FCC §2.1053, §22.917 & §24.238 & §27.53 - SPURIOUS RADIATED EMISSIONS

Applicable Standards

FCC § 2.1053, §22.917 and § 24.238 and § 27.53.

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.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2014-12-01	2015-11-30
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11
Mini-Circuits	Amplifier	ZVA-213+	N/A	NCR	NCR
HP	Amplifier	HP8447E	1937A01046	2015-05-06	2016-05-06
HP	Signal Generator	8341B	2624A00116	2015-06-03	2016-06-03
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-11	2016-02-10
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2014-11-03	2015-11-03
Electro-Mechanics	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-08-05.

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

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)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
143.99	35.06	30	1.3	H	-61.9	0.26	0	-62.16	-13	49.16
143.99	36.37	57	1.9	V	-60.6	0.26	0	-60.86	-13	47.86
1673.20	54.51	103	1.4	H	-41.2	1.60	6.90	-35.90	-13	22.90
1673.20	52.95	249	1.1	V	-43.2	1.60	6.90	-37.90	-13	24.90
2509.80	47.93	125	1.9	H	-45.6	1.70	8.60	-38.70	-13	25.70
2509.80	45.21	69	1.5	V	-48.7	1.70	8.60	-41.80	-13	28.80
WCDMA Mode, Middle channel										
143.99	36.37	121	1.7	H	-60.6	0.26	0	-60.86	-13	47.86
143.99	35.01	249	2.1	V	-62.0	0.26	0	-62.26	-13	49.26
1673.20	37.15	54	1.1	H	-58.6	1.60	6.90	-53.30	-13	40.30
1673.20	37.62	324	1.9	V	-58.5	1.60	6.90	-53.20	-13	40.20
2509.80	43.51	292	1.5	H	-50.0	1.70	8.60	-43.10	-13	30.10
2509.80	44.26	263	2.2	V	-49.6	1.70	8.60	-42.70	-13	29.70

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)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
143.99	36.92	193	2.0	H	-60.1	0.26	0	-60.36	-13	47.36
143.99	36.18	172	2.5	V	-60.8	0.26	0	-61.06	-13	48.06
3760.00	34.51	279	1.4	H	-52.5	1.90	9.90	-44.50	-13	31.50
3760.00	34.77	161	1.7	V	-51.9	1.90	9.90	-43.90	-13	30.90
9400.00	41.89	323	1.1	H	-34.6	2.70	11.50	-25.80	-13	12.80
9400.00	44.23	313	1.6	V	-34.2	2.70	11.50	-25.40	-13	12.40
WCDMA Mode, middle channel										
143.99	35.31	292	1.1	H	-61.7	0.26	0	-61.96	-13	48.96
143.99	36.65	304	2.1	V	-60.3	0.26	0	-60.56	-13	47.56
3760.00	36.55	346	2.4	H	-50.5	1.90	9.90	-42.50	-13	29.50
3760.00	37.16	207	1.9	V	-49.5	1.90	9.90	-41.50	-13	28.50
11280.00	40.85	191	1.1	H	-24.6	4.10	11.60	-17.10	-13	4.10
11280.00	41.38	151	1.8	V	-23.4	4.10	11.60	-15.90	-13	2.90

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H&24E&27	
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Band 2										
143.99	35.69	343	2.3	H	-61.3	0.26	0	-61.56	-13	48.56
143.99	36.26	215	1.7	V	-60.7	0.26	0	-60.96	-13	47.96
3760.00	37.62	76	1.9	H	-52.3	1.90	9.90	-44.30	-13	31.30
3760.00	38.98	331	1.3	V	-51.2	1.90	9.90	-43.20	-13	30.20
Band 4										
143.99	36.40	193	1.2	H	-60.6	0.26	0	-60.86	-13	47.86
143.99	35.13	306	1.4	V	-61.9	0.26	0	-62.16	-13	49.16
3465.00	36.86	340	2.0	H	-53.6	1.90	10.00	-45.50	-13	32.50
3465.00	38.24	73	2.1	V	-52.8	1.90	10.00	-44.70	-13	31.70
Band 5										
143.99	36.95	129	1.4	H	-60.0	0.26	0	-60.26	-13	47.26
143.99	36.77	176	1.2	V	-60.2	0.26	0	-60.46	-13	47.46
1673.00	39.22	127	2.0	H	-57.0	1.60	6.90	-51.70	-13	38.70
1673.00	37.86	17	1.4	V	-60.4	1.60	6.90	-55.10	-13	42.10
Band 7										
143.99	36.58	330	1.7	H	-60.4	0.26	0	-60.66	-25	35.66
143.99	36.21	115	2.1	V	-60.8	0.26	0	-61.06	-25	36.06
5070.00	38.16	138	2.3	H	-48.3	2.30	10.10	-40.50	-25	15.50
5070.00	37.44	15	2.1	V	-49.6	2.30	10.10	-41.80	-25	16.80

Note:
1) Absolute Level = SG Level - Cable loss + Antenna Gain
2) Margin = Limit- Absolute Level

FCC §22.917(a) & §24.238(a) & §27.53 - 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.

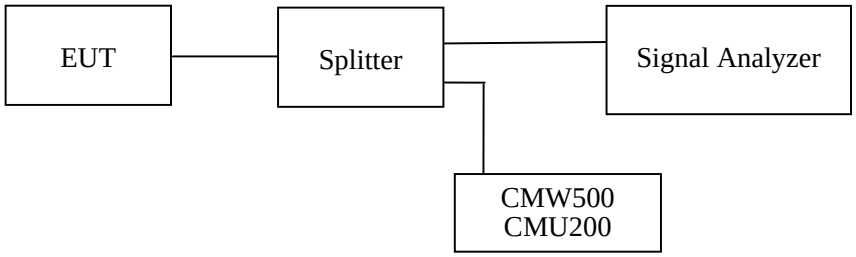
According to FCC §27.53, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2014-06-13	2015-06-13
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

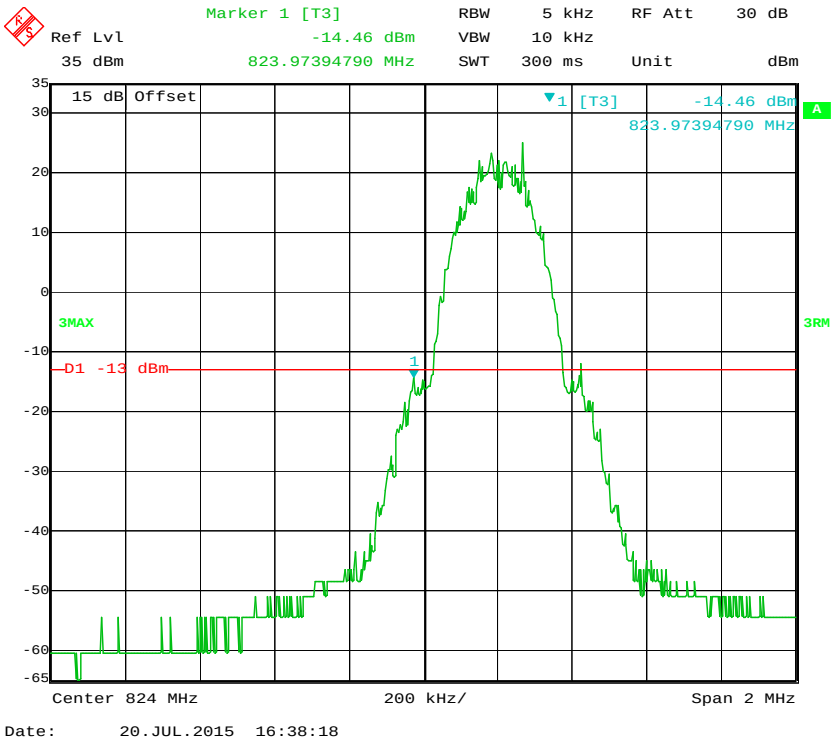
Environmental Conditions

Temperature:	20~26 ℃
Relative Humidity:	48~53 %
ATM Pressure:	100.0~101.0 kPa

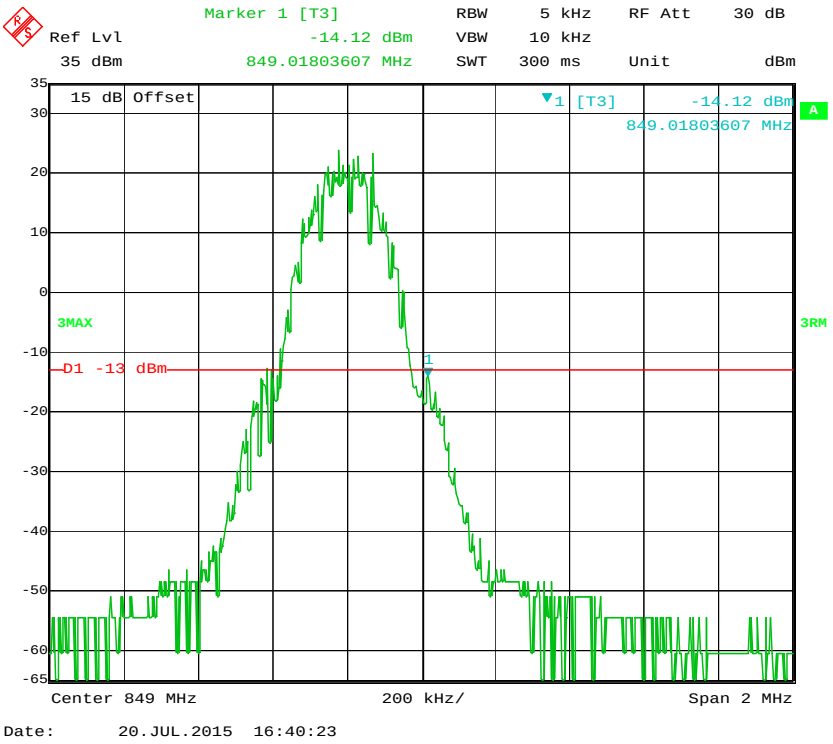
The testing was performed by William Li from 2015-07-20 to 2015-07-31.
EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following plots.

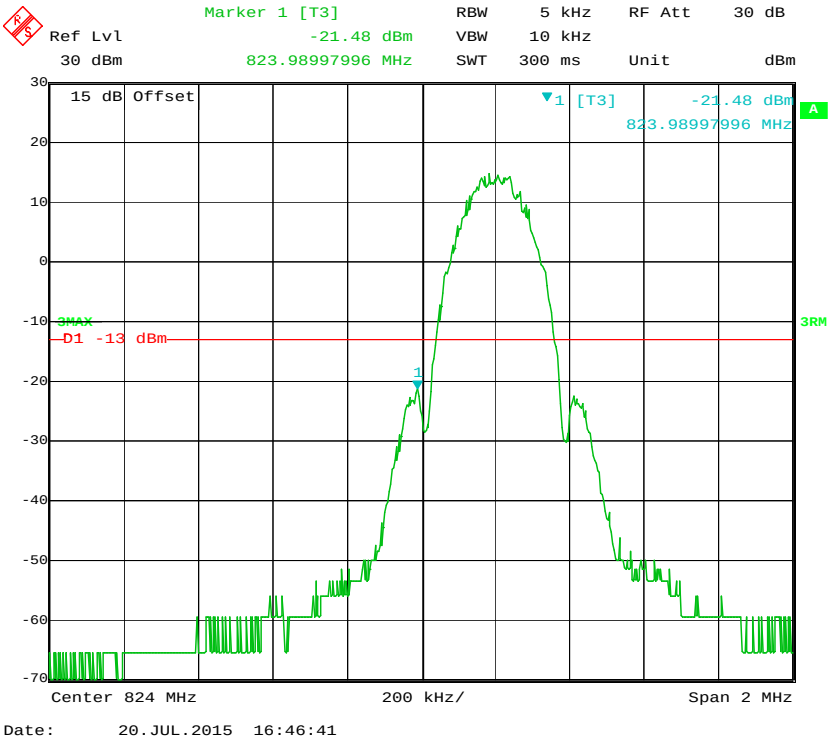
Cellular Band, Left Band Edge for GSM (GMSK) Mode



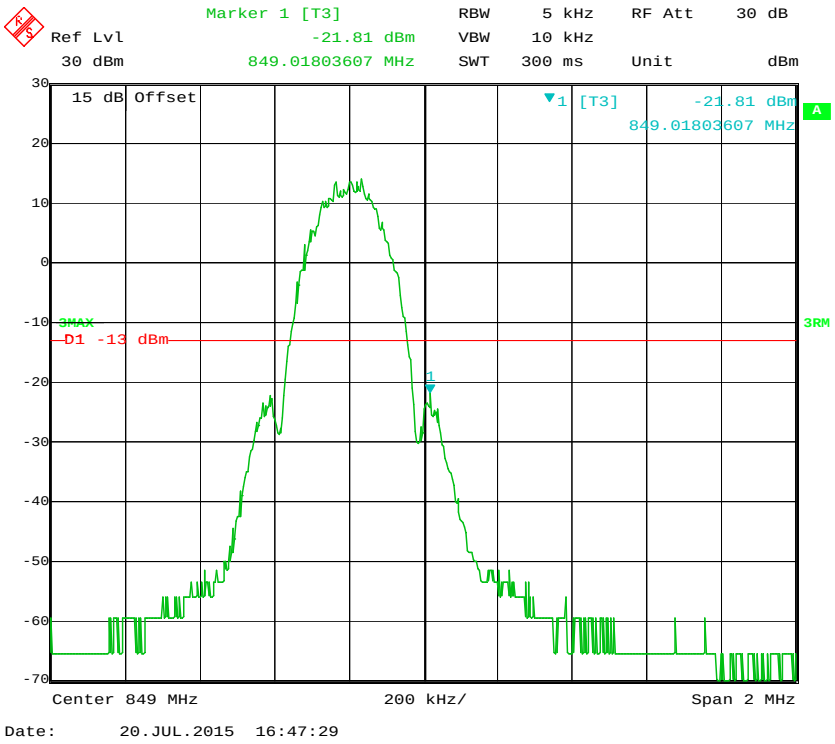
Cellular Band, Right Band Edge for GSM (GMSK) Mode



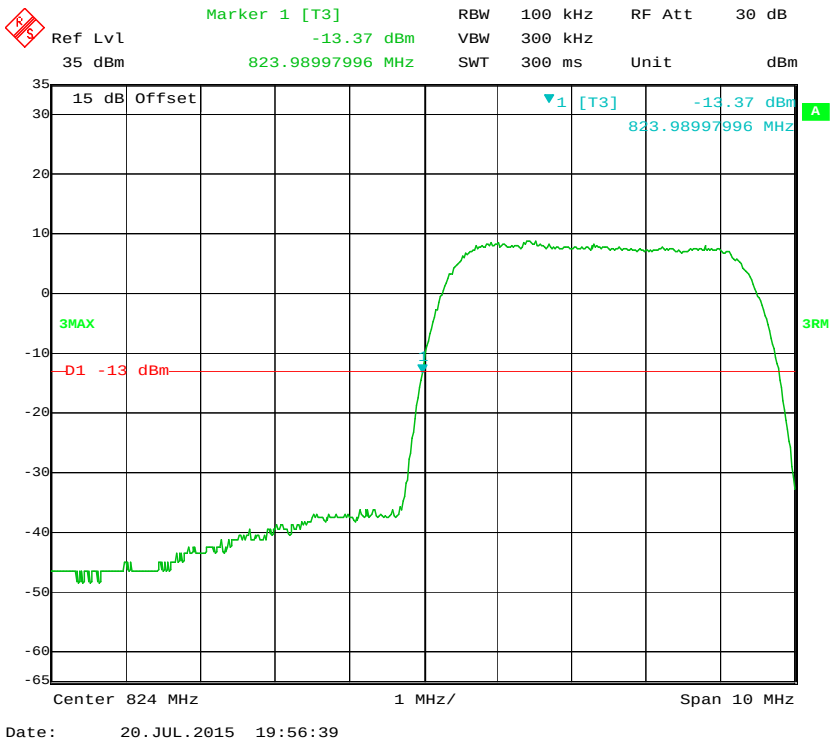
Cellular Band, Left Band Edge for EGPRS Mode



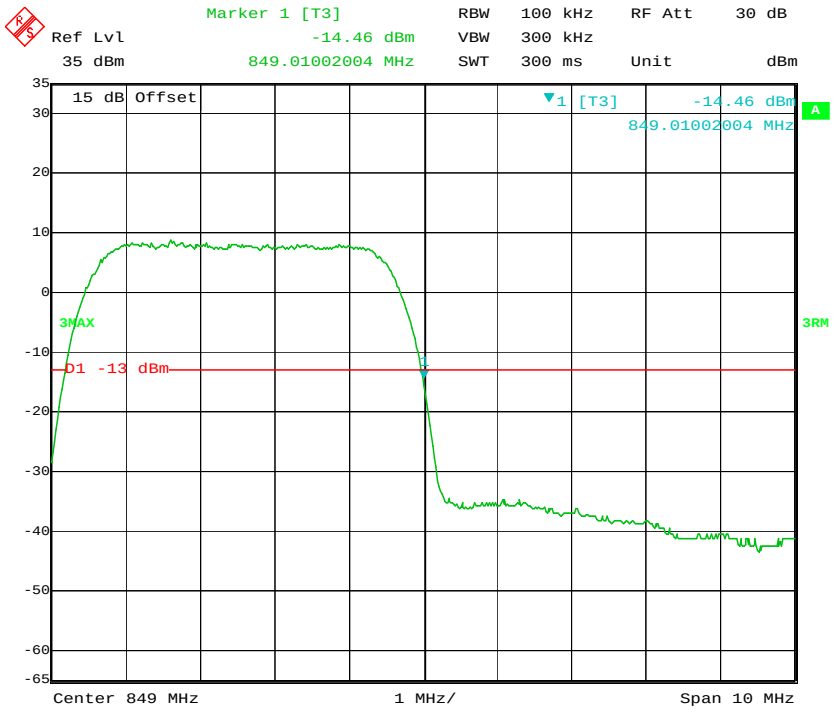
Cellular Band, Right Band Edge for EGPRS Mode



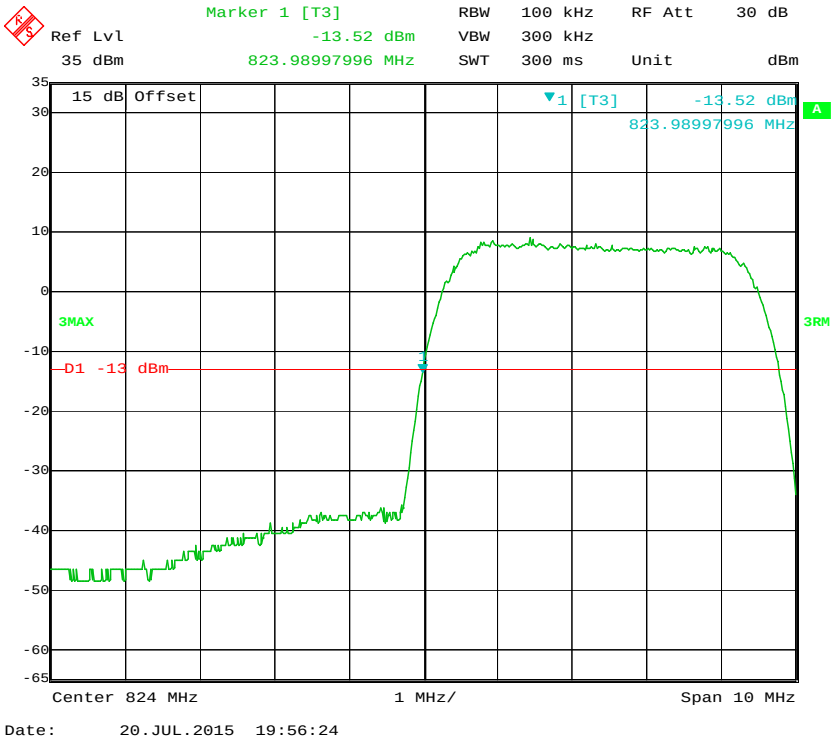
Cellular Band, Left Band Edge for WCDMA (BPSK) Mode



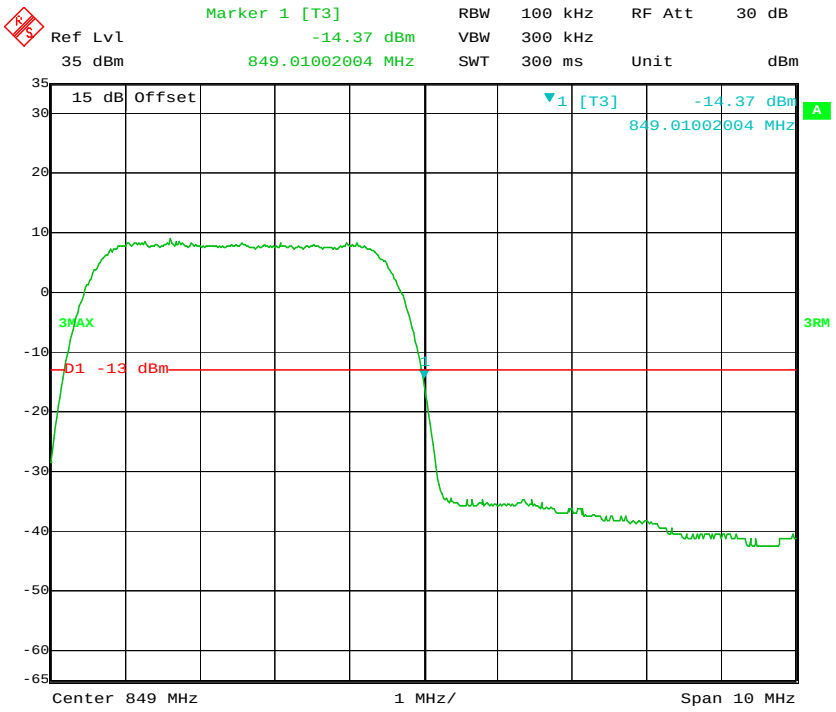
Cellular Band, Right Band Edge for WCDMA (BPSK) Mode



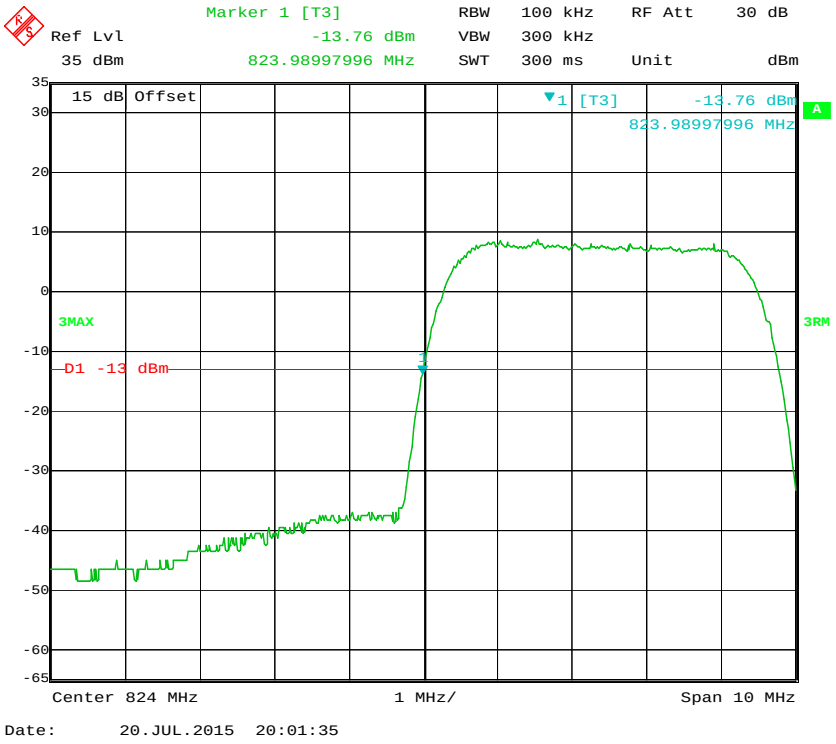
Cellular Band, Left Band Edge for HSDPA (16QAM) Mode



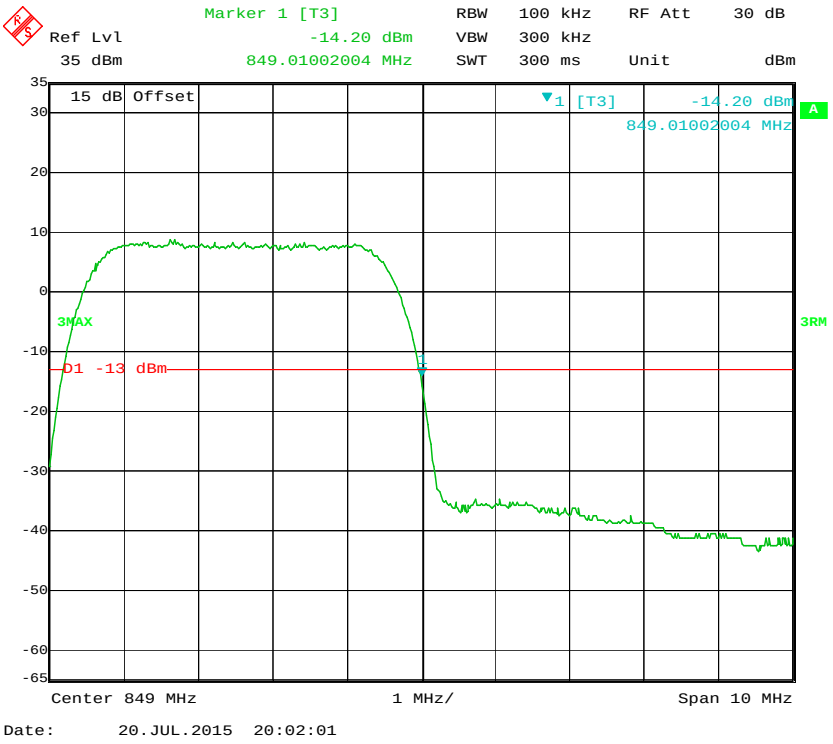
Cellular Band, Right Band Edge for HSDPA (16QAM) Mode



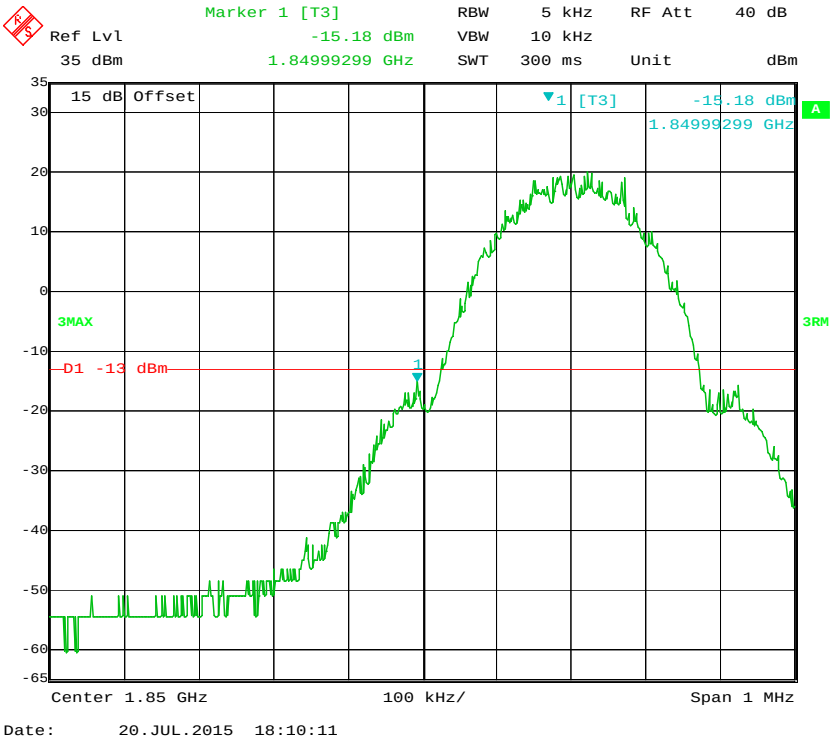
Cellular Band, Left Band Edge for HSUPA (BPSK) Mode



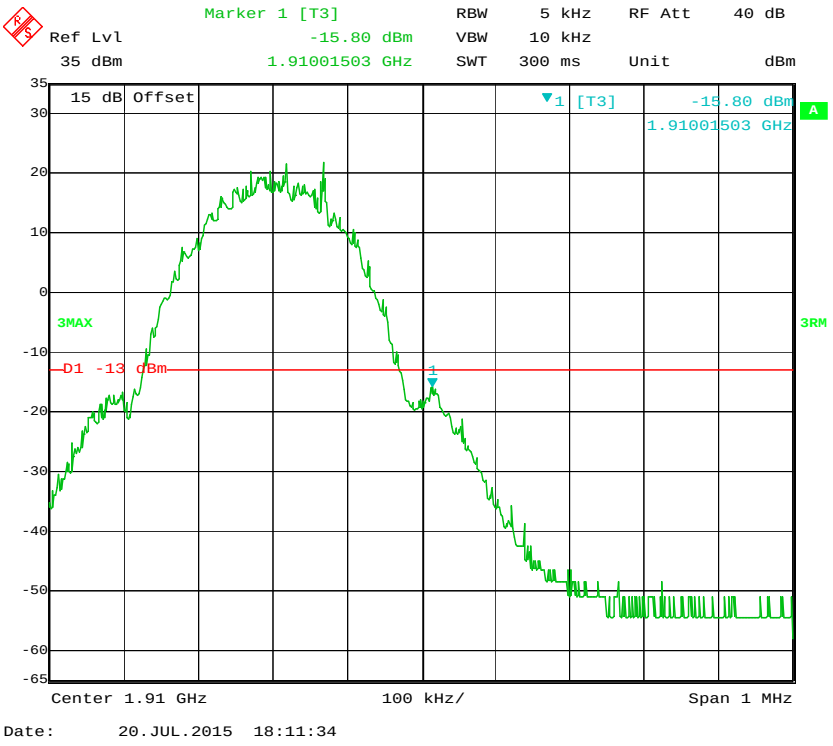
Cellular Band, Right Band Edge for HSUPA (BPSK) Mode



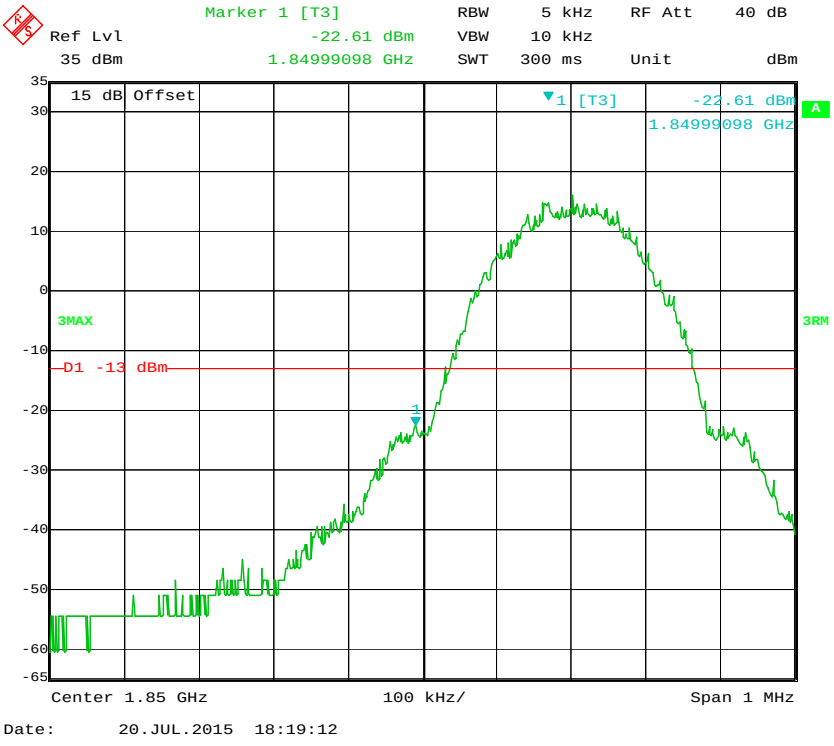
PCS Band, Left Band Edge for GSM (GMSK) Mode



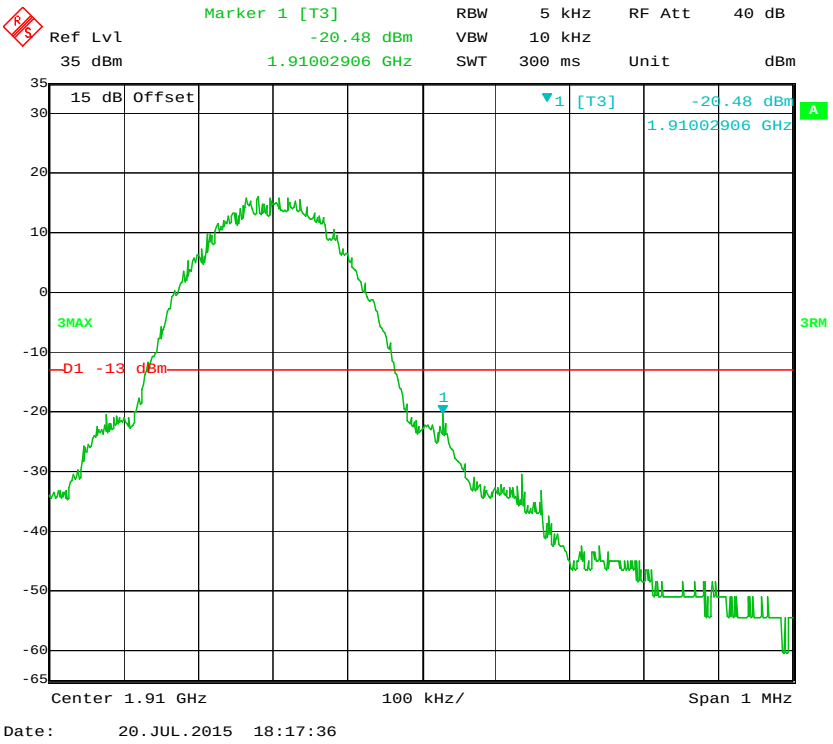
PCS Band, Right Band Edge for GSM (GMSK) Mode



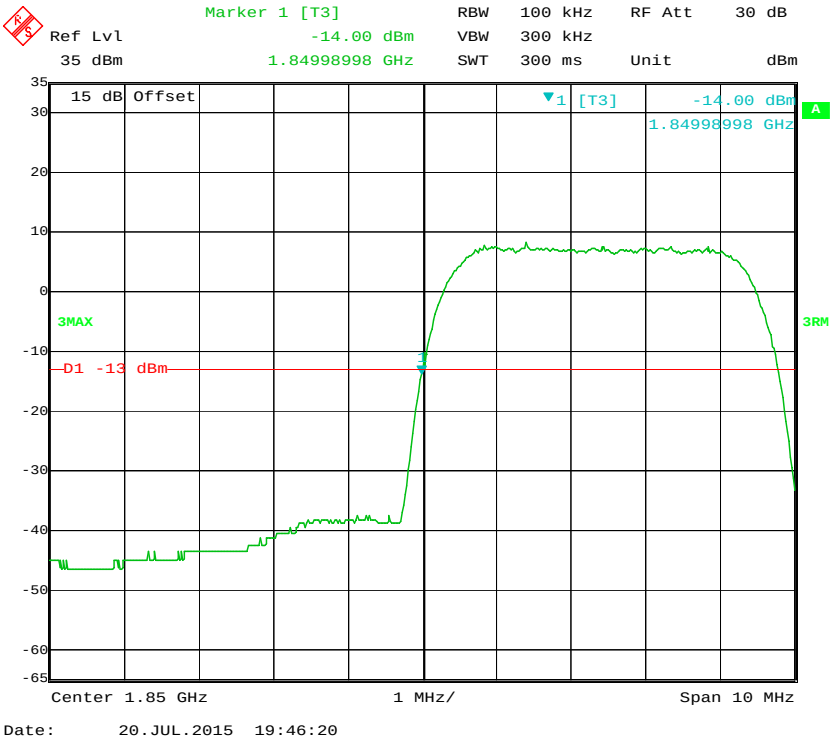
PCS Band, Left Band Edge for EGPRS Mode



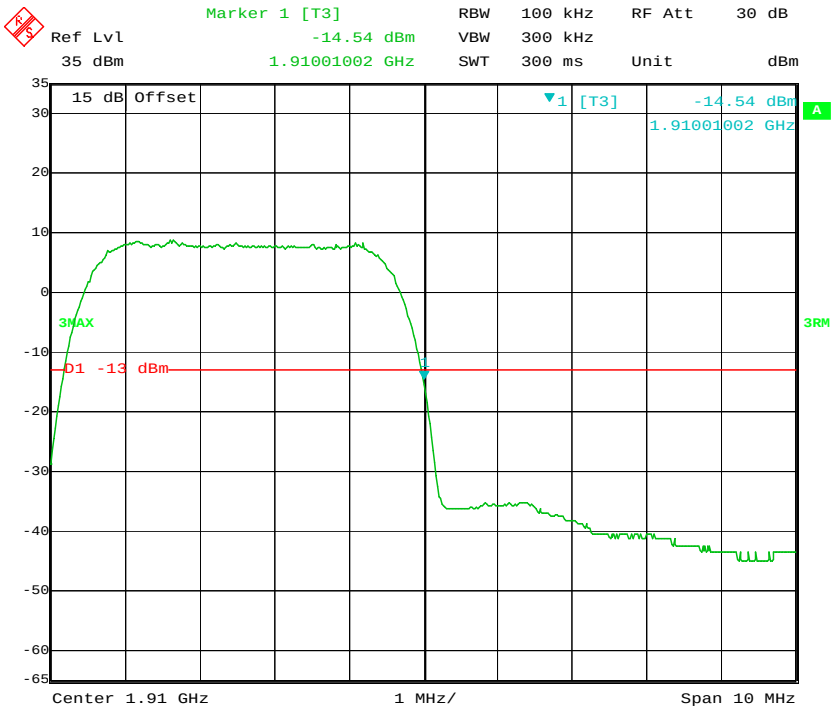
PCS Band, Right Band Edge for EGPRS Mode



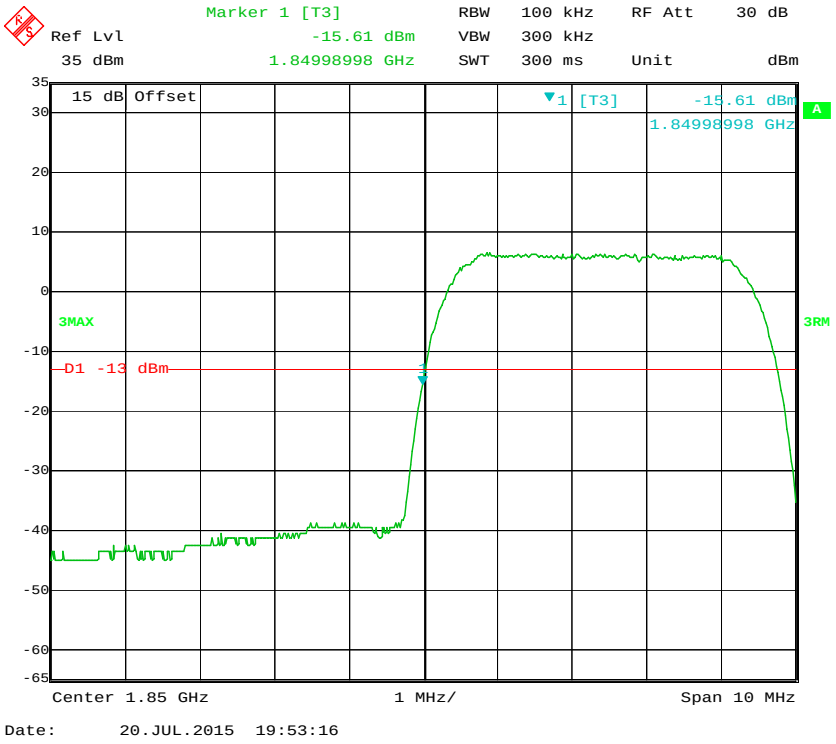
PCS Band, Left Band Edge for WCDMA (BPSK) Mode



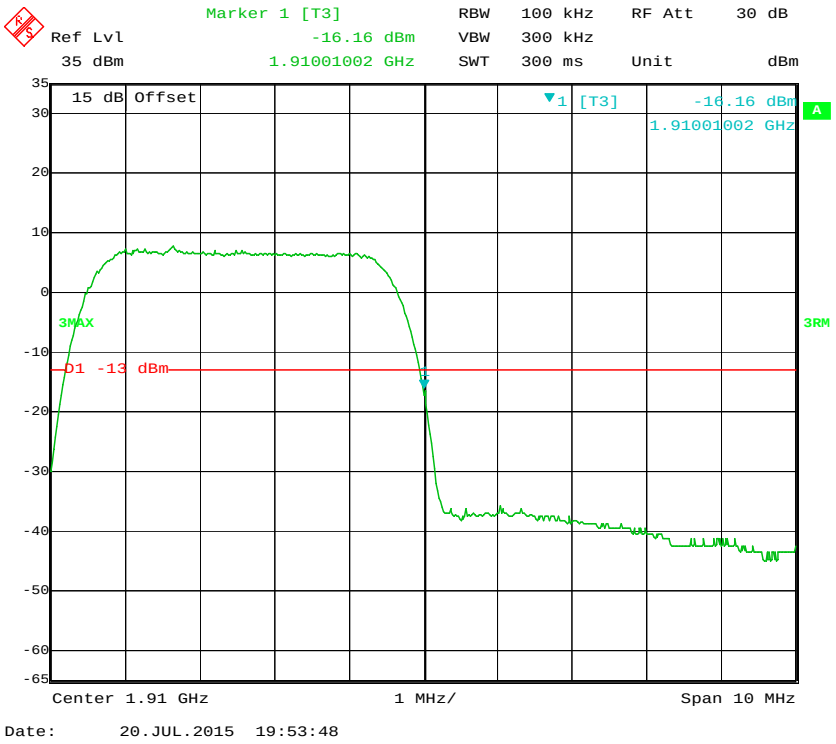
PCS Band, Right Band Edge for WCDMA (BPSK) Mode



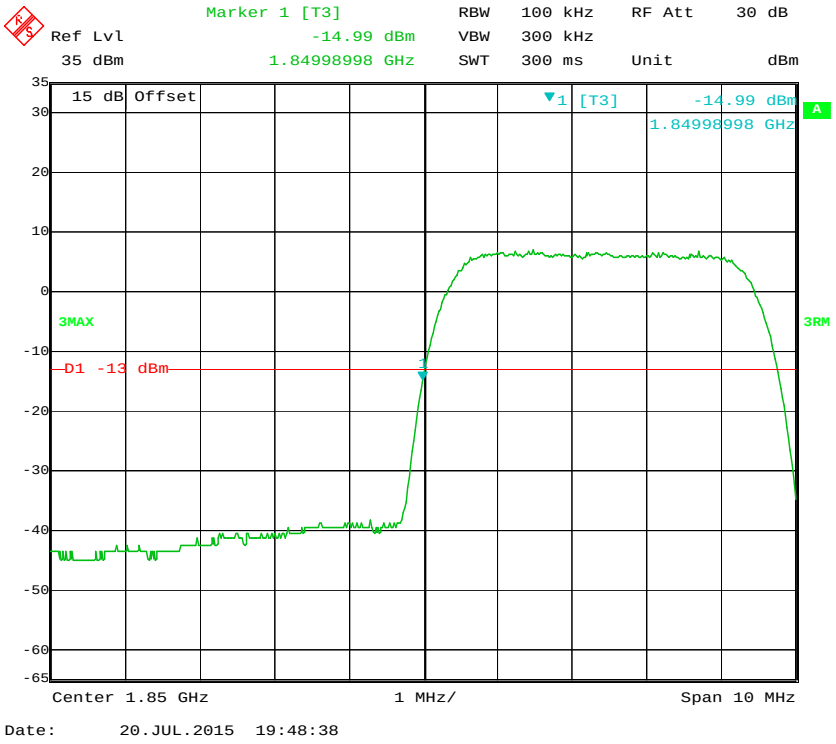
PCS Band, Left Band Edge for HSDPA (16QAM) Mode



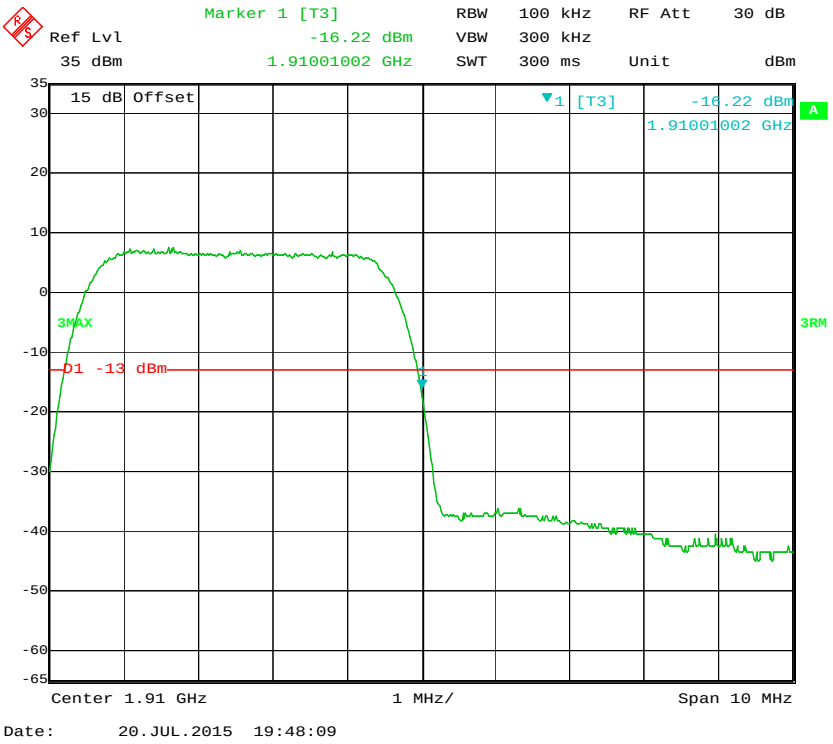
PCS Band, Right Band Edge for HSDPA (16QAM) Mode



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

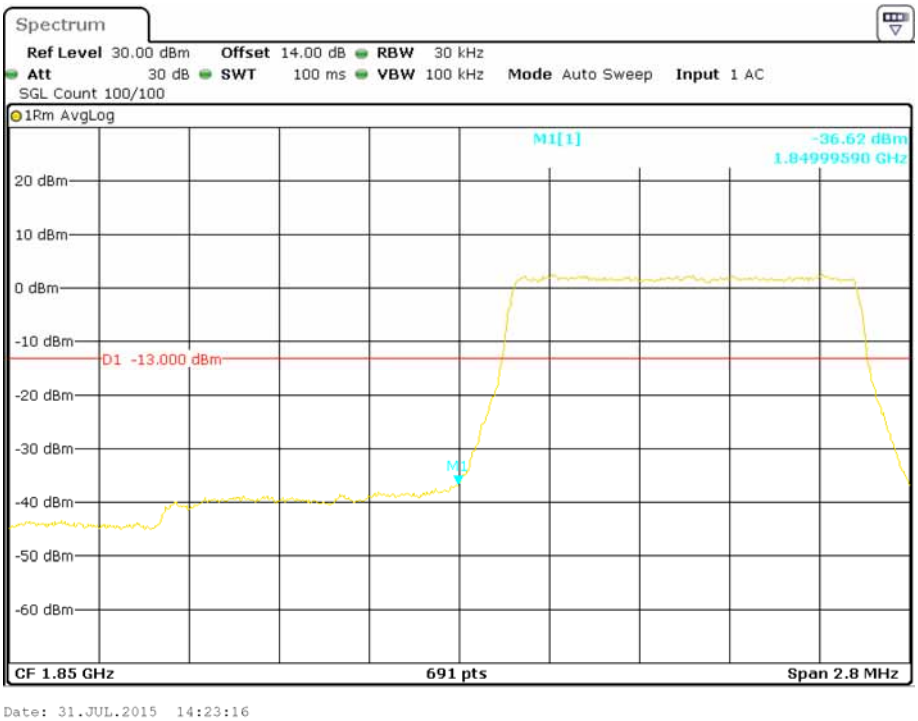


PCS Band, Right Band Edge for HSUPA (BPSK) Mode

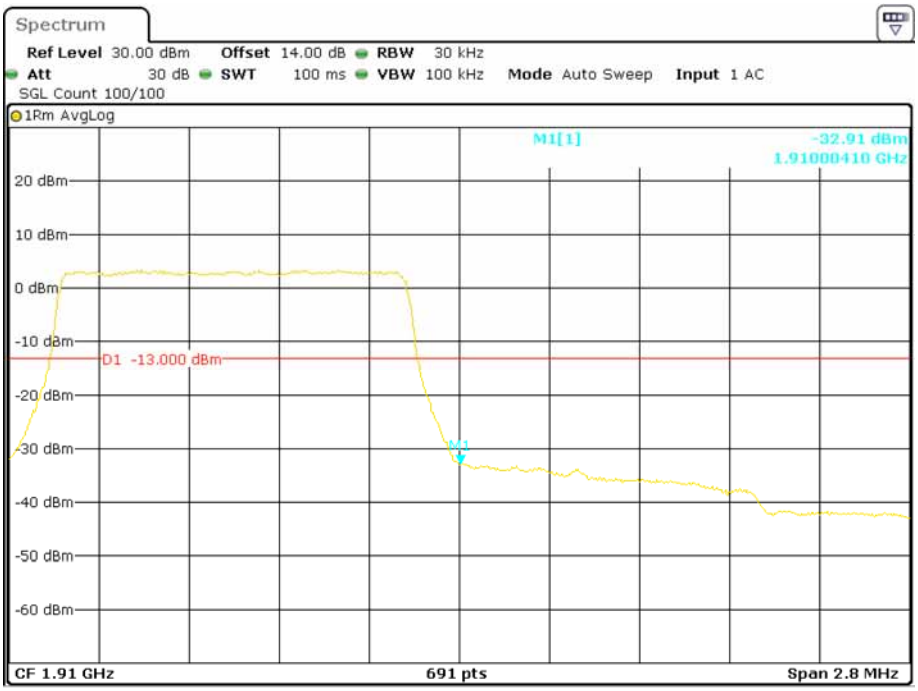


Band 2:

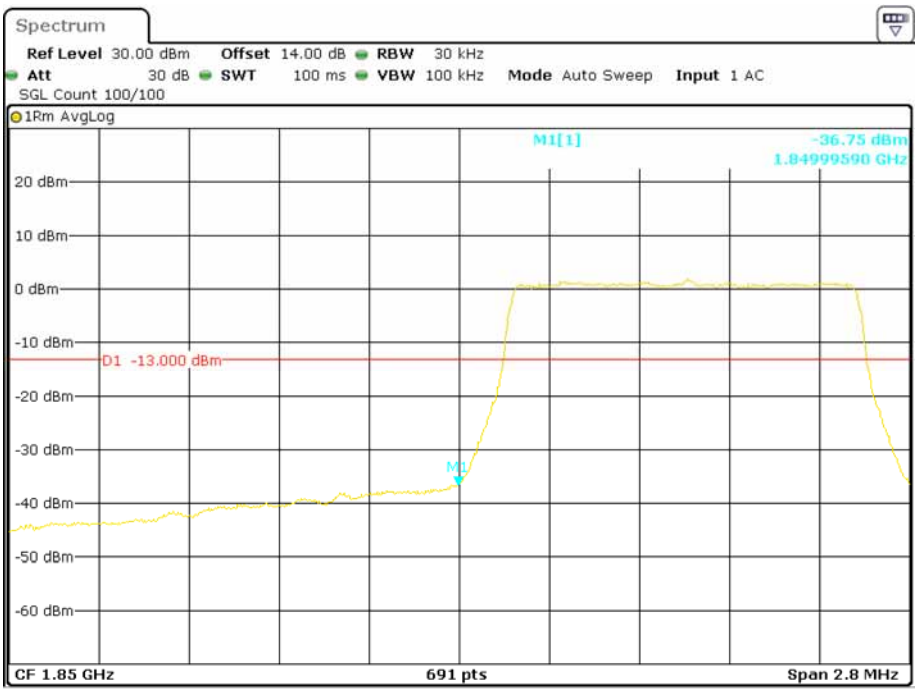
QPSK (1.4 MHz, FULL RB) - Left Band Edge



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

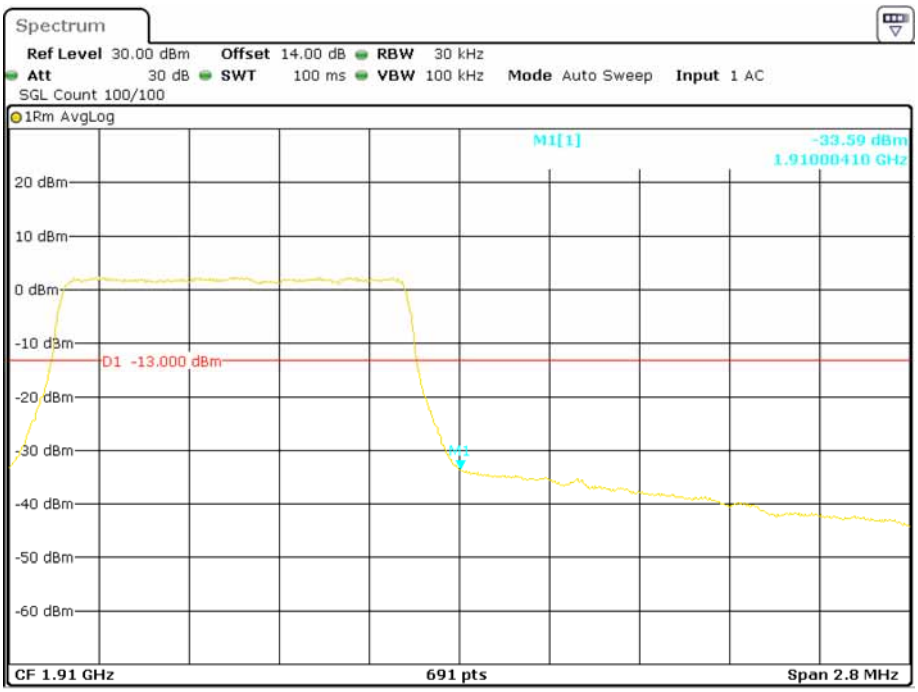


16-QAM (1.4 MHz, FULL RB) - Left Band Edge



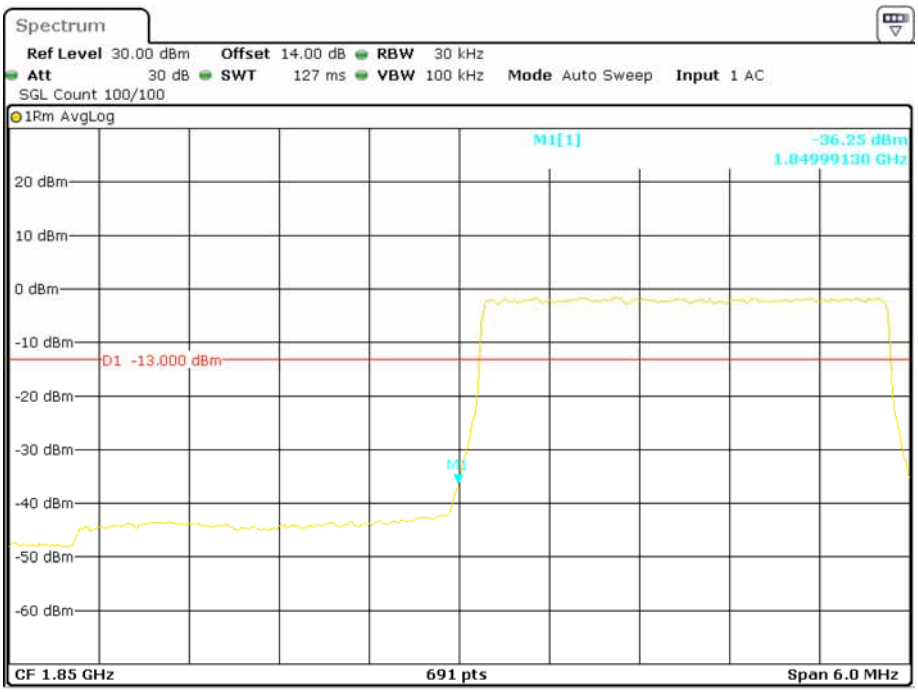
Date: 31.JUL.2015 14:23:42

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



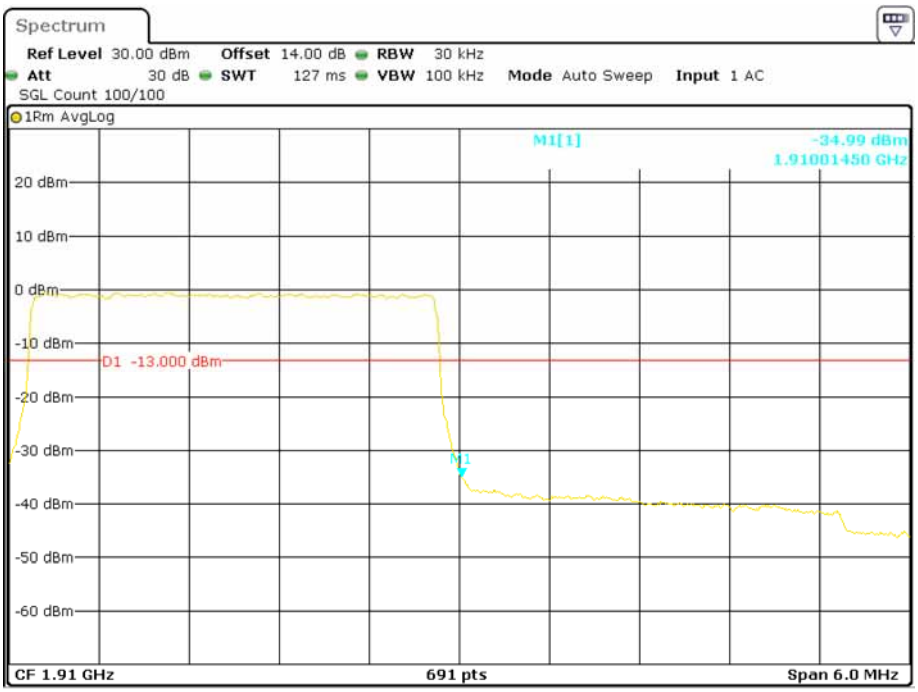
Date: 31.JUL.2015 14:25:06

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



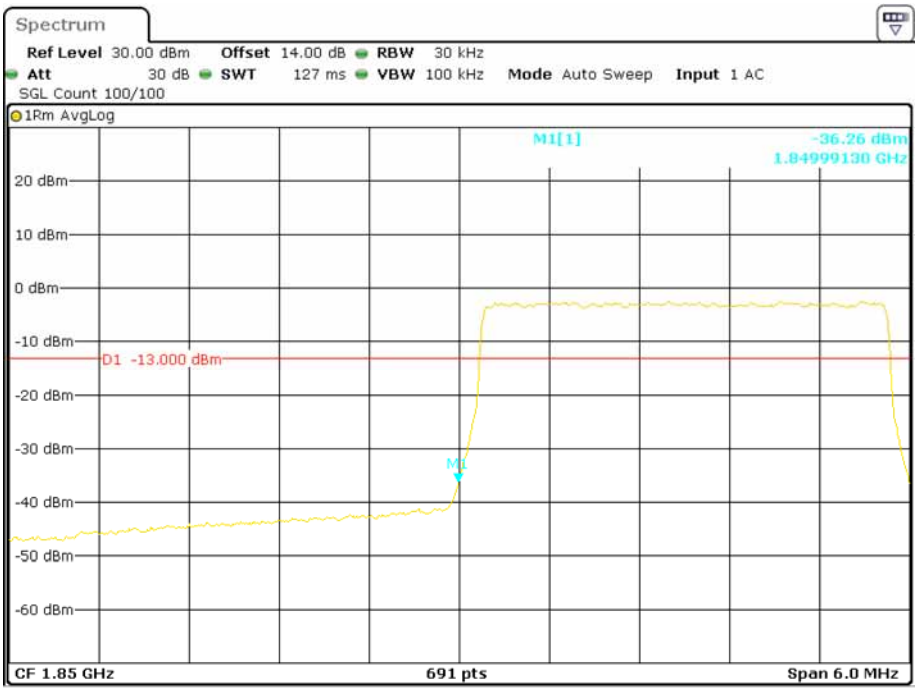
Date: 31.JUL.2015 15:44:07

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



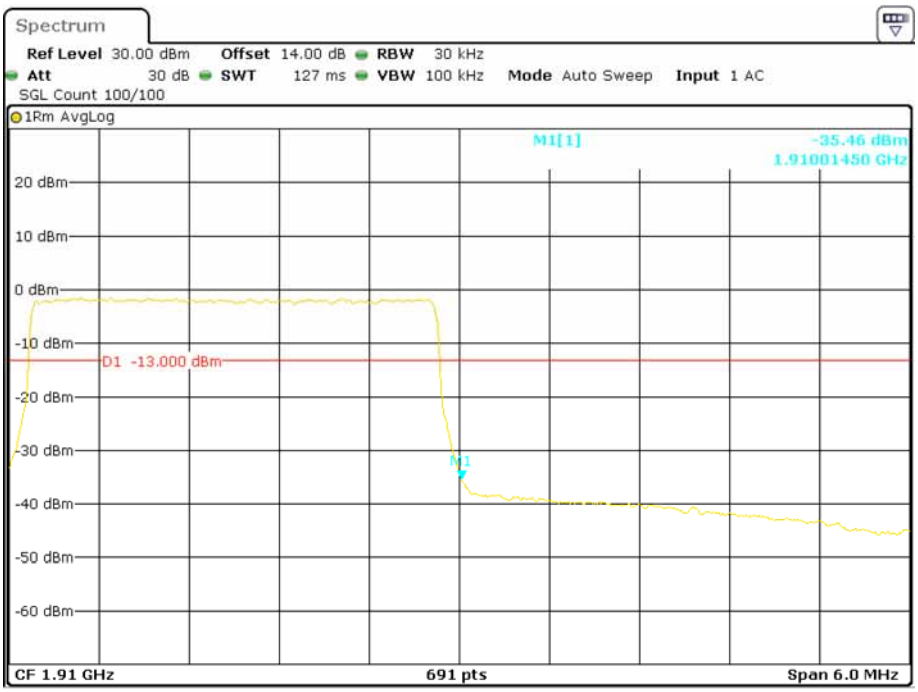
Date: 31.JUL.2015 15:38:34

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



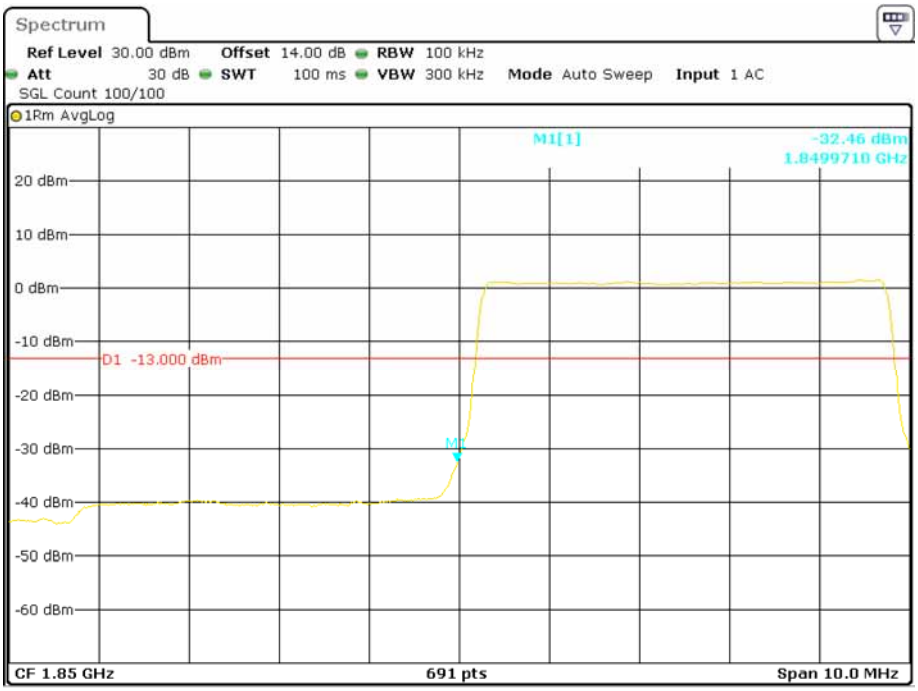
Date: 31.JUL.2015 15:45:28

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



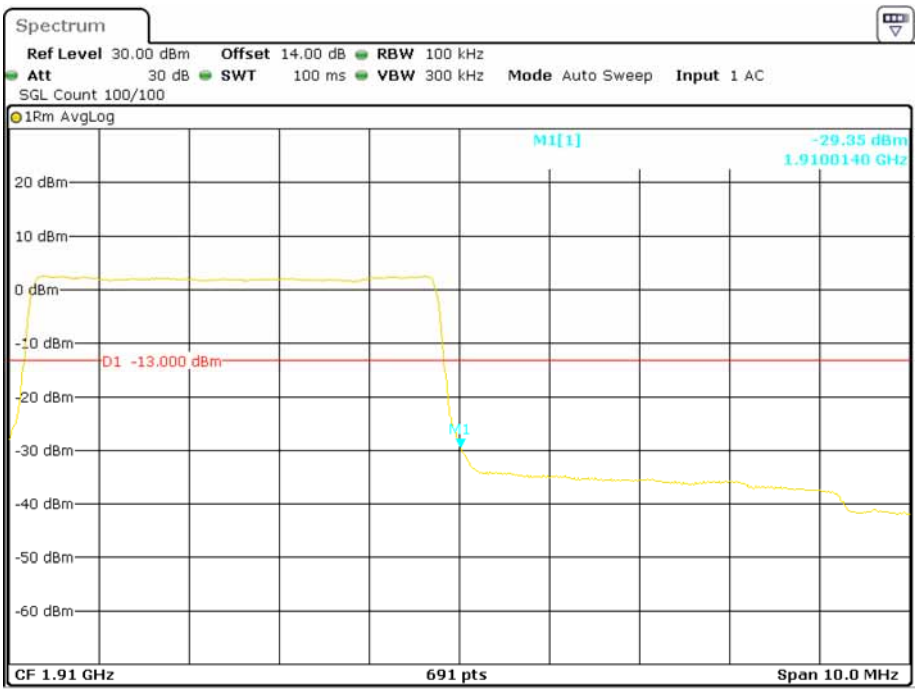
Date: 31.JUL.2015 15:39:27

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



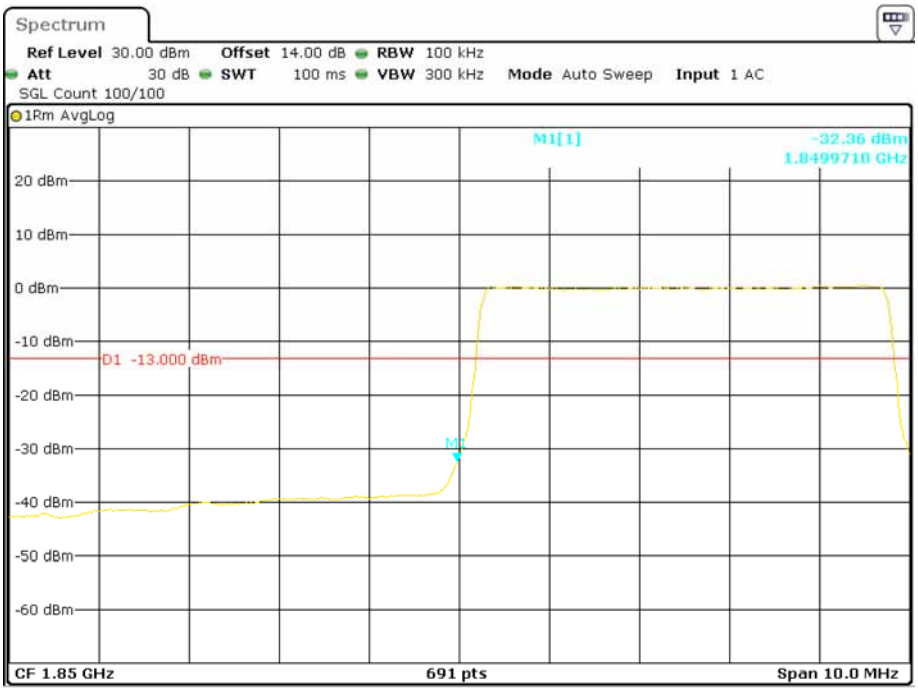
Date: 31.JUL.2015 15:32:32

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



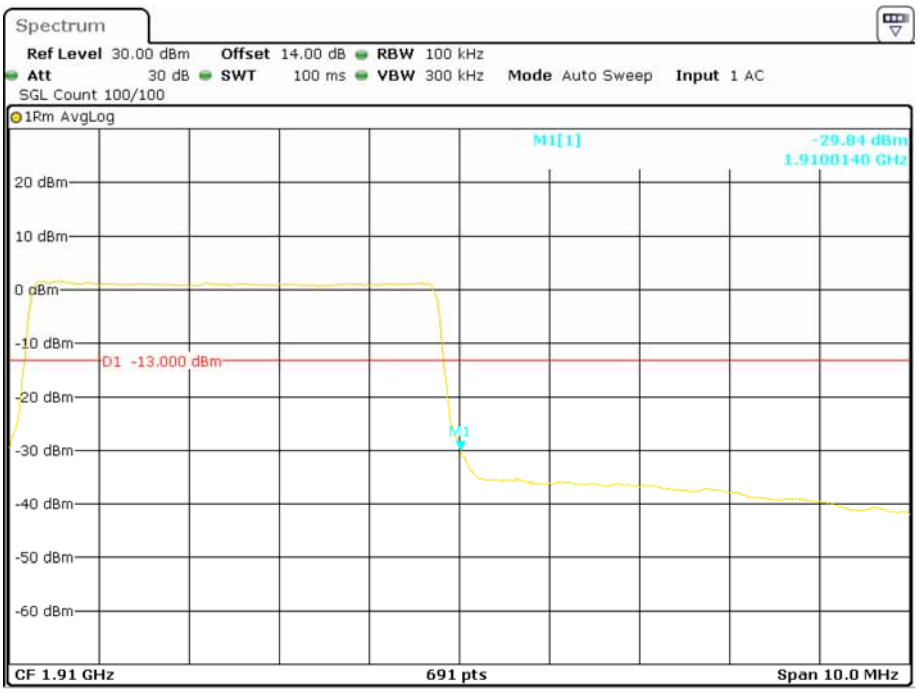
Date: 31.JUL.2015 15:36:21

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



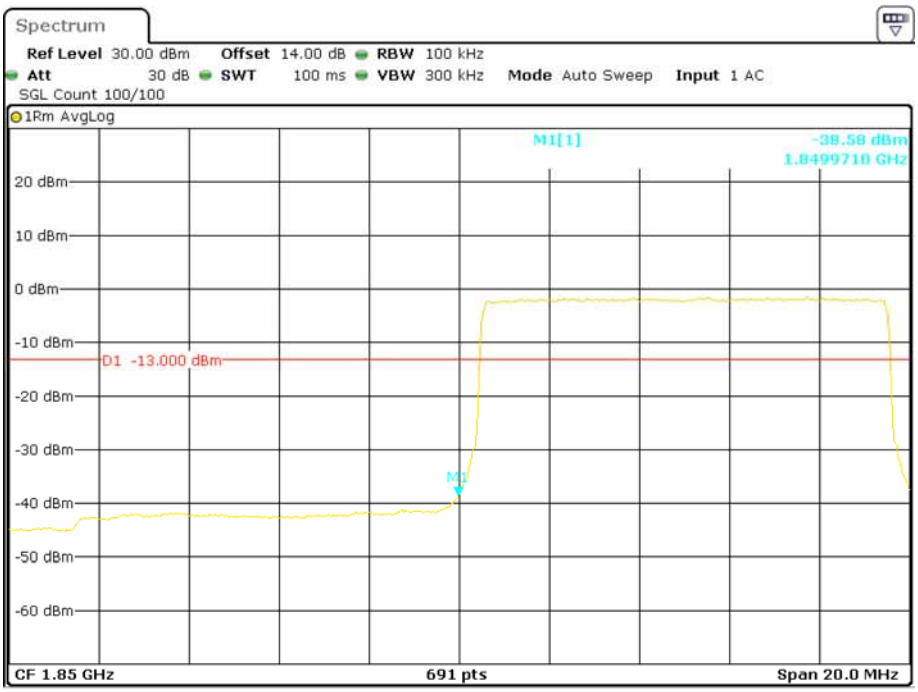
Date: 31.JUL.2015 15:31:38

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



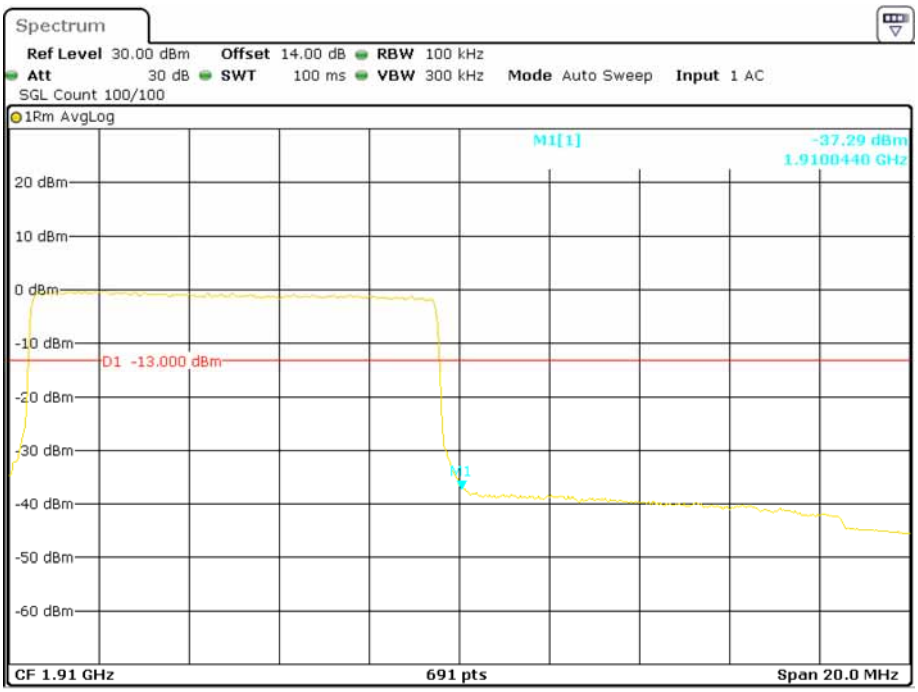
Date: 31.JUL.2015 15:36:58

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



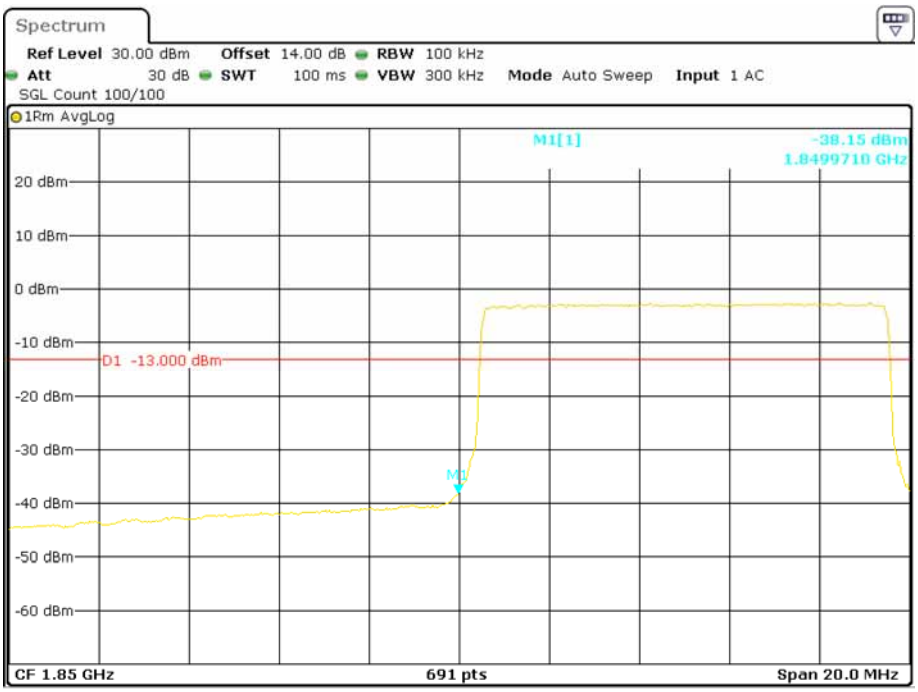
Date: 31.JUL.2015 15:30:27

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



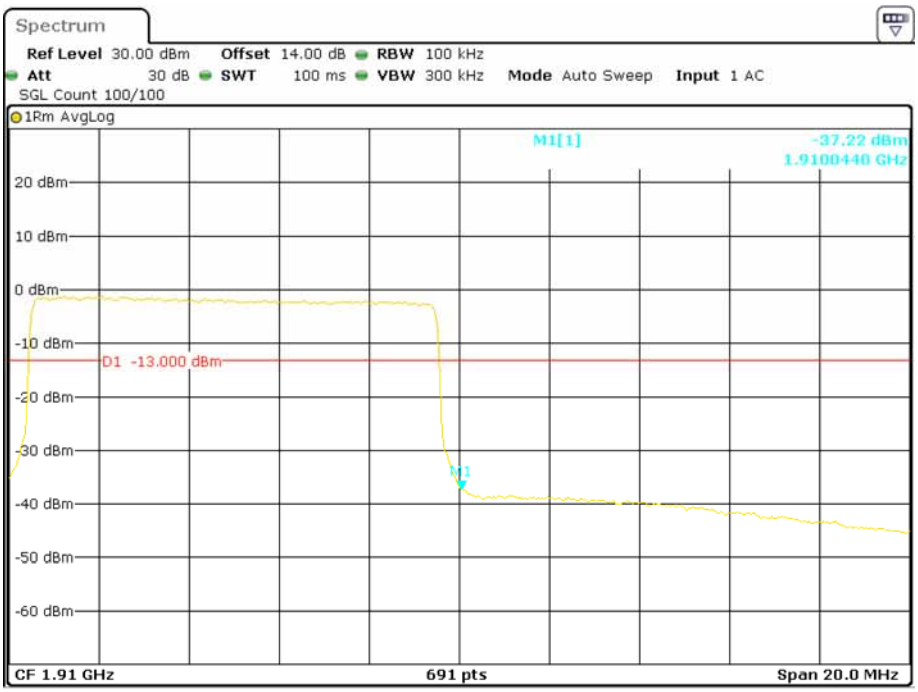
Date: 31.JUL.2015 15:09:22

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



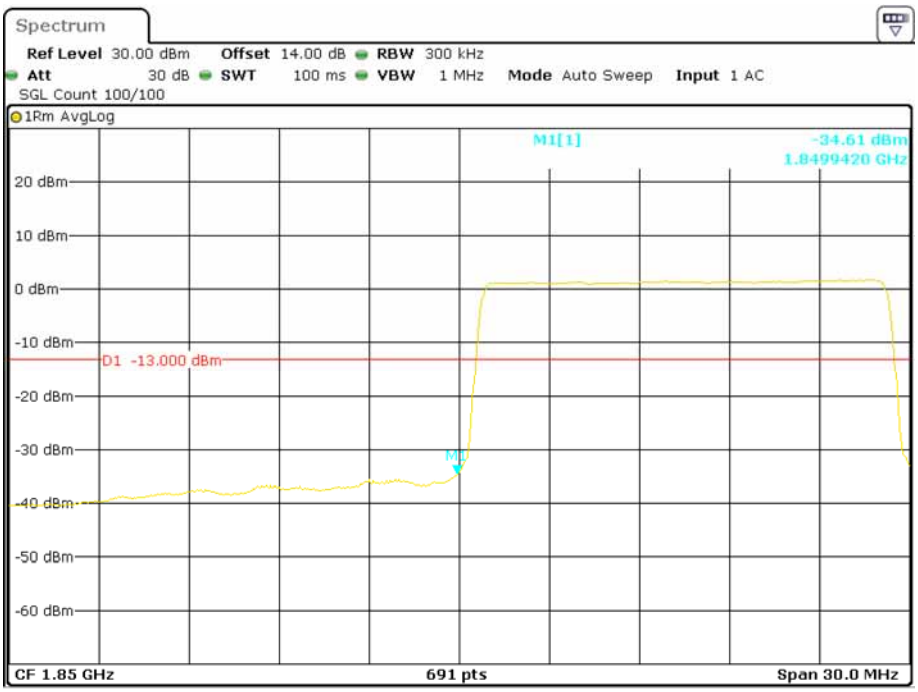
Date: 31.JUL.2015 15:29:52

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



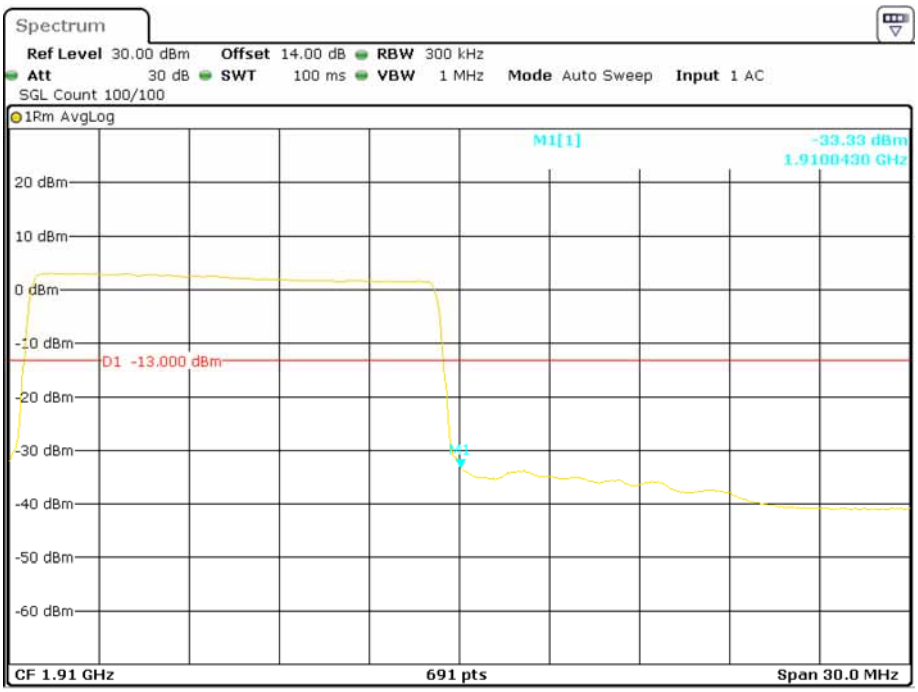
Date: 31.JUL.2015 15:10:14

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



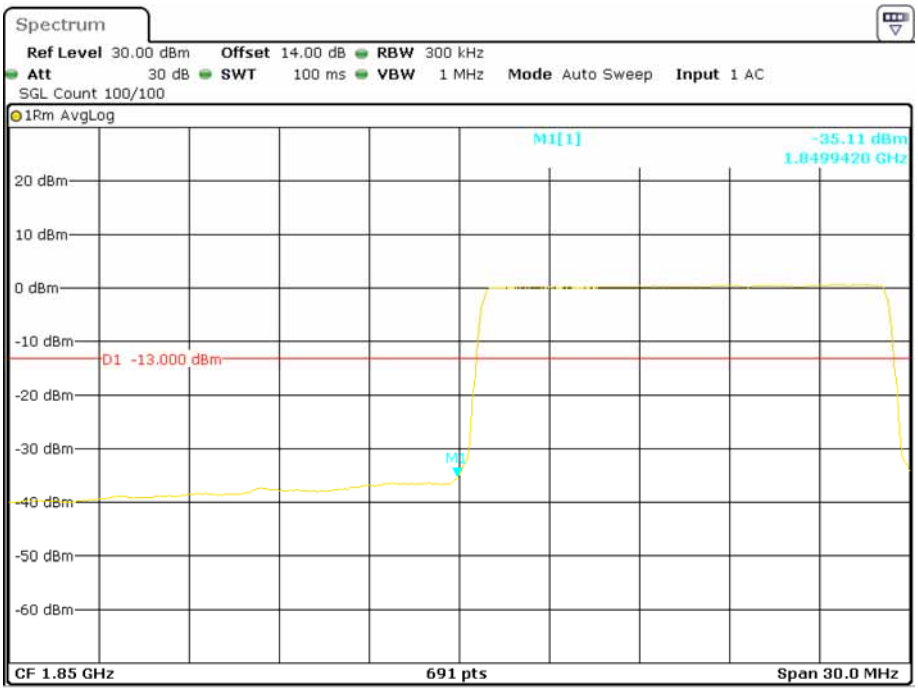
Date: 31.JUL.2015 14:47:12

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



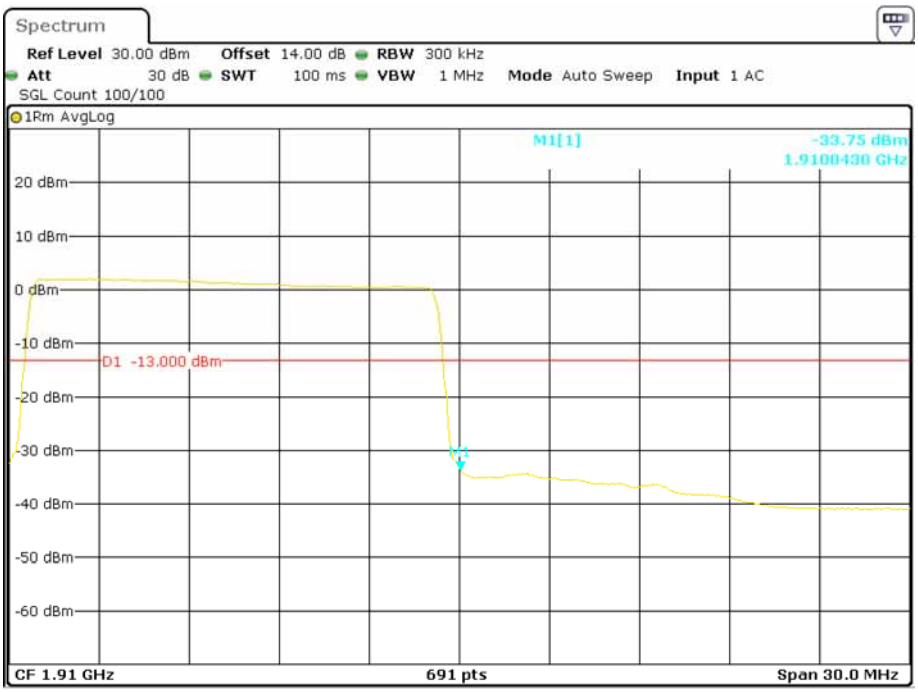
Date: 31.JUL.2015 15:07:51

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



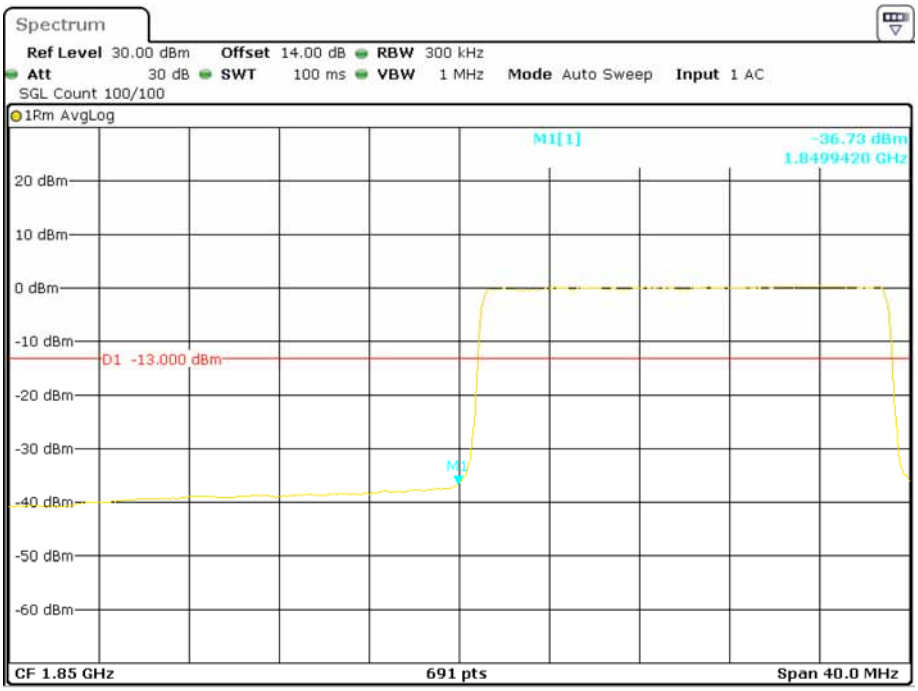
Date: 31.JUL.2015 15:02:15

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



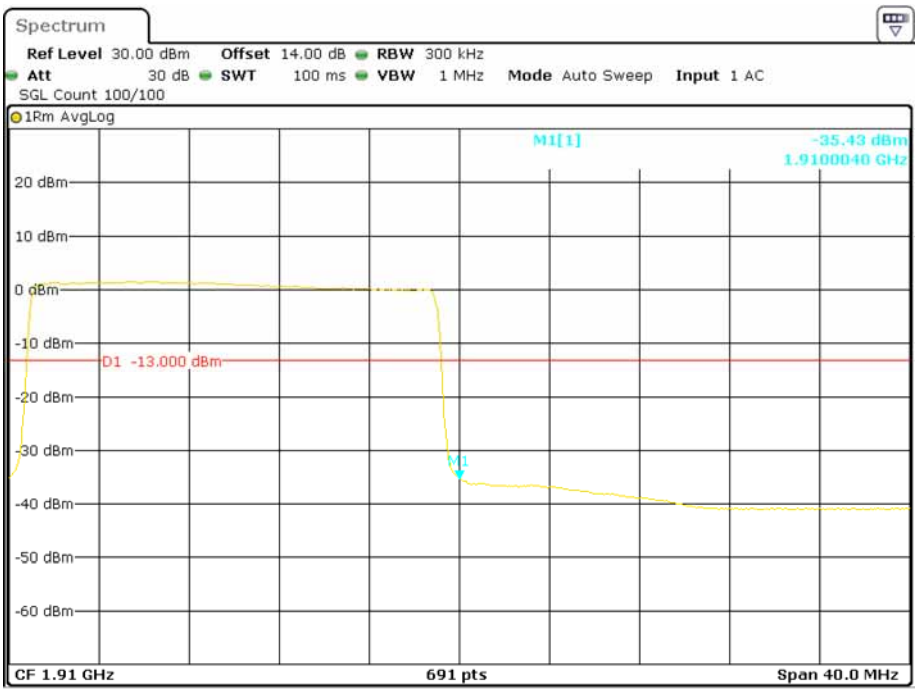
Date: 31.JUL.2015 15:07:17

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



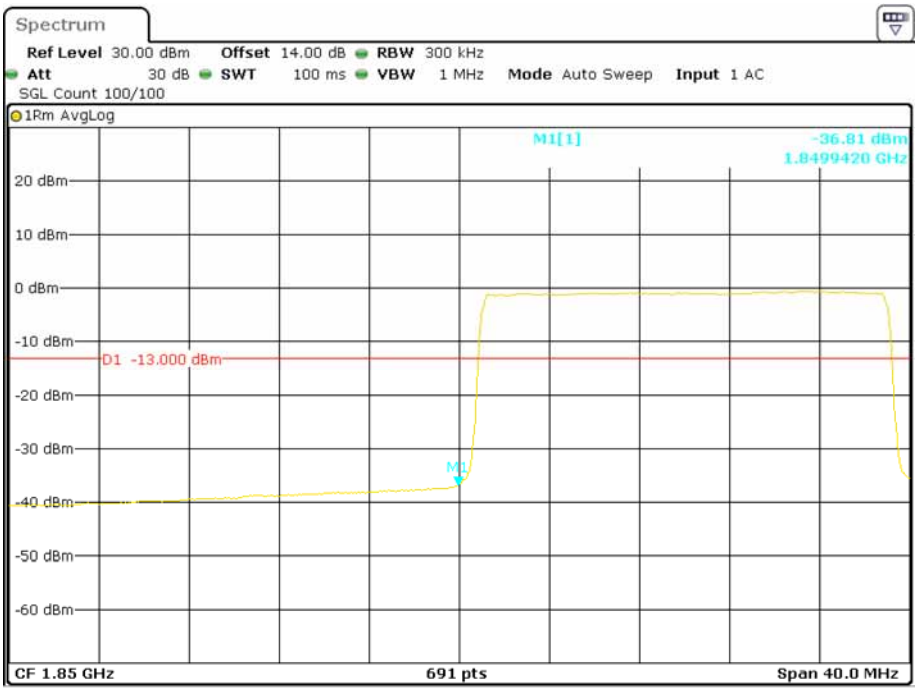
Date: 31.JUL.2015 14:45:17

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



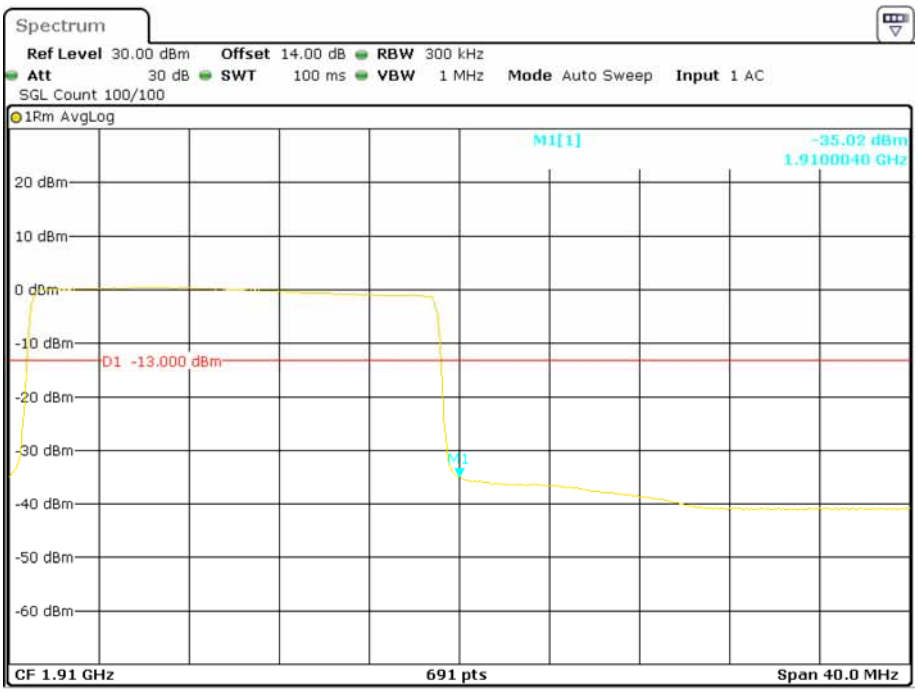
Date: 31.JUL.2015 14:38:06

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



Date: 31.JUL.2015 14:45:51

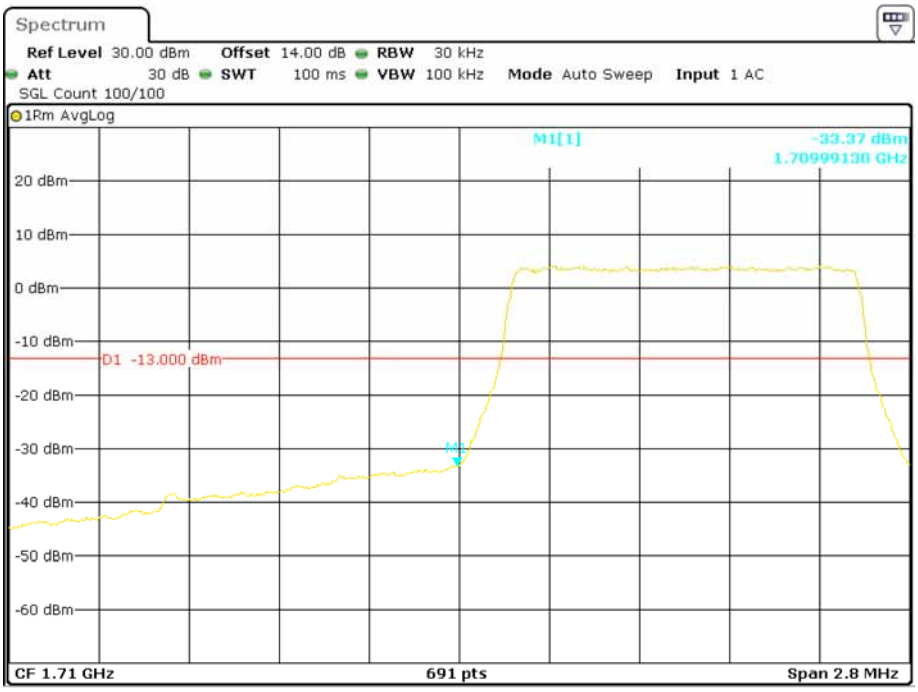
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 31.JUL.2015 14:36:46

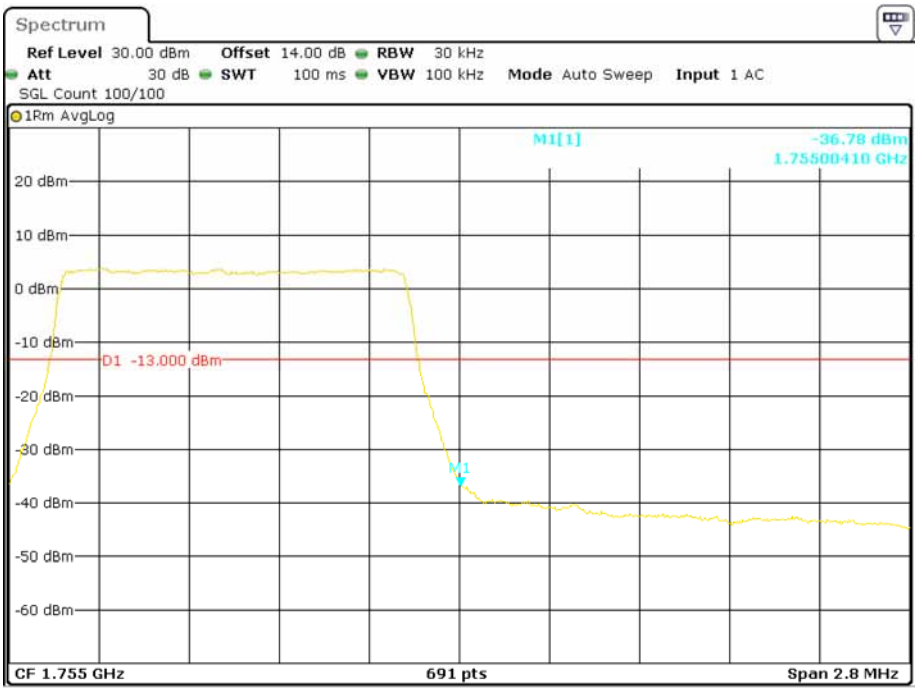
Band 4:

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



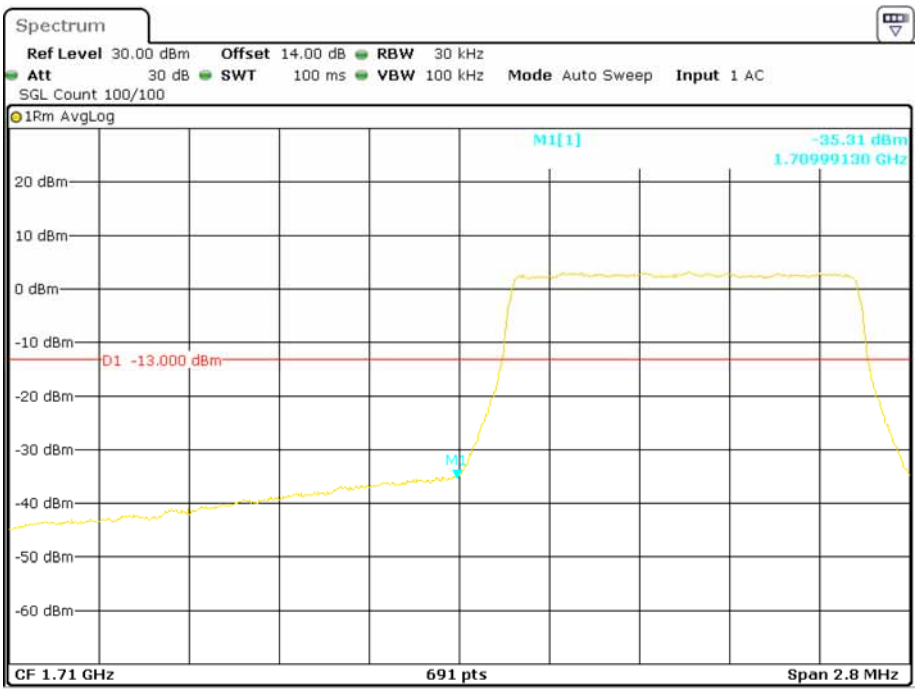
Date: 31.JUL.2015 17:17:05

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



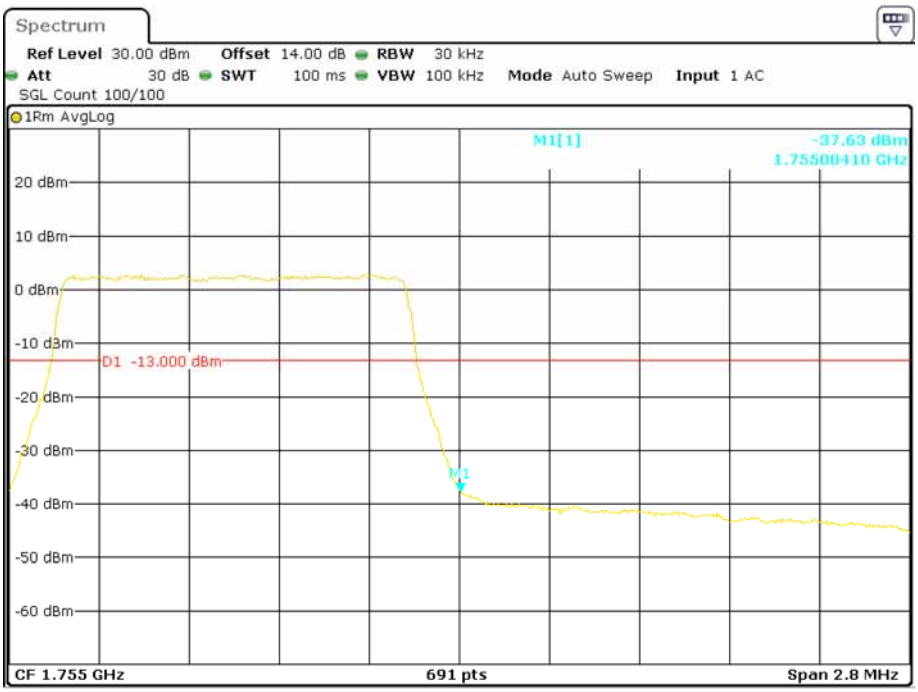
Date: 31.JUL.2015 17:31:37

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



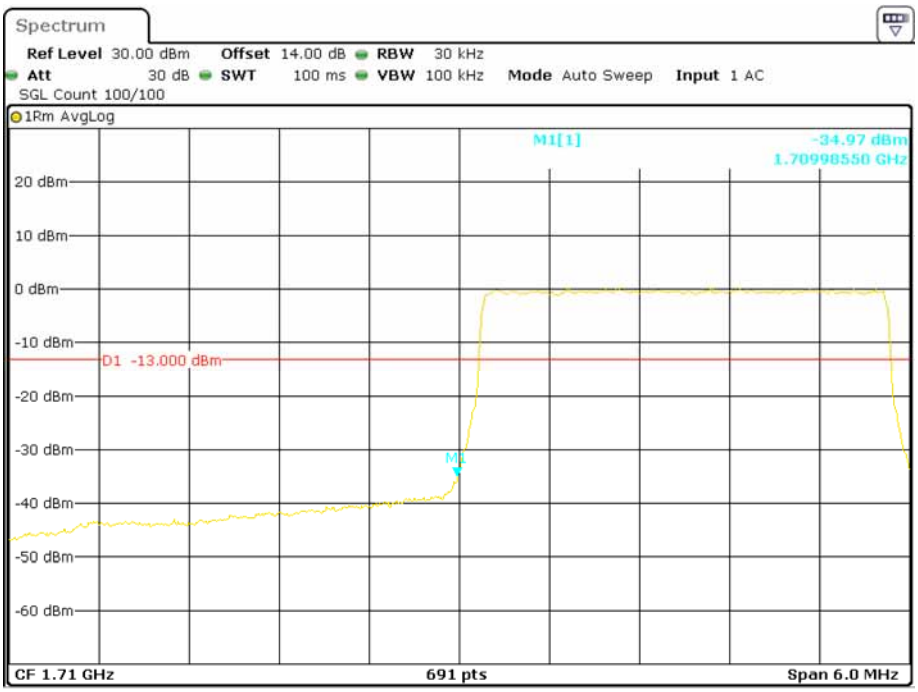
Date: 31.JUL.2015 17:17:41

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



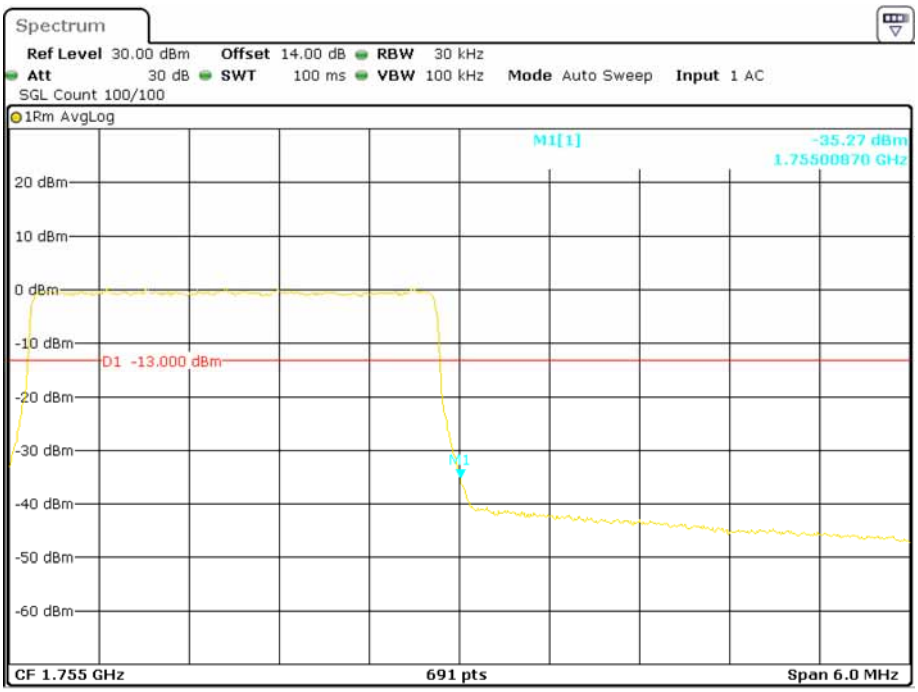
Date: 31.JUL.2015 17:30:55

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



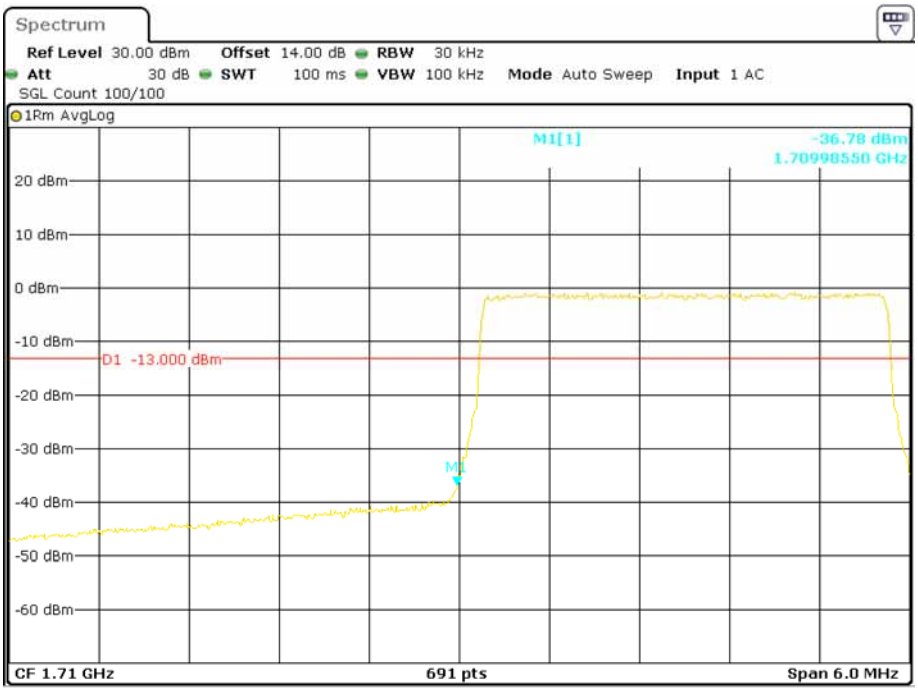
Date: 31.JUL.2015 17:02:24

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



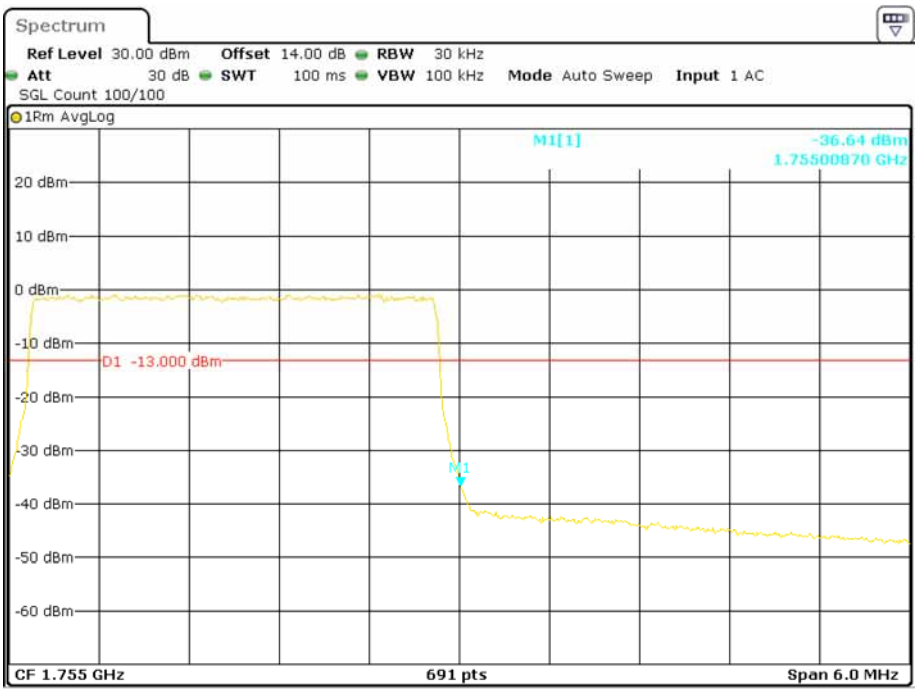
Date: 31.JUL.2015 17:13:27

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



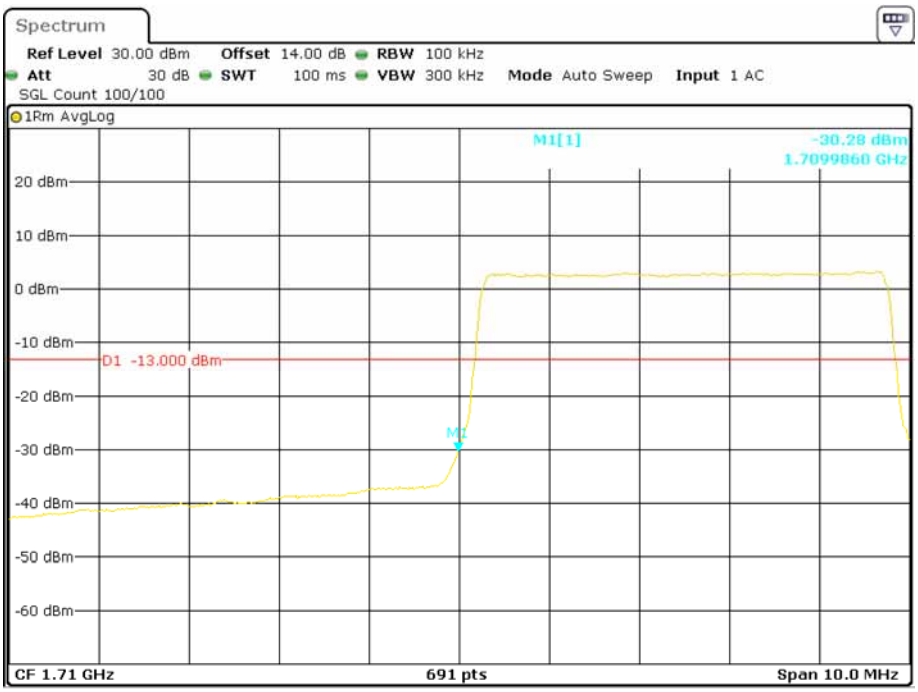
Date: 31.JUL.2015 17:01:39

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



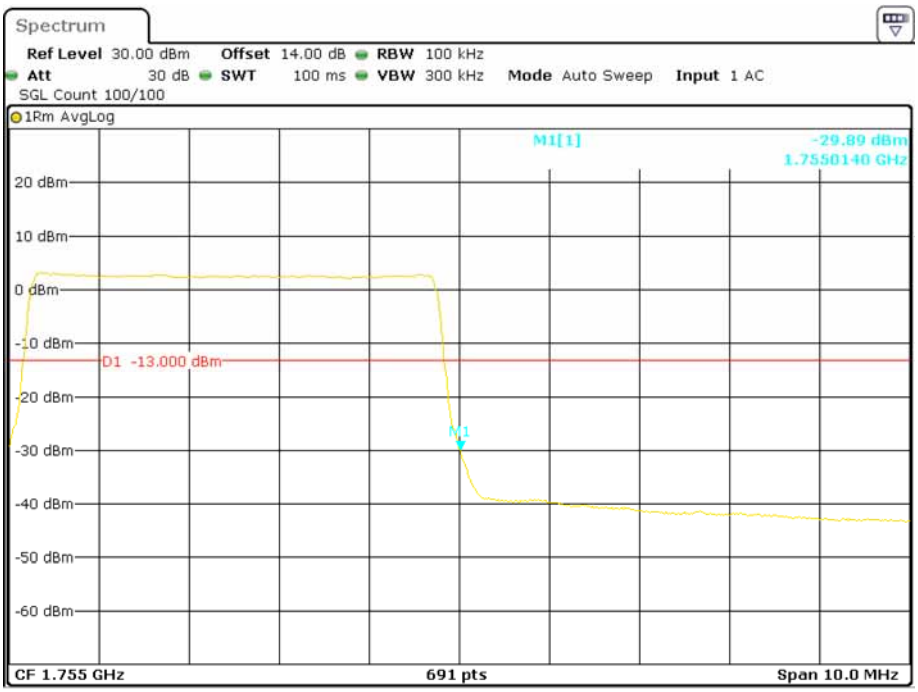
Date: 31.JUL.2015 17:14:00

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



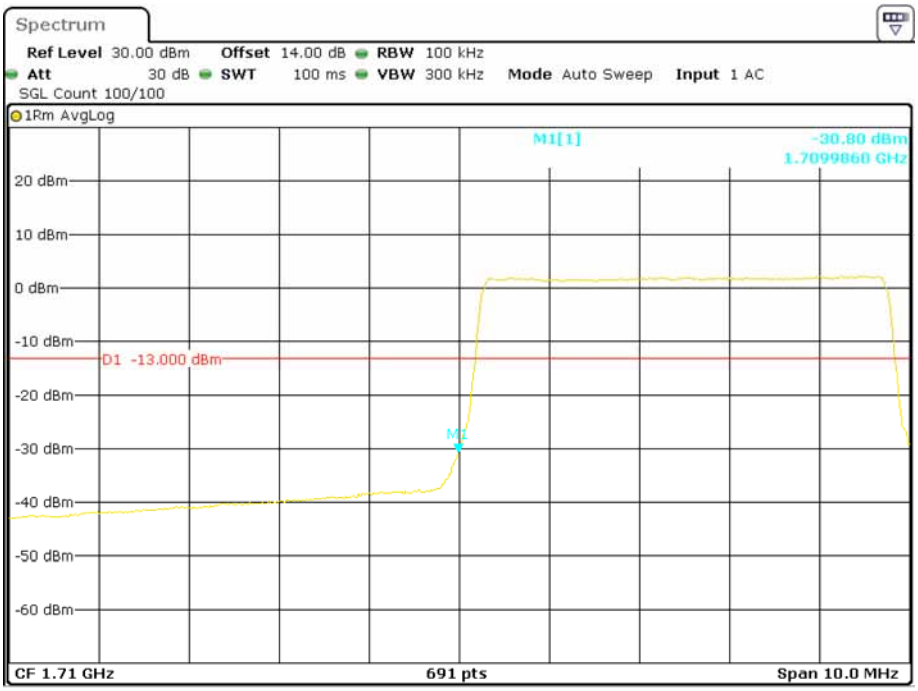
Date: 31.JUL.2015 16:59:44

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



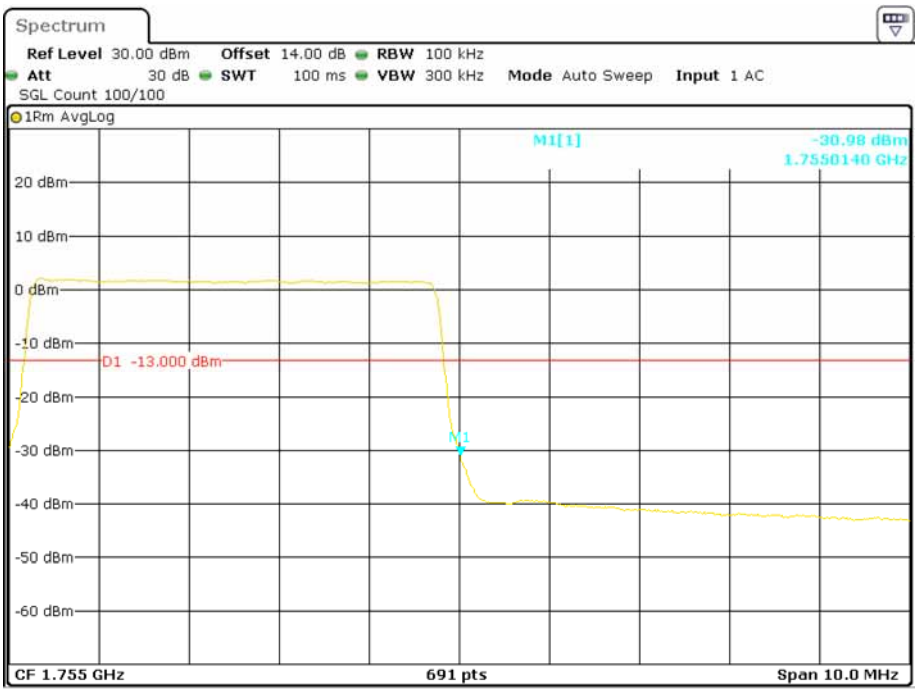
Date: 31.JUL.2015 16:54:18

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



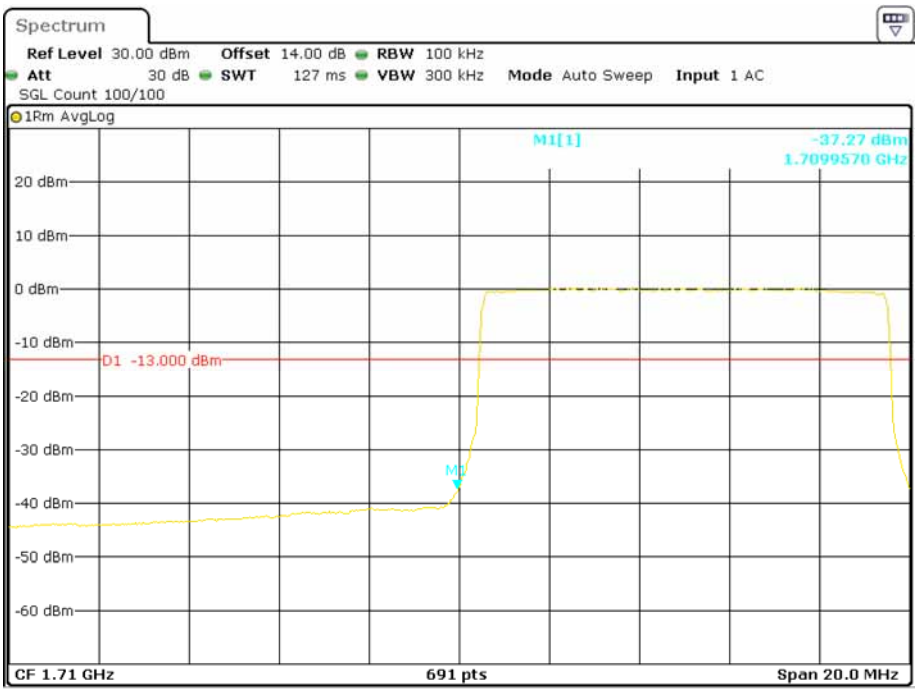
Date: 31.JUL.2015 17:00:21

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



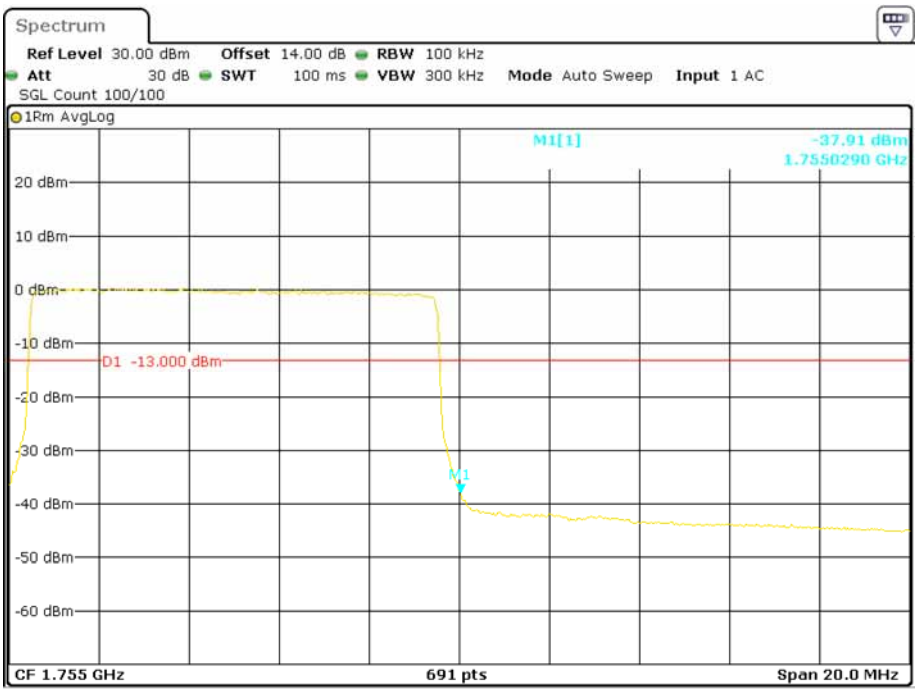
Date: 31.JUL.2015 16:52:28

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



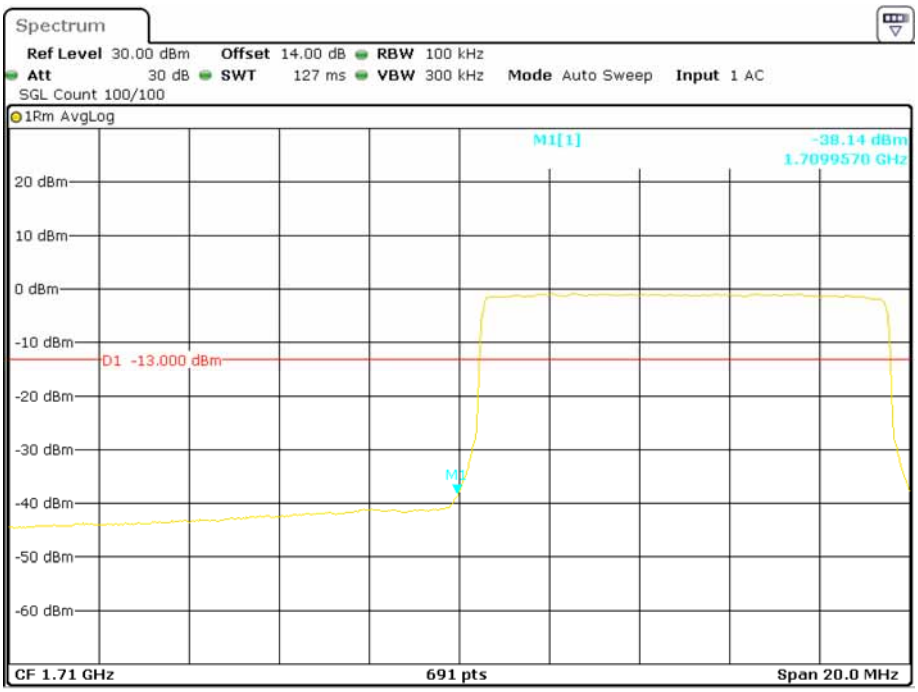
Date: 31.JUL.2015 16:09:32

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



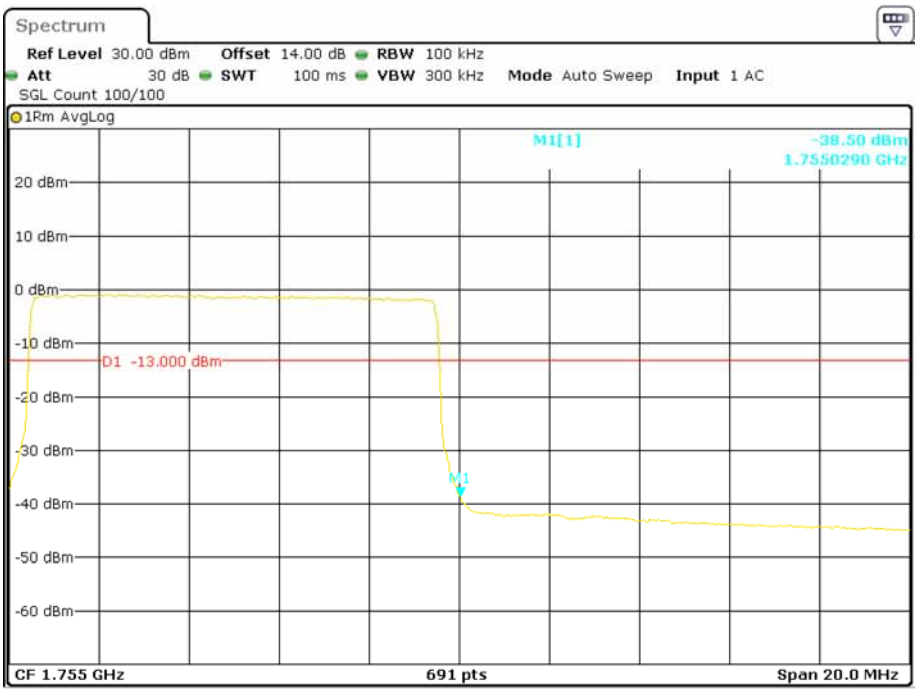
Date: 31.JUL.2015 16:17:05

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



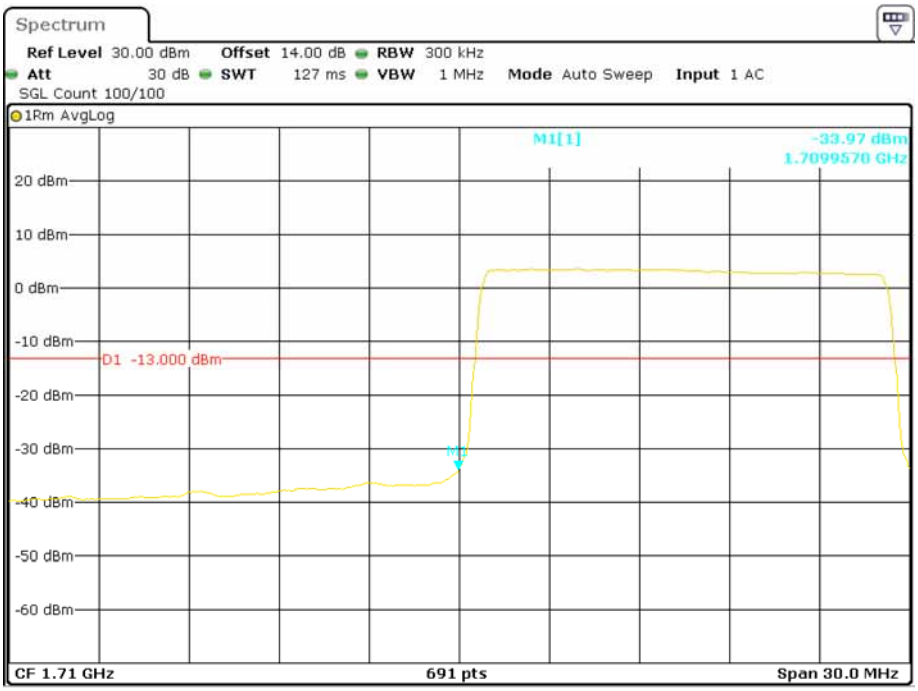
Date: 31.JUL.2015 16:10:23

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



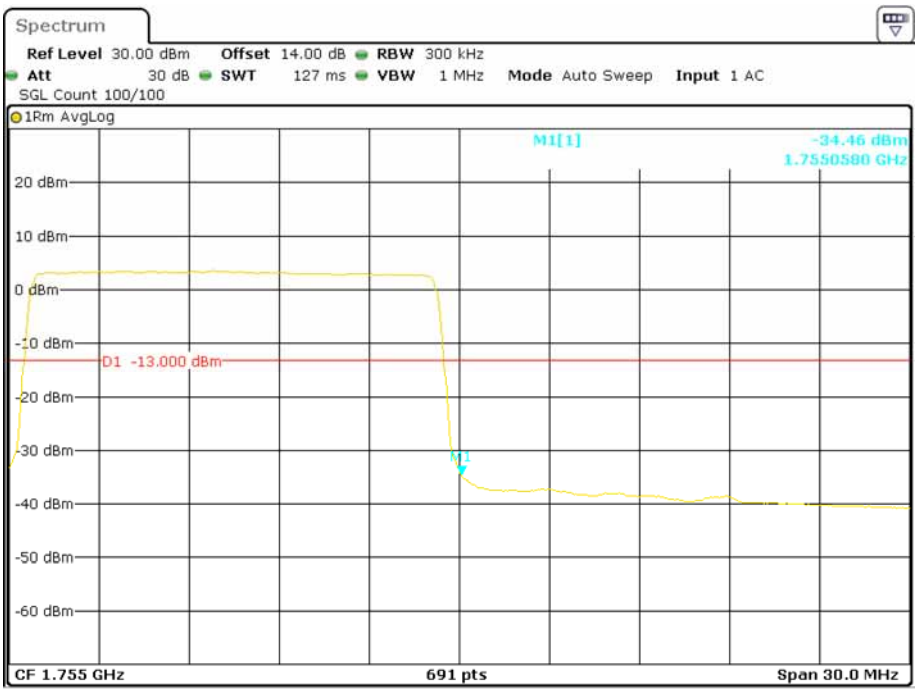
Date: 31.JUL.2015 16:16:23

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



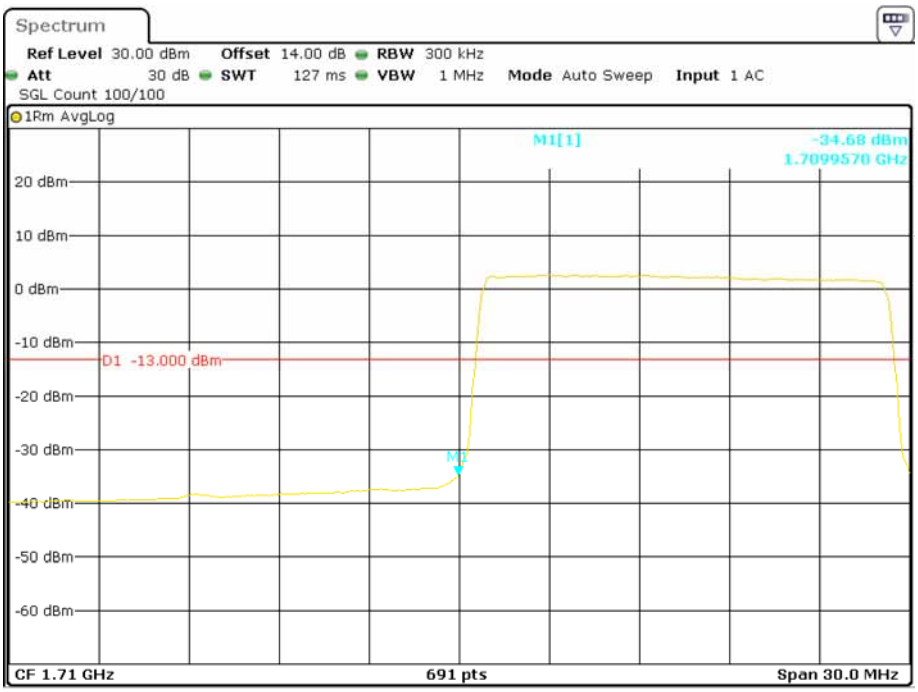
Date: 31.JUL.2015 16:08:11

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



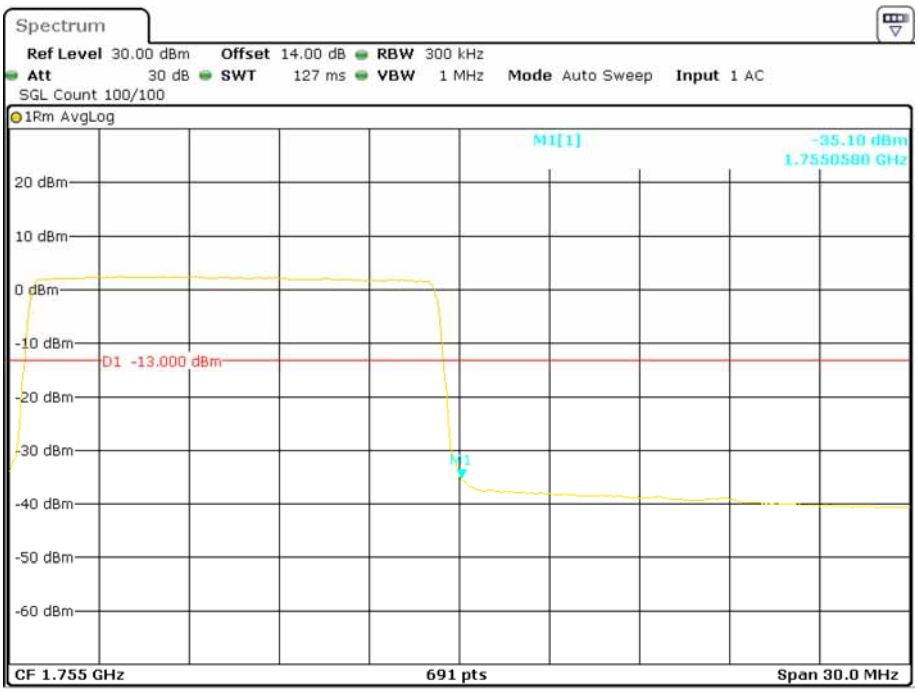
Date: 31.JUL.2015 15:59:23

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



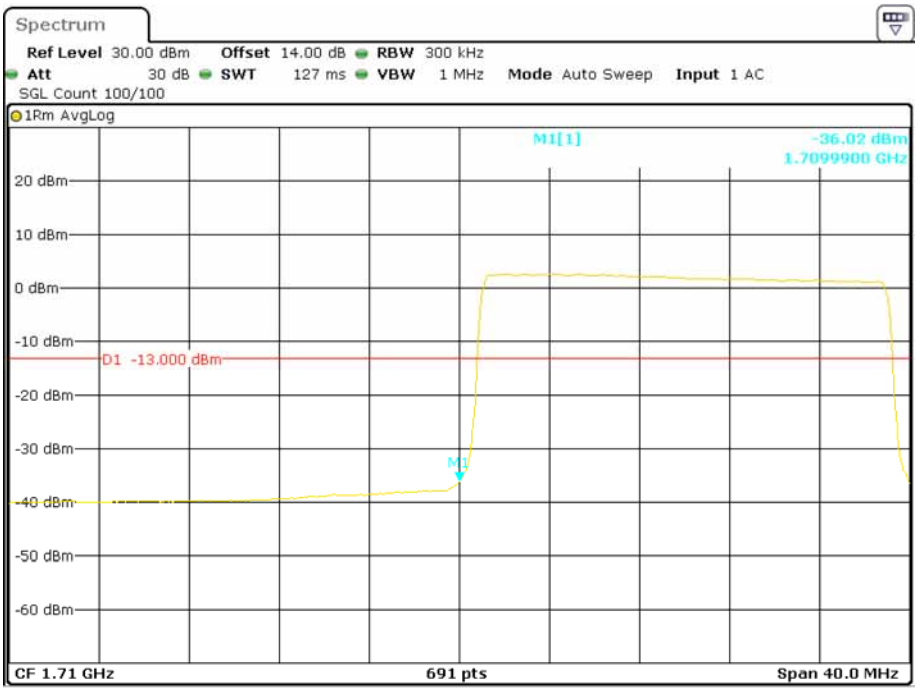
Date: 31.JUL.2015 16:07:32

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



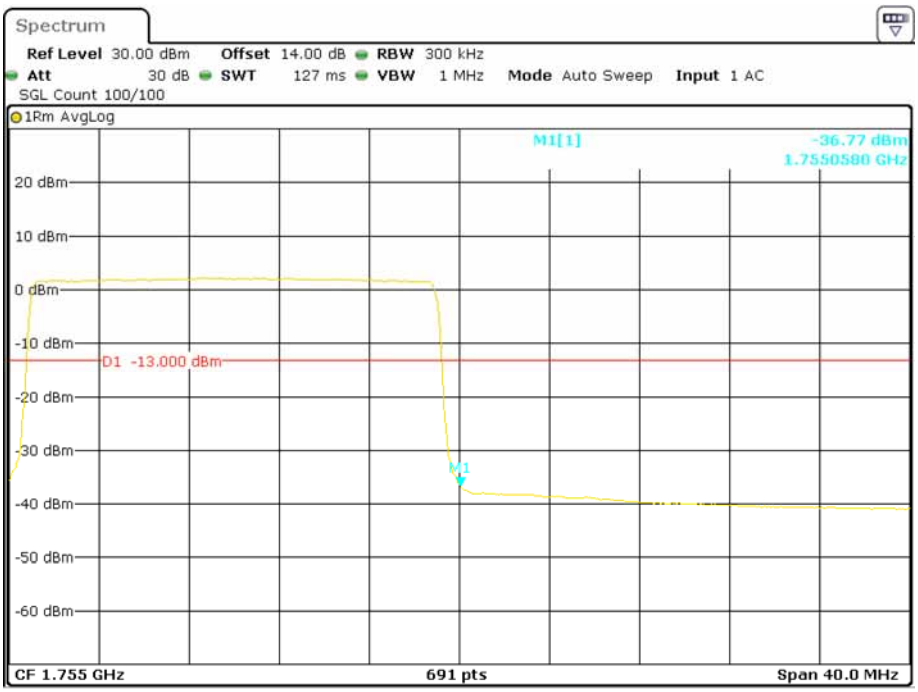
Date: 31.JUL.2015 16:01:42

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



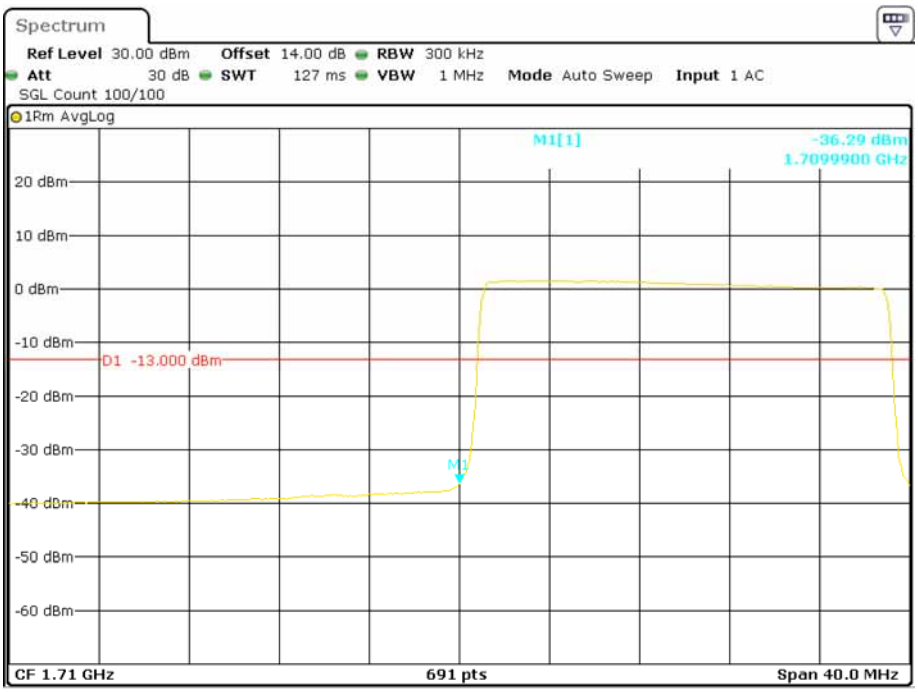
Date: 31.JUL.2015 15:52:16

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



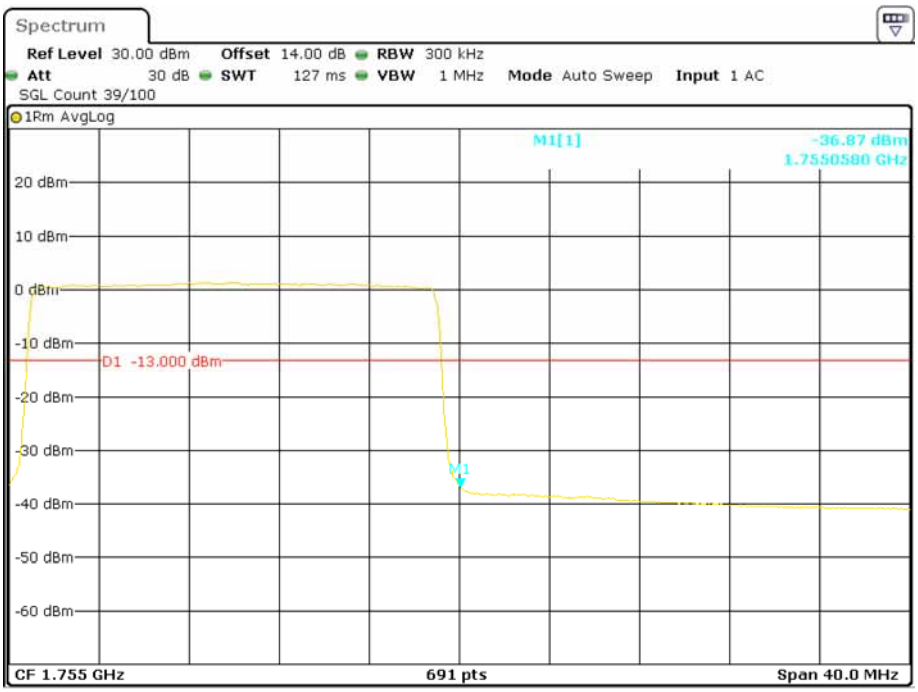
Date: 31.JUL.2015 15:57:22

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



Date: 31.JUL.2015 15:50:31

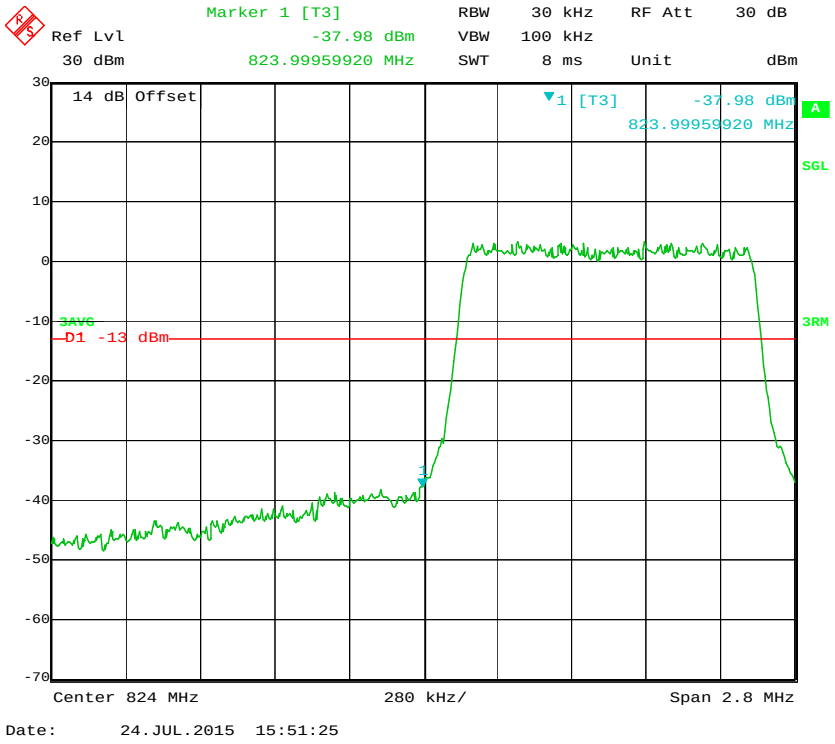
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



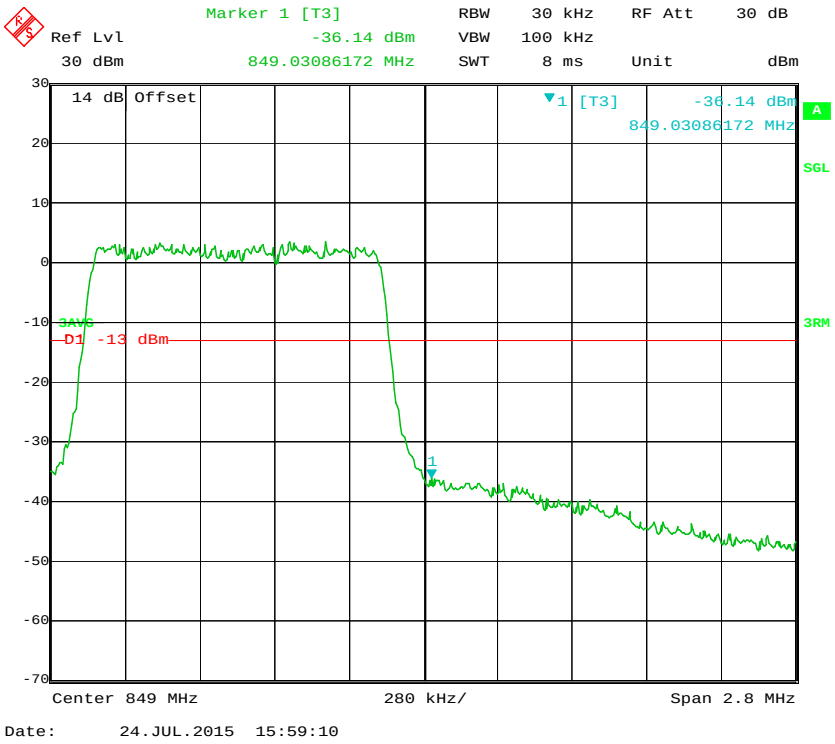
Date: 31.JUL.2015 15:57:46

Band 5:

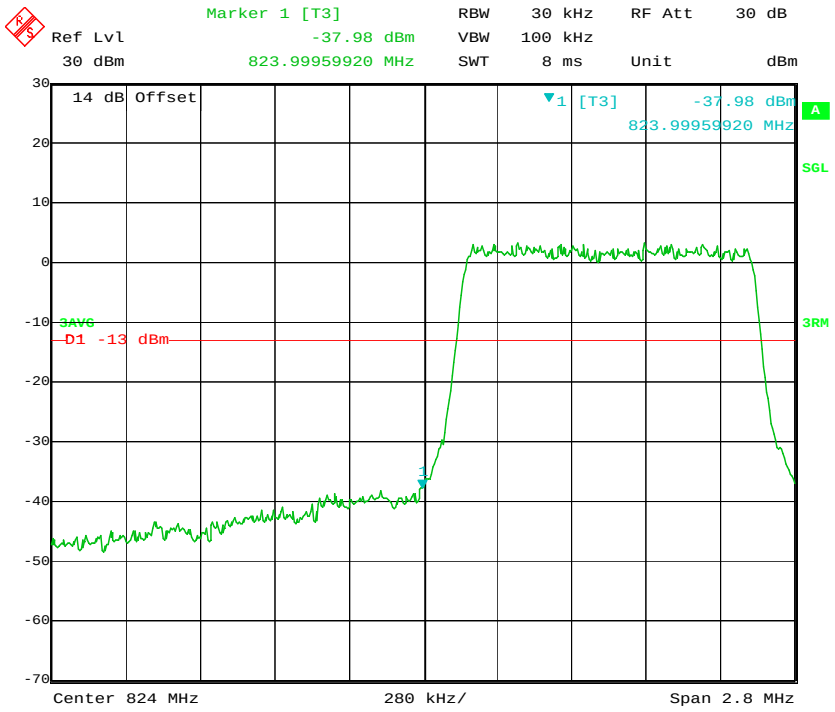
QPSK (1.4 MHz, FULL RB) - Left Band Edge



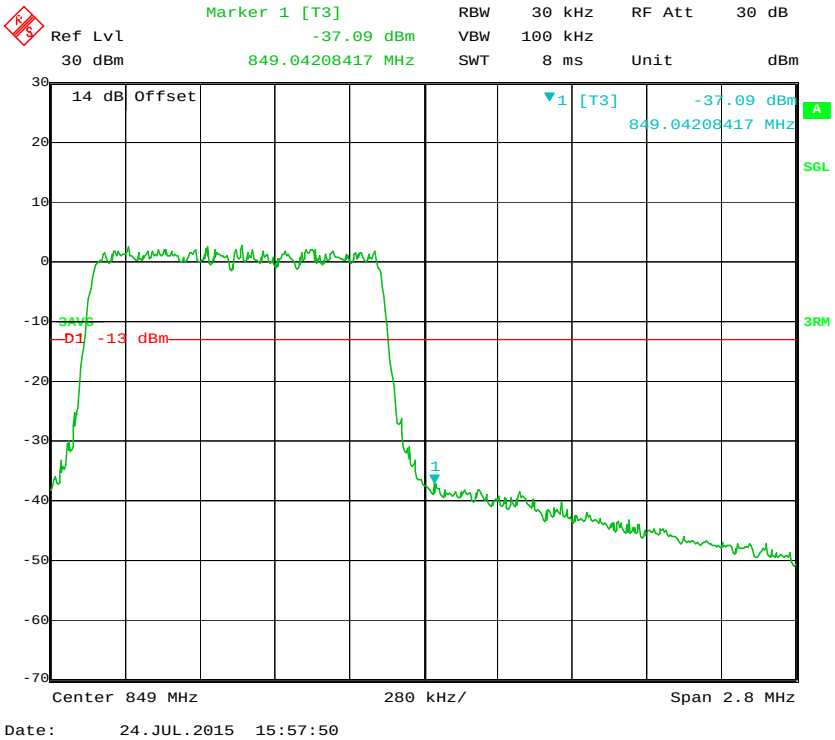
QPSK (1.4 MHz, FULL RB) - Right Band Edge



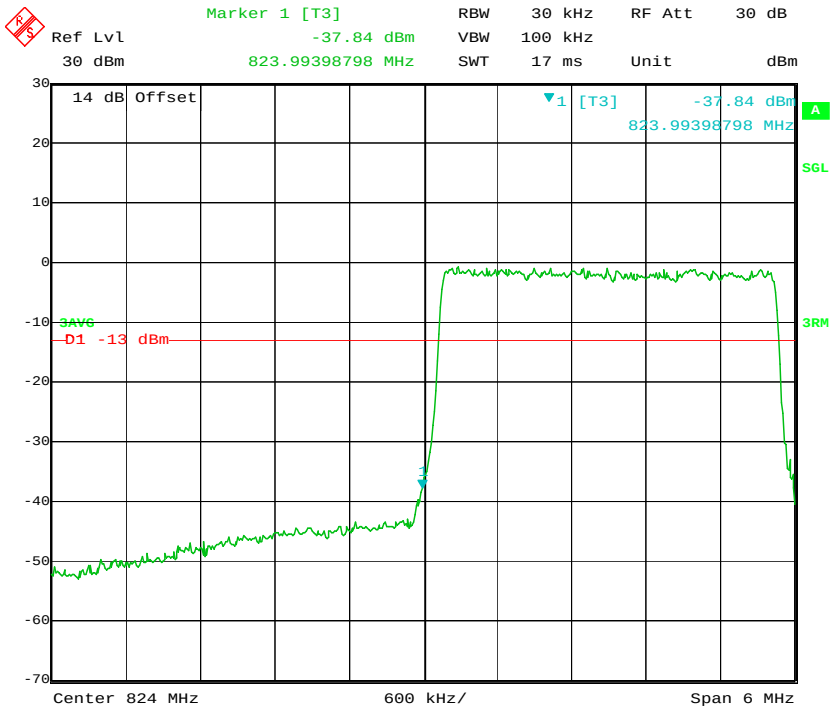
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



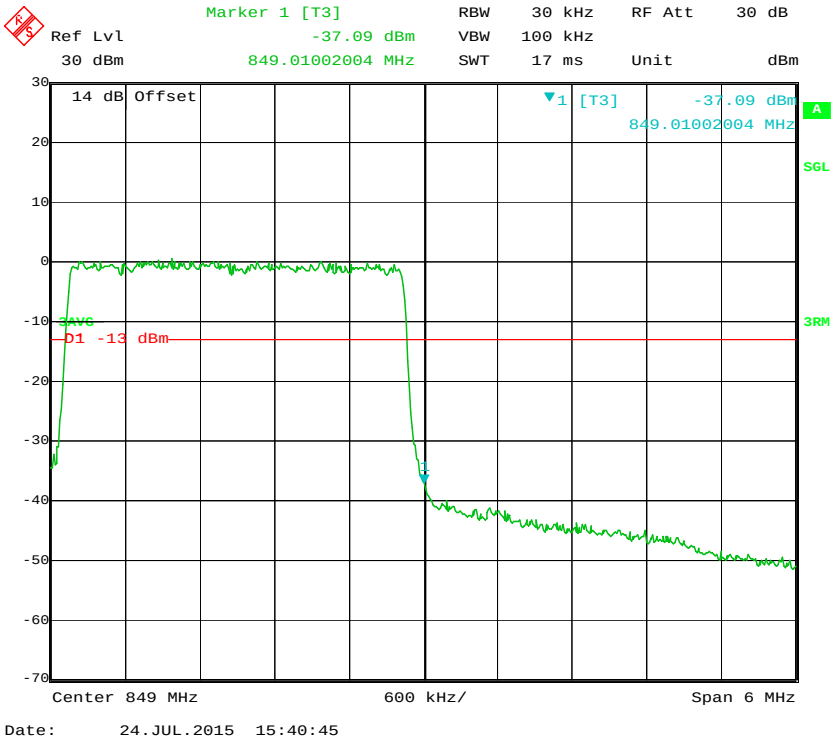
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



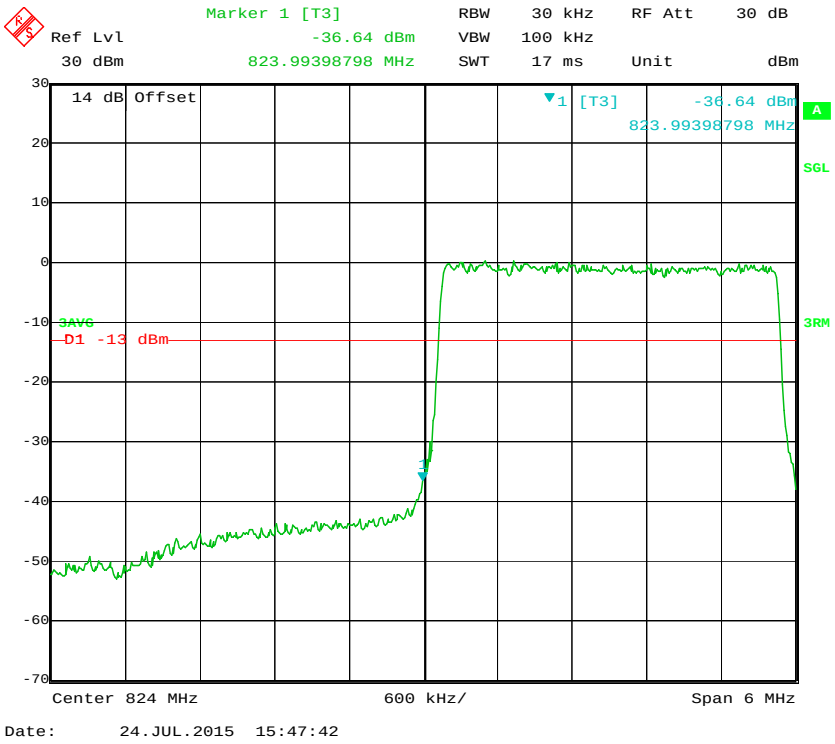
QPSK (3.0 MHz, FULL RB) - Left Band Edge



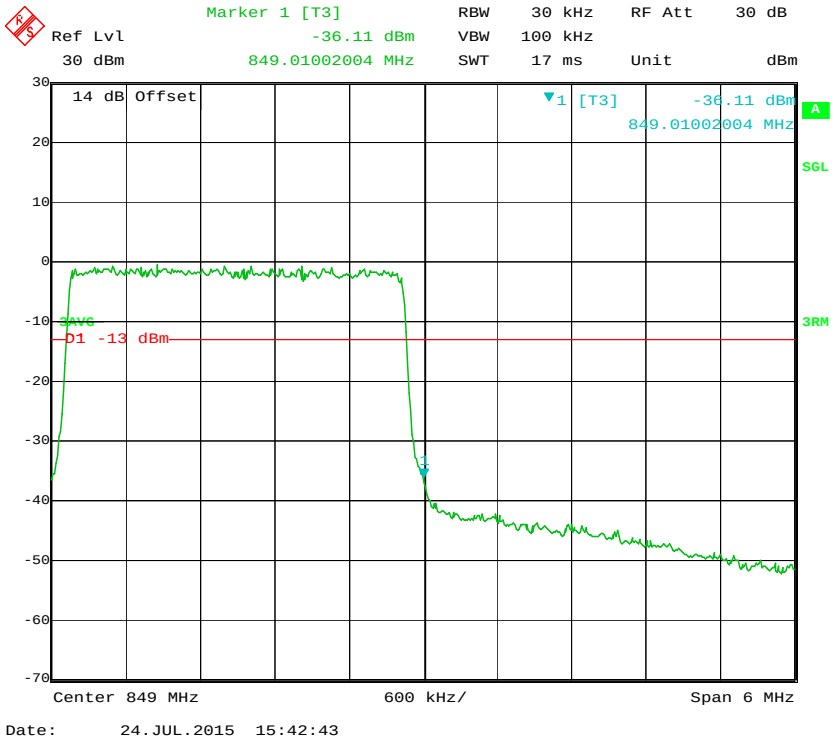
QPSK (3.0 MHz, FULL RB) - Right Band Edge



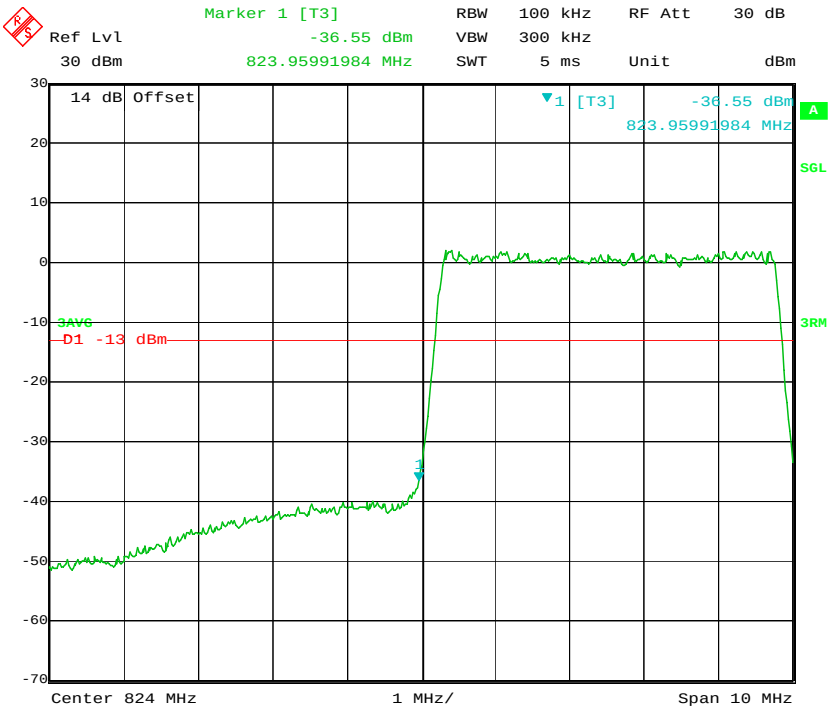
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



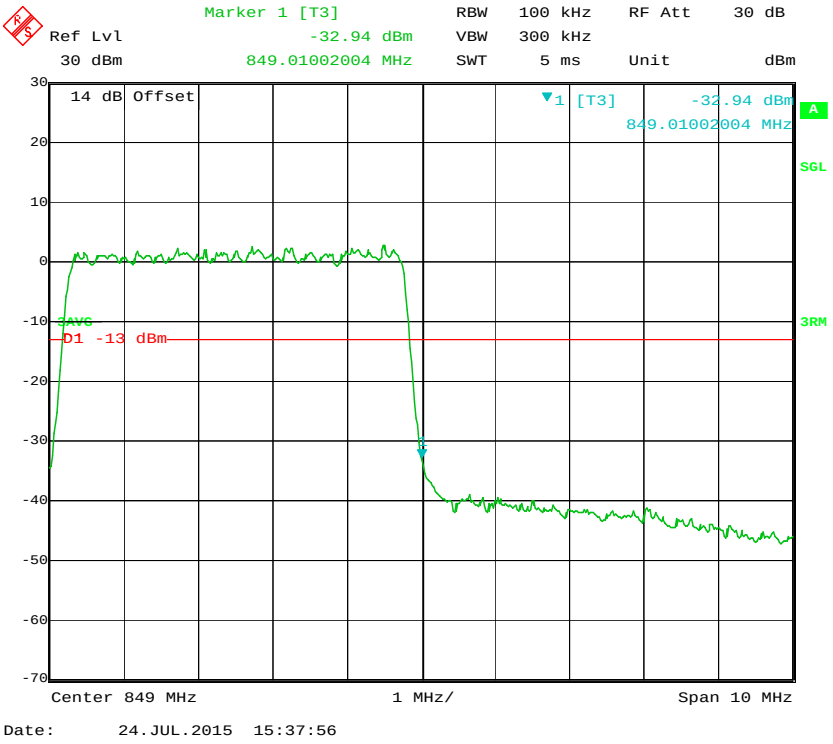
16-QAM (3.0 MHz, FULL RB) - Right Band Edge



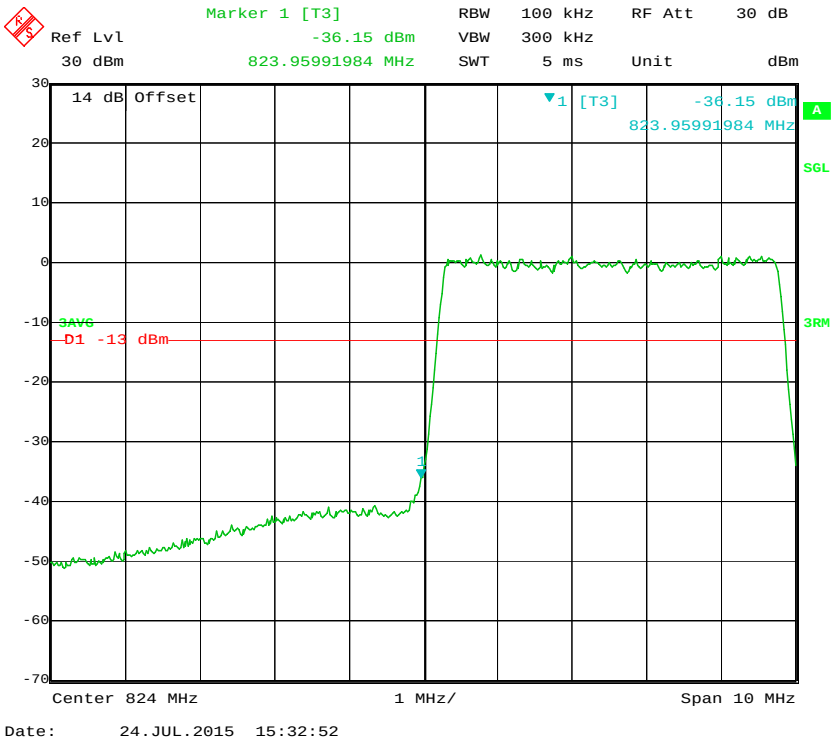
QPSK (5.0 MHz, FULL RB) - Left Band Edge



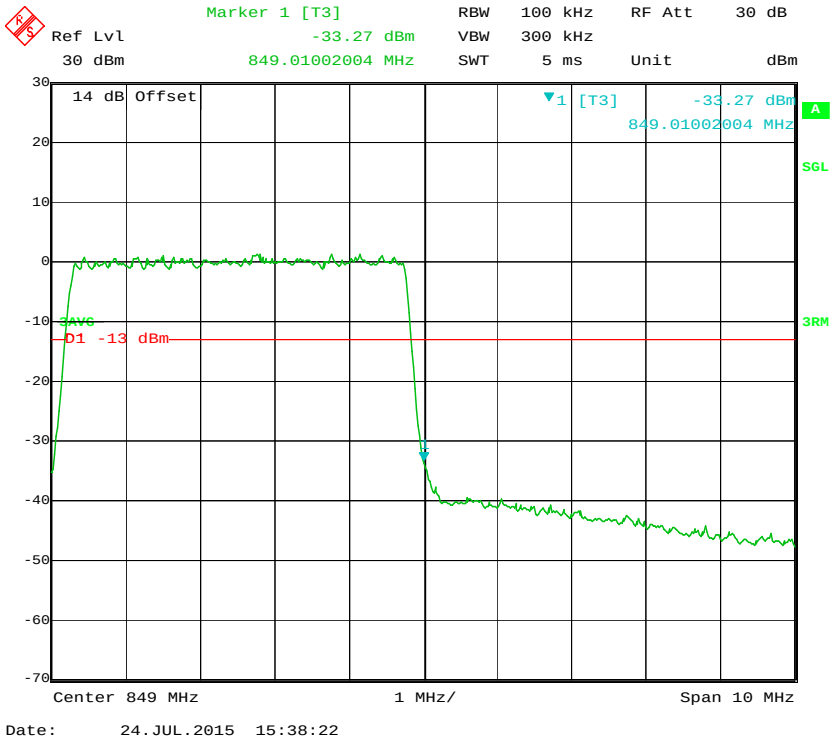
QPSK (5.0 MHz, FULL RB) - Right Band Edge



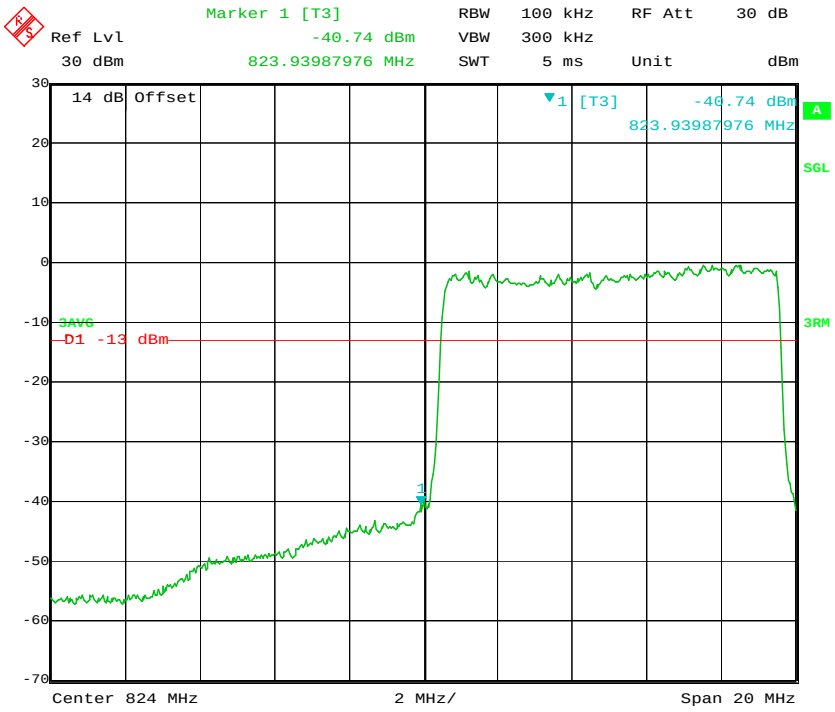
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



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

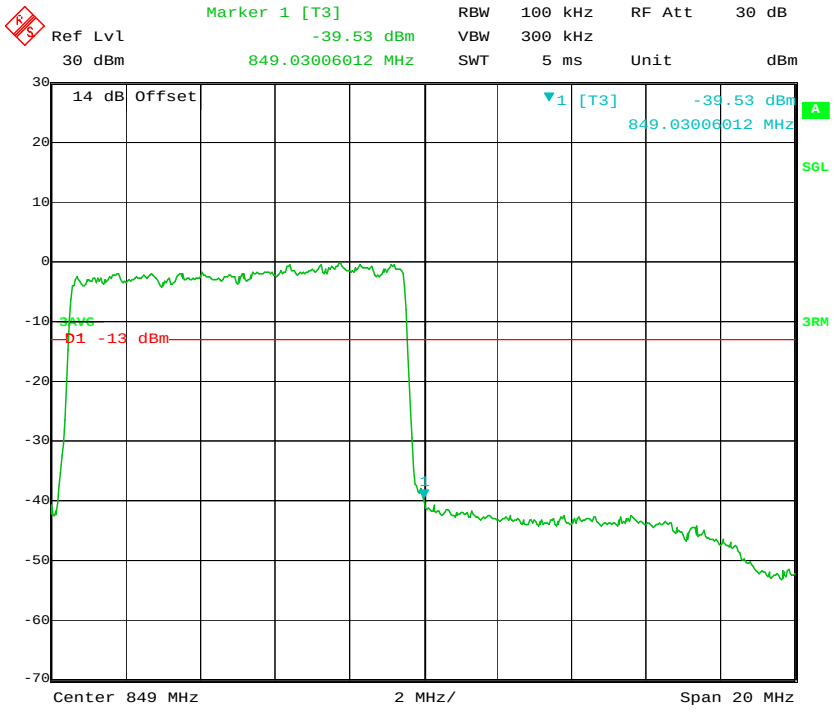


QPSK (10.0 MHz, FULL RB) - Left Band Edge



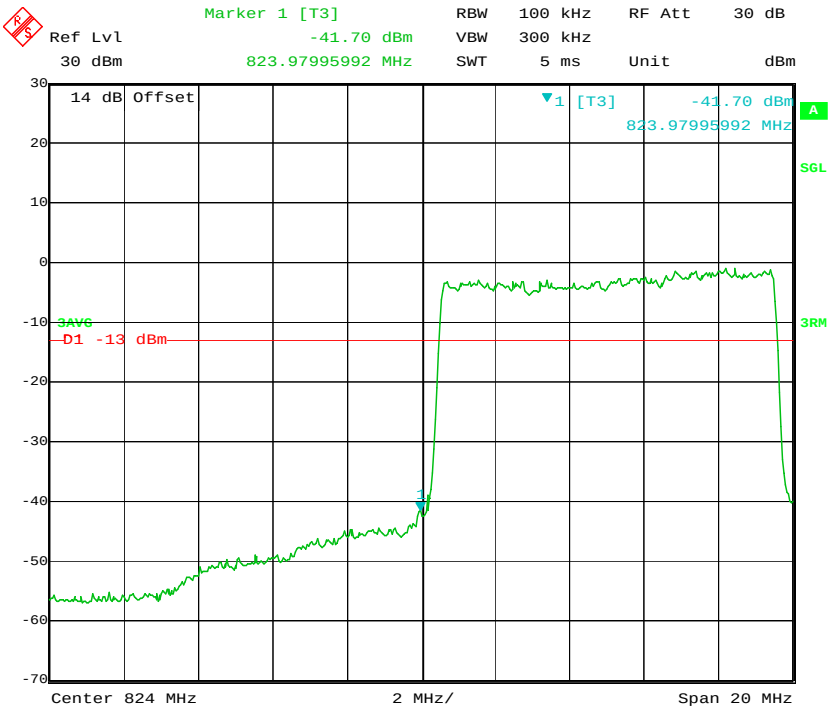
Date: 24.JUL.2015 15:19:33

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

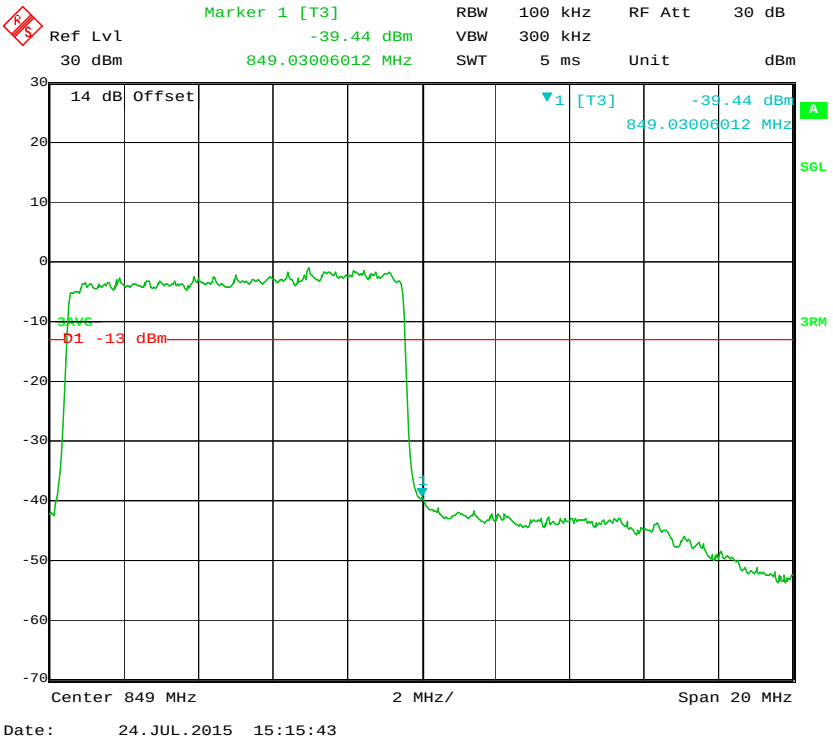


Date: 24.JUL.2015 15:15:21

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

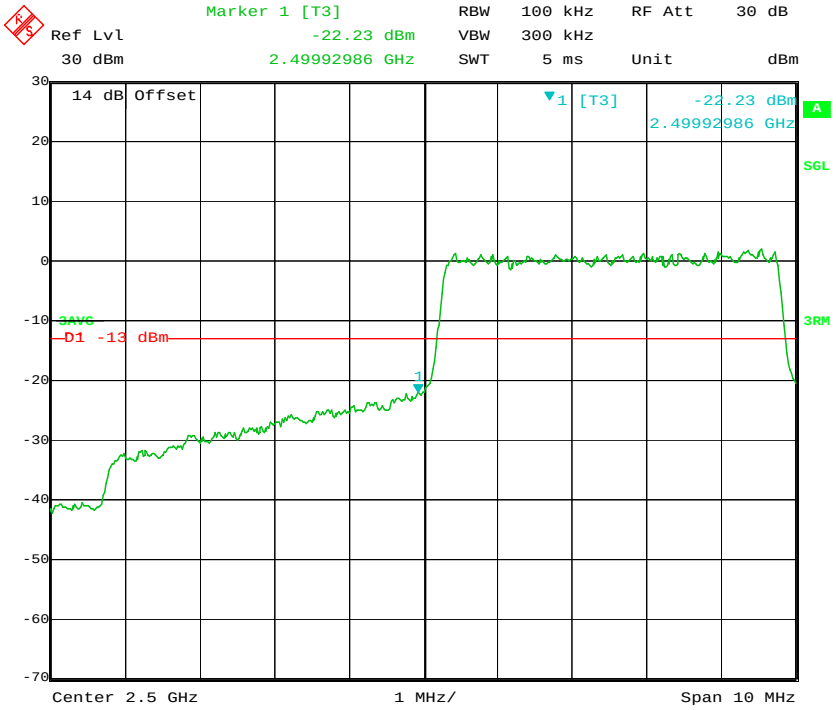


16-QAM (10.0 MHz, FULL RB) - Right Band Edge



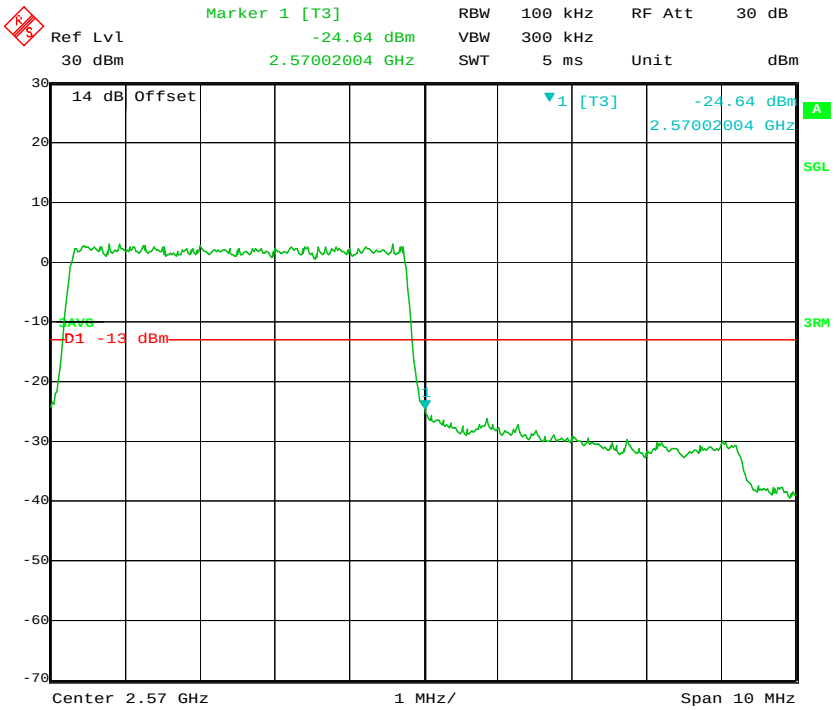
Band 7:

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



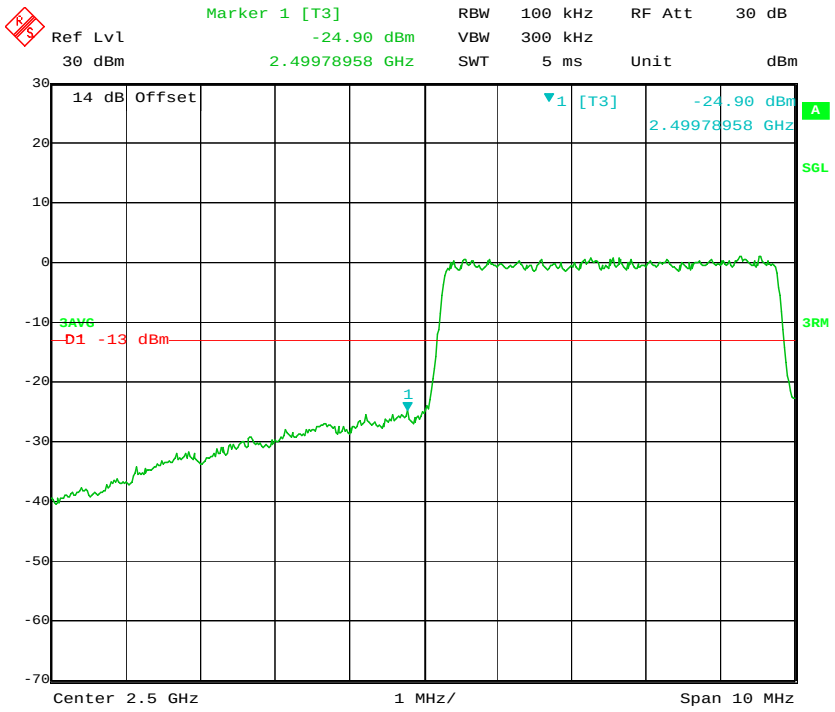
Date: 24.JUL.2015 15:07:58

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



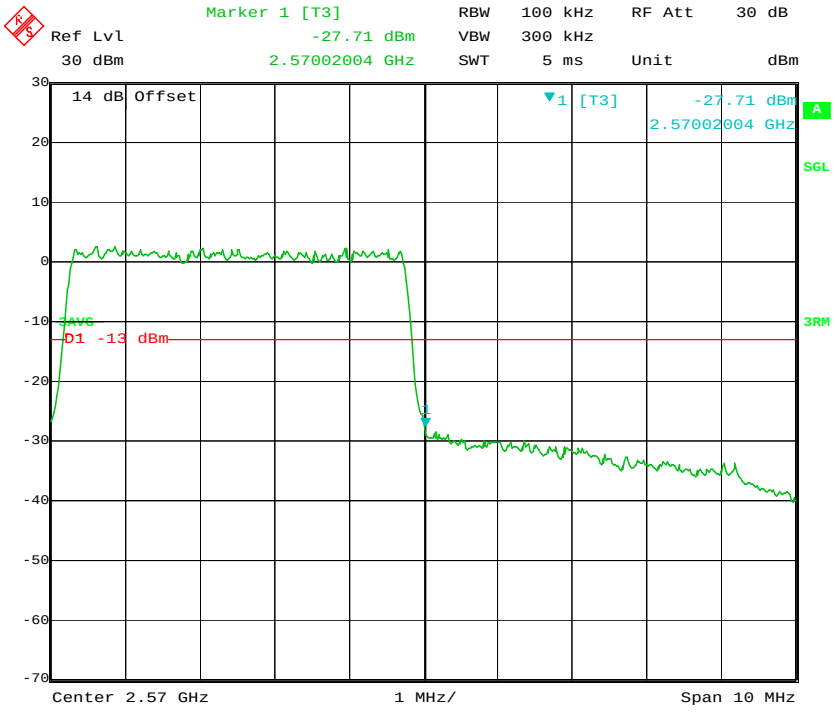
Date: 24.JUL.2015 15:06:53

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



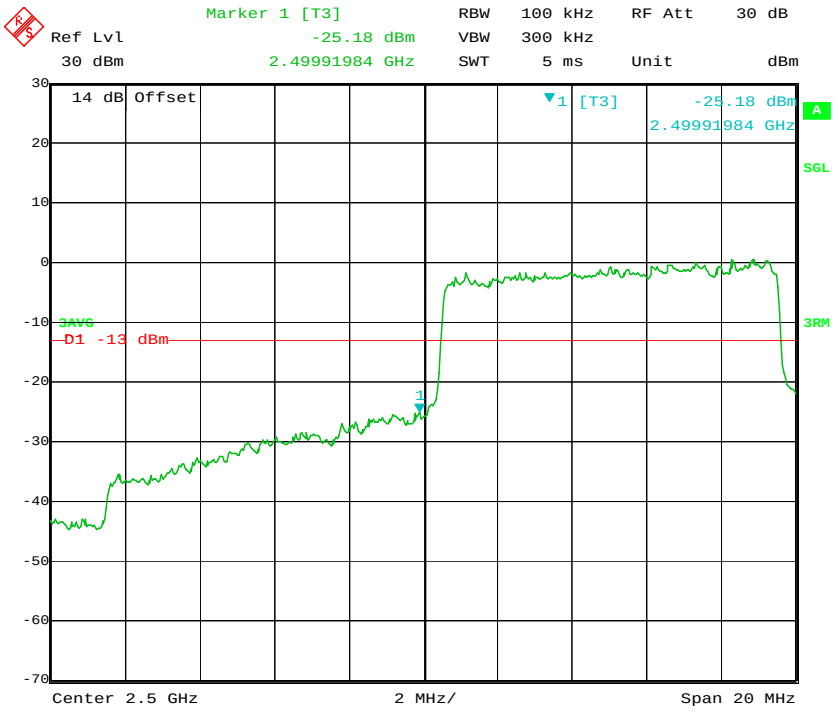
Date: 24.JUL.2015 15:09:50

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



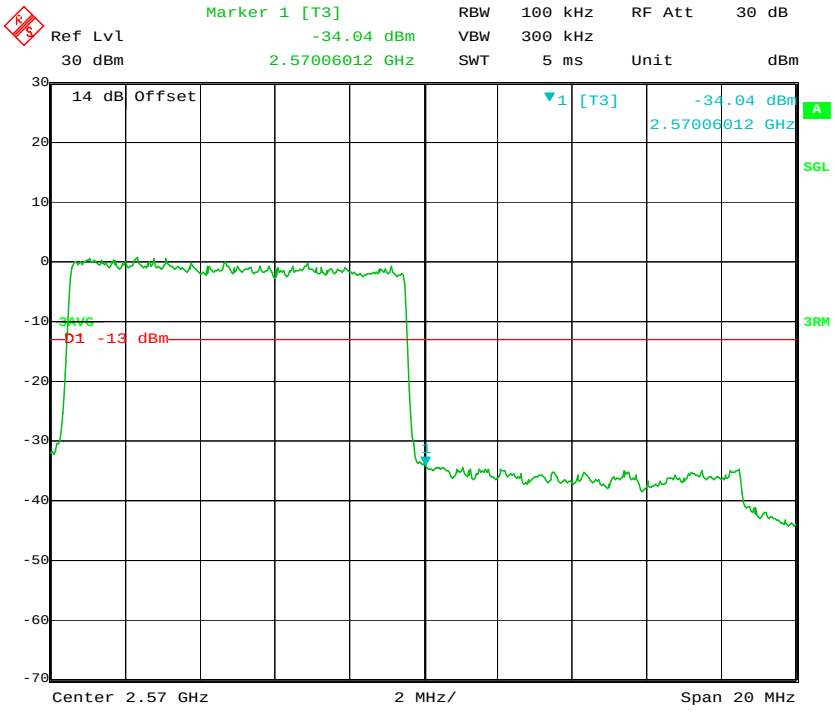
Date: 24.JUL.2015 15:06:26

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



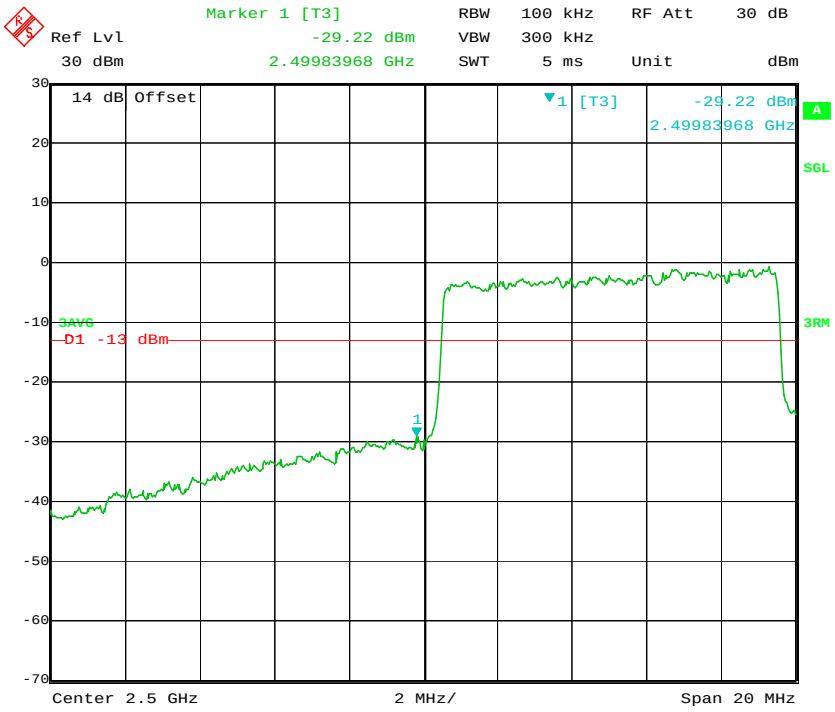
Date: 24.JUL.2015 14:54:43

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



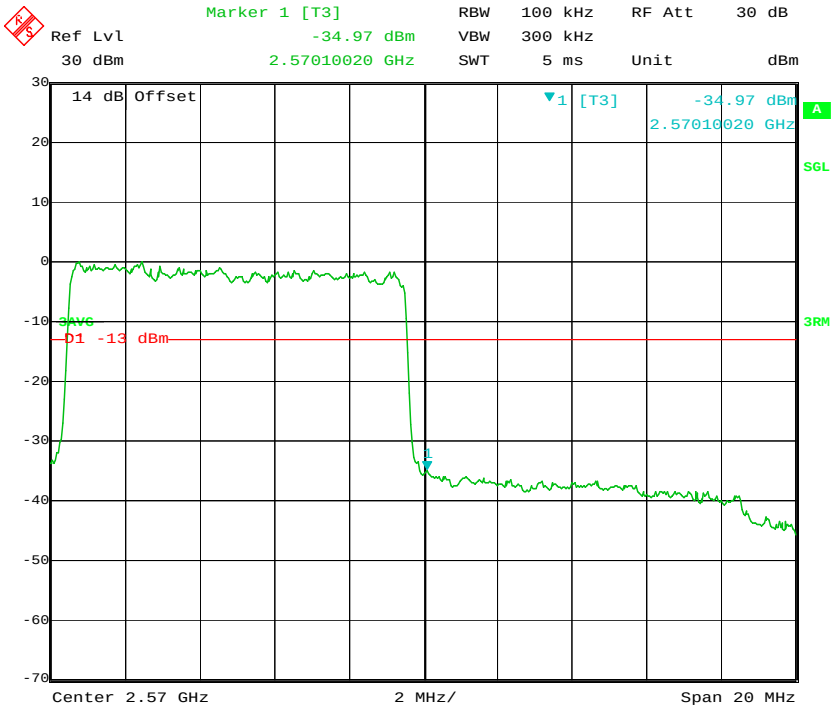
Date: 24.JUL.2015 15:02:29

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



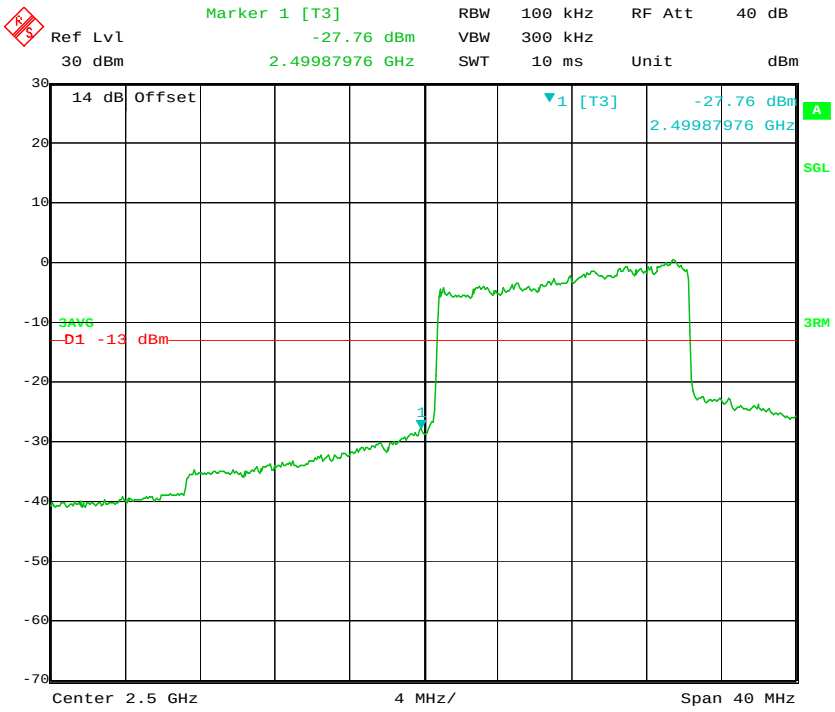
Date: 24.JUL.2015 14:55:11

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



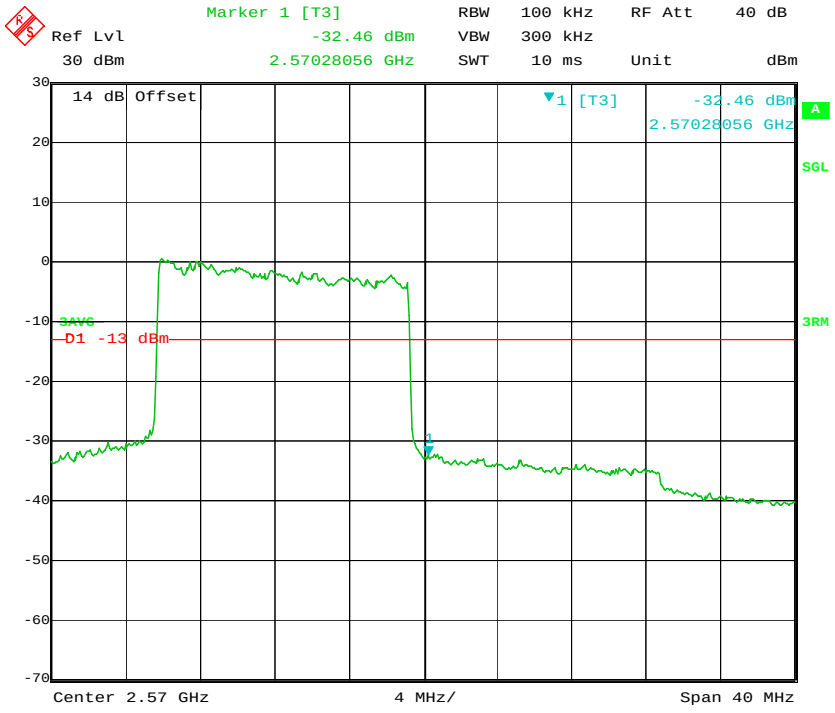
Date: 24.JUL.2015 15:02:00

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



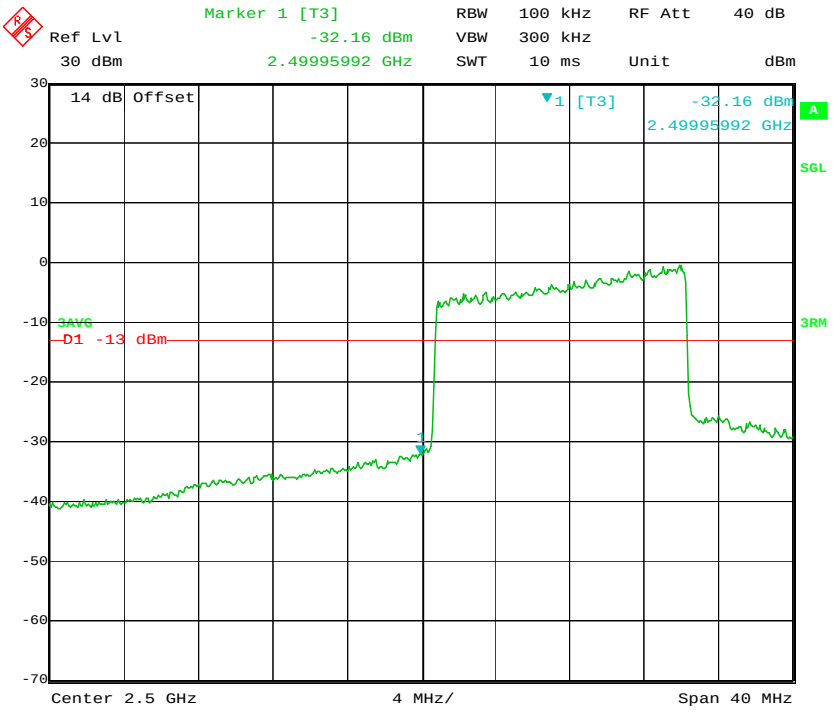
Date: 24.JUL.2015 14:52:52

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

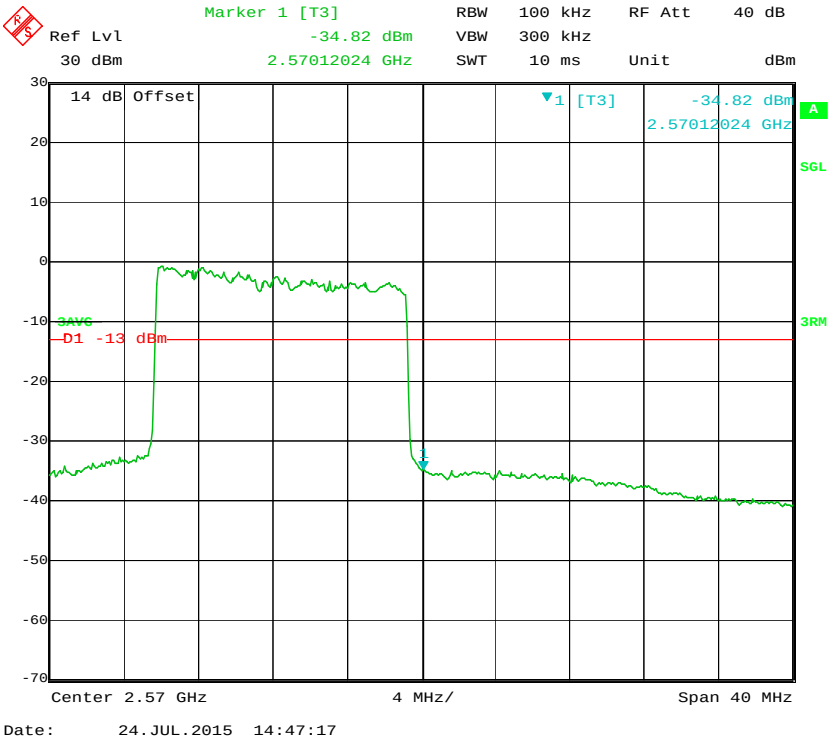


Date: 24.JUL.2015 14:46:44

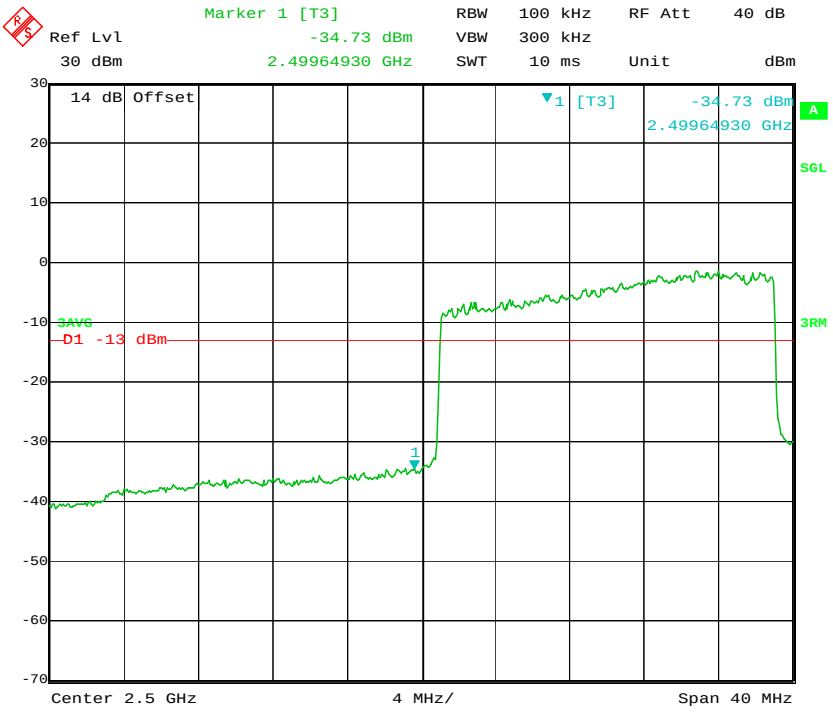
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



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

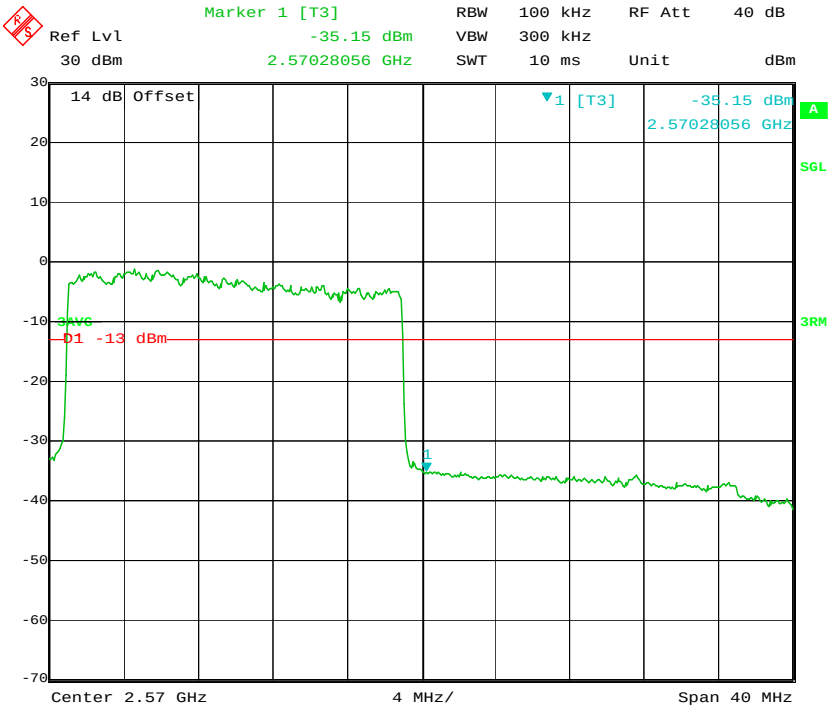


QPSK (20.0 MHz, FULL RB) - Left Band Edge



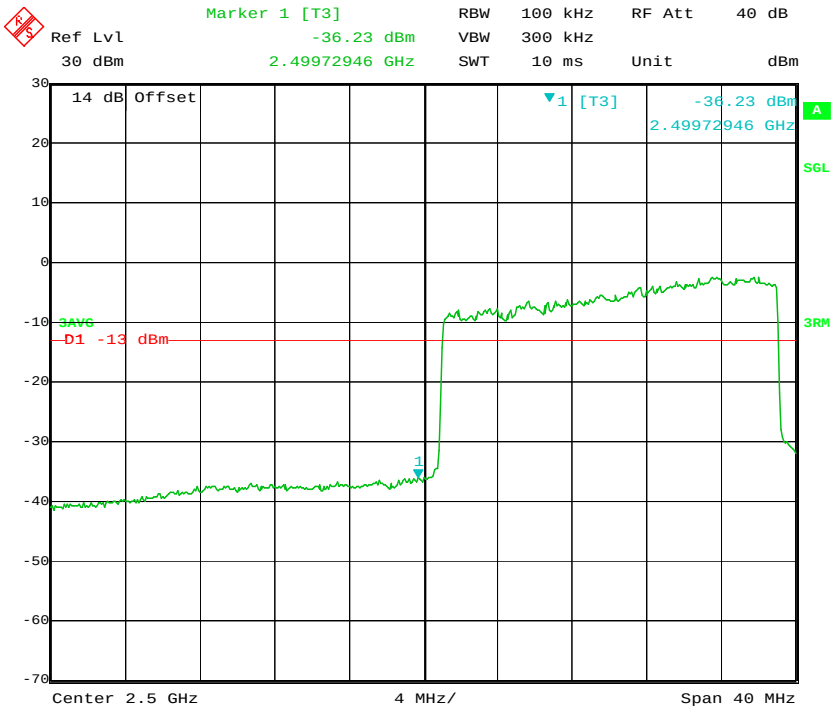
Date: 24.JUL.2015 14:40:35

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



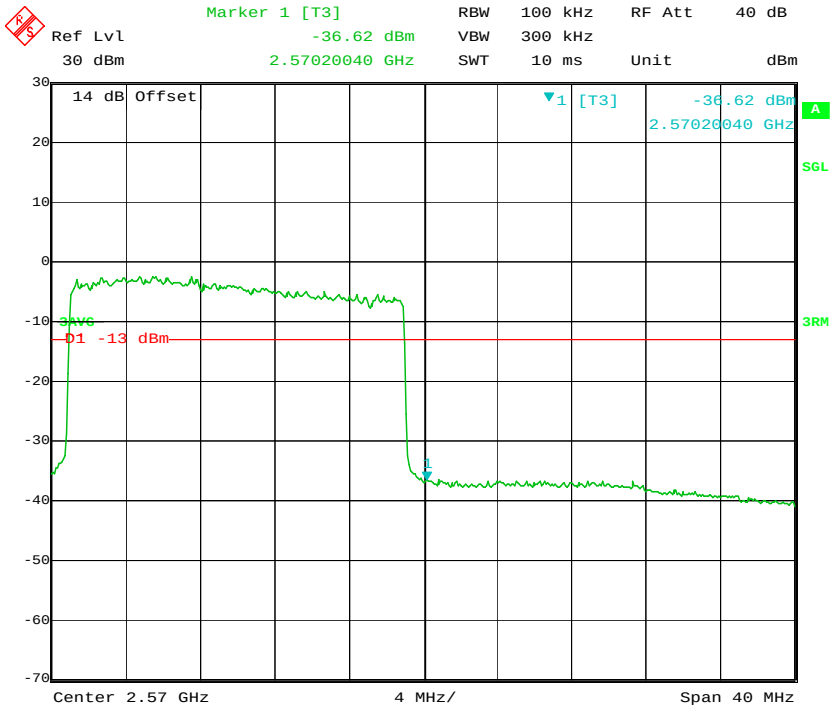
Date: 24.JUL.2015 14:43:50

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



Date: 24.JUL.2015 14:41:04

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



Date: 24.JUL.2015 14:43:21

FCC §2.1055, §22.355 & §24.235 & §27.54 - FREQUENCY STABILITY

Applicable Standards

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

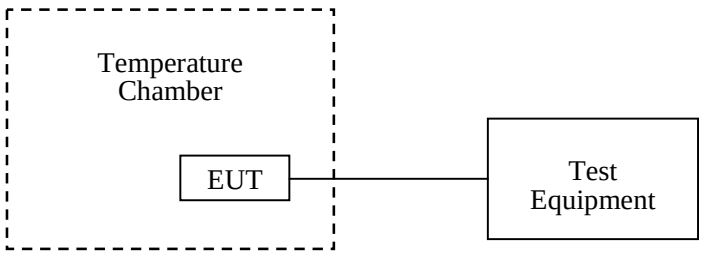
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2014-11-01	2015-11-01
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-07-31.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables.

Cellular Band (Part 22H)

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	4	0.00478	2.5
-20		6	0.00717	2.5
-10		5	0.00598	2.5
0		8	0.00956	2.5
10		6	0.00717	2.5
20		7	0.00837	2.5
30		5	0.00598	2.5
40		6	0.00717	2.5
50		4	0.00478	2.5
25	V min.= 3.5	5	0.00598	2.5
25	V max.= 4.2	7	0.00837	2.5

EDGE Mode

Middle Channel, f_o=836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	6	0.00717	2.5
-20		8	0.00956	2.5
-10		6	0.00717	2.5
0		7	0.00837	2.5
10		5	0.00598	2.5
20		8	0.00956	2.5
30		7	0.00837	2.5
40		8	0.00956	2.5
50		9	0.01076	2.5
25	V min.= 3.5	7	0.00837	2.5
25	V max.= 4.2	9	0.01076	2.5

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	17	0.02032	2.5
-20		16	0.01913	2.5
-10		15	0.01793	2.5
0		17	0.02032	2.5
10		18	0.02152	2.5
20		16	0.01913	2.5
30		14	0.01673	2.5
40		16	0.01913	2.5
50		15	0.01793	2.5
25	V min.= 3.5	17	0.02032	2.5
25	V max.= 4.2	19	0.02271	2.5

PCS Band (Part 24E)

GSM Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	15	0.00798	pass
-20		12	0.00638	pass
-10		10	0.00532	pass
0		13	0.00691	pass
10		-10	-0.00532	pass
20		-14	-0.00745	pass
30		13	0.00691	pass
40		12	0.00638	pass
50		11	0.00585	pass
25	V min.= 3.5	13	0.00691	pass
25	V max.= 4.2	16	0.00851	pass

EDGE Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	15	0.00798	pass
-20		16	0.00851	pass
-10		14	0.00745	pass
0		13	0.00691	pass
10		16	0.00851	pass
20		18	0.00957	pass
30		15	0.00798	pass
40		16	0.00851	pass
50		18	0.00957	pass
25	V min.= 3.5	14	0.00745	pass
25	V max.= 4.2	17	0.00904	pass

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	24	0.01277	pass
-20		25	0.01330	pass
-10		23	0.01223	pass
0		26	0.01383	pass
10		28	0.01489	pass
20		22	0.01170	pass
30		27	0.01436	pass
40		23	0.01223	pass
50		27	0.01436	pass
25	V min.= 3.5	24	0.01277	pass
25	V max.= 4.2	27	0.01436	pass

Band 2:

	Temperature (^{o}C)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
10.0 MHz, Middle Channel	-30	3.8	30	0.017	Pass
	-20		32	0.018	Pass
	-10		28	0.016	Pass
	0		26	0.015	Pass
	10		24	0.014	Pass
	20		25	0.014	Pass
	30		27	0.016	Pass
	40		30	0.017	Pass
	50		33	0.019	Pass
	25	V min.= 3.5	29	0.017	Pass
	25	V max.= 4.2	30	0.017	Pass

Band 4:

	Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
10.0 MHz, Middle Channel	-30	3.8	27	0.016	Pass
	-20		23	0.013	Pass
	-10		20	0.012	Pass
	0		18	0.010	Pass
	10		19	0.011	Pass
	20		21	0.012	Pass
	30		23	0.013	Pass
	40		20	0.012	Pass
	50		24	0.014	Pass
	25	V min.= 3.5	21	0.012	Pass
	25	V max.= 4.2	28	0.016	Pass

Band 5:

	Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
10.0 MHz, Middle Channel	-30	3.8	12	0.014	2.5
	-20		9	0.011	2.5
	-10		10	0.012	2.5
	0		8	0.010	2.5
	10		13	0.016	2.5
	20		12	0.014	2.5
	30		11	0.013	2.5
	40		10	0.012	2.5
	50		13	0.016	2.5
	25	V min.= 3.5	12	0.014	2.5
	25	V max.= 4.2	13	0.016	2.5

Band 7:

	Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
10.0 MHz, Middle Channel	-30	3.8	35	0.014	Pass
	-20		33	0.013	Pass
	-10		29	0.011	Pass
	0		28	0.011	Pass
	10		31	0.012	Pass
	20		32	0.013	Pass
	30		28	0.011	Pass
	40		35	0.014	Pass
	50		37	0.015	Pass
	25	V min.= 3.5	33	0.013	Pass
	25	V max.= 4.2	35	0.014	Pass

PRODUCT SIMILARITY DECLARATION LETTER

b mobile HK Limited
Flat 18; 14/F Block 1; Golden Industrial Building;16-26 Kwai Tak Street; Kwai Chung;New Territories; Hong Kong
Tel: 852-27287886 Fax: 852-27280468

07/20/2015

Product Similarity Declaration

To Whom It May Concern,

We, b mobile HK Limited , hereby declare that we have a product named as Mobile Phone (Model no: AX1055) was tested by BACL, meanwhile, for our marketing purpose, we would like to list a series models （AX1045） on reports and certificate, all the models are identical schematics, except for the differences as below,
1,Only difference Model No.

No other changes are made to them.
We confirm that all information above is true, and we'll be responsible for all the consequences. Please contact me if you have any question.

For and on behalf of
b mobile HK Limited
Authorized Signature(s)

Signature:

Ka Shing Lam
Director

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