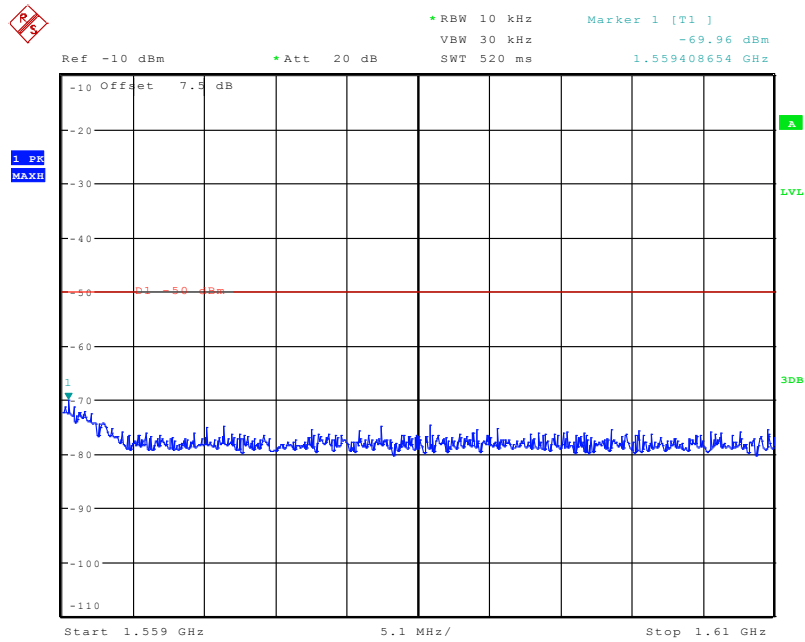
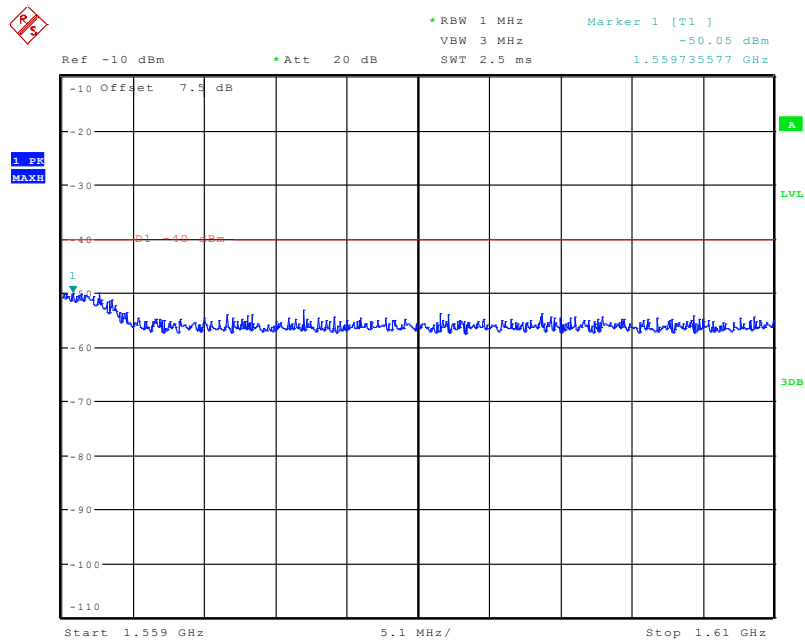


1559 MHz - 1610 MHz (5.0 MHz, Low channel, Narrow)



Date: 5.NOV.2020 13:25:08

1559 MHz - 1610 MHz (5.0 MHz, Low channel, Wide)



Date: 5.NOV.2020 13:25:29

Ref -10 dBm * Att 20 dB RBW 10 kHz Marker 1 [T1] -48.49 dBm
 VBW 30 kHz SWT 120 ms 774.653846154 MHz

Offset 7.5 dB

1.2 MHz/

Start 763 MHz Stop 775 MHz

1.25 MAXH

01 -35 dBm

1

LVL

3DB

Date: 5.NOV.2020 13:19:57

Ref -10 dBm • RBW 10 kHz Marker 1 [T1] -59.32 dBm
 • Att 20 dB VBW 30 kHz SWT 120 ms 793.00000000 MHz

-10 Offset 7.5 dB

-20

-30

-40

-50

-60

-70

-80

-90

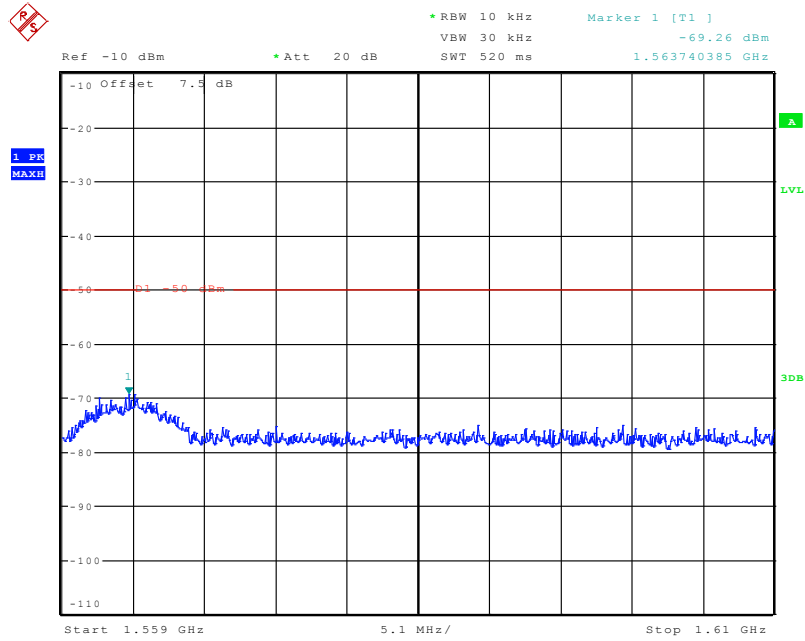
-100

-110

Start 793 MHz 1.2 MHz/ Stop 805 MHz

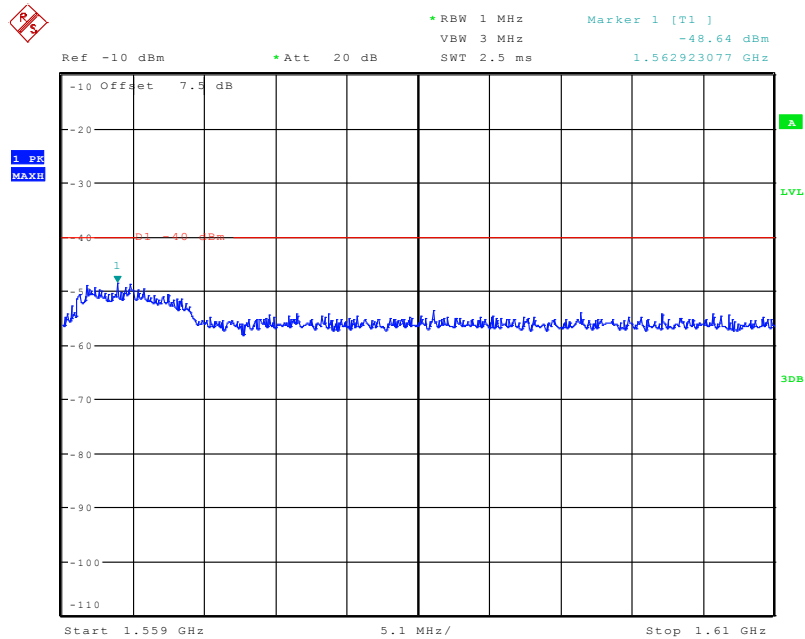
Date: 5.NOV.2020 13:21:31

1559 MHz - 1610 MHz (5.0 MHz, Middle channel, Narrow)



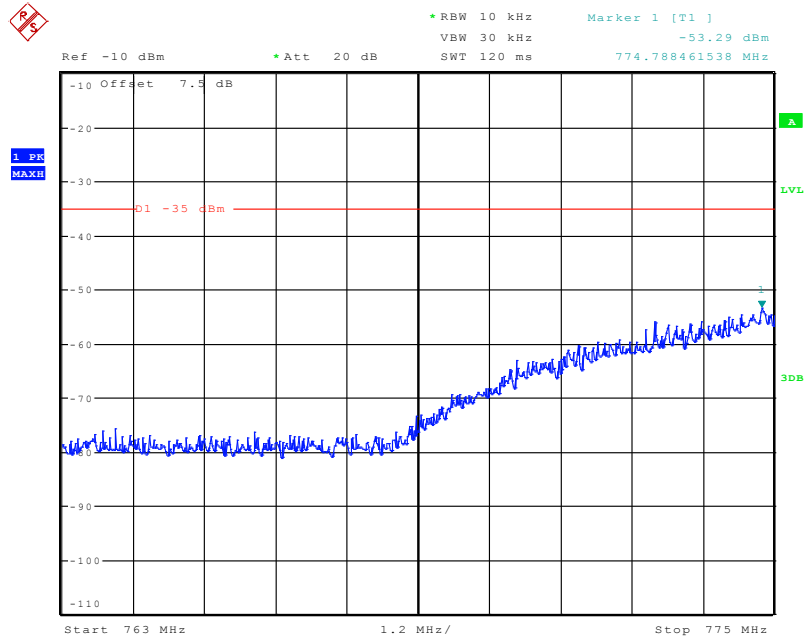
Date: 5.NOV.2020 13:24:49

1559 MHz - 1610 MHz (5.0 MHz, Middle channel, Wide)



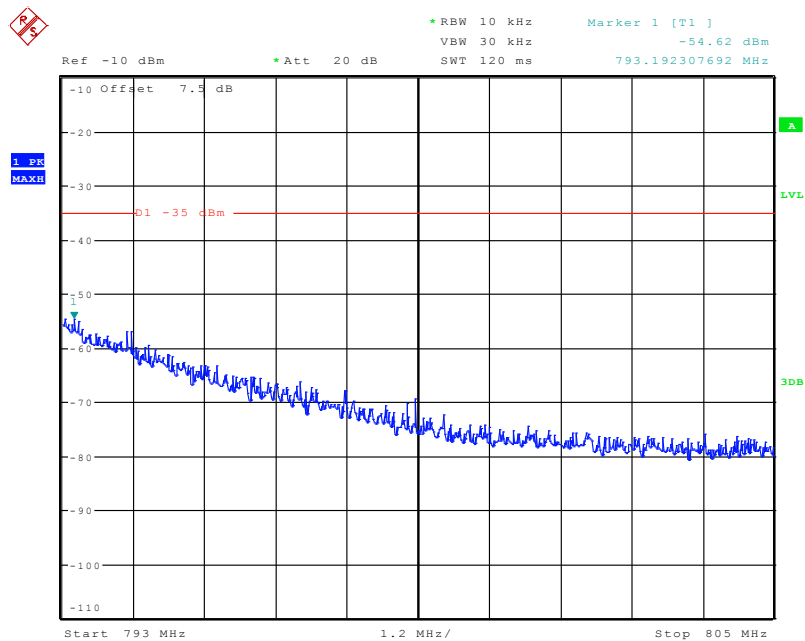
Date: 5.NOV.2020 13:24:27

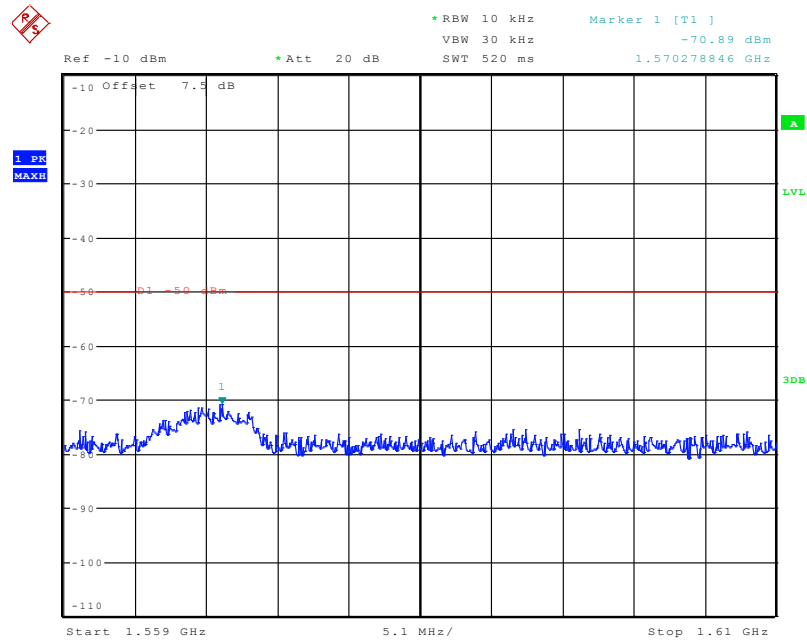
763 MHz - 775 MHz (5.0 MHz, High channel)



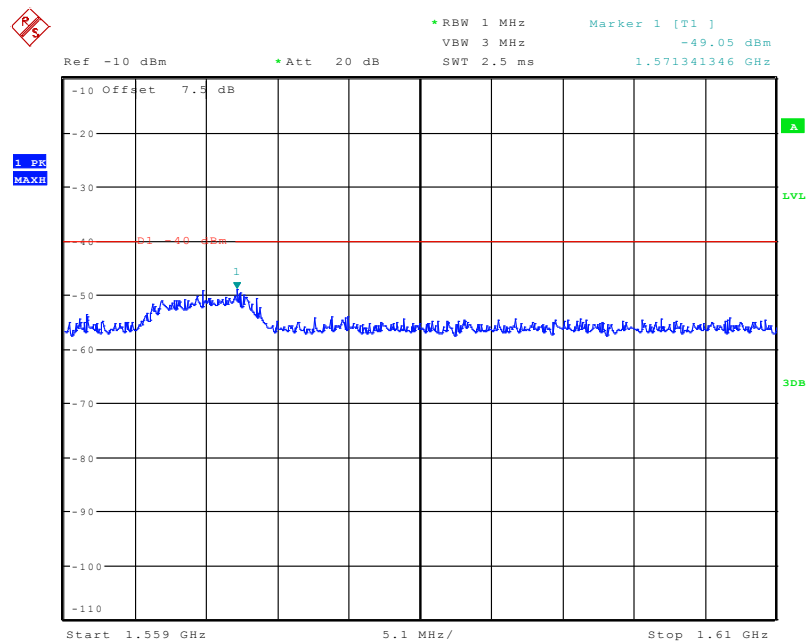
Date: 5.NOV.2020 13:20:21

793MHz – 805MHz (5.0 MHz, High channel)



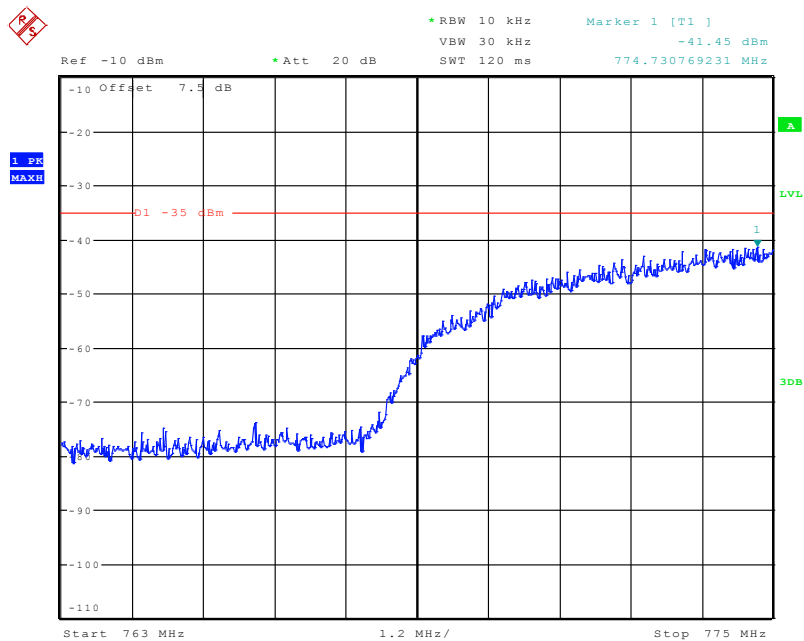
1559 MHz - 1610 MHz (5.0 MHz, High channel, Narrow)

Date: 5.NOV.2020 13:26:11

1559 MHz - 1610 MHz (5.0 MHz, High channel, Wide)

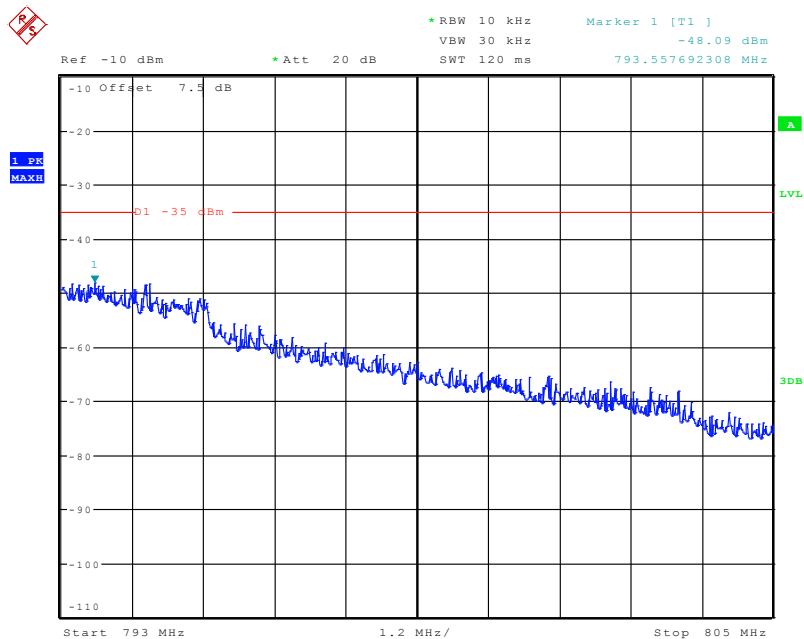
Date: 5.NOV.2020 13:25:52

763 MHz - 775 MHz (10.0 MHz, Middle channel)



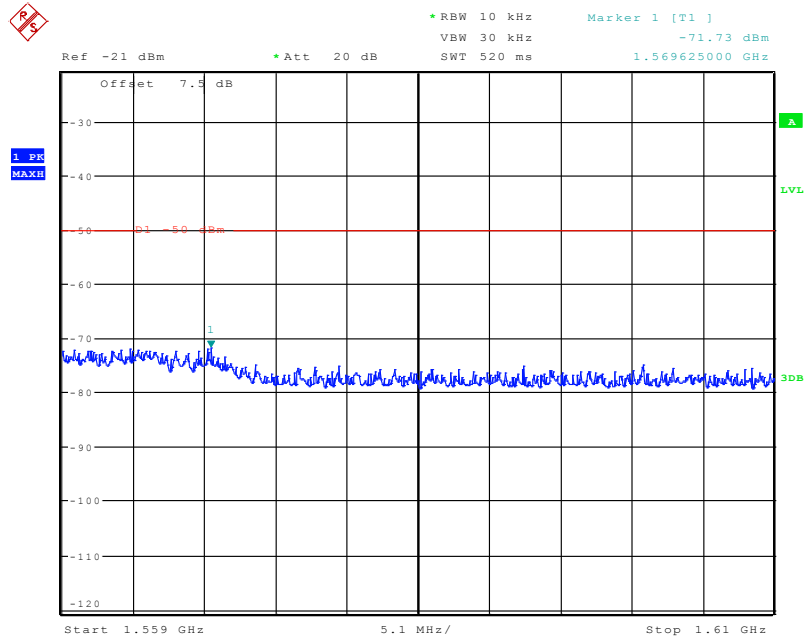
Date: 5.NOV.2020 13:22:11

793MHz – 805 MHz (10.0 MHz, Middle channel)



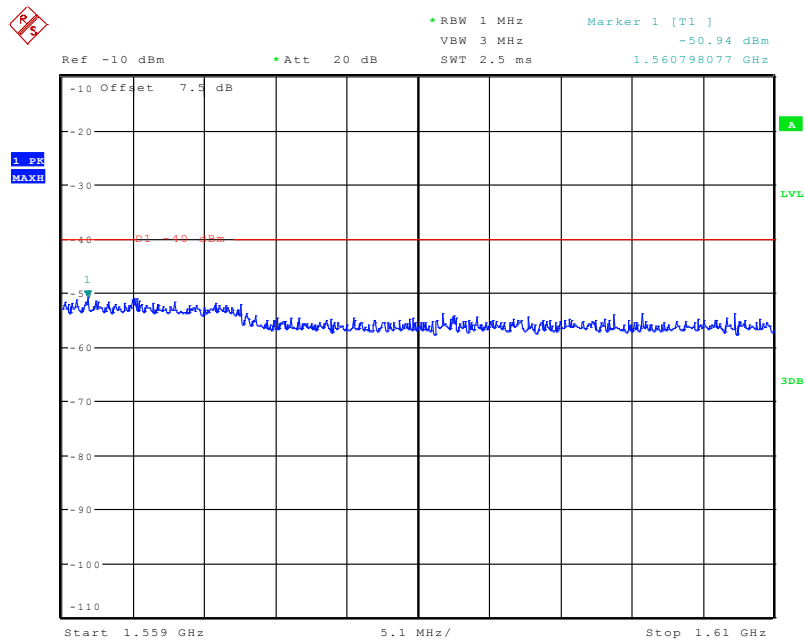
Date: 5.NOV.2020 13:21:54

1559 MHz - 1610 MHz (10.0 MHz, Middle channel, Narrow)



Date: 5.NOV.2020 13:23:27

1559 MHz - 1610 MHz (10.0 MHz, Middle channel, Wide)



Date: 5.NOV.2020 13:23:58

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

Applicable Standard

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

Test Procedure

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

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

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

Test Data

Environmental Conditions

Temperature:	29~30.5 °C
Relative Humidity:	54~65 %
ATM Pressure:	100.8~101.0 kPa

The testing was performed by Harris He on 2020-10-22 for below 1GHz and Alan He on 2020-10-19 for above 1GHz.

EUT operation mode: Transmitting (Worst case)

30 MHz ~ 10 GHz:**Cellular Band (Part 22H)**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
956.3	37.38	256	1.3	H	-63.2	1.37	0.0	-64.57	-13	51.57
956.3	38.43	45	1.3	V	-60.9	1.37	0.0	-62.27	-13	49.27
1652.80	46.27	268	1.4	H	-60.1	1.30	8.90	-52.50	-13	39.50
1652.80	45.18	56	2.4	V	-60.6	1.30	8.90	-53.00	-13	40.00
2479.20	44.08	294	1.7	H	-59.3	2.60	10.20	-51.70	-13	38.70
2479.20	44.24	341	1.3	V	-58.5	2.60	10.20	-50.90	-13	37.90
3305.60	44.08	255	2.4	H	-56.8	1.50	11.70	-46.60	-13	33.60
3305.60	43.67	321	1.2	V	-57.3	1.50	11.70	-47.10	-13	34.10
Middle channel										
957.4	37.63	284	2.0	H	-63.0	1.37	0.0	-64.37	-13	51.37
957.4	38.52	38	2.3	V	-60.8	1.37	0.0	-62.17	-13	49.17
1673.20	46.14	257	1.3	H	-60.2	1.30	8.90	-52.60	-13	39.60
1673.20	45.84	272	1.3	V	-59.9	1.30	8.90	-52.30	-13	39.30
2509.80	43.88	198	1.2	H	-59.5	2.60	10.20	-51.90	-13	38.90
2509.80	43.97	31	2.2	V	-58.8	2.60	10.20	-51.20	-13	38.20
3346.40	44.14	226	2.3	H	-56.8	1.50	11.70	-46.60	-13	33.60
3346.40	43.77	46	2.4	V	-57.2	1.50	11.70	-47.00	-13	34.00
High channel										
961.7	37.39	173	1.8	H	-63.2	1.37	0.0	-64.57	-13	51.57
961.7	38.46	5	1.8	V	-60.9	1.37	0.0	-62.27	-13	49.27
1693.20	46.23	223	2.5	H	-60.1	1.30	8.90	-52.50	-13	39.50
1693.20	45.91	295	1.2	V	-59.8	1.30	8.90	-52.20	-13	39.20
2539.80	44.01	159	2.0	H	-59.3	2.60	10.20	-51.70	-13	38.70
2539.80	43.86	171	1.9	V	-58.9	2.60	10.20	-51.30	-13	38.30
3386.40	43.74	54	1.2	H	-57.5	1.40	11.80	-47.10	-13	34.10
3386.40	43.82	238	1.1	V	-57.2	1.40	11.80	-46.80	-13	33.80

30 MHz ~ 20 GHz:**PCS Band (Part 24E)**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
958.6	37.47	352	1.4	H	-63.1	1.37	0.0	-64.47	-13	51.47
958.6	38.63	215	2.5	V	-60.7	1.37	0.0	-62.07	-13	49.07
3704.80	45.12	351	1.9	H	-56.7	1.60	11.90	-46.40	-13	33.40
3704.80	44.33	87	1.5	V	-56.9	1.60	11.90	-46.60	-13	33.60
Middle channel										
968.7	37.54	243	1.3	H	-63.1	1.37	0.0	-64.47	-13	51.47
968.7	38.26	120	1.8	V	-61.1	1.37	0.0	-62.47	-13	49.47
3760.00	44.89	9	2.4	H	-57.2	1.50	11.80	-46.90	-13	33.90
3760.00	44.41	40	2.0	V	-57.2	1.50	11.80	-46.90	-13	33.90
High channel										
947.7	37.49	304	1.2	H	-63.1	1.37	0.0	-64.47	-13	51.47
947.7	38.54	174	2.2	V	-60.8	1.37	0.0	-62.17	-13	49.17
3815.20	44.91	220	1.3	H	-57.1	1.50	11.80	-46.80	-13	33.80
3815.20	44.22	239	1.4	V	-57.4	1.50	11.80	-47.10	-13	34.10

30 MHz ~ 20 GHz:**AWS Band**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
960.6	37.28	139	2.3	H	-63.3	1.37	0.0	-64.67	-13	51.67
960.6	38.84	162	1.8	V	-60.5	1.37	0.0	-61.87	-13	48.87
3424.80	44.38	232	1.1	H	-56.4	1.40	11.80	-46.00	-13	33.00
3424.80	43.96	327	1.8	V	-56.6	1.40	11.80	-46.20	-13	33.20
Middle channel										
961.3	37.48	201	2.0	H	-63.1	1.37	0.0	-64.47	-13	51.47
961.3	38.15	223	1.5	V	-61.2	1.37	0.0	-62.57	-13	49.57
3465.20	44.75	236	1.6	H	-56.0	1.50	12.00	-45.50	-13	32.50
3465.20	44.27	314	1.9	V	-57.2	1.50	12.00	-46.70	-13	33.70
High channel										
962.5	37.34	154	1.2	H	-63.3	1.37	0.0	-64.67	-13	51.67
962.5	38.78	159	2.3	V	-60.6	1.37	0.0	-61.97	-13	48.97
3505.20	44.61	299	1.4	H	-56.1	1.50	12.00	-45.60	-13	32.60
3505.20	44.54	72	2.0	V	-57.0	1.50	12.00	-46.50	-13	33.50

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

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level	Limit	Margin
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)	(dBm)	(dBm)	(dB)
Band 2										
Test frequency range:30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
957.4	37.33	239	1.1	H	-63.3	1.37	0.0	-64.67	-13	51.67
957.4	38.25	342	1.5	V	-61.1	1.37	0.0	-62.47	-13	49.47
3701.40	44.16	191	1.2	H	-57.6	1.60	11.90	-47.30	-13	34.30
3701.40	43.85	265	2.5	V	-57.4	1.60	11.90	-47.10	-13	34.10
1.4 MHz, Middle channel										
959.6	37.62	129	1.7	H	-63.0	1.37	0.0	-64.37	-13	51.37
959.6	38.45	98	1.7	V	-60.9	1.37	0.0	-62.27	-13	49.27
3760.00	44.12	57	1.8	H	-57.9	1.50	11.80	-47.60	-13	34.60
3760.00	43.67	246	1.6	V	-57.9	1.50	11.80	-47.60	-13	34.60
1.4 MHz, High channel										
966.2	37.43	177	1.7	H	-63.2	1.37	0.0	-64.57	-13	51.57
966.2	38.20	215	1.7	V	-61.1	1.37	0.0	-62.47	-13	49.47
5727.90	51.34	283	1.4	H	-48.5	1.60	12.10	-38.00	-13	25.00
5727.90	49.35	315	1.5	V	-49.9	1.60	12.10	-39.40	-13	26.40
Band 4										
Test frequency range:30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
949.3	37.27	101	1.2	H	-63.3	1.37	0.0	-64.67	-13	51.67
949.3	38.16	152	1.6	V	-61.2	1.37	0.0	-62.57	-13	49.57
3421.40	44.04	255	1.7	H	-56.8	1.40	11.80	-46.40	-13	33.40
3421.40	43.86	60	2.5	V	-56.7	1.40	11.80	-46.30	-13	33.30
1.4 MHz, Middle channel										
961.7	37.52	46	1.4	H	-63.1	1.37	0.0	-64.47	-13	51.47
961.7	38.36	136	2.5	V	-61.0	1.37	0.0	-62.37	-13	49.37
3465.00	44.25	183	2.3	H	-56.5	1.50	12.00	-46.00	-13	33.00
3465.00	44.08	336	2.4	V	-57.4	1.50	12.00	-46.90	-13	33.90
1.4 MHz, High channel										
962.8	37.59	159	2.2	H	-63.0	1.37	0.0	-64.37	-13	51.37
962.8	38.42	67	1.3	V	-60.9	1.37	0.0	-62.27	-13	49.27
3508.60	44.38	81	1.1	H	-56.4	1.50	12.00	-45.90	-13	32.90
3508.60	44.15	102	2.1	V	-57.4	1.50	12.00	-46.90	-13	33.90

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level	Limit	Margin
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)	(dBm)	(dBm)	(dB)
Band 5										
Test frequency range: 30 MHz ~ 10 GHz										
1.4 MHz, Low channel										
952.1	37.41	15	2.1	H	-63.2	1.37	0.0	-64.57	-13	51.57
952.1	38.36	225	1.3	V	-61.0	1.37	0.0	-62.37	-13	49.37
1649.40	44.61	94	1.5	H	-63.5	1.40	8.70	-56.20	-13	43.20
1649.40	44.28	346	2.0	V	-63.6	1.40	8.70	-56.30	-13	43.30
1.4 MHz, Middle channel										
963.2	37.41	102	2.4	H	-63.2	1.37	0.0	-64.57	-13	51.57
963.2	38.27	255	2.5	V	-61.1	1.37	0.0	-62.47	-13	49.47
1673.00	44.35	183	1.1	H	-62.0	1.30	8.90	-54.40	-13	41.40
1673.00	44.21	224	2.2	V	-61.5	1.30	8.90	-53.90	-13	40.90
1.4 MHz, High channel										
965.0	37.74	264	2.1	H	-62.9	1.37	0.0	-64.27	-13	51.27
965.0	38.66	96	2.1	V	-60.7	1.37	0.0	-62.07	-13	49.07
1696.60	44.35	36	1.0	H	-62.0	1.30	8.90	-54.40	-13	41.40
1696.60	44.12	28	2.3	V	-61.6	1.30	8.90	-54.00	-13	41.00
Band 12										
Test frequency range: 30 MHz ~ 10 GHz										
1.4 MHz, Low channel										
947.0	37.69	201	1.9	H	-62.9	1.37	0.0	-64.27	-13	51.27
947.0	38.81	267	1.0	V	-60.5	1.37	0.0	-61.87	-13	48.87
1399.40	43.95	11	2.0	H	-64.2	1.60	7.90	-57.90	-13	44.90
1399.40	43.82	24	1.3	V	-64.6	1.60	7.90	-58.30	-13	45.30
1.4 MHz, Middle channel										
965.3	37.48	201	2.0	H	-63.1	1.37	0.0	-64.47	-13	51.47
965.3	38.15	223	1.5	V	-61.2	1.37	0.0	-62.57	-13	49.57
1415.00	44.26	271	2.1	H	-63.9	1.60	7.90	-57.60	-13	44.60
1415.00	43.85	33	1.1	V	-64.6	1.60	7.90	-58.30	-13	45.30
1.4 MHz, High channel										
967.4	37.51	147	1.2	H	-63.1	1.37	0.0	-64.47	-13	51.47
967.4	38.63	146	1.3	V	-60.7	1.37	0.0	-62.07	-13	49.07
1430.60	44.11	232	1.1	H	-64.1	1.60	7.90	-57.80	-13	44.80
1430.60	43.93	101	1.9	V	-64.5	1.60	7.90	-58.20	-13	45.20

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level	Limit	Margin
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)	(dBm)	(dBm)	(dB)
Band 13										
Test frequency range: 30 MHz ~ 10 GHz										
5 MHz, Low channel										
964.9	37.62	113	2.2	H	-63.0	1.37	0.0	-64.37	-13	51.37
964.9	38.13	287	1.7	V	-61.2	1.37	0.0	-62.57	-13	49.57
1559.00	44.38	233	1.4	H	-63.7	1.40	8.70	-56.40	-13	43.40
1559.00	44.12	252	1.4	V	-63.7	1.40	8.70	-56.40	-13	43.40
5 MHz, Middle channel										
954.7	37.54	243	1.3	H	-63.1	1.37	0.0	-64.47	-13	51.47
954.7	38.26	120	1.8	V	-61.1	1.37	0.0	-62.47	-13	49.47
1564.00	44.12	126	1.4	H	-64.0	1.40	8.70	-56.70	-13	43.70
1564.00	44.03	344	1.4	V	-63.8	1.40	8.70	-56.50	-13	43.50
5 MHz, High channel										
951.3	37.37	273	1.8	H	-63.2	1.37	0.0	-64.57	-13	51.57
951.3	38.44	319	1.8	V	-60.9	1.37	0.0	-62.27	-13	49.27
1569.00	45.13	243	2.2	H	-62.9	1.40	8.70	-55.60	-13	42.60
1569.00	44.52	211	1.9	V	-63.3	1.40	8.70	-56.00	-13	43.00

Note:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

dBd is for the ERP, dBi is for EIRP.

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

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

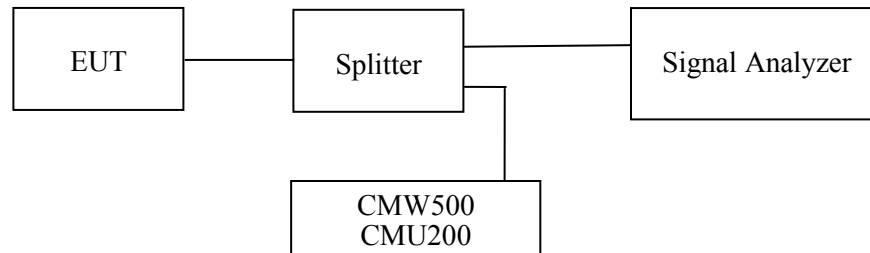
According to § 24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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

Test Procedure

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

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

**Test Data****Environmental Conditions**

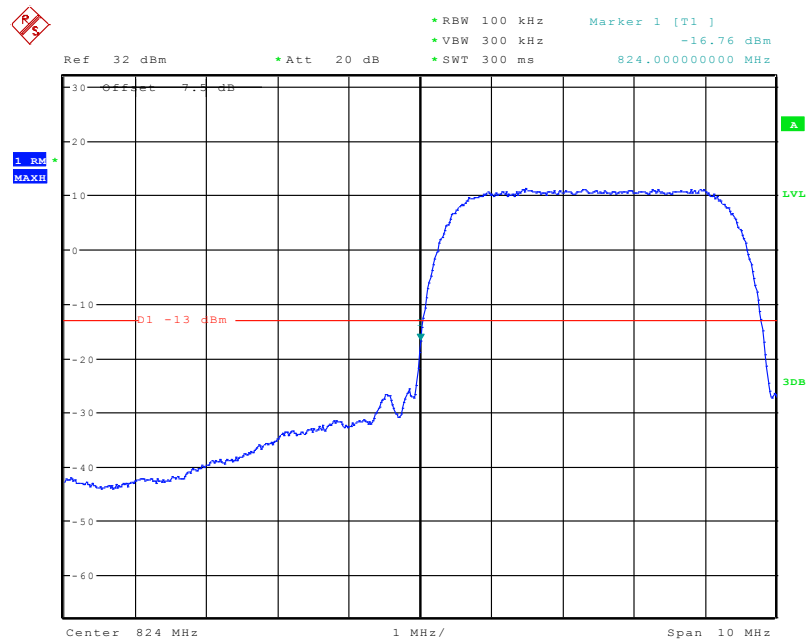
Temperature:	21~26.4℃
Relative Humidity:	42~68 %
ATM Pressure:	100.3~101.2 kPa

The testing was performed by Alan He and Gavin Guo from 2020-03-09 to 2020-03-13.

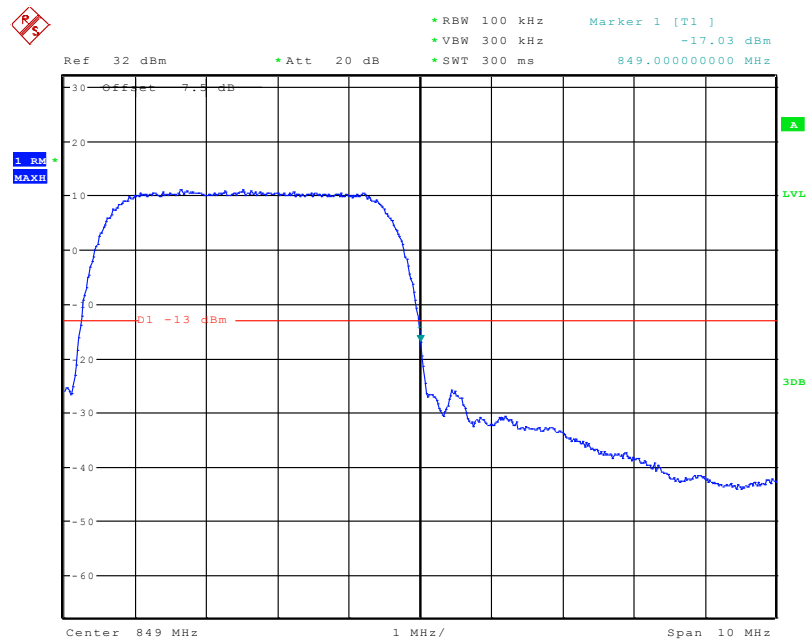
EUT operation mode: Transmitting (Worst case)

Test Result: Pass

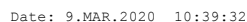
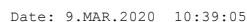
Please refer to the following plots.

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

Date: 9.MAR.2020 10:36:08

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

Date: 9.MAR.2020 10:37:21



[illegible]

Date: 9.MAR.2020 10:38:30

Ref 32 dBm * Att 20 dB * RBW 100 kHz Marker 1 [T1] -19.29 dBm
 * VBW 300 kHz * SWT 300 ms 849.00000000 MHz

Offset 7.5 dB

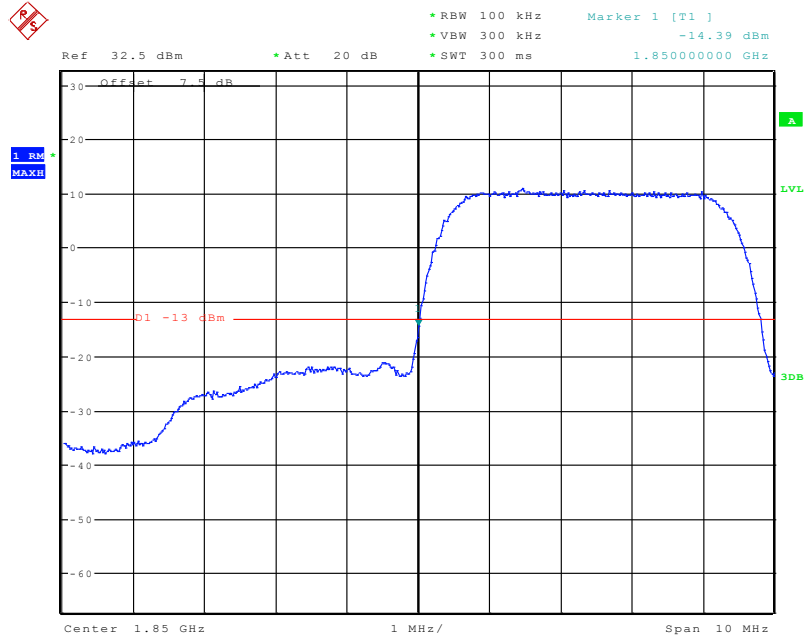
1.0 MHz
MAX

01 -13 dBm

Center 849 MHz 1 MHz/ Span 10 MHz

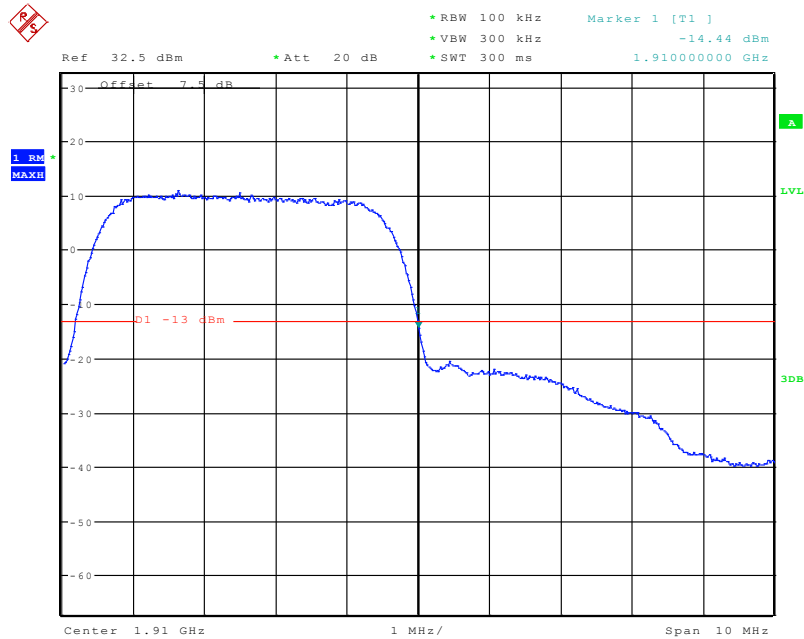
Date: 9.MAR.2020 10:37:58

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



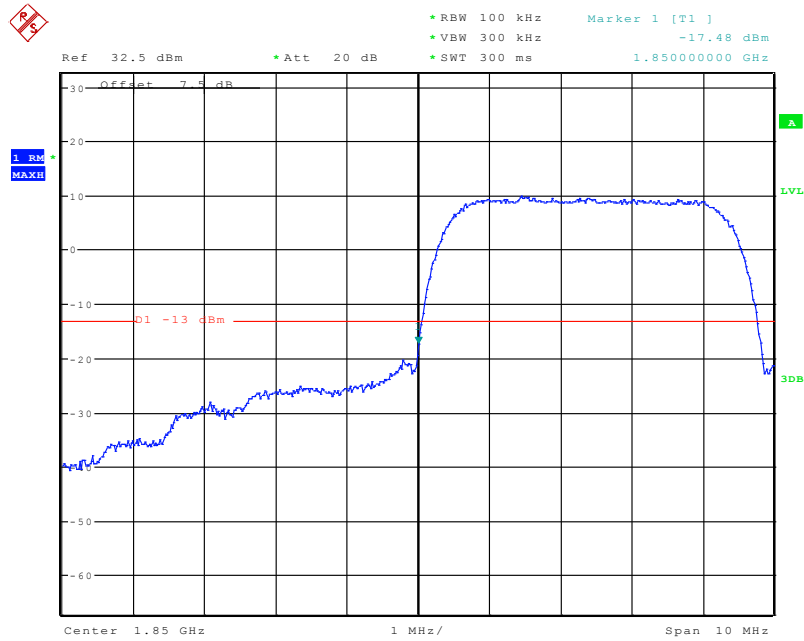
Date: 9.MAR.2020 11:23:50

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



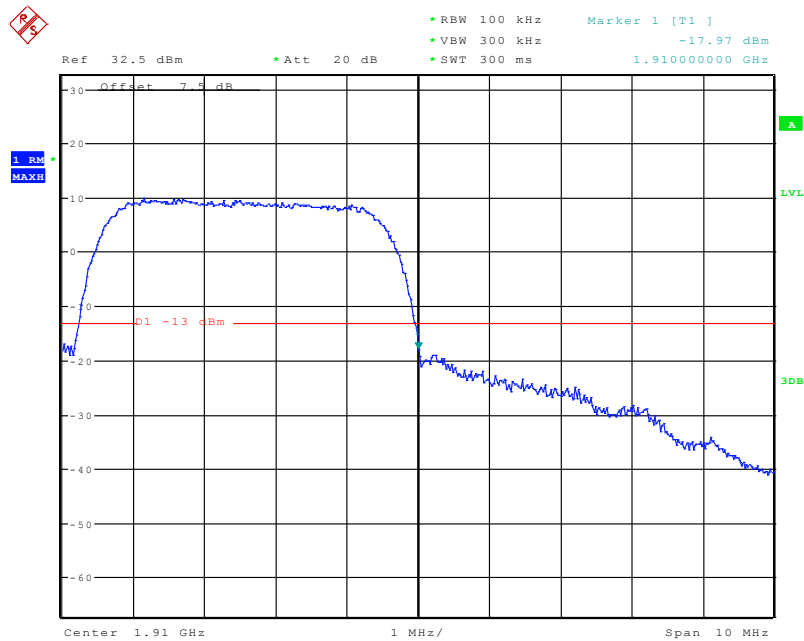
Date: 9.MAR.2020 11:28:01

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



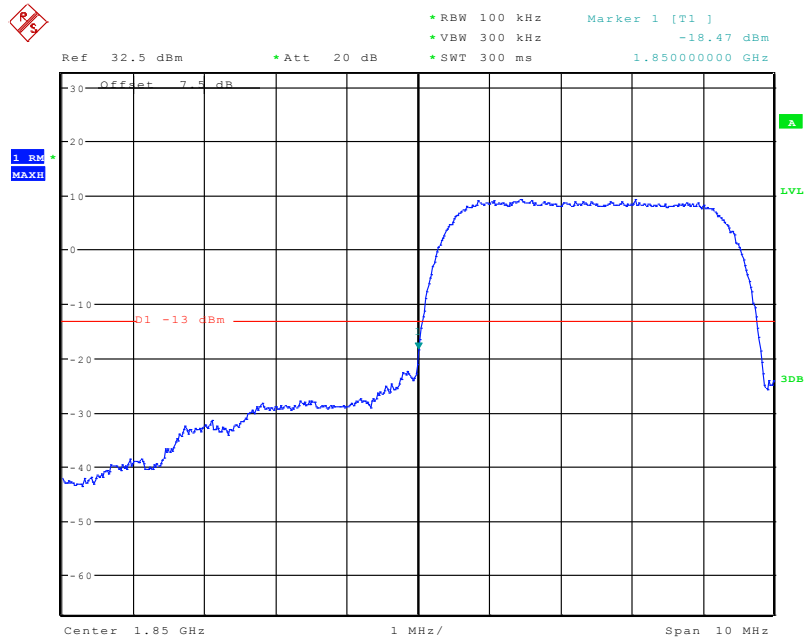
Date: 9.MAR.2020 11:24:30

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



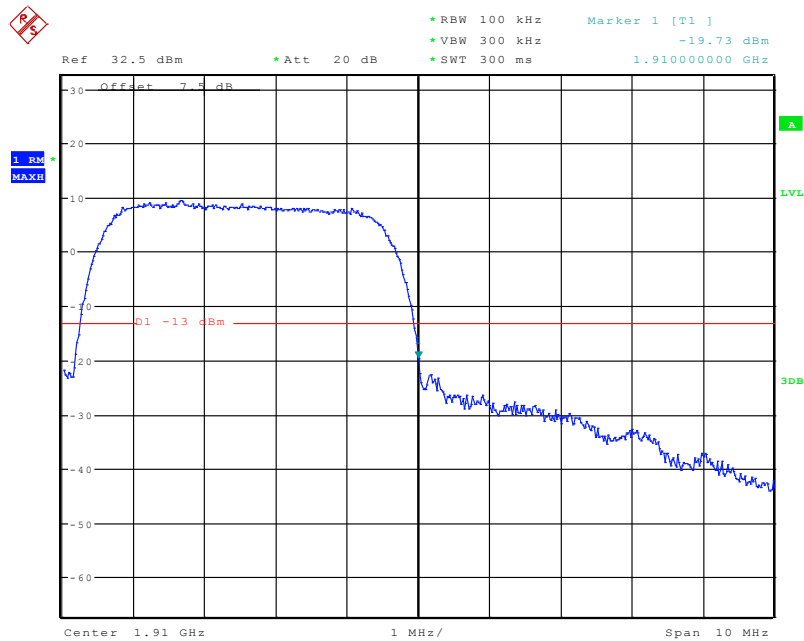
Date: 9.MAR.2020 11:26:55

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



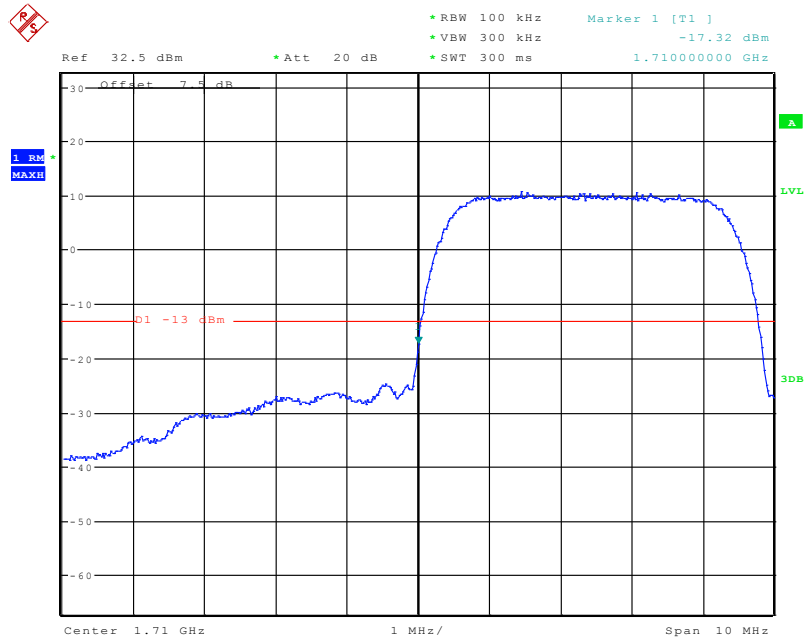
Date: 9.MAR.2020 11:23:17

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



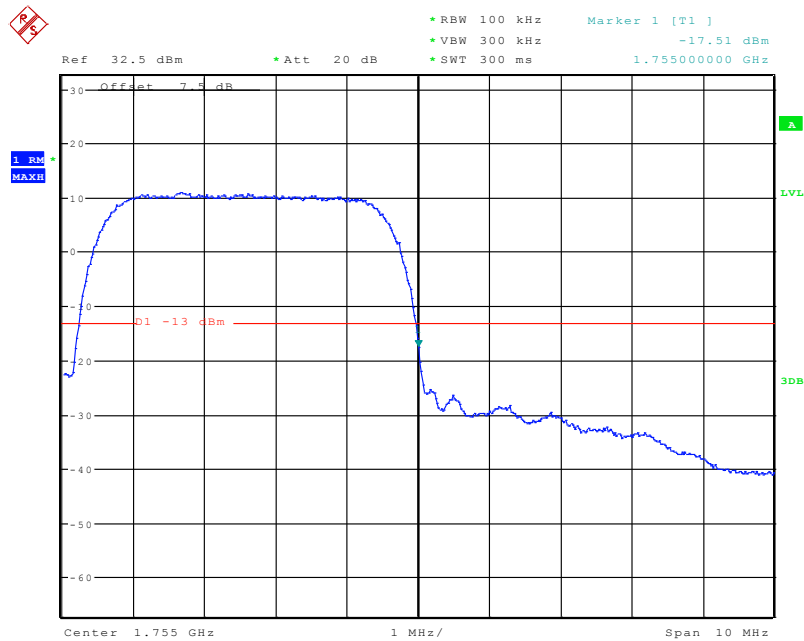
Date: 9.MAR.2020 11:27:31

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



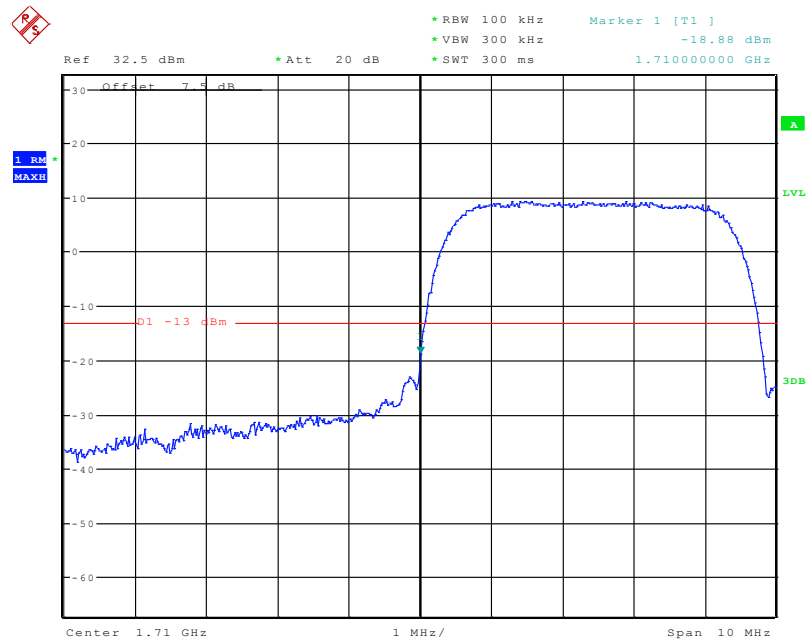
Date: 9.MAR.2020 11:08:53

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



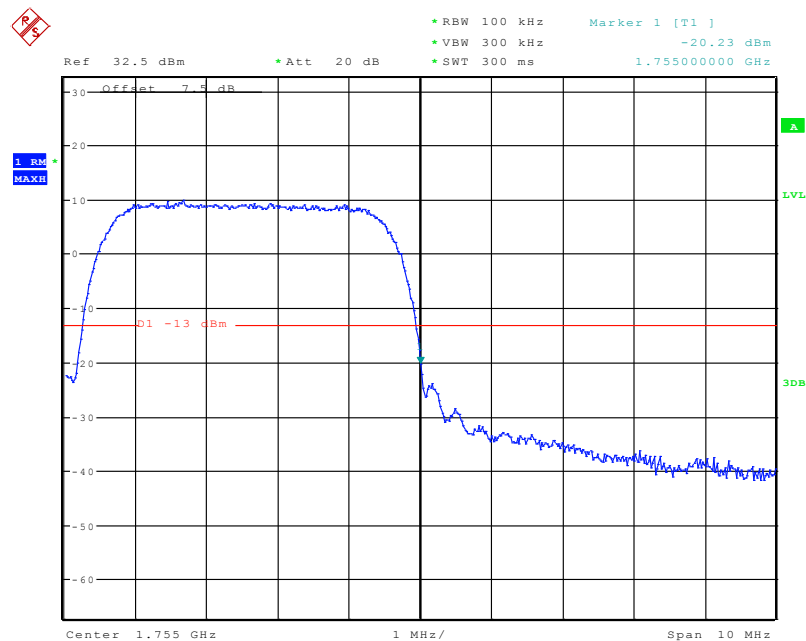
Date: 9.MAR.2020 11:09:32

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



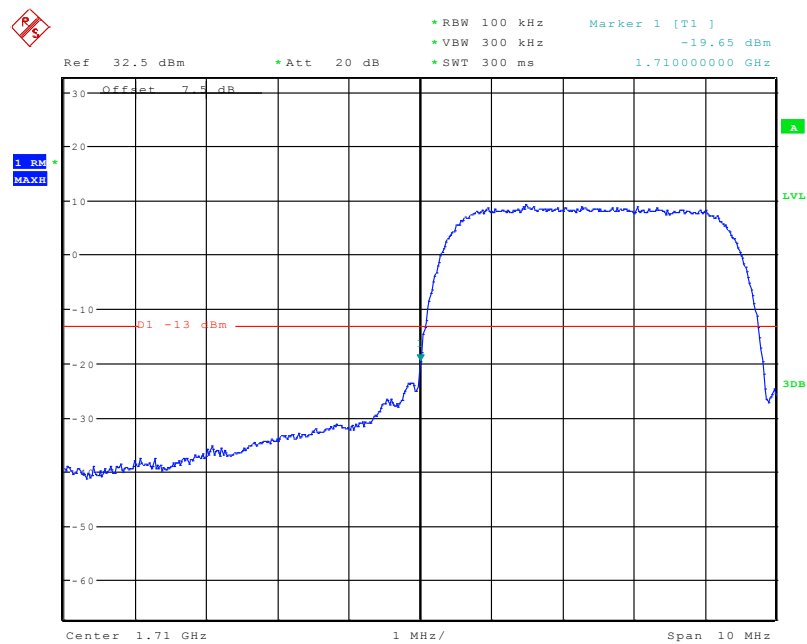
Date: 9.MAR.2020 11:08:21

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



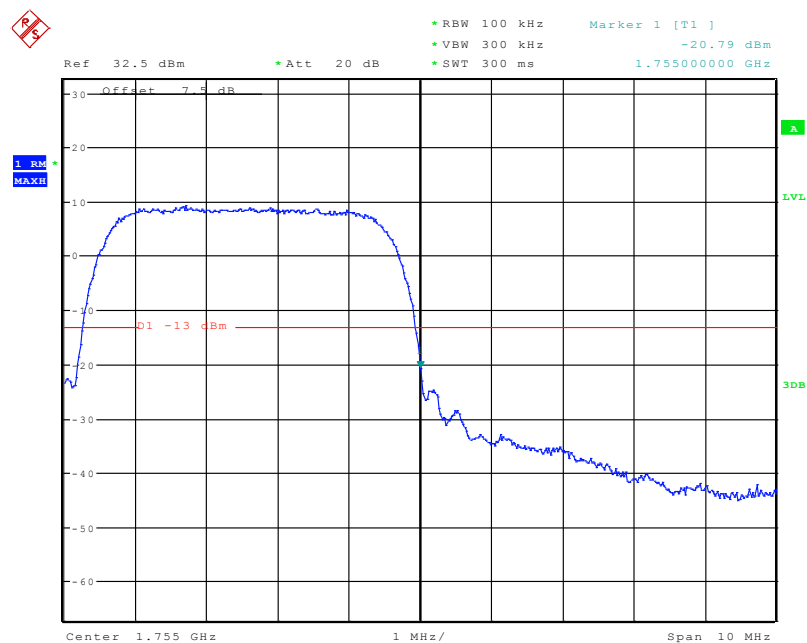
Date: 9.MAR.2020 11:07:51

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

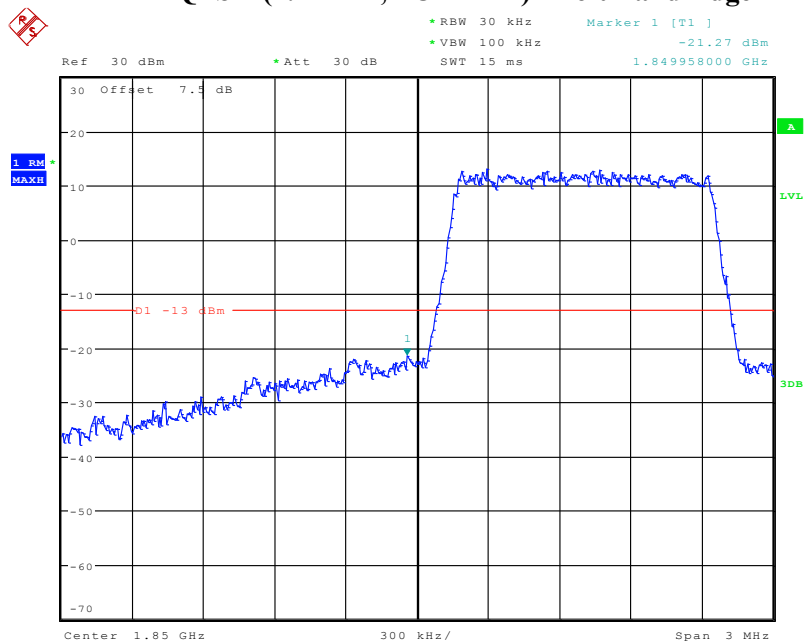


Date: 9.MAR.2020 11:04:25

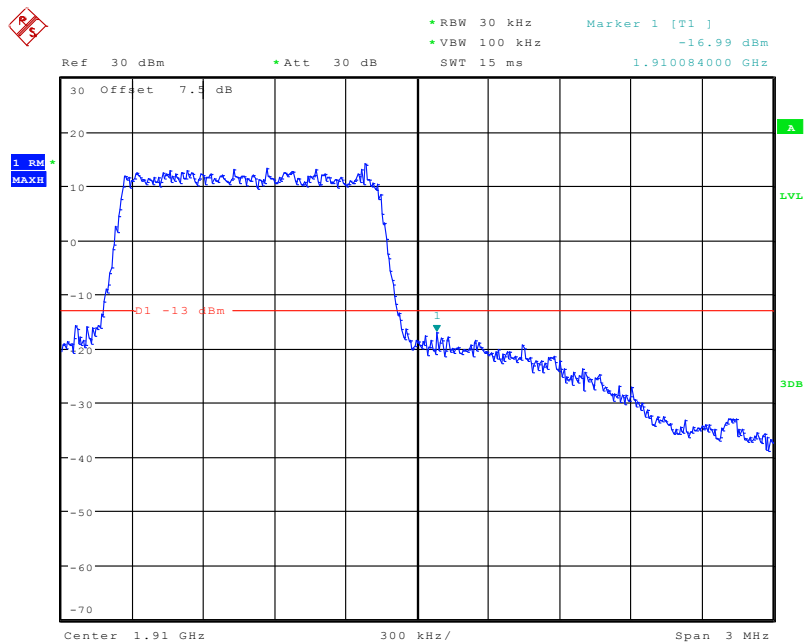
AWS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 9.MAR.2020 11:05:25

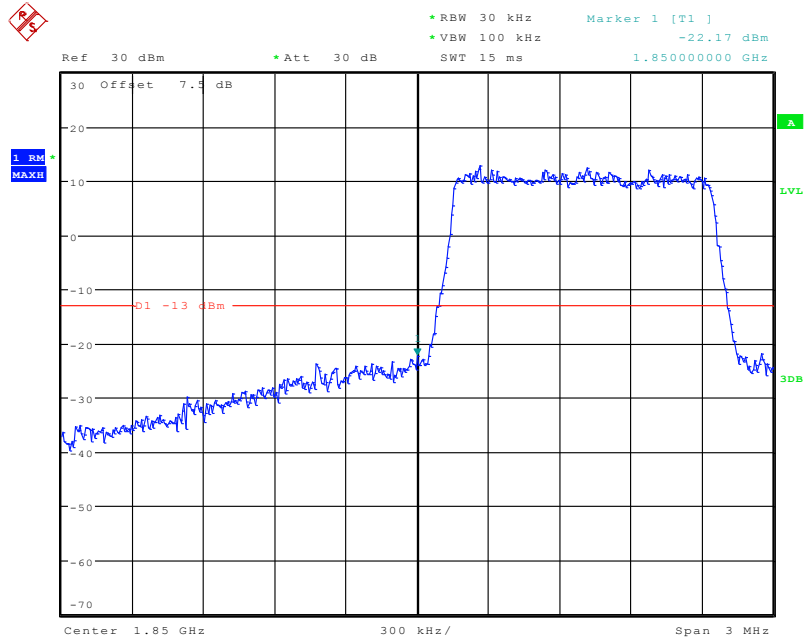
Band 2:**Low channel****QPSK (1.4 MHz, FULL RB) - Left Band Edge**

Date: 13.MAR.2020 10:26:13

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

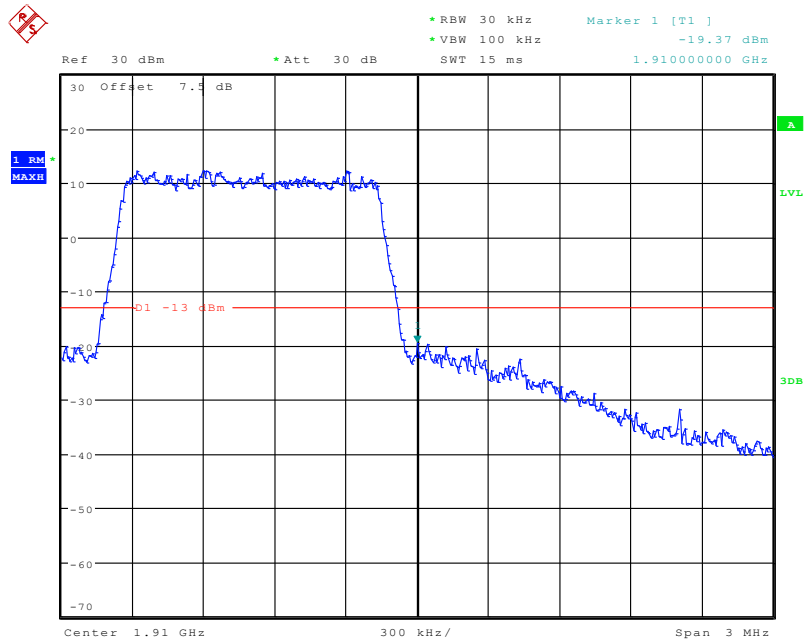
Date: 13.MAR.2020 10:26:49

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



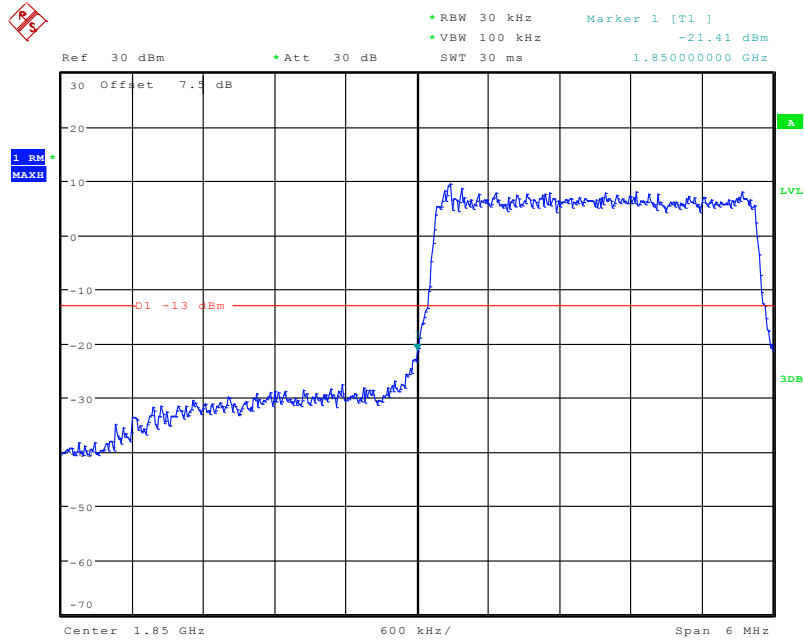
Date: 13.MAR.2020 10:26:29

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



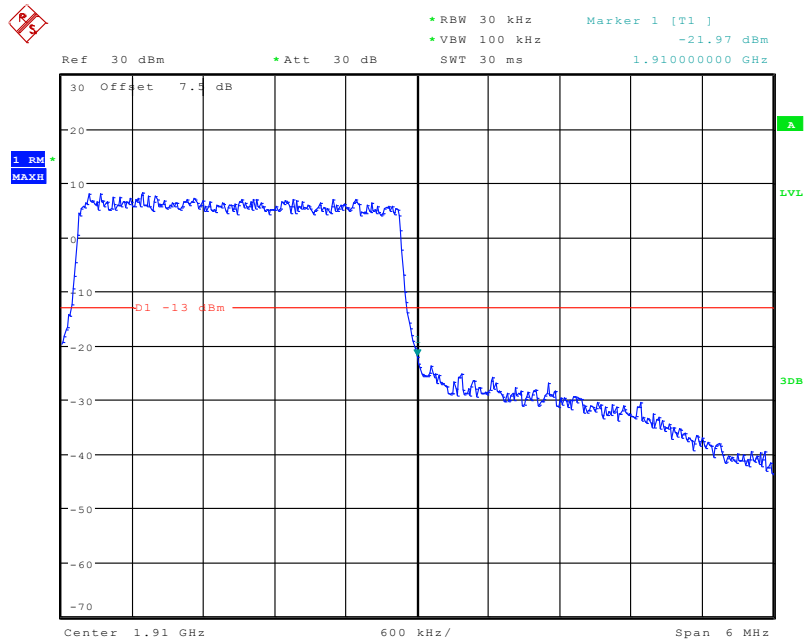
Date: 13.MAR.2020 10:27:11

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

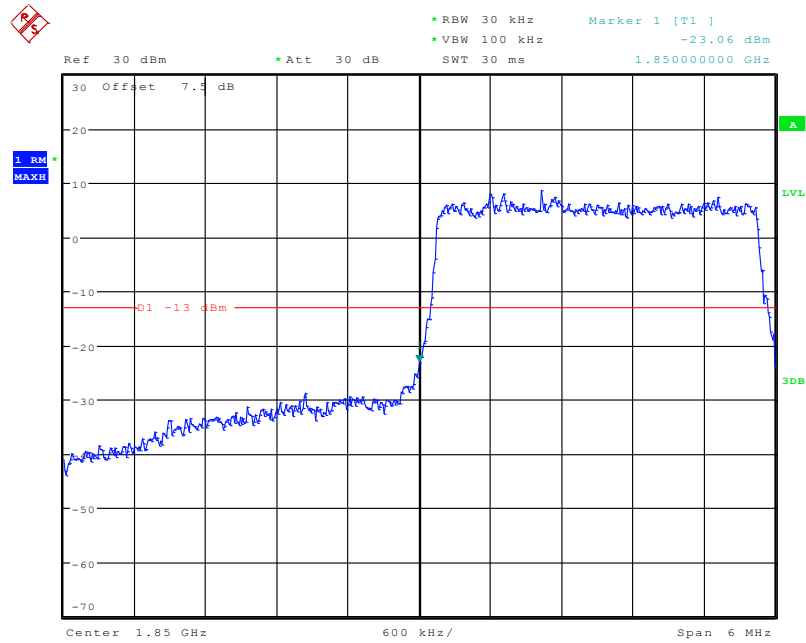


Date: 13.MAR.2020 10:27:30

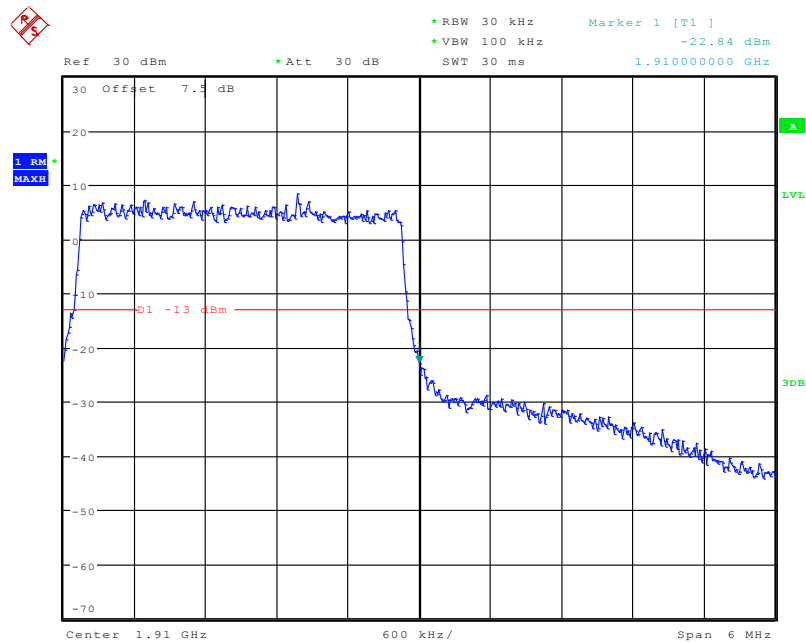
QPSK (3.0 MHz, FULL RB) - Right Band Edge



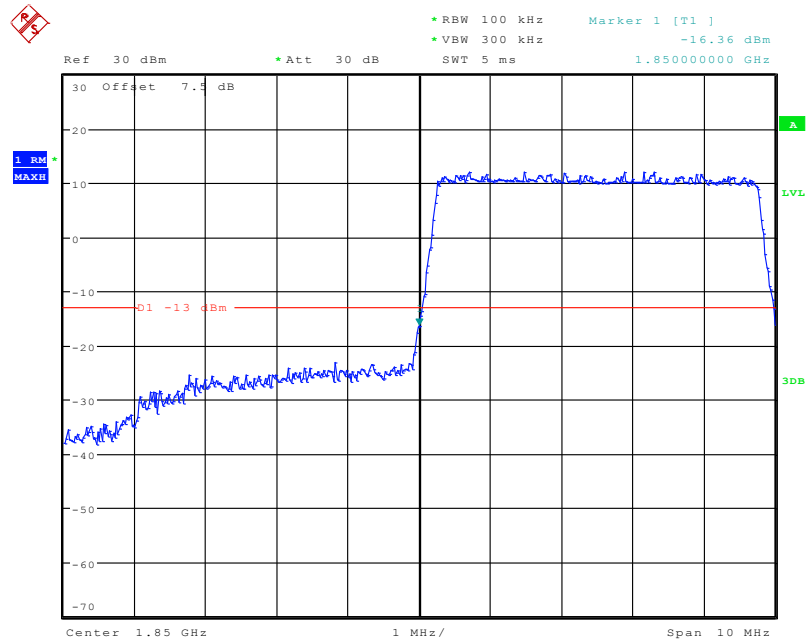
Date: 13.MAR.2020 10:28:05

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

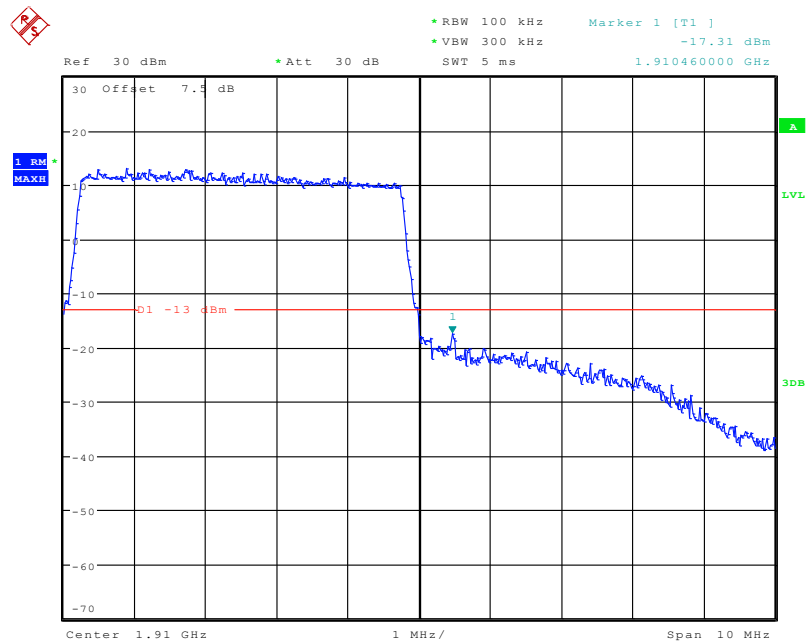
Date: 13.MAR.2020 10:27:49

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

Date: 13.MAR.2020 10:28:20

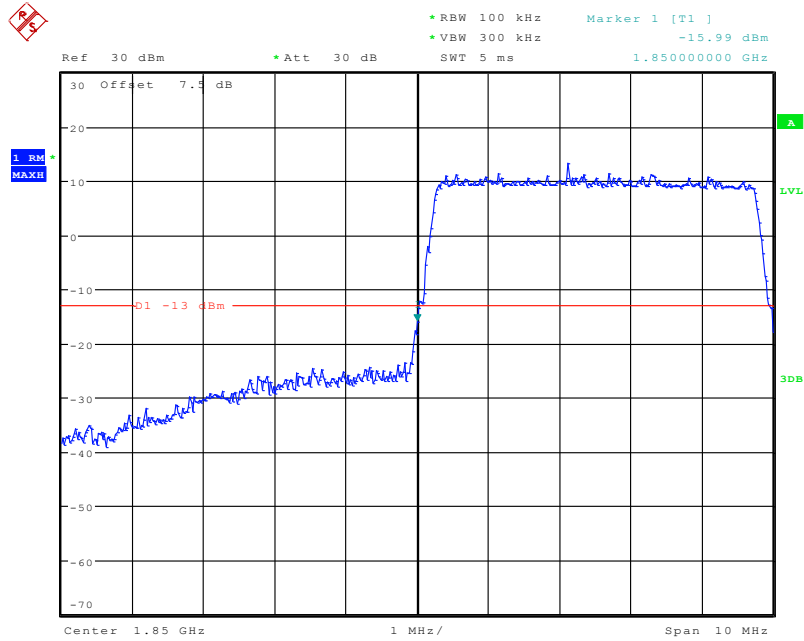
QPSK (5.0 MHz, FULL RB) - Left Band Edge

Date: 13.MAR.2020 10:28:40

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

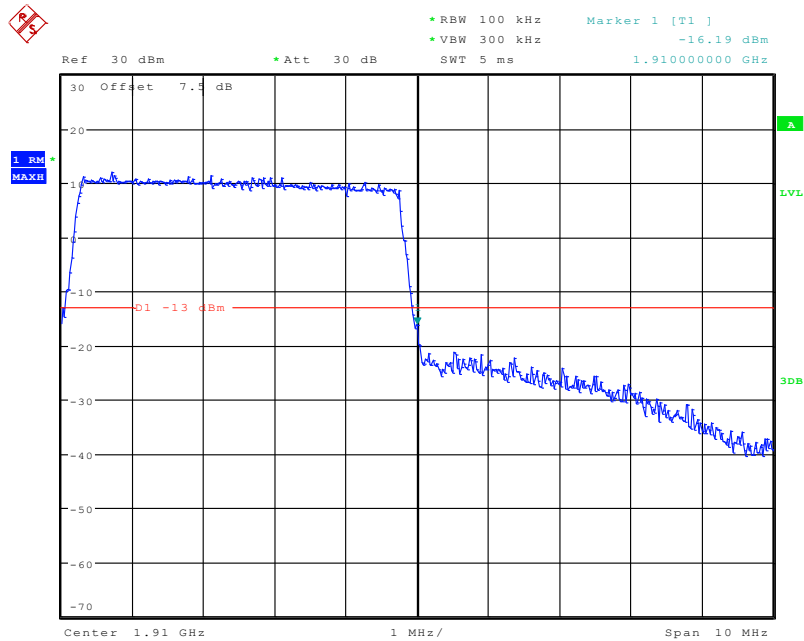
Date: 13.MAR.2020 10:29:15

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



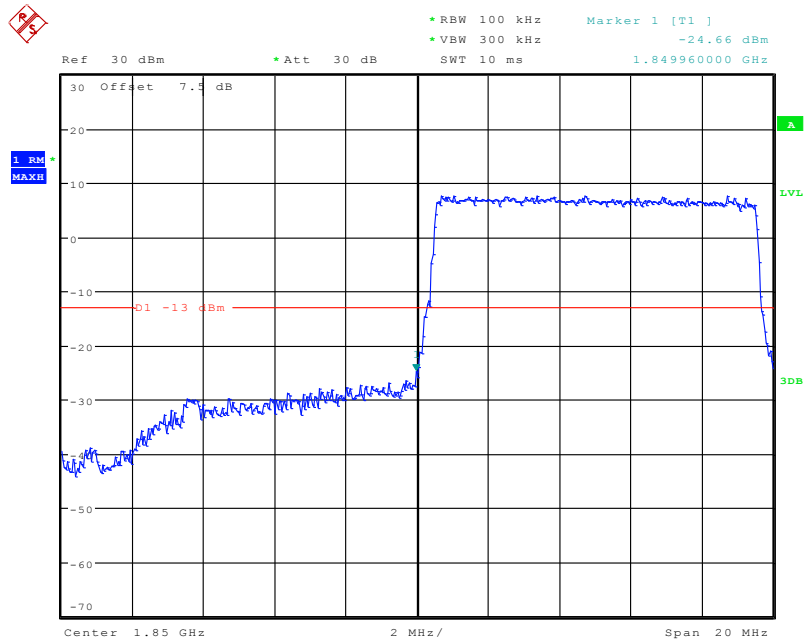
Date: 13.MAR.2020 10:28:56

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



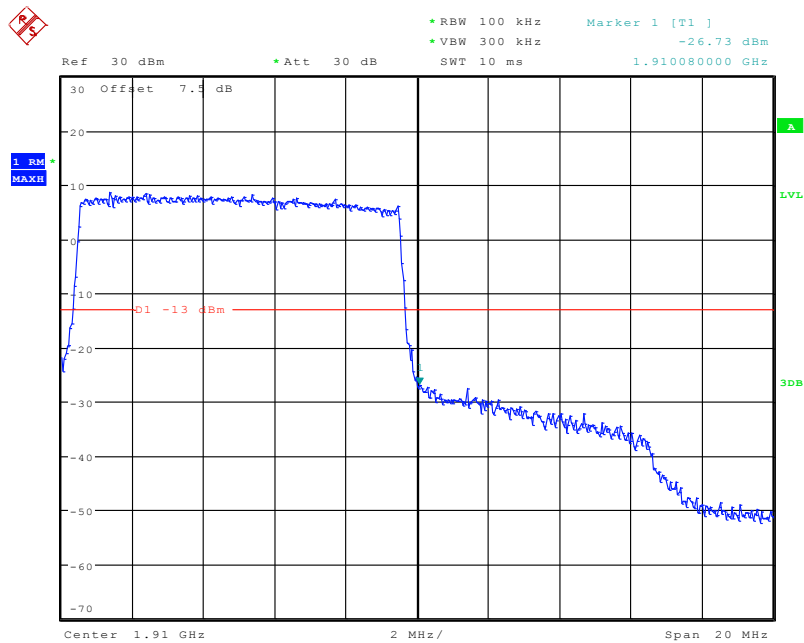
Date: 13.MAR.2020 10:29:30

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



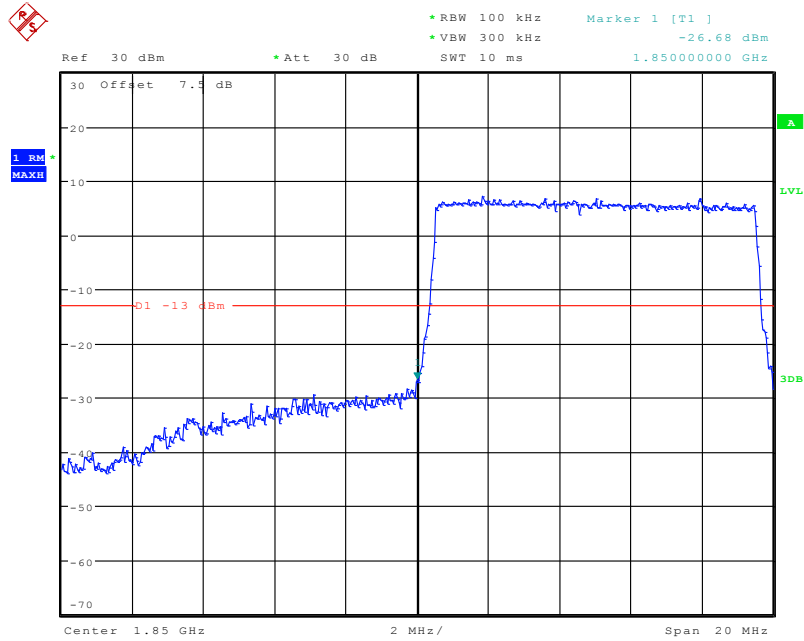
Date: 13.MAR.2020 10:29:54

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



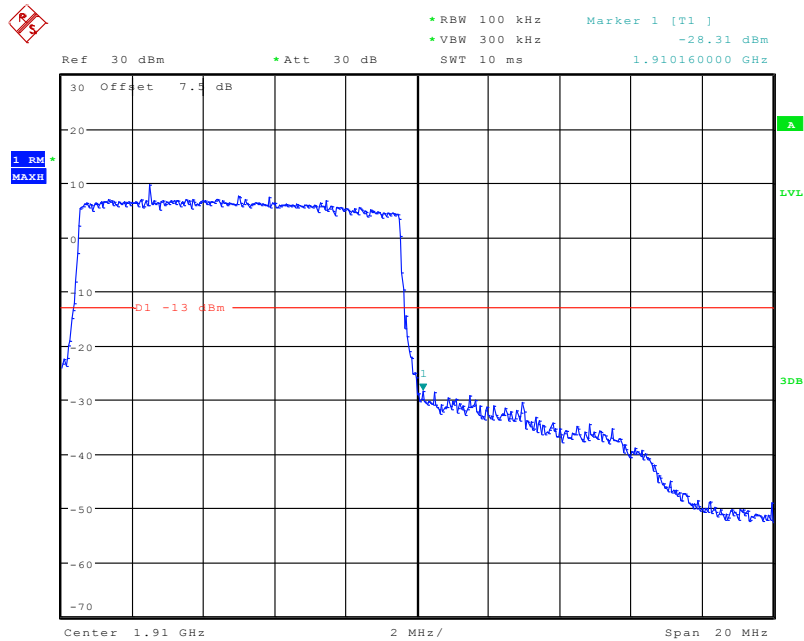
Date: 13.MAR.2020 10:30:28

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



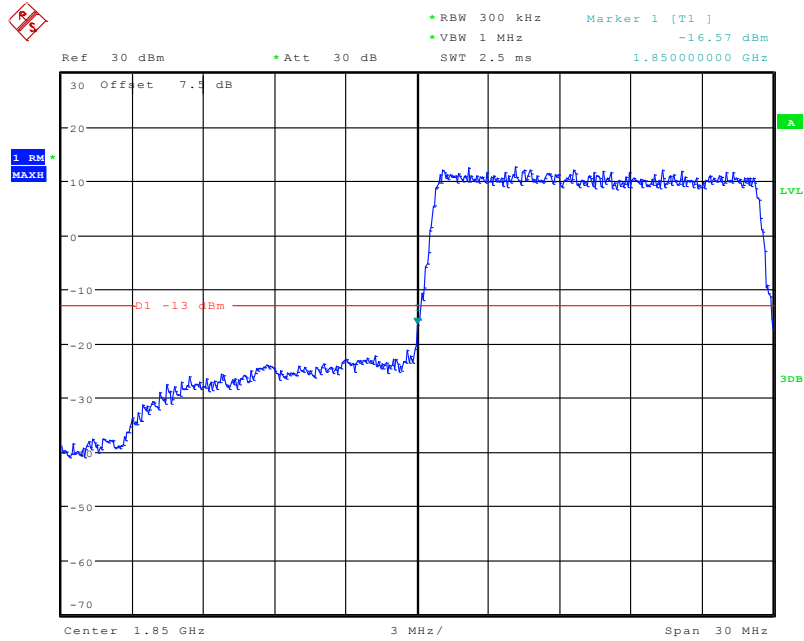
Date: 13.MAR.2020 10:30:11

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



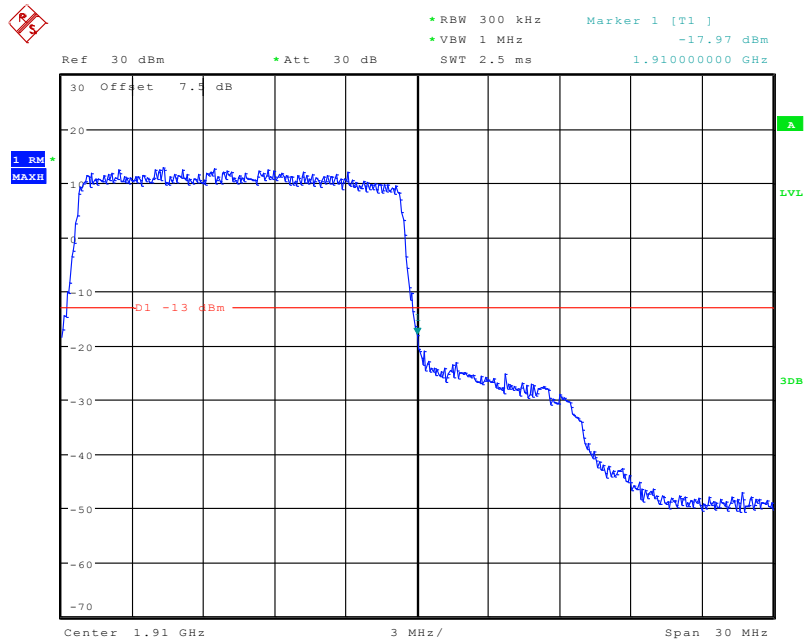
Date: 13.MAR.2020 10:30:45

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



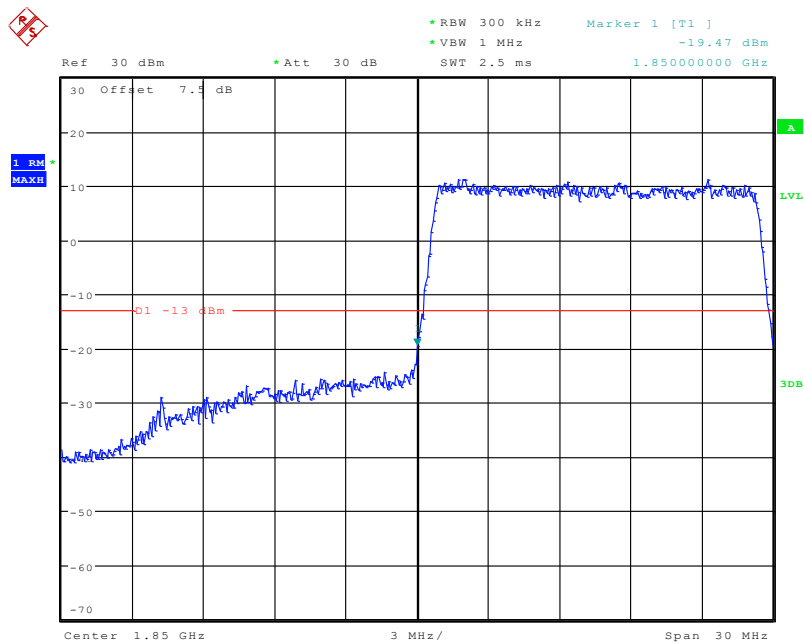
Date: 13.MAR.2020 10:31:08

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



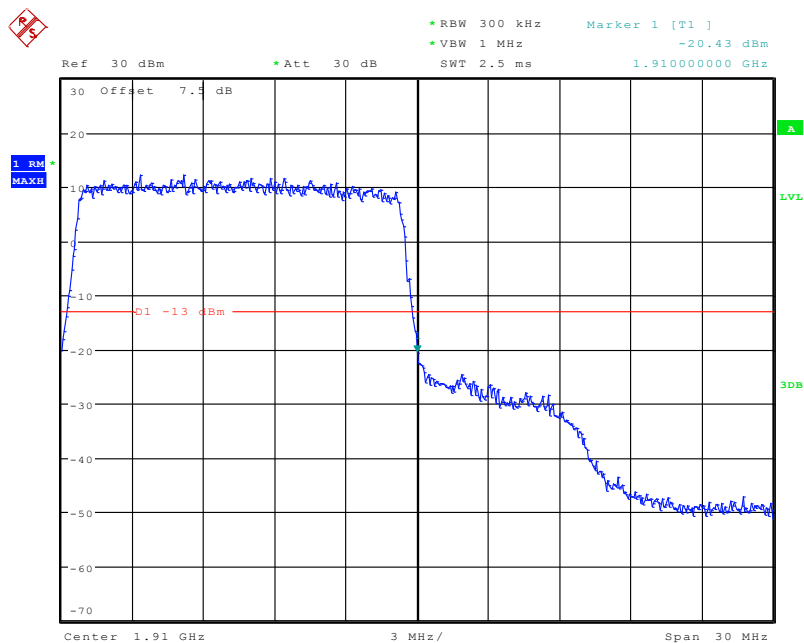
Date: 13.MAR.2020 10:31:47

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



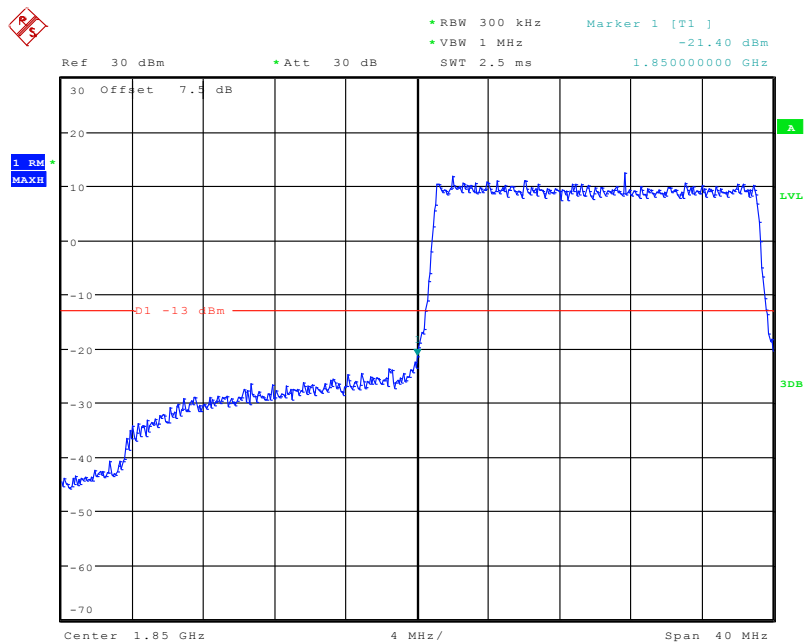
Date: 13.MAR.2020 10:31:27

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



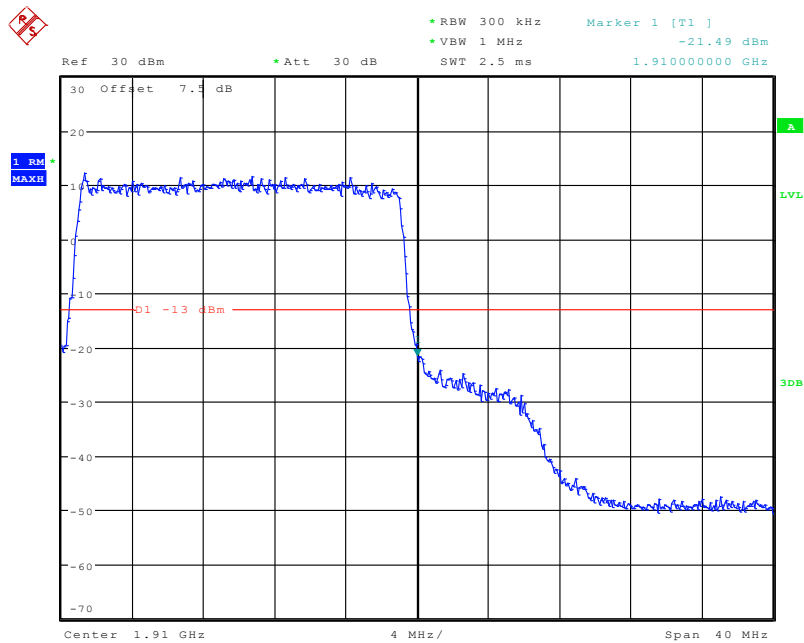
Date: 13.MAR.2020 10:32:05

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



Date: 13.MAR.2020 10:32:32

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

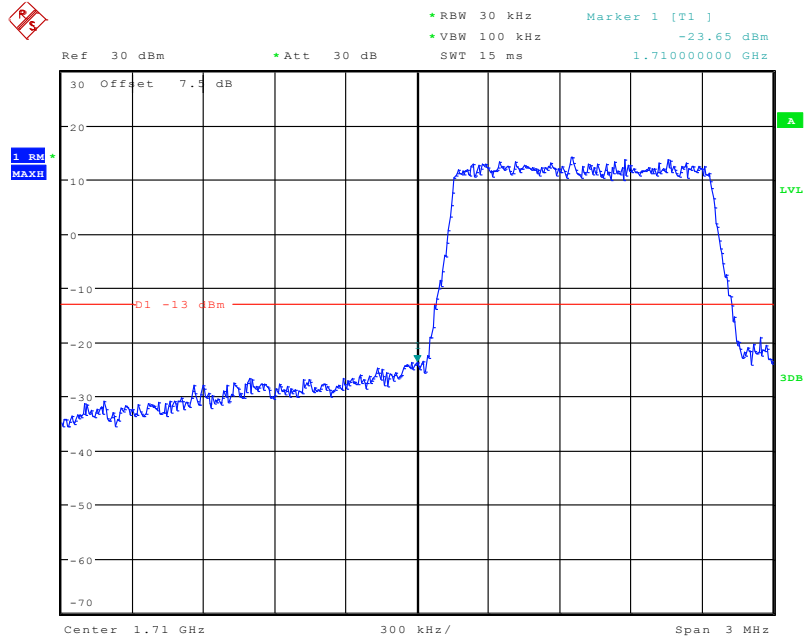


Date: 13.MAR.2020 10:33:10



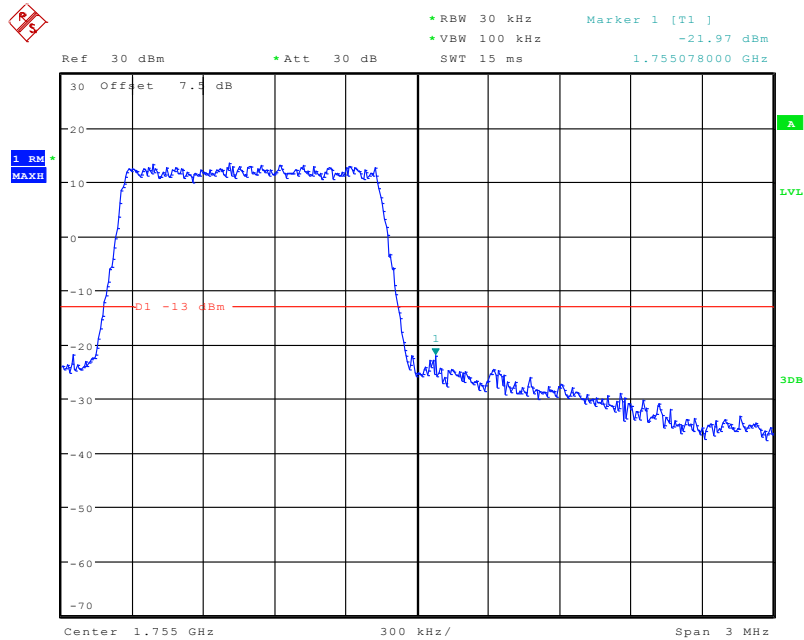
Band 4:

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



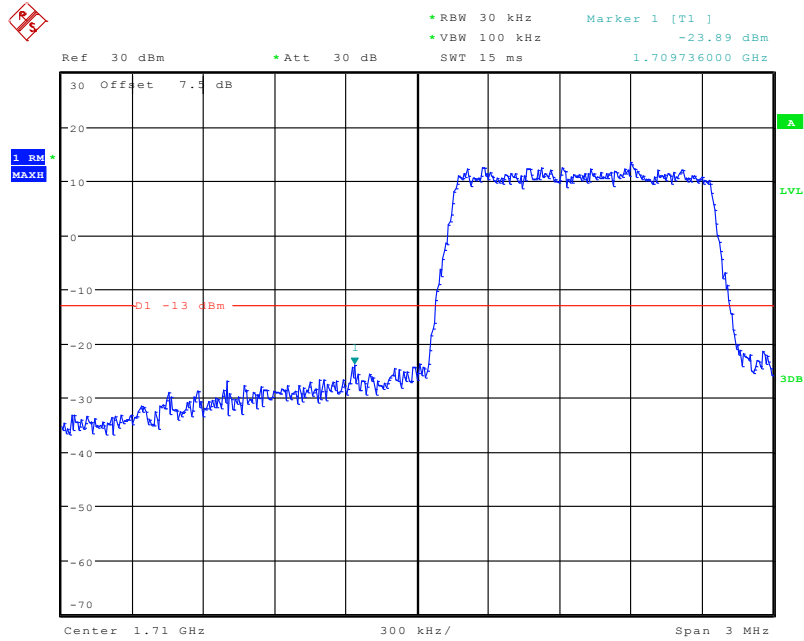
Date: 13.MAR.2020 10:33:54

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



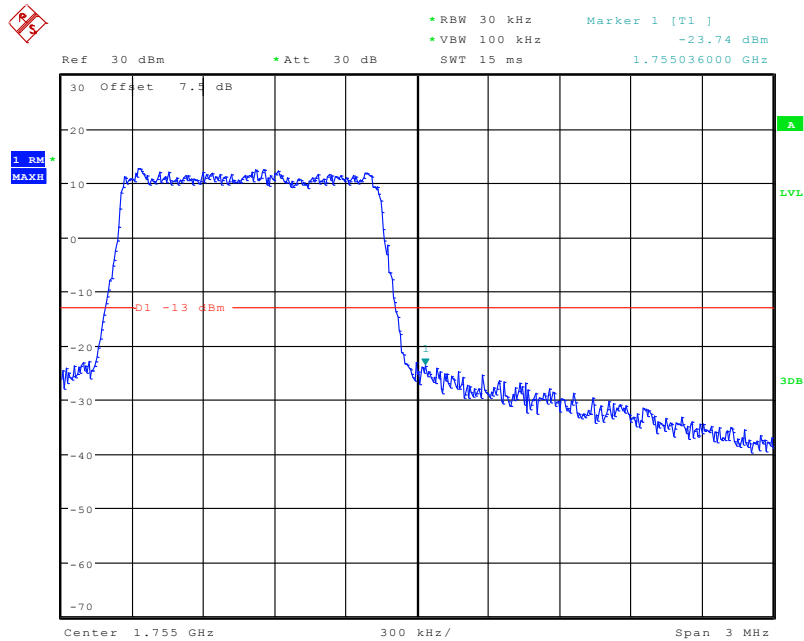
Date: 13.MAR.2020 10:34:32

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



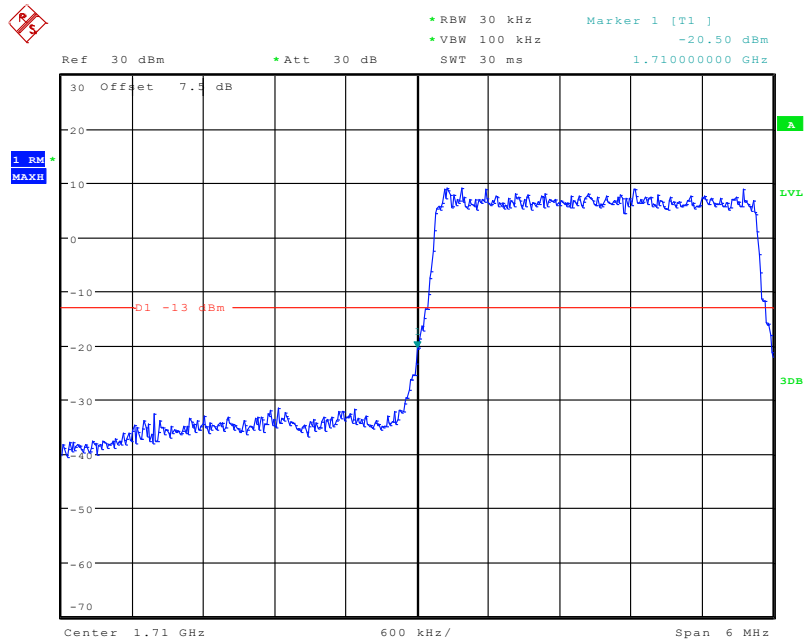
Date: 13.MAR.2020 10:34:13

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



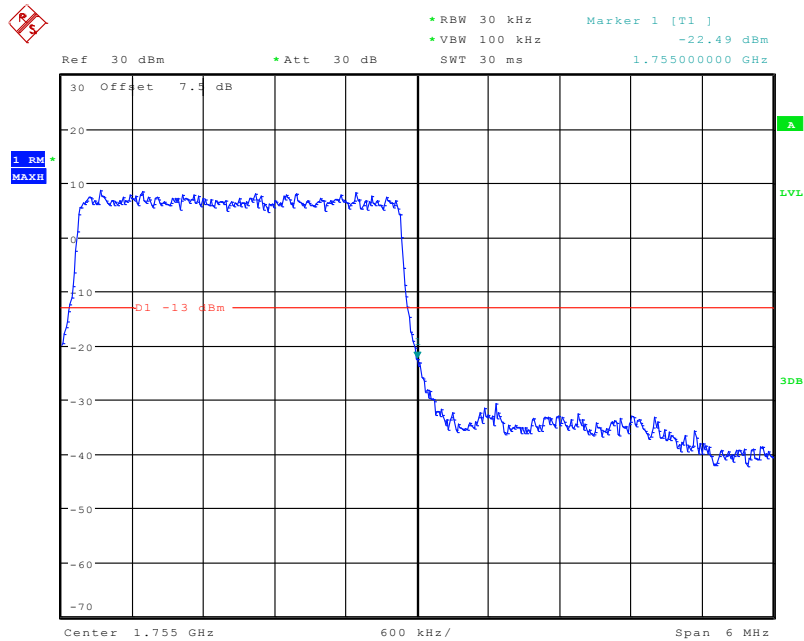
Date: 13.MAR.2020 10:34:47

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



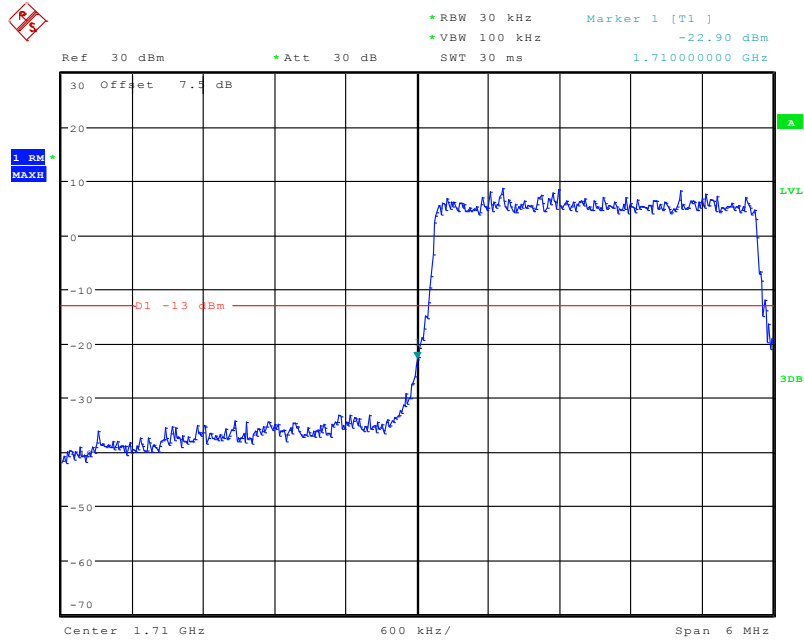
Date: 13.MAR.2020 10:35:07

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



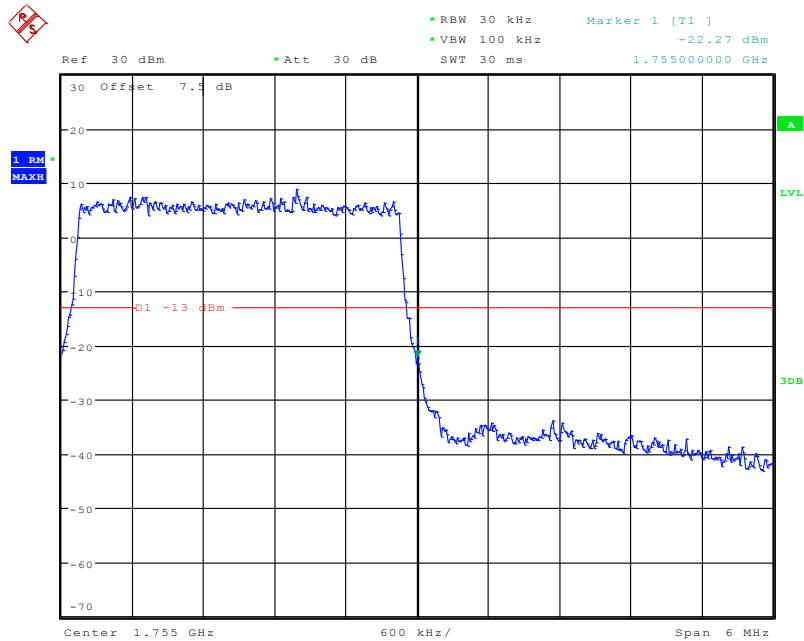
Date: 13.MAR.2020 10:35:39

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



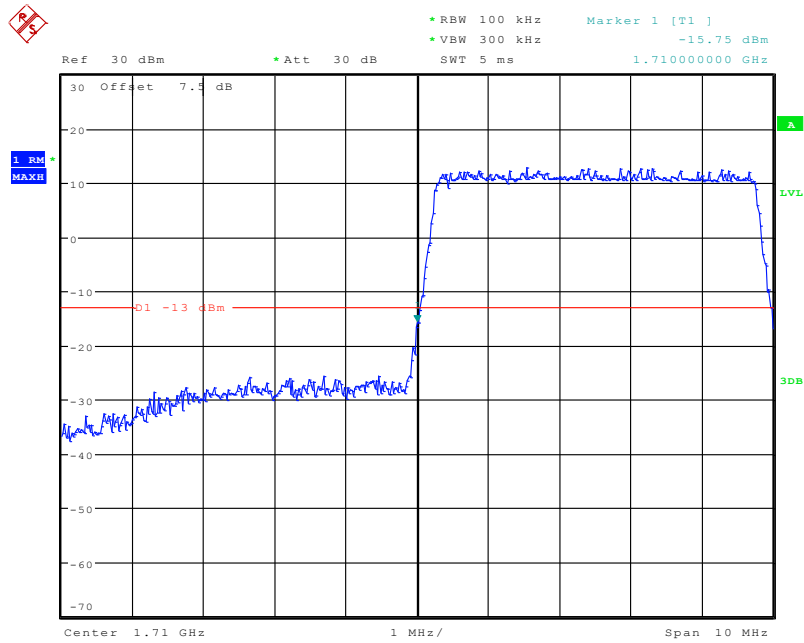
Date: 13.MAR.2020 10:35:22

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



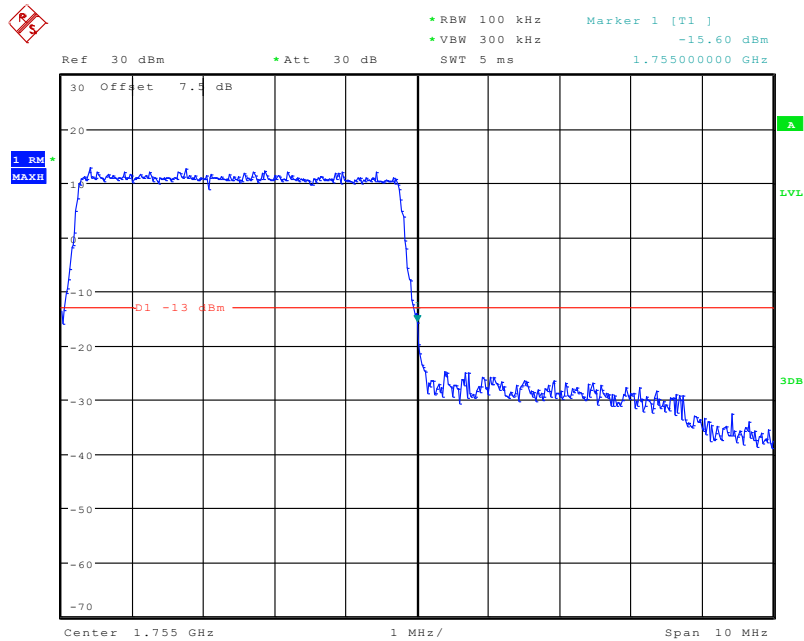
Date: 13.MAR.2020 10:35:54

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



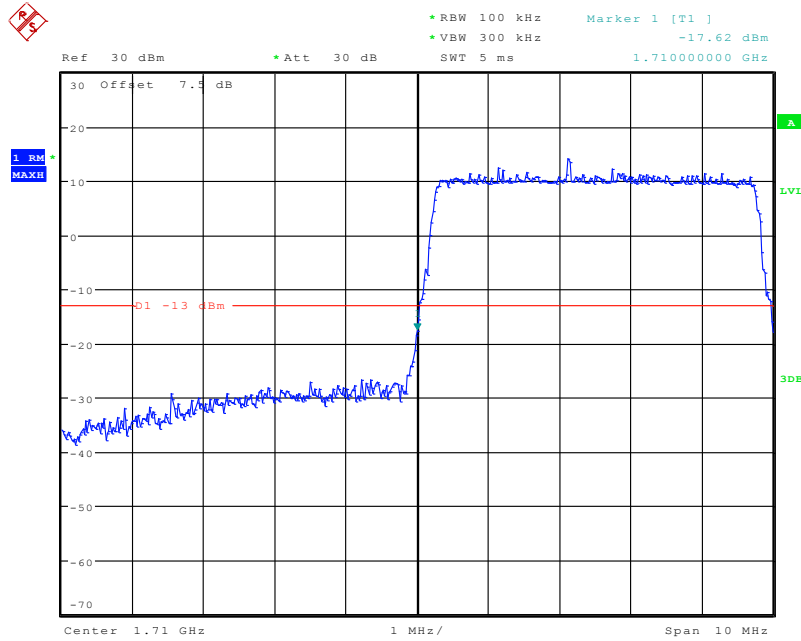
Date: 13.MAR.2020 10:36:17

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



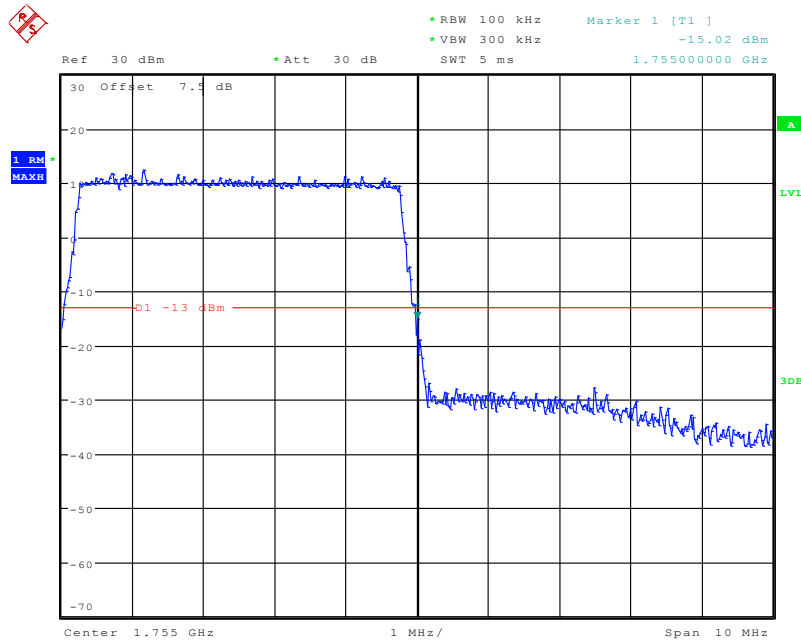
Date: 13.MAR.2020 10:36:52

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



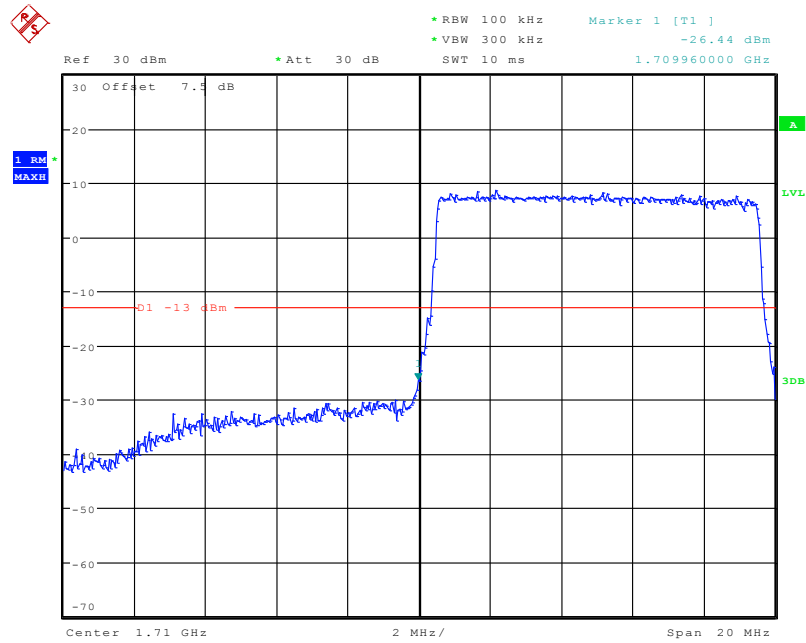
Date: 13.MAR.2020 10:36:36

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



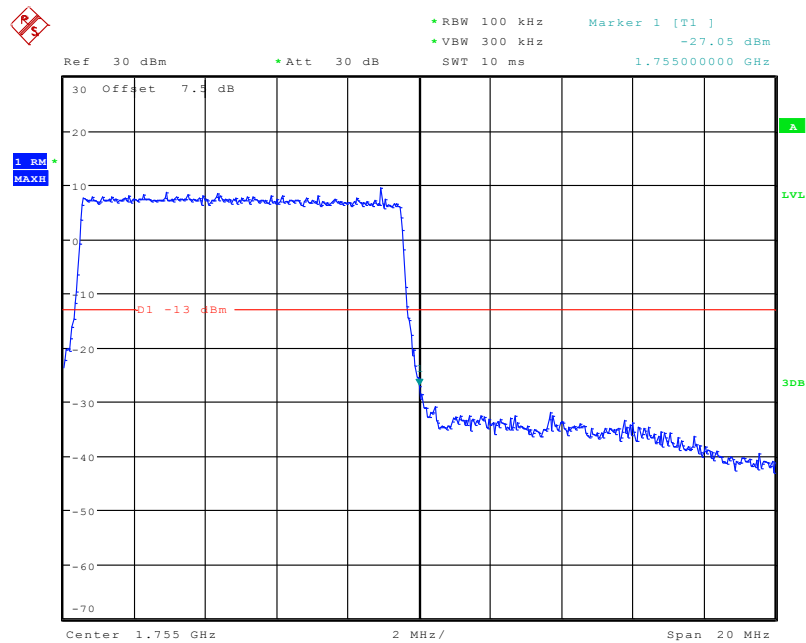
Date: 13.MAR.2020 10:37:07

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

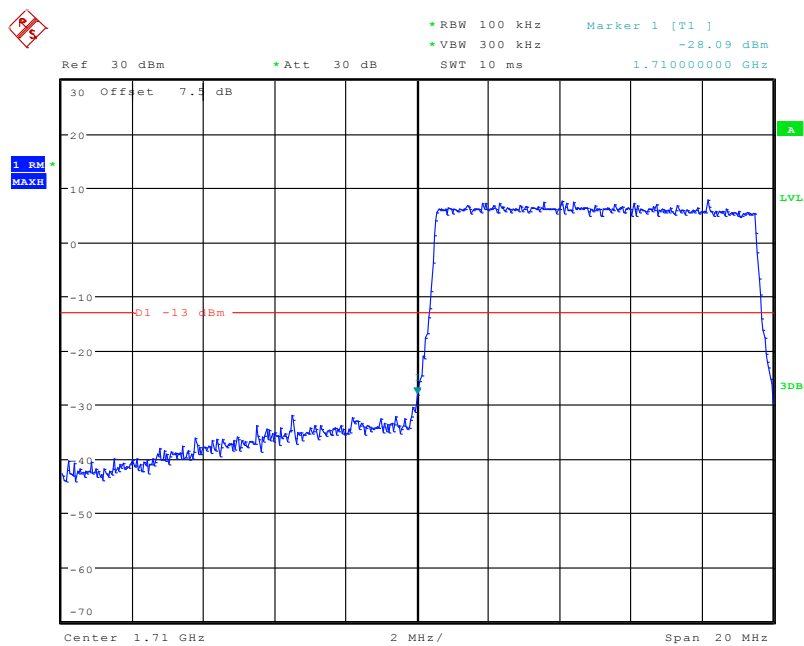


Date: 13.MAR.2020 10:37:29

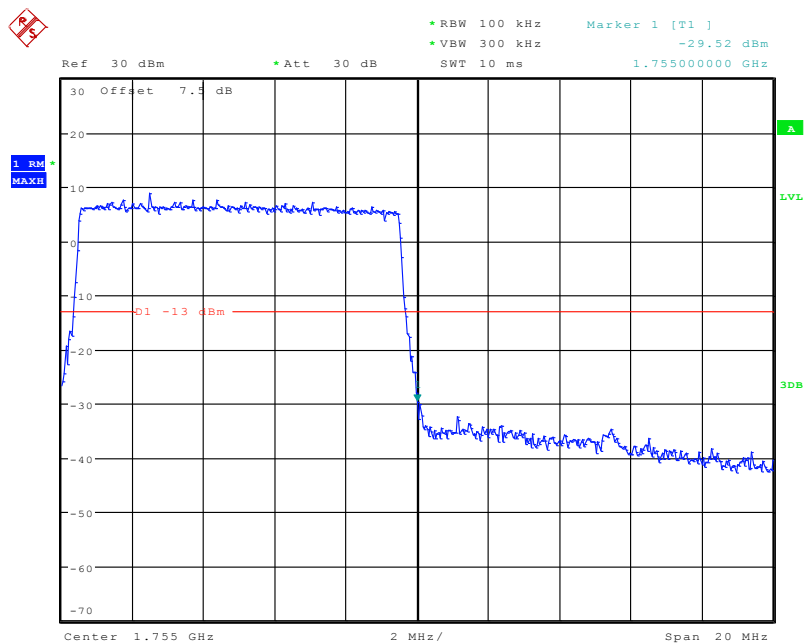
QPSK (10.0 MHz, FULL RB) - Right Band Edge



Date: 13.MAR.2020 10:38:03

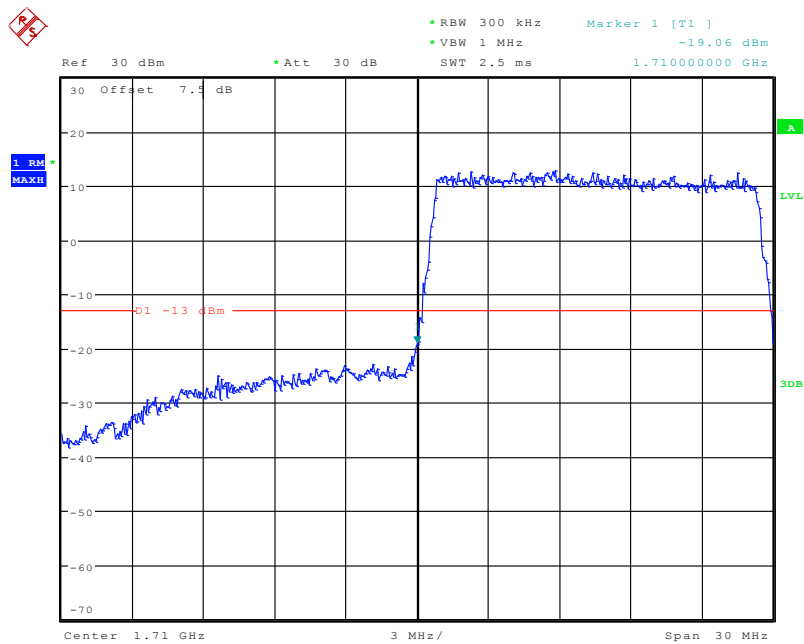
16-QAM (10.0 MHz, FULL RB) - Left Band Edge

Date: 13.MAR.2020 10:37:45

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

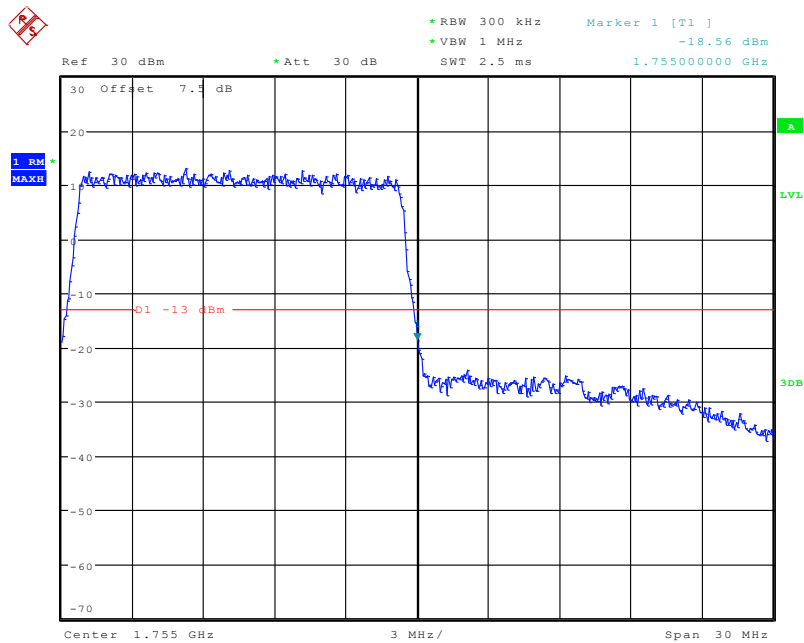
Date: 13.MAR.2020 10:38:19

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



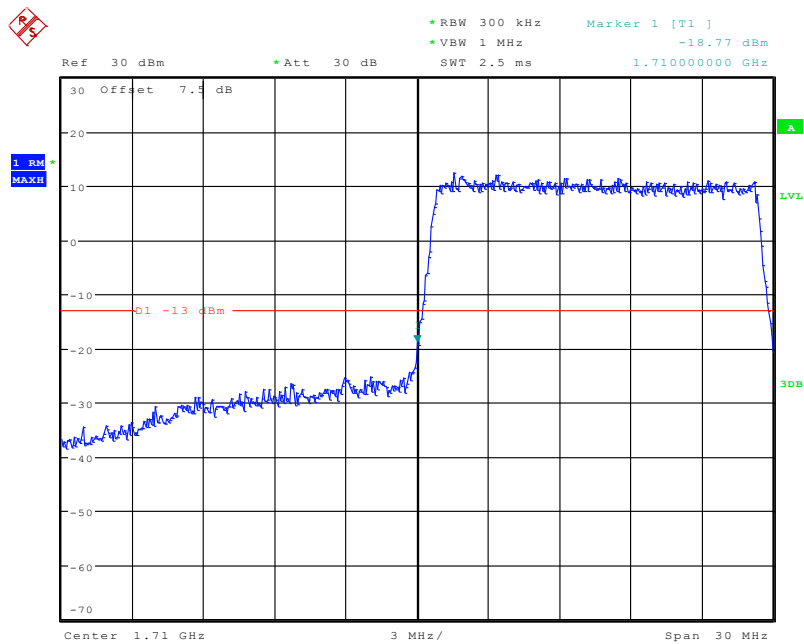
Date: 13.MAR.2020 10:38:43

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



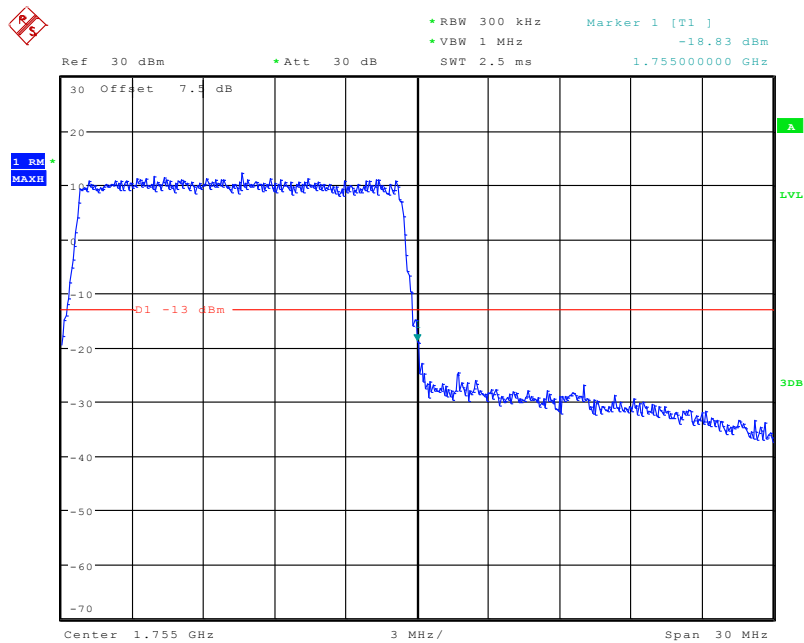
Date: 13.MAR.2020 10:39:21

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



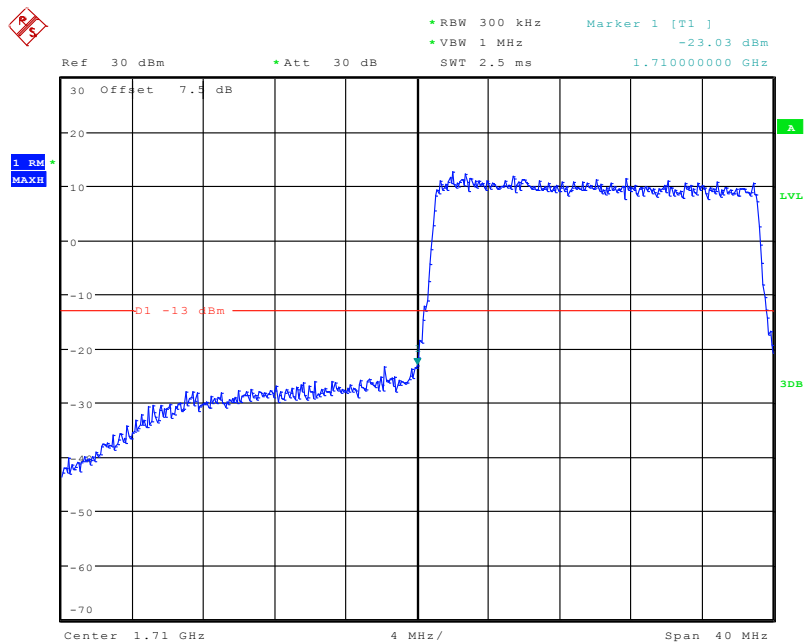
Date: 13.MAR.2020 10:39:02

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



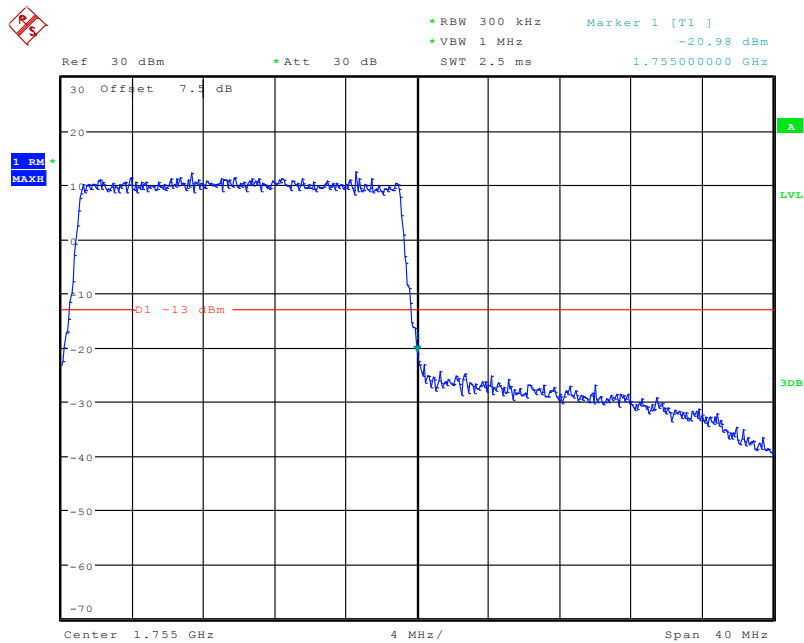
Date: 13.MAR.2020 10:39:40

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



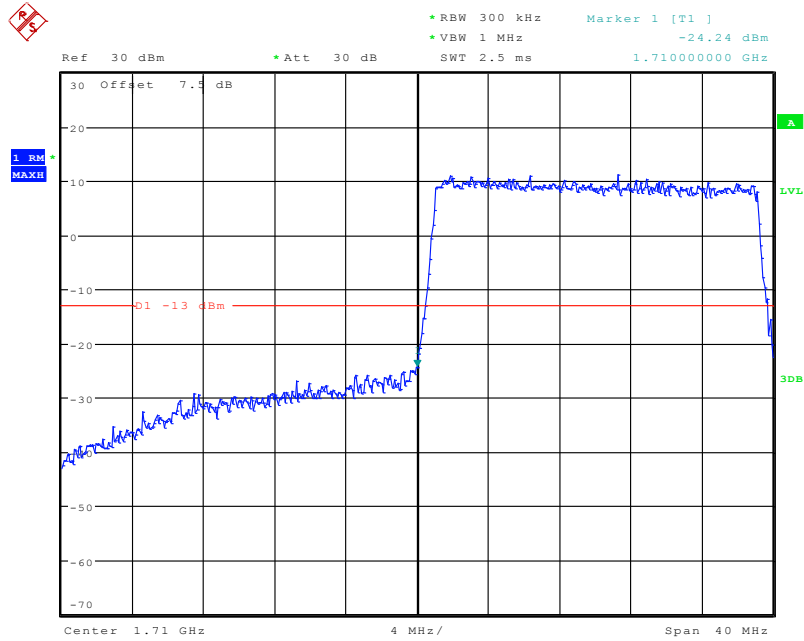
Date: 13.MAR.2020 10:40:04

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



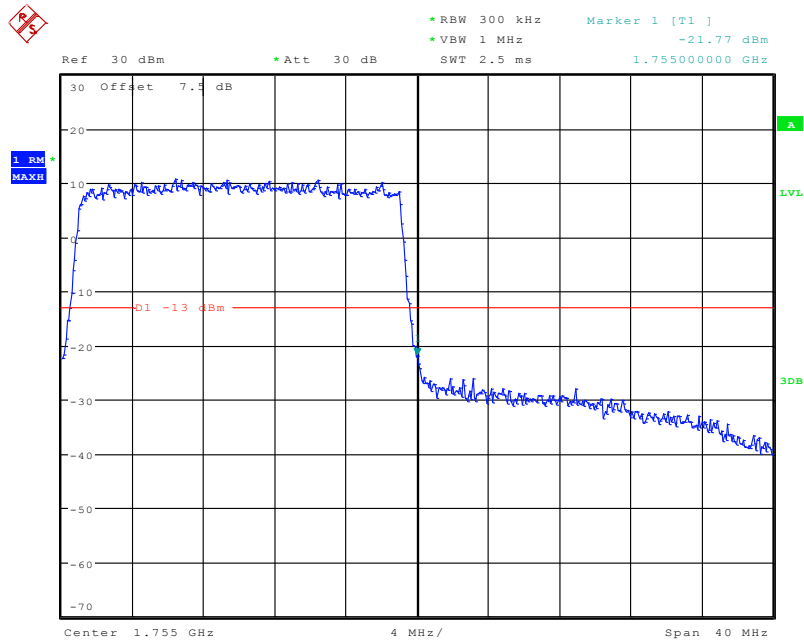
Date: 13.MAR.2020 10:40:49

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



Date: 13.MAR.2020 10:40:26

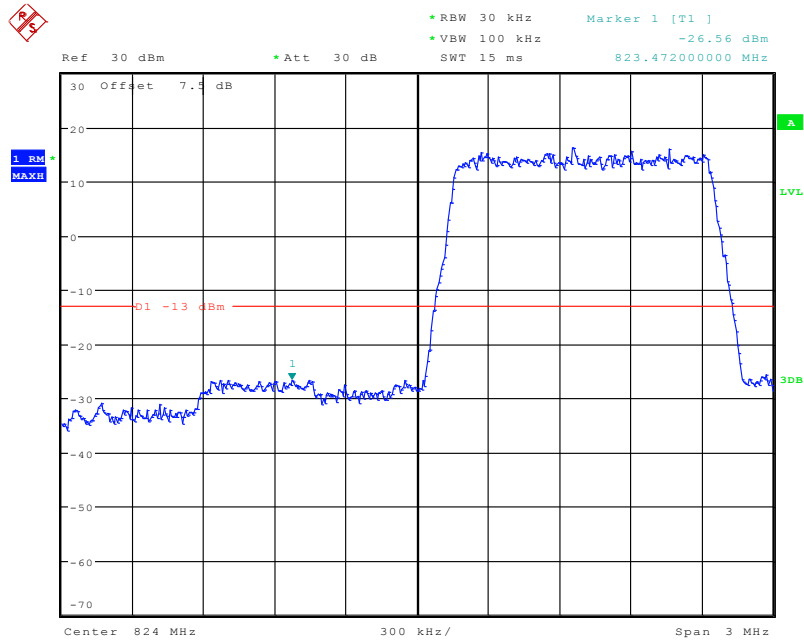
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 13.MAR.2020 10:41:07

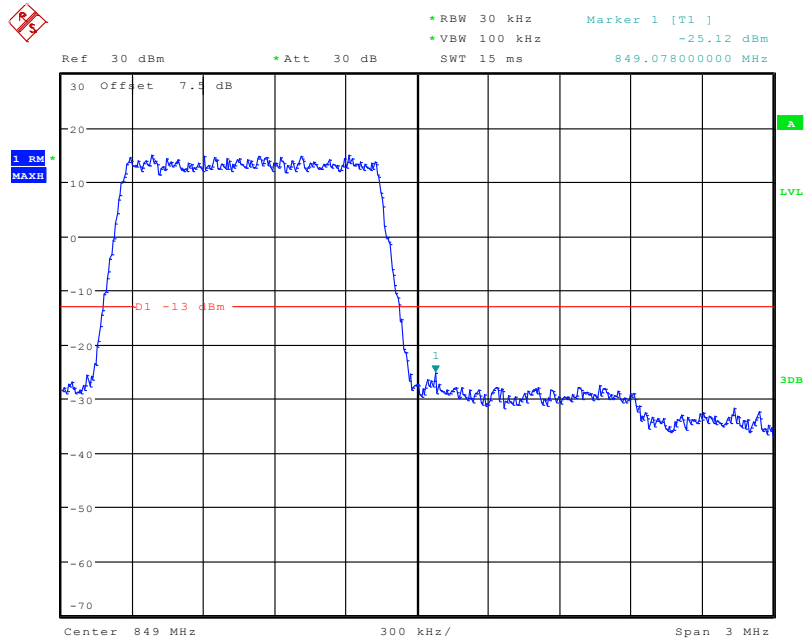
Band 5:

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



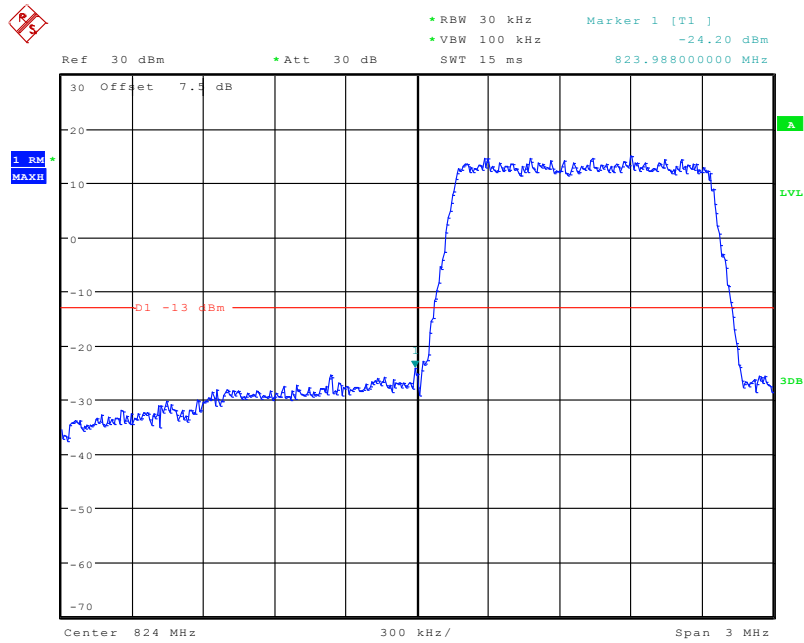
Date: 13.MAR.2020 10:41:31

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



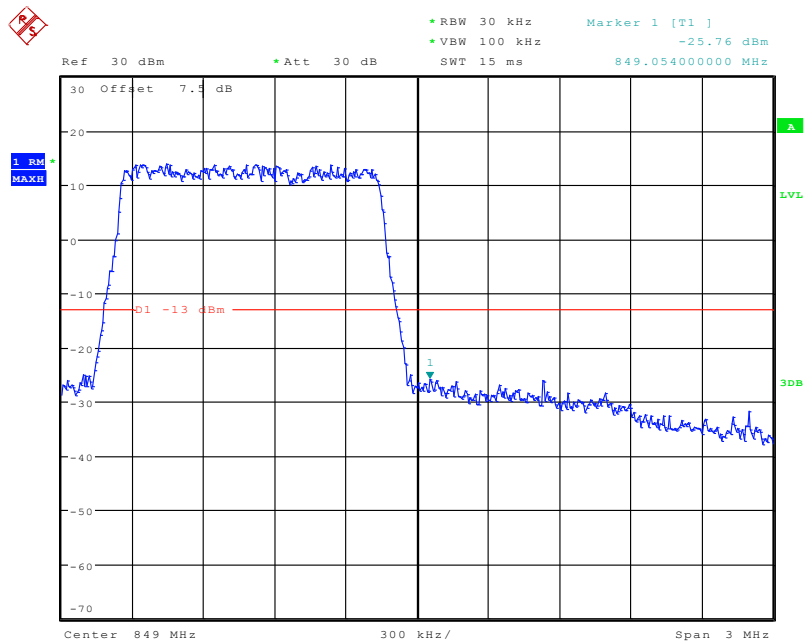
Date: 13.MAR.2020 10:42:03

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

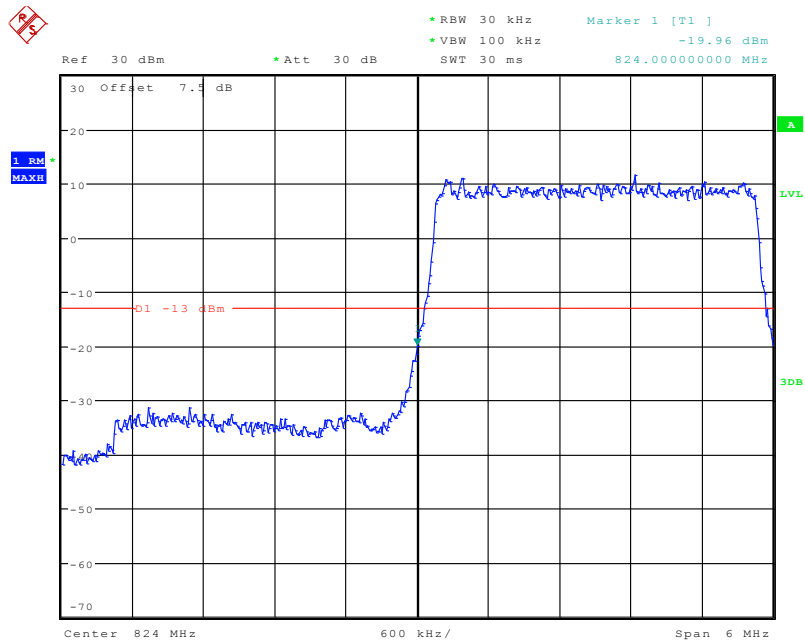


Date: 13.MAR.2020 10:41:47

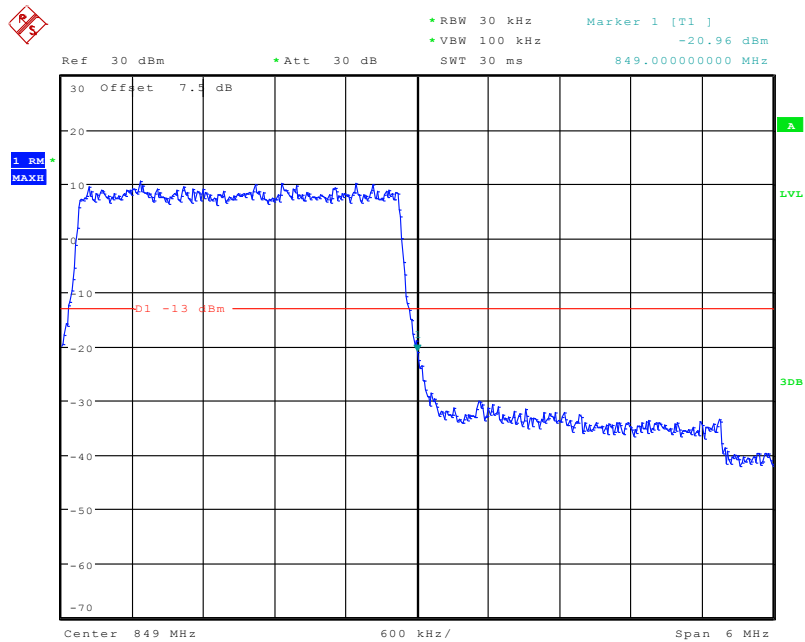
16-QAM (1.4MHz, FULL RB) - Right Band Edge



Date: 13.MAR.2020 10:42:18

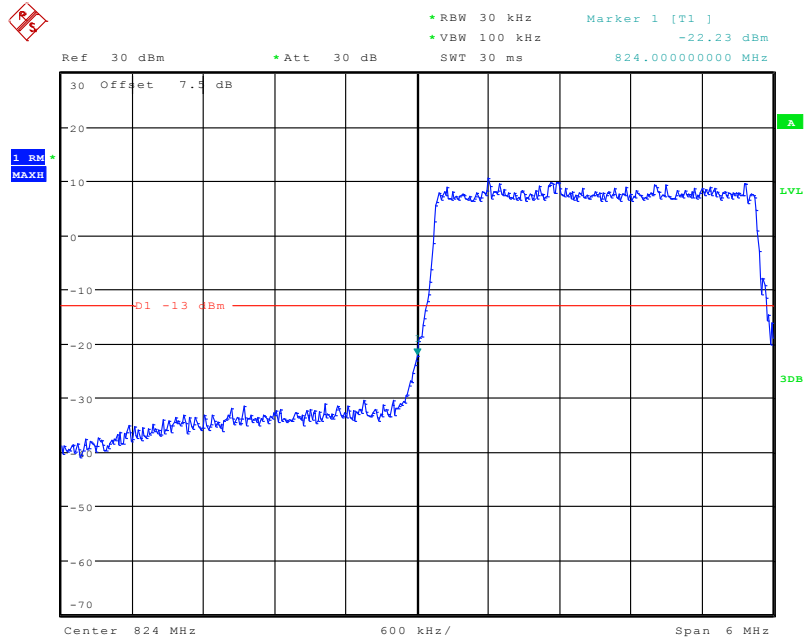
QPSK (3.0 MHz, FULL RB) - Left Band Edge

Date: 13.MAR.2020 10:42:38

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

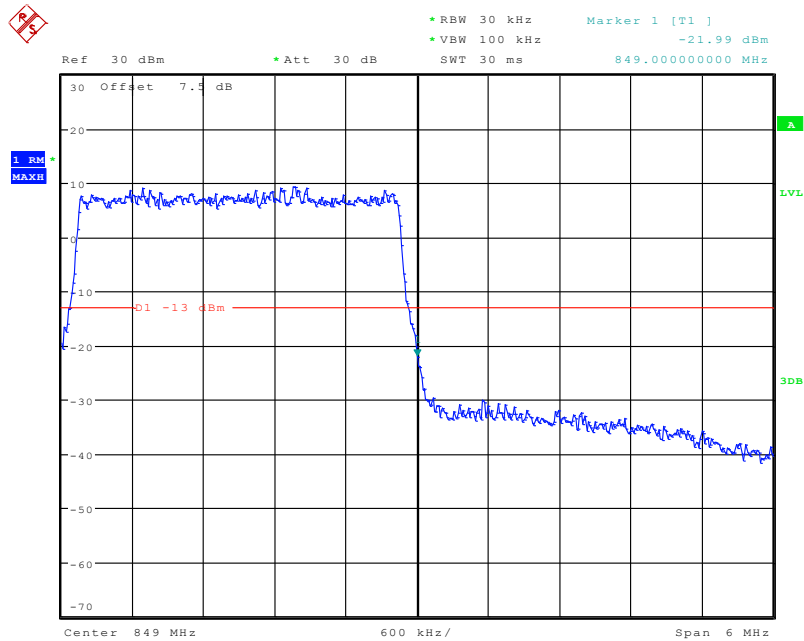
Date: 13.MAR.2020 10:43:10

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



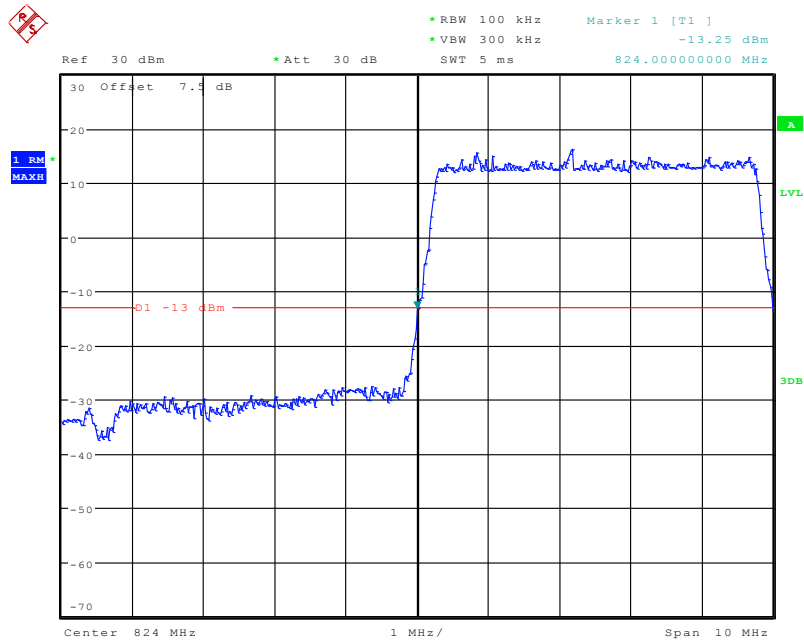
Date: 13.MAR.2020 10:42:54

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



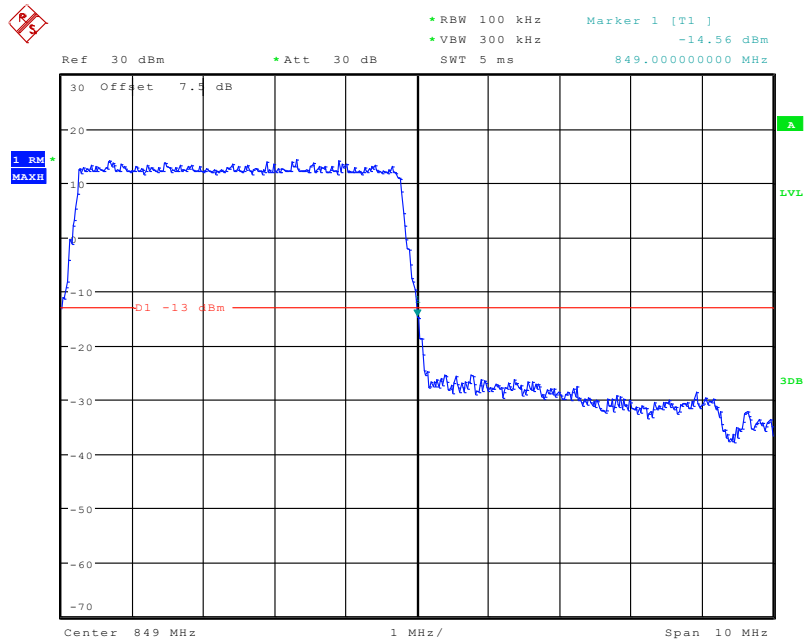
Date: 13.MAR.2020 10:43:25

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

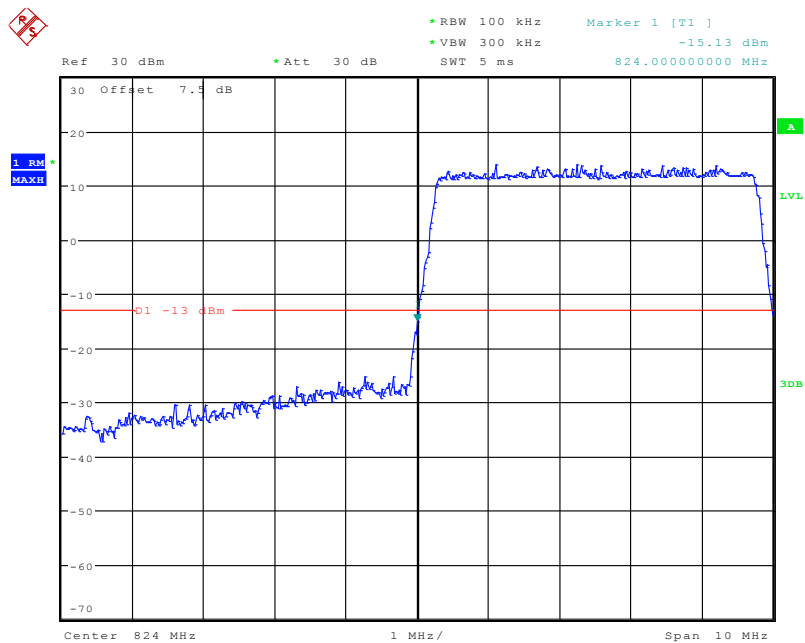


Date: 13.MAR.2020 10:56:16

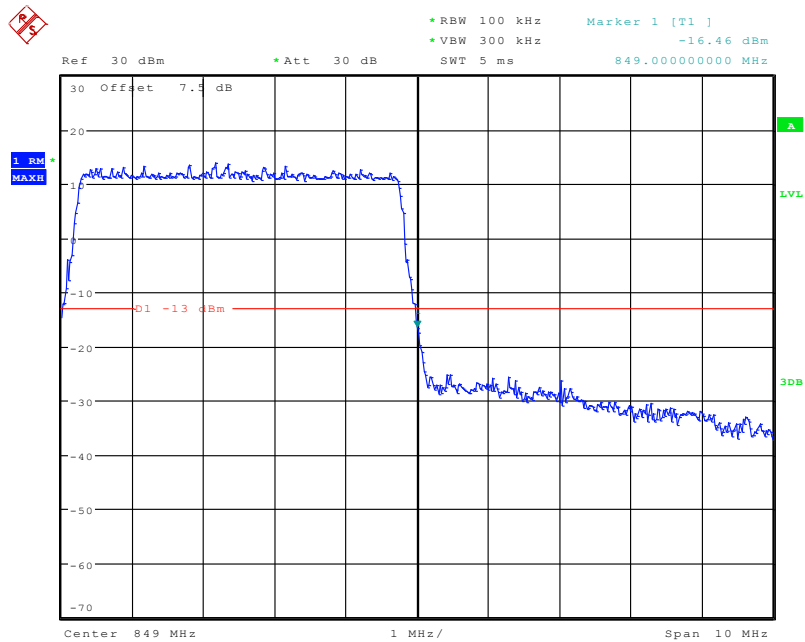
QPSK (5.0 MHz, FULL RB) - Right Band Edge



Date: 13.MAR.2020 10:56:47

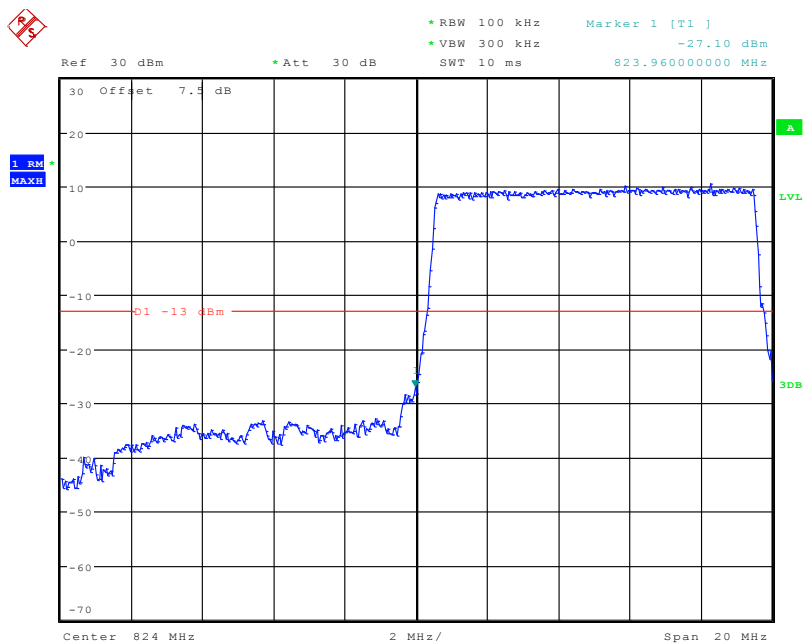
16-QAM (5.0 MHz, FULL RB) - Left Band Edge

Date: 13.MAR.2020 10:56:31

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

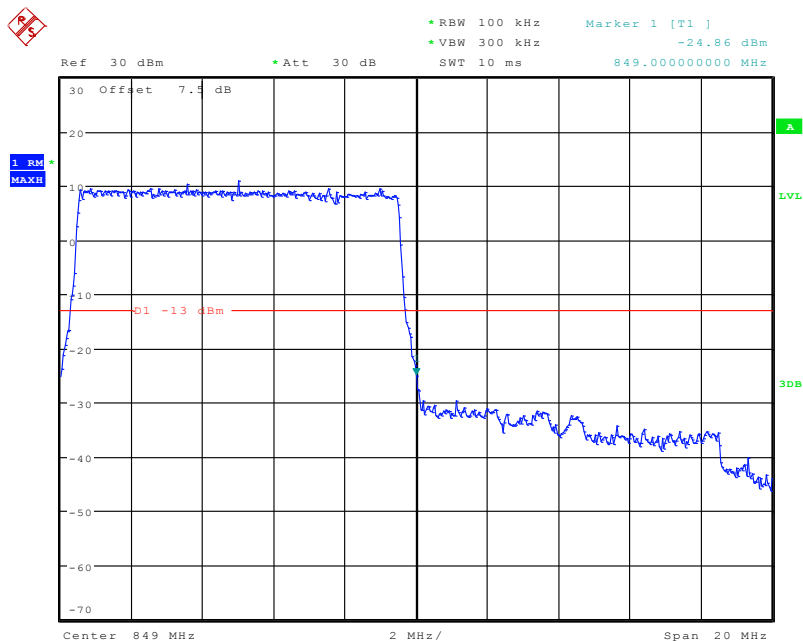
Date: 13.MAR.2020 10:57:03

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

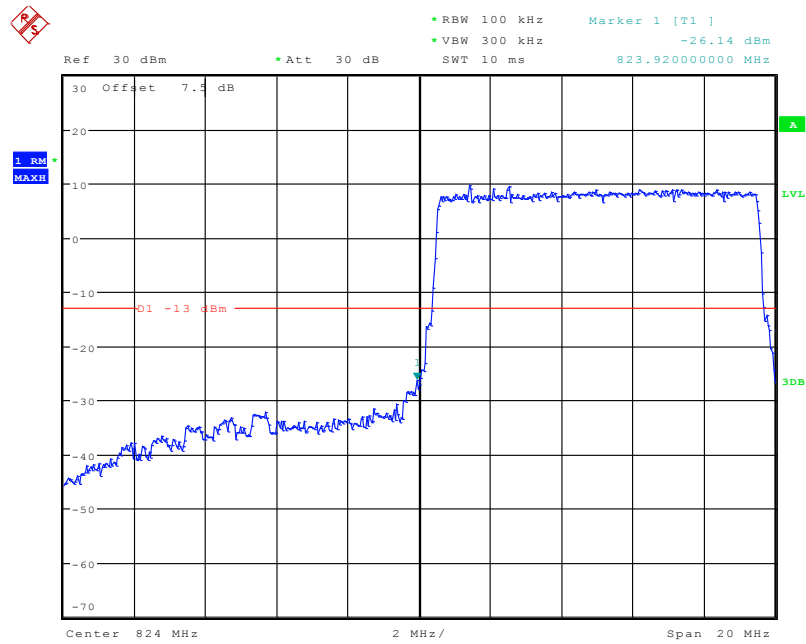


Date: 13.MAR.2020 10:59:42

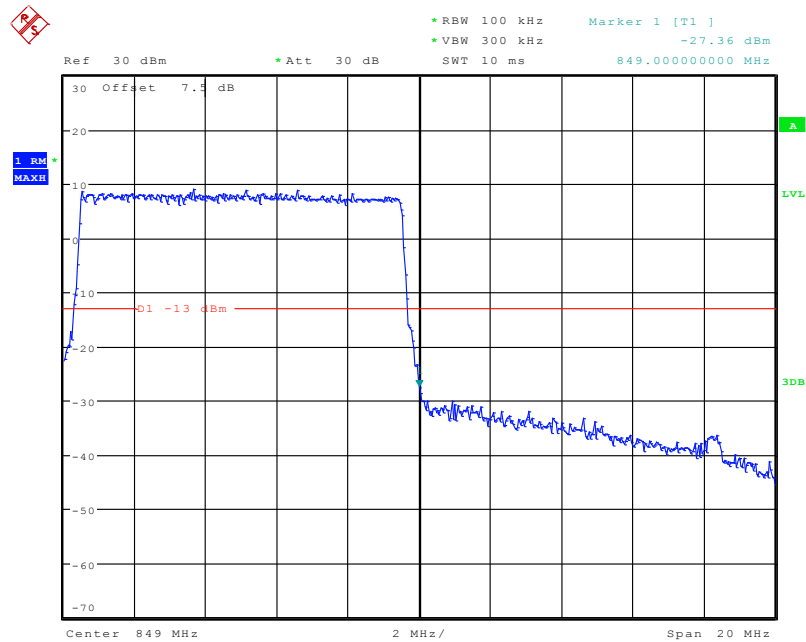
QPSK (10.0 MHz, FULL RB) - Right Band Edge



Date: 13.MAR.2020 11:00:16

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

Date: 13.MAR.2020 10:59:59

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

Date: 13.MAR.2020 11:00:33

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



Ref 30 dBm *Att 30 dB RBW 30 kHz Marker 1 [T1] -19.86 dBm
 *VBW 100 kHz SWT 15 ms 716.00000000 MHz

30 Offset 7.5 dB

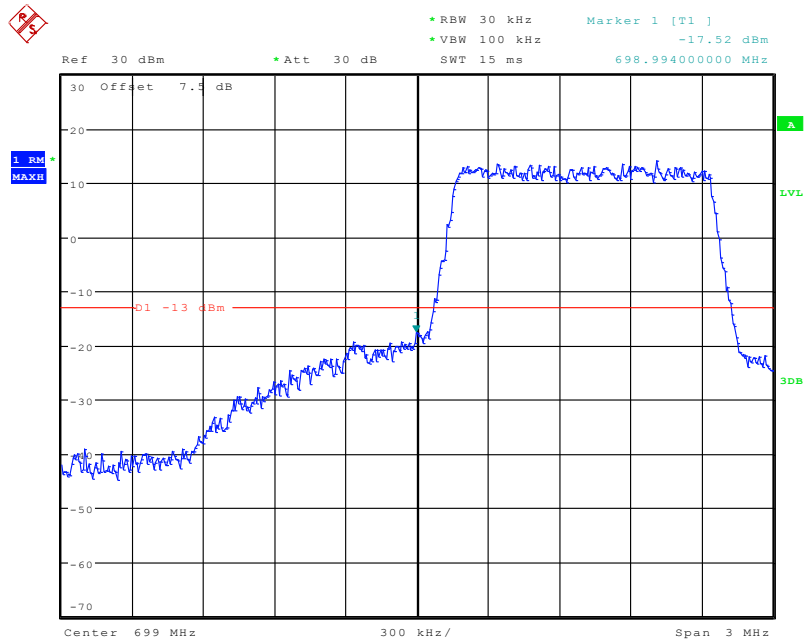
1.00 MAX

Q1 -13 dBm

Center 716 MHz 300 kHz/ Span 3 MHz

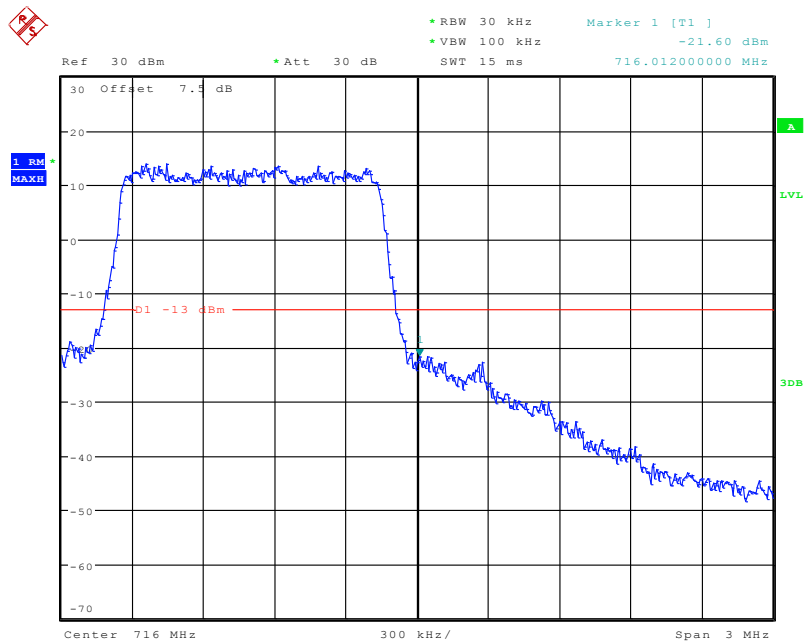
Date: 13.MAR.2020 11:01:30

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



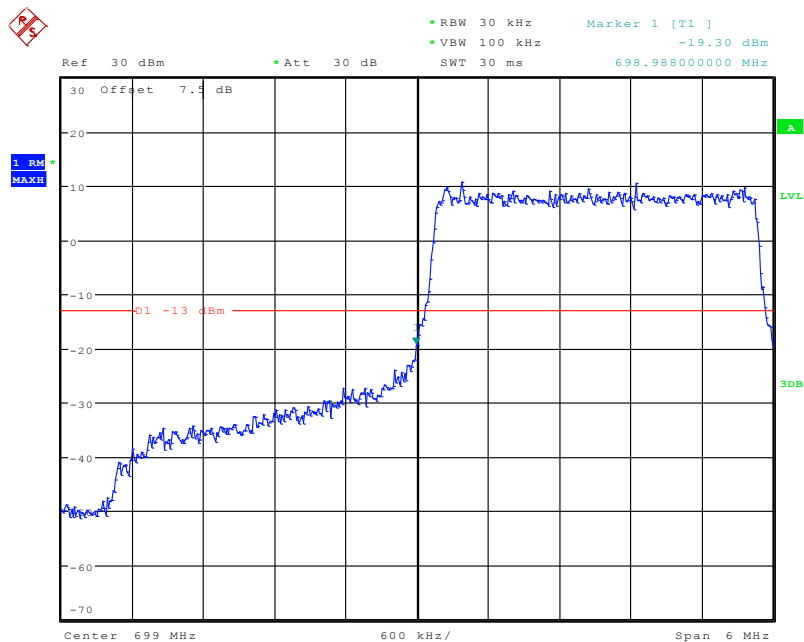
Date: 13.MAR.2020 11:01:14

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



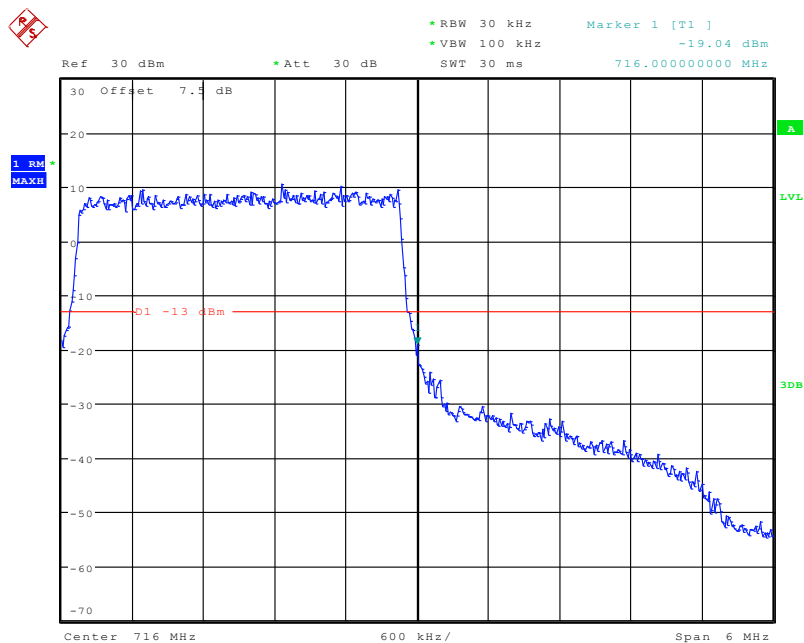
Date: 13.MAR.2020 11:01:45

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



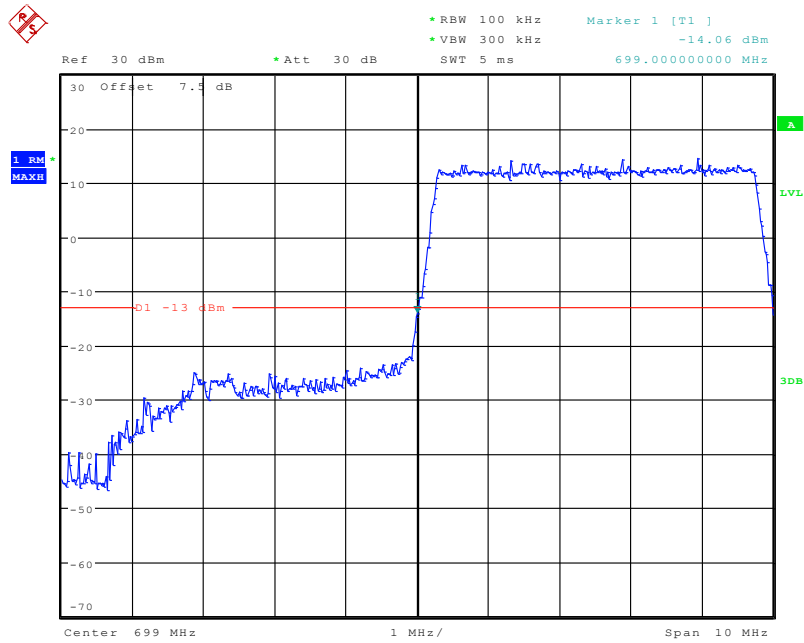
Date: 13.MAR.2020 11:02:05

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



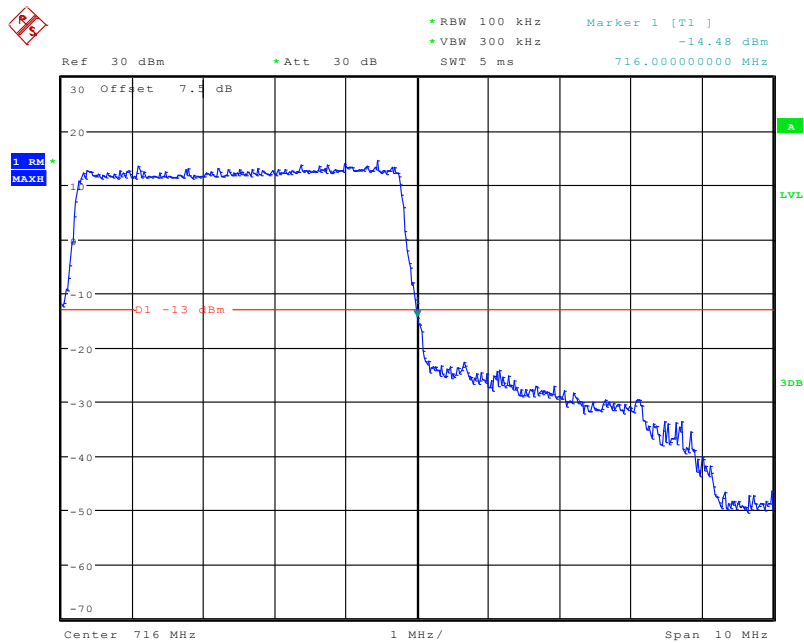
Date: 13.MAR.2020 11:02:37

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



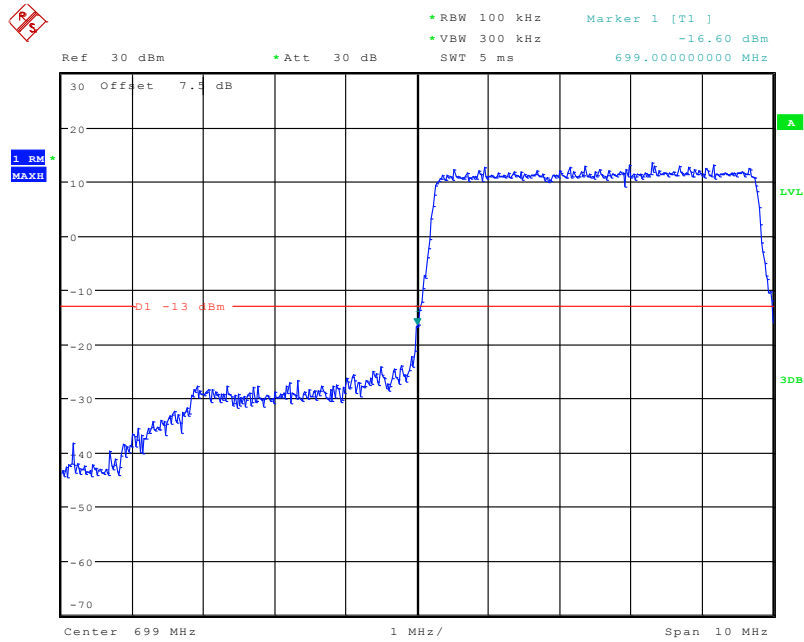
Date: 13.MAR.2020 11:03:15

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



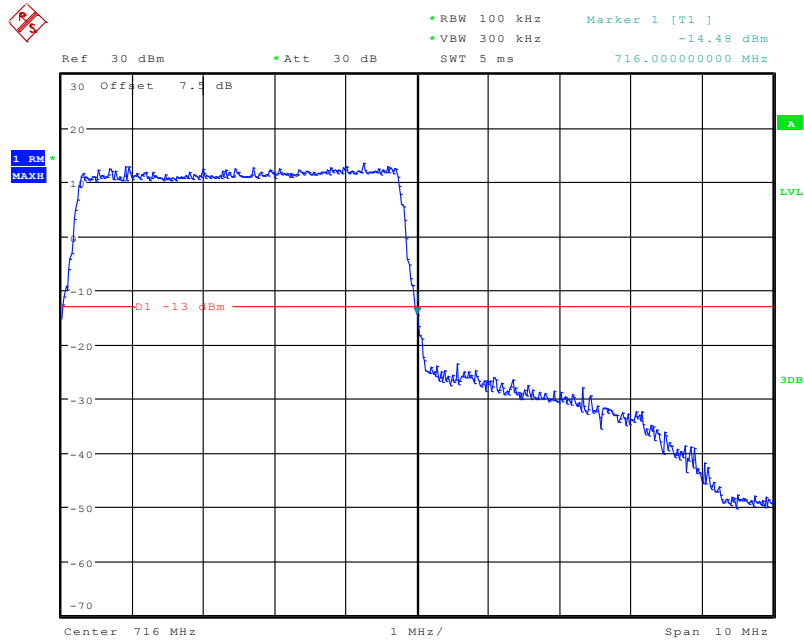
Date: 13.MAR.2020 11:03:47

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



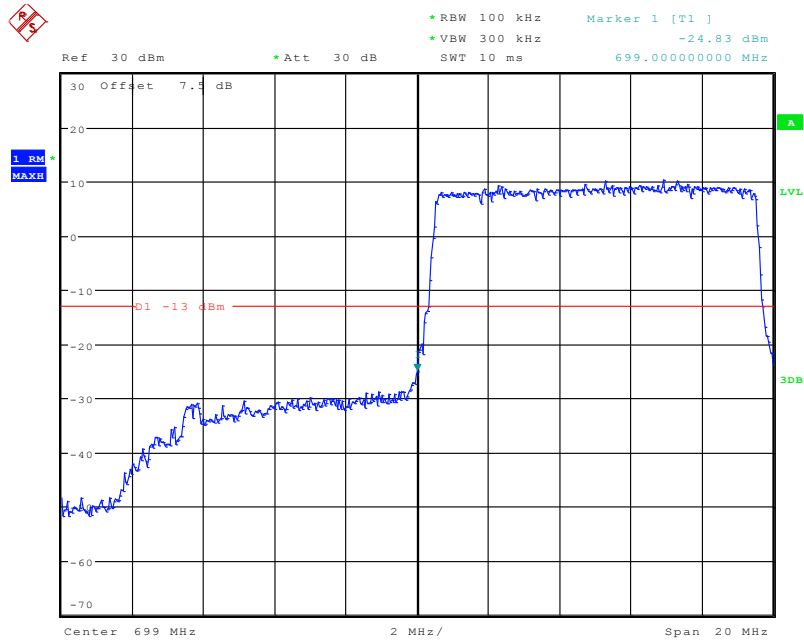
Date: 13.MAR.2020 11:03:31

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



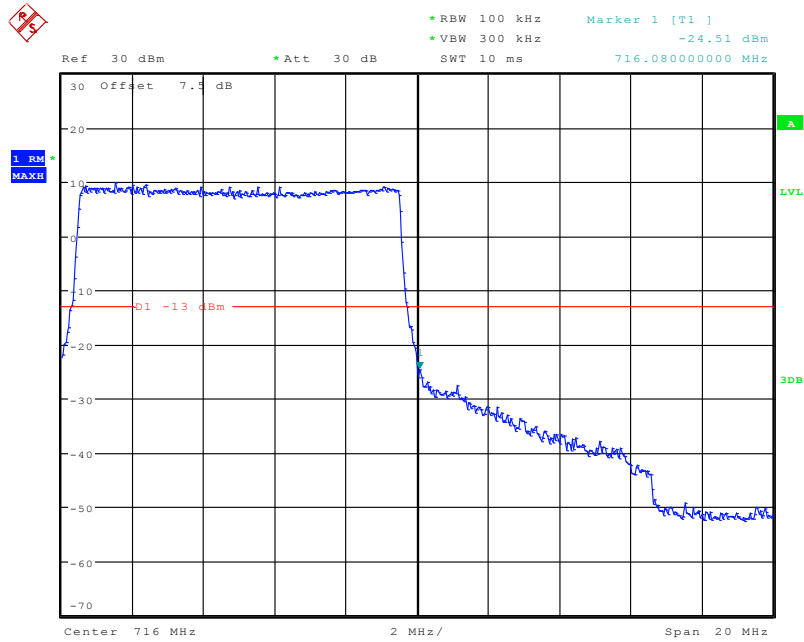
Date: 13.MAR.2020 11:04:03

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



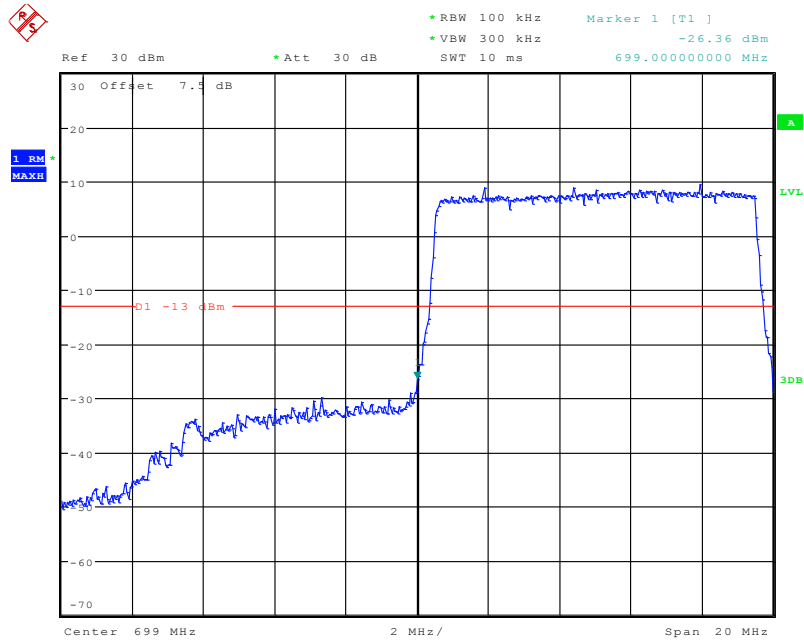
Date: 13.MAR.2020 11:04:24

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



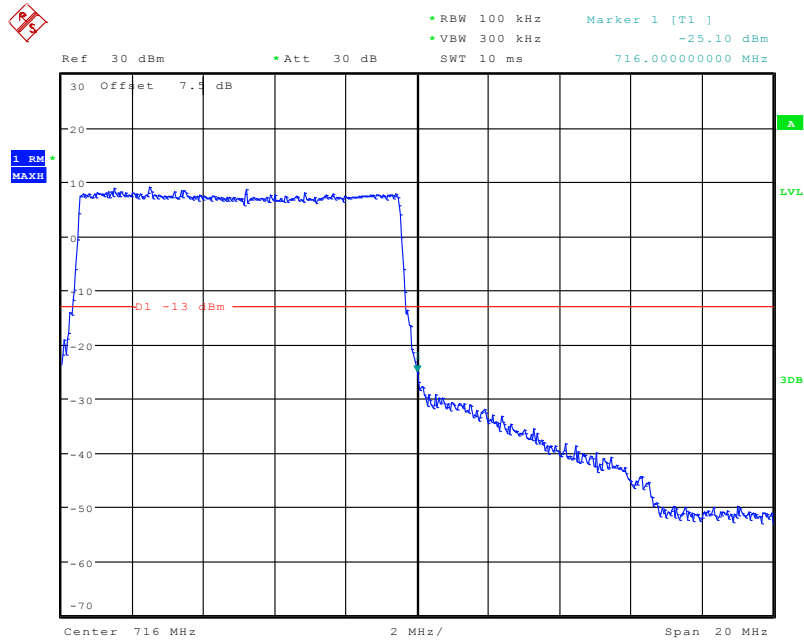
Date: 13.MAR.2020 11:04:58

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

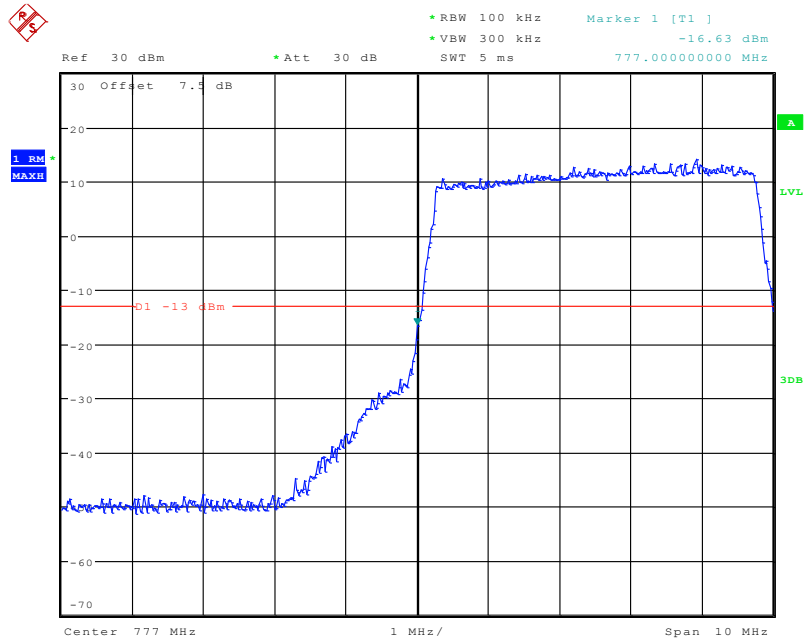


Date: 13.MAR.2020 11:04:41

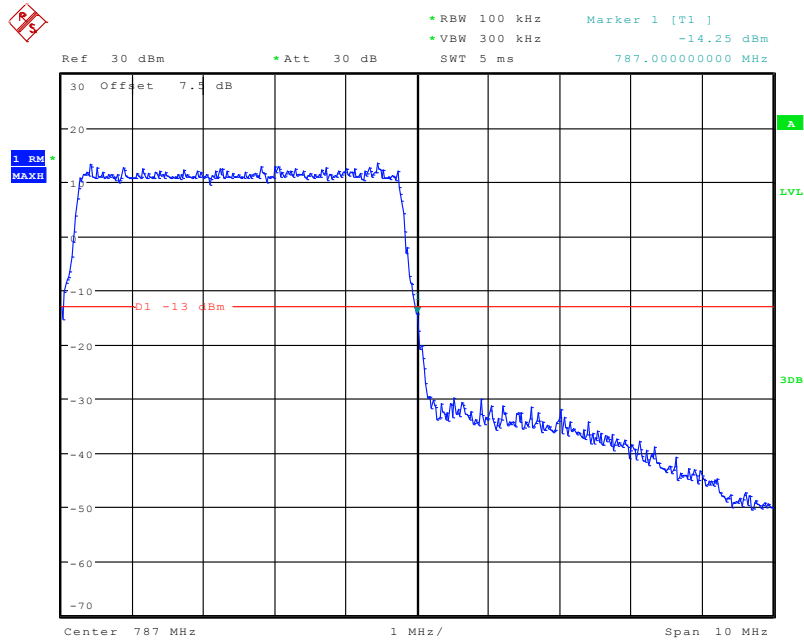
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 13.MAR.2020 11:05:15

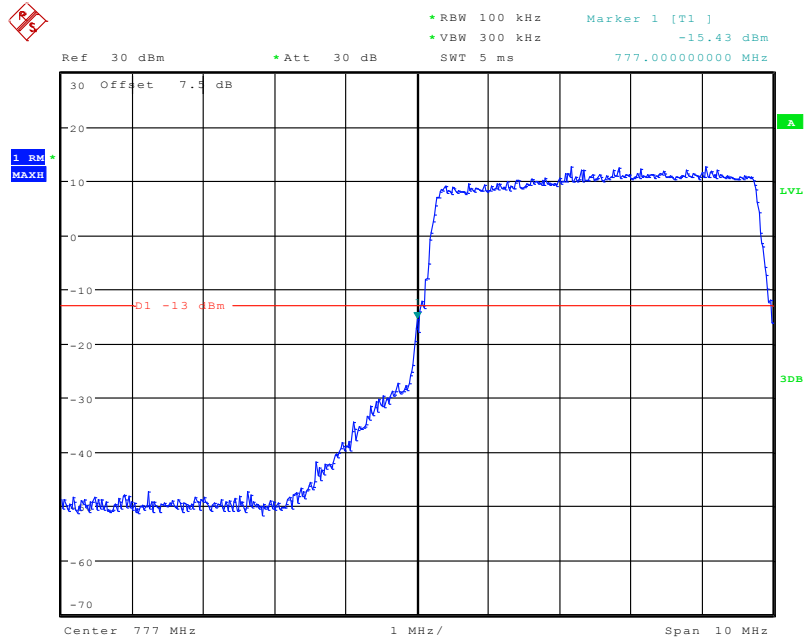
Band 13:**QPSK (5.0 MHz, FULL RB) - Left Band Edge**

Date: 13.MAR.2020 11:05:42

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

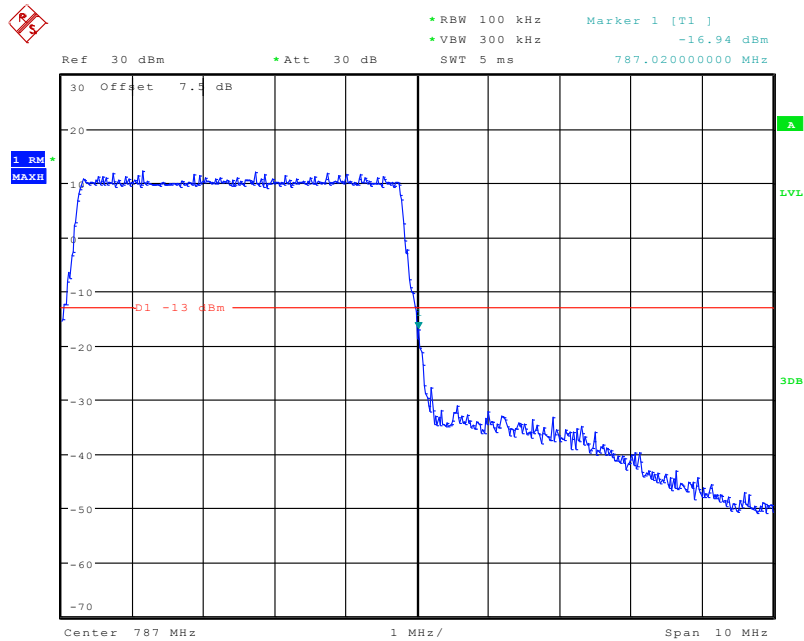
Date: 13.MAR.2020 11:06:17

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



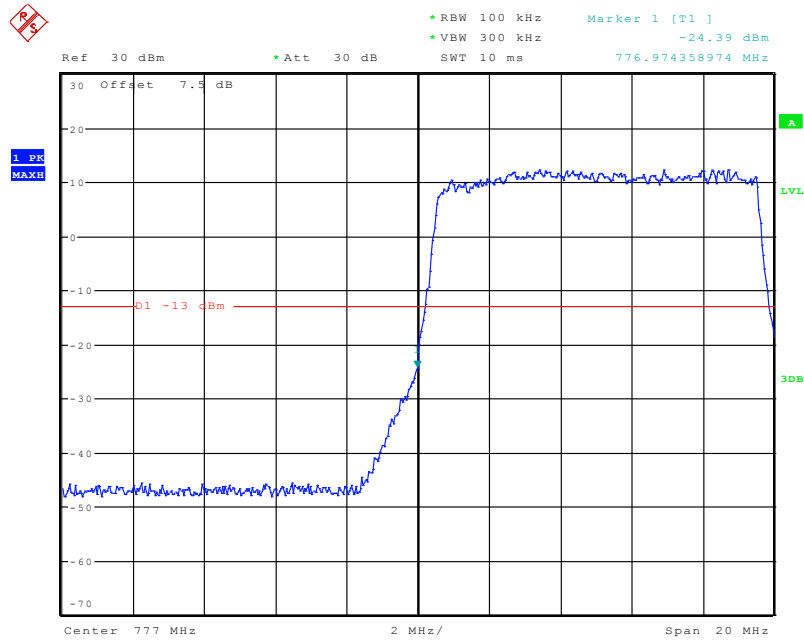
Date: 13.MAR.2020 11:05:58

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



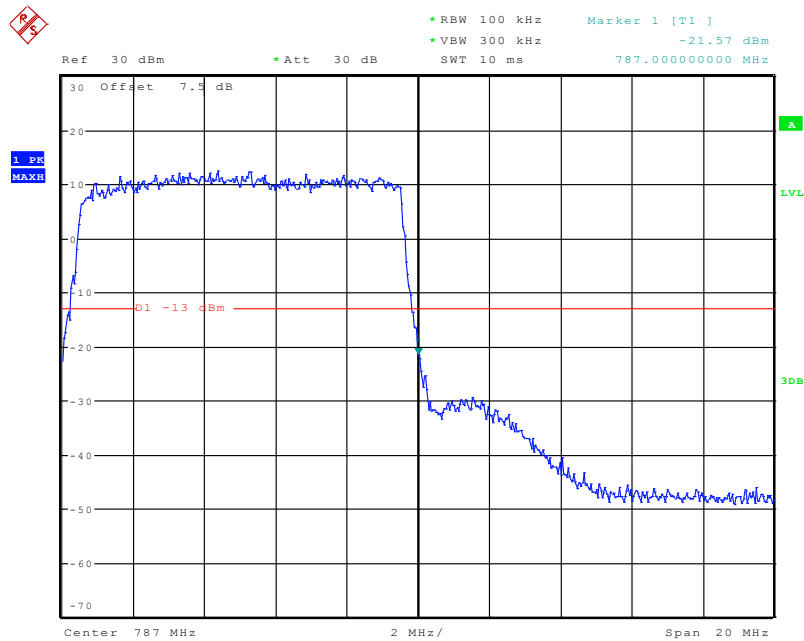
Date: 13.MAR.2020 11:06:33

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



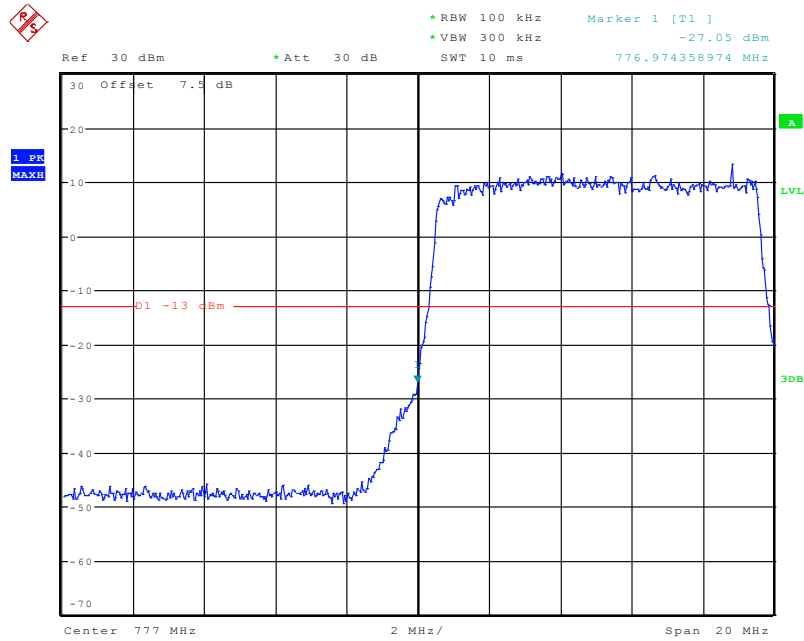
Date: 13.MAR.2020 11:14:38

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



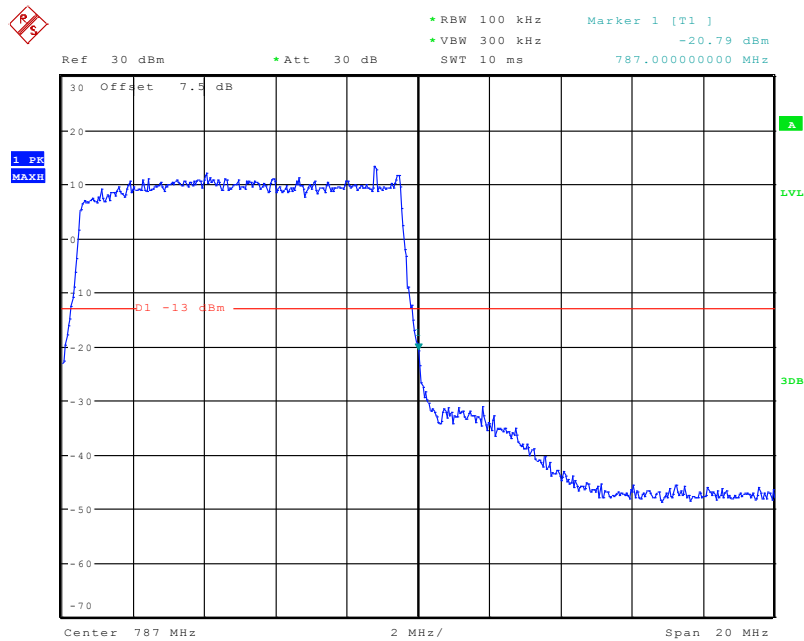
Date: 13.MAR.2020 11:16:29

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



Date: 13.MAR.2020 11:15:34

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



Date: 13.MAR.2020 11:16:04

FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY**Applicable Standard**

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

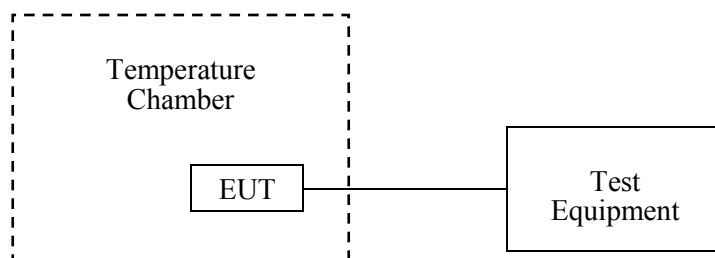
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Data**Environmental Conditions**

Temperature:	23.3~24.2 °C
Relative Humidity:	42~66 %
ATM Pressure:	100.3~101.2kPa

*The testing was performed by Alan He and Gavin Guo from 2020-03-09 to 2020-03-13.
EUT operation mode: Transmitting*

Test Result: Pass

Please refer to the following tables.

Cellular Band (Part 22H)**WCDMA Mode**

Middle channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Voltage (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	13.6	-9	-0.010758	2.5
-20		3	0.003586	2.5
-10		-1	-0.001195	2.5
0		1	0.001195	2.5
10		0	0.000000	2.5
20		-5	-5.005977	2.5
30		-4	-0.004781	2.5
40		1	0.001195	2.5
50		5	0.005977	2.5
20	11.6	-1	0.001195	2.5
	15.6	-6	-0.007172	2.5

PCS Band (Part 24E)**WCDMA Mode**

Middle channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	13.6	4	0.0021	Pass
-20		13	0.0069	Pass
-10		8	0.0043	Pass
0		7	0.0037	Pass
10		5	0.0027	Pass
20		7	0.0037	Pass
30		13	0.0069	Pass
40		5	0.0027	Pass
50		0	0.0000	Pass
20	11.6	-2	-0.0011	Pass
	15.6	3	0.0016	Pass

AWS Band (Part 27)

Temperature (°C)	Voltage (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	13.6	1710.0672	1754.9306	1710	1755
-20		1710.0641	1754.9278	1710	1755
-10		1710.0633	1754.9296	1710	1755
0		1710.0661	1754.9309	1710	1755
10		1710.0658	1754.9289	1710	1755
20		1710.0707	1754.9282	1710	1755
30		1710.0685	1754.9321	1710	1755
40		1710.0630	1754.9276	1710	1755
50		1710.0659	1754.9299	1710	1755
20	11.6	1710.0633	1754.9291	1710	1755
	15.6	1710.0700	1754.9318	1710	1755

LTE:
QPSK:

Band 2:

10.0 MHz Middle channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	13.6	-2.50	-0.0013	Pass
-20		-9.97	-0.0053	Pass
-10		-6.13	-0.0033	Pass
0		6.17	0.0033	Pass
10		7.92	0.0042	Pass
20		6.46	0.0034	Pass
30		-6.52	-0.0035	Pass
40		7.18	0.0038	Pass
50		-9.69	-0.0052	Pass
20	11.6	-8.17	-0.0043	Pass
	15.6	-7.05	-0.0038	Pass

Band 4:

10MHz Bandwidth					
Temperature (°C)	Voltage (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	13.6	1710.0762	1754.9316	1710	1755
-20		1710.0547	1754.9365	1710	1755
-10		1710.0741	1754.9415	1710	1755
0		1710.0709	1754.9394	1710	1755
10		1710.0696	1754.9339	1710	1755
20		1710.0621	1754.9443	1710	1755
30		1710.0584	1754.9396	1710	1755
40		1710.0537	1754.9321	1710	1755
50		1710.0663	1754.9374	1710	1755
20	11.6	1710.0619	1754.9312	1710	1755
	15.6	1710.0505	1754.9471	1710	1755

Band 5:

10.0 MHz Middle channel, $f_o=836.6\text{MHz}$				
Temperature (°C)	Voltage (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	13.6	-0.27	-0.0003	2.5
-20		-6.97	-0.0083	2.5
-10		-5.50	-0.0066	2.5
0		6.06	0.0072	2.5
10		9.80	0.0117	2.5
20		5.03	0.006	2.5
30		-6.62	-0.0079	2.5
40		-8.73	-0.0104	2.5
50		-7.05	-0.0084	2.5
20	11.6	8.99	0.0107	2.5
	15.6	-7.17	-0.0086	2.5

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Voltage (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	13.6	699.0663	715.9616	699	716
-20		699.0682	715.9594	699	716
-10		699.0510	715.9530	699	716
0		699.0371	715.9577	699	716
10		699.0460	715.9629	699	716
20		699.0385	715.9702	699	716
30		699.0631	715.9672	699	716
40		699.0520	715.9482	699	716
50		699.0575	715.9551	699	716
20	11.6	699.0748	715.9632	699	716
	15.6	699.0344	715.9618	699	716

Band 13:

10 MHz Bandwidth					
Temperature (°C)	Voltage (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	13.6	777.0393	786.9604	777	787
-20		777.0250	786.9489	777	787
-10		777.0331	786.9647	777	787
0		777.0390	786.9727	777	787
10		777.0470	786.9526	777	787
20		777.0328	786.9495	777	787
30		777.0456	786.9506	777	787
40		777.0233	786.9423	777	787
50		777.0319	786.9555	777	787
20	11.6	777.0261	786.9322	777	787
	15.6	777.0251	786.9426	777	787

16QAM:**Band 2:**

10.0 MHz Middle channel, f ₀ =1880MHz				
Temperature (°C)	Voltage (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	13.6	-3.98	-0.0021	Pass
-20		-6.68	-0.0036	Pass
-10		9.77	0.0052	Pass
0		-7.62	-0.0041	Pass
10		-9.91	-0.0053	Pass
20		-9.82	-0.0052	Pass
30		-6.68	-0.0036	Pass
40		-8.85	-0.0047	Pass
50		5.67	0.003	Pass
20	11.6	6.05	0.0032	Pass
	15.6	7.52	0.004	Pass

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Voltage (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	13.6	1710.0675	1754.9384	1710	1755
-20		1710.0344	1754.9421	1710	1755
-10		1710.0731	1754.9358	1710	1755
0		1710.0694	1754.9451	1710	1755
10		1710.0635	1754.9312	1710	1755
20		1710.0547	1754.9335	1710	1755
30		1710.0605	1754.9362	1710	1755
40		1710.0572	1754.9482	1710	1755
50		1710.0574	1754.9309	1710	1755
20	11.6	1710.0605	1754.9419	1710	1755
	15.6	1710.0895	1754.9391	1710	1755

Band 5:

10.0 MHz Middle channel, f ₀ =836.6MHz				
Temperature (°C)	Voltage (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	13.6	-1.53	-0.0018	2.5
-20		8.10	0.0097	2.5
-10		-8.59	-0.0103	2.5
0		9.33	0.0112	2.5
10		-6.94	-0.0083	2.5
20		7.54	0.009	2.5
30		6.43	0.0077	2.5
40		-6.17	-0.0074	2.5
50		-6.44	-0.0077	2.5
20	11.6	6.34	0.0076	2.5
	15.6	-6.89	-0.0082	2.5

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Voltage (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	13.6	699.0479	715.9478	699	716
-20		699.0278	715.9549	699	716
-10		699.0695	715.9430	699	716
0		699.0502	715.9303	699	716
10		699.0328	715.9651	699	716
20		699.0433	715.9490	699	716
30		699.0461	715.9518	699	716
40		699.0374	715.9761	699	716
50		699.0435	715.9562	699	716
20	11.6	699.0670	715.9642	699	716
	15.6	699.0443	715.9362	699	716

Band 13:

10 MHz Bandwidth					
Temperature (°C)	Voltage (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	13.6	777.0315	786.9718	777	787
-20		777.0162	786.9617	777	787
-10		777.0470	786.9597	777	787
0		777.0238	786.9675	777	787
10		777.0449	786.9387	777	787
20		777.0313	786.9699	777	787
30		777.0319	786.9417	777	787
40		777.0403	786.9452	777	787
50		777.0125	786.9615	777	787
20	11.6	777.0305	786.9505	777	787
	15.6	777.0451	786.9590	777	787

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