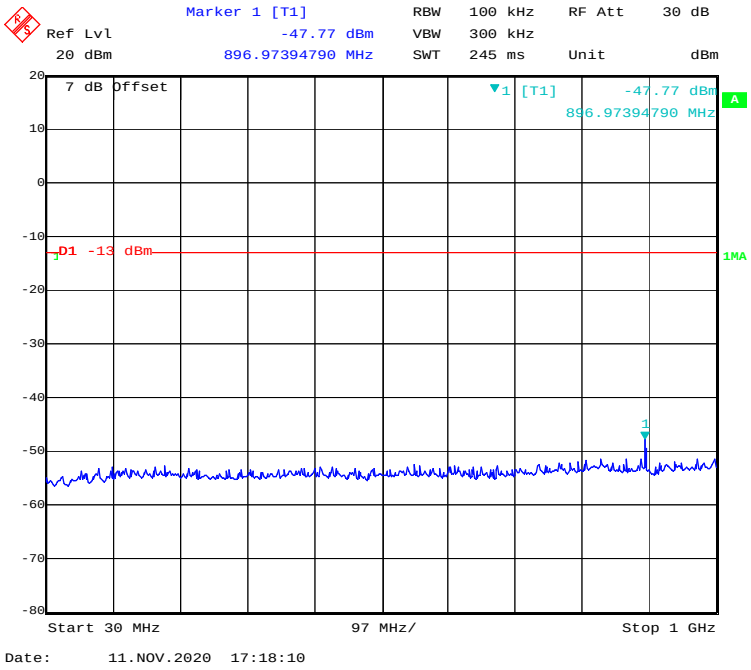
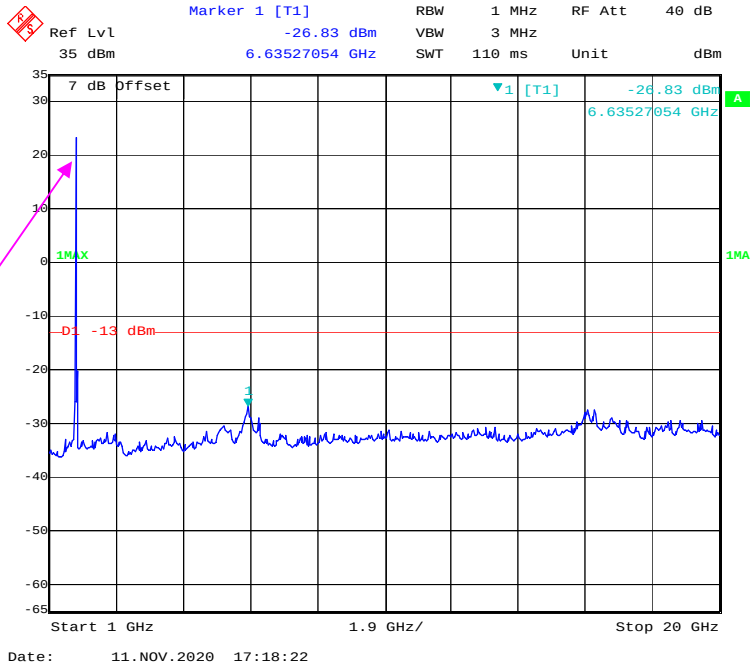
30 MHz – 1 GHz (5 MHz, 16-QAM, High Channel)

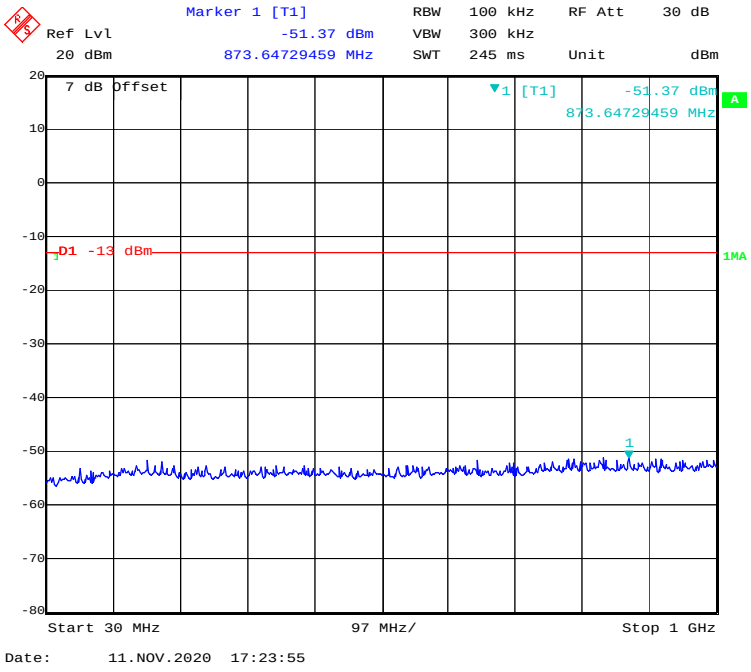


1 GHz – 20 GHz (5 MHz, 16-QAM, High Channel)

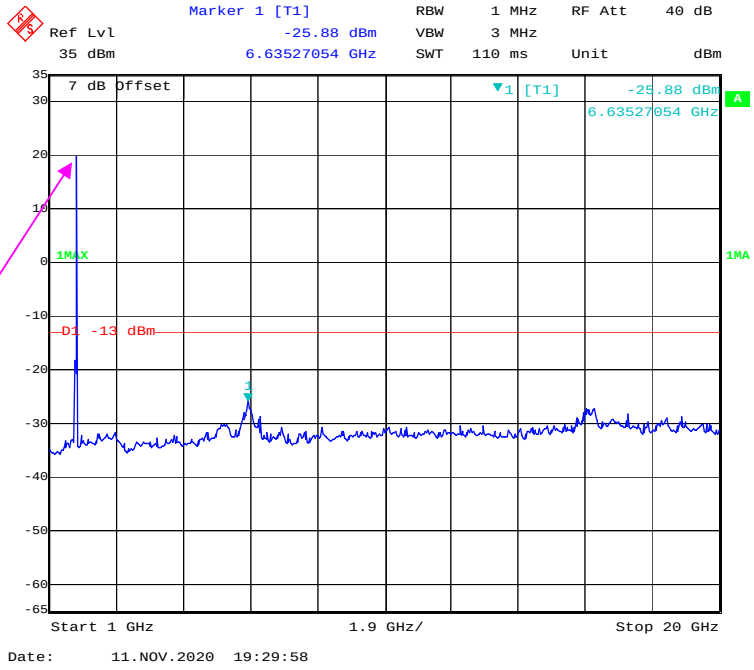


Fundamental

30 MHz – 1 GHz (10 MHz, QPSK, High Channel)

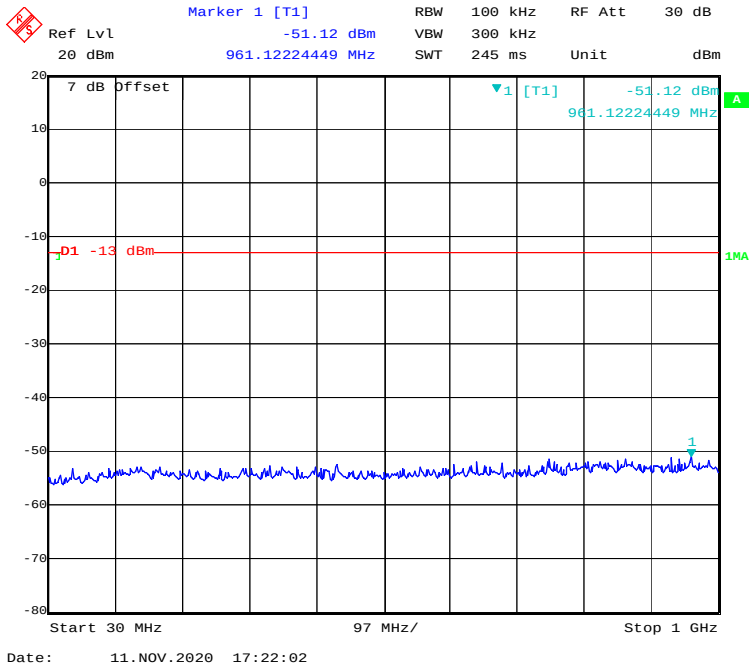


1 GHz – 20 GHz (10 MHz, QPSK, High Channel)

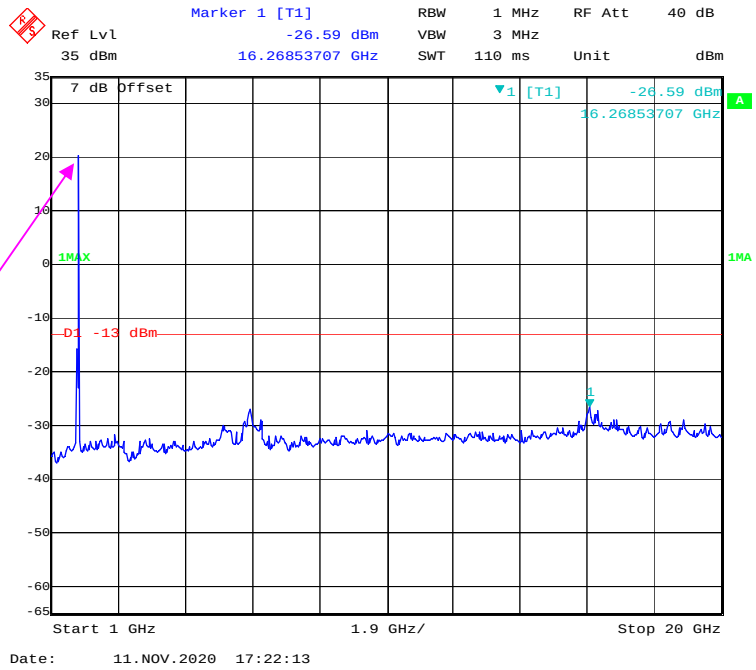


Fundamental

30 MHz – 1 GHz (10 MHz, 16-QAM, High Channel)

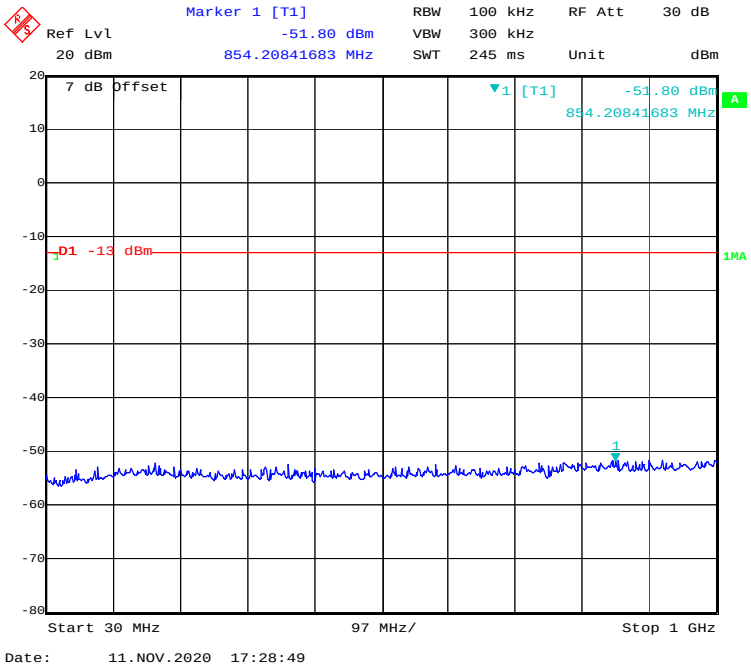


1 GHz – 20 GHz (10 MHz, 16-QAM, High Channel)

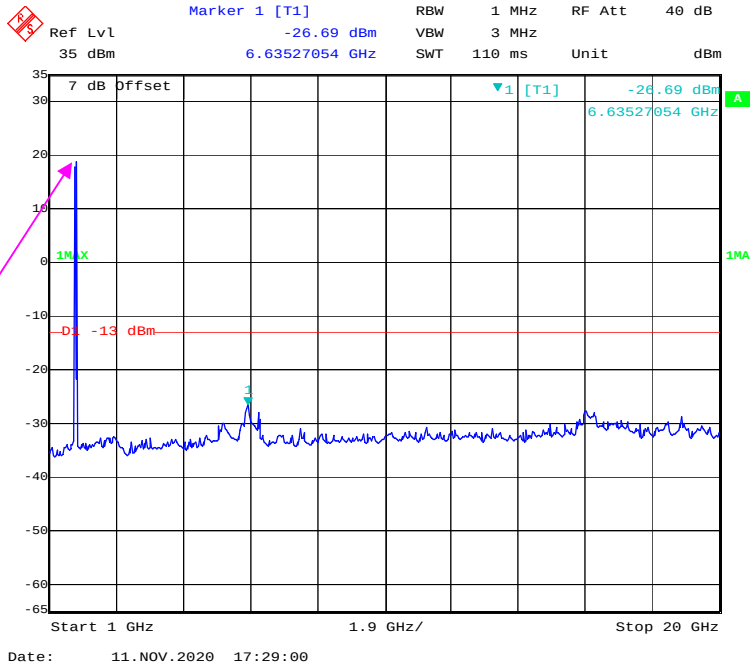


Fundamental

30 MHz – 1 GHz (15 MHz, QPSK, High Channel)

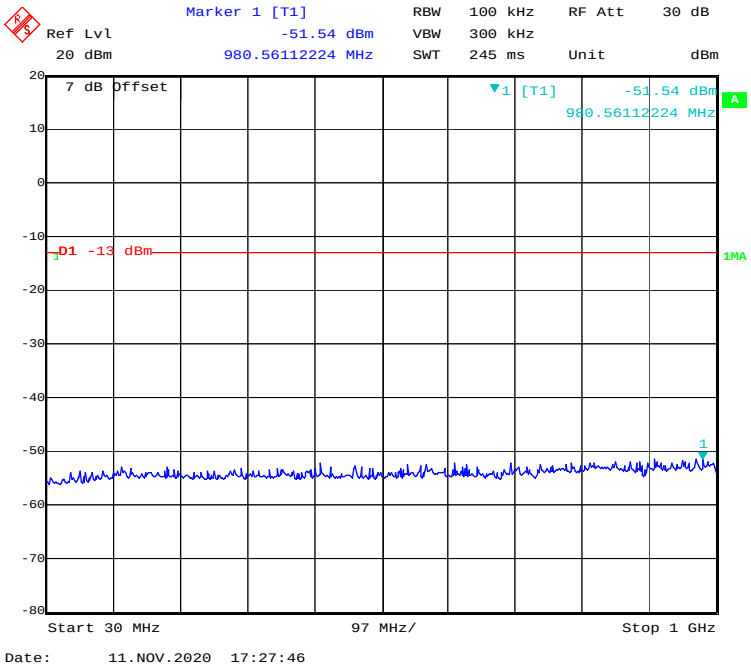


1 GHz – 20 GHz (15 MHz, QPSK, High Channel)

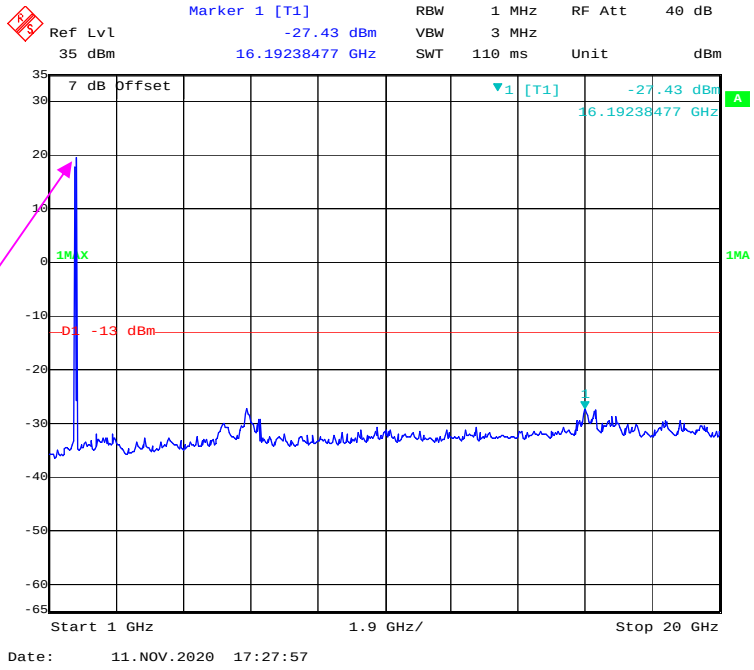


Fundamental

30 MHz – 1 GHz (15 MHz, 16-QAM, High Channel)

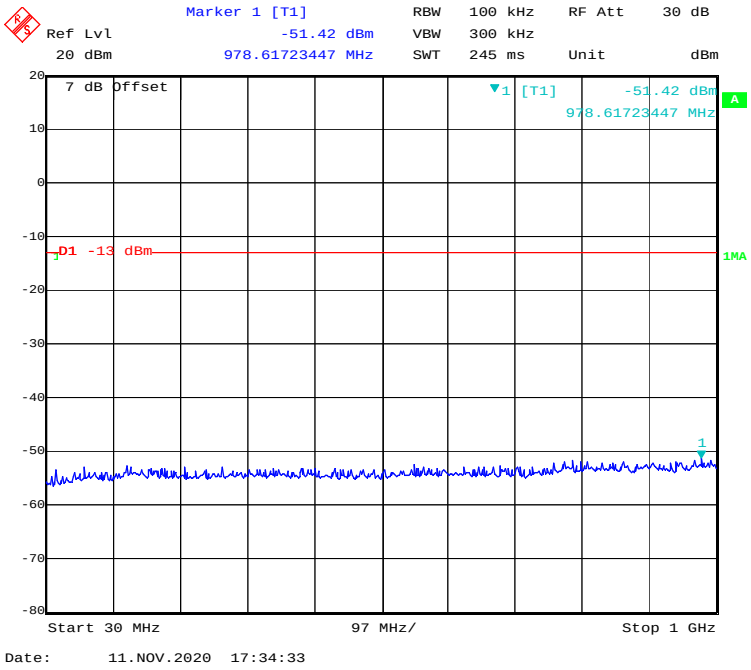


1 GHz – 20 GHz (15 MHz, 16-QAM, High Channel)

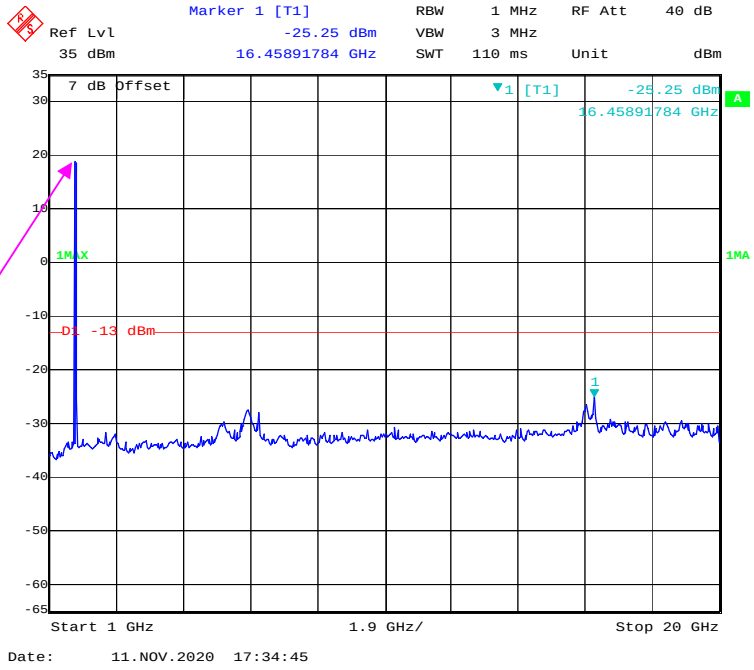


Fundamental

30 MHz – 1 GHz (20 MHz, QPSK, High Channel)

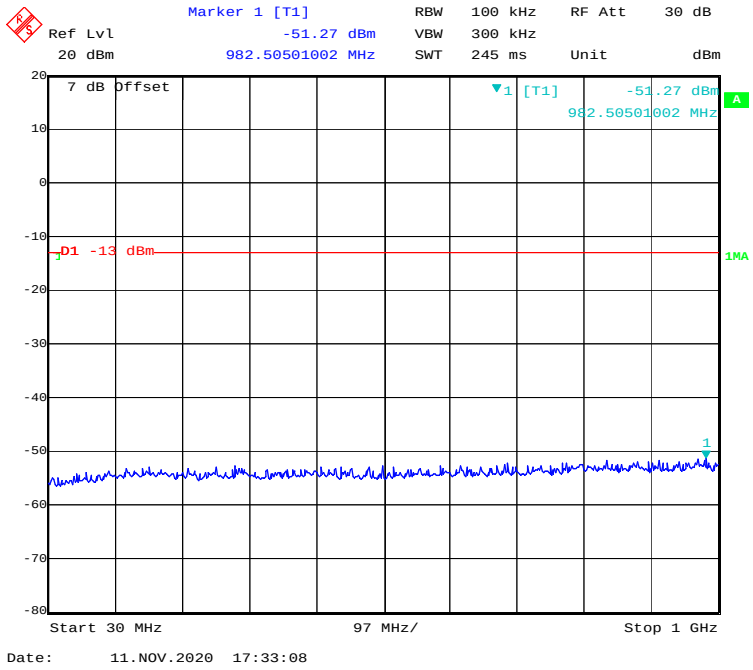


1 GHz – 20 GHz (20 MHz, QPSK, High Channel)

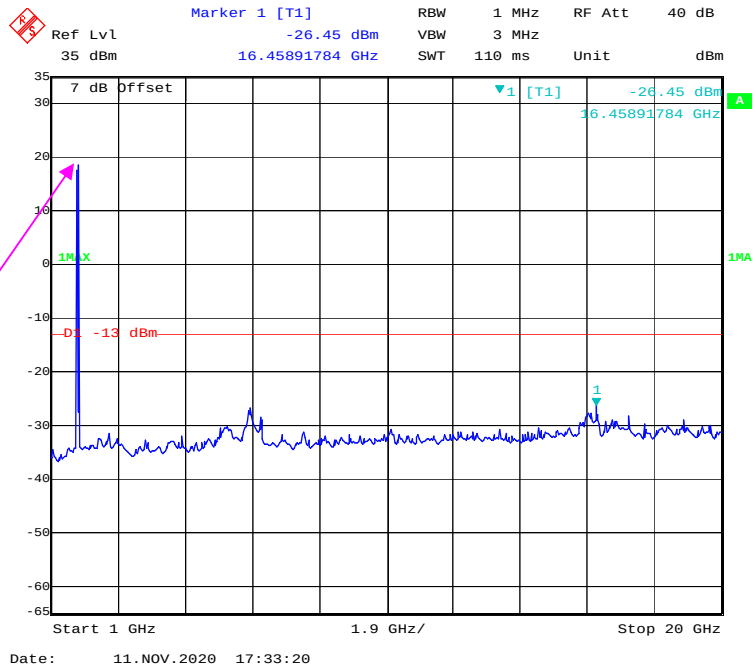


Fundamental

30 MHz – 1 GHz (20 MHz, 16-QAM, High Channel)



1 GHz – 20 GHz (20 MHz, 16-QAM, High Channel)



Fundamental

FCC § 2.1053; § 22.917 (a); § 24.238 (a)& §27.53(h) (m); § 90.691 - SPURIOUS RADIATED EMISSIONS

Applicable Standards

FCC § 2.1053, §22.917(a) and § 24.238(a), §90.691 and § 27.53(h) (m)

22.917 (a) Out of band emissions. 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.

24.238 (a) Out of band emissions. 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.

27.53(h) (m), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Rule Part 90.691 specifies that “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 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 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.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TX pwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Data

Environmental Conditions

Temperature:	23.5~24.9 ℃
Relative Humidity:	50~52 %
ATM Pressure:	100.7~101.9 kPa

The testing was performed by Chao Gao from 2020-11-14 to 2020-12-10.

Test mode: Transmitting (Pre-scan with low, middle and high channels, and the worse case data as below)

30 MHz ~ 10 GHz:

GSM 850 Band

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
GPRS Mode, Low channel										
459.92	55.21	354	150	H	-44.13	0.55	-1.71	-46.39	-13	33.39
459.92	54.39	327	150	V	-44.95	0.55	-1.71	-47.21	-13	34.21
1648.40	47.45	259	150	H	-65.90	0.84	8.44	-58.30	-13	45.3
1648.40	46.11	204	150	V	-67.24	0.84	8.44	-59.64	-13	46.64
GPRS Mode, Middle channel										
459.78	55.23	143	150	H	-44.11	0.55	-1.71	-46.37	-13	33.37
459.78	54.96	213	150	V	-44.38	0.55	-1.71	-46.64	-13	33.64
1673.20	46.81	289	150	H	-66.58	0.84	8.48	-58.94	-13	45.94
1673.20	48.14	239	150	V	-65.25	0.84	8.48	-57.61	-13	44.61
GPRS Mode, High channel										
459.93	55.36	5	150	H	-43.98	0.55	-1.71	-46.24	-13	33.24
459.93	54.71	247	150	V	-44.63	0.55	-1.71	-46.89	-13	33.89
1697.60	46.37	172	150	H	-66.64	0.84	8.52	-58.96	-13	45.96
1697.60	46.21	65	150	V	-66.80	0.84	8.52	-59.12	-13	46.12

WCDMA Band V

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Low channel										
459.61	54.75	121	150	H	-44.60	0.55	-1.71	-46.86	-13	33.86
459.61	55.29	59	150	V	-44.06	0.55	-1.71	-46.32	-13	33.32
1652.80	47.09	182	150	H	-66.23	0.84	8.44	-58.63	-13	45.63
1652.80	48.31	38	150	V	-65.01	0.84	8.44	-57.41	-13	44.41
WCDMA Mode, Middle channel										
459.68	54.81	99	150	H	-44.54	0.55	-1.71	-46.80	-13	33.80
459.68	55.23	179	150	V	-44.12	0.55	-1.71	-46.38	-13	33.38
1673.20	47.36	359	150	H	-66.03	0.83	8.20	-58.66	-13	45.66
1673.20	48.07	356	150	V	-65.32	0.83	8.20	-57.95	-13	44.95
WCDMA Mode, High channel										
459.73	54.45	114	150	H	-44.90	0.55	-1.71	-47.16	-13	34.16
459.73	55.39	331	150	V	-43.96	0.55	-1.71	-46.22	-13	33.22
1693.20	46.83	286	150	H	-66.20	0.84	8.51	-58.53	-13	45.53
1693.20	48.12	251	150	V	-64.91	0.84	8.51	-57.24	-13	44.24

30 MHz ~ 20 GHz:

PCS 1900 Band

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
GPRS Mode, Low channel										
459.72	55.24	275	150	H	-44.11	0.55	-1.71	-46.37	-13	46.37
459.72	54.96	76	150	V	-44.39	0.55	-1.71	-46.65	-13	46.65
3700.40	47.69	6	150	H	-59.28	0.95	9.78	-50.45	-13	50.45
3700.40	46.66	45	150	V	-60.31	0.95	9.78	-51.48	-13	51.48
GPRS Mode, Middle channel										
459.88	55.31	60	150	H	-44.04	0.55	-1.71	-46.30	-13	46.30
459.88	54.95	144	150	V	-44.40	0.55	-1.71	-46.66	-13	46.66
3760.00	49.09	192	150	H	-58.12	0.95	9.74	-49.33	-13	49.33
3760.00	47.88	212	150	V	-59.33	0.95	9.74	-50.54	-13	50.54
GPRS Mode, High channel										
459.86	55.29	21	150	H	-44.06	0.55	-1.71	-46.32	-13	46.32
459.86	54.71	348	150	V	-44.64	0.55	-1.71	-46.90	-13	46.90
3819.60	47.92	46	150	H	-58.67	0.96	9.71	-49.92	-13	49.92
3819.60	47.60	314	150	V	-58.99	0.96	9.71	-50.24	-13	50.24

WCDMA Band II

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Low channel										
459.70	55.05	162	150	H	-44.30	0.55	-1.71	-46.56	-13	33.56
459.70	55.39	261	150	V	-43.96	0.55	-1.71	-46.22	-13	33.22
3704.80	42.94	304	150	H	-64.02	0.95	9.78	-55.19	-13	42.19
3704.80	43.64	137	150	V	-63.32	0.95	9.78	-54.49	-13	41.49
WCDMA Mode, Middle channel										
459.58	54.61	155	150	H	-44.74	0.55	-1.71	-47.00	-13	34.00
459.58	55.28	353	150	V	-44.07	0.55	-1.71	-46.33	-13	33.33
3760.00	43.61	82	150	H	-63.60	0.93	9.90	-54.63	-13	41.63
3760.00	44.26	201	150	V	-62.95	0.93	9.90	-53.98	-13	40.98
WCDMA Mode, High channel										
459.92	54.65	222	150	H	-44.70	0.55	-1.71	-46.96	-13	33.96
459.92	55.07	215	150	V	-44.28	0.55	-1.71	-46.54	-13	33.54
3815.20	41.92	322	150	H	-64.68	0.96	9.71	-55.93	-13	42.93
3815.20	43.09	112	150	V	-63.51	0.96	9.71	-54.76	-13	41.76

Note:
1) Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)
2) Margin (dB) = Limit (dBm) - Absolute Level (dBm)

Test mode: Transmitting (Pre-scan with all the bandwidth, and worse case as below)

30 MHz ~ 20 GHz:

LTE Band 2:

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
459.71	52.57	59	100	H	-46.82	0.55	-1.71	-44.56	-13	31.56
459.71	52.93	193	200	V	-46.46	0.55	-1.71	-44.20	-13	31.20
3701.40	41.62	134	150	H	-65.34	0.95	9.78	-56.51	-13	43.51
3701.40	41.58	200	100	V	-65.38	0.95	9.78	-56.55	-13	43.55
16-QAM 1.4MHz Bandwidth Low Channel										
459.78	52.06	278	150	H	-47.33	0.55	-1.71	-45.07	-13	32.07
459.78	51.95	322	150	V	-47.44	0.55	-1.71	-45.18	-13	32.18
3701.40	42.08	1	200	H	-64.88	0.95	9.78	-56.05	-13	43.05
3701.40	41.31	338	200	V	-65.65	0.95	9.78	-56.82	-13	43.82

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
459.61	51.35	226	100	H	-48.04	0.55	-1.71	-45.78	-13	32.78
459.61	52.15	28	200	V	-47.24	0.55	-1.71	-44.98	-13	31.98
3760.00	42.48	110	150	H	-64.30	0.95	9.74	-55.51	-13	42.51
3760.00	41.63	134	100	V	-65.15	0.95	9.74	-56.36	-13	43.36
16-QAM 1.4MHz Bandwidth Middle Channel										
459.76	51.39	113	150	H	-48.00	0.55	-1.71	-45.74	-13	32.74
459.76	52.48	39	150	V	-46.91	0.55	-1.71	-44.65	-13	31.65
3760.00	41.21	269	200	H	-65.57	0.95	9.74	-56.78	-13	43.78
3760.00	40.11	345	200	V	-66.67	0.95	9.74	-57.88	-13	44.88

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
459.58	52.31	102	100	H	-47.08	0.55	-1.71	-44.82	-13	31.82
459.58	52.43	167	200	V	-46.96	0.55	-1.71	-44.70	-13	31.70
3818.60	40.87	352	150	H	-65.73	0.96	9.71	-56.98	-13	43.98
3818.60	41.66	56	100	V	-64.94	0.96	9.71	-56.19	-13	43.19
16-QAM 1.4MHz Bandwidth High Channel										
459.96	53.23	265	150	H	-46.16	0.55	-1.71	-43.90	-13	30.90
459.96	52.77	294	150	V	-46.62	0.55	-1.71	-44.36	-13	31.36
3818.60	41.80	312	200	H	-64.80	0.96	9.71	-56.05	-13	43.05
3818.60	41.08	82	200	V	-65.52	0.96	9.71	-56.77	-13	43.77

LTE Band 4:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
459.79	52.18	337	100	H	-47.21	0.55	-1.71	-44.95	-13	31.95
459.79	52.78	313	200	V	-46.61	0.55	-1.71	-44.35	-13	31.35
3421.40	42.83	266	150	H	-65.11	0.93	9.82	-56.22	-13	43.22
3421.40	42.23	4	100	V	-65.71	0.93	9.82	-56.82	-13	43.82
16-QAM 1.4MHz Bandwidth Low Channel										
459.85	52.79	11	100	H	-46.60	0.55	-1.71	-44.34	-13	31.34
459.85	52.28	143	200	V	-47.11	0.55	-1.71	-44.85	-13	31.85
3421.40	42.83	130	200	H	-65.11	0.93	9.82	-56.22	-13	43.22
3421.40	42.72	205	200	V	-65.22	0.93	9.82	-56.33	-13	43.33

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
459.76	52.50	272	100	H	-46.89	0.55	-1.71	-44.63	-13	31.63
459.76	52.30	301	200	V	-47.09	0.55	-1.71	-44.83	-13	31.83
3465.00	42.77	159	150	H	-64.98	0.93	9.87	-56.04	-13	43.04
3465.00	42.04	278	100	V	-65.71	0.93	9.87	-56.77	-13	43.77
16-QAM 1.4MHz Bandwidth Middle Channel										
459.72	52.61	82	100	H	-46.78	0.55	-1.71	-44.52	-13	31.52
459.72	52.56	226	200	V	-46.83	0.55	-1.71	-44.57	-13	31.57
3465.00	42.65	353	200	H	-65.10	0.93	9.87	-56.16	-13	43.16
3465.00	42.14	238	200	V	-65.61	0.93	9.87	-56.67	-13	43.67

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
459.45	52.87	355	100	H	-46.52	0.55	-1.71	-44.26	-13	31.26
459.45	52.32	170	200	V	-47.07	0.55	-1.71	-44.81	-13	31.81
3508.60	42.27	348	150	H	-65.30	0.93	9.90	-56.33	-13	43.33
3508.60	42.57	20	100	V	-65.00	0.93	9.90	-56.03	-13	43.03
16-QAM 1.4MHz Bandwidth High Channel										
459.70	52.78	279	100	H	-46.61	0.55	-1.71	-44.35	-13	31.35
459.70	52.23	102	200	V	-47.16	0.55	-1.71	-44.90	-13	31.90
3508.60	42.46	9	200	H	-65.11	0.93	9.90	-56.14	-13	43.14
3508.60	42.51	90	200	V	-65.06	0.93	9.90	-56.09	-13	43.09

30 MHz ~ 10 GHz:

LTE Band 5:

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
459.84	51.33	179	100	H	-47.99	0.55	-1.71	-45.73	-13	32.73
459.84	51.68	322	200	V	-47.64	0.55	-1.71	-45.38	-13	32.38
1649.40	48.96	51	150	H	-64.38	0.84	8.44	-56.78	-13	43.78
1649.40	49.37	197	100	V	-63.97	0.84	8.44	-56.37	-13	43.37
16-QAM 1.4MHz Bandwidth Low Channel										
459.74	51.22	323	150	H	-48.10	0.55	-1.71	-45.84	-13	32.84
459.74	51.01	9	150	V	-48.31	0.55	-1.71	-46.05	-13	33.05
1649.40	48.76	238	200	H	-64.58	0.84	8.44	-56.98	-13	43.98
1649.40	49.70	31	200	V	-63.64	0.84	8.44	-56.04	-13	43.04

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
459.86	51.06	105	100	H	-48.26	0.55	-1.71	-46.00	-13	33.00
459.86	51.57	0	200	V	-47.75	0.55	-1.71	-45.49	-13	32.49
1673.00	38.81	202	150	H	-64.58	0.84	8.48	-56.94	-13	43.94
1673.00	39.15	102	100	V	-64.24	0.84	8.48	-56.60	-13	43.60
16-QAM 1.4MHz Bandwidth Middle Channel										
459.92	51.98	64	150	H	-47.34	0.55	-1.71	-45.08	-13	32.08
459.92	51.79	95	150	V	-47.53	0.55	-1.71	-45.27	-13	32.27
1673.00	39.49	299	200	H	-63.90	0.84	8.48	-56.26	-13	43.26
1673.00	39.26	52	200	V	-64.13	0.84	8.48	-56.49	-13	43.49

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
459.69	51.81	20	100	H	-47.51	0.55	-1.71	-45.25	-13	32.25
459.69	51.88	146	200	V	-47.44	0.55	-1.71	-45.18	-13	32.18
1696.60	48.55	250	150	H	-64.46	0.84	8.51	-56.79	-13	43.79
1696.60	48.93	275	100	V	-64.08	0.84	8.51	-56.41	-13	43.41
16-QAM 1.4MHz Bandwidth High Channel										
459.68	51.48	189	150	H	-47.84	0.55	-1.71	-45.58	-13	32.58
459.68	51.28	327	150	V	-48.04	0.55	-1.71	-45.78	-13	32.78
1696.60	49.24	270	200	H	-63.77	0.84	8.51	-56.10	-13	43.10
1696.60	49.15	207	200	V	-63.86	0.84	8.51	-56.19	-13	43.19

30MHz~26.5GHz:

LTE Band 7:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Low Channel										
459.93	52.95	192	100	H	-46.44	0.55	-1.71	-44.18	-25	19.18
459.93	52.94	140	200	V	-46.45	0.55	-1.71	-44.19	-25	19.19
5005.00	40.72	121	100	H	-65.27	1.08	10.30	-56.05	-25	31.05
5005.00	40.02	135	150	V	-65.97	1.08	10.30	-56.75	-25	31.75
16-QAM 5MHz Bandwidth Low Channel										
459.91	52.33	147	100	H	-47.06	0.55	-1.71	-44.80	-25	19.80
459.91	52.62	324	200	V	-46.77	0.55	-1.71	-44.51	-25	19.51
5005.00	40.49	97	150	H	-65.50	1.08	10.30	-56.28	-25	31.28
5005.00	40.14	324	200	V	-65.85	1.08	10.30	-56.63	-25	31.63

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Middle Channel										
459.70	52.60	98	100	H	-46.79	0.55	-1.71	-44.53	-25	19.53
459.70	52.58	92	200	V	-46.81	0.55	-1.71	-44.55	-25	19.55
5070.00	29.97	302	100	H	-65.31	1.09	10.30	-56.10	-25	31.10
5070.00	29.74	159	150	V	-65.54	1.09	10.30	-56.33	-25	31.33
16-QAM 5MHz Bandwidth Middle Channel										
459.88	52.55	142	100	H	-46.84	0.55	-1.71	-44.58	-25	19.58
459.88	52.53	121	200	V	-46.86	0.55	-1.71	-44.60	-25	19.60
5070.00	30.00	237	150	H	-65.28	1.09	10.30	-56.07	-25	31.07
5070.00	30.04	191	200	V	-65.24	1.09	10.30	-56.03	-25	31.03

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth High Channel										
459.98	52.21	53	100	H	-47.18	0.55	-1.71	-44.92	-25	19.92
459.98	52.27	237	200	V	-47.12	0.55	-1.71	-44.86	-25	19.86
5135.00	39.25	272	100	H	-66.02	1.10	10.30	-56.82	-25	31.82
5135.00	39.13	186	150	V	-66.14	1.10	10.30	-56.94	-25	31.94
16-QAM 5MHz Bandwidth High Channel										
459.64	52.66	144	100	H	-46.73	0.55	-1.71	-44.47	-25	19.47
459.64	52.22	315	200	V	-47.17	0.55	-1.71	-44.91	-25	19.91
5135.00	40.04	189	150	H	-65.23	1.10	10.30	-56.03	-25	31.03
5135.00	39.10	290	200	V	-66.17	1.10	10.30	-56.97	-25	31.97

30MHz~10GHz:

LTE Band 12:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
459.89	52.37	203	100	H	-47.02	0.55	-1.71	-44.76	-13	31.76
459.89	52.08	170	200	V	-47.31	0.55	-1.71	-45.05	-13	32.05
1399.40	44.08	15	150	H	-70.09	0.82	7.92	-62.99	-13	49.99
1399.40	44.45	193	100	V	-69.72	0.82	7.92	-62.62	-13	49.62
16-QAM 1.4MHz Bandwidth Low Channel										
459.94	52.95	184	100	H	-46.44	0.55	-1.71	-44.18	-13	31.18
459.94	52.05	295	200	V	-47.34	0.55	-1.71	-45.08	-13	32.08
1399.4	44.51	345	200	H	-69.66	0.82	7.92	-62.56	-13	49.56
1399.4	45.07	326	200	V	-69.10	0.82	7.92	-62.00	-13	49.00

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
459.87	52.16	29	100	H	-47.23	0.55	-1.71	-44.97	-13	31.97
459.87	52.39	116	200	V	-47.00	0.55	-1.71	-44.74	-13	31.74
1415.00	44.79	82	150	H	-69.41	0.82	7.96	-62.27	-13	49.27
1415.00	44.22	325	100	V	-69.98	0.82	7.96	-62.84	-13	49.84
16-QAM 1.4MHz Bandwidth Middle Channel										
459.98	52.73	69	100	H	-46.66	0.55	-1.71	-44.40	-13	31.40
459.98	52.41	150	200	V	-46.98	0.55	-1.71	-44.72	-13	31.72
1415.00	44.37	325	200	H	-69.83	0.82	7.96	-62.69	-13	49.69
1415.00	44.69	127	200	V	-69.51	0.82	7.96	-62.37	-13	49.37

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
459.73	52.28	284	100	H	-47.11	0.55	-1.71	-44.85	-13	31.85
459.73	52.38	142	200	V	-47.01	0.55	-1.71	-44.75	-13	31.75
1430.60	44.96	281	150	H	-69.27	0.82	8.00	-62.09	-13	49.09
1430.60	44.19	96	100	V	-70.04	0.82	8.00	-62.86	-13	49.86
16-QAM 1.4MHz Bandwidth High Channel										
459.93	52.93	70	100	H	-46.46	0.55	-1.71	-44.20	-13	31.20
459.93	52.08	292	200	V	-47.31	0.55	-1.71	-45.05	-13	32.05
1430.60	44.16	18	200	H	-70.07	0.82	8.00	-62.89	-13	49.89
1430.60	44.35	219	200	V	-69.88	0.82	8.00	-62.70	-13	49.70

LTE Band 17:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Low Channel										
459.71	52.74	352	100	H	-46.65	0.55	-1.71	-44.39	-13	31.39
459.71	52.72	273	200	V	-46.67	0.55	-1.71	-44.41	-13	31.41
1413.00	54.94	218	150	H	-60.03	0.83	8.06	-52.80	-13	39.80
1413.00	55.93	264	100	V	-59.04	0.83	8.06	-51.81	-13	38.81
16-QAM 5MHz Bandwidth Low Channel										
459.62	52.35	302	100	H	-47.04	0.55	-1.71	-44.78	-13	31.78
459.62	52.26	305	200	V	-47.13	0.55	-1.71	-44.87	-13	31.87
1413.00	55.68	206	200	H	-59.29	0.83	8.06	-52.06	-13	39.06
1413.00	56.42	113	200	V	-58.55	0.83	8.06	-51.32	-13	38.32

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Middle Channel										
459.72	52.25	118	100	H	-47.14	0.55	-1.71	-44.88	-13	31.88
459.72	52.22	320	200	V	-47.17	0.55	-1.71	-44.91	-13	31.91
1420.00	54.82	335	150	H	-60.10	0.83	8.07	-52.86	-13	39.86
1420.00	56.66	216	100	V	-58.26	0.83	8.07	-51.02	-13	38.02
16-QAM 5MHz Bandwidth Middle Channel										
459.65	52.24	162	100	H	-47.15	0.55	-1.71	-44.89	-13	31.89
459.65	52.16	197	200	V	-47.23	0.55	-1.71	-44.97	-13	31.97
1420.00	55.20	137	200	H	-59.72	0.83	8.07	-52.48	-13	39.48
1420.00	55.71	72	200	V	-59.21	0.83	8.07	-51.97	-13	38.97

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth High Channel										
459.83	52.71	117	100	H	-46.68	0.55	-1.71	-44.42	-13	31.42
459.83	52.72	70	200	V	-46.67	0.55	-1.71	-44.41	-13	31.41
1427.00	54.87	8	150	H	-60.01	0.83	8.08	-52.76	-13	39.76
1427.00	56.53	305	100	V	-58.35	0.83	8.08	-51.10	-13	38.10
16-QAM 5MHz Bandwidth High Channel										
459.80	52.48	339	100	H	-46.91	0.55	-1.71	-44.65	-13	31.65
459.80	52.97	117	200	V	-46.42	0.55	-1.71	-44.16	-13	31.16
1427.00	55.50	128	200	H	-59.38	0.83	8.08	-52.13	-13	39.13
1427.00	56.48	136	200	V	-58.40	0.83	8.08	-51.15	-13	38.15

30 MHz ~ 20 GHz:

LTE Band 25:

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
459.68	52.26	267	100	H	-47.13	0.55	-1.71	-44.87	-13	31.87
459.68	52.18	346	200	V	-47.21	0.55	-1.71	-44.95	-13	31.95
3611.40	35.61	249	150	H	-71.64	0.94	9.83	-62.75	-13	49.75
3611.40	35.92	1	100	V	-71.33	0.94	9.83	-62.44	-13	49.44
16-QAM 1.4MHz Bandwidth Low Channel										
459.76	52.26	141	100	H	-47.13	0.55	-1.71	-44.87	-13	31.87
459.76	52.57	143	200	V	-46.82	0.55	-1.71	-44.56	-13	31.56
3611.40	35.87	317	200	H	-71.38	0.94	9.83	-62.49	-13	49.49
3611.40	36.08	85	200	V	-71.17	0.94	9.83	-62.28	-13	49.28

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
459.86	52.43	162	100	H	-46.96	0.55	-1.71	-44.70	-13	31.70
459.86	52.09	22	200	V	-47.30	0.55	-1.71	-45.04	-13	32.04
3765.00	35.72	321	150	H	-71.04	0.95	9.74	-62.25	-13	49.25
3765.00	34.98	287	100	V	-71.78	0.95	9.74	-62.99	-13	49.99
16-QAM 1.4MHz Bandwidth Middle Channel										
459.60	52.18	243	100	H	-47.21	0.55	-1.71	-44.95	-13	31.95
459.60	52.95	44	200	V	-46.44	0.55	-1.71	-44.18	-13	31.18
3765.00	35.67	156	200	H	-71.09	0.95	9.74	-62.30	-13	49.30
3765.00	35.52	29	200	V	-71.24	0.95	9.74	-62.45	-13	49.45

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
459.89	52.39	108	100	H	-47.00	0.55	-1.71	-44.74	-13	31.74
459.89	52.84	355	200	V	-46.55	0.55	-1.71	-44.29	-13	31.29
3828.60	34.94	140	150	H	-71.62	0.96	9.70	-62.88	-13	49.88
3828.60	35.12	224	100	V	-71.44	0.96	9.70	-62.70	-13	49.70
16-QAM 1.4MHz Bandwidth High Channel										
459.95	52.75	349	100	H	-46.64	0.55	-1.71	-44.38	-13	31.38
459.95	52.53	163	200	V	-46.86	0.55	-1.71	-44.60	-13	31.60
3828.60	35.26	183	200	H	-71.30	0.96	9.70	-62.56	-13	49.56
3828.60	35.68	351	200	V	-70.88	0.96	9.70	-62.14	-13	49.14

30 MHz ~ 10 GHz:

LTE Band 26:

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
459.64	52.63	137	100	H	-46.76	0.55	-1.71	-44.50	-13	31.50
459.64	52.52	137	200	V	-46.87	0.55	-1.71	-44.61	-13	31.61
1629.40	48.49	193	100	H	-64.98	0.84	8.41	-57.41	-13	44.41
1629.40	48.79	234	150	V	-64.68	0.84	8.41	-57.11	-13	44.11
16-QAM 1.4MHz Bandwidth Low Channel										
459.64	58.43	352	100	H	-42.76	0.62	-1.50	-40.64	-13	27.64
459.64	58.72	197	150	V	-42.47	0.62	-1.50	-40.35	-13	27.35
1629.40	48.73	156	150	H	-64.74	0.84	8.41	-57.17	-13	44.17
1629.40	48.26	227	200	V	-65.21	0.84	8.41	-57.64	-13	44.64

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
459.78	52.84	7	100	H	-46.55	0.55	-1.71	-44.29	-13	31.29
459.78	52.60	135	200	V	-46.79	0.55	-1.71	-44.53	-13	31.53
1663.00	48.02	116	100	H	-65.22	0.84	8.46	-57.60	-13	44.60
1663.00	48.29	333	150	V	-64.95	0.84	8.46	-57.33	-13	44.33
16-QAM 1.4MHz Bandwidth Middle Channel										
459.63	52.22	36	100	H	-47.17	0.55	-1.71	-44.91	-13	31.91
459.63	52.08	119	200	V	-47.31	0.55	-1.71	-45.05	-13	32.05
1663.00	48.61	262	150	H	-64.63	0.84	8.46	-57.01	-13	44.01
1663.00	47.94	232	200	V	-65.30	0.84	8.46	-57.68	-13	44.68

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
459.75	52.80	305	100	H	-46.59	0.55	-1.71	-44.33	-13	31.33
459.75	52.33	344	200	V	-47.06	0.55	-1.71	-44.80	-13	31.80
1696.60	47.89	317	100	H	-65.12	0.84	8.51	-57.45	-13	44.45
1696.60	48.21	224	150	V	-64.80	0.84	8.51	-57.13	-13	44.13
16-QAM 1.4MHz Bandwidth High Channel										
459.86	52.65	111	100	H	-46.74	0.55	-1.71	-44.48	-13	31.48
459.86	52.94	5	200	V	-46.45	0.55	-1.71	-44.19	-13	31.19
1696.60	48.04	6	150	H	-64.97	0.84	8.51	-57.30	-13	44.30
1696.60	48.02	140	200	V	-64.99	0.84	8.51	-57.32	-13	44.32

30 MHz ~ 26.5 GHz:

LTE Band 38:

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Low Channel										
459.78	51.74	133	100	H	-47.58	0.55	-1.71	-45.32	-25	20.32
459.78	52.47	321	200	V	-46.85	0.55	-1.71	-44.59	-25	19.59
5145.00	40.60	34	100	H	-64.61	1.10	10.30	-55.41	-25	30.41
5145.00	39.53	148	150	V	-65.68	1.10	10.30	-56.48	-25	31.48
16-QAM 5MHz Bandwidth Low Channel										
459.84	52.54	16	100	H	-46.78	0.55	-1.71	-44.52	-25	19.52
459.84	51.70	43	150	V	-47.62	0.55	-1.71	-45.36	-25	20.36
5145.00	40.85	187	100	H	-64.36	1.10	10.30	-55.16	-25	30.16
5145.00	39.21	205	200	V	-66.00	1.10	10.30	-56.80	-25	31.80

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Middle Channel										
459.77	52.68	284	100	H	-46.64	0.55	-1.71	-44.38	-25	19.38
459.77	52.35	179	200	V	-46.97	0.55	-1.71	-44.71	-25	19.71
5190.00	30.24	235	100	H	-64.65	1.10	10.30	-55.45	-25	30.45
5190.00	29.15	286	150	V	-65.74	1.10	10.30	-56.54	-25	31.54
16-QAM 5MHz Bandwidth Middle Channel										
459.69	52.14	108	100	H	-47.18	0.55	-1.71	-44.92	-25	19.92
459.69	51.87	39	150	V	-47.45	0.55	-1.71	-45.19	-25	20.19
5190.00	30.22	305	100	H	-64.67	1.10	10.30	-55.47	-25	30.47
5190.00	29.24	193	200	V	-65.65	1.10	10.30	-56.45	-25	31.45

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth High Channel										
459.94	51.54	196	100	H	-47.78	0.55	-1.71	-45.52	-25	20.52
459.94	52.40	178	200	V	-46.92	0.55	-1.71	-44.66	-25	19.66
5235.00	39.54	306	100	H	-65.17	1.11	10.30	-55.98	-25	30.98
5235.00	39.38	186	150	V	-65.33	1.11	10.30	-56.14	-25	31.14
16-QAM 5MHz Bandwidth High Channel										
459.74	51.47	180	100	H	-47.85	0.55	-1.71	-45.59	-25	20.59
459.74	52.43	248	150	V	-46.89	0.55	-1.71	-44.63	-25	19.63
5235.00	40.12	51	100	H	-64.59	1.11	10.30	-55.40	-25	30.40
5235.00	38.65	20	200	V	-66.06	1.11	10.30	-56.87	-25	31.87

LTE Band 41:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Low Channel										
459.85	52.16	45	150	H	-47.19	0.55	-1.71	-44.93	-25	19.93
459.85	52.98	73	200	V	-46.37	0.55	-1.71	-44.11	-25	19.11
5115.00	40.72	326	100	H	-64.66	1.09	10.30	-55.45	-25	30.45
5115.00	39.69	168	100	V	-65.69	1.09	10.30	-56.48	-25	31.48
16-QAM 5MHz Bandwidth Low Channel										
459.64	51.48	114	200	H	-47.87	0.55	-1.71	-45.61	-25	20.61
459.64	52.78	92	150	V	-46.57	0.55	-1.71	-44.31	-25	19.31
5115.00	40.70	217	150	H	-64.68	1.09	10.30	-55.47	-25	30.47
5115.00	40.12	344	100	V	-65.26	1.09	10.30	-56.05	-25	31.05

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Middle Channel										
459.67	51.48	85	150	H	-47.87	0.55	-1.71	-45.61	-25	20.61
459.67	52.23	252	200	V	-47.12	0.55	-1.71	-44.86	-25	19.86
5210.00	29.83	305	100	H	-65.00	1.11	10.30	-55.81	-25	30.81
5210.00	28.95	333	100	V	-65.88	1.11	10.30	-56.69	-25	31.69
16-QAM 5MHz Bandwidth Middle Channel										
459.63	51.26	255	200	H	-48.09	0.55	-1.71	-45.83	-25	20.83
459.63	52.18	271	150	V	-47.17	0.55	-1.71	-44.91	-25	19.91
5210.00	30.23	19	150	H	-64.60	1.11	10.30	-55.41	-25	30.41
5210.00	29.38	30	100	V	-65.45	1.11	10.30	-56.26	-25	31.26

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth High Channel										
459.84	52.45	322	150	H	-46.90	0.55	-1.71	-44.64	-25	19.64
459.84	51.89	121	200	V	-47.46	0.55	-1.71	-45.20	-25	20.20
5305.00	39.60	74	100	H	-64.72	1.12	10.30	-55.54	-25	30.54
5305.00	39.10	197	100	V	-65.22	1.12	10.30	-56.04	-25	31.04
16-QAM 5MHz Bandwidth High Channel										
459.64	52.36	200	200	H	-46.99	0.55	-1.71	-44.73	-25	19.73
459.64	51.48	230	150	V	-47.87	0.55	-1.71	-45.61	-25	20.61
5305.00	39.73	299	150	H	-64.59	1.12	10.30	-55.41	-25	30.41
5305.00	39.07	271	100	V	-65.25	1.12	10.30	-56.07	-25	31.07

30 MHz ~ 20 GHz:

LTE Band 66:

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
459.79	52.51	260	100	H	-46.88	0.55	-1.71	-44.62	-13	31.62
459.79	52.56	305	200	V	-46.83	0.55	-1.71	-44.57	-13	31.57
3421.40	36.52	154	150	H	-71.42	0.93	9.82	-62.53	-13	49.53
3421.40	36.94	165	100	V	-71.00	0.93	9.82	-62.11	-13	49.11
16-QAM 1.4MHz Bandwidth Low Channel										
459.73	52.83	202	100	H	-46.56	0.55	-1.71	-44.30	-13	31.30
459.73	52.48	353	200	V	-46.91	0.55	-1.71	-44.65	-13	31.65
3421.40	36.95	74	200	H	-70.99	0.93	9.82	-62.10	-13	49.10
3421.40	36.62	293	200	V	-71.32	0.93	9.82	-62.43	-13	49.43

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
459.88	52.33	147	100	H	-47.06	0.55	-1.71	-44.80	-13	31.80
459.88	52.27	18	200	V	-47.12	0.55	-1.71	-44.86	-13	31.86
3490.00	36.59	138	150	H	-71.05	0.93	9.89	-62.09	-13	49.09
3490.00	36.06	220	100	V	-71.58	0.93	9.89	-62.62	-13	49.62
16-QAM 1.4MHz Bandwidth Middle Channel										
459.80	52.05	121	100	H	-47.34	0.55	-1.71	-45.08	-13	32.08
459.80	52.97	214	200	V	-46.42	0.55	-1.71	-44.16	-13	31.16
3490.00	35.90	263	200	H	-71.74	0.93	9.89	-62.78	-13	49.78
3490.00	35.77	29	200	V	-71.87	0.93	9.89	-62.91	-13	49.91

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
459.92	52.44	225	100	H	-46.95	0.55	-1.71	-44.69	-13	31.69
459.92	52.39	186	200	V	-47.00	0.55	-1.71	-44.74	-13	31.74
3558.60	35.62	61	150	H	-71.73	0.93	9.96	-62.70	-13	49.70
3558.60	35.37	20	100	V	-71.98	0.93	9.96	-62.95	-13	49.95
16-QAM 1.4MHz Bandwidth High Channel										
459.96	52.98	208	100	H	-46.41	0.55	-1.71	-44.15	-13	31.15
459.96	52.21	162	200	V	-47.18	0.55	-1.71	-44.92	-13	31.92
3558.60	35.89	91	200	H	-71.46	0.93	9.96	-62.43	-13	49.43
3558.60	35.45	66	200	V	-71.90	0.93	9.96	-62.87	-13	49.87

Note:
1) Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)
2) Margin (dB) = Limit (dBm) - Absolute Level (dBm)

FCC § 22.917 (a); § 24.238 (a); §27.53 (h) (m); § 90.691 - BAND EDGES

Applicable Standards

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.

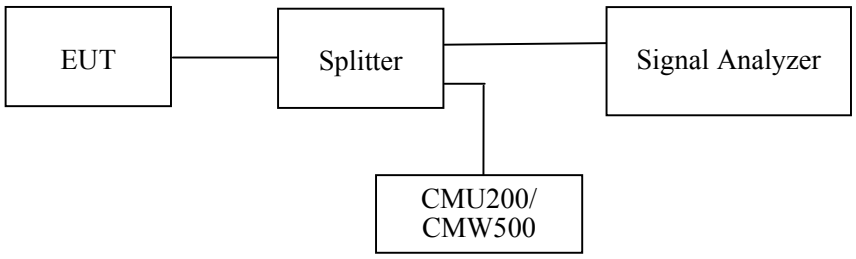
According to FCC §27.53 (h) (m), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC §2.1051 and §90.691(a).The power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth.

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:	24.9~25.3 ℃
Relative Humidity:	49~50 %
ATM Pressure:	100.7~102.9 kPa

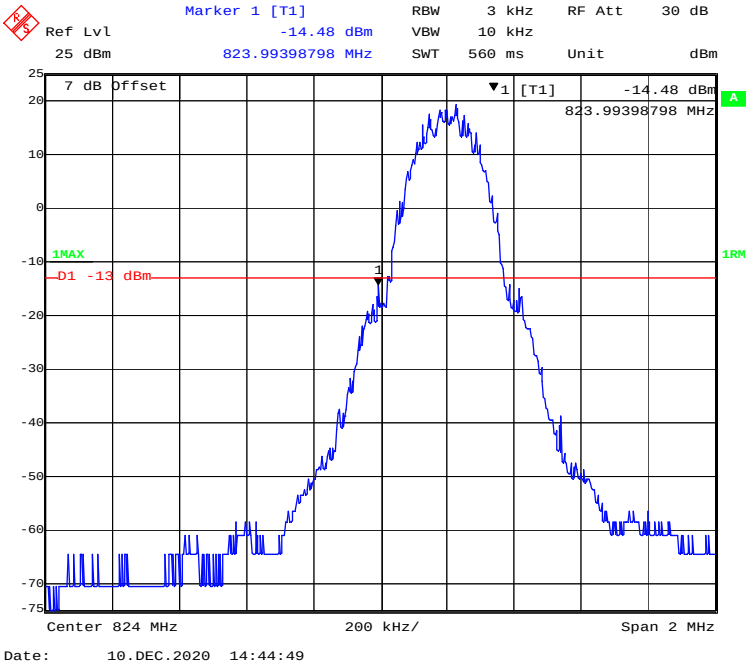
The testing was performed by Chao Gao from 2020-11-09 to 2020-12-10.

EUT operation mode: Transmitting

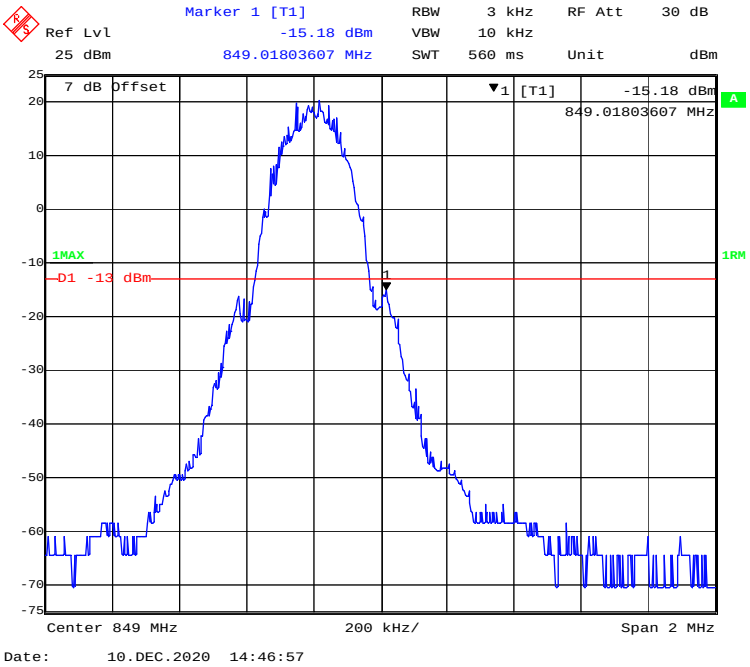
Test Result: Compliant.

GSM 850 Band:

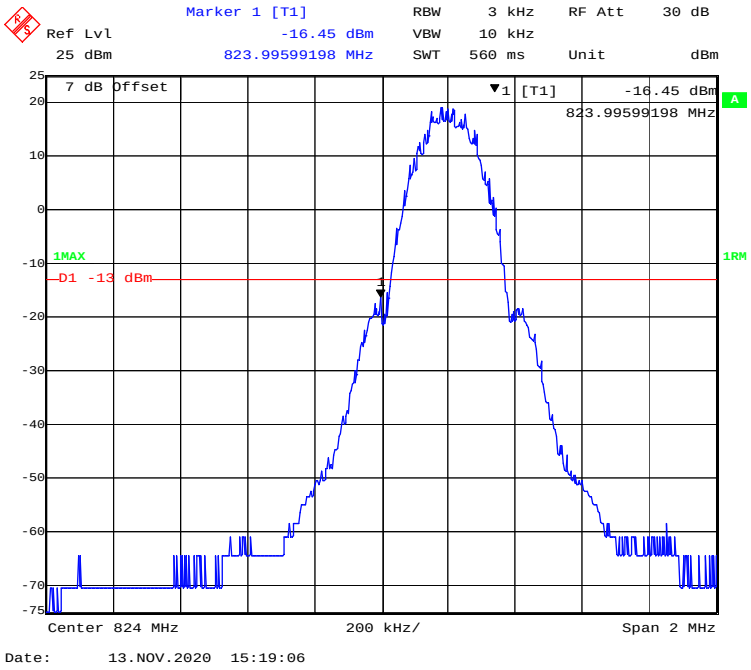
GSM Mode, Left Band Edge



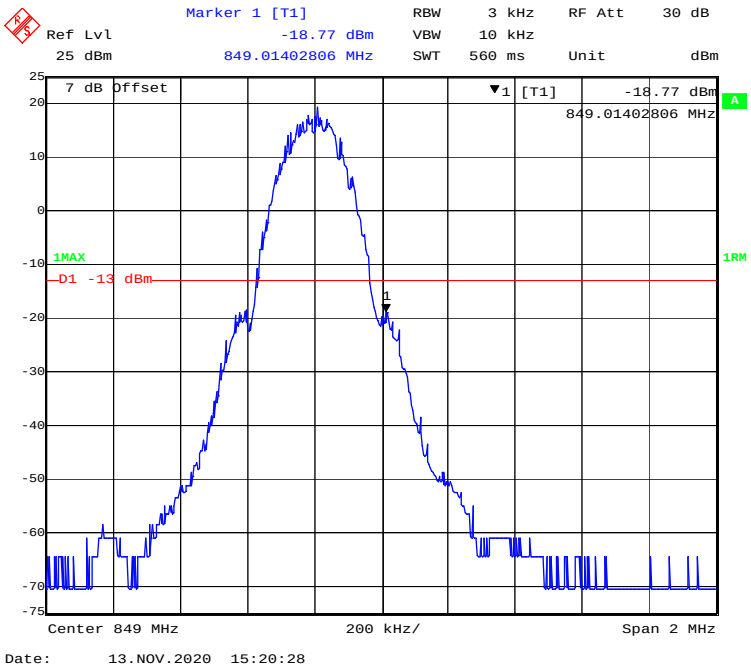
GSM Mode, Right Band Edge



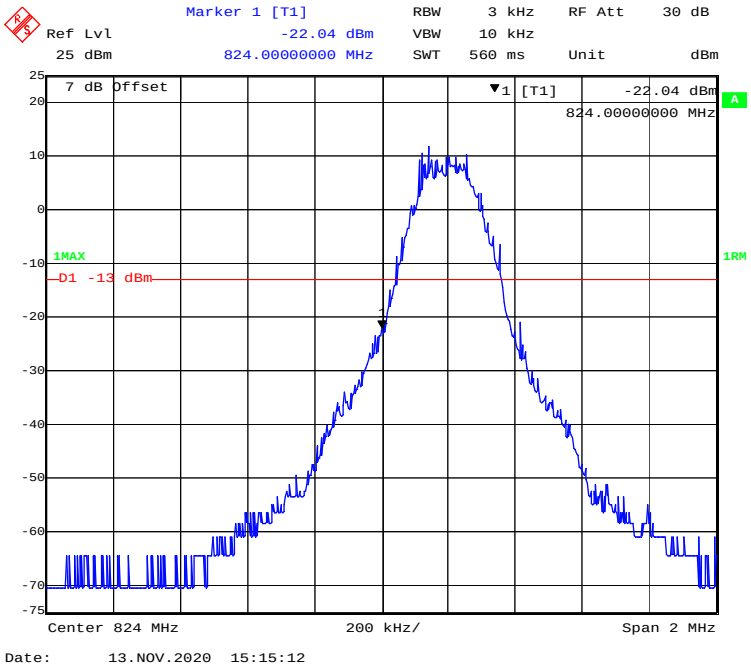
GPRS Mode, Left Band Edge



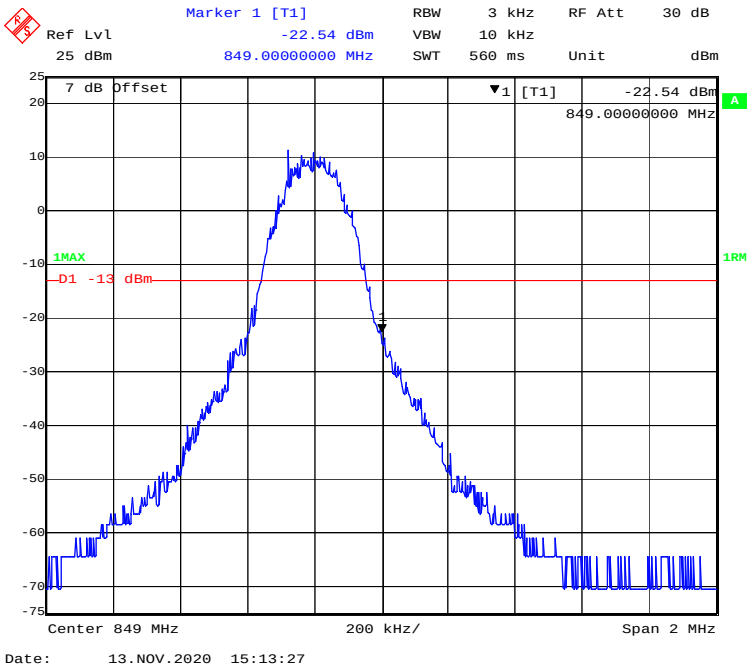
GPRS Mode, Right Band Edge



EGPRS Mode, Left Band Edge

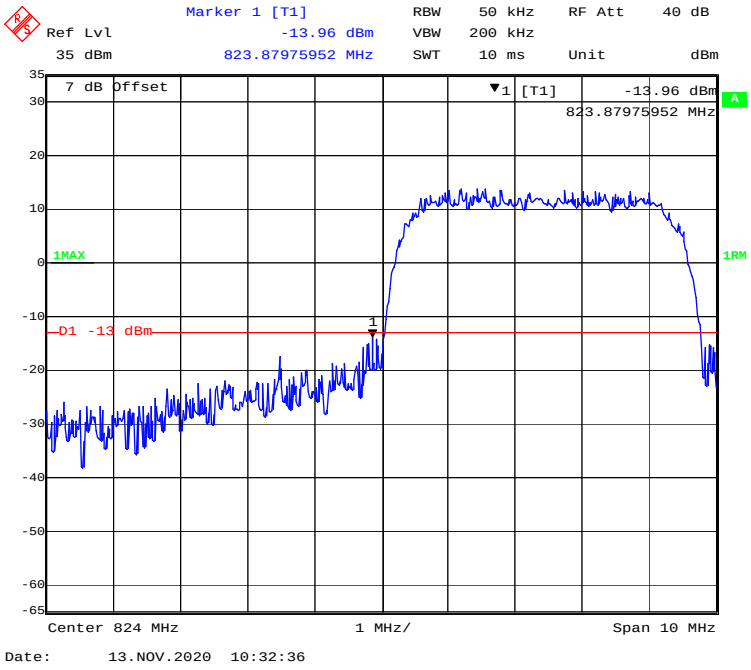


EGPRS Mode, Right Band Edge

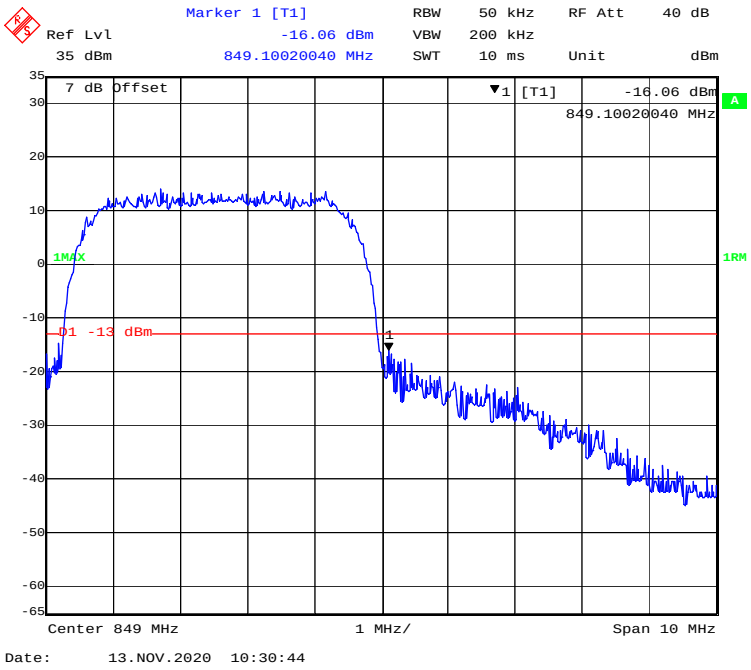


WCDMA Band V

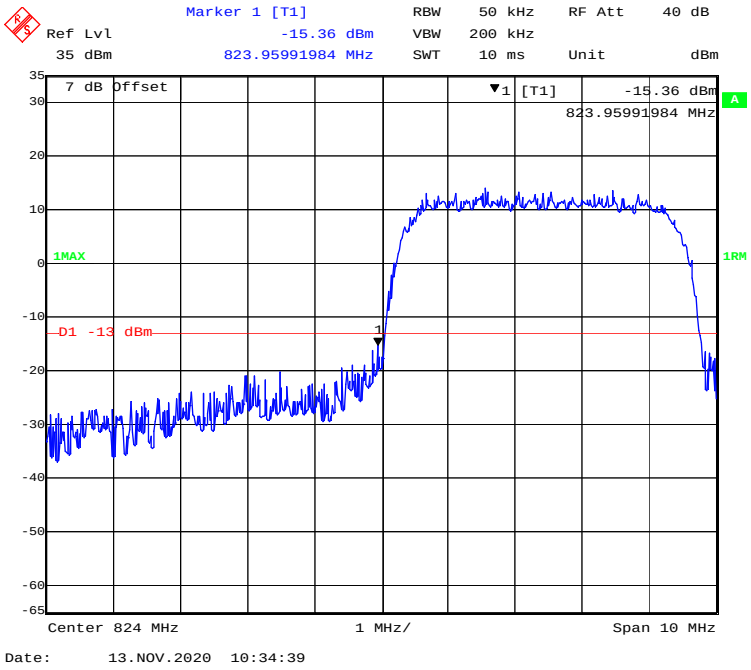
WCDMA (Rel 99) Mode, Left Band Edge



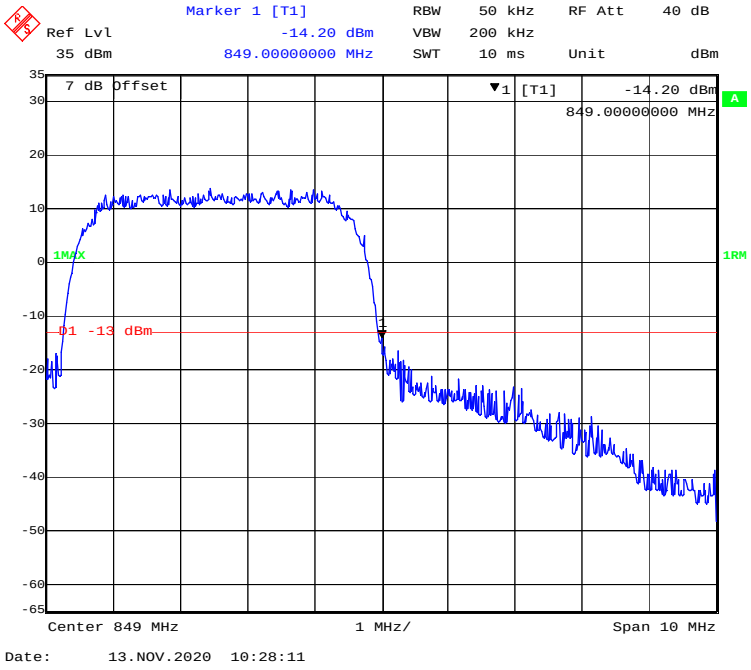
WCDMA (Rel 99) Mode, Right Band Edge



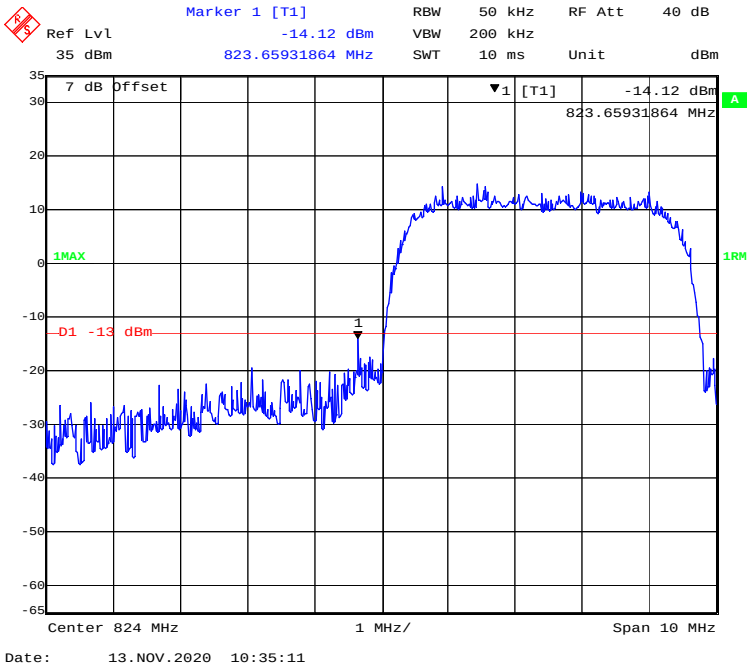
WCDMA (HSDPA) Mode, Left Band Edge



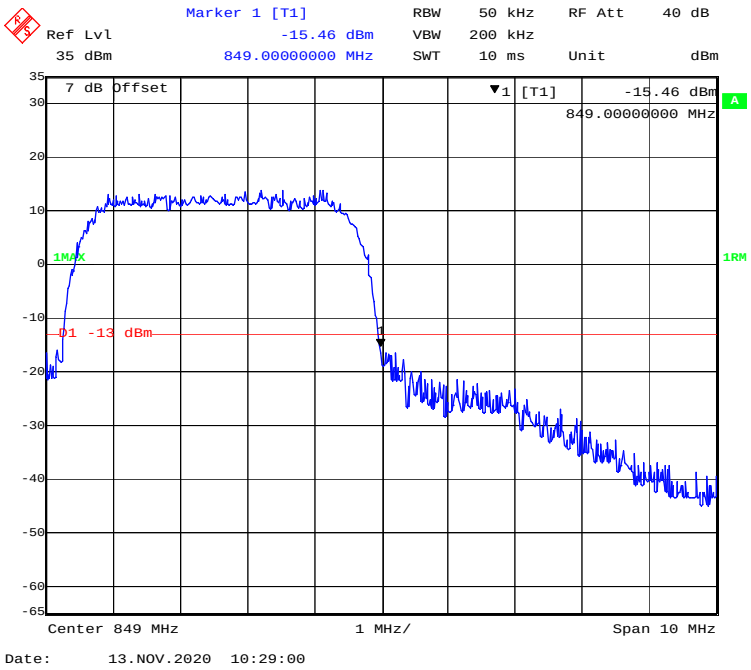
WCDMA (HSDPA) Mode, Right Band Edge



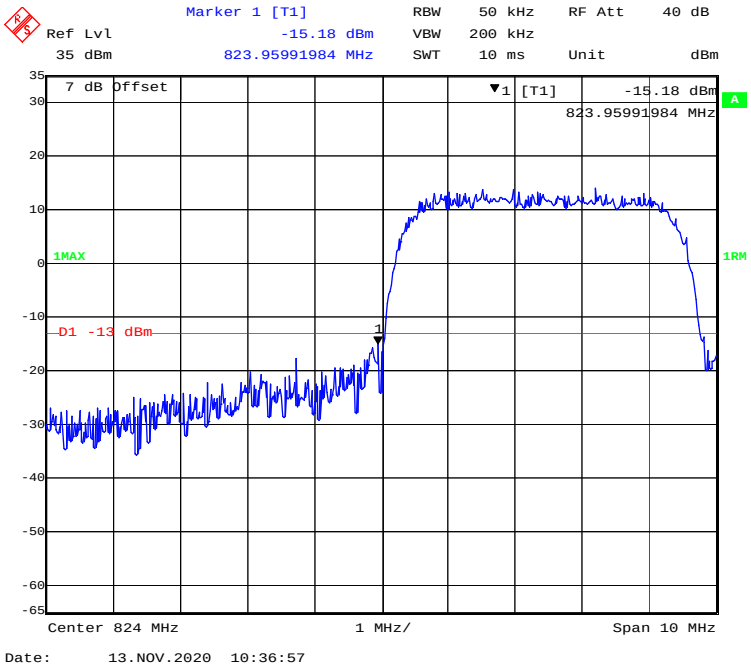
WCDMA (HSUPA) Mode, Left Band Edge



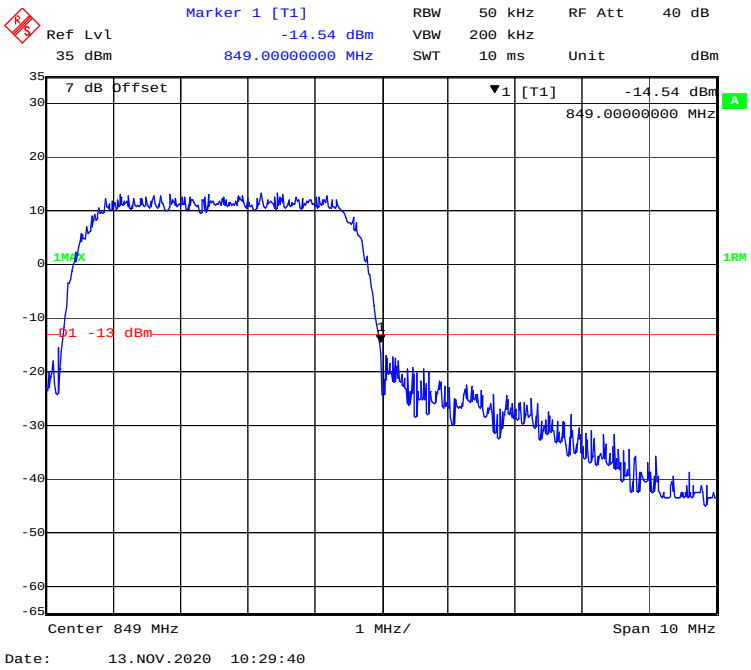
WCDMA (HSUPA) Mode, Right Band Edge



WCDMA (HSPA+) Mode, Left Band Edge

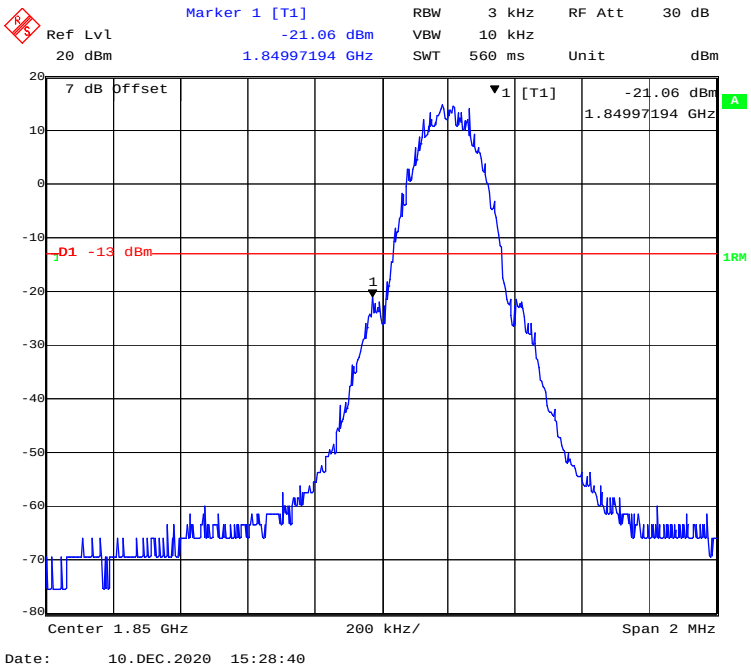


WCDMA (HSPA+) Mode, Right Band Edge

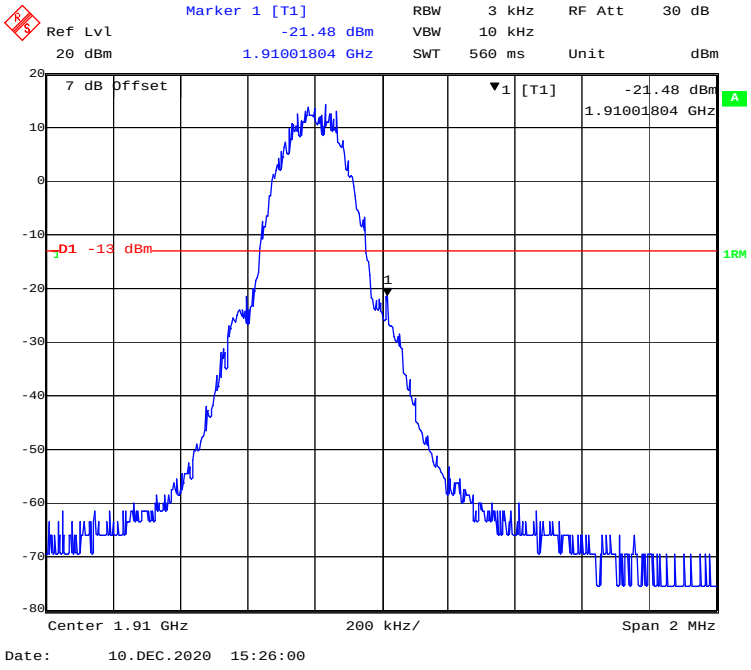


PCS 1900 Band:

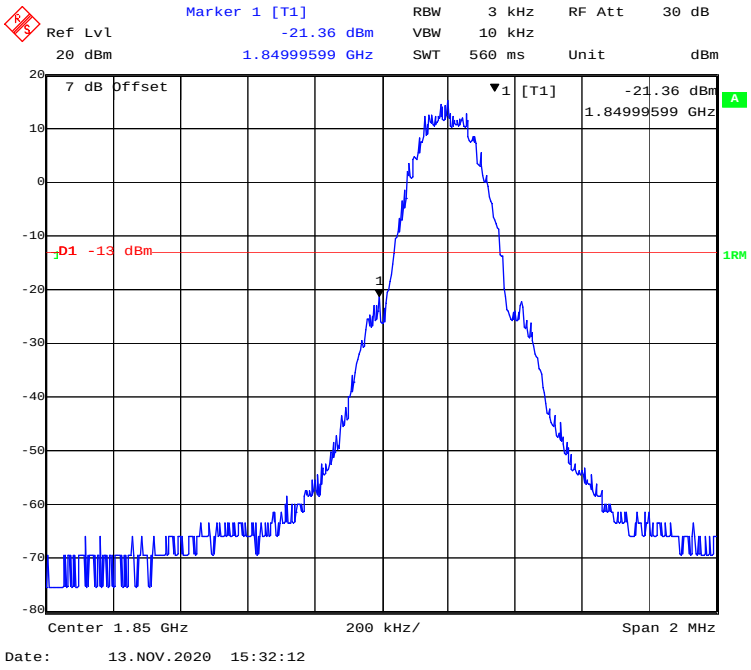
GSM Mode, Left Band Edge



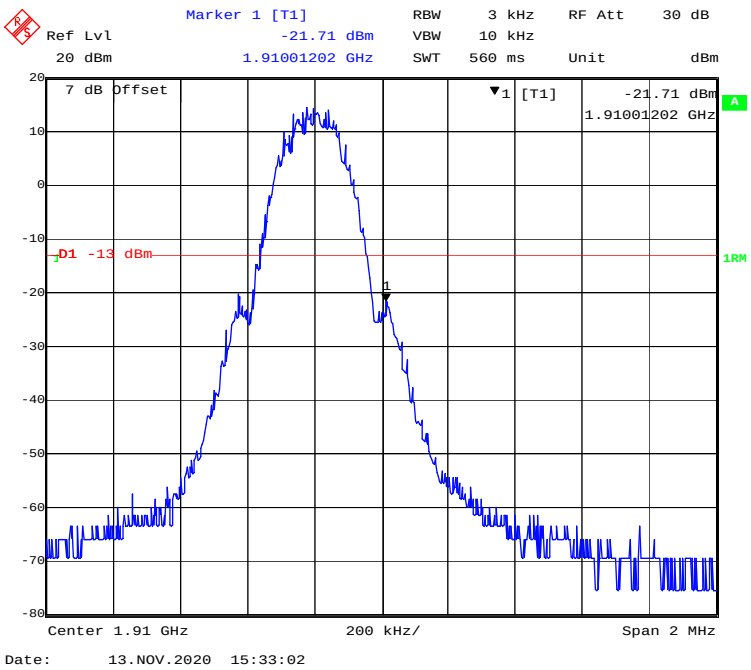
GSM Mode, Right Band Edge



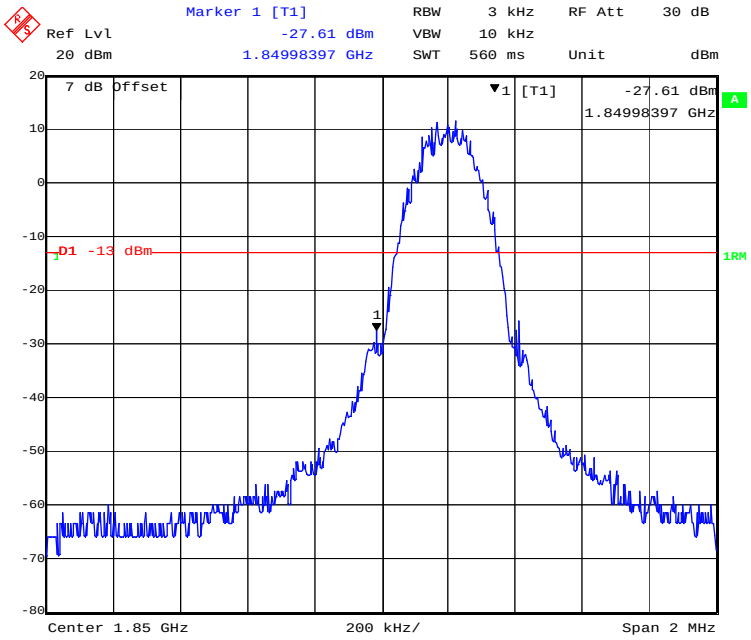
GPRS Mode, Left Band Edge



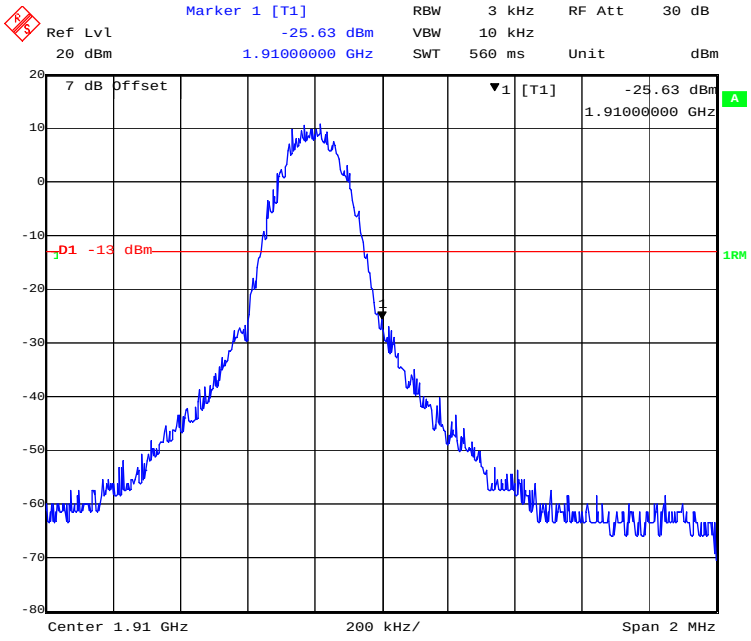
GPRS Mode, Right Band Edge



EGPRS Mode, Left Band Edge

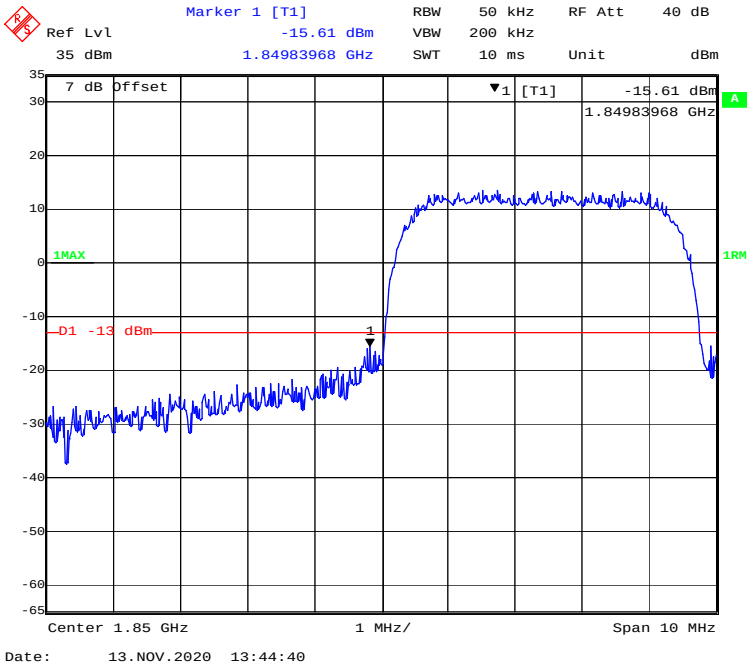


EGPRS Mode, Right Band Edge

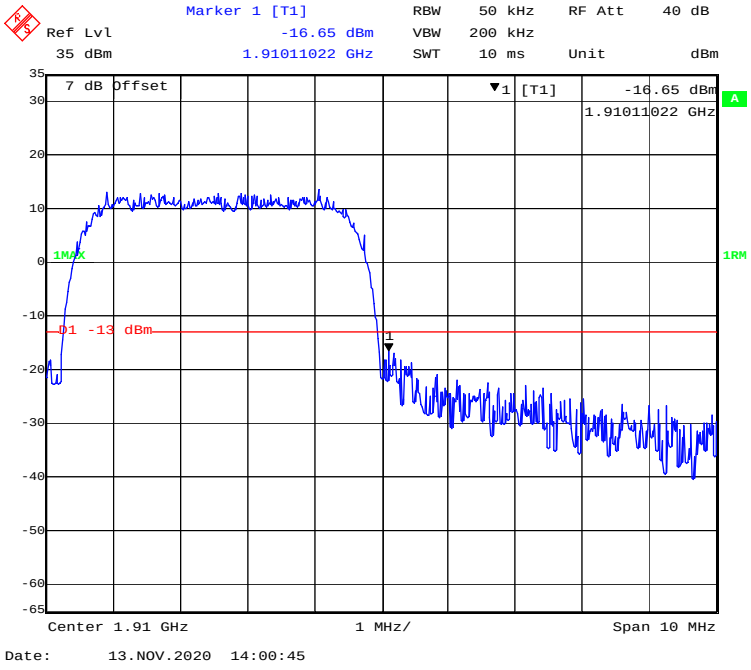


WCDMA Band II

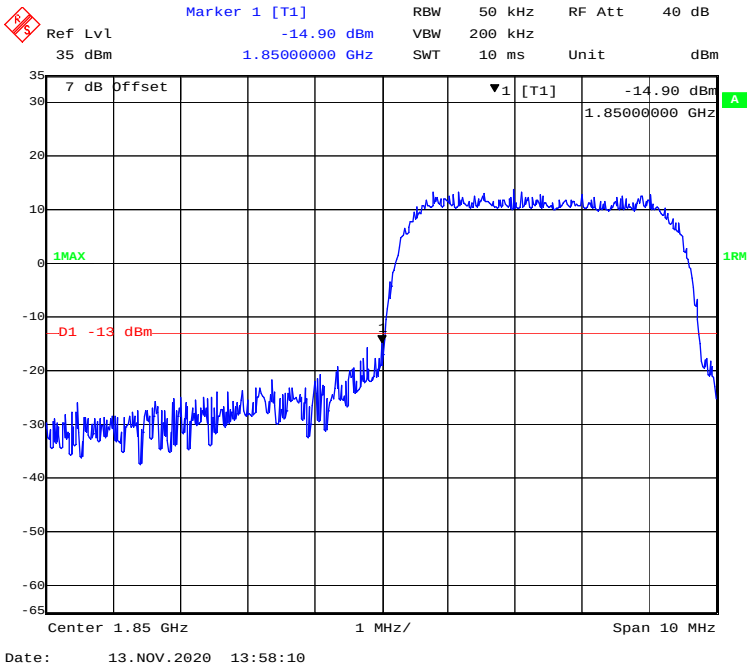
WCDMA (Rel 99) Mode, Left Band Edge



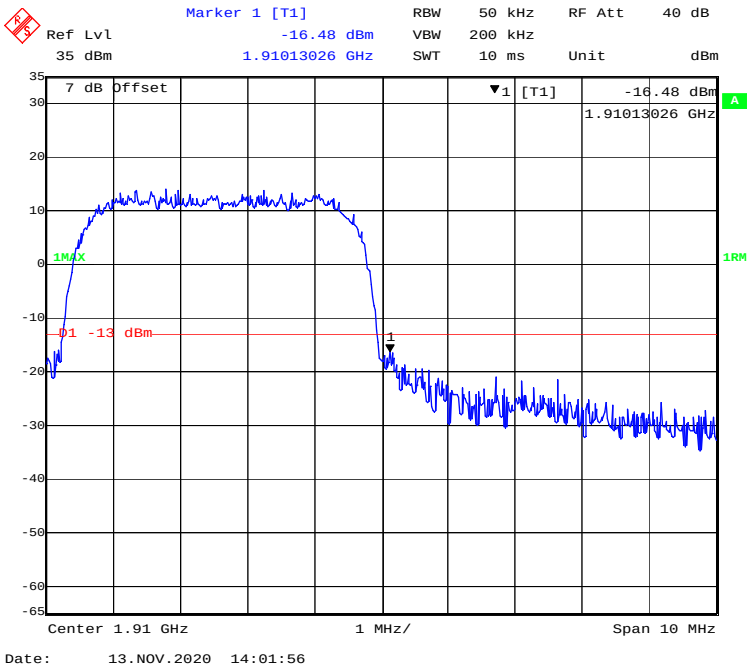
WCDMA (Rel 99) Mode, Right Band Edge



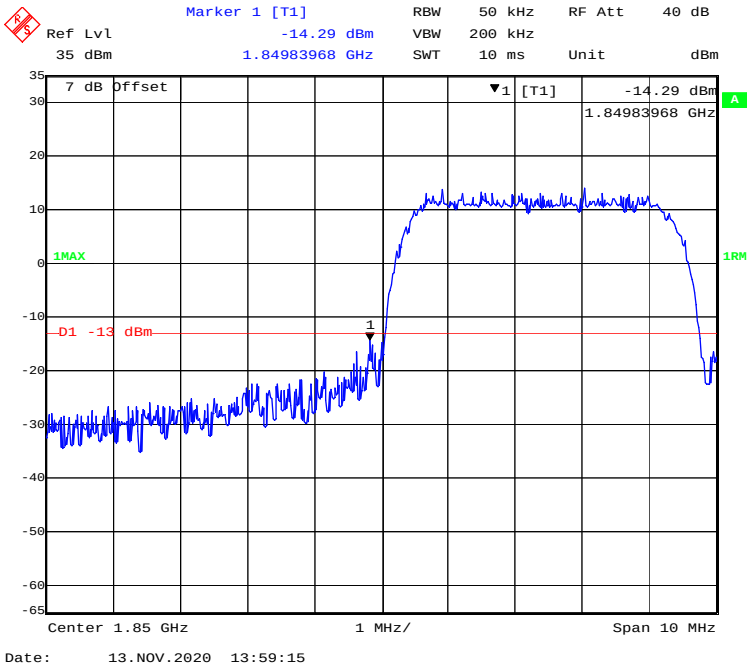
WCDMA (HSDPA) Mode, Left Band Edge



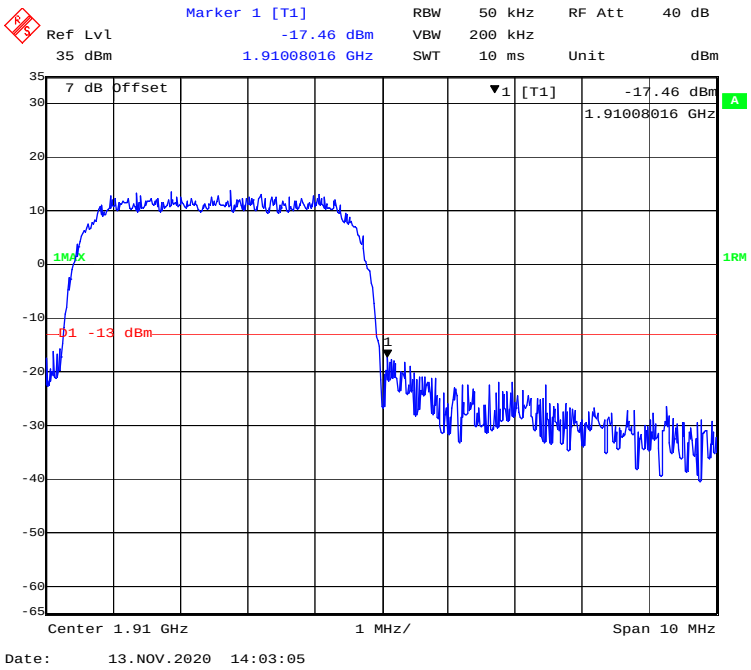
WCDMA (HSDPA) Mode, Right Band Edge



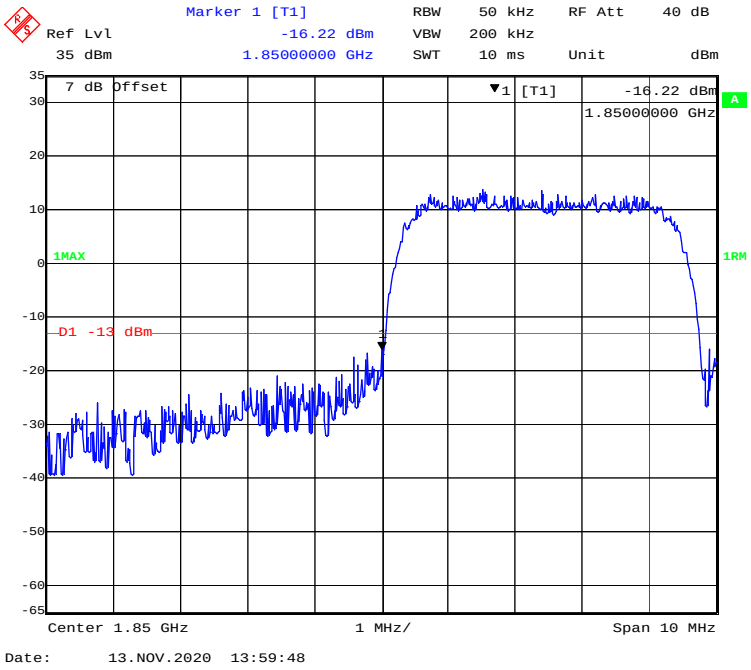
WCDMA (HSUPA) Mode, Left Band Edge



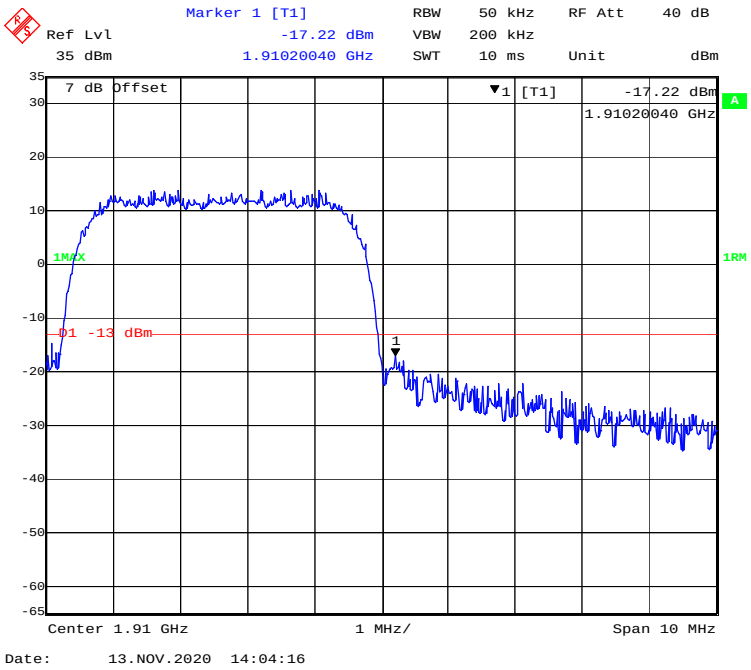
WCDMA (HSUPA) Mode, Right Band Edge



WCDMA (HSPA+) Mode, Left Band Edge

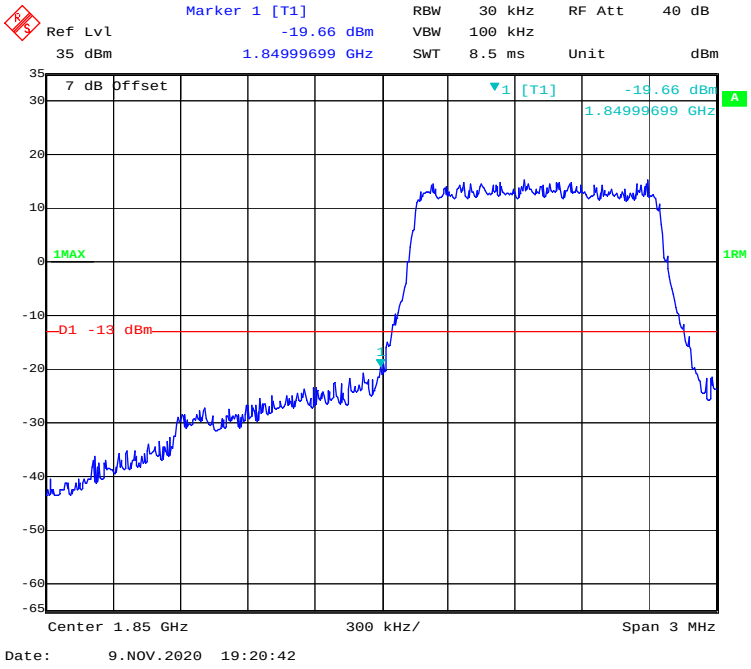


WCDMA (HSPA+) Mode, Right Band Edge

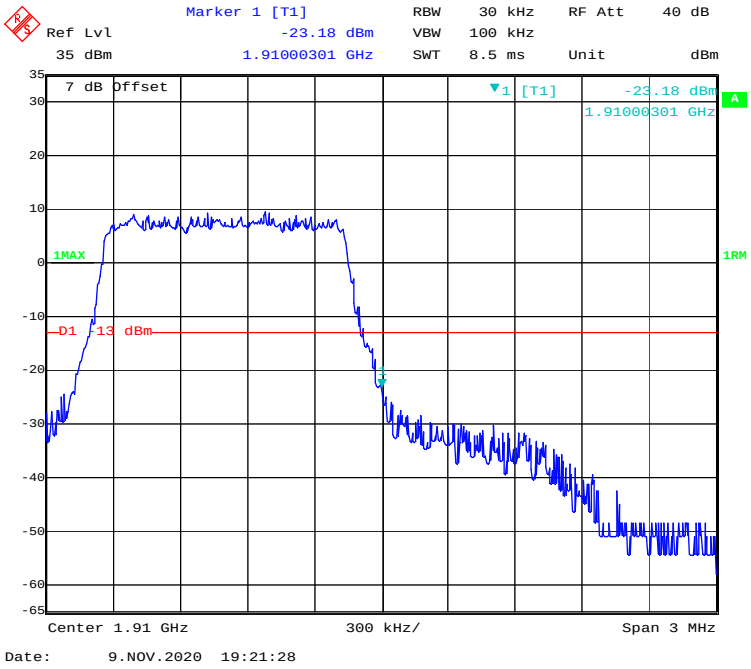


LTE Band 2:

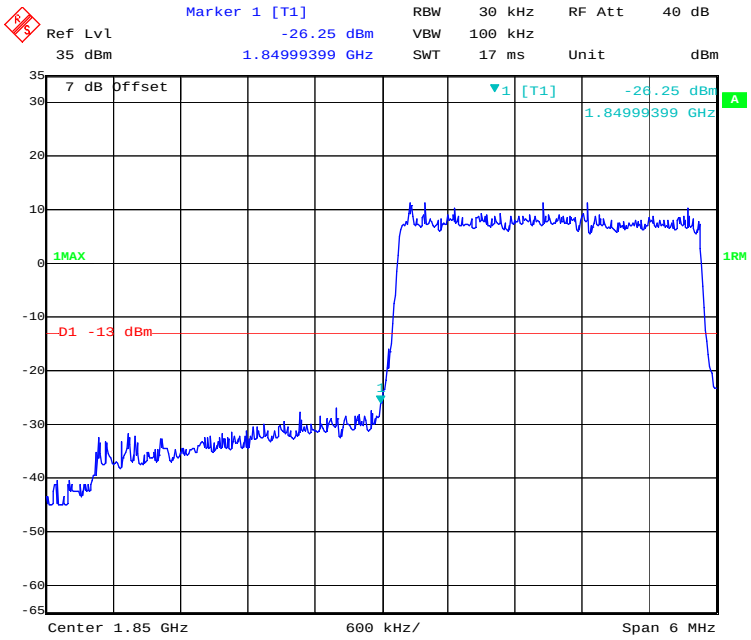
QPSK (1.4 MHz, FULL RB) - Left Band Edge



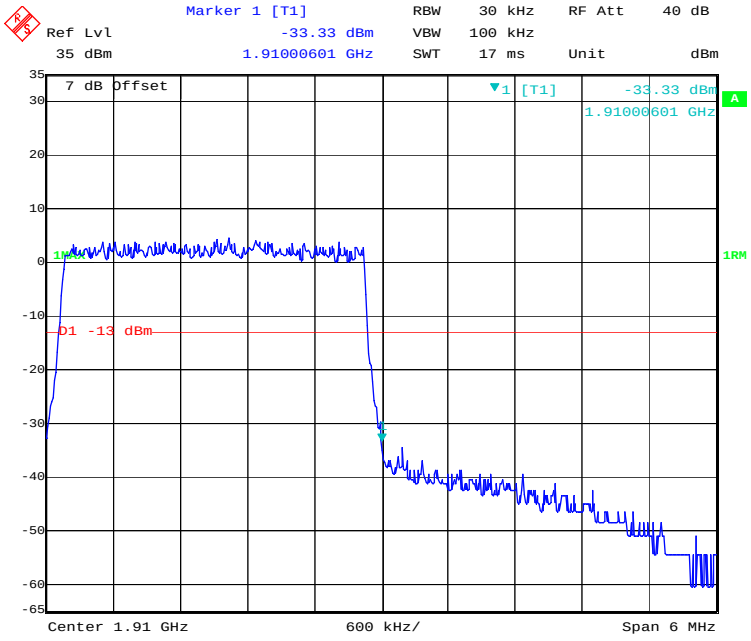
QPSK (1.4 MHz, FULL RB) - Right Band Edge



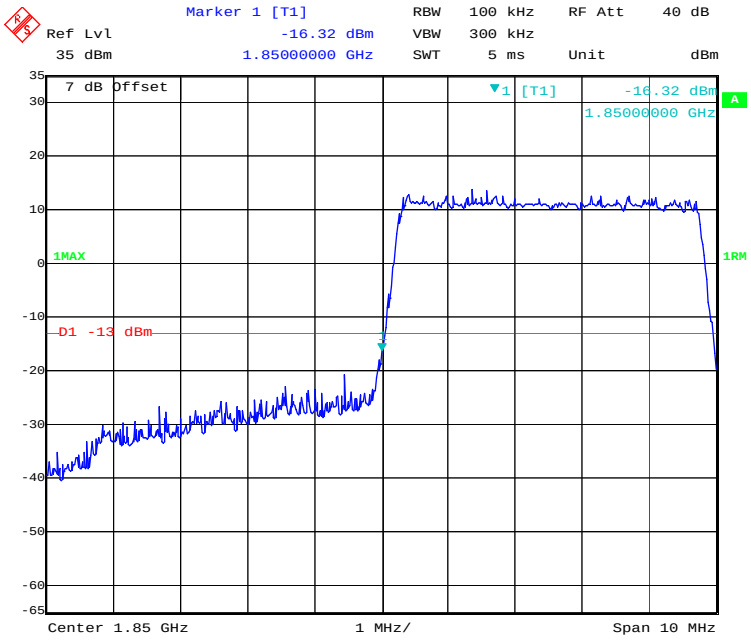
QPSK (3 MHz, FULL RB) - Left Band Edge



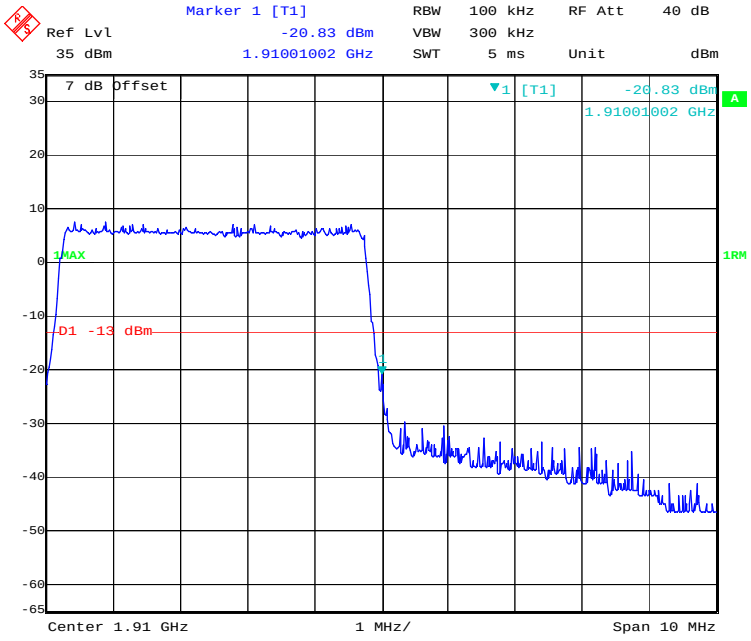
QPSK (3 MHz, FULL RB) - Right Band Edge



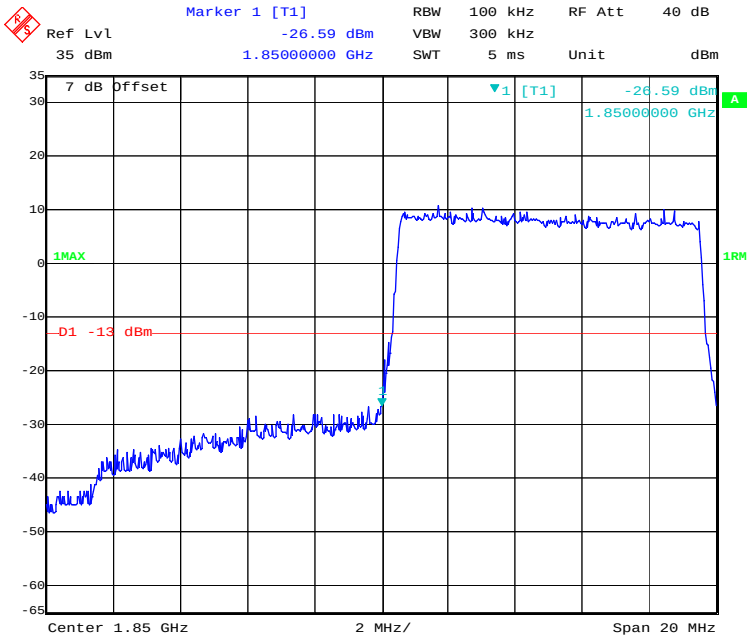
QPSK (5 MHz, FULL RB) - Left Band Edge



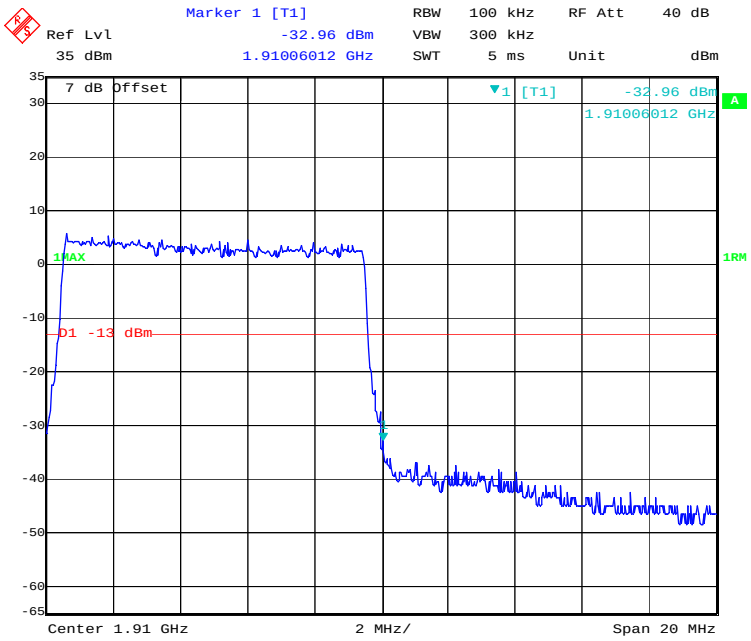
QPSK (5 MHz, FULL RB) - Right Band Edge



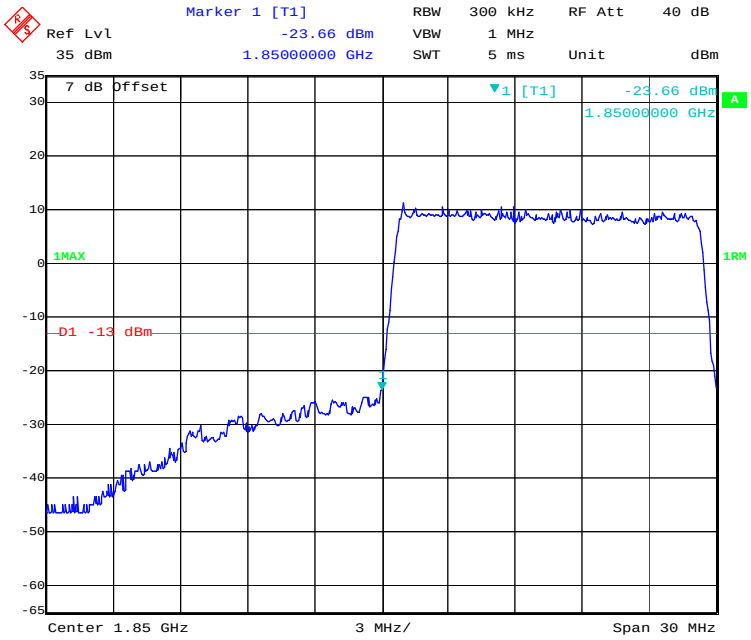
QPSK (10 MHz, FULL RB) - Left Band Edge



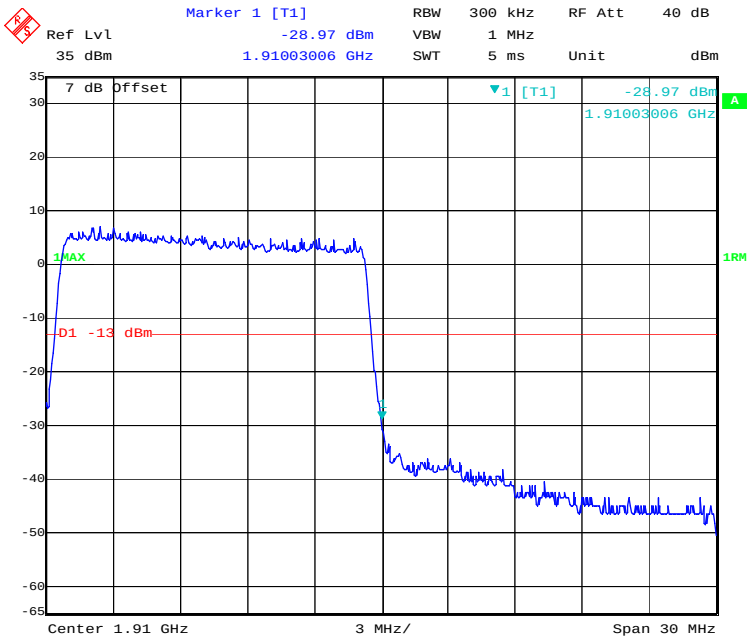
QPSK (10 MHz, FULL RB) - Right Band Edge



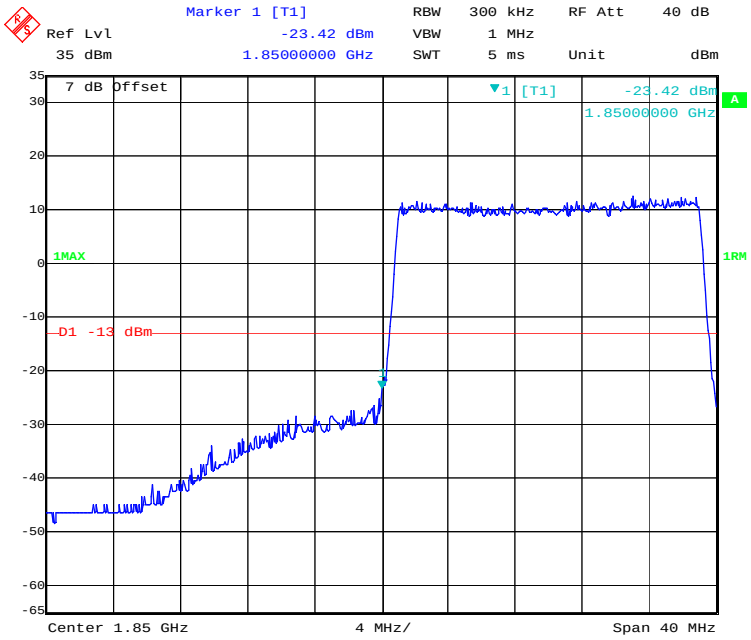
QPSK (15 MHz, FULL RB) - Left Band Edge



QPSK (15 MHz, FULL RB) - Right Band Edge

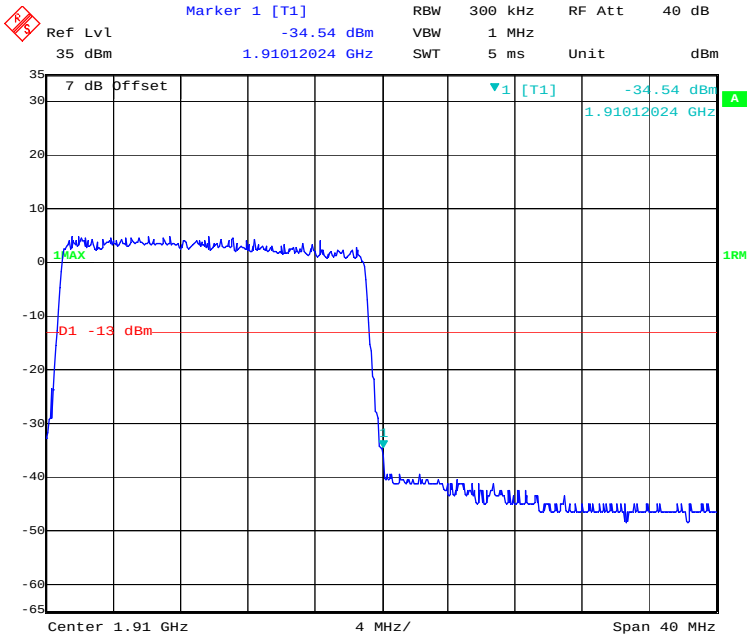


QPSK (20 MHz, FULL RB) - Left Band Edge



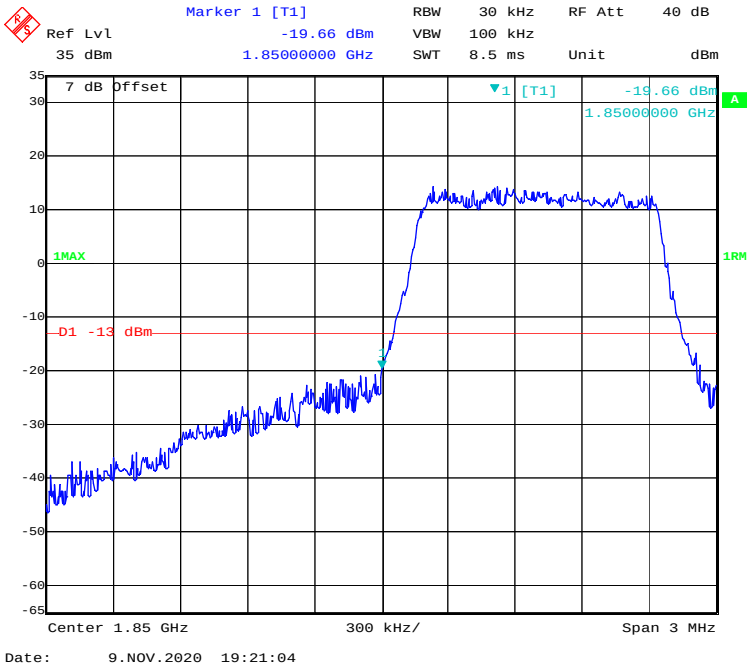
Date: 12.NOV.2020 16:12:53

QPSK (20 MHz, FULL RB) - Right Band Edge

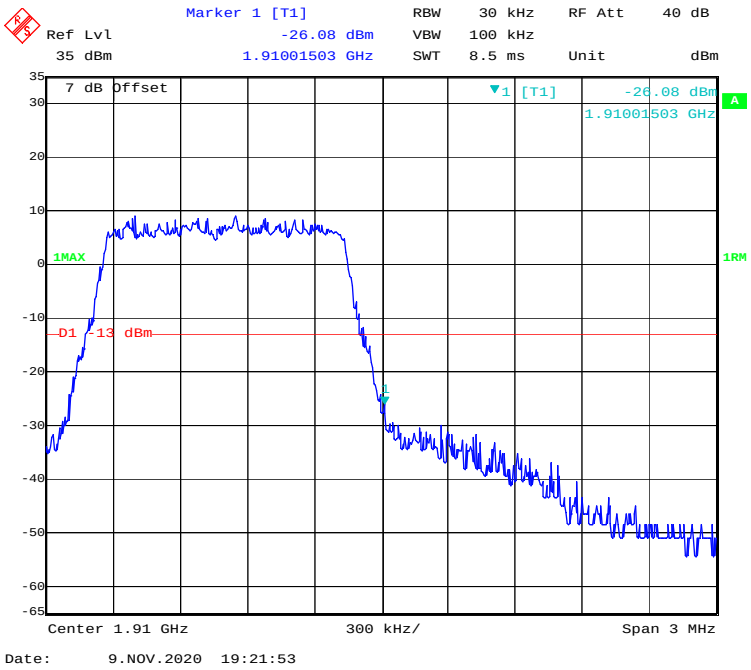


Date: 9.NOV.2020 19:29:08

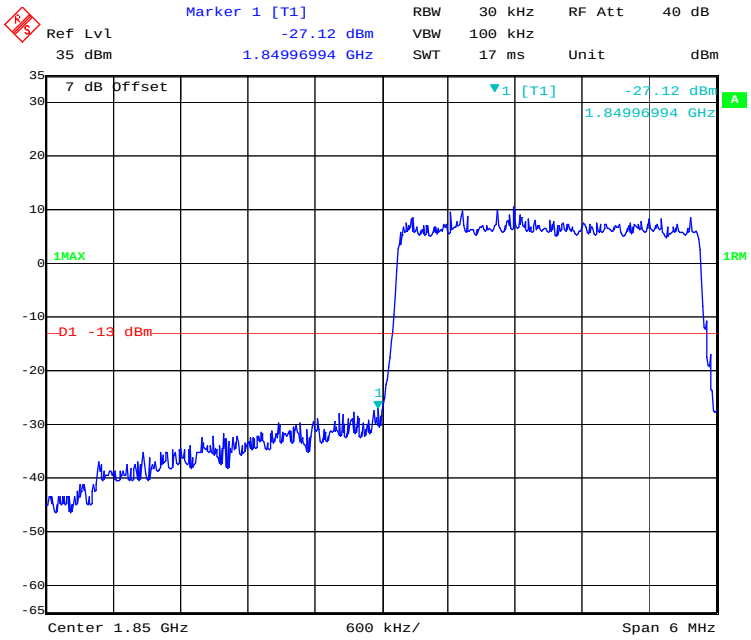
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



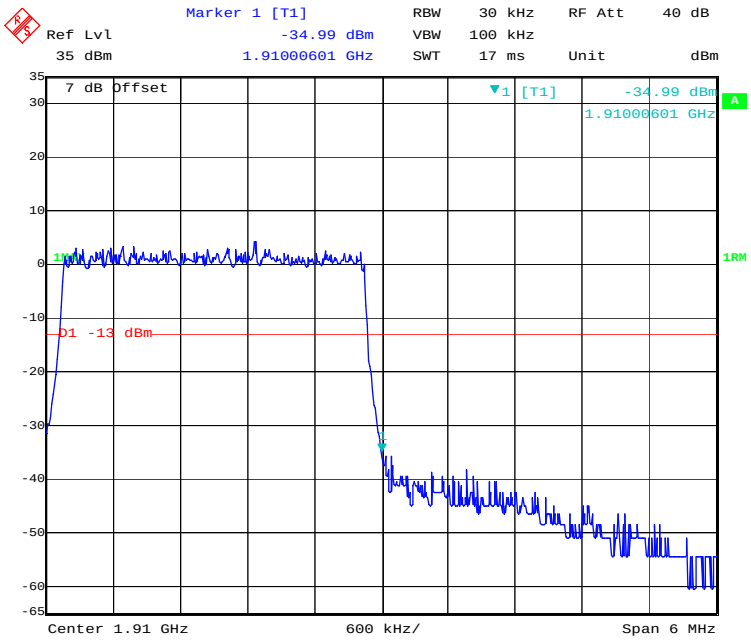
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



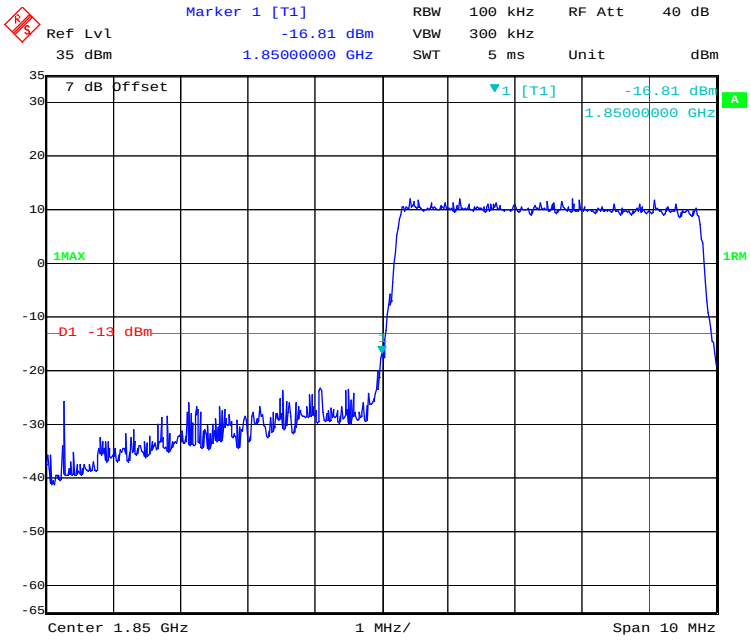
16-QAM (3 MHz, FULL RB) - Left Band Edge



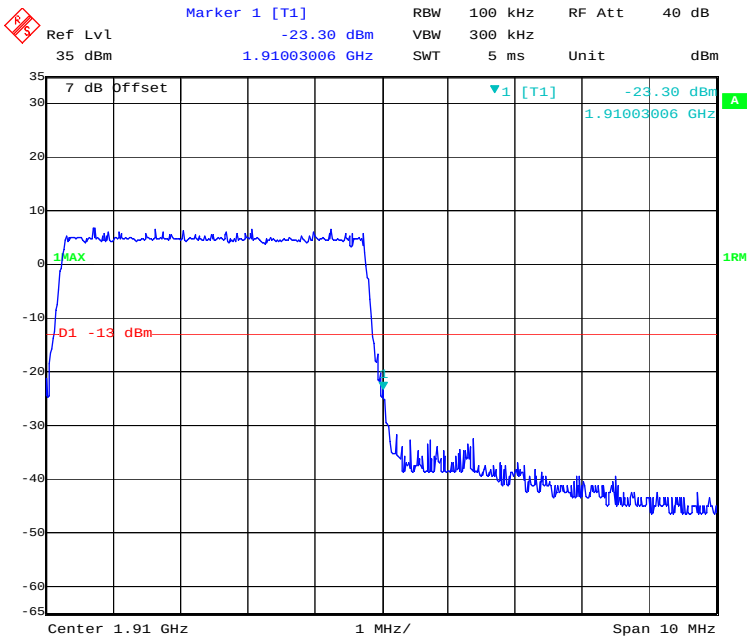
16-QAM (3 MHz, FULL RB) - Right Band Edge



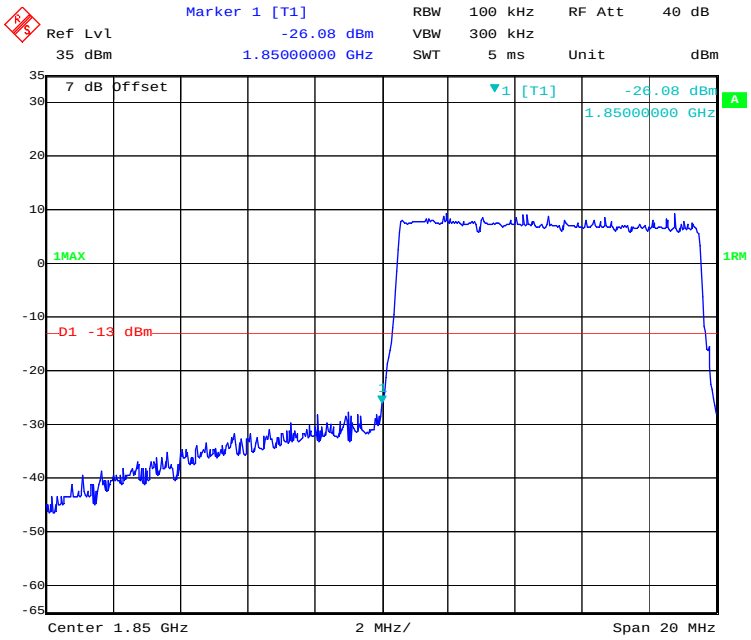
16-QAM (5 MHz, FULL RB) - Left Band Edge



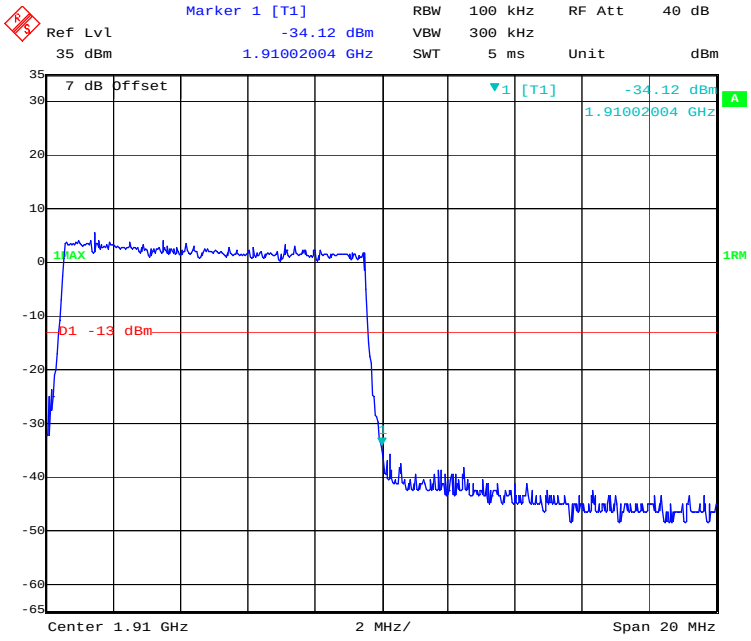
16-QAM (5 MHz, FULL RB) - Right Band Edge



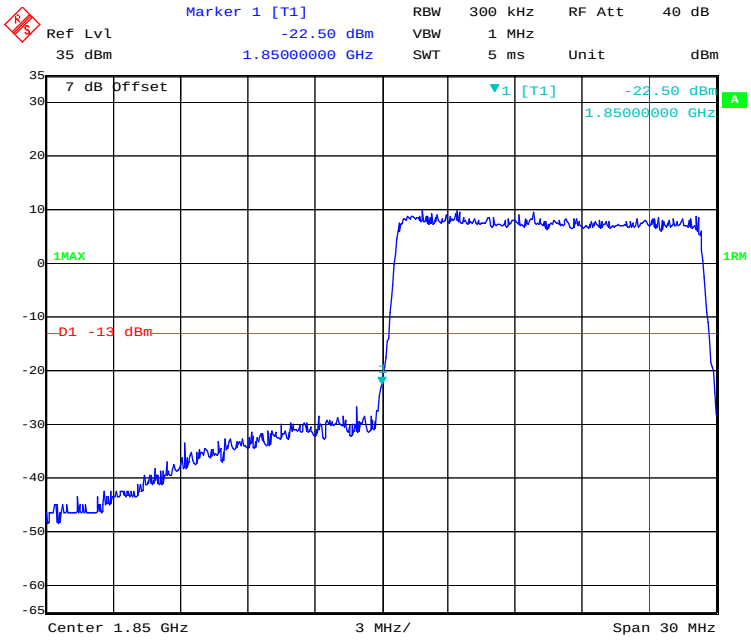
16-QAM (10 MHz, FULL RB) - Left Band Edge



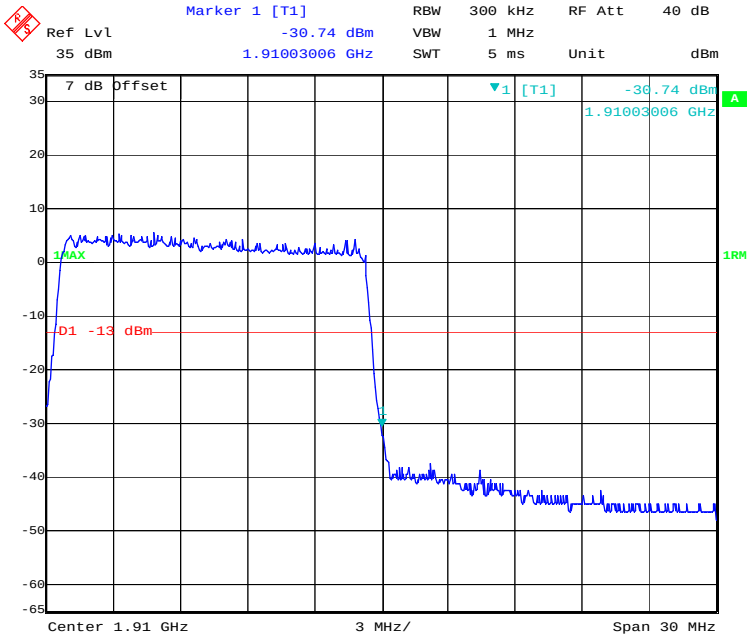
16-QAM (10 MHz, FULL RB) - Right Band Edge



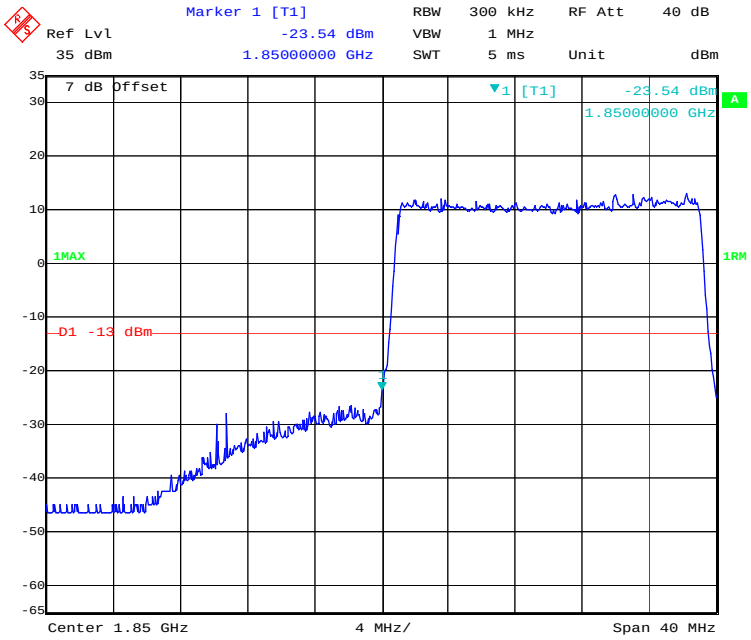
16-QAM (15 MHz, FULL RB) - Left Band Edge



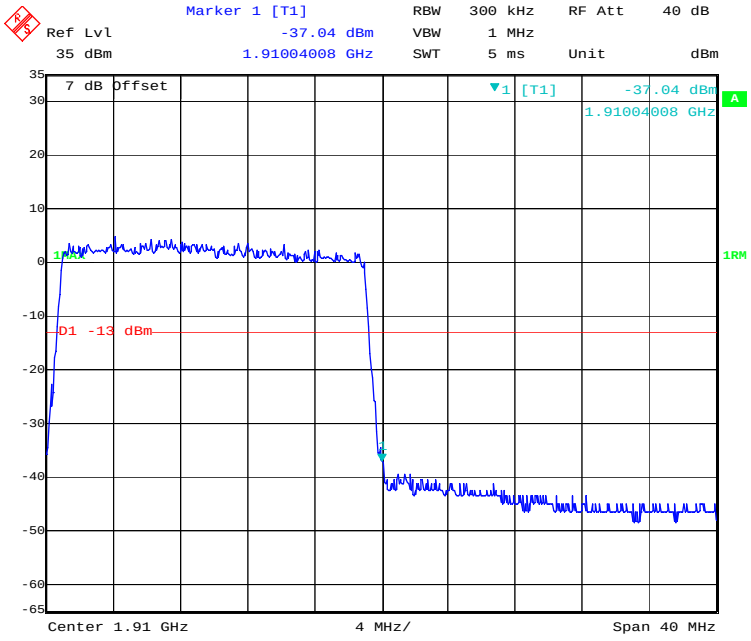
16-QAM (15 MHz, FULL RB) - Right Band Edge



16-QAM (20 MHz, FULL RB) - Left Band Edge

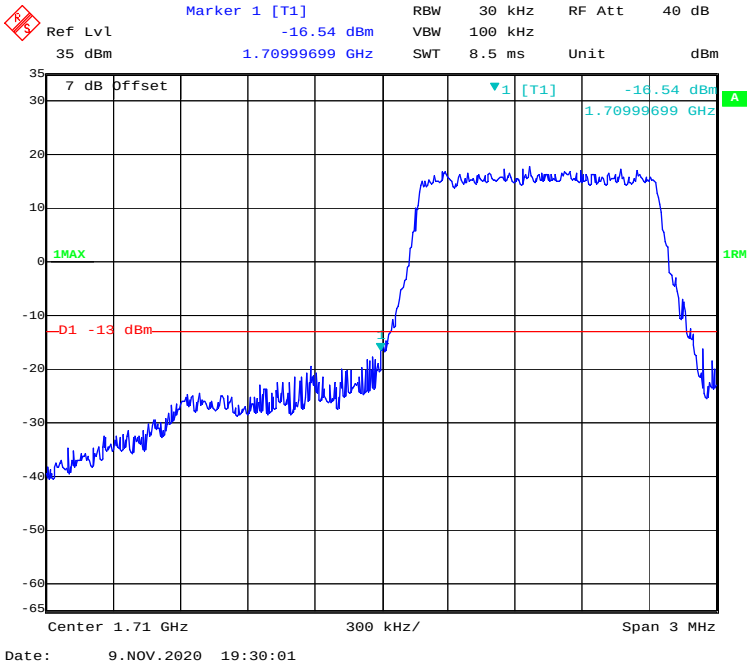


16-QAM (20 MHz, FULL RB) - Right Band Edge

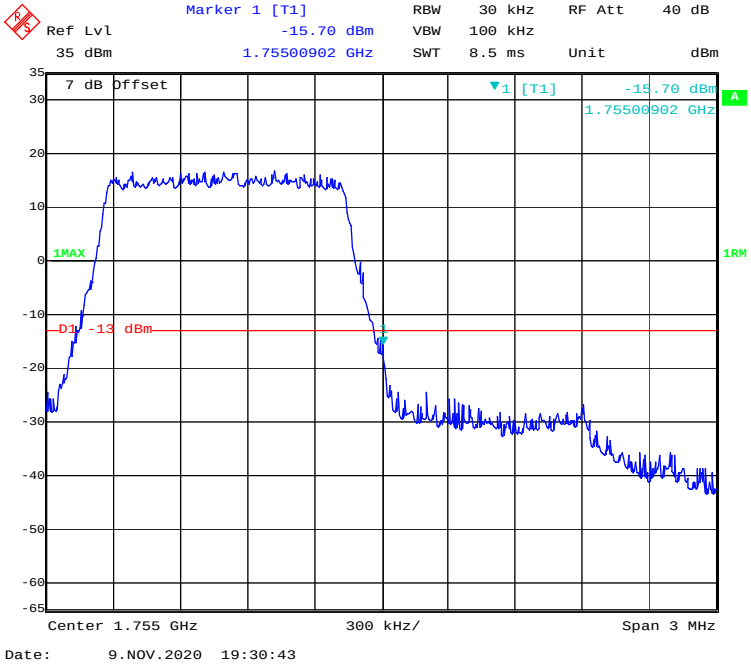


LTE Band 4:

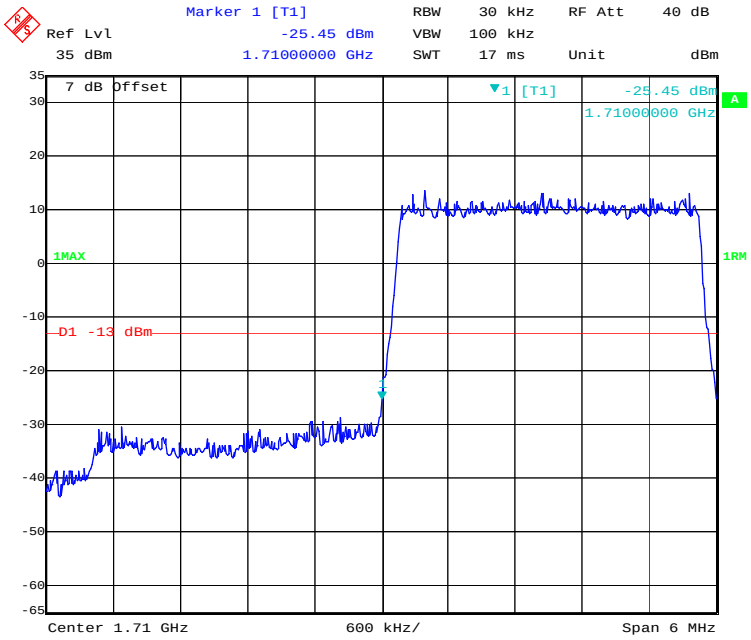
QPSK (1.4 MHz, FULL RB) - Left Band Edge



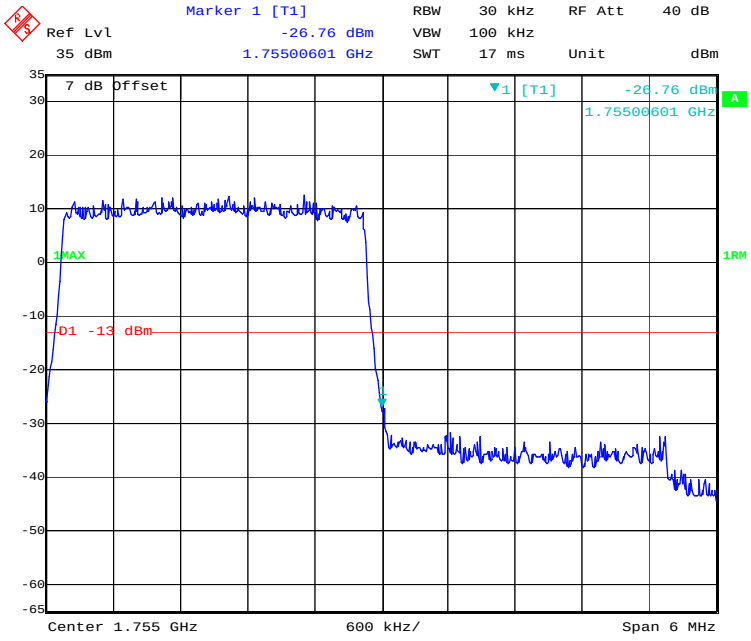
QPSK (1.4 MHz, FULL RB) - Right Band Edge



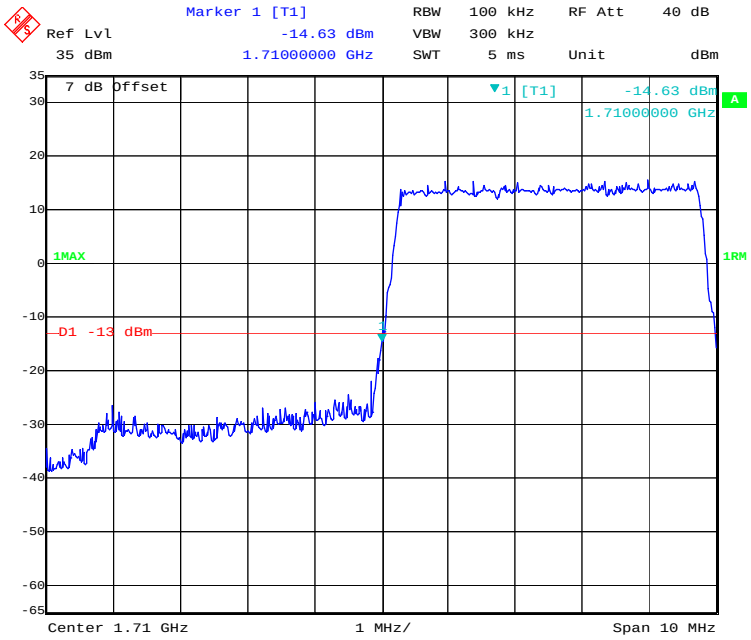
QPSK (3 MHz, FULL RB) - Left Band Edge



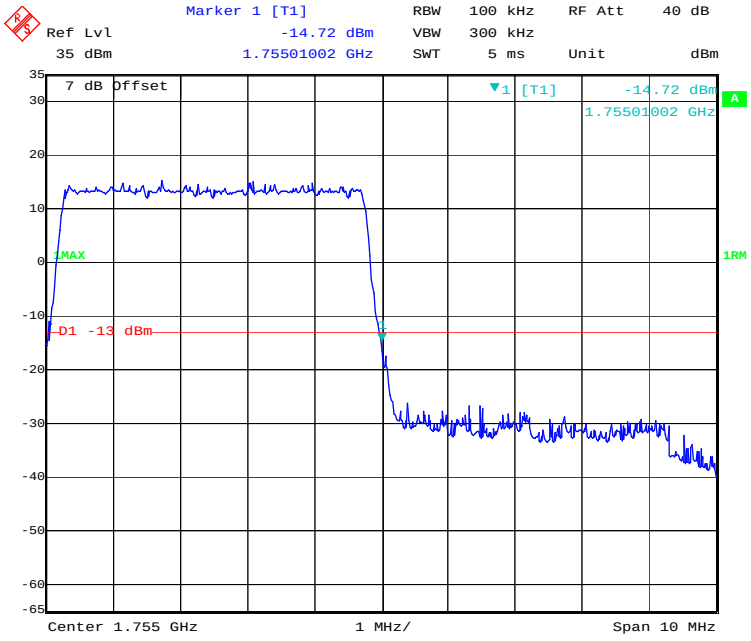
QPSK (3 MHz, FULL RB) - Right Band Edge



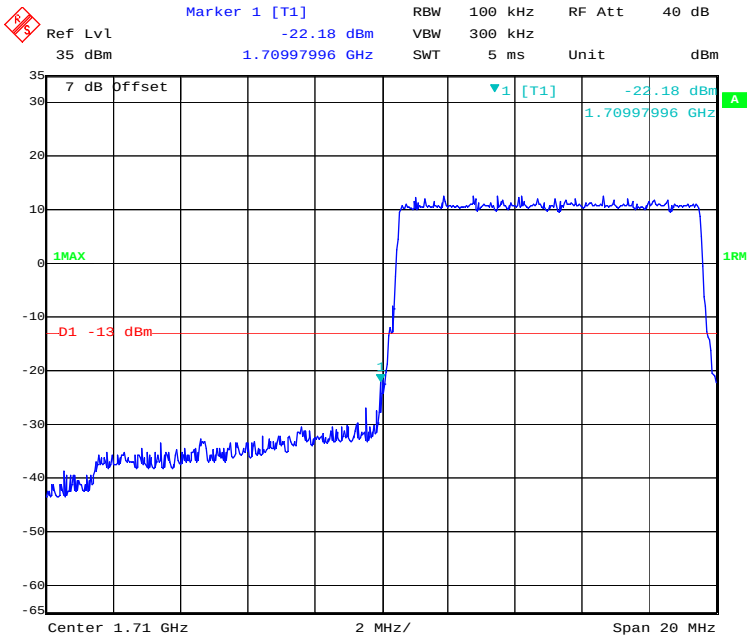
QPSK (5 MHz, FULL RB) - Left Band Edge



QPSK (5 MHz, FULL RB) - Right Band Edge

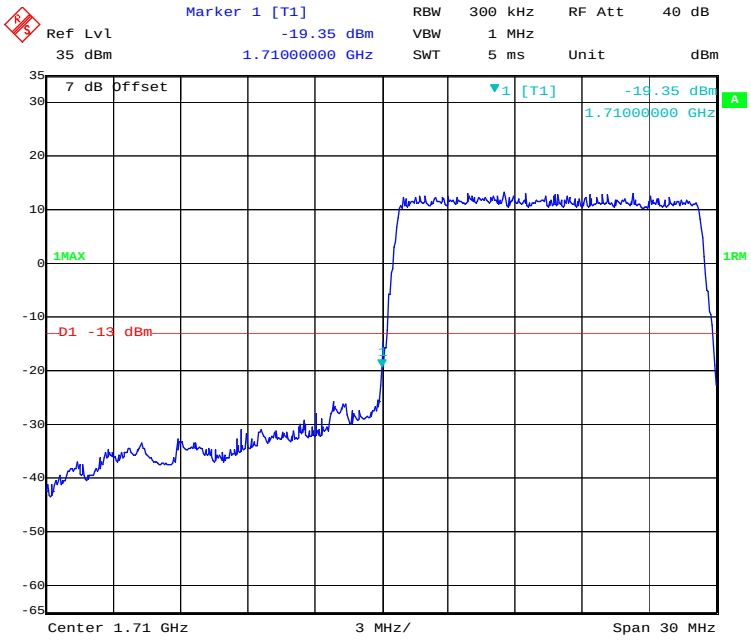


QPSK (10 MHz, FULL RB) - Left Band Edge

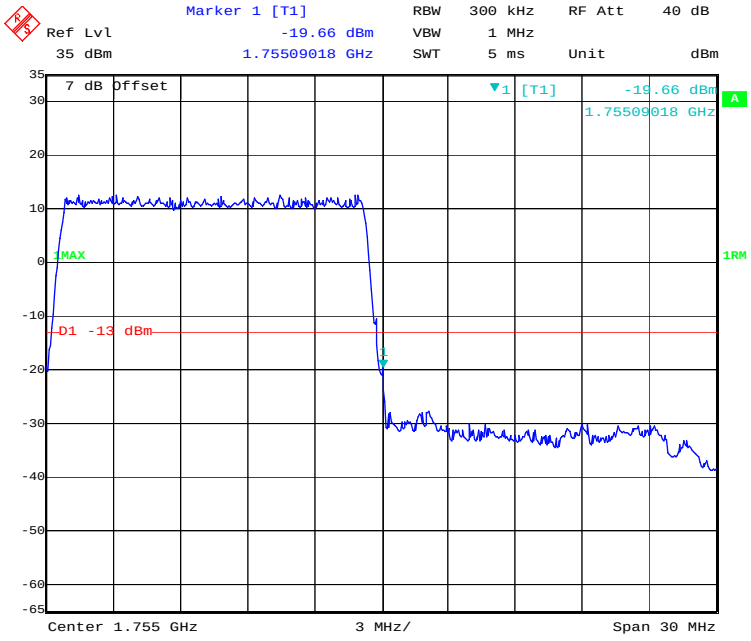


QPSK (10 MHz, FULL RB) - Right Band Edge

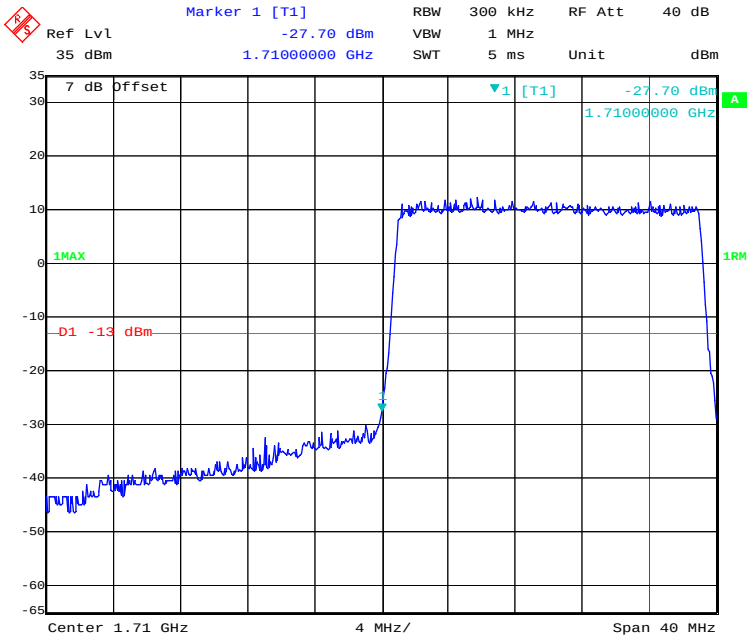
QPSK (15 MHz, FULL RB) - Left Band Edge



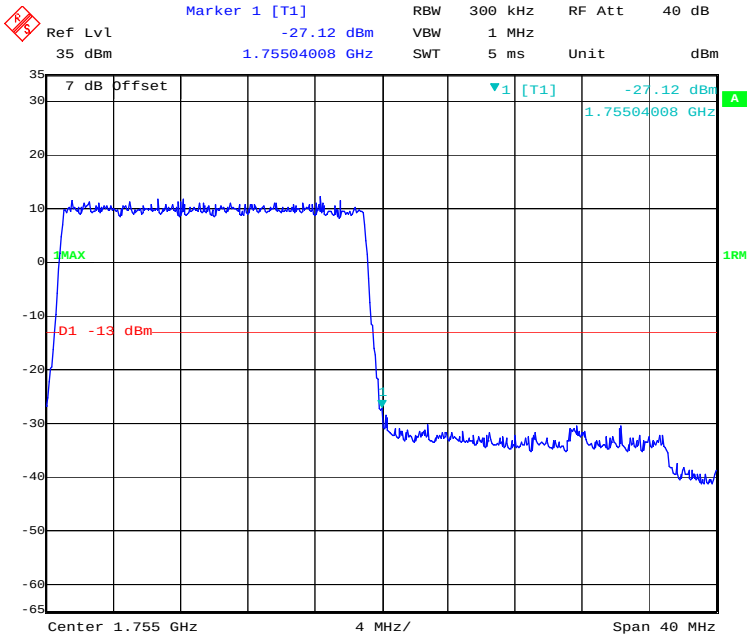
QPSK (15 MHz, FULL RB) - Right Band Edge



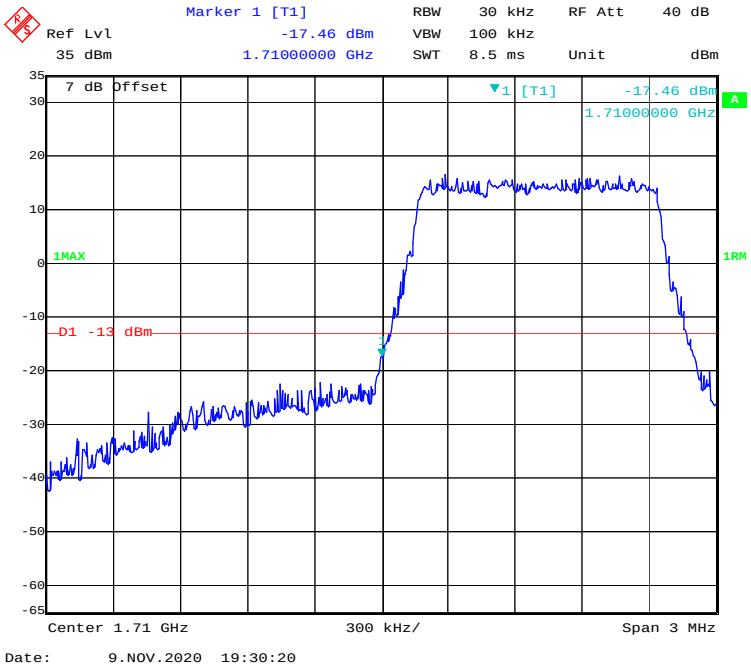
QPSK (20 MHz, FULL RB) - Left Band Edge



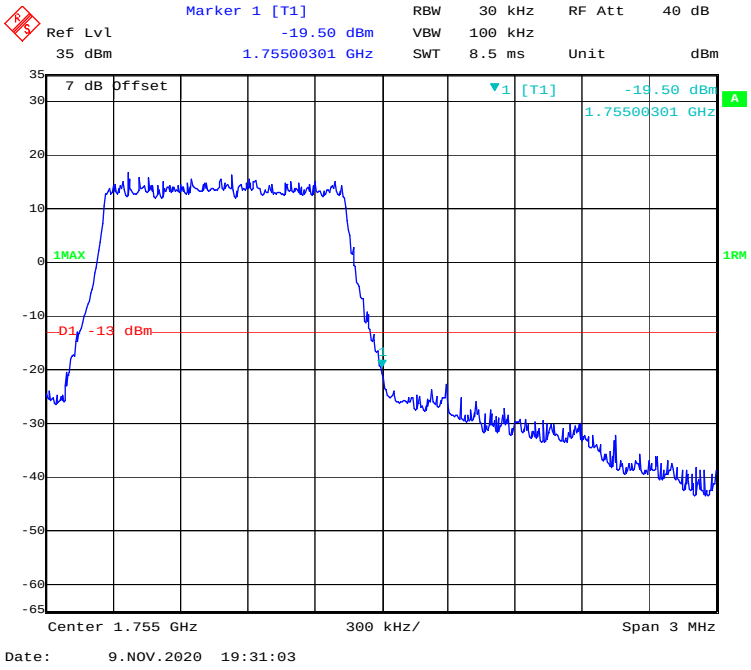
QPSK (20 MHz, FULL RB) - Right Band Edge



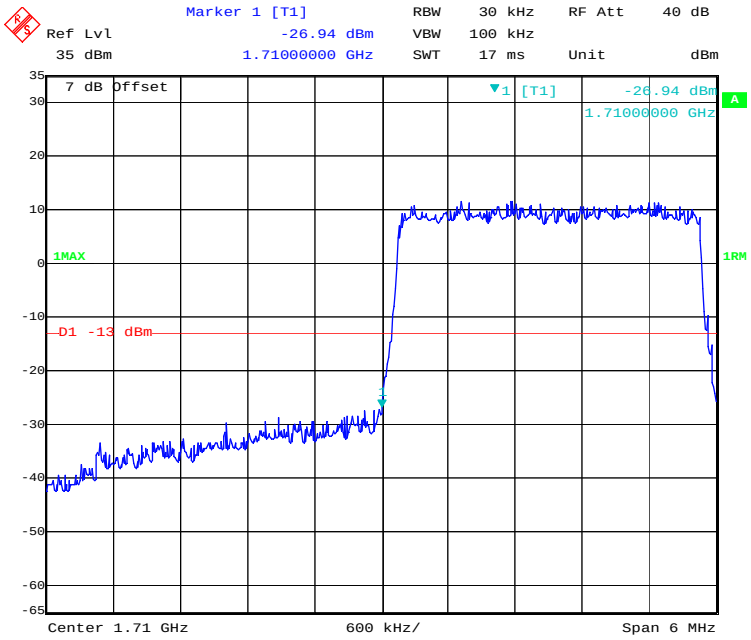
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



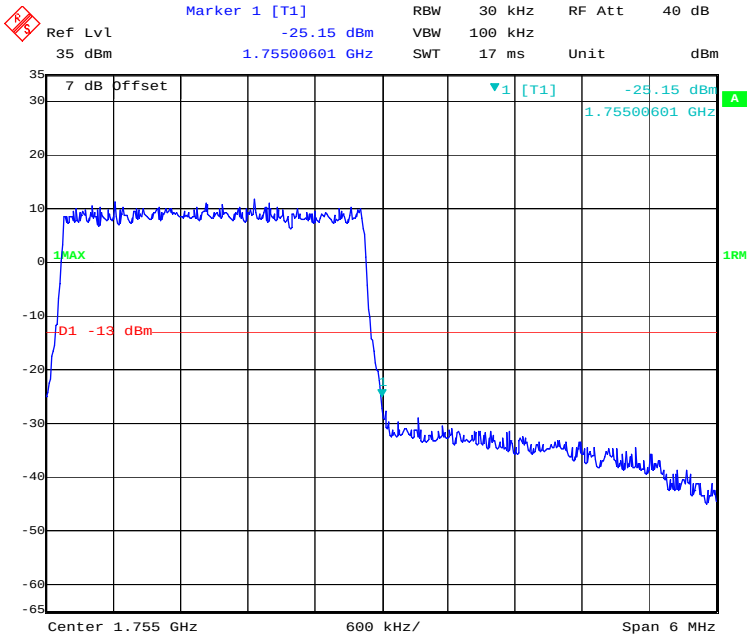
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



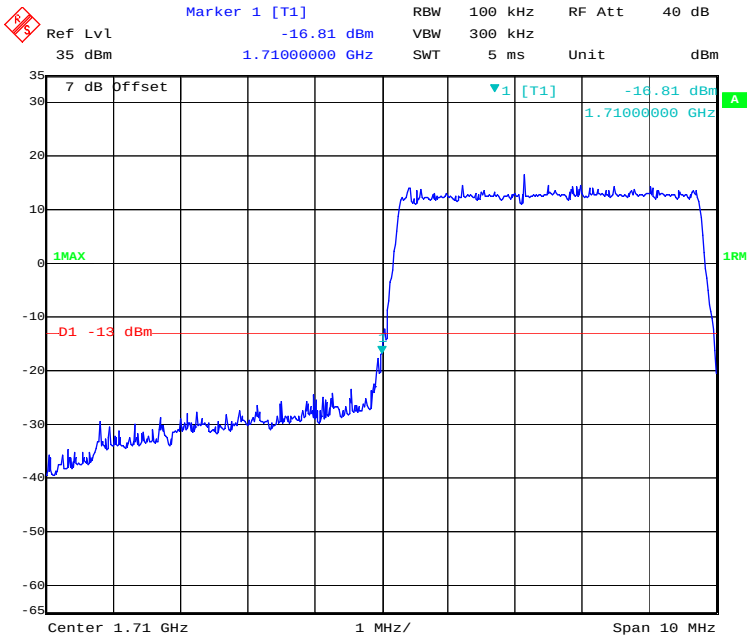
16-QAM (3 MHz, FULL RB) - Left Band Edge



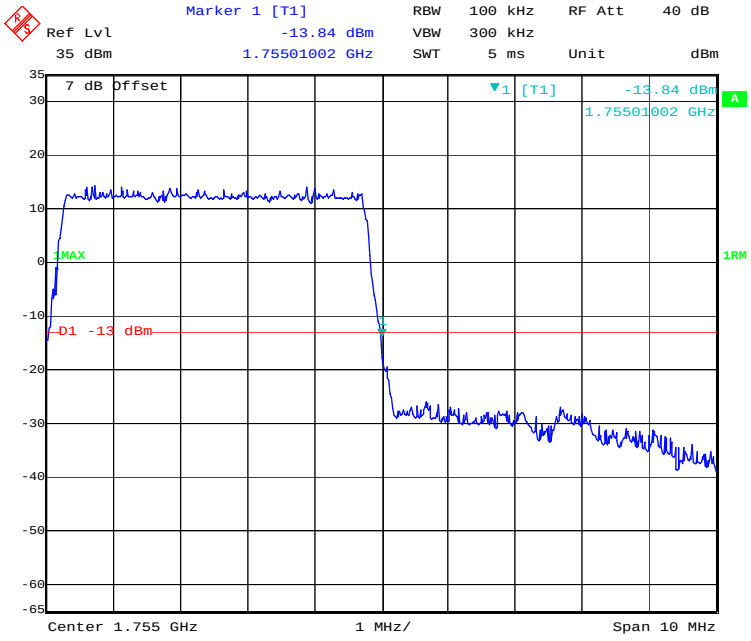
16-QAM (3 MHz, FULL RB) - Right Band Edge



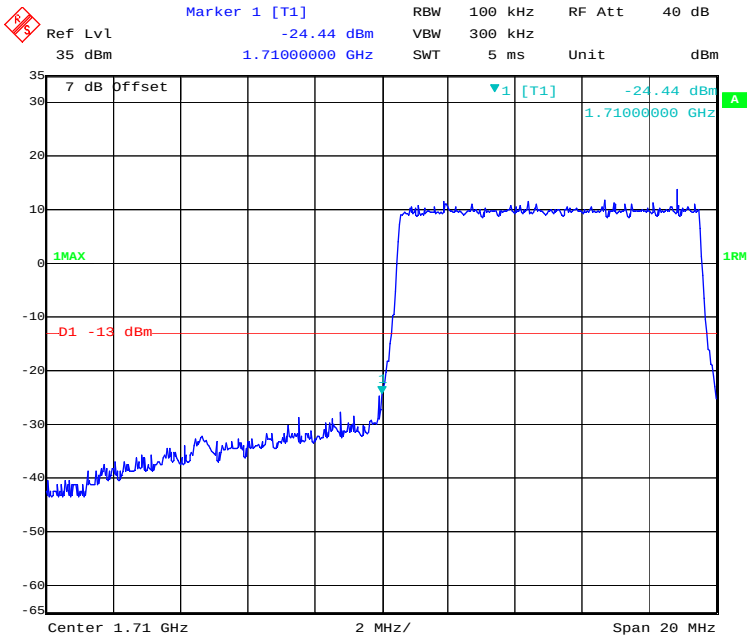
16-QAM (5 MHz, FULL RB) - Left Band Edge



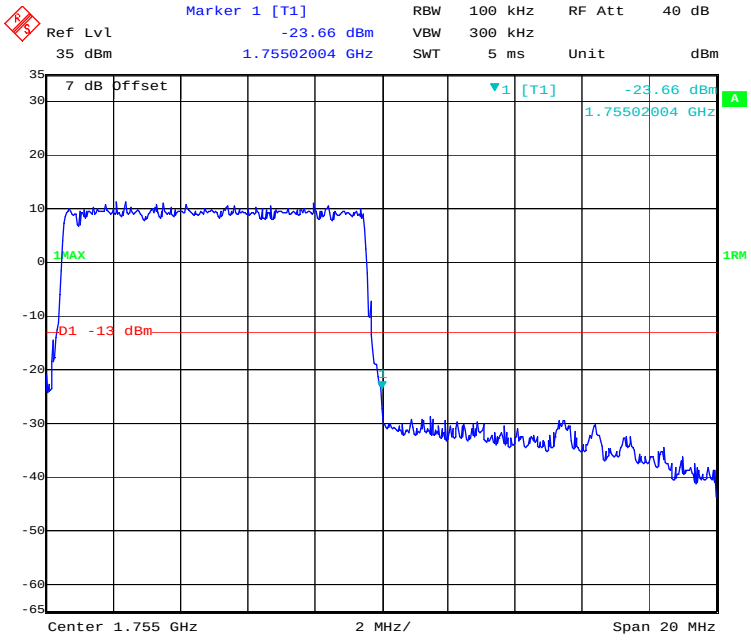
16-QAM (5 MHz, FULL RB) - Right Band Edge



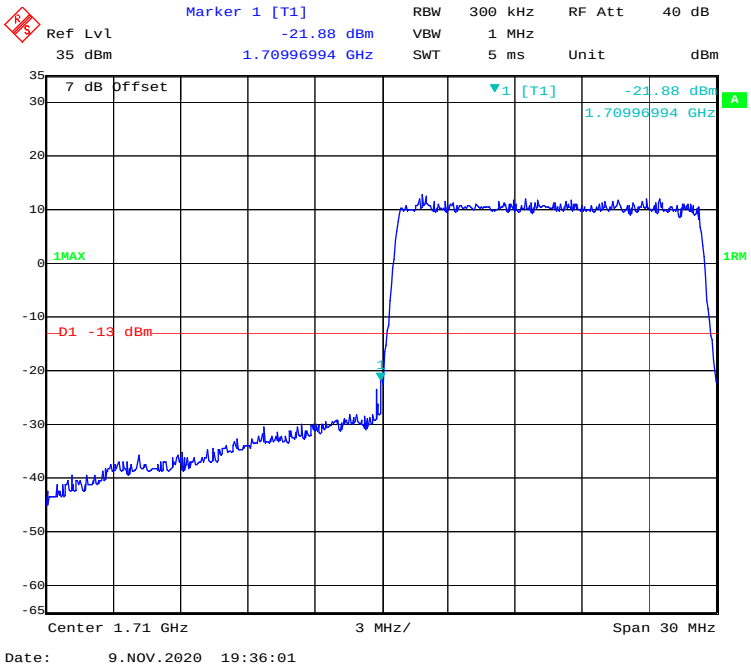
16-QAM (10 MHz, FULL RB) - Left Band Edge



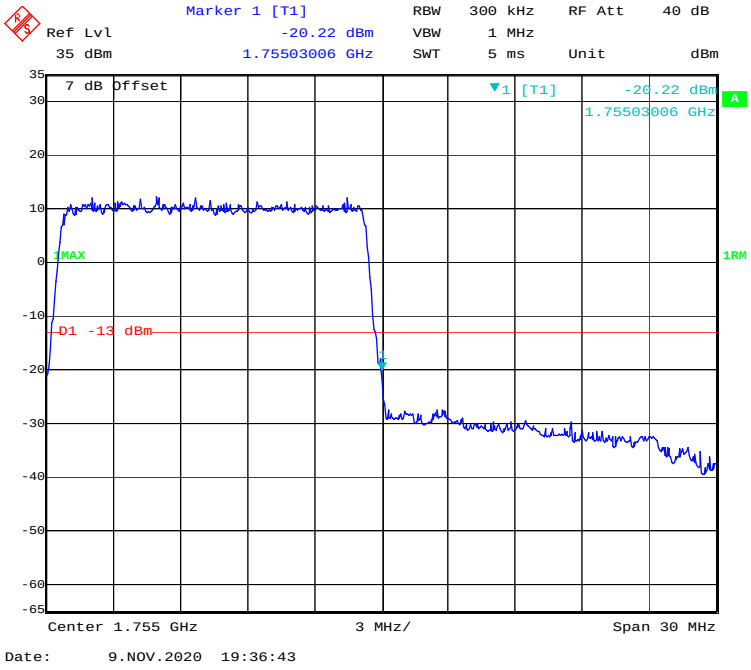
16-QAM (10 MHz, FULL RB) - Right Band Edge



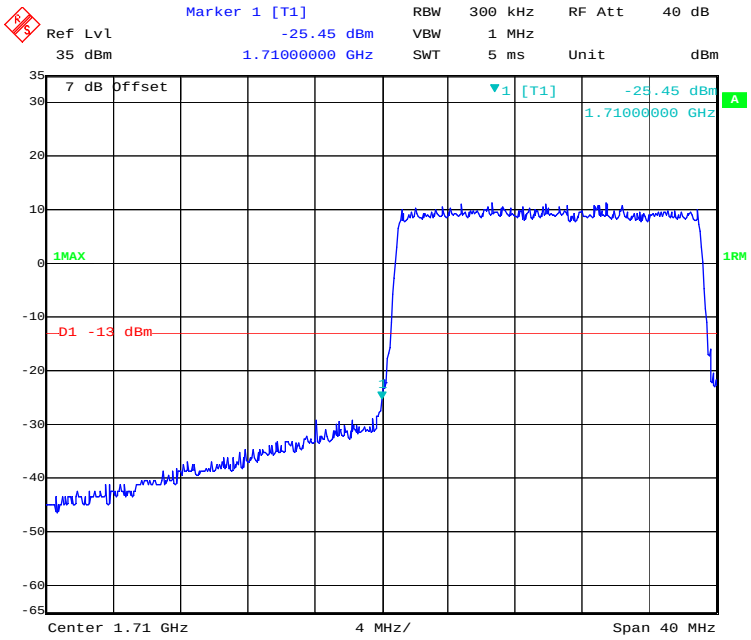
16-QAM (15 MHz, FULL RB) - Left Band Edge



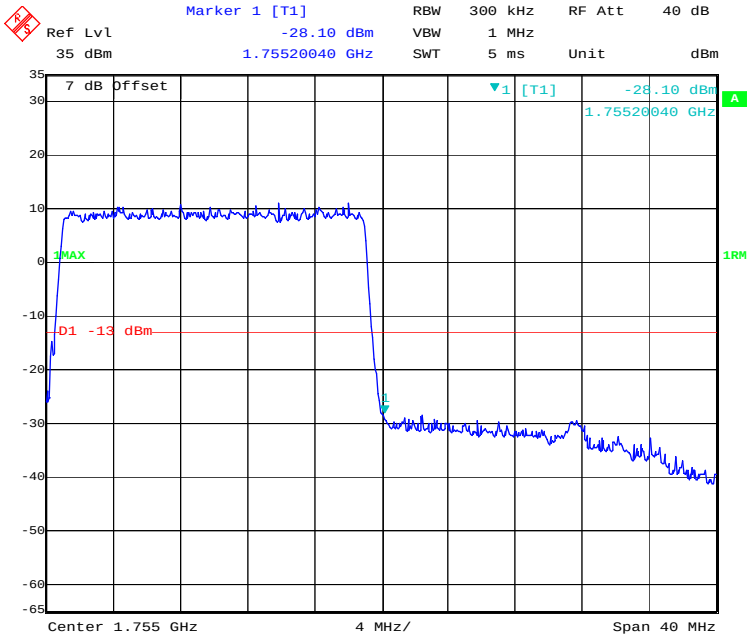
16-QAM (15 MHz, FULL RB) - Right Band Edge



16-QAM (20 MHz, FULL RB) - Left Band Edge

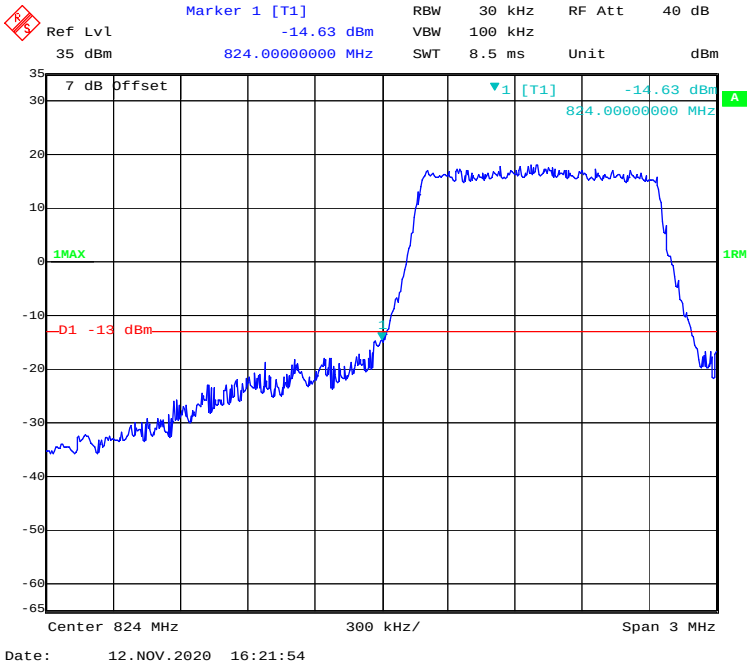


16-QAM (20 MHz, FULL RB) - Right Band Edge

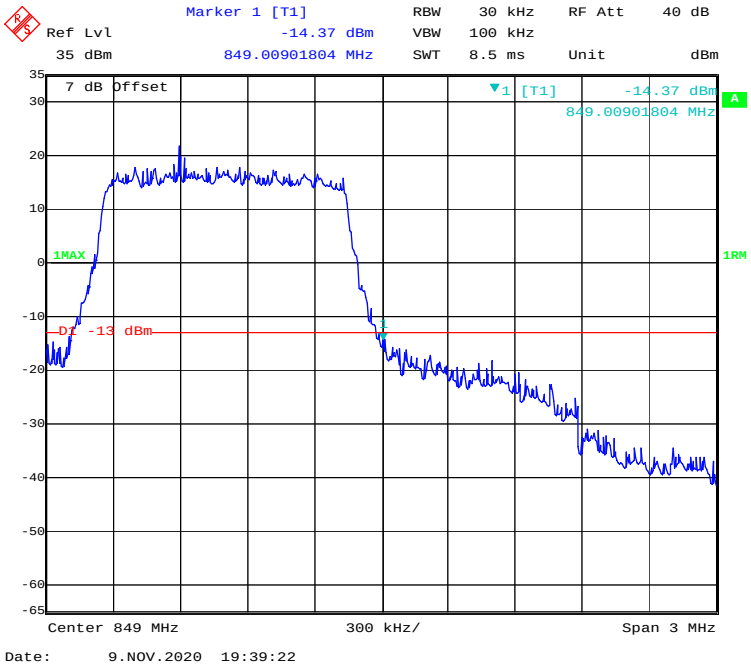


LTE Band 5:

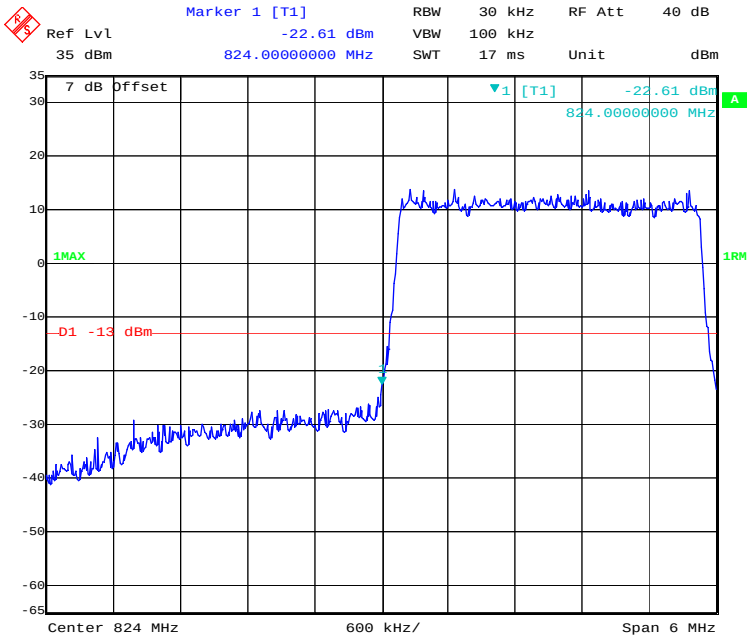
QPSK (1.4 MHz, FULL RB) - Left Band Edge



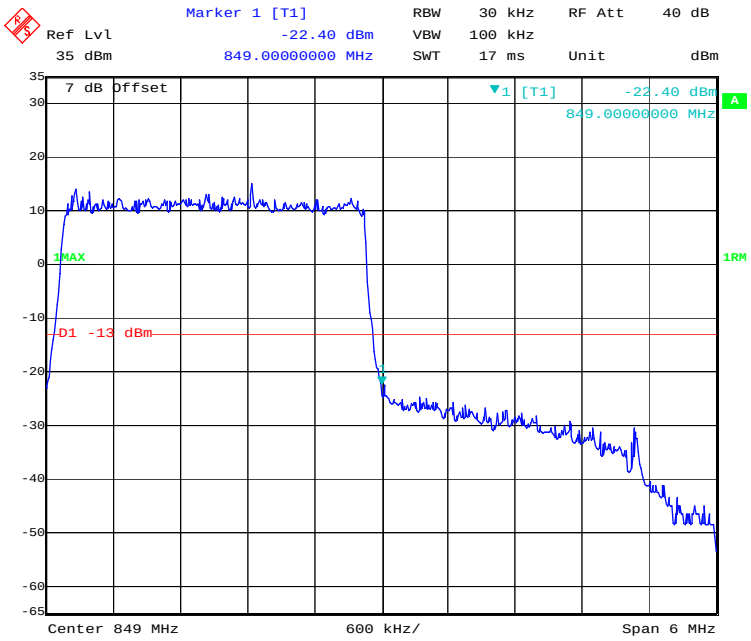
QPSK (1.4 MHz, FULL RB) - Right Band Edge



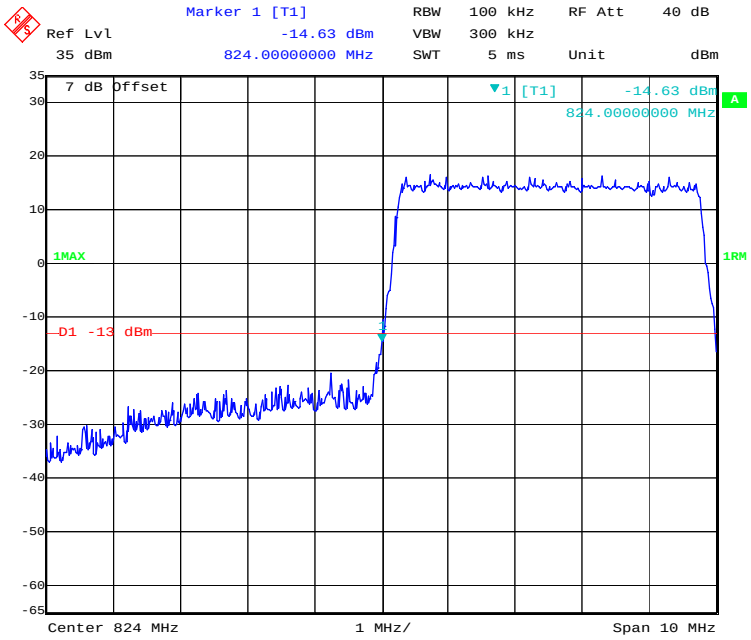
QPSK (3.0 MHz, FULL RB) - Left Band Edge



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

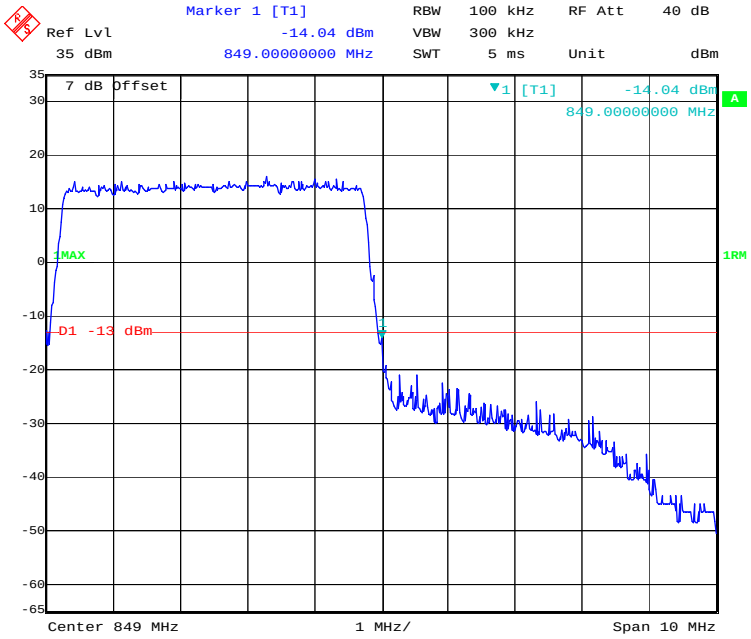


QPSK (5.0 MHz, FULL RB) - Left Band Edge



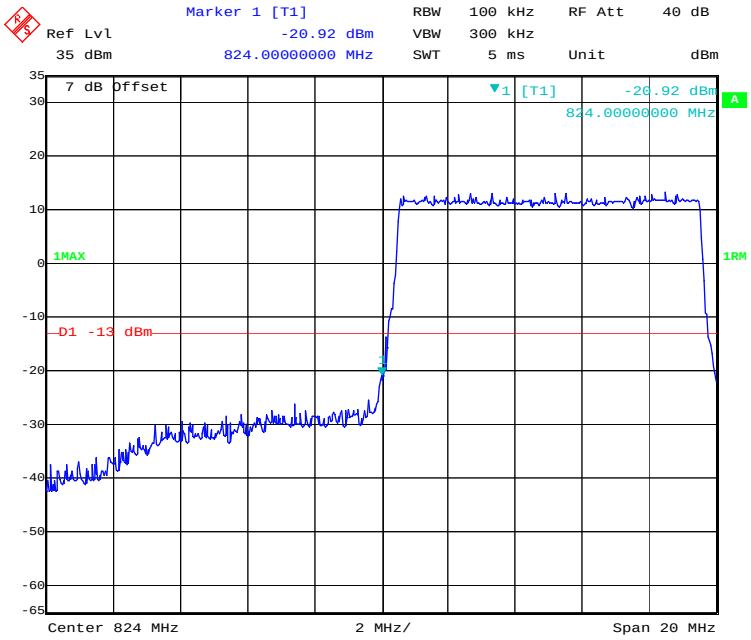
Date: 9.NOV.2020 19:41:34

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



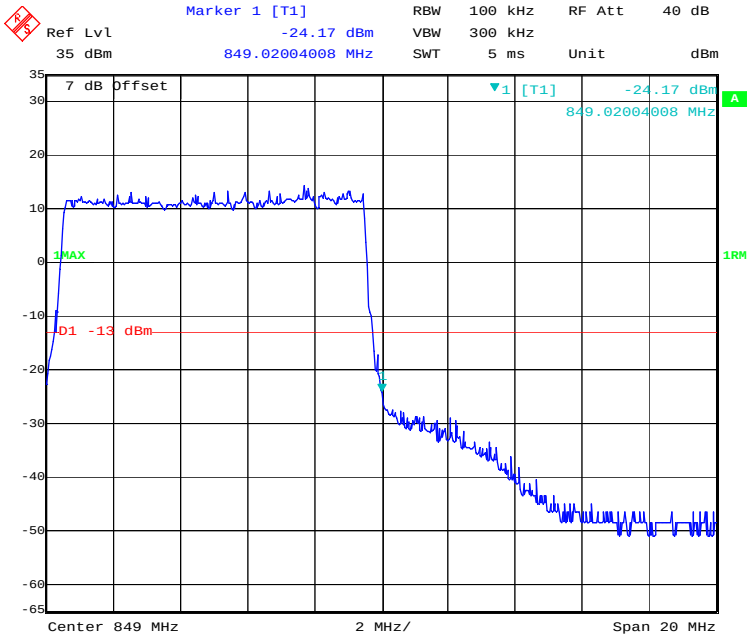
Date: 12.NOV.2020 16:28:22

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



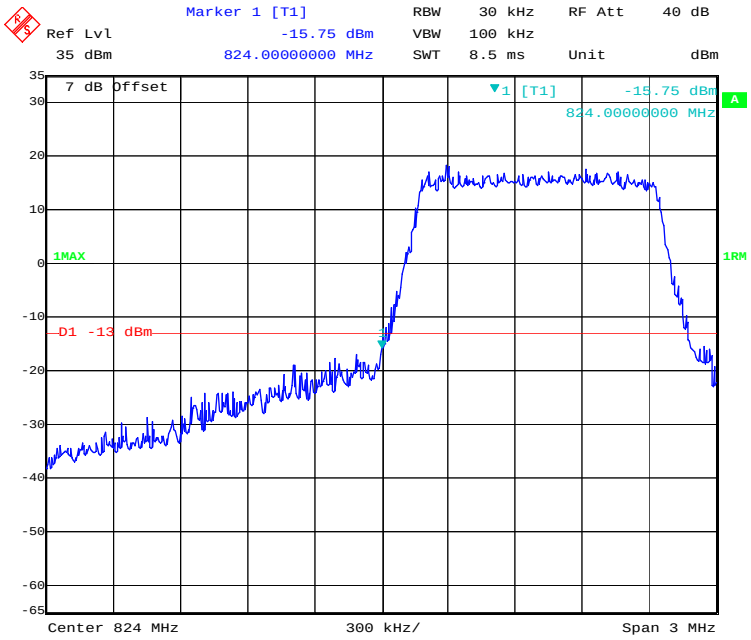
Date: 9.NOV.2020 19:43:07

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

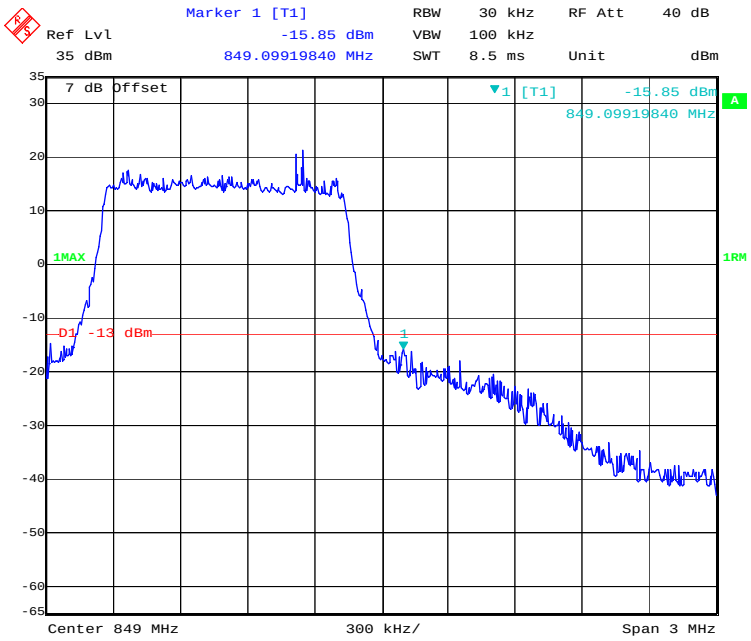


Date: 9.NOV.2020 19:43:49

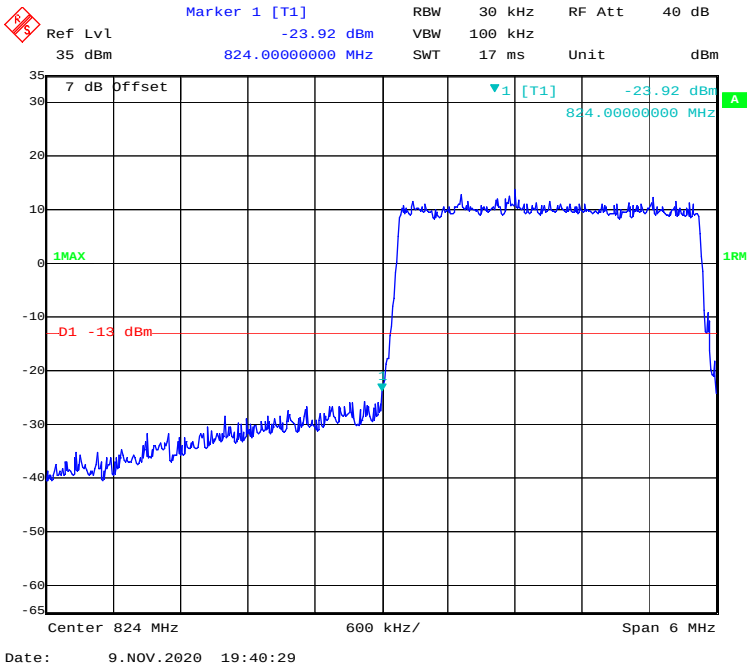
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



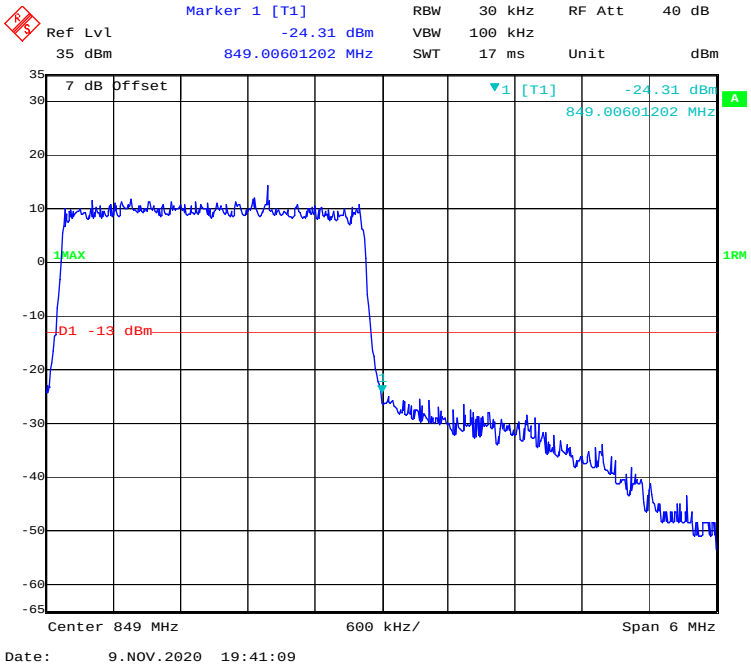
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



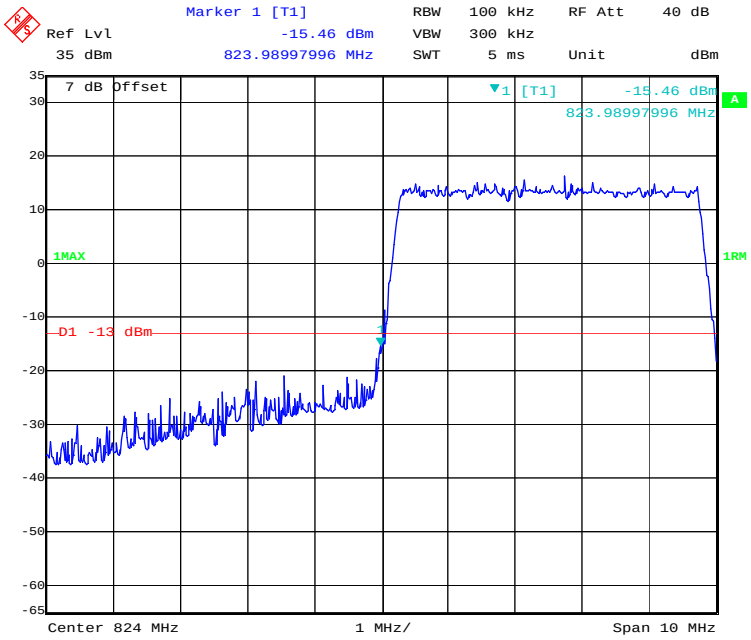
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



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

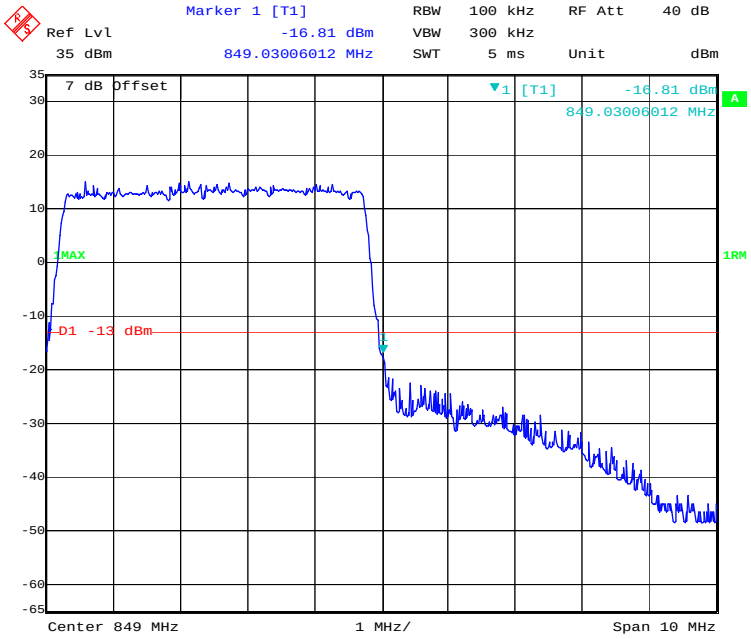


16-QAM (5.0 MHz, FULL RB) - Left Band Edge



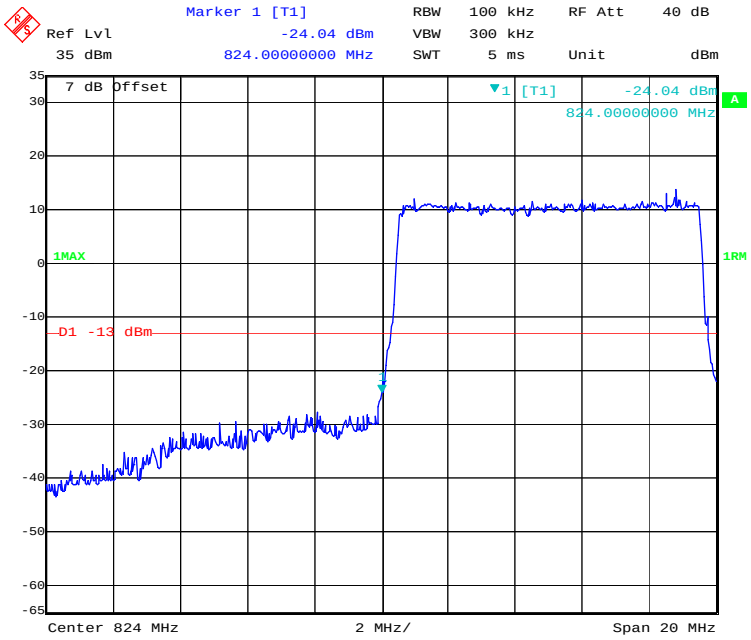
Date: 9.NOV.2020 19:41:54

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



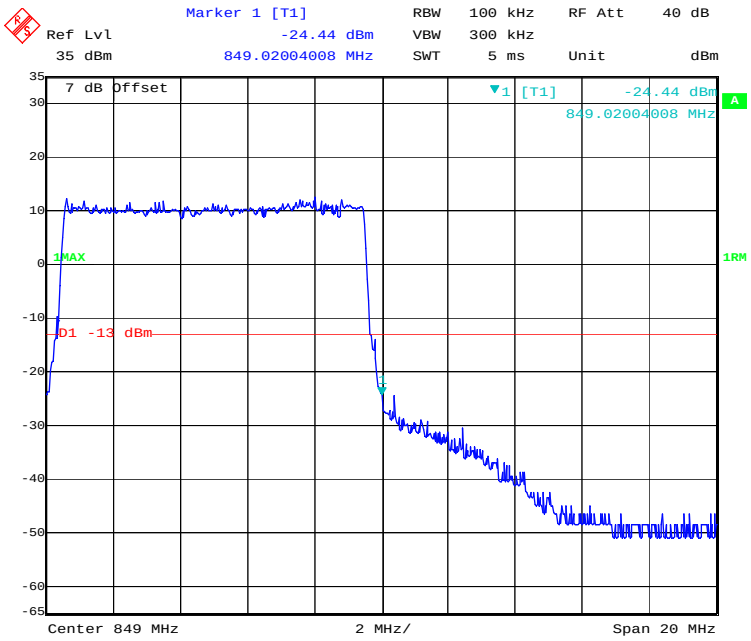
Date: 9.NOV.2020 19:42:39

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



Date: 9.NOV.2020 19:43:28

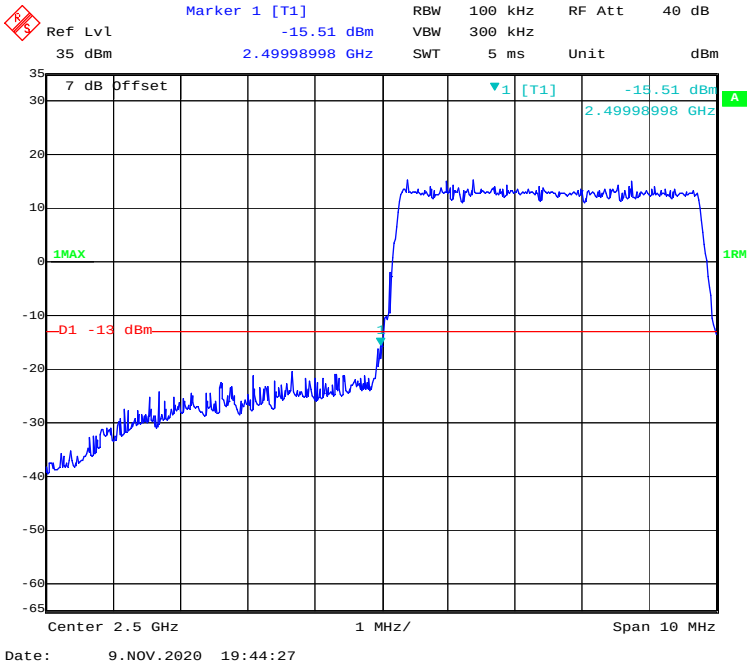
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



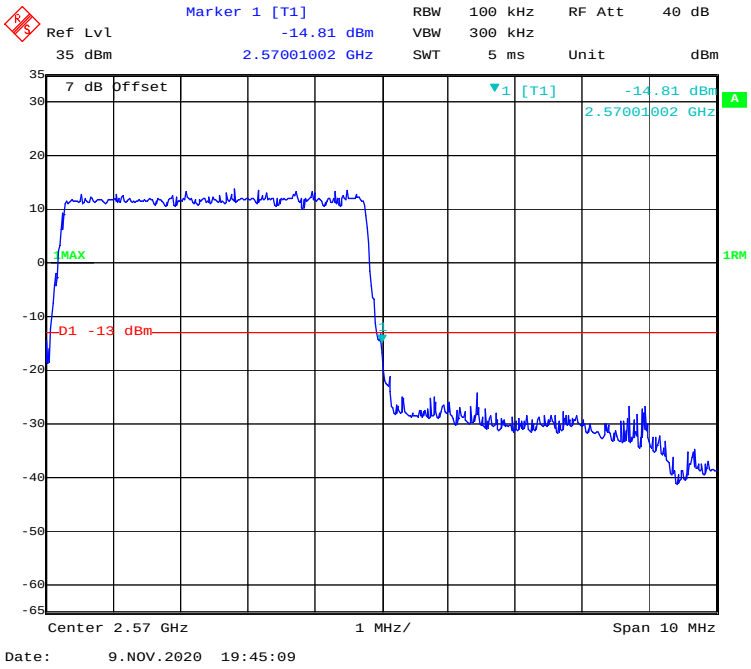
Date: 9.NOV.2020 19:44:06

LTE Band 7:

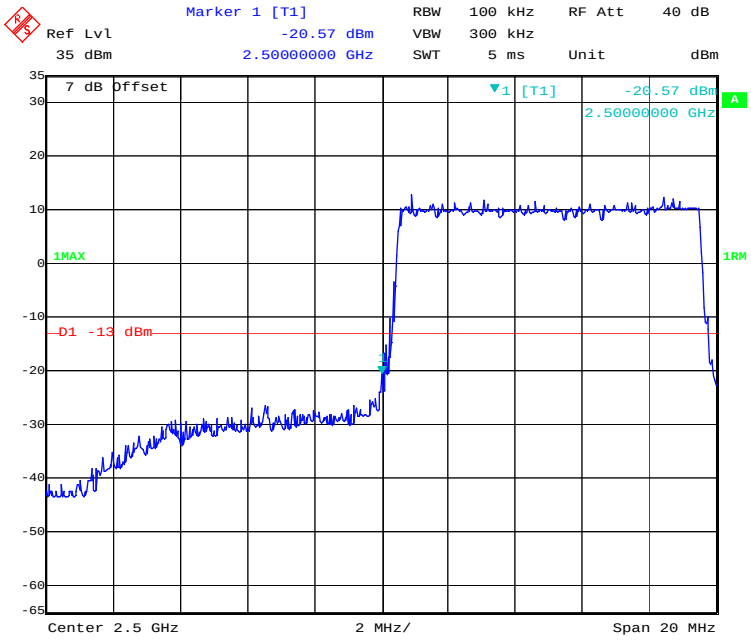
QPSK (5.0 MHz, FULL RB) - Left Band Edge



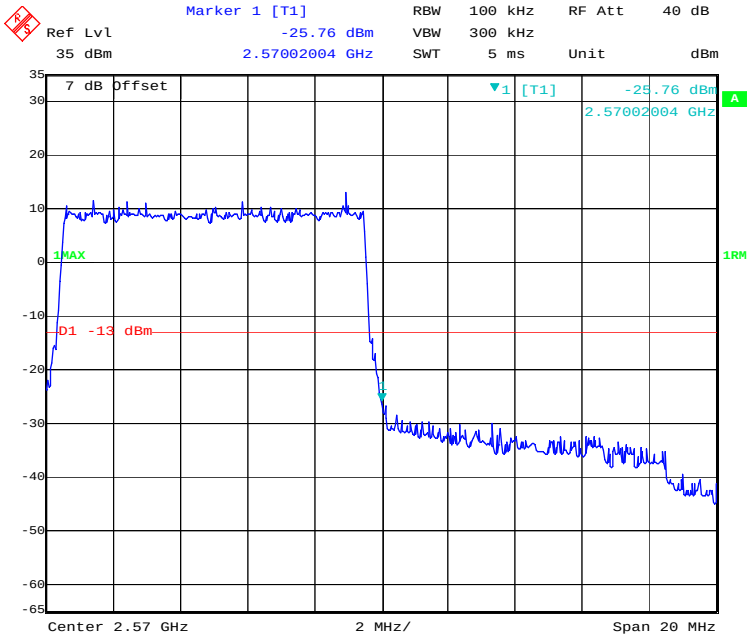
QPSK (5.0 MHz, FULL RB) - Right Band Edge



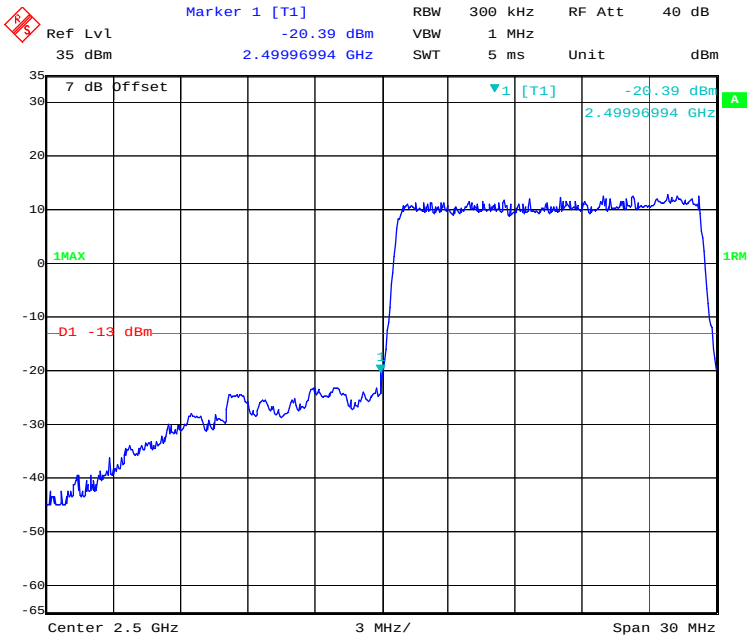
QPSK (10.0 MHz, FULL RB) - Left Band Edge



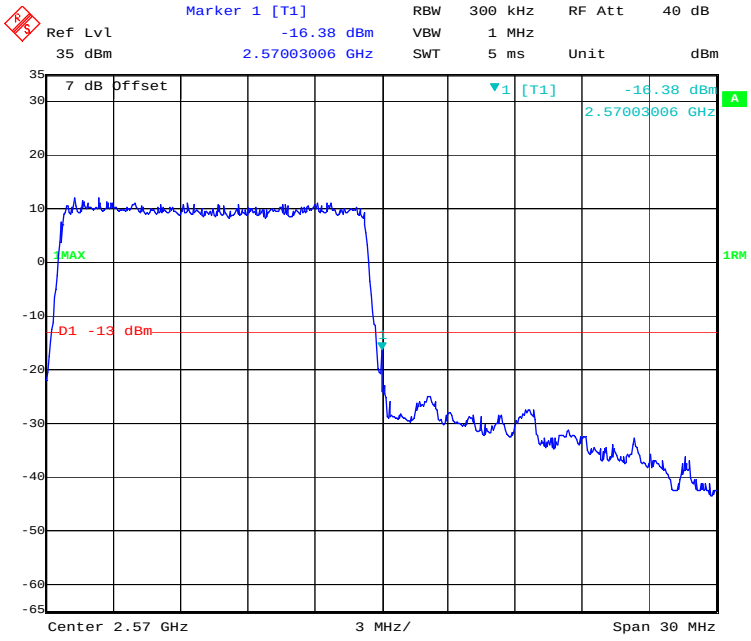
QPSK (10.0 MHz, FULL RB) - Right Band Edge



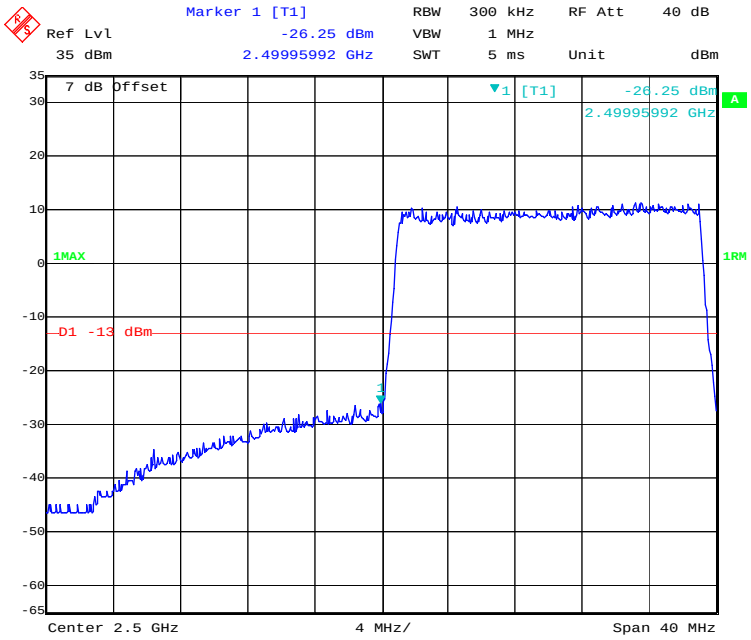
QPSK (15.0 MHz, FULL RB) - Left Band Edge



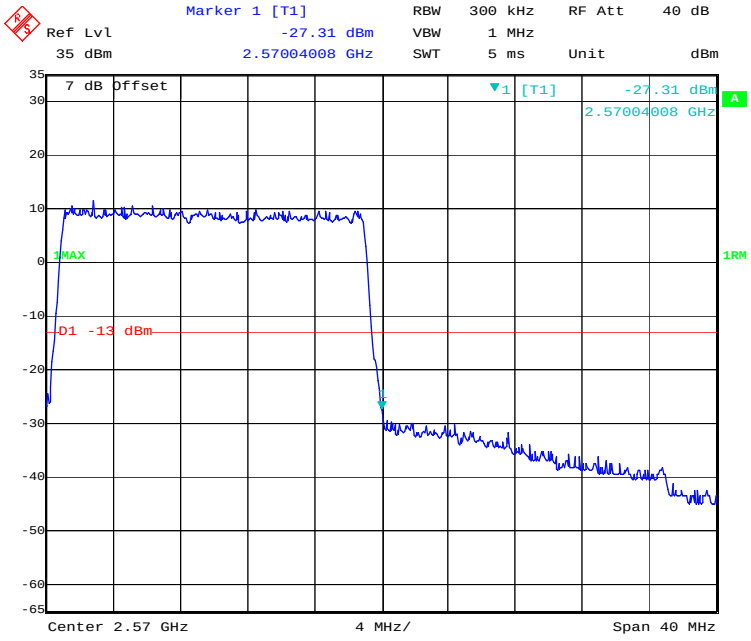
QPSK (15.0 MHz, FULL RB) - Right Band Edge



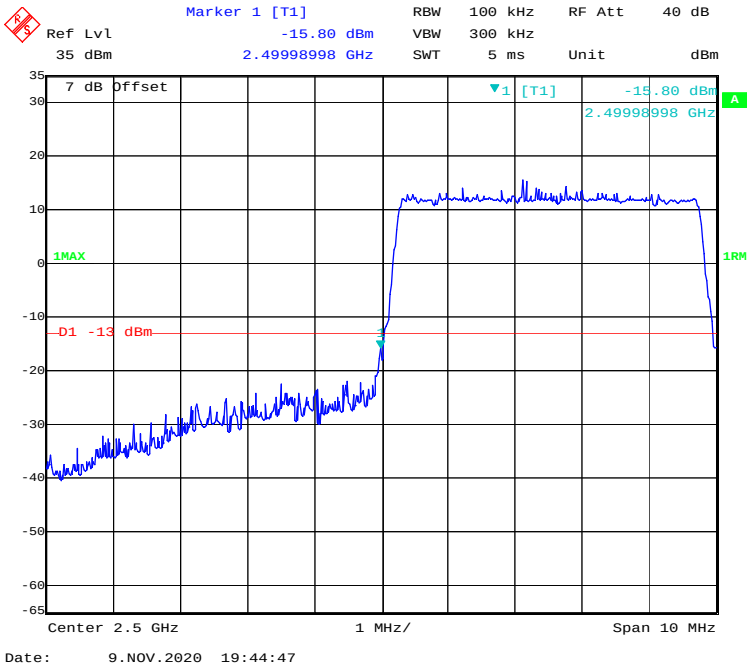
QPSK (20.0 MHz, FULL RB) - Left Band Edge



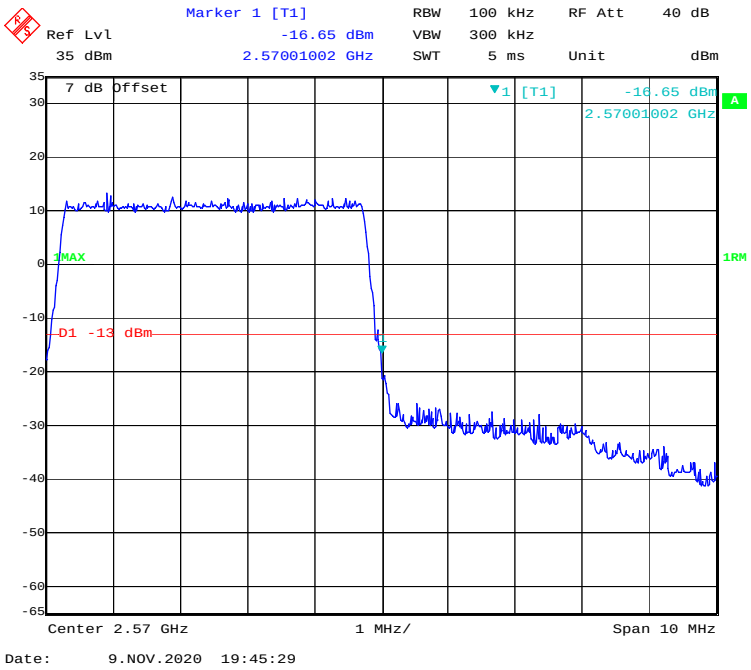
QPSK (20.0 MHz, FULL RB) - Right Band Edge



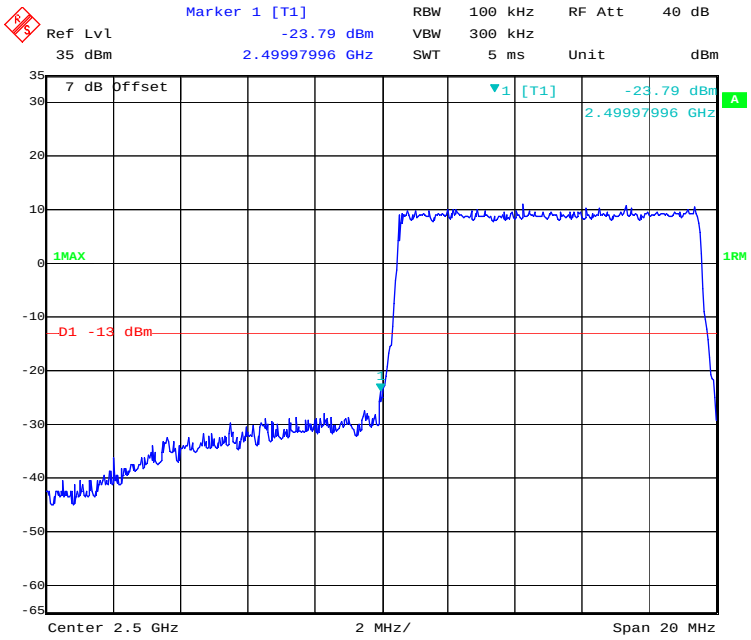
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



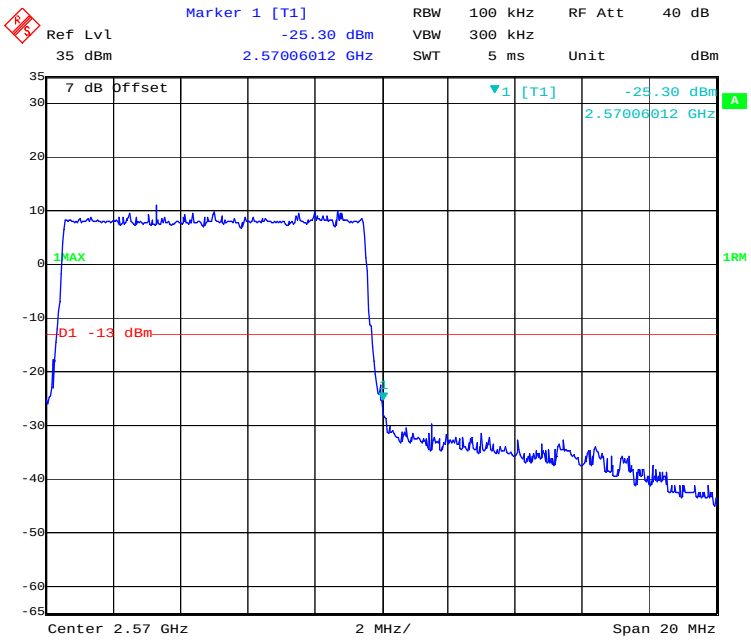
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



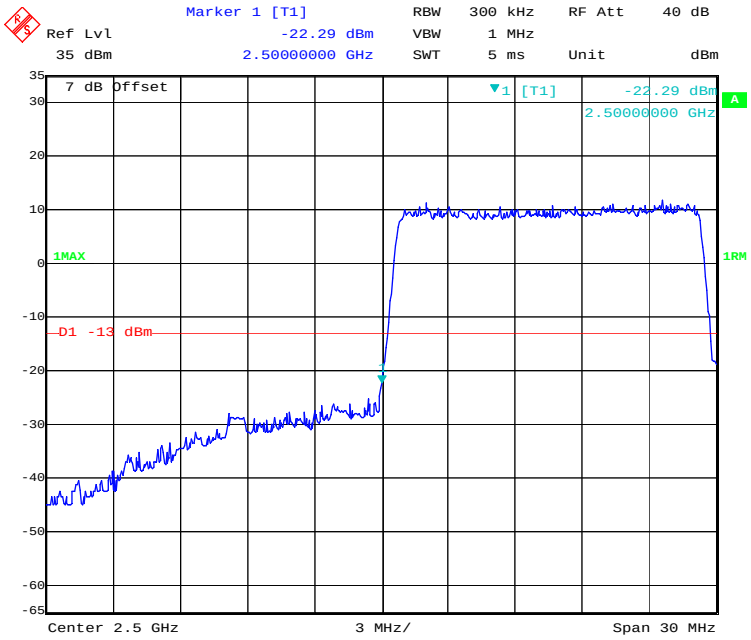
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



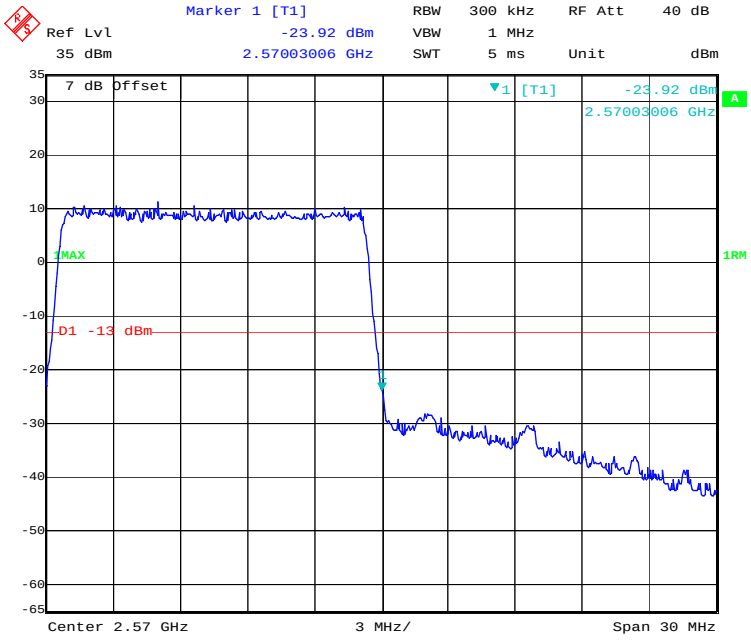
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



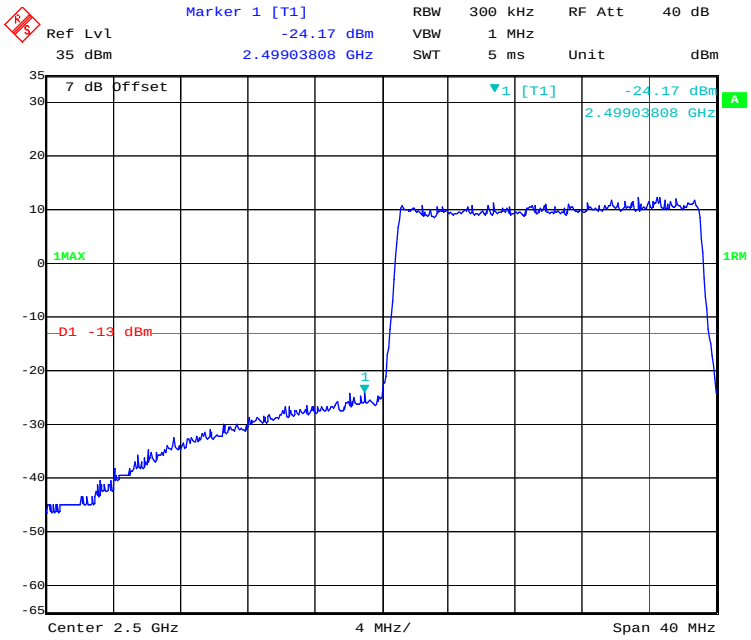
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



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



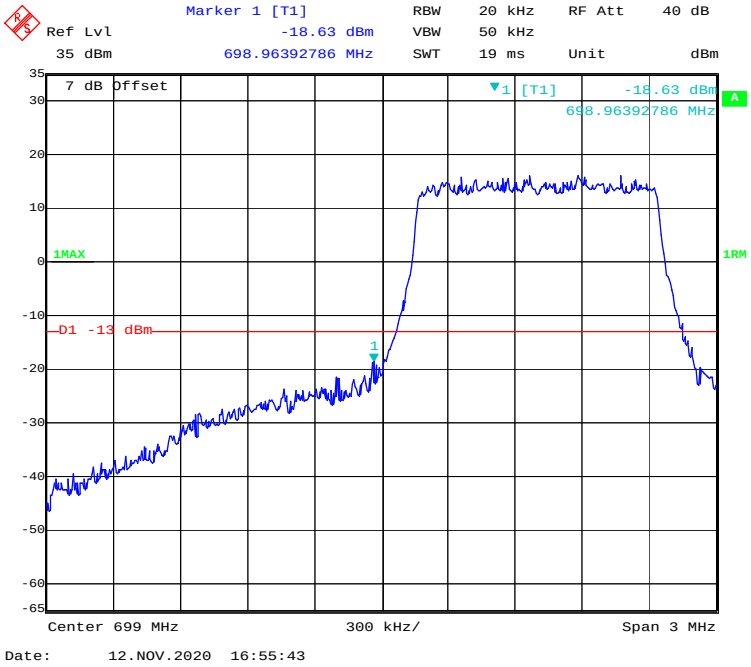
16-QAM (20.0 MHz, FULL RB) - Left Band Edge



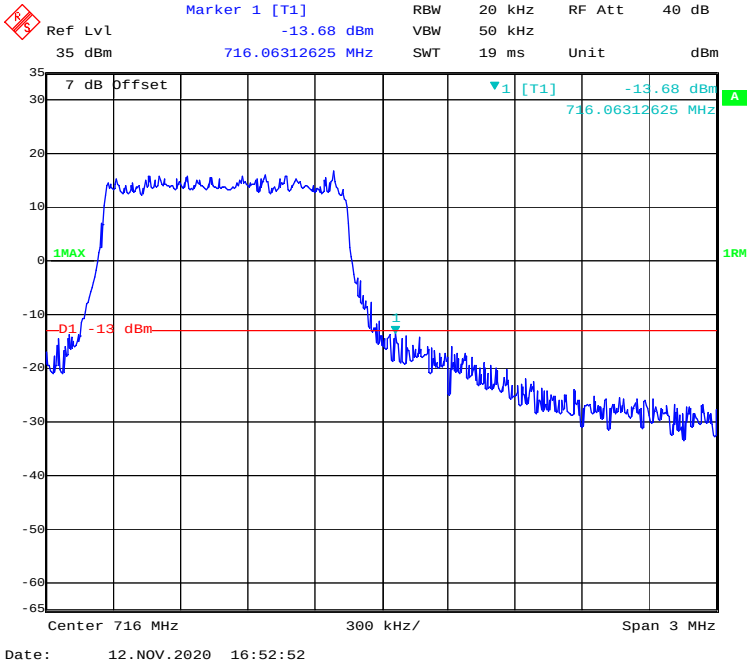
16-QAM (20.0 MHz, FULL RB) - Right Band Edge

LTE Band 12:

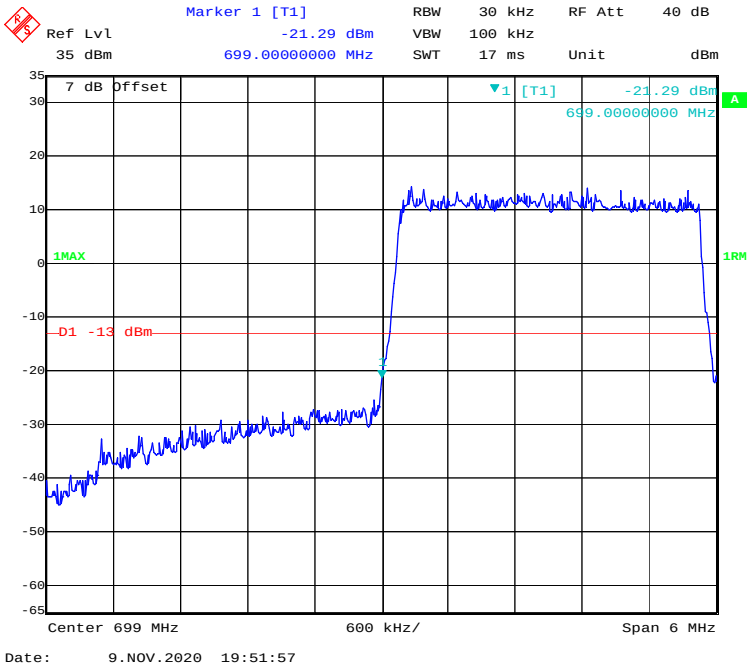
QPSK (1.4 MHz, FULL RB) - Left Band Edge



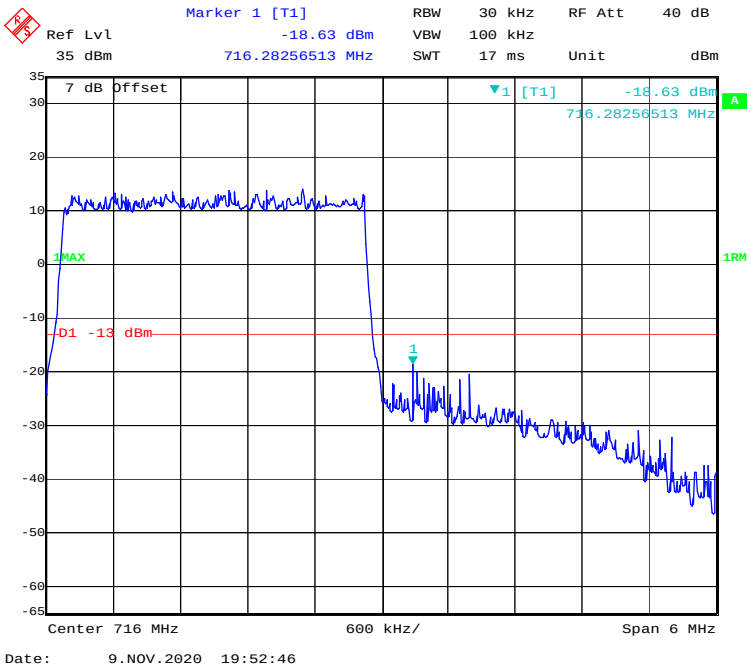
QPSK (1.4 MHz, FULL RB) - Right Band Edge



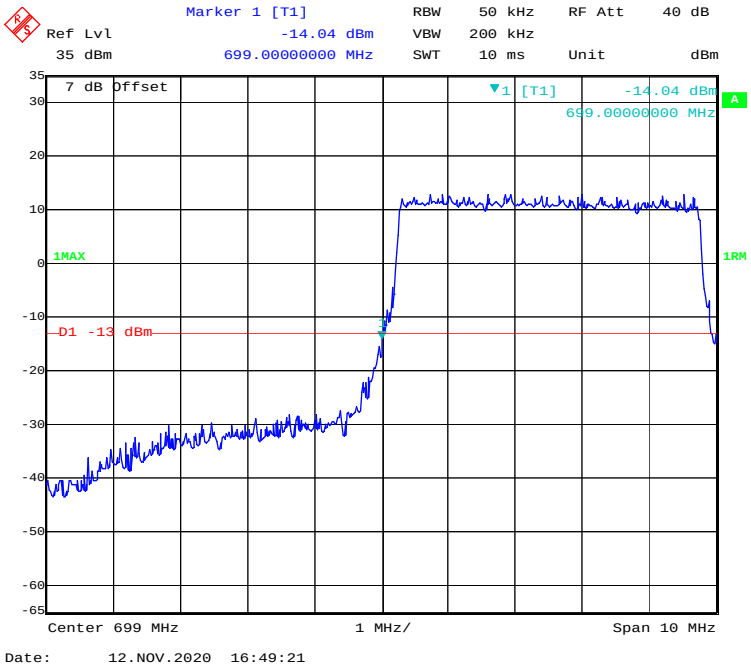
QPSK (3.0 MHz, FULL RB) - Left Band Edge



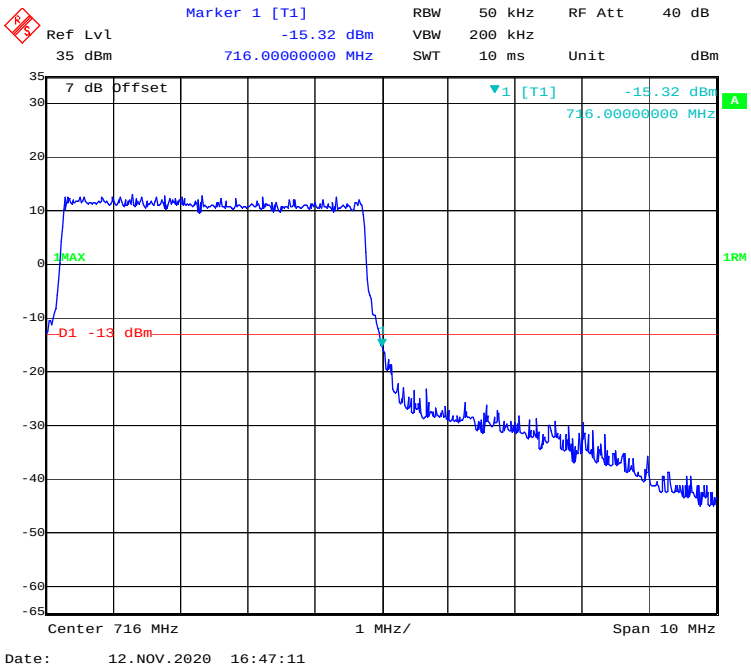
QPSK (3.0 MHz, FULL RB) - Right Band Edge



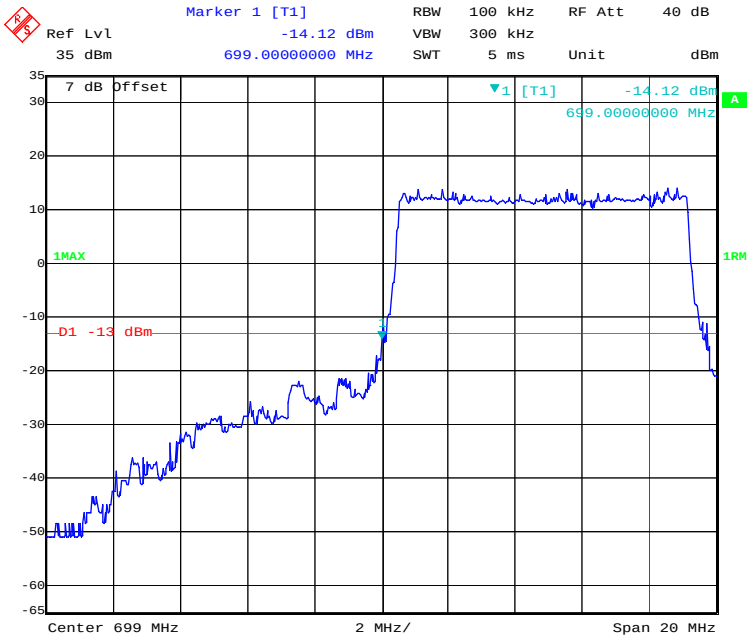
QPSK (5.0 MHz, FULL RB) - Left Band Edge



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

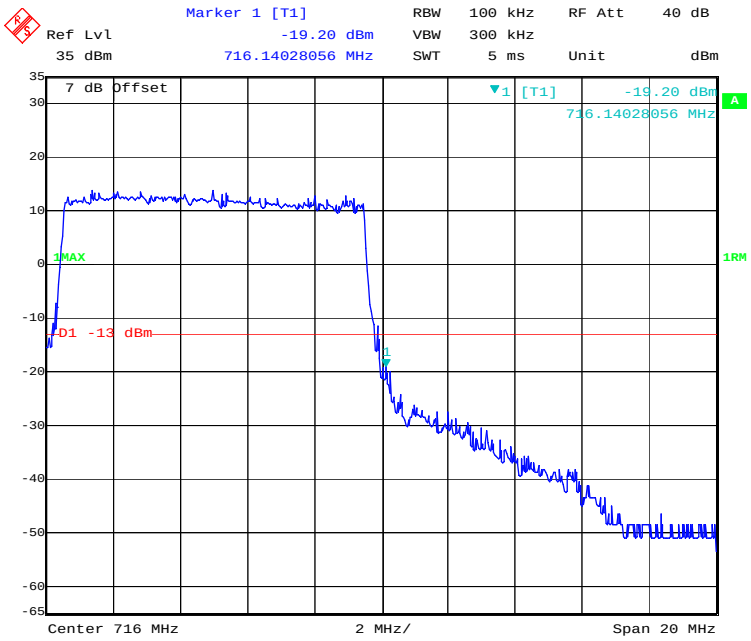


QPSK (10.0 MHz, FULL RB) - Left Band Edge



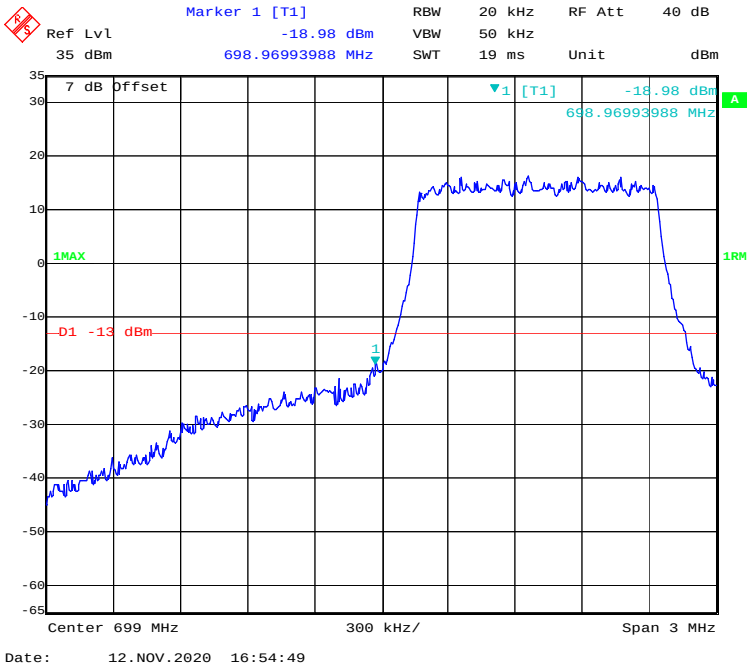
Date: 12.NOV.2020 16:40:59

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

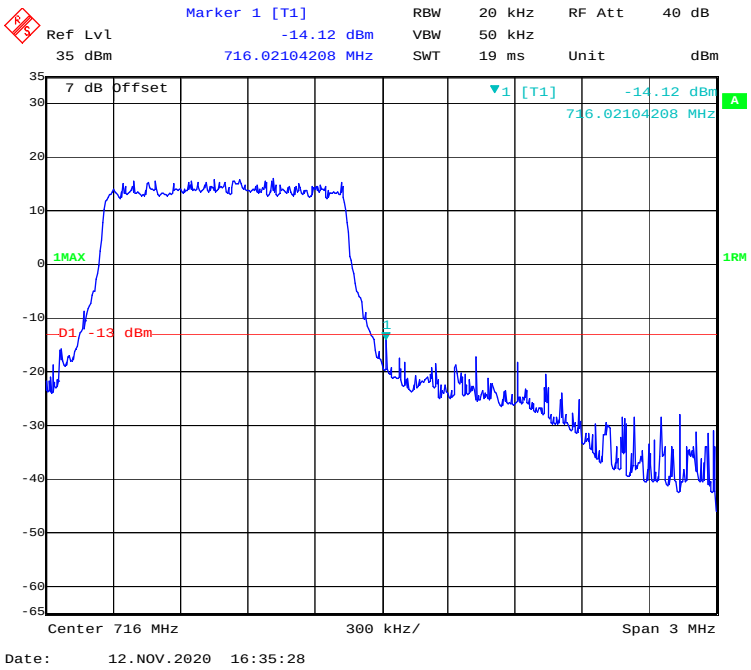


Date: 9.NOV.2020 19:55:58

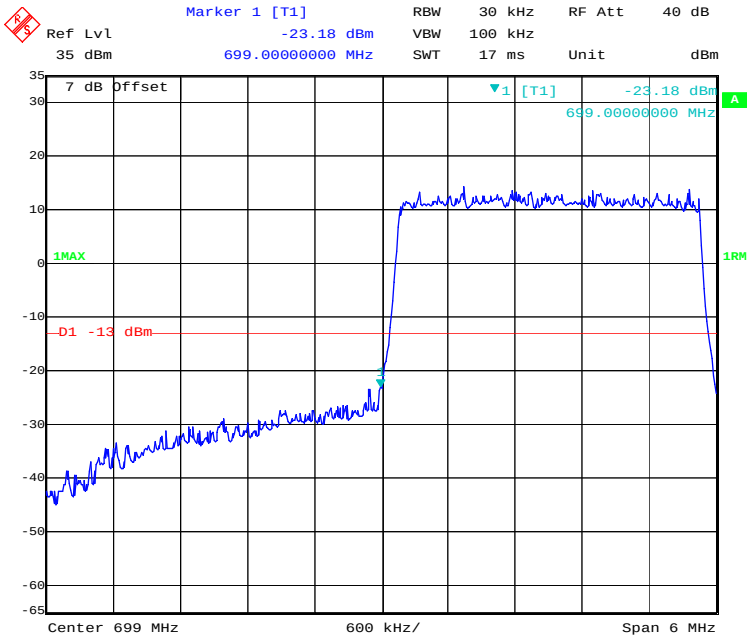
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



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

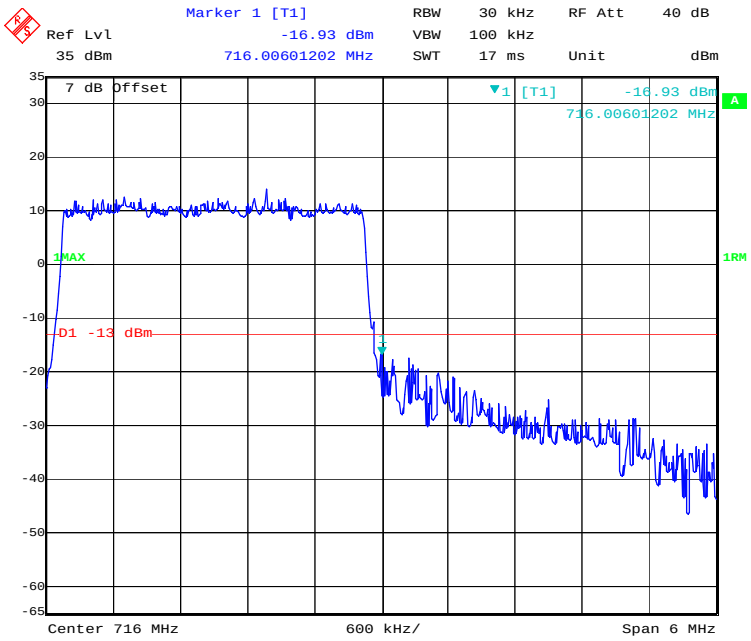


16-QAM (3.0 MHz, FULL RB) - Left Band Edge



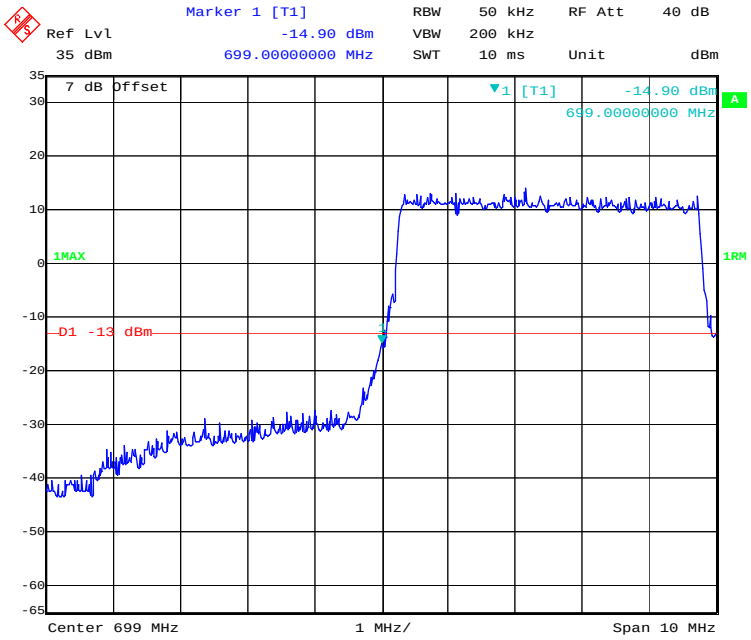
Date: 12.NOV.2020 16:43:13

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

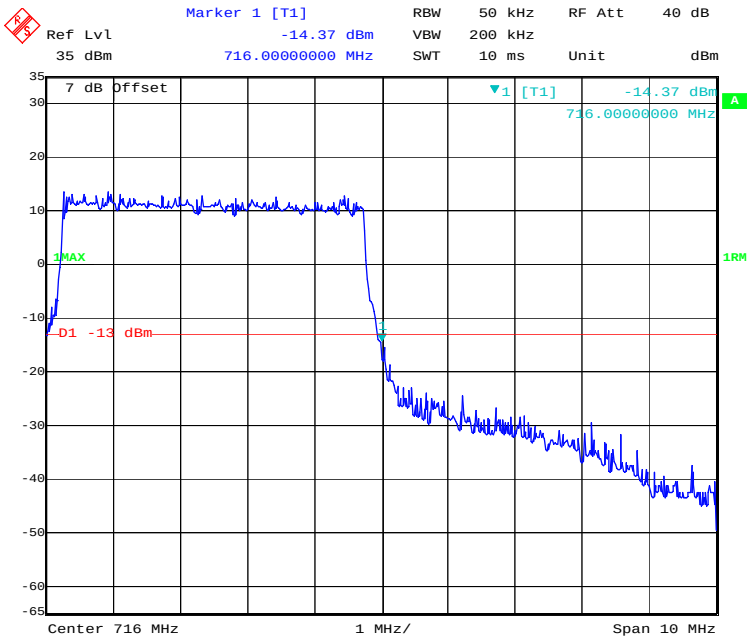


Date: 9.NOV.2020 19:53:09

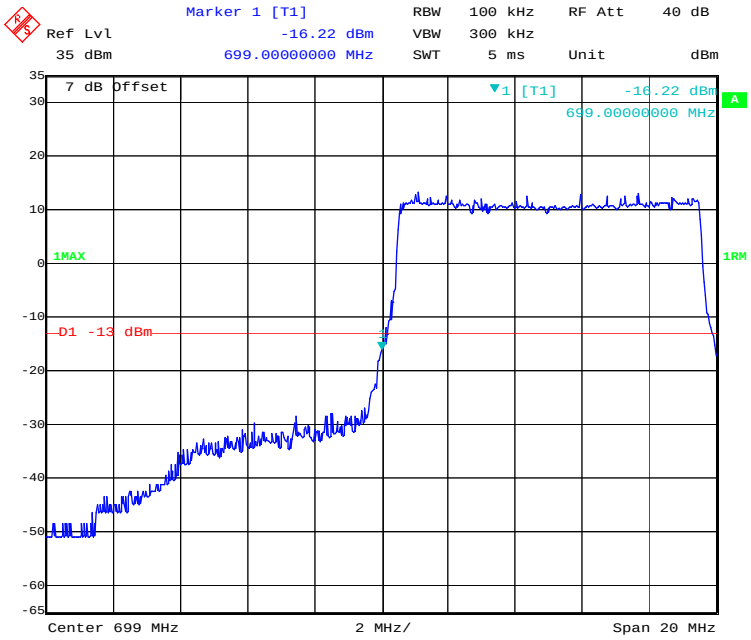
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



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

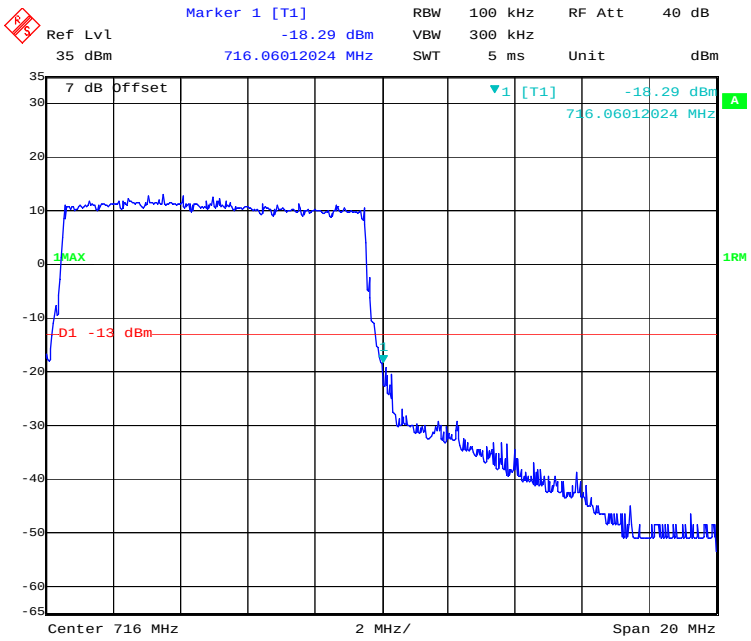


16-QAM (10.0 MHz, FULL RB) - Left Band Edge



Date: 9.NOV.2020 19:55:37

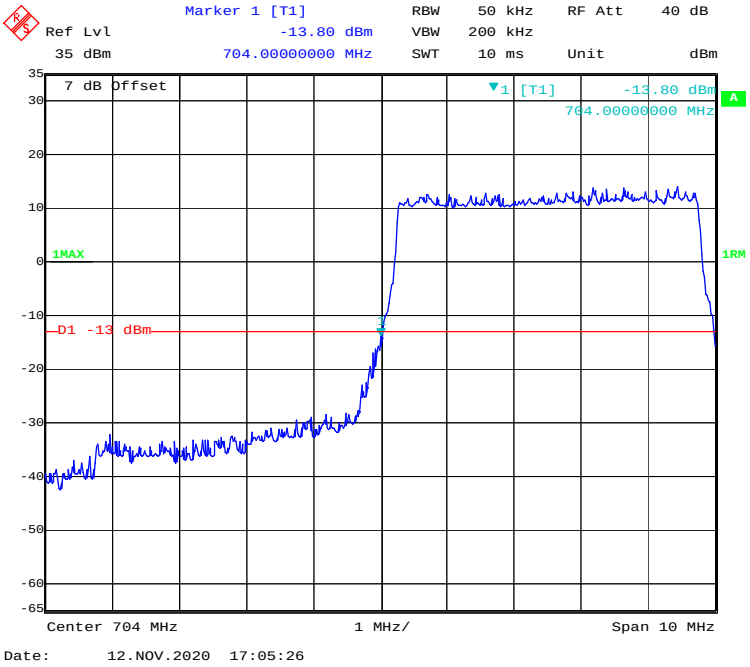
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



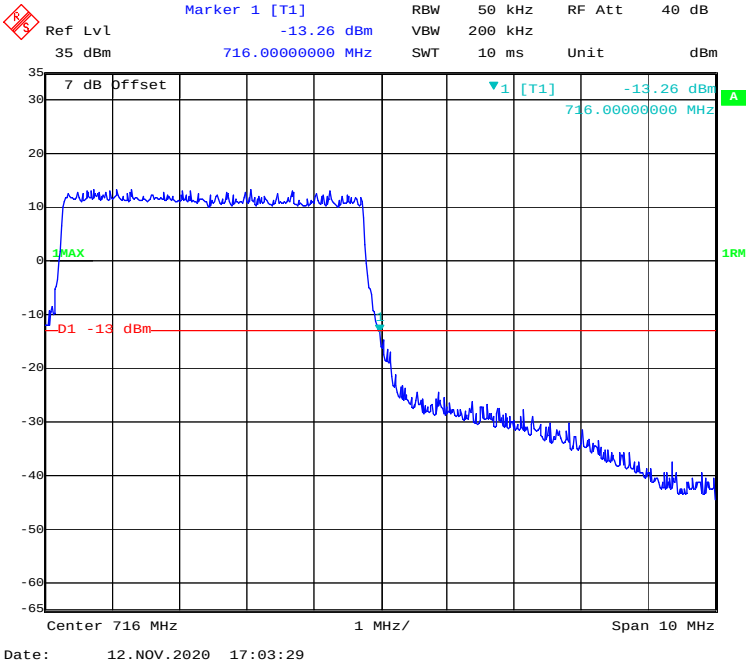
Date: 9.NOV.2020 19:56:19

LTE Band 17:

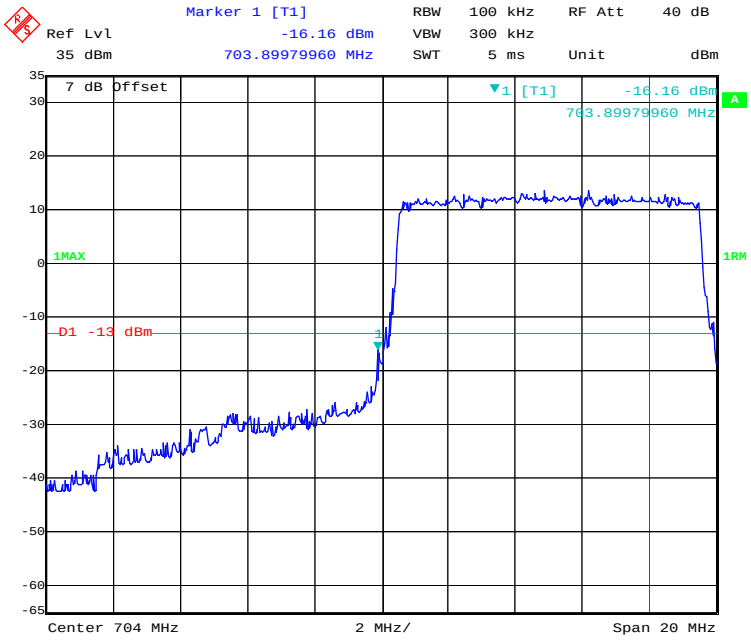
QPSK (5.0 MHz, FULL RB) - Left Band Edge



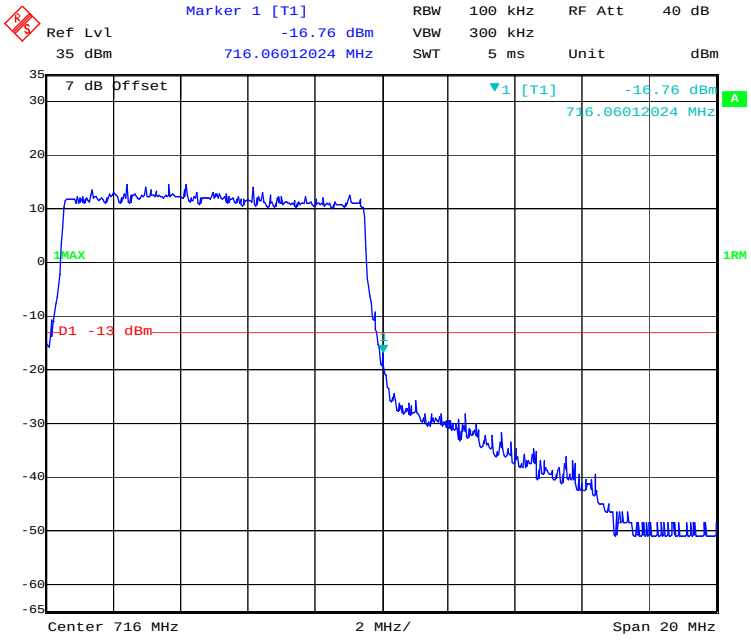
QPSK (5.0 MHz, FULL RB) - Right Band Edge



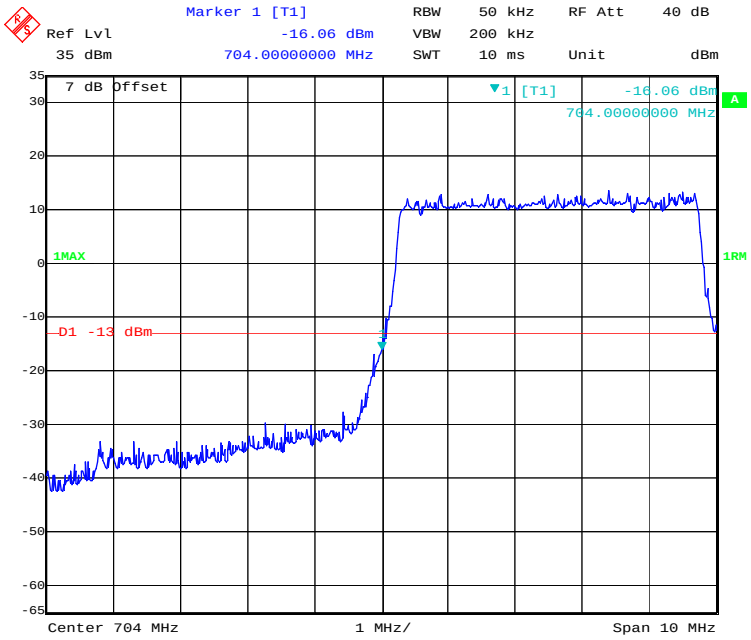
QPSK (10.0 MHz, FULL RB) - Left Band Edge



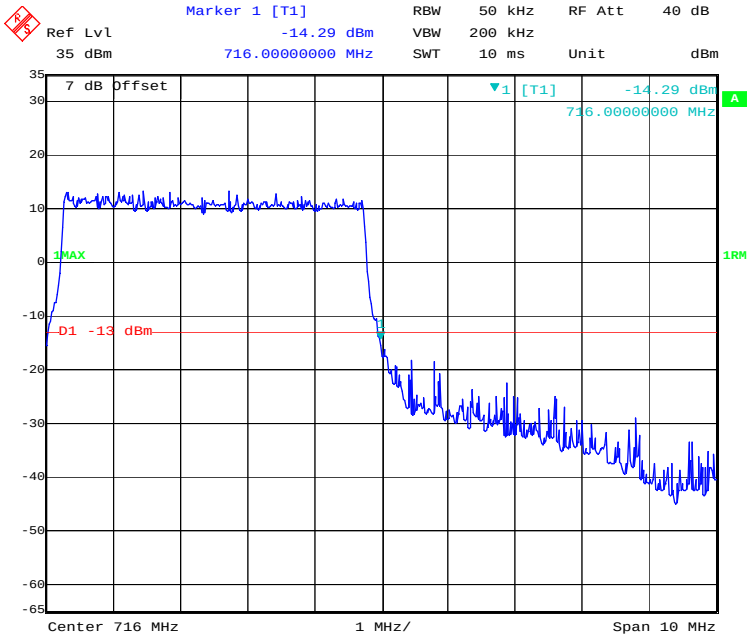
QPSK (10.0 MHz, FULL RB) - Right Band Edge



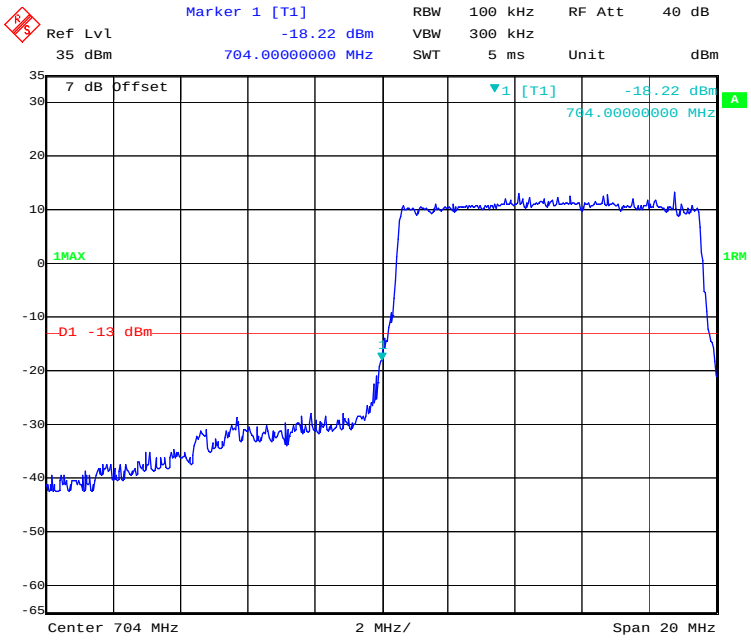
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



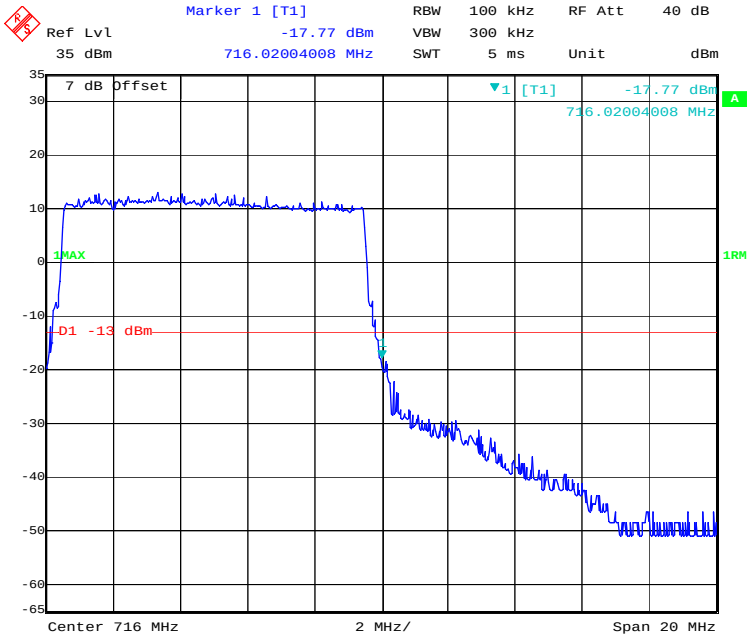
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



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

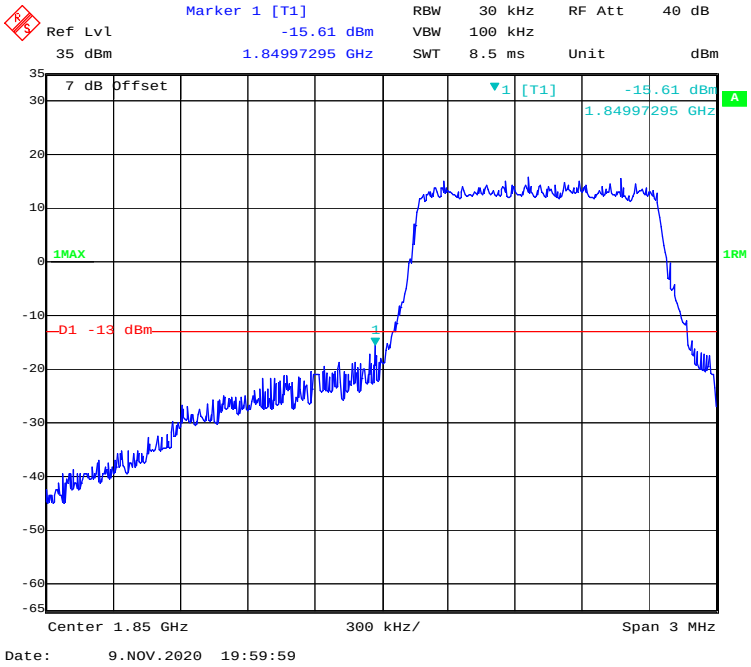


16-QAM (10.0 MHz, FULL RB) - Right Band Edge

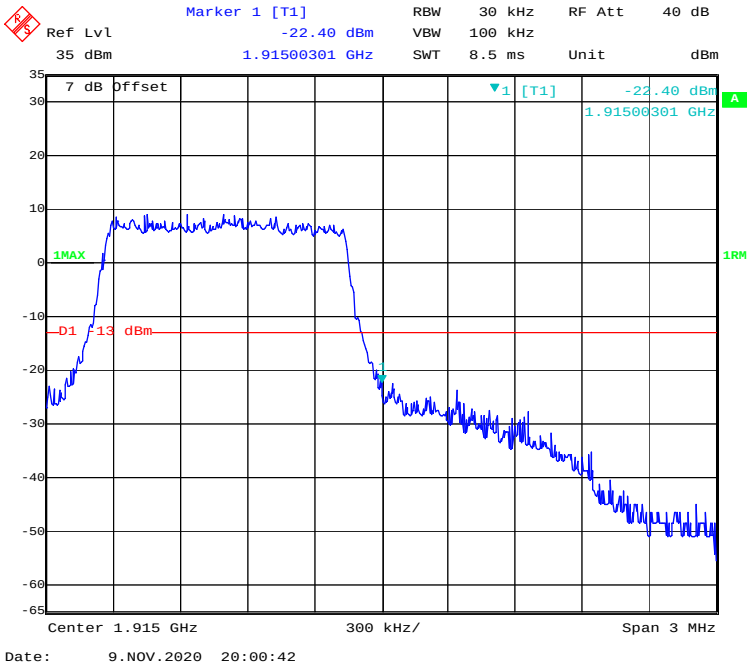


LTE Band 25:

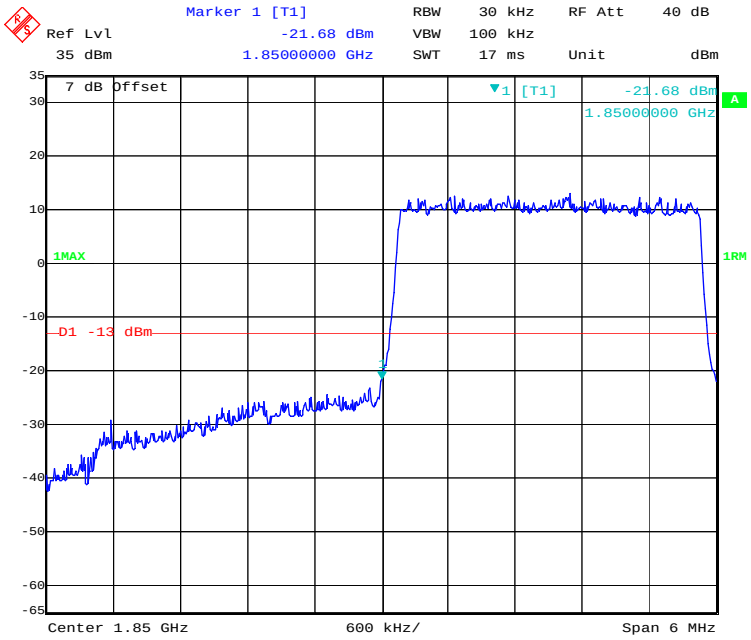
QPSK (1.4 MHz, FULL RB) - Left Band Edge



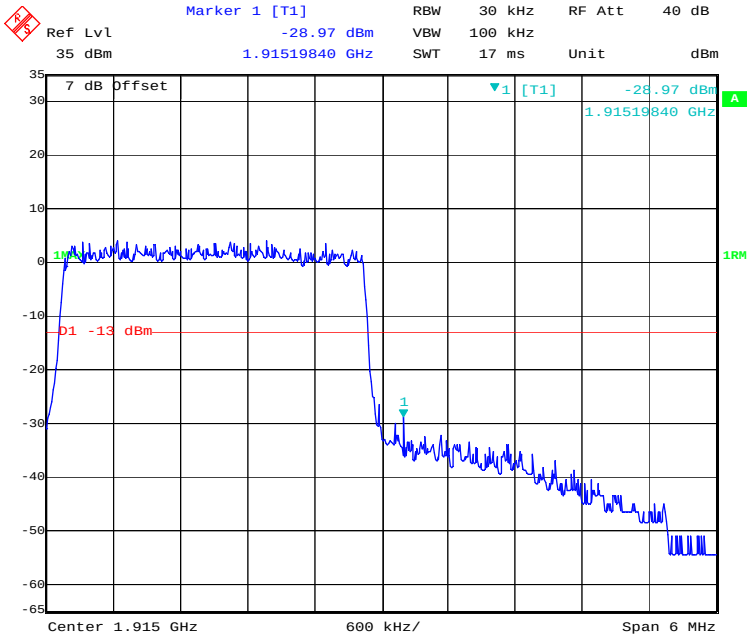
QPSK (1.4 MHz, FULL RB) - Right Band Edge



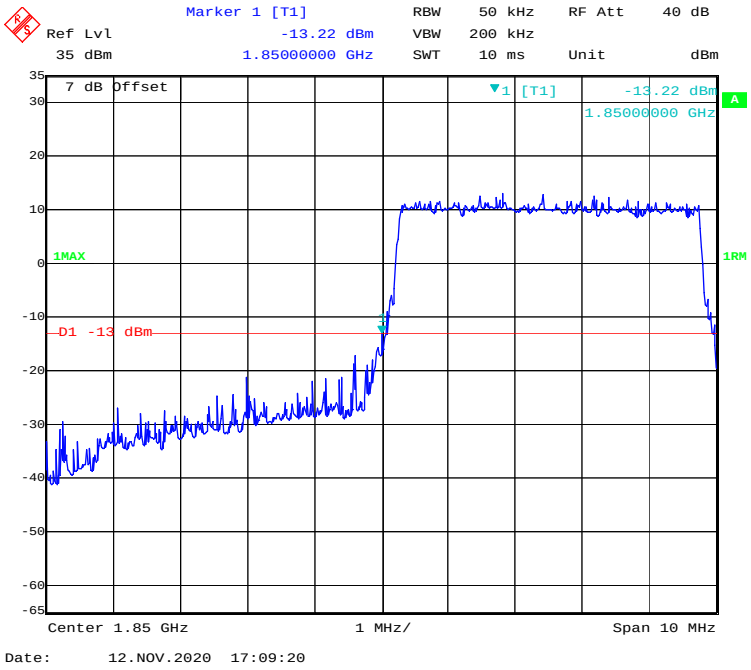
QPSK (3 MHz, FULL RB) - Left Band Edge



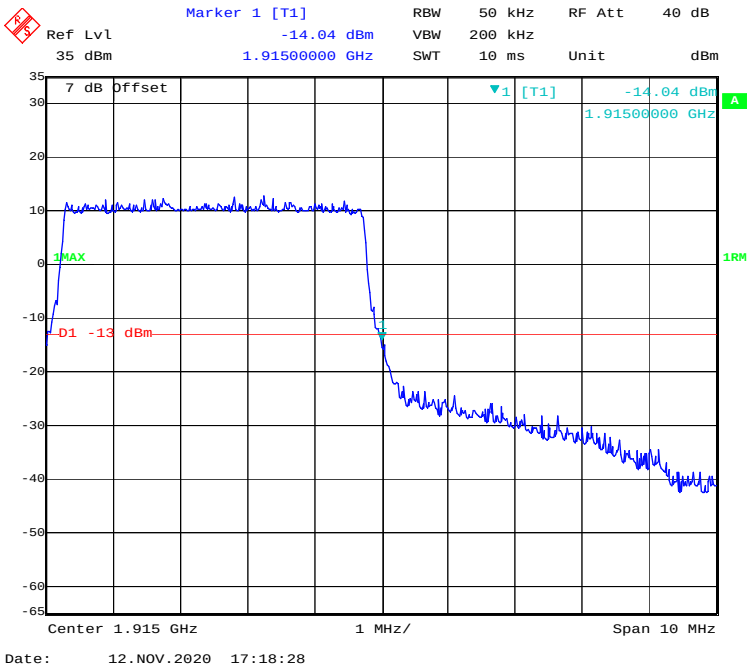
QPSK (3 MHz, FULL RB) - Right Band Edge



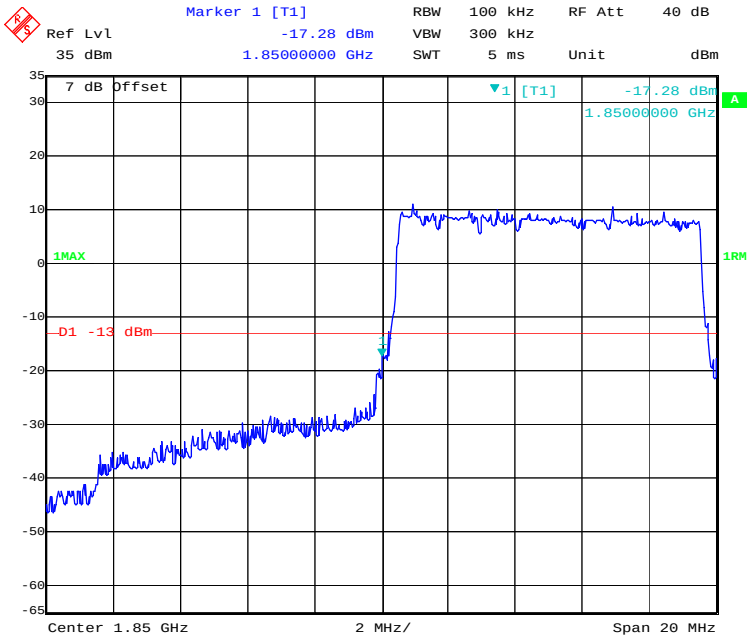
QPSK (5 MHz, FULL RB) - Left Band Edge



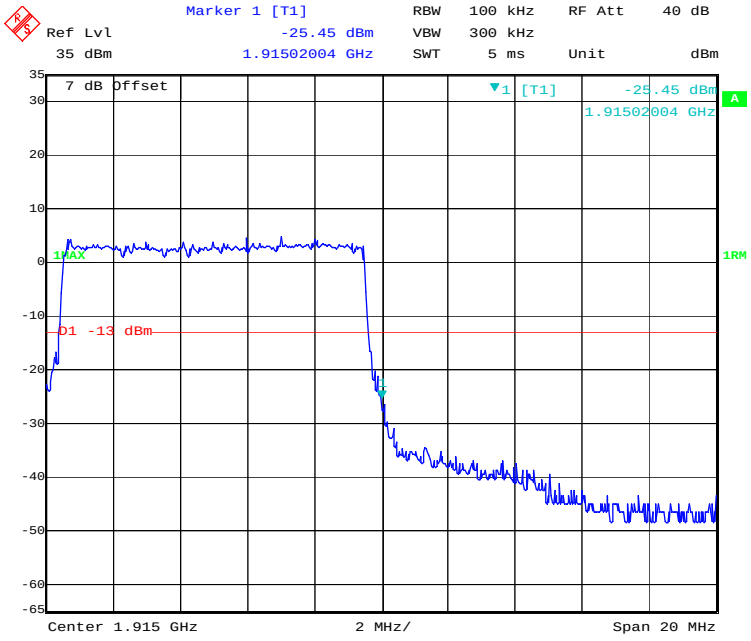
QPSK (5 MHz, FULL RB) - Right Band Edge



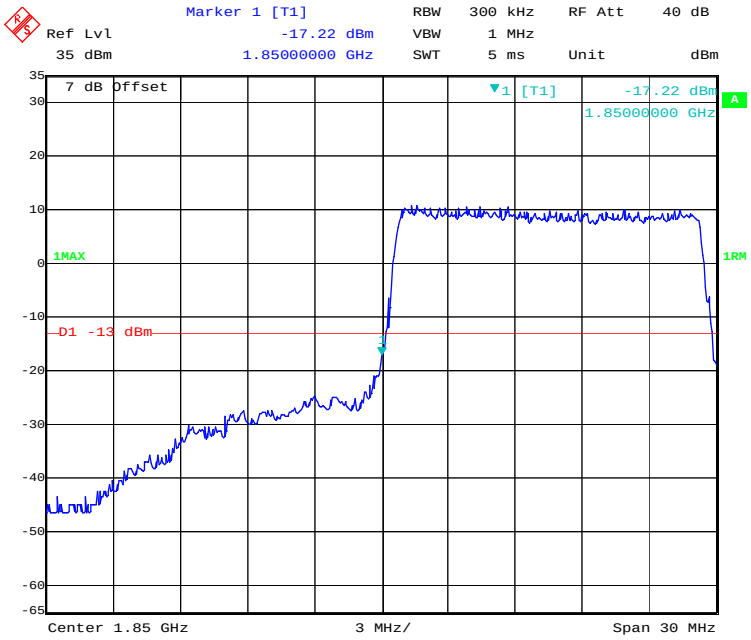
QPSK (10 MHz, FULL RB) - Left Band Edge



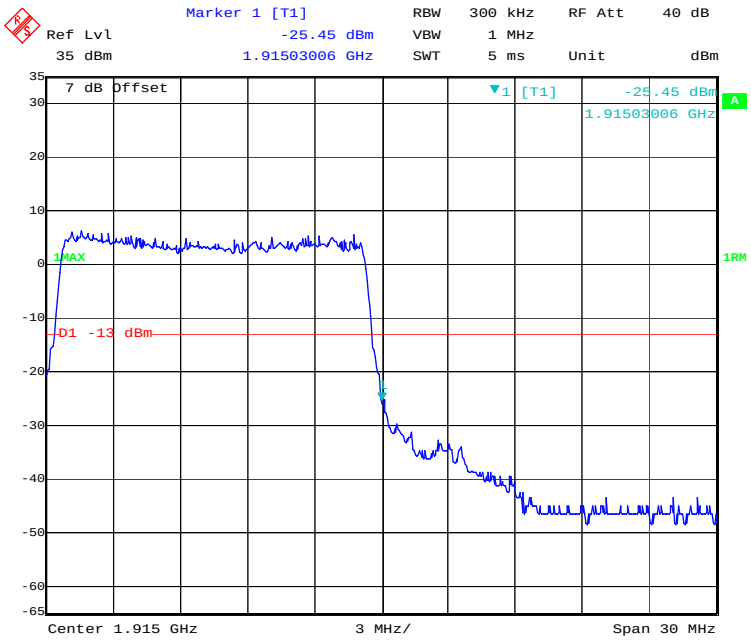
QPSK (10 MHz, FULL RB) - Right Band Edge



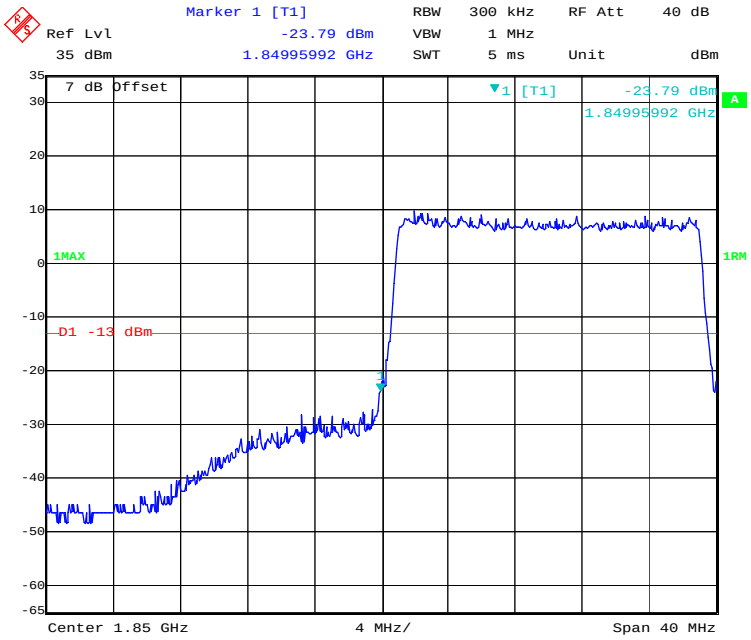
QPSK (15 MHz, FULL RB) - Left Band Edge



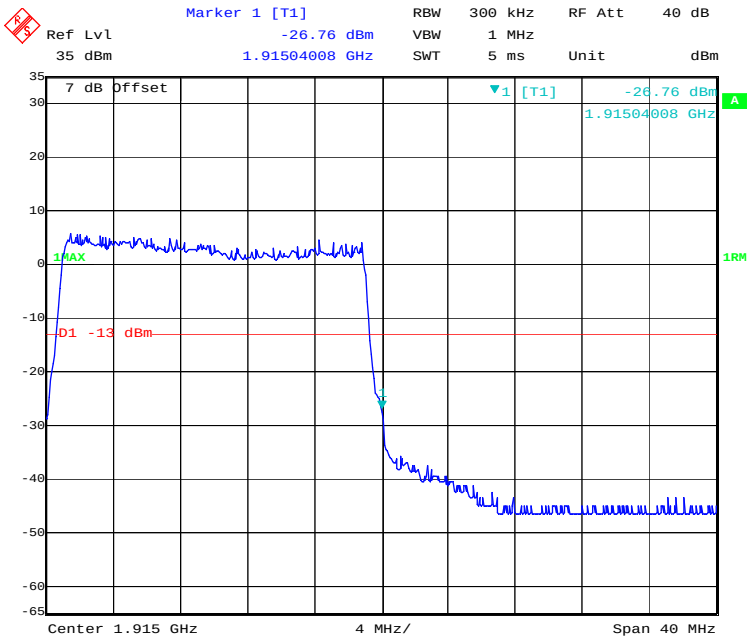
QPSK (15 MHz, FULL RB) - Right Band Edge



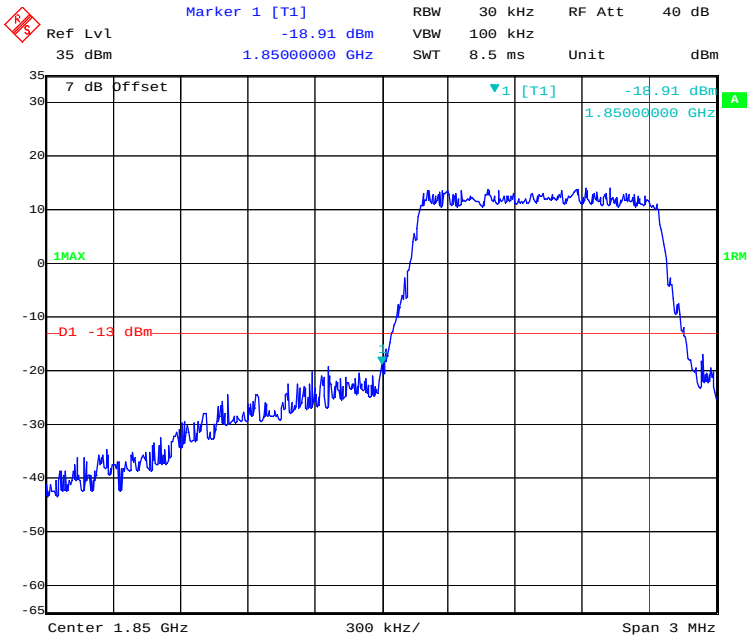
QPSK (20 MHz, FULL RB) - Left Band Edge



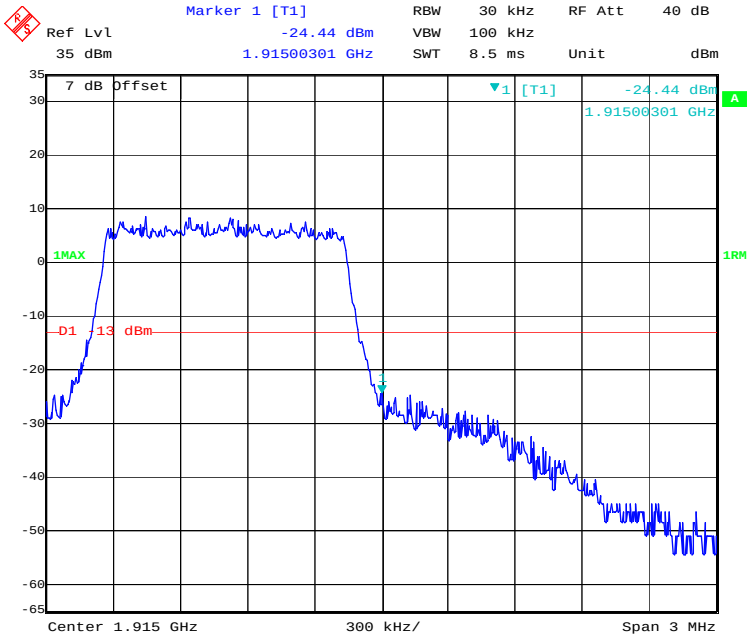
QPSK (20 MHz, FULL RB) - Right Band Edge



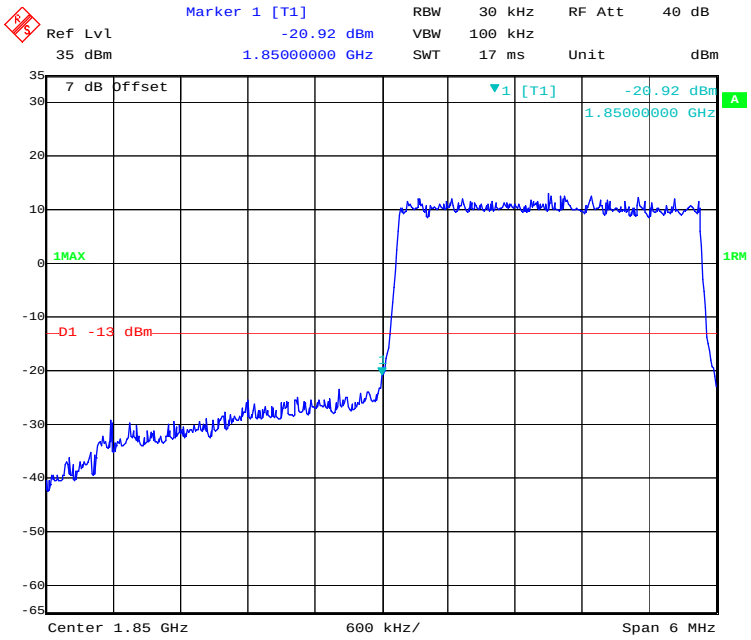
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



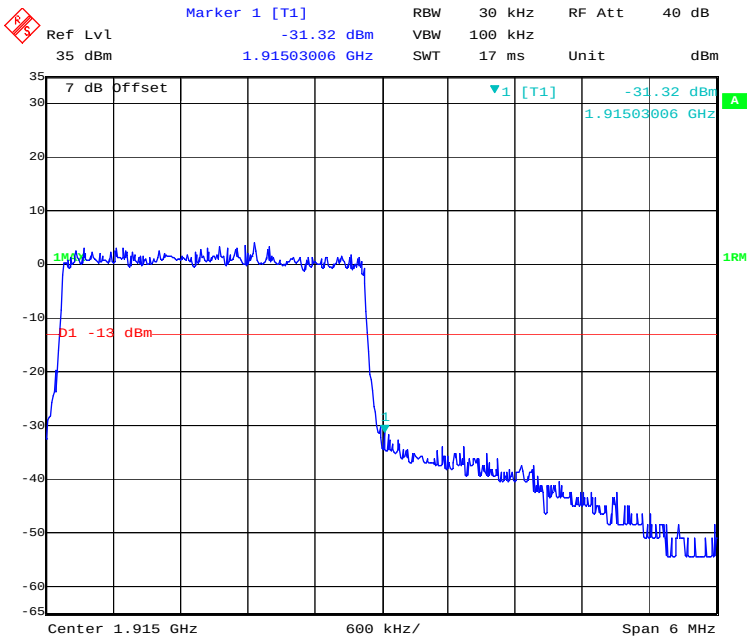
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



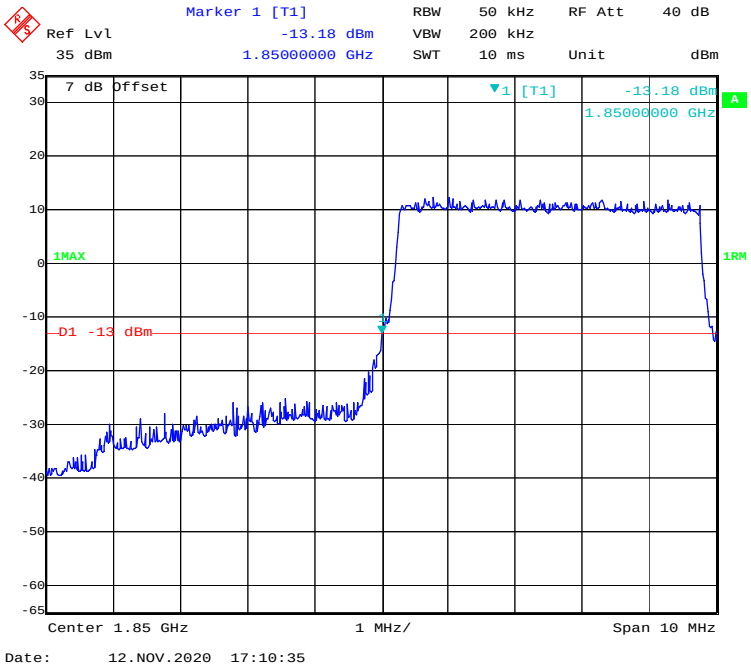
16-QAM (3 MHz, FULL RB) - Left Band Edge



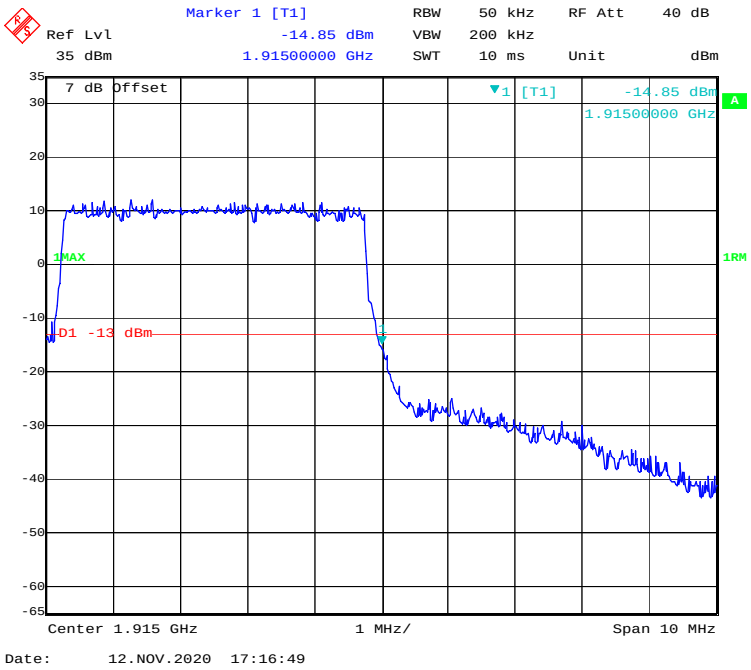
16-QAM (3 MHz, FULL RB) - Right Band Edge



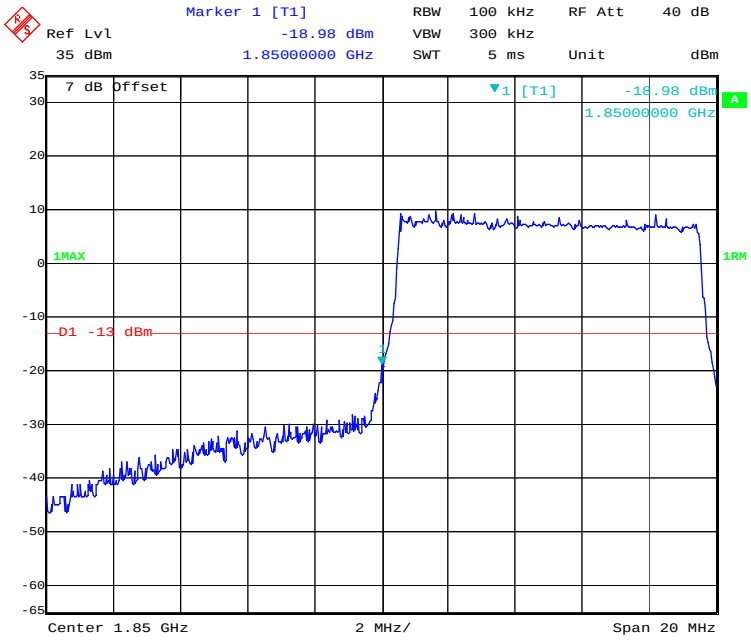
16-QAM (5 MHz, FULL RB) - Left Band Edge



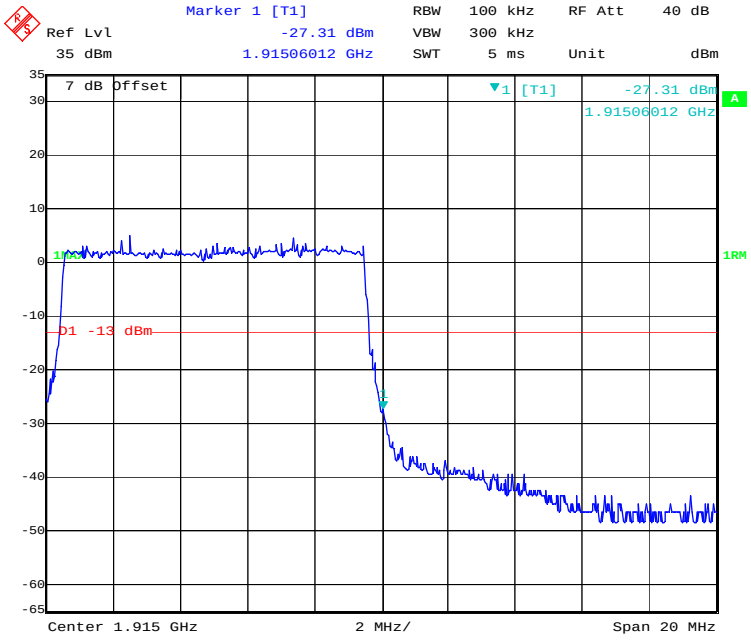
16-QAM (5 MHz, FULL RB) - Right Band Edge



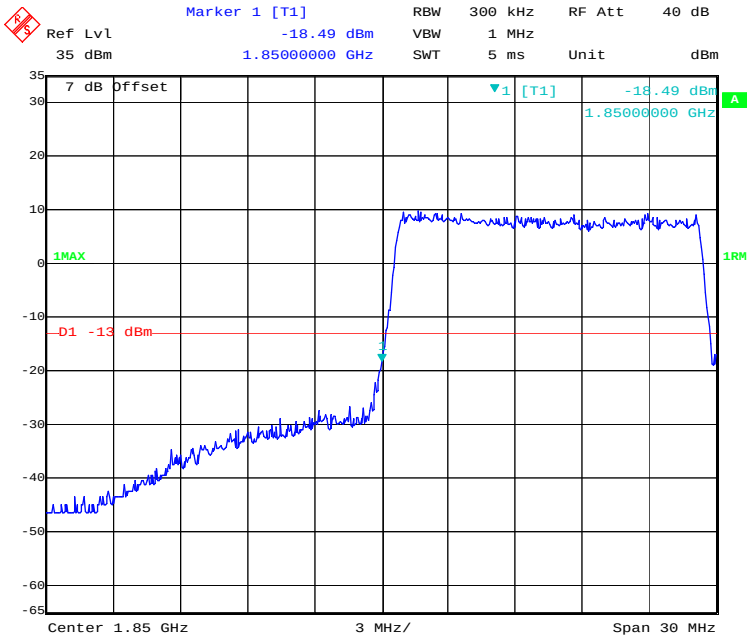
16-QAM (10 MHz, FULL RB) - Left Band Edge



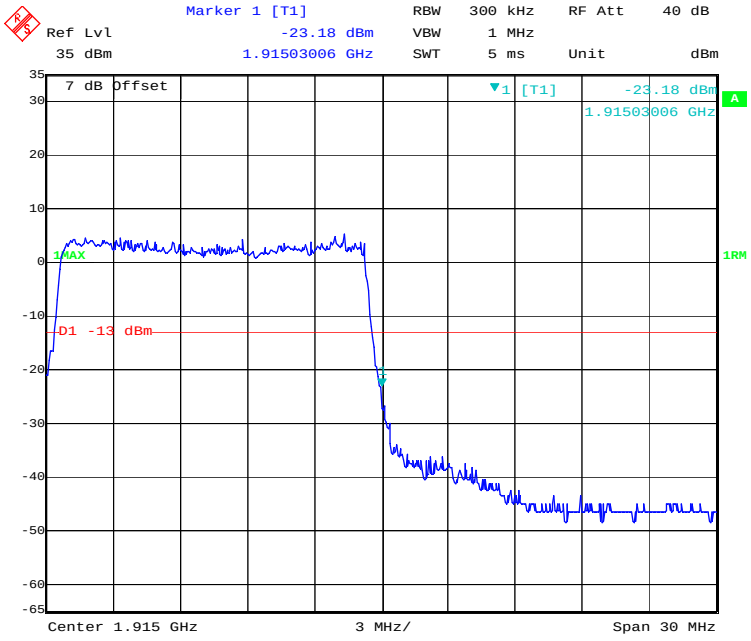
16-QAM (10 MHz, FULL RB) - Right Band Edge



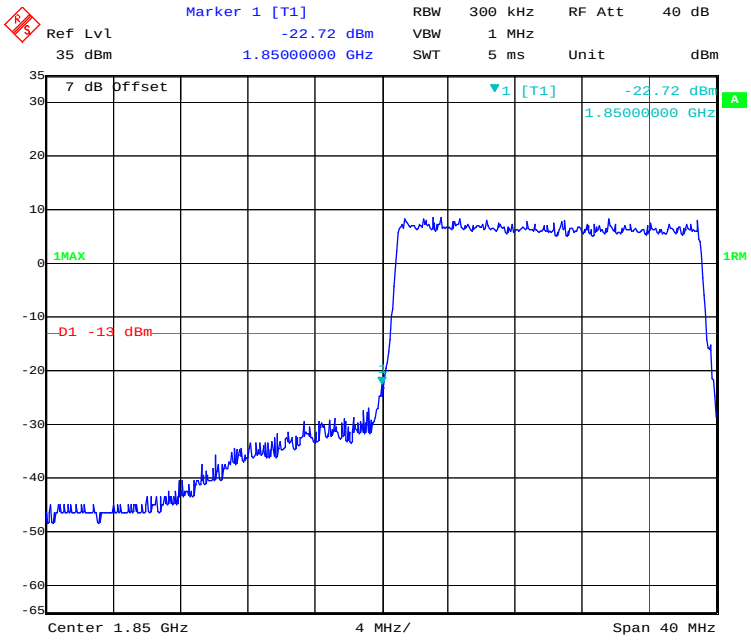
16-QAM (15 MHz, FULL RB) - Left Band Edge



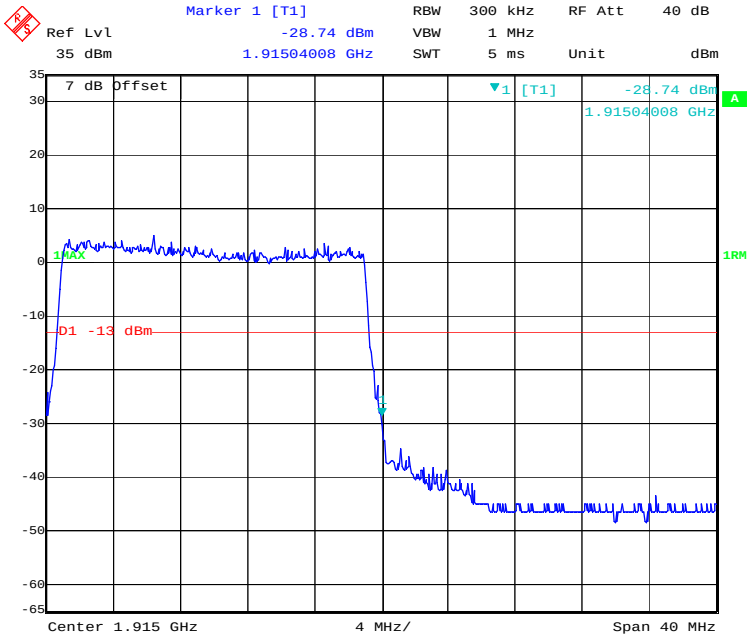
16-QAM (15 MHz, FULL RB) - Right Band Edge



16-QAM (20 MHz, FULL RB) - Left Band Edge

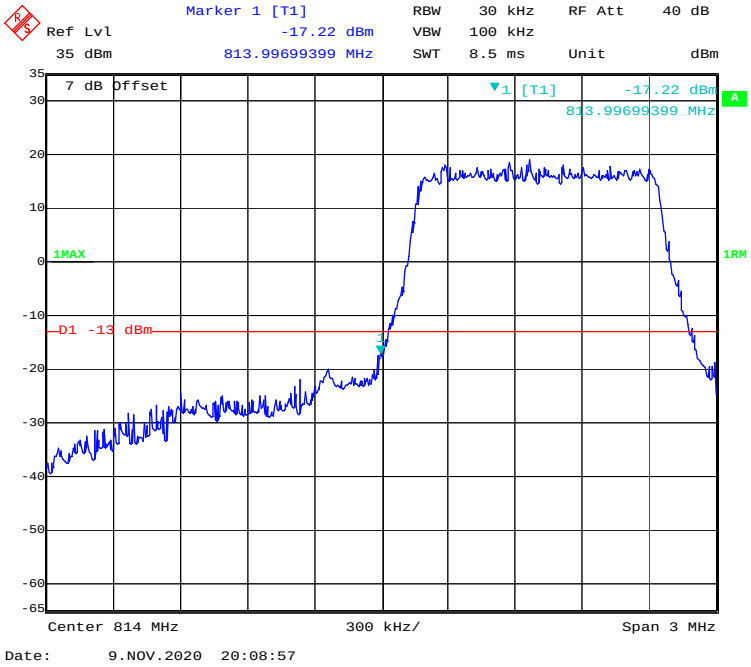


16-QAM (20 MHz, FULL RB) - Right Band Edge

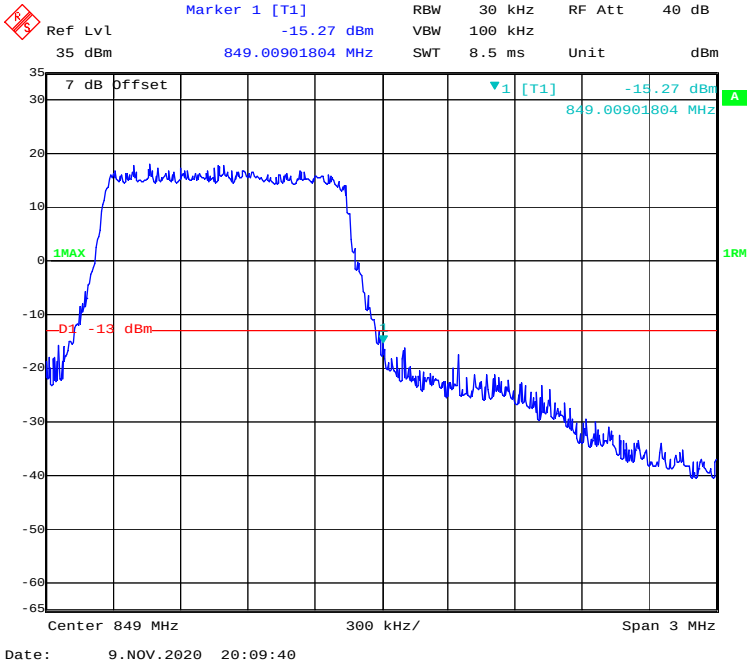


LTE Band 26:

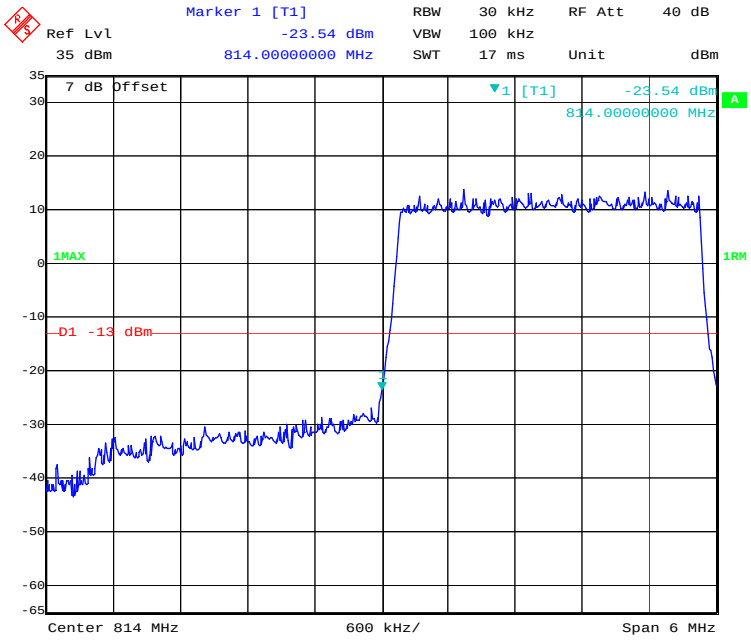
QPSK (1.4 MHz, FULL RB) - Left Band Edge



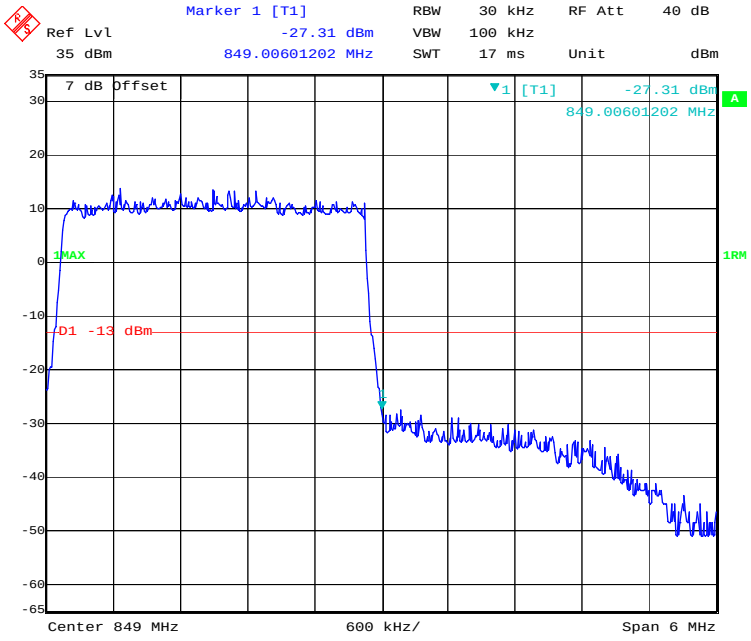
QPSK (1.4 MHz, FULL RB) - Right Band Edge



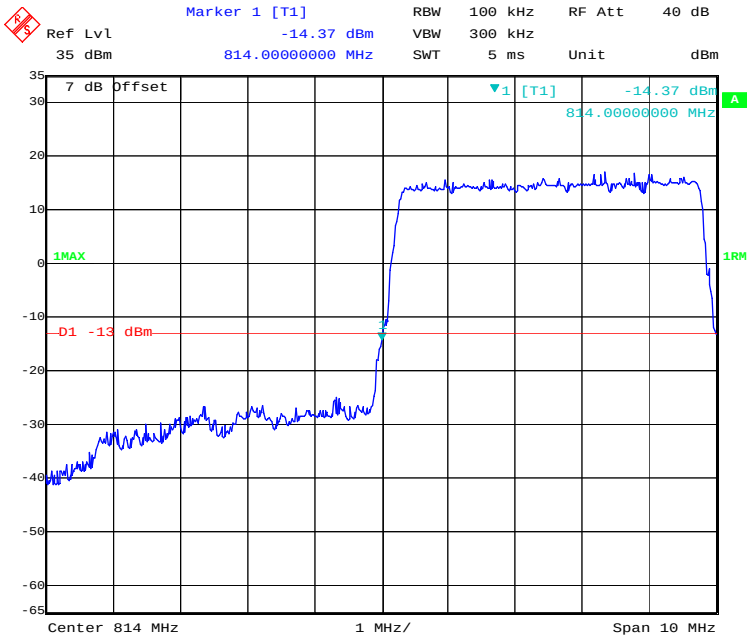
QPSK (3 MHz, FULL RB) - Left Band Edge



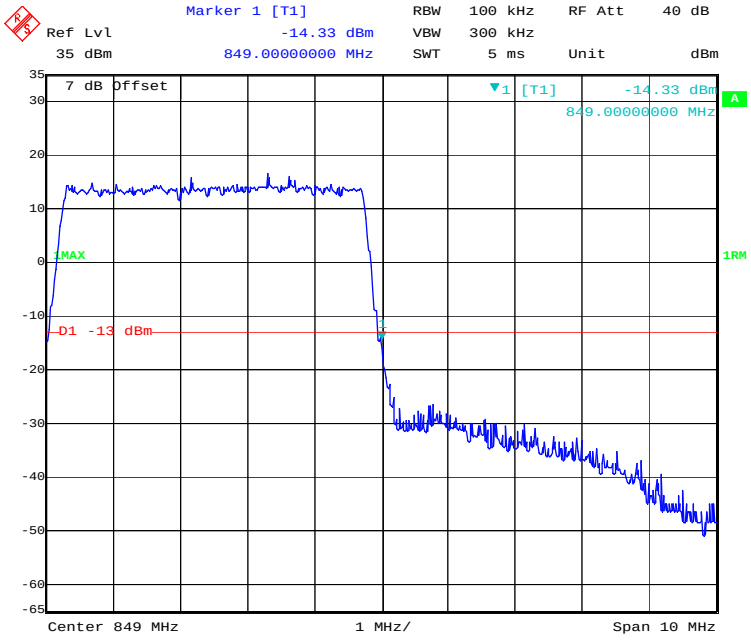
QPSK (3 MHz, FULL RB) - Right Band Edge



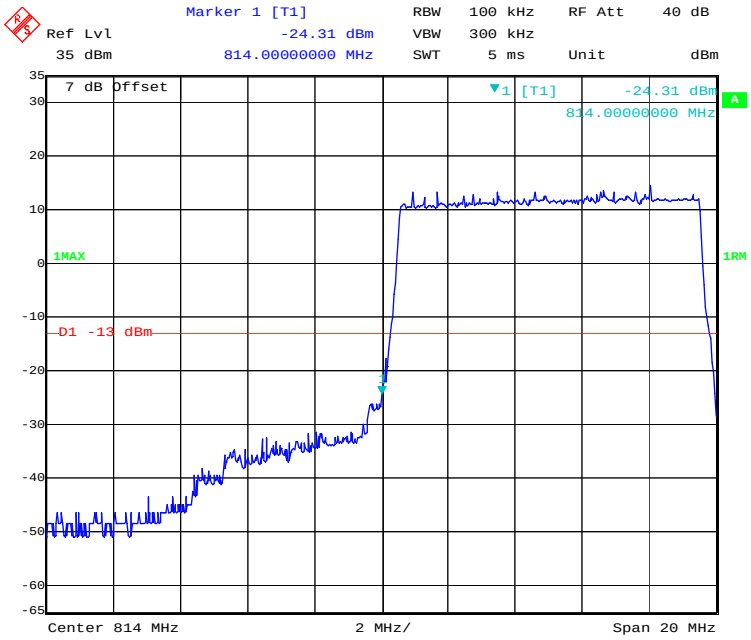
QPSK (5 MHz, FULL RB) - Left Band Edge



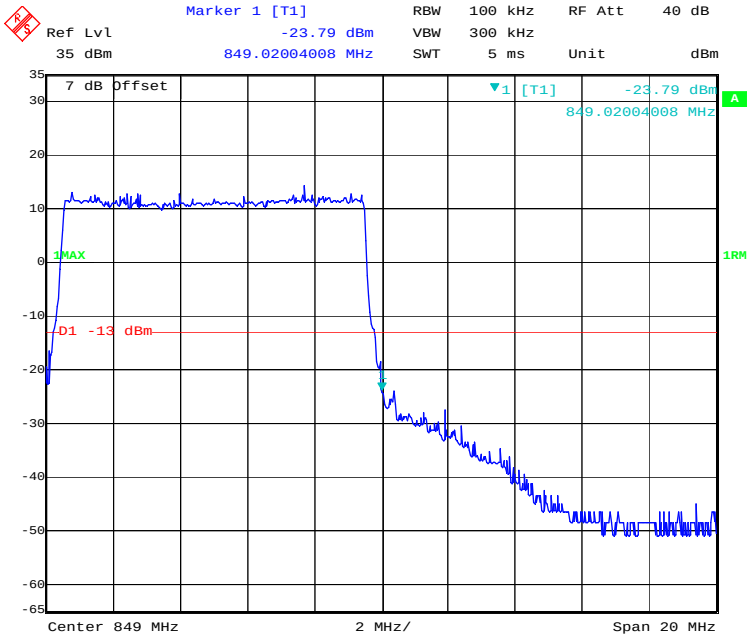
QPSK (5 MHz, FULL RB) - Right Band Edge



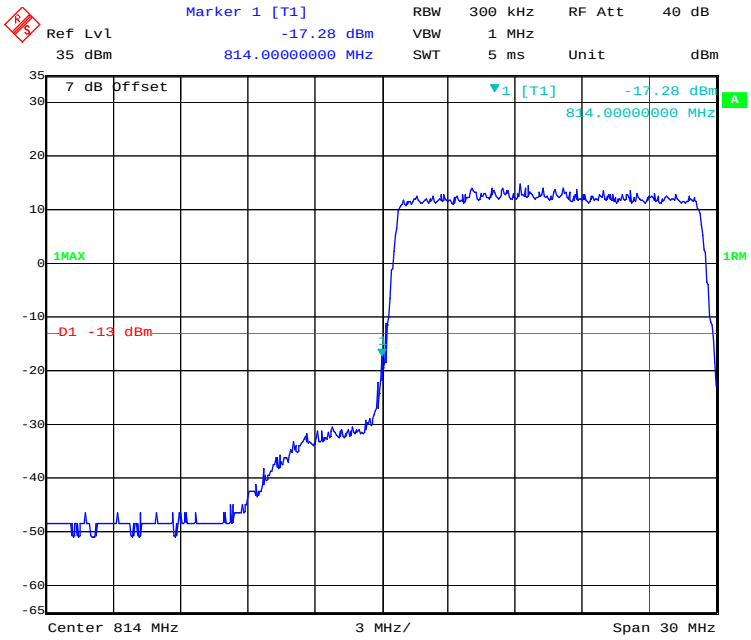
QPSK (10 MHz, FULL RB) - Left Band Edge



QPSK (10 MHz, FULL RB) - Right Band Edge

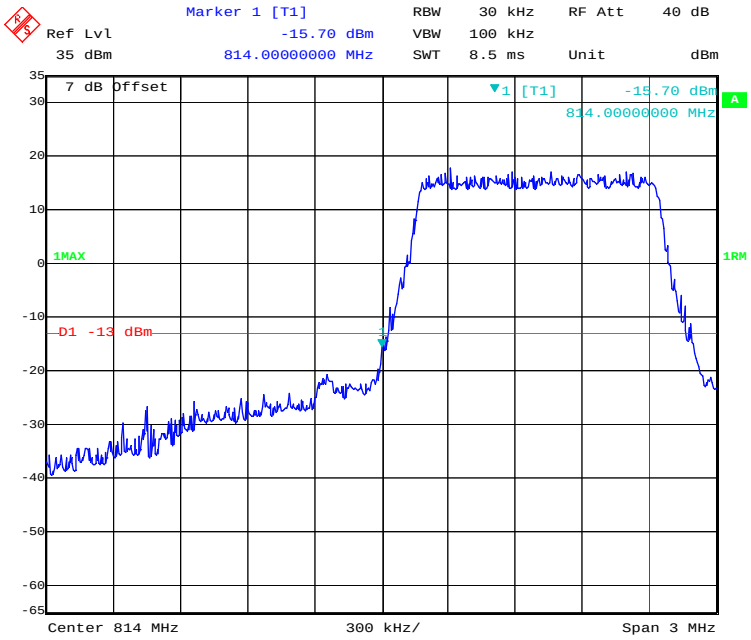


QPSK (15 MHz, FULL RB) - Left Band Edge

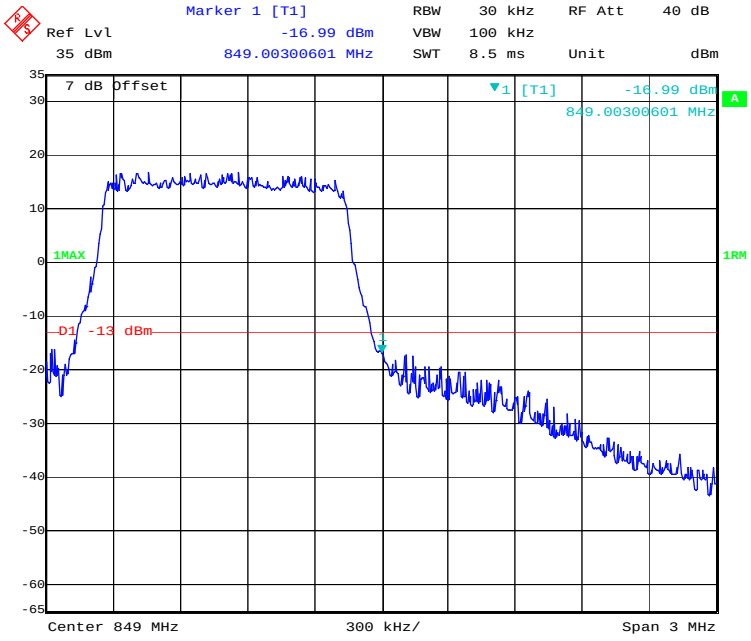


QPSK (15 MHz, FULL RB) - Right Band Edge

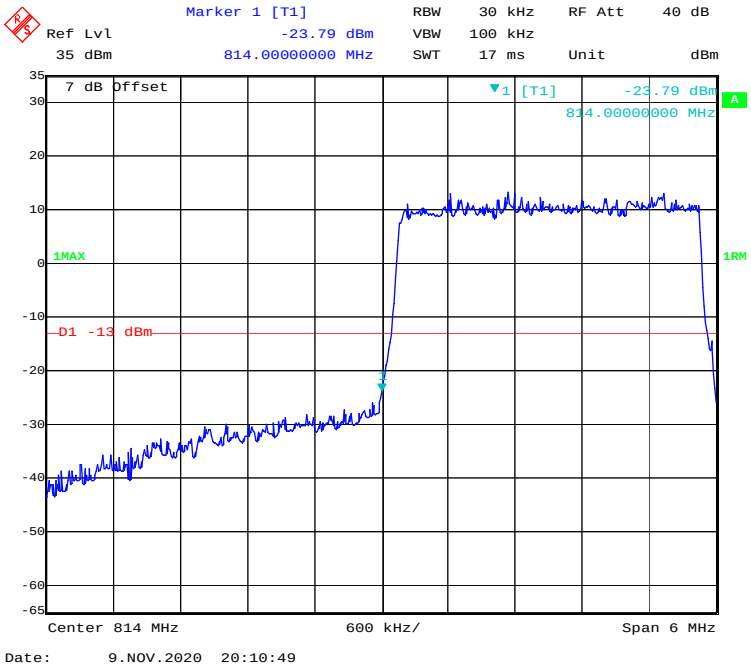
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



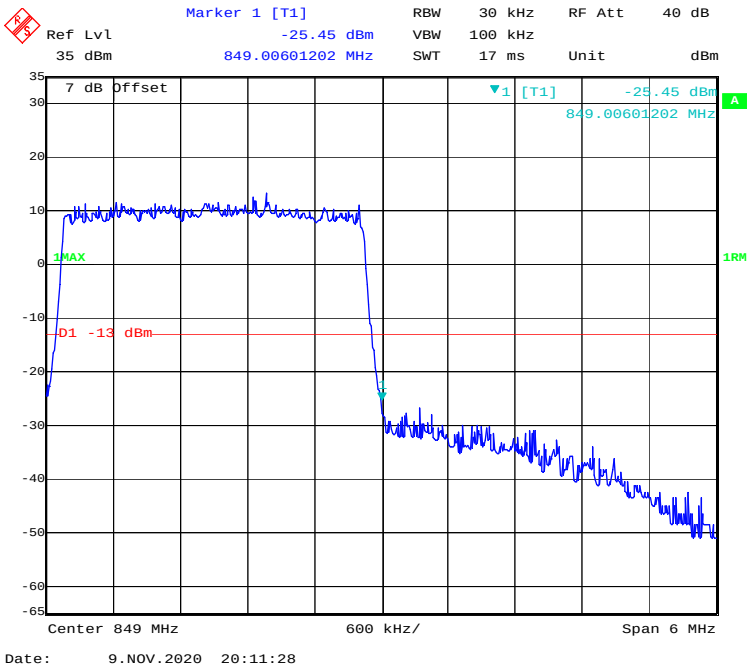
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



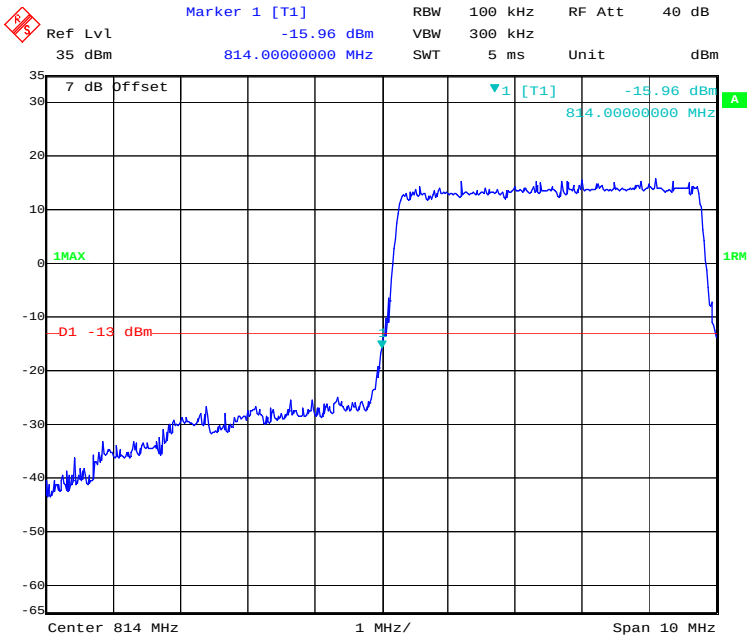
16-QAM (3 MHz, FULL RB) - Left Band Edge



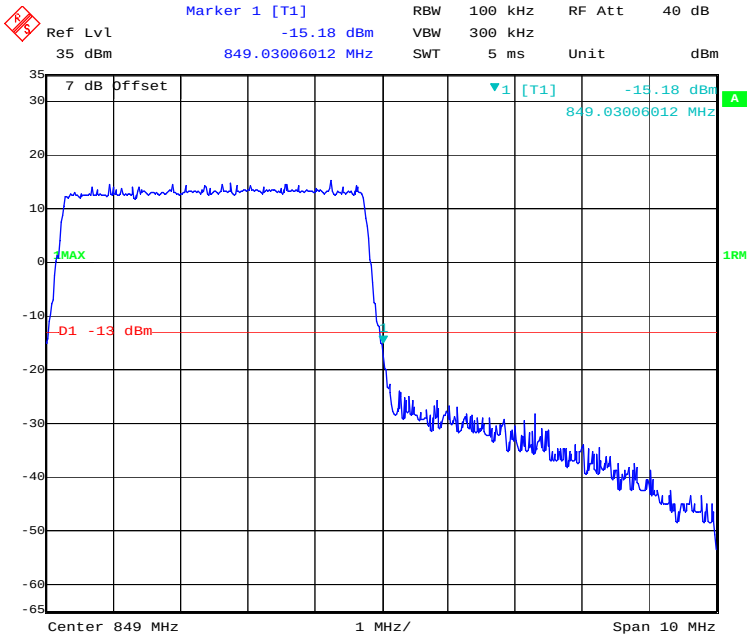
16-QAM (3 MHz, FULL RB) - Right Band Edge



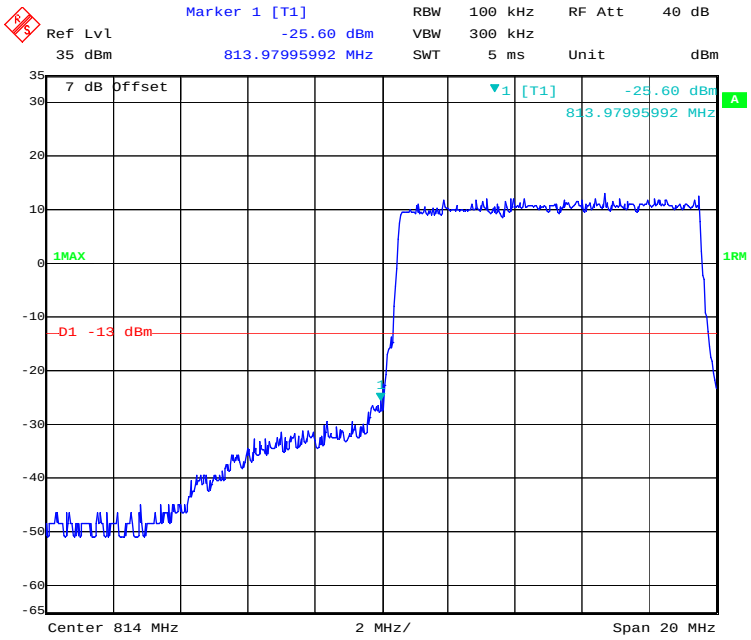
16-QAM (5 MHz, FULL RB) - Left Band Edge



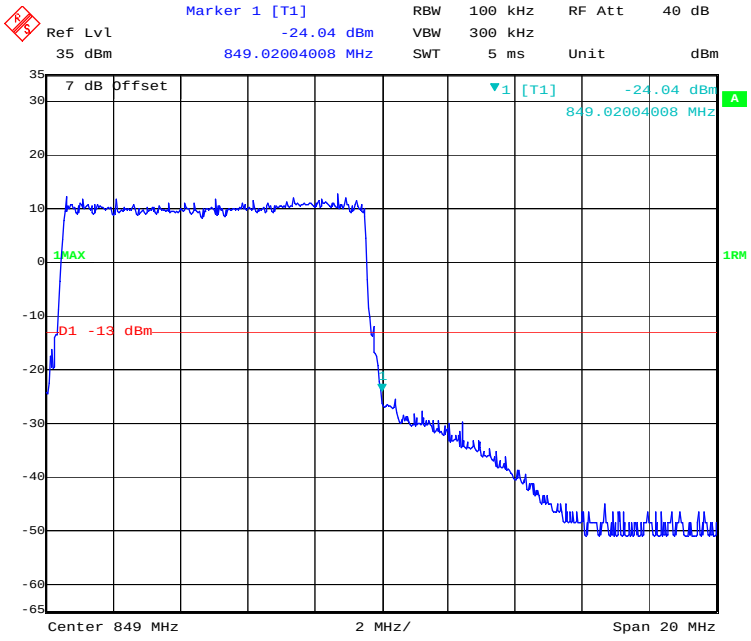
16-QAM (5 MHz, FULL RB) - Right Band Edge



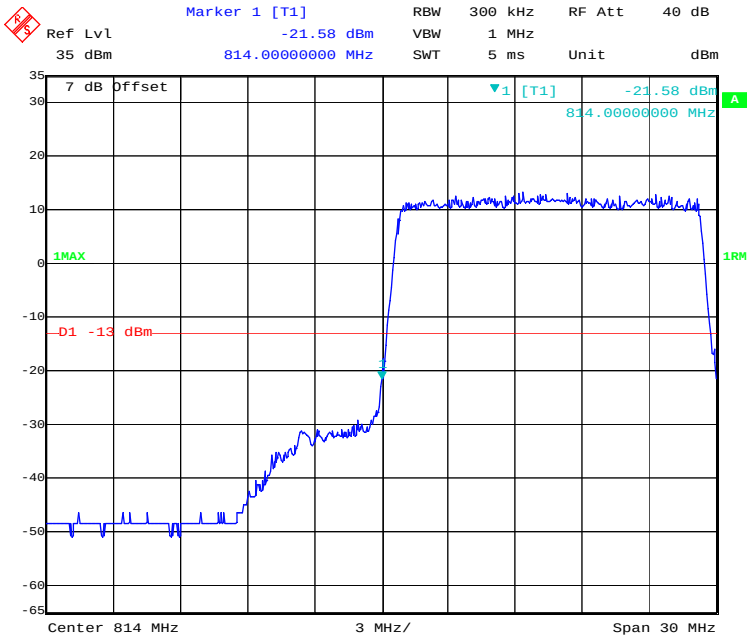
16-QAM (10 MHz, FULL RB) - Left Band Edge



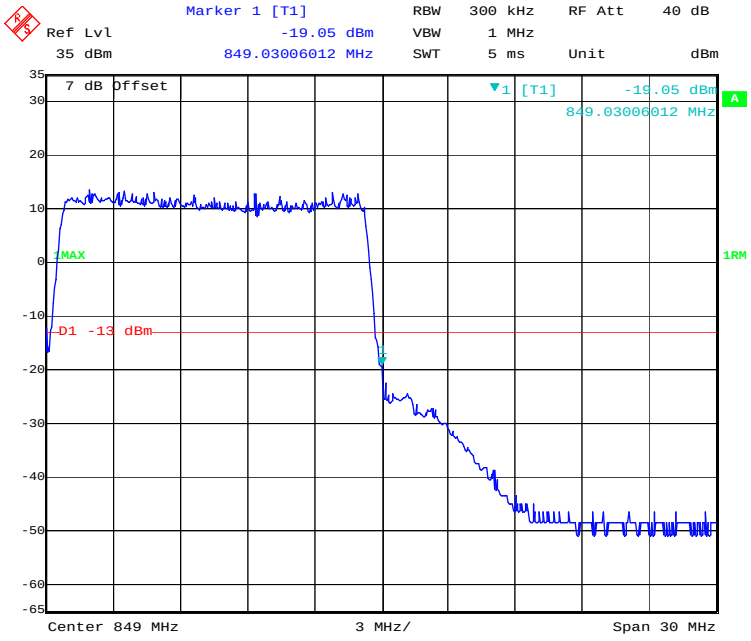
16-QAM (10 MHz, FULL RB) - Right Band Edge



16-QAM (15 MHz, FULL RB) - Left Band Edge

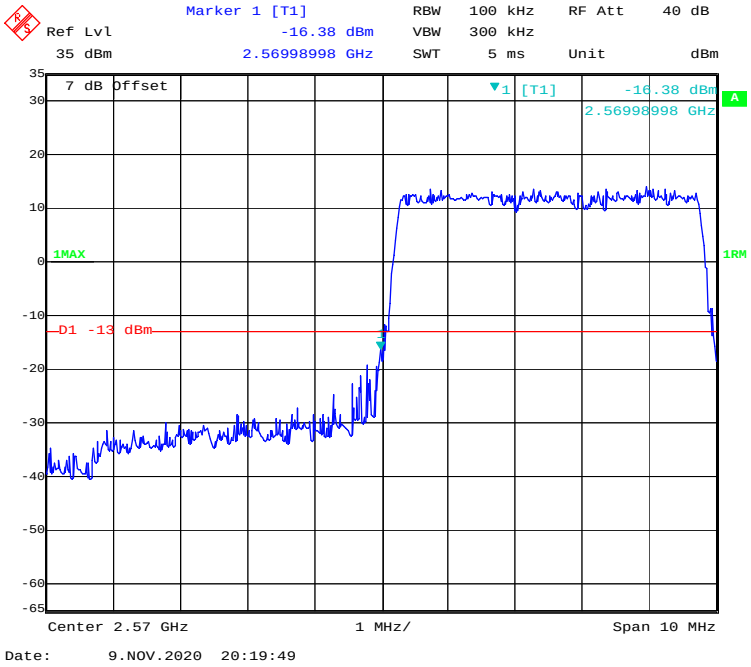


16-QAM (15 MHz, FULL RB) - Right Band Edge

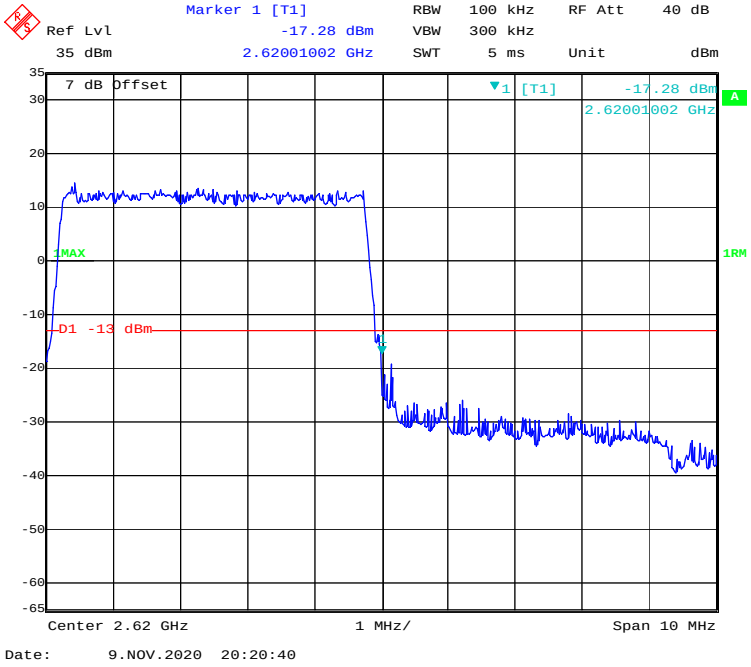


LTE Band 38:

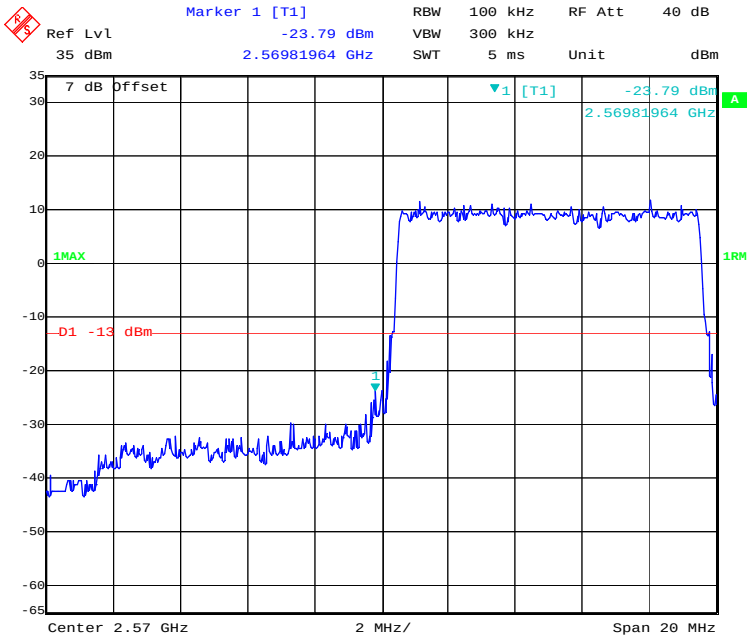
QPSK (5.0 MHz, FULL RB) - Left Band Edge



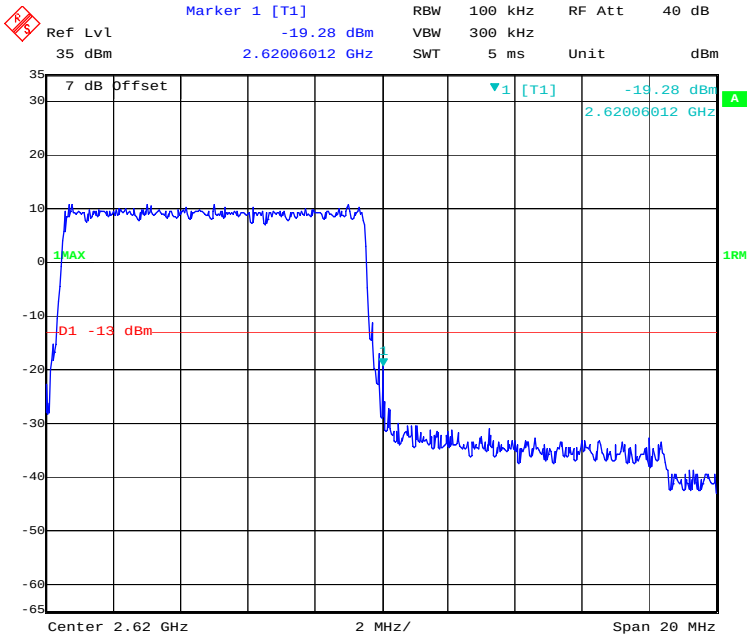
QPSK (5.0 MHz, FULL RB) - Right Band Edge



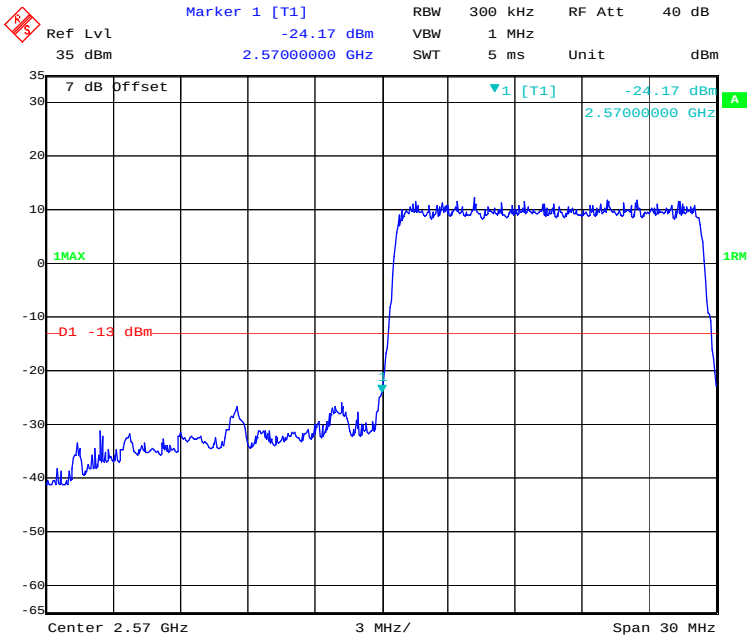
QPSK (10.0 MHz, FULL RB) - Left Band Edge



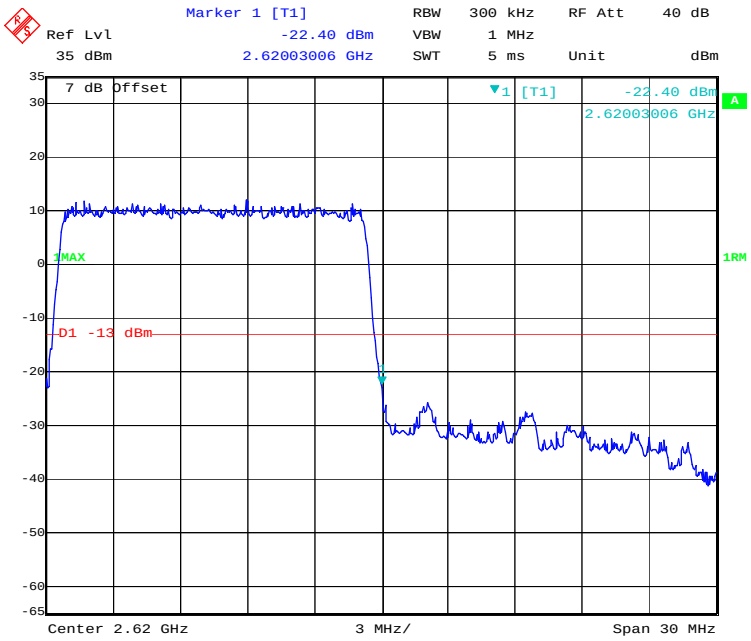
QPSK (10.0 MHz, FULL RB) - Right Band Edge



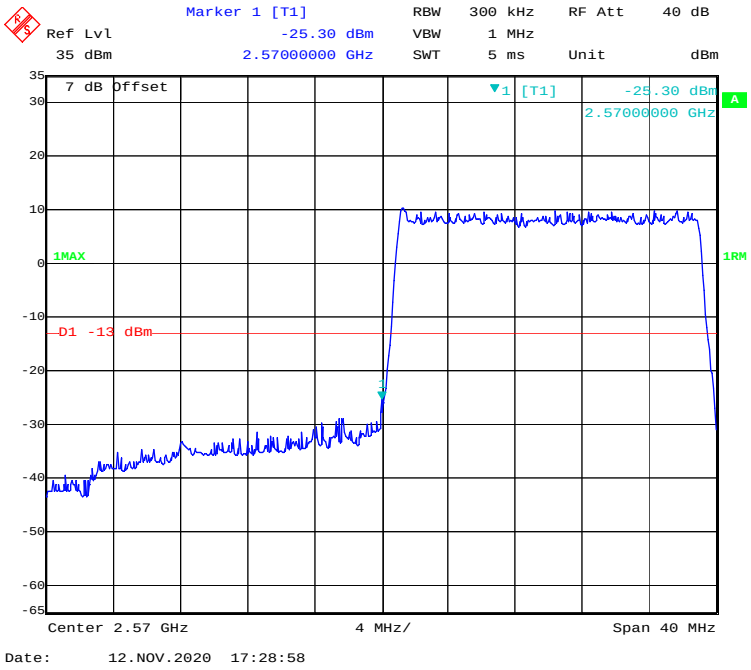
QPSK (15.0 MHz, FULL RB) - Left Band Edge



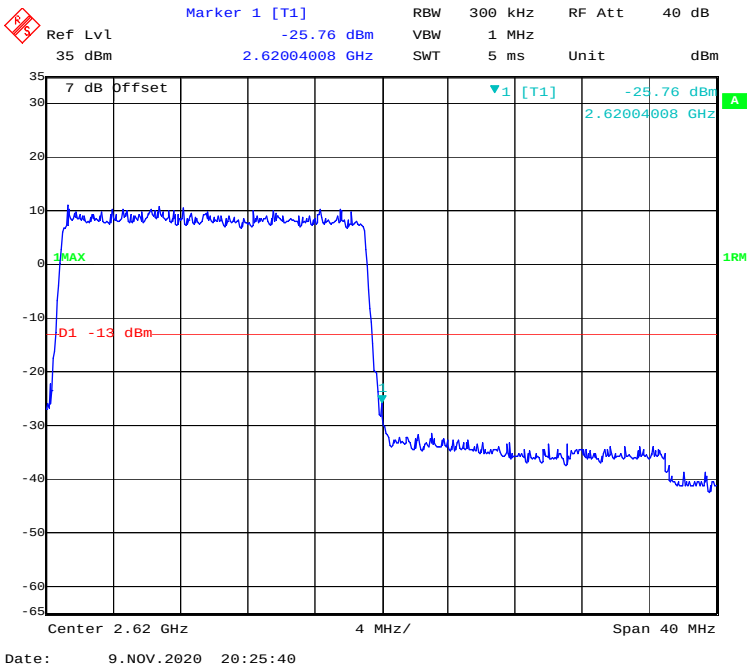
QPSK (15.0 MHz, FULL RB) - Right Band Edge



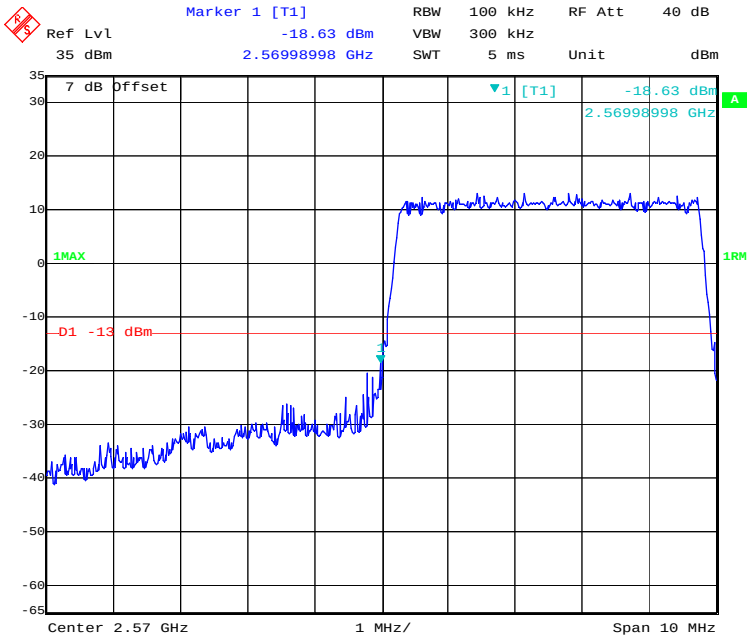
QPSK (20.0 MHz, FULL RB) - Left Band Edge



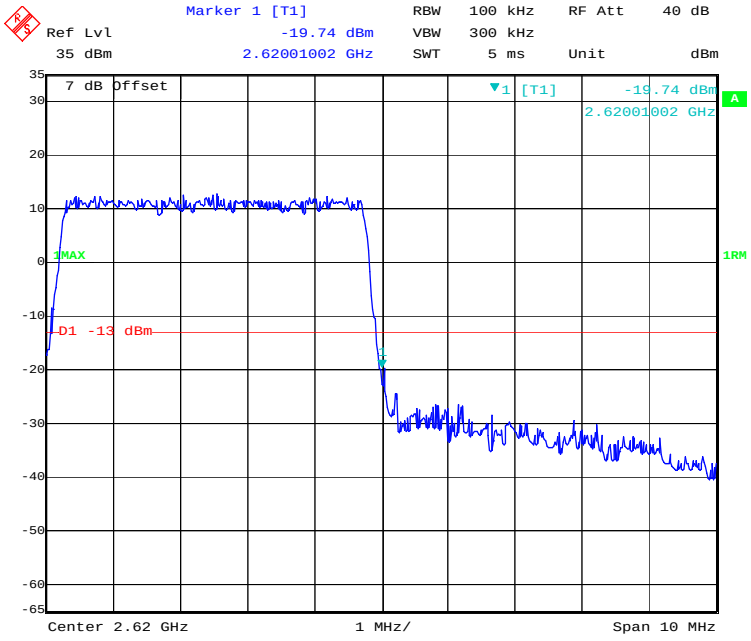
QPSK (20.0 MHz, FULL RB) - Right Band Edge



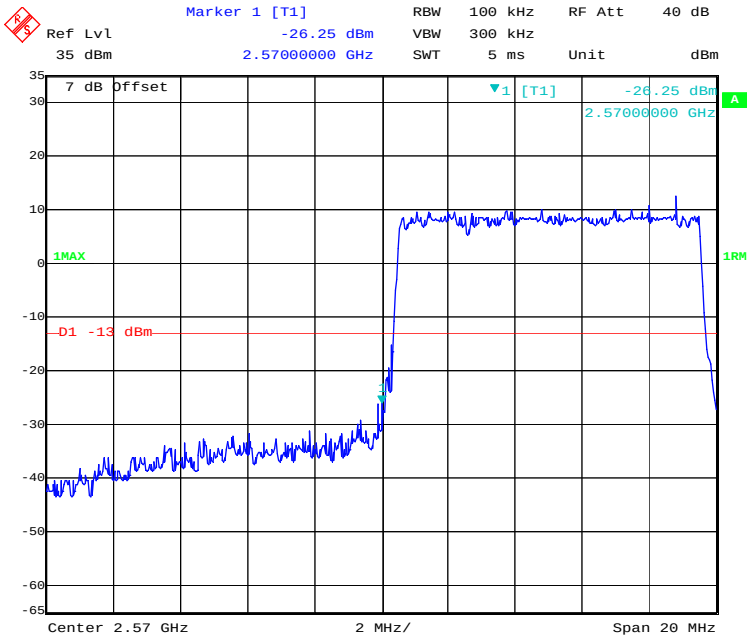
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



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

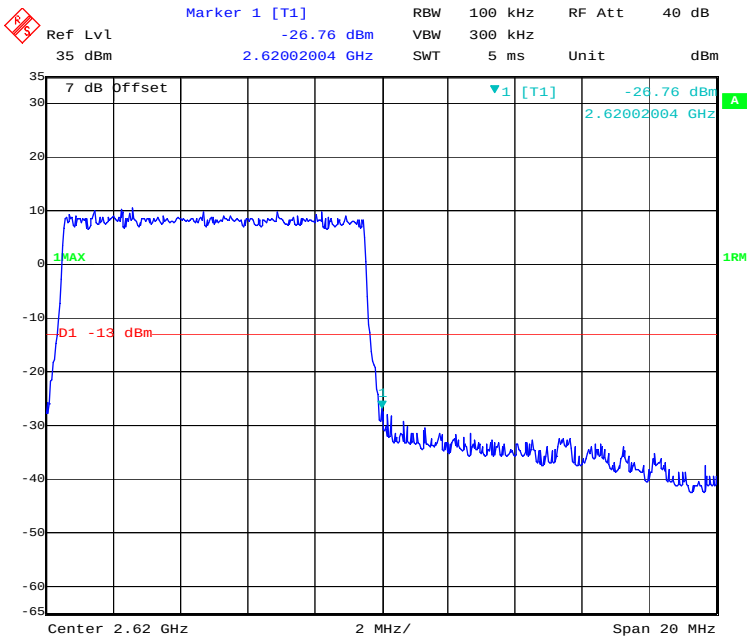


16-QAM (10.0 MHz, FULL RB) - Left Band Edge



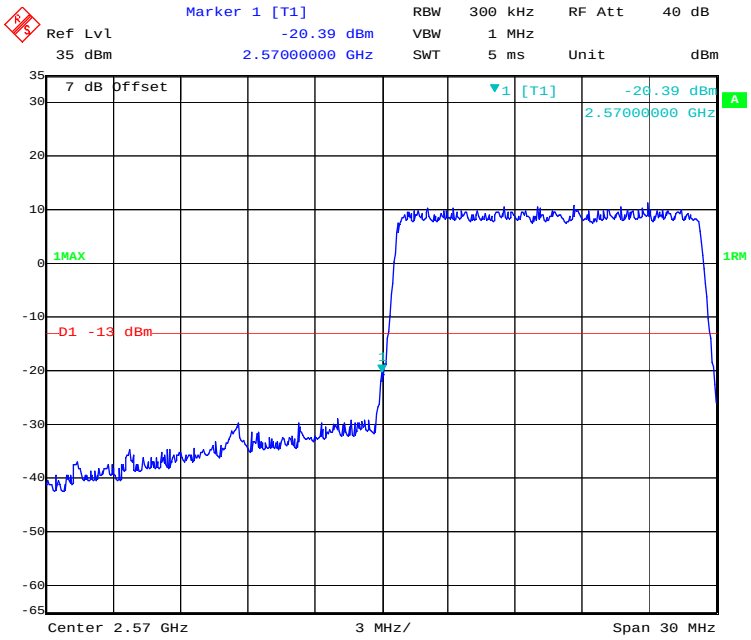
Date: 9.NOV.2020 20:21:52

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



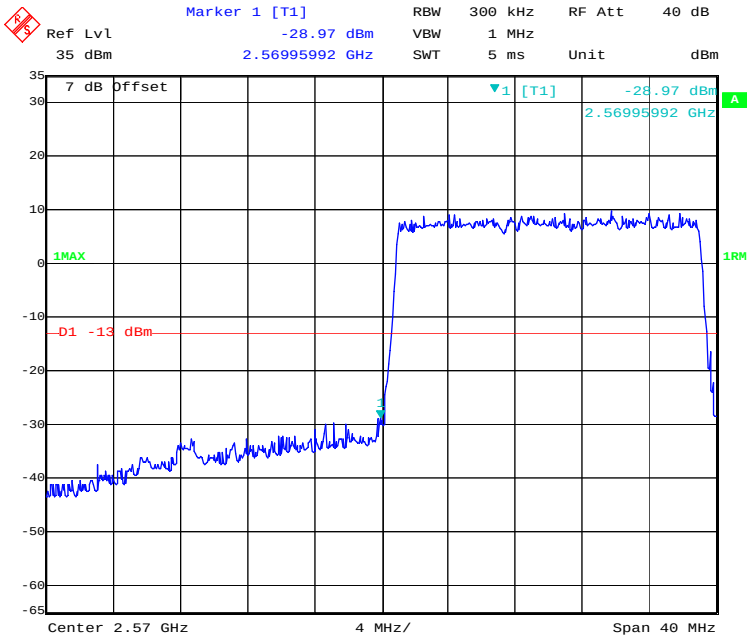
Date: 9.NOV.2020 20:22:43

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

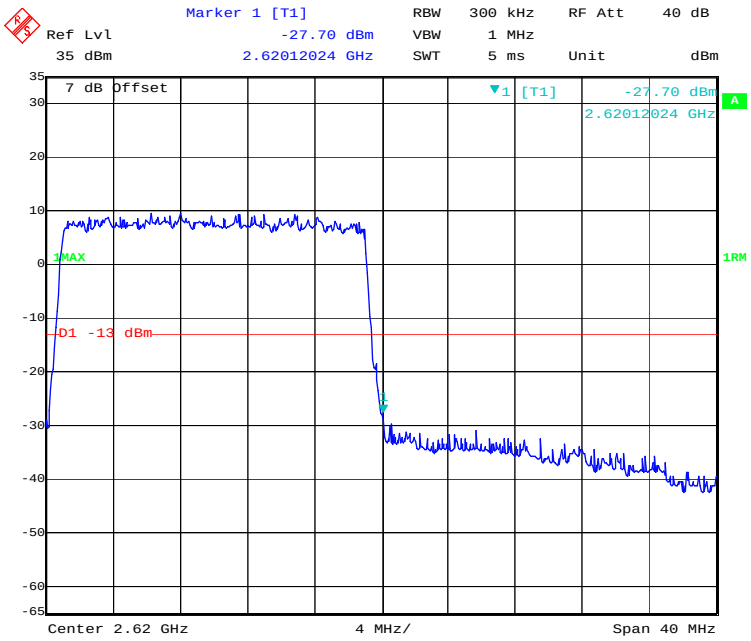


16-QAM (15.0 MHz, FULL RB) - Right Band Edge

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

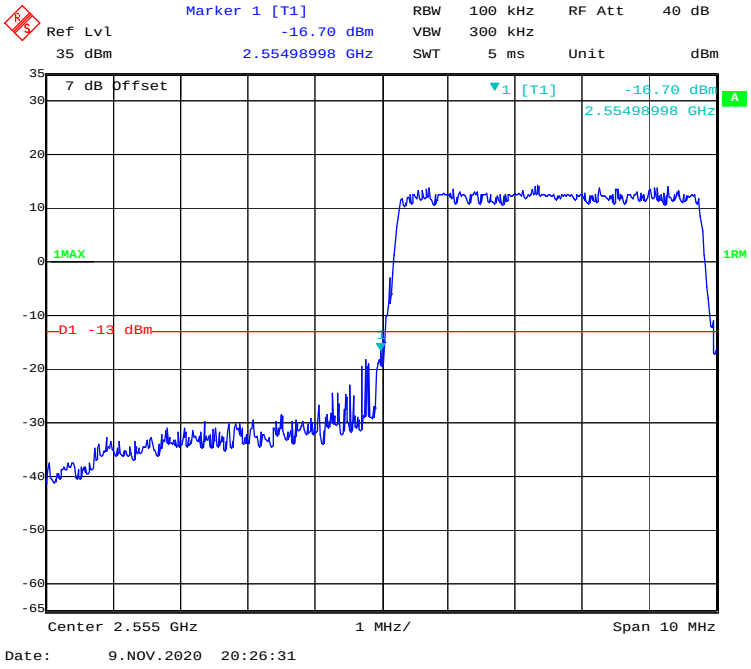


16-QAM (20.0 MHz, FULL RB) - Right Band Edge

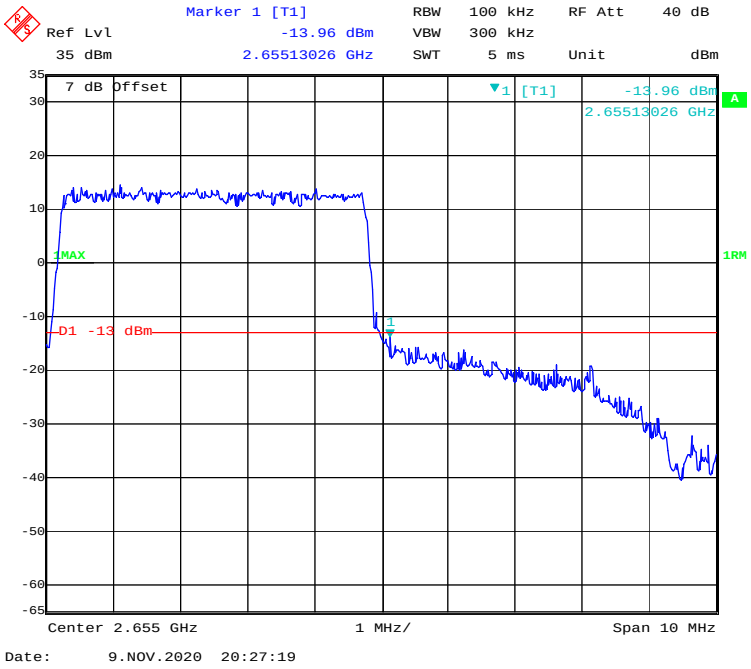


LTE Band 41:

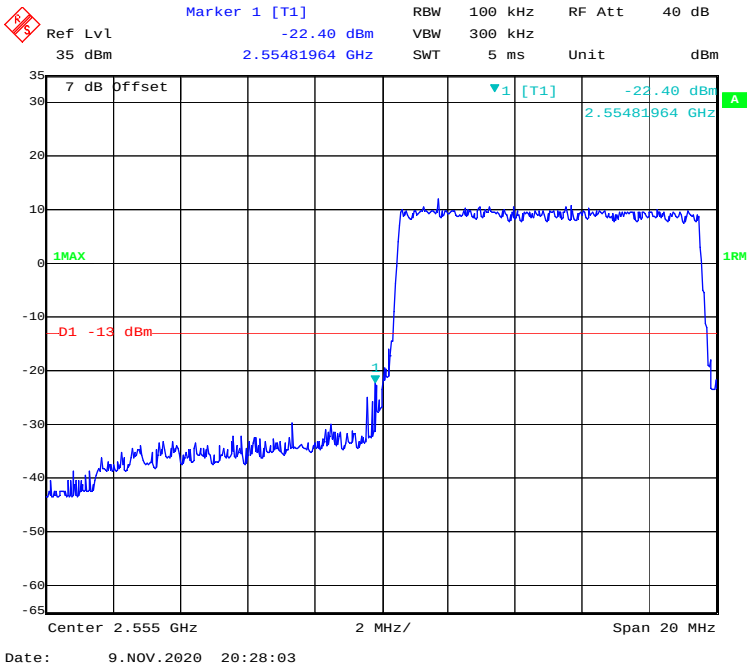
QPSK (5.0 MHz, FULL RB) - Left Band Edge



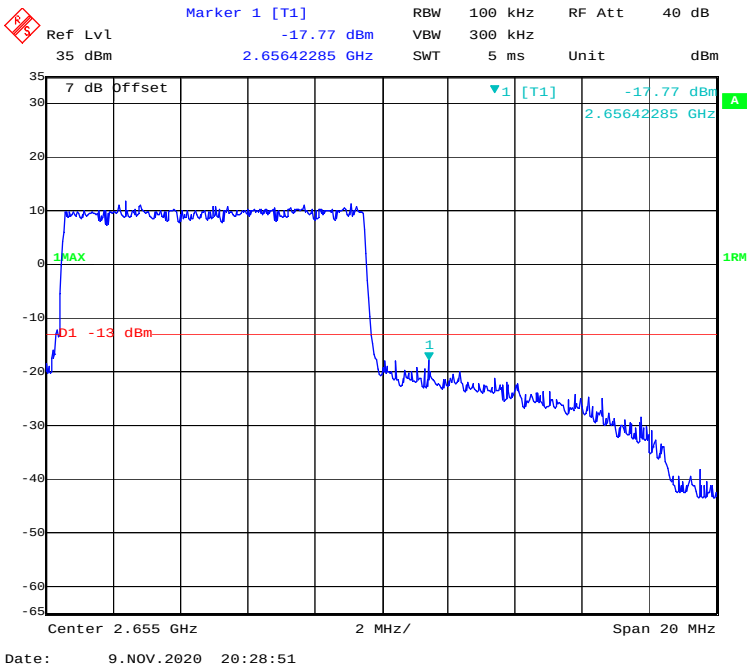
QPSK (5.0 MHz, FULL RB) - Right Band Edge



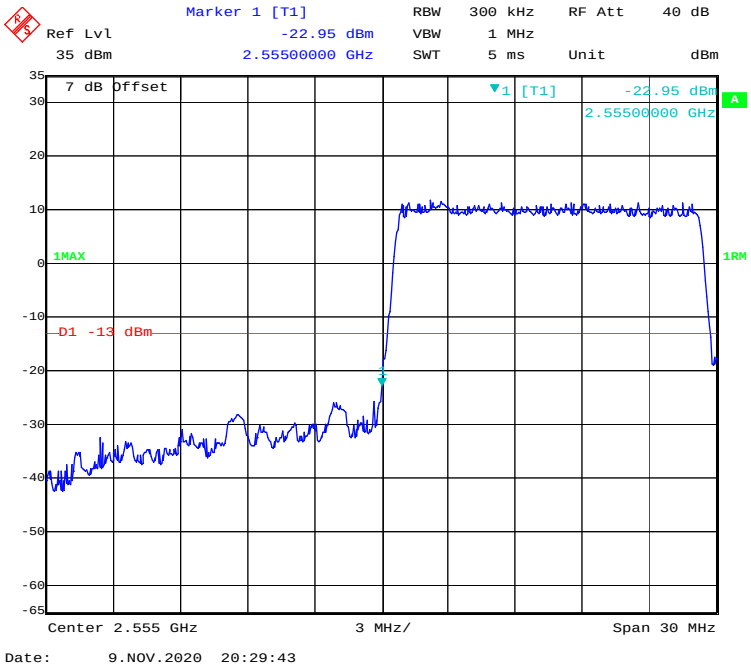
QPSK (10.0 MHz, FULL RB) - Left Band Edge



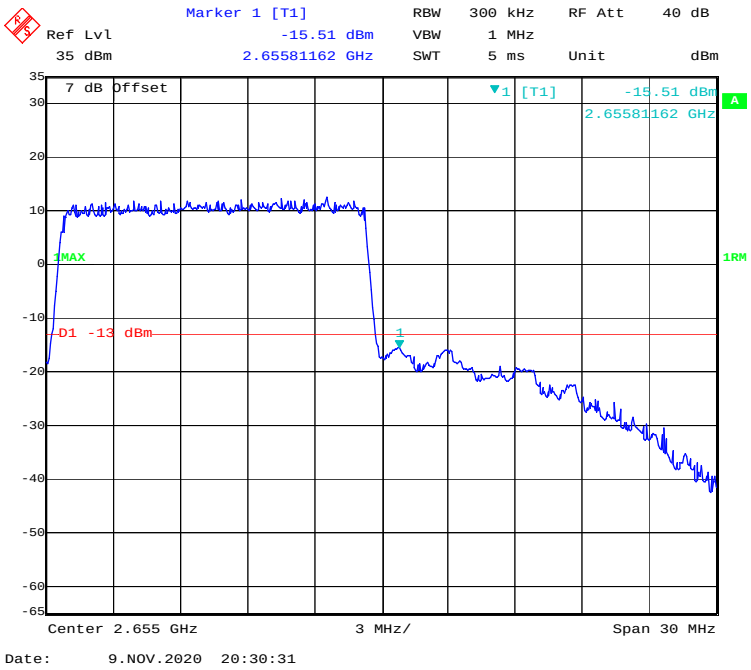
QPSK (10.0 MHz, FULL RB) - Right Band Edge



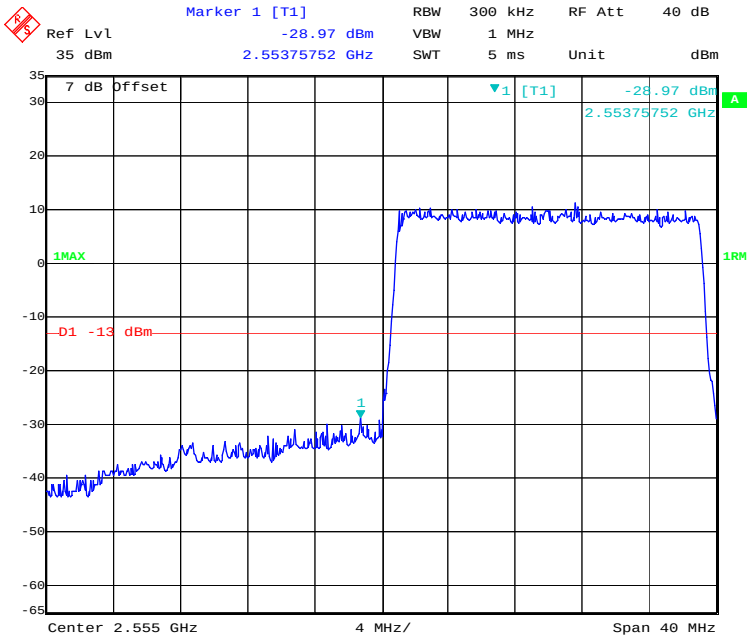
QPSK (15.0 MHz, FULL RB) - Left Band Edge



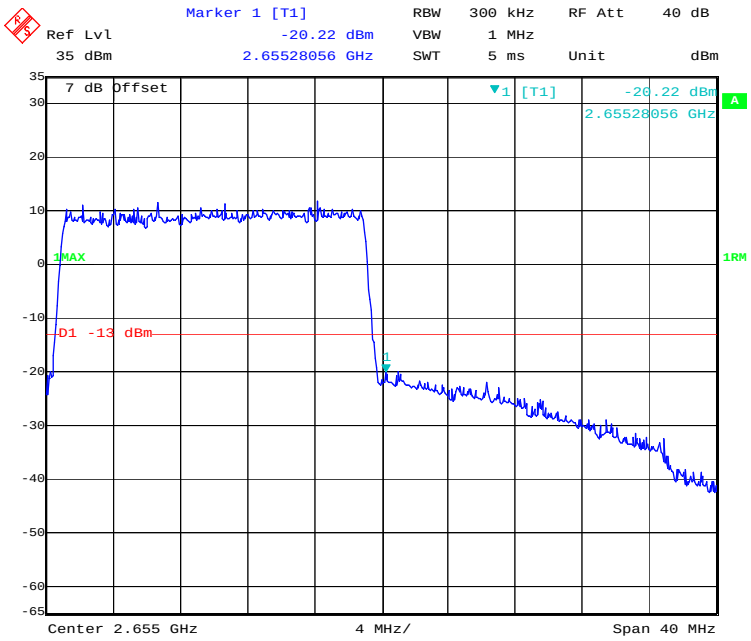
QPSK (15.0 MHz, FULL RB) - Right Band Edge



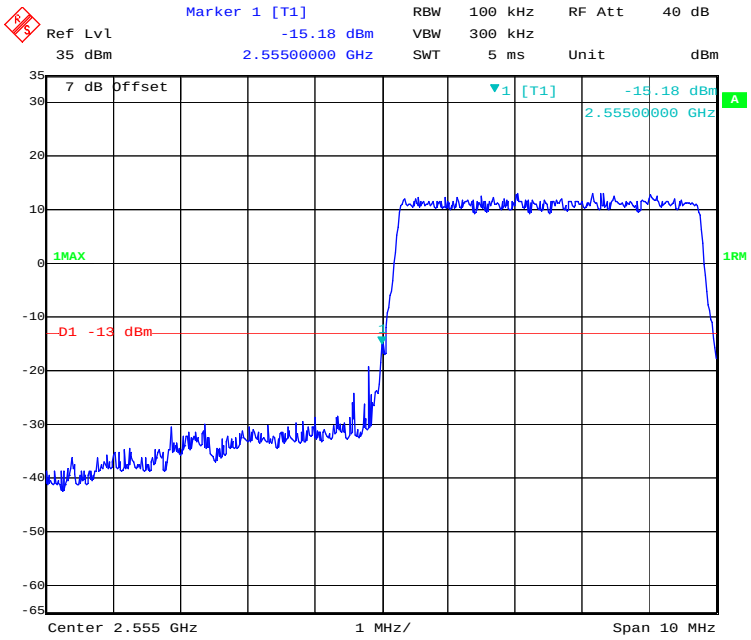
QPSK (20.0 MHz, FULL RB) - Left Band Edge



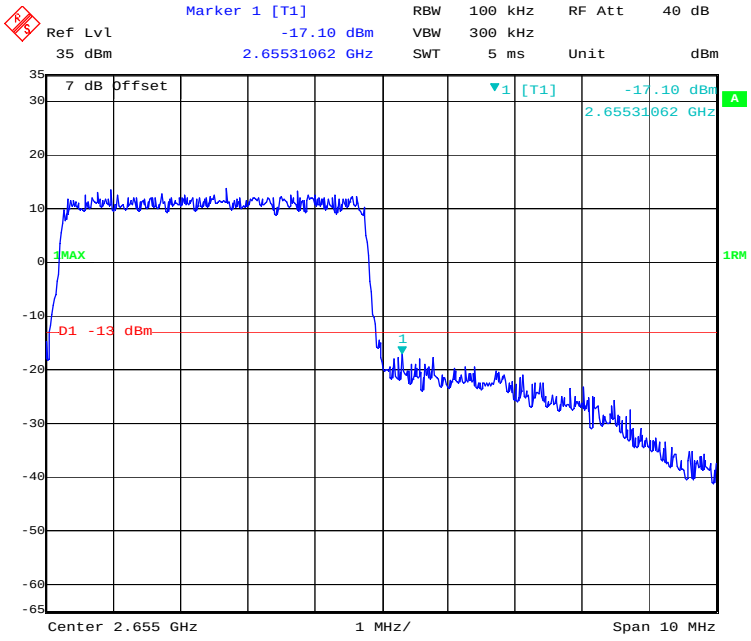
QPSK (20.0 MHz, FULL RB) - Right Band Edge



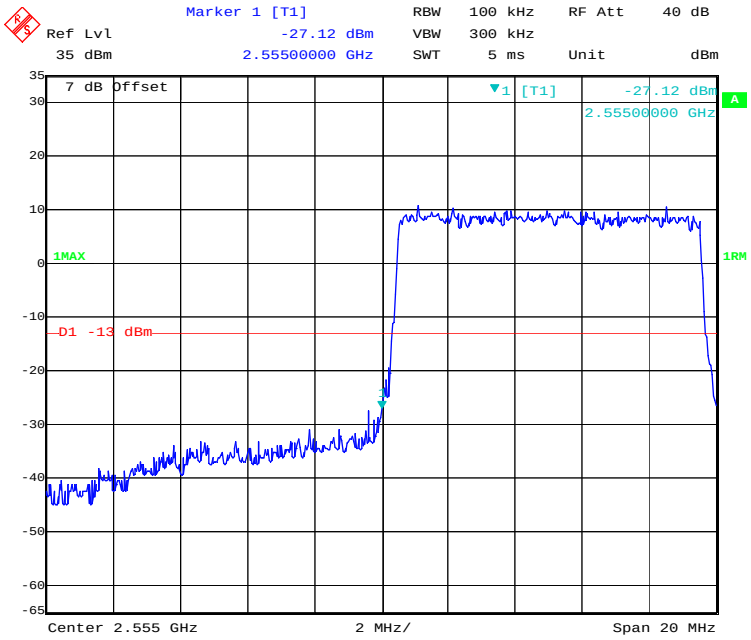
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



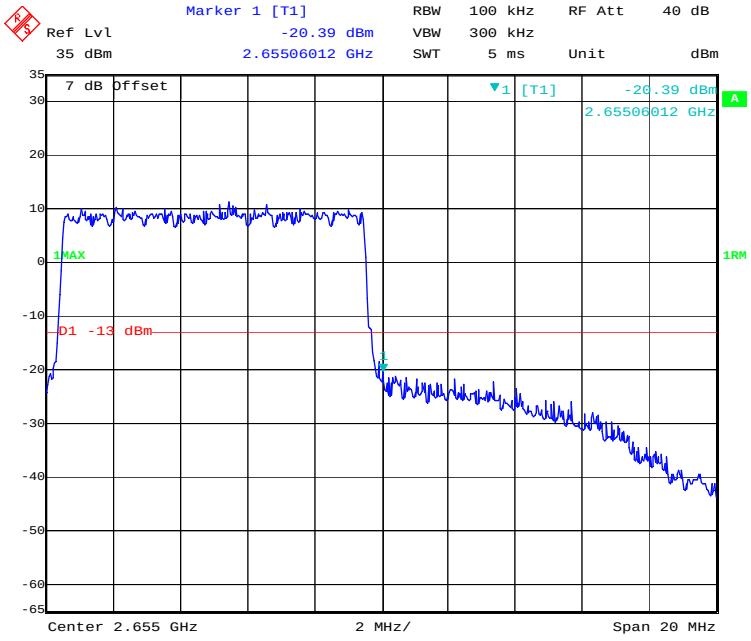
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



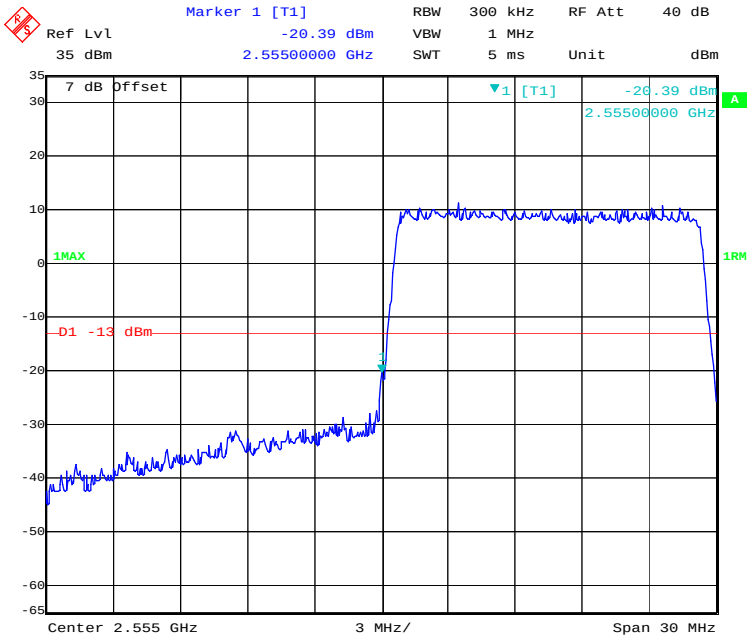
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



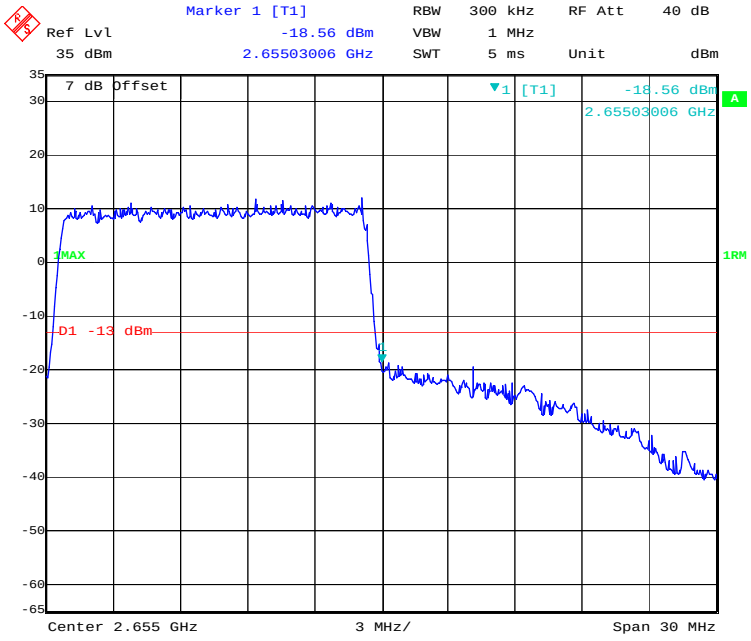
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



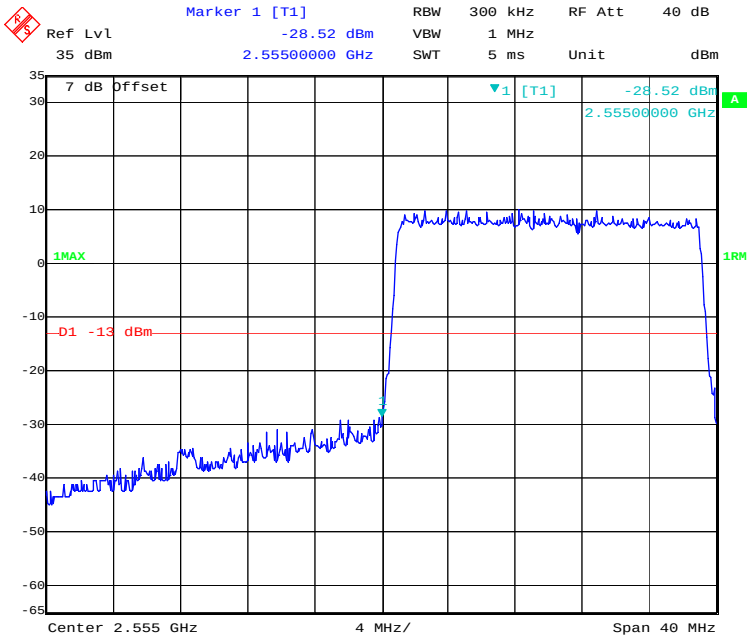
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



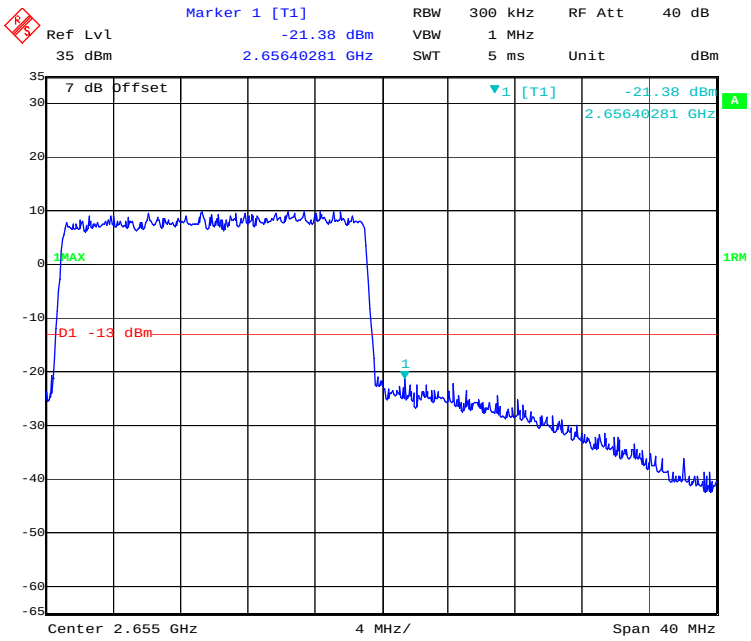
16-QAM (15.0 MHz, FULL RB) - Right Band Edge



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

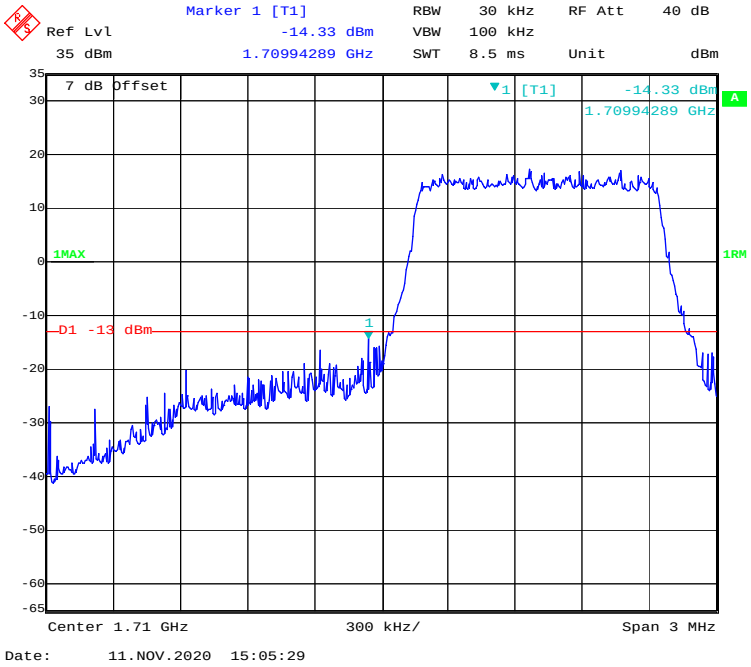


16-QAM (20.0 MHz, FULL RB) - Right Band Edge

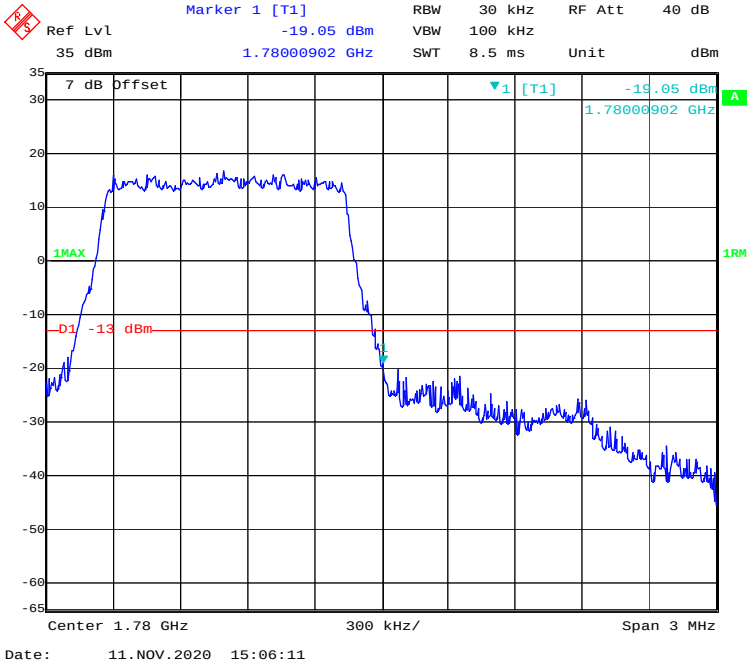


LTE Band 66:

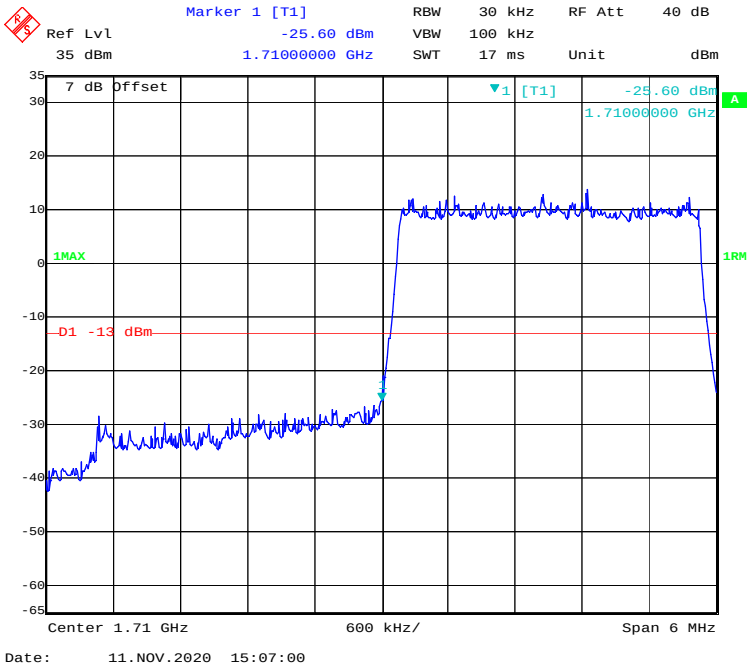
QPSK (1.4 MHz, FULL RB) - Left Band Edge



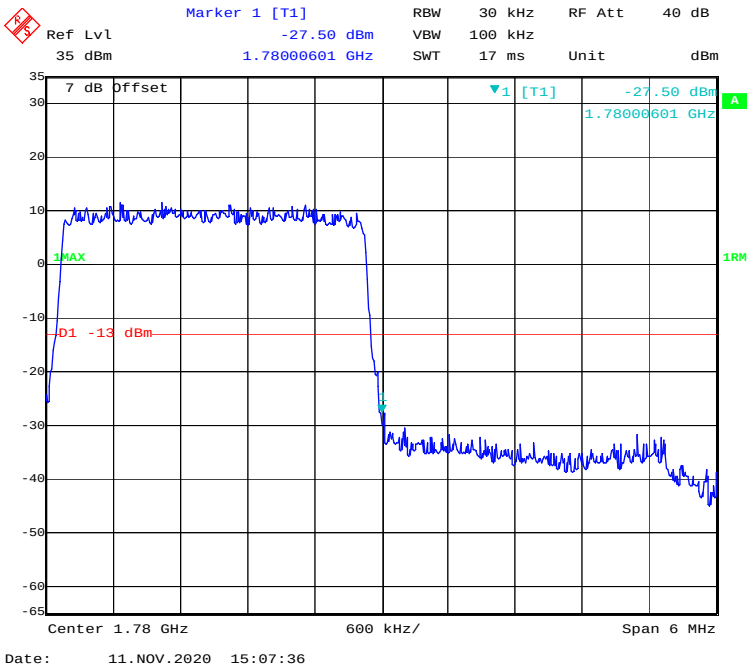
QPSK (1.4 MHz, FULL RB) - Right Band Edge



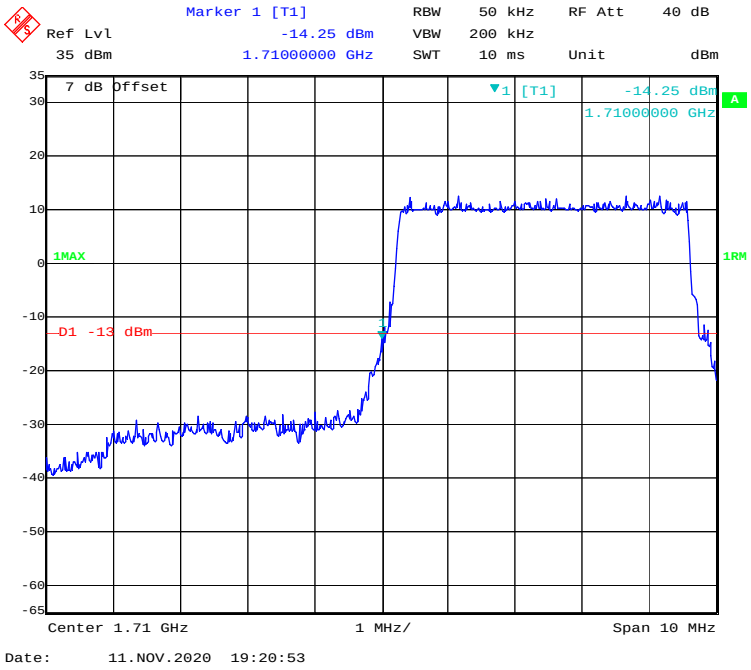
QPSK (3 MHz, FULL RB) - Left Band Edge



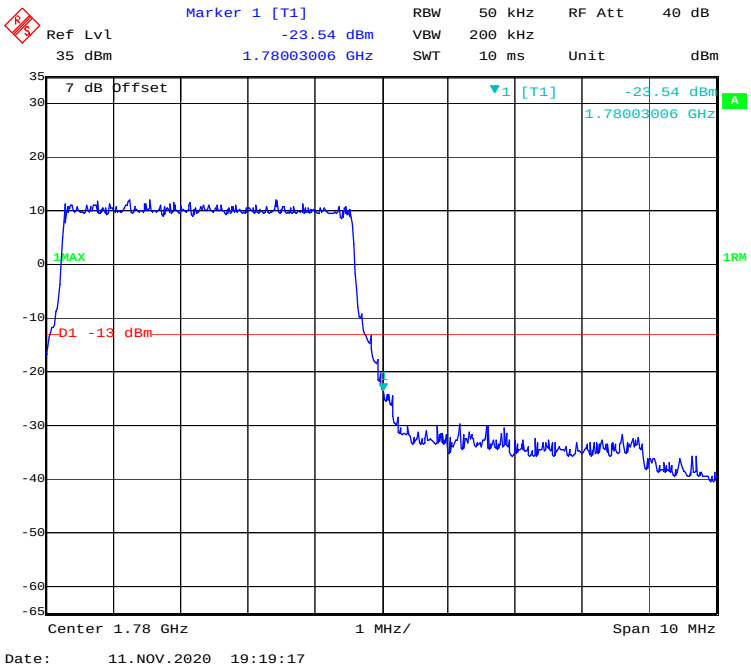
QPSK (3 MHz, FULL RB) - Right Band Edge



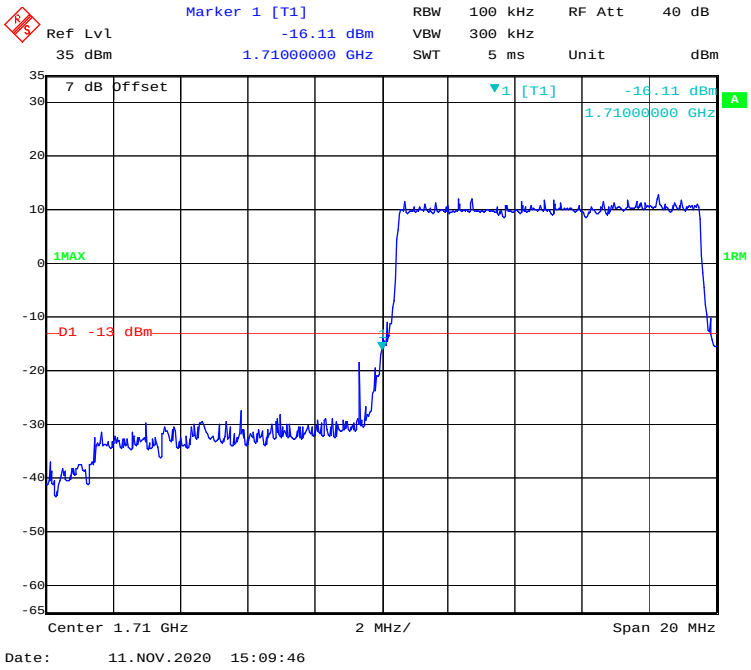
QPSK (5 MHz, FULL RB) - Left Band Edge



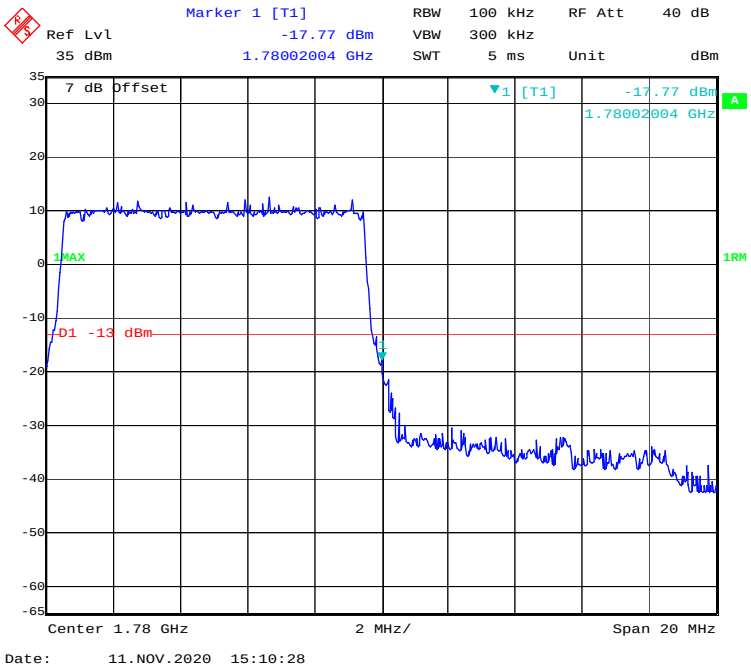
QPSK (5 MHz, FULL RB) - Right Band Edge



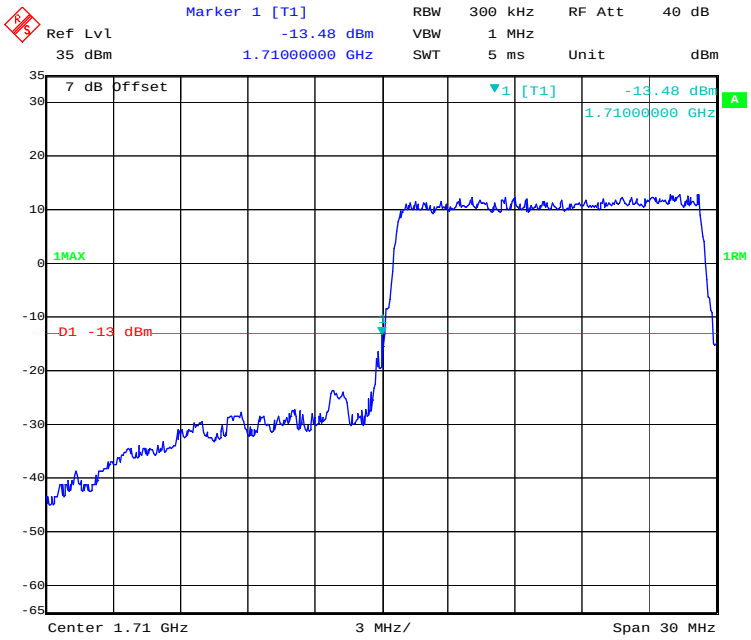
QPSK (10 MHz, FULL RB) - Left Band Edge



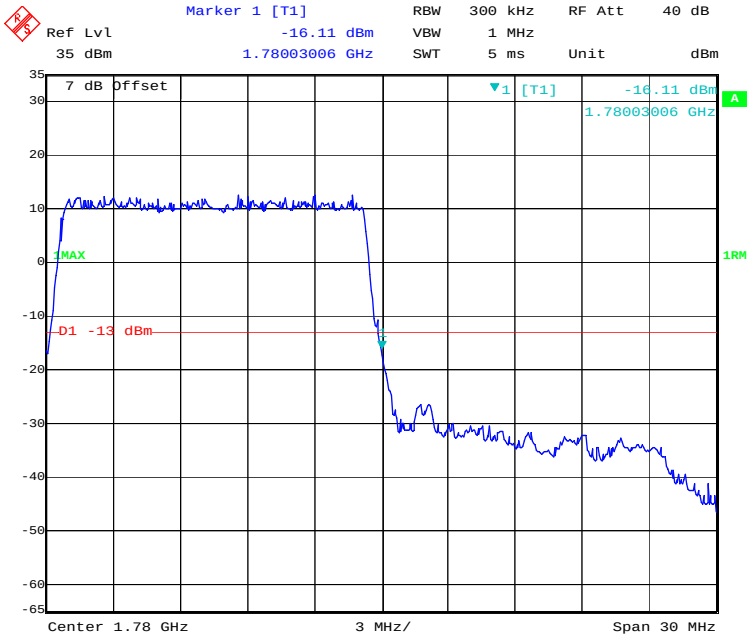
QPSK (10 MHz, FULL RB) - Right Band Edge



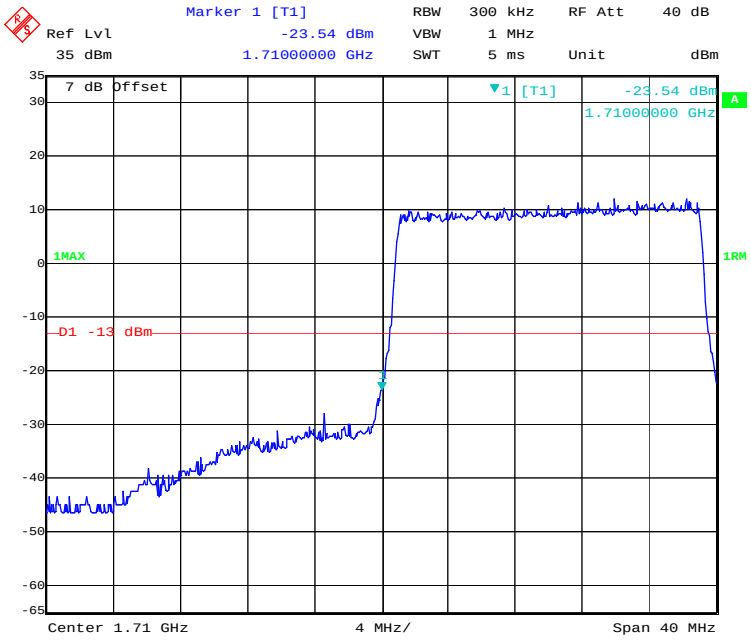
QPSK (15 MHz, FULL RB) - Left Band Edge



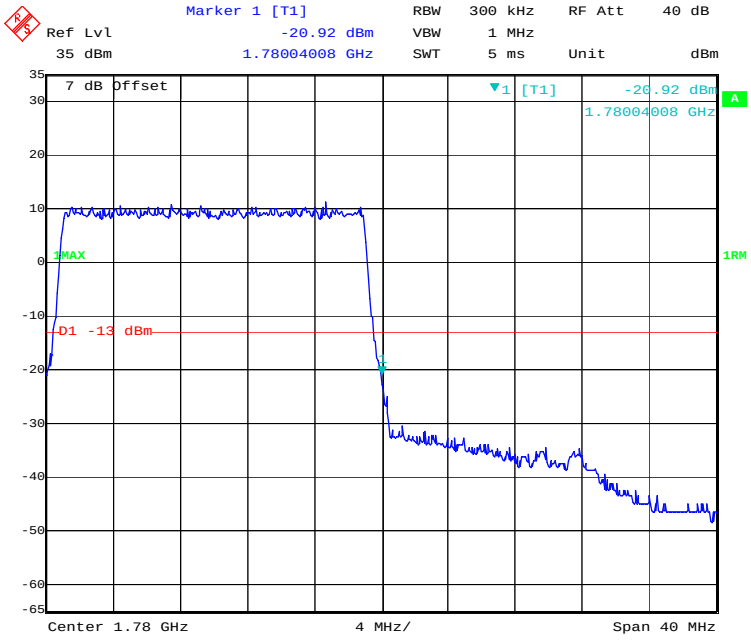
QPSK (15 MHz, FULL RB) - Right Band Edge



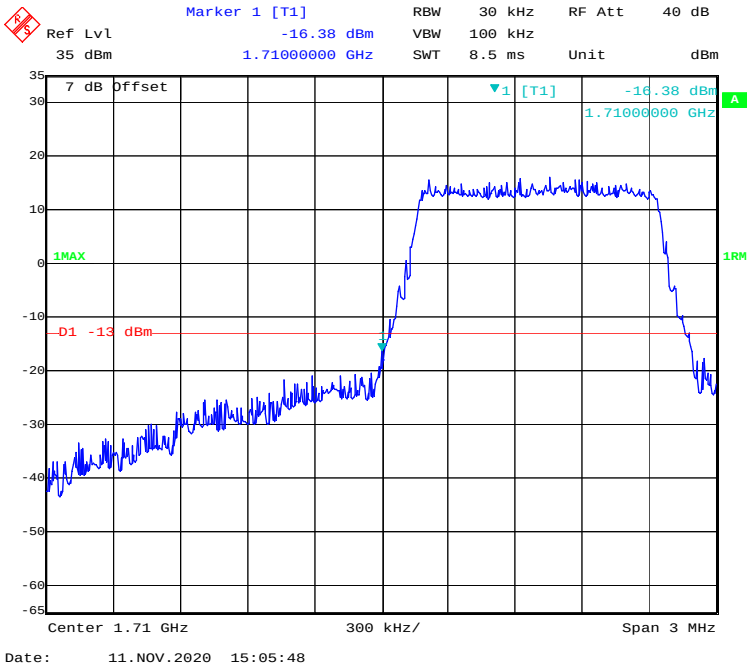
QPSK (20 MHz, FULL RB) - Left Band Edge



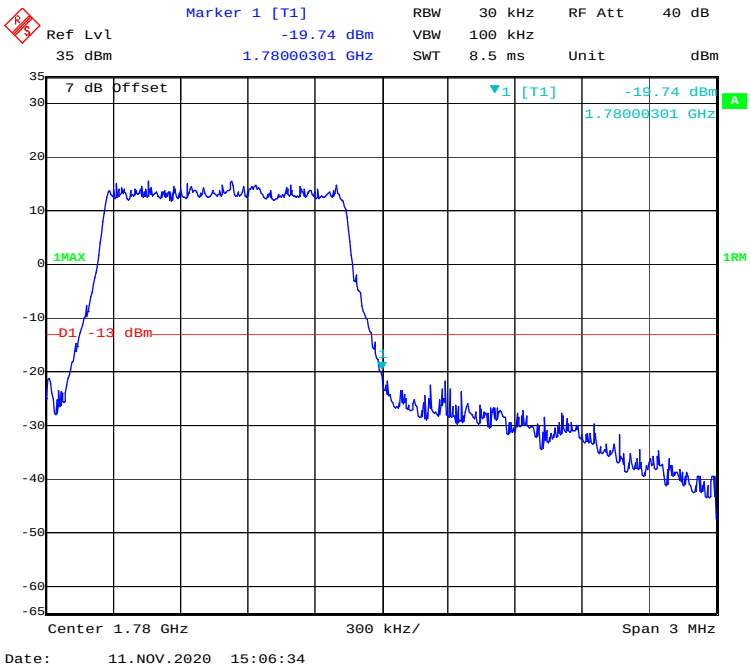
QPSK (20 MHz, FULL RB) - Right Band Edge



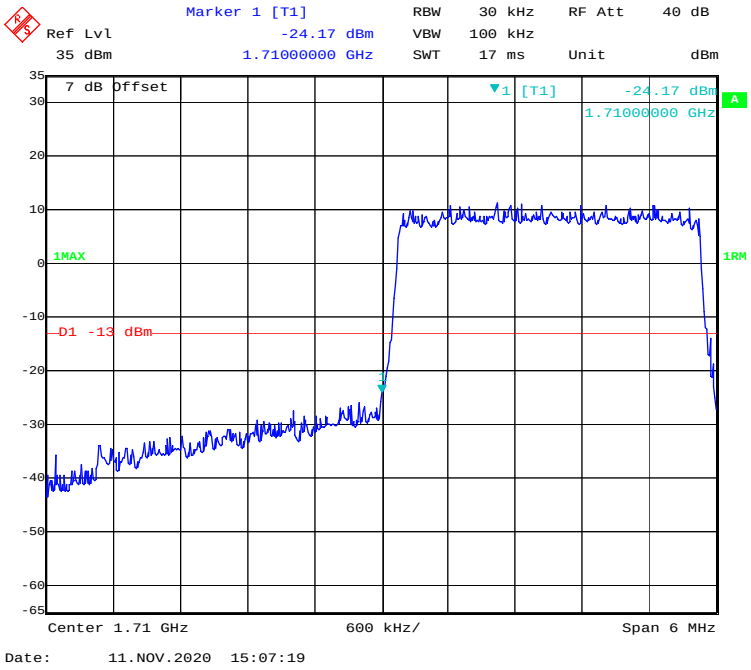
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



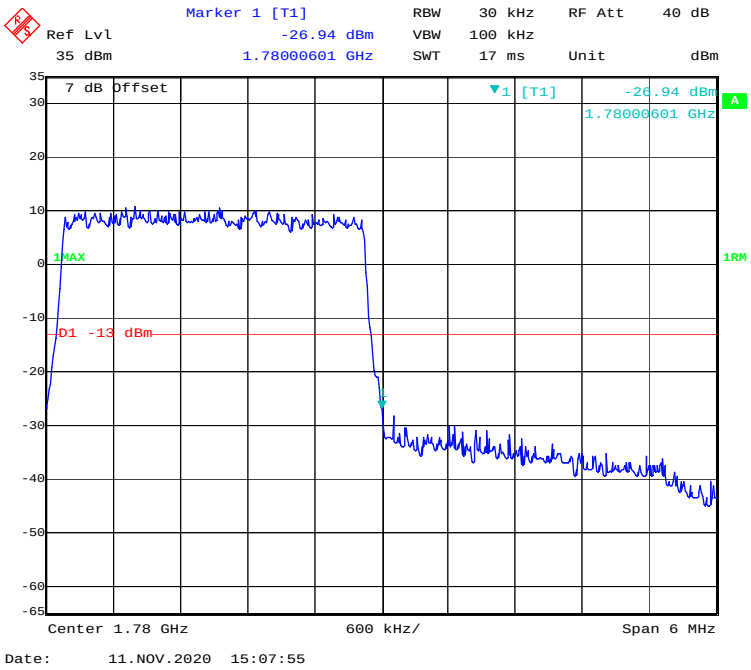
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



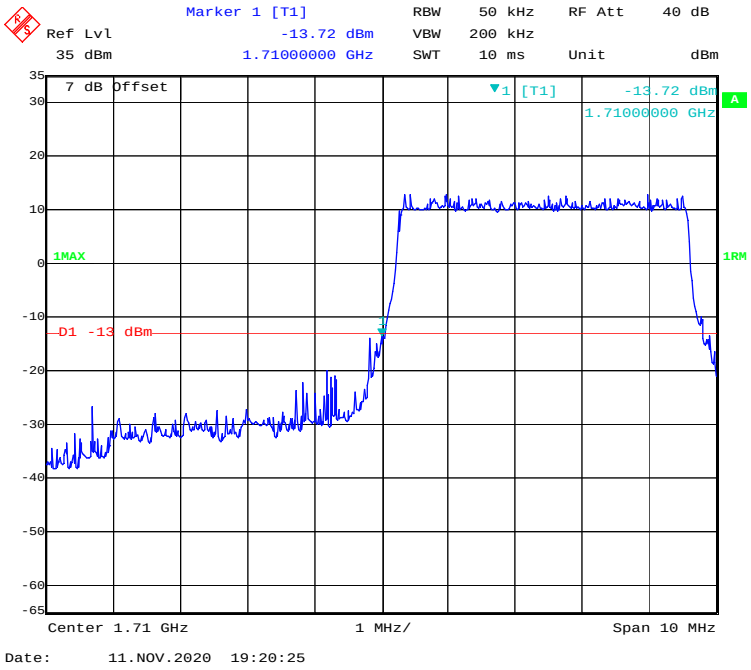
16-QAM (3 MHz, FULL RB) - Left Band Edge



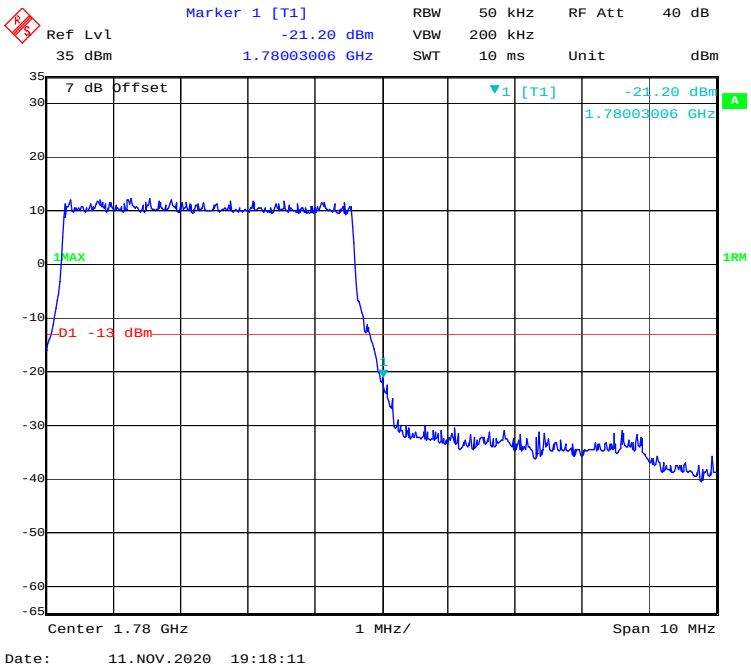
16-QAM (3 MHz, FULL RB) - Right Band Edge



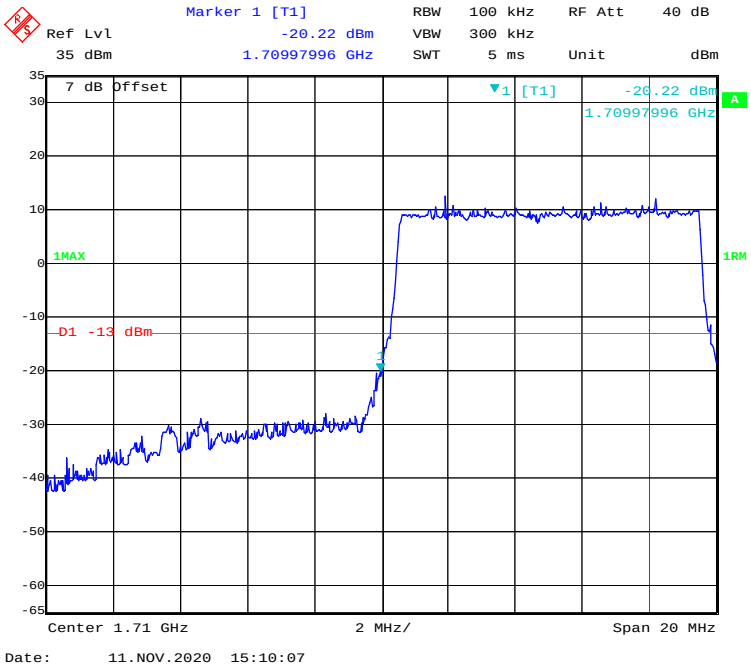
16-QAM (5 MHz, FULL RB) - Left Band Edge



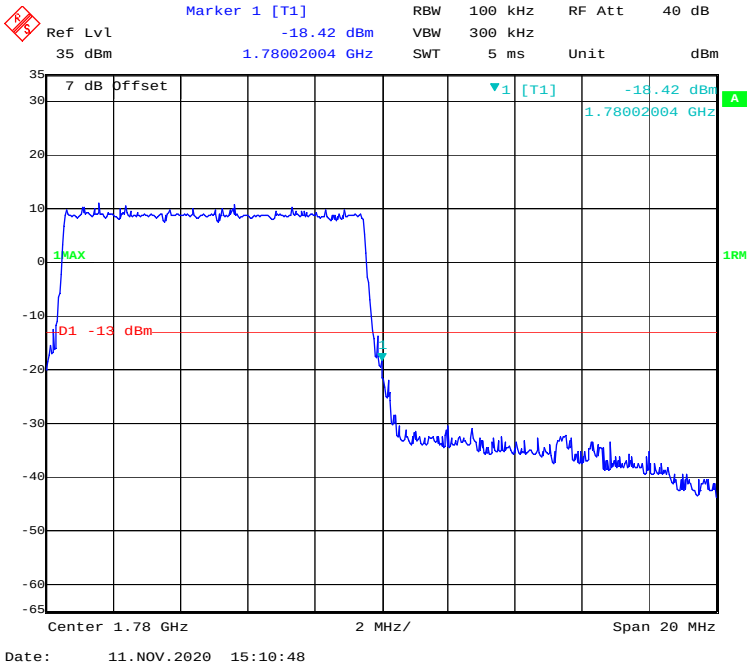
16-QAM (5 MHz, FULL RB) - Right Band Edge



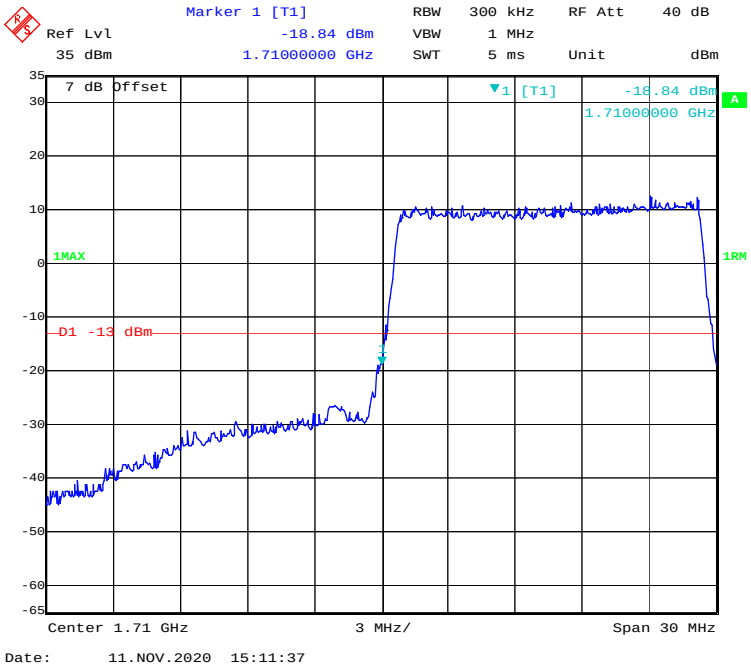
16-QAM (10 MHz, FULL RB) - Left Band Edge



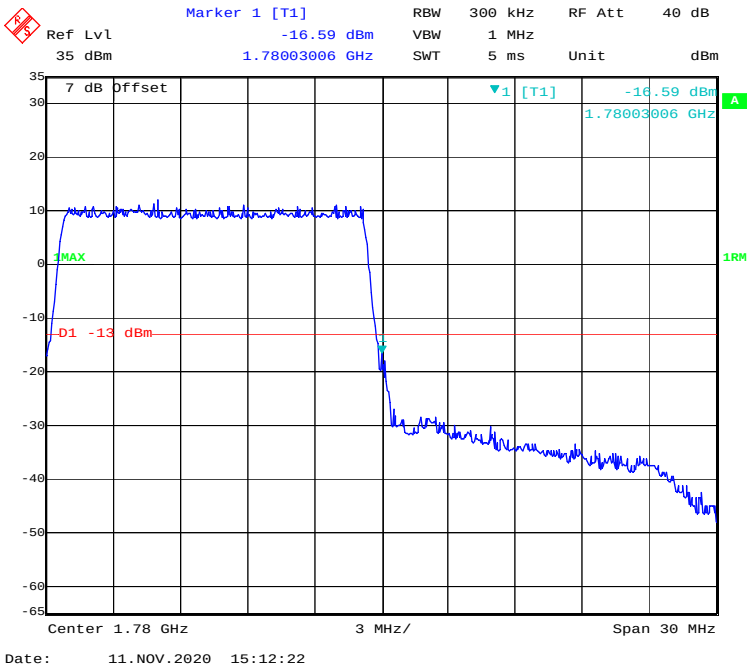
16-QAM (10 MHz, FULL RB) - Right Band Edge



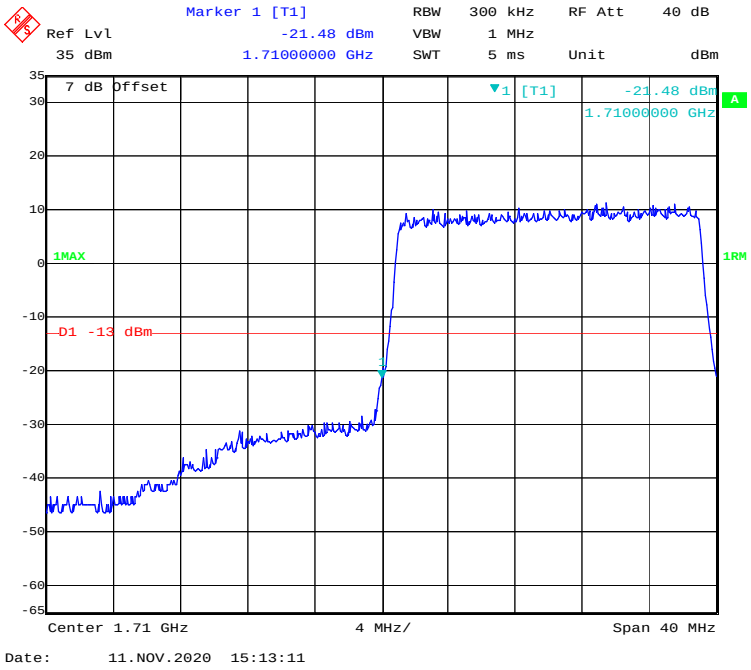
16-QAM (15 MHz, FULL RB) - Left Band Edge



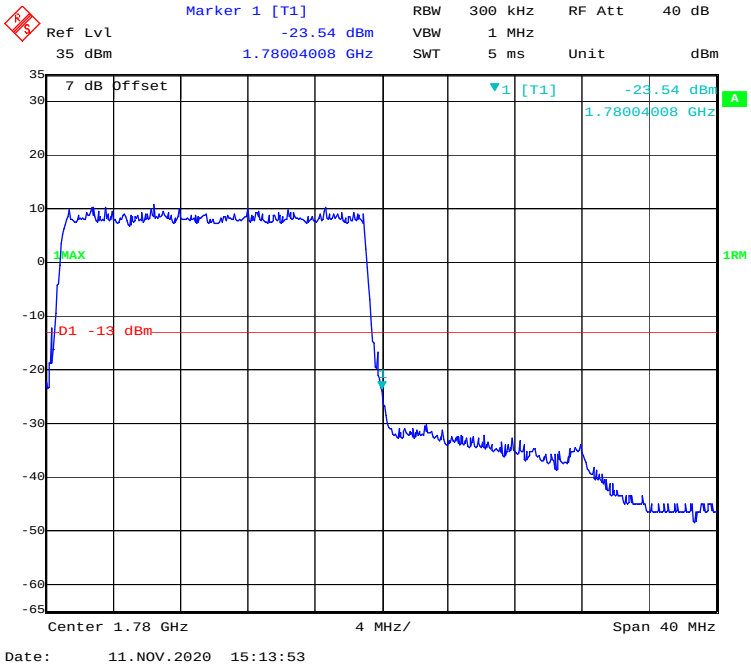
16-QAM (15 MHz, FULL RB) - Right Band Edge



16-QAM (20 MHz, FULL RB) - Left Band Edge



16-QAM (20 MHz, FULL RB) - Right Band Edge



FCC § 2.1055; § 22.355; § 24.235; §27.54; §90.213- FREQUENCY STABILITY

Applicable Standards

FCC § 2.1055, §22.355, §24.235, §27.54 and §90.213.

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

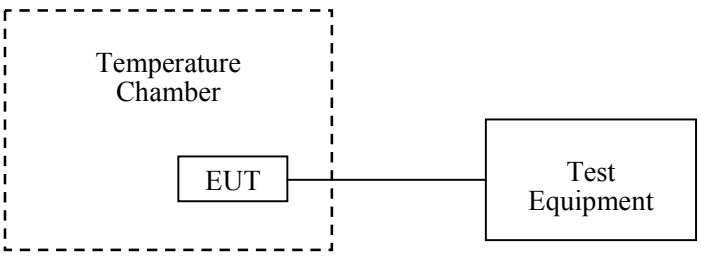
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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:	23.5-24.9 ℃
Relative Humidity:	47-52 %
ATM Pressure:	101.2-101.9 kPa

The testing was performed by Chao Gao from 2020-11-14 to 2020-12-10.

EUT operation mode: Transmitting

Test Result: Compliant.

GSM 850 Band:

GSM Mode, Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	8	0.00956	2.5
-20		21	0.02510	2.5
-10		15	0.01793	2.5
0		14	0.01673	2.5
10		11	0.01315	2.5
20		15	0.01793	2.5
30		21	0.02510	2.5
40		19	0.02271	2.5
50		11	0.01315	2.5
20	V min.= 3.42	15	0.01793	2.5
20	V max.= 4.18	12	0.01434	2.5

GPRS Mode, Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	7	0.00837	2.5
-20		23	0.02749	2.5
-10		14	0.01673	2.5
0		13	0.01554	2.5
10		10	0.01195	2.5
20		16	0.01913	2.5
30		20	0.02391	2.5
40		18	0.02152	2.5
50		12	0.01434	2.5
20	V min.= 3.42	13	0.01554	2.5
20	V max.= 4.18	10	0.01195	2.5

EGPRS Mode, Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	21	0.02510	2.5
-20		12	0.01434	2.5
-10		18	0.02152	2.5
0		18	0.02152	2.5
10		12	0.01434	2.5
20		19	0.02271	2.5
30		13	0.01554	2.5
40		8	0.00956	2.5
50		22	0.02630	2.5
20	V min.= 3.42	14	0.01673	2.5
20	V max.= 4.18	11	0.01315	2.5

WCDMA Band V:

WCDMA Mode, Middle Channel, f_o = 836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	14	0.0167	2.5
-20		18	0.0215	2.5
-10		18	0.0215	2.5
0		16	0.0191	2.5
10		14	0.0167	2.5
20		8	0.0096	2.5
30		10	0.0120	2.5
40		13	0.0155	2.5
50		10	0.0120	2.5
20	V min.= 3.42	12	0.0143	2.5
20	V max.= 4.18	17	0.0203	2.5

PCS 1900 Band:

GSM Mode, Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	11	0.00585	pass
-20		12	0.00638	pass
-10		15	0.00798	pass
0		18	0.00957	pass
10		16	0.00851	pass
20		13	0.00691	pass
30		20	0.01064	pass
40		12	0.00638	pass
50		9	0.00479	pass
20	V min.= 3.42	11	0.00585	pass
20	V max.= 4.18	14	0.00745	pass

GPRS Mode, Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	10	0.00532	pass
-20		13	0.00691	pass
-10		16	0.00851	pass
0		17	0.00904	pass
10		15	0.00798	pass
20		12	0.00638	pass
30		19	0.01011	pass
40		15	0.00798	pass
50		8	0.00426	pass
20	V min.= 3.42	12	0.00638	pass
20	V max.= 4.18	15	0.00798	pass

EGPRS Mode, Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	8	0.00426	pass
-20		16	0.00851	pass
-10		20	0.01064	pass
0		11	0.00585	pass
10		15	0.00798	pass
20		14	0.00745	pass
30		19	0.01011	pass
40		19	0.01011	pass
50		14	0.00745	pass
20	V min.= 3.42	14	0.00745	pass
20	V max.= 4.18	8	0.00426	pass

WCDMA Band II:

WCDMA Mode, Middle Channel, f_o = 1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	14	0.0074	pass
-20		20	0.0106	pass
-10		18	0.0096	pass
0		19	0.0101	pass
10		14	0.0074	pass
20		18	0.0096	pass
30		16	0.0085	pass
40		9	0.0048	pass
50		7	0.0037	pass
20	V min.= 3.42	17	0.0090	pass
20	V max.= 4.18	13	0.0069	pass

LTE Band 2:

f_o =1880.0 MHz (QPSK)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	17	0.0203	Pass
-20		13	0.0155	Pass
-10		16	0.0191	Pass
0		15	0.0179	Pass
10		15	0.0179	Pass
20		15	0.0179	Pass
30		19	0.0227	Pass
40		15	0.0179	Pass
50		21	0.0251	Pass
20	V min.= 3.42	20	0.0239	Pass
20	V max.= 4.18	8	0.0096	Pass

f_o =1880.0 MHz (16-QAM)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	14	0.0167	Pass
-20		21	0.0251	Pass
-10		20	0.0239	Pass
0		13	0.0155	Pass
10		17	0.0203	Pass
20		16	0.0191	Pass
30		16	0.0191	Pass
40		14	0.0167	Pass
50		13	0.0155	Pass
20	V min.= 3.42	13	0.0155	Pass
20	V max.= 4.18	15	0.0179	Pass

LTE Band 4:

Low Channel & High Channel (QPSK)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	1710.0499	1754.9617	1710	1755
-20		1710.0458	1754.9609	1710	1755
-10		1710.0434	1754.9686	1710	1755
0		1710.0475	1754.9655	1710	1755
10		1710.0446	1754.9607	1710	1755
20		1710.0425	1754.9607	1710	1755
30		1710.0405	1754.9647	1710	1755
40		1710.0412	1754.9696	1710	1755
50		1710.0428	1754.9636	1710	1755
20	V min.= 3.42	1710.0401	1754.9602	1710	1755
20	V max.= 4.18	1710.0489	1754.9665	1710	1755

Low Channel & High Channel (16-QAM)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	1710.0489	1754.9620	1710	1755
-20		1710.0493	1754.9607	1710	1755
-10		1710.0448	1754.9673	1710	1755
0		1710.0439	1754.9694	1710	1755
10		1710.0451	1754.9648	1710	1755
20		1710.0429	1754.9693	1710	1755
30		1710.0494	1754.9620	1710	1755
40		1710.0459	1754.9693	1710	1755
50		1710.0408	1754.9623	1710	1755
20	V min.= 3.42	1710.0443	1754.9693	1710	1755
20	V max.= 4.18	1710.0458	1754.9648	1710	1755

LTE Band 5:

Middle Channel, f_o = 836.5 MHz (QPSK)				
Temperature	**Power Supplied**	**Frequency Error**	**Frequency Error**	**Limit**
(℃)	**(V_{DC})**	**(Hz)**	**(ppm)**	**(ppm)**
-30	3.8	15	0.0179	2.5
-20		15	0.0179	2.5
-10		13	0.0155	2.5
0		14	0.0167	2.5
10		13	0.0155	2.5
20		9	0.0108	2.5
30		13	0.0155	2.5
40		18	0.0215	2.5
50		8	0.0096	2.5
20	V min.= 3.42	8	0.0096	2.5
20	V max.= 4.18	15	0.0179	2.5

Middle Channel, f_o = 836.5 MHz (16-QAM)				
Temperature	**Power Supplied**	**Frequency Error**	**Frequency Error**	**Limit**
(℃)	**(V_{DC})**	**(Hz)**	**(ppm)**	**(ppm)**
-30	3.8	8	0.0096	2.5
-20		14	0.0167	2.5
-10		14	0.0167	2.5
0		15	0.0179	2.5
10		20	0.0239	2.5
20		13	0.0155	2.5
30		14	0.0167	2.5
40		10	0.0120	2.5
50		15	0.0179	2.5
20	V min.= 3.42	13	0.0155	2.5
20	V max.= 4.18	13	0.0155	2.5

LTE Band 7:

Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	2500.0483	2569.9589	2500	2570
-20		2500.0467	2569.9547	2500	2570
-10		2500.0455	2569.9515	2500	2570
0		2500.0445	2569.9505	2500	2570
10		2500.0455	2569.9558	2500	2570
20		2500.0500	2569.9572	2500	2570
30		2500.0410	2569.9573	2500	2570
40		2500.0485	2569.9514	2500	2570
50		2500.0499	2569.9523	2500	2570
20	V min.= 3.42	2500.0448	2569.9568	2500	2570
20	V max.= 4.18	2500.0491	2569.9588	2500	2570

Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	2500.0429	2569.9516	2500	2570
-20		2500.0476	2569.9511	2500	2570
-10		2500.0464	2569.9561	2500	2570
0		2500.0448	2569.9514	2500	2570
10		2500.0479	2569.9512	2500	2570
20		2500.0473	2569.9529	2500	2570
30		2500.0499	2569.9549	2500	2570
40		2500.0446	2569.9599	2500	2570
50		2500.0496	2569.9575	2500	2570
20	V min.= 3.42	2500.0497	2569.9526	2500	2570
20	V max.= 4.18	2500.0474	2569.9578	2500	2570

LTE Band 12:

Low Channel & High Channel (QPSK)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	699.1697	715.7621	699	716
-20		699.1626	715.7653	699	716
-10		699.1639	715.7654	699	716
0		699.1693	715.7665	699	716
10		699.1664	715.7621	699	716
20		699.1688	715.765	699	716
30		699.1652	715.7658	699	716
40		699.1630	715.7664	699	716
50		699.1680	715.7683	699	716
20	V min.= 3.42	699.1636	715.7645	699	716
20	V max.= 4.18	699.1680	715.7696	699	716

Low Channel & High Channel (16-QAM)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	699.1674	715.7691	699	716
-20		699.1657	715.7672	699	716
-10		699.1692	715.7638	699	716
0		699.1659	715.7626	699	716
10		699.1657	715.7682	699	716
20		699.1664	715.7622	699	716
30		699.1694	715.7656	699	716
40		699.1676	715.7609	699	716
50		699.1675	715.7661	699	716
20	V min.= 3.42	699.1611	715.7660	699	716
20	V max.= 4.18	699.1668	715.7637	699	716

LTE Band 17:

Low Channel & High Channel (QPSK)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	704.0016	715.7676	704	716
-20		704.0067	715.7615	704	716
-10		704.0089	715.7615	704	716
0		704.0003	715.7693	704	716
10		704.0029	715.7667	704	716
20		704.0003	715.7607	704	716
30		704.0012	715.7631	704	716
40		704.0078	715.7665	704	716
50		704.0056	715.7667	704	716
20	V min.= 3.42	704.0023	715.7692	704	716
20	V max.= 4.18	704.0057	715.7635	704	716

Low Channel & High Channel (16-QAM)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	704.0007	715.7678	704	716
-20		704.0058	715.7691	704	716
-10		704.0061	715.7614	704	716
0		704.0075	715.7641	704	716
10		704.0038	715.7658	704	716
20		704.0047	715.7601	704	716
30		704.0063	715.7688	704	716
40		704.0003	715.7660	704	716
50		704.0014	715.7625	704	716
20	V min.= 3.42	704.0034	715.7656	704	716
20	V max.= 4.18	704.0033	715.766	704	716

LTE Band 25:

Low Channel & High Channel (QPSK)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	1850.7001	1914.3079	1850	1915
-20		1850.7065	1914.3011	1850	1915
-10		1850.7038	1914.3025	1850	1915
0		1850.7014	1914.3049	1850	1915
10		1850.7057	1914.3041	1850	1915
20		1850.7095	1914.3016	1850	1915
30		1850.7001	1914.3064	1850	1915
40		1850.7049	1914.3041	1850	1915
50		1850.7046	1914.3097	1850	1915
20	V min.= 3.42	1850.7097	1914.3008	1850	1915
20	V max.= 4.18	1850.7077	1914.3018	1850	1915

Low Channel & High Channel (16-QAM)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	1850.7009	1914.3062	1850	1915
-20		1850.7093	1914.3078	1850	1915
-10		1850.7009	1914.3023	1850	1915
0		1850.7084	1914.3073	1850	1915
10		1850.7021	1914.3018	1850	1915
20		1850.7045	1914.3014	1850	1915
30		1850.7024	1914.3077	1850	1915
40		1850.7090	1914.3003	1850	1915
50		1850.7099	1914.3059	1850	1915
20	V min.= 3.42	1850.7042	1914.3001	1850	1915
20	V max.= 4.18	1850.7066	1914.3061	1850	1915

LTE Band 26:

Middle Channel, f_o = 831.5 MHz (QPSK)				
Temperature	**Power Supplied**	**Frequency Error**	**Frequency Error**	**Limit**
(℃)	**(V_{DC})**	**(Hz)**	**(ppm)**	**(ppm)**
-30	3.8	18	0.0215	2.5
-20		16	0.0191	2.5
-10		15	0.0179	2.5
0		13	0.0155	2.5
10		11	0.0132	2.5
20		10	0.0120	2.5
30		12	0.0143	2.5
40		11	0.0132	2.5
50		12	0.0143	2.5
20	V min.= 3.42	14	0.0167	2.5
20	V max.= 4.18	13	0.0155	2.5

Middle Channel, f_o = 831.5 MHz (16-QAM)				
Temperature	**Power Supplied**	**Frequency Error**	**Frequency Error**	**Limit**
(℃)	**(V_{DC})**	**(Hz)**	**(ppm)**	**(ppm)**
-30	3.8	15	0.0179	2.5
-20		18	0.0215	2.5
-10		17	0.0203	2.5
0		16	0.0191	2.5
10		10	0.0120	2.5
20		11	0.0132	2.5
30		11	0.0132	2.5
40		13	0.0155	2.5
50		8	0.0096	2.5
20	V min.= 3.42	9	0.0108	2.5
20	V max.= 4.18	12	0.0143	2.5

LTE Band 38:

Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	2570.0439	2619.9669	2570	2620
-20		2570.0447	2619.9607	2570	2620
-10		2570.0451	2619.9615	2570	2620
0		2570.0433	2619.9666	2570	2620
10		2570.0466	2619.9650	2570	2620
20		2570.0457	2619.9668	2570	2620
30		2570.0440	2619.9671	2570	2620
40		2570.0445	2619.9628	2570	2620
50		2570.0489	2619.9675	2570	2620
20	V min.= 3.42	2570.0418	2619.9613	2570	2620
20	V max.= 4.18	2570.0422	2619.9617	2570	2620

Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.8	2570.0475	2619.9679	2570	2620
-20		2570.0473	2619.9653	2570	2620
-10		2570.0483	2619.9684	2570	2620
0		2570.0462	2619.9638	2570	2620
10		2570.0476	2619.9644	2570	2620
20		2570.0457	2619.9656	2570	2620
30		2570.0472	2619.9612	2570	2620
40		2570.0453	2619.9667	2570	2620
50		2570.0435	2619.9640	2570	2620
20	V min.= 3.42	2570.0405	2619.9672	2570	2620
20	V max.= 4.18	2570.0450	2619.9669	2570	2620

LTE Band 41:

Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz					
Temperature	Power Supplied	F_L	F_H	F_L Limit	F_H Limit
(℃)	(V_{DC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	3.8	2555.0597	2654.9553	2555	2655
-20		2555.0563	2654.9530	2555	2655
-10		2555.0576	2654.9540	2555	2655
0		2555.0512	2654.9598	2555	2655
10		2555.0559	2654.9580	2555	2655
20		2555.0574	2654.9597	2555	2655
30		2555.0576	2654.9529	2555	2655
40		2555.0543	2654.9570	2555	2655
50		2555.0539	2654.9593	2555	2655
20	V min.= 3.42	2555.0563	2654.9536	2555	2655
20	V max.= 4.18	2555.0541	2654.9540	2555	2655

Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz					
Temperature	Power Supplied	F_L	F_H	F_L Limit	F_H Limit
(℃)	(V_{DC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	3.8	2555.0555	2654.9531	2555	2655
-20		2555.0575	2654.9512	2555	2655
-10		2555.0517	2654.9516	2555	2655
0		2555.0503	2654.9550	2555	2655
10		2555.0566	2654.9502	2555	2655
20		2555.0520	2654.9504	2555	2655
30		2555.0522	2654.9516	2555	2655
40		2555.0531	2654.9509	2555	2655
50		2555.0565	2654.9537	2555	2655
20	V min.= 3.42	2555.0558	2654.9529	2555	2655
20	V max.= 4.18	2555.0533	2654.9567	2555	2655

LTE Band 66:

Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz					
Temperature	Power Supplied	F_L	F_H	F_L Limit	F_H Limit
(℃)	(V_{DC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	3.8	1710.7093	1779.3012	1710	1780
-20		1710.7026	1779.3097	1710	1780
-10		1710.7056	1779.3067	1710	1780
0		1710.7003	1779.3011	1710	1780
10		1710.7000	1779.3085	1710	1780
20		1710.7062	1779.3073	1710	1780
30		1710.7042	1779.3019	1710	1780
40		1710.7077	1779.3007	1710	1780
50		1710.7005	1779.3027	1710	1780
20	V min.= 3.42	1710.7051	1779.3086	1710	1780
20	V max.= 4.18	1710.7014	1779.3082	1710	1780

Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz					
Temperature	Power Supplied	F_L	F_H	F_L Limit	F_H Limit
(℃)	(V_{DC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	3.8	1710.7083	1779.3092	1710	1780
-20		1710.7019	1779.3021	1710	1780
-10		1710.7045	1779.3019	1710	1780
0		1710.7049	1779.3081	1710	1780
10		1710.7062	1779.3065	1710	1780
20		1710.7006	1779.3076	1710	1780
30		1710.7044	1779.3024	1710	1780
40		1710.702	1779.3096	1710	1780
50		1710.7072	1779.3063	1710	1780
20	V min.= 3.42	1710.7037	1779.3074	1710	1780
20	V max.= 4.18	1710.7057	1779.3026	1710	1780

Declarations

1: BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.

2: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

4: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

5: This report cannot be reproduced except in full, without prior written approval of the Company.

6: This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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