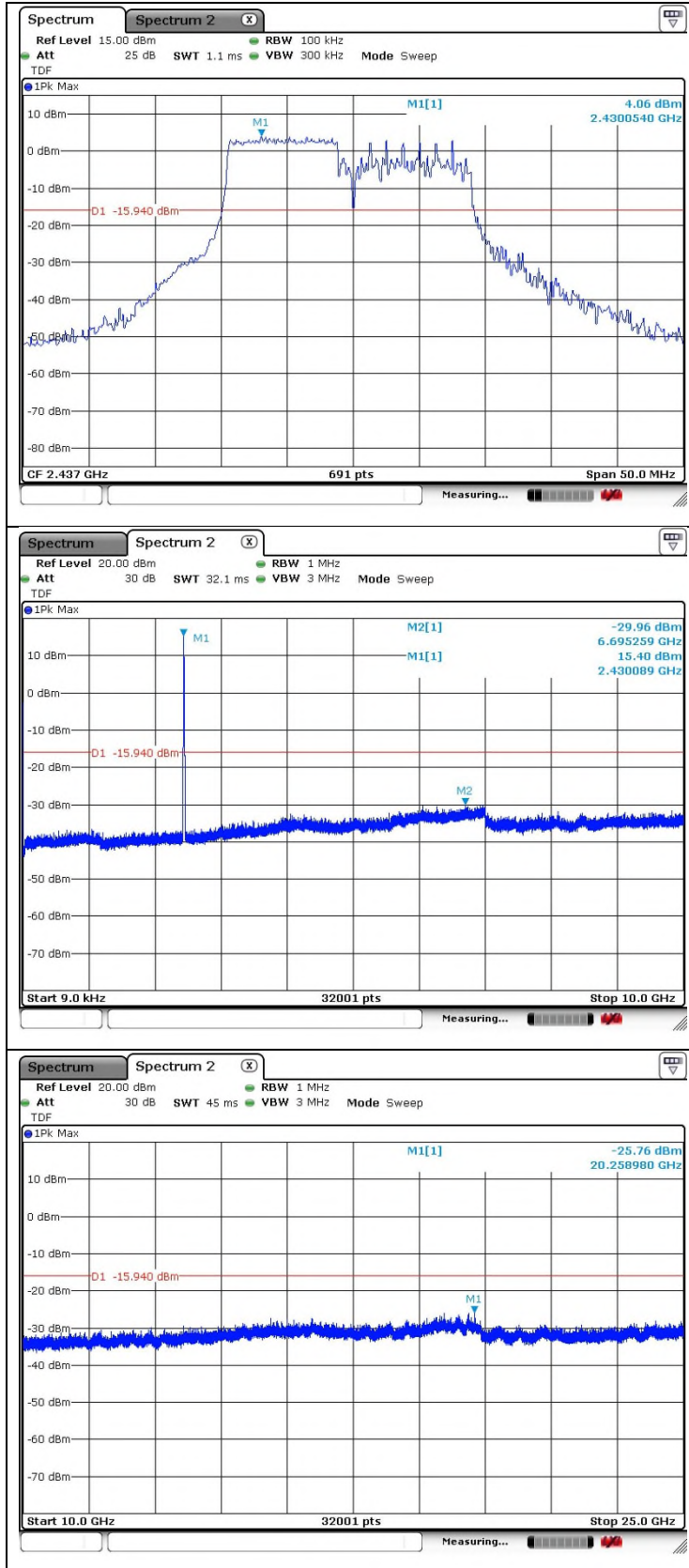
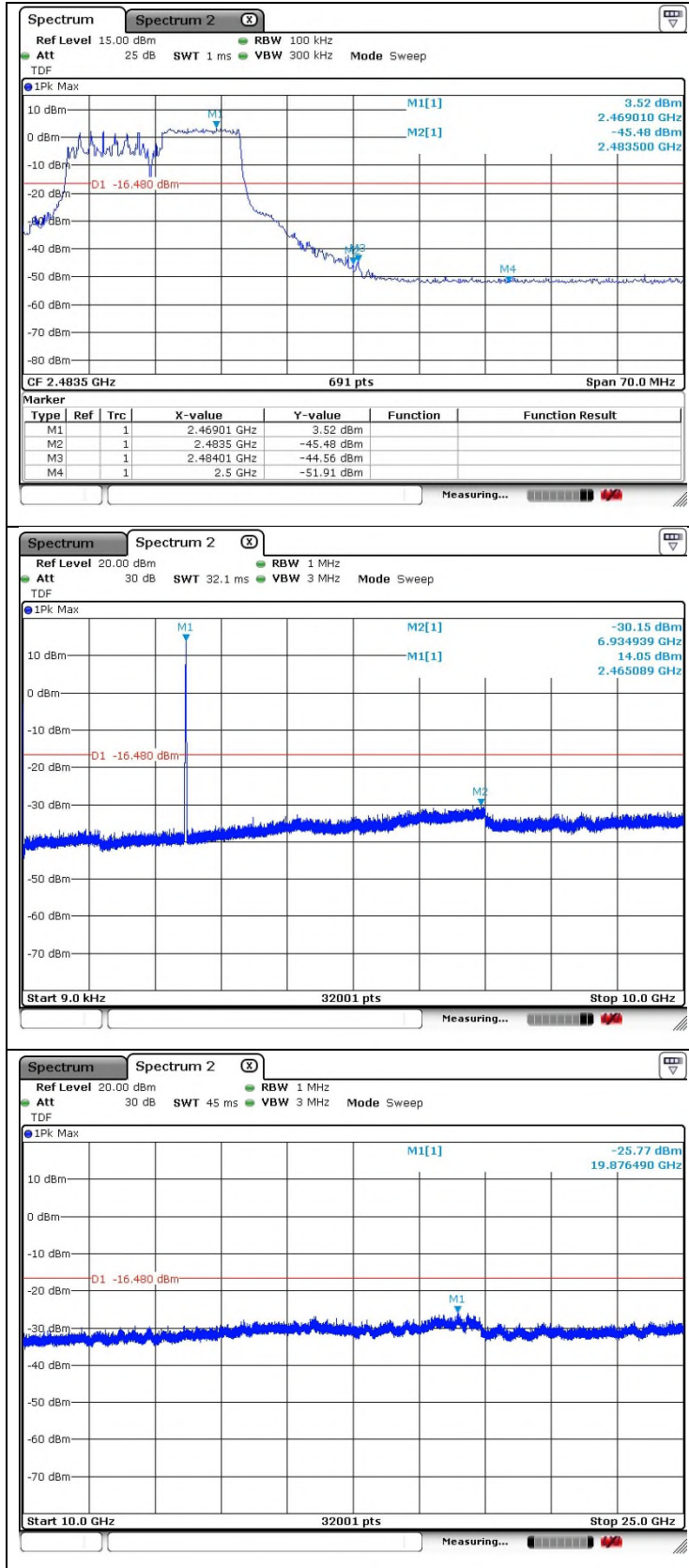


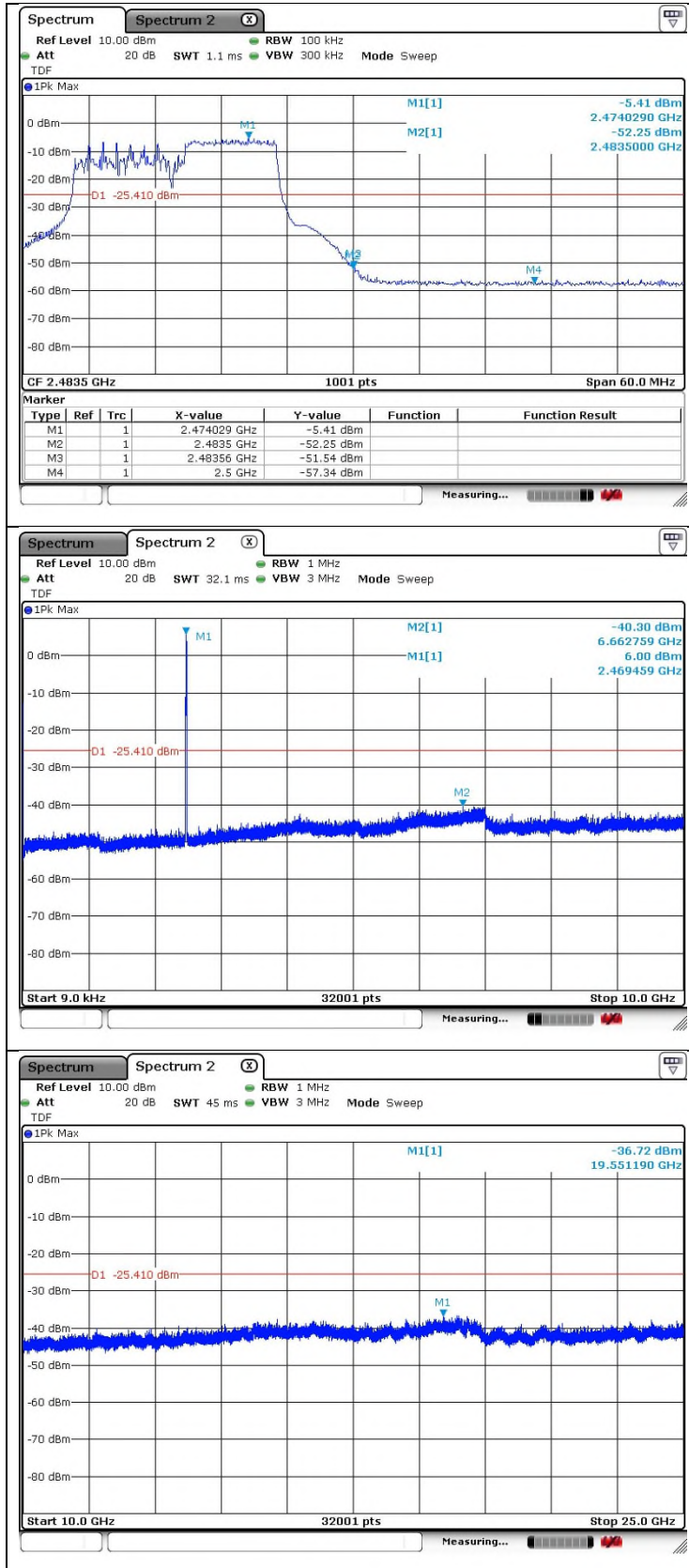
Middle Channel_53 RU



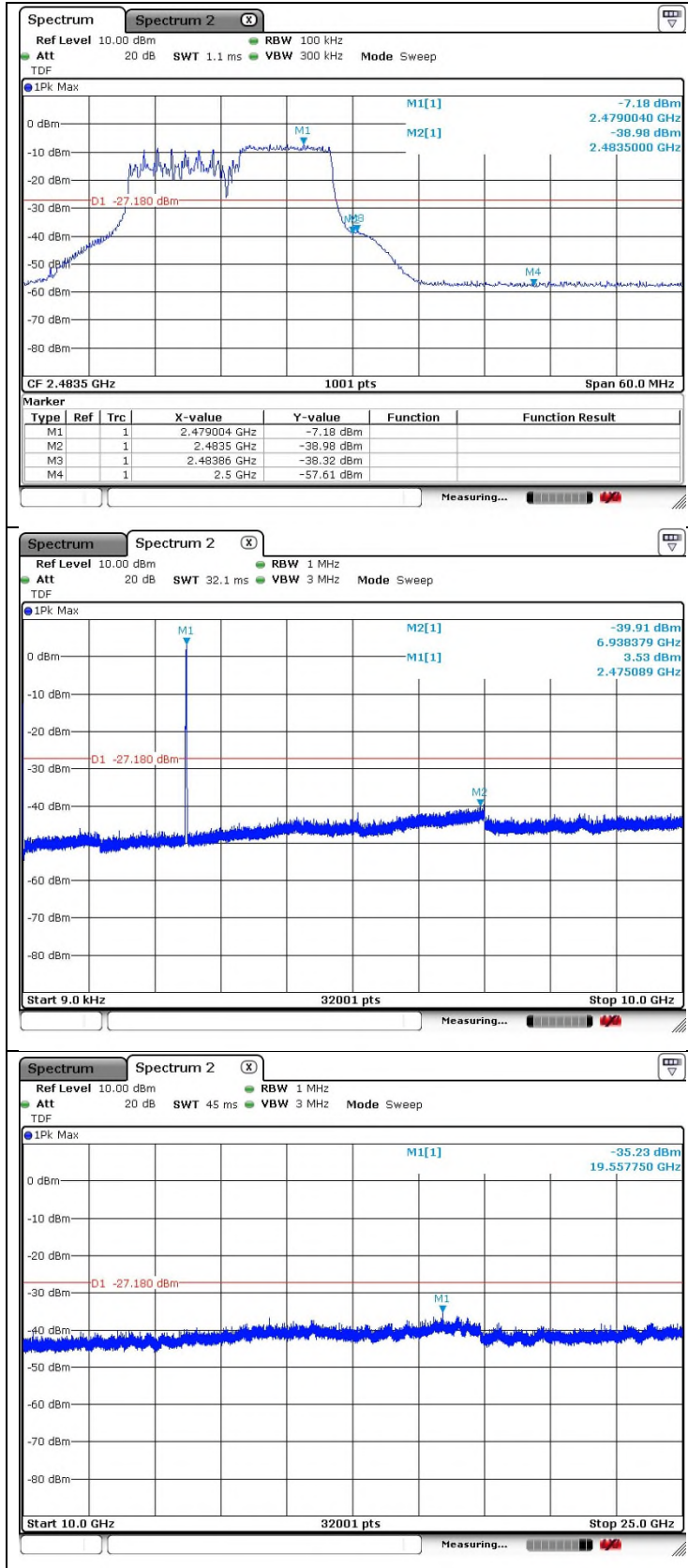
High Channel_54 RU



12 Channel_54 RU

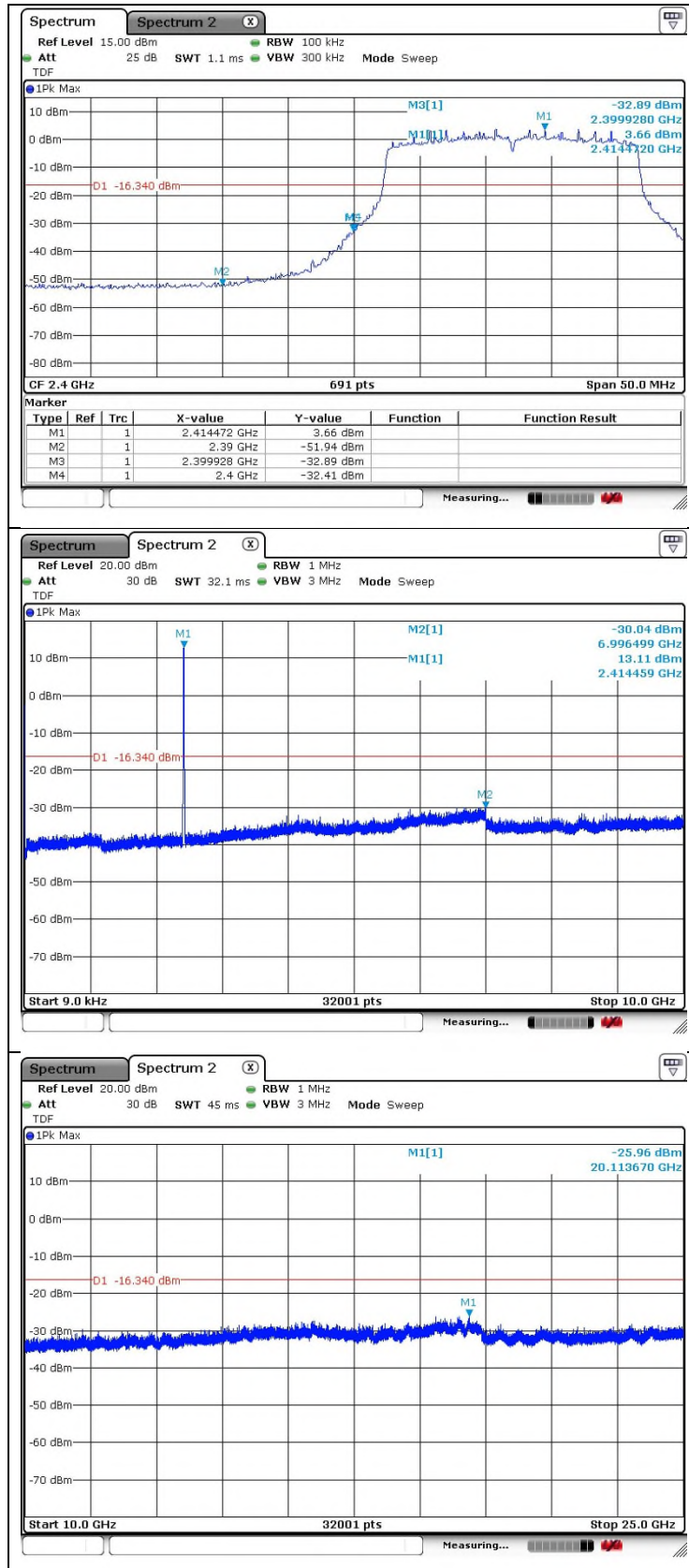


13 Channel_54 RU

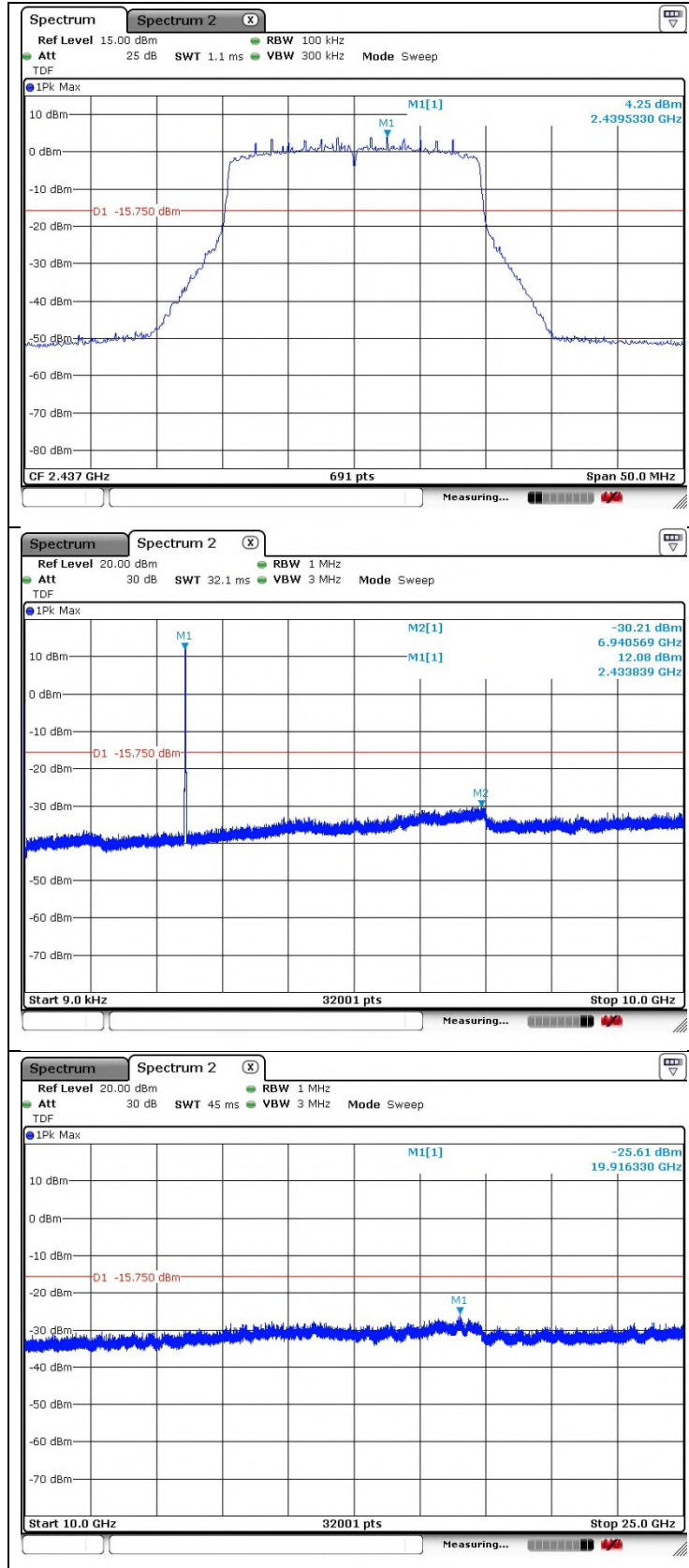


OFDMA: 802.11ax_HE20_SU

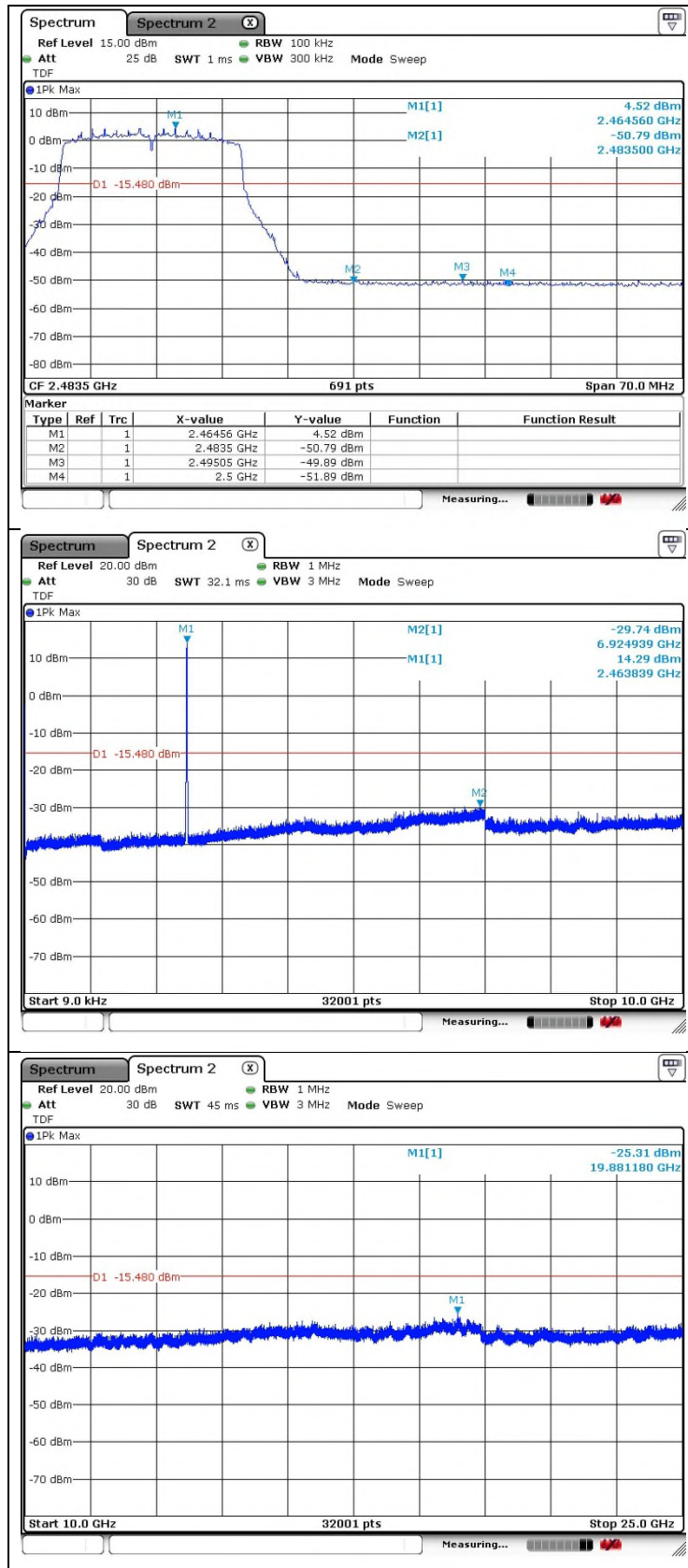
Low Channel



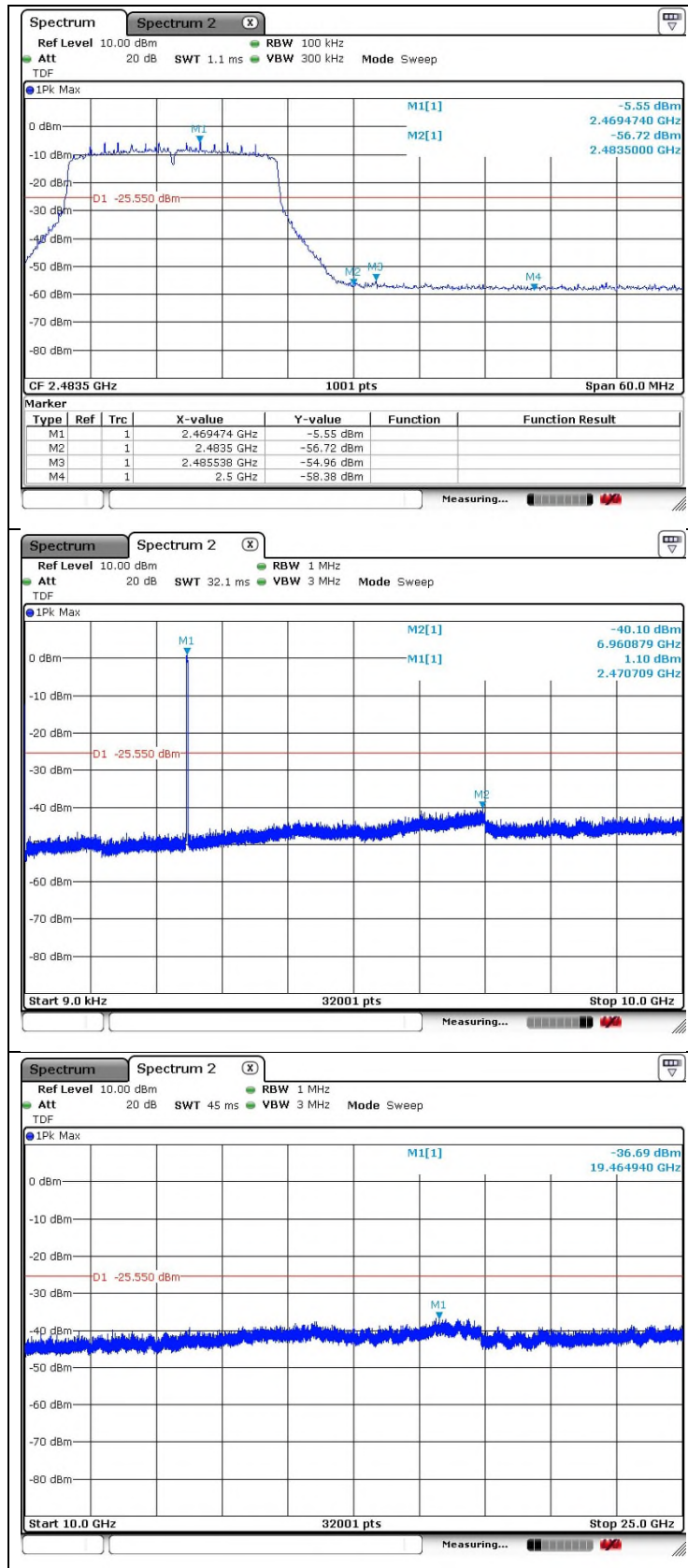
Middle Channel



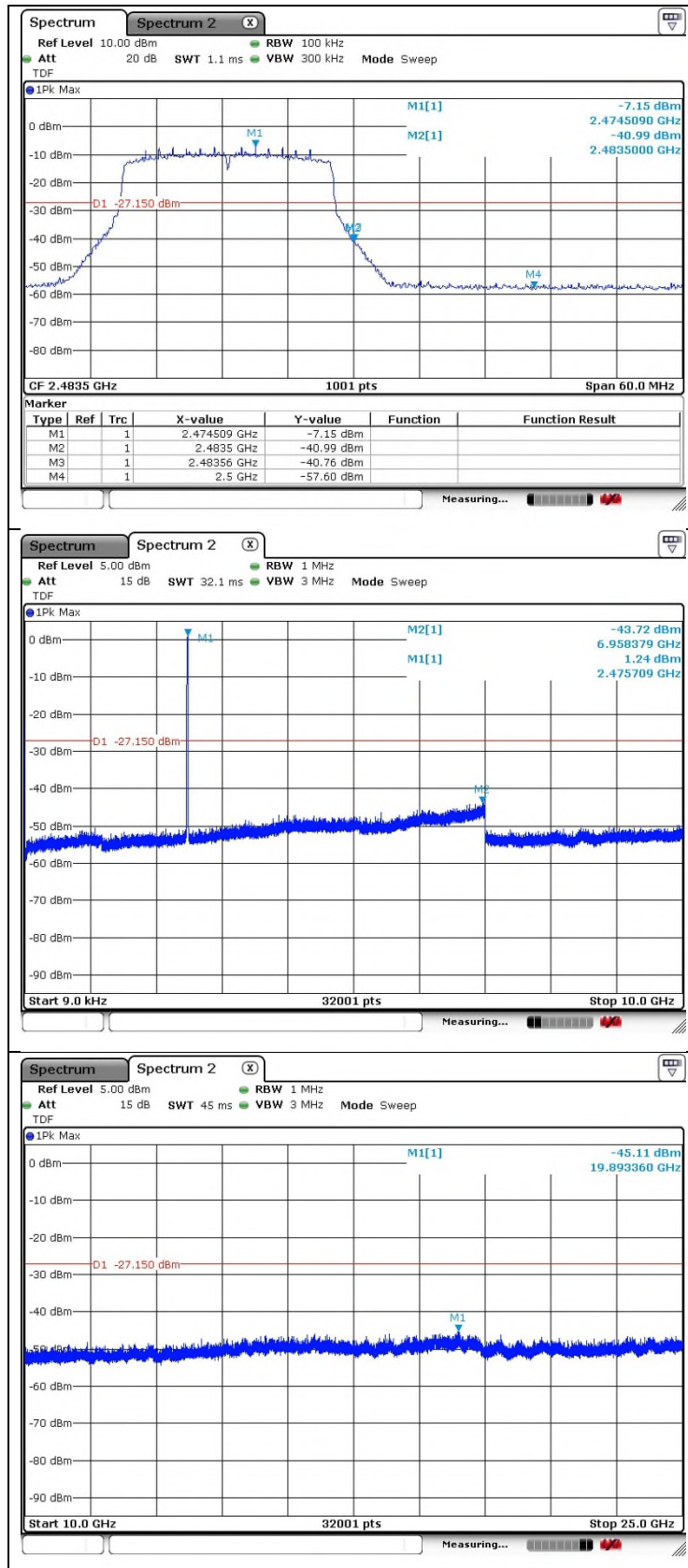
High Channel



12 Channel



13 Channel



3. 6 dB Bandwidth & 99 % Bandwidth

3.1. Test Setup



3.2. Limit

3.2.1. FCC

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902-928 MHz, 2 400-2 483.5 MHz, and 5 725-5 850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

3.2.2. IC

According to RSS-247 Issue 2, 5.2(a), the minimum 6 dB bandwidth shall be 500 kHz.

3.3. Test Procedure

All data rates and modes were investigated for this test. The full data for the worst case data rate are reported in this section.

3.3.1. 6 dB Bandwidth

The test follows section 11.8 DTS bandwidth of ANSI C63.10-2013.

Tests performed using section 11.8.1 Option 1.

- Option 1:

1. Set RBW to = 100 kHz.
2. Set the VBW \geq [3 x RBW].
3. Detector = peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.3.2. 99 % Bandwidth

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test condition.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99 % emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99 % emission bandwidth).

3.4. Test Results

Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

OFDMA: 802.11ax_HE20

Tones	RU offset	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (kHz)
				Ant.1	Ant.2	
26T	0	Low	2 412	2.083	2.043	500
		Middle	2 437	2.086	2.046	
		High	2 462	2.080	2.042	
		12	2 467	2.107	2.110	
		13	2 472	2.109	2.107	

Tones	RU offset	Channel	Frequency (MHz)	99 % Bandwidth (MHz)	
				Ant.1	Ant.2
26T	0	Low	2 412	18.518	18.595
		Middle	2 437	18.486	18.543
		High	2 462	18.490	18.495
		12	2 467	18.440	18.458
		13	2 472	18.386	18.272
	4	Low	2 412	17.147	17.327
		Middle	2 437	17.217	17.211
		High	2 462	17.251	17.223
		12	2 467	17.199	17.140
		13	2 472	17.200	17.181
	8	Low	2 412	18.410	18.549
		Middle	2 437	18.579	18.494
		High	2 462	18.583	18.565
		12	2 467	18.530	18.506
		13	2 472	18.533	18.469

Tones	RU offset	Channel	Frequency (MHz)	99 % Bandwidth (MHz)	
				Ant.1	Ant.2
52T	37	Low	2 412	18.385	18.537
		Middle	2 437	18.199	18.440
		High	2 462	18.357	18.403
		12	2 467	18.306	18.364
		13	2 472	18.266	18.270
	38	Low	2 412	17.137	17.375
		Middle	2 437	17.256	17.251
		High	2 462	17.263	17.290
		12	2 467	17.221	17.201
		13	2 472	17.194	17.227
	40	Low	2 412	18.230	18.372
		Middle	2 437	18.303	18.330
		High	2 462	18.349	18.500
		12	2 467	18.322	18.101
		13	2 472	18.319	18.303
106T	53	Low	2 412	18.285	18.400
		Middle	2 437	18.315	18.338
		High	2 462	18.270	18.336
		12	2 467	18.233	18.221
		13	2 472	18.155	18.184
	54	Low	2 412	18.199	18.370
		Middle	2 437	18.359	18.304
		High	2 462	18.343	18.372
		12	2 467	18.323	18.184
		13	2 472	18.324	18.284
SU	-	Low	2 412	18.839	19.026
		Middle	2 437	18.921	18.878
		High	2 462	18.898	19.050
		12	2 467	18.749	18.828
		13	2 472	18.724	18.872

- Test plots

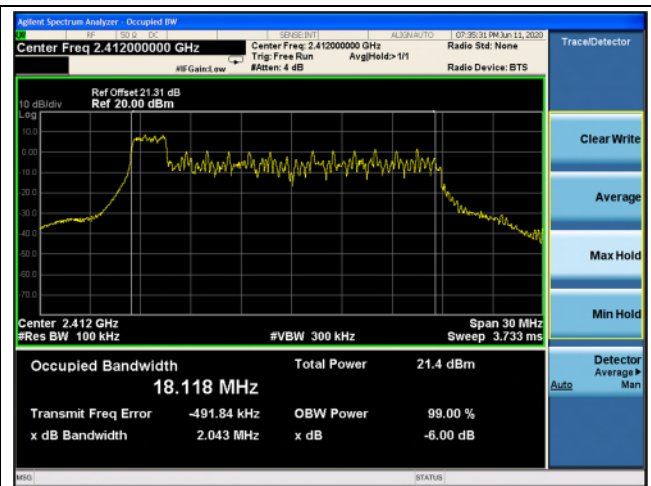
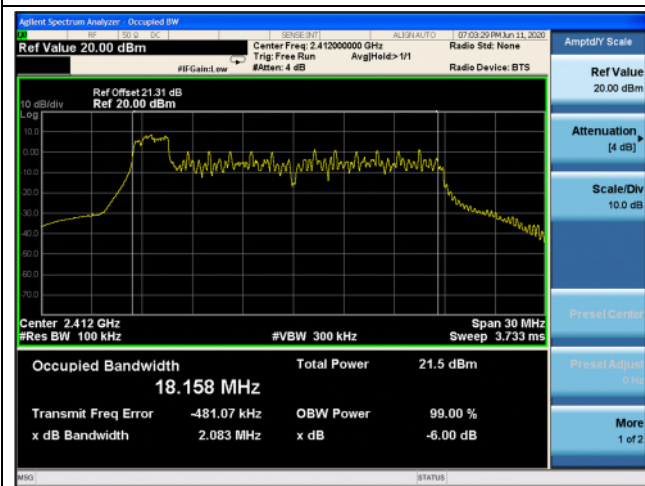
- 6 dB Bandwidth

OFDMA: 802.11ax_HE20

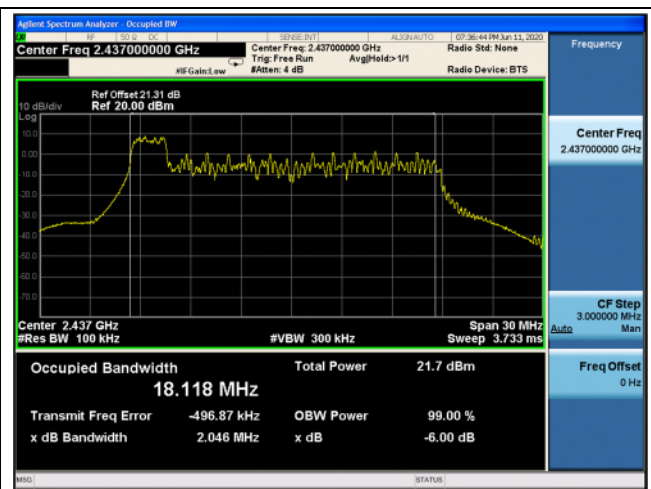
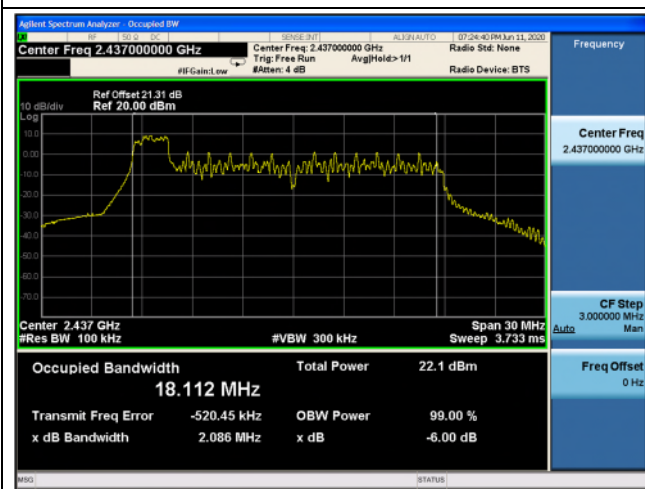
Ant.1

Ant.2

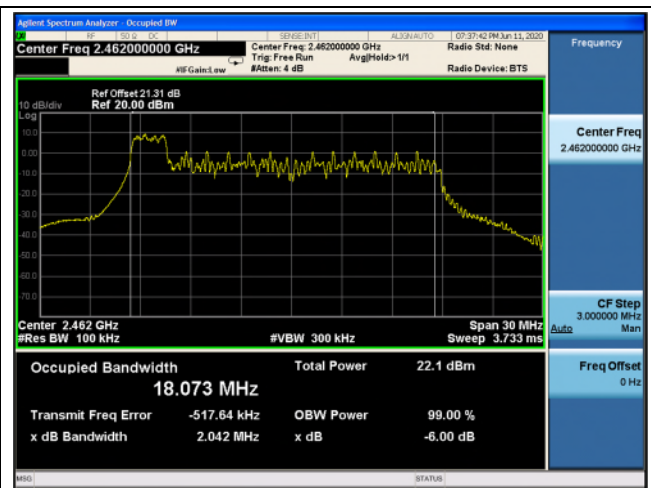
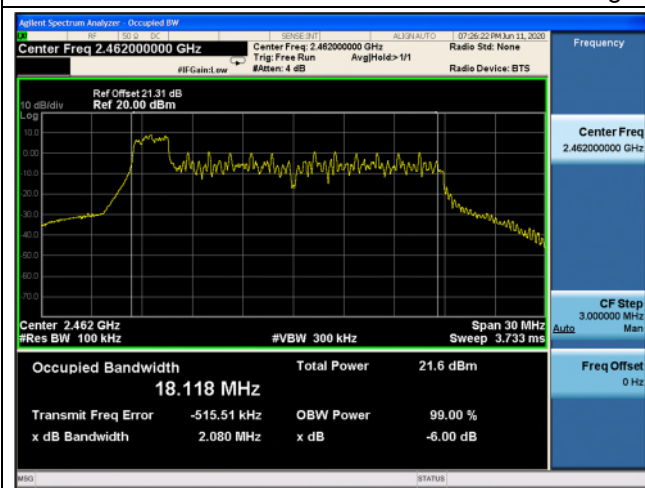
Low channel



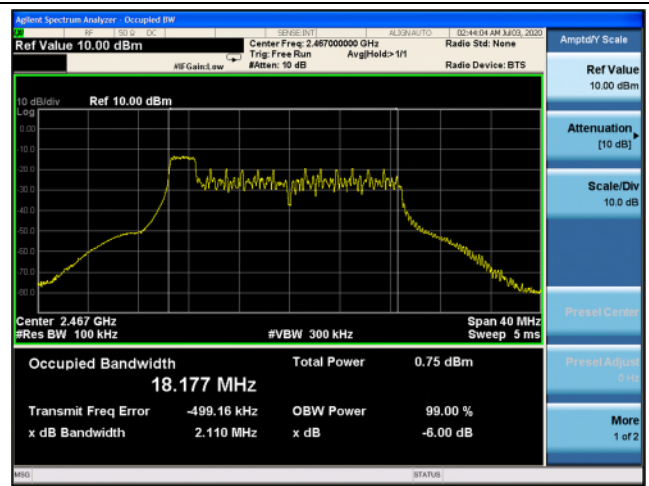
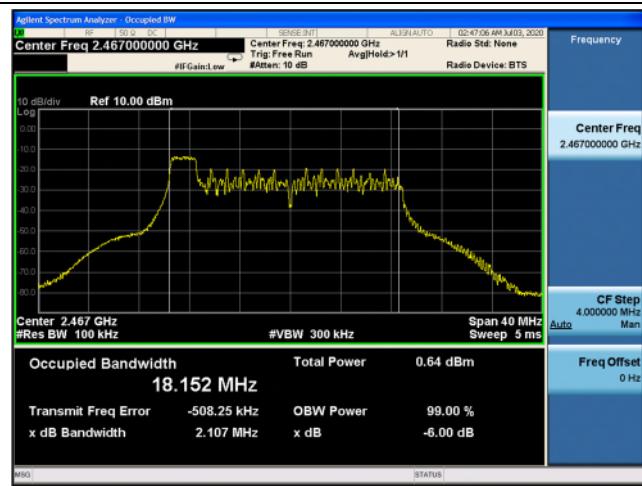
Middle channel



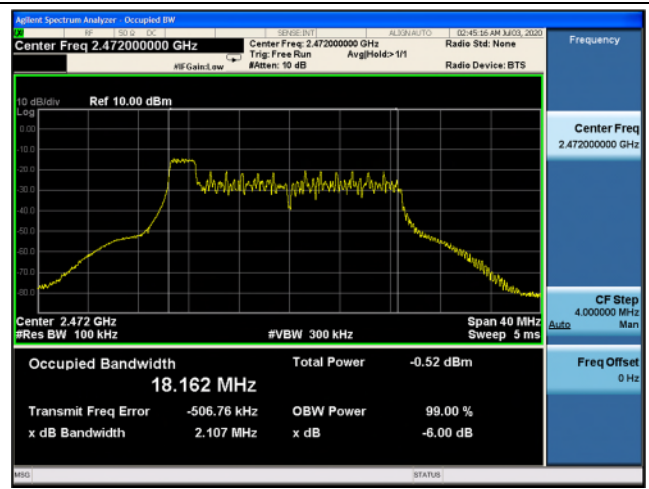
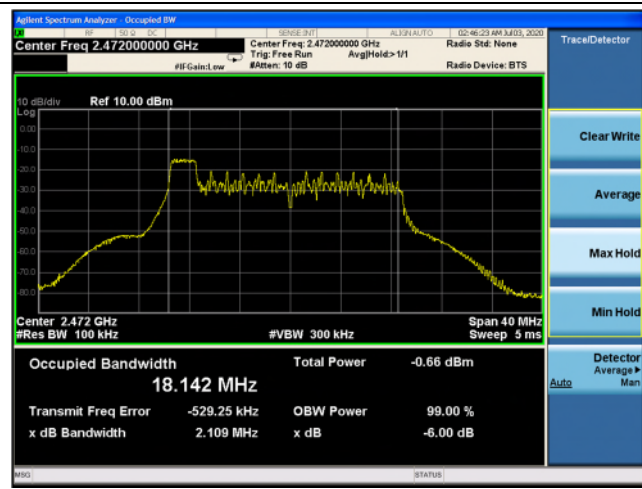
High channel



12 channel



13 channel



- 99 % Bandwidth

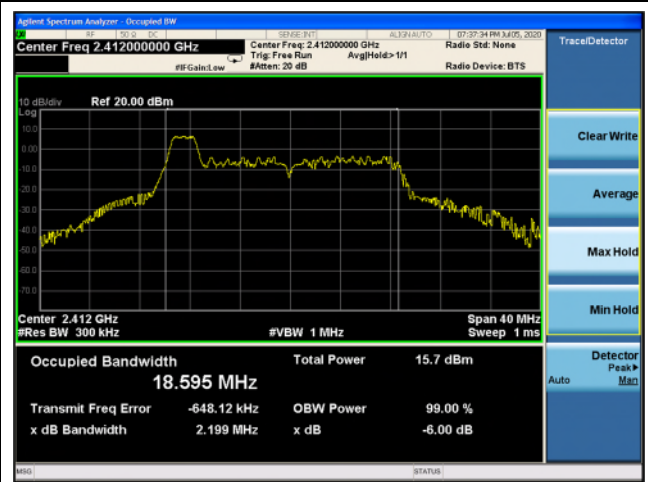
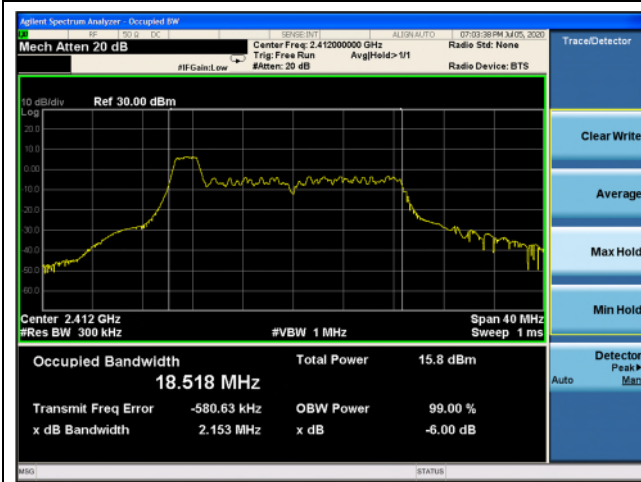
OFDMA: 802.11ax_HE20

26T_0 RU

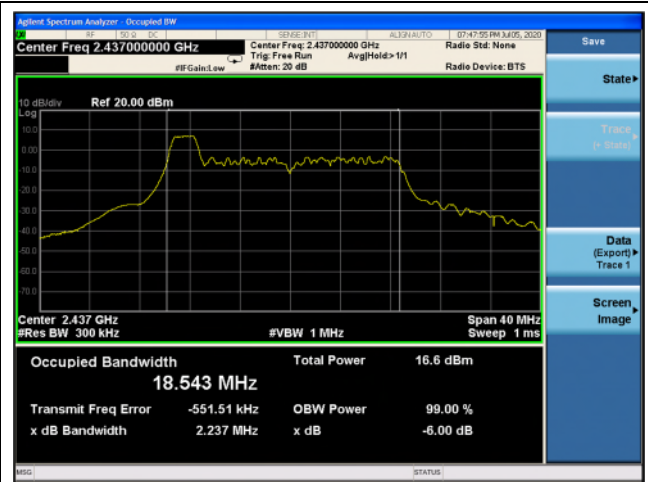
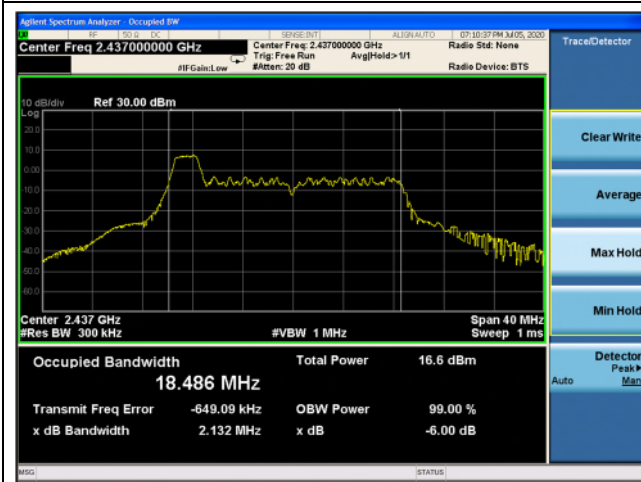
Ant.1

Ant.2

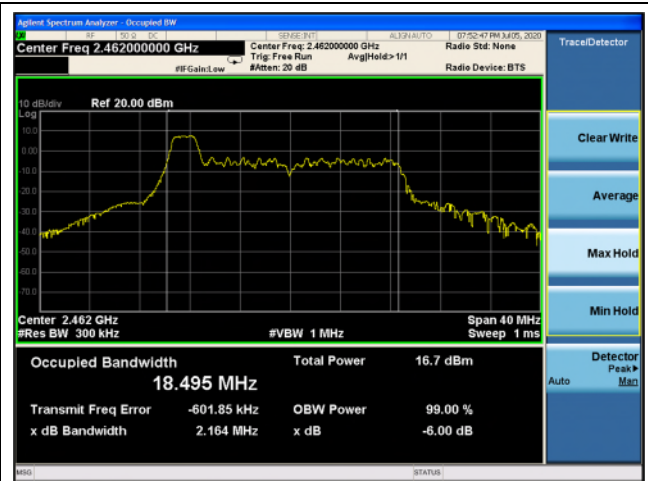
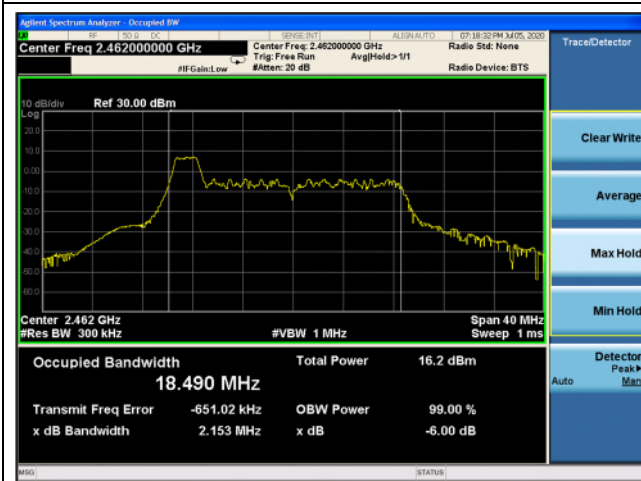
Low channel



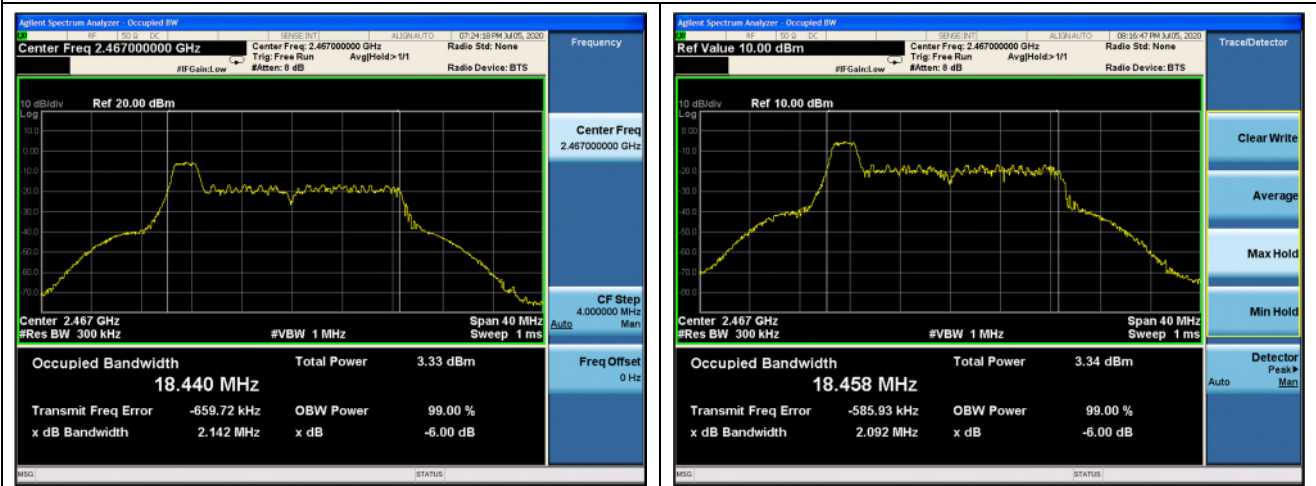
Middle channel



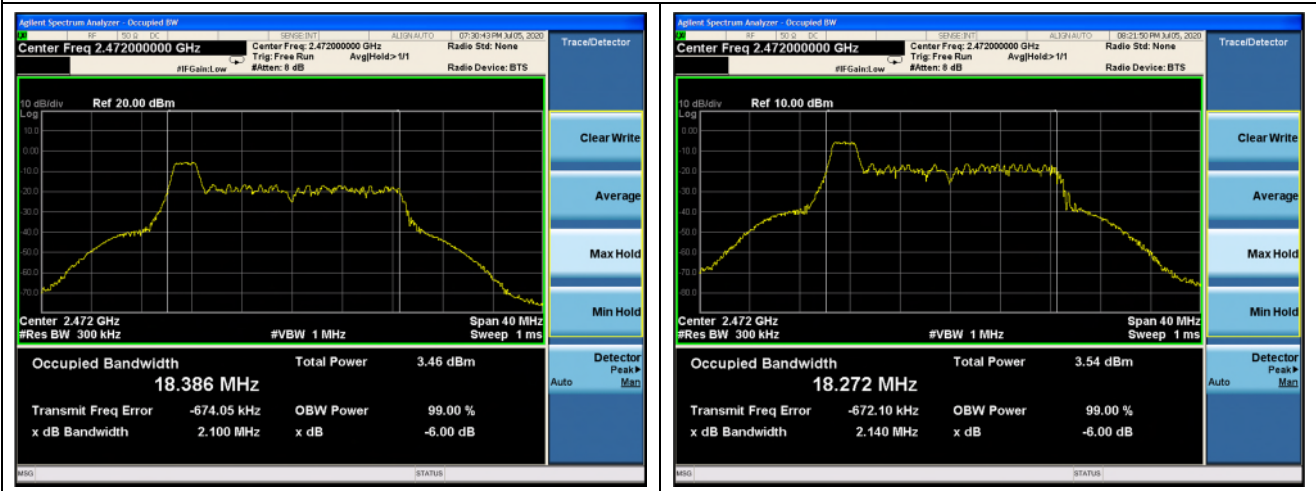
High channel



12 channel



13 channel

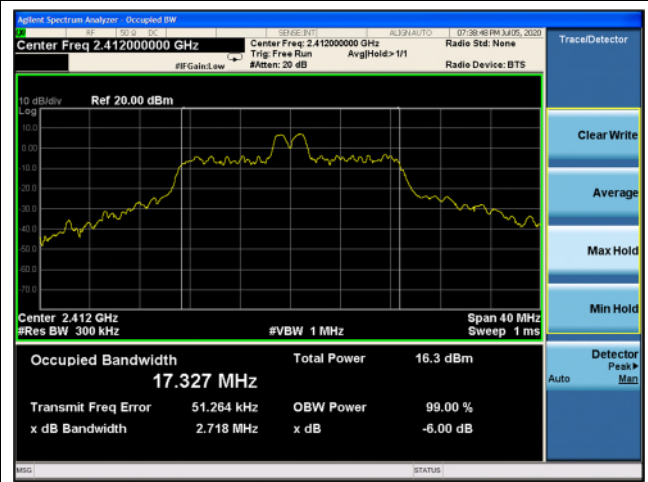
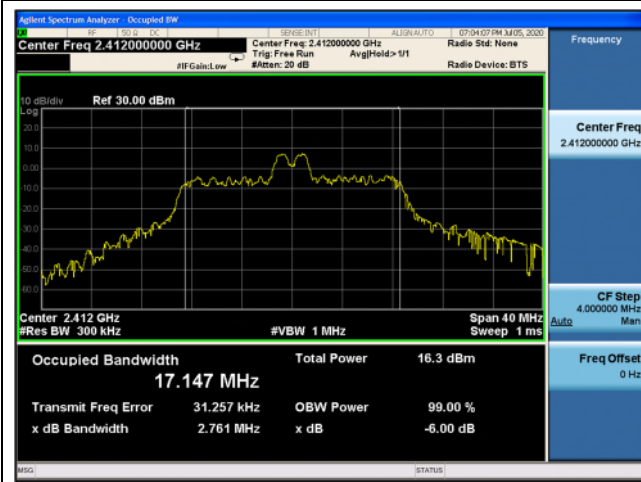


26T_4 RU

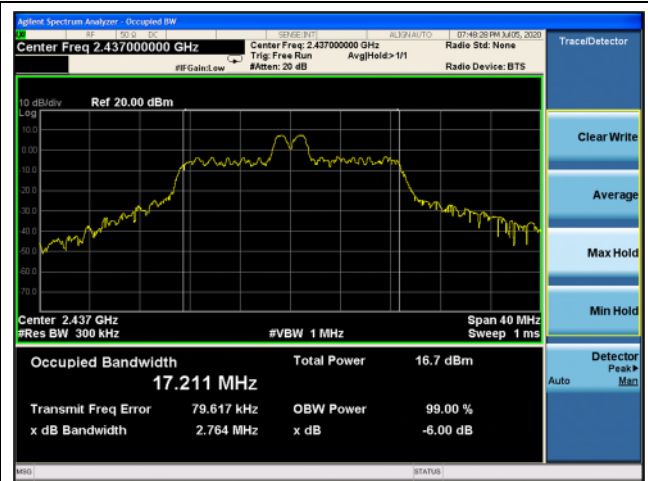
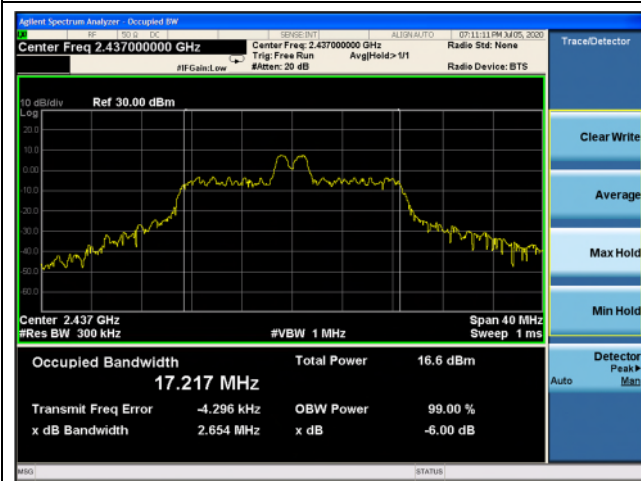
Ant.1

Ant.2

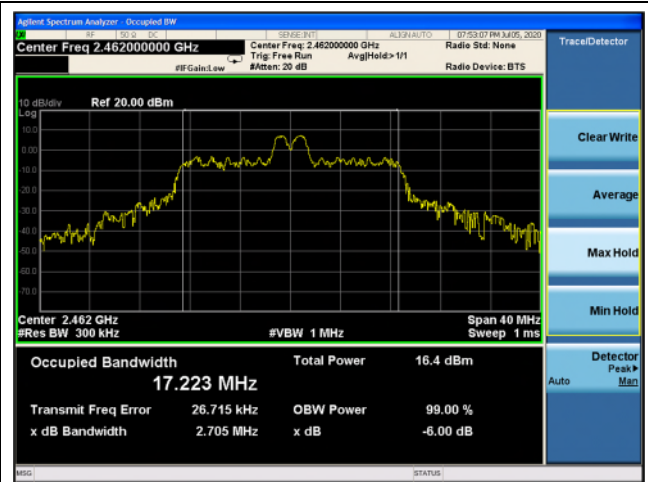
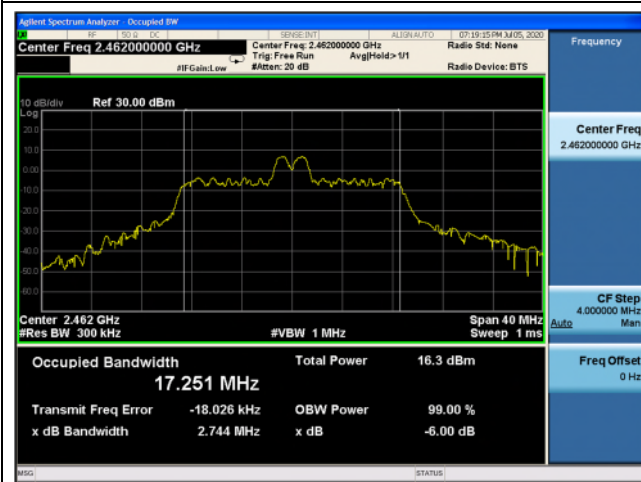
Low channel



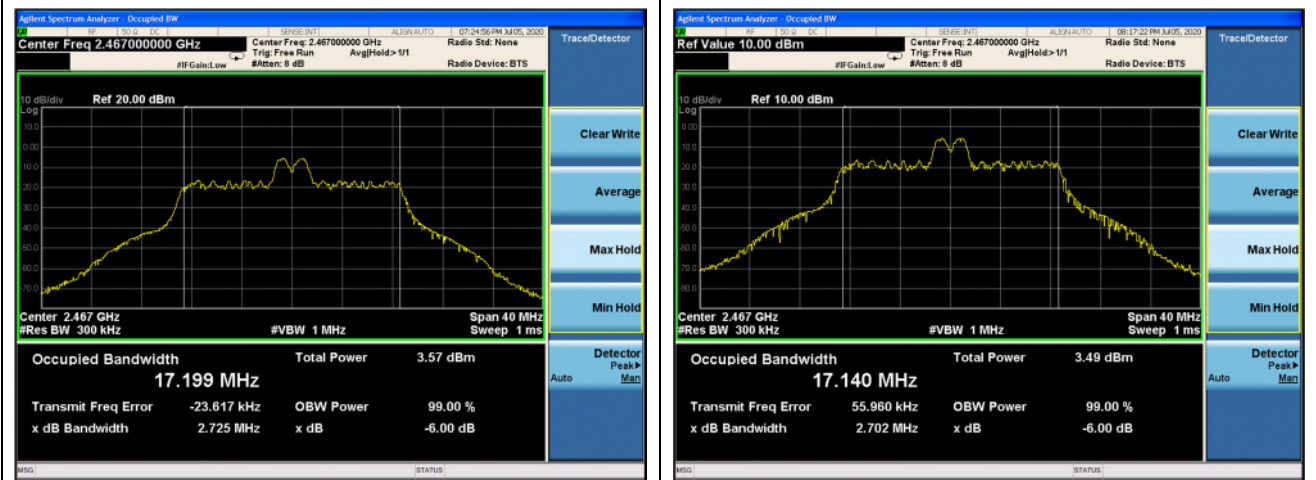
Middle channel



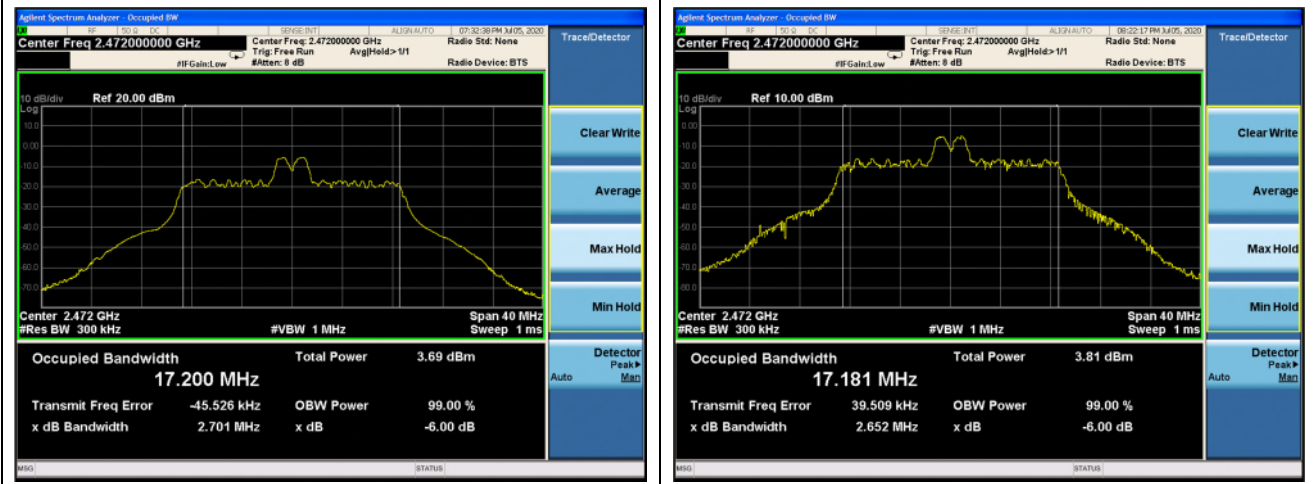
High channel



12 channel



13 channel

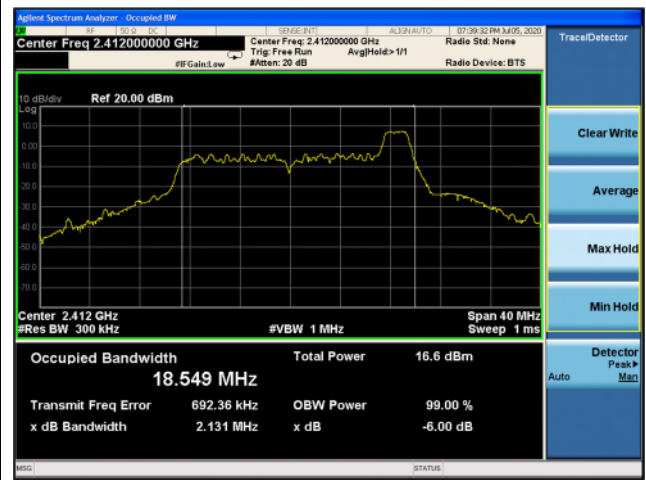
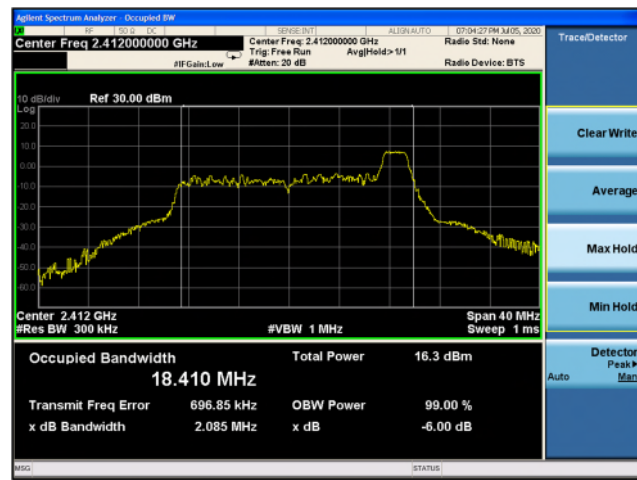


26T_8 RU

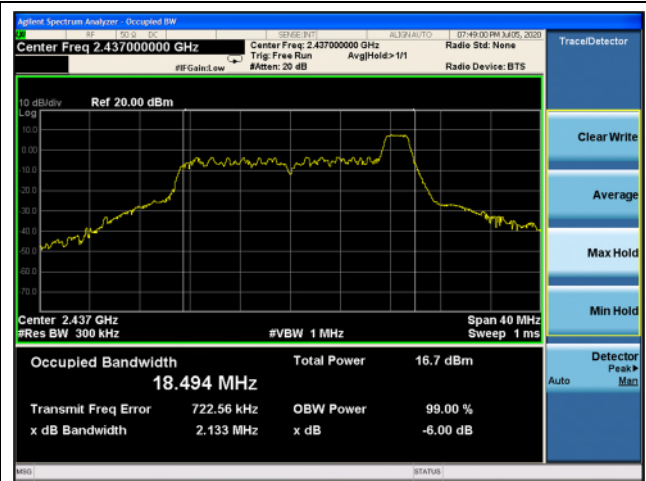
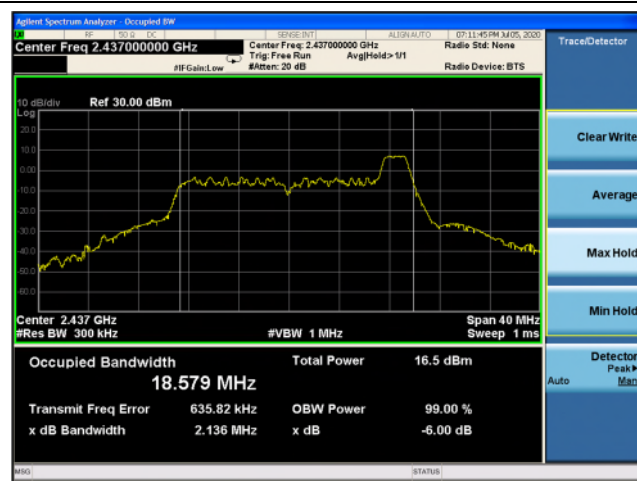
Ant.1

Ant.2

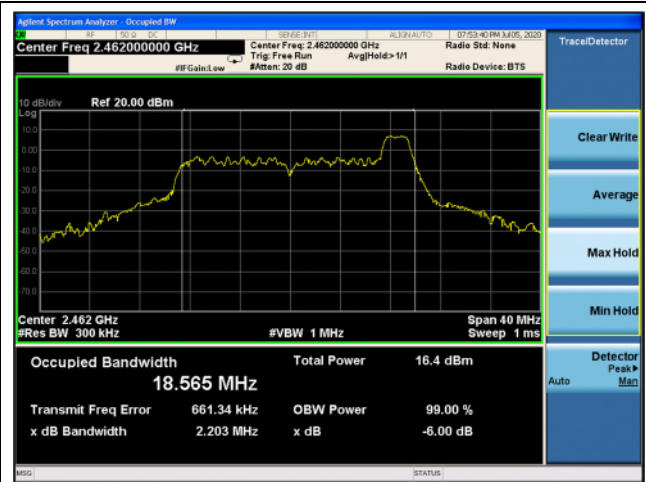
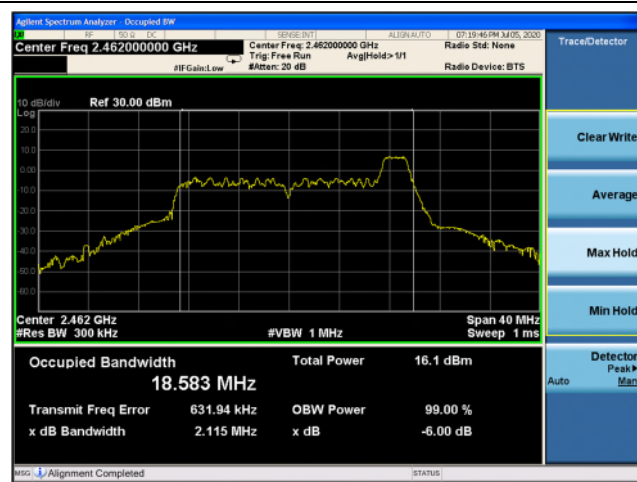
Low channel



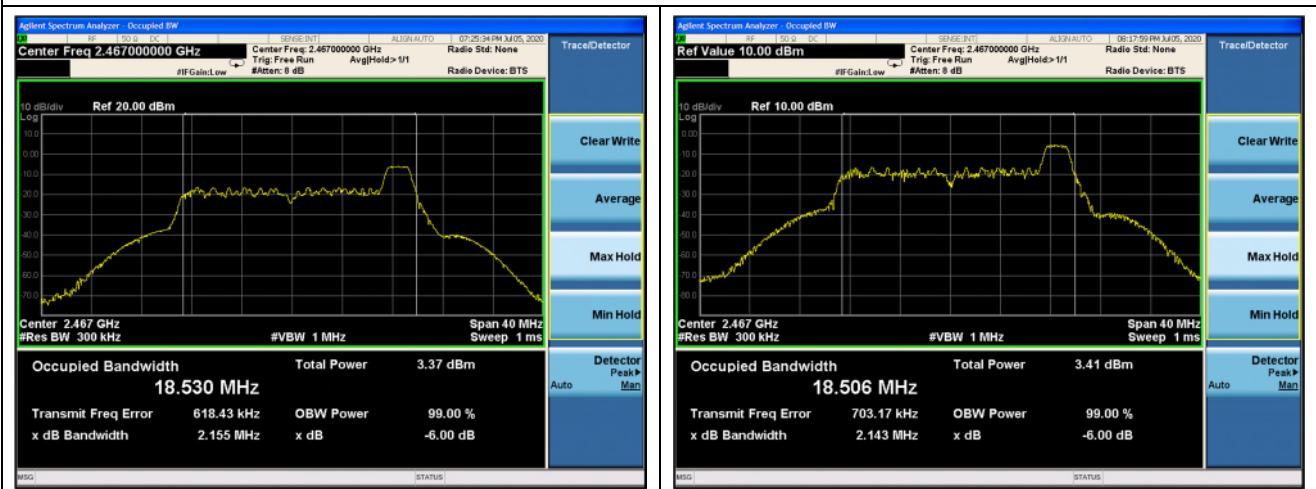
Middle channel



High channel



12 channel



13 channel

