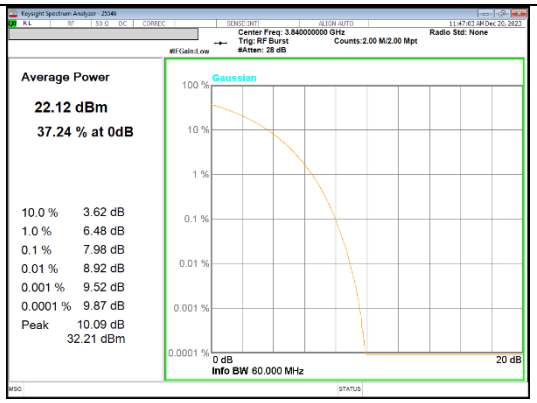
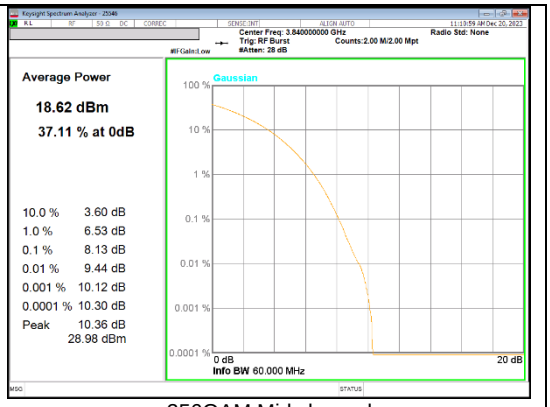
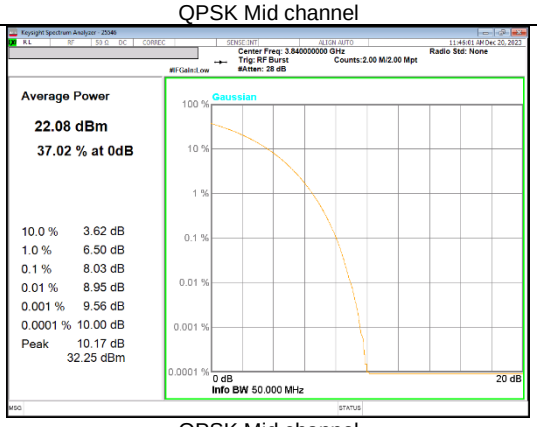
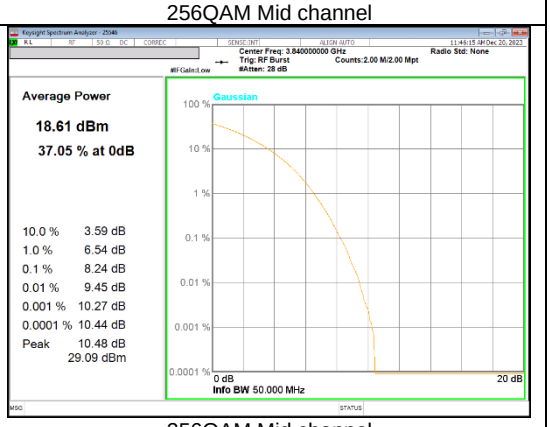
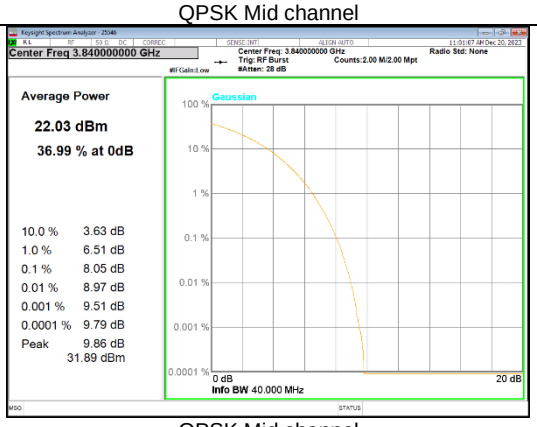
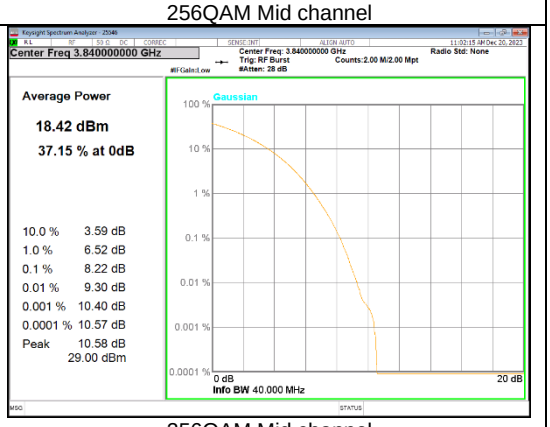
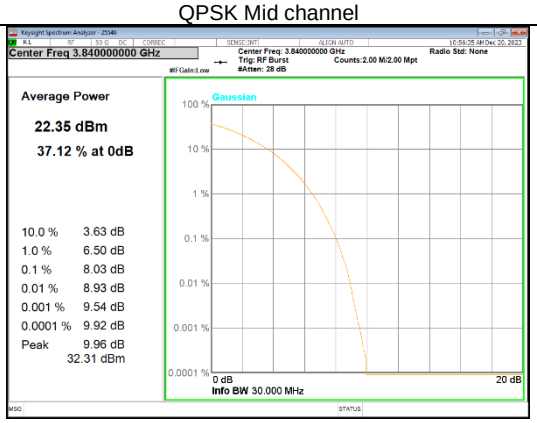
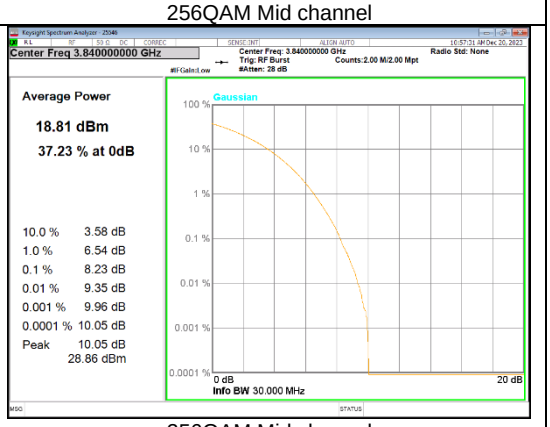
60 MHz	 QPSK Mid channel	 256QAM Mid channel
50 MHz	 QPSK Mid channel	 256QAM Mid channel
40 MHz	 QPSK Mid channel	 256QAM Mid channel
30 MHz	 QPSK Mid channel	 256QAM Mid channel

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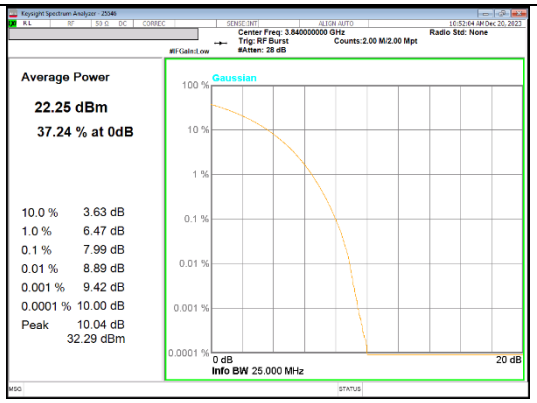
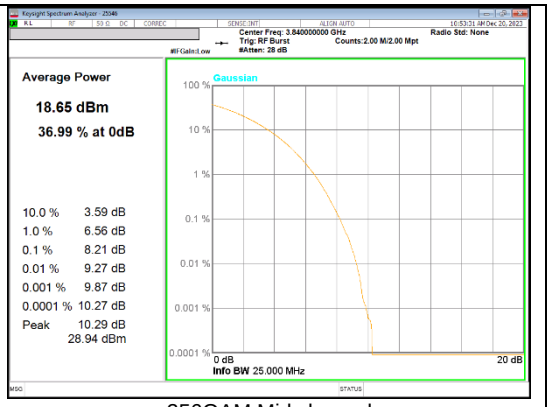
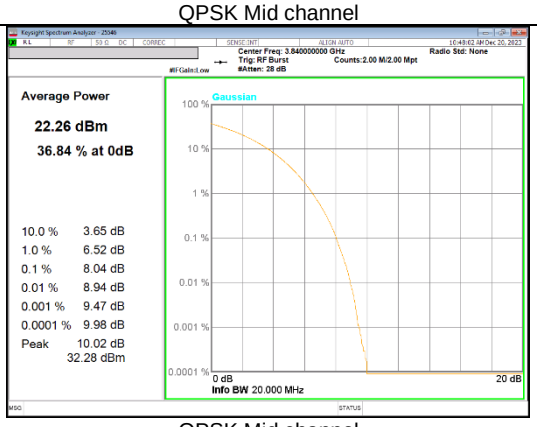
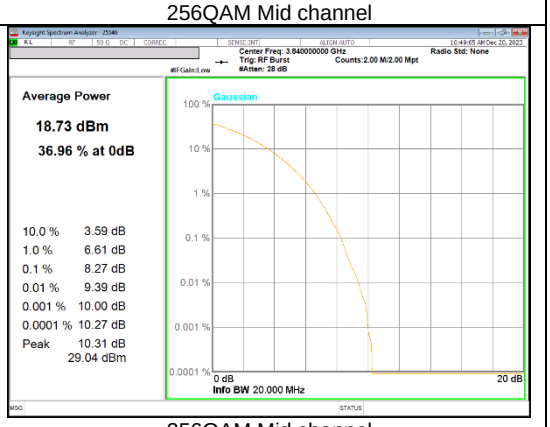
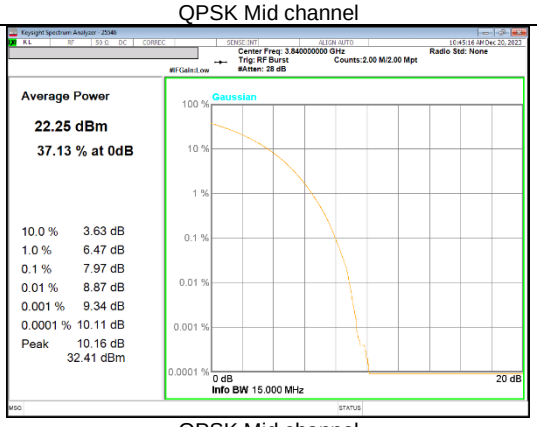
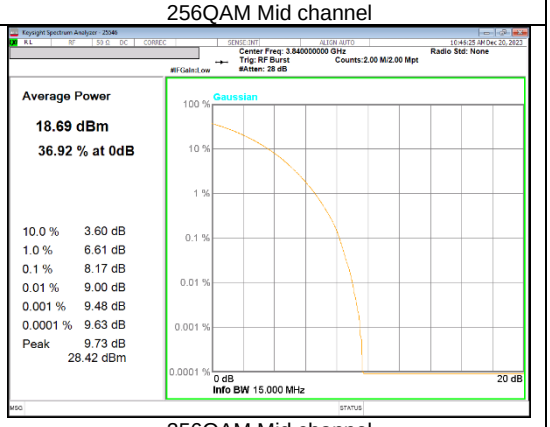
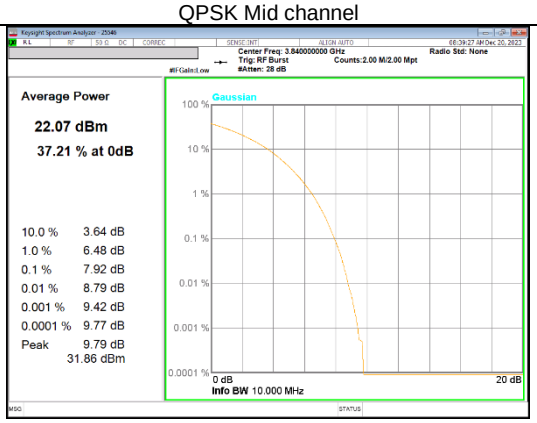
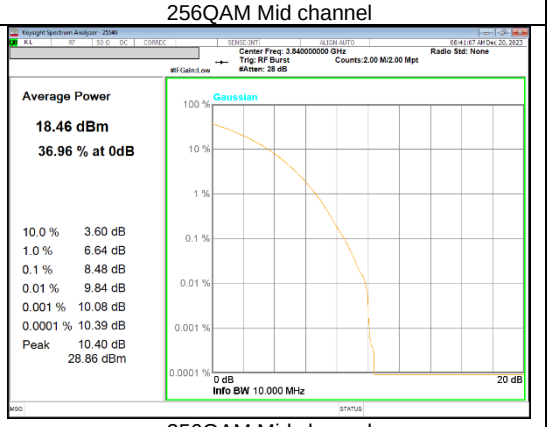
25 MHz	 QPSK Mid channel	 256QAM Mid channel
20 MHz	 QPSK Mid channel	 256QAM Mid channel
15 MHz	 QPSK Mid channel	 256QAM Mid channel
10 MHz	 QPSK Mid channel	 256QAM Mid channel

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8.3. 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 middle channel in each band. The -26dB bandwidth was also measured and recorded.

(KDB 971168 D01 Power Meas License Digital Systems v03r01)

RESULTS

See the following pages.

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- **WCDMA**

Band	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
B4	Rel.99	1732.6	4.172	4.738
	HSDPA		4.178	4.717

- **LTE Band 12**

Band	BW	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B12	10M	QPSK	707.5	8.978	10.230
		16QAM		8.973	10.140
	5M	QPSK		4.497	5.259
		16QAM		4.494	5.270
	3M	QPSK		2.700	3.101
		16QAM		2.699	3.080
	1.4M	QPSK		1.086	1.296
		16QAM		1.090	1.331

- **LTE Band 13**

Band	BW	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B13	10M	QPSK	782.0	9.002	10.580
		16QAM		9.017	10.870
	5M	QPSK		4.504	5.374
		16QAM		4.508	5.625

- **LTE Band 41**

Band	BW	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B41	20M	QPSK	2593.0	17.930	19.830
		16QAM		17.906	19.650
	15M	QPSK		13.426	15.170
		16QAM		13.425	14.960
	10M	QPSK		8.962	10.320
		16QAM		8.955	10.370
	5M	QPSK		4.499	5.248
		16QAM		4.488	5.201

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- **LTE Band 66**

Band	BW	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
LTE B66	20M	QPSK	1745.0	17.930	19.620
		16QAM		17.917	19.830
	15M	QPSK		13.423	15.050
		16QAM		13.426	15.080
	10M	QPSK		8.974	10.320
		16QAM		8.989	10.270
	5M	QPSK		4.498	5.348
		16QAM		4.494	5.226
	3M	QPSK		2.707	3.080
		16QAM		2.704	3.066
	1.4M	QPSK		1.086	1.313
		16QAM		1.086	1.291

- **NR Band n41 CP-OFDM**

Band	BW	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n41	100M	QPSK	2593.0	95.846	100.700
		16QAM		95.891	101.700
	90M	QPSK		87.323	92.840
		16QAM		87.161	91.710
	80M	QPSK		77.204	83.490
		16QAM		77.237	82.130
	70M	QPSK		67.335	72.170
		16QAM		67.235	72.400
	60M	QPSK		57.593	62.260
		16QAM		57.696	62.790
	50M	QPSK		47.401	50.740
		16QAM		47.473	50.060
	40M	QPSK		37.814	41.260
		16QAM		37.891	40.570
	30M	QPSK		27.941	29.390
		16QAM		27.827	29.720
	20M	QPSK		18.308	20.150
		16QAM		18.198	20.040
	15M	QPSK		13.527	15.030
		16QAM		13.567	14.820
	10M	QPSK		8.576	9.995
		16QAM		8.607	9.458

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- **NR Band n66 CP-OFDM**

Band	BW	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n66	40M	QPSK	1745.0	38.598	41.620
		16QAM		38.659	41.630
	30M	QPSK		28.614	30.790
		16QAM		28.620	31.370
	25M	QPSK		23.822	25.380
		16QAM		23.803	25.470
	20M	QPSK		18.922	20.600
		16QAM		18.977	20.410
	15M	QPSK		14.106	14.900
		16QAM		14.117	15.000
	10M	QPSK		9.296	10.270
		16QAM		9.289	10.140
	5M	QPSK		4.480	5.250
		16QAM		4.488	5.225

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- **NR Band n77(PC2, 3450 - 3550 MHz) CP-OFDM**

Band	BW	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n77	100M	QPSK	3500.0	97.677	103.500
		16QAM		97.650	101.500
	90M	QPSK		87.736	93.360
		16QAM		87.942	92.070
	80M	QPSK		77.627	81.720
		16QAM		77.503	82.540
	70M	QPSK		67.606	73.120
		16QAM		67.534	73.490
	60M	QPSK		58.035	62.420
		16QAM		57.971	61.600
	50M	QPSK		47.692	49.590
		16QAM		47.516	49.530
	40M	QPSK		37.999	40.470
		16QAM		38.085	39.890
	30M	QPSK		27.878	29.480
		16QAM		27.911	29.540
	25M	QPSK		23.357	24.390
		16QAM		23.336	24.640
	20M	QPSK		18.228	19.550
		16QAM		18.246	19.490
	15M	QPSK		13.619	15.080
		16QAM		13.543	15.020
	10M	QPSK		8.630	9.885
		16QAM		8.626	9.921

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- **NR Band n77(PC2, 3700 - 3980 MHz) CP-OFDM**

Band	BW	Modulation	Frequency [MHz]	99% BW (MHz)	-26dB BW (MHz)
NR n77	100M	QPSK	3840.0	97.925	103.400
		16QAM		97.655	102.100
	90M	QPSK		87.830	93.470
		16QAM		88.022	92.210
	80M	QPSK		77.578	82.040
		16QAM		77.777	81.740
	70M	QPSK		67.603	73.310
		16QAM		67.684	72.090
	60M	QPSK		58.079	61.160
		16QAM		58.092	61.700
	50M	QPSK		47.785	50.180
		16QAM		47.592	51.100
	40M	QPSK		37.955	40.910
		16QAM		38.004	40.450
	30M	QPSK		27.914	29.950
		16QAM		27.952	29.350
	25M	QPSK		23.302	25.170
		16QAM		23.311	24.740
	20M	QPSK		18.229	19.880
		16QAM		18.240	19.310
	15M	QPSK		13.565	15.390
		16QAM		13.576	15.100
	10M	QPSK		8.621	10.020
		16QAM		8.624	10.140

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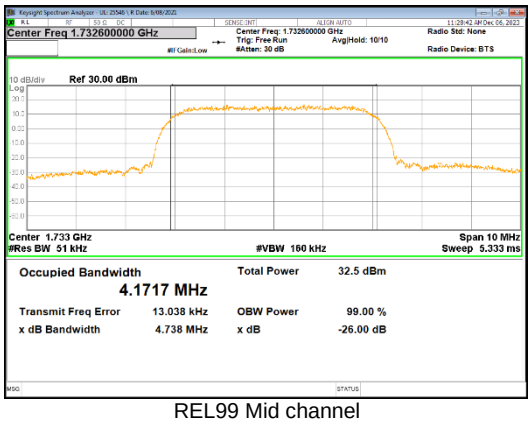
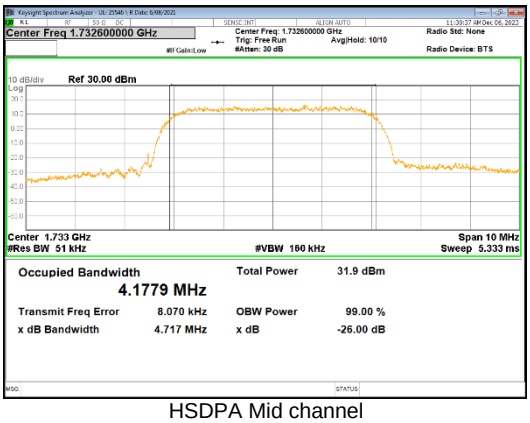
8.3.1. OCCUPIED BANDWIDTH RESULTS

WCDMA B4

Band 4	 REL99 Mid channel	 HSDPA Mid channel

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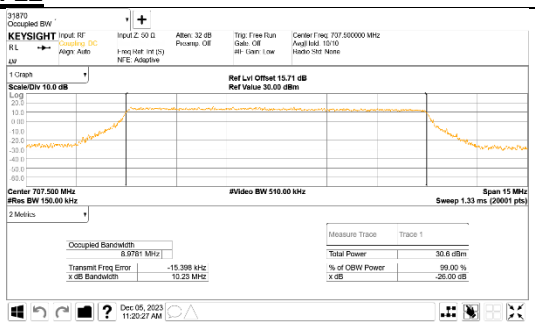
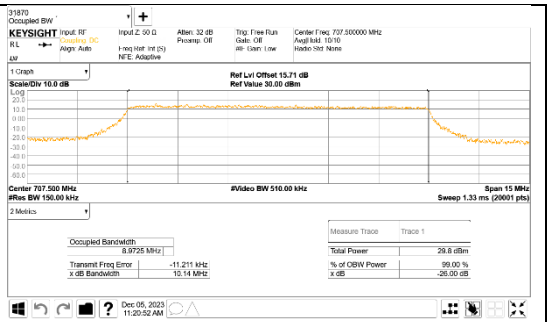
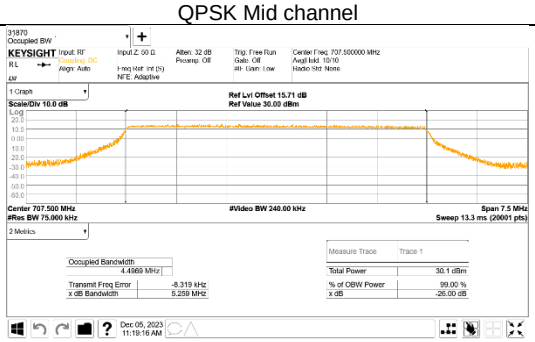
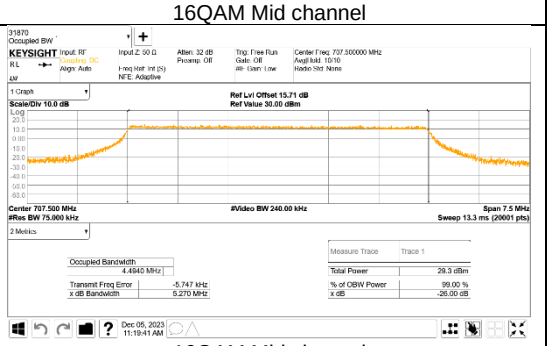
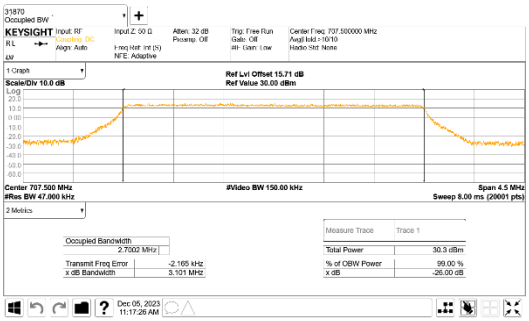
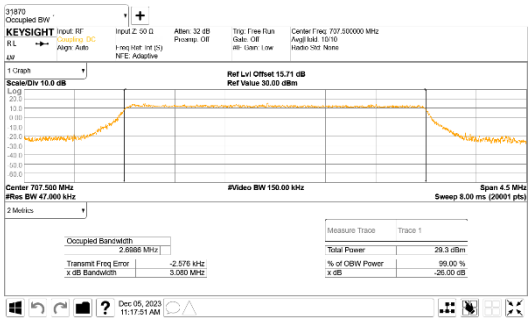
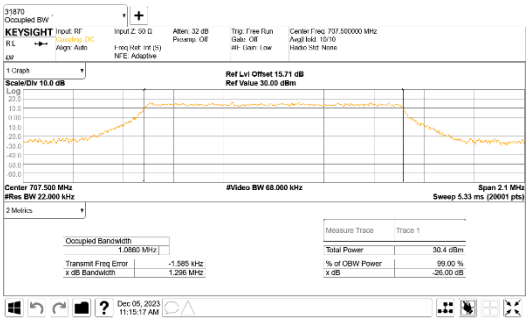
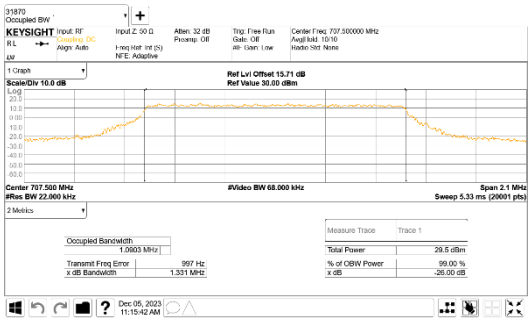
LTE Band 12

10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel
3MHz	 QPSK Mid channel	 16QAM Mid channel
1.4MHz	 QPSK Mid channel	 16QAM Mid channel

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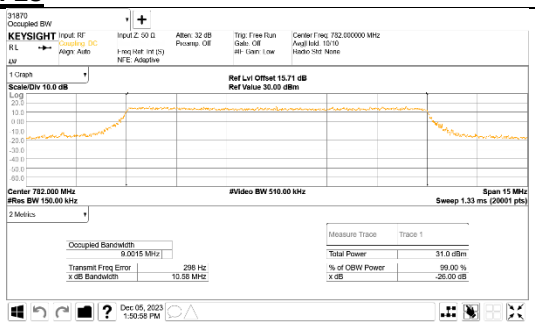
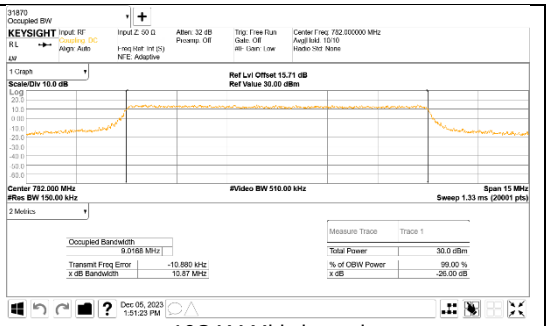
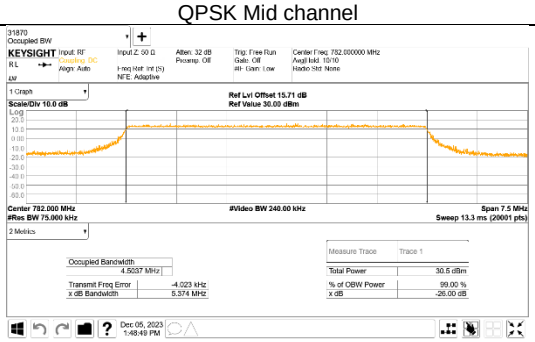
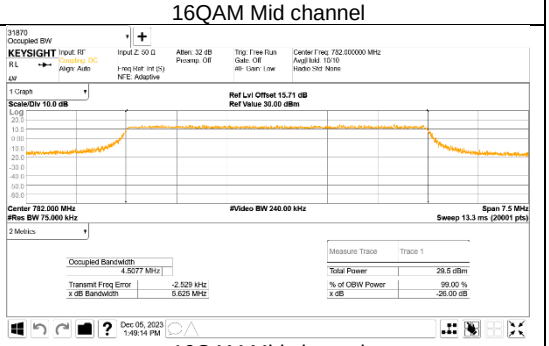
LTE Band 13

10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel

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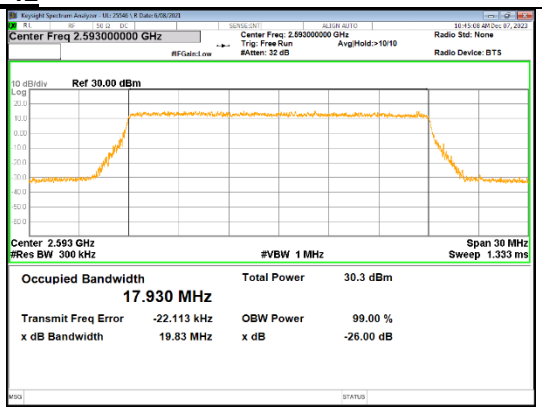
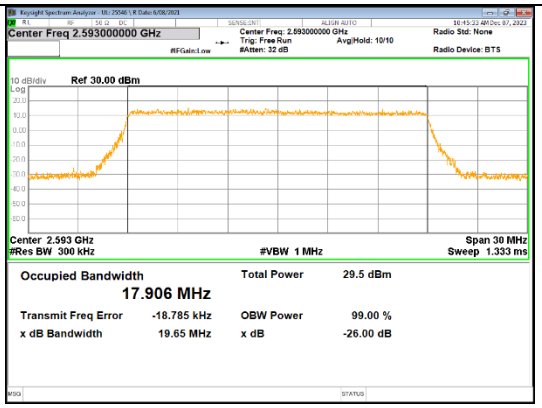
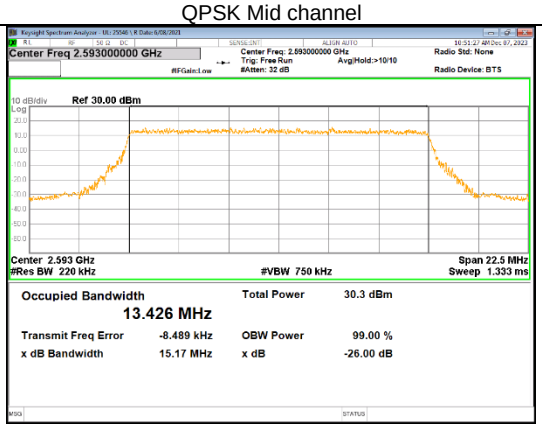
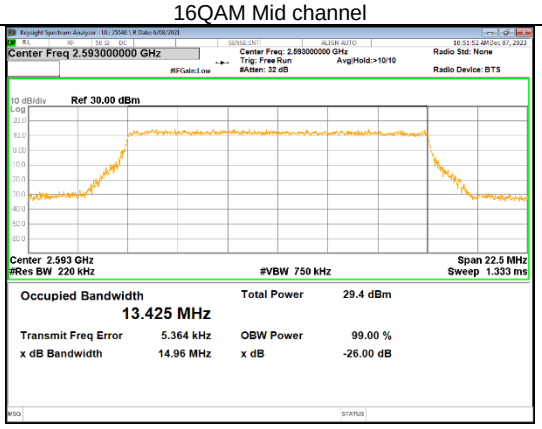
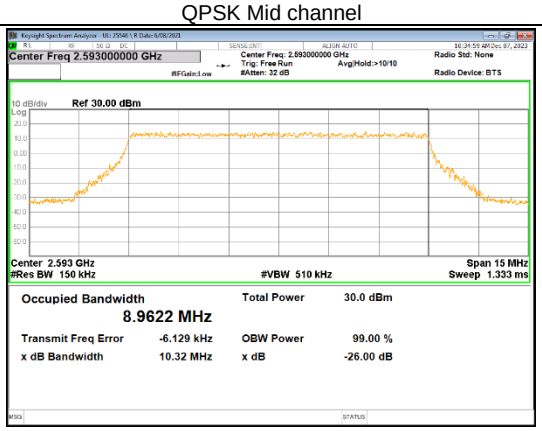
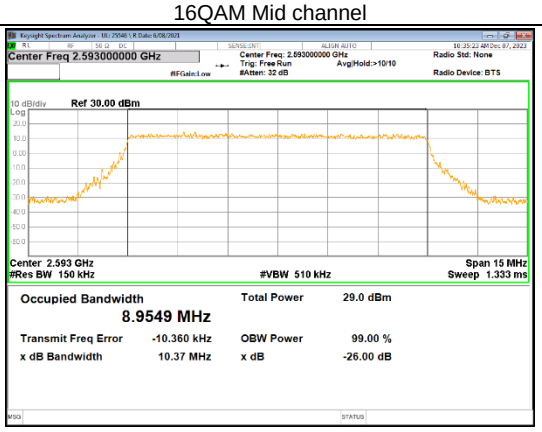
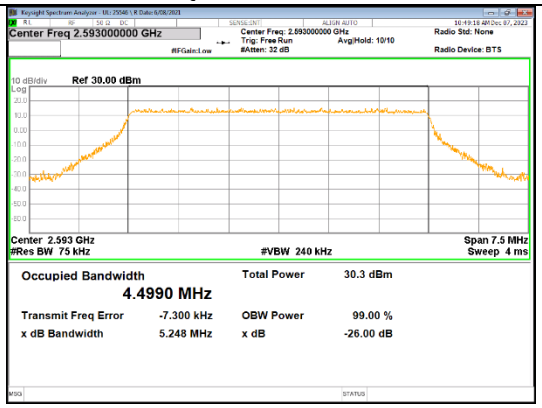
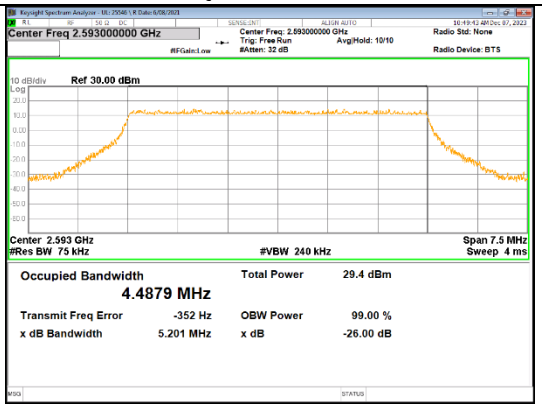
LTE Band 41

20MHz	 QPSK Mid channel	 16QAM Mid channel
15MHz	 QPSK Mid channel	 16QAM Mid channel
10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel

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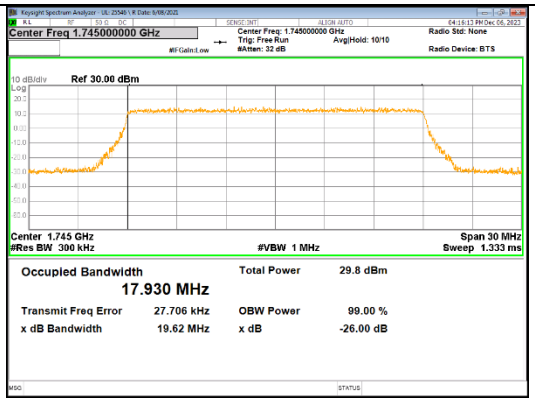
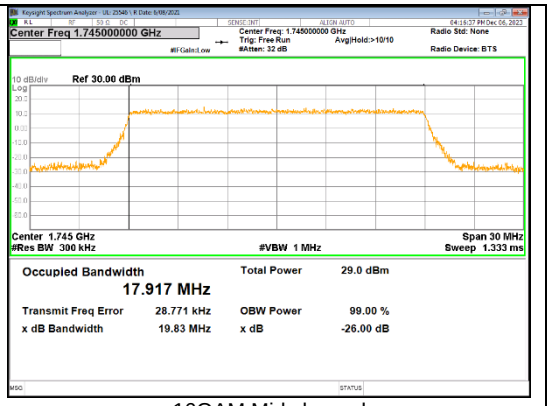
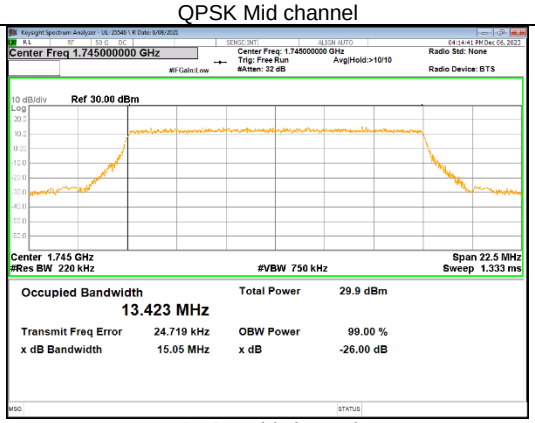
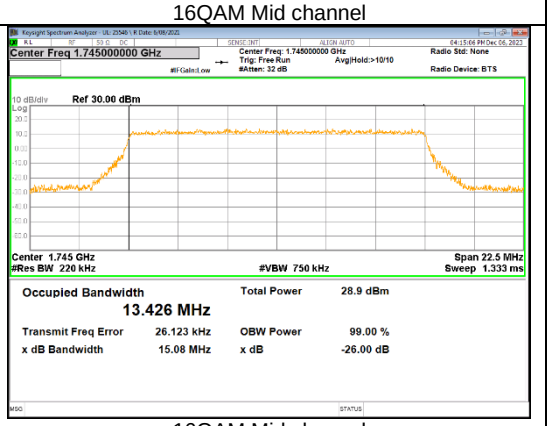
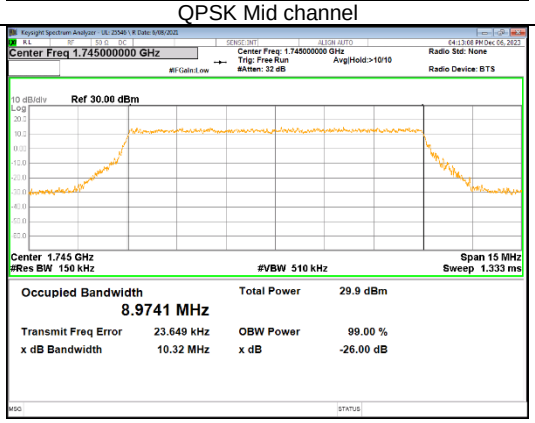
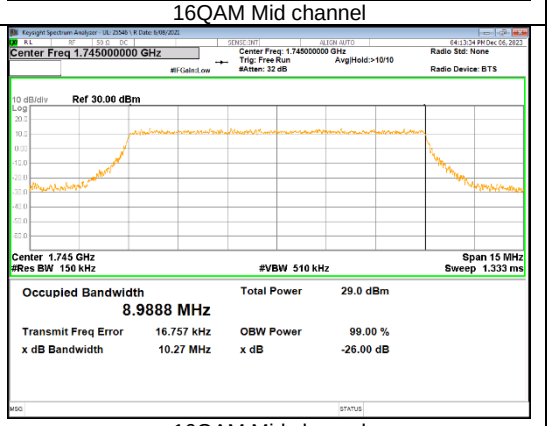
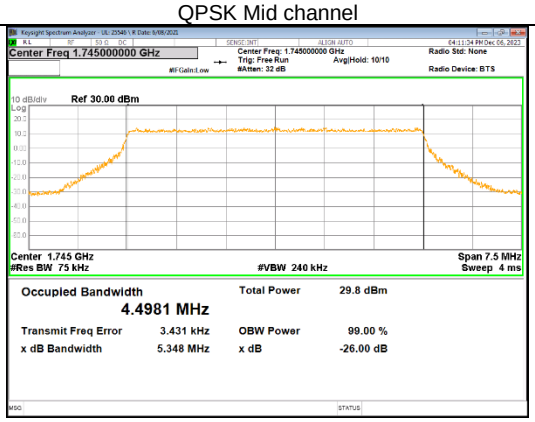
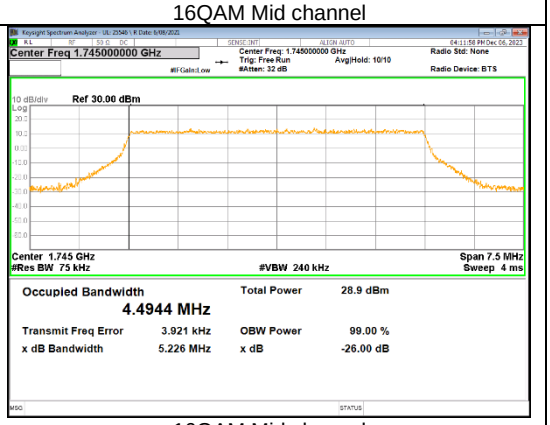
LTE Band 66

20MHz	 QPSK Mid channel	 16QAM Mid channel
15MHz	 QPSK Mid channel	 16QAM Mid channel
10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel

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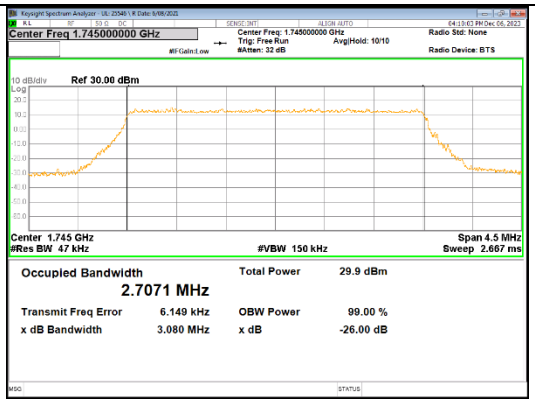
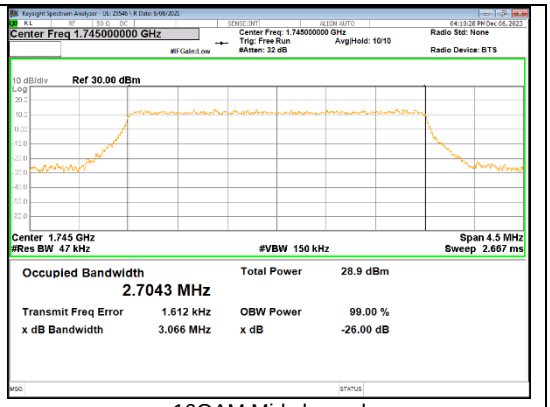
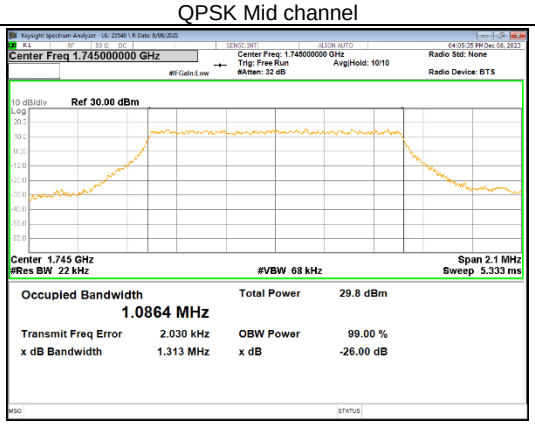
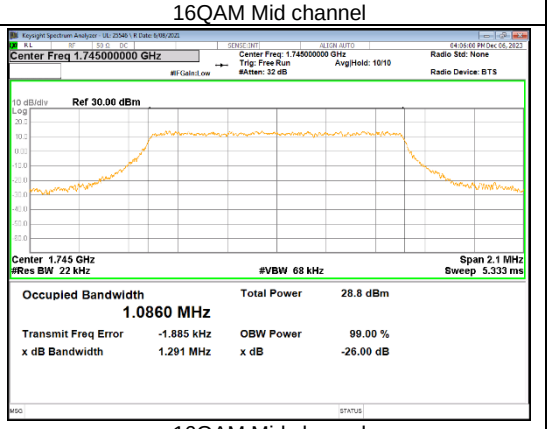
3MHz	 QPSK Mid channel	 16QAM Mid channel
1.4MHz	 QPSK Mid channel	 16QAM Mid channel

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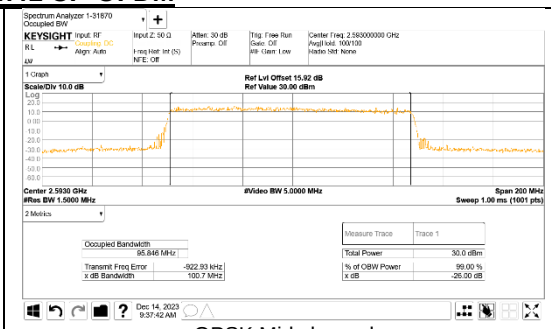
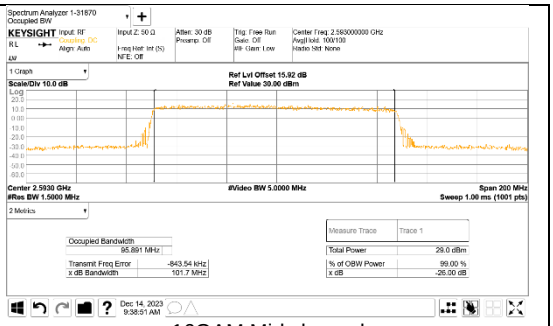
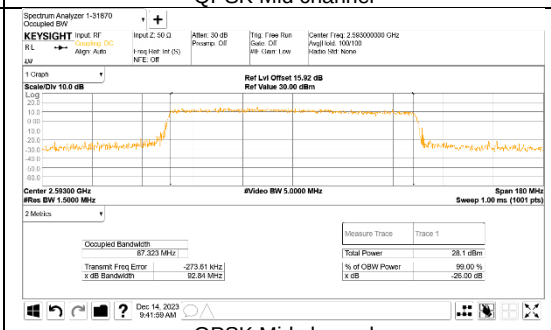
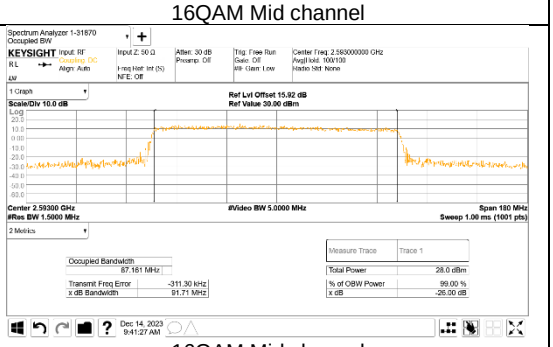
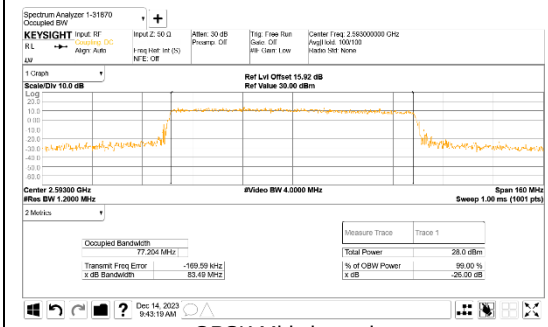
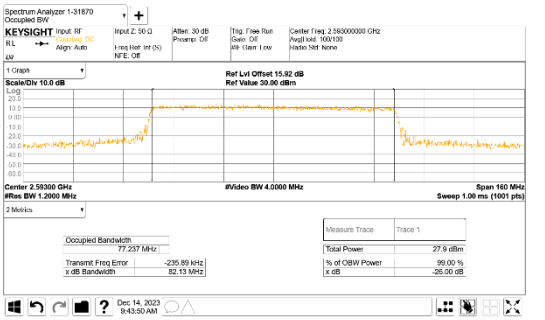
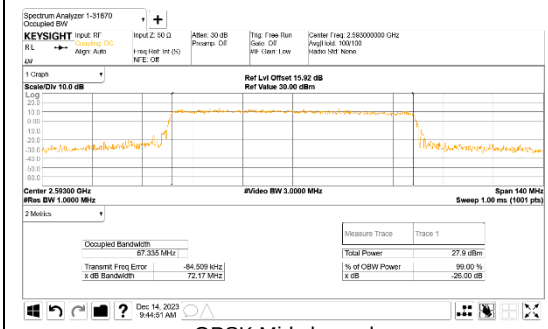
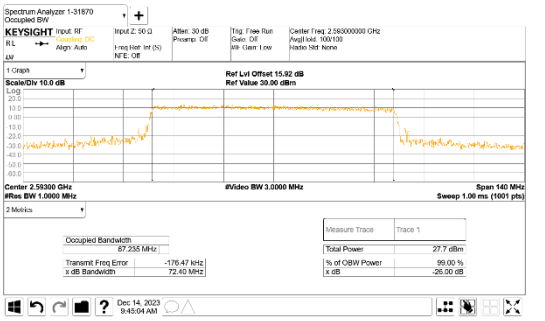
NR Band n41 CP-OFDM

100 MHz	 QPSK Mid channel	 16QAM Mid channel
90 MHz	 QPSK Mid channel	 16QAM Mid channel
80 MHz	 QPSK Mid channel	 16QAM Mid channel
70 MHz	 QPSK Mid channel	 16QAM Mid channel

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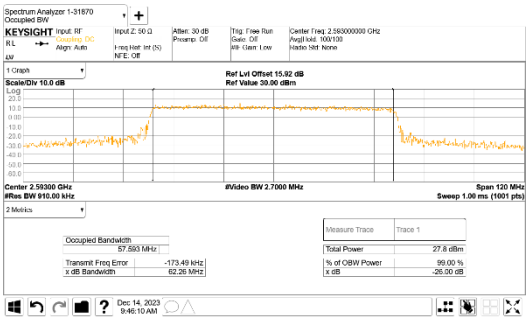
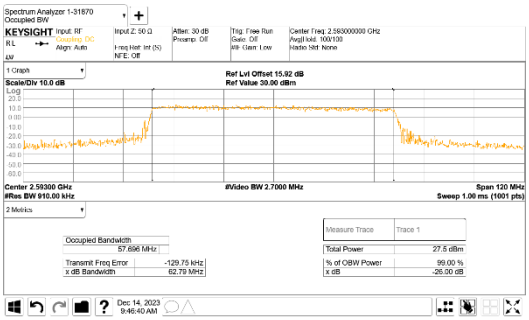
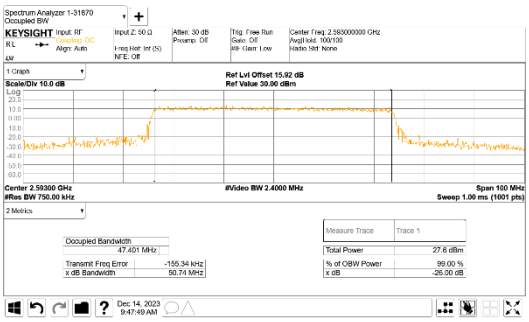
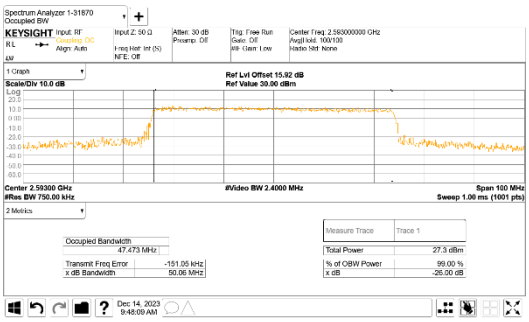
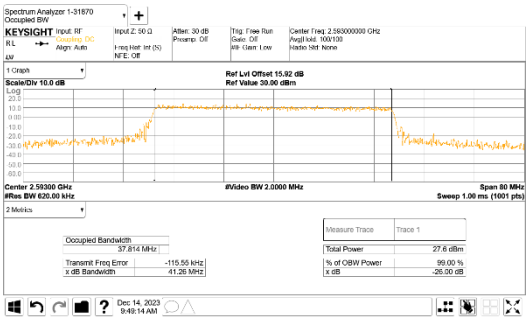
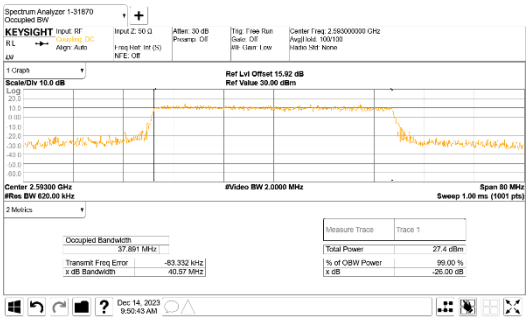
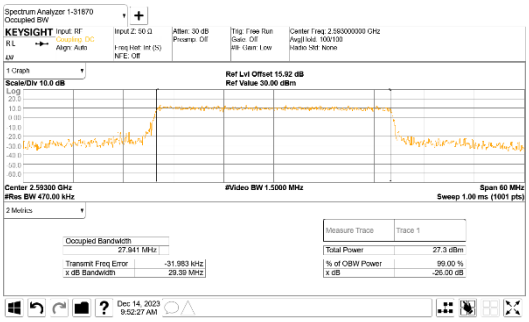
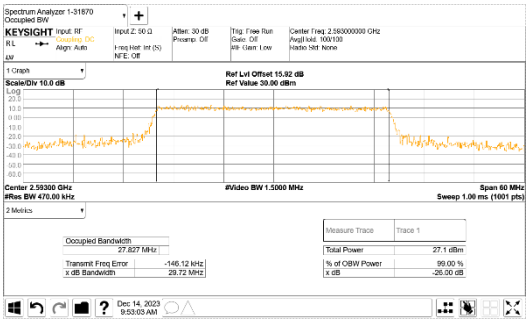
60 MHz	 QPSK Mid channel	 16QAM Mid channel
50 MHz	 QPSK Mid channel	 16QAM Mid channel
40 MHz	 QPSK Mid channel	 16QAM Mid channel
30 MHz	 QPSK Mid channel	 16QAM Mid channel

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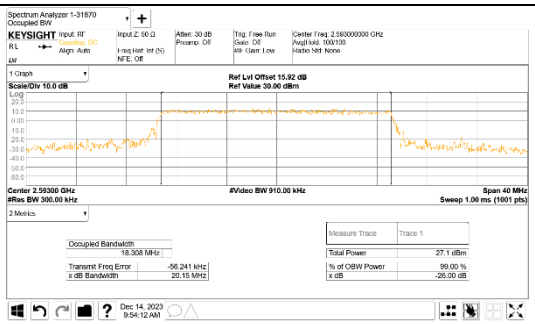
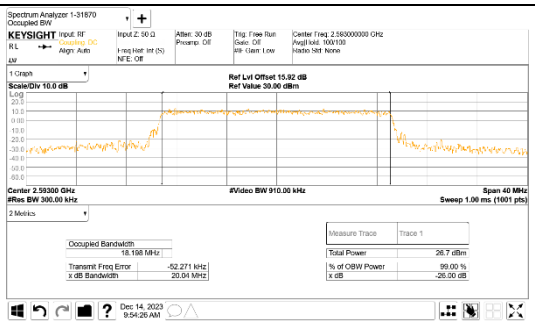
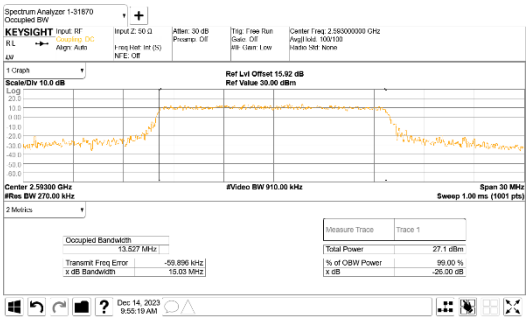
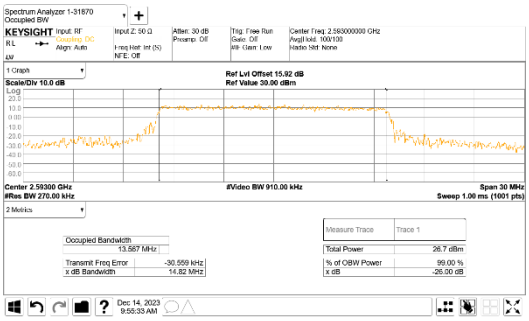
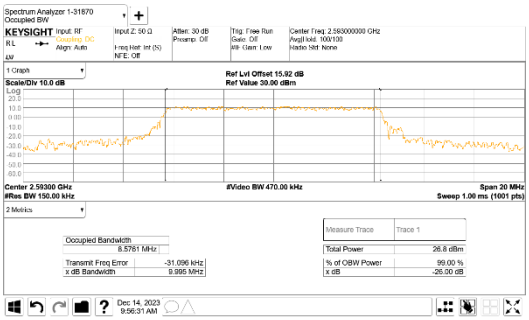
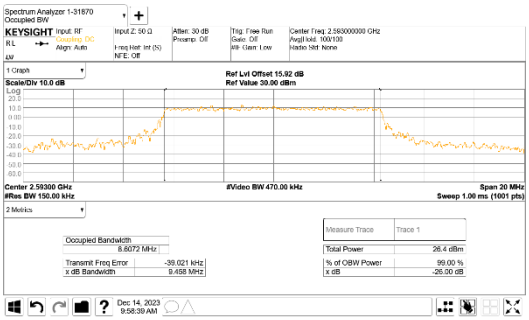
20 MHz	 QPSK Mid channel	 16QAM Mid channel
15 MHz	 QPSK Mid channel	 16QAM Mid channel
10 MHz	 QPSK Mid channel	 16QAM Mid channel

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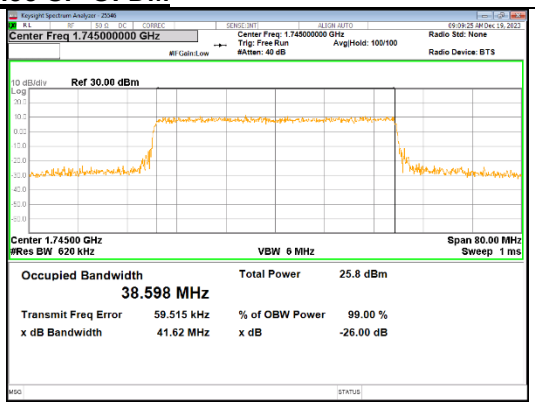
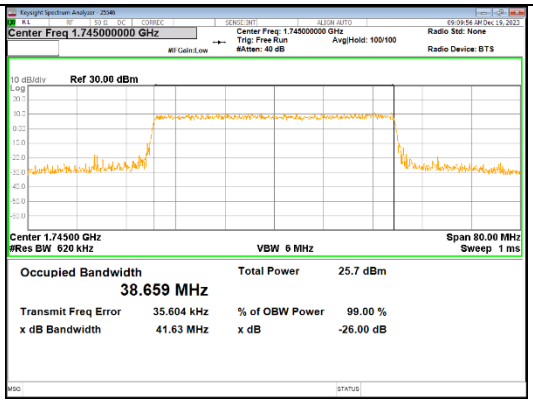
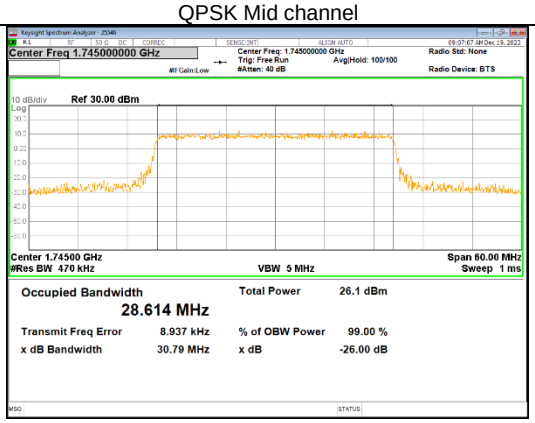
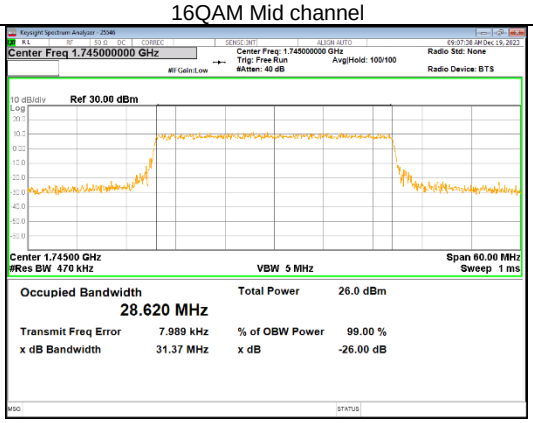
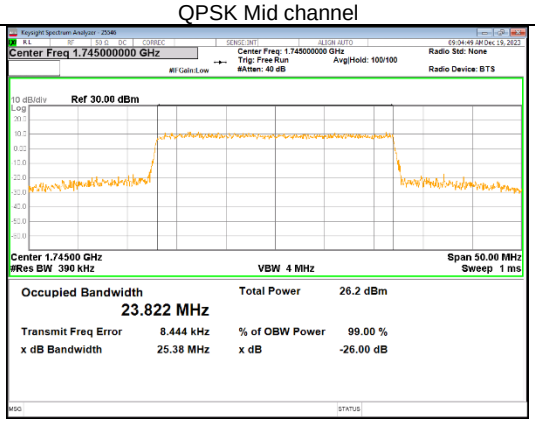
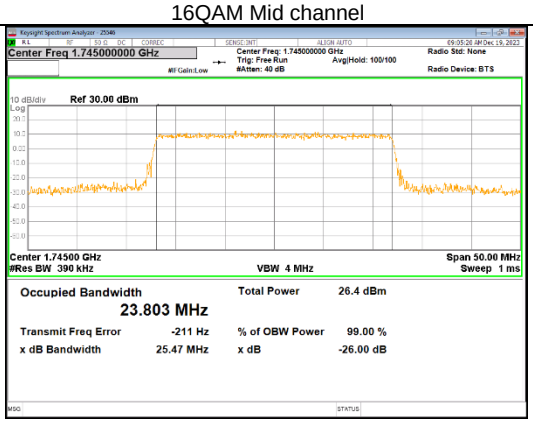
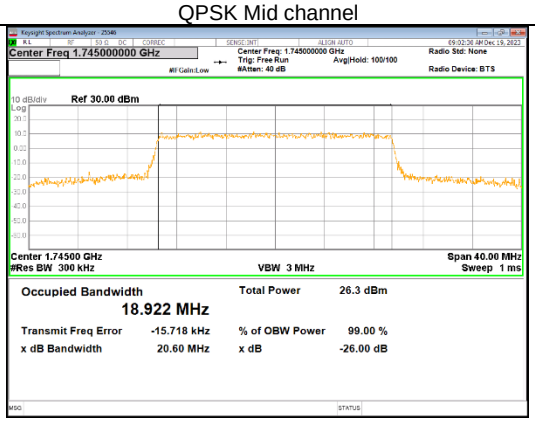
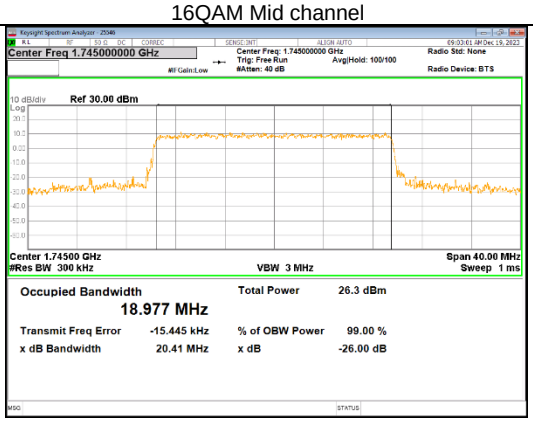
NR Band n66 CP-OFDM

40MHz	 QPSK Mid channel	 16QAM Mid channel
30MHz	 QPSK Mid channel	 16QAM Mid channel
25MHz	 QPSK Mid channel	 16QAM Mid channel
20MHz	 QPSK Mid channel	 16QAM Mid channel

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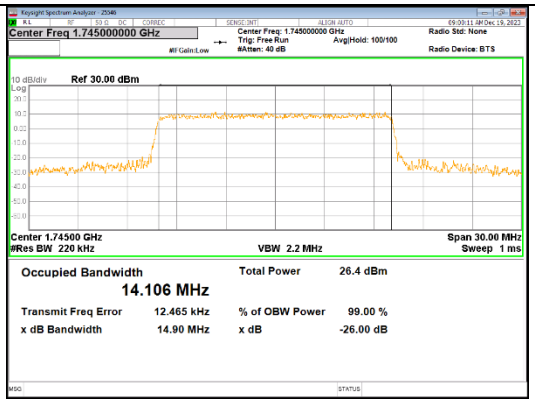
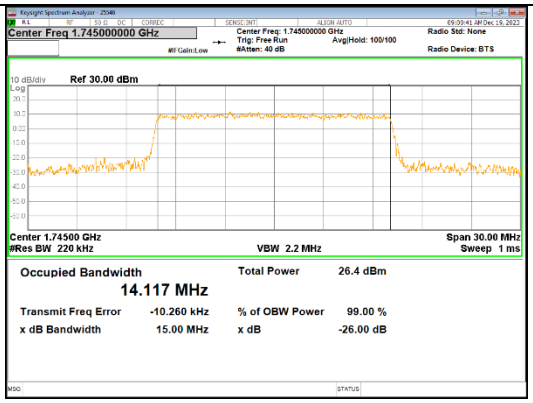
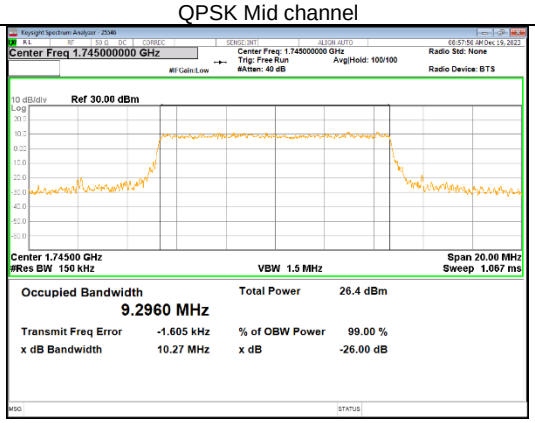
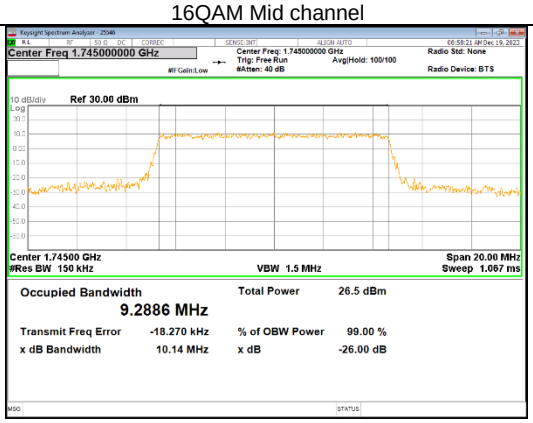
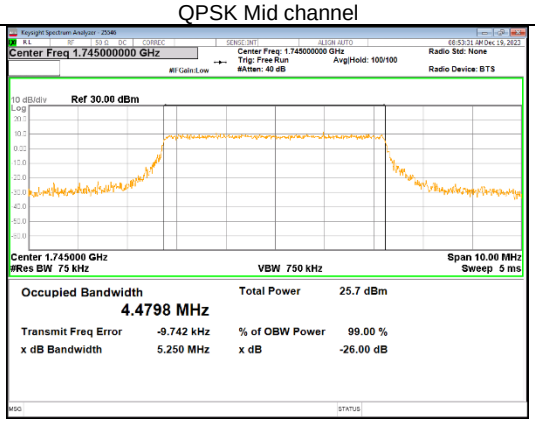
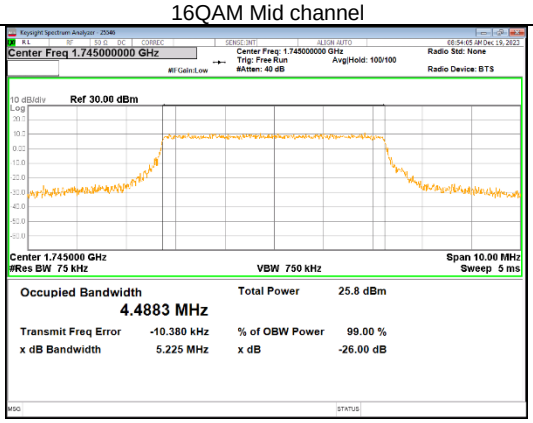
15MHz	 QPSK Mid channel	 16QAM Mid channel
10MHz	 QPSK Mid channel	 16QAM Mid channel
5MHz	 QPSK Mid channel	 16QAM Mid channel

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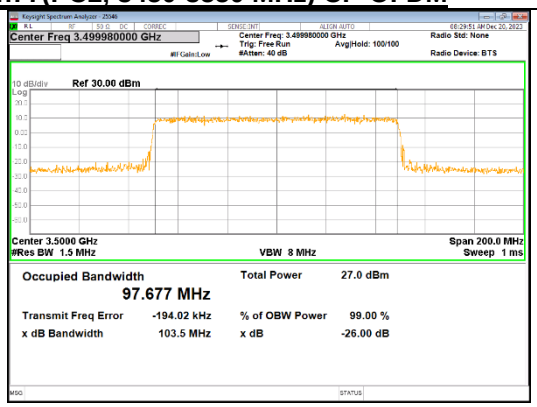
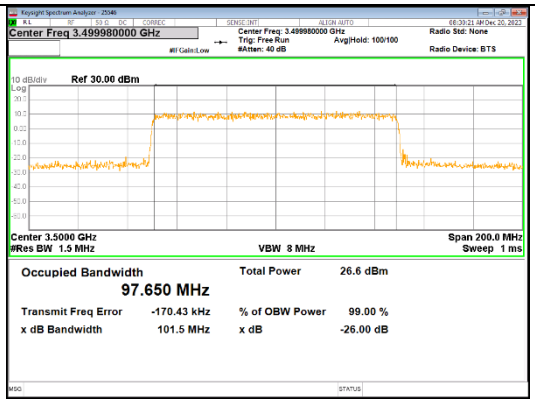
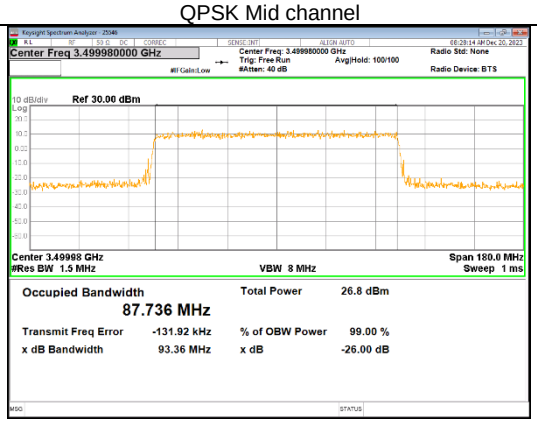
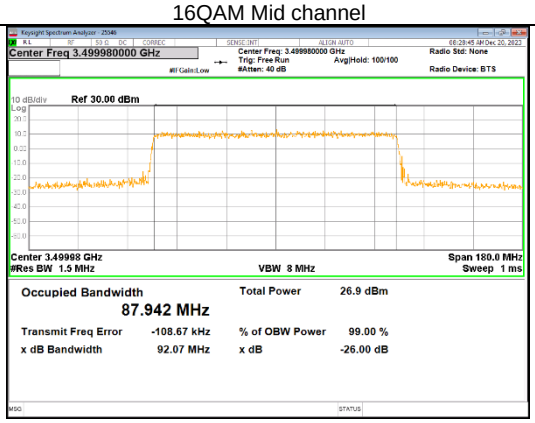
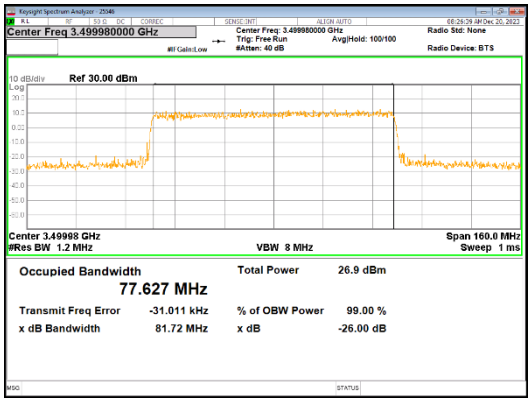
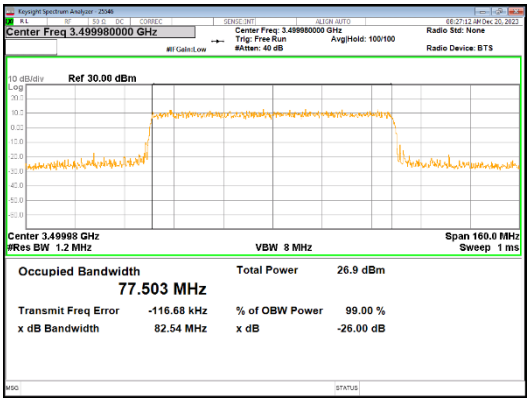
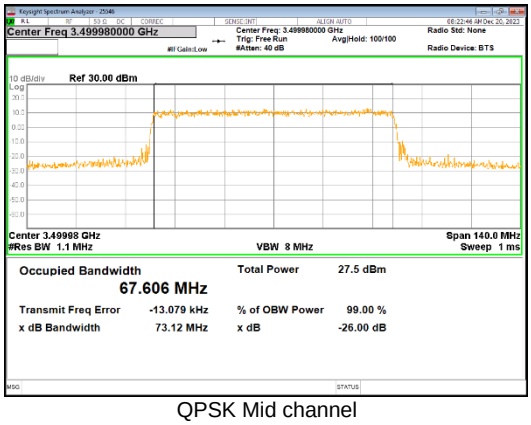
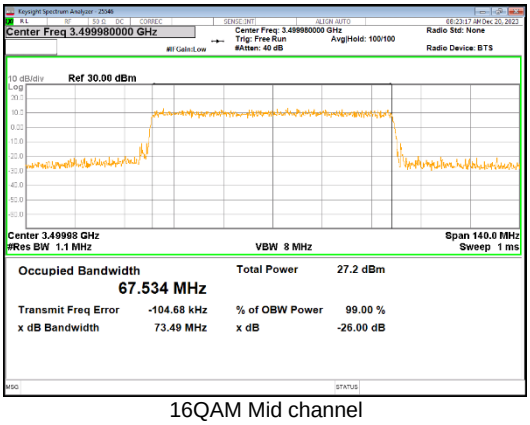
NR Band n77(PC2, 3450-3550 MHz) CP-OFDM

100MHz	 QPSK Mid channel	 16QAM Mid channel
90MHz	 QPSK Mid channel	 16QAM Mid channel
80MHz	 QPSK Mid channel	 16QAM Mid channel
70MHz	 QPSK Mid channel	 16QAM Mid channel

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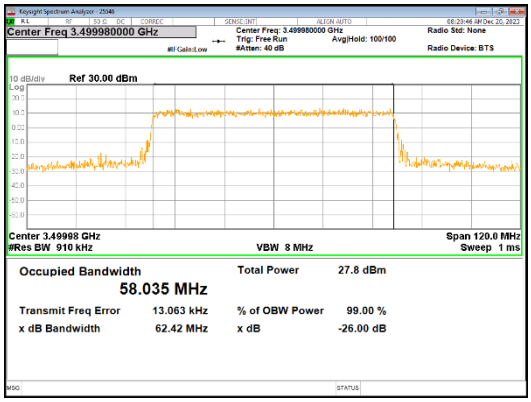
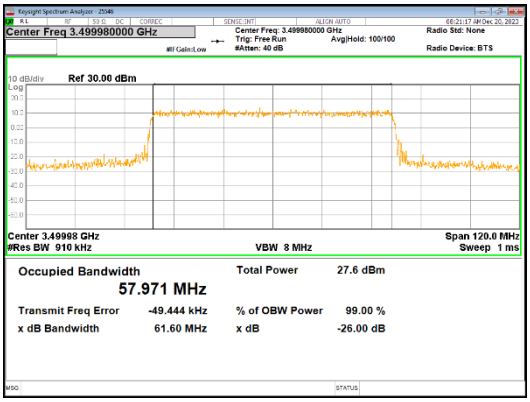
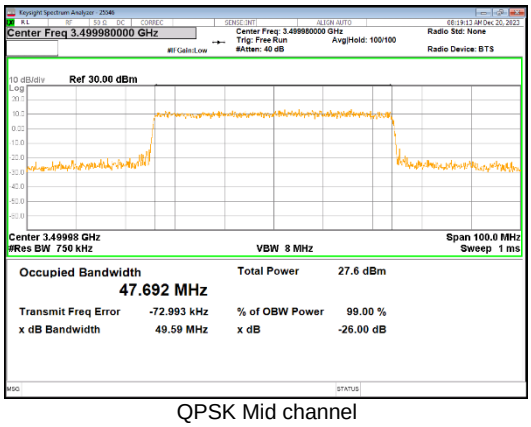
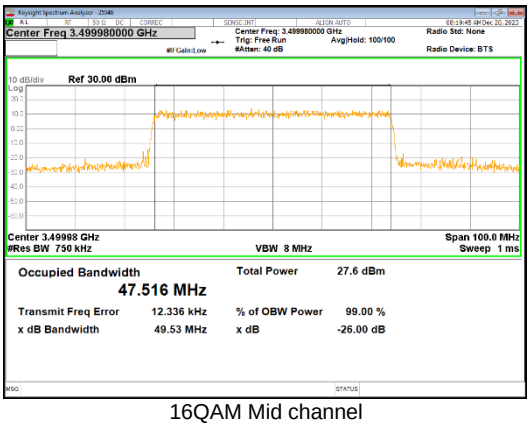
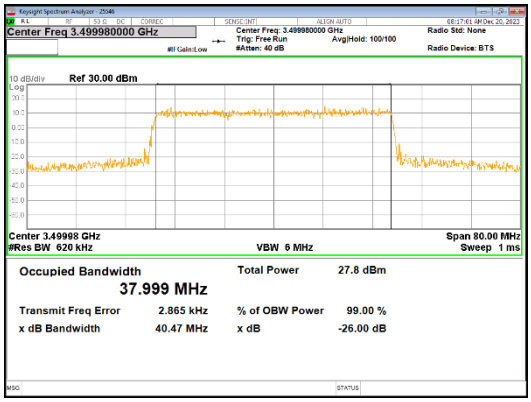
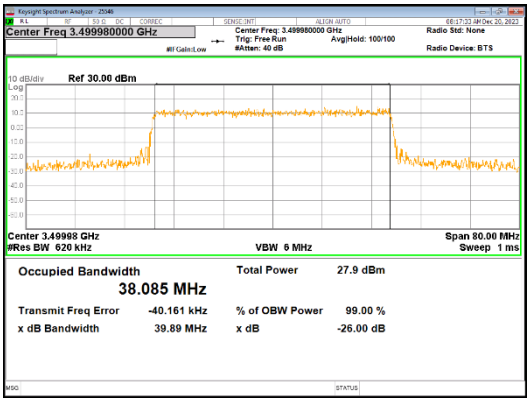
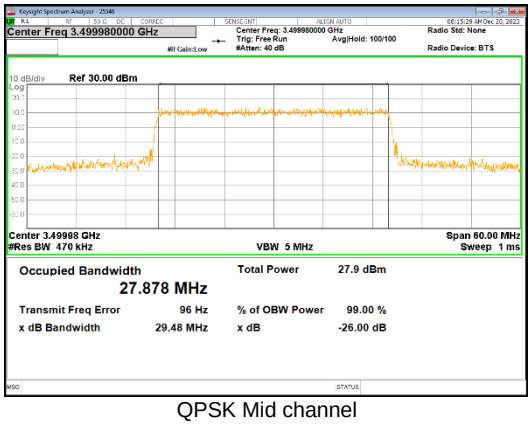
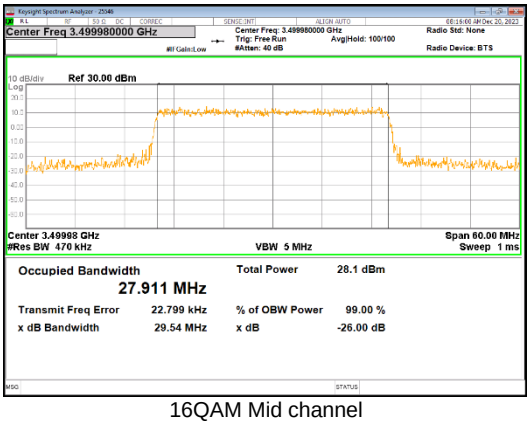
60MHz	 QPSK Mid channel	 16QAM Mid channel
50MHz	 QPSK Mid channel	 16QAM Mid channel
40MHz	 QPSK Mid channel	 16QAM Mid channel
30MHz	 QPSK Mid channel	 16QAM Mid channel

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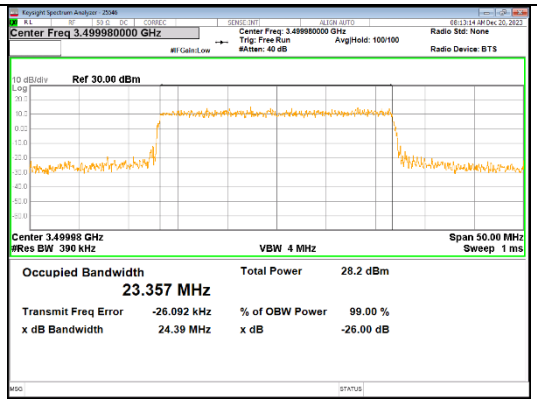
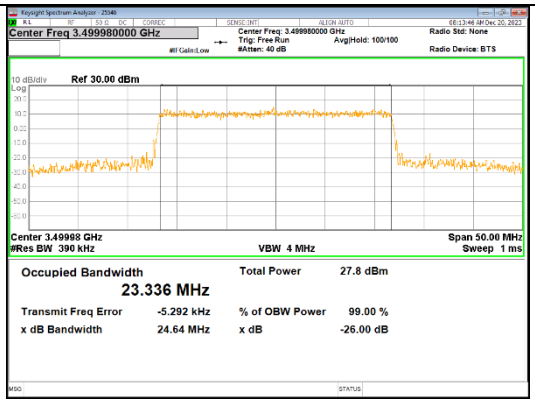
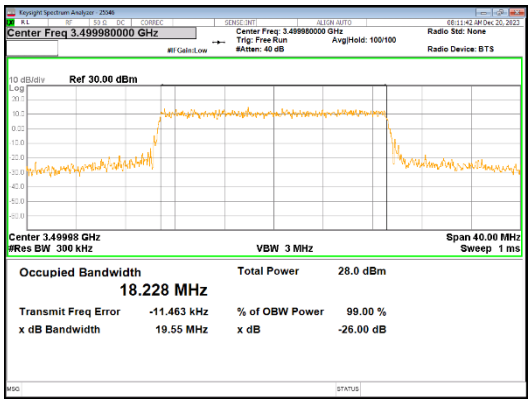
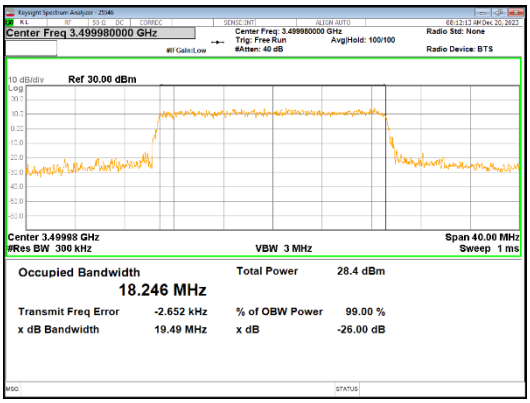
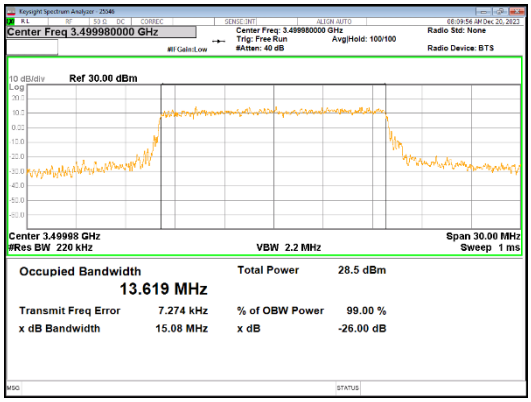
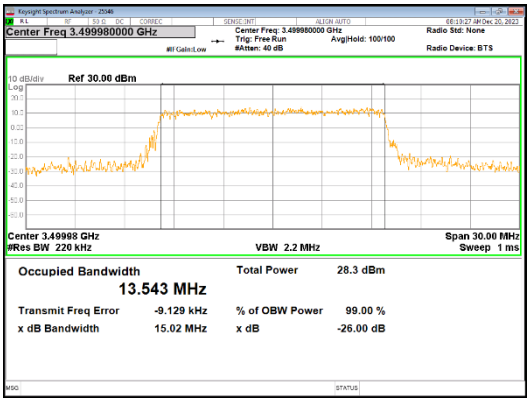
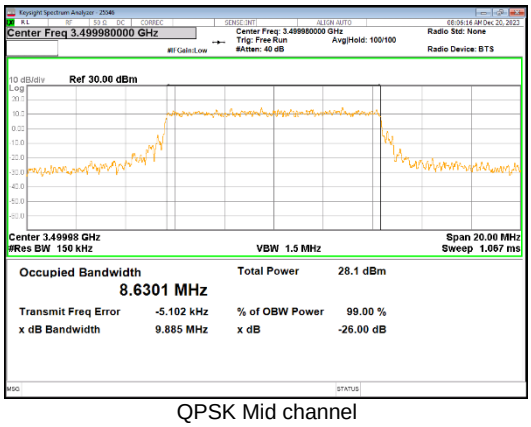
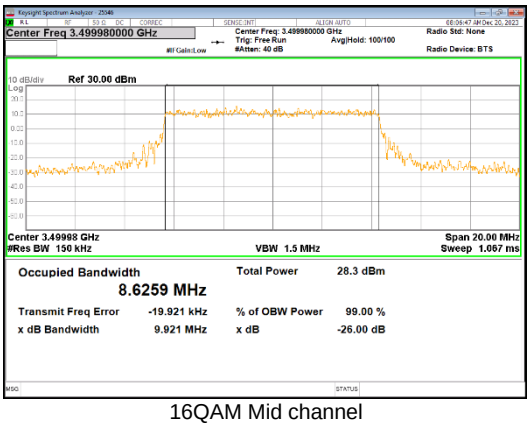
25MHz	 QPSK Mid channel	 16QAM Mid channel
20MHz	 QPSK Mid channel	 16QAM Mid channel
15MHz	 QPSK Mid channel	 16QAM Mid channel
10MHz	 QPSK Mid channel	 16QAM Mid channel

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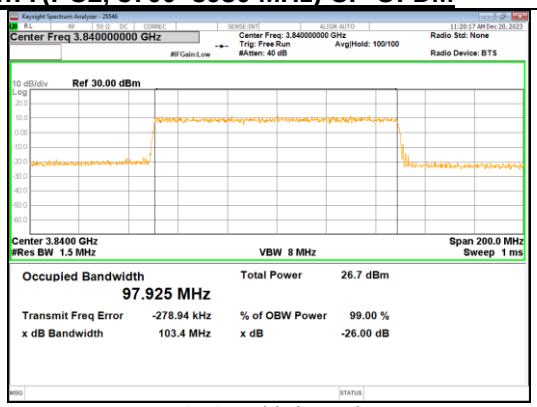
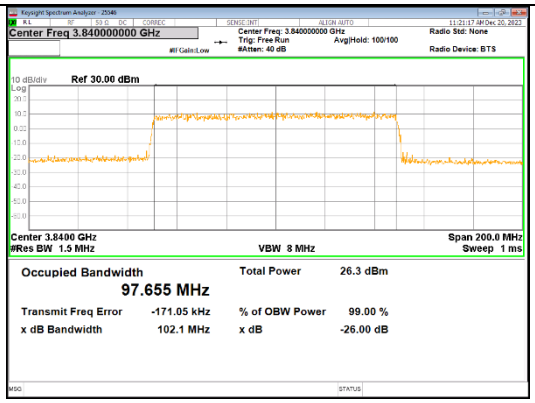
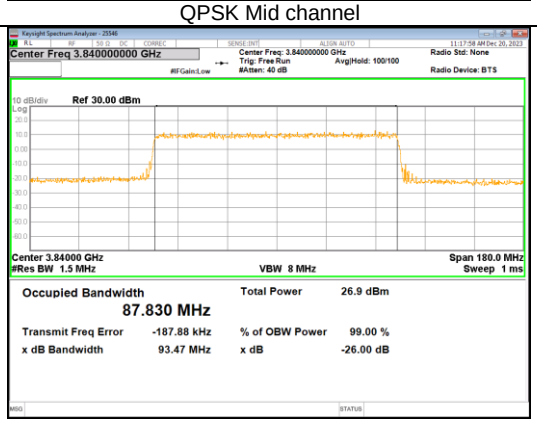
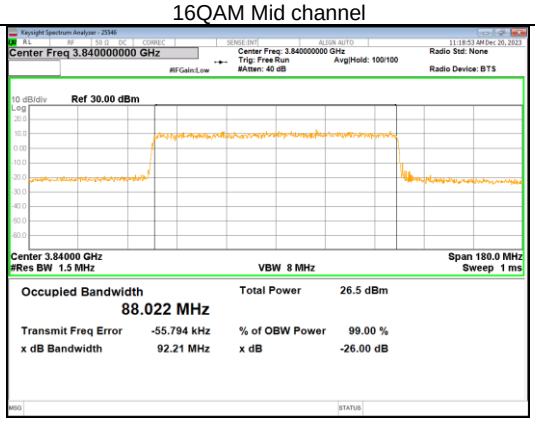
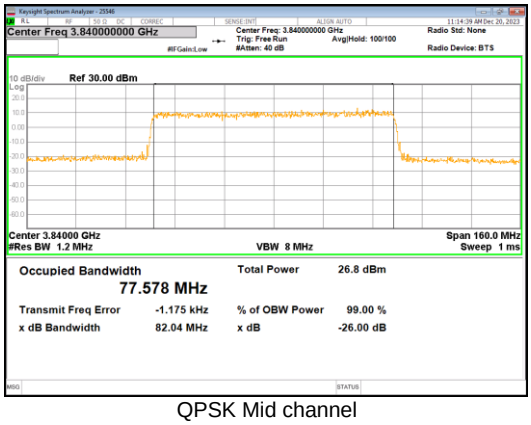
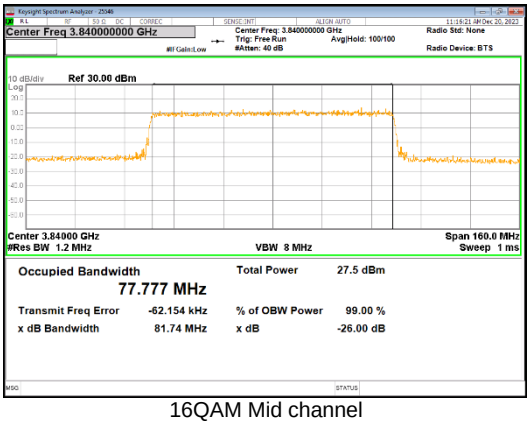
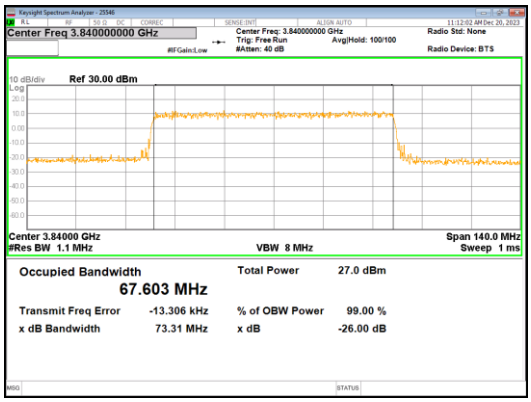
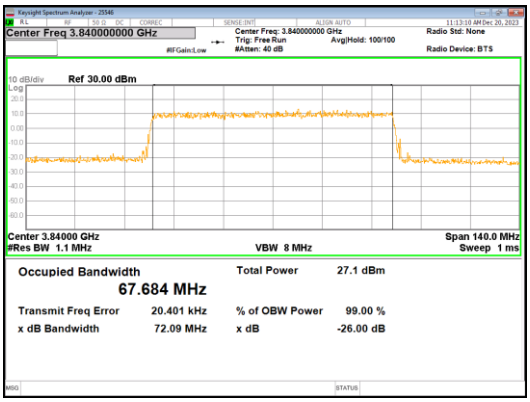
NR Band n77(PC2, 3700–3980 MHz) CP-OFDM

100MHz	 QPSK Mid channel	 16QAM Mid channel
90MHz	 QPSK Mid channel	 16QAM Mid channel
80MHz	 QPSK Mid channel	 16QAM Mid channel
70MHz	 QPSK Mid channel	 16QAM Mid channel

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