TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFBFBE-WTW-P22031259-2
FCC ID:	I88EX5512-T0
Model No.:	EX5512-T0
Received Date:	2022/6/1
Test Date:	2022/6/8 ~ 2022/7/20
Issued Date:	2022/8/24
Applicant:	Zyxel Communications Corporation
Address:	No.2 Industry East RD. IX, Hsinchu Science Park, Hsinchu 30075, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Approved by: _____ , **Date:** 2022/8/24

May Chen / Manager

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Prepared by : Vivian Huang / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBFBE-WTW-P22031259-2	Original release.	2022/8/24

1 Certificate

Product:	AX6000 WiFi 6 Multi-Gigabit Ethernet Gateway
Brand:	ZYXEL
Test Model:	EX5512-T0
Sample Status:	Engineering sample
Applicant:	Zyxel Communications Corporation
Test Date:	2022/6/8 ~ 2022/7/20
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407)
Measurement procedure:	ANSI C63.10-2013 KDB 291074 D02 EMC Measurement v01 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)(3)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(3)	Power Spectral Density	Pass	Meet the requirement of limit.
15.407(b)(9)	AC Power Conducted Emissions	Pass	Minimum passing margin is -9.52 dB at 0.36484 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -3.3 dB at 42.93 MHz
15.407(b) (5) 15.407(b) (8)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.6 dB at 5635.52 MHz
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.403	Operational restrictions U-NII 4 devices	-	Declaration by applicant.
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) (±)
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.4 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.0 dB
	18 GHz ~ 40 GHz	5.3 dB

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

2.2 Supplementary Information

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

3 General Information

3.1 General Description of EUT

Product	AX6000 WiFi 6 Multi-Gigabit Ethernet Gateway
Brand	ZYXEL
Test Model	EX5512-T0
Status of EUT	Engineering sample
CPU Model No.	MT7986A
RF Chip Model No.	2.4G Chip Model: MT7976G 5G Chip Model: MT7976A
FW Version	V5.70(ACEG.0)b3
Power Supply Rating	12Vdc from Adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode 1024QAM for OFDMA in 11ax mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps
Operating Frequency	5845 ~ 5885 MHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 3 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1 802.11ac (VHT160), 802.11ax (HE160): 1
Output Power	**CDD Mode:** EIRP: 2454.709 mW (33.9 dBm) **Beamforming Mode:** EIRP: 3953.666 mW (35.97 dBm)
EUT Category	Indoor access point
Accessory Device	- AC Adapter x1, Brand:MNC, Model:MAUS-1202503000 - Ethernet Cable x1 (1m, Non-shielded)

Note:

1. The EUT power needs to be supplied from a power adapter, the information is as below table:

Brand	Model	Specification
MNC	MAUS-1202503000	AC Input : 100-240V 50/60Hz, 0.8A DC Output : 12V/2.5A DC Cable : 1.5m, Non-shielded

2. Simultaneously transmission condition.

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

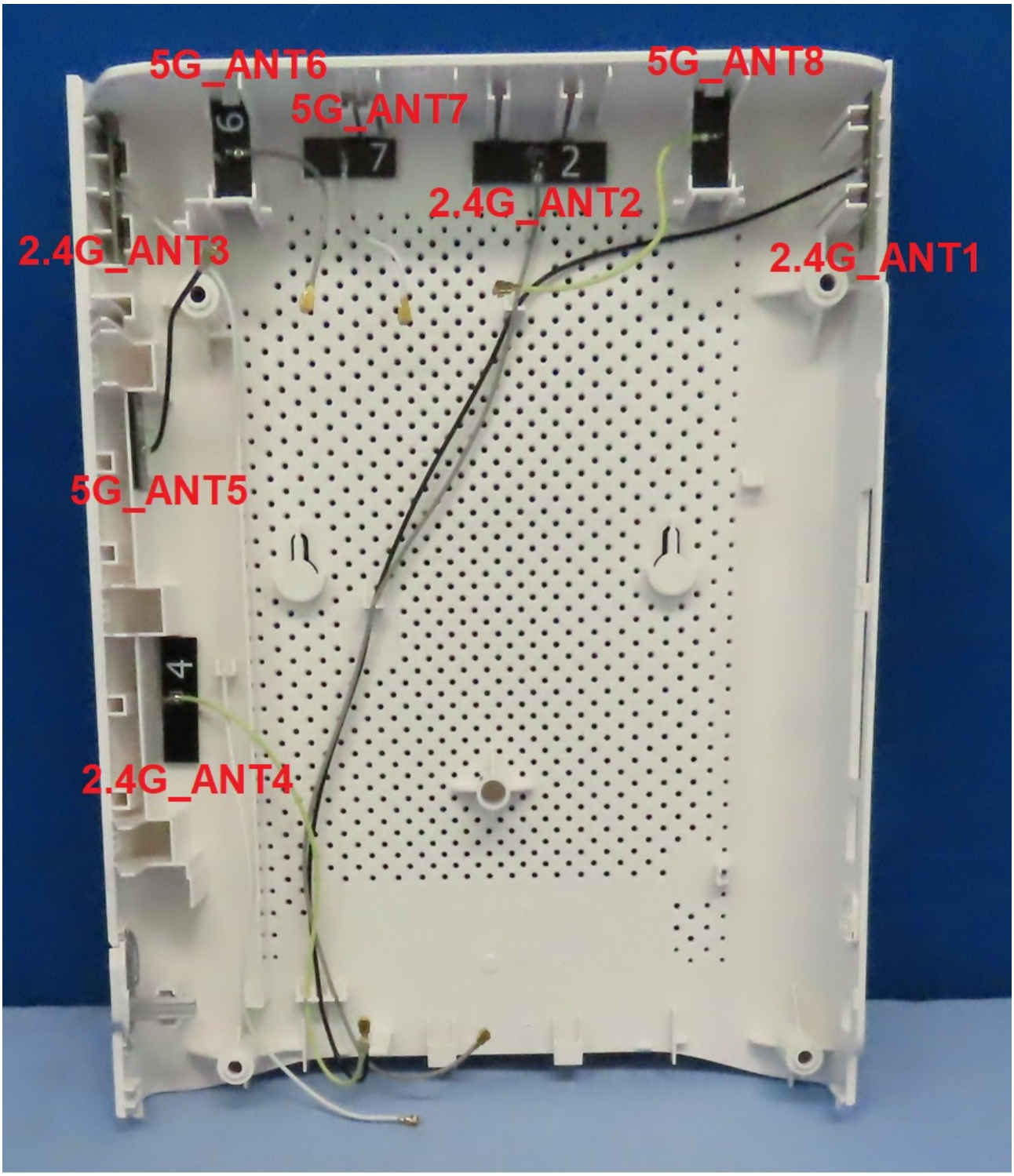
3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
2G_ANT1	2G_Chain2	M.gear	56-001-000240Z	2.6	2.4~2.4835	Dipole	ipex(MHF)
2G_ANT2	2G_Chain0	M.gear	56-001-000241Z	3.3	2.4~2.4835	Dipole	ipex(MHF)
2G_ANT3	2G_Chain1	M.gear	56-001-000247Z	3.1	2.4~2.4835	Dipole	ipex(MHF)
2G_ANT4	2G_Chain3	M.gear	56-001-000242Z	3.2	2.4~2.4835	Dipole	ipex(MHF)
5G_ANT5	5G_Chain0	M.gear	56-001-000243Z	3.2	5.15~5.25	Dipole	ipex(MHF)
				3.4	5.25~5.35		
				4.0	5.47~5.725		
				3.3	5.725~5.85		
				3.6	5.850~5.895		
5G_ANT6	5G_Chain1	M.gear	56-001-000244Z	2.5	5.15~5.25	Dipole	ipex(MHF)
				2.2	5.25~5.35		
				3.2	5.47~5.725		
				2.4	5.725~5.85		
				2.7	5.850~5.895		
5G_ANT7	5G_Chain2	M.gear	56-001-000245Z	3.6	5.15~5.25	Dipole	ipex(MHF)
				3.8	5.25~5.35		
				3.9	5.47~5.725		
				3.8	5.725~5.85		
				4.2	5.850~5.895		
5G_ANT8	5G_Chain3	M.gear	56-001-000246Z	2.4	5.15~5.25	Dipole	ipex(MHF)
				3.4	5.25~5.35		
				3.4	5.47~5.725		
				3.2	5.725~5.85		
				3.2	5.850~5.895		

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

* Antenna port location



2. The EUT incorporates a MIMO function:

5 GHz Band		
Modulation Mode	**TX & RX Configuration**	
802.11a	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
802.11ac (VHT20)	4TX	4RX
802.11ac (VHT40)	4TX	4RX
802.11ac (VHT80)	4TX	4RX
802.11ac (VHT160)	4TX	4RX
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
802.11ax (HE80)	4TX	4RX
802.11ax (HE160)	4TX	4RX

Note:
1. All of modulation mode support beamforming function except 802.11a modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz, 160 MHz) and 802.11ax mode for 20 MHz (40 MHz, 80 MHz, 160 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 U-NII-4

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

Channel	Frequency	Channel	Frequency	Channel	Frequency
*169	5845 MHz	173	5865 MHz	177	5885 MHz

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

Channel	Frequency	Channel	Frequency
*167	5835 MHz	175	5875 MHz

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

Channel	Frequency
*171	5855 MHz

1 channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
*163	5815 MHz

Note: * U-NII-3 & -4 span channels.

3.4 Test Mode Applicability and Tested Channel Detail

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

Note: Partial RU (resource unit) configurations not supported.

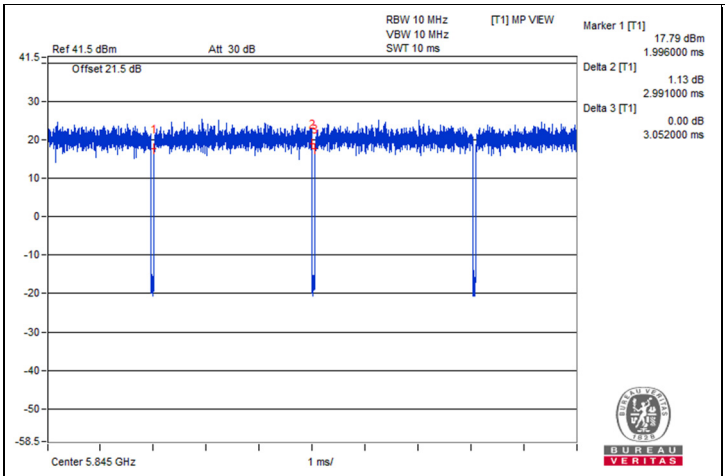
Following channel(s) was (were) selected for the final test as listed below:

Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	802.11a	CDD	169, 173, 177	BPSK	6Mb/s
	802.11ac (VHT20)	CDD & Beamforming	169, 173, 177	BPSK	MCS0
	802.11ac (VHT40)	CDD & Beamforming	167, 175	BPSK	MCS0
	802.11ac (VHT80)	CDD & Beamforming	171	BPSK	MCS0
	802.11ac (VHT160)	CDD & Beamforming	163	BPSK	MCS0
	802.11ax (HE20)	CDD & Beamforming	169, 173, 177	BPSK	MCS0
	802.11ax (HE40)	CDD & Beamforming	167, 175	BPSK	MCS0
	802.11ax (HE80)	CDD & Beamforming	171	BPSK	MCS0
	802.11ax (HE160)	CDD & Beamforming	163	BPSK	MCS0
6 dB Bandwidth / Power Spectral Density	802.11a	CDD	169, 173, 177	BPSK	6Mb/s
	802.11ac (VHT20)	CDD	169, 173, 177	BPSK	MCS0
	802.11ac (VHT40)	CDD	167, 175	BPSK	MCS0
	802.11ac (VHT80)	CDD	171	BPSK	MCS0
	802.11ac (VHT160)	CDD	163	BPSK	MCS0
	802.11ax (HE20)	CDD	169, 173, 177	BPSK	MCS0
	802.11ax (HE40)	CDD	167, 175	BPSK	MCS0
	802.11ax (HE80)	CDD	171	BPSK	MCS0
	802.11ax (HE160)	CDD	163	BPSK	MCS0
Frequency Stability	802.11a	CDD	177	un-modulation	-
AC Power Conducted Emissions	802.11ax (HE40)	CDD	175	BPSK	MCS0
Unwanted Emissions below 1 GHz	802.11ax (HE40)	CDD	175	BPSK	MCS0
Unwanted Emissions above 1 GHz	802.11a	CDD	169, 173, 177	BPSK	6Mb/s
	802.11ax (HE20)	CDD	169, 173, 177	BPSK	MCS0
	802.11ax (HE40)	CDD	167, 175	BPSK	MCS0
	802.11ax (HE80)	CDD	171	BPSK	MCS0
	802.11ax (HE160)	CDD	163	BPSK	MCS0

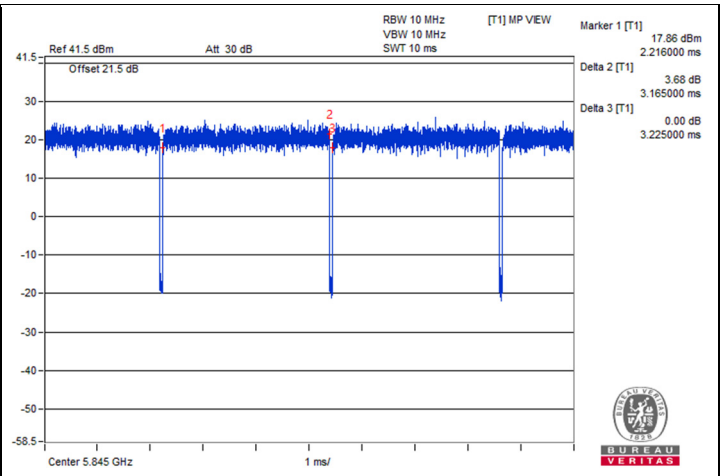
3.5 Duty Cycle of Test Signal

Duty cycle of test signal is >= 98 %, duty factor is not required.
Duty cycle of test signal is < 98 %, duty factor shall be considered.

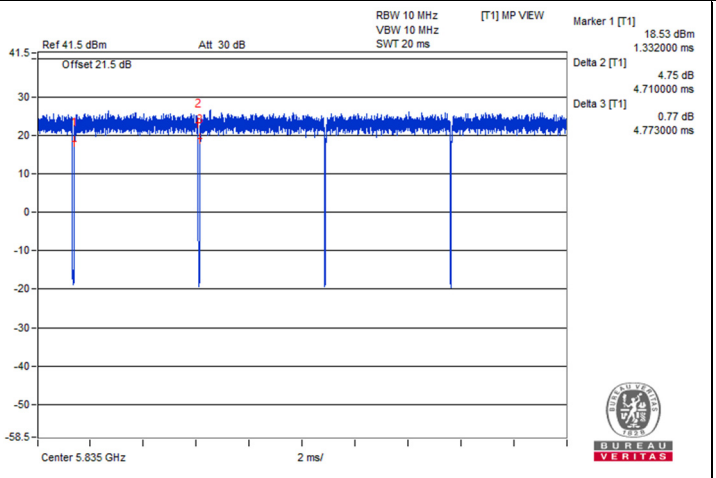
802.11a: Duty cycle = 2.991 ms / 3.052 ms x 100% = 98.0%
802.11ax (HE20): Duty cycle = 3.165 ms / 3.225 ms x 100% = 98.1%
802.11ax (HE40): Duty cycle = 4.710 ms / 4.773 ms x 100% = 98.7%
802.11ax (HE80): Duty cycle = 4.505 ms / 4.585 ms x 100% = 98.3%
802.11ax (HE160): Duty cycle = 4.503 ms / 4.58 ms x 100% = 98.3%



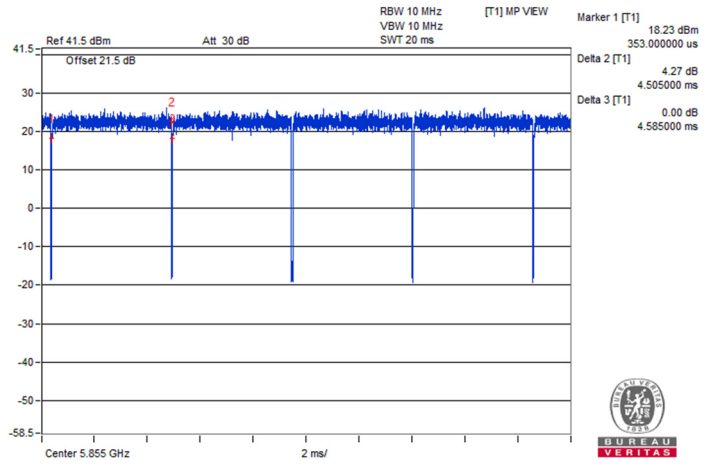
802.11a



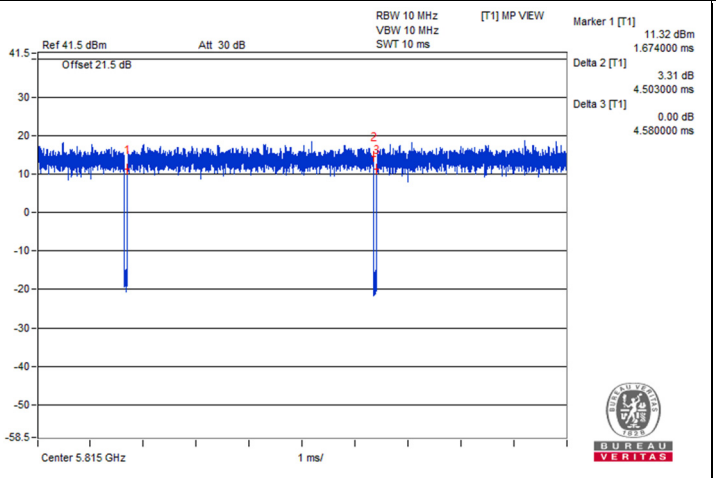
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

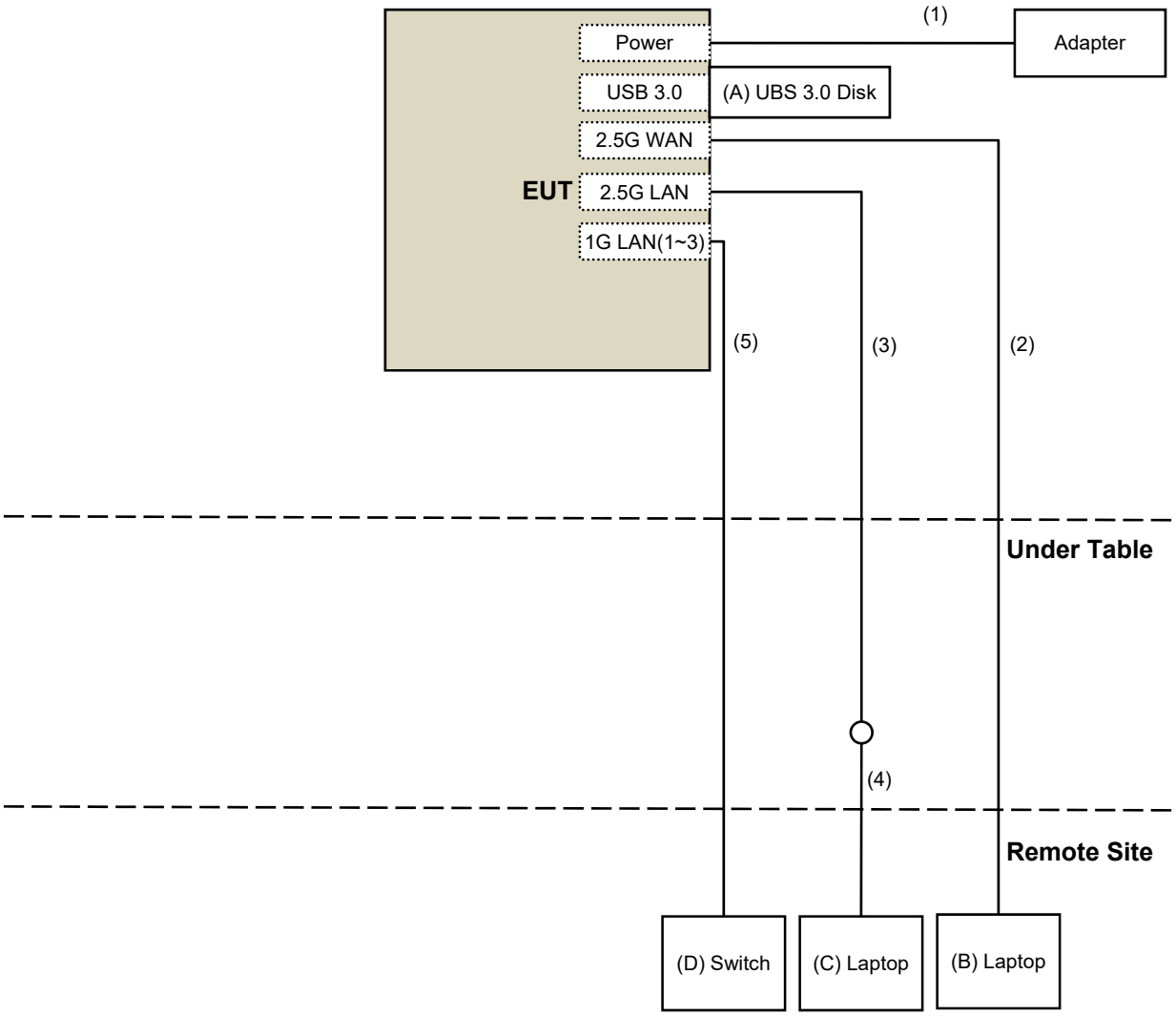


802.11ax (HE160)

3.6 Test Program Used and Operation Descriptions

Controlling software (QATool_UIv2.88_DLLv6.93_ap_2022.01.04(V14)c) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	UBS 3.0 Disk	SanDisk	BM181225896Z	N/A	N/A	Provided by Lab
B	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Provided by Lab
C	Laptop	DELL	PP36S	25733582128	N/A	Provided by Lab
D	Switch	D-Link	DGS-1005D	DR8WC92000523	N/A	Provided by Lab

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

4 Test Instruments

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

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/7/20

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/7/20

4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

4.4 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
AC Power Source GOOD WILL	6905S	1991551	N/A	N/A
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	2022/1/14	2023/1/13
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/7/20

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohms Terminator	50	3	2021/10/27	2022/10/26
Fixed attenuator STI	STI02-2200-10	005	2021/8/27	2022/8/26
LISN R&S	ESH3-Z5	848773/004	2021/10/29	2022/10/28
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2021/9/25	2022/9/24
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2021/10/13	2022/10/12

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2022/6/10

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2021/9/23	2022/9/22
LOOP ANTENNA Electro-Metrics	EM-6879	264	2022/3/18	2023/3/17
Pre_Amplifier Agilent	8447D	2944A10636	2022/3/19	2023/3/18
Pre_Amplifier Mini-Circuits	ZFL-1000VH2	QA0838008	2021/10/19	2022/10/18
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/1/6	2023/1/5
		LOOPCAB-002	2022/1/6	2023/1/5
RF Coaxial Cable COMMATE/PEWC	8D	966-4-1	2022/3/8	2023/3/7
		966-3-2	2022/2/26	2023/2/25
		966-3-3	2022/2/26	2023/2/25
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2022/4/26	2023/4/25
Test Receiver KEYSIGHT	N9038A	MY59050100	2022/6/20	2023/6/19
Trilog Broadband Antenna Schwarzbeck	VULB 9168	9168-361	2021/10/26	2022/10/25

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2022/7/20

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Horn Antenna Schwarzbeck	BBHA9120-D	9120D-406	2021/11/14	2022/11/13
	BBHA 9170	9170-739	2021/11/14	2022/11/13
MXE EMI Receiver(20 Hz to 44 GHz) Keysight	N9038A	MY54450088	2021/7/6 2022/07/11	2022/7/5 2023/07/10
Pre_Amplifier EMCI	EMC12630SE	980384	2022/1/10	2023/1/9
	EMC184045SE	980387	2022/1/10	2023/1/9
RF Cable EMCI	EMC104-SM-SM-6000	210201	2022/5/10	2023/5/9
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10	2023/1/9
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180504	2022/4/25	2023/4/24
	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
	EMC104-SM-SM-2000	180601	2022/6/6	2023/6/5
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2022/4/26	2023/4/25
Test Receiver KEYSIGHT	N9038A	MY59050100	2021/7/6 2022/6/20	2022/7/5 2023/6/19

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2022/6/8 ~ 2022/7/14

5 Limits of Test Items

5.1 RF Output Power

Device Category	Limit (Max Average Power)
Indoor access point	EIRP 36 dBm
Subordinate device	EIRP 36 dBm
Client device	EIRP 30 dBm
Note: For all U-NII-4 and U-NII-3 & -4 span channels shall met above EIRP values.	

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

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

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

5.2 Power Spectral Density

Device Category	Limit
Indoor access point	EIRP 20 dBm/MHz
Subordinate device	EIRP 20 dBm/MHz
Client device	EIRP 14 dBm/MHz
Note: For all U-NII-4 and U-NII-3 & -4 span channels shall met above EIRP values.	

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 Frequency Stability

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

5.5 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.

5.6 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:

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

5.7 Unwanted Emissions above 1 GHz

(i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of −7 dBm/MHz at or above 5.925 GHz.

(ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of −5 dBm/MHz and shall decrease linearly to an e.i.r.p. of −27 dBm/MHz at or above 5.925 GHz.

(iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of −27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

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

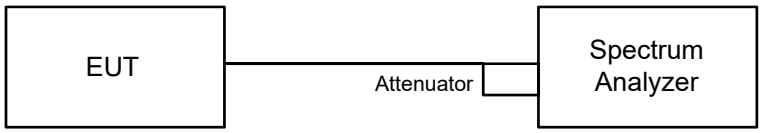
6.1.1 Test Setup

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

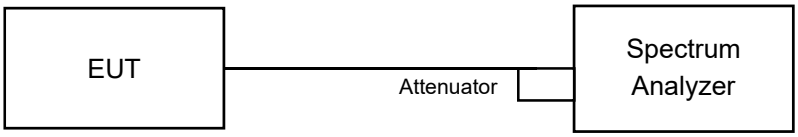
a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
c. Scale the observed power level to an equivalent value in 1 MHz by adjusting (increasing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(1 MHz/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

For specified measurement bandwidth 1 MHz:
Method SA-2

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

6.3 6 dB Bandwidth

6.3.1 Test Setup

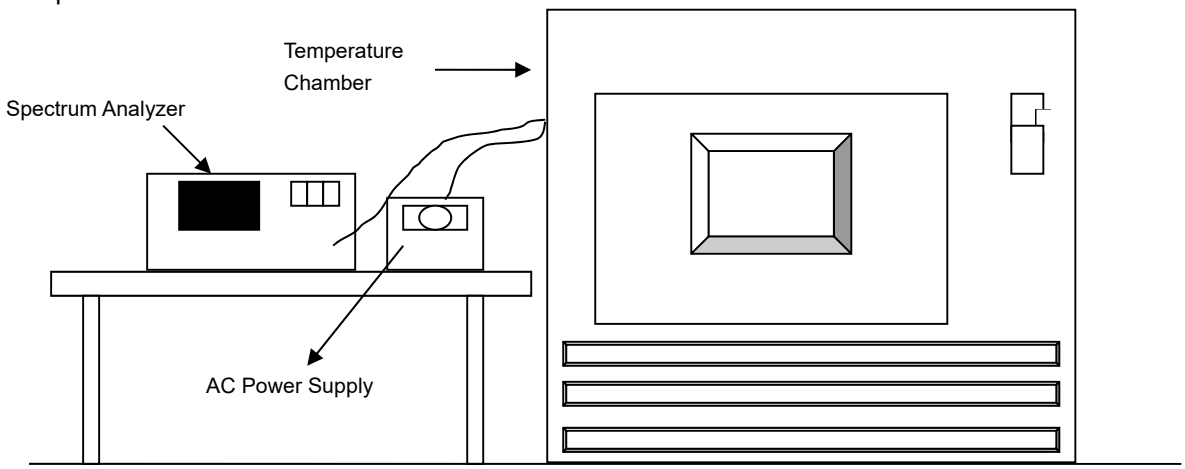


6.3.2 Test Procedure

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

6.4 Frequency Stability

6.4.1 Test Setup

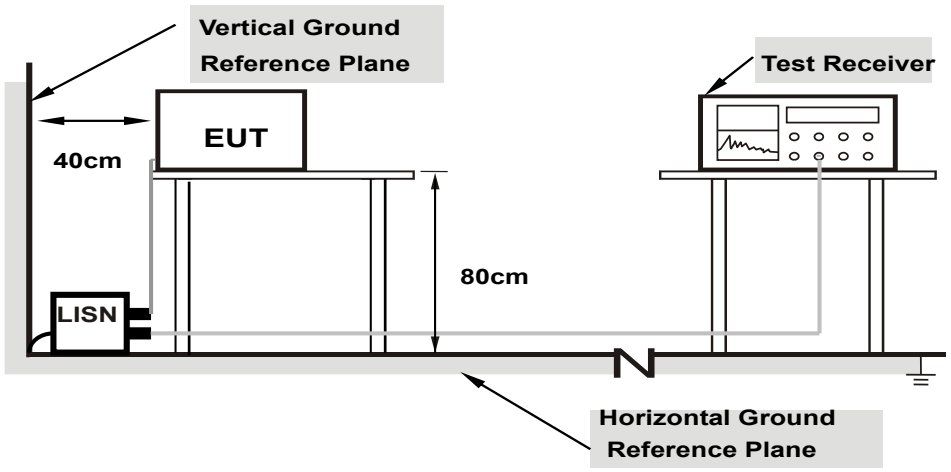


6.4.2 Test Procedure

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.

6.5 AC Power Conducted Emissions

6.5.1 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).

6.5.2 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.

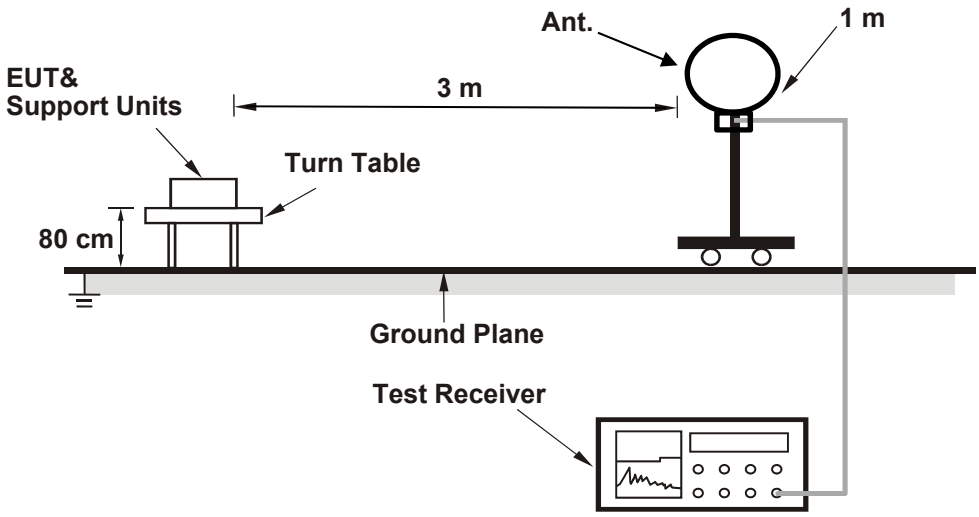
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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.

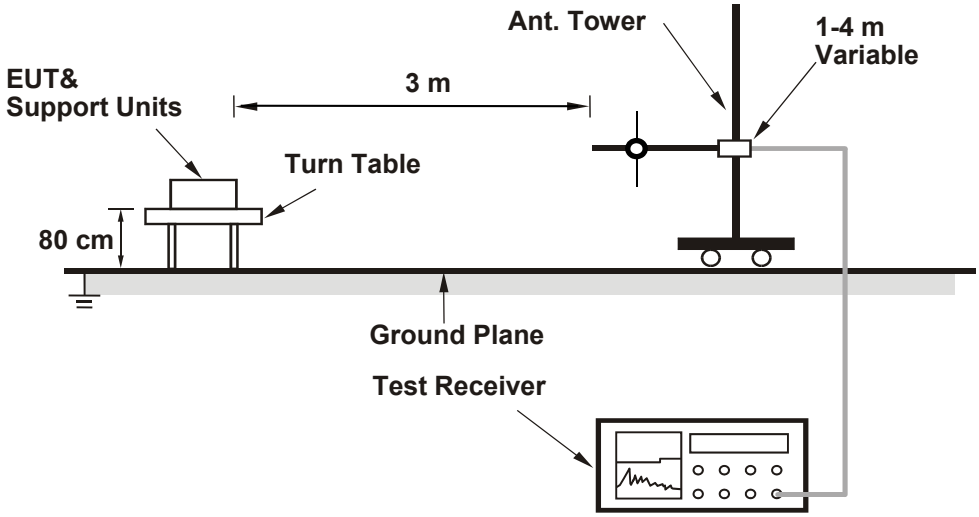
6.6 Unwanted Emissions below 1 GHz

6.6.1 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).

6.6.2 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.

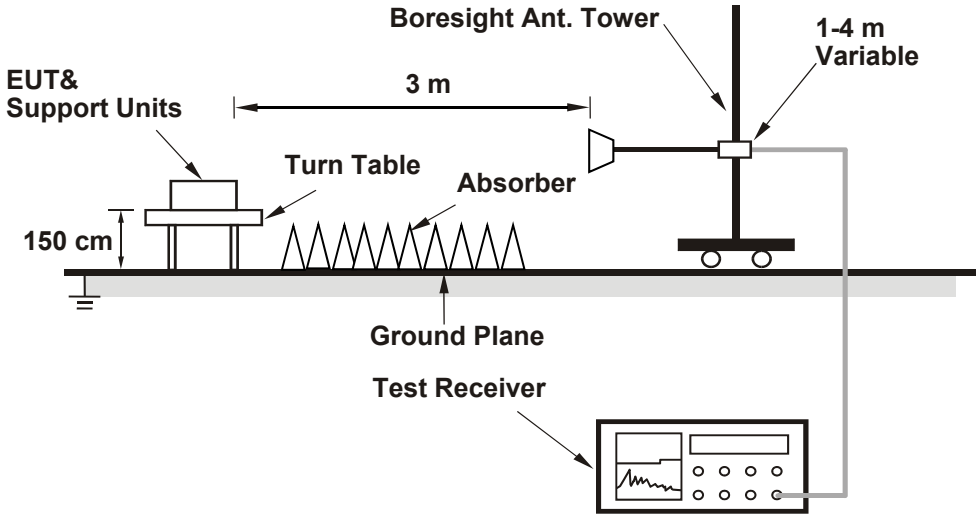
Notes:

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.

6.7 Unwanted Emissions above 1 GHz

6.7.1 Test Setup

For Radiated emission above 1 GHz



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

6.7.2 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

For fundamental and harmonic signal:

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.

For transmitters operating Band Edge signal:

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 range 5.5 ~ 6.025 GHz.

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:	Chilin Lee

802.11a CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
169	5845	17.58	17.15	17.18	17.23	214.244	23.31	4.20	563.638	27.51	36	Pass
173	5865	17.46	17.17	17.17	17.17	212.077	23.26	4.20	557.186	27.46	36	Pass
177	5885	17.47	17.22	17.14	17.14	212.091	23.27	4.20	558.47	27.47	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi.

802.11ac (VHT20) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
169	5845	17.51	17.33	17.20	17.47	218.767	23.40	4.20	575.44	27.6	36	Pass
173	5865	17.54	17.30	17.34	17.32	218.609	23.40	4.20	575.44	27.6	36	Pass
177	5885	17.51	17.34	17.29	17.35	218.469	23.39	4.20	574.116	27.59	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi

802.11ac (VHT40) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
167	5835	20.52	20.05	20.07	20.18	419.734	26.23	4.20	1104.079	30.43	36	Pass
175	5875	20.44	20.06	20.29	20.18	423.191	26.27	4.20	1114.295	30.47	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi.

802.11ac (VHT80) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
171	5855	24.03	23.14	22.97	23.38	874.916	29.42	4.20	2301.442	33.62	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi.

802.11ac (VHT160) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
163	5815	19.18	19.06	18.53	18.93	312.78	24.95	4.20	822.243	29.15	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi.

802.11ax (HE20) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
169	5845	17.80	17.58	17.42	17.71	231.763	23.65	4.20	609.537	27.85	36	Pass
173	5865	17.84	17.59	17.57	17.58	232.653	23.67	4.20	612.35	27.87	36	Pass
177	5885	17.76	17.62	17.50	17.57	230.895	23.63	4.20	606.736	27.83	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi.

802.11ax (HE40) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
167	5835	20.78	20.27	20.31	20.39	442.883	26.46	4.20	1164.126	30.66	36	Pass
175	5875	20.73	20.28	20.53	20.39	447.339	26.51	4.20	1177.606	30.71	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi.

802.11ax (HE80) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
171	5855	24.33	23.42	23.27	23.63	933.804	29.70	4.20	2454.709	33.9	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi.

802.11ax (HE160) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Maximum Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
163	5815	19.42	19.31	18.77	19.18	330.938	25.20	4.20	870.964	29.4	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.2 dBi.

802.11ac (VHT20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
169	5845	17.51	17.33	17.20	17.47	218.767	23.40	9.46	1931.968	32.86	36	Pass
173	5865	17.54	17.30	17.34	17.32	218.609	23.40	9.46	1931.968	32.86	36	Pass
177	5885	17.51	17.34	17.29	17.35	218.469	23.39	9.46	1927.525	32.85	36	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. The directional gain is 9.46 dBi.

802.11ac (VHT40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
167	5835	20.52	20.05	20.07	20.18	419.734	26.23	9.46	3706.807	35.69	36	Pass
175	5875	20.44	20.06	20.29	20.18	423.191	26.27	9.46	3741.106	35.73	36	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. The directional gain is 9.46 dBi.

802.11ac (VHT80) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
171	5855	20.64	19.55	19.62	19.87	394.708	25.96	9.46	3483.373	35.42	36	Pass

Notes:

1. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
2. The directional gain is 9.46 dBi.

802.11ac (VHT160) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
163	5815	19.18	19.06	18.53	18.93	312.78	24.95	9.46	2760.578	34.41	36	Pass

Notes:

1. Directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$ + $10^{Chain2/20}$ + $10^{Chain3/20}$)^2 / 4]
2. The directional gain is 9.46 dBi.

802.11ax (HE20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
169	5845	17.80	17.58	17.42	17.71	231.763	23.65	9.46	2046.445	33.11	36	Pass
173	5865	17.84	17.59	17.57	17.58	232.653	23.67	9.46	2055.891	33.13	36	Pass
177	5885	17.76	17.62	17.50	17.57	230.895	23.63	9.46	2037.042	33.09	36	Pass

Notes:

1. Directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$ + $10^{Chain2/20}$ + $10^{Chain3/20}$)^2 / 4]
2. The directional gain is 9.46 dBi.

802.11ax (HE40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
167	5835	20.78	20.27	20.31	20.39	442.883	26.46	9.46	3908.409	35.92	36	Pass
175	5875	20.73	20.28	20.53	20.39	447.339	26.51	9.46	3953.666	35.97	36	Pass

Notes:

1. Directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$ + $10^{Chain2/20}$ + $10^{Chain3/20}$)^2 / 4]
2. The directional gain is 9.46 dBi.

802.11ax (HE80) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
171	5855	20.92	19.83	19.82	20.09	417.79	26.21	9.46	3689.776	35.67	36	Pass

Notes:

1. Directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$ + $10^{Chain2/20}$ + $10^{Chain3/20}$)^2 / 4]
2. The directional gain is 9.46 dBi

802.11ax (HE160) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3							
163	5815	19.42	19.31	18.77	19.18	330.938	25.20	9.46	2924.152	34.66	36	Pass

Notes:

1. Directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$ + $10^{Chain2/20}$ + $10^{Chain3/20}$)^2 / 4]
2. The directional gain is 9.46 dBi.

7.2 Power Spectral Density

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

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3						
169	5845	-4.39	-4.06	-2.98	-2.88	2.49	7.72	9.46	17.18	20	Pass
173	5865	-3.12	-5.31	-3.10	-3.81	2.27	7.50	9.46	16.96	20	Pass
177	5885	-3.30	-4.12	-4.34	-2.96	2.38	7.61	9.46	17.07	20	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. The directional gain is 9.46 dBi

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3						
169	5845	-4.30	-3.34	-4.86	-3.49	2.07	7.30	9.46	16.76	20	Pass
173	5865	-4.76	-3.79	-3.75	-4.04	1.95	7.18	9.46	16.64	20	Pass
177	5885	-4.91	-4.59	-4.17	-4.64	1.45	6.68	9.46	16.14	20	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. The directional gain is 9.46 dBi

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3						
167	5835	-2.73	-3.06	-2.41	-1.99	3.49	8.72	9.46	18.18	20	Pass
175	5875	-3.73	-2.73	-2.43	-3.23	3.02	8.25	9.46	17.71	20	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. The directional gain is 9.46 dBi

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3						
171	5855	-3.88	-3.23	-3.77	-3.21	2.51	7.74	9.46	17.2	20	Pass

Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. The directional gain is 9.46 dBi

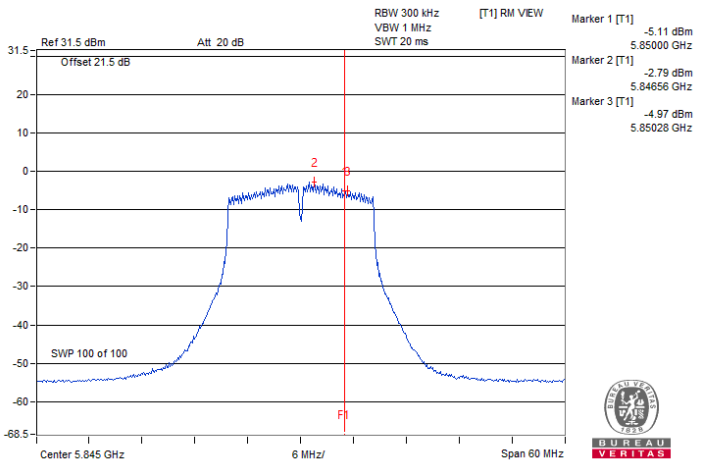
802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)				Total PSD (dBm/300kHz)	Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3						
163	5815	-12.24	-12.07	-10.98	-10.98	-5.51	-0.28	9.46	9.18	20	Pass

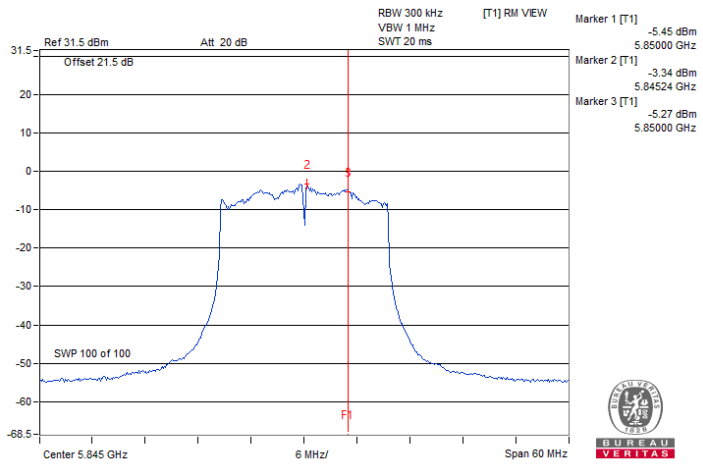
Notes:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 4]
3. The directional gain is 9.46 dBi

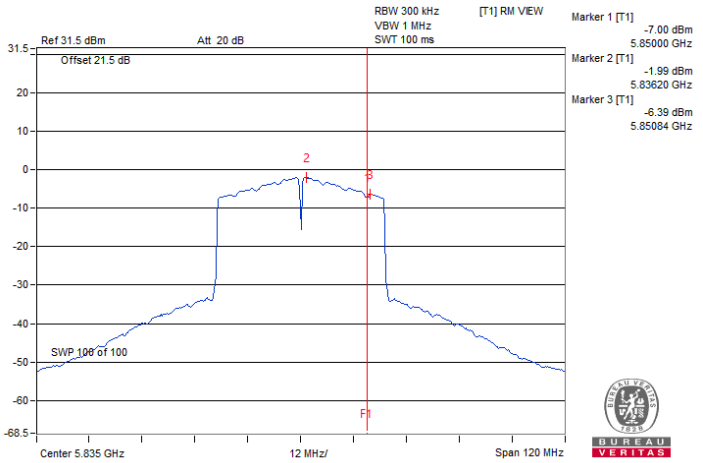
Spectrum Plot of Maximum Value



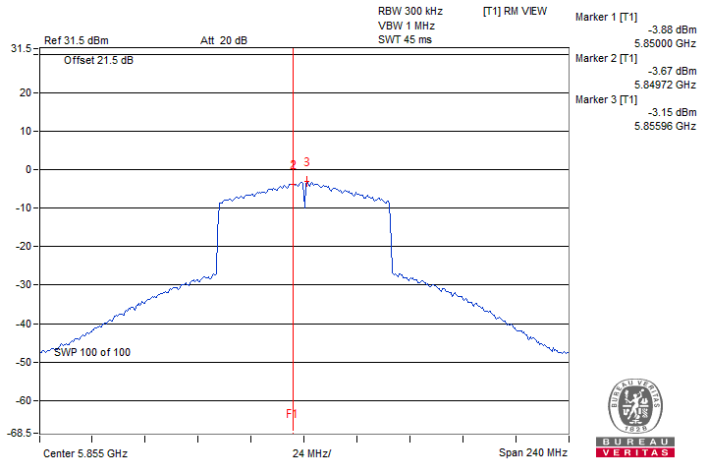
802.11a / Chain3 : CH 169



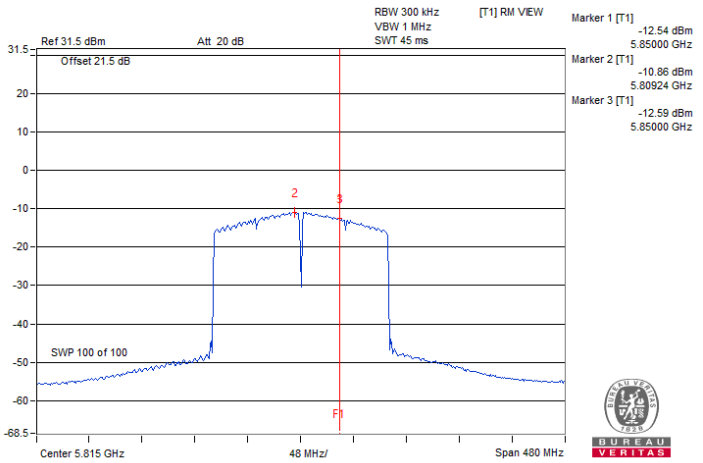
802.11ax (HE20) / Chain1 : CH 169



802.11ax (HE40) / Chain3 : CH 167



802.11ax (HE80) / Chain3 : CH 171



802.11ax (HE160) / Chain2 : CH 163

7.3 6 dB Bandwidth

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

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
169	5845	16.33	16.31	15.96	16.06	0.5	Pass
173	5865	15.19	16.37	15.72	15.45	0.5	Pass
177	5885	15.15	15.51	16.36	15.18	0.5	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
169	5845	18.79	16.70	18.20	18.49	0.5	Pass
173	5865	18.71	15.89	18.27	18.47	0.5	Pass
177	5885	18.07	18.09	18.49	18.69	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
167	5835	35.65	37.12	30.80	35.24	0.5	Pass
175	5875	35.15	33.93	33.14	33.93	0.5	Pass

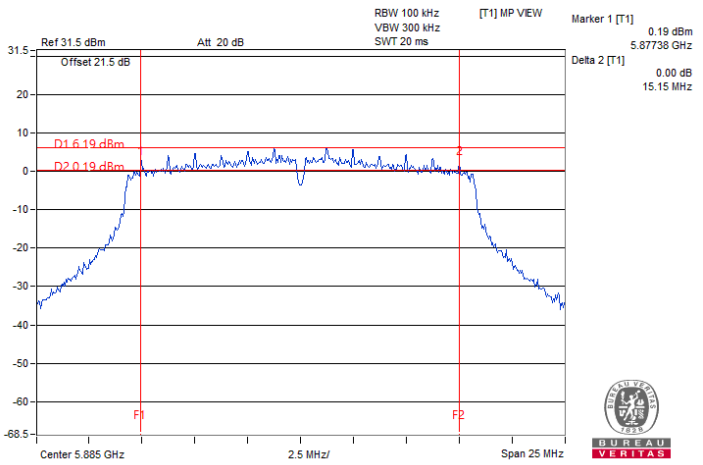
802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
171	5855	74.52	70.29	71.53	74.09	0.5	Pass

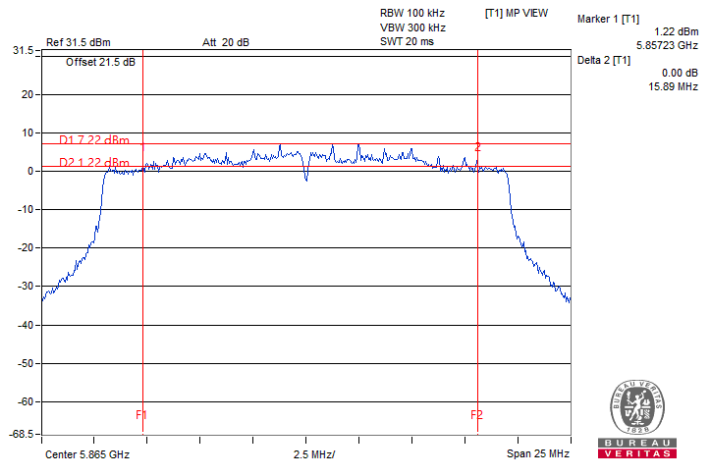
802.11ax (HE160)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
163	5815	154.28	149.28	151.92	155.43	0.5	Pass

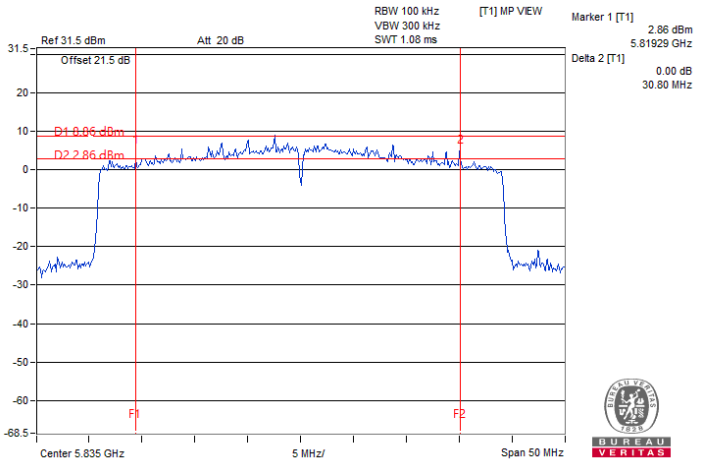
Spectrum Plot of Minimum Value



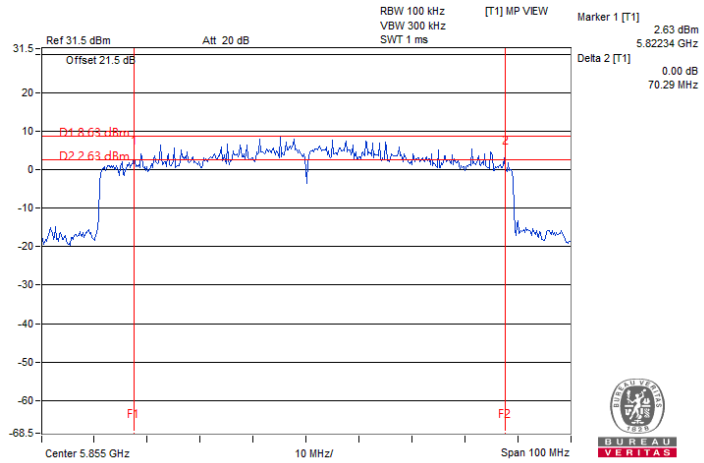
802.11a / Chain0 : CH 177



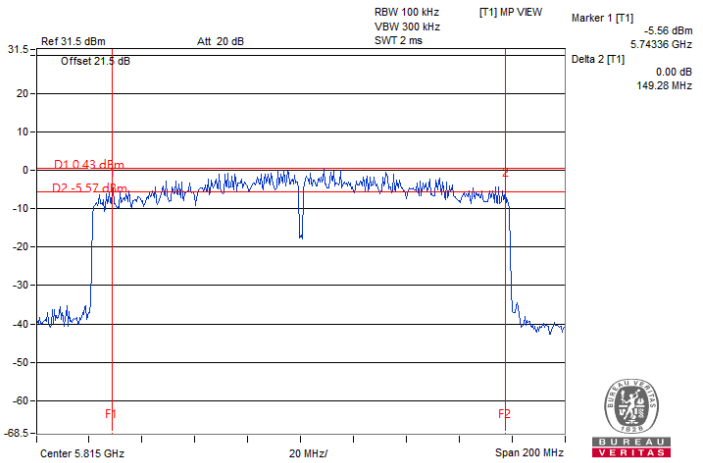
802.11ax (HE20) / Chain1 : CH 173



802.11ax (HE40) / Chain2 : CH 167



802.11ax (HE80) / Chain1 : CH 171



802.11ax (HE160) / Chain1 : CH 163

7.4 Frequency Stability

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

802.11a

Frequency Stability Versus Temp.									
Operating Frequency: 5885 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
40	120	5885.0255	Pass	5885.0265	Pass	5885.0266	Pass	5885.0264	Pass
30	120	5885.0169	Pass	5885.0161	Pass	5885.0169	Pass	5885.0145	Pass
20	120	5884.9892	Pass	5884.9911	Pass	5884.9899	Pass	5884.9902	Pass
10	120	5884.9917	Pass	5884.9876	Pass	5884.9926	Pass	5884.9908	Pass
0	120	5884.9876	Pass	5884.9899	Pass	5884.9873	Pass	5884.9878	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5885 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	5884.9974	Pass	5885.0017	Pass	5884.9963	Pass	5884.9992	Pass
	120	5884.9892	Pass	5884.9911	Pass	5884.9899	Pass	5884.9902	Pass
	102	5884.9775	Pass	5884.9768	Pass	5884.9789	Pass	5884.9785	Pass

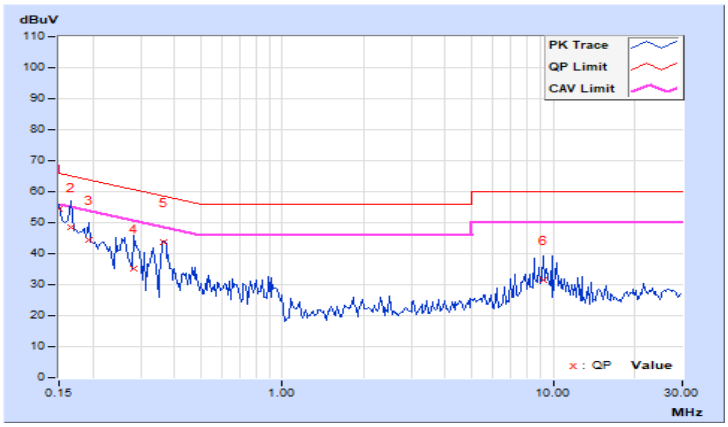
7.5 AC Power Conducted Emissions

RF Mode	TX 802.11ax (HE40)	**Channel**	CH 175：5875 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Ryan Du		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15000	10.07	44.50	31.10	54.57	41.17	66.00	56.00	-11.43	-14.83
2	0.16562	10.07	38.50	22.38	48.57	32.45	65.18	55.18	-16.61	-22.73
3	0.19297	10.08	34.20	22.42	44.28	32.50	63.91	53.91	-19.63	-21.41
4	0.28281	10.09	25.02	15.36	35.11	25.45	60.73	50.73	-25.62	-25.28
5	**0.36484**	**10.10**	**33.70**	**29.00**	**43.80**	**39.10**	**58.62**	**48.62**	**-14.82**	**-9.52**
6	9.16797	10.72	20.60	11.90	31.32	22.62	60.00	50.00	-28.68	-27.38

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

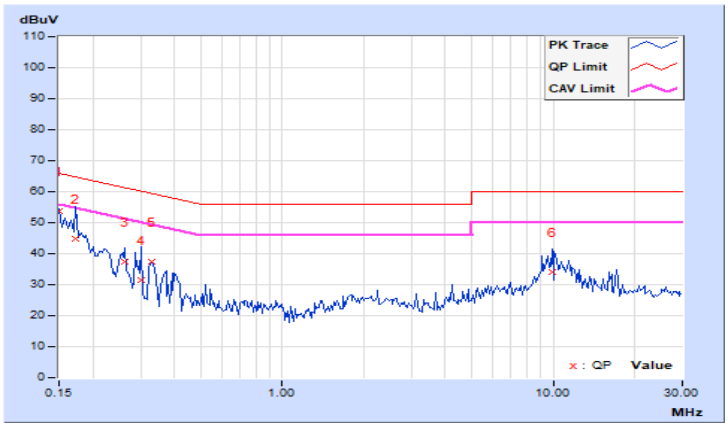


RF Mode	TX 802.11ax (HE40)	**Channel**	CH 175：5875 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Ryan Du		

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	0.15000	10.05	43.80	29.02	53.85	39.07	66.00	56.00	-12.15	-16.93
2	0.17344	10.06	34.64	19.54	44.70	29.60	64.79	54.79	-20.09	-25.19
3	0.26328	10.09	27.20	14.72	37.29	24.81	61.33	51.33	-24.04	-26.52
4	0.30234	10.09	21.48	6.36	31.57	16.45	60.18	50.18	-28.61	-33.73
5	0.32969	10.09	27.18	21.40	37.27	31.49	59.46	49.46	-22.19	-17.97
6	9.95703	10.68	23.56	15.94	34.24	26.62	60.00	50.00	-25.76	-23.38

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



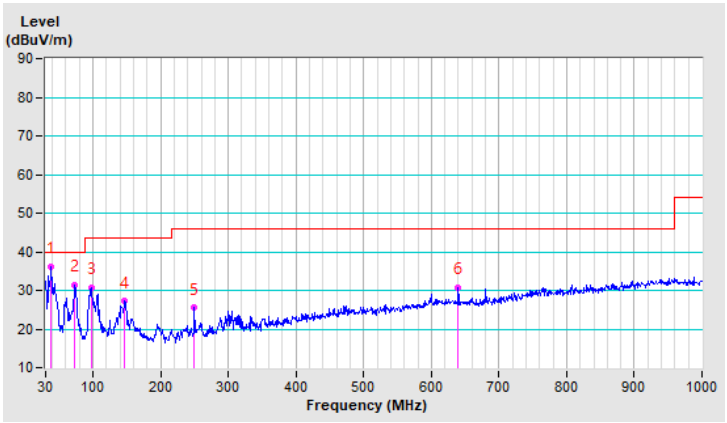
7.6 Unwanted Emissions below 1 GHz

RF Mode	TX 802.11ax (HE40)	**Channel**	CH 175：5875 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	37.37	36.3 QP	40.0	-3.7	2.00 H	352	45.1	-8.8
2	72.90	31.3 QP	40.0	-8.7	2.00 H	42	42.4	-11.1
3	97.83	30.6 QP	43.5	-12.9	2.00 H	86	43.7	-13.1
4	147.20	27.2 QP	43.5	-16.3	1.50 H	68	35.2	-8.0
5	250.02	25.5 QP	46.0	-20.5	2.00 H	48	35.1	-9.6
6	640.01	30.8 QP	46.0	-15.2	1.50 H	83	30.7	0.1

Remarks:

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

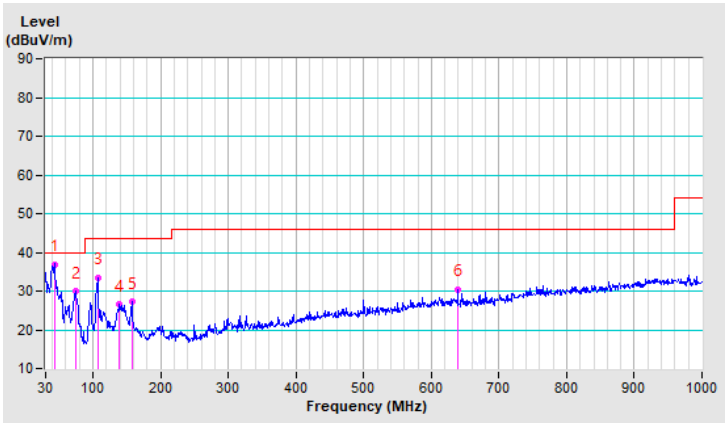


RF Mode	TX 802.11ax (HE40)	**Channel**	CH 175：5875 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	**42.93**	**36.7 QP**	**40.0**	**-3.3**	**1.50 V**	**36**	**45.0**	**-8.3**
2	73.77	29.9 QP	40.0	-10.1	1.50 V	300	41.2	-11.3
3	106.68	33.4 QP	43.5	-10.1	2.00 V	360	44.8	-11.4
4	138.88	26.5 QP	43.5	-17.0	1.50 V	0	35.0	-8.5
5	157.53	27.2 QP	43.5	-16.3	1.00 V	129	35.4	-8.2
6	640.03	30.4 QP	46.0	-15.6	2.00 V	184	30.3	0.1

Remarks:

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



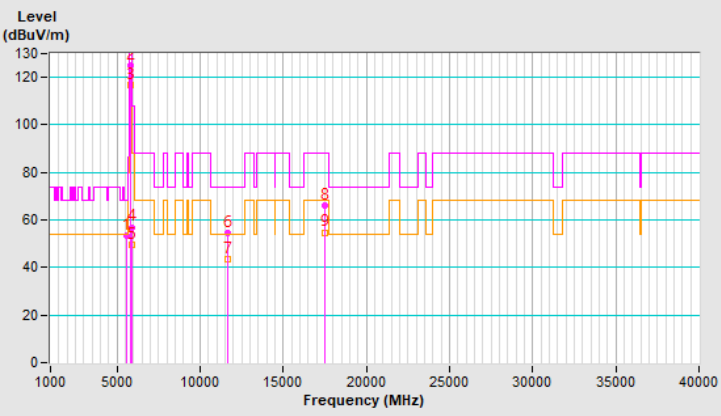
7.7 Unwanted Emissions above 1 GHz

RF Mode	TX 802.11a	Channel	CH 169：5845 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5608.64	53.6 PK	68.2	-14.6	2.47 H	251	48.7	4.9
2	*5845.00	124.9 PK			2.47 H	251	119.6	5.3
3	*5845.00	116.7 AV			2.47 H	251	111.4	5.3
4	#5927.97	57.0 PK	108.2	-51.2	2.47 H	251	51.5	5.5
5	#5927.97	49.5 AV	88.2	-38.7	2.47 H	251	44.0	5.5
6	11690.00	54.5 PK	74.0	-19.5	1.69 H	128	39.7	14.8
7	11690.00	43.7 AV	54.0	-10.3	1.69 H	128	28.9	14.8
8	#17535.00	66.2 PK	88.2	-22.0	2.34 H	31	46.9	19.3
9	#17535.00	54.8 AV	68.2	-13.4	2.34 H	31	35.5	19.3

Remarks:

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

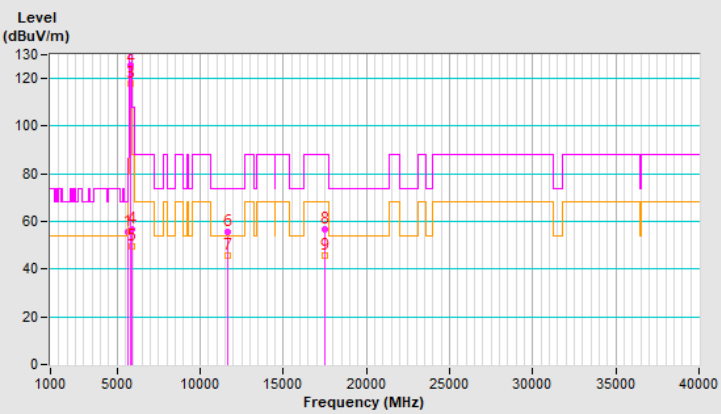


RF Mode	TX 802.11a	Channel	CH 169：5845 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5636.18	55.5 PK	68.2	-12.7	1.66 V	259	50.6	4.9
2	*5845.00	125.5 PK			1.66 V	259	120.2	5.3
3	*5845.00	117.8 AV			1.66 V	259	112.5	5.3
4	#5928.06	56.6 PK	108.2	-51.6	1.66 V	259	51.1	5.5
5	#5928.06	49.6 AV	88.2	-38.6	1.66 V	259	44.1	5.5
6	11690.00	55.7 PK	74.0	-18.3	3.86 V	99	40.9	14.8
7	11690.00	45.6 AV	54.0	-8.4	3.86 V	99	30.8	14.8
8	#17535.00	56.6 PK	88.2	-31.6	1.30 V	116	37.3	19.3
9	#17535.00	45.7 AV	68.2	-22.5	1.30 V	116	26.4	19.3

Remarks:

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

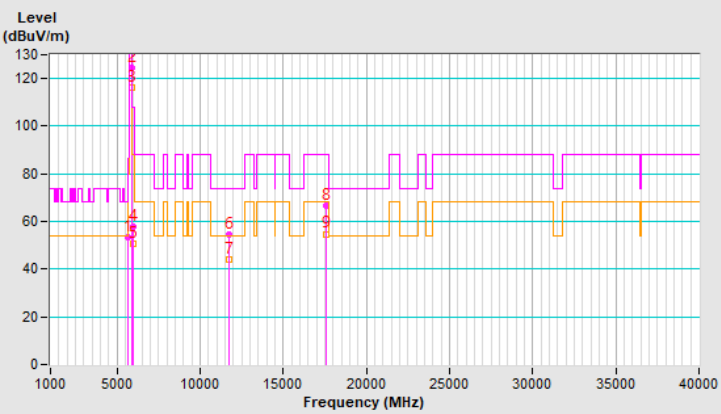


RF Mode	TX 802.11a	Channel	CH 173：5865 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5623.26	53.6 PK	68.2	-14.6	2.48 H	279	48.7	4.9
2	*5865.00	124.4 PK			2.48 H	279	119.0	5.4
3	*5865.00	116.2 AV			2.48 H	279	110.8	5.4
4	#5944.24	57.9 PK	108.2	-50.3	2.48 H	279	52.4	5.5
5	#5944.24	50.6 AV	88.2	-37.6	2.48 H	279	45.1	5.5
6	11730.00	54.4 PK	74.0	-19.6	1.80 H	128	39.6	14.8
7	11730.00	43.9 AV	54.0	-10.1	1.80 H	128	29.1	14.8
8	#17595.00	66.5 PK	88.2	-21.7	2.34 H	22	46.7	19.8
9	#17595.00	54.8 AV	68.2	-13.4	2.34 H	22	35.0	19.8

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.

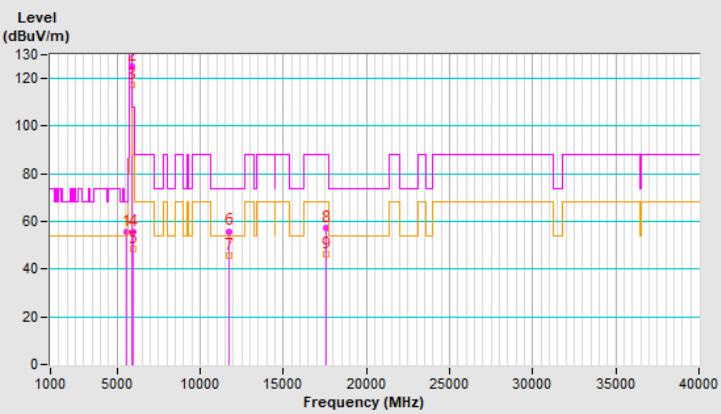


RF Mode	TX 802.11a	Channel	CH 173：5865 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5587.67	55.6 PK	68.2	-12.6	1.62 V	279	50.7	4.9
2	*5865.00	124.8 PK			1.62 V	279	119.4	5.4
3	*5865.00	117.4 AV			1.62 V	279	112.0	5.4
4	#5945.89	55.7 PK	108.2	-52.5	1.62 V	279	50.2	5.5
5	#5945.89	48.4 AV	88.2	-39.8	1.62 V	279	42.9	5.5
6	11730.00	55.9 PK	74.0	-18.1	3.80 V	113	41.1	14.8
7	11730.00	45.7 AV	54.0	-8.3	3.80 V	113	30.9	14.8
8	#17595.00	57.3 PK	88.2	-30.9	1.32 V	138	37.5	19.8
9	#17595.00	46.2 AV	68.2	-22.0	1.32 V	138	26.4	19.8

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.

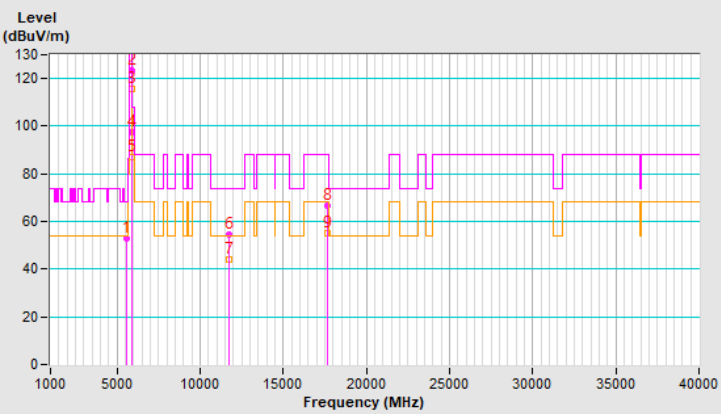


RF Mode	TX 802.11a	Channel	CH 177：5885 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5578.82	53.0 PK	68.2	-15.2	2.43 H	256	48.2	4.8
2	*5885.00	123.5 PK			2.43 H	256	118.1	5.4
3	*5885.00	115.8 AV			2.43 H	256	110.4	5.4
4	#5895.00	97.5 PK	130.2	-32.7	2.43 H	256	92.0	5.5
5	#5895.00	86.8 AV	110.2	-23.4	2.43 H	256	81.3	5.5
6	11770.00	54.5 PK	74.0	-19.5	1.69 H	155	39.7	14.8
7	11770.00	43.8 AV	54.0	-10.2	1.69 H	155	29.0	14.8
8	#17655.00	66.5 PK	88.2	-21.7	2.46 H	39	46.3	20.2
9	#17655.00	55.2 AV	68.2	-13.0	2.46 H	39	35.0	20.2

Remarks:

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

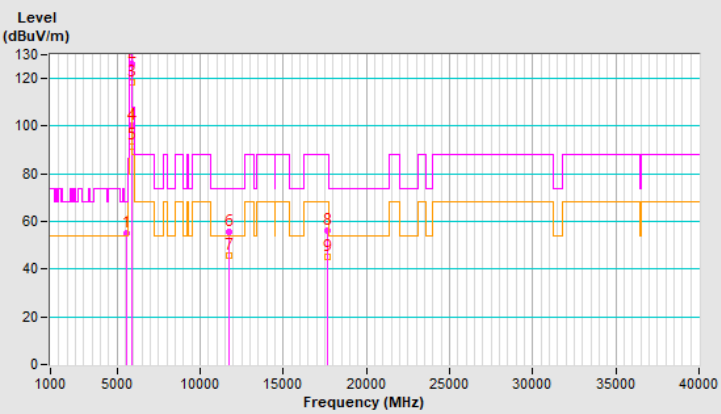


RF Mode	TX 802.11a	Channel	CH 177：5885 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5578.64	54.9 PK	68.2	-13.3	1.60 V	244	50.1	4.8
2	*5885.00	125.9 PK			1.60 V	244	120.5	5.4
3	*5885.00	118.4 AV			1.60 V	244	113.0	5.4
4	#5895.00	100.4 PK	130.2	-29.8	1.60 V	244	94.9	5.5
5	#5895.00	91.7 AV	110.2	-18.5	1.60 V	244	86.2	5.5
6	11770.00	55.7 PK	74.0	-18.3	3.83 V	94	40.9	14.8
7	11770.00	45.5 AV	54.0	-8.5	3.83 V	94	30.7	14.8
8	#17655.00	56.0 PK	88.2	-32.2	1.37 V	114	35.8	20.2
9	#17655.00	45.3 AV	68.2	-22.9	1.37 V	114	25.1	20.2

Remarks:

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

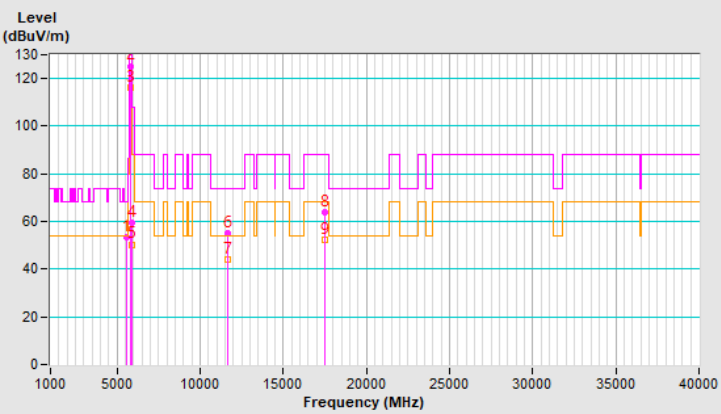


RF Mode	TX 802.11ax (HE20)	Channel	CH 169：5845 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5592.42	53.2 PK	68.2	-15.0	2.08 H	284	48.3	4.9
2	*5845.00	125.3 PK			2.08 H	284	120.0	5.3
3	*5845.00	116.1 AV			2.08 H	284	110.8	5.3
4	#5926.98	59.6 PK	108.2	-48.6	2.08 H	284	54.1	5.5
5	#5926.98	50.4 AV	88.2	-37.8	2.08 H	284	44.9	5.5
6	11690.00	54.9 PK	74.0	-19.1	1.79 H	144	40.1	14.8
7	11690.00	44.2 AV	54.0	-9.8	1.79 H	144	29.4	14.8
8	#17535.00	64.0 PK	88.2	-24.2	2.40 H	52	44.7	19.3
9	#17535.00	52.5 AV	68.2	-15.7	2.40 H	52	33.2	19.3

Remarks:

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

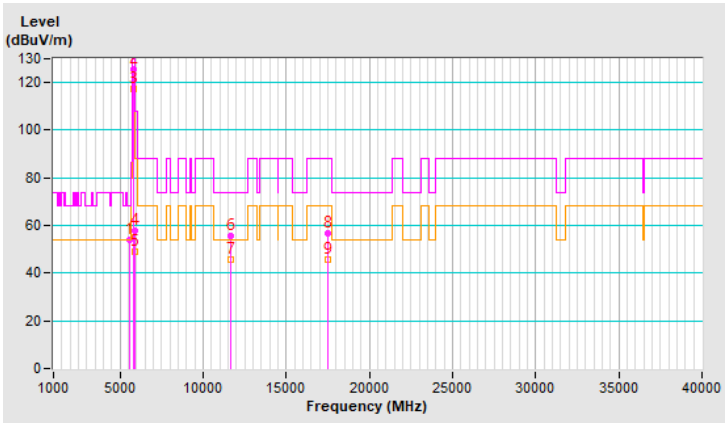


RF Mode	TX 802.11ax (HE20)	Channel	CH 169：5845 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5602.49	54.2 PK	68.2	-14.0	2.12 V	259	49.2	5.0
2	*5845.00	125.6 PK			2.12 V	259	120.3	5.3
3	*5845.00	117.3 AV			2.12 V	259	112.0	5.3
4	#5926.41	57.7 PK	108.2	-50.5	2.12 V	259	52.2	5.5
5	#5926.41	49.1 AV	88.2	-39.1	2.12 V	259	43.6	5.5
6	11690.00	55.4 PK	74.0	-18.6	3.92 V	111	40.6	14.8
7	11690.00	45.5 AV	54.0	-8.5	3.92 V	111	30.7	14.8
8	#17535.00	56.6 PK	88.2	-31.6	1.30 V	133	37.3	19.3
9	#17535.00	45.9 AV	68.2	-22.3	1.30 V	133	26.6	19.3

Remarks:

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

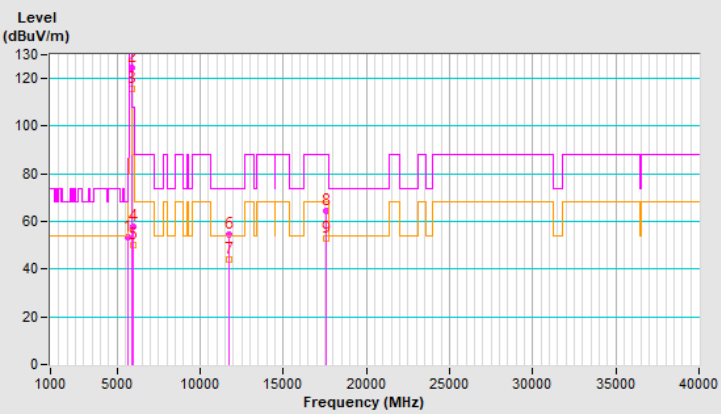


RF Mode	TX 802.11ax (HE20)	Channel	CH 173：5865 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5623.86	53.3 PK	68.2	-14.9	2.06 H	285	48.4	4.9
2	*5865.00	124.7 PK			2.06 H	285	119.3	5.4
3	*5865.00	115.6 AV			2.06 H	285	110.2	5.4
4	#5944.53	57.8 PK	108.2	-50.4	2.06 H	285	52.3	5.5
5	#5944.53	50.2 AV	88.2	-38.0	2.06 H	285	44.7	5.5
6	11730.00	54.7 PK	74.0	-19.3	1.80 H	148	39.9	14.8
7	11730.00	44.2 AV	54.0	-9.8	1.80 H	148	29.4	14.8
8	#17595.00	64.6 PK	88.2	-23.6	2.42 H	55	44.8	19.8
9	#17595.00	52.9 AV	68.2	-15.3	2.42 H	55	33.1	19.8

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.

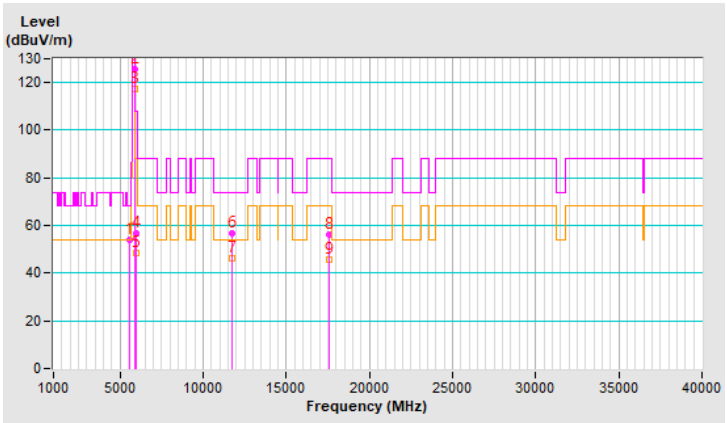


RF Mode	TX 802.11ax (HE20)	Channel	CH 173：5865 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5559.58	54.0 PK	68.2	-14.2	1.72 V	258	49.2	4.8
2	*5865.00	125.4 PK			1.72 V	258	120.0	5.4
3	*5865.00	117.2 AV			1.72 V	258	111.8	5.4
4	#5944.31	56.7 PK	108.2	-51.5	1.72 V	258	51.2	5.5
5	#5944.31	48.6 AV	88.2	-39.6	1.72 V	258	43.1	5.5
6	11730.00	56.5 PK	74.0	-17.5	3.94 V	97	41.7	14.8
7	11730.00	46.1 AV	54.0	-7.9	3.94 V	97	31.3	14.8
8	#17595.00	56.2 PK	88.2	-32.0	1.35 V	115	36.4	19.8
9	#17595.00	45.5 AV	68.2	-22.7	1.35 V	115	25.7	19.8

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.

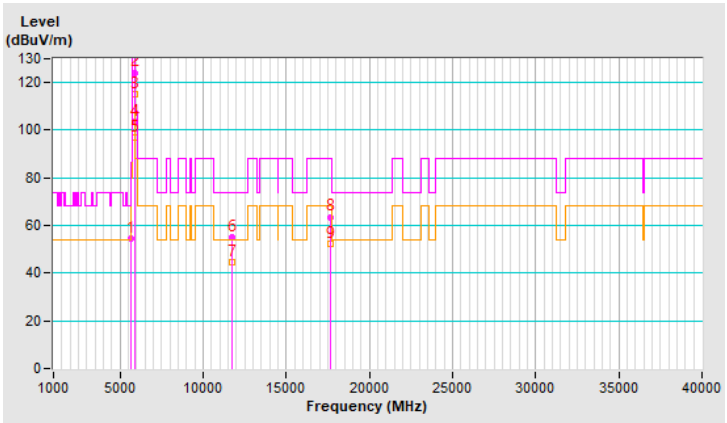


RF Mode	TX 802.11ax (HE20)	Channel	CH 177：5885 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.11	54.4 PK	68.2	-13.8	2.07 H	282	49.5	4.9
2	*5885.00	124.2 PK			2.07 H	282	118.8	5.4
3	*5885.00	115.2 AV			2.07 H	282	109.8	5.4
4	#5895.00	103.5 PK	130.2	-26.7	2.07 H	282	98.0	5.5
5	#5895.00	96.8 AV	110.2	-13.4	2.07 H	282	91.3	5.5
6	11770.00	55.2 PK	74.0	-18.8	1.77 H	148	40.4	14.8
7	11770.00	44.5 AV	54.0	-9.5	1.77 H	148	29.7	14.8
8	#17655.00	63.6 PK	88.2	-24.6	2.46 H	61	43.4	20.2
9	#17655.00	52.2 AV	68.2	-16.0	2.46 H	61	32.0	20.2

Remarks:

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

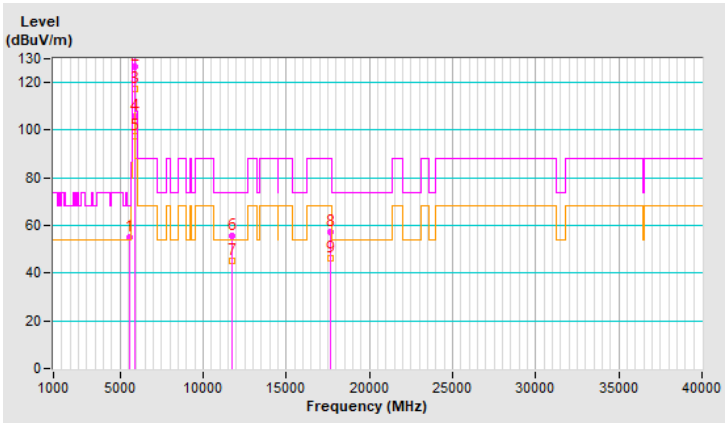


RF Mode	TX 802.11ax (HE20)	Channel	CH 177：5885 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5554.49	55.0 PK	68.2	-13.2	1.72 V	250	50.2	4.8
2	*5885.00	126.6 PK			1.72 V	250	121.2	5.4
3	*5885.00	117.4 AV			1.72 V	250	112.0	5.4
4	#5895.00	105.8 PK	130.2	-24.4	1.72 V	250	100.3	5.5
5	#5895.00	97.3 AV	110.2	-12.9	1.72 V	250	91.8	5.5
6	11770.00	55.7 PK	74.0	-18.3	3.84 V	128	40.9	14.8
7	11770.00	45.3 AV	54.0	-8.7	3.84 V	128	30.5	14.8
8	#17655.00	57.2 PK	88.2	-31.0	1.40 V	144	37.0	20.2
9	#17655.00	46.1 AV	68.2	-22.1	1.40 V	144	25.9	20.2

Remarks:

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

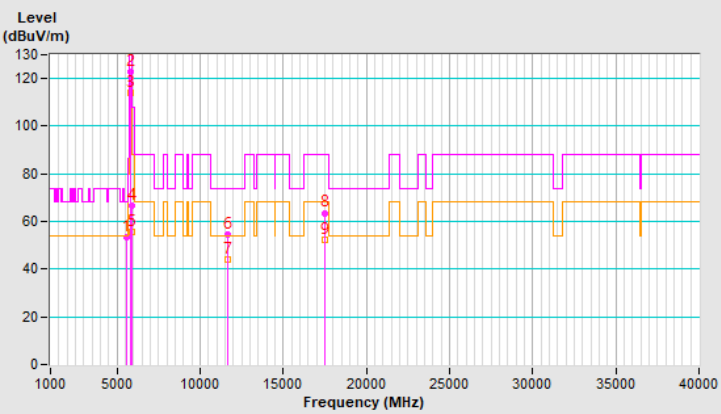


RF Mode	TX 802.11ax (HE40)	Channel	CH 167：5835 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5589.89	53.5 PK	68.2	-14.7	2.11 H	283	48.6	4.9
2	*5835.00	122.6 PK			2.11 H	283	117.3	5.3
3	*5835.00	113.8 AV			2.11 H	283	108.5	5.3
4	#5927.24	66.4 PK	108.2	-41.8	2.11 H	283	60.9	5.5
5	#5927.24	55.5 AV	88.2	-32.7	2.11 H	283	50.0	5.5
6	11670.00	54.7 PK	74.0	-19.3	1.76 H	130	39.7	15.0
7	11670.00	44.1 AV	54.0	-9.9	1.76 H	130	29.1	15.0
8	#17505.00	63.6 PK	88.2	-24.6	2.36 H	63	44.4	19.2
9	#17505.00	52.1 AV	68.2	-16.1	2.36 H	63	32.9	19.2

Remarks:

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

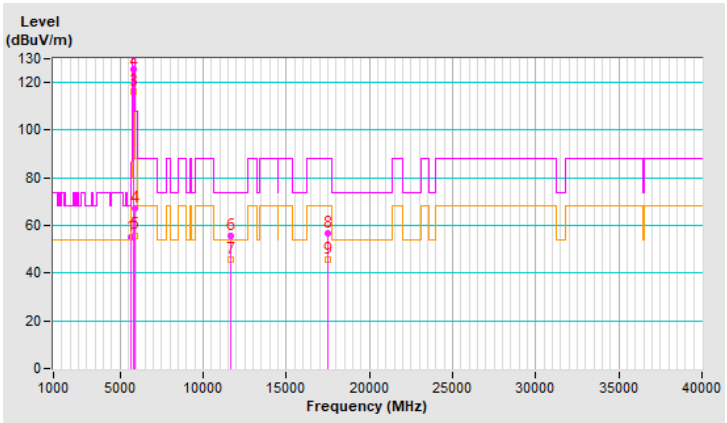


RF Mode	TX 802.11ax (HE40)	Channel	CH 167：5835 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5627.27	55.3 PK	68.2	-12.9	1.47 V	273	50.4	4.9
2	*5835.00	125.6 PK			1.47 V	273	120.3	5.3
3	*5835.00	116.3 AV			1.47 V	273	111.0	5.3
4	#5926.02	67.2 PK	108.2	-41.0	1.47 V	273	61.7	5.5
5	#5926.02	55.9 AV	88.2	-32.3	1.47 V	273	50.4	5.5
6	11670.00	55.8 PK	74.0	-18.2	3.89 V	104	40.8	15.0
7	11670.00	45.8 AV	54.0	-8.2	3.89 V	104	30.8	15.0
8	#17505.00	56.8 PK	88.2	-31.4	1.34 V	138	37.6	19.2
9	#17505.00	45.8 AV	68.2	-22.4	1.34 V	138	26.6	19.2

Remarks:

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

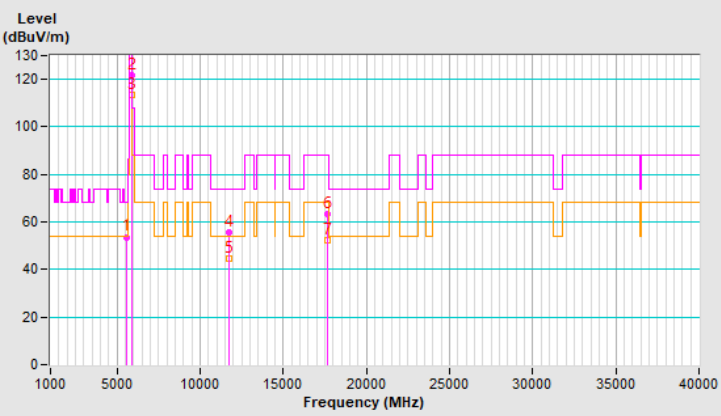


RF Mode	TX 802.11ax (HE40)	Channel	CH 175：5875 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5615.79	53.7 PK	68.2	-14.5	2.46 H	289	48.8	4.9
2	*5875.00	121.9 PK			2.46 H	289	116.5	5.4
3	*5875.00	113.2 AV			2.46 H	289	107.8	5.4
4	11750.00	55.4 PK	74.0	-18.6	1.74 H	146	40.5	14.9
5	11750.00	44.7 AV	54.0	-9.3	1.74 H	146	29.8	14.9
6	#17625.00	63.5 PK	88.2	-24.7	2.46 H	39	43.6	19.9
7	#17625.00	52.2 AV	68.2	-16.0	2.46 H	39	32.3	19.9

Remarks:

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

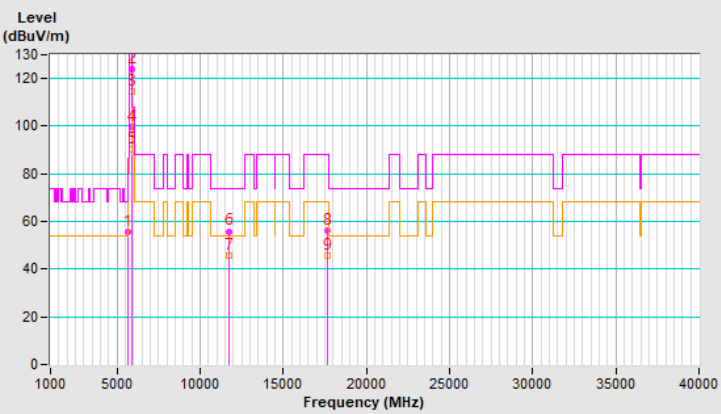


RF Mode	TX 802.11ax (HE40)	Channel	CH 175：5875 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5634.18	55.4 PK	68.2	-12.8	1.60 V	271	50.5	4.9
2	*5875.00	123.7 PK			1.60 V	271	118.3	5.4
3	*5875.00	114.8 AV			1.60 V	271	109.4	5.4
4	#5895.00	99.7 PK	130.2	-30.5	1.60 V	271	94.2	5.5
5	#5895.00	90.2 AV	110.2	-20.0	1.60 V	271	84.7	5.5
6	11750.00	55.9 PK	74.0	-18.1	3.82 V	97	41.0	14.9
7	11750.00	45.5 AV	54.0	-8.5	3.82 V	97	30.6	14.9
8	#17625.00	56.2 PK	88.2	-32.0	1.34 V	131	36.3	19.9
9	#17625.00	45.5 AV	68.2	-22.7	1.34 V	131	25.6	19.9

Remarks:

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

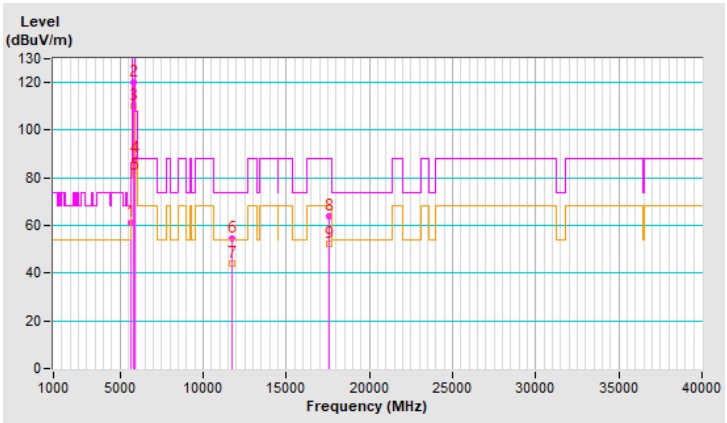


RF Mode	TX 802.11ax (HE80)	Channel	CH 171：5855 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.02	60.9 PK	68.2	-7.3	2.37 H	288	56.0	4.9
2	*5855.00	119.9 PK			2.37 H	288	114.5	5.4
3	*5855.00	110.3 AV			2.37 H	288	104.9	5.4
4	#5927.06	88.0 PK	108.2	-20.2	2.37 H	288	82.5	5.5
5	#5927.06	80.8 AV	88.2	-7.4	2.37 H	288	75.3	5.5
6	11710.00	54.4 PK	74.0	-19.6	1.74 H	138	39.5	14.9
7	11710.00	43.8 AV	54.0	-10.2	1.74 H	138	28.9	14.9
8	#17565.00	63.7 PK	88.2	-24.5	2.45 H	65	44.1	19.6
9	#17565.00	52.1 AV	68.2	-16.1	2.45 H	65	32.5	19.6

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.

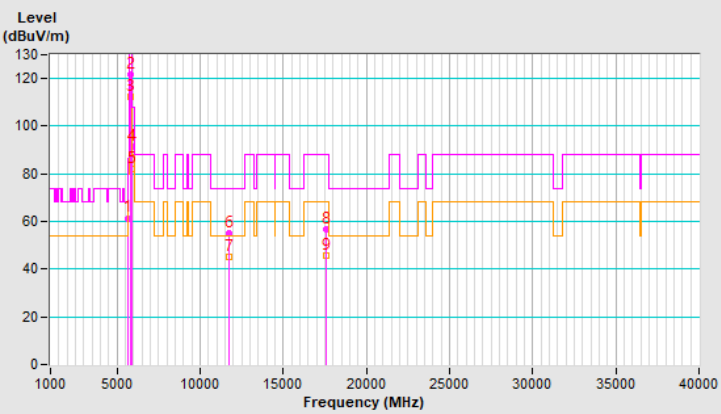


RF Mode	TX 802.11ax (HE80)	Channel	CH 171：5855 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5645.84	61.4 PK	68.2	-6.8	1.43 V	272	56.5	4.9
2	*5855.00	121.9 PK			1.43 V	272	116.5	5.4
3	*5855.00	112.5 AV			1.43 V	272	107.1	5.4
4	#5925.88	91.5 PK	108.2	-16.7	1.43 V	272	86.0	5.5
5	#5925.88	82.0 AV	88.2	-6.2	1.43 V	272	76.5	5.5
6	11710.00	55.3 PK	74.0	-18.7	3.91 V	106	40.4	14.9
7	11710.00	45.2 AV	54.0	-8.8	3.91 V	106	30.3	14.9
8	#17565.00	56.7 PK	88.2	-31.5	1.40 V	118	37.1	19.6
9	#17565.00	45.9 AV	68.2	-22.3	1.40 V	118	26.3	19.6

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.

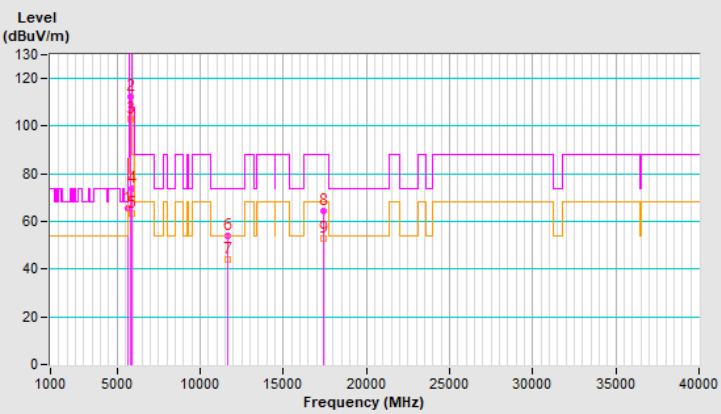


RF Mode	TX 802.11ax (HE160)	Channel	CH 163：5815 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5631.34	65.3 PK	68.2	-2.9	2.45 H	272	60.4	4.9
2	*5815.00	112.6 PK			2.45 H	272	107.3	5.3
3	*5815.00	102.9 AV			2.45 H	272	97.6	5.3
4	#5926.44	73.7 PK	108.2	-34.5	2.45 H	272	68.2	5.5
5	#5926.44	63.2 AV	88.2	-25.0	2.45 H	272	57.7	5.5
6	11630.00	54.2 PK	74.0	-19.8	1.83 H	136	39.1	15.1
7	11630.00	43.8 AV	54.0	-10.2	1.83 H	136	28.7	15.1
8	#17445.00	64.5 PK	88.2	-23.7	2.43 H	47	45.3	19.2
9	#17445.00	53.0 AV	68.2	-15.2	2.43 H	47	33.8	19.2

Remarks:

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

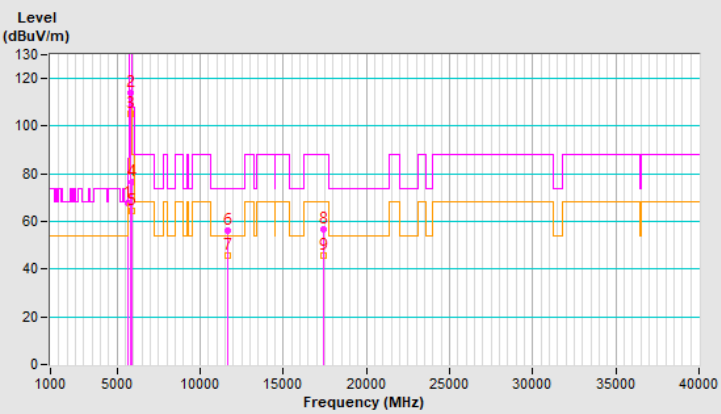


RF Mode	TX 802.11ax (HE160)	Channel	CH 163：5815 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	20°C, 70% RH
Tested By	Ryan Du		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	**#5635.52**	**67.6 PK**	**68.2**	**-0.6**	**1.60 V**	**264**	**62.7**	**4.9**
2	*5815.00	114.1 PK			1.60 V	264	108.8	5.3
3	*5815.00	105.1 AV			1.60 V	264	99.8	5.3
4	#5925.27	76.4 PK	108.2	-31.8	1.60 V	264	70.9	5.5
5	#5925.27	64.6 AV	88.2	-23.6	1.60 V	264	59.1	5.5
6	11630.00	56.1 PK	74.0	-17.9	3.80 V	98	41.0	15.1
7	11630.00	45.9 AV	54.0	-8.1	3.80 V	98	30.8	15.1
8	#17445.00	56.9 PK	88.2	-31.3	1.38 V	138	37.7	19.2
9	#17445.00	45.9 AV	68.2	-22.3	1.38 V	138	26.7	19.2

Remarks:

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

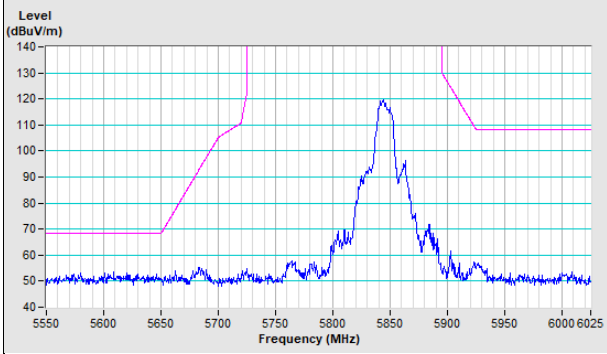


Plot of Band Edge

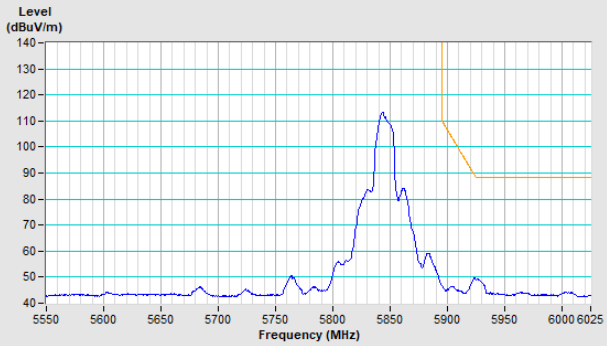
Frequency Range	5.5 GHz ~ 6.025 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz

802.11a Channel 169

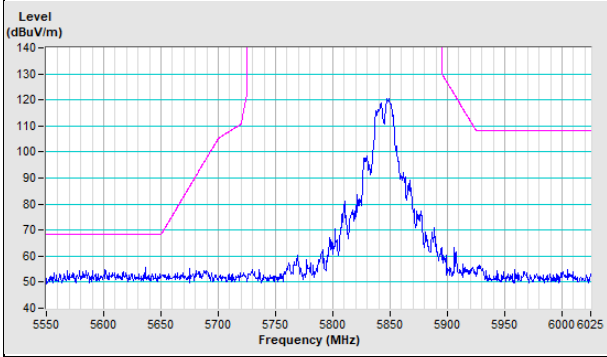
Horizontal (Peak)



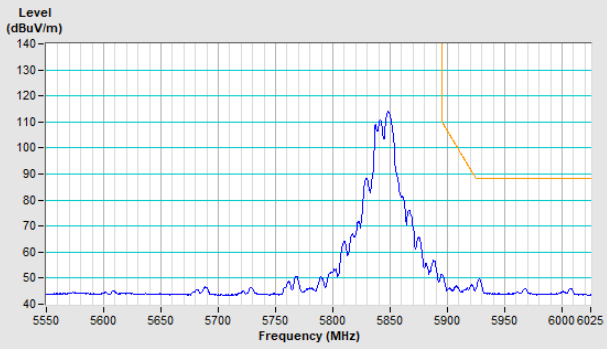
Horizontal (Average)



Vertical (Peak)

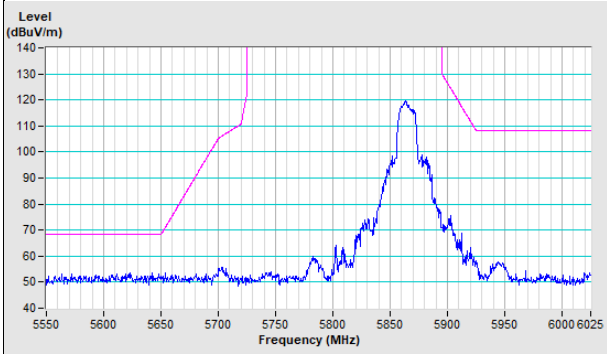


Vertical (Average)

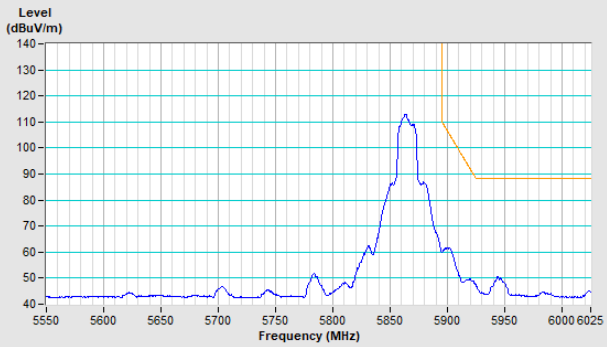


802.11a Channel 173

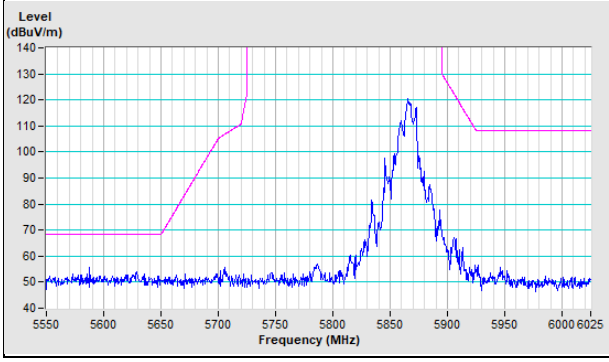
Horizontal (Peak)



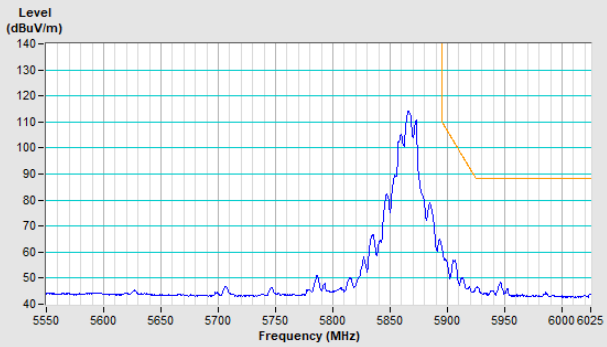
Horizontal (Average)

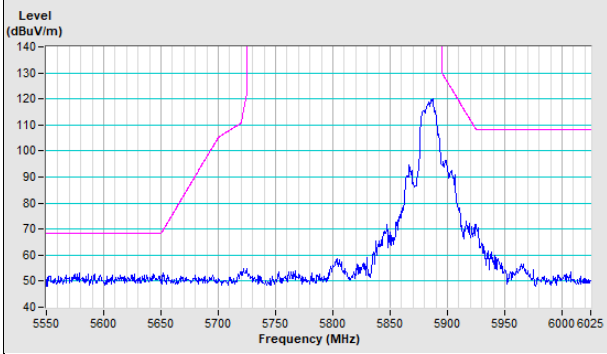
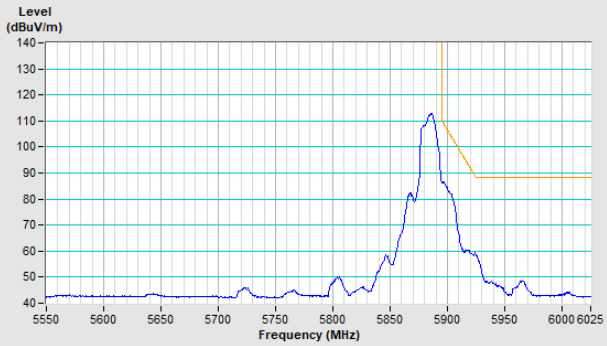
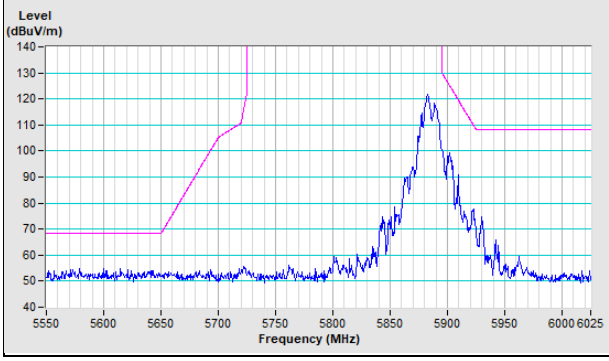
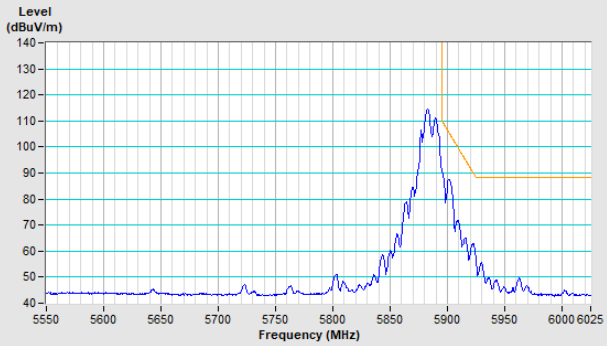


Vertical (Peak)



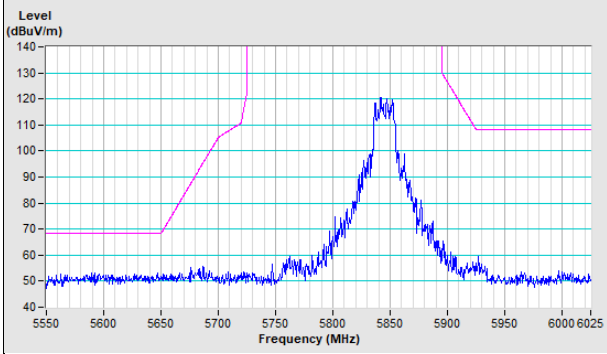
Vertical (Average)



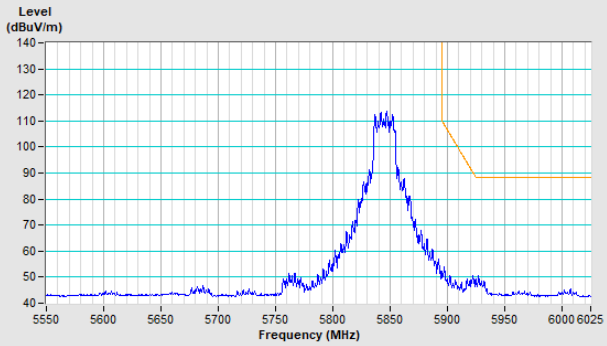
802.11a Channel 177	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE20) Channel 169

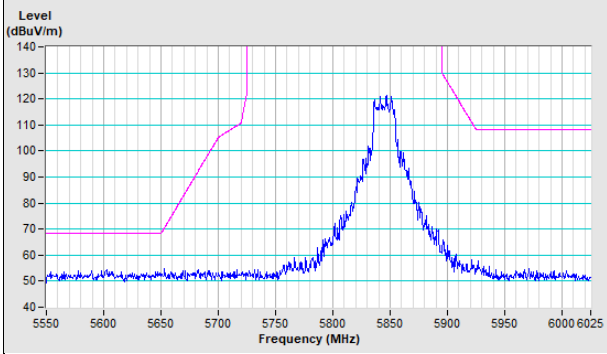
Horizontal (Peak)



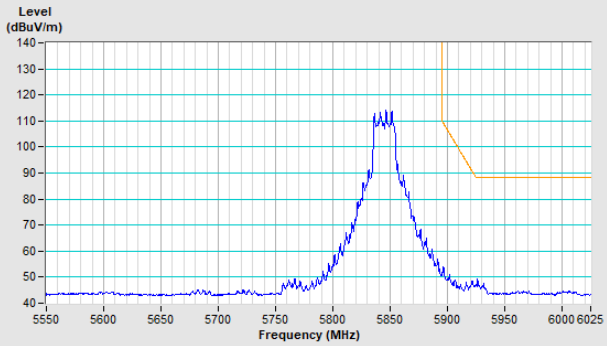
Horizontal (Average)



Vertical (Peak)

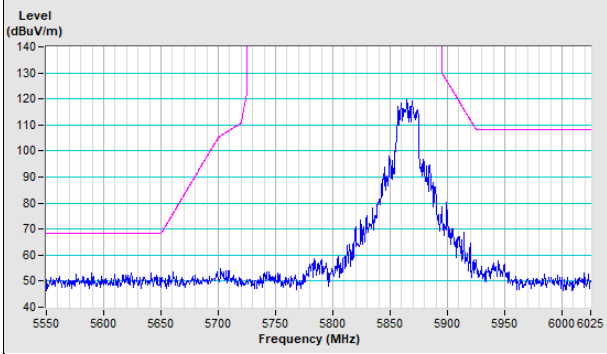


Vertical (Average)

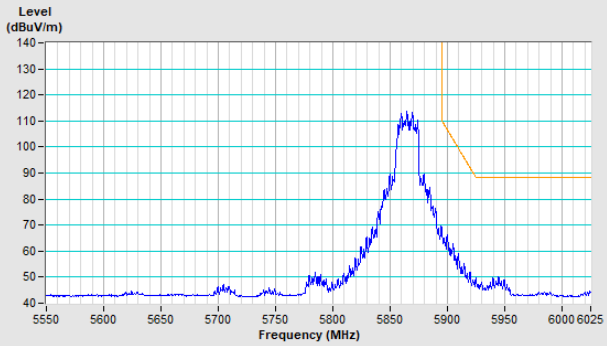


802.11ax (HE20) Channel 173

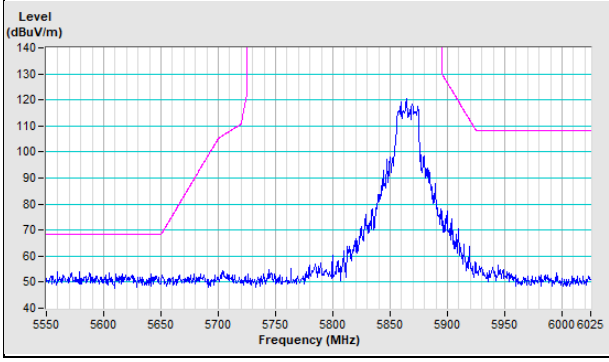
Horizontal (Peak)



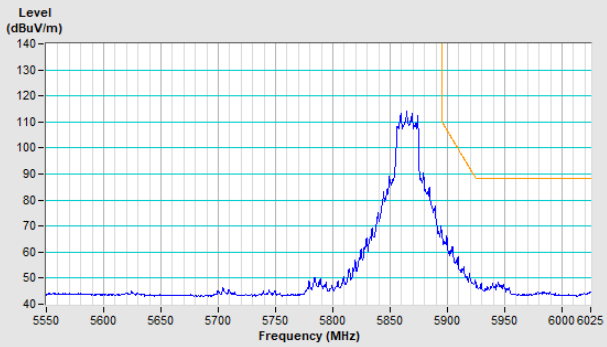
Horizontal (Average)

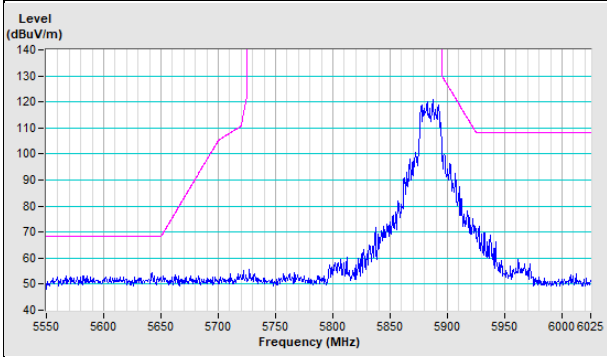
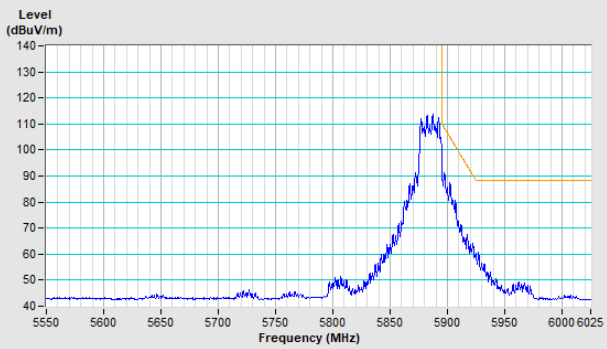
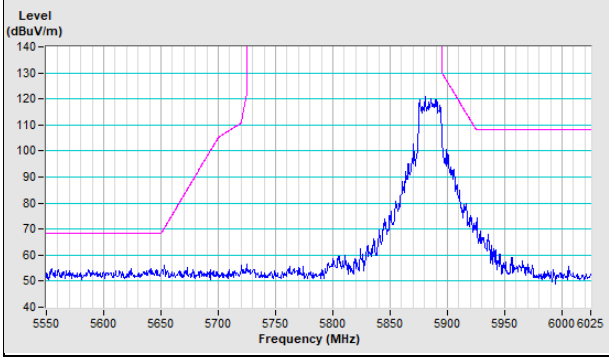
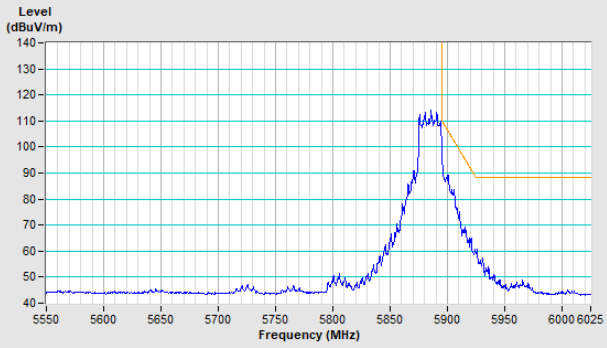


Vertical (Peak)



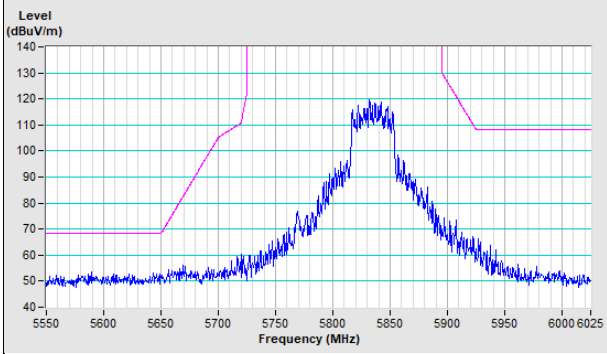
Vertical (Average)



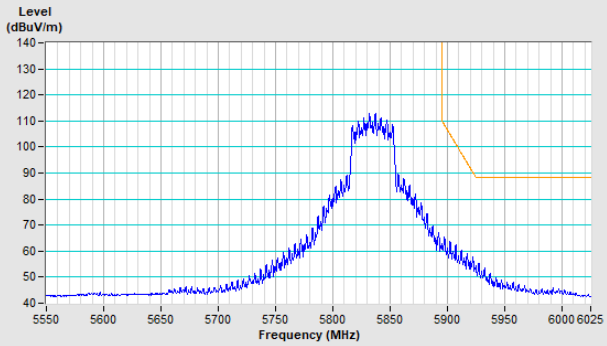
802.11ax (HE20) Channel 177	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE40) Channel 167

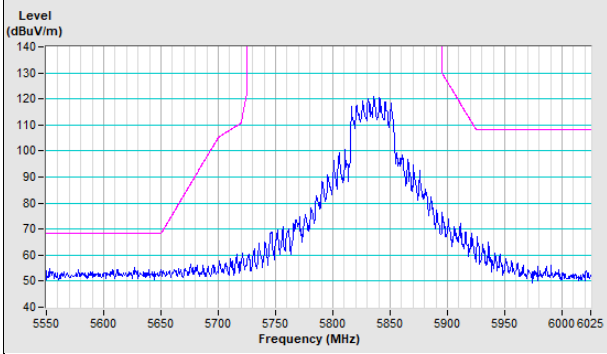
Horizontal (Peak)



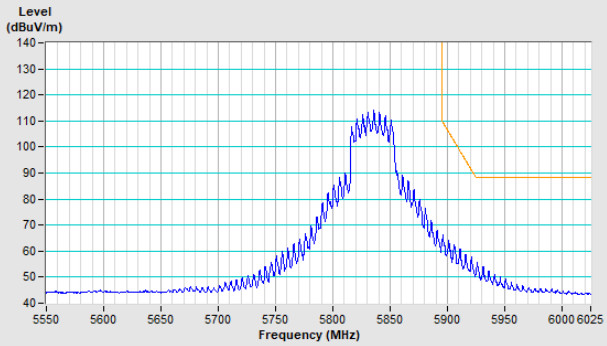
Horizontal (Average)



Vertical (Peak)

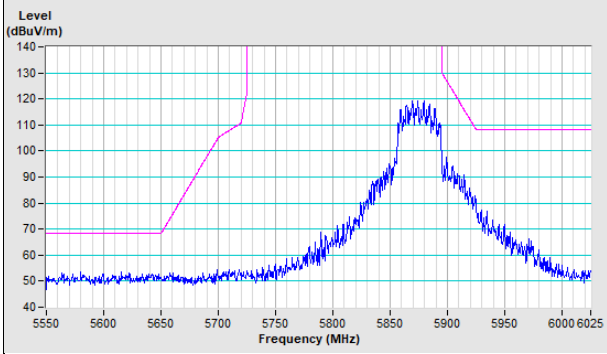


Vertical (Average)

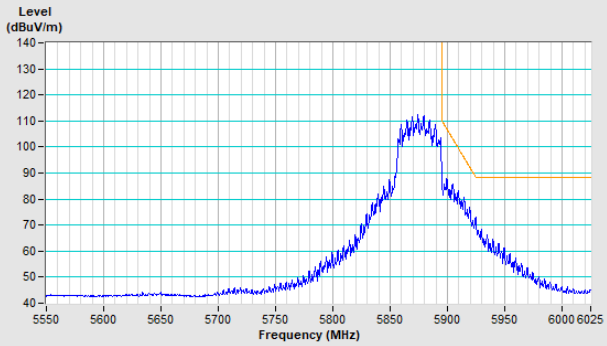


802.11ax (HE40) Channel 175

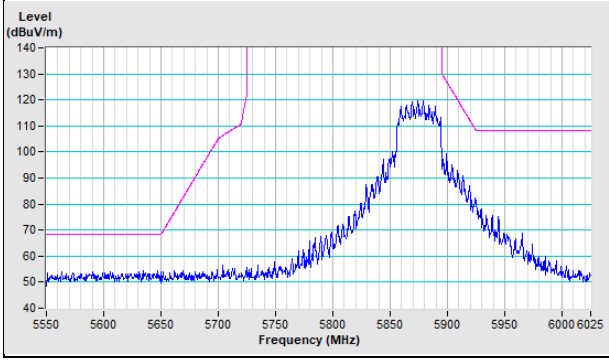
Horizontal (Peak)



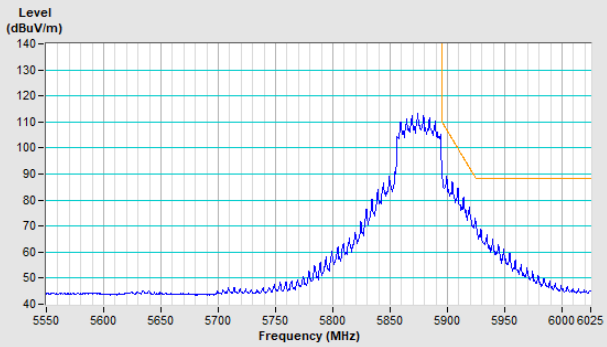
Horizontal (Average)

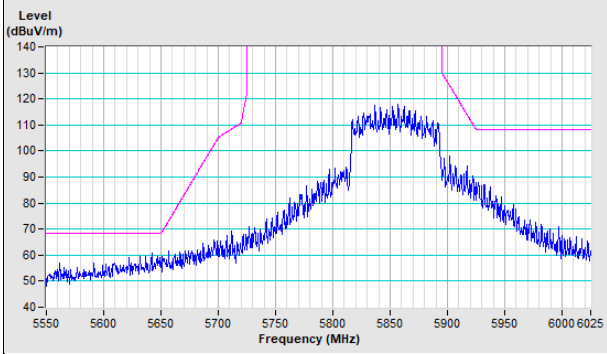
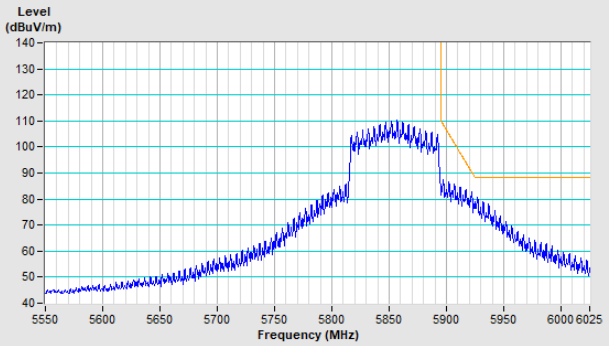
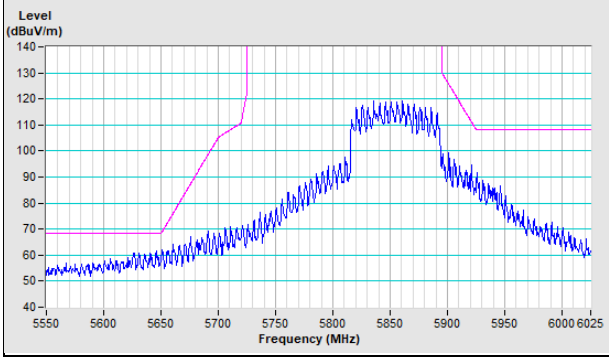
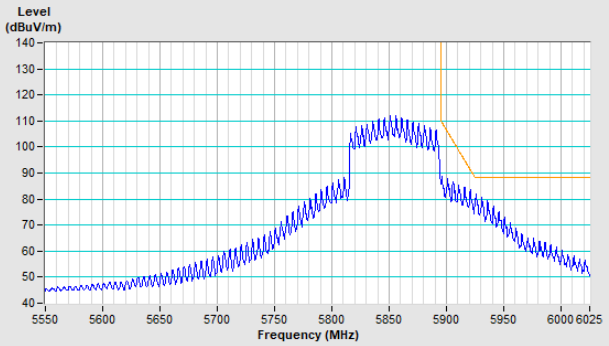


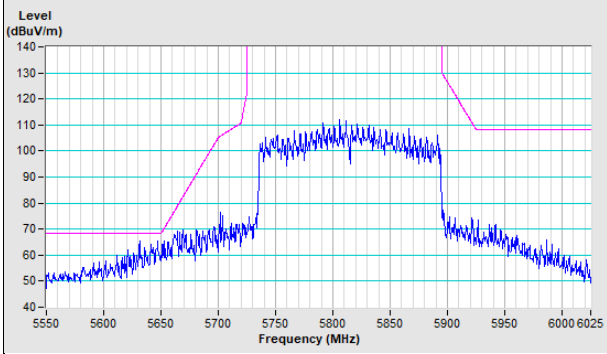
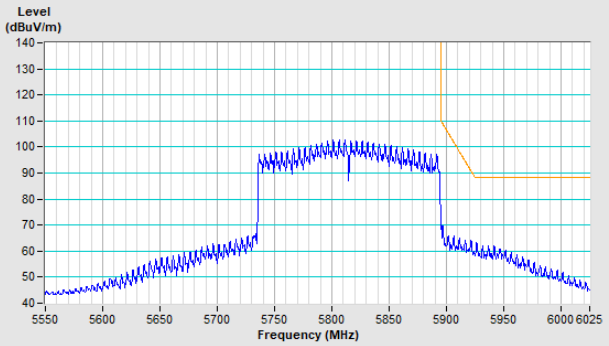
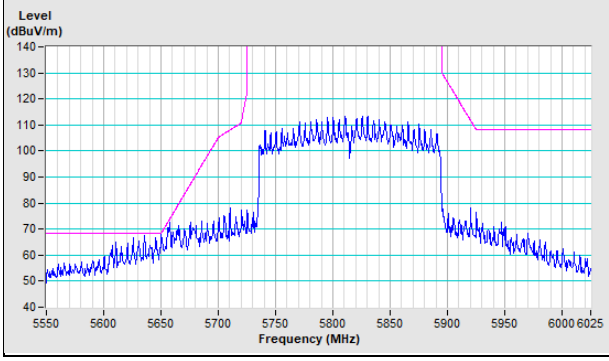
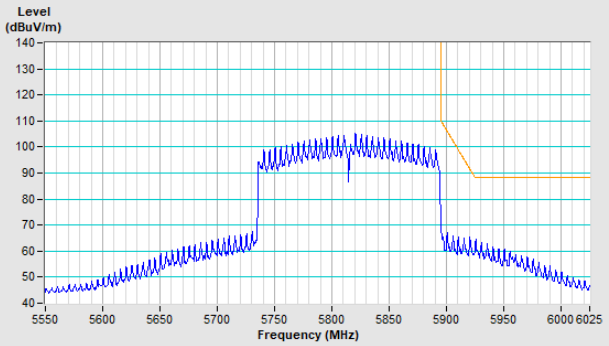
Vertical (Peak)



Vertical (Average)



802.11ax (HE80) Channel 171	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE160) Channel 163	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

8 Operational Restrictions for 5.85-5.895GHz U-NII Devices

For Indoor Access Point operates in the 5.850-5.895 GHz band, is supplied power from a wired connection, has an integrated antenna, is not battery powered, and does not have a weatherized enclosure. Indoor access point devices must bear the following statement in a conspicuous location on the device and in the user's manual: FCC regulations restrict operation of this device to indoor use only.

Device is a Indoor access point, all restrictions are meet the §15.403 requirements. Please refer to the Attestation letter exhibit supplied within this application.

9 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

10 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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