

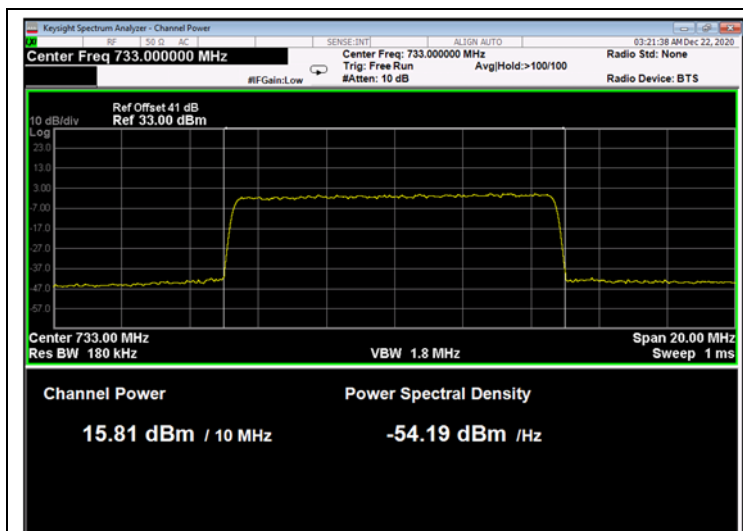


Figure 81: 256QAM 10MHz B.W.; 733.0MHz, 15kHz

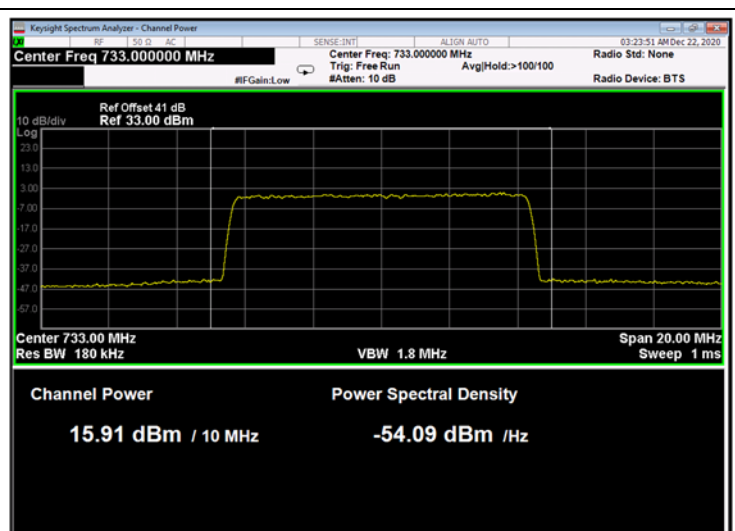


Figure 82: 256QAM 10MHz B.W.; 733.0MHz, 30kHz

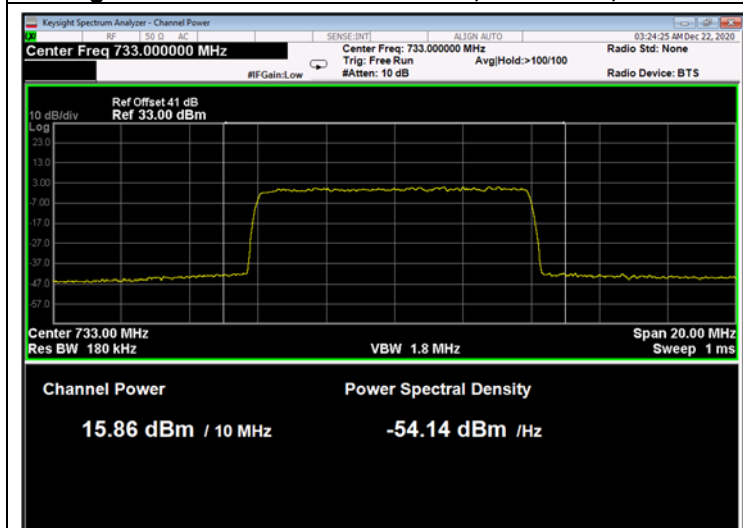


Figure 83: 256QAM 10MHz B.W.; 733.0MHz, 60kHz

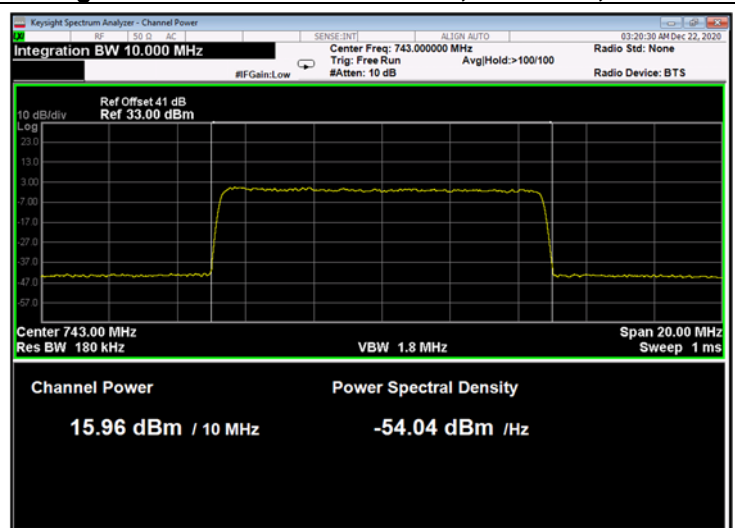


Figure 84: 256QAM 10MHz B.W.; 743.0MHz, 15kHz

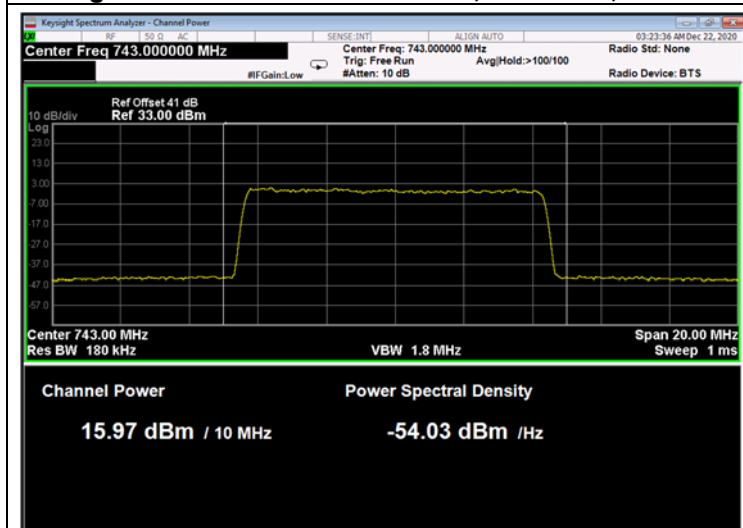


Figure 85: 256QAM 10MHz B.W.; 743.0MHz, 30kHz

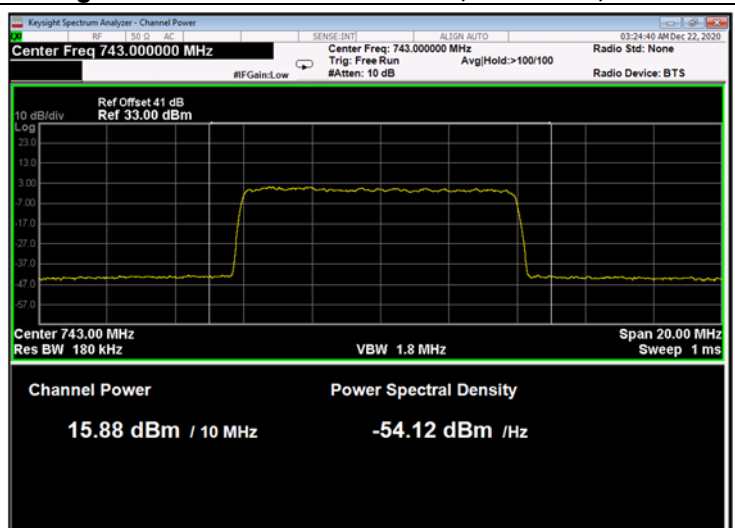


Figure 86: 256QAM 10MHz B.W.; 743.0MHz, 60kHz

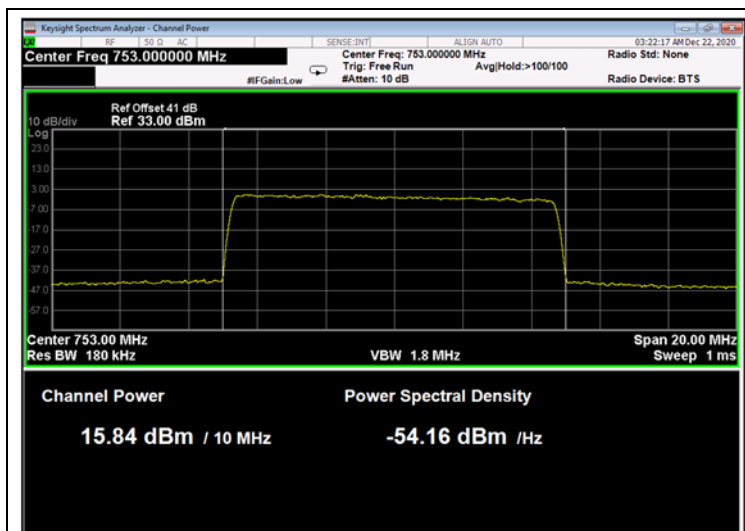


Figure 87: 256QAM 10MHz B.W.; 753.0MHz, 15kHz



Figure 88: 256QAM 10MHz B.W.; 753.0MHz, 30kHz

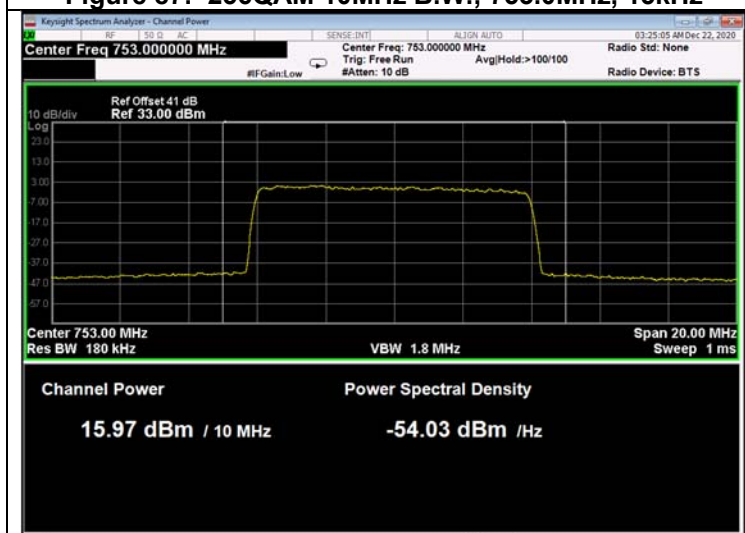


Figure 89: 256QAM 10MHz B.W.; 753.0MHz, 60kHz

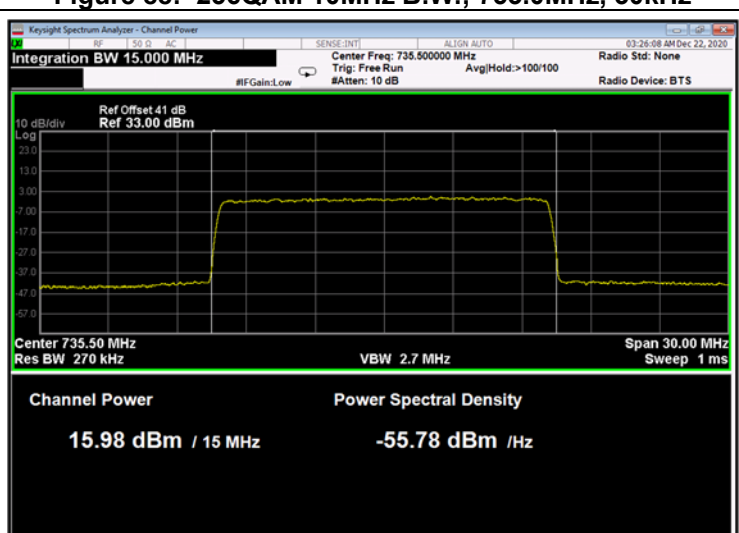


Figure 90: 256QAM 15MHz B.W.; 735.5MHz, 15kHz

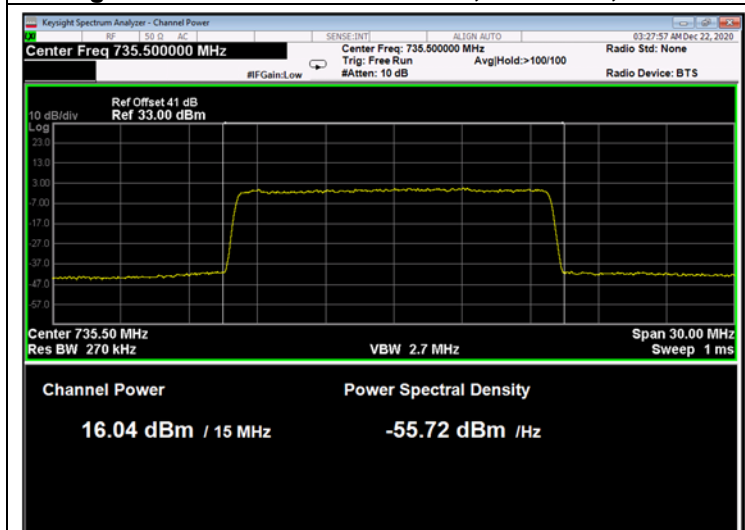


Figure 91: 256QAM 15MHz B.W.; 735.5MHz, 30kHz

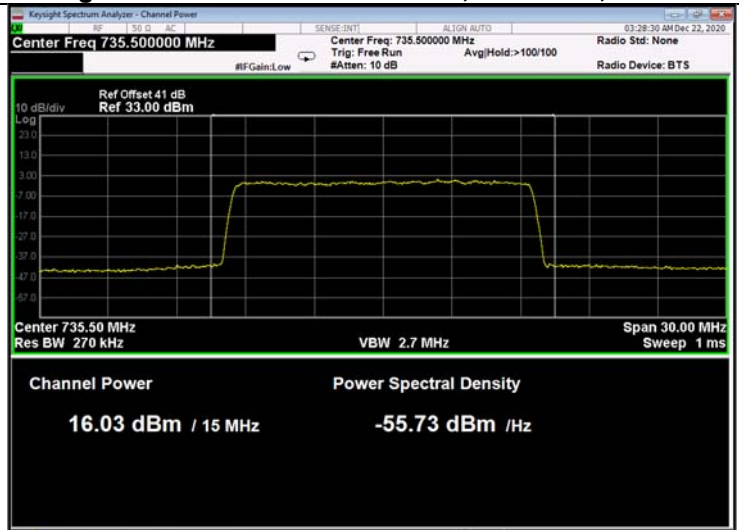


Figure 92: 256QAM 15MHz B.W.; 735.5MHz, 60kHz

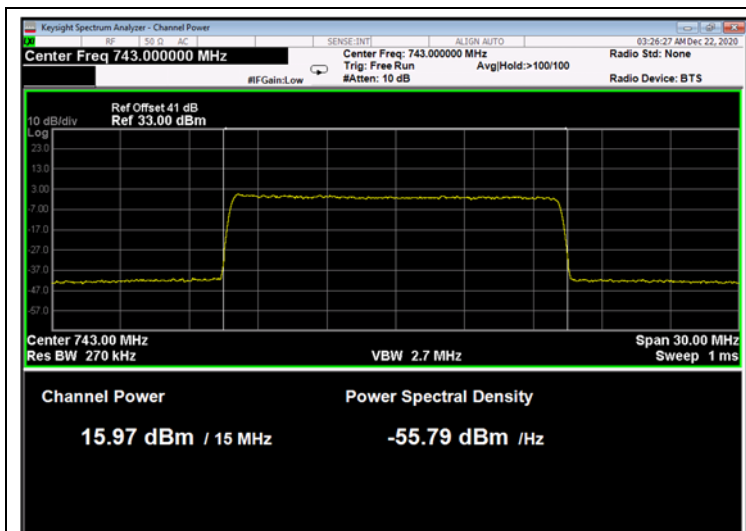


Figure 93: 256QAM 15MHz B.W.; 743.0MHz, 15kHz

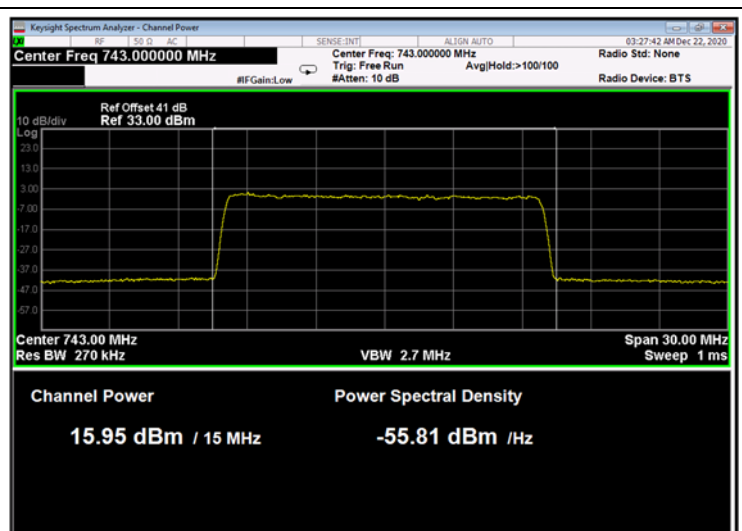


Figure 94: 256QAM 15MHz B.W.; 743.0MHz, 30kHz

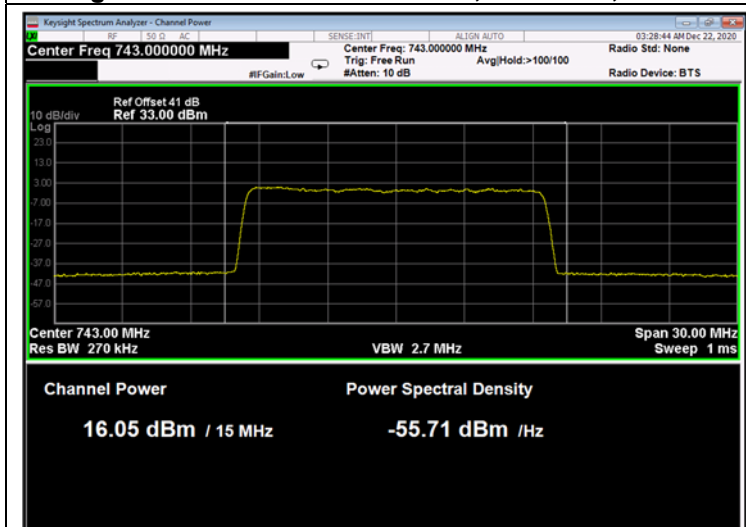


Figure 95: 256QAM 15MHz B.W.; 743.0MHz, 60kHz

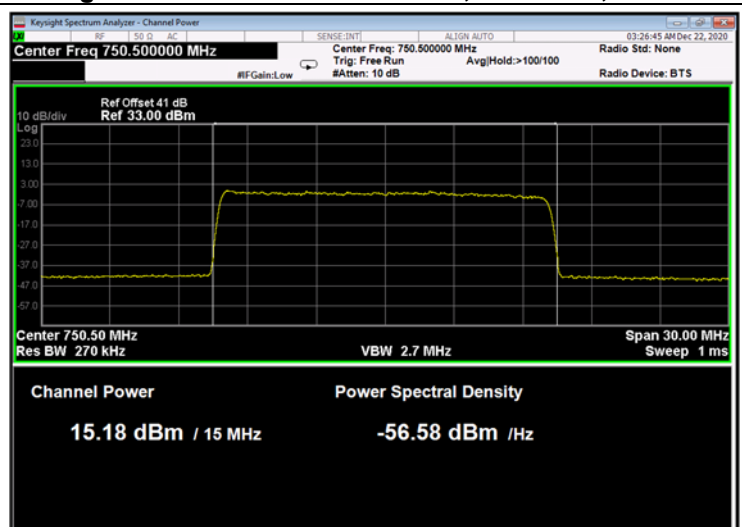


Figure 96: 256QAM 15MHz B.W.; 750.5MHz, 15kHz

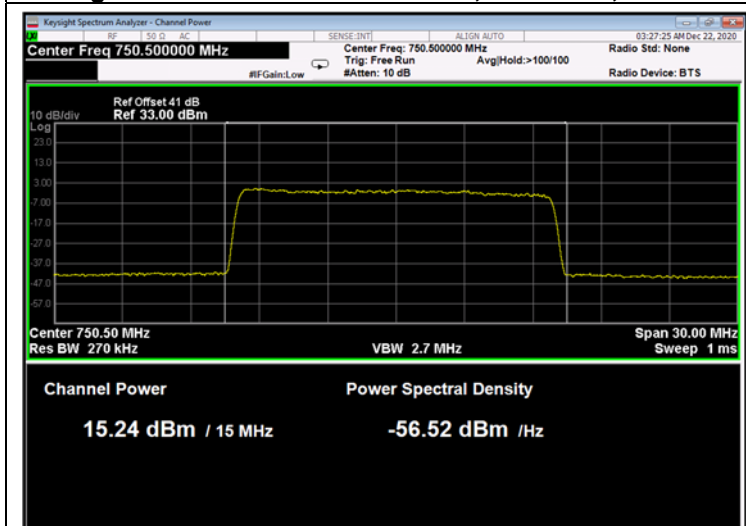


Figure 97: 256QAM 15MHz B.W.; 750.5MHz, 30kHz

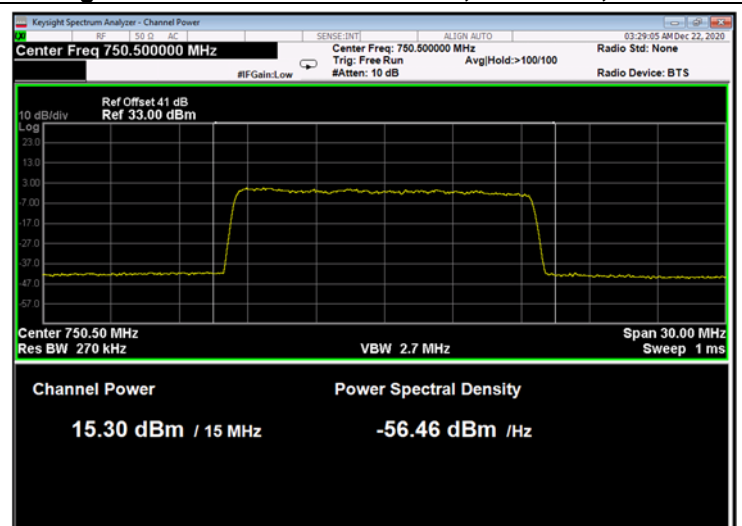


Figure 98: 256QAM 15MHz B.W.; 750.5MHz, 60kHz

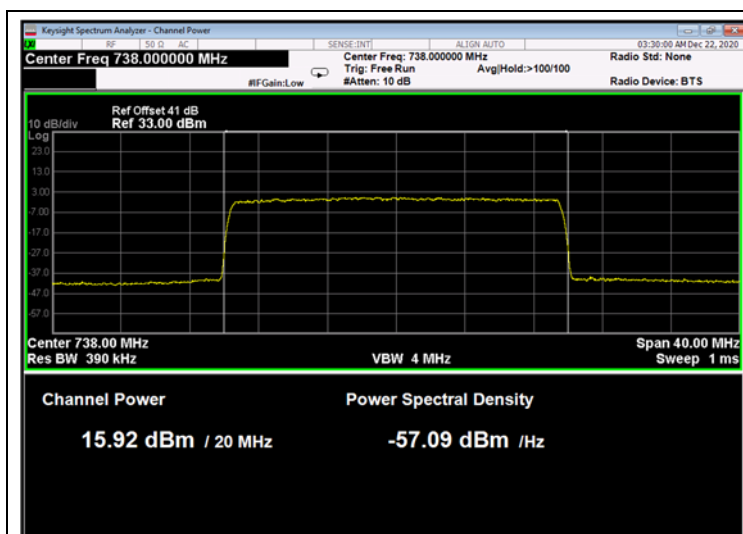


Figure 99: 256QAM 20MHz B.W.; 738.0MHz, 15kHz

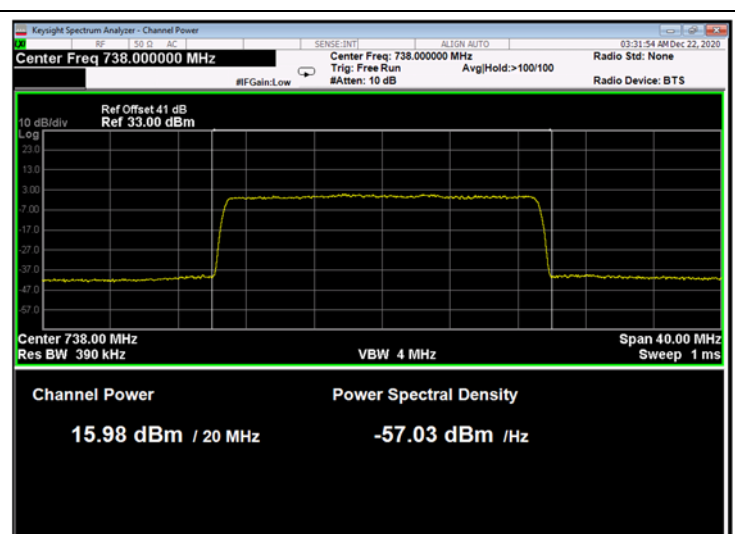


Figure 100: 256QAM 20MHz B.W.; 738.0MHz, 30kHz

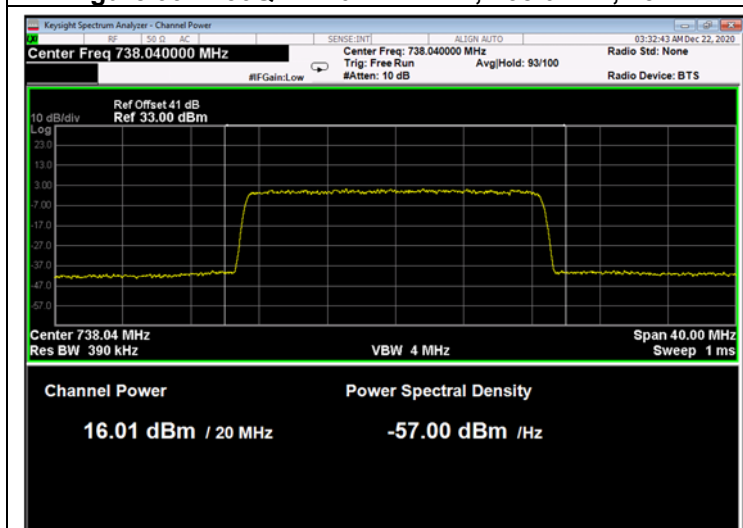


Figure 101: 256QAM 20MHz B.W.; 738.0MHz, 60kHz

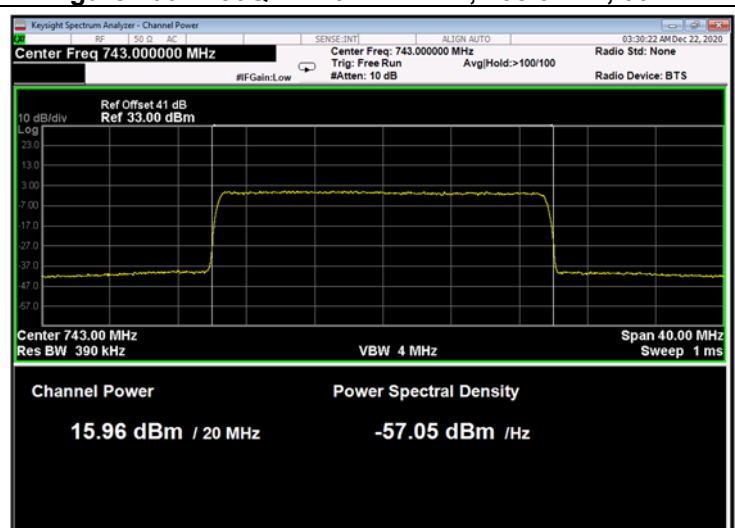


Figure 102: 256QAM 20MHz B.W.; 743.0MHz, 15kHz

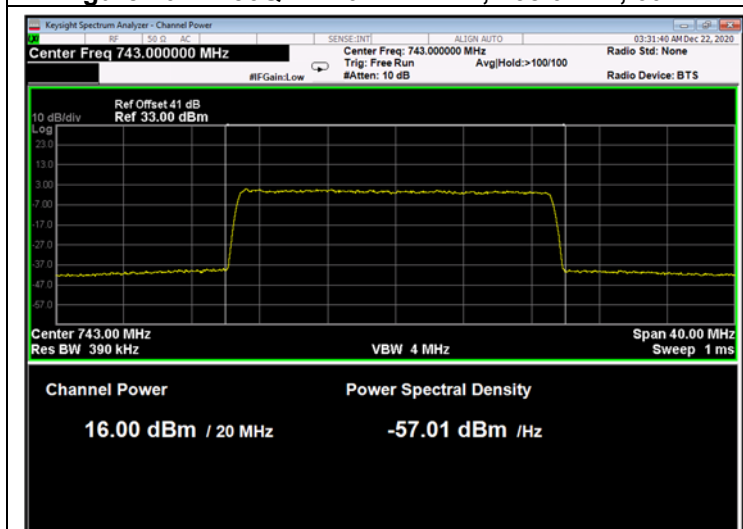


Figure 103: 256QAM 20MHz B.W.; 743.0MHz, 30kHz

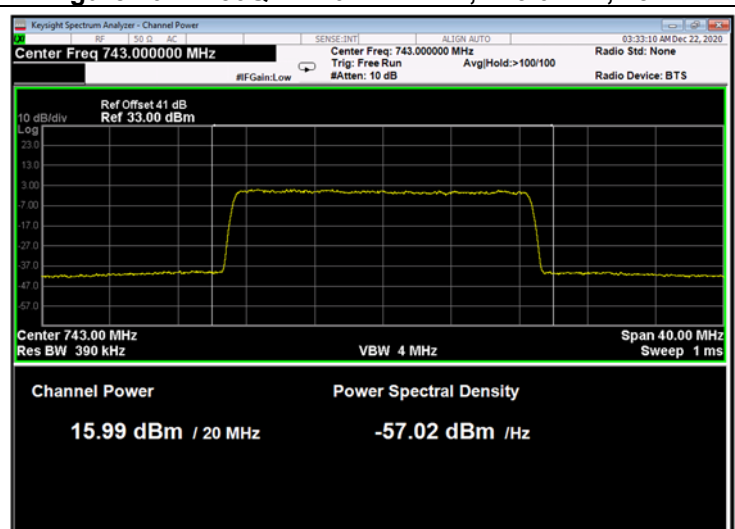


Figure 104: 256QAM 20MHz B.W.; 743.0MHz, 60kHz

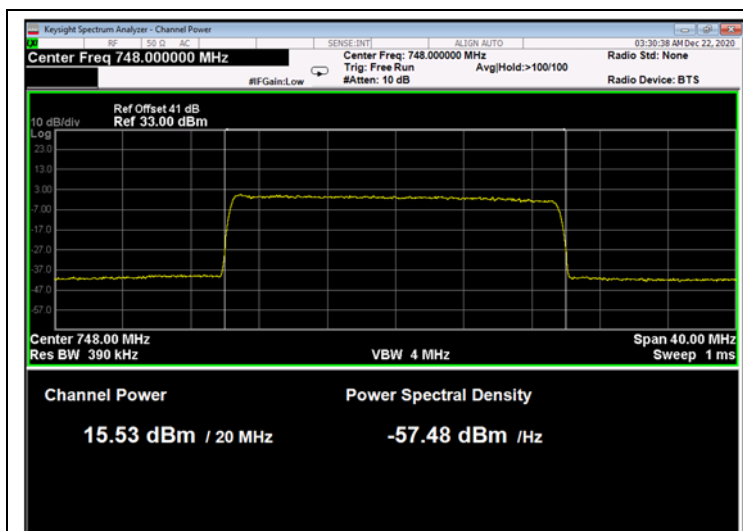


Figure 105: 256QAM 20MHz B.W.; 748.0MHz, 15kHz

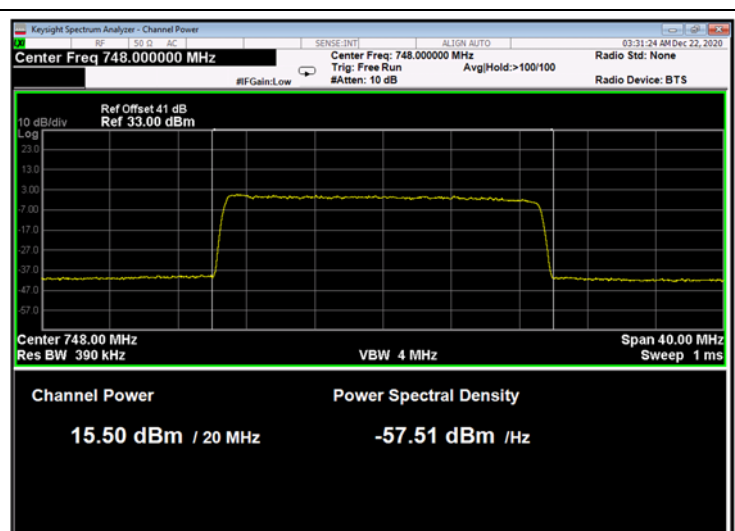


Figure 106: 256QAM 20MHz B.W.; 748.0MHz, 30kHz

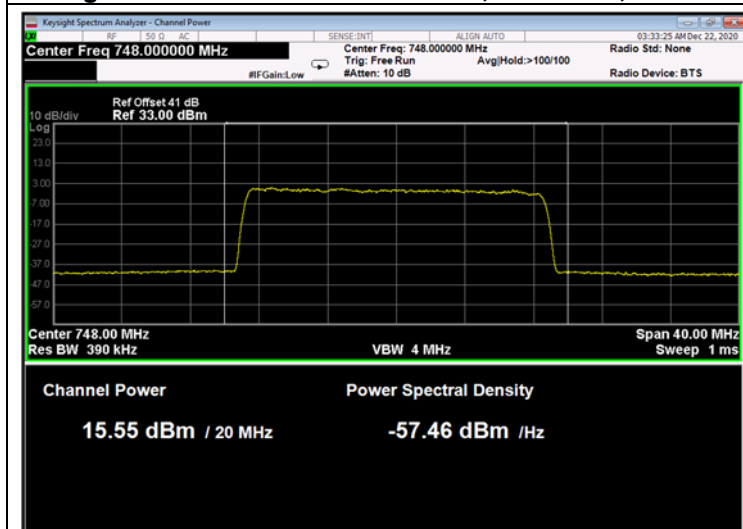


Figure 107: 256QAM 20MHz B.W.; 748.0MHz, 60kHz

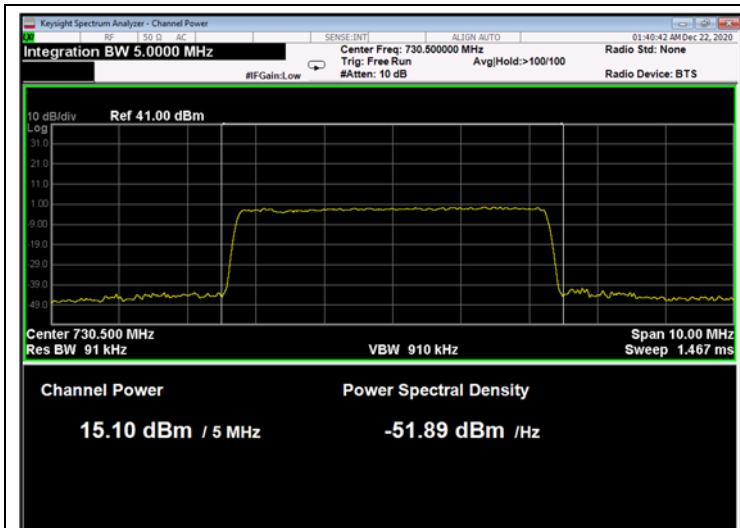


Figure 108: QPSK 5MHz B.W.; 730.5MHz, 15kHz

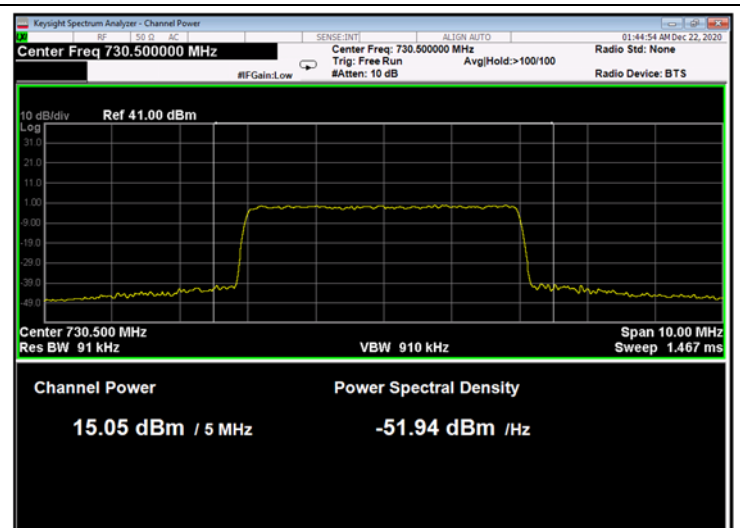


Figure 109: QPSK 5MHz B.W.; 730.5MHz, 30kHz

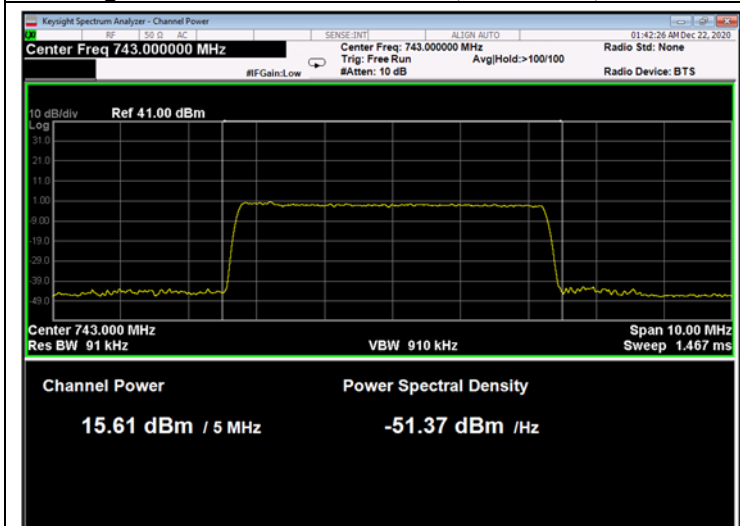


Figure 110: QPSK 5MHz B.W.; 743.0MHz, 15kHz

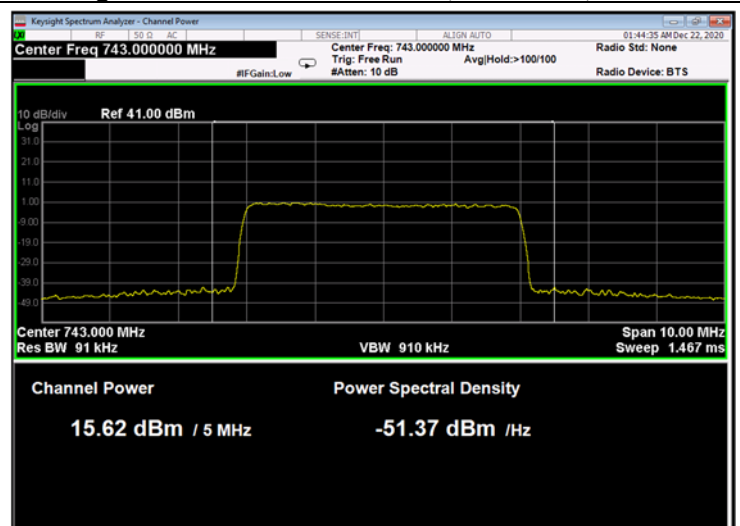


Figure 111: QPSK 5MHz B.W.; 743.0MHz, 30kHz

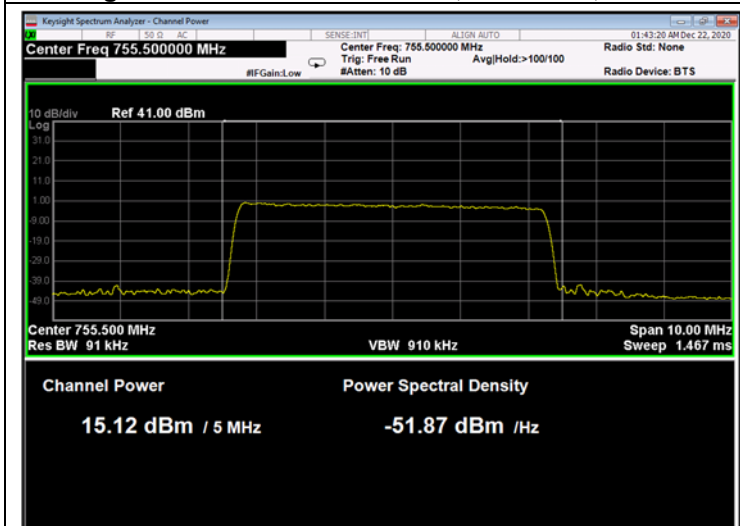


Figure 112: QPSK 5MHz B.W.; 755.50MHz, 15kHz

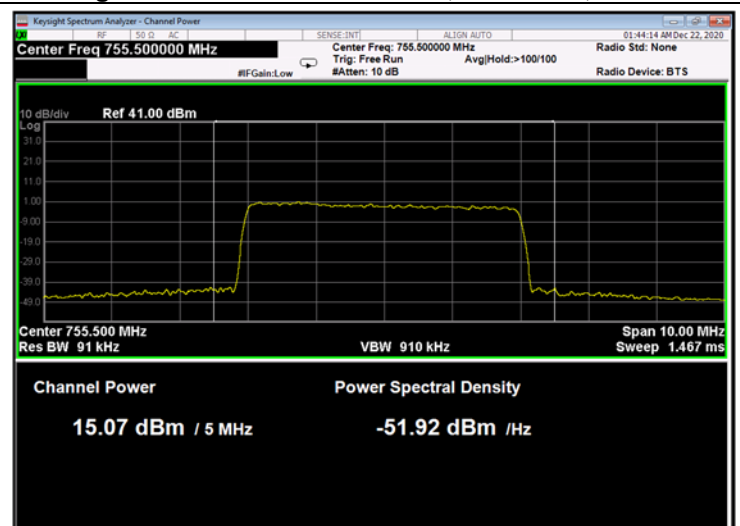


Figure 113: QPSK 5MHz B.W.; 755.5MHz, 30kHz

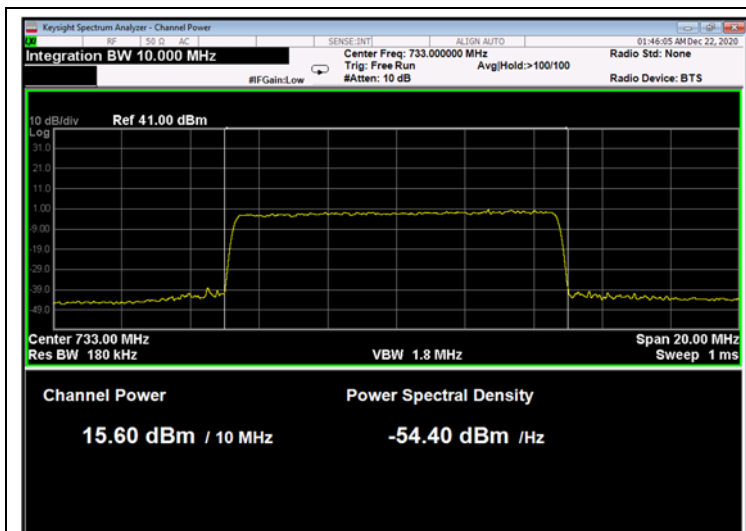


Figure 114: QPSK 10MHz B.W.; 733.0MHz, 15kHz

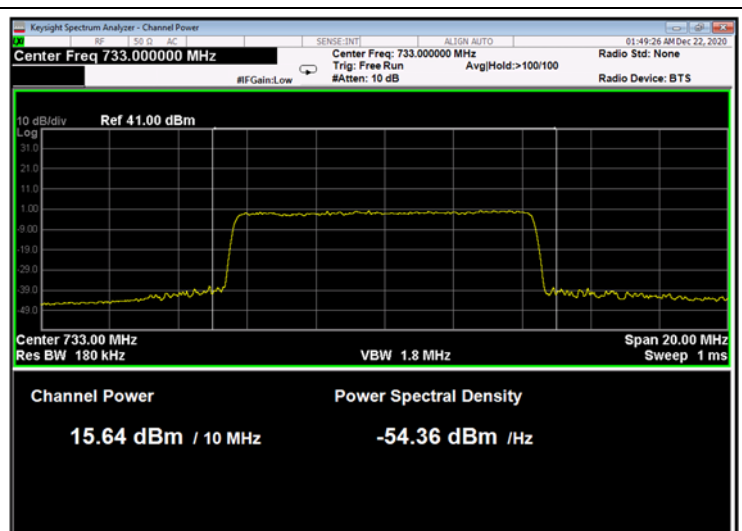


Figure 115: QPSK 10MHz B.W.; 733.0MHz, 30kHz

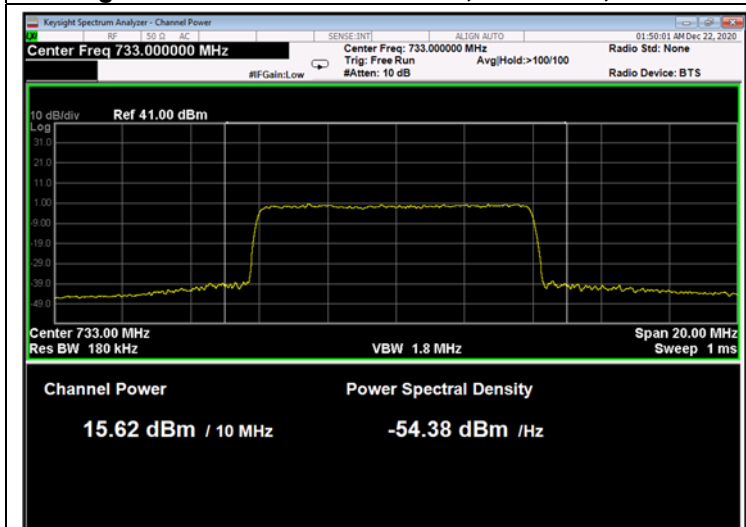


Figure 116: QPSK 10MHz B.W.; 733.0MHz, 60kHz

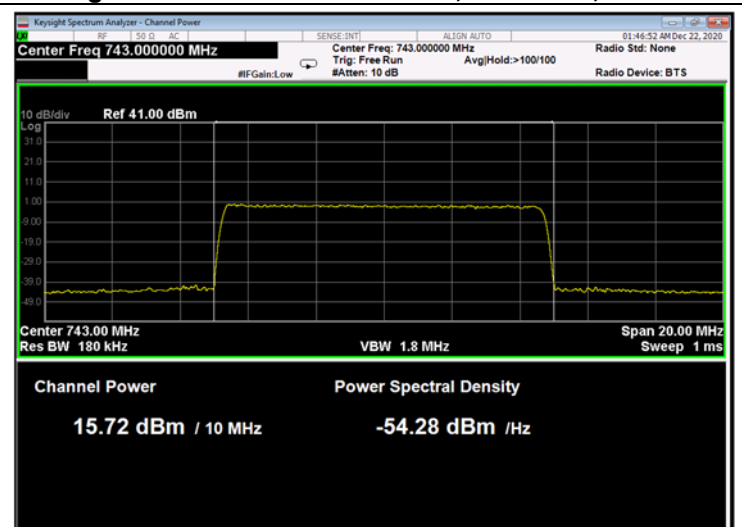


Figure 117: QPSK 10MHz B.W.; 743.0MHz, 15kHz

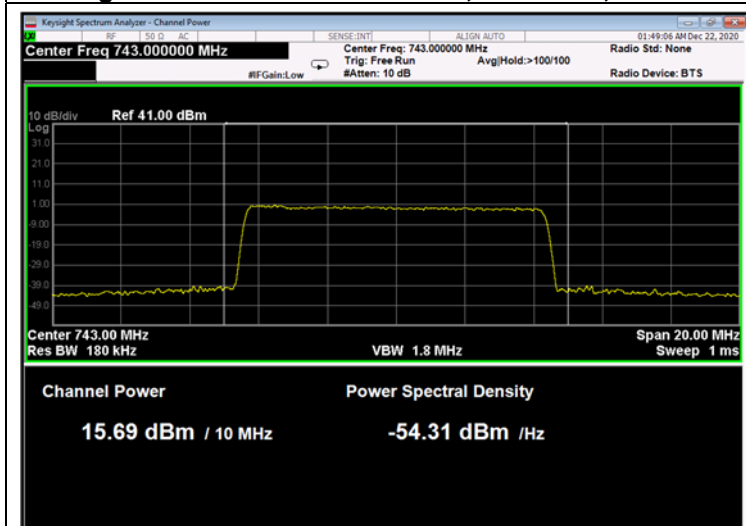


Figure 118: QPSK 10MHz B.W.; 743.0MHz, 30kHz



Figure 119: QPSK 10MHz B.W.; 743.0MHz, 60kHz

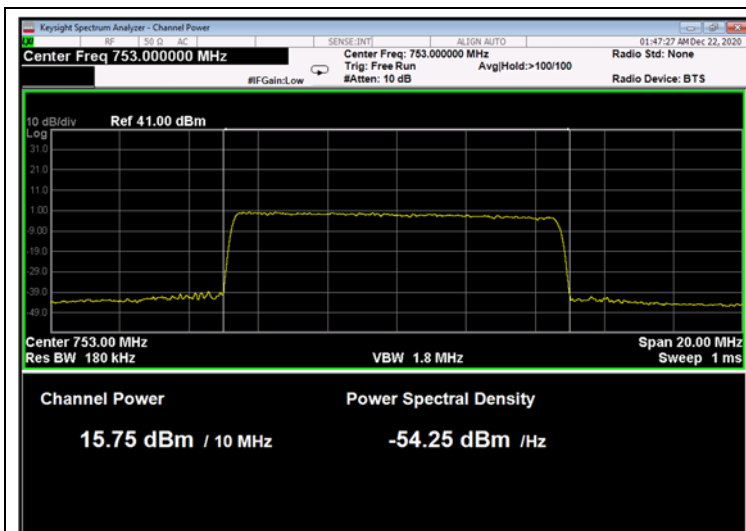


Figure 120: QPSK 10MHz B.W.; 753.0MHz, 15kHz

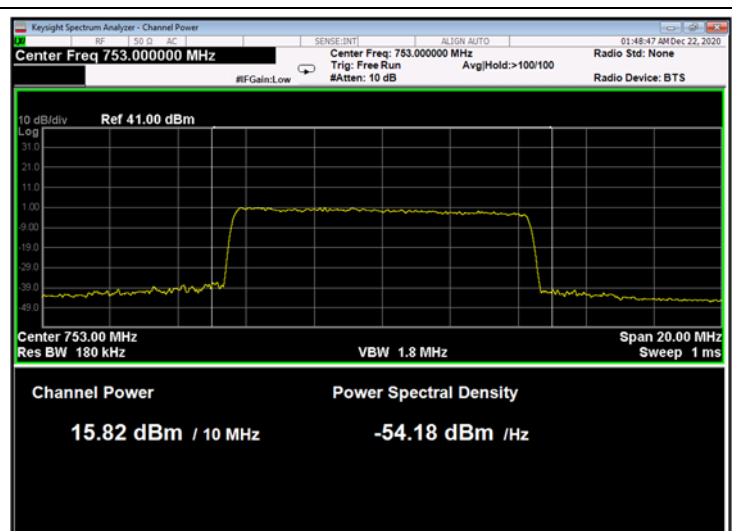


Figure 121: QPSK 10MHz B.W.; 753.0MHz, 30kHz

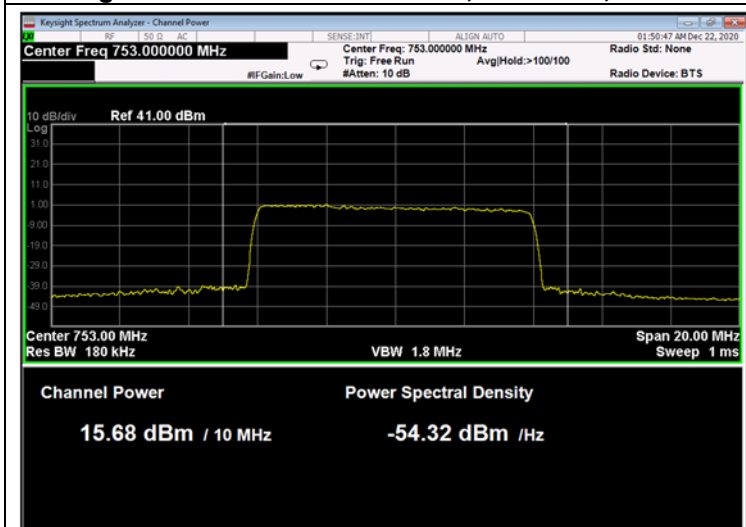


Figure 122: QPSK 10MHz B.W.; 753.0MHz, 60kHz

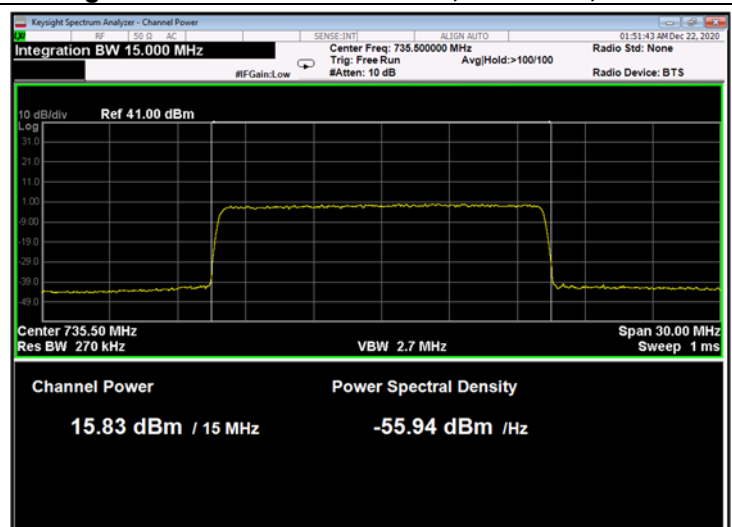


Figure 123: QPSK 15MHz B.W.; 735.5MHz, 15kHz

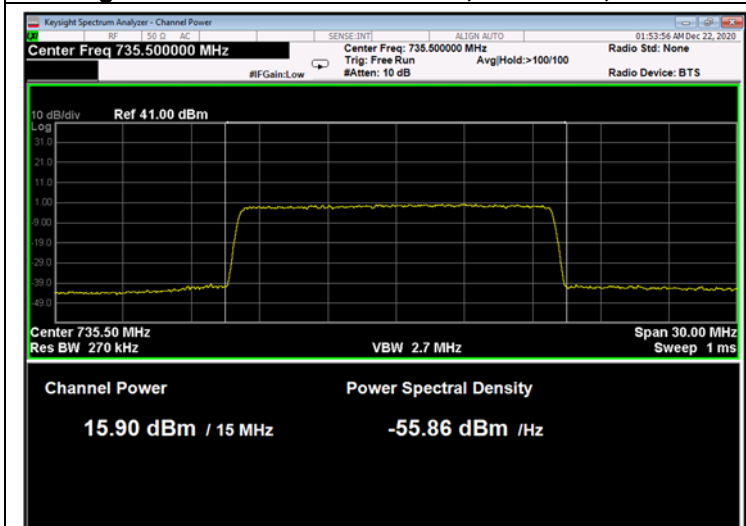


Figure 124: QPSK 15MHz B.W.; 735.5MHz, 30kHz



Figure 125: QPSK 15MHz B.W.; 735.5MHz, 60kHz

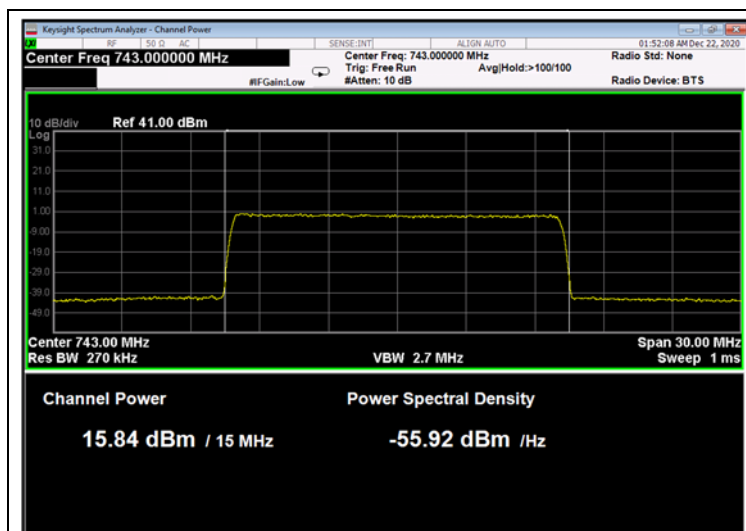


Figure 126: QPSK 15MHz B.W.; 743.0MHz, 15kHz

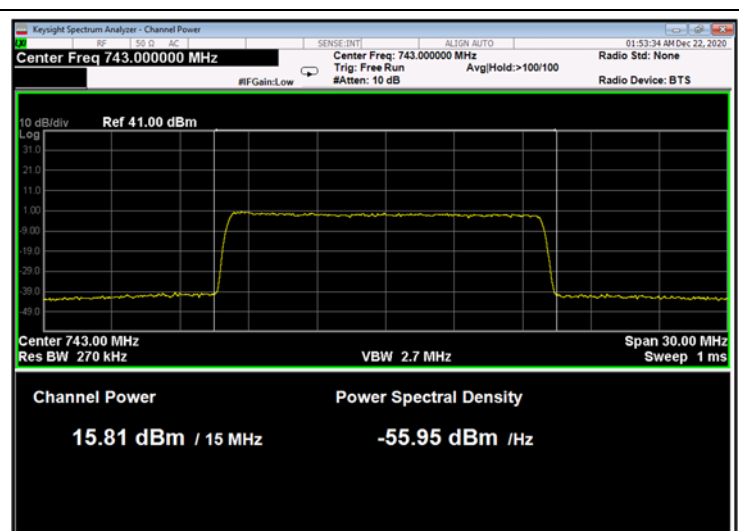


Figure 127: QPSK 15MHz B.W.; 743.0MHz, 30kHz

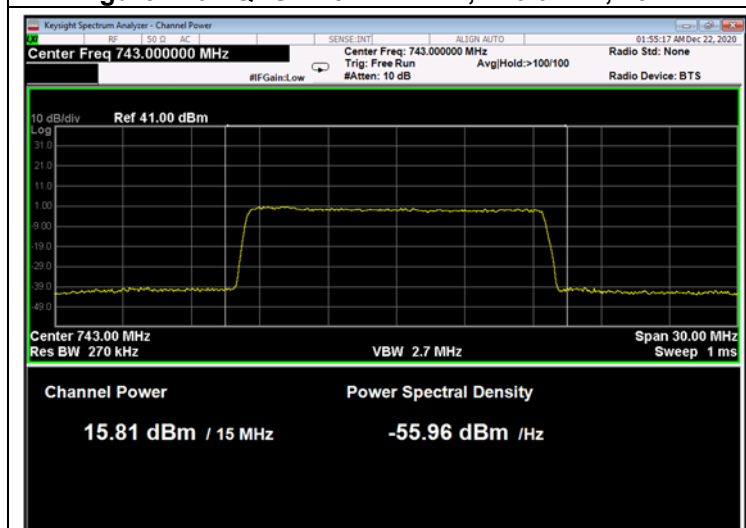


Figure 128: QPSK 15MHz B.W.; 743.0MHz, 60kHz

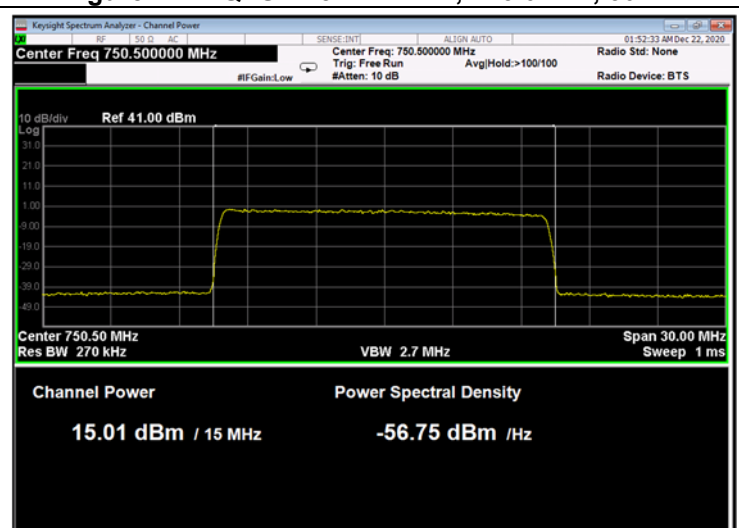


Figure 129: QPSK 15MHz B.W.; 750.5MHz, 15kHz

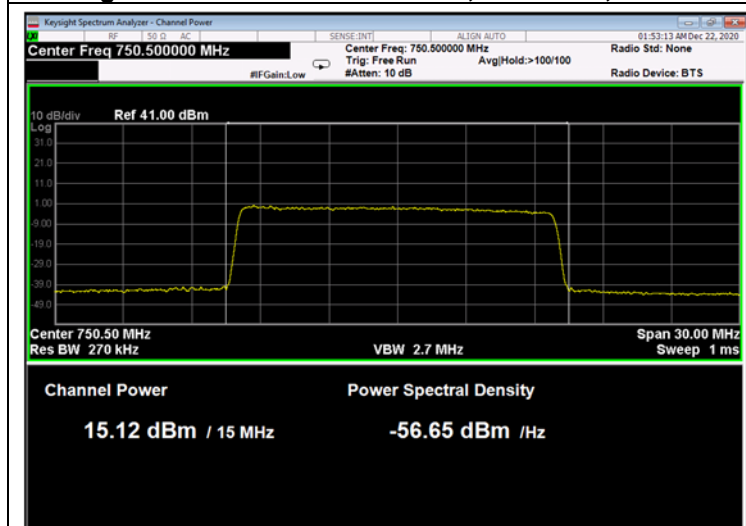


Figure 130: QPSK 15MHz B.W.; 750.5MHz, 30kHz

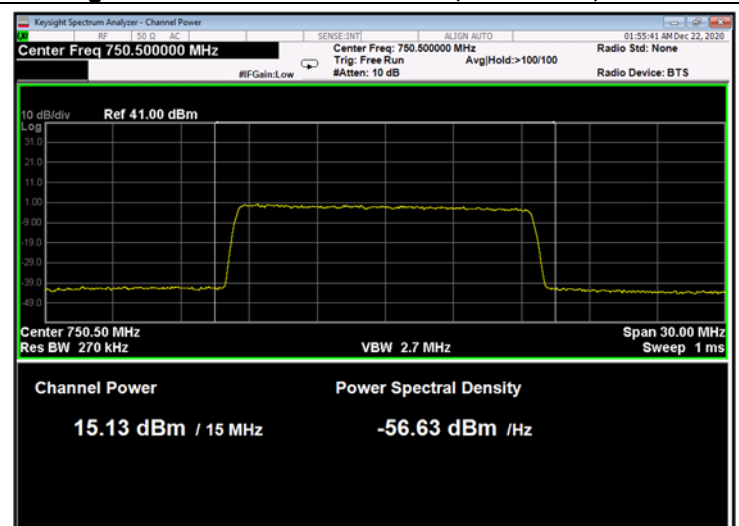


Figure 131: QPSK 15MHz B.W.; 750.5MHz, 60kHz

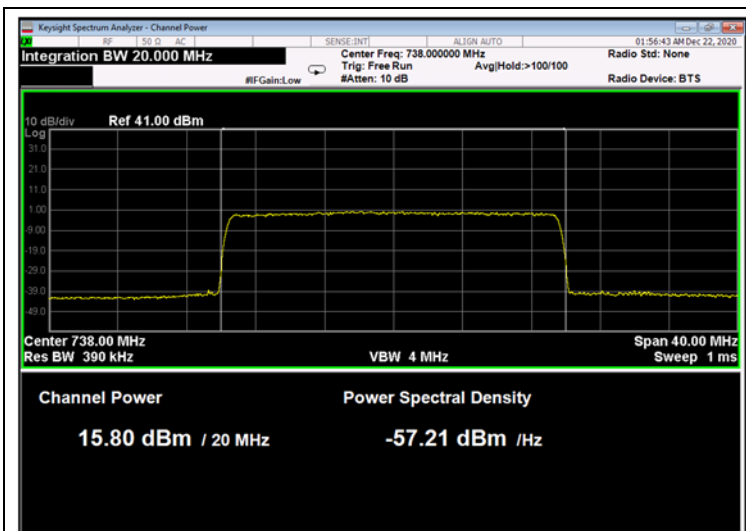


Figure 132: QPSK 20MHz B.W.; 738.0MHz, 15kHz

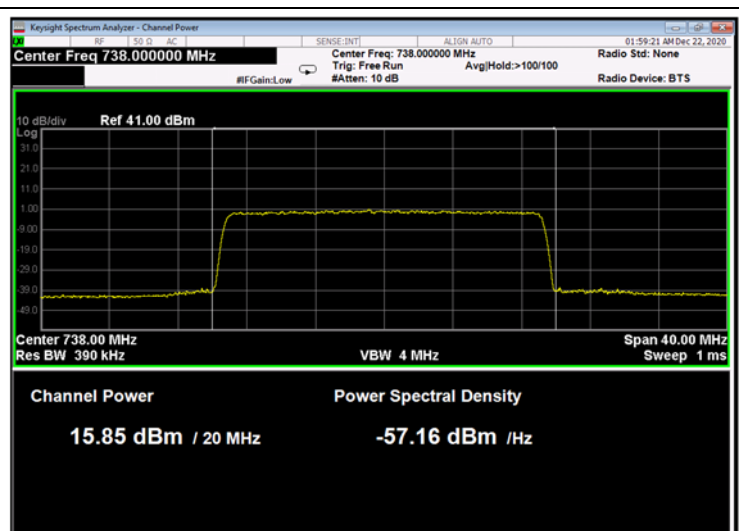


Figure 133: QPSK 20MHz B.W.; 738.0MHz, 30kHz

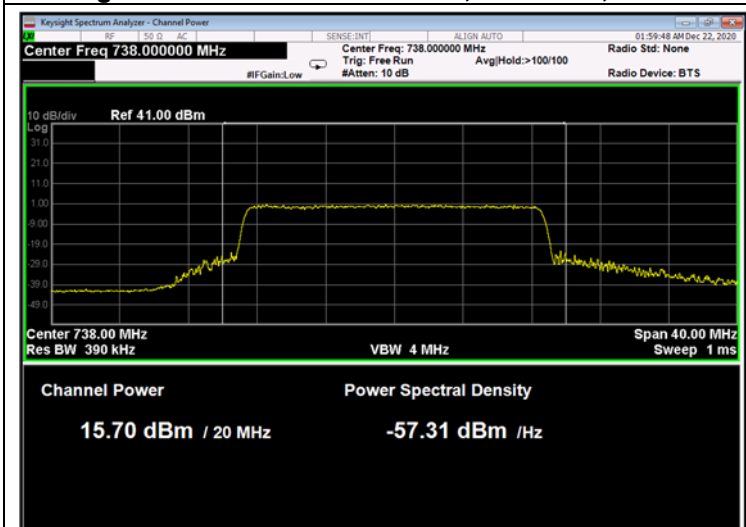


Figure 134: QPSK 20MHz B.W.; 738.0MHz, 60kHz

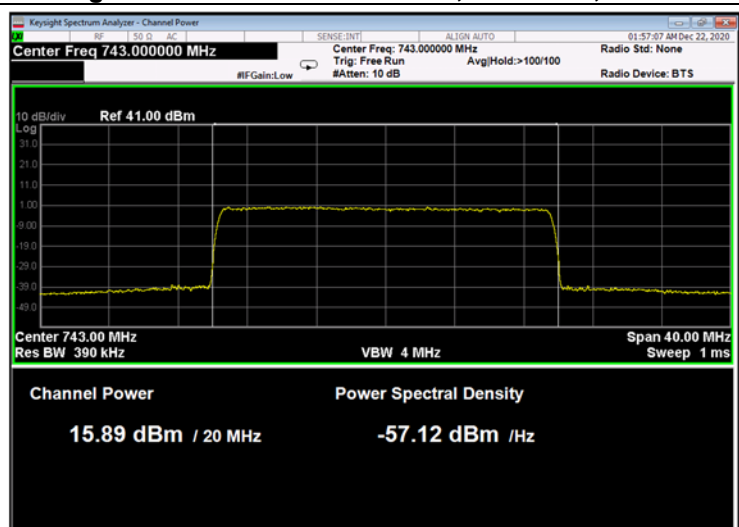


Figure 135: QPSK 20MHz B.W.; 743.0MHz, 15kHz

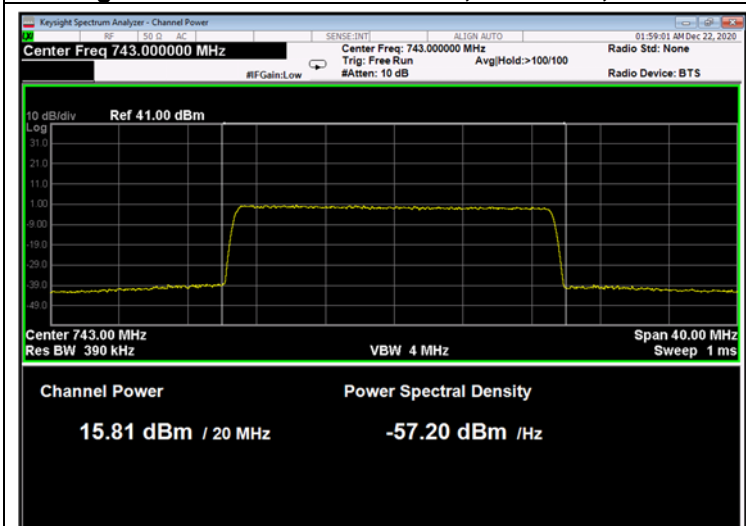


Figure 136: QPSK 20MHz B.W.; 743.0MHz, 30kHz

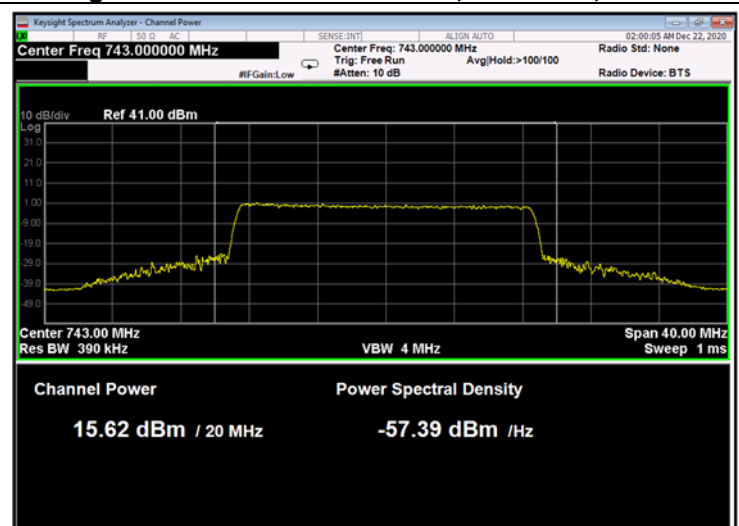


Figure 137: QPSK 20MHz B.W.; 743.0MHz, 60kHz

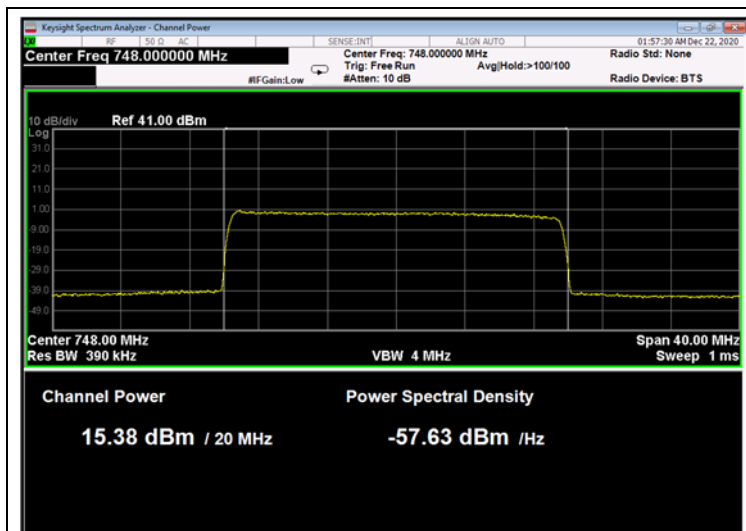


Figure 138: QPSK 20MHz B.W.; 748.0MHz, 15kHz

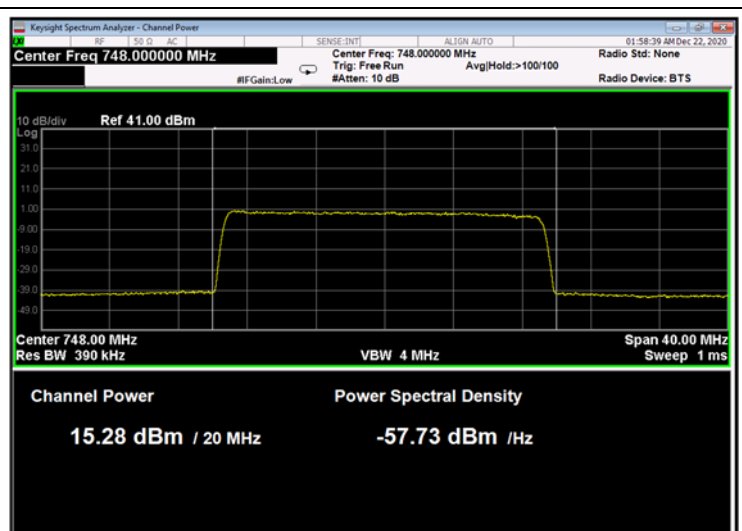


Figure 139: QPSK 20MHz B.W.; 748.0MHz, 30kHz

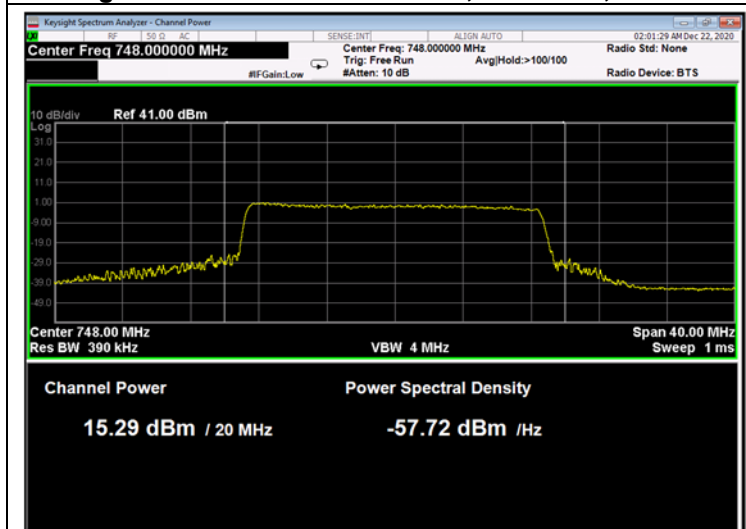


Figure 140: QPSK 20MHz B.W.; 748.0MHz, 60kHz

4.5 Test Equipment Used; RF Power Output

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EXA signal Analyzer	Agilent Technologies	N9010A	MY52220686	November 28, 2018	May 30, 2021
Vector Signal Generator	R&S	SMBV100B	1423.1003K02-101470-XE	October 2, 2019	October 2, 2022
40 dB Attenuator	Weinschel	WA 39-40-33	A1323	July 7, 2020	July 31, 2021
RF Cable	Huber Suhner	Sucofelex	27504/4PEA	August 23, 2020	August 31, 2021

Table 5 Test Equipment Used

5 Occupied Bandwidth

5.1 Test Specification

FCC Part 2, Section 1049

5.2 Test Procedure

(Temperature (20°C)/ Humidity (57%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 6 to Table 13* and *Figure 141 to Figure 404*.

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (MHz)
16QAM	5	15	730.5	4.4860
		30	730.5	3.9430
		15	743.0	4.4860
		30	743.0	3.9430
		15	755.5	4.4860
		30	755.5	3.9440
	10	15	733.0	9.2455
		30	733.0	8.5345
		60	733.0	7.8830
		15	743.0	9.2445
		30	743.0	8.5375
		60	743.0	7.8840
		15	753.0	9.2440
		30	753.0	8.5370
		60	753.0	7.8840
	15	15	735.5	14.170
		30	735.5	13.660
		60	735.5	12.920
		15	743.0	14.170
		30	743.0	13.660
		60	743.0	12.915
		15	750.5	14.165
		30	750.5	13.660
		60	750.5	12.920
	20	15	738.0	18.990
		30	738.0	18.330
		60	738.0	17.130
		15	743.0	19.000
		30	743.0	18.330
		60	743.0	17.130
		15	748.0	18.990
		30	748.0	18.315
		60	748.0	17.145

Table 6 Occupied Bandwidth 16QAM - Input

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (MHz)
64QAM	5	15	730.5	4.4925
		30	730.5	3.9440
		15	743.0	4.4945
		30	743.0	3.9450
		15	755.5	4.4925
		30	755.5	3.9445
	10	15	733.0	9.3155
		30	733.0	8.5895
		60	733.0	7.8900
		15	743.0	9.3140
		30	743.0	8.5900
		60	743.0	7.8860
		15	753.0	9.3145
		30	753.0	8.5900
		60	753.0	7.8875
	15	15	735.5	14.145
		30	735.5	13.605
		60	735.5	12.895
		15	743.0	14.140
		30	743.0	13.605
		60	743.0	12.895
		15	750.5	14.145
		30	750.5	13.610
		60	750.5	12.890
	20	15	738.0	19.970
		30	738.0	18.235
		60	738.0	17.200
		15	743.0	18.970
		30	743.0	18.240
		60	743.0	17.190
		15	748.0	18.975
		30	748.0	18.235
		60	748.0	17.184

Table 7 Occupied Bandwidth 64QAM - Input

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (MHz)
256QAM	5	15	730.5	4.4955
		30	730.5	3.9580
		15	743.0	4.4965
		30	743.0	3.9567
		15	755.5	4.4955
		30	755.5	3.9580
	10	15	733.0	9.3000
		30	733.0	8.5855
		60	733.0	7.8850
		15	743.0	9.2915
		30	743.0	8.5855
		60	743.0	7.8840
		15	753.0	9.3015
		30	753.0	8.5860
		60	753.0	7.8840
	15	15	735.5	14.180
		30	735.5	13.615
		60	735.5	12.940
		15	743.0	14.195
		30	743.0	13.615
		60	743.0	12.950
		15	750.5	14.190
		30	750.5	13.610
		60	750.5	12.945
	20	15	738.0	18.970
		30	738.0	18.260
		60	738.0	17.165
		15	743.0	18.970
		30	743.0	18.255
		60	743.0	17.165
		15	748.0	18.970
		30	748.0	18.260
		60	748.0	17.170

Table 8 Occupied Bandwidth 256QAM - Input

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (MHz)
QPSK	5	15	730.5	4.4950
		30	730.5	3.9670
		15	743.0	4.4920
		30	743.0	3.9670
		15	755.5	4.4960
		30	755.5	3.9665
	10	15	733.0	9.3095
		30	733.0	8.5965
		60	733.0	7.9285
		15	743.0	9.3110
		30	743.0	8.5960
		60	743.0	7.9290
		15	753.0	9.3070
		30	753.0	8.600
		60	753.0	7.9280
	15	15	735.5	14.150
		30	735.5	13.670
		60	735.5	12.995
		15	743.0	14.150
		30	743.0	13.670
		60	743.0	12.995
		15	750.5	14.150
		30	750.5	13.670
		60	750.5	12.995
	20	15	738.0	18.940
		30	738.0	18.215
		60	738.0	71.190
		15	743.0	18.935
		30	743.0	18.210
		60	743.0	17.190
		15	748.0	18.910
		30	748.0	18.220
		60	748.0	17.200

Table 9 Occupied Bandwidth QPSK – Input

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (MHz)
16QAM	5	15	730.5	4.900
		30	730.5	3.9455
		15	743.0	4.5323
		30	743.0	3.9498
		15	755.5	4.4945
		30	755.5	3.9449
	10	15	733.0	9.7463
		30	733.0	9.1205
		60	733.0	7.8931
		15	743.0	9.4939
		30	743.0	8.8514
		60	743.0	7.9042
		15	753.0	9.3305
		30	753.0	8.6761
		60	753.0	7.8779
	15	15	735.5	14.451
		30	735.5	13.818
		60	735.5	13.164
		15	743.0	14.502
		30	743.0	13.871
		60	743.0	13.112
		15	750.5	14.717
		30	750.5	13.780
		60	750.5	12.938
	20	15	738.0	21.398
		30	738.0	18.569
		60	738.0	17.796
		15	743.0	21.121
		30	743.0	18.950
		60	743.0	17.978
		15	748.0	20.686
		30	748.0	19.009
		60	748.0	17.691

Table 10 Occupied Bandwidth 16QAM - Output

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (MHz)
64QAM	5	15	730.5	4.4925
		30	730.5	3.9402
		15	743.0	4.4942
		30	743.0	3.9390
		15	755.5	4.4789
		30	755.5	3.9402
	10	15	733.0	9.2689
		30	733.0	8.5858
		60	733.0	7.8839
		15	743.0	9.2933
		30	743.0	8.5952
		60	743.0	7.8918
		15	753.0	9.2652
		30	753.0	8.5695
		60	753.0	7.8733
	15	15	735.5	14.101
		30	735.5	13.567
		60	735.5	12.885
		15	743.0	14.139
		30	743.0	13.597
		60	743.0	12.895
		15	750.5	14.088
		30	750.5	13.551
		60	750.5	12.859
	20	15	738.0	18.898
		30	738.0	18.196
		60	738.0	17.159
		15	743.0	18.943
		30	743.0	18.228
		60	743.0	17.192
		15	748.0	18.897
		30	748.0	18.193
		60	748.0	17.160

Table 11 Occupied Bandwidth 64QAM - Output

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (MHz)
256QAM	5	15	730.5	4.4926
		30	730.5	3.9371
		15	743.0	4.5003
		30	743.0	3.9472
		15	755.5	4.4941
		30	755.5	3.9381
	10	15	733.0	9.2677
		30	733.0	8.5827
		60	733.0	7.8743
		15	743.0	9.2958
		30	743.0	8.6042
		60	743.0	7.8775
		15	753.0	9.2821
		30	753.0	8.5850
		60	753.0	7.8728
	15	15	735.5	14.104
		30	735.5	13.577
		60	735.5	12.889
		15	743.0	14.146
		30	743.0	13.614
		60	743.0	12.931
		15	750.5	14.105
		30	750.5	13.577
		60	750.5	12.880
	20	15	738.0	18.896
		30	738.0	18.218
		60	738.0	17.141
		15	743.0	18.924
		30	743.0	18.248
		60	743.0	17.188
		15	748.0	18.889
		30	748.0	18.234
		60	748.0	17.155

Table 12 Occupied Bandwidth 256QAM - Output

Modulation	Bandwidth (MHz)	Sub Carrier (kHz)	Operation Frequency (MHz)	Reading (MHz)
QPSK	5	15	730.5	4.4987
		30	730.5	3.9716
		15	743.0	4.4996
		30	743.0	3.9675
		15	755.5	4.4871
		30	755.5	3.9591
	10	15	733.0	9.3011
		30	733.0	8.6021
		60	733.0	7.9193
		15	743.0	9.3183
		30	743.0	8.6113
		60	743.0	7.9359
		15	753.0	9.2831
		30	753.0	8.5814
		60	753.0	7.8423
	15	15	735.5	14.112
		30	735.5	13.638
		60	735.5	12.956
		15	743.0	14.132
		30	743.0	13.683
		60	743.0	13.001
		15	750.5	14.081
		30	750.5	13.634
		60	750.5	12.948
	20	15	738.0	18.872
		30	738.0	18.256
		60	738.0	17.173
		15	743.0	18.901
		30	743.0	18.176
		60	743.0	17.218
		15	748.0	18.861
		30	748.0	18.148
		60	748.0	17.180

Table 13 Occupied Bandwidth QPSK – Output

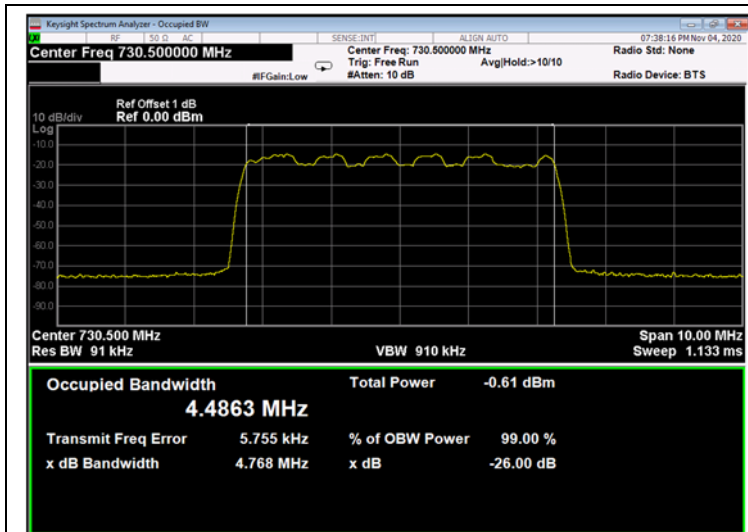


Figure 141: 16QAM 5MHz B.W.; 730.5MHz, 15kHz - Input

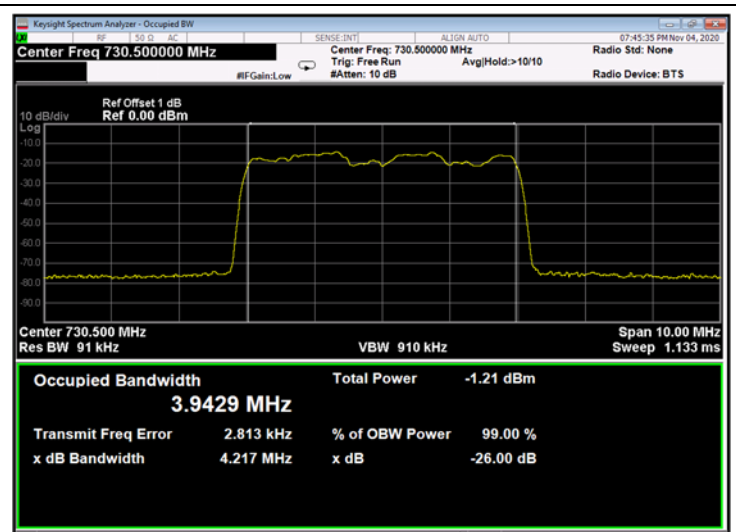


Figure 142: 16QAM 5MHz B.W.; 730.5MHz, 30kHz- Input

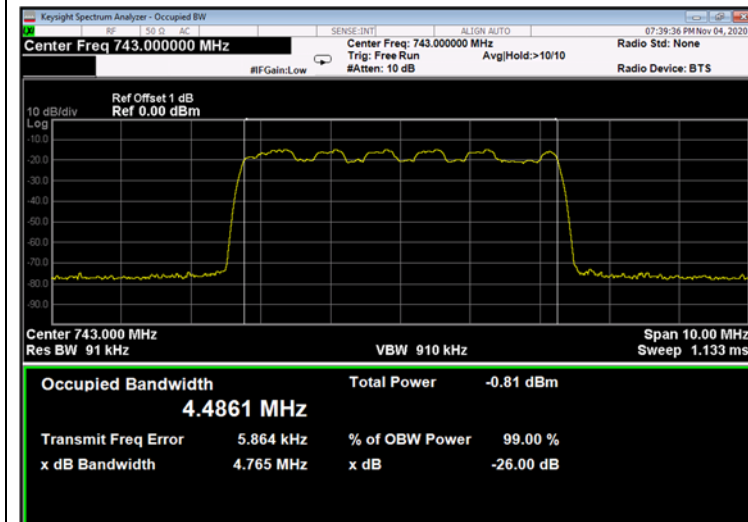


Figure 143: 16QAM 5MHz B.W.; 743.0MHz, 15kHz- Input

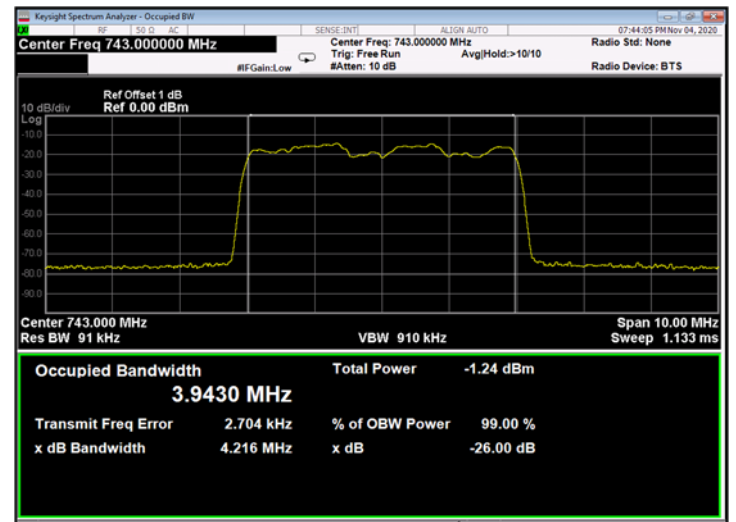


Figure 144: 16QAM 5MHz B.W.; 743.0MHz, 30kHz- Input

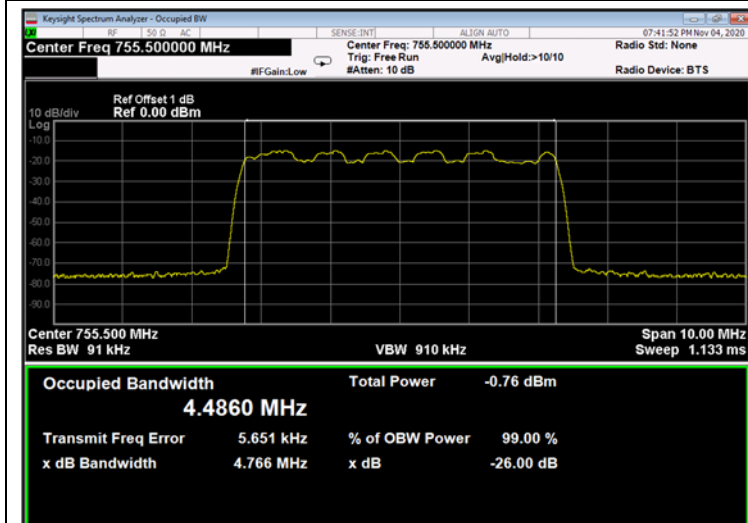


Figure 145: 16QAM 5MHz B.W.; 755.5MHz, 15kHz- Input

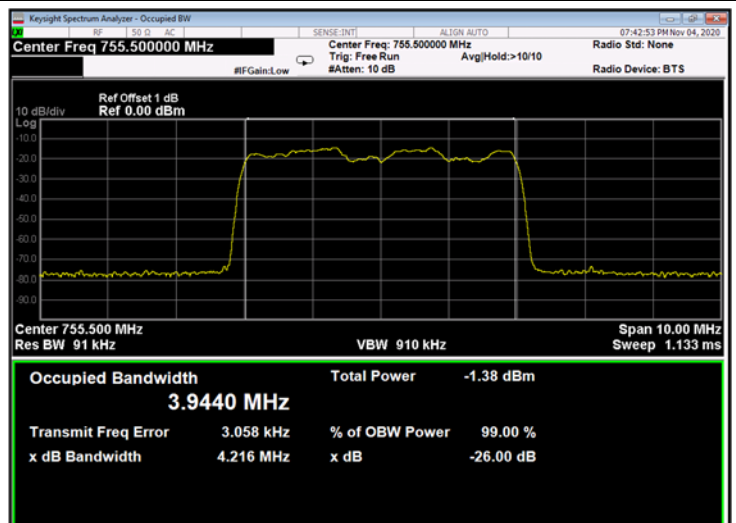


Figure 146: 16QAM 5MHz; 755.5MHz, 30kHz- Input

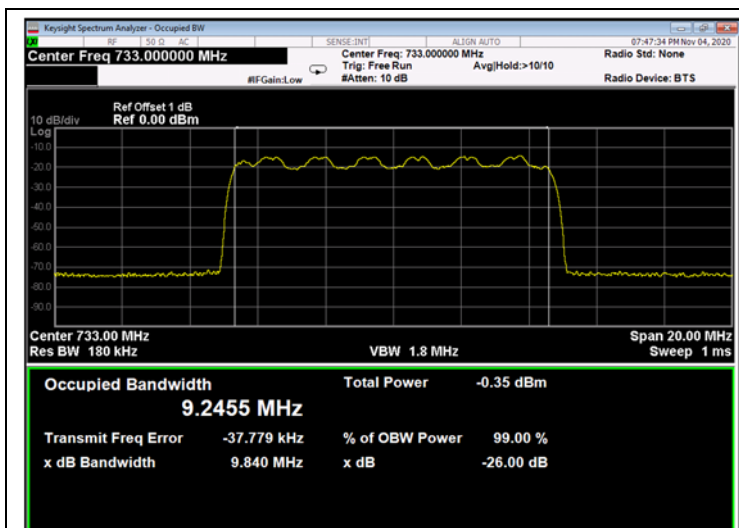


Figure 147: 16QAM 10MHz B.W.; 733.0MHz, 15kHz- Input

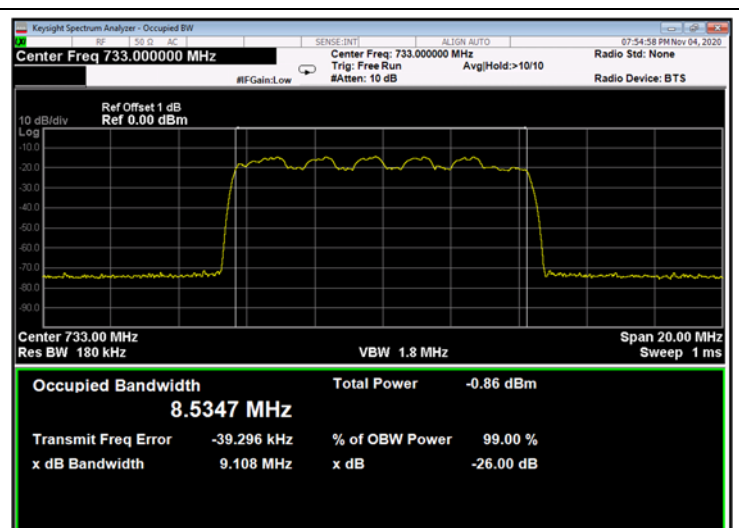


Figure 148: 16QAM 10MHz B.W.; 733.0MHz, 30kHz- Input

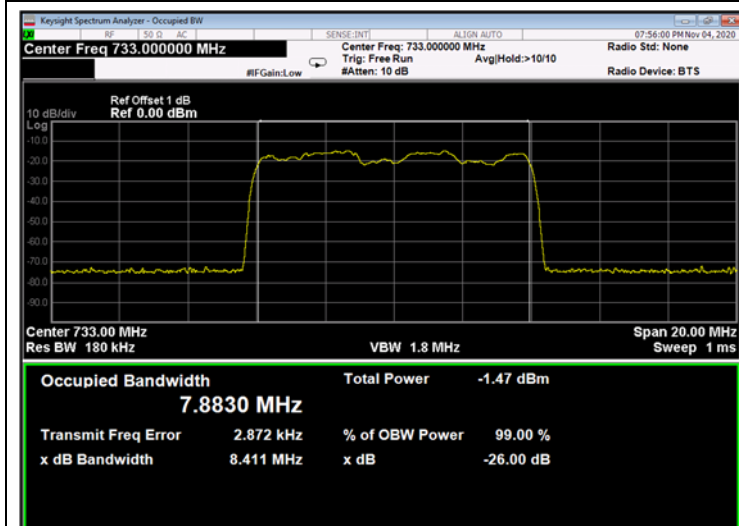


Figure 149: 16QAM 10MHz B.W.; 733.0MHz, 60kHz- Input

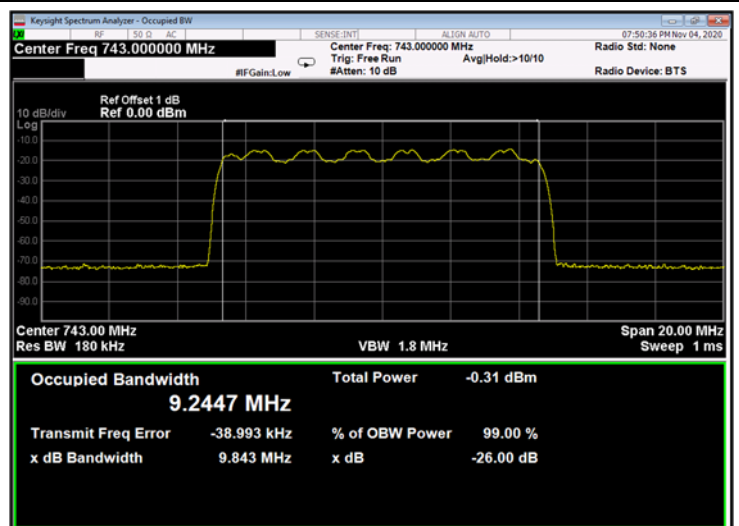


Figure 150: 16QAM 10MHz B.W.; 743.0MHz, 15kHz- Input

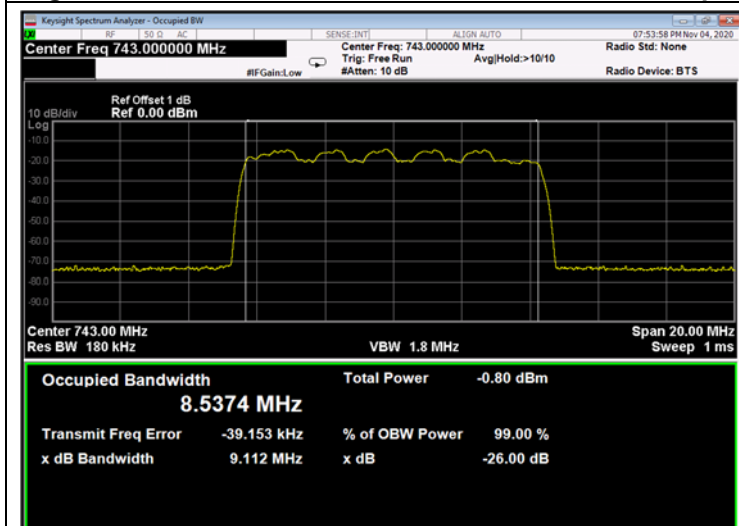


Figure 151: 16QAM 10MHz B.W.; 743.0MHz, 30kHz- Input

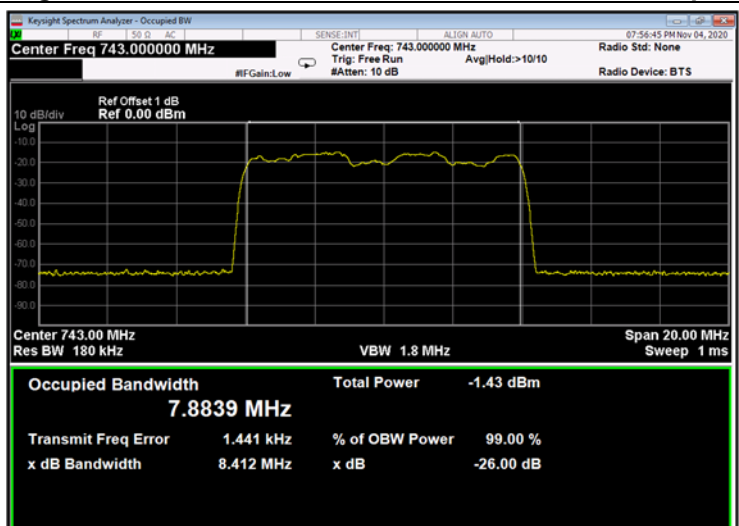


Figure 152: 16QAM 10MHz B.W.; 743.0MHz, 60kHz - Input

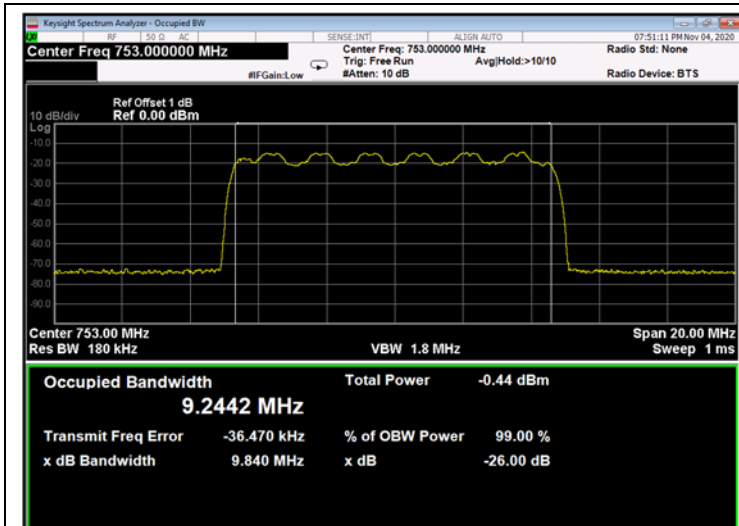


Figure 153: 16QAM 10MHz B.W.; 753.0MHz, 15kHz - Input

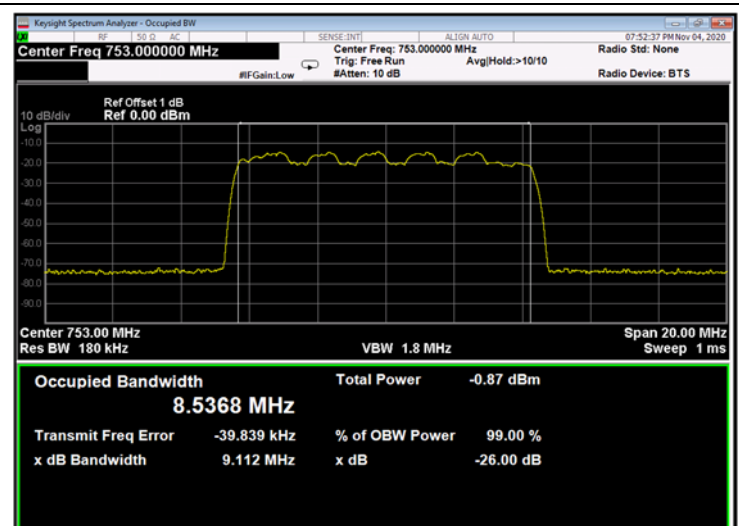


Figure 154: 16QAM 10MHz B.W.; 753.MHz, 30kHz - Input

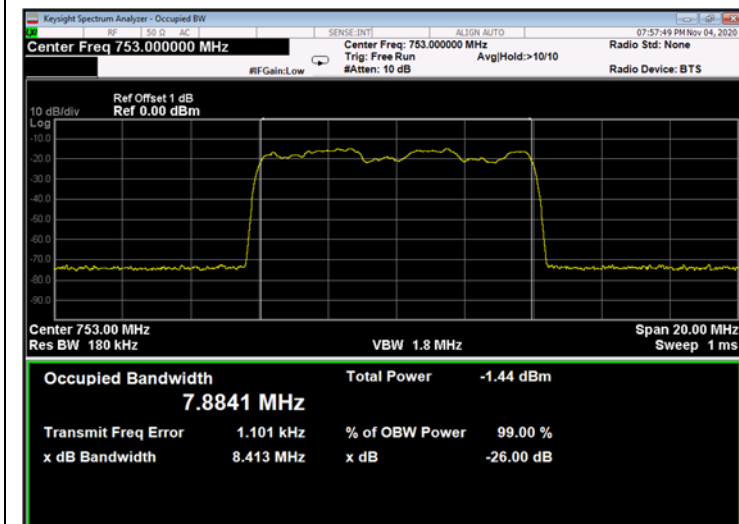


Figure 155: 16QAM 10MHz B.W.; 753.0MHz, 60kHz - Input

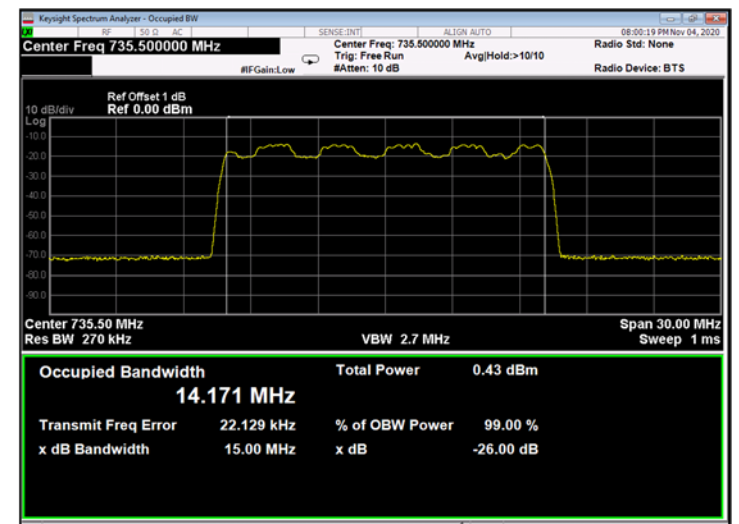


Figure 156: 16QAM 15MHz B.W.; 735.5MHz, 15kHz - Input

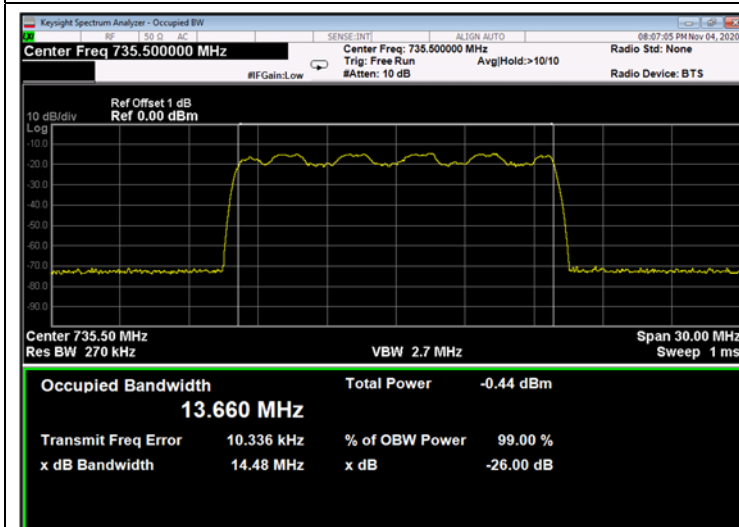


Figure 157: 16QAM 15MHz B.W.; 735.5MHz, 30kHz - Input

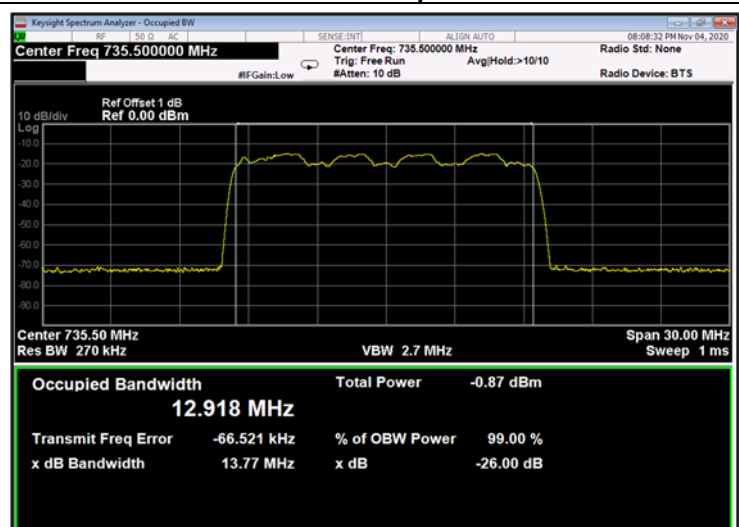


Figure 158: 16QAM 10MHz B.W.; 735.5MHz, 60kHz - Input