

Issued Date: Sep. 04, 2018

Applicant: Lenovo(Shanghai) Electronics Technology Co., Ltd.

Address: NO.68 BUILDING, 199 FENJU RD, China (Shanghai) Pilot Free Trade Zone, 200131, CHINA

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

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

**FCC Registration /
Designation Number:** 427177 / TW0011



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

Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results.....	6
2.1 Measurement Uncertainty.....	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes.....	9
3.2.1 Test Mode Applicability and Tested Channel Detail.....	11
3.3 Duty Cycle of Test Signal	13
3.4 Description of Support Units	14
3.4.1 Configuration of System under Test	14
3.5 General Description of Applied Standards.....	14
4 Test Types and Results	15
4.1 Radiated Emission and Bandedge Measurement	15
4.1.1 Limits of Radiated Emission and Bandedge Measurement	15
4.1.2 Limits of Unwanted Emission Out of the Restricted Bands	16
4.1.3 Test Instruments	17
4.1.4 Test Procedures.....	18
4.1.5 Deviation from Test Standard	19
4.1.6 Test Set Up	19
4.1.7 EUT Operating Conditions.....	20
4.1.8 Test Results	21
4.2 Conducted Emission Measurement.....	127
4.2.1 Limits of Conducted Emission Measurement	127
4.2.2 Test Instruments	127
4.2.3 Test Procedures.....	128
4.2.4 Deviation from Test Standard	128
4.2.5 Test Setup.....	128
4.2.6 EUT Operating Conditions.....	128
4.2.7 Test Results	129
4.3 Transmit Power Measurement.....	131
4.3.1 Limits of Transmit Power Measurement	131
4.3.2 Test Setup.....	131
4.3.3 Test Instruments	132
4.3.4 Test Procedure	132
4.3.5 Deviation from Test Standard	132
4.3.6 EUT Operating Conditions.....	132
4.3.7 Test Result	133
4.4 Occupied Bandwidth Measurement.....	140
4.4.1 Test Setup.....	140
4.4.2 Test Instruments	140
4.4.3 Test Procedure	140
4.4.4 Test Results	141
4.5 Peak Power Spectral Density Measurement	144
4.5.1 Limits of Peak Power Spectral Density Measurement	144
4.5.2 Test Setup.....	144
4.5.3 Test Instruments	144
4.5.4 Test Procedures.....	144
4.5.5 Deviation from Test Standard	145
4.5.6 EUT Operating Conditions.....	145
4.5.7 Test Results	146
4.6 Frequency Stability	153

4.6.1	Limit of Frequency Stability Measurement	153
4.6.2	Test Setup	153
4.6.3	Test Instruments	153
4.6.4	Test Procedure	153
4.6.5	Deviation from Test Standard	153
4.6.6	EUT Operating Condition	153
4.6.7	Test Results	154
4.7	6 dB Bandwidth Measurement.....	155
4.7.1	Limits of 6 dB Bandwidth Measurement.....	155
4.7.2	Test Setup.....	155
4.7.3	Test Instruments	155
4.7.4	Test Procedure	155
4.7.5	Deviation from Test Standard	155
4.7.6	EUT Operating Condition	155
4.7.7	Test Results	156
5	Pictures of Test Arrangements.....	158
	Annex A- Radiated Out of Band Emisison (OOBE) Measurement (For U-NII-3 band)	159
	Appendix – Information on the Testing Laboratories	162

Release Control Record

Issue No.	Description	Date Issued
RF180629C15-3	Original Release	Sep. 04, 2018

1 Certificate of Conformity

Product: Notebook Computer

Brand: Lenovo

Test Model: Lenovo YOGA C630-13Q50*****, 81JL*****, (*=0~9, A~Z, a~z, "-" or blank, for marketing use only, with no impact on RF compliance of the product)

Sample Status: Identical Prototype

Applicant: Lenovo(Shanghai) Electronics Technology Co., Ltd.

Test Date: Jun. 23, 2018 ~ Sep. 03, 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 RF characteristics under the conditions specified in this report.

Prepared by : Gina Liu, **Date:** Sep. 04, 2018
Gina Liu / Specialist

Approved by : Dylan Chiou, **Date:** Sep. 04, 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 -17.21 dB at 0.15400 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.8 dB at 5356.6 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	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Notebook Computer
Brand	Lenovo
Test Model	Lenovo YOGA C630-13Q50*****, 81JL*****, (*=0~9, A~Z, a~z, “-“ or blank, for marketing use only, with no impact on RF compliance of the product)
Status of EUT	Identical Prototype
Power Supply Rating	20 / 15 / 9 / 5 Vdc (adapter) 7.68 Vdc (Li-ion battery)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 300.0 Mbps 802.11ac: up to 866.7 Mbps
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5720 MHz: 12 for 802.11a, 802.11n (HT20) 5 for 802.11n (HT40) 2 for 802.11ac (VHT80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
Output Power	117.253 mW for 5180 ~ 5240 MHz 66.315 mW for 5260 ~ 5320 MHz 61.737 mW for 5500 ~ 5720 MHz 60.200 mW for 5745 ~ 5825 MHz
Antenna Type	Refer to Note as below
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

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

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

* The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	Lenovo	ADLX45YLC3D	I/P: 100-240 Vac, 50-60 Hz, 1.3 A O/P: 20 Vdc, 2.25 A / 15 Vdc, 3A / 9 Vdc, 2A / 5 Vdc, 2A
Battery	Lenovo	L17M4PH3	7.68 Vdc, 7680 mAh
WWAN Module	FOXCONN	T77W980	--

3. The antenna information is listed as below.

3. The antenna information is listed as below:

Antenna Type	Manufacturer	Parts Number	Antenna Gain			
			WLAN 2.4 GHz / Bluetooth	WLAN 5.15~5.35 GHz	WLAN 5.47~5.725 GHz	WLAN 5.725~5.875 GHz
PIFA	Tablet Mode					
	ACON	Main Antenna: ANF6Y-200023 (DC330026L20) Aux Antenna: ANF6Y-200024 (DC330026L30)	Main: -0.89 Aux: 0.37	Main: 0.22 Aux: 0.26	Main: 0.51 Aux: 0.19	Main: 0.82 Aux: 0.41
	Laptop Mode					
	ACON	Main Antenna: ANF6Y-200023 (DC330026L20) Aux Antenna: ANF6Y-200024 (DC330026L30)	Main: -0.11 Aux: 0.79	Main: 0.15 Aux: 0.21	Main: 0.53 Aux: 0.58	Main: 0.93 Aux: 0.91

4. There're Tablet mode and Laptop Mode for the EUT. After pre-tested all the modes and found Tablet mode was the worst. Therefore only Tablet mode was for the final test and presented in the test.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

For 5180 ~ 5240 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

For 5260 ~ 5320 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5700 MHz

12 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	144	5720

5 channels are provided for 802.11n (HT40):

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

2 channels are provided for 802.11ac (VHT80):

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

For 5745 ~ 5825 MHz:

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

RE<1G: Radiated Emission below 1 GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **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, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 122	106, 122	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1 GHz):

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5260-5320	802.11ac (VHT80)	58	58	OFDM	BPSK	29.3

Power Line Conducted Emission Test:

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5260-5320	802.11ac (VHT80)	58	58	OFDM	BPSK	29.3

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 122	106, 122	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee, Charles Hsiao
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Harry Hsueh
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
APCM	25 deg. C, 65 % RH	7.68 Vdc	Gavin Wu

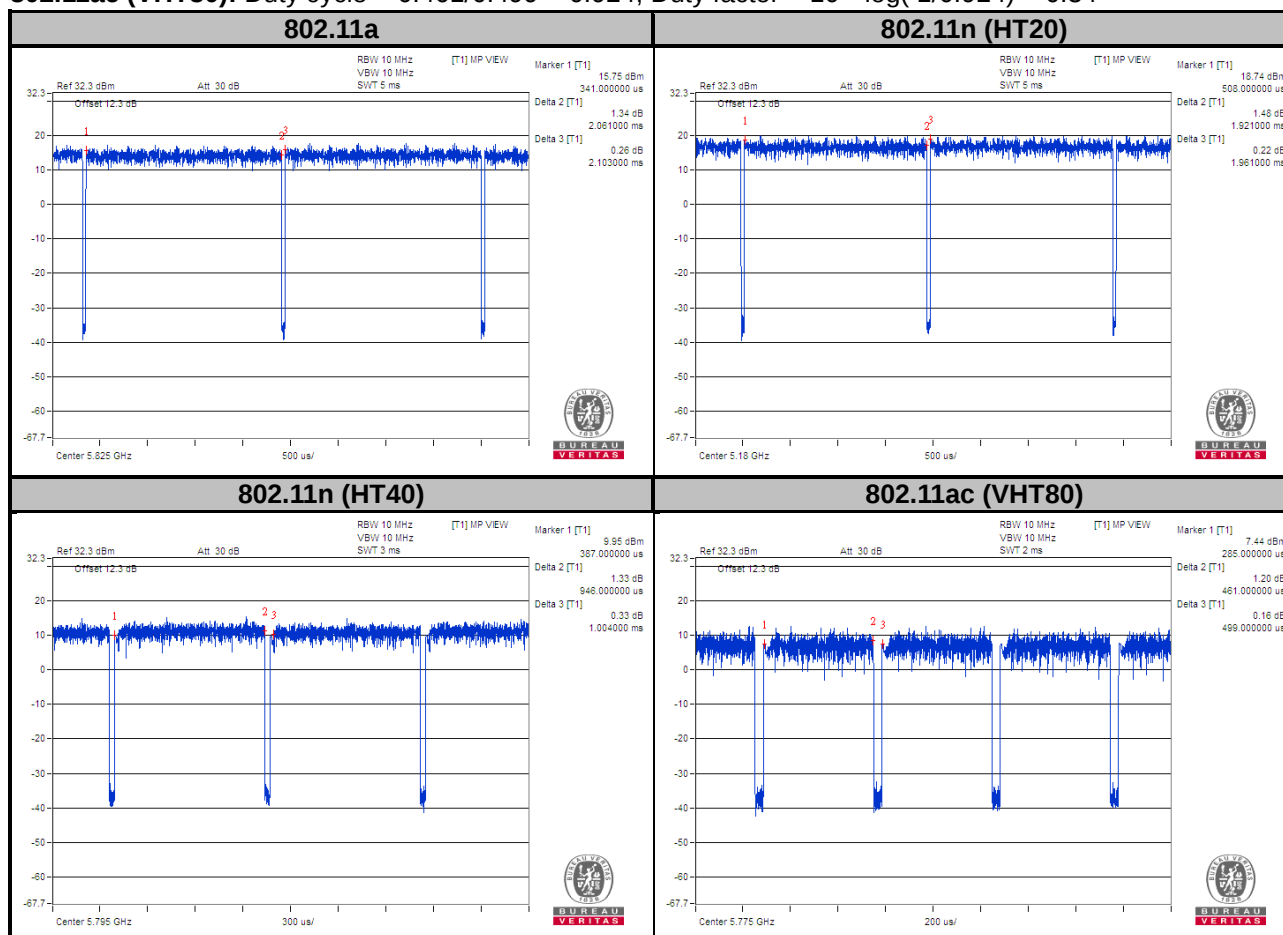
3.3 Duty Cycle of Test Signal

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

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

802.11n (HT40): Duty cycle = $0.946/1.004 = 0.942$, Duty factor = $10 * \log(1/0.942) = 0.26$

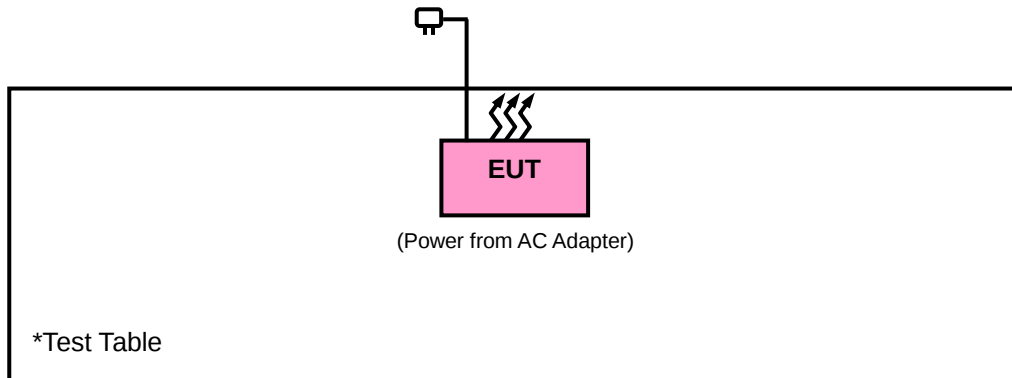
802.11ac (VHT80): Duty cycle = $0.461/0.499 = 0.924$, Duty factor = $10 * \log(1/0.924) = 0.34$



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)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Limits of Unwanted Emission Out of the Restricted Bands

Applicable To		Limit	
789033 D02 General UNII Test Procedures New Rules 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	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
Horn Antenna ETS-Lindgren	3117	00143293	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 01, 2017	Nov. 30, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Dec. 14, 2017	Dec. 13, 2018
Fixed Attenuator Mini-Circuits	BW-N4W5+	PAD-ATT4-01	Jan. 29, 2018	Jan. 28, 2019
Loop Antenna	HLA 6121	45745	Jun. 14, 2018	Jun. 13, 2019
Preamplifier Agilent	310N	187226	Jun. 19, 2018	Jun. 18, 2019
Preamplifier Agilent	83017A	MY39501357	Jun. 19, 2018	Jun. 18, 2019
Power Meter Anritsu	ML2495A	1012010	Aug. 15, 2017	Aug. 14, 2018
Power Sensor Anritsu	MA2411B	1315050	Aug. 15, 2017	Aug. 14, 2018
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 19, 2018	Jun. 18, 2019
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

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

2. The test was performed in HsinTien Chamber 1.

3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.

4. The IC Site Registration No. is IC7450I-1.

4.1.4 Test Procedures

For Radiated Emission below 30 MHz

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

Note:

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

For Radiated Emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

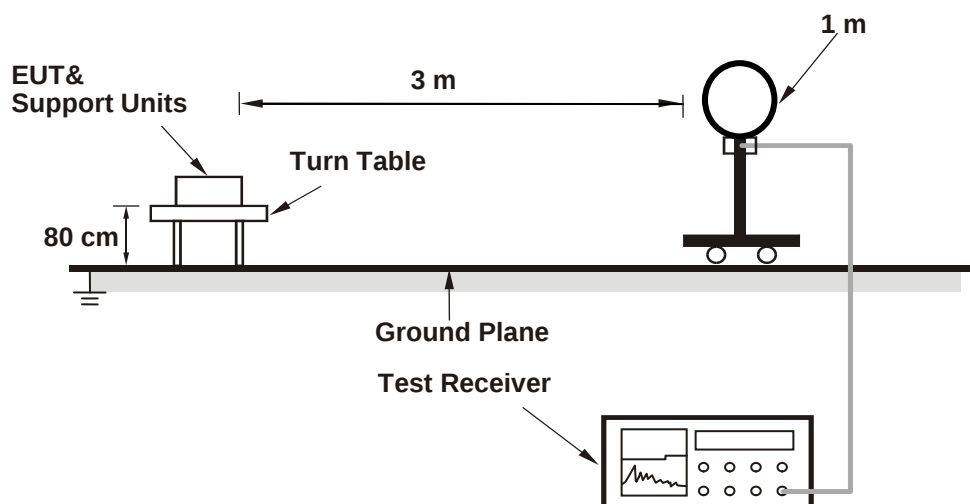
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
(11a: RBW = 1 MHz, VBW = 10 Hz ; 11ac (VHT20): RBW = 1 MHz, VBW = 10 Hz ;
11ac (VHT40): RBW = 1 MHz, VBW = 3 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 3 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

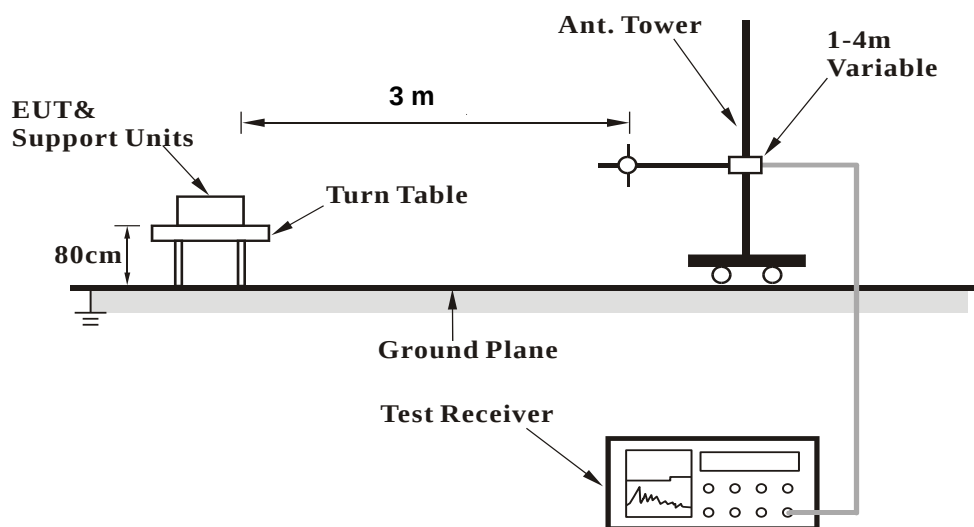
No deviation.

4.1.6 Test Setup

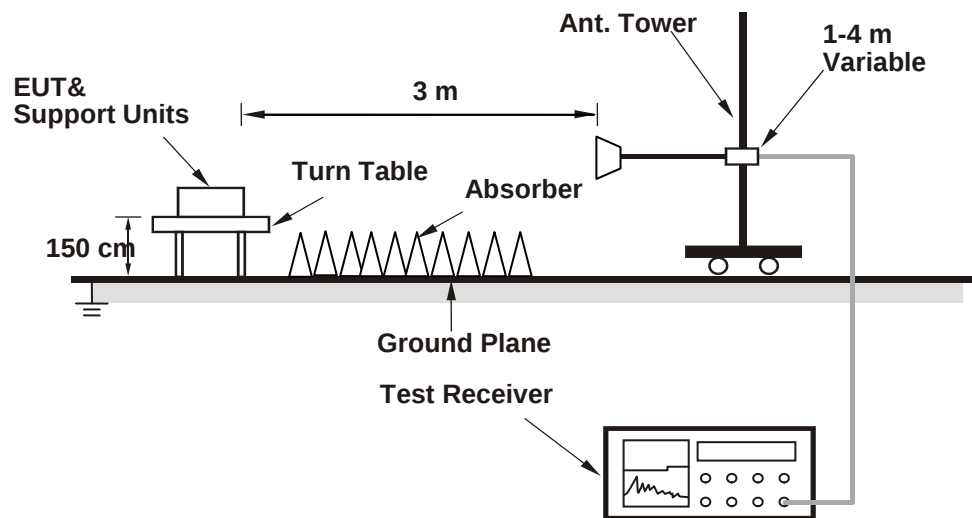
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

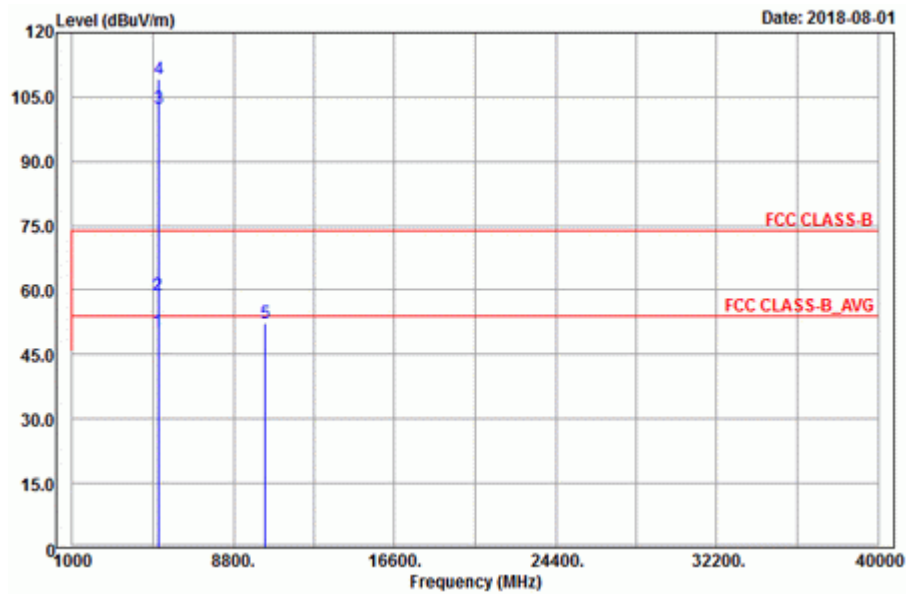
4.1.7 EUT Operating Conditions

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

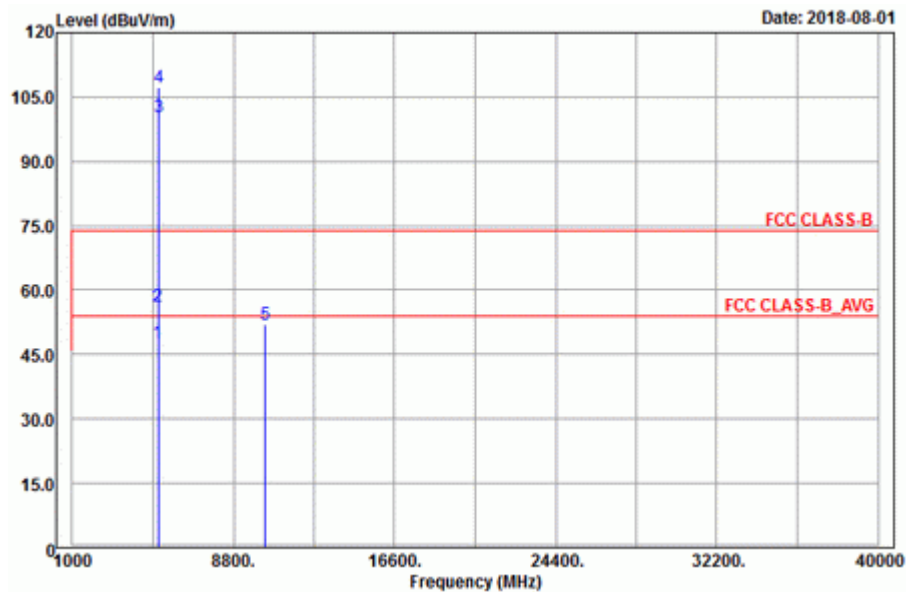
4.1.8 Test Results
Above 1 GHz Data :
802.11a

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

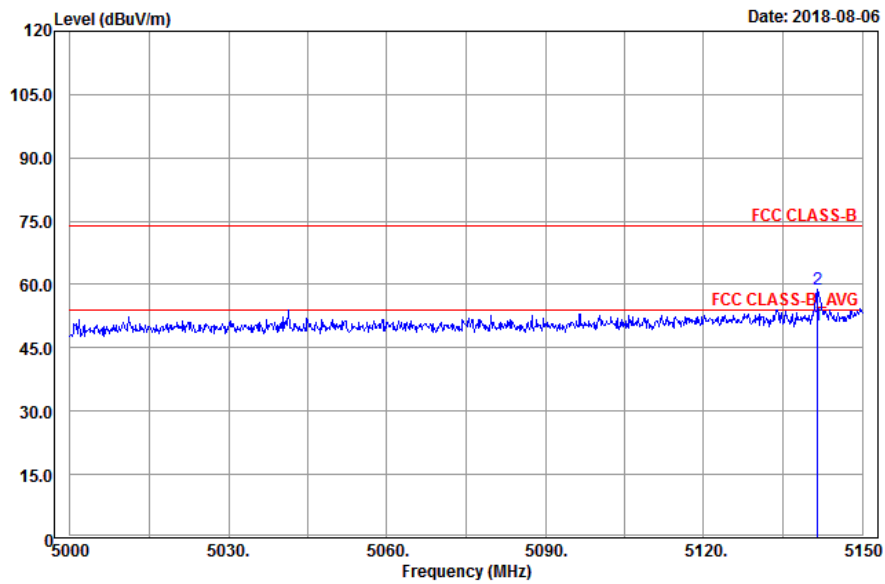
Spurious Emission
Horizontal



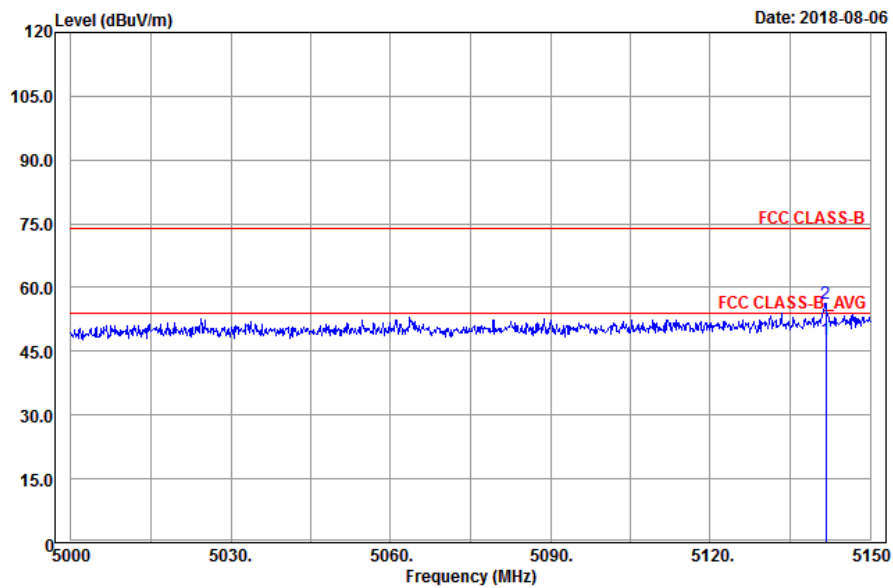
Vertical



Band Edge Horizontal



Vertical



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
5141.6	50.38	42.12	54	-3.62	34.12	8.13	33.99	192	185	Average
5141.6	58.99	50.73	74	-15.01	34.12	8.13	33.99	192	185	Peak
5180	102.39	94.08			34.15	8.16	34	202	183	Average
5180	109.1	100.79			34.15	8.16	34	202	183	Peak
*10360	52.31	38.01	68.2	-15.89	37.12	12.3	35.12	169	157	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
5141.75	47.78	39.52	54	-6.22	34.12	8.13	33.99	234	199	Average
5141.75	56.24	47.98	74	-17.76	34.12	8.13	33.99	234	199	Peak
5180	100.48	92.17			34.15	8.16	34	234	199	Average
5180	107.41	99.1			34.15	8.16	34	234	199	Peak
*10360	51.87	37.57	68.2	-16.33	37.12	12.3	35.12	147	223	Peak

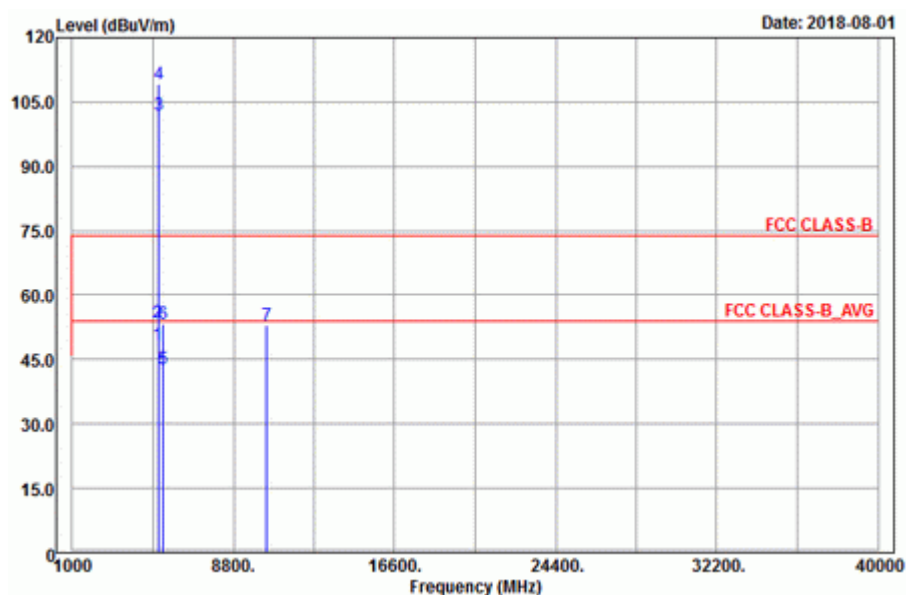
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

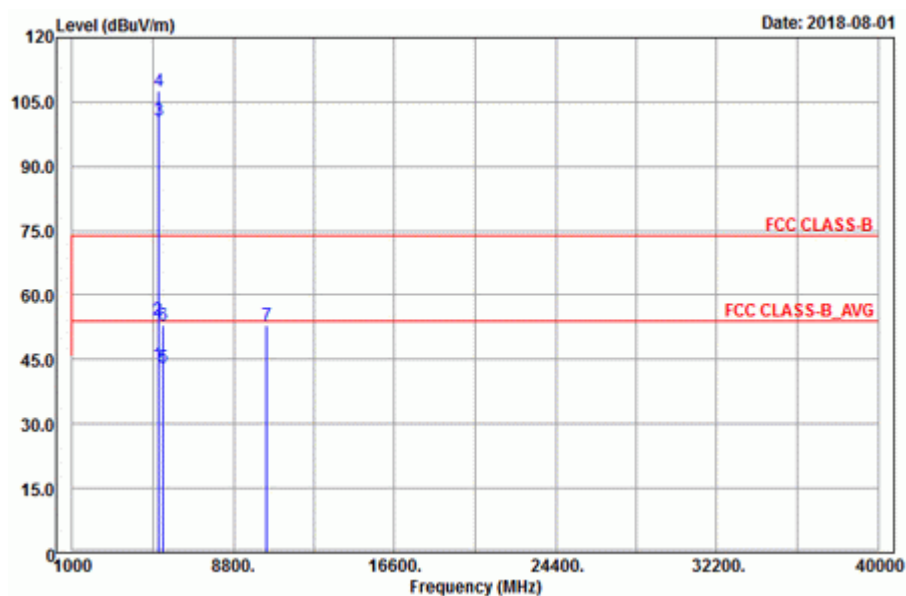
EUT Test Condition		Measurement Detail	
Channel	Channel 40	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Spurious Emission

Horizontal



Vertical



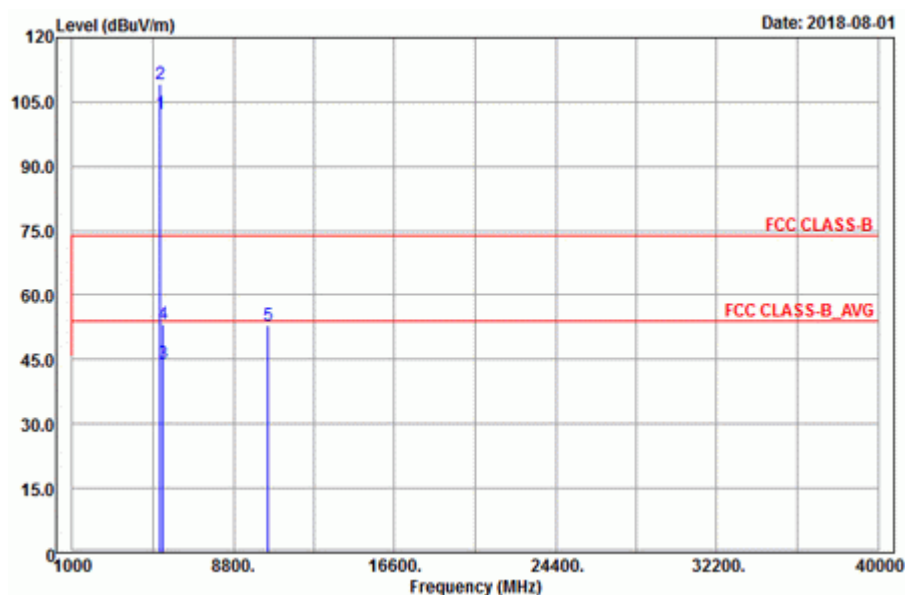
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.35	48.38	40.13	54	-5.62	34.12	8.13	34	192	185	Average
5148.35	53.51	45.26	74	-20.49	34.12	8.13	34	192	185	Peak
5200	101.99	93.64			34.16	8.19	34	192	185	Average
5200	109.09	100.74			34.16	8.19	34	192	185	Peak
5394.44	42.93	34.22	54	-11.07	34.31	8.44	34.04	192	185	Average
5394.44	53.2	44.49	74	-20.8	34.31	8.44	34.04	192	185	Peak
*10400	53.04	38.7	68.2	-15.16	37.14	12.36	35.16	137	165	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
5144.6	43.78	35.53	54	-10.22	34.12	8.13	34	234	199	Average
5144.6	54.18	45.93	74	-19.82	34.12	8.13	34	234	199	Peak
5200	100.76	92.41			34.16	8.19	34	234	199	Average
5200	107.6	99.25			34.16	8.19	34	234	199	Peak
5401.48	43.25	34.53	54	-10.75	34.32	8.44	34.04	234	199	Average
5401.48	52.96	44.24	74	-21.04	34.32	8.44	34.04	234	199	Peak
*10400	52.94	38.6	68.2	-15.26	37.14	12.36	35.16	180	191	Peak

Remarks:

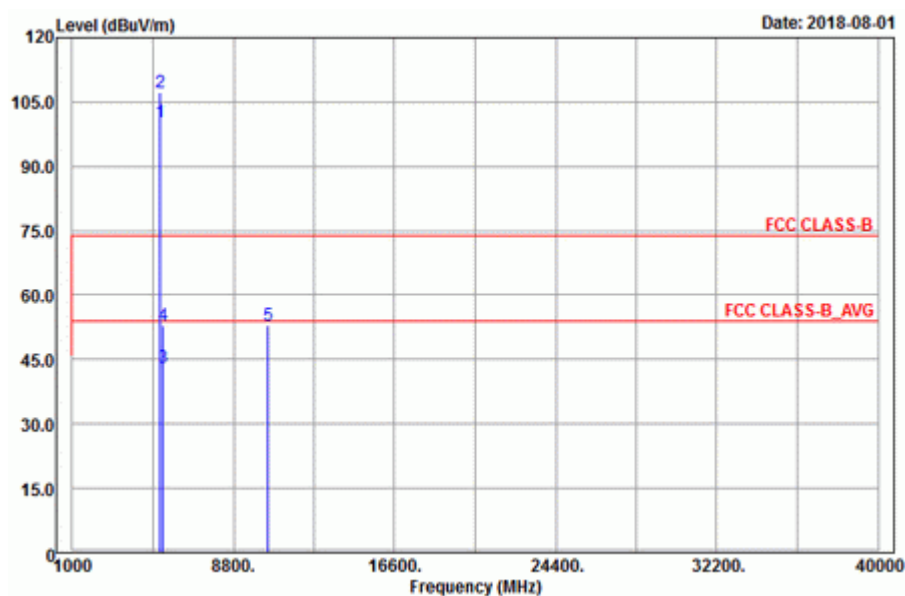
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 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	Karl Lee

Spurious Emission Horizontal



Vertical



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
5240	102.26	93.82			34.19	8.26	34.01	192	185	Average
5240	109.25	100.81			34.19	8.26	34.01	192	185	Peak
5396.42	44.25	35.53	54	-9.75	34.32	8.44	34.04	192	185	Average
5396.42	53.38	44.66	74	-20.62	34.32	8.44	34.04	192	185	Peak
*10480	53.04	38.53	68.2	-15.16	37.19	12.53	35.21	108	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
5240	100.33	91.89			34.19	8.26	34.01	234	199	Average
5240	107.28	98.84			34.19	8.26	34.01	234	199	Peak
5400.93	43.31	34.59	54	-10.69	34.32	8.44	34.04	234	199	Average
5400.93	52.99	44.27	74	-21.01	34.32	8.44	34.04	234	199	Peak
*10480	52.9	38.39	68.2	-15.3	37.19	12.53	35.21	145	86	Peak

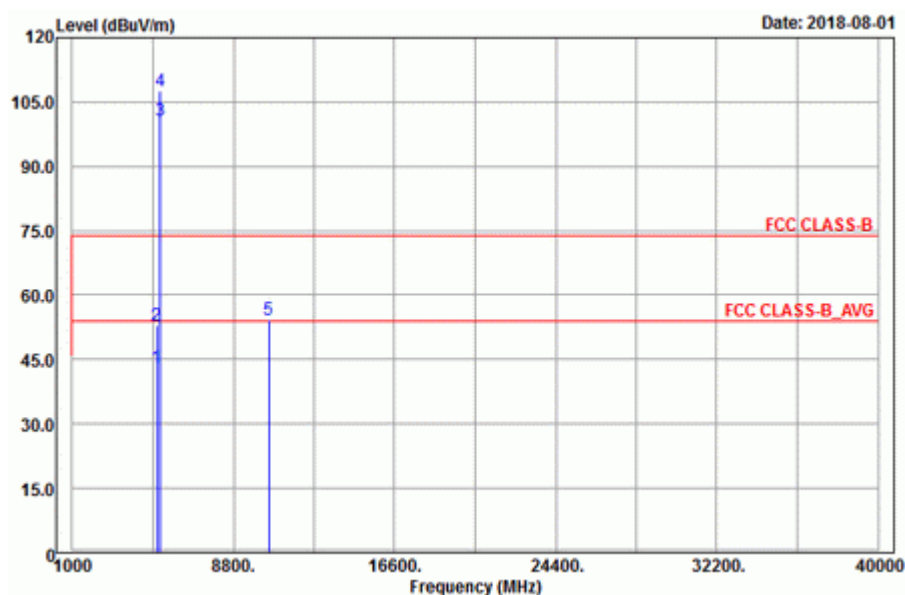
Remarks:

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
4. The emission levels of other frequencies were very low against the limit

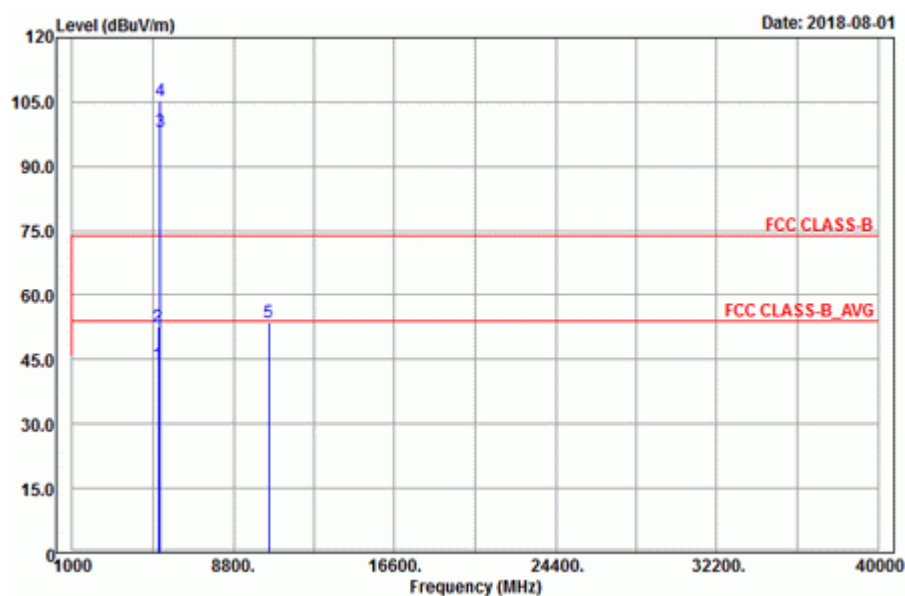
EUT Test Condition		Measurement Detail	
Channel	Channel 52	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Spurious Emission

Horizontal



Vertical



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
5090.6	43.02	34.85	54	-10.98	34.08	8.07	33.98	116	143	Average
5090.6	53.09	44.92	74	-20.91	34.08	8.07	33.98	116	143	Peak
5260	100.61	92.15			34.21	8.26	34.01	116	143	Average
5260	107.56	99.1			34.21	8.26	34.01	116	143	Peak
*10520	54.13	39.54	68.2	-14.07	37.21	12.61	35.23	120	178	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5142.5	43.84	35.58	54	-10.16	34.12	8.13	33.99	112	192	Average
5142.5	52.79	44.53	74	-21.21	34.12	8.13	33.99	112	192	Peak
5260	98.11	89.65			34.21	8.26	34.01	112	192	Average
5260	105.39	96.93			34.21	8.26	34.01	112	192	Peak
*10520	53.71	39.12	68.2	-14.49	37.21	12.61	35.23	147	169	Peak

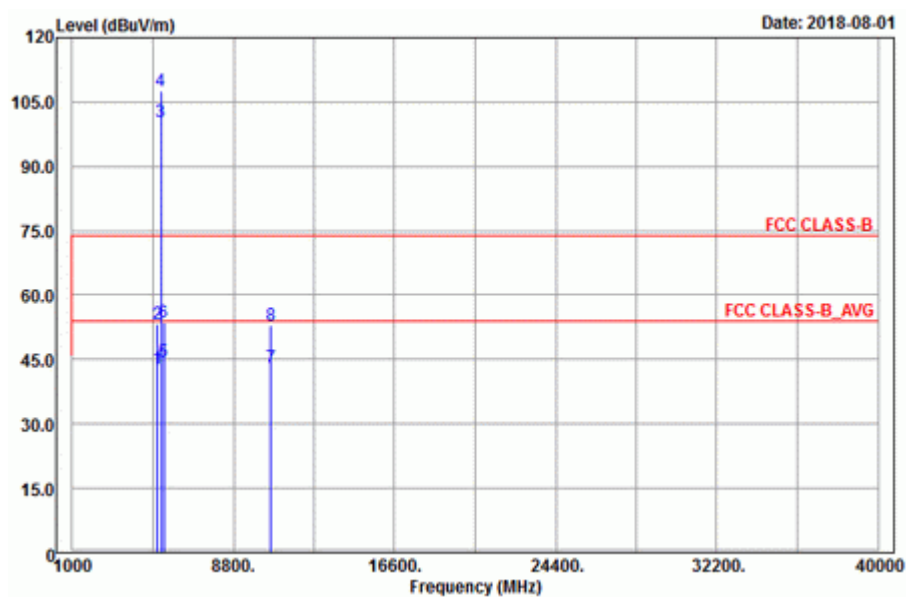
Remarks:

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
4. The emission levels of other frequencies were very low against the limit

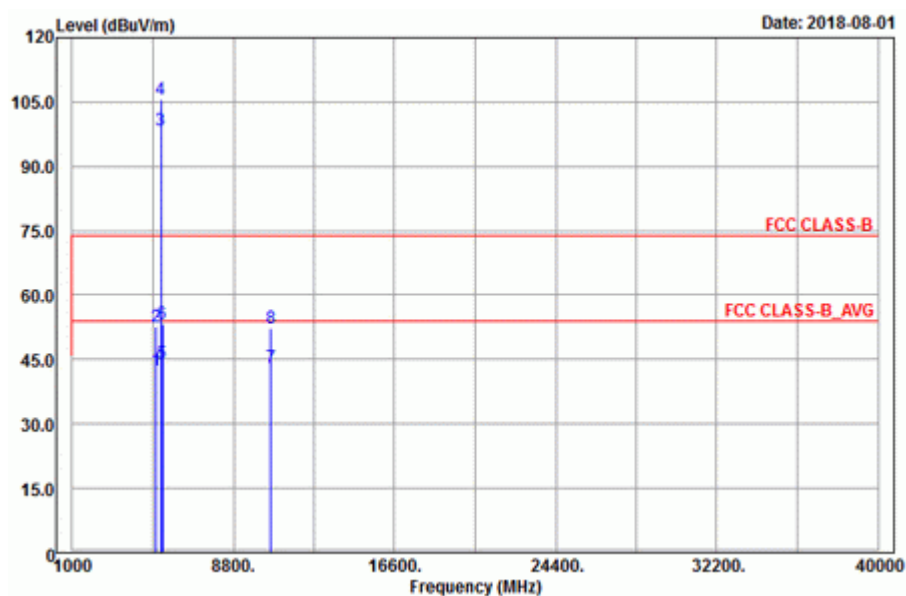
EUT Test Condition		Measurement Detail	
Channel	Channel 60	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Spurious Emission

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5130.65	42.78	34.56	54	-11.22	34.11	8.1	33.99	120	143	Average
5130.65	53.18	44.96	74	-20.82	34.11	8.1	33.99	120	143	Peak
5300	100.41	91.87			34.24	8.32	34.02	120	143	Average
5300	107.5	98.96			34.24	8.32	34.02	120	143	Peak
5442.07	44.43	35.64	54	-9.57	34.35	8.48	34.04	120	143	Average
5442.07	53.53	44.74	74	-20.47	34.35	8.48	34.04	120	143	Peak
10600	43.25	28.57	54	-10.75	37.28	12.67	35.27	130	87	Average
10600	52.94	38.26	74	-21.06	37.28	12.67	35.27	130	87	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
5037.35	42.63	34.57	54	-11.37	34.03	8	33.97	112	192	Average
5037.35	52.5	44.44	74	-21.5	34.03	8	33.97	112	192	Peak
5300	98.42	89.88			34.24	8.32	34.02	112	192	Average
5300	105.52	96.98			34.24	8.32	34.02	112	192	Peak
5355.94	44.2	35.57	54	-9.8	34.28	8.38	34.03	112	192	Average
5355.94	53.33	44.7	74	-20.67	34.28	8.38	34.03	112	192	Peak
10600	43.25	28.57	54	-10.75	37.28	12.67	35.27	161	142	Average
10600	52.44	37.76	74	-21.56	37.28	12.67	35.27	161	142	Peak

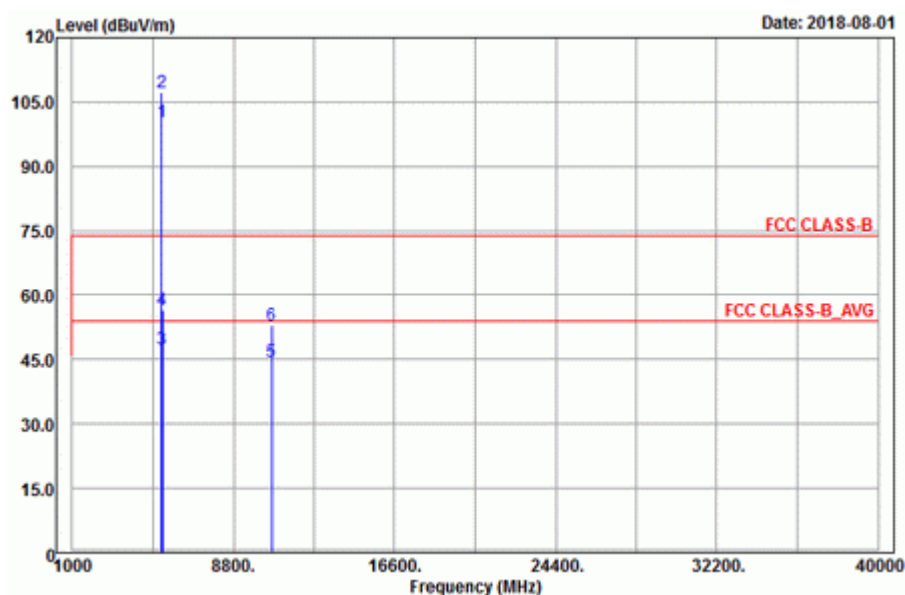
Remarks:

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

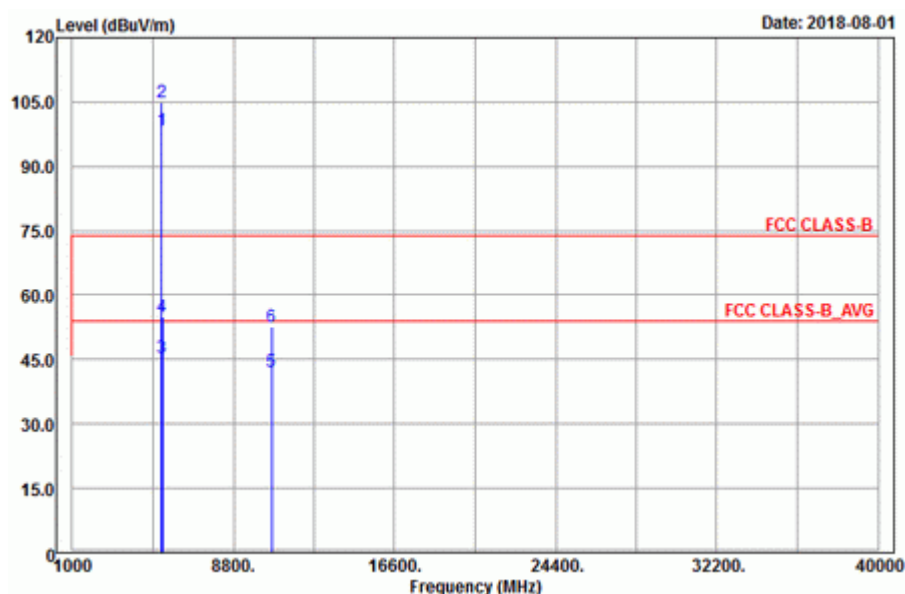
EUT Test Condition		Measurement Detail	
Channel	Channel 64	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Spurious Emission

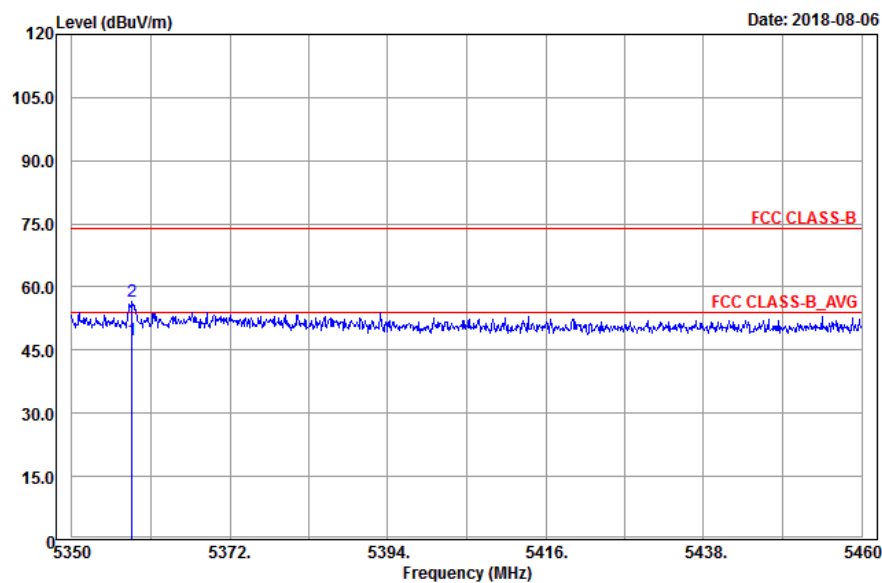
Horizontal



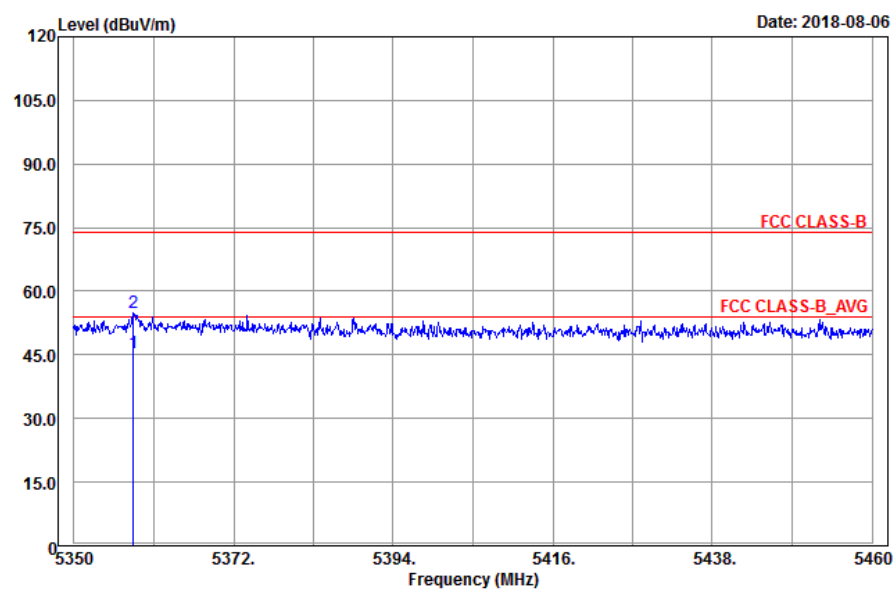
Vertical



Band Edge Horizontal



Vertical



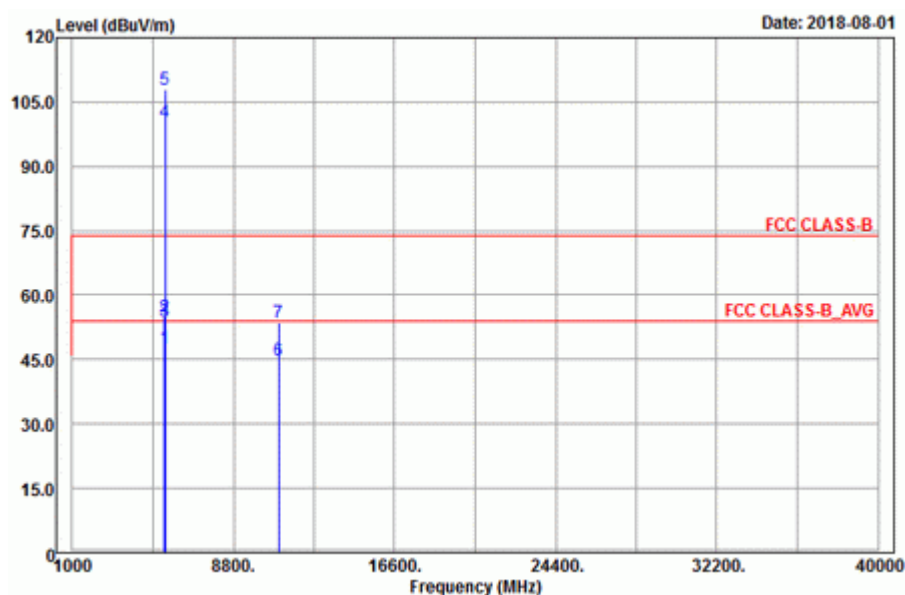
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	100.28	91.7			34.25	8.35	34.02	120	143	Average
5320	107.38	98.8			34.25	8.35	34.02	120	143	Peak
5358.36	47.49	38.86	54	-6.51	34.28	8.38	34.03	120	143	Average
5358.36	56.68	48.05	74	-17.32	34.28	8.38	34.03	120	143	Peak
10640	44.58	29.85	54	-9.42	37.31	12.71	35.29	151	117	Average
10640	52.93	38.2	74	-21.07	37.31	12.71	35.29	151	117	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	98.38	89.8			34.25	8.35	34.02	112	189	Average
5320	105.1	96.52			34.25	8.35	34.02	112	189	Peak
5358.14	45.53	36.9	54	-8.47	34.28	8.38	34.03	112	189	Average
5358.14	55	46.37	74	-19	34.28	8.38	34.03	112	189	Peak
10640	42.29	27.56	54	-11.71	37.31	12.71	35.29	163	227	Average
10640	52.48	37.75	74	-21.52	37.31	12.71	35.29	163	227	Peak

Remarks:

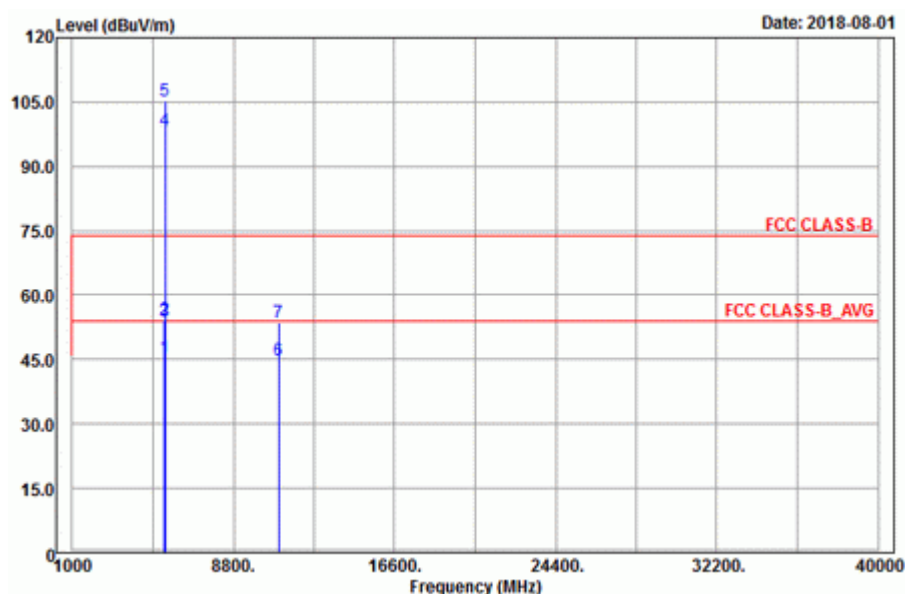
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

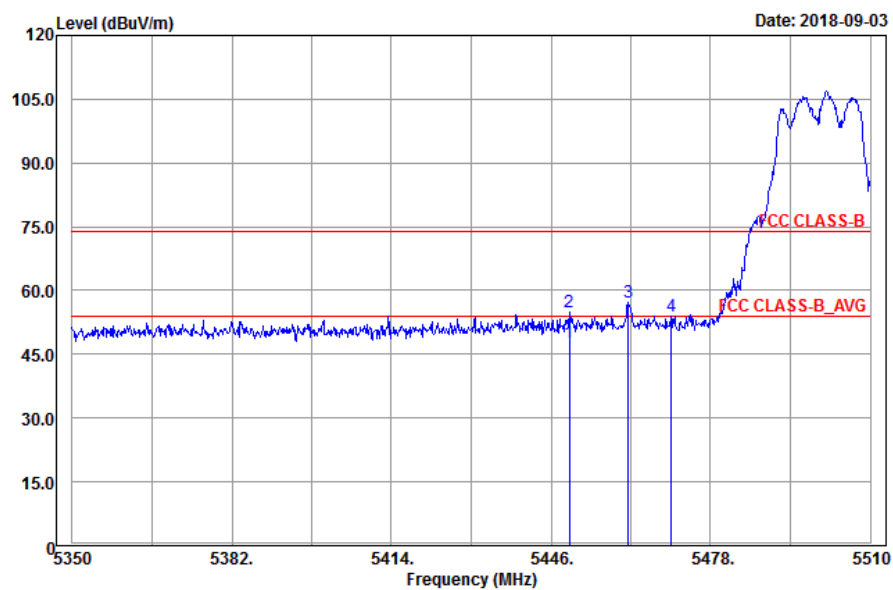
Spurious Emission Horizontal



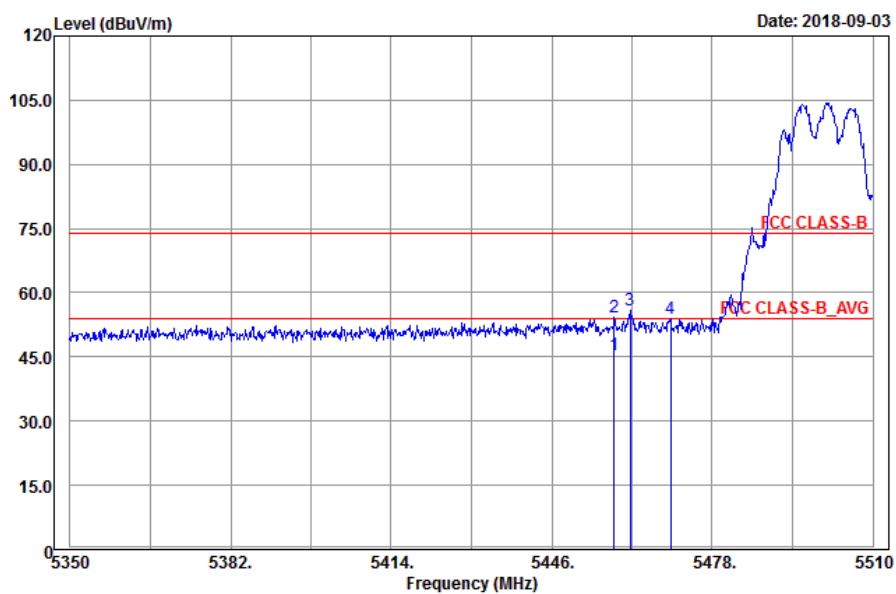
Vertical



Band Edge Horizontal



Vertical



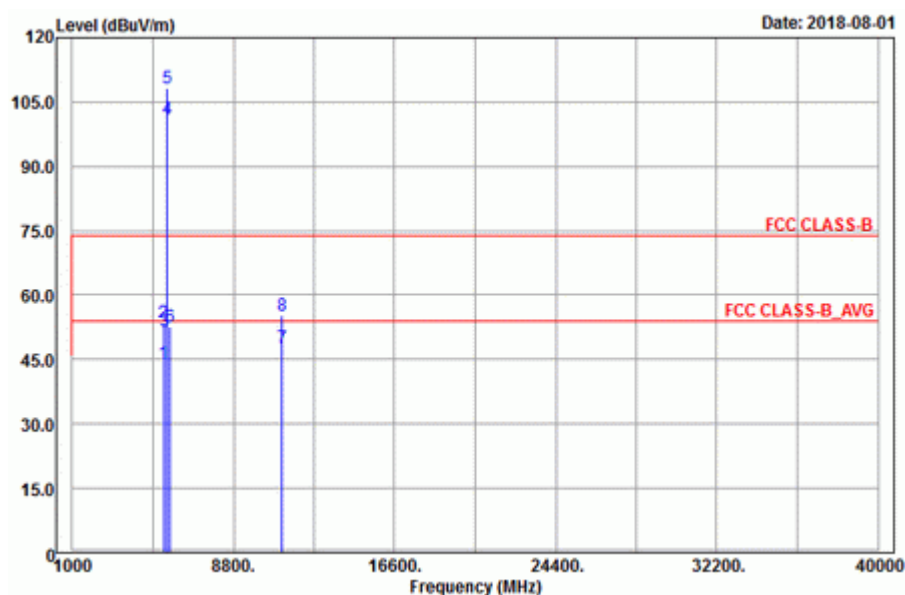
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5449.68	47.68	38.85	54	-6.32	34.36	8.51	34.04	141	161	Average
5449.68	55.09	46.26	74	-18.91	34.36	8.51	34.04	141	161	Peak
*5461.52	57.24	48.42	68.2	-10.96	34.36	8.51	34.05	141	161	Peak
*5470.16	53.89	45.06	68.2	-14.31	34.37	8.51	34.05	141	161	Peak
5500	100.53	91.61			34.4	8.57	34.05	141	161	Average
5500	107.78	98.86			34.4	8.57	34.05	141	161	Peak
11000	44.94	29.86	54	-9.06	37.6	12.96	35.48	145	178	Average
11000	53.54	38.46	74	-20.46	37.6	12.96	35.48	145	178	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.48	45.34	36.52	54	-8.66	34.36	8.51	34.05	237	189	Average
5458.48	54.37	45.55	74	-19.63	34.36	8.51	34.05	237	189	Peak
*5461.68	56.07	47.25	68.2	-12.13	34.36	8.51	34.05	237	189	Peak
*5469.68	53.89	45.06	68.2	-14.31	34.37	8.51	34.05	237	189	Peak
5500	98.49	89.57			34.4	8.57	34.05	237	189	Average
5500	105.43	96.51			34.4	8.57	34.05	237	189	Peak
11000	44.64	29.56	54	-9.36	37.6	12.96	35.48	136	84	Average
11000	53.59	38.51	74	-20.41	37.6	12.96	35.48	136	84	Peak

Remarks:

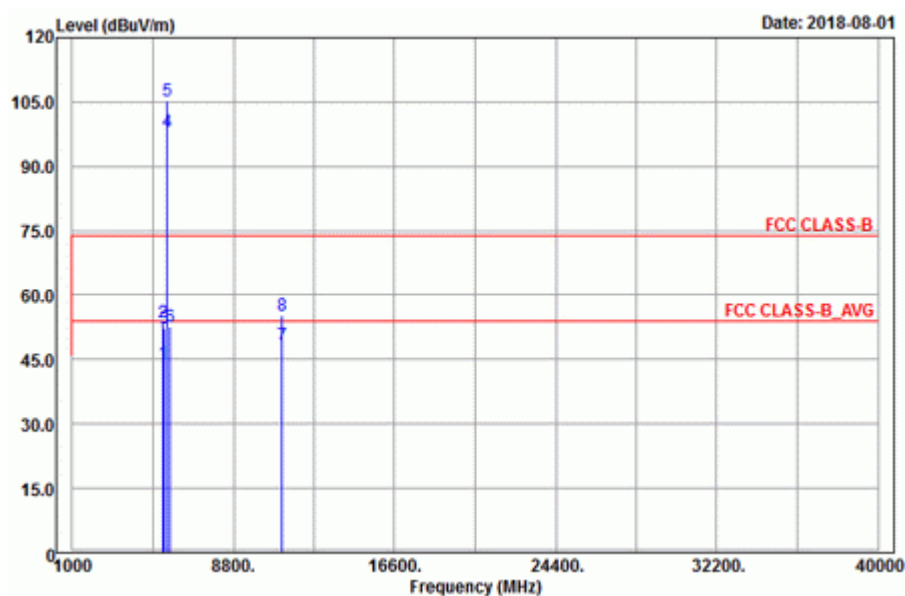
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



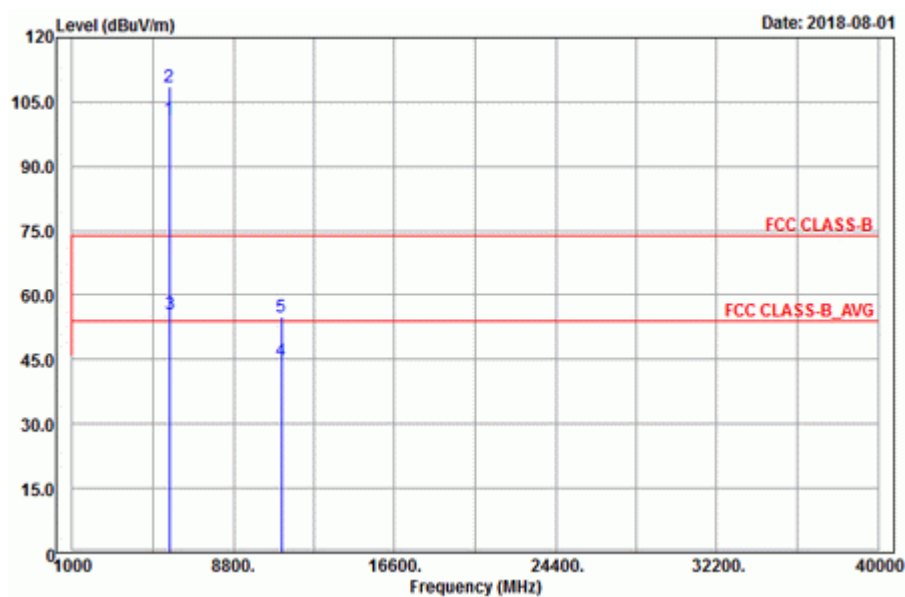
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5429.04	44.3	35.51	54	-9.7	34.35	8.48	34.04	141	161	Average
5429.04	53.56	44.77	74	-20.44	34.35	8.48	34.04	141	161	Peak
*5470.8	51.68	42.82	68.2	-16.52	34.37	8.54	34.05	141	161	Peak
5580	101.03	92.04			34.47	8.6	34.08	141	161	Average
5580	108.17	99.18			34.47	8.6	34.08	141	161	Peak
*5725.4	52.72	43.56	68.2	-15.48	34.62	8.65	34.11	141	161	Peak
11160	47.61	32.53	54	-6.39	37.7	12.83	35.45	128	261	Average
11160	55.28	40.2	74	-18.72	37.7	12.83	35.45	128	261	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
5408.24	44.26	35.54	54	-9.74	34.32	8.44	34.04	237	189	Average
5408.24	53.49	44.77	74	-20.51	34.32	8.44	34.04	237	189	Peak
*5469.84	52.25	43.42	68.2	-15.95	34.37	8.51	34.05	237	189	Peak
5580	98.25	89.26			34.47	8.6	34.08	237	189	Average
5580	105.35	96.36			34.47	8.6	34.08	237	189	Peak
*5724.6	52.5	43.34	68.2	-15.7	34.62	8.65	34.11	237	189	Peak
11160	48.32	33.24	54	-5.68	37.7	12.83	35.45	149	6	Average
11160	55.37	40.29	74	-18.63	37.7	12.83	35.45	149	6	Peak

Remarks:

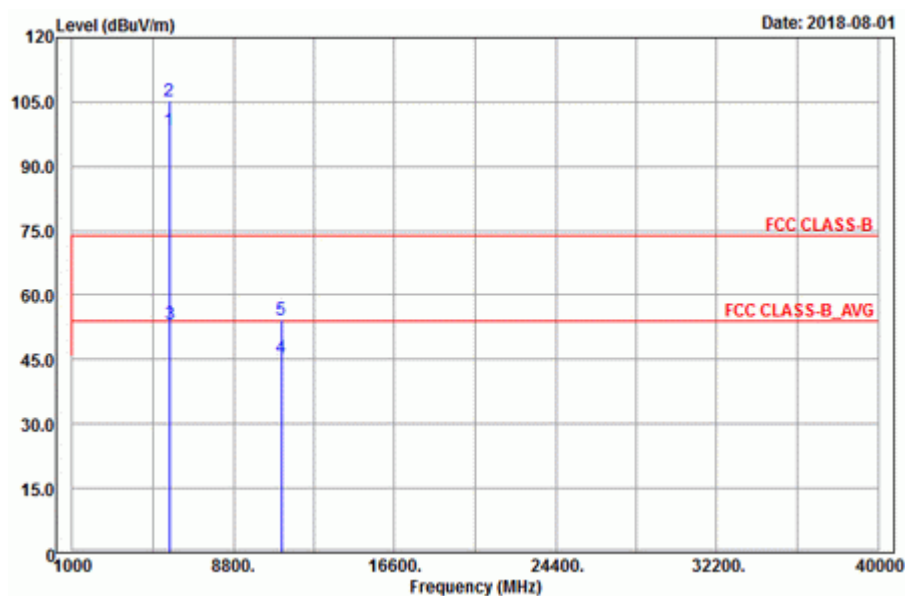
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

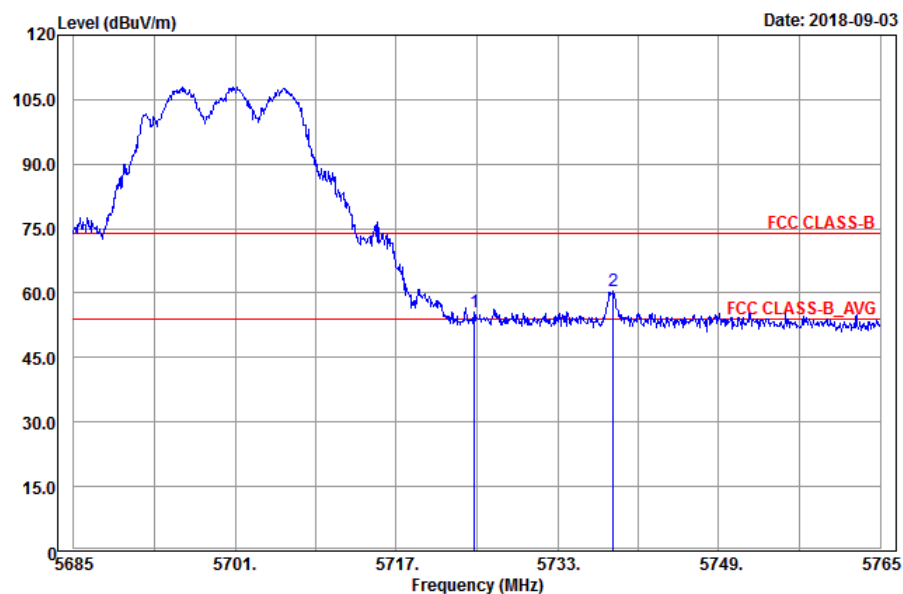
Spurious Emission Horizontal



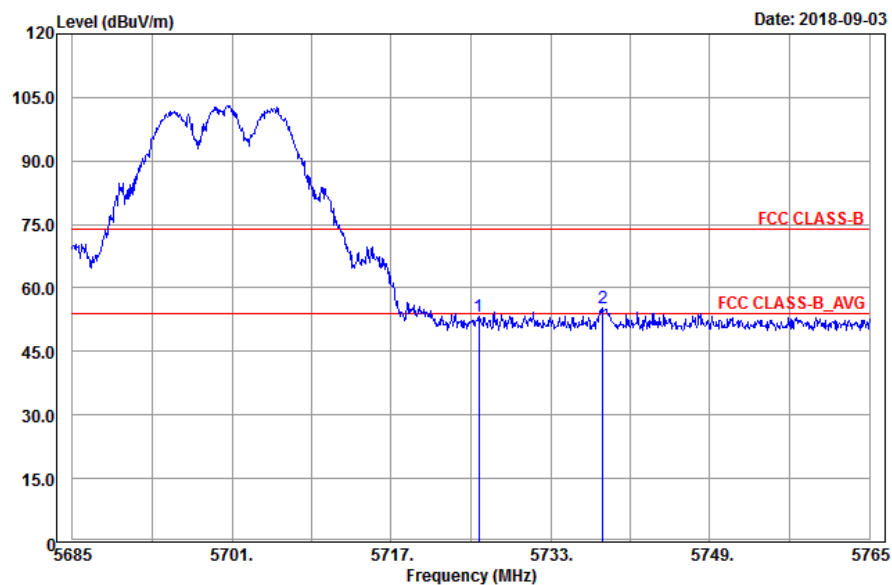
Vertical



Band Edge Horizontal



Vertical



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
5700	101.19	92.06			34.59	8.64	34.1	160	160	Average
5700	108.69	99.56			34.59	8.64	34.1	160	160	Peak
*5724.76	55.44	46.28	68.2	-12.76	34.62	8.65	34.11	160	153	Peak
*5738.52	60.45	51.26	68.2	-7.75	34.64	8.66	34.11	160	160	Peak
11140	44.66	29.58	54	-9.34	37.68	12.85	35.45	154	112	Average
11140	55.03	39.95	74	-18.97	37.68	12.85	35.45	154	112	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
5700	98.27	89.14			34.59	8.64	34.1	237	189	Average
5700	105.12	95.99			34.59	8.64	34.1	237	189	Peak
*5725.8	53.43	44.27	68.2	-14.77	34.62	8.65	34.11	237	189	Peak
*5738.28	55.17	45.98	68.2	-13.03	34.64	8.66	34.11	237	189	Peak
11140	45.31	30.23	54	-8.69	37.68	12.85	35.45	199	317	Average
11140	54.2	39.12	74	-19.8	37.68	12.85	35.45	199	317	Peak

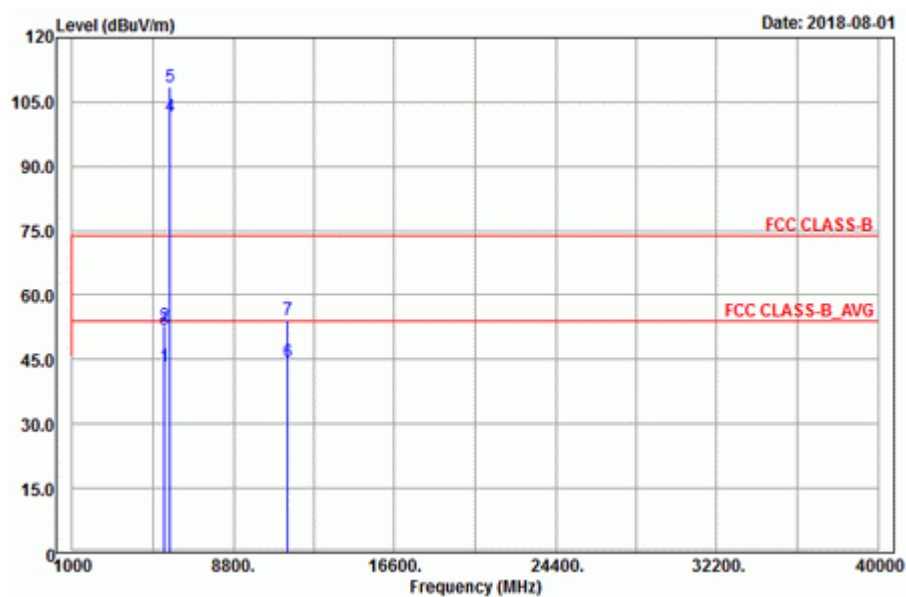
Remarks:

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

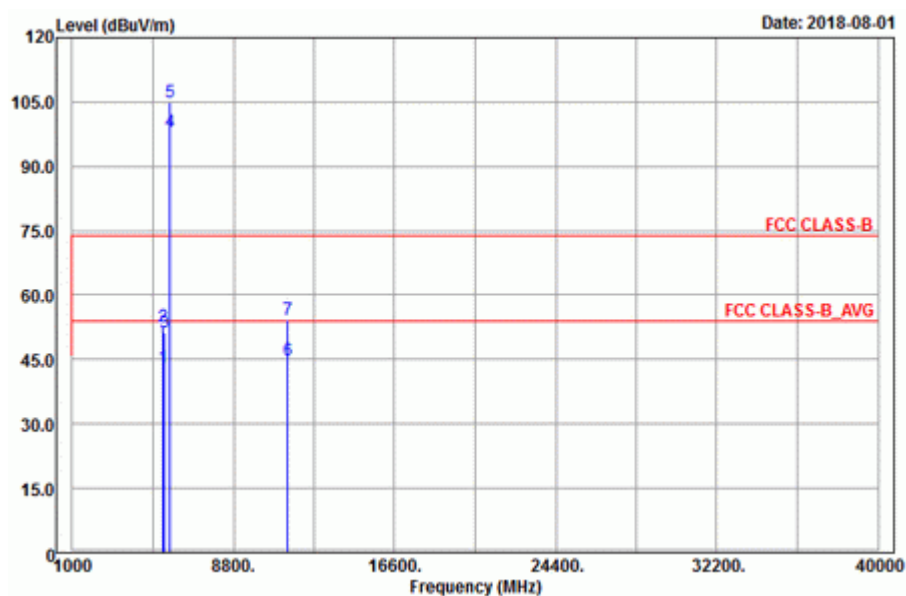
EUT Test Condition		Measurement Detail	
Channel	Channel 144	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Spurious Emission

Horizontal



Vertical



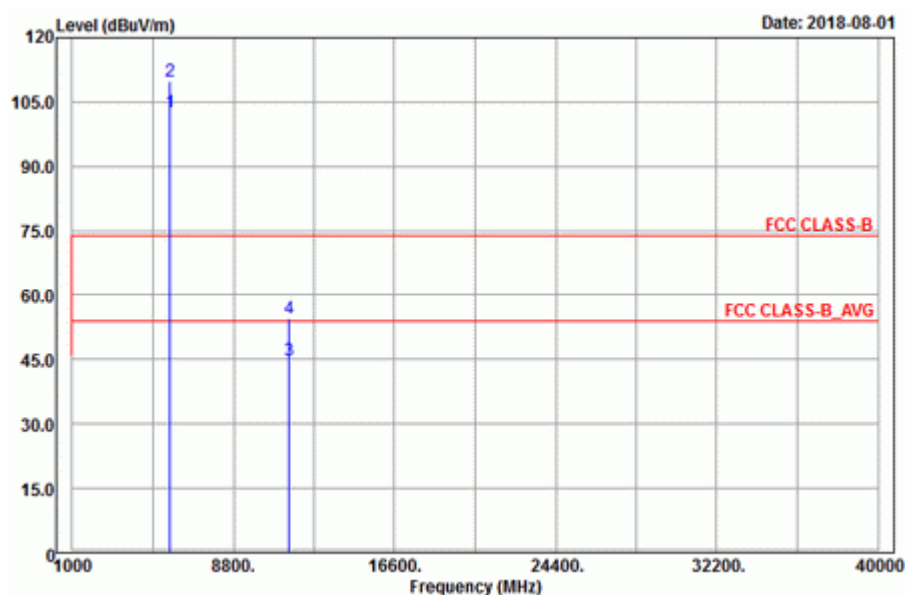
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.32	43.34	34.52	54	-10.66	34.36	8.51	34.05	141	161	Average
5458.32	52.9	44.08	74	-21.1	34.36	8.51	34.05	141	161	Peak
*5470.8	52.04	43.18	68.2	-16.16	34.37	8.54	34.05	141	161	Peak
5720	101.76	92.6			34.62	8.65	34.11	141	161	Average
5720	108.59	99.43			34.62	8.65	34.11	141	161	Peak
11440	44.5	29.39	54	-9.5	37.86	12.65	35.4	196	131	Average
11440	54.22	39.11	74	-19.78	37.86	12.65	35.4	196	131	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
5379.92	43.25	34.57	54	-10.75	34.31	8.41	34.04	237	189	Average
5379.92	52.8	44.12	74	-21.2	34.31	8.41	34.04	237	189	Peak
*5469.52	51.44	42.61	68.2	-16.76	34.37	8.51	34.05	237	189	Peak
5720	98.25	89.09			34.62	8.65	34.11	237	189	Average
5720	105.1	95.94			34.62	8.65	34.11	237	189	Peak
11440	44.75	29.64	54	-9.25	37.86	12.65	35.4	163	172	Average
11440	54.43	39.32	74	-19.57	37.86	12.65	35.4	163	172	Peak

Remarks:

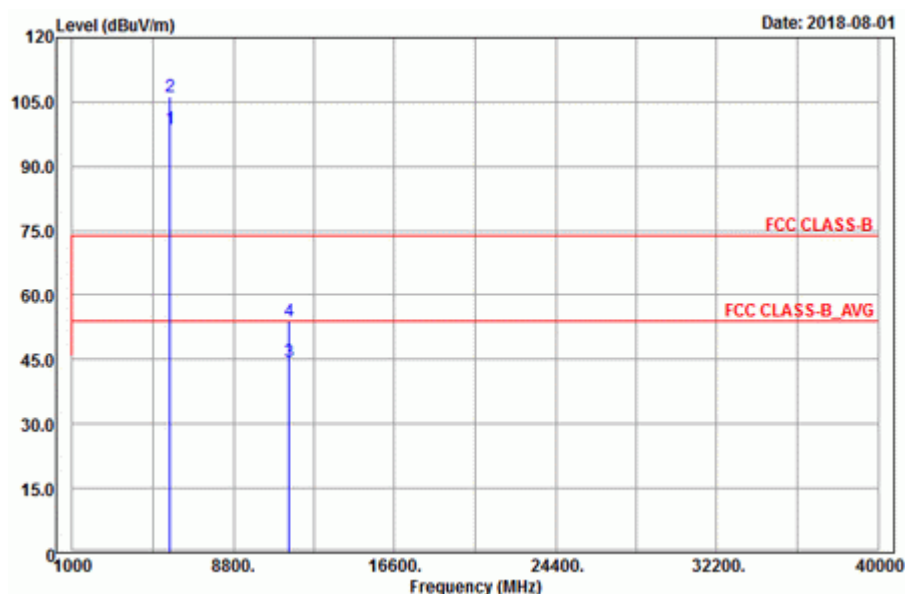
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



<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	102.61	93.42			34.64	8.66	34.11	161	187	Average
5745	109.97	100.78			34.64	8.66	34.11	161	187	Peak
11490	44.67	29.55	54	-9.33	37.89	12.62	35.39	160	227	Average
11490	54.52	39.4	74	-19.48	37.89	12.62	35.39	160	227	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	98.72	89.53			34.64	8.66	34.11	257	183	Average
5745	106.12	96.93			34.64	8.66	34.11	257	183	Peak
11490	44.33	29.21	54	-9.67	37.89	12.62	35.39	137	216	Average
11490	53.95	38.83	74	-20.05	37.89	12.62	35.39	137	216	Peak

<Out of Band Emission (OOBE)>

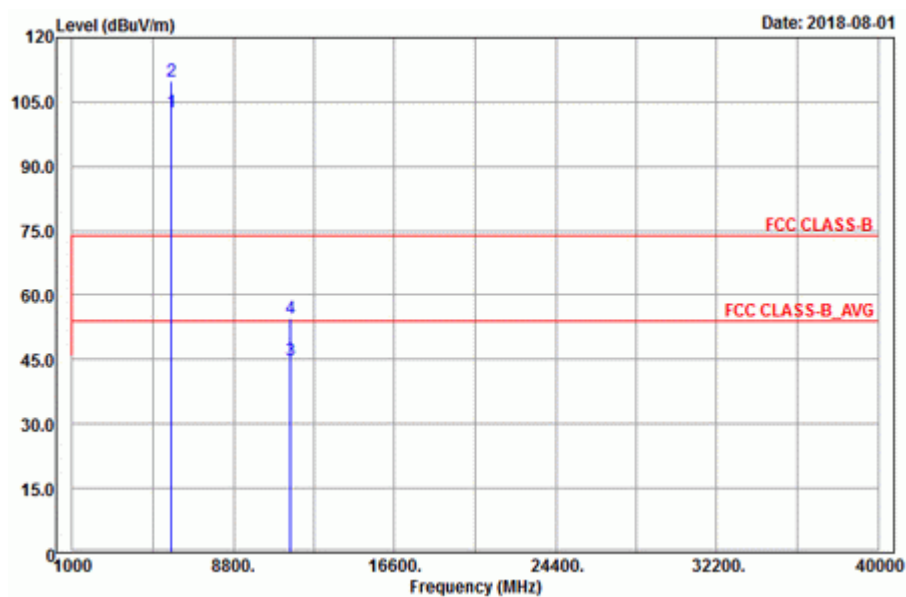
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5568.775	52.49	43.5	68.2	-15.71	34.47	8.59	34.07	161	187	Peak
5651.2	52.6	43.51	69.09	-16.49	34.56	8.62	34.09	161	187	Peak
5923.675	51.46	42.06	69.18	-17.72	34.83	8.73	34.16	161	187	Peak
*5988.25	53.38	43.92	68.2	-14.82	34.88	8.75	34.17	161	187	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
*5555.65	53.06	44.09	68.2	-15.14	34.45	8.59	34.07	257	183	Peak
5652.25	51.22	42.13	69.86	-18.64	34.56	8.62	34.09	257	183	Peak
5923.675	52.15	42.75	69.18	-17.03	34.83	8.73	34.16	257	183	Peak
*5998.75	52.63	43.14	68.2	-15.57	34.9	8.76	34.17	257	183	Peak

Remarks:

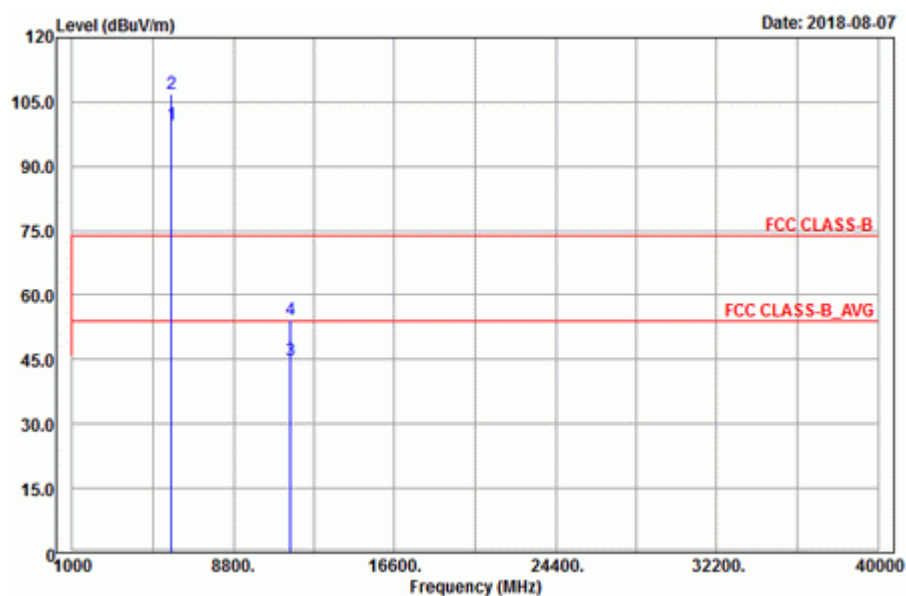
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



<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	102.82	93.59			34.68	8.68	34.13	161	187	Average
5785	109.8	100.57			34.68	8.68	34.13	161	187	Peak
11570	44.92	29.61	54	-9.08	38	12.68	35.37	180	152	Average
11570	54.46	39.15	74	-19.54	38	12.68	35.37	180	152	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	99.73	90.5			34.68	8.68	34.13	257	183	Average
5785	106.82	97.59			34.68	8.68	34.13	257	183	Peak
11570	44.71	29.4	54	-9.29	38	12.68	35.37	131	182	Average
11570	54.44	39.13	74	-19.56	38	12.68	35.37	131	182	Peak

<Out of Band Emission (OOBE)>

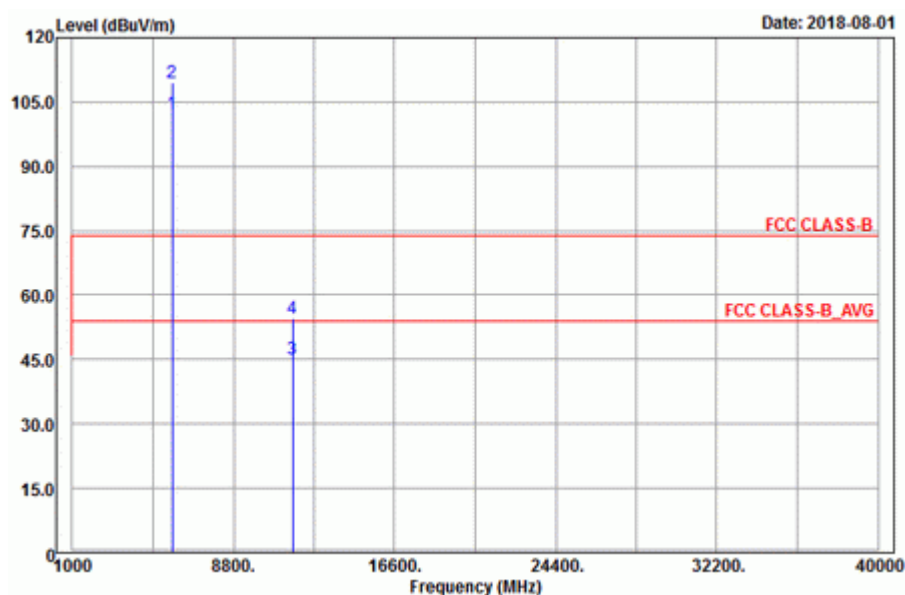
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5616.55	53.78	44.73	68.2	-14.42	34.52	8.61	34.08	161	187	Peak
5652.25	52.64	43.55	69.86	-17.22	34.56	8.62	34.09	161	187	Peak
5921.575	51.57	42.17	70.73	-19.16	34.83	8.73	34.16	161	187	Peak
*6011.35	52.82	43.32	68.2	-15.38	34.92	8.76	34.18	161	187	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
*5602.375	52.99	43.96	68.2	-15.21	34.5	8.61	34.08	257	183	Peak
5651.2	51.23	42.14	69.09	-17.86	34.56	8.62	34.09	257	183	Peak
5923.675	50.59	41.19	69.18	-18.59	34.83	8.73	34.16	257	183	Peak
*5994.025	53	43.51	68.2	-15.2	34.9	8.76	34.17	257	183	Peak

Remarks:

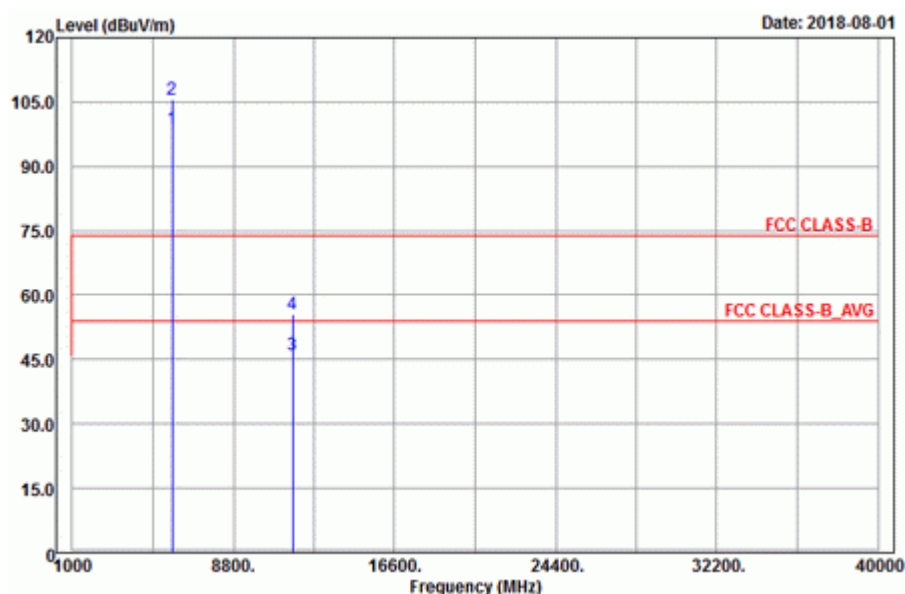
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



<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	102.4	93.11			34.73	8.69	34.13	160	187	Average
5825	109.6	100.31			34.73	8.69	34.13	160	187	Peak
11650	45.03	29.5	54	-8.97	38.09	12.8	35.36	176	243	Average
11650	54.75	39.22	74	-19.25	38.09	12.8	35.36	176	243	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	98.6	89.31			34.73	8.69	34.13	257	183	Average
5825	105.64	96.35			34.73	8.69	34.13	257	183	Peak
11650	46.11	30.58	54	-7.89	38.09	12.8	35.36	136	124	Average
11650	55.59	40.06	74	-18.41	38.09	12.8	35.36	136	124	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
*5568.25	53.71	44.72	68.2	-14.49	34.47	8.59	34.07	160	187	Peak
5652.775	51.87	42.77	70.25	-18.38	34.56	8.63	34.09	160	187	Peak
5923.675	50.52	41.12	69.18	-18.66	34.83	8.73	34.16	160	187	Peak
*6019.225	53.26	43.75	68.2	-14.94	34.92	8.77	34.18	160	187	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
*5635.975	52.74	43.67	68.2	-15.46	34.54	8.62	34.09	257	183	Peak
5653.3	51.62	42.52	70.64	-19.02	34.56	8.63	34.09	257	183	Peak
5922.625	50.69	41.29	69.96	-19.27	34.83	8.73	34.16	257	183	Peak
*5994.55	52.9	43.41	68.2	-15.3	34.9	8.76	34.17	257	183	Peak

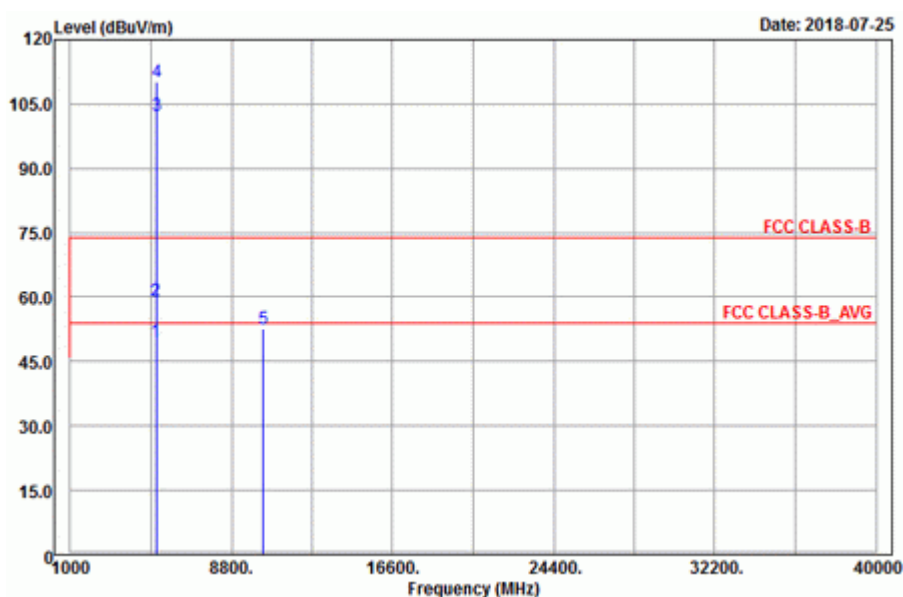
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

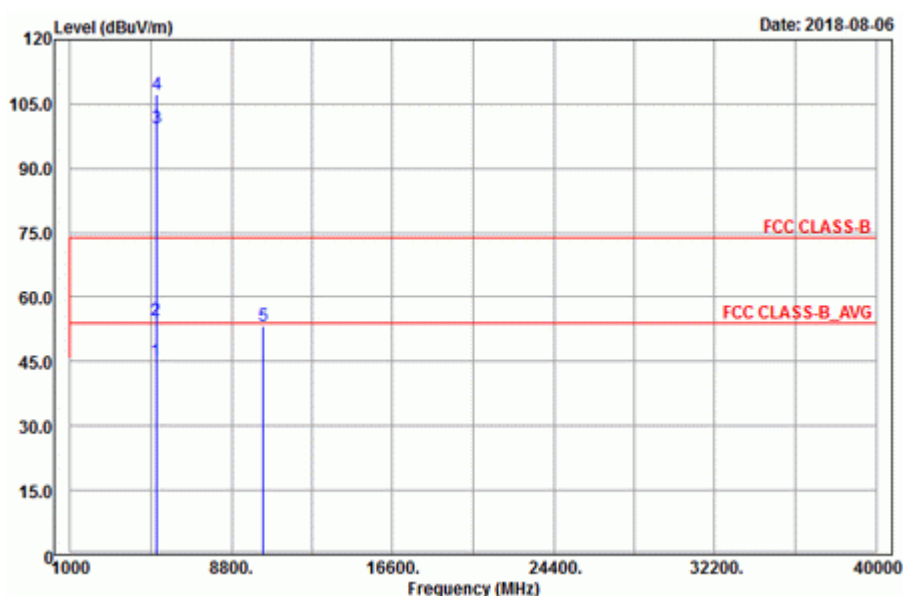
802.11n (HT20)

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

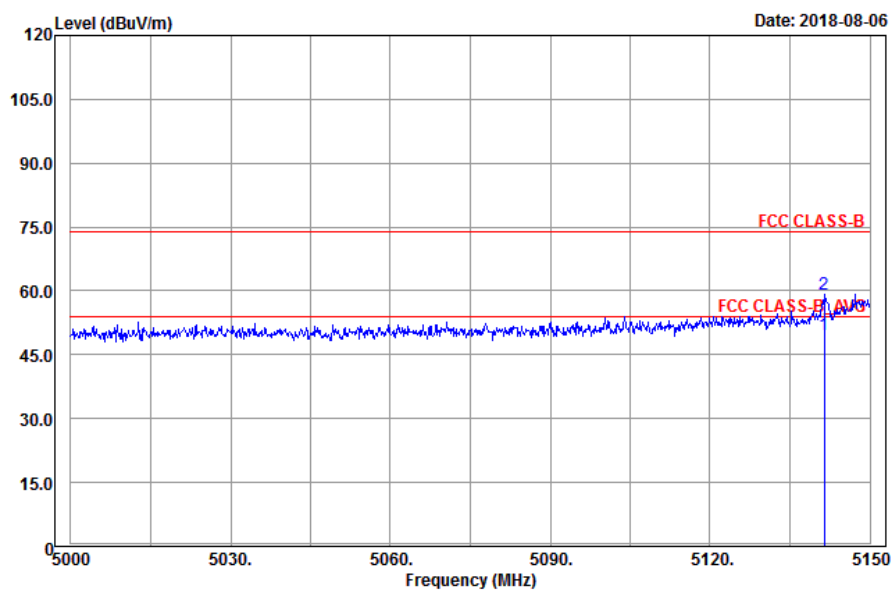
Spurious Emission Horizontal



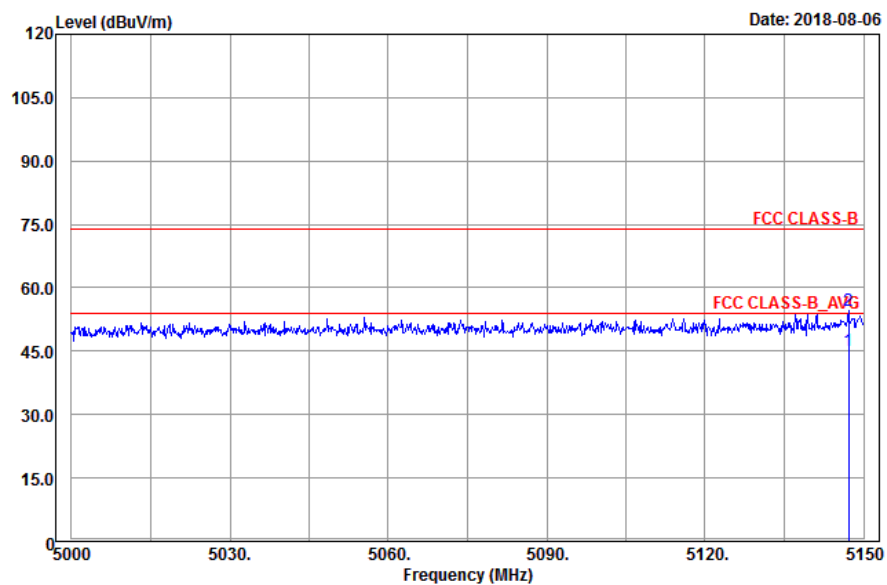
Vertical



Band Edge Horizontal



Vertical



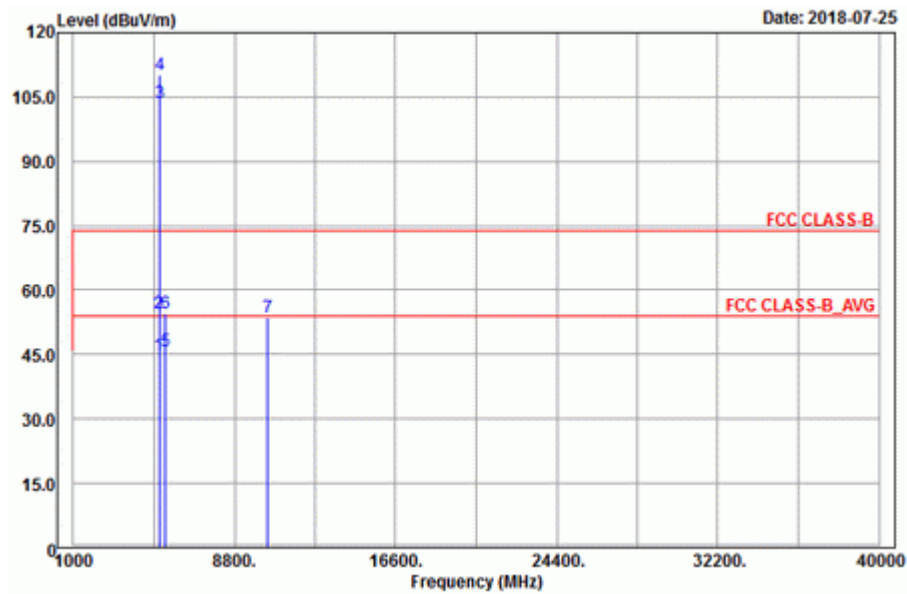
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5141.45	49.79	41.53	54	-4.21	34.12	8.13	33.99	195	251	Average
5141.45	59.26	51	74	-14.74	34.12	8.13	33.99	195	251	Peak
5180	102.49	94.18			34.15	8.16	34	197	247	Average
5180	110.3	101.99			34.15	8.16	34	197	247	Peak
*10360	52.59	38.29	68.2	-15.61	37.12	12.3	35.12	165	225	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
5147.15	45.24	36.99	54	-8.76	34.12	8.13	34	123	175	Average
5147.15	54.54	46.29	74	-19.46	34.12	8.13	34	123	175	Peak
5180	99.55	91.24			34.15	8.16	34	123	175	Average
5180	107.4	99.09			34.15	8.16	34	123	175	Peak
*10360	53.3	39	68.2	-14.9	37.12	12.3	35.12	112	179	Peak

Remarks:

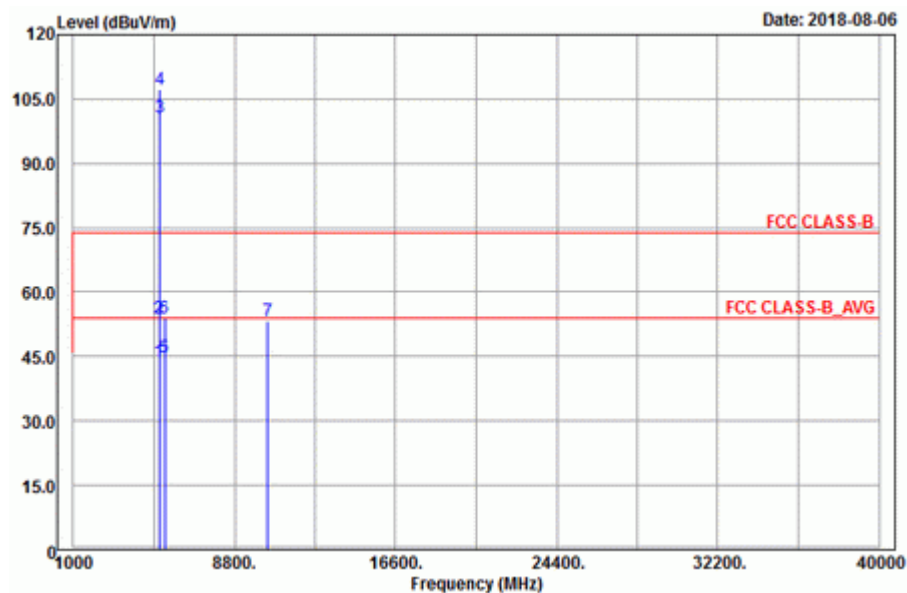
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



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
5147.15	44.82	36.57	54	-9.18	34.12	8.13	34	200	183	Average
5147.15	54.71	46.46	74	-19.29	34.12	8.13	34	200	183	Peak
5200	103.6	95.25			34.16	8.19	34	200	183	Average
5200	110.29	101.94			34.16	8.19	34	200	183	Peak
5455.93	45.77	36.95	54	-8.23	34.36	8.51	34.05	200	183	Average
5455.93	54.49	45.67	74	-19.51	34.36	8.51	34.05	200	183	Peak
*10400	53.71	39.37	68.2	-14.49	37.14	12.36	35.16	153	293	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
5141.45	43.94	35.68	54	-10.06	34.12	8.13	33.99	100	230	Average
5141.45	53.86	45.6	74	-20.14	34.12	8.13	33.99	100	230	Peak
5200	100.65	92.3			34.16	8.19	34	100	230	Average
5200	107.12	98.77			34.16	8.19	34	100	230	Peak
5426.67	44.73	35.96	54	-9.27	34.33	8.48	34.04	100	230	Average
5426.67	54.1	45.33	74	-19.9	34.33	8.48	34.04	100	230	Peak
*10400	53.35	39.01	68.2	-14.85	37.14	12.36	35.16	161	287	Peak

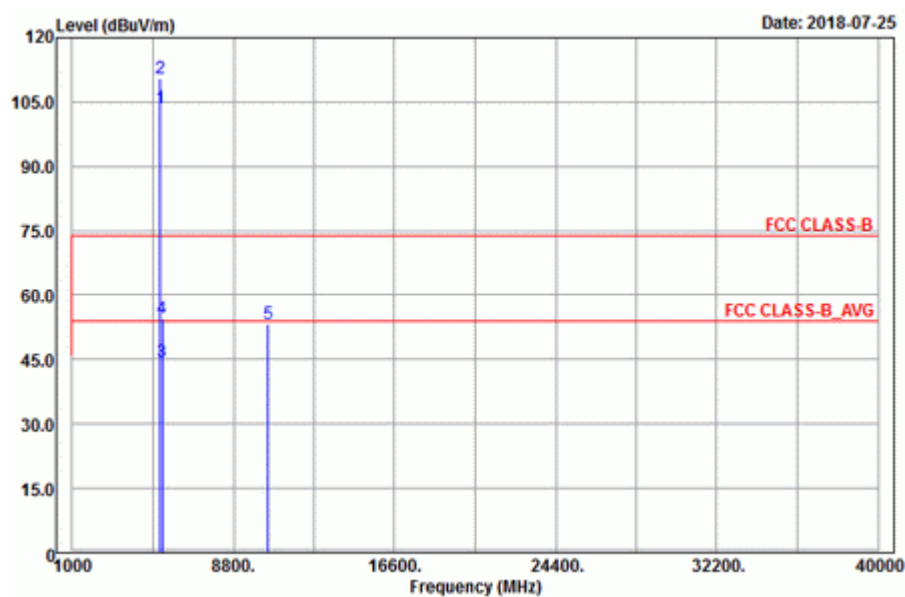
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

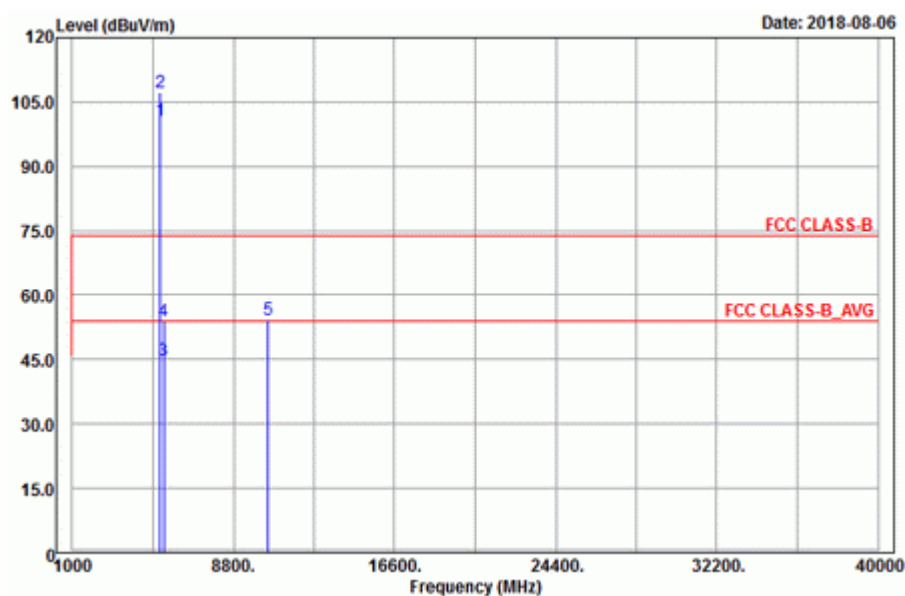
EUT Test Condition		Measurement Detail	
Channel	Channel 48	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

Horizontal



Vertical



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
5240	103.6	95.16			34.19	8.26	34.01	200	183	Average
5240	110.38	101.94			34.19	8.26	34.01	200	183	Peak
5370.46	44.37	35.7	54	-9.63	34.29	8.41	34.03	200	183	Average
5370.46	54.59	45.92	74	-19.41	34.29	8.41	34.03	200	183	Peak
*10480	53.27	38.76	68.2	-14.93	37.19	12.53	35.21	154	249	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
5240	100.8	92.36			34.19	8.26	34.01	100	230	Average
5240	107.17	98.73			34.19	8.26	34.01	100	230	Peak
5422.16	44.64	35.87	54	-9.36	34.33	8.48	34.04	100	230	Average
5422.16	53.87	45.1	74	-20.13	34.33	8.48	34.04	100	230	Peak
*10480	54.13	39.62	68.2	-14.07	37.19	12.53	35.21	167	173	Peak

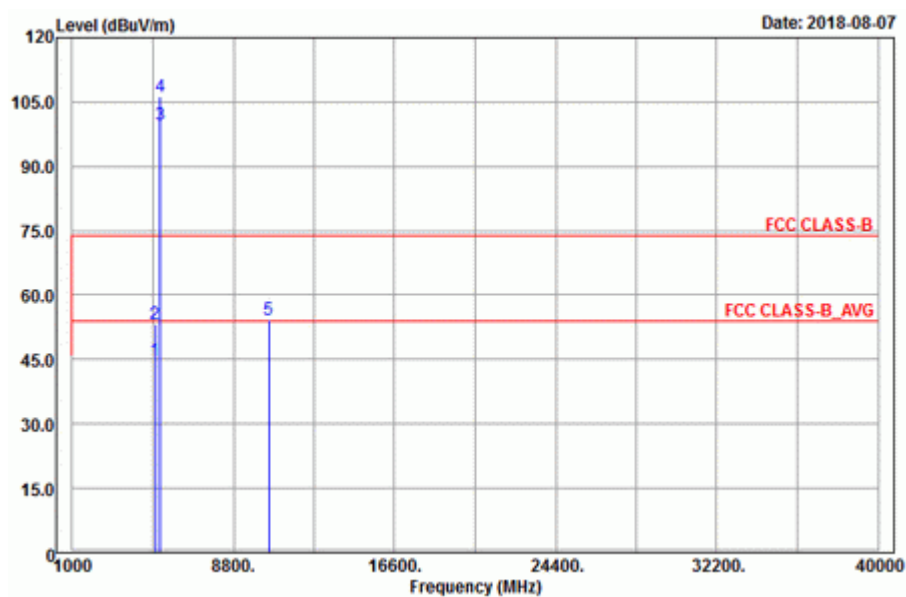
Remarks:

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
4. The emission levels of other frequencies were very low against the limit

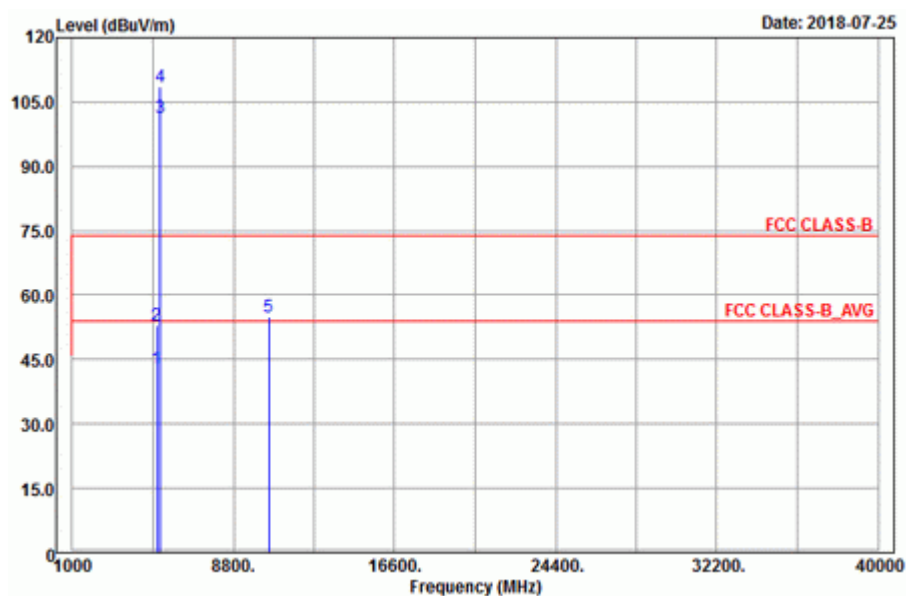
EUT Test Condition		Measurement Detail	
Channel	Channel 52	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

Horizontal



Vertical



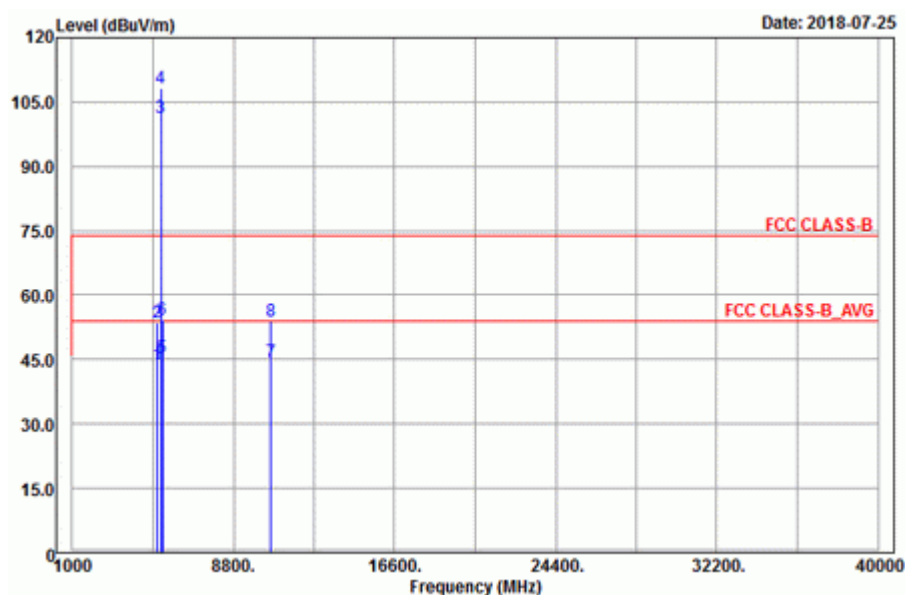
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5027.9	44.89	36.86	54	-9.11	34.03	7.97	33.97	100	230	Average
5027.9	53.43	45.4	74	-20.57	34.03	7.97	33.97	100	230	Peak
5260	99.59	91.13			34.21	8.26	34.01	100	230	Average
5260	106.29	97.83			34.21	8.26	34.01	100	230	Peak
*10520	54.4	39.81	68.2	-13.8	37.21	12.61	35.23	146	223	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
5091.65	42.75	34.58	54	-11.25	34.08	8.07	33.98	200	183	Average
5091.65	53.02	44.85	74	-20.98	34.08	8.07	33.98	200	183	Peak
5260	101.47	93.01			34.21	8.26	34.01	200	183	Average
5260	108.57	100.11			34.21	8.26	34.01	200	183	Peak
*10520	54.92	40.33	68.2	-13.28	37.21	12.61	35.23	178	149	Peak

Remarks:

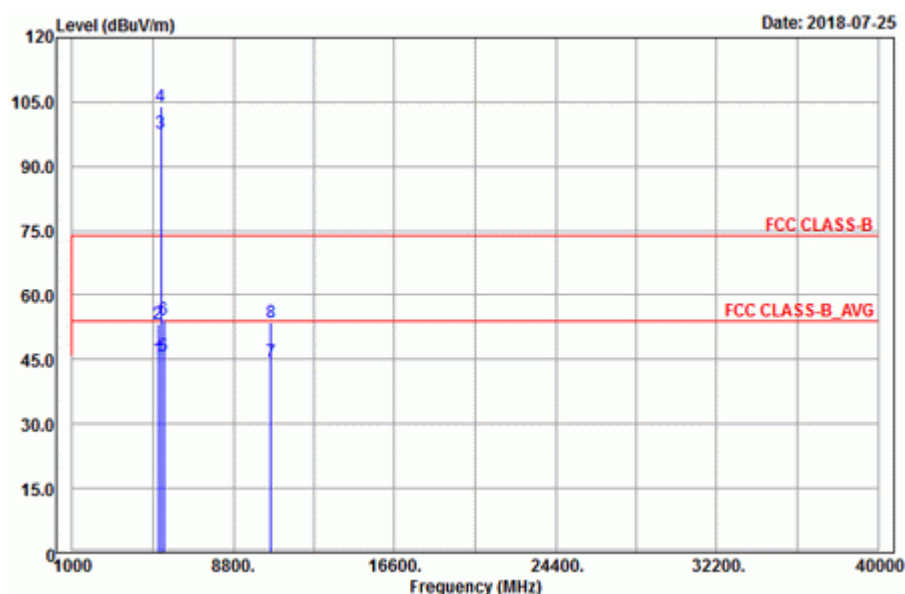
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



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
5131.1	43.87	35.65	54	-10.13	34.11	8.1	33.99	200	183	Average
5131.1	53.65	45.43	74	-20.35	34.11	8.1	33.99	200	183	Peak
5300	101.28	92.74			34.24	8.32	34.02	200	183	Average
5300	108.22	99.68			34.24	8.32	34.02	200	183	Peak
5374.42	45.33	36.67	54	-8.67	34.29	8.41	34.04	200	183	Average
5374.42	54.28	45.62	74	-19.72	34.29	8.41	34.04	200	183	Peak
10600	44.55	29.87	54	-9.45	37.28	12.67	35.27	146	127	Average
10600	53.91	39.23	74	-20.09	37.28	12.67	35.27	146	127	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.55	45.11	36.86	54	-8.89	34.12	8.13	34	100	230	Average
5146.55	53.35	45.1	74	-20.65	34.12	8.13	34	100	230	Peak
5300	97.65	89.11			34.24	8.32	34.02	100	230	Average
5300	104.09	95.55			34.24	8.32	34.02	100	230	Peak
5439.54	45.63	36.84	54	-8.37	34.35	8.48	34.04	100	230	Average
5439.54	54.18	45.39	74	-19.82	34.35	8.48	34.04	100	230	Peak
10600	44.55	29.87	54	-9.45	37.28	12.67	35.27	153	186	Average
10600	53.67	38.99	74	-20.33	37.28	12.67	35.27	153	186	Peak

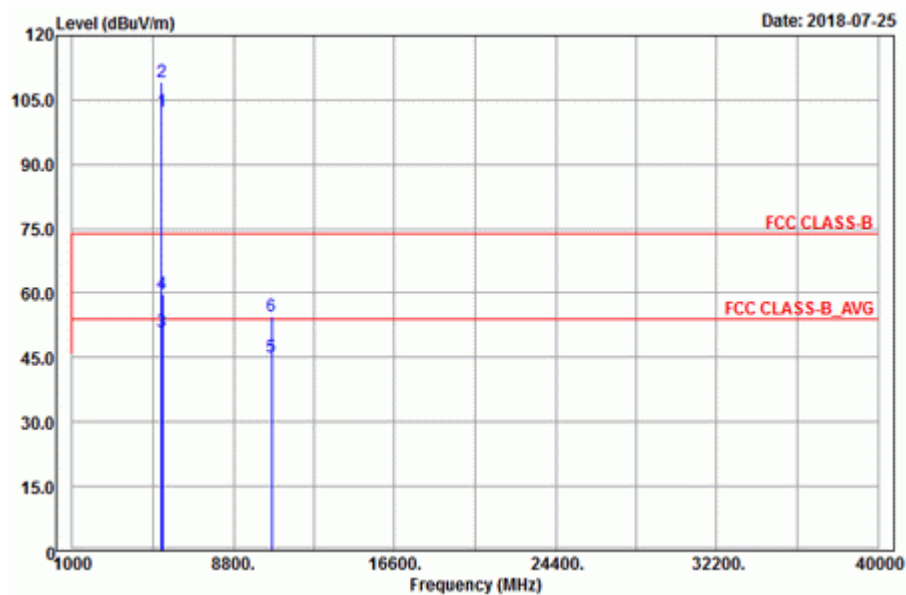
Remarks:

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

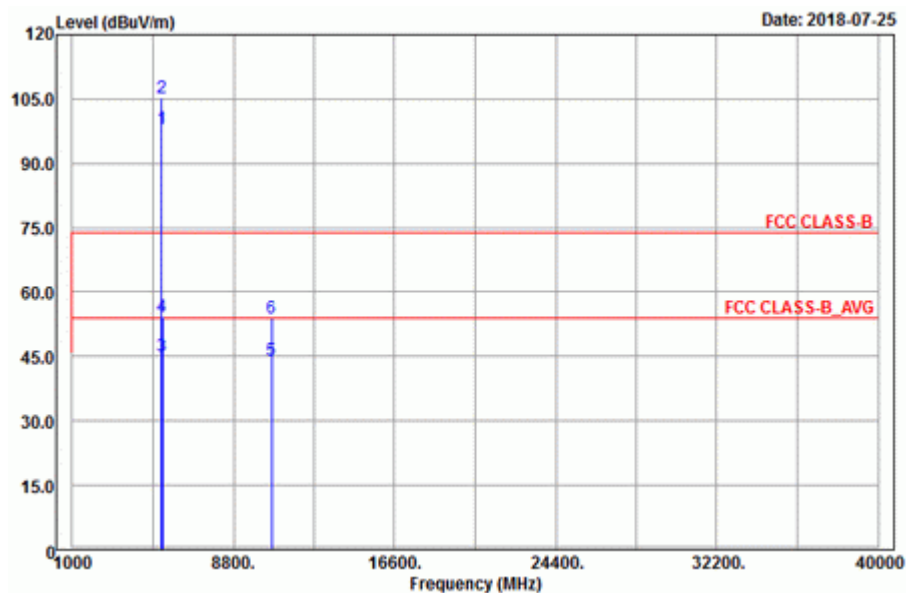
EUT Test Condition		Measurement Detail	
Channel	Channel 64	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

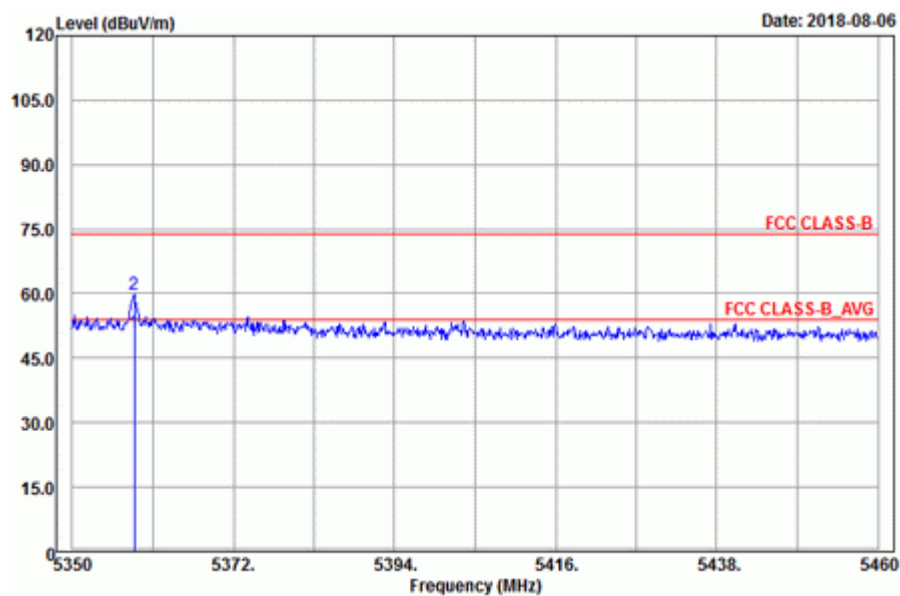
Horizontal



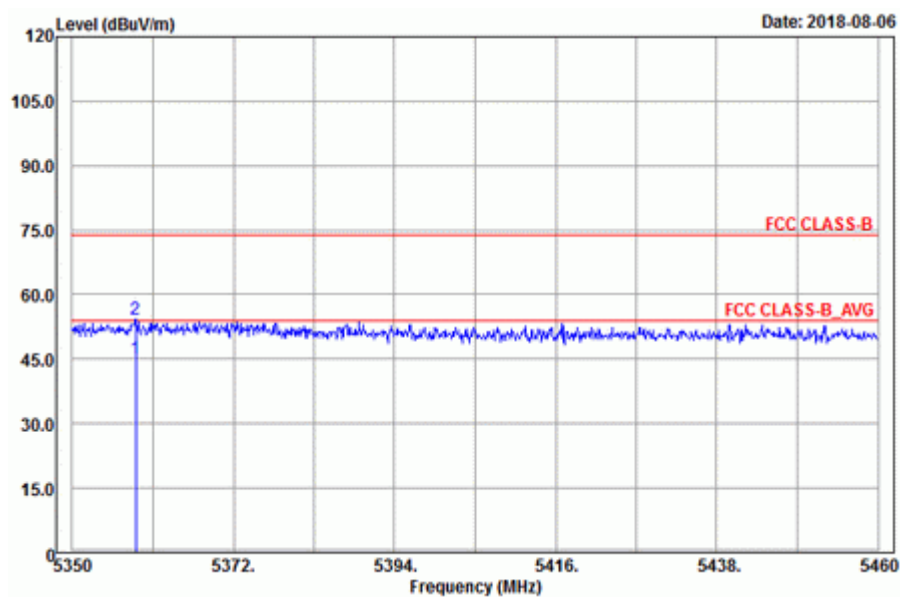
Vertical



Band Edge Horizontal



Vertical



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	102.44	93.86			34.25	8.35	34.02	136	184	Average
5320	109.19	100.61			34.25	8.35	34.02	136	184	Peak
5358.47	51.16	42.53	54	-2.84	34.28	8.38	34.03	148	186	Average
5358.47	59.8	51.17	74	-14.2	34.28	8.38	34.03	148	186	Peak
10640	44.96	30.23	54	-9.04	37.31	12.71	35.29	149	165	Average
10640	54.49	39.76	74	-19.51	37.31	12.71	35.29	149	165	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	98.13	89.55			34.25	8.35	34.02	291	201	Average
5320	105.29	96.71			34.25	8.35	34.02	291	201	Peak
5358.69	45.2	36.57	54	-8.8	34.28	8.38	34.03	277	201	Average
5358.69	54.4	45.77	74	-19.6	34.28	8.38	34.03	277	201	Peak
10640	44.29	29.56	54	-9.71	37.31	12.71	35.29	133	252	Average
10640	54.1	39.37	74	-19.9	37.31	12.71	35.29	133	252	Peak

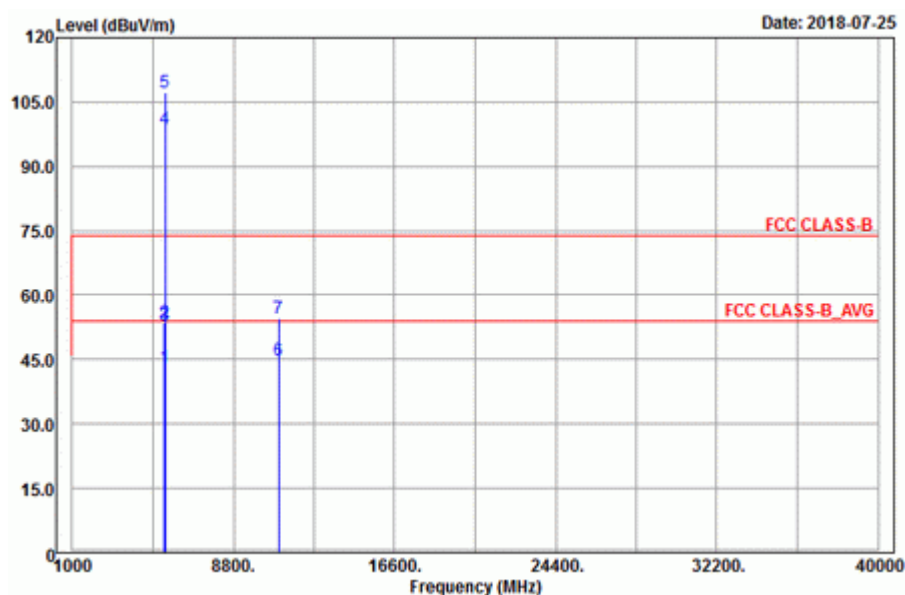
Remarks:

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

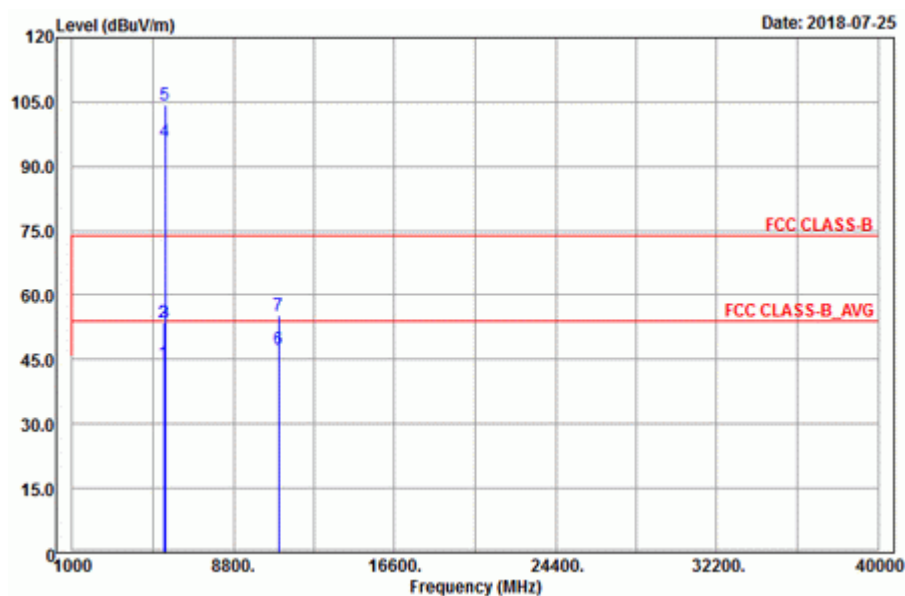
EUT Test Condition		Measurement Detail	
Channel	Channel 100	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

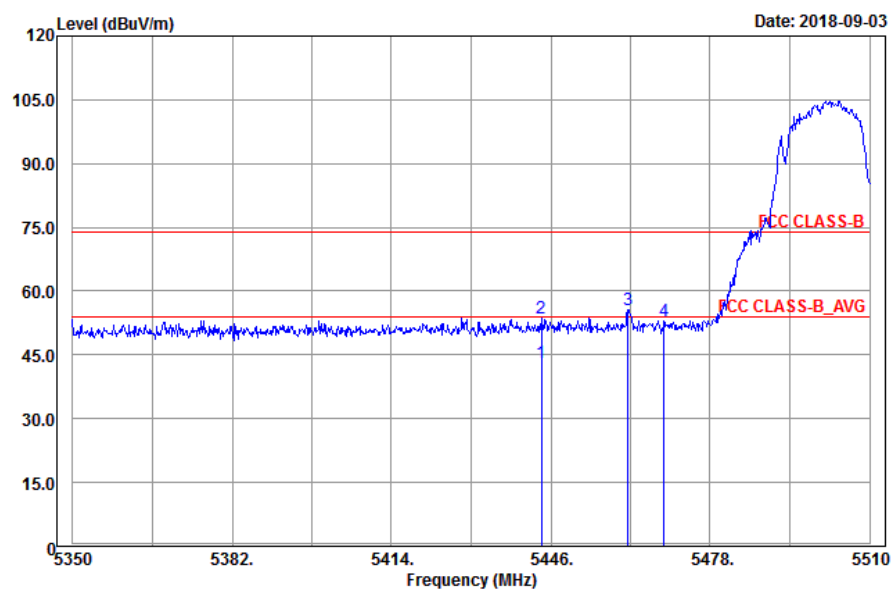
Horizontal



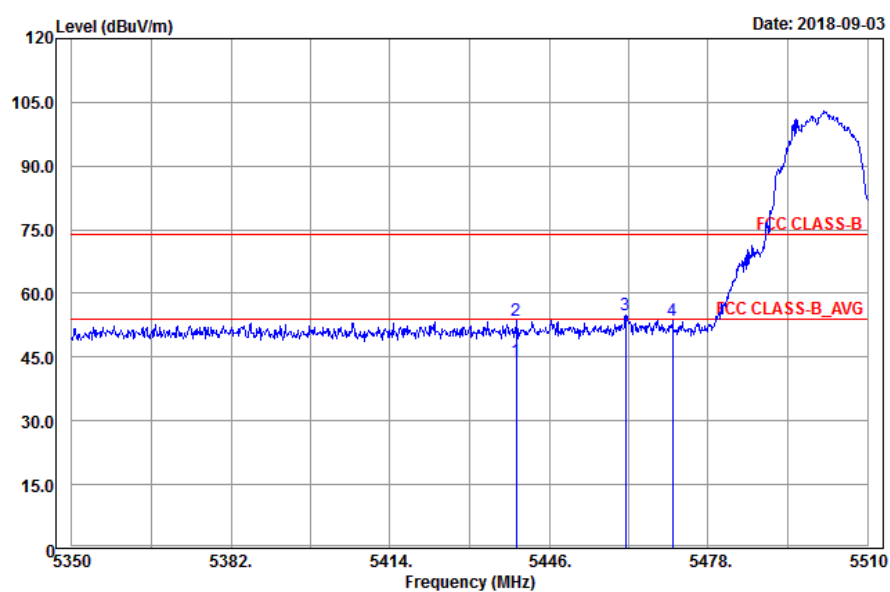
Vertical



Band Edge Horizontal



Vertical



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
5444.08	43.3	34.51	54	-10.7	34.35	8.48	34.04	132	188	Average
5444.08	53.55	44.76	74	-20.45	34.35	8.48	34.04	132	188	Peak
*5461.52	55.6	46.78	68.2	-12.6	34.36	8.51	34.05	132	188	Peak
*5468.72	52.93	44.1	68.2	-15.27	34.37	8.51	34.05	132	188	Peak
5500	98.64	89.72			34.4	8.57	34.05	132	188	Average
5500	107.24	98.32			34.4	8.57	34.05	132	188	Peak
11000	44.94	29.86	54	-9.06	37.6	12.96	35.48	154	279	Average
11000	54.51	39.43	74	-19.49	37.6	12.96	35.48	154	279	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
5439.44	44.3	35.51	54	-9.7	34.35	8.48	34.04	220	202	Average
5439.44	53.52	44.73	74	-20.48	34.35	8.48	34.04	220	202	Peak
*5461.36	55	46.18	68.2	-13.2	34.36	8.51	34.05	220	202	Peak
*5470.8	53.67	44.81	68.2	-14.53	34.37	8.54	34.05	220	202	Peak
5500	95.79	86.87			34.4	8.57	34.05	220	202	Average
5500	104.3	95.38			34.4	8.57	34.05	220	202	Peak
11000	47.44	32.36	54	-6.56	37.6	12.96	35.48	182	55	Average
11000	55.28	40.2	74	-18.72	37.6	12.96	35.48	182	55	Peak

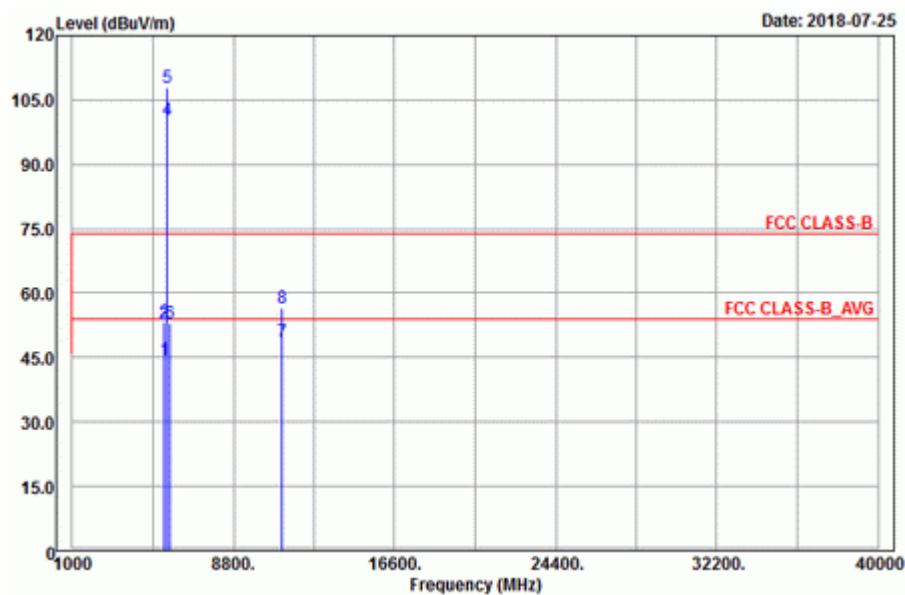
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

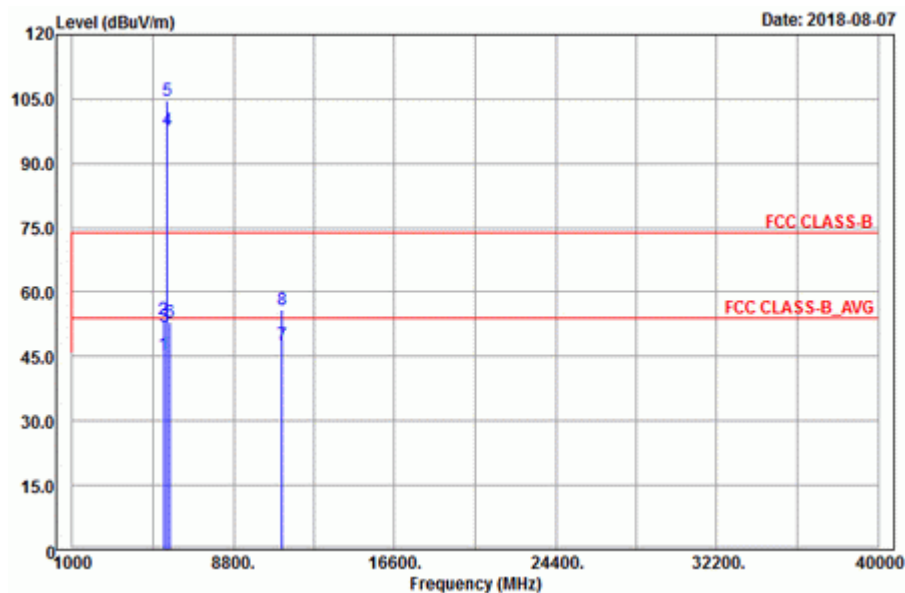
EUT Test Condition		Measurement Detail	
Channel	Channel 116	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

Horizontal



Vertical



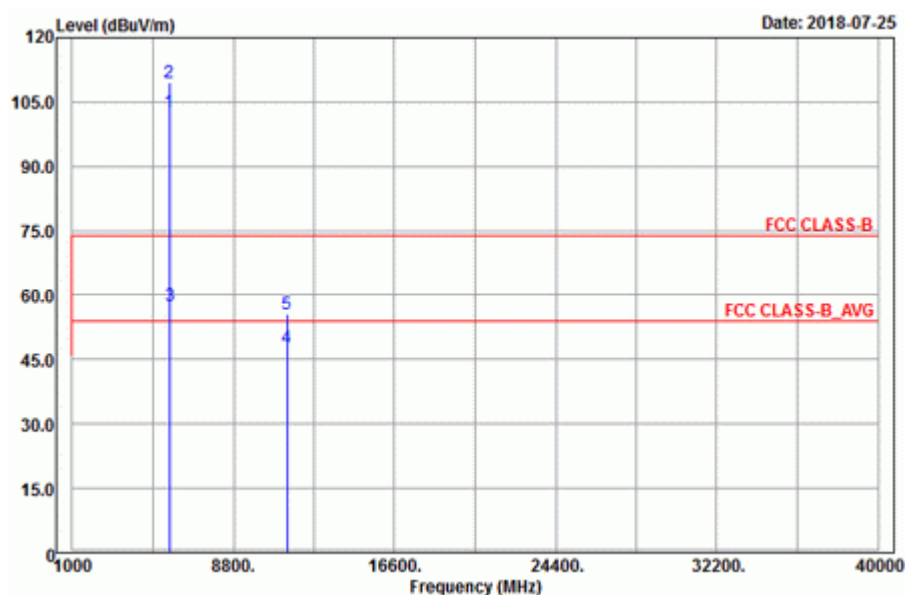
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5456.56	44.34	35.52	54	-9.66	34.36	8.51	34.05	200	183	Average
5456.56	53.43	44.61	74	-20.57	34.36	8.51	34.05	200	183	Peak
*5470.32	52.74	43.91	68.2	-15.46	34.37	8.51	34.05	200	183	Peak
5580	100.25	91.26			34.47	8.6	34.08	200	183	Average
5580	107.78	98.79			34.47	8.6	34.08	200	183	Peak
*5724.28	53.05	43.89	68.2	-15.15	34.62	8.65	34.11	200	183	Peak
11160	48.61	33.53	54	-5.39	37.7	12.83	35.45	157	155	Average
11160	56.64	41.56	74	-17.36	37.7	12.83	35.45	157	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
5437.68	45.31	36.52	54	-8.69	34.35	8.48	34.04	100	230	Average
5437.68	53.67	44.88	74	-20.33	34.35	8.48	34.04	100	230	Peak
*5469.04	52.14	43.31	68.2	-16.06	34.37	8.51	34.05	100	230	Peak
5580	97.65	88.66			34.47	8.6	34.08	100	230	Average
5580	104.72	95.73			34.47	8.6	34.08	100	230	Peak
*5724.44	53.07	43.91	68.2	-15.13	34.62	8.65	34.11	100	230	Peak
11160	47.61	32.53	54	-6.39	37.7	12.83	35.45	154	1	Average
11160	55.81	40.73	74	-18.19	37.7	12.83	35.45	154	1	Peak

Remarks:

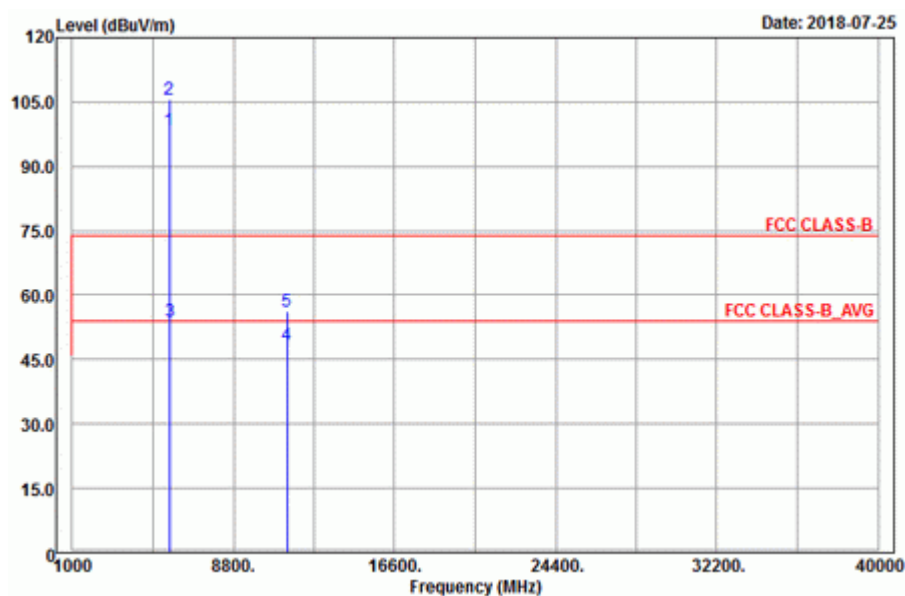
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

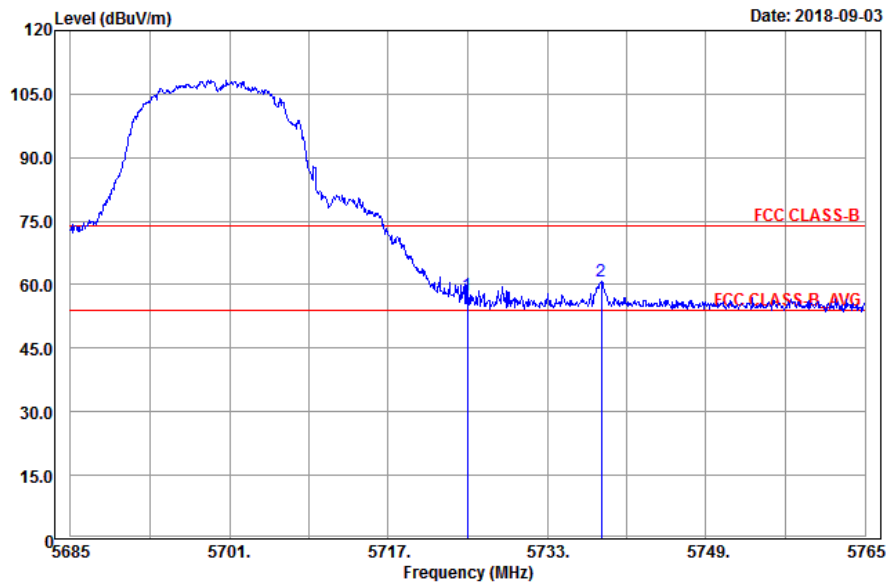
Spurious Emission Horizontal



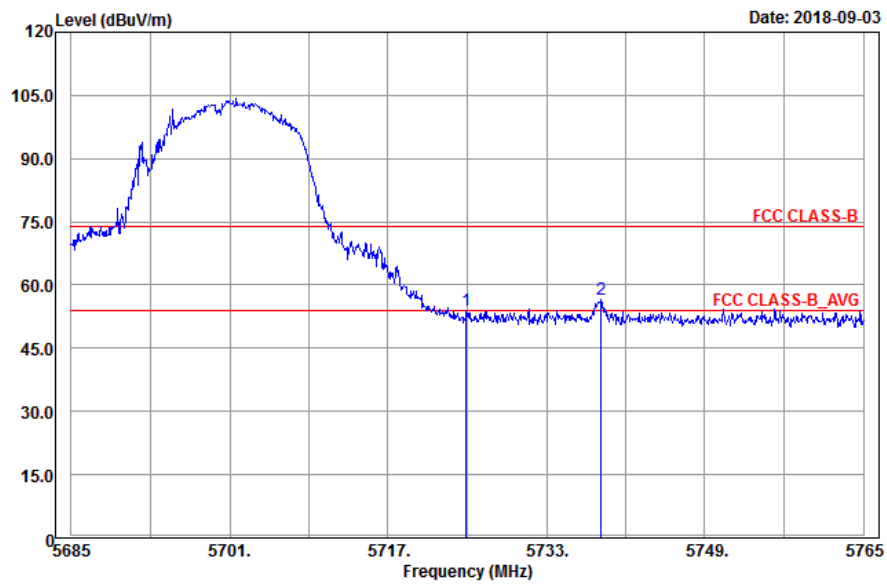
Vertical



Band Edge Horizontal



Vertical



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
5700	102.62	93.49			34.59	8.64	34.1	167	202	Average
5700	109.53	100.4			34.59	8.64	34.1	167	202	Peak
*5725	57.59	48.43	68.2	-10.61	34.62	8.65	34.11	164	202	Peak
*5738.44	60.7	51.51	68.2	-7.5	34.64	8.66	34.11	167	202	Peak
11400	47.63	32.53	54	-6.37	37.84	12.67	35.41	113	32	Average
11400	55.72	40.62	74	-18.28	37.84	12.67	35.41	113	32	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
5700	98.56	89.43			34.59	8.64	34.1	253	212	Average
5700	105.63	96.5			34.59	8.64	34.1	253	212	Peak
*5724.92	53.83	44.67	68.2	-14.37	34.62	8.65	34.11	253	212	Peak
*5738.52	56.47	47.28	68.2	-11.73	34.64	8.66	34.11	253	212	Peak
11400	48.34	33.24	54	-5.66	37.84	12.67	35.41	174	288	Average
11400	56.24	41.14	74	-17.76	37.84	12.67	35.41	174	288	Peak

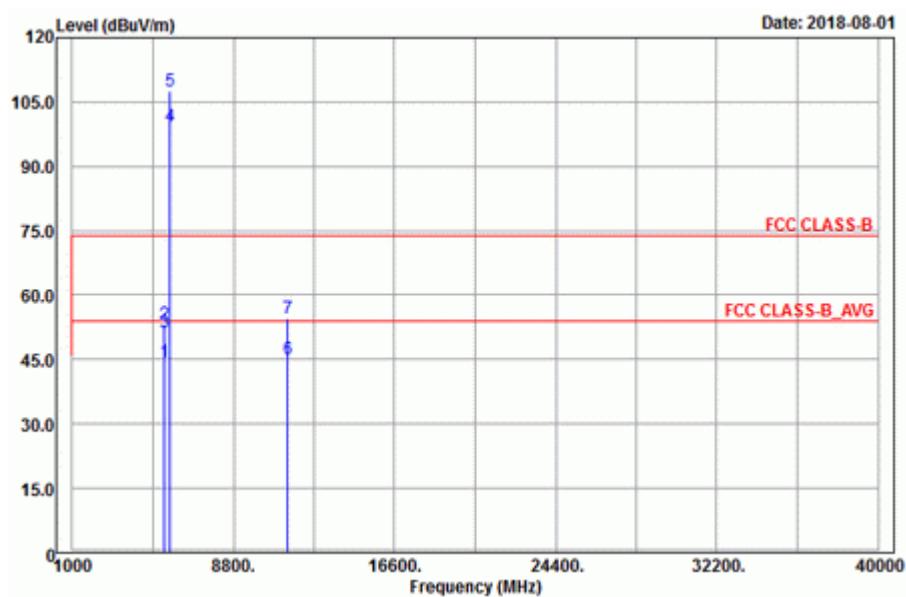
Remarks:

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

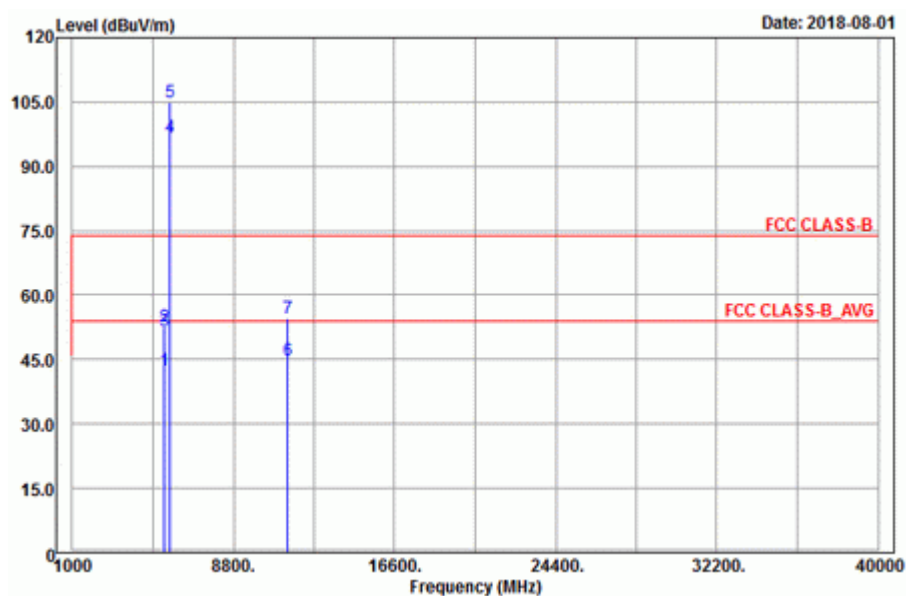
EUT Test Condition		Measurement Detail	
Channel	Channel 144	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Spurious Emission

Horizontal



Vertical



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
5455.28	44.34	35.52	54	-9.66	34.36	8.51	34.05	141	161	Average
5455.28	53.38	44.56	74	-20.62	34.36	8.51	34.05	141	161	Peak
*5469.52	51.19	42.36	68.2	-17.01	34.37	8.51	34.05	141	161	Peak
5720	99.41	90.25			34.62	8.65	34.11	141	161	Average
5720	107.42	98.26			34.62	8.65	34.11	141	161	Peak
11440	45.09	29.98	54	-8.91	37.86	12.65	35.4	117	165	Average
11440	54.61	39.5	74	-19.39	37.86	12.65	35.4	117	165	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
5458.48	42.34	33.52	54	-11.66	34.36	8.51	34.05	237	189	Average
5458.48	52.77	43.95	74	-21.23	34.36	8.51	34.05	237	189	Peak
*5468.72	51.66	42.83	68.2	-16.54	34.37	8.51	34.05	237	189	Peak
5720	96.68	87.52			34.62	8.65	34.11	237	189	Average
5720	104.81	95.65			34.62	8.65	34.11	237	189	Peak
11440	44.75	29.64	54	-9.25	37.86	12.65	35.4	158	127	Average
11440	54.53	39.42	74	-19.47	37.86	12.65	35.4	158	127	Peak

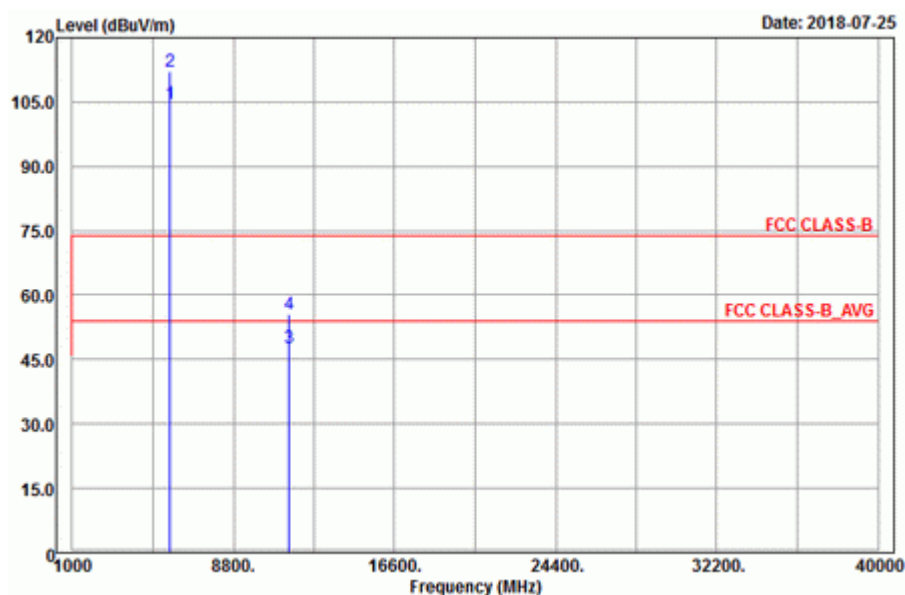
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

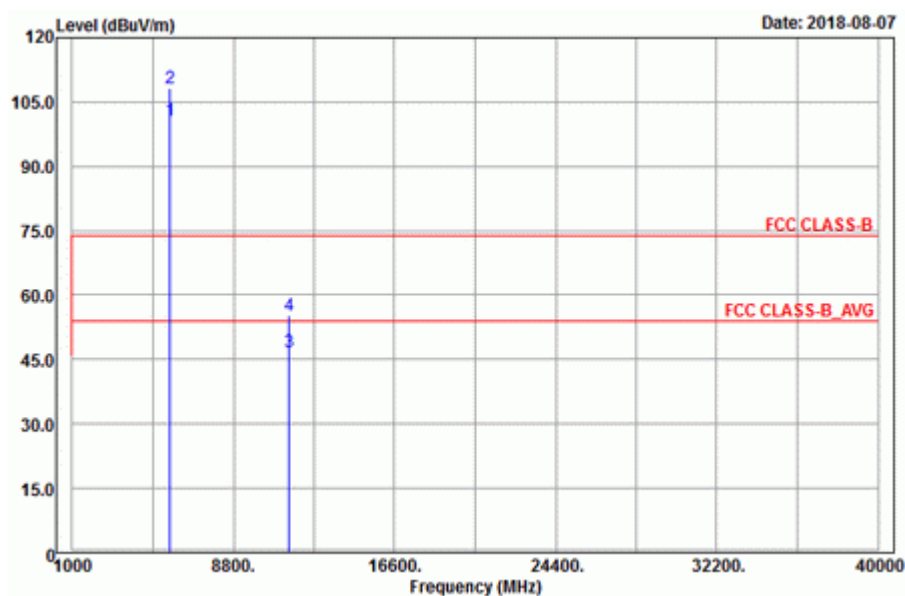
EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

Horizontal



Vertical



<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	104.6	95.41			34.64	8.66	34.11	193	201	Average
5745	112.26	103.07			34.64	8.66	34.11	193	201	Peak
11490	47.64	32.52	54	-6.36	37.89	12.62	35.39	200	188	Average
11490	55.54	40.42	74	-18.46	37.89	12.62	35.39	200	188	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	100.75	91.56			34.64	8.66	34.11	261	212	Average
5745	108.07	98.88			34.64	8.66	34.11	261	212	Peak
11490	46.64	31.52	54	-7.36	37.89	12.62	35.39	118	246	Average
11490	55.38	40.26	74	-18.62	37.89	12.62	35.39	118	246	Peak

<Out of Band Emission (OOBE)>

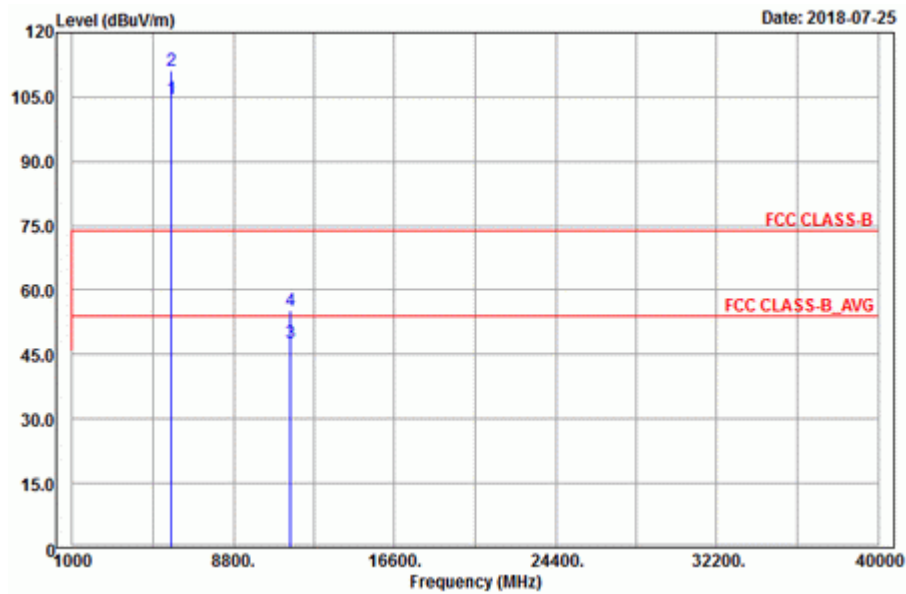
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5646.475	53.92	44.85	68.2	-14.28	34.54	8.62	34.09	193	201	Peak
5651.725	52.41	43.32	69.48	-17.07	34.56	8.62	34.09	193	201	Peak
5923.15	51.98	42.58	69.57	-17.59	34.83	8.73	34.16	193	201	Peak
*5983.525	53.46	44	68.2	-14.74	34.88	8.75	34.17	193	201	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
*5598.7	53.74	44.72	68.2	-14.46	34.5	8.6	34.08	261	212	Peak
5651.2	51.22	42.13	69.09	-17.87	34.56	8.62	34.09	261	212	Peak
5923.675	50.58	41.18	69.18	-18.6	34.83	8.73	34.16	261	212	Peak
*5963.575	53.6	44.16	68.2	-14.6	34.87	8.74	34.17	261	212	Peak

Remarks:

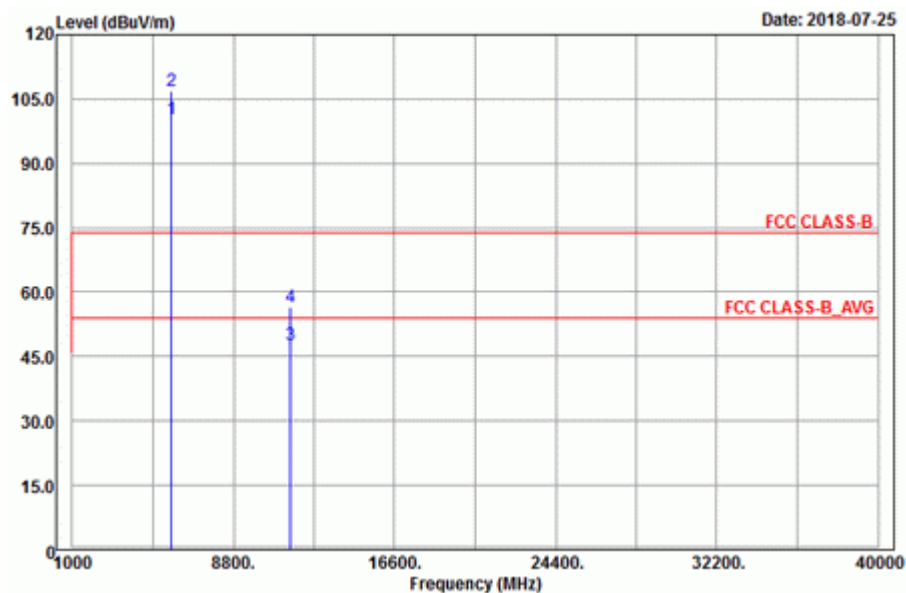
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



<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	104.47	95.24			34.68	8.68	34.13	200	183	Average
5785	111.23	102			34.68	8.68	34.13	200	183	Peak
11570	47.83	32.52	54	-6.17	38	12.68	35.37	106	300	Average
11570	55.39	40.08	74	-18.61	38	12.68	35.37	106	300	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	100.36	91.13			34.68	8.68	34.13	100	230	Average
5785	107.02	97.79			34.68	8.68	34.13	100	230	Peak
11570	47.87	32.56	54	-6.13	38	12.68	35.37	124	307	Average
11570	56.46	41.15	74	-17.54	38	12.68	35.37	124	307	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
*5614.45	53.79	44.76	68.2	-14.41	34.5	8.61	34.08	200	183	Peak
5653.3	51.73	42.63	70.64	-18.91	34.56	8.63	34.09	200	183	Peak
5920.525	52.34	42.96	71.51	-19.17	34.81	8.73	34.16	200	183	Peak
*5997.7	54.23	44.74	68.2	-13.97	34.9	8.76	34.17	200	183	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
*5595.025	52.96	43.95	68.2	-15.24	34.49	8.6	34.08	100	230	Peak
5654.875	53.39	44.3	71.81	-18.42	34.56	8.63	34.1	100	230	Peak
5916.325	52.37	42.99	74.62	-22.25	34.81	8.73	34.16	100	230	Peak
*5948.875	53.91	44.48	68.2	-14.29	34.85	8.74	34.16	100	230	Peak

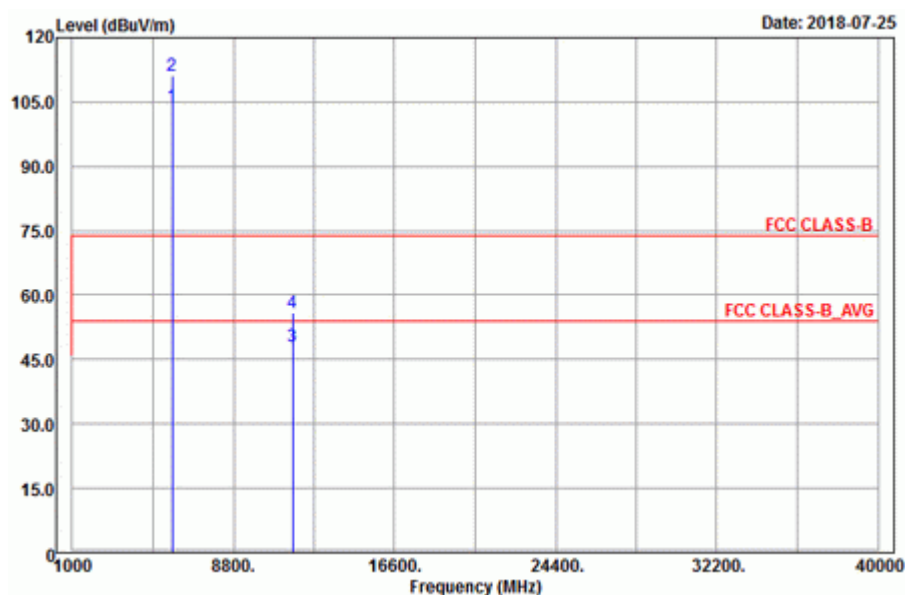
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

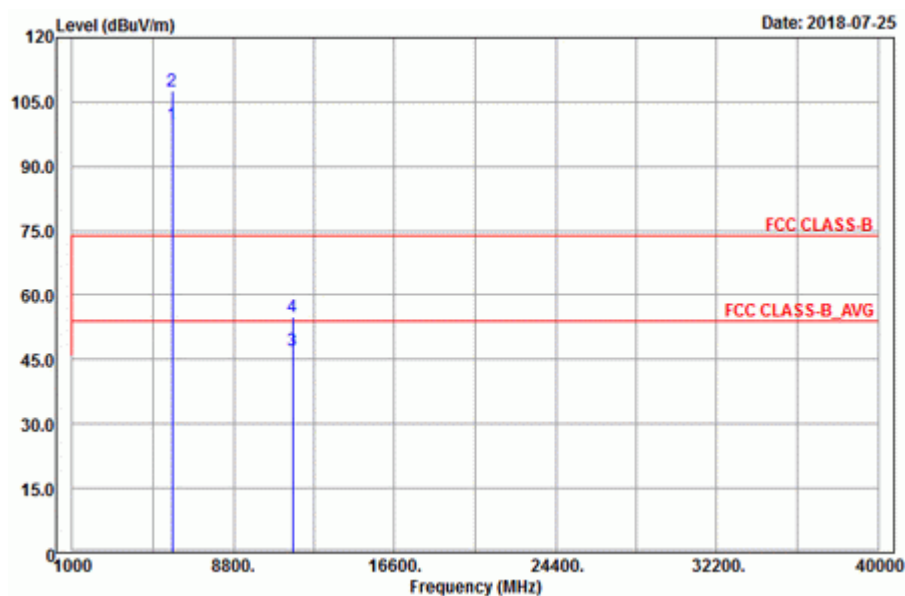
EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

Horizontal



Vertical



<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	103.94	94.65			34.73	8.69	34.13	197	247	Average
5825	111.28	101.99			34.73	8.69	34.13	197	247	Peak
11650	48.06	32.53	54	-5.94	38.09	12.8	35.36	187	7	Average
11650	55.92	40.39	74	-18.08	38.09	12.8	35.36	187	7	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	99.67	90.38			34.73	8.69	34.13	123	175	Average
5825	107.62	98.33			34.73	8.69	34.13	123	175	Peak
11650	47.1	31.57	54	-6.9	38.09	12.8	35.36	154	255	Average
11650	54.91	39.38	74	-19.09	38.09	12.8	35.36	154	255	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
*5581.9	53.69	44.68	68.2	-14.51	34.49	8.6	34.08	197	247	Peak
5651.2	52.43	43.34	69.09	-16.66	34.56	8.62	34.09	197	247	Peak
5921.575	53.15	43.75	70.73	-17.58	34.83	8.73	34.16	197	247	Peak
*5980.375	53.47	44.01	68.2	-14.73	34.88	8.75	34.17	197	247	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
*5648.575	53.05	43.98	68.2	-15.15	34.54	8.62	34.09	123	175	Peak
5652.25	51.29	42.2	69.86	-18.57	34.56	8.62	34.09	123	175	Peak
5921.575	52.31	42.91	70.73	-18.42	34.83	8.73	34.16	123	175	Peak
*5989.3	53.31	43.85	68.2	-14.89	34.88	8.75	34.17	123	175	Peak

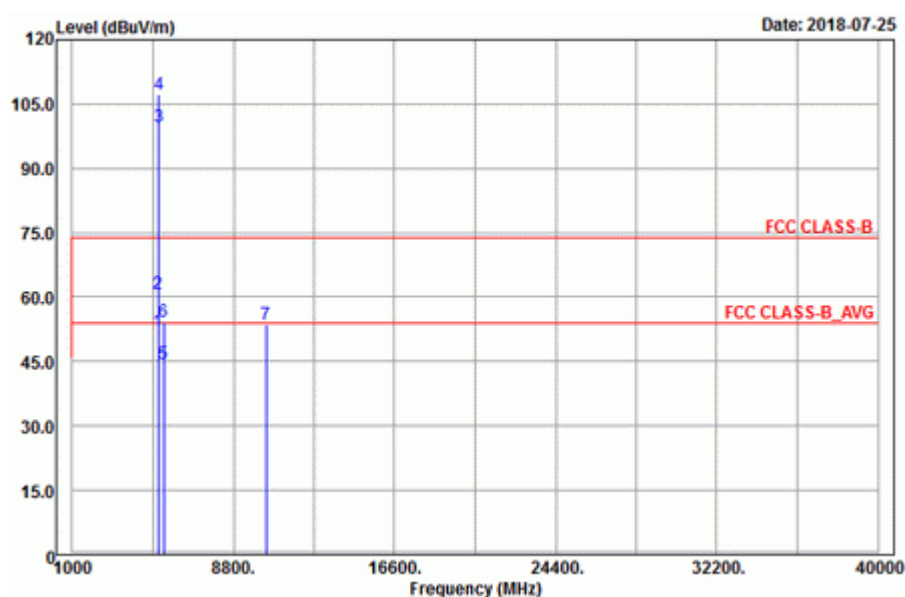
Remarks:

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

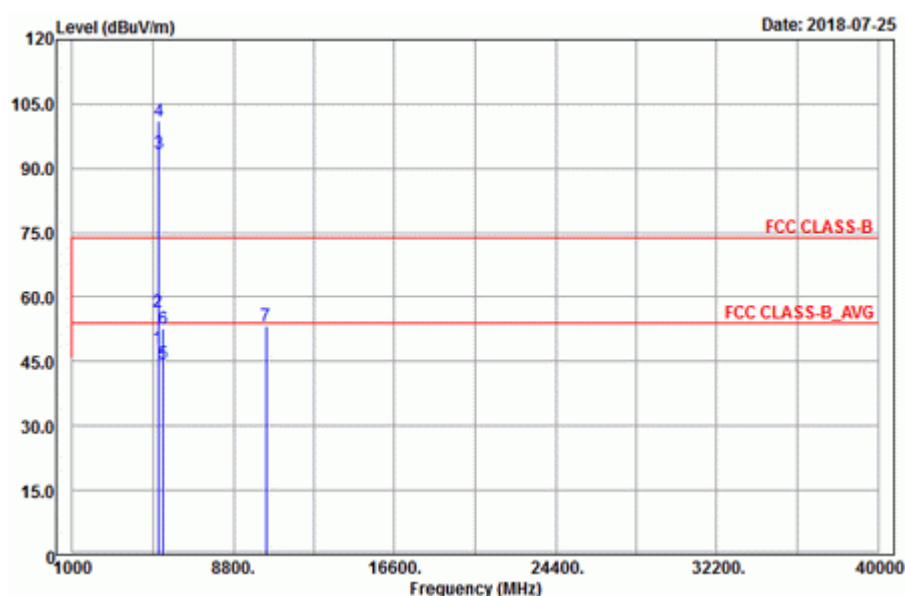
802.11n (HT40)

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

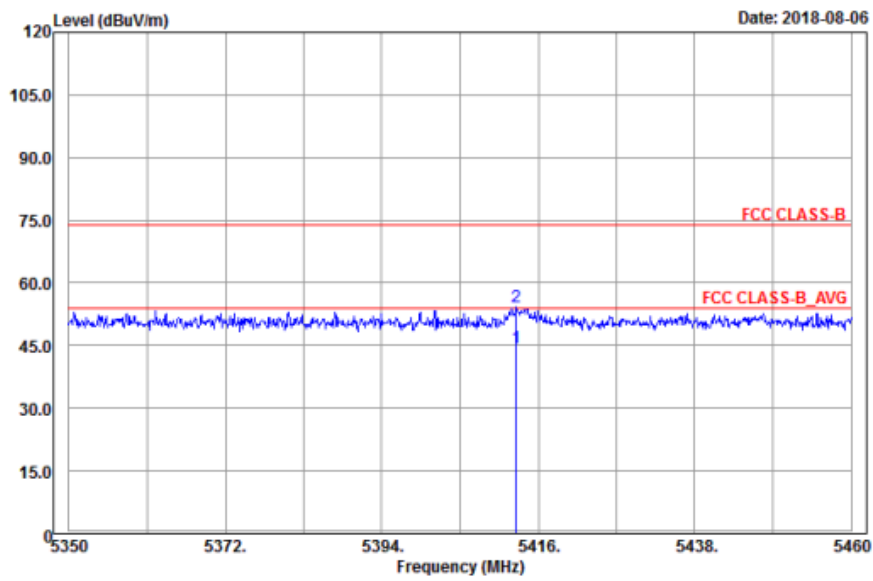
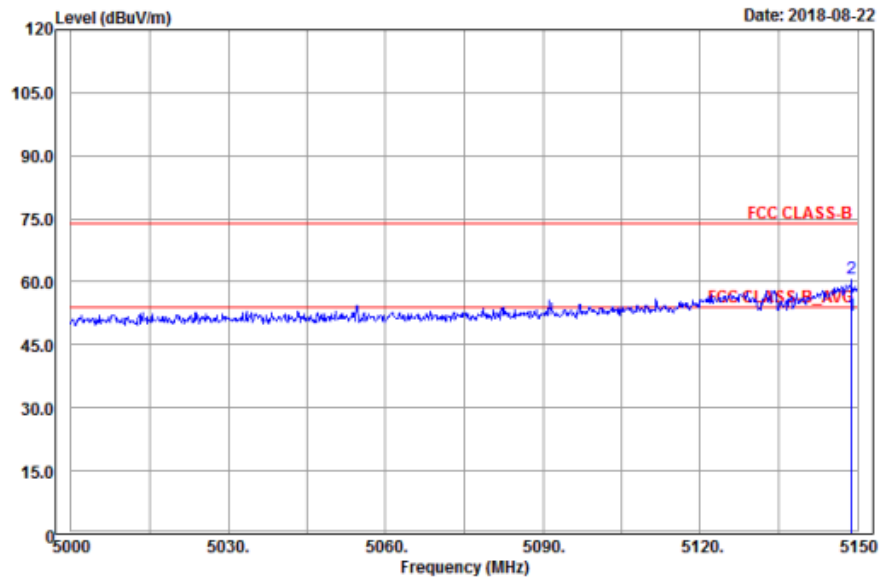
Spurious Emission Horizontal



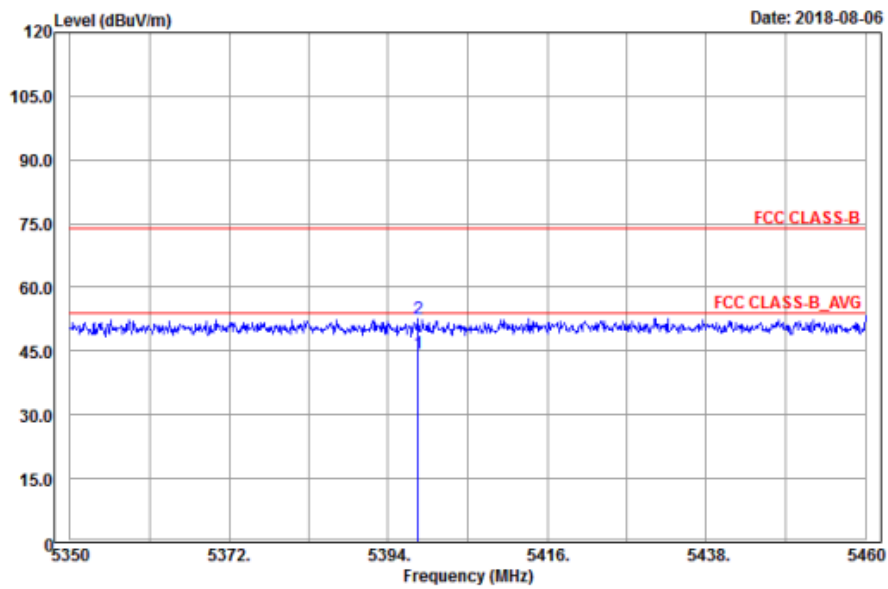
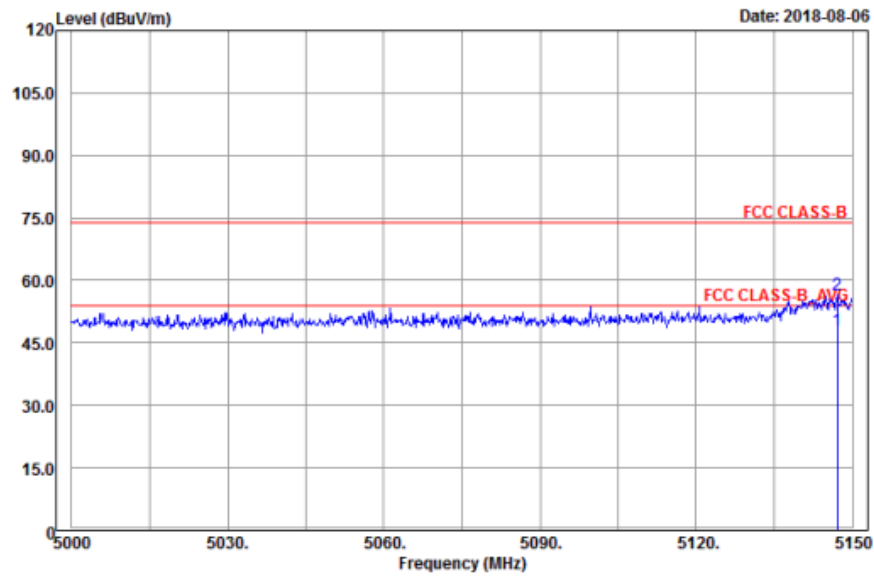
Vertical



Band Edge Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.95	52.11	43.86	54	-1.89	34.12	8.13	34	219	242	Average
5148.95	60.73	52.48	74	-13.27	34.12	8.13	34	219	242	Peak
5190	99.81	91.47			34.15	8.19	34	197	247	Average
5190	107.12	98.78			34.15	8.19	34	197	247	Peak
5412.92	44.6	35.87	54	-9.4	34.33	8.44	34.04	197	247	Average
5412.92	54.39	45.66	74	-19.61	34.33	8.44	34.04	197	247	Peak
*10380	53.54	39.19	68.2	-14.66	37.13	12.36	35.14	141	117	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
5147.15	48.15	39.9	54	-5.85	34.12	8.13	34	119	158	Average
5147.15	56.49	48.24	74	-17.51	34.12	8.13	34	119	158	Peak
5190	93.56	85.22			34.15	8.19	34	123	175	Average
5190	100.92	92.58			34.15	8.19	34	123	175	Peak
5398.18	44.59	35.87	54	-9.41	34.32	8.44	34.04	123	175	Average
5398.18	52.77	44.05	74	-21.23	34.32	8.44	34.04	123	175	Peak
*10380	53.15	38.8	68.2	-15.05	37.13	12.36	35.14	123	99	Peak

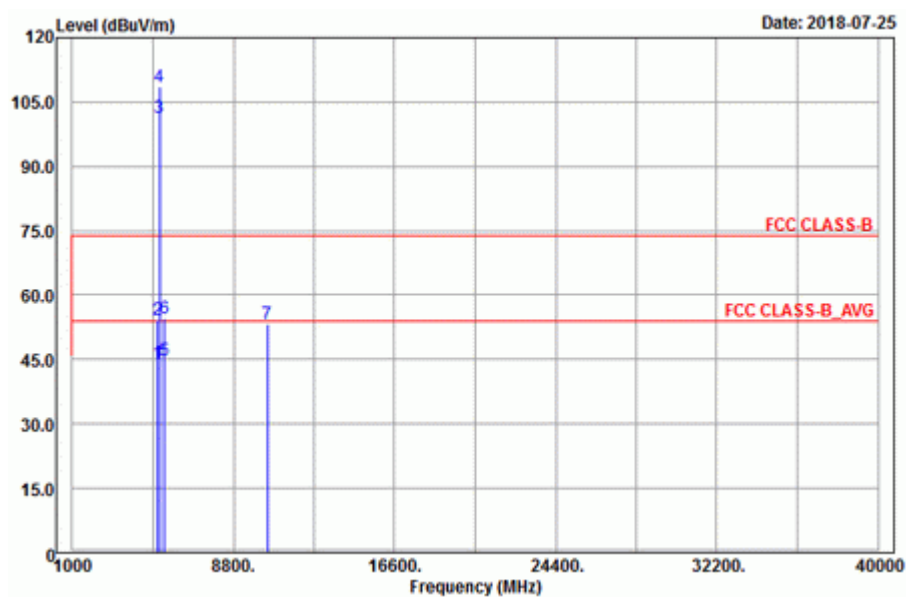
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

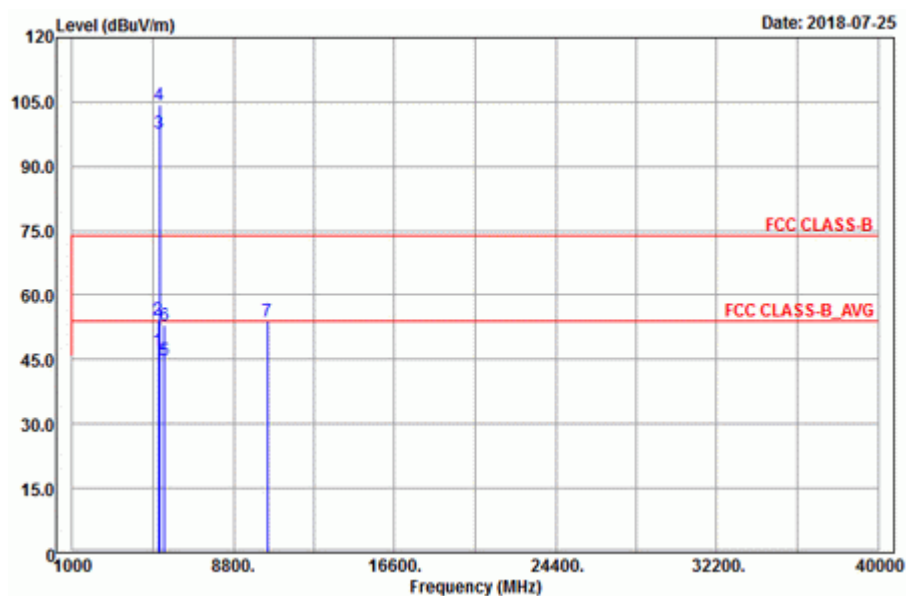
EUT Test Condition		Measurement Detail	
Channel	Channel 46	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

Horizontal



Vertical



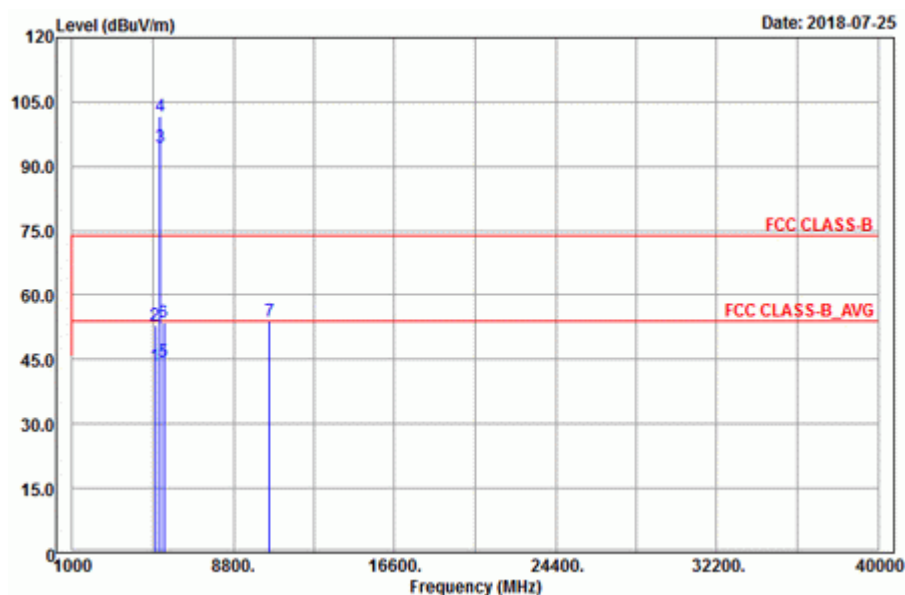
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5114.6	44.06	35.86	54	-9.94	34.09	8.1	33.99	200	183	Average
5114.6	54.16	45.96	74	-19.84	34.09	8.1	33.99	200	183	Peak
5230	101.47	93.07			34.19	8.22	34.01	200	183	Average
5230	108.64	100.24			34.19	8.22	34.01	200	183	Peak
5454.5	44.68	35.86	54	-9.32	34.36	8.51	34.05	200	183	Average
5454.5	54.65	45.83	74	-19.35	34.36	8.51	34.05	200	183	Peak
*10460	53.22	38.71	68.2	-14.98	37.17	12.53	35.19	196	305	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
5137.7	47.1	38.85	54	-6.9	34.11	8.13	33.99	100	230	Average
5137.7	54.33	46.08	74	-19.67	34.11	8.13	33.99	100	230	Peak
5230	97.77	89.37			34.19	8.22	34.01	100	230	Average
5230	104.23	95.83			34.19	8.22	34.01	100	230	Peak
5453.18	44.67	35.85	54	-9.33	34.36	8.51	34.05	100	230	Average
5453.18	53.04	44.22	74	-20.96	34.36	8.51	34.05	100	230	Peak
*10460	53.82	39.31	68.2	-14.38	37.17	12.53	35.19	152	107	Peak

Remarks:

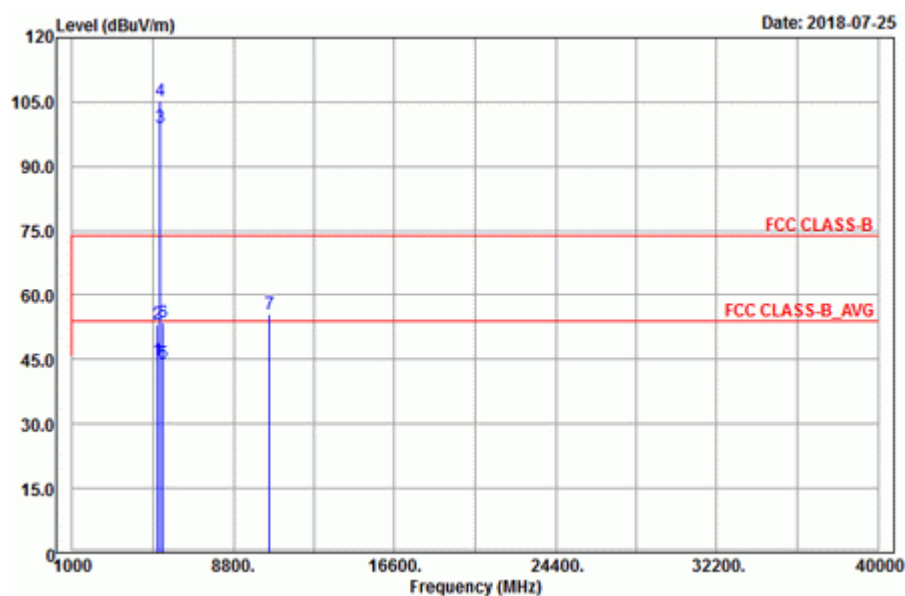
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5230 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



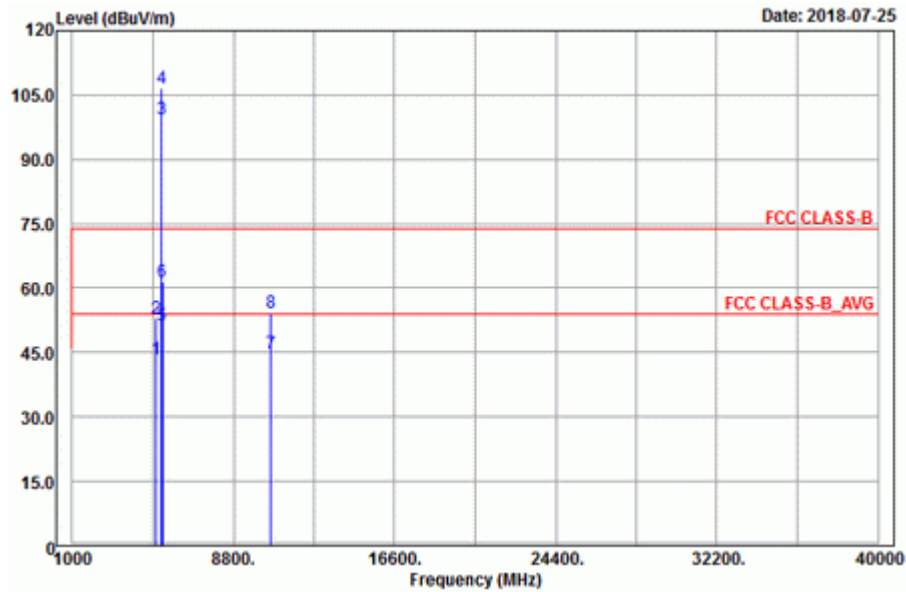
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5010.35	43.54	35.53	54	-10.46	34.01	7.97	33.97	100	230	Average
5010.35	52.97	44.96	74	-21.03	34.01	7.97	33.97	100	230	Peak
5270	94.55	86.06			34.21	8.29	34.01	100	230	Average
5270	101.62	93.13			34.21	8.29	34.01	100	230	Peak
5442.07	44.34	35.55	54	-9.66	34.35	8.48	34.04	100	230	Average
5442.07	53.59	44.8	74	-20.41	34.35	8.48	34.04	100	230	Peak
*10540	53.85	39.23	68.2	-14.35	37.23	12.63	35.24	136	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
5106.5	44.7	36.53	54	-9.3	34.09	8.07	33.99	200	183	Average
5106.5	53.38	45.21	74	-20.62	34.09	8.07	33.99	200	183	Peak
5270	98.95	90.46			34.21	8.29	34.01	200	183	Average
5270	105.21	96.72			34.21	8.29	34.01	200	183	Peak
5406.98	44.25	35.53	54	-9.75	34.32	8.44	34.04	200	183	Average
5406.98	53.48	44.76	74	-20.52	34.32	8.44	34.04	200	183	Peak
*10540	55.52	40.9	68.2	-12.68	37.23	12.63	35.24	178	143	Peak

Remarks:

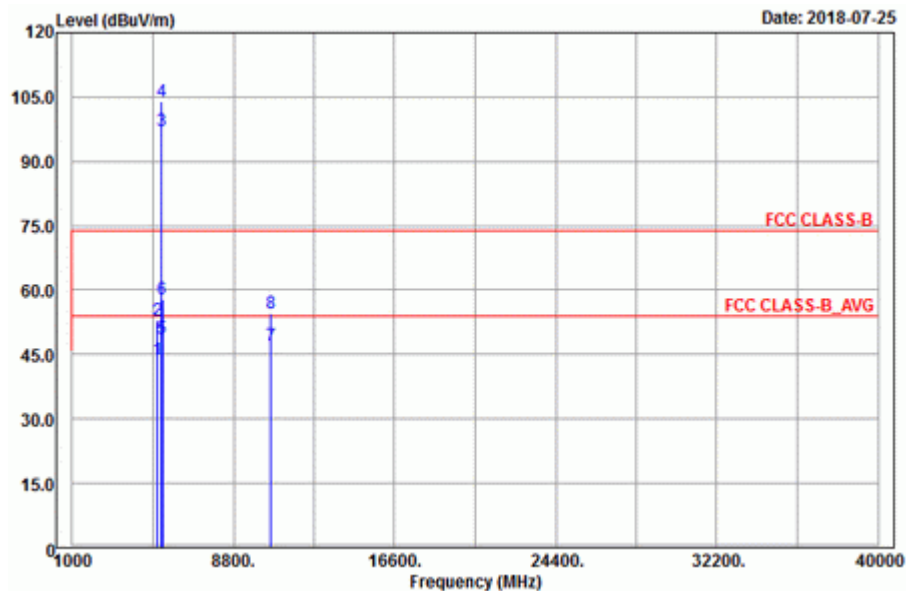
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5270 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

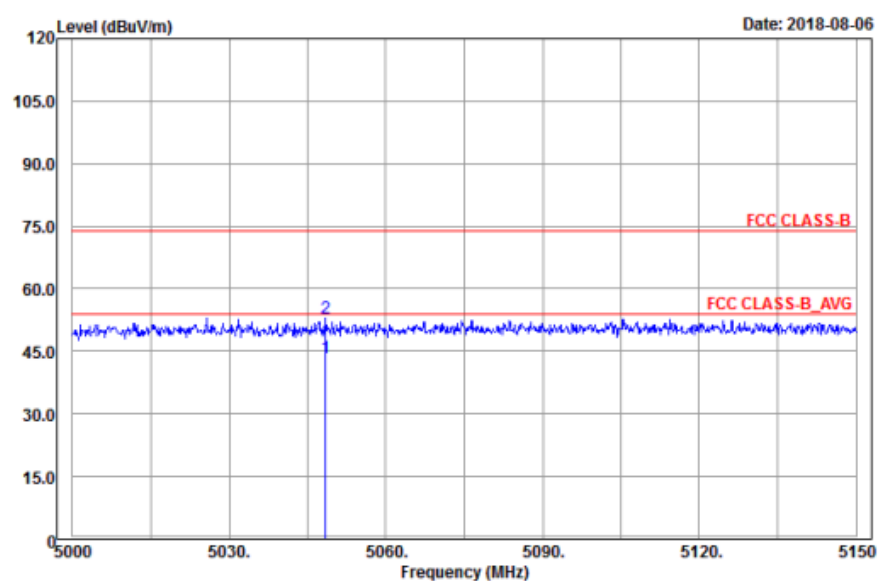
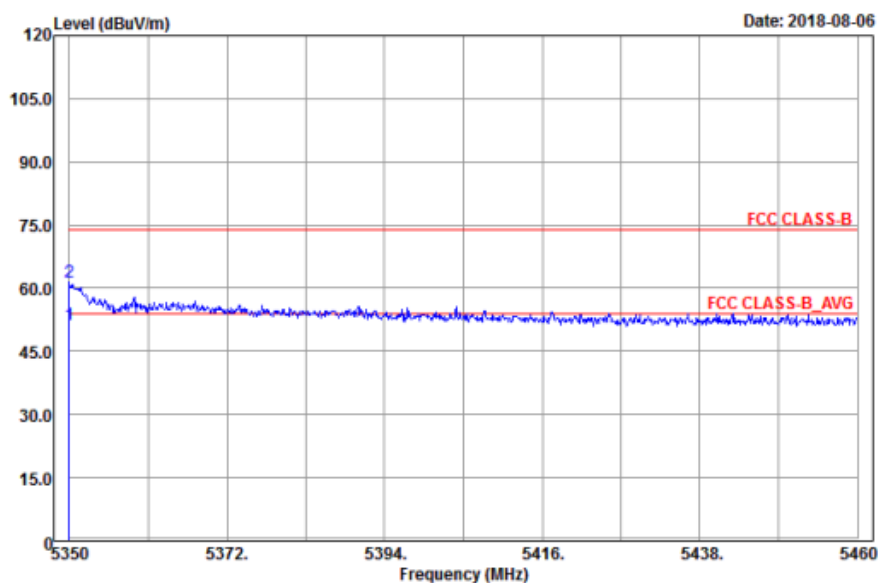
Spurious Emission Horizontal



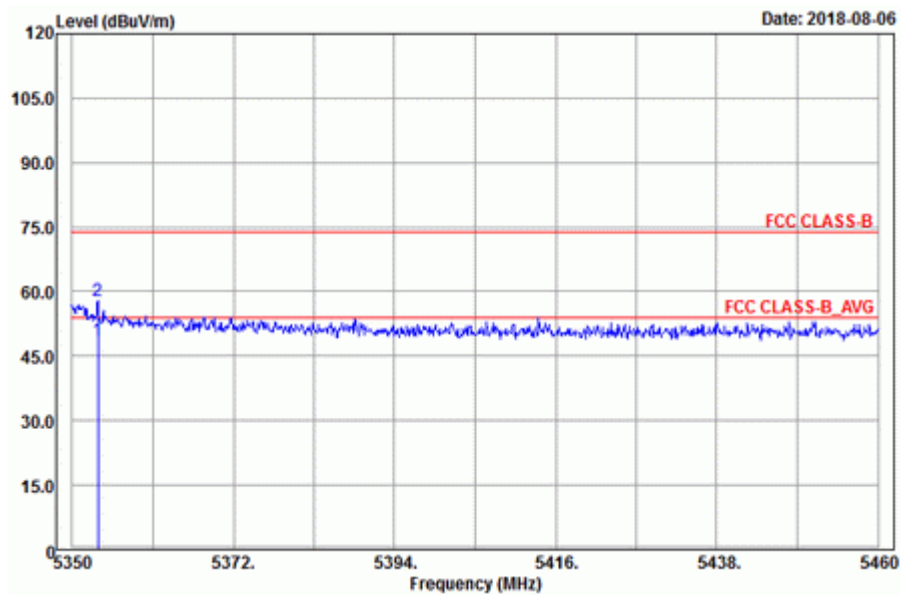
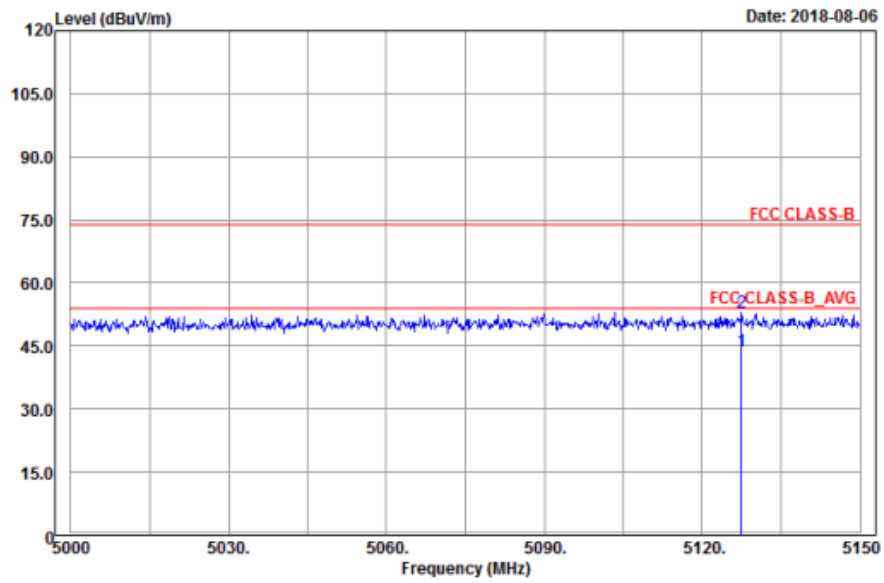
Vertical



Band Edge Horizontal



Vertical



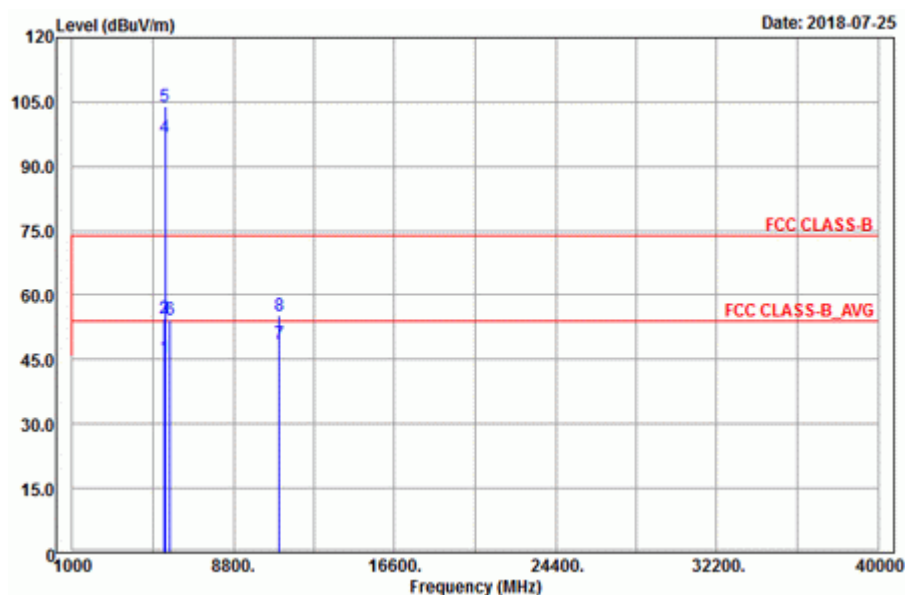
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5048.45	43.63	35.57	54	-10.37	34.04	8	33.98	100	185	Average
5048.45	53.12	45.06	74	-20.88	34.04	8	33.98	100	185	Peak
5310	99.32	90.77			34.25	8.32	34.02	135	184	Average
5310	106.61	98.06			34.25	8.32	34.02	135	184	Peak
5350	51.19	42.56	54	-2.81	34.28	8.38	34.03	100	185	Average
5350	61.39	52.76	74	-12.61	34.28	8.38	34.03	100	185	Peak
10620	44.94	30.23	54	-9.06	37.3	12.69	35.28	179	244	Average
10620	54.42	39.71	74	-19.58	37.3	12.69	35.28	179	244	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
5127.5	43.74	35.52	54	-10.26	34.11	8.1	33.99	291	201	Average
5127.5	52.91	44.69	74	-21.09	34.11	8.1	33.99	291	201	Peak
5310	97.02	88.47			34.25	8.32	34.02	291	201	Average
5310	103.89	95.34			34.25	8.32	34.02	291	201	Peak
5353.52	48.88	40.25	54	-5.12	34.28	8.38	34.03	286	183	Average
5353.52	57.85	49.22	74	-16.15	34.28	8.38	34.03	286	183	Peak
10620	47.23	32.52	54	-6.77	37.3	12.69	35.28	137	105	Average
10620	54.76	40.05	74	-19.24	37.3	12.69	35.28	137	105	Peak

Remarks:

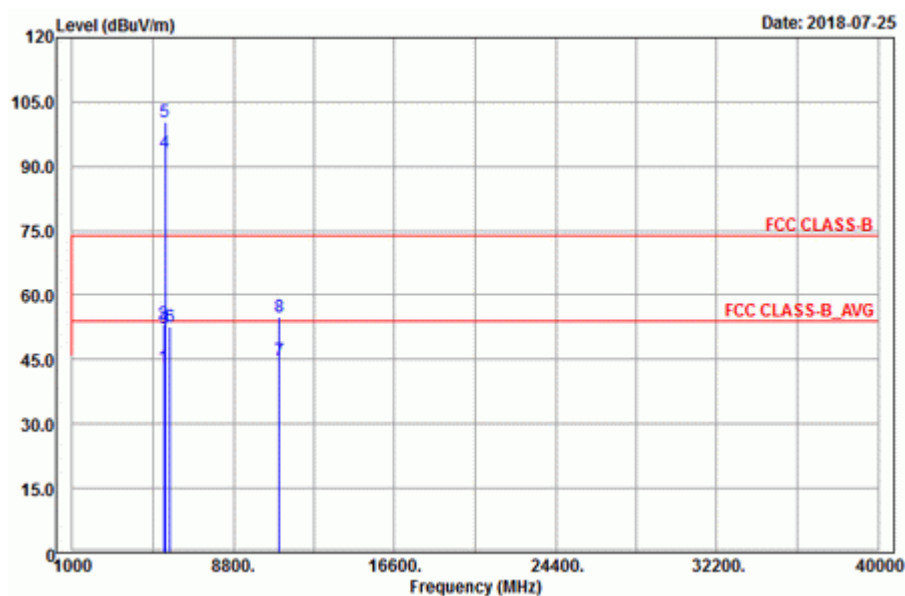
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

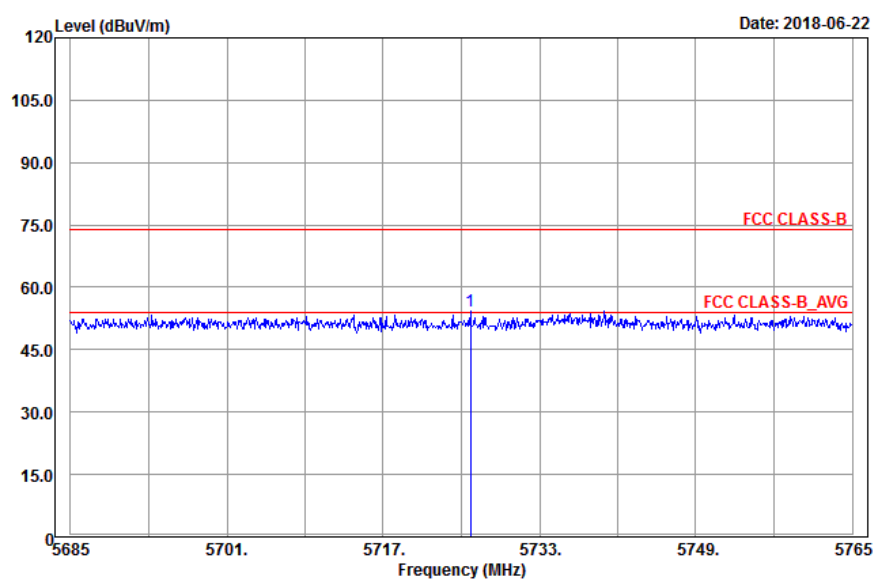
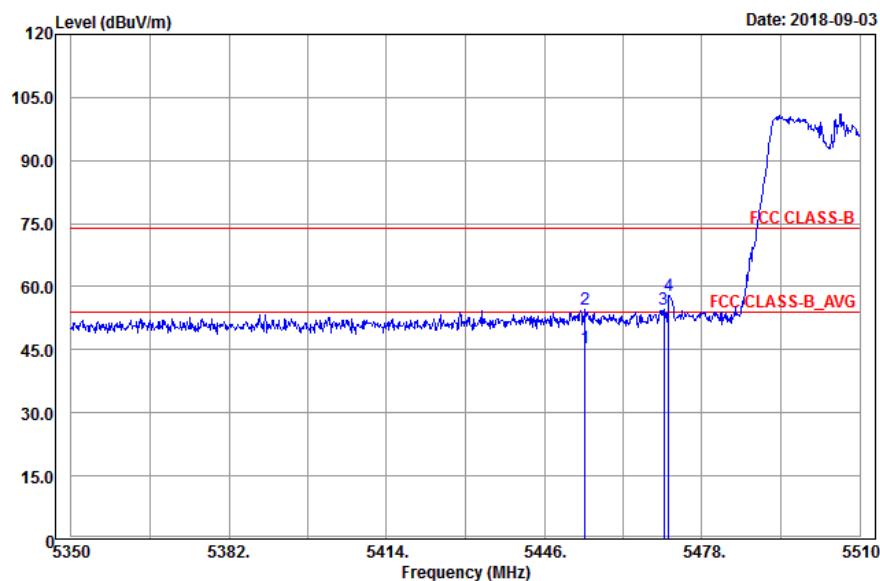
Spurious Emission Horizontal



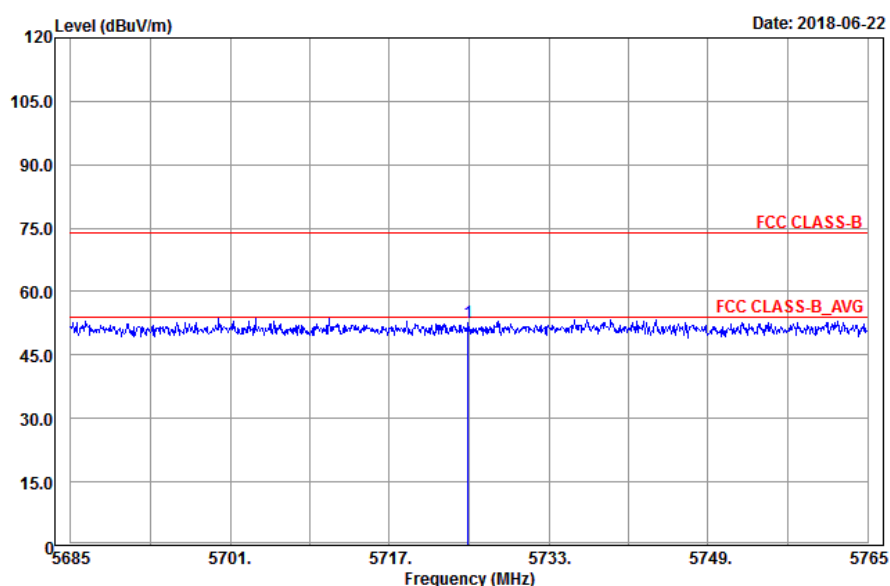
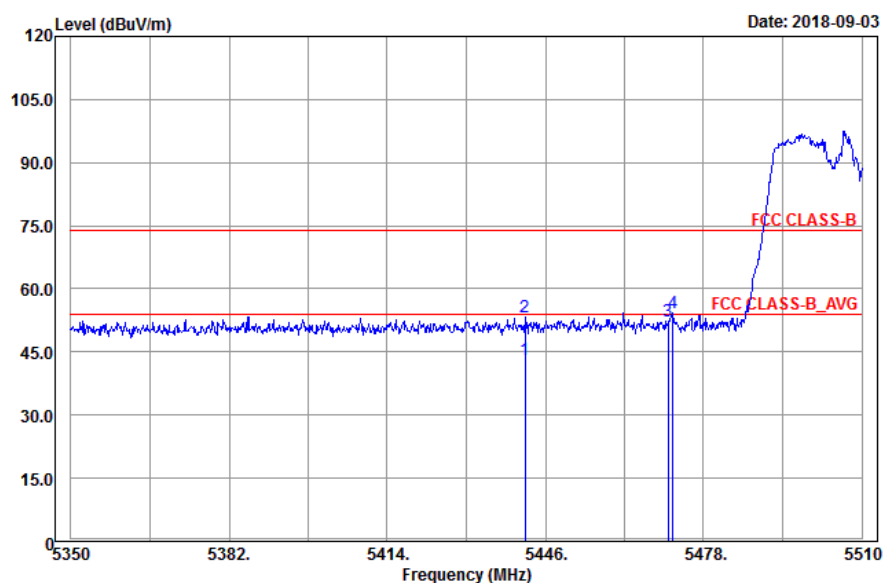
Vertical



Band Edge Horizontal



Vertical



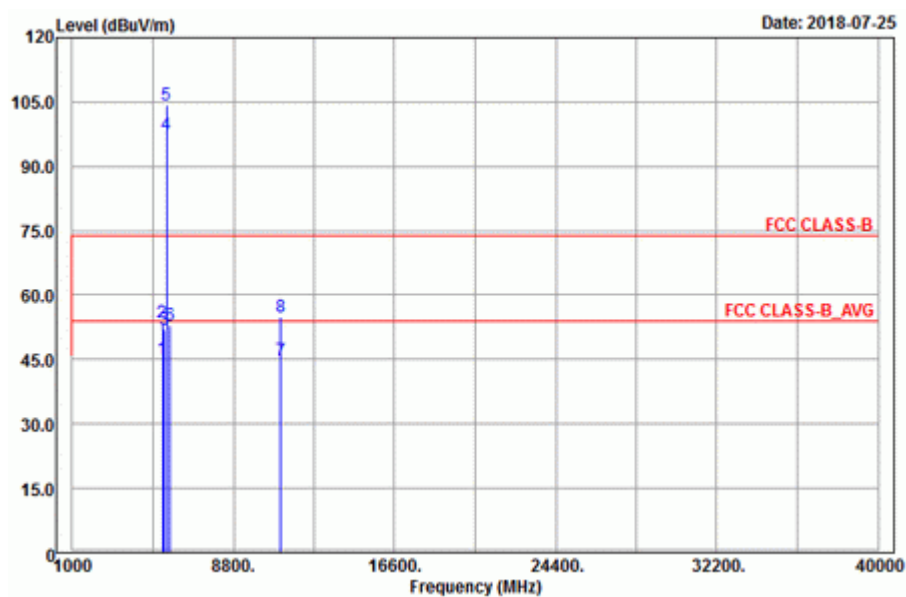
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5454.32	45.38	36.56	54	-8.62	34.36	8.51	34.05	119	187	Average
5454.32	54.75	45.93	74	-19.25	34.36	8.51	34.05	119	187	Peak
*5470.32	54.59	45.76	68.2	-13.61	34.37	8.51	34.05	119	187	Peak
*5471.28	57.93	49.07	68.2	-10.27	34.37	8.54	34.05	119	187	Peak
5510	96.78	87.87			34.4	8.57	34.06	119	187	Average
5510	104.07	95.16			34.4	8.57	34.06	119	187	Peak
*5725.96	54.13	44.97	68.2	-14.07	34.62	8.65	34.11	119	187	Peak
11020	48.6	33.53	54	-5.4	37.61	12.94	35.48	198	8	Average
11020	55.37	40.3	74	-18.63	37.61	12.94	35.48	198	8	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
5441.84	43.3	34.51	54	-10.7	34.35	8.48	34.04	220	209	Average
5441.84	53.37	44.58	74	-20.63	34.35	8.48	34.04	220	209	Peak
*5470.8	52.37	43.51	68.2	-15.83	34.37	8.54	34.05	220	209	Peak
*5471.76	54.17	45.31	68.2	-14.03	34.37	8.54	34.05	220	209	Peak
5510	93.19	84.28			34.4	8.57	34.06	220	209	Average
5510	100.23	91.32			34.4	8.57	34.06	220	209	Peak
*5724.92	52.5	43.34	68.2	-15.7	34.62	8.65	34.11	220	209	Peak
11020	44.93	29.86	54	-9.07	37.61	12.94	35.48	157	222	Average
11020	54.97	39.9	74	-19.03	37.61	12.94	35.48	157	222	Peak

Remarks:

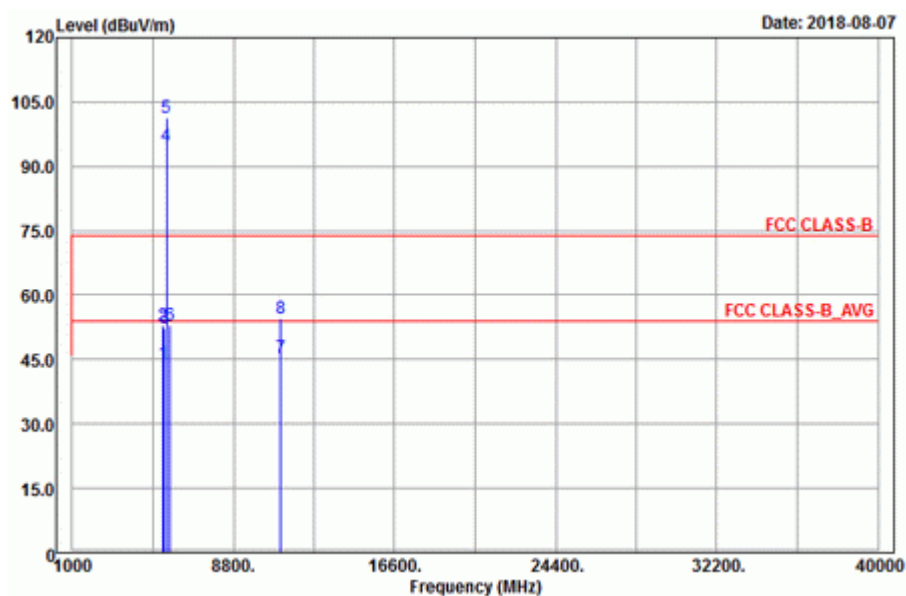
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



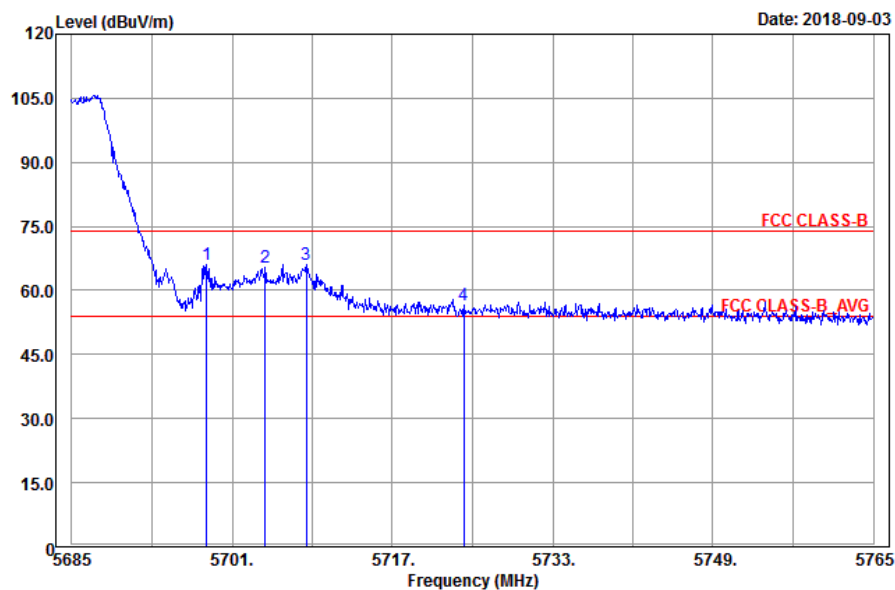
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5362.8	45.21	36.57	54	-8.79	34.29	8.38	34.03	200	183	Average
5362.8	53.65	45.01	74	-20.35	34.29	8.38	34.03	200	183	Peak
*5469.36	51.87	43.04	68.2	-16.33	34.37	8.51	34.05	200	183	Peak
5550	97.45	88.48			34.45	8.59	34.07	200	183	Average
5550	104.26	95.29			34.45	8.59	34.07	200	183	Peak
*5724.92	52.83	43.67	68.2	-15.37	34.62	8.65	34.11	200	183	Peak
11100	44.94	29.85	54	-9.06	37.66	12.89	35.46	185	226	Average
11100	55.02	39.93	74	-18.98	37.66	12.89	35.46	185	226	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
5380.88	44.21	35.53	54	-9.79	34.31	8.41	34.04	100	230	Average
5380.88	53.06	44.38	74	-20.94	34.31	8.41	34.04	100	230	Peak
*5469.68	52.23	43.4	68.2	-15.97	34.37	8.51	34.05	100	230	Peak
5550	94.66	85.69			34.45	8.59	34.07	100	230	Average
5550	101.47	92.5			34.45	8.59	34.07	100	230	Peak
*5724.84	53.06	43.9	68.2	-15.14	34.62	8.65	34.11	100	230	Peak
11100	45.61	30.52	54	-8.39	37.66	12.89	35.46	157	88	Average
11100	54.69	39.6	74	-19.31	37.66	12.89	35.46	157	88	Peak

Remarks:

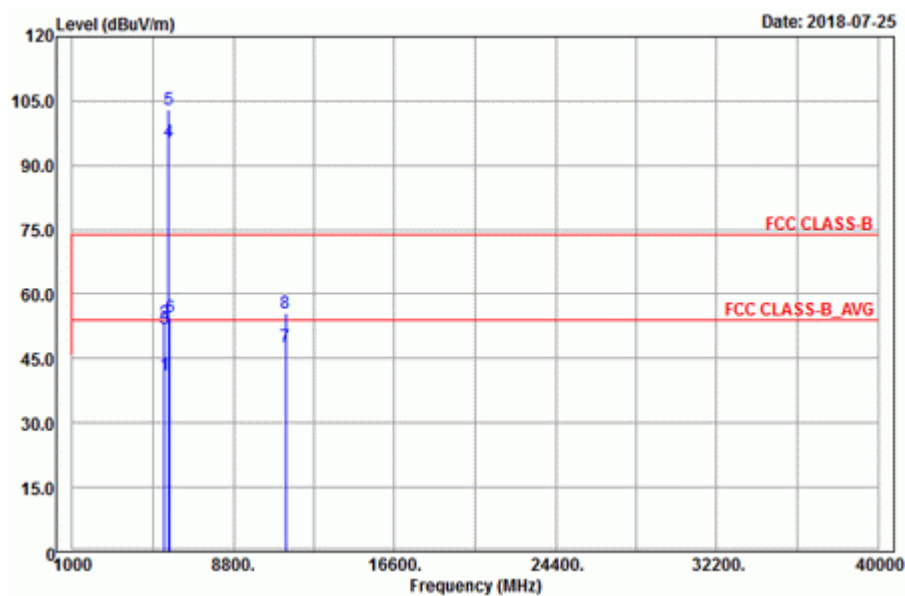
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

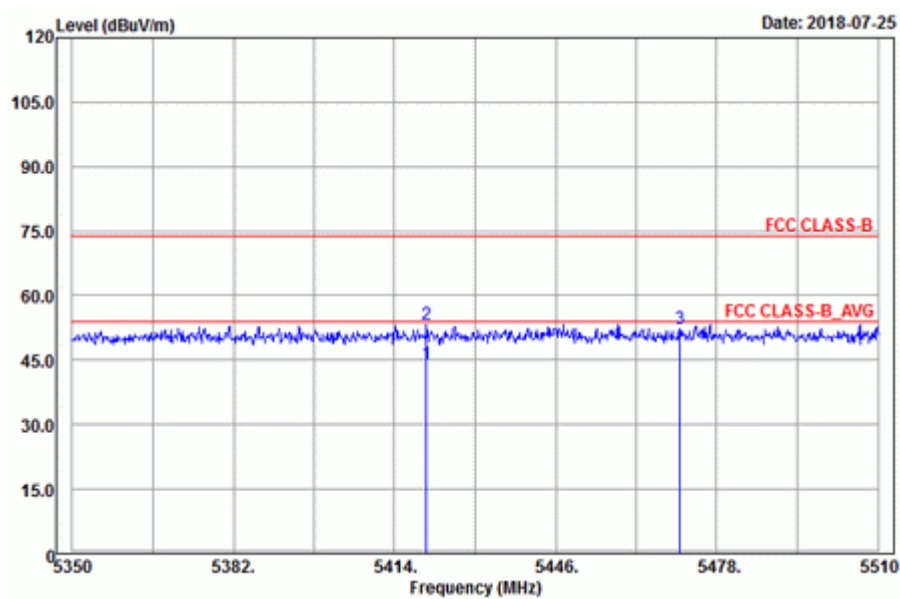
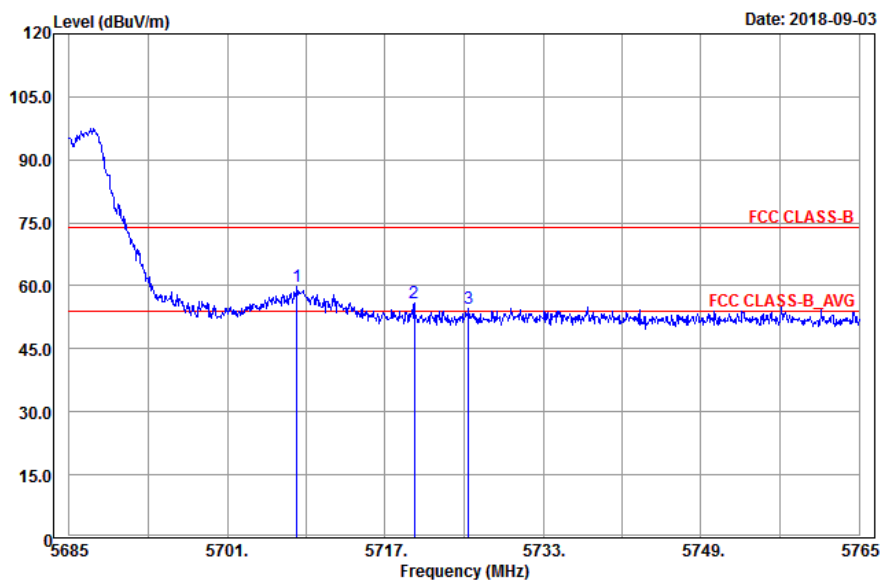
Spurious Emission Horizontal



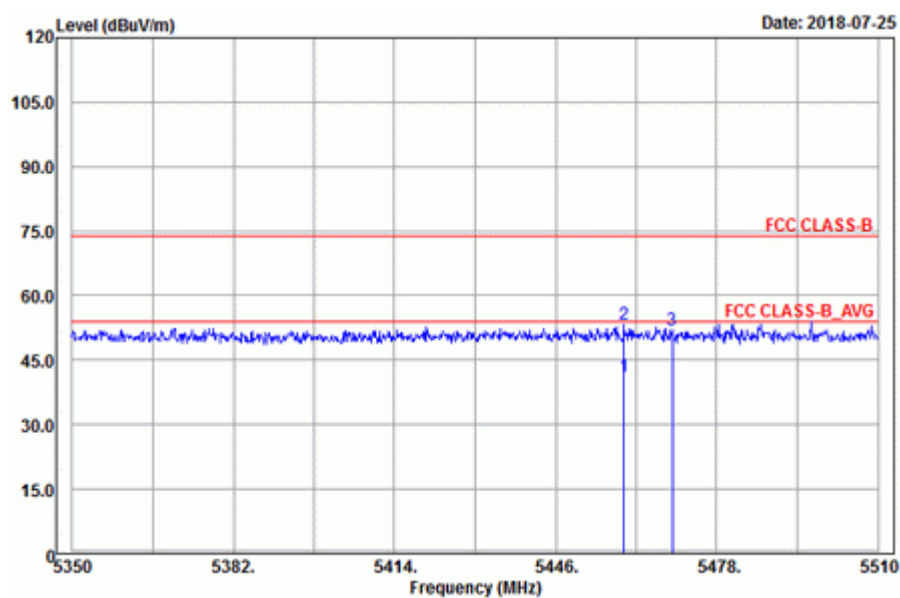
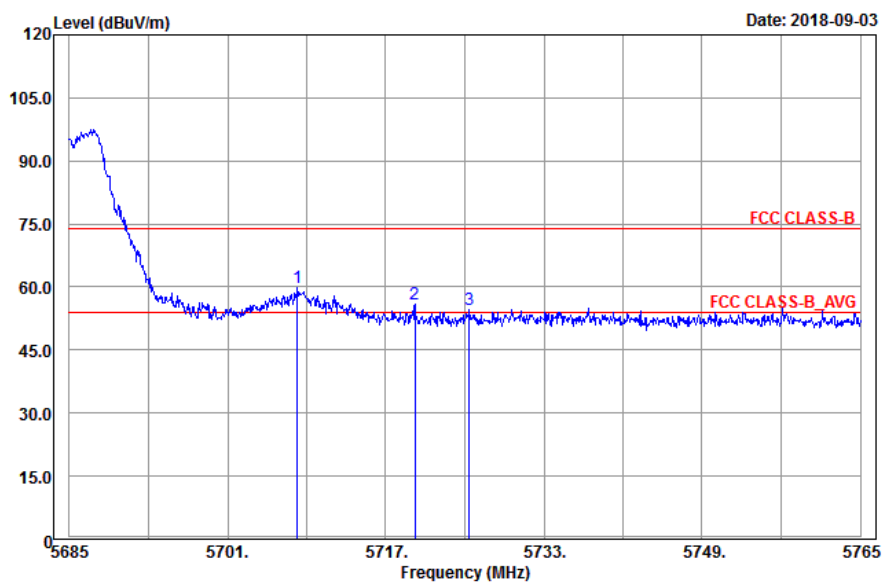
Vertical



Band Edge Horizontal



Vertical



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
5420.4	44.29	35.52	54	-9.71	34.33	8.48	34.04	176	202	Average
5420.4	53.46	44.69	74	-20.54	34.33	8.48	34.04	176	202	Peak
*5470.64	52.17	43.34	68.2	-16.03	34.37	8.51	34.05	176	202	Peak
5670	99.24	90.14			34.57	8.63	34.1	176	202	Average
5670	106.91	97.81			34.57	8.63	34.1	176	202	Peak
*5698.44	66.1	56.97	68.2	-2.1	34.59	8.64	34.1	176	202	Peak
*5704.28	65.47	56.32	68.2	-2.73	34.61	8.64	34.1	176	202	Peak
*5708.44	65.97	56.82	68.2	-2.23	34.61	8.65	34.11	176	202	Peak
*5724.12	56.59	47.43	68.2	-11.61	34.62	8.65	34.11	176	202	Peak
11340	47.32	32.23	54	-6.68	37.8	12.71	35.42	174	248	Average
11340	56.32	41.23	74	-17.68	37.8	12.71	35.42	174	248	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
5459.6	41.34	32.52	54	-12.66	34.36	8.51	34.05	253	212	Average
5459.6	53.39	44.57	74	-20.61	34.36	8.51	34.05	253	212	Peak
*5469.2	52.14	43.31	68.2	-16.06	34.37	8.51	34.05	253	212	Peak
5670	95.55	86.45			34.57	8.63	34.1	253	212	Average
5670	102.93	93.83			34.57	8.63	34.1	253	212	Peak
*5708.04	59.73	50.58	68.2	-8.47	34.61	8.65	34.11	253	212	Peak
*5719.96	55.82	46.66	68.2	-12.38	34.62	8.65	34.11	253	212	Peak
*5725.48	54.46	45.3	68.2	-13.74	34.62	8.65	34.11	253	212	Peak
11340	47.61	32.52	54	-6.39	37.8	12.71	35.42	153	332	Average
11340	55.69	40.6	74	-18.31	37.8	12.71	35.42	153	332	Peak

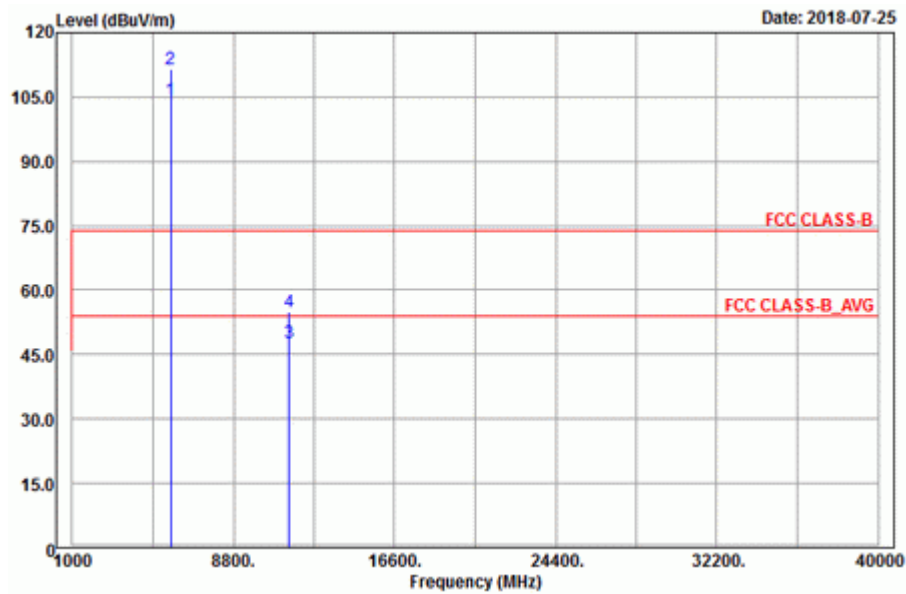
Remarks:

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

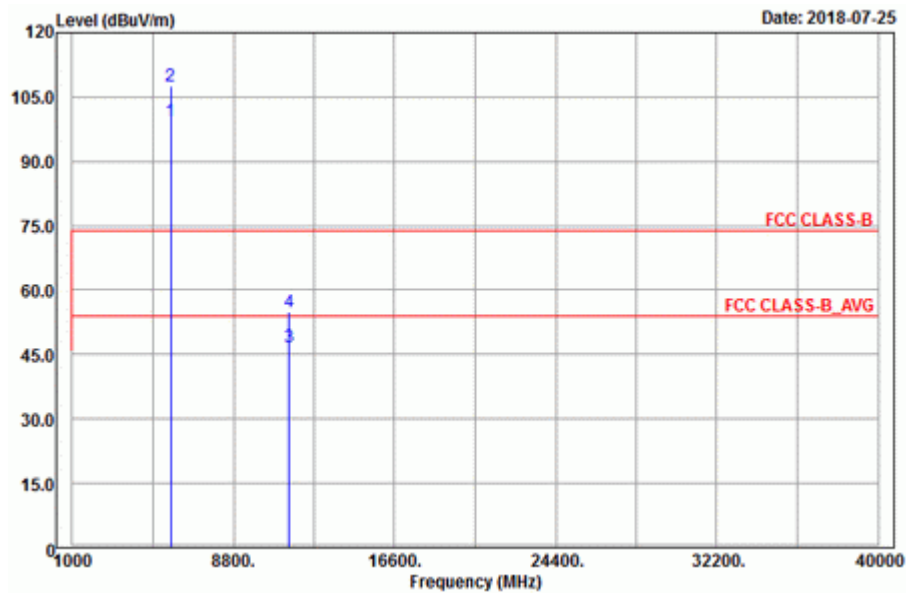
EUT Test Condition		Measurement Detail	
Channel	Channel 151	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

Horizontal



Vertical



<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	104.18	94.97			34.66	8.66	34.11	193	201	Average
5755	111.48	102.27			34.66	8.66	34.11	193	201	Peak
11510	47.63	32.52	54	-6.37	37.9	12.6	35.39	197	8	Average
11510	54.87	39.76	74	-19.13	37.9	12.6	35.39	197	8	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	99.24	90.03			34.66	8.66	34.11	259	212	Average
5755	107.55	98.34			34.66	8.66	34.11	259	212	Peak
11510	46.64	31.53	54	-7.36	37.9	12.6	35.39	118	249	Average
11510	54.97	39.86	74	-19.03	37.9	12.6	35.39	118	249	Peak

<Out of Band Emission (OOBE)>

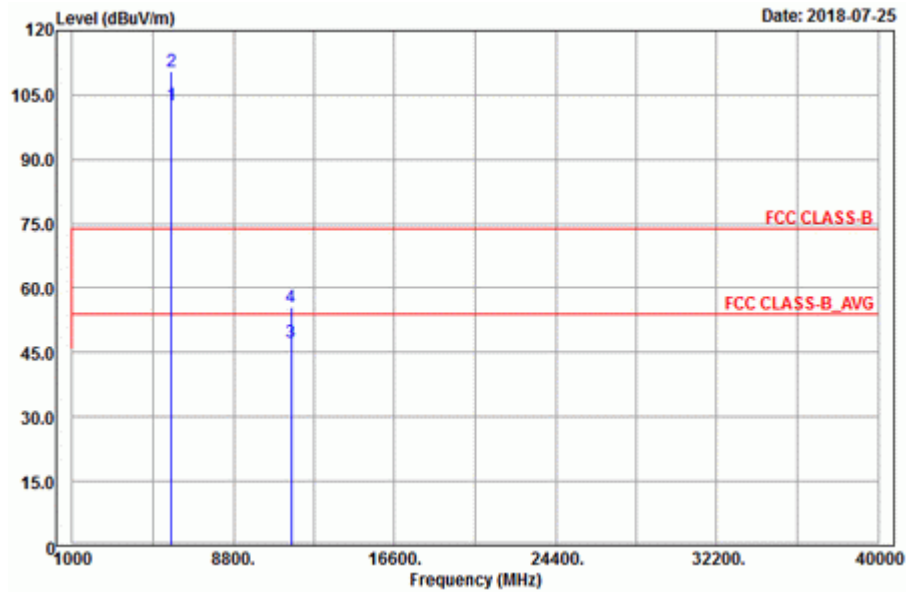
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5642.8	54.14	45.07	68.2	-14.06	34.54	8.62	34.09	193	201	Peak
5654.875	55.05	45.96	71.81	-16.76	34.56	8.63	34.1	193	201	Peak
5922.1	52.67	43.27	70.35	-17.68	34.83	8.73	34.16	193	201	Peak
*5978.275	57.19	47.73	68.2	-11.01	34.88	8.75	34.17	193	201	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
*5641.75	54.03	44.96	68.2	-14.17	34.54	8.62	34.09	259	212	Peak
5652.775	52.11	43.01	70.25	-18.14	34.56	8.63	34.09	259	212	Peak
5921.575	52.32	42.92	70.73	-18.41	34.83	8.73	34.16	259	212	Peak
*6011.35	54.25	44.75	68.2	-13.95	34.92	8.76	34.18	259	212	Peak

Remarks:

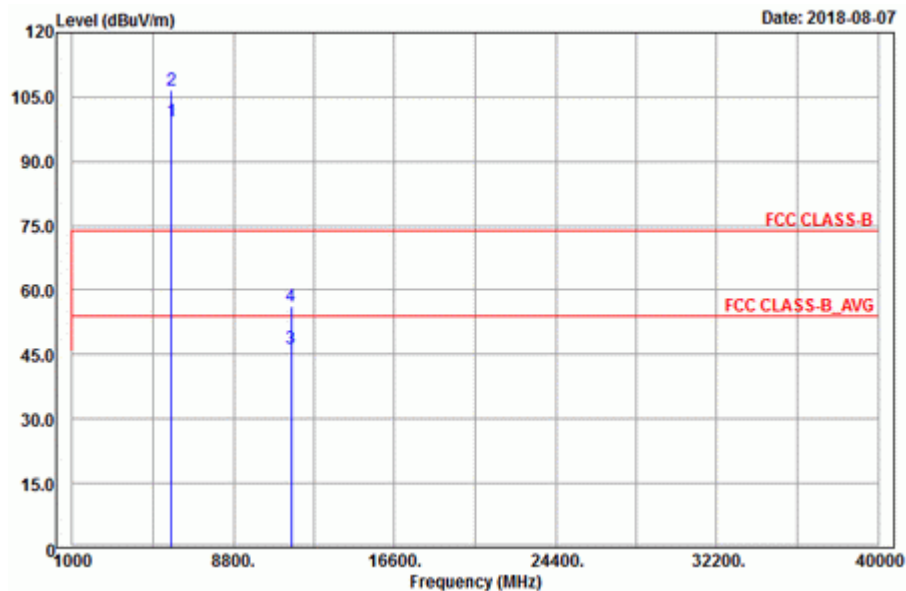
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5755 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



<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	102.76	93.52			34.69	8.68	34.13	197	247	Average
5795	110.6	101.36			34.69	8.68	34.13	197	247	Peak
11590	47.49	32.12	54	-6.51	38.02	12.72	35.37	124	229	Average
11590	55.65	40.28	74	-18.35	38.02	12.72	35.37	124	229	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	99.5	90.26			34.69	8.68	34.13	123	175	Average
5795	106.73	97.49			34.69	8.68	34.13	123	175	Peak
11590	46.49	31.12	54	-7.51	38.02	12.72	35.37	187	344	Average
11590	56.08	40.71	74	-17.92	38.02	12.72	35.37	187	344	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
*5572.45	53.69	44.7	68.2	-14.51	34.47	8.59	34.07	197	247	Peak
5651.2	52.17	43.08	69.09	-16.92	34.56	8.62	34.09	197	247	Peak
5923.675	53.2	43.8	69.18	-15.98	34.83	8.73	34.16	197	247	Peak
*6020.8	55.72	46.21	68.2	-12.48	34.92	8.77	34.18	197	247	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
*5545.15	53.54	44.6	68.2	-14.66	34.43	8.58	34.07	123	175	Peak
5653.3	51.75	42.65	70.64	-18.89	34.56	8.63	34.09	123	175	Peak
5923.15	51.7	42.3	69.57	-17.87	34.83	8.73	34.16	123	175	Peak
*5967.25	53.27	43.82	68.2	-14.93	34.87	8.75	34.17	123	175	Peak

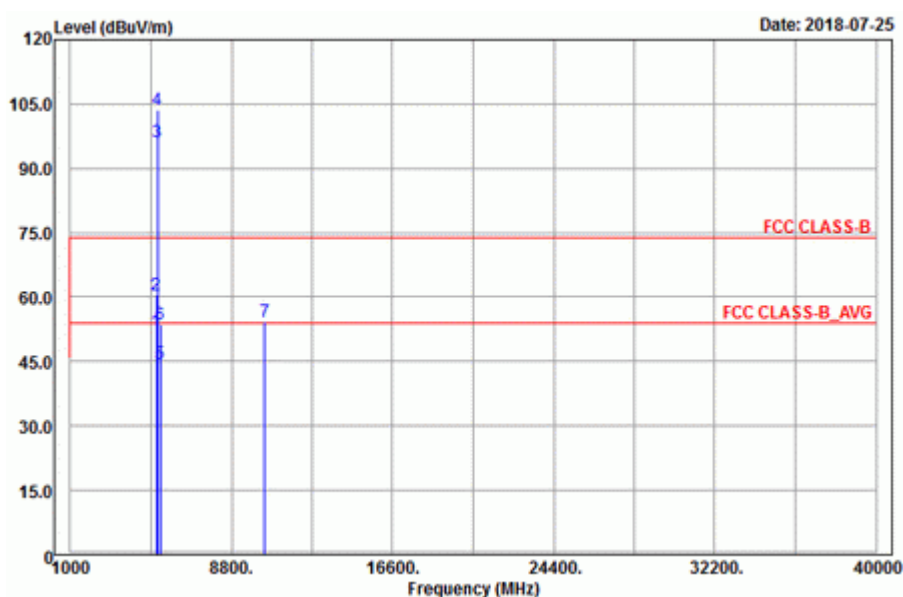
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5795 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

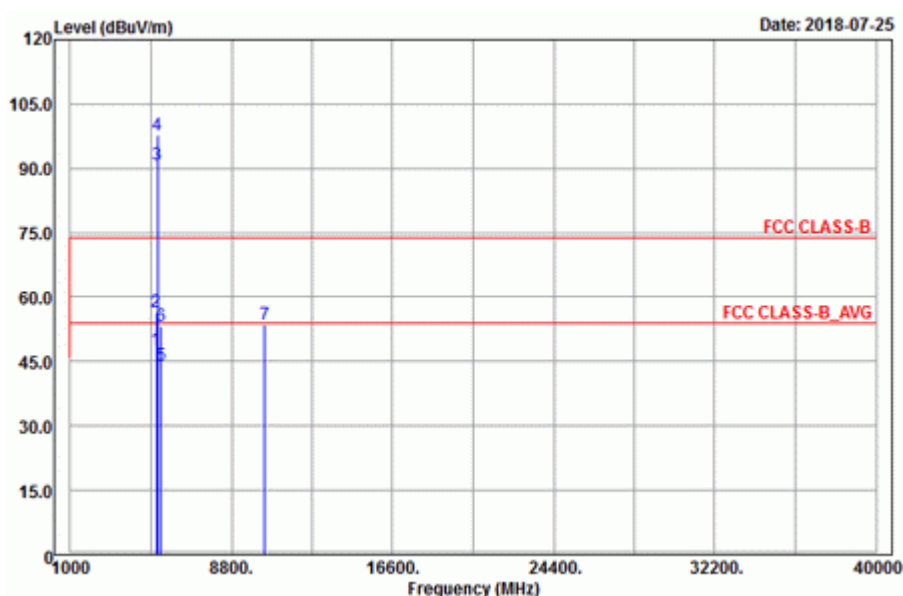
802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

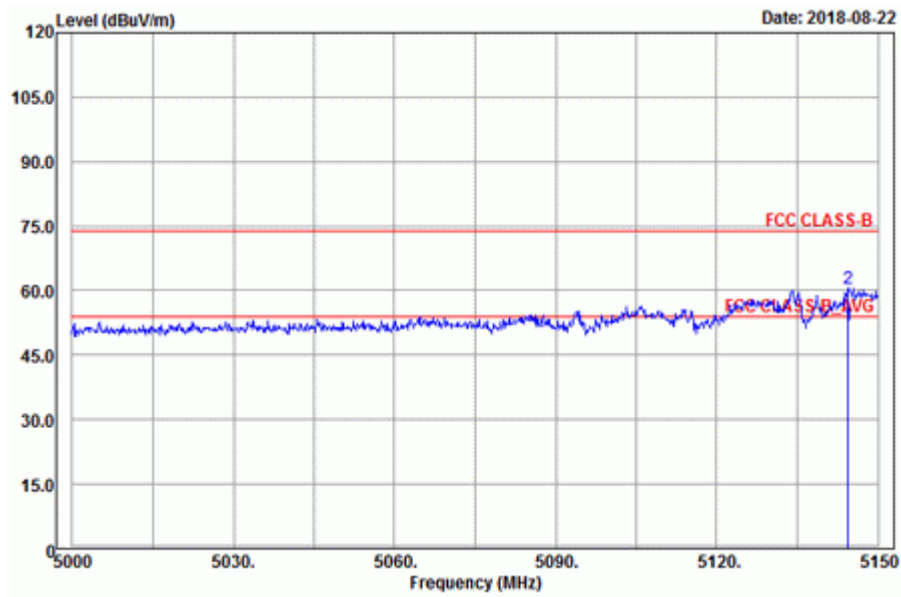
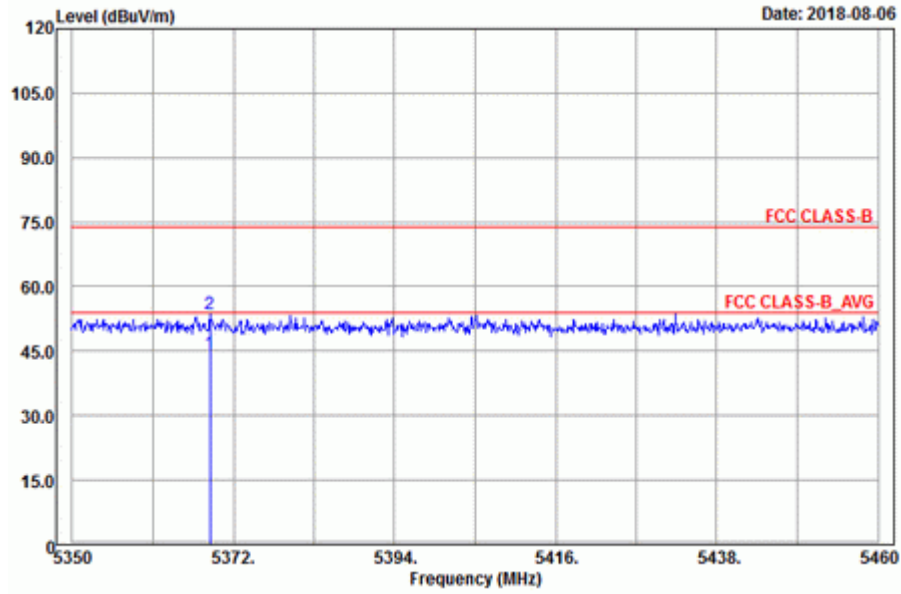
Spurious Emission Horizontal



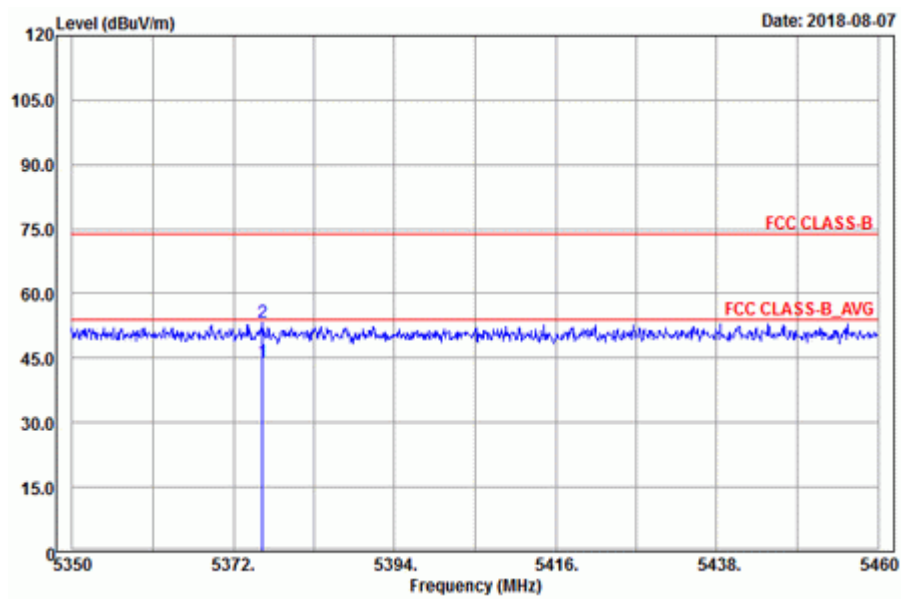
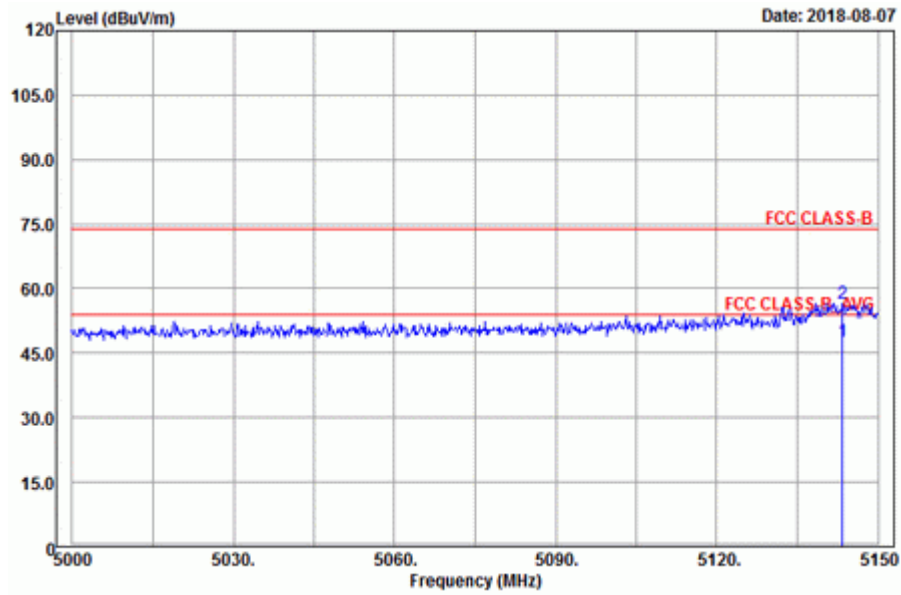
Vertical



Band Edge Horizontal



Vertical



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
5144.45	52.1	43.85	54	-1.9	34.12	8.13	34	199	245	Average
5144.45	60.49	52.24	74	-13.51	34.12	8.13	34	199	245	Peak
5210	96.22	87.86			34.17	8.19	34	197	247	Average
5210	103.78	95.42			34.17	8.19	34	197	247	Peak
5368.81	44.53	35.86	54	-9.47	34.29	8.41	34.03	199	245	Average
5368.81	53.7	45.03	74	-20.3	34.29	8.41	34.03	199	245	Peak
*10420	54.16	39.75	68.2	-14.04	37.15	12.42	35.16	193	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
5143.4	47.78	39.52	54	-6.22	34.12	8.13	33.99	125	175	Average
5143.4	56.69	48.43	74	-17.31	34.12	8.13	33.99	125	175	Peak
5210	90.91	82.55			34.17	8.19	34	123	175	Average
5210	97.92	89.56			34.17	8.19	34	123	175	Peak
5375.96	44.2	35.54	54	-9.8	34.29	8.41	34.04	125	175	Average
5375.96	53.41	44.75	74	-20.59	34.29	8.41	34.04	125	175	Peak
*10420	53.53	39.12	68.2	-14.67	37.15	12.42	35.16	142	176	Peak

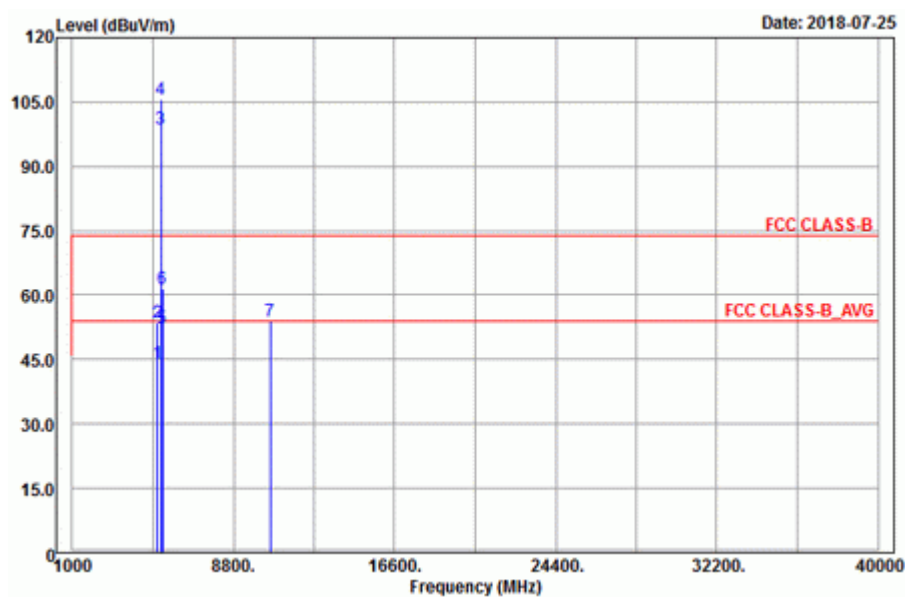
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

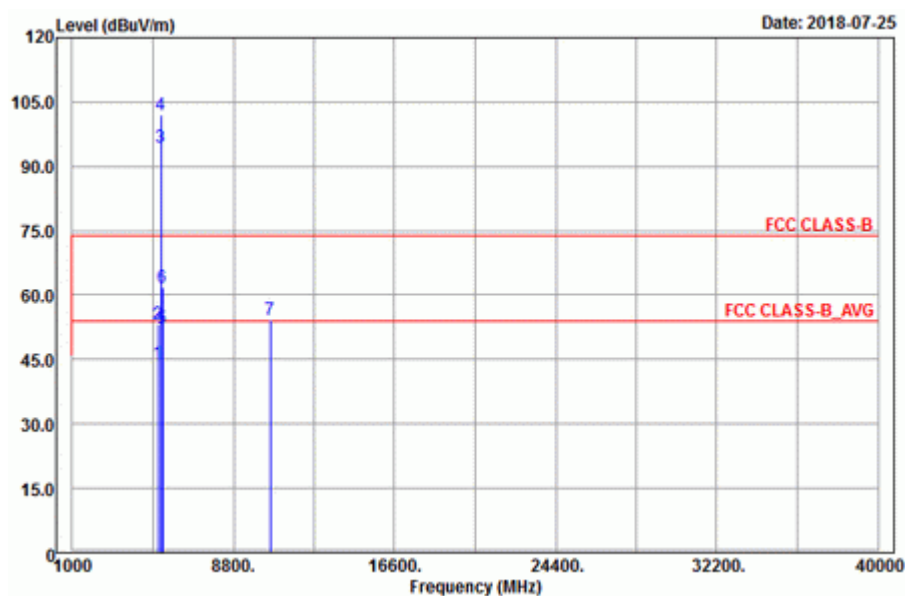
EUT Test Condition		Measurement Detail	
Channel	Channel 58	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

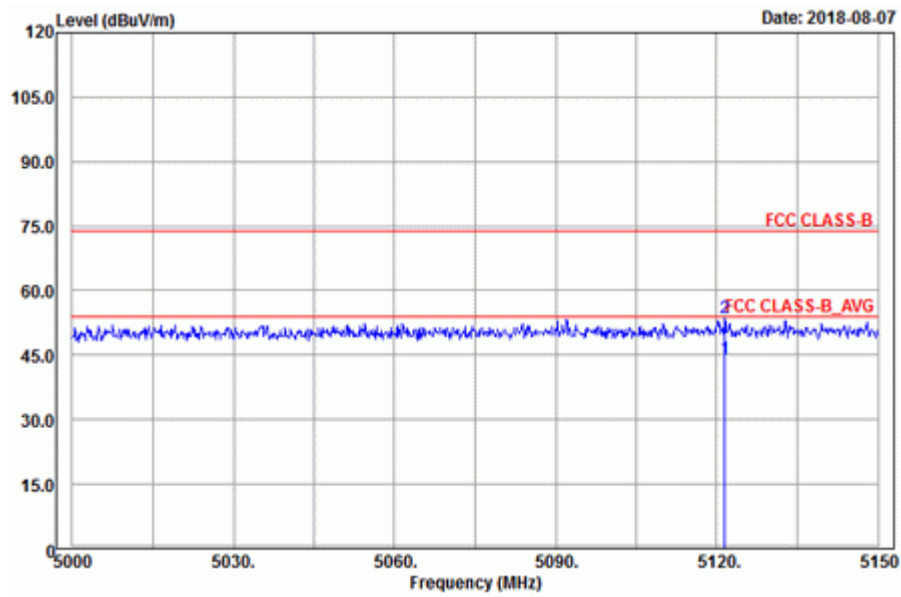
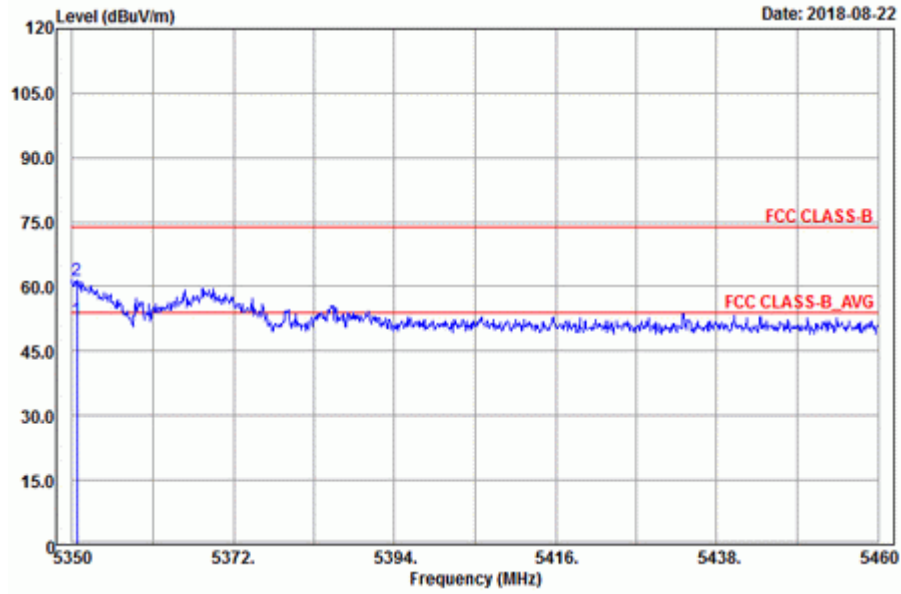
Horizontal



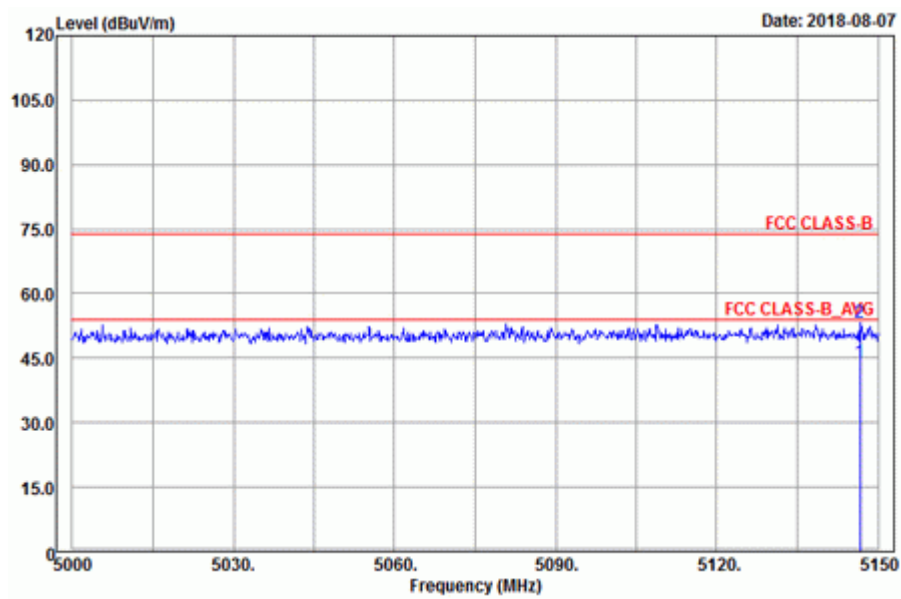
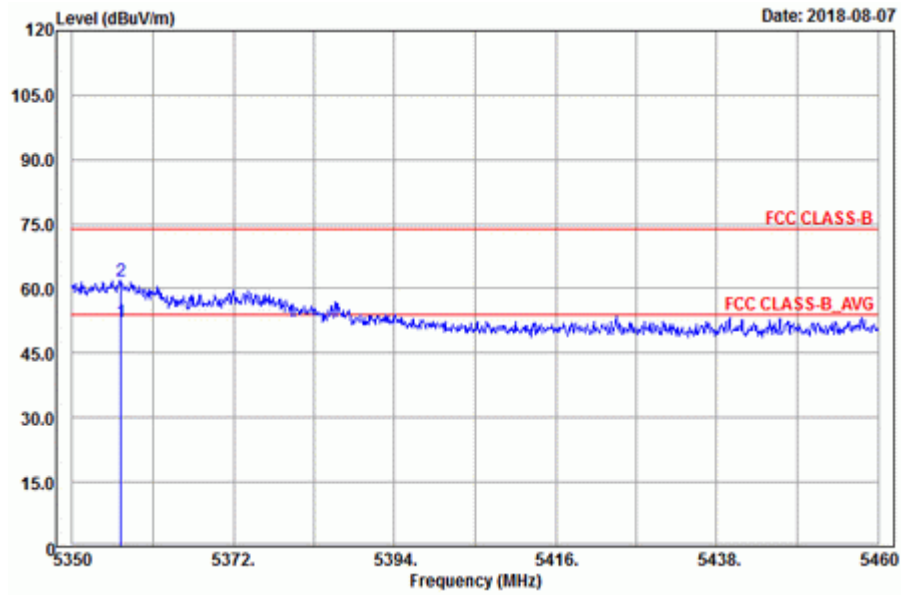
Vertical



Band Edge Horizontal



Vertical



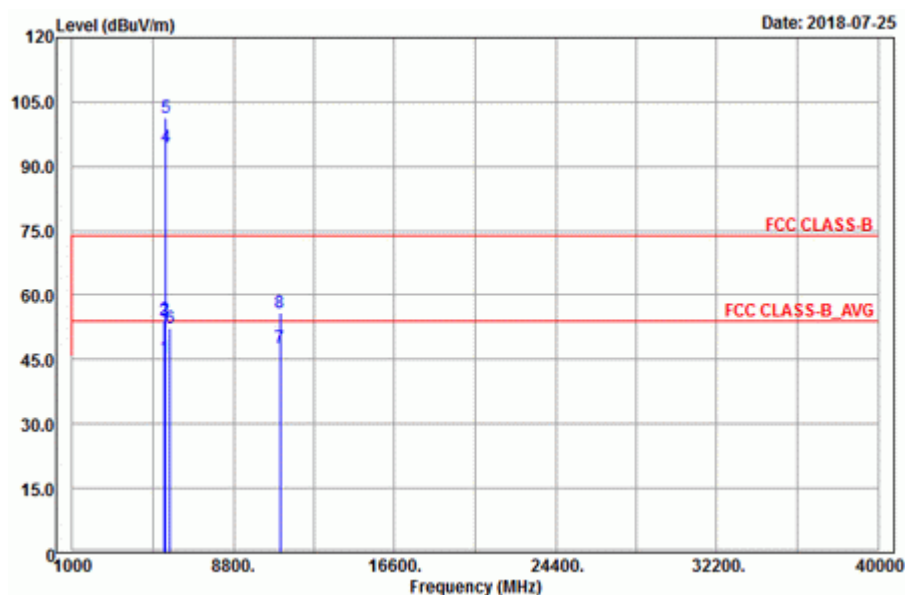
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5121.5	44.19	35.99	54	-9.81	34.09	8.1	33.99	122	184	Average
5121.5	53.54	45.34	74	-20.46	34.09	8.1	33.99	122	184	Peak
5290	98.83	90.3			34.23	8.32	34.02	122	184	Average
5290	105.69	97.16			34.23	8.32	34.02	122	184	Peak
5350.66	52.16	43.53	54	-1.84	34.28	8.38	34.03	134	184	Average
5350.66	61.57	52.94	74	-12.43	34.28	8.38	34.03	134	184	Peak
*10580	53.81	39.16	68.2	-14.39	37.27	12.65	35.27	198	226	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.7	44.15	35.9	54	-9.85	34.12	8.13	34	288	201	Average
5146.7	53.18	44.93	74	-20.82	34.12	8.13	34	288	201	Peak
5290	94.44	85.91			34.23	8.32	34.02	288	201	Average
5290	102.17	93.64			34.23	8.32	34.02	288	201	Peak
5356.6	52.2	43.57	54	-1.8	34.28	8.38	34.03	288	201	Average
5356.6	61.8	53.17	74	-12.2	34.28	8.38	34.03	288	201	Peak
*10580	54.38	39.73	68.2	-13.82	37.27	12.65	35.27	123	140	Peak

Remarks:

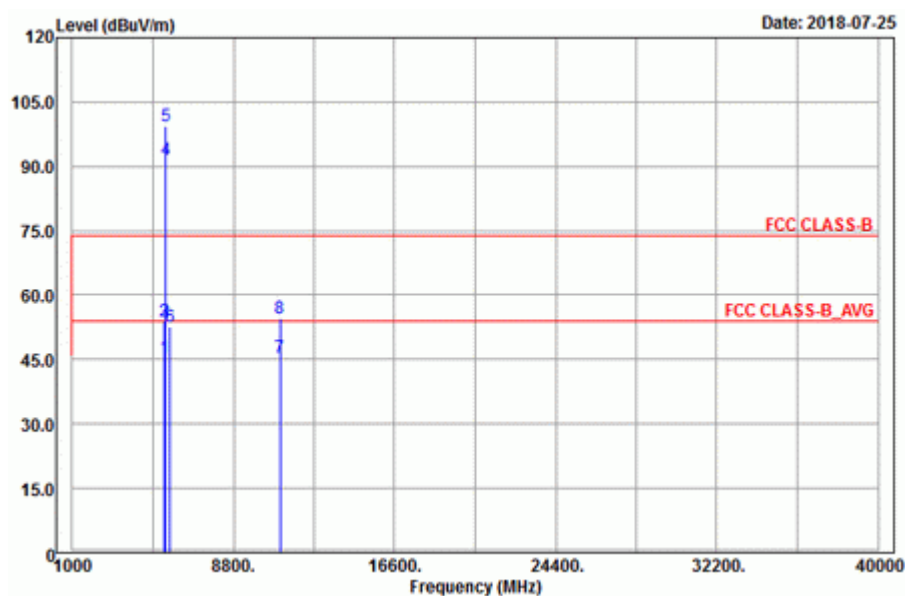
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5290 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

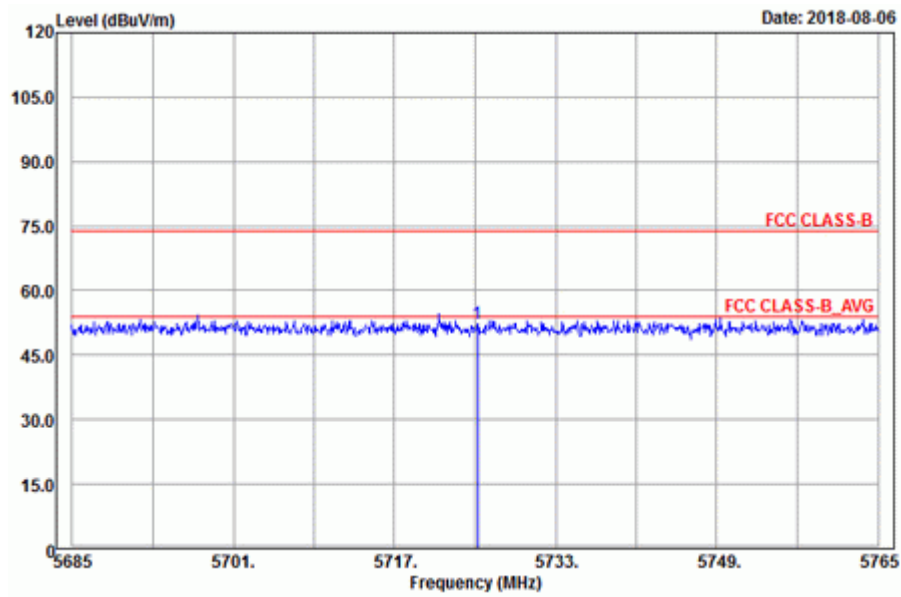
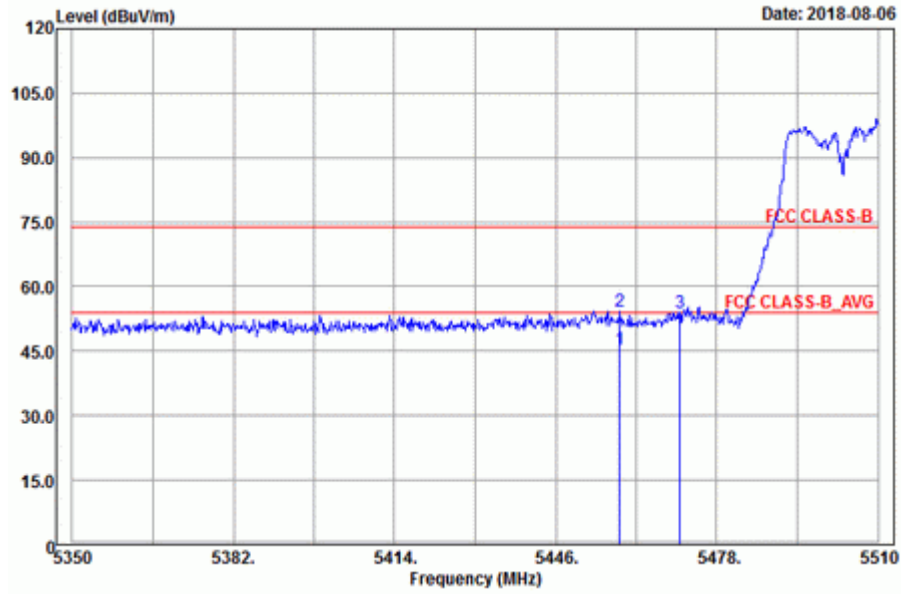
Spurious Emission Horizontal



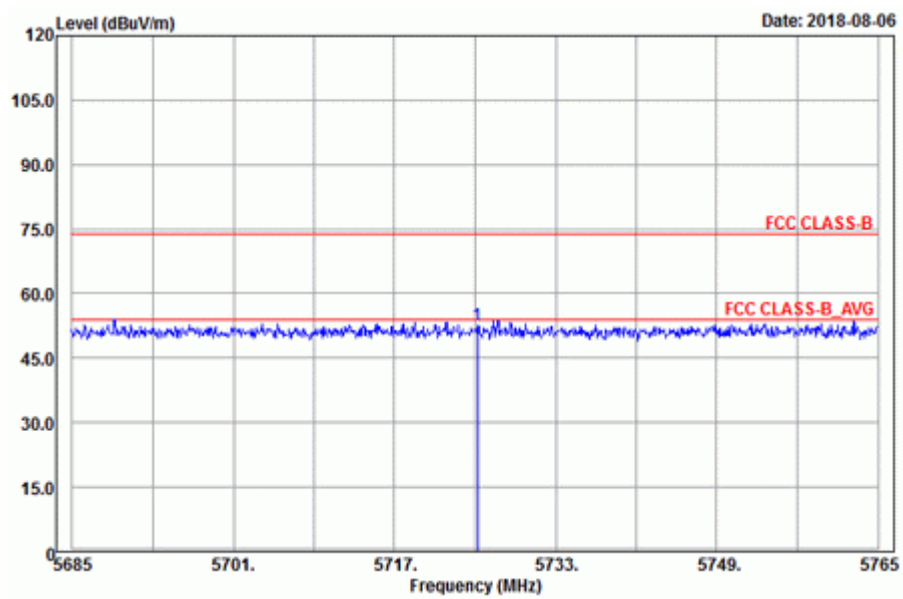
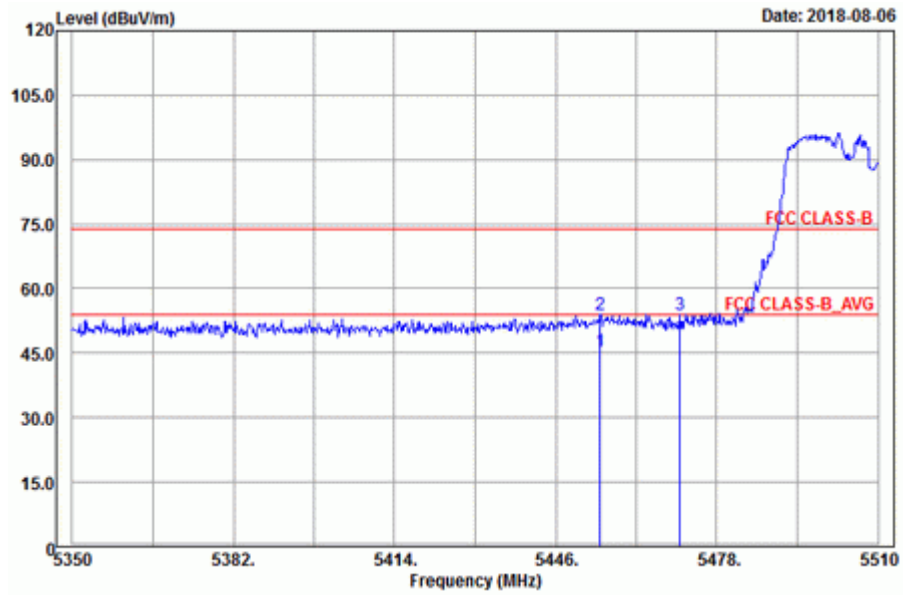
Vertical



Band Edge Horizontal



Vertical



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
5458.8	45.38	36.56	54	-8.62	34.36	8.51	34.05	128	196	Average
5458.8	54.24	45.42	74	-19.76	34.36	8.51	34.05	128	196	Peak
*5470.64	54.04	45.21	68.2	-14.16	34.37	8.51	34.05	128	196	Peak
5530	94.45	85.52			34.42	8.58	34.07	131	187	Average
5530	101.4	92.47			34.42	8.58	34.07	131	187	Peak
*5725.24	52.46	43.3	68.2	-15.74	34.62	8.65	34.11	131	187	Peak
11060	47.6	32.52	54	-6.4	37.64	12.91	35.47	132	226	Average
11060	55.83	40.75	74	-18.17	37.64	12.91	35.47	132	226	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
5454.8	45.47	36.65	54	-8.53	34.36	8.51	34.05	217	212	Average
5454.8	54.09	45.27	74	-19.91	34.36	8.51	34.05	217	212	Peak
*5470.64	53.85	45.02	68.2	-14.35	34.37	8.51	34.05	217	212	Peak
5530	91.61	82.68			34.42	8.58	34.07	217	212	Average
5530	99.26	90.33			34.42	8.58	34.07	217	212	Peak
*5725.24	52.5	43.34	68.2	-15.7	34.62	8.65	34.11	217	212	Peak
11060	45.6	30.52	54	-8.4	37.64	12.91	35.47	101	174	Average
11060	54.59	39.51	74	-19.41	37.64	12.91	35.47	101	174	Peak

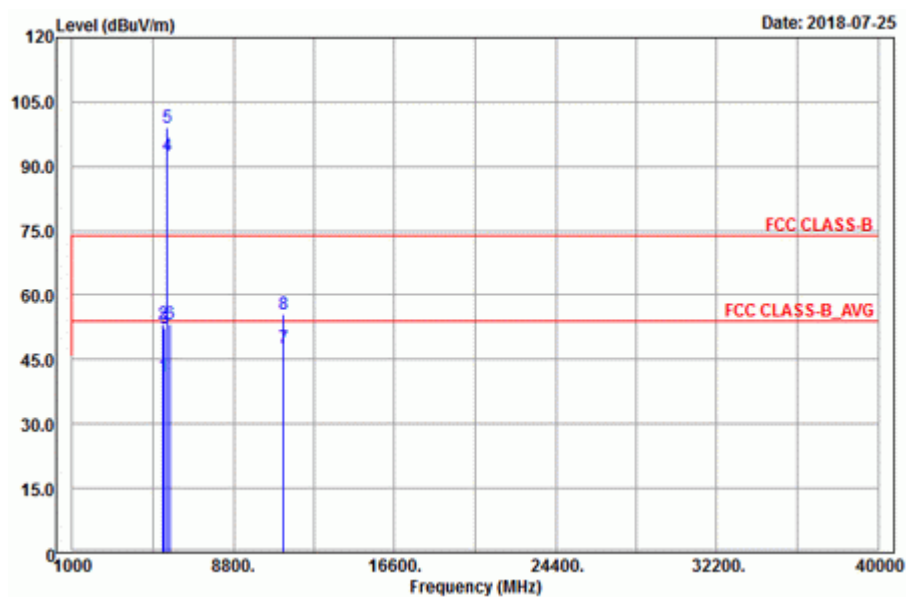
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5530 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

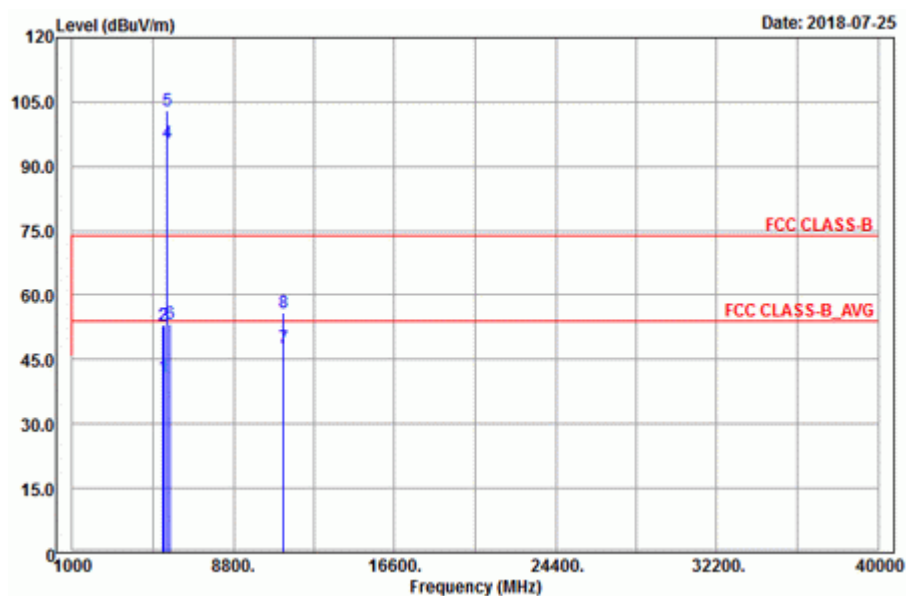
EUT Test Condition		Measurement Detail	
Channel	Channel 122	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Spurious Emission

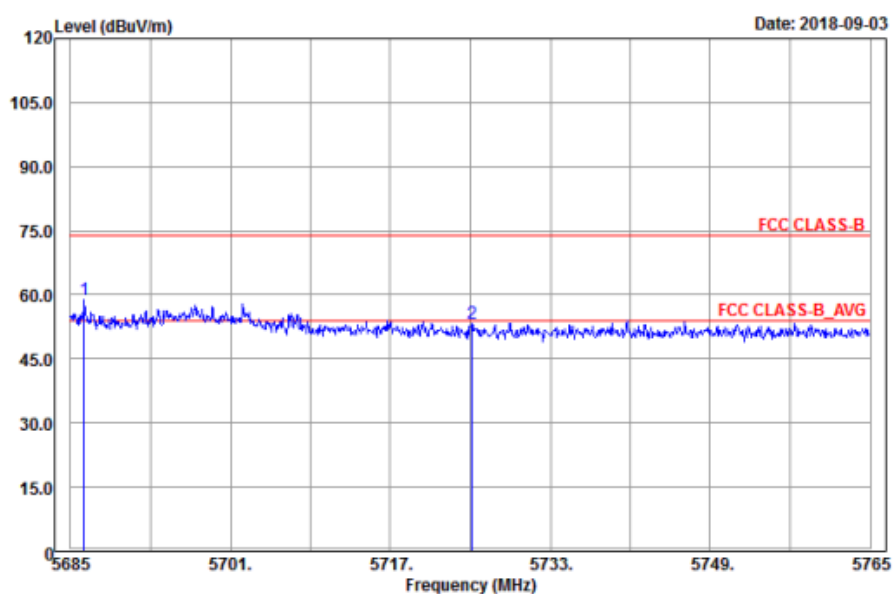
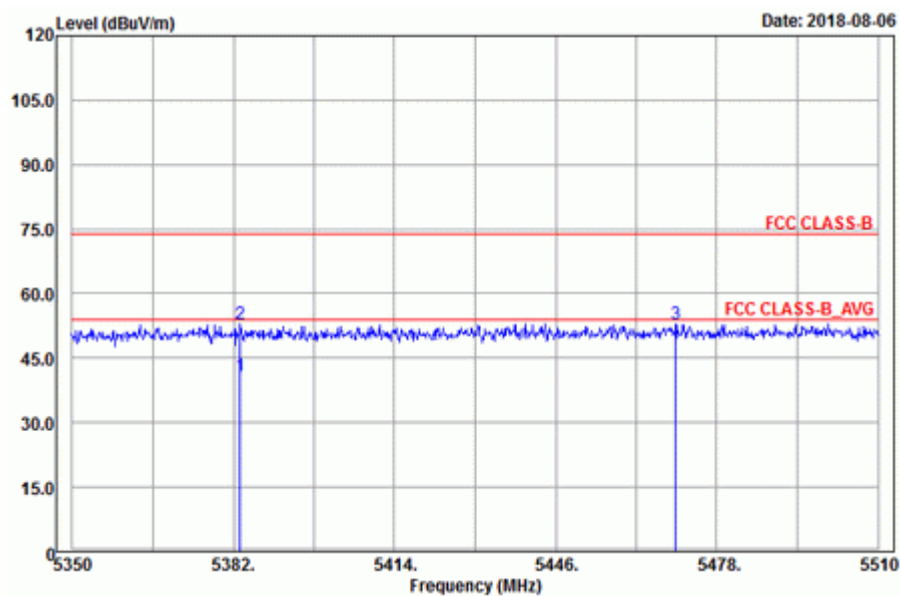
Horizontal



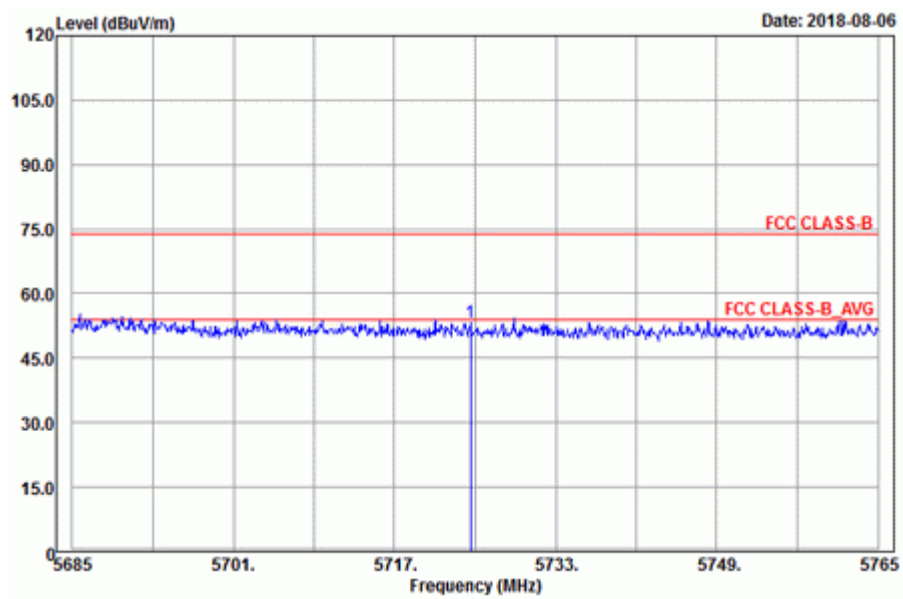
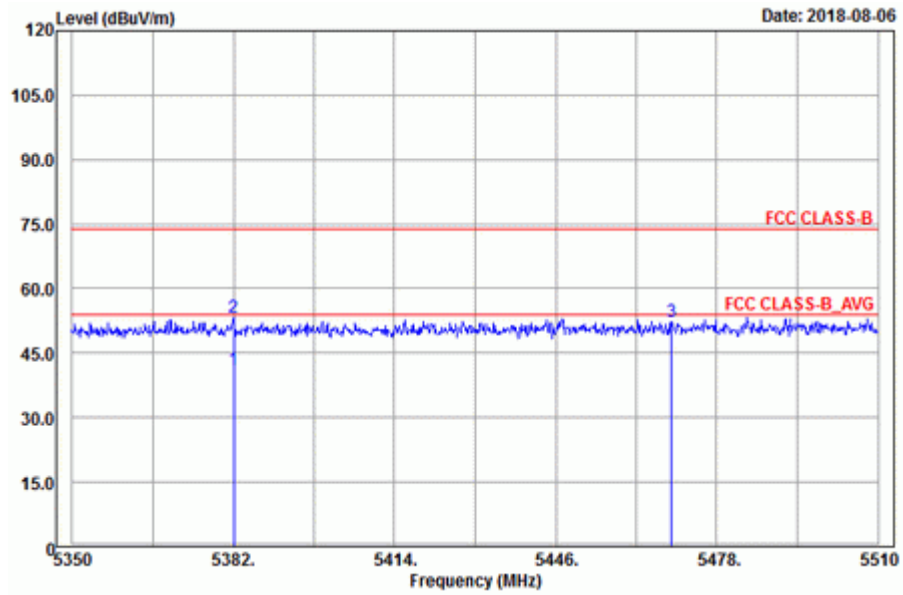
Vertical



Band Edge Horizontal



Vertical



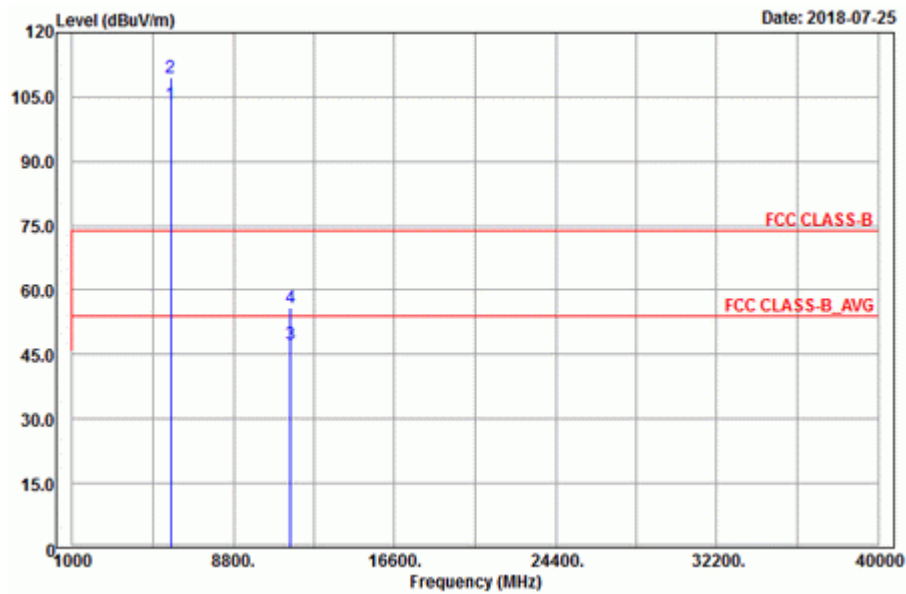
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5382	41.22	32.54	54	-12.78	34.31	8.41	34.04	271	212	Average
5382	53.23	44.55	74	-20.77	34.31	8.41	34.04	271	212	Peak
*5469.04	52.2	43.37	68.2	-16	34.37	8.51	34.05	271	212	Peak
5610	92.45	83.42			34.5	8.61	34.08	271	212	Average
5610	99.08	90.05			34.5	8.61	34.08	271	212	Peak
*5724.52	53.27	44.11	68.2	-14.93	34.62	8.65	34.11	271	212	Peak
11220	47.62	32.53	54	-6.38	37.73	12.8	35.44	247	159	Average
11220	55.72	40.63	74	-18.28	37.73	12.8	35.44	247	159	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
5383.28	40.92	32.24	54	-13.08	34.31	8.41	34.04	131	159	Average
5383.28	52.99	44.31	74	-21.01	34.31	8.41	34.04	131	159	Peak
*5469.84	52.84	44.01	68.2	-15.36	34.37	8.51	34.05	131	159	Peak
5610	95.61	86.58			34.5	8.61	34.08	131	159	Average
5610	103.07	94.04			34.5	8.61	34.08	131	159	Peak
*5725.16	53.22	44.06	68.2	-14.98	34.62	8.65	34.11	131	159	Peak
11220	47.61	32.52	54	-6.39	37.73	12.8	35.44	107	14	Average
11220	55.8	40.71	74	-18.2	37.73	12.8	35.44	107	14	Peak

Remarks:

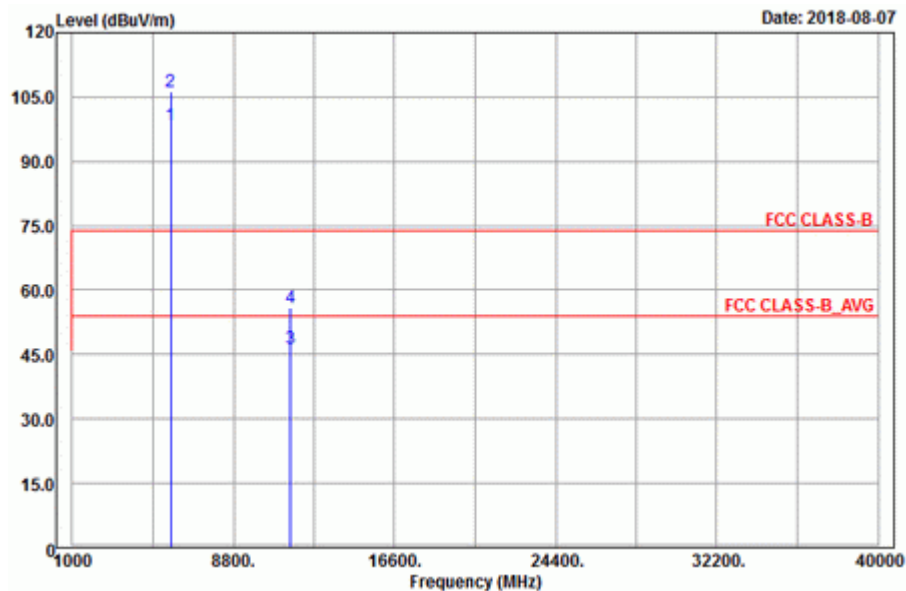
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5610 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Spurious Emission Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	103.48	94.25			34.68	8.67	34.12	180	202	Average
5775	109.46	100.23			34.68	8.67	34.12	180	202	Peak
11550	47.49	32.22	54	-6.51	37.97	12.68	35.38	140	187	Average
11550	55.98	40.71	74	-18.02	37.97	12.68	35.38	140	187	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	98.29	89.06			34.68	8.67	34.12	261	212	Average
5775	106.33	97.1			34.68	8.67	34.12	261	212	Peak
11550	46.49	31.22	54	-7.51	37.97	12.68	35.38	165	326	Average
11550	56.07	40.8	74	-17.93	37.97	12.68	35.38	165	326	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
*5635.45	63.89	54.82	68.2	-4.31	34.54	8.62	34.09	180	202	Peak
5652.775	65.8	56.7	70.25	-4.45	34.56	8.63	34.09	180	202	Peak
5923.675	63.36	53.96	69.18	-5.82	34.83	8.73	34.16	180	202	Peak
*5927.35	63.61	54.21	68.2	-4.59	34.83	8.73	34.16	180	202	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
*5640.175	56.77	47.7	68.2	-11.43	34.54	8.62	34.09	261	212	Peak
5651.725	59.85	50.76	69.48	-9.63	34.56	8.62	34.09	261	212	Peak
5923.675	53.73	44.33	69.18	-15.45	34.83	8.73	34.16	261	212	Peak
*5928.925	55.16	45.76	68.2	-13.04	34.83	8.73	34.16	261	212	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5775 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

9 kHz ~ 30 MHz Data:

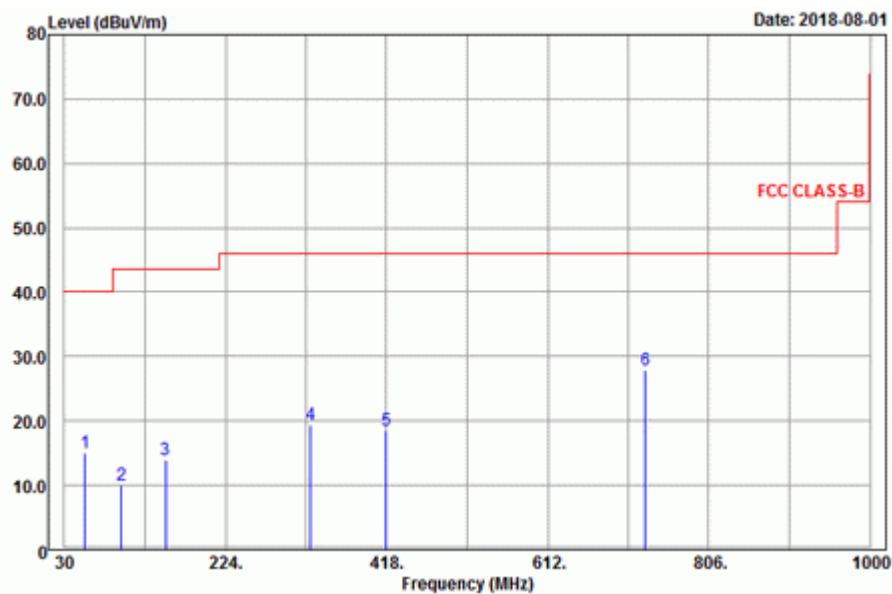
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

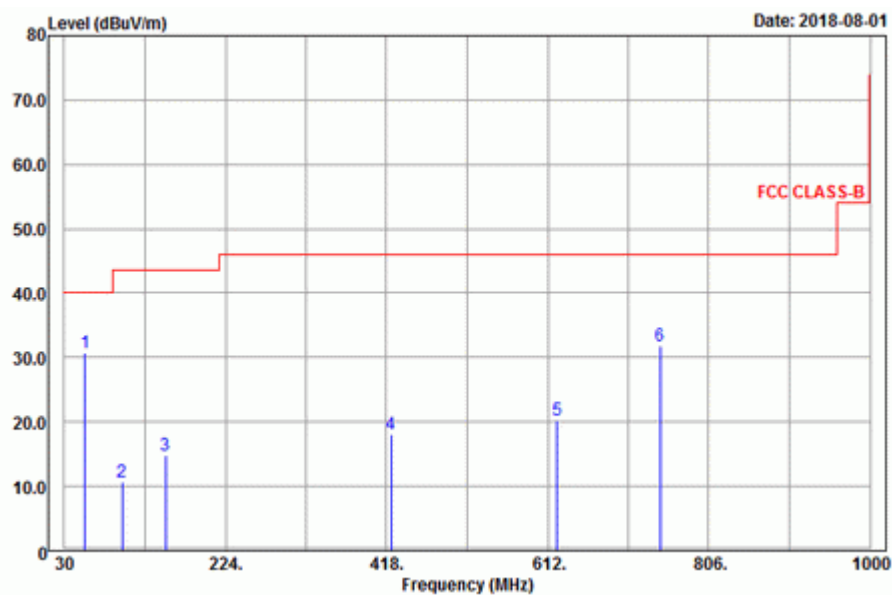
802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 58	Frequency Range	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Harry Hsueh

Spurious Emission Horizontal



Vertical



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
54.57	15.05	32.16	40	-24.95	14.22	0.9	32.23	101	120	Peak
99.12	9.97	28.75	43.5	-33.53	12.15	1.28	32.21	112	147	Peak
151.77	13.97	36.25	43.5	-29.53	8.47	1.52	32.27	133	165	Peak
326.6	19.32	35.61	46	-26.68	13.7	2.11	32.1	165	195	Peak
417.6	18.63	33.21	46	-27.37	15.21	2.41	32.2	141	174	Peak
729.8	27.84	37.19	46	-18.16	19.61	3.16	32.12	122	132	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
54.57	30.82	47.93	40	-9.18	14.22	0.9	32.23	101	158	Peak
99.39	10.6	29.3	43.5	-32.9	12.28	1.28	32.26	142	165	Peak
151.77	14.81	37.09	43.5	-28.69	8.47	1.52	32.27	177	184	Peak
423.2	18.18	32.7	46	-27.82	15.26	2.41	32.19	101	121	Peak
623.4	20.25	31.33	46	-25.75	18.16	2.93	32.17	133	162	Peak
747.3	31.86	41	46	-14.14	19.78	3.22	32.14	142	165	Peak

Remarks:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 26, 2018	Feb. 25, 2019
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

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

4.2.3 Test Procedures

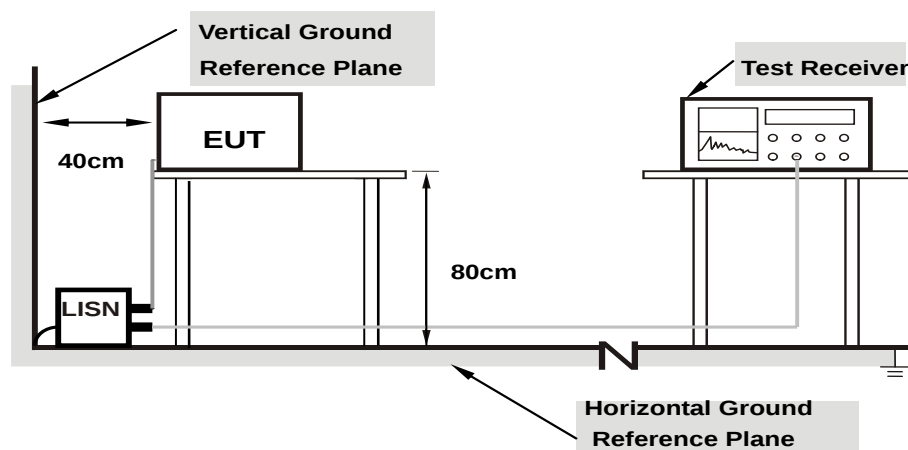
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.6 EUT Operating Conditions

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

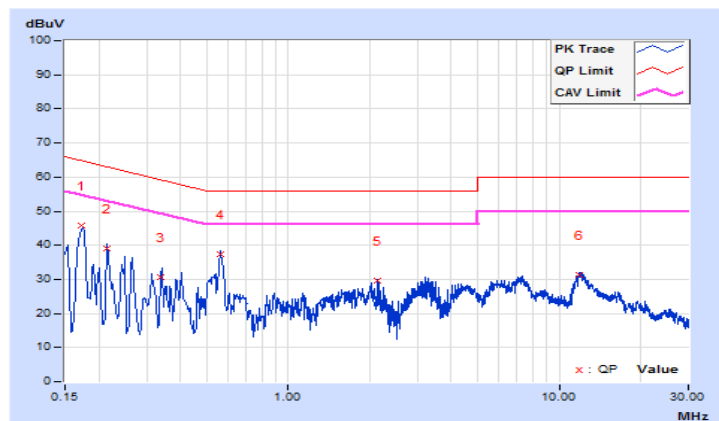
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Jisyong Wang	Test Date	2018/8/6

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17293	9.67	36.02	20.21	45.69	29.88	64.82	54.82	-19.13	-24.94
2	0.21406	9.67	29.23	12.80	38.90	22.47	63.05	53.05	-24.15	-30.58
3	0.34035	9.67	21.08	7.58	30.75	17.25	59.19	49.19	-28.44	-31.94
4	0.56200	9.67	27.62	11.67	37.29	21.34	56.00	46.00	-18.71	-24.66
5	2.12600	9.72	19.90	5.62	29.62	15.34	56.00	46.00	-26.38	-30.66
6	11.92600	9.89	21.26	9.06	31.15	18.95	60.00	50.00	-28.85	-31.05

Remarks:

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

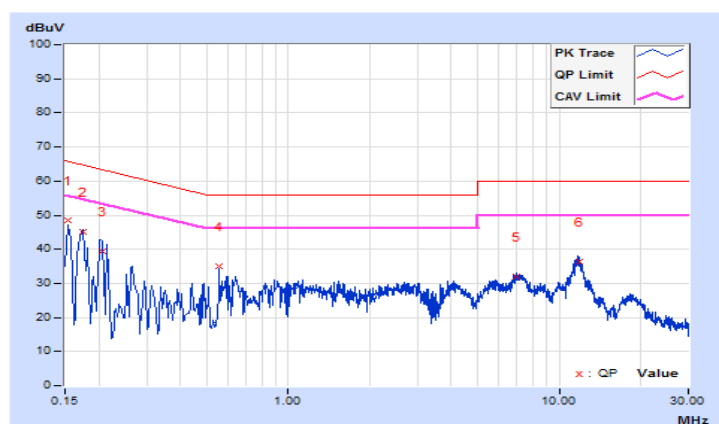


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Jisyong Wang	Test Date	2018/8/6

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	0.15400	9.68	38.89	23.68	48.57	33.36	65.78	55.78	-17.21	-22.42
2	0.17384	9.68	35.39	19.11	45.07	28.79	64.77	54.77	-19.70	-25.98
3	0.20600	9.68	29.59	12.71	39.27	22.39	63.37	53.37	-24.10	-30.98
4	0.55800	9.68	25.19	11.27	34.87	20.95	56.00	46.00	-21.13	-25.05
5	6.99400	9.82	22.15	8.78	31.97	18.60	60.00	50.00	-28.03	-31.40
6	11.85800	9.91	26.34	11.03	36.25	20.94	60.00	50.00	-23.75	-29.06

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125 mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	✓	Mobile and Portable client device	250 mW (24 dBm)
U-NII-2A		✓	250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C		✓	250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-3		✓	1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

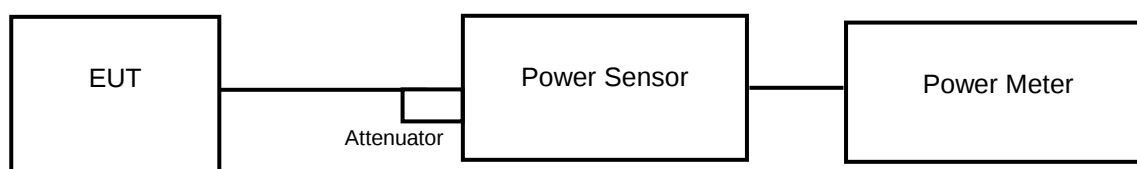
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

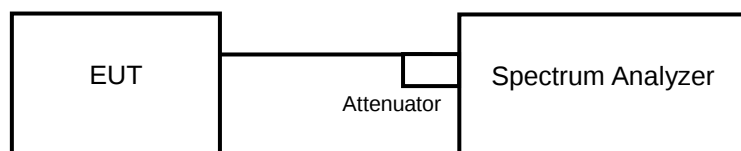
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

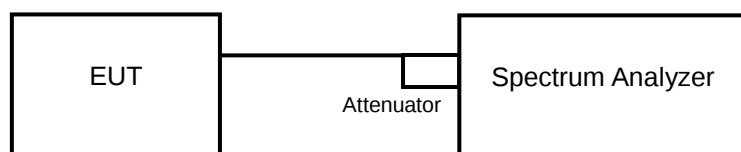
<Power Output Measurement>



or



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

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

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

<802.11ac (VHT80)>

- a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99 % occupied bandwidth) of the signal.
- b. Set sweep trigger to "free run".
- c. Set RBW = 1 MHz.
- d. Set VBW $\geq$ 3 MHz
- e. Number of points in sweep $\geq$ 2 Span / RBW.
- f. Sweep time $\leq$ (number of points in sweep) * T
- g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
- h. Detector = RMS.
- i. Trace mode = max hold.
- j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

26 dB Bandwidth

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

Power Output:

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.70	17.62	116.694	20.67	24	Pass
40	5200	17.65	17.57	115.358	20.62	24	Pass
48	5240	17.74	17.58	116.709	20.67	24	Pass
52	5260	15.16	15.01	64.506	18.10	24	Pass
60	5300	15.14	15.07	64.796	18.12	24	Pass
64	5320	15.29	15.12	66.315	18.22	24	Pass
100	5500	14.87	14.72	60.338	17.81	24	Pass
116	5580	14.93	14.86	61.737	17.91	24	Pass
140	5700	14.73	14.54	58.162	17.65	24	Pass
144	5720 (U-NII-2C)	13.08	12.94	40.003	16.02	23.09	Pass
144	5720 (U-NII-3)	9.37	9.07	16.722	12.23	30	Pass
149	5745	14.62	14.50	57.157	17.57	30	Pass
157	5785	14.86	14.71	60.200	17.80	30	Pass
165	5825	14.82	14.71	59.919	17.78	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log (22.39) = 24.50 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (22.69) = 24.56 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (22.94) = 24.61 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (22.38) = 24.50 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (23.00) = 24.62 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (22.85) = 24.59 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log (16.19) = 23.09 \text{ dBm} < 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log (21.83) = 24.39 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (21.98) = 24.42 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (21.70) = 24.36 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (22.20) = 24.46 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (21.88) = 24.40 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (21.88) = 24.40 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log (16.28) = 23.12 \text{ dBm} < 24 \text{ dBm}$.

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.77	17.59	117.253	20.69	24	Pass
40	5200	17.65	17.57	115.358	20.62	24	Pass
48	5240	17.77	17.58	117.121	20.69	24	Pass
52	5260	14.75	14.64	58.961	17.71	24	Pass
60	5300	14.66	14.65	58.416	17.67	24	Pass
64	5320	14.88	14.68	60.137	17.79	24	Pass
100	5500	13.92	13.74	48.319	16.84	24	Pass
116	5580	13.67	13.51	45.72	16.60	24	Pass
140	5700	13.63	13.55	45.713	16.60	24	Pass
144	5720 (U-NII-2C)	12.06	12.05	32.101	15.07	23.12	Pass
144	5720 (U-NII-3)	8.28	8.08	13.157	11.19	30	Pass
149	5745	14.88	14.68	60.137	17.79	30	Pass
157	5785	14.81	14.70	59.781	17.77	30	Pass
165	5825	14.68	14.51	57.625	17.61	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(23.84) = 24.77 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(23.62) = 24.73 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(23.26) = 24.67 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(23.02) = 24.62 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(24.32) = 24.86 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(23.63) = 24.73 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log(16.40) = 23.15 \text{ dBm} < 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(22.94) = 24.61 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(23.52) = 24.71 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(23.45) = 24.70 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(23.31) = 24.68 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(23.48) = 24.71 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(23.42) = 24.70 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log(16.48) = 23.17 \text{ dBm} < 24 \text{ dBm}$.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	14.94	14.87	61.879	17.92	24	Pass
46	5230	14.89	14.69	60.276	17.80	24	Pass
54	5270	14.61	14.55	57.417	17.59	24	Pass
62	5310	14.90	14.75	60.757	17.84	24	Pass
102	5510	14.89	14.72	60.48	17.82	24	Pass
110	5550	14.62	14.51	57.222	17.58	24	Pass
134	5670	14.73	14.62	58.69	17.69	24	Pass
151	5755	14.61	14.56	57.483	17.60	30	Pass
159	5795	14.75	14.58	58.562	17.68	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(41.73) = 27.20 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(41.95) = 27.23 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(42.03) = 27.24 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(42.17) = 27.25 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(42.09) = 27.24 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(41.77) = 27.21 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(42.09) = 27.24 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(42.30) = 27.26 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(42.02) = 27.23 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(42.28) = 27.26 \text{ dBm} > 24 \text{ dBm}$.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	14.95	14.82	61.600	17.90	24	Pass
58	5290	14.79	14.70	59.642	17.76	24	Pass
106	5530	14.62	14.59	57.747	17.62	24	Pass
122	5610	14.75	14.55	58.364	17.66	24	Pass
155	5775	14.63	14.57	57.682	17.61	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(83.52) = 30.22 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(84.08) = 30.25 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(82.60) = 30.17 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(82.70) = 30.18 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(82.63) = 30.17 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(83.66) = 30.23 \text{ dBm} > 24 \text{ dBm}$.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	25.12	22.47
44	5220	24.93	23.20
48	5240	24.76	23.12
52	5260	22.39	21.83
60	5300	22.69	21.98
64	5320	22.94	21.70
100	5500	22.38	22.20
116	5580	23.00	21.88
140	5700	22.85	21.88
144	5720 (U-NII-2C)	16.19	16.28
144	5720 (U-NII-3)	6.88	6.68

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	24.72	25.57
44	5220	25.02	25.72
48	5240	25.05	24.07
52	5260	23.84	22.94
60	5300	23.62	23.52
64	5320	23.26	23.45
100	5500	23.02	23.31
116	5580	24.32	23.48
140	5700	23.63	23.42
144	5720 (U-NII-2C)	16.40	16.48
144	5720 (U-NII-3)	6.86	6.61

802.11n (HT40)

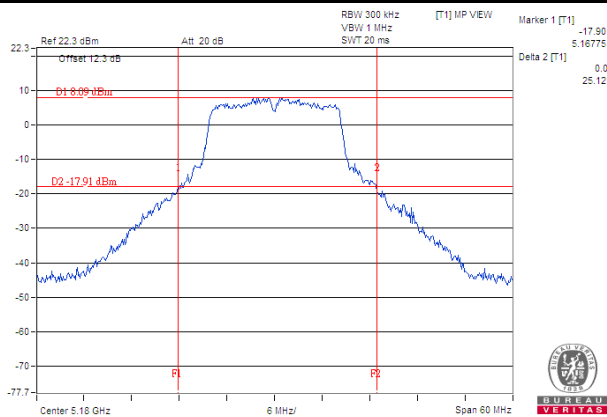
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	41.94	42.23
46	5230	41.95	42.07
54	5270	41.73	41.77
62	5310	41.95	42.09
102	5510	42.03	42.30
110	5550	42.17	42.02
134	5670	42.09	42.28

802.11ac (VHT80)

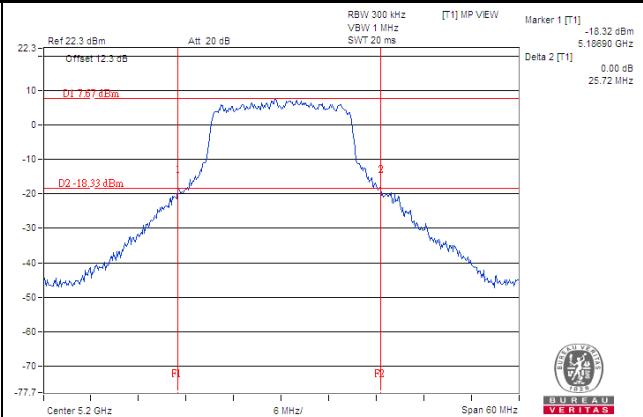
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	83.17	83.14
58	5290	83.52	82.70
106	5530	84.08	82.63
122	5610	82.60	83.66

Spectrum Plot of Worst Value

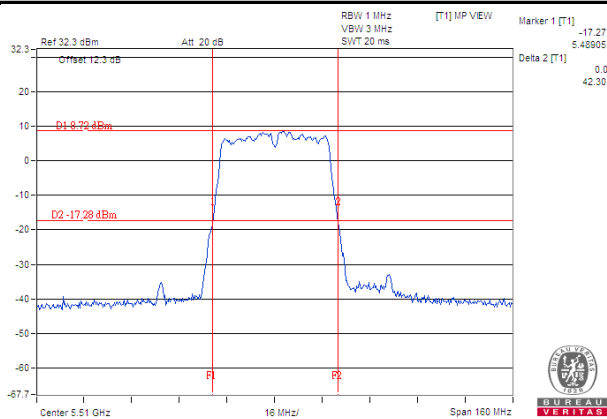
802.11a



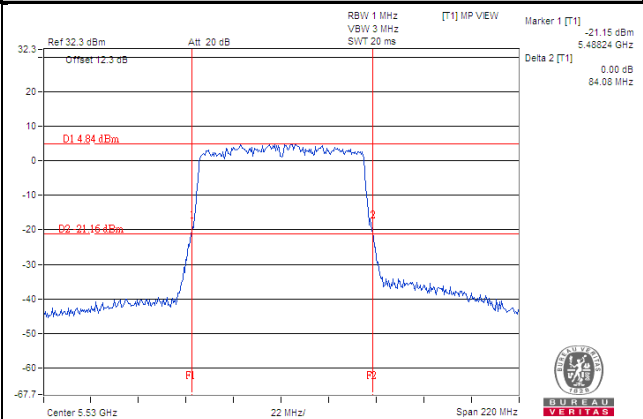
802.11n (HT20)



802.11n (HT40)

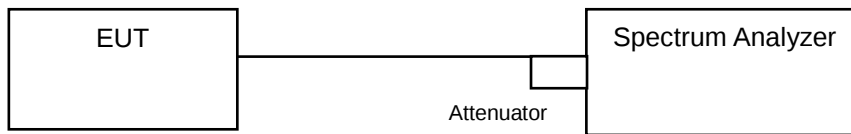


802.11ac (VHT80)



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.68	16.68
40	5200	16.80	16.68
48	5240	16.68	16.80
52	5260	16.68	16.56
60	5300	16.80	16.56
64	5320	16.56	16.68
100	5500	16.68	16.68
116	5580	16.68	16.68
140	5700	16.68	16.68
144	5720 (U-NII-2C)	13.28	13.28
144	5720 (U-NII-3)	3.16	3.16
149	5745	16.74	16.64
157	5785	16.64	16.64
165	5825	16.64	16.54

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.88	17.88
40	5200	18.00	17.88
48	5240	17.88	17.88
52	5260	17.88	17.88
60	5300	17.88	17.88
64	5320	17.88	17.88
100	5500	17.88	17.88
116	5580	17.88	17.88
140	5700	17.88	17.88
144	5720 (U-NII-2C)	13.88	13.88
144	5720 (U-NII-3)	3.76	3.76
149	5745	17.88	17.79
157	5785	17.98	17.79
165	5825	17.79	17.79

802.11n (HT40)

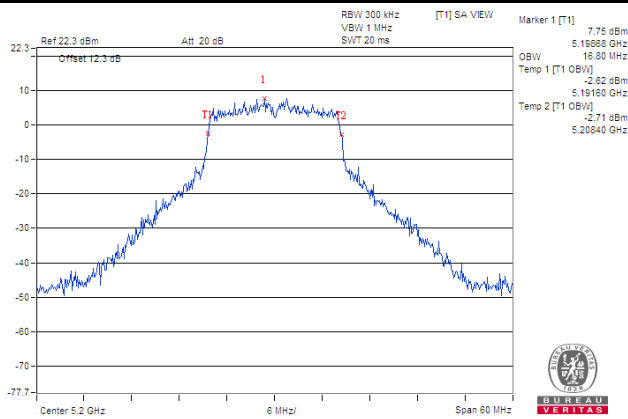
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.48	36.60
46	5230	36.36	36.72
54	5270	36.48	36.48
62	5310	36.60	36.48
102	5510	36.48	36.60
110	5550	36.48	36.60
134	5670	36.72	36.60
151	5755	36.54	36.64
159	5795	36.54	36.54

802.11ac (VHT80)

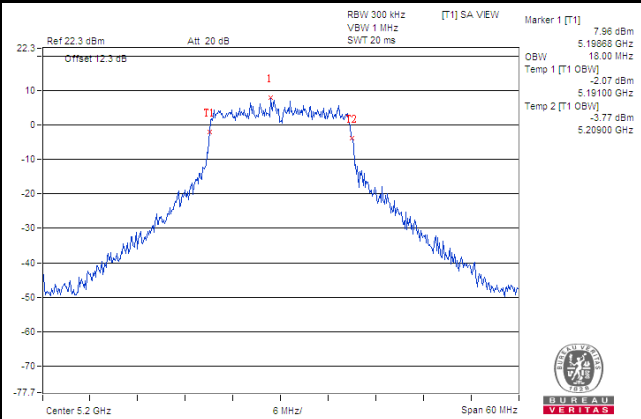
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.84	75.84
58	5290	75.84	75.60
106	5530	76.08	76.08
122	5610	75.84	75.84
155	5775	75.76	75.77

Spectrum Plot of Worst Value

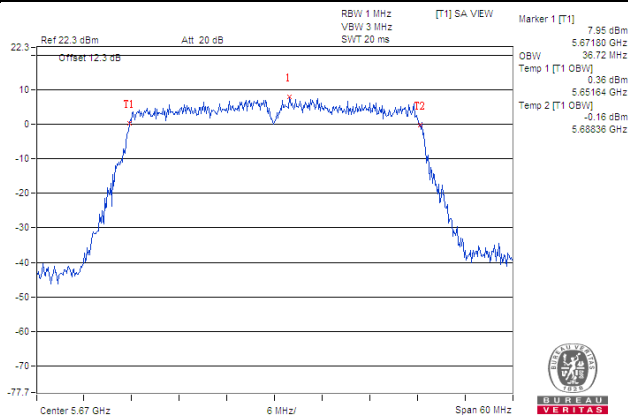
802.11a



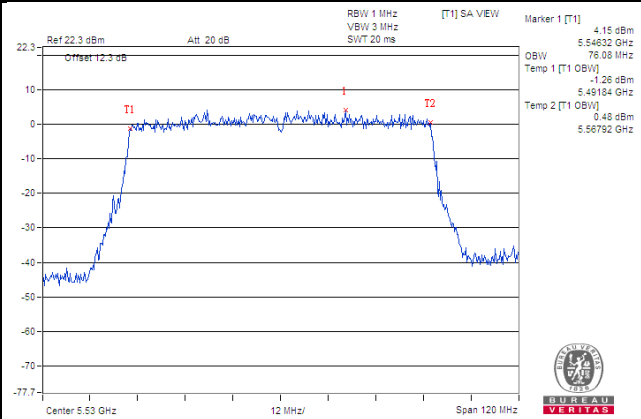
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

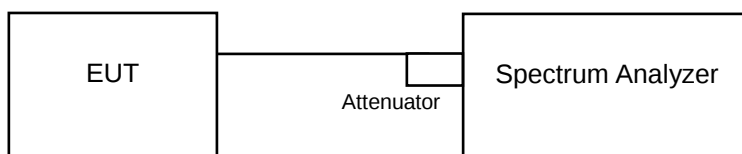


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 Test Procedures

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

Using method SA-2

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

※For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 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)		Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
36	5180	3.17	2.69	6.03	11	Pass
40	5200	3.51	2.62	6.19	11	Pass
48	5240	3.06	2.60	5.93	11	Pass
52	5260	0.76	-0.20	3.40	11	Pass
60	5300	0.94	0.00	3.59	11	Pass
64	5320	0.86	0.28	3.68	11	Pass
100	5500	0.73	0.35	3.64	11	Pass
116	5580	0.56	0.17	3.47	11	Pass
140	5700	0.94	0.75	3.94	11	Pass
144	5720 (U-NII-2C)	0.79	0.49	3.74	11	Pass

Note:

- Method 2)a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1, U-NII-2A Band:**
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.25 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.
- For U-NII-2C Band:**
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.57 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
36	5180	2.35	2.23	5.39	11	Pass
40	5200	2.38	2.22	5.40	11	Pass
48	5240	2.24	2.09	5.27	11	Pass
52	5260	-0.23	-0.94	2.53	11	Pass
60	5300	-0.58	-1.01	2.31	11	Pass
64	5320	0.35	-0.86	2.89	11	Pass
100	5500	-0.67	-1.44	2.06	11	Pass
116	5580	-1.47	-1.48	1.63	11	Pass
140	5700	0.05	0.20	3.23	11	Pass
144	5720 (U-NII-2C)	0.09	0.02	3.15	11	Pass

Note:

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

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.25 \text{ dBi} < 6 \text{ dBi}$$
 so the limit no need to reduced.
- For U-NII-2C Band:**

$$\text{Directional gain} = 10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.57 \text{ dBi} < 6 \text{ dBi}$$
 so the limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-2.33	-2.99	0.26	0.62	11	Pass
46	5230	-3.11	-3.34	0.26	0.05	11	Pass
54	5270	-2.41	-3.07	0.26	0.54	11	Pass
62	5310	-2.66	-3.49	0.26	0.21	11	Pass
102	5510	-2.28	-2.69	0.26	0.79	11	Pass
110	5550	-2.77	-3.08	0.26	0.35	11	Pass
134	5670	-2.14	-2.75	0.26	0.83	11	Pass

Note:

- Method 2)a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1, U-NII-2A Band:**
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.25 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.
- For U-NII-2C Band:**
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.57 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

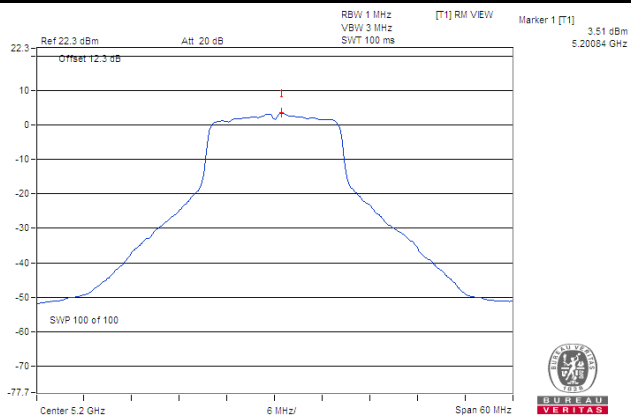
Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-6.51	-6.96	0.34	-3.37	11	Pass
58	5290	-6.44	-6.33	0.34	-3.03	11	Pass
106	5530	-5.91	-6.15	0.34	-2.67	11	Pass
122	5610	-6.37	-6.29	0.34	-2.97	11	Pass

Note:

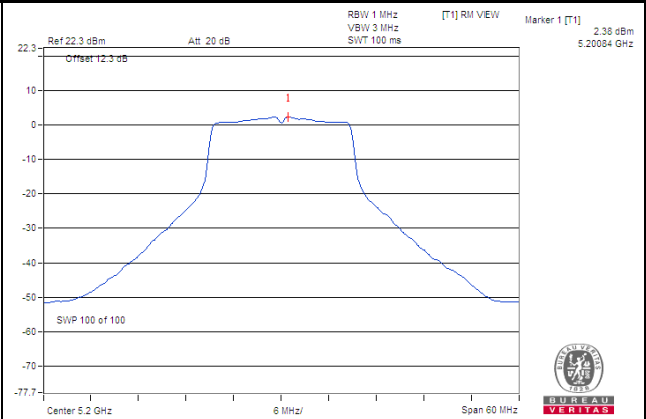
- Method 2)a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1, U-NII-2A Band:**
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.25 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.
- For U-NII-2C Band:**
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.57 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

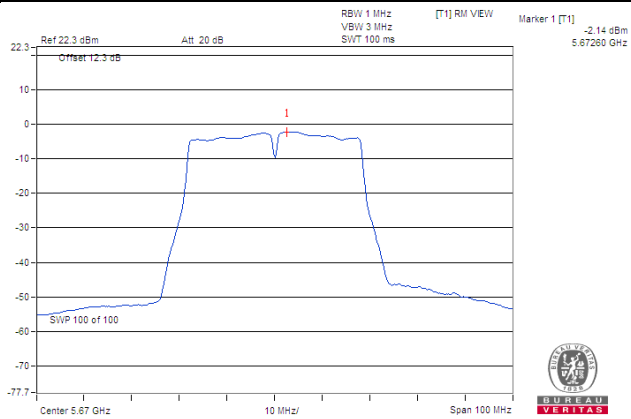
802.11a (Ch 40 / Chain 0)



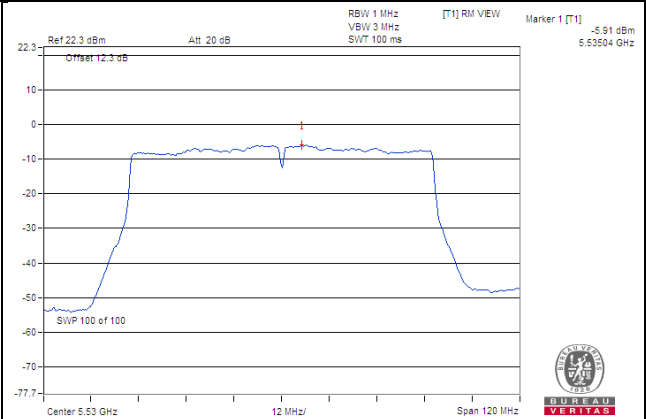
802.11n (HT20) (Ch 40 / Chain 0)



802.11n (HT40) (Ch 134 / Chain 0)



802.11ac (VHT80) (Ch 106 / Chain 0)



For U-NII-3 Band

802.11a

TX Chain	Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	144	5720 (U-NII-3)	-8.83	-6.61	3.01	-3.51	30	Pass
	149	5745	-6.91	-4.69	3.01	-1.59	30	Pass
	157	5785	-7.46	-5.24	3.01	-2.14	30	Pass
	165	5825	-7.35	-5.13	3.01	-2.03	30	Pass
1	144	5720 (U-NII-3)	-9.16	-6.94	3.01	-3.84	30	Pass
	149	5745	-7.54	-5.32	3.01	-2.22	30	Pass
	157	5785	-7.85	-5.63	3.01	-2.53	30	Pass
	165	5825	-8.12	-5.90	3.01	-2.80	30	Pass

Note: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20,2}) / N_{ANT}] = 3.93 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.

802.11n (HT20)

TX Chain	Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	144	5720 (U-NII-3)	-9.34	-7.12	3.01	-4.02	30	Pass
	149	5745	-8.01	-5.79	3.01	-2.69	30	Pass
	157	5785	-8.29	-6.07	3.01	-2.97	30	Pass
	165	5825	-8.04	-5.82	3.01	-2.72	30	Pass
1	144	5720 (U-NII-3)	-9.16	-6.94	3.01	-3.84	30	Pass
	149	5745	-8.18	-5.96	3.01	-2.86	30	Pass
	157	5785	-8.26	-6.04	3.01	-2.94	30	Pass
	165	5825	-8.69	-6.47	3.01	-3.37	30	Pass

Note: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20,2}) / N_{ANT}] = 3.93 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.

802.11n (HT40)

TX Chain	Channel	Frequency (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	151	5755	-10.62	-8.40	3.01	0.26	-5.13	30	Pass
	159	5795	-10.87	-8.65	3.01	0.26	-5.38	30	Pass
1	151	5755	-11.18	-8.96	3.01	0.26	-5.69	30	Pass
	159	5795	-11.44	-9.22	3.01	0.26	-5.95	30	Pass

Note:

- Method 2)a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.93 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

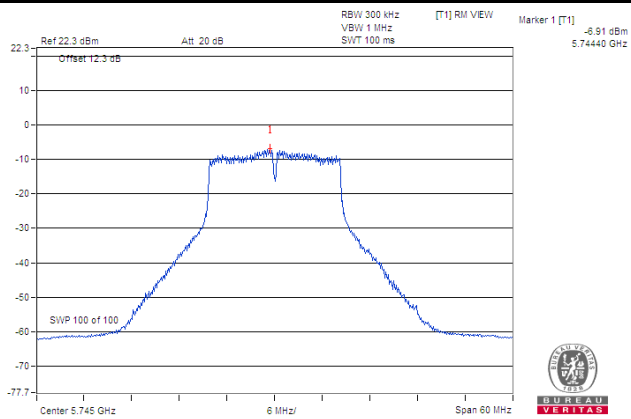
TX Chain	Channel	Frequency (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	155	5775	-14.47	-12.25	3.01	0.34	-8.90	30	Pass
1	155	5775	-14.68	-12.46	3.01	0.34	-9.11	30	Pass

Note:

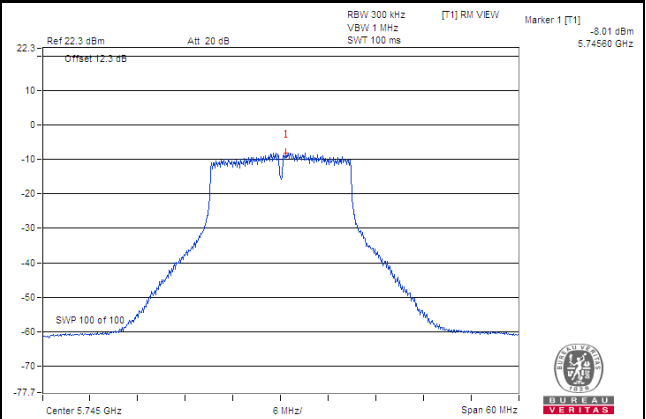
- Method 2)a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 3.93 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

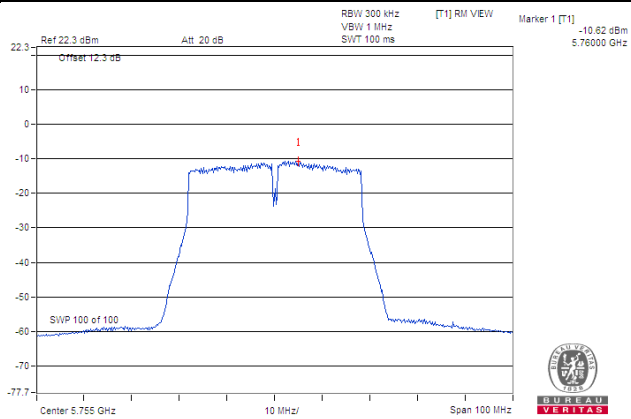
802.11a



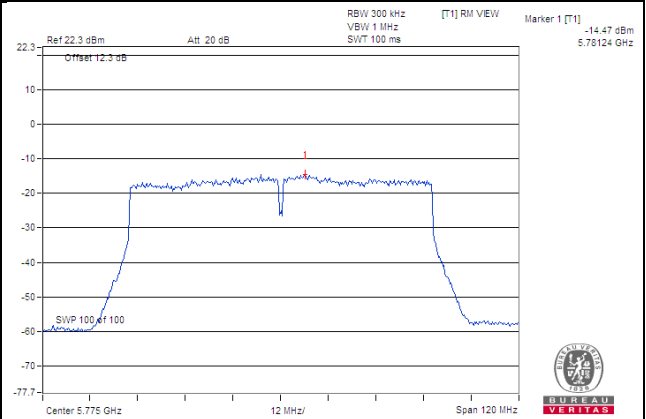
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

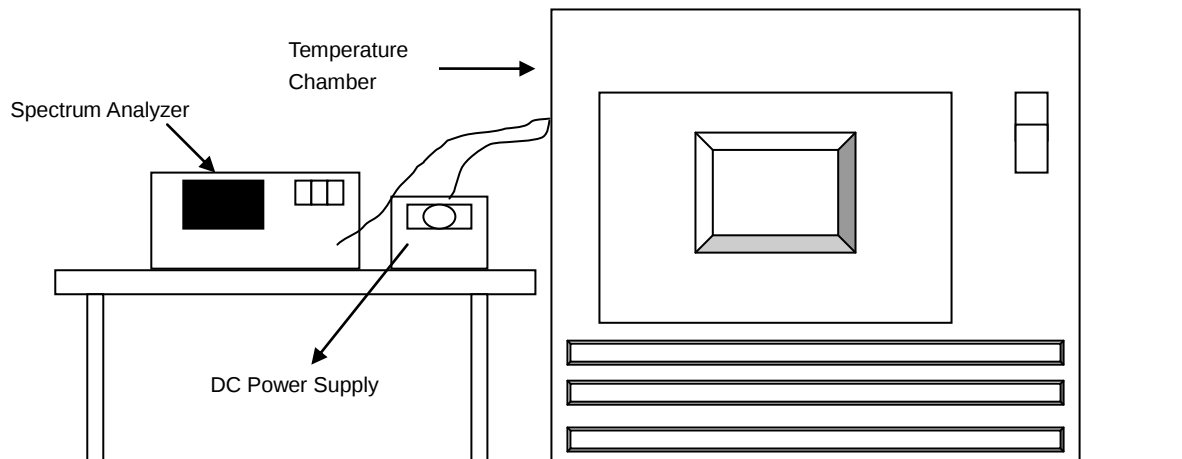


4.6 Frequency Stability

4.6.1 Limit of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.6.4 Test Procedure

- 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)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
50	120	5180.0155	PASS	5180.0132	PASS	5180.0131	PASS	5180.017	PASS
40	120	5179.9905	PASS	5179.9907	PASS	5179.9895	PASS	5179.9899	PASS
30	120	5179.9819	PASS	5179.9822	PASS	5179.979	PASS	5179.9806	PASS
20	120	5180.0128	PASS	5180.0142	PASS	5180.0126	PASS	5180.0118	PASS
10	120	5180.0081	PASS	5180.0093	PASS	5180.0069	PASS	5180.0093	PASS
0	120	5180.0212	PASS	5180.0191	PASS	5180.0214	PASS	5180.0208	PASS
-10	120	5180.0057	PASS	5180.0005	PASS	5180.0056	PASS	5180.0017	PASS
-20	120	5179.9953	PASS	5179.9912	PASS	5179.994	PASS	5179.9953	PASS
-30	120	5179.986	PASS	5179.9873	PASS	5179.9896	PASS	5179.9886	PASS

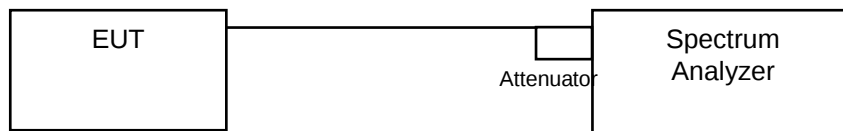
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0136	PASS	5180.0143	PASS	5180.0118	PASS	5180.0108	PASS
	120	5180.0128	PASS	5180.0142	PASS	5180.0126	PASS	5180.0118	PASS
	102	5180.0124	PASS	5180.0132	PASS	5180.0125	PASS	5180.011	PASS

4.7 6 dB Bandwidth Measurement

4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

- Set resolution bandwidth (RBW) = 100 kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	2.57	2.85	0.5	Pass
149	5745	15.17	15.19	0.5	Pass
157	5785	15.16	15.47	0.5	Pass
165	5825	15.16	15.49	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	2.57	2.57	0.5	Pass
149	5745	16.79	15.49	0.5	Pass
157	5785	15.16	16.52	0.5	Pass
165	5825	15.18	16.53	0.5	Pass

802.11n (HT40)

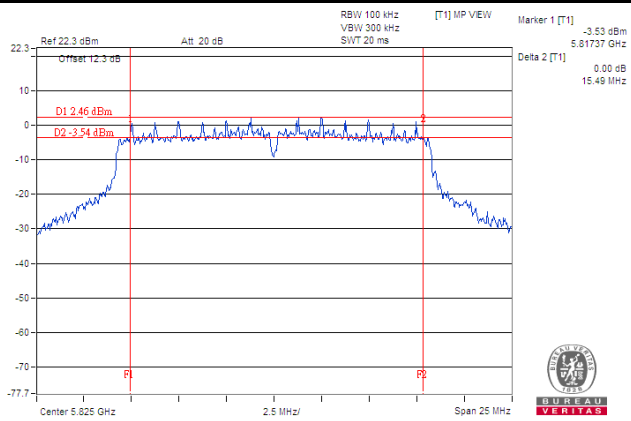
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.27	35.22	0.5	Pass
159	5795	35.27	34.01	0.5	Pass

802.11ac (VHT80)

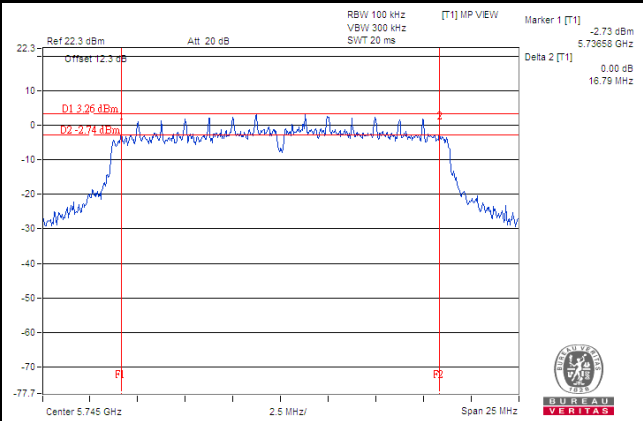
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.54	75.48	0.5	Pass

Spectrum Plot of Worst Value

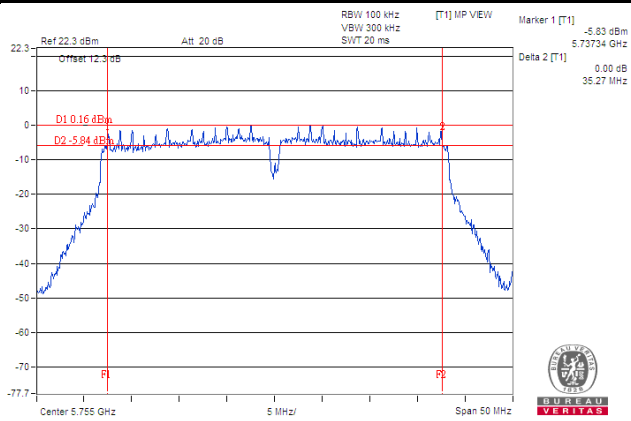
802.11a



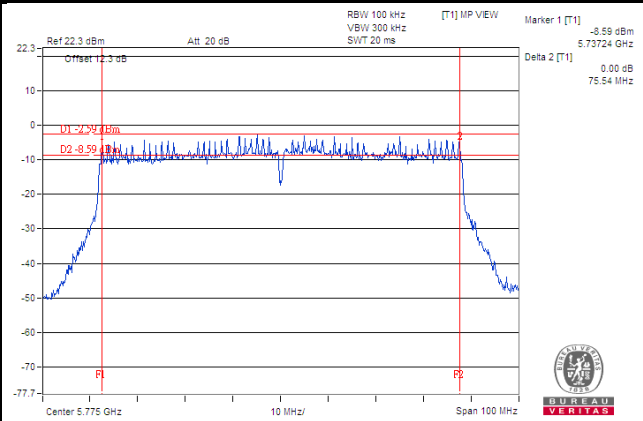
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

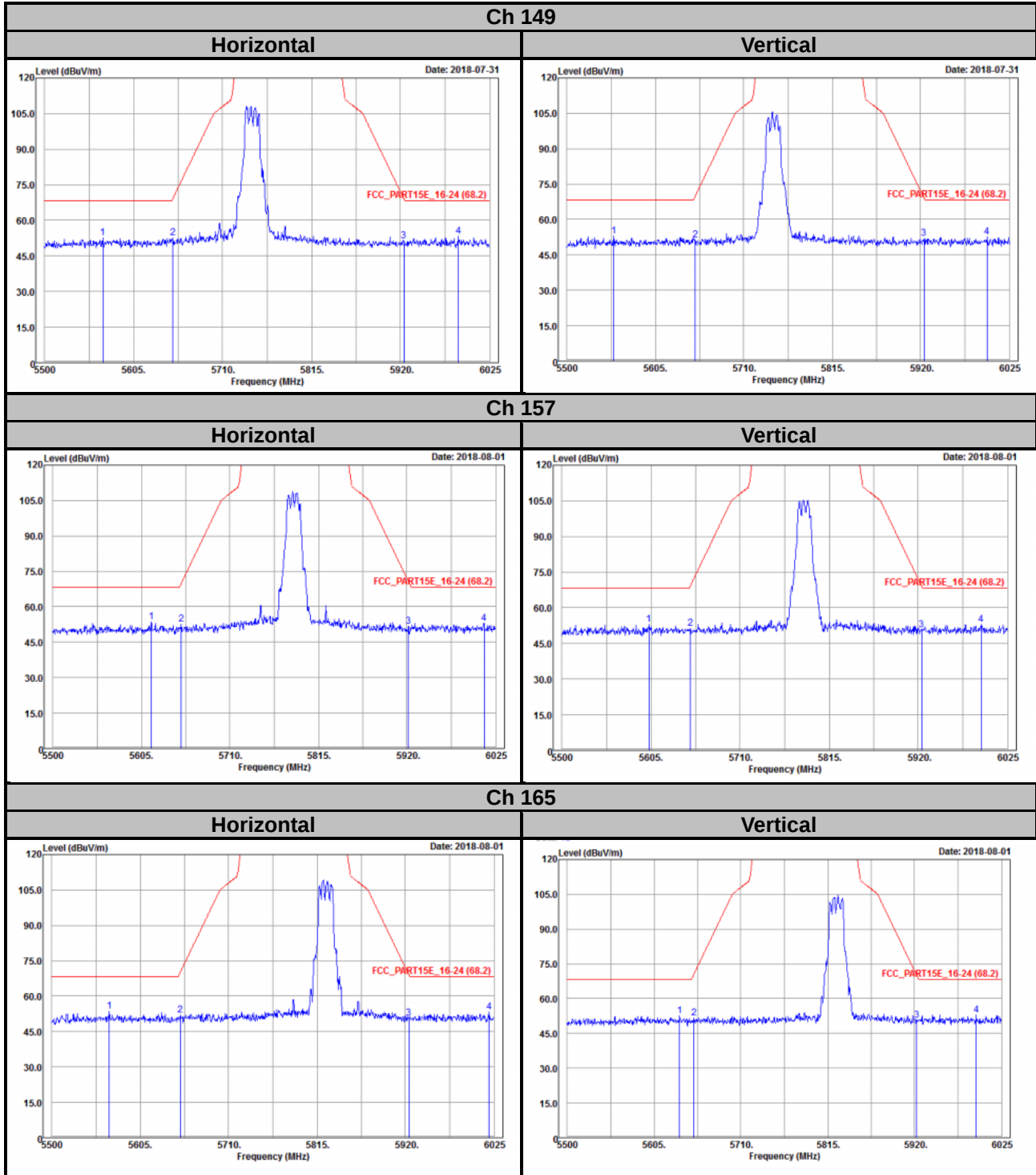


5 Pictures of Test Arrangements

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

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

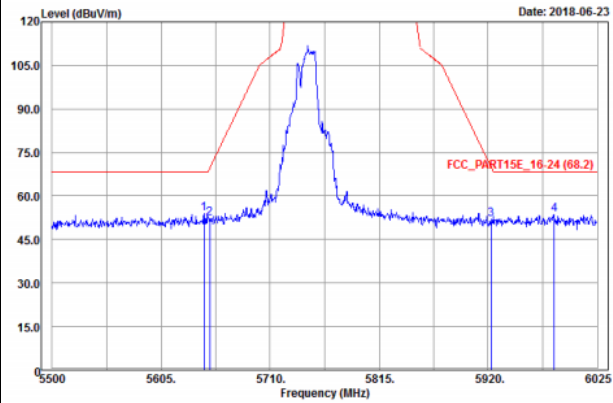
802.11a



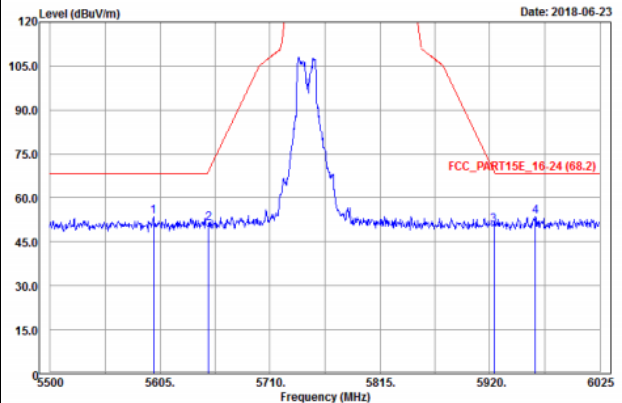
802.11n (HT20)

Ch 149

Horizontal

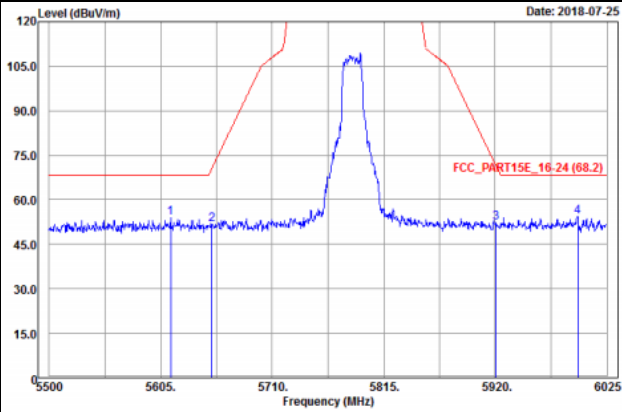


Vertical

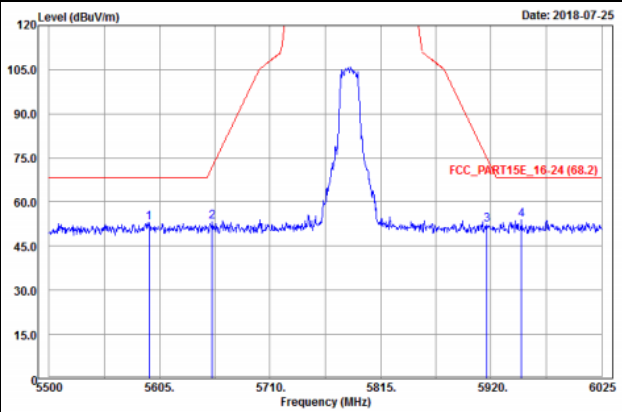


Ch 157

Horizontal

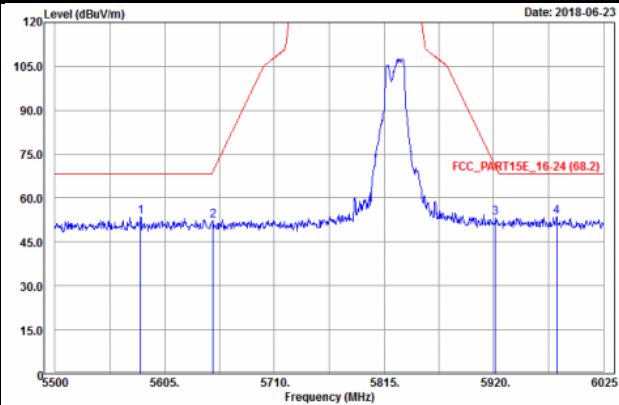


Vertical

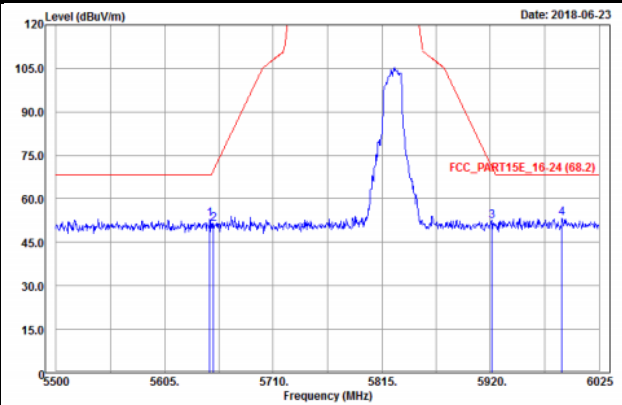


Ch 165

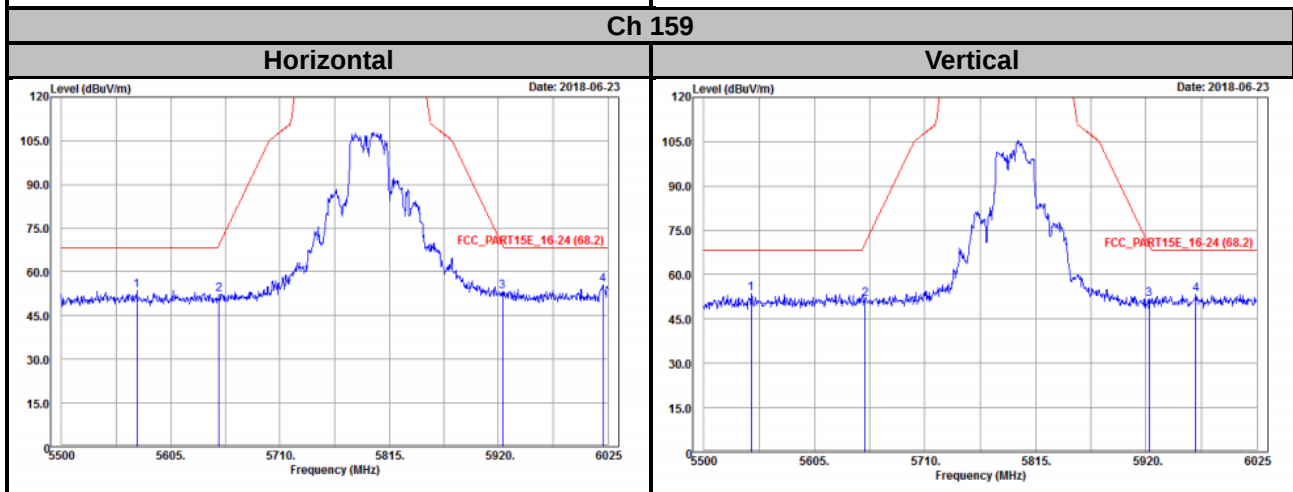
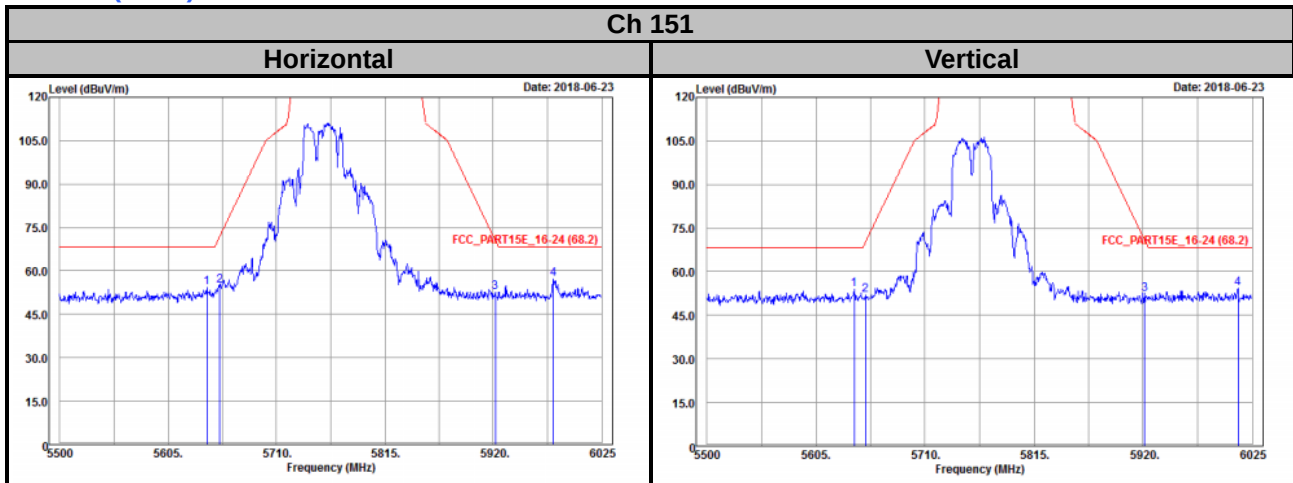
Horizontal



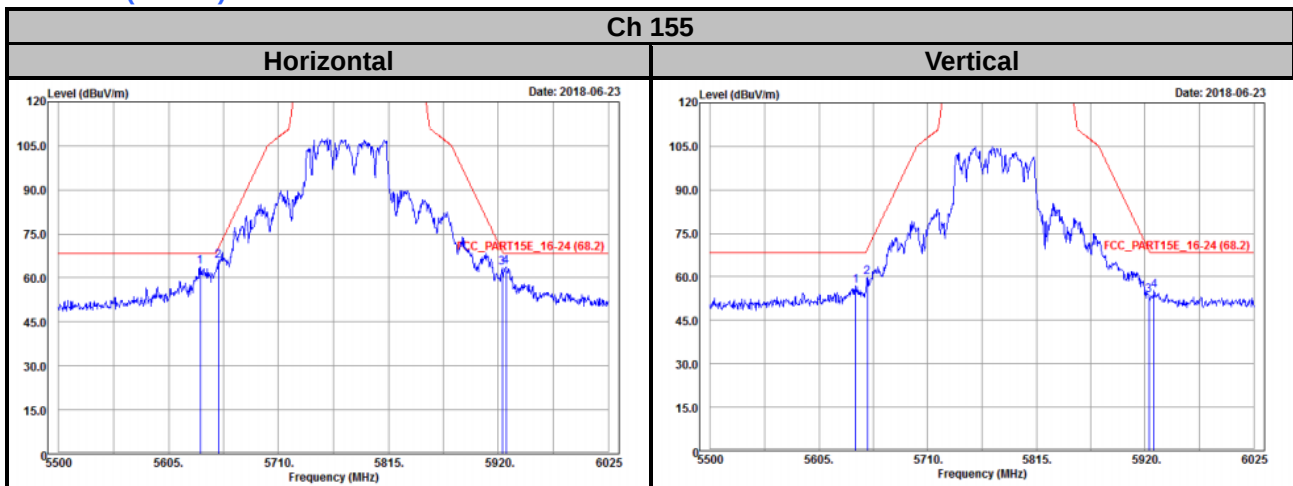
Vertical



802.11n (HT40)



802.11ac (VHT80)



Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---