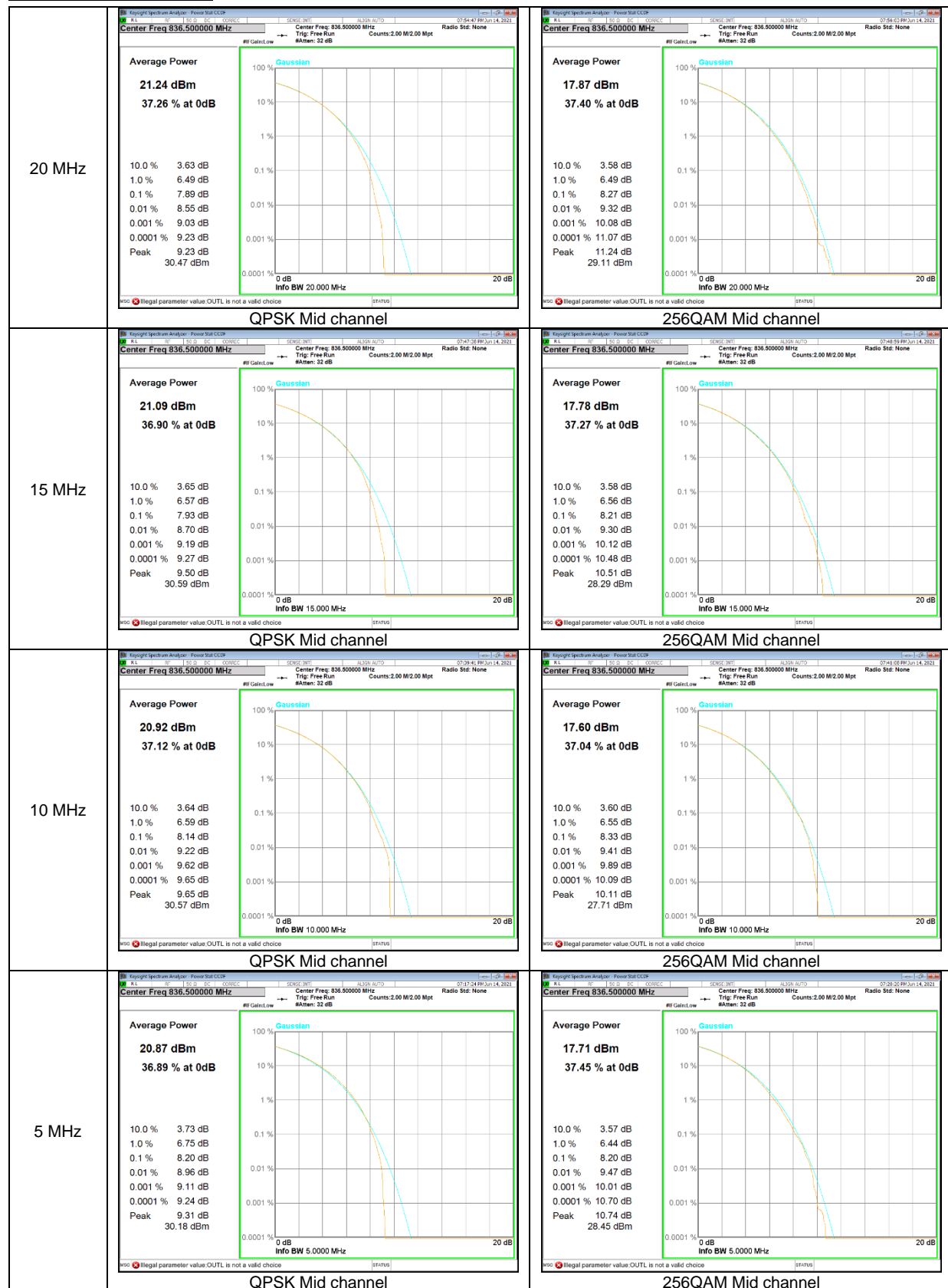
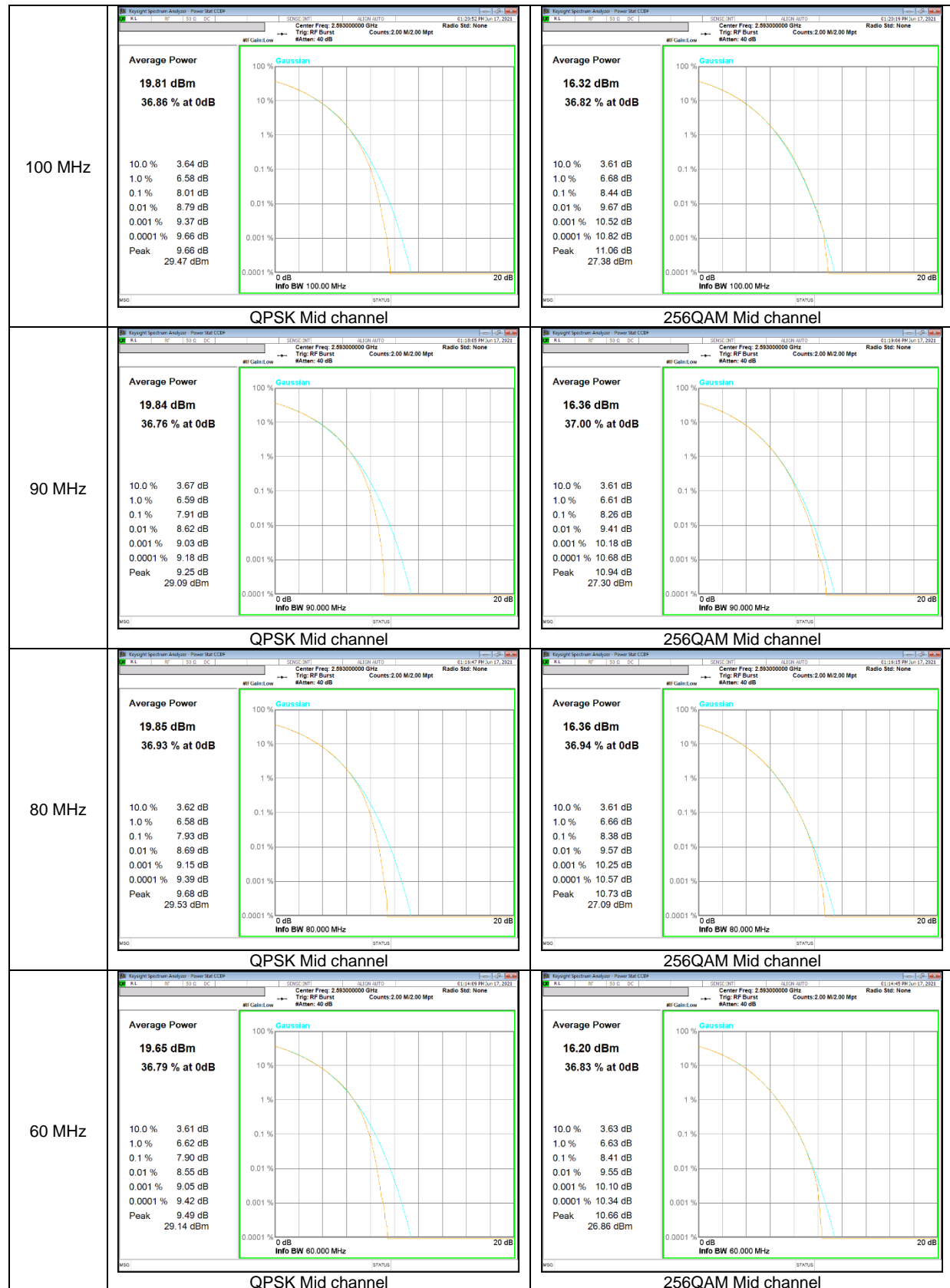
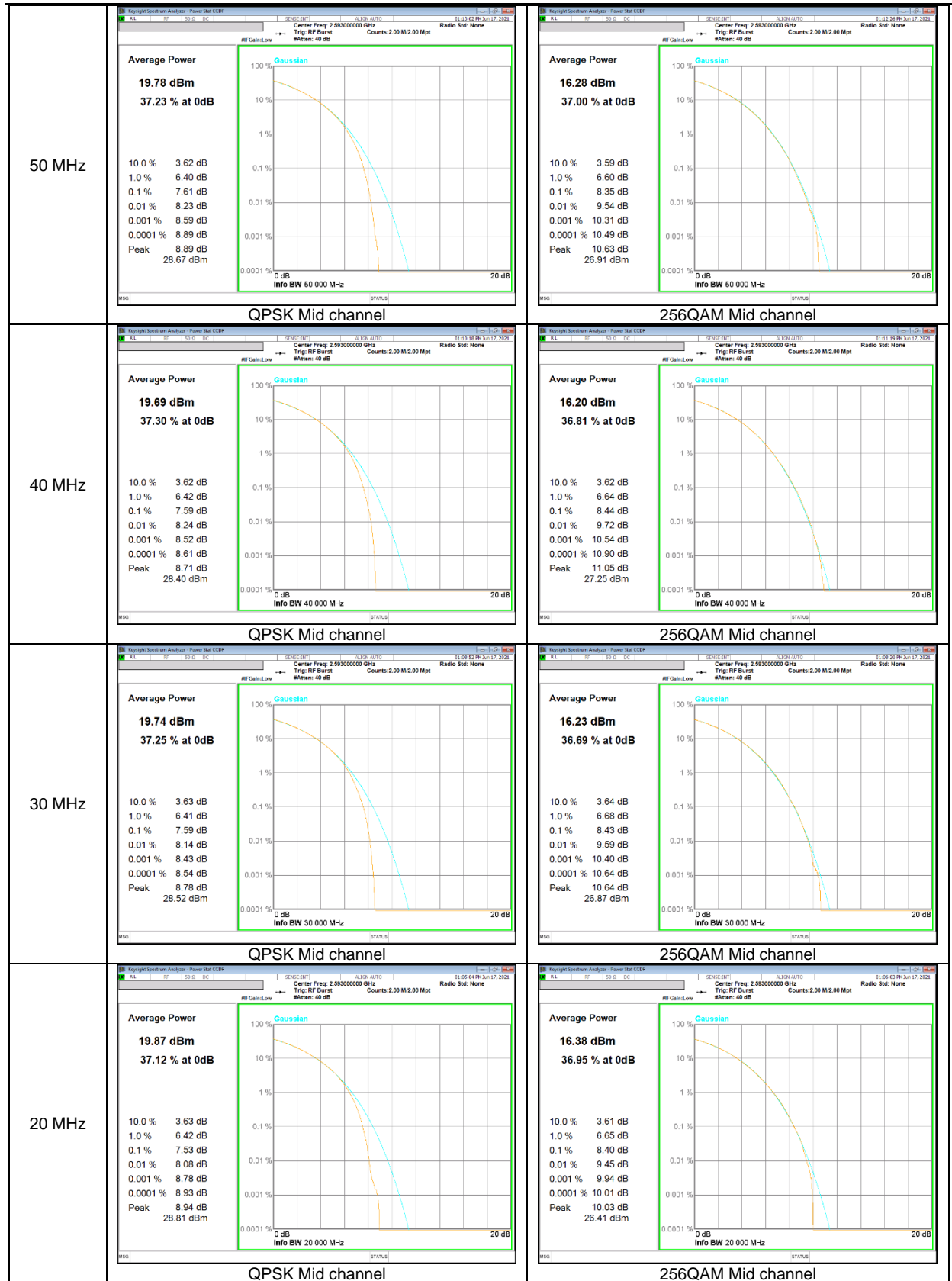


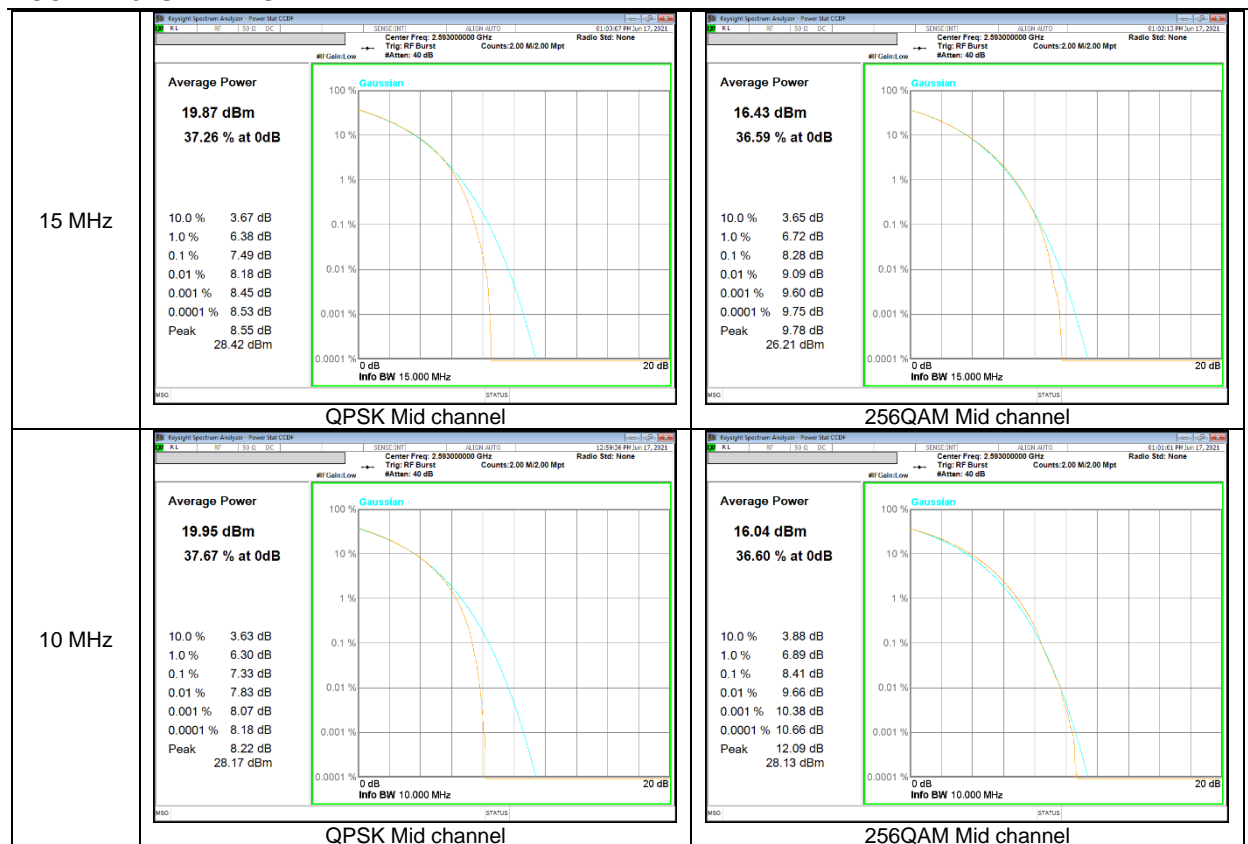
NR Band 5 CP-OFDM



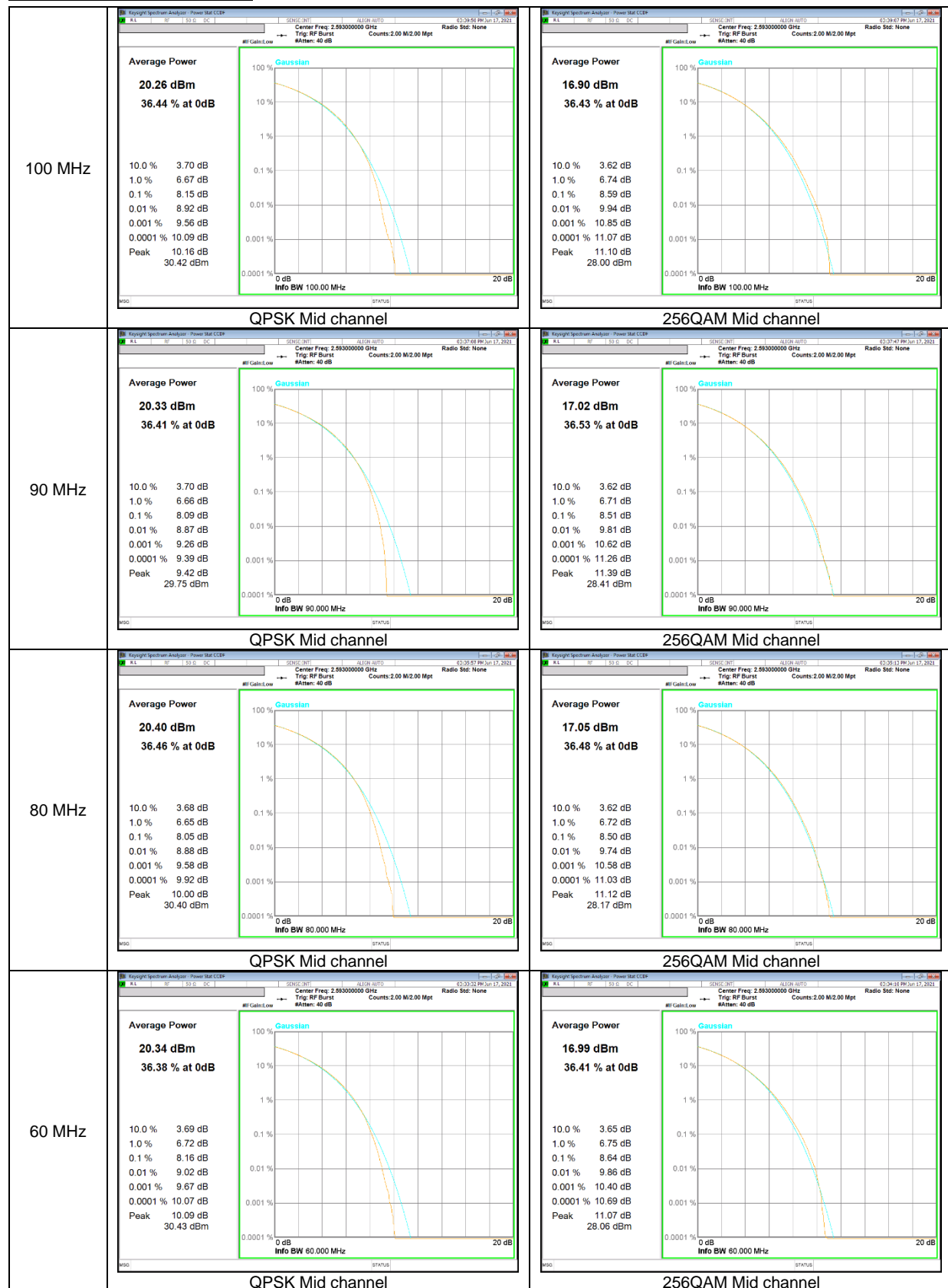
NR Band 41 #0 CP-OFDM

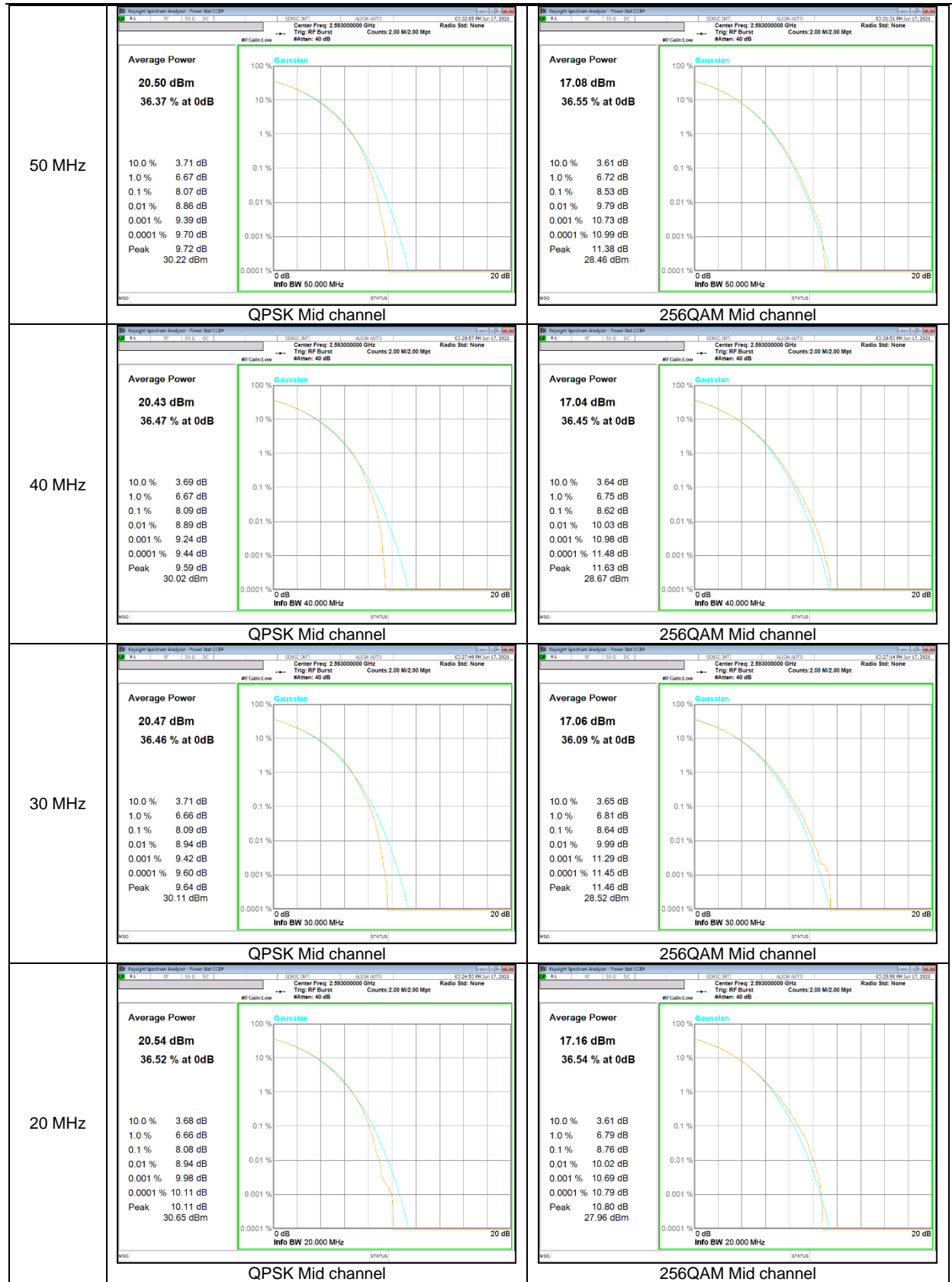


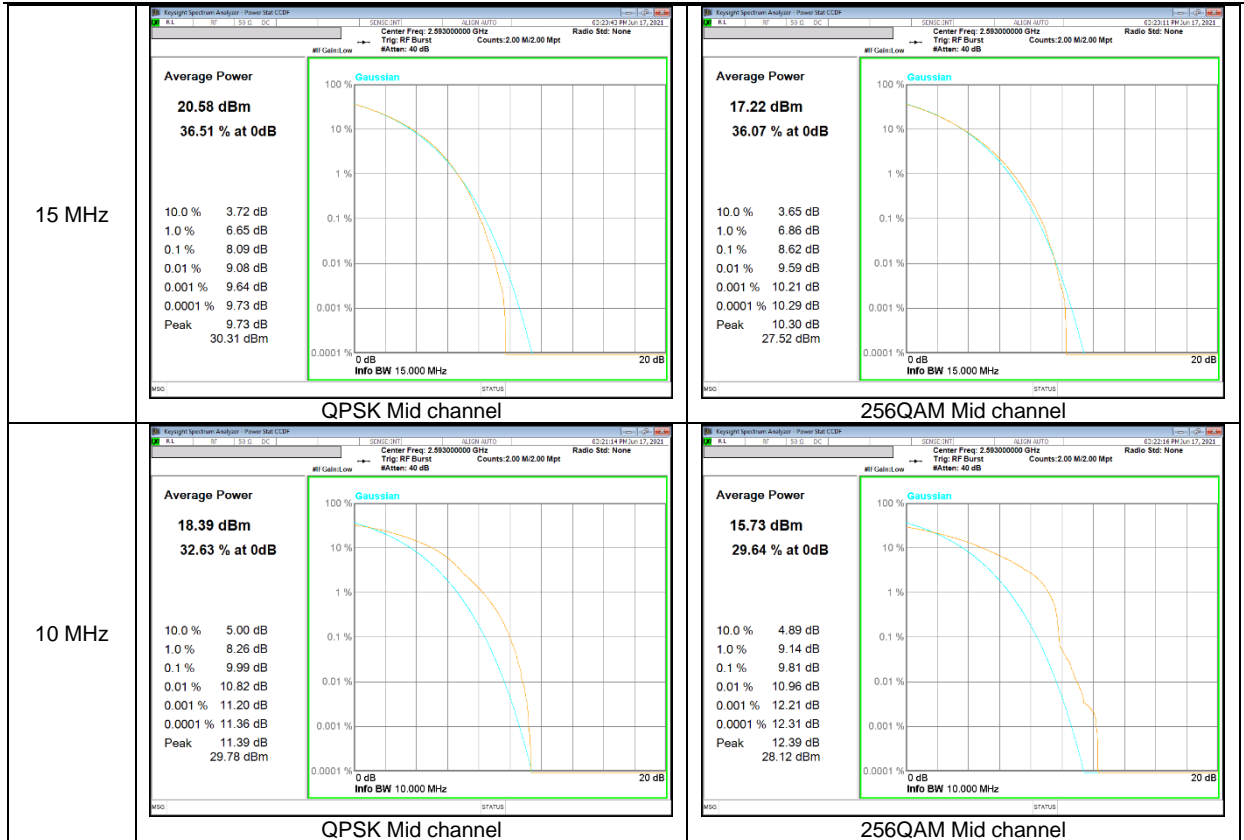




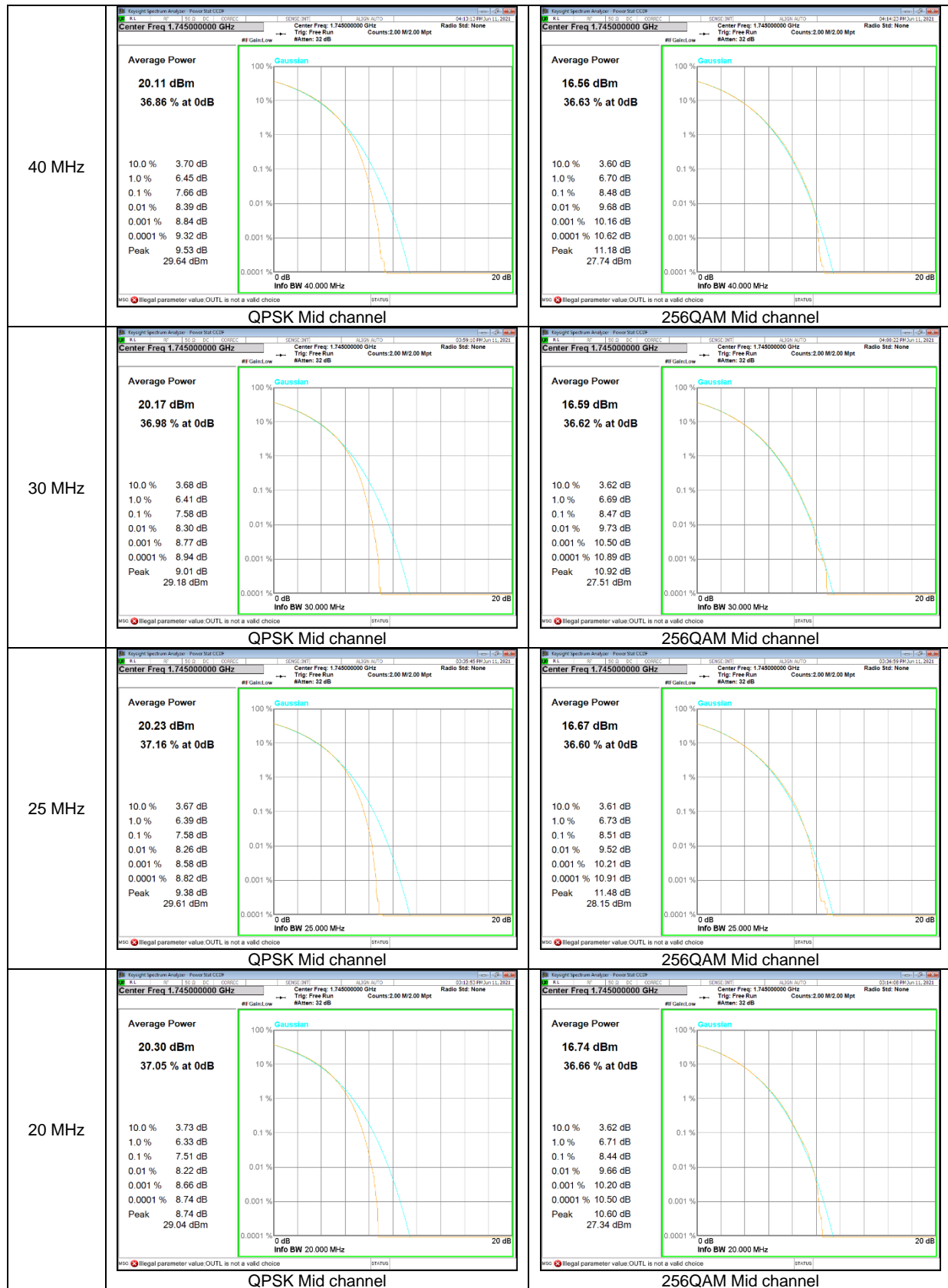
NR Band 41 #1 CP-OFDM

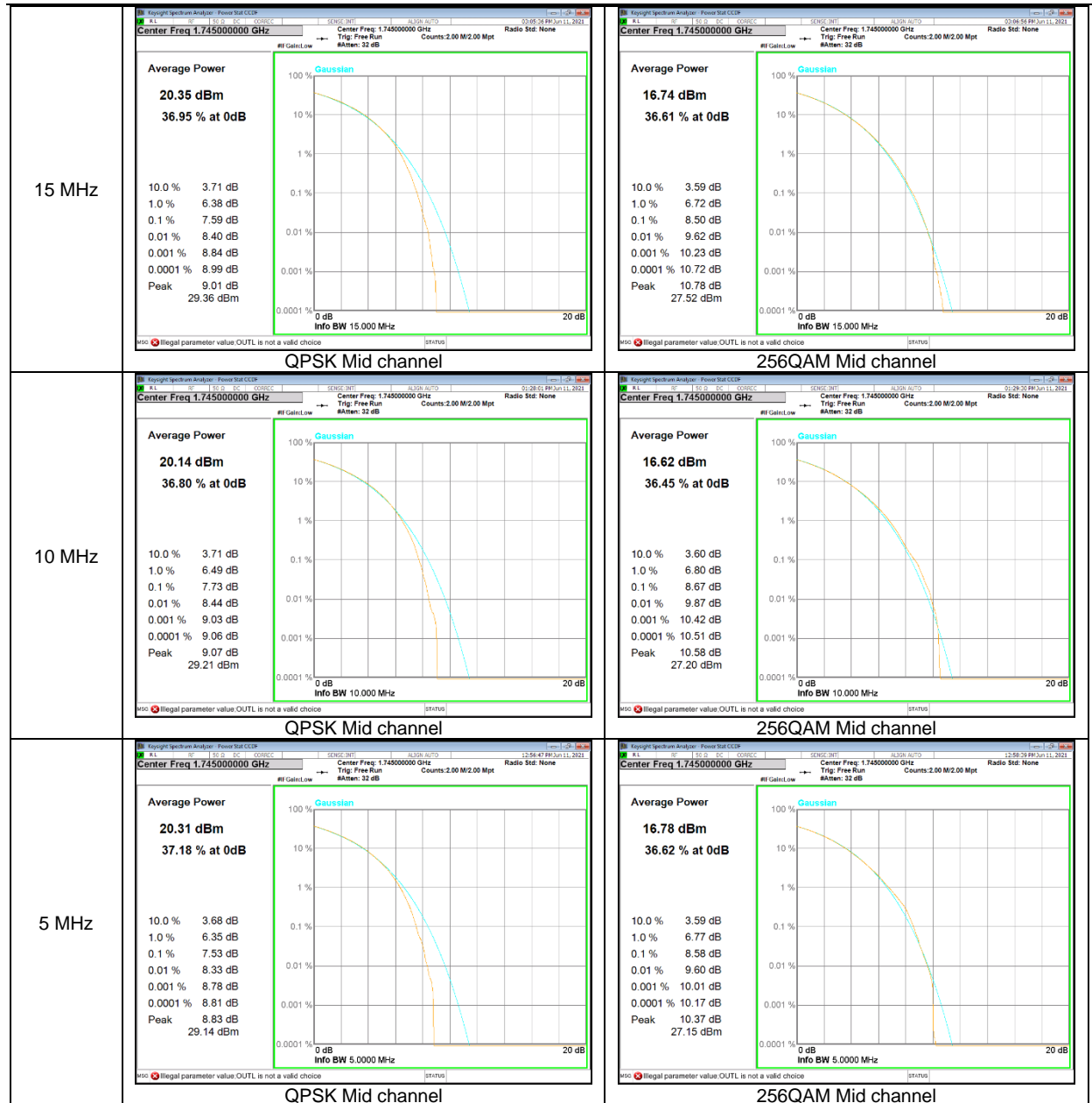




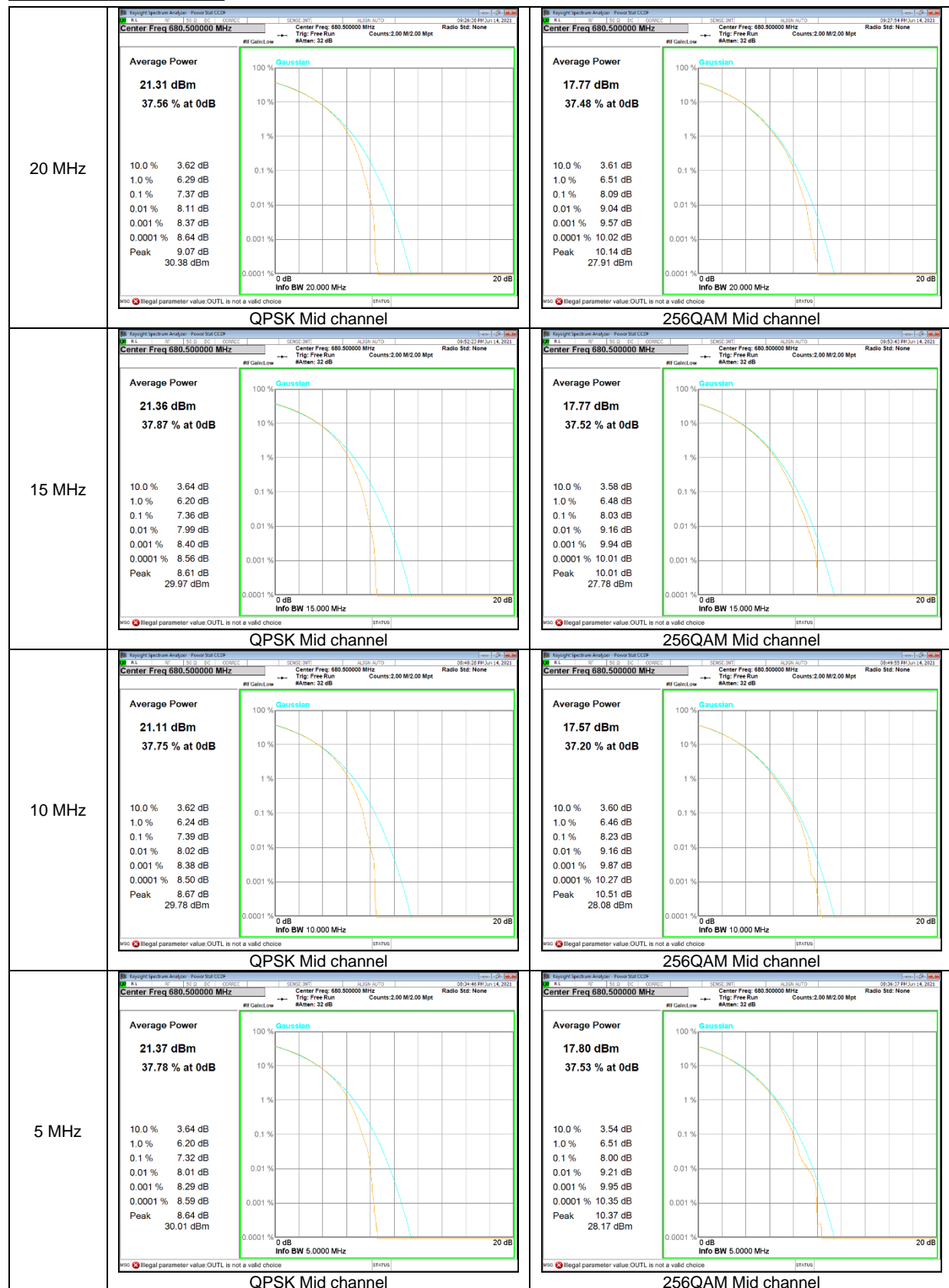


NR Band 66 CP-OFDM

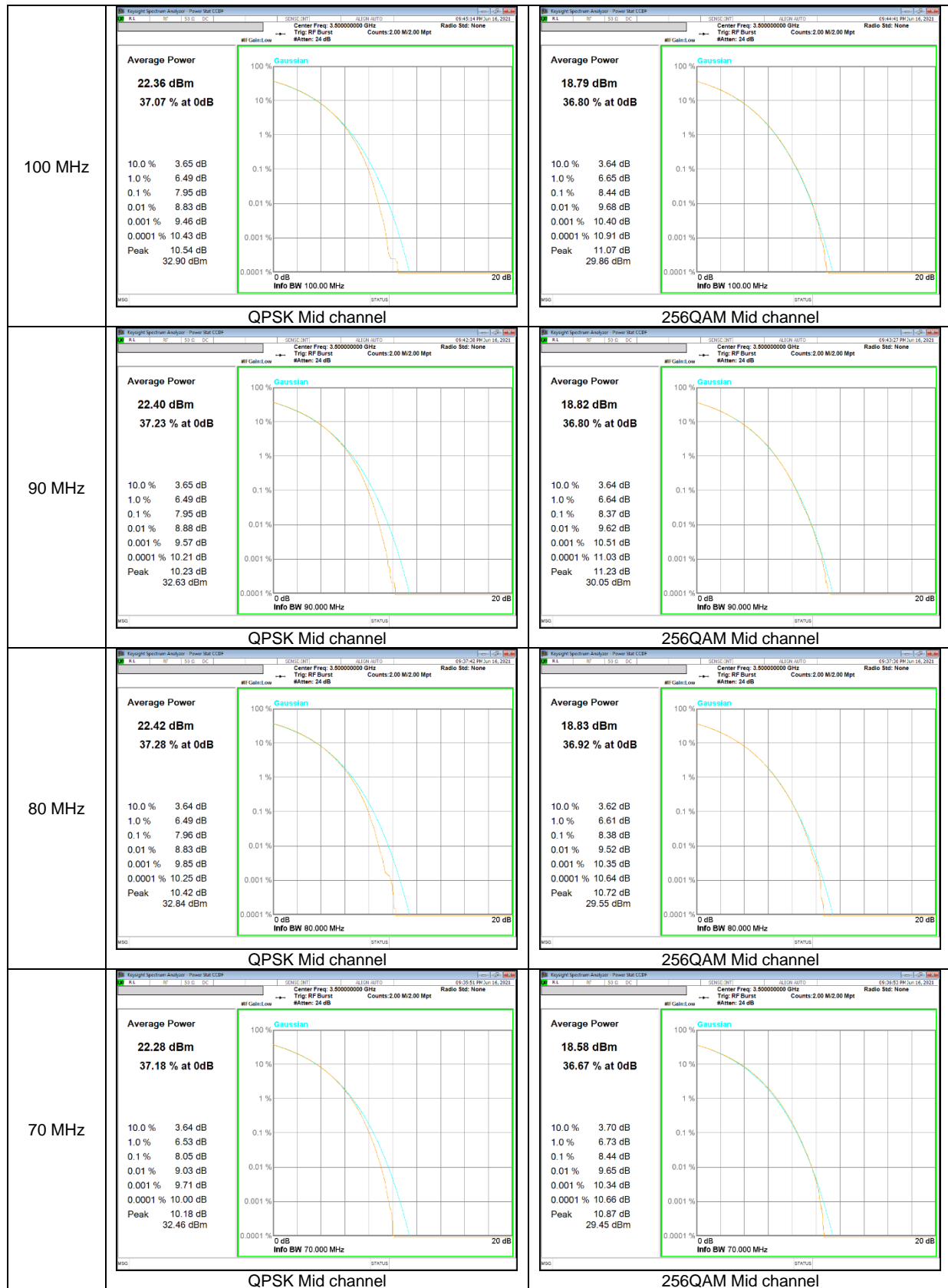


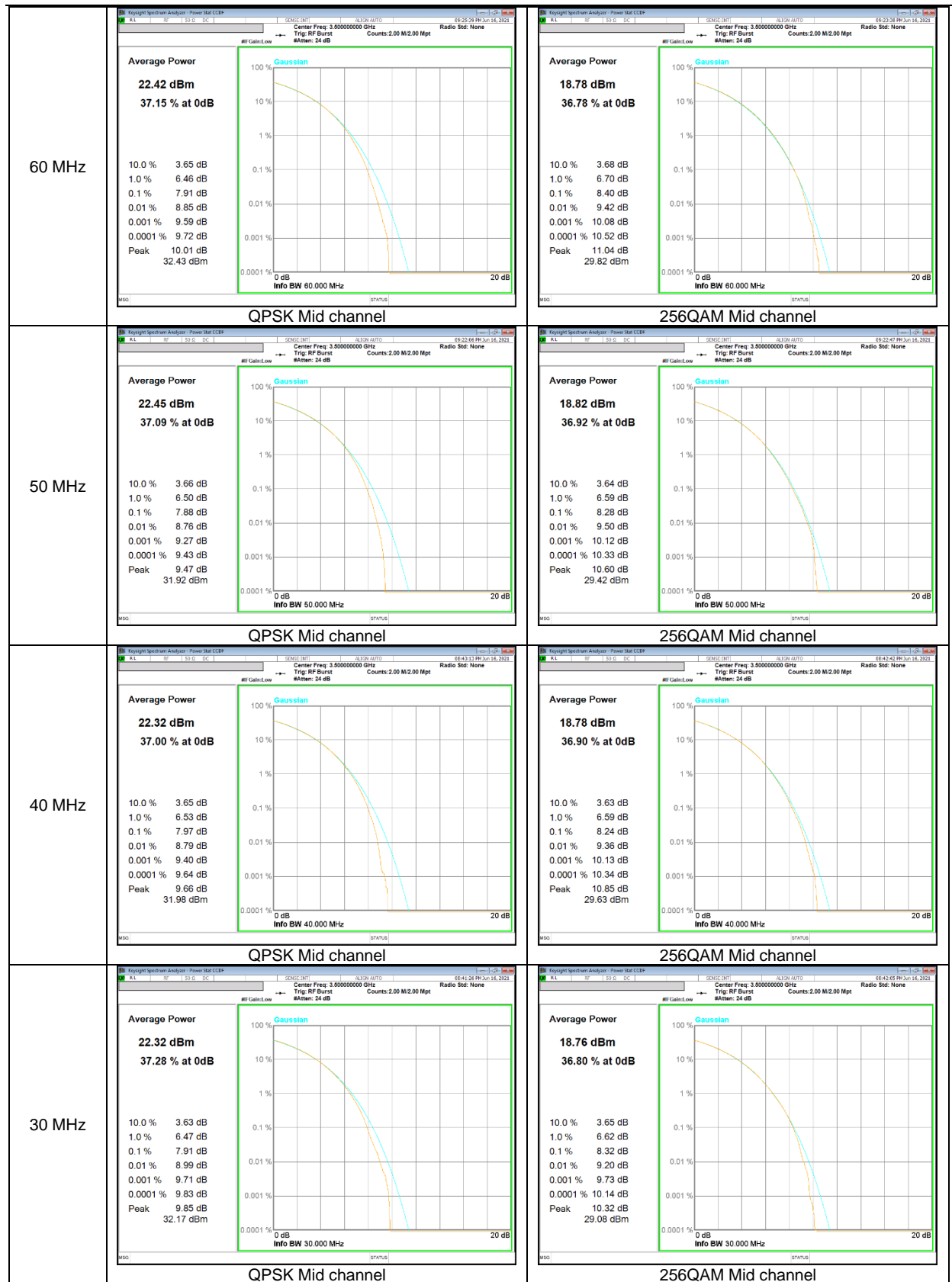


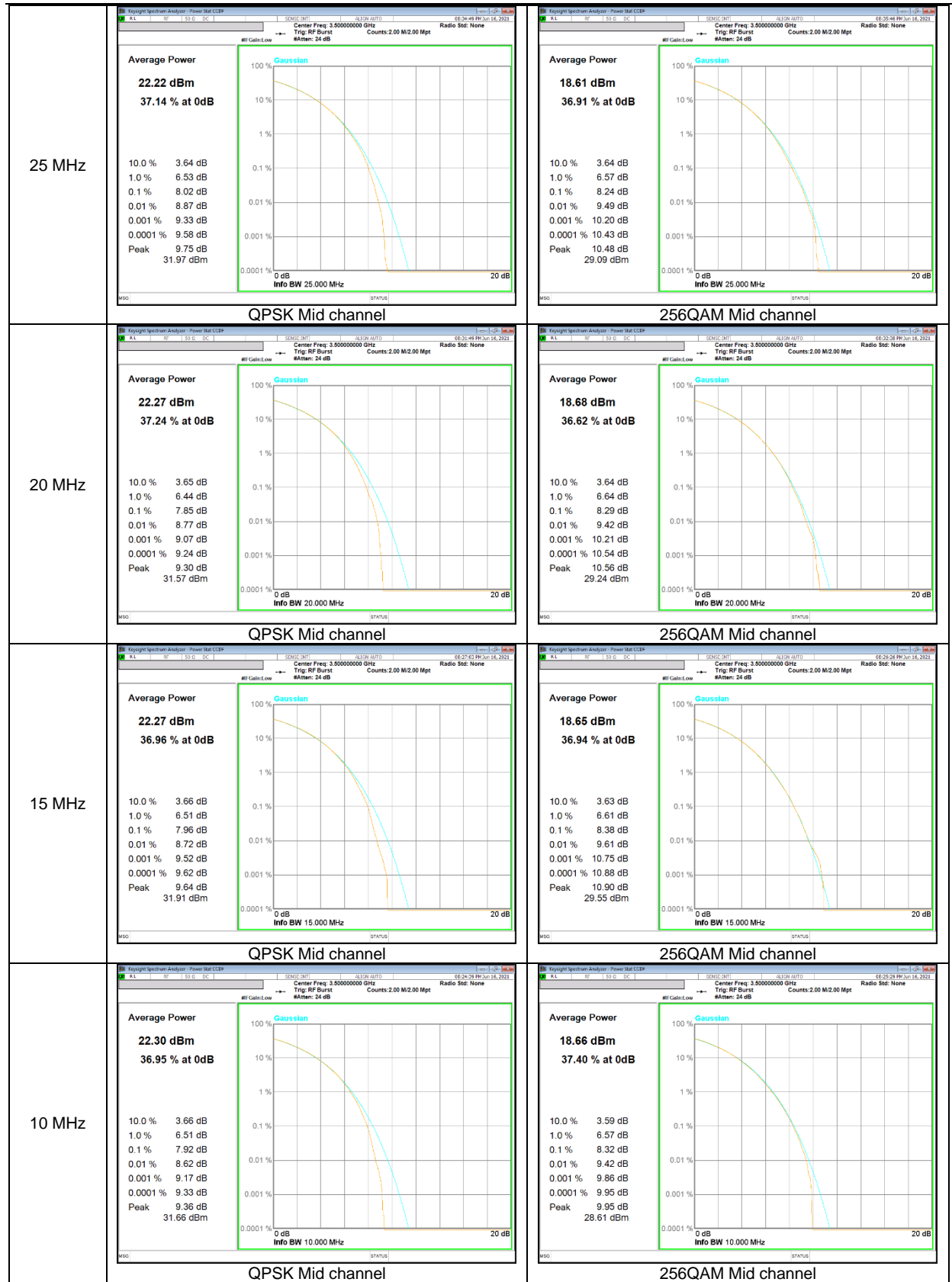
NR Band 71 CP-OFDM



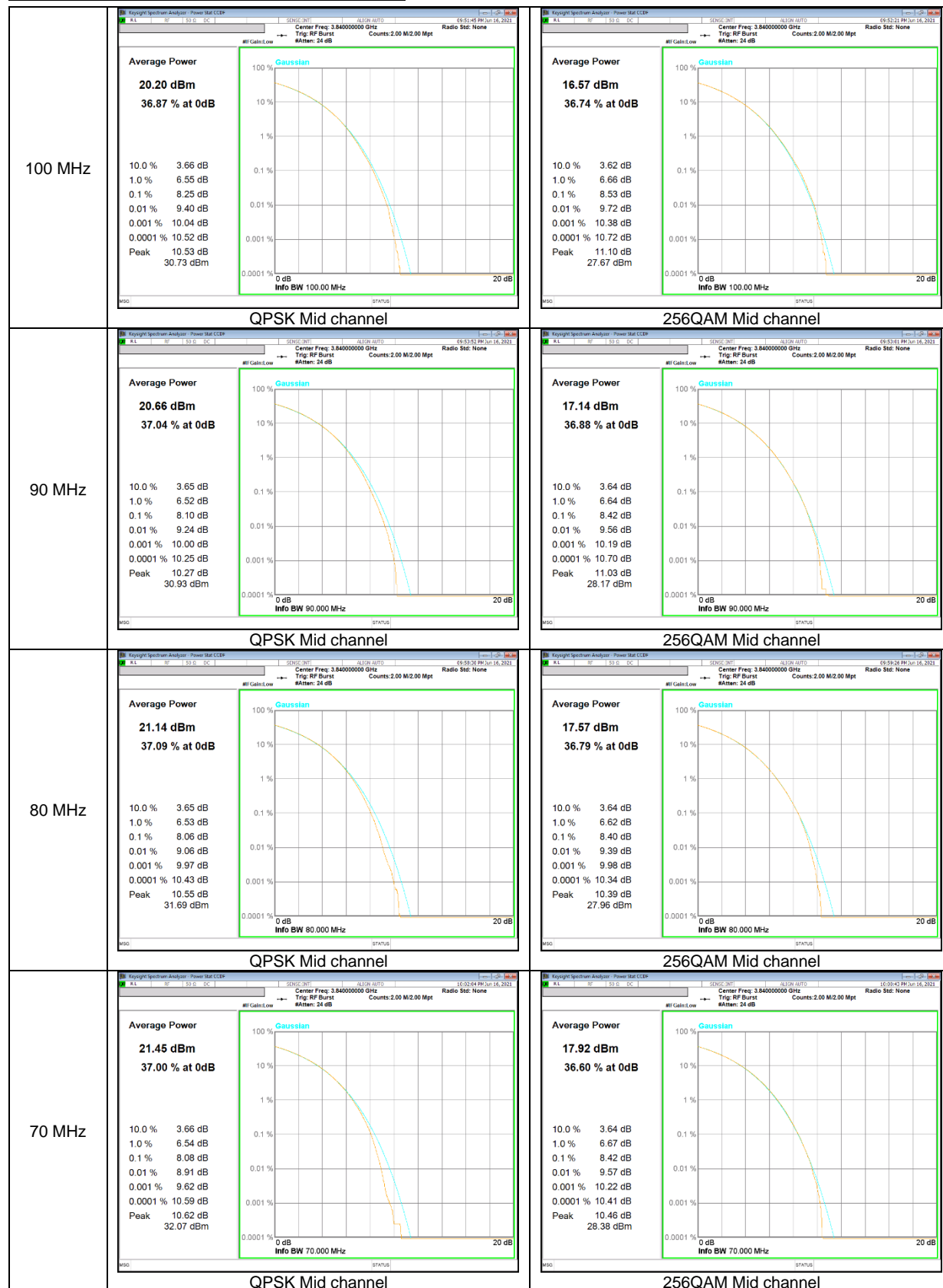
NR Band 77 (3450 – 3550 MHz) CP-OFDM

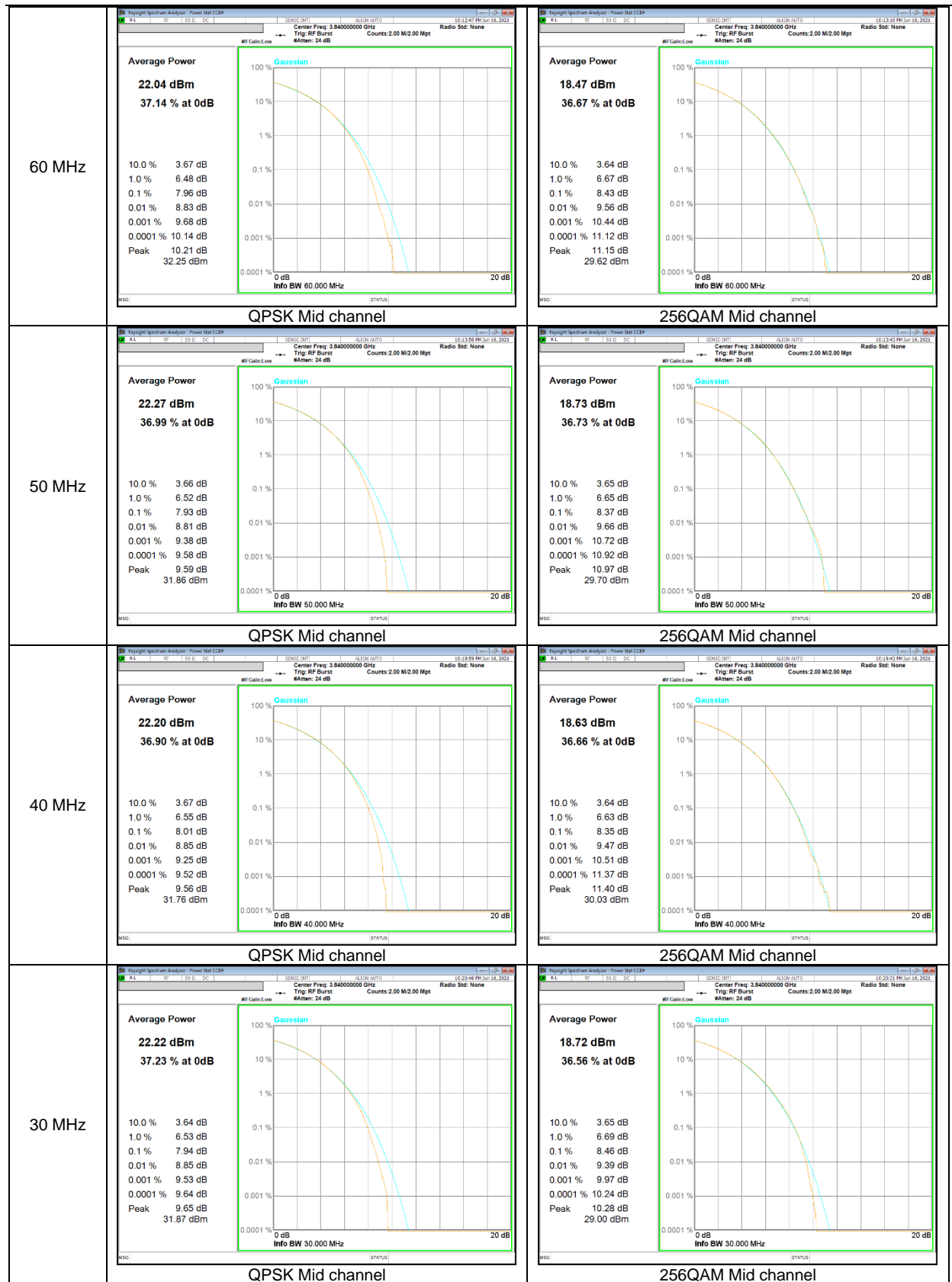


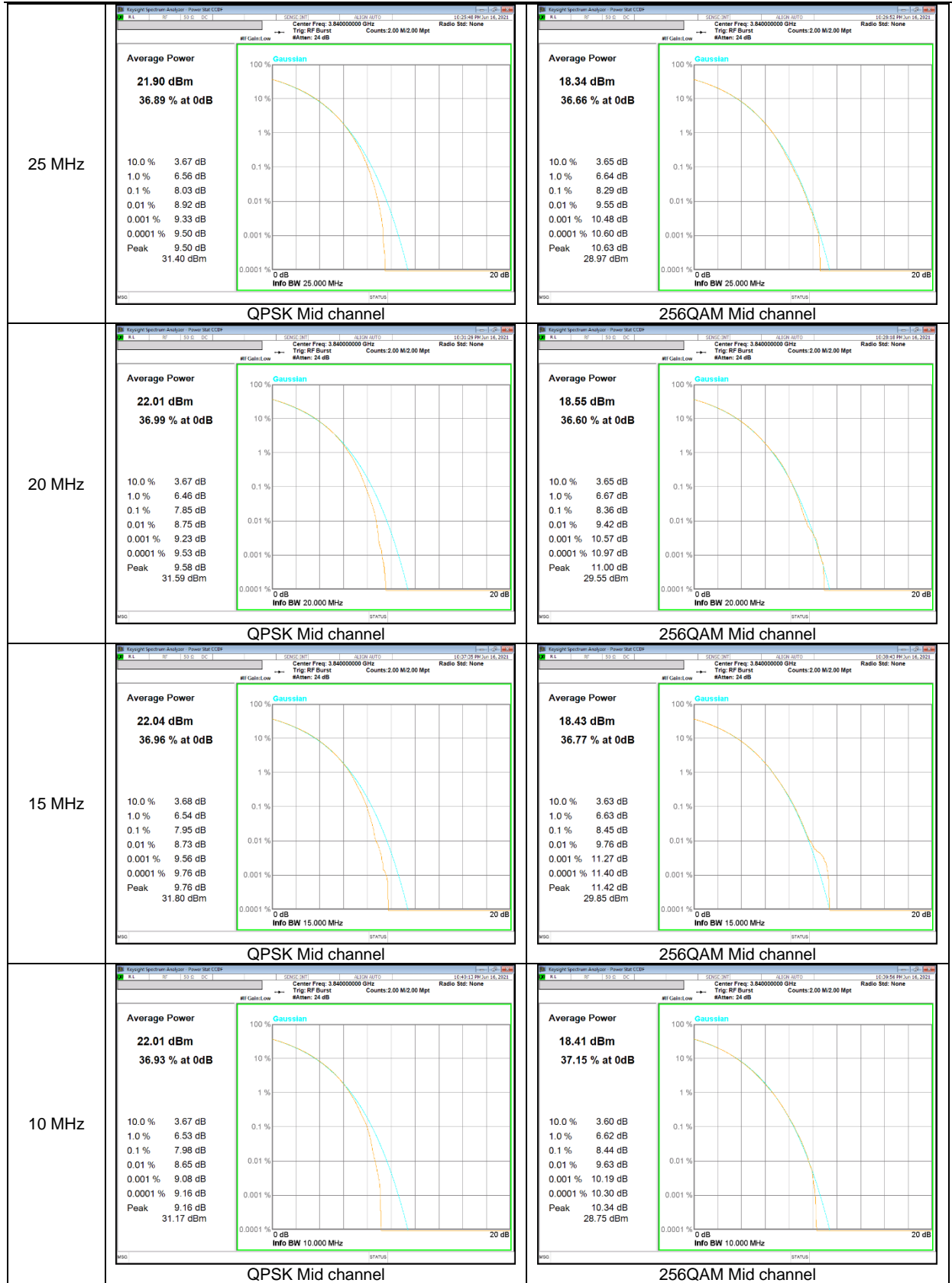




NR Band 77 (3700 – 3980 MHz) CP-OFDM







9. LIMITS AND CONDUCTED RESULTS

9.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded. (KDB 971168 D01 Power Meas License Digital Systems v03r01)

Note

5G NR: All Waveforms (CP-OFDM vs DFT-s OFDM) and modulations (QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

RESULTS

See the following pages.

- WCDMA

Band	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
B5	Rel.99	836.6	4.150	4.660
	HSDPA		4.141	4.643
B4	Rel.99	1732.6	4.134	4.651
	HSDPA		4.161	4.654
B2	Rel.99	1880.0	4.152	4.646
	HSDPA		4.145	4.661

- LTE Band 5

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B5	10M	QPSK	836.5	8.965	9.724
		16QAM		8.946	9.721
	5M	QPSK	836.5	4.485	4.935
		16QAM		4.482	4.917
	3M	QPSK	836.5	2.691	2.926
		16QAM		2.686	2.938
	1.4M	QPSK	836.5	1.081	1.280
		16QAM		1.084	1.279

- LTE Band 7

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B7	20M	QPSK	2535.0	17.924	19.170
		16QAM		17.929	19.270
	15M	QPSK	2535.0	13.425	14.520
		16QAM		13.465	14.420
	10M	QPSK	2535.0	8.966	9.739
		16QAM		8.963	9.629
	5M	QPSK	2535.0	4.487	4.926
		16QAM		4.476	4.883

- LTE Band 12

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B12	10M	QPSK	707.5	8.986	9.749
		16QAM		8.960	9.686
	5M	QPSK	707.5	4.486	5.110
		16QAM		4.484	4.900
	3M	QPSK	707.5	2.689	2.933
		16QAM		2.683	2.917
	1.4M	QPSK	707.5	1.095	1.298
		16QAM		1.082	1.269

- LTE Band 13

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B13	10M	QPSK	782.0	8.951	9.679
		16QAM		8.960	9.646
	5M	QPSK	782.0	4.512	4.970
		16QAM		4.489	4.946

- LTE Band 14

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B14	10M	QPSK	793.0	8.954	9.749
		16QAM		8.926	9.710
	5M	QPSK	793.0	4.480	4.928
		16QAM		4.482	4.896

- LTE Band 25

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B25	20M	QPSK	1882.5	17.881	19.270
		16QAM		17.873	19.160
	15M	QPSK	1882.5	13.425	14.470
		16QAM		13.418	14.540
	10M	QPSK	1882.5	8.947	9.690
		16QAM		8.942	9.662
	5M	QPSK	1882.5	4.486	4.914
		16QAM		4.486	4.910
	3M	QPSK	1882.5	2.691	2.927
		16QAM		2.688	2.917
	1.4M	QPSK	1882.5	1.090	1.297
		16QAM		1.094	1.297

- LTE Band 30

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B30	10M	QPSK	2310	8.961	9.574
		16QAM		8.945	9.685
	5M	QPSK	2310	4.487	4.915
		16QAM		4.481	4.933

- LTE Band 41 (PC2)

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B41	20M	QPSK	2593.0	17.860	19.770
		16QAM		17.909	20.380
	15M	QPSK	2593.0	13.417	14.560
		16QAM		13.428	15.100
	10M	QPSK	2593.0	8.957	9.654
		16QAM		8.957	9.510
	5M	QPSK	2593.0	4.474	4.879
		16QAM		4.475	4.869

- LTE Band 66

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B66	20M	QPSK	1745.0	17.870	19.190
		16QAM		17.884	19.320
	15M	QPSK	1745.0	13.434	14.450
		16QAM		13.411	14.470
	10M	QPSK	1745.0	8.956	9.732
		16QAM		8.992	9.684
	5M	QPSK	1745.0	4.485	4.904
		16QAM		4.475	4.880
	3M	QPSK	1745.0	2.691	2.920
		16QAM		2.686	2.930
	1.4M	QPSK	1745.0	1.081	1.279
		16QAM		1.085	1.282

- LTE Band 71

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B71	20M	QPSK	680.5	17.873	19.180
		16QAM		17.834	19.170
	15M	QPSK	680.5	13.442	14.270
		16QAM		13.423	14.520
	10M	QPSK	680.5	8.936	9.595
		16QAM		8.940	9.613
	5M	QPSK	680.5	4.469	4.918
		16QAM		4.477	4.909

- NR Band 2 CP-OFDM

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n2	20M	QPSK	836.5	18.967	20.470
		16QAM		18.952	22.420
	15M	QPSK	836.5	14.108	14.870
		16QAM		14.150	19.280
	10M	QPSK	836.5	9.300	10.080
		16QAM		9.293	9.923
	5M	QPSK	836.5	4.470	5.780
		16QAM		4.472	5.392

- NR Band 5 CP-OFDM

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n5	20M	QPSK	836.5	18.973	19.780
		16QAM		18.940	19.980
	15M	QPSK	836.5	14.099	14.790
		16QAM		14.135	14.820
	10M	QPSK	836.5	9.294	9.985
		16QAM		9.288	9.866
	5M	QPSK	836.5	4.467	4.828
		16QAM		4.466	4.881

- NR Band 41 #0 CP-OFDM

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n41 #0	100M	QPSK	2593.0	97.032	100.900
		16QAM		97.186	101.200
	90M	QPSK	2593.0	87.656	90.850
		16QAM		87.373	90.720
	80M	QPSK	2593.0	77.620	80.370
		16QAM		77.430	80.350
	60M	QPSK	2593.0	57.843	60.300
		16QAM		57.896	60.100
	50M	QPSK	2593.0	47.372	49.520
		16QAM		47.534	49.570
	40M	QPSK	2593.0	37.935	39.620
		16QAM		37.932	39.720
	30M	QPSK	2593.0	27.932	31.160
		16QAM		27.946	29.880
	20M	QPSK	2593.0	18.207	19.140
		16QAM		18.203	19.520
	15M	QPSK	2593.0	13.581	14.400
		16QAM		13.590	14.610
10M	QPSK	2593.0	8.578	9.512	
	16QAM		8.578	9.340	

- NR Band 41 #1 CP-OFDM

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n41 #1	100M	QPSK	2593.0	97.222	101.400
		16QAM		97.201	101.500
	90M	QPSK	2593.0	87.254	91.180
		16QAM		87.482	90.960
	80M	QPSK	2593.0	77.720	80.740
		16QAM		77.433	80.810
	60M	QPSK	2593.0	57.690	60.410
		16QAM		57.864	60.290
	50M	QPSK	2593.0	47.562	49.920
		16QAM		47.503	49.740
	40M	QPSK	2593.0	37.901	39.650
		16QAM		37.811	39.690
	30M	QPSK	2593.0	27.840	29.770
		16QAM		27.826	29.610
	20M	QPSK	2593.0	18.239	19.410
		16QAM		18.231	19.220
	15M	QPSK	2593.0	13.574	14.750
		16QAM		13.639	14.600
10M	QPSK	2593.0	8.579	9.432	
	16QAM		8.578	9.589	

- NR Band 66 CP-OFDM

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n66	40M	QPSK	1745.0	38.588	39.840
		16QAM		38.580	39.840
	30M	QPSK	1745.0	28.545	29.540
		16QAM		28.583	29.630
	25M	QPSK	1745.0	23.787	24.880
		16QAM		23.734	24.830
	20M	QPSK	1745.0	18.938	19.800
		16QAM		18.936	19.820
	15M	QPSK	1745.0	14.129	14.850
		16QAM		14.150	14.930
	10M	QPSK	1745.0	9.309	9.869
		16QAM		9.298	9.779
	5M	QPSK	1745.0	4.481	5.231
		16QAM		4.480	4.843

- NR Band 71 CP-OFDM

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n71	20M	QPSK	680.5	18.948	19.960
		16QAM		18.950	19.950
	15M	QPSK	680.5	14.100	14.810
		16QAM		14.099	14.730
	10M	QPSK	680.5	9.315	10.040
		16QAM		9.306	9.968
	5M	QPSK	680.5	4.469	4.880
		16QAM		4.472	4.893

- NR Band 77 (3450 – 3550 MHz) CP-OFDM

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n77 (3450 – 3550 MHz)	100M	QPSK	3500	97.363	101.100
		16QAM		97.384	101.200
	90M	QPSK	3500	87.579	90.740
		16QAM		87.445	90.730
	80M	QPSK	3500	77.528	80.480
		16QAM		77.627	80.550
	70M	QPSK	3500	67.556	70.680
		16QAM		67.537	70.150
	60M	QPSK	3500	57.950	61.770
		16QAM		58.099	60.520
	50M	QPSK	3500	47.716	49.990
		16QAM		47.553	49.390
	40M	QPSK	3500	37.863	40.800
		16QAM		37.925	39.780
	30M	QPSK	3500	27.844	29.570
		16QAM		27.968	29.080
	25M	QPSK	3500	23.280	24.600
		16QAM		23.232	24.400
	20M	QPSK	3500	18.172	19.090
		16QAM		18.176	19.490
15M	QPSK	3500	13.571	14.660	
	16QAM		13.598	14.560	
10M	QPSK	3500	8.567	9.252	
	16QAM		8.551	9.521	

- NR Band 77 (3700 – 3980 MHz) CP-OFDM

Band	BW	Modulation	f [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n77 (3700 – 3980 MHz)	100M	QPSK	3840	97.302	101.300
		16QAM		97.284	101.300
	90M	QPSK	3840	87.340	90.680
		16QAM		87.529	90.630
	80M	QPSK	3840	77.605	82.200
		16QAM		77.688	80.590
	70M	QPSK	3840	67.580	70.240
		16QAM		67.625	70.610
	60M	QPSK	3840	58.028	60.200
		16QAM		57.825	60.140
	50M	QPSK	3840	47.592	49.460
		16QAM		47.611	49.540
	40M	QPSK	3840	37.802	39.400
		16QAM		37.882	39.640
	30M	QPSK	3840	27.952	29.550
		16QAM		27.961	29.750
	25M	QPSK	3840	23.224	24.220
		16QAM		23.220	24.930
	20M	QPSK	3840	18.194	19.340
		16QAM		18.253	19.350
15M	QPSK	3840	13.570	14.780	
	16QAM		13.581	14.560	
10M	QPSK	3840	8.583	9.426	
	16QAM		8.594	9.328	