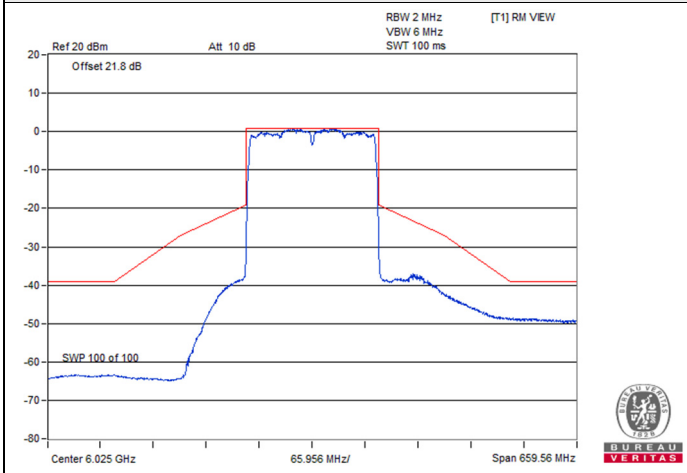
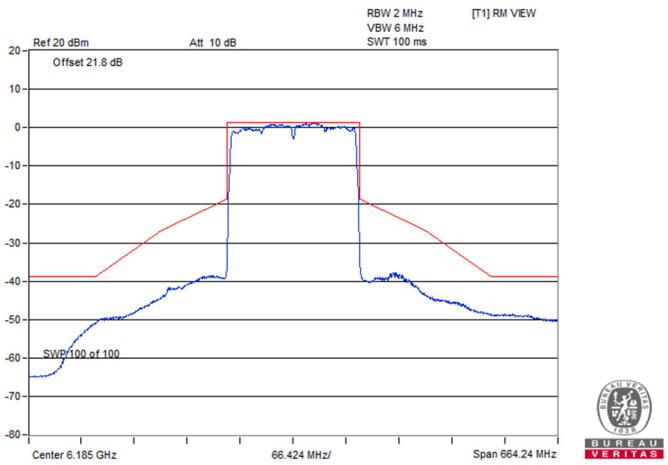
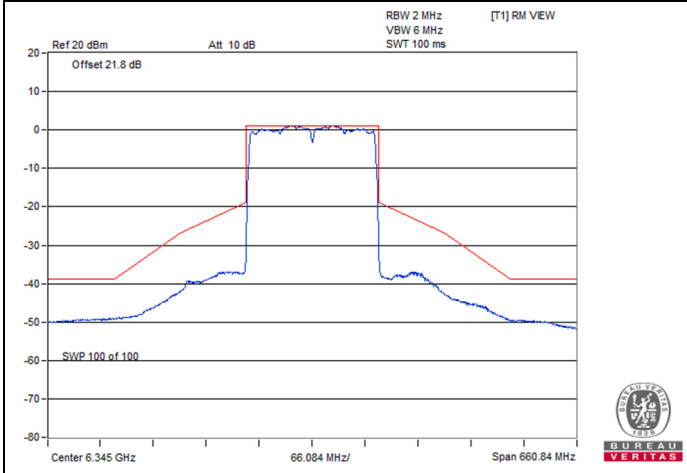
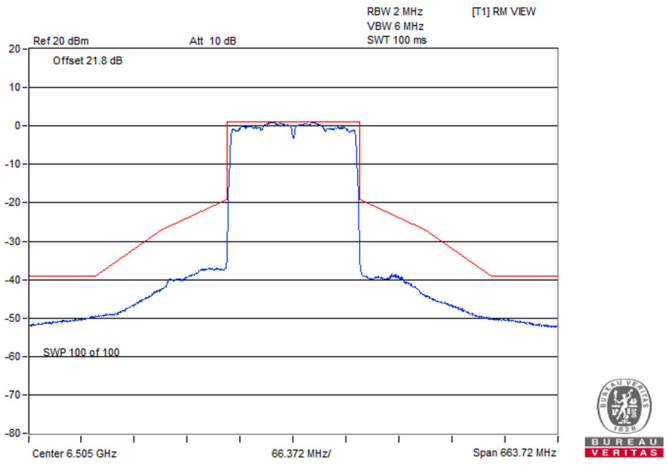
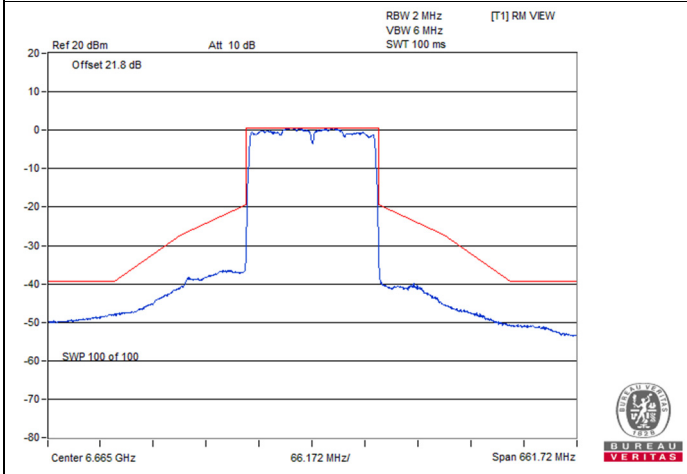
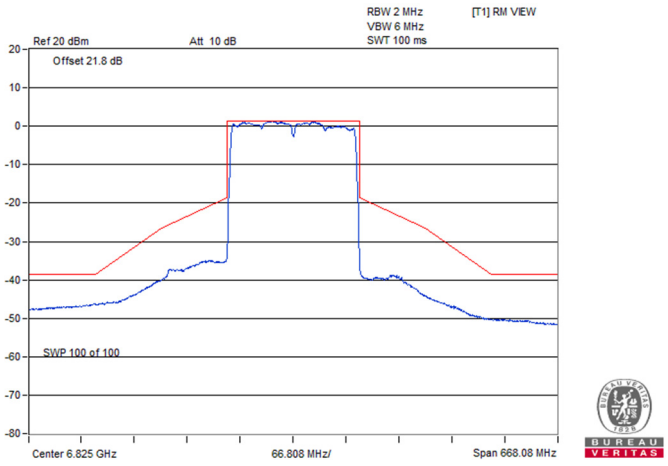
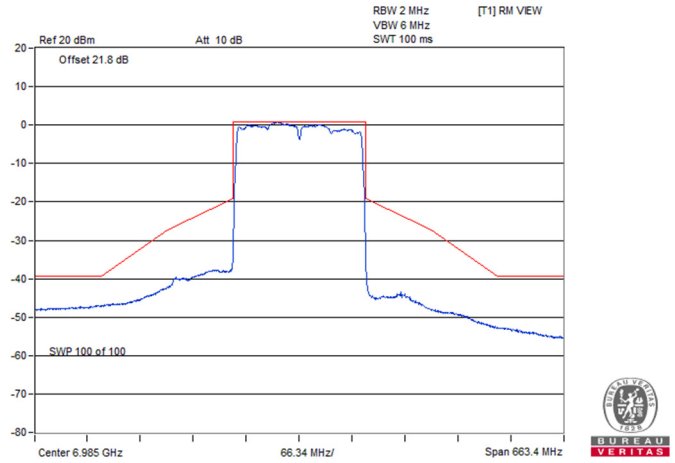
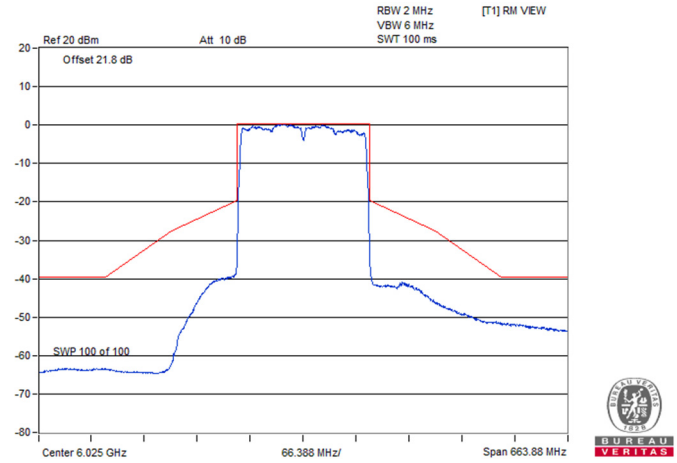
802.11ax (HE160)

Spectrum Plot	
	
802.11ax (HE160) / Chain 0 : CH 15	802.11ax (HE160) / Chain 0 : CH 47
	
802.11ax (HE160) / Chain 0 : CH 79	802.11ax (HE160) / Chain 0 : CH 111
	
802.11ax (HE160) / Chain 0 : CH 143	802.11ax (HE160) / Chain 0 : CH 175

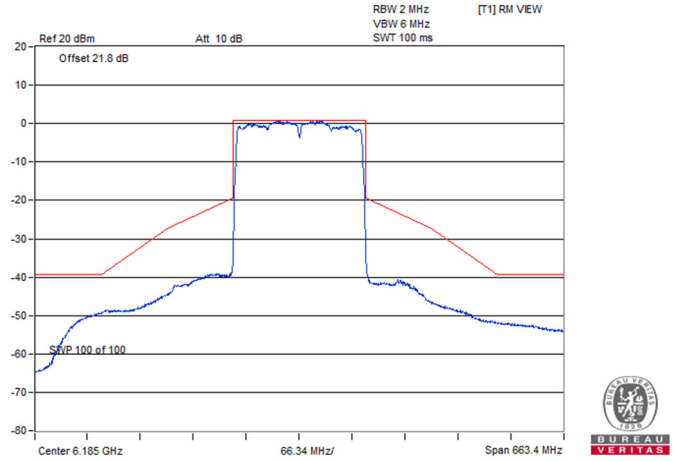
Spectrum Plot



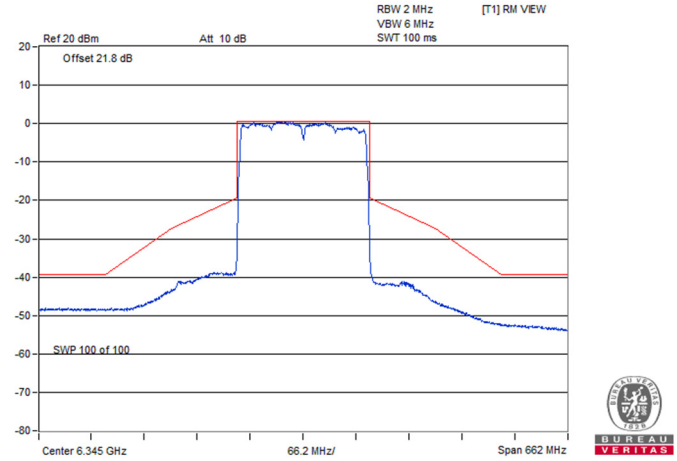
802.11ax (HE160) / Chain 0 : CH 207



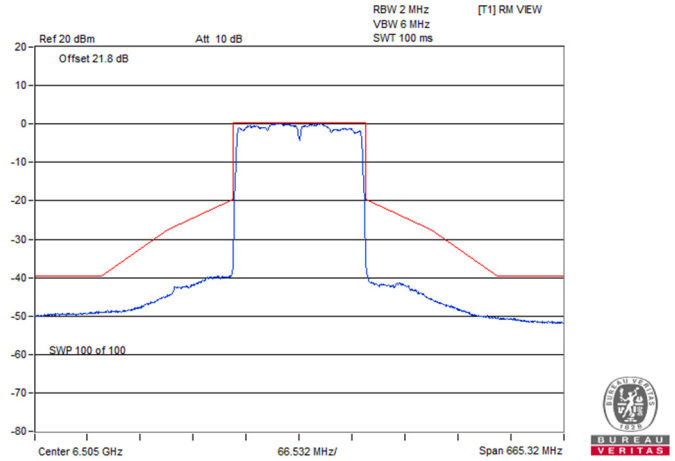
802.11ax (HE160) / Chain 1 : CH 15



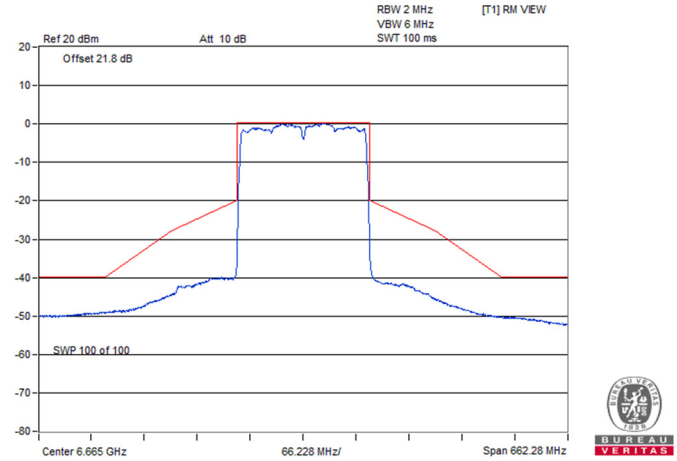
802.11ax (HE160) / Chain 1 : CH 47



802.11ax (HE160) / Chain 1 : CH 79

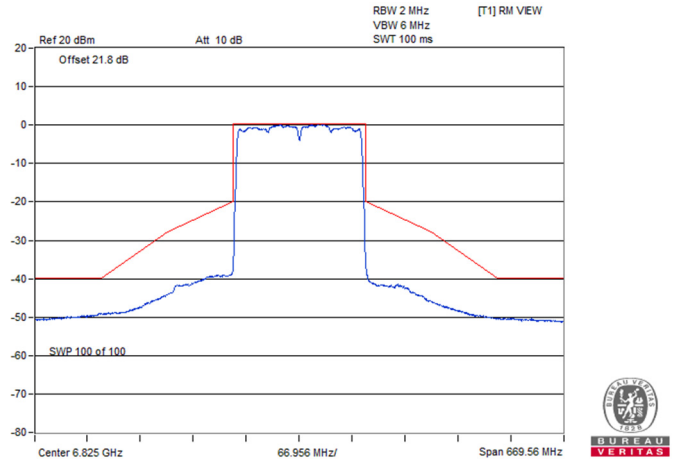


802.11ax (HE160) / Chain 1 : CH 111

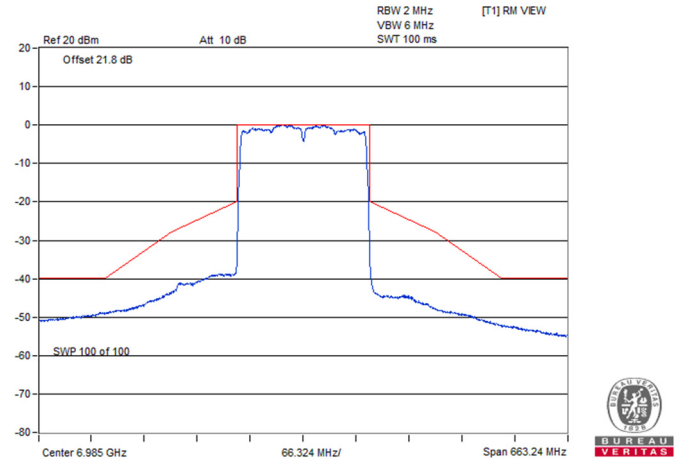


802.11ax (HE160) / Chain 1 : CH 143

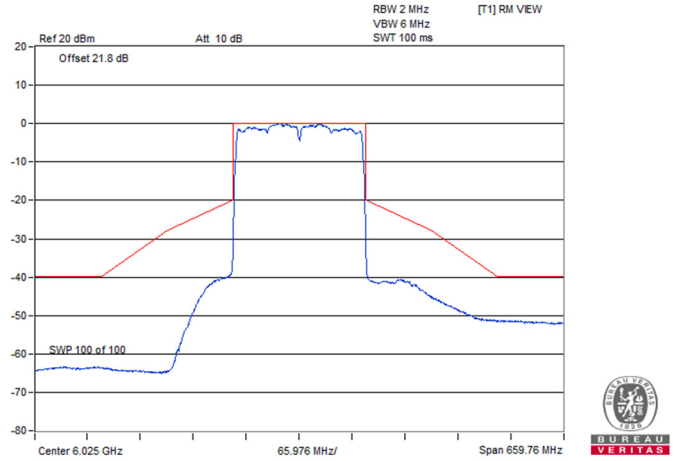
Spectrum Plot



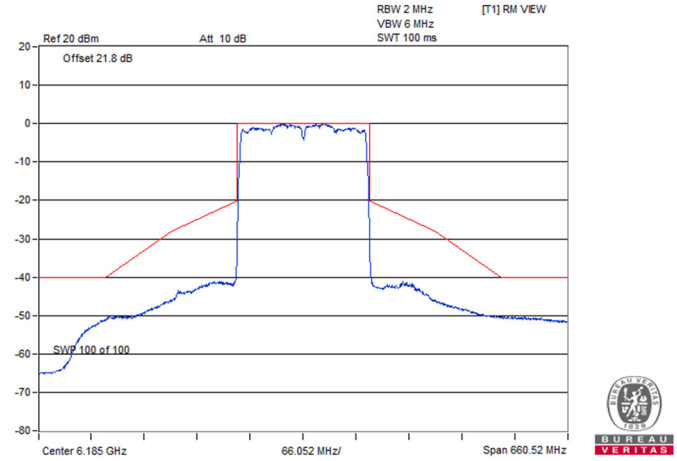
802.11ax (HE160) / Chain 1 : CH 175



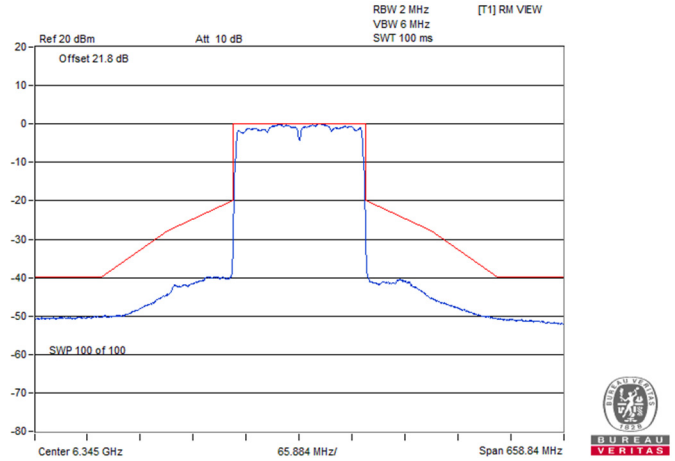
802.11ax (HE160) / Chain 1 : CH 207



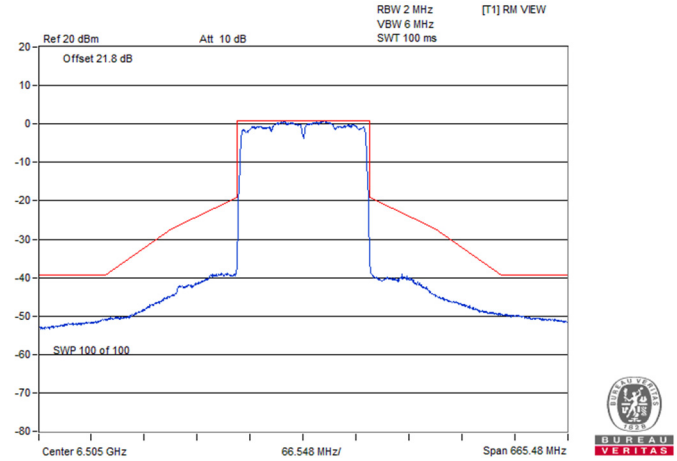
802.11ax (HE160) / Chain 2 : CH 15



802.11ax (HE160) / Chain 2 : CH 47

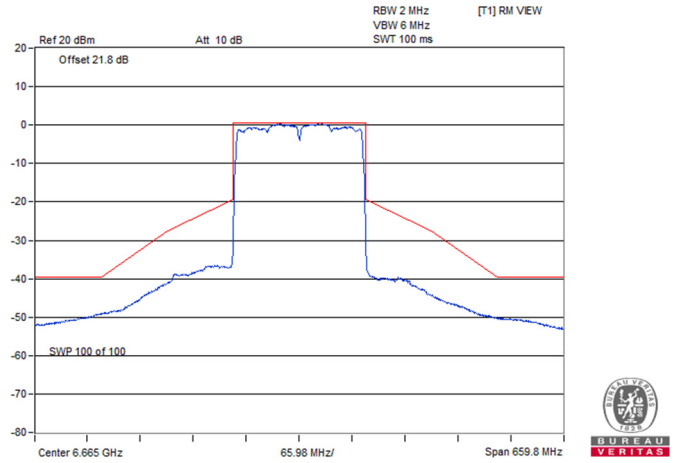


802.11ax (HE160) / Chain 2 : CH 79

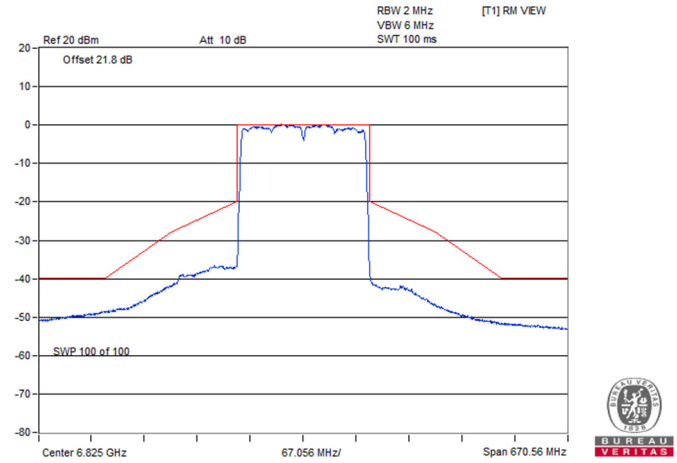


802.11ax (HE160) / Chain 2 : CH 111

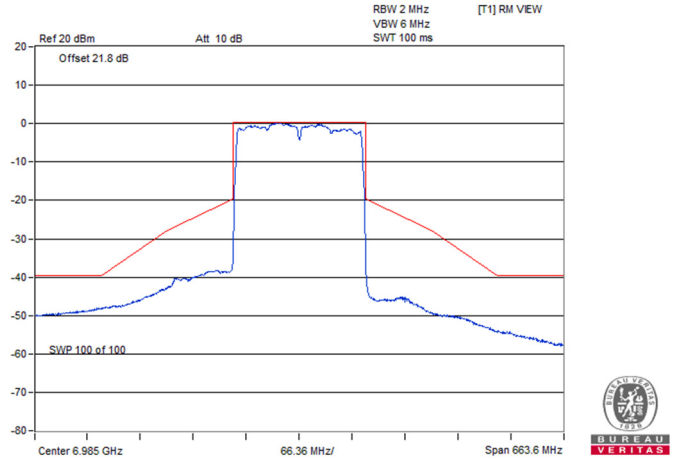
Spectrum Plot



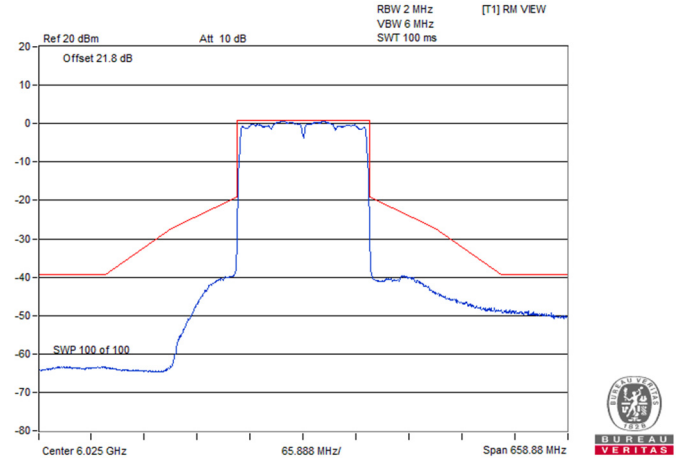
802.11ax (HE160) / Chain 2 : CH 143



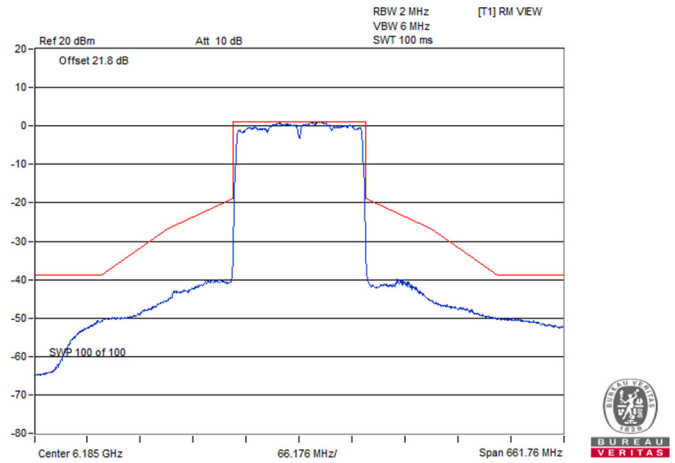
802.11ax (HE160) / Chain 2 : CH 175



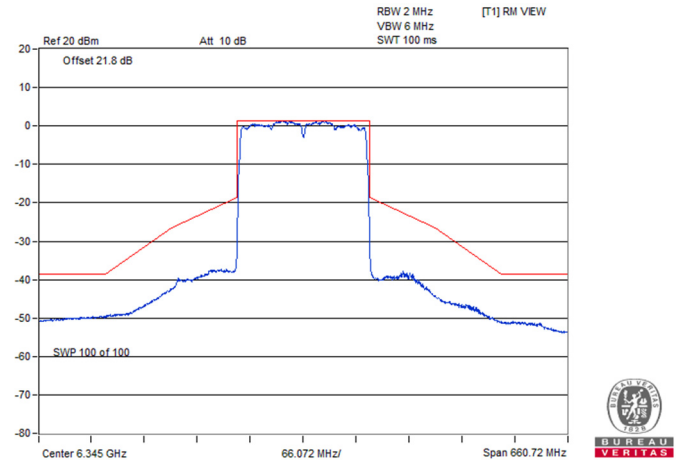
802.11ax (HE160) / Chain 2 : CH 207



802.11ax (HE160) / Chain 3 : CH 15

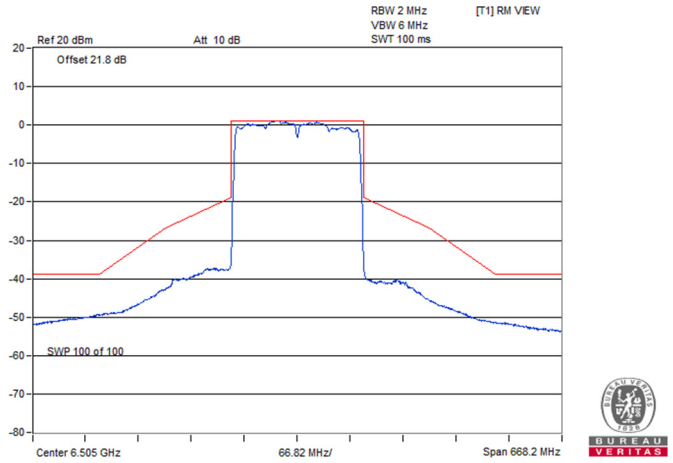


802.11ax (HE160) / Chain 3 : CH 47

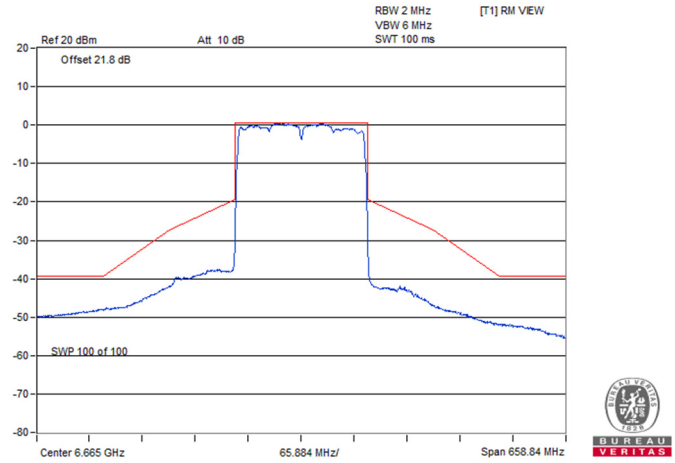


802.11ax (HE160) / Chain 3 : CH 79

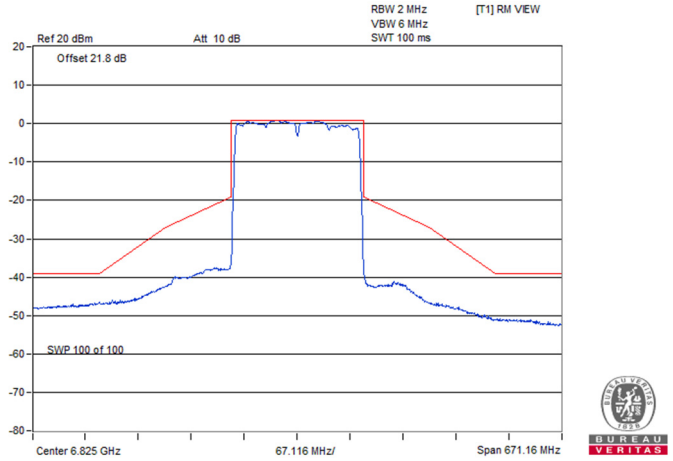
Spectrum Plot



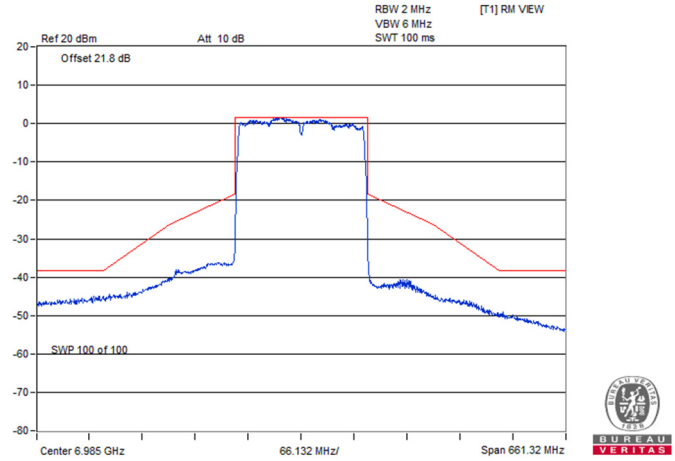
802.11ax (HE160) / Chain 3 : CH 111



802.11ax (HE160) / Chain 3 : CH 143



802.11ax (HE160) / Chain 3 : CH 175



802.11ax (HE160) / Chain 3 : CH 207

7.5 Occupied Bandwidth

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

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	5955	16.98	16.98	16.92	17.04	320	Pass
45	6175	17.10	16.98	16.86	16.80	320	Pass
93	6415	16.98	16.86	16.86	16.98	320	Pass
97	6435	16.92	17.04	16.92	16.86	320	Pass
105	6475	16.98	16.86	16.80	17.04	320	Pass
113	6515	16.98	16.98	16.98	16.80	320	Pass
117	6535	16.98	16.86	16.92	16.92	320	Pass
149	6695	16.98	16.92	16.98	17.04	320	Pass
181	6855	16.92	16.92	16.92	17.04	320	Pass
185	6875	16.92	16.86	17.04	16.98	320	Pass
209	6995	16.98	16.92	16.98	16.98	320	Pass
229	7095	16.98	16.98	16.98	16.98	320	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	5955	19.02	19.14	19.08	19.08	320	Pass
45	6175	19.08	19.08	19.14	19.08	320	Pass
93	6415	19.02	19.08	19.14	19.02	320	Pass
97	6435	19.08	19.14	19.02	19.08	320	Pass
105	6475	19.08	19.14	19.08	19.14	320	Pass
113	6515	19.20	19.08	19.08	19.08	320	Pass
117	6535	19.08	19.20	19.14	19.14	320	Pass
149	6695	19.14	19.14	19.02	19.14	320	Pass
181	6855	19.02	19.08	19.14	19.08	320	Pass
185	6875	19.14	19.14	19.02	19.08	320	Pass
209	6995	19.08	19.08	19.08	19.14	320	Pass
229	7095	19.08	19.14	19.08	19.14	320	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
3	5965	38.04	38.04	38.04	37.92	320	Pass
43	6165	37.92	38.04	38.04	38.04	320	Pass
91	6405	37.92	37.92	37.92	38.16	320	Pass
99	6445	37.92	37.92	38.04	37.80	320	Pass
107	6485	38.04	38.16	38.04	37.92	320	Pass
115	6525	38.04	38.04	38.16	37.92	320	Pass
123	6565	38.16	37.92	38.04	38.16	320	Pass
155	6725	38.04	38.04	38.40	38.04	320	Pass
179	6845	38.04	38.04	38.16	38.16	320	Pass
187	6885	38.04	37.92	38.04	38.04	320	Pass
211	7005	38.04	38.04	38.04	38.16	320	Pass
227	7085	38.04	38.16	38.16	38.28	320	Pass

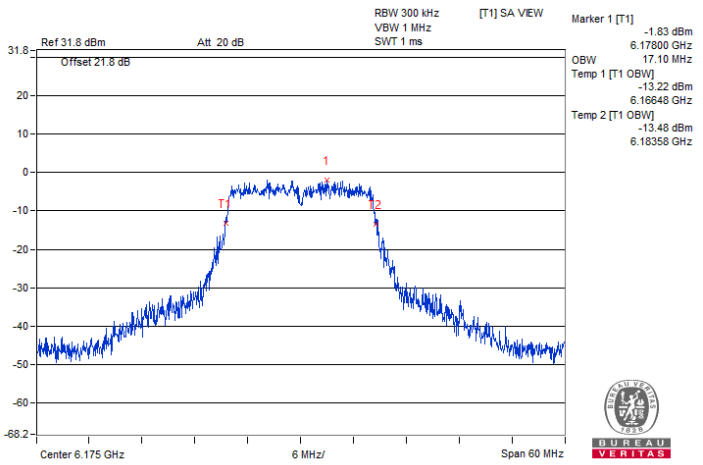
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
7	5985	77.28	77.28	77.52	77.52	320	Pass
39	6145	77.28	77.52	77.28	77.28	320	Pass
87	6385	77.28	77.28	77.52	77.28	320	Pass
103	6465	77.28	77.28	77.28	77.28	320	Pass
119	6545	77.28	77.52	77.28	77.28	320	Pass
151	6705	77.04	77.52	77.28	77.28	320	Pass
183	6865	77.28	77.28	77.28	77.52	320	Pass
199	6945	77.52	77.52	77.52	77.28	320	Pass
215	7025	77.28	77.28	77.28	77.52	320	Pass

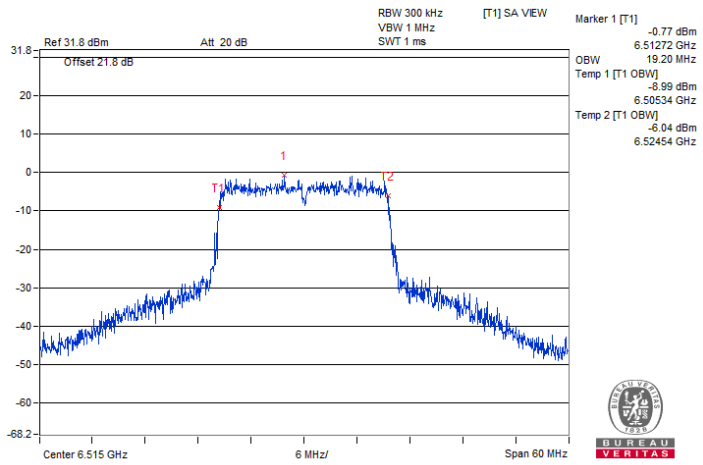
802.11ax (HE160)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				Maximum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
15	6025	156.96	156.96	156.96	156.48	320	Pass
47	6185	156.96	156.96	156.96	156.48	320	Pass
79	6345	156.48	156.96	156.48	156.48	320	Pass
111	6505	156.48	156.48	156.48	156.96	320	Pass
143	6665	156.48	156.96	156.96	157.44	320	Pass
175	6825	157.44	156.96	157.44	157.44	320	Pass
207	6985	156.96	156.00	156.96	157.44	320	Pass

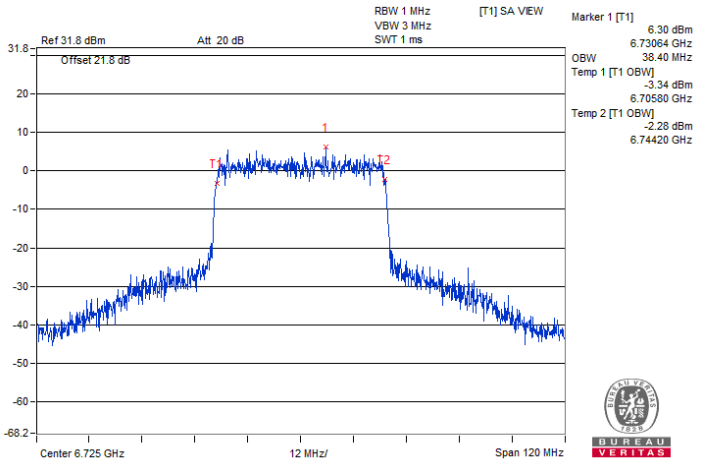
Spectrum Plot of Maximum Value



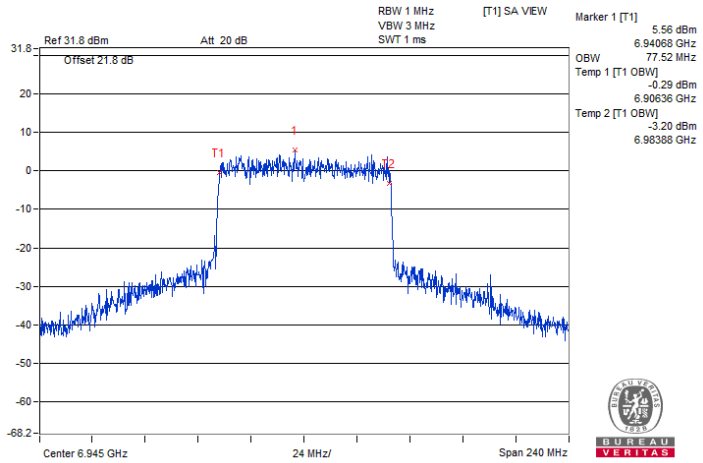
802.11a / Chain 0 : CH 45



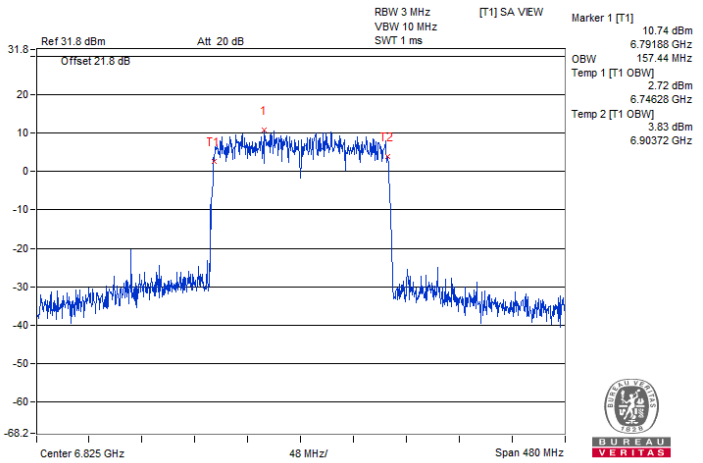
802.11ax (HE20) / Chain 0 : CH 113



802.11ax (HE40) / Chain 2 : CH 155



802.11ax (HE80) / Chain 0 : CH 199



802.11ax (HE160) / Chain 0 : CH 175

7.6 Frequency Stability

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

802.11a

Frequency Stability Versus Temperature									
Operating Frequency: 5955 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
55	120	5954.9907	Pass	5954.9894	Pass	5954.9917	Pass	5954.9906	Pass
50	120	5954.975	Pass	5954.9762	Pass	5954.9742	Pass	5954.9741	Pass
40	120	5955.0297	Pass	5955.0256	Pass	5955.0282	Pass	5955.0296	Pass
30	120	5955.0293	Pass	5955.0313	Pass	5955.0297	Pass	5955.0302	Pass
20	120	5954.9832	Pass	5954.9889	Pass	5954.9866	Pass	5954.9887	Pass
10	120	5955.0228	Pass	5955.0253	Pass	5955.0222	Pass	5955.0229	Pass
0	120	5954.9862	Pass	5954.9875	Pass	5954.9833	Pass	5954.9857	Pass
-10	120	5954.9978	Pass	5954.9989	Pass	5954.9983	Pass	5954.9957	Pass
-20	120	5955.008	Pass	5955.0043	Pass	5955.0065	Pass	5955.0059	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5955 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
20	138	5954.9777	Pass	5954.9788	Pass	5954.9788	Pass	5954.983	Pass
	120	5954.9832	Pass	5954.9889	Pass	5954.9866	Pass	5954.9887	Pass
	102	5954.996	Pass	5954.9952	Pass	5954.996	Pass	5954.9935	Pass

7.7 Contention-based Protocol

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

EUT Information		
Product	**Model No.**	**Software/Firmware Version**
Wireless Access Point	EWM322TTCH2	17.10.251.3202

Companion Device Information			
Product	**Brand**	**Model No.**	**Software/Firmware Version**
Wireless-AX6000 Dual Band Gigabit Router	ASUS	RT-AX88U	3.0.0.4.384

For U-NII-5

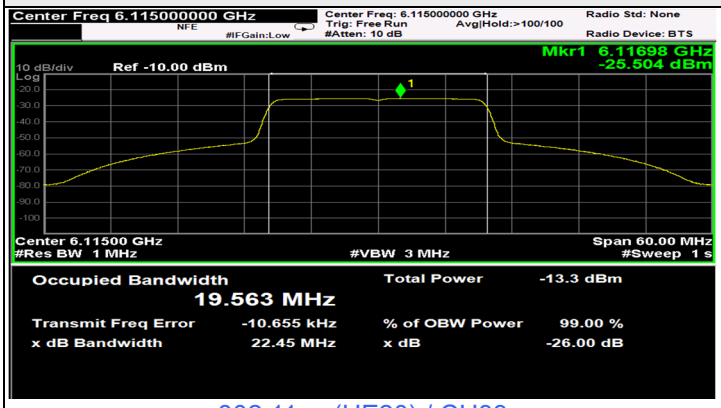
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 3)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	33	6115	6115	-69.21	5.38	0	-74.59	-62	OFF
					-69.71	5.38	0	-75.09	-62	Minimal
					-76.62	5.38	0	-82	-62	ON
	160	47	6185	6110	-69.03	5.38	0	-74.41	-62	OFF
					-69.53	5.38	0	-74.91	-62	Minimal
					-76.62	5.38	0	-82	-62	ON
				6185	-67.24	5.38	0	-72.62	-62	OFF
					-67.74	5.38	0	-73.12	-62	Minimal
					-76.62	5.38	0	-82	-62	ON
				6260	-70.07	5.38	0	-75.45	-62	OFF
					-70.57	5.38	0	-75.95	-62	Minimal
					-76.62	5.38	0	-82	-62	ON

Notes:

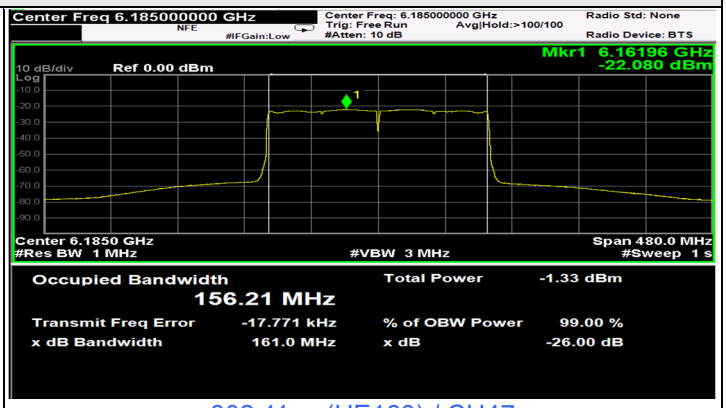
1. After investigation (consider antenna gain and path loss) , the one representative port (Chain 2) was measured and presented in the report.
2. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
3. Antenna gain values include all the applicable path losses.

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	x	v	v	90%	90%	Pass
		6260	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass

Plots of EUT Tx waveform

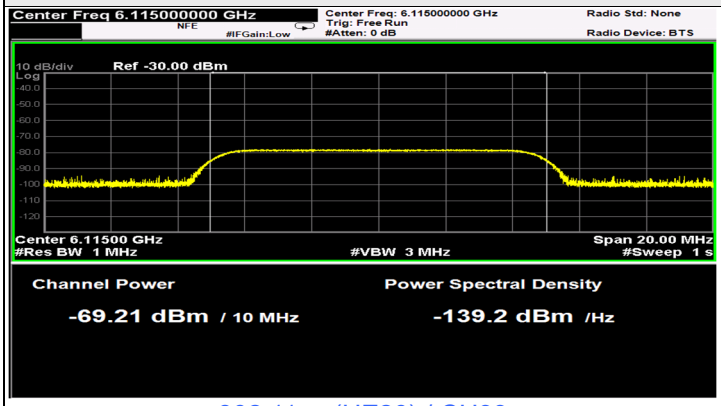


802.11ax (HE20) / CH33

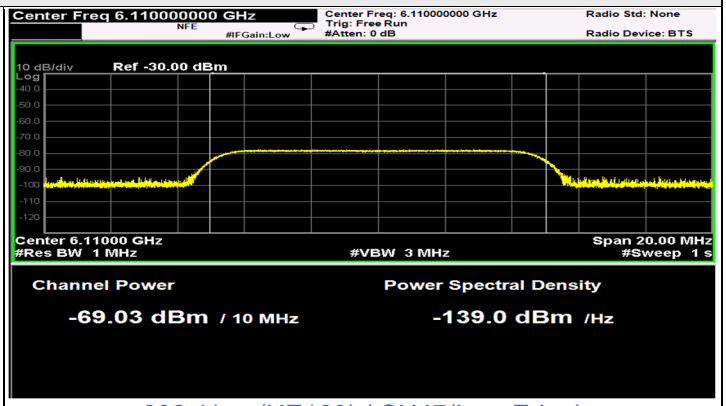


802.11ax (HE160) / CH47

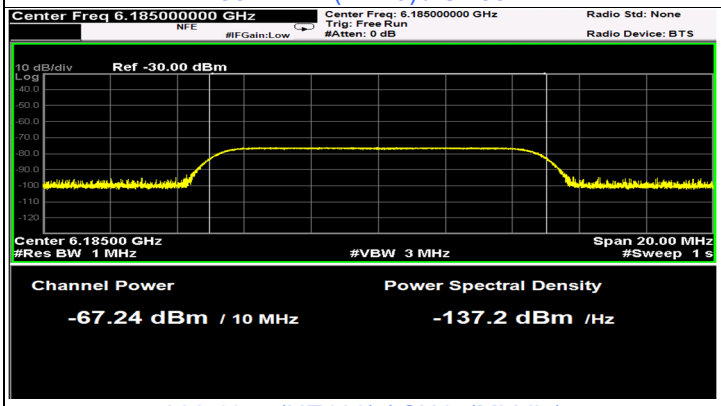
Plots of Injected signal (AWGN) level



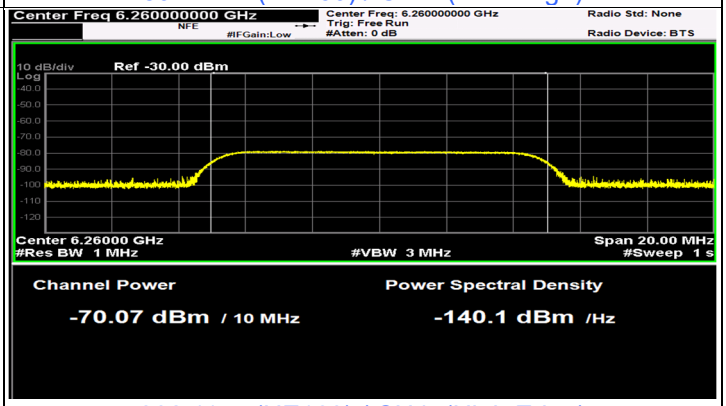
802.11ax (HE20) / CH33



802.11ax (HE160) / CH47(Low Edge)

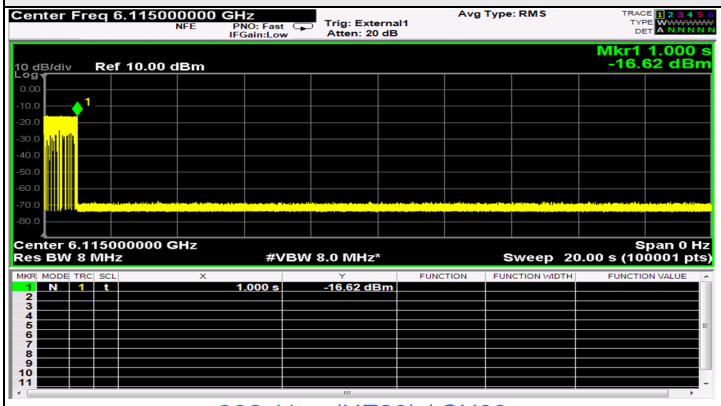


802.11ax (HE160) / CH47(Middle)

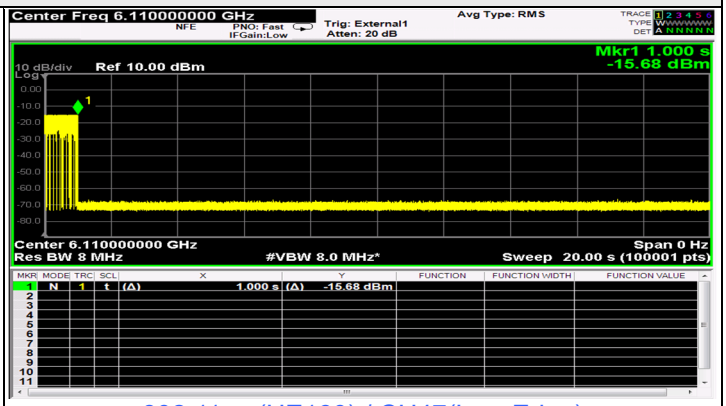


802.11ax (HE160) / CH47(High Edge)

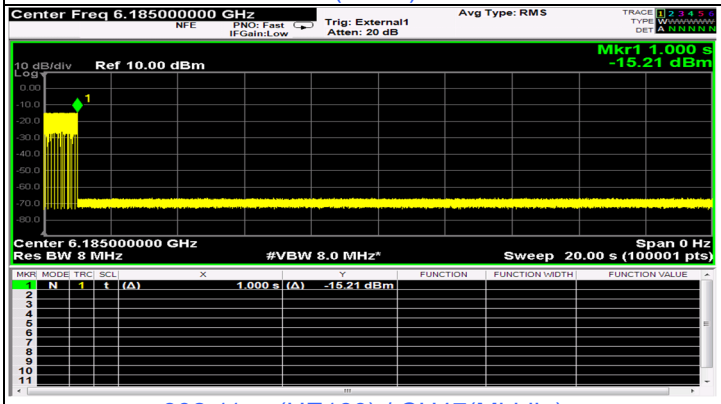
Plots of EUT ceased transmission in the time domain



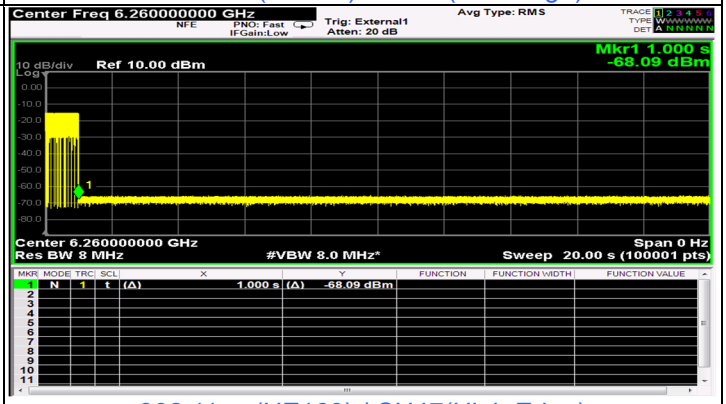
802.11ax (HE20) / CH33



802.11ax (HE160) / CH47(Low Edge)



802.11ax (HE160) / CH47(Middle)



802.11ax (HE160) / CH47(High Edge)

For U-NII-6

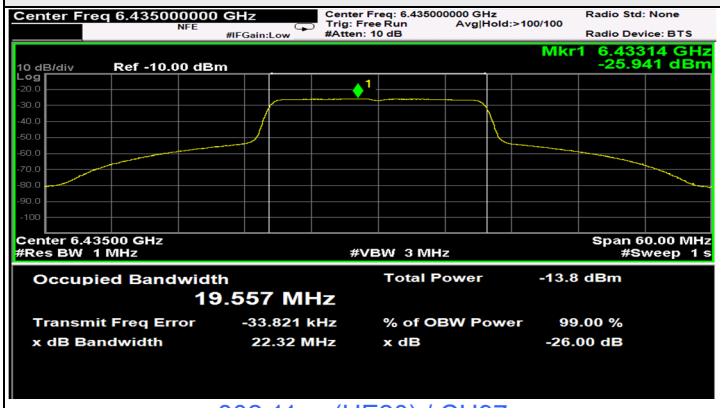
Contention Based Protocol Measurement										
Operation Mode	Channel Bandwidth (MHz)	Channel Number	Channel Freq. (MHz)	Injected Signal (AWGN)		Antenna Gain (dBi)	Path Loss (dB) (Note 3)	Adjusted Power (dBm)	Detection Limit	EUT TX Status
				Freq. (MHz)	Power (dBm)					
802.11ax	20	97	6435	6435	-70.08	5.31	0	-75.39	-62	OFF
					-70.58	5.31	0	-75.89	-62	Minimal
					-76.69	5.31	0	-82	-62	ON
	160	111	6505	6430	-70.06	5.31	0	-75.37	-62	OFF
					-70.56	5.31	0	-75.87	-62	Minimal
					-76.69	5.31	0	-82	-62	ON
				6505	-69.11	5.31	0	-74.42	-62	OFF
					-69.61	5.31	0	-74.92	-62	Minimal
					-76.69	5.31	0	-82	-62	ON
				6580	-70.2	5.31	0	-75.51	-62	OFF
					-70.7	5.31	0	-76.01	-62	Minimal
					-76.69	5.31	0	-82	-62	ON

Notes:

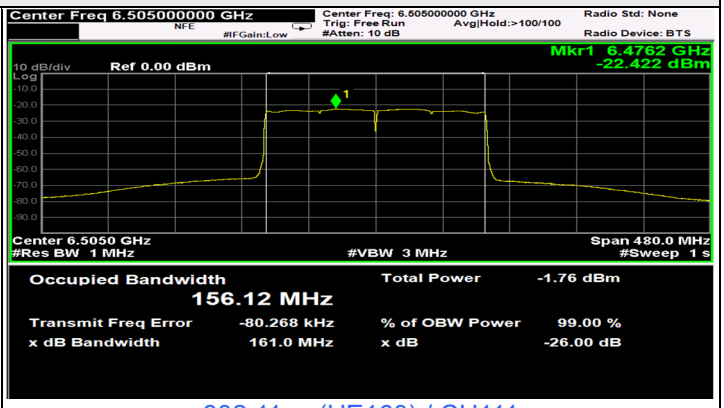
1. After investigation (consider antenna gain and path loss) , the one representative port (Chain 3) was measured and presented in the report.
2. Adjusted Power (dBm) = Injected Signal (AWGN) Power (dBm) - Antenna Gain (dBi) + Path Loss (dB)
3. Antenna gain values include all the applicable path losses.

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	x	v	v	v	90%	90%	Pass
		6580	v	v	v	v	v	v	v	v	v	v	100%	90%	Pass

Plots of EUT Tx waveform

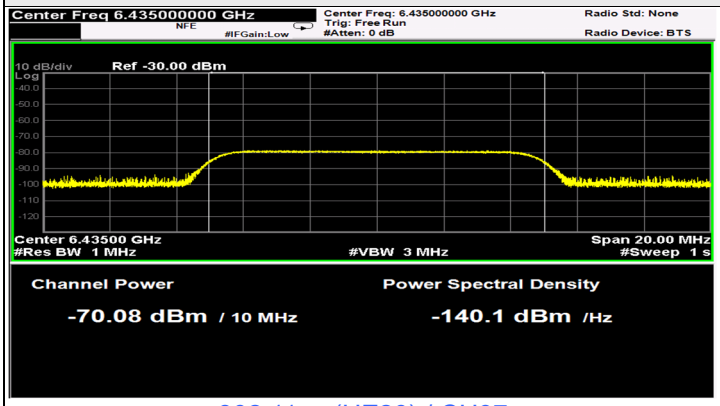


802.11ax (HE20) / CH97

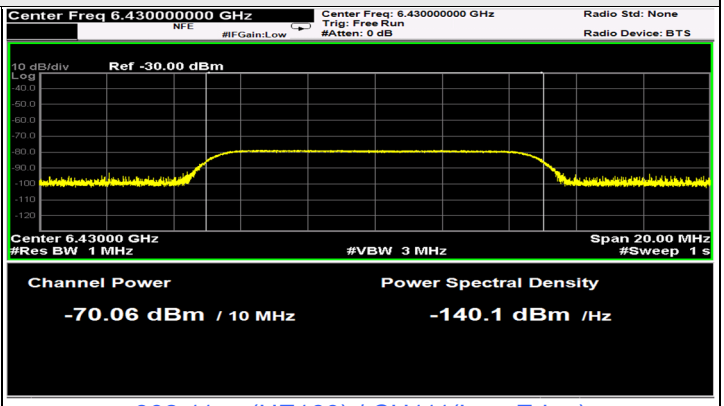


802.11ax (HE160) / CH111

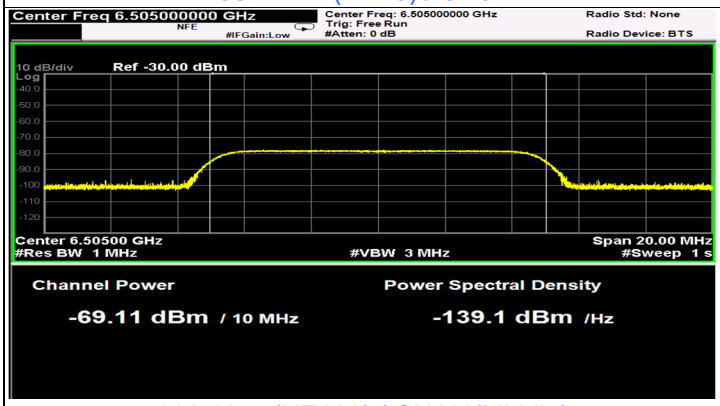
Plots of Injected signal (AWGN) level



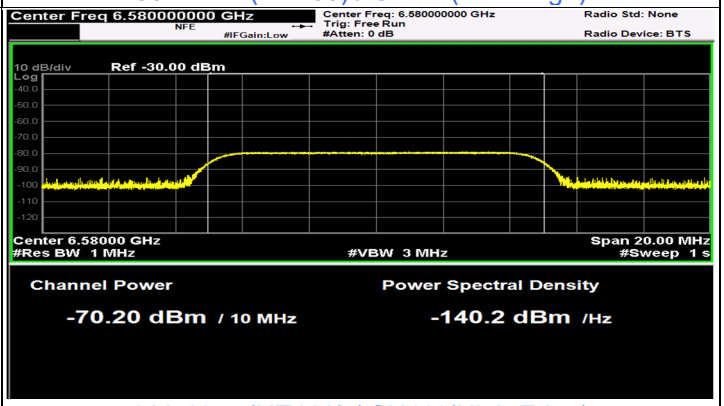
802.11ax (HE20) / CH97



802.11ax (HE160) / CH111(Low Edge)



802.11ax (HE160) / CH111(Middle)



802.11ax (HE160) / CH111(High Edge)