TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: **47 CFR FCC Part 15, Subpart E (Section 15.407)**

Report No.: RFBHQC-WTW-P22080379-1

FCC ID: XCNUBN2309

Product: XGS-PON

Brand: altice

Model No.: UBN2309

Series Model: XSR250GK

Received Date: 2022/7/28

Test Date: 2022/11/30 ~ 2023/2/6

Issued Date: 2023/7/25

Applicant: Ubee Interactive Holding Corp. Taiwan Branch

Address: 10F-1, No.5, Taiyuan 1st St. Jhubei, Hsinchu, 302, Taiwan

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

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

FCC Registration / Designation Number: 723255 / TW2022

Approved by: _____ , **Date:** **2023/7/25**

May Chen / Manager

This test report consists of 97 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.

Prepared by : Vito Lung / Specialist

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/ and is intended 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. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; 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.

Table of Contents

Release Control Record **4**

1 Certificate **5**

2 Summary of Test Results **6**

2.1 Measurement Uncertainty 6
2.2 Supplementary Information 6

3 General Information **7**

3.1 General Description of EUT 7
3.2 Antenna Description of EUT 9
3.3 Channel List 10
3.4 Test Mode Applicability and Tested Channel Detail 11
3.5 Duty Cycle of Test Signal 12
3.6 Test Program Used and Operation Descriptions 14
3.7 Connection Diagram of EUT and Peripheral Devices 14
3.8 Configuration of Peripheral Devices and Cable Connections 15

4 Test Instruments **16**

4.1 RF Output Power 16
4.2 Power Spectral Density 16
4.3 6 dB Bandwidth 16
4.4 Occupied Bandwidth 16
4.5 Frequency Stability 17
4.6 AC Power Conducted Emissions 17
4.7 Unwanted Emissions below 1 GHz 18
4.8 Unwanted Emissions above 1 GHz 19

5 Limits of Test Items **20**

5.1 RF Output Power 20
5.2 Power Spectral Density 20
5.3 6 dB Bandwidth 20
5.4 Occupied Bandwidth 20
5.5 Frequency Stability 20
5.6 AC Power Conducted Emissions 21
5.7 Unwanted Emissions below 1 GHz 21
5.8 Unwanted Emissions above 1 GHz 22

6 Test Arrangements **23**

6.1 RF Output Power 23
6.1.1 Test Setup 23
6.1.2 Test Procedure 23
6.2 Power Spectral Density 23
6.2.1 Test Setup 23
6.2.2 Test Procedure 23
6.3 6 dB Bandwidth 24
6.3.1 Test Setup 24
6.3.2 Test Procedure 24
6.4 Occupied Bandwidth 24
6.4.1 Test Setup 24
6.4.2 Test Procedure 24
6.5 Frequency Stability 25
6.5.1 Test Setup 25
6.5.2 Test Procedure 25
6.6 AC Power Conducted Emissions 26
6.6.1 Test Setup 26
6.6.2 Test Procedure 26
6.7 Unwanted Emissions below 1 GHz 27
6.7.1 Test Setup 27
6.7.2 Test Procedure 28

6.8 Unwanted Emissions above 1 GHz 29
6.8.1 Test Setup 29
6.8.2 Test Procedure 29

7 Test Results of Test Item 30

7.1 RF Output Power 30
7.2 Power Spectral Density 33
7.3 6 dB Bandwidth 38
7.4 Occupied Bandwidth 40
7.5 Frequency Stability 48
7.6 AC Power Conducted Emissions 49
7.7 Unwanted Emissions below 1 GHz 51
7.8 Unwanted Emissions above 1 GHz 53

8 Pictures of Test Arrangements 96

9 Information of the Testing Laboratories 97

Release Control Record

Issue No.	Description	Date Issued
RFBHQC-WTW-P22080379-1	Original release.	2023/7/25

1 Certificate

Product:	XGS-PON
Brand:	altice
Test Model:	UBN2309
Series Model:	XSR250GK
Sample Status:	Mass product
Applicant:	Ubee Interactive Holding Corp. Taiwan Branch
Test Date:	2022/11/30 ~ 2023/2/6
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407)
Measurement procedure:	ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedure New Rules v02r01 KDB 662911 D01 Multiple Transmitter Output v02r01

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.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
Clause	Test Item	Result	Remark
15.407(a)(2)	26 dB Bandwidth	-	For U-NII-2A U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.
15.407(a)(1) 15.407(a)(3)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(1) 15.407(a)(3)	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)
---	Occupied Bandwidth	-	Reference only.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.407(b)(9)	AC Power Conducted Emissions	Pass	Minimum passing margin is -11.95 dB at 0.15000 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -3.7 dB at 650.02 MHz
15.407(b) (1/10) 15.407(b) (4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.2 dB at 5150.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Parameter	Specification	Expanded Uncertainty (k=2) (±)
Occupied Bandwidth	-	960 Hz
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.1 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.0 dB
	18 GHz ~ 40 GHz	5.3 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	XGS-PON
Brand	altice
Test Model	UBN2309
Series Model	XSR250GK
Status of EUT	Mass product
Power Supply Rating	12 Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT mode 1024QAM for OFDMA in 11ax mode only
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to 600 Mbps 802.11ac: up to 3466.7 Mbps 802.11ax: up to 4803.9 Mbps
Operating Frequency	5.18 GHz ~ 5.25 GHz 5.745 GHz ~ 5.825 GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):9 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):4 802.11ac (VHT80), 802.11ax (HE80):2
Output Power	**CDD Mode:** 5.18 GHz ~ 5.25 GHz : 813.789 mW (29.11 dBm) 5.745 GHz ~ 5.825 GHz : 996.041 mW (29.98 dBm) **Beamforming Mode:** 5.18 GHz ~ 5.25 GHz : 412.108 mW (26.15 dBm) 5.745 GHz ~ 5.825 GHz : 413.621 mW (26.17 dBm)
EUT Category	Indoor Access Point

Note:

1. All models are listed as below.

Brand	Model	Difference
altice	UBN2309	All models are electrically identical, different model names are for marketing purpose.
	XSR250GK	

From the above models, model: UBN2309 was selected as representative model for the test and its data was recorded in this report.

2. The EUT has three radios as following table:

Radio 1	Radio 2	Radio 3
WLAN(2.4GHz)	WLAN(5GHz)	WLAN(6GHz)

3. Simultaneously transmission condition.

Condition	Technology		
1	WLAN(2.4GHz)	WLAN(5GHz)	WLAN(6GHz)
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.			

4. The EUT uses following accessories.

Brand	Model	Specification
MOSO	MSS-V3500WR120-042A0-US	AC Input : 100-240Vac, 50/60Hz 1.2A DC Output : 12.0Vdc, 3.5A DC Output Cable : 1.8m non-shielded, without core.

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna NO.	RF Chain NO.	Brand	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
DB1	5G Chain 3	WHA YU	3.72	5.15~5.85GHz	Dipole	ipex(MHF)
DB2	2.4G Chain 0 5G Chain 0	WHA YU	3.32	2.4~2.4835GHz	Dipole	ipex(MHF)
		WHA YU	3.8	5.15~5.85GHz	Dipole	ipex(MHF)
DB3	2.4G Chain 1 5G Chain 1	WHA YU	2.93	2.4~2.4835GHz	Dipole	ipex(MHF)
		WHA YU	3.79	5.15~5.85GHz	Dipole	ipex(MHF)
DB4	2.4G Chain 2 5G Chain 2	WHA YU	3.40	2.4~2.4835GHz	Dipole	ipex(MHF)
		WHA YU	3.79	5.15~5.85GHz	Dipole	ipex(MHF)
6G5	6G Chain 3	WHA YU	3.34	5.925GHz~7.125GHz	Dipole	ipex(MHF)
6G6	6G Chain 2	WHA YU	3.49	5.925GHz~7.125GHz	Dipole	ipex(MHF)
6G7	6G Chain 1	WHA YU	3.47	5.925GHz~7.125GHz	Dipole	ipex(MHF)
6G8	6G Chain 0	WHA YU	3.49	5.925GHz~7.125GHz	Dipole	ipex(MHF)

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a MIMO function:

5 GHz Band		
Modulation Mode	**TX & RX Configuration**	
802.11a	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
802.11ac (VHT20)	4TX	4RX
802.11ac (VHT40)	4TX	4RX
802.11ac (VHT80)	4TX	4RX
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
802.11ax (HE80)	4TX	4RX

Note:
1. All of modulation mode support beamforming function except 802.11a modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. For 802.11ax, the EUT not support partial RU.
4. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz) and 802.11ax mode for 20 MHz (40 MHz, 80 MHz), therefore the manufacturer will control the power for 802.11n/ac mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report.

3.3 Channel List

FOR 5180 ~ 5250 MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
42	5210 MHz

FOR 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
155	5775 MHz

3.4 Test Mode Applicability and Tested Channel Detail

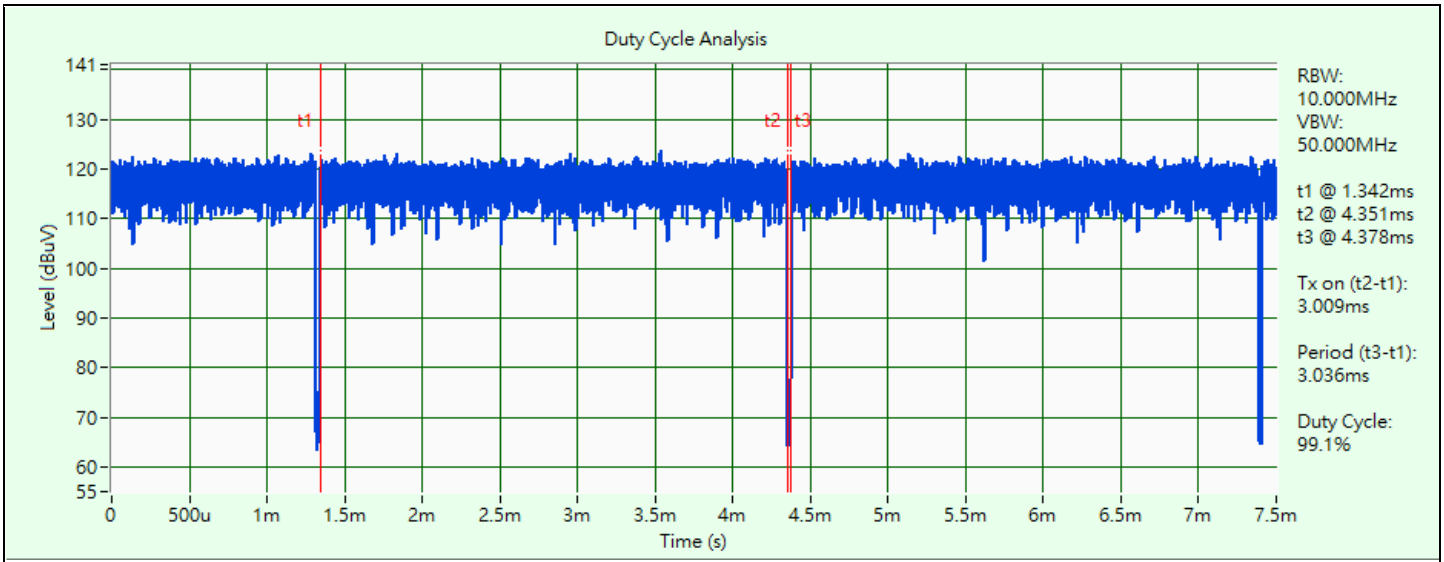
Pre-Scan:	1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below:

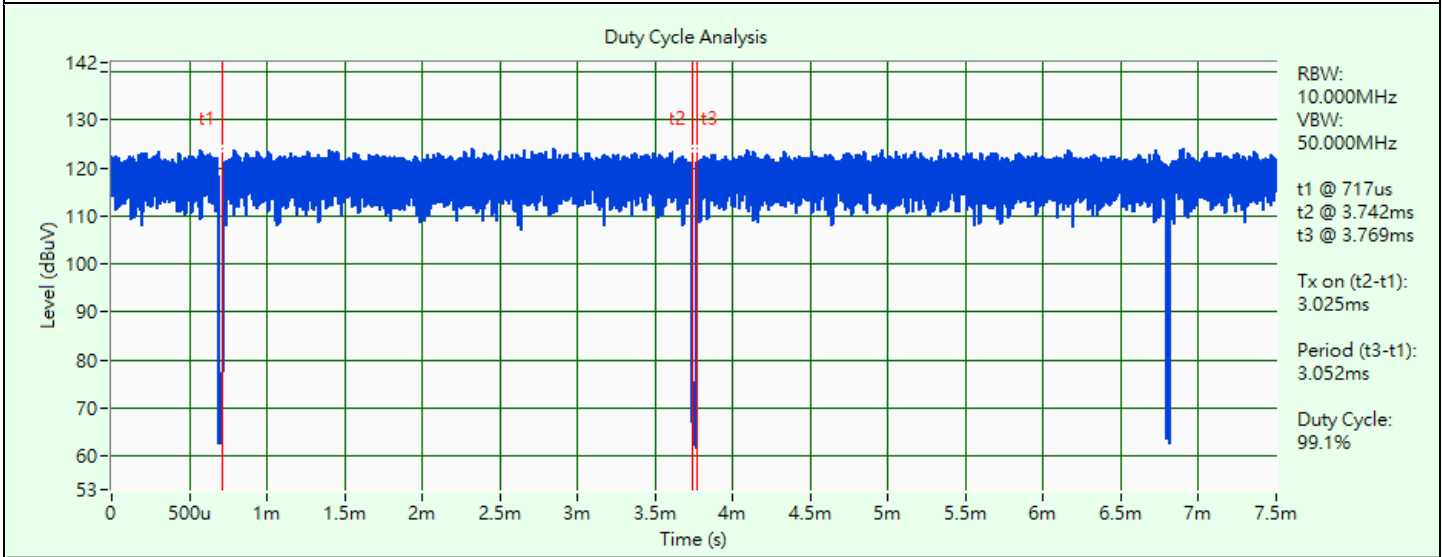
Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD & Beamforming	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD & Beamforming	38, 46, 151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD & Beamforming	42, 155	BPSK	MCS0
Power Spectral Density	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD	38, 46, 151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD	42, 155	BPSK	MCS0
6 dB Bandwidth	802.11a	CDD	149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD	149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD	151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD	155	BPSK	MCS0
Occupied Bandwidth	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD	38, 46, 151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD	42, 155	BPSK	MCS0
Frequency Stability	802.11a	-	36	un-modulation	-
AC Power Conducted Emissions	802.11ax (HE20)	CDD	157	BPSK	MCS0
Unwanted Emissions below 1 GHz	802.11ax (HE20)	CDD	157	BPSK	MCS0
Unwanted Emissions above 1 GHz	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD	38, 46, 151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD	42, 155	BPSK	MCS0

3.5 Duty Cycle of Test Signal

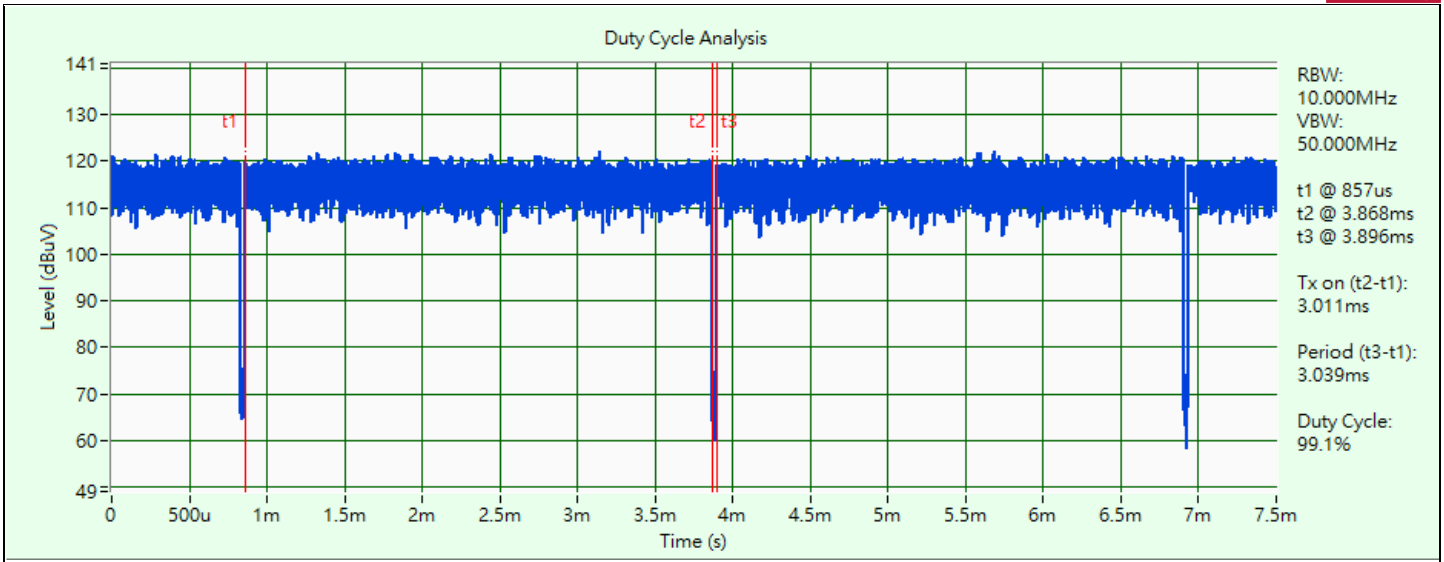
802.11a: Duty cycle = 3.009 ms / 3.036 ms x 100% = 99.1%
802.11ax (HE20): Duty cycle = 3.025 ms / 3.052 ms x 100% = 99.1%
802.11ax (HE40): Duty cycle = 3.011 ms / 3.039 ms x 100% = 99.1%
802.11ax (HE80): Duty cycle = 3.011 ms / 3.039 ms x 100% = 99.1%



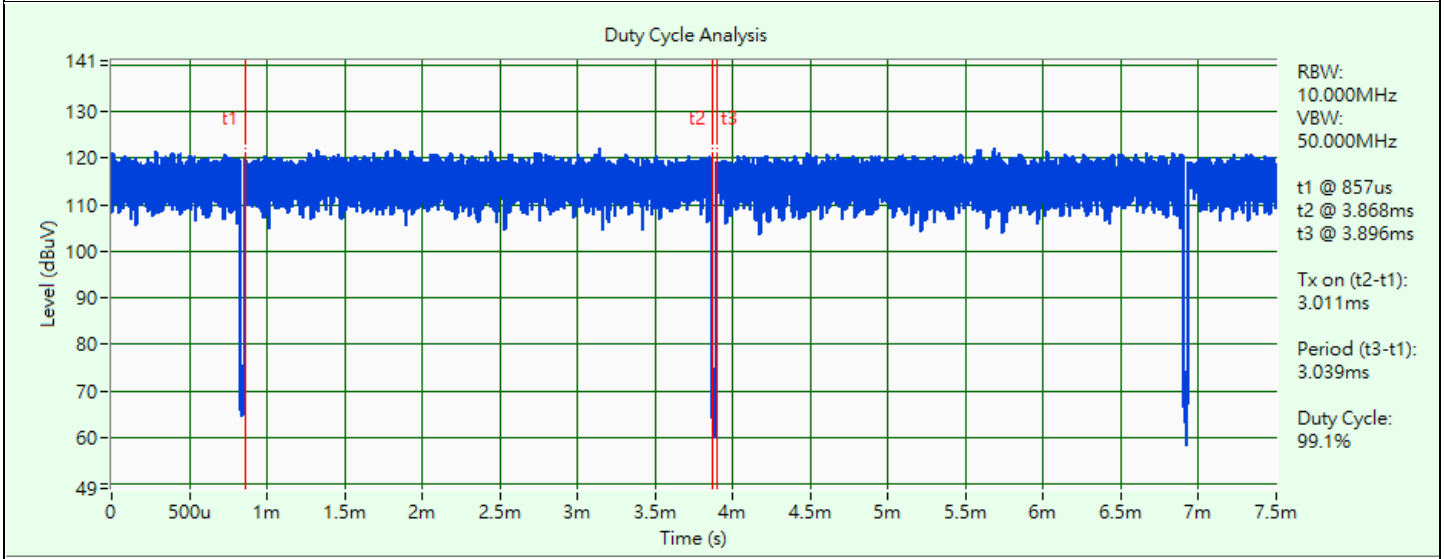
802.11a



802.11ax (HE20)



802.11ax (HE40)

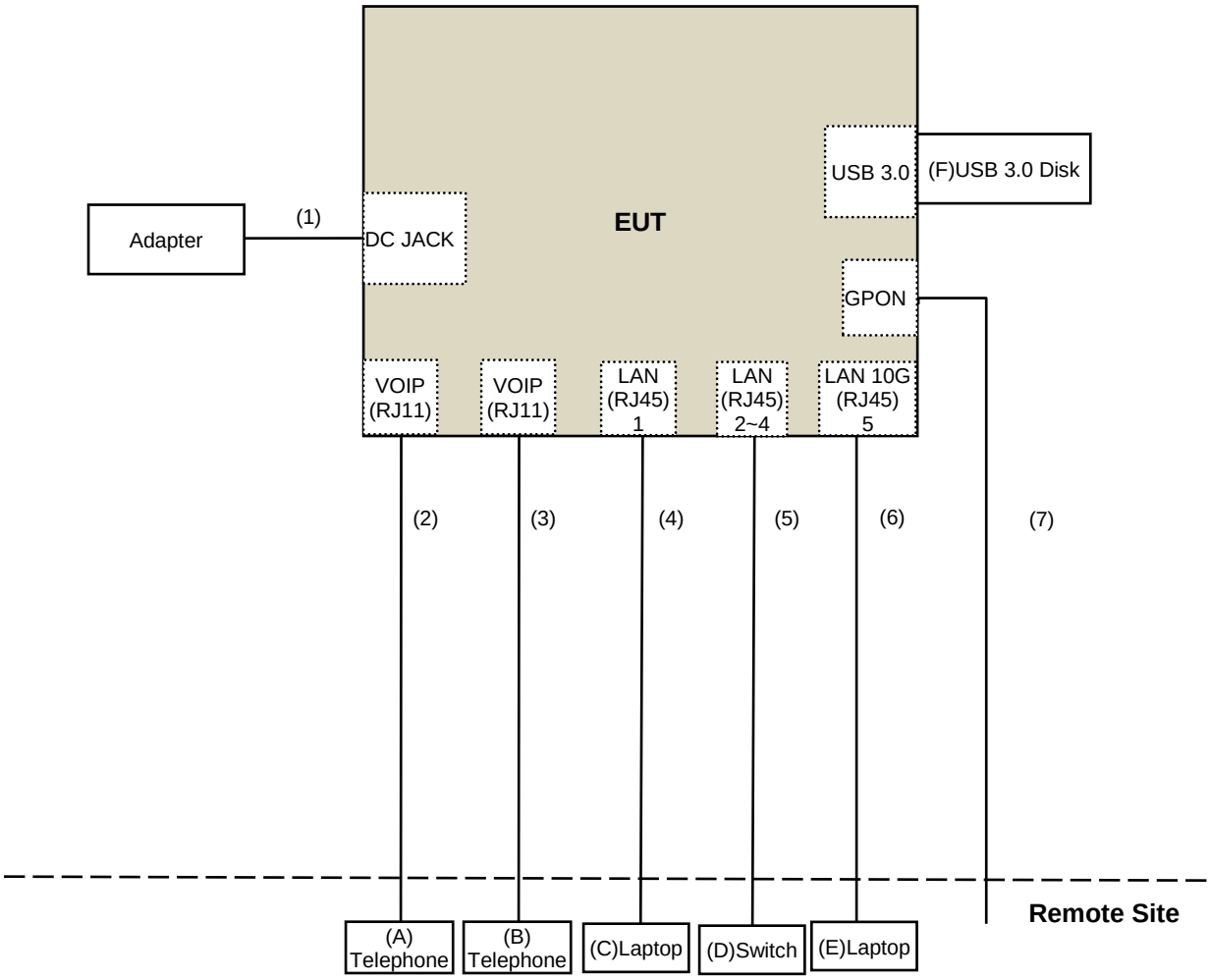


802.11ax (HE80)

3.6 Test Program Used and Operation Descriptions

Controlling software (accessMTool_REL_3_3_0_0) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	TELEPHONE	Romeo	TE-812	97285638	N/A	Provided by Lab
B	TELEPHONE	Romeo	TE-812	97280903	N/A	Provided by Lab
C	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	N/A	Provided by Lab
D	Switch	D-Link	DGS-1005D	DR8WC92000523	N/A	Provided by Lab
E	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Provided by Lab
F	USB 3.0 Disk	SanDisk	BM181225896Z	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.8	No	0	Supplied by applicant
2	RJ-11 Cable	1	10	No	0	Provided by Lab
3	RJ-11 Cable	1	10	No	0	Provided by Lab
4	RJ-45 Cable	1	10	No	0	Provided by Lab
5	RJ-45 Cable	3	10	No	0	Provided by Lab
6	RJ-45 Cable	1	10	No	0	Provided by Lab
7	Fiber Cable	1	10	No	0	Provided by Lab

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/2/6

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/2/6

4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

4.4 Occupied Bandwidth

Refer to section 4.2 to get information of the instruments.

4.5 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
AC Power Source GOOD WILL	6905S	1991551	N/A	N/A
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	2022/12/26	2023/12/25
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/2/6

4.6 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	N/A	EMC-01	2022/9/27	2023/9/26
Fixed attenuator STI	STI02-2200-10	005	2022/8/24	2023/8/23
LISN R&S	ESH3-Z5	848773/004	2022/10/18	2023/10/17
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2022/8/24	2023/8/23
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2022/10/14	2023/10/13

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2023/2/3

4.7 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bilog Antenna Schwarzbeck	VULB 9168	9168-0942	2022/10/20	2023/10/19
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-01	2022/12/28	2023/12/27
LOOP ANTENNA Electro-Metrics	EM-6879	264	2022/3/18	2023/3/17
Pre_Amplifier EMCI	EMC001340	980142	2022/6/2	2023/6/1
Pre_Amplifier(20M-3G) EMCI	EMC330N	980852	2022/3/28	2023/3/27
RF Coaxial Cable COMMATE/PEWC	8D	966-6-1	2022/4/25	2023/4/24
		966-6-2	2022/4/25	2023/4/24
		966-6-3	2022/4/25	2023/4/24
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/12/19	2023/12/18
		LOOPCAB-002	2022/12/19	2023/12/18
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Test Receiver KEYSIGHT	N9038A	MY59050100	2022/6/20	2023/6/19

Notes:

1. The test was performed in 966 Chamber No. 6.
2. Tested Date: 2023/2/3

4.8 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-2035	2022/11/13	2023/11/12
	BBHA 9170	BBHA9170519	2022/11/13	2023/11/12
Pre_Amplifier EMCI	EMC12630SE	980385	2022/8/15	2023/8/14
	EMC184045SE	980387	2022/12/28	2023/12/27
RF Cable EMCI	EMC104-SM-SM-1300	210205	2022/5/10	2023/5/9
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10 2022/12/28	2023/1/9 2023/12/27
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
	EMC101G-KM-KM-10000	210708	2022/11/4	2023/11/3
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Test Receiver KEYSIGHT	N9038A	MY59050100	2022/6/20	2023/6/19

Notes:

1. The test was performed in 966 Chamber No. 6.
2. Tested Date: 2022/11/30 ~ 2023/2/2

5 Limits of Test Items

5.1 RF Output Power

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(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	250mW (24 dBm)

Operation Band	Limit
U-NII-3	1 Watt (30 dBm)

Per KDB 662911 D01 Multiple Transmitter Output 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.

5.2 Power Spectral Density

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

Operation Band	Limit
U-NII-3	30 dBm/500 kHz

5.3 6 dB Bandwidth

Within the 5.725-5.850 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

5.4 Occupied Bandwidth

The results are for reference only.

5.5 Frequency Stability

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

5.6 AC Power Conducted Emissions

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

Notes:

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.

5.7 Unwanted Emissions below 1 GHz

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

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

Notes:

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

5.8 Unwanted Emissions above 1 GHz

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

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

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.

Limits of unwanted emission out of the restricted bands

Applicable To	Limit	
789033 D02 General UNII Test Procedure New Rules v02r01	Field Strength at 3 m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)

For transmitters operating in the 5.15-5.25 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)

For transmitters operating in the 5.725-5.850 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
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
*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.		

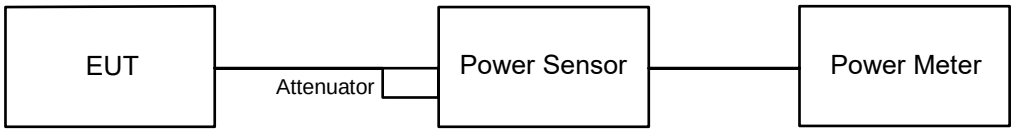
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

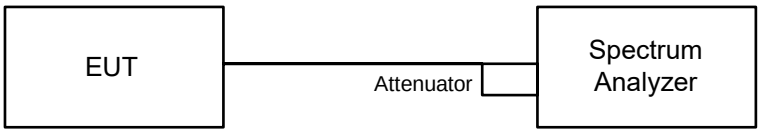


6.1.2 Test Procedure

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 and set the detector to average. Duty factor is not added to measured value.

6.2 Power Spectral Density

6.2.1 Test Setup



6.2.2 Test Procedure

For specified measurement bandwidth 1 MHz:
Method SA-1

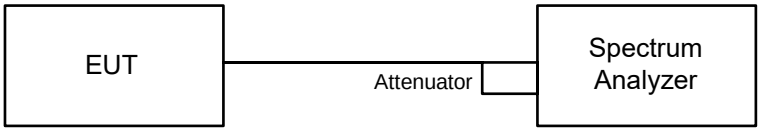
a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
d. Sweep time = auto, trigger set to “free run”.
e. Trace average at least 100 traces in power averaging mode.
f. Record the max value

For specified measurement bandwidth 500 kHz:
Method SA-1

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
c. Scale the observed power level to an equivalent value in 500 kHz by adjusting (increasing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300 kHz)
d. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
e. Sweep time = auto, trigger set to “free run”.
f. Trace average at least 100 traces in power averaging mode.
g. Record the max value

6.3 6 dB Bandwidth

6.3.1 Test Setup

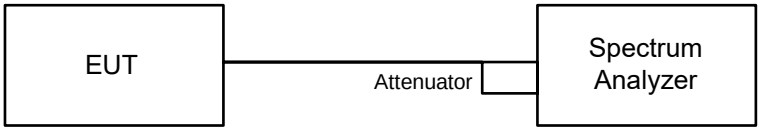


6.3.2 Test Procedure

a. Set resolution bandwidth (RBW) = 100 kHz.
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. 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.

6.4 Occupied Bandwidth

6.4.1 Test Setup

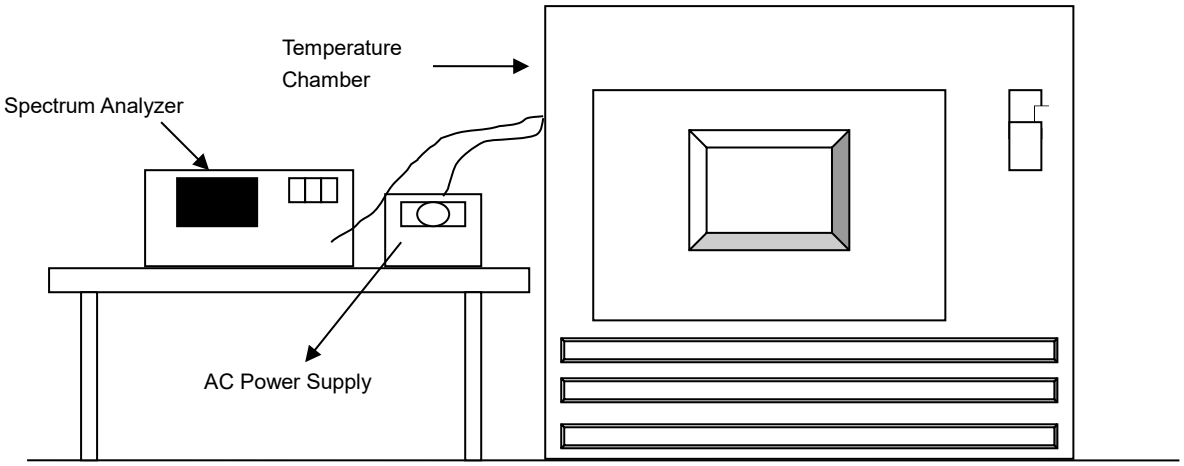


6.4.2 Test Procedure

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 Sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

6.5 Frequency Stability

6.5.1 Test Setup

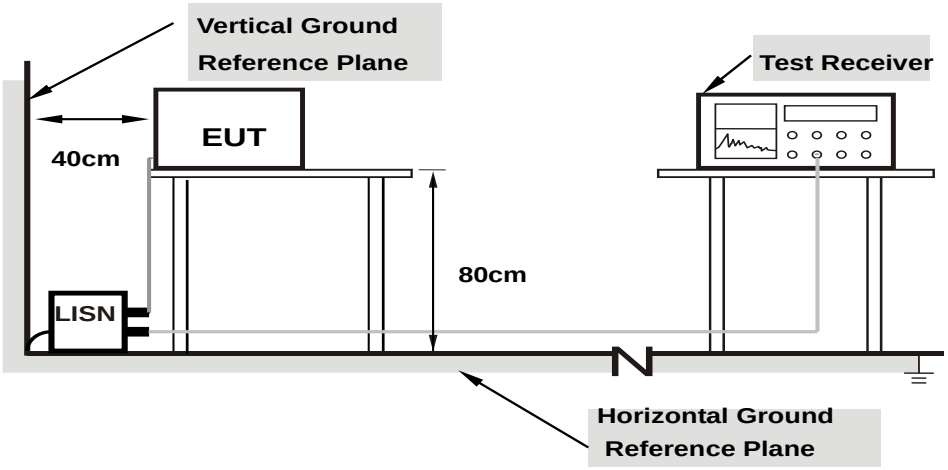


6.5.2 Test Procedure

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

6.6 AC Power Conducted Emissions

6.6.1 Test Setup



Note: 1.Support units were connected to second LISN.

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

6.6.2 Test Procedure

a. The EUT was placed on a 0.8 meter to the top of table and 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/ 50 uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

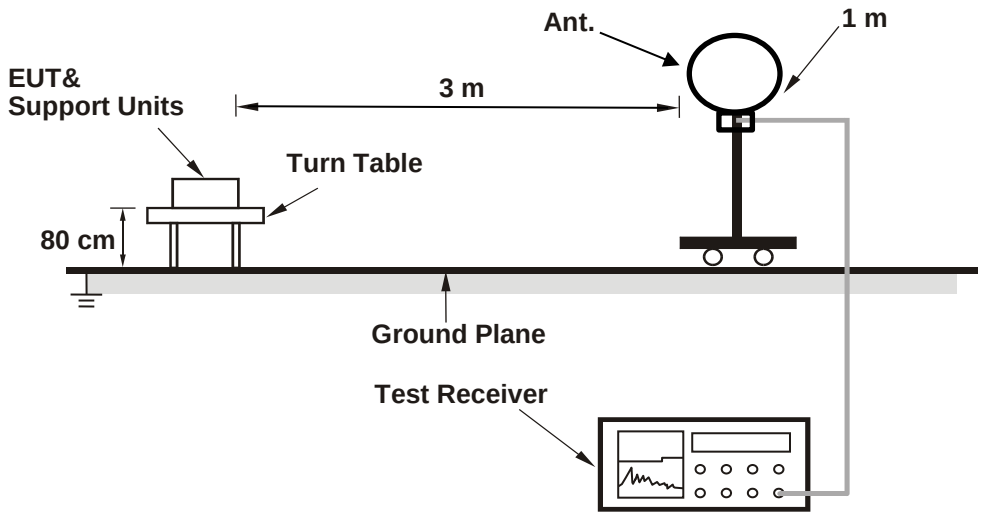
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

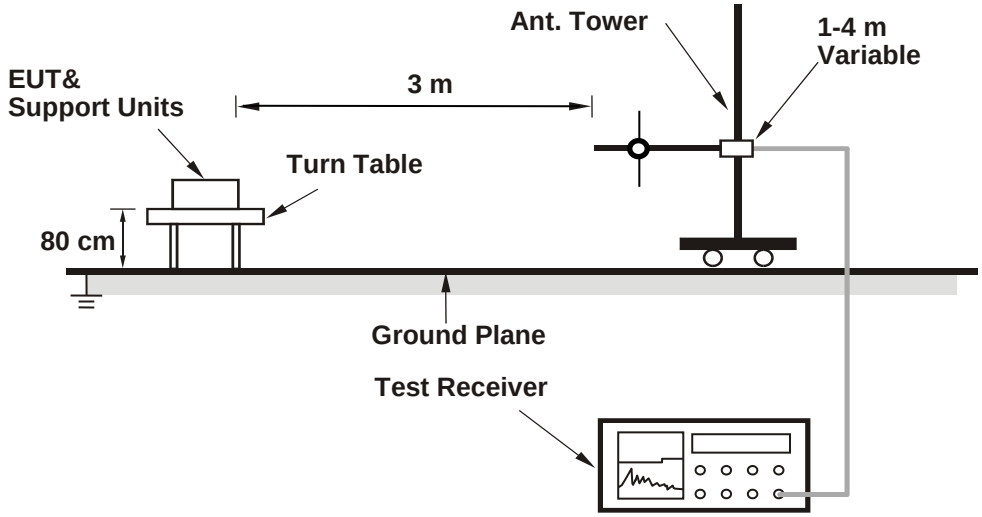
6.7 Unwanted Emissions below 1 GHz

6.7.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.7.2 Test Procedure

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 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. 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, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters 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.

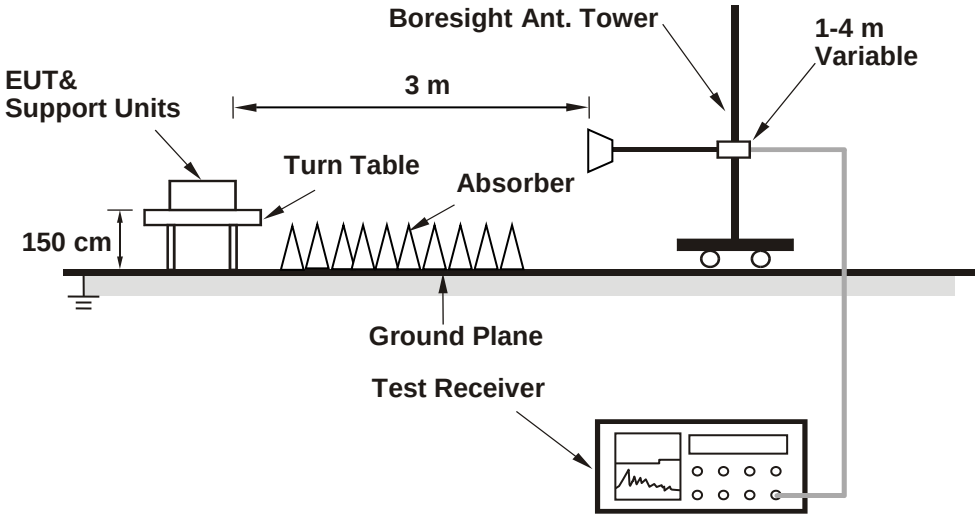
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

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. All modes of operation were investigated and the worst-case emissions are reported.

6.8 Unwanted Emissions above 1 GHz

6.8.1 Test Setup



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

6.8.2 Test Procedure

a. The EUT was placed on the top of a rotating table 1.5 meters 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 peak and average detects 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.

Notes:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu

802.11a CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	19.78	20.03	20.59	20.09	412.399	26.15	30	Pass
40	5200	19.47	19.58	19.79	19.27	359.101	25.55	30	Pass
48	5240	19.91	20.03	20.55	19.85	408.748	26.11	30	Pass
149	5745	23.59	23.97	24.13	23.91	982.877	29.92	30	Pass
157	5785	23.64	24.02	24.20	23.97	996.041	29.98	30	Pass
165	5825	23.62	23.75	23.98	23.89	962.222	29.83	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 3.8 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 3.8 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.38	20.25	20.61	20.19	434.621	26.38	30	Pass
40	5200	19.91	20.06	20.27	19.77	400.596	26.03	30	Pass
48	5240	19.64	20.00	19.98	19.45	379.69	25.79	30	Pass
149	5745	23.28	23.66	23.79	23.60	913.506	29.61	30	Pass
157	5785	23.24	23.62	23.82	23.60	911.084	29.60	30	Pass
165	5825	23.30	23.41	23.67	23.50	889.758	29.49	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 3.8 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 3.8 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	17.13	17.46	17.60	17.38	219.606	23.42	30	Pass
46	5230	22.88	23.12	23.25	23.08	813.789	29.11	30	Pass
151	5755	23.13	23.46	23.57	23.38	872.689	29.41	30	Pass
159	5795	23.19	23.56	23.73	23.45	892.793	29.51	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 3.8 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 3.8 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE80) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	16.33	16.73	16.90	16.60	184.738	22.67	30	Pass
155	5775	21.59	22.00	22.16	21.87	620.953	27.93	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 3.8 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 3.8 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	19.98	19.85	20.67	19.95	411.682	26.15	26.204	Pass
40	5200	19.91	20.06	20.27	19.77	400.596	26.03	26.204	Pass
48	5240	19.64	20.00	19.98	19.45	379.69	25.79	26.204	Pass
149	5745	19.74	20.07	20.43	20.31	413.621	26.17	26.204	Pass
157	5785	20.01	20.21	20.19	19.95	408.512	26.11	26.204	Pass
165	5825	20.09	20.06	20.06	20.35	413.269	26.16	26.204	Pass

Notes:

1. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
2. For U-NII-1, the directional gain is 9.796 dBi > 6 dBi, so the output power limit shall be reduced to 30-(9.796-6) = 26.2 dBm.
3. For U-NII-3, the directional gain is 9.796 dBi > 6 dBi, so the output power limit shall be reduced to 30-(9.796-6) = 26.2 dBm.

802.11ax (HE40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	17.13	17.46	17.60	17.38	219.606	23.42	26.204	Pass
46	5230	19.91	20.20	20.14	20.26	412.108	26.15	26.204	Pass
151	5755	20.23	20.04	20.14	20.14	412.916	26.16	26.204	Pass
159	5795	19.81	20.38	20.06	20.16	410.007	26.13	26.204	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-1, the directional gain is 9.796 dBi > 6 dBi, so the output power limit shall be reduced to 30-(9.796-6) = 26.2 dBm.
3. For U-NII-3, the directional gain is 9.796 dBi > 6 dBi, so the output power limit shall be reduced to 30-(9.796-6) = 26.2 dBm.

802.11ax (HE80) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	16.33	16.73	16.90	16.60	184.738	22.67	26.204	Pass
155	5775	19.80	19.86	20.49	20.13	407.309	26.10	26.204	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. For U-NII-1, the directional gain is 9.796 dBi > 6 dBi, so the output power limit shall be reduced to 30-(9.796-6) = 26.2 dBm.
3. For U-NII-3, the directional gain is 9.796 dBi > 6 dBi, so the output power limit shall be reduced to 30-(9.796-6) = 26.2 dBm.

7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3			
36	5180	6.41	6.73	7.37	6.66	12.83	13.204	Pass
40	5200	6.73	6.73	7.60	6.71	12.98	13.204	Pass
48	5240	6.67	7.09	7.58	6.96	13.11	13.204	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. For U-NII-1, the directional gain is 9.796 dBi > 6dBi, so the power density limit shall be reduced to 17-(9.796-6) = 13.2 dBm/MHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3			
36	5180	6.98	6.50	7.17	6.58	12.84	13.204	Pass
40	5200	6.60	6.69	7.37	6.34	12.79	13.204	Pass
48	5240	6.64	6.74	7.29	6.47	12.82	13.204	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. For U-NII-1, the directional gain is 9.796 dBi > 6dBi, so the power density limit shall be reduced to 17-(9.796-6) = 13.2 dBm/MHz.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3			
38	5190	0.42	0.26	1.33	0.92	6.77	13.204	Pass
46	5230	6.71	6.31	6.90	6.49	12.63	13.204	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
3. For U-NII-1, the directional gain is 9.796 dBi > 6dBi, so the power density limit shall be reduced to 17-(9.796-6) = 13.2 dBm/MHz.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3			
42	5210	-2.87	-3.00	-2.61	-2.81	3.20	13.204	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
3. For U-NII-1, the directional gain is 9.796 dBi > 6dBi, so the power density limit shall be reduced to 17-(9.796-6) = 13.2 dBm/MHz.

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	2.40	2.06	2.75	2.52	8.46	10.68	26.2	Pass
157	5785	1.95	1.91	2.57	2.68	8.31	10.53	26.2	Pass
165	5825	1.16	1.50	1.83	1.95	7.64	9.86	26.2	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
3. For U-NII-3, the directional gain is 9.796 dBi > 6 dBi, so the power density limit shall be reduced to 30-(9.796-6) = 26.2 dBm/500kHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	0.69	0.35	1.11	0.78	6.76	8.98	26.2	Pass
157	5785	0.27	0.35	1.17	0.87	6.7	8.92	26.2	Pass
165	5825	-0.16	0.13	0.32	0.27	6.16	8.38	26.2	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
3. For U-NII-3, the directional gain is 9.796 dBi > 6 dBi, so the power density limit shall be reduced to 30-(9.796-6) = 26.2 dBm/500kHz.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	-2.45	-2.38	-1.84	-2.46	3.75	5.97	26.2	Pass
159	5795	-2.70	-2.13	-1.72	-2.23	3.84	6.06	26.2	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
3. For U-NII-3, the directional gain is 9.796 dBi > 6 dBi, so the power density limit shall be reduced to 30-(9.796-6) = 26.2 dBm/500kHz.

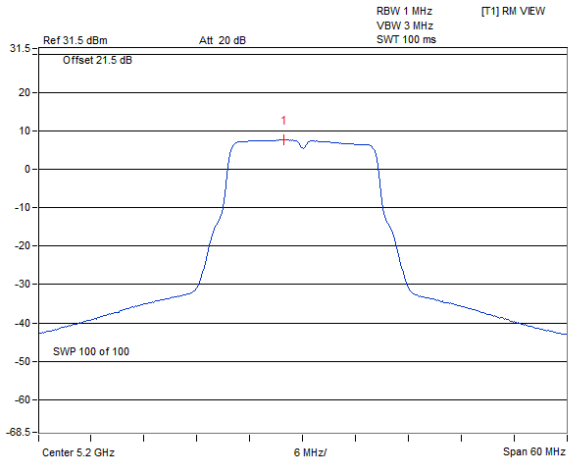
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	-6.90	-6.90	-6.28	-7.10	-0.76	1.46	26.2	Pass

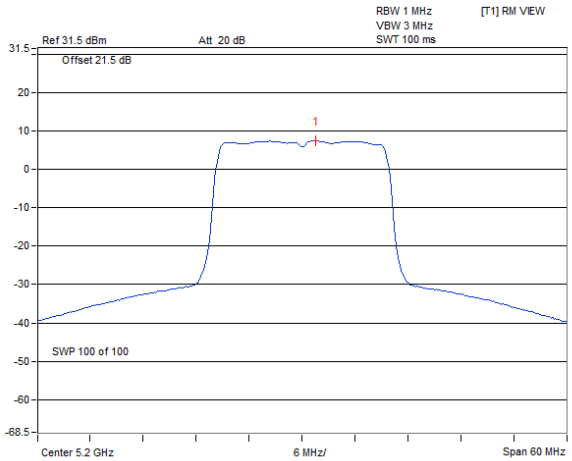
Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2 / 4]$
3. For U-NII-3, the directional gain is 9.796 dBi > 6 dBi, so the power density limit shall be reduced to 30-(9.796-6) = 26.2 dBm/500kHz.

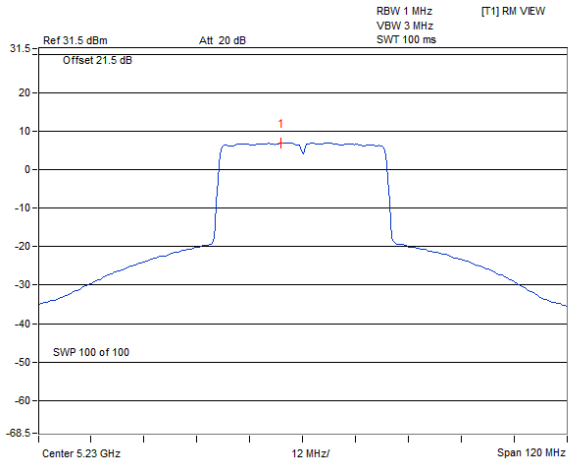
Spectrum Plot of Maximum Value



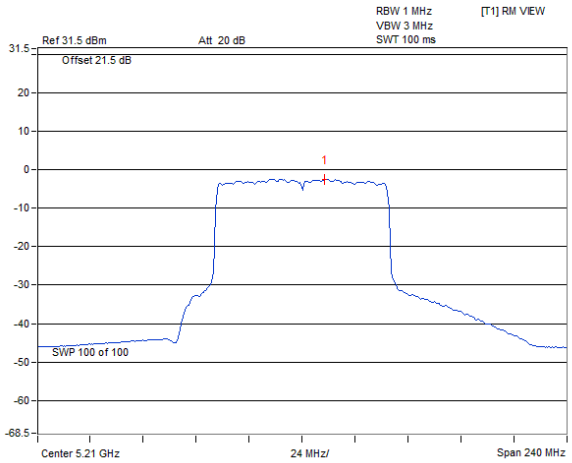
802.11a / Chain 2 : CH 40



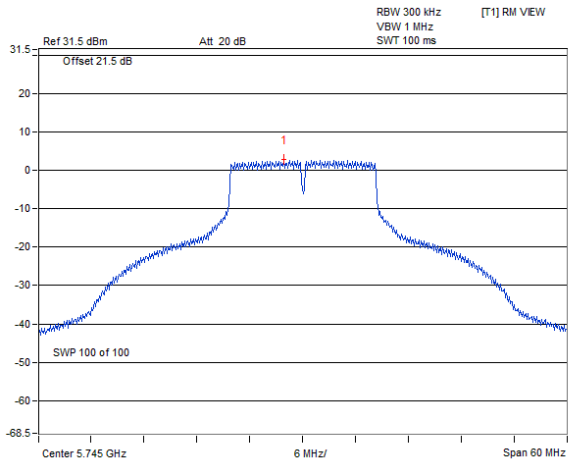
802.11ax (HE20) / Chain 2 : CH 40



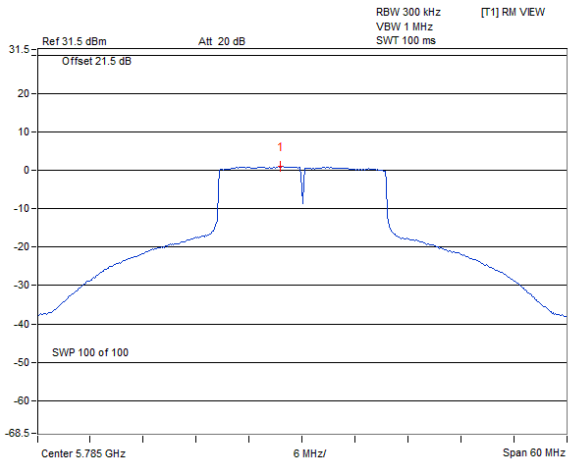
802.11ax (HE40) / Chain 2 : CH 46



802.11ax (HE80) / Chain 2 : CH 42

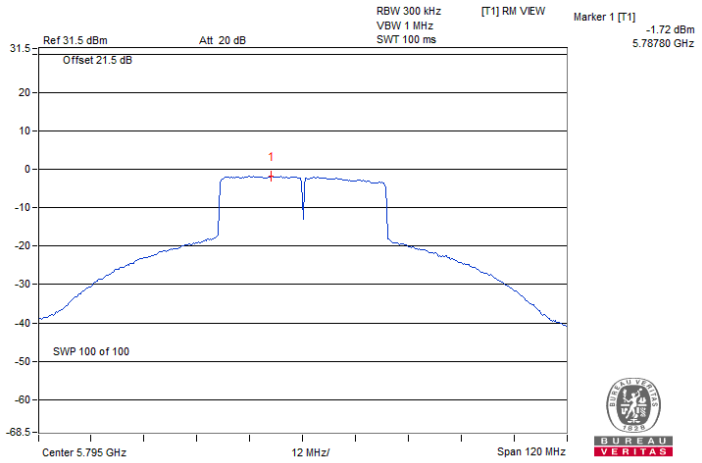


802.11a / Chain 2 : CH 149

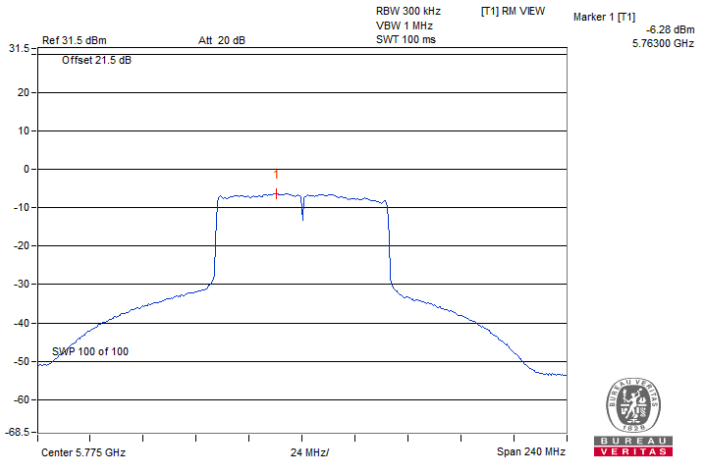


802.11ax (HE20) / Chain 2 : CH 157

Spectrum Plot of Maximum Value



802.11ax (HE40) / Chain 2 : CH 159



802.11ax (HE80) / Chain 2 : CH 155

7.3 6 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.41	16.41	16.41	16.41	0.5	Pass
157	5785	16.42	16.41	16.42	16.43	0.5	Pass
165	5825	16.41	16.42	16.41	16.46	0.5	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	18.97	18.91	18.94	18.91	0.5	Pass
157	5785	19.01	18.92	18.93	18.87	0.5	Pass
165	5825	18.96	18.84	18.89	18.85	0.5	Pass

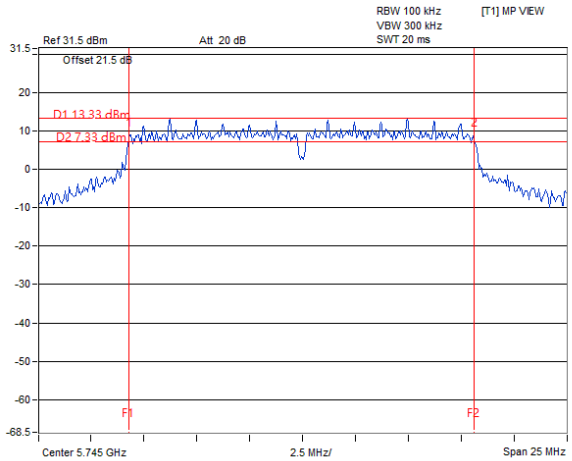
802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.87	37.75	37.90	37.76	0.5	Pass
159	5795	37.88	37.82	37.88	38.03	0.5	Pass

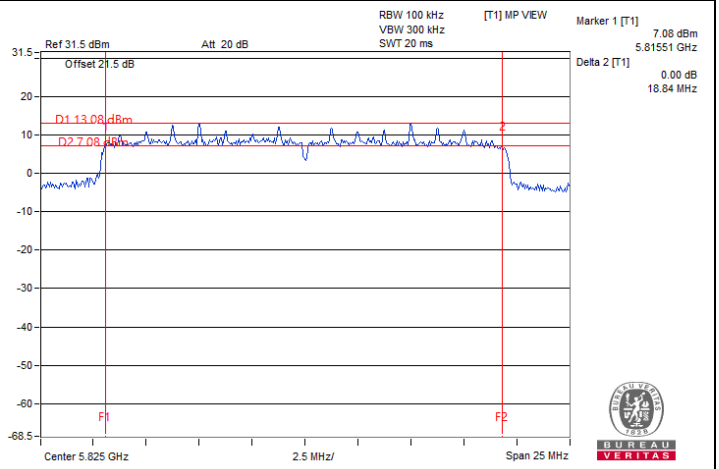
802.11ax (HE80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	77.10	77.41	77.24	76.43	0.5	Pass

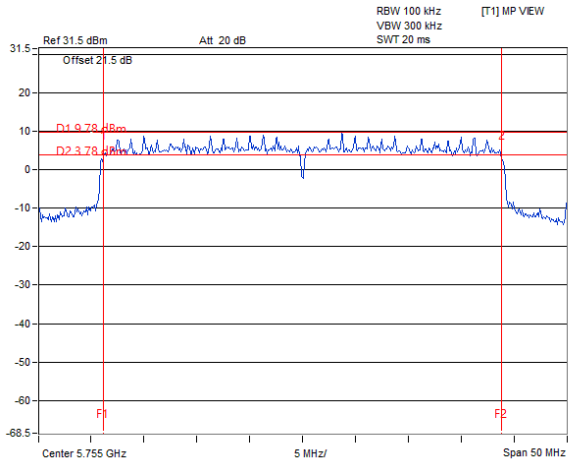
Spectrum Plot of Minimum Value



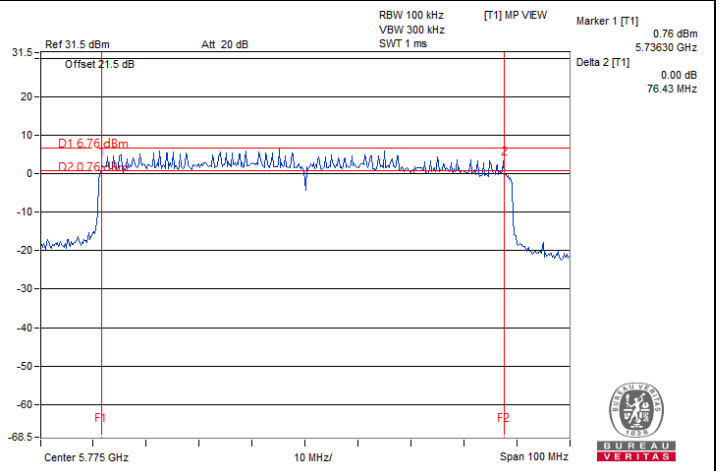
802.11a / Chain 0 : CH 149



802.11ax (HE20) / Chain 1 : CH 165



802.11ax (HE40) / Chain 1 : CH 151



802.11ax (HE80) / Chain 3 : CH 155

7.4 Occupied Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	17.76	17.40	17.16	17.16
40	5200	17.28	17.28	16.92	17.04
48	5240	17.16	17.04	16.92	17.04
149	5745	25.80	27.00	25.68	29.16
157	5785	28.44	29.57	26.88	32.22
165	5825	34.44	37.31	34.82	48.13

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	19.20	19.20	19.32	19.32
40	5200	19.20	19.08	19.08	19.32
48	5240	19.20	19.08	19.20	19.20
149	5745	22.44	26.16	24.72	28.08
157	5785	28.32	34.17	26.16	29.88
165	5825	37.31	40.43	38.22	46.69

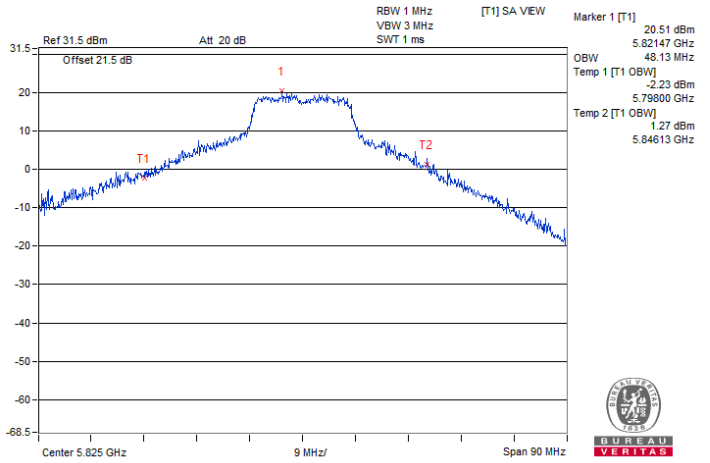
802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	38.16	38.16	38.40	38.40
46	5230	38.64	38.40	38.16	38.64
151	5755	41.04	42.48	50.88	47.04
159	5795	57.84	60.72	66.72	65.52

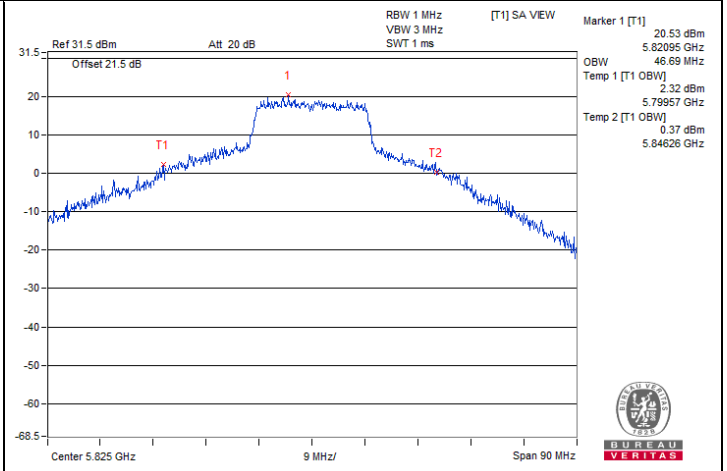
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	77.28	77.28	77.76	77.76
155	5775	78.24	77.76	77.28	77.76

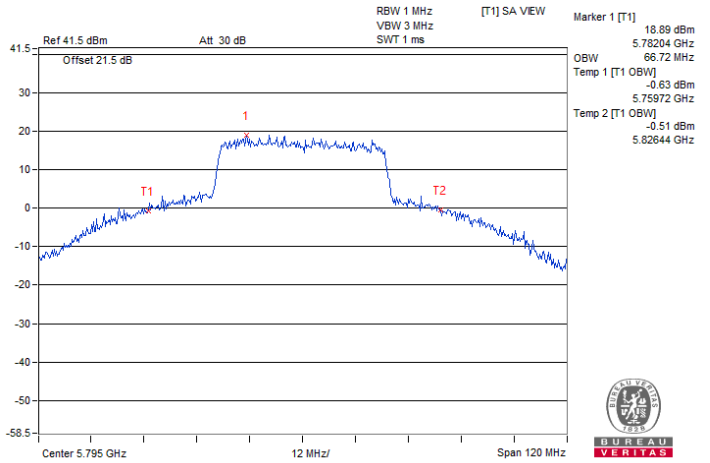
Spectrum Plot of Maximum Value



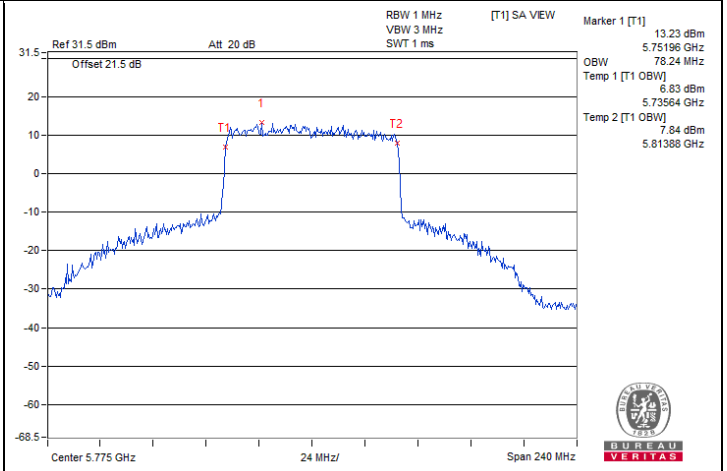
802.11a / Chain 3 : CH 165



802.11ax (HE20) / Chain 3 : CH 165



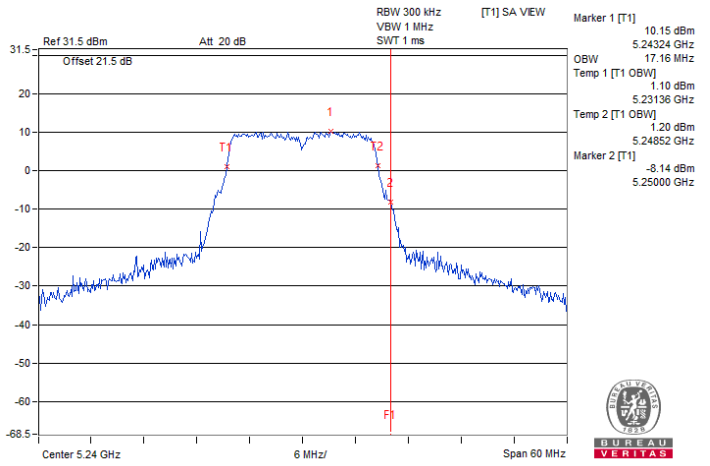
802.11ax (HE40) / Chain 2 : CH 159



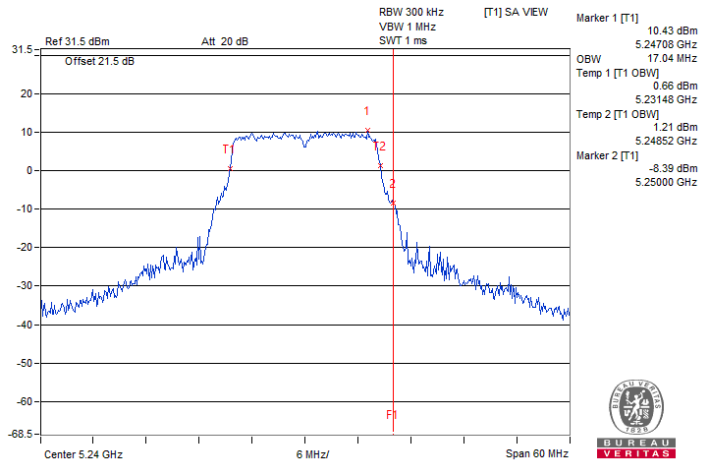
802.11ax (HE80) / Chain 0 : CH 155

Spectrum Plot for nearby DFS band

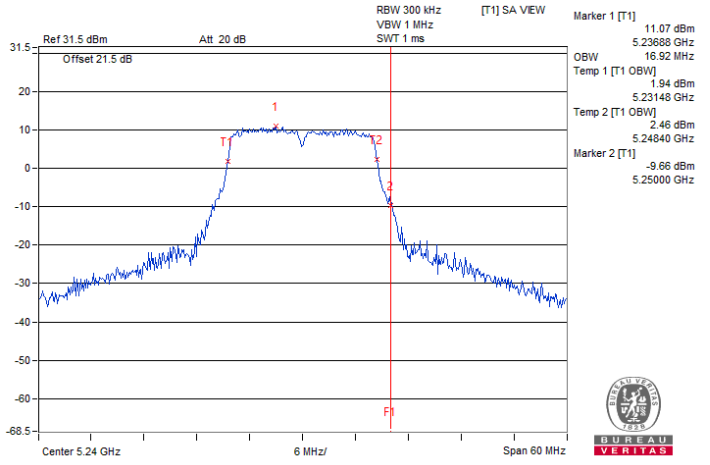
(DFS is required, if 99% OCP straddle into U-NII-2A)



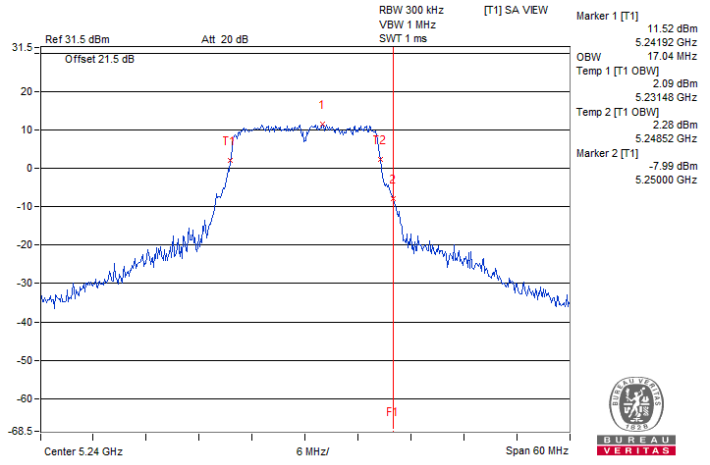
802.11a / Chain 0 : CH 48



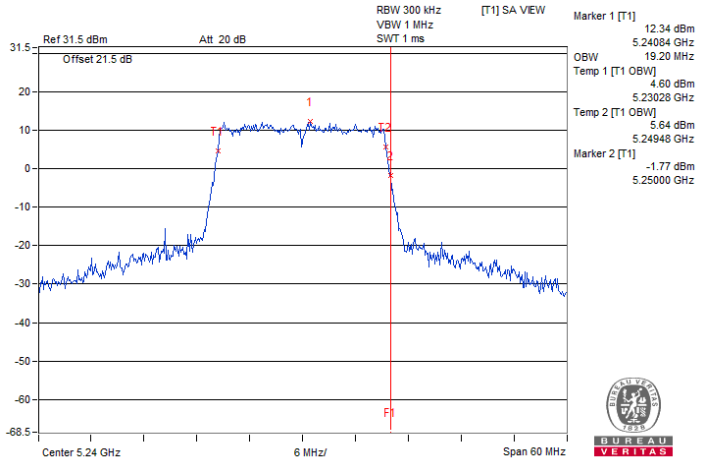
802.11a / Chain 1 : CH 48



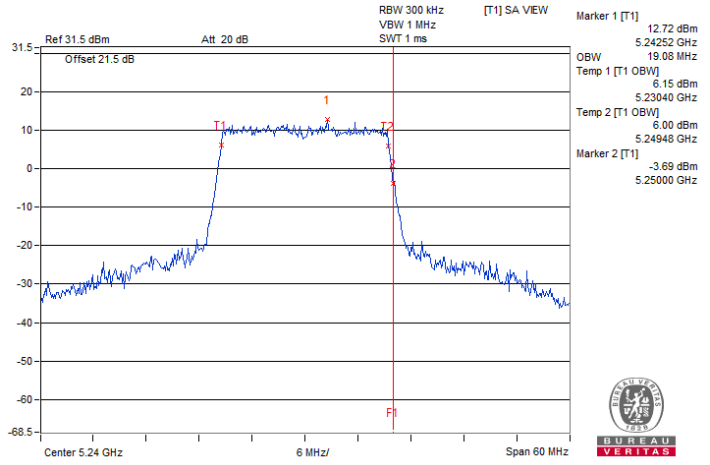
802.11a / Chain 2 : CH 48



802.11a / Chain 3 : CH 48



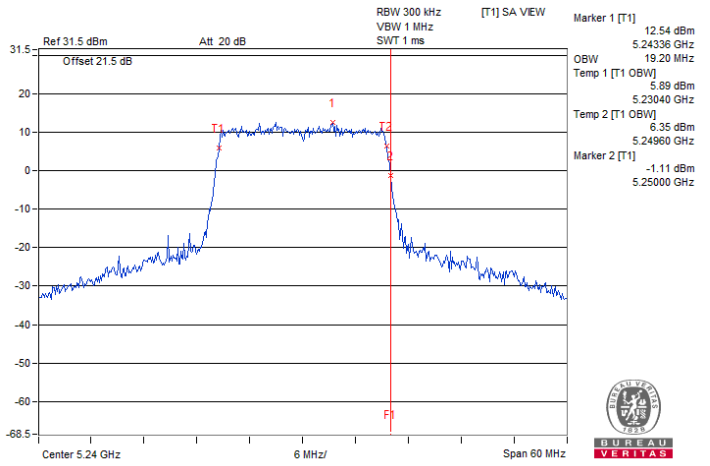
802.11ax (HE20) / Chain 0 : CH 48



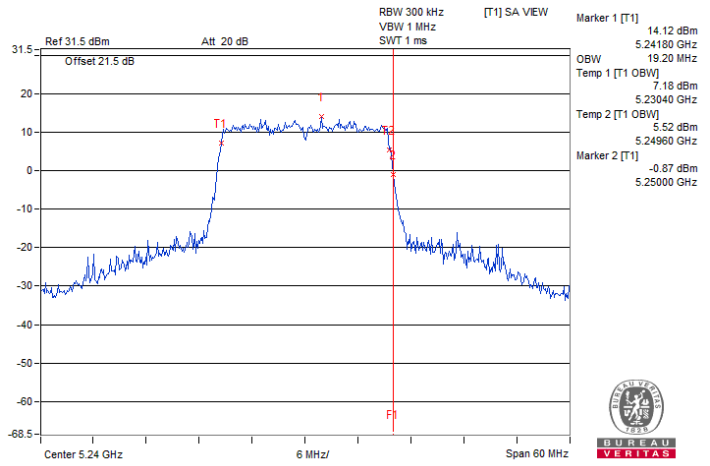
802.11ax (HE20) / Chain 1 : CH 48

Spectrum Plot for nearby DFS band

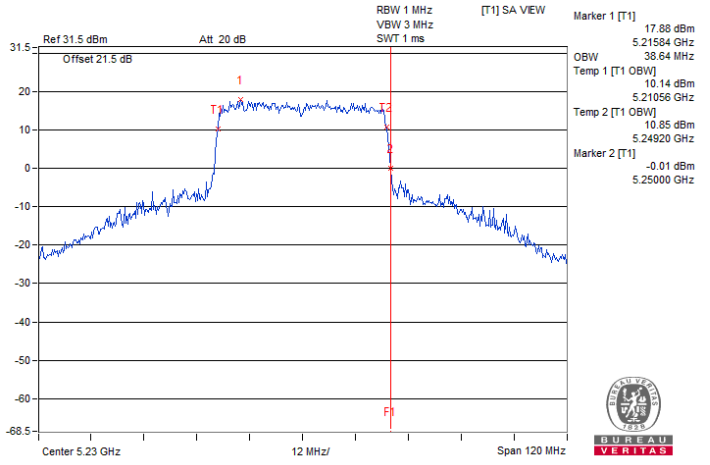
(DFS is required, if 99% OCP straddle into U-NII-2A)



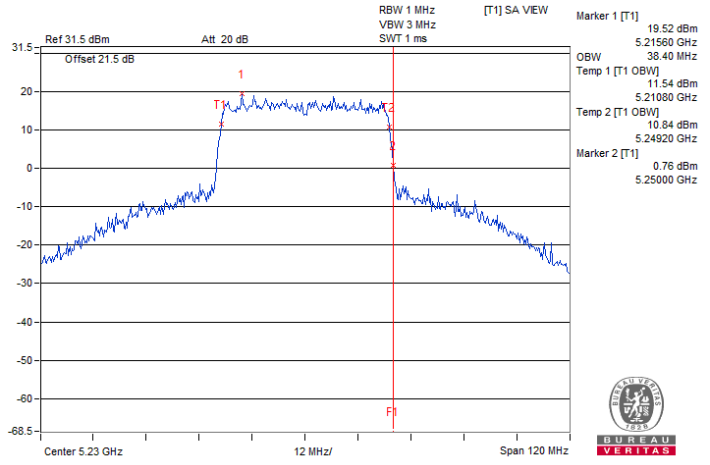
802.11ax (HE20) / Chain 2 : CH 48



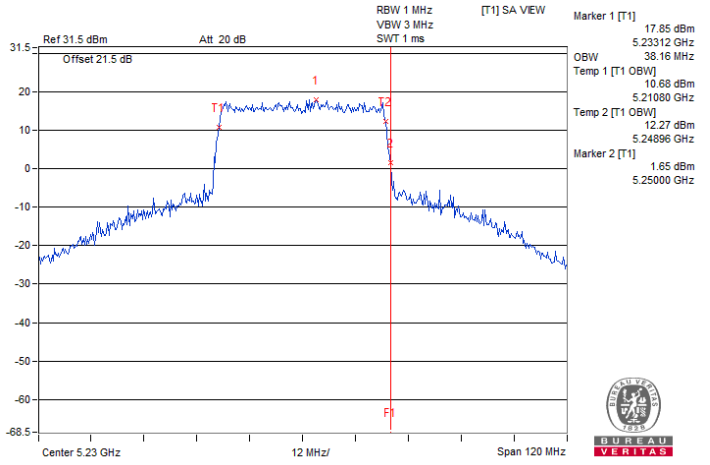
802.11ax (HE20) / Chain 3 : CH 48



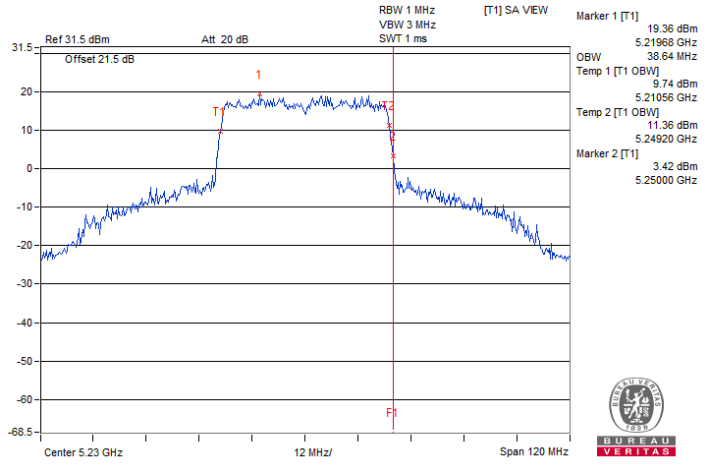
802.11ax (HE40) / Chain 0 : CH 46



802.11ax (HE40) / Chain 1 : CH 46



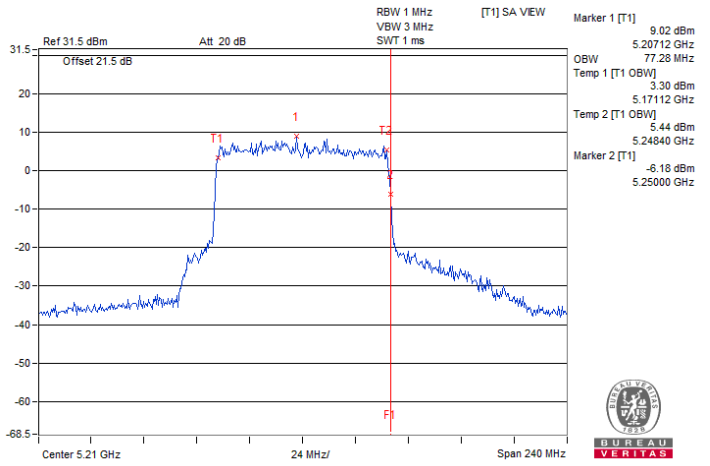
802.11ax (HE40) / Chain 2 : CH 46



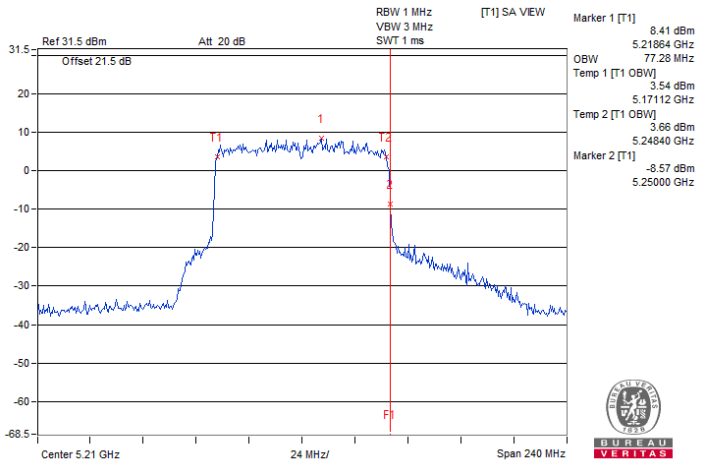
802.11ax (HE40) / Chain 3 : CH 46

Spectrum Plot for nearby DFS band

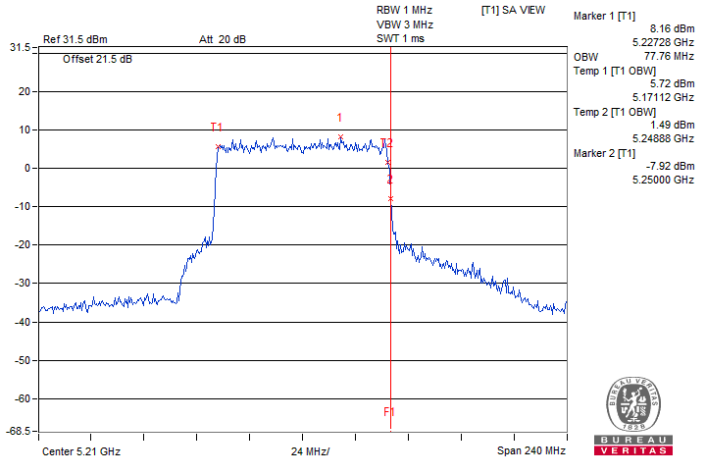
(DFS is required, if 99% OCP straddle into U-NII-2A)



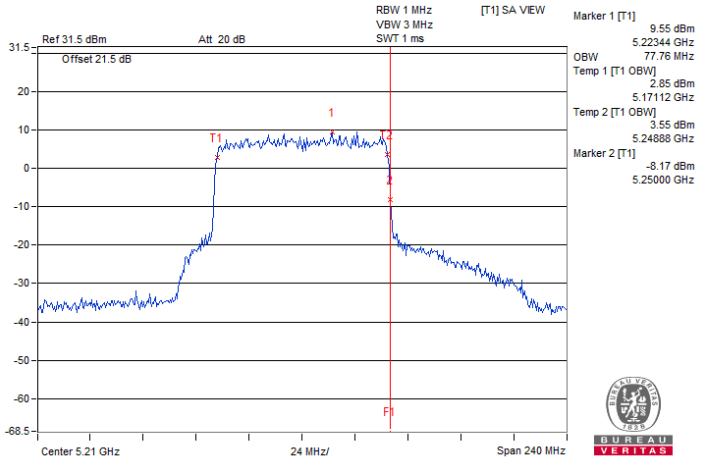
802.11ax (HE80) / Chain 0 : CH 42



802.11ax (HE80) / Chain 1 : CH 42



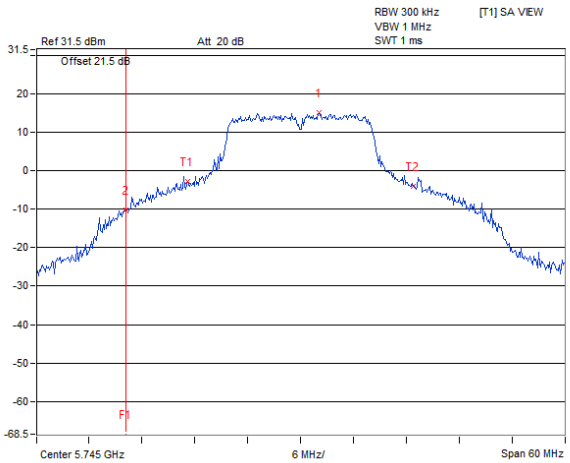
802.11ax (HE80) / Chain 2 : CH 42



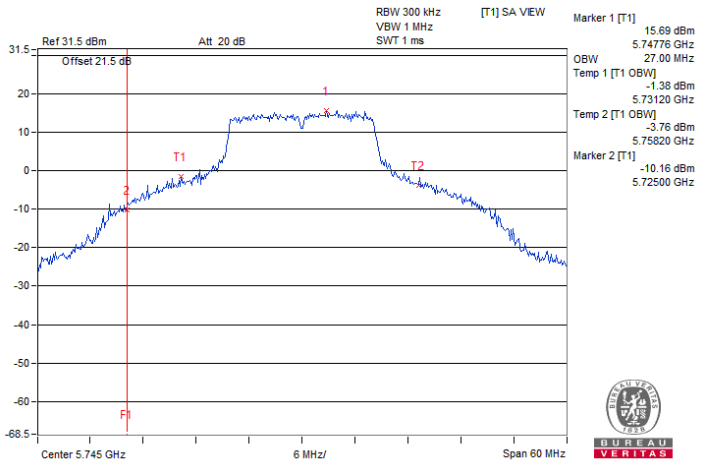
802.11ax (HE80) / Chain 3 : CH 42

Spectrum Plot for nearby DFS band

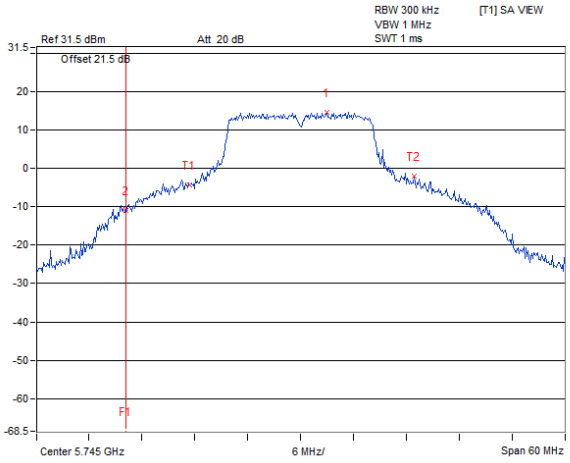
(DFS is required, if 99% OCP straddle into U-NII-2C)



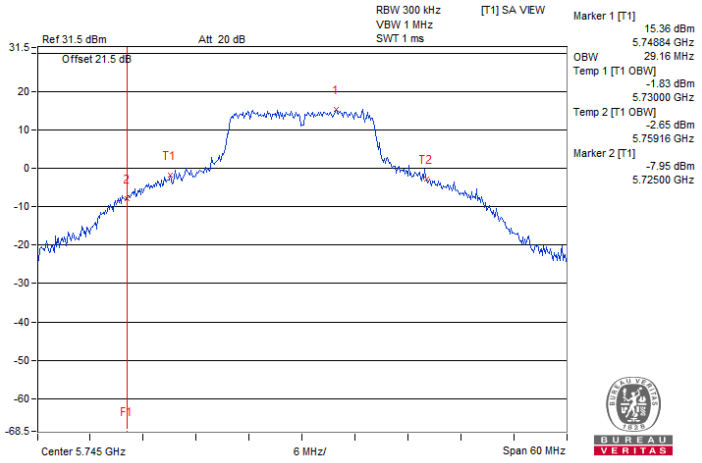
802.11a / Chain 0 : CH 149



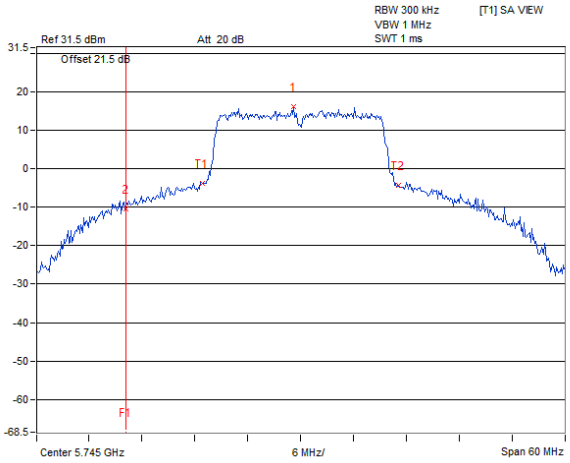
802.11a / Chain 1 : CH 149



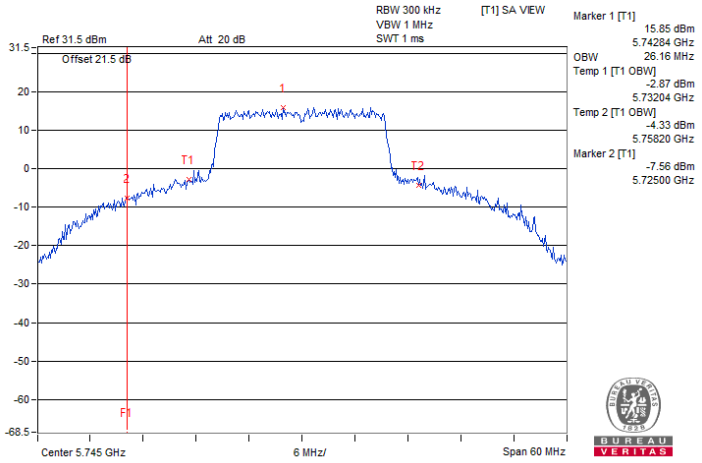
802.11a / Chain 2 : CH 149



802.11a / Chain 3 : CH 149



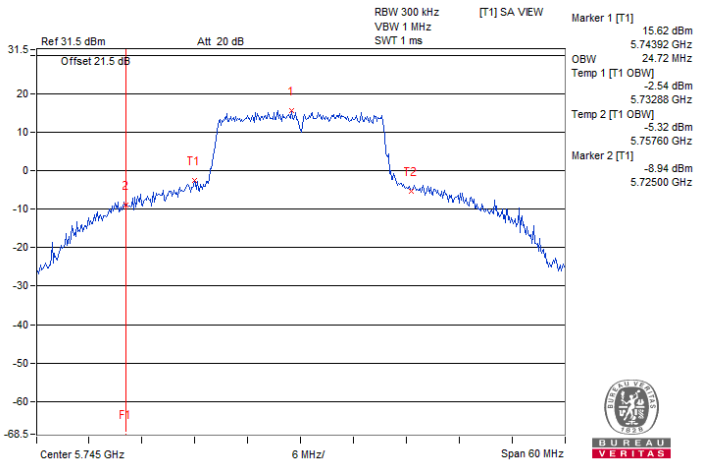
802.11ax (HE20) / Chain 0 : CH 149



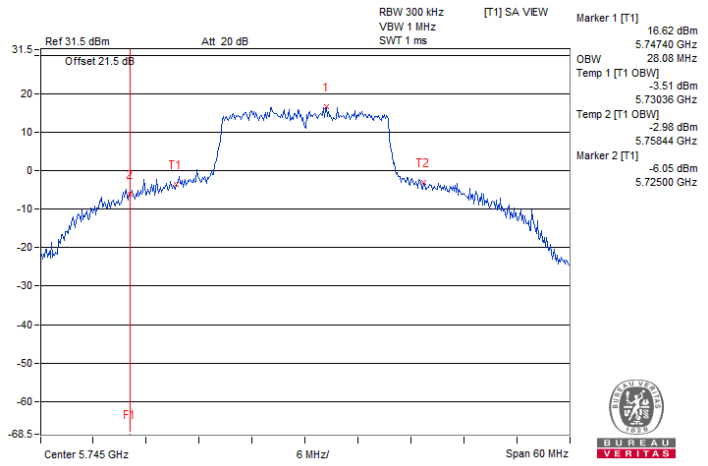
802.11ax (HE20) / Chain 1 : CH 149

Spectrum Plot for nearby DFS band

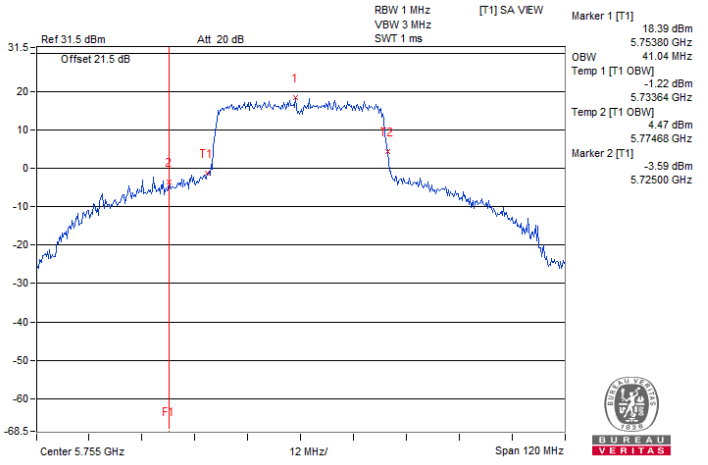
(DFS is required, if 99% OCP straddle into U-NII-2C)



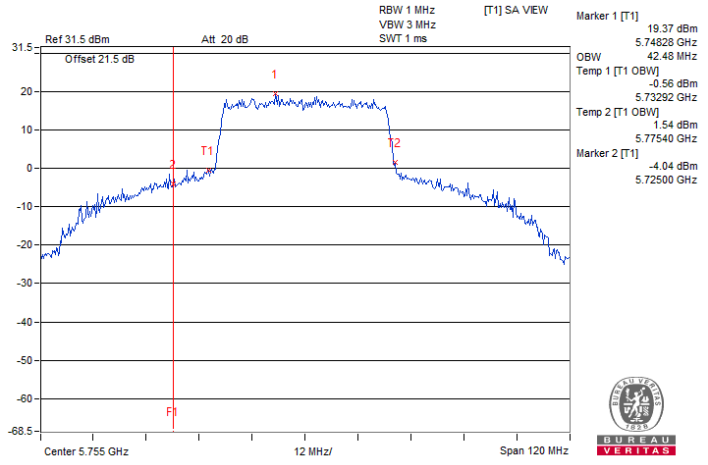
802.11ax (HE20) / Chain 2 : CH 149



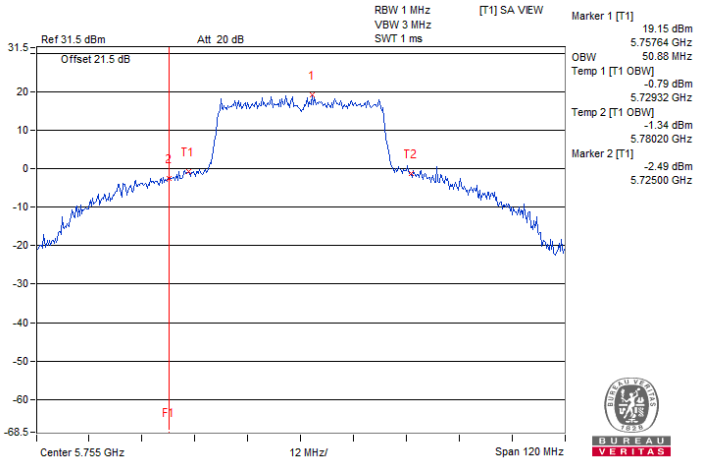
802.11ax (HE20) / Chain 3 : CH 149



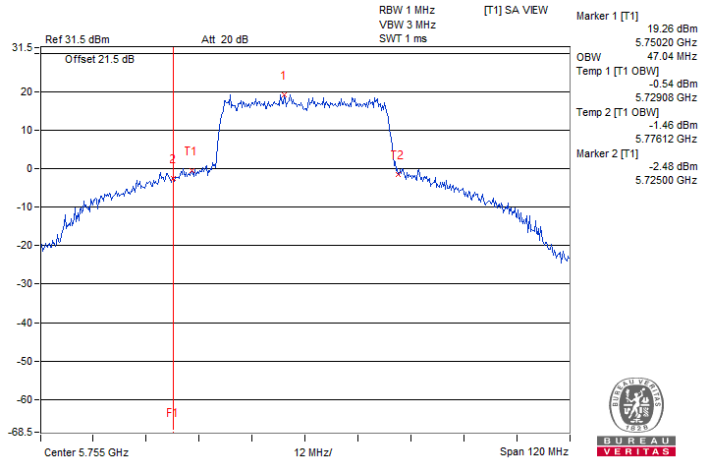
802.11ax (HE40) / Chain 0 : CH 151



802.11ax (HE40) / Chain 1 : CH 151



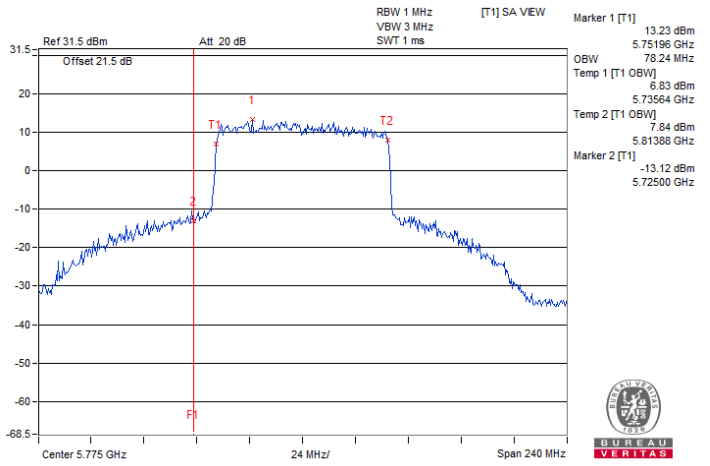
802.11ax (HE40) / Chain 2 : CH 151



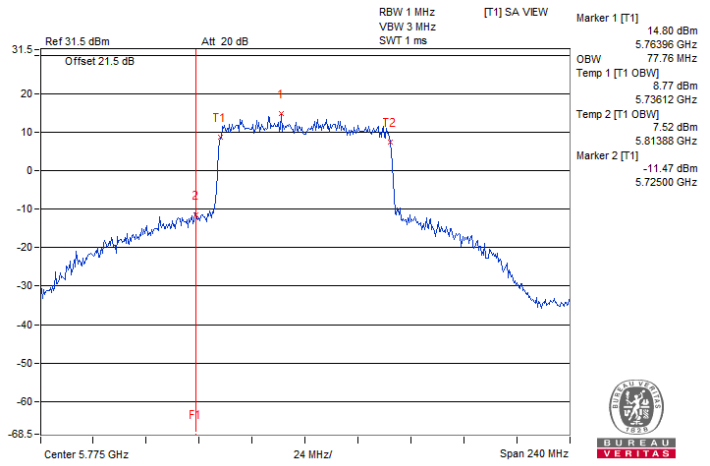
802.11ax (HE40) / Chain 3 : CH 151

Spectrum Plot for nearby DFS band

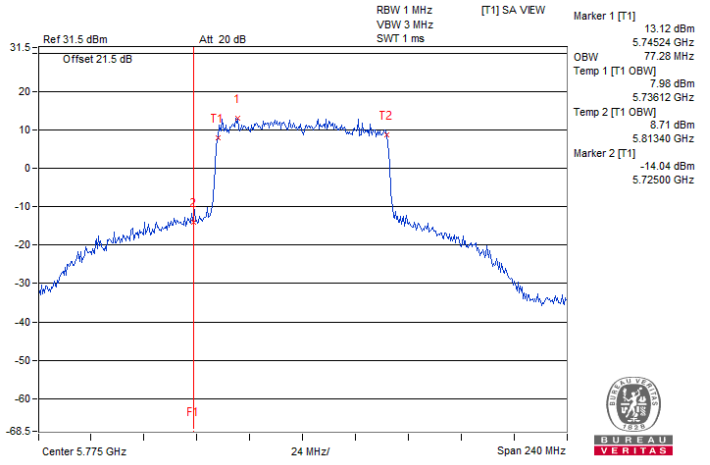
(DFS is required, if 99% OCP straddle into U-NII-2C)



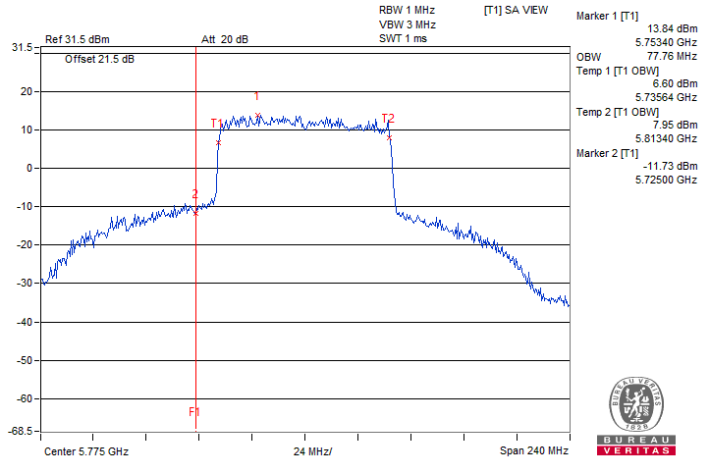
802.11ax (HE80) / Chain 0 : CH 155



802.11ax (HE80) / Chain 1 : CH 155



802.11ax (HE80) / Chain 2 : CH 155



802.11ax (HE80) / Chain 3 : CH 155

7.5 Frequency Stability

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu

802.11a

Frequency Stability Versus Temperature									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
40	120	5179.9886	Pass	5179.9916	Pass	5179.9884	Pass	5179.9875	Pass
30	120	5180.0152	Pass	5180.0163	Pass	5180.0197	Pass	5180.0197	Pass
20	120	5179.9958	Pass	5179.9985	Pass	5179.9955	Pass	5179.9968	Pass
10	120	5179.9955	Pass	5179.9972	Pass	5179.9958	Pass	5179.9963	Pass
0	120	5180.0124	Pass	5180.0121	Pass	5180.0115	Pass	5180.0119	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
20	138	5179.9948	Pass	5179.9918	Pass	5179.9943	Pass	5179.9948	Pass
	120	5179.9958	Pass	5179.9985	Pass	5179.9955	Pass	5179.9968	Pass
	102	5180.0032	Pass	5179.9984	Pass	5179.9998	Pass	5180.002	Pass

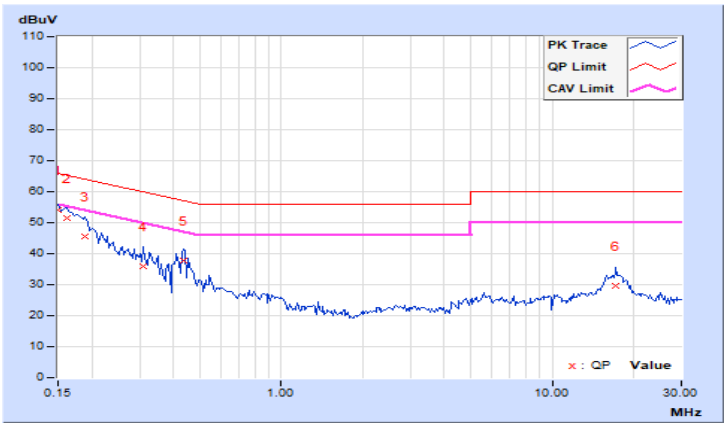
7.6 AC Power Conducted Emissions

RF Mode	802.11ax (HE20)	**Channel**	CH 157：5785 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	24°C, 71% RH
Tested By	Sampson Chen		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	**0.15000**	**9.95**	**44.10**	**29.80**	**54.05**	**39.75**	**66.00**	**56.00**	**-11.95**	**-16.25**
2	0.16172	9.95	41.39	27.17	51.34	37.12	65.38	55.38	-14.04	-18.26
3	0.18906	9.96	35.72	21.95	45.68	31.91	64.08	54.08	-18.40	-22.17
4	0.31016	9.96	26.02	17.11	35.98	27.07	59.97	49.97	-23.99	-22.90
5	0.43516	9.96	27.71	18.58	37.67	28.54	57.15	47.15	-19.48	-18.61
6	17.23828	11.04	18.64	14.51	29.68	25.55	60.00	50.00	-30.32	-24.45

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

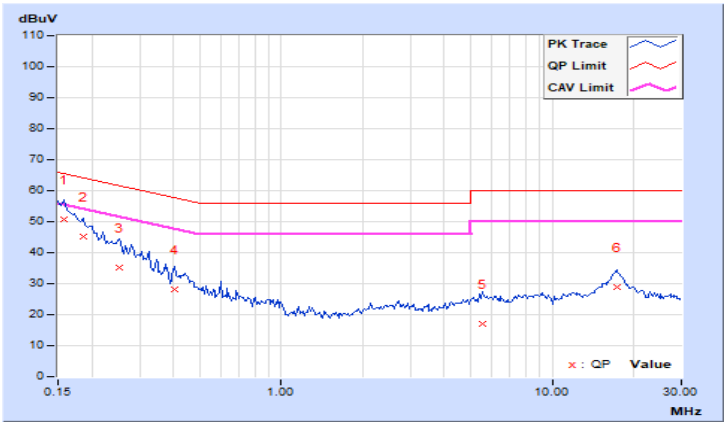


RF Mode	802.11ax (HE20)	**Channel**	CH 157：5785 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	24°C, 71% RH
Tested By	Sampson Chen		

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	0.15781	9.95	40.63	26.70	50.58	36.65	65.58	55.58	-15.00	-18.93
2	0.18516	9.96	35.40	23.23	45.36	33.19	64.25	54.25	-18.89	-21.06
3	0.25156	9.96	25.12	12.85	35.08	22.81	61.71	51.71	-26.63	-28.90
4	0.40391	9.96	18.13	5.16	28.09	15.12	57.77	47.77	-29.68	-32.65
5	5.52734	10.27	6.91	1.69	17.18	11.96	60.00	50.00	-42.82	-38.04
6	17.28516	10.86	18.19	14.08	29.05	24.94	60.00	50.00	-30.95	-25.06

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



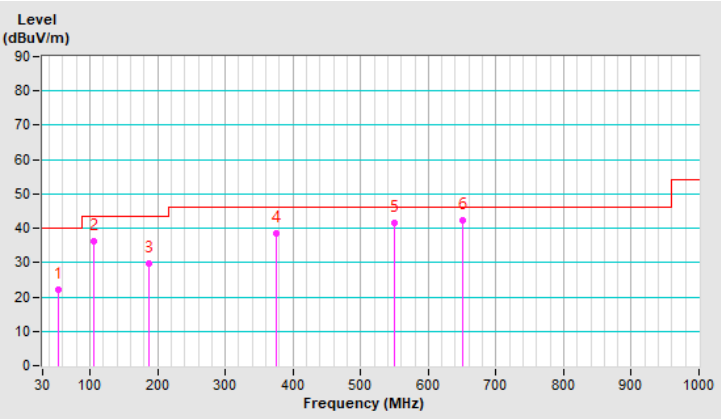
7.7 Unwanted Emissions below 1 GHz

RF Mode	802.11ax (HE20)	**Channel**	CH 157：5785 MHz
Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	24°C, 66% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	53.45	22.1 QP	40.0	-17.9	3.00 H	326	34.5	-12.4
2	105.76	36.3 QP	43.5	-7.2	3.00 H	271	52.6	-16.3
3	186.41	29.8 QP	43.5	-13.7	1.50 H	98	44.6	-14.8
4	375.44	38.5 QP	46.0	-7.5	1.00 H	292	48.8	-10.3
5	550.02	41.7 QP	46.0	-4.3	1.50 H	316	48.4	-6.7
6	**650.02**	**42.3 QP**	**46.0**	**-3.7**	**1.00 H**	**86**	**46.6**	**-4.3**

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

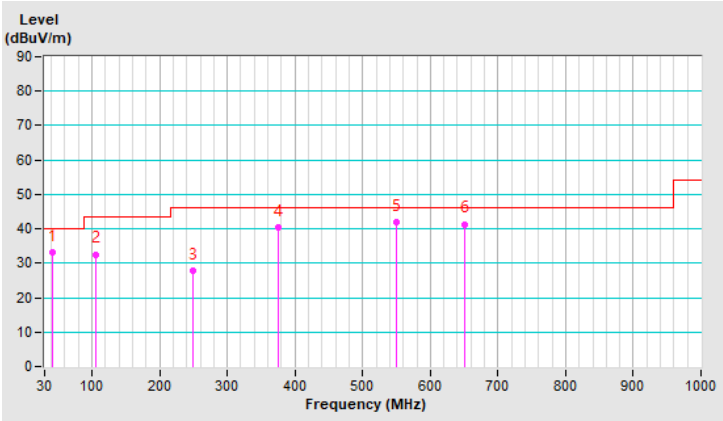


RF Mode	802.11ax (HE20)	Channel	CH 157：5785 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 66% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	40.89	33.1 QP	40.0	-6.9	1.00 V	287	45.8	-12.7
2	105.51	32.6 QP	43.5	-10.9	1.00 V	270	48.9	-16.3
3	250.00	27.9 QP	46.0	-18.1	2.00 V	190	41.9	-14.0
4	375.44	40.5 QP	46.0	-5.5	1.50 V	140	50.8	-10.3
5	550.02	41.9 QP	46.0	-4.1	1.00 V	262	48.6	-6.7
6	650.00	41.4 QP	46.0	-4.6	1.00 V	114	45.7	-4.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



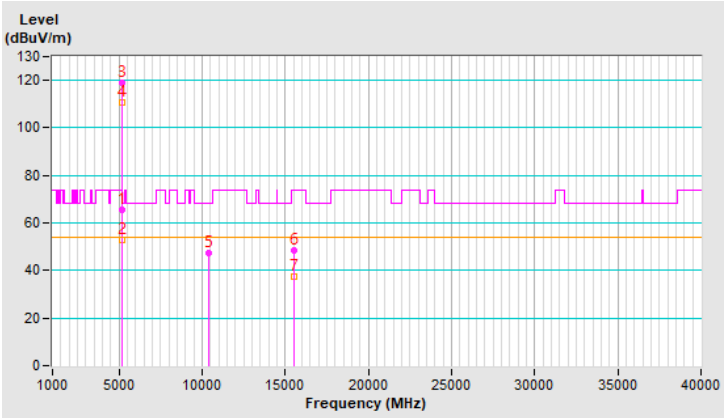
7.8 Unwanted Emissions above 1 GHz

RF Mode	802.11a	**Channel**	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	65.5 PK	74.0	-8.5	1.34 H	17	60.3	5.2
2	5150.00	53.1 AV	54.0	-0.9	1.34 H	17	47.9	5.2
3	*5180.00	118.8 PK			1.34 H	17	113.7	5.1
4	*5180.00	110.9 AV			1.34 H	17	105.8	5.1
5	#10360.00	47.4 PK	68.2	-20.8	1.34 H	17	31.4	16.0
6	15540.00	48.5 PK	74.0	-25.5	1.33 H	16	31.1	17.4
7	15540.00	37.5 AV	54.0	-16.5	1.33 H	16	20.1	17.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

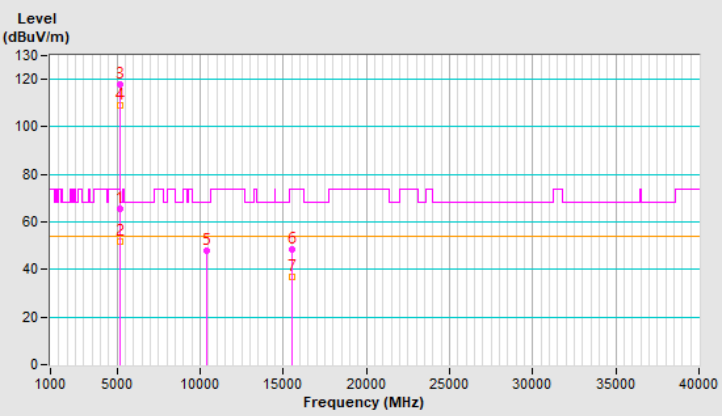


RF Mode	802.11a	Channel	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	65.6 PK	74.0	-8.4	3.42 V	30	60.4	5.2
2	5150.00	51.7 AV	54.0	-2.3	3.42 V	30	46.5	5.2
3	*5180.00	117.7 PK			3.42 V	30	112.6	5.1
4	*5180.00	108.9 AV			3.42 V	30	103.8	5.1
5	#10360.00	48.0 PK	68.2	-20.2	3.45 V	32	32.0	16.0
6	15540.00	48.4 PK	74.0	-25.6	3.46 V	30	31.0	17.4
7	15540.00	37.1 AV	54.0	-16.9	3.46 V	30	19.7	17.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

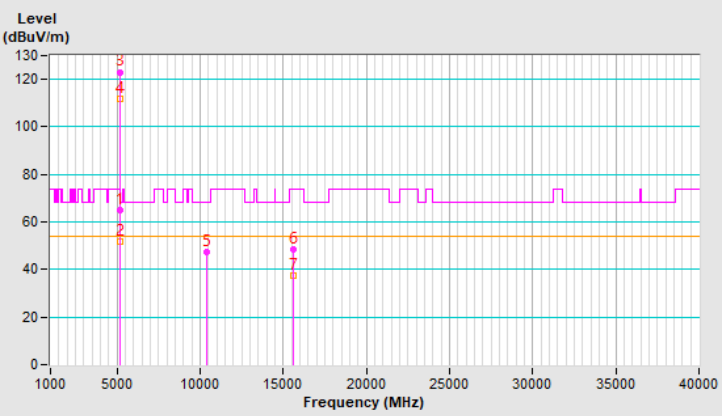


RF Mode	802.11a	Channel	CH 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5151.00	65.1 PK	68.2	-3.1	1.90 H	2	59.9	5.2
2	#5151.00	51.7 AV	54.0	-2.3	1.90 H	2	46.5	5.2
3	*5200.00	123.1 PK			1.90 H	2	118.0	5.1
4	*5200.00	111.8 AV			1.90 H	2	106.7	5.1
5	#10400.00	47.3 PK	68.2	-20.9	2.11 H	4	31.2	16.1
6	15600.00	48.3 PK	74.0	-25.7	1.82 H	5	31.0	17.3
7	15600.00	37.4 AV	54.0	-16.6	1.82 H	5	20.1	17.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

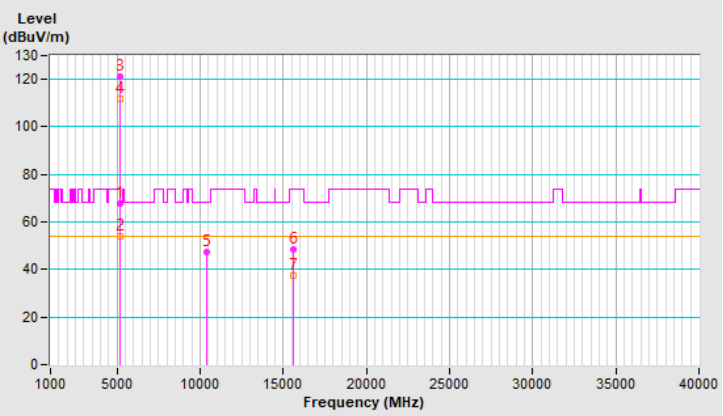


RF Mode	802.11a	Channel	CH 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.6 PK	74.0	-6.4	2.15 V	5	62.4	5.2
2	**5150.00**	**53.8 AV**	**54.0**	**-0.2**	**2.15 V**	**5**	**48.6**	**5.2**
3	*5200.00	121.0 PK			2.15 V	5	115.9	5.1
4	*5200.00	111.6 AV			2.15 V	5	106.5	5.1
5	#10400.00	47.6 PK	68.2	-20.6	2.13 V	15	31.5	16.1
6	15600.00	48.3 PK	74.0	-25.7	2.22 V	25	31.0	17.3
7	15600.00	37.5 AV	54.0	-16.5	2.22 V	25	20.2	17.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

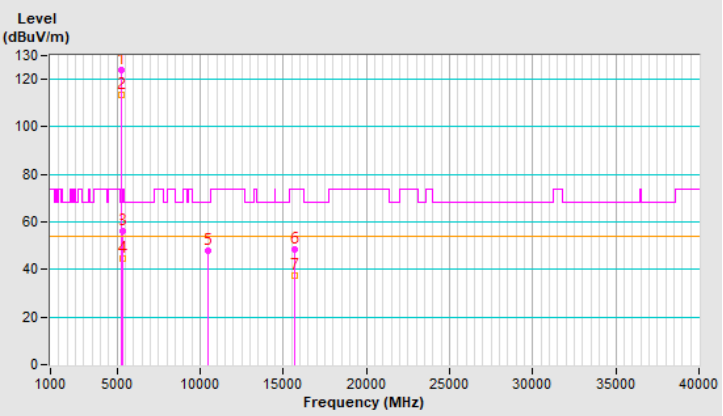


RF Mode	802.11a	Channel	CH 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	124.0 PK			2.00 H	9	119.1	4.9
2	*5240.00	113.6 AV			2.00 H	9	108.7	4.9
3	5350.00	56.2 PK	74.0	-17.8	2.00 H	9	51.2	5.0
4	5350.00	44.8 AV	54.0	-9.2	2.00 H	9	39.8	5.0
5	#10480.00	47.7 PK	68.2	-20.5	1.96 H	16	31.4	16.3
6	15720.00	48.5 PK	74.0	-25.5	2.10 H	15	31.7	16.8
7	15720.00	37.5 AV	54.0	-16.5	2.10 H	15	20.7	16.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

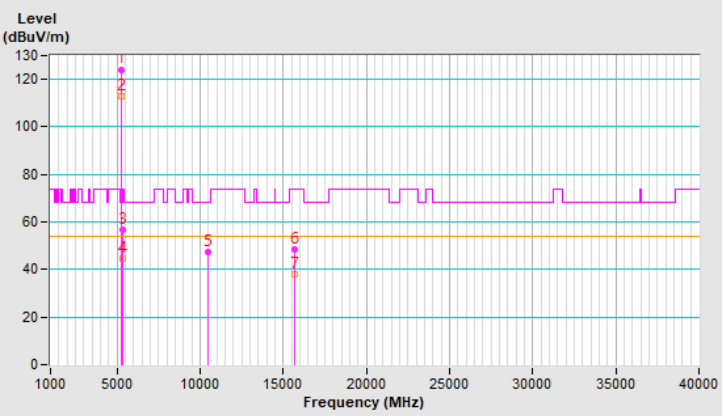


RF Mode	802.11a	Channel	CH 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	124.2 PK			2.11 V	5	119.3	4.9
2	*5240.00	113.1 AV			2.11 V	5	108.2	4.9
3	5350.00	56.7 PK	74.0	-17.3	2.11 V	5	51.7	5.0
4	5350.00	44.7 AV	54.0	-9.3	2.11 V	5	39.7	5.0
5	#10480.00	47.6 PK	68.2	-20.6	2.11 V	6	31.3	16.3
6	15720.00	48.3 PK	74.0	-25.7	1.82 V	5	31.5	16.8
7	15720.00	37.8 AV	54.0	-16.2	1.82 V	5	21.0	16.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

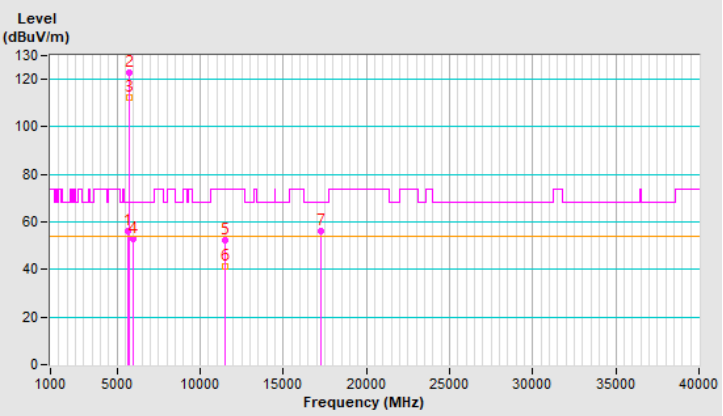


RF Mode	802.11a	Channel	CH 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5633.60	56.2 PK	68.2	-12.0	2.43 H	11	50.5	5.7
2	*5745.00	122.6 PK			2.43 H	11	116.8	5.8
3	*5745.00	112.2 AV			2.43 H	11	106.4	5.8
4	#5980.35	52.8 PK	68.2	-15.4	2.43 H	11	46.3	6.5
5	11490.00	52.4 PK	74.0	-21.6	2.32 H	1	35.1	17.3
6	11490.00	41.3 AV	54.0	-12.7	2.32 H	1	24.0	17.3
7	#17235.00	56.4 PK	68.2	-11.8	3.21 H	312	35.8	20.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

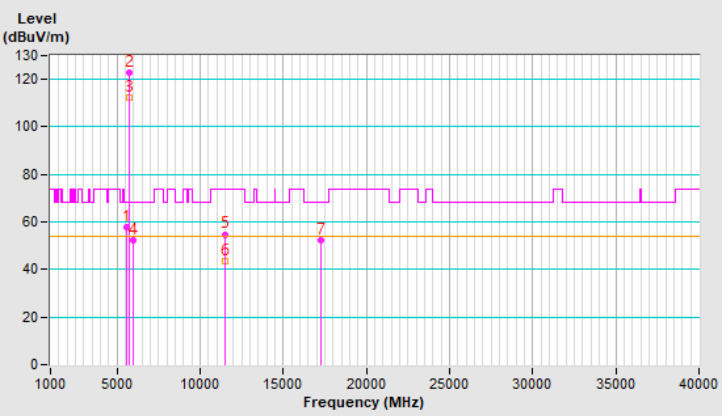


RF Mode	802.11a	Channel	CH 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5599.97	57.8 PK	68.2	-10.4	2.01 V	0	52.2	5.6
2	*5745.00	122.6 PK			2.01 V	0	116.8	5.8
3	*5745.00	112.3 AV			2.01 V	0	106.5	5.8
4	#5971.72	52.4 PK	68.2	-15.8	2.01 V	0	45.9	6.5
5	11490.00	54.8 PK	74.0	-19.2	2.04 V	74	37.5	17.3
6	11490.00	43.5 AV	54.0	-10.5	2.04 V	74	26.2	17.3
7	#17235.00	52.5 PK	68.2	-15.7	2.15 V	130	31.9	20.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

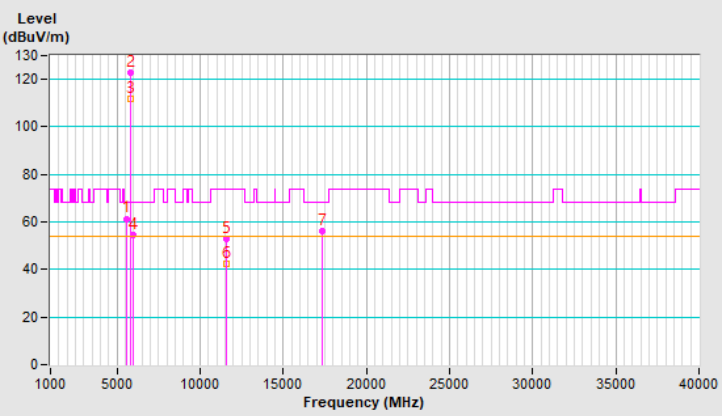


RF Mode	802.11a	Channel	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5568.74	61.4 PK	68.2	-6.8	2.53 H	13	56.0	5.4
2	*5785.00	122.6 PK			2.53 H	13	116.7	5.9
3	*5785.00	111.9 AV			2.53 H	13	106.0	5.9
4	#5957.94	54.3 PK	68.2	-13.9	2.53 H	13	47.8	6.5
5	11570.00	52.8 PK	74.0	-21.2	2.33 H	3	35.7	17.1
6	11570.00	42.4 AV	54.0	-11.6	2.33 H	3	25.3	17.1
7	#17355.00	56.4 PK	68.2	-11.8	3.15 H	328	35.3	21.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

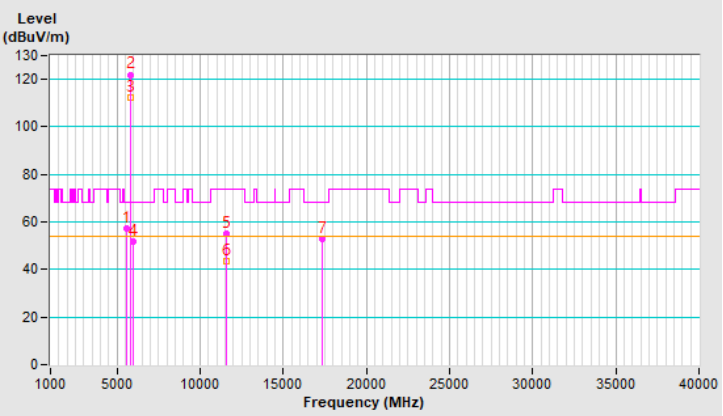


RF Mode	802.11a	Channel	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5585.83	57.4 PK	68.2	-10.8	2.01 V	0	51.8	5.6
2	*5785.00	122.0 PK			2.01 V	0	116.1	5.9
3	*5785.00	112.5 AV			2.01 V	0	106.6	5.9
4	#5992.87	51.6 PK	68.2	-16.6	2.01 V	0	45.1	6.5
5	11570.00	54.9 PK	74.0	-19.1	2.08 V	82	37.8	17.1
6	11570.00	43.5 AV	54.0	-10.5	2.08 V	82	26.4	17.1
7	#17355.00	53.1 PK	68.2	-15.1	2.16 V	128	32.0	21.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

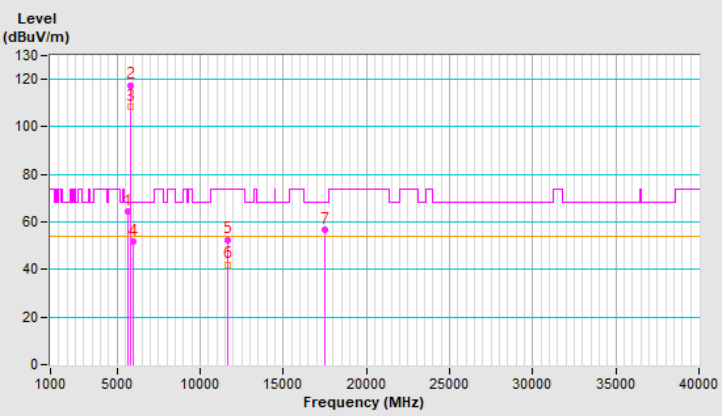


RF Mode	802.11a	Channel	CH 165：5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5633.01	64.3 PK	68.2	-3.9	2.41 H	14	58.5	5.8
2	*5825.00	117.6 PK			2.41 H	14	111.6	6.0
3	*5825.00	108.3 AV			2.41 H	14	102.3	6.0
4	#5935.97	51.9 PK	68.2	-16.3	2.41 H	14	45.5	6.4
5	11650.00	52.6 PK	74.0	-21.4	2.32 H	1	35.9	16.7
6	11650.00	42.1 AV	54.0	-11.9	2.32 H	1	25.4	16.7
7	#17475.00	56.8 PK	68.2	-11.4	3.21 H	312	34.3	22.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

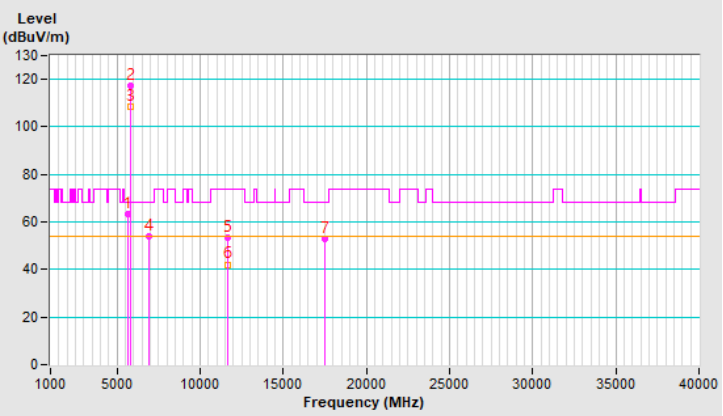


RF Mode	802.11a	Channel	CH 165：5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5628.93	63.2 PK	68.2	-5.0	2.35 V	0	57.5	5.7
2	*5825.00	117.1 PK			2.35 V	0	111.1	6.0
3	*5825.00	108.3 AV			2.35 V	0	102.3	6.0
4	#6942.79	53.8 PK	68.2	-14.4	2.35 V	0	44.7	9.1
5	11650.00	53.6 PK	74.0	-20.4	2.12 V	87	36.9	16.7
6	11650.00	42.1 AV	54.0	-11.9	2.12 V	87	25.4	16.7
7	#17475.00	53.1 PK	68.2	-15.1	2.16 V	135	30.6	22.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

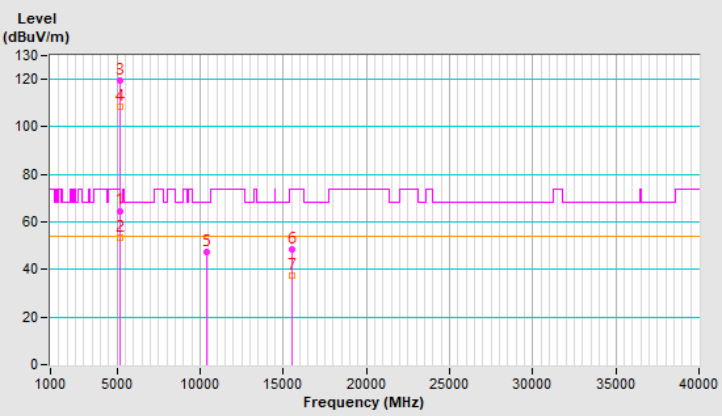


RF Mode	802.11ax (HE20)	Channel	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.7 PK	74.0	-9.3	3.11 H	320	59.5	5.2
2	5150.00	53.4 AV	54.0	-0.6	3.11 H	320	48.2	5.2
3	*5180.00	119.5 PK			3.11 H	320	114.4	5.1
4	*5180.00	108.5 AV			3.11 H	320	103.4	5.1
5	#10360.00	47.3 PK	68.2	-20.9	3.12 H	322	31.3	16.0
6	15540.00	48.3 PK	74.0	-25.7	3.18 H	321	30.9	17.4
7	15540.00	37.5 AV	54.0	-16.5	3.18 H	321	20.1	17.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

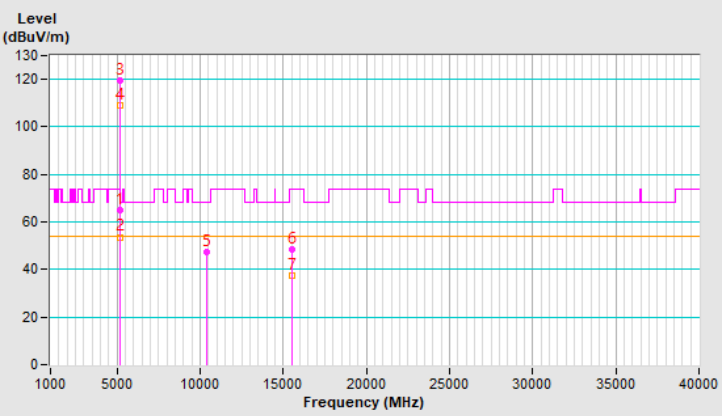


RF Mode	802.11ax (HE20)	Channel	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.8 PK	74.0	-9.2	2.18 V	5	59.6	5.2
2	5150.00	53.7 AV	54.0	-0.3	2.18 V	5	48.5	5.2
3	*5180.00	119.7 PK			2.18 V	5	114.6	5.1
4	*5180.00	109.0 AV			2.18 V	5	103.9	5.1
5	#10360.00	47.5 PK	68.2	-20.7	2.15 V	6	31.5	16.0
6	15540.00	48.6 PK	74.0	-25.4	2.00 V	10	31.2	17.4
7	15540.00	37.4 AV	54.0	-16.6	2.00 V	10	20.0	17.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

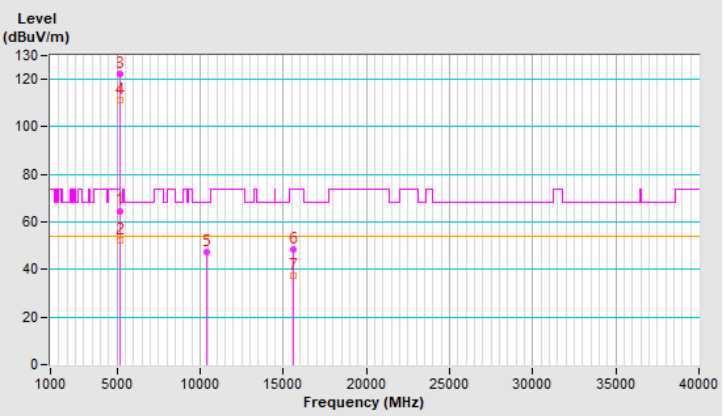


RF Mode	802.11ax (HE20)	Channel	CH 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.7 PK	74.0	-9.3	1.90 H	2	59.5	5.2
2	5150.00	52.1 AV	54.0	-1.9	1.90 H	2	46.9	5.2
3	*5200.00	122.2 PK			1.90 H	2	117.1	5.1
4	*5200.00	111.5 AV			1.90 H	2	106.4	5.1
5	#10400.00	47.5 PK	68.2	-20.7	2.11 H	5	31.4	16.1
6	15600.00	48.3 PK	74.0	-25.7	2.01 H	5	31.0	17.3
7	15600.00	37.4 AV	54.0	-16.6	2.01 H	5	20.1	17.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

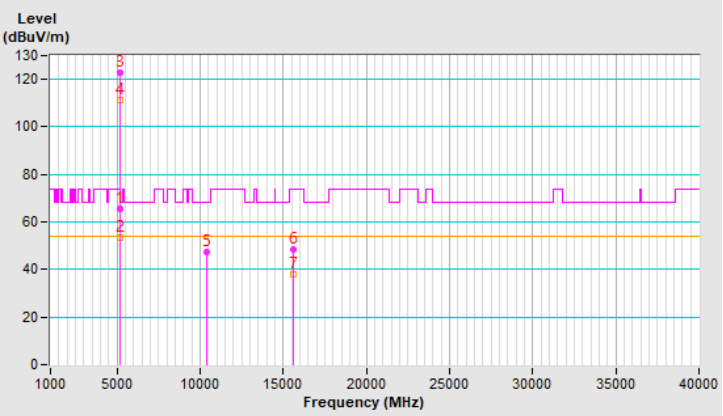


RF Mode	802.11ax (HE20)	Channel	CH 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	65.3 PK	74.0	-8.7	2.18 V	5	60.1	5.2
2	5150.00	53.6 AV	54.0	-0.4	2.18 V	5	48.4	5.2
3	*5200.00	122.7 PK			2.18 V	5	117.6	5.1
4	*5200.00	111.5 AV			2.18 V	5	106.4	5.1
5	#10400.00	47.6 PK	68.2	-20.6	2.16 V	6	31.5	16.1
6	15600.00	48.2 PK	74.0	-25.8	2.10 V	8	30.9	17.3
7	15600.00	37.8 AV	54.0	-16.2	2.10 V	8	20.5	17.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

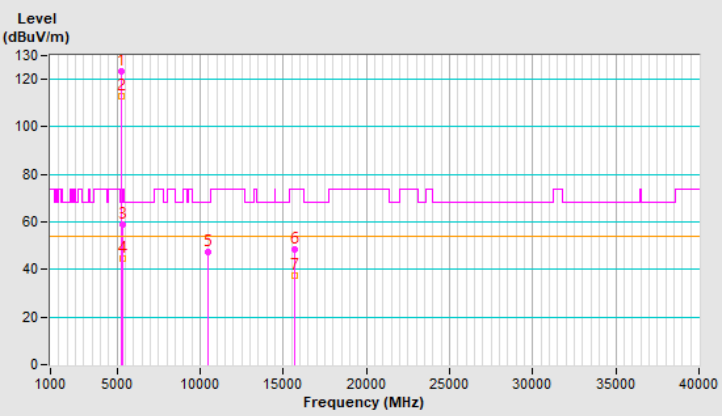


RF Mode	802.11ax (HE20)	Channel	CH 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	123.2 PK			2.09 H	6	118.3	4.9
2	*5240.00	112.9 AV			2.09 H	6	108.0	4.9
3	5350.00	58.8 PK	74.0	-15.2	2.09 H	6	53.8	5.0
4	5350.00	44.7 AV	54.0	-9.3	2.09 H	6	39.7	5.0
5	#10480.00	47.6 PK	68.2	-20.6	2.01 H	5	31.3	16.3
6	15720.00	48.4 PK	74.0	-25.6	2.01 H	4	31.6	16.8
7	15720.00	37.2 AV	54.0	-16.8	2.01 H	4	20.4	16.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

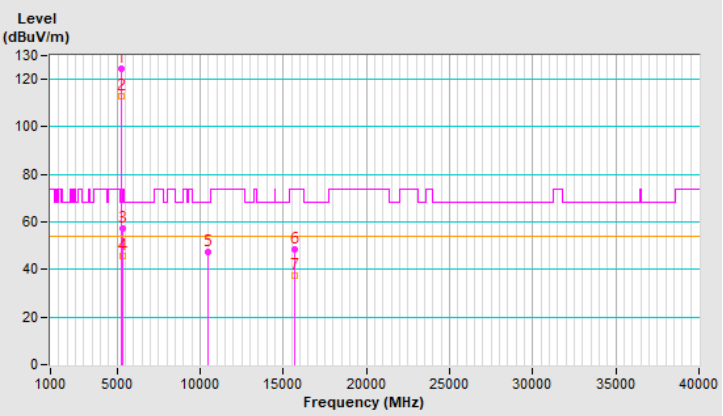


RF Mode	802.11ax (HE20)	Channel	CH 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	124.4 PK			2.11 V	6	119.5	4.9
2	*5240.00	113.1 AV			2.11 V	6	108.2	4.9
3	5350.00	57.4 PK	74.0	-16.6	2.11 V	6	52.4	5.0
4	5350.00	45.7 AV	54.0	-8.3	2.11 V	6	40.7	5.0
5	#10480.00	47.5 PK	68.2	-20.7	2.15 V	6	31.2	16.3
6	15720.00	48.6 PK	74.0	-25.4	2.12 V	5	31.8	16.8
7	15720.00	37.5 AV	54.0	-16.5	2.12 V	5	20.7	16.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

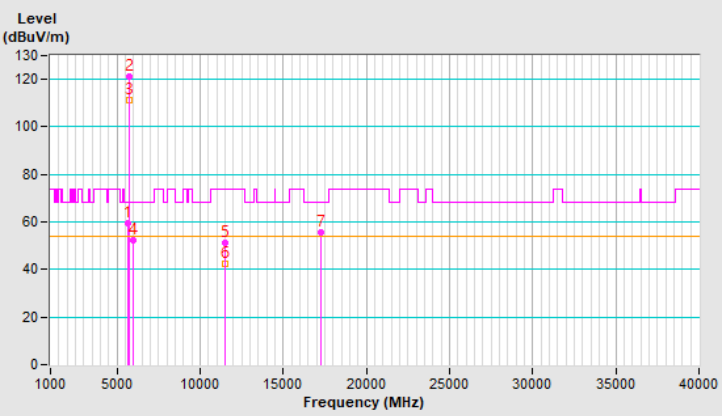


RF Mode	802.11ax (HE20)	Channel	CH 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5622.57	59.5 PK	68.2	-8.7	2.43 H	6	53.8	5.7
2	*5745.00	121.3 PK			2.43 H	6	115.5	5.8
3	*5745.00	111.3 AV			2.43 H	6	105.5	5.8
4	#5969.64	52.5 PK	68.2	-15.7	2.43 H	6	46.0	6.5
5	11490.00	51.3 PK	74.0	-22.7	2.22 H	2	34.0	17.3
6	11490.00	42.3 AV	54.0	-11.7	2.22 H	2	25.0	17.3
7	#17235.00	55.6 PK	68.2	-12.6	3.10 H	328	35.0	20.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

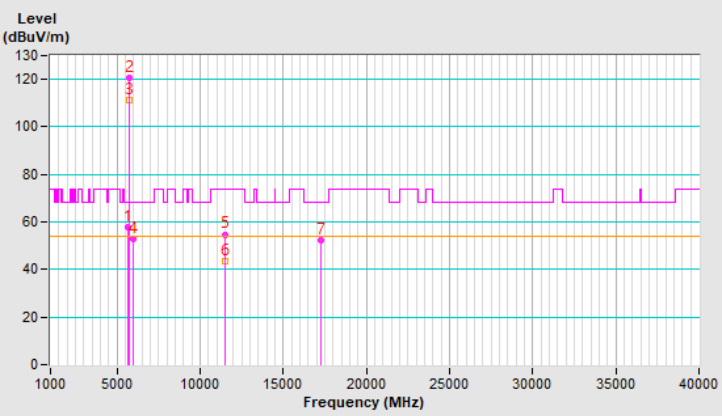


RF Mode	802.11ax (HE20)	Channel	CH 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5623.39	57.7 PK	68.2	-10.5	2.01 V	0	52.0	5.7
2	*5745.00	120.8 PK			2.01 V	0	115.0	5.8
3	*5745.00	111.0 AV			2.01 V	0	105.2	5.8
4	#5936.16	52.7 PK	68.2	-15.5	2.01 V	0	46.3	6.4
5	11490.00	54.8 PK	74.0	-19.2	2.04 V	74	37.5	17.3
6	11490.00	43.5 AV	54.0	-10.5	2.04 V	74	26.2	17.3
7	#17235.00	52.5 PK	68.2	-15.7	2.15 V	130	31.9	20.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

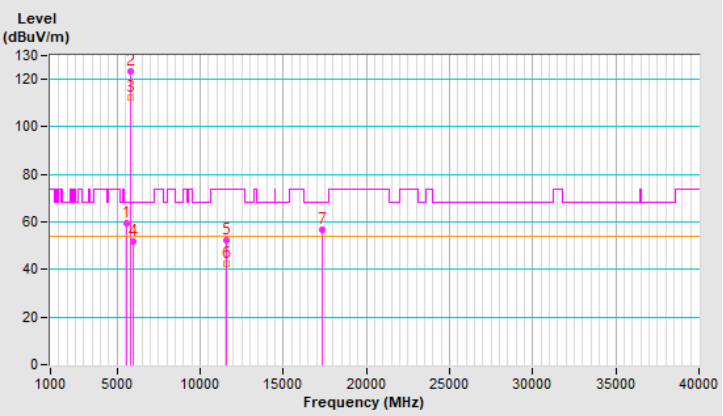


RF Mode	802.11ax (HE20)	Channel	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5593.30	59.5 PK	68.2	-8.7	2.55 H	6	53.9	5.6
2	*5785.00	123.5 PK			2.55 H	6	117.6	5.9
3	*5785.00	112.1 AV			2.55 H	6	106.2	5.9
4	#5939.88	51.7 PK	68.2	-16.5	2.55 H	6	45.3	6.4
5	11570.00	52.3 PK	74.0	-21.7	2.33 H	3	35.2	17.1
6	11570.00	42.4 AV	54.0	-11.6	2.33 H	3	25.3	17.1
7	#17355.00	56.9 PK	68.2	-11.3	3.15 H	328	35.8	21.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

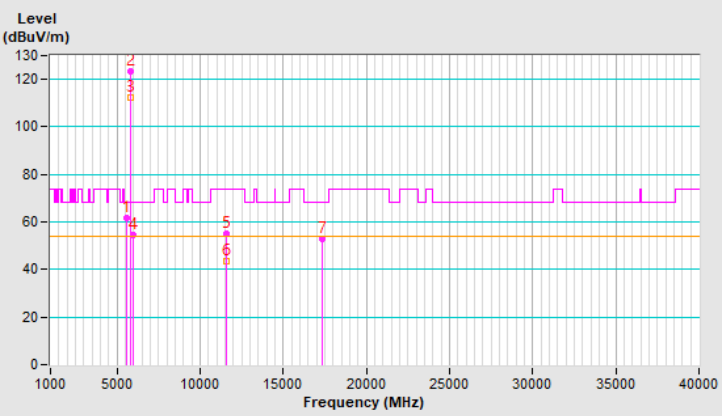


RF Mode	802.11ax (HE20)	Channel	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5581.68	61.9 PK	68.2	-6.3	2.01 V	6	56.3	5.6
2	*5785.00	123.2 PK			2.01 V	6	117.3	5.9
3	*5785.00	112.5 AV			2.01 V	6	106.6	5.9
4	#5946.77	54.4 PK	68.2	-13.8	2.01 V	6	47.9	6.5
5	11570.00	54.9 PK	74.0	-19.1	2.08 V	82	37.8	17.1
6	11570.00	43.5 AV	54.0	-10.5	2.08 V	82	26.4	17.1
7	#17355.00	53.1 PK	68.2	-15.1	2.16 V	128	32.0	21.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

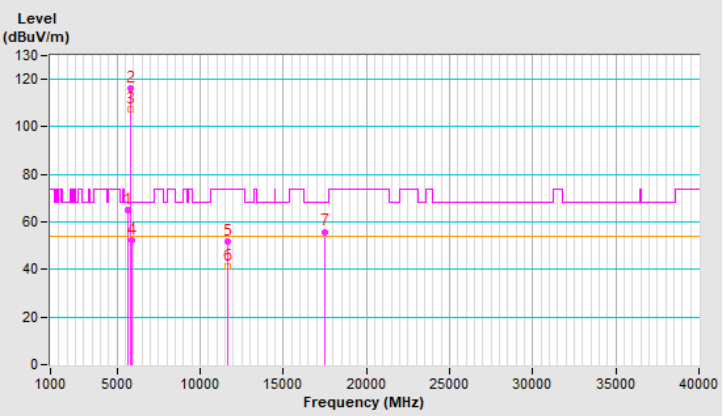


RF Mode	802.11ax (HE20)	Channel	CH 165：5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5630.42	65.2 PK	68.2	-3.0	2.55 H	2	59.5	5.7
2	*5825.00	116.2 PK			2.55 H	2	110.2	6.0
3	*5825.00	107.2 AV			2.55 H	2	101.2	6.0
4	#5930.17	52.4 PK	68.2	-15.8	2.55 H	2	46.0	6.4
5	11650.00	51.6 PK	74.0	-22.4	2.22 H	2	34.9	16.7
6	11650.00	41.2 AV	54.0	-12.8	2.22 H	2	24.5	16.7
7	#17475.00	55.9 PK	68.2	-12.3	3.10 H	328	33.4	22.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

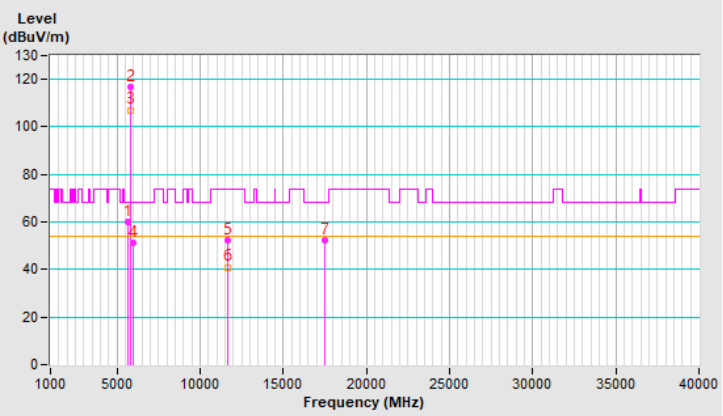


RF Mode	802.11ax (HE20)	Channel	CH 165：5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5627.61	60.1 PK	68.2	-8.1	2.05 V	1	54.4	5.7
2	*5825.00	116.7 PK			2.05 V	1	110.7	6.0
3	*5825.00	107.1 AV			2.05 V	1	101.1	6.0
4	#5976.80	51.4 PK	68.2	-16.8	2.05 V	1	44.9	6.5
5	11650.00	52.1 PK	74.0	-21.9	2.12 V	87	35.4	16.7
6	11650.00	41.0 AV	54.0	-13.0	2.12 V	87	24.3	16.7
7	#17475.00	52.3 PK	68.2	-15.9	2.16 V	135	29.8	22.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

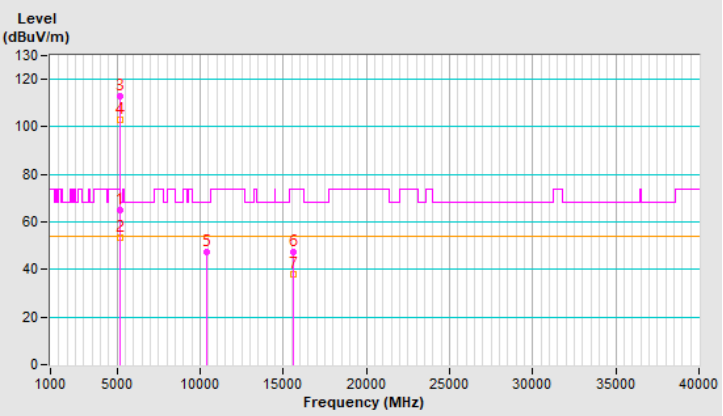


RF Mode	802.11ax (HE40)	Channel	CH 38：5190 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.8 PK	74.0	-9.2	1.94 H	2	59.6	5.2
2	5150.00	53.6 AV	54.0	-0.4	1.94 H	2	48.4	5.2
3	*5190.00	112.7 PK			1.94 H	2	107.6	5.1
4	*5190.00	103.0 AV			1.94 H	2	97.9	5.1
5	#10380.00	47.6 PK	68.2	-20.6	2.10 H	4	31.6	16.0
6	15570.00	47.1 PK	74.0	-26.9	2.16 H	6	29.7	17.4
7	15570.00	37.8 AV	54.0	-16.2	2.16 H	6	20.4	17.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

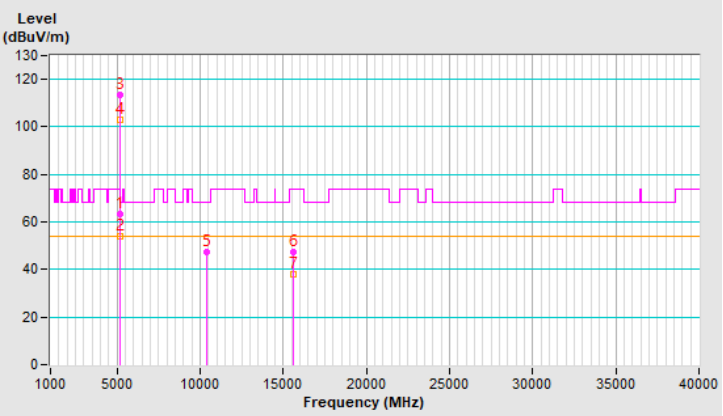


RF Mode	802.11ax (HE40)	Channel	CH 38：5190 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.4 PK	74.0	-10.6	2.14 V	9	58.2	5.2
2	**5150.00**	**53.8 AV**	**54.0**	**-0.2**	**2.14 V**	**9**	**48.6**	**5.2**
3	*5190.00	113.4 PK			2.14 V	9	108.3	5.1
4	*5190.00	102.9 AV			2.14 V	9	97.8	5.1
5	#10380.00	47.3 PK	68.2	-20.9	2.02 V	8	31.3	16.0
6	15570.00	47.5 PK	74.0	-26.5	2.10 V	8	30.1	17.4
7	15570.00	37.8 AV	54.0	-16.2	2.10 V	8	20.4	17.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

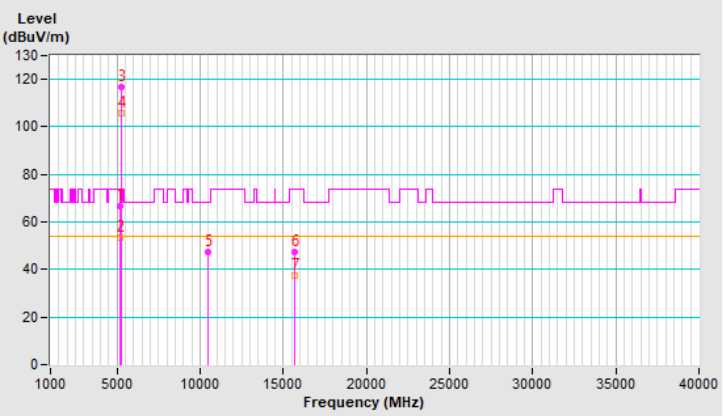


RF Mode	802.11ax (HE40)	Channel	CH 46：5230 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.6 PK	74.0	-7.4	1.98 H	4	61.4	5.2
2	5150.00	53.6 AV	54.0	-0.4	1.98 H	4	48.4	5.2
3	*5230.00	116.9 PK			1.98 H	4	112.0	4.9
4	*5230.00	105.6 AV			1.98 H	4	100.7	4.9
5	#10460.00	47.5 PK	68.2	-20.7	2.12 H	5	31.3	16.2
6	15690.00	47.3 PK	74.0	-26.7	2.10 H	4	30.5	16.8
7	15690.00	37.4 AV	54.0	-16.6	2.10 H	4	20.6	16.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

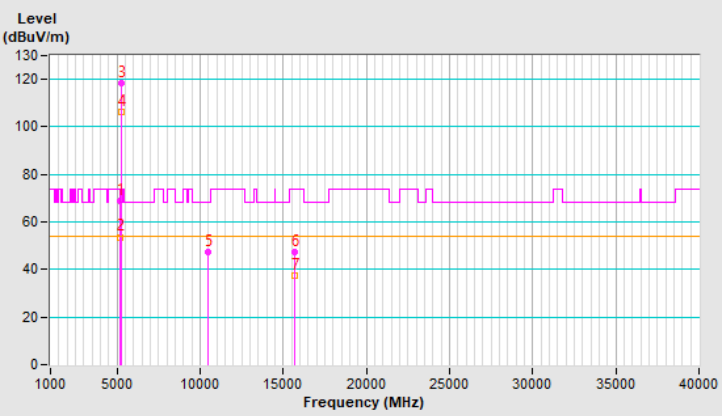


RF Mode	802.11ax (HE40)	Channel	CH 46：5230 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	68.7 PK	74.0	-5.3	2.10 V	0	63.5	5.2
2	5150.00	53.7 AV	54.0	-0.3	2.10 V	0	48.5	5.2
3	*5230.00	118.5 PK			2.10 V	0	113.6	4.9
4	*5230.00	106.2 AV			2.10 V	0	101.3	4.9
5	#10460.00	47.6 PK	68.2	-20.6	2.21 V	1	31.4	16.2
6	15690.00	47.4 PK	74.0	-26.6	2.15 V	5	30.6	16.8
7	15690.00	37.5 AV	54.0	-16.5	2.15 V	5	20.7	16.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

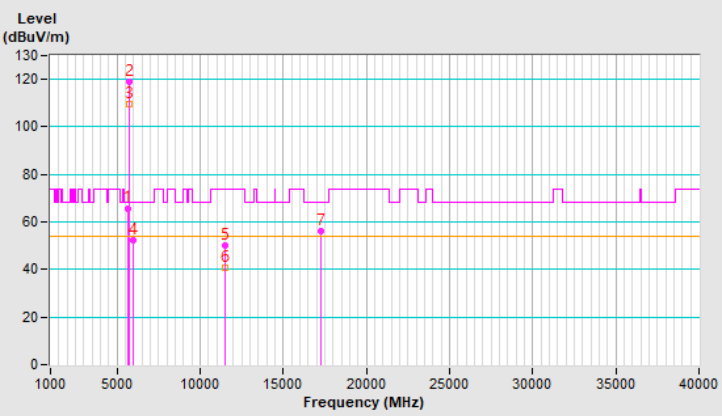


RF Mode	802.11ax (HE40)	Channel	CH 151：5755 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5647.80	65.8 PK	68.2	-2.4	2.54 H	2	60.1	5.7
2	*5755.00	119.2 PK			2.54 H	2	113.3	5.9
3	*5755.00	109.4 AV			2.54 H	2	103.5	5.9
4	#5946.36	52.5 PK	68.2	-15.7	2.54 H	2	46.0	6.5
5	11510.00	50.1 PK	74.0	-23.9	2.31 H	0	32.8	17.3
6	11510.00	40.5 AV	54.0	-13.5	2.31 H	0	23.2	17.3
7	#17265.00	56.3 PK	68.2	-11.9	3.22 H	305	35.6	20.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

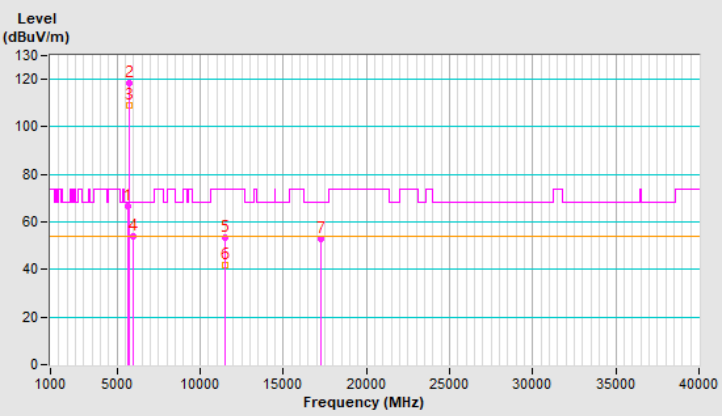


RF Mode	802.11ax (HE40)	Channel	CH 151：5755 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.49	66.6 PK	68.2	-1.6	2.01 V	1	60.9	5.7
2	*5755.00	118.6 PK			2.01 V	1	112.7	5.9
3	*5755.00	108.9 AV			2.01 V	1	103.0	5.9
4	#5955.79	54.0 PK	68.2	-14.2	2.01 V	1	47.5	6.5
5	11510.00	53.4 PK	74.0	-20.6	2.06 V	74	36.1	17.3
6	11510.00	41.8 AV	54.0	-12.2	2.06 V	74	24.5	17.3
7	#17265.00	52.7 PK	68.2	-15.5	2.14 V	130	32.0	20.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

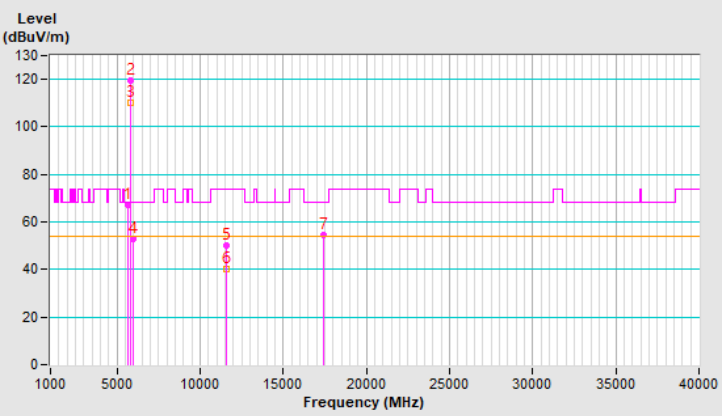


RF Mode	802.11ax (HE40)	Channel	CH 159：5795 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.16	67.0 PK	68.2	-1.2	2.55 H	3	61.3	5.7
2	*5795.00	119.6 PK			2.55 H	3	113.7	5.9
3	*5795.00	110.2 AV			2.55 H	3	104.3	5.9
4	#5942.26	52.8 PK	68.2	-15.4	2.55 H	3	46.3	6.5
5	11590.00	50.3 PK	74.0	-23.7	2.31 H	2	33.3	17.0
6	11590.00	40.3 AV	54.0	-13.7	2.31 H	2	23.3	17.0
7	#17385.00	54.6 PK	68.2	-13.6	3.22 H	314	33.5	21.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

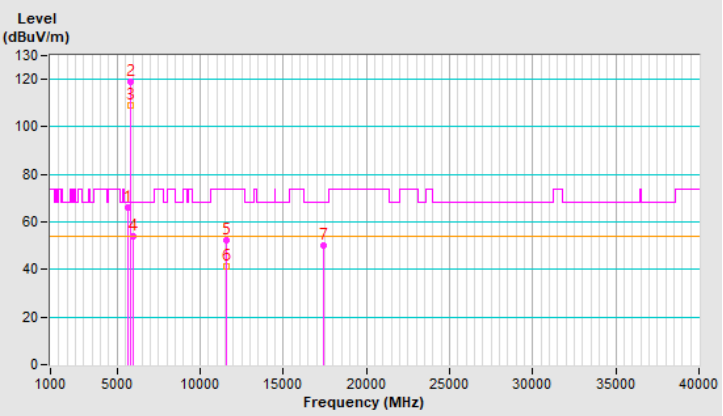


RF Mode	802.11ax (HE40)	Channel	CH 159：5795 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5647.97	65.9 PK	68.2	-2.3	2.07 V	3	60.2	5.7
2	*5795.00	118.8 PK			2.07 V	3	112.9	5.9
3	*5795.00	109.3 AV			2.07 V	3	103.4	5.9
4	#6005.23	53.9 PK	68.2	-14.3	2.07 V	3	47.5	6.4
5	11590.00	52.1 PK	74.0	-21.9	2.10 V	75	35.1	17.0
6	11590.00	41.2 AV	54.0	-12.8	2.10 V	75	24.2	17.0
7	#17385.00	50.3 PK	68.2	-17.9	2.11 V	132	29.2	21.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

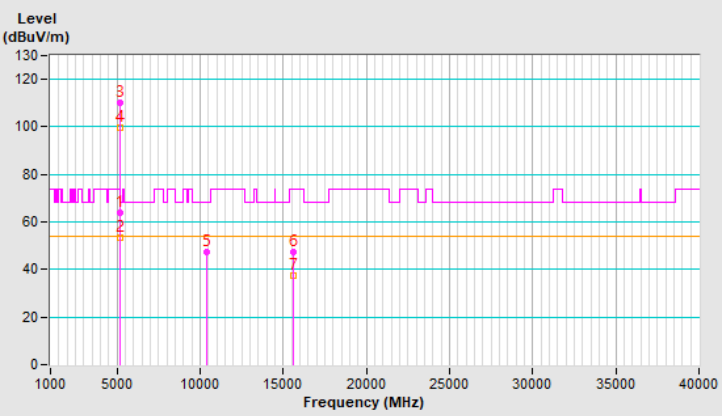


RF Mode	802.11ax (HE80)	Channel	CH 42：5210 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.9 PK	74.0	-10.1	2.16 H	10	58.7	5.2
2	5150.00	53.5 AV	54.0	-0.5	2.16 H	10	48.3	5.2
3	*5210.00	110.4 PK			2.16 H	10	105.4	5.0
4	*5210.00	99.7 AV			2.16 H	10	94.7	5.0
5	#10420.00	47.6 PK	68.2	-20.6	2.10 H	13	31.5	16.1
6	15630.00	47.4 PK	74.0	-26.6	2.11 H	4	30.3	17.1
7	15630.00	37.4 AV	54.0	-16.6	2.11 H	4	20.3	17.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

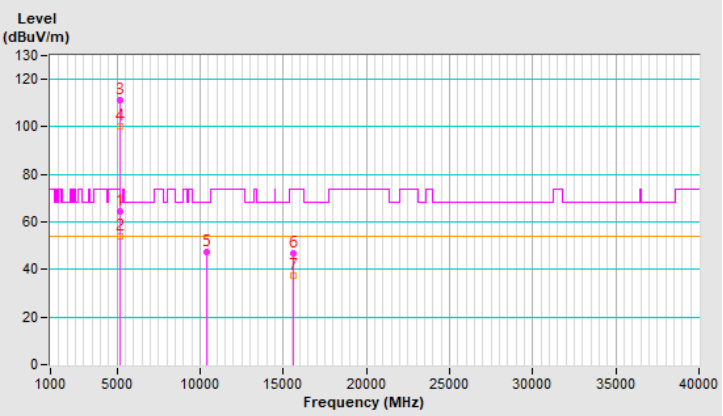


RF Mode	802.11ax (HE80)	Channel	CH 42：5210 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.3 PK	74.0	-9.7	2.12 V	11	59.1	5.2
2	**5150.00**	**53.8 AV**	**54.0**	**-0.2**	**2.12 V**	**11**	**48.6**	**5.2**
3	*5210.00	111.0 PK			2.12 V	11	106.0	5.0
4	*5210.00	100.1 AV			2.12 V	11	95.1	5.0
5	#10420.00	47.5 PK	68.2	-20.7	2.10 V	15	31.4	16.1
6	15630.00	47.0 PK	74.0	-27.0	2.00 V	5	29.9	17.1
7	15630.00	37.5 AV	54.0	-16.5	2.00 V	5	20.4	17.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

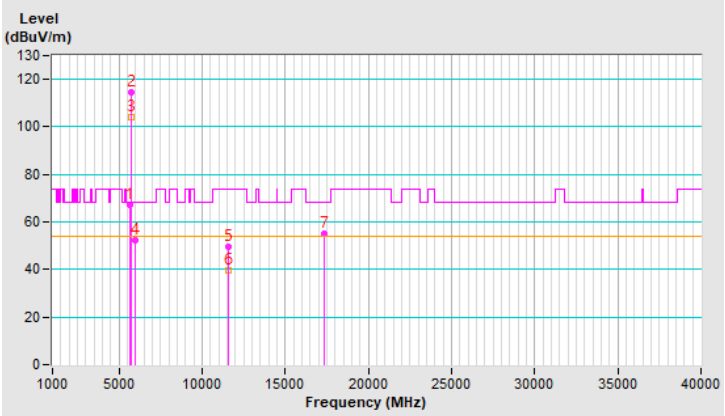


RF Mode	802.11ax (HE80)	Channel	CH 155：5775 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.06	67.0 PK	68.2	-1.2	2.55 H	3	61.3	5.7
2	*5775.00	114.6 PK			2.55 H	3	108.7	5.9
3	*5775.00	104.2 AV			2.55 H	3	98.3	5.9
4	#5993.02	52.5 PK	68.2	-15.7	2.55 H	3	46.0	6.5
5	11550.00	49.4 PK	74.0	-24.6	2.22 H	1	32.2	17.2
6	11550.00	39.5 AV	54.0	-14.5	2.22 H	1	22.3	17.2
7	#17325.00	55.3 PK	68.2	-12.9	3.10 H	215	34.1	21.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

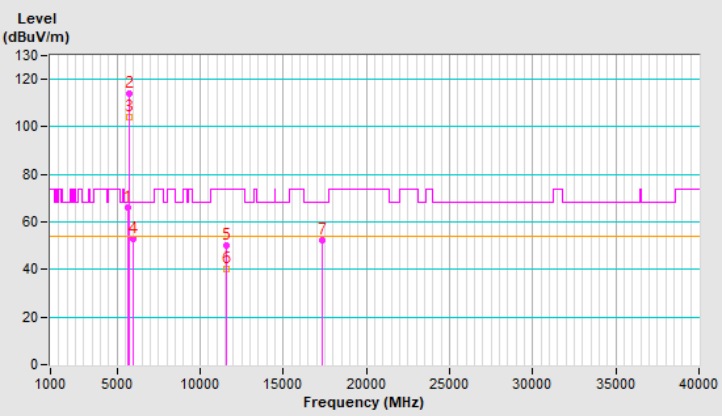


RF Mode	802.11ax (HE80)	Channel	CH 155：5775 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Randy Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5635.68	65.9 PK	68.2	-2.3	2.10 V	22	60.2	5.7
2	*5775.00	114.2 PK			2.10 V	22	108.3	5.9
3	*5775.00	104.1 AV			2.10 V	22	98.2	5.9
4	#5964.20	53.1 PK	68.2	-15.1	2.10 V	22	46.6	6.5
5	11550.00	50.1 PK	74.0	-23.9	2.11 V	45	32.9	17.2
6	11550.00	40.3 AV	54.0	-13.7	2.11 V	45	23.1	17.2
7	#17325.00	52.3 PK	68.2	-15.9	2.01 V	122	31.1	21.2

Remarks:

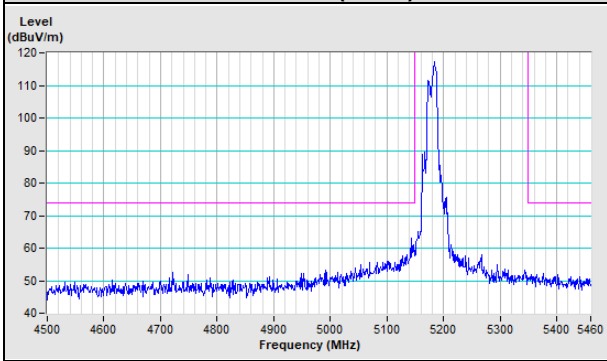
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.



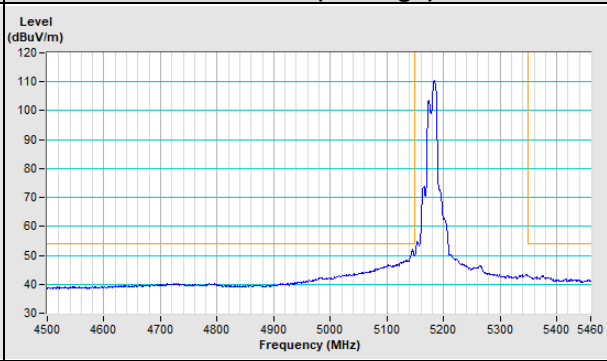
Plot of Band Edge

802.11a Channel 36

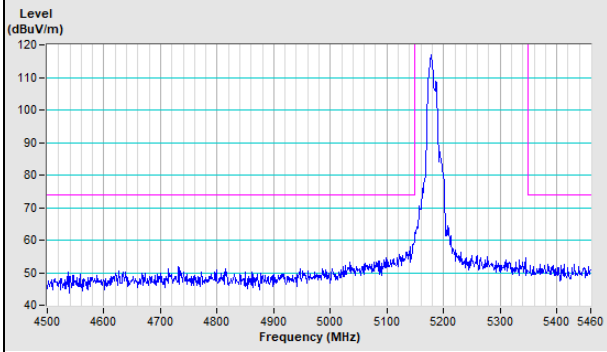
Horizontal (Peak)



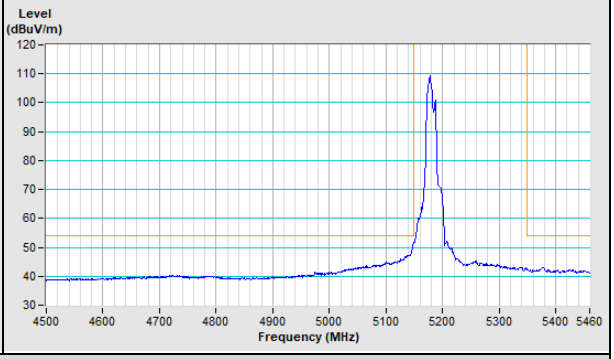
Horizontal (Average)



Vertical (Peak)

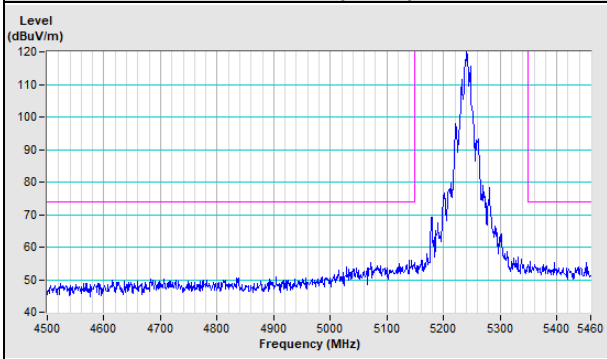


Vertical (Average)

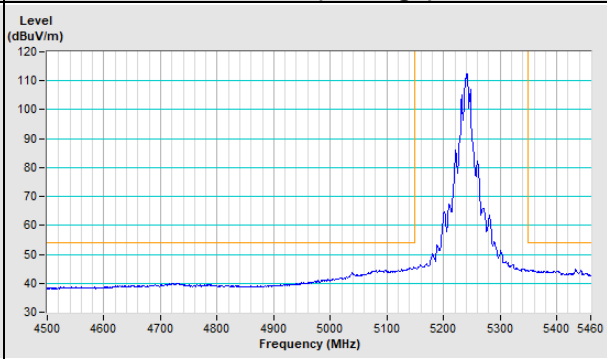


802.11a Channel 48

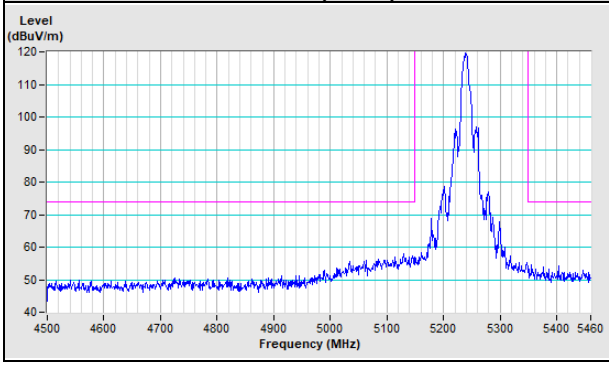
Horizontal (Peak)



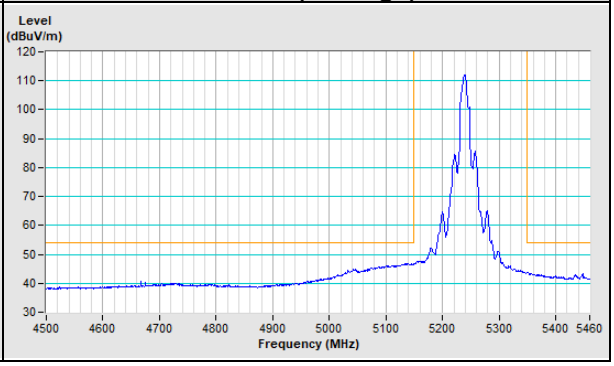
Horizontal (Average)



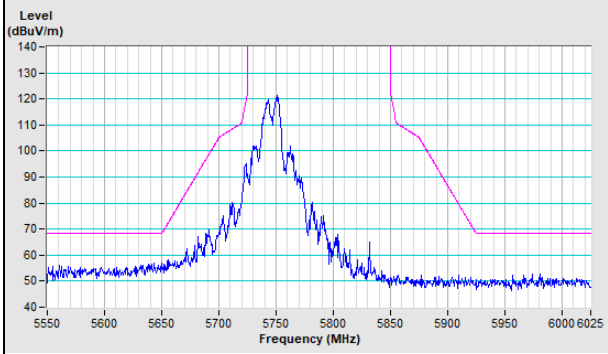
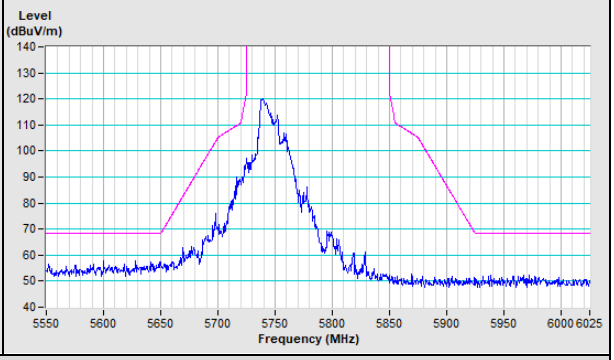
Vertical (Peak)



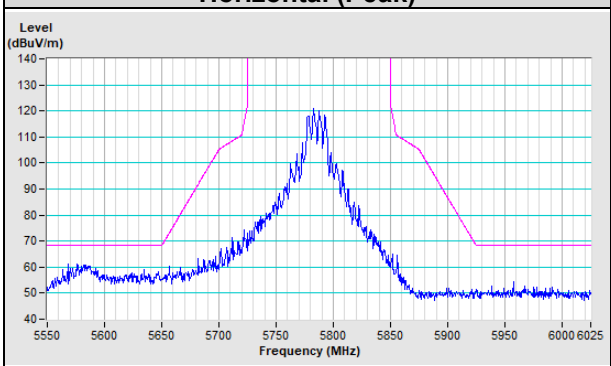
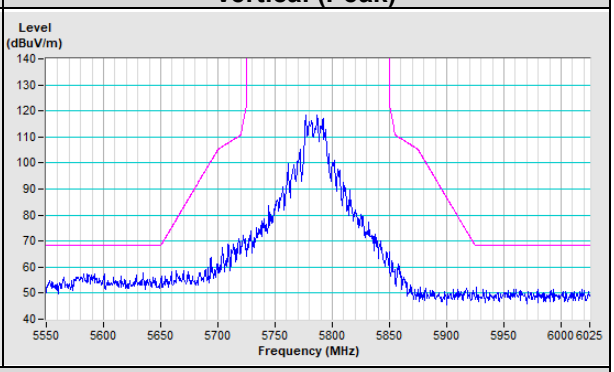
Vertical (Average)



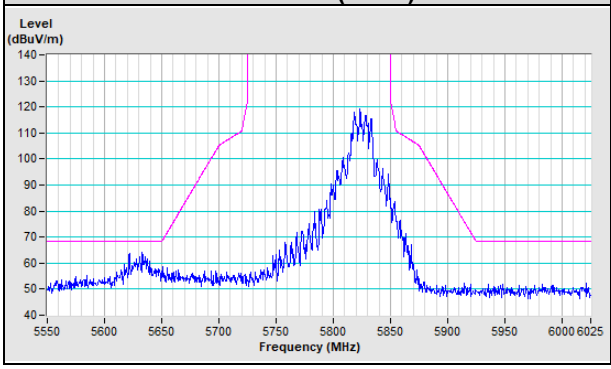
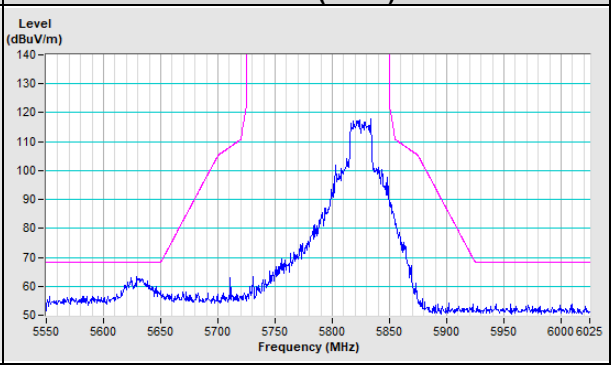
802.11a Channel 149

Horizontal (Peak)	Vertical (Peak)
	

802.11a Channel 157

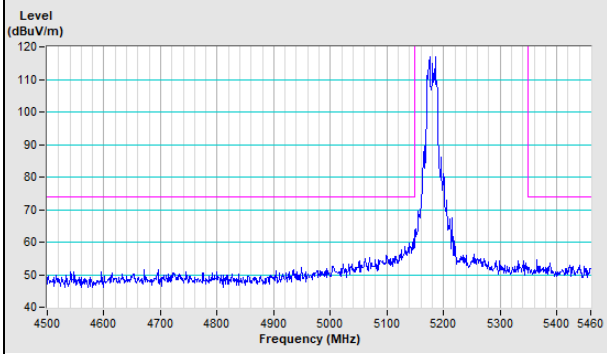
Horizontal (Peak)	Vertical (Peak)
	

802.11a Channel 165

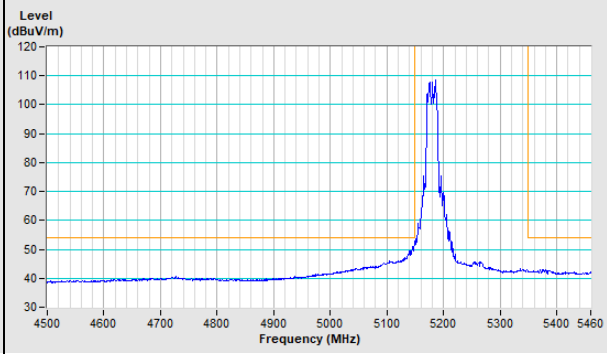
Horizontal (Peak)	Vertical (Peak)
	

802.11ax (HE20) Channel 36

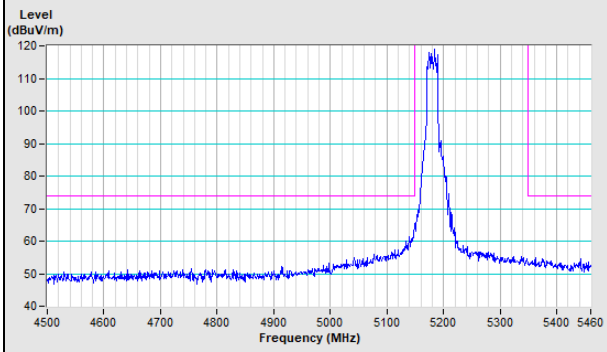
Horizontal (Peak)



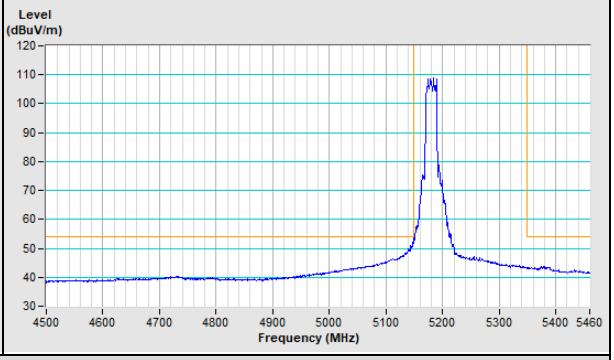
Horizontal (Average)



Vertical (Peak)

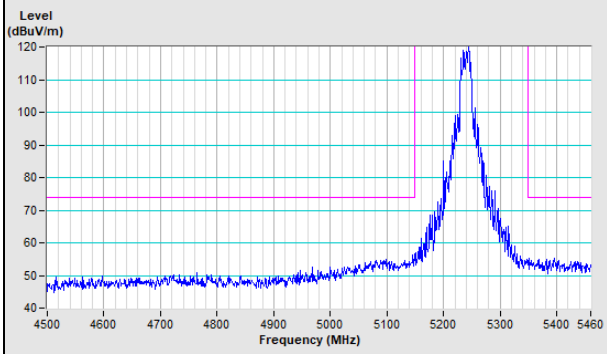


Vertical (Average)

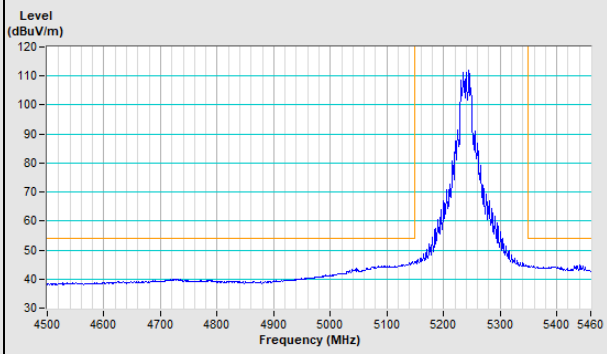


802.11ax (HE20) Channel 48

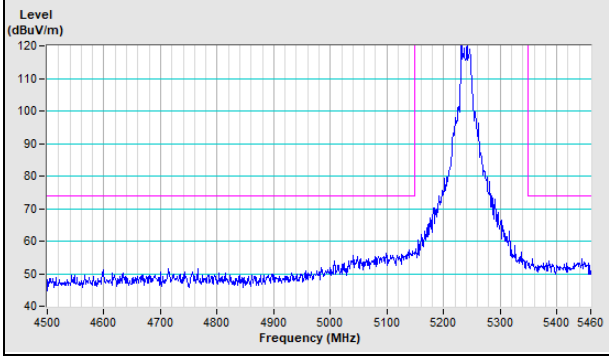
Horizontal (Peak)



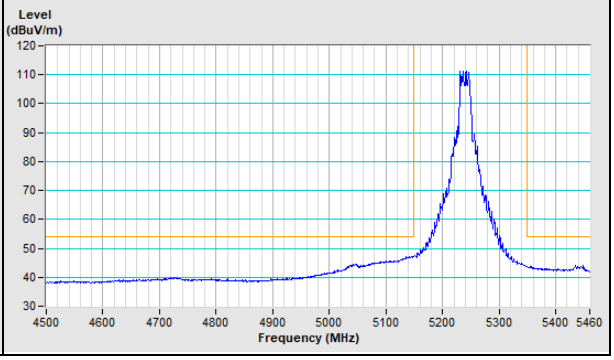
Horizontal (Average)



Vertical (Peak)

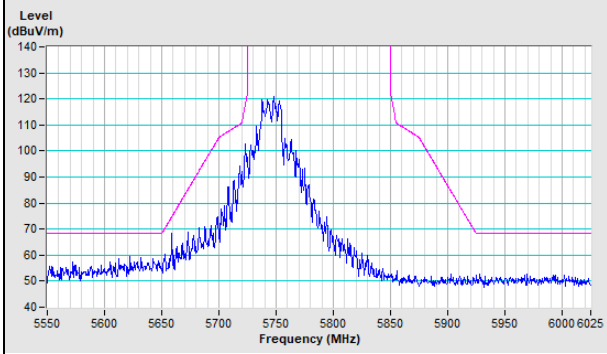


Vertical (Average)

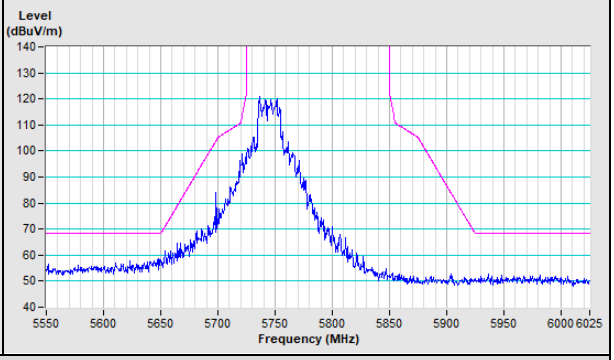


802.11ax (HE20) Channel 149

Horizontal (Peak)

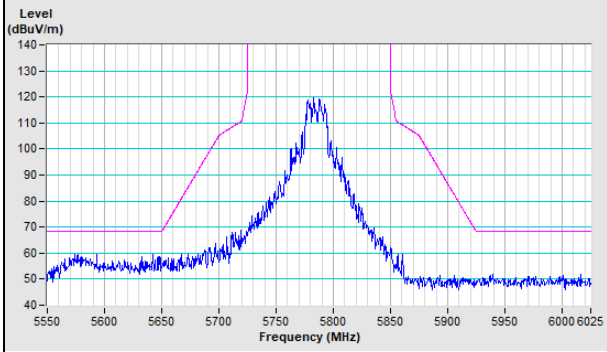


Vertical (Peak)

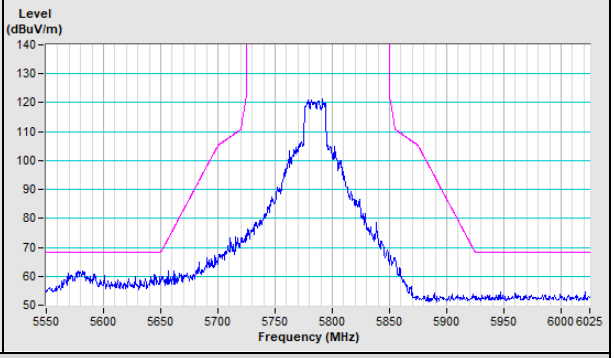


802.11ax (HE20) Channel 157

Horizontal (Peak)

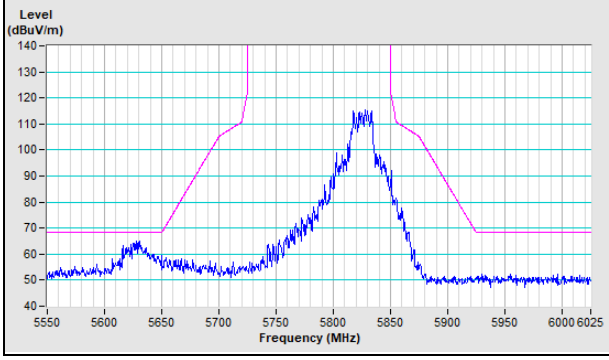


Vertical (Peak)

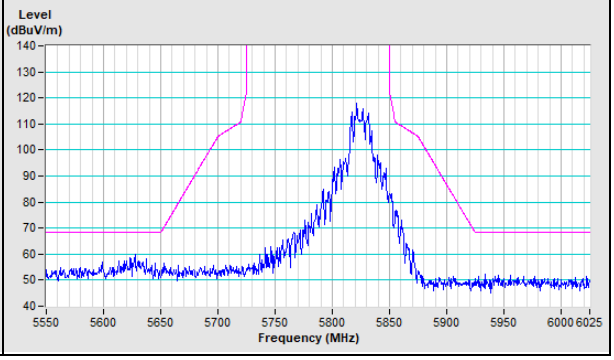


802.11ax (HE20) Channel 165

Horizontal (Peak)

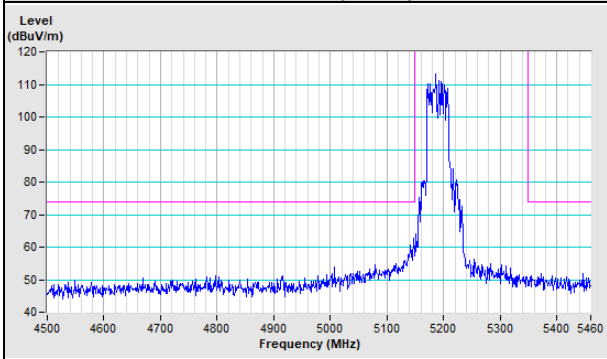


Vertical (Peak)

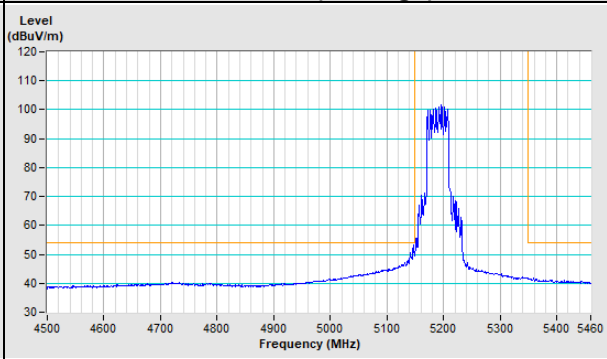


802.11ax (HE40) Channel 38

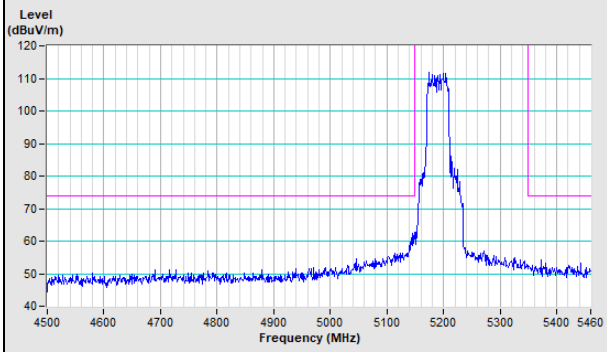
Horizontal (Peak)



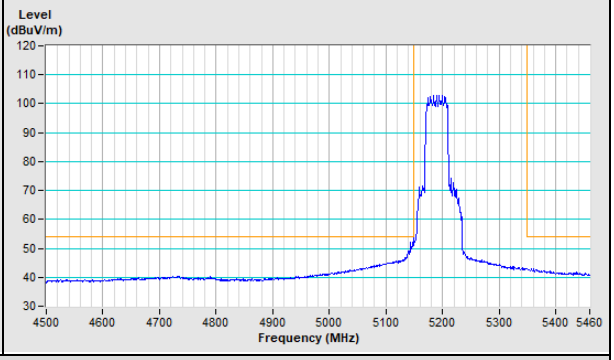
Horizontal (Average)



Vertical (Peak)

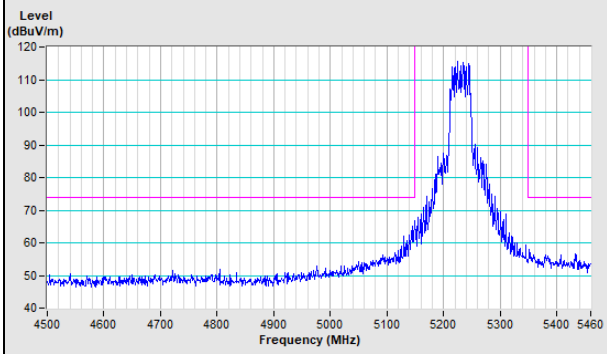


Vertical (Average)

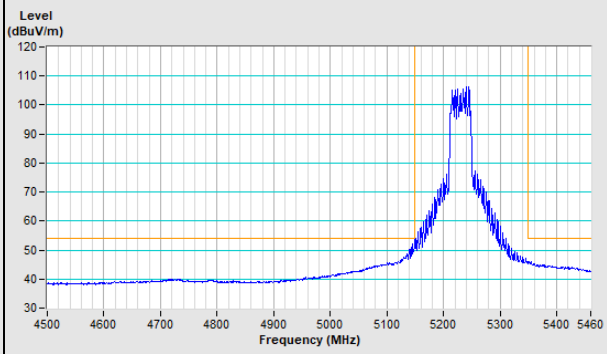


802.11ax (HE40) Channel 46

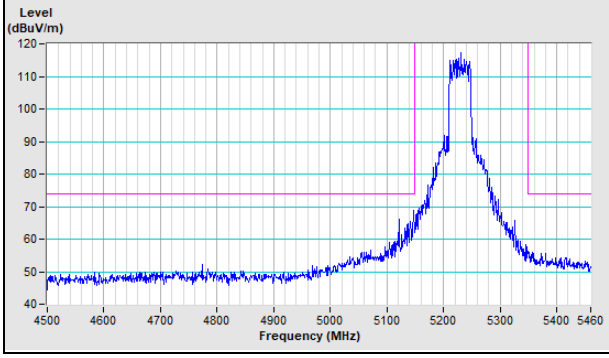
Horizontal (Peak)



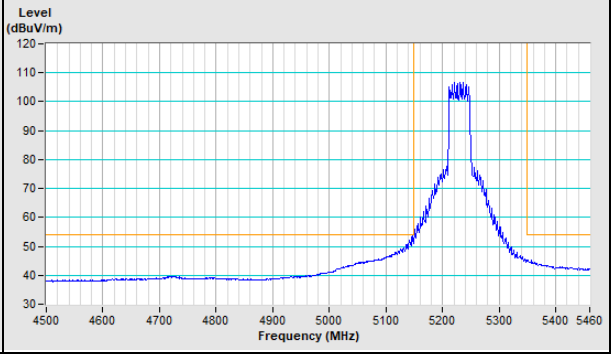
Horizontal (Average)

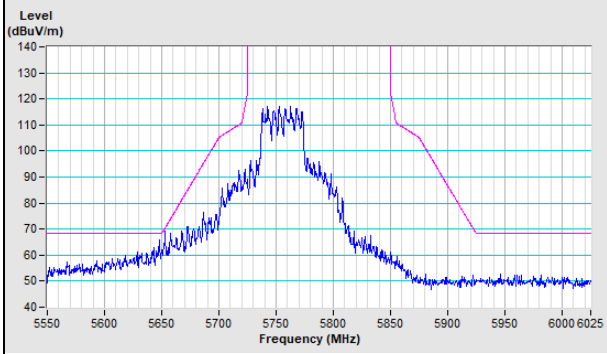
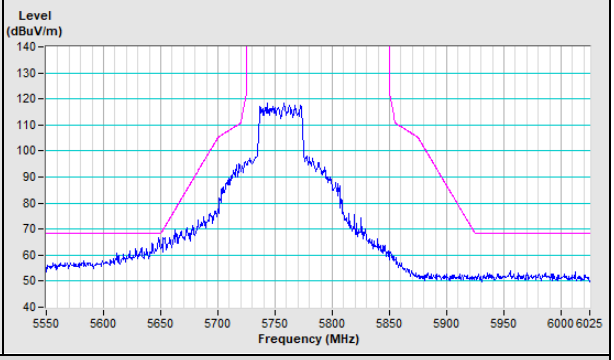
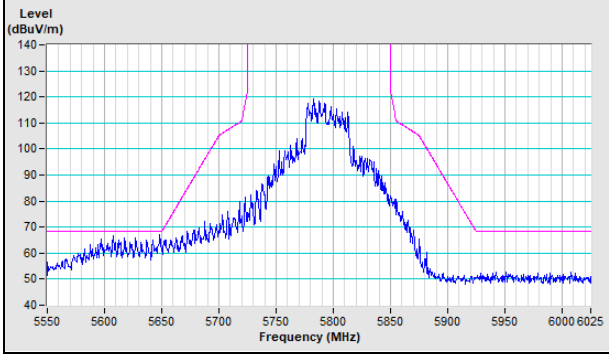
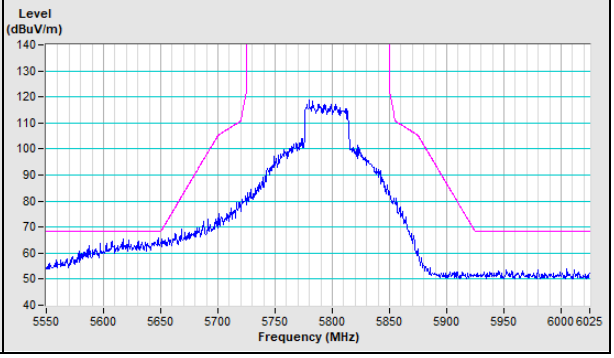


Vertical (Peak)



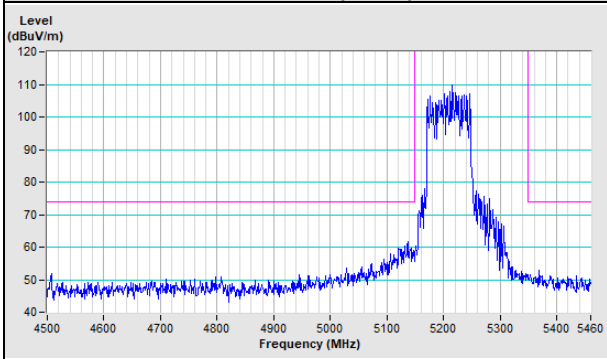
Vertical (Average)



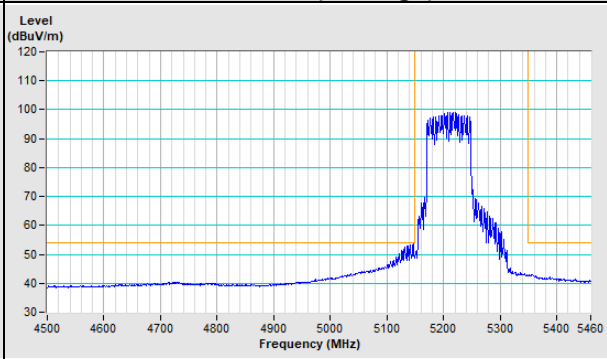
802.11ax (HE40) Channel 151	
Horizontal (Peak)	**Vertical (Peak)**
	
802.11ax (HE40) Channel 159	
Horizontal (Peak)	**Vertical (Peak)**
	

802.11ax (HE80) Channel 42

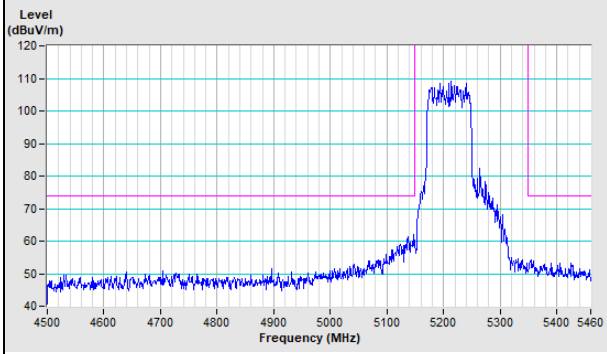
Horizontal (Peak)



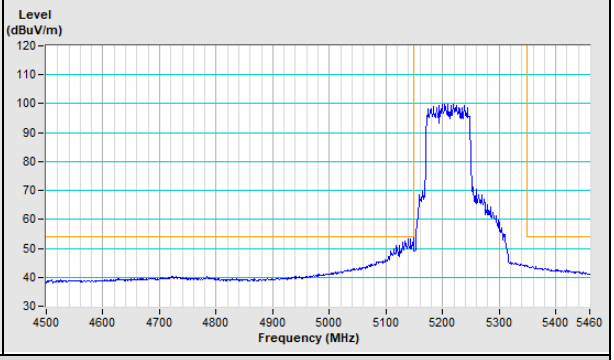
Horizontal (Average)



Vertical (Peak)

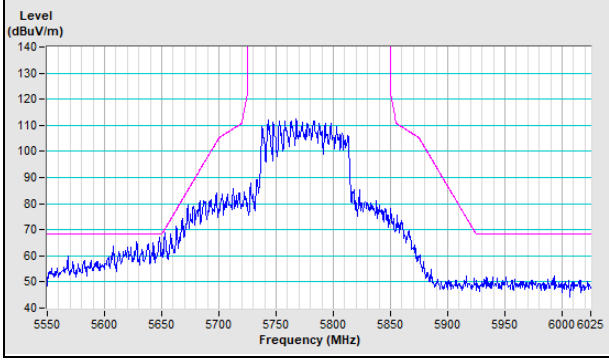


Vertical (Average)

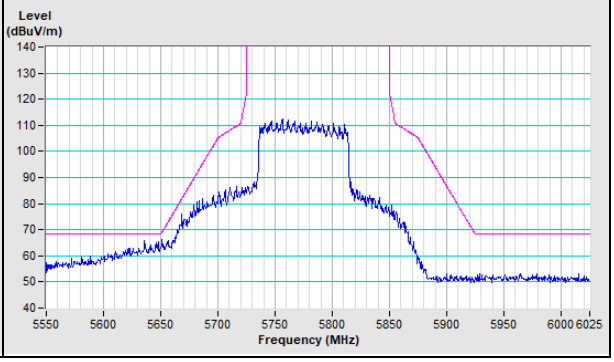


802.11ax (HE80) Channel 155

Horizontal (Peak)



Vertical (Peak)



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

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

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

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@bureauveritas.com
Web Site: http://ee.bureauveritas.com.tw

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

--- END ---