FCC Test Report

Report No.:	RFBHQC-WTW-P22030336-4
FCC ID:	2AQ68RLP0003
Test Model:	RLP0003
Received Date:	2022/3/8
Test Date:	2022/6/22
Issued Date:	2022/6/28
Applicant:	Hon Lin Technology Co., Ltd.
Address:	11F, No. 32, Jihu Rd., Neihu Dist., Taipei City 114, Taiwan R.O.C.
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

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Release Control Record

Issue No.	Description	Date Issued
RFBHQC-WTW-P22030336-4	Original release.	2022/6/28

1 Certificate of Conformity

Product:	Wi-Fi 6E BT5.2 WLAN Module
Brand:	Foxconn
Test Model:	RLP0003
Sample Status:	Engineering sample
Applicant:	Hon Lin Technology Co., Ltd.
Test Date:	2022/6/22
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10: 2013

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 EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** 2022/6/28

Claire Kuan / Specialist

Approved by : _____ , **Date:** 2022/6/28

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(8)	AC Power Conducted Emissions	N/A	Refer to Note 1 below
15.407(b)(5)(8)	Radiated Emissions	N/A	Refer to Note 1 below
15.407(b)(6)	In-Band Emission (Mask)	N/A	Refer to Note 1 below
15.407(a)(4/5/6/7/8)	Max Average Transmit Power	N/A	Refer to Note 1 below
15.407(a)(10)	Emission Bandwidth Measurement	N/A	Refer to Note 1 below
15.407(a)(4/5/6/7/8)	Peak Power Spectral Density	N/A	Refer to Note 1 below
15.407 (d)(6)	Contention-based Protocol.	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	N/A	Refer to Note 1 below
15.407(a)(7)(8)	Dual Client- Proper Power Adjustment	N/A	Refer to Note 1 below
15.407(d)	Operational restrictions for 6 GHz U-NII devices	N/A	Refer to Note 1 below
15.203	Antenna Requirement	PASS	Antenna connector is i-pex (MHF 4L) not a standard connector.

Note:
1. Contention-based Protocol was performed for this addendum. The others testing data refer to original application (Report No.: RF201119E01-6_R00 (FCC ID: J9C-QCNFA765)).
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. N/A: Not Applicable.

2.1 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wi-Fi 6E BT5.2 WLAN Module
Brand	Foxconn
Test Model	RLP0003
Status of EUT	Engineering sample
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDM in 11ac mode 4096QAM for OFDMA in 11ax HE mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 2166.7Mbps 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, 6.865 ~ 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)
Antenna Type	Refer to section 3.2
Antenna Connector	Refer to section 3.2
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC permissive change. The difference compared with the original design is as the following:
   - ◆ Added new antenna (Refer to section 3.2)
2. According to above condition, the Contention-based Protocol needs to be performed. And all data was verified to meet the requirements.
3. This device of WLAN (2.4GHz & 5GHz U-NII-1 Band) can support hotspot mode.

4. Simultaneously transmission condition.

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

5. The device of WLAN (2.4GHz) and Bluetooth technology can't transmit simultaneously, it was used timely shared coexistence technology.

6. The module 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.	

7. 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.

8. 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.		

9. 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 Description of Antenna

The antenna gain was declared by client; please refer to the following table:

Original

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length
1	Chain0/1	HONGBO	260-25094	3.53 3.06 3.07 4.81 4.20	2.40~2.4835 5.150~5.250 5.250~5.350 5.470~5.725 5.725~5.850	0.76 1.16 1.18 1.20 1.27	PIFA	i-pex (MHF 4L)	300mm
2	Chain0/1	HONGBO	260-25083	5.09 5.14 5.09 5.16 5.12	5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	1.29 1.32 1.35 1.40 1.45	PIFA	i-pex (MHF 4L)	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	2.40~2.4835 5.150~5.250 5.250~5.350 5.470~5.725 5.725~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	0.50 0.76 0.78 0.81 0.85 0.86 0.87 0.91 0.96 0.98	Monopole	i-pex (MHF 4L)	200mm

Newly

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length
4	Chain0	Auden	ANTRG6U123-1801	5.13 2.70 2.70 2.50 2.68 2.68 2.18 1.98 2.42 1.48	2.40~2.4835 5.150~5.250 5.250~5.350 5.470~5.725 5.725~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA (Slot)	Ipex (MHF 4L)	460mm
	Chain1	Auden	ANTRG6U123-1802	4.64 3.36 3.07 1.08 0.42 0.42 1.20 0.59 1.72 0.62	2.40~2.4835 5.150~5.250 5.250~5.350 5.470~5.725 5.725~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA (Slot)	Ipex (MHF 4L)	740mm

Note:

1. Antenna Set 4 is the new antenna to be applied for this time.
2. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.3 Description of Test Modes

U-NII-5 (5925 ~ 6425MHz): 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 (6425 ~ 6525MHz): 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 (6525 ~ 6875MHz): 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

4 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

2 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency
143	6665 MHz	175	*6825 MHz

U-NII-8 (6875 ~ 7125MHz): 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

3 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency
*183	6865 MHz	199	6945 MHz	215	7025 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
207	6985 MHz

Note:

* mean these's straddle channels and operating under control by Low-power indoor AP only.

3.3.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To	Description
	CBP	
-	√	-

Where **CBP:**Contention Based Protocol

Contention Based Protocol Measurement:

☒ 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).

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

Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11ax (HE20)	5925-6425	1 to 93	53	OFDMA	BPSK	MCS0
	6425-6525	97 to 113	101	OFDMA	BPSK	MCS0
	6525-6875	117 to 181	133	OFDMA	BPSK	MCS0
	6875-7125	185 to 233	197	OFDMA	BPSK	MCS0
802.11ax (HE160)	5925-6425	15 to 79	47	OFDMA	BPSK	MCS0
	6425-6525	111	111	OFDMA	BPSK	MCS0
	6525-6875	143 to 175	143	OFDMA	BPSK	MCS0
	6875-7125	207	207	OFDMA	BPSK	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power (System)	Tested By
CBP	25deg. C, 60%RH	120Vac, 60Hz	Tobey Chen

3.4 General Description of Applied Standard

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

Test Standard:
FCC Part 15, Subpart E (15.407)
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 987594 D02 EMC Measurement v01r01
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01

All test items have been performed as a reference to the above KDB test guidance.

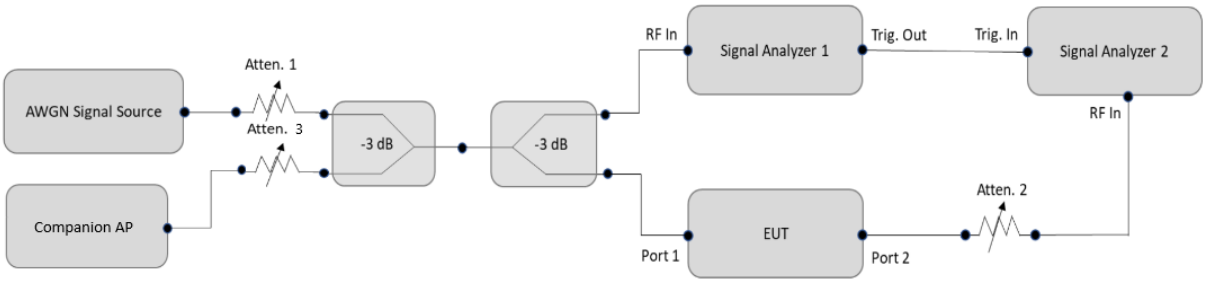
4 Test Types and Results

4.1 Contention Based Protocol Measurement

4.1.1 Limits of Contention Based Protocol Measurement

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.

4.1.2 Test Setup



4.1.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Spectrum Analyzer R&S	FSW8	101497	2021/8/25	2022/8/24
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6
MXG X-Series RF Vector Signal Generator Keysight	N5182B	MY53052647	2021/11/5	2022/11/4
N5182BU KEYSIGHT	N5182BX07	MY59360203	2021/12/10	2022/12/09
Power Splitter/combiner Mini-Circuits	ZFRSC-123-S+	F698501347_01	2022/1/26	2023/1/25

Note: 1. The test was performed in Femtocell room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2022/6/22

4.1.4 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 4.1.5 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.

4.1.5 EUT Operating Condition

Set the EUT to transmit with a constant duty cycle and relative operating parameters which including power level, operating frequency,modulation and bandwidth.

4.1.6 Test Results

For U-NII-5 band

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 (dBi)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	53	6215	6215	-62.07	1.2	0.2	-63.07	-62	OFF
					-62.12	1.2	0.2	-63.12	-62	Minimal
					-82	1.2	0.2	-83	-62	ON
	160	47	6185	6110	-62.05	1.2	0.2	-63.05	-62	OFF
					-62.1	1.2	0.2	-63.1	-62	Minimal
					-82	1.2	0.2	-83	-62	ON
				6185	-62.06	1.2	0.2	-63.06	-62	OFF
					-62.11	1.2	0.2	-63.11	-62	Minimal
					-82	1.2	0.2	-83	-62	ON
				6260	-62.03	1.2	0.2	-63.03	-62	OFF
					-62.8	1.2	0.2	-63.08	-62	Minimal
					-82	1.2	0.2	-83	-62	ON

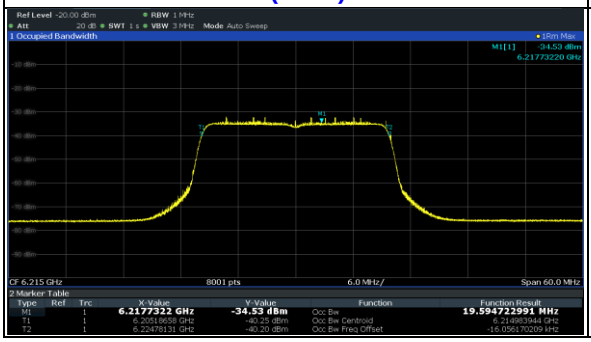
Note:

1. Adjusted Power = Injected Signal (AWGN) Power - Antenna Gain + Path Loss

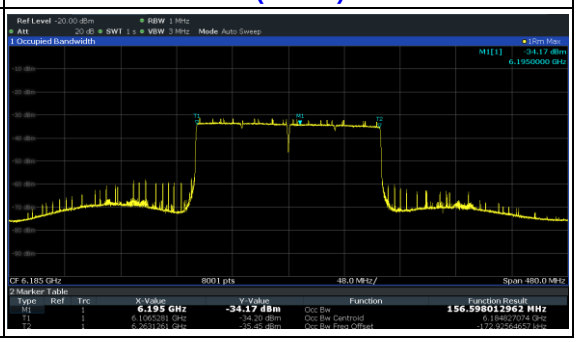
Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6215	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6110	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6185	v	v	x	v	v	v	v	v	v	v	90%	90%	Pass
		6260	v	v	v	v	v	v	v	v	x	v	90%	90%	Pass

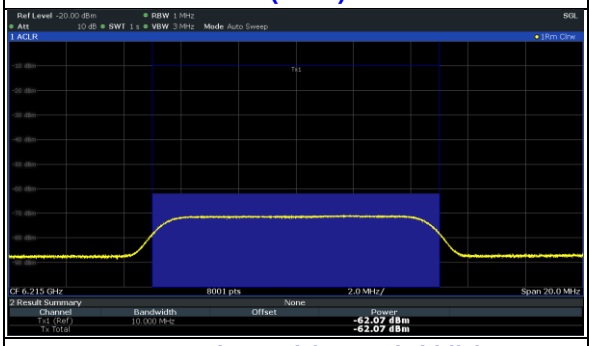
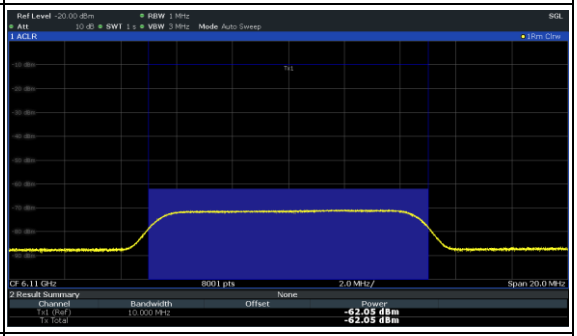
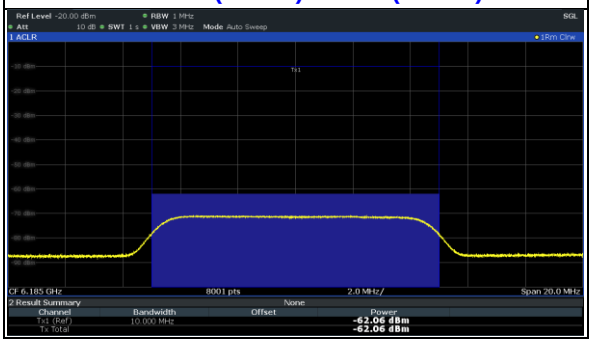
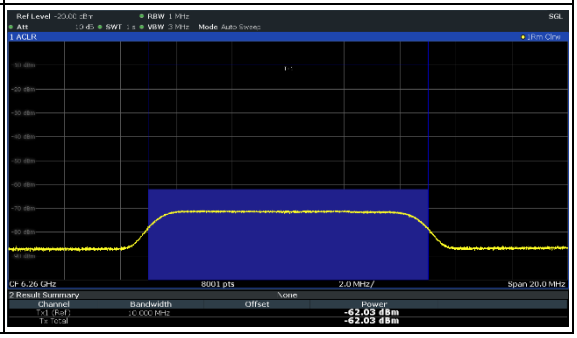
Plots of EUT Tx waveform

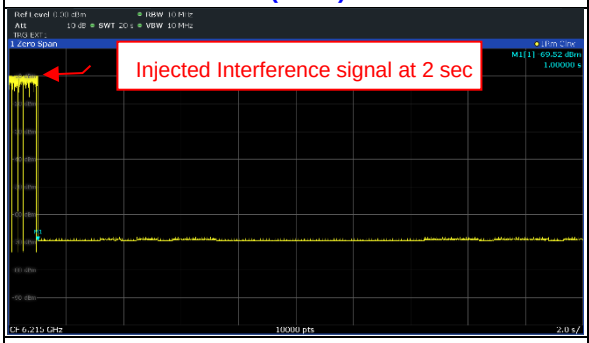
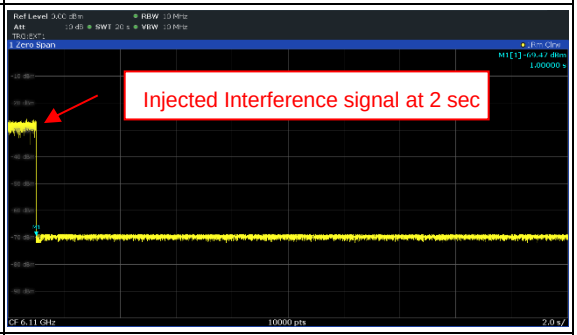
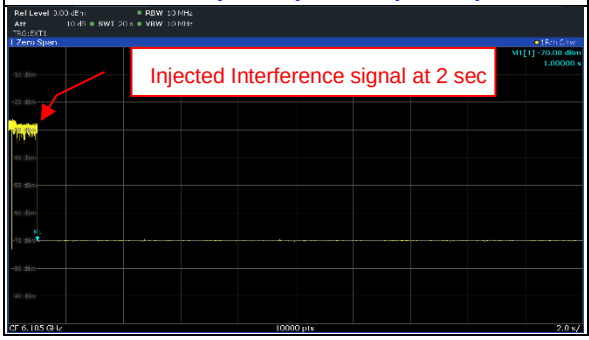
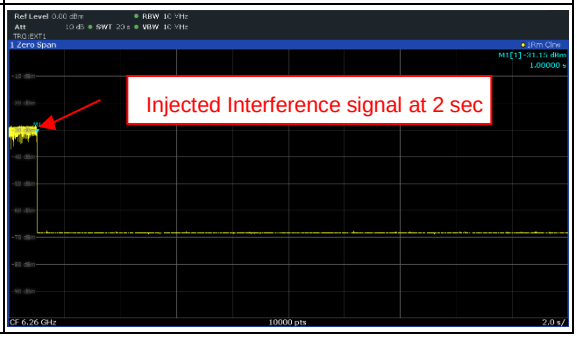
802.11ax (HE20) / CH53



802.11ax (HE160) / CH47



Plots of Incumbent signal (AWGN) level	
802.11ax (HE20) / CH53	**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) / CH53	**802.11ax (HE160) / CH47 (Low Edge)**
	
802.11ax (HE160) / CH47 (Middle)	**802.11ax (HE160) / CH47 (High Edge)**
	

For U-NII-6 band

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 (dBi)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	101	6455	6455	-62.07	0.59	0.2	-62.46	-62	OFF
					-62.12	0.59	0.2	-62.51	-62	Minimal
					-82	0.59	0.2	-82.39	-62	ON
	160	111	6505	6430	-62.05	0.59	0.2	-62.44	-62	OFF
					-62.1	0.59	0.2	-62.49	-62	Minimal
					-82	0.59	0.2	-82.39	-62	ON
				6505	-62.06	0.59	0.2	-62.45	-62	OFF
					-62.11	0.59	0.2	-62.5	-62	Minimal
					-82	0.59	0.2	-82.39	-62	ON
				6580	-62.07	1.72	0.2	-63.59	-62	OFF
					-62.12	1.72	0.2	-63.64	-62	Minimal
					-82	1.72	0.2	-83.52	-62	ON

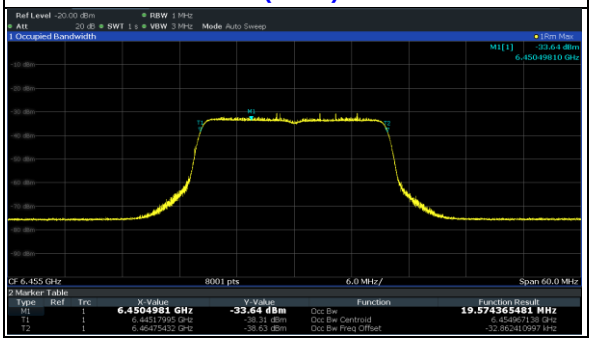
Note:

1. Adjusted Power = Injected Signal (AWGN) Power - Antenna Gain + Path Loss

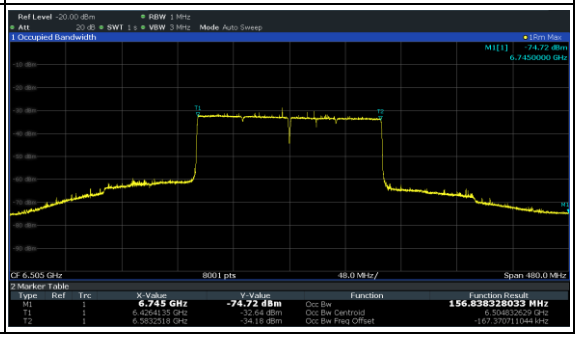
Contention Based Protocol Detection Probability															
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6455	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6430	v	v	v	v	x	v	v	v	v	v	90%	90%	Pass
		6505	v	v	v	v	v	x	v	v	v	v	90%	90%	Pass
		6580	v	v	x	v	v	v	v	v	v	v	90%	90%	Pass

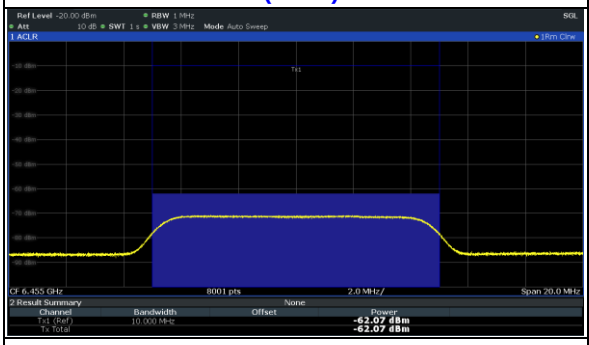
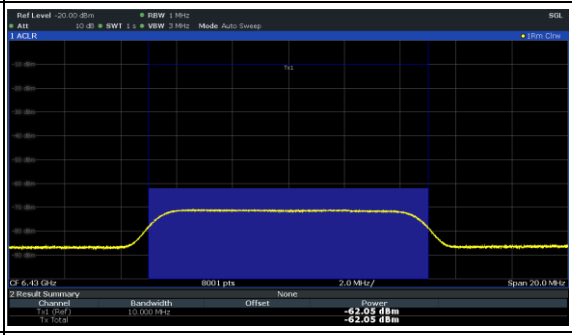
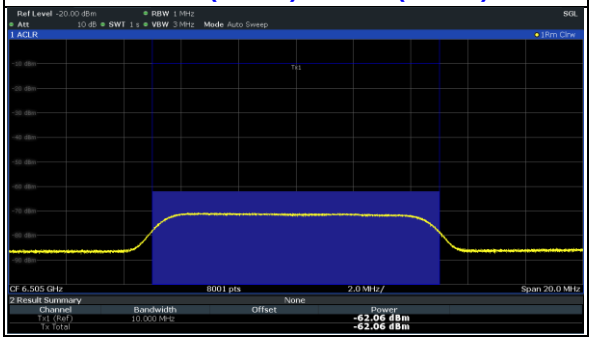
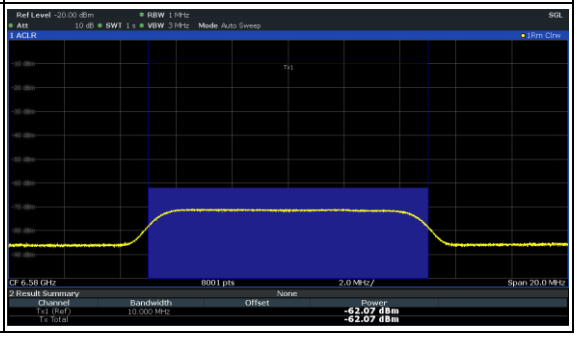
Plots of EUT Tx waveform

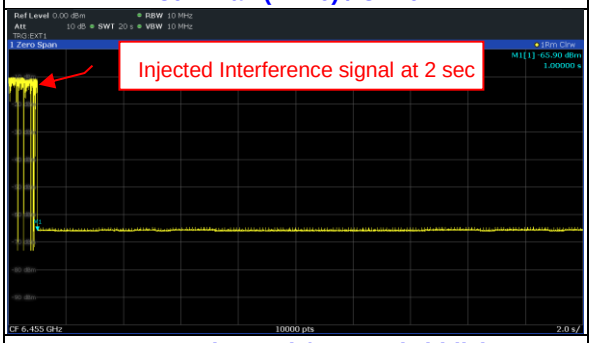
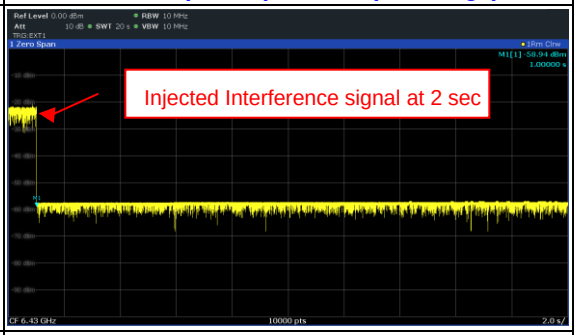
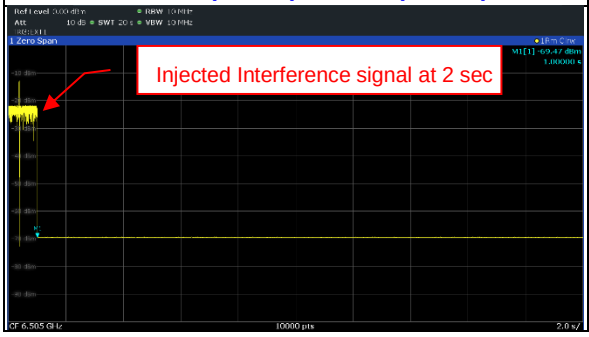
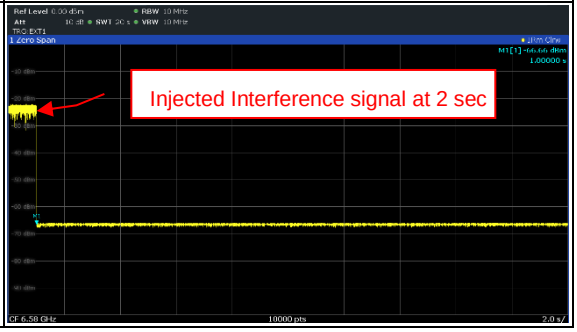
802.11ax (HE20) / CH101



802.11ax (HE160) / CH111



Plots of Incumbent signal (AWGN) level	
802.11ax (HE20) / CH101	**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) / CH101	**802.11ax (HE160) / CH111 (Low Edge)**
	
802.11ax (HE160) / CH111 (Middle)	**802.11ax (HE160) / CH111 (High Edge)**
	

For U-NII-7 band

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 (dBi)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	133	6615	6615	-62.06	1.72	0.2	-63.58	-62	OFF
					-62.11	1.72	0.2	-63.63	-62	Minimal
					-82	1.72	0.2	-83.52	-62	ON
	160	143	6665	6590	-62.09	1.72	0.2	-63.61	-62	OFF
					-62.14	1.72	0.2	-63.66	-62	Minimal
					-82	1.72	0.2	-83.52	-62	ON
				6665	-62.06	1.72	0.2	-63.58	-62	OFF
					-62.11	1.72	0.2	-63.63	-62	Minimal
					-82	1.72	0.2	-83.52	-62	ON
				6740	-62.05	1.72	0.2	-63.57	-62	OFF
					-62.1	1.72	0.2	-63.62	-62	Minimal
					-82	1.72	0.2	-83.52	-62	ON

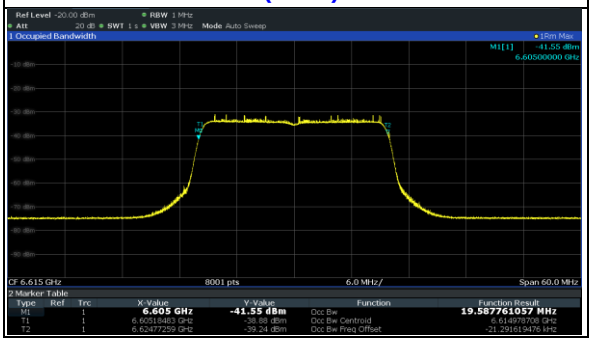
Note:

1. Adjusted Power = Injected Signal (AWGN) Power - Antenna Gain + Path Loss

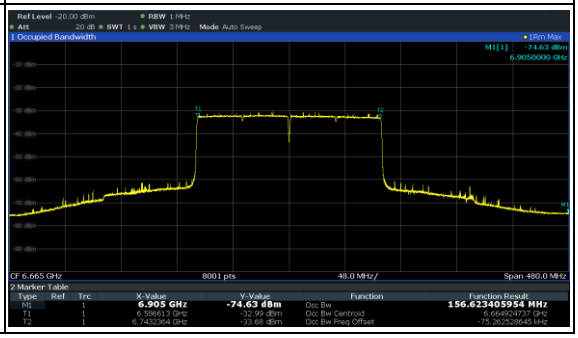
Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6615	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6590	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
		6665	v	v	v	v	v	v	v	x	v	v	90%	90%	Pass
		6740	v	v	v	v	v	v	v	v	x	v	90%	90%	Pass

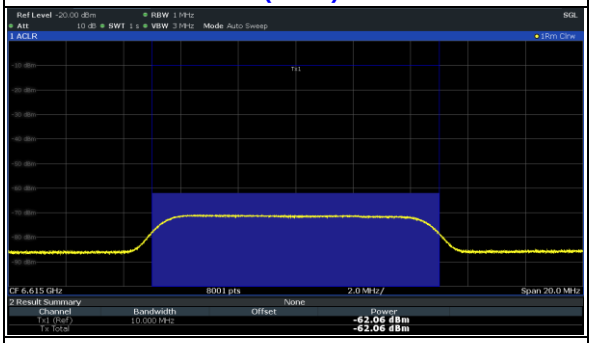
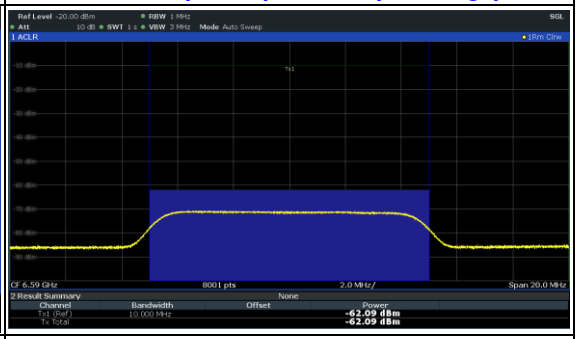
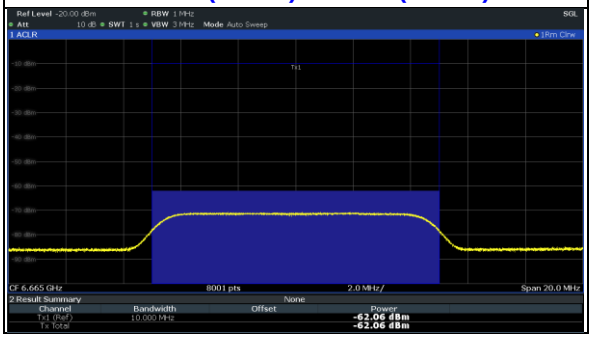
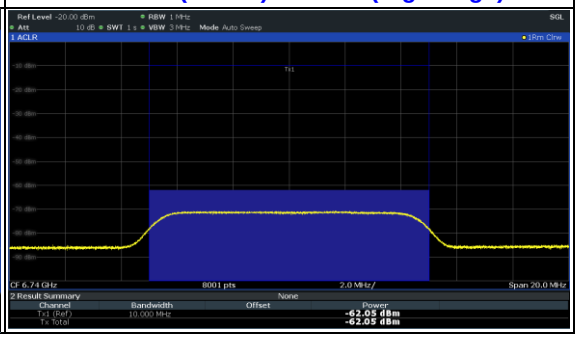
Plots of EUT Tx waveform

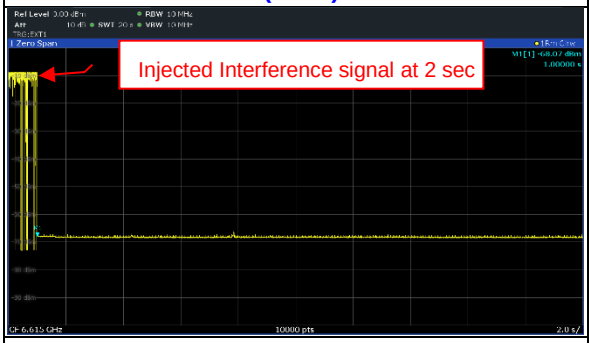
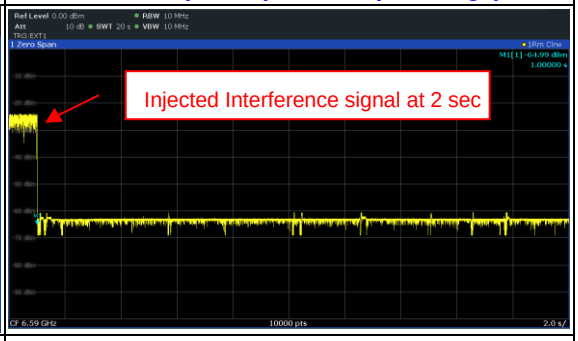
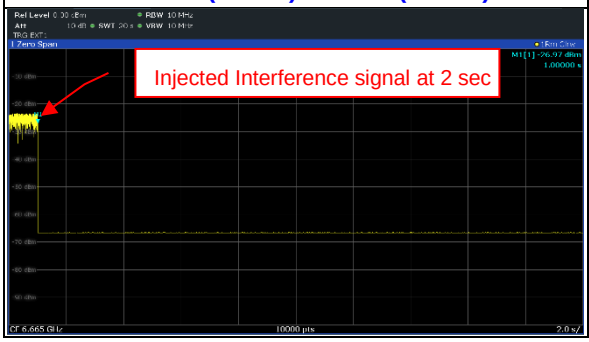
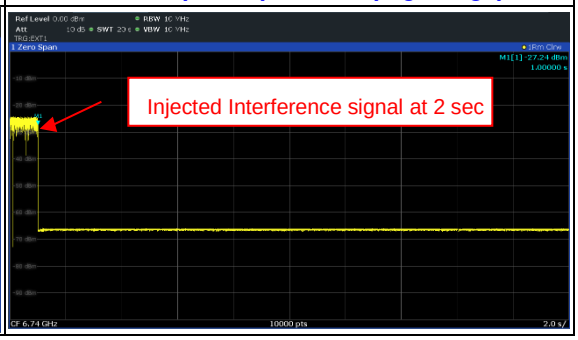
802.11ax (HE20) / CH133



802.11ax (HE160) / CH143



Plots of Incumbent signal (AWGN) level	
802.11ax (HE20) / CH133	**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) / CH133	**802.11ax (HE160) / CH143 (Low Edge)**
	
802.11ax (HE160) / CH143 (Middle)	**802.11ax (HE160) / CH143 (High Edge)**
	

For U-NII-8 band

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 (dBi)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	197	6935	6935	-62.02	0.62	0.2	-62.44	-62	OFF
					-62.07	0.62	0.2	-62.49	-62	Minimal
					-82	0.62	0.2	-82.42	-62	ON
	160	207	6985	6910	-62.08	0.62	0.2	-62.5	-62	OFF
					-62.13	0.62	0.2	-62.55	-62	Minimal
					-82	0.62	0.2	-82.42	-62	ON
				6985	-62.02	0.62	0.2	-62.44	-62	OFF
					-62.07	0.62	0.2	-62.49	-62	Minimal
					-82	0.62	0.2	-82.42	-62	ON
				7060	-62.04	0.62	0.2	-62.46	-62	OFF
					-62.09	0.62	0.2	-62.51	-62	Minimal
					-82	0.62	0.2	-82.42	-62	ON

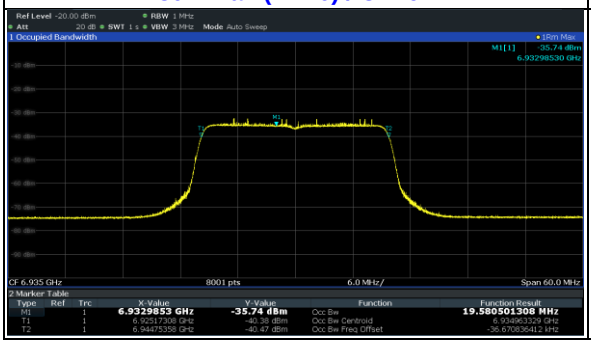
Note:

1. Adjusted Power = Injected Signal (AWGN) Power - Antenna Gain + Path Loss

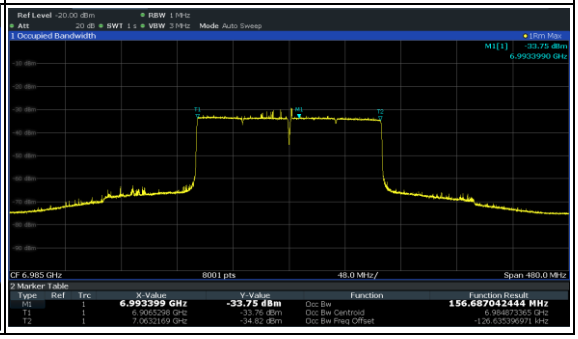
Contention Based Protocol Detection Probability														
Operation Mode	Channel Bandwidth (MHz)	AWGN Signal Freq. (MHz)	#01	#02	#03	#04	#05	#06	#07	#08	#09	#10	Detection Probability	Detection Limit	Test Result
802.11ax	20	6935	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass
	160	6910	v	x	v	v	v	v	v	v	v	v	90%	90%	Pass
		6985	v	v	v	x	v	v	v	v	v	v	90%	90%	Pass
		7060	v	v	v	x	v	v	v	v	v	v	90%	90%	Pass

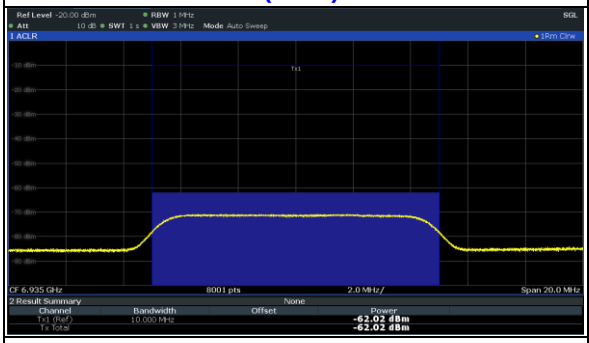
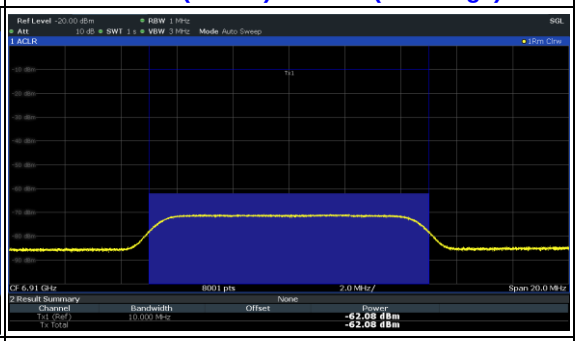
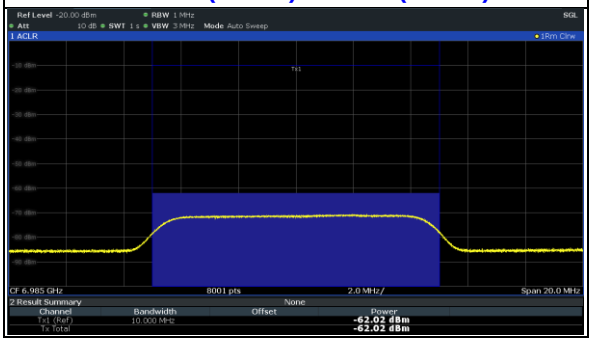
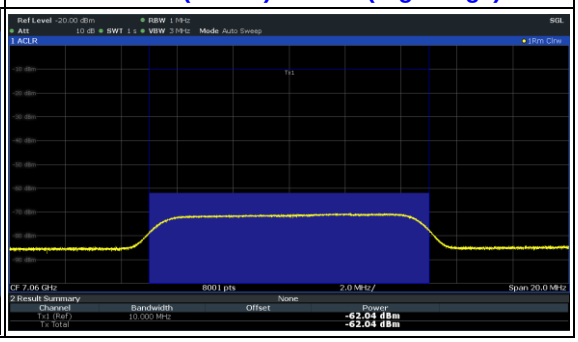
Plots of EUT Tx waveform

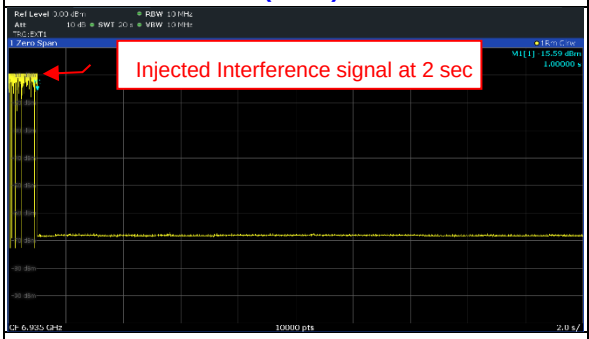
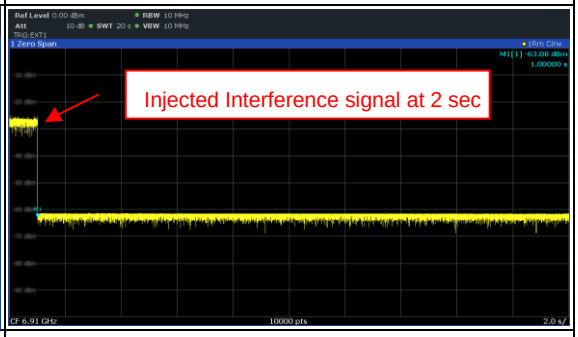
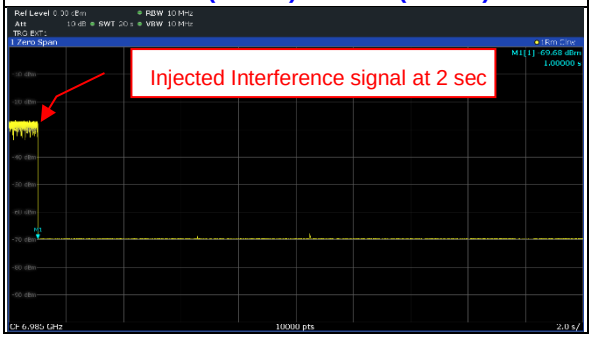
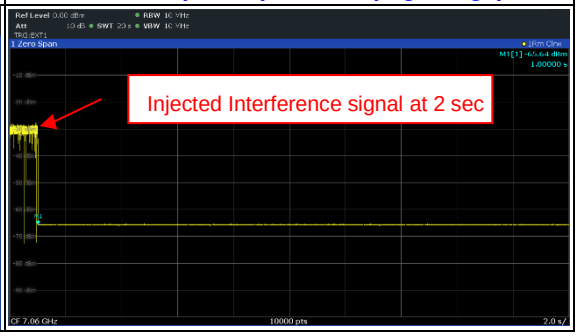
802.11ax (HE20) / CH197



802.11ax (HE160) / CH207



Plots of Incumbent signal (AWGN) level	
802.11ax (HE20) / CH197	**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) / CH197	**802.11ax (HE160) / CH207 (Low Edge)**
	
802.11ax (HE160) / CH207 (Middle)	**802.11ax (HE160) / CH207 (High Edge)**
	

Appendix A– 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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