

5 Occupied Bandwidth

5.1 Test Specification

FCC Part 2, Section 1049

5.2 Test Procedure

(Temperature (24°C)/ Humidity (35%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable. The spectrum analyzer was set to proper resolution B.W.

OBW function (99%) was employed for this evaluation.

Occupied bandwidth measured was repeated for each modulation.

5.3 Test Limit

N/A

5.4 Test Results

JUDGEMENT: Passed

See additional information in Table 8 to Table 19 and Figure 153 to Figure 440.

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
16QAM	5	15	2498.5	4.5531
		30	2498.5	3.9939
		15	2593.0	4.5464
		30	2593.0	4.0007
		15	2687.5	4.5552
		30	2687.5	3.9902
	10	15	2501.0	9.3318
		30	2501.0	8.6254
		60	2501.0	8.0277
		15	2593.0	9.2807
		30	2593.0	8.6222
		60	2593.0	8.0365
		15	2685.0	9.3259
		30	2685.0	8.6311
		60	2685.0	8.0321
	15	15	2503.5	14.361
		30	2503.5	13.824
		60	2503.5	13.842
		15	2593.0	14.314
		30	2593.0	13.825
		60	2593.0	13.021
		15	2682.5	14.338
		30	2682.5	13.857
		60	2682.5	12.990

Table 8 Occupied Bandwidth 16QAM Input

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
16QAM	20	15	2506.0	19.121
		30	2506.0	18.542
		60	2506.0	17.275
		15	2593.0	19.115
		30	2593.0	18.530
		60	2593.0	17.266
		15	2680.0	19.128
		30	2680.0	18.621
		60	2680.0	17.281
	40	15	2516.0	39.185
		30	2516.0	38.267
		60	2516.0	37.192
		15	2593.0	39.129
		30	2593.0	38.315
		60	2593.0	37.035
		15	2670.0	39.004
		30	2670.0	38.301
		60	2670.0	37.064
	60	30	2526.0	58.359
		60	2526.0	57.168
		30	2593.0	58.450
		60	2593.0	57.207
		30	2660.0	58.515
		60	2660.0	57.182

Table 9 Occupied Bandwidth 16QAM Input

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
16QAM	5	15	2498.5	4.9227
		30	2498.5	4.0548
		15	2593.0	4.6921
		30	2593.0	4.0331
		15	2687.5	4.9618
		30	2687.5	4.0527
	10	15	2501.0	9.9012
		30	2501.0	9.0123
		60	2501.0	8.0711
		15	2593.0	9.9438
		30	2593.0	8.9016
		60	2593.0	8.0717
		15	2685.0	10.123
		30	2685.0	8.9097
		60	2685.0	8.0705
	15	15	2503.5	14.696
		30	2503.5	13.958
		60	2503.5	13.154
		15	2593.0	14.789
		30	2593.0	14.021
		60	2593.0	13.160
		15	2682.5	15.207
		30	2682.5	13.942
		60	2682.5	13.043

Table 10 Occupied Bandwidth 16QAM Output

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
16QAM	20	15	2506.0	21.450
		30	2506.0	18.547
		60	2506.0	17.421
		15	2593.0	20.353
		30	2593.0	18.670
		60	2593.0	17.446
		15	2680.0	20.632
		30	2680.0	18.673
		60	2680.0	17.371
	40	15	2516.0	42.144
		30	2516.0	41.891
		60	2516.0	37.254
		15	2593.0	41.068
		30	2593.0	39.402
		60	2593.0	37.817
		15	2670.0	41.640
		30	2670.0	40.320
		60	2670.0	38.085
	60	30	2526.0	59.997
		60	2526.0	57.848
		30	2593.0	62.609
		60	2593.0	58.260
		30	2660.0	60.413
		60	2660.0	57.973

Table 11 Occupied Bandwidth 16QAM Output

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
64QAM	5	15	2498.5	4.5440
		30	2498.5	3.9848
		15	2593.0	4.5357
		30	2593.0	3.9898
		15	2687.5	4.5417
		30	2687.5	3.9836
	10	15	2501.0	9.4482
		30	2501.0	8.7324
		60	2501.0	8.0149
		15	2593.0	9.4569
		30	2593.0	13.651
		60	2593.0	8.0116
		15	2685.0	9.4685
		30	2685.0	9.4327
		60	2685.0	8.0109
	15	15	2503.5	14.333
		30	2503.5	13.803
		60	2503.5	13.098
		15	2593.0	14.353
		30	2593.0	13.774
		60	2593.0	13.087
		15	2682.5	14.344
		30	2682.5	13.775
		60	2682.5	13.118

Table 12 Occupied Bandwidth 64QAM Input

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
64QAM	20	15	2506.0	19.231
		30	2506.0	18.531
		60	2506.0	17.487
		15	2593.0	19.229
		30	2593.0	18.531
		60	2593.0	17.472
		15	2680.0	19.155
		30	2680.0	19.152
		60	2680.0	18.554
	40	15	2516.0	39.422
		30	2516.0	38.615
		60	2516.0	37.183
		15	2593.0	39.417
		30	2593.0	38.628
		60	2593.0	37.205
		15	2670.0	39.241
		30	2670.0	38.594
		60	2670.0	37.217
	60	30	2526.0	59.193
		60	2526.0	57.683
		30	2593.0	59.121
		60	2593.0	57.759
		30	2660.0	59.182
		60	2660.0	57.689

Table 13 Occupied Bandwidth 64QAM Input

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
64QAM	5	15	2498.5	4.5625
		30	2498.5	3.9960
		15	2593.0	4.5611
		30	2593.0	3.9874
		15	2687.5	4.5636
		30	2687.5	3.9970
	10	15	2501.0	9.4951
		30	2501.0	8.8017
		60	2501.0	8.0395
		15	2593.0	9.4571
		30	2593.0	9.4447
		60	2593.0	8.0161
		15	2685.0	9.4894
		30	2685.0	8.7936
		60	2685.0	8.0307
	15	15	2503.5	14.382
		30	2503.5	14.367
		60	2503.5	13.102
		15	2593.0	14.373
		30	2593.0	13.757
		60	2593.0	13.083
		15	2682.5	14.403
		30	2682.5	13.837
		60	2682.5	13.129

Table 14 Occupied Bandwidth 64QAM Output

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
64QAM	20	15	2506.0	19.250
		30	2506.0	18.525
		60	2506.0	17.528
		15	2593.0	19.240
		30	2593.0	18.503
		60	2593.0	17.488
		15	2680.0	19.305
		30	2680.0	18.573
		60	2680.	17.557
	40	15	2516.0	38.812
		30	2516.0	38.338
		60	2516.0	38.275
		15	2593.0	39.28
		30	2593.0	38.430
		60	2593.0	37.021
		15	2670.0	39.365
		30	2670.0	38.477
		60	2670.0	37.163
	60	30	2526.0	58.562
		60	2526.0	58.467
		30	2593.0	58.865
		60	2593.0	57.504
		30	2660.0	59.415
		60	2660.0	57.465

Table 15 Occupied Bandwidth 64QAM Output

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
256QAM	5	15	2498.5	4.5386
		30	2498.5	3.9959
		15	2539.0	4.5457
		30	2539.0	3.9925
		15	2687.5	4.5459
		30	2687.5	3.9940
	10	15	2501.0	9.4302
		30	2501.0	8.7160
		60	2501.0	8.0302
		15	2593.0	9.4346
		30	2593.0	8.7210
		60	2593.0	8.0371
		15	2685.0	9.4393
		30	2685.0	8.6979
		60	2685.0	8.0324
	15	15	2503.5	14.369
		30	2503.5	13.824
		60	2503.5	13.118
		15	2593.0	14.361
		30	2593.0	13.827
		60	2593.0	13.105
		15	2682.5	14.386
		30	2682.5	14.324
		60	2682.5	13.090

Table 16 Occupied Bandwidth 256QAM Input

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
256QAM	20	15	2506.0	19.227
		30	2506.0	18.578
		60	2506.0	17.457
		15	2593.0	19.253
		30	2593.0	18.576
		60	2593.0	17.451
		15	2680.0	19.243
		30	2680.0	18.577
		60	2680.0	17.409
	40	15	2516.0	38.999
		30	2516.0	38.594
		60	2516.0	37.217
		15	2593.0	39.383
		30	2593.0	38.591
		60	2593.0	37.224
		15	2670.0	39.441
		30	2670.0	38.565
		60	2670.0	37.290
	60	30	2526.0	59.028
		60	2526.0	57.627
		30	2593.0	58.939
		60	2593.0	57.727
		30	2660.0	59.064
		60	2660.0	57.77

Table 17 Occupied Bandwidth 256QAM Input

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
256QAM	5	15	2498.5	4.5688
		30	2498.5	4.0038
		15	2593.0	4.5519
		30	2593.0	3.9931
		15	2687.5	4.5741
		30	2687.5	4.0038
	10	15	2501.0	9.3694
		30	2501.0	8.7193
		60	2501.0	8.0346
		15	2593.0	9.4336
		30	2593.0	8.7070
		60	2593.0	8.0427
		15	2685.0	9.4974
		30	2685.0	8.7438
		60	2685.0	8.0753
	15	15	2503.5	14.345
		30	2503.5	13.800
		60	2503.5	13.107
		15	2593.0	14.379
		30	2593.0	13.844
		60	2593.0	13.123
		15	2682.5	14.457
		30	2682.5	13.863
		60	2682.5	13.179

Table 18 Occupied Bandwidth 256QAM Output

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
256QAM	20	15	2506.0	19.176
		30	2506.0	18.537
		60	2506.0	17.378
		15	2593.0	19.202
		30	2593.0	19.264
		60	2593.0	17.497
		15	2680.0	19.257
		30	2680.0	18.703
		60	2680.0	17.553
	40	15	2516.0	38.992
		30	2516.0	38.245
		60	2516.0	36.975
		15	2593.0	39.449
		30	2593.0	38.703
		60	2593.0	37.360
		15	2670.0	39.598
		30	2670.0	38.860
		60	2670.0	37.473
	60	30	2526.0	58.600
		60	2526.0	57.230
		30	2593.0	59.298
		60	2593.0	57.903
		30	2660.0	59.191
		60	2660.0	57.787

Table 19 Occupied Bandwidth 256QAM Output

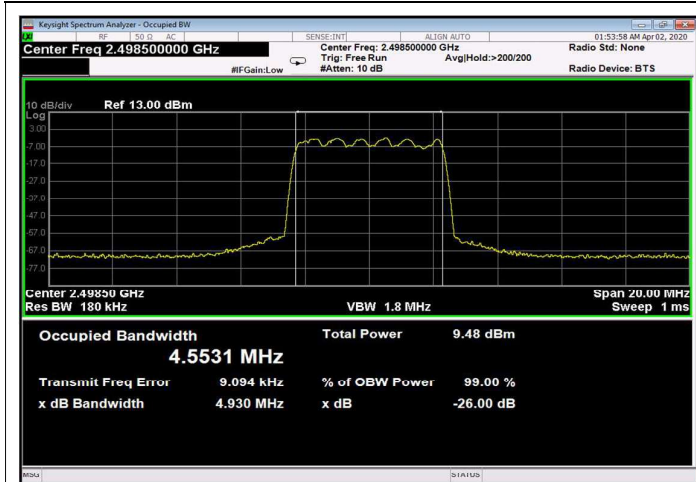


Figure 153: 16QAM 5MHz B.W.; 2498.5MHz, 15kHz Input

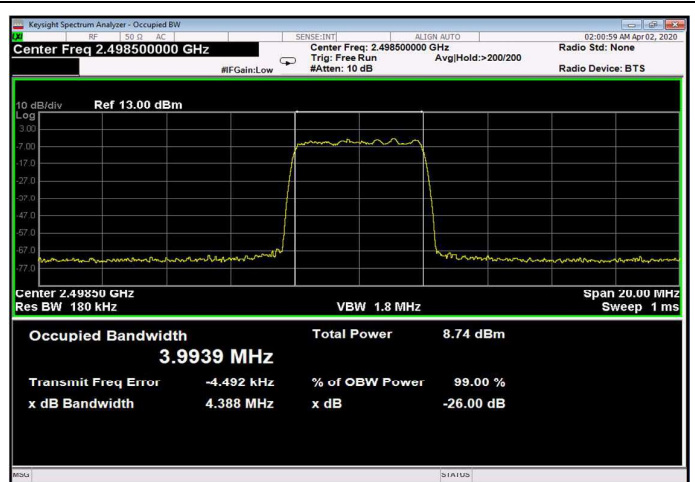


Figure 154: 16QAM 5MHz B.W.; 2498.5MHz, 30kHz Input

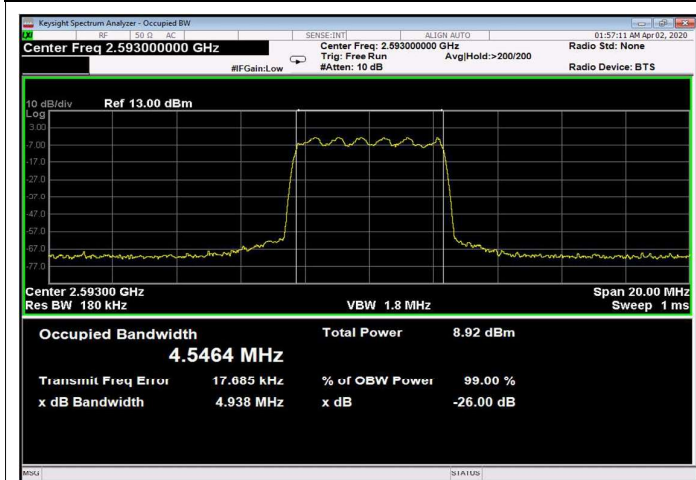


Figure 155: 16QAM 5MHz B.W.; 2593.0MHz, 15kHz Input

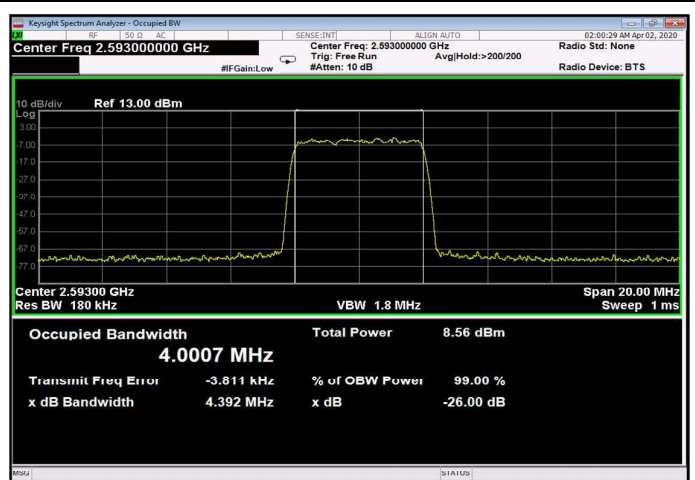


Figure 156: 16QAM 5MHz B.W.; 2593.0MHz, 30kHz Input

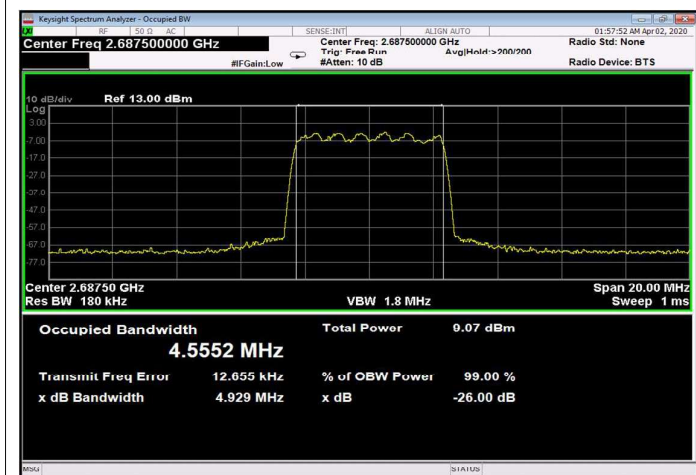


Figure 157: 16QAM 5MHz B.W.; 2687.5MHz, 15kHz Input

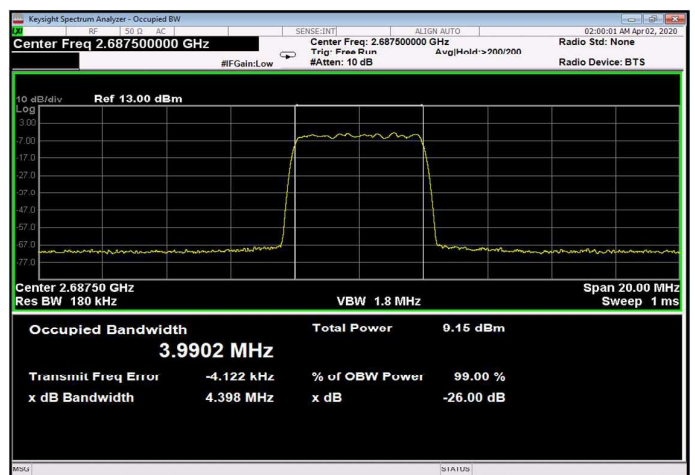


Figure 158: 16QAM 5MHz B.W.; 2687.5MHz, 30kHz Input

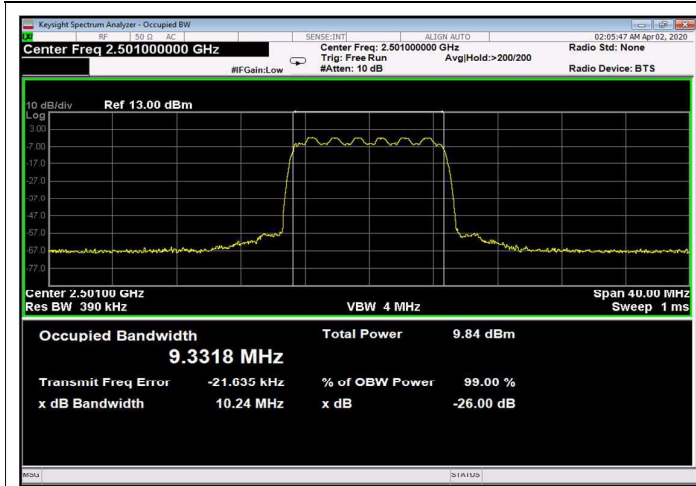


Figure 159: 16QAM 10MHz B.W.; 2501.0MHz, 15kHz Input

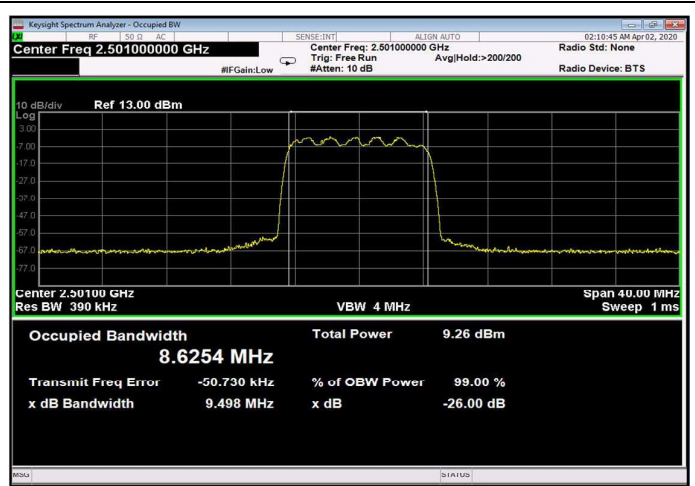


Figure 160: 16QAM 10MHz B.W.; 2501.0MHz, 30kHz Input

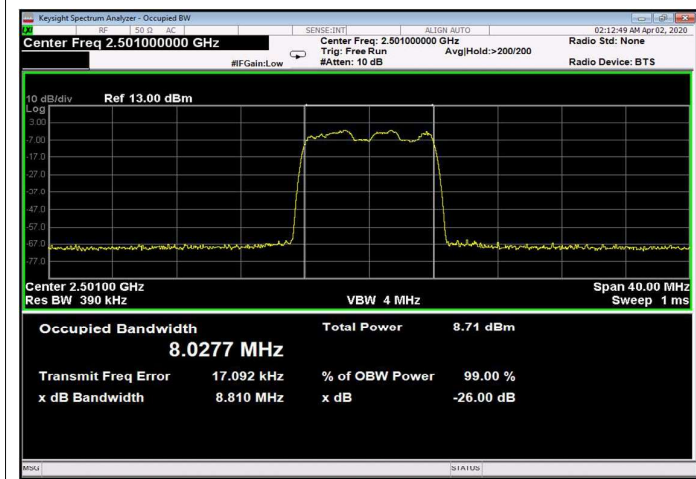


Figure 161: 16QAM 10MHz B.W.; 2501.0MHz, 60kHz Input

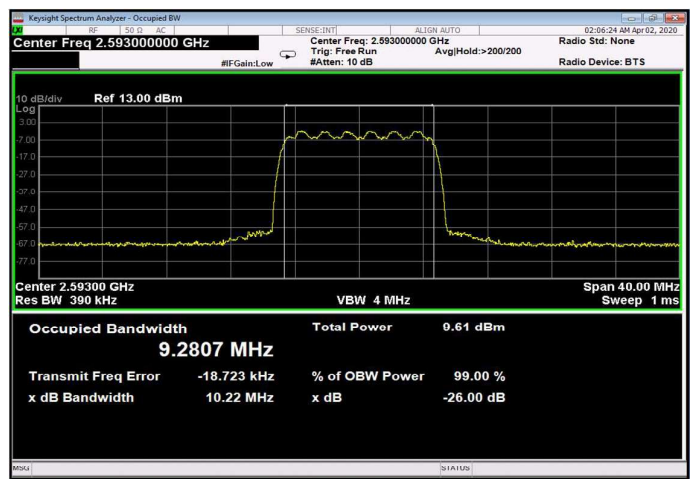


Figure 162: 16QAM 10MHz B.W.; 2593.0MHz, 15kHz Input

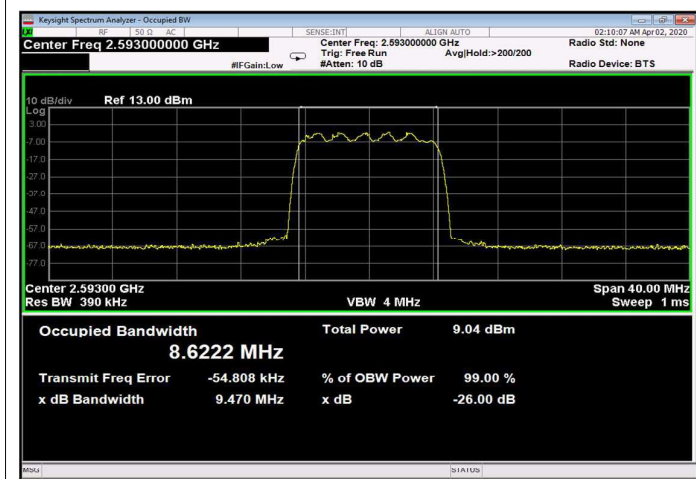


Figure 163: 16QAM 10MHz B.W.; 2593.0MHz, 30kHz Input

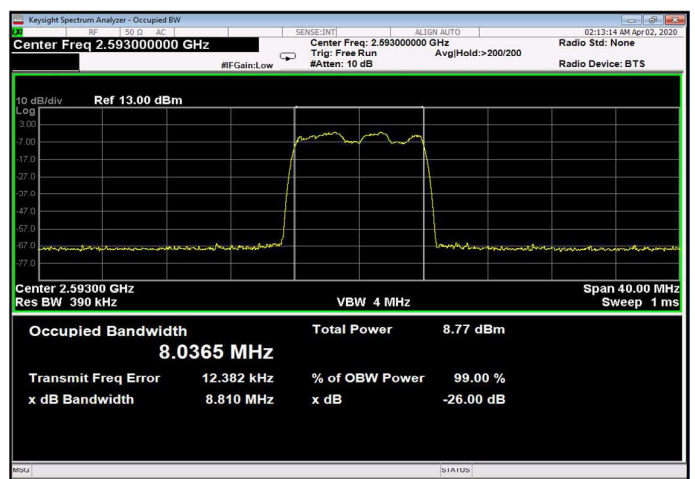


Figure 164: 16QAM 10MHz B.W.; 2593.0MHz, 60kHz Input

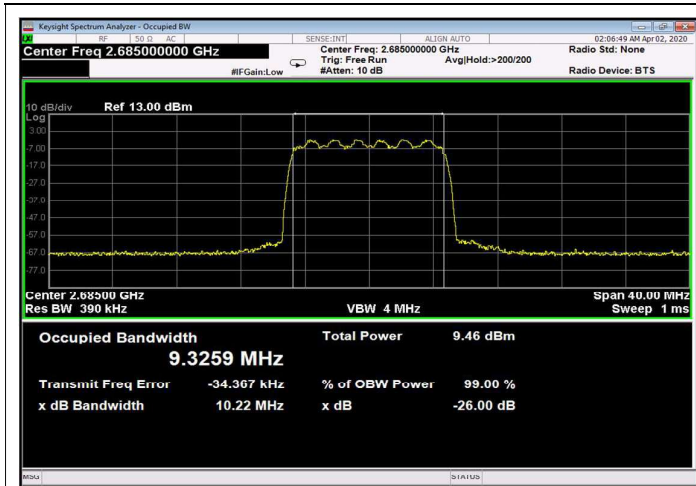


Figure 165: 16QAM 10MHz B.W.; 2685.0MHz,
15kHz Input

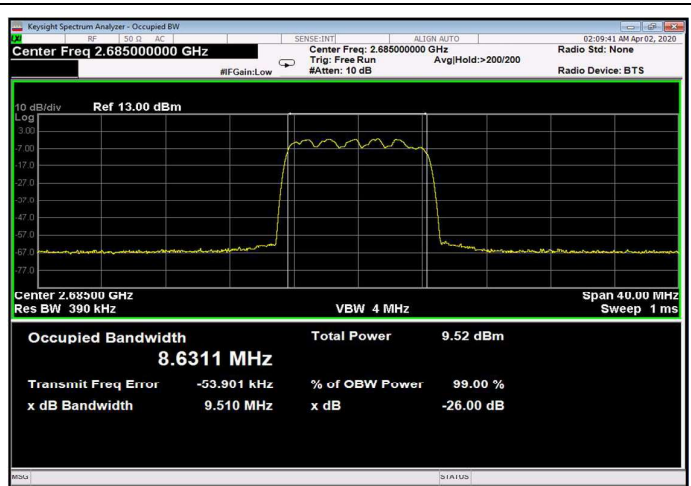


Figure 166: 16QAM 10MHz B.W.; 2685.0MHz,
30kHz Input

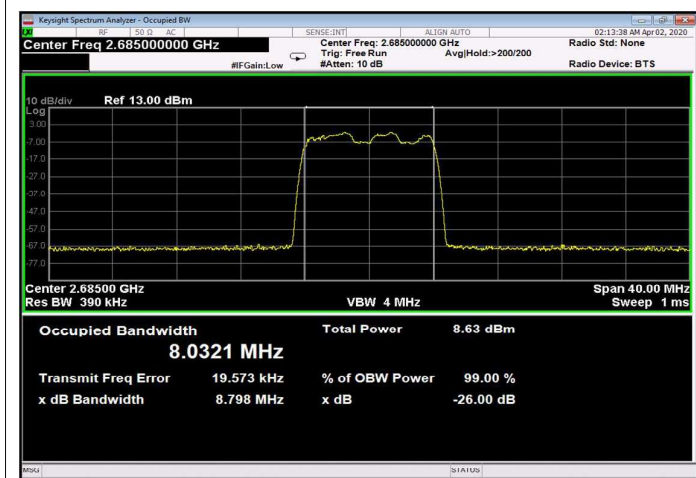


Figure 167: 16QAM 10MHz B.W.; 2685.0MHz,
60kHz Input

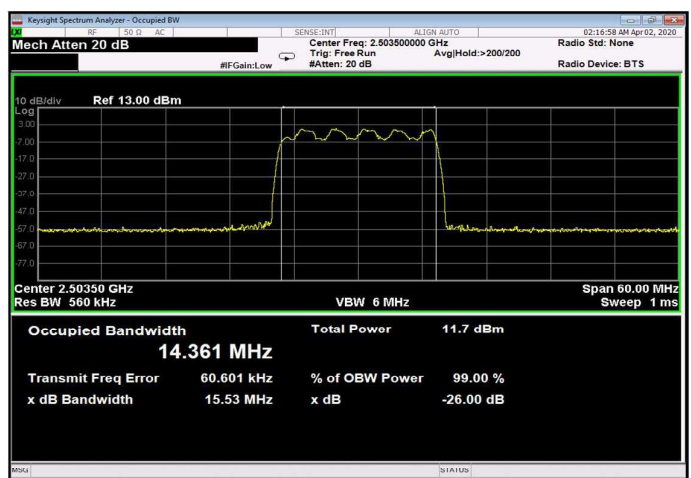


Figure 168: 16QAM 15MHz B.W.; 2503.5MHz,
15kHz Input

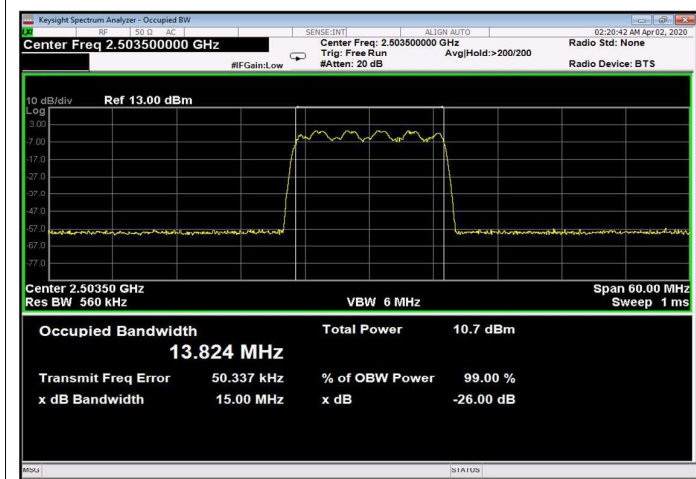


Figure 169: 16QAM 15MHz B.W.; 2503.5MHz,
30kHz Input

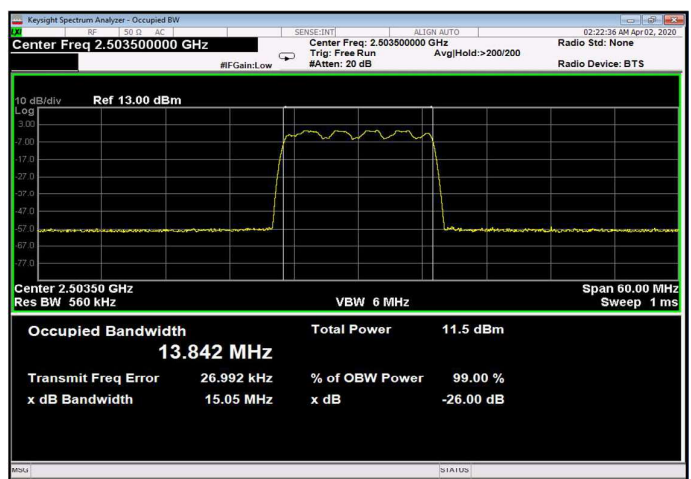


Figure 170: 16QAM 15MHz B.W.; 2503.5MHz,
60kHz Input

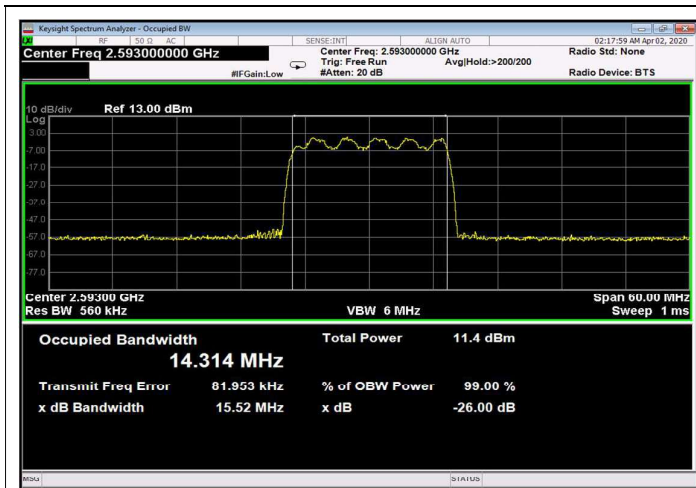


Figure 171: 16QAM 15MHz B.W.; 2593.0MHz, 15kHz Input

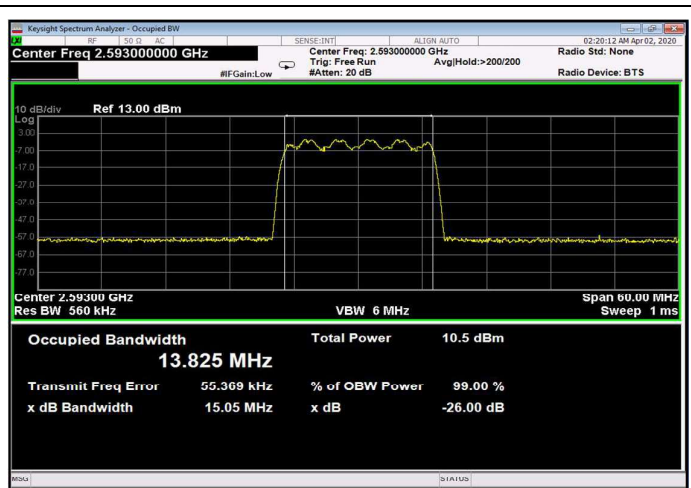


Figure 172: 16QAM 15MHz B.W.; 2593.0MHz, 30 kHz Input

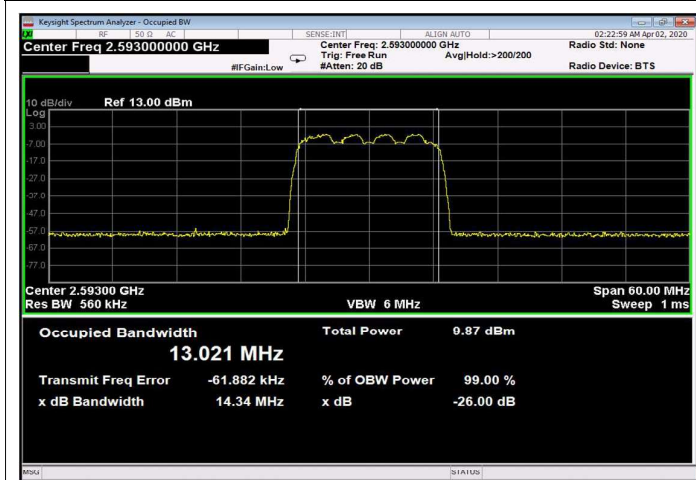


Figure 173: 16QAM 15MHz B.W.; 2593.0MHz, 60kHz Input

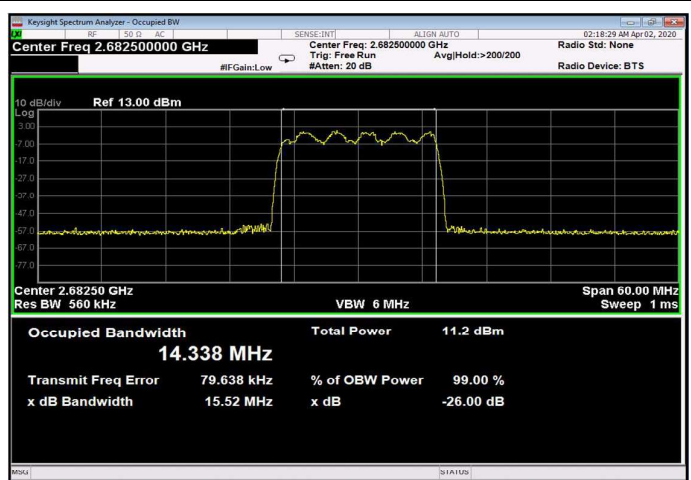


Figure 174: 16QAM 15MHz B.W.; 2682.5MHz, 15kHz Input

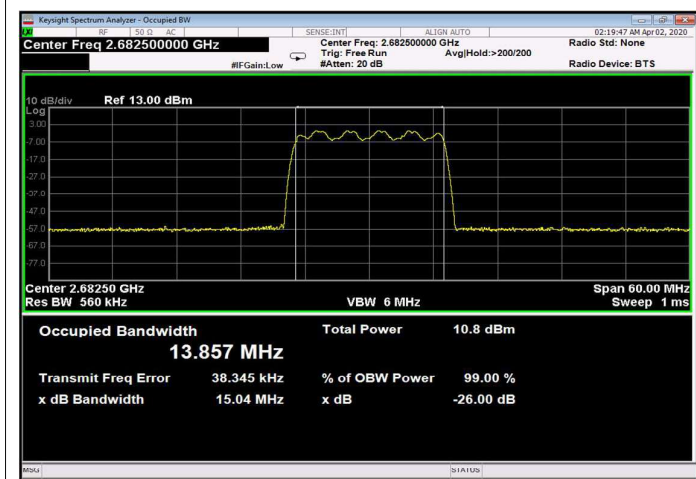


Figure 175: 16QAM 15MHz B.W.; 2682.5MHz, 30kHz Input

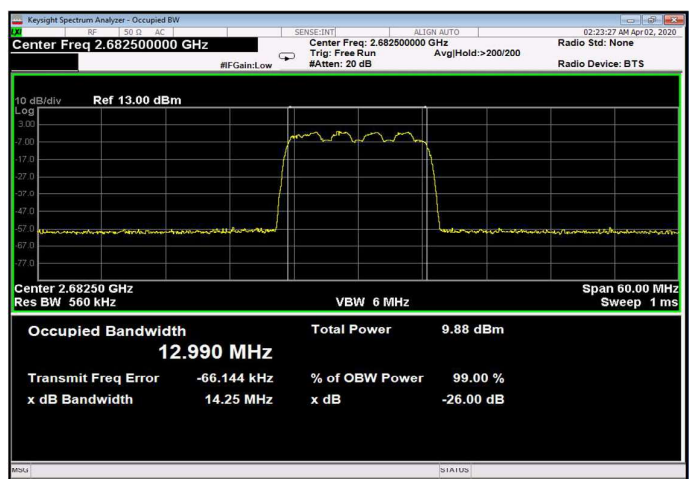


Figure 176: 16QAM 15MHz B.W.; 2682.5MHz, 60kHz Input

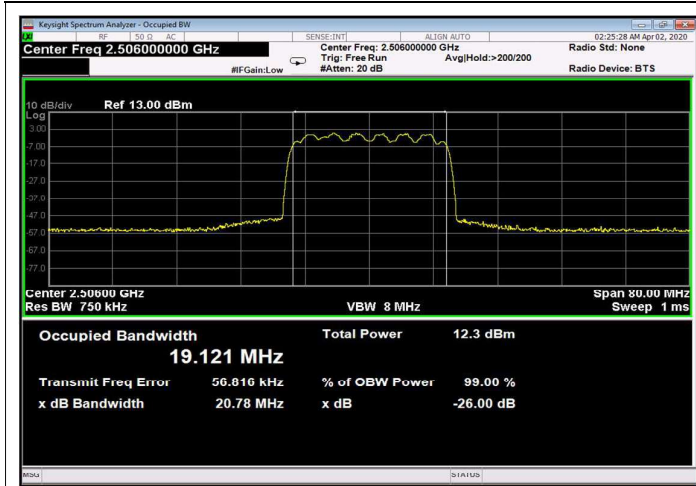


Figure 177: 16QAM 20MHz B.W.; 2506.0MHz,
15 kHz Input

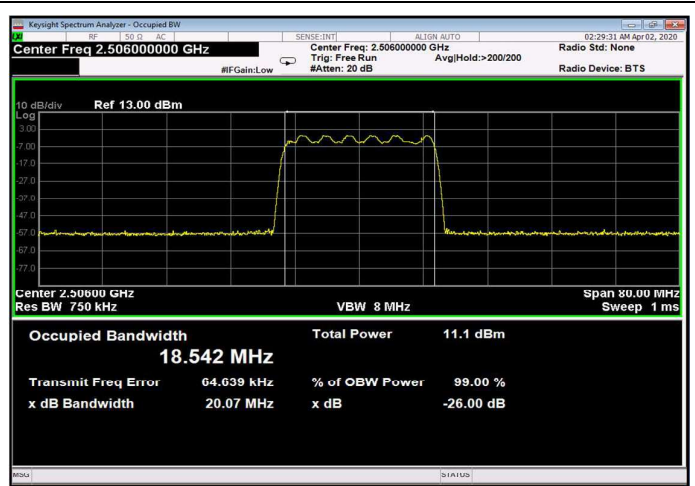


Figure 178: 16QAM 20MHz B.W.; 2506.0MHz,
30kHz Input

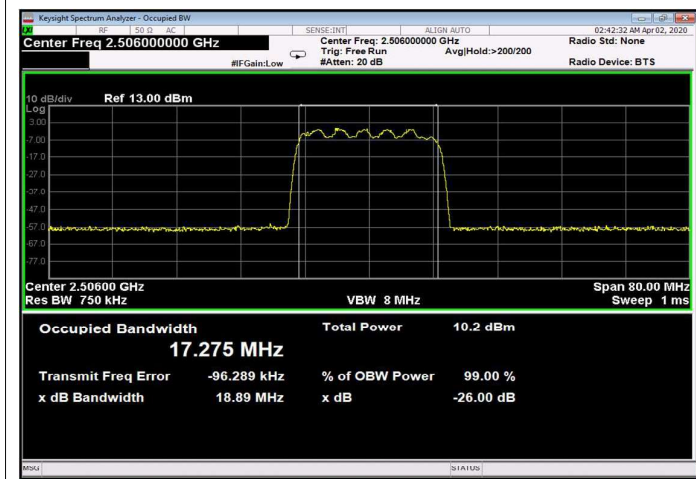


Figure 179: 16QAM 20MHz B.W.; 2506.0MHz,
60kHz Input

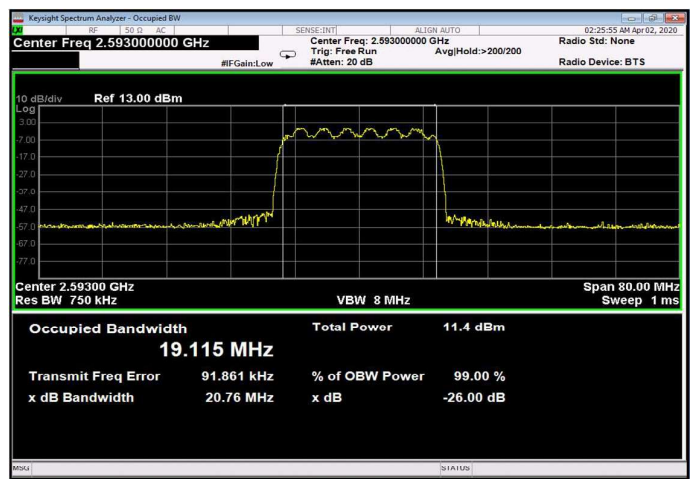


Figure 180: 16QAM 20MHz B.W.; 2593.0MHz,
15kHz Input

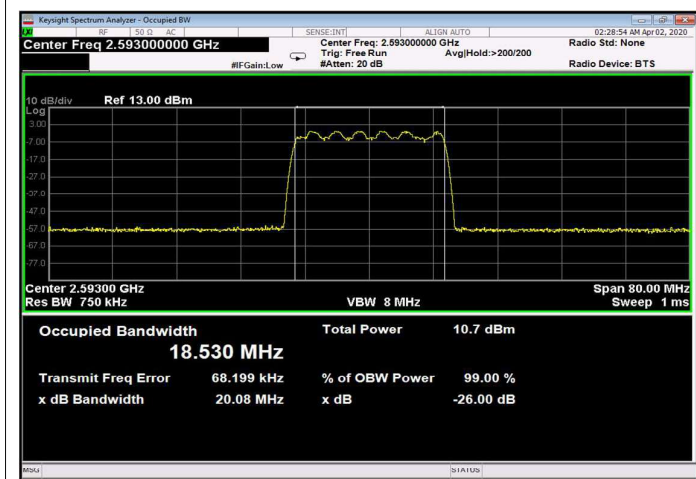


Figure 181: 16QAM 20MHz B.W.; 2593.0MHz,
30kHz Input

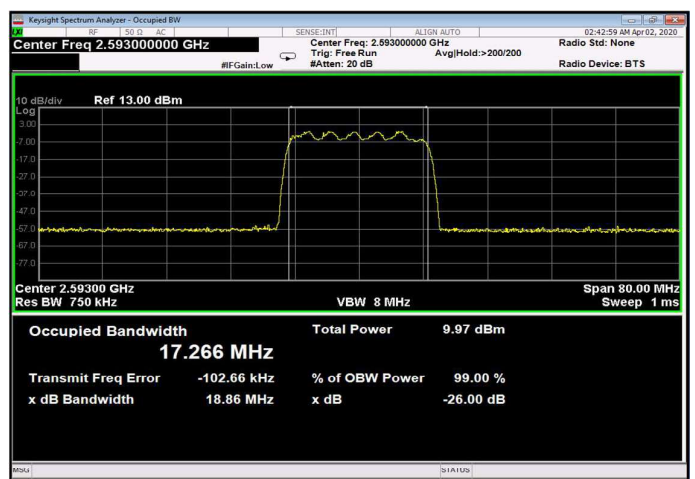


Figure 182: 16QAM 20MHz B.W.; 2593.0MHz,
60kHz Input

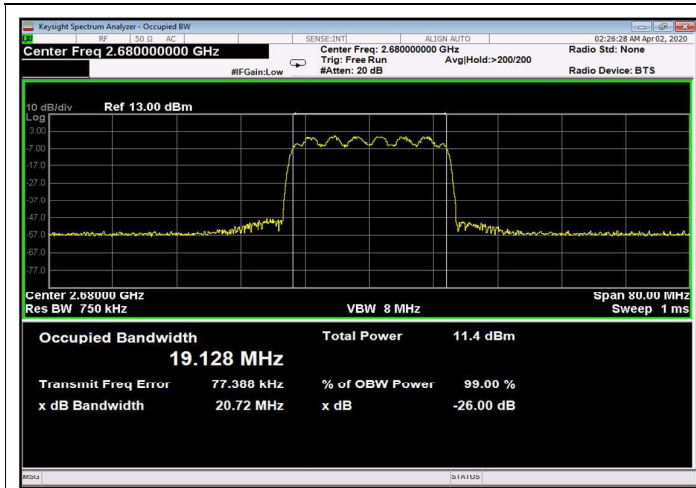


Figure 183: 16QAM 20MHz B.W.; 2680.0MHz, 15kHz Input

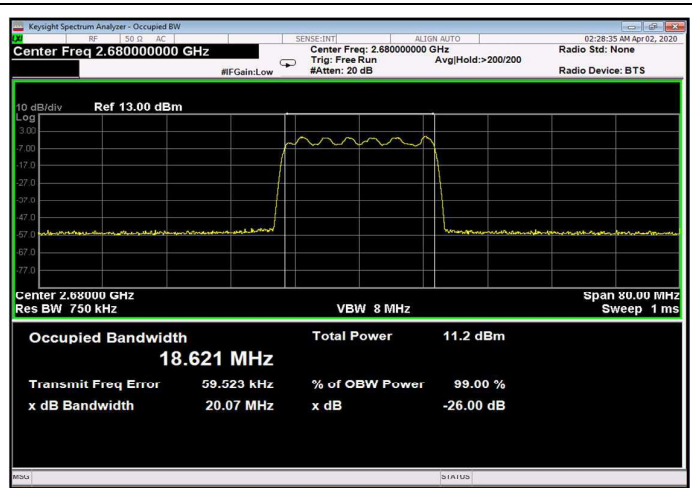


Figure 184: 16QAM 20MHz B.W.; 2680.0MHz, 30kHz Input

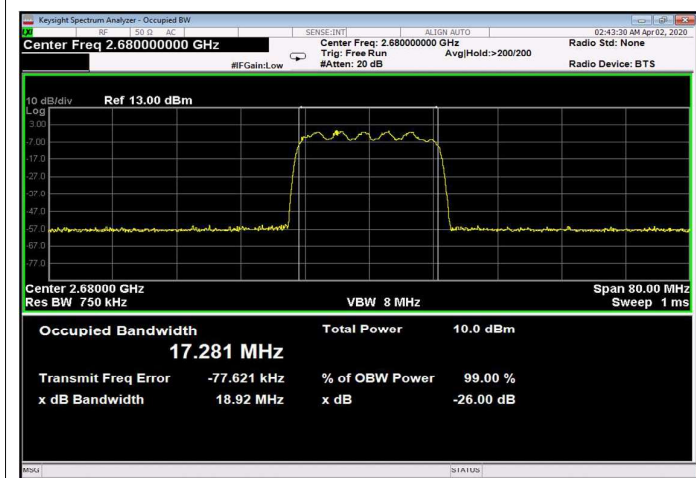


Figure 185: 16QAM 20MHz B.W.; 2680.0MHz, 60kHz Input

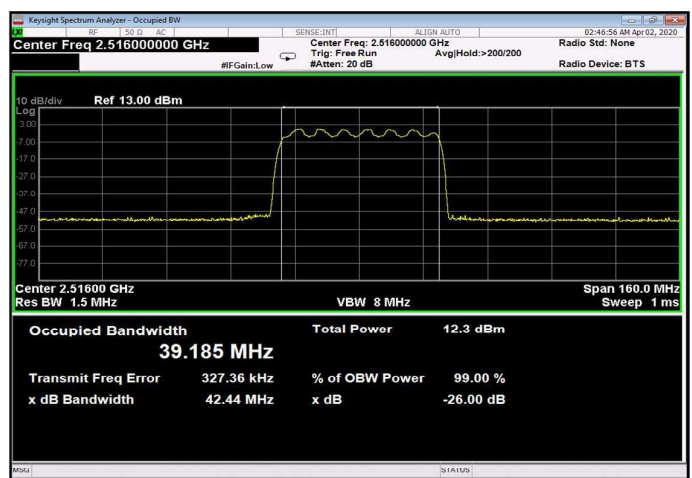


Figure 186: 16QAM 40MHz B.W.; 2516.0MHz, 15kHz Input

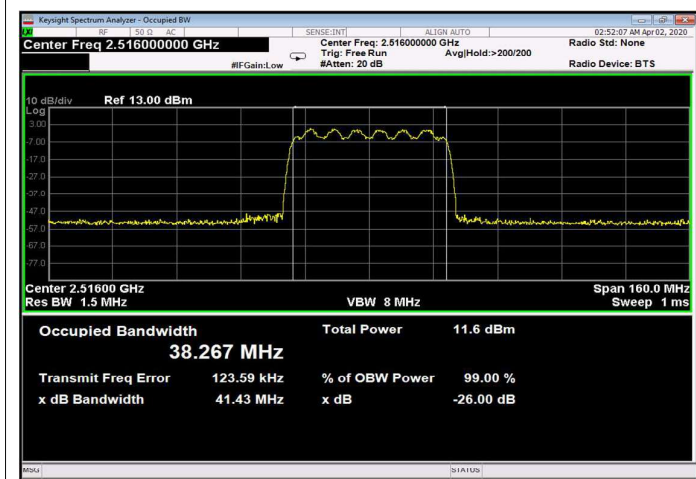


Figure 187: 16QAM 40MHz B.W.; 2516.0MHz, 30kHz Input

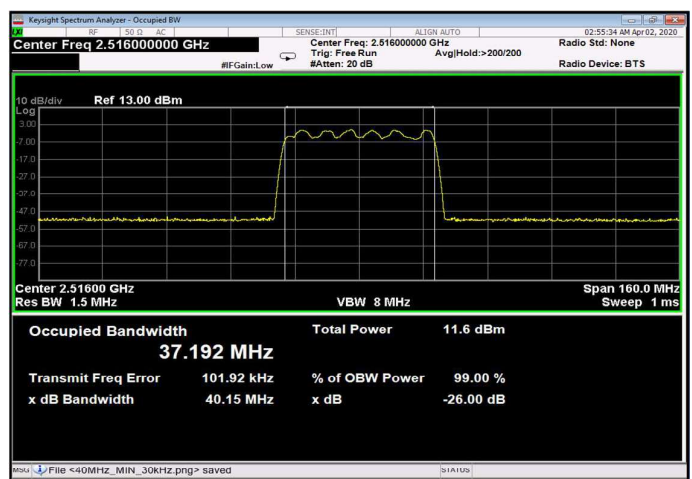


Figure 188: 16QAM 40MHz B.W.; 2516.0MHz, 60kHz Input

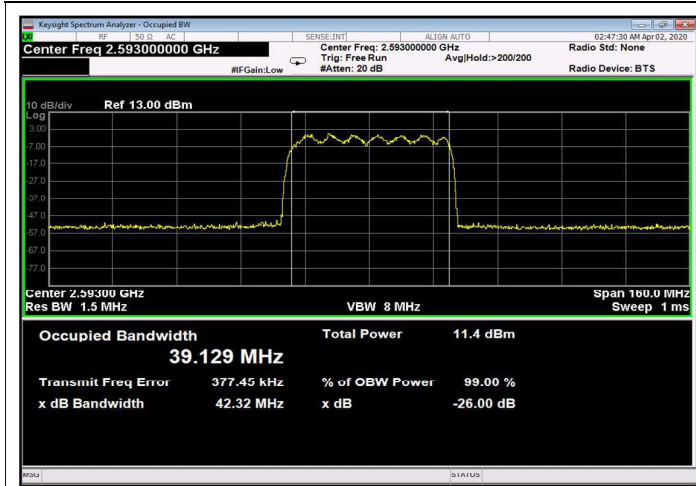


Figure 189: 16QAM 40MHz B.W.; 2593.0MHz, 15kHz Input

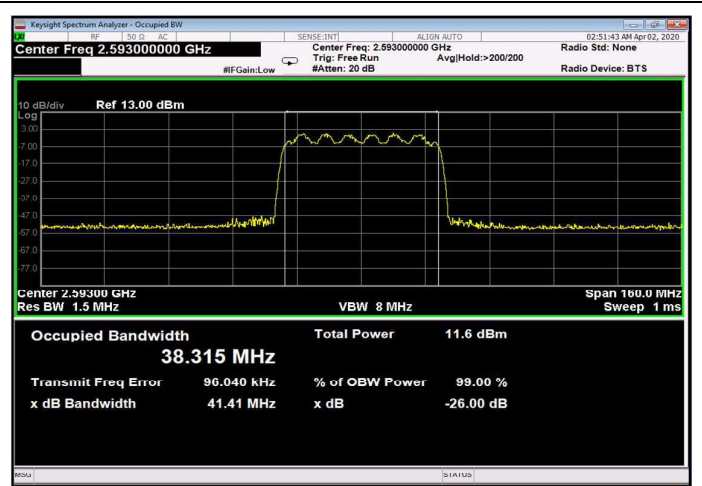


Figure 190: 16QAM 40MHz B.W.; 2593.0MHz, 30kHz Input

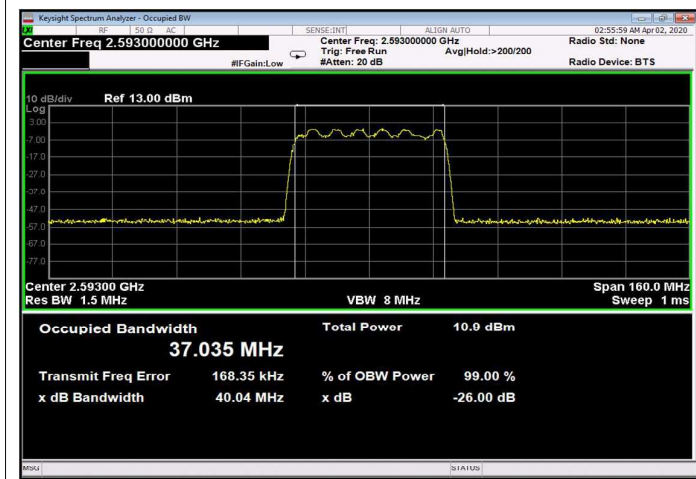


Figure 191: 16QAM 40MHz B.W.; 2593.0MHz, 60kHz Input

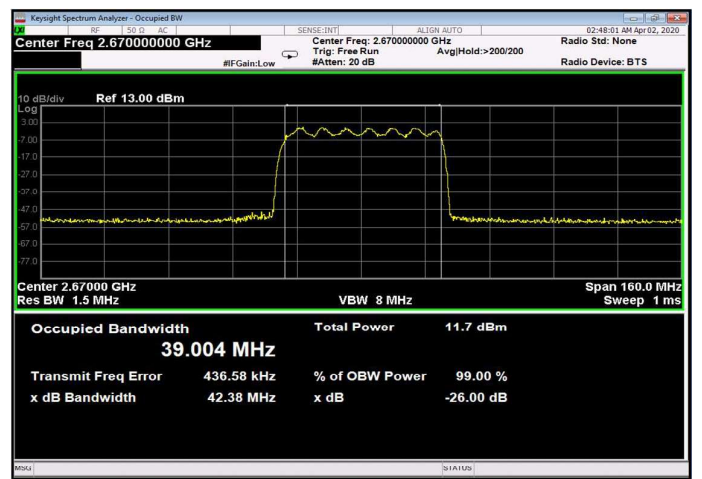


Figure 192: 16QAM 40MHz B.W.; 2670.0MHz, 15kHz Input

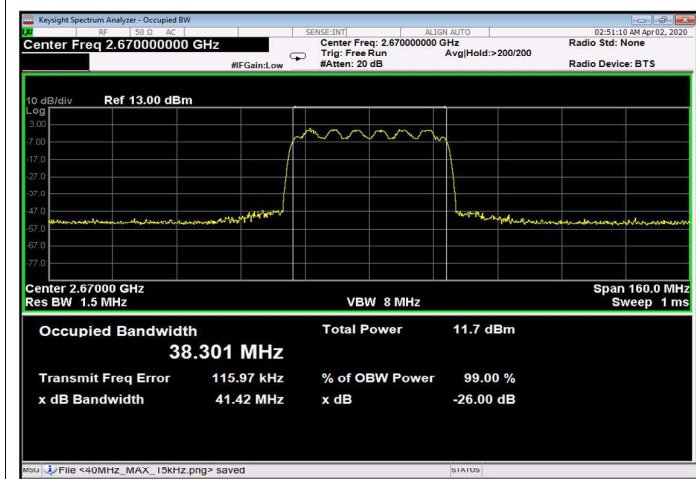


Figure 193: 16QAM 40MHz B.W.; 2670.0MHz, 30kHz Input

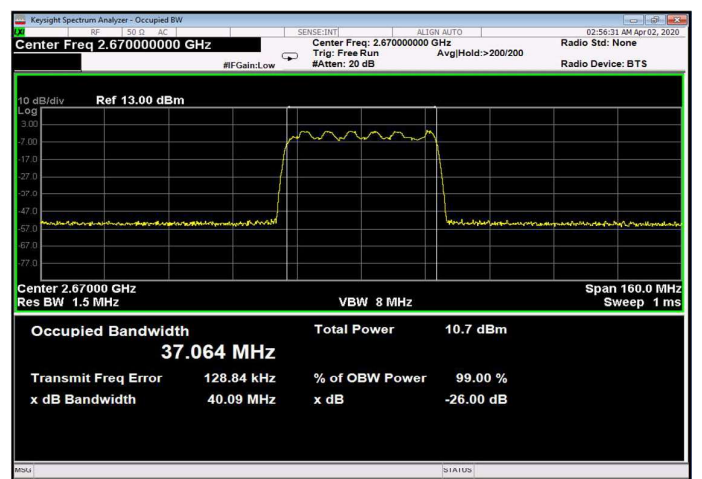


Figure 194: 16QAM 40MHz B.W.; 2670.0MHz, 60kHz Input

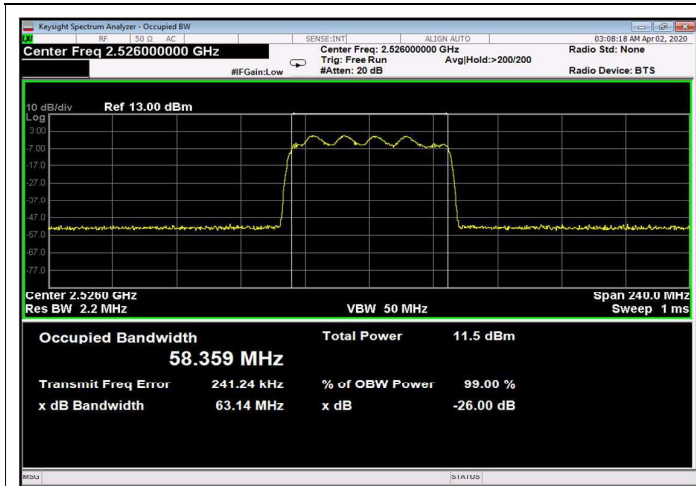


Figure 195: 16QAM 60MHz B.W.; 2526.0MHz,
30kHz Input

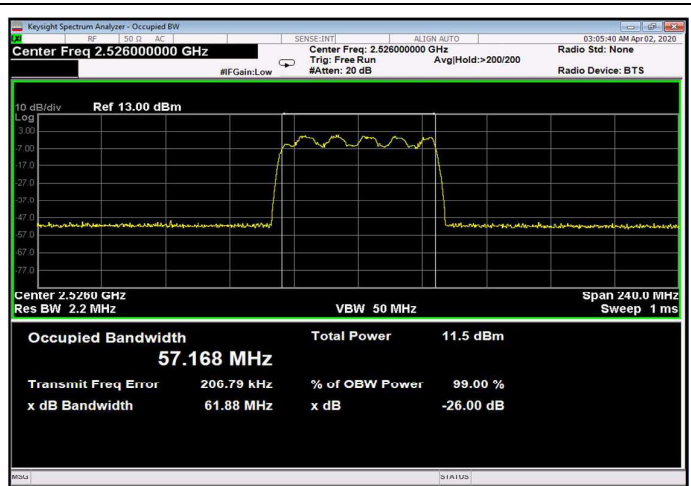


Figure 196: 16QAM 60MHz B.W.; 2526.0MHz,
60kHz Input

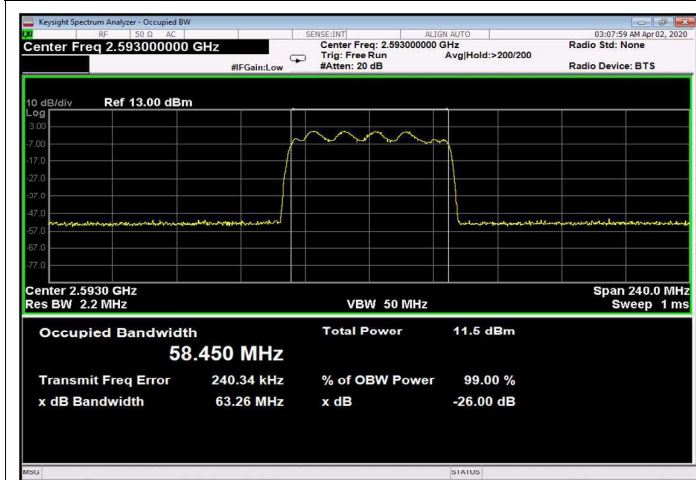


Figure 197: 16QAM 60MHz B.W.; 2593.0MHz,
30kHz Input

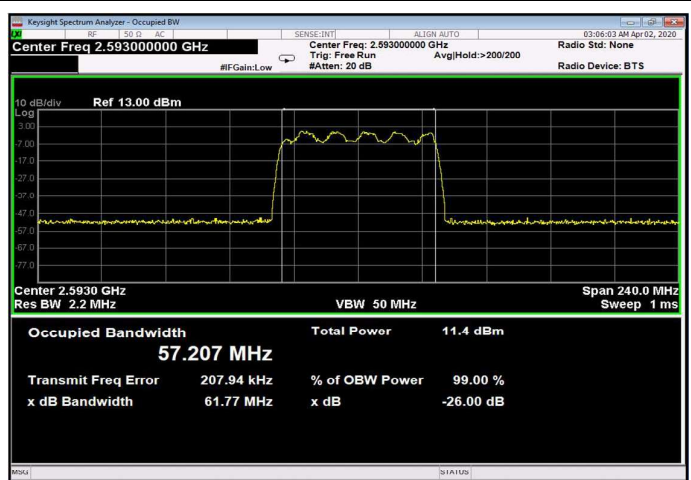


Figure 198: 16QAM 60MHz B.W.; 2593.0MHz,
60kHz Input

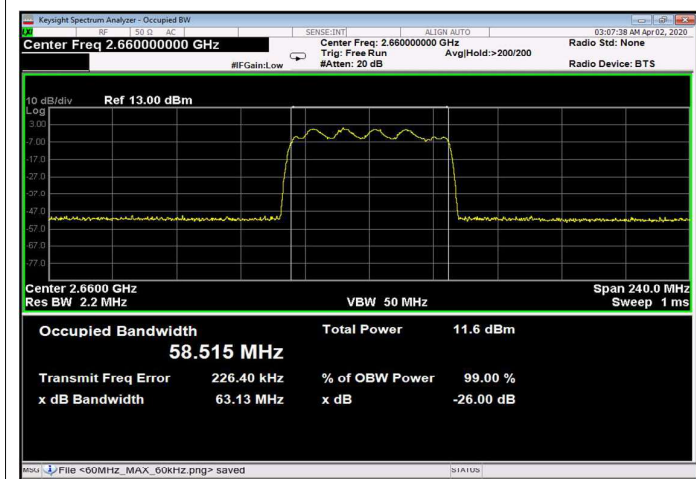


Figure 199: 16QAM 60MHz B.W.; 2660.0MHz,
30kHz Input

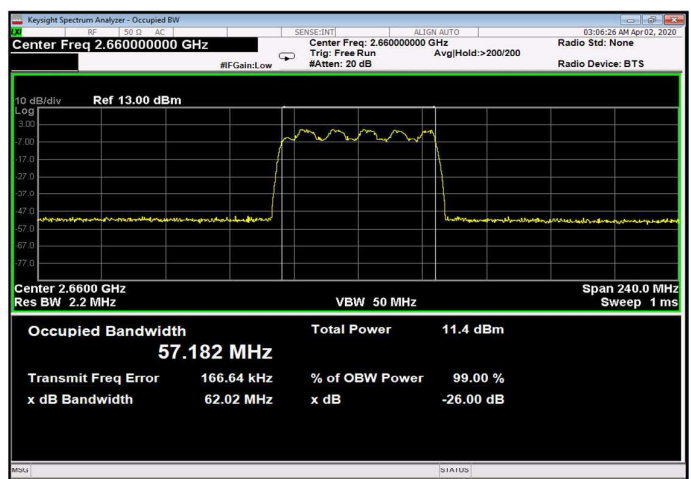


Figure 200: 16QAM 60MHz B.W.; 2660.0MHz,
60kHz Input