

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)
Report No.: RFBAOZ-WTW-P23070065A-1
FCC ID: RRK-BW1600A
Product: LTE Data and Voice (ATA) In-Home Gateway
Brand: Brightspeed
Model No.: BW1600A
Received Date: 2023/7/12
Test Date: 2023/7/26 ~ 2023/9/12
Issued Date: 2023/10/12
Applicant: Alpha Networks Inc.
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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory
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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / 723255 / TW2022
Designation Number:

Approved by: _____



, Date: _____

2023/10/12

Wen Yu / Assistant Manager

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Prepared by : Phoenix Huang / Specialist

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Table of Contents

Release Control Record	4
1 Certificate.....	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Supplementary Information	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Antenna Description of EUT	8
3.3 Channel List.....	9
3.4 Test Mode Applicability and Tested Channel Detail.....	10
3.5 Duty Cycle of Test Signal.....	11
3.6 Test Program Used and Operation Descriptions	13
3.7 Connection Diagram of EUT and Peripheral Devices	13
3.8 Configuration of Peripheral Devices and Cable Connections	14
4 Test Instruments	15
4.1 RF Output Power.....	15
4.2 Power Spectral Density	15
4.3 6 dB Bandwidth	15
4.4 Frequency Stability	16
4.5 AC Power Conducted Emissions	16
4.6 Unwanted Emissions below 1 GHz	17
4.7 Unwanted Emissions above 1 GHz.....	18
5 Limits of Test Items.....	19
5.1 RF Output Power.....	19
5.2 Power Spectral Density	19
5.3 6 dB Bandwidth	19
5.4 Frequency Stability	19
5.5 AC Power Conducted Emissions	19
5.6 Unwanted Emissions below 1 GHz	20
5.7 Unwanted Emissions above 1 GHz.....	20
6 Test Arrangements.....	21
6.1 RF Output Power.....	21
6.1.1 Test Setup	21
6.1.2 Test Procedure.....	21
6.2 Power Spectral Density	21
6.2.1 Test Setup	21
6.2.2 Test Procedure.....	21
6.3 6 dB Bandwidth	22
6.3.1 Test Setup	22
6.3.2 Test Procedure.....	22
6.4 Frequency Stability	22
6.4.1 Test Setup	22
6.4.2 Test Procedure.....	22
6.5 AC Power Conducted Emissions	23
6.5.1 Test Setup	23
6.5.2 Test Procedure.....	23
6.6 Unwanted Emissions below 1 GHz	24
6.6.1 Test Setup	24
6.6.2 Test Procedure.....	25
6.7 Unwanted Emissions above 1 GHz.....	26
6.7.1 Test Setup	26
6.7.2 Test Procedure.....	26
7 Test Results of Test Item	27

7.1	RF Output Power.....	27
7.2	Power Spectral Density	31
7.3	6 dB Bandwidth	33
7.4	Frequency Stability	35
7.5	AC Power Conducted Emissions	36
7.6	Unwanted Emissions below 1 GHz	38
7.7	Unwanted Emissions above 1 GHz.....	40
8	Operational Restrictions for 5.85-5.895 GHz U-NII Devices.....	65
9	Pictures of Test Arrangements	66
10	Information of the Testing Laboratories	67

Release Control Record

Issue No.	Description	Date Issued
RFBAOZ-WTW-P23070065A-1	Original release.	2023/10/12

1 Certificate

Product: LTE Data and Voice (ATA) In-Home Gateway

Brand: Brightspeed

Test Model: BW1600A

Sample Status: Engineering sample

Applicant: Alpha Networks Inc.

Test Date: 2023/7/26 ~ 2023/9/12

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

Measurement ANSI C63.10-2013

procedure: 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 -11.71 dB at 0.37266 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.8 dB at 64.86 MHz
15.407(b)(5) 15.407(b)(10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -4.6 dB at 11730.00 and 11750.00 MHz
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit.
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	No antenna connector is used.

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	5.5 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	LTE Data and Voice (ATA) In-Home Gateway
Brand	Brightspeed
Test Model	BW1600A
Status of EUT	Engineering sample
Power Supply Rating	12 Vdc from power adapter or 5 Vdc from USB interface
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode 1024QAM for OFDMA in 11ax mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 866.7 Mbps 802.11ax: up to 1201.0 Mbps
Operating Frequency	5.835 GHz ~ 5.885 GHz
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
Output Power	CDD Mode: EIRP: 1453.962 mW (31.63 dBm) Beamforming Mode: EIRP: 2841.535 mW (34.54 dBm)
EUT Category	Indoor access point

Note:

- This report is prepared for FCC class II change. The difference compared with the Report No.: RFBAOZ-WTW-P23070065-1 as the following:
 - ◆ Enable U-NII-2A, U-NII-2C and U-NII-4 bands through software change.
- According to above conditions, for U-NII-4 band all of test items need to be performed and all data was verified to meet the requirements.
- The EUT uses following accessories.

AC Adapter 1		
Brand	Model	Specification
MOSO	MS-V2000R120-024Q0-US	AC Input : 100-240V 50/60Hz 0.7A max. DC Output : 12V 2A DC Output Cable : 1.8 m Plug : White mouth with fork plug and groove
RJ14 Cable		
Specification		
Signal Line : 3.7 m		
RJ11 Cable		
Specification		
Signal Line : 3.66 m		
RJ45 Cable 1		
Model		Specification
MT01-C076		Signal Line : 1.8 m
RJ45 Cable 2		
Model		Specification
MT01-C077		Signal Line : 1.8 m

4. The EUT contains certified WWAN module which FCC ID: XMR202008EC25AFXD.

5. The EUT has below radios as following table:

Radios 1	Radios 2
WLAN 2.4GHz + WLAN 5GHz	WWAN(LTE + WCDMA)

6. Simultaneously transmission condition.

Condition	Technology		
1	WWAN	WLAN 2.4GHz	WLAN 5GHz

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

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

WLAN							
Antenna No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (MHz)	Antenna Type	Connector Type	Cable Length (cm)
1	Quectel	Y4AXO00A1FA	3.53	2400~2500	Dipole	ipex(MHF)	5
			4.82	5150~5925			
2	Quectel	Y4AXO00A1EA	1.66	2400~2500	Dipole	ipex(MHF)	13
			4.61	5150~5925			

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

2. The EUT incorporates a MIMO function:

5 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11a	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ac (VHT80)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX

Note:

- All of modulation mode support beamforming function except 802.11a modulation mode.
- 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.
- The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz) and 802.11ax mode for 20 MHz (40 MHz, 80 MHz) therefore the manufacturer will control the power for 802.11n/ac mode is same as the 802.11ax mode or more lower than it and investigated worst case to representative mode in test report.

3.3 Channel List

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

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

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. The accessories cable has the following types: RJ11 / RJ14. Pre-scan these types and find the worst case as a representative test condition. 2. The Ethernet cable has two models: MT01-C076 / MT01-C077. Pre-scan these types and find the worst case as a representative test condition. 3. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
Worst Case:	1. For accessories cable worst condition is: RJ14 type 2. For Ethernet cable worst condition is: MT01-C076

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
	802.11ax (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
Power Spectral Density / 6 dB Bandwidth	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
Frequency Stability	802.11a	-	173	unmodulated	-
AC Power Conducted Emissions	802.11ax (HE80)	CDD	171	BPSK	MCS0
Unwanted Emissions below 1 GHz	802.11ax (HE80)	CDD	171	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

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

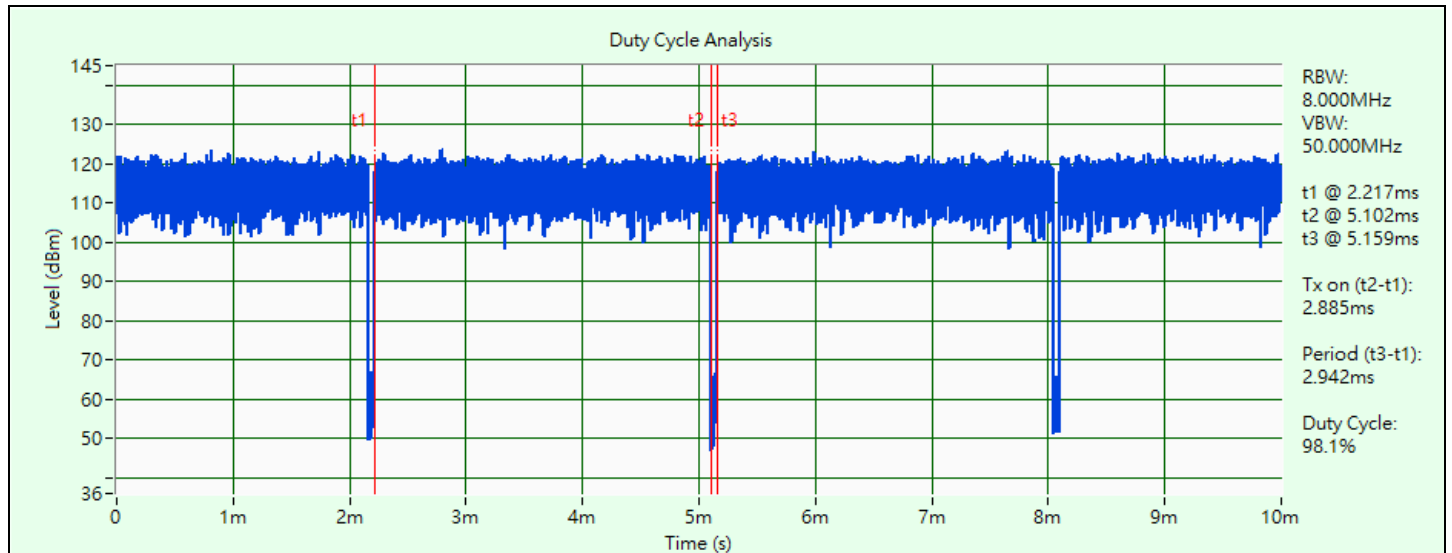
3.5 Duty Cycle of Test Signal

802.11a: Duty cycle = 2.885 ms / 2.942 ms x 100% = 98.1%

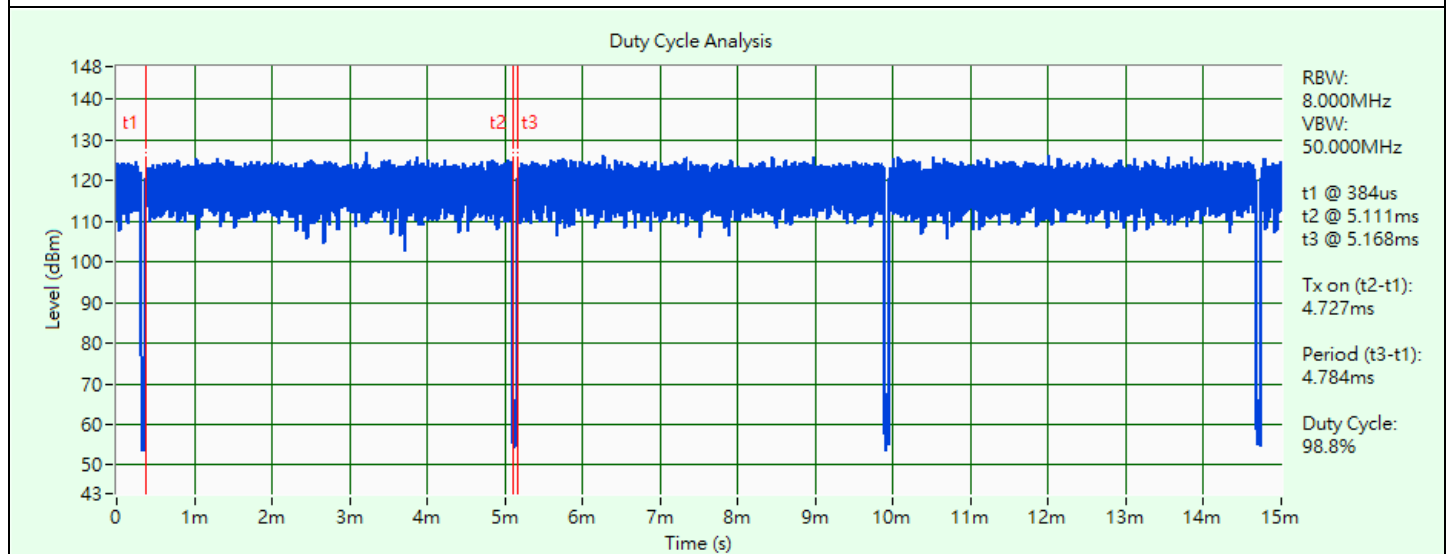
802.11ax (HE20): Duty cycle = 4.727 ms / 4.784 ms x 100% = 98.8%

802.11ax (HE40): Duty cycle = 4.719 ms / 4.776 ms x 100% = 98.8%

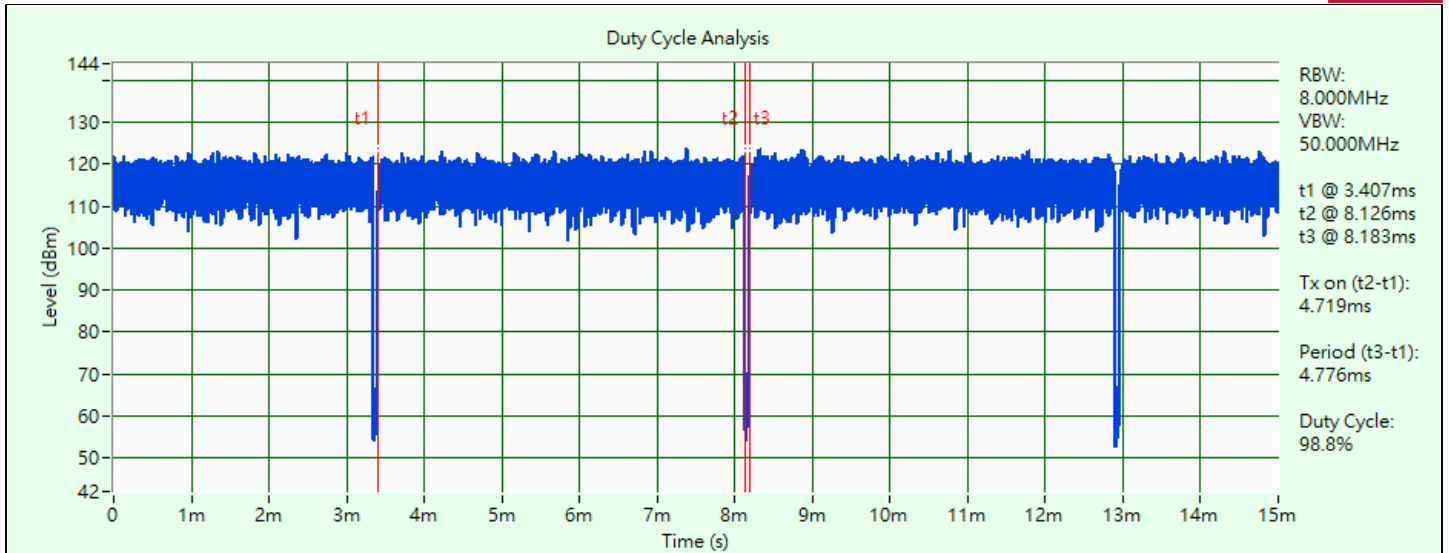
802.11ax (HE80): Duty cycle = 4.513 ms / 4.569 ms x 100% = 98.8%



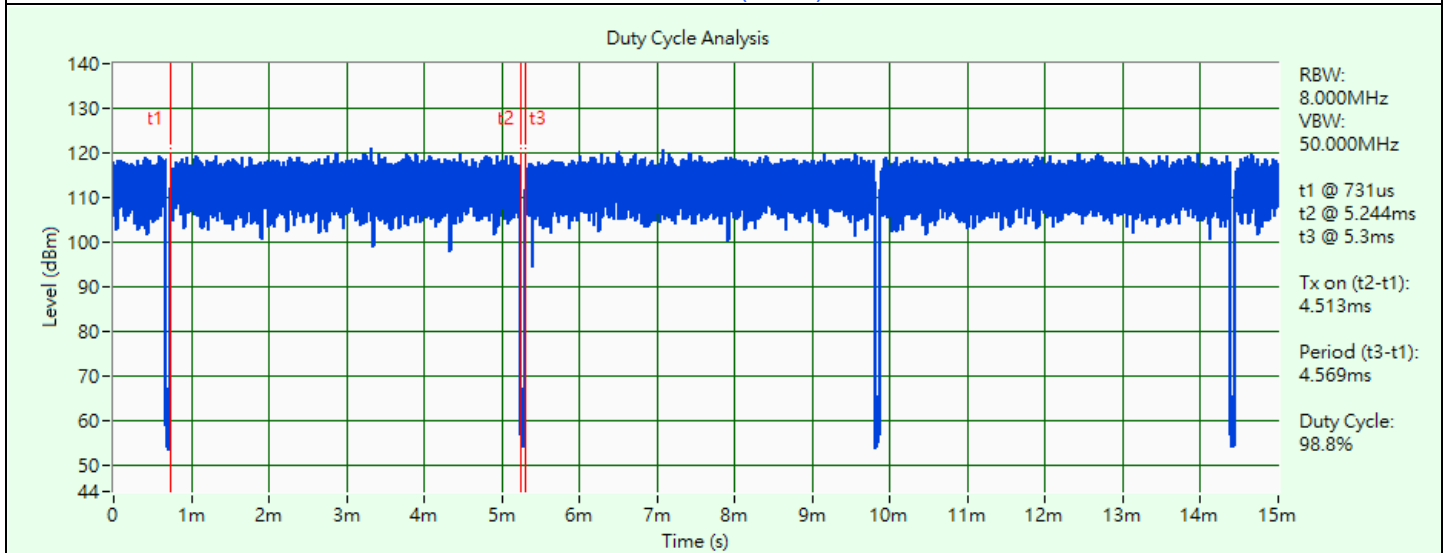
802.11a



802.11ax (HE20)



802.11ax (HE40)

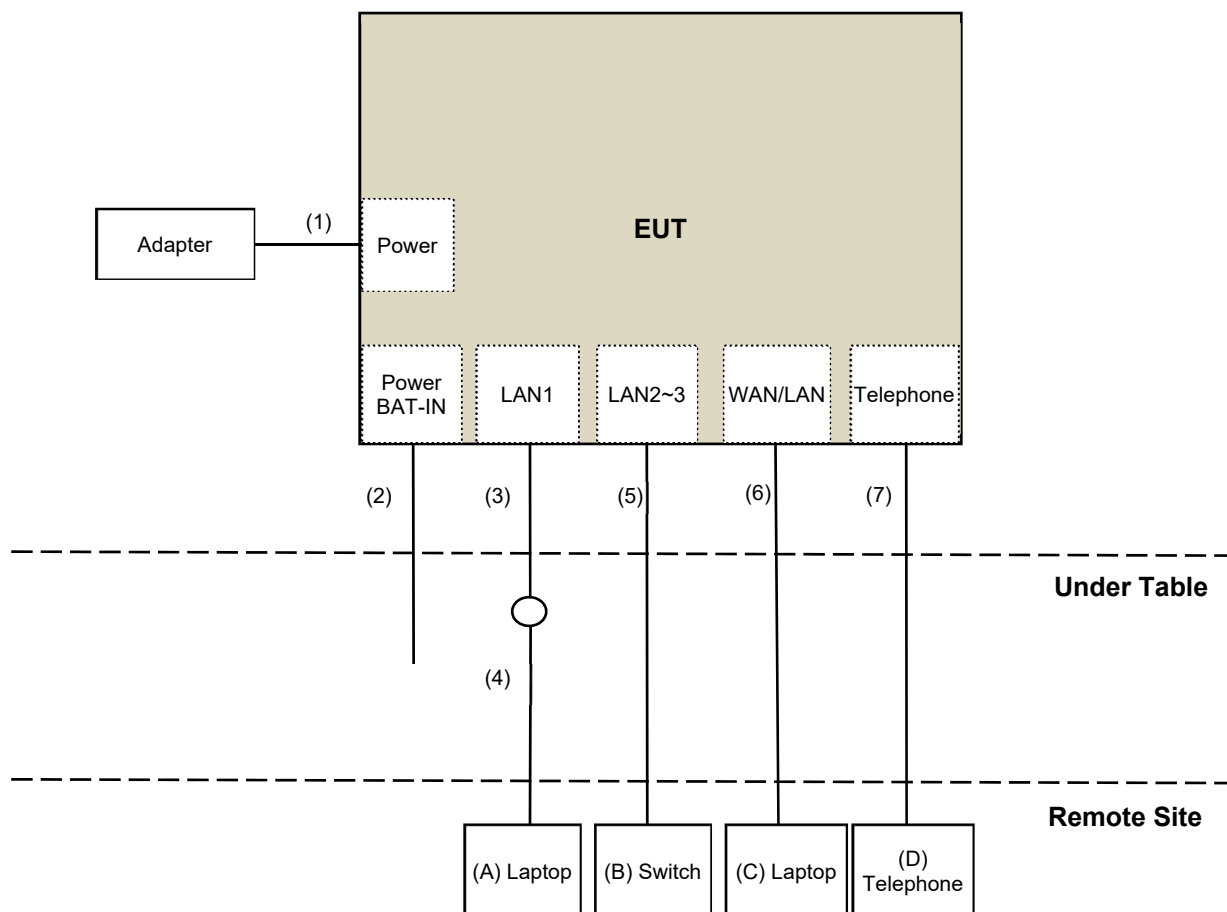


802.11ax (HE80)

3.6 Test Program Used and Operation Descriptions

Controlling software (MT7915 QA 0.0.2.17) 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	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	N/A	Provided by Lab
B	Switch	D-Link	DGS-1005D	DR8WC92000523	N/A	Provided by Lab
C	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Provided by Lab
D	Telephone	WONDER	WD-303	7C17KA 04011	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.8	No	0	Supplied by applicant
2	Type C to Type C Cable	1	1	Yes	0	Provided by Lab
3	RJ45 Cable	1	1.8	No	0	Supplied by applicant
4	RJ45 Cable	1	10	No	0	Provided by Lab
5	RJ45 Cable	2	10	No	0	Provided by Lab
6	RJ45 Cable	1	10	No	0	Provided by Lab
7	RJ14 Cable	1	3.7	No	0	Supplied by applicant

4 Test Instruments

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

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	MDCS18N-10	MDCS18N-10-01	2023/3/27	2024/3/26
Power Meter Anritsu	ML2495A	1529002	2023/6/17	2024/6/16
Pulse Power Sensor Anritsu	MA2411B	1726434	2023/6/19	2024/6/18

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/8/7

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	MDCS18N-10	MDCS18N-10-01	2023/3/27	2024/3/26
MXA Signal Analyzer Keysight	N9020B	MY60112409	2023/2/18	2024/2/17
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/8/7

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
Fixed Attenuator Woken	MDCS18N-10	MDCS18N-10-01	2023/3/27	2024/3/26
MXA Signal Analyzer Keysight	N9020B	MY60112409	2023/2/18	2024/2/17
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	2022/12/26	2023/12/25
True RMS Clamp Meter FLUKE	325	31130711WS	2023/6/8	2024/6/7

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/8/7

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	N/A	EMC-01	2022/9/27	2023/9/26
EMI Test Receiver R&S	ESCS 30	847124/029	2022/10/14	2023/10/13
Fixed Attenuator STI	STI02-2200-10	005	2023/7/1	2024/6/30
LISN R&S	ESH3-Z5	848773/004	2022/10/18	2023/10/17
RF Coaxial Cable JYEBAO	5D-FB	COCCAB-001	2023/7/1	2024/6/30
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2023/9/12

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-406	2022/10/21	2023/10/20
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-03	2022/12/28	2023/12/27
Loop Antenna Electro-Metrics	EM-6879	264	2023/2/21	2024/2/20
MXA Signal Analyzer Keysight	N9020B	MY60112408	2023/3/6	2024/3/5
MXE EMI Receiver Keysight	N9038A	MY59050100	2023/6/13	2024/6/12
Preamplifier EMCI	EMC330N	980701	2023/2/18	2024/2/17
	EMC001340	980142	2023/5/8	2024/5/7
RF Coaxial Cable JYEBAO	5D-FB	LOOPCAB-001	2022/12/19	2023/12/18
		LOOPCAB-002	2022/12/19	2023/12/18
RF Coaxial Cable PEWC	8D	966-4-1	2023/2/18	2024/2/17
		966-4-2	2023/2/18	2024/2/17
		966-4-3	2023/2/18	2024/2/17
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 4.
2. Tested Date: 2023/9/12

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	NA	NA
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	NA	NA
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-406	2022/11/13	2023/11/12
	BBHA 9170	9170-739	2022/11/13	2023/11/12
MXE EMI Receiver Agilent	N9038A	MY50010156	2023/6/13	2024/6/12
Preamplifier EMCI	EMC12630SE	980384	2022/12/28	2023/12/27
	EMC184045SE	980387	2022/12/28	2023/12/27
PXA Signal Analyzer Keysight	N9030B	MY57142938	2023/4/6	2024/4/5
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180504	2023/3/27	2024/3/26
	EMC104-SM-SM-2000	180601	2023/6/2	2024/6/1
	EMC104-SM-SM-6000	210201	2023/5/8	2024/5/7
	EMC102-KM-KM-1200	160924	2022/12/28	2023/12/27
	EMC-KM-KM-4000	200214	2023/2/20	2024/2/19
Software	ADT_Radiated_V8.7.08	NA	NA	NA

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2023/7/26 ~ 2023/8/11

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 and 5.850-5.895 GHz bands, 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:

1. The lower limit shall apply at the transition frequencies.
2. 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:

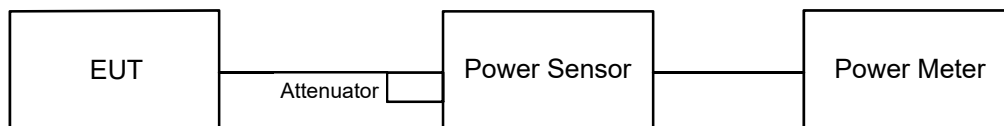
The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

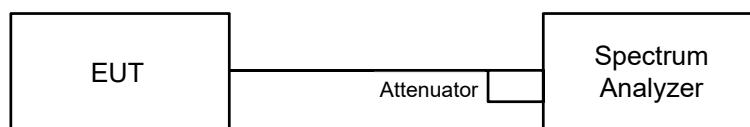


6.1.2 Test Procedure

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

6.2 Power Spectral Density

6.2.1 Test Setup



6.2.2 Test Procedure

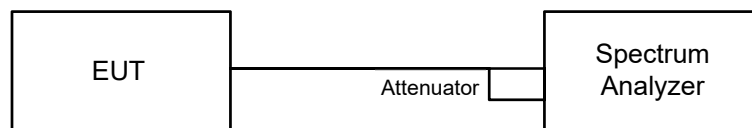
For specified measurement bandwidth 1 MHz:

Method SA-1

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

6.3 6 dB Bandwidth

6.3.1 Test Setup

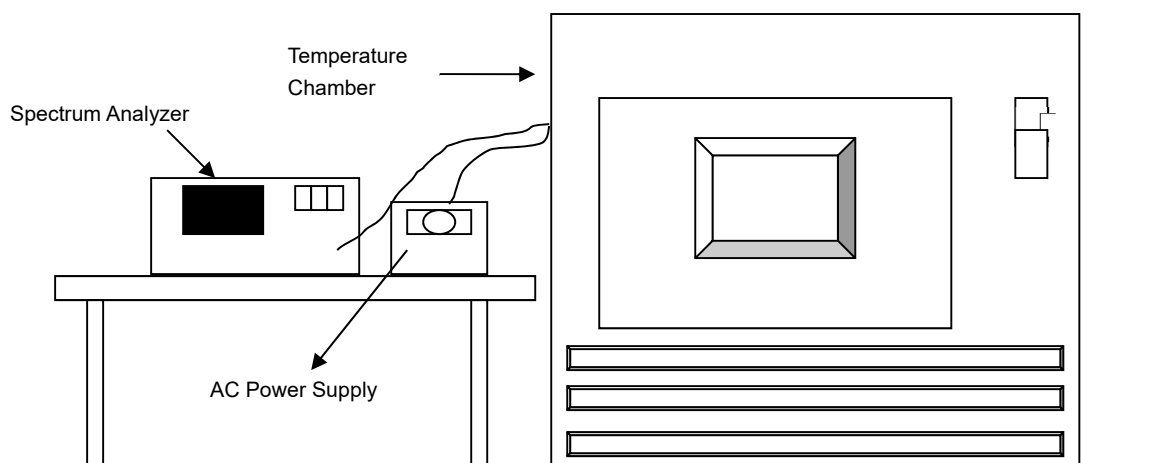


6.3.2 Test Procedure

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

6.4 Frequency Stability

6.4.1 Test Setup

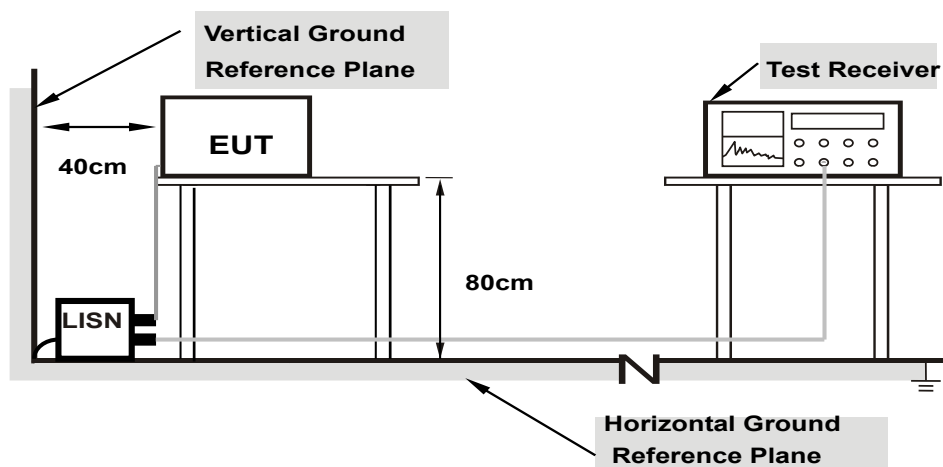


6.4.2 Test Procedure

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

6.5 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

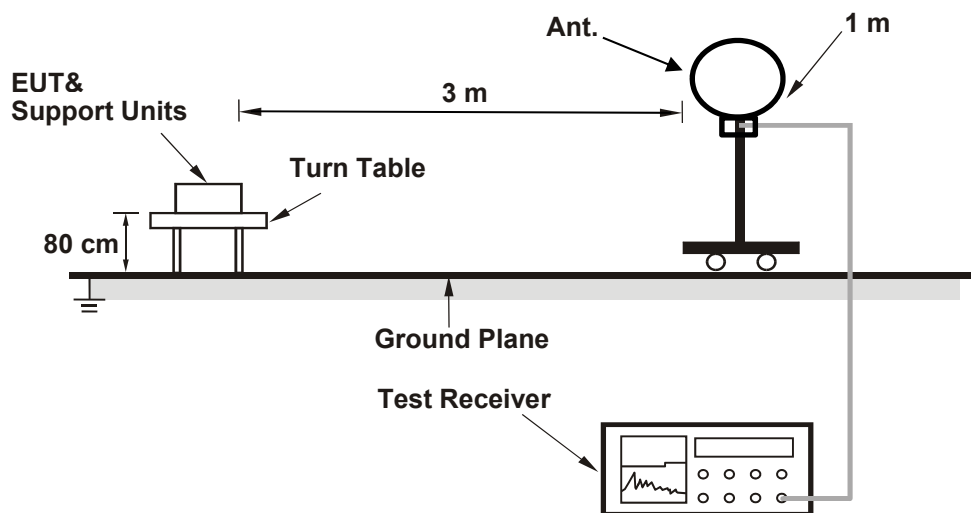
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The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

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

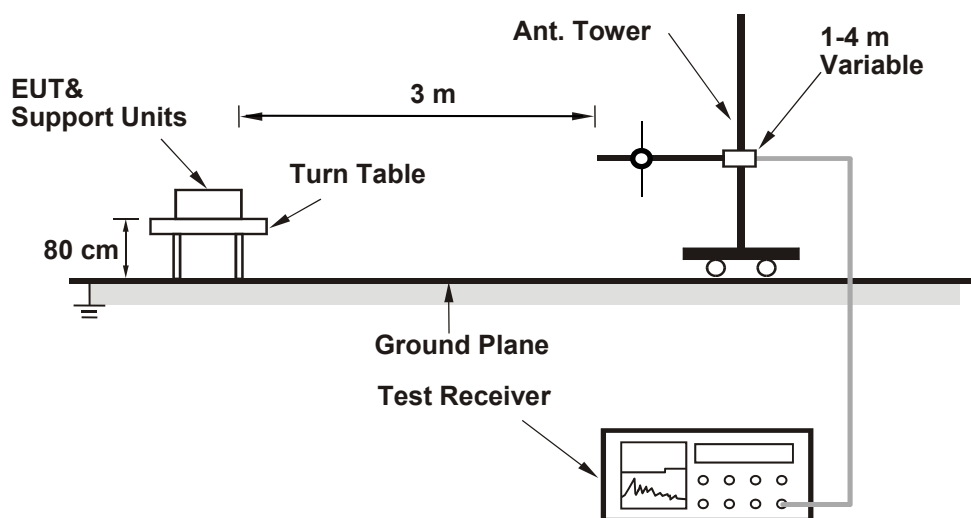
6.6 Unwanted Emissions below 1 GHz

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

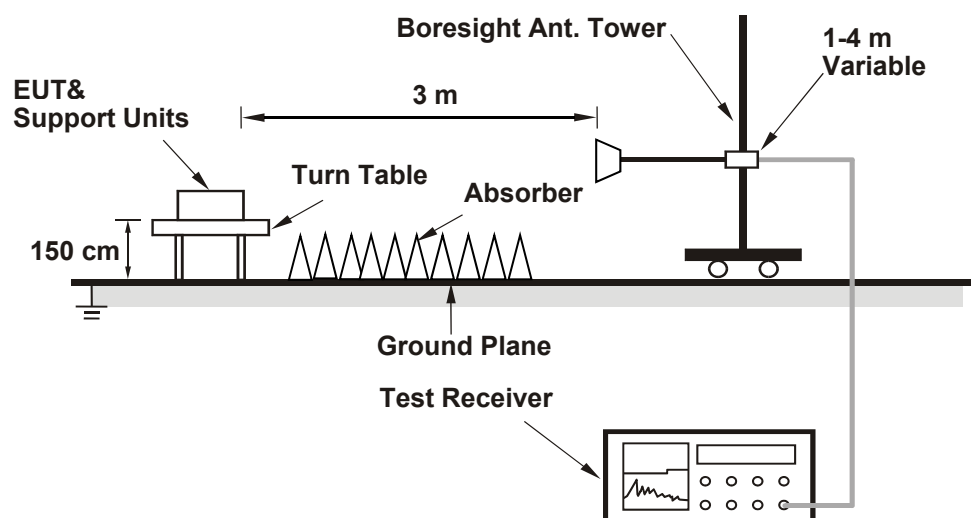
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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 the actual test configuration, please refer to the attached file (Test Setup Photo).

6.7.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

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

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu
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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							
169	5845	20.23	20.52	218.158	23.39	4.82	661.868	28.21	36	Pass
173	5865	20.02	20.29	207.367	23.17	4.82	629.129	27.99	36	Pass
177	5885	19.98	20.01	199.771	23.01	4.82	606.083	27.83	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.82 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							
169	5845	20.75	21.08	247.083	23.93	4.82	749.623	28.75	36	Pass
173	5865	20.79	20.81	240.454	23.81	4.82	729.511	28.63	36	Pass
177	5885	20.36	20.57	222.668	23.48	4.82	675.55	28.3	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.82 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							
167	5835	21.97	22.08	318.834	25.04	4.82	967.308	29.86	36	Pass
175	5875	21.30	21.64	280.778	24.48	4.82	851.85	29.3	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.82 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							
171	5855	23.58	23.49	451.391	26.55	4.82	1369.471	31.37	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.82 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							
169	5845	21.02	21.34	262.618	24.19	4.82	796.754	29.01	36	Pass
173	5865	20.79	21.06	247.594	23.94	4.82	751.173	28.76	36	Pass
177	5885	20.63	20.83	236.671	23.74	4.82	718.034	28.56	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.82 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							
167	5835	22.23	22.34	338.505	25.30	4.82	1026.987	30.12	36	Pass
175	5875	21.54	21.91	297.799	24.74	4.82	903.49	29.56	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.82 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							
171	5855	23.84	23.75	479.24	26.81	4.82	1453.962	31.63	36	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.82 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							
169	5845	20.75	21.08	247.083	23.93	7.73	1465.018	31.66	36	Pass
173	5865	20.79	20.81	240.454	23.81	7.73	1425.713	31.54	36	Pass
177	5885	20.36	20.57	222.668	23.48	7.73	1320.255	31.21	36	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 7.73 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							
167	5835	21.97	22.08	318.834	25.04	7.73	1890.448	32.77	36	Pass
175	5875	21.30	21.64	280.778	24.48	7.73	1664.804	32.21	36	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 7.73 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							
171	5855	23.58	23.49	451.391	26.55	7.73	2676.412	34.28	36	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 7.73 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							
169	5845	21.02	21.34	262.618	24.19	7.73	1557.129	31.92	36	Pass
173	5865	20.79	21.06	247.594	23.94	7.73	1468.048	31.67	36	Pass
177	5885	20.63	20.83	236.671	23.74	7.73	1403.282	31.47	36	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 7.73 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							
167	5835	22.23	22.34	338.505	25.30	7.73	2007.082	33.03	36	Pass
175	5875	21.54	21.91	297.799	24.74	7.73	1765.726	32.47	36	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
2. The directional gain is 7.73 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							
171	5855	23.84	23.75	479.24	26.81	7.73	2841.535	34.54	36	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
2. The directional gain is 7.73 dBi

7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu
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802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
169	5845	9.14	9.36	12.26	7.73	19.99	20	Pass
173	5865	9.04	9.44	12.25	7.73	19.98	20	Pass
177	5885	8.96	9.51	12.25	7.73	19.98	20	Pass

Notes:

- 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.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 7.73 dBi

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
169	5845	9.23	9.24	12.25	7.73	19.98	20	Pass
173	5865	9.11	8.72	11.93	7.73	19.66	20	Pass
177	5885	9.09	8.90	12.01	7.73	19.74	20	Pass

Notes:

- 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.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 7.73 dBi

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
167	5835	7.94	7.84	10.90	7.73	18.63	20	Pass
175	5875	7.29	7.25	10.28	7.73	18.01	20	Pass

Notes:

- 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.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 7.73 dBi

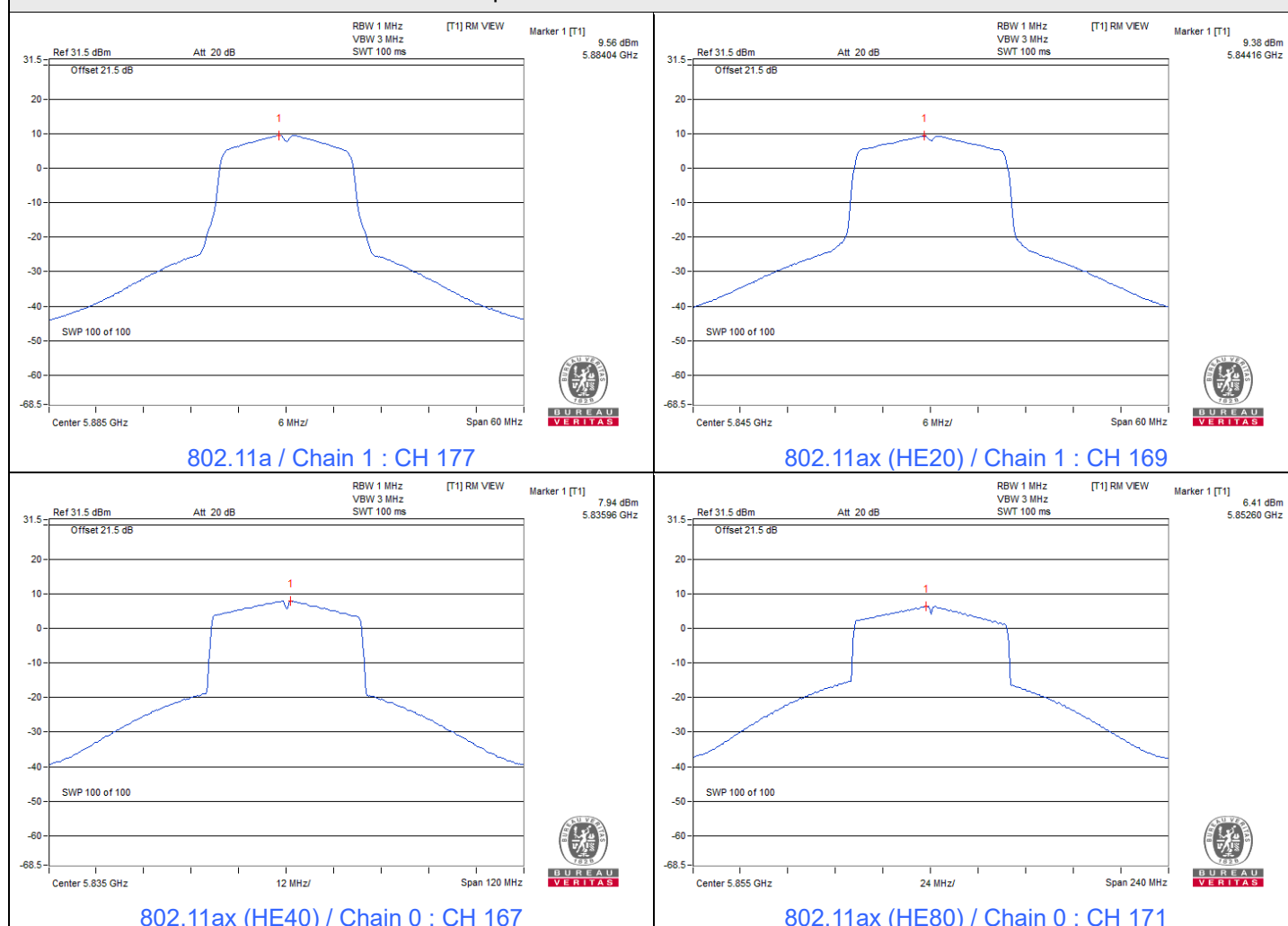
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Test Result
		Chain 0	Chain 1					
171	5855	6.41	6.30	9.37	7.73	17.1	20	Pass

Notes:

- 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.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 7.73 dBi

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu
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802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
169	5845	15.13	15.10	0.5	Pass
173	5865	15.15	15.10	0.5	Pass
177	5885	15.14	15.15	0.5	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
169	5845	17.43	17.03	0.5	Pass
173	5865	16.87	16.95	0.5	Pass
177	5885	17.86	17.84	0.5	Pass

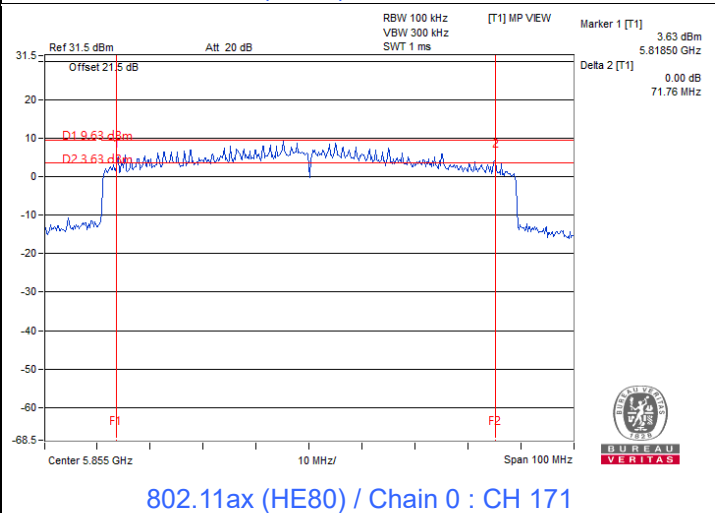
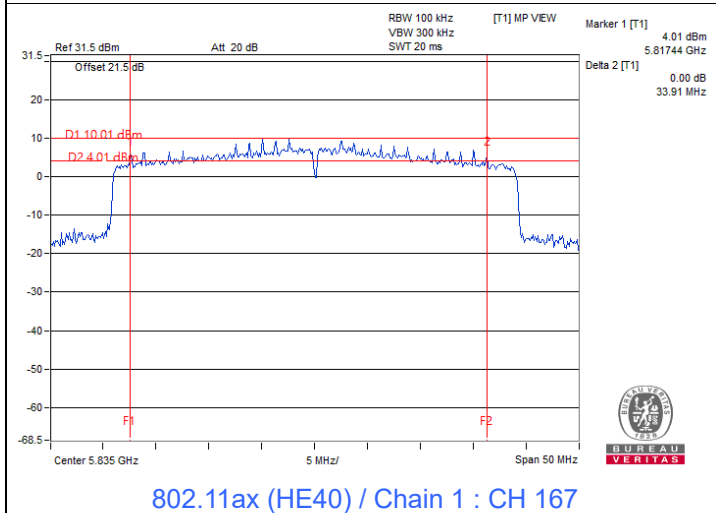
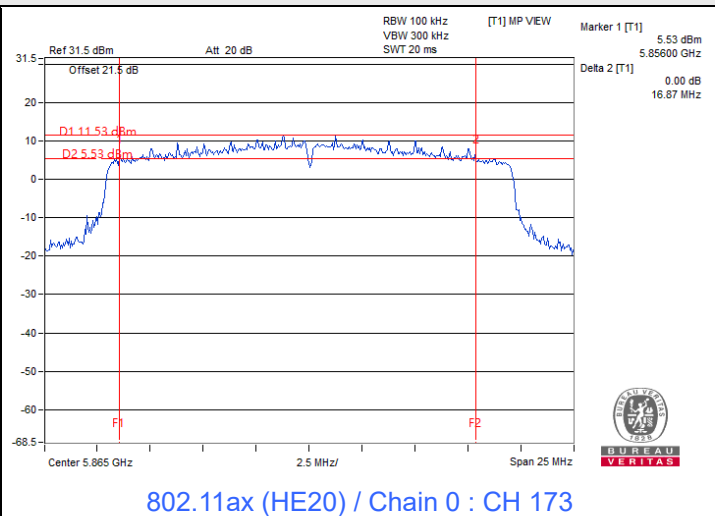
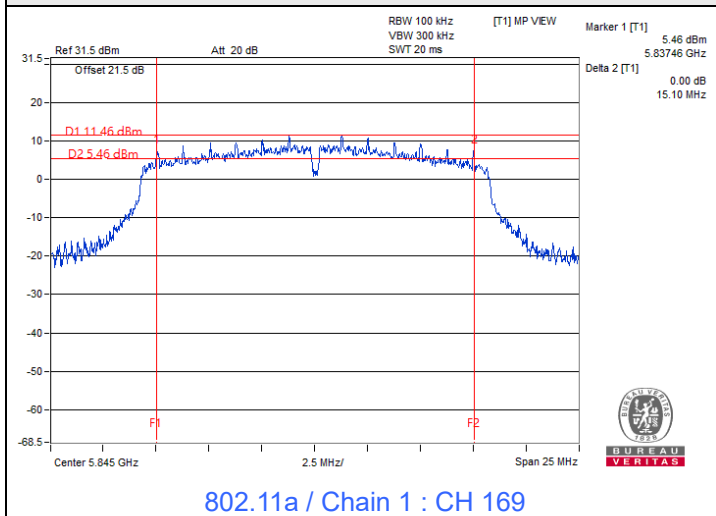
802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
167	5835	35.65	33.91	0.5	Pass
175	5875	36.32	35.48	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
171	5855	71.76	72.85	0.5	Pass

Spectrum Plot of Minimum Value



7.4 Frequency Stability

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Katina Lu
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802.11a

Frequency Stability Versus Temperature									
Operating Frequency: 5865 MHz									
Temp. (°C)	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	5864.9873	Pass	5864.9912	Pass	5864.9899	Pass	5864.9863	Pass
30	120	5865.0254	Pass	5865.0269	Pass	5865.0222	Pass	5865.0261	Pass
20	120	5865.0218	Pass	5865.0206	Pass	5865.0237	Pass	5865.0188	Pass
10	120	5864.9929	Pass	5864.9893	Pass	5864.9928	Pass	5864.9897	Pass
0	120	5865.0123	Pass	5865.0109	Pass	5865.0106	Pass	5865.0099	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5865 MHz									
Temp. (°C)	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	5865.032	Pass	5865.0287	Pass	5865.0327	Pass	5865.028	Pass
	120	5865.0218	Pass	5865.0206	Pass	5865.0237	Pass	5865.0188	Pass
	102	5865.0139	Pass	5865.0152	Pass	5865.0171	Pass	5865.0172	Pass

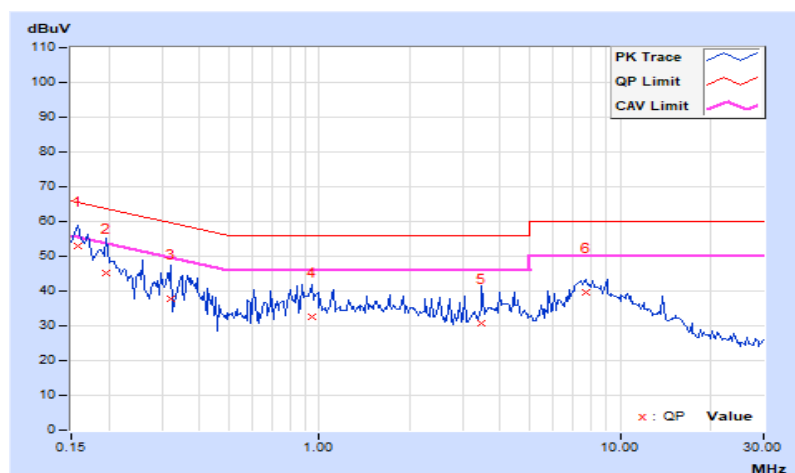
7.5 AC Power Conducted Emissions

RF Mode	802.11ax (HE80)	Channel	CH 171 : 5855 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	23°C, 68% RH
Tested By	Sampson Chen		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	9.95	43.04	29.20	52.99	39.15	65.58	55.58	-12.59	-16.43
2	0.19687	9.95	35.11	23.15	45.06	33.10	63.74	53.74	-18.68	-20.64
3	0.32188	9.96	27.96	13.72	37.92	23.68	59.66	49.66	-21.74	-25.98
4	0.94297	10.00	22.69	18.27	32.69	28.27	56.00	46.00	-23.31	-17.73
5	3.48047	10.18	20.54	14.55	30.72	24.73	56.00	46.00	-25.28	-21.27
6	7.66016	10.49	29.31	24.06	39.80	34.55	60.00	50.00	-20.20	-15.45

Remarks:

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

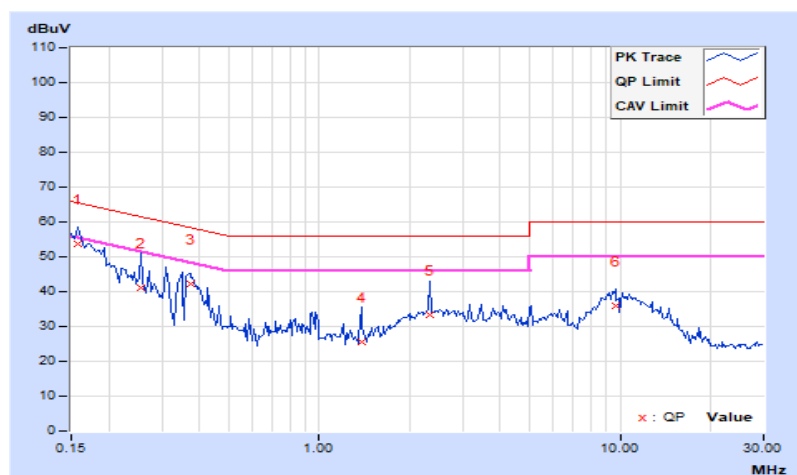


RF Mode	802.11ax (HE80)	Channel	CH 171 : 5855 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Sampson Chen		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	10.00	43.55	28.84	53.55	38.84	65.58	55.58	-12.03	-16.74
2	0.25547	10.00	31.12	20.22	41.12	30.22	61.58	51.58	-20.46	-21.36
3	0.37266	10.01	32.37	26.72	42.38	36.73	58.44	48.44	-16.06	-11.71
4	1.38672	10.07	15.47	9.71	25.54	19.78	56.00	46.00	-30.46	-26.22
5	2.33984	10.13	23.11	16.85	33.24	26.98	56.00	46.00	-22.76	-19.02
6	9.63281	10.63	25.23	20.23	35.86	30.86	60.00	50.00	-24.14	-19.14

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



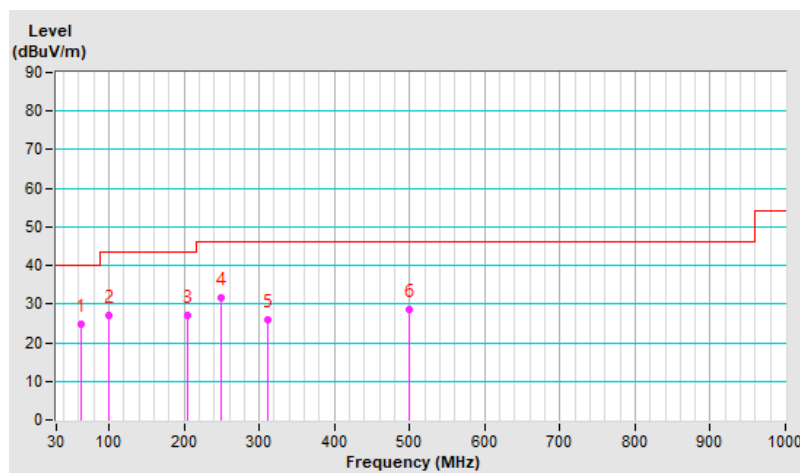
7.6 Unwanted Emissions below 1 GHz

RF Mode	802.11ax (HE80)	Channel	CH 171 : 5855 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	Sampson Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	63.86	24.7 QP	40.0	-15.3	1.50 H	94	39.0	-14.3
2	100.01	27.2 QP	43.5	-16.3	1.00 H	324	44.5	-17.3
3	203.97	27.2 QP	43.5	-16.3	1.00 H	94	43.5	-16.3
4	249.85	31.7 QP	46.0	-14.3	1.00 H	104	45.9	-14.2
5	311.36	25.8 QP	46.0	-20.2	1.50 H	217	37.9	-12.1
6	499.98	28.7 QP	46.0	-17.3	1.50 H	321	36.3	-7.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

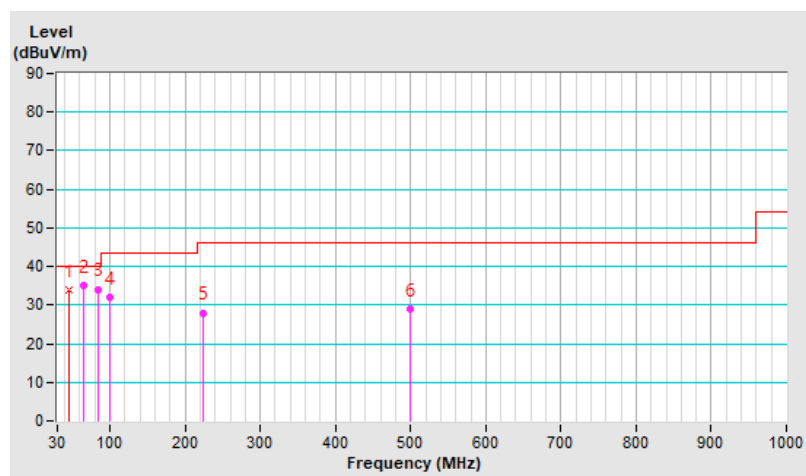


RF Mode	802.11ax (HE80)	Channel	CH 171 : 5855 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	Sampson Chen		

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	45.29	33.9 QP	40.0	-6.1	1.50 V	300	47.0	-13.1
2	64.86	35.2 QP	40.0	-4.8	1.00 V	355	49.7	-14.5
3	83.94	34.1 QP	40.0	-5.9	2.00 V	251	52.7	-18.6
4	99.83	32.1 QP	43.5	-11.4	2.00 V	350	49.5	-17.4
5	223.94	28.0 QP	46.0	-18.0	2.00 V	339	44.6	-16.6
6	499.94	28.9 QP	46.0	-17.1	2.00 V	341	36.5	-7.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



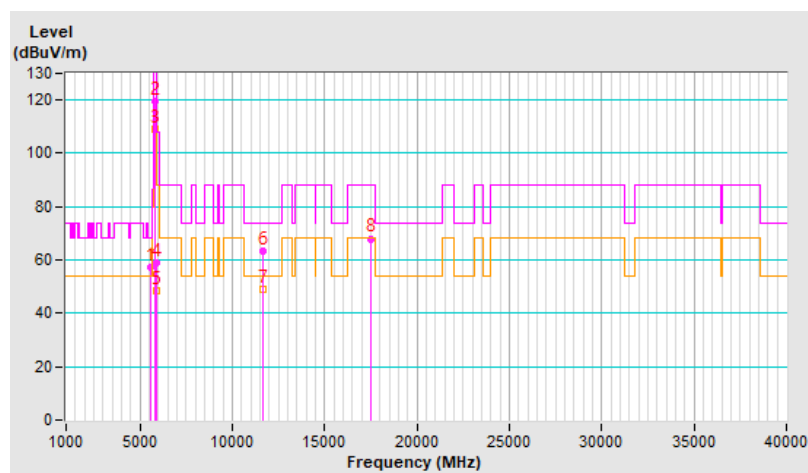
7.7 Unwanted Emissions above 1 GHz

RF Mode	802.11a	Channel	CH 169 : 5845 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% 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	#5563.07	57.4 PK	68.2	-10.8	2.08 H	42	54.7	2.7
2	*5845.00	119.4 PK			2.08 H	42	116.0	3.4
3	*5845.00	109.3 AV			2.08 H	42	105.9	3.4
4	#5927.98	58.8 PK	108.2	-49.4	2.08 H	42	55.2	3.6
5	#5927.98	48.3 AV	88.2	-39.9	2.08 H	42	44.7	3.6
6	11690.00	63.2 PK	74.0	-10.8	1.78 H	224	51.5	11.7
7	11690.00	49.2 AV	54.0	-4.8	1.78 H	224	37.5	11.7
8	#17535.00	68.0 PK	88.2	-20.2	1.55 H	155	49.5	18.5

Remarks:

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

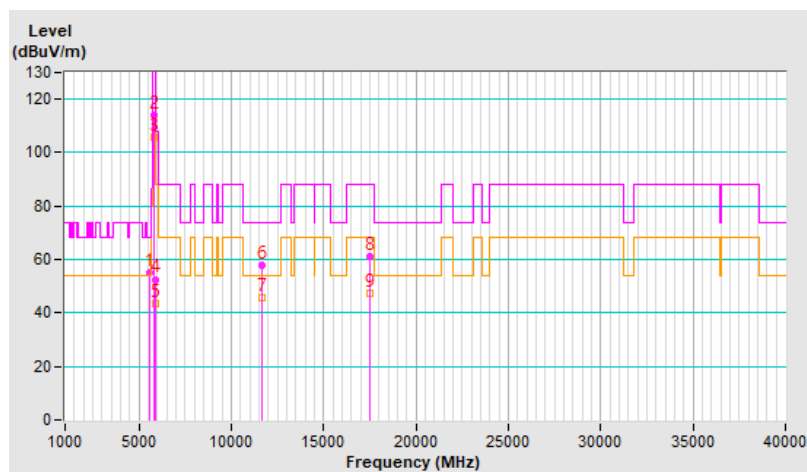


RF Mode	802.11a	Channel	CH 169 : 5845 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5568.99	55.0 PK	68.2	-13.2	1.74 V	330	52.3	2.7
2	*5845.00	114.1 PK			1.74 V	330	110.7	3.4
3	*5845.00	105.7 AV			1.74 V	330	102.3	3.4
4	#5927.61	52.6 PK	108.2	-55.6	1.74 V	330	49.0	3.6
5	#5927.61	43.7 AV	88.2	-44.5	1.74 V	330	40.1	3.6
6	11690.00	58.0 PK	74.0	-16.0	1.59 V	326	46.3	11.7
7	11690.00	45.7 AV	54.0	-8.3	1.59 V	326	34.0	11.7
8	#17535.00	61.1 PK	88.2	-27.1	3.99 V	194	42.6	18.5
9	#17535.00	47.3 AV	68.2	-20.9	3.99 V	194	28.8	18.5

Remarks:

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

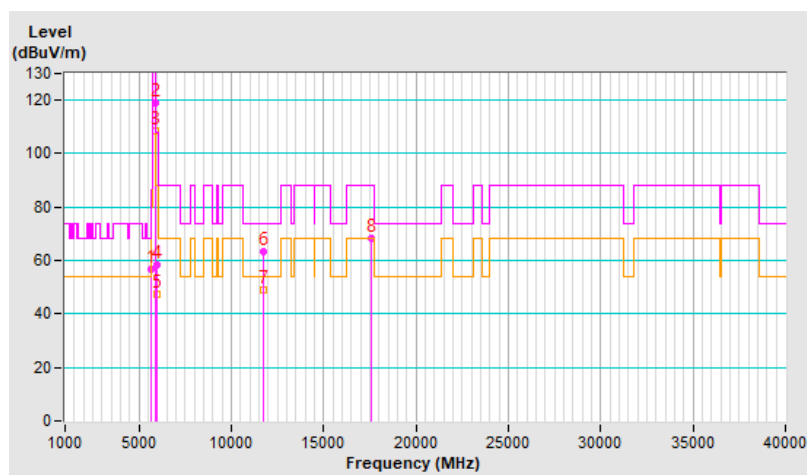


RF Mode	802.11a	Channel	CH 173 : 5865 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5641.43	56.8 PK	68.2	-11.4	2.14 H	43	54.0	2.8
2	*5865.00	119.0 PK			2.14 H	43	115.6	3.4
3	*5865.00	108.7 AV			2.14 H	43	105.3	3.4
4	#5947.86	58.5 PK	108.2	-49.7	2.14 H	43	54.8	3.7
5	#5947.86	47.2 AV	88.2	-41.0	2.14 H	43	43.5	3.7
6	11730.00	63.2 PK	74.0	-10.8	1.72 H	217	51.7	11.5
7	11730.00	48.9 AV	54.0	-5.1	1.72 H	217	37.4	11.5
8	#17595.00	68.1 PK	88.2	-20.1	1.54 H	156	49.7	18.4

Remarks:

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

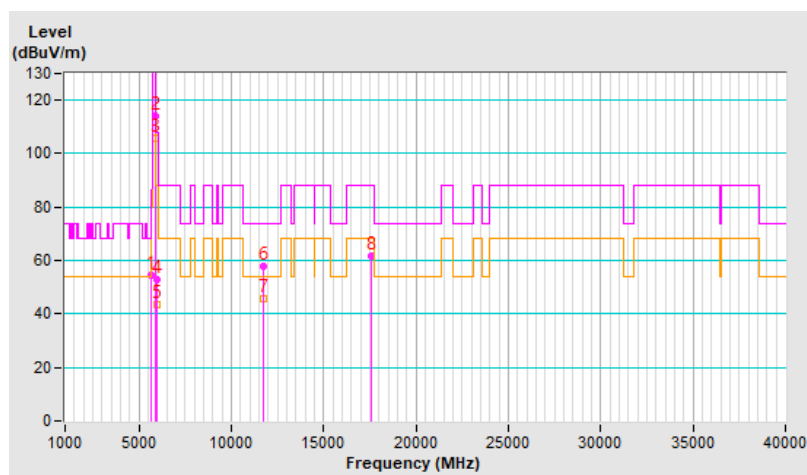


RF Mode	802.11a	Channel	CH 173 : 5865 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5628.99	54.4 PK	68.2	-13.8	1.69 V	332	51.5	2.9
2	*5865.00	114.2 PK			1.69 V	332	110.8	3.4
3	*5865.00	105.9 AV			1.69 V	332	102.5	3.4
4	#5947.21	52.9 PK	108.2	-55.3	1.69 V	332	49.2	3.7
5	#5947.21	43.6 AV	88.2	-44.6	1.69 V	332	39.9	3.7
6	11730.00	57.9 PK	74.0	-16.1	1.54 V	322	46.4	11.5
7	11730.00	45.5 AV	54.0	-8.5	1.54 V	322	34.0	11.5
8	#17595.00	61.9 PK	88.2	-26.3	3.98 V	203	43.5	18.4

Remarks:

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

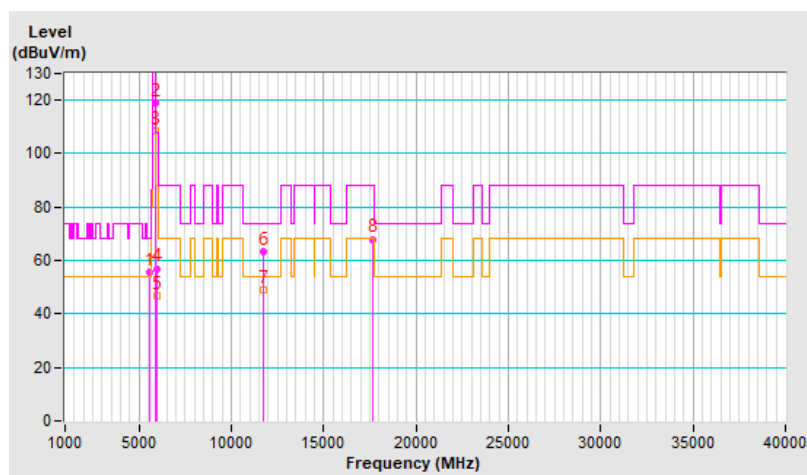


RF Mode	802.11a	Channel	CH 177 : 5885 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5591.68	55.7 PK	68.2	-12.5	2.01 H	45	53.0	2.7
2	*5885.00	118.8 PK			2.01 H	45	115.4	3.4
3	*5885.00	108.7 AV			2.01 H	45	105.3	3.4
4	#5962.91	57.0 PK	108.2	-51.2	2.01 H	45	53.4	3.6
5	#5962.91	46.9 AV	88.2	-41.3	2.01 H	45	43.3	3.6
6	11770.00	63.3 PK	74.0	-10.7	1.84 H	212	51.8	11.5
7	11770.00	49.1 AV	54.0	-4.9	1.84 H	212	37.6	11.5
8	#17655.00	68.0 PK	88.2	-20.2	1.55 H	157	48.9	19.1

Remarks:

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

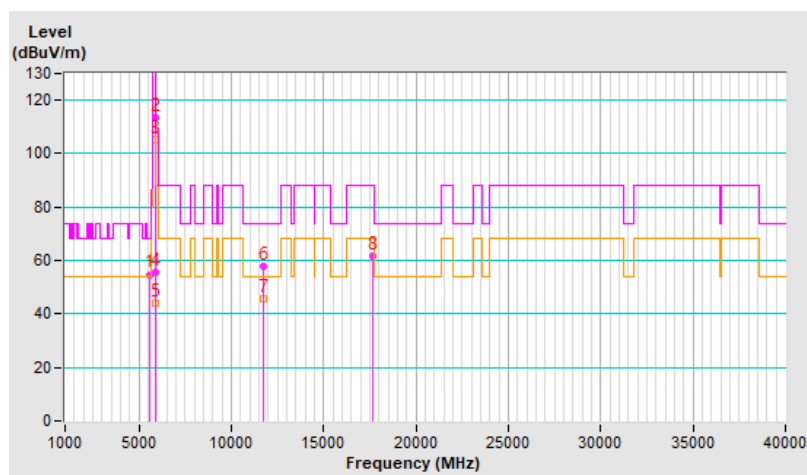


RF Mode	802.11a	Channel	CH 177 : 5885 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5610.80	54.8 PK	68.2	-13.4	1.72 V	334	52.0	2.8
2	*5885.00	113.6 PK			1.72 V	334	110.2	3.4
3	*5885.00	105.4 AV			1.72 V	334	102.0	3.4
4	#5926.53	55.7 PK	108.2	-52.5	1.72 V	334	52.1	3.6
5	#5926.53	43.9 AV	88.2	-44.3	1.72 V	334	40.3	3.6
6	11770.00	57.9 PK	74.0	-16.1	1.62 V	335	46.4	11.5
7	11770.00	45.7 AV	54.0	-8.3	1.62 V	335	34.2	11.5
8	#17655.00	61.6 PK	88.2	-26.6	3.95 V	206	42.5	19.1

Remarks:

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

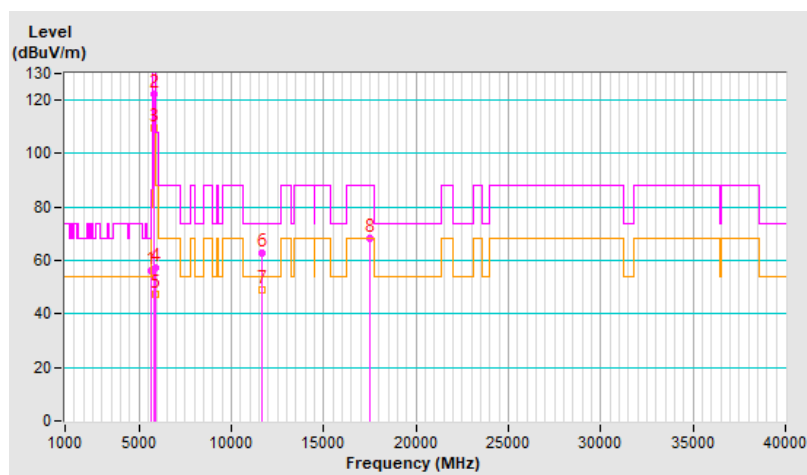


RF Mode	802.11ax (HE20)	Channel	CH 169 : 5845 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5634.23	56.4 PK	68.2	-11.8	2.05 H	47	53.6	2.8
2	*5845.00	122.1 PK			2.05 H	47	118.7	3.4
3	*5845.00	109.8 AV			2.05 H	47	106.4	3.4
4	#5926.34	57.4 PK	108.2	-50.8	2.05 H	47	53.8	3.6
5	#5926.34	47.2 AV	88.2	-41.0	2.05 H	47	43.6	3.6
6	11690.00	62.9 PK	74.0	-11.1	1.73 H	239	51.2	11.7
7	11690.00	48.9 AV	54.0	-5.1	1.73 H	239	37.2	11.7
8	#17535.00	68.1 PK	88.2	-20.1	1.55 H	156	49.6	18.5

Remarks:

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

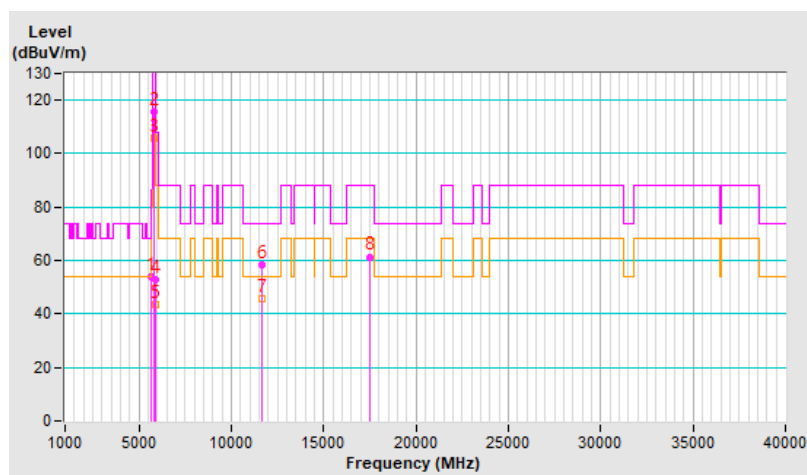


RF Mode	802.11ax (HE20)	Channel	CH 169 : 5845 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5632.35	54.0 PK	68.2	-14.2	1.78 V	341	51.1	2.9
2	*5845.00	115.9 PK			1.78 V	341	112.5	3.4
3	*5845.00	105.9 AV			1.78 V	341	102.5	3.4
4	#5926.20	53.1 PK	108.2	-55.1	1.78 V	341	49.5	3.6
5	#5926.20	43.6 AV	88.2	-44.6	1.78 V	341	40.0	3.6
6	11690.00	58.3 PK	74.0	-15.7	1.57 V	337	46.6	11.7
7	11690.00	45.8 AV	54.0	-8.2	1.57 V	337	34.1	11.7
8	#17535.00	61.4 PK	88.2	-26.8	4.00 V	209	42.9	18.5

Remarks:

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

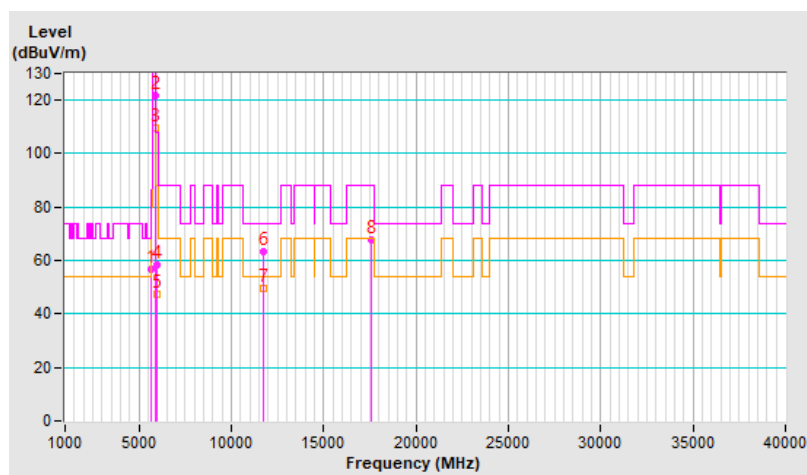


RF Mode	802.11ax (HE20)	Channel	CH 173 : 5865 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5622.47	56.5 PK	68.2	-11.7	2.06 H	41	53.7	2.8
2	*5865.00	121.8 PK			2.06 H	41	118.4	3.4
3	*5865.00	109.5 AV			2.06 H	41	106.1	3.4
4	#5944.23	58.4 PK	108.2	-49.8	2.06 H	41	54.7	3.7
5	#5944.23	47.3 AV	88.2	-40.9	2.06 H	41	43.6	3.7
6	11730.00	63.3 PK	74.0	-10.7	1.80 H	239	51.8	11.5
7	11730.00	49.4 AV	54.0	-4.6	1.80 H	239	37.9	11.5
8	#17595.00	67.9 PK	88.2	-20.3	1.56 H	154	49.5	18.4

Remarks:

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

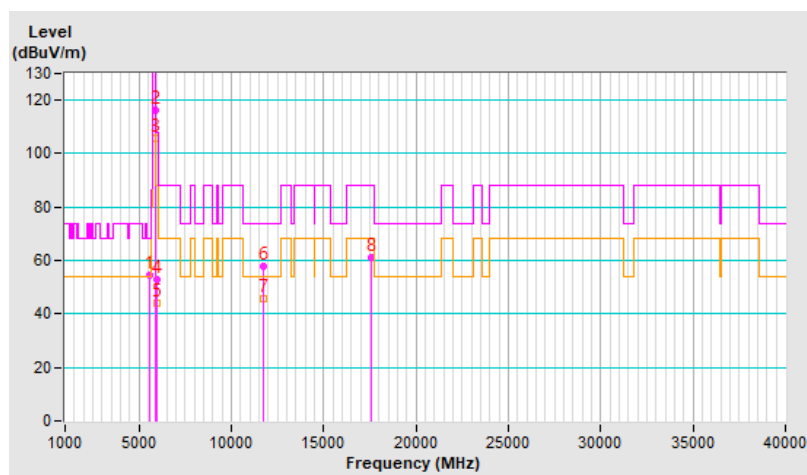


RF Mode	802.11ax (HE20)	Channel	CH 173 : 5865 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5600.24	54.3 PK	68.2	-13.9	1.66 V	337	51.6	2.7
2	*5865.00	116.2 PK			1.66 V	337	112.8	3.4
3	*5865.00	105.6 AV			1.66 V	337	102.2	3.4
4	#5946.36	52.9 PK	108.2	-55.3	1.66 V	337	49.2	3.7
5	#5946.36	43.8 AV	88.2	-44.4	1.66 V	337	40.1	3.7
6	11730.00	57.8 PK	74.0	-16.2	1.58 V	333	46.3	11.5
7	11730.00	45.6 AV	54.0	-8.4	1.58 V	333	34.1	11.5
8	#17595.00	61.2 PK	88.2	-27.0	4.00 V	201	42.8	18.4

Remarks:

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

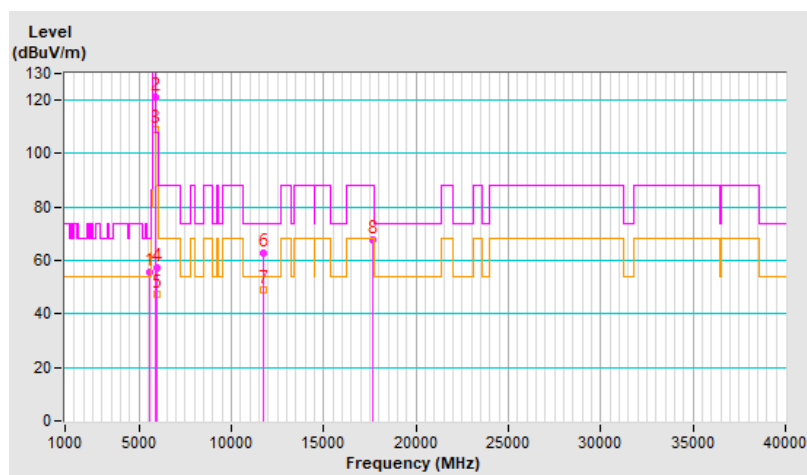


RF Mode	802.11ax (HE20)	Channel	CH 177 : 5885 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5591.88	55.6 PK	68.2	-12.6	2.08 H	43	52.9	2.7
2	*5885.00	121.0 PK			2.08 H	43	117.6	3.4
3	*5885.00	109.0 AV			2.08 H	43	105.6	3.4
4	#5964.26	57.4 PK	108.2	-50.8	2.08 H	43	53.8	3.6
5	#5964.26	47.1 AV	88.2	-41.1	2.08 H	43	43.5	3.6
6	11770.00	62.6 PK	74.0	-11.4	1.84 H	224	51.1	11.5
7	11770.00	48.8 AV	54.0	-5.2	1.84 H	224	37.3	11.5
8	#17655.00	67.9 PK	88.2	-20.3	1.56 H	157	48.8	19.1

Remarks:

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

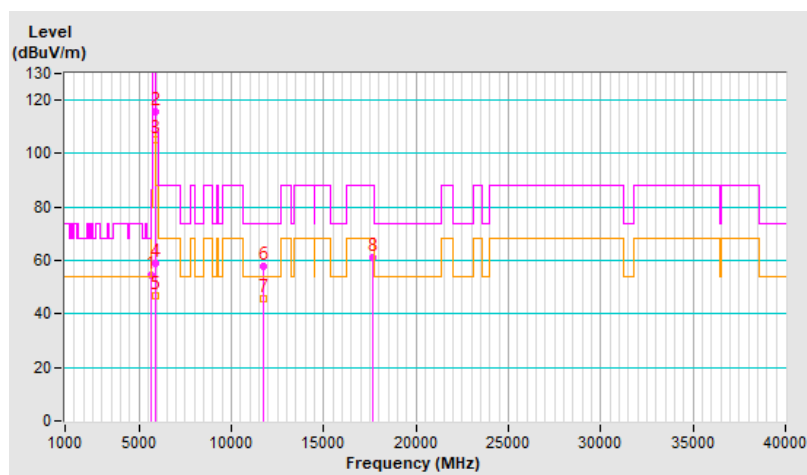


RF Mode	802.11ax (HE20)	Channel	CH 177 : 5885 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5630.43	54.6 PK	68.2	-13.6	1.67 V	344	51.7	2.9
2	*5885.00	115.8 PK			1.67 V	344	112.4	3.4
3	*5885.00	105.4 AV			1.67 V	344	102.0	3.4
4	#5925.93	58.8 PK	108.2	-49.4	1.67 V	344	55.2	3.6
5	#5925.93	46.6 AV	88.2	-41.6	1.67 V	344	43.0	3.6
6	11770.00	57.8 PK	74.0	-16.2	1.56 V	334	46.3	11.5
7	11770.00	45.5 AV	54.0	-8.5	1.56 V	334	34.0	11.5
8	#17655.00	60.9 PK	88.2	-27.3	3.95 V	181	41.8	19.1

Remarks:

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

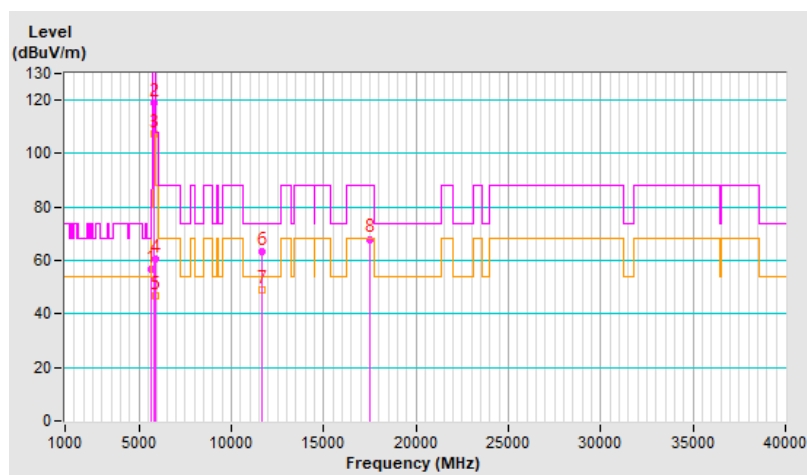


RF Mode	802.11ax (HE40)	Channel	CH 167 : 5835 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5618.92	56.9 PK	68.2	-11.3	2.08 H	40	54.1	2.8
2	*5835.00	118.9 PK			2.08 H	40	115.6	3.3
3	*5835.00	107.5 AV			2.08 H	40	104.2	3.3
4	#5926.37	60.6 PK	108.2	-47.6	2.08 H	40	57.0	3.6
5	#5926.37	47.0 AV	88.2	-41.2	2.08 H	40	43.4	3.6
6	11670.00	63.1 PK	74.0	-10.9	1.76 H	213	51.3	11.8
7	11670.00	49.2 AV	54.0	-4.8	1.76 H	213	37.4	11.8
8	#17505.00	68.0 PK	88.2	-20.2	1.55 H	157	49.4	18.6

Remarks:

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

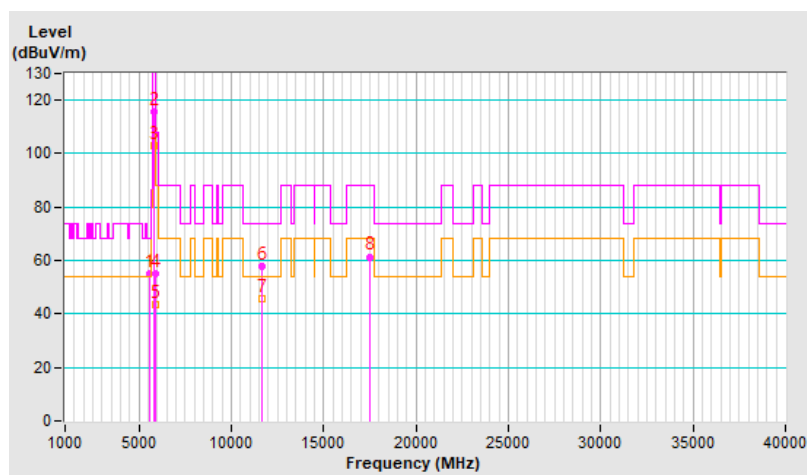


RF Mode	802.11ax (HE40)	Channel	CH 167 : 5835 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5612.38	54.9 PK	68.2	-13.3	1.59 V	332	52.1	2.8
2	*5835.00	115.6 PK			1.59 V	332	112.3	3.3
3	*5835.00	103.2 AV			1.59 V	332	99.9	3.3
4	#5926.37	55.3 PK	108.2	-52.9	1.59 V	332	51.7	3.6
5	#5926.37	43.4 AV	88.2	-44.8	1.59 V	332	39.8	3.6
6	11670.00	57.7 PK	74.0	-16.3	1.59 V	310	45.9	11.8
7	11670.00	45.7 AV	54.0	-8.3	1.59 V	310	33.9	11.8
8	#17505.00	61.4 PK	88.2	-26.8	4.00 V	201	42.8	18.6

Remarks:

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

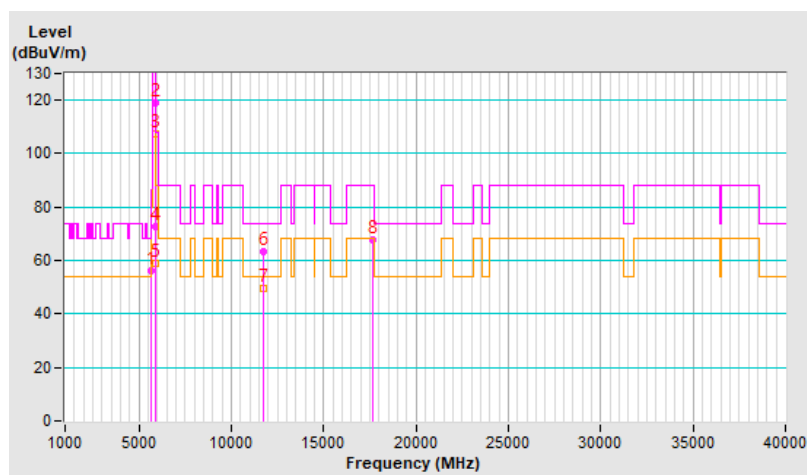


RF Mode	802.11ax (HE40)	Channel	CH 175 : 5875 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5629.21	56.3 PK	68.2	-11.9	2.00 H	46	53.4	2.9
2	*5875.00	119.2 PK			2.00 H	46	115.8	3.4
3	*5875.00	107.6 AV			2.00 H	46	104.2	3.4
4	#5926.33	72.5 PK	108.2	-35.7	2.00 H	46	68.9	3.6
5	#5926.33	58.7 AV	88.2	-29.5	2.00 H	46	55.1	3.6
6	11750.00	63.3 PK	74.0	-10.7	1.76 H	215	51.8	11.5
7	11750.00	49.4 AV	54.0	-4.6	1.76 H	215	37.9	11.5
8	#17625.00	67.9 PK	88.2	-20.3	1.54 H	153	49.2	18.7

Remarks:

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

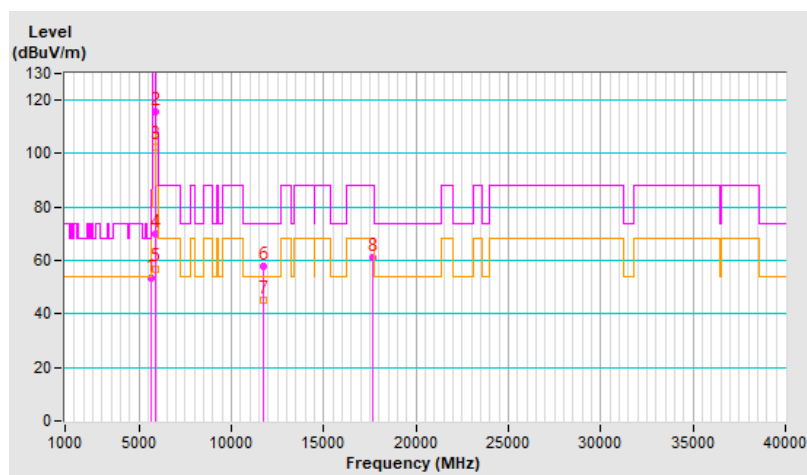


RF Mode	802.11ax (HE40)	Channel	CH 175 : 5875 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5630.30	53.3 PK	68.2	-14.9	1.67 V	334	50.4	2.9
2	*5875.00	115.9 PK			1.67 V	334	112.5	3.4
3	*5875.00	102.7 AV			1.67 V	334	99.3	3.4
4	#5926.18	69.8 PK	108.2	-38.4	1.67 V	334	66.2	3.6
5	#5926.18	57.0 AV	88.2	-31.2	1.67 V	334	53.4	3.6
6	11750.00	57.7 PK	74.0	-16.3	1.55 V	321	46.2	11.5
7	11750.00	45.3 AV	54.0	-8.7	1.55 V	321	33.8	11.5
8	#17625.00	61.2 PK	88.2	-27.0	3.99 V	205	42.5	18.7

Remarks:

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

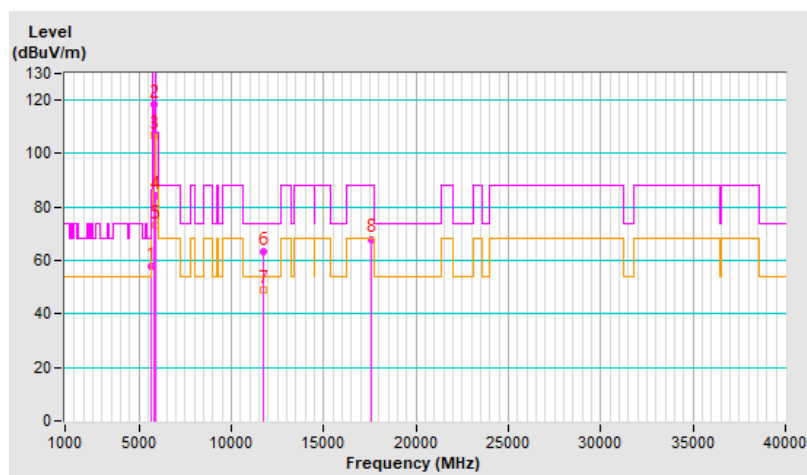


RF Mode	802.11ax (HE80)	Channel	CH 171 : 5855 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5645.69	57.6 PK	68.2	-10.6	2.01 H	45	54.8	2.8
2	*5855.00	118.6 PK			2.01 H	45	115.2	3.4
3	*5855.00	106.9 AV			2.01 H	45	103.5	3.4
4	#5926.47	84.3 PK	108.2	-23.9	2.01 H	45	80.7	3.6
5	#5926.47	73.2 AV	88.2	-15.0	2.01 H	45	69.6	3.6
6	11710.00	63.3 PK	74.0	-10.7	1.83 H	219	51.7	11.6
7	11710.00	49.2 AV	54.0	-4.8	1.83 H	219	37.6	11.6
8	#17565.00	68.0 PK	88.2	-20.2	1.54 H	156	49.5	18.5

Remarks:

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

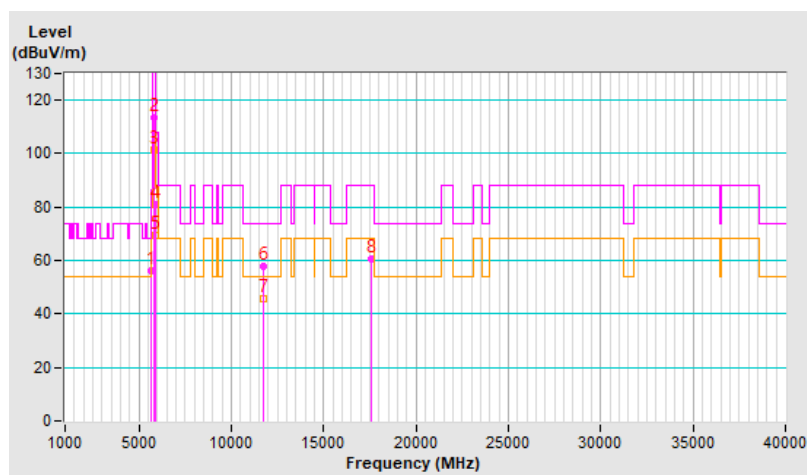


RF Mode	802.11ax (HE80)	Channel	CH 171 : 5855 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Ryan Du		

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	#5646.85	56.2 PK	68.2	-12.0	1.73 V	328	53.4	2.8
2	*5855.00	113.6 PK			1.73 V	328	110.2	3.4
3	*5855.00	101.2 AV			1.73 V	328	97.8	3.4
4	#5926.08	80.8 PK	108.2	-27.4	1.73 V	328	77.2	3.6
5	#5926.08	69.5 AV	88.2	-18.7	1.73 V	328	65.9	3.6
6	11710.00	57.8 PK	74.0	-16.2	1.64 V	312	46.2	11.6
7	11710.00	45.6 AV	54.0	-8.4	1.64 V	312	34.0	11.6
8	#17565.00	60.5 PK	88.2	-27.7	3.97 V	196	42.0	18.5

Remarks:

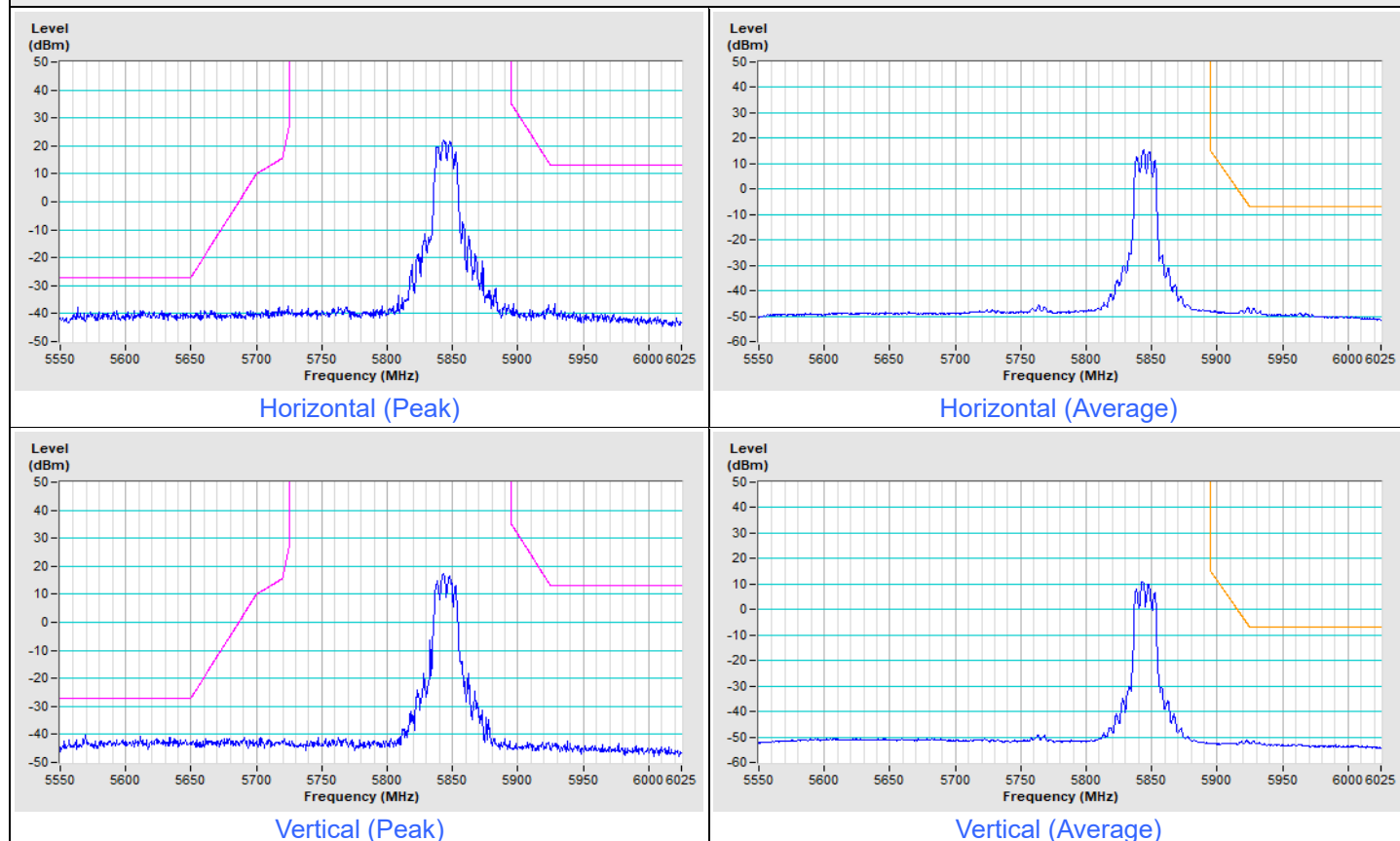
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency,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



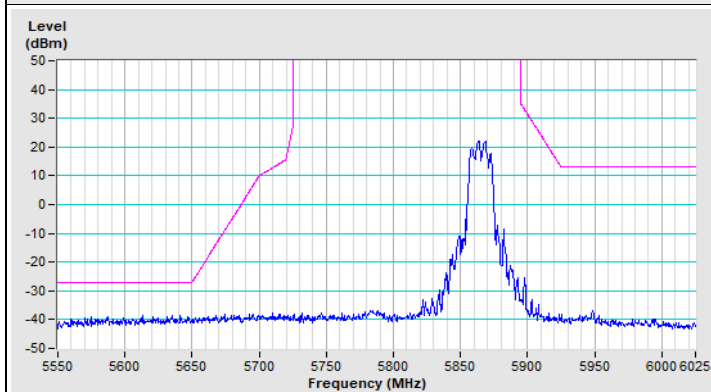
Plot of Band Edge

Frequency Range	5.55 GHz ~ 6.025 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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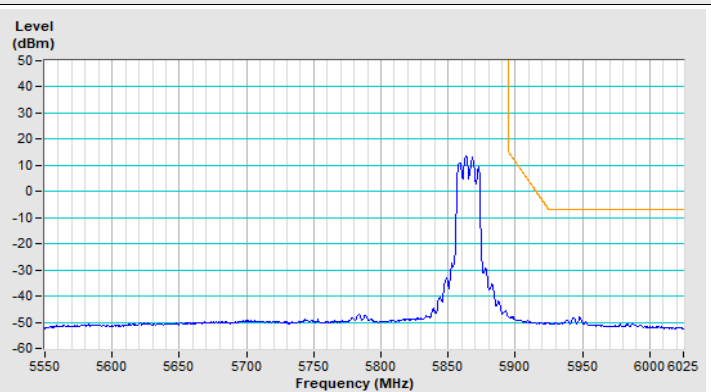
802.11a Channel 169



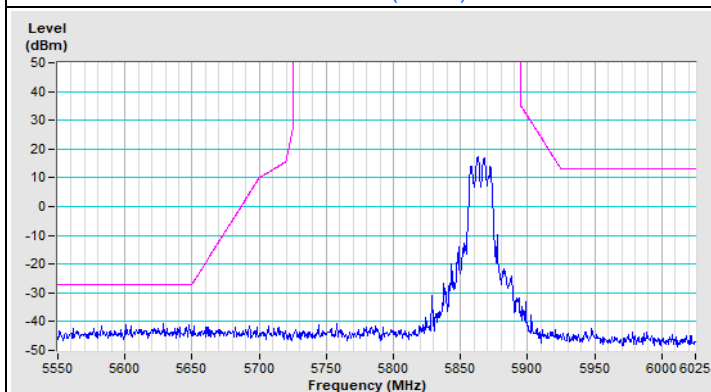
802.11a Channel 173



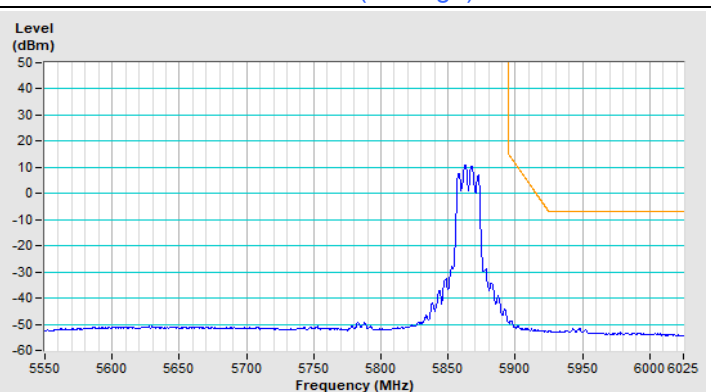
Horizontal (Peak)



Horizontal (Average)

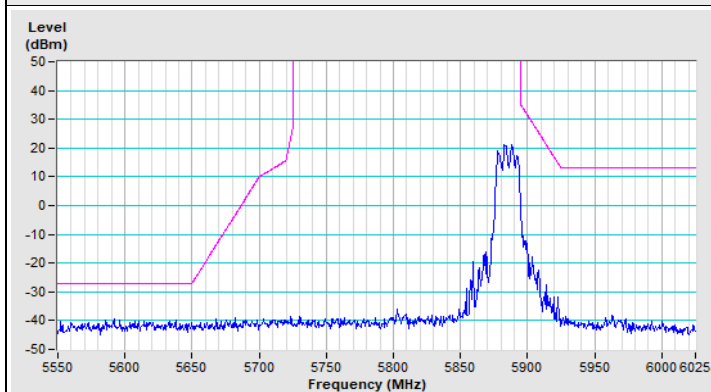


Vertical (Peak)

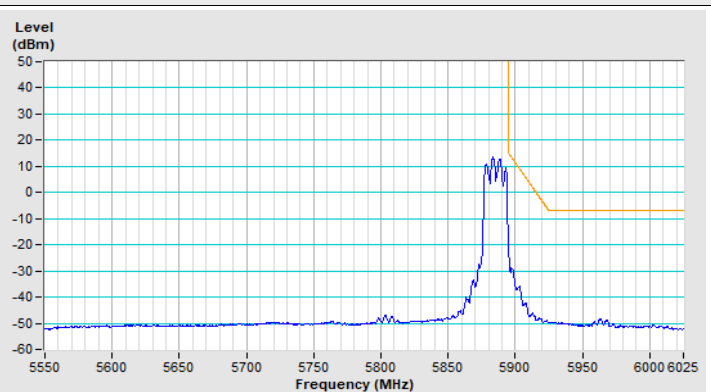


Vertical (Average)

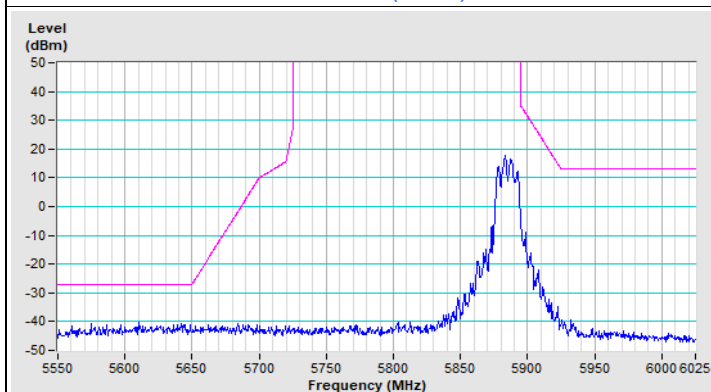
802.11a Channel 177



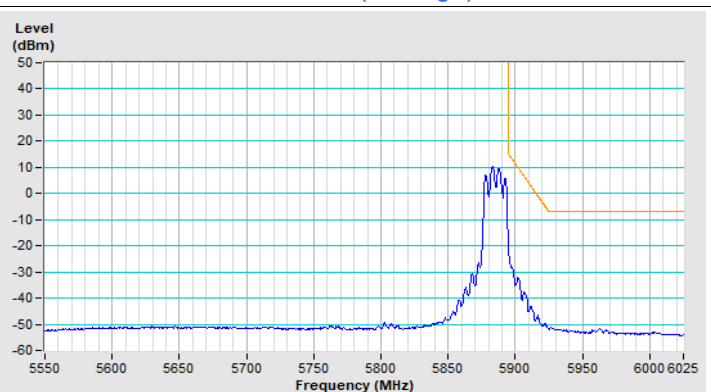
Horizontal (Peak)



Horizontal (Average)



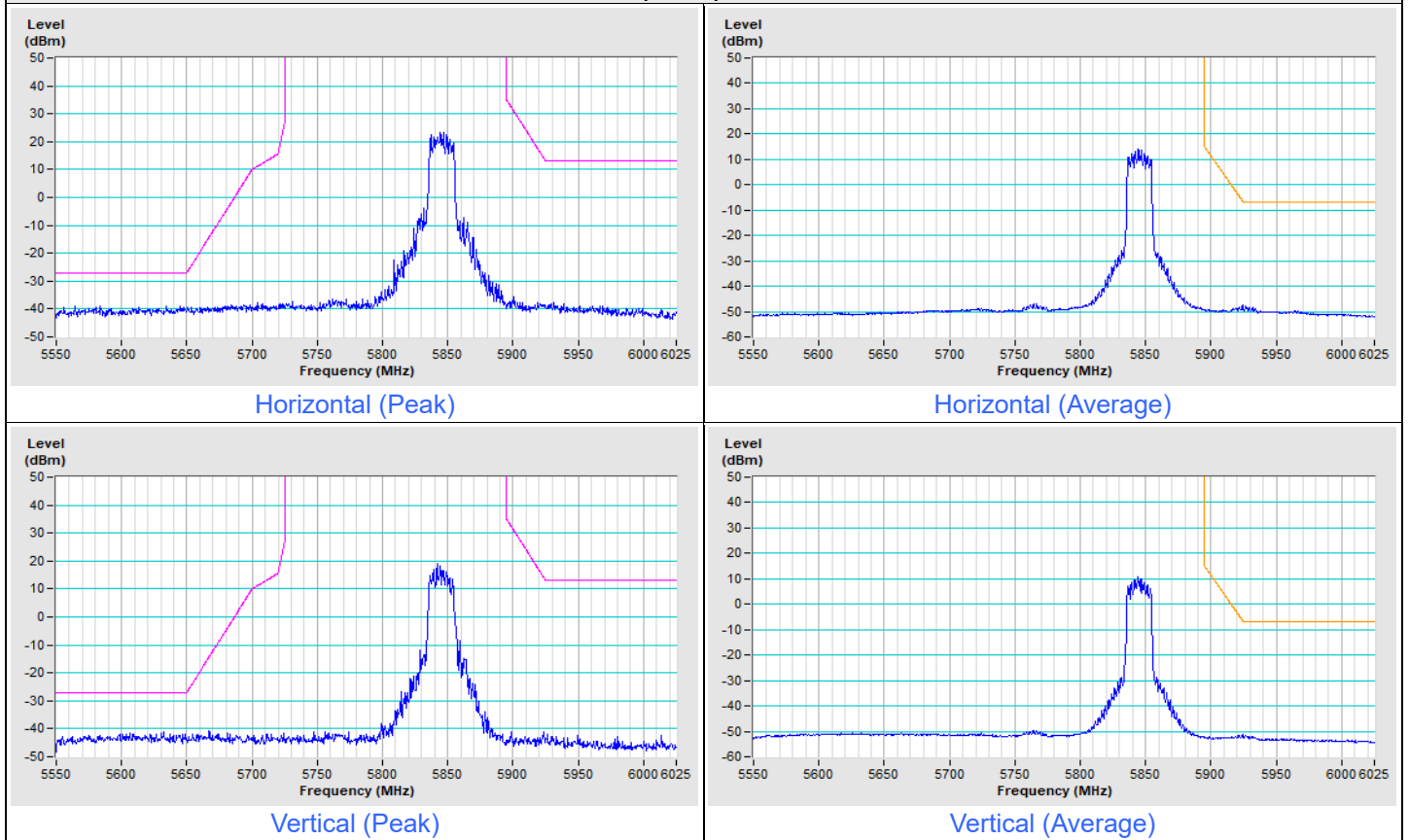
Vertical (Peak)



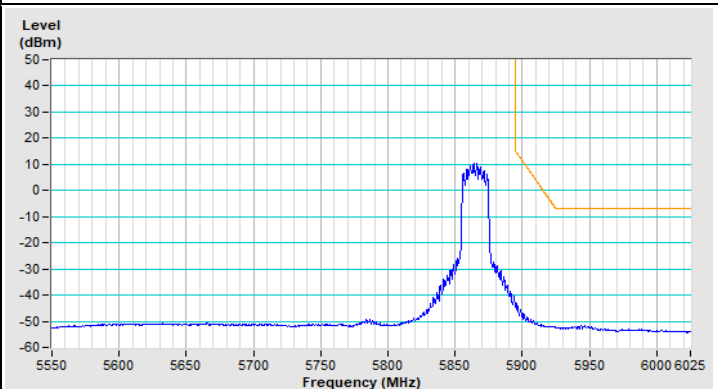
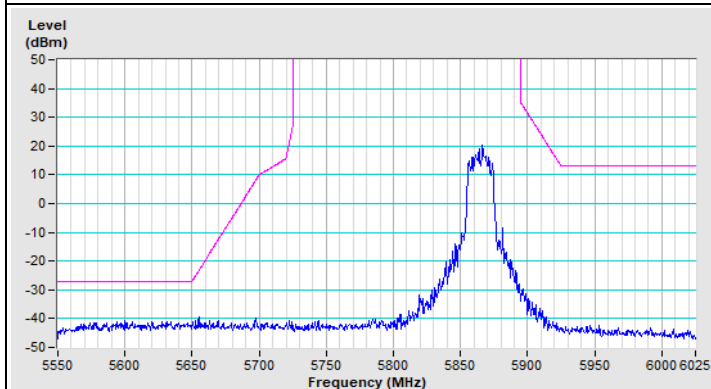
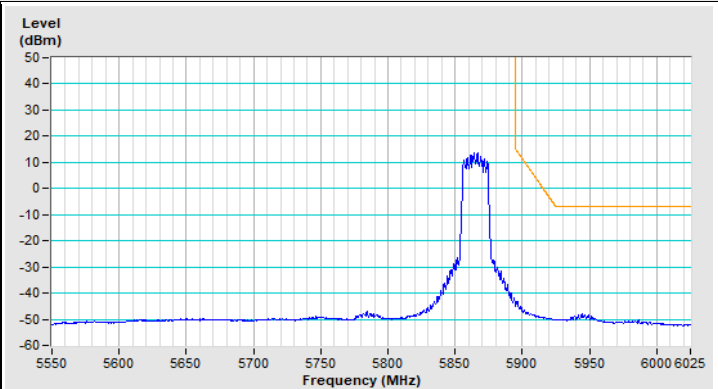
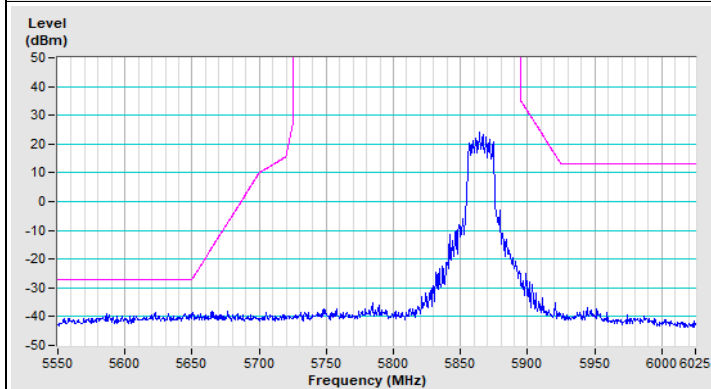
Vertical (Average)

Frequency Range	5.55 GHz ~ 6.025 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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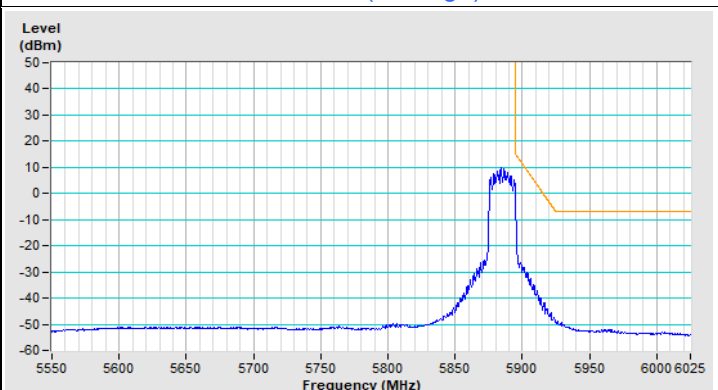
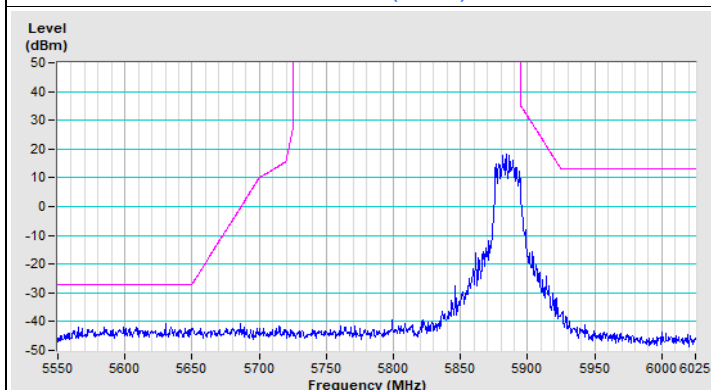
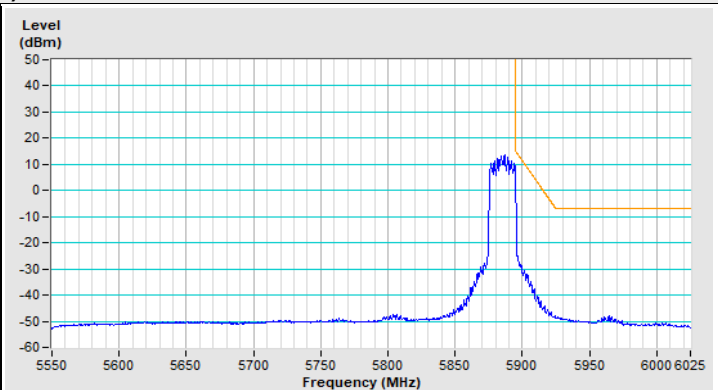
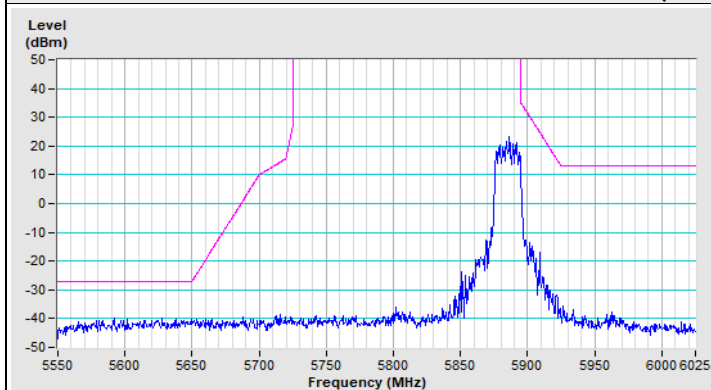
802.11ax (HE20) Channel 169



802.11ax (HE20) Channel 173

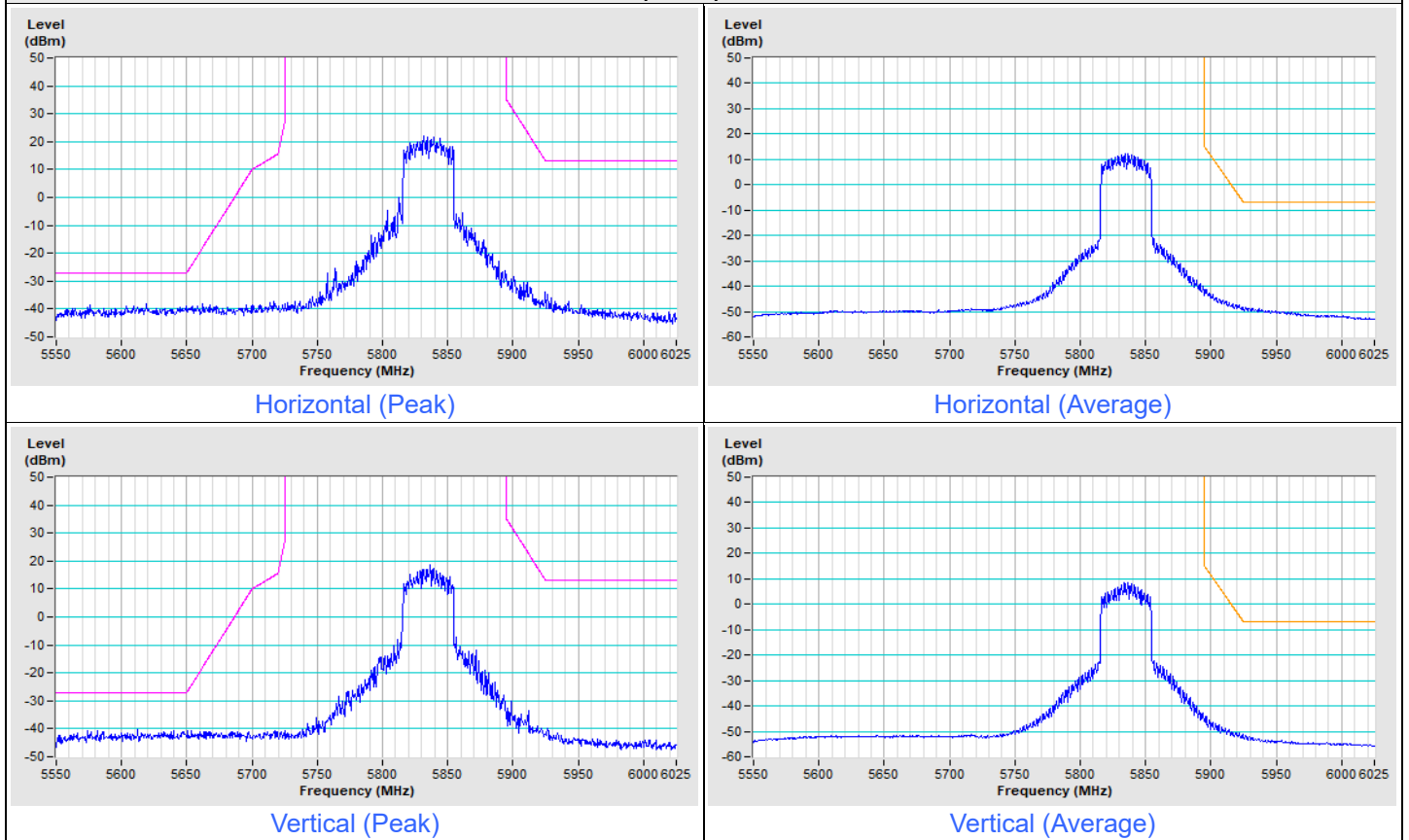


802.11ax (HE20) Channel 177

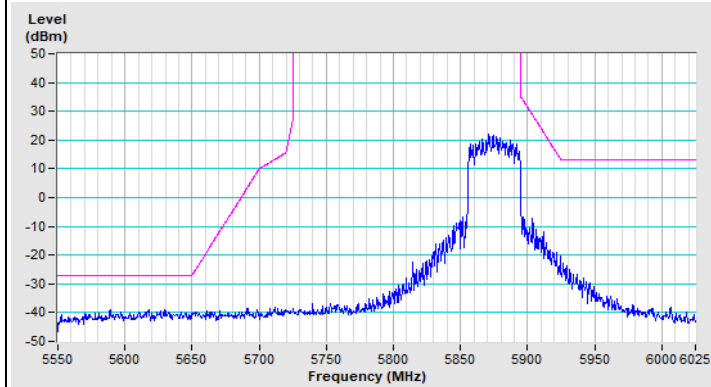


Frequency Range	5.55 GHz ~ 6.025 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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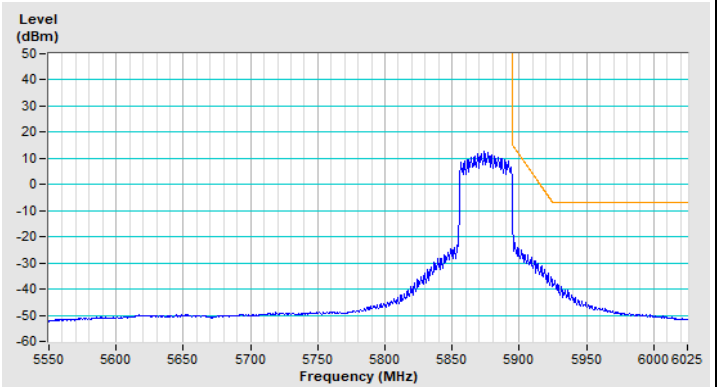
802.11ax (HE40) Channel 167



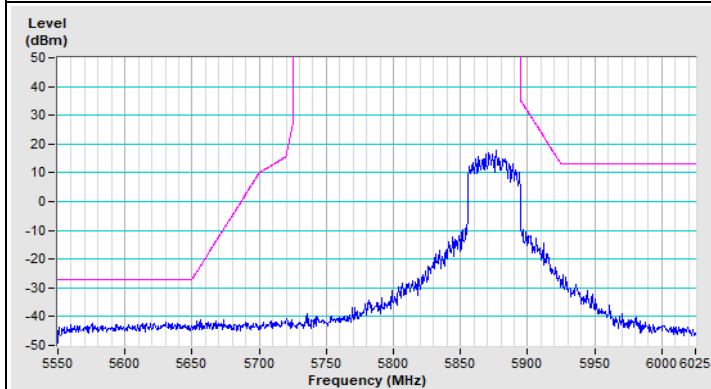
802.11ax (HE40) Channel 175



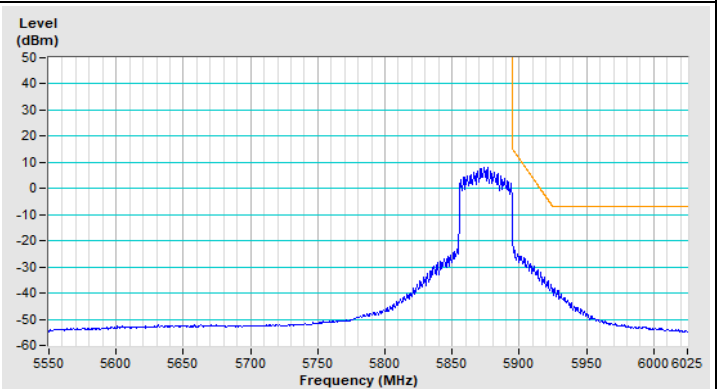
Horizontal (Peak)



Horizontal (Average)



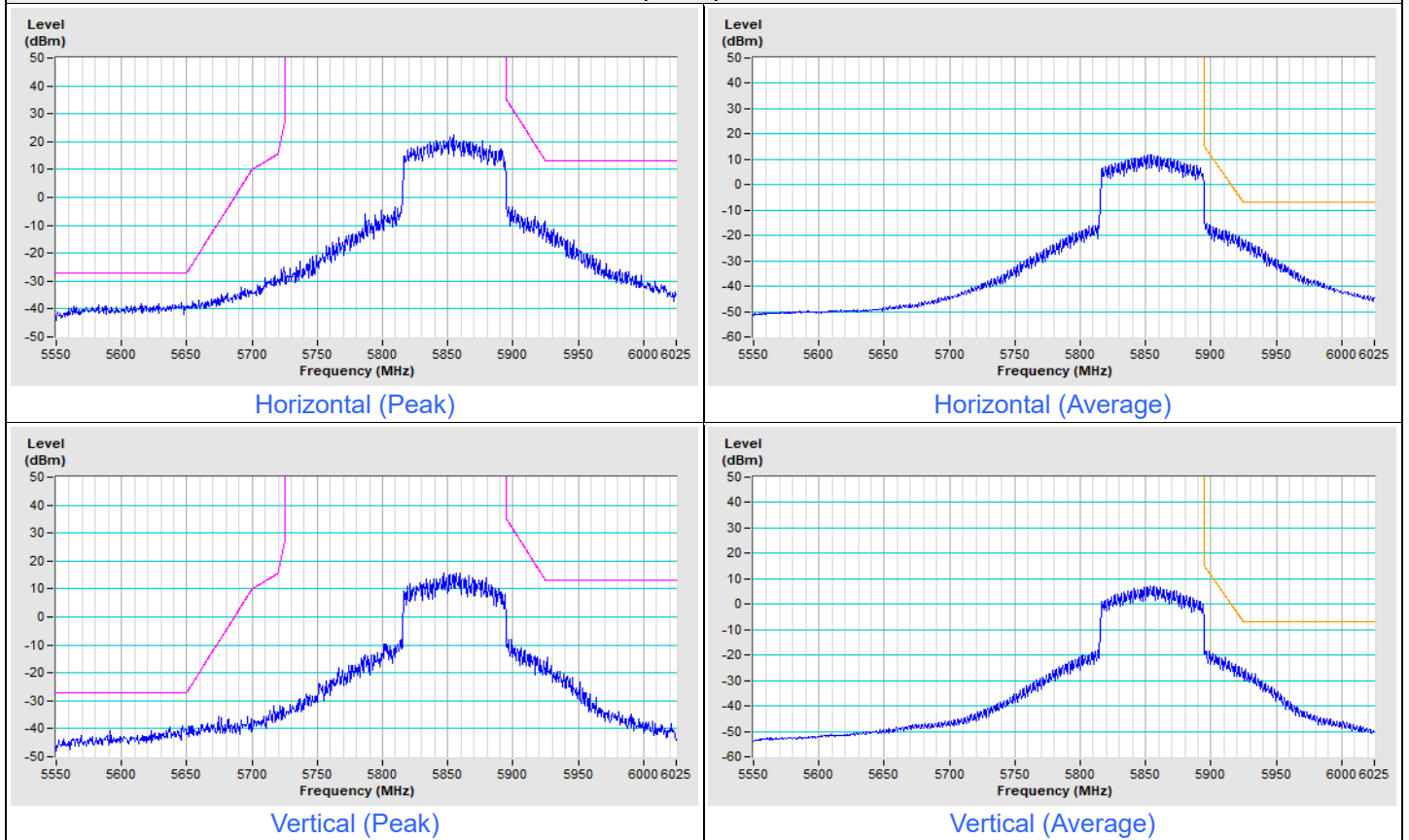
Vertical (Peak)



Vertical (Average)

Frequency Range	5.55 GHz ~ 6.025 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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802.11ax (HE80) Channel 171



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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