TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFBVSW-WTW-P22080967-5
FCC ID:	2A3G3-WMX720X
Product:	Wi-Fi 6E BT 5.2 M.2 2230 Module, Wi-Fi 6E BT 5.2 Mini PCIe Module
Brand:	EmWicon Corporation
Model No.:	WMX7205, WMX7203
Series Model:	WMX7203-F
Received Date:	2022/8/30
Test Date:	2022/11/24 ~ 2023/3/23
Issued Date:	2023/3/24
Applicant:	EmWicon Corporation
Address:	7F.-5, No. 258, Liancheng Rd., Zhonghe Dist., New Taipei City, Taiwan 235
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:** 2023/3/24

May Chen / Manager

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Prepared by : Vivian Huang / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBVSW-WTW-P22080967-5	Original release.	2023/3/24

1 Certificate

Product:	Wi-Fi 6E BT 5.2 M.2 2230 Module, Wi-Fi 6E BT 5.2 Mini PCIe Module
Brand:	EmWicon Corporation
Test Model:	WMX7205, WMX7203
Series Model:	WMX7203-F
Sample Status:	Engineering sample
Applicant:	EmWicon Corporation
Test Date:	2022/11/24 ~ 2023/3/23
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407)
Measurement procedure:	ANSI C63.10-2013 KDB 987594 D02 U-NII 6 GHz EMC Measurement v01v01 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)(7)(8)	RF Output Power	NA	Refer to Note 1 below
15.407(a)(7)(8)	Power Spectral Density	NA	Refer to Note 1 below
15.407(a)(10)	Occupied Bandwidth	NA	Refer to Note 1 below
15.407(b)(9)	AC Power Conducted Emissions	NA	Refer to Note 1 below
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.9 dB at 35.04 MHz
15.407(b)(6) 15.407(b)(10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.2 dB at 5925.00 MHz
15.407(b)(7)	In-Band Emission Mask	NA	Refer to Note 1 below
15.407(d)(6)	Contention-based Protocol	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	NA	Refer to Note 1 below
15.407(d)	Operational restrictions for 6 GHz U-NII devices	NA	Refer to Note 1 below
15.203	Antenna Requirement	Pass	Antenna connector is i-pex & RP-SMA not a standard connector.
---	Emission Bandwidth	NA	Refer to Note 1 below

Notes:

1. Unwanted Emissions Measurement & Contention-based Protocol were performed for this addendum. The others testing data refer to original test report (Original FCC ID: J9C-QCNFA765, Report No.: RF201119E01-6).
2. 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) (±)
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	5.1 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	Wi-Fi 6E BT 5.2 M.2 2230 Module, Wi-Fi 6E BT 5.2 Mini PCIe Module
Brand	EmWicon Corporation
Test Model	WMX7205, WMX7203
Series Model	WMX7203-F
Status of EUT	Engineering sample
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 4096QAM for OFDMA in 11ax HE mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54Mbps 802.11ax: up to 2969.7Mbps
Operating Frequency	Under control by Standard Power AP: 5.935 ~ 6.415GHz, 6.535 ~ 6.855GHz Under control by Low-powerIndoor AP: 5.935 ~ 6.415GHz, 6.435 ~ 6.525GHz, 6.535 ~ 6.855GHz, 6.875 ~ 7.115GHz
Number of Channel	802.11a/ax (HE20): 60 802.11ax (HE40): 29 802.11ax (HE80): 14 802.11ax (HE160): 7
Output Power	Under control of a Standard Power AP: **5.935 ~ 6.415GHz:** 152.069 mW (EIRP: 29.97 dBm / 993.116 mW) **6.535 ~ 6.855GHz:** 151.395 mW (EIRP: 29.97 dBm / 993.116 mW) Under control of a Low-power Indoor AP: **5.935 ~ 6.415GHz:** 23.162 mW (EIRP: 21.80 dBm / 151.356 mW) **6.435 ~ 6.525GHz:** 23.607 mW (EIRP: 21.83 dBm / 152.405 mW) **6.535 ~ 6.855GHz:** 23.692 mW (EIRP: 21.92 dBm / 155.597 mW) **6.865 ~ 7.115GHz:** 22.235 mW (EIRP: 21.60 dBm / 144.544 mW)

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the original design is as the following:
   - ◆ Added two models (refer to note 3).
   - ◆ Added new antenna (refer to section 3.2).
2. According to above conditions, only unwanted emissions needs to be performed. And all data are verified to meet the requirements.
3. The EUT has below model names which are identical to each other in all aspects except for the following table:

Original					
Model Name	Product Name	PCB size	Interface	IPEX	Difference
WMX7205	Wi-Fi 6E BT 5.2 M.2 2230 Module	Original size	M.2 E-Key M.2 AE-Key	i-pex (MHF 4L)	-
Newly					
Model Name	Product Name	PCB size	Interface	IPEX	Difference
WMX7203	Wi-Fi 6E BT 5.2 Mini PCIe Module	Bigger than original	mini PCIe	i-pex (MHF 1)	Market segment
WMX7203-F		Bigger than original	mini PCIe		
Note: From the above models, model: **WMX7205, WMX7203** was selected as representative model for the test and its data was recorded in this report.					

4. This device of WLAN (2.4GHz & 5GHz U-NII-1 Band) can support hotspot mode.
5. Simultaneously transmission condition.

Condition	Technology	
1	WLAN(2.4GHz)	WLAN(6GHz)
2	WLAN(2.4GHz)	WLAN(5GHz)
3	WLAN(2.4GHz)	WLAN(5.9GHz)
4	WLAN(6GHz)	Bluetooth
5	WLAN(5GHz)	Bluetooth
6	WLAN(5.9GHz)	Bluetooth
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

6. The device of WLAN (2.4GHz) and Bluetooth technology can't transmit simultaneously, it was used timely shared coexistence technology.
7. The module (Model: WMX7205) has two variant designs as following table:

SKU No.	Description
SKU #1	M.2 2230 E-key
SKU #2	M.2 2230 AE-key
From the above variants designs, the worst case was found in **SKU #1.** Therefore only the test data of the mode was recorded in this report.	

8. The product provides option to depopulate external LNA (Low-Noise amplifier) from 5GHz/6GHz receive path. This test report covers variation of with/without external LNA and test was conducted to confirm not change in RF compliance and EMC. And worst case was found in without external LNA.
9. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Original

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length
1	Chain0/1	HONGBO	260-25094	3.53 3.06 3.07 4.81 4.2	2.4~2.4835 GHz 5.15~5.25 GHz 5.25~5.35 GHz 5.47~5.725 GHz 5.725~5.850 GHz	0.76 1.16 1.18 1.2 1.27	PIFA	ipex(MHF 4L) ipex(MHF 1)	300mm
2	Chain0/1	HONGBO	260-25083	5.09 5.14 5.09 5.16 5.12	5.850~5.895 GHz 5.925~6.425 GHz 6.425~6.525 GHz 6.525~6.875 GHz 6.875~7.125 GHz	1.29 1.32 1.35 1.4 1.45	PIFA	ipex(MHF 4L) ipex(MHF 1)	300mm
3	Chain0/1	HONGBO	260-25084	3.22 3.35 3.42 4.77 4.72 4.71 4.75 4.29 4.81 4.74	2.4~2.4835 GHz 5.150~5.250 GHz 5.250~5.350 GHz 5.470~5.725 GHz 5.725~5.850 GHz 5.850~5.895 GHz 5.925~6.425 GHz 6.425~6.525 GHz 6.525~6.875 GHz 6.875~7.125 GHz	0.5 0.76 0.78 0.81 0.85 0.86 0.87 0.91 0.96 0.98	Monopole	ipex(MHF 4L) ipex(MHF 1)	200mm

Newly

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length
4	Chain0/1	emwicon	ATD7351	2.51 2.66 2.07 3.21 3.64 3.73 3.13 3.54 3.06	2400 MHz 2450 MHz 2500 MHz 5150 MHz 5500 MHz 5850 MHz 6125 MHz 6750 MHz 7125 MHz	0.64 0.64 0.64 1.27 1.27 1.27 1.24 1.24 1.24	Monopole	RP-SMA	0.15m

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

2. The EUT incorporates a MIMO function:

6GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11a	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX
802.11ax (HE160)	2TX	2RX
802.11ax (RU26/52/106/242/484/996/1992)	2TX	2RX

Note: The EUT support Beamforming and non-beamforming mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.

3.3 Channel List

U-NII-5: Under control of a Low-power Indoor AP and Standard Power AP

25 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
2	5935 MHz	1	5955 MHz	5	5975 MHz	9	5955 MHz
13	6015 MHz	17	6035 MHz	21	6055 MHz	25	6075 MHz
29	6095 MHz	33	6115 MHz	37	6135 MHz	41	6155 MHz
45	6175 MHz	49	6195 MHz	53	6215 MHz	57	6235 MHz
61	6255 MHz	65	6275 MHz	69	6295 MHz	73	6315 MHz
77	6335 MHz	81	6355 MHz	85	6375 MHz	89	6395 MHz
93	6415MHz						

12 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
3	5965 MHz	11	6005 MHz	19	6045 MHz	27	6085 MHz
35	6125 MHz	43	6165 MHz	51	6205 MHz	59	6245 MHz
67	6285MHz	75	6325 MHz	83	6365 MHz	91	6405 MHz

6 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
7	5985 MHz	23	6065 MHz	39	6145 MHz	55	6225 MHz
71	6305 MHz	87	6385 MHz				

3 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency	Channel	Frequency
15	6025 MHz	47	6185 MHz	79	6345 MHz

U-NII-6: Under control of a Low-power Indoor AP

5 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
97	6435 MHz	101	6455 MHz	105	6475 MHz	109	6495 MHz
113	6515 MHz						

3 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency
99	6445 MHz	107	6485 MHz	*115	6525 MHz

1 channel is provided for 802.11ax (HE80):

Channel	Frequency
103	6465 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
*111	6505 MHz

U-NII-7: Under control of a Low-power Indoor AP and Standard Power AP

17 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
117	6535 MHz	121	6555 MHz	125	6575 MHz	129	6595 MHz
133	6615 MHz	137	6635 MHz	141	6655 MHz	145	6675 MHz
149	6695 MHz	153	6715 MHz	157	6735 MHz	161	6755 MHz
165	6775 MHz	169	6795 MHz	173	6815 MHz	177	6835 MHz
181	6855 MHz						

8 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
123	6565 MHz	131	6605 MHz	139	6645 MHz	147	6685 MHz
155	6725 MHz	163	6765 MHz	171	6805 MHz	179	6845 MHz

5 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
*119	6545 MHz	135	6625 MHz	151	6705 MHz	167	6785 MHz
*183	6865 MHz						

2 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency
143	6665 MHz	175	*6825 MHz

U-NII-8: Under control of a Low-power Indoor AP

13 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
185	6875 MHz	189	6895 MHz	193	6915 MHz	197	6935 MHz
201	6955 MHz	205	6975 MHz	209	6995 MHz	213	7015 MHz
217	7035 MHz	221	7055 MHz	225	7075 MHz	229	7095 MHz
233	7115 MHz						

6 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency
187	6885 MHz	195	6925 MHz	203	6965 MHz
211	7005 MHz	219	7045 MHz	227	7085 MHz

2 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
199	6945 MHz	215	7025 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
207	6985 MHz

Note: * mean these are straddle channels.

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	1. X-axis/ Y-axis/ Z-axis Worst Condition: X-axis for Mode A and Mode B

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

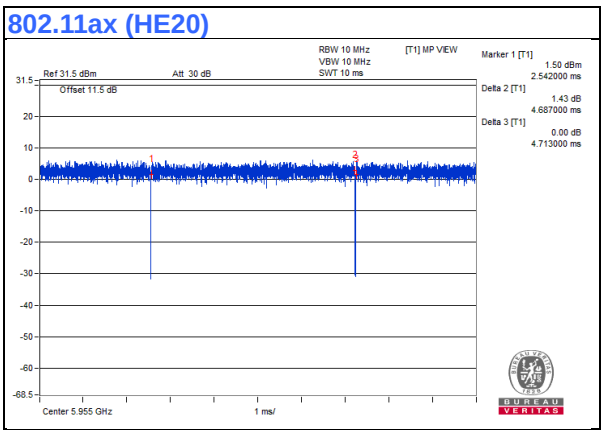
Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter
Unwanted Emissions below 1 GHz	A	802.11ax (HE20)	2	BPSK	MCS0
	B	802.11ax (HE20)	233	BPSK	MCS0
	C	802.11ax (HE20)	2	BPSK	MCS0
	D	802.11ax (HE20)	233	BPSK	MCS0
Unwanted Emissions above 1 GHz	A	802.11ax (HE20)	2	BPSK	MCS0
	B	802.11ax (HE20)	2, 233	BPSK	MCS0
	C	802.11ax (HE20)	2	BPSK	MCS0
	D	802.11ax (HE20)	2, 233	BPSK	MCS0
Contention-based Protocol	C	802.11ax (HE20)	33, 97, 129, 193	BPSK	MCS0
		802.11ax (HE160)	47, 111, 143, 207	BPSK	MCS0
EUT Configure Mode:	A	(Under control Low-power Indoor AP) Old Module + Antenna 4			
	B	(Standard Power AP) Old Module + Antenna 4			
	C	(Under control Low-power Indoor AP) New Module + Antenna 4			
	D	(Standard Power AP) New Module + Antenna 4			

Note:
1. The EUT supports ax full RU and ax prital RU modes, so these two modes were investigated and the worst case was determined to be ax full RU mode. Worst case data are provided in the test report.
2. For the Unwanted Emission test mode, after evaluation, it is tested with the worst channel in all bandwidths, and finally tested with 11ax20 channel 2 & Channel 233.

3.5 Duty Cycle of Test Signal

Duty cycle of test signal is ≥ 98 %, duty factor is not required.
802.11ax (HE20): Duty cycle = 4.687 ms/4.713 ms= 0.994

802.11ax (HE20)

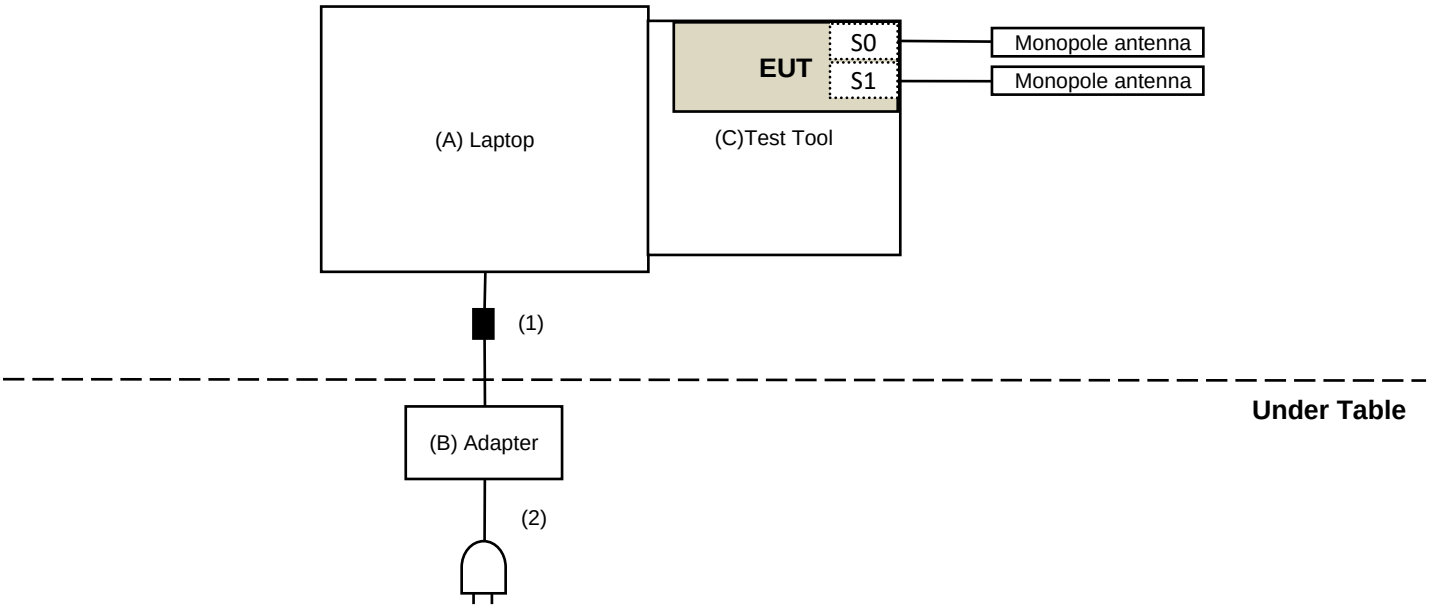


3.6 Test Program Used and Operation Descriptions

Controlling software (QRCT_v4.0-00182) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For Unwanted Emission test (Monopole)



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	DELL	E6320	N/A	N/A	Supplied by applicant
B	Adapter	DELL	DA90PM111	N/A	N/A	Supplied by applicant
C	Test Tool	Phiyo	N/A	N/A	N/A	Supplied by applicant
D	Test Tool	EmWicon	N/A	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.8	No	1	Supplied by applicant
2	AC Cable	1	1.8	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 Contention-based Protocol

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
N9030B - PXA Signal Analyzer KEYSIGHT	N9030B	MY57140938	2022/3/15	2023/3/14
MXA Signal Analyzer KEYSIGHT	N9020B	MY60110513	2022/12/26	2023/12/25
MXG Vector signal generator Agilent	N5182B	MY53050430	2022/11/29	2023/11/28
Combiner / Splitter (Model:ZN2PD-9G) Mini-Circuits	ZN2PD-9G	ZN2PD-9G	2022/6/9	2023/6/8
N5182BU KEYSIGHT	N5182BU	MY59360189	2022/11/29	2023/11/28
Splitters/Combiners Mini-Circuits	ZN2PD-9G	N/A	2022/9/2	2024/9/1

Notes:

1. The test was performed in Adaptivity room.
2. Tested Date: 2023/3/23

4.2 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-03	2022/1/10 2022/12/28	2023/1/9 2023/12/27
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 EMCI	EMC330N	980701	2022/3/8	2023/3/7
RF Coaxial Cable COMMATE/PEWC	8D	966-4-1	2022/3/8	2023/3/7
		966-4-2	2022/3/8	2023/3/7
		966-4-3	2022/3/8	2023/3/7
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/1/6 2022/12/19	2023/1/5 2023/12/18
		LOOPCAB-002	2022/1/6 2022/12/19	2023/1/5 2023/12/18
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2022/4/26	2023/4/25
Trilog Broadband Antenna Schwarzbeck	VULB 9168	9168-406	2022/10/21	2023/10/20

Notes:

1. The test was performed in 966 Chamber No. 4.
2. Tested Date: 2022/11/24 ~ 2023/1/17

4.3 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-783	2022/11/13	2023/11/12
	BBHA 9170	9170-739	2022/11/13	2023/11/12
Pre_Amplifier EMCI	EMC12630SE	980688	2022/10/4	2023/10/3
	EMC184045SE	980387	2022/1/10 2022/12/28	2023/1/9 2023/12/27
RF Cable-Frequency Range : 1-26.5GHz EMCI	EMC104-SM-SM-1200	160922	2021/12/24 2022/12/15	2022/12/23 2023/12/14
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10 2022/12/28	2023/1/9 2023/12/27
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
	EMC104-SM-SM-2000	180502	2022/4/25	2023/4/24
	EMC104-SM-SM-6000	210704	2022/11/4	2023/11/3
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2022/4/26	2023/4/25

Notes:

1. The test was performed in 966 Chamber No. 4.
2. Tested Date: 2022/11/24 ~ 2023/1/17

5 Limits of Test Items

5.1 Contention-based Protocol

Unlicensed indoor low-power devices must detect co-channel radio frequency power that is at least -62 dBm (The threshold is referenced to a 0 dBi antenna gain.) or lower. Additionally, indoor low-power devices must detect co-channel energy with 90% or greater certainty.

5.2 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).

5.3 Unwanted Emissions above 1 GHz

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

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

Notes:

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

Limits of unwanted emission out of the restricted bands

Frequencies (MHz)	EIRP Limit	Equivalent Field Strength at 3 m
5925 MHz > F > 7125 MHz	Peak: -7 (dBm/MHz)	88.2 (dBuV/m)
	Average: -27 (dBm/MHz)	68.2 (dBuV/m)

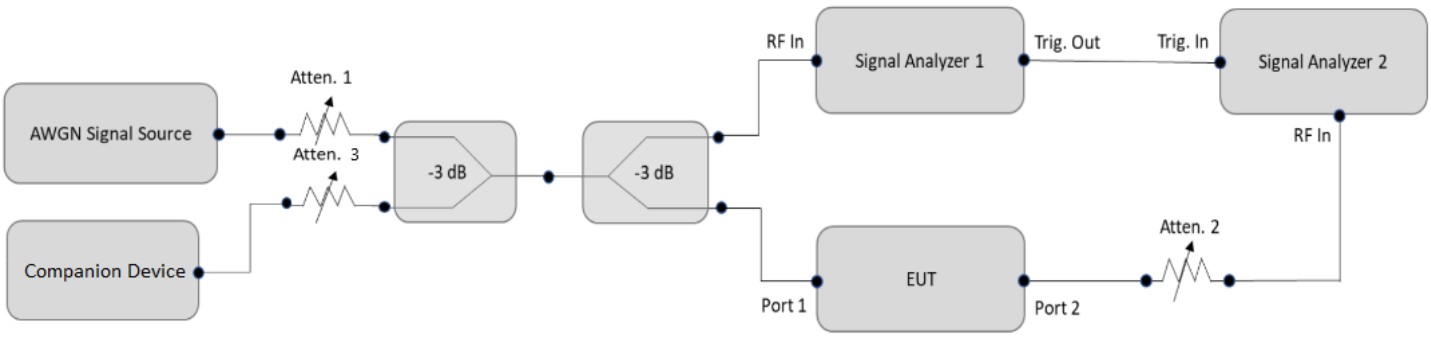
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 Contention-based Protocol

6.1.1 Test Setup



6.1.2 Test Procedure

a. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT. Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.

b. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters (set as following section 4.7.5 EUT operating condition).

c. Determine number of times detection threshold test as following table,

If	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leqq BW_{Inc}$	Once	Same as EUT transmission
$BW_{Inc} < BW_{EUT} \leqq 2xBW_{Inc}$	Once	Contained within BW_{EUT}
$2xBW_{Inc} < BW_{EUT} \leqq 4xBW_{Inc}$	Twice. (Incumbent transmission is contained within BW_{EUT})	Closely to the lower edge and upper edge of the EUT Channel
$BW_{EUT} > 4xBW_{Inc}$	Three times	Closely to the lower edge ,in the middle and upper edge of the EUT Channel

d. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use step c table to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.

e. Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT.

f. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.

g. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.

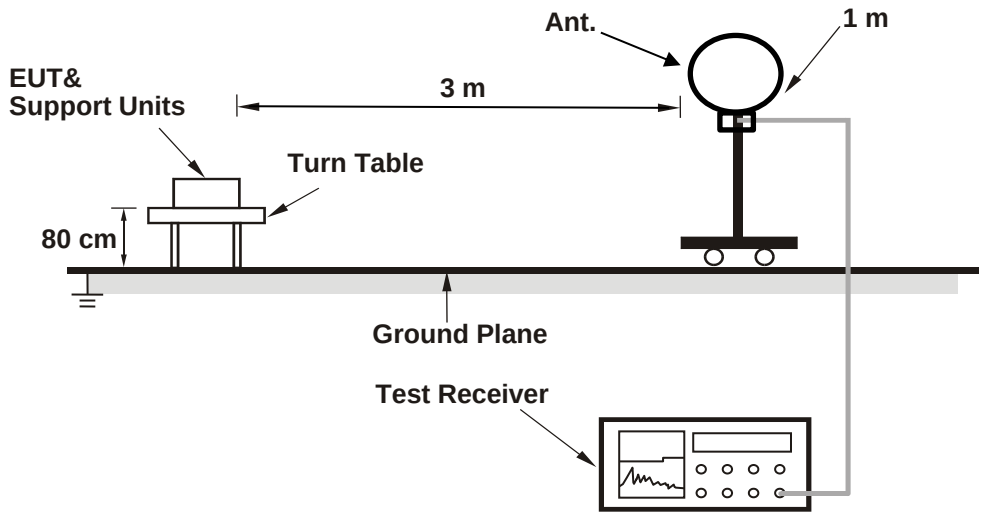
h. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.

i. Refer to step c table to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step d, choose a different center frequency for the AWGN signal and repeat the process.

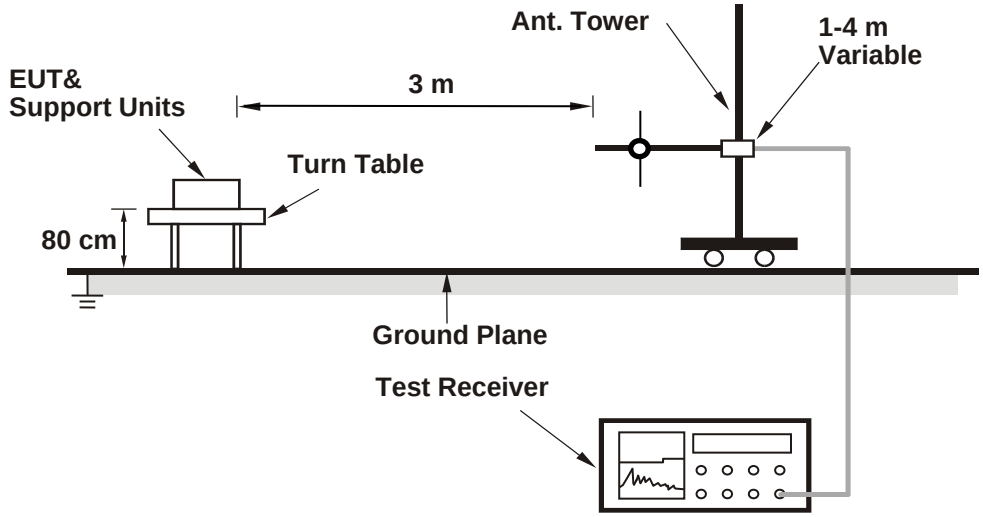
6.2 Unwanted Emissions below 1 GHz

6.2.1 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).

6.2.2 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.

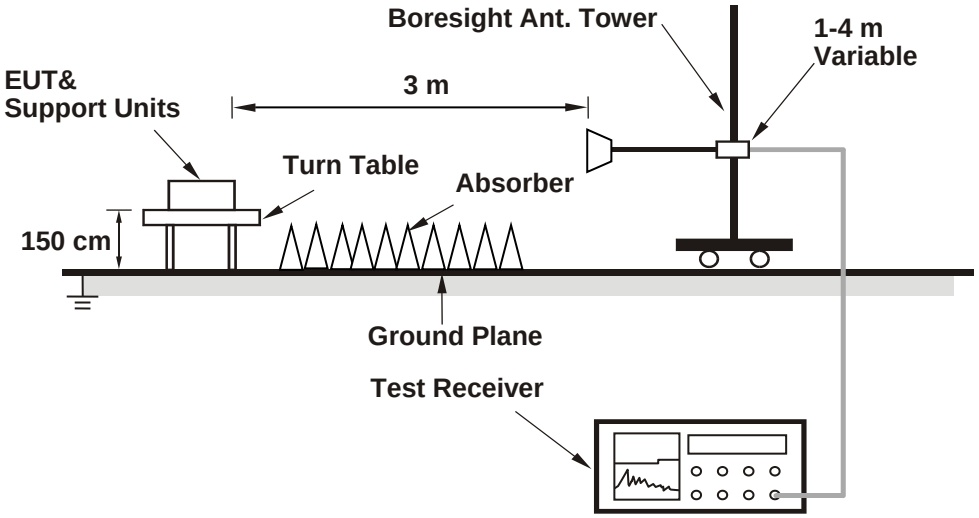
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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.

6.3 Unwanted Emissions above 1 GHz

6.3.1 Test Setup



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

6.3.2 Test Procedure

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

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

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

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

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

Notes:

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

7 Test Results of Test Item

7.1 Contention-based Protocol

Mode C

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

For U-NII-5

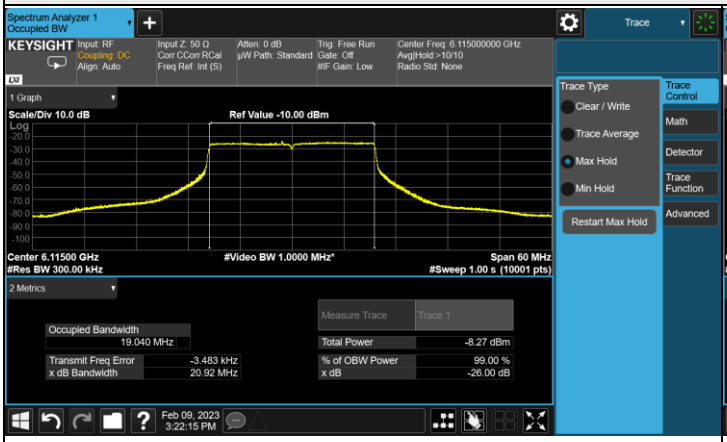
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	33	6115	6115	-66	3.13	1.24	-67.89	-62	OFF
					-67	3.13	1.24	-68.89	-62	Minimal
					-80.11	3.13	1.24	-82	-62	ON
	160	47	6185	6110	-65	3.13	1.24	-66.89	-62	OFF
					-66	3.13	1.24	-67.89	-62	Minimal
					-80.11	3.13	1.24	-82	-62	ON
				6185	-67	3.13	1.24	-68.89	-62	OFF
					-68	3.13	1.24	-69.89	-62	Minimal
					-80.11	3.13	1.24	-82	-62	ON
				6260	-71	3.13	1.24	-72.89	-62	OFF
					-72	3.13	1.24	-73.89	-62	Minimal
					-80.11	3.13	1.24	-82	-62	ON

Notes:

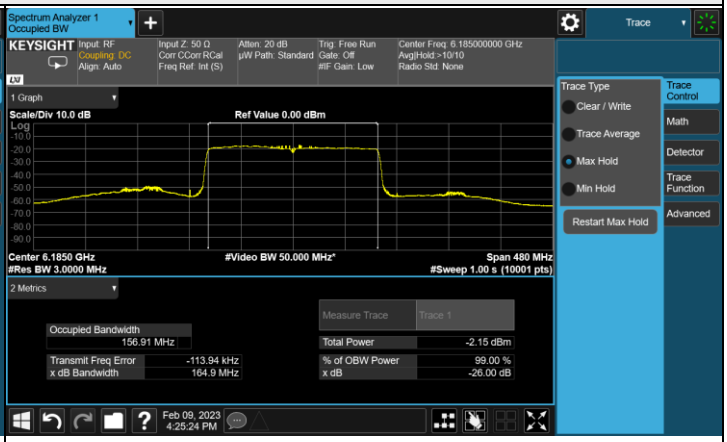
1. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
2. After evaluation, only the Chain 0 was chosen for test and presented in the test report.

Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6115	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6110	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6185	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6260	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass

Plots of EUT Tx waveform

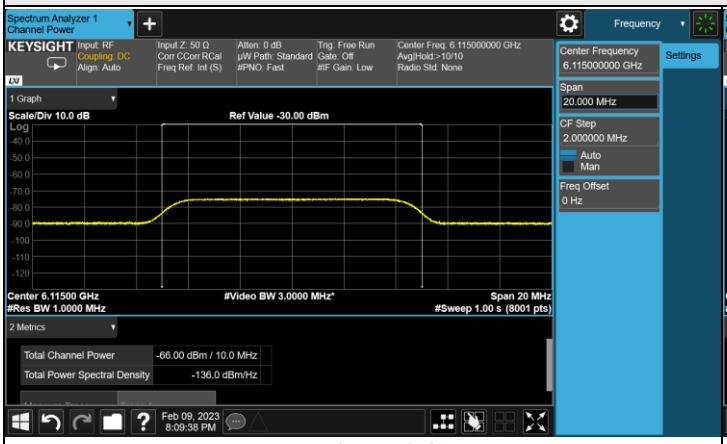


802.11ax (HE20) / CH33

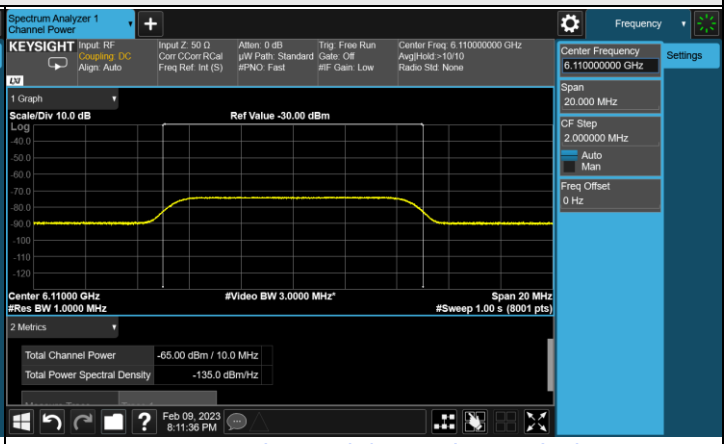


802.11ax (HE160) / CH47

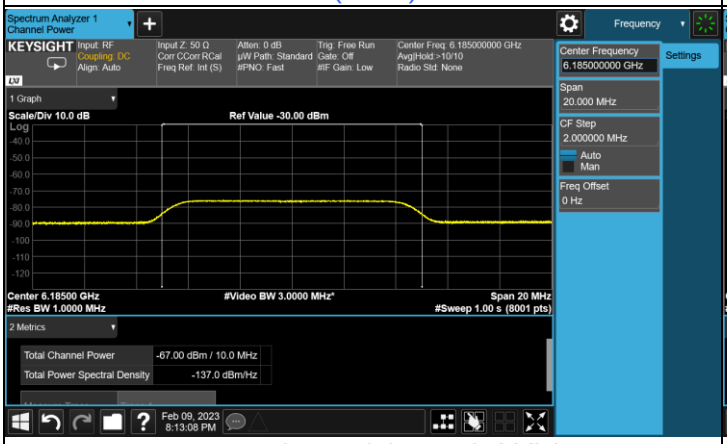
Plots of Injected signal (AWGN) level



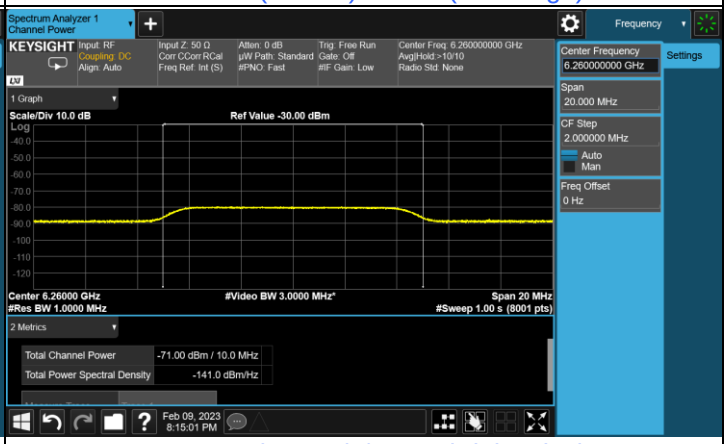
802.11ax (HE20) / CH33



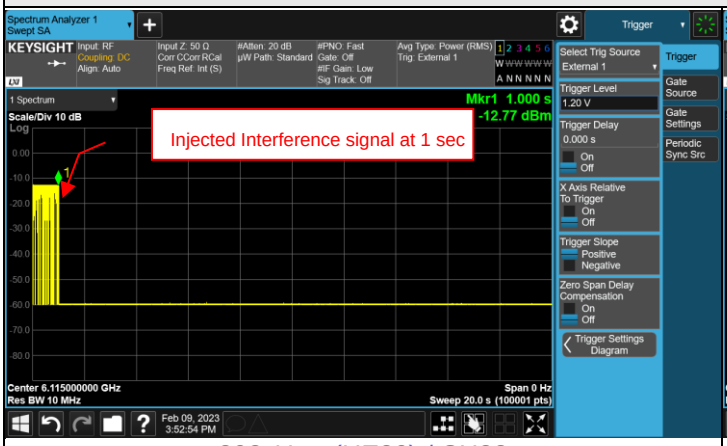
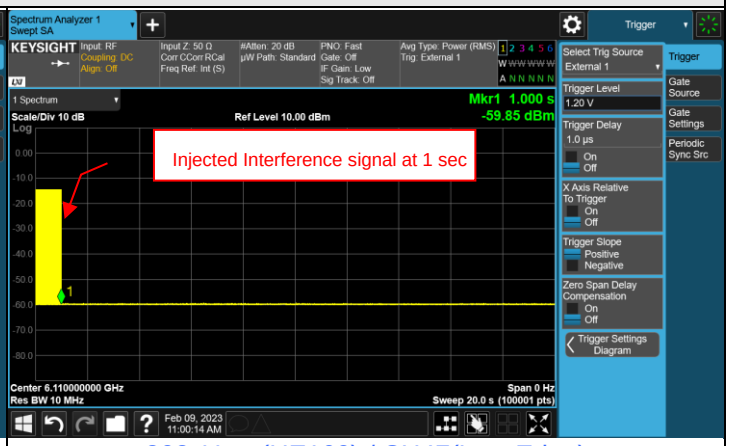
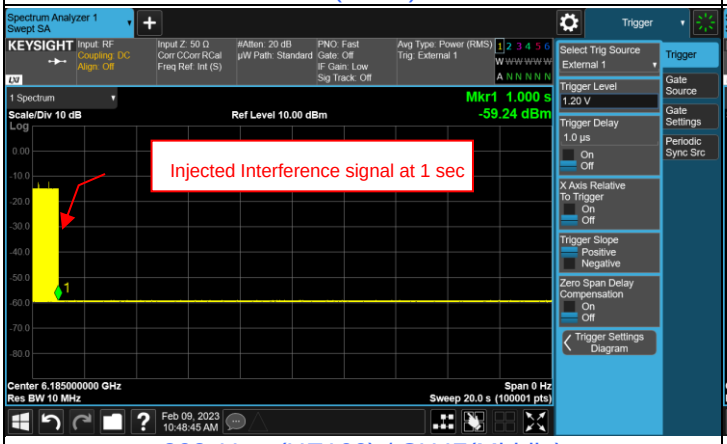
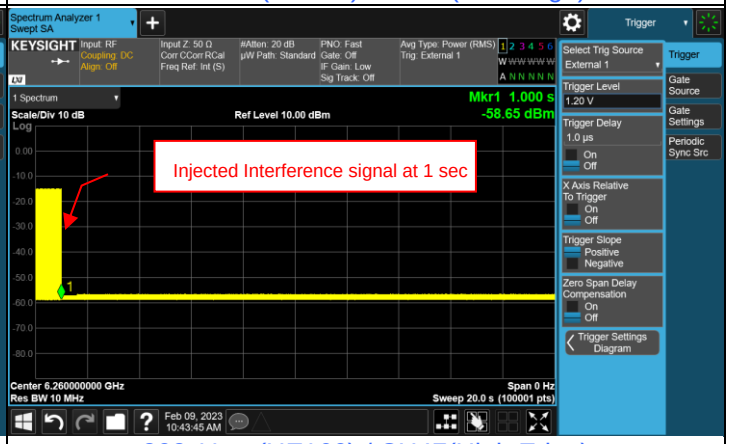
802.11ax (HE160) / CH47(Low Edge)



802.11ax (HE160) / CH47(Middle)



802.11ax (HE160) / CH47(High Edge)

Plots of EUT ceased transmission in the time domain	
	
802.11ax (HE20) / CH33	802.11ax (HE160) / CH47(Low Edge)
	
802.11ax (HE160) / CH47(Middle)	802.11ax (HE160) / CH47(High Edge)

For U-NII-6

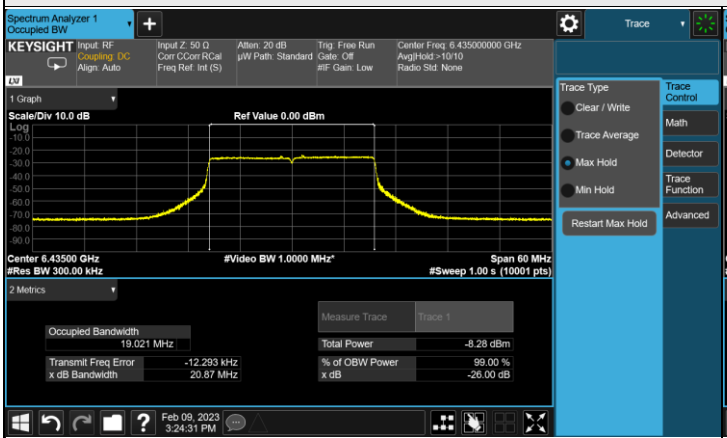
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	97	6435	6435	-64	3.13	1.24	-65.89	-62	OFF
					-65	3.13	1.24	-66.89	-62	Minimal
					-80.11	3.13	1.24	-82	-62	ON
	160	111	6505	6430	-64	3.13	1.24	-65.89	-62	OFF
					-65	3.13	1.24	-66.89	-62	Minimal
					-80.11	3.13	1.24	-82	-62	ON
				6505	-67	3.13	1.24	-68.89	-62	OFF
					-68	3.13	1.24	-69.89	-62	Minimal
					-80.11	3.13	1.24	-82	-62	ON
				6580	-70	3.13	1.24	-71.89	-62	OFF
					-71	3.13	1.24	-72.89	-62	Minimal
					-80.11	3.13	1.24	-82	-62	ON

Notes:

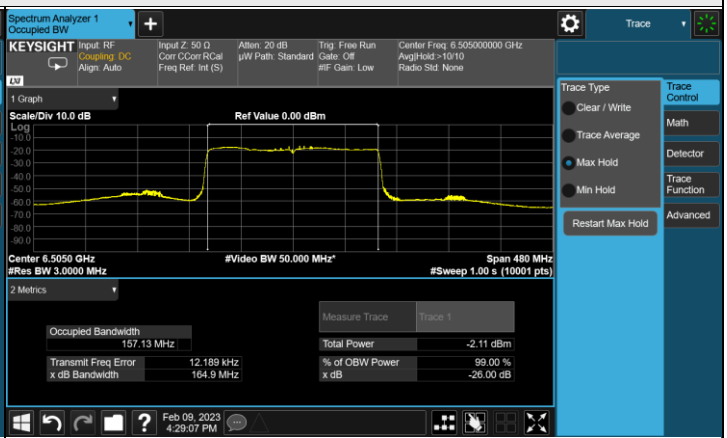
1. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
2. After evaluation, only the Chain 0 was chosen for test and presented in the test report.

Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6435	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6430	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6505	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6580	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass

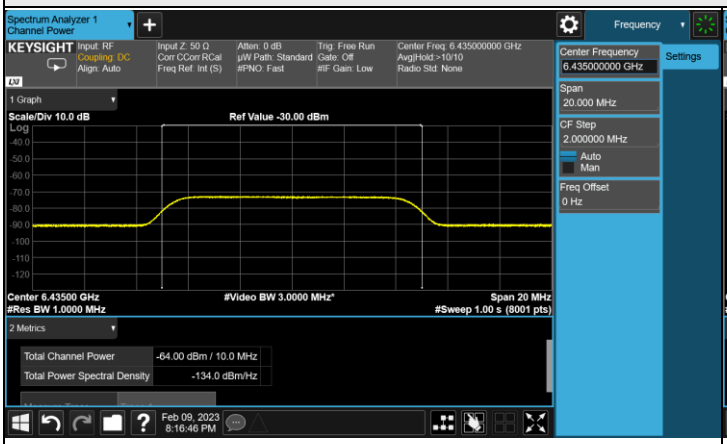
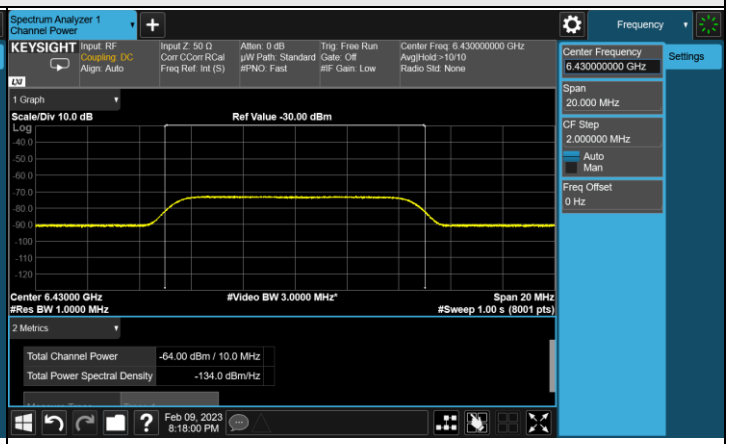
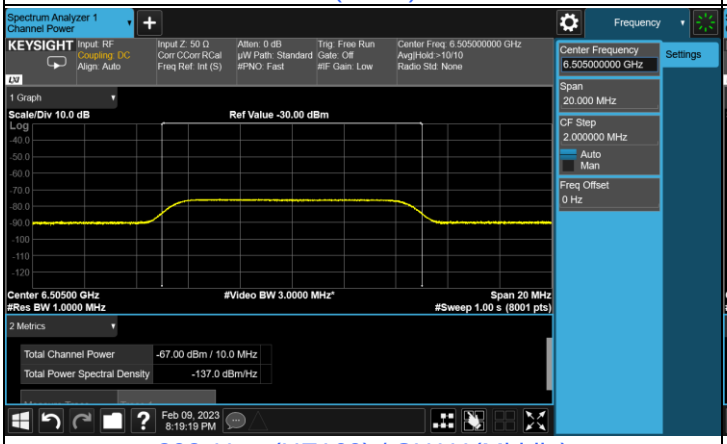
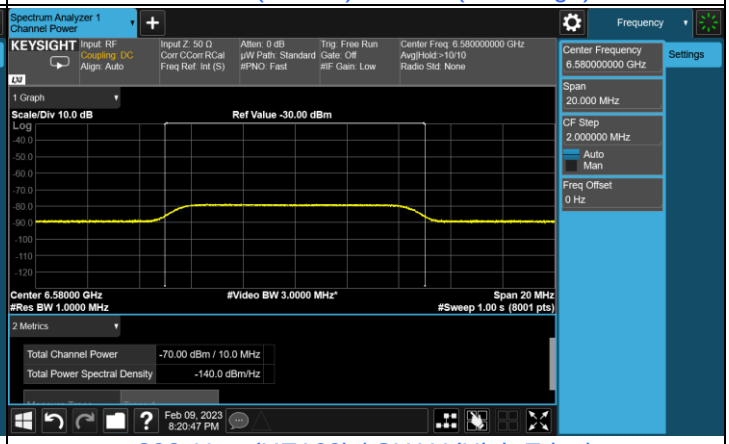
Plots of EUT Tx waveform

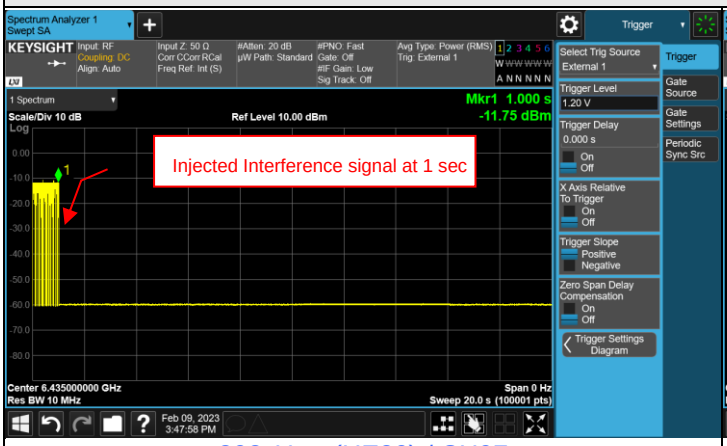
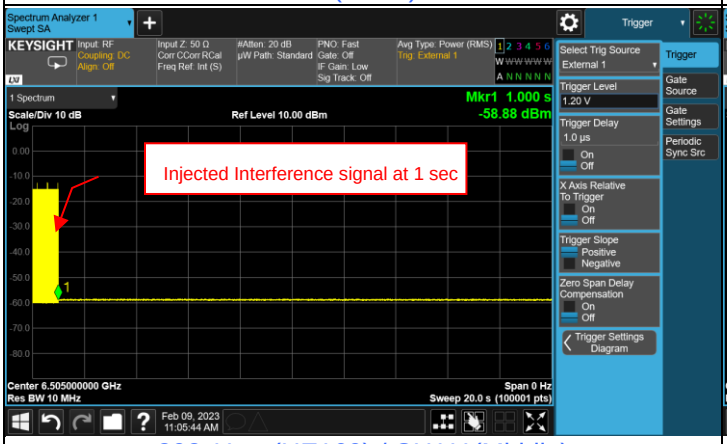


802.11ax (HE20) / CH97



802.11ax (HE160) / CH111

Plots of Injected signal (AWGN) level	
	
802.11ax (HE20) / CH97	802.11ax (HE160) / CH111(Low Edge)
	
802.11ax (HE160) / CH111(Middle)	802.11ax (HE160) / CH111(High Edge)

Plots of EUT ceased transmission in the time domain	
	
802.11ax (HE20) / CH97	802.11ax (HE160) / CH111(Low Edge)
	
802.11ax (HE160) / CH111(Middle)	802.11ax (HE160) / CH111(High Edge)

For U-NII-7

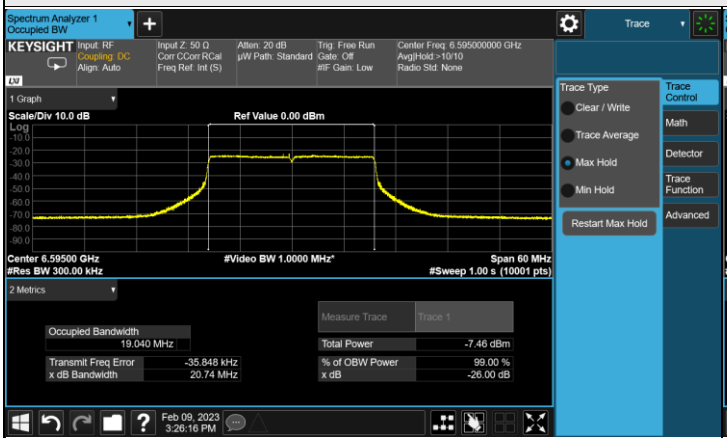
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	129	6595	6595	-64	3.54	1.24	-66.3	-62	OFF
					-65	3.54	1.24	-67.3	-62	Minimal
					-79.7	3.54	1.24	-82	-62	ON
	160	143	6665	6590	-64	3.54	1.24	-66.3	-62	OFF
					-65	3.54	1.24	-67.3	-62	Minimal
					-79.7	3.54	1.24	-82	-62	ON
				6665	-66	3.54	1.24	-68.3	-62	OFF
					-67	3.54	1.24	-69.3	-62	Minimal
					-79.7	3.54	1.24	-82	-62	ON
				6740	-61	3.54	1.24	-63.3	-62	OFF
					-62	3.54	1.24	-64.3	-62	Minimal
					-79.7	3.54	1.24	-82	-62	ON

Notes:

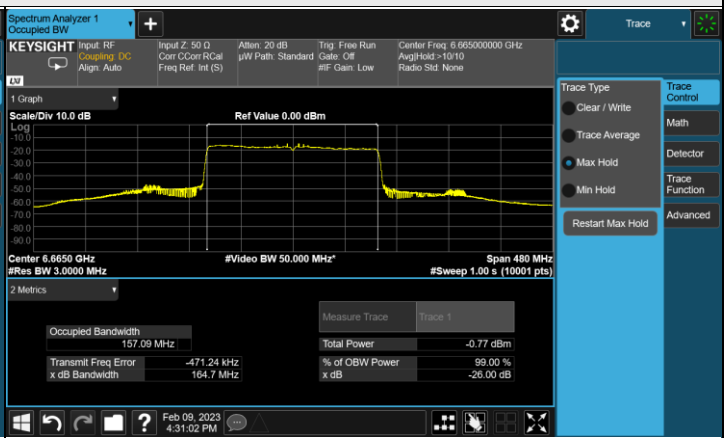
1. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
2. After evaluation, only the Chain 0 was chosen for test and presented in the test report.

Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6595	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6590	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6665	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6740	v	v	v	v	v	v	v	x	v	v	90%	90%	Pass

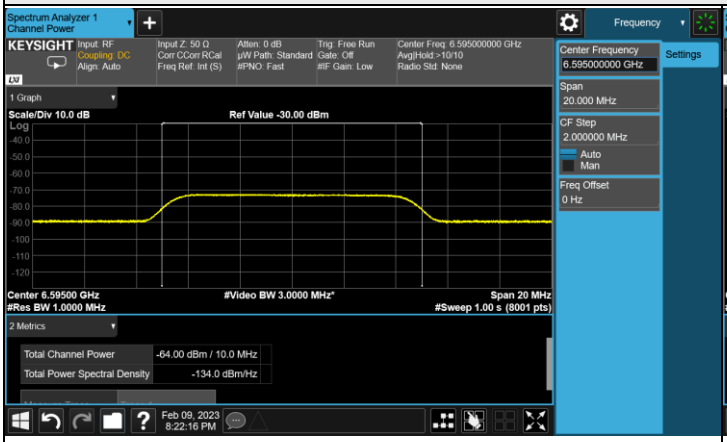
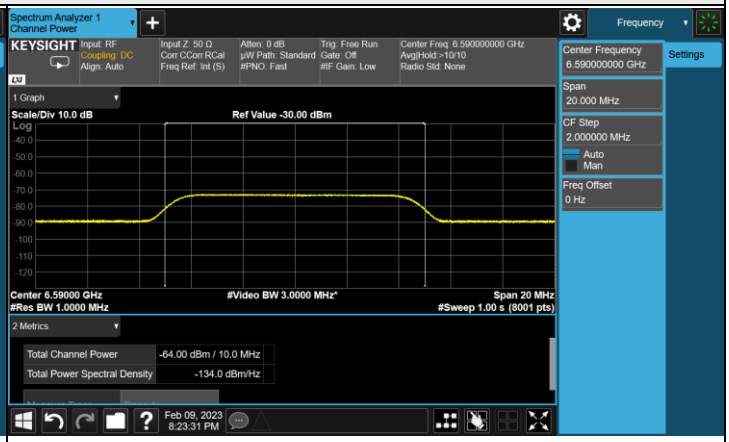
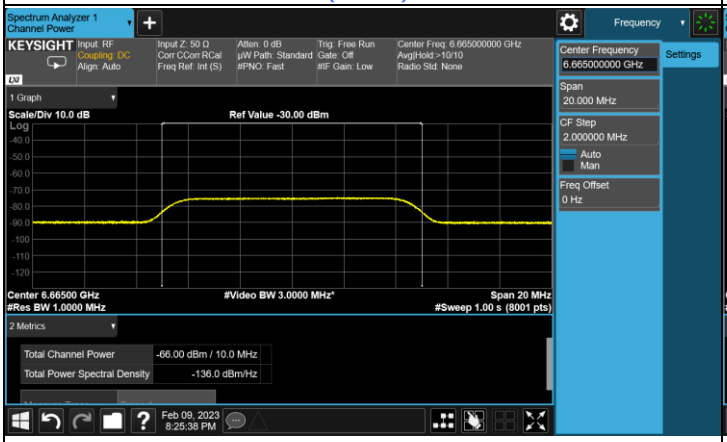
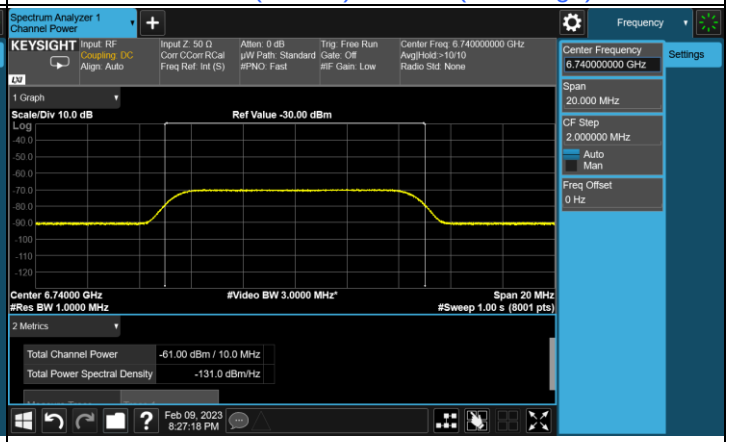
Plots of EUT Tx waveform

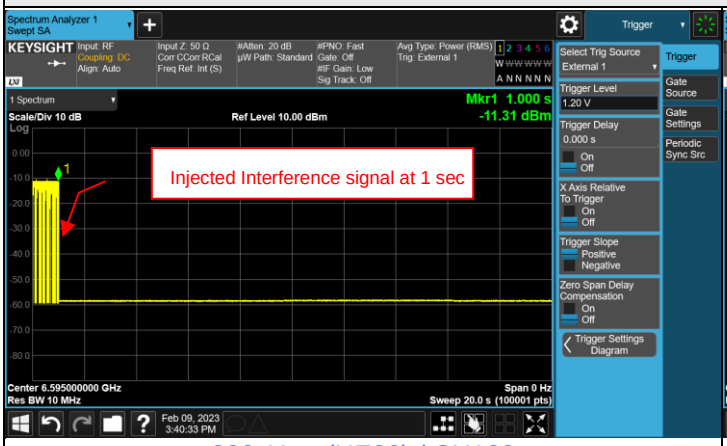
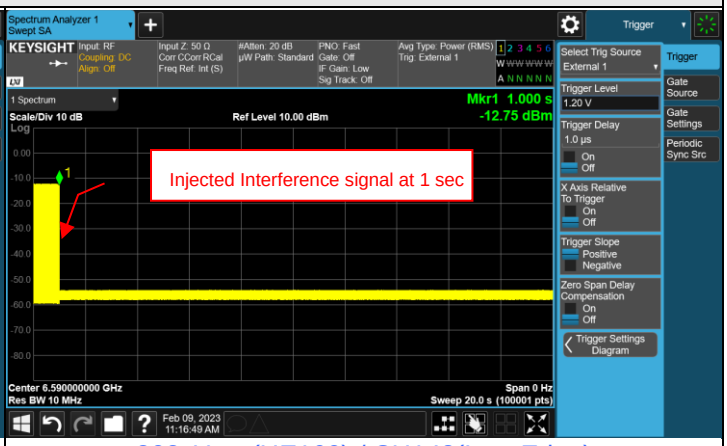
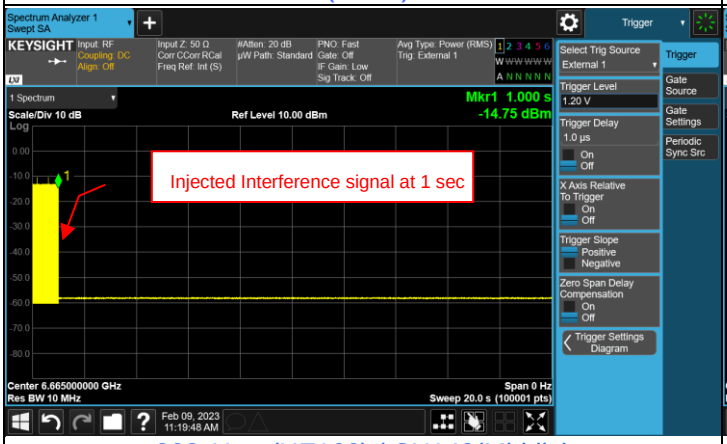
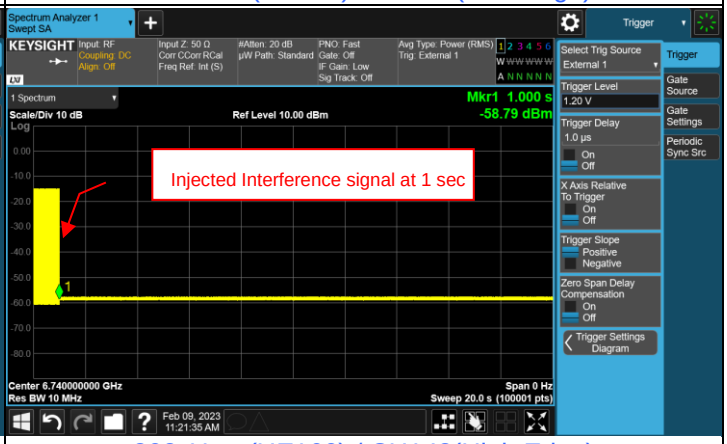


802.11ax (HE20) / CH129



802.11ax (HE160) / CH143

Plots of Injected signal (AWGN) level	
	
802.11ax (HE20) / CH129	802.11ax (HE160) / CH143(Low Edge)
	
802.11ax (HE160) / CH143(Middle)	802.11ax (HE160) / CH143(High Edge)

Plots of EUT ceased transmission in the time domain	
	
802.11ax (HE20) / CH129	802.11ax (HE160) / CH143(Low Edge)
	
802.11ax (HE160) / CH143(Middle)	802.11ax (HE160) / CH143(High Edge)

For U-NII-8

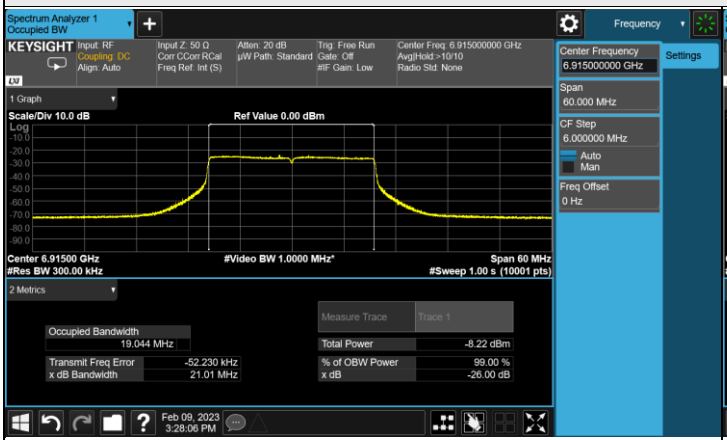
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	193	6915	6915	-64	3.06	1.24	-65.82	-62	OFF
					-65	3.06	1.24	-66.82	-62	Minimal
					-80.18	3.06	1.24	-82	-62	ON
	160	207	6985	6910	-66	3.06	1.24	-67.82	-62	OFF
					-67	3.06	1.24	-68.82	-62	Minimal
					-80.18	3.06	1.24	-82	-62	ON
				6985	-60.18	3.06	1.24	-62	-62	OFF
					-61.18	3.06	1.24	-63	-62	Minimal
					-80.18	3.06	1.24	-82	-62	ON
				7060	-60.18	3.06	1.24	-62	-62	OFF
					-61.18	3.06	1.24	-63	-62	Minimal
					-80.18	3.06	1.24	-82	-62	ON

Notes:

1. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
2. After evaluation, only the Chain 0 was chosen for test and presented in the test report.

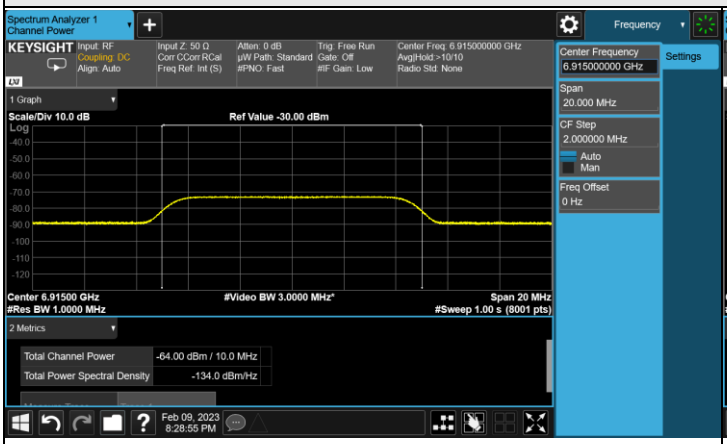
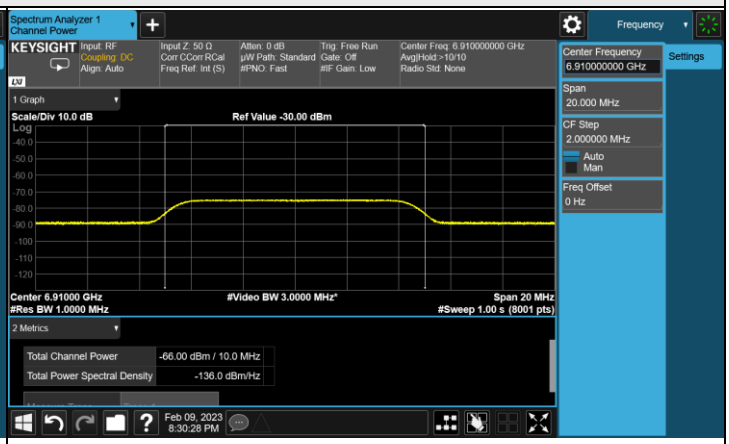
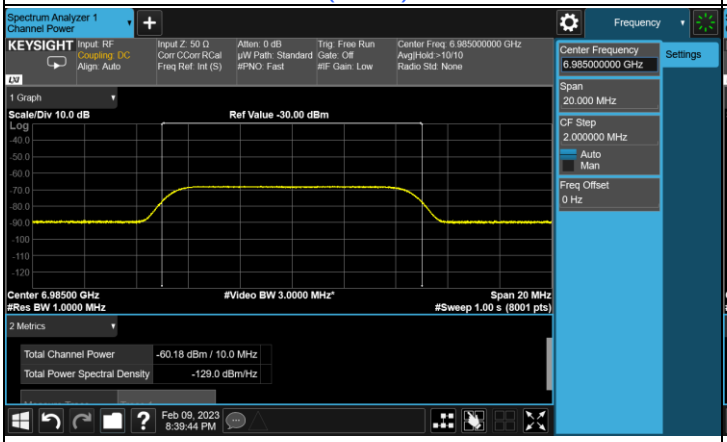
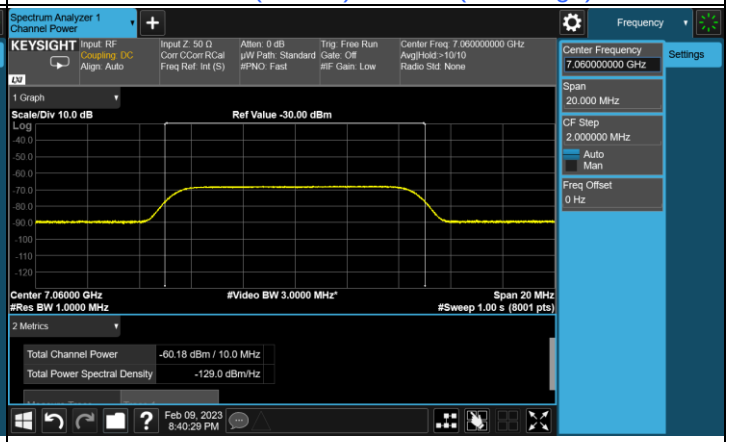
Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6915	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6910	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6985	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		7060	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass

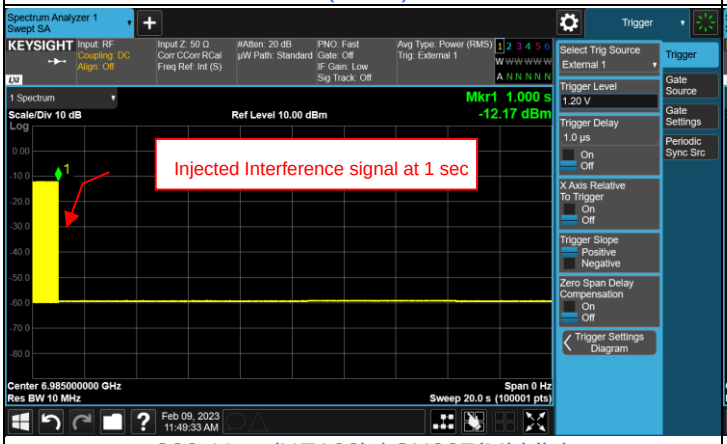
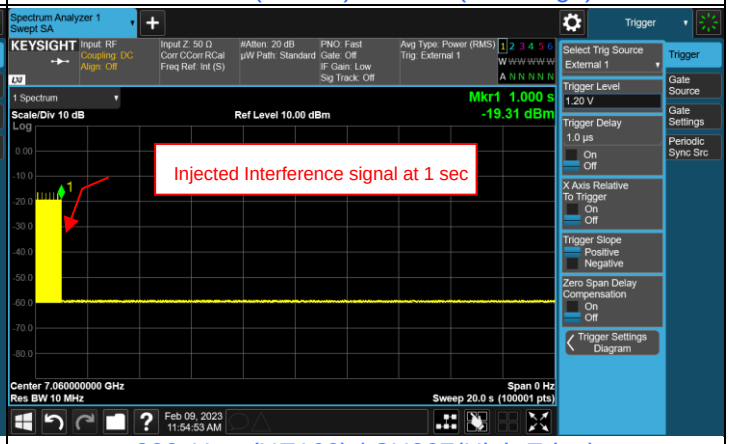
Plots of EUT Tx waveform



802.11ax (HE20) / CH193

802.11ax (HE160) / CH207

Plots of Injected signal (AWGN) level	
	
802.11ax (HE20) / CH193	802.11ax (HE160) / CH207(Low Edge)
	
802.11ax (HE160) / CH207(Middle)	802.11ax (HE160) / CH207(High Edge)

Plots of EUT ceased transmission in the time domain	
	
802.11ax (HE20) / CH193	802.11ax (HE160) / CH207(Low Edge)
	
802.11ax (HE160) / CH207(Middle)	802.11ax (HE160) / CH207(High Edge)

7.2 Unwanted Emissions below 1 GHz

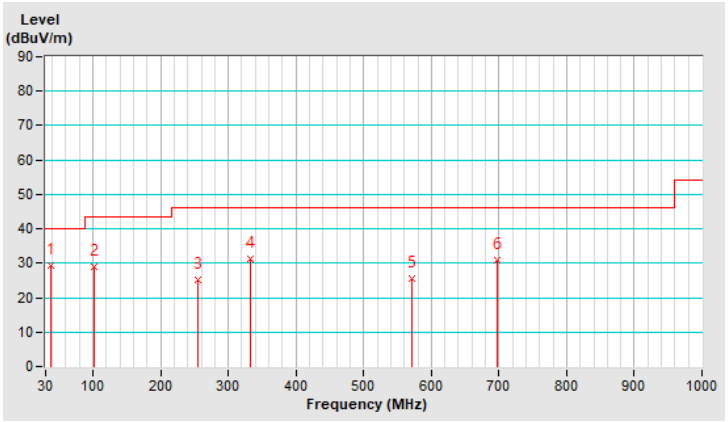
Mode A

RF Mode	802.11ax (HE20)	**Channel**	CH 2：5935 MHz
Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 68% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	38.65	29.2 QP	40.0	-10.8	1.50 H	93	42.2	-13.0
2	101.26	28.8 QP	43.5	-14.7	1.50 H	348	45.1	-16.3
3	255.16	25.3 QP	46.0	-20.7	1.00 H	158	37.9	-12.6
4	331.79	31.2 QP	46.0	-14.8	2.00 H	87	41.0	-9.8
5	571.01	25.6 QP	46.0	-20.4	1.00 H	206	29.1	-3.5
6	698.08	30.8 QP	46.0	-15.2	1.00 H	357	31.5	-0.7

Remarks:

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

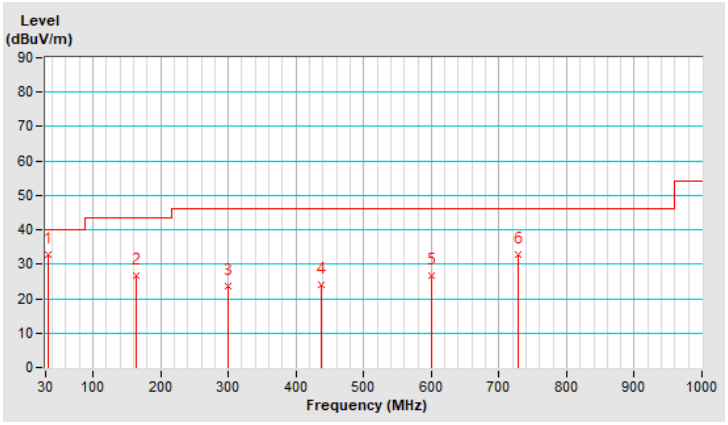


RF Mode	802.11ax (HE20)	**Channel**	CH 2：5935 MHz
Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 68% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	34.55	32.9 QP	40.0	-7.1	1.00 V	149	46.5	-13.6
2	163.50	26.6 QP	43.5	-16.9	1.50 V	357	38.7	-12.1
3	299.33	23.6 QP	46.0	-22.4	1.00 V	193	34.3	-10.7
4	438.28	23.9 QP	46.0	-22.1	2.00 V	53	30.3	-6.4
5	600.12	26.6 QP	46.0	-19.4	1.50 V	113	29.0	-2.4
6	727.85	32.7 QP	46.0	-13.3	1.50 V	194	32.8	-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.



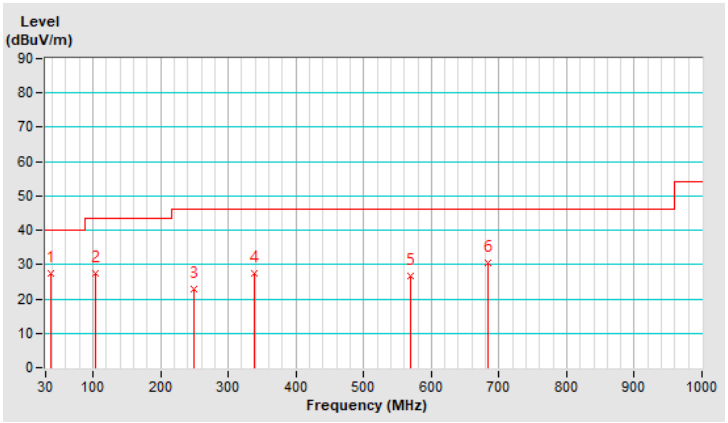
Mode B

RF Mode	802.11ax (HE20)	Channel	CH 233：7115 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 68% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	37.57	27.5 QP	40.0	-12.5	1.00 H	298	40.7	-13.2
2	103.93	27.5 QP	43.5	-16.0	1.00 H	149	43.3	-15.8
3	249.24	22.8 QP	46.0	-23.2	2.00 H	87	35.5	-12.7
4	338.13	27.5 QP	46.0	-18.5	1.00 H	90	37.2	-9.7
5	568.40	26.7 QP	46.0	-19.3	2.00 H	253	30.3	-3.6
6	684.64	30.5 QP	46.0	-15.5	1.50 H	317	31.5	-1.0

Remarks:

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

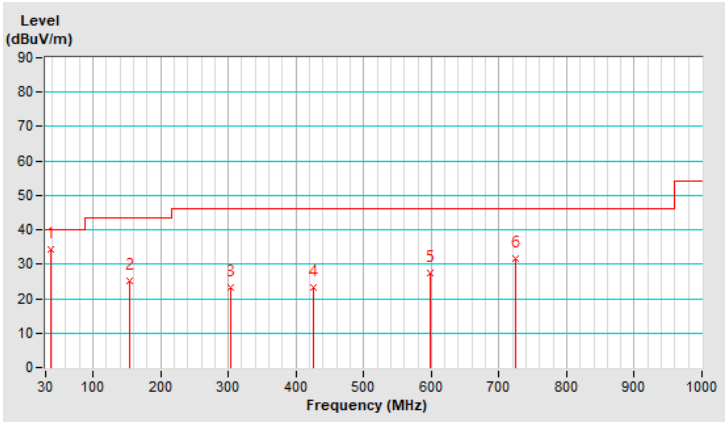


RF Mode	802.11ax (HE20)	**Channel**	CH 233：7115 MHz
Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 68% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	37.60	34.2 QP	40.0	-5.8	1.50 V	46	47.4	-13.2
2	153.94	25.3 QP	43.5	-18.2	1.00 V	209	37.0	-11.7
3	303.18	23.4 QP	46.0	-22.6	2.00 V	343	34.0	-10.6
4	425.31	23.3 QP	46.0	-22.7	1.00 V	220	30.2	-6.9
5	598.25	27.4 QP	46.0	-18.6	1.50 V	166	29.9	-2.5
6	724.39	31.7 QP	46.0	-14.3	1.50 V	78	31.9	-0.2

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 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.



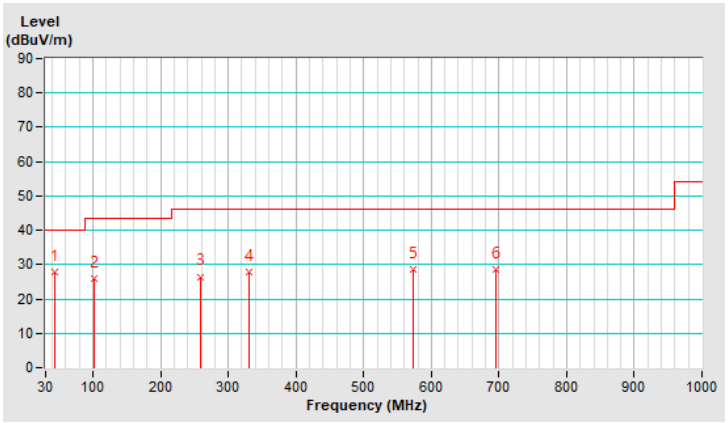
Mode C

RF Mode	802.11ax (HE20)	Channel	CH 2：5935 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 68% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	43.08	27.8 QP	40.0	-12.2	1.50 H	156	40.6	-12.8
2	102.22	25.8 QP	43.5	-17.7	1.00 H	336	41.9	-16.1
3	259.24	26.5 QP	46.0	-19.5	1.50 H	252	38.9	-12.4
4	330.85	27.8 QP	46.0	-18.2	1.00 H	32	37.6	-9.8
5	572.95	28.5 QP	46.0	-17.5	1.50 H	97	32.0	-3.5
6	694.62	28.7 QP	46.0	-17.3	1.50 H	224	29.4	-0.7

Remarks:

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

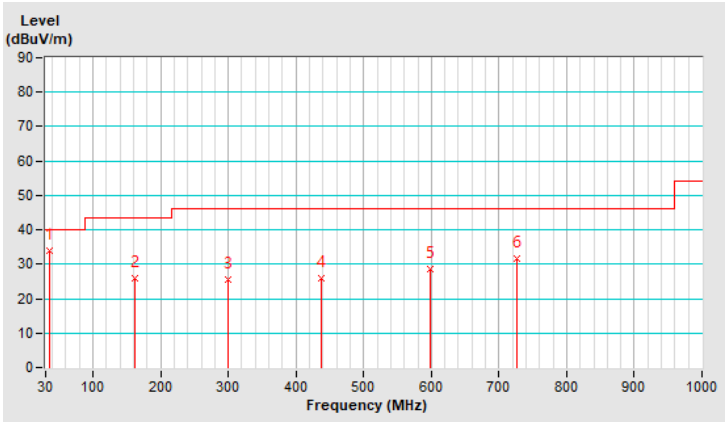


RF Mode	802.11ax (HE20)	**Channel**	CH 2：5935 MHz
Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 68% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	36.60	34.0 QP	40.0	-6.0	1.00 V	318	47.4	-13.4
2	162.54	25.9 QP	43.5	-17.6	1.50 V	136	38.0	-12.1
3	299.23	25.6 QP	46.0	-20.4	1.00 V	59	36.3	-10.7
4	438.20	25.8 QP	46.0	-20.2	1.50 V	186	32.2	-6.4
5	598.51	28.5 QP	46.0	-17.5	1.00 V	286	31.0	-2.5
6	727.30	31.8 QP	46.0	-14.2	1.00 V	204	31.9	-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.



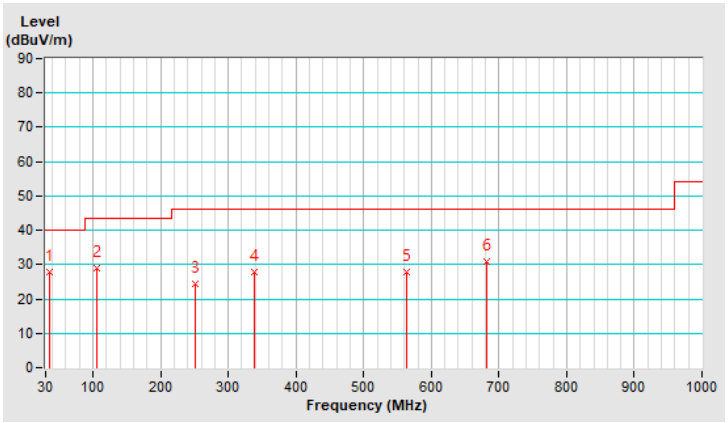
Mode D

RF Mode	802.11ax (HE20)	Channel	CH 233：7115 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 68% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	35.03	27.9 QP	40.0	-12.1	1.00 H	199	41.6	-13.7
2	104.83	29.0 QP	43.5	-14.5	1.50 H	65	44.7	-15.7
3	250.79	24.5 QP	46.0	-21.5	1.00 H	253	37.2	-12.7
4	338.55	27.9 QP	46.0	-18.1	1.00 H	142	37.6	-9.7
5	564.02	27.8 QP	46.0	-18.2	1.50 H	38	31.5	-3.7
6	682.17	30.7 QP	46.0	-15.3	1.50 H	227	31.7	-1.0

Remarks:

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

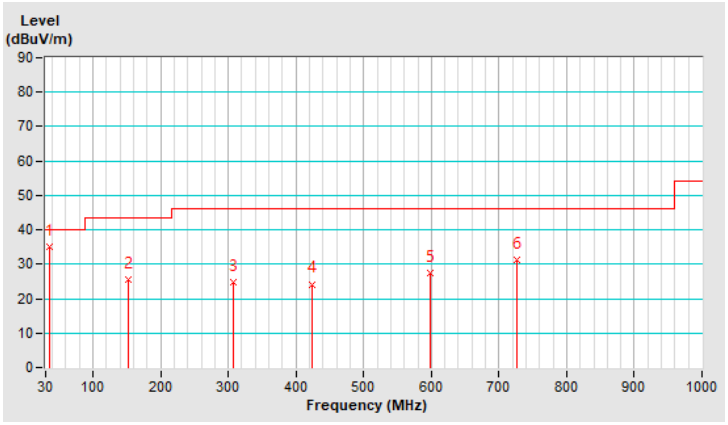


RF Mode	802.11ax (HE20)	**Channel**	CH 233：7115 MHz
Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 68% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	**35.04**	**35.1 QP**	**40.0**	**-4.9**	**1.50 V**	**156**	**48.8**	**-13.7**
2	151.92	25.4 QP	43.5	-18.1	1.50 V	74	37.3	-11.9
3	306.58	24.9 QP	46.0	-21.1	1.50 V	55	35.4	-10.5
4	423.08	24.2 QP	46.0	-21.8	2.00 V	148	31.2	-7.0
5	597.55	27.5 QP	46.0	-18.5	1.00 V	360	30.0	-2.5
6	725.80	31.4 QP	46.0	-14.6	2.00 V	154	31.6	-0.2

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 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.



7.3 Unwanted Emissions above 1 GHz

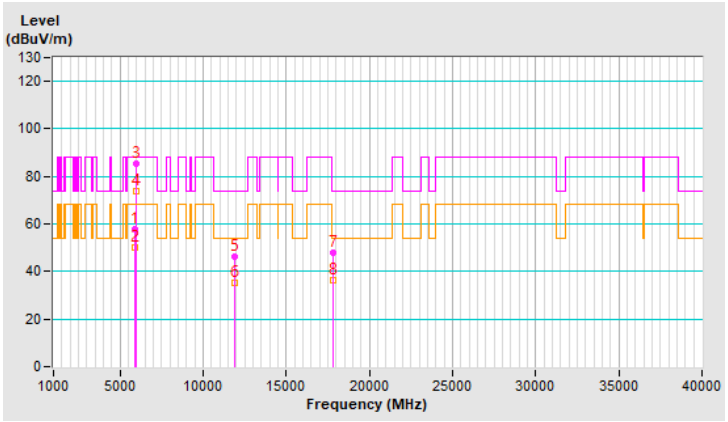
Mode A

RF Mode	802.11ax (HE20)	**Channel**	CH 2：5935 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 (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 66% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5925.00	57.8 PK	88.2	-30.4	1.55 H	353	56.4	1.4
2	#5925.00	50.2 AV	68.2	-18.0	1.55 H	353	48.8	1.4
3	*5935.00	85.4 PK			1.55 H	353	84.0	1.4
4	*5935.00	74.0 AV			1.55 H	353	72.6	1.4
5	11870.00	46.5 PK	74.0	-27.5	2.09 H	197	35.7	10.8
6	11870.00	35.4 AV	54.0	-18.6	2.09 H	197	24.6	10.8
7	17805.00	48.0 PK	74.0	-26.0	1.12 H	352	27.6	20.4
8	17805.00	36.3 AV	54.0	-17.7	1.12 H	352	15.9	20.4

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.

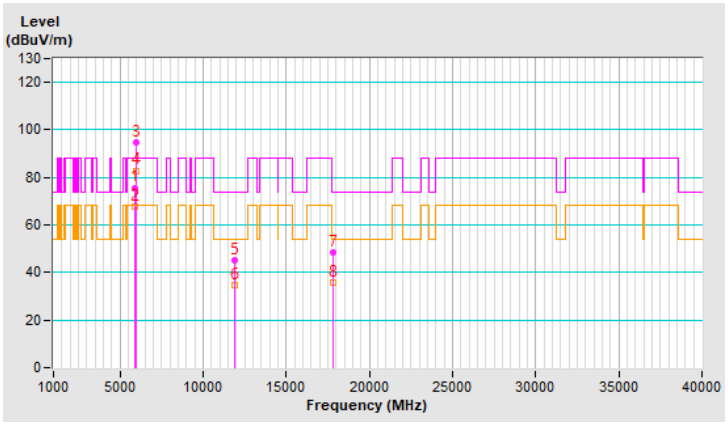


RF Mode	802.11ax (HE20)	**Channel**	CH 2：5935 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 66% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5925.00	75.7 PK	88.2	-12.5	3.48 V	129	74.3	1.4
2	#5925.00	67.9 AV	68.2	-0.3	3.48 V	129	66.5	1.4
3	*5935.00	94.5 PK			3.48 V	129	93.1	1.4
4	*5935.00	82.9 AV			3.48 V	129	81.5	1.4
5	11870.00	45.0 PK	74.0	-29.0	1.54 V	175	34.2	10.8
6	11870.00	34.6 AV	54.0	-19.4	1.54 V	175	23.8	10.8
7	17805.00	48.2 PK	74.0	-25.8	1.82 V	237	27.8	20.4
8	17805.00	35.8 AV	54.0	-18.2	1.82 V	237	15.4	20.4

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.



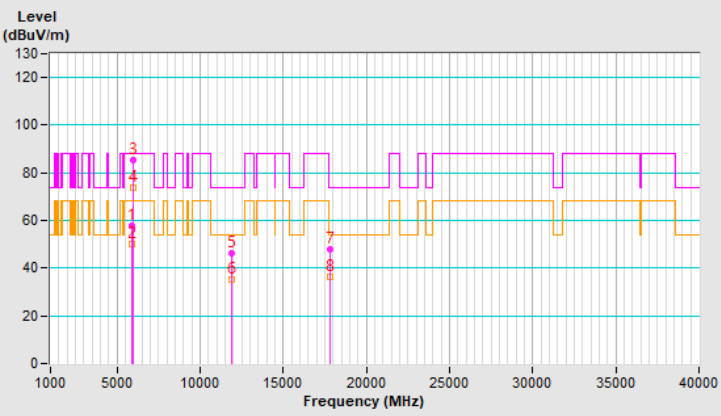
Mode B

RF Mode	802.11ax (HE20)	Channel	CH 2：5935 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 (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 66% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5925.00	57.8 PK	88.2	-30.4	1.55 H	353	56.4	1.4
2	#5925.00	50.2 AV	68.2	-18.0	1.55 H	353	48.8	1.4
3	*5935.00	85.4 PK			1.55 H	353	84.0	1.4
4	*5935.00	74.0 AV			1.55 H	353	72.6	1.4
5	11870.00	46.5 PK	74.0	-27.5	2.09 H	197	35.7	10.8
6	11870.00	35.4 AV	54.0	-18.6	2.09 H	197	24.6	10.8
7	17805.00	48.0 PK	74.0	-26.0	1.12 H	352	27.6	20.4
8	17805.00	36.3 AV	54.0	-17.7	1.12 H	352	15.9	20.4

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.

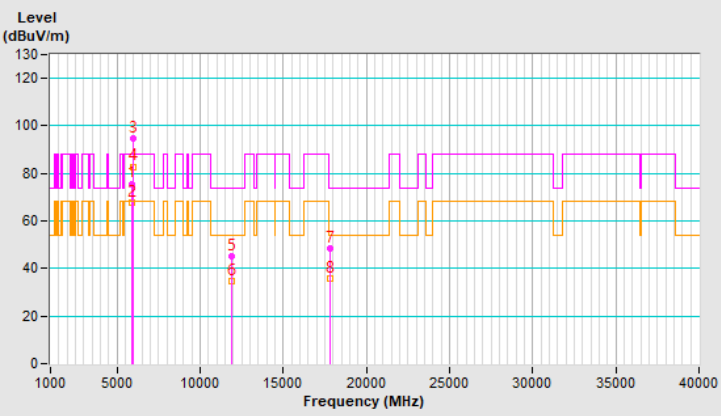


RF Mode	802.11ax (HE20)	**Channel**	CH 2：5935 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 66% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5925.00	75.7 PK	88.2	-12.5	3.48 V	129	74.3	1.4
2	#5925.00	67.9 AV	68.2	-0.3	3.48 V	129	66.5	1.4
3	*5935.00	94.5 PK			3.48 V	129	93.1	1.4
4	*5935.00	82.9 AV			3.48 V	129	81.5	1.4
5	11870.00	45.0 PK	74.0	-29.0	1.54 V	175	34.2	10.8
6	11870.00	34.6 AV	54.0	-19.4	1.54 V	175	23.8	10.8
7	17805.00	48.2 PK	74.0	-25.8	1.82 V	237	27.8	20.4
8	17805.00	35.8 AV	54.0	-18.2	1.82 V	237	15.4	20.4

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.

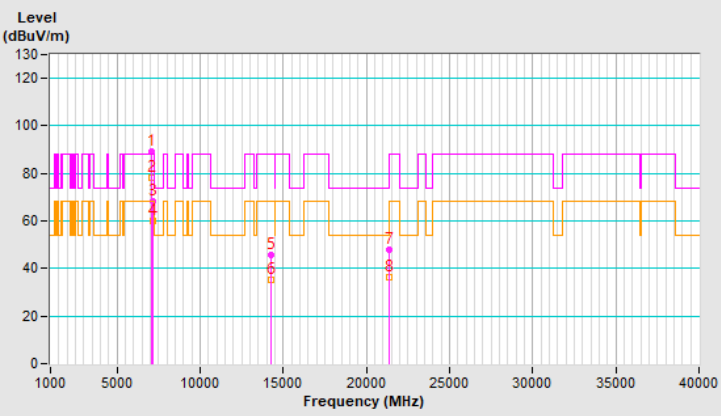


RF Mode	802.11ax (HE20)	**Channel**	CH 233：7115 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 66% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*7115.00	89.1 PK			1.19 H	149	83.5	5.6
2	*7115.00	78.2 AV			1.19 H	149	72.6	5.6
3	#7125.00	68.1 PK	88.2	-20.1	1.19 H	149	62.4	5.7
4	#7125.00	60.0 AV	68.2	-8.2	1.19 H	149	54.3	5.7
5	#14230.00	45.8 PK	88.2	-42.4	2.08 H	208	32.3	13.5
6	#14230.00	35.0 AV	68.2	-33.2	2.08 H	208	21.5	13.5
7	21345.00	48.0 PK	74.0	-26.0	1.15 H	358	51.8	-3.8
8	21345.00	36.3 AV	54.0	-17.7	1.15 H	358	40.1	-3.8

Remarks:

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

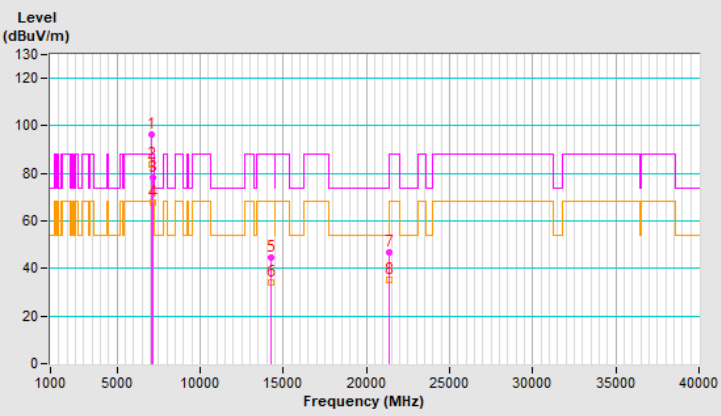


RF Mode	802.11ax (HE20)	**Channel**	CH 233：7115 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 66% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*7115.00	96.3 PK			2.43 V	87	90.7	5.6
2	*7115.00	83.5 AV			2.43 V	87	77.9	5.6
3	#7125.00	78.0 PK	88.2	-10.2	2.43 V	87	72.3	5.7
4	#7125.00	67.8 AV	68.2	-0.4	2.43 V	87	62.1	5.7
5	#14230.00	44.7 PK	88.2	-43.5	1.54 V	170	31.2	13.5
6	#14230.00	34.2 AV	68.2	-34.0	1.54 V	170	20.7	13.5
7	21345.00	47.0 PK	74.0	-27.0	1.87 V	251	50.8	-3.8
8	21345.00	35.4 AV	54.0	-18.6	1.87 V	251	39.2	-3.8

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.



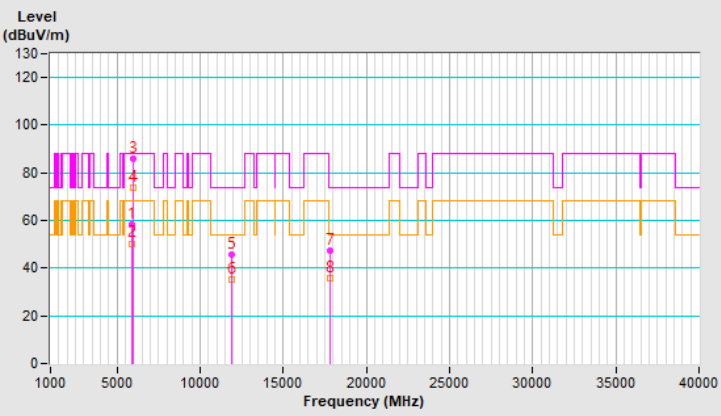
Mode C

RF Mode	802.11ax (HE20)	Channel	CH 2：5935 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 (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 67% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5925.00	58.5 PK	88.2	-29.7	1.58 H	343	57.1	1.4
2	#5925.00	50.4 AV	68.2	-17.8	1.58 H	343	49.0	1.4
3	*5935.00	86.0 PK			1.58 H	343	84.6	1.4
4	*5935.00	74.0 AV			1.58 H	343	72.6	1.4
5	11870.00	45.9 PK	74.0	-28.1	2.05 H	213	35.1	10.8
6	11870.00	35.0 AV	54.0	-19.0	2.05 H	213	24.2	10.8
7	17805.00	47.5 PK	74.0	-26.5	1.11 H	346	27.1	20.4
8	17805.00	36.0 AV	54.0	-18.0	1.11 H	346	15.6	20.4

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.

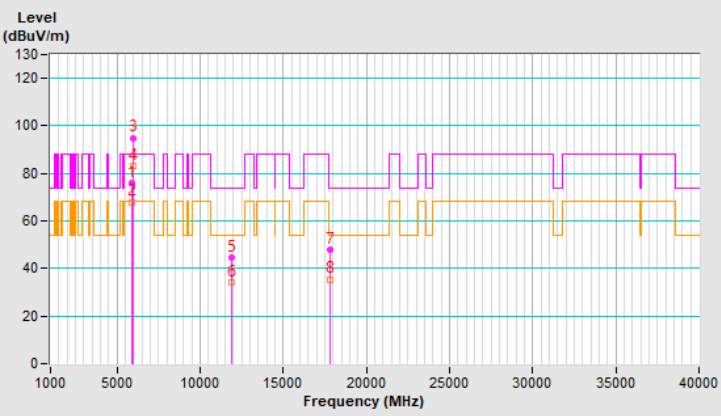


RF Mode	802.11ax (HE20)	**Channel**	CH 2：5935 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 67% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5925.00	75.9 PK	88.2	-12.3	3.46 V	133	74.5	1.4
2	**#5925.00**	**68.0 AV**	**68.2**	**-0.2**	**3.46 V**	**133**	**66.6**	**1.4**
3	*5935.00	95.0 PK			3.46 V	133	93.6	1.4
4	*5935.00	83.3 AV			3.46 V	133	81.9	1.4
5	11870.00	44.7 PK	74.0	-29.3	1.53 V	177	33.9	10.8
6	11870.00	34.2 AV	54.0	-19.8	1.53 V	177	23.4	10.8
7	17805.00	48.0 PK	74.0	-26.0	1.85 V	243	27.6	20.4
8	17805.00	35.5 AV	54.0	-18.5	1.85 V	243	15.1	20.4

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.



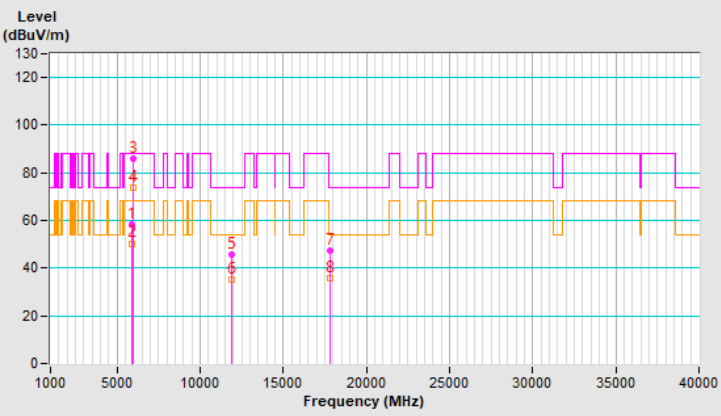
Mode D

RF Mode	802.11ax (HE20)	Channel	CH 2：5935 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 (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 67% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5925.00	58.5 PK	88.2	-29.7	1.58 H	343	57.1	1.4
2	#5925.00	50.4 AV	68.2	-17.8	1.58 H	343	49.0	1.4
3	*5935.00	86.0 PK			1.58 H	343	84.6	1.4
4	*5935.00	74.0 AV			1.58 H	343	72.6	1.4
5	11870.00	45.9 PK	74.0	-28.1	2.05 H	213	35.1	10.8
6	11870.00	35.0 AV	54.0	-19.0	2.05 H	213	24.2	10.8
7	17805.00	47.5 PK	74.0	-26.5	1.11 H	346	27.1	20.4
8	17805.00	36.0 AV	54.0	-18.0	1.11 H	346	15.6	20.4

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.

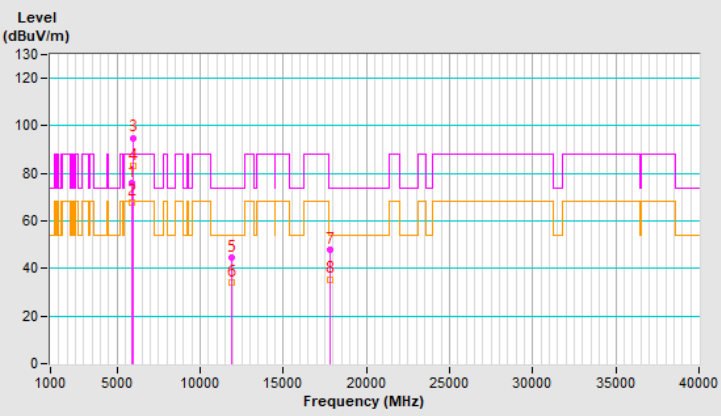


RF Mode	802.11ax (HE20)	**Channel**	CH 2：5935 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 67% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	#5925.00	75.9 PK	88.2	-12.3	3.46 V	133	74.5	1.4
2	**#5925.00**	**68.0 AV**	**68.2**	**-0.2**	**3.46 V**	**133**	**66.6**	**1.4**
3	*5935.00	95.0 PK			3.46 V	133	93.6	1.4
4	*5935.00	83.3 AV			3.46 V	133	81.9	1.4
5	11870.00	44.7 PK	74.0	-29.3	1.53 V	177	33.9	10.8
6	11870.00	34.2 AV	54.0	-19.8	1.53 V	177	23.4	10.8
7	17805.00	48.0 PK	74.0	-26.0	1.85 V	243	27.6	20.4
8	17805.00	35.5 AV	54.0	-18.5	1.85 V	243	15.1	20.4

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.

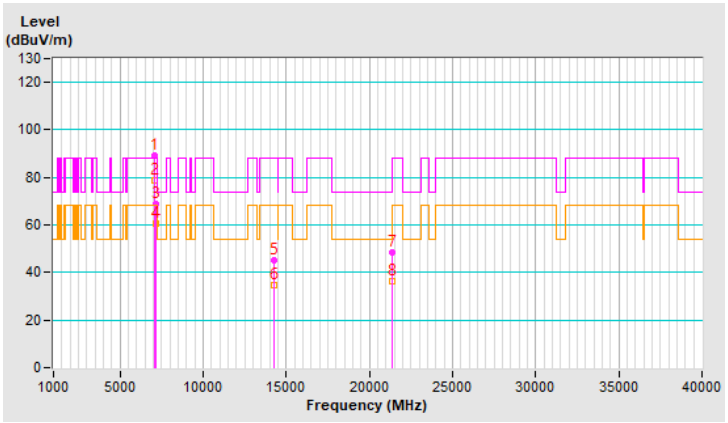


RF Mode	802.11ax (HE20)	**Channel**	CH 233：7115 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60Hz	**Environmental Conditions**	25°C, 67% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*7115.00	89.3 PK			1.19 H	161	83.7	5.6
2	*7115.00	78.5 AV			1.19 H	161	72.9	5.6
3	#7125.00	68.6 PK	88.2	-19.6	1.19 H	161	62.9	5.7
4	#7125.00	60.5 AV	68.2	-7.7	1.19 H	161	54.8	5.7
5	#14230.00	45.3 PK	88.2	-42.9	2.07 H	224	31.8	13.5
6	#14230.00	34.8 AV	68.2	-33.4	2.07 H	224	21.3	13.5
7	21345.00	48.4 PK	74.0	-25.6	1.11 H	360	52.2	-3.8
8	21345.00	36.5 AV	54.0	-17.5	1.11 H	360	40.3	-3.8

Remarks:

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

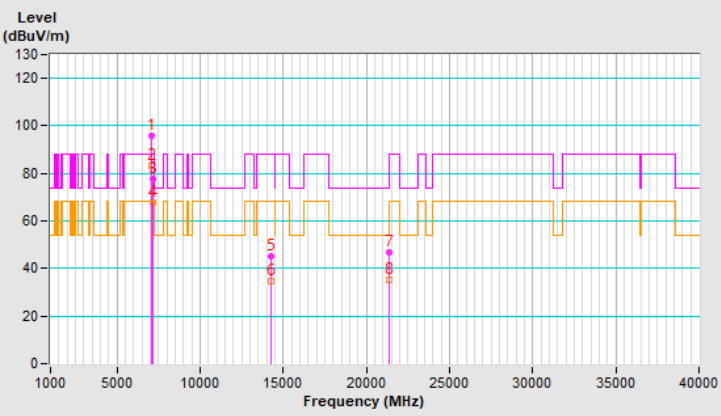


RF Mode	802.11ax (HE20)	Channel	CH 233：7115 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 67% RH
Tested By	Tom Yang		

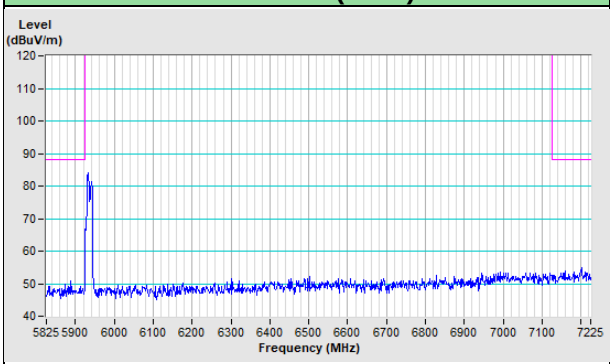
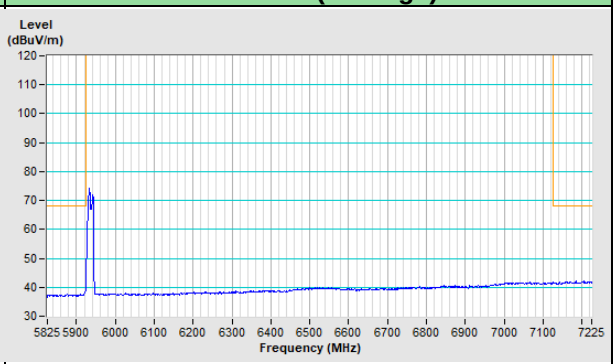
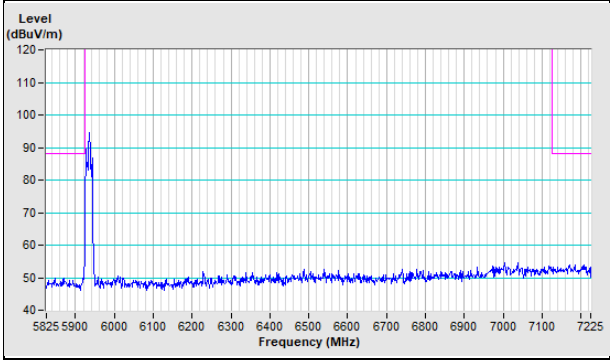
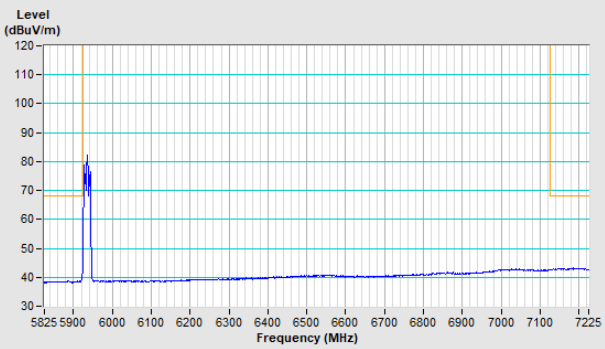
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*7115.00	95.8 PK			2.37 V	88	90.2	5.6
2	*7115.00	83.3 AV			2.37 V	88	77.7	5.6
3	#7125.00	77.5 PK	88.2	-10.7	2.37 V	88	71.8	5.7
4	#7125.00	67.6 AV	68.2	-0.6	2.37 V	88	61.9	5.7
5	#14230.00	45.2 PK	88.2	-43.0	1.49 V	179	31.7	13.5
6	#14230.00	34.5 AV	68.2	-33.7	1.49 V	179	21.0	13.5
7	21345.00	47.0 PK	74.0	-27.0	1.91 V	248	50.8	-3.8
8	21345.00	35.4 AV	54.0	-18.6	1.91 V	248	39.2	-3.8

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.



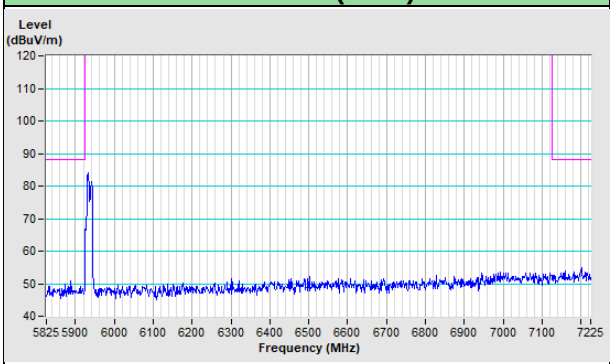
Plot of Band Edge Mode A

802.11ax (HE20) Channel 2	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

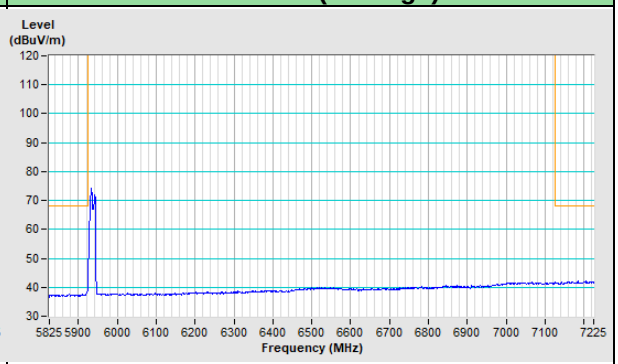
Plot of Band Edge Mode B

802.11ax (HE20) Channel 2

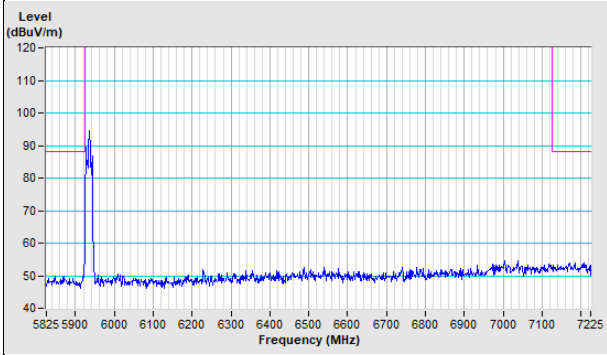
Horizontal (Peak)



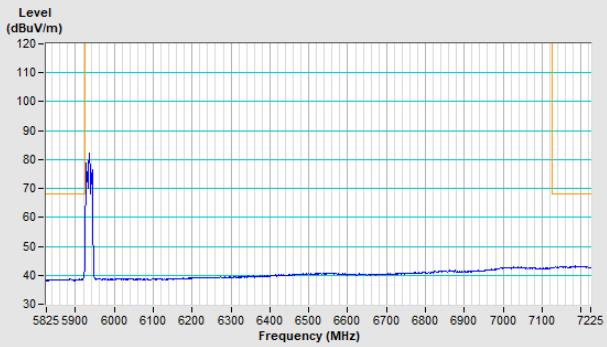
Horizontal (Average)



Vertical (Peak)

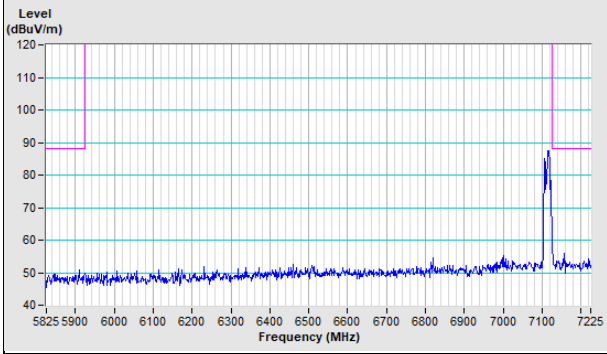


Vertical (Average)

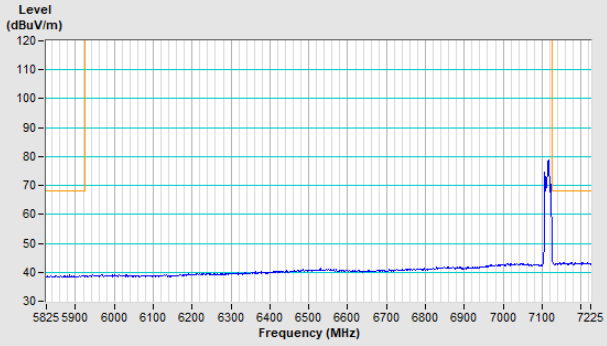


802.11ax (HE20) Channel 233

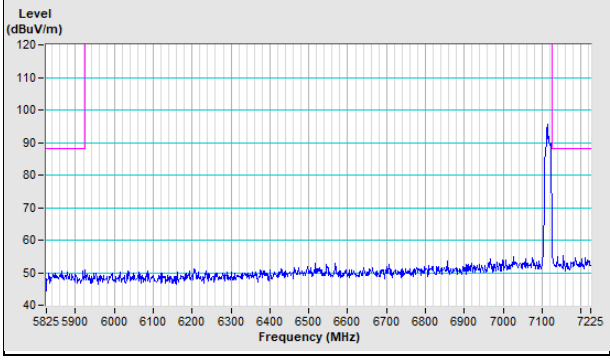
Horizontal (Peak)



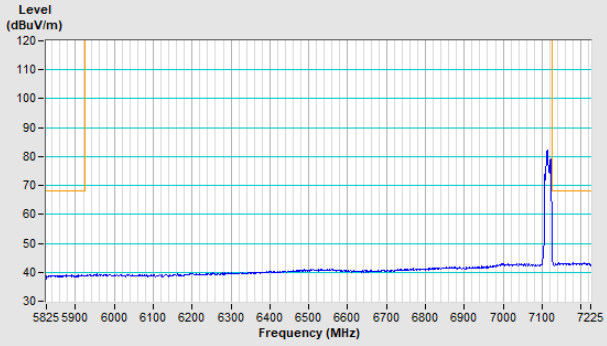
Horizontal (Average)



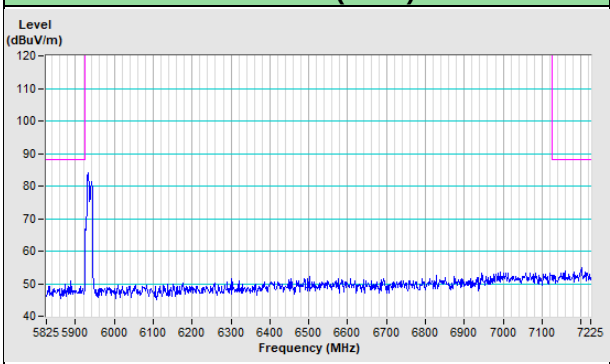
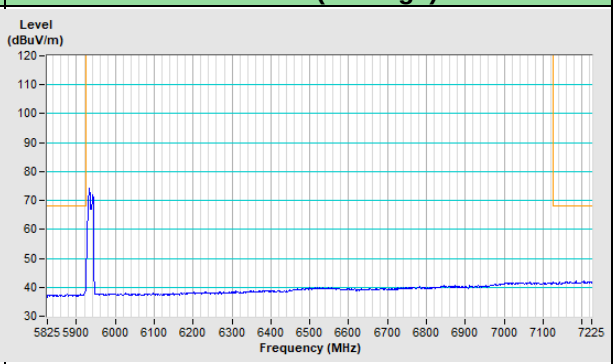
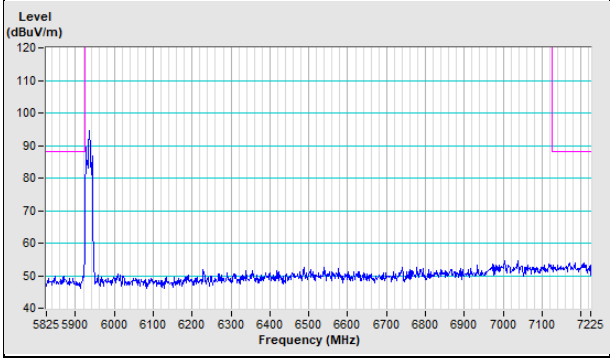
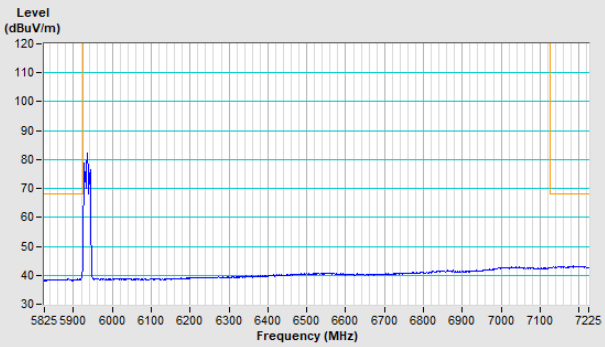
Vertical (Peak)



Vertical (Average)



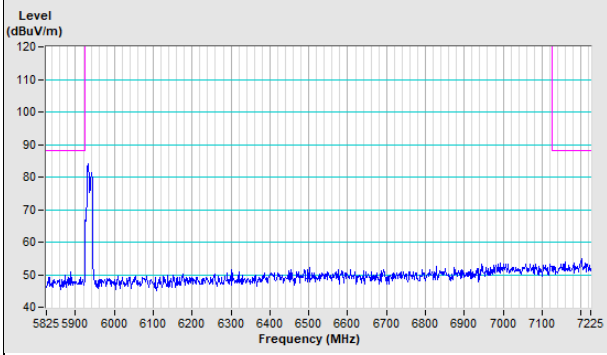
Plot of Band Edge Mode C

802.11ax (HE20) Channel 2	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

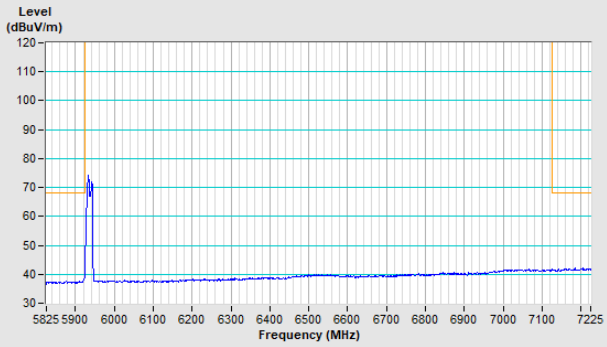
Plot of Band Edge Mode D

802.11ax (HE20) Channel 2

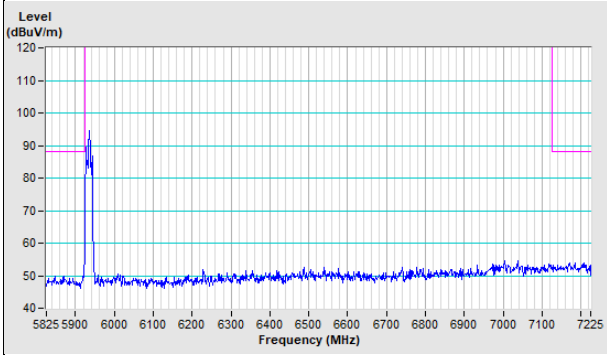
Horizontal (Peak)



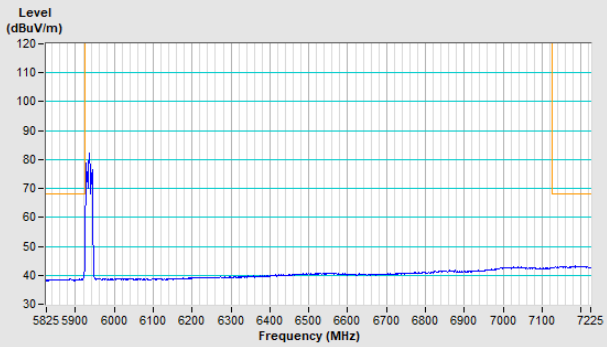
Horizontal (Average)



Vertical (Peak)

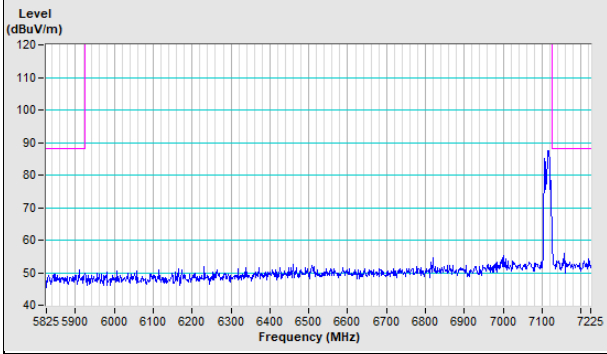


Vertical (Average)

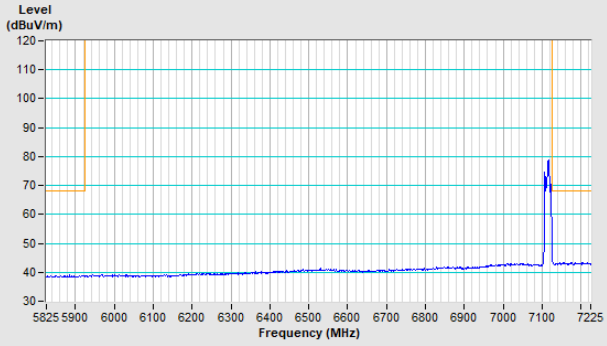


802.11ax (HE20) Channel 233

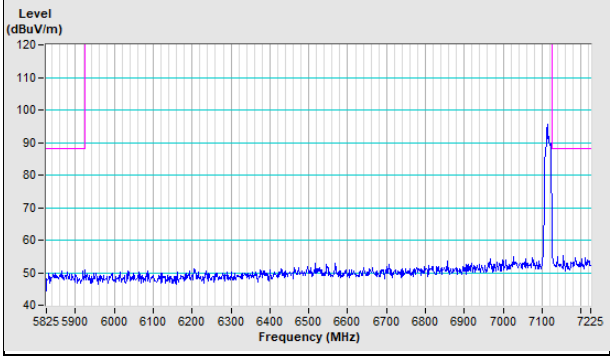
Horizontal (Peak)



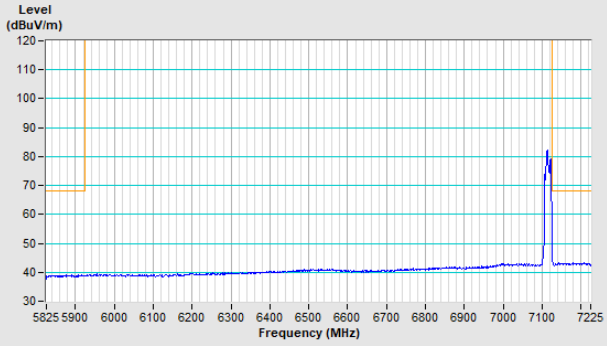
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

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

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

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

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