

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)
Report No.: RFBCKS-WTW-P23110556-1
FCC ID: 2ABLKGS5229XX
Product: GigaSpire BLAST u6t
Brand: Calix
Model No.: u6txg GS5229XG
Series Model: u6t GS5229E
Received Date: 2023/10/25
Test Date: 2023/10/25 ~ 2023/12/8
Issued Date: 2024/1/23
Applicant: Calix Inc.
Address: 1035 N. McDowell Blvd. Petaluma, CA94954 U.S.A.
Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory
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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / 723255 / TW2022
Designation Number:

Approved by: _____



Wen Yu / Assistant Manager

, Date: _____

2024/1/23

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Prepared by : Phoenix Huang / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBCKS-WTW-P23110556-1	Original release.	2024/1/23

1 Certificate

Product: GigaSpire BLAST u6t
Brand: Calix
Test Model: u6txg GS5229XG
Series Model: u6t GS5229E
Sample Status: Engineering sample
Applicant: Calix Inc.
Test Date: 2023/10/25 ~ 2023/12/8
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)(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 -3.23 dB at 25.22456 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.4 dB at 249.39 MHz
15.407(b) (1/10) 15.407(b) (4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.1 dB at 11650.00 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:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.1 dB
Power Spectral Density	-	1.3 dB
6 dB Bandwidth	-	1050.00 Hz
Occupied Bandwidth	-	1050.00 Hz
Frequency Stability	-	0.16 ppm
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	5.4 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	GigaSpire BLAST u6t
Brand	Calix
Test Model	u6txg GS5229XG
Series Model	u6t GS5229E
Status of EUT	Engineering sample
Power Supply Rating	12 Vdc from power adapter or UPS
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode 1024QAM for OFDMA in 11ax mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to 600 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps
Operating Frequency	5.18 GHz ~ 5.24 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 ~ 5.24 GHz : 824.029 mW (29.16 dBm) 5.745 GHz ~ 5.825 GHz : 996.331 mW (29.98 dBm) Beamforming Mode: 5.18 GHz ~ 5.24 GHz : 824.029 mW (29.16 dBm) 5.745 GHz ~ 5.825 GHz : 996.331 mW (29.98 dBm)
EUT Category	Indoor Access Point

Note:

1. The EUT has below model names, more detailed information as below table.

Model	u6t GS5229E	u6txg GS5229XG
WiFi bands	2.4 / 5 GHz	2.4 / 5 GHz
WiFi version	WiFi 6	WiFi 6
Configuration	Dual band 2x2 (2.4 GHz) + 4x4 (5 GHz)	Dual band 2x2 (2.4 GHz) + 4x4 (5 GHz)
WAN ports	10GE	XGS PON
LAN/WAN	10GE	10GE
LAN ports	4 x GE	4 x GE
USB	1 x 2.0	1 x 2.0
LED	Single pin hole tri-color LED	Single pin hole tri-color LED
POTS	2	2
Other buttons	Reset and WPS	Reset and WPS
UPS Connector	8 pin UPS connector	8 pin UPS connector
Supporting Ambient Temperature	0 to 40°C	0 to 40°C
Desktop and Wall Mount	Required	Required

2. The EUT has two heatsink types as below table.

Type	Description
1 st	HEATSPREADER, MAIN, LCS7
2 nd	HEATSPREADER, MAIN, TYPE2, LCS7

3. The EUT has two transformer sources as below table.

Item	1 st Transformer	2 nd Transformer
PN	76.1S220.005	76.1S602.007
Vendor	UDE	HDT

4. The EUT uses following accessories.

AC Adapter 1		
Brand	Model	Specification
AMIGO	AMS157-1203000FU	AC Input : 100-240 V~, 50/60 Hz, 1 A DC Output : 12 V – 3.0 A Specification : 1.45 m
AC Adapter 2		
Brand	Model	Specification
MOSO	MS-V3000R120-036L0-US	AC Input : 100-240 V~, 50/60 Hz, 1.0 A DC Output : 12 V – 3.0 A Specification : 1.535 m

5. There are WLAN (2.4 GHz) and WLAN (5 GHz) technology used for the EUT.

6. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4 GHz)	WLAN (5 GHz)

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna No.	RF Chain No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
2G1	Chain 0	3.69	2.4~2.4835	Dipole	ipex(MHF)
2G2	Chain 1	3.63	2.4~2.4835	Dipole	ipex(MHF)
5G1	Chain 0	3.96	5.15~5.25	Dipole	ipex(MHF)
		3.96	5.25~5.35	Dipole	ipex(MHF)
		3.90	5.47~5.725	Dipole	ipex(MHF)
		3.06	5.725~5.85	Dipole	ipex(MHF)
5G2	Chain 1	4.63	5.15~5.25	Dipole	ipex(MHF)
		4.28	5.25~5.35	Dipole	ipex(MHF)
		5.02	5.47~5.725	Dipole	ipex(MHF)
		4.27	5.725~5.85	Dipole	ipex(MHF)
5G3	Chain 2	3.06	5.15~5.25	Dipole	ipex(MHF)
		2.25	5.25~5.35	Dipole	ipex(MHF)
		1.91	5.47~5.725	Dipole	ipex(MHF)
		3.57	5.725~5.85	Dipole	ipex(MHF)
5G4	Chain 3	3.18	5.15~5.25	Dipole	ipex(MHF)
		3.45	5.25~5.35	Dipole	ipex(MHF)
		4.60	5.47~5.725	Dipole	ipex(MHF)
		3.72	5.725~5.85	Dipole	ipex(MHF)

2. The directional gain table:

Frequency Range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Connector Type
2.4~2.4835	5.84	Dipole	ipex(MHF)
5.15 ~ 5.25	6.11	Dipole	ipex(MHF)
5.25 ~ 5.35	5.43	Dipole	ipex(MHF)
5.47 ~ 5.725	6.89	Dipole	ipex(MHF)
5.725 ~ 5.85	4.94	Dipole	ipex(MHF)

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

4. 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.

3.3 Channel List

FOR 5180 ~ 5240 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. The Power Supply has the following models: Adapter 1 (AMS157-1203000FU) / Adapter 2 (MS-V3000R120-036L0-US) / UPS. Pre-scan these models of Power Supply and find the worst case as a representative test condition. 2. The device has the following models: u6t GS5229E / u6txg GS5229XG. Pre-scan these models of device and find the worst case as a representative test condition. 3. The device has the Heatsink following types: Type 1 / Type 2. Pre-scan these models of device and find the worst case as a representative test condition. 4. The device has the LAN Transformer following sources: Main / Second. Pre-scan these sources of device and find the worst case as a representative test condition. 5. 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).
Worst Case:	1. Power Supply Worst Condition: ➤ Unwanted Emission Below 1GHz: Adapter 1 (AMS157-1203000FU); ➤ AC Power Conducted Emissions: UPS 2. The device worst model condition: u6t GS5229E 3. The device worst heatsink condition: Type 2 4. LAN Transformer Worst Condition: Main source

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
	802.11n (HT20)	CDD & Beamforming	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11n (HT40)	CDD & Beamforming	38, 46, 151, 159	BPSK	MCS0
	802.11ac (VHT20)	CDD & Beamforming	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ac (VHT40)	CDD & Beamforming	38, 46, 151, 159	BPSK	MCS0
	802.11ac (VHT80)	CDD & Beamforming	42, 155	BPSK	MCS0
	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
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
Power Spectral Density / 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	unmodulated	-

Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
AC Power Conducted Emissions	802.11ax (HE40)	CDD	159	BPSK	MCS0
Unwanted Emissions below 1 GHz	802.11ax (HE40)	CDD	159	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

Note: Partial RU (resource unit) mechanism is not supported.

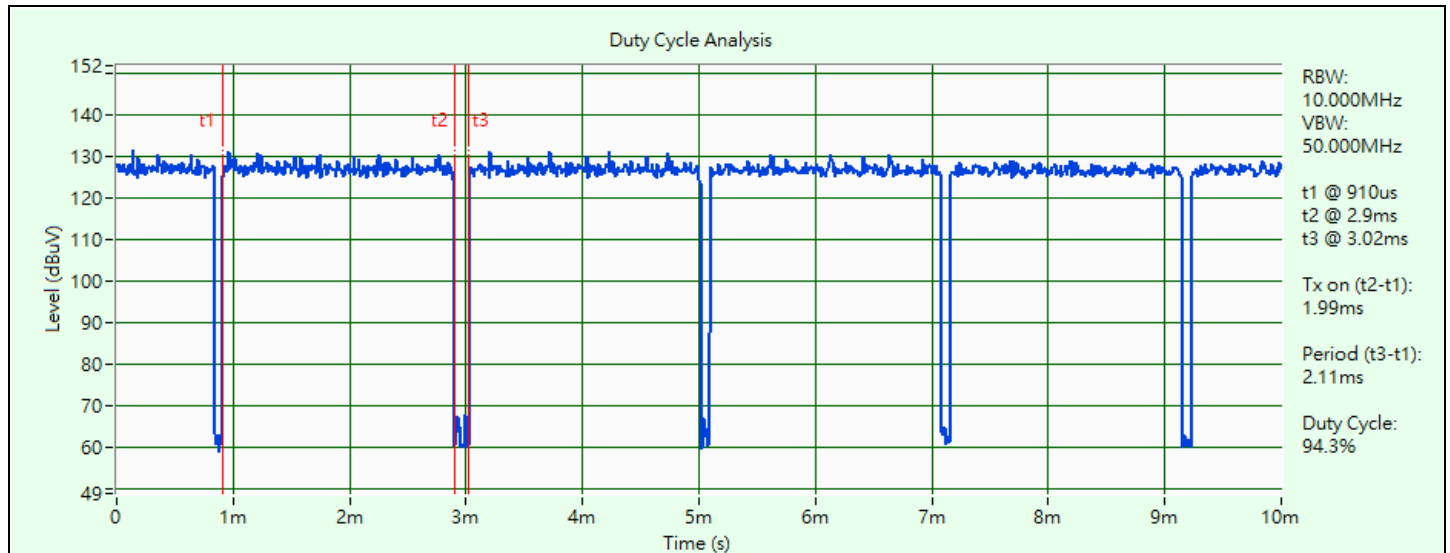
3.5 Duty Cycle of Test Signal

802.11a: Duty cycle = $1.99 \text{ ms} / 2.11 \text{ ms} \times 100\% = 94.3\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.25 \text{ dB}$

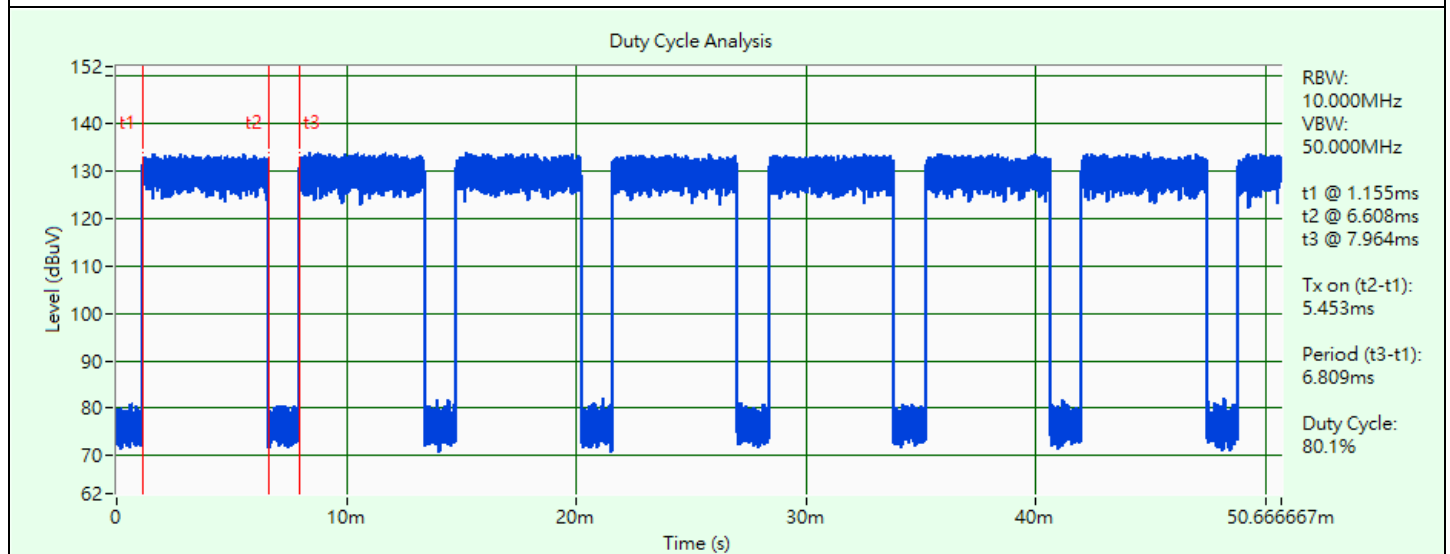
802.11ax (HE20): Duty cycle = $5.453 \text{ ms} / 6.809 \text{ ms} \times 100\% = 80.1\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.96 \text{ dB}$

802.11ax (HE40): Duty cycle = $5.452 \text{ ms} / 6.816 \text{ ms} \times 100\% = 80.0\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.97 \text{ dB}$

802.11ax (HE80): Duty cycle = $5.453 \text{ ms} / 6.825 \text{ ms} \times 100\% = 79.9\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.97 \text{ dB}$

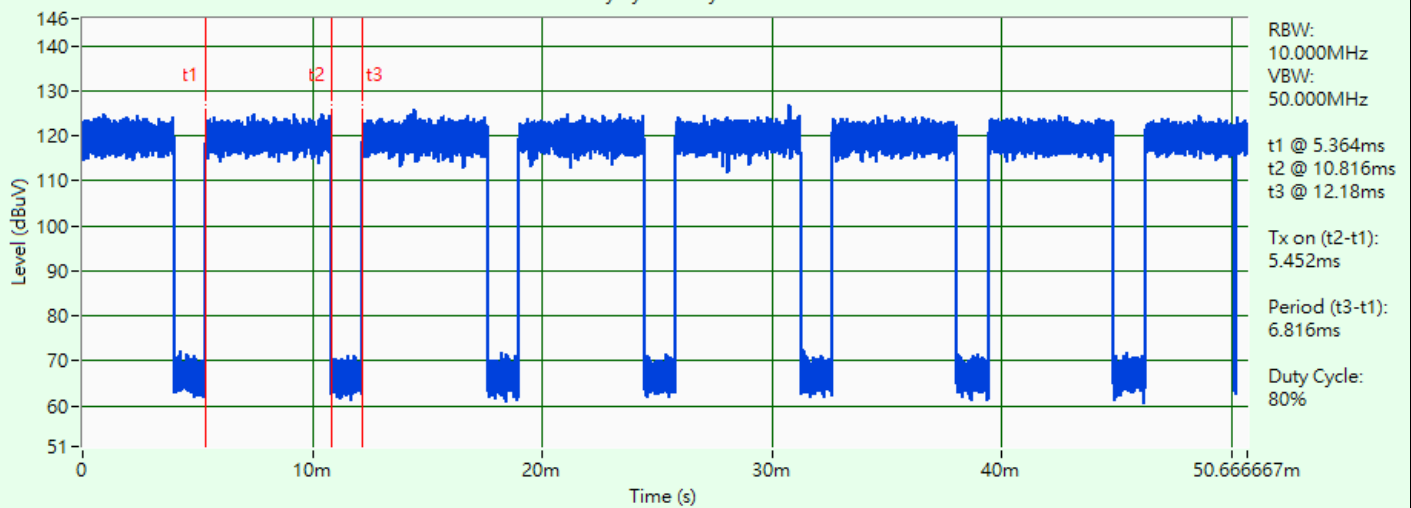


802.11a



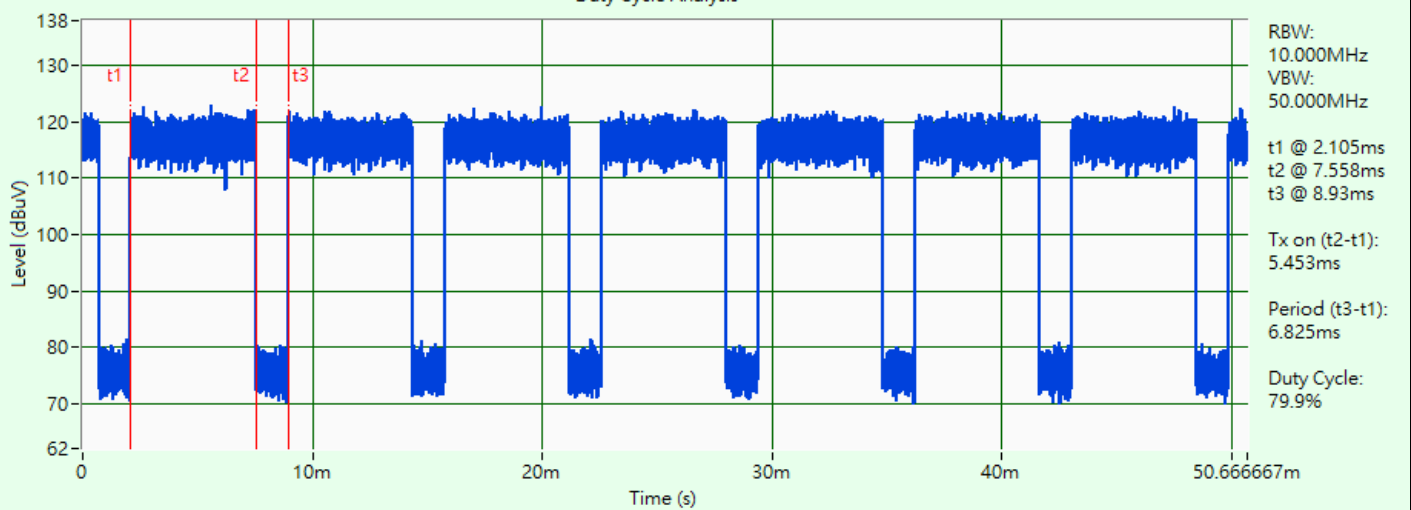
802.11ax (HE20)

Duty Cycle Analysis



802.11ax (HE40)

Duty Cycle Analysis



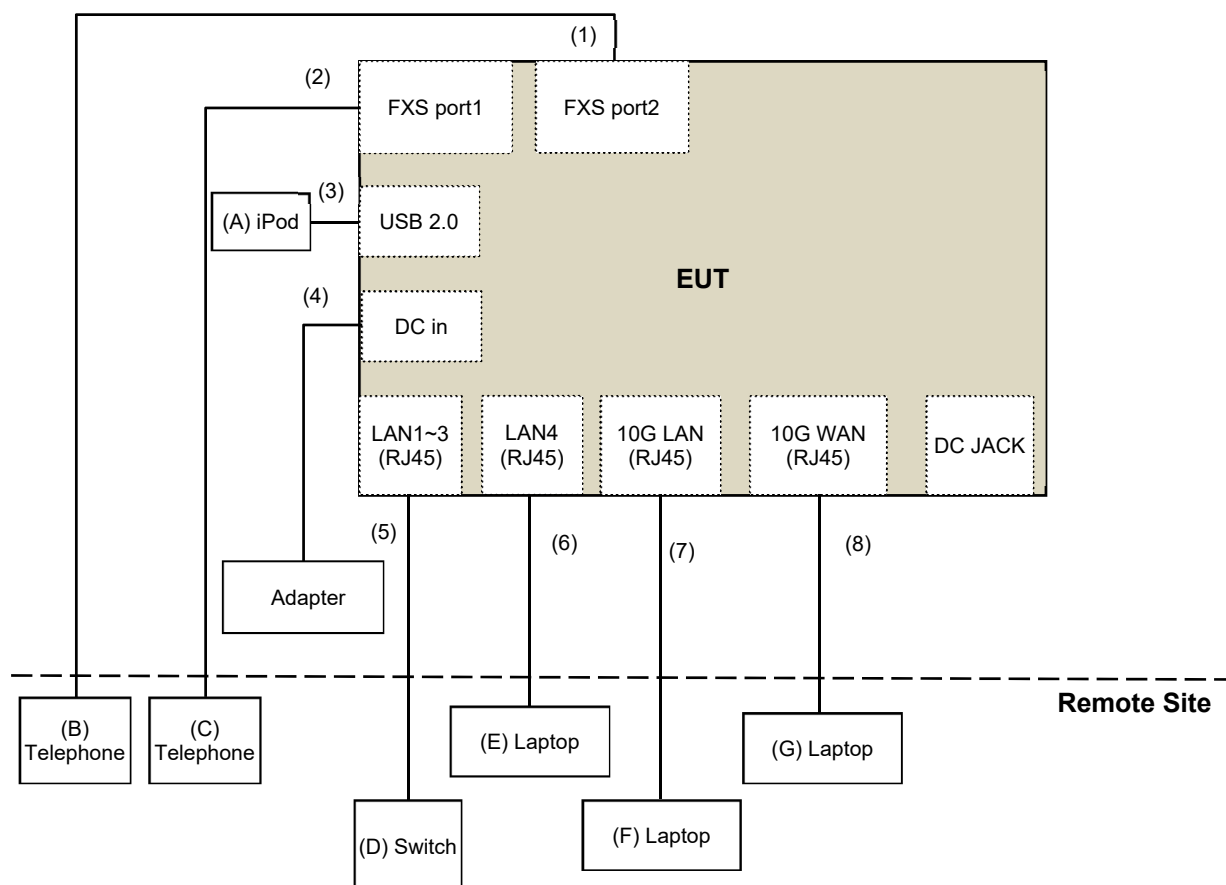
802.11ax (HE80)

3.6 Test Program Used and Operation Descriptions

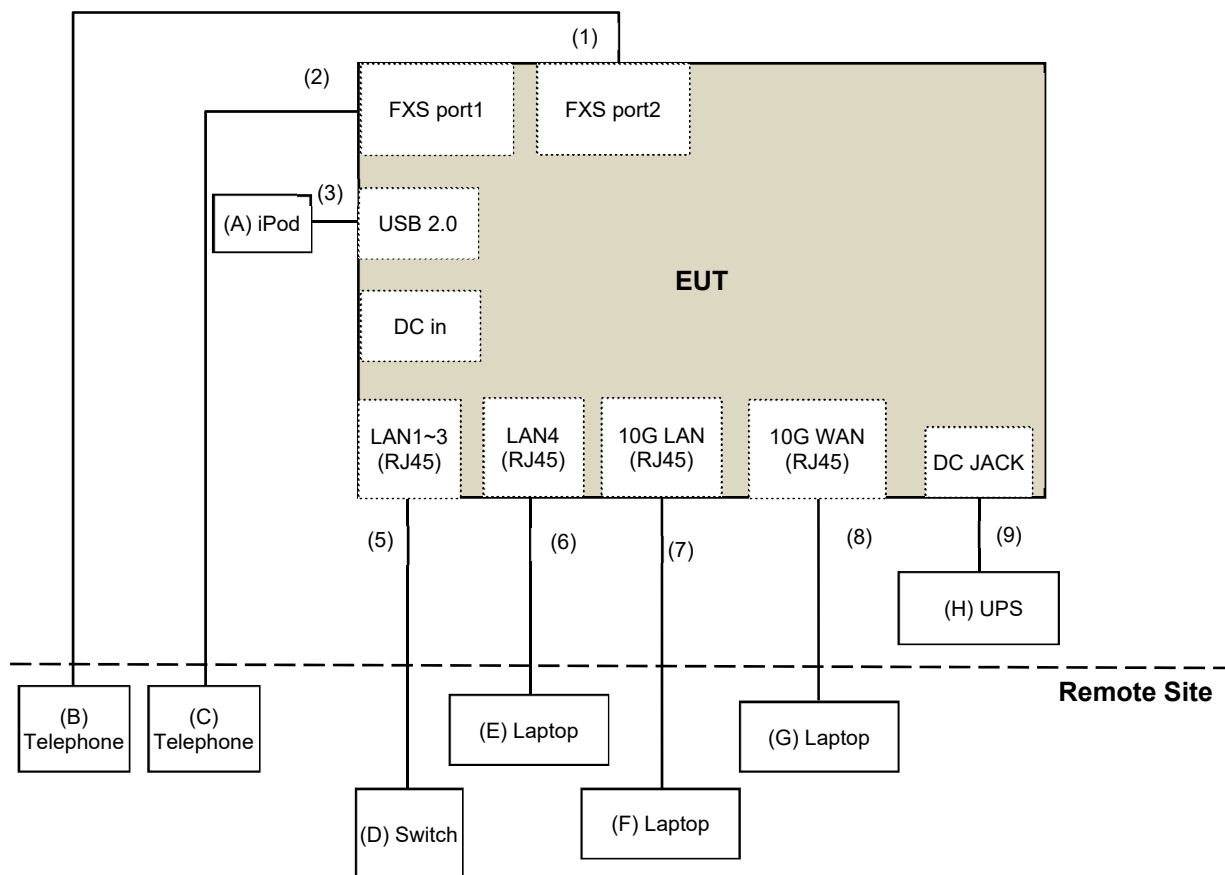
Controlling software (qdart_conn.win.1.0_installer_00097.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For Unwanted Emission test:



For AC Power Conducted Emission test:



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	iPod shuffle (2G bytes)	Apple	A1373	CC4DN25WDFDM	N/A	Provided by Lab
B	Telephone	WONDER	WD-303	7C17KA 04011	N/A	Provided by Lab
C	Telephone	Romeo	TE-812	97280903	N/A	Provided by Lab
D	Switch	D-Link	DGS-1005D	DR8WC92000523	N/A	Provided by Lab
E	Laptop	DELL	E5430	4YV4VY1	DoC	Provided by Lab
F	Laptop	DELL	E5430	HYV4VY1	DoC	Provided by Lab
G	Laptop	DELL	E6420	H62T3R1	DoC	Provided by Lab
H	UPS	CyberPower	DTC36U12V3-G	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-11 Cable	1	10	No	0	Provided by Lab
2	RJ-11 Cable	1	10	No	0	Provided by Lab
3	USB Cable	1	0.1	Yes	0	Provided by Lab
4	DC Cable	1	1.45	No	0	Supplied by applicant
5	RJ-45 Cable	3	10	No	0	Provided by Lab
6	RJ-45 Cable	1	10	No	0	Provided by Lab
7	RJ-45 Cable	1	10	No	0	Provided by Lab
8	RJ-45 Cable	1	10	No	0	Provided by Lab
9	DC Cable	1	2.5	No	0	Supplied by applicant

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	2023/6/17	2024/6/16
Pulse Power Sensor Anritsu	MA2411B	1726434	2023/6/19	2024/6/18

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/12/8

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
MXA Signal Analyzer Keysight	N9020B	MY60112409	2023/2/18	2024/2/17
Software	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/12/8

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
DC Power Supply Topward	6603D	795558	N/A	N/A
MXA Signal Analyzer Keysight	N9020B	MY60112409	2023/2/18	2024/2/17
Software	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
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	2023/6/8	2024/6/7

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/12/8

4.6 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance Telegartner	50 ohm	3	2023/10/20	2024/10/19
EMI Test Receiver R&S	ESCS 30	847124/029	2023/10/18	2024/10/17
Fixed Attenuator STI	STI02-2200-10	005	2023/7/1	2024/6/30
LISN R&S	ESH3-Z5	835239/001	2023/4/6	2024/4/5
		848773/004	2023/10/13	2024/10/12
RF Coaxial Cable JYEBAO	5D-FB	COCCAB-001	2023/7/1	2024/6/30
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2023/12/6

4.7 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-361	2023/10/13	2024/10/12
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2023/9/7	2024/9/6
Loop Antenna Electro-Metrics	EM-6879	264	2023/2/21	2024/2/20
MXE EMI Receiver Agilent	N9038A	MY50010156	2023/6/13	2024/6/12
Preamplifier EMCI	EMC330N	980852	2023/2/20	2024/2/19
	EMC001340	980142	2023/5/8	2024/5/7
RF Coaxial Cable JYEBAO	5D-FB	LOOPCAB-001	2022/12/19	2023/12/18
		LOOPCAB-002	2022/12/19	2023/12/18
RF Coaxial Cable PEWC	8D	966-3-2	2023/2/17	2024/2/16
		966-3-3	2023/2/17	2024/2/16
		966-4-1	2023/2/18	2024/2/17
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2023/12/5

4.8 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-406	2022/11/13 2023/11/12	2023/11/12 2024/11/11
	BBHA 9170	9170-739	2023/11/12	2024/11/11
MXE EMI Receiver Agilent	N9038A	MY50010156	2023/6/13	2024/6/12
Preamplifier EMCI	EMC12630SE	980384	2023/8/9	2024/8/8
	EMC184045SE	980387	2023/8/9	2024/8/8
PXA Signal Analyzer Keysight	N9030B	MY57142938	2023/4/6	2024/4/5
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2023/2/20	2024/2/19
	EMC102-KM-KM-1200	160924	2023/8/9	2024/8/8
	EMC104-SM-SM-1500	180504	2023/3/27	2024/3/26
	EMC104-SM-SM-2000	180601	2023/6/2	2024/6/1
	EMC104-SM-SM-6000	210201	2023/5/8	2024/5/7
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2023/10/25 ~ 2023/12/7

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 $\leq$ 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: 68.2 (dBμV/m) ^{*1}
	PK: 10 (dBm/MHz) ^{*2}	PK: 105.2 (dBμV/m) ^{*2}
	PK: 15.6 (dBm/MHz) ^{*3}	PK: 110.8 (dBμV/m) ^{*3}
	PK: 27 (dBm/MHz) ^{*4}	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.

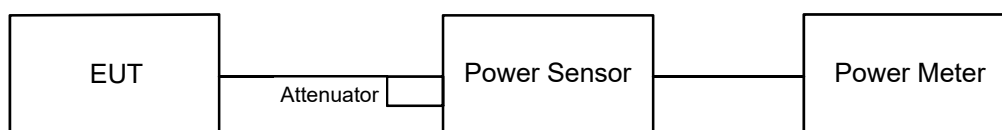
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

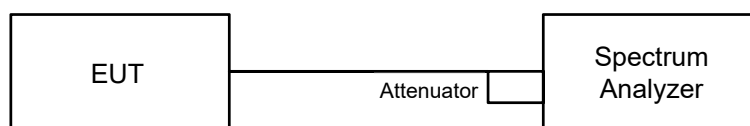


6.1.2 Test Procedure

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-2

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
- Sweep points $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- Sweep time = auto, trigger set to "free run".
- Trace average at least 100 traces in power averaging mode.
- Use the peak search function on the instrument to find the peak of the spectrum and record its value.
- Record the max value and add $10 \log (1/\text{duty cycle})$.

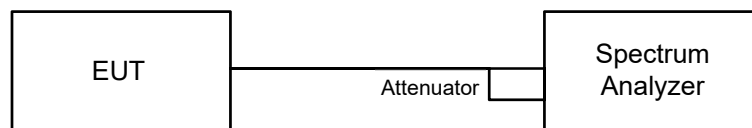
For specified measurement bandwidth 500 kHz:

Method SA-2

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS
- 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 $\text{BWCF} = 10\log(500 \text{ kHz}/300 \text{ kHz})$
- Sweep points $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- Sweep time = auto, trigger set to "free run".
- Trace average at least 100 traces in power averaging mode.
- Use the peak search function on the instrument to find the peak of the spectrum and record its value.
- Record the max value and add $10 \log (1/\text{duty cycle})$.

6.3 6 dB Bandwidth

6.3.1 Test Setup

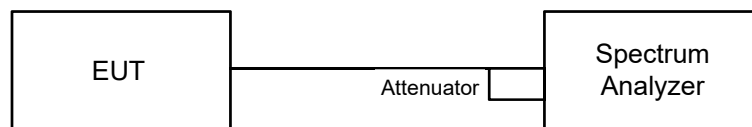


6.3.2 Test Procedure

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

6.4 Occupied Bandwidth

6.4.1 Test Setup

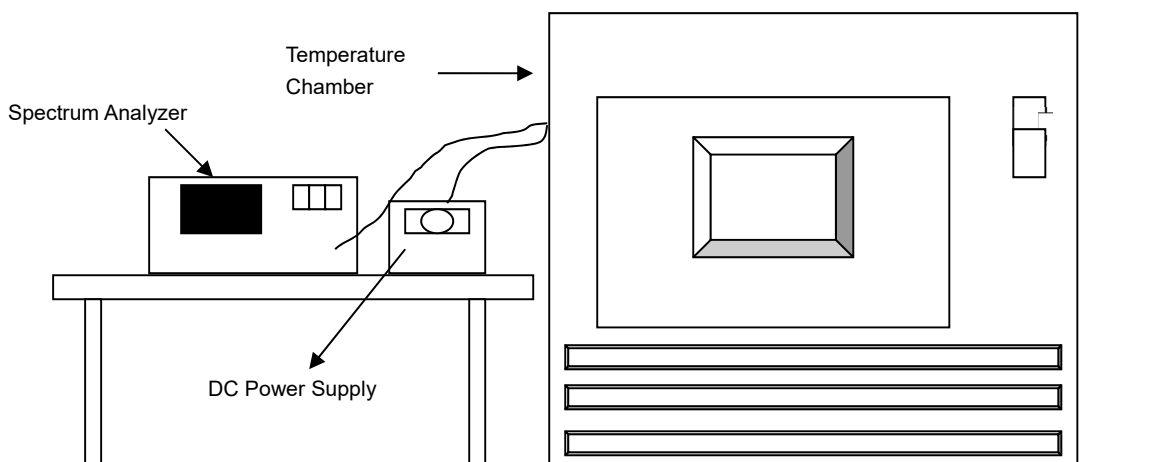


6.4.2 Test Procedure

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

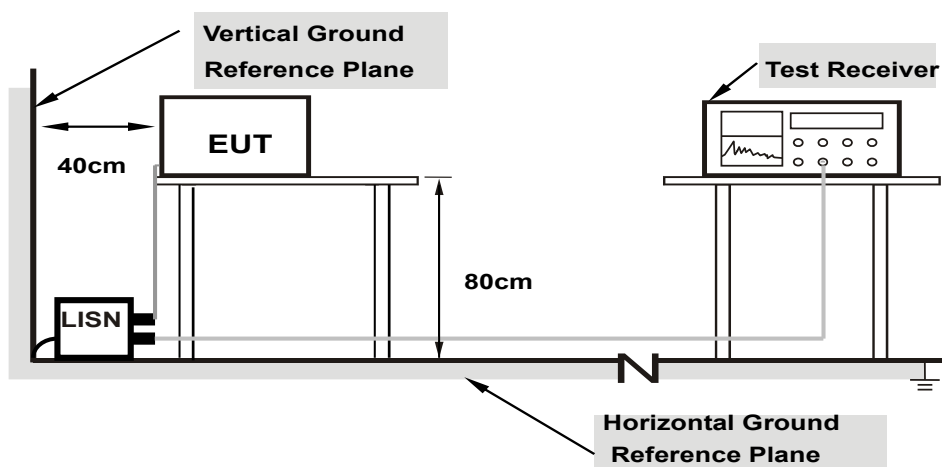


6.5.2 Test Procedure

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

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

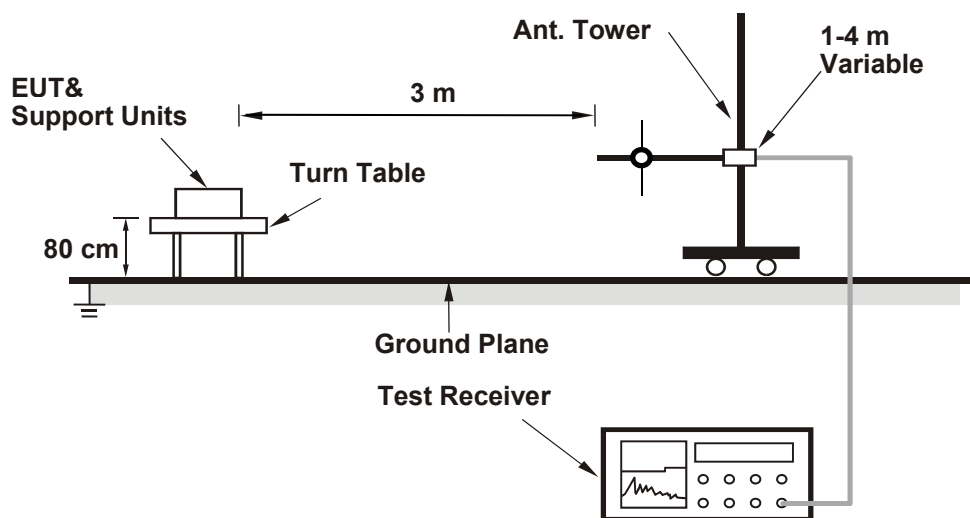
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: 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 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 above 30 MHz

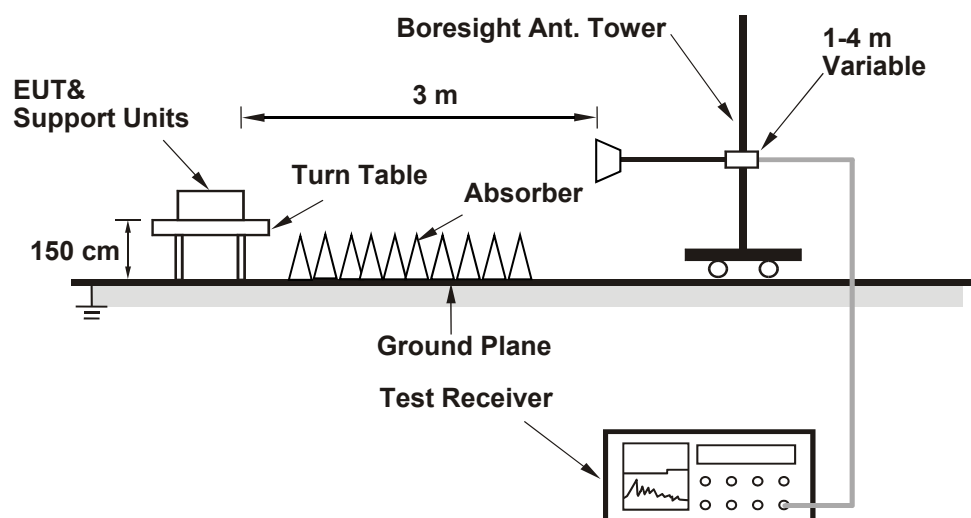
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- 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:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
- 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

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- 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:

- 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.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- 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:	22°C, 60% RH	Tested By:	Willy Lin
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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	20.81	20.65	20.26	19.98	442.359	26.46	30	Pass
40	5200	22.22	22.12	22.05	21.95	646.654	28.11	30	Pass
48	5240	22.61	22.01	22.49	22.02	677.884	28.31	30	Pass
149	5745	23.56	21.65	23.06	22.91	770.94	28.87	30	Pass
157	5785	24.01	21.88	23.51	23.57	857.836	29.33	30	Pass
165	5825	21.46	22.22	23.43	24.09	783.425	28.94	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 4.27 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20) 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	20.46	21.04	20.23	20.02	444.131	26.48	30	Pass
40	5200	22.37	22.59	21.60	21.55	641.569	28.07	30	Pass
48	5240	21.80	22.74	22.21	21.53	647.862	28.11	30	Pass
149	5745	23.90	23.72	23.83	23.05	924.359	29.66	30	Pass
157	5785	23.81	23.70	23.60	23.26	915.782	29.62	30	Pass
165	5825	23.91	23.95	23.12	23.63	930.141	29.69	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 4.27 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT40) 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	16.95	17.71	16.85	16.48	201.445	23.04	30	Pass
46	5230	22.94	23.26	22.85	22.31	771.593	28.87	30	Pass
151	5755	23.98	23.91	23.52	23.20	929.906	29.68	30	Pass
159	5795	23.87	24.01	22.96	23.64	924.452	29.66	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.27 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT20) 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	20.58	21.21	20.42	20.18	460.803	26.64	30	Pass
40	5200	22.62	22.88	21.83	21.81	681.009	28.33	30	Pass
48	5240	22.03	23.02	22.43	21.80	686.376	28.37	30	Pass
149	5745	24.08	23.85	23.98	23.24	959.417	29.82	30	Pass
157	5785	23.93	23.89	23.80	23.42	951.748	29.79	30	Pass
165	5825	24.03	24.11	23.29	23.82	964.857	29.84	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 4.27 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT40) 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	17.86	16.97	16.62	208.429	23.19	30	Pass
46	5230	23.08	23.41	23.01	22.43	797.487	29.02	30	Pass
151	5755	24.08	24.02	23.69	23.34	957.865	29.81	30	Pass
159	5795	24.02	24.19	23.08	23.84	960.109	29.82	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.27 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT80) 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	15.41	15.73	15.16	14.86	135.594	21.32	30	Pass
155	5775	20.23	20.07	19.91	19.73	398.985	26.01	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.27 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	20.89	21.56	20.76	20.51	497.547	26.97	30	Pass
40	5200	22.89	23.12	22.03	22.09	721.048	28.58	30	Pass
48	5240	22.31	23.22	22.67	22.01	723.891	28.60	30	Pass
149	5745	24.21	24.05	24.09	23.42	993.965	29.97	30	Pass
157	5785	24.08	24.01	23.98	23.56	984.647	29.93	30	Pass
165	5825	24.15	24.21	23.43	23.95	992.255	29.97	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 4.27 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	17.25	18.01	17.16	16.78	215.972	23.34	30	Pass
46	5230	23.21	23.61	23.12	22.55	824.029	29.16	30	Pass
151	5755	24.23	24.14	23.81	23.52	989.61	29.95	30	Pass
159	5795	24.21	24.31	23.21	24.04	996.331	29.98	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.27 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	15.53	15.86	15.32	14.96	139.649	21.45	30	Pass
155	5775	20.35	20.24	20.01	19.85	410.91	26.14	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.63 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.27 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20) 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	20.46	21.04	20.23	20.02	444.131	26.48	29.89	Pass
40	5200	22.37	22.59	21.60	21.55	641.569	28.07	29.89	Pass
48	5240	21.80	22.74	22.21	21.53	647.862	28.11	29.89	Pass
149	5745	23.90	23.72	23.83	23.05	924.359	29.66	30	Pass
157	5785	23.81	23.70	23.60	23.26	915.782	29.62	30	Pass
165	5825	23.91	23.95	23.12	23.63	930.141	29.69	30	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT40) 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	16.95	17.71	16.85	16.48	201.445	23.04	29.89	Pass
46	5230	22.94	23.26	22.85	22.31	771.593	28.87	29.89	Pass
151	5755	23.98	23.91	23.52	23.20	929.906	29.68	30	Pass
159	5795	23.87	24.01	22.96	23.64	924.452	29.66	30	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT20) 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	20.58	21.21	20.42	20.18	460.803	26.64	29.89	Pass
40	5200	22.62	22.88	21.83	21.81	681.009	28.33	29.89	Pass
48	5240	22.03	23.02	22.43	21.80	686.376	28.37	29.89	Pass
149	5745	24.08	23.85	23.98	23.24	959.417	29.82	30	Pass
157	5785	23.93	23.89	23.80	23.42	951.748	29.79	30	Pass
165	5825	24.03	24.11	23.29	23.82	964.857	29.84	30	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.11 - 6) = 29.89$ dBm.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT40) 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	17.86	16.97	16.62	208.429	23.19	29.89	Pass
46	5230	23.08	23.41	23.01	22.43	797.487	29.02	29.89	Pass
151	5755	24.08	24.02	23.69	23.34	957.865	29.81	30	Pass
159	5795	24.02	24.19	23.08	23.84	960.109	29.82	30	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.11 - 6) = 29.89$ dBm.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT80) 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	15.41	15.73	15.16	14.86	135.594	21.32	29.89	Pass
155	5775	20.23	20.07	19.91	19.73	398.985	26.01	30	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.11 - 6) = 29.89$ dBm.
3. For U-NII-3, the directional gain is 4.94 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	20.89	21.56	20.76	20.51	497.547	26.97	29.89	Pass
40	5200	22.89	23.12	22.03	22.09	721.048	28.58	29.89	Pass
48	5240	22.31	23.22	22.67	22.01	723.891	28.60	29.89	Pass
149	5745	24.21	24.05	24.09	23.42	993.965	29.97	30	Pass
157	5785	24.08	24.01	23.98	23.56	984.647	29.93	30	Pass
165	5825	24.15	24.21	23.43	23.95	992.255	29.97	30	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.11 - 6) = 29.89$ dBm.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the output power limit shall not be reduced.

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	17.25	18.01	17.16	16.78	215.972	23.34	29.89	Pass
46	5230	23.21	23.61	23.12	22.55	824.029	29.16	29.89	Pass
151	5755	24.23	24.14	23.81	23.52	989.61	29.95	30	Pass
159	5795	24.21	24.31	23.21	24.04	996.331	29.98	30	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.11 - 6) = 29.89$ dBm.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the output power limit shall not be reduced.

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	15.53	15.86	15.32	14.96	139.649	21.45	29.89	Pass
155	5775	20.35	20.24	20.01	19.85	410.91	26.14	30	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.11 - 6) = 29.89$ dBm.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the output power limit shall not be reduced.

7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	22°C, 60% RH	Tested By:	Willy Lin
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802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	8.00	7.51	7.22	8.13	0.25	14.00	16.89	Pass
40	5200	10.10	11.17	8.08	10.23	0.25	16.30	16.89	Pass
48	5240	10.82	7.44	9.74	10.52	0.25	16.08	16.89	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 is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-1, the directional gain is 6.11 dBi > 6dBi, so the power density limit shall be reduced to $17-(6.11-6) = 16.89$ dBm/MHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	4.78	3.96	1.94	5.39	0.96	11.18	16.89	Pass
40	5200	9.78	9.61	6.75	8.95	0.96	15.91	16.89	Pass
48	5240	9.95	9.81	7.91	8.06	0.96	16.02	16.89	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 is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-1, the directional gain is 6.11 dBi > 6dBi, so the power density limit shall be reduced to $17-(6.11-6) = 16.89$ dBm/MHz.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	0.36	-0.62	-1.15	-2.54	0.97	6.13	16.89	Pass
46	5230	4.63	5.56	4.67	2.11	0.97	11.41	16.89	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 is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-1, the directional gain is 6.11 dBi > 6dBi, so the power density limit shall be reduced to $17-(6.11-6) = 16.89$ dBm/MHz.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	-4.41	-4.45	-8.68	-10.07	0.97	0.77	16.89	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 is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-1, the directional gain is 6.11 dBi > 6dBi, so the power density limit shall be reduced to $17-(6.11-6) = 16.89$ dBm/MHz.

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Total PSD w/o Duty Factor (dBm/300kHz)	Duty Factor (dB)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3					
149	5745	2.27	2.67	-9.06	2.88	7.48	0.25	9.95	30	Pass
157	5785	2.53	2.59	-9.99	3.31	7.67	0.25	10.14	30	Pass
165	5825	2.30	2.31	2.27	3.03	8.51	0.25	10.98	30	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 is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Total PSD w/o Duty Factor (dBm/300kHz)	Duty Factor (dB)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3					
149	5745	-1.38	-1.23	-0.47	-1.95	4.8	0.96	7.98	30	Pass
157	5785	-2.06	-0.31	-0.27	-0.67	5.25	0.96	8.43	30	Pass
165	5825	-0.46	-2.19	-0.82	-1.25	4.89	0.96	8.07	30	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 is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Total PSD w/o Duty Factor (dBm/300kHz)	Duty Factor (dB)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3					
151	5755	-3.31	-3.16	-2.86	-4.04	2.7	0.97	5.89	30	Pass
159	5795	-3.10	-3.88	-2.48	-2.74	3	0.97	6.19	30	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 is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the power density limit shall not be reduced.

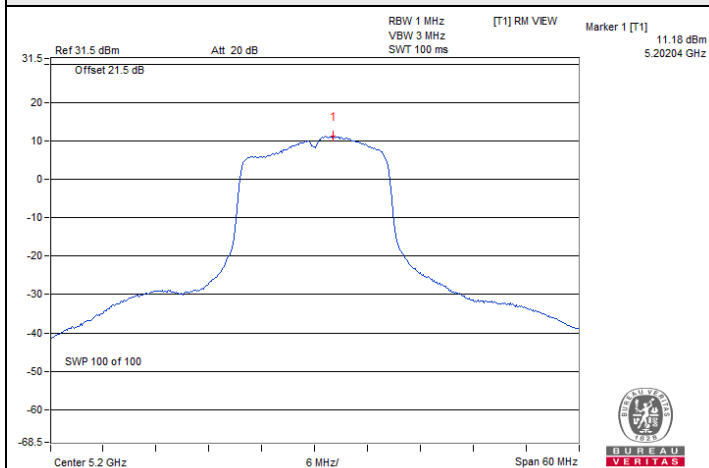
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Total PSD w/o Duty Factor (dBm/300kHz)	Duty Factor (dB)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3					
155	5775	-10.81	-11.09	-9.97	-10.93	-4.66	0.97	-1.47	30	Pass

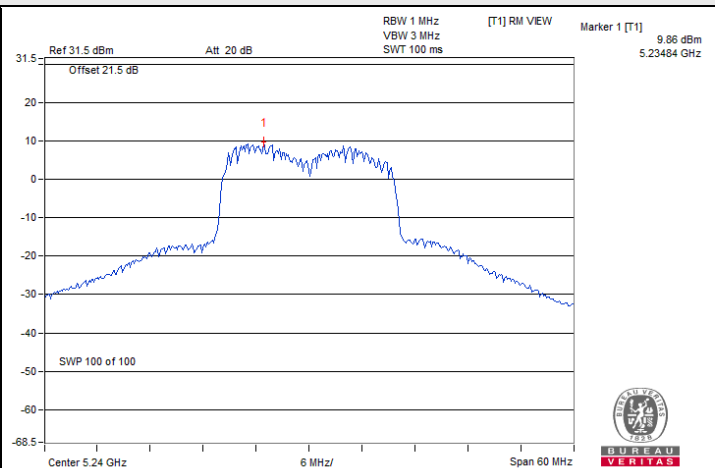
Notes:

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 is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-3, the directional gain is 4.94 dBi < 6 dBi, so the power density limit shall not be reduced.

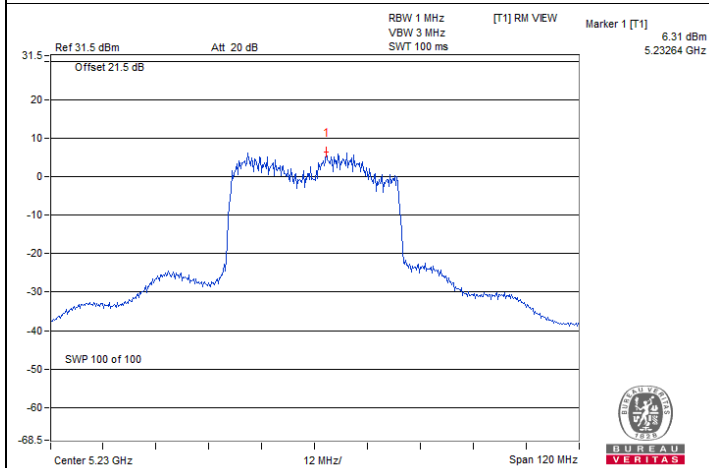
Spectrum Plot of Maximum Value



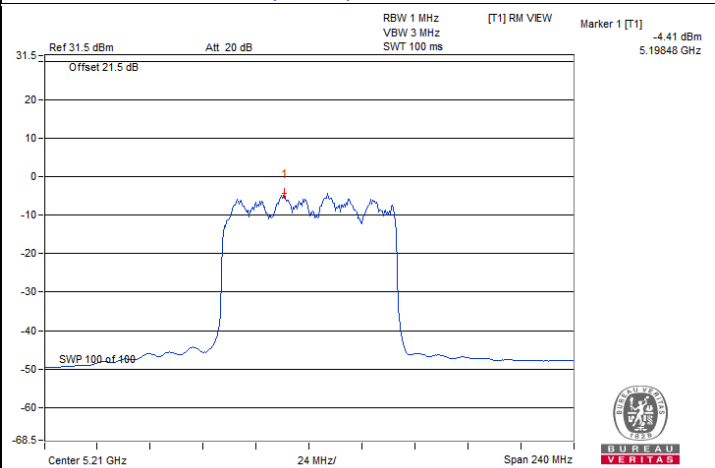
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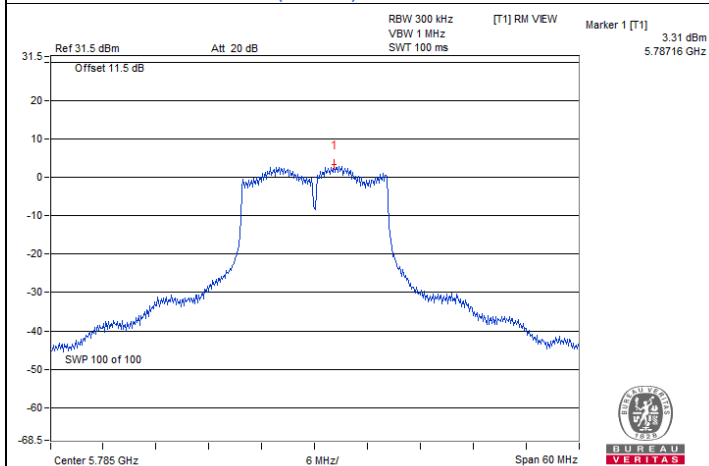
802.11ax (HE20) / Chain 0 : CH 48



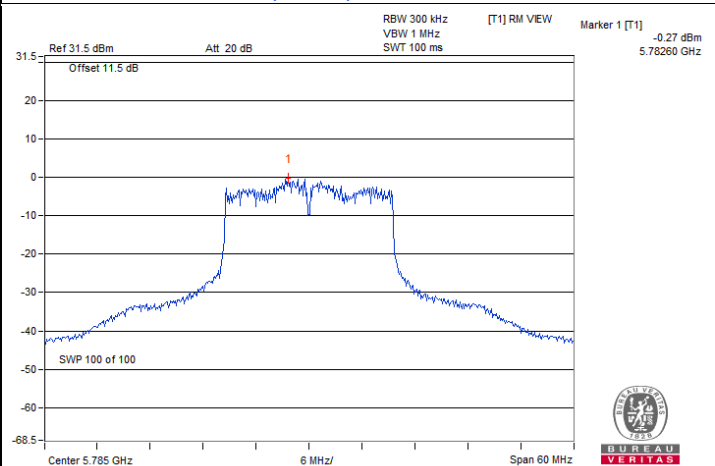
802.11ax (HE40) / Chain 1 : CH 46



802.11ax (HE80) / Chain 0 : CH 42

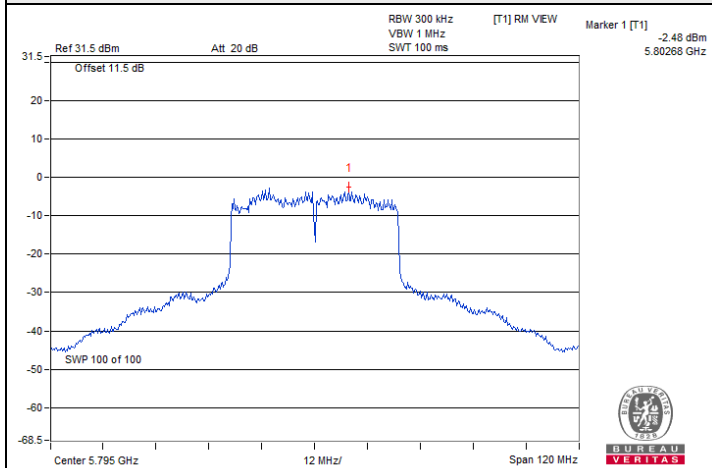


802.11a / Chain 3 : CH 157

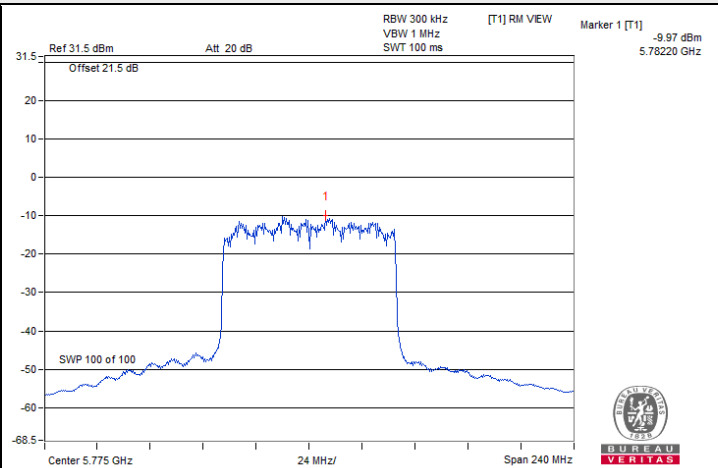


802.11ax (HE20) / Chain 2 : CH 157

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:	22°C, 60% RH	Tested By:	Willy Lin
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802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.06	15.50	16.46	16.08	0.5	Pass
157	5785	15.95	15.40	16.46	15.48	0.5	Pass
165	5825	16.04	15.39	16.37	15.75	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	18.87	18.03	17.88	17.96	0.5	Pass
157	5785	18.75	18.94	18.98	18.84	0.5	Pass
165	5825	18.68	18.37	18.75	18.89	0.5	Pass

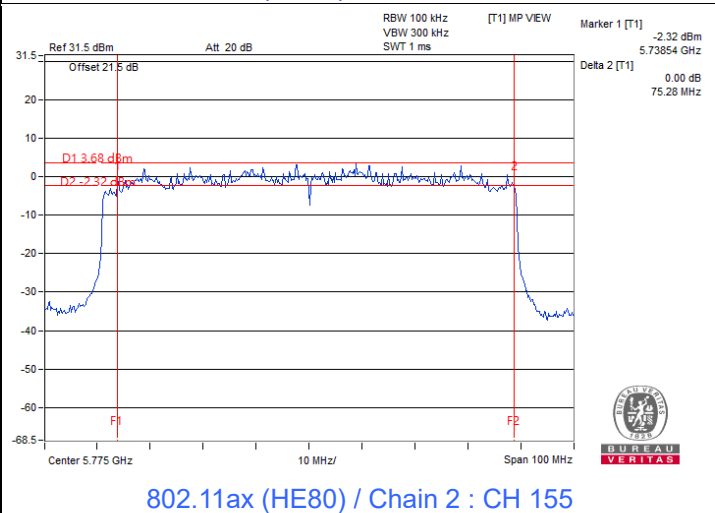
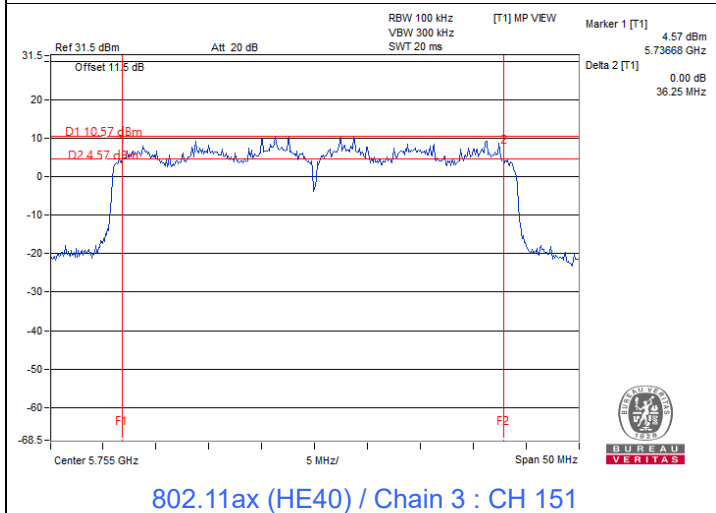
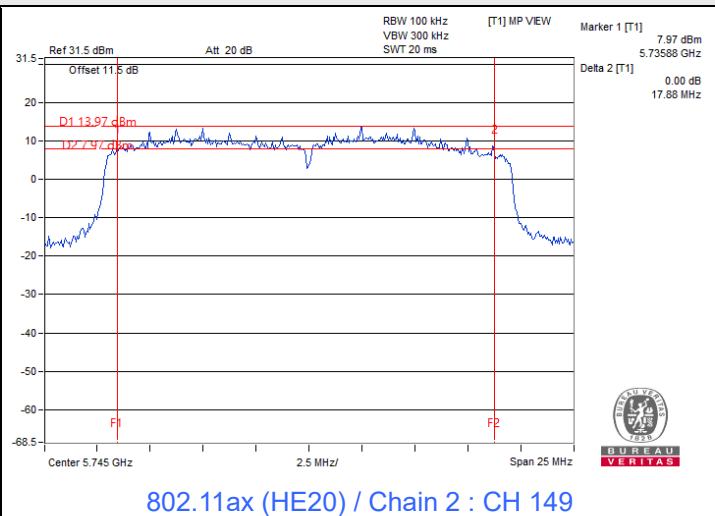
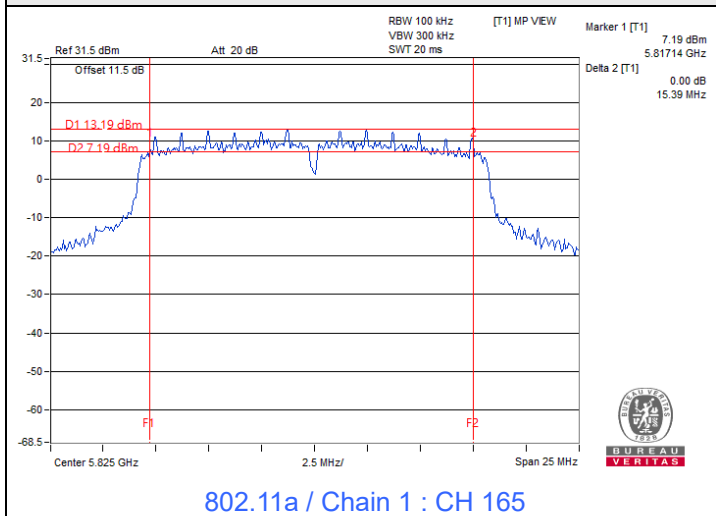
802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.78	37.46	38.00	36.25	0.5	Pass
159	5795	37.94	37.45	37.91	36.59	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	76.28	76.18	75.28	75.71	0.5	Pass

Spectrum Plot of Minimum Value



7.4 Occupied Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	22°C, 60% RH	Tested By:	Willy Lin
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802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	16.38	16.20	16.56	16.38
40	5200	16.44	16.26	16.80	16.62
48	5240	16.74	16.32	16.32	16.56
149	5745	16.68	16.56	17.16	16.62
157	5785	16.56	16.56	16.92	16.44
165	5825	16.68	16.56	16.80	16.56

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	19.02	18.60	19.08	19.02
40	5200	19.32	19.02	19.14	19.32
48	5240	19.02	19.38	19.02	19.32
149	5745	19.08	18.96	18.96	18.96
157	5785	18.96	19.20	19.20	19.08
165	5825	19.20	18.96	19.32	19.20

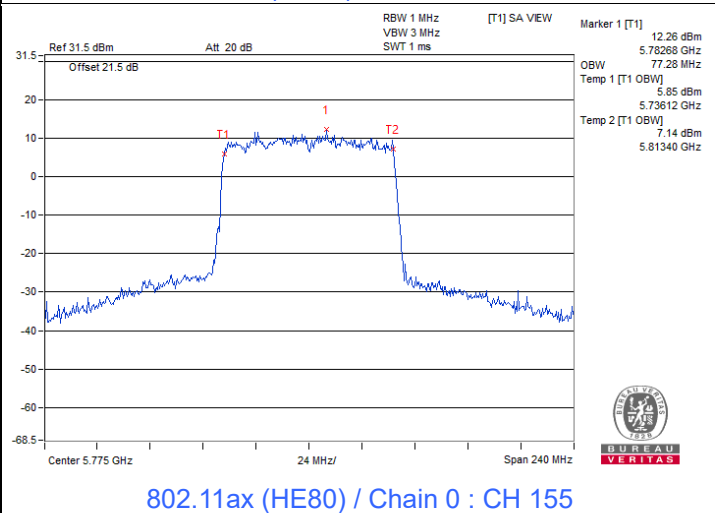
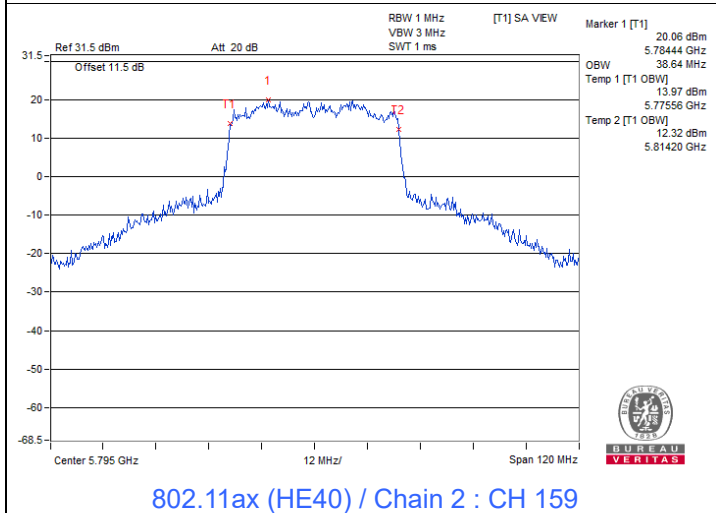
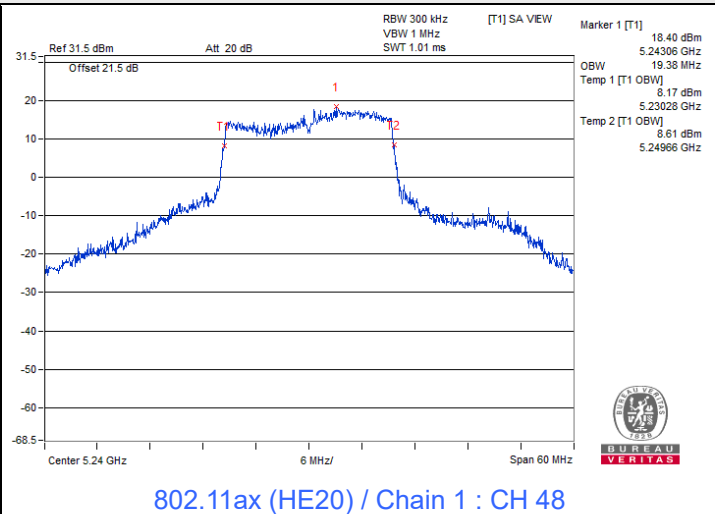
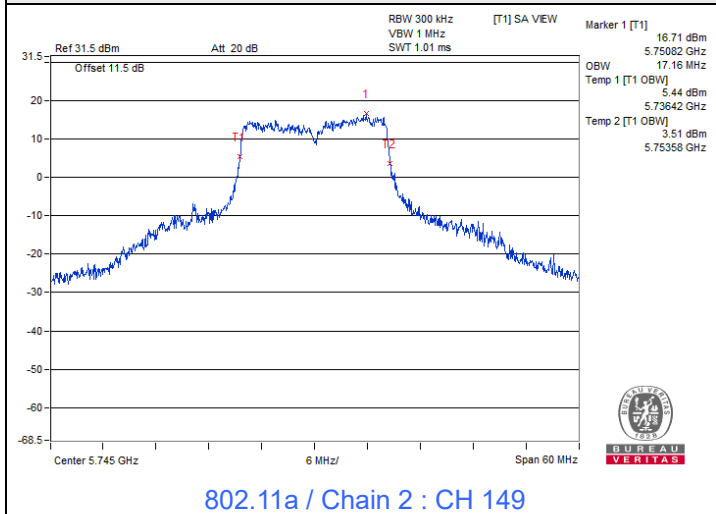
802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	37.68	37.56	38.04	37.92
46	5230	38.04	38.04	38.40	38.28
151	5755	38.16	38.16	38.40	38.16
159	5795	38.28	38.16	38.64	38.16

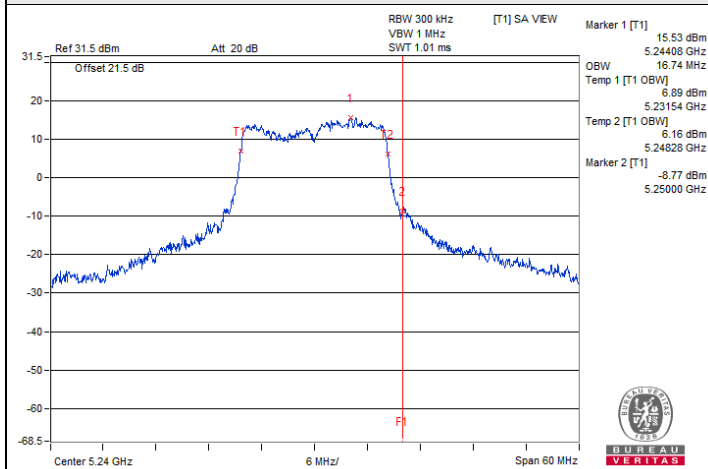
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	76.80	76.56	77.28	77.04
155	5775	77.28	77.28	76.80	77.28

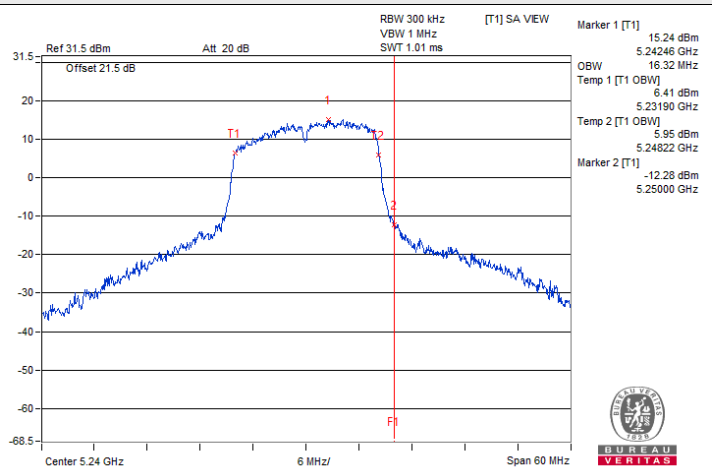
Spectrum Plot of Maximum Value



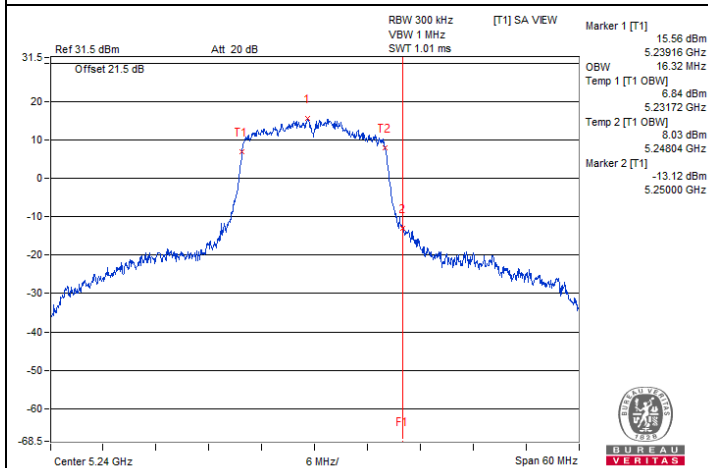
Spectrum Plot for nearby DFS band (DFS is required, if 99% OCP straddle into U-NII-2A)



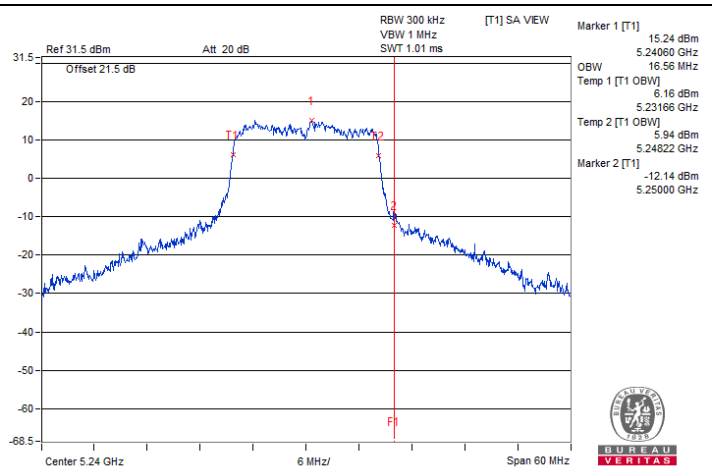
802.11a / Chain 0 : CH 48



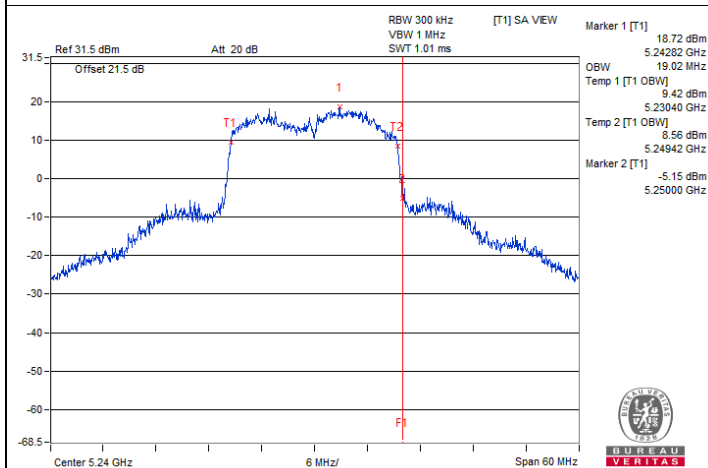
802.11a / Chain 1 : CH 48



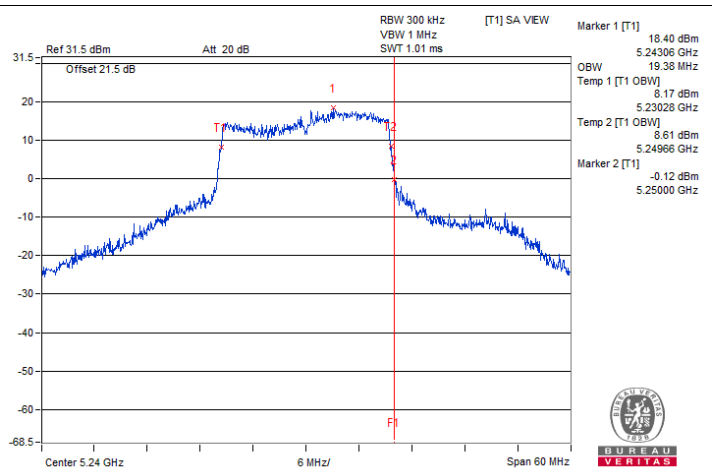
802.11a / Chain 2 : CH 48



802.11a / Chain 3 : CH 48

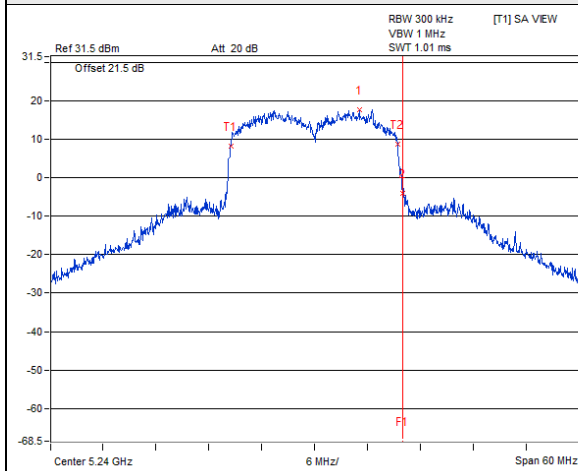


802.11ax (HE20) / Chain 0 : CH 48

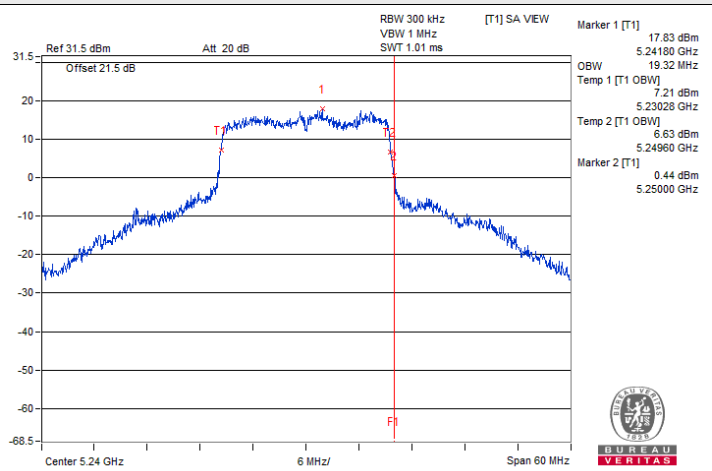


802.11ax (HE20) / Chain 1 : CH 48

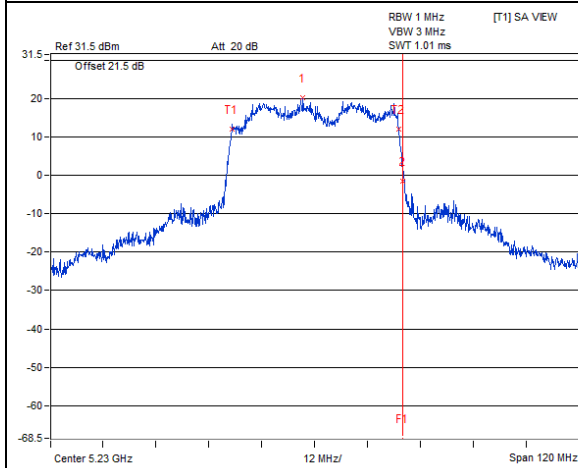
Spectrum Plot for nearby DFS band (DFS is required, if 99% OCP straddle into U-NII-2A)



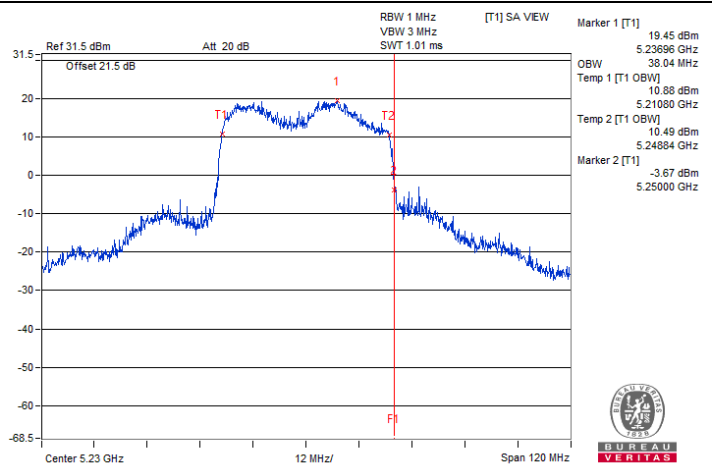
802.11ax (HE20) / Chain 2 : CH 48



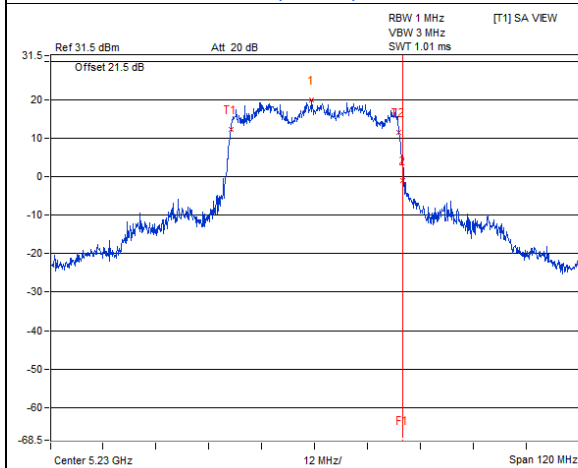
802.11ax (HE20) / Chain 3 : CH 48



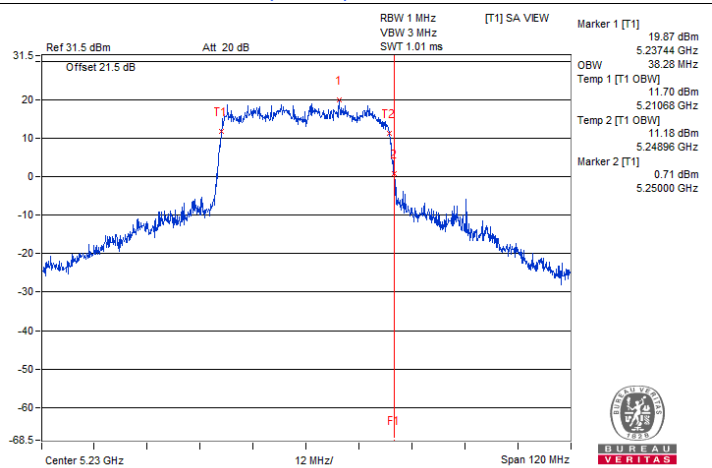
802.11ax (HE40) / Chain 0 : CH 46



802.11ax (HE40) / Chain 1 : CH 46

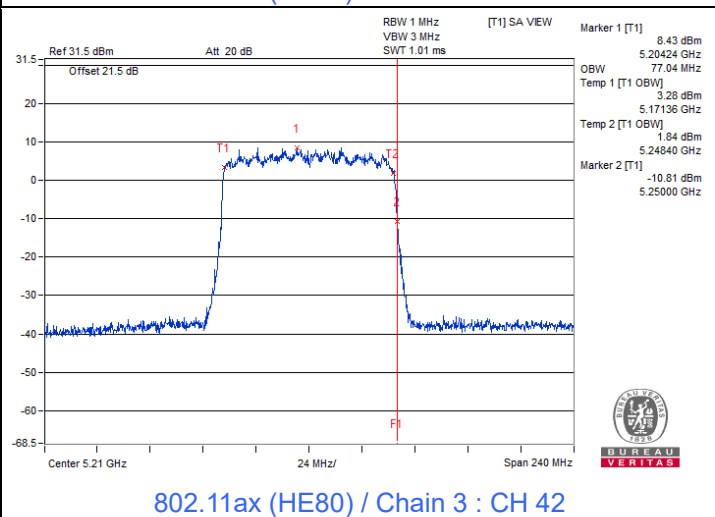
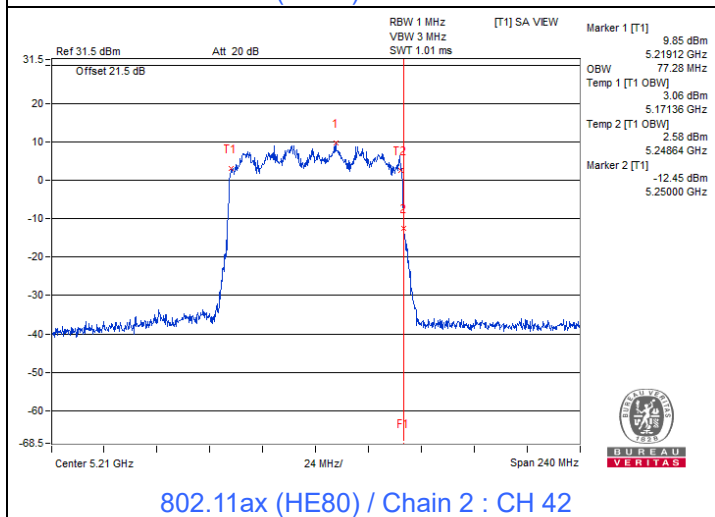
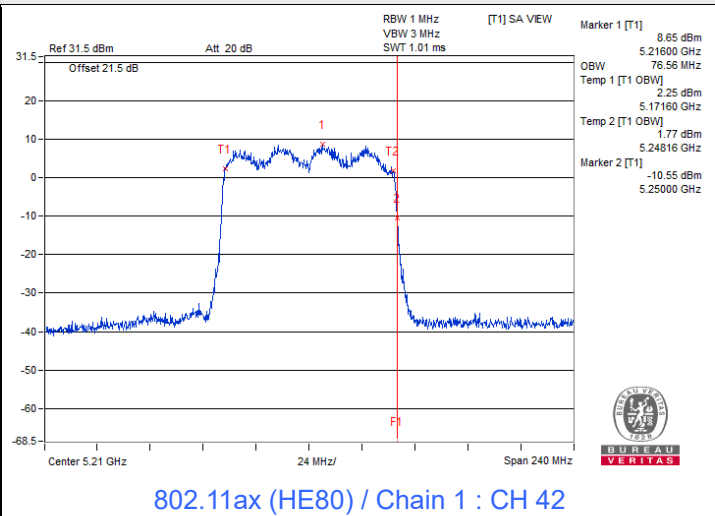
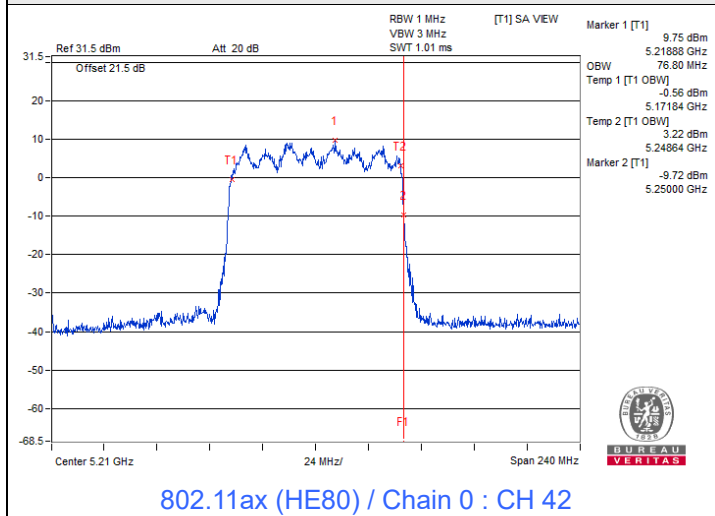


802.11ax (HE40) / Chain 2 : CH 46

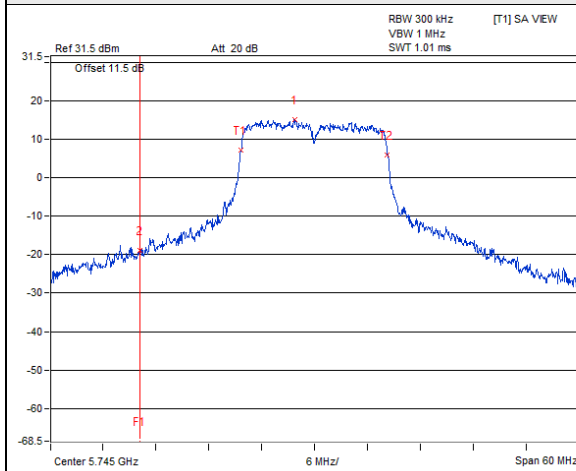


802.11ax (HE40) / Chain 3 : CH 46

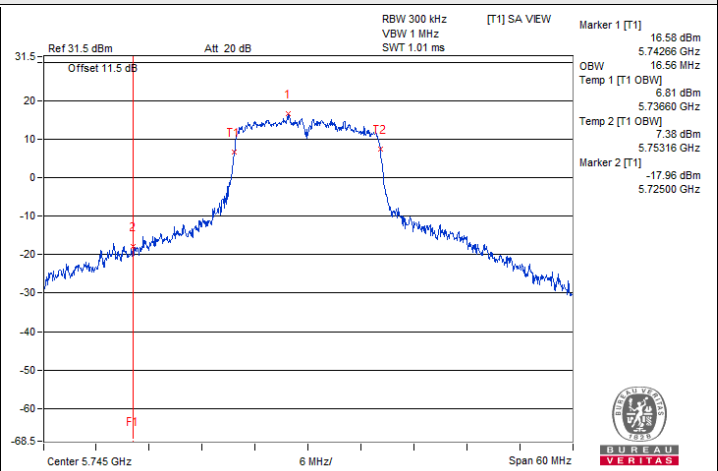
Spectrum Plot for nearby DFS band (DFS is required, if 99% OCP straddle into U-NII-2A)



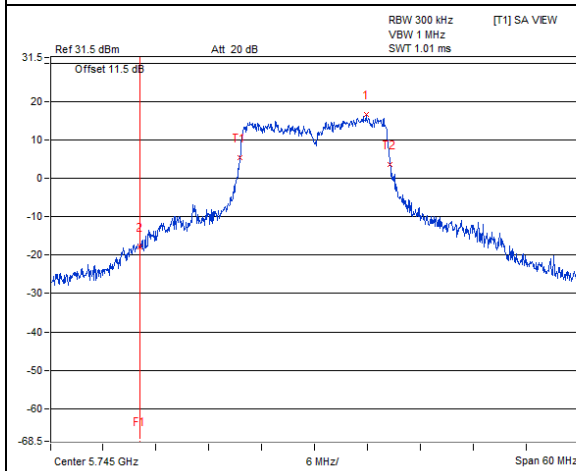
Spectrum Plot for nearby DFS band (DFS is required, if 99% OCP straddle into U-NII-2C)



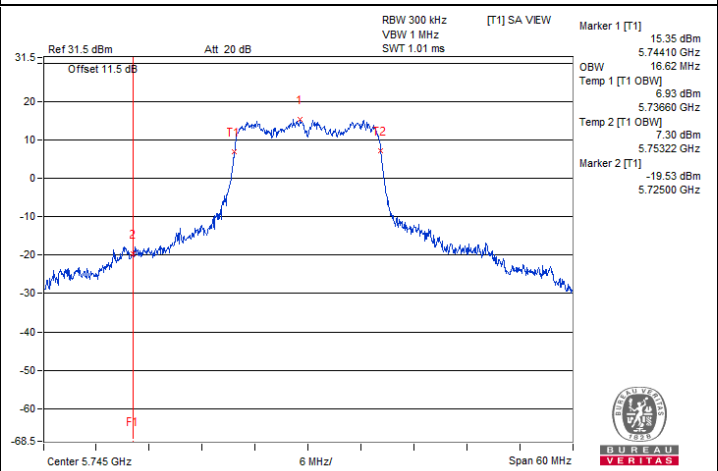
802.11a / Chain 0 : CH 149



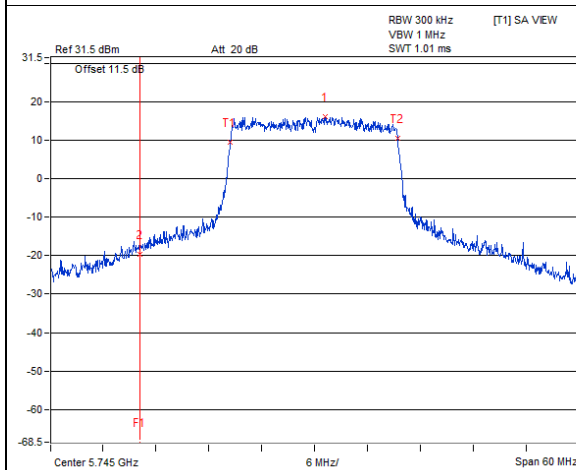
802.11a / Chain 1 : CH 149



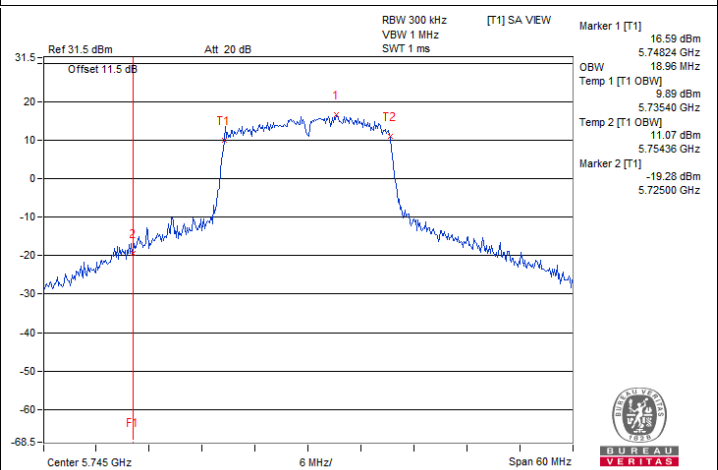
802.11a / Chain 2 : CH 149



802.11a / Chain 3 : CH 149

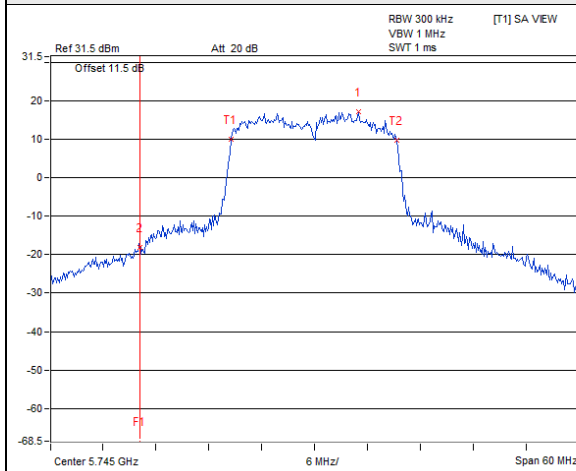


802.11ax (HE20) / Chain 0 : CH 149

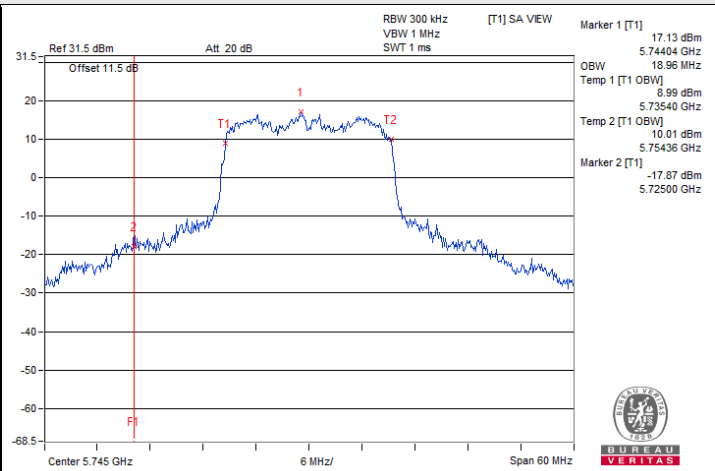


802.11ax (HE20) / Chain 1 : CH 149

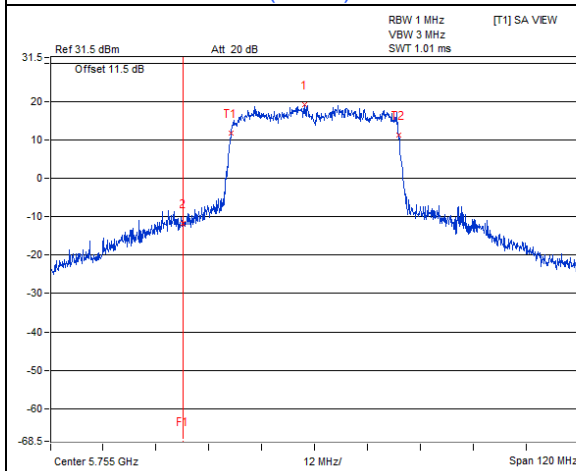
Spectrum Plot for nearby DFS band (DFS is required, if 99% OCP straddle into U-NII-2C)



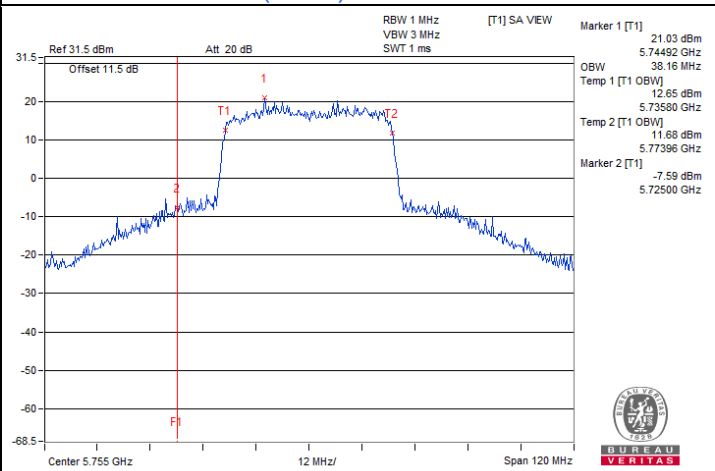
802.11ax (HE20) / Chain 2 : CH 149



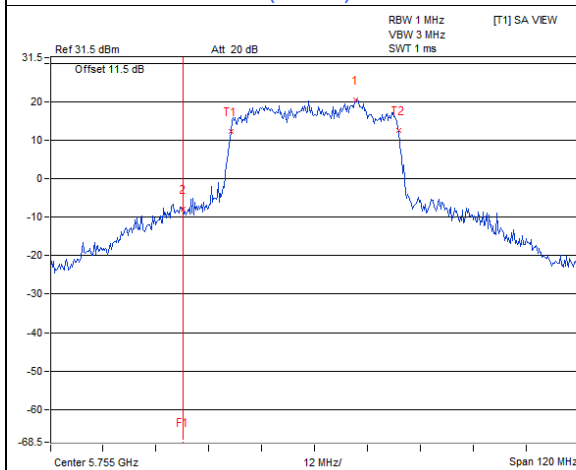
802.11ax (HE20) / Chain 3 : CH 149



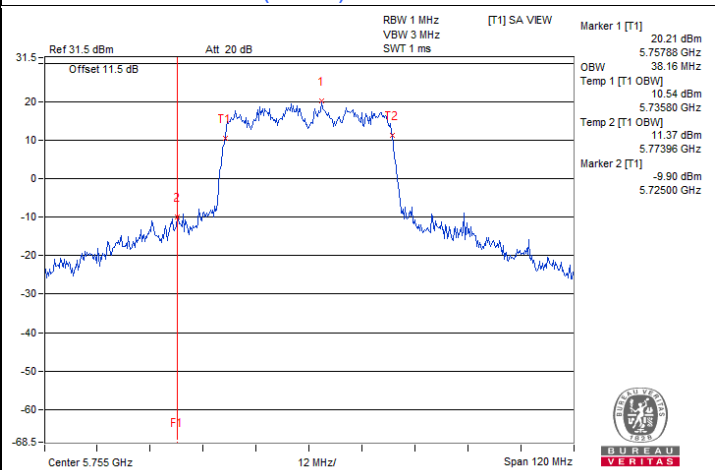
802.11ax (HE40) / Chain 0 : CH 151



802.11ax (HE40) / Chain 1 : CH 151

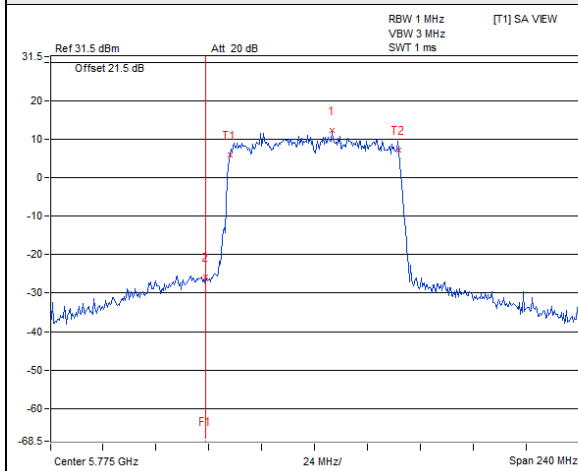


802.11ax (HE40) / Chain 2 : CH 151

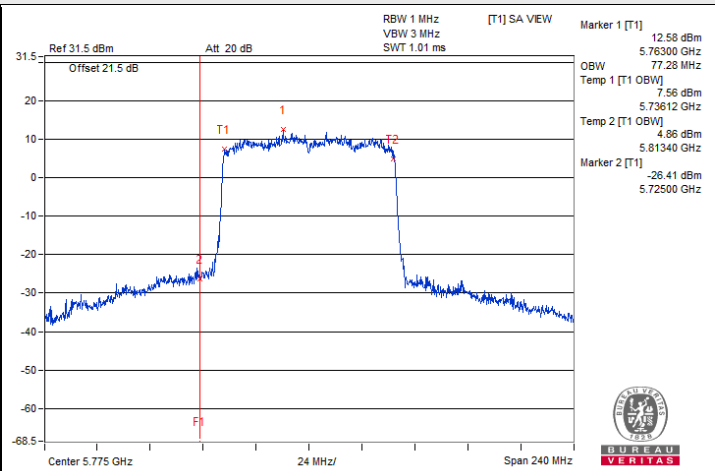


802.11ax (HE40) / Chain 3 : CH 151

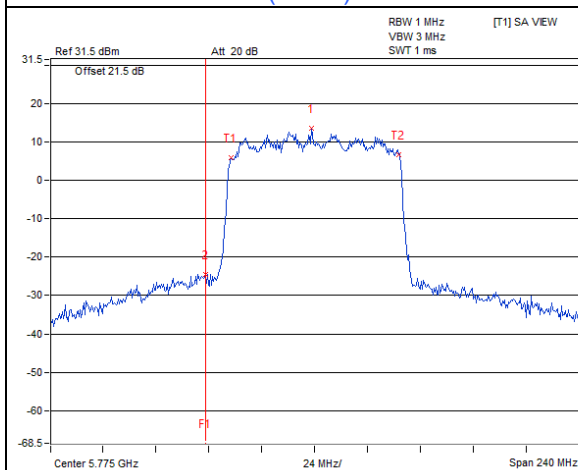
Spectrum Plot for nearby DFS band (DFS is required, if 99% OCP straddle into U-NII-2C)



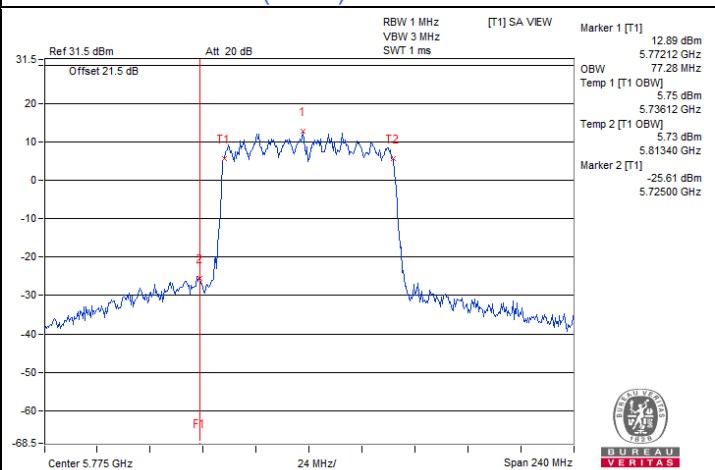
802.11ax (HE80) / Chain 0 : CH 155



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:	22°C, 60% RH	Tested By:	Willy Lin
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Frequency Stability Versus Temperature									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vdc)	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	12	5179.9952	Pass	5179.994	Pass	5179.9961	Pass	5179.9951	Pass
30	12	5179.9816	Pass	5179.9826	Pass	5179.9809	Pass	5179.9809	Pass
20	12	5179.9773	Pass	5179.9748	Pass	5179.9771	Pass	5179.9783	Pass
10	12	5179.9886	Pass	5179.9852	Pass	5179.9889	Pass	5179.9842	Pass
0	12	5180.0003	Pass	5180	Pass	5179.9994	Pass	5180.0012	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vdc)	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	13.8	5179.9878	Pass	5179.9887	Pass	5179.9888	Pass	5179.9886	Pass
	12	5179.9886	Pass	5179.9852	Pass	5179.9889	Pass	5179.9842	Pass
	10.2	5179.9846	Pass	5179.9891	Pass	5179.9846	Pass	5179.9877	Pass

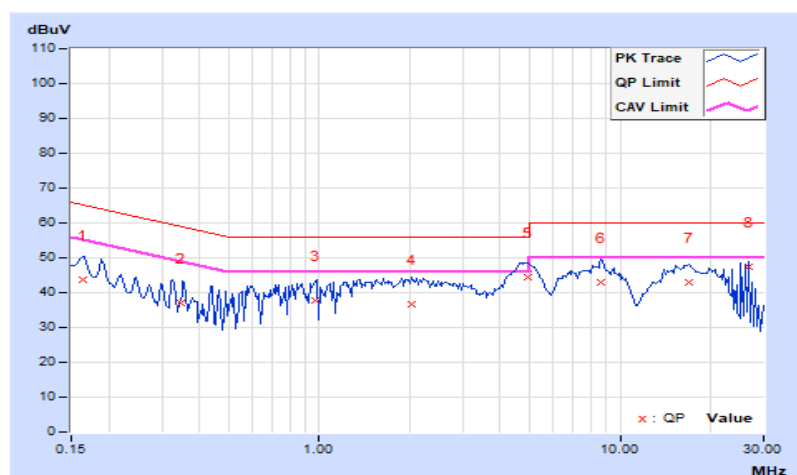
7.6 AC Power Conducted Emissions

RF Mode	802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21°C, 66% RH
Tested By	Louis Yang		

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	0.16442	9.94	33.87	30.76	43.81	40.70	65.24	55.24	-21.43	-14.54
2	0.34903	9.95	27.05	24.89	37.00	34.84	58.99	48.99	-21.99	-14.15
3	0.97703	9.99	27.92	22.19	37.91	32.18	56.00	46.00	-18.09	-13.82
4	2.02244	10.03	26.58	15.42	36.61	25.45	56.00	46.00	-19.39	-20.55
5	4.91206	10.26	34.11	28.87	44.37	39.13	56.00	46.00	-11.63	-6.87
6	8.67759	10.54	32.46	27.19	43.00	37.73	60.00	50.00	-17.00	-12.27
7	16.91888	11.15	31.65	26.77	42.80	37.92	60.00	50.00	-17.20	-12.08
8	26.74891	11.65	35.74	34.48	47.39	46.13	60.00	50.00	-12.61	-3.87

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

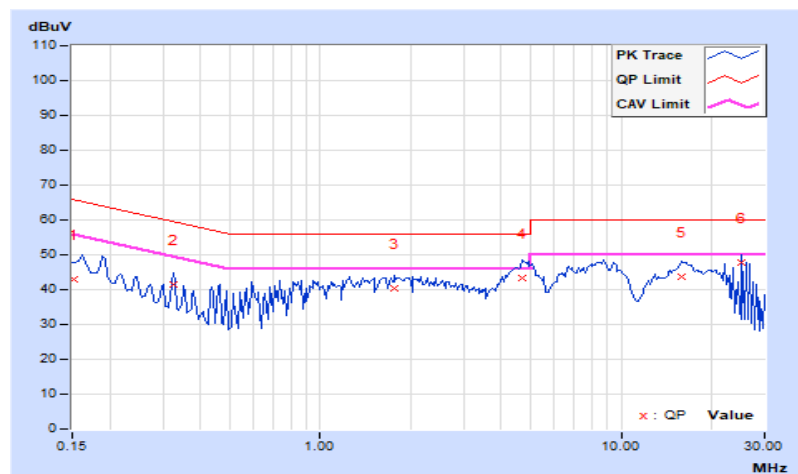


RF Mode	802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21°C, 66% RH
Tested By	Louis Yang		

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	0.15172	10.00	32.89	29.74	42.89	39.74	65.91	55.91	-23.02	-16.17
2	0.32488	10.01	31.29	30.30	41.30	40.31	59.58	49.58	-18.28	-9.27
3	1.75863	10.08	30.27	23.34	40.35	33.42	56.00	46.00	-15.65	-12.58
4	4.66667	10.27	33.24	28.04	43.51	38.31	56.00	46.00	-12.49	-7.69
5	15.88406	10.93	32.94	27.88	43.87	38.81	60.00	50.00	-16.13	-11.19
6	25.22456	11.27	36.61	35.50	47.88	46.77	60.00	50.00	-12.12	-3.23

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



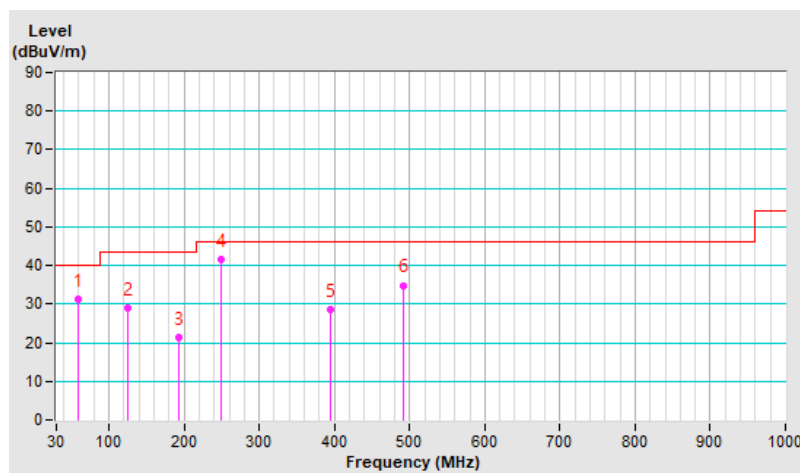
7.7 Unwanted Emissions below 1 GHz

RF Mode	802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	28°C, 76% RH
Tested By	Louis 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	58.72	31.2 QP	40.0	-8.8	3.00 H	130	39.7	-8.5
2	124.58	29.1 QP	43.5	-14.4	1.00 H	54	38.6	-9.5
3	193.11	21.3 QP	43.5	-22.2	2.00 H	266	32.2	-10.9
4	249.39	41.6 QP	46.0	-4.4	1.00 H	263	50.6	-9.0
5	394.11	28.7 QP	46.0	-17.3	1.00 H	67	33.5	-4.8
6	490.77	34.9 QP	46.0	-11.1	2.00 H	203	37.3	-2.4

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 of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

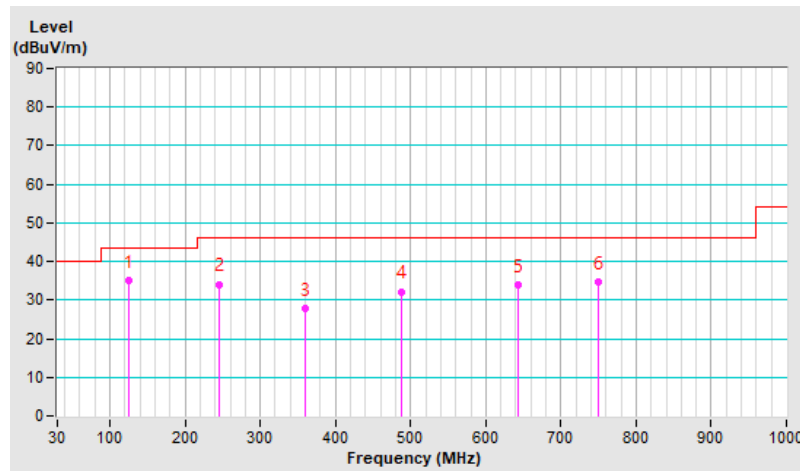


RF Mode	802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	28°C, 76% RH
Tested By	Louis Yang		

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	124.30	35.0 QP	43.5	-8.5	1.00 V	306	44.5	-9.5
2	245.41	34.1 QP	46.0	-11.9	1.00 V	148	43.2	-9.1
3	358.95	27.8 QP	46.0	-18.2	1.00 V	284	33.3	-5.5
4	487.44	32.2 QP	46.0	-13.8	2.00 V	254	34.7	-2.5
5	643.68	33.9 QP	46.0	-12.1	3.00 V	358	32.9	1.0
6	749.57	34.7 QP	46.0	-11.3	1.00 V	107	31.7	3.0

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 frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



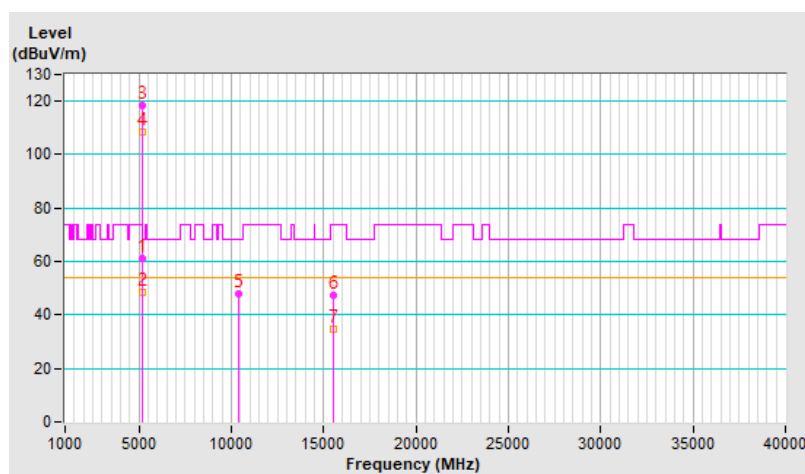
7.8 Unwanted Emissions above 1 GHz

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, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	61.3 PK	74.0	-12.7	2.84 H	267	57.9	3.4
2	5150.00	48.7 AV	54.0	-5.3	2.84 H	267	45.3	3.4
3	*5180.00	118.3 PK			2.84 H	267	115.2	3.1
4	*5180.00	108.3 AV			2.84 H	267	105.2	3.1
5	#10360.00	47.9 PK	68.2	-20.3	1.57 H	111	36.4	11.5
6	15540.00	47.6 PK	74.0	-26.4	1.50 H	148	35.4	12.2
7	15540.00	34.6 AV	54.0	-19.4	1.50 H	148	22.4	12.2

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.

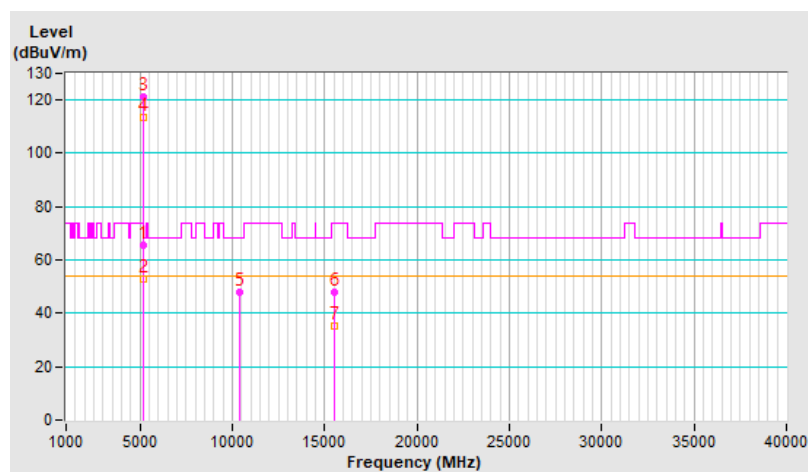


RF Mode	802.11a	Channel	CH 36 : 5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	65.7 PK	74.0	-8.3	1.73 V	81	62.3	3.4
2	5150.00	53.0 AV	54.0	-1.0	1.73 V	81	49.6	3.4
3	*5180.00	121.3 PK			1.73 V	81	118.2	3.1
4	*5180.00	113.3 AV			1.73 V	81	110.2	3.1
5	#10360.00	47.9 PK	68.2	-20.3	1.55 V	206	36.4	11.5
6	15540.00	47.7 PK	74.0	-26.3	2.00 V	3	35.5	12.2
7	15540.00	35.1 AV	54.0	-18.9	2.00 V	3	22.9	12.2

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.

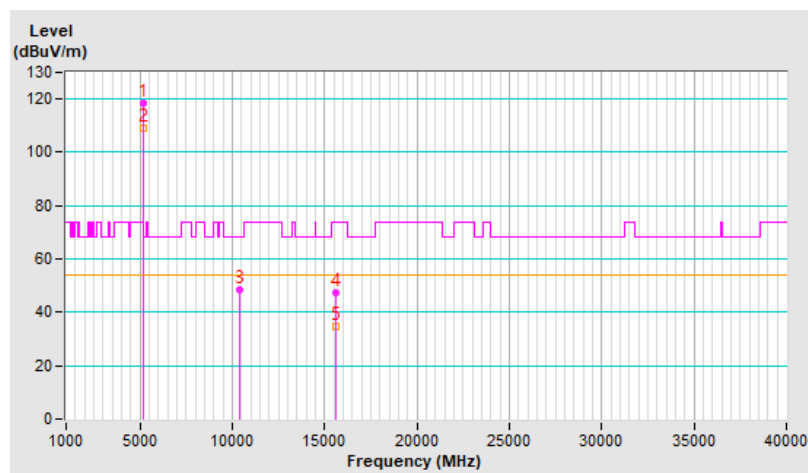


RF Mode	802.11a	Channel	CH 40 : 5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	*5200.00	118.2 PK			1.50 H	315	115.3	2.9
2	*5200.00	108.8 AV			1.50 H	315	105.9	2.9
3	#10400.00	48.4 PK	68.2	-19.8	1.58 H	103	36.8	11.6
4	15600.00	47.5 PK	74.0	-26.5	1.48 H	135	35.8	11.7
5	15600.00	34.6 AV	54.0	-19.4	1.48 H	135	22.9	11.7

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.

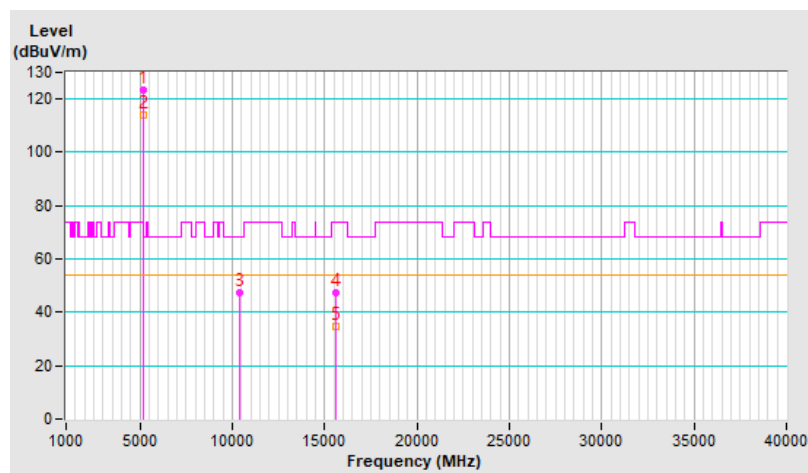


RF Mode	802.11a	Channel	CH 40 : 5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	*5200.00	123.2 PK			1.72 V	62	120.3	2.9
2	*5200.00	114.0 AV			1.72 V	62	111.1	2.9
3	#10400.00	47.5 PK	68.2	-20.7	1.56 V	213	35.9	11.6
4	15600.00	47.2 PK	74.0	-26.8	1.93 V	17	35.5	11.7
5	15600.00	34.5 AV	54.0	-19.5	1.93 V	17	22.8	11.7

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.

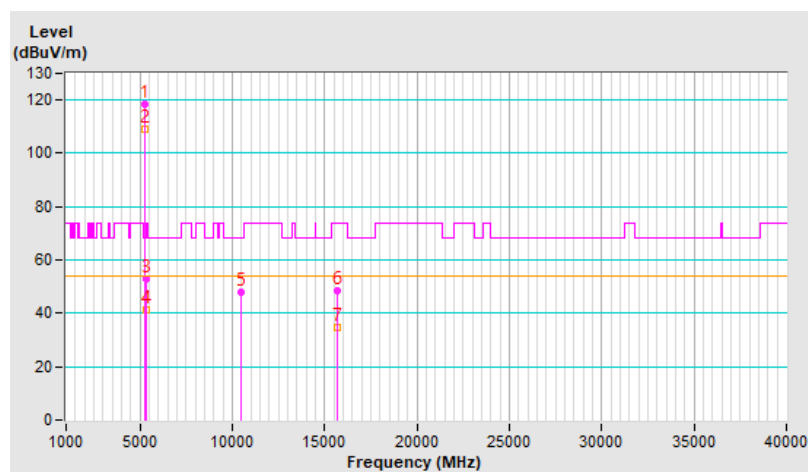


RF Mode	802.11a	Channel	CH 48 : 5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	118.3 PK			1.50 H	313	115.7	2.6
2	*5240.00	108.9 AV			1.50 H	313	106.3	2.6
3	5350.00	52.8 PK	74.0	-21.2	1.50 H	313	49.9	2.9
4	5350.00	41.5 AV	54.0	-12.5	1.50 H	313	38.6	2.9
5	#10480.00	48.0 PK	68.2	-20.2	1.52 H	107	36.4	11.6
6	15720.00	48.2 PK	74.0	-25.8	1.55 H	152	36.3	11.9
7	15720.00	34.9 AV	54.0	-19.1	1.55 H	152	23.0	11.9

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.

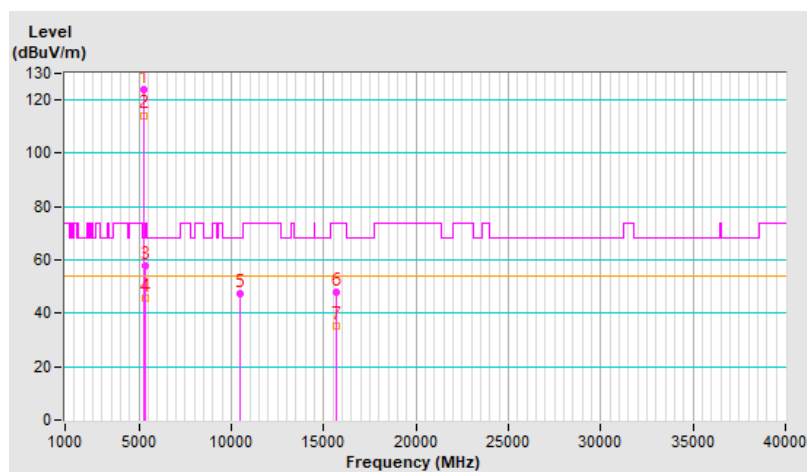


RF Mode	802.11a	Channel	CH 48 : 5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	123.7 PK			1.68 V	58	121.1	2.6
2	*5240.00	114.3 AV			1.68 V	58	111.7	2.6
3	5350.00	58.0 PK	74.0	-16.0	1.68 V	58	55.1	2.9
4	5350.00	45.7 AV	54.0	-8.3	1.68 V	58	42.8	2.9
5	#10480.00	47.3 PK	68.2	-20.9	1.56 V	211	35.7	11.6
6	15720.00	47.7 PK	74.0	-26.3	1.95 V	12	35.8	11.9
7	15720.00	35.0 AV	54.0	-19.0	1.95 V	12	23.1	11.9

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.

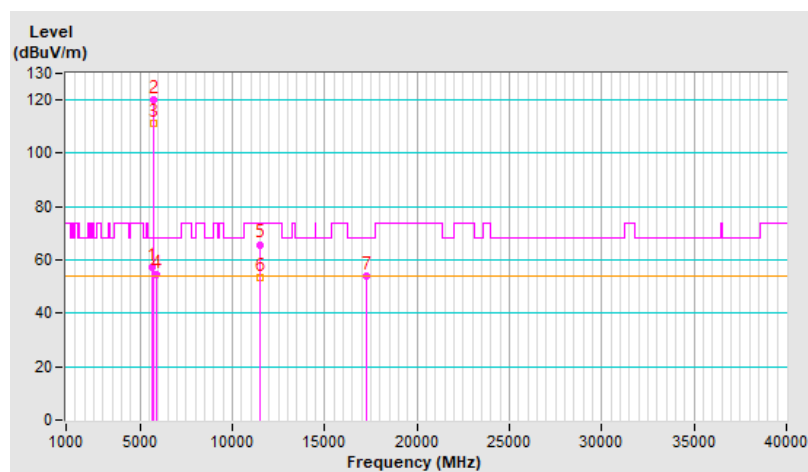


RF Mode	802.11a	Channel	CH 149 : 5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5643.00	57.2 PK	68.2	-11.0	2.73 H	302	54.2	3.0
2	*5745.00	120.3 PK			2.73 H	302	116.8	3.5
3	*5745.00	111.5 AV			2.73 H	302	108.0	3.5
4	#5931.00	54.4 PK	68.2	-13.8	2.73 H	302	50.8	3.6
5	11490.00	65.8 PK	74.0	-8.2	1.50 H	161	53.2	12.6
6	11490.00	53.5 AV	54.0	-0.5	1.50 H	161	40.9	12.6
7	#17235.00	53.8 PK	68.2	-14.4	1.27 H	56	36.5	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.

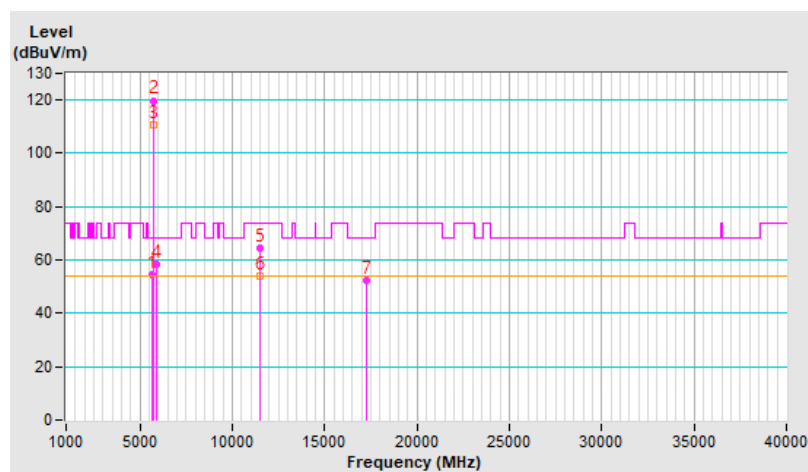


RF Mode	802.11a	Channel	CH 149 : 5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5643.00	54.4 PK	68.2	-13.8	1.44 V	124	51.4	3.0
2	*5745.00	119.8 PK			1.44 V	124	116.3	3.5
3	*5745.00	110.5 AV			1.44 V	124	107.0	3.5
4	#5931.00	58.3 PK	68.2	-9.9	1.44 V	124	54.7	3.6
5	11490.00	64.3 PK	74.0	-9.7	1.51 V	182	51.7	12.6
6	11490.00	53.8 AV	54.0	-0.2	1.51 V	182	41.2	12.6
7	#17235.00	52.2 PK	68.2	-16.0	1.50 V	197	34.9	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.

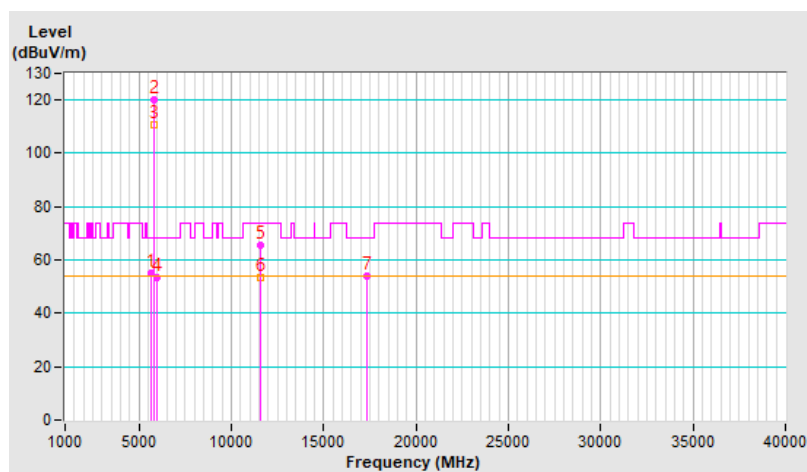


RF Mode	802.11a	Channel	CH 157 : 5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5620.00	55.1 PK	68.2	-13.1	2.36 H	285	52.1	3.0
2	*5785.00	120.3 PK			2.36 H	285	116.8	3.5
3	*5785.00	110.5 AV			2.36 H	285	107.0	3.5
4	#5956.20	53.2 PK	68.2	-15.0	2.36 H	285	49.7	3.5
5	11570.00	65.3 PK	74.0	-8.7	1.54 H	146	52.8	12.5
6	11570.00	53.3 AV	54.0	-0.7	1.54 H	146	40.8	12.5
7	#17355.00	54.0 PK	68.2	-14.2	1.21 H	44	36.4	17.6

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.

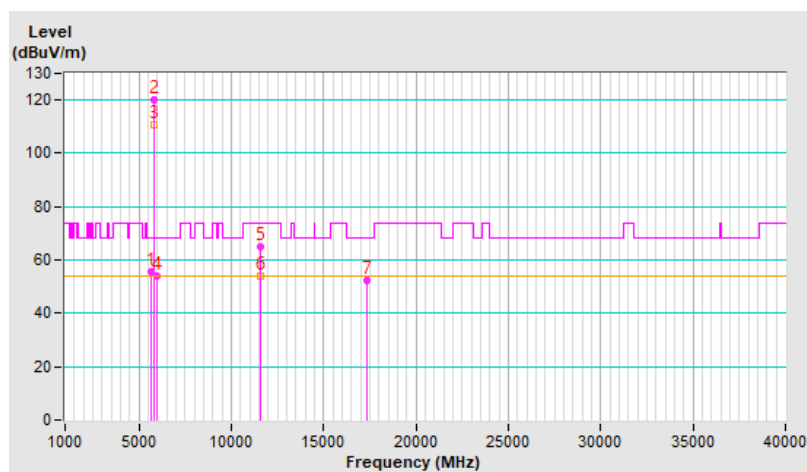


RF Mode	802.11a	Channel	CH 157 : 5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5620.00	55.5 PK	68.2	-12.7	1.36 V	124	52.5	3.0
2	*5785.00	119.9 PK			1.36 V	124	116.4	3.5
3	*5785.00	110.6 AV			1.36 V	124	107.1	3.5
4	#5956.20	53.8 PK	68.2	-14.4	1.36 V	124	50.3	3.5
5	11570.00	65.1 PK	74.0	-8.9	1.51 V	187	52.6	12.5
6	11570.00	53.8 AV	54.0	-0.2	1.51 V	187	41.3	12.5
7	#17355.00	52.5 PK	68.2	-15.7	1.54 V	189	34.9	17.6

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.

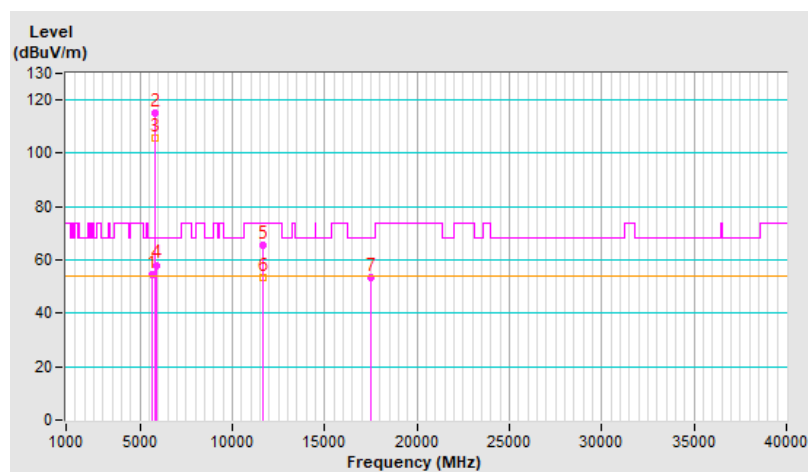


RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5648.80	54.4 PK	68.2	-13.8	2.20 H	301	51.4	3.0
2	*5825.00	115.3 PK			2.20 H	301	111.6	3.7
3	*5825.00	105.6 AV			2.20 H	301	101.9	3.7
4	#5928.40	58.1 PK	68.2	-10.1	2.20 H	301	54.5	3.6
5	11650.00	65.7 PK	74.0	-8.3	1.55 H	158	53.6	12.1
6	11650.00	53.4 AV	54.0	-0.6	1.55 H	158	41.3	12.1
7	#17475.00	53.6 PK	68.2	-14.6	1.30 H	51	35.4	18.2

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.

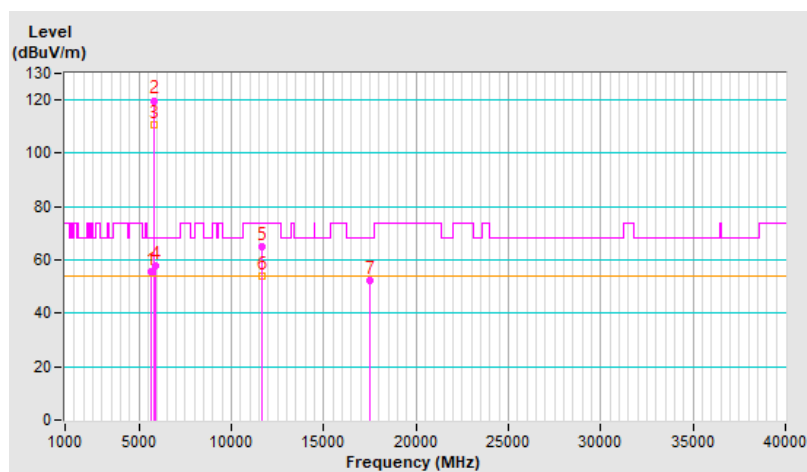


RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5639.20	55.8 PK	68.2	-12.4	1.48 V	100	52.7	3.1
2	*5825.00	119.8 PK			1.48 V	100	116.1	3.7
3	*5825.00	110.5 AV			1.48 V	100	106.8	3.7
4	#5925.70	57.6 PK	68.2	-10.6	1.48 V	100	54.0	3.6
5	11650.00	64.9 PK	74.0	-9.1	1.47 V	184	52.8	12.1
6	11650.00	53.9 AV	54.0	-0.1	1.47 V	184	41.8	12.1
7	#17475.00	52.2 PK	68.2	-16.0	1.51 V	212	34.0	18.2

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.

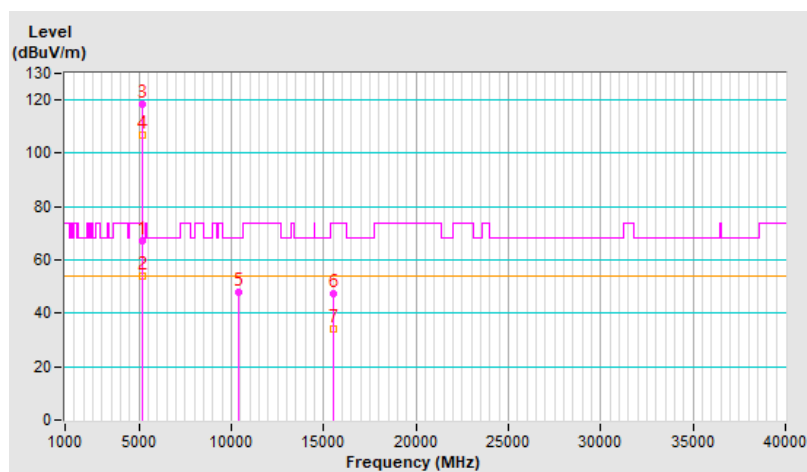


RF Mode	802.11ax (HE20)	Channel	CH 36 : 5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	67.1 PK	74.0	-6.9	2.82 H	151	63.7	3.4
2	5150.00	53.8 AV	54.0	-0.2	2.82 H	151	50.4	3.4
3	*5180.00	118.5 PK			2.82 H	151	115.4	3.1
4	*5180.00	106.8 AV			2.82 H	151	103.7	3.1
5	#10360.00	47.8 PK	68.2	-20.4	3.31 H	126	36.3	11.5
6	15540.00	47.3 PK	74.0	-26.7	1.50 H	325	35.1	12.2
7	15540.00	34.2 AV	54.0	-19.8	1.50 H	325	22.0	12.2

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.

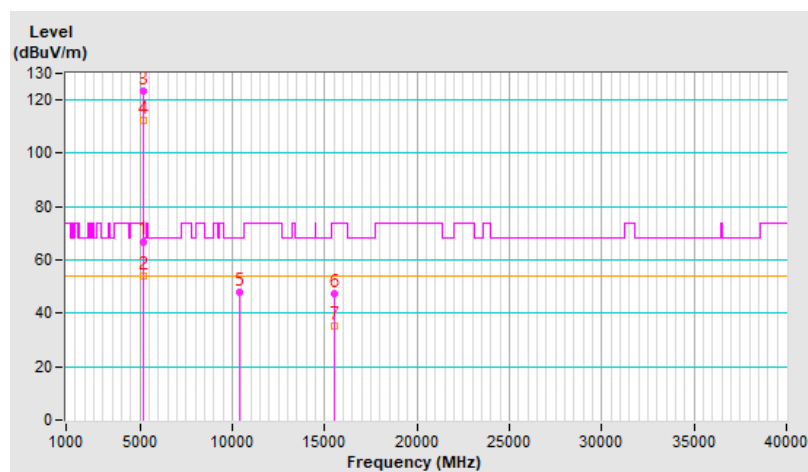


RF Mode	802.11ax (HE20)	Channel	CH 36 : 5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	66.9 PK	74.0	-7.1	1.65 V	84	63.5	3.4
2	5150.00	53.8 AV	54.0	-0.2	1.65 V	84	50.4	3.4
3	*5180.00	123.6 PK			1.65 V	84	120.5	3.1
4	*5180.00	112.2 AV			1.65 V	84	109.1	3.1
5	#10360.00	47.8 PK	68.2	-20.4	1.61 V	193	36.3	11.5
6	15540.00	47.4 PK	74.0	-26.6	2.01 V	2	35.2	12.2
7	15540.00	35.0 AV	54.0	-19.0	2.01 V	2	22.8	12.2

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.

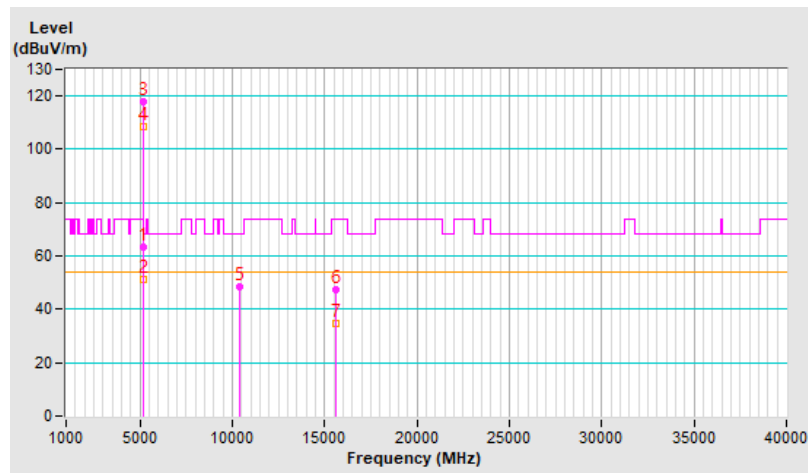


RF Mode	802.11ax (HE20)	Channel	CH 40 : 5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	63.1 PK	74.0	-10.9	1.54 H	331	59.7	3.4
2	5150.00	51.2 AV	54.0	-2.8	1.54 H	331	47.8	3.4
3	*5200.00	118.1 PK			1.54 H	331	115.2	2.9
4	*5200.00	108.5 AV			1.54 H	331	105.6	2.9
5	#10400.00	48.5 PK	68.2	-19.7	1.62 H	111	36.9	11.6
6	15600.00	47.2 PK	74.0	-26.8	1.51 H	123	35.5	11.7
7	15600.00	34.6 AV	54.0	-19.4	1.51 H	123	22.9	11.7

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.

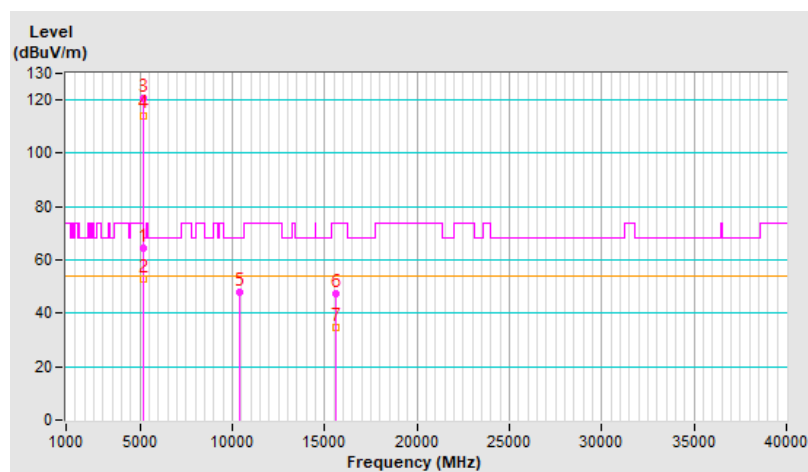


RF Mode	802.11ax (HE20)	Channel	CH 40 : 5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	1.76 V	75	60.9	3.4
2	5150.00	52.8 AV	54.0	-1.2	1.76 V	75	49.4	3.4
3	*5200.00	120.4 PK			1.76 V	75	117.5	2.9
4	*5200.00	114.3 AV			1.76 V	75	111.4	2.9
5	#10400.00	47.8 PK	68.2	-20.4	1.55 V	223	36.2	11.6
6	15600.00	47.3 PK	74.0	-26.7	1.94 V	2	35.6	11.7
7	15600.00	34.8 AV	54.0	-19.2	1.94 V	2	23.1	11.7

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.

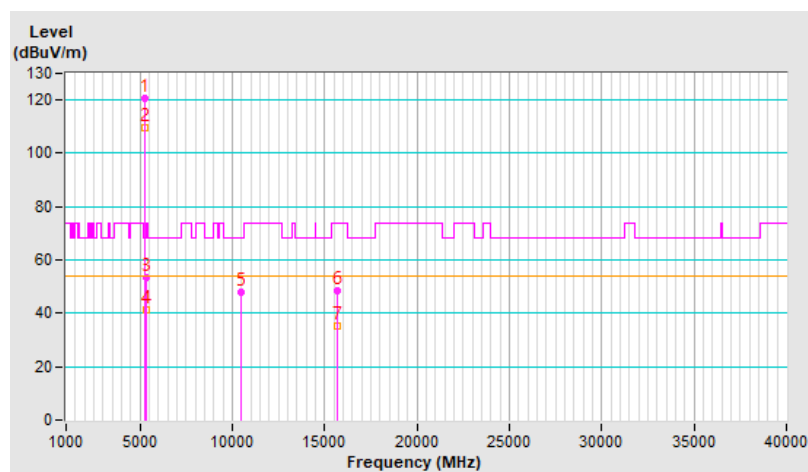


RF Mode	802.11ax (HE20)	Channel	CH 48 : 5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	120.8 PK			1.59 H	254	118.2	2.6
2	*5240.00	109.6 AV			1.59 H	254	107.0	2.6
3	5350.00	53.4 PK	74.0	-20.6	1.59 H	254	50.5	2.9
4	5350.00	41.2 AV	54.0	-12.8	1.59 H	254	38.3	2.9
5	#10480.00	48.1 PK	68.2	-20.1	1.49 H	110	36.5	11.6
6	15720.00	48.6 PK	74.0	-25.4	1.52 H	167	36.7	11.9
7	15720.00	35.2 AV	54.0	-18.8	1.52 H	167	23.3	11.9

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.

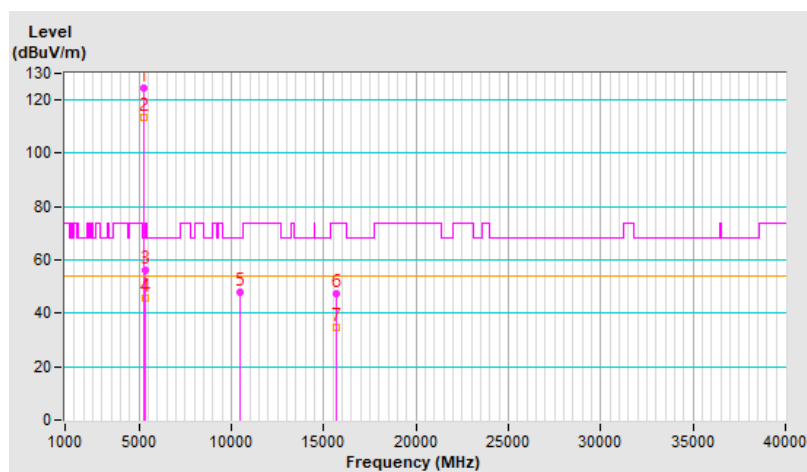


RF Mode	802.11ax (HE20)	Channel	CH 48 : 5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	124.6 PK			1.78 V	76	122.0	2.6
2	*5240.00	113.5 AV			1.78 V	76	110.9	2.6
3	5350.00	56.4 PK	74.0	-17.6	1.78 V	76	53.5	2.9
4	5350.00	45.8 AV	54.0	-8.2	1.78 V	76	42.9	2.9
5	#10480.00	47.8 PK	68.2	-20.4	1.55 V	215	36.2	11.6
6	15720.00	47.1 PK	74.0	-26.9	1.97 V	0	35.2	11.9
7	15720.00	34.6 AV	54.0	-19.4	1.97 V	0	22.7	11.9

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.

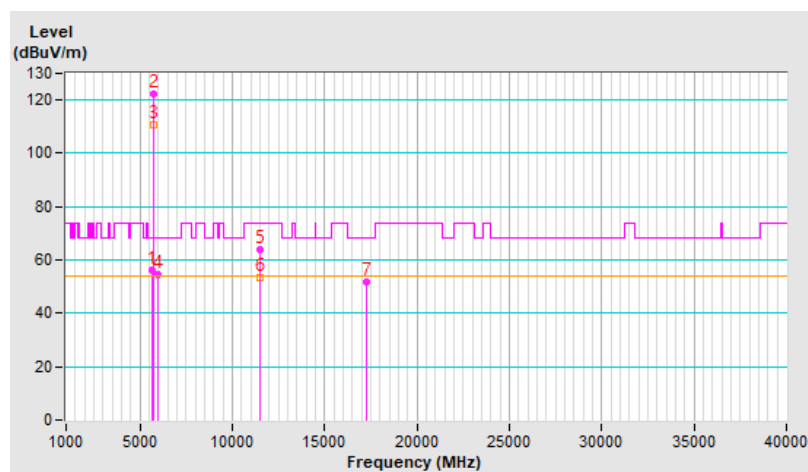


RF Mode	802.11ax (HE20)	Channel	CH 149 : 5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5642.50	56.4 PK	68.2	-11.8	1.22 H	326	53.3	3.1
2	*5745.00	122.5 PK			1.22 H	326	119.0	3.5
3	*5745.00	110.8 AV			1.22 H	326	107.3	3.5
4	#5941.40	54.7 PK	68.2	-13.5	1.22 H	326	51.1	3.6
5	11490.00	64.0 PK	74.0	-10.0	2.24 H	185	51.4	12.6
6	11490.00	53.3 AV	54.0	-0.7	2.24 H	185	40.7	12.6
7	#17235.00	51.6 PK	68.2	-16.6	1.40 H	214	34.3	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.

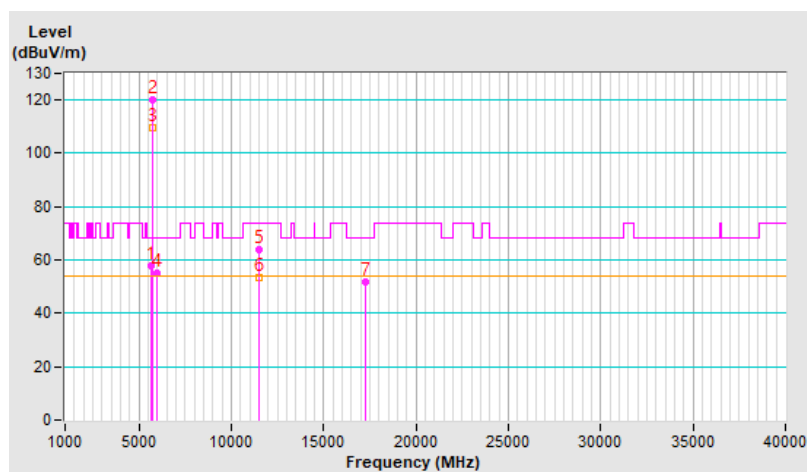


RF Mode	802.11ax (HE20)	Channel	CH 149 : 5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5646.70	57.9 PK	68.2	-10.3	1.43 V	113	54.9	3.0
2	*5745.00	120.1 PK			1.43 V	113	116.6	3.5
3	*5745.00	109.8 AV			1.43 V	113	106.3	3.5
4	#5937.30	55.2 PK	68.2	-13.0	1.43 V	113	51.6	3.6
5	11490.00	64.0 PK	74.0	-10.0	2.28 V	183	51.4	12.6
6	11490.00	53.5 AV	54.0	-0.5	2.28 V	183	40.9	12.6
7	#17235.00	51.8 PK	68.2	-16.4	1.45 V	198	34.5	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.

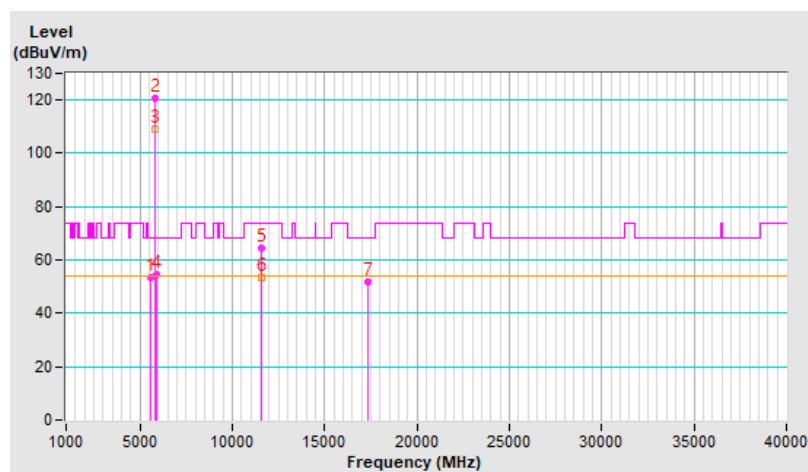


RF Mode	802.11ax (HE20)	Channel	CH 157 : 5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5566.10	53.6 PK	68.2	-14.6	1.50 H	282	50.6	3.0
2	*5785.00	120.5 PK			1.50 H	282	117.0	3.5
3	*5785.00	108.9 AV			1.50 H	282	105.4	3.5
4	#5930.20	54.3 PK	68.2	-13.9	1.50 H	282	50.7	3.6
5	11570.00	64.2 PK	74.0	-9.8	2.21 H	192	51.7	12.5
6	11570.00	53.6 AV	54.0	-0.4	2.21 H	192	41.1	12.5
7	#17355.00	51.6 PK	68.2	-16.6	1.40 H	199	34.0	17.6

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.

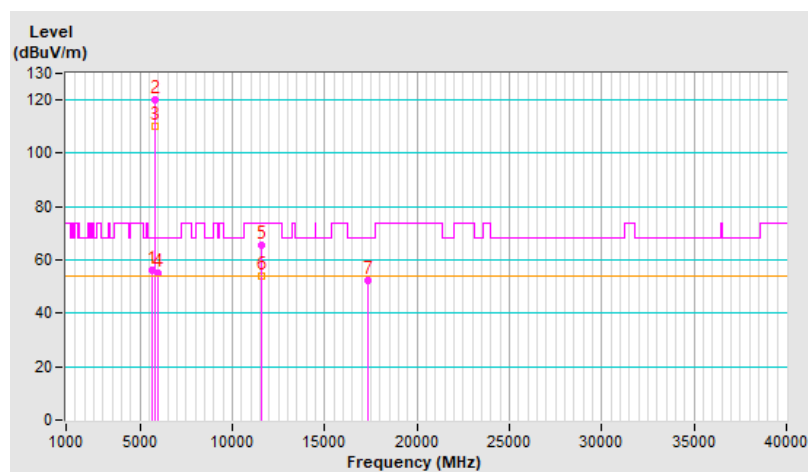


RF Mode	802.11ax (HE20)	Channel	CH 157 : 5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5636.00	56.1 PK	68.2	-12.1	1.60 V	115	53.0	3.1
2	*5785.00	120.3 PK			1.60 V	115	116.8	3.5
3	*5785.00	110.0 AV			1.60 V	115	106.5	3.5
4	#5947.00	54.9 PK	68.2	-13.3	1.60 V	115	51.4	3.5
5	11570.00	65.6 PK	74.0	-8.4	2.27 V	181	53.1	12.5
6	11570.00	53.8 AV	54.0	-0.2	2.27 V	181	41.3	12.5
7	#17355.00	52.3 PK	68.2	-15.9	1.41 V	203	34.7	17.6

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.

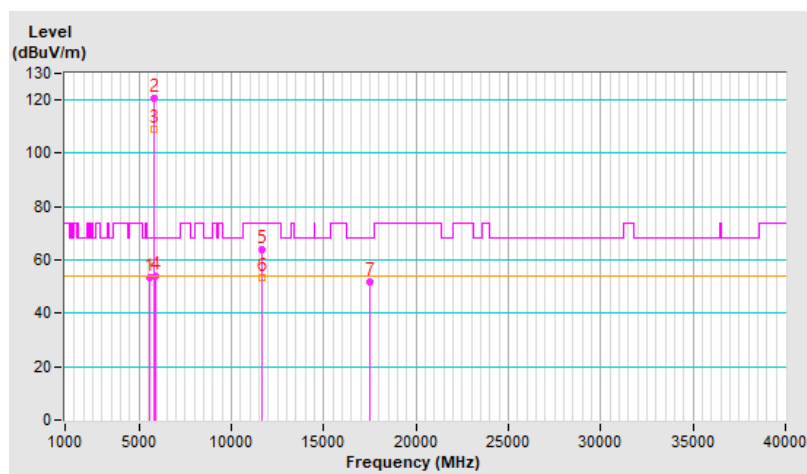


RF Mode	802.11ax (HE20)	Channel	CH 165 : 5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5598.50	53.4 PK	68.2	-14.8	1.71 H	304	50.4	3.0
2	*5825.00	120.5 PK			1.71 H	304	116.8	3.7
3	*5825.00	108.9 AV			1.71 H	304	105.2	3.7
4	#5930.20	54.0 PK	68.2	-14.2	1.71 H	304	50.4	3.6
5	11650.00	64.1 PK	74.0	-9.9	2.23 H	184	52.0	12.1
6	11650.00	53.3 AV	54.0	-0.7	2.23 H	184	41.2	12.1
7	#17475.00	51.9 PK	68.2	-16.3	1.36 H	226	33.7	18.2

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.

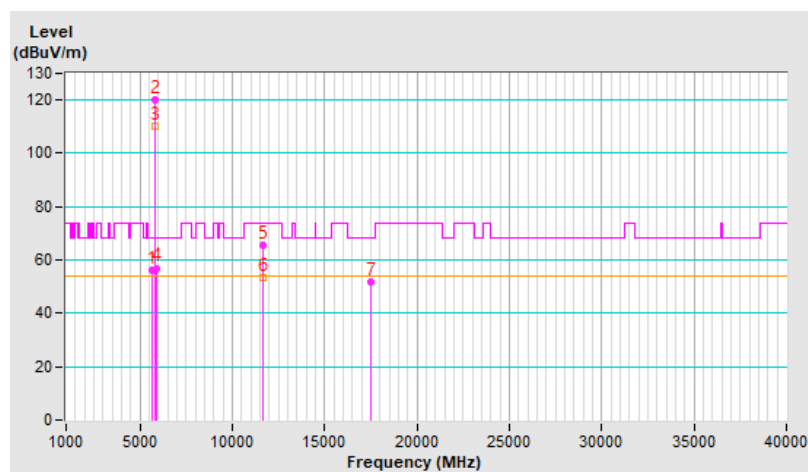


RF Mode	802.11ax (HE20)	Channel	CH 165 : 5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5630.00	56.0 PK	68.2	-12.2	1.51 V	101	53.0	3.0
2	*5825.00	119.9 PK			1.51 V	101	116.2	3.7
3	*5825.00	110.4 AV			1.51 V	101	106.7	3.7
4	#5928.60	57.0 PK	68.2	-11.2	1.51 V	101	53.4	3.6
5	11650.00	65.5 PK	74.0	-8.5	2.28 V	182	53.4	12.1
6	11650.00	53.6 AV	54.0	-0.4	2.28 V	182	41.5	12.1
7	#17475.00	52.0 PK	68.2	-16.2	1.50 V	209	33.8	18.2

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.

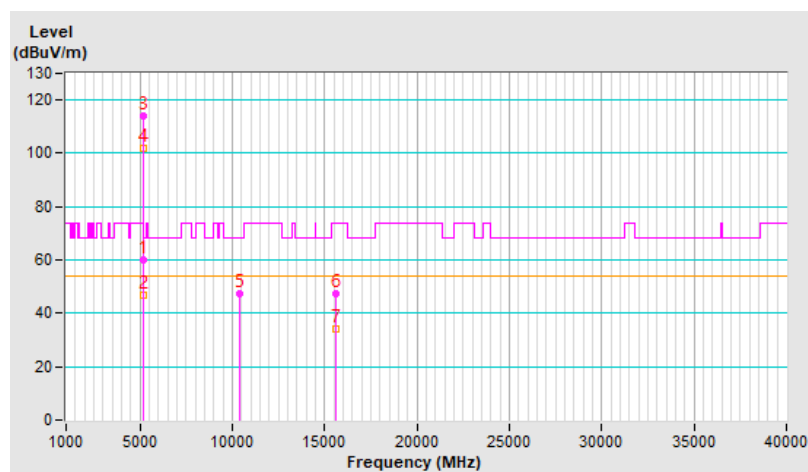


RF Mode	802.11ax (HE40)	Channel	CH 38 : 5190 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	59.8 PK	74.0	-14.2	2.82 H	270	56.4	3.4
2	5150.00	47.0 AV	54.0	-7.0	2.82 H	270	43.6	3.4
3	*5190.00	113.9 PK			2.82 H	270	110.9	3.0
4	*5190.00	102.1 AV			2.82 H	270	99.1	3.0
5	#10380.00	47.3 PK	68.2	-20.9	3.34 H	137	35.7	11.6
6	15570.00	47.3 PK	74.0	-26.7	1.49 H	328	35.4	11.9
7	15570.00	34.1 AV	54.0	-19.9	1.49 H	328	22.2	11.9

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.

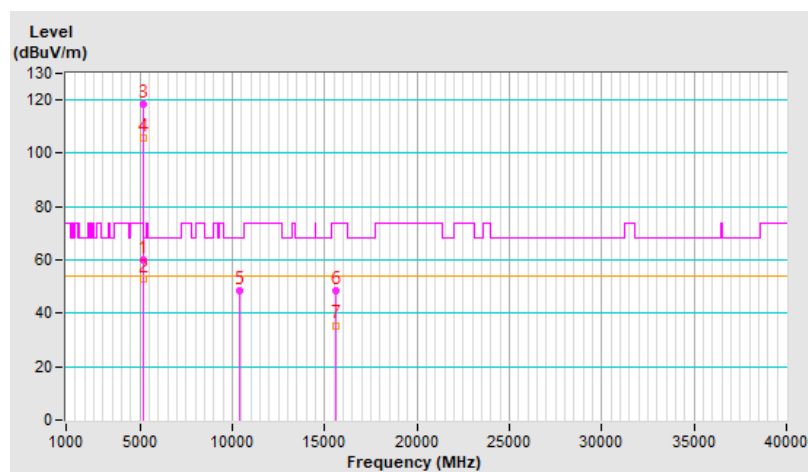


RF Mode	802.11ax (HE40)	Channel	CH 38 : 5190 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	60.2 PK	74.0	-13.8	1.42 V	119	56.8	3.4
2	5150.00	52.9 AV	54.0	-1.1	1.42 V	119	49.5	3.4
3	*5190.00	118.2 PK			1.42 V	119	115.2	3.0
4	*5190.00	105.8 AV			1.42 V	119	102.8	3.0
5	#10380.00	48.3 PK	68.2	-19.9	1.50 V	198	36.7	11.6
6	15570.00	48.2 PK	74.0	-25.8	2.04 V	10	36.3	11.9
7	15570.00	35.5 AV	54.0	-18.5	2.04 V	10	23.6	11.9

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.

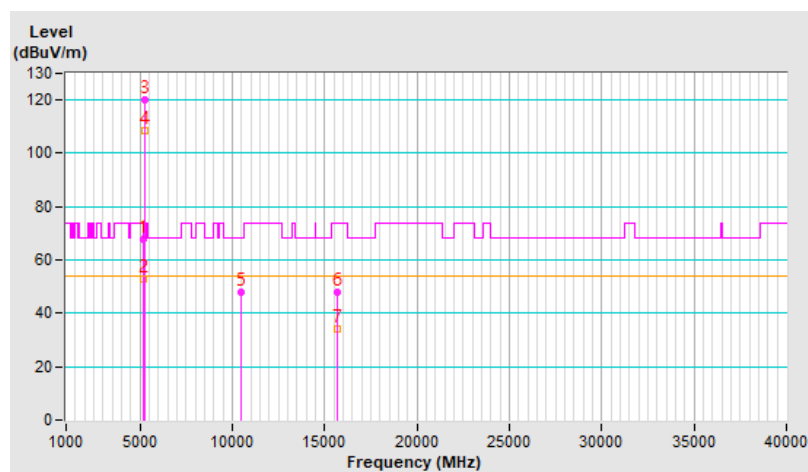


RF Mode	802.11ax (HE40)	Channel	CH 46 : 5230 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	67.9 PK	74.0	-6.1	2.78 H	278	64.5	3.4
2	5150.00	52.7 AV	54.0	-1.3	2.78 H	278	49.3	3.4
3	*5230.00	120.1 PK			2.78 H	278	117.3	2.8
4	*5230.00	108.3 AV			2.78 H	278	105.5	2.8
5	#10460.00	47.9 PK	68.2	-20.3	3.34 H	121	36.3	11.6
6	15690.00	47.7 PK	74.0	-26.3	1.49 H	335	35.8	11.9
7	15690.00	34.3 AV	54.0	-19.7	1.49 H	335	22.4	11.9

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.

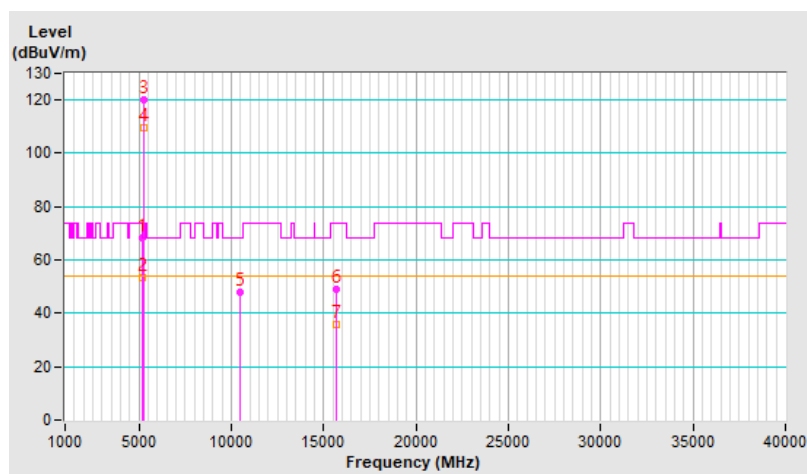


RF Mode	802.11ax (HE40)	Channel	CH 46 : 5230 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	68.5 PK	74.0	-5.5	1.38 V	115	65.1	3.4
2	5150.00	53.5 AV	54.0	-0.5	1.38 V	115	50.1	3.4
3	*5230.00	120.1 PK			1.38 V	115	117.3	2.8
4	*5230.00	109.7 AV			1.38 V	115	106.9	2.8
5	#10460.00	47.9 PK	68.2	-20.3	1.46 V	196	36.3	11.6
6	15690.00	48.8 PK	74.0	-25.2	2.05 V	16	36.9	11.9
7	15690.00	35.9 AV	54.0	-18.1	2.05 V	16	24.0	11.9

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.

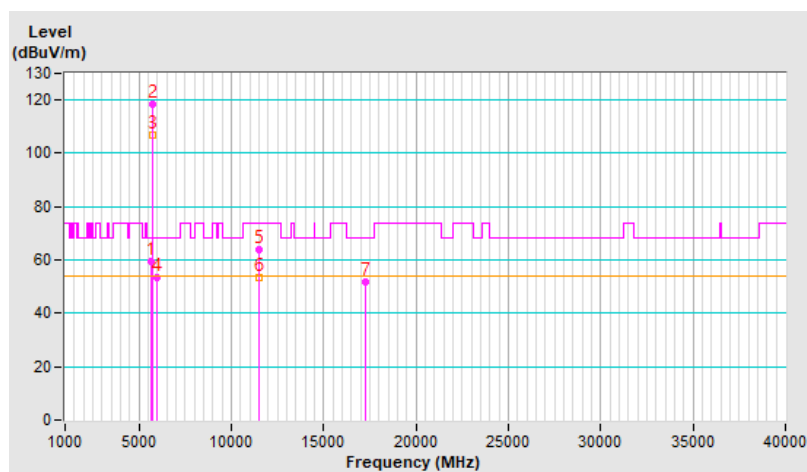


RF Mode	802.11ax (HE40)	Channel	CH 151 : 5755 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5645.30	59.4 PK	68.2	-8.8	1.60 H	288	56.4	3.0
2	*5755.00	118.6 PK			1.60 H	288	115.1	3.5
3	*5755.00	106.8 AV			1.60 H	288	103.3	3.5
4	#5990.10	53.6 PK	68.2	-14.6	1.60 H	288	50.0	3.6
5	11510.00	64.0 PK	74.0	-10.0	2.25 H	176	51.4	12.6
6	11510.00	53.3 AV	54.0	-0.7	2.25 H	176	40.7	12.6
7	#17265.00	51.8 PK	68.2	-16.4	1.34 H	211	34.4	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.

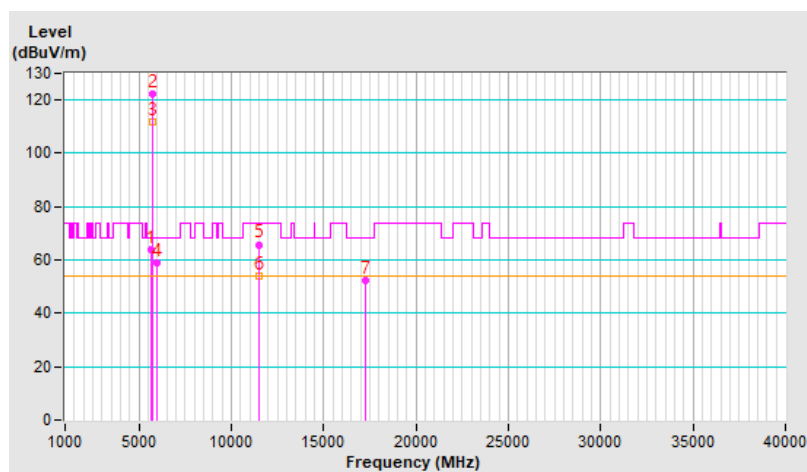


RF Mode	802.11ax (HE40)	Channel	CH 151 : 5755 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5647.94	63.9 PK	68.2	-4.3	1.50 V	110	60.9	3.0
2	*5755.00	122.2 PK			1.50 V	110	118.7	3.5
3	*5755.00	111.8 AV			1.50 V	110	108.3	3.5
4	#5978.32	59.0 PK	68.2	-9.2	1.50 V	110	55.4	3.6
5	11510.00	65.8 PK	74.0	-8.2	2.34 V	181	53.2	12.6
6	11510.00	53.8 AV	54.0	-0.2	2.34 V	181	41.2	12.6
7	#17265.00	52.4 PK	68.2	-15.8	1.47 V	205	35.0	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.

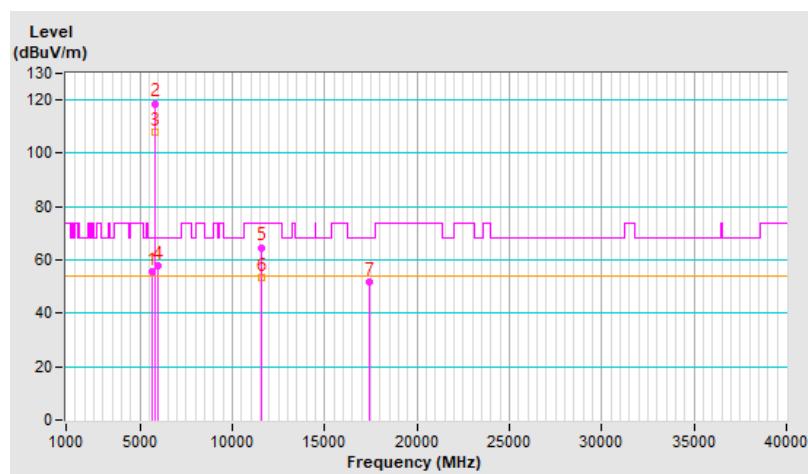


RF Mode	802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5644.60	55.5 PK	68.2	-12.7	1.58 H	285	52.5	3.0
2	*5795.00	118.7 PK			1.58 H	285	115.1	3.6
3	*5795.00	107.8 AV			1.58 H	285	104.2	3.6
4	#5938.10	57.7 PK	68.2	-10.5	1.58 H	285	54.1	3.6
5	11590.00	64.7 PK	74.0	-9.3	2.21 H	168	52.3	12.4
6	11590.00	53.6 AV	54.0	-0.4	2.21 H	168	41.2	12.4
7	#17385.00	51.8 PK	68.2	-16.4	1.41 H	223	34.2	17.6

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.

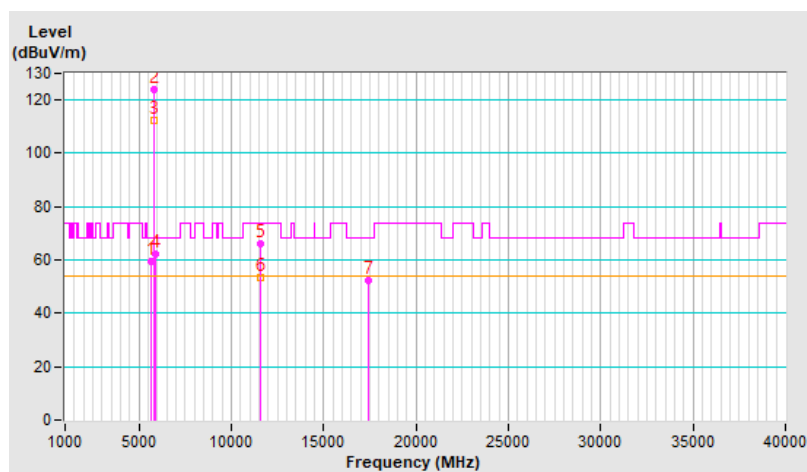


RF Mode	802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5640.08	59.7 PK	68.2	-8.5	1.50 V	64	56.6	3.1
2	*5795.00	123.8 PK			1.50 V	64	120.2	3.6
3	*5795.00	112.3 AV			1.50 V	64	108.7	3.6
4	#5925.46	62.4 PK	68.2	-5.8	1.50 V	64	58.8	3.6
5	11590.00	66.1 PK	74.0	-7.9	2.33 V	181	53.7	12.4
6	11590.00	53.5 AV	54.0	-0.5	2.33 V	181	41.1	12.4
7	#17385.00	52.4 PK	68.2	-15.8	1.43 V	219	34.8	17.6

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.

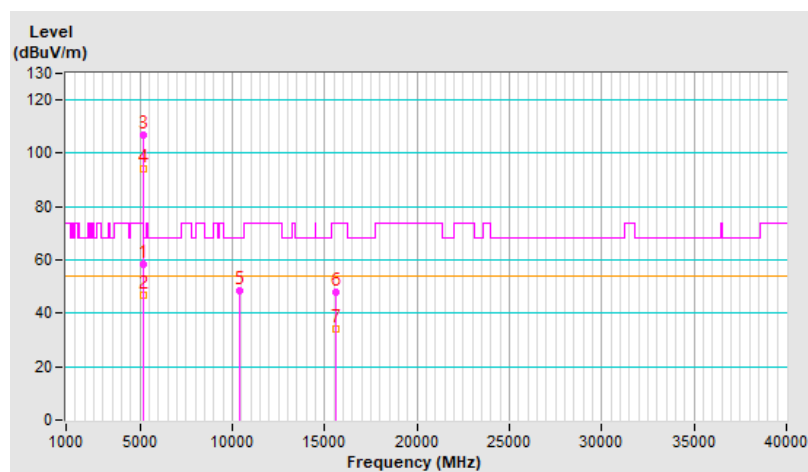


RF Mode	802.11ax (HE80)	Channel	CH 42 : 5210 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	5145.40	58.6 PK	74.0	-15.4	1.59 H	200	55.2	3.4
2	5145.40	46.7 AV	54.0	-7.3	1.59 H	200	43.3	3.4
3	*5210.00	106.6 PK			1.59 H	200	103.7	2.9
4	*5210.00	94.2 AV			1.59 H	200	91.3	2.9
5	#10420.00	48.5 PK	68.2	-19.7	3.28 H	123	36.8	11.7
6	15630.00	47.9 PK	74.0	-26.1	1.48 H	347	36.1	11.8
7	15630.00	34.2 AV	54.0	-19.8	1.48 H	347	22.4	11.8

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.

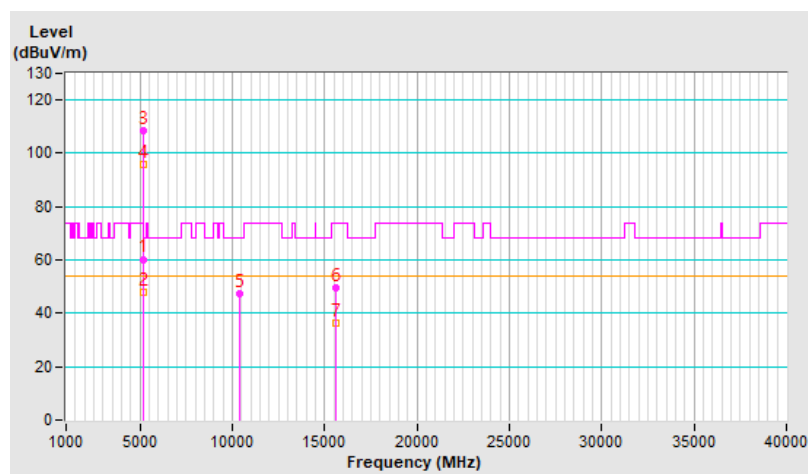


RF Mode	802.11ax (HE80)	Channel	CH 42 : 5210 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	5145.40	60.3 PK	74.0	-13.7	1.43 V	118	56.9	3.4
2	5145.40	47.8 AV	54.0	-6.2	1.43 V	118	44.4	3.4
3	*5210.00	108.4 PK			1.43 V	118	105.5	2.9
4	*5210.00	95.9 AV			1.43 V	118	93.0	2.9
5	#10420.00	47.5 PK	68.2	-20.7	1.52 V	202	35.8	11.7
6	15630.00	49.5 PK	74.0	-24.5	2.08 V	8	37.7	11.8
7	15630.00	36.4 AV	54.0	-17.6	2.08 V	8	24.6	11.8

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.

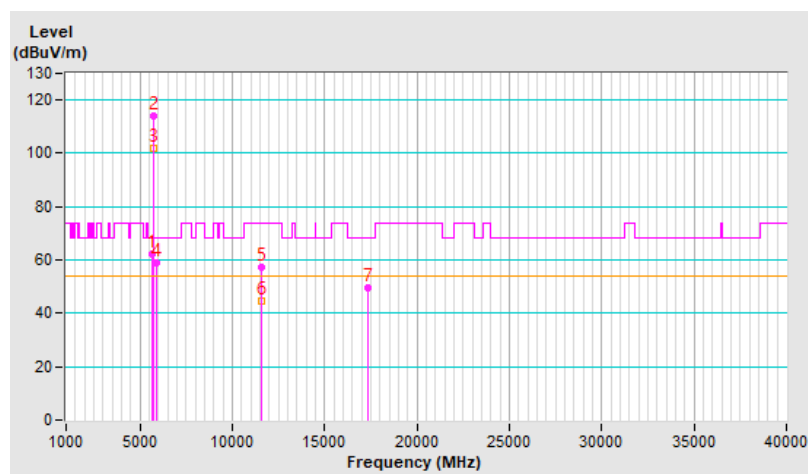


RF Mode	802.11ax (HE80)	Channel	CH 155 : 5775 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5650.00	62.1 PK	68.2	-6.1	1.70 H	304	59.1	3.0
2	*5775.00	114.2 PK			1.70 H	304	110.7	3.5
3	*5775.00	101.7 AV			1.70 H	304	98.2	3.5
4	#5930.40	59.0 PK	68.2	-9.2	1.70 H	304	55.4	3.6
5	11550.00	57.3 PK	74.0	-16.7	3.15 H	114	44.8	12.5
6	11550.00	44.6 AV	54.0	-9.4	3.15 H	114	32.1	12.5
7	#17325.00	49.4 PK	68.2	-18.8	1.35 H	352	31.7	17.7

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.

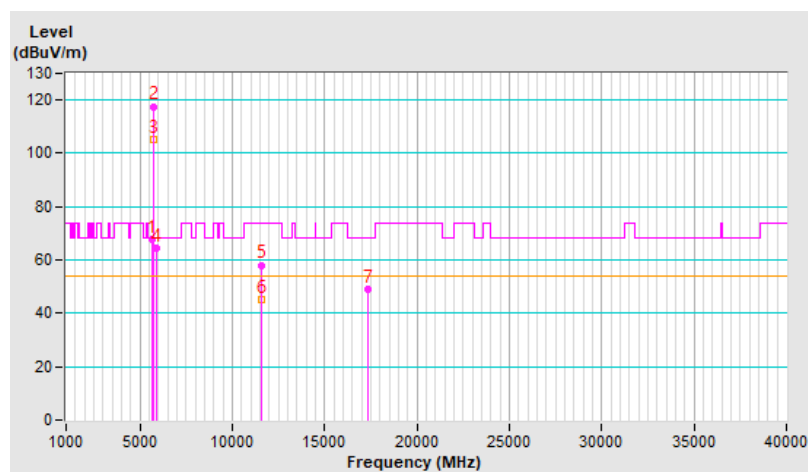


RF Mode	802.11ax (HE80)	Channel	CH 155 : 5775 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Willy Lin		

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	#5646.00	67.6 PK	68.2	-0.6	1.51 V	104	64.6	3.0
2	*5775.00	117.6 PK			1.51 V	104	114.1	3.5
3	*5775.00	105.3 AV			1.51 V	104	101.8	3.5
4	#5926.00	64.2 PK	68.2	-4.0	1.51 V	104	60.6	3.6
5	11550.00	58.1 PK	74.0	-15.9	1.50 V	216	45.6	12.5
6	11550.00	45.2 AV	54.0	-8.8	1.50 V	216	32.7	12.5
7	#17325.00	49.0 PK	68.2	-19.2	2.03 V	4	31.3	17.7

Remarks:

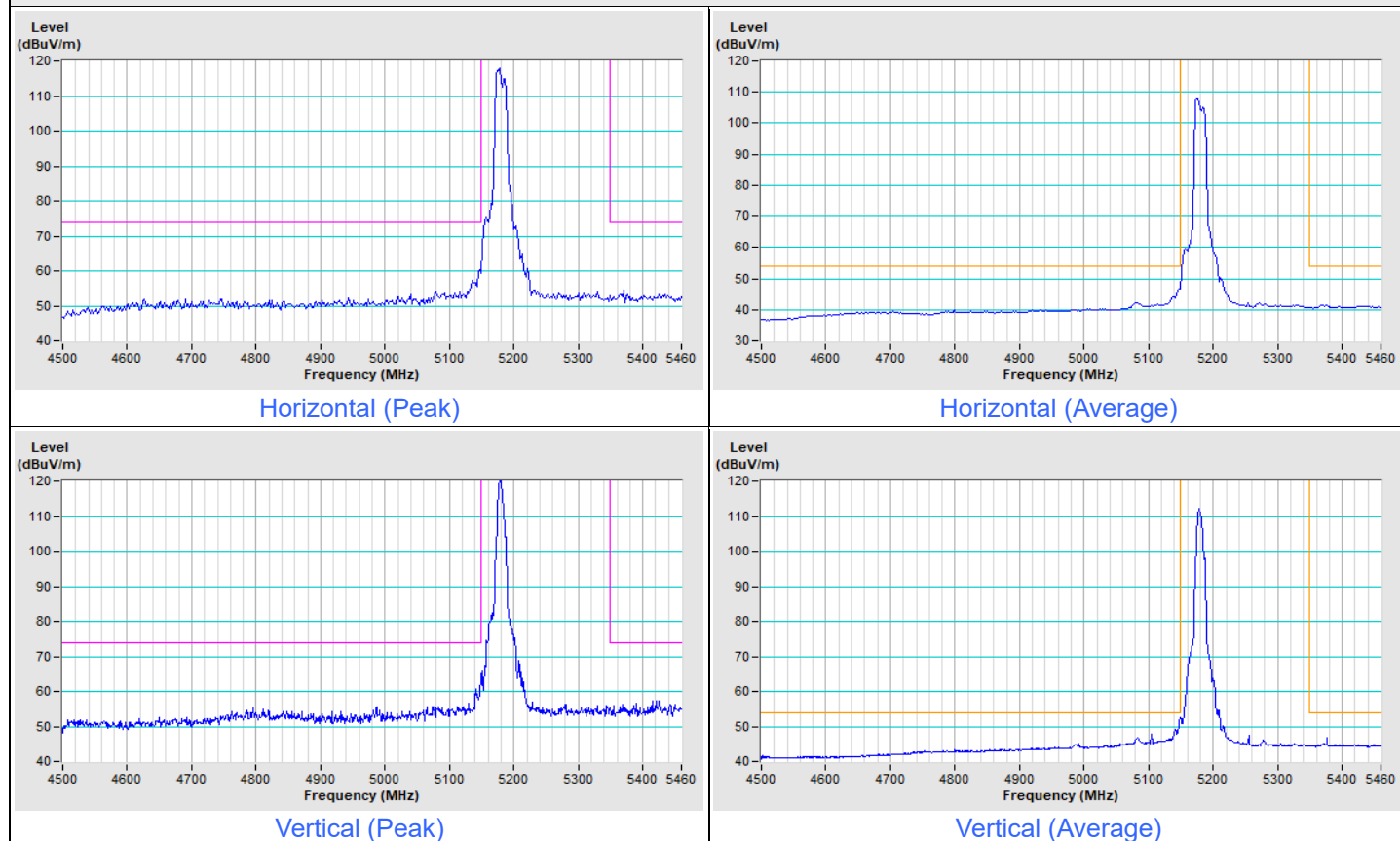
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency,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

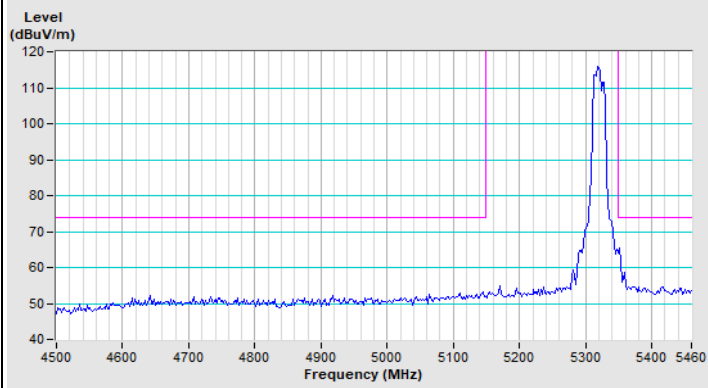


Plot of Band Edge

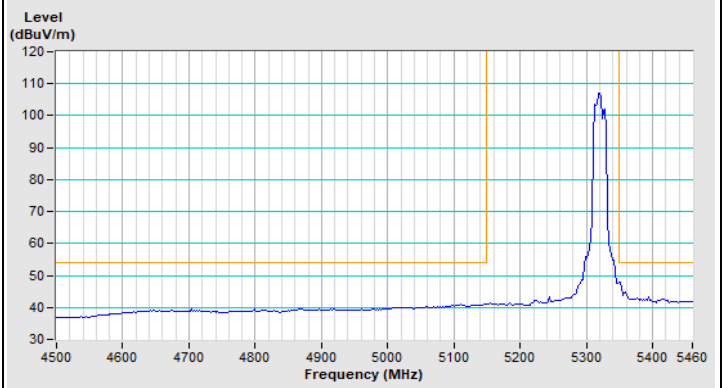
Frequency Range	4.5 GHz ~ 5.46 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=510 Hz, DET=Peak
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802.11a Channel 36

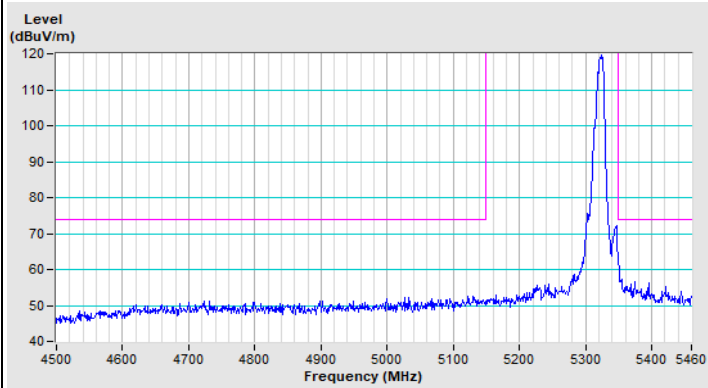


802.11a Channel 48

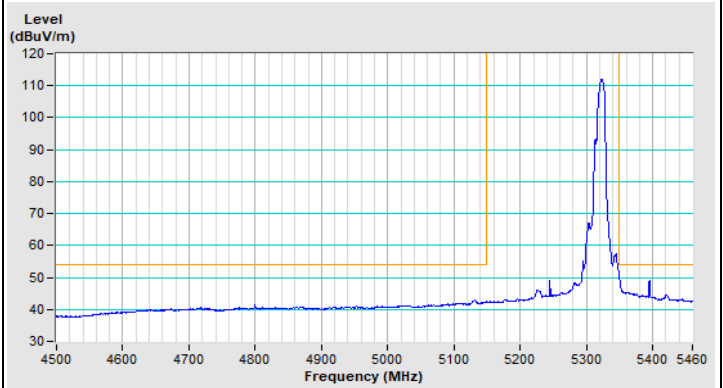
Horizontal (Peak)



Horizontal (Average)

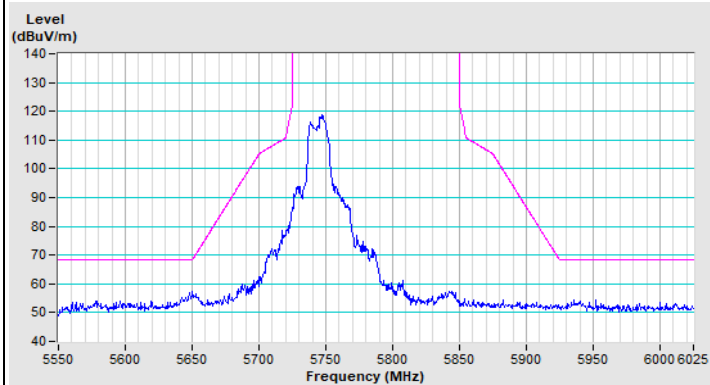


Vertical (Peak)

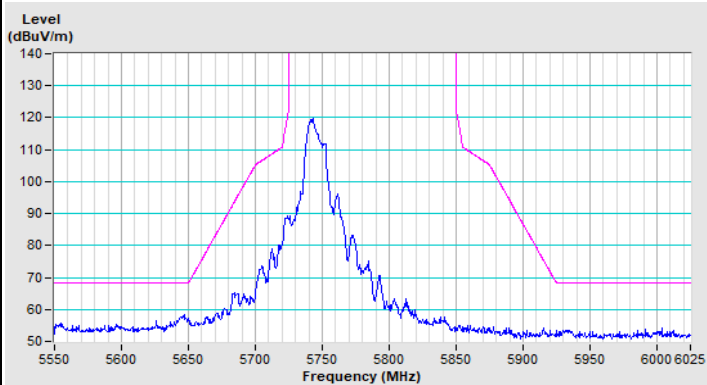


Vertical (Average)

802.11a Channel 149

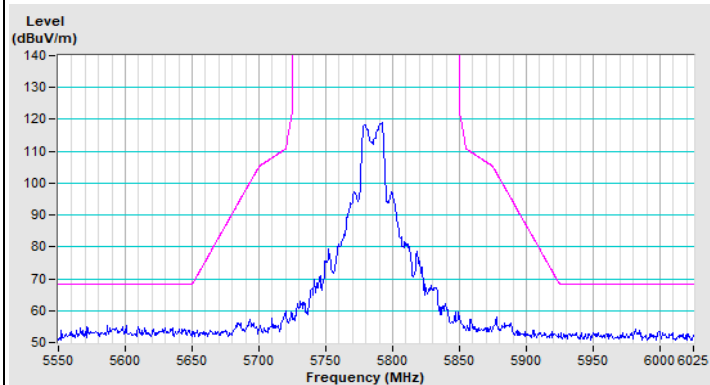


Horizontal (Peak)

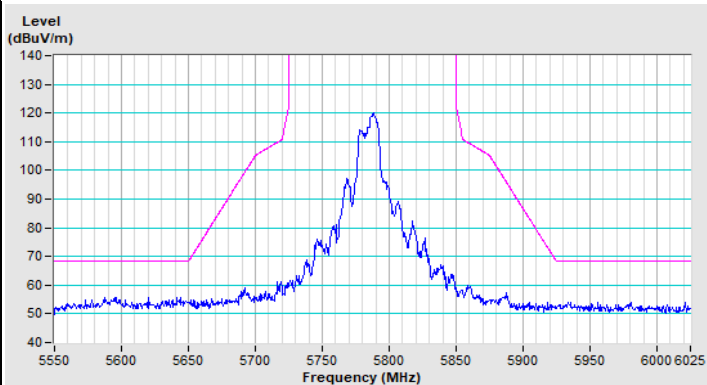


Vertical (Peak)

802.11a Channel 157

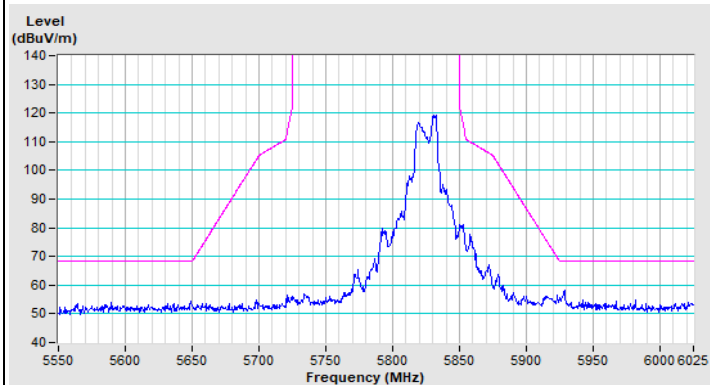


Horizontal (Peak)

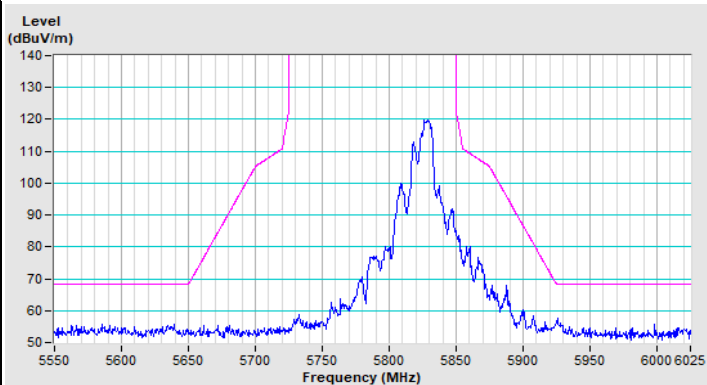


Vertical (Peak)

802.11a Channel 165



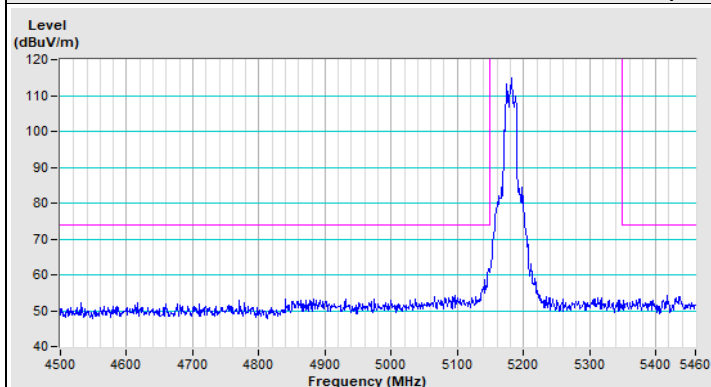
Horizontal (Peak)



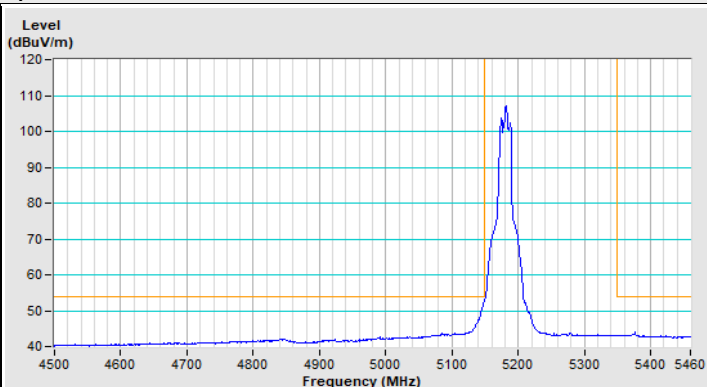
Vertical (Peak)

Frequency Range	4.5 GHz ~ 5.46 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
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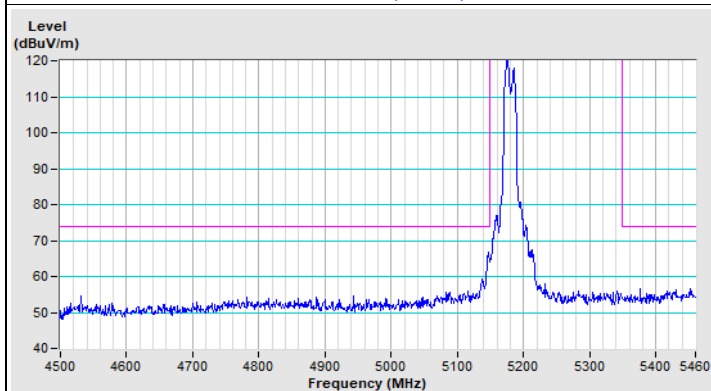
802.11ax (HE20) Channel 36



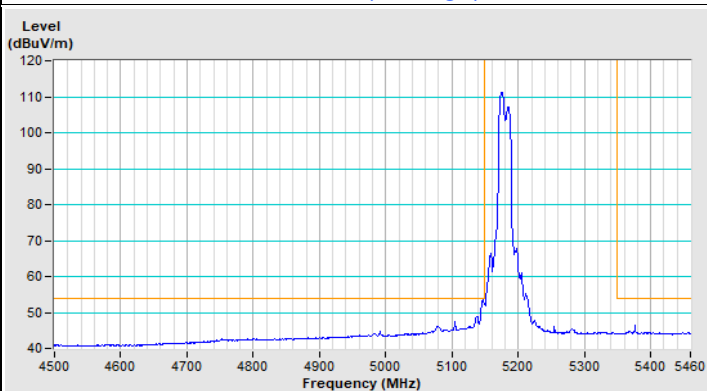
Horizontal (Peak)



Horizontal (Average)

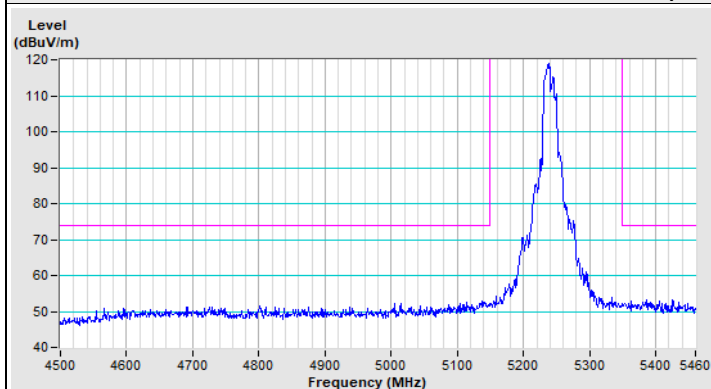


Vertical (Peak)

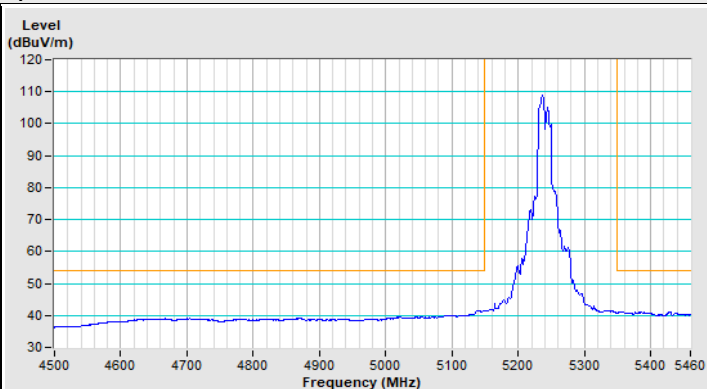


Vertical (Average)

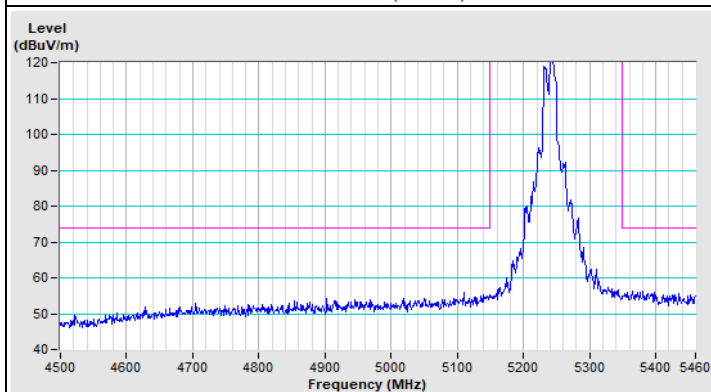
802.11ax (HE20) Channel 48



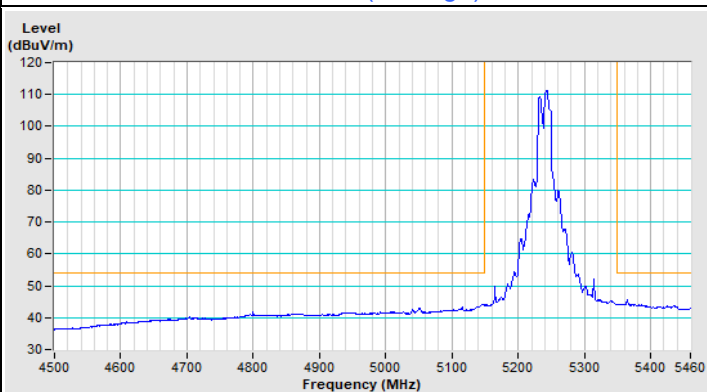
Horizontal (Peak)



Horizontal (Average)

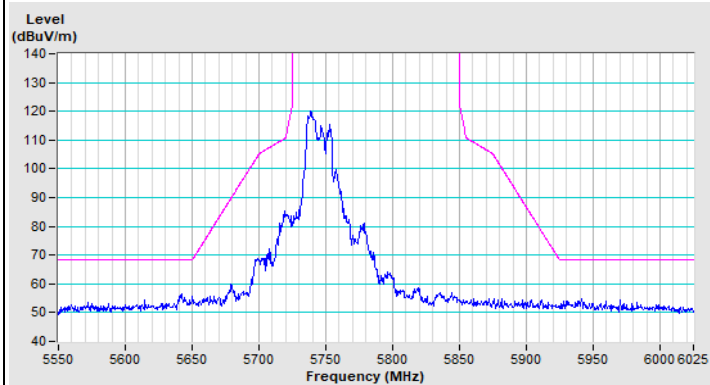


Vertical (Peak)

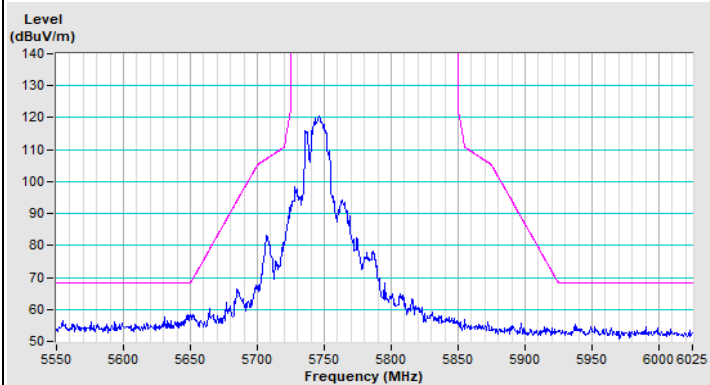


Vertical (Average)

802.11ax (HE20) Channel 149

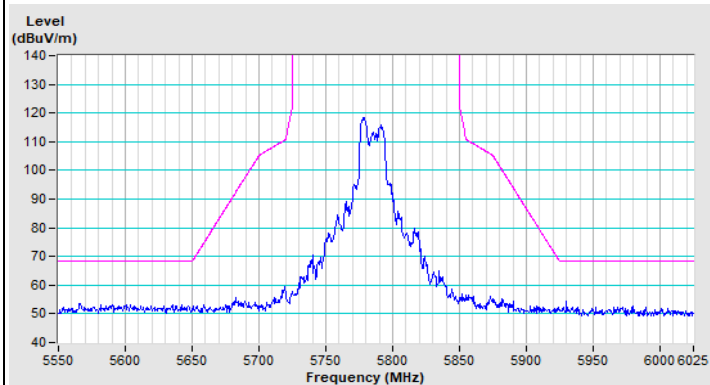


Horizontal (Peak)

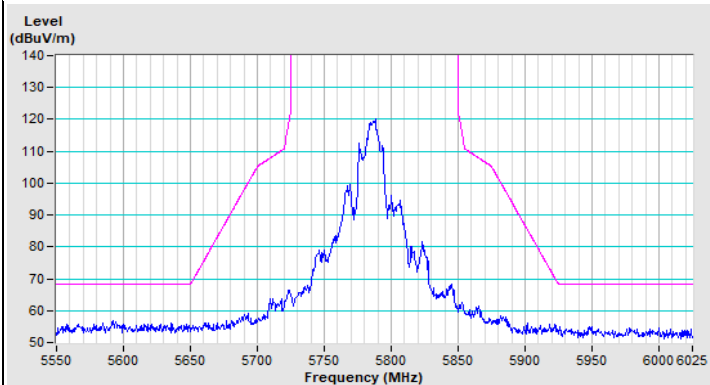


Vertical (Peak)

802.11ax (HE20) Channel 157

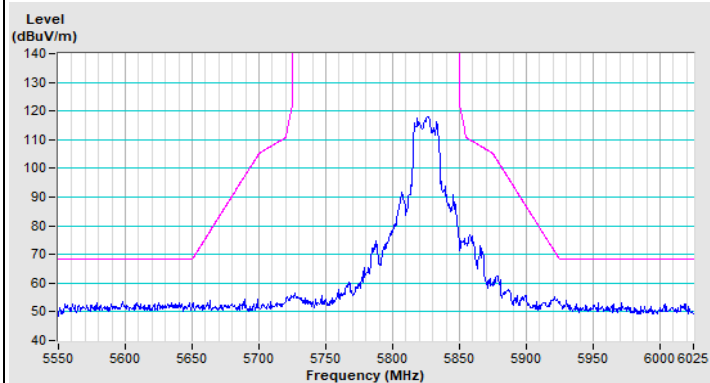


Horizontal (Peak)

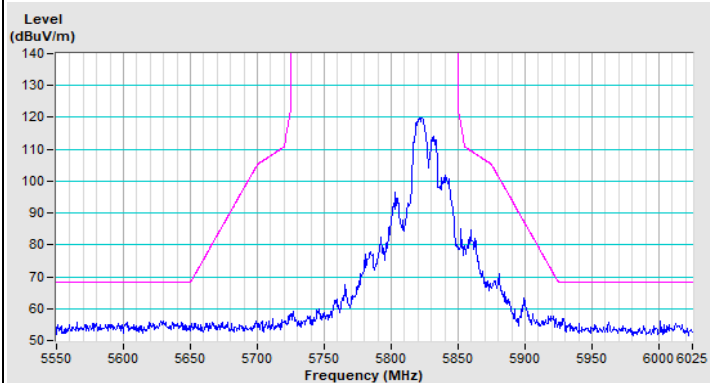


Vertical (Peak)

802.11ax (HE20) Channel 165



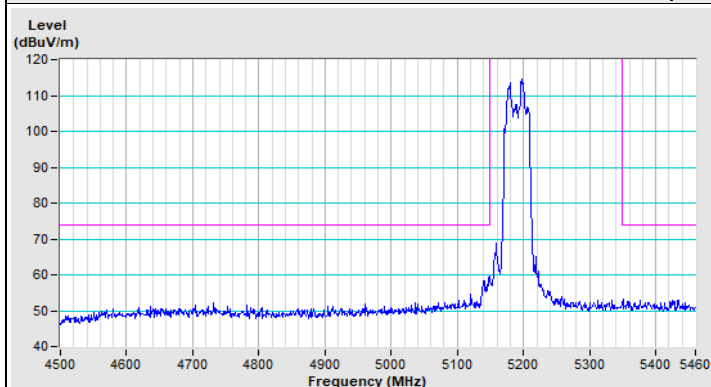
Horizontal (Peak)



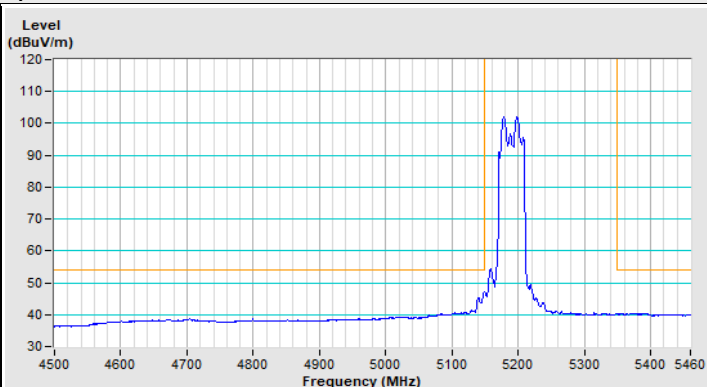
Vertical (Peak)

Frequency Range	4.5 GHz ~ 5.46 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
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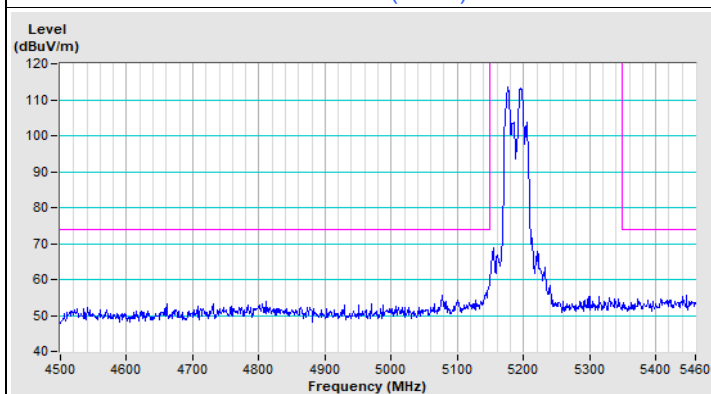
802.11ax (HE40) Channel 38



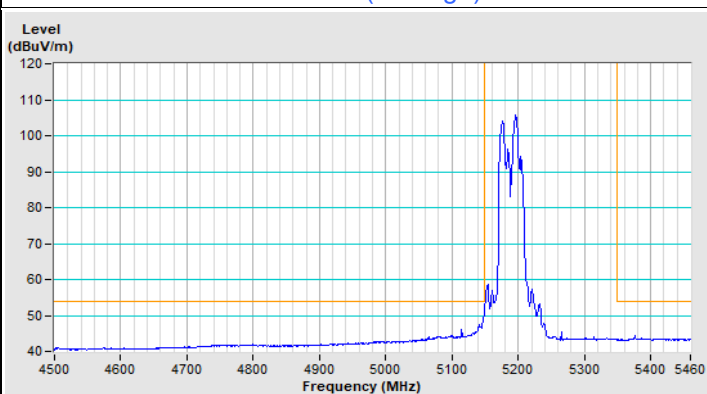
Horizontal (Peak)



Horizontal (Average)

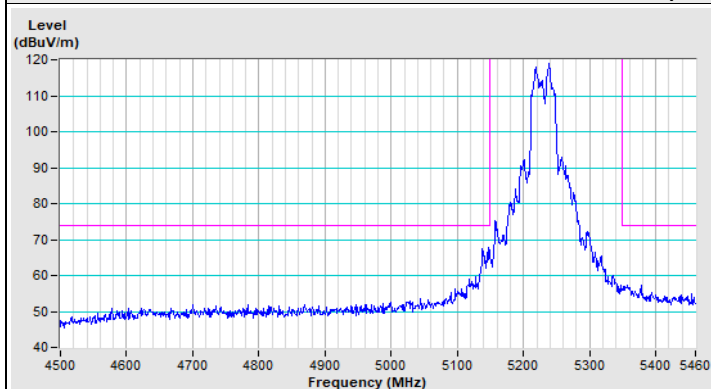


Vertical (Peak)

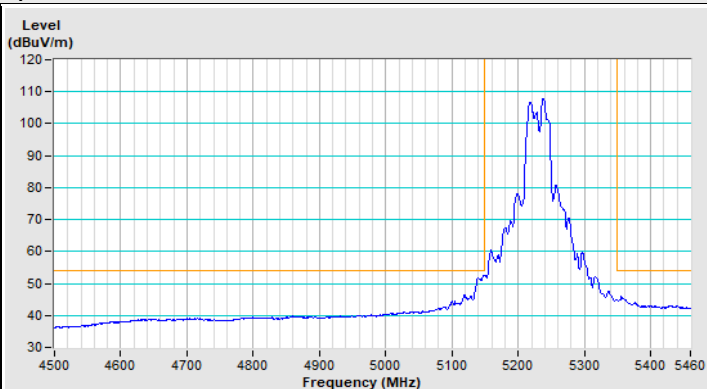


Vertical (Average)

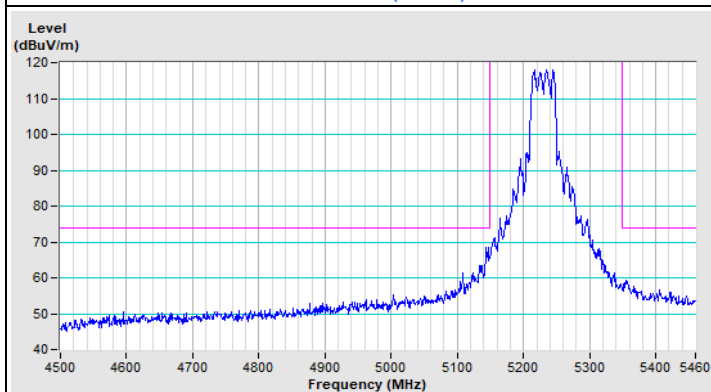
802.11ax (HE40) Channel 46



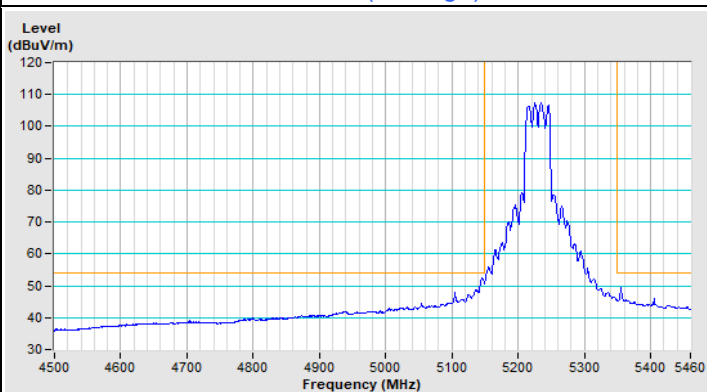
Horizontal (Peak)



Horizontal (Average)

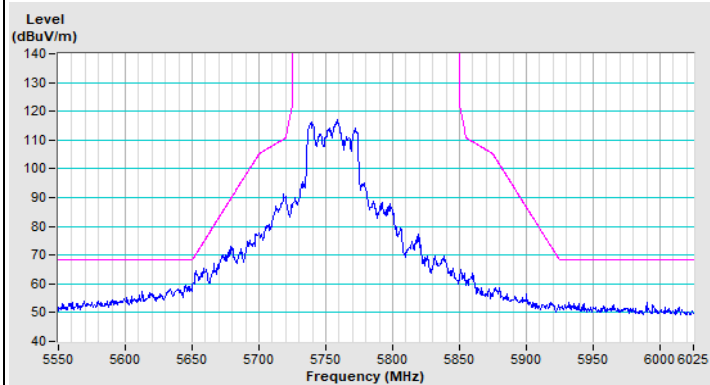


Vertical (Peak)

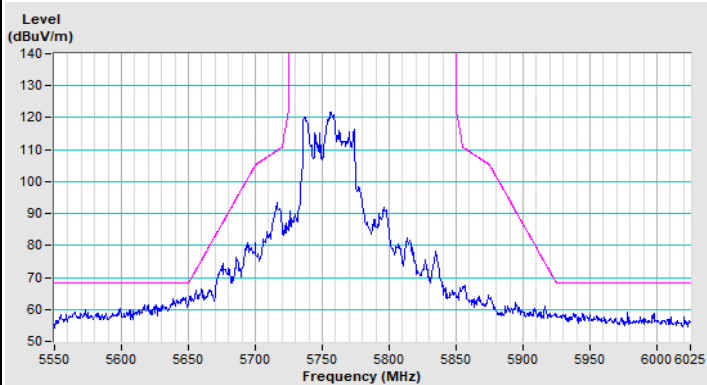


Vertical (Average)

802.11ax (HE40) Channel 151

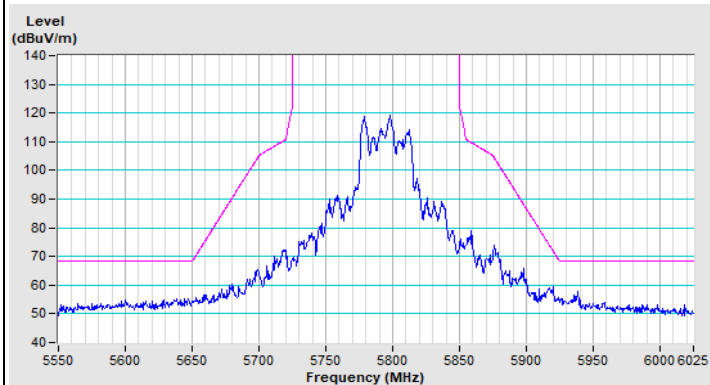


Horizontal (Peak)

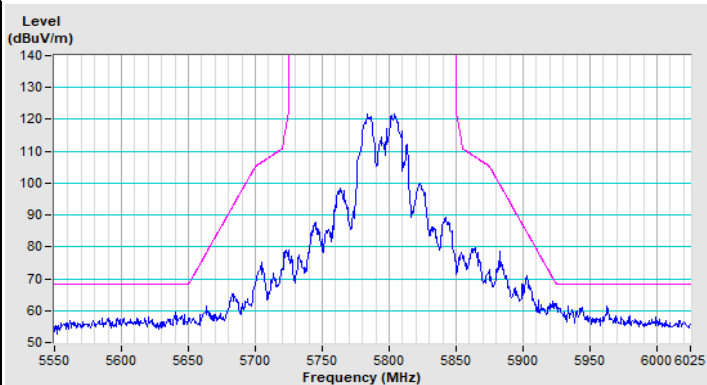


Vertical (Peak)

802.11ax (HE40) Channel 159



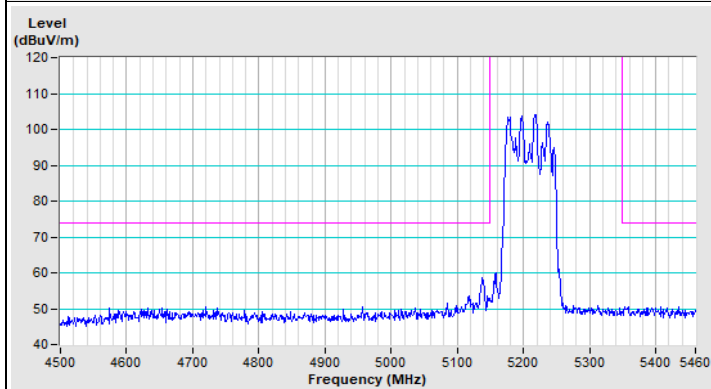
Horizontal (Peak)



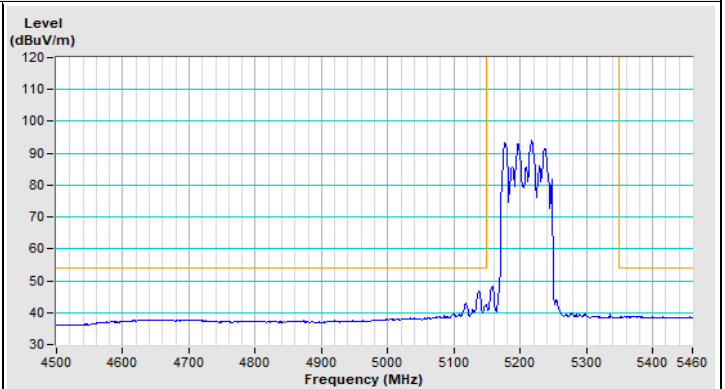
Vertical (Peak)

Frequency Range	4.5 GHz ~ 5.46 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
-----------------	--------------------	-------------------------------	---

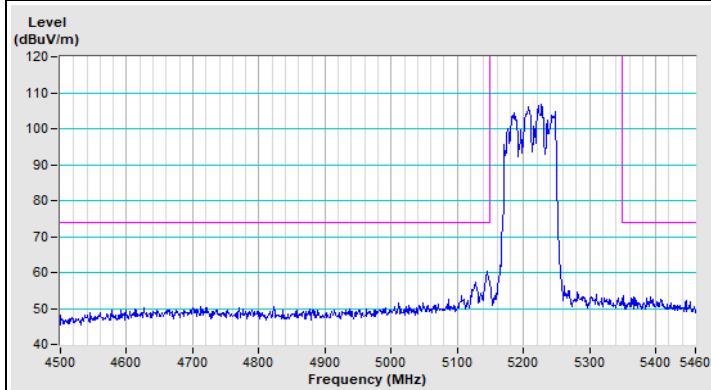
802.11ax (HE80) Channel 42



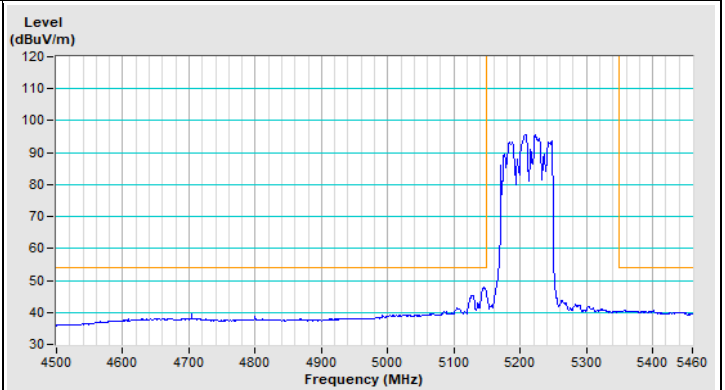
Horizontal (Peak)



Horizontal (Average)

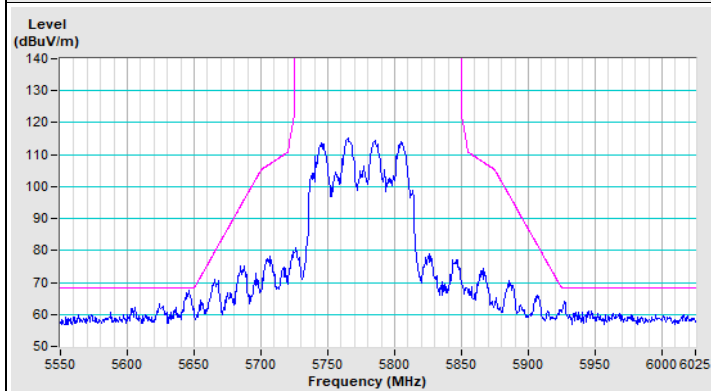


Vertical (Peak)

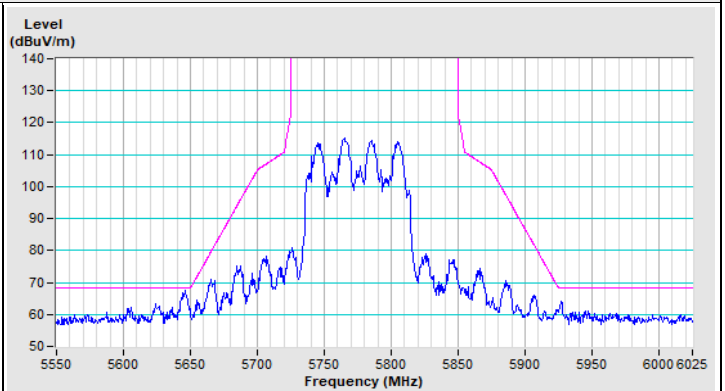


Vertical (Average)

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:

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Web Site: <http://ee.bureauveritas.com.tw>

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

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