
FCC § 2.1053; § 22.917 (a); § 24.238 (a); §27.53 SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917(a) and § 24.238(a) and § 27.53

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Test Data**Environmental Conditions**

Temperature:	25.0~28.1 °C
Relative Humidity:	44.0~52.0 %
ATM Pressure:	101.0~101.1 kPa

The testing was performed by Holland Yang on 2020-12-14 for below 1GHz and Leven gan on 2020-12-14 for above 1GHz.

EUT operation mode: Transmitting

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
178.8	57.83	187	1.4	H	-51.4	0.85	0.0	-52.25	-13	39.25
178.8	49.74	335	1.3	V	-56.9	0.85	0.0	-57.75	-13	44.75
1652.80	46.27	248	1.4	H	-60.1	1.30	8.90	-52.50	-13	39.50
1652.80	45.18	56	1.4	V	-60.6	1.30	8.90	-53.00	-13	40.00
2479.20	44.08	94	1.2	H	-59.3	2.60	10.20	-51.70	-13	38.70
2479.20	44.24	141	1.3	V	-58.5	2.60	10.20	-50.90	-13	37.90
3305.60	44.08	225	1.7	H	-56.8	1.50	11.70	-46.60	-13	33.60
3305.60	43.67	221	1.2	V	-57.3	1.50	11.70	-47.10	-13	34.10
Middle channel										
178.8	57.76	108	2.5	H	-51.4	0.85	0.0	-52.25	-13	39.25
178.8	49.83	147	1.2	V	-56.8	0.85	0.0	-57.65	-13	44.65
1673.20	46.14	257	1.3	H	-60.2	1.30	8.90	-52.60	-13	39.60
1673.20	45.84	262	1.4	V	-59.9	1.30	8.90	-52.30	-13	39.30
2509.80	43.88	128	1.2	H	-59.5	2.60	10.20	-51.90	-13	38.90
2509.80	43.97	131	1.8	V	-58.8	2.60	10.20	-51.20	-13	38.20
3346.40	44.14	126	1.3	H	-56.8	1.50	11.70	-46.60	-13	33.60
3346.40	43.77	46	1.4	V	-57.2	1.50	11.70	-47.00	-13	34.00
High channel										
178.9	57.89	311	2.2	H	-51.3	0.85	0.0	-52.15	-13	39.15
178.9	49.76	40	2.3	V	-56.9	0.85	0.0	-57.75	-13	44.75
1693.20	46.23	123	2.5	H	-60.1	1.30	8.90	-52.50	-13	39.50
1693.20	45.91	195	1.2	V	-59.8	1.30	8.90	-52.20	-13	39.20
2539.80	44.02	159	2.0	H	-59.3	2.60	10.20	-51.70	-13	38.70
2539.80	43.86	172	1.9	V	-58.9	2.60	10.20	-51.30	-13	38.30
3386.40	43.74	54	1.2	H	-57.5	1.40	11.80	-47.10	-13	34.10
3386.40	43.82	238	1.1	V	-57.2	1.40	11.80	-46.80	-13	33.80

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
178.8	57.58	65	1.8	H	-51.6	0.85	0.0	-52.45	-13	39.45
178.8	49.62	20	2.4	V	-57.0	0.85	0.0	-57.85	-13	44.85
3704.80	44.14	221	1.5	H	-57.7	1.60	11.90	-47.40	-13	34.40
3704.80	43.97	136	1.6	V	-57.3	1.60	11.90	-47.00	-13	34.00
Middle channel										
178.7	57.52	359	2.1	H	-51.7	0.85	0.0	-52.55	-13	39.55
178.7	49.67	353	1.1	V	-57.0	0.85	0.0	-57.85	-13	44.85
3760.00	43.83	185	1.4	H	-58.2	1.50	11.80	-47.90	-13	34.90
3760.00	43.93	110	1.6	V	-57.7	1.50	11.80	-47.40	-13	34.40
High channel										
178.7	57.61	339	1.7	H	-51.6	0.85	0.0	-52.45	-13	39.45
178.7	49.73	250	1.4	V	-56.9	0.85	0.0	-57.75	-13	44.75
3815.20	43.89	227	2.0	H	-58.2	1.50	11.80	-47.90	-13	34.90
3815.20	43.91	135	2.3	V	-57.7	1.50	11.80	-47.40	-13	34.40

30 MHz ~ 20 GHz:

AWS Band

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
178.7	57.68	4	1.5	H	-51.5	0.85	0.0	-52.35	-13	39.35
178.7	49.75	264	2.4	V	-56.9	0.85	0.0	-57.75	-13	44.75
3424.80	44.75	157	2.1	H	-56.0	1.40	11.80	-45.60	-13	32.60
3424.80	44.35	135	2.4	V	-56.3	1.40	11.80	-45.90	-13	32.90
Middle channel										
178.8	57.72	244	1.3	H	-51.5	0.85	0.0	-52.35	-13	39.35
178.8	49.64	291	1.9	V	-57.0	0.85	0.0	-57.85	-13	44.85
3465.20	44.36	81	2.1	H	-56.4	1.50	12.00	-45.90	-13	32.90
3465.20	44.51	317	1.3	V	-57.0	1.50	12.00	-46.50	-13	33.50
High channel										
178.9	57.78	146	2.1	H	-51.4	0.85	0.0	-52.25	-13	39.25
178.9	49.69	263	1.5	V	-57.0	0.85	0.0	-57.85	-13	44.85
3505.20	44.52	112	2.1	H	-56.2	1.50	12.00	-45.70	-13	32.70
3505.20	44.39	128	1.6	V	-57.1	1.50	12.00	-46.60	-13	33.60

LTE Band: (Pre-scan with all the bandwidth, and worst case as below)

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 2										
Test frequency range: 30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
178.8	57.64	335	1.7	H	-51.6	0.85	0.0	-52.45	-13	39.45
178.8	49.81	212	1.5	V	-56.8	0.85	0.0	-57.65	-13	44.65
3701.40	45.75	323	1.4	H	-56.1	1.60	11.90	-45.80	-13	32.80
3701.40	46.04	81	1.2	V	-55.2	1.60	11.90	-44.90	-13	31.90
1.4 MHz, Middle channel										
178.7	57.51	212	2.3	H	-51.7	0.85	0.0	-52.55	-13	39.55
178.7	49.76	63	2.2	V	-56.9	0.85	0.0	-57.75	-13	44.75
3760.00	45.81	310	1.2	H	-56.2	1.50	11.80	-45.90	-13	32.90
3760.00	45.93	180	1.5	V	-55.7	1.50	11.80	-45.40	-13	32.40
1.4 MHz, High channel										
178.8	57.45	202	1.6	H	-51.8	0.85	0.0	-52.65	-13	39.65
178.8	49.78	31	1.1	V	-56.9	0.85	0.0	-57.75	-13	44.75
3800.00	45.87	178	1.8	H	-56.2	1.50	11.80	-45.90	-13	32.90
3800.00	46.12	343	1.1	V	-55.5	1.50	11.80	-45.20	-13	32.20
Band 4										
Test frequency range:30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
178.7	57.62	71	1.7	H	-51.6	0.85	0.0	-52.45	-13	39.45
178.7	49.83	310	2.0	V	-56.8	0.85	0.0	-57.65	-13	44.65
3421.40	46.15	309	1.3	H	-54.6	1.40	11.80	-44.20	-13	31.20
3421.40	46.63	303	1.8	V	-54.0	1.40	11.80	-43.60	-13	30.60
1.4 MHz, Middle channel										
178.8	57.48	304	1.9	H	-51.7	0.85	0.0	-52.55	-13	39.55
178.8	49.71	123	1.9	V	-56.9	0.85	0.0	-57.75	-13	44.75
3465.00	45.14	62	2.4	H	-55.6	1.50	12.00	-45.10	-13	32.10
3465.00	44.56	208	2.0	V	-56.9	1.50	12.00	-46.40	-13	33.40
1.4 MHz, High channel										
178.8	57.52	151	1.8	H	-51.7	0.85	0.0	-52.55	-13	39.55
178.8	49.68	181	2.3	V	-57.0	0.85	0.0	-57.85	-13	44.85
3508.60	45.71	188	2.2	H	-55.0	1.50	12.00	-44.50	-13	31.50
3508.60	44.98	66	1.9	V	-56.5	1.50	12.00	-46.00	-13	33.00

Frequency (MHz)	Receiver	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBμV)		Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 5										
Test frequency range:30 MHz ~ 10 GHz										
1.4 MHz, Low channel										
178.7	57.39	166	1.0	H	-51.8	0.85	0.0	-52.65	-13	39.65
178.7	49.57	113	2.5	V	-57.1	0.85	0.0	-57.95	-13	44.95
1649.40	43.55	51	2.5	H	-64.5	1.40	8.70	-57.20	-13	44.20
1649.40	43.48	216	2.0	V	-64.4	1.40	8.70	-57.10	-13	44.10
2474.10	48.14	136	2.1	H	-55.2	2.60	10.20	-47.60	-13	34.60
2474.10	47.52	117	2.1	V	-55.2	2.60	10.20	-47.60	-13	34.60
3298.80	44.36	32	1.8	H	-56.5	1.50	11.70	-46.30	-13	33.30
3298.80	44.59	97	1.7	V	-56.3	1.50	11.70	-46.10	-13	33.10
1.4 MHz, Middle channel										
178.8	57.42	272	1.3	H	-51.8	0.85	0.0	-52.65	-13	39.65
178.8	49.56	268	2.2	V	-57.1	0.85	0.0	-57.95	-13	44.95
1673.00	43.57	163	2.5	H	-62.8	1.30	8.90	-55.20	-13	42.20
1673.00	43.28	292	1.1	V	-62.5	1.30	8.90	-54.90	-13	41.90
2509.50	48.87	181	1.7	H	-54.5	2.60	10.20	-46.90	-13	33.90
2509.50	49.02	133	1.3	V	-53.7	2.60	10.20	-46.10	-13	33.10
3346.00	44.17	140	2.3	H	-56.7	1.50	11.70	-46.50	-13	33.50
3346.00	44.46	24	1.1	V	-56.5	1.50	11.70	-46.30	-13	33.30
1.4 MHz, High channel										
178.7	57.48	50	1.0	H	-51.7	0.85	0.0	-52.55	-13	39.55
178.7	49.76	46	2.1	V	-56.9	0.85	0.0	-57.75	-13	44.75
1696.60	43.61	207	1.5	H	-62.7	1.30	8.90	-55.10	-13	42.10
1696.60	43.34	249	2.1	V	-62.4	1.30	8.90	-54.80	-13	41.80
2544.90	47.85	165	1.4	H	-55.5	2.60	10.20	-47.90	-13	34.90
2544.90	48.01	272	1.4	V	-54.7	2.60	10.20	-47.10	-13	34.10
3393.20	43.99	10	2.0	H	-57.2	1.40	11.80	-46.80	-13	33.80
3393.20	44.16	189	2.1	V	-56.9	1.40	11.80	-46.50	-13	33.50
Band 7										
Test frequency range: 30 MHz ~ 26.5 GHz										
5 MHz, Low channel										
178.8	57.51	91	1.7	H	-51.7	0.85	0.0	-52.55	-25	27.55
178.8	49.82	239	2.0	V	-56.8	0.85	0.0	-57.65	-25	32.65
5005.00	44.27	178	1.3	H	-56.3	1.70	12.00	-46.00	-25	21.00
5005.00	45.36	104	1.6	V	-54.7	1.70	12.00	-44.40	-25	19.40
5 MHz, Middle channel										
178.8	57.59	250	1.7	H	-51.6	0.85	0.0	-52.45	-25	27.45
178.8	49.65	172	2.2	V	-57.0	0.85	0.0	-57.85	-25	32.85
5070.00	43.89	355	1.9	H	-56.1	1.60	12.10	-45.60	-25	20.60
5070.00	44.58	360	1.2	V	-55.4	1.60	12.10	-44.90	-25	19.90
5 MHz, High channel										
178.7	57.64	30	1.7	H	-51.6	0.85	0.0	-52.45	-25	27.45
178.7	49.77	192	1.8	V	-56.9	0.85	0.0	-57.75	-25	32.75
5135.00	44.28	264	2.3	H	-55.7	1.60	12.10	-45.20	-25	20.20
5135.00	44.67	28	2.1	V	-55.3	1.60	12.10	-44.80	-25	19.80

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 12										
Test frequency range: 30 MHz ~8GHz										
1.4MHz, Low channel										
178.8	57.69	265	1.5	H	-51.5	0.85	0.0	-52.35	-13	39.35
178.8	49.83	48	2.2	V	-56.8	0.85	0.0	-57.65	-13	44.65
1399.40	43.78	326	1.1	H	-64.4	1.60	7.90	-58.10	-13	45.10
1399.40	43.69	176	2.1	V	-64.7	1.60	7.90	-58.40	-13	45.40
2099.10	51.91	171	2.2	H	-49.2	1.30	9.70	-40.80	-13	27.80
2099.10	54.22	322	1.3	V	-47.7	1.30	9.70	-39.30	-13	26.30
2798.80	44.07	331	2.4	H	-59.9	1.80	10.50	-51.20	-13	38.20
2798.80	44.39	304	1.2	V	-59.2	1.80	10.50	-50.50	-13	37.50
1.4MHz, Middle channel										
178.8	57.71	149	1.7	H	-51.5	0.85	0.0	-52.35	-13	39.35
178.8	49.86	183	1.9	V	-56.8	0.85	0.0	-57.65	-13	44.65
1415.00	43.81	311	1.4	H	-64.4	1.60	7.90	-58.10	-13	45.10
1415.00	43.66	1	1.4	V	-64.8	1.60	7.90	-58.50	-13	45.50
2122.50	52.10	230	1.5	H	-49.0	1.30	9.70	-40.60	-13	27.60
2122.50	54.33	168	2.4	V	-47.6	1.30	9.70	-39.20	-13	26.20
2830.00	44.05	81	1.7	H	-59.9	1.80	10.50	-51.20	-13	38.20
2830.00	44.38	124	1.7	V	-59.2	1.80	10.50	-50.50	-13	37.50
1.4MHz, High channel										
178.9	57.73	168	2.0	H	-51.5	0.85	0.0	-52.35	-13	39.35
178.9	49.94	30	1.4	V	-56.7	0.85	0.0	-57.55	-13	44.55
1430.60	44.69	113	1.6	H	-63.5	1.60	7.90	-57.20	-13	44.20
1430.60	44.37	76	2.4	V	-64.1	1.60	7.90	-57.80	-13	44.80
2145.90	52.12	141	1.8	H	-49.0	1.30	9.70	-40.60	-13	27.60
2145.90	53.94	320	1.3	V	-48.0	1.30	9.70	-39.60	-13	26.60
2861.20	43.89	303	2.2	H	-60.8	1.70	10.70	-51.80	-13	38.80
2861.20	44.25	177	2.5	V	-60.5	1.70	10.70	-51.50	-13	38.50

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 13										
Test frequency range: 30 MHz ~ 8GHz										
5 MHz, Low channel										
178.8	57.66	184	1.6	H	-51.5	0.85	0.0	-52.35	-13	39.35
178.8	49.87	293	2.5	V	-56.8	0.85	0.0	-57.65	-13	44.65
1559.00	43.58	168	2.3	H	-64.5	1.40	8.70	-57.20	-40	17.20
1559.00	44.77	282	2.0	V	-63.1	1.40	8.70	-55.80	-40	15.80
2338.50	51.94	282	1.0	H	-53.3	1.30	10.00	-44.60	-13	31.60
2338.50	54.08	39	1.3	V	-51.1	1.30	10.00	-42.40	-13	29.40
3118.00	44.06	163	1.2	H	-57.5	1.70	11.30	-47.90	-13	34.90
3118.00	44.37	189	1.7	V	-57.1	1.70	11.30	-47.50	-13	34.50
5 MHz, Middle channel										
178.9	57.61	8	1.7	H	-51.6	0.85	0.0	-52.45	-13	39.45
178.9	49.76	317	2.1	V	-56.9	0.85	0.0	-57.75	-13	44.75
1564.00	43.63	128	1.9	H	-64.4	1.40	8.70	-57.10	-40	17.10
1564.00	44.79	102	2.1	V	-63.1	1.40	8.70	-55.80	-40	15.80
2346.00	52.04	39	2.2	H	-53.2	1.30	10.00	-44.50	-13	31.50
2346.00	54.17	213	2.1	V	-51.0	1.30	10.00	-42.30	-13	29.30
3128.00	44.11	209	1.9	H	-57.5	1.70	11.30	-47.90	-13	34.90
3128.00	44.44	153	2.1	V	-57.0	1.70	11.30	-47.40	-13	34.40
5 MHz, High channel										
178.8	57.67	113	1.9	H	-51.5	0.85	0.0	-52.35	-13	39.35
178.8	49.71	158	1.9	V	-56.9	0.85	0.0	-57.75	-13	44.75
1569.00	44.10	273	1.8	H	-64.0	1.40	8.70	-56.70	-40	16.70
1569.00	44.81	9	1.7	V	-63.0	1.40	8.70	-55.70	-40	15.70
2353.50	52.01	165	2.2	H	-52.3	2.30	10.10	-44.50	-13	31.50
2353.50	54.22	164	2.1	V	-49.2	2.30	10.10	-41.40	-13	28.40
3138.00	44.03	353	1.2	H	-57.6	1.70	11.30	-48.00	-13	35.00
3138.00	44.39	112	1.7	V	-57.1	1.70	11.30	-47.50	-13	34.50

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 17										
Test frequency range: 30 MHz ~ 8GHz										
5 MHz, Low channel										
178.8	57.54	201	1.7	H	-51.7	0.85	0.0	-52.55	-13	39.55
178.8	49.79	83	2.2	V	-56.9	0.85	0.0	-57.75	-13	44.75
1413.00	42.97	147	2.5	H	-65.2	1.60	7.90	-58.90	-13	45.90
1413.00	44.25	169	2.4	V	-64.2	1.60	7.90	-57.90	-13	44.90
2119.50	46.75	216	1.5	H	-54.4	1.30	9.70	-46.00	-13	33.00
2119.50	47.98	63	1.7	V	-54.0	1.30	9.70	-45.60	-13	32.60
2826.00	44.58	283	1.5	H	-59.4	1.80	10.50	-50.70	-13	37.70
2826.00	45.17	299	1.0	V	-58.4	1.80	10.50	-49.70	-13	36.70
5 MHz, Middle channel										
178.9	57.64	151	1.1	H	-51.6	0.85	0.0	-52.45	-13	39.45
178.9	49.81	181	1.3	V	-56.8	0.85	0.0	-57.65	-13	44.65
1420.00	42.57	220	2.1	H	-65.6	1.60	7.90	-59.30	-13	46.30
1420.00	43.95	359	2.0	V	-64.5	1.60	7.90	-58.20	-13	45.20
2130.00	48.01	171	2.5	H	-53.1	1.30	9.70	-44.70	-13	31.70
2130.00	49.37	219	1.5	V	-52.6	1.30	9.70	-44.20	-13	31.20
2840.00	44.78	212	1.7	H	-59.2	1.80	10.50	-50.50	-13	37.50
2840.00	45.28	148	1.8	V	-58.3	1.80	10.50	-49.60	-13	36.60
5 MHz, High channel										
178.8	57.75	65	1.6	H	-51.5	0.85	0.0	-52.35	-13	39.35
178.8	49.87	71	2.2	V	-56.8	0.85	0.0	-57.65	-13	44.65
1427.00	43.23	78	2.5	H	-64.9	1.60	7.90	-58.60	-13	45.60
1427.00	44.12	181	1.6	V	-64.3	1.60	7.90	-58.00	-13	45.00
2140.50	47.31	227	1.8	H	-53.8	1.30	9.70	-45.40	-13	32.40
2140.50	49.26	85	2.1	V	-52.7	1.30	9.70	-44.30	-13	31.30
2854.00	43.87	81	2.0	H	-60.8	1.70	10.70	-51.80	-13	38.80
2854.00	45.14	135	1.2	V	-59.6	1.70	10.70	-50.60	-13	37.60

Note:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

dBd is for the ERP, dBi is for EIRP.

FCC § 22.917 (a); § 24.238 (a); §27.53 (h)(m) - BAND EDGES

Applicable Standard

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

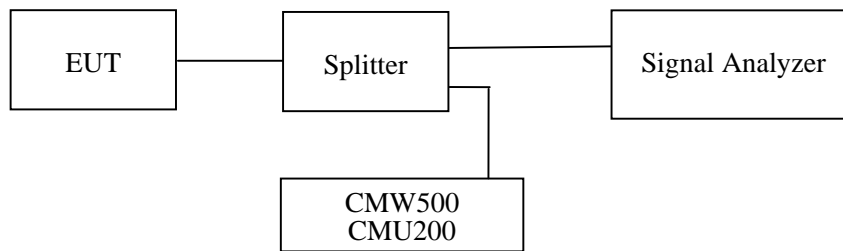
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC §27.53 (h)(m), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

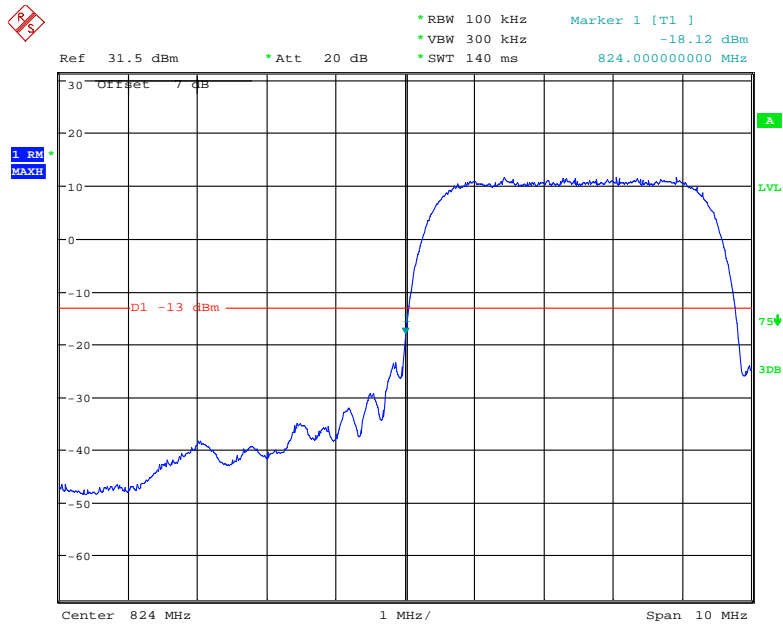
The testing was performed by Alan He from 2020-12-22 to 2021-02-22.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

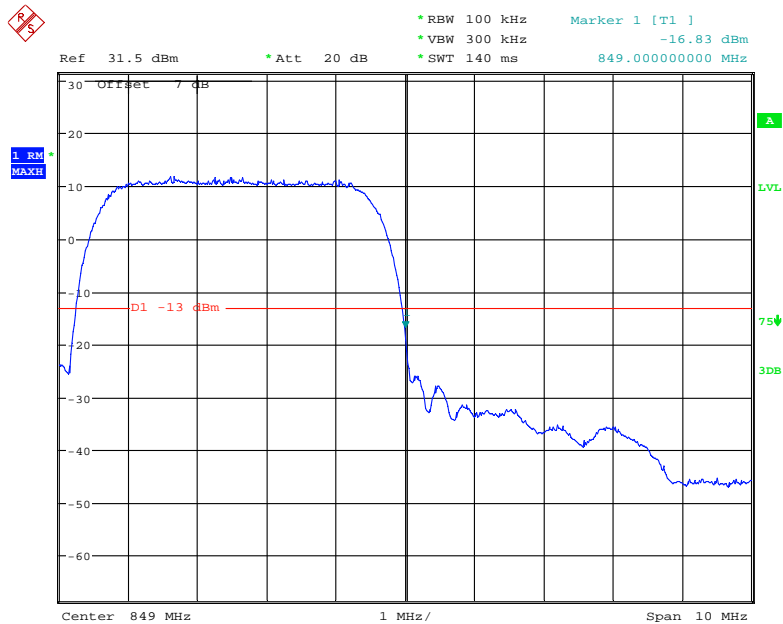
Please refer to the following plots.

Cellular Band, Left Band Edge for WCDMA (BPSK) Mode



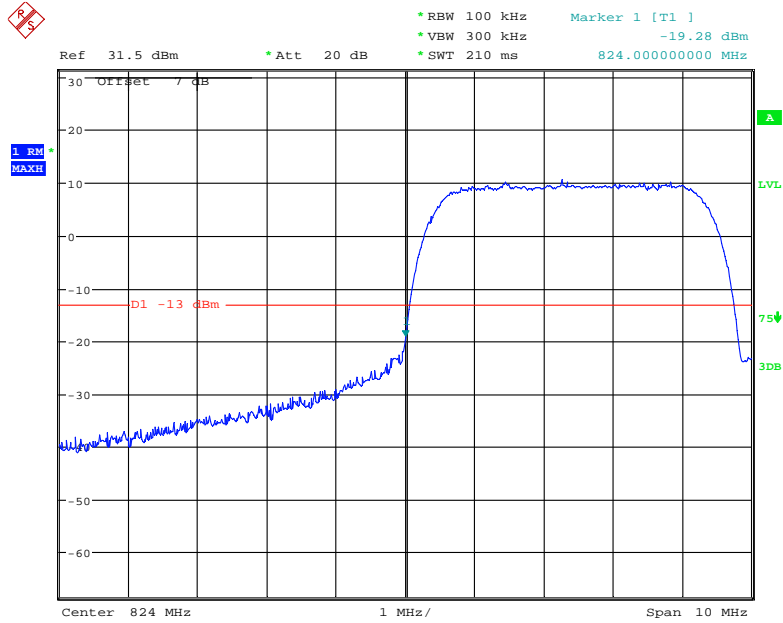
Date: 22.DEC.2020 00:43:33

Cellular Band, Right Band Edge for WCDMA (BPSK) Mode



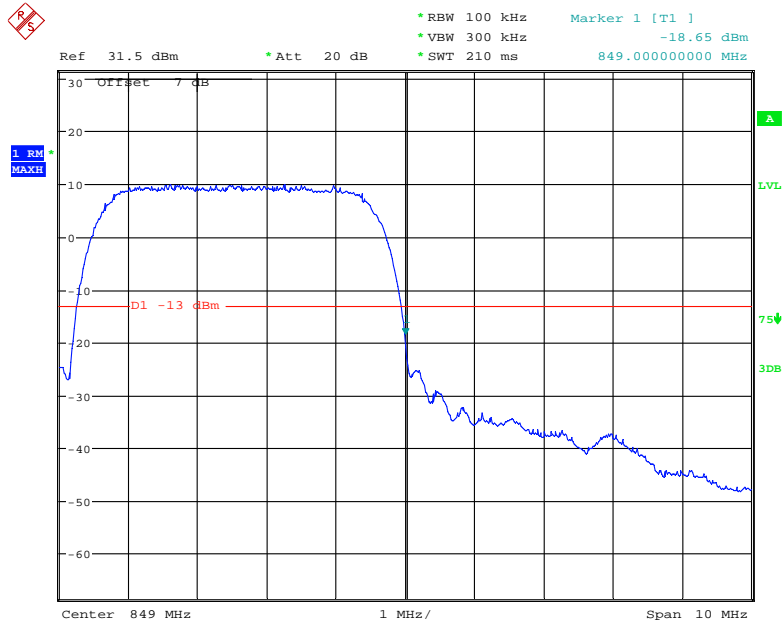
Date: 22.DEC.2020 00:42:46

Cellular Band, Left Band Edge for HSDPA (16QAM) Mode



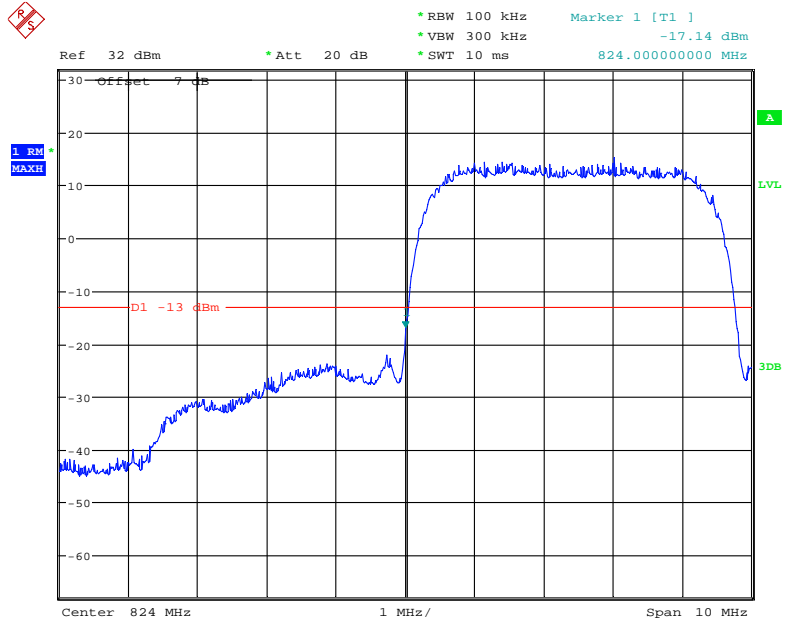
Date: 22.DEC.2020 01:07:54

Cellular Band, Right Band Edge for HSDPA (16QAM) Mode



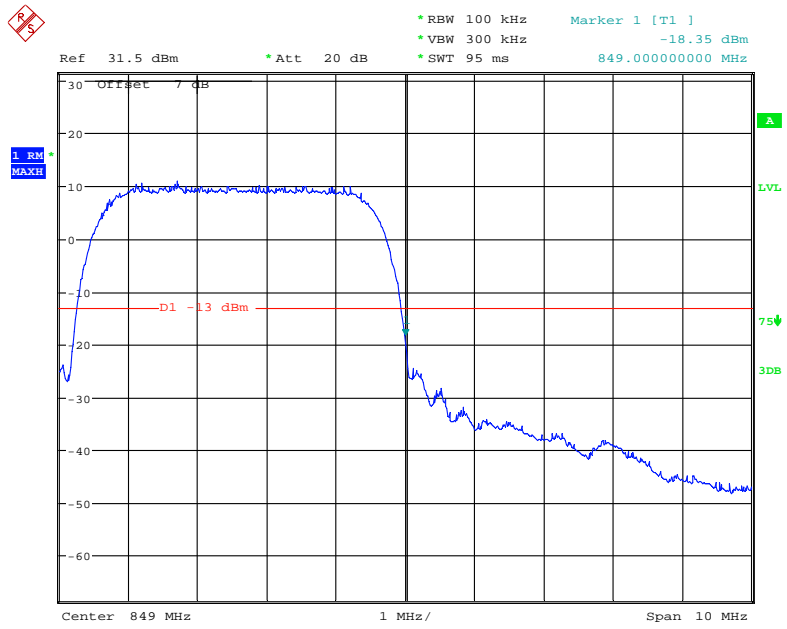
Date: 22.DEC.2020 01:09:08

Cellular Band, Left Band Edge for HSUPA (BPSK) Mode



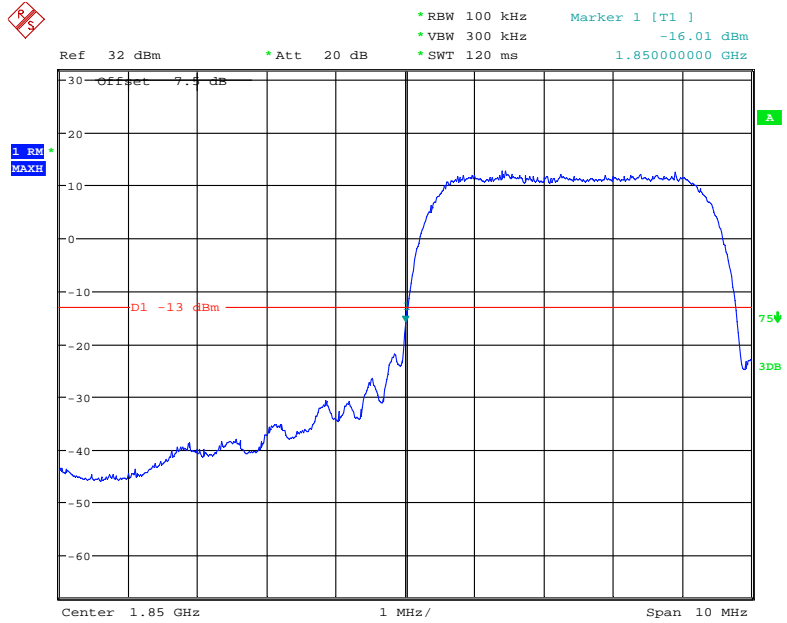
Date: 22.FEB.2021 17:27:05

Cellular Band, Right Band Edge for HSUPA (BPSK) Mode



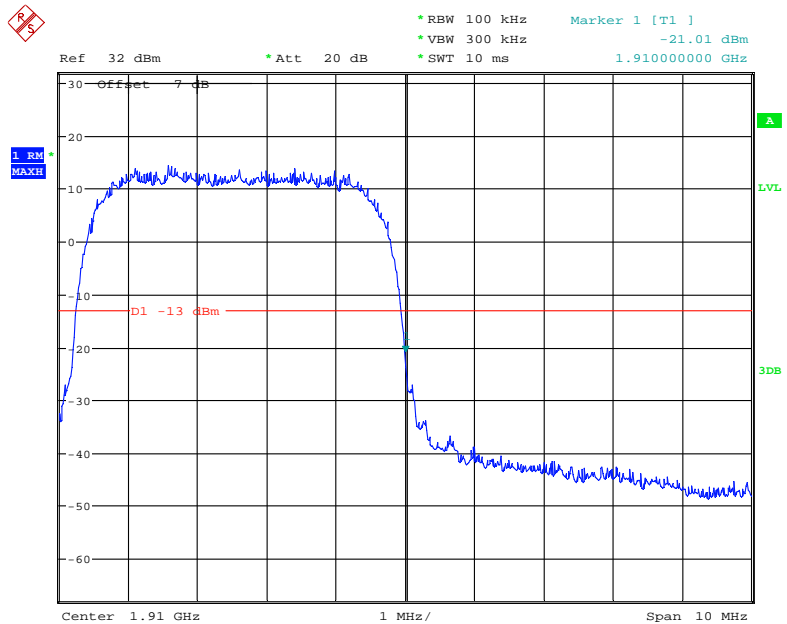
Date: 22.DEC.2020 01:24:51

PCS Band, Left Band Edge for WCDMA (BPSK) Mode



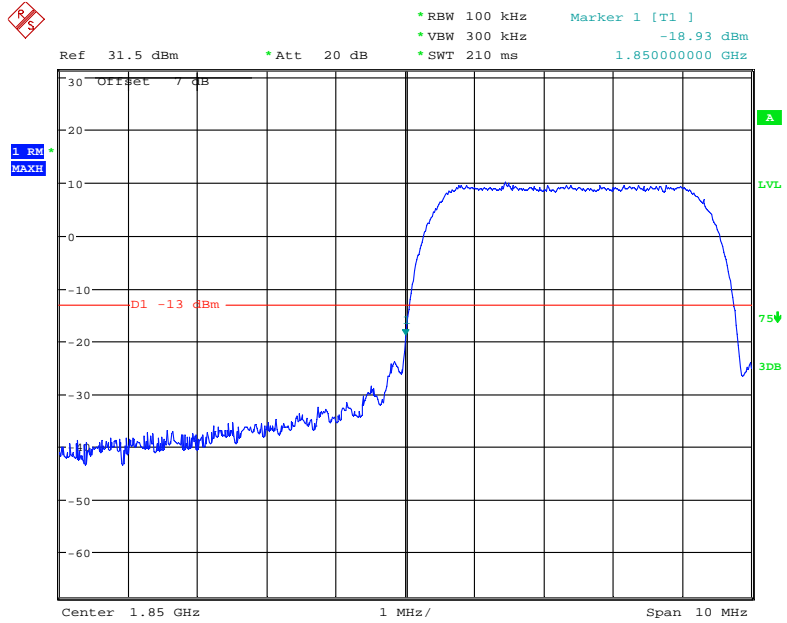
Date: 22.DEC.2020 00:29:24

PCS Band, Right Band Edge for WCDMA (BPSK) Mode



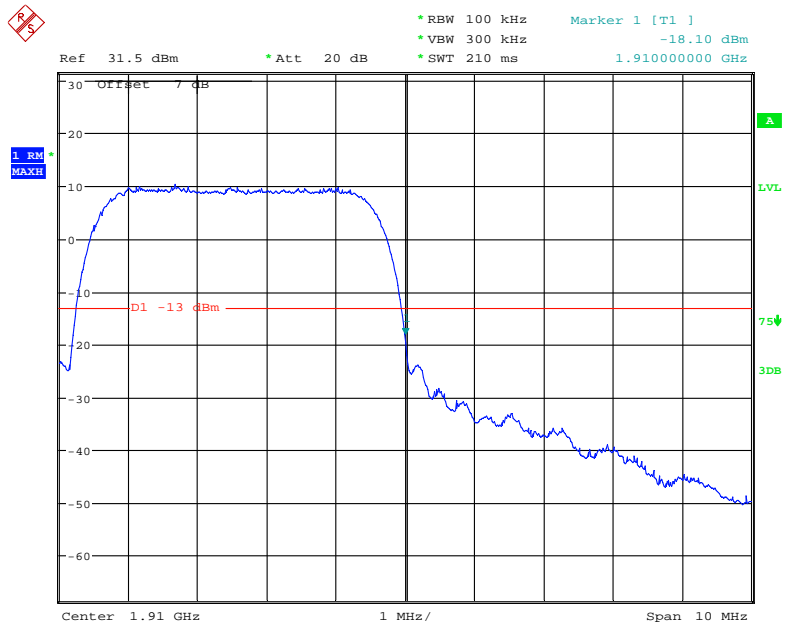
Date: 22.FEB.2021 17:29:26

PCS Band, Left Band Edge for HSDPA (16QAM) Mode



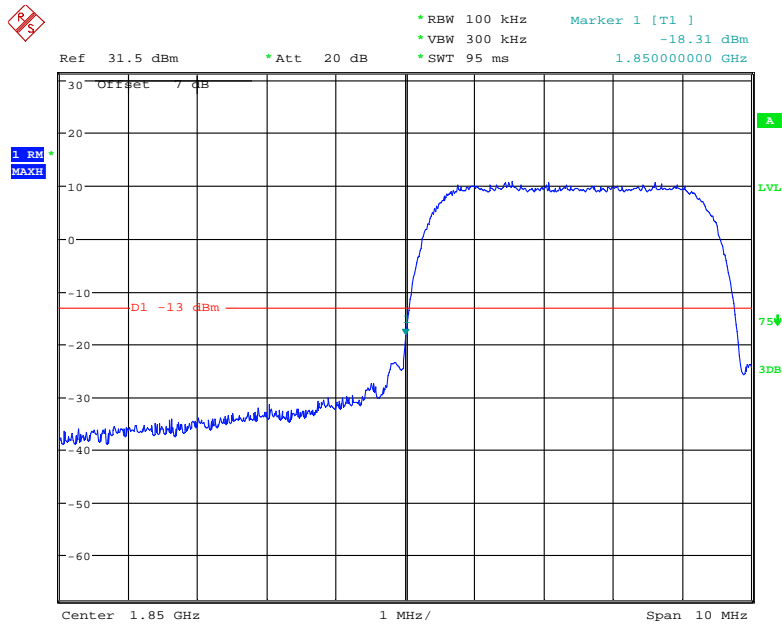
Date: 22.DEC.2020 01:05:01

PCS Band, Right Band Edge for HSDPA (16QAM) Mode

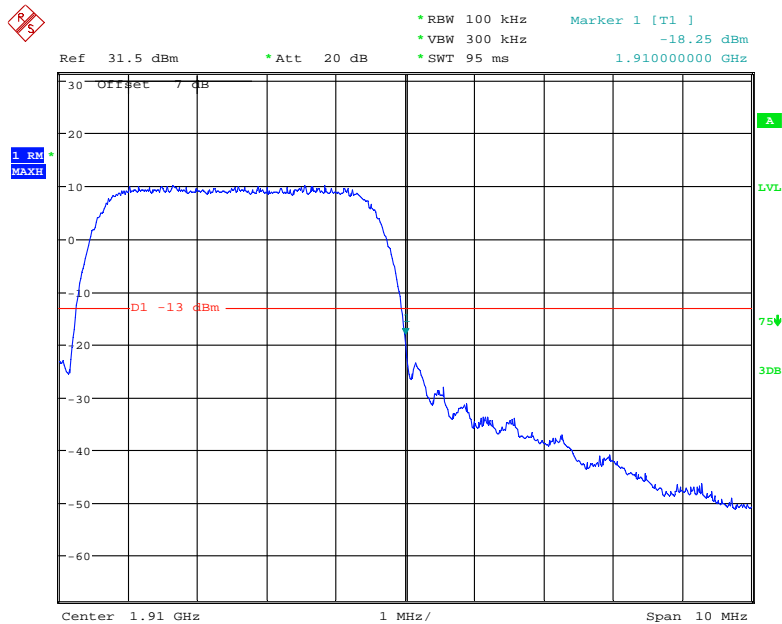


Date: 22.DEC.2020 01:03:59

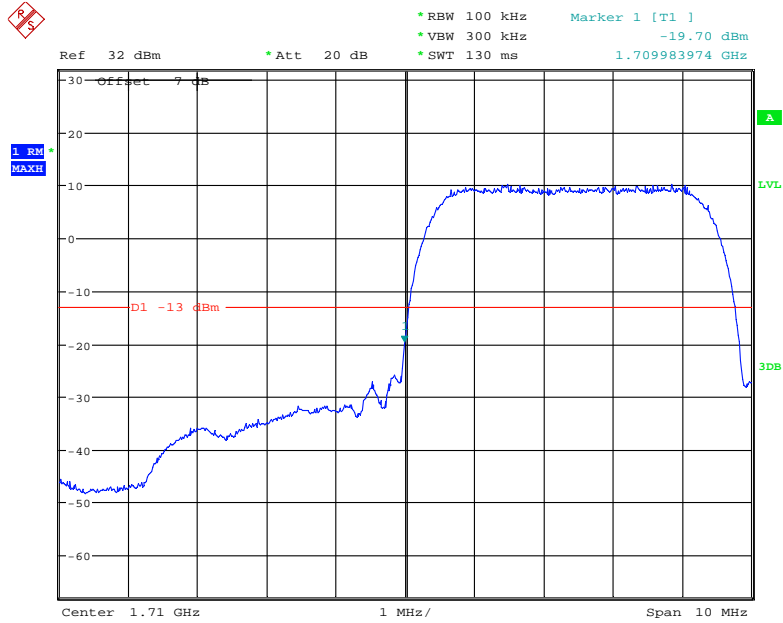
PCS Band, Left Band Edge for HSUPA (BPSK) Mode



PCS Band, Right Band Edge for HSUPA (BPSK) Mode

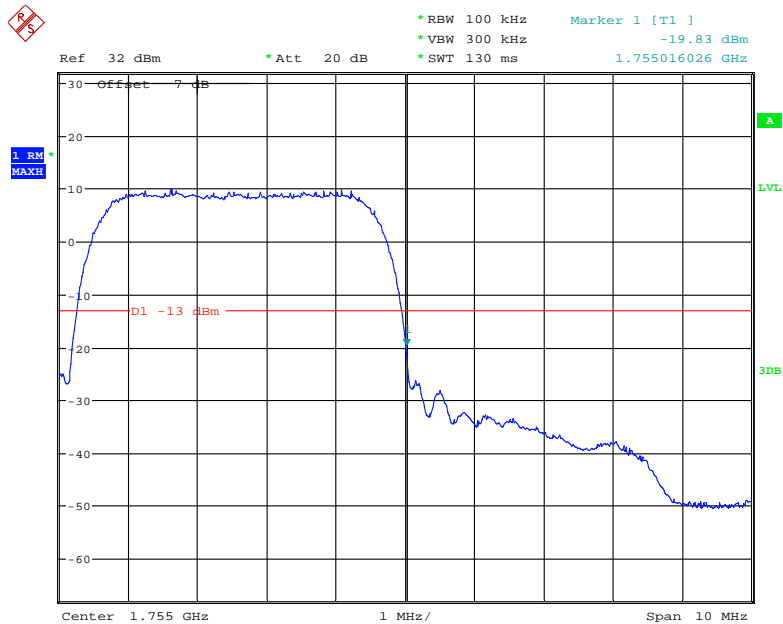


AWS Band, Left Band Edge for WCDMA (BPSK) Mode



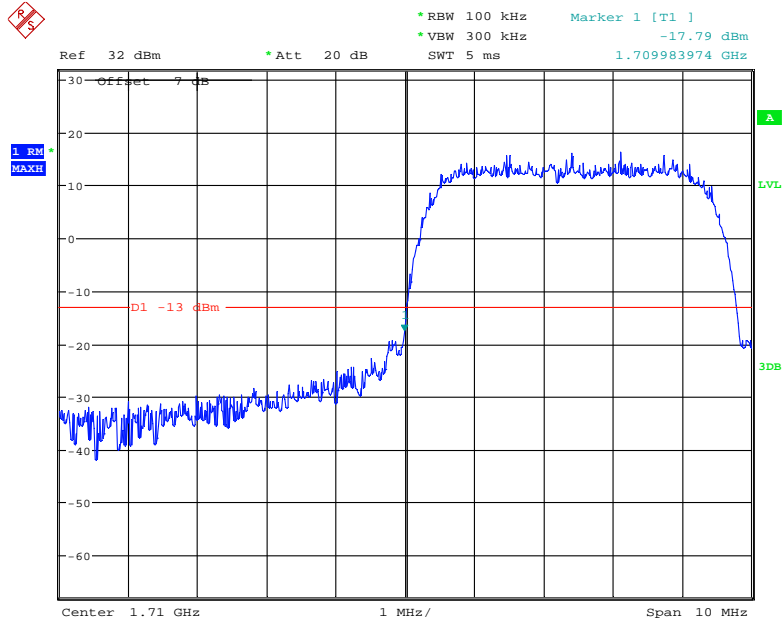
Date: 22.DEC.2020 22:29:40

AWS Band, Right Band Edge for WCDMA (BPSK) Mode



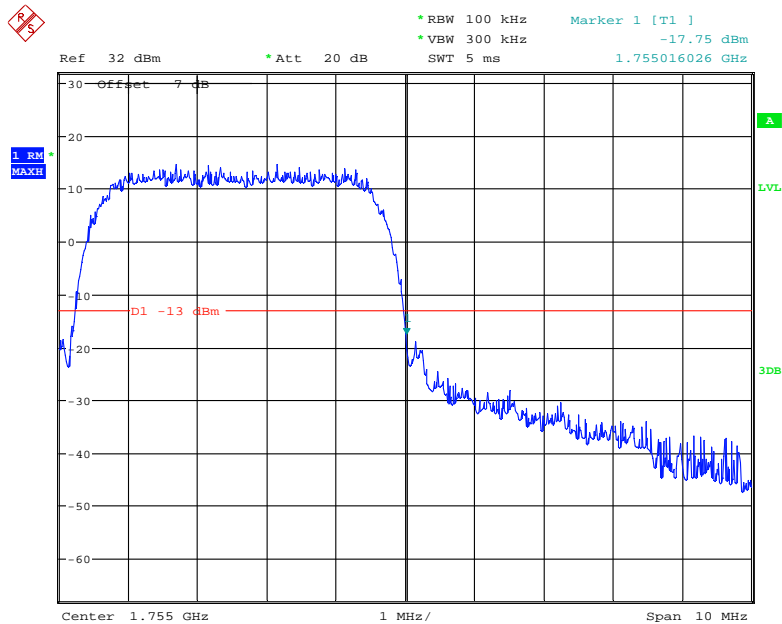
Date: 22.DEC.2020 22:30:28

AWS Band, Left Band Edge for HSDPA (16QAM) Mode



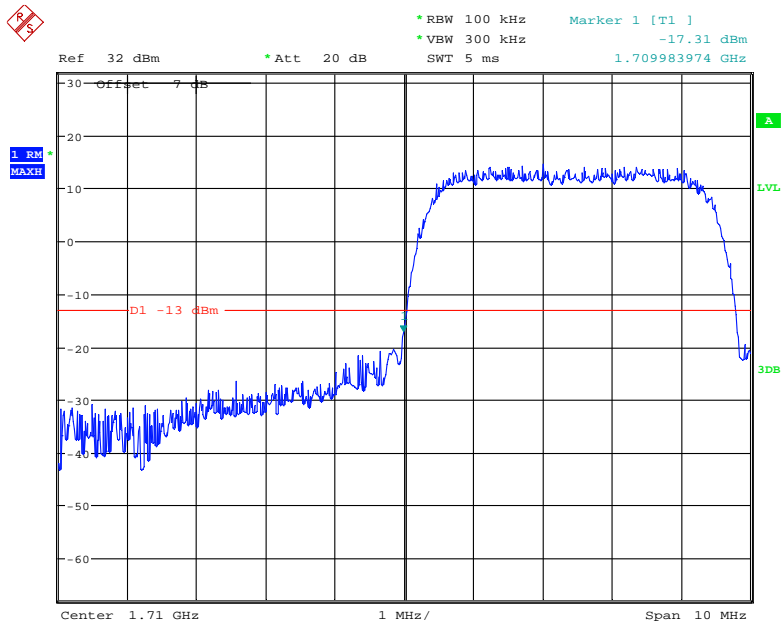
Date: 22.DEC.2020 22:22:05

AWS Band, Right Band Edge for HSDPA (16QAM) Mode



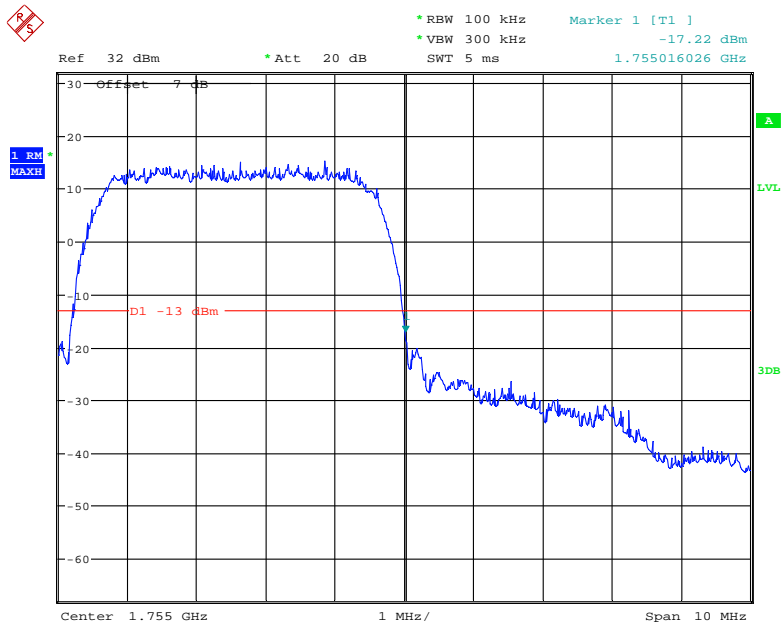
Date: 22.DEC.2020 22:22:44

AWS Band, Left Band Edge for HSUPA (BPSK) Mode



Date: 22.DEC.2020 22:41:38

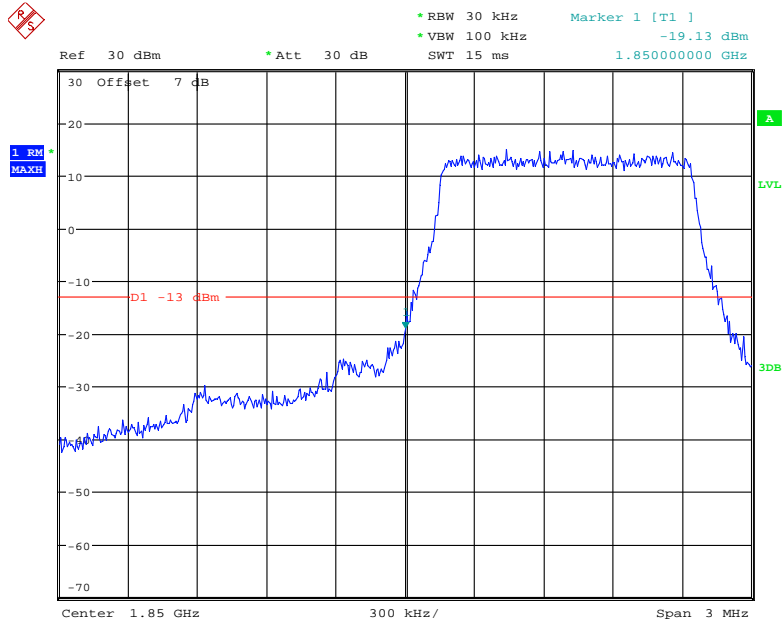
AWS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 22.DEC.2020 22:40:49

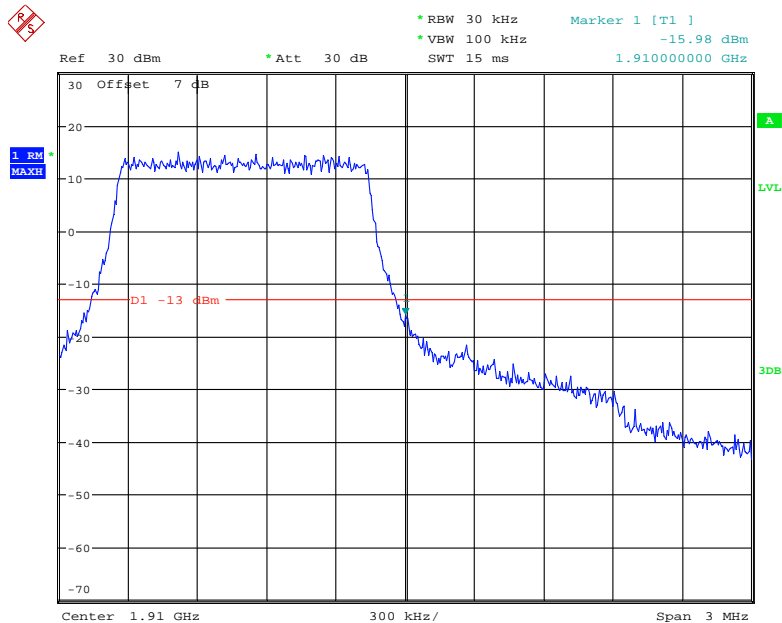
LTE Band 2:

QPSK (1.4 MHz, FULL RB) - Left Band Edge



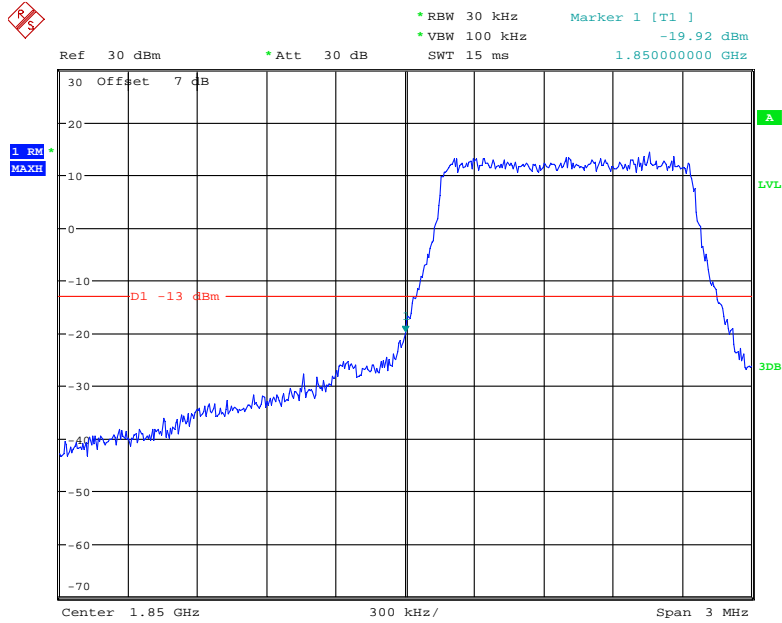
Date: 29.DEC.2020 12:46:28

QPSK (1.4 MHz, FULL RB) - Right Band Edge



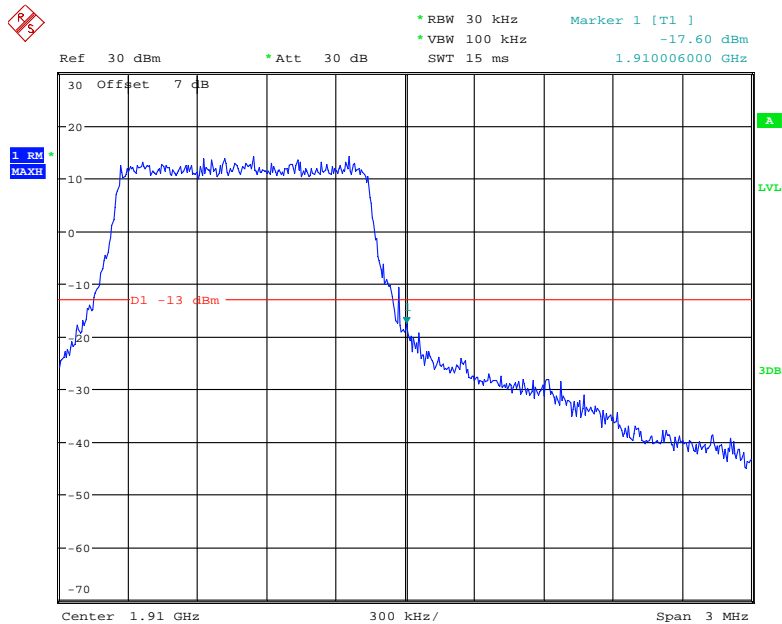
Date: 29.DEC.2020 12:47:14

16-QAM (1.4 MHz, FULL RB) - Left Band Edge



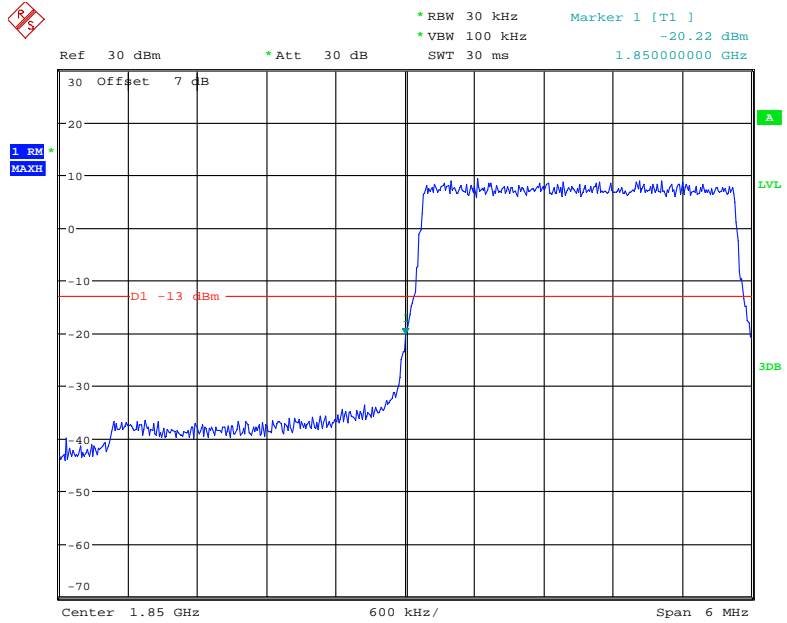
Date: 29.DEC.2020 12:46:52

16-QAM (1.4 MHz, FULL RB) - Right Band Edge



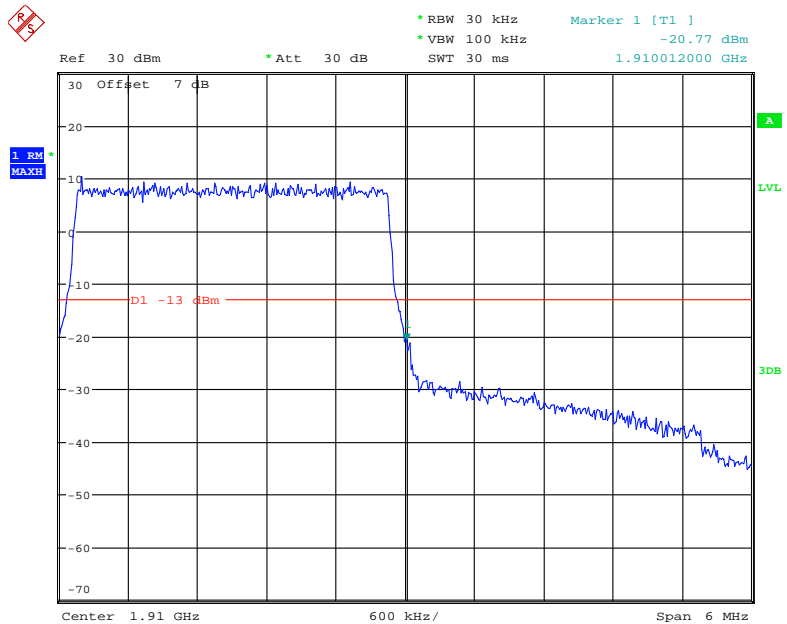
Date: 29.DEC.2020 12:47:34

QPSK (3.0 MHz, FULL RB) - Left Band Edge



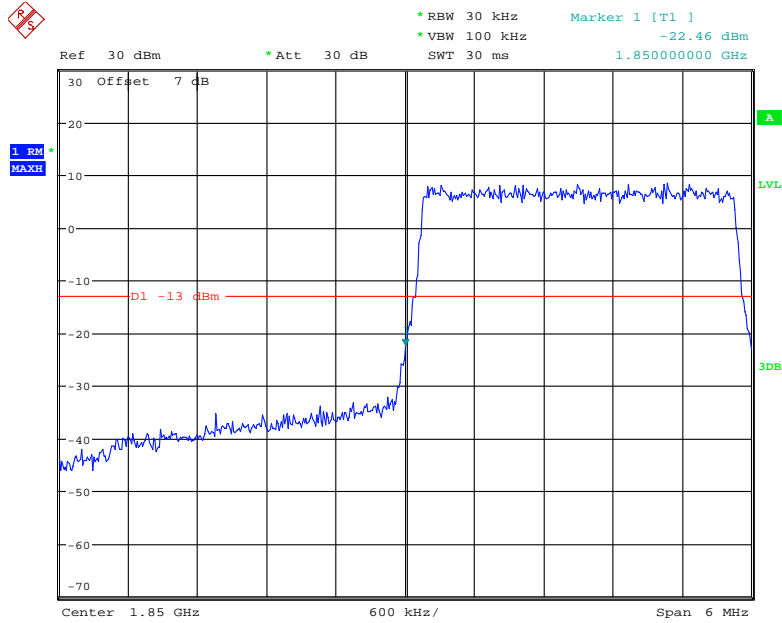
Date: 29.DEC.2020 12:47:56

QPSK (3.0 MHz, FULL RB) - Right Band Edge



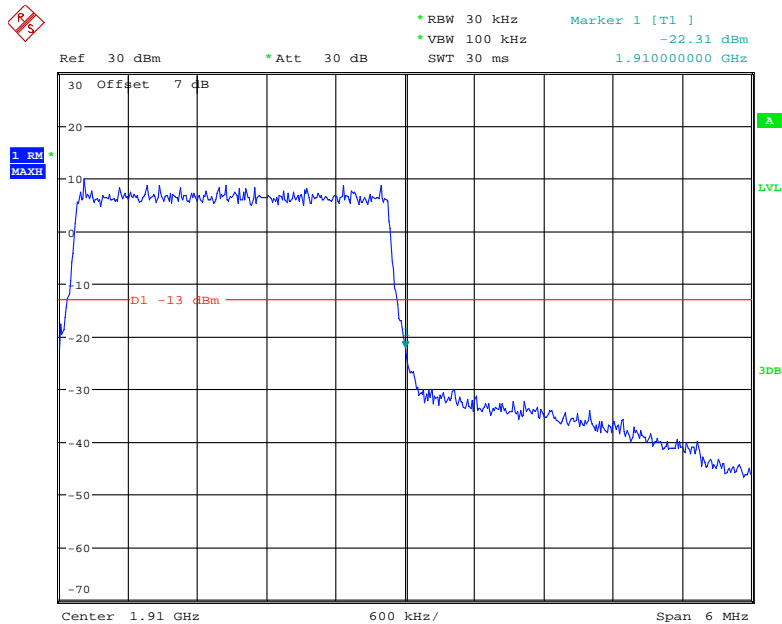
Date: 29.DEC.2020 12:48:35

16-QAM (3.0 MHz, FULL RB) - Left Band Edge



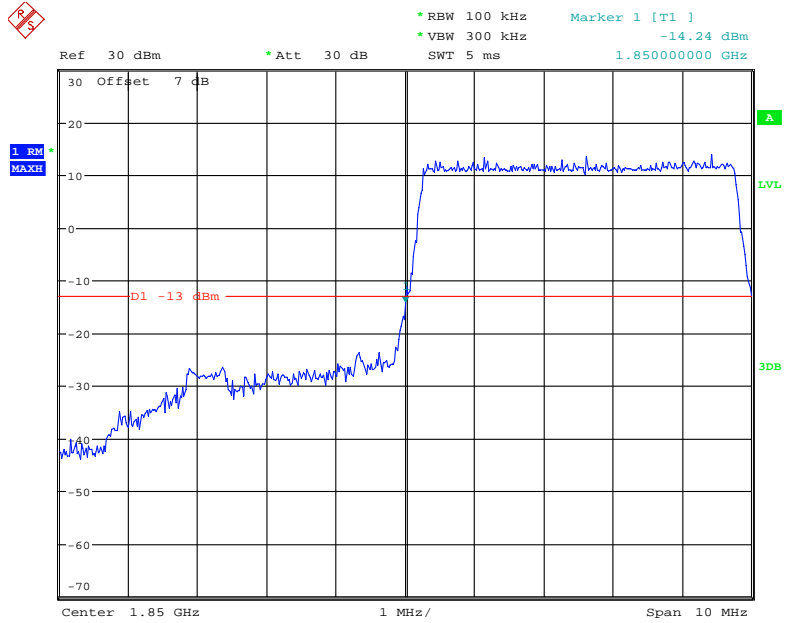
Date: 29.DEC.2020 12:48:14

16-QAM (3.0 MHz, FULL RB) - Right Band Edge



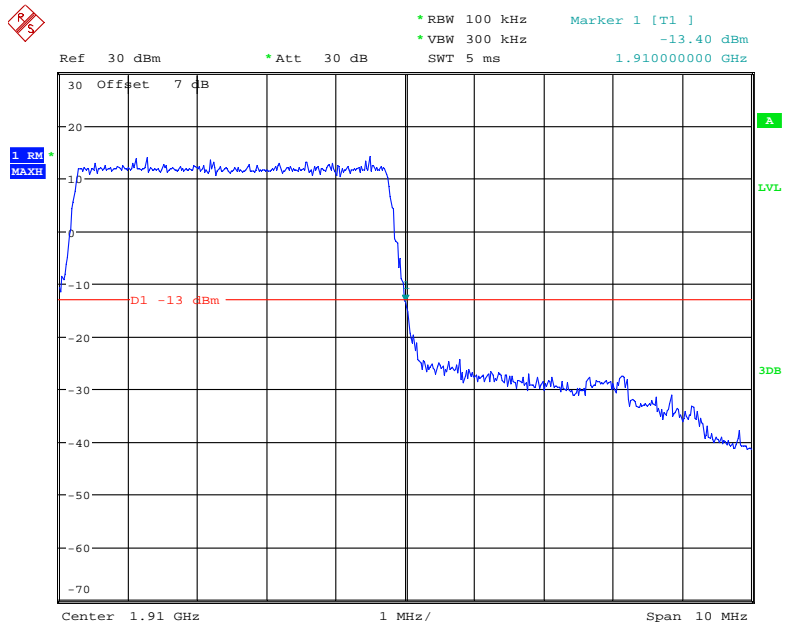
Date: 29.DEC.2020 12:48:56

QPSK (5.0 MHz, FULL RB) - Left Band Edge



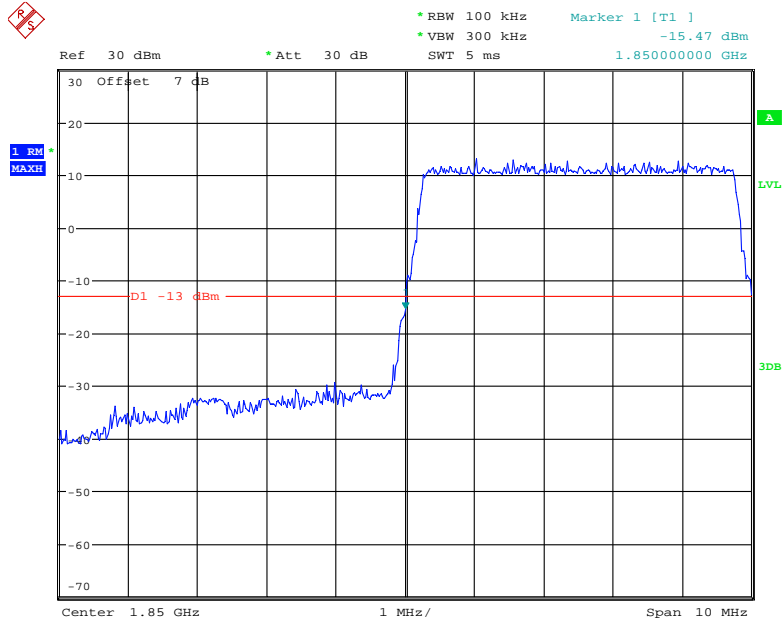
Date: 30.DEC.2020 12:56:36

QPSK (5.0 MHz, FULL RB) - Right Band Edge



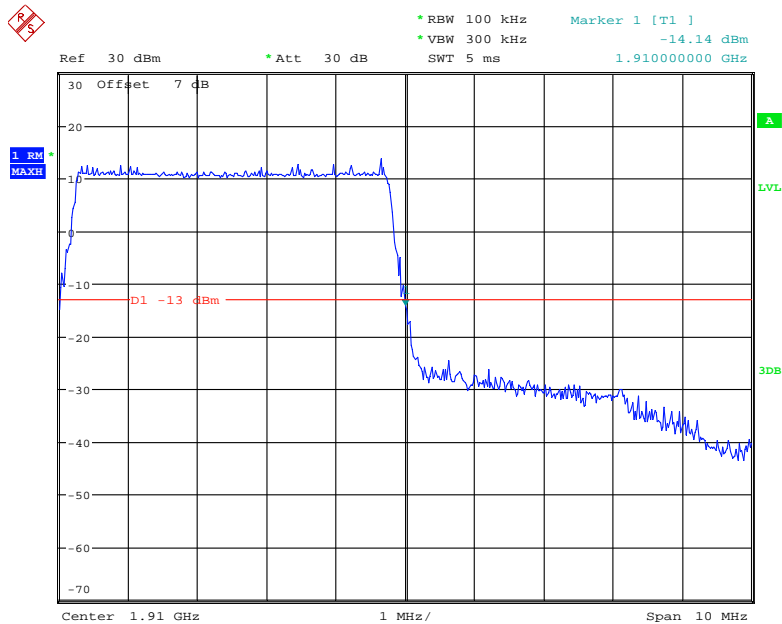
Date: 29.DEC.2020 12:49:56

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



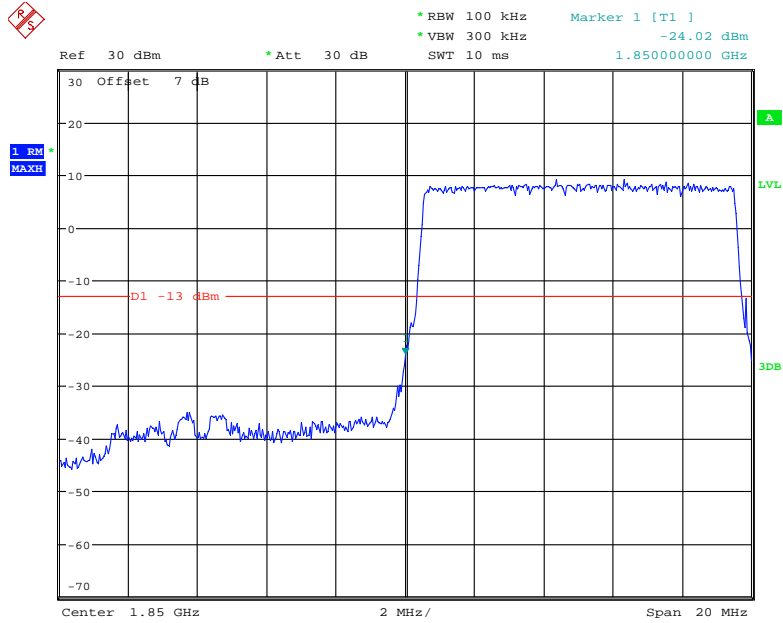
Date: 22.DEC.2020 23:08:04

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



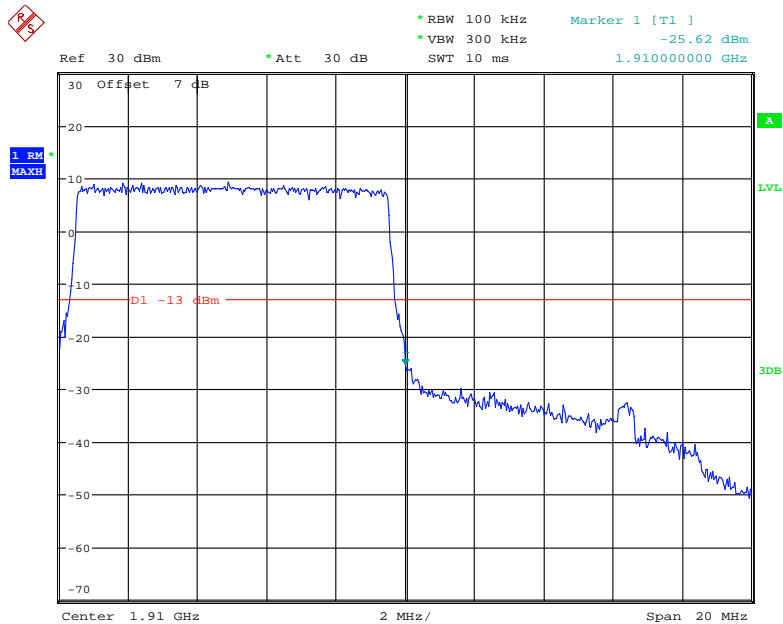
Date: 29.DEC.2020 12:50:17

QPSK (10.0 MHz, FULL RB) - Left Band Edge



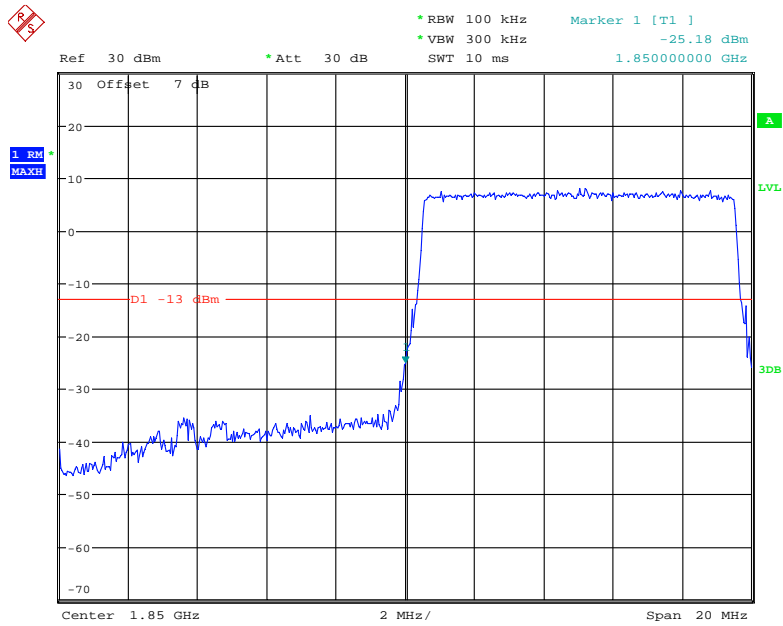
Date: 29.DEC.2020 12:50:40

QPSK (10.0 MHz, FULL RB) - Right Band Edge



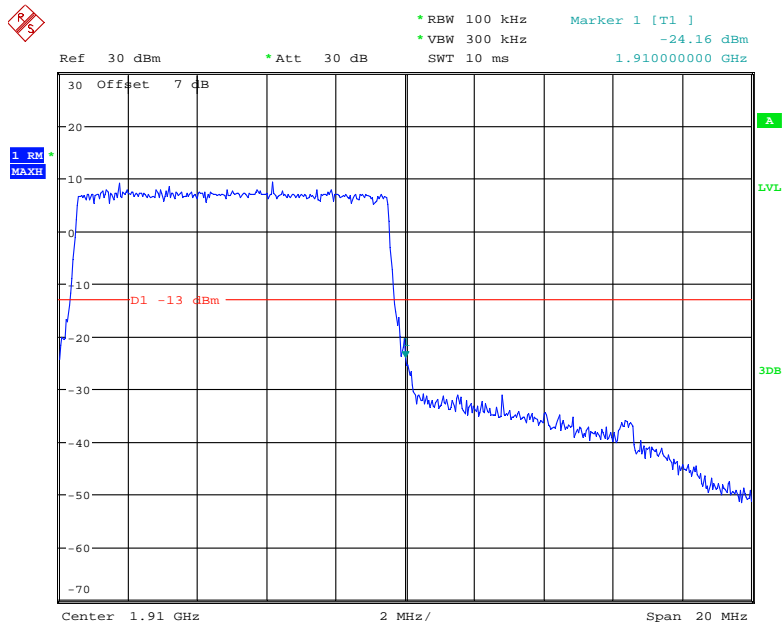
Date: 29.DEC.2020 12:51:18

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



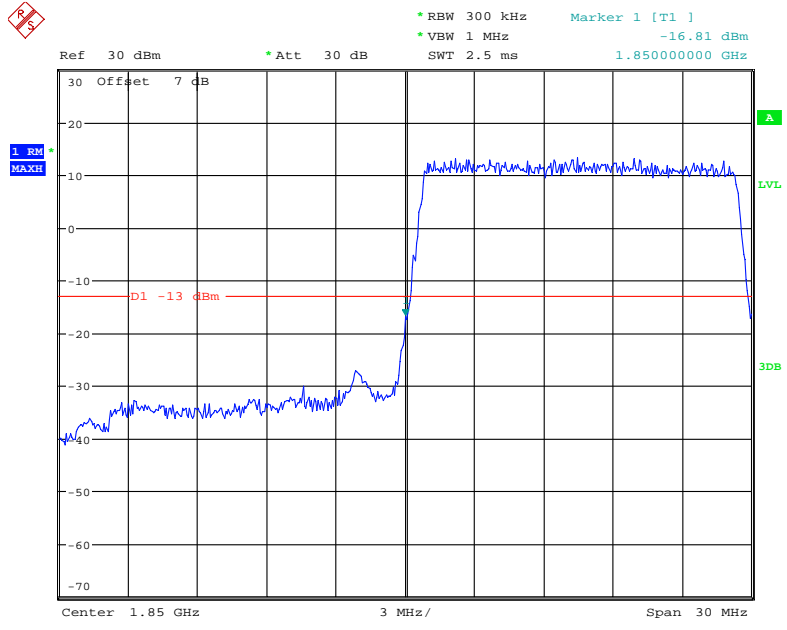
Date: 29.DEC.2020 12:50:58

16-QAM (10.0 MHz, FULL RB) - Right Band Edge



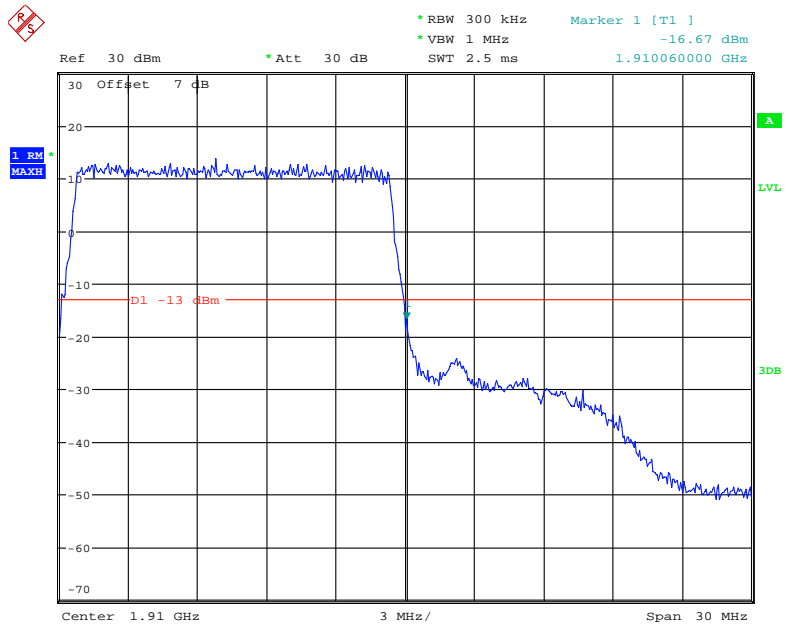
Date: 29.DEC.2020 12:51:37

QPSK (15.0 MHz, FULL RB) - Left Band Edge



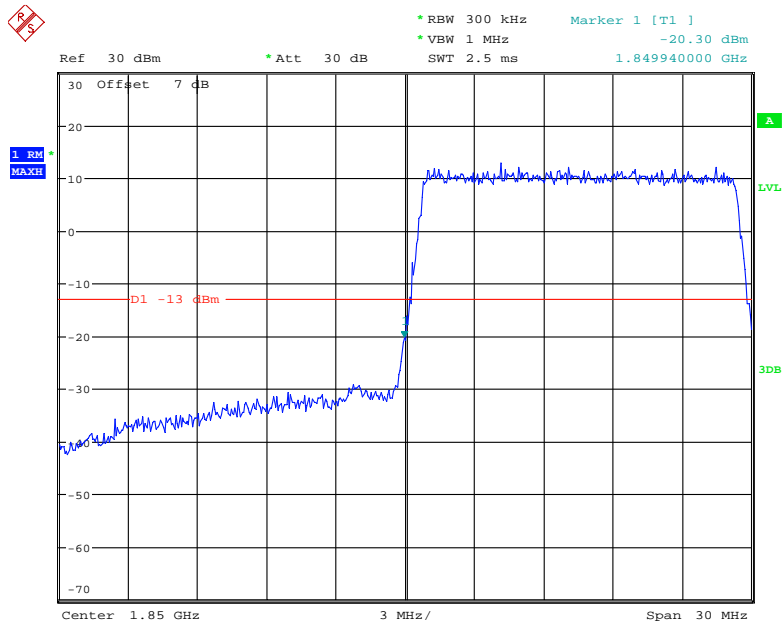
Date: 29.DEC.2020 12:52:02

QPSK (15.0 MHz, FULL RB) - Right Band Edge



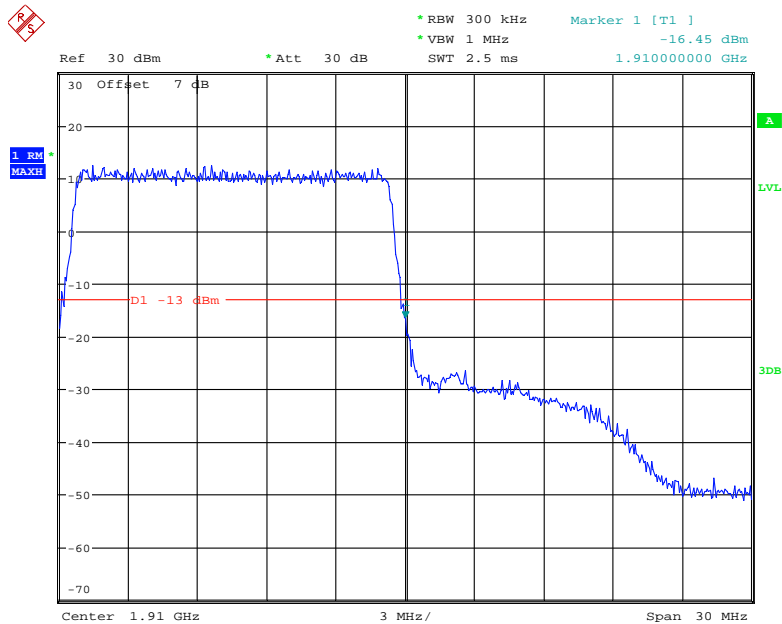
Date: 29.DEC.2020 12:52:44

16-QAM (15.0 MHz, FULL RB) - Left Band Edge



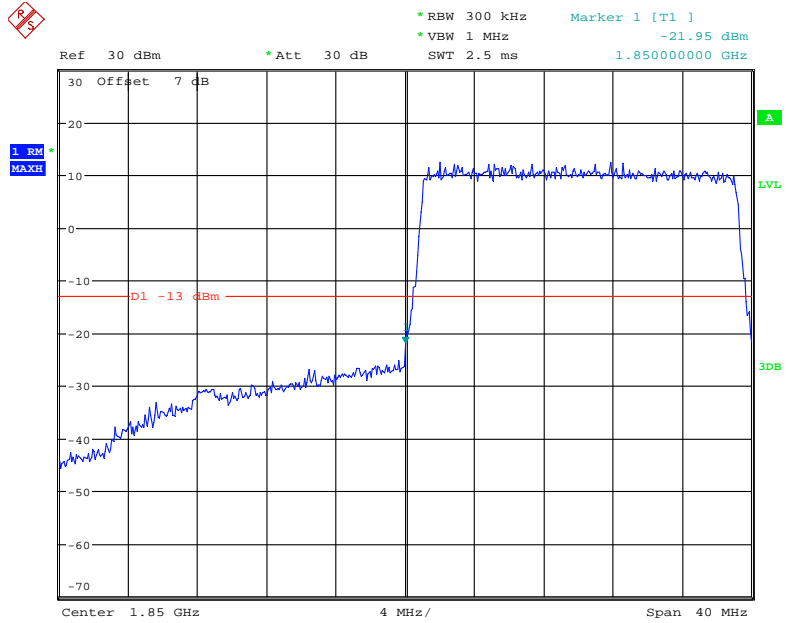
Date: 29.DEC.2020 12:52:23

16-QAM (15.0 MHz, FULL RB) - Right Band Edge



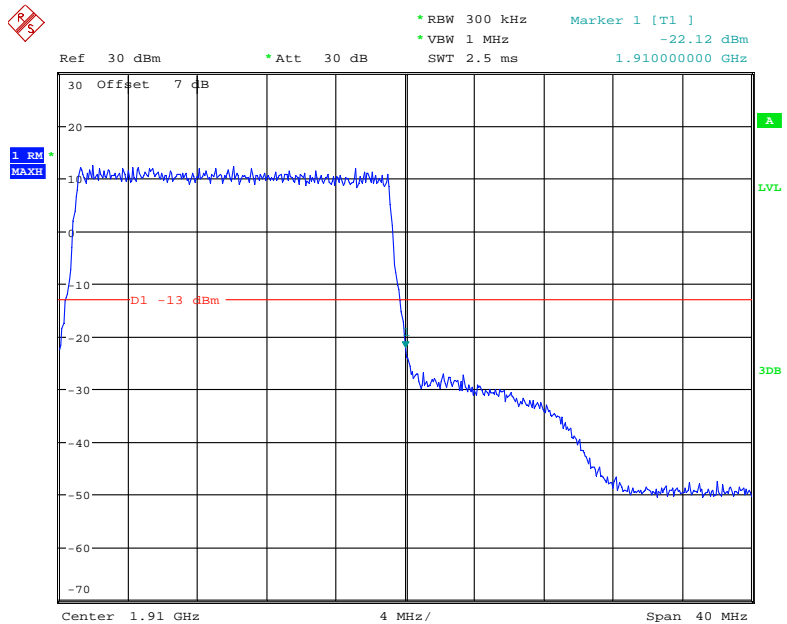
Date: 29.DEC.2020 12:53:05

QPSK (20.0 MHz, FULL RB) - Left Band Edge



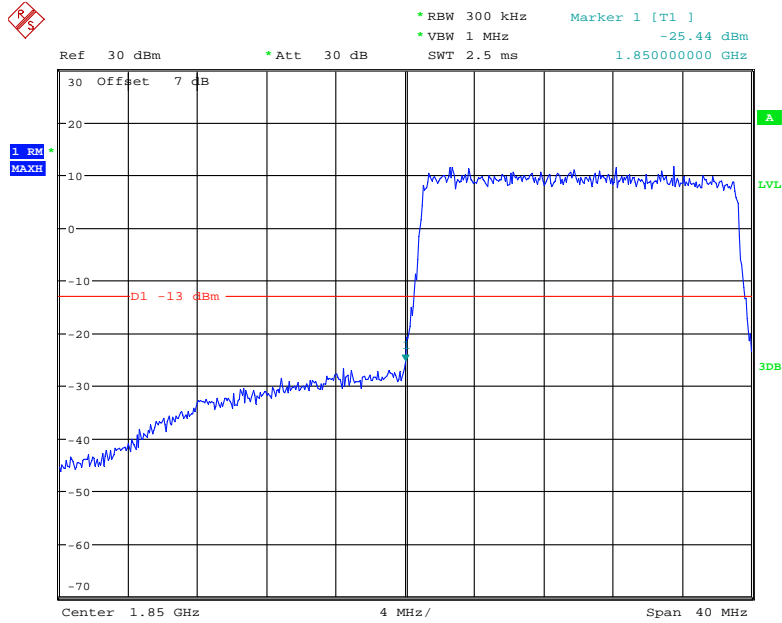
Date: 29.DEC.2020 12:53:33

QPSK (20.0 MHz, FULL RB) - Right Band Edge



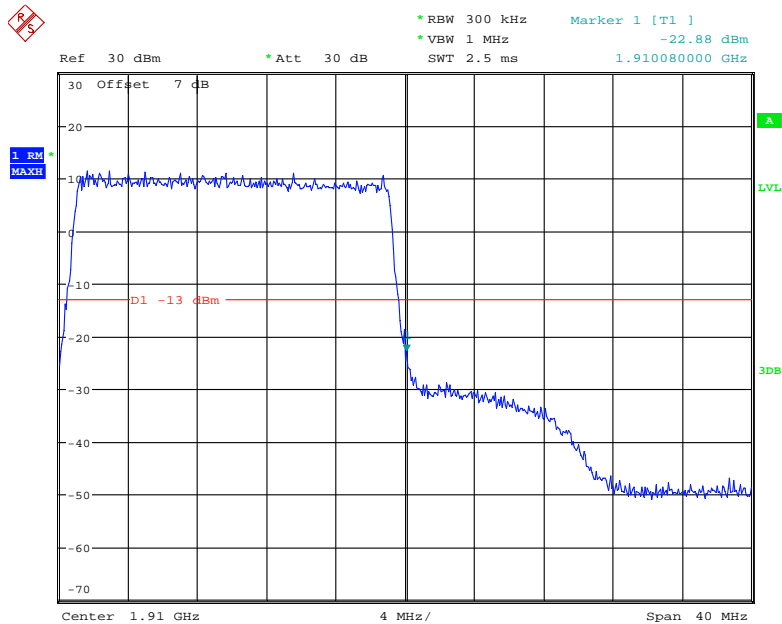
Date: 29.DEC.2020 12:54:19

16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 29.DEC.2020 12:53:54

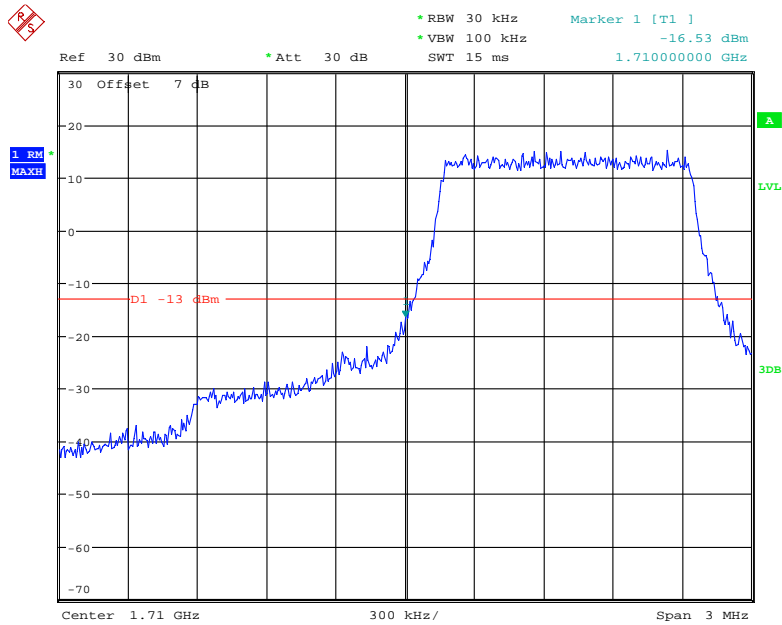
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 29.DEC.2020 12:54:40

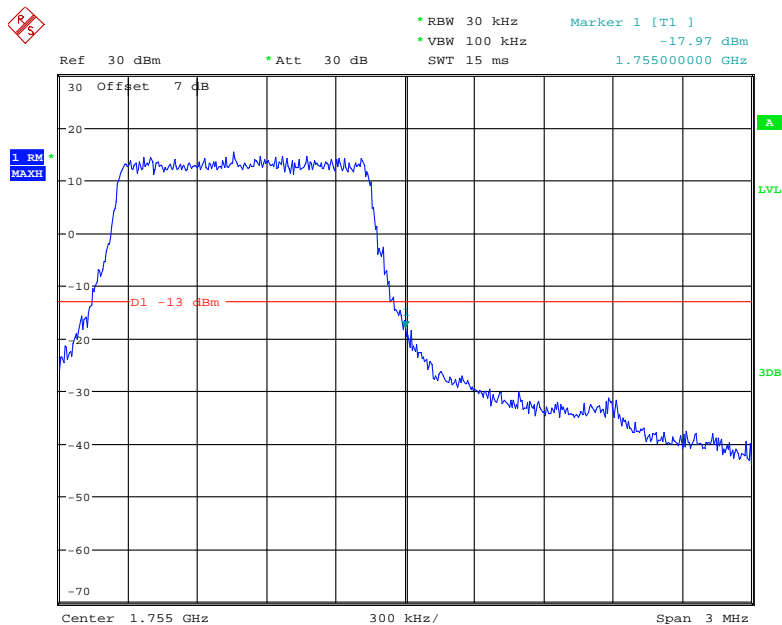
LTE Band 4:

QPSK (1.4 MHz, FULL RB) - Left Band Edge



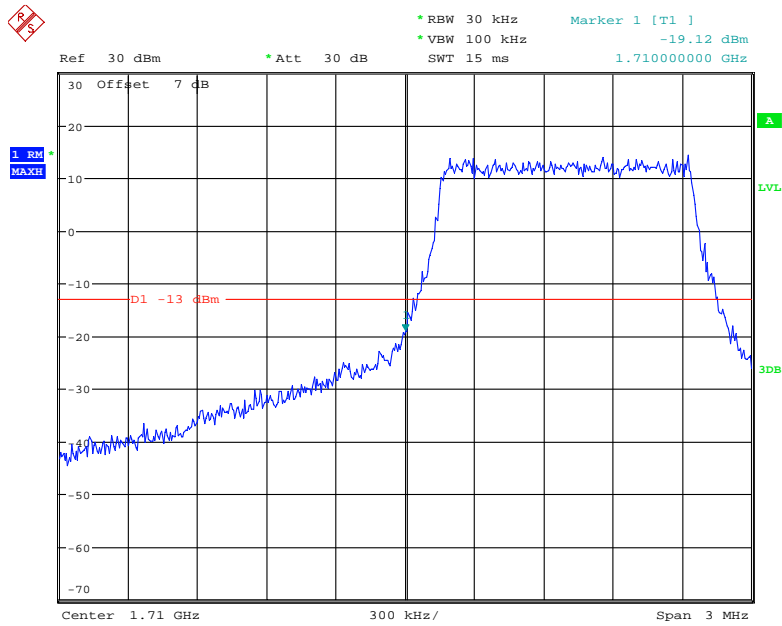
Date: 29.DEC.2020 12:55:07

QPSK (1.4 MHz, FULL RB) - Right Band Edge



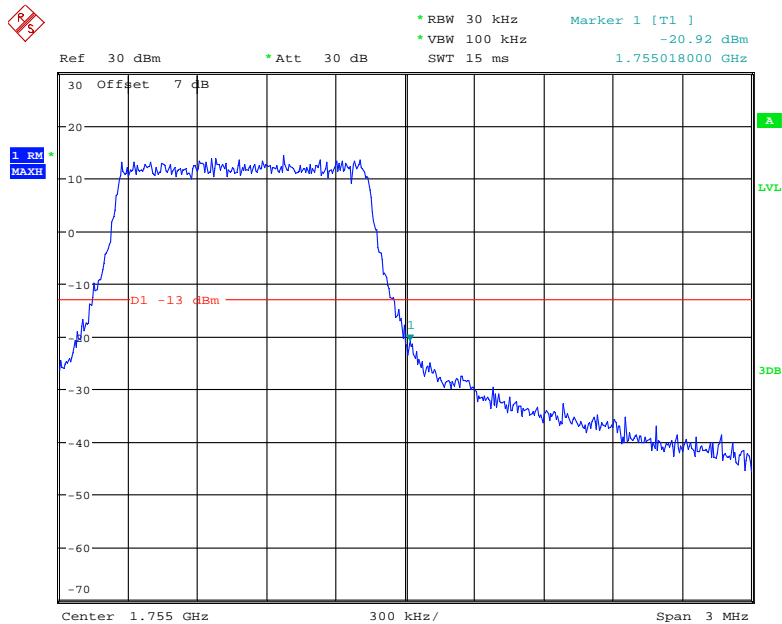
Date: 29.DEC.2020 12:55:49

16-QAM 1.4 MHz, FULL RB) - Left Band Edge



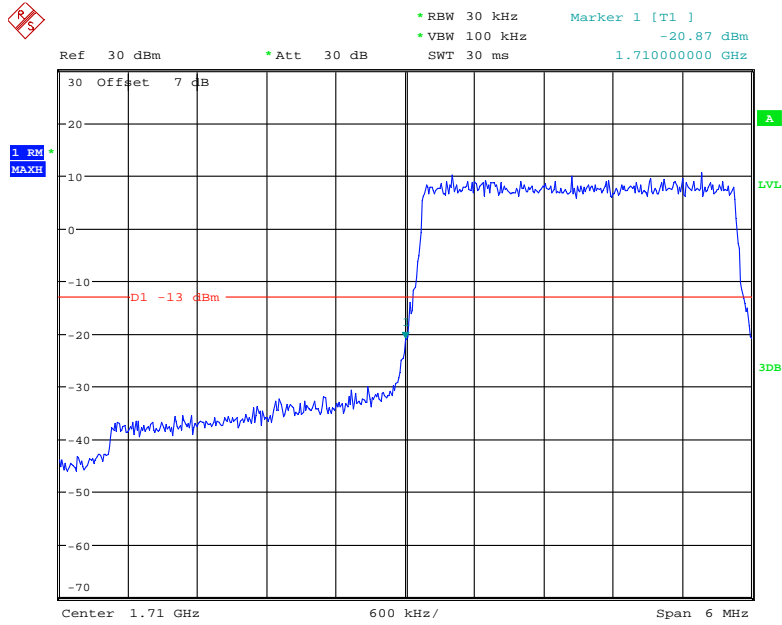
Date: 29.DEC.2020 12:55:27

16-QAM (1.4MHz, FULL RB) - Right Band Edge



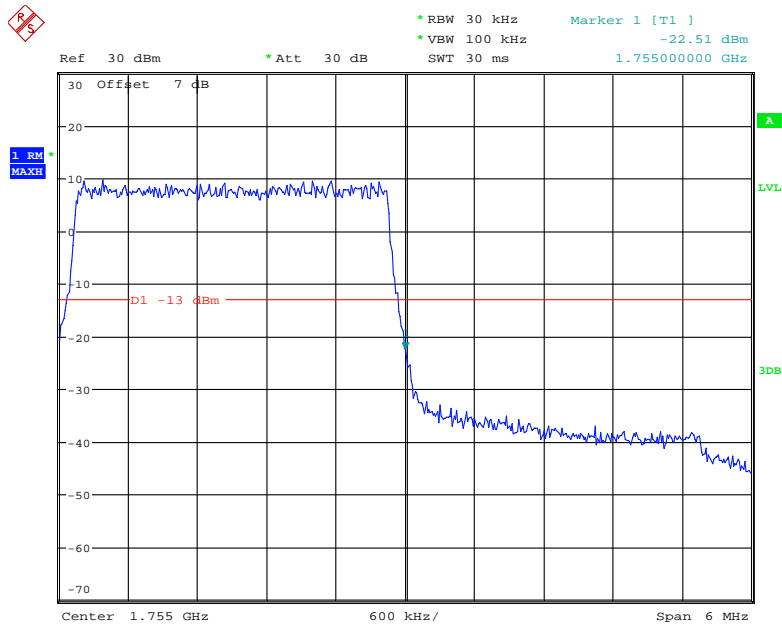
Date: 29.DEC.2020 12:56:10

QPSK (3.0 MHz, FULL RB) - Left Band Edge



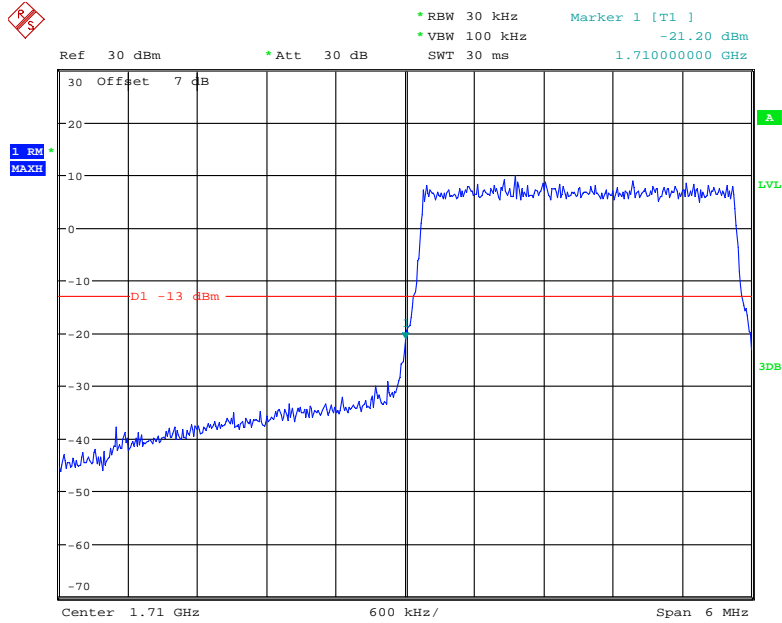
Date: 29.DEC.2020 12:56:31

QPSK (3.0 MHz, FULL RB) - Right Band Edge



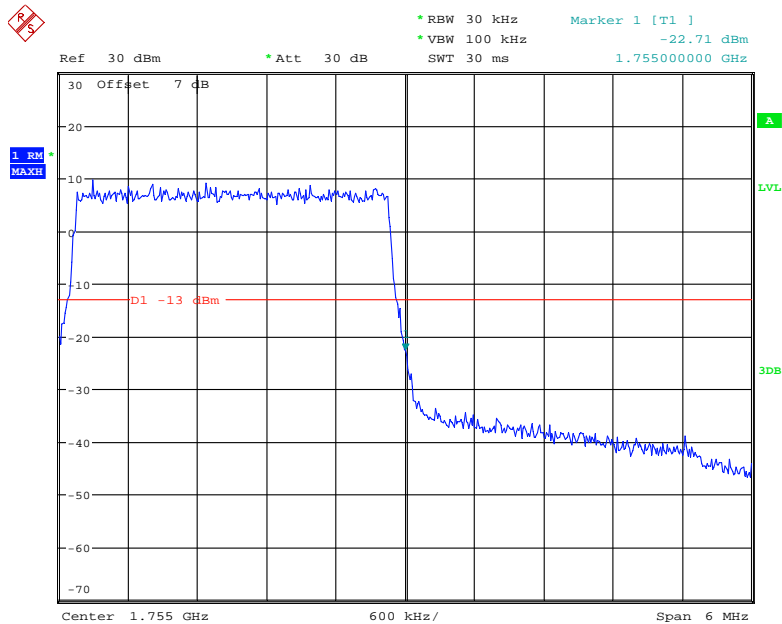
Date: 29.DEC.2020 12:57:10

16-QAM (3.0 MHz, FULL RB) - Left Band Edge



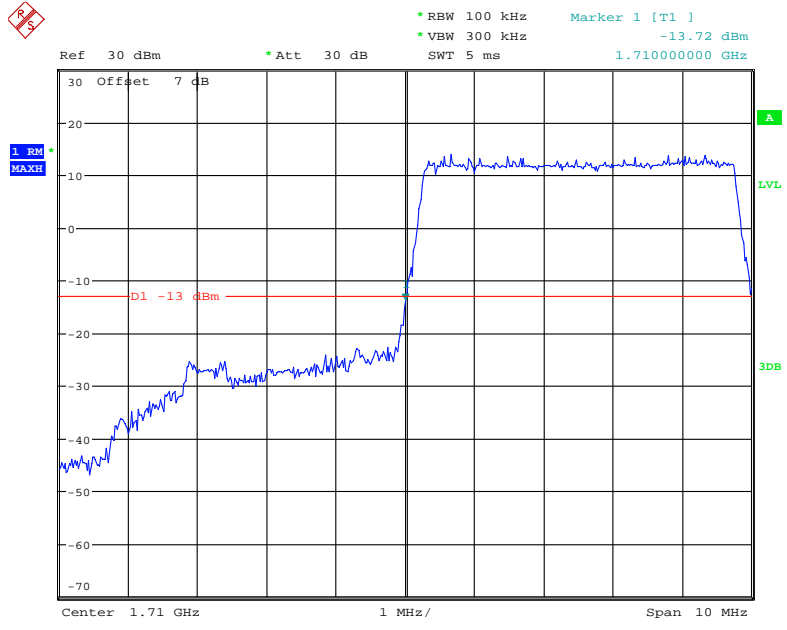
Date: 29.DEC.2020 12:56:52

16-QAM (3.0 MHz, FULL RB) - Right Band Edge



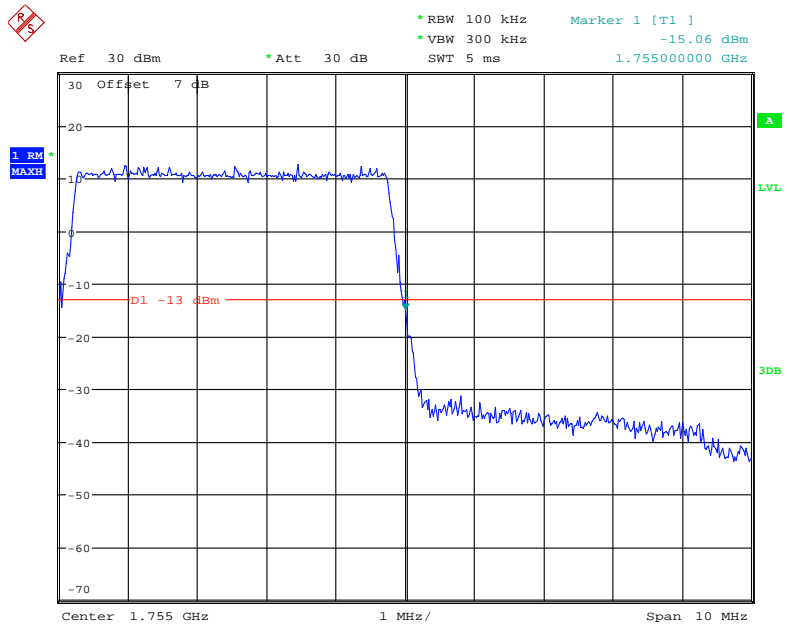
Date: 29.DEC.2020 12:57:31

QPSK (5.0 MHz, FULL RB) - Left Band Edge



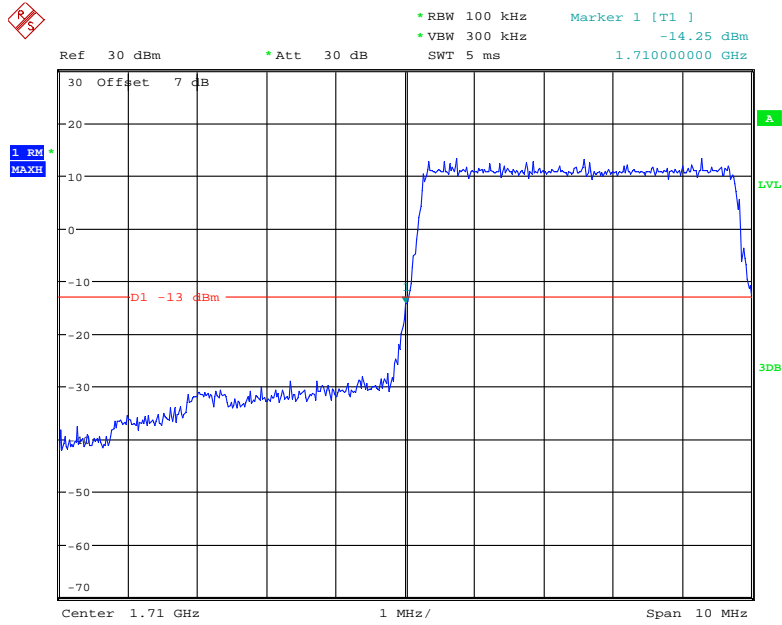
Date: 30.DEC.2020 13:04:39

QPSK (5.0 MHz, FULL RB) - Right Band Edge



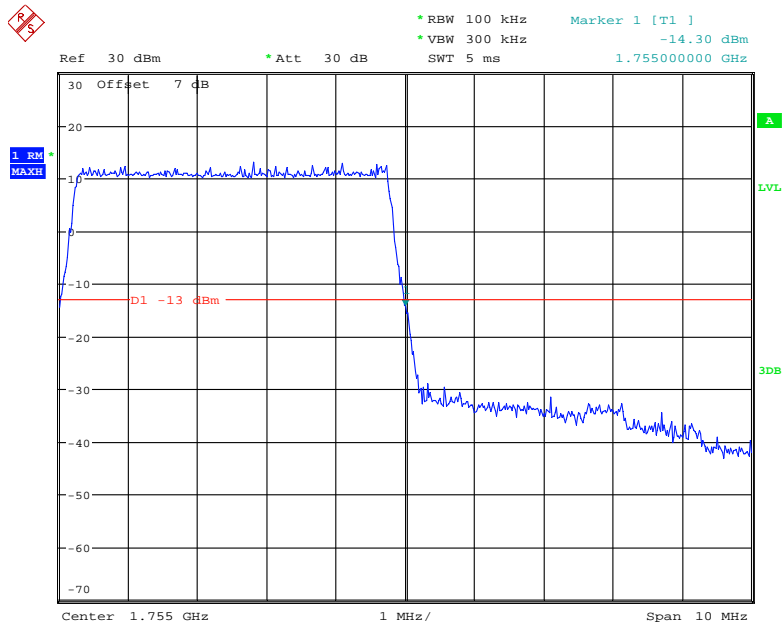
Date: 29.DEC.2020 13:50:03

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



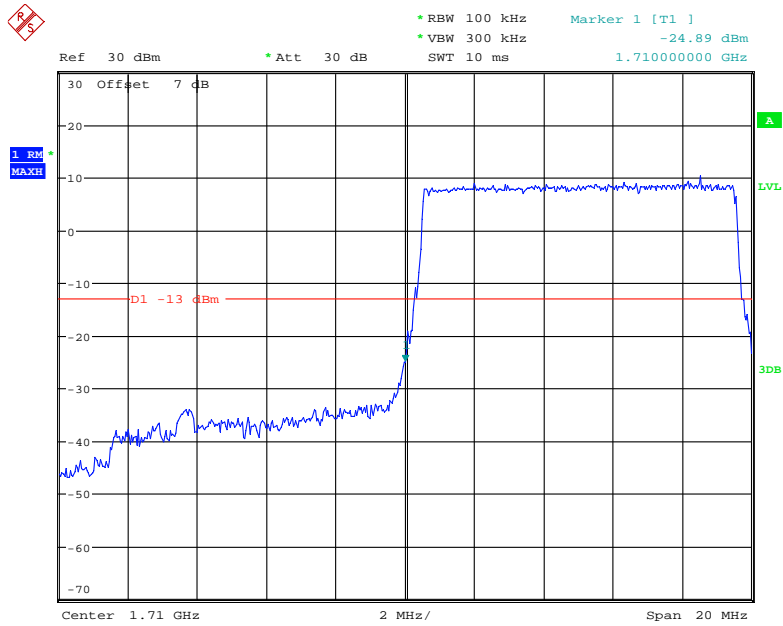
Date: 29.DEC.2020 12:58:10

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



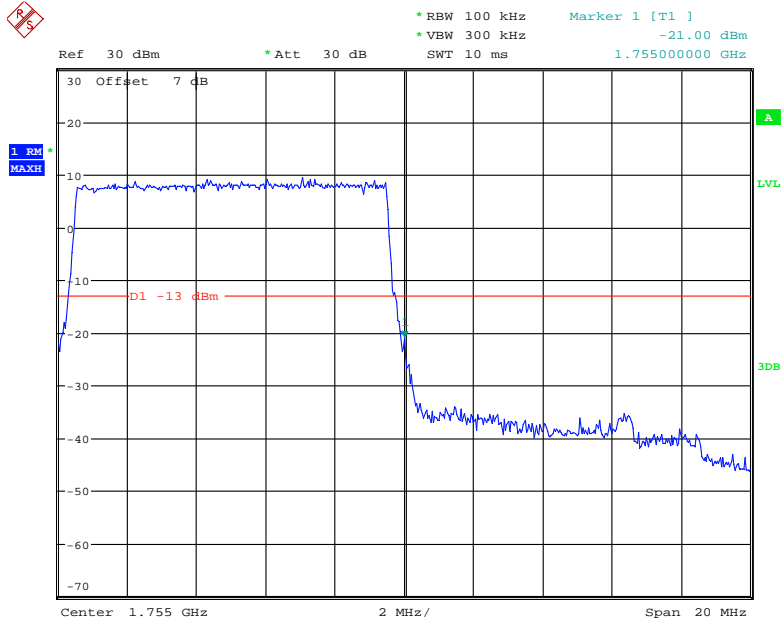
Date: 29.DEC.2020 12:58:49

QPSK (10.0 MHz, FULL RB) - Left Band Edge



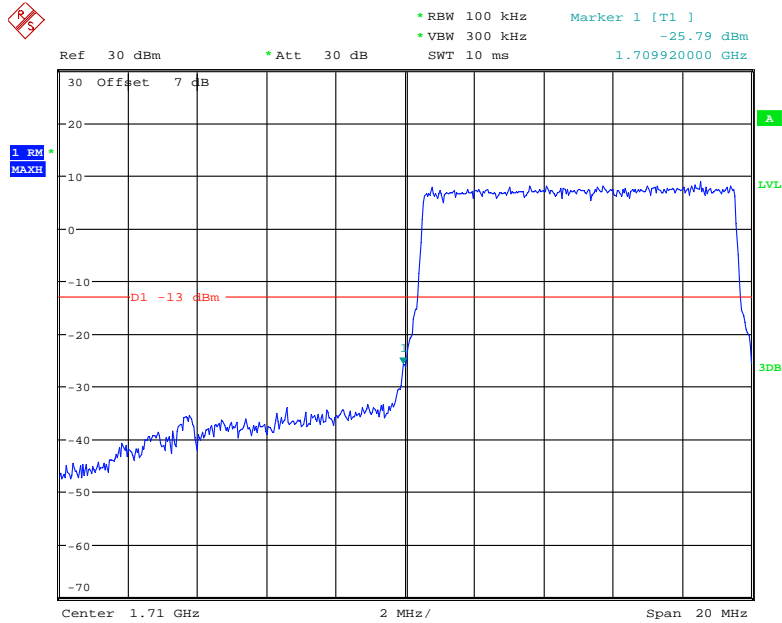
Date: 29.DEC.2020 12:59:15

QPSK (10.0 MHz, FULL RB) - Right Band Edge



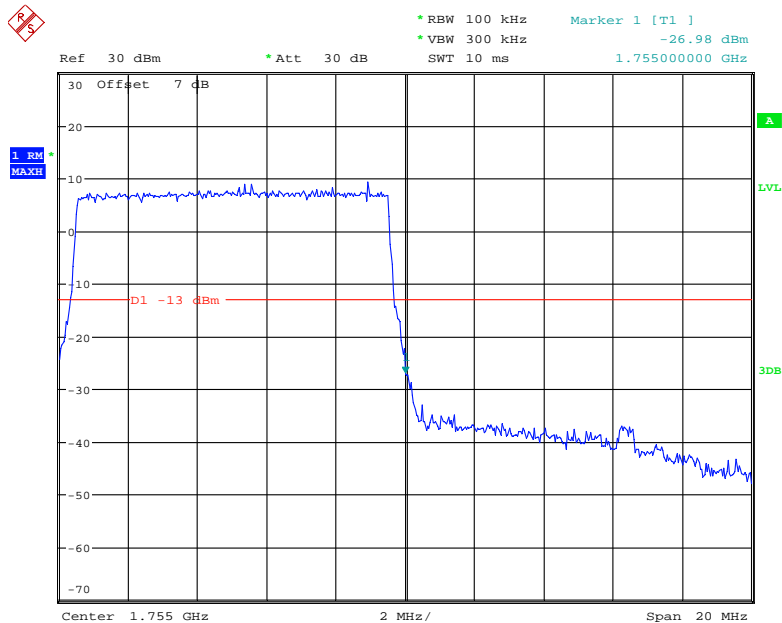
Date: 29.DEC.2020 12:59:53

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



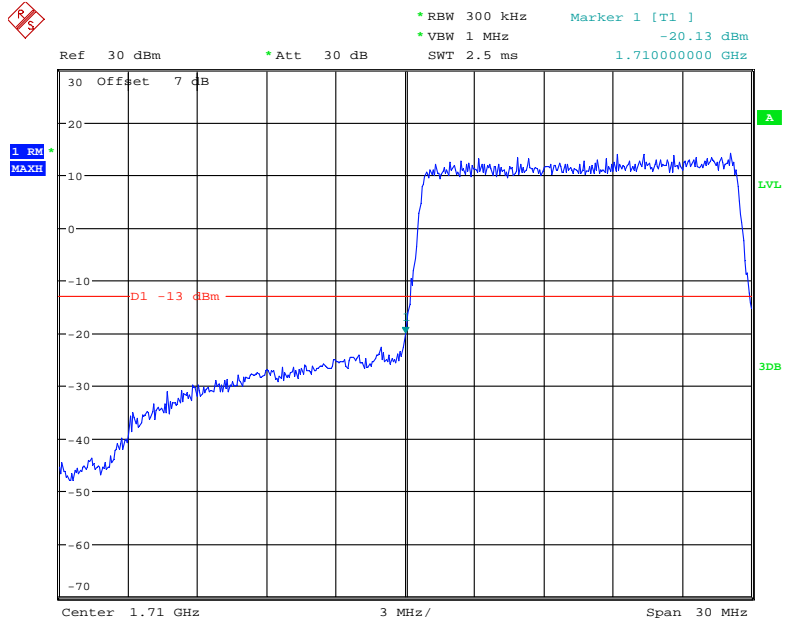
Date: 29.DEC.2020 12:59:34

16-QAM (10.0 MHz, FULL RB) - Right Band Edge



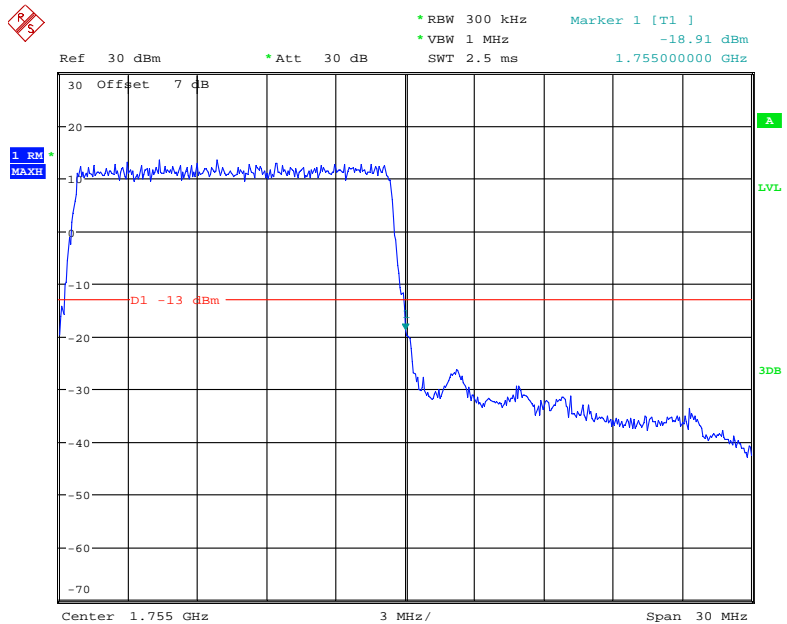
Date: 29.DEC.2020 13:00:12

QPSK (15.0 MHz, FULL RB) - Left Band Edge



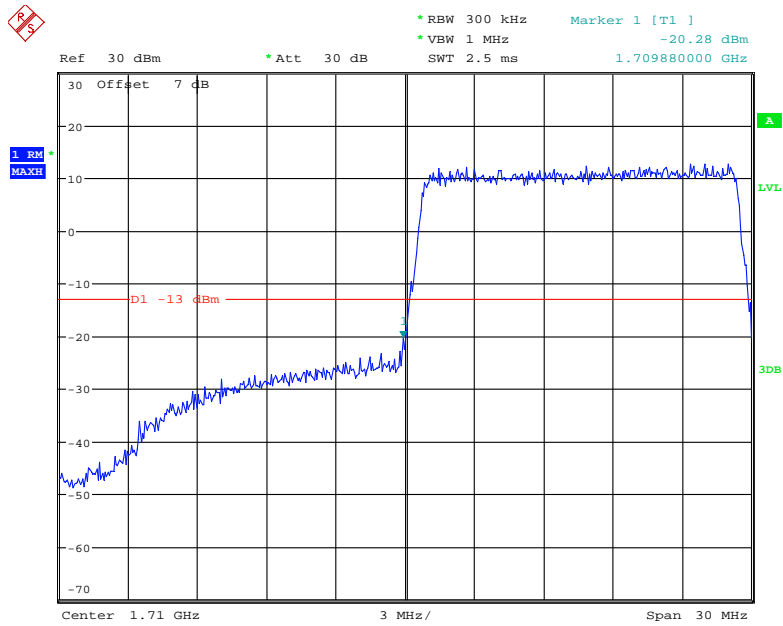
Date: 29.DEC.2020 13:00:37

QPSK (15.0 MHz, FULL RB) - Right Band Edge



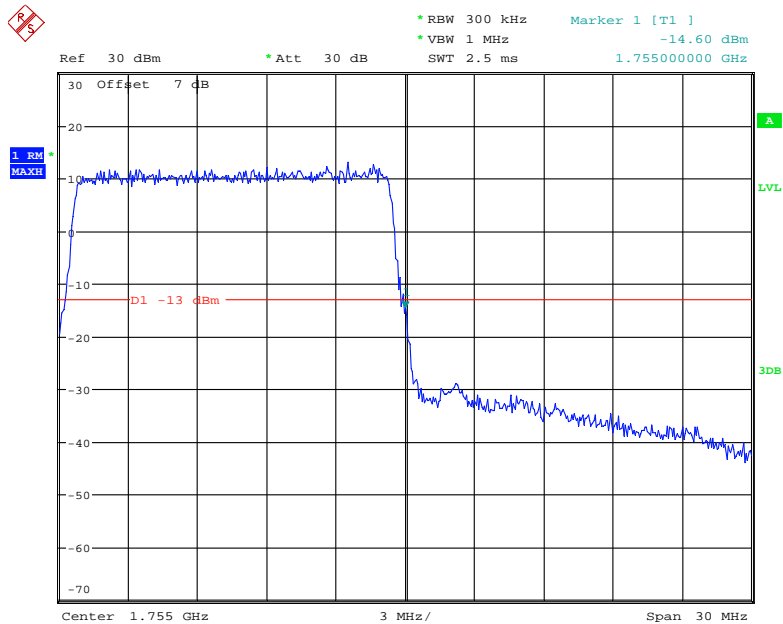
Date: 29.DEC.2020 13:01:19

16-QAM (15.0 MHz, FULL RB) - Left Band Edge



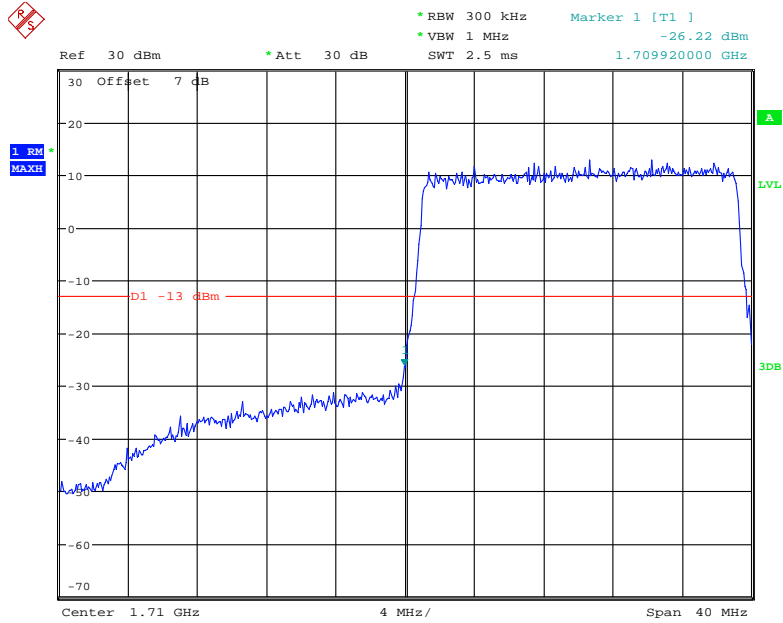
Date: 29.DEC.2020 13:00:58

16-QAM (15.0 MHz, FULL RB) - Right Band Edge



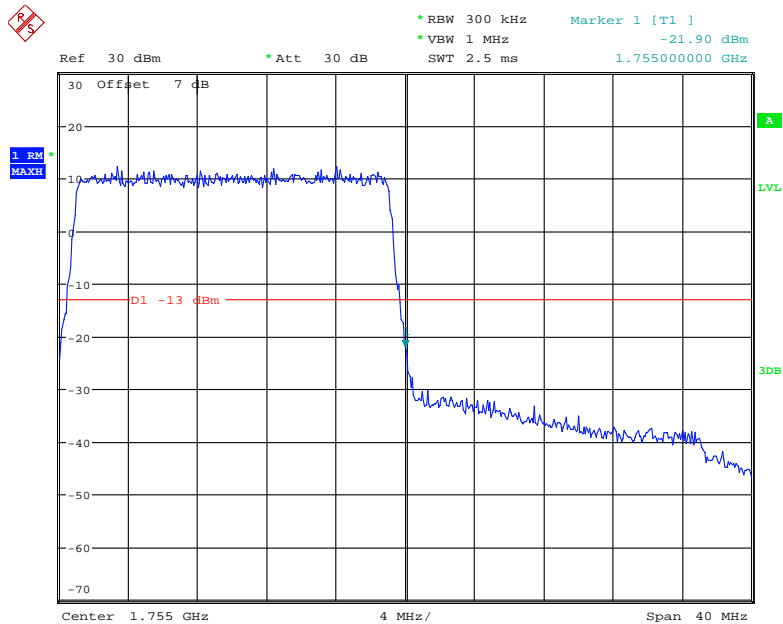
Date: 29.DEC.2020 13:01:40

QPSK (20.0 MHz, FULL RB) - Left Band Edge



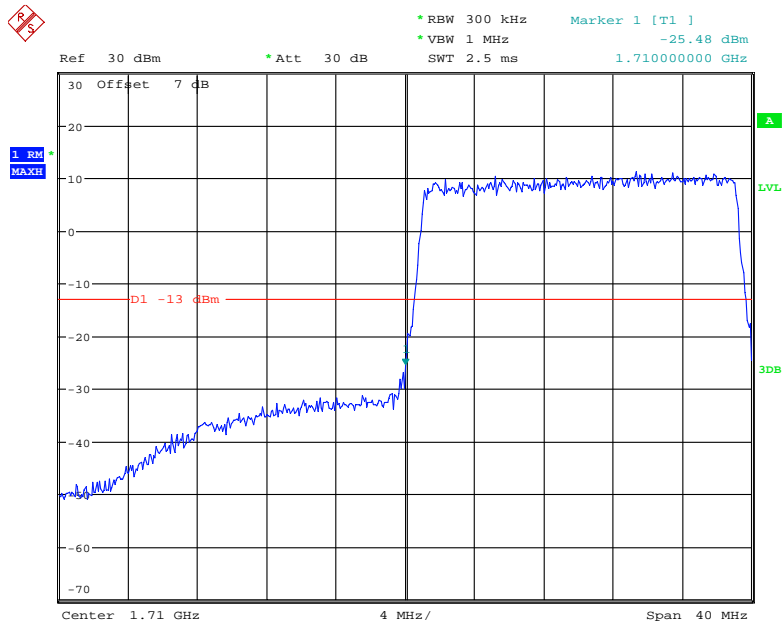
Date: 29.DEC.2020 12:04:59

QPSK (20.0 MHz, FULL RB) - Right Band Edge



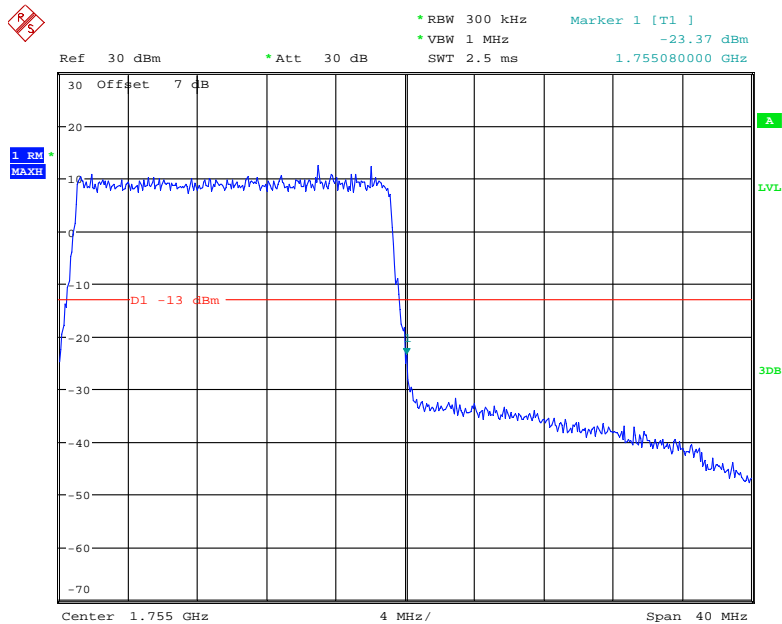
Date: 29.DEC.2020 12:05:42

16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 29.DEC.2020 12:05:20

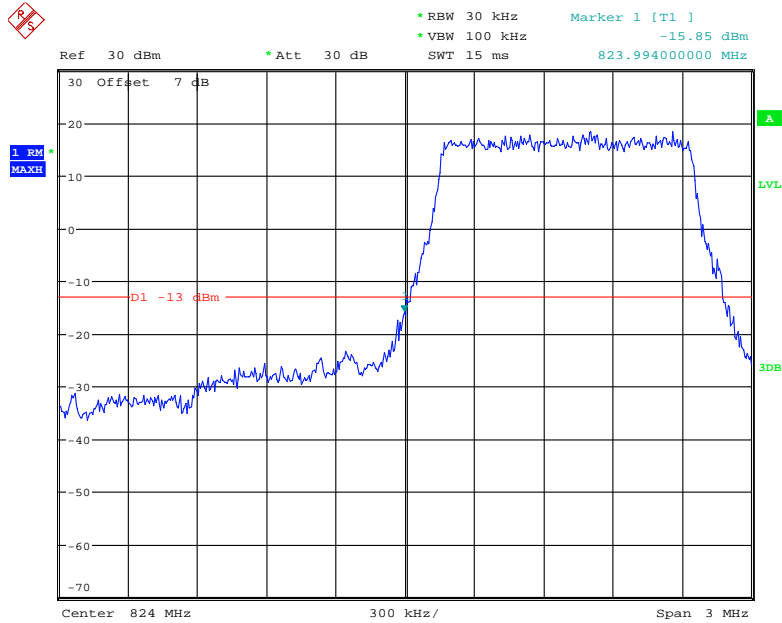
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 29.DEC.2020 12:06:03

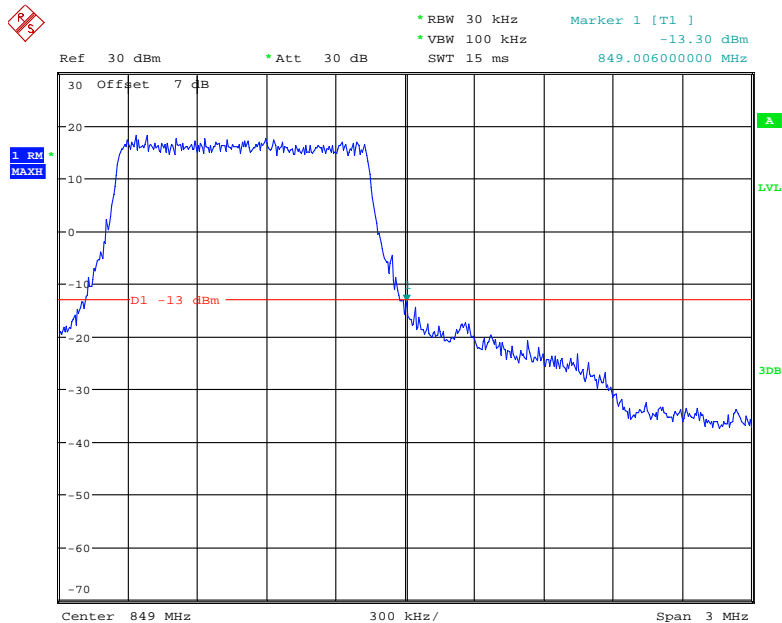
LTE Band 5:

QPSK (1.4 MHz, FULL RB) - Left Band Edge



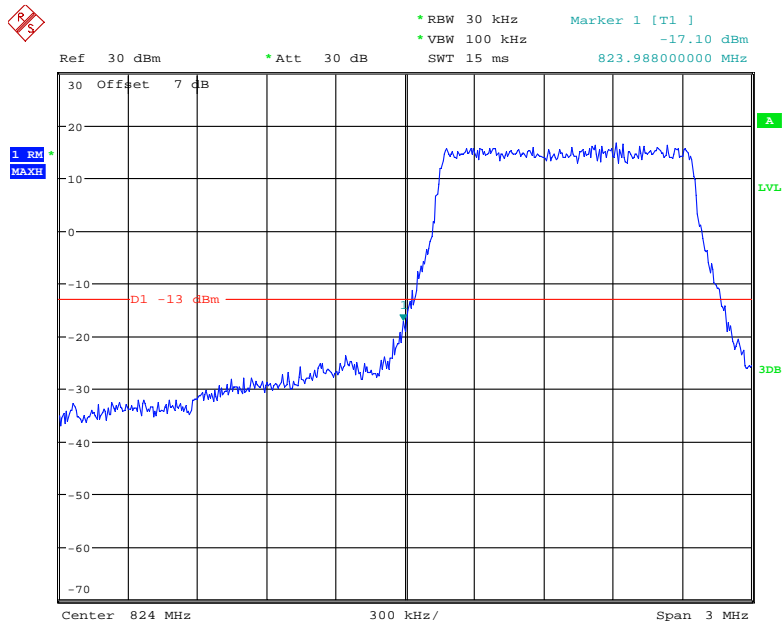
Date: 30.DEC.2020 13:45:59

QPSK (1.4 MHz, FULL RB) - Right Band Edge



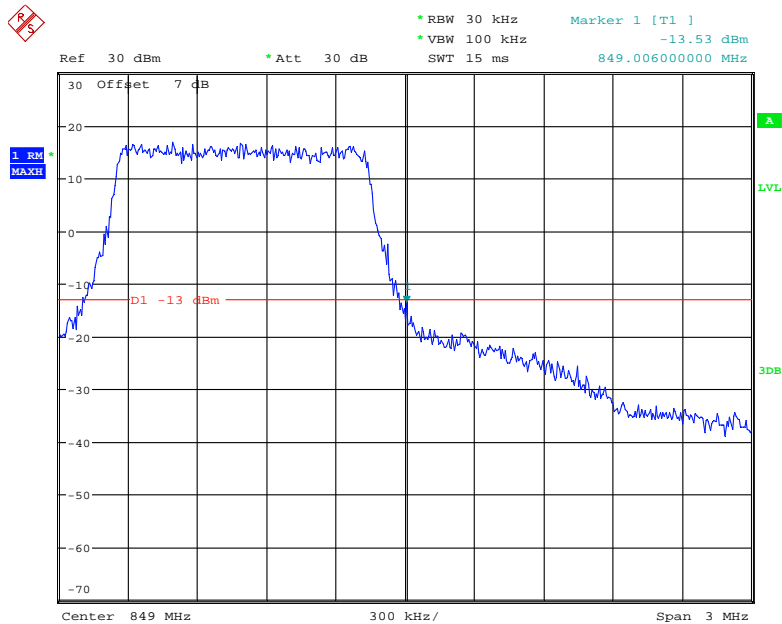
Date: 30.DEC.2020 13:46:36

16-QAM 1.4 MHz, FULL RB) - Left Band Edge



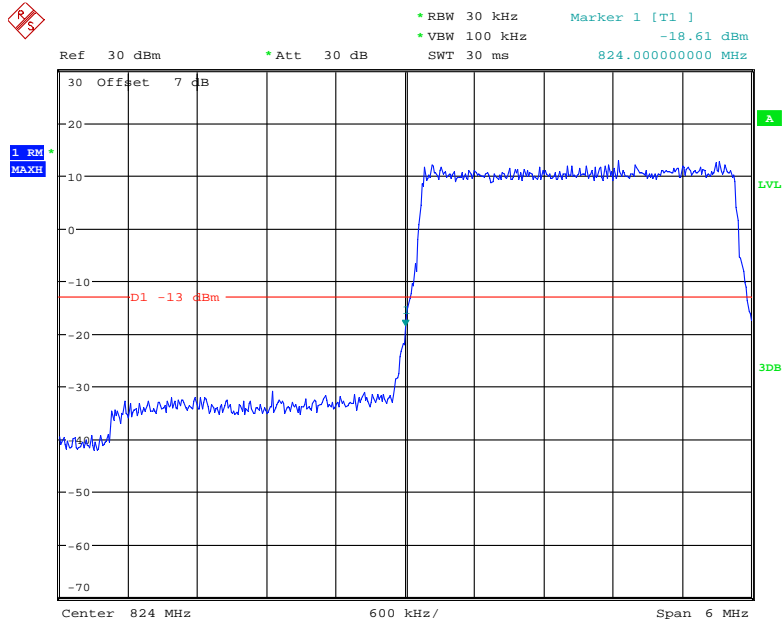
Date: 30.DEC.2020 13:46:16

16-QAM (1.4MHz, FULL RB) - Right Band Edge



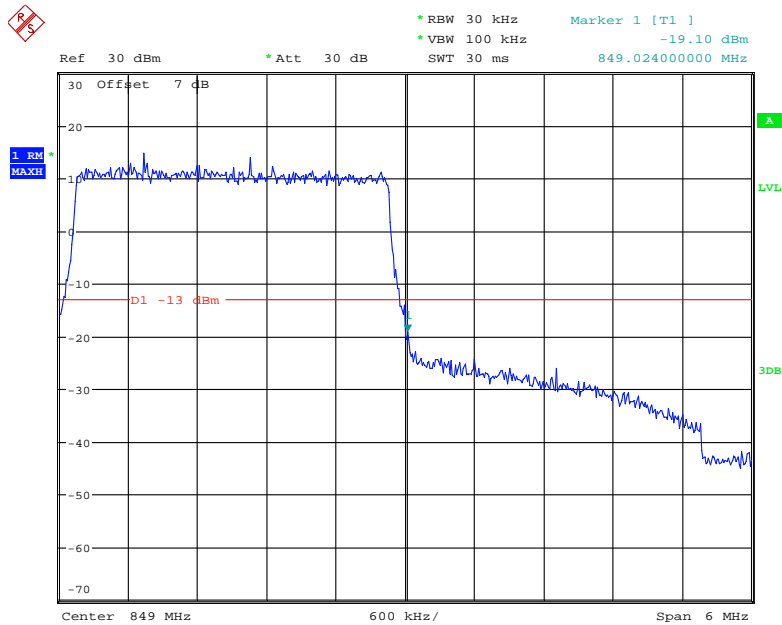
Date: 30.DEC.2020 13:46:56

QPSK (3.0 MHz, FULL RB) - Left Band Edge



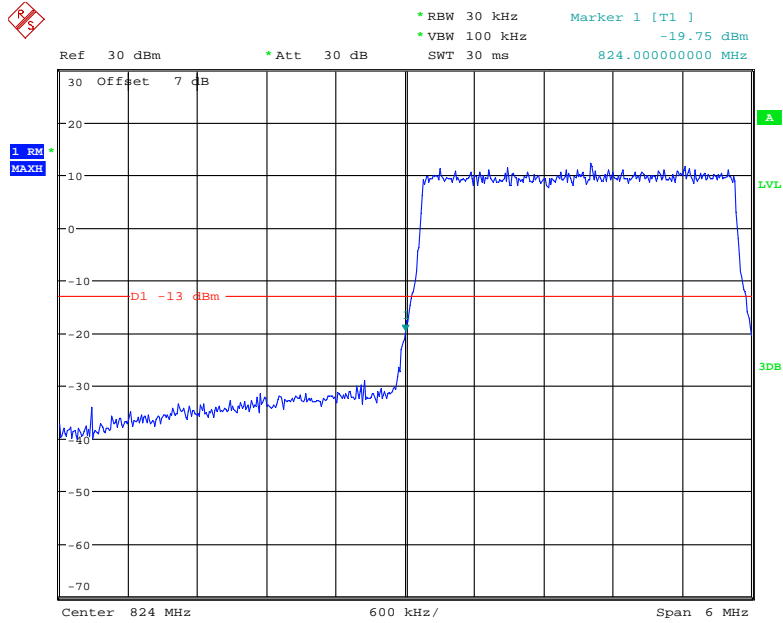
Date: 30.DEC.2020 13:47:16

QPSK (3.0 MHz, FULL RB) - Right Band Edge



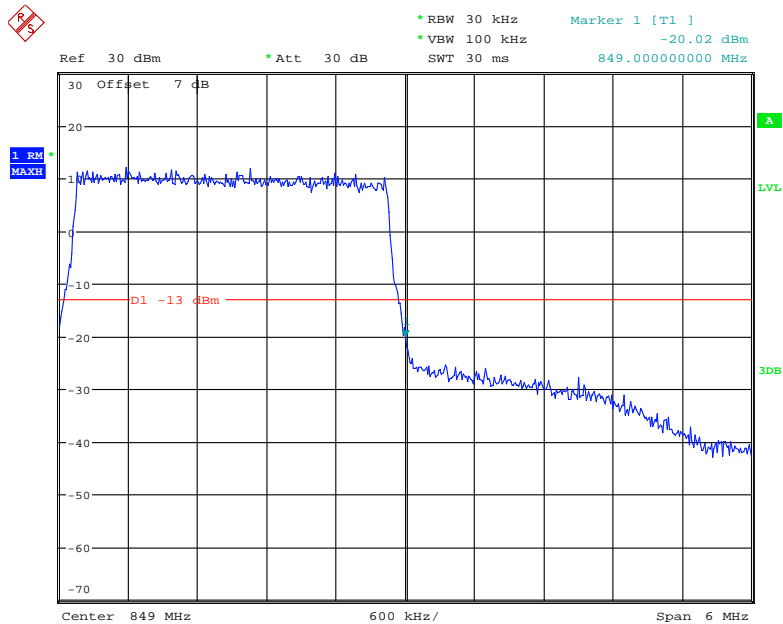
Date: 30.DEC.2020 13:47:50

16-QAM (3.0 MHz, FULL RB) - Left Band Edge



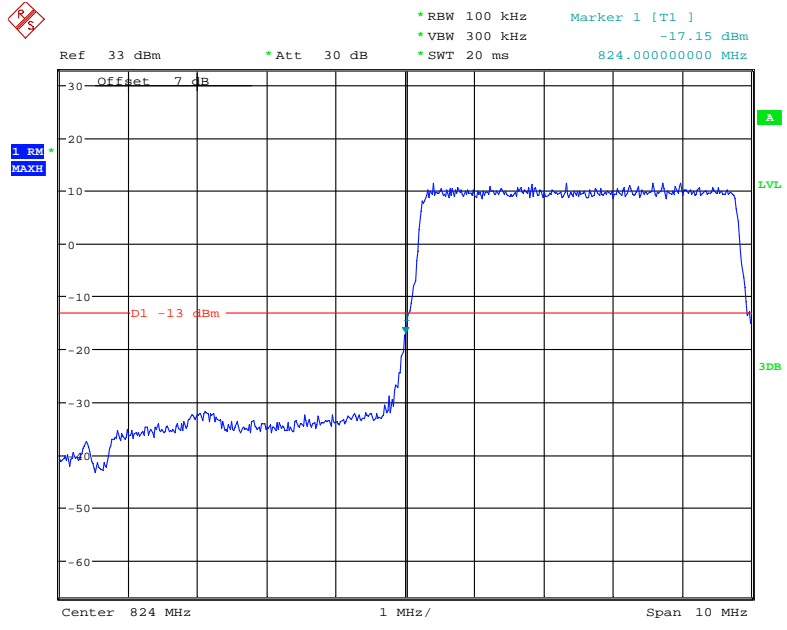
Date: 30.DEC.2020 13:47:33

16-QAM (3.0 MHz, FULL RB) - Right Band Edge



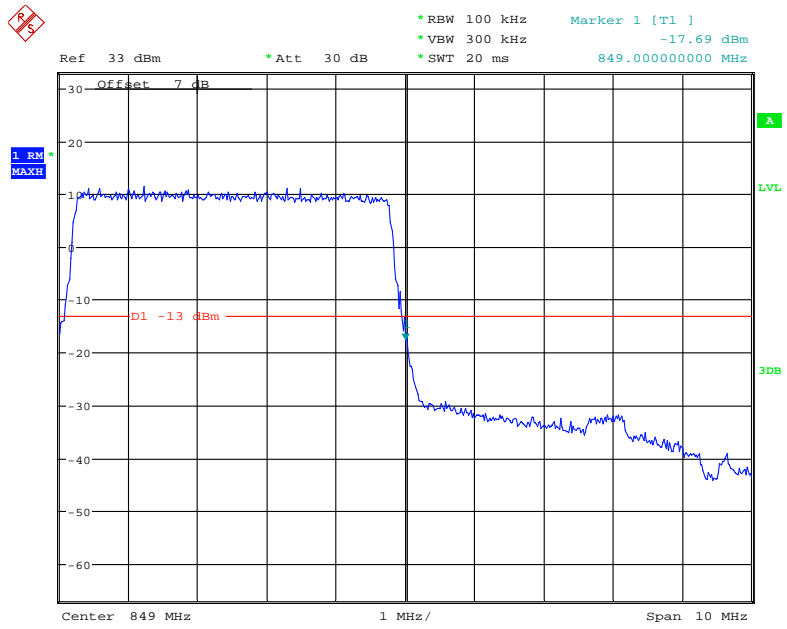
Date: 30.DEC.2020 13:48:06

QPSK (5.0 MHz, FULL RB) - Left Band Edge



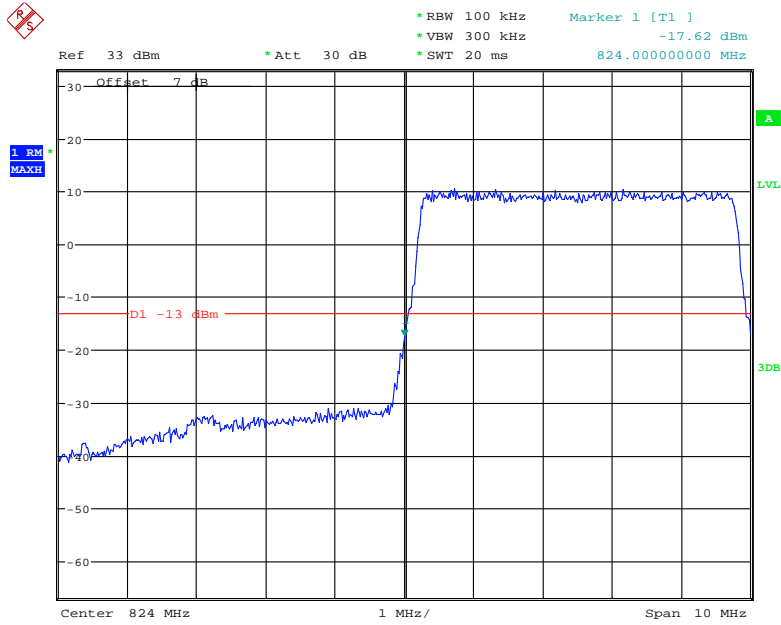
Date: 4.JAN.2021 09:00:59

QPSK (5.0 MHz, FULL RB) - Right Band Edge



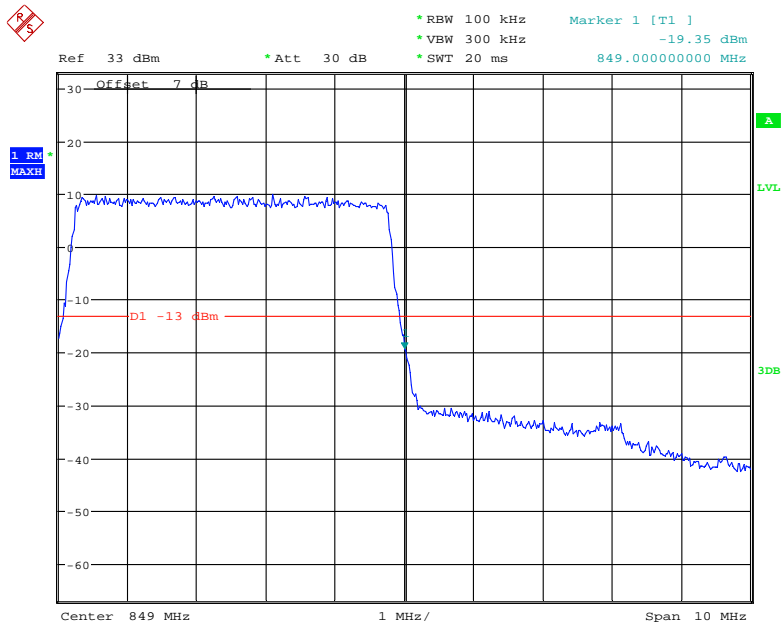
Date: 4.JAN.2021 09:08:42

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



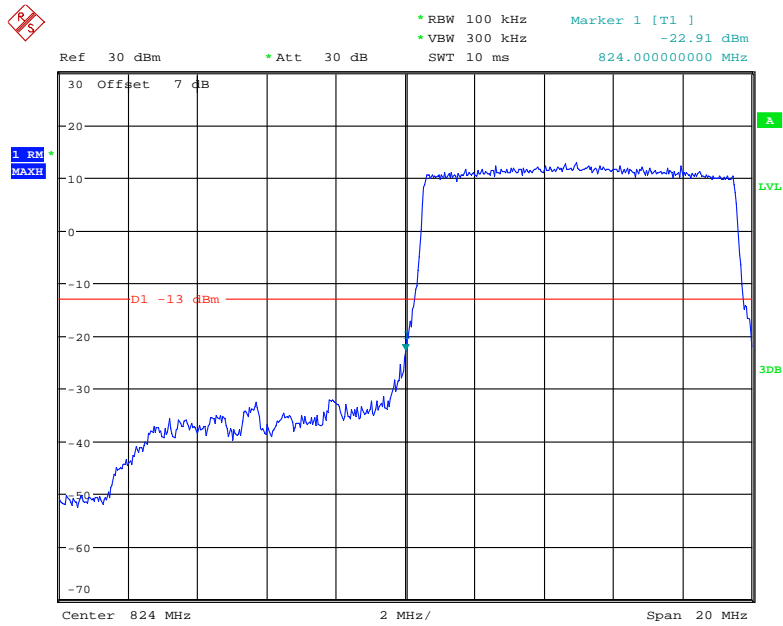
Date: 4.JAN.2021 09:03:25

16-QAM (5.0 MHz, FULL RB) - Right Band Edge

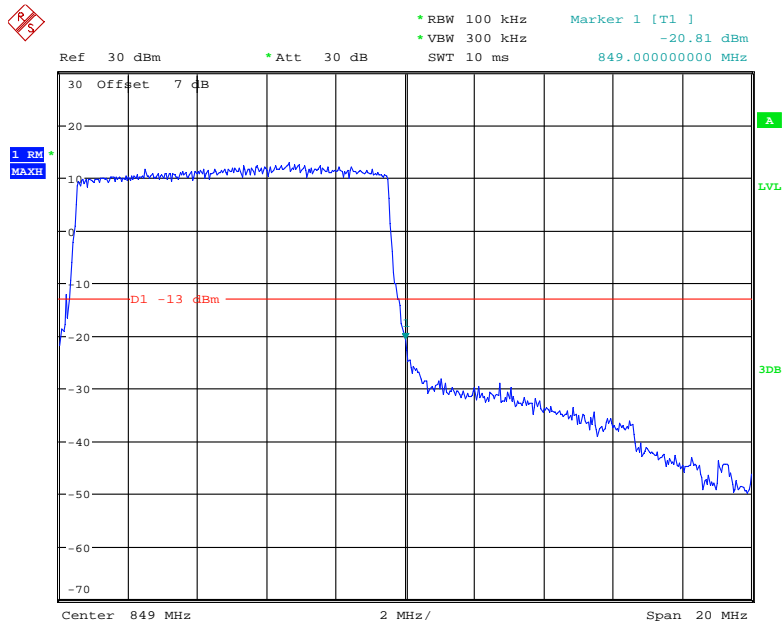


Date: 4.JAN.2021 09:10:00

QPSK (10.0 MHz, FULL RB) - Left Band Edge

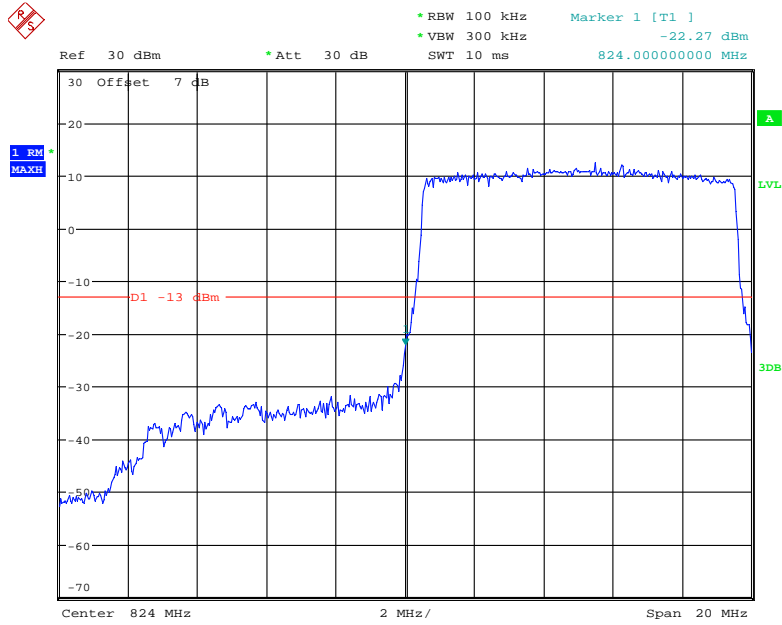


QPSK (10.0 MHz, FULL RB) - Right Band Edge



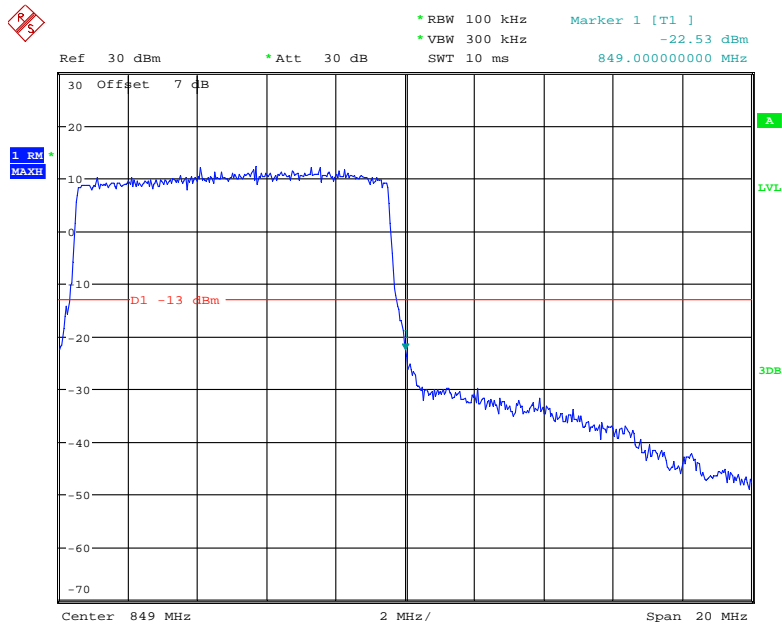
Date: 30.DEC.2020 13:50:17

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



Date: 30.DEC.2020 13:49:59

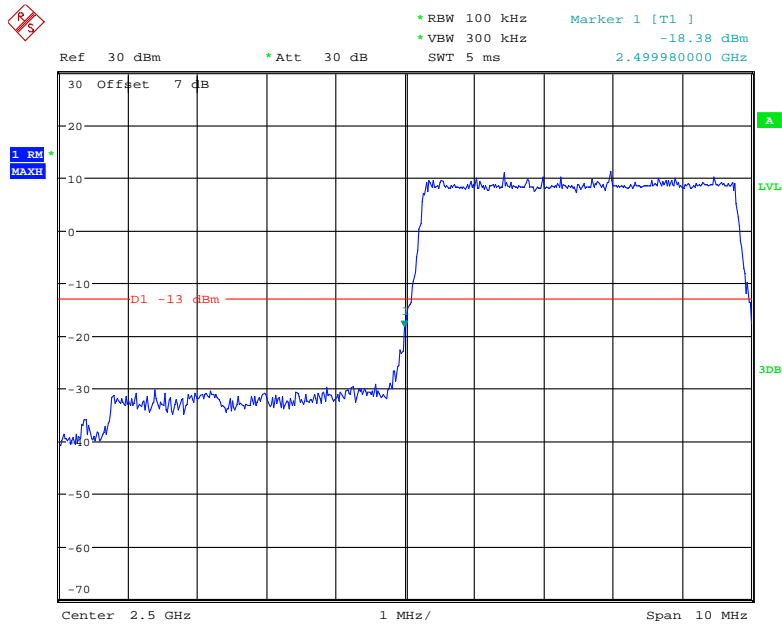
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 30.DEC.2020 13:50:34

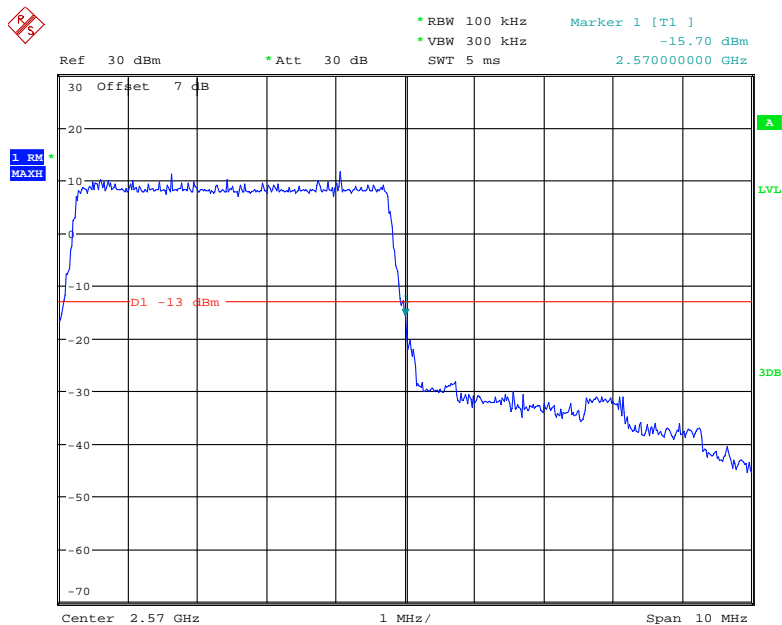
LTE Band 7:

QPSK (5.0 MHz, FULL RB) - Left Band Edge



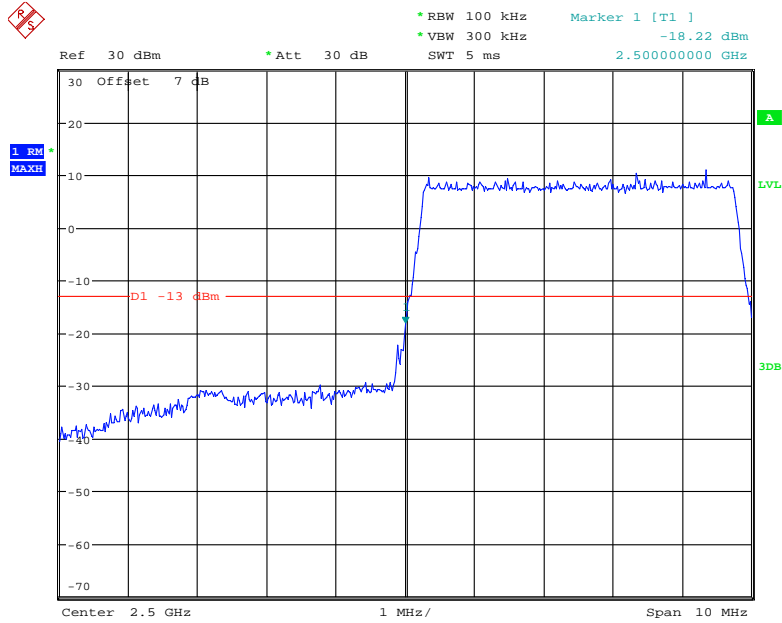
Date: 30.DEC.2020 14:41:33

QPSK (5.0 MHz, FULL RB) - Right Band Edge



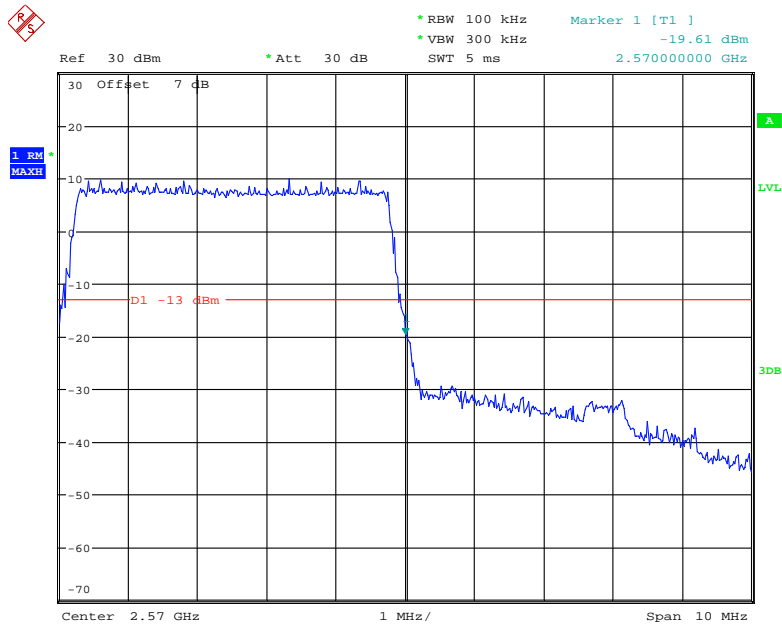
Date: 30.DEC.2020 14:42:09

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



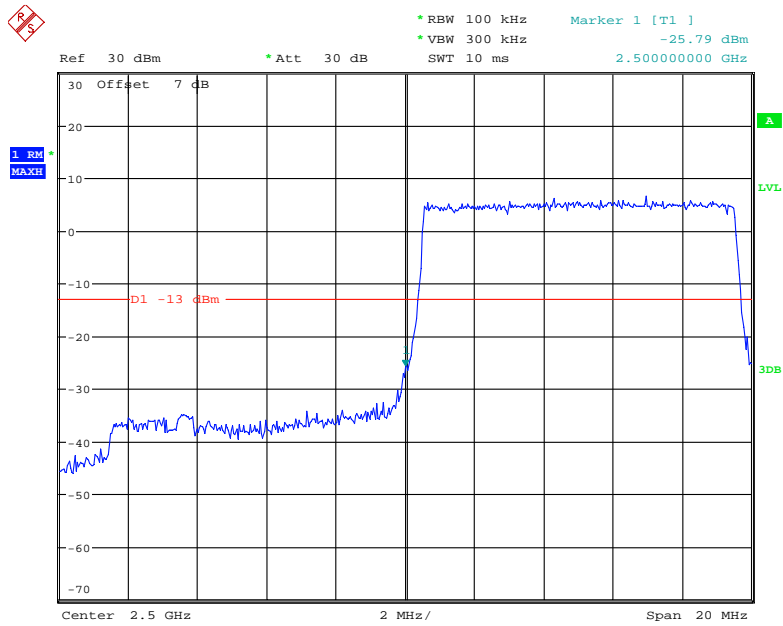
Date: 30.DEC.2020 14:41:52

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



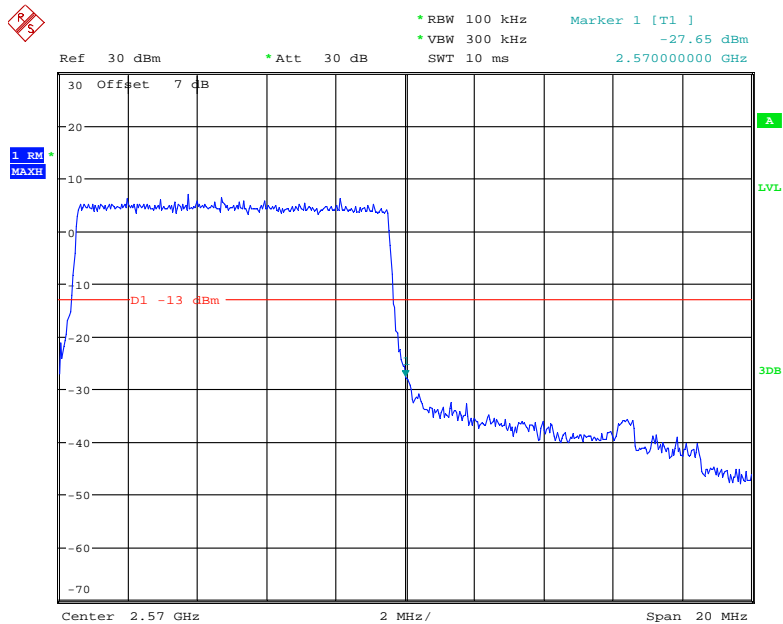
Date: 30.DEC.2020 14:42:29

QPSK (10.0 MHz, FULL RB) - Left Band Edge



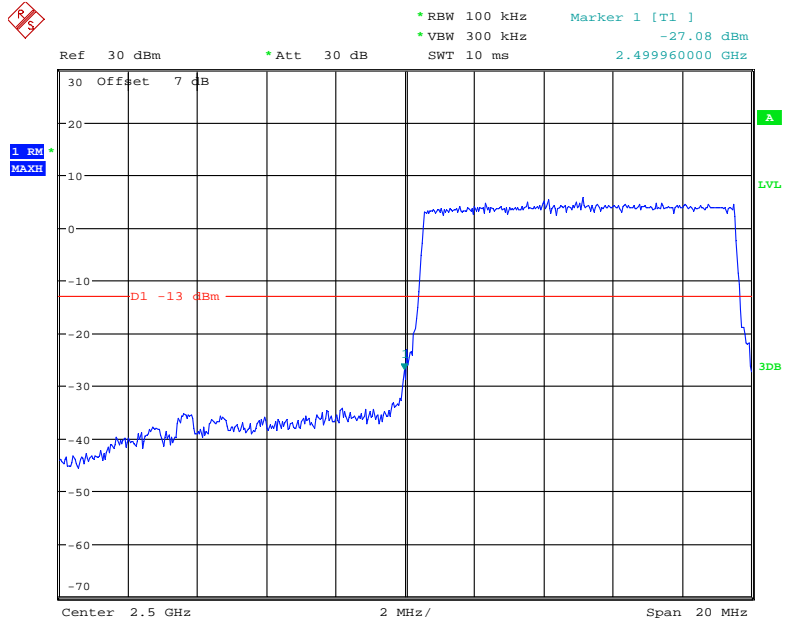
Date: 30.DEC.2020 14:42:50

QPSK (10.0 MHz, FULL RB) - Right Band Edge



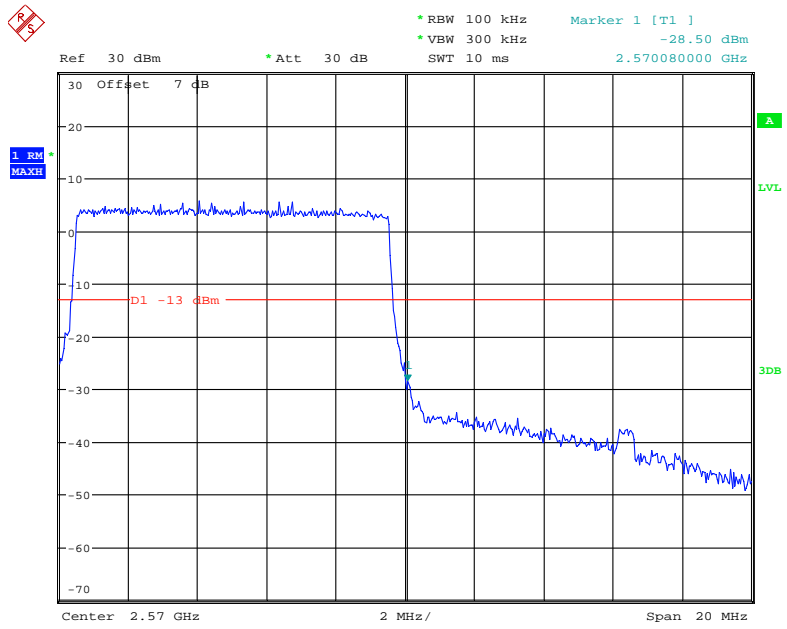
Date: 30.DEC.2020 14:43:26

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



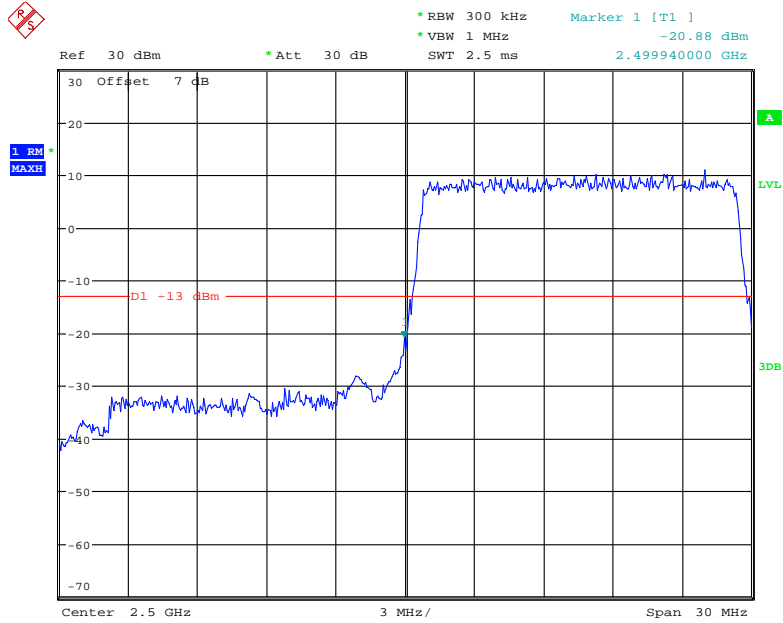
Date: 30.DEC.2020 14:43:08

16-QAM (10.0 MHz, FULL RB) - Right Band Edge



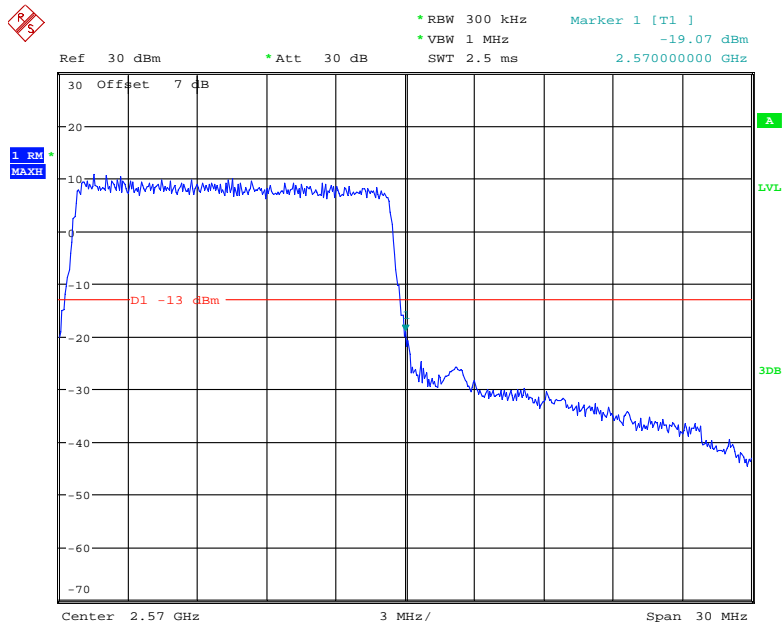
Date: 30.DEC.2020 14:43:47

QPSK (15.0 MHz, FULL RB) - Left Band Edge



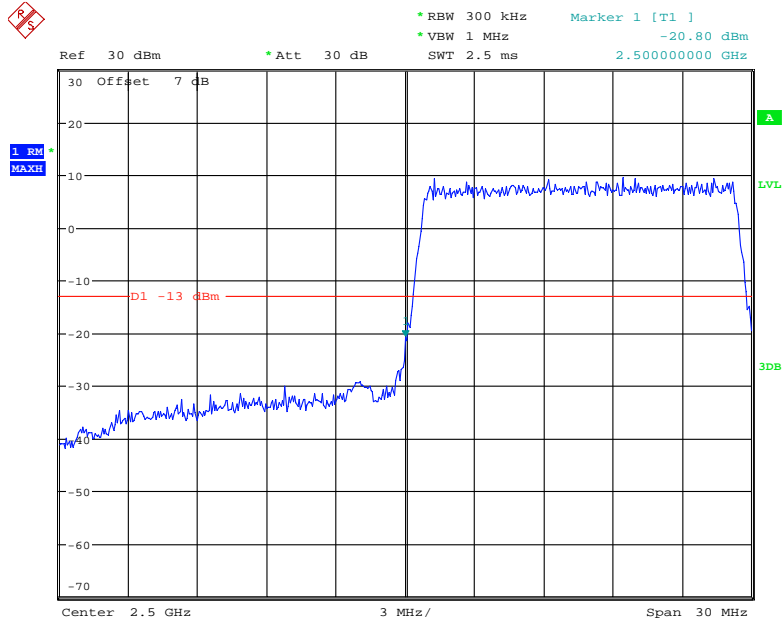
Date: 30.DEC.2020 14:44:11

QPSK (15.0 MHz, FULL RB) - Right Band Edge



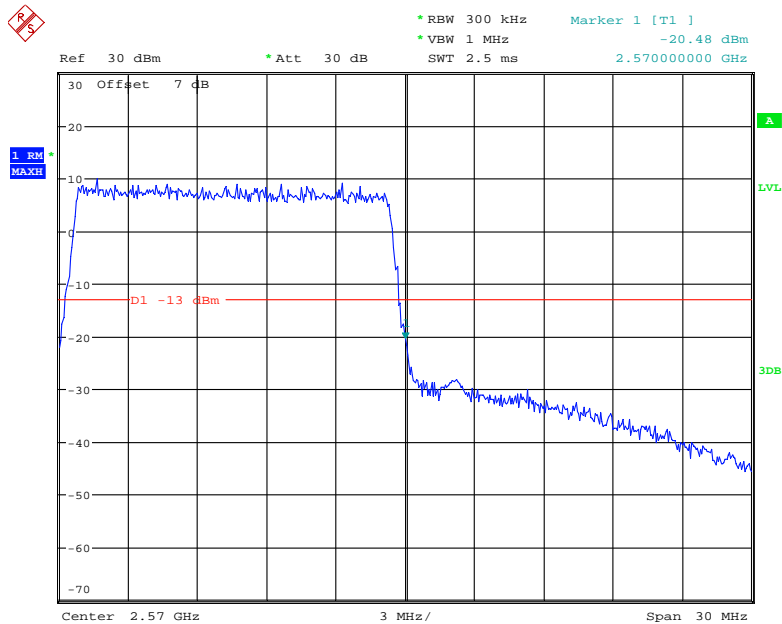
Date: 30.DEC.2020 14:44:51

16-QAM (15.0 MHz, FULL RB) - Left Band Edge



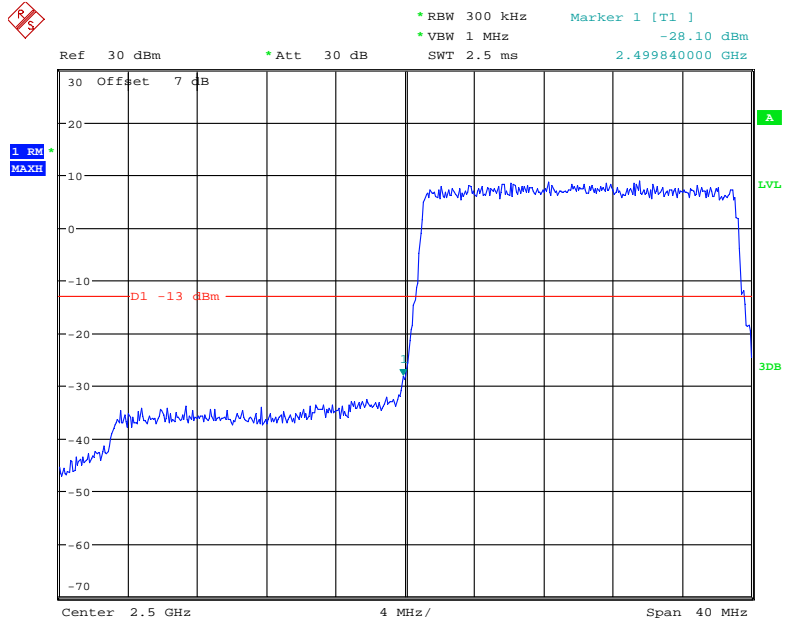
Date: 30.DEC.2020 14:44:30

16-QAM (15.0 MHz, FULL RB) - Right Band Edge



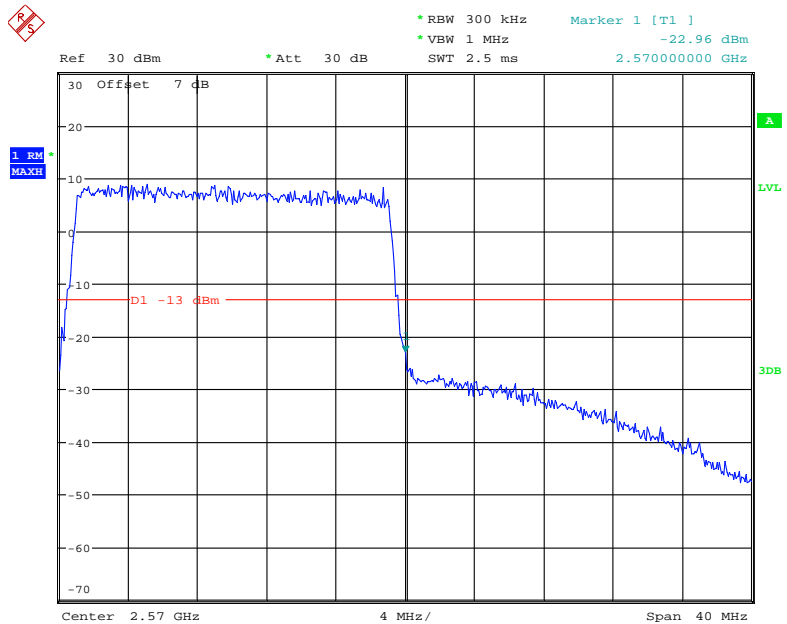
Date: 30.DEC.2020 14:45:11

QPSK (20.0 MHz, FULL RB) - Left Band Edge



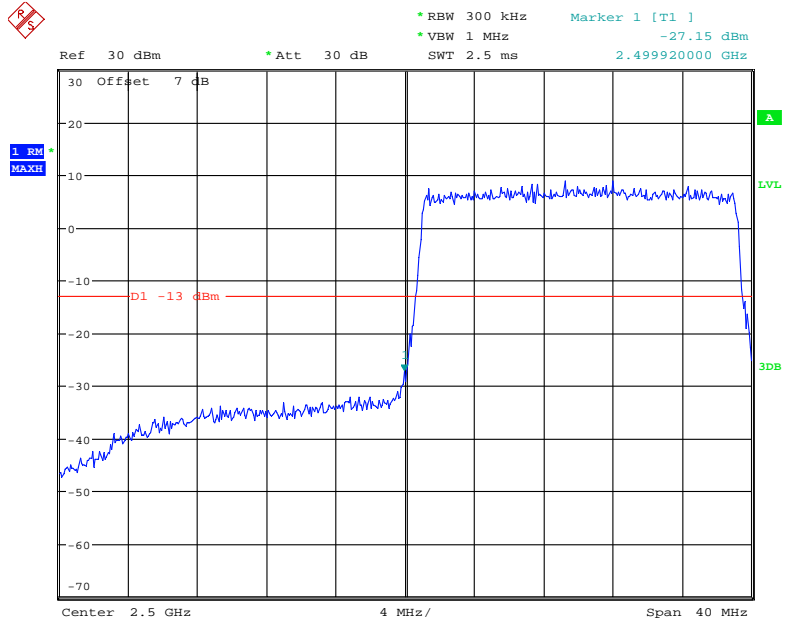
Date: 30.DEC.2020 14:45:35

QPSK (20.0 MHz, FULL RB) - Right Band Edge



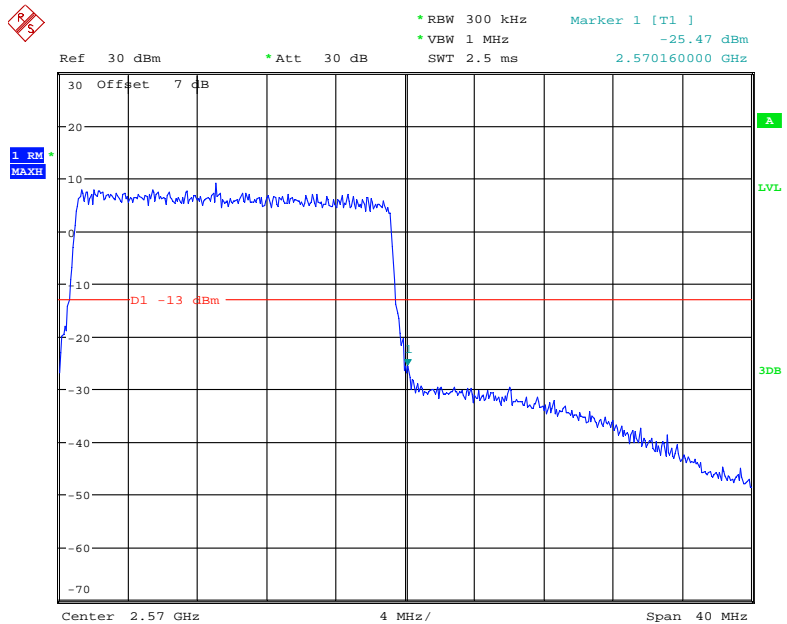
Date: 30.DEC.2020 14:46:18

16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 30.DEC.2020 14:45:58

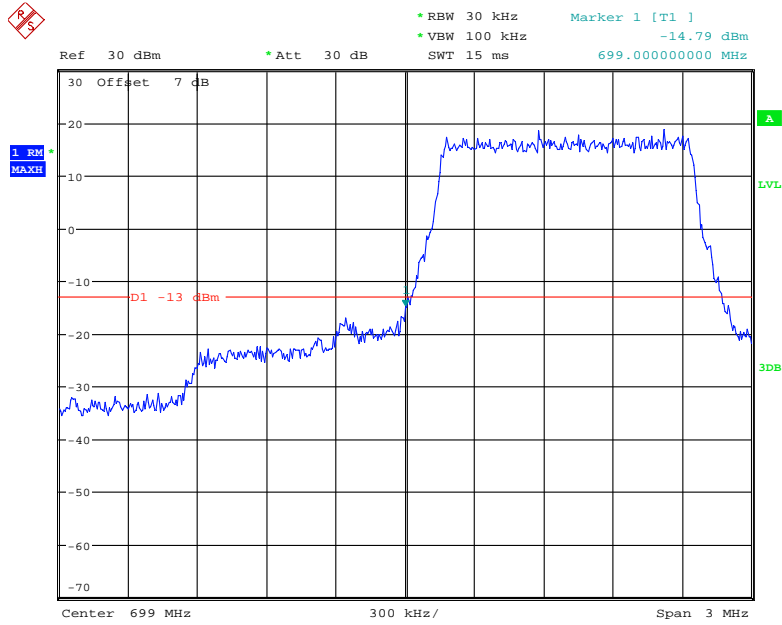
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 30.DEC.2020 14:46:41

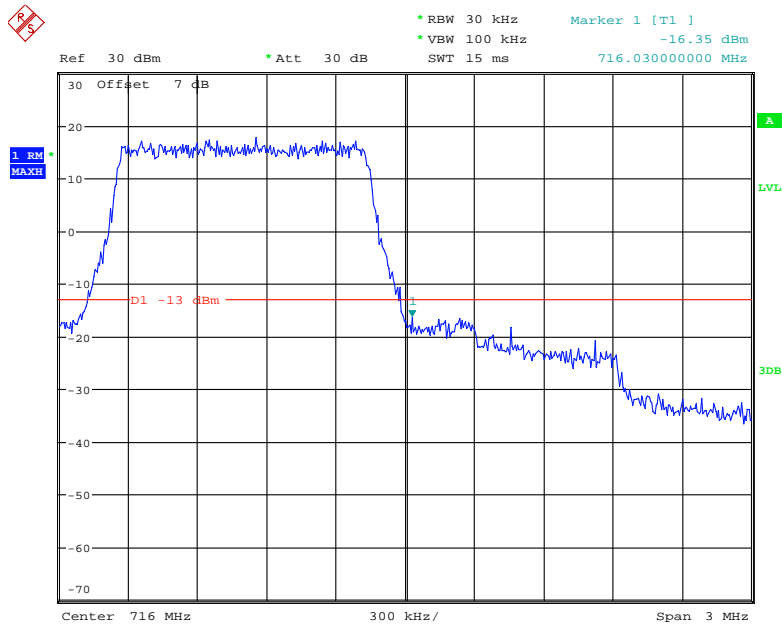
LTE Band 12:

QPSK (1.4 MHz, FULL RB) - Left Band Edge



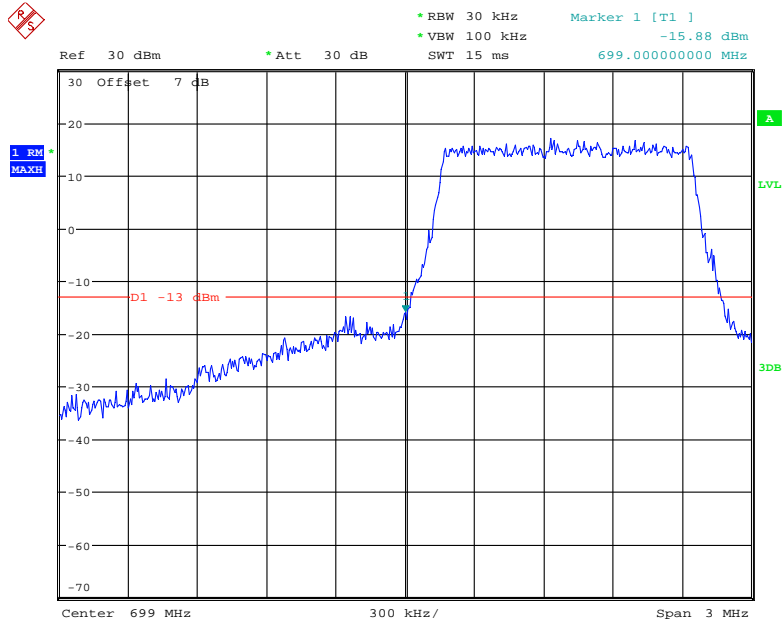
Date: 30.DEC.2020 14:47:12

QPSK (1.4 MHz, FULL RB) - Right Band Edge



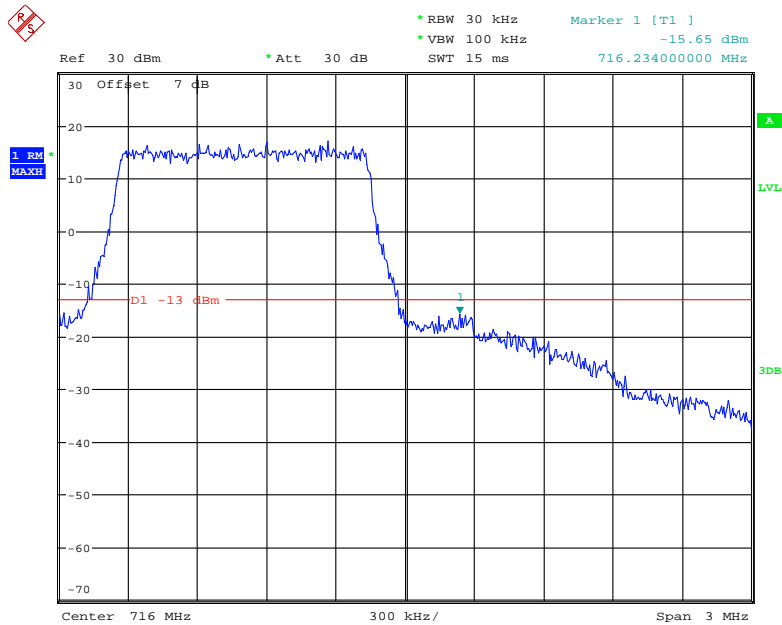
Date: 30.DEC.2020 14:47:49

16-QAM (1.4 MHz, FULL RB) - Left Band Edge



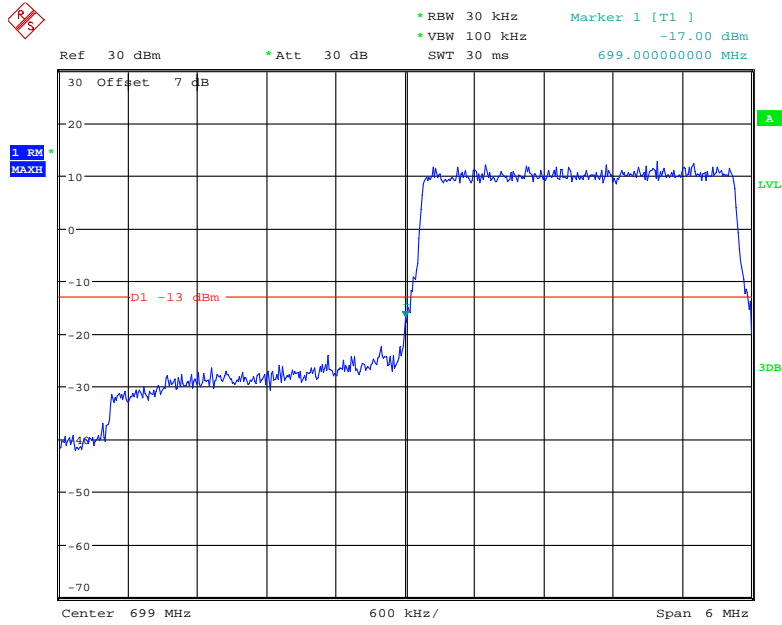
Date: 30.DEC.2020 14:47:32

16-QAM (1.4 MHz, FULL RB) - Right Band Edge



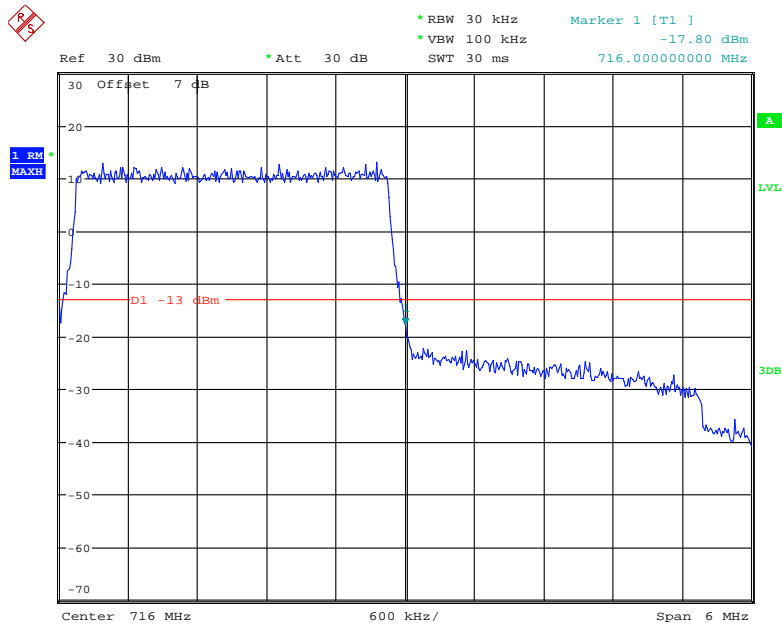
Date: 30.DEC.2020 14:48:08

QPSK (3.0 MHz, FULL RB) - Left Band Edge



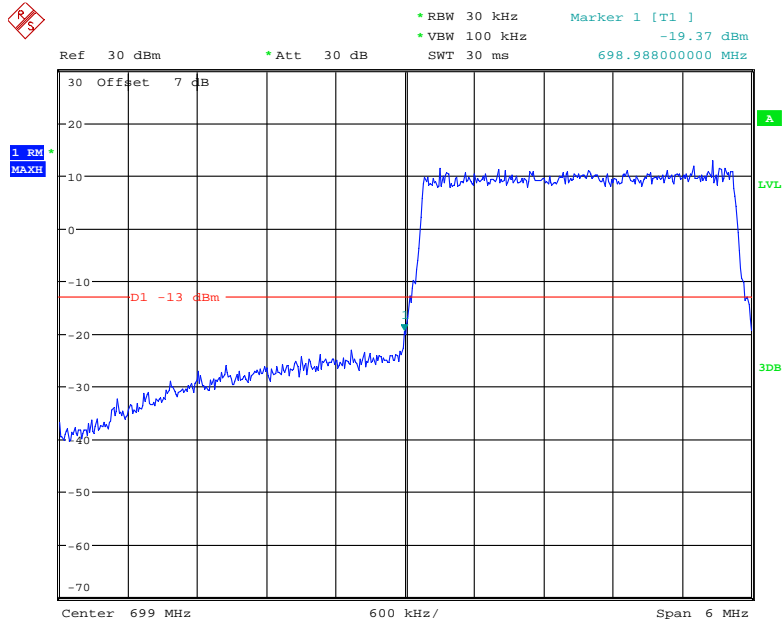
Date: 30.DEC.2020 14:48:29

QPSK (3.0 MHz, FULL RB) - Right Band Edge



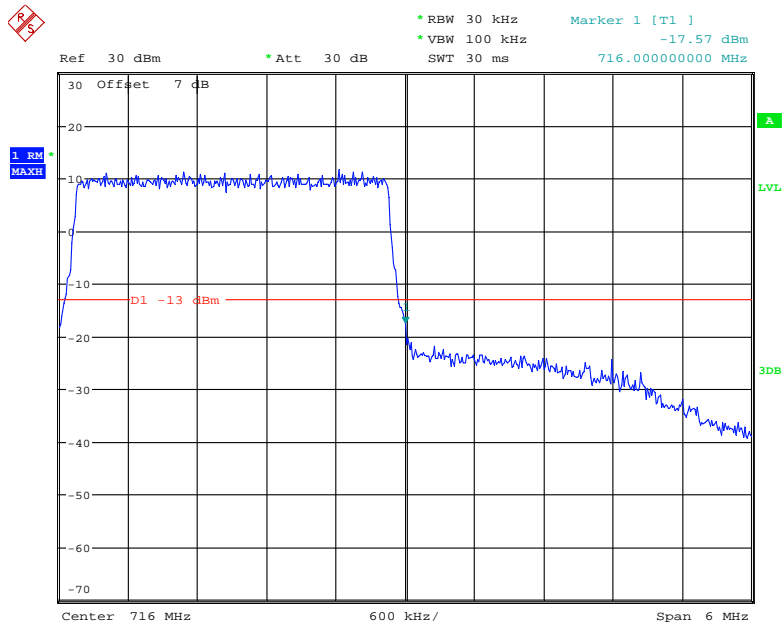
Date: 30.DEC.2020 14:49:09

16-QAM (3.0 MHz, FULL RB) - Left Band Edge



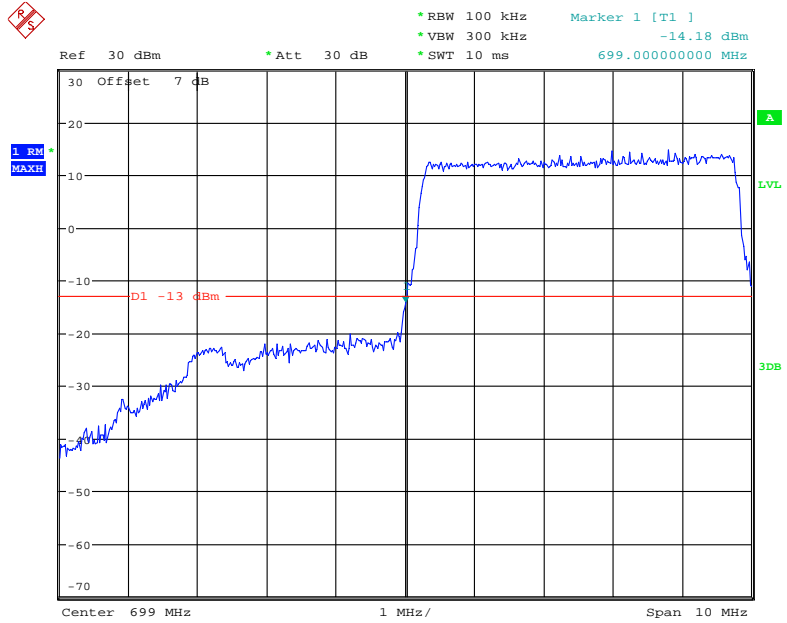
Date: 30.DEC.2020 14:48:49

16-QAM (3.0 MHz, FULL RB) - Right Band Edge



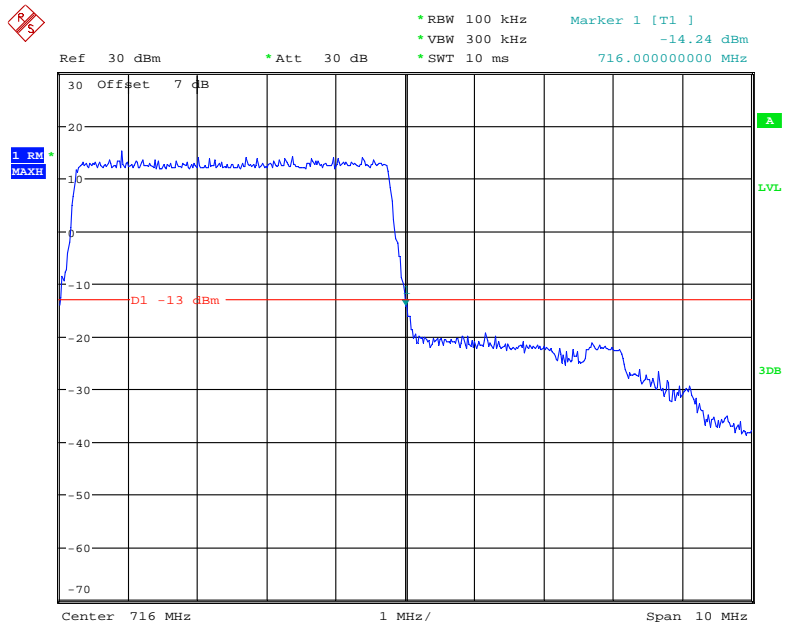
Date: 30.DEC.2020 14:49:26

QPSK (5.0 MHz, FULL RB) - Left Band Edge



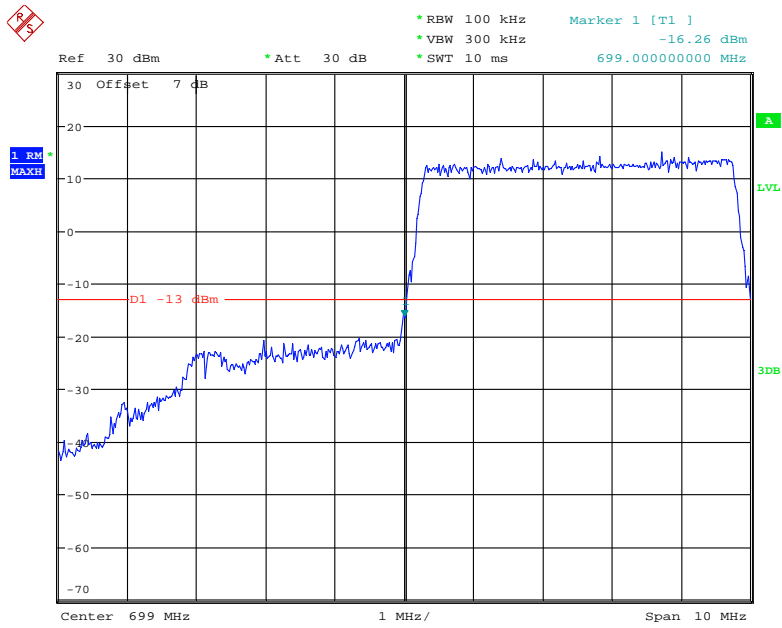
Date: 30.DEC.2020 18:10:48

QPSK (5.0 MHz, FULL RB) - Right Band Edge



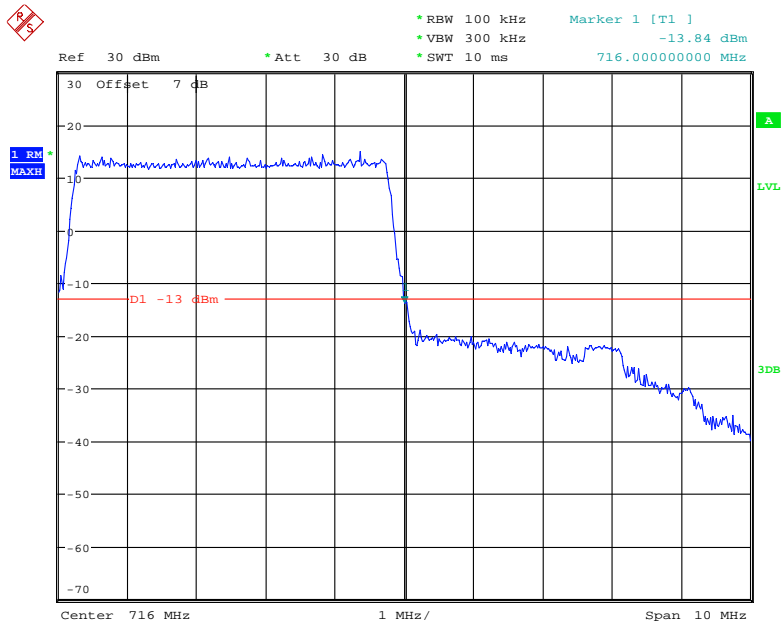
Date: 30.DEC.2020 18:12:11

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



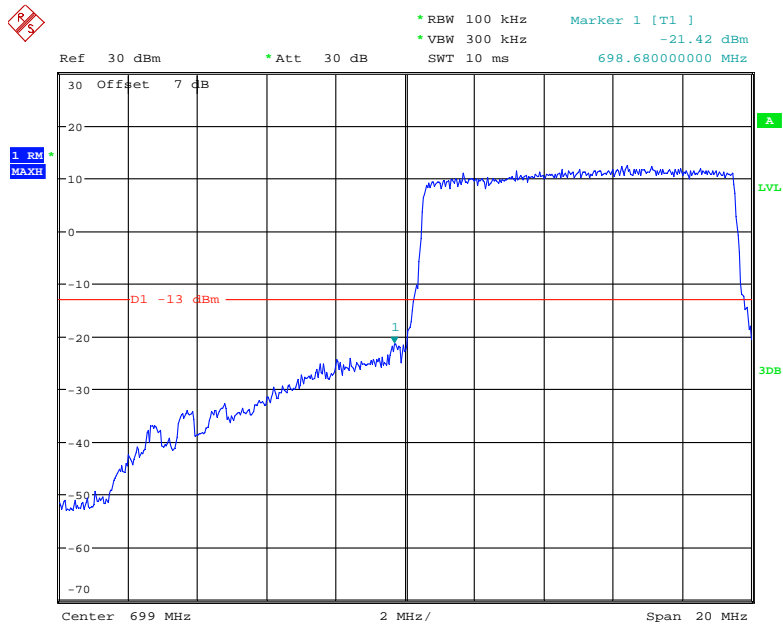
Date: 30.DEC.2020 18:11:33

16-QAM (5.0 MHz, FULL RB) - Right Band Edge

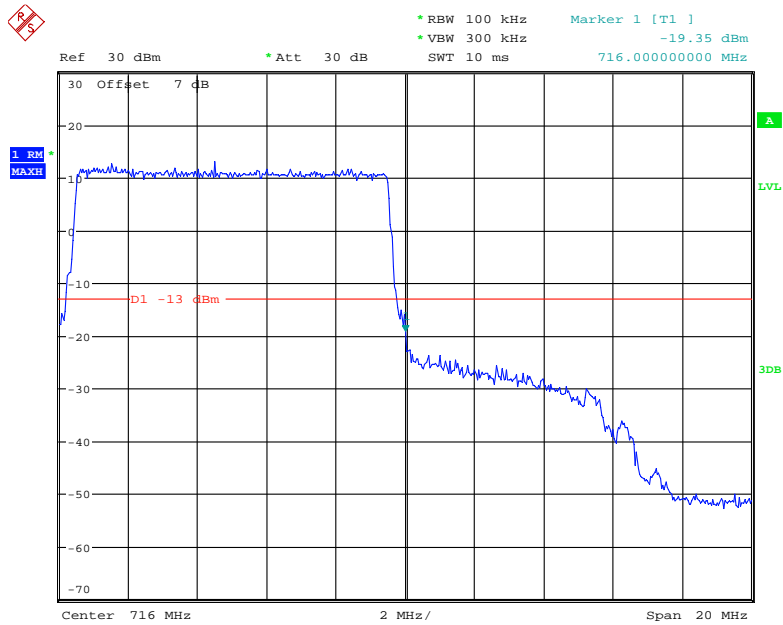


Date: 30.DEC.2020 18:12:48

QPSK (10.0 MHz, FULL RB) - Left Band Edge

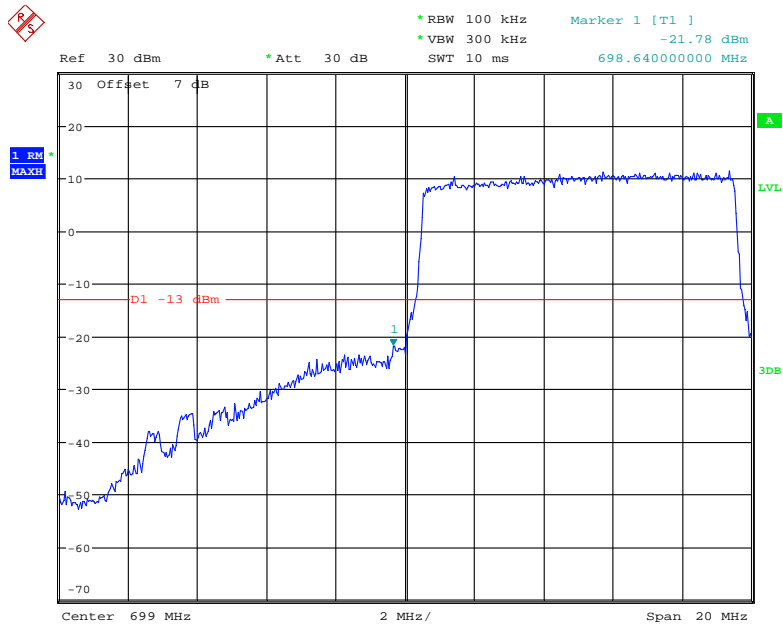


QPSK (10.0 MHz, FULL RB) - Right Band Edge

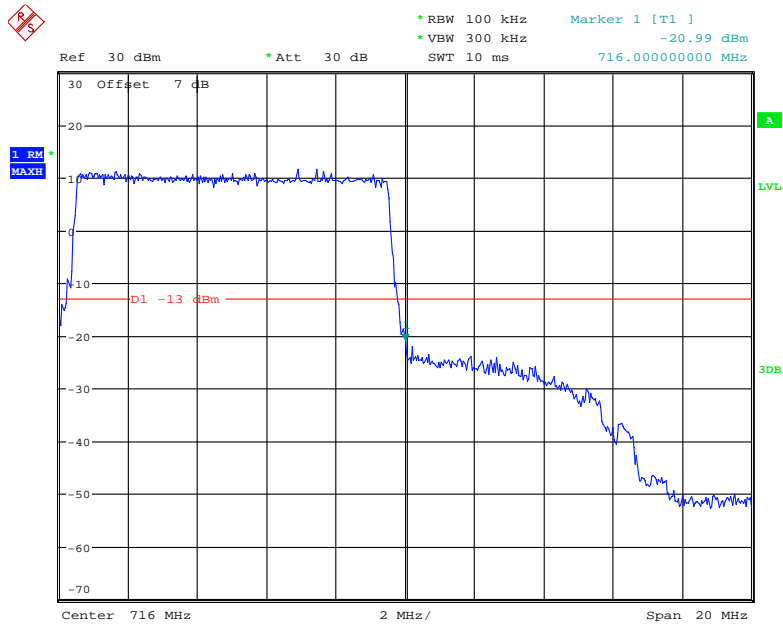


Date: 30.DEC.2020 14:51:39

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



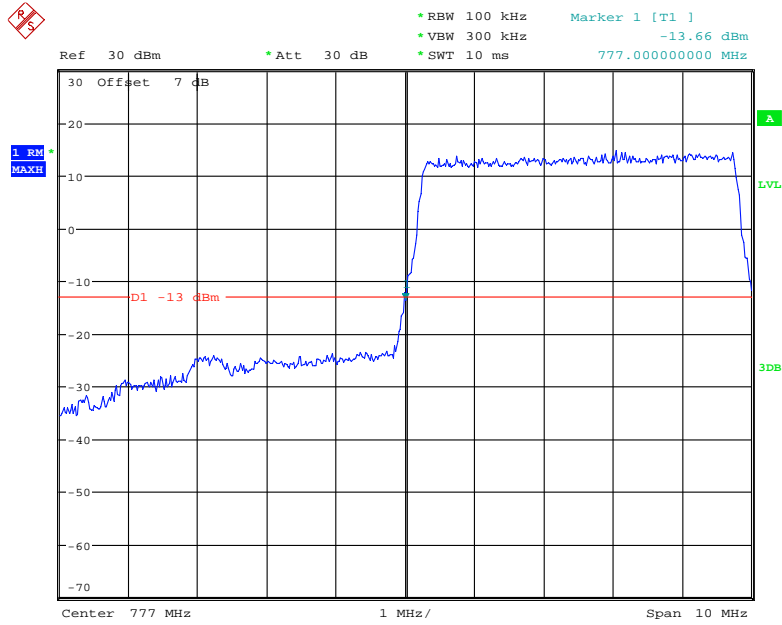
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 30.DEC.2020 14:51:57

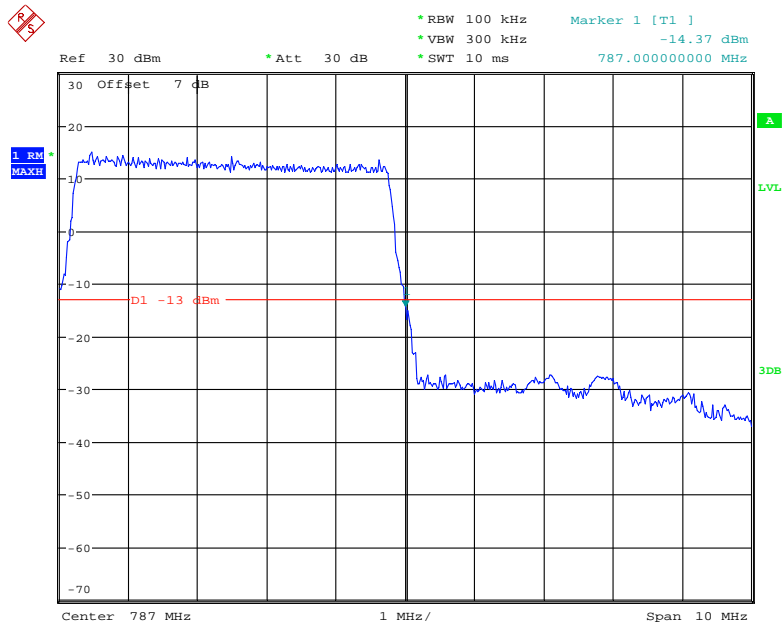
LTE Band 13:

QPSK (5.0 MHz, FULL RB) - Left Band Edge



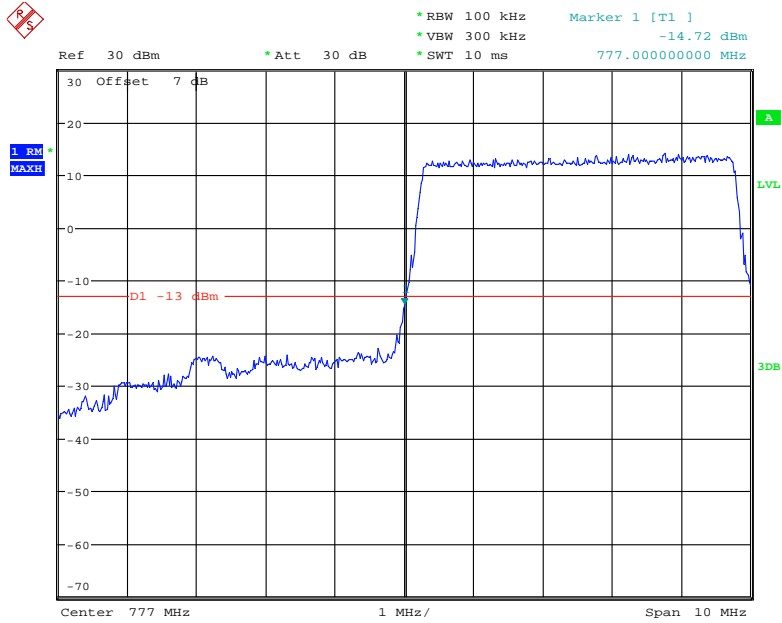
Date: 30.DEC.2020 17:55:13

QPSK (5.0 MHz, FULL RB) - Right Band Edge



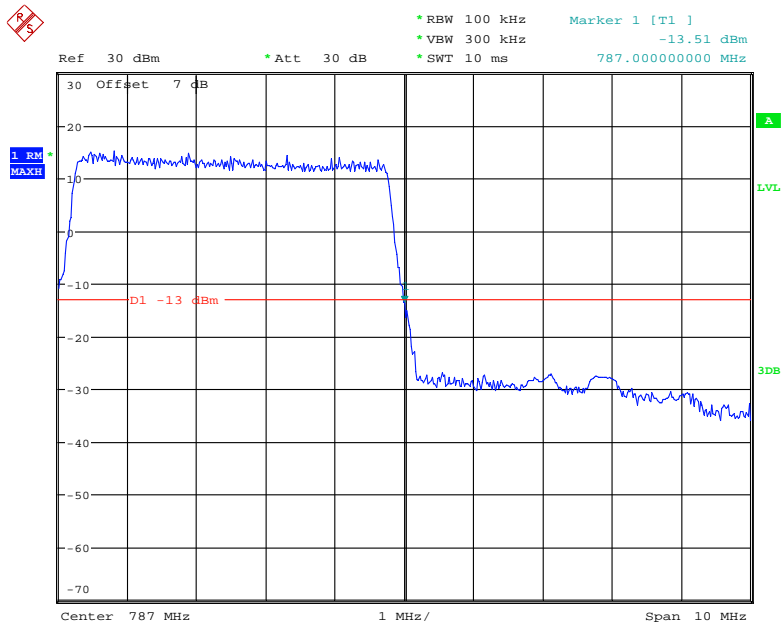
Date: 30.DEC.2020 17:57:02

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



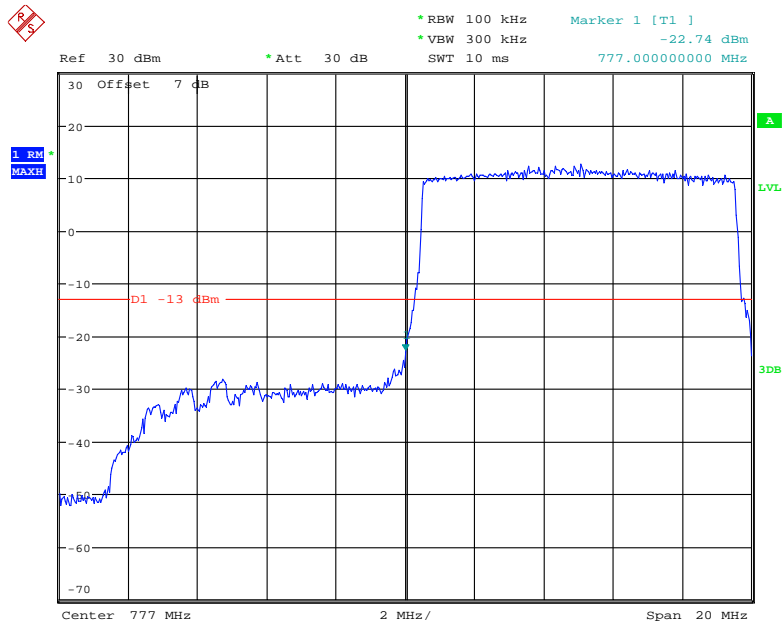
Date: 30.DEC.2020 17:55:50

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



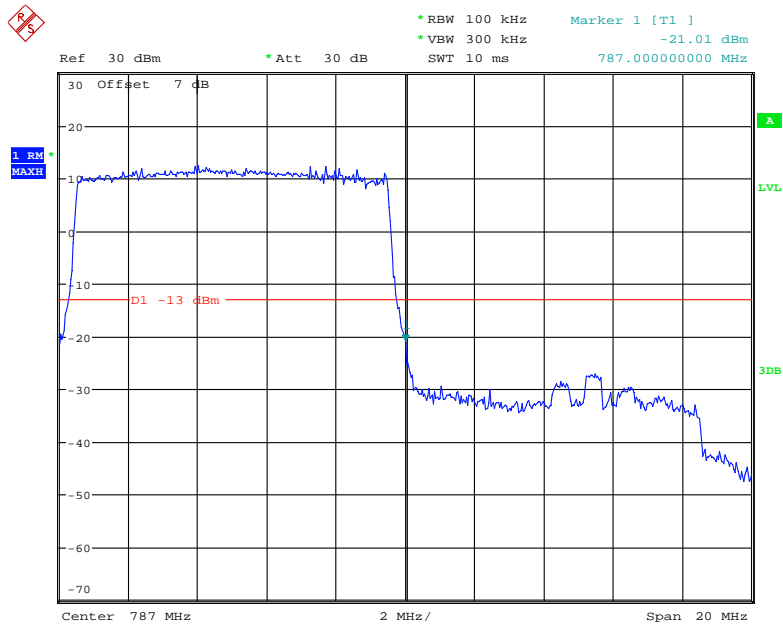
Date: 30.DEC.2020 17:57:23

QPSK (10.0 MHz, FULL RB) - Left Band Edge



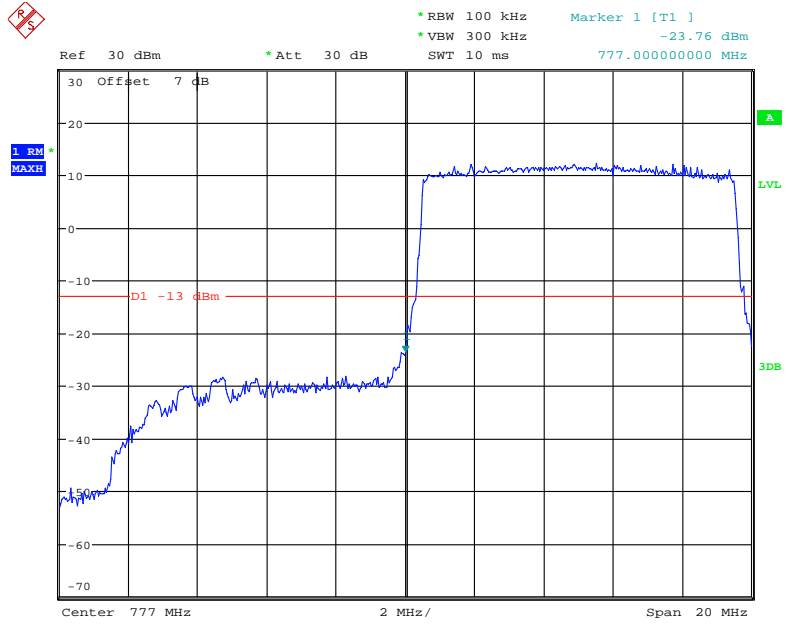
Date: 30.DEC.2020 17:43:10

QPSK (10.0 MHz, FULL RB) - Right Band Edge

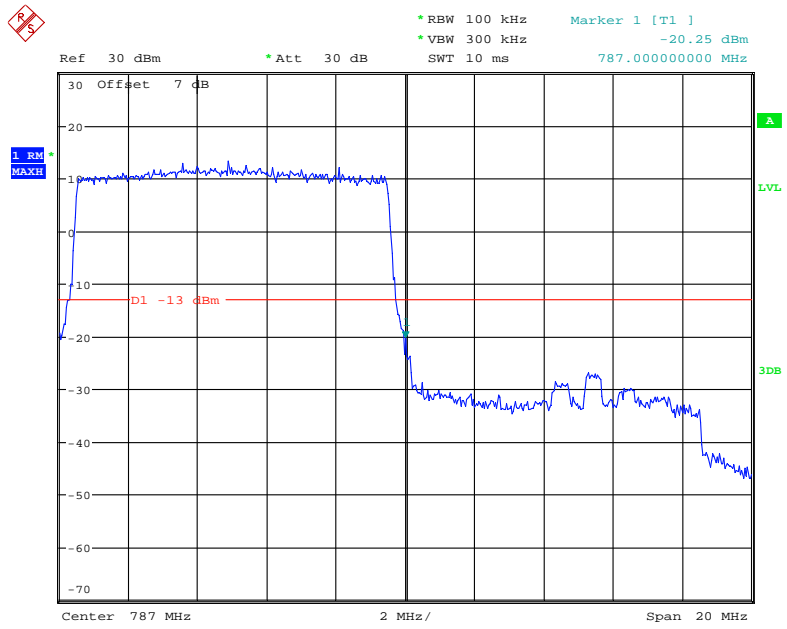


Date: 30.DEC.2020 17:41:43

16-QAM (10.0 MHz, FULL RB) - Left Band Edge

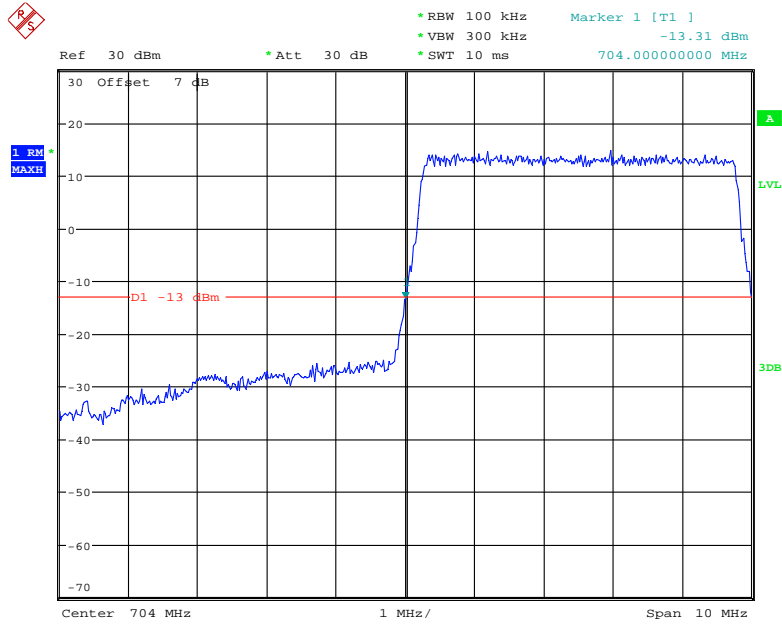


16-QAM (10.0 MHz, FULL RB) - Right Band Edge



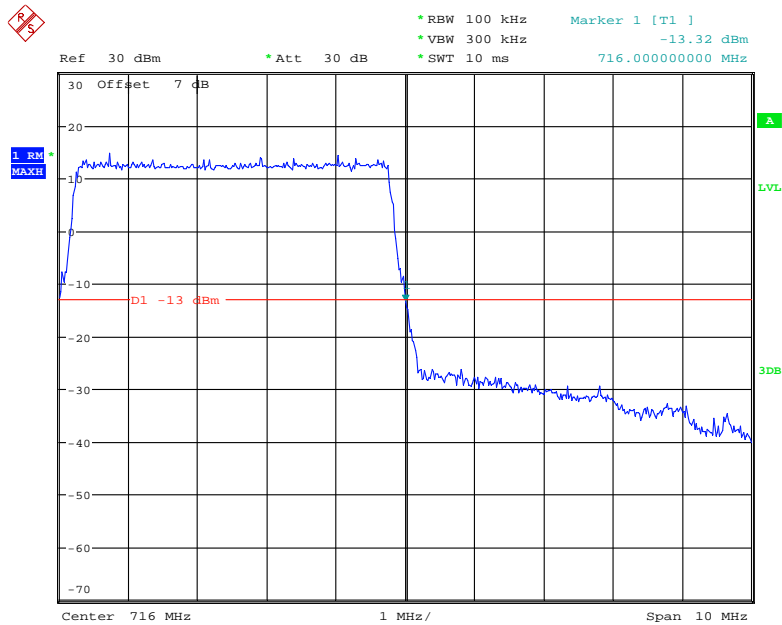
LTE Band 17:

QPSK (5.0 MHz, FULL RB) - Left Band Edge



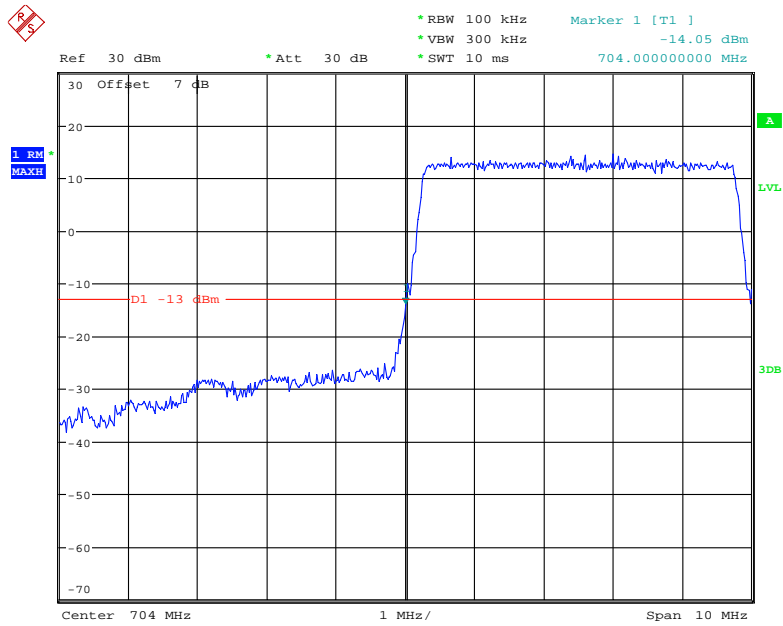
Date: 30.DEC.2020 17:06:05

QPSK (5.0 MHz, FULL RB) - Right Band Edge



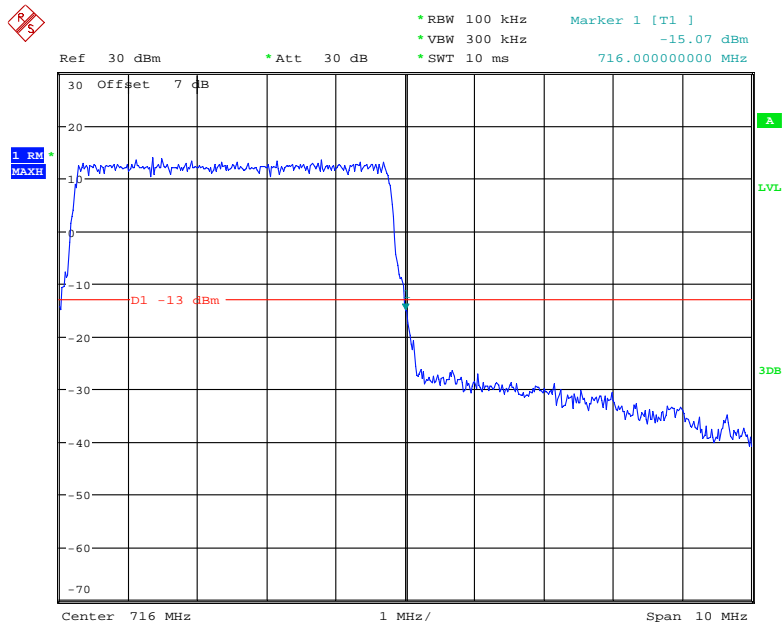
Date: 30.DEC.2020 17:13:13

16-QAM 5.0 MHz, FULL RB) - Left Band Edge



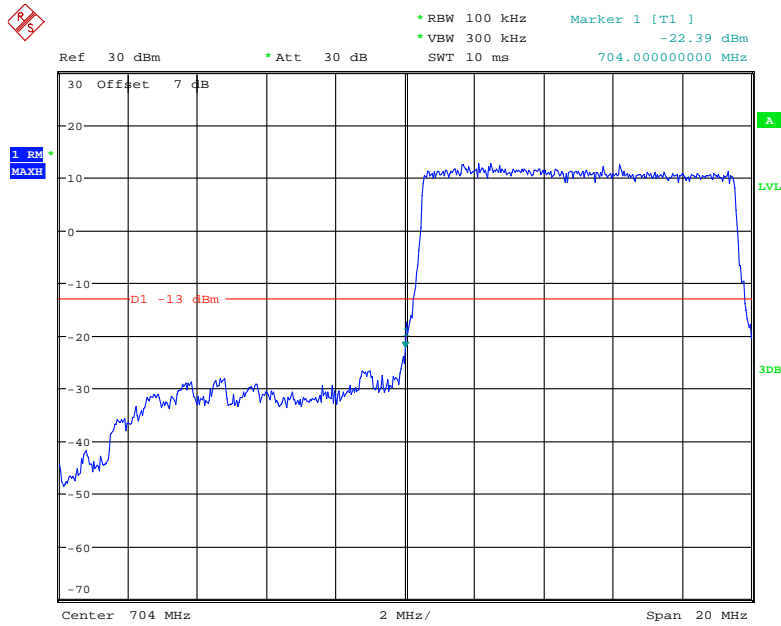
Date: 30.DEC.2020 17:07:07

16-QAM (5.0MHz, FULL RB) - Right Band Edge



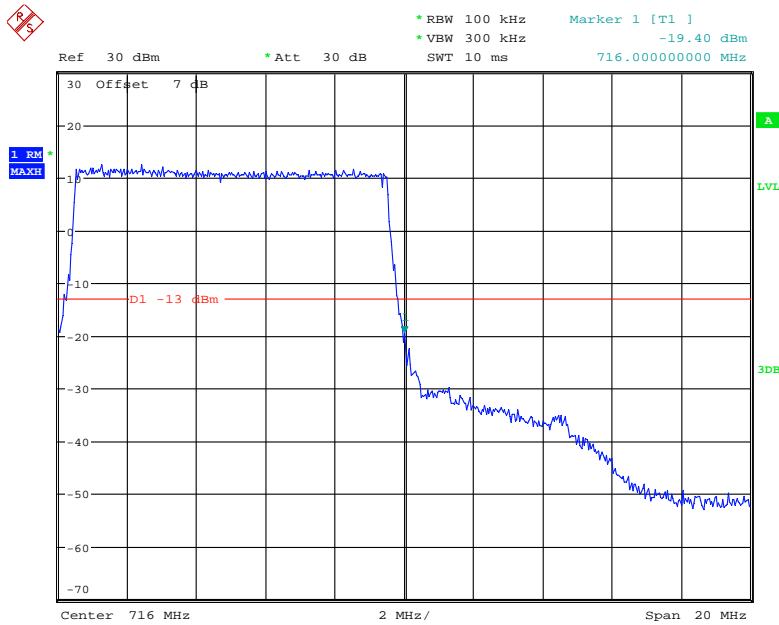
Date: 30.DEC.2020 17:14:14

QPSK (10.0 MHz, FULL RB) - Left Band Edge



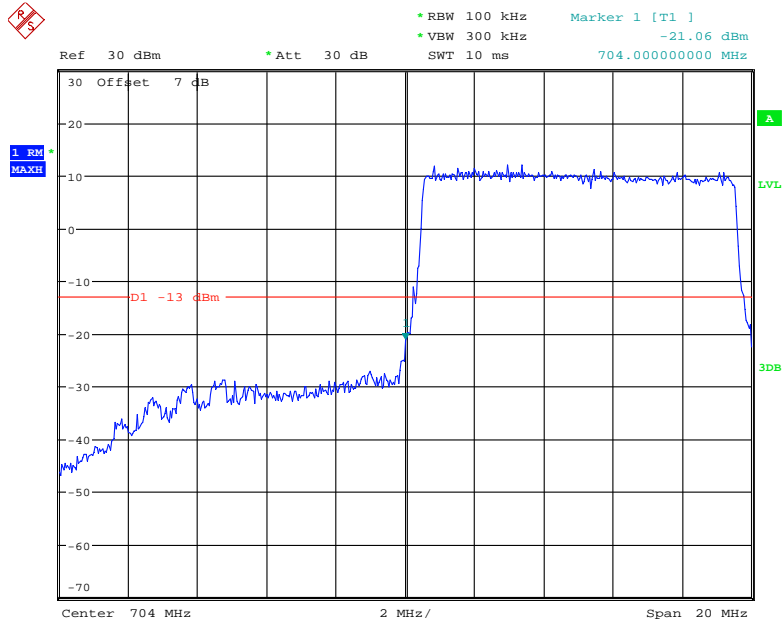
Date: 30.DEC.2020 16:59:04

QPSK (10.0 MHz, FULL RB) - Right Band Edge



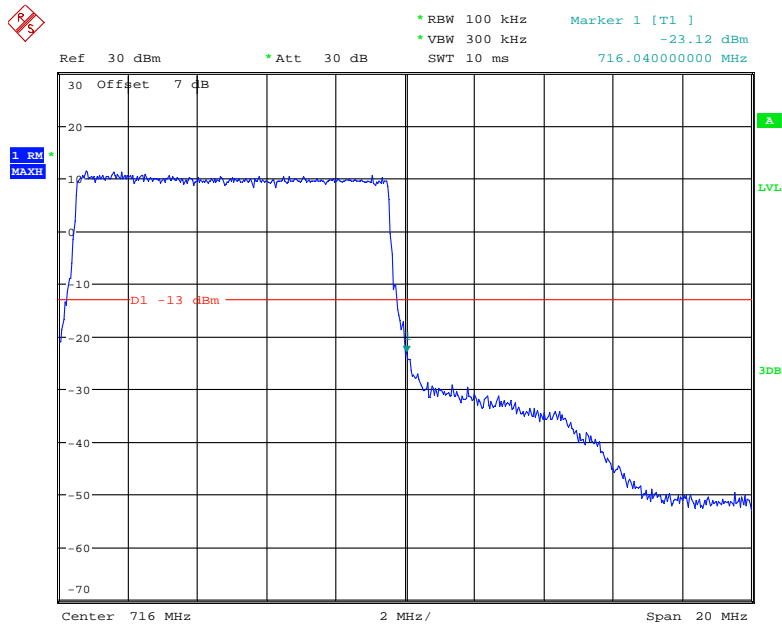
Date: 30.DEC.2020 16:59:40

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



Date: 30.DEC.2020 16:59:22

16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 30.DEC.2020 16:59:58

FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055, §22.355, §24.235 and & §27.54.

According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile > 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

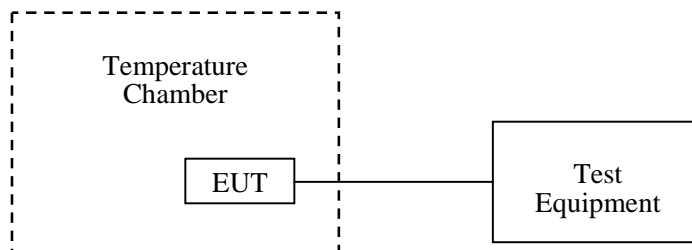
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Alan He on 2020-11-24.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

Cellular Band (Part 22H)

WCDMA Mode

Middle Channel, f₀ = 836.6MHz				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	12	-2	-0.0024	2.5
-20		-3	-0.0036	2.5
-10		-5	-0.0060	2.5
0		-10	-0.0120	2.5
10		-12	-0.0143	2.5
20		-13	-0.0155	2.5
30		-9	-0.0108	2.5
40		2	0.0024	2.5
50		-4	-0.0048	2.5
20		V min.= 9	7	0.0084
	V max.=16	6	0.0072	2.5

PCS Band (Part 24E)

WCDMA Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	12	-5	-0.0028	pass
-20		-4	-0.0022	pass
-10		-7	-0.0039	pass
0		-8	-0.0044	pass
10		-12	-0.0067	pass
20		-13	-0.0072	pass
30		-10	-0.0056	pass
40		-6	-0.0033	pass
50		3	0.0017	pass
20		V min.= 9	7	0.0039
	V max.=16	8	0.0044	pass

AWS Band (Part 27)

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	1710.0044	1754.9223	1710	1755
-20		1710.0030	1754.9227	1710	1755
-10		1710.0024	1754.9272	1710	1755
0		1710.0024	1754.9265	1710	1755
10		1710.0025	1754.9235	1710	1755
20		1710.0017	1754.9252	1710	1755
30		1710.0005	1754.9277	1710	1755
40		1710.0072	1754.9234	1710	1755
50		1710.0068	1754.9260	1710	1755
20		V min.= 9	1710.0071	1754.9240	1710
	V max.= 16	1710.0064	1754.9244	1710	1755

LTE:
QPSK:

Band 2:

10.0 MHz Middle Channel, $f_0 = 1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	12	1	0.0006	pass
-20		3	0.0017	pass
-10		-1	-0.0006	pass
0		-2	-0.0011	pass
10		-3	-0.0017	pass
20		2	0.0011	pass
30		-1	-0.0006	pass
40		-3	-0.0017	pass
50		1	0.0006	pass
20		V min.= 9	3	0.0017
	V max.= 16	1	0.0006	pass

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	1710.4578	1754.6300	1710	1755
-20		1710.4546	1754.6361	1710	1755
-10		1710.4555	1754.6362	1710	1755
0		1710.4538	1754.6291	1710	1755
10		1710.4536	1754.6321	1710	1755
20		1710.4565	1754.6299	1710	1755
30		1710.4579	1754.6304	1710	1755
40		1710.4568	1754.6301	1710	1755
50		1710.4567	1754.6305	1710	1755
20		V min.= 9	1710.4544	1754.6338	1710
	V max.= 16	1710.4540	1754.6327	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0 = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	12	1	0.0012	2.5
-20		2	0.0024	2.5
-10		-2	-0.0024	2.5
0		-3	-0.0036	2.5
10		1	0.0012	2.5
20		3	0.0036	2.5
30		-2	-0.0024	2.5
40		-3	-0.0036	2.5
50		1	0.0012	2.5
20		V min.= 9	1	0.0012
	V max.= 16	-2	-0.0024	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	2500.4682	2569.6828	2500	2570
-20		2500.4631	2569.6835	2500	2570
-10		2500.4673	2569.6837	2500	2570
0		2500.4680	2569.6846	2500	2570
10		2500.4639	2569.6824	2500	2570
20		2500.4678	2569.6838	2500	2570
30		2500.4672	2569.6814	2500	2570
40		2500.4649	2569.6820	2500	2570
50		2500.4628	2569.6860	2500	2570
20		V min.= 9	2500.4616	2569.6872	2500
	V max.= 16	2500.4680	2569.6864	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	699.5216	715.5808	699	716
-20		699.5212	715.5772	699	716
-10		699.5281	715.5804	699	716
0		699.5221	715.5813	699	716
10		699.5234	715.5769	699	716
20		699.5284	715.5739	699	716
30		699.5265	715.5797	699	716
40		699.5276	715.5787	699	716
50		699.5272	715.5813	699	716
20	V min.= 9	699.5204	715.5759	699	716
	V max.= 16	699.5258	715.5790	699	716

Band 13:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	777.4641	786.6271	777	787
-20		777.4622	786.6276	777	787
-10		777.4677	786.6228	777	787
0		777.4654	786.6230	777	787
10		777.4636	786.6235	777	787
20		777.4686	786.6254	777	787
30		777.4664	786.6248	777	787
40		777.4676	786.6279	777	787
50		777.4626	786.6206	777	787
20		V min.= 9	777.4604	786.6232	777
	V max.= 16	777.4636	786.6277	777	787

Band 17:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	704.3770	715.7332	704	716
-20		704.3783	715.7341	704	716
-10		704.3768	715.7368	704	716
0		704.3764	715.7378	704	716
10		704.3765	715.7362	704	716
20		704.3753	715.7352	704	716
30		704.3813	715.7378	704	716
40		704.3740	715.7342	704	716
50		704.3738	715.7409	704	716
20		V min.= 9	704.3790	715.7405	704
	V max.= 16	704.3799	715.7358	704	716

16QAM:

Band 2:

10.0 MHz Middle Channel, $f_0 = 1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	12	1	0.0006	pass
-20		-2	-0.0011	pass
-10		3	0.0017	pass
0		-1	-0.0006	pass
10		3	0.0017	pass
20		-2	-0.0011	pass
30		1	0.0006	pass
40		2	0.0011	pass
50		3	0.0017	pass
20		V min.= 9	2	0.0011
	V max.= 16	1	0.0006	pass

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	1710.4641	1754.6359	1710	1755
-20		1710.4685	1754.6307	1710	1755
-10		1710.4643	1754.6308	1710	1755
0		1710.4644	1754.6359	1710	1755
10		1710.4635	1754.6325	1710	1755
20		1710.4680	1754.6364	1710	1755
30		1710.4661	1754.6367	1710	1755
40		1710.4668	1754.6327	1710	1755
50		1710.4647	1754.6365	1710	1755
20		V min.= 9	1710.4612	1754.6311	1710
	V max.= 16	1710.4625	1754.6307	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_o = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	12	1	0.0012	2.5
-20		4	0.0048	2.5
-10		-2	-0.0024	2.5
0		-1	-0.0012	2.5
10		1	0.0012	2.5
20		2	0.0024	2.5
30		-2	-0.0024	2.5
40		-4	-0.0048	2.5
50		2	0.0024	2.5
20	V min.= 9	3	0.0036	2.5
	V max.= 16	-2	-0.0024	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	2500.4870	2569.6746	2500	2570
-20		2500.4862	2569.6686	2500	2570
-10		2500.4809	2569.6694	2500	2570
0		2500.4846	2569.6731	2500	2570
10		2500.4832	2569.6714	2500	2570
20		2500.4874	2569.6741	2500	2570
30		2500.4875	2569.6759	2500	2570
40		2500.4821	2569.6740	2500	2570
50		2500.4879	2569.6689	2500	2570
20		V min.= 9	2500.4823	2569.6705	2500
	V max.= 16	2500.4809	2569.6697	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	699.5295	715.5688	699	716
-20		699.5316	715.5627	699	716
-10		699.5326	715.5700	699	716
0		699.5343	715.5646	699	716
10		699.5324	715.5654	699	716
20		699.5369	715.5696	699	716
30		699.5367	715.5674	699	716
40		699.5355	715.5652	699	716
50		699.5318	715.5630	699	716
20		V min.= 9	699.5256	715.5664	699
	V max.= 16	699.5346	715.5622	699	716

Band 13:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	777.4705	786.6352	777	787
-20		777.4749	786.6356	777	787
-10		777.4744	786.6317	777	787
0		777.4763	786.6335	777	787
10		777.4723	786.6324	777	787
20		777.4761	786.6342	777	787
30		777.4754	786.6355	777	787
40		777.4747	786.6363	777	787
50		777.4693	786.6371	777	787
20		V min.= 9	777.4712	786.6336	777
	V max.= 16	777.4735	786.6324	777	787

Band 17:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	704.3658	715.7340	704	716
-20		704.3705	715.7356	704	716
-10		704.3703	715.7325	704	716
0		704.3650	715.7302	704	716
10		704.3665	715.7326	704	716
20		704.3654	715.7362	704	716
30		704.3677	715.7344	704	716
40		704.3698	715.7299	704	716
50		704.3662	715.7368	704	716
20		V min.= 9	704.3653	715.7354	704
	V max.= 16	704.3756	715.7324	704	716

******* END OF REPORT *******