TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFCGJR-WTW-P23010147-3
FCC ID:	G95EWM322T
Product:	Wireless Access Point
Brand:	technicolor
Test Model:	EWM322TTCH2
Variant Model:	EGM322TTCH2
Received Date:	2023/2/13
Test Date:	2023/2/14 ~ 2023/3/4
Issued Date:	2023/5/17
Applicant:	Vantiva USA LLC
Address:	4855 Peachtree Industrial Blvd. Suite 200 Norcross, Georgia 30092.
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:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Approved by: Jeremy Lin , **Date:** 2023/5/17

Jeremy Lin / Project Engineer

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Prepared by : Vera Huang / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFCGJR-WTW-P23010147-3	Original Release	2023/5/17

1 Certificate

Product:	Wireless Access Point
Brand:	technicolor
Test Model:	EWM322TTCH2
Variant Model:	EGM322TTCH2
Sample Status:	Engineering sample
Applicant:	Vantiva USA LLC
Test Date:	2023/2/14 ~ 2023/3/4
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407)
Measurement procedure:	ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedure New Rules v02r01 KDB 662911 D01 Multiple Transmitter Output v02r01

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

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
Clause	Test Item	Result	Remark
15.407(a)(1) 15.407(a)(3)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(1) 15.407(a)(3)	Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
---	Occupied Bandwidth	-	Reference only.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.407(b)(9)	AC Power Conducted Emissions	Pass	Minimum passing margin is -16.65 dB at 24.57800 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -1.3 dB at 44.55 MHz
15.407(b) (1/10) 15.407(b) (4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.1 dB at 15720.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.

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

2.1 Measurement Uncertainty

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

Measurement	Specification	Expanded Uncertainty (k=2) (±)
Occupied Bandwidth	-	491.896 Hz
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.99 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.6 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 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	Wireless Access Point
Brand	technicolor
Test Model	EWM322TTCH2
Variant Model	EGM322TTCH2
Model Difference	for marketing purpose
Status of EUT	Engineering sample
Power Supply Rating	Refer to Note
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: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3Mbps 802.11ax: up to 2401.9Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 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 ~ 5825MHz: 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: 5180 ~ 5240MHz: 974.812 mW (29.89 dBm) 5745 ~ 5825MHz: 973.448 mW (29.88 dBm) Beamforming mode: 5180 ~ 5240MHz: 923.997 mW (29.66 dBm) 5745 ~ 5825MHz: 894.219 mW (29.51 dBm)
EUT Category	Indoor Access Point

Note:

1. The EUT uses following accessories.

AC Adapter 1			
Brand	Model	Part Number	Specification
Honor	ADS-42FI-12 12042EPCU-L	6322120A	AC Input : 100-120V, 50/60Hz DC Output : 12V, 3.5A DC Output Cable : 1.8m Plug : US

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna NO.	RF Chain NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
DB1	5G core0	Technicolor	EWM322T/EWA322T	5.61	5.15~5.25GHz	Dipole	ipex(MHF)
				5.47	5.725~5.85GHz	Dipole	ipex(MHF)
DB2	5G core1	Technicolor	EWM322T/EWA322T	5.96	5.15~5.25GHz	Dipole	ipex(MHF)
				5.53	5.725~5.85GHz	Dipole	ipex(MHF)
DB3	5G core2	Technicolor	EWM322T/EWA322T	4.21	5.15~5.25GHz	Dipole	ipex(MHF)
				4.80	5.725~5.85GHz	Dipole	ipex(MHF)
DB4	5G core3	Technicolor	EWM322T/EWA322T	3.96	5.15~5.25GHz	Dipole	ipex(MHF)
				3.86	5.725~5.85GHz	Dipole	ipex(MHF)

Directional Gain (dBi)	Frequency range
6.11	5.15~5.25GHz
6.48	5.725~5.85GHz

* The detailed antenna information, please refer to the Test report-Antenna Spec.pdf.

2. The EUT incorporates a MIMO function:

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

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.

3.3 Channel List

FOR 5180 ~ 5240 MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

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

Channel	Frequency
42	5210 MHz

FOR 5745 ~ 5825 MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

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

Channel	Frequency
155	5775 MHz

3.4 Power Setting

Power Setting (CDD Mode)											
Channel	802.11a	802.11n (HT20)	802.11ac (VHT20)	802.11ax (HE20)	Channel	802.11n (HT40)	802.11ac (VHT40)	802.11ax (HE40)	Channel	802.11ac (VHT80)	802.11ax (HE80)
36	87	84	84	84	38	75	75	75	42	74	74
40	96	92	92	92	46	84	84	84	155	84	84
48	92	93	93	93	151	92	92	92			
149	97	96	96	96	159	93	93	93			
157	97	96	96	96							
165	100	100	100	100							

Power Setting (Beamforming Mode)										
Channel	802.11n (HT20)	802.11ac (VHT20)	802.11ax (HE20)	Channel	802.11n (HT40)	802.11ac (VHT40)	802.11ax (HE40)	Channel	802.11ac (VHT80)	802.11ax (HE80)
36	84	84	84	38	75	75	75	42	74	74
40	92	92	92	46	84	84	84	155	84	84
48	92	92	92	151	90	90	90			
149	94	94	94	159	91	91	91			
157	94	94	94							
165	100	100	100							

3.5 Test Mode Applicability and Tested Channel Detail

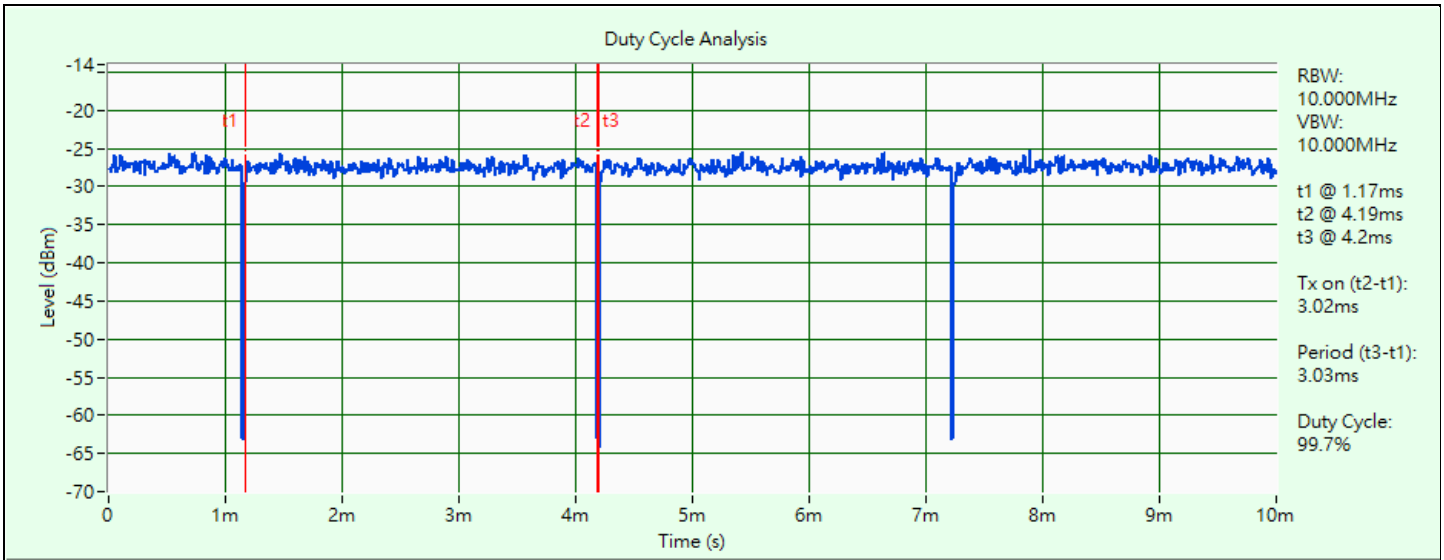
Pre-Scan:	The EUT is designed to be positioned on the X-plane only.

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

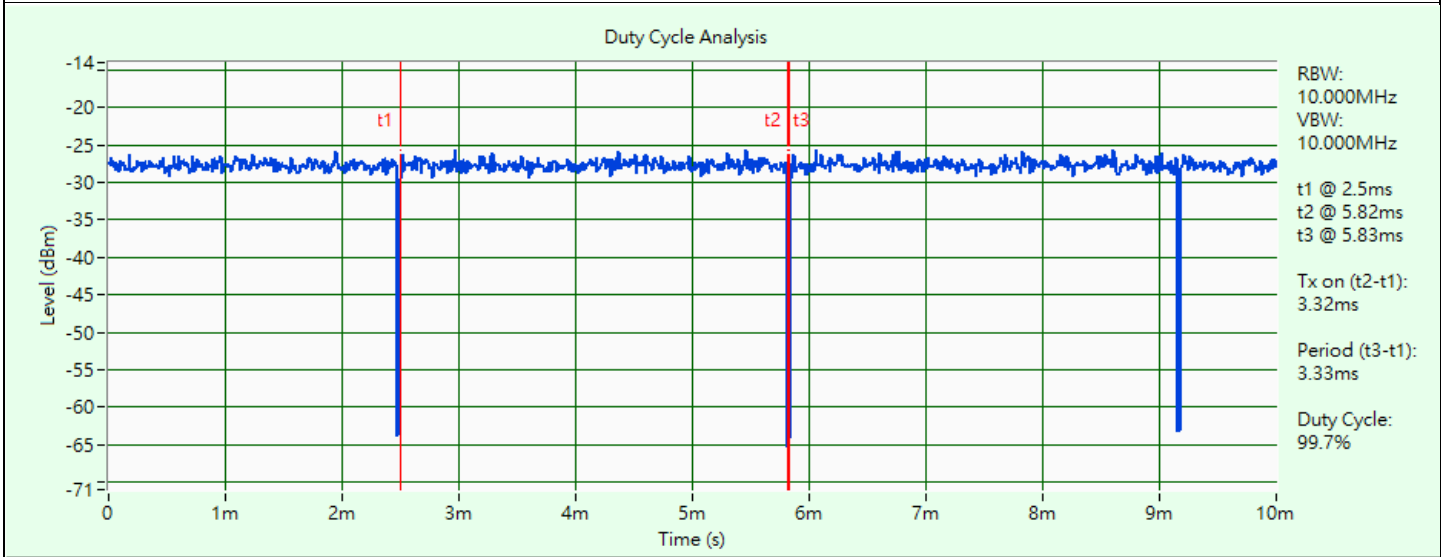
Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
	802.11n (HT20)	CDD & Beamforming	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11n (HT40)	CDD & Beamforming	38, 46, 151, 159	BPSK	MCS0
	802.11ac (VHT20)	CDD & Beamforming	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ac (VHT40)	CDD & Beamforming	38, 46, 151, 159	BPSK	MCS0
	802.11ac (VHT80)	CDD & Beamforming	42, 155	BPSK	MCS0
	802.11ax (HE20)	CDD & Beamforming	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD & Beamforming	38, 46, 151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD & Beamforming	42, 155	BPSK	MCS0
6 dB Bandwidth	802.11a	CDD	149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD	149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD	151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD	155	BPSK	MCS0
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	-	36	un-modulation	-
AC Power Conducted Emissions	802.11ax (HE20)	CDD	48	BPSK	MCS0
Unwanted Emissions below 1 GHz	802.11ax (HE20)	CDD	48	BPSK	MCS0
Unwanted Emissions above 1 GHz	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
	802.11ax (HE20)	CDD	36, 40, 48, 149, 157, 165	BPSK	MCS0
	802.11ax (HE40)	CDD	38, 46, 151, 159	BPSK	MCS0
	802.11ax (HE80)	CDD	42, 155	BPSK	MCS0

3.6 Duty Cycle of Test Signal

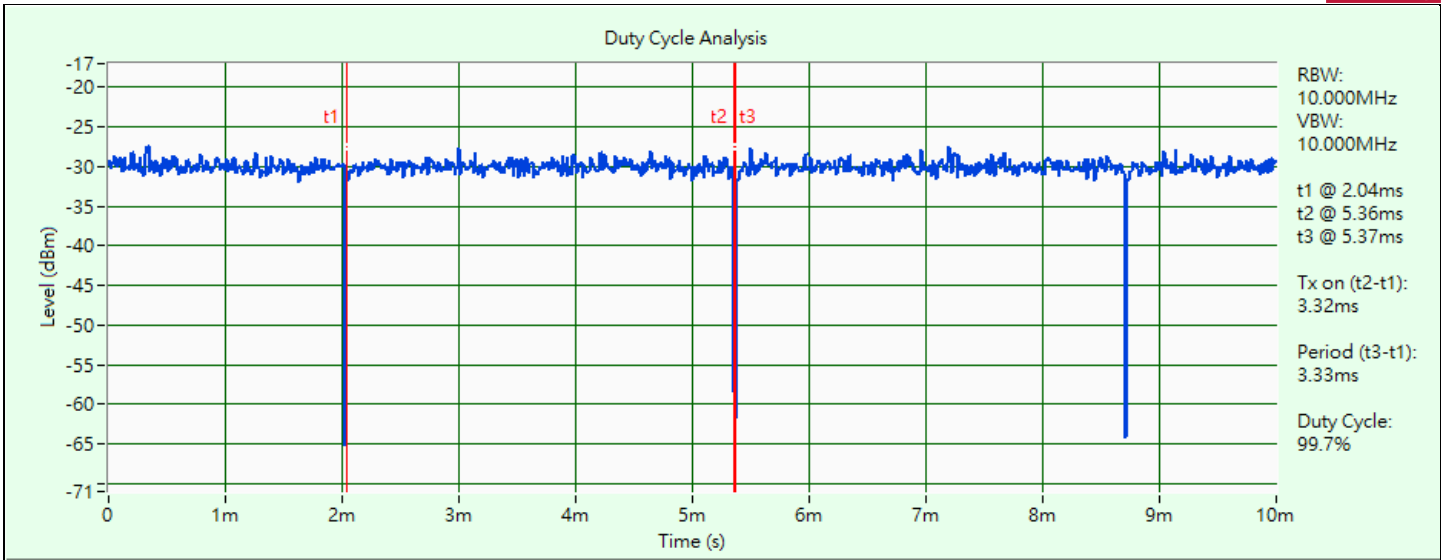
802.11a: Duty cycle = 3.02 ms / 3.03 ms x 100% = 99.7%
802.11ax (HE20): Duty cycle = 3.32 ms / 3.33 ms x 100% = 99.7%
802.11ax (HE40): Duty cycle = 3.32 ms / 3.33 ms x 100% = 99.7%
802.11ax (HE80): Duty cycle = 3.18 ms / 3.19 ms x 100% = 99.7%



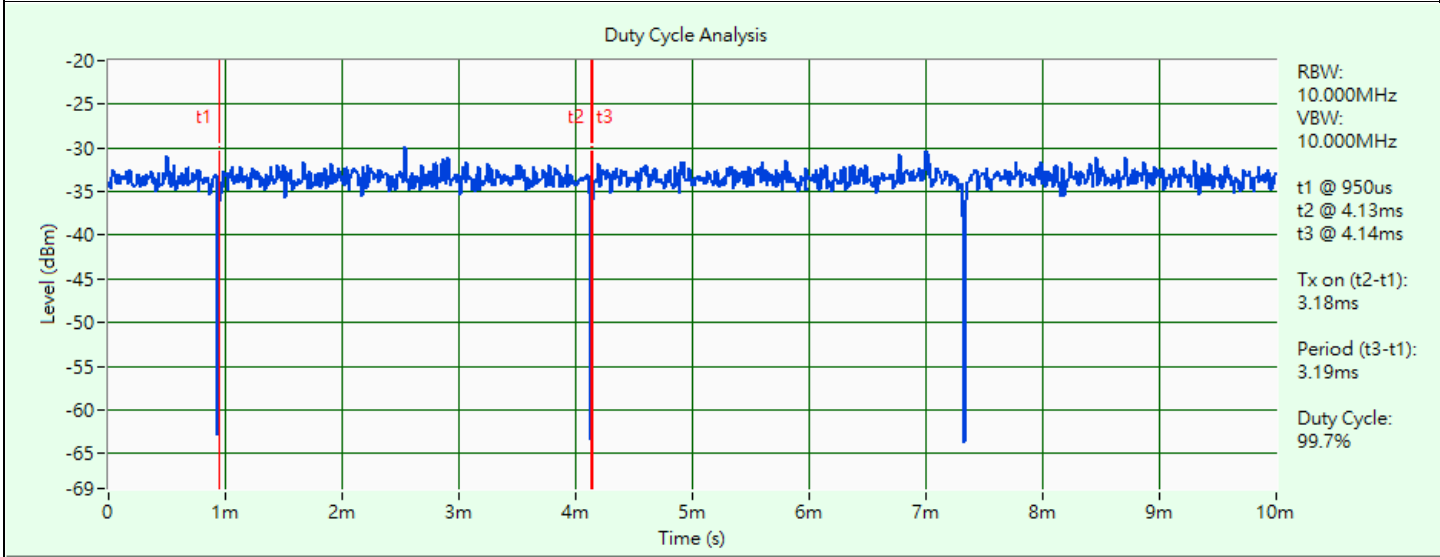
802.11a



802.11ax (HE20)



802.11ax (HE40)

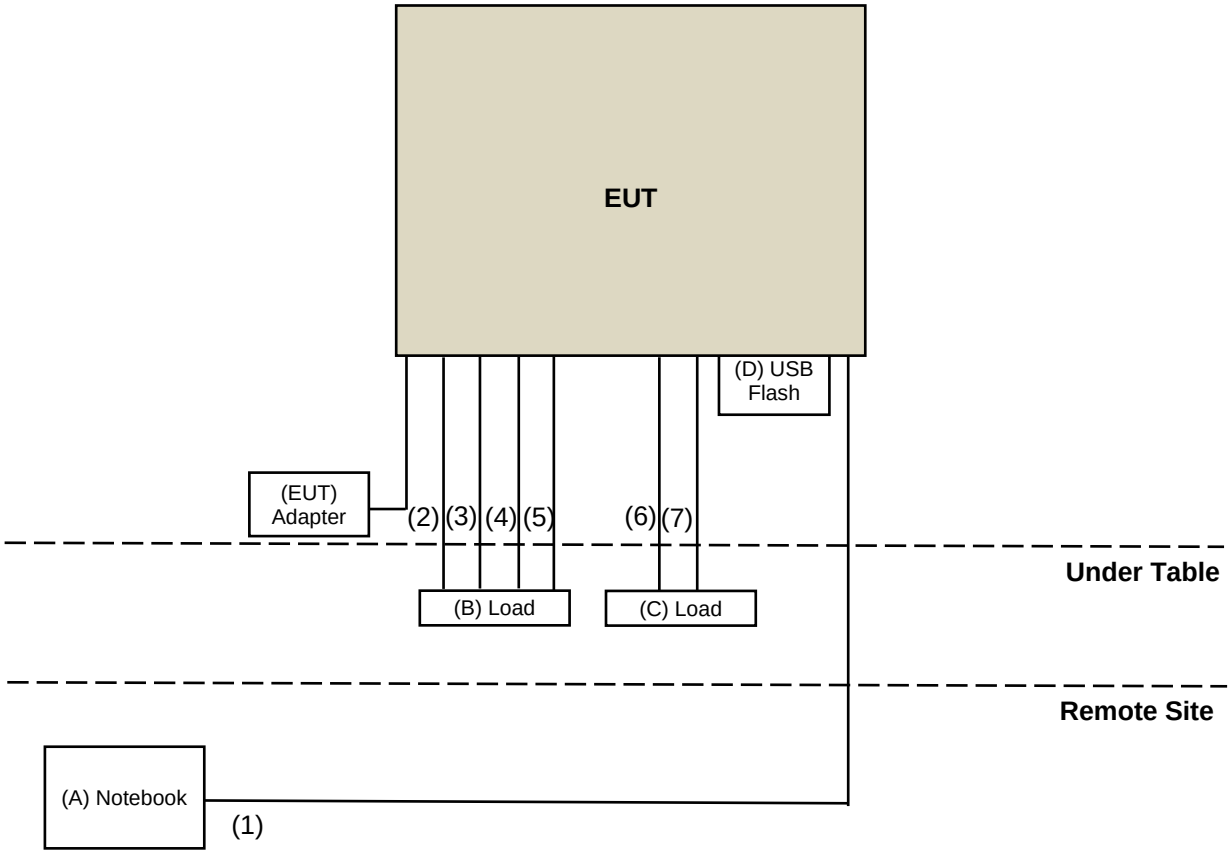


802.11ax (HE80)

3.7 Test Program Used and Operation Descriptions

Controlling software MTOOL_3.2.1.5 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.8 Connection Diagram of EUT and Peripheral Devices



3.9 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Notebook	Lenovo	L470	PF0TALMG	N/A	Provided by Lab
B	Load	N/A	N/A	N/A	N/A	Provided by Lab
C	Load	N/A	N/A	N/A	N/A	Provided by Lab
D	FLASH	sandisk	SDDDC3-0320G	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	LAN Cable	1	6	N	N	Provided by Lab
2	LAN Cable	1	1.5	N	N	Provided by Lab
3	LAN Cable	1	1.5	N	N	Provided by Lab
4	LAN Cable	1	1.5	N	N	Provided by Lab
5	LAN Cable	1	1.5	N	N	Provided by Lab
6	Tel. Cable	1	1.5	N	N	Provided by Lab
7	Tel. Cable	1	1.5	N	N	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
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	2022/7/13	2023/7/12

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/3/3 ~ 2023/3/4

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	100980	2022/4/20	2023/4/19

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/3/3 ~ 2023/3/4

4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

4.4 Occupied Bandwidth

Refer to section 4.2 to get information of the instruments.

4.5 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
AC power supply JIN YIH Technology	6905S	1720444	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	100980	2022/4/20	2023/4/19
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	2022/12/27	2023/12/26

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/3/3 ~ 2023/3/4

4.6 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
LISN R&S	ESH3-Z5	100311	2022/09/12	2023/09/11
LISN ROHDE & SCHWARZ	ENV216	101826	2022/03/14	2023/03/13
RF Coaxial Cable WOKEN	5D-FB	Cable-cond1-01	2023/01/07	2024/01/06
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A
Test Receiver Rohde&Schwarz	ESCI	100613	2022/12/05	2023/12/04
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2022/08/31	2023/08/30

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2023/2/20

4.7 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Bi_Log Antenna Schwarbeck	VULB9168	9168-160	2022/10/20	2023/10/19
Loop Antenna EMCI	EM-6879	269	2022/09/19	2023/09/18
Loop Antenna TESEQ	HLA 6121	45745	2022/07/27	2023/07/26
Pre-amplifier EMCI	EMC001340	980201	2022/09/23	2023/09/22
Preamplifier Agilent	8447D	2944A10638	2022/05/14	2023/05/13
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2023/01/07	2024/01/06
RF Coaxial Cable WOKEN	8D-FB	Cable-CH9-01	2022/05/14	2023/05/13
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101867	2022/12/30	2023/12/29
Test Receiver KEYSIGHT	N9038A	MY55420137	2022/04/27	2023/04/26
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2023/2/17

4.8 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	9120D	9120D-1169	2022/11/13	2023/11/12
	BBHA 9170	9170-480	2022/11/13	2023/11/12
		BBHA9170243	2022/11/13	2023/11/12
Pre-Ammlifier EMCI	EMC 184045	980116	2022/10/01	2023/09/30
Preamplifier Agilent	8449B	3008A02367	2022/02/16	2023/02/15
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2022/07/09	2023/07/08
	EMC102-KM-KM-3000	150929	2022/07/09	2023/07/08
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2023/01/07	2024/01/06
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2023/01/07	2024/01/06
RF FLITER MICRO-TRONICS	BRM17690	004	2023/01/11	2024/01/10
	BRM50716	060	2023/01/11	2024/01/10
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101867	2022/12/30	2023/12/29
Test Receiver KEYSIGHT	N9038A	MY55420137	2022/04/27	2023/04/26
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2023/2/14

5 Limits of Test Items

5.1 RF Output Power

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	Fixed point-to-point Access Point	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Mobile and Portable client device	250mW (24 dBm)

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

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

5.2 Power Spectral Density

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	17 dBm/MHz
	Fixed point-to-point Access Point	
	Indoor Access Point	
	Mobile and Portable client device	11 dBm/MHz

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

5.3 6 dB Bandwidth

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

5.4 Occupied Bandwidth

The results are for reference only.

5.5 Frequency Stability

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

5.6 AC Power Conducted Emissions

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

Notes:

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

5.7 Unwanted Emissions below 1 GHz

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

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

Notes:

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

5.8 Unwanted Emissions above 1 GHz

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

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

Notes:

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

Limits of unwanted emission out of the restricted bands

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

For transmitters operating in the 5.15-5.25 GHz band:

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

For transmitters operating in the 5.725-5.850 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(4)(i)	PK: -27 (dBm/MHz) *1 PK: 10 (dBm/MHz) *2 PK: 15.6 (dBm/MHz) *3 PK: 27 (dBm/MHz) *4	PK: 68.2 (dBµV/m) *1 PK: 105.2 (dBµV/m) *2 PK: 110.8 (dBµV/m) *3 PK: 122.2 (dBµV/m) *4
*1 beyond 75 MHz or more above of the band edge. *2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. *3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. *4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		

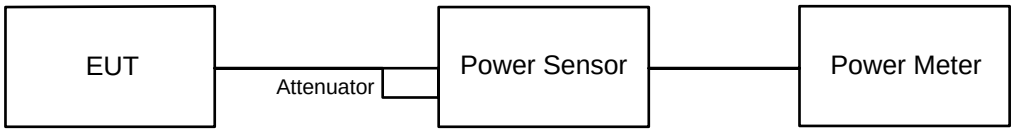
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

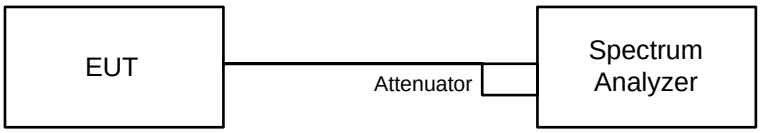


6.1.2 Test Procedure

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

6.2 Power Spectral Density

6.2.1 Test Setup



6.2.2 Test Procedure

For specified measurement bandwidth 1 MHz:
Method SA-1

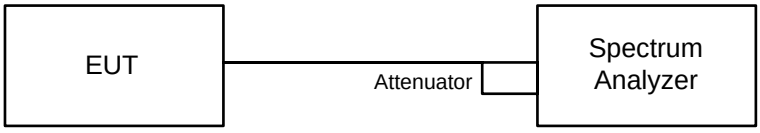
a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
d. Sweep time = auto, trigger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

For specified measurement bandwidth 500 kHz:
Method SA-1

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

6.3 6 dB Bandwidth

6.3.1 Test Setup

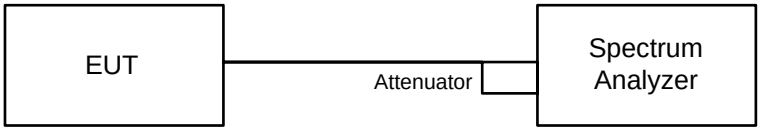


6.3.2 Test Procedure

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

6.4 Occupied Bandwidth

6.4.1 Test Setup

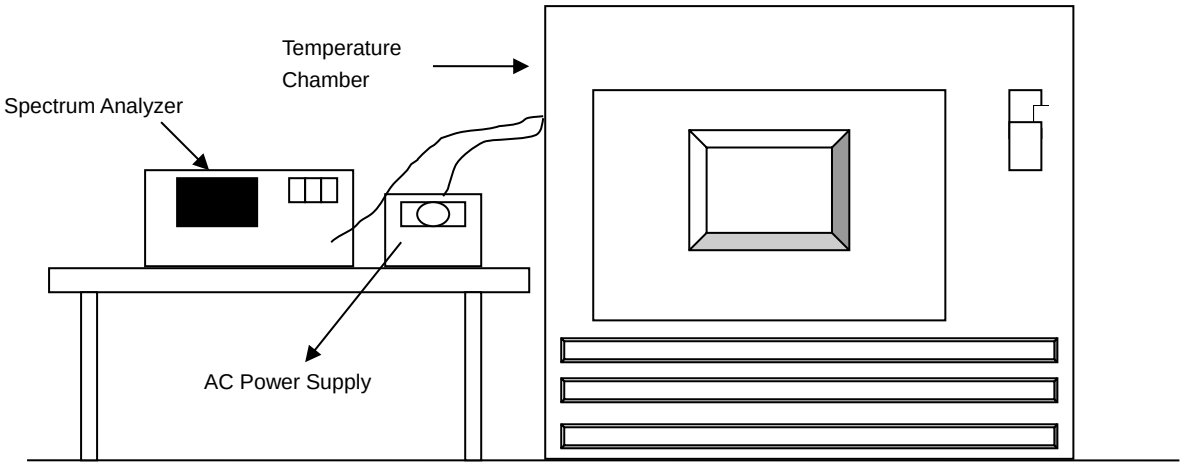


6.4.2 Test Procedure

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

6.5 Frequency Stability

6.5.1 Test Setup

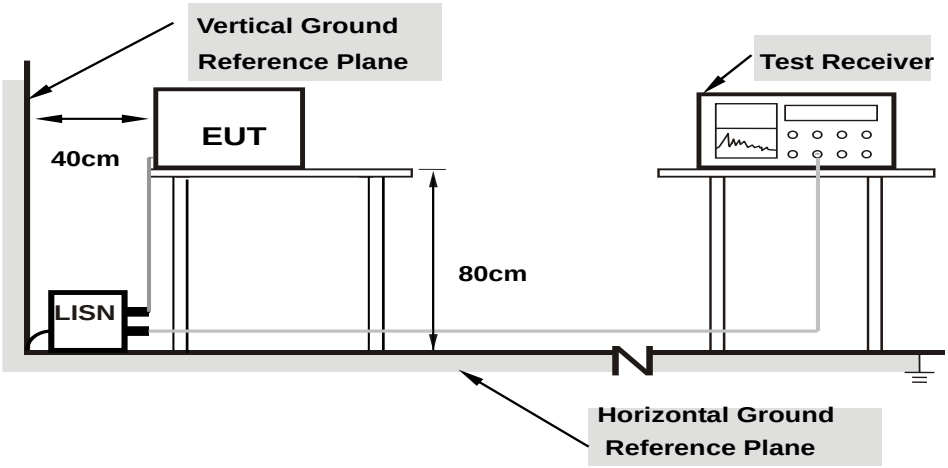


6.5.2 Test Procedure

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

6.6 AC Power Conducted Emissions

6.6.1 Test Setup



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

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

6.6.2 Test Procedure

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

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

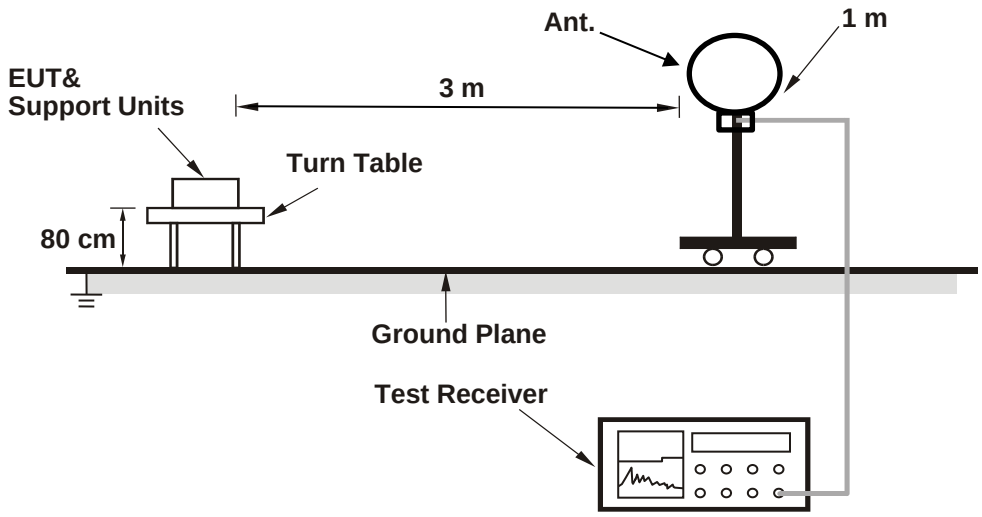
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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

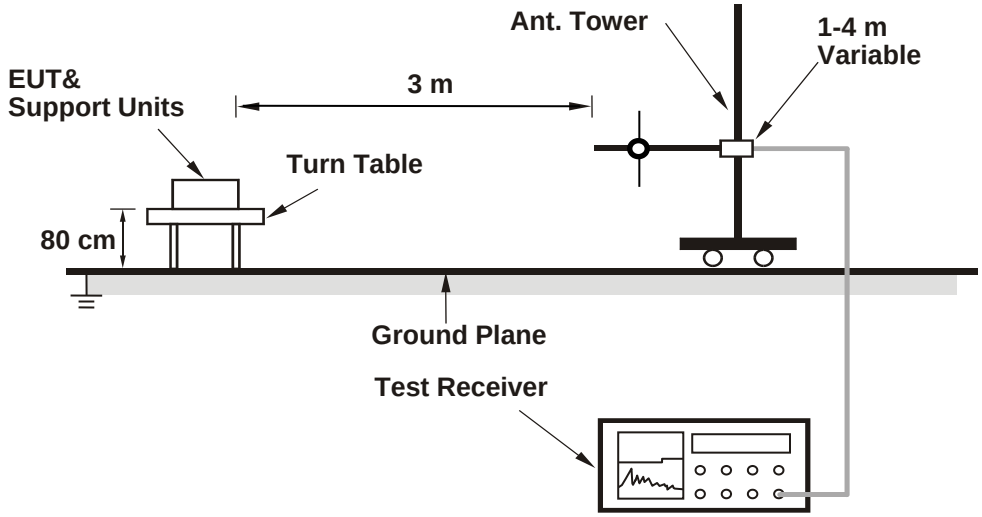
6.7 Unwanted Emissions below 1 GHz

6.7.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.7.2 Test Procedure

For Radiated emission below 30 MHz

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

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

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

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

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

Notes:

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

For Radiated emission above 30 MHz

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

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

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

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

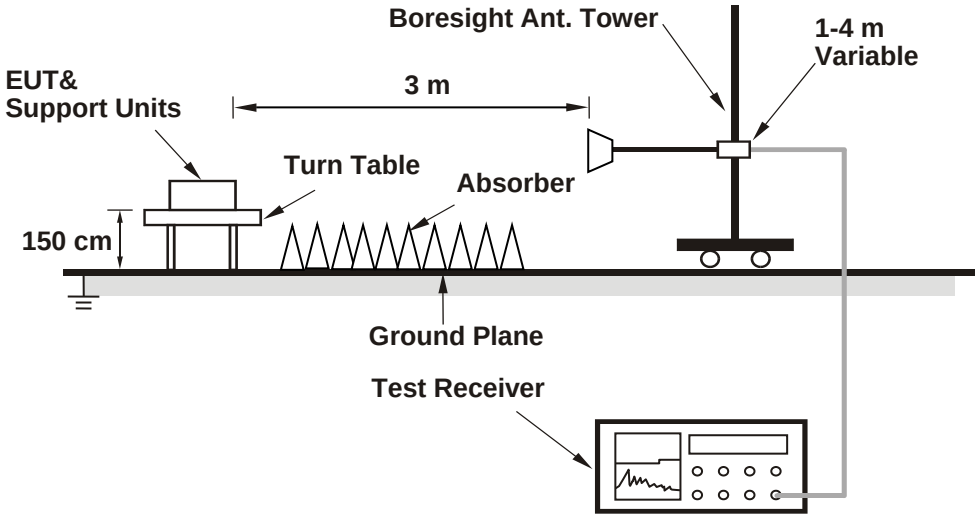
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

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

6.8 Unwanted Emissions above 1 GHz

6.8.1 Test Setup



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

6.8.2 Test Procedure

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

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

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

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

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

Notes:

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

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Alan Wu / Wayne Lin

802.11a CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	21.36	20.82	20.89	20.74	498.875	26.98	30	Pass
40	5200	24.02	23.48	23.55	23.42	921.442	29.64	30	Pass
48	5240	24.01	23.82	23.69	23.44	947.442	29.77	30	Pass
149	5745	23.97	23.83	24.01	23.63	973.448	29.88	30	Pass
157	5785	23.94	23.61	23.94	23.69	958.983	29.82	30	Pass
165	5825	23.53	23.14	23.69	23.63	896.045	29.52	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.88	20.09	20.48	20.13	439.281	26.43	30	Pass
40	5200	23.45	22.81	23.09	22.87	809.641	29.08	30	Pass
48	5240	24.12	23.86	23.75	23.57	966.094	29.85	30	Pass
149	5745	23.73	23.79	23.81	23.47	938.147	29.72	30	Pass
157	5785	23.77	23.69	23.78	23.79	950.228	29.78	30	Pass
165	5825	23.41	23.18	23.64	23.57	885.966	29.47	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT40) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.34	19.04	18.71	18.99	319.621	25.05	30	Pass
46	5230	22.51	22.35	22.07	22.35	682.884	28.34	30	Pass
151	5755	23.88	23.82	23.97	23.32	949.576	29.78	30	Pass
159	5795	23.87	23.61	23.99	23.81	964.443	29.84	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT20) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.89	20.11	20.51	20.15	441.284	26.45	30	Pass
40	5200	23.47	22.82	23.11	22.89	812.937	29.10	30	Pass
48	5240	24.15	23.87	23.78	23.59	971.138	29.87	30	Pass
149	5745	23.78	23.82	23.84	23.51	946.263	29.76	30	Pass
157	5785	23.79	23.70	23.81	23.82	955.181	29.80	30	Pass
165	5825	23.44	23.19	23.67	23.59	890.619	29.50	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT40) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.36	19.06	18.72	19.01	320.925	25.06	30	Pass
46	5230	22.52	22.37	22.08	22.36	684.855	28.36	30	Pass
151	5755	23.89	23.84	23.99	23.34	953.395	29.79	30	Pass
159	5795	23.89	23.62	24.01	23.83	968.364	29.86	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT80) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.78	18.45	18.56	18.53	288.558	24.60	30	Pass
155	5775	21.32	21.11	21.37	21.36	538.502	27.31	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.91	20.12	20.52	20.17	442.824	26.46	30	Pass
40	5200	23.48	22.84	23.12	22.91	815.703	29.12	30	Pass
48	5240	24.10	23.88	23.88	23.60	974.812	29.89	30	Pass
149	5745	23.81	23.87	23.87	23.55	954.463	29.80	30	Pass
157	5785	23.81	23.72	23.83	23.85	960.148	29.82	30	Pass
165	5825	23.45	23.21	23.69	23.61	894.219	29.51	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the directional gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the directional gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.38	19.07	18.74	19.02	322.036	25.08	30	Pass
46	5230	22.54	22.39	22.09	22.38	687.643	28.37	30	Pass
151	5755	23.91	23.85	24.01	23.36	957.236	29.81	30	Pass
159	5795	23.91	23.63	24.02	23.85	971.721	29.88	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE80) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.80	18.46	18.57	18.55	289.563	24.62	30	Pass
155	5775	21.34	21.13	21.39	21.37	540.672	27.33	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 5.96 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 5.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.88	20.09	20.48	20.13	439.281	26.43	29.89	Pass
40	5200	23.45	22.81	23.09	22.87	809.641	29.08	29.89	Pass
48	5240	23.80	23.57	23.56	23.28	907.193	29.58	29.89	Pass
149	5745	23.27	23.33	23.31	22.98	840.501	29.25	29.52	Pass
157	5785	23.28	23.19	23.28	23.30	847.873	29.28	29.52	Pass
165	5825	23.41	23.18	23.64	23.57	885.966	29.47	29.52	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.48-6) = 29.52 dBm.

802.11n (HT40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.34	19.04	18.71	18.99	319.621	25.05	29.89	Pass
46	5230	22.51	22.35	22.07	22.35	682.884	28.34	29.89	Pass
151	5755	23.38	23.31	23.46	22.82	845.305	29.27	29.52	Pass
159	5795	23.39	23.10	23.47	23.26	856.614	29.33	29.52	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.48-6) = 29.52 dBm.

802.11ac (VHT20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.89	20.11	20.51	20.15	441.284	26.45	29.89	Pass
40	5200	23.47	22.82	23.11	22.89	812.937	29.10	29.89	Pass
48	5240	23.82	23.61	23.60	23.32	914.475	29.61	29.89	Pass
149	5745	23.30	23.36	23.35	23.01	846.825	29.28	29.52	Pass
157	5785	23.31	23.23	23.30	23.34	854.238	29.32	29.52	Pass
165	5825	23.44	23.19	23.67	23.59	890.619	29.50	29.52	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.48-6) = 29.52 dBm.

802.11ac (VHT40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.36	19.06	18.72	19.01	320.925	25.06	29.89	Pass
46	5230	22.52	22.37	22.08	22.36	684.855	28.36	29.89	Pass
151	5755	23.41	23.35	23.50	22.86	852.621	29.31	29.52	Pass
159	5795	23.42	23.12	23.51	23.30	863.087	29.36	29.52	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.48-6) = 29.52 dBm.

802.11ac (VHT80) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.78	18.45	18.56	18.53	288.558	24.60	29.89	Pass
155	5775	21.32	21.11	21.37	21.36	538.502	27.31	29.52	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.48-6) = 29.52 dBm.

802.11ax (HE20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.91	20.12	20.52	20.17	442.824	26.46	29.89	Pass
40	5200	23.48	22.84	23.12	22.91	815.703	29.12	29.89	Pass
48	5240	23.87	23.65	23.64	23.37	923.997	29.66	29.89	Pass
149	5745	23.35	23.40	23.41	23.06	856.63	29.33	29.52	Pass
157	5785	23.34	23.27	23.35	23.39	862.644	29.36	29.52	Pass
165	5825	23.45	23.21	23.69	23.61	894.219	29.51	29.52	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.48-6) = 29.52 dBm.

802.11ax (HE40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.38	19.07	18.74	19.02	322.036	25.08	29.89	Pass
46	5230	22.54	22.39	22.09	22.38	687.643	28.37	29.89	Pass
151	5755	23.44	23.38	23.53	22.89	858.531	29.34	29.52	Pass
159	5795	23.45	23.15	23.54	23.34	869.566	29.39	29.52	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.48-6) = 29.52 dBm.

802.11ax (HE80) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.80	18.46	18.57	18.55	289.563	24.62	29.89	Pass
155	5775	21.34	21.13	21.39	21.37	540.672	27.33	29.52	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. For U-NII-1, the directional gain is 6.11 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.11-6) = 29.89 dBm.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.48-6) = 29.52 dBm.

7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Alan Wu / Wayne Lin

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3			
36	5180	7.59	7.06	7.11	6.97	13.21	16.89	Pass
40	5200	10.24	9.66	9.68	9.61	15.83	16.89	Pass
48	5240	10.27	10.04	9.88	9.63	15.98	16.89	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-1, the directional gain is 6.11 dBi > 6dBi, so the power density limit shall be reduced to 17-(6.11-6) = 16.89 dBm/MHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3			
36	5180	7.12	6.30	6.60	6.22	12.60	16.89	Pass
40	5200	9.45	9.00	9.35	9.13	15.26	16.89	Pass
48	5240	10.36	9.89	10.11	9.79	16.06	16.89	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-1, the directional gain is 6.11 dBi > 6dBi, so the power density limit shall be reduced to 17-(6.11-6) = 16.89 dBm/MHz.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3			
38	5190	2.52	2.15	1.91	2.30	8.25	16.89	Pass
46	5230	5.43	5.29	4.84	4.97	11.16	16.89	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-1, the directional gain is 6.11 dBi > 6dBi, so the power density limit shall be reduced to 17-(6.11-6) = 16.89 dBm/MHz.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3			
42	5210	-1.76	-2.18	-2.06	-1.83	4.07	16.89	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-1, the directional gain is 6.11 dBi > 6dBi, so the power density limit shall be reduced to 17-(6.11-6) = 16.89 dBm/MHz.

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	4.94	4.66	4.61	4.54	10.71	12.93	29.52	Pass
157	5785	4.35	4.06	4.49	4.45	10.36	12.58	29.52	Pass
165	5825	4.21	4.09	4.63	4.37	10.35	12.57	29.52	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.48-6) = 29.52 dBm/500kHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	4.03	4.08	4.08	3.70	10	12.22	29.52	Pass
157	5785	3.38	3.33	3.56	3.64	9.5	11.72	29.52	Pass
165	5825	3.10	3.26	3.75	3.45	9.42	11.64	29.52	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.48-6) = 29.52 dBm/500kHz.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	0.94	1.10	1.00	0.52	6.92	9.14	29.52	Pass
159	5795	0.59	0.50	0.90	0.66	6.69	8.91	29.52	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.48-6) = 29.52 dBm/500kHz.

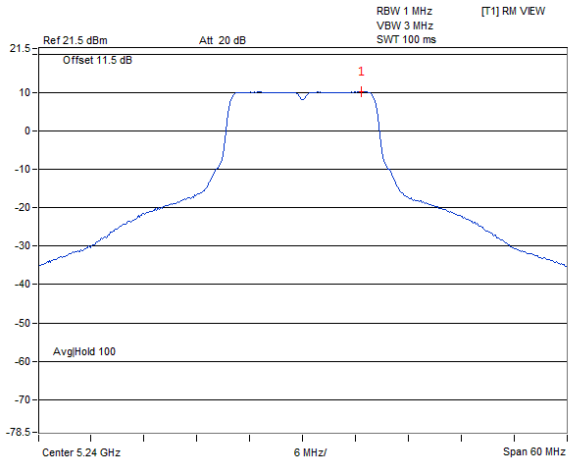
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	-4.69	-4.54	-4.58	-4.28	1.5	3.72	29.52	Pass

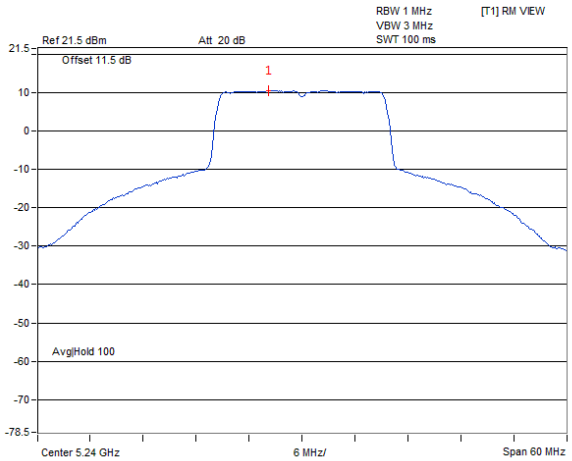
Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. For U-NII-3, the directional gain is 6.48 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.48-6) = 29.52 dBm/500kHz.

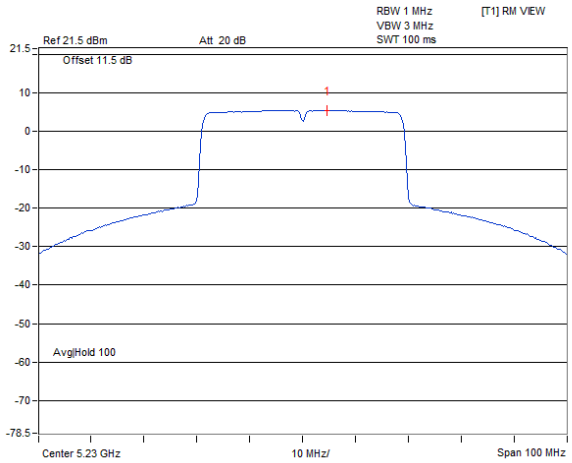
Spectrum Plot of Maximum Value



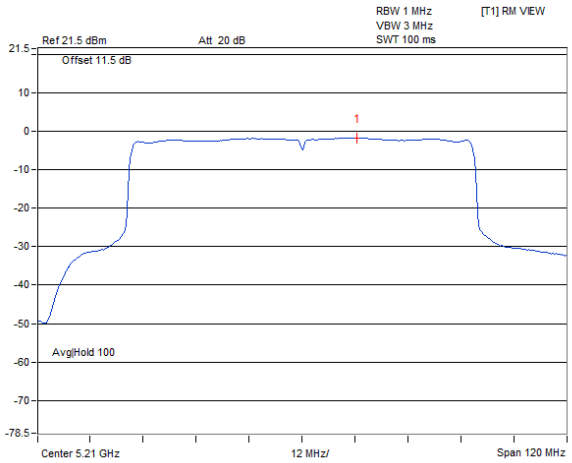
802.11a / Chain 0 : CH 48



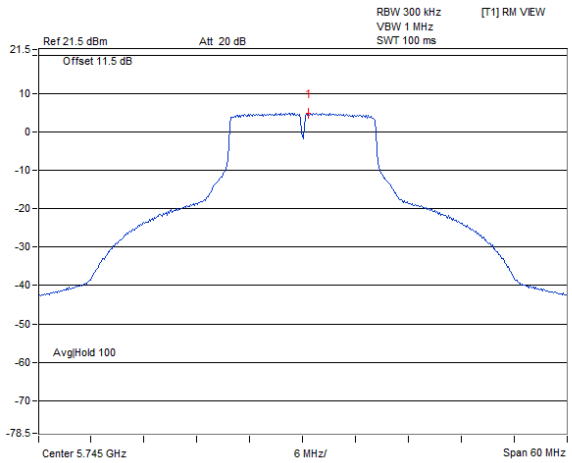
802.11ax (HE20) / Chain 0 : CH 48



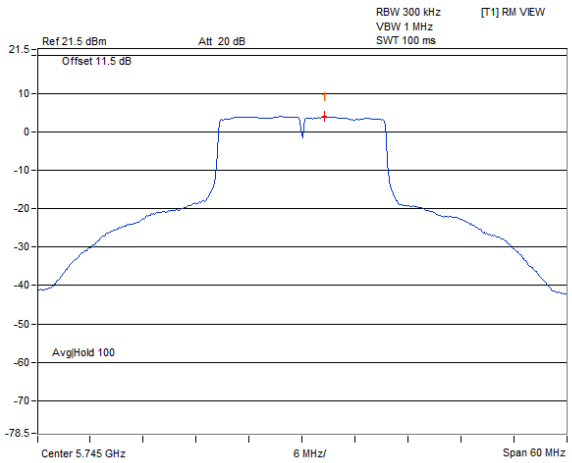
802.11ax (HE40) / Chain 0 : CH 46



802.11ax (HE80) / Chain 0 : CH 42

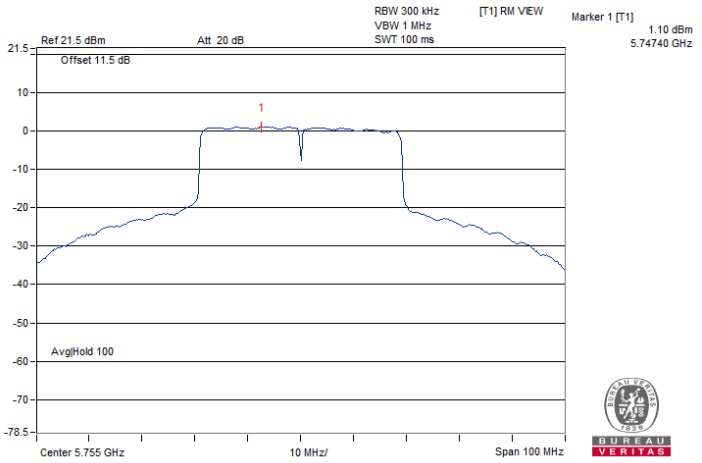


802.11a / Chain 0 : CH 149

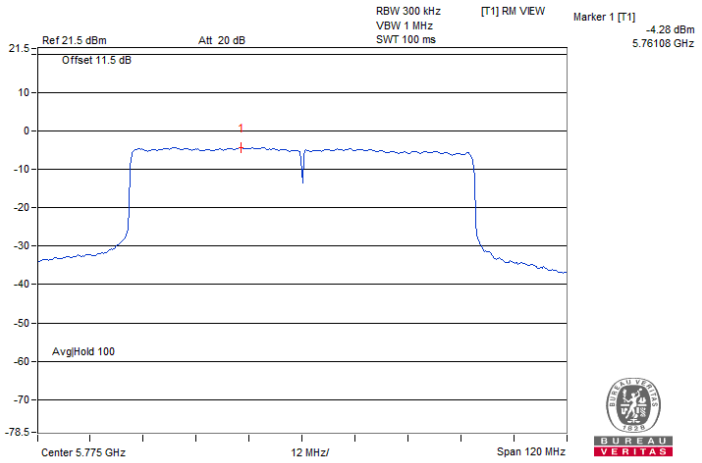


802.11ax (HE20) / Chain 1 : CH 149

Spectrum Plot of Maximum Value



802.11ax (HE40) / Chain 1 : CH 151



802.11ax (HE80) / Chain 3 : CH 155

7.3 6 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Alan Wu / Wayne Lin

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.34	16.34	16.32	16.29	0.5	Pass
157	5785	16.33	16.34	16.34	16.32	0.5	Pass
165	5825	16.30	16.06	16.30	16.31	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	18.89	18.65	18.98	18.80	0.5	Pass
157	5785	18.92	18.96	18.83	18.54	0.5	Pass
165	5825	18.80	18.28	18.54	18.72	0.5	Pass

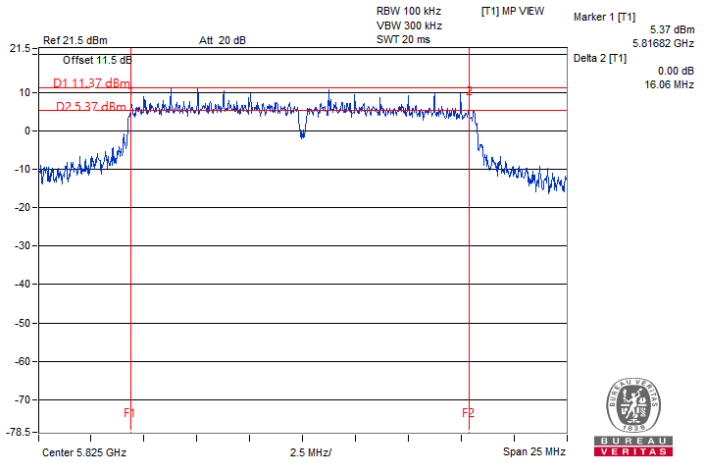
802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.62	37.00	37.66	37.50	0.5	Pass
159	5795	37.47	37.52	37.85	37.77	0.5	Pass

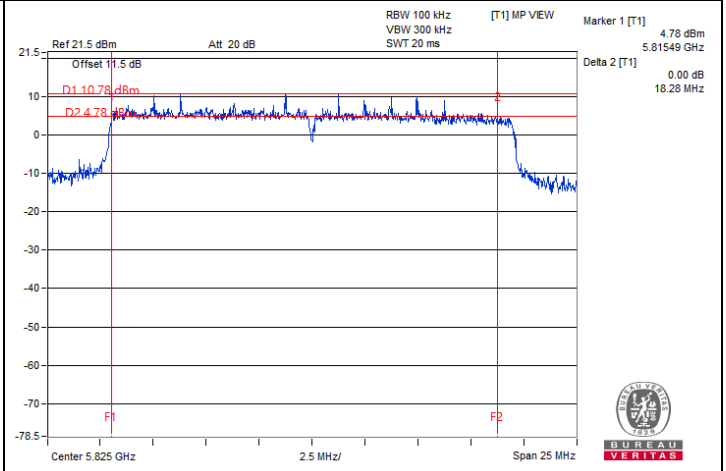
802.11ax (HE80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	77.54	76.28	77.34	77.30	0.5	Pass

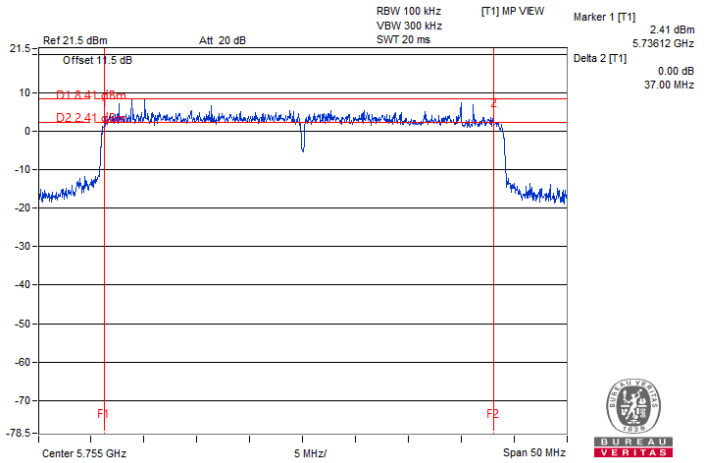
Spectrum Plot of Minimum Value



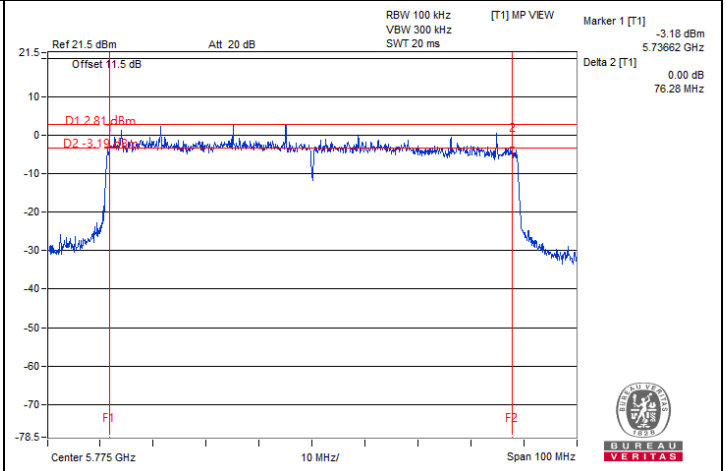
802.11a / Chain 1 : CH 165



802.11ax (HE20) / Chain 1 : CH 165



802.11ax (HE40) / Chain 1 : CH 151



802.11ax (HE80) / Chain 1 : CH 155

7.4 Occupied Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Alan Wu / Wayne Lin

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	16.98	16.98	16.92	17.04
40	5200	16.80	16.86	16.74	16.80
48	5240	16.86	16.68	16.68	16.80
149	5745	18.66	17.70	18.60	21.06
157	5785	20.52	20.10	21.24	20.46
165	5825	22.86	21.66	23.88	23.28

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	19.14	19.08	19.08	19.02
40	5200	19.08	19.02	18.96	19.02
48	5240	19.08	19.02	18.96	18.96
149	5745	19.38	19.56	19.44	20.46
157	5785	20.70	21.06	20.82	20.10
165	5825	23.70	22.20	24.12	23.70

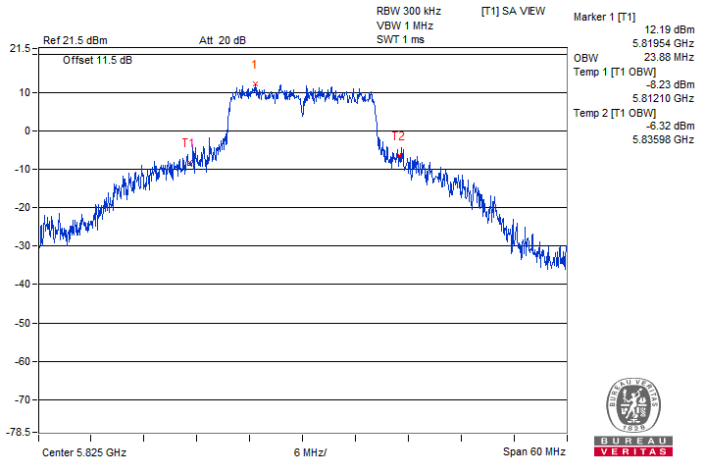
802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	38.04	37.92	37.92	37.92
46	5230	38.04	38.28	38.16	38.04
151	5755	38.76	38.76	38.76	38.76
159	5795	42.72	40.32	43.56	38.88

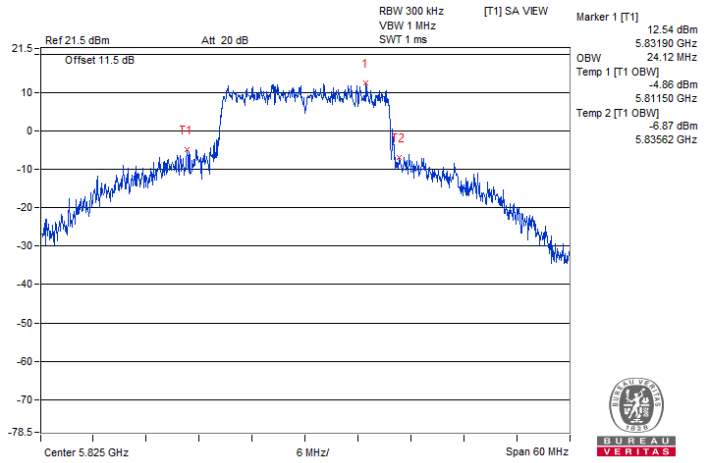
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	77.52	77.52	77.28	77.28
155	5775	77.28	77.52	77.52	77.28

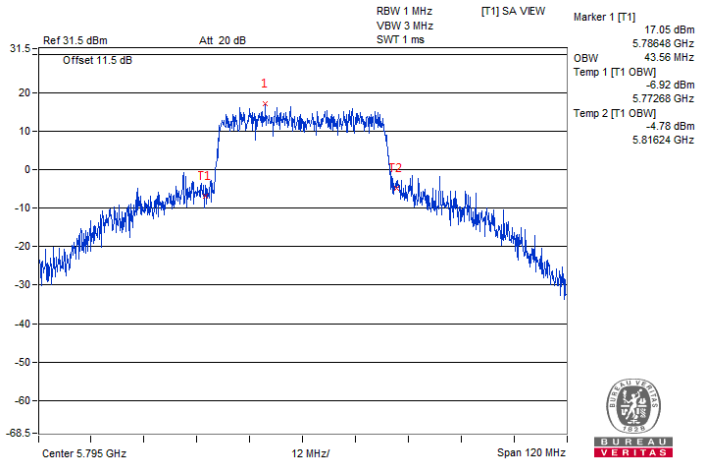
Spectrum Plot of Maximum Value



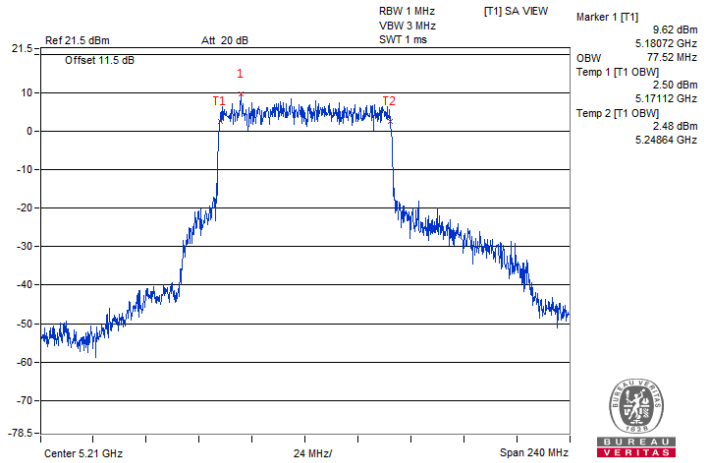
802.11a / Chain 2 : CH 165



802.11ax (HE20) / Chain 2 : CH 165

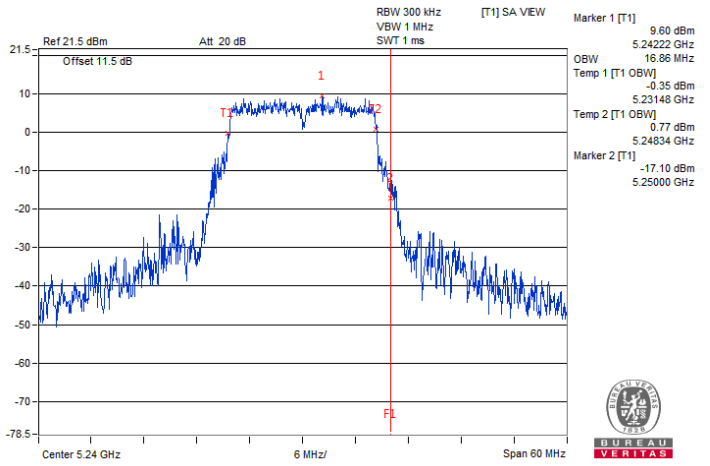


802.11ax (HE40) / Chain 2 : CH 159

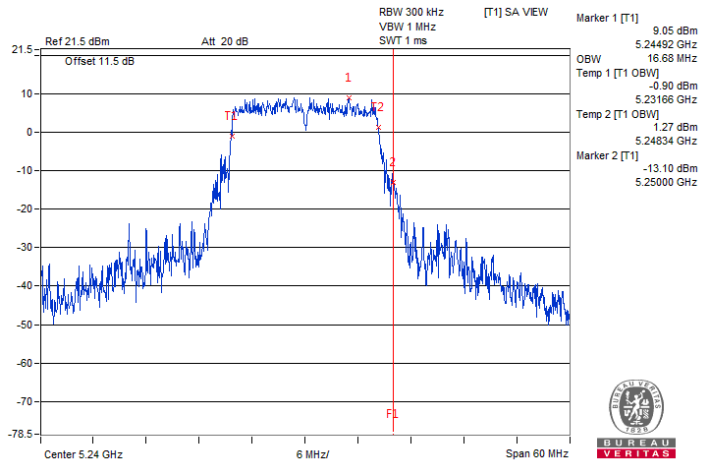


802.11ax (HE80) / Chain 0 : CH 42

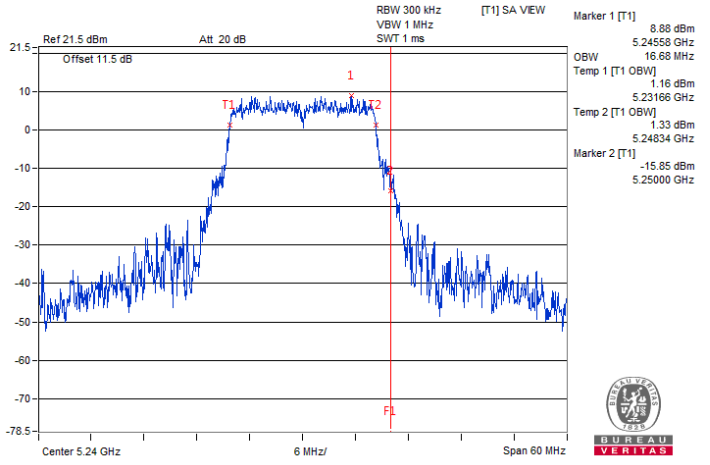
Spectrum Plot for nearby DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A)



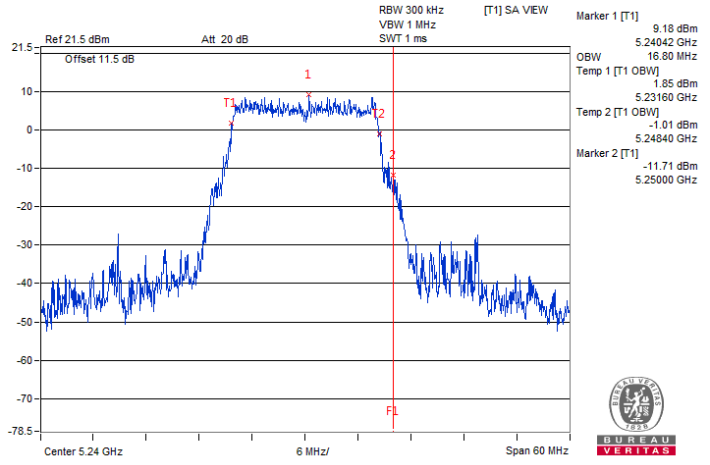
802.11a / Chain 0 : CH 48



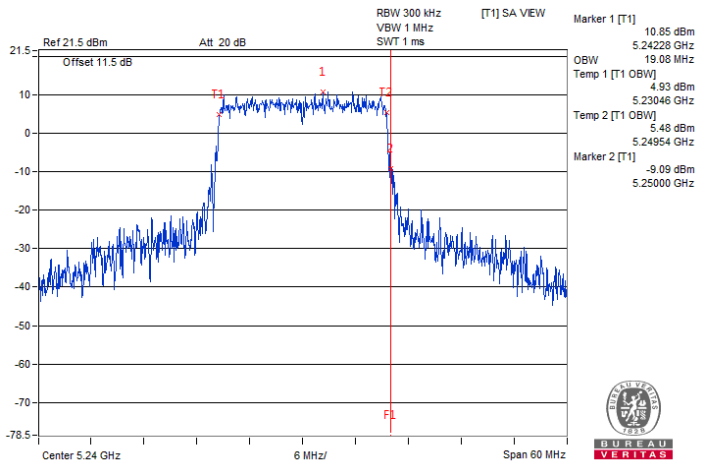
802.11a / Chain 1 : CH 48



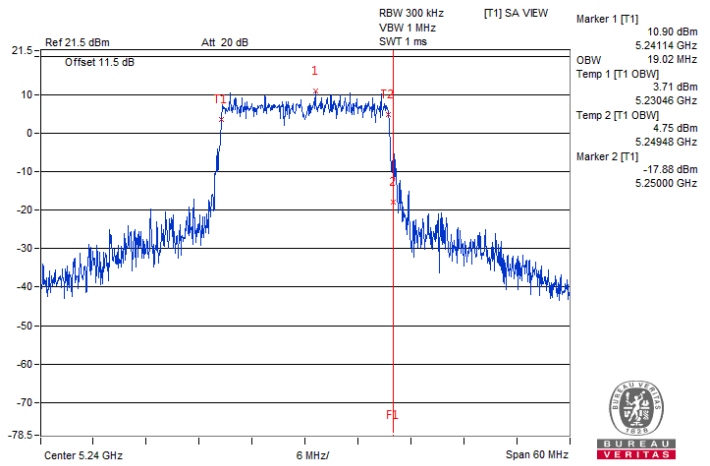
802.11a / Chain 2 : CH 48



802.11a / Chain 3 : CH 48



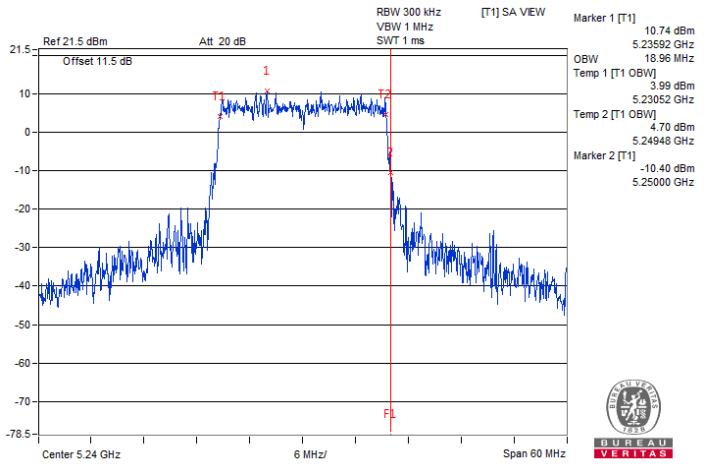
802.11ax (HE20) / Chain 0 : CH 48



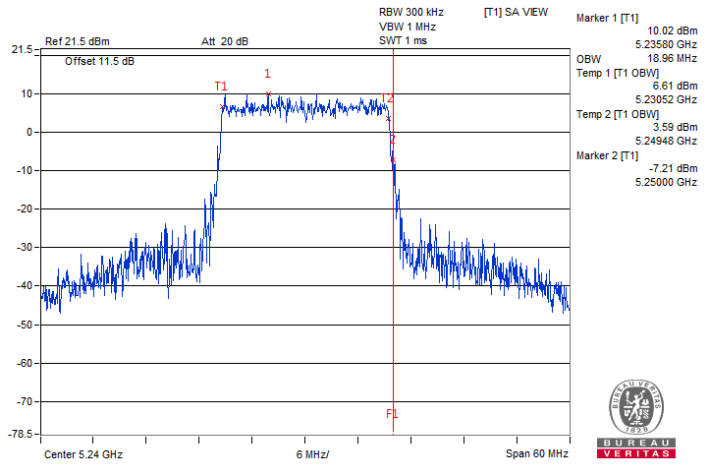
802.11ax (HE20) / Chain 1 : CH 48

Spectrum Plot for nearby DFS band

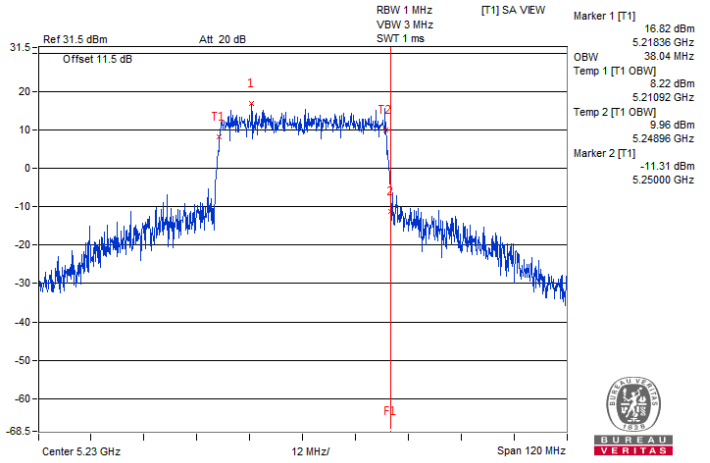
(DFS is required, if 99% OCP straddle into U-NII-2A)



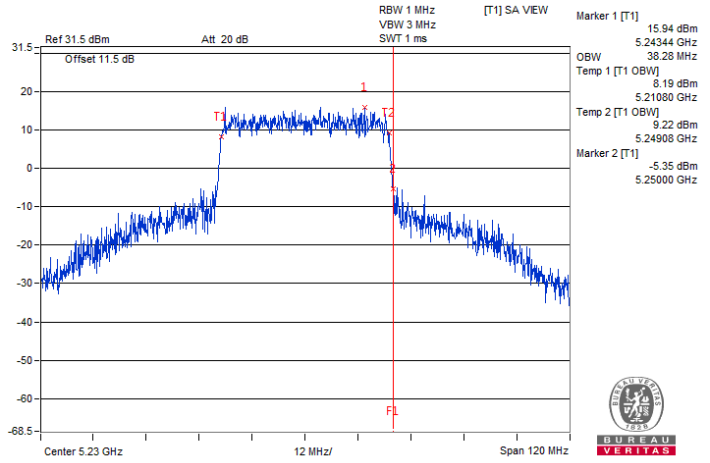
802.11ax (HE20) / Chain 2 : CH 48



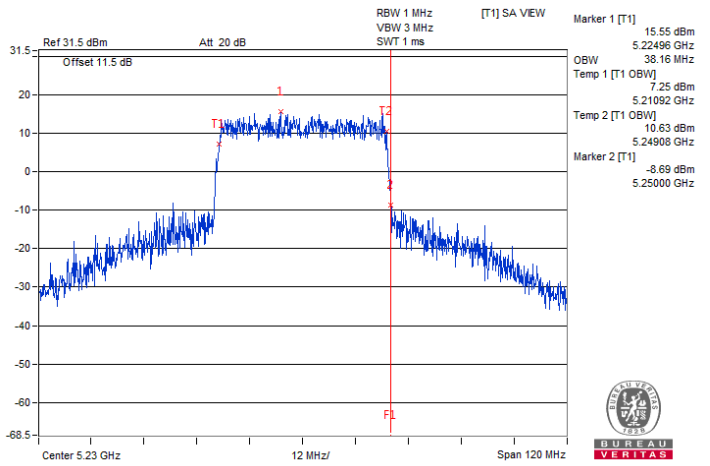
802.11ax (HE20) / Chain 3 : CH 48



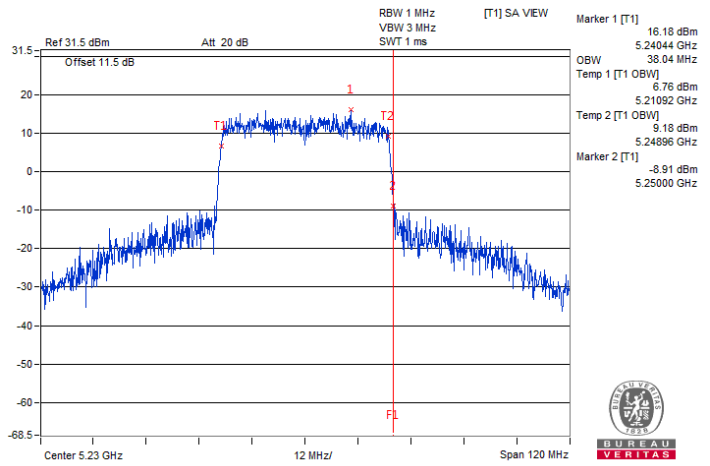
802.11ax (HE40) / Chain 0 : CH 46



802.11ax (HE40) / Chain 1 : CH 46



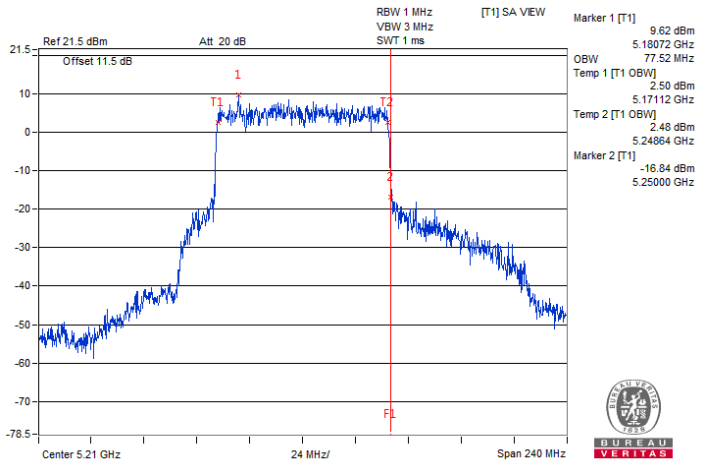
802.11ax (HE40) / Chain 2 : CH 46



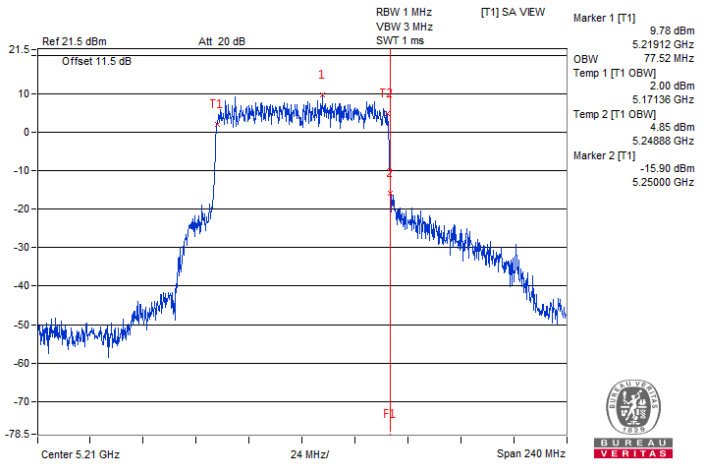
802.11ax (HE40) / Chain 3 : CH 46

Spectrum Plot for nearby DFS band

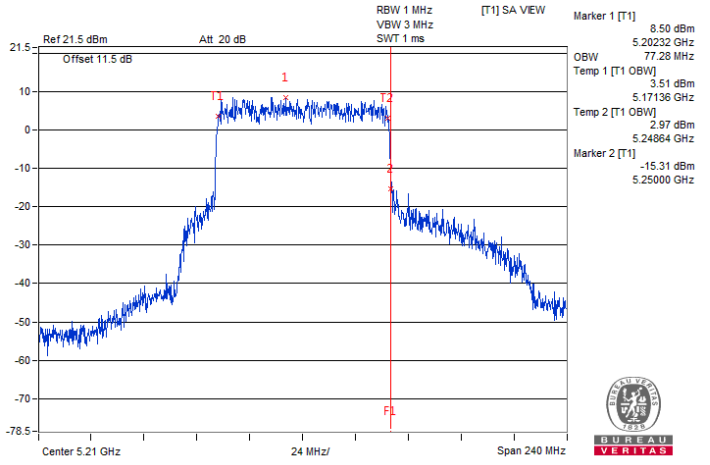
(DFS is required, if 99% OCP straddle into U-NII-2A)



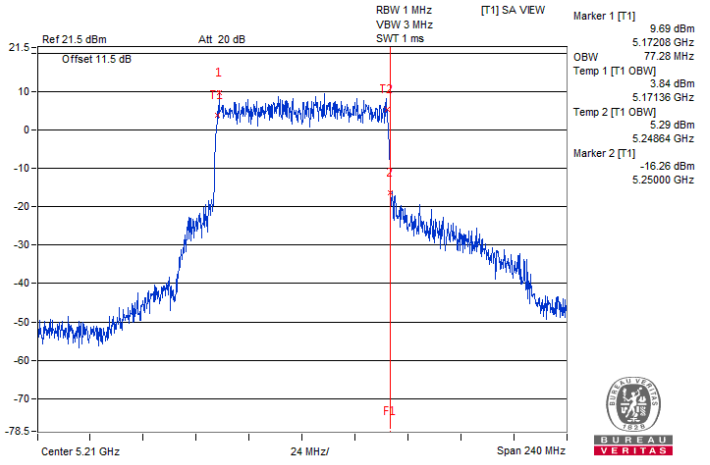
802.11ax (HE80) / Chain 0 : CH 42



802.11ax (HE80) / Chain 1 : CH 42



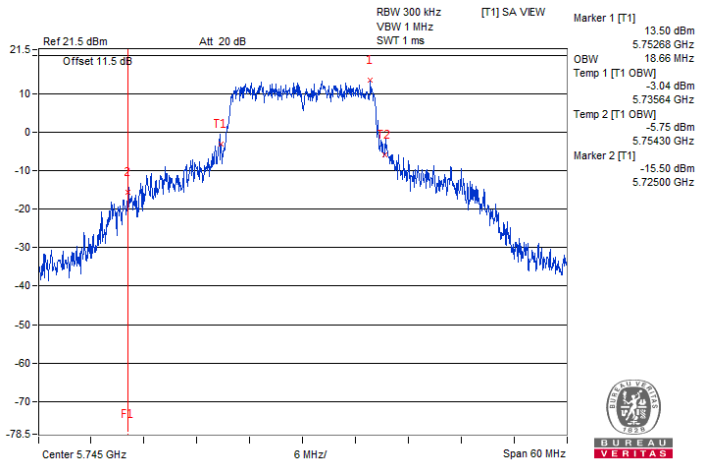
802.11ax (HE80) / Chain 2 : CH 42



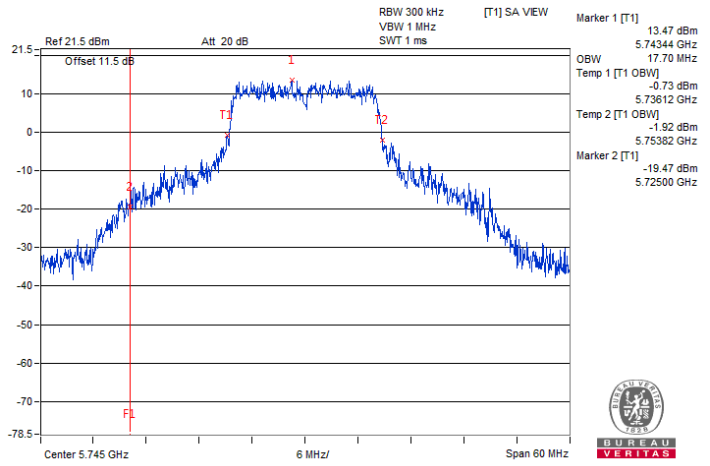
802.11ax (HE80) / Chain 3 : CH 42

Spectrum Plot for nearby DFS band

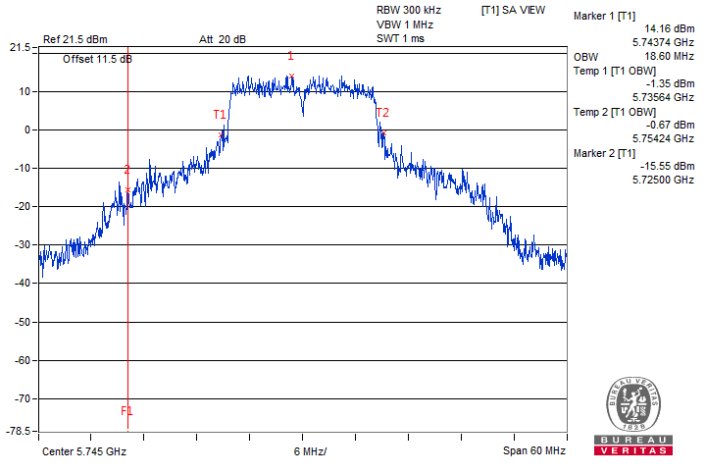
(DFS is required, if 99% OCP straddle into U-NII-2C)



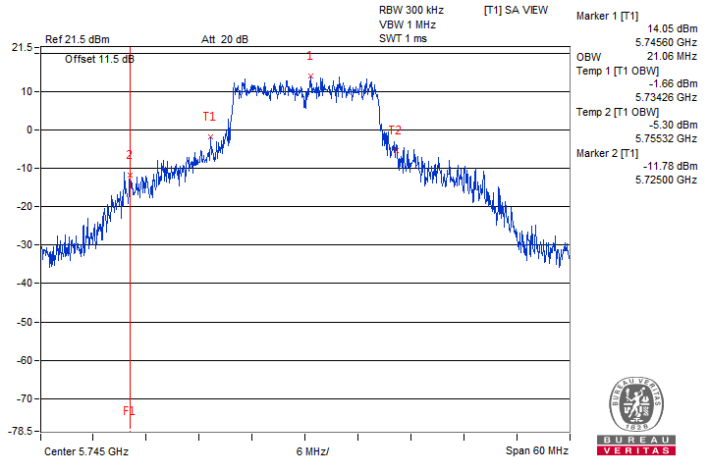
802.11a / Chain 0 : CH 149



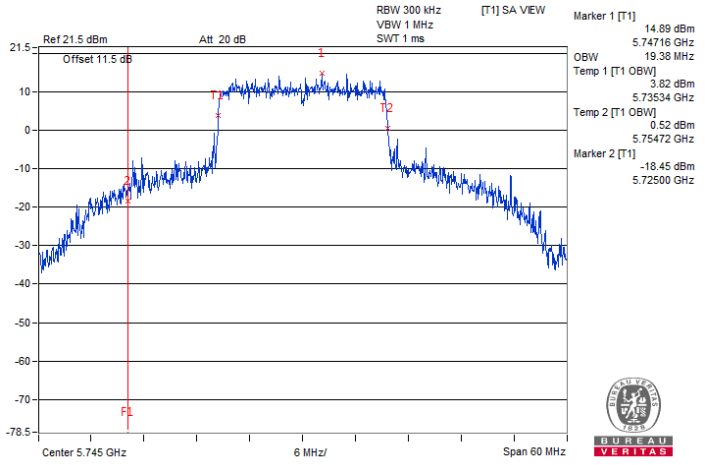
802.11a / Chain 1 : CH 149



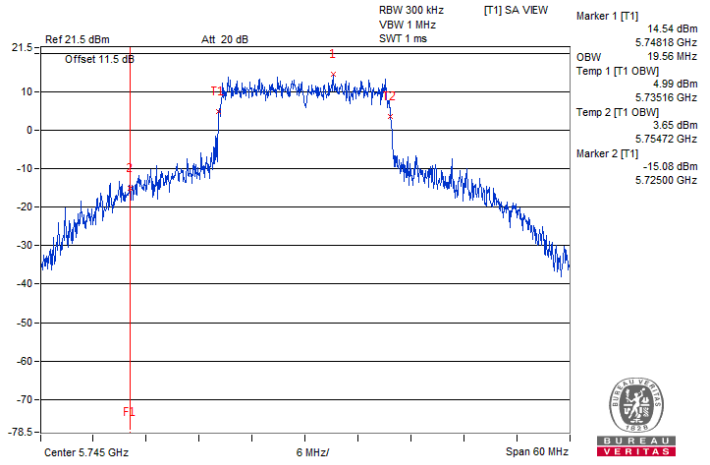
802.11a / Chain 2 : CH 149



802.11a / Chain 3 : CH 149



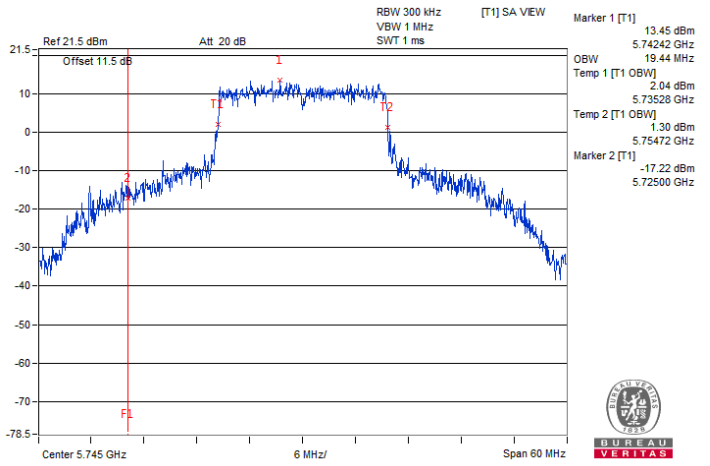
802.11ax (HE20) / Chain 0 : CH 149



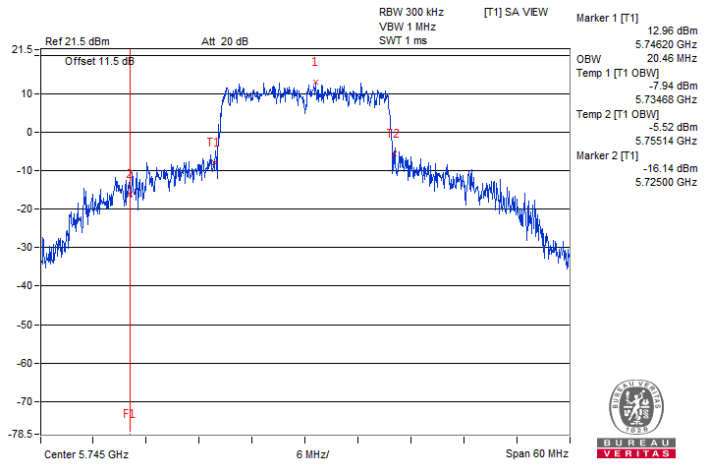
802.11ax (HE20) / Chain 1 : CH 149

Spectrum Plot for nearby DFS band

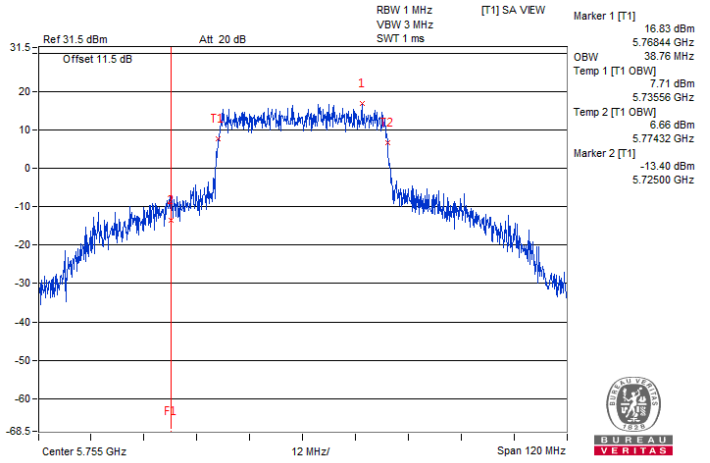
(DFS is required, if 99% OCP straddle into U-NII-2C)



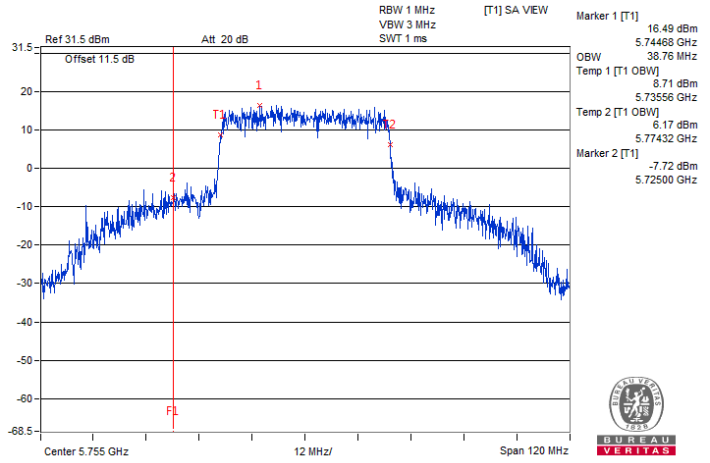
802.11ax (HE20) / Chain 2 : CH 149



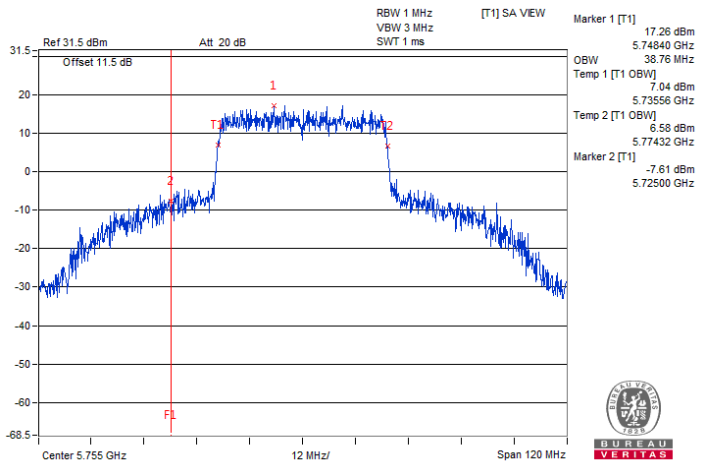
802.11ax (HE20) / Chain 3 : CH 149



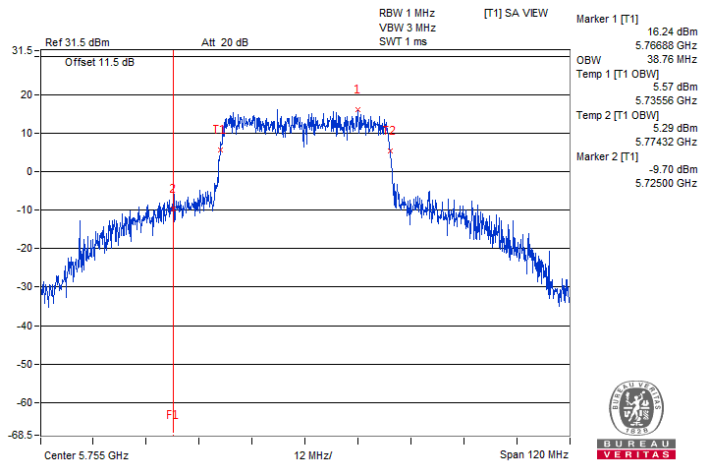
802.11ax (HE40) / Chain 0 : CH 151



802.11ax (HE40) / Chain 1 : CH 151



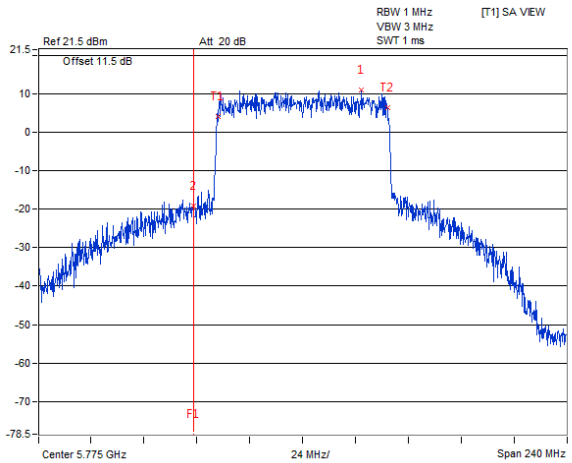
802.11ax (HE40) / Chain 2 : CH 151



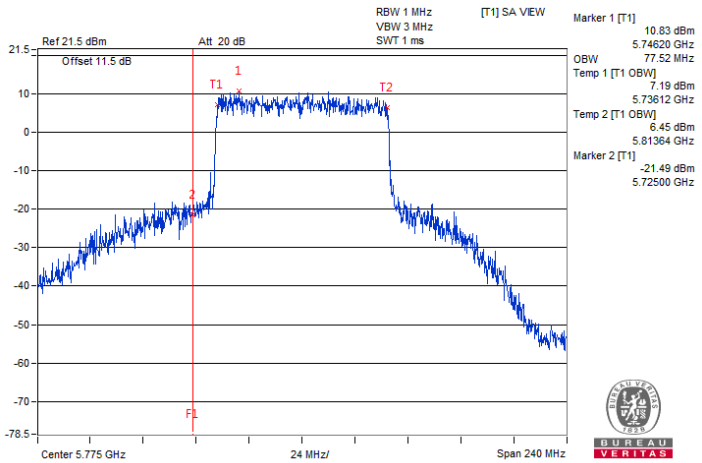
802.11ax (HE40) / Chain 3 : CH 151

Spectrum Plot for nearby DFS band

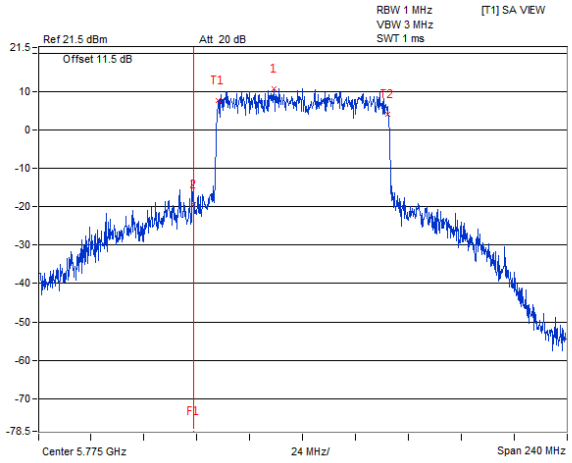
(DFS is required, if 99% OCP straddle into U-NII-2C)



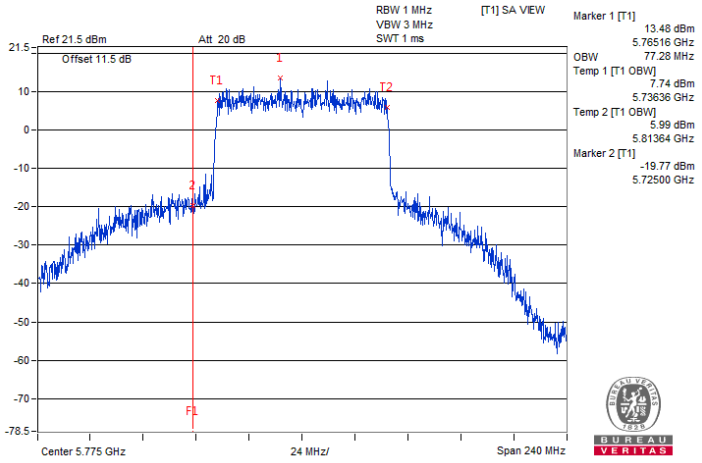
802.11ax (HE80) / Chain 0 : CH 155



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:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Alan Wu / Wayne Lin

802.11a

Frequency Stability Versus Temperature									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
50	120	5180.0072	Pass	5180.006	Pass	5180.0081	Pass	5180.0071	Pass
40	120	5179.9935	Pass	5179.9945	Pass	5179.9928	Pass	5179.9927	Pass
30	120	5179.9893	Pass	5179.9868	Pass	5179.9891	Pass	5179.9851	Pass
20	120	5179.9954	Pass	5179.9971	Pass	5179.9957	Pass	5179.9999	Pass
10	120	5179.9972	Pass	5179.9969	Pass	5179.9963	Pass	5179.9981	Pass
0	120	5179.9949	Pass	5179.9919	Pass	5179.9943	Pass	5179.9949	Pass
-10	120	5180.0148	Pass	5180.0099	Pass	5180.0114	Pass	5180.0136	Pass
-20	120	5180.0152	Pass	5180.011	Pass	5180.0105	Pass	5180.0135	Pass
-30	120	5180.0189	Pass	5180.0209	Pass	5180.0176	Pass	5180.0223	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
20	138	5179.9984	Pass	5179.9993	Pass	5179.9993	Pass	5179.9992	Pass
	120	5179.9954	Pass	5179.9971	Pass	5179.9957	Pass	5179.9999	Pass
	102	5179.9953	Pass	5179.9946	Pass	5179.9953	Pass	5179.9983	Pass

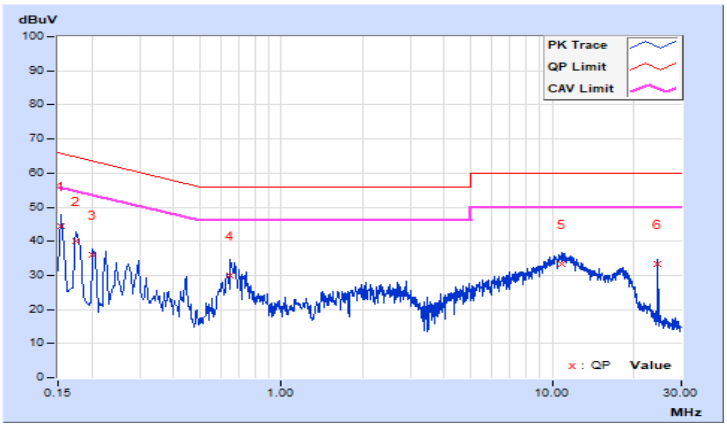
7.6 AC Power Conducted Emissions

RF Mode	802.11ax (HE20)	**Channel**	CH 48：5240 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

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	0.15400	9.68	34.79	21.17	44.47	30.85	65.78	55.78	-21.31	-24.93
2	0.17400	9.70	30.46	17.11	40.16	26.81	64.77	54.77	-24.61	-27.96
3	0.20200	9.72	26.24	11.68	35.96	21.40	63.53	53.53	-27.57	-32.13
4	0.65000	9.83	20.06	14.04	29.89	23.87	56.00	46.00	-26.11	-22.13
5	10.87800	10.05	23.16	16.59	33.21	26.64	60.00	50.00	-26.79	-23.36
6	**24.57800**	**10.23**	**23.18**	**23.12**	**33.41**	**33.35**	**60.00**	**50.00**	**-26.59**	**-16.65**

Remarks:

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

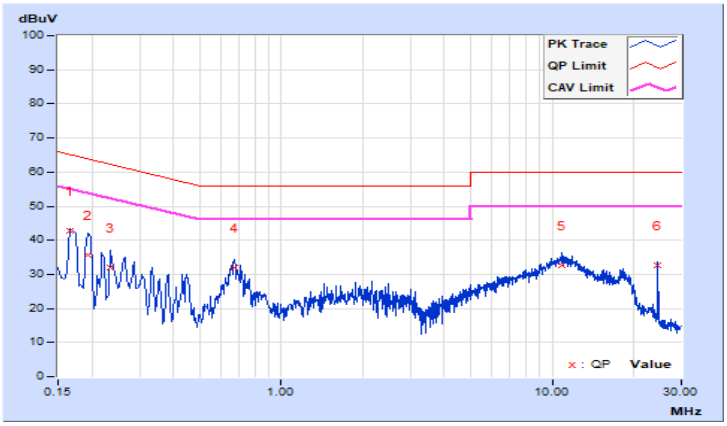


RF Mode	802.11ax (HE20)	**Channel**	CH 48：5240 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

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	0.16600	9.69	33.04	18.21	42.73	27.90	65.16	55.16	-22.43	-27.26
2	0.19367	9.71	26.04	13.34	35.75	23.05	63.88	53.88	-28.13	-30.83
3	0.23400	9.73	22.20	11.82	31.93	21.55	62.31	52.31	-30.38	-30.76
4	0.67400	9.82	22.04	14.75	31.86	24.57	56.00	46.00	-24.14	-21.43
5	10.82200	10.09	22.45	15.91	32.54	26.00	60.00	50.00	-27.46	-24.00
6	24.57800	10.21	22.35	22.05	32.56	32.26	60.00	50.00	-27.44	-17.74

Remarks:

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



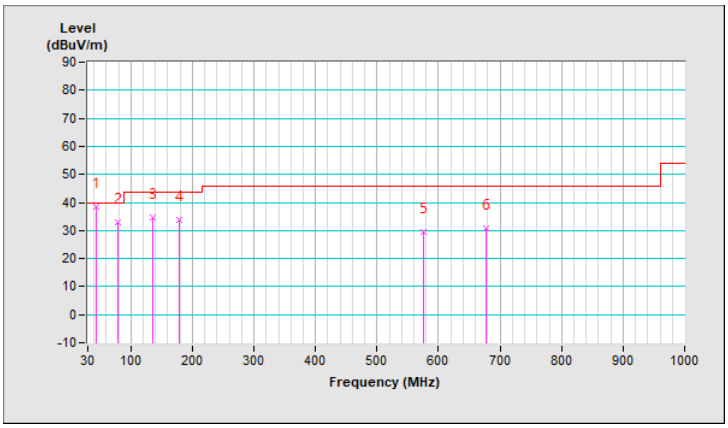
7.7 Unwanted Emissions below 1 GHz

RF Mode	802.11ax (HE20)	**Channel**	CH 48：5240 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	**44.55**	**38.7 QP**	**40.0**	**-1.3**	**1.00 H**	**277**	**47.8**	**-9.1**
2	79.47	32.8 QP	40.0	-7.2	1.00 H	193	46.1	-13.3
3	135.73	34.5 QP	43.5	-9.0	1.50 H	229	44.0	-9.5
4	178.41	33.8 QP	43.5	-9.7	1.00 H	94	43.6	-9.8
5	575.14	29.5 QP	46.0	-16.5	1.50 H	19	30.5	-1.0
6	676.99	30.9 QP	46.0	-15.1	1.00 H	312	30.1	0.8

Remarks:

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

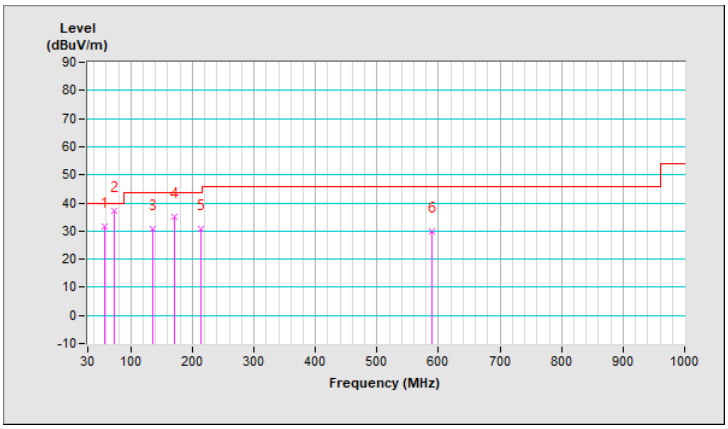


RF Mode	802.11ax (HE20)	**Channel**	CH 48：5240 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Vertical at								
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	57.16	31.7 QP	40.0	-8.3	1.50 V	3	41.1	-9.4
2	73.65	37.2 QP	40.0	-2.8	1.00 V	168	49.1	-11.9
3	135.73	30.7 QP	43.5	-12.8	1.00 V	83	40.2	-9.5
4	171.62	35.0 QP	43.5	-8.5	1.50 V	231	44.1	-9.1
5	213.33	30.7 QP	43.5	-12.8	1.00 V	242	41.8	-11.1
6	588.72	29.7 QP	46.0	-16.3	2.00 V	100	30.4	-0.7

Remarks:

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



7.8 Unwanted Emissions above 1 GHz

RF Mode	802.11a	**Channel**	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	20.9°C, 76.8% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	2.76 H	203	44.6	20.9
2	5150.00	51.0 AV	54.0	-3.0	2.76 H	203	30.1	20.9
3	*5180.00	116.4 PK			2.76 H	203	75.2	41.2
4	*5180.00	107.2 AV			2.76 H	203	66.0	41.2
5	#10360.00	63.2 PK	68.2	-5.0	2.89 H	212	38.6	24.6
Antenna Polarity & Test Distance : Vertical at								
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	67.8 PK	74.0	-6.2	2.23 V	231	46.9	20.9
2	5150.00	53.2 AV	54.0	-0.8	2.23 V	231	32.3	20.9
3	*5180.00	120.0 PK			2.23 V	231	78.8	41.2
4	*5180.00	110.7 AV			2.23 V	231	69.5	41.2
5	#10360.00	63.4 PK	68.2	-4.8	2.50 V	274	38.8	24.6

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 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	20.9°C, 76.8% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	63.1 PK	74.0	-10.9	3.04 H	196	42.2	20.9
2	5150.00	50.4 AV	54.0	-3.6	3.04 H	196	29.5	20.9
3	*5200.00	119.1 PK			3.04 H	196	78.0	41.1
4	*5200.00	109.9 AV			3.04 H	196	68.8	41.1
5	5403.90	61.6 PK	74.0	-12.4	3.04 H	196	40.2	21.4
6	5403.90	49.5 AV	54.0	-4.5	3.04 H	196	28.1	21.4
7	#10400.00	63.7 PK	68.2	-4.5	2.91 H	209	38.9	24.8
Antenna Polarity & Test Distance : Vertical at								
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	69.0 PK	74.0	-5.0	2.73 V	231	48.1	20.9
2	5150.00	53.1 AV	54.0	-0.9	2.73 V	231	32.2	20.9
3	*5200.00	123.0 PK			2.73 V	231	81.9	41.1
4	*5200.00	113.1 AV			2.73 V	231	72.0	41.1
5	5395.00	63.8 PK	74.0	-10.2	2.73 V	231	42.5	21.3
6	5395.00	51.3 AV	54.0	-2.7	2.73 V	231	30.0	21.3
7	#10400.00	64.0 PK	68.2	-4.2	2.56 V	277	39.2	24.8

Remarks:

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

RF Mode	802.11a	**Channel**	CH 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	20.9°C, 76.8% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*5240.00	120.8 PK			3.12 H	196	79.9	40.9
2	*5240.00	110.7 AV			3.12 H	196	69.8	40.9
3	5444.00	62.0 PK	74.0	-12.0	3.12 H	196	40.5	21.5
4	5444.00	49.3 AV	54.0	-4.7	3.12 H	196	27.8	21.5
5	#10480.00	63.7 PK	68.2	-4.5	2.95 H	207	38.6	25.1
6	15720.00	66.6 PK	74.0	-7.4	1.60 H	35	38.9	27.7
7	**15720.00**	**53.9 AV**	**54.0**	**-0.1**	**1.60 H**	**35**	**26.2**	**27.7**
Antenna Polarity & Test Distance : Vertical at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*5240.00	124.1 PK			2.53 V	231	83.2	40.9
2	*5240.00	114.1 AV			2.53 V	231	73.2	40.9
3	5434.00	63.2 PK	74.0	-10.8	2.53 V	231	41.8	21.4
4	5434.00	52.9 AV	54.0	-1.1	2.53 V	231	31.5	21.4
5	#10480.00	64.4 PK	68.2	-3.8	2.48 V	276	39.3	25.1
6	15720.00	66.0 PK	74.0	-8.0	N/A V	N/A	38.3	27.7
7	15720.00	53.1 AV	54.0	-0.9	N/A V	N/A	25.4	27.7

Remarks:

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

RF Mode	802.11a	**Channel**	CH 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	*5745.00	120.9 PK			2.32 H	51	78.9	42.0
2	*5745.00	110.5 AV			2.32 H	51	68.5	42.0
3	11490.00	64.5 PK	74.0	-9.5	2.43 H	22	37.2	27.3
4	11490.00	50.6 AV	54.0	-3.4	2.43 H	22	23.3	27.3
Antenna Polarity & Test Distance : Vertical at								
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	*5745.00	122.8 PK			2.77 V	230	80.8	42.0
2	*5745.00	112.3 AV			2.77 V	230	70.3	42.0
3	11490.00	64.0 PK	74.0	-10.0	1.79 V	31	36.7	27.3
4	11490.00	50.1 AV	54.0	-3.9	1.79 V	31	22.8	27.3

Remarks:

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

RF Mode	802.11a	**Channel**	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	*5785.00	120.6 PK			2.39 H	55	78.4	42.2
2	*5785.00	110.5 AV			2.39 H	55	68.3	42.2
3	11570.00	64.6 PK	74.0	-9.4	2.49 H	25	37.0	27.6
4	11570.00	50.8 AV	54.0	-3.2	2.49 H	25	23.2	27.6
Antenna Polarity & Test Distance : Vertical at								
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	*5785.00	122.0 PK			2.46 V	257	79.8	42.2
2	*5785.00	112.3 AV			2.46 V	257	70.1	42.2
3	11570.00	64.1 PK	74.0	-9.9	1.83 V	35	36.5	27.6
4	11570.00	50.2 AV	54.0	-3.8	1.83 V	35	22.6	27.6

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 = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	*5825.00	118.6 PK			2.36 H	51	76.2	42.4
2	*5825.00	108.9 AV			2.36 H	51	66.5	42.4
3	11650.00	63.9 PK	74.0	-10.1	2.49 H	29	37.0	26.9
4	11650.00	50.1 AV	54.0	-3.9	2.49 H	29	23.2	26.9
5	#17475.00	67.4 PK	68.2	-0.8	2.69 H	48	32.7	34.7
Antenna Polarity & Test Distance : Vertical at								
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	*5825.00	120.9 PK			2.84 V	263	78.5	42.4
2	*5825.00	111.2 AV			2.84 V	263	68.8	42.4
3	11650.00	63.5 PK	74.0	-10.5	1.80 V	37	36.6	26.9
4	11650.00	49.5 AV	54.0	-4.5	1.80 V	37	22.6	26.9
5	#17475.00	66.8 PK	68.2	-1.4	3.60 V	2	32.1	34.7

Remarks:

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

RF Mode	802.11ax (HE20)	**Channel**	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	20.9°C, 76.8% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	63.3 PK	74.0	-10.7	2.98 H	206	42.4	20.9
2	5150.00	50.6 AV	54.0	-3.4	2.98 H	206	29.7	20.9
3	*5180.00	117.7 PK			2.98 H	206	76.5	41.2
4	*5180.00	105.7 AV			2.98 H	206	64.5	41.2
5	#10360.00	63.1 PK	68.2	-5.1	2.85 H	216	38.5	24.6
Antenna Polarity & Test Distance : Vertical at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	64.7 PK	74.0	-9.3	2.68 V	238	43.8	20.9
2	5150.00	53.5 AV	54.0	-0.5	2.68 V	238	32.6	20.9
3	*5180.00	120.6 PK			2.68 V	238	79.4	41.2
4	*5180.00	109.0 AV			2.68 V	238	67.8	41.2
5	#10360.00	63.4 PK	68.2	-4.8	2.47 V	278	38.8	24.6

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 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	20.9°C, 76.8% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	64.9 PK	74.0	-9.1	3.10 H	203	44.0	20.9
2	5150.00	51.4 AV	54.0	-2.6	3.10 H	203	30.5	20.9
3	*5200.00	120.7 PK			3.10 H	203	79.6	41.1
4	*5200.00	108.1 AV			3.10 H	203	67.0	41.1
5	#10400.00	63.7 PK	68.2	-4.5	2.91 H	205	38.9	24.8
Antenna Polarity & Test Distance : Vertical at								
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	5146.00	70.2 PK	74.0	-3.8	2.57 V	236	49.3	20.9
2	5146.00	53.6 AV	54.0	-0.4	2.57 V	236	32.7	20.9
3	*5200.00	123.4 PK			2.57 V	236	82.3	41.1
4	*5200.00	111.5 AV			2.57 V	236	70.4	41.1
5	#10400.00	63.9 PK	68.2	-4.3	2.56 V	274	39.1	24.8

Remarks:

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

RF Mode	802.11ax (HE20)	**Channel**	CH 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	20.9°C, 76.8% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*5240.00	121.6 PK			2.92 H	205	80.7	40.9
2	*5240.00	110.3 AV			2.92 H	205	69.4	40.9
3	5350.00	62.2 PK	74.0	-11.8	2.92 H	205	41.2	21.0
4	5350.00	48.8 AV	54.0	-5.2	2.92 H	205	27.8	21.0
5	#10480.00	63.8 PK	68.2	-4.4	2.88 H	211	38.7	25.1
6	15720.00	66.8 PK	74.0	-7.2	1.42 H	37	39.1	27.7
7	**15720.00**	**53.9 AV**	**54.0**	**-0.1**	**1.42 H**	**37**	**26.2**	**27.7**
Antenna Polarity & Test Distance : Vertical at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*5240.00	124.5 PK			2.77 V	236	83.6	40.9
2	*5240.00	113.0 AV			2.77 V	236	72.1	40.9
3	5442.00	63.0 PK	74.0	-11.0	2.77 V	236	41.5	21.5
4	5442.00	51.1 AV	54.0	-2.9	2.77 V	236	29.6	21.5
5	#10480.00	64.0 PK	68.2	-4.2	2.55 V	284	38.9	25.1
6	15720.00	66.2 PK	74.0	-7.8	2.71 V	339	38.5	27.7
7	15720.00	53.3 AV	54.0	-0.7	2.71 V	339	25.6	27.7

Remarks:

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

RF Mode	802.11ax (HE20)	**Channel**	CH 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	*5745.00	121.6 PK			2.40 H	52	79.6	42.0
2	*5745.00	110.1 AV			2.40 H	52	68.1	42.0
3	11490.00	64.6 PK	74.0	-9.4	2.52 H	36	37.3	27.3
4	11490.00	50.6 AV	54.0	-3.4	2.52 H	36	23.3	27.3
Antenna Polarity & Test Distance : Vertical at								
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	*5745.00	123.0 PK			2.80 V	230	81.0	42.0
2	*5745.00	112.0 AV			2.80 V	230	70.0	42.0
3	11490.00	64.2 PK	74.0	-9.8	1.85 V	34	36.9	27.3
4	11490.00	50.3 AV	54.0	-3.7	1.85 V	34	23.0	27.3

Remarks:

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

RF Mode	802.11ax (HE20)	**Channel**	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	*5785.00	122.6 PK			2.46 H	52	80.4	42.2
2	*5785.00	110.2 AV			2.46 H	52	68.0	42.2
3	11570.00	64.7 PK	74.0	-9.3	2.52 H	20	37.1	27.6
4	11570.00	50.7 AV	54.0	-3.3	2.52 H	20	23.1	27.6
Antenna Polarity & Test Distance : Vertical at								
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	*5785.00	124.2 PK			2.88 V	261	82.0	42.2
2	*5785.00	112.0 AV			2.88 V	261	69.8	42.2
3	11570.00	64.1 PK	74.0	-9.9	1.91 V	39	36.5	27.6
4	11570.00	50.3 AV	54.0	-3.7	1.91 V	39	22.7	27.6

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 = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	*5825.00	122.1 PK			2.38 H	52	79.7	42.4
2	*5825.00	109.7 AV			2.38 H	52	67.3	42.4
3	11650.00	64.1 PK	74.0	-9.9	2.43 H	30	37.2	26.9
4	11650.00	50.0 AV	54.0	-4.0	2.43 H	30	23.1	26.9
5	#17475.00	67.5 PK	68.2	-0.7	2.71 H	45	32.8	34.7
Antenna Polarity & Test Distance : Vertical at								
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	*5825.00	123.3 PK			2.89 V	265	80.9	42.4
2	*5825.00	111.6 AV			2.89 V	265	69.2	42.4
3	11650.00	63.7 PK	74.0	-10.3	1.88 V	35	36.8	26.9
4	11650.00	49.7 AV	54.0	-4.3	1.88 V	35	22.8	26.9
5	#17475.00	67.0 PK	68.2	-1.2	3.52 V	0	32.3	34.7

Remarks:

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

RF Mode	802.11ax (HE40)	**Channel**	CH 38：5190 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	64.6 PK	74.0	-9.4	2.97 H	202	43.7	20.9
2	5150.00	51.0 AV	54.0	-3.0	2.97 H	202	30.1	20.9
3	*5190.00	114.3 PK			2.97 H	202	73.2	41.1
4	*5190.00	101.3 AV			2.97 H	202	60.2	41.1
5	#10380.00	61.9 PK	68.2	-6.3	2.73 H	219	37.2	24.7
Antenna Polarity & Test Distance : Vertical at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	68.4 PK	74.0	-5.6	1.72 V	239	47.5	20.9
2	5150.00	53.6 AV	54.0	-0.4	1.72 V	239	32.7	20.9
3	*5190.00	116.3 PK			1.72 V	239	75.2	41.1
4	*5190.00	103.9 AV			1.72 V	239	62.8	41.1
5	#10380.00	62.5 PK	68.2	-5.7	2.92 V	293	37.8	24.7

Remarks:

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

RF Mode	802.11ax (HE40)	**Channel**	CH 46：5230 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
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	2.95 H	205	46.8	20.9
2	5150.00	52.3 AV	54.0	-1.7	2.95 H	205	31.4	20.9
3	*5230.00	117.0 PK			2.95 H	205	76.1	40.9
4	*5230.00	104.3 AV			2.95 H	205	63.4	40.9
5	5350.00	63.2 PK	74.0	-10.8	2.95 H	205	42.2	21.0
6	5350.00	49.5 AV	54.0	-4.5	2.95 H	205	28.5	21.0
7	#10460.00	62.0 PK	68.2	-6.2	2.81 H	222	36.9	25.1
Antenna Polarity & Test Distance : Vertical at								
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	69.4 PK	74.0	-4.6	2.75 V	231	48.5	20.9
2	5150.00	53.7 AV	54.0	-0.3	2.75 V	231	32.8	20.9
3	*5230.00	119.5 PK			2.75 V	231	78.6	40.9
4	*5230.00	106.9 AV			2.75 V	231	66.0	40.9
5	5350.00	64.5 PK	74.0	-9.5	2.75 V	231	43.5	21.0
6	5350.00	50.1 AV	54.0	-3.9	2.75 V	231	29.1	21.0
7	#10460.00	62.4 PK	68.2	-5.8	2.98 V	291	37.3	25.1

Remarks:

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

RF Mode	802.11ax (HE40)	**Channel**	CH 151：5755 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5650.00	65.5 PK	68.2	-2.7	2.39 H	52	43.6	21.9
2	*5755.00	118.3 PK			2.39 H	52	76.2	42.1
3	*5755.00	105.9 AV			2.39 H	52	63.8	42.1
4	11510.00	64.5 PK	74.0	-9.5	2.40 H	25	37.0	27.5
5	11510.00	50.5 AV	54.0	-3.5	2.40 H	25	23.0	27.5
Antenna Polarity & Test Distance : Vertical at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5650.00	67.5 PK	68.2	-0.7	2.88 V	260	45.6	21.9
2	*5755.00	120.5 PK			2.88 V	260	78.4	42.1
3	*5755.00	107.9 AV			2.88 V	260	65.8	42.1
4	11510.00	64.2 PK	74.0	-9.8	1.85 V	37	36.7	27.5
5	11510.00	50.2 AV	54.0	-3.8	1.85 V	37	22.7	27.5

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 159：5795 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5650.00	65.0 PK	68.2	-3.2	2.37 H	54	43.1	21.9
2	*5795.00	119.0 PK			2.37 H	54	76.8	42.2
3	*5795.00	106.4 AV			2.37 H	54	64.2	42.2
4	11590.00	64.6 PK	74.0	-9.4	2.50 H	25	37.0	27.6
5	11590.00	50.6 AV	54.0	-3.4	2.50 H	25	23.0	27.6
Antenna Polarity & Test Distance : Vertical at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5650.00	67.3 PK	68.2	-0.9	2.90 V	230	45.4	21.9
2	*5795.00	121.4 PK			2.90 V	230	79.2	42.2
3	*5795.00	108.6 AV			2.90 V	230	66.4	42.2
4	11590.00	64.4 PK	74.0	-9.6	1.83 V	33	36.8	27.6
5	11590.00	50.4 AV	54.0	-3.6	1.83 V	33	22.8	27.6

Remarks:

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

RF Mode	802.11ax (HE80)	**Channel**	CH 42：5210 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	64.2 PK	74.0	-9.8	2.89 H	200	43.3	20.9
2	5150.00	51.8 AV	54.0	-2.2	2.89 H	200	30.9	20.9
3	*5210.00	110.5 PK			2.89 H	200	69.5	41.0
4	*5210.00	98.4 AV			2.89 H	200	57.4	41.0
5	#10420.00	62.1 PK	68.2	-6.1	2.69 H	217	37.3	24.8
Antenna Polarity & Test Distance : Vertical at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	66.2 PK	74.0	-7.8	2.74 V	233	45.3	20.9
2	5150.00	53.3 AV	54.0	-0.7	2.74 V	233	32.4	20.9
3	*5210.00	112.9 PK			2.74 V	233	71.9	41.0
4	*5210.00	100.8 AV			2.74 V	233	59.8	41.0
5	#10420.00	62.3 PK	68.2	-5.9	3.01 V	287	37.5	24.8

Remarks:

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

RF Mode	802.11ax (HE80)	**Channel**	CH 155：5775 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120Vac,60Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5650.00	65.9 PK	68.2	-2.3	2.44 H	55	44.0	21.9
2	*5775.00	113.7 PK			2.44 H	55	71.6	42.1
3	*5775.00	100.9 AV			2.44 H	55	58.8	42.1
4	11550.00	64.5 PK	74.0	-9.5	2.50 H	25	36.9	27.6
5	11550.00	50.4 AV	54.0	-3.6	2.50 H	25	22.8	27.6
Antenna Polarity & Test Distance : Vertical at								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5650.00	67.4 PK	68.2	-0.8	2.99 V	230	45.5	21.9
2	*5775.00	115.1 PK			2.99 V	230	73.0	42.1
3	*5775.00	102.7 AV			2.99 V	230	60.6	42.1
4	11550.00	64.2 PK	74.0	-9.8	1.88 V	37	36.6	27.6
5	11550.00	50.1 AV	54.0	-3.9	1.88 V	37	22.5	27.6

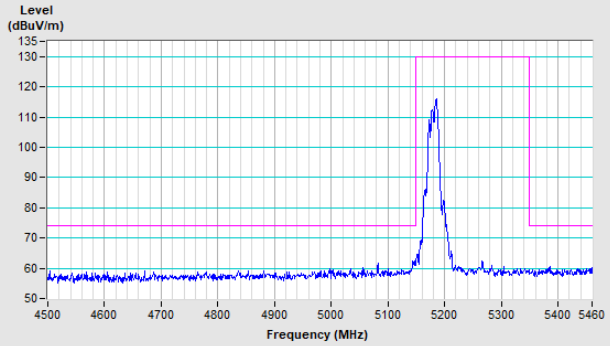
Remarks:

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.

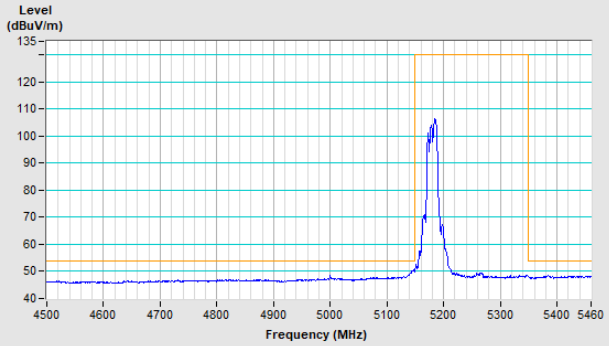
Plot of Band Edge

802.11a Channel 36

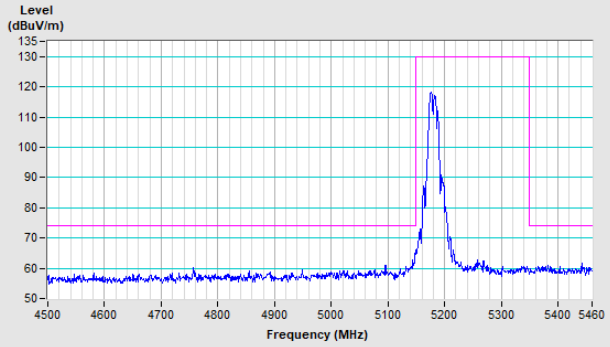
Horizontal (Peak)



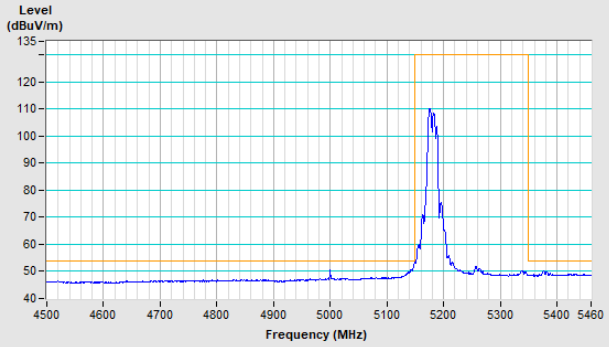
Horizontal (Average)



Vertical (Peak)

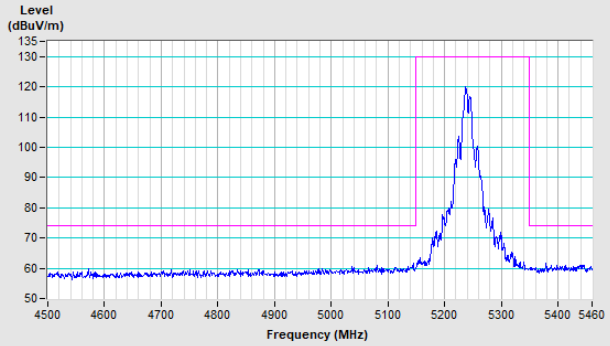


Vertical (Average)

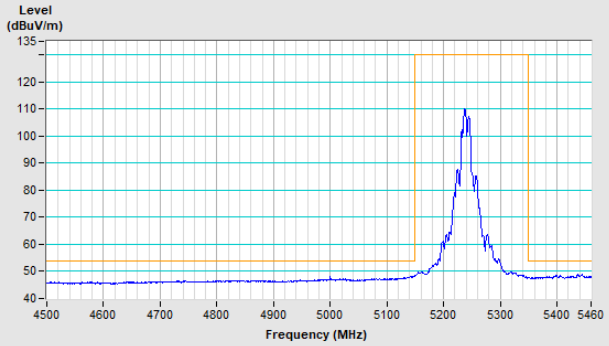


802.11a Channel 48

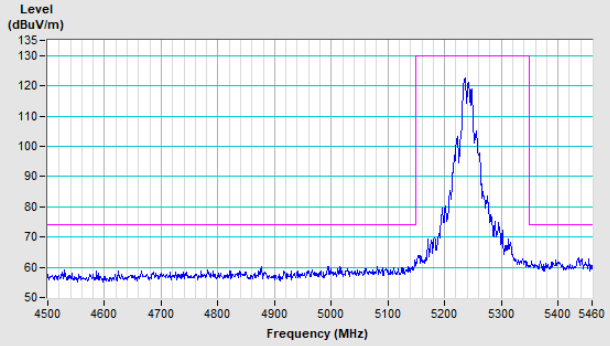
Horizontal (Peak)



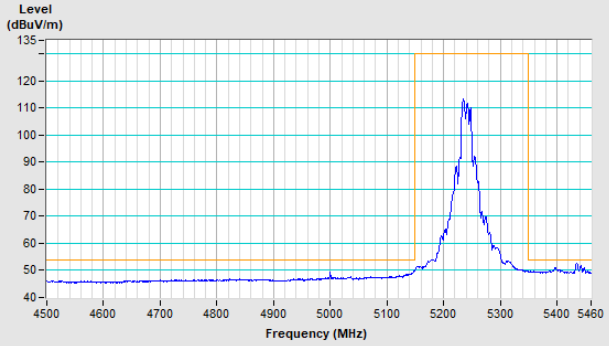
Horizontal (Average)



Vertical (Peak)

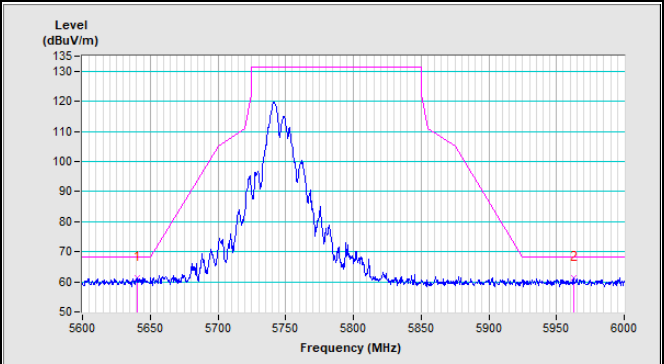


Vertical (Average)

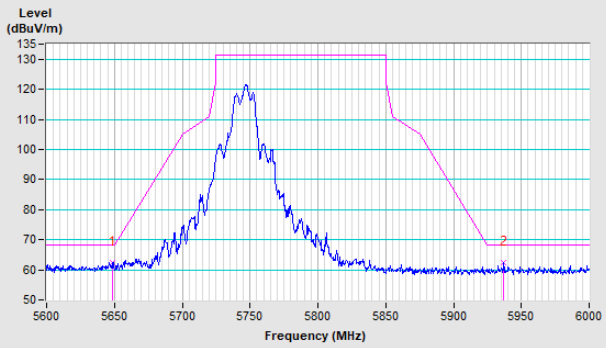


802.11a Channel 149

Horizontal (Peak)

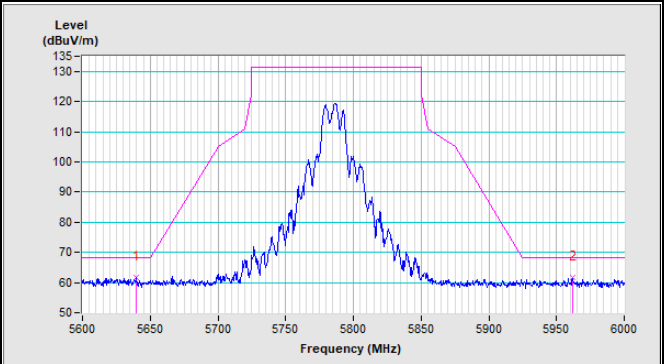


Vertical (Peak)

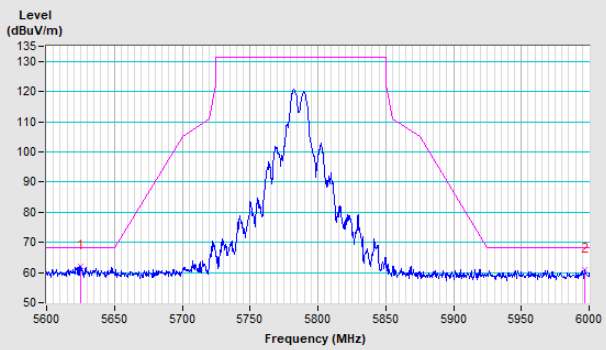


802.11a Channel 157

Horizontal (Peak)

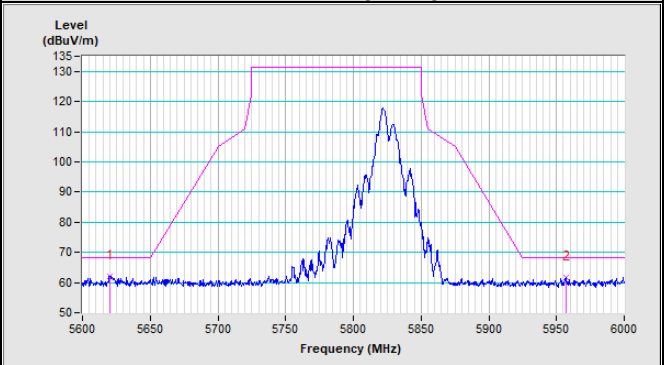


Vertical (Peak)

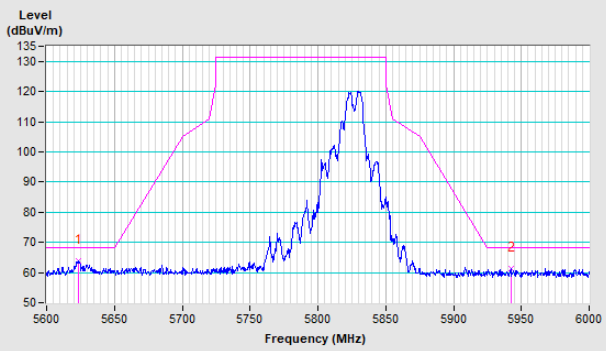


802.11a Channel 165

Horizontal (Peak)

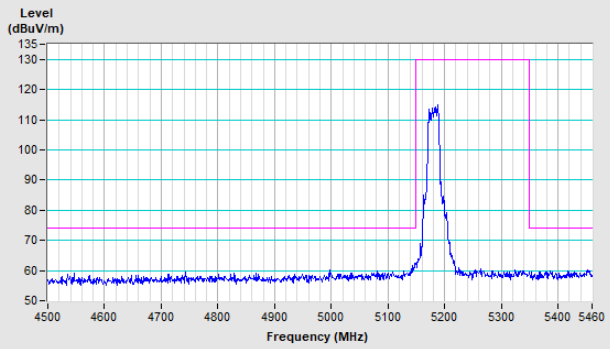


Vertical (Peak)

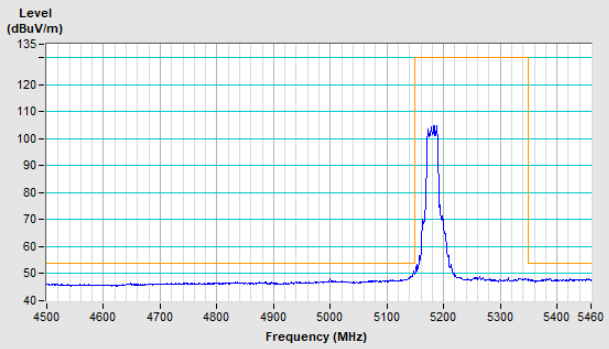


802.11ax (HE20) Channel 36

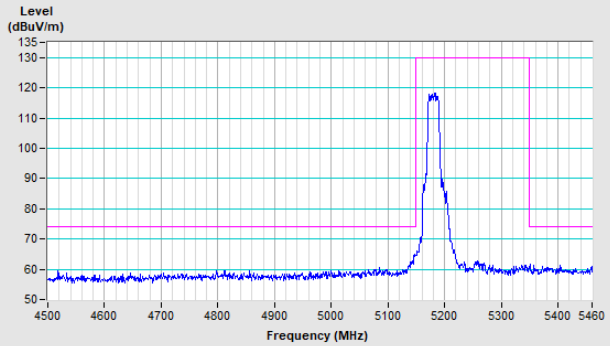
Horizontal (Peak)



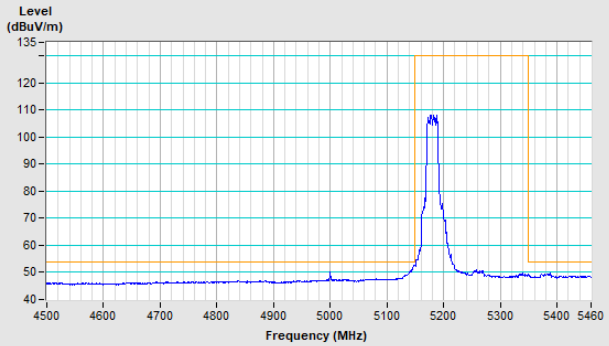
Horizontal (Average)



Vertical (Peak)

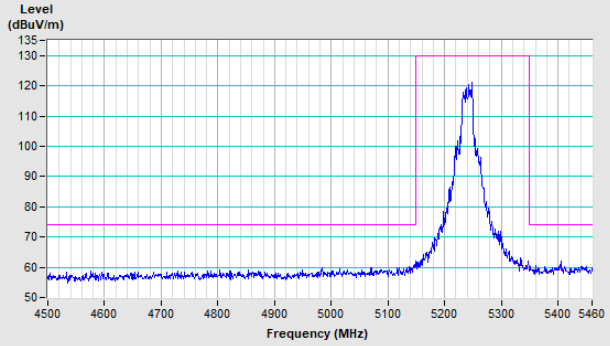


Vertical (Average)

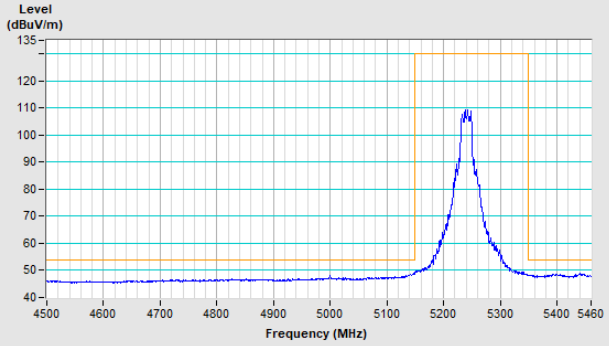


802.11ax (HE20) Channel 48

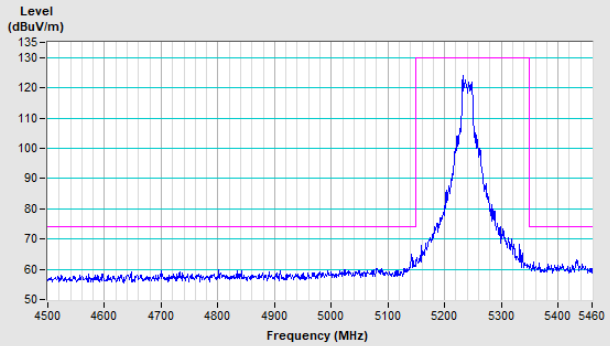
Horizontal (Peak)



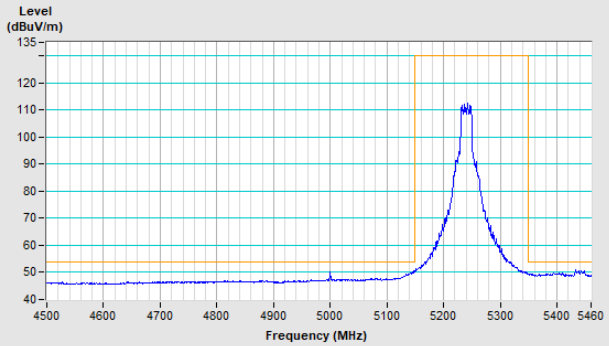
Horizontal (Average)



Vertical (Peak)

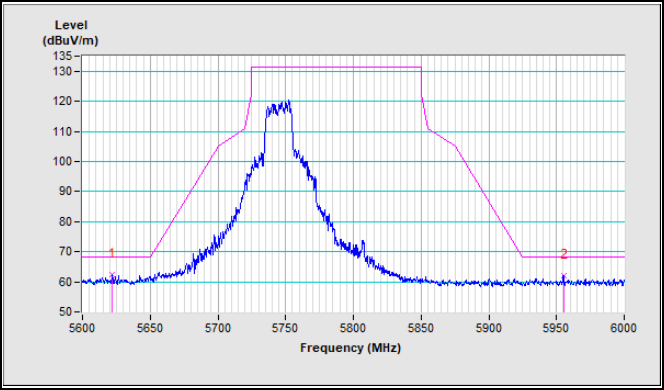


Vertical (Average)

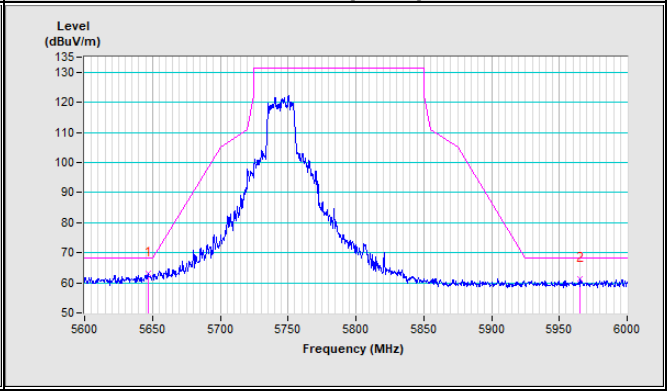


802.11ax (HE20) Channel 149

Horizontal (Peak)

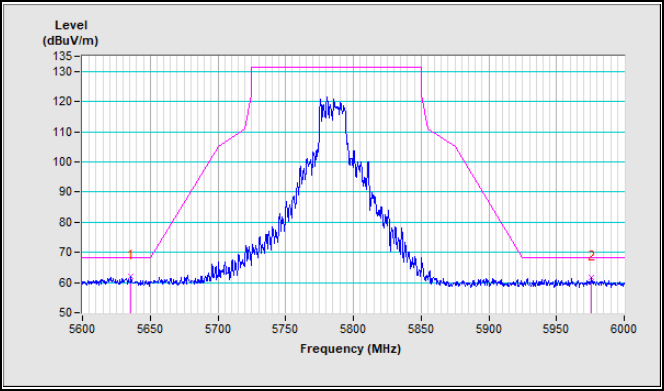


Vertical (Peak)

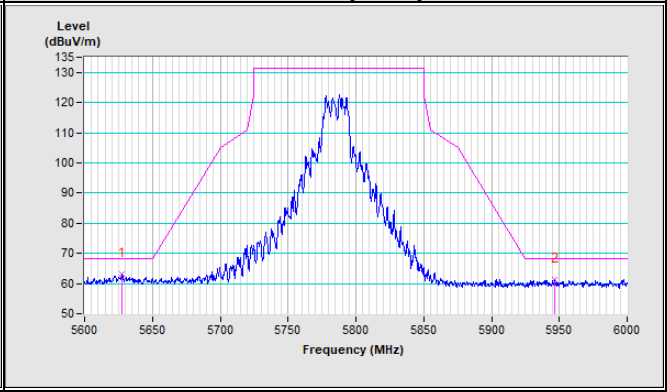


802.11ax (HE20) Channel 157

Horizontal (Peak)

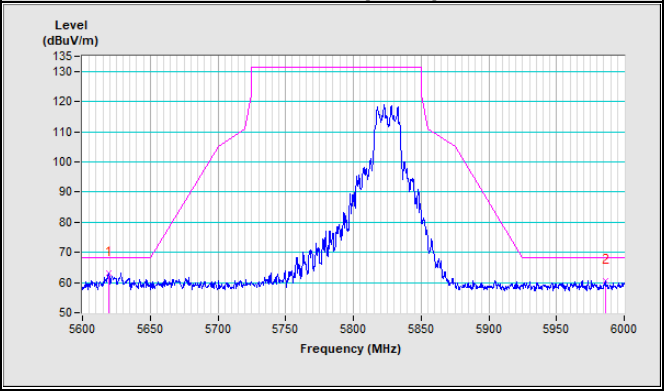


Vertical (Peak)

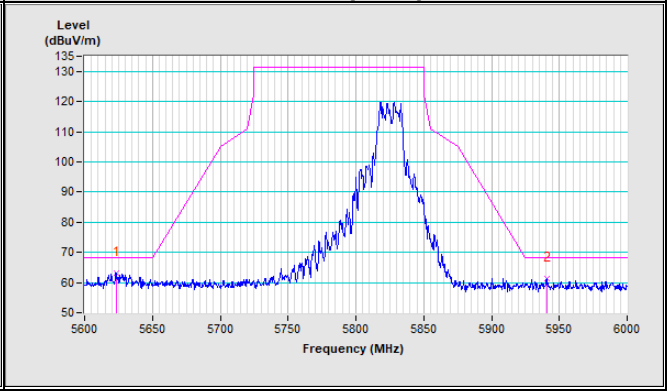


802.11ax (HE20) Channel 165

Horizontal (Peak)

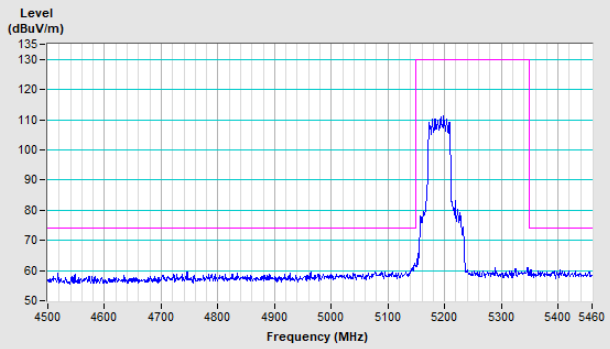


Vertical (Peak)

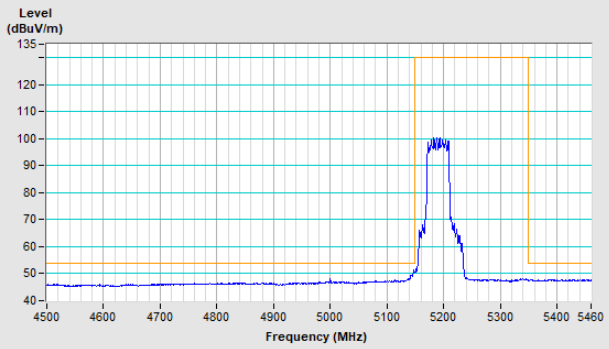


802.11ax (HE40) Channel 38

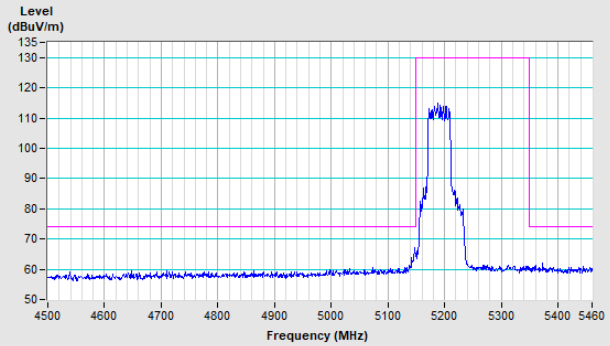
Horizontal (Peak)



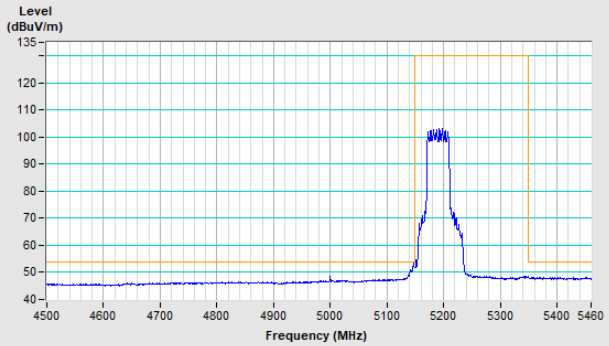
Horizontal (Average)



Vertical (Peak)

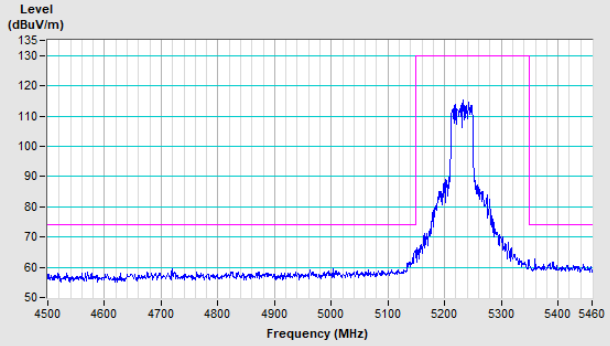


Vertical (Average)

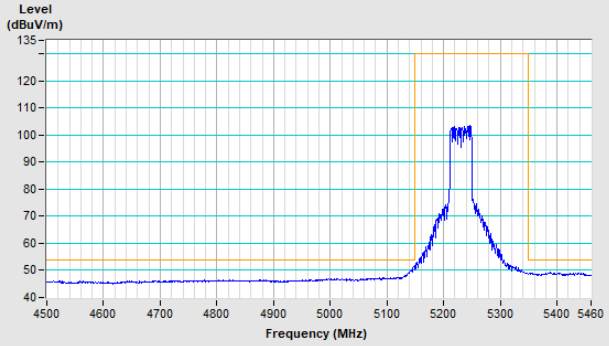


802.11ax (HE40) Channel 46

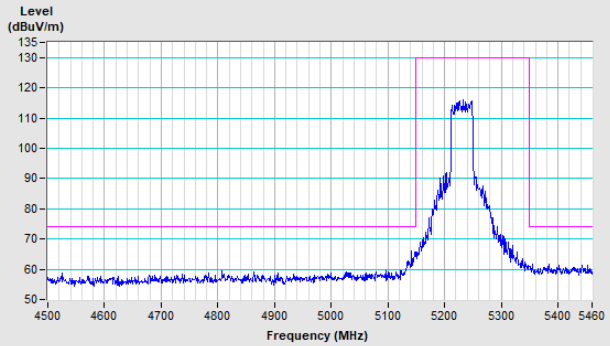
Horizontal (Peak)



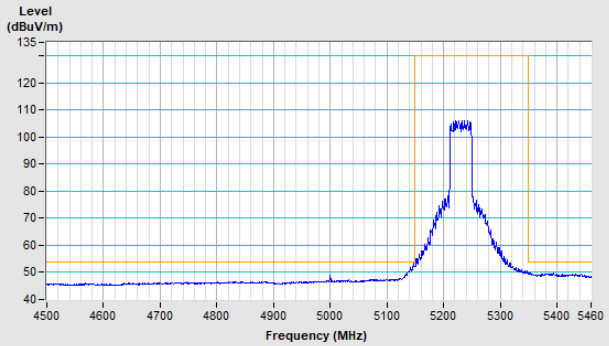
Horizontal (Average)

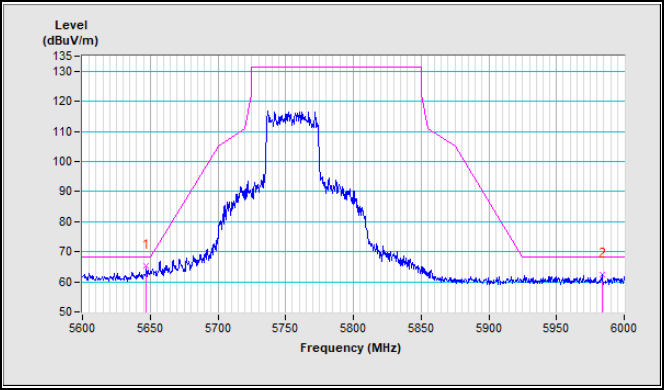
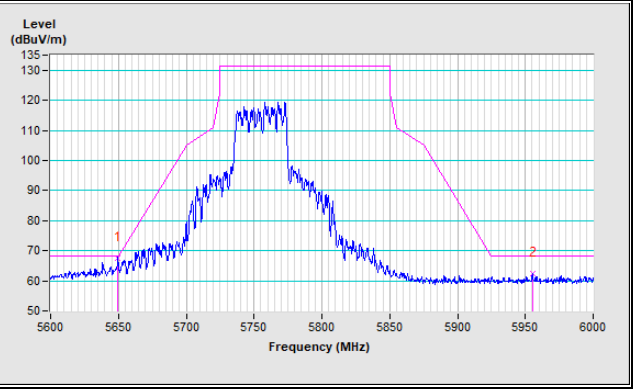


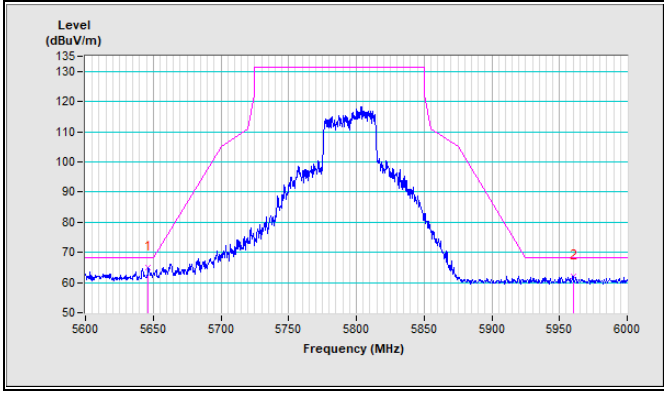
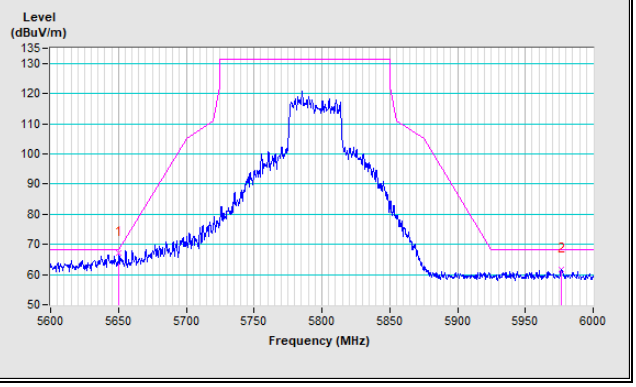
Vertical (Peak)



Vertical (Average)

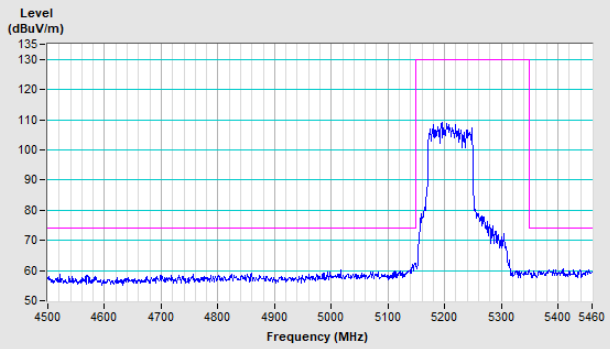


802.11ax (HE40) Channel 151	
Horizontal (Peak)	**Vertical (Peak)**
	

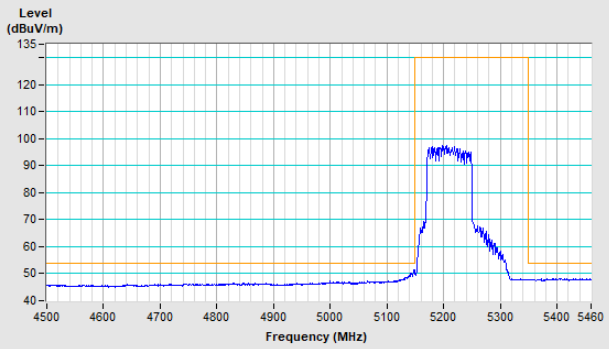
802.11ax (HE40) Channel 159	
Horizontal (Peak)	**Vertical (Peak)**
	

802.11ax (HE80) Channel 42

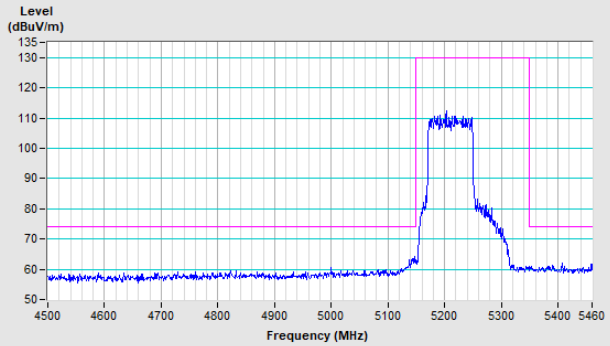
Horizontal (Peak)



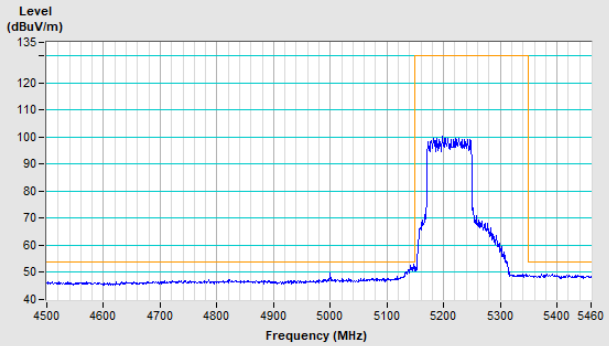
Horizontal (Average)



Vertical (Peak)

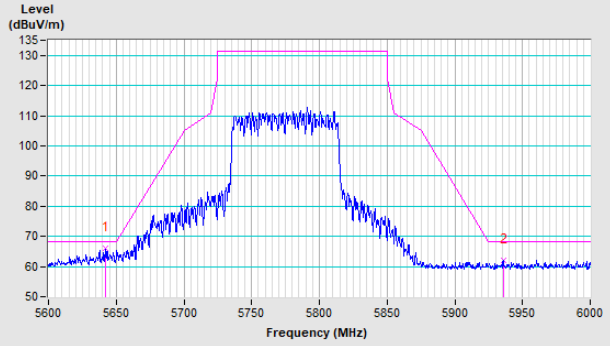


Vertical (Average)

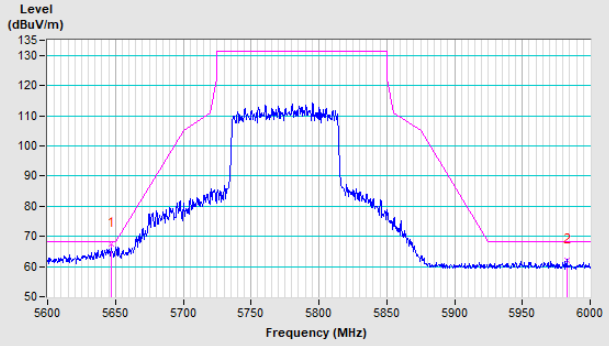


802.11ax (HE80) Channel 155

Horizontal (Peak)



Vertical (Peak)



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

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

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

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

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

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