TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFBDYS-WTW-P21120357-1
FCC ID:	A8J-ECW270
Product:	Cloud6 4x4 Outdoor
Brand:	EnGenius
Model No.:	ECW270
Received Date:	2022/6/30
Test Date:	2022/8/26 ~ 2022/10/24
Issued Date:	2023/1/11
Applicant:	EnGenius Technologies, Inc.
Address:	1580 Scenic Avenue, Costa Mesa, CA92626
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location (1):	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan
Test Location (2):	No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
FCC Registration / Designation Number (1):	788550 / TW0003
FCC Registration / Designation Number (2):	281270 / TW0032

Approved by: Jeremy . Lin , **Date:** **2023/1/11**

Jeremy Lin / Project Engineer

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Prepared by : Polly Chien / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBDYS-WTW-P21120357-1	Original release.	2023/1/11

1 Certificate

Product:	Cloud6 4x4 Outdoor
Brand:	EnGenius
Test Model:	ECW270
Sample Status:	Engineering sample
Applicant:	EnGenius Technologies, Inc.
Test Date:	2022/8/26 ~ 2022/10/24
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)(1/2/3)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	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 -13.35 dB at 2.52200 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -7.5 dB at 34.22 MHz
15.407(b) (1/2/3/4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.4 dB at 5150.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is R-N type 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) (±)
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.79 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.00 dB
	30 MHz ~ 1 GHz	2.93 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	1.76 dB
	18 GHz ~ 40 GHz	1.77 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	Cloud6 4x4 Outdoor
Brand	EnGenius
Test Model	ECW270
Status of EUT	Engineering sample
Power Supply Rating	54Vdc (from POE)
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode 1024QAM for OFDMA in 11ax HE mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6 Mbps 802.11n: up to 600 Mbps 802.11ac: up to 3466.7 Mbps 802.11ax: up to 4803.9 Mbps
Operating Frequency	5.18 GHz ~ 5.24 GHz 5.745 GHz ~ 5.825 GHz
Number of Channel	5180 ~ 5240 MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 4 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1 5745 ~ 5825 MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 5 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1
Output Power	CDD Mode: 5.18 GHz ~ 5.24 GHz : 160.718 mW (22.06 dBm) 5.745 GHz ~ 5.825 GHz : 789.207 mW (28.97 dBm) Beamforming Mode: 5.18 GHz ~ 5.24 GHz : 39.978 mW (16.02 dBm) 5.745 GHz ~ 5.825 GHz : 193.808 mW (22.87 dBm)
EUT Category	Outdoor Access Point

Note:

1. The EUT uses following accessories.

POE (Support unit)		
Brand	Model	Specification
EnGenius	EPA5012GP	AC Input : 100-240Vac, 1.12A, 50-60Hz DC Output : 54Vdc, 0.6A
Ground cable		
Brand	Model	Model
NA	NA	1.75m

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

3. 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.		

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

ANT. No.	Type	Connector	Frequency Range	Gain (dBi)
1~4	Dipole	N type	2.40~2.4835GHz	5
5~8	Dipole	N type	5.15~5.85GHz	7

2. The EUT will install at outdoor area, the highest antenna gain from the horizon above 30 degrees as below, for more detail information please refer to antenna specification and user manual.

Antenna Model	Antenna gain	Antenna install degree
5718A0137300	-1.08 dBi	

* Due to device Will restricted installation position as above photo, thus consider to above 30 degrees highest antenna gain are chosen from XZ and YZ Plane (antenna specification of 30~150 deg)
* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

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

3. 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. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz) and 802.11ax mode for 20 MHz (40 MHz, 80 MHz), therefore the manufacturer will control the power for 802.11n/ac mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report.
4. The EUT doesn't support Tone RU mode.

3.3 Channel List

For 5180 ~ 5240 MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20) and 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) and 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	5210MHz

FOR 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20) and 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) and 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

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

Channel	Frequency
155	5775 MHz

3.4 Test Mode Applicability and Tested Channel Detail

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

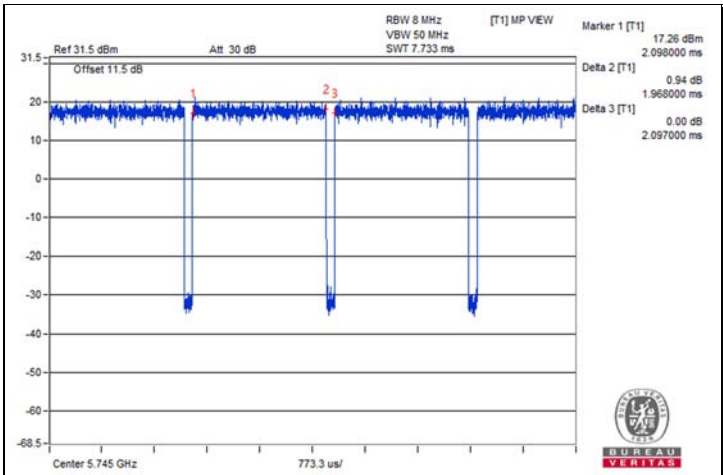
Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD & Beamforming	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD & Beamforming	38, 46, 151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD & Beamforming	42, 155	BPSK	MCS0
6 dB Bandwidth	802.11a	CDD	149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD	149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD	151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD	155	BPSK	MCS0
Occupied Bandwidth / Power Spectral Density	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD	38, 46, 151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD	42, 155	BPSK	MCS0
Frequency Stability	802.11a	CDD	36	-	-
AC Power Conducted Emissions	802.11a	CDD	157	BPSK	6Mb/s
Unwanted Emissions below 1 GHz	802.11a	CDD	157	BPSK	6Mb/s
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: The EUT is designed to be positioned on the z-plane only.

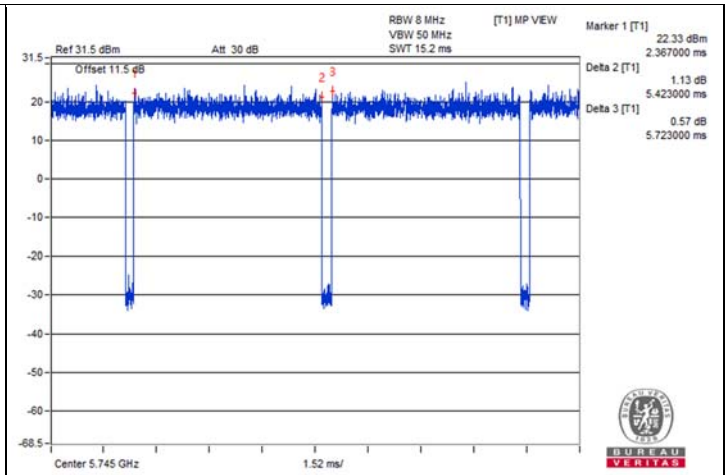
3.5 Duty Cycle of Test Signal

Duty cycle of test signal is < 98 %, duty factor shall be considered.

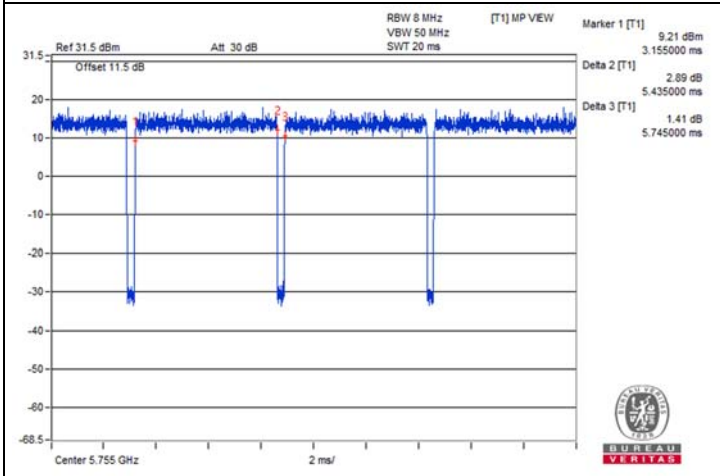
802.11a: Duty cycle = 1.968 ms / 2.097 ms x 100% = 93.8%, duty factor = 10 * log (1/Duty cycle) = 0.28 dB
802.11ax (HE20): Duty cycle = 5.423 ms / 5.723 ms x 100% = 94.8%, duty factor = 10 * log (1/Duty cycle) = 0.23 dB
802.11ax (HE40): Duty cycle = 5.435 ms / 5.745 ms x 100% = 94.6%, duty factor = 10 * log (1/Duty cycle) = 0.24 dB
802.11ax (HE80): Duty cycle = 5.425 ms / 5.760 ms x 100% = 94.2%, duty factor = 10 * log (1/Duty cycle) = 0.26 dB



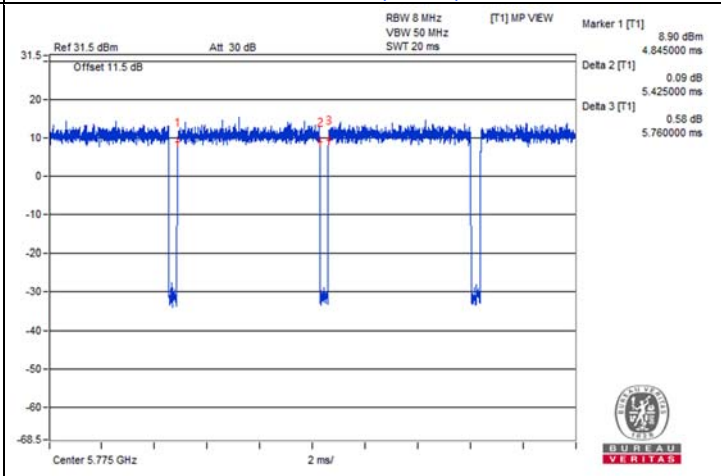
802.11a



802.11ax (HE20)



802.11ax (HE40)

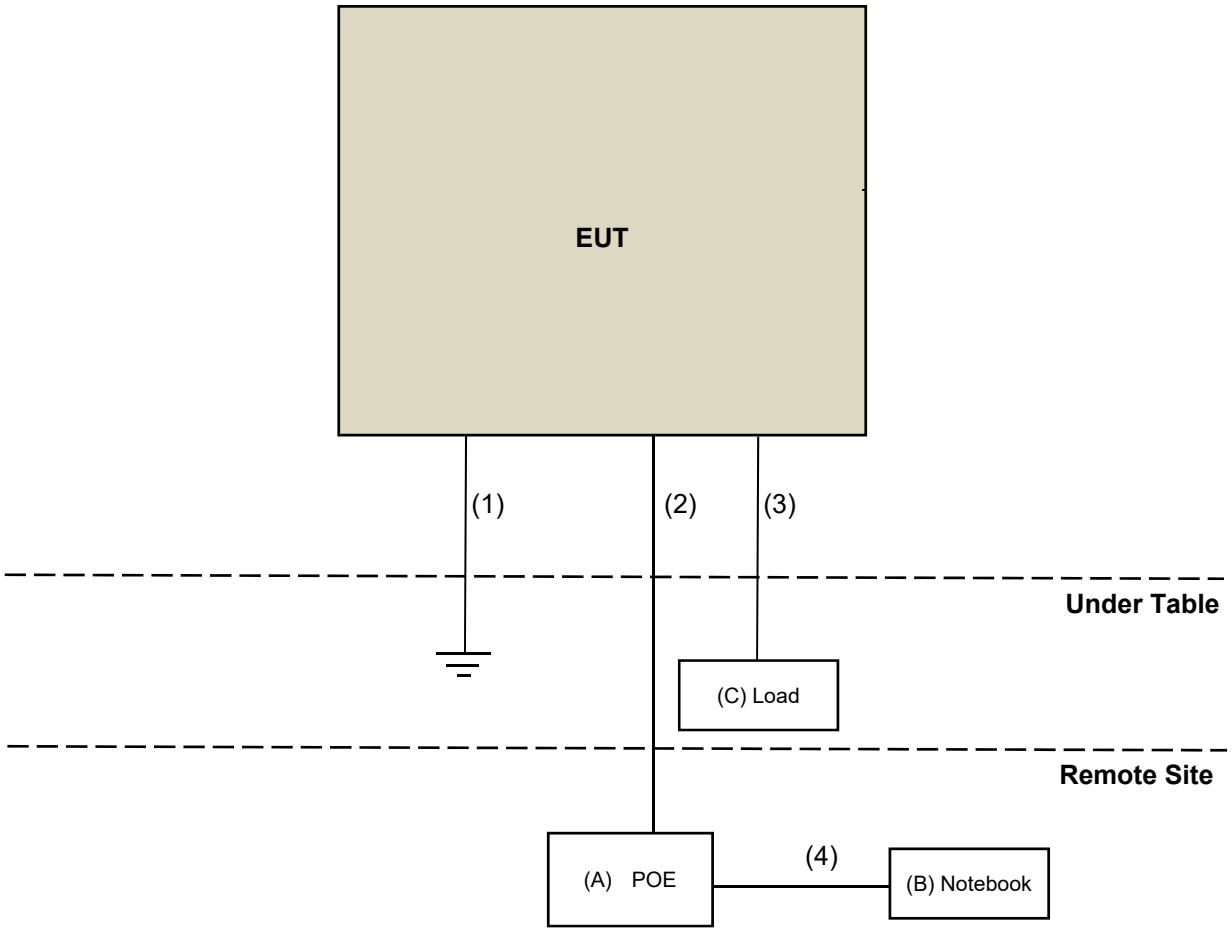


802.11ax (HE80)

3.6 Test Program Used and Operation Descriptions

Controlling software Verification EVT_2.4g + 5g_TX_20200812.cxtt has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	POE	EnGenius	EPA5012GP	N/A	N/A	Supplied by applicant
B	Notebook	Lenovo	20J4 MD A003TW	PF-11H9AK	FCC DoC Approved	Provided by Lab
C	Load	N/A	N/A	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	GND cable	1	1	N/A	0	Supplied by applicant
2	RJ-45 Cable	1	10	N/A	0	Provided by Lab
3	RJ-45 Cable	1	1.5	N/A	0	Provided by Lab
4	RJ-45 Cable	1	1	N/A	0	Provided by Lab

4 Test Instruments

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

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Peak Power Analyzer KEYSIGHT	8990B	MY51000485	2022/1/18	2023/1/17
Power sensor Keysight	U2021XA	MY55380009	2022/3/23	2023/3/22
Wideband Power Sensor(N1923A) KEYSIGHT	N1923A	MY58020002	2022/1/17	2023/1/16

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2022/10/21 ~ 2022/10/24

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2022/10/21

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	6306A	727263	N/A	N/A
Digital Multimeter Fluke	87-III	70360742	2022/6/23	2023/6/22
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	2022/1/3	2023/1/2

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2022/10/21

4.6 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
DC-LISN SCHWARZBECK MESS-ELETRONIK	NNBM 8126G	8126G-069	2021/11/10	2022/11/9
LISN R&S	ESH3-Z5	100220	2021/11/25	2022/11/24
LISN ROHDE & SCHWARZ	ENV216	101826	2022/3/14	2023/3/13
RF Coaxial Cable WOKEN	5D-FB	Cable-cond1-01	2022/1/15	2023/1/14
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A
Test Receiver Rohde&Schwarz	ESCI	100613	2021/12/3	2022/12/2
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2022/8/31	2023/8/30

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2022/9/7

4.7 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower Max-Full	MFT-151SS-0.5T	N/A	N/A	N/A
Bi-log Broadband Antenna Schwarzbeck	VULB9168	9168-1213	2021/10/27	2022/10/26
Loop Antenna EMCI	EM-6879	269	2021/9/16	2022/9/15
Loop Antenna TESEQ	HLA 6121	45745	2022/7/27	2023/7/26
Pre-amplifier EMCI	EMC001340	980201	2021/9/15	2022/9/14
Pre_Amplifier EMCI	EMC330N	980782	2022/1/17	2023/1/16
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2022/1/15	2023/1/14
	EMCCFD400-NM-NM-500	201233	2022/1/17	2023/1/16
	EMCCFD400-NM-NM-3000	201235	2022/1/17	2023/1/16
	EMCCFD400-NM-NM-9000	201236	2022/1/17	2023/1/16
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101866	2022/1/14	2023/1/13
Test Receiver R&S	ESR3+	102782	2021/12/10	2022/12/9
Turn Table Max-Full	MF-7802BS	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208674	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 8.
2. Tested Date: 2022/9/7

4.8 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower Max-Full	MFT-151SS-0.5T	N/A	N/A	N/A
Horn Antenna RFSPIN	DRH18-E	210103A18E	2021/11/14	2022/11/13
Horn Antenna Schwarzbeck	BBHA 9170	9170-1049	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC118A45SE	980808	2021/12/30	2022/12/29
	EMC184045SE	980788	2022/1/17	2023/1/16
RF Coaxial Cable EMCI	EMC101G-KM-KM-2000	201254	2022/1/17	2023/1/16
	EMC101G-KM-KM-3000	201257	2022/1/17	2023/1/16
	EMC101G-KM-KM-5000	201260	2022/1/17	2023/1/16
	EMC104-SM-SM-1000	210102	2022/1/17	2023/1/16
	EMC104-SM-SM-3000	201231	2022/1/17	2023/1/16
	EMC104-SM-SM-9000	201243	2022/1/17	2023/1/16
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101866	2022/1/14	2023/1/13
Test Receiver R&S	ESR3+	102782	2021/12/10	2022/12/9
Turn Table Max-Full	MF-7802BS	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208674	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 8.
2. Tested Date: 2022/8/26 ~ 2022/9/5

5 Limits of Test Items

5.1 RF Output Power

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	Fixed point-to-point Access Point	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Mobile and Portable client device	250 mW (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

<table>
<tr><th colspan="2">Applicable To</th><th colspan="2">Limit</th></tr>
<tr><td colspan="2" rowspan="2">789033 D02 General UNII Test Procedure New Rules v02r01</td><td colspan="2">Field Strength at 3 m</td></tr>
<tr><td>PK: 74 (dBµV/m)</td><td>AV: 54 (dBµV/m)</td></tr>
<tr><td>Frequency Band</td><td>Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3 m</td></tr>
<tr><td>5150~5250 MHz</td><td>15.407(b)(1)</td><td rowspan="3">PK: -27 (dBm/MHz)</td><td rowspan="3">PK: 68.2 (dBµV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td>15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td>15.407(b)(3)</td></tr>
<tr><td>5725~5850 MHz</td><td>15.407(b)(4)(i)</td><td>PK: -27 (dBm/MHz) *1
PK: 10 (dBm/MHz) *2
PK: 15.6 (dBm/MHz) *3
PK: 27 (dBm/MHz) *4</td><td>PK: 68.2 (dBµV/m) *1
PK: 105.2 (dBµV/m) *2
PK: 110.8 (dBµV/m) *3
PK: 122.2 (dBµV/m) *4</td></tr>
<tr><td colspan="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.</td></tr>
</table>

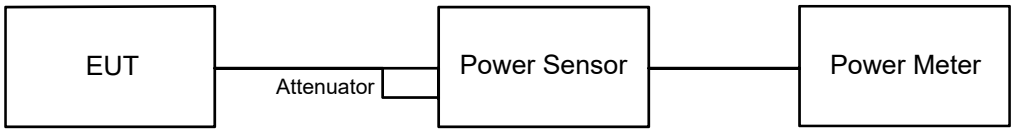
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

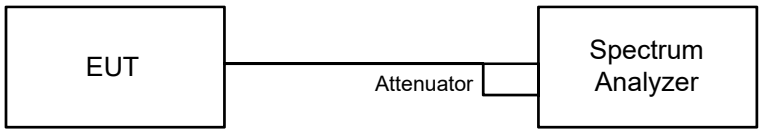


6.1.2 Test Procedure

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

6.2 Power Spectral Density

6.2.1 Test Setup



6.2.2 Test Procedure

For specified measurement bandwidth 1 MHz:
Method SA-2

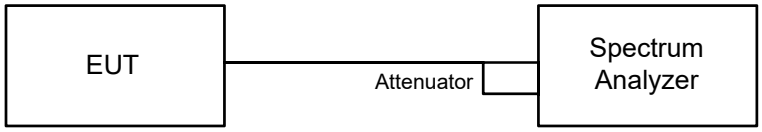
a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
d. Sweep time = auto, trigger set to “free run”.
e. Trace average at least 100 traces in power averaging mode.
f. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
g. Record the max value and add 10 log (1/duty cycle).

For specified measurement bandwidth 500 kHz:
Method SA-2

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

6.3 6 dB Bandwidth

6.3.1 Test Setup

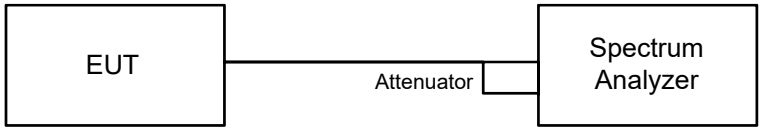


6.3.2 Test Procedure

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

6.4 Occupied Bandwidth

6.4.1 Test Setup

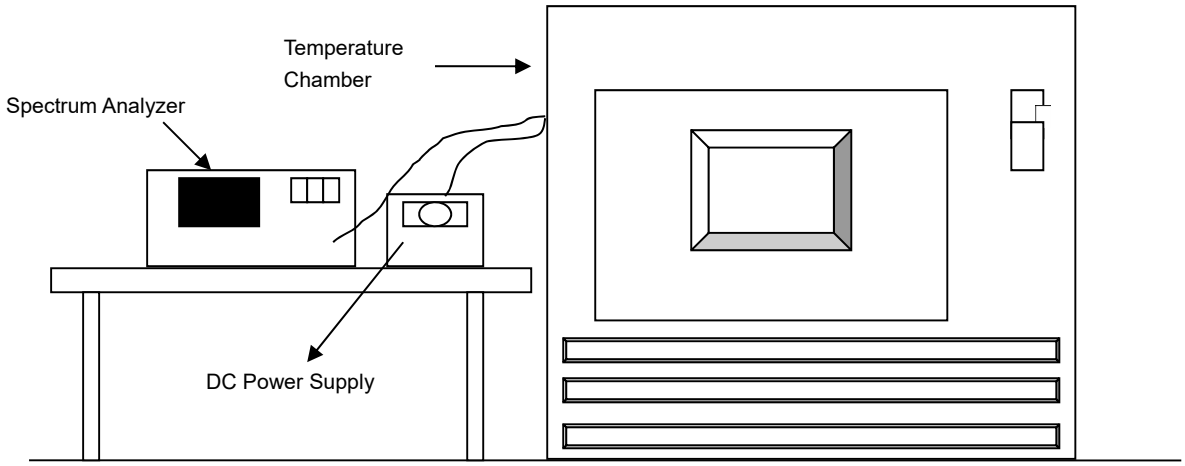


6.4.2 Test Procedure

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

6.5 Frequency Stability

6.5.1 Test Setup

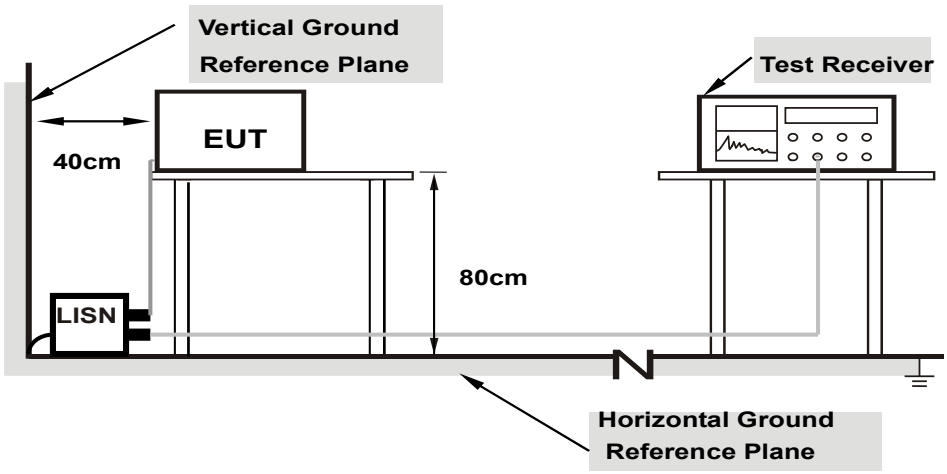


6.5.2 Test Procedure

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

6.6 AC Power Conducted Emissions

6.6.1 Test Setup



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

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

6.6.2 Test Procedure

a. The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.

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

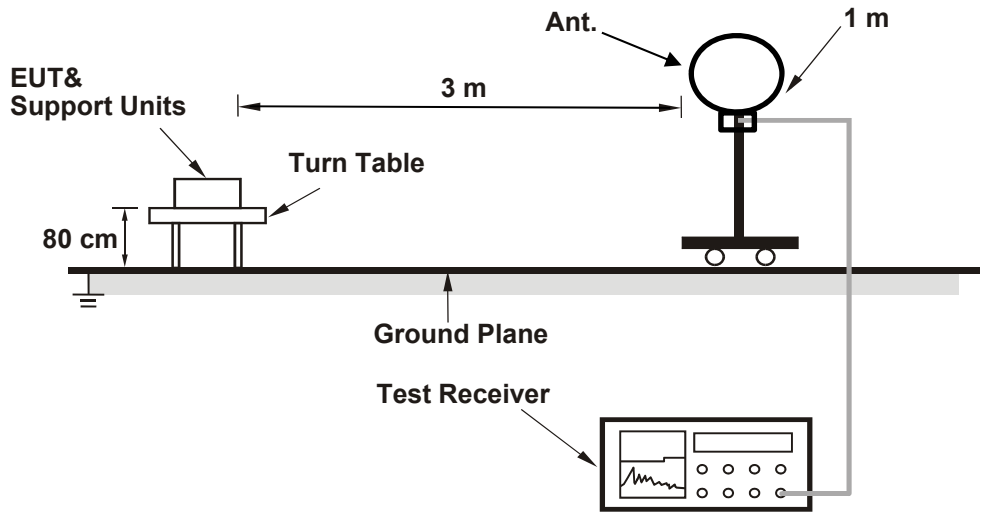
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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

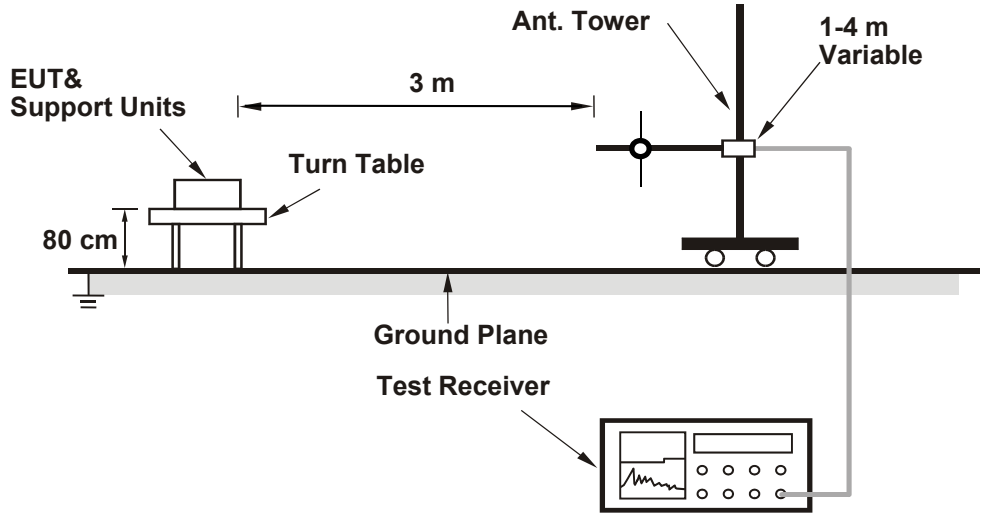
6.7 Unwanted Emissions below 1 GHz

6.7.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.7.2 Test Procedure

For Radiated emission below 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

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

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

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

For Radiated emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

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

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

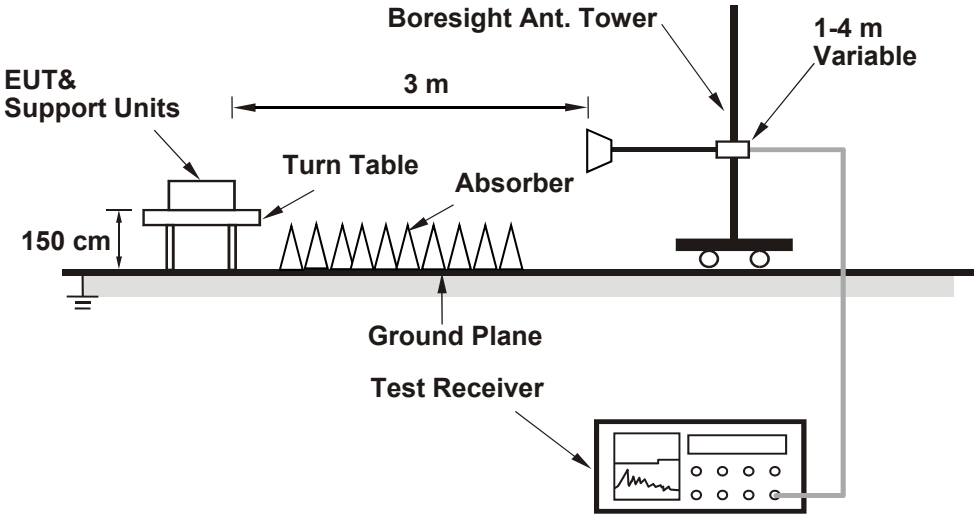
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

6.8 Unwanted Emissions above 1 GHz

6.8.1 Test Setup



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

6.8.2 Test Procedure

a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

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

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

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

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	54Vdc	Environmental Conditions:	23°C, 66% RH	Tested By:	Tim Chen

802.11a

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	16.10	15.98	15.99	15.83	158.367	22.00	29	Pass
40	5200	16.14	15.95	15.97	15.79	157.938	21.98	29	Pass
48	5240	16.11	15.92	15.94	15.77	156.938	21.96	29	Pass
149	5745	22.62	22.87	22.95	23.02	774.142	28.89	29	Pass
157	5785	22.78	22.95	23.00	23.07	789.207	28.97	29	Pass
165	5825	22.66	22.78	22.97	22.99	771.392	28.87	29	Pass

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	*Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
36	5180	22.00	-1.08	123.595	20.92	21	Pass
40	5200	21.98	-1.08	123.027	20.90	21	Pass
48	5240	21.96	-1.08	122.462	20.88	21	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 7 dBi > 6 dBi, so the output power limit shall be reduced to 30-(7-6) = 29 dBm.
3. For U-NII-3, the directional gain is 7 dBi> 6 dBi, so the output power limit shall be reduced to 30-(7-6) = 29 dBm.
4. * For U-NII-1, the gain of above 30 degrees from the horizon is -1.08 dBi, EIRP (dBm) = Average Power (dBm) + (-1.08) dBi

802.11ax (HE20)

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	16.21	16.01	16.12	15.81	160.718	22.06	29	Pass
40	5200	16.17	15.89	15.93	15.74	156.886	21.96	29	Pass
48	5240	16.18	15.93	15.99	15.85	158.848	22.01	29	Pass
149	5745	22.72	22.84	22.64	22.95	760.273	28.81	29	Pass
157	5785	22.81	22.71	22.83	22.97	767.643	28.85	29	Pass
165	5825	22.71	22.75	22.92	23.02	771.335	28.87	29	Pass

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	*Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
36	5180	22.06	-1.08	125.314	20.98	21	Pass
40	5200	21.96	-1.08	122.462	20.88	21	Pass
48	5240	22.01	-1.08	123.88	20.93	21	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 7 dBi > 6 dBi, so the output power limit shall be reduced to 30-(7-6) = 29 dBm.
3. For U-NII-3, the directional gain is 7 dBi> 6 dBi, so the output power limit shall be reduced to 30-(7-6) = 29 dBm.
4. * For U-NII-1, the gain of above 30 degrees from the horizon is -1.08 dBi, EIRP (dBm) = Average Power (dBm) + (-1.08) dBi

802.11ax (HE40)

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	14.16	13.95	13.97	13.83	99.993	20.00	29	Pass
46	5230	16.02	15.55	15.62	15.13	144.946	21.61	29	Pass
151	5755	21.04	21.06	20.75	20.69	490.771	26.91	29	Pass
159	5795	22.22	22.48	22.06	22.17	669.246	28.26	29	Pass

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	*Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
38	5190	20.00	-1.08	77.983	18.92	21	Pass
46	5230	21.61	-1.08	112.98	20.53	21	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 7 dBi > 6 dBi, so the output power limit shall be reduced to 30-(7-6) = 29 dBm.
3. For U-NII-3, the maximum gain is 7 dBi> 6 dBi, so the output power limit shall be reduced to 30-(7-6) = 29 dBm.
4. * For U-NII-1, the gain of above 30 degrees from the horizon is -1.08 dBi, EIRP (dBm) = Average Power (dBm) + (-1.08) dBi

802.11ax (HE80)

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	14.23	13.99	14.02	13.85	101.047	20.05	29	Pass
155	5775	19.57	19.84	19.45	19.33	360.765	25.57	29	Pass

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	*Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
42	5210	20.05	-1.08	78.886	18.97	21	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 7 dBi > 6 dBi, so the output power limit shall be reduced to 30-(7-6) = 29 dBm.
3. For U-NII-3, the maximum gain is 7 dBi> 6 dBi, so the output power limit shall be reduced to 30-(7-6) = 29 dBm.
4. * For U-NII-1, the gain of above 30 degrees from the horizon is -1.08 dBi, EIRP (dBm) = Average Power (dBm) + (-1.08) dBi

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	10.19	10.00	10.09	9.77	40.141	16.04	22.98	Pass
40	5200	10.16	9.88	9.89	9.72	39.228	15.94	22.98	Pass
48	5240	10.16	9.93	9.94	9.80	39.628	15.98	22.98	Pass
149	5745	16.69	16.83	16.62	16.95	190.326	22.79	22.98	Pass
157	5785	16.79	16.71	16.82	16.95	192.263	22.84	22.98	Pass
165	5825	16.71	16.72	16.91	17.01	193.196	22.86	22.98	Pass

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	*Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
36	5180	16.04	4.94	125.314	20.98	21	Pass
40	5200	15.94	4.94	122.462	20.88	21	Pass
48	5240	15.98	4.94	123.595	20.92	21	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (4 of TX antenna elements)
2. For U-NII-1, the directional gain is 13.02 dBi > 6 dBi, so the output power limit shall be reduced to 30-(13.02-6) = 22.98 dBm.
3. For U-NII-3, the directional gain is 13.02 dBi> 6 dBi, so the output power limit shall be reduced to 30-(13.02-6) = 22.98 dBm.
4. * For U-NII-1, the gain of above 30 degrees from the horizon is -1.08 dBi, EIRP (dBm) = Average Power (dBm) + (-1.08) dBi + 10LogN (6.02 dB)

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	10.11	9.93	9.92	9.79	39.442	15.96	22.98	Pass
46	5230	10.31	9.95	9.94	9.38	39.158	15.93	22.98	Pass
151	5755	16.99	17.03	16.74	16.64	193.808	22.87	22.98	Pass
159	5795	16.66	17.08	16.69	16.81	192.034	22.83	22.98	Pass

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	*Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
38	5190	15.96	4.94	123.027	20.90	21	Pass
46	5230	15.93	4.94	122.18	20.87	21	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (4 of TX antenna elements)
2. For U-NII-1, the directional gain is 13.02 dBi > 6 dBi, so the output power limit shall be reduced to 30-(13.02-6) = 22.98 dBm.
3. For U-NII-3, the directional gain is 13.02 dBi> 6 dBi, so the output power limit shall be reduced to 30-(13.02-6) = 22.98 dBm.
4. * For U-NII-1, the gain of above 30 degrees from the horizon is -1.08 dBi, EIRP (dBm) = Average Power (dBm) + (-1.08) dBi + 10LogN (6.02 dB)

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	10.22	9.97	9.99	9.80	39.978	16.02	22.98	Pass
155	5775	16.58	16.84	16.43	16.30	180.417	22.56	22.98	Pass

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	*Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
42	5210	16.02	4.94	124.738	20.96	21	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (4 of TX antenna elements)
2. For U-NII-1, the directional gain is 13.02 dBi > 6 dBi, so the output power limit shall be reduced to 30-(13.02-6) = 22.98 dBm.
3. For U-NII-3, the directional gain is 13.02 dBi> 6 dBi, so the output power limit shall be reduced to 30-(13.02-6) = 22.98 dBm.
4. * For U-NII-1, the gain of above 30 degrees from the horizon is -1.08 dBi, EIRP (dBm) = Average Power (dBm) + (-1.08) dBi + 10LogN (6.02 dB)

7.2 Power Spectral Density

Input Power:	54Vdc	Environmental Conditions:	23°C, 66% RH	Tested By:	Tim Chen

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	2.58	3.13	2.48	3.00	0.28	9.11	9.98	Pass
40	5200	3.19	3.00	2.96	2.81	0.28	9.29	9.98	Pass
48	5240	3.20	2.99	2.94	2.77	0.28	9.28	9.98	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 = gain of antenna element + 10 log (4 of TX antenna elements)
3. For U-NII-1, the directional gain is 13.02 dBi > 6dBi, so the power density limit shall be reduced to 17-(13.02-6) = 9.98 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	2.67	2.45	2.39	1.88	0.23	8.61	9.98	Pass
40	5200	2.50	2.44	2.34	2.31	0.23	8.65	9.98	Pass
48	5240	2.78	2.44	2.53	2.10	0.23	8.72	9.98	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 = gain of antenna element + 10 log (4 of TX antenna elements)
3. For U-NII-1, the directional gain is 13.02 dBi > 6dBi, so the power density limit shall be reduced to 17-(13.02-6) = 9.98 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	-1.96	-2.07	-2.48	-2.23	0.24	4.08	9.98	Pass
46	5230	-0.47	-0.50	-0.85	-1.04	0.24	5.55	9.98	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 = gain of antenna element + 10 log (4 of TX antenna elements)
3. For U-NII-1, the directional gain is 13.02 dBi > 6dBi, so the power density limit shall be reduced to 17-(13.02-6) = 9.98 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	-5.44	-4.86	-4.94	-5.64	0.26	1.07	9.98	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 = gain of antenna element + 10 log (4 of TX antenna elements)
3. For U-NII-1, the directional gain is 13.02 dBi > 6dBi, so the power density limit shall be reduced to 17-(13.02-6) = 9.98 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	3.98	4.58	4.54	4.51	10.43	0.28	12.93	22.98	Pass
157	5785	3.67	4.89	4.41	3.90	10.26	0.28	12.76	22.98	Pass
165	5825	3.75	4.62	4.40	4.06	10.24	0.28	12.74	22.98	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 = gain of antenna element + 10 log (4 of TX antenna elements)
3. For U-NII-3, the directional gain is 13.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(13.02-6) = 22.98 dBm/500kHz.

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	3.32	4.53	3.92	3.71	9.91	0.23	12.36	22.98	Pass
157	5785	3.58	4.09	4.05	3.41	9.81	0.23	12.26	22.98	Pass
165	5825	3.50	4.25	3.57	3.43	9.72	0.23	12.17	22.98	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 = gain of antenna element + 10 log (4 of TX antenna elements)
3. For U-NII-3, the directional gain is 13.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(13.02-6) = 22.98 dBm/500kHz.

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	-0.67	0.50	-0.34	-0.99	5.68	0.24	8.14	22.98	Pass
159	5795	0.63	0.19	-0.36	-1.06	5.92	0.24	8.38	22.98	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 = gain of antenna element + 10 log (4 of TX antenna elements)
3. For U-NII-3, the directional gain is 13.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(13.02-6) = 22.98 dBm/500kHz.

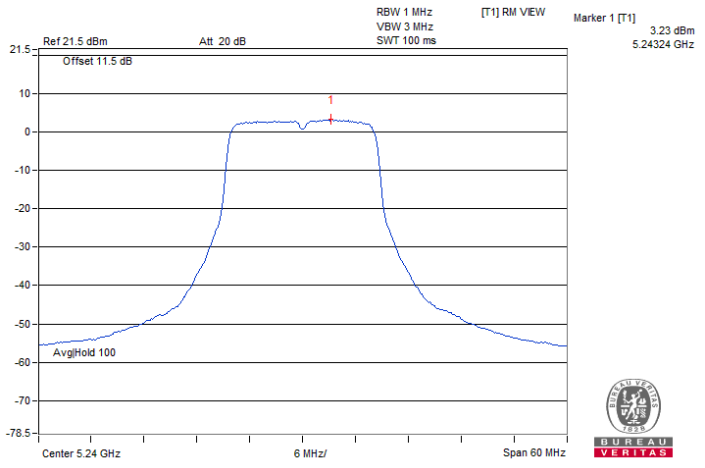
802.11ax (HE80)

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	-5.08	-3.99	-4.47	-5.26	1.35	0.26	3.83	22.98	Pass

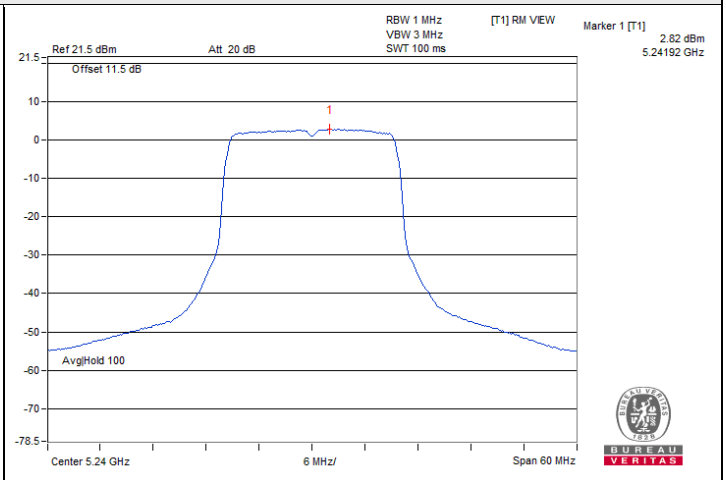
Notes:

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 = gain of antenna element + 10 log (4 of TX antenna elements)
3. For U-NII-3, the directional gain is 13.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(13.02-6) = 22.98 dBm/500kHz.

Spectrum Plot of Maximum Value

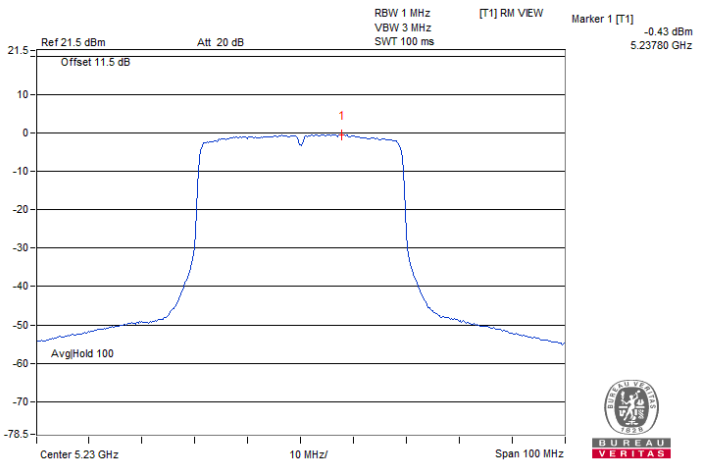


802.11a / Chain0 : CH 48

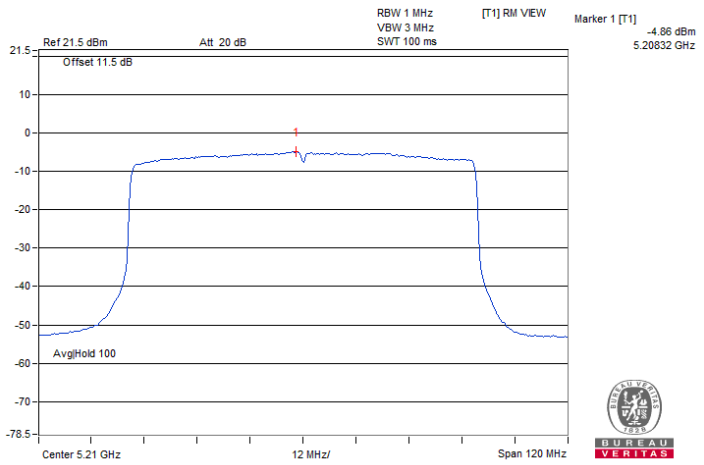


802.11ax (HE20) / Chain0 : CH 48

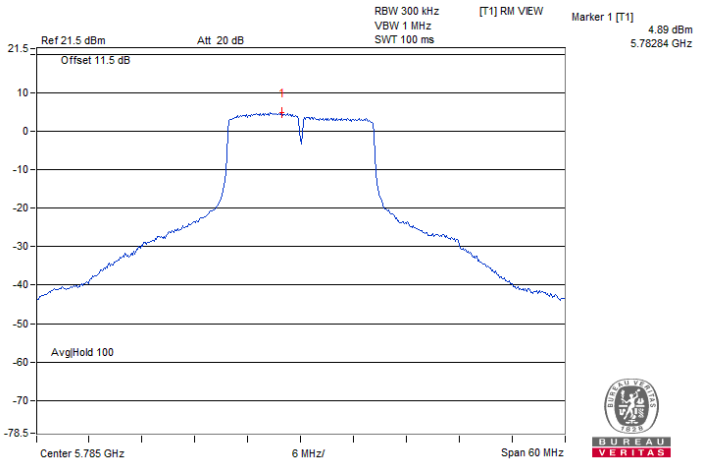
Spectrum Plot of Maximum Value



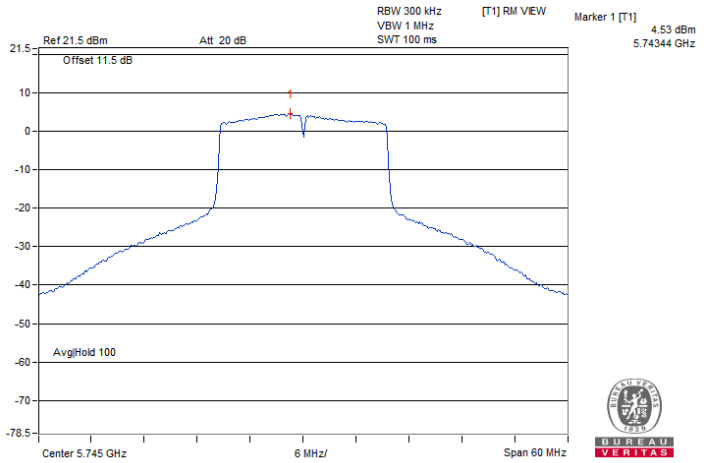
802.11ax (HE40) / Chain0 : CH 46



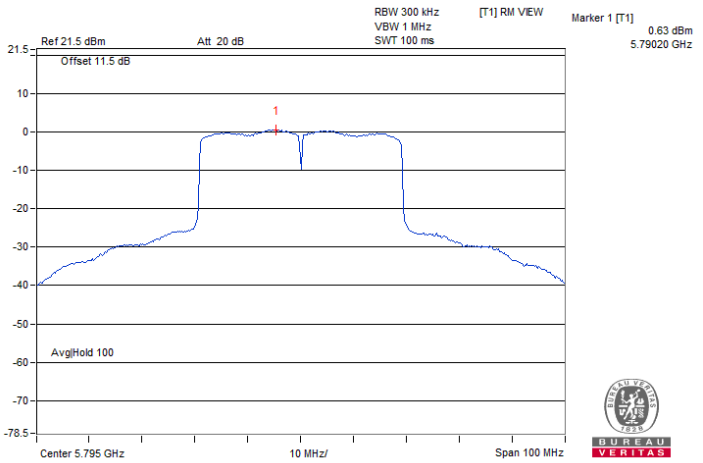
802.11ax (HE80) / Chain1 : CH 42



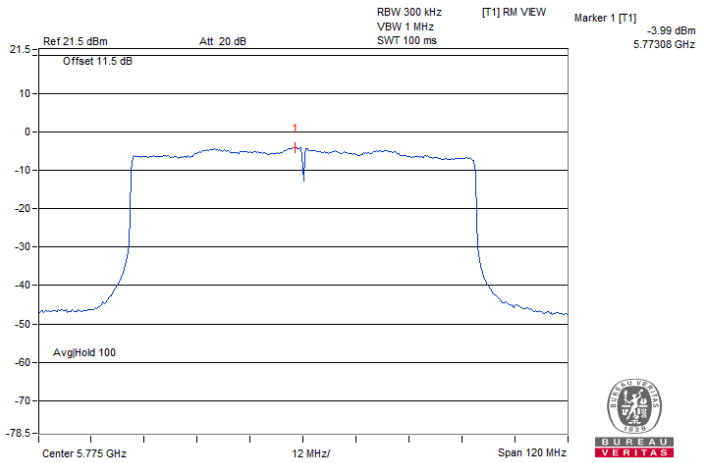
802.11a / Chain1 : CH 157



802.11ax (HE20) / Chain1 : CH 149



802.11ax (HE40) / Chain0 : CH 159



802.11ax (HE80) / Chain1 : CH 155

7.3 6 dB Bandwidth

Input Power:	54Vdc	Environmental Conditions:	23°C, 66% RH	Tested By:	Tim Chen

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.30	16.32	16.27	16.33	0.5	Pass
157	5785	16.32	16.06	15.60	16.02	0.5	Pass
165	5825	16.31	15.65	16.30	16.05	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	18.53	18.68	18.90	18.65	0.5	Pass
157	5785	18.66	16.78	18.41	18.83	0.5	Pass
165	5825	18.77	18.55	18.87	18.51	0.5	Pass

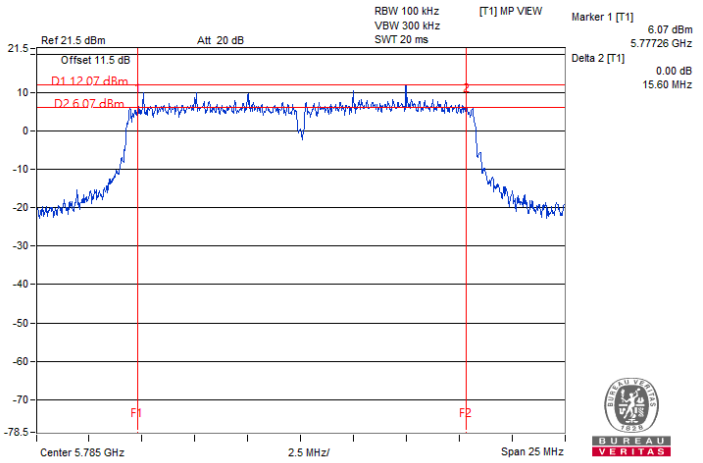
802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.62	37.97	37.79	38.02	0.5	Pass
159	5795	37.72	37.89	37.17	37.57	0.5	Pass

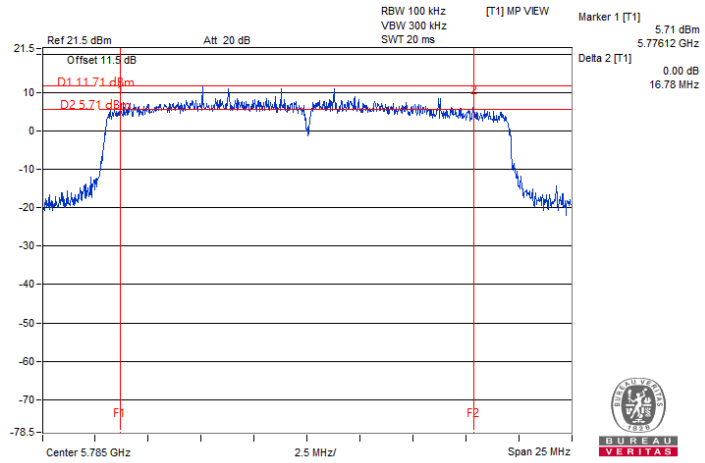
802.11ax (HE80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	77.77	77.18	74.57	77.54	0.5	Pass

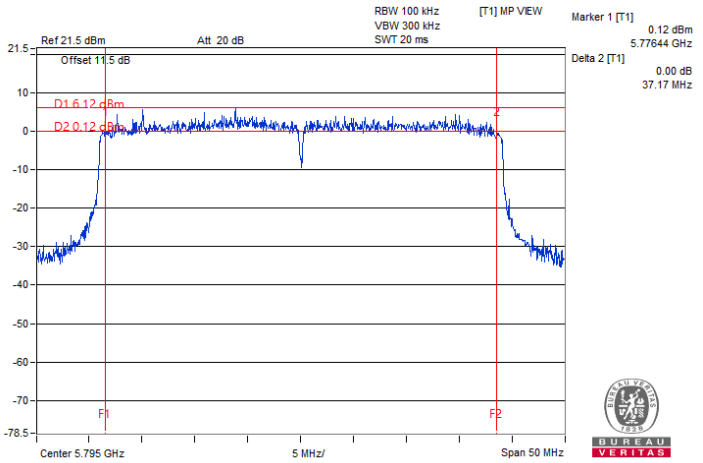
Spectrum Plot of Minimum Value



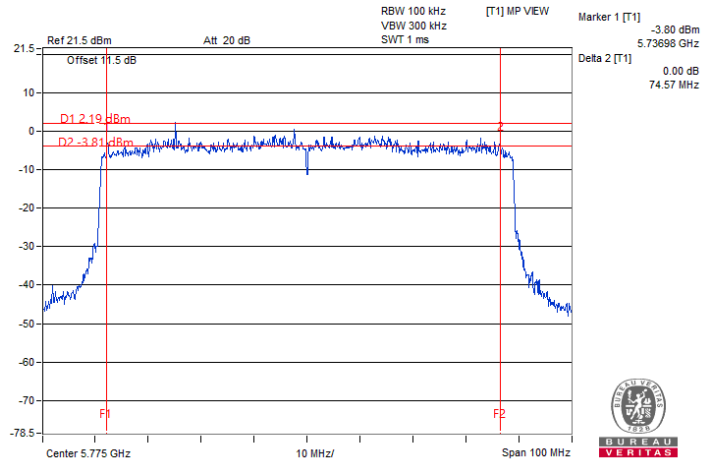
802.11a / Chain2 : CH 157



802.11ax (HE20) / Chain1 : CH 157



802.11ax (HE40) / Chain2 : CH 159



802.11ax (HE80) / Chain2 : CH 155

7.4 Occupied Bandwidth

Input Power:	54Vdc	Environmental Conditions:	23°C, 66% RH	Tested By:	Tim Chen

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	16.44	16.44	16.38	16.50
40	5200	16.38	16.38	16.50	16.44
48	5240	16.50	16.50	16.50	16.38
149	5745	16.62	16.62	16.56	16.50
157	5785	16.68	16.56	16.56	16.56
165	5825	16.86	16.50	16.56	16.62

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	18.84	18.96	19.02	18.90
40	5200	18.96	18.90	18.96	18.90
48	5240	18.96	18.96	18.90	18.96
149	5745	18.96	19.02	19.02	19.02
157	5785	19.08	19.02	18.90	19.08
165	5825	19.08	19.02	19.08	19.02

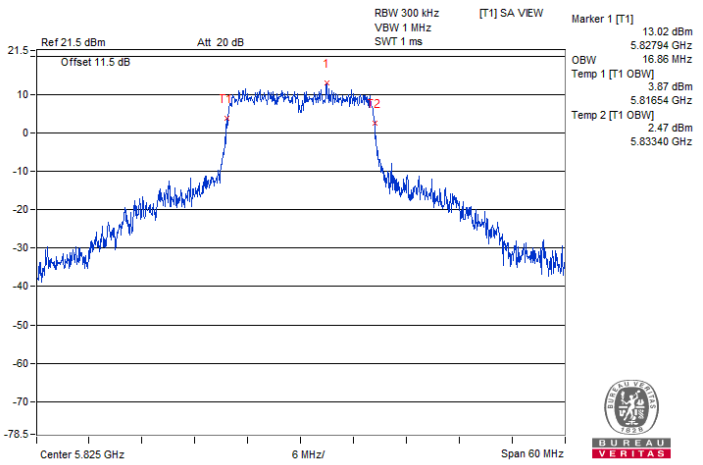
802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	37.92	37.92	37.80	37.92
46	5230	37.92	37.80	37.80	37.92
151	5755	37.80	38.04	37.80	37.80
159	5795	38.16	38.04	37.80	38.04

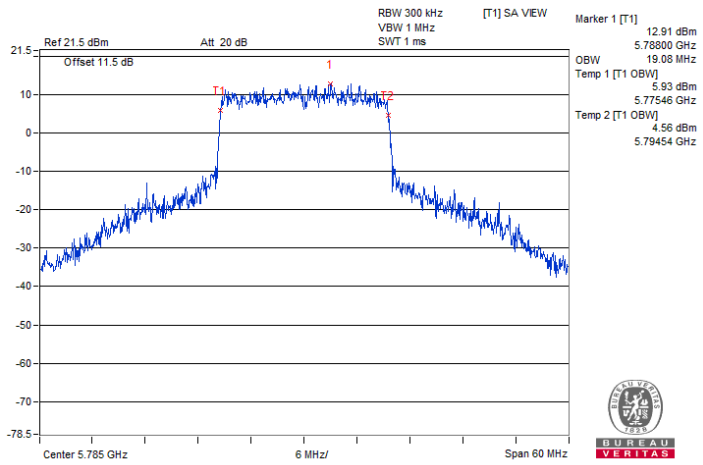
802.11ax (HE80)

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

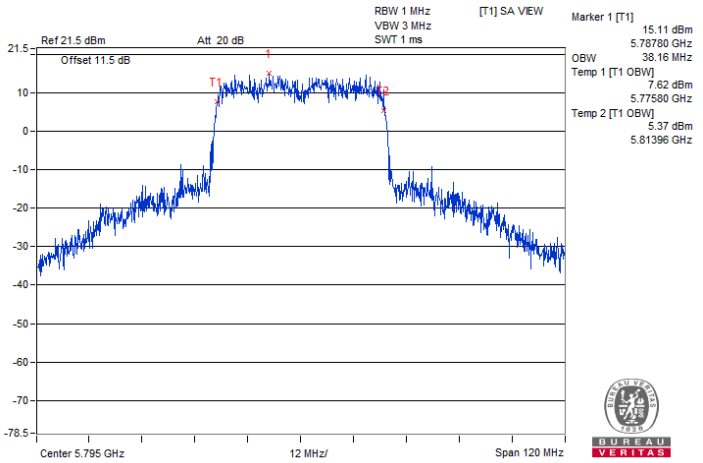
Spectrum Plot of Maximum Value



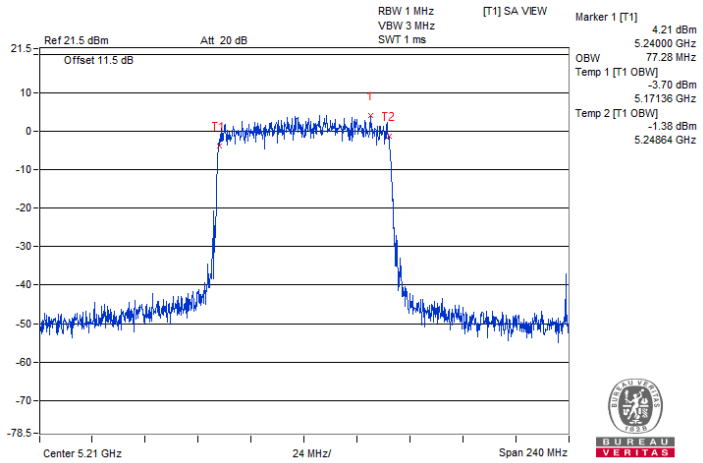
802.11a / Chain0 : CH 165



802.11ax (HE20) / Chain0 : CH 157



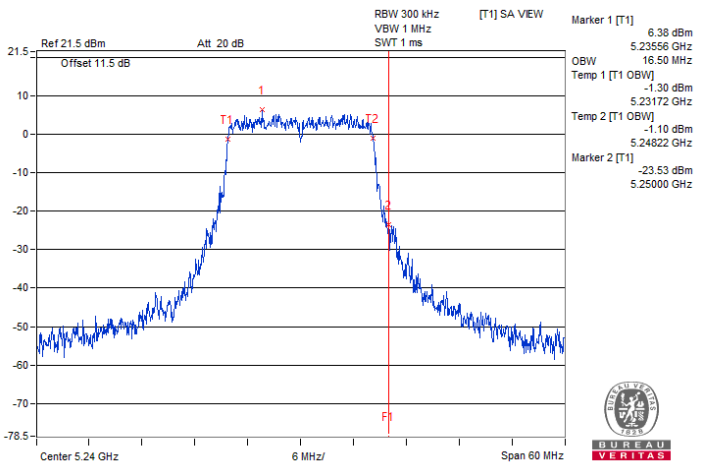
802.11ax (HE40) / Chain0 : CH 159



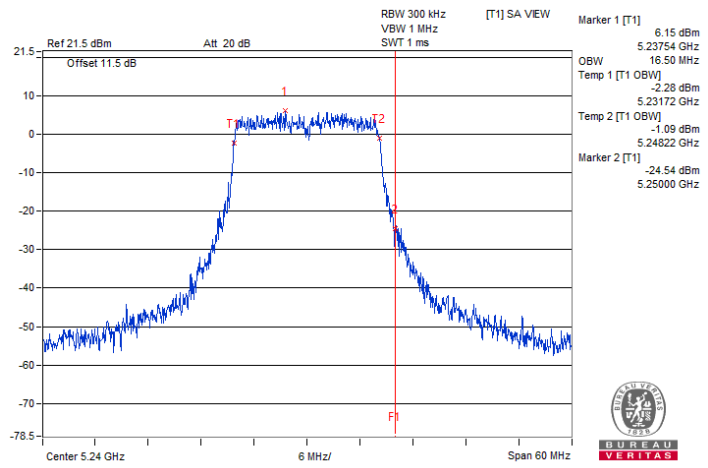
802.11ax (HE80) / Chain0 : CH 42

Spectrum Plot for nearby DFS band

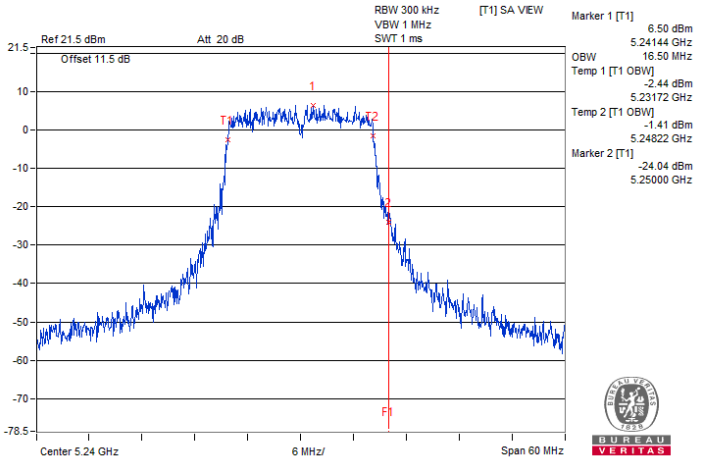
(DFS is required, if 99% OCP straddle into U-NII-2A)



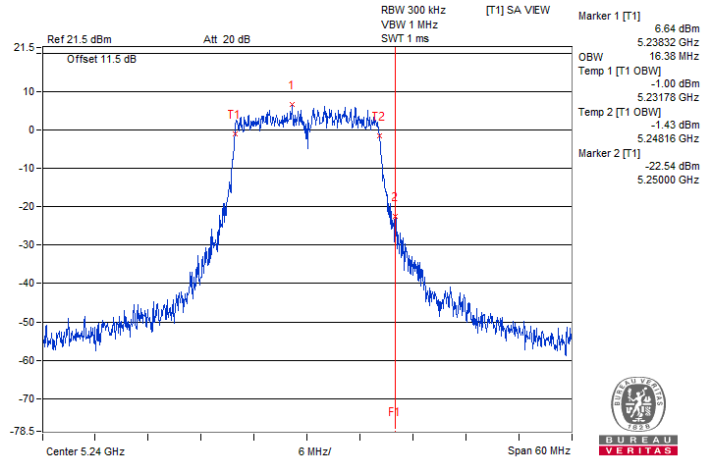
802.11a / Chain 0 : CH 48



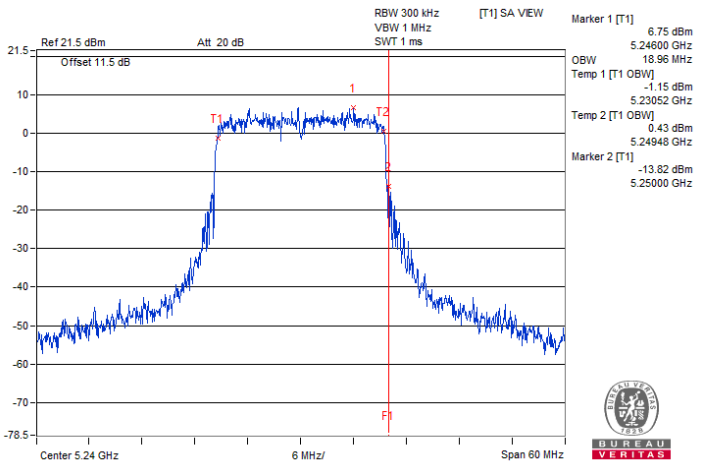
802.11a / Chain 1 : CH 48



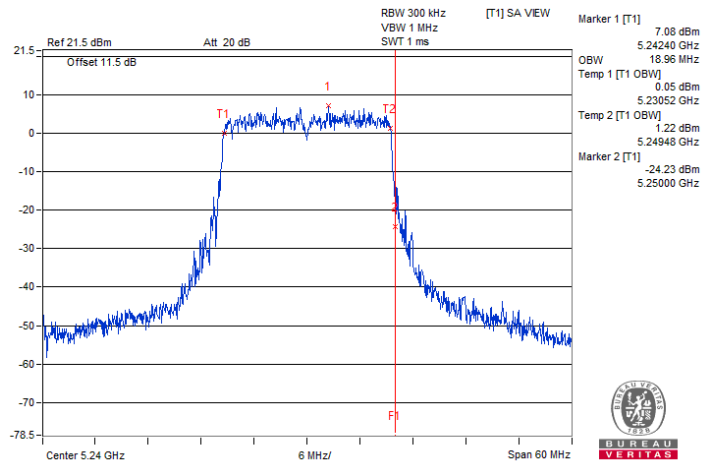
802.11a / Chain 2 : CH 48



802.11a / Chain 3 : CH 48



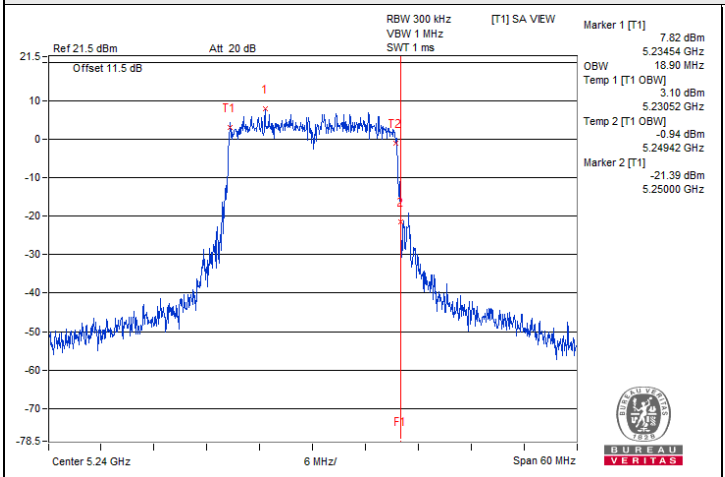
802.11ax (HE20) / Chain 0 : CH 48



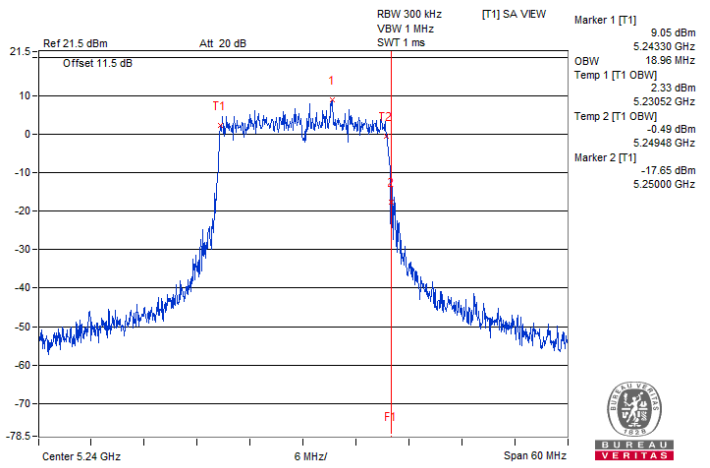
802.11ax (HE20) / Chain 1 : CH 48

Spectrum Plot for nearby DFS band

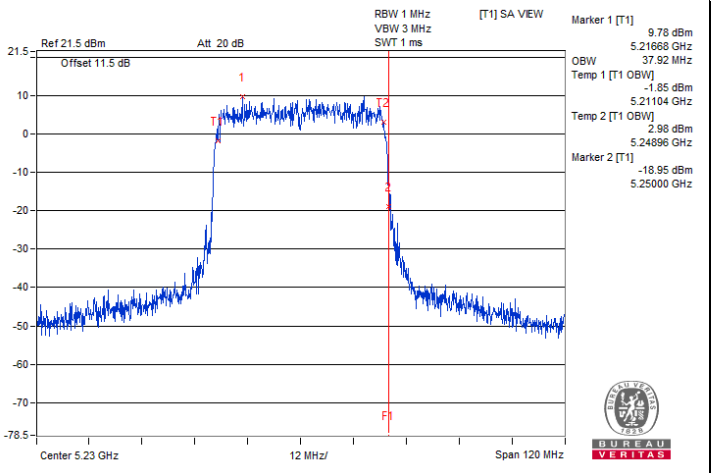
(DFS is required, if 99% OCP straddle into U-NII-2A)



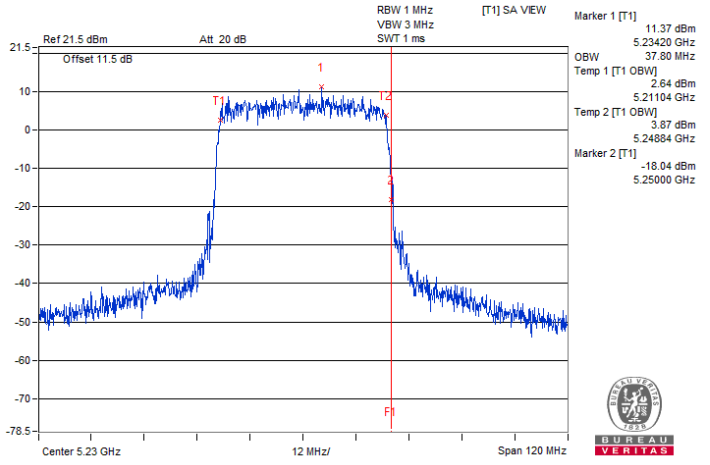
802.11ax (HE20) / Chain 2 : CH 48



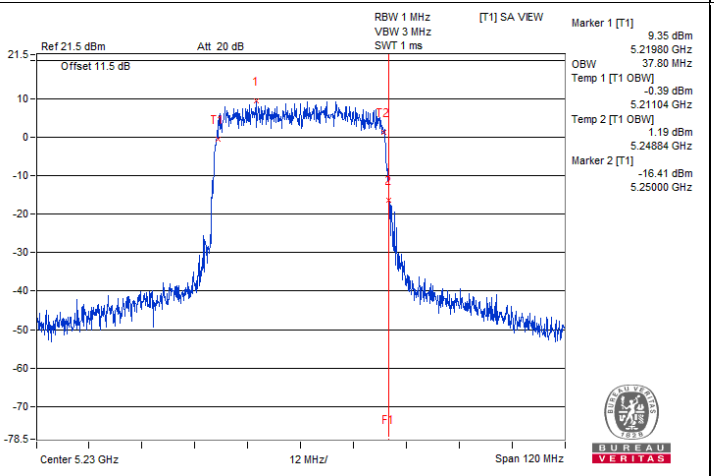
802.11ax (HE20) / Chain 3 : CH 48



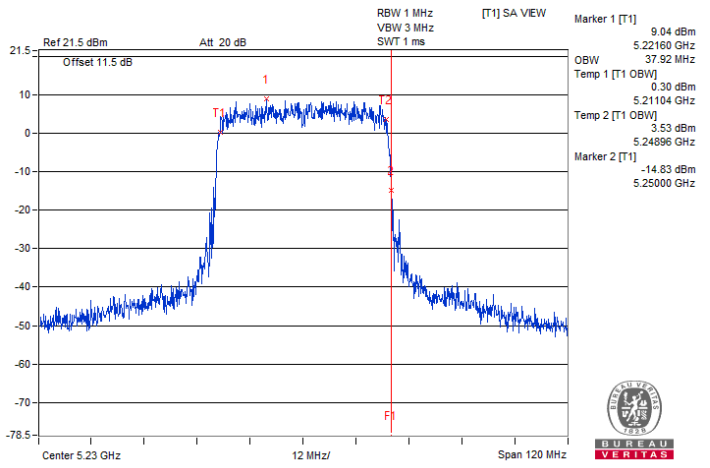
802.11ax (HE40) / Chain 0 : CH 46



802.11ax (HE40) / Chain 1 : CH 46



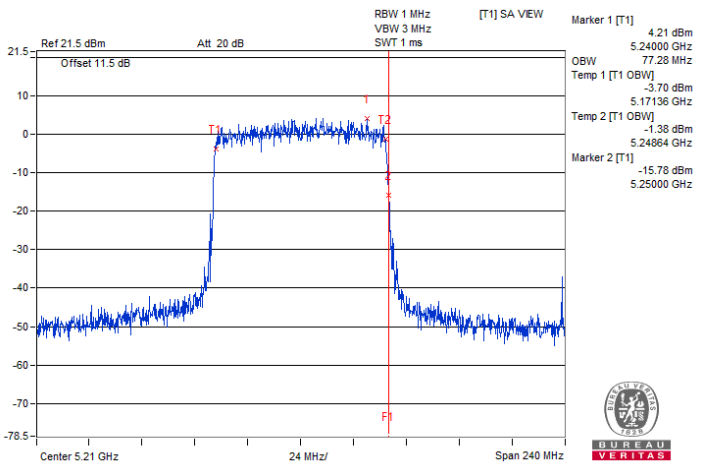
802.11ax (HE40) / Chain 2 : CH 46



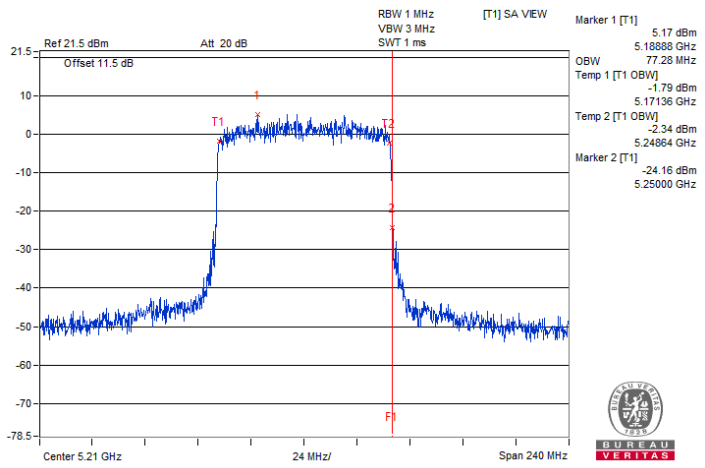
802.11ax (HE40) / Chain 3 : CH 46

Spectrum Plot for nearby DFS band

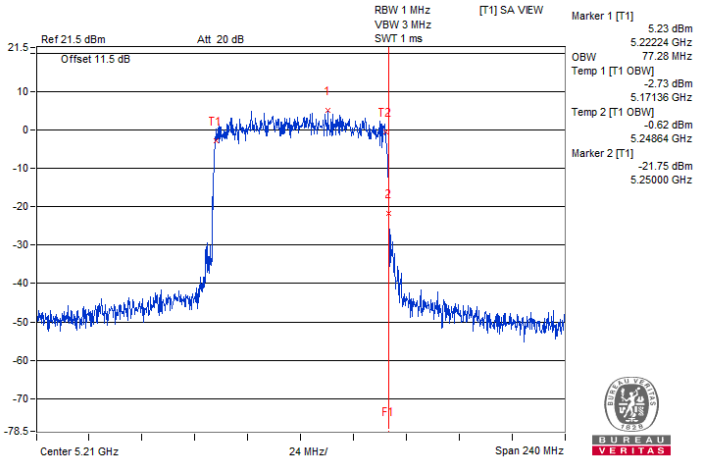
(DFS is required, if 99% OCP straddle into U-NII-2A)



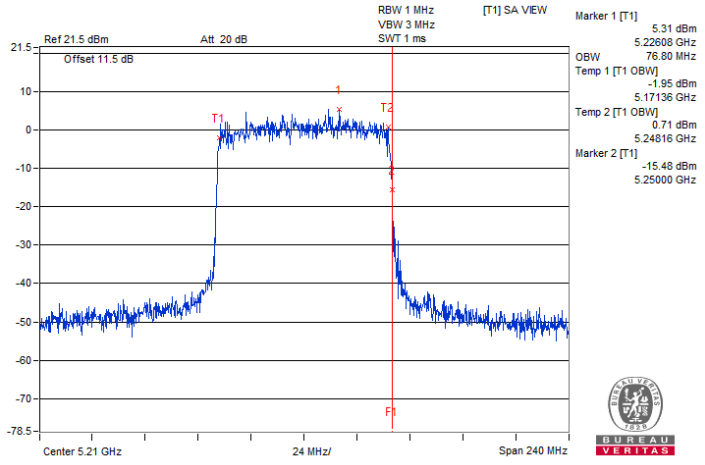
802.11ax (HE80) / Chain 0 : CH 42



802.11ax (HE80) / Chain 1 : CH 42



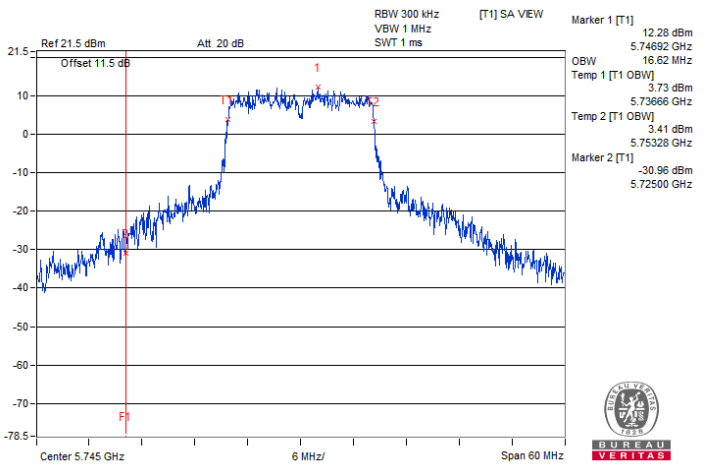
802.11ax (HE80) / Chain 2 : CH 42



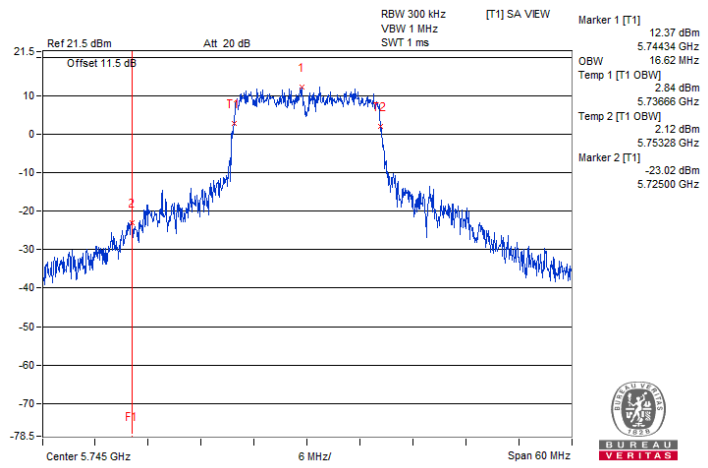
802.11ax (HE80) / Chain 3 : CH 42

Spectrum Plot for nearby DFS band

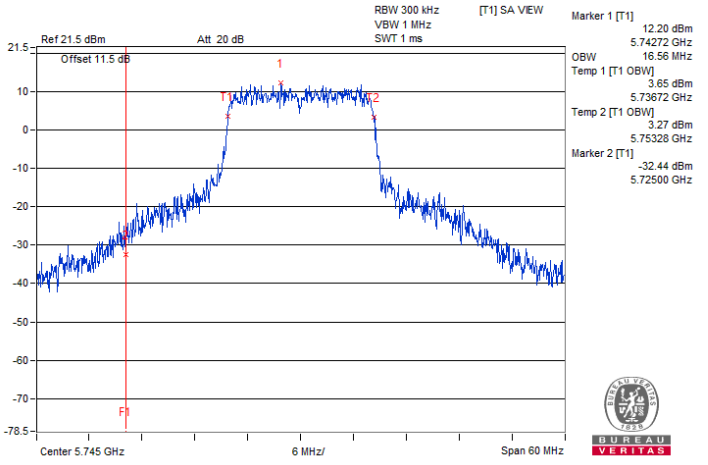
(DFS is required, if 99% OCP straddle into U-NII-2C)



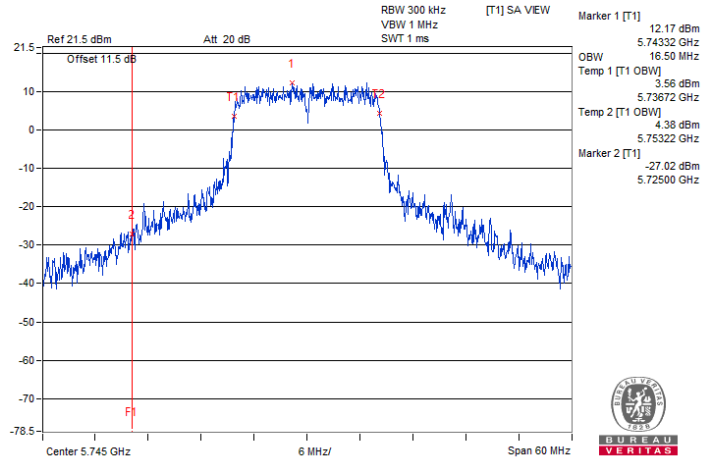
802.11a / Chain 0 : CH 149



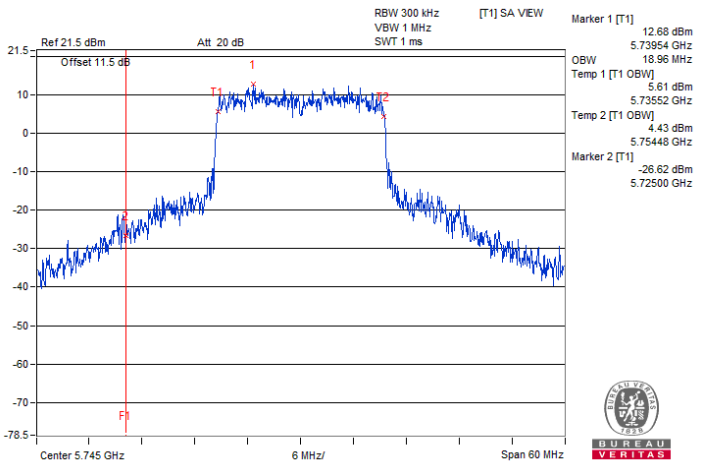
802.11a / Chain 1 : CH 149



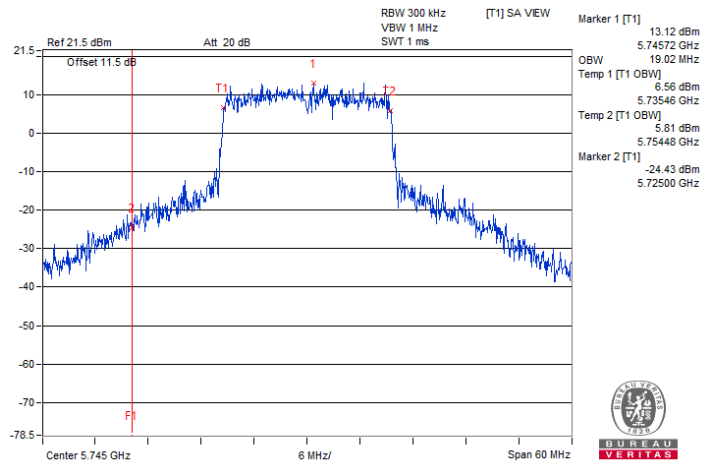
802.11a / Chain 2 : CH 149



802.11a / Chain 3 : CH 149



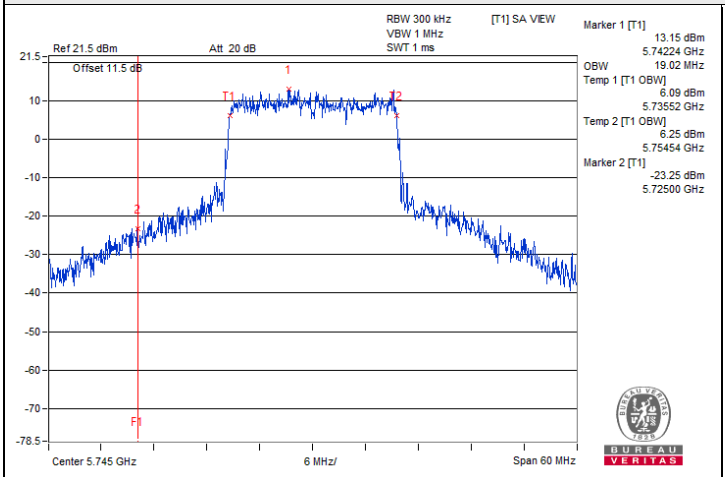
802.11ax (HE20) / Chain 0 : CH 149



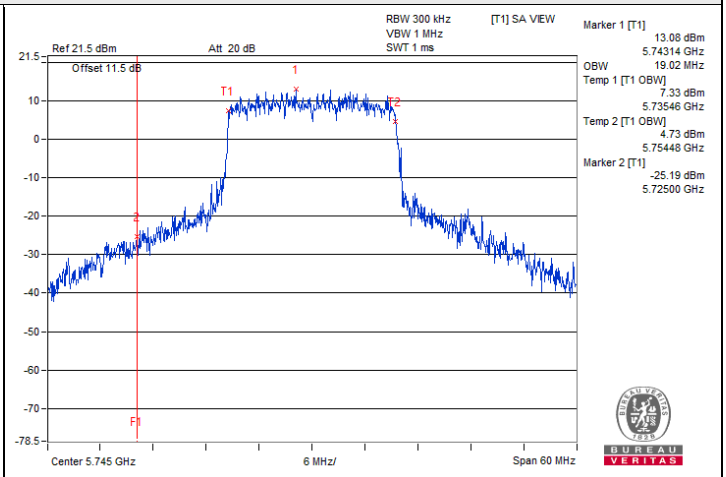
802.11ax (HE20) / Chain 1 : CH 149

Spectrum Plot for nearby DFS band

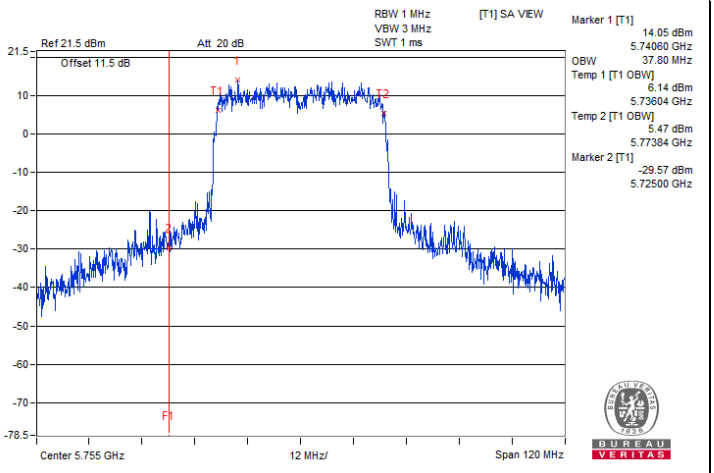
(DFS is required, if 99% OCP straddle into U-NII-2C)



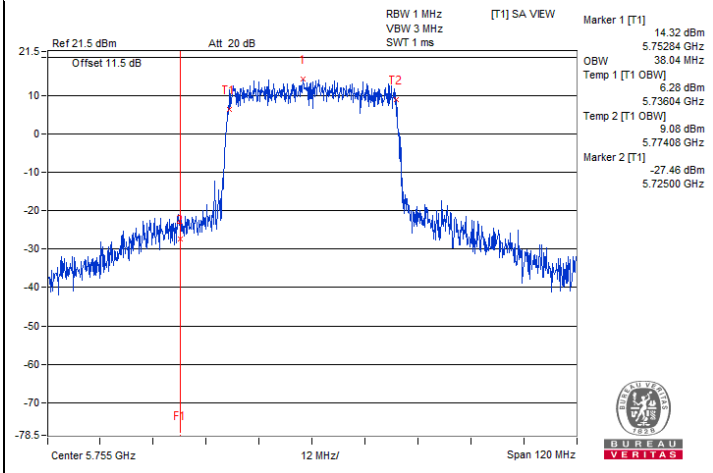
802.11ax (HE20) / Chain 2 : CH 149



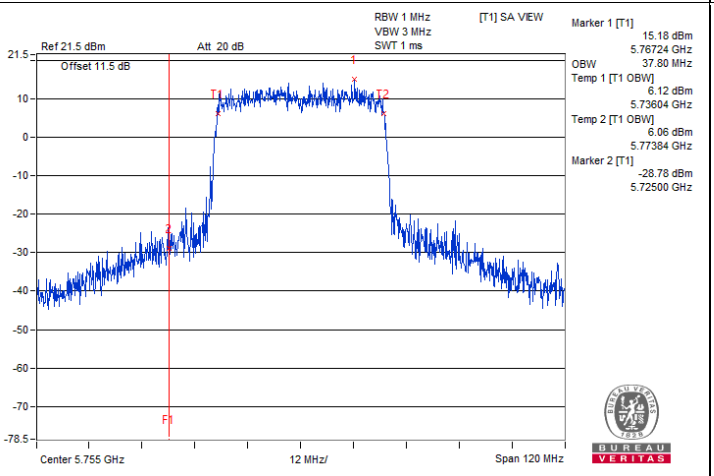
802.11ax (HE20) / Chain 3 : CH 149



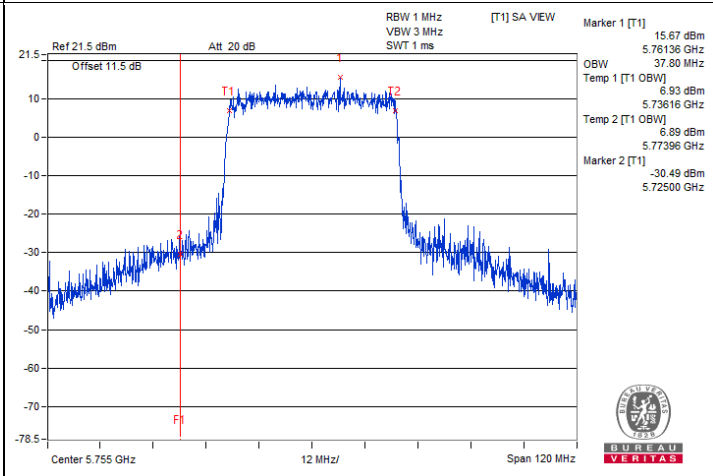
802.11ax (HE40) / Chain 0 : CH 151



802.11ax (HE40) / Chain 1 : CH 151



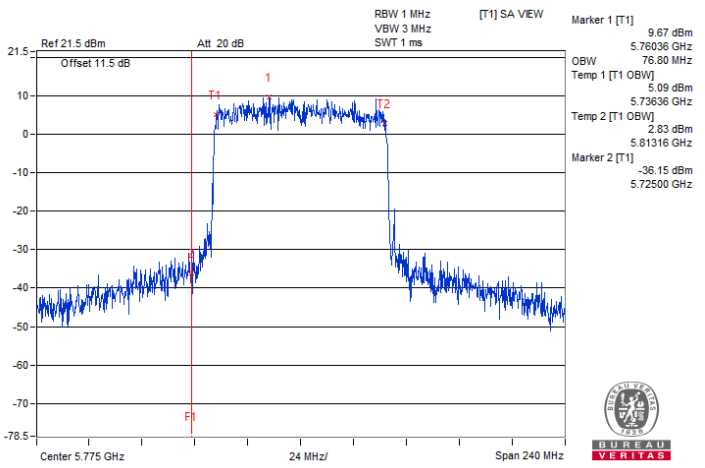
802.11ax (HE40) / Chain 2 : CH 151



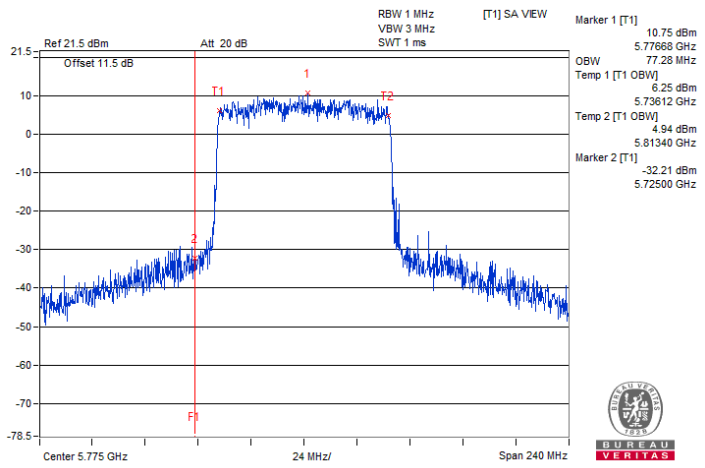
802.11ax (HE40) / Chain 3 : CH 151

Spectrum Plot for nearby DFS band

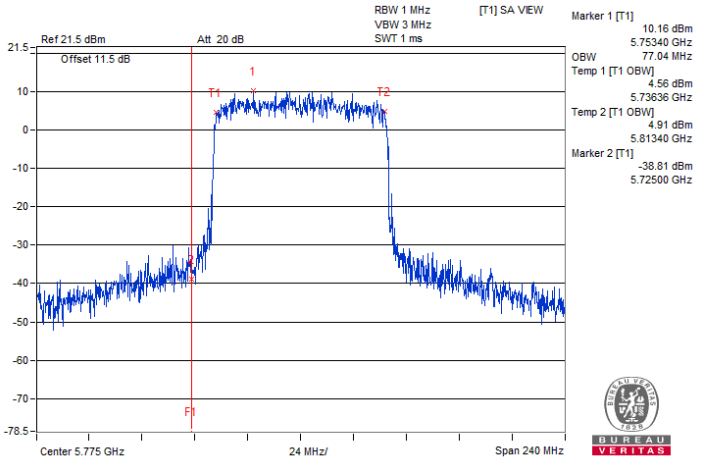
(DFS is required, if 99% OCP straddle into U-NII-2C)



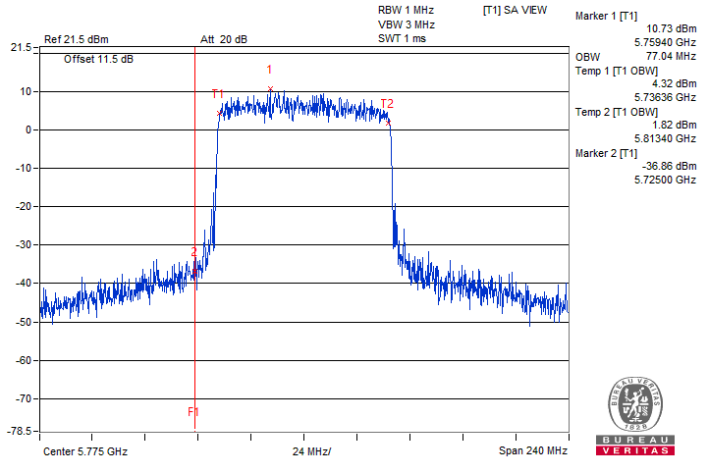
802.11ax (HE80) / Chain 0 : CH 155



802.11ax (HE80) / Chain 1 : CH 155



802.11ax (HE80) / Chain 2 : CH 155



802.11ax (HE80) / Chain 3 : CH 155

7.5 Frequency Stability

Input Power:	54Vdc	Environmental Conditions:	23°C, 66% RH	Tested By:	Tim Chen

802.11a

Frequency Stability Versus Temperature									
Operating Frequency: 5180 MHz									
Temp. (℃)	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
65	54	5179.9961	Pass	5179.9924	Pass	5179.9917	Pass	5179.9953	Pass
60	54	5179.9925	Pass	5179.9946	Pass	5179.9922	Pass	5179.9927	Pass
50	54	5180.0129	Pass	5180.0098	Pass	5180.0112	Pass	5180.0099	Pass
40	54	5179.9777	Pass	5179.9748	Pass	5179.9798	Pass	5179.9775	Pass
30	54	5179.9833	Pass	5179.9818	Pass	5179.9823	Pass	5179.9848	Pass
20	54	5179.991	Pass	5179.9904	Pass	5179.9922	Pass	5179.9919	Pass
10	54	5179.9825	Pass	5179.9798	Pass	5179.9841	Pass	5179.9838	Pass
0	54	5179.9757	Pass	5179.9772	Pass	5179.9742	Pass	5179.9781	Pass
-10	54	5179.9745	Pass	5179.974	Pass	5179.9769	Pass	5179.9771	Pass
-20	54	5180.0075	Pass	5180.0029	Pass	5180.0037	Pass	5180.0026	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	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	62.1	5179.9958	Pass	5179.9958	Pass	5179.9957	Pass	5179.9962	Pass
	54.0	5179.991	Pass	5179.9904	Pass	5179.9922	Pass	5179.9919	Pass
	45.9	5179.9877	Pass	5179.9884	Pass	5179.9862	Pass	5179.9875	Pass

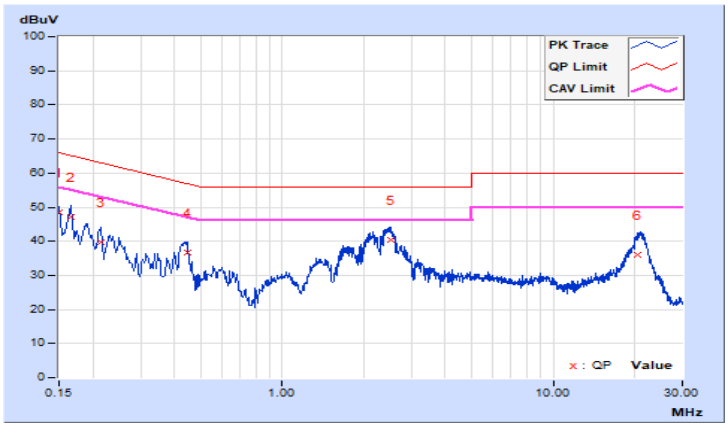
7.6 AC Power Conducted Emissions

RF Mode	802.11a	**Channel**	CH 157：5785 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	54Vdc	**Environmental Conditions**	25°C, 75% RH
Tested By	Edison Lee		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15000	9.68	38.73	28.67	48.41	38.35	66.00	56.00	-17.59	-17.65
2	0.16600	9.69	37.37	25.02	47.06	34.71	65.16	55.16	-18.10	-20.45
3	0.21400	9.73	30.04	19.34	39.77	29.07	63.05	53.05	-23.28	-23.98
4	0.44600	9.80	27.01	20.87	36.81	30.67	56.95	46.95	-20.14	-16.28
5	2.52200	9.91	30.66	22.69	40.57	32.60	56.00	46.00	-15.43	-13.40
6	20.54200	10.16	26.00	17.34	36.16	27.50	60.00	50.00	-23.84	-22.50

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

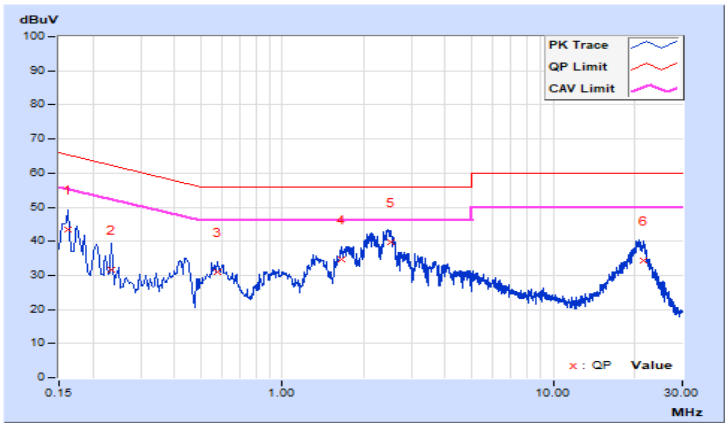


RF Mode	802.11a	**Channel**	CH 157：5785 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	54Vdc	**Environmental Conditions**	25°C, 75% RH
Tested By	Edison Lee		

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	0.16200	9.69	33.81	21.80	43.50	31.49	65.36	55.36	-21.86	-23.87
2	0.23400	9.74	21.86	13.60	31.60	23.34	62.31	52.31	-30.71	-28.97
3	0.57400	9.82	21.13	14.94	30.95	24.76	56.00	46.00	-25.05	-21.24
4	1.65400	9.90	24.86	19.42	34.76	29.32	56.00	46.00	-21.24	-16.68
5	**2.52200**	**9.93**	**29.91**	**22.72**	**39.84**	**32.65**	**56.00**	**46.00**	**-16.16**	**-13.35**
6	21.56600	10.20	24.05	14.87	34.25	25.07	60.00	50.00	-25.75	-24.93

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



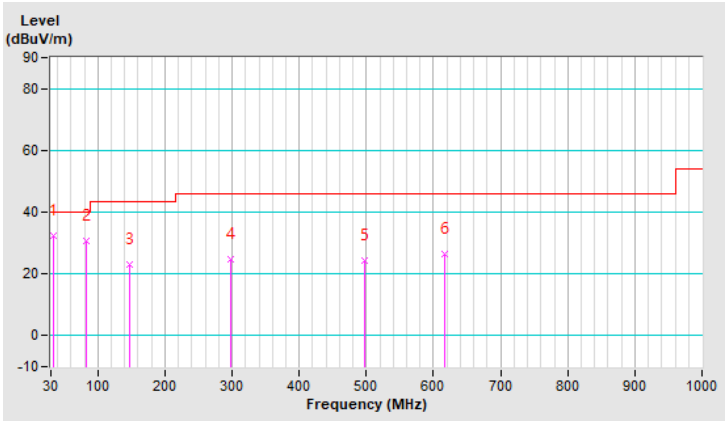
7.7 Unwanted Emissions below 1 GHz

RF Mode	802.11a	**Channel**	CH 157：5785 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power	54Vdc	**Environmental Conditions**	23°C, 66% RH
Tested By	Edison Lee		

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	**34.22**	**32.5 QP**	**40.0**	**-7.5**	**2.00 H**	**66**	**46.8**	**-14.3**
2	82.01	30.8 QP	40.0	-9.2	1.51 H	88	49.3	-18.5
3	148.09	23.2 QP	43.5	-20.3	1.01 H	18	36.4	-13.2
4	297.10	24.6 QP	46.0	-21.4	2.00 H	68	37.3	-12.7
5	498.13	24.2 QP	46.0	-21.8	1.51 H	2	32.1	-7.9
6	616.22	26.5 QP	46.0	-19.5	1.01 H	141	31.6	-5.1

Remarks:

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

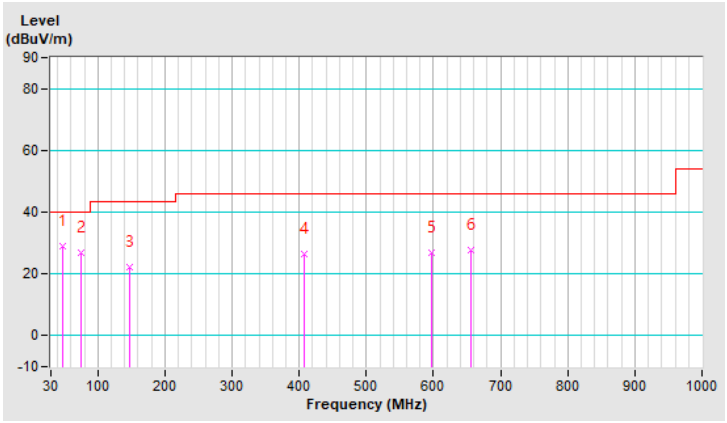


RF Mode	802.11a	Channel	CH 157：5785 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Edison Lee		

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	48.28	28.9 QP	40.0	-11.1	1.00 V	2	41.9	-13.0
2	74.99	26.9 QP	40.0	-13.1	1.49 V	3	43.6	-16.7
3	148.09	22.2 QP	43.5	-21.3	1.99 V	94	35.4	-13.2
4	408.16	26.5 QP	46.0	-19.5	1.00 V	250	36.5	-10.0
5	597.94	26.7 QP	46.0	-19.3	1.99 V	2	32.1	-5.4
6	655.58	27.6 QP	46.0	-18.4	1.00 V	36	32.2	-4.6

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 of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



7.8 Unwanted Emissions above 1 GHz

RF Mode	802.11a	**Channel**	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	**Environmental Conditions**	23°C, 66% RH
Tested By	Tim Chen		

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	59.2 PK	74.0	-14.8	1.44 H	193	56.7	2.5
2	5150.00	45.7 AV	54.0	-8.3	1.44 H	193	43.2	2.5
3	*5180.00	103.5 PK			1.46 H	202	63.2	40.3
4	*5180.00	94.3 AV			1.46 H	202	54.0	40.3
5	#10360.00	55.7 PK	68.2	-12.5	1.32 H	165	47.2	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	67.2 PK	74.0	-6.8	1.58 V	191	64.7	2.5
2	5150.00	53.2 AV	54.0	-0.8	1.58 V	191	50.7	2.5
3	*5180.00	125.4 PK			2.01 V	165	85.1	40.3
4	*5180.00	115.3 AV			2.01 V	165	75.0	40.3
5	#10360.00	56.3 PK	68.2	-11.9	2.25 V	185	47.8	8.5

Remarks:

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

RF Mode	802.11a	Channel	CH 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	5088.00	57.8 PK	74.0	-16.2	1.44 H	192	55.5	2.3
2	5088.00	45.6 AV	54.0	-8.4	1.44 H	192	43.3	2.3
3	5150.00	59.2 PK	74.0	-14.8	1.40 H	201	56.7	2.5
4	5150.00	45.6 AV	54.0	-8.4	1.40 H	201	43.1	2.5
5	*5200.00	108.7 PK			1.39 H	202	68.5	40.2
6	*5200.00	99.0 AV			1.39 H	202	58.8	40.2
7	5390.00	58.2 PK	74.0	-15.8	1.35 H	195	56.2	2.0
8	5390.00	44.1 AV	54.0	-9.9	1.35 H	195	42.1	2.0
9	#10400.00	56.6 PK	68.2	-11.6	1.56 H	342	48.2	8.4
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	5088.00	62.5 PK	74.0	-11.5	1.53 V	154	60.2	2.3
2	5088.00	52.0 AV	54.0	-2.0	1.53 V	154	49.7	2.3
3	5150.00	65.9 PK	74.0	-8.1	1.57 V	185	63.4	2.5
4	5150.00	52.0 AV	54.0	-2.0	1.57 V	185	49.5	2.5
5	*5200.00	129.3 PK			1.93 V	351	89.1	40.2
6	*5200.00	119.7 AV			1.93 V	351	79.5	40.2
7	5390.00	62.9 PK	74.0	-11.1	1.94 V	353	60.9	2.0
8	5390.00	50.7 AV	54.0	-3.3	1.94 V	353	48.7	2.0
9	#10400.00	57.1 PK	68.2	-11.1	1.23 V	104	48.7	8.4

Remarks:

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

RF Mode	802.11a	Channel	CH 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	5088.00	57.6 PK	74.0	-16.4	1.52 H	203	55.3	2.3
2	5088.00	44.4 AV	54.0	-9.6	1.52 H	203	42.1	2.3
3	*5240.00	108.6 PK			1.46 H	200	68.5	40.1
4	*5240.00	99.1 AV			1.46 H	200	59.0	40.1
5	5350.00	56.8 PK	74.0	-17.2	1.44 H	203	54.7	2.1
6	5350.00	44.2 AV	54.0	-9.8	1.44 H	203	42.1	2.1
7	5435.00	57.3 PK	74.0	-16.7	1.46 H	206	55.3	2.0
8	5435.00	44.6 AV	54.0	-9.4	1.46 H	206	42.6	2.0
9	#10480.00	57.1 PK	68.2	-11.1	1.42 H	135	48.6	8.5
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	5088.00	61.7 PK	74.0	-12.3	1.88 V	157	59.4	2.3
2	5088.00	52.8 AV	54.0	-1.2	1.88 V	157	50.5	2.3
3	*5240.00	128.9 PK			1.87 V	181	88.8	40.1
4	*5240.00	119.4 AV			1.87 V	181	79.3	40.1
5	5350.00	61.0 PK	74.0	-13.0	1.88 V	181	58.9	2.1
6	5350.00	49.7 AV	54.0	-4.3	1.88 V	181	47.6	2.1
7	5435.00	62.0 PK	74.0	-12.0	1.86 V	182	60.0	2.0
8	5435.00	50.7 AV	54.0	-3.3	1.86 V	182	48.7	2.0
9	#10480.00	57.1 PK	68.2	-11.1	1.42 V	135	48.6	8.5

Remarks:

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

RF Mode	802.11ax (HE20)	Channel	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	57.2 PK	74.0	-16.8	1.48 H	201	54.7	2.5
2	5150.00	44.6 AV	54.0	-9.4	1.48 H	201	42.1	2.5
3	*5180.00	104.2 PK			1.48 H	201	63.9	40.3
4	*5180.00	91.5 AV			1.48 H	201	51.2	40.3
5	#10360.00	56.1 PK	68.2	-12.1	2.13 H	48	47.6	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.2 PK	74.0	-6.8	1.89 V	177	64.7	2.5
2	5150.00	53.5 AV	54.0	-0.5	1.89 V	177	51.0	2.5
3	*5180.00	123.1 PK			1.88 V	172	82.8	40.3
4	*5180.00	111.4 AV			1.88 V	172	71.1	40.3
5	#10360.00	57.0 PK	68.2	-11.2	2.28 V	189	48.5	8.5

Remarks:

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

RF Mode	802.11ax (HE20)	Channel	CH 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	5088.00	57.5 PK	74.0	-16.5	1.53 H	198	55.2	2.3
2	5088.00	44.4 AV	54.0	-9.6	1.53 H	198	42.1	2.3
3	5150.00	57.8 PK	74.0	-16.2	1.44 H	203	55.3	2.5
4	5150.00	44.8 AV	54.0	-9.2	1.44 H	203	42.3	2.5
5	*5200.00	110.1 PK			1.51 H	199	69.9	40.2
6	*5200.00	97.5 AV			1.51 H	199	57.3	40.2
7	5386.00	56.9 PK	74.0	-17.1	1.53 H	192	54.9	2.0
8	5386.00	43.9 AV	54.0	-10.1	1.53 H	192	41.9	2.0
9	#10400.00	56.6 PK	68.2	-11.6	1.24 H	166	48.2	8.4
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	5088.00	62.2 PK	74.0	-11.8	1.89 V	155	59.9	2.3
2	5088.00	53.4 AV	54.0	-0.6	1.89 V	155	51.1	2.3
3	5150.00	69.4 PK	74.0	-4.6	2.11 V	164	66.9	2.5
4	5150.00	53.4 AV	54.0	-0.6	2.11 V	164	50.9	2.5
5	*5200.00	131.3 PK			2.00 V	176	91.1	40.2
6	*5200.00	118.7 AV			2.00 V	176	78.5	40.2
7	5386.00	62.7 PK	74.0	-11.3	2.00 V	14	60.7	2.0
8	5386.00	50.9 AV	54.0	-3.1	2.00 V	14	48.9	2.0
9	#10400.00	56.6 PK	68.2	-11.6	1.24 V	166	48.2	8.4

Remarks:

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

RF Mode	802.11ax (HE20)	Channel	CH 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	5088.00	57.5 PK	74.0	-16.5	1.55 H	201	55.2	2.3
2	5088.00	44.5 AV	54.0	-9.5	1.55 H	201	42.2	2.3
3	*5240.00	110.1 PK			1.57 H	203	70.0	40.1
4	*5240.00	98.3 AV			1.57 H	203	58.2	40.1
5	5350.00	56.8 PK	74.0	-17.2	1.44 H	192	54.7	2.1
6	5350.00	44.2 AV	54.0	-9.8	1.44 H	192	42.1	2.1
7	5427.00	57.5 PK	74.0	-16.5	1.56 H	201	55.5	2.0
8	5427.00	44.6 AV	54.0	-9.4	1.56 H	201	42.6	2.0
9	#10480.00	56.8 PK	68.2	-11.4	2.11 H	134	48.3	8.5
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	5088.00	60.8 PK	74.0	-13.2	1.90 V	158	58.5	2.3
2	5088.00	52.6 AV	54.0	-1.4	1.90 V	158	50.3	2.3
3	*5240.00	132.1 PK			1.87 V	167	92.0	40.1
4	*5240.00	118.7 AV			1.87 V	167	78.6	40.1
5	5350.00	60.6 PK	74.0	-13.4	1.88 V	172	58.5	2.1
6	5350.00	49.7 AV	54.0	-4.3	1.88 V	172	47.6	2.1
7	5427.00	64.2 PK	74.0	-9.8	1.81 V	168	62.2	2.0
8	5427.00	50.8 AV	54.0	-3.2	1.81 V	168	48.8	2.0
9	#10480.00	57.4 PK	68.2	-10.8	1.82 V	196	48.9	8.5

Remarks:

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

RF Mode	802.11ax (HE40)	Channel	CH 38：5190 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	58.4 PK	74.0	-15.6	1.23 H	202	55.9	2.5
2	5150.00	45.3 AV	54.0	-8.7	1.23 H	202	42.8	2.5
3	*5190.00	98.4 PK			1.23 H	202	58.1	40.3
4	*5190.00	85.5 AV			1.23 H	202	45.2	40.3
5	#10380.00	55.8 PK	68.2	-12.4	1.68 H	324	47.3	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.3 PK	74.0	-6.7	1.91 V	172	64.8	2.5
2	**5150.00**	**53.6 AV**	**54.0**	**-0.4**	**1.91 V**	**172**	**51.1**	**2.5**
3	*5190.00	119.1 PK			1.95 V	174	78.8	40.3
4	*5190.00	106.8 AV			1.95 V	174	66.5	40.3
5	#10380.00	56.0 PK	68.2	-12.2	2.31 V	184	47.5	8.5

Remarks:

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

RF Mode	802.11ax (HE40)	Channel	CH 46：5230 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	58.3 PK	74.0	-15.7	1.00 H	193	55.8	2.5
2	5150.00	45.2 AV	54.0	-8.8	1.00 H	193	42.7	2.5
3	*5230.00	107.2 PK			1.50 H	201	67.1	40.1
4	*5230.00	94.4 AV			1.50 H	201	54.3	40.1
5	#10460.00	55.7 PK	68.2	-12.5	1.45 H	256	47.2	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.7 PK	74.0	-6.3	1.96 V	199	65.2	2.5
2	5150.00	53.5 AV	54.0	-0.5	1.96 V	199	51.0	2.5
3	*5230.00	127.8 PK			1.85 V	174	87.7	40.1
4	*5230.00	115.2 AV			1.85 V	174	75.1	40.1
5	#10460.00	56.2 PK	68.2	-12.0	2.36 V	189	47.7	8.5

Remarks:

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

RF Mode	802.11ax (HE80)	Channel	CH 42：5210 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	58.8 PK	74.0	-15.2	1.33 H	208	56.3	2.5
2	5150.00	45.4 AV	54.0	-8.6	1.33 H	208	42.9	2.5
3	*5210.00	94.6 PK			1.35 H	201	54.4	40.2
4	*5210.00	82.9 AV			1.35 H	201	42.7	40.2
5	#10420.00	55.7 PK	68.2	-12.5	1.52 H	163	47.3	8.4
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	65.5 PK	74.0	-8.5	1.96 V	199	63.0	2.5
2	5150.00	53.3 AV	54.0	-0.7	1.96 V	199	50.8	2.5
3	*5210.00	115.9 PK			1.87 V	172	75.7	40.2
4	*5210.00	102.9 AV			1.87 V	172	62.7	40.2
5	#10420.00	55.0 PK	68.2	-13.2	2.33 V	189	46.6	8.4

Remarks:

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

RF Mode	802.11a	Channel	CH 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	#5639.20	58.1 PK	68.2	-10.1	1.43 H	153	54.7	3.4
2	*5745.00	111.2 PK			1.43 H	153	69.5	41.7
3	*5745.00	102.2 AV			1.43 H	153	60.5	41.7
4	#5940.80	57.8 PK	68.2	-10.4	1.43 H	153	54.1	3.7
5	11490.00	56.8 PK	74.0	-17.2	1.56 H	256	47.2	9.6
6	11490.00	44.6 AV	54.0	-9.4	1.56 H	256	35.0	9.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.40	60.3 PK	68.2	-7.9	2.08 V	156	56.9	3.4
2	*5745.00	128.4 PK			2.08 V	156	86.7	41.7
3	*5745.00	119.2 AV			2.08 V	156	77.5	41.7
4	#5939.20	59.3 PK	68.2	-8.9	2.08 V	156	55.6	3.7
5	11490.00	58.4 PK	74.0	-15.6	2.55 V	180	48.8	9.6
6	11490.00	46.3 AV	54.0	-7.7	2.55 V	180	36.7	9.6

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.

RF Mode	802.11a	Channel	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	#5638.80	57.9 PK	68.2	-10.3	1.64 H	127	54.5	3.4
2	*5785.00	110.5 PK			1.64 H	127	68.7	41.8
3	*5785.00	100.9 AV			1.64 H	127	59.1	41.8
4	#5932.80	57.7 PK	68.2	-10.5	1.64 H	127	54.0	3.7
5	11570.00	57.0 PK	74.0	-17.0	1.57 H	243	47.4	9.6
6	11570.00	44.8 AV	54.0	-9.2	1.57 H	243	35.2	9.6
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	#5646.80	61.4 PK	68.2	-6.8	1.89 V	194	58.0	3.4
2	*5785.00	128.0 PK			1.89 V	194	86.2	41.8
3	*5785.00	118.8 AV			1.89 V	194	77.0	41.8
4	#5941.20	59.3 PK	68.2	-8.9	1.89 V	194	55.6	3.7
5	11570.00	58.6 PK	74.0	-15.4	2.57 V	182	49.0	9.6
6	11570.00	45.4 AV	54.0	-8.6	2.57 V	182	35.8	9.6

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 (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	#5643.60	57.4 PK	68.2	-10.8	1.57 H	153	54.0	3.4
2	*5825.00	110.8 PK			1.57 H	153	69.0	41.8
3	*5825.00	101.5 AV			1.57 H	153	59.7	41.8
4	#5940.00	57.7 PK	68.2	-10.5	1.57 H	153	54.0	3.7
5	11650.00	56.9 PK	74.0	-17.1	1.57 H	258	47.4	9.5
6	11650.00	44.6 AV	54.0	-9.4	1.57 H	258	35.1	9.5
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	64.3 PK	68.2	-3.9	1.84 V	176	60.9	3.4
2	*5825.00	128.8 PK			1.84 V	176	87.0	41.8
3	*5825.00	118.9 AV			1.84 V	176	77.1	41.8
4	#5926.40	61.9 PK	68.2	-6.3	1.84 V	176	58.2	3.7
5	11650.00	58.6 PK	74.0	-15.4	2.49 V	172	49.1	9.5
6	11650.00	48.4 AV	54.0	-5.6	2.49 V	172	38.9	9.5

Remarks:

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

RF Mode	802.11ax (HE20)	Channel	CH 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	#5648.40	57.2 PK	68.2	-11.0	1.51 H	150	53.8	3.4
2	*5745.00	114.8 PK			1.51 H	150	73.1	41.7
3	*5745.00	102.1 AV			1.51 H	150	60.4	41.7
4	#5933.60	57.5 PK	68.2	-10.7	1.51 H	150	53.8	3.7
5	11490.00	57.7 PK	74.0	-16.3	1.49 H	253	48.1	9.6
6	11490.00	45.6 AV	54.0	-8.4	1.49 H	253	36.0	9.6
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	#5644.40	62.0 PK	68.2	-6.2	1.83 V	203	58.6	3.4
2	*5745.00	130.0 PK			1.83 V	203	88.3	41.7
3	*5745.00	118.9 AV			1.83 V	203	77.2	41.7
4	#5942.80	60.0 PK	68.2	-8.2	1.83 V	203	56.3	3.7
5	11490.00	58.1 PK	74.0	-15.9	2.43 V	171	48.5	9.6
6	11490.00	47.2 AV	54.0	-6.8	2.43 V	171	37.6	9.6

Remarks:

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

RF Mode	802.11ax (HE20)	Channel	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	#5644.40	58.5 PK	68.2	-9.7	1.35 H	151	55.1	3.4
2	*5785.00	114.3 PK			1.35 H	151	72.5	41.8
3	*5785.00	101.8 AV			1.35 H	151	60.0	41.8
4	#5992.00	59.2 PK	68.2	-9.0	1.35 H	151	55.1	4.1
5	11570.00	57.5 PK	74.0	-16.5	1.57 H	249	47.9	9.6
6	11570.00	44.6 AV	54.0	-9.4	1.57 H	249	35.0	9.6
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	#5600.00	63.3 PK	68.2	-4.9	1.86 V	170	60.1	3.2
2	*5785.00	130.6 PK			1.86 V	170	88.8	41.8
3	*5785.00	118.4 AV			1.86 V	170	76.6	41.8
4	#5932.00	60.5 PK	68.2	-7.7	1.86 V	170	56.8	3.7
5	11570.00	58.0 PK	74.0	-16.0	2.46 V	178	48.4	9.6
6	11570.00	47.2 AV	54.0	-6.8	2.46 V	178	37.6	9.6

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 (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	#5631.20	57.4 PK	68.2	-10.8	1.31 H	155	54.1	3.3
2	*5825.00	112.1 PK			1.31 H	155	70.3	41.8
3	*5825.00	99.9 AV			1.31 H	155	58.1	41.8
4	#5985.20	58.1 PK	68.2	-10.1	1.31 H	155	54.1	4.0
5	11650.00	57.0 PK	74.0	-17.0	1.62 H	258	47.5	9.5
6	11650.00	44.0 AV	54.0	-10.0	1.62 H	258	34.5	9.5
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	#5637.60	64.4 PK	68.2	-3.8	1.81 V	155	61.0	3.4
2	*5825.00	129.9 PK			1.81 V	155	88.1	41.8
3	*5825.00	118.0 AV			1.81 V	155	76.2	41.8
4	#5929.60	61.0 PK	68.2	-7.2	1.81 V	155	57.3	3.7
5	11650.00	57.6 PK	74.0	-16.4	2.50 V	170	48.1	9.5
6	11650.00	46.9 AV	54.0	-7.1	2.50 V	170	37.4	9.5

Remarks:

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

RF Mode	802.11ax (HE40)	Channel	CH 151：5755 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	#5600.40	58.3 PK	68.2	-9.9	1.73 H	123	55.1	3.2
2	#5650.00	58.4 PK	68.2	-9.8	1.77 H	125	55.0	3.4
3	*5755.00	106.1 PK			1.73 H	123	64.3	41.8
4	*5755.00	93.9 AV			1.73 H	123	52.1	41.8
5	#5990.80	59.8 PK	68.2	-8.4	1.73 H	123	55.7	4.1
6	11510.00	56.8 PK	74.0	-17.2	1.53 H	251	47.2	9.6
7	11510.00	43.9 AV	54.0	-10.1	1.53 H	251	34.3	9.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5635.60	66.7 PK	68.2	-1.5	1.73 V	184	63.3	3.4
2	#5650.00	67.4 PK	68.2	-0.8	1.75 V	182	64.0	3.4
3	*5755.00	125.9 PK			1.73 V	184	84.1	41.8
4	*5755.00	113.6 AV			1.73 V	184	71.8	41.8
5	#5966.00	61.5 PK	68.2	-6.7	1.73 V	184	57.6	3.9
6	11510.00	57.4 PK	74.0	-16.6	2.57 V	178	47.8	9.6
7	11510.00	46.2 AV	54.0	-7.8	2.57 V	178	36.6	9.6

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 (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

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	#5615.20	58.0 PK	68.2	-10.2	1.26 H	20	54.8	3.2
2	#5650.00	59.5 PK	68.2	-8.7	1.31 H	25	56.1	3.4
3	*5795.00	108.9 PK			1.26 H	20	67.1	41.8
4	*5795.00	96.5 AV			1.26 H	20	54.7	41.8
5	#5925.00	58.6 PK	68.2	-9.6	1.22 H	21	54.9	3.7
6	#5933.20	58.4 PK	68.2	-9.8	1.26 H	20	54.7	3.7
7	11590.00	56.4 PK	74.0	-17.6	1.61 H	239	46.9	9.5
8	11590.00	43.1 AV	54.0	-10.9	1.61 H	239	33.6	9.5
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	66.6 PK	68.2	-1.6	2.06 V	171	63.2	3.4
2	#5650.00	67.6 PK	68.2	-0.6	2.04 V	166	64.2	3.4
3	*5795.00	127.3 PK			1.87 V	171	85.5	41.8
4	*5795.00	114.7 AV			1.87 V	171	72.9	41.8
5	#5925.00	67.7 PK	68.2	-0.5	2.05 V	169	64.0	3.7
6	#5927.60	66.8 PK	68.2	-1.4	2.06 V	171	63.1	3.7
7	11590.00	57.3 PK	74.0	-16.7	2.44 V	169	47.8	9.5
8	11590.00	43.7 AV	54.0	-10.3	2.44 V	169	34.2	9.5

Remarks:

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

RF Mode	802.11ax (HE80)	Channel	CH 155：5775 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54Vdc	Environmental Conditions	23°C, 66% RH
Tested By	Tim Chen		

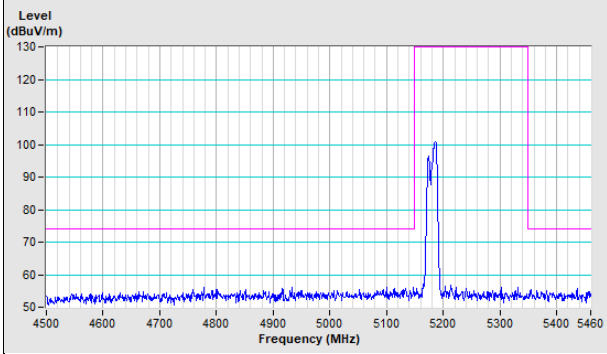
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.00	58.5 PK	68.2	-9.7	1.30 H	20	55.1	3.4
2	#5650.00	59.5 PK	68.2	-8.7	1.31 H	29	56.1	3.4
3	*5775.00	103.5 PK			1.30 H	20	61.8	41.7
4	*5775.00	90.7 AV			1.30 H	20	49.0	41.7
5	#5944.40	58.7 PK	68.2	-9.5	1.30 H	20	55.0	3.7
6	11550.00	56.4 PK	74.0	-17.6	1.56 H	280	46.8	9.6
7	11550.00	42.6 AV	54.0	-11.4	1.56 H	280	33.0	9.6
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	#5640.00	66.5 PK	68.2	-1.7	1.88 V	172	63.1	3.4
2	#5650.00	67.4 PK	68.2	-0.8	1.86 V	167	64.0	3.4
3	*5775.00	122.0 PK			1.88 V	172	80.3	41.7
4	*5775.00	109.0 AV			1.88 V	172	67.3	41.7
5	#5960.40	58.9 PK	68.2	-9.3	1.88 V	172	55.0	3.9
6	11550.00	57.1 PK	74.0	-16.9	2.55 V	172	47.5	9.6
7	11550.00	42.7 AV	54.0	-11.3	2.55 V	172	33.1	9.6

Remarks:

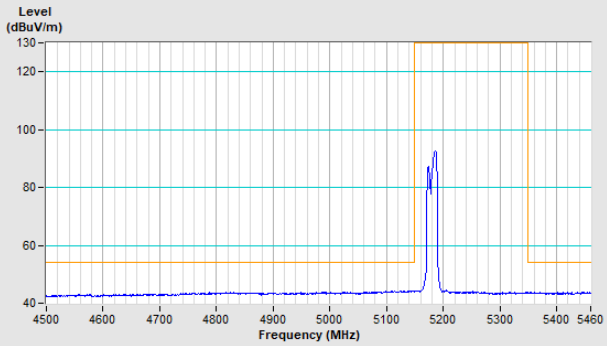
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency,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

802.11a Channel 36

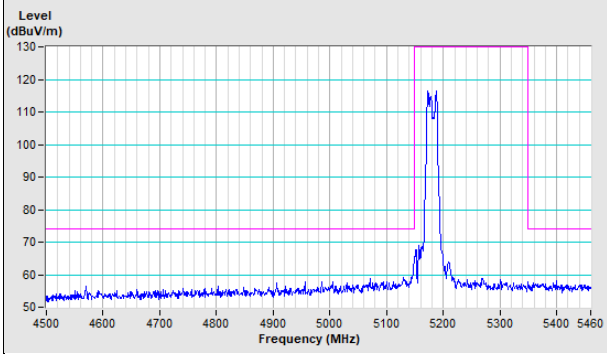
Horizontal (Peak)



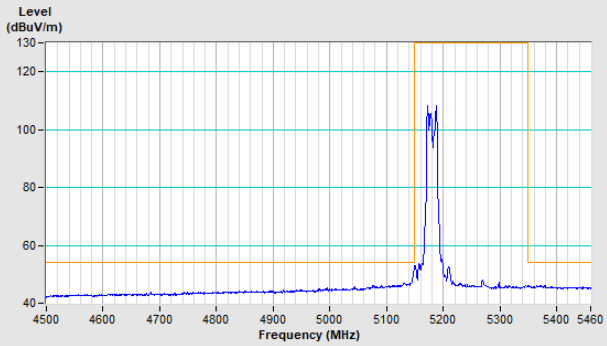
Horizontal (Average)



Vertical (Peak)

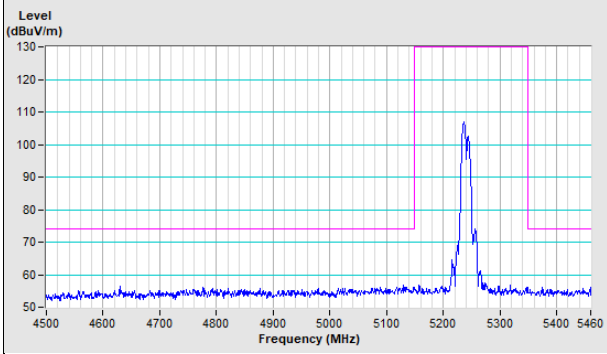


Vertical (Average)

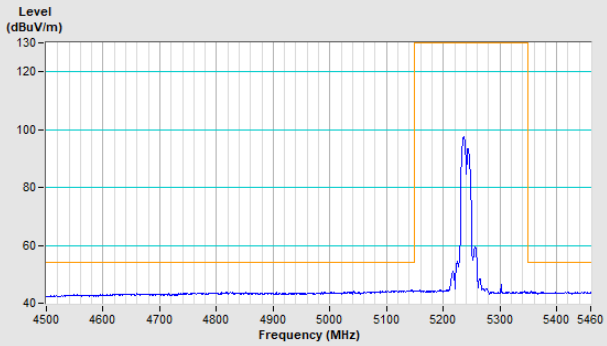


802.11a Channel 48

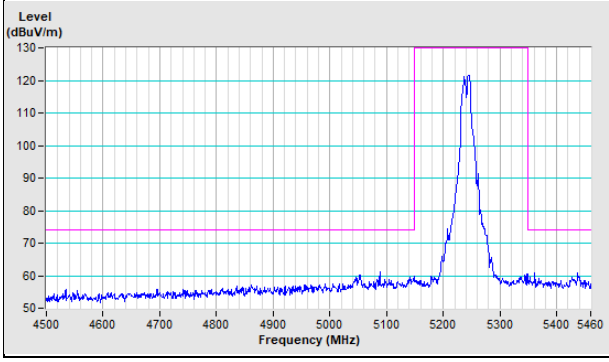
Horizontal (Peak)



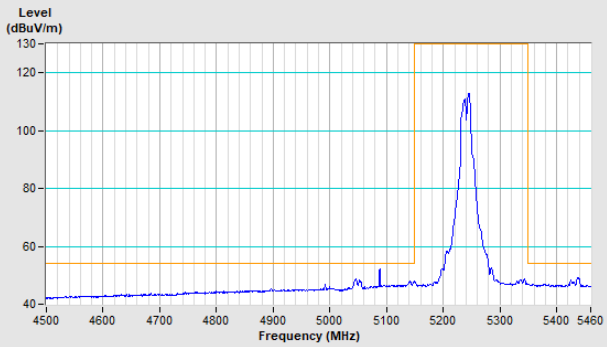
Horizontal (Average)

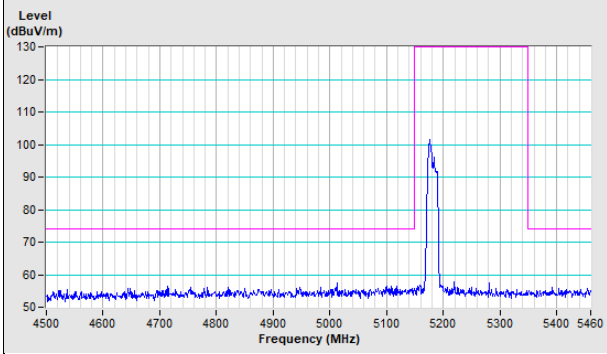
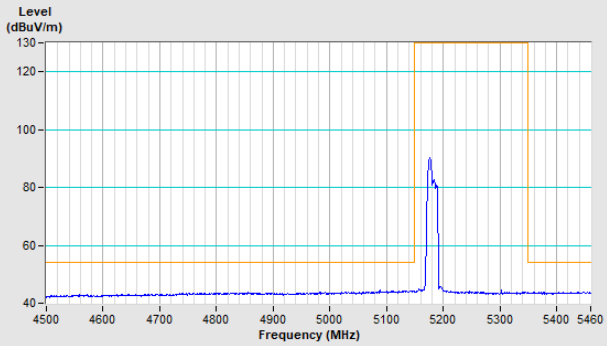
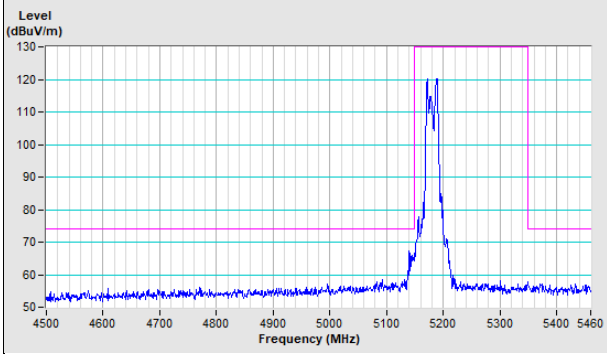
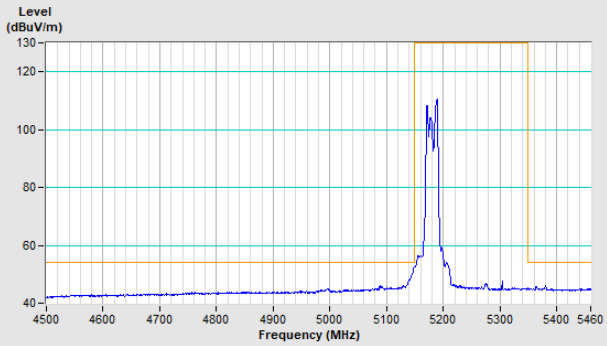
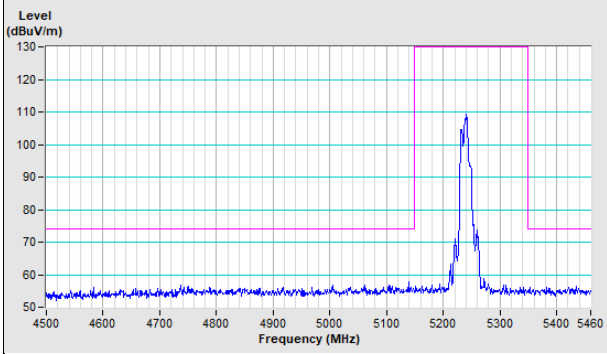
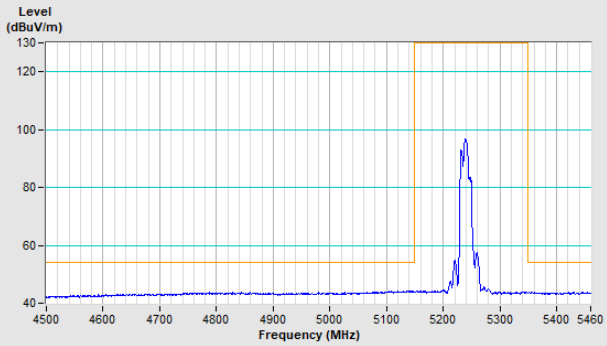
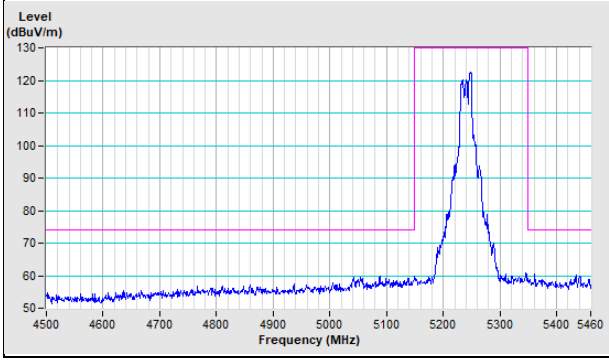
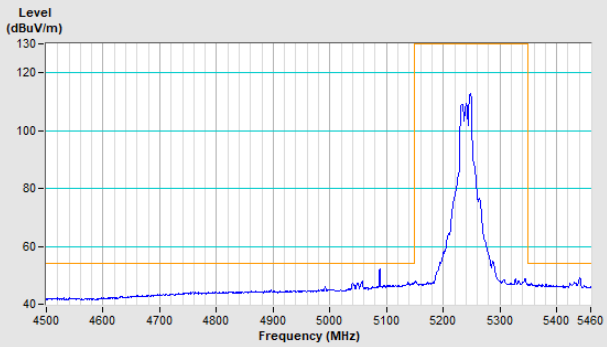


Vertical (Peak)



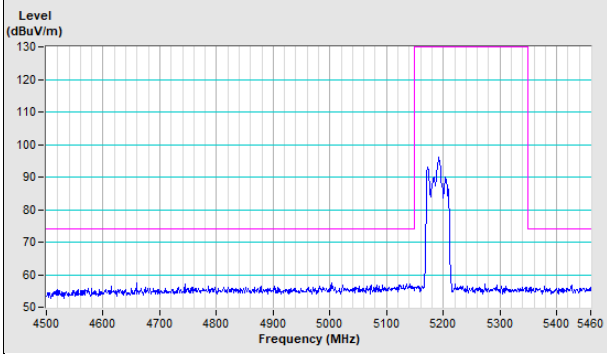
Vertical (Average)



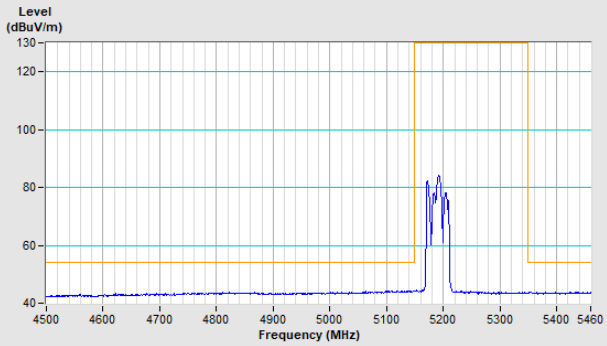
802.11ax (HE20) Channel 36	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11ax (HE20) Channel 48	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE40) Channel 38

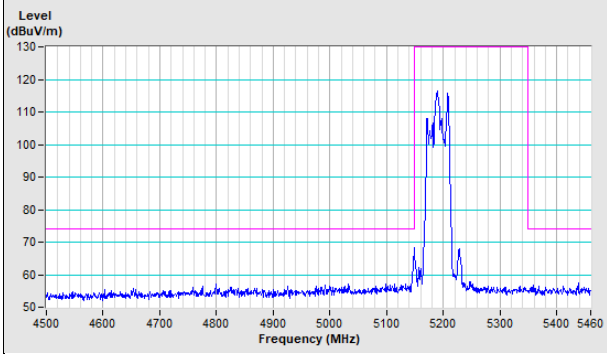
Horizontal (Peak)



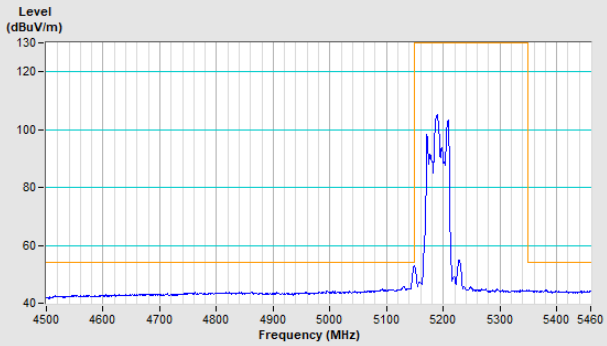
Horizontal (Average)



Vertical (Peak)

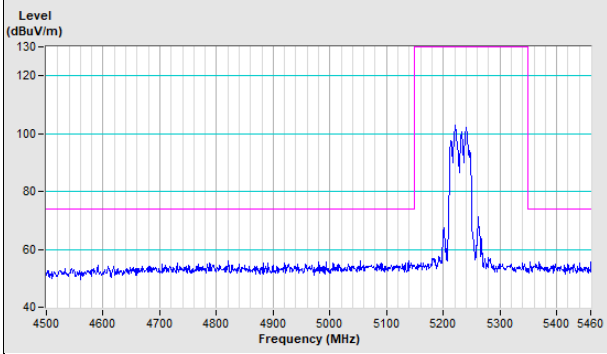


Vertical (Average)

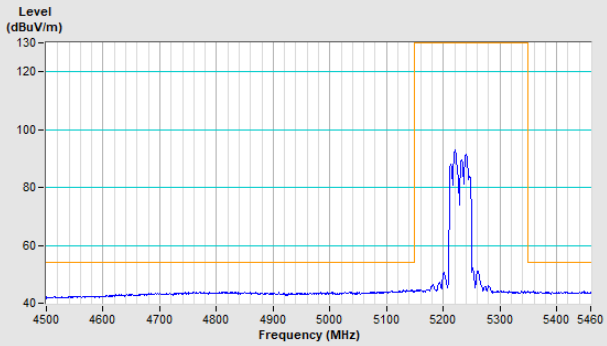


802.11ax (HE40) Channel 46

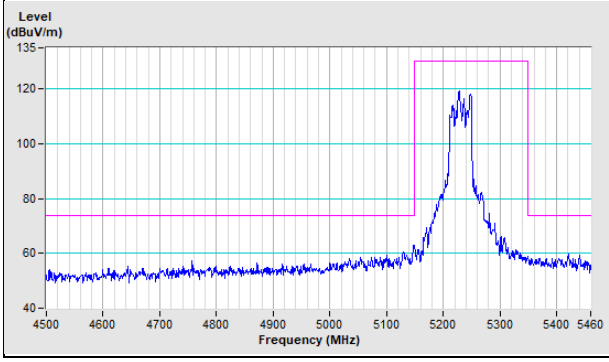
Horizontal (Peak)



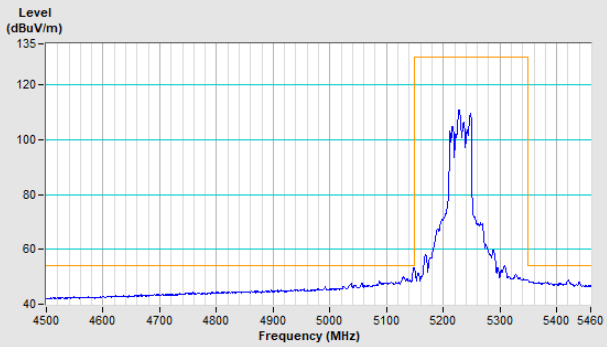
Horizontal (Average)

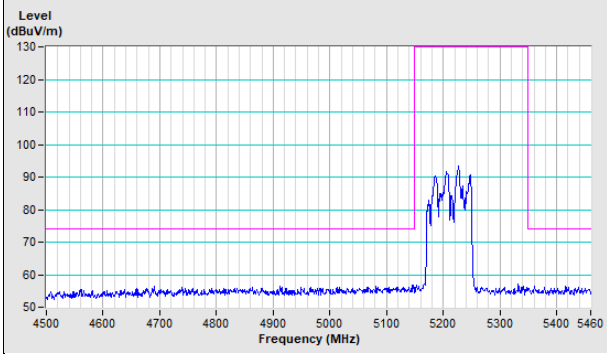
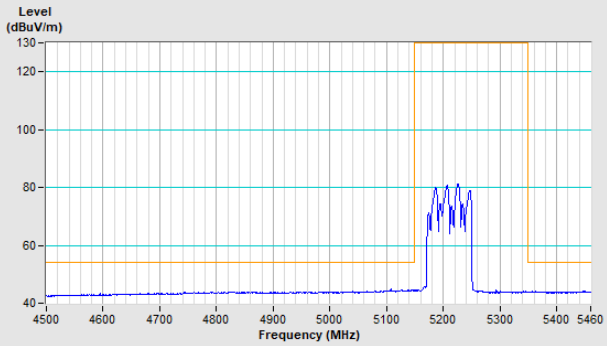
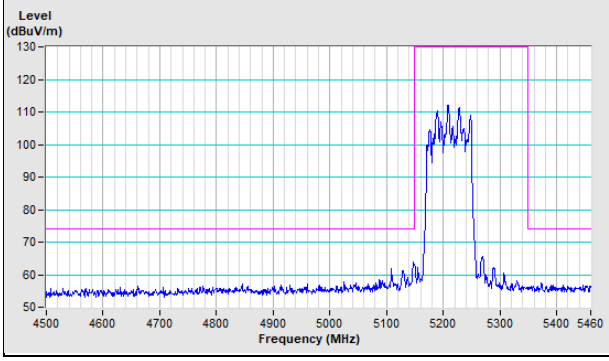
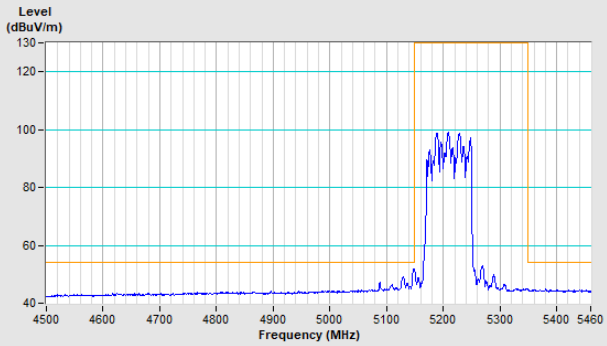


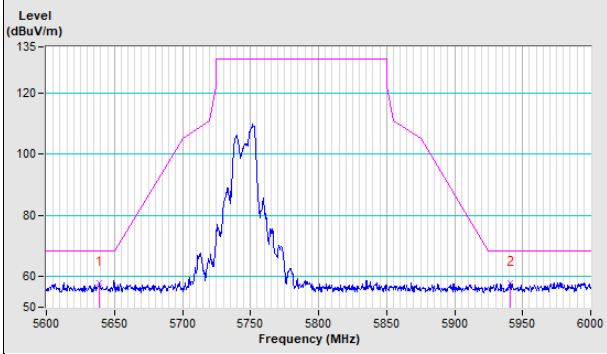
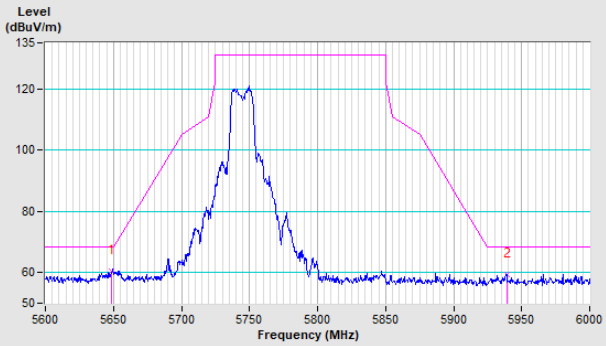
Vertical (Peak)

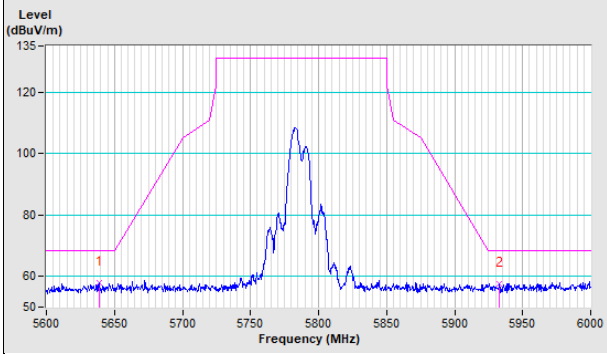
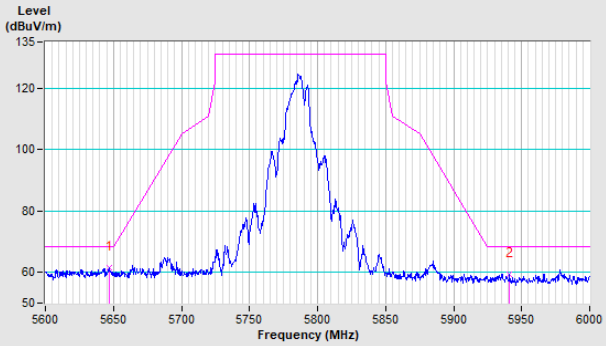


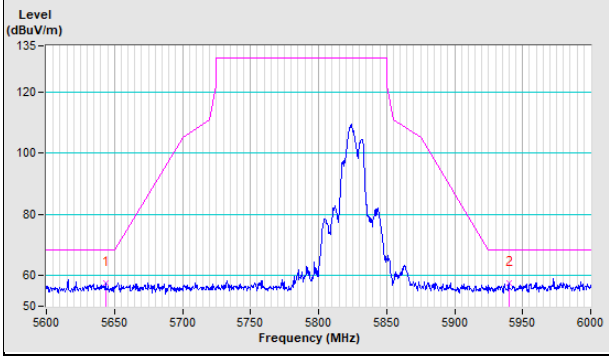
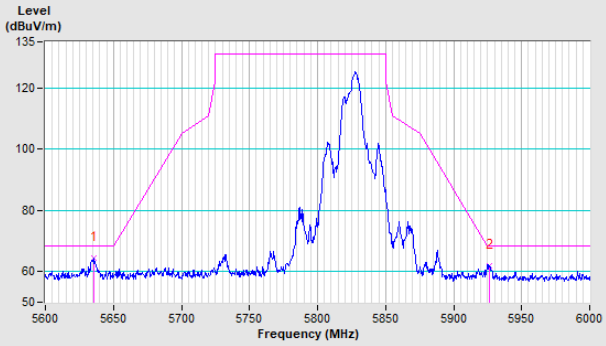
Vertical (Average)

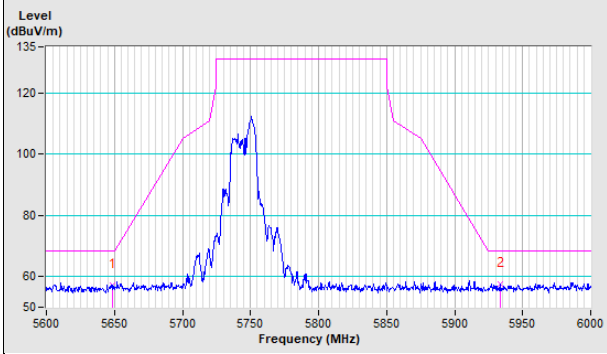
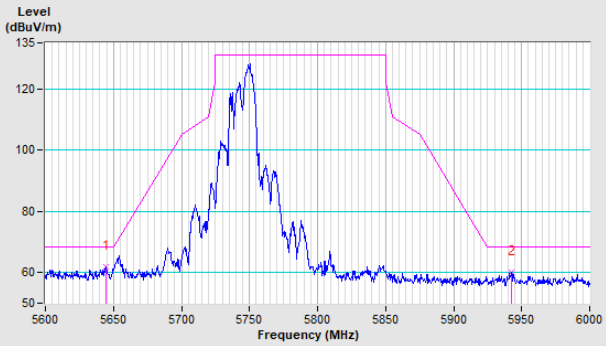


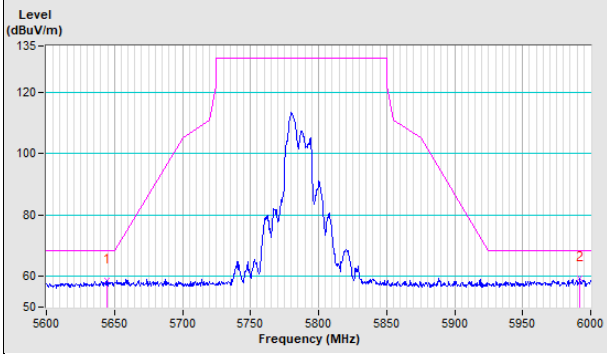
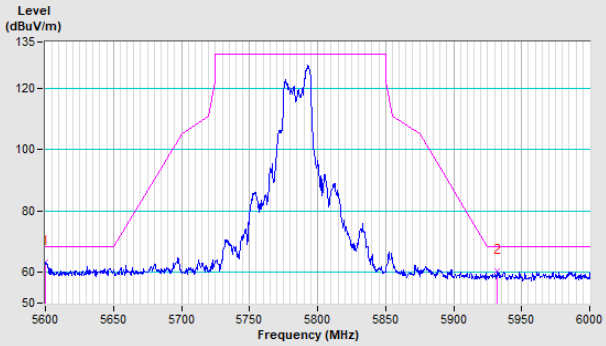
802.11ax (HE80) Channel 42	
Horizontal (Peak)	**Horizontal (Average)**
	
Vertical (Peak)	**Vertical (Average)**
	

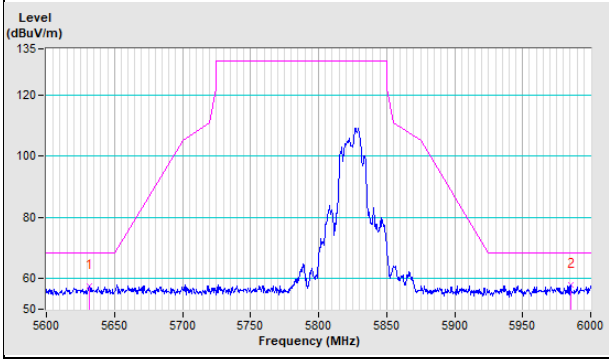
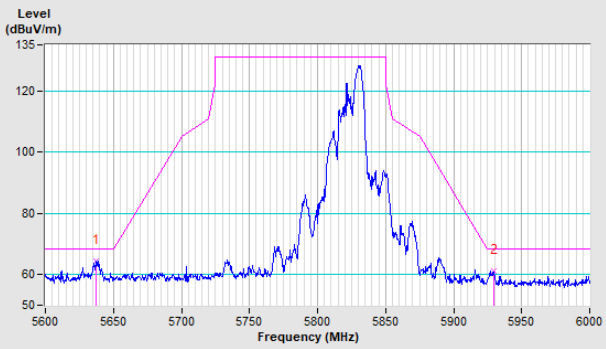
802.11a Channel 149	
Horizontal (Peak)	Vertical (Peak)
	

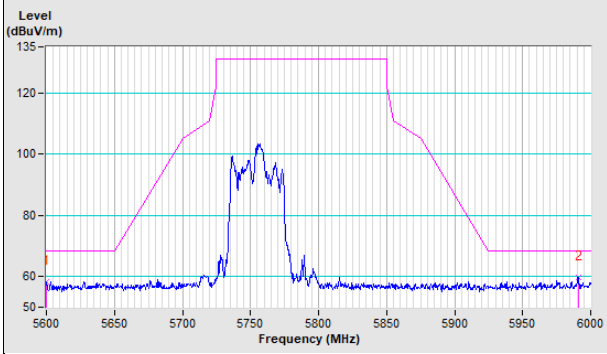
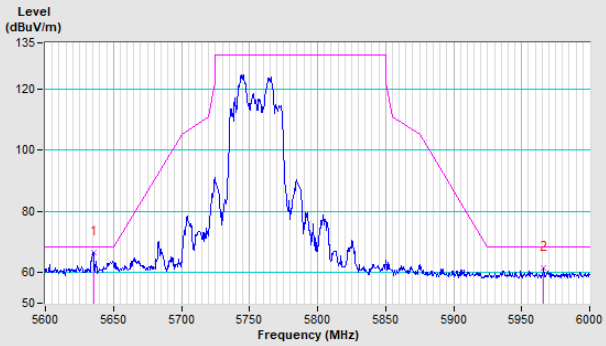
802.11a Channel 157	
Horizontal (Peak)	Vertical (Peak)
	

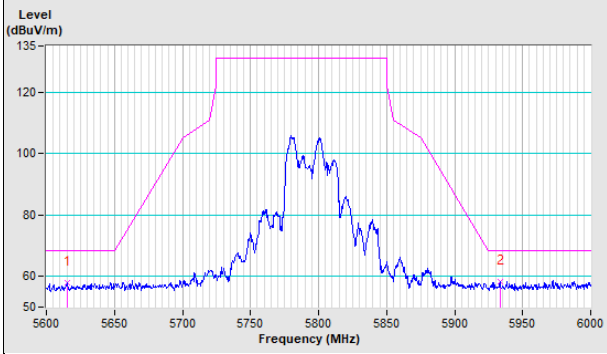
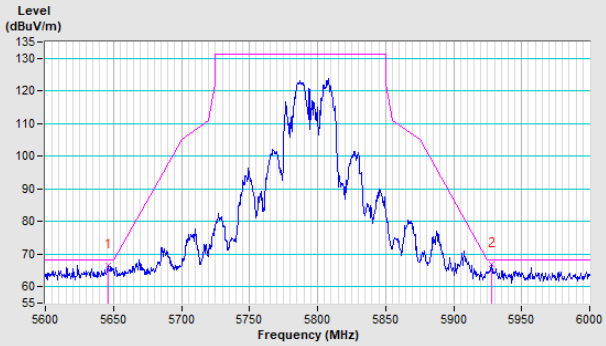
802.11a Channel 165	
Horizontal (Peak)	Vertical (Peak)
	

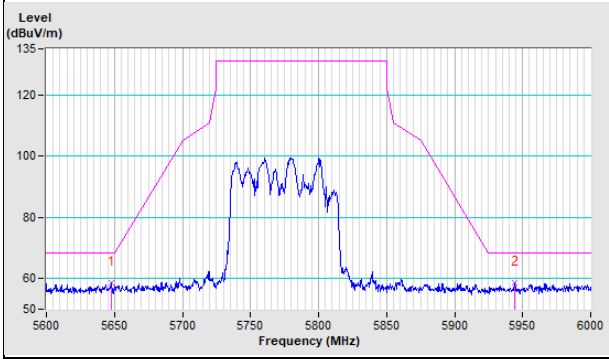
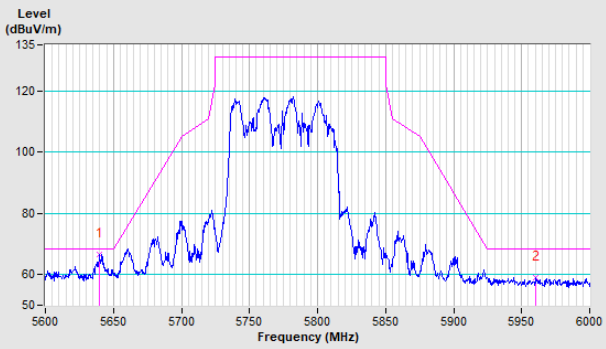
802.11ax (HE20) Channel 149	
Horizontal (Peak)	Vertical (Peak)
	

802.11ax (HE20) Channel 157	
Horizontal (Peak)	Vertical (Peak)
	

802.11ax (HE20) Channel 165	
Horizontal (Peak)	Vertical (Peak)
	

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

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

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.

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

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