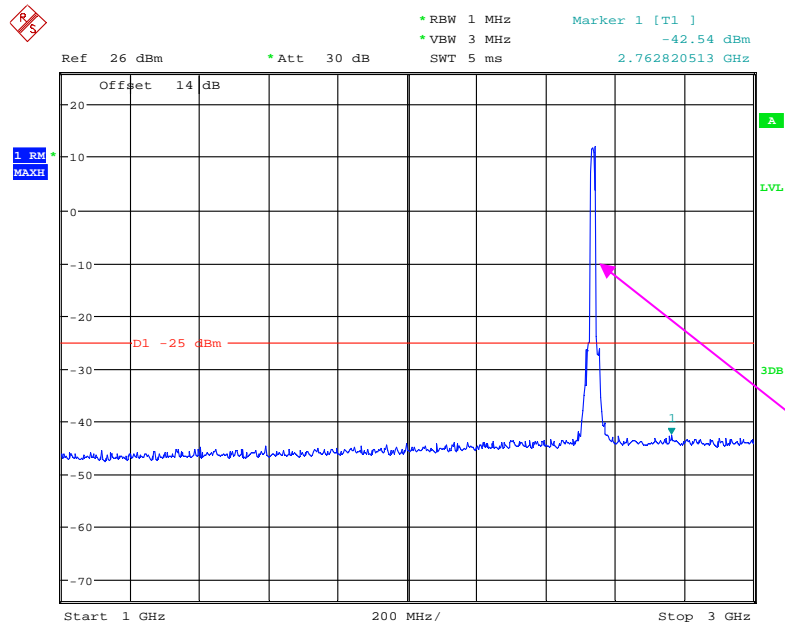


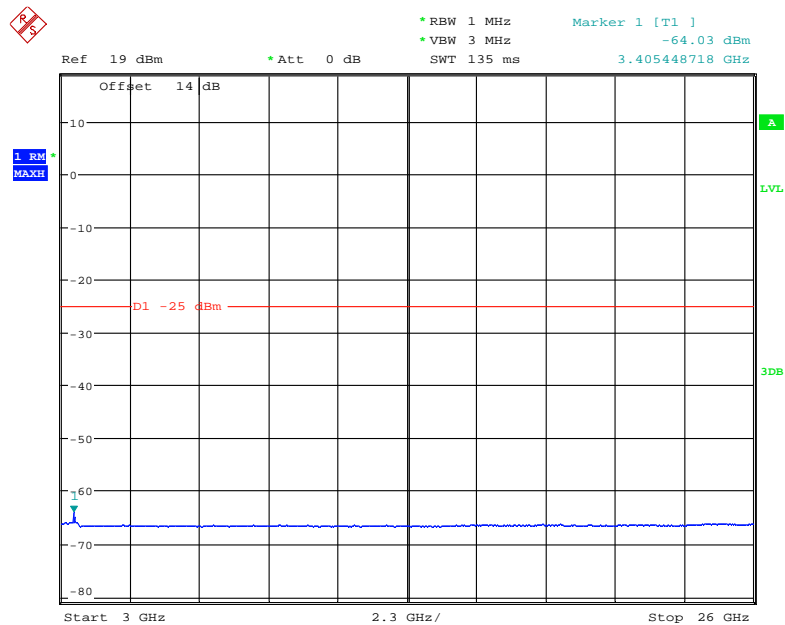
1 GHz – 3 GHz (15.0 MHz, Middle Channel)



Fundamental test

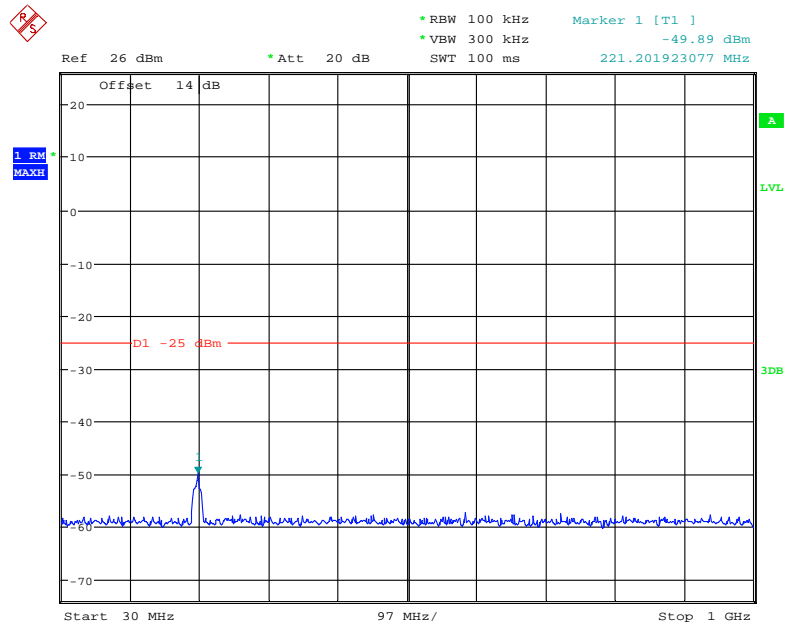
Date: 17.OCT.2017 09:11:39

3 GHz – 26 GHz (15.0 MHz, Middle Channel)



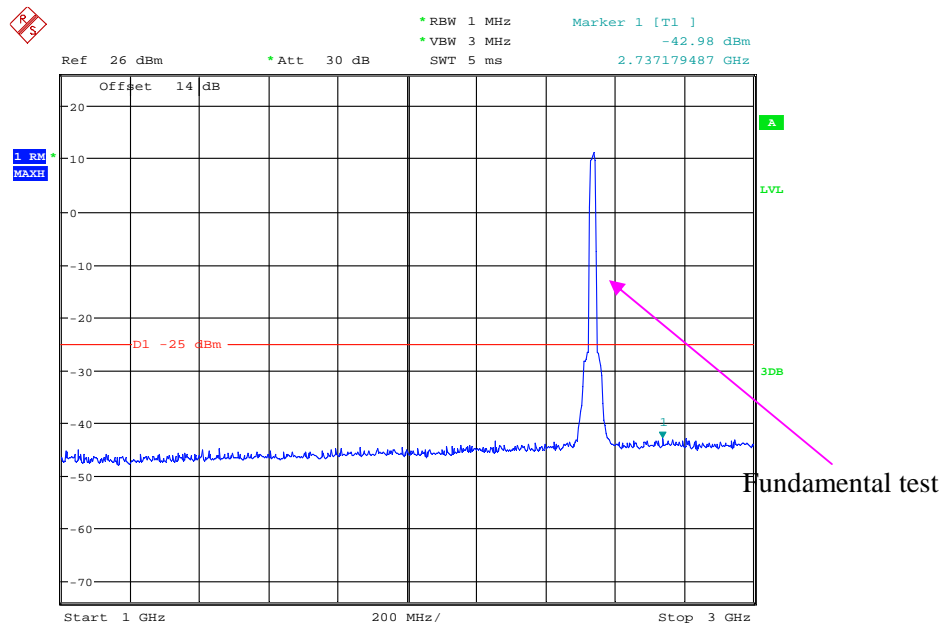
Date: 17.OCT.2017 09:13:23

30 MHz – 1 GHz (20.0 MHz, Middle Channel)



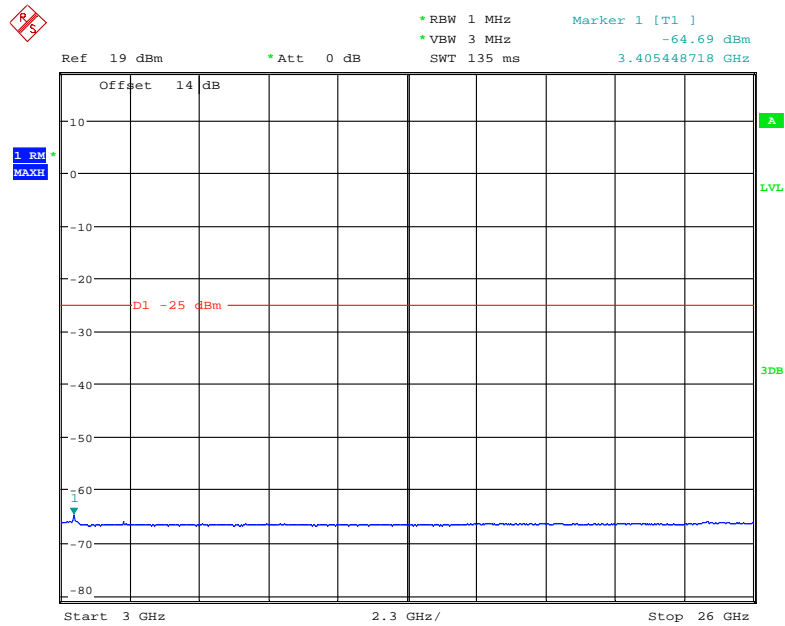
Date: 17.OCT.2017 09:09:58

1 GHz – 3 GHz (20.0 MHz, Middle Channel)



Date: 17.OCT.2017 09:11:56

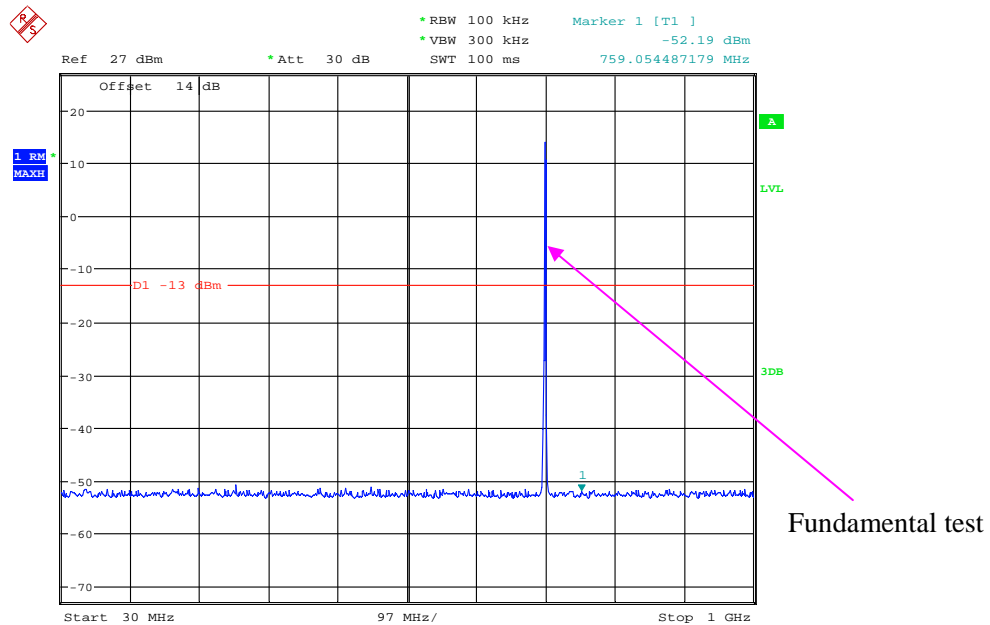
3 GHz – 26 GHz (20.0 MHz, Middle Channel)



Date: 17.OCT.2017 09:13:36

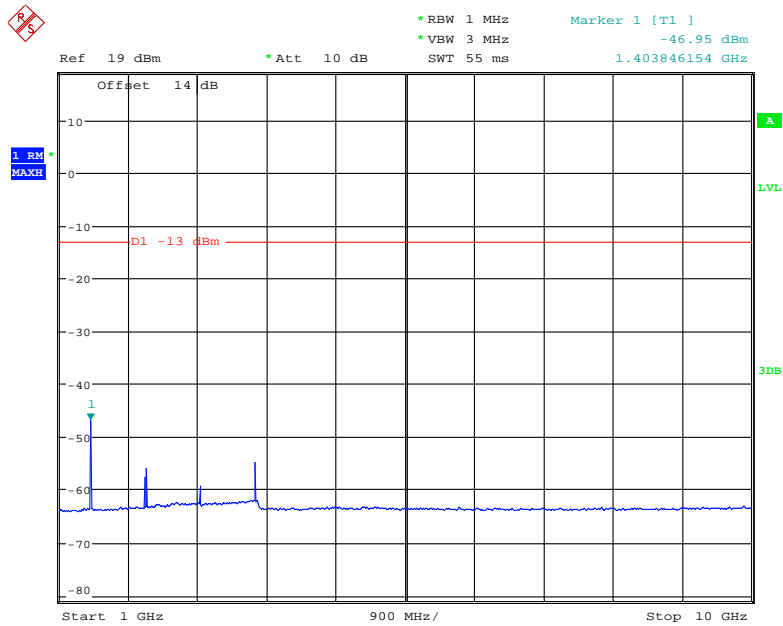
LTE Band 12:

30 MHz - 1 GHz (1.4 MHz, Middle Channel)



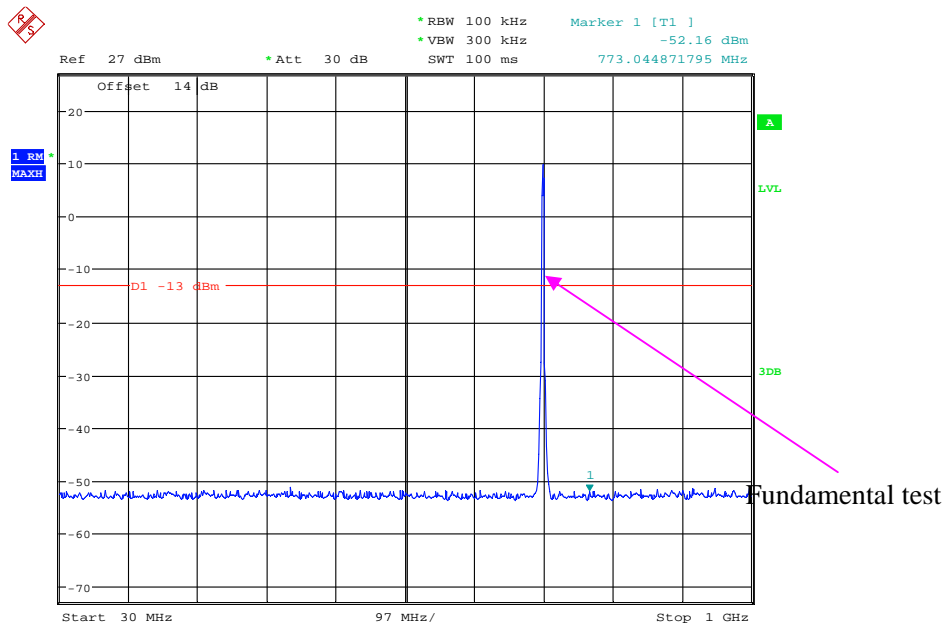
Date: 17.OCT.2017 09:18:51

1 GHz – 10 GHz (1.4 MHz, Middle Channel)

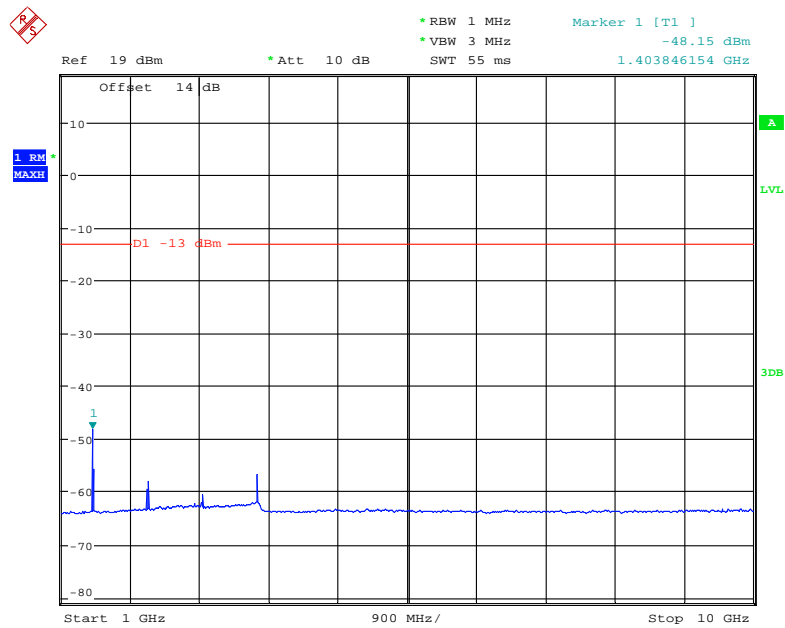


Date: 17.OCT.2017 09:15:39

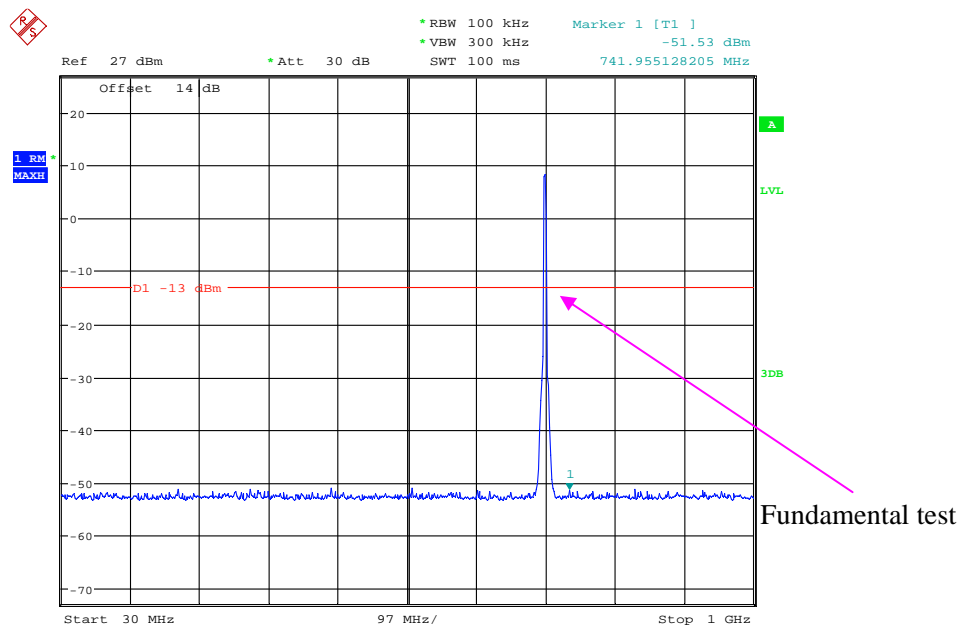
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



Date: 17.OCT.2017 09:19:09

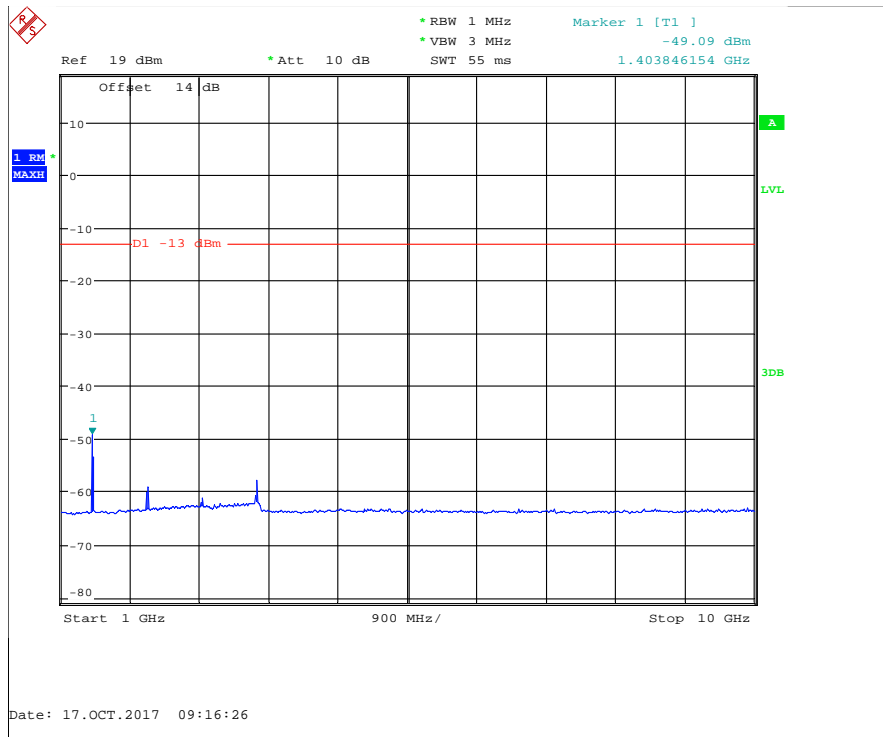
1 GHz – 10 GHz (3.0 MHz, Middle Channel)

Date: 17.OCT.2017 09:16:12

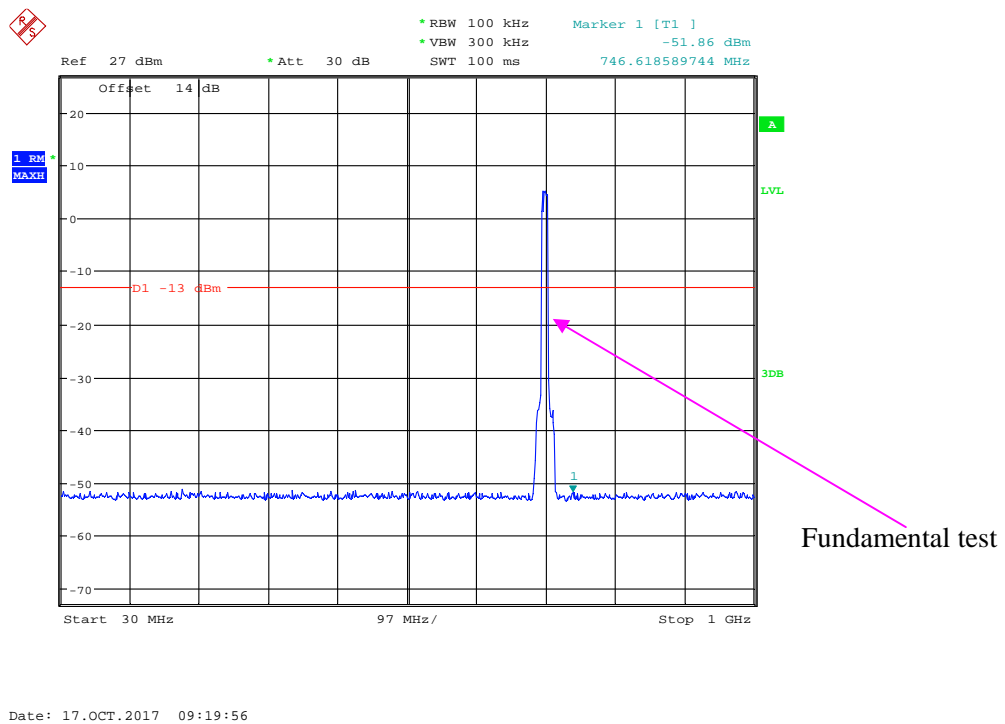
30 MHz - 1 GHz (5.0 MHz, Middle Channel)

Date: 17.OCT.2017 09:19:33

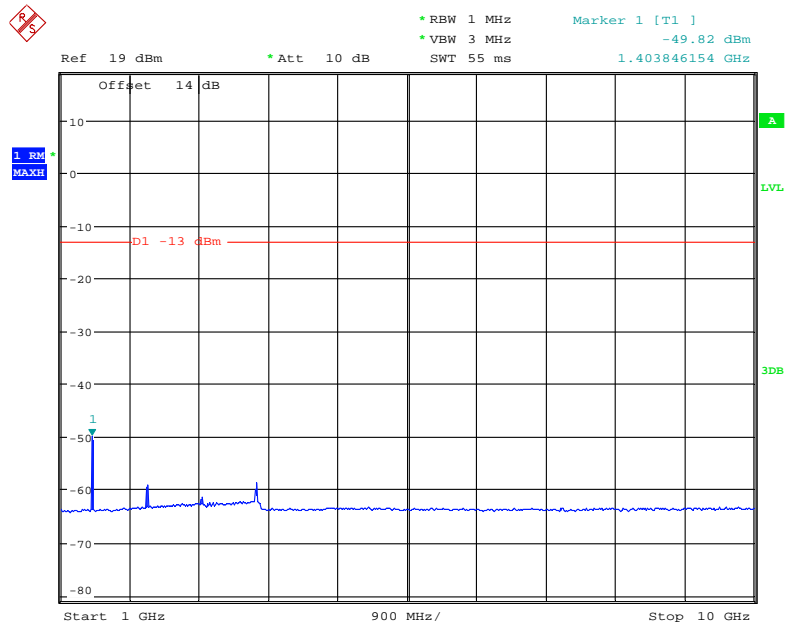
1 GHz – 10 GHz (5.0 MHz, Middle Channel)



30 MHz - 1 GHz (10.0 MHz, Middle Channel)



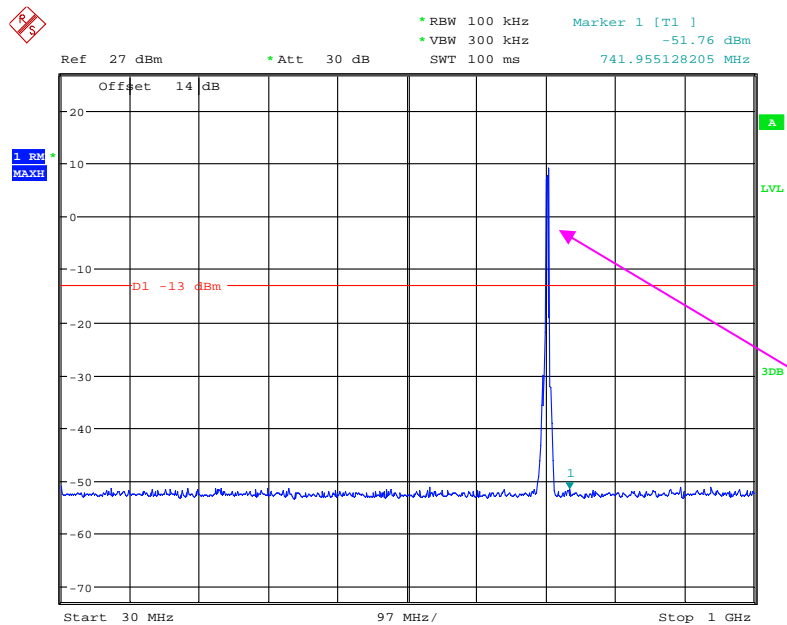
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 17.OCT.2017 09:16:40

LTE Band 17:

30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Date: 17.OCT.2017 09:22:09

Ref 27 dBm * Att 10 dB * RBW 1 MHz VBW 3 MHz SWT 55 ms Marker 1 [T1] -46.53 dBm 1.418269231 GHz

Offset 14 dB

1 RM MAXH

D1 -13 dBm

1

Start 1 GHz 900 MHz/ Stop 10 GHz

Ref 27 dBm * Att 30 dB * RBW 100 kHz Marker 1 [T1] -51.57 dBm
 * VBW 300 kHz SWT 100 ms 779.262820513 MHz

Offset 14 dB

1 RM
MAXH

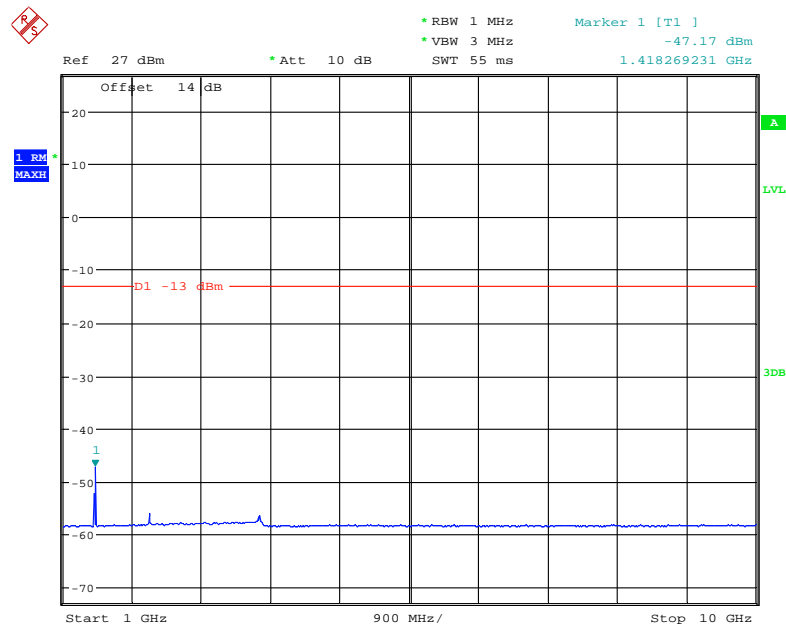
D1 -13 dBm

1

Start 30 MHz 97 MHz/ Stop 1 GHz

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1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 17.OCT.2017 09:23:05

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

Applicable Standard

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

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:	22 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Layne Li on 2017-10-19.

EUT operation mode: Transmitting

Pre-scan with Low, Middle and High channel, the worst 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)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
190.51	36.57	268	1.3	H	-60.4	0.27	0	-60.70	-13	47.70
190.51	37.19	217	2.2	V	-59.8	0.27	0	-60.08	-13	47.08
1673.20	46.16	134	1.8	H	-60.9	1.30	9.10	-53.10	-13	40.10
1673.20	46.18	342	2.4	V	-60.3	1.30	9.10	-52.50	-13	39.50
2509.80	47.8	142	1.3	H	-55.7	2.60	9.30	-49.00	-13	36.00
2509.80	44.55	359	1.1	V	-58.4	2.60	9.30	-51.70	-13	38.70
WCDMA Mode, Middle channel										
168.95	34.94	226	1.3	H	-62.1	0.27	0	-62.33	-13	49.33
168.95	33.88	9	1.2	V	-63.1	0.27	0	-63.39	-13	50.39
1673.20	43.87	285	1.7	H	-63.2	1.30	9.10	-55.40	-13	42.40
1673.20	43.65	276	2.4	V	-62.8	1.30	9.10	-55.00	-13	42.00
2509.80	47.24	265	1.4	H	-56.3	2.60	9.30	-49.60	-13	36.60
2509.80	47.1	291	1.8	V	-55.8	2.60	9.30	-49.10	-13	36.10

30 MHz ~ 20 GHz:**PCS Band (Part 24E & 27)**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E/27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
190.51	37.32	108	1.1	H	-59.7	0.27	0	-59.95	-13	46.95
190.51	37.03	89	1.9	V	-60.0	0.27	0	-60.24	-13	47.24
3760.00	46.15	93	1.7	H	-55.1	1.50	9.70	-46.90	-13	33.90
3760.00	46.18	126	2.4	V	-54.6	1.50	9.70	-46.40	-13	33.40
WCDMA Mode Band II, Middle channel										
168.95	33.69	265	1.7	H	-63.3	0.27	0	-63.58	-13	50.58
168.95	33.19	1	1.6	V	-63.8	0.27	0	-64.08	-13	51.08
3760.00	48.95	276	1.1	H	-52.3	1.50	9.70	-44.10	-13	31.10
3760.00	45.51	340	1.1	V	-55.2	1.50	9.70	-47.00	-13	34.00
WCDMA Mode Band IV, Middle channel										
168.95	34.75	143	2.0	H	-62.2	0.27	0	-62.52	-13	49.52
168.95	34.47	217	2.3	V	-62.5	0.27	0	-62.80	-13	49.80
3465.20	43.89	104	1.1	H	-56.5	1.50	9.70	-48.30	-13	35.30
3465.20	43.26	135	2.4	V	-57.9	1.50	9.70	-49.70	-13	36.70

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

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Band 2										
Test frequency range:30 MHz ~ 20 GHz										
193.21	33.82	244	2.0	H	-63.2	0.27	0	-63.47	-13	50.47
193.21	34.66	264	2.1	V	-62.3	0.27	0	-62.57	-13	49.57
3760.00	49.12	295	1.6	H	-52.1	1.50	9.70	-43.90	-13	30.90
3760.00	44.96	89	1.1	V	-55.8	1.50	9.70	-47.60	-13	34.60
Band 4										
Test frequency range:30 MHz ~ 18 GHz										
193.21	33.88	253	1.4	H	-63.1	0.27	0	-63.37	-13	50.37
193.21	34.73	35	1.0	V	-62.3	0.27	0	-62.57	-13	49.57
3465.00	42.81	298	2.2	H	-57.6	1.50	9.70	-49.40	-13	36.40
3465.00	42.82	159	1.5	V	-58.3	1.50	9.70	-50.10	-13	37.10
Band 5										
Test frequency range:30 MHz ~ 10 GHz										
193.21	33.69	62	1.7	H	-63.3	0.27	0	-63.57	-13	50.57
193.21	34.41	271	1.9	V	-62.6	0.27	0	-62.87	-13	49.87
1673.00	42.68	189	1.3	H	-64.4	1.30	9.10	-56.60	-13	43.60
1673.00	42.84	242	1.7	V	-63.6	1.30	9.10	-55.80	-13	42.80
Band 7										
Test frequency range:30 MHz ~ 26 GHz										
193.21	33.70	315	1.7	H	-63.3	0.27	0	-63.57	-25	38.57
193.21	34.69	108	1.8	V	-62.3	0.27	0	-62.57	-25	37.57
5070.00	50.59	247	1.6	H	-47.3	1.60	11.20	-37.70	-25	12.70
5070.00	51.81	317	2.5	V	-46.1	1.60	11.20	-36.50	-25	11.50
7605.00	49.95	102	1.2	H	-45.3	2.10	11.60	-35.80	-25	10.80
7605.00	51.84	75	1.3	V	-43.1	2.10	11.60	-33.60	-25	8.60
Band 12										
Test frequency range: 30 MHz ~ 10 GHz										
193.21	33.73	354	1.2	H	-63.3	0.27	0	-63.57	-13	50.57
193.21	34.18	12	1.5	V	-62.8	0.27	0	-63.07	-13	50.07
1415.00	45.38	90	1.7	H	-62.5	1.60	8.30	-55.80	-13	42.80
1415.00	43.19	32	1.5	V	-64.9	1.60	8.30	-58.20	-13	45.20
Band 17										
Test frequency range: 30 MHz ~ 10GHz										
193.21	34.69	300	2.2	H	-62.3	0.27	0	-62.57	-13	49.57
193.21	35.00	107	2.2	V	-62.0	0.27	0	-62.27	-13	49.27
1420.00	44.96	73	1.7	H	-62.9	1.60	8.30	-56.20	-13	43.20
1420.00	43.75	39	2.4	V	-64.3	1.60	8.30	-57.60	-13	44.60

Note:

- 1) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level

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.

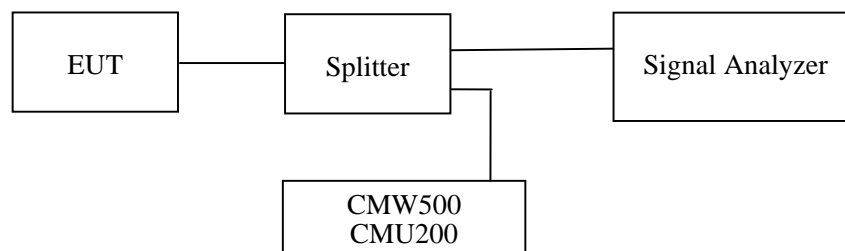
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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

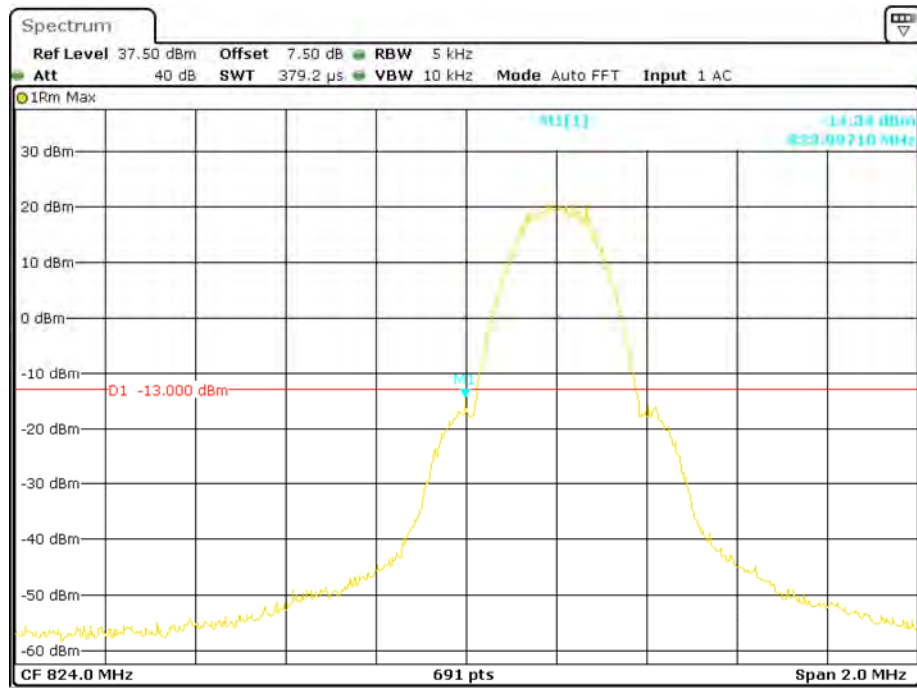
**Test Data****Environmental Conditions**

Temperature:	24~25°C
Relative Humidity:	47~50 %
ATM Pressure:	100.0~101.0 kPa

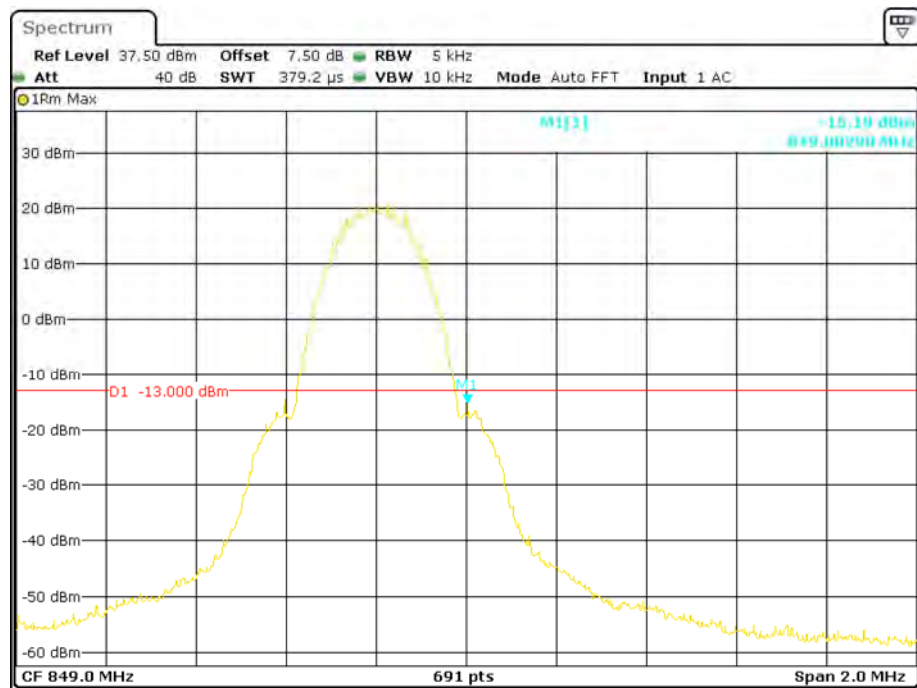
The testing was performed by Hill He from 2017-10-16 to 2017-10-20.

EUT operation mode: Transmitting

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

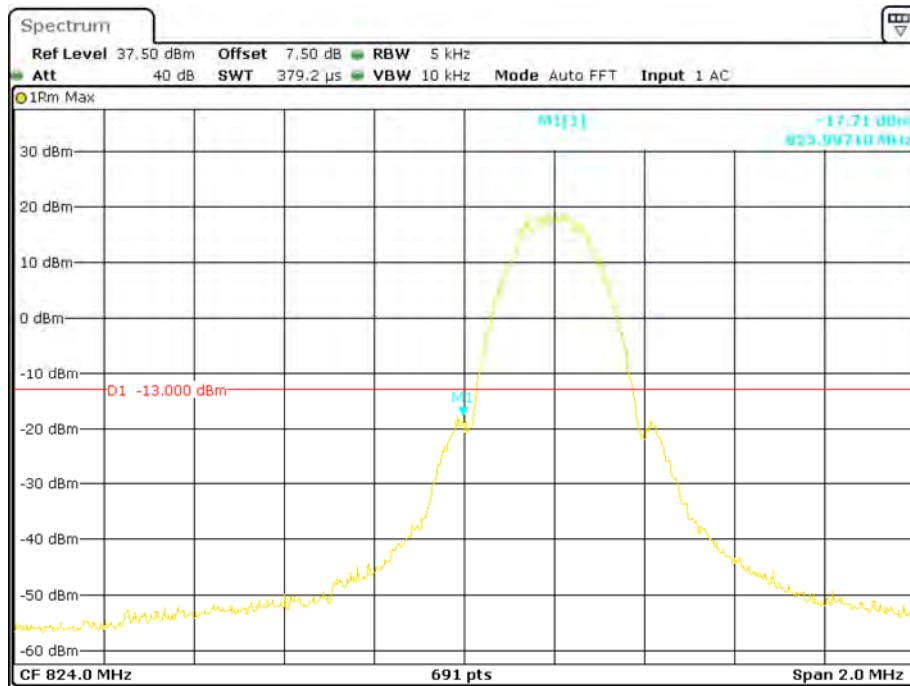
Cellular Band, Left Band Edge for GSM (GMSK) Mode

Date: 20.OCT.2017 09:30:44

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

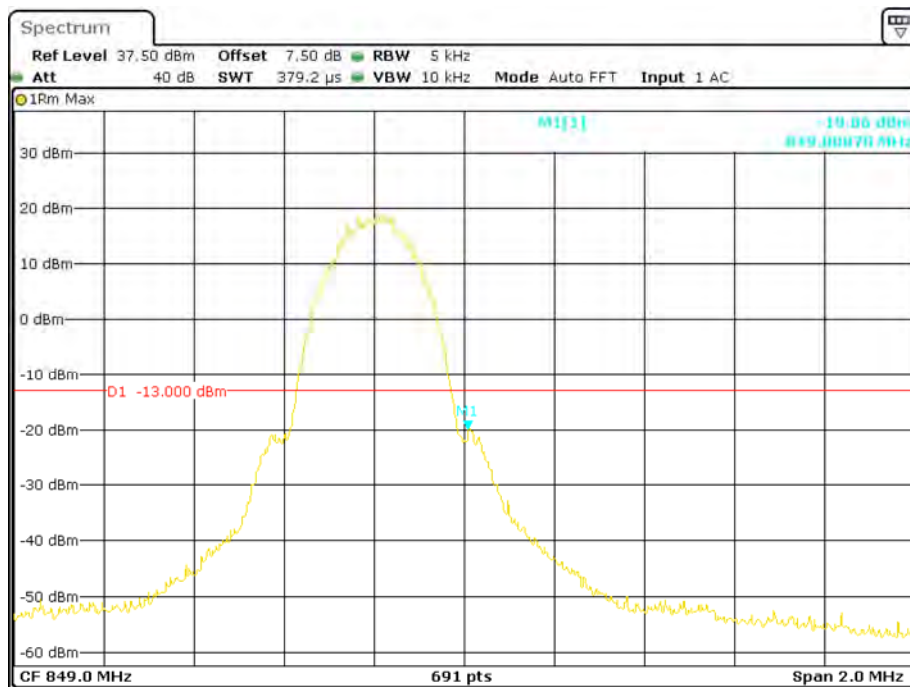
Date: 20.OCT.2017 09:38:03

Cellular Band, Left Band Edge for EDGE Mode

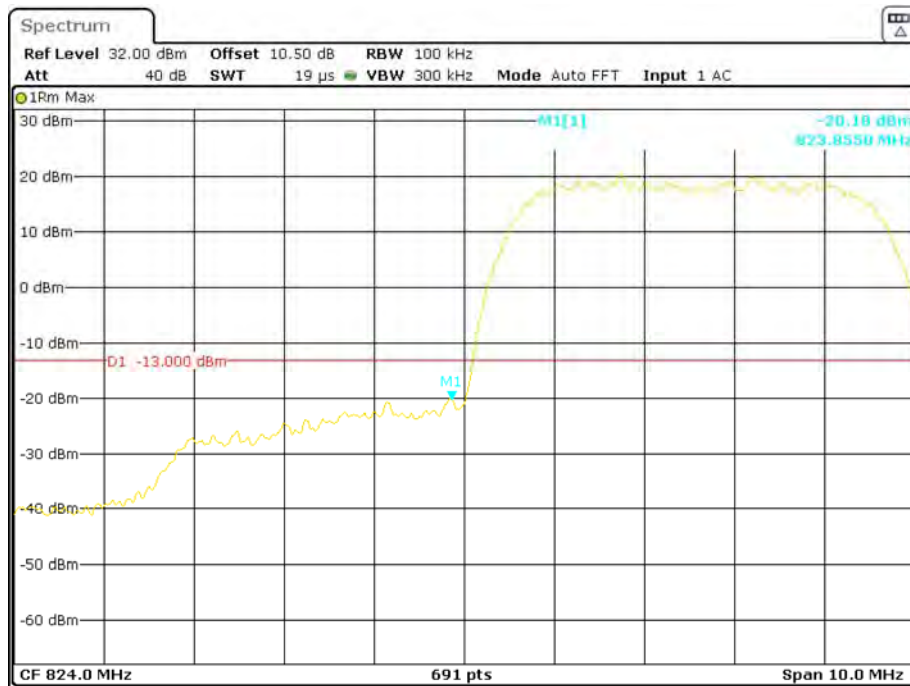


Date: 20.OCT.2017 10:48:13

Cellular Band, Right Band Edge for EDGE Mode



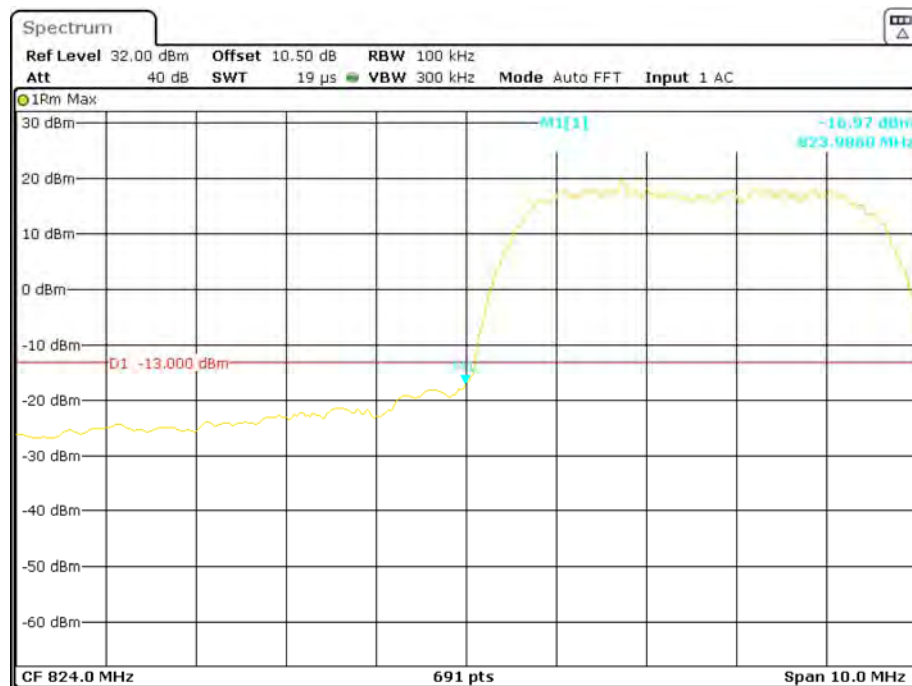
Date: 20.OCT.2017 10:49:29

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

Date: 18.OCT.2017 09:34:54

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

Date: 18.OCT.2017 09:35:59

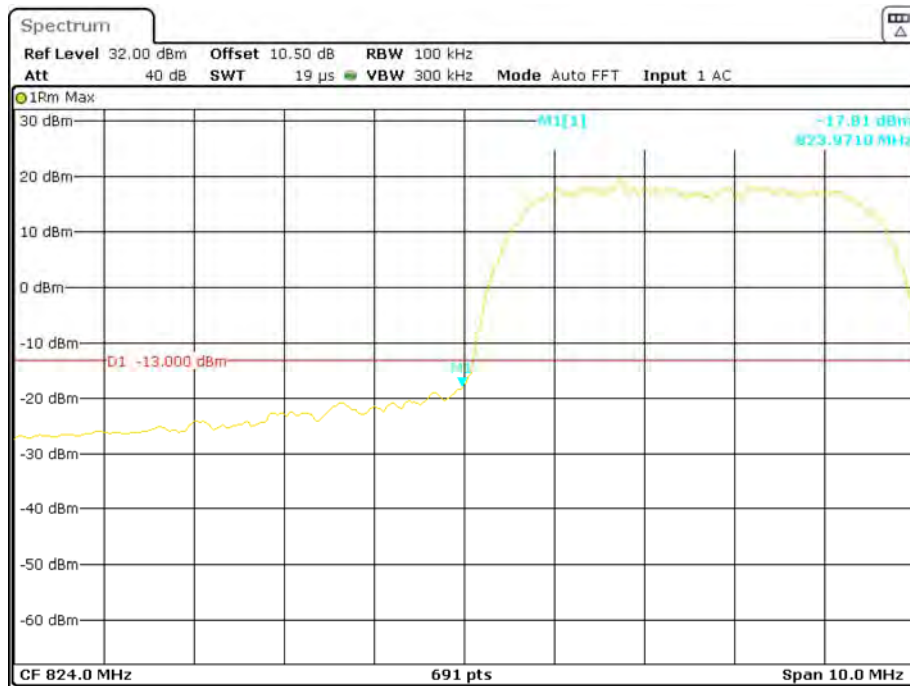
Cellular Band, Left Band Edge for HSDPA (16QAM) Mode

Date: 18.OCT.2017 09:41:54

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

Date: 18.OCT.2017 09:40:53

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



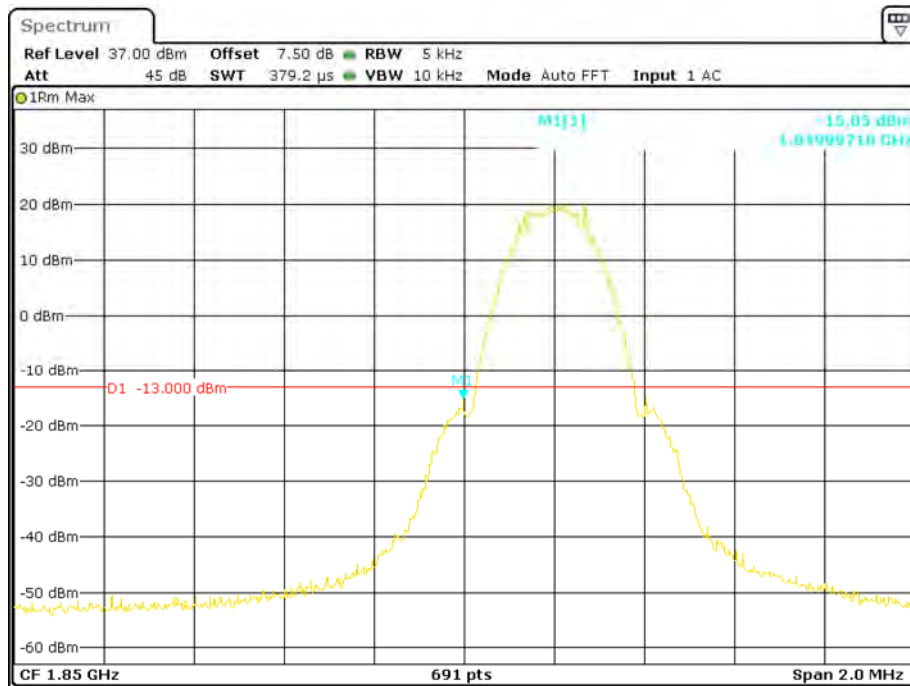
Date: 18.OCT.2017 10:23:30

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



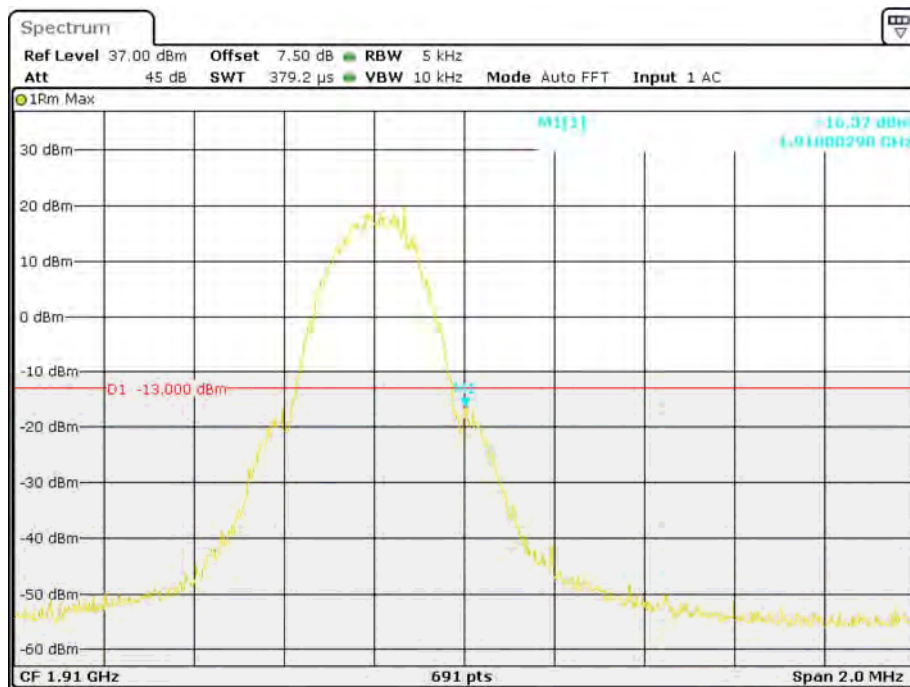
Date: 18.OCT.2017 10:24:19

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



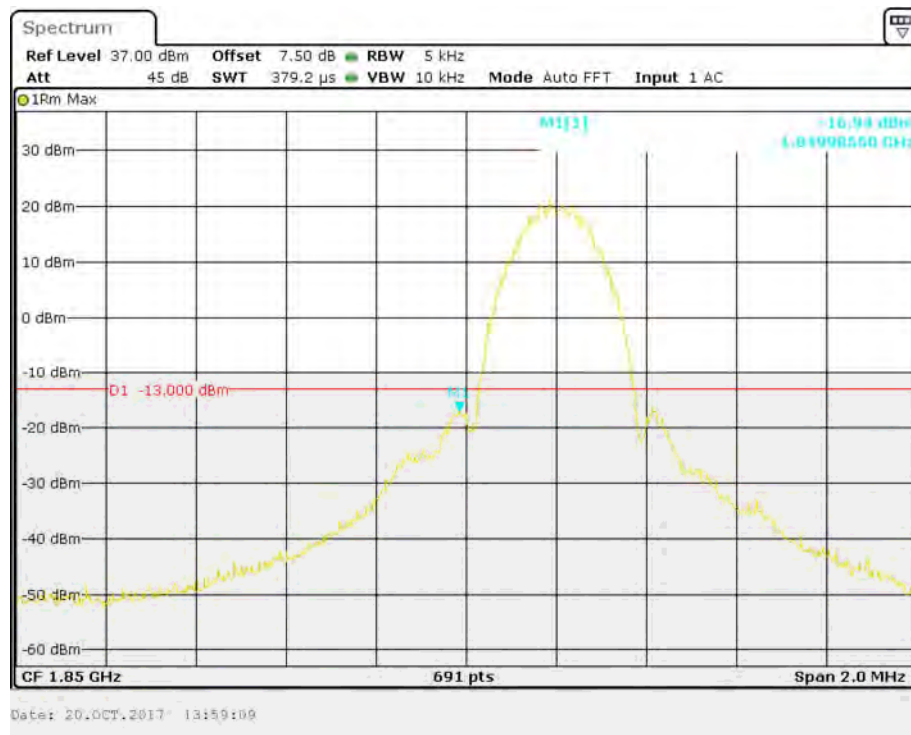
Date: 20.OCT.2017 13:51:47

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

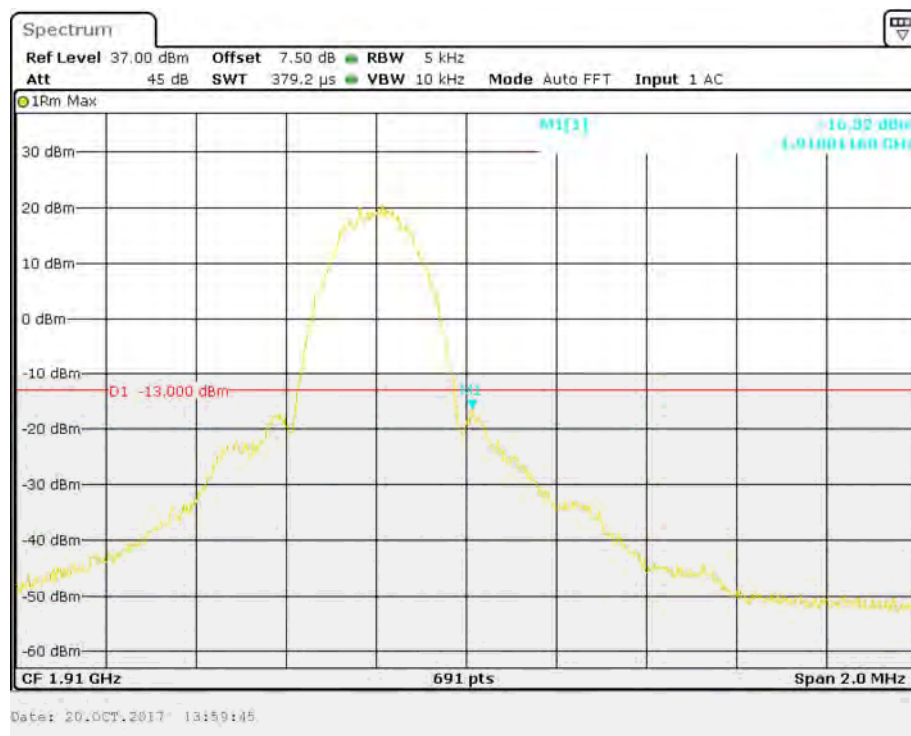


Date: 20.OCT.2017 13:52:35

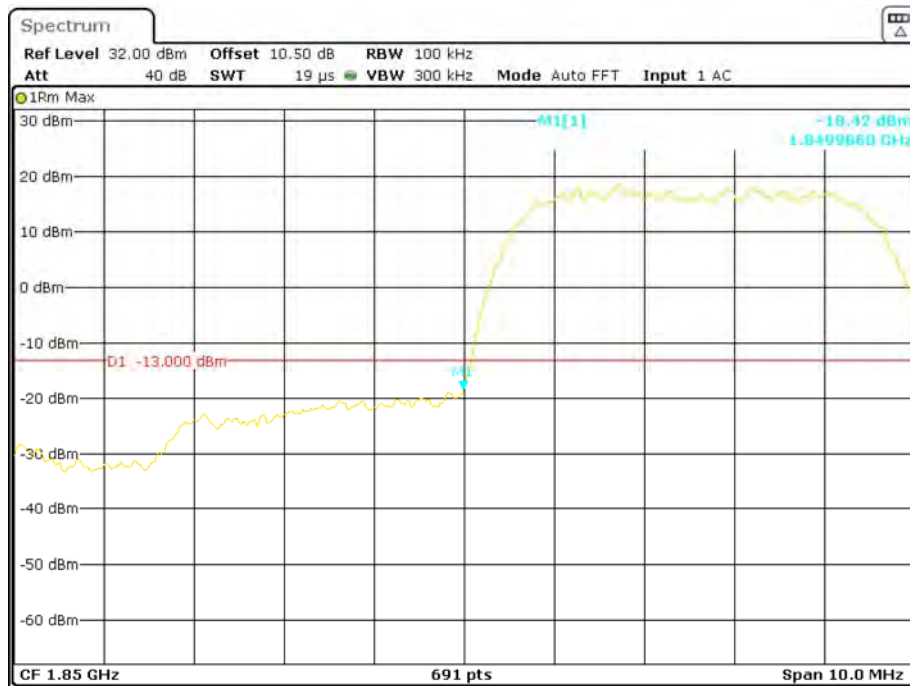
PCS Band, Left Band Edge for EDGE Mode



PCS Band, Right Band Edge for EDGE Mode

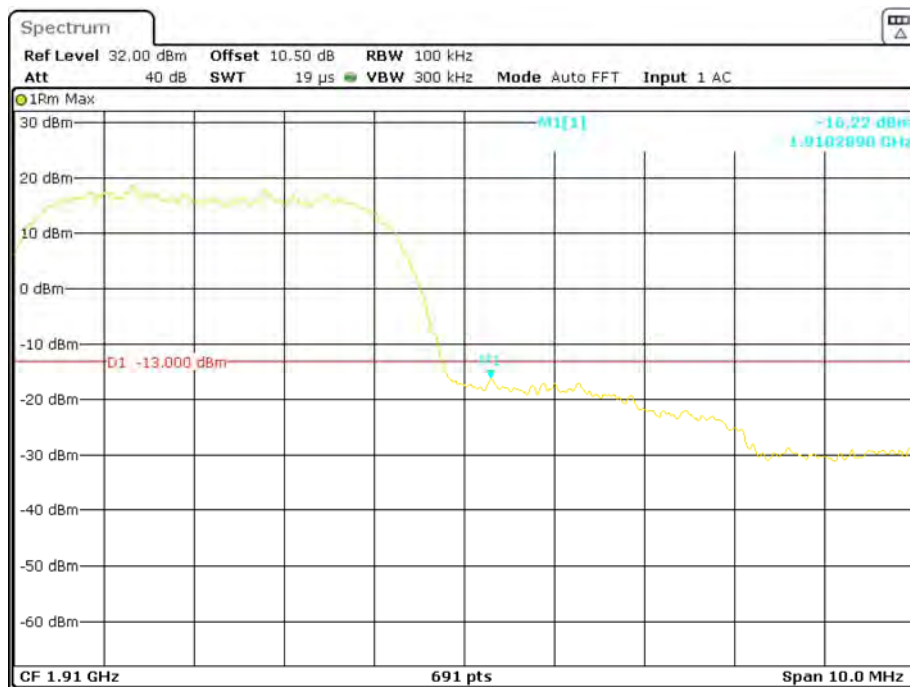


PCS Band, Left Band Edge for WCDMA (BPSK) Mode



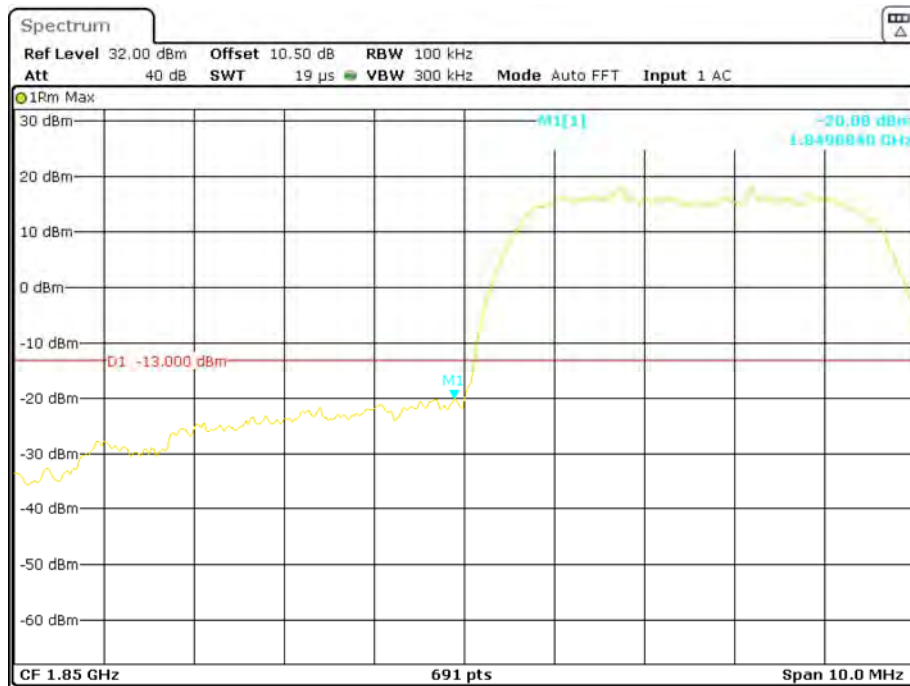
Date: 18.OCT.2017 09:05:20

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



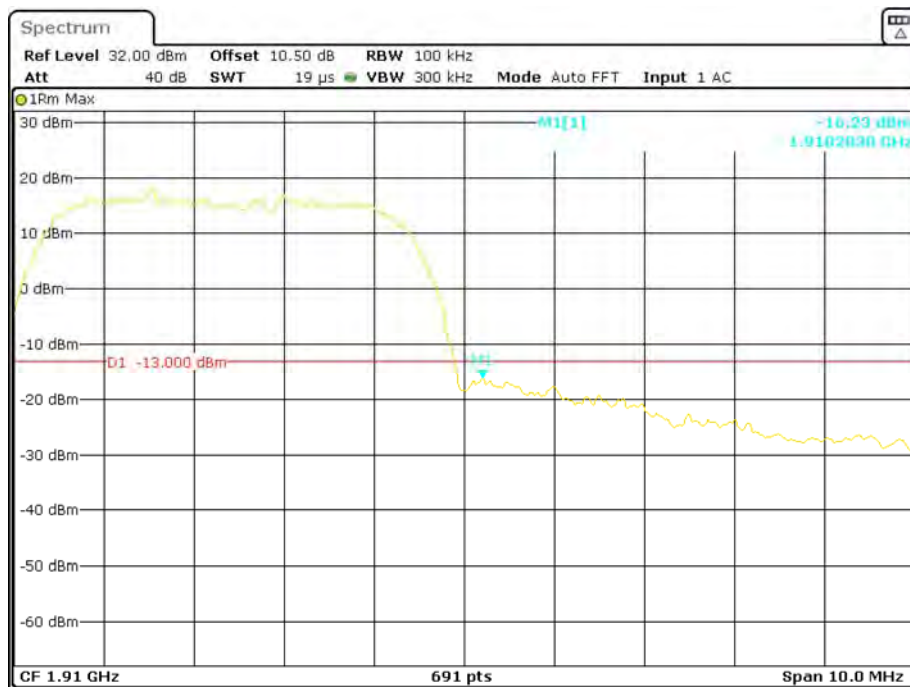
Date: 18.OCT.2017 09:10:32

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



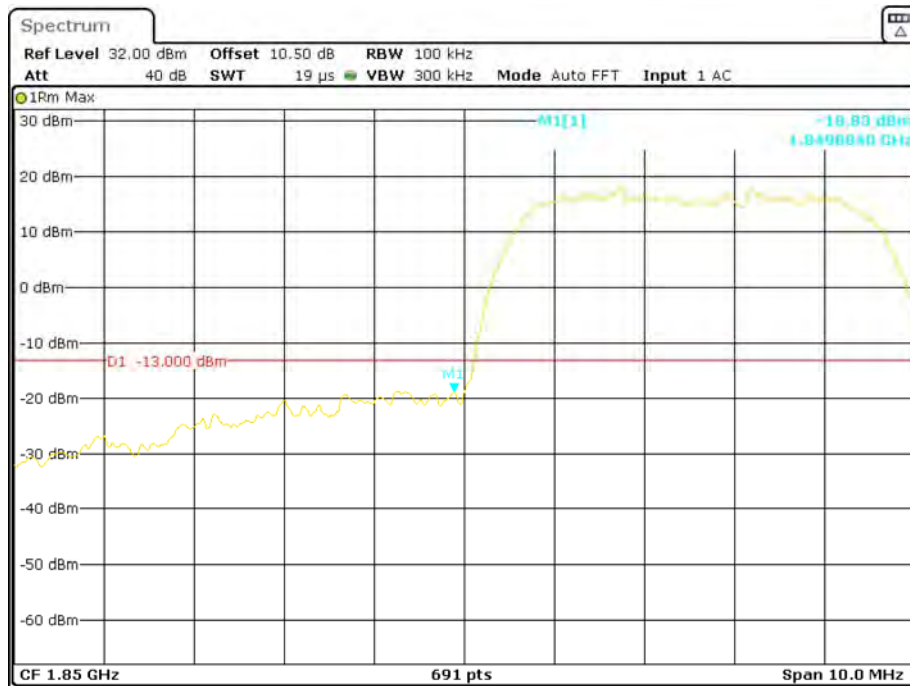
Date: 18.OCT.2017 09:52:09

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



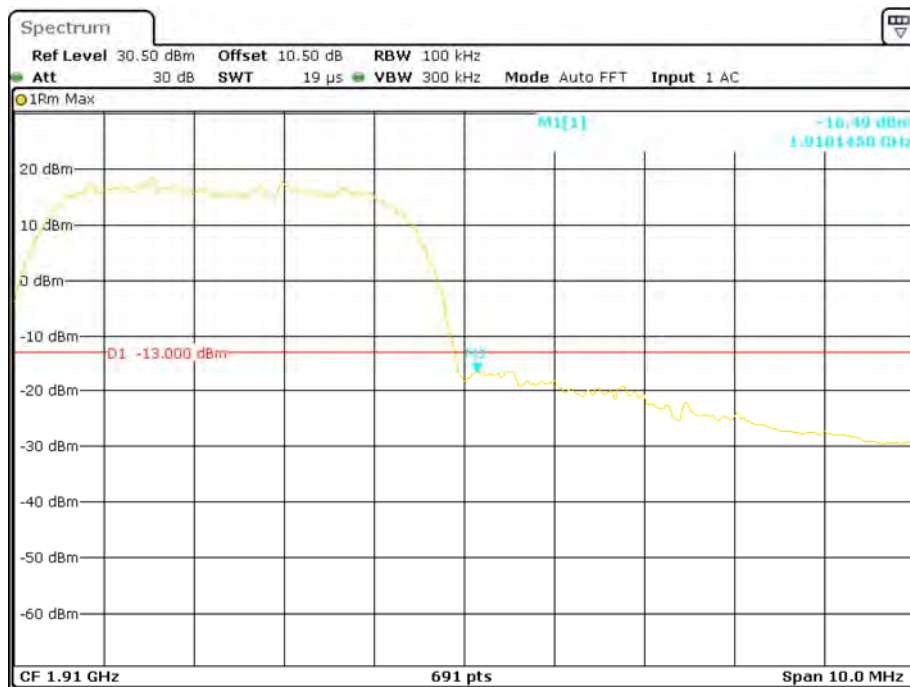
Date: 18.OCT.2017 09:53:26

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



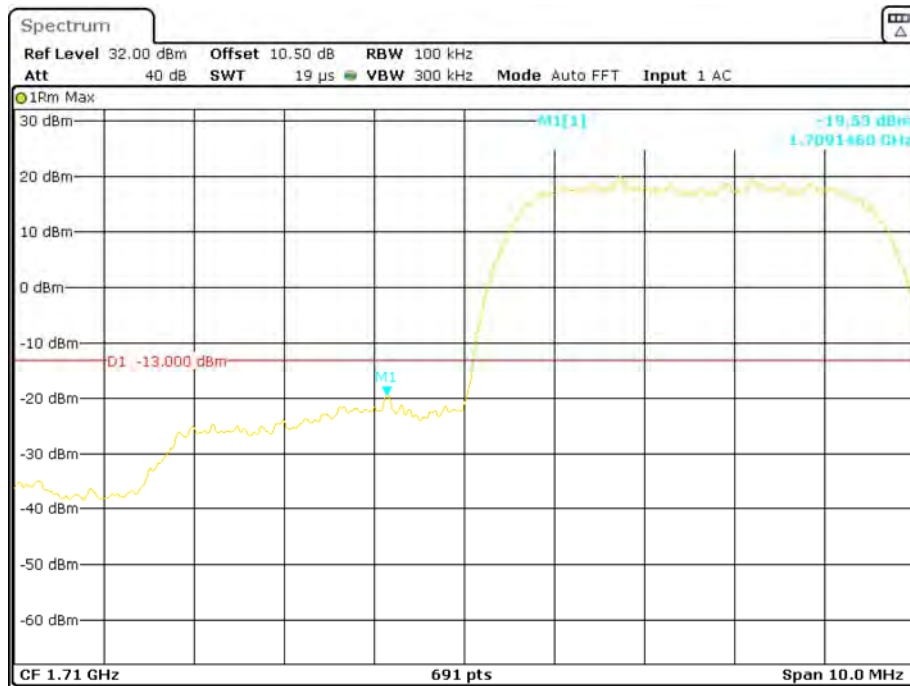
Date: 18.OCT.2017 10:07:59

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



Date: 18.OCT.2017 17:02:13

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



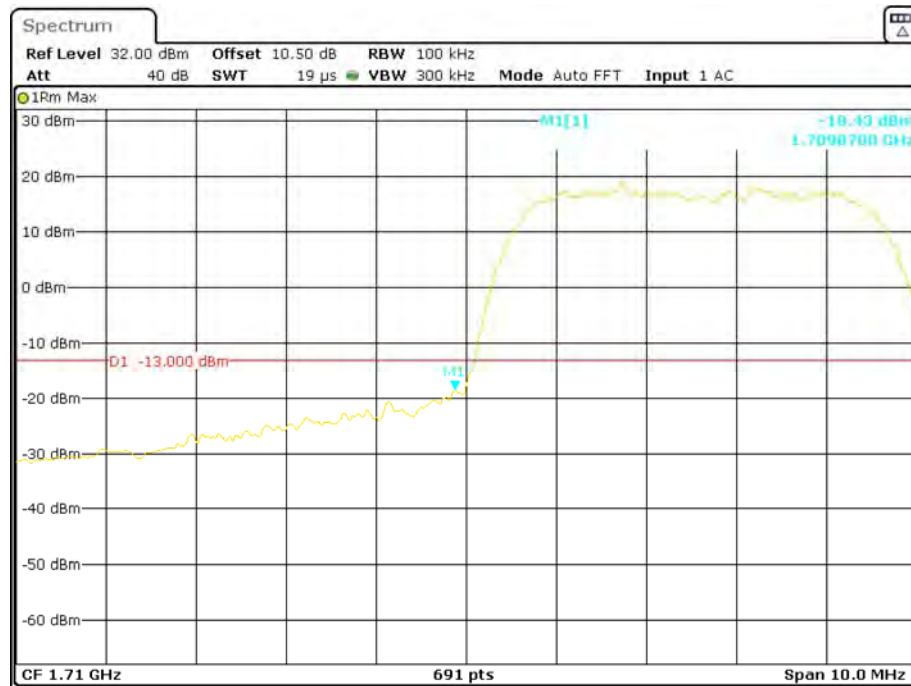
Date: 18.OCT.2017 09:19:45

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



Date: 18.OCT.2017 09:21:14

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



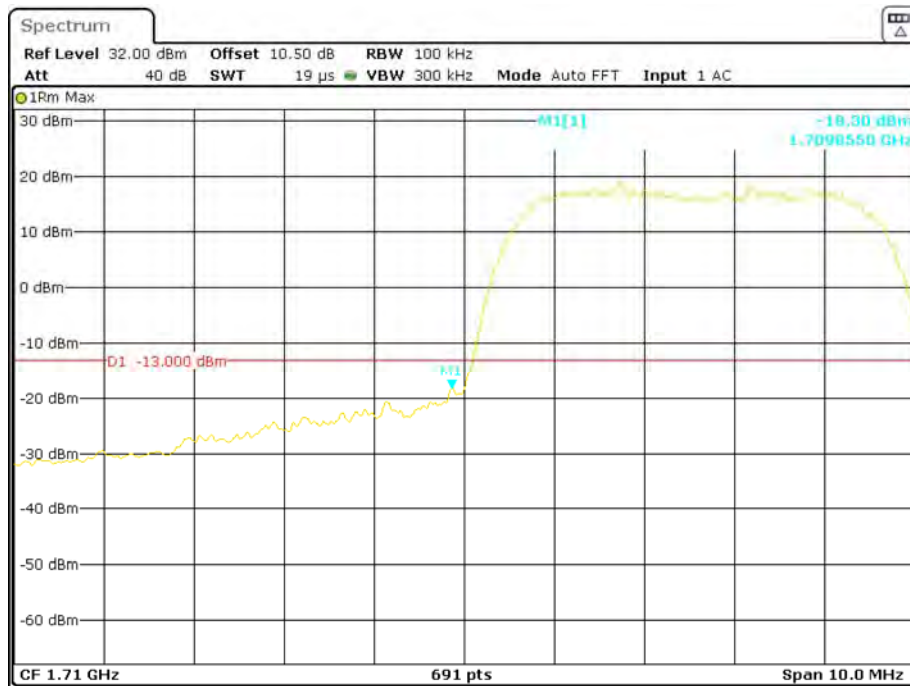
Date: 18.OCT.2017 09:55:02

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



Date: 18.OCT.2017 09:55:47

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

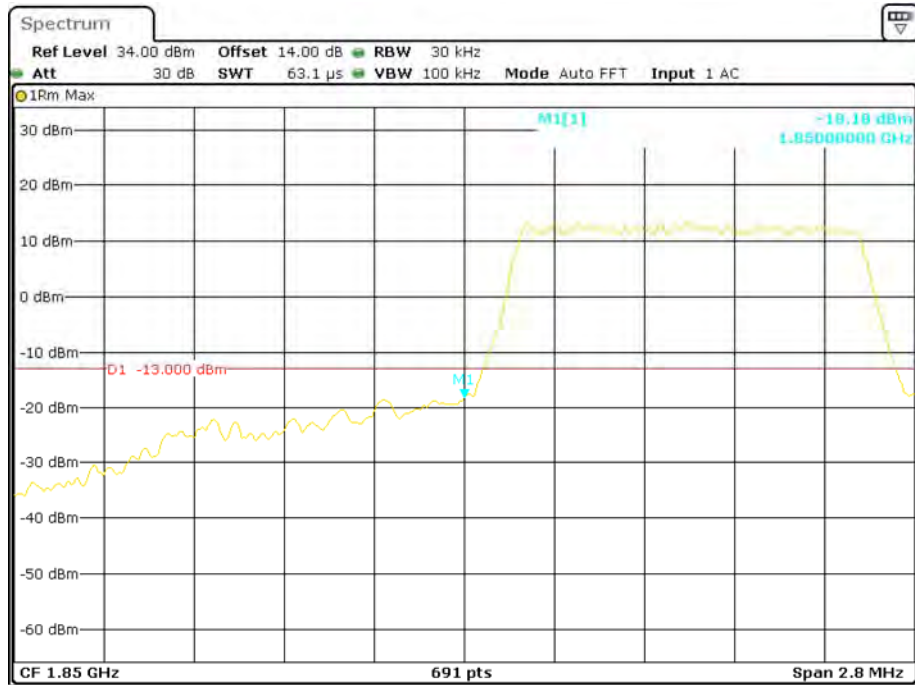


Date: 18.OCT.2017 10:02:10

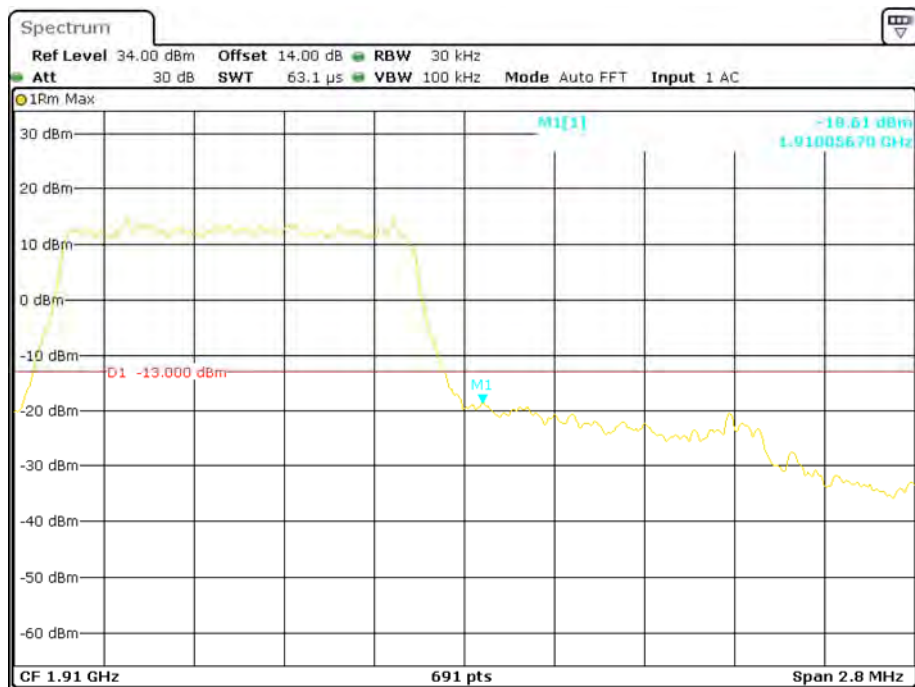
AWS Band, Right Band Edge for HSUPA (BPSK) Mode



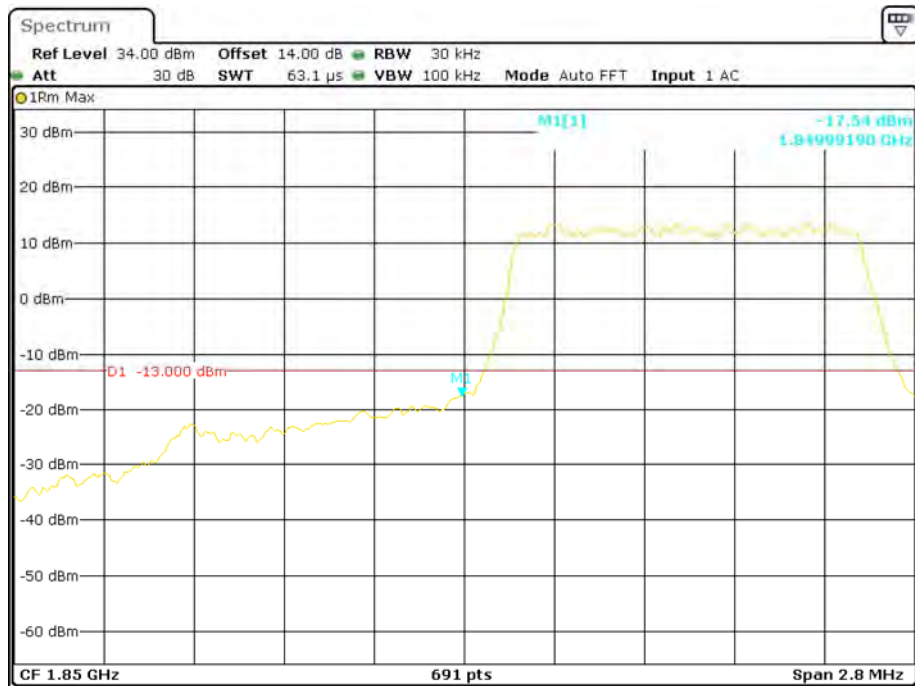
Date: 18.OCT.2017 10:03:01

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

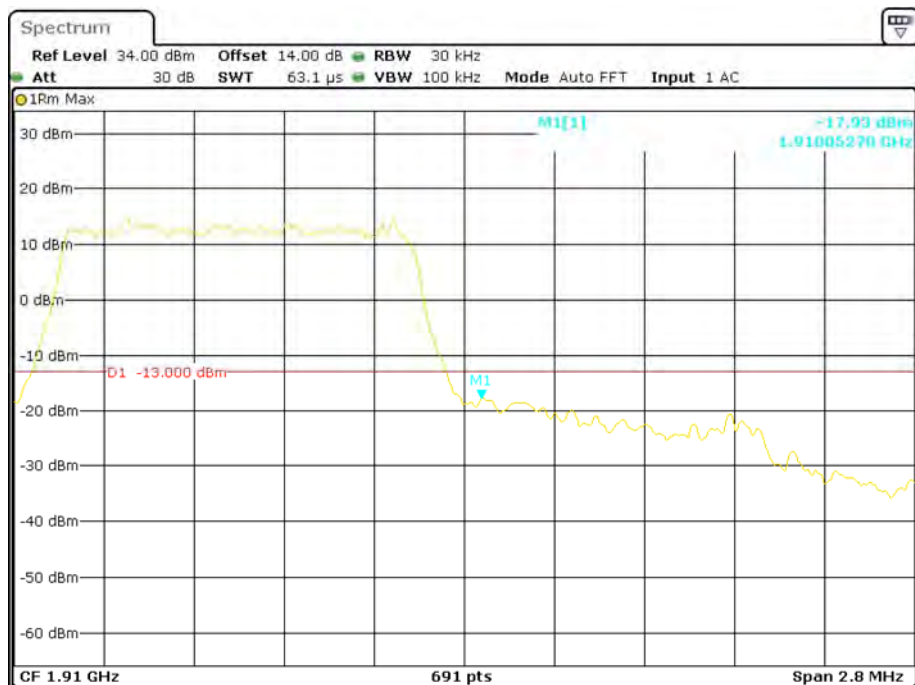
Date: 16.OCT.2017 14:00:12

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

Date: 16.OCT.2017 14:01:52

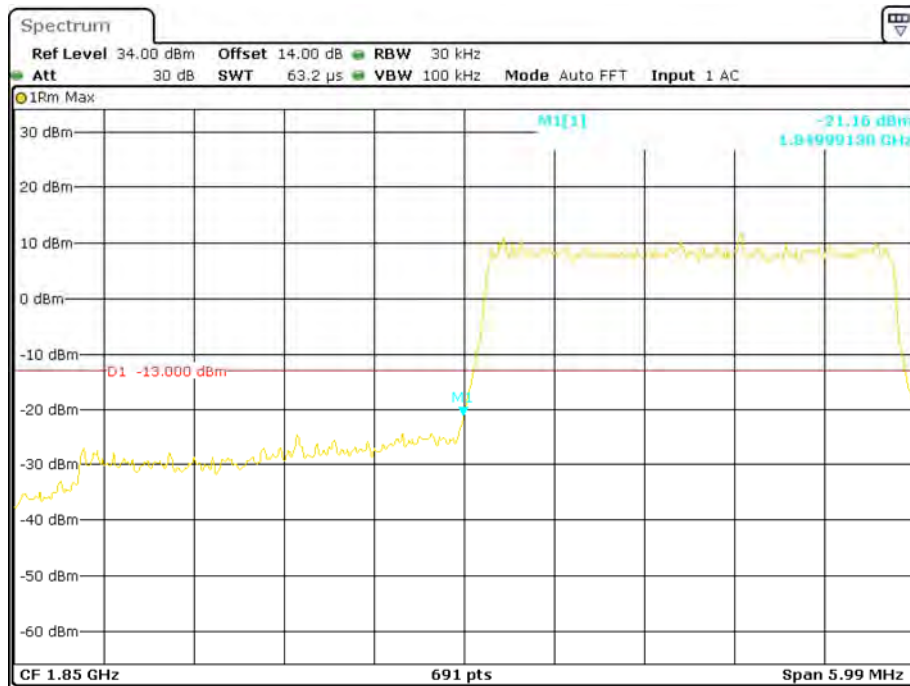
16-QAM (1.4 MHz, FULL RB) - Left Band Edge

Date: 16.OCT.2017 14:05:12

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

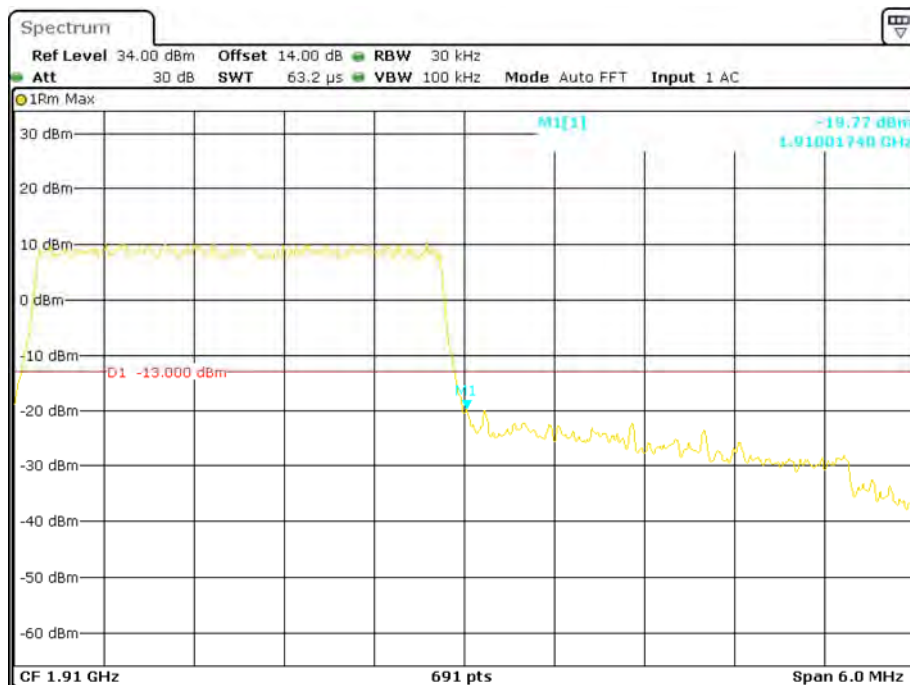
Date: 16.OCT.2017 14:04:18

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

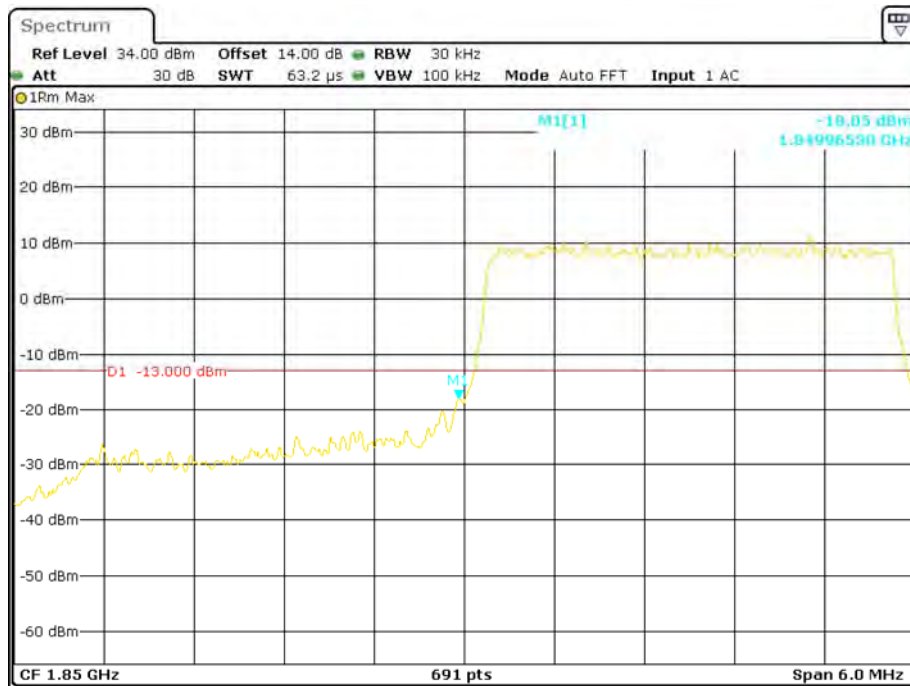


Date: 16.OCT.2017 14:20:27

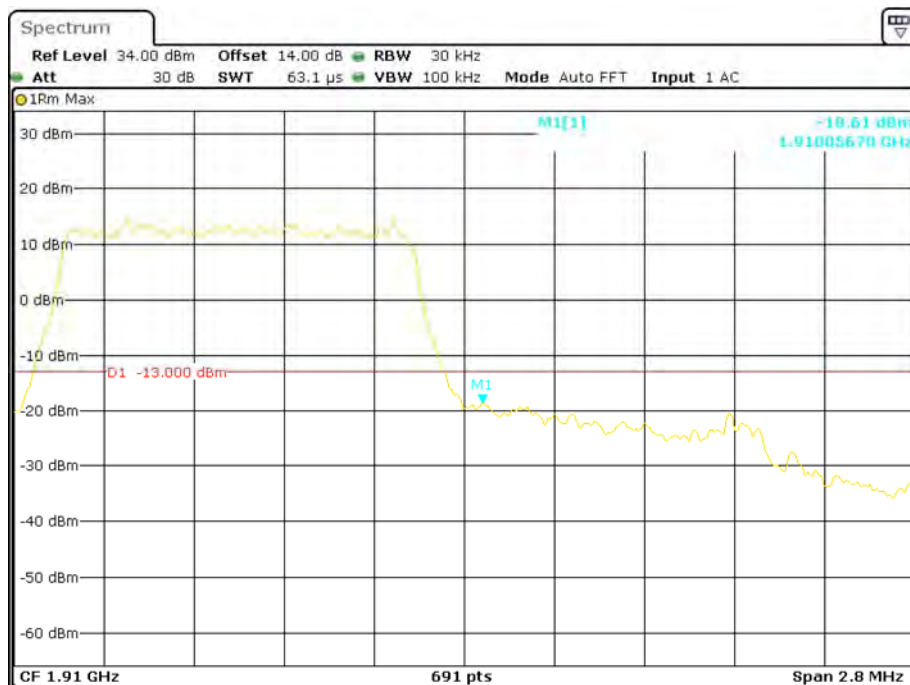
QPSK (3.0 MHz, FULL RB) - Right Band Edge



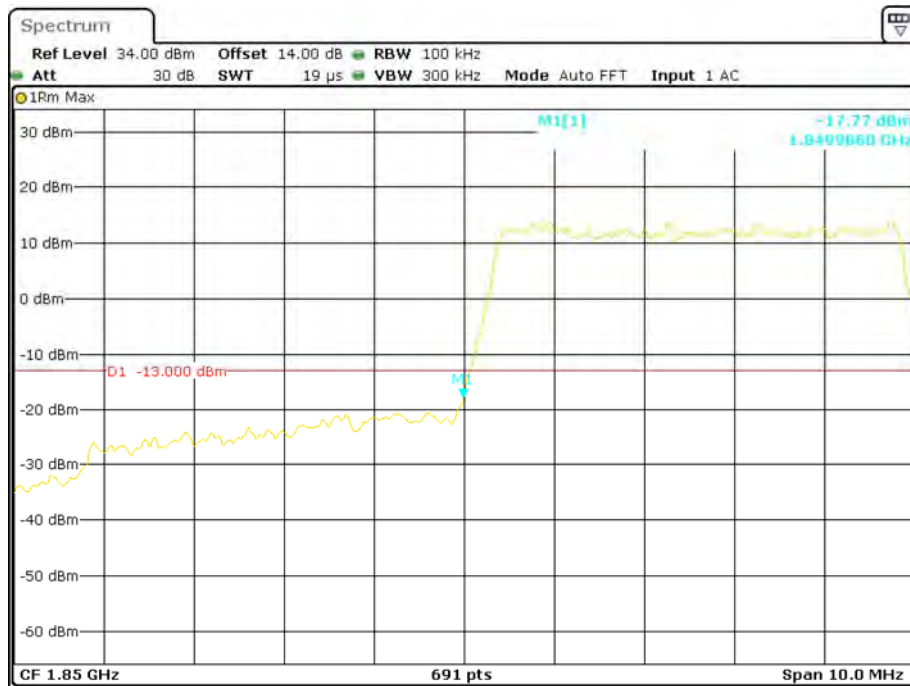
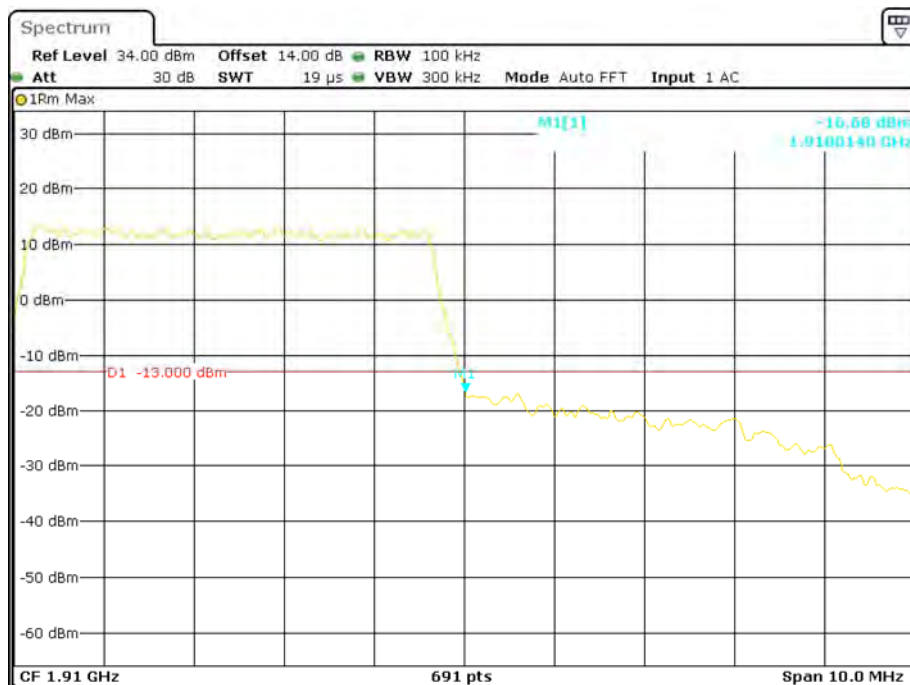
Date: 16.OCT.2017 14:19:12

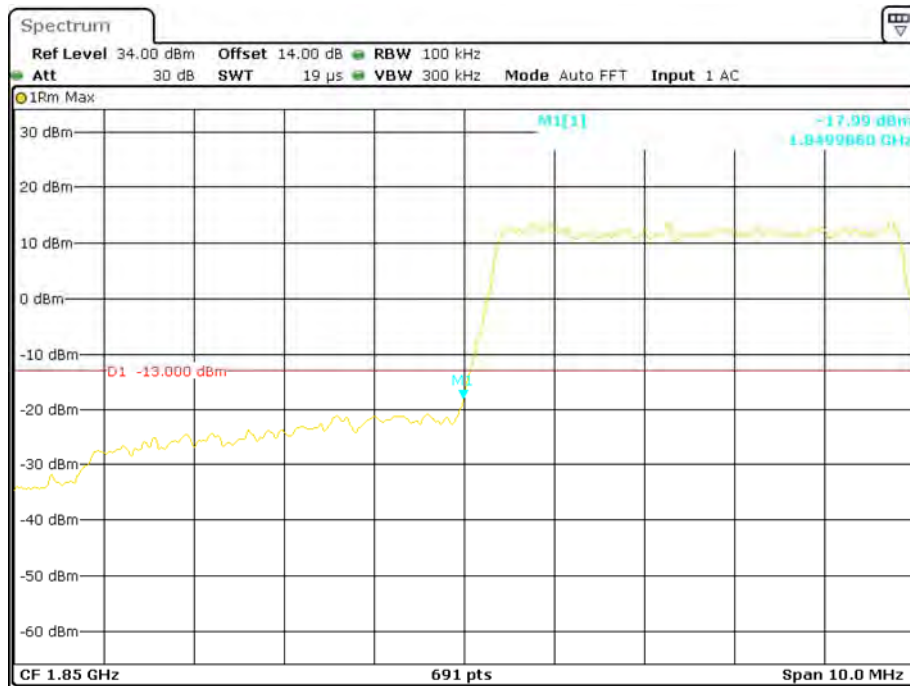
16-QAM (3.0 MHz, FULL RB) - Left Band Edge

Date: 16.OCT.2017 14:16:39

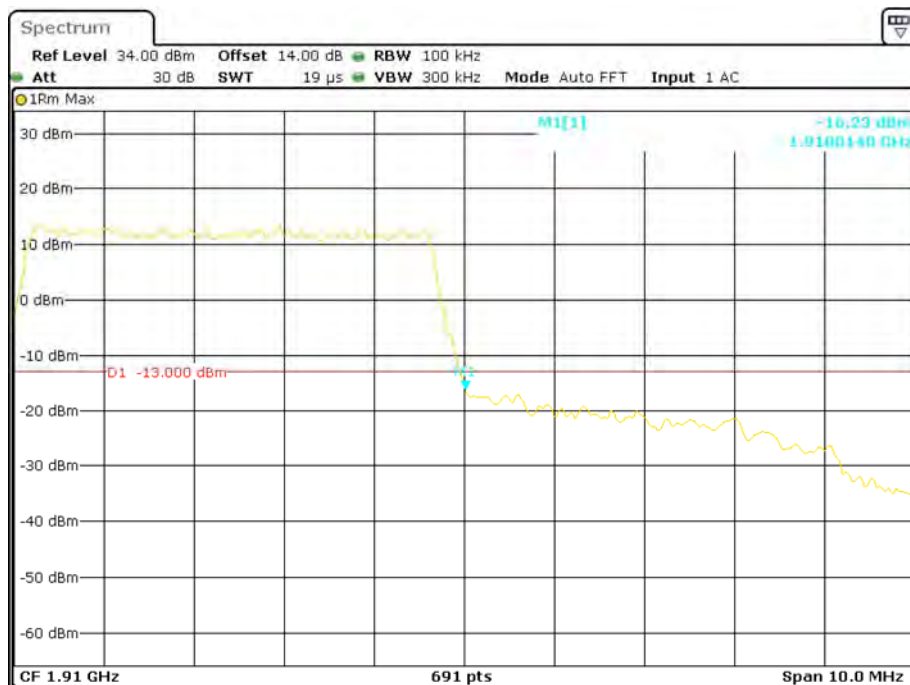
16-QAM (3.0 MHz, FULL RB) - Right Band Edge

Date: 16.OCT.2017 14:01:52

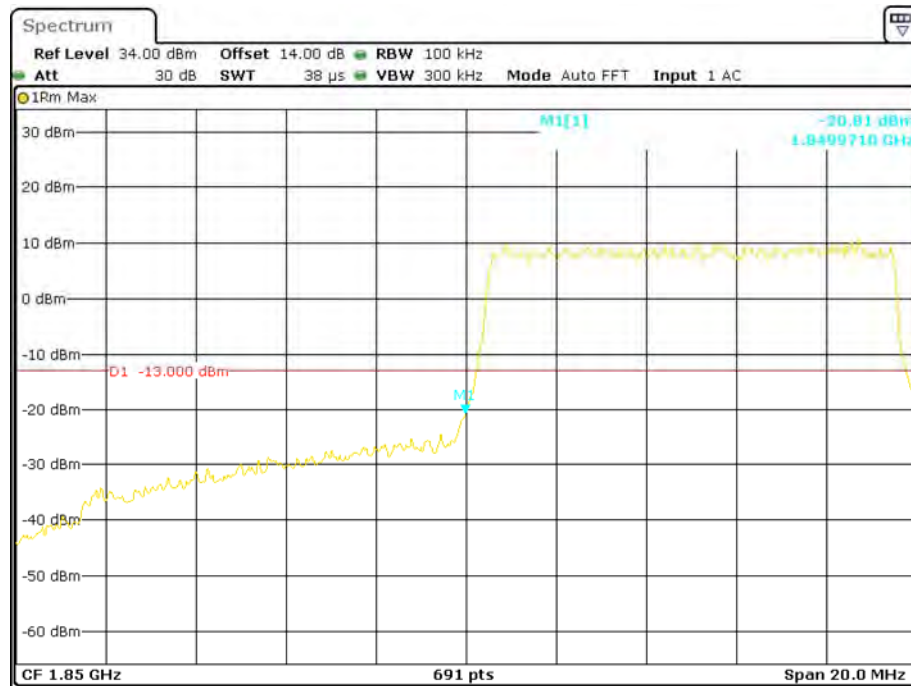
QPSK (5.0 MHz, FULL RB) - Left Band Edge**QPSK (5.0 MHz, FULL RB) - Right Band Edge**

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

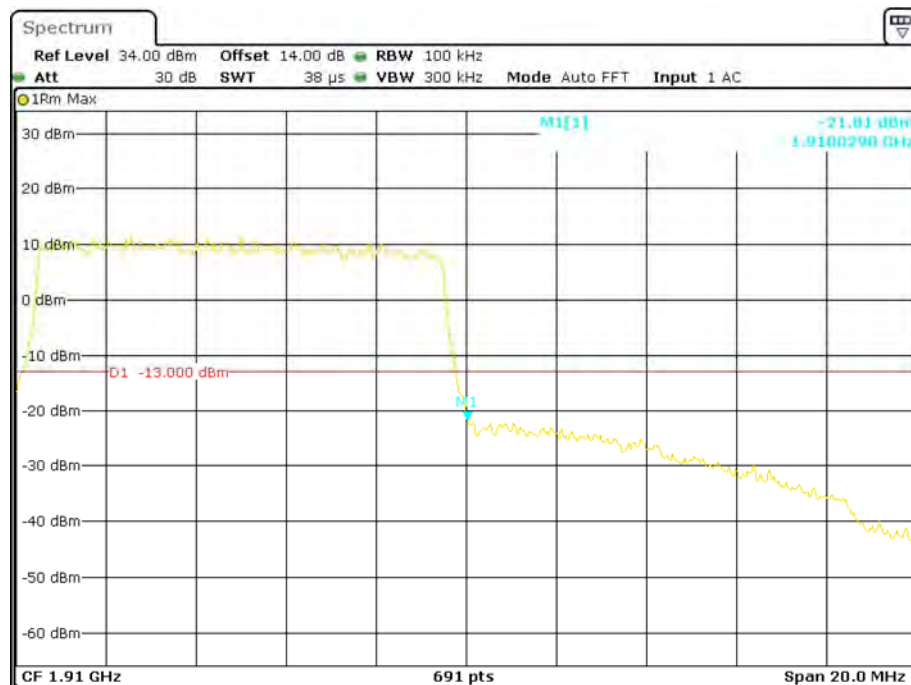
Date: 16.OCT.2017 14:30:01

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

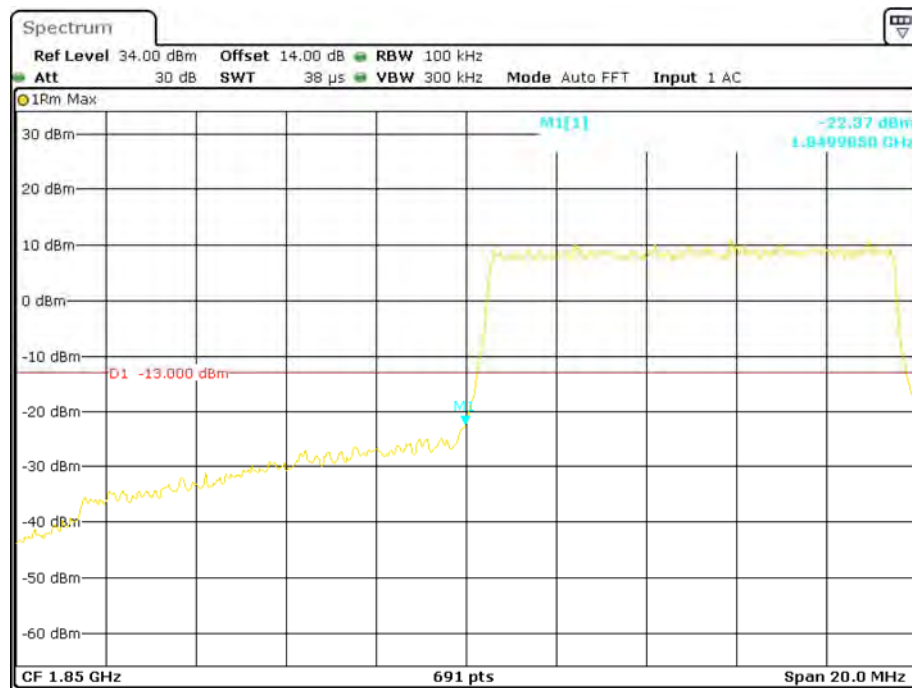
Date: 16.OCT.2017 14:29:10

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

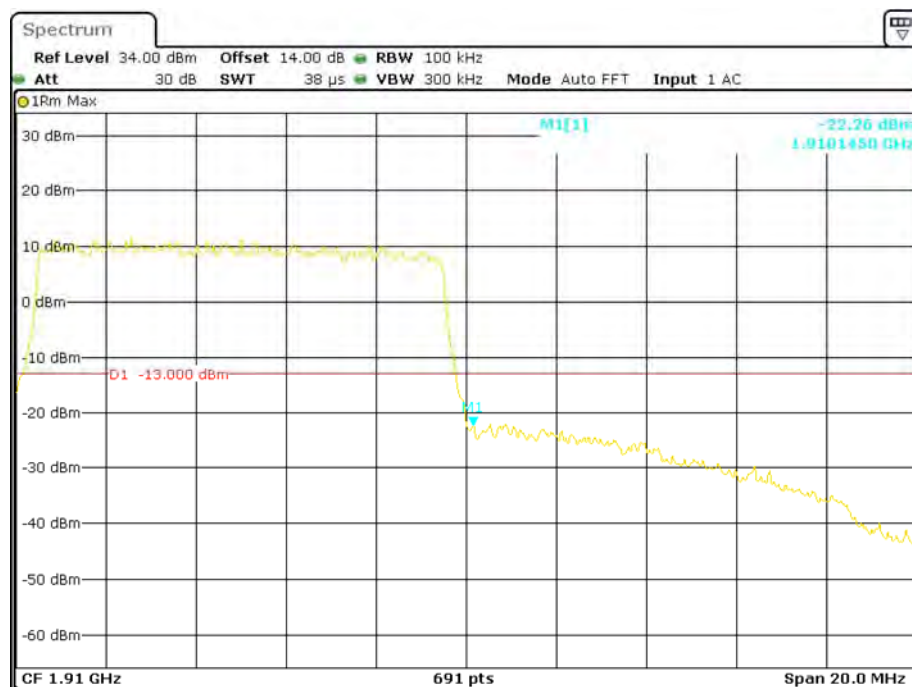
Date: 16.OCT.2017 14:36:17

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

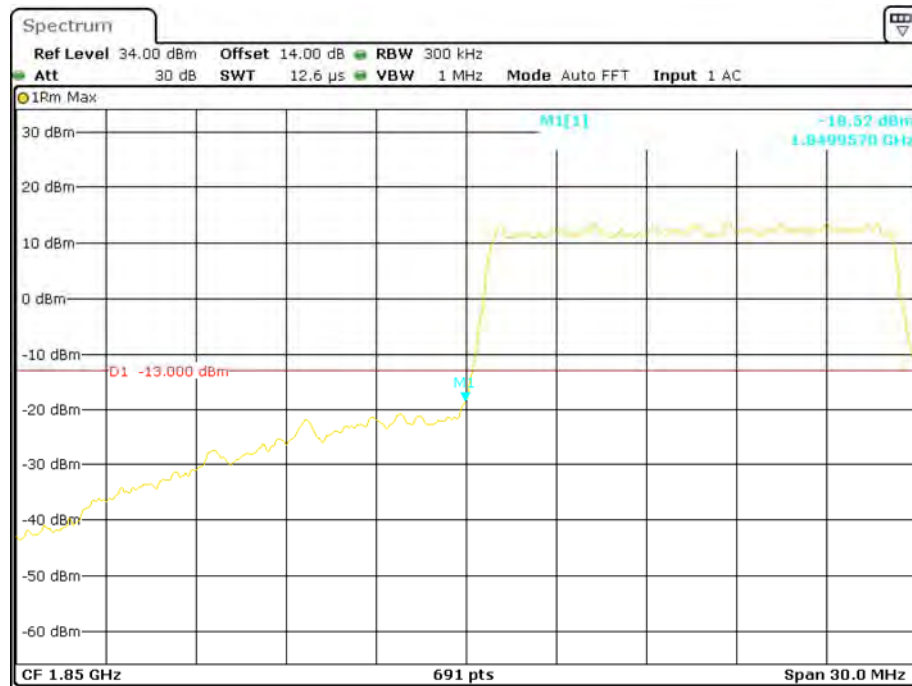
Date: 16.OCT.2017 14:35:12

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

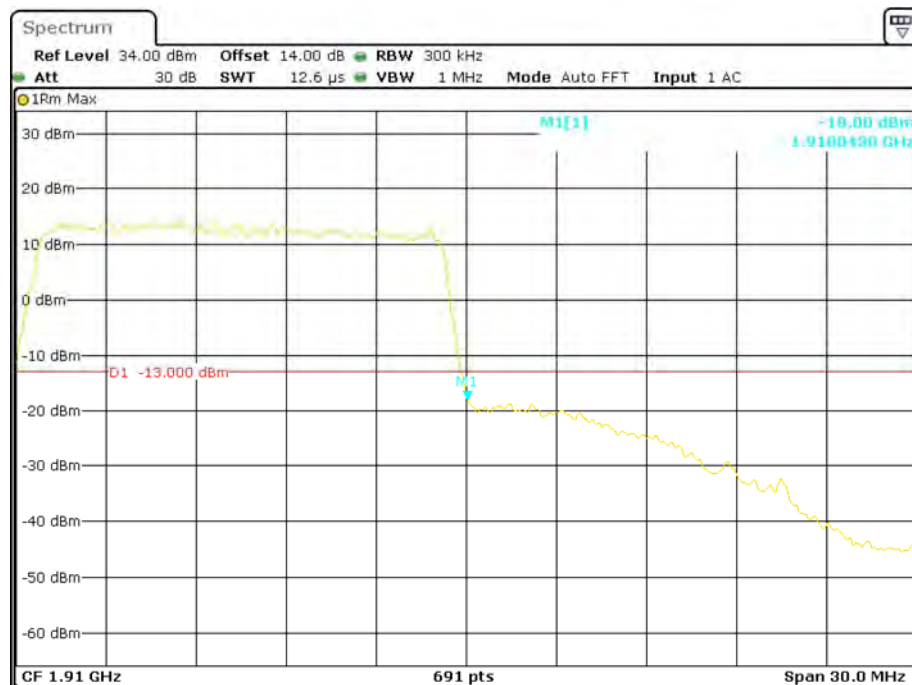
Date: 16.OCT.2017 14:31:19

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

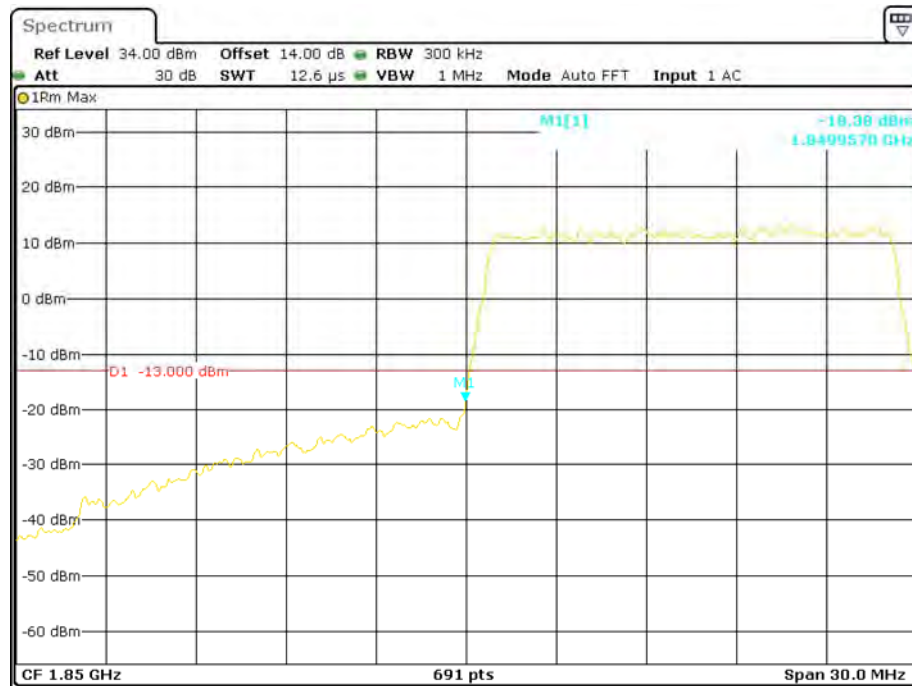
Date: 16.OCT.2017 14:33:04

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

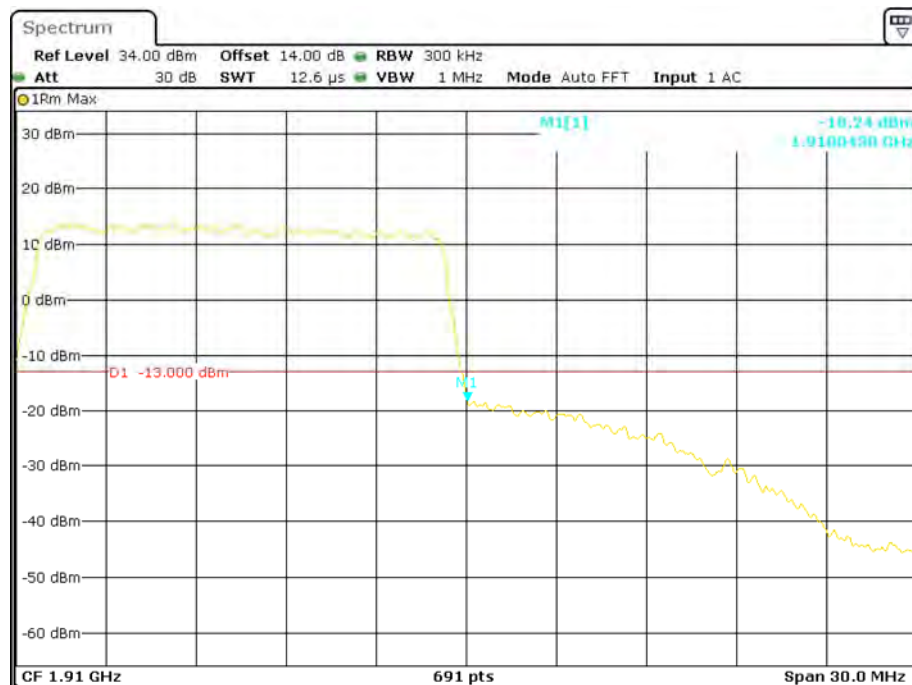
Date: 16.OCT.2017 14:43:13

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

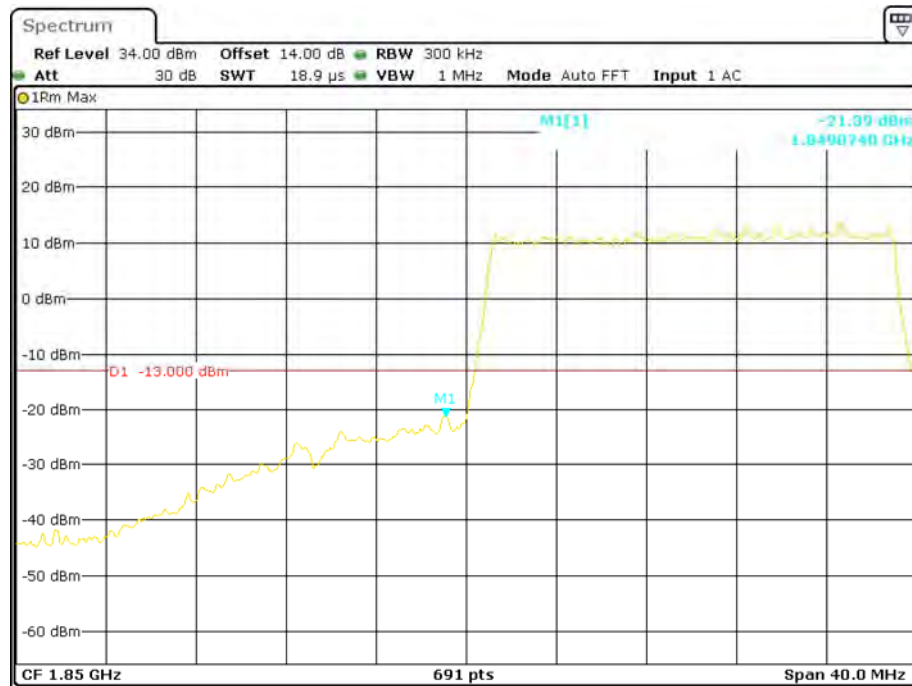
Date: 16.OCT.2017 14:44:33

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

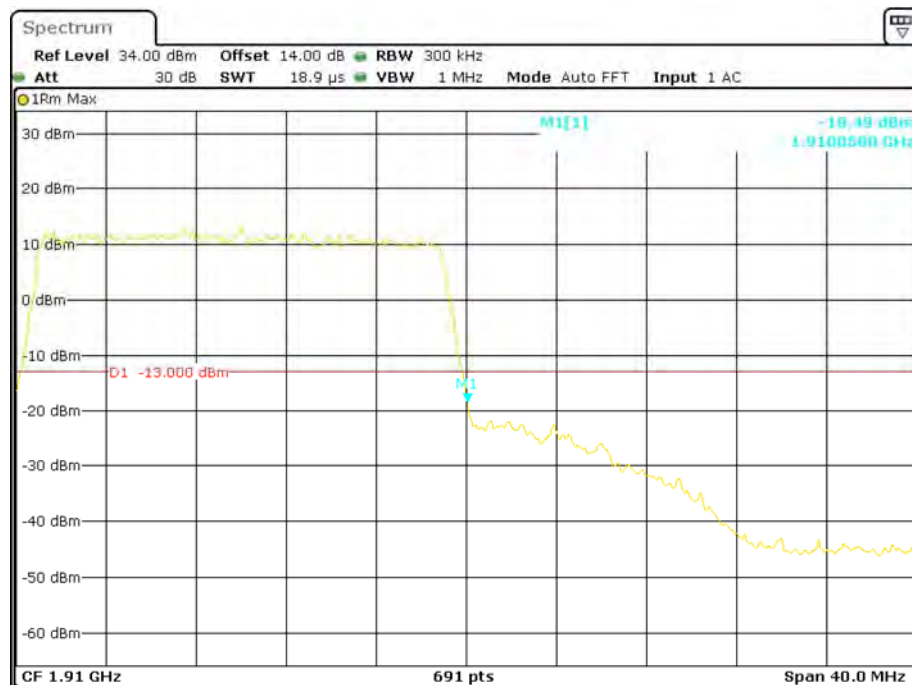
Date: 16.OCT.2017 14:46:12

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

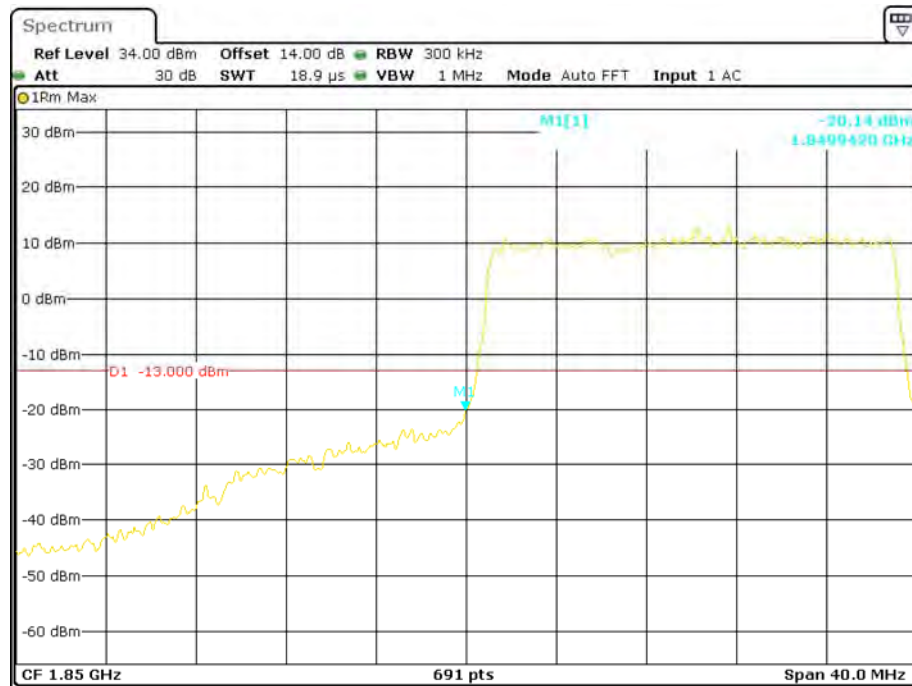
Date: 16.OCT.2017 14:45:29

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

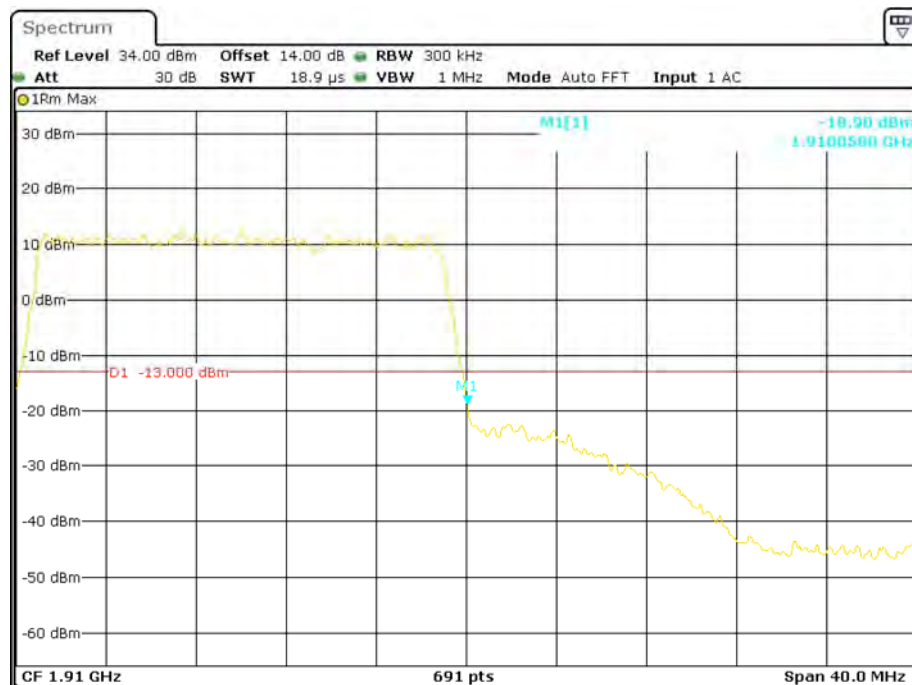
Date: 16.OCT.2017 14:53:38

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

Date: 16.OCT.2017 14:55:31

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

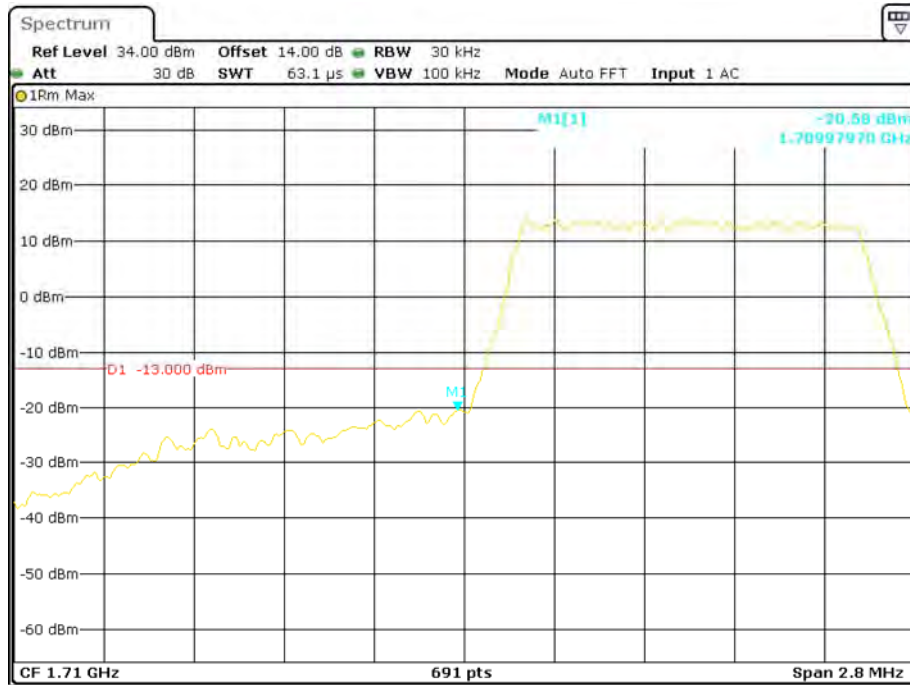
Date: 16.OCT.2017 14:57:05

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

Date: 16.OCT.2017 14:56:14

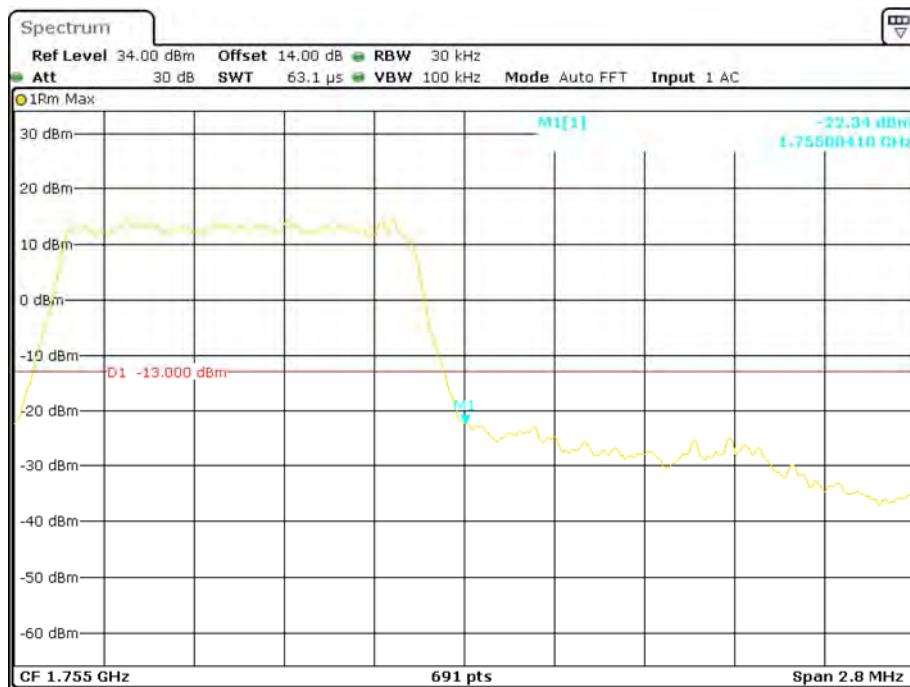
Band 4:

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

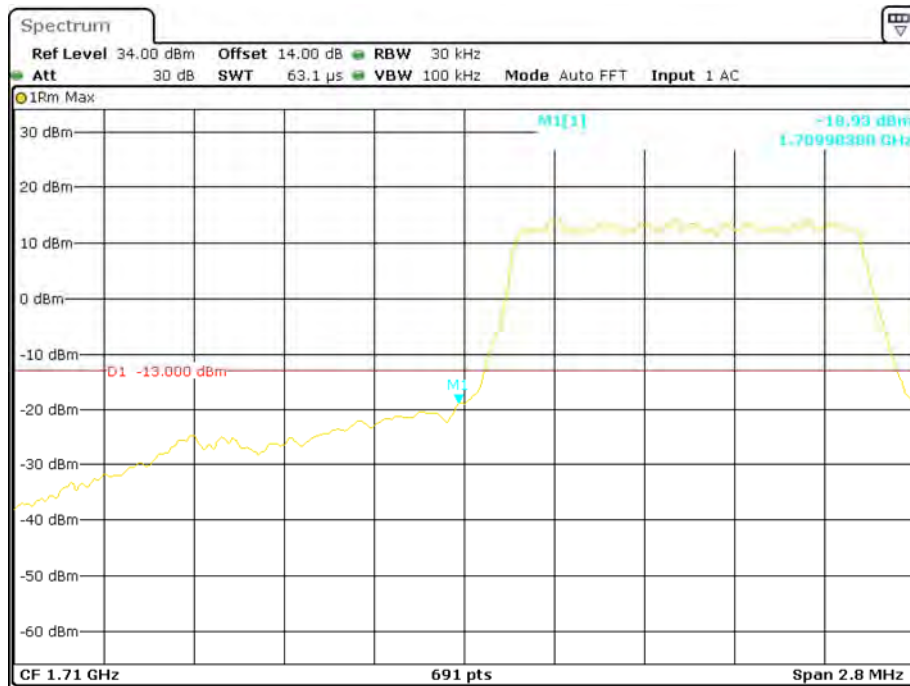


Date: 16.OCT.2017 15:00:44

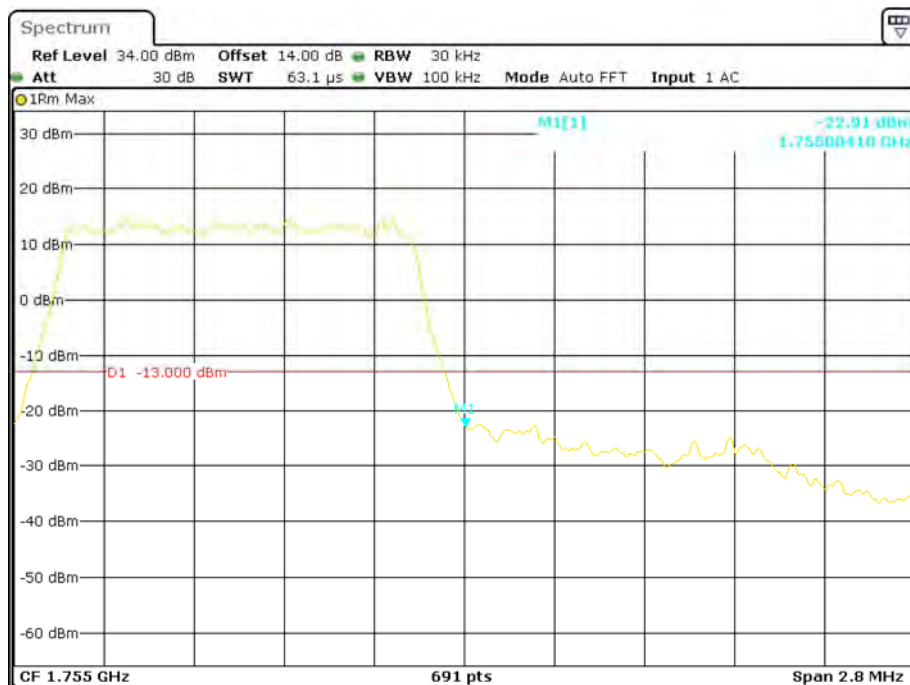
QPSK (1.4 MHz, FULL RB) - Right Band Edge



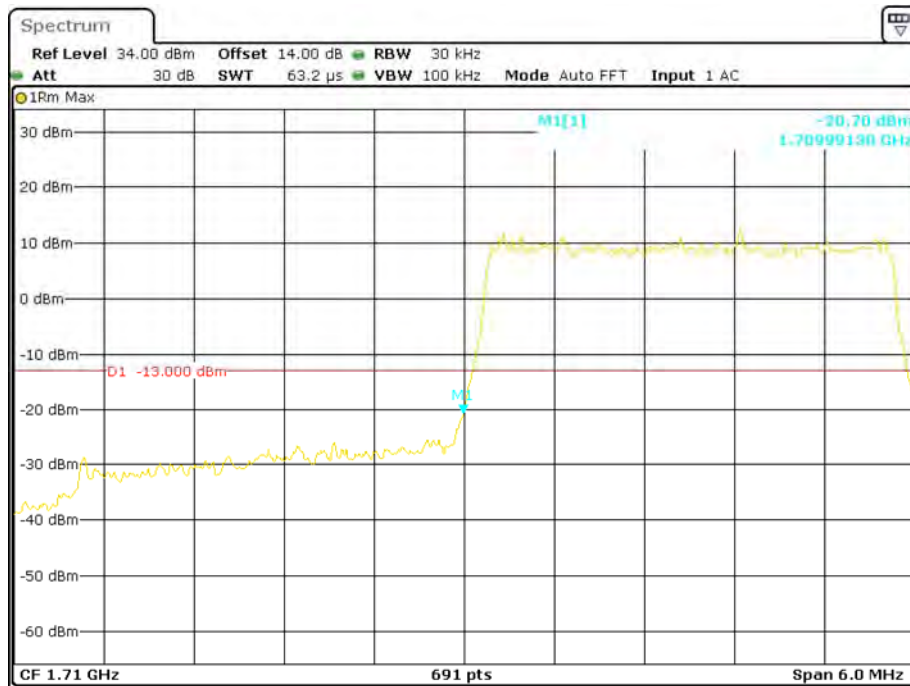
Date: 16.OCT.2017 15:02:04

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

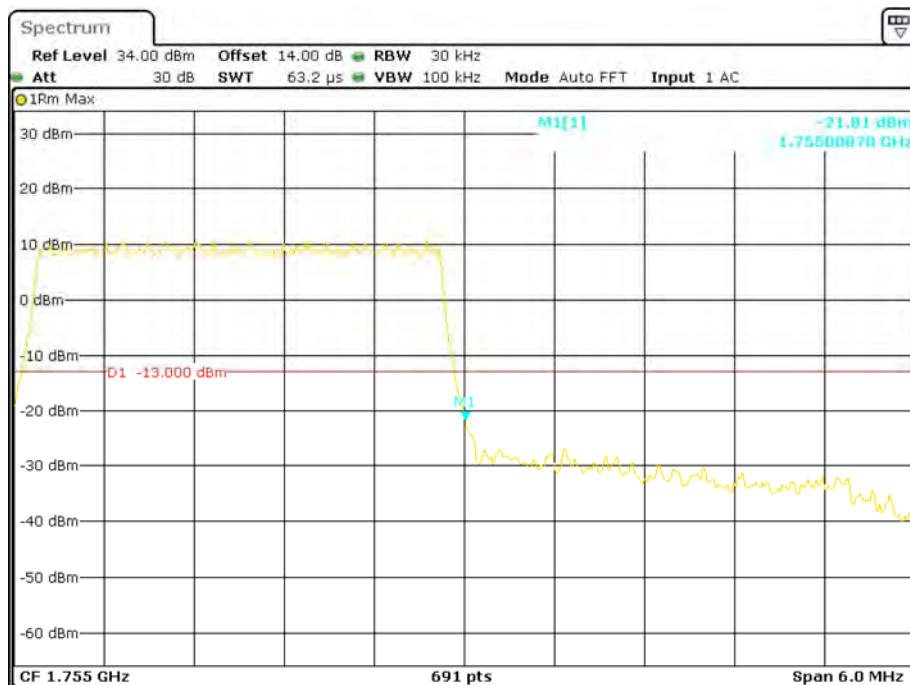
Date: 16.OCT.2017 15:04:09

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

Date: 16.OCT.2017 15:03:00

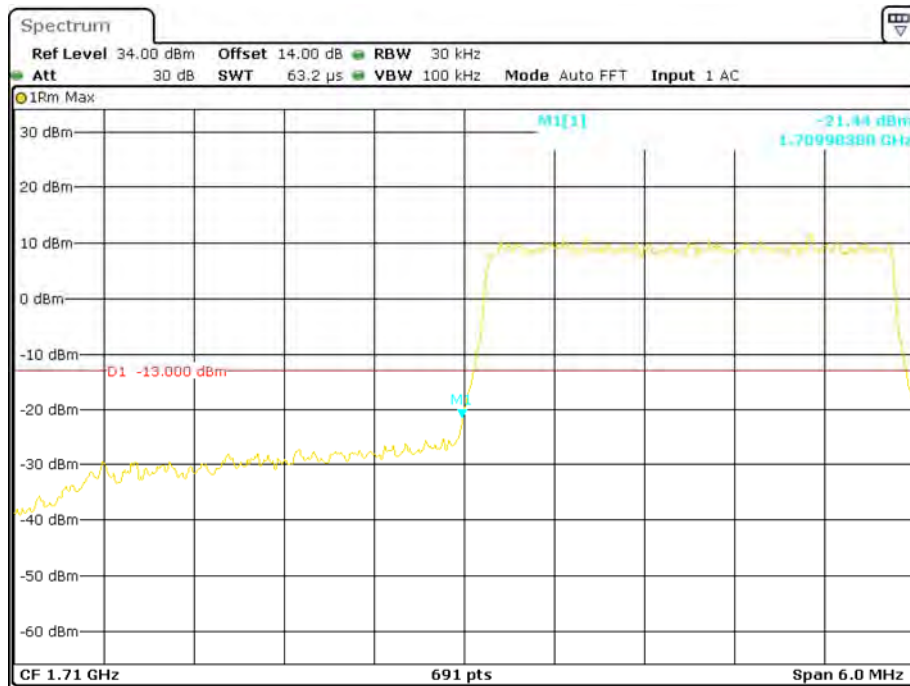
QPSK (3.0 MHz, FULL RB) - Left Band Edge

Date: 16.OCT.2017 15:10:51

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

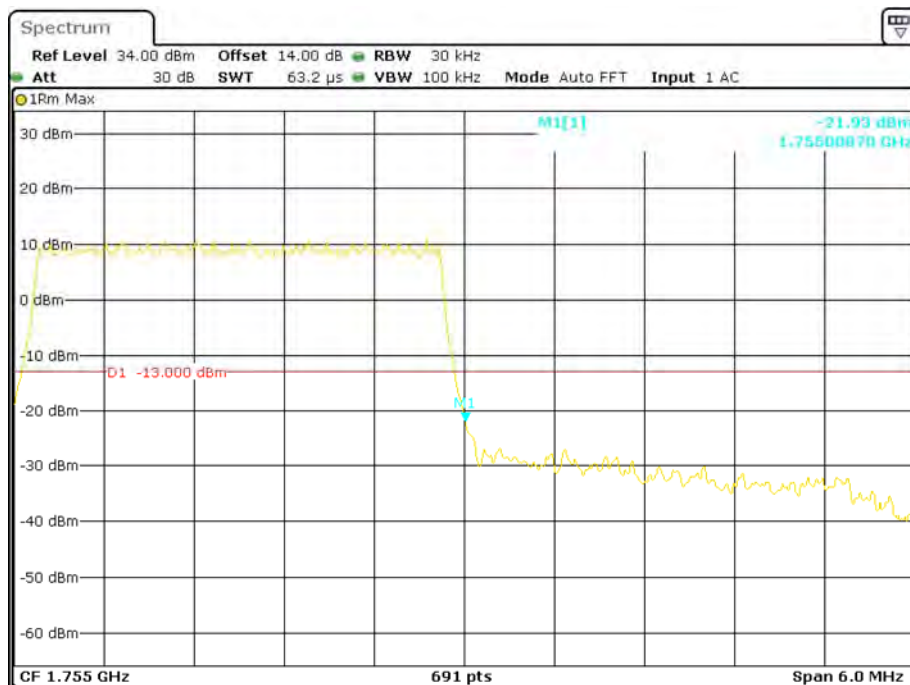
Date: 16.OCT.2017 15:09:31

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



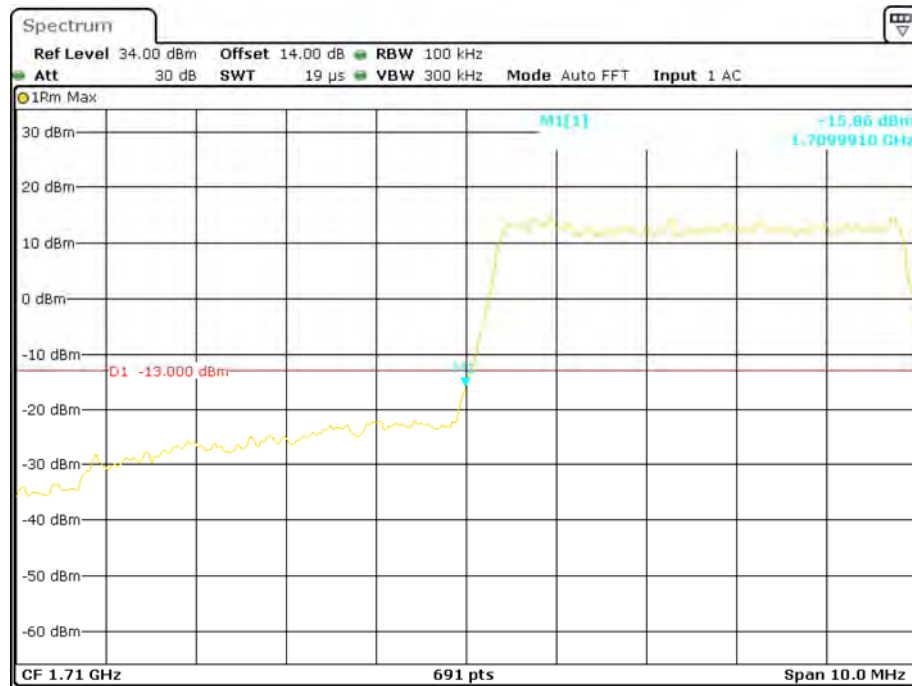
Date: 16.OCT.2017 15:08:09

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



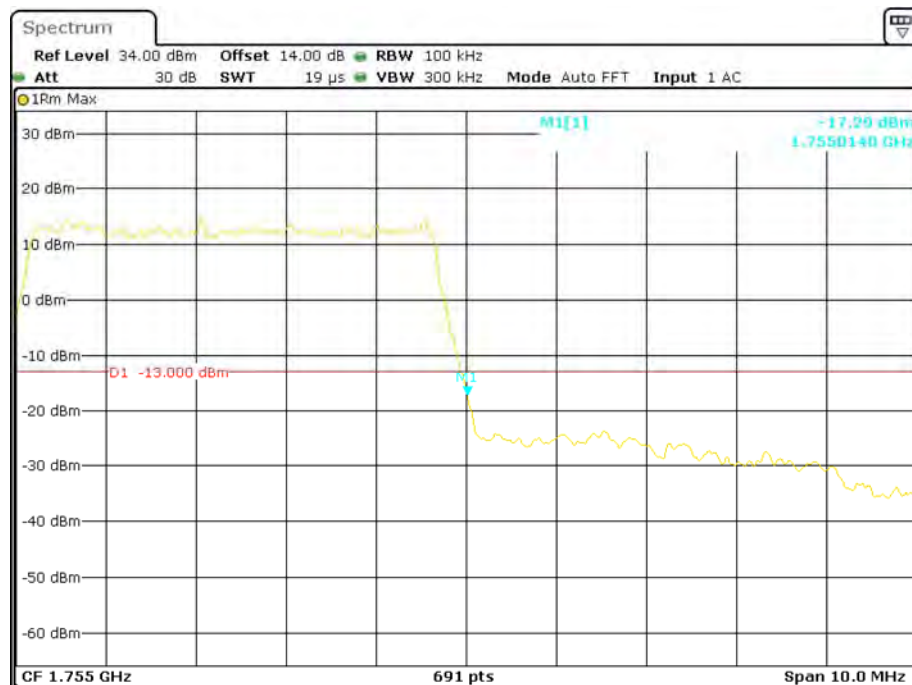
Date: 16.OCT.2017 15:09:01

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

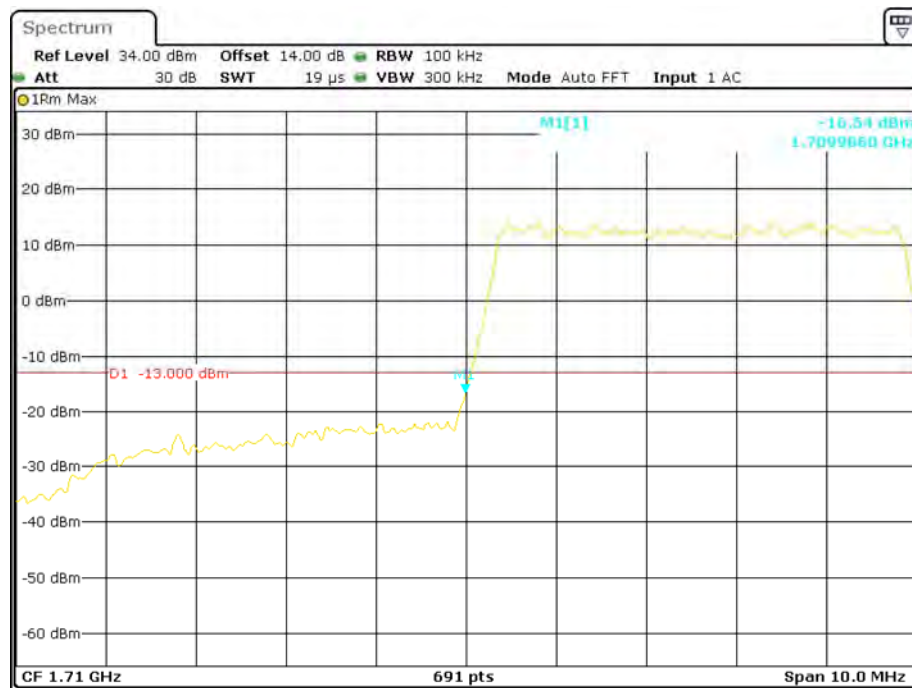


Date: 16.OCT.2017 15:12:59

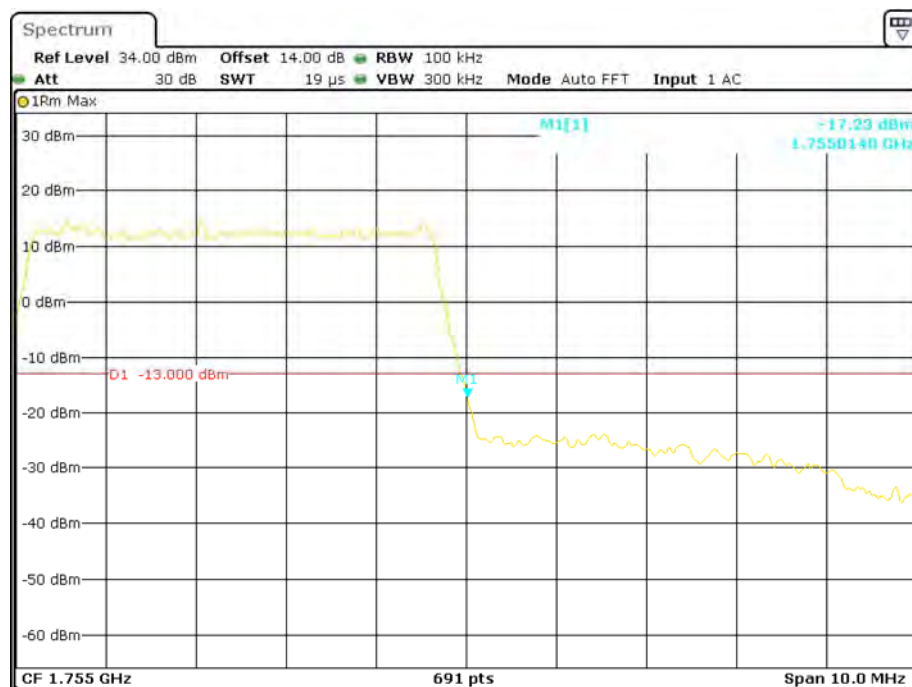
QPSK (5.0 MHz, FULL RB) - Right Band Edge



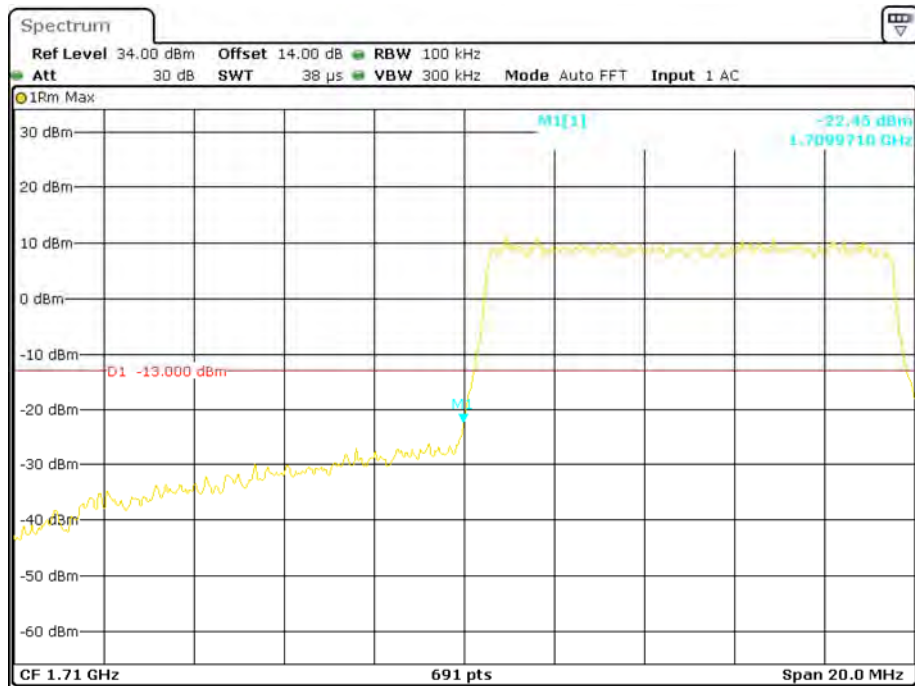
Date: 16.OCT.2017 15:14:12

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

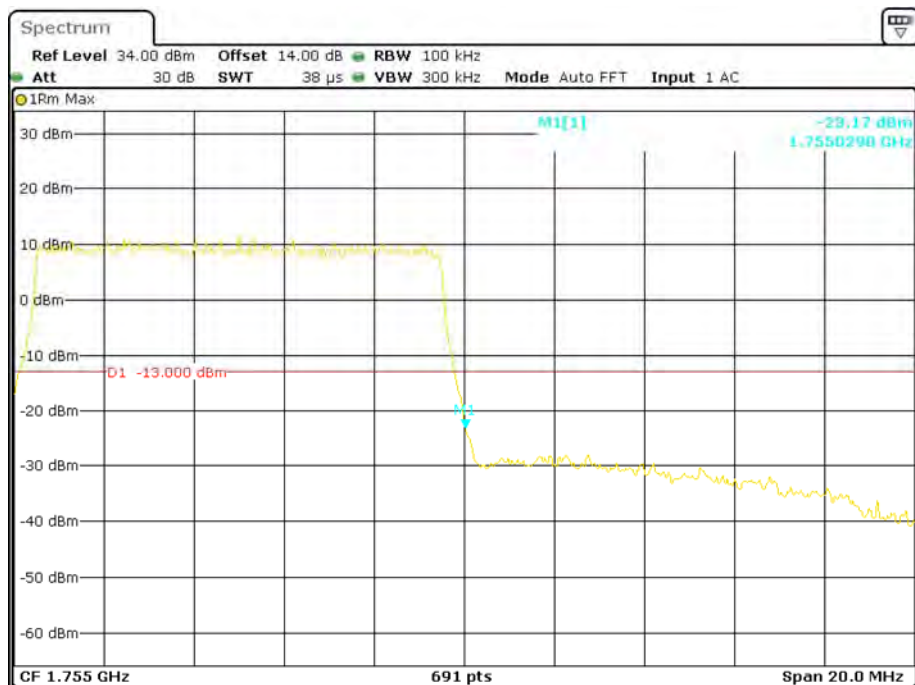
Date: 16.OCT.2017 15:16:08

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

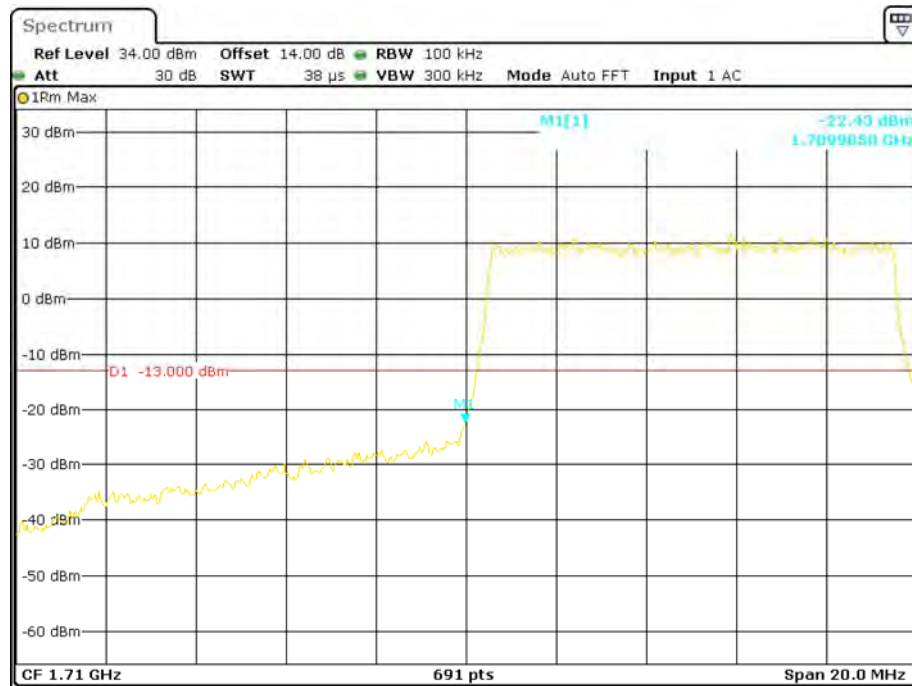
Date: 16.OCT.2017 15:15:05

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

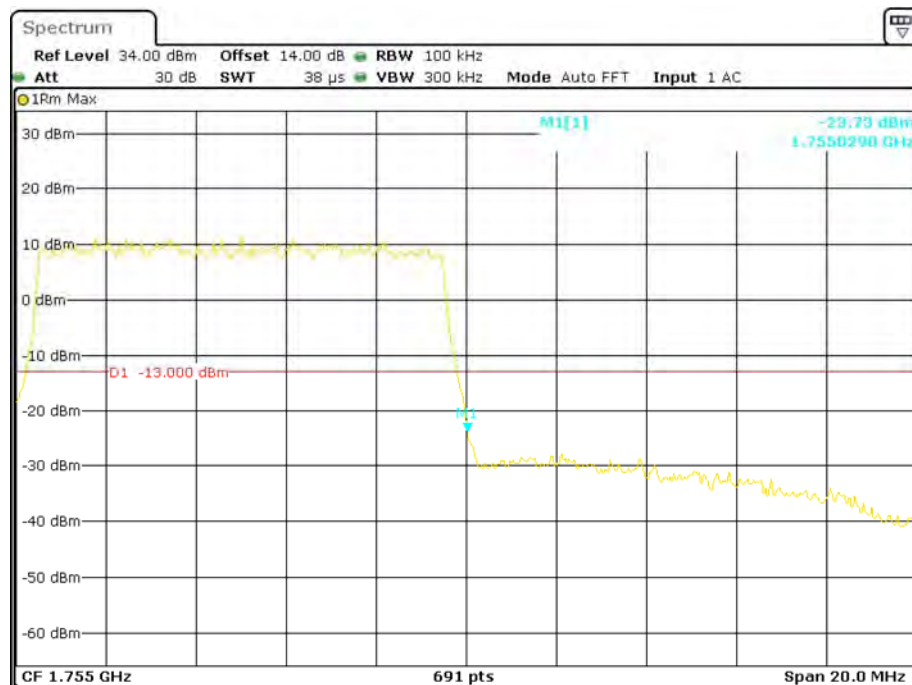
Date: 16.OCT.2017 15:19:41

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

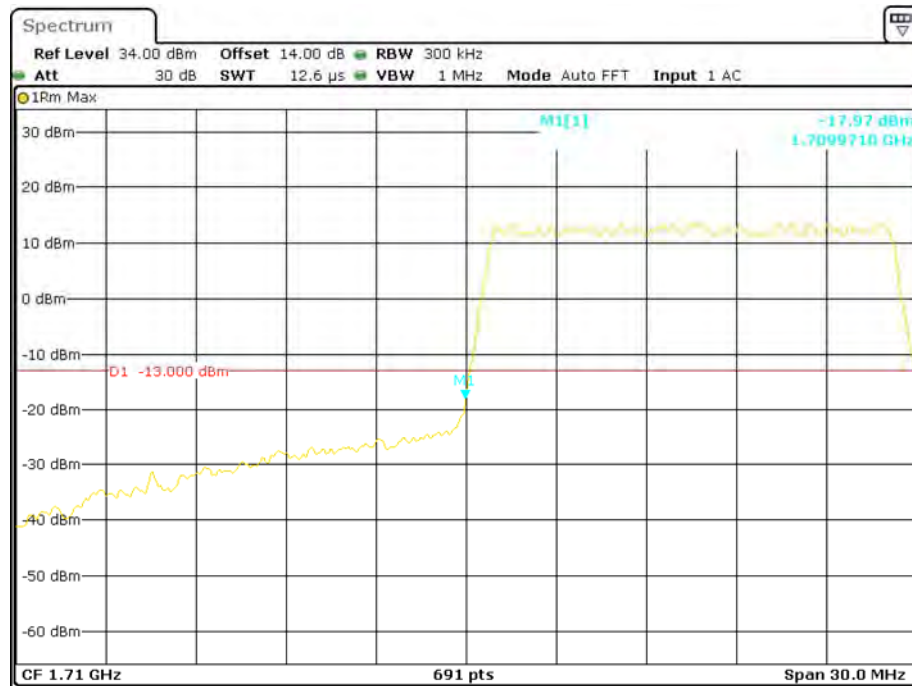
Date: 16.OCT.2017 15:18:57

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

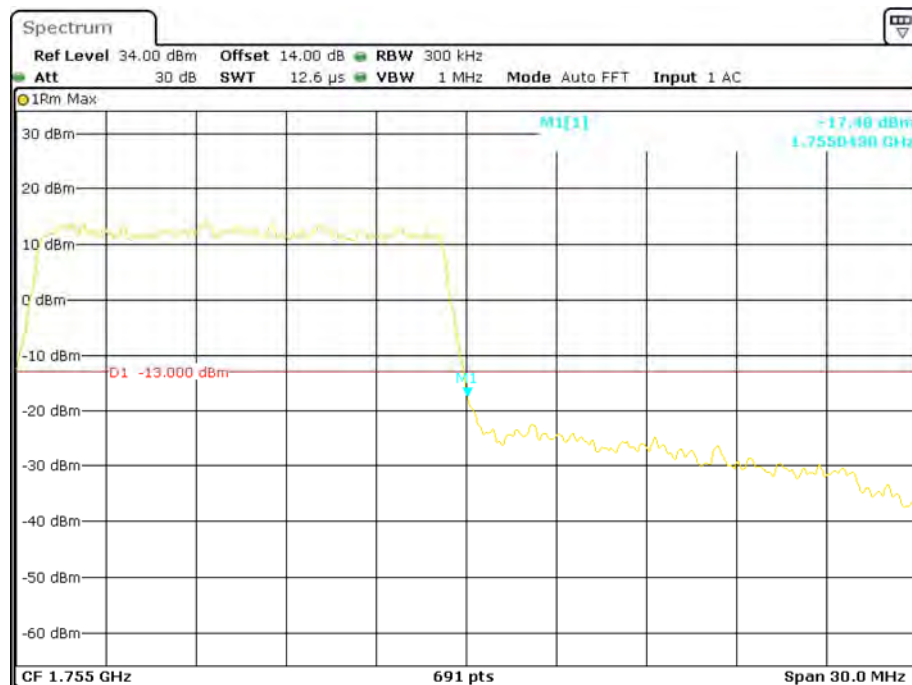
Date: 16.OCT.2017 15:17:30

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

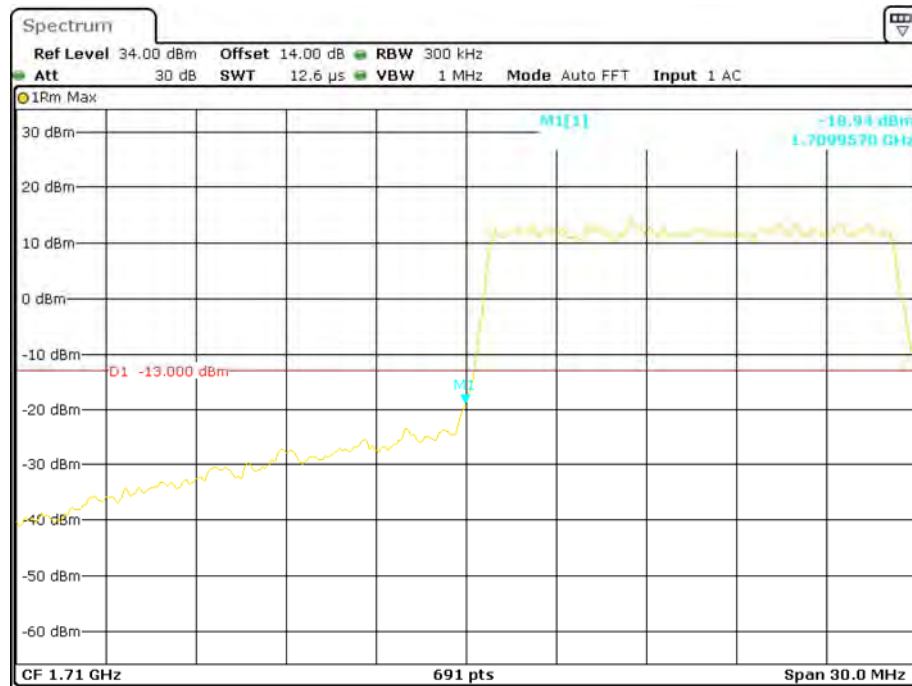
Date: 16.OCT.2017 15:18:17

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

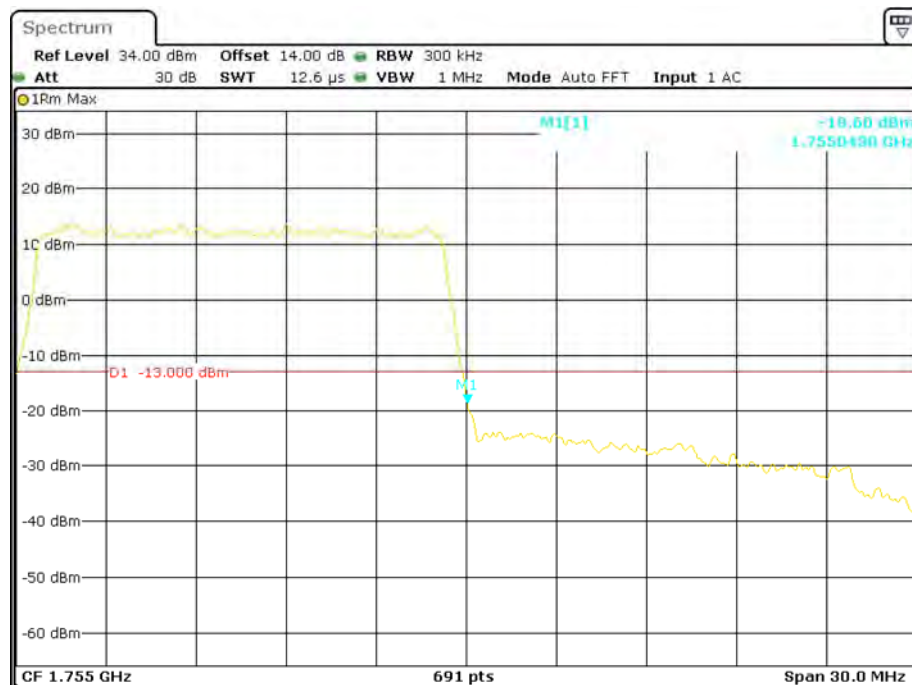
Date: 16.OCT.2017 15:23:45

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

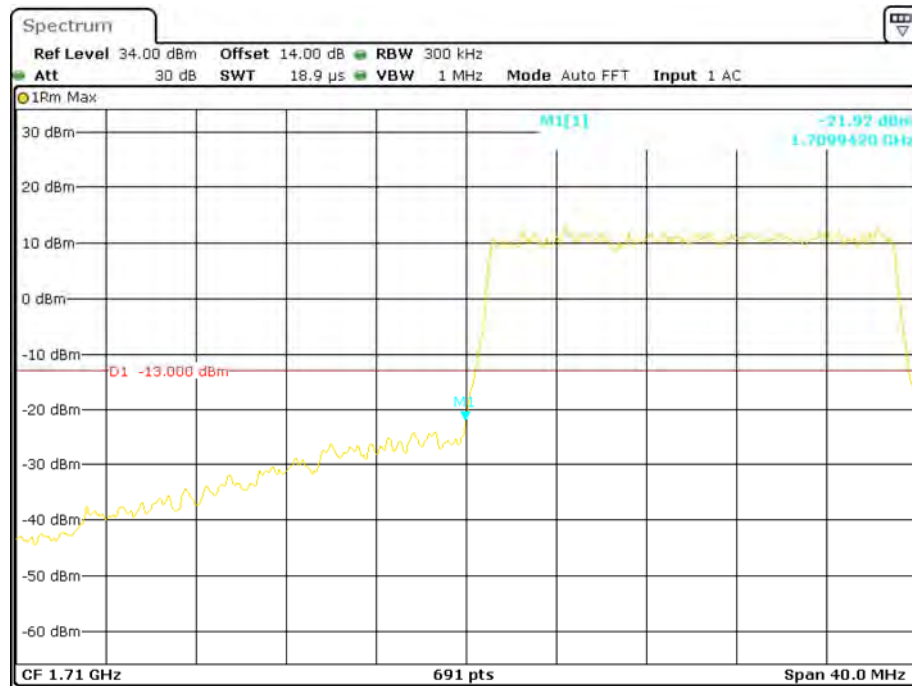
Date: 16.OCT.2017 15:24:36

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

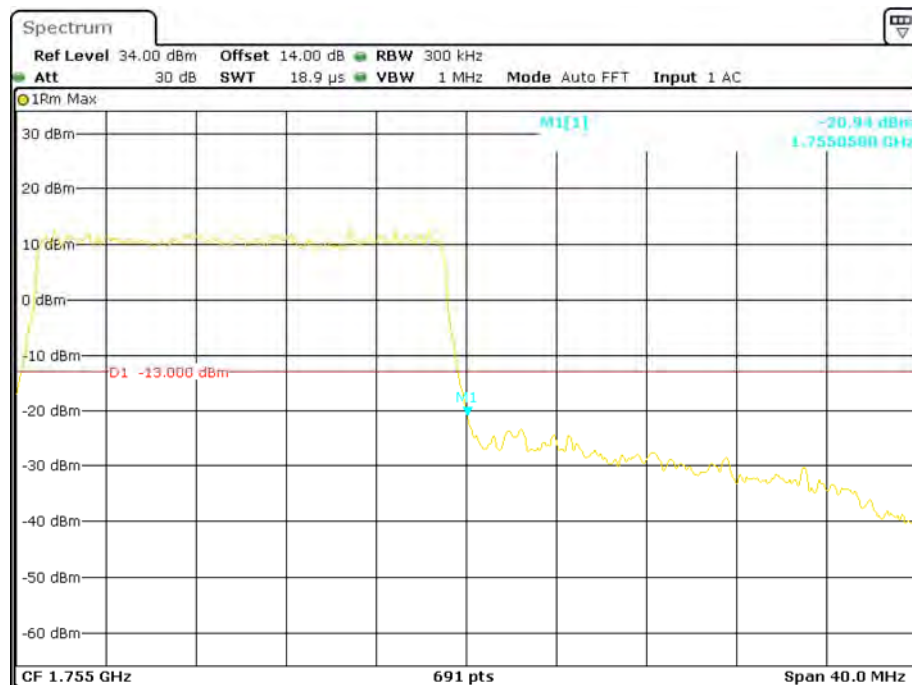
Date: 16.OCT.2017 15:27:52

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

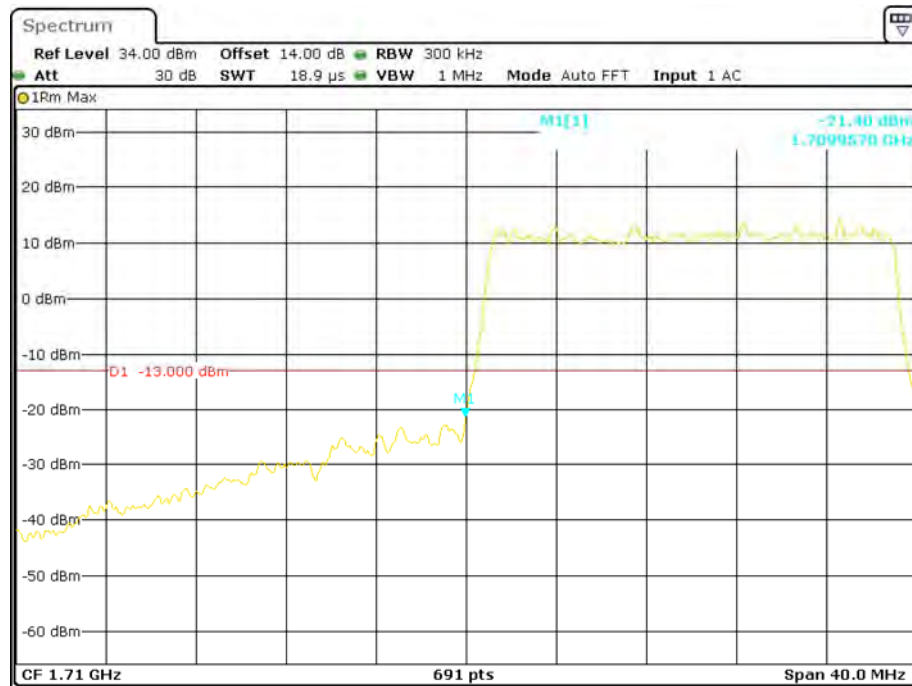
Date: 16.OCT.2017 15:27:10

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

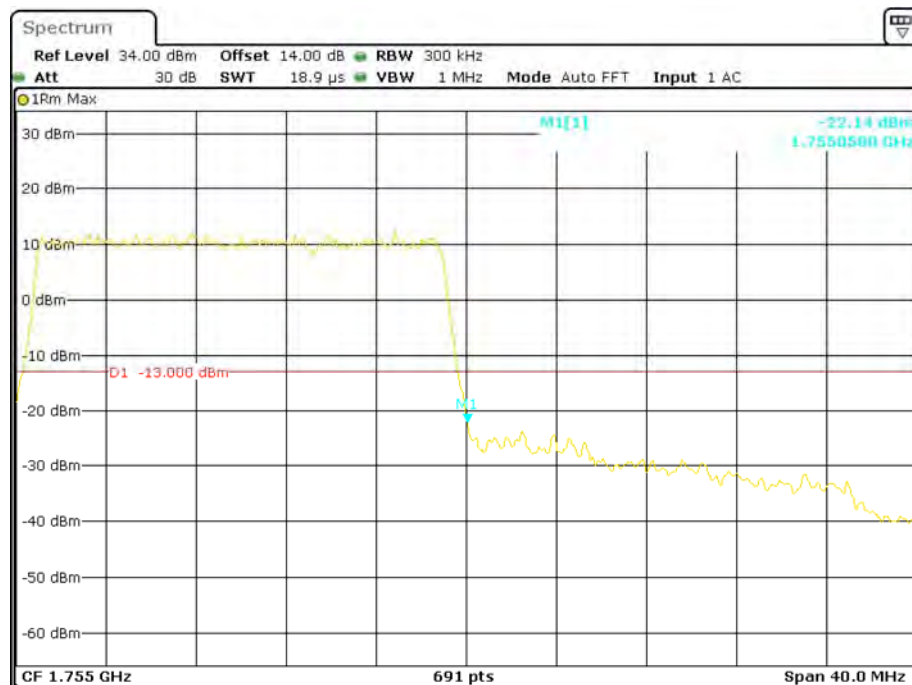
Date: 16.OCT.2017 15:32:49

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

Date: 16.OCT.2017 15:32:03

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

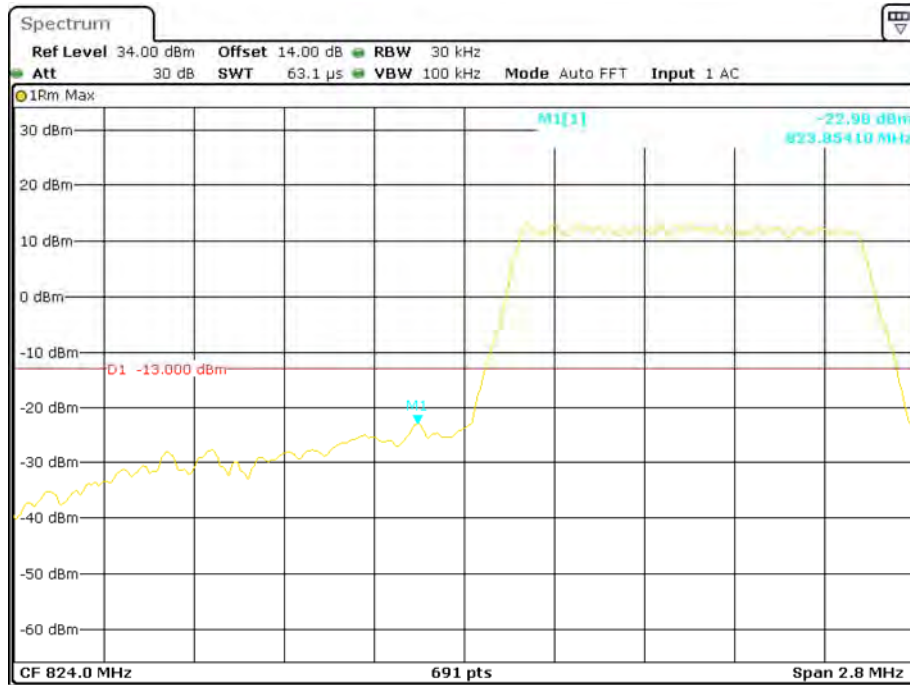
Date: 16.OCT.2017 15:30:46

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

Date: 16.OCT.2017 15:31:33

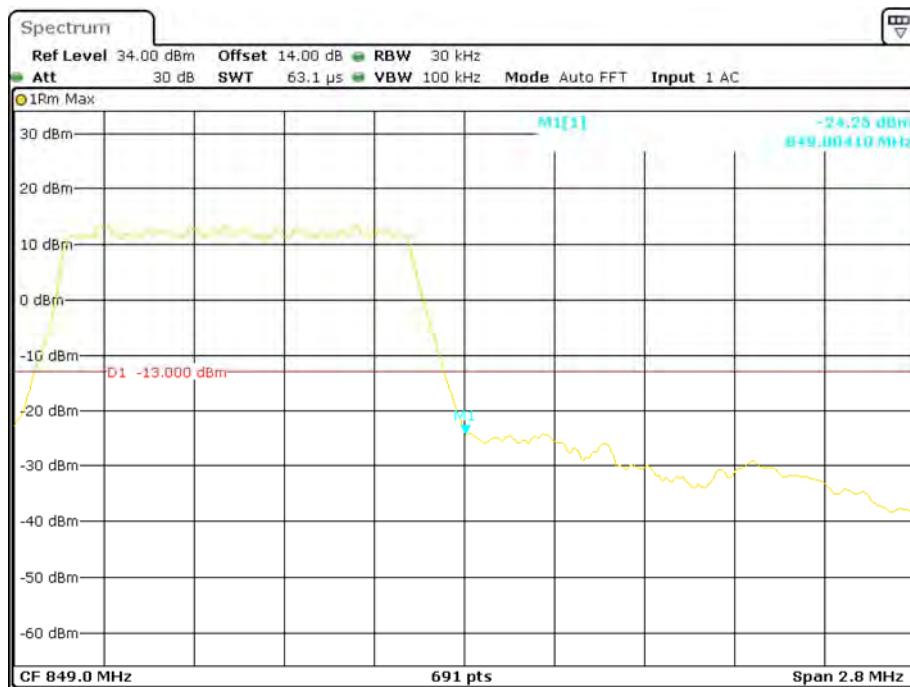
Band 5:

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

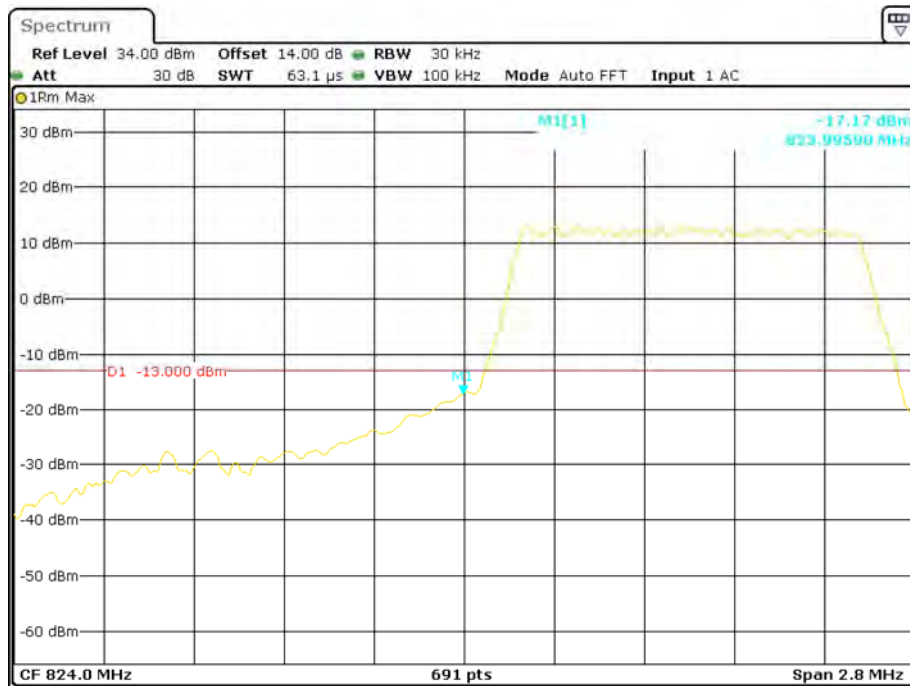


Date: 16.OCT.2017 15:35:02

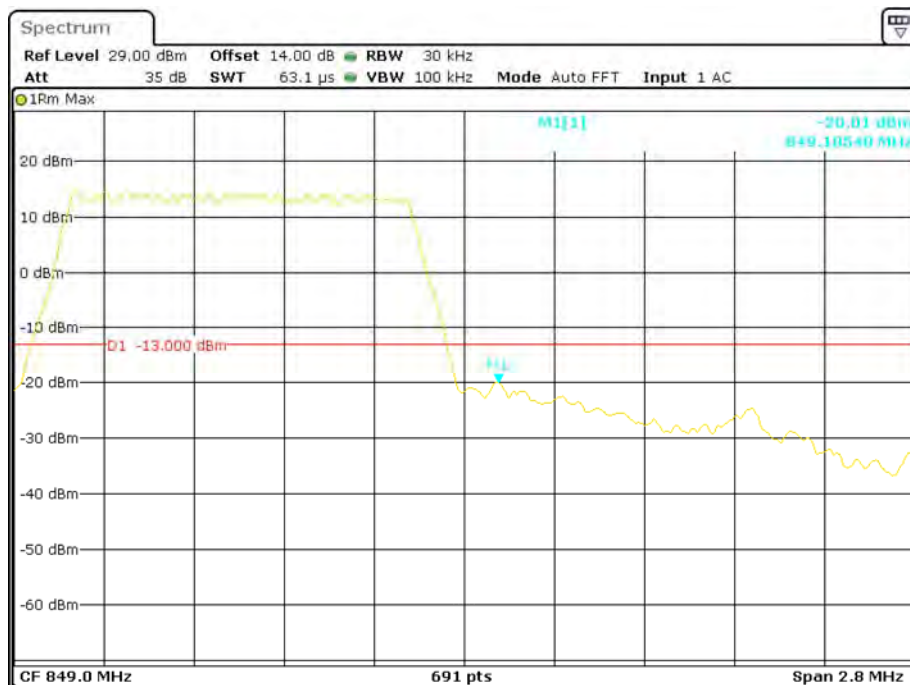
QPSK (1.4 MHz, FULL RB) - Right Band Edge



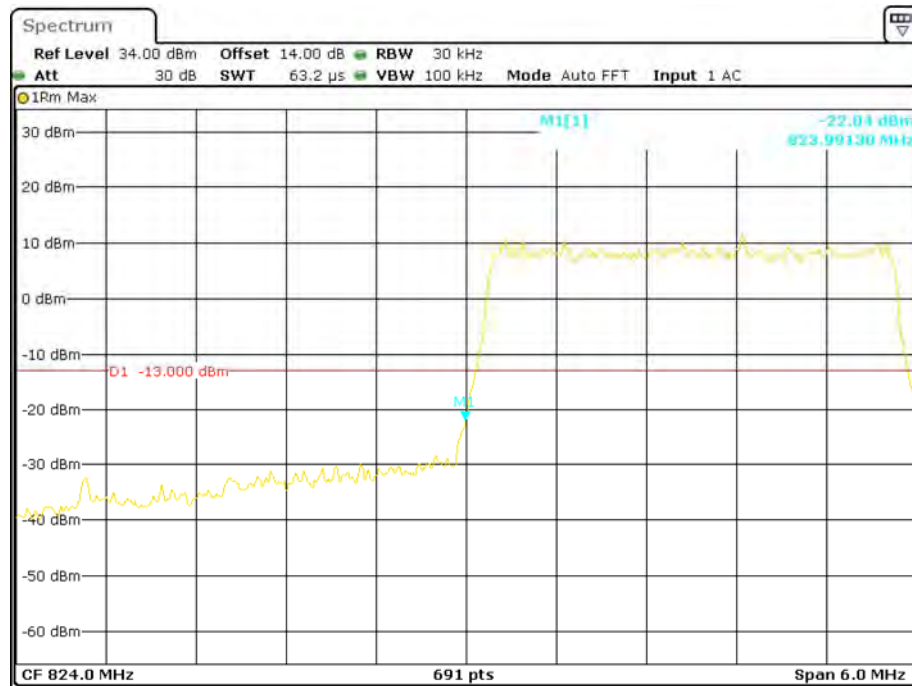
Date: 16.OCT.2017 15:36:24

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

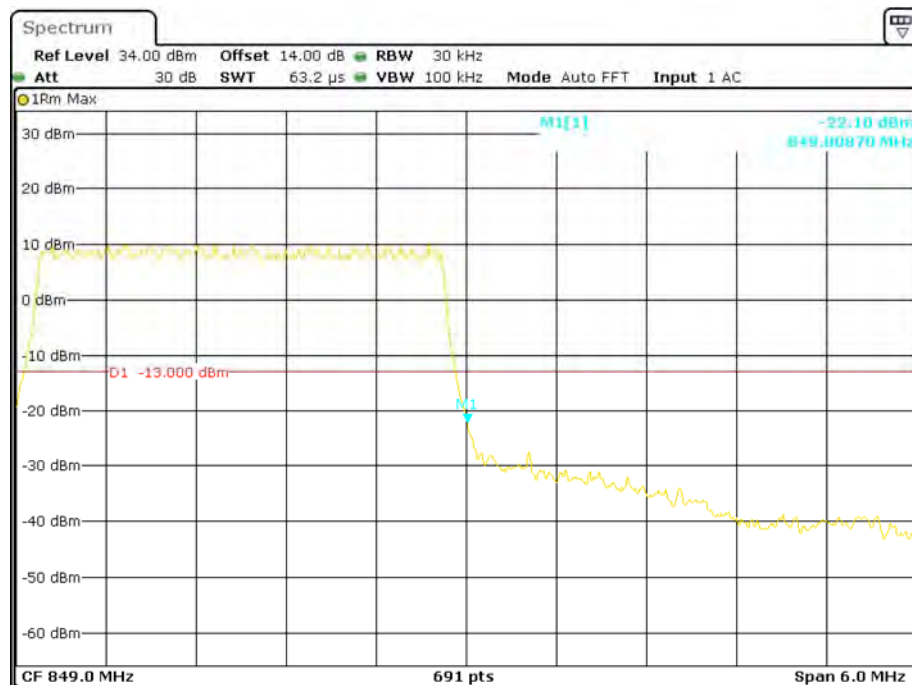
Date: 16.OCT.2017 15:48:10

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

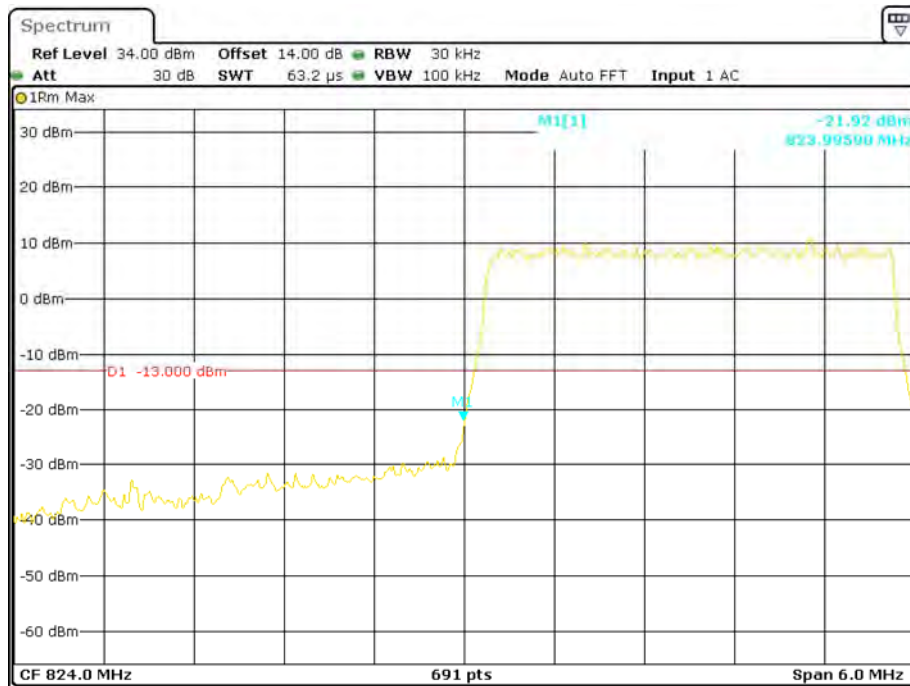
Date: 19.OCT.2017 08:36:44

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

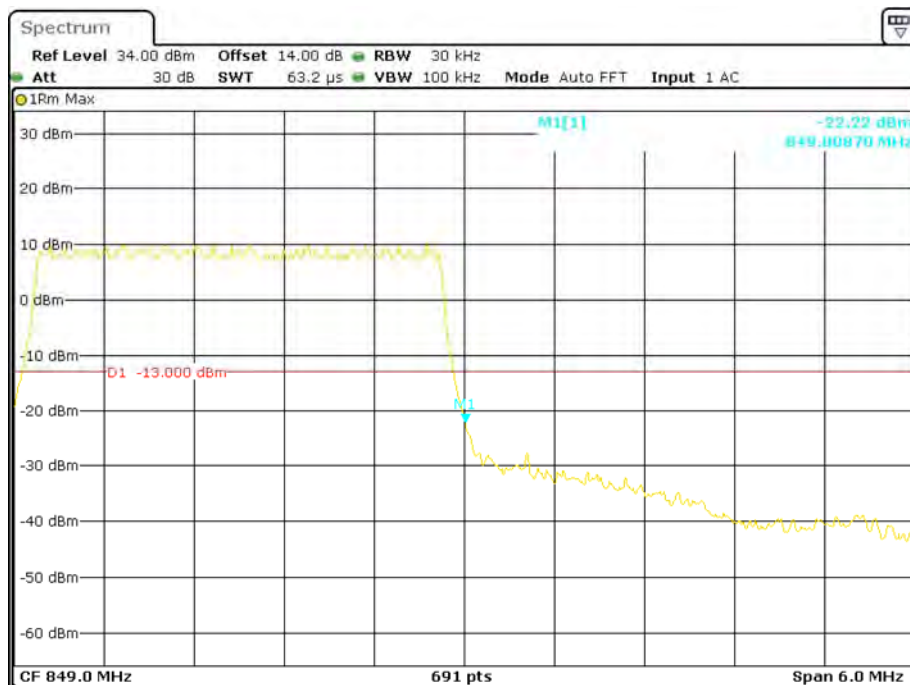
Date: 16.OCT.2017 15:54:11

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

Date: 16.OCT.2017 15:53:25

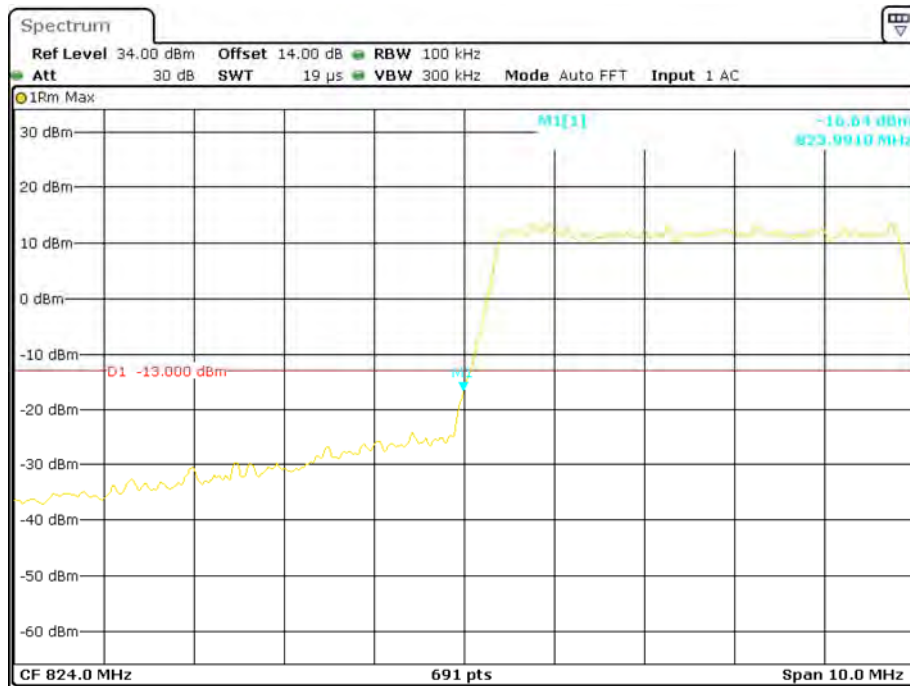
16-QAM (3.0 MHz, FULL RB) - Left Band Edge

Date: 16.OCT.2017 15:50:22

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

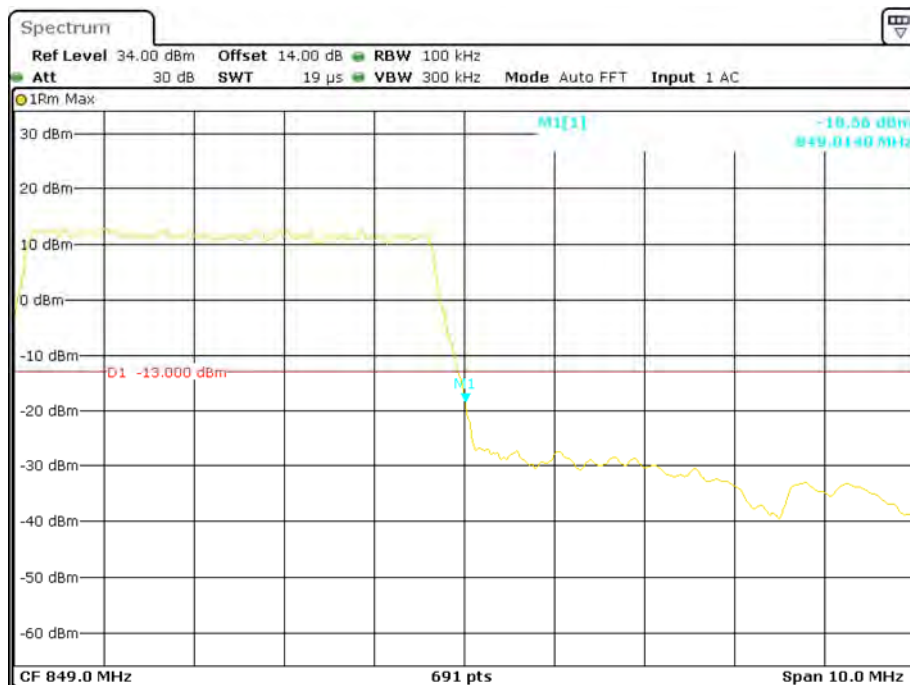
Date: 16.OCT.2017 15:52:54

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

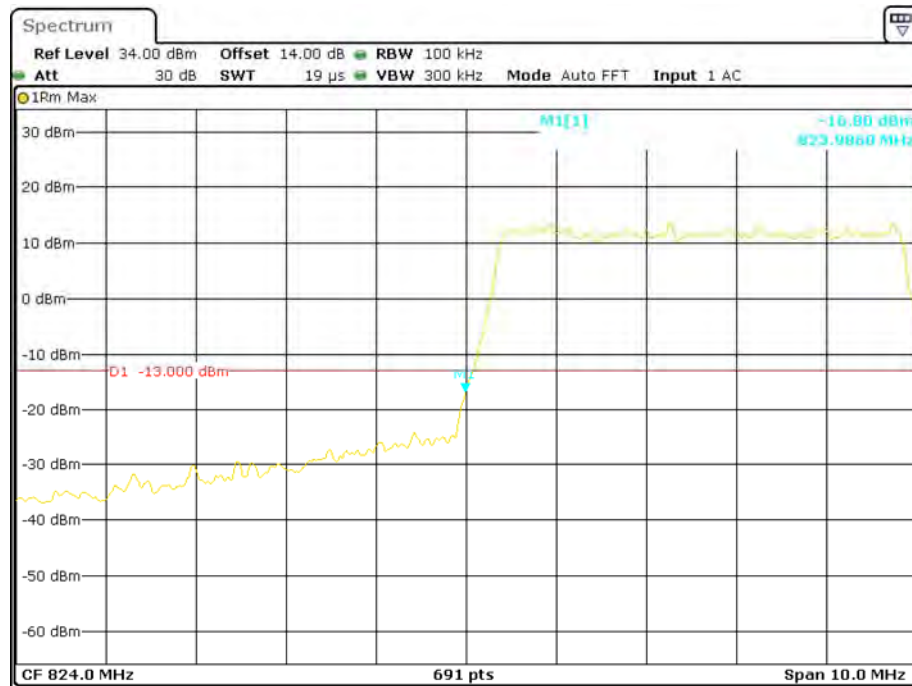


Date: 16.OCT.2017 15:55:36

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



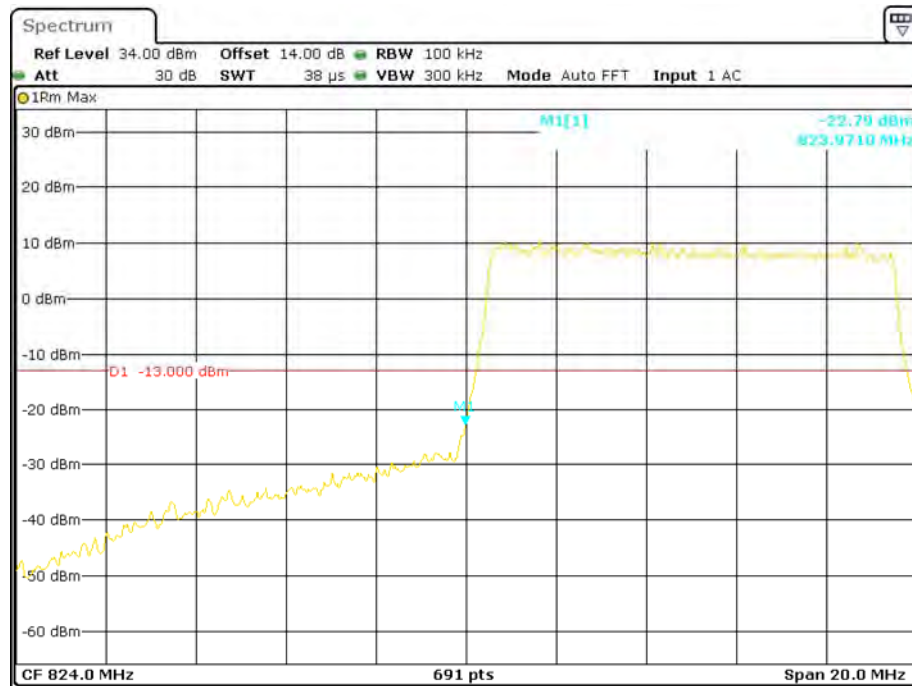
Date: 16.OCT.2017 15:56:37

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

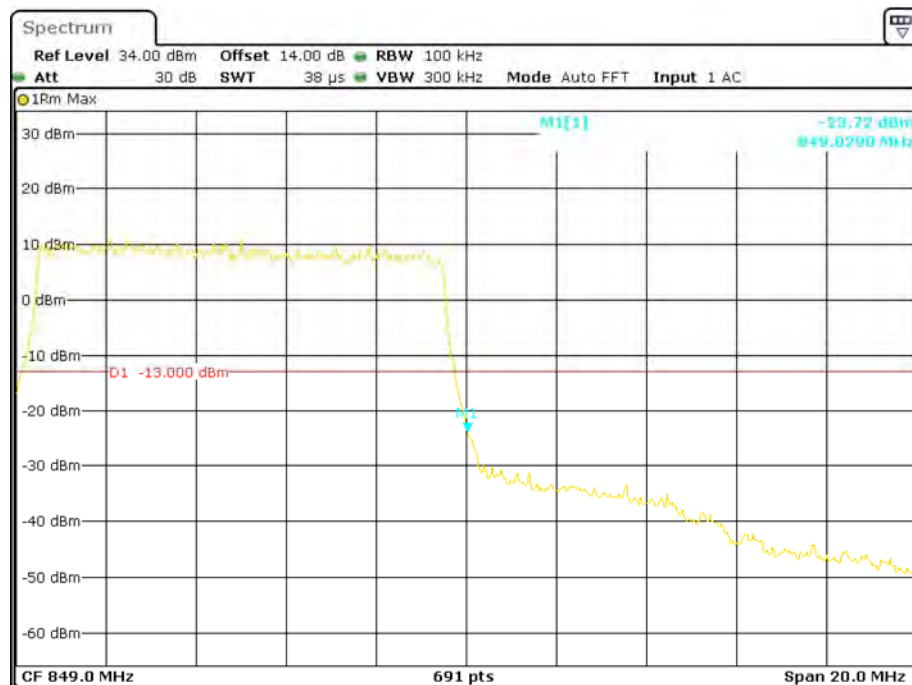
Date: 16.OCT.2017 15:59:38

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

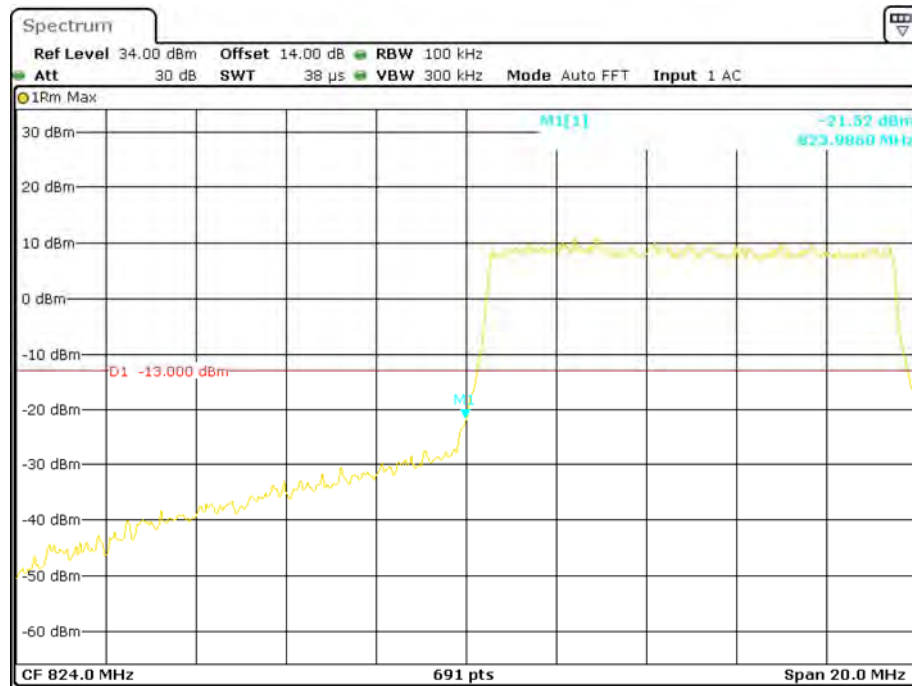
Date: 16.OCT.2017 15:58:50

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

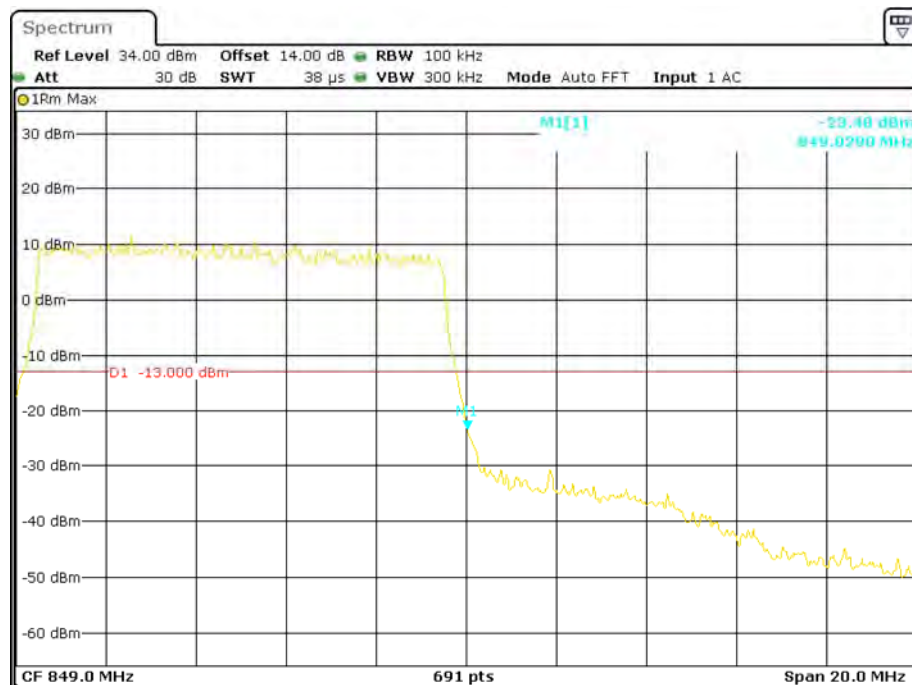
Date: 16.OCT.2017 16:04:26

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

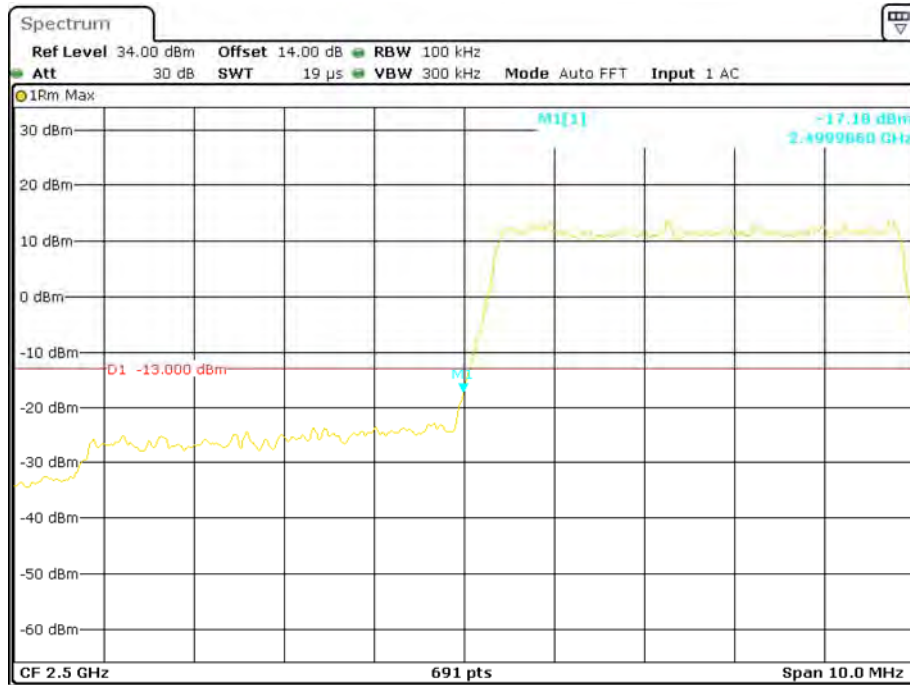
Date: 16.OCT.2017 16:03:43

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

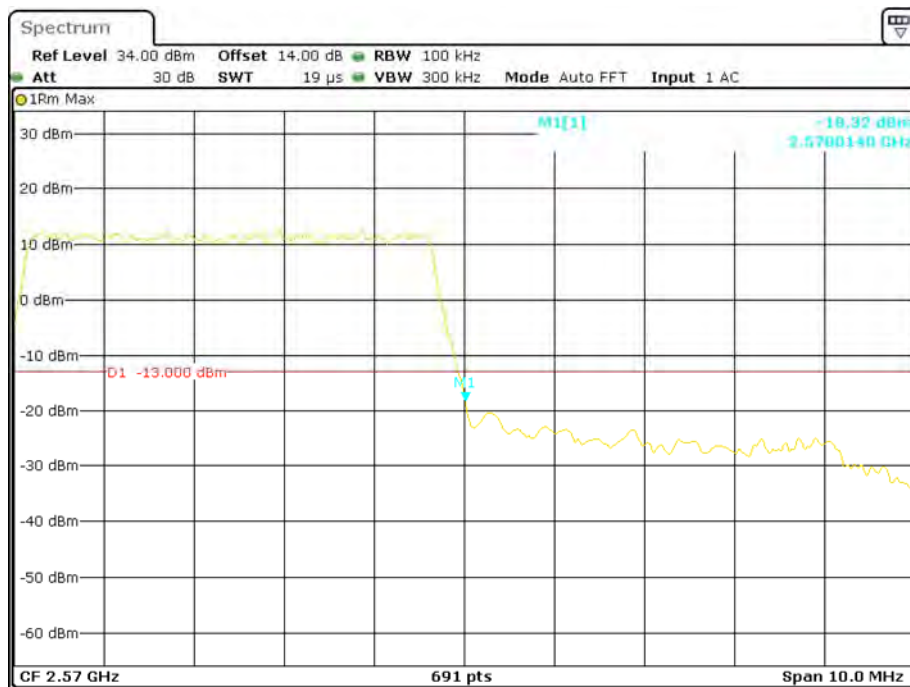
Date: 16.OCT.2017 16:02:14

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

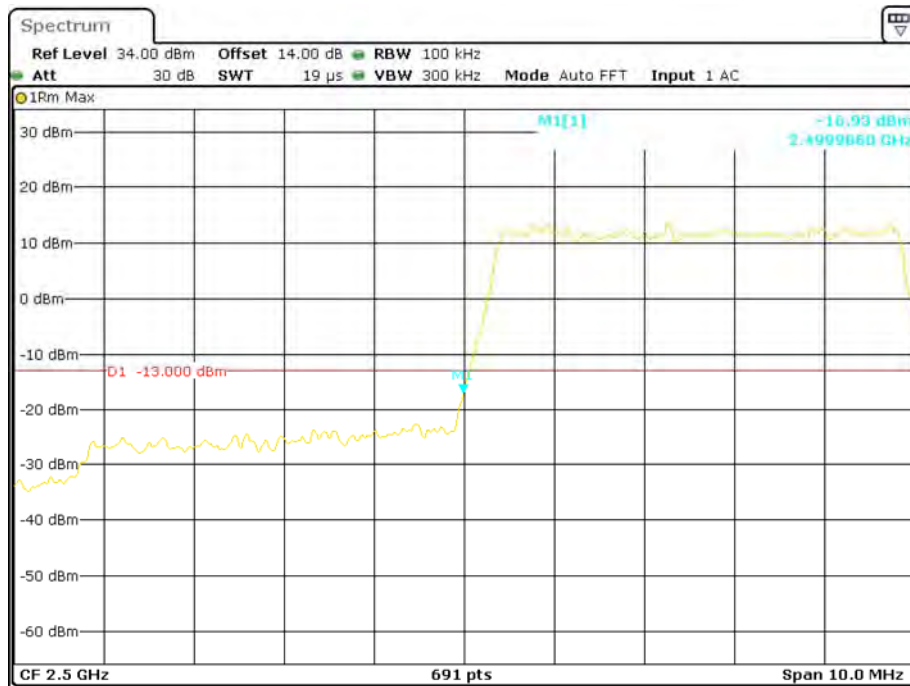
Date: 16.OCT.2017 16:03:10

Band 7:**QPSK (5.0 MHz, FULL RB) - Left Band Edge**

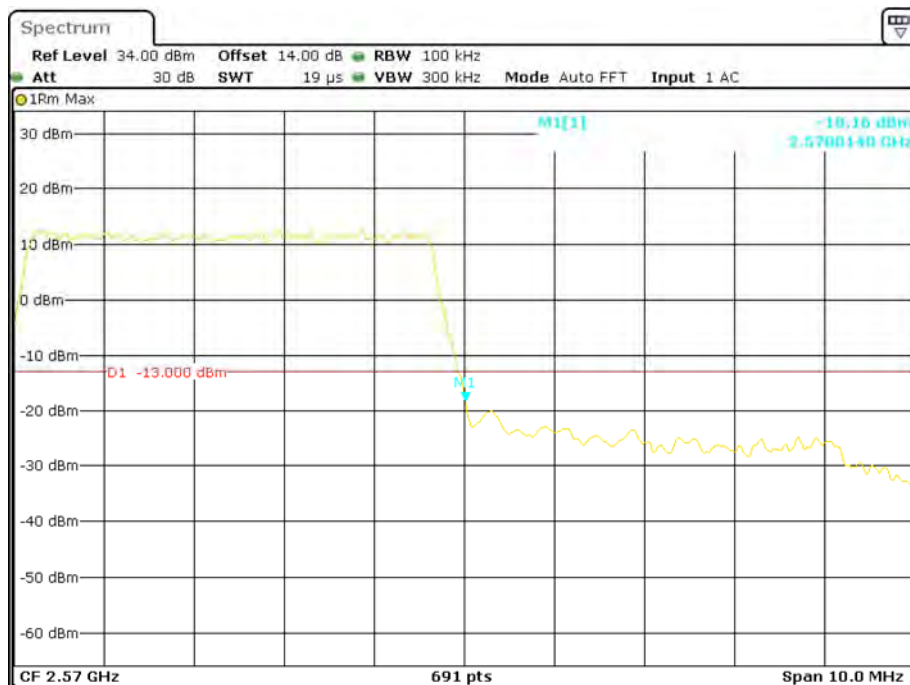
Date: 16.OCT.2017 16:06:30

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

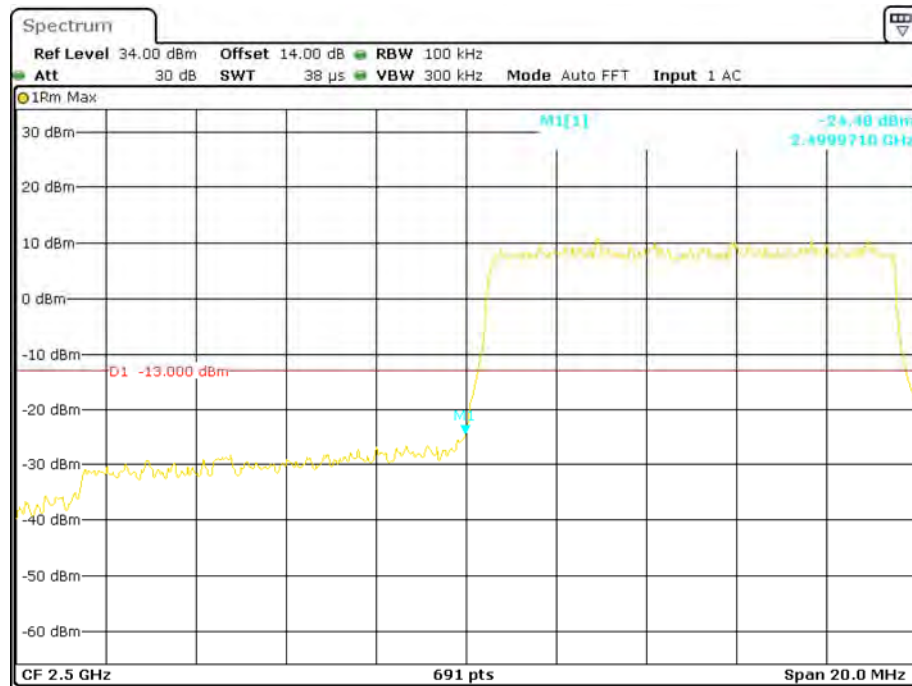
Date: 16.OCT.2017 16:07:36

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

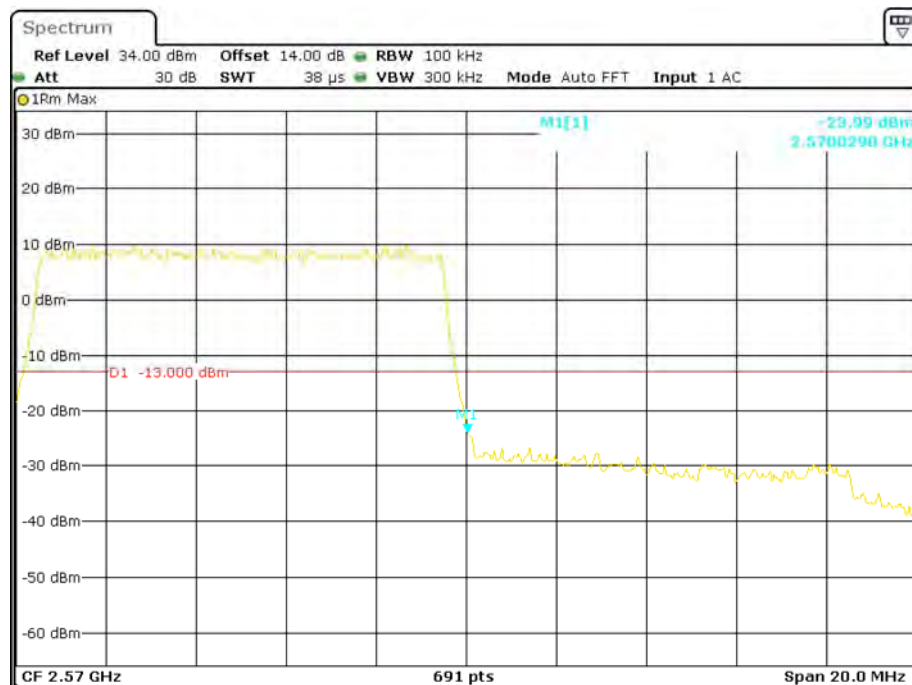
Date: 16.OCT.2017 16:09:14

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

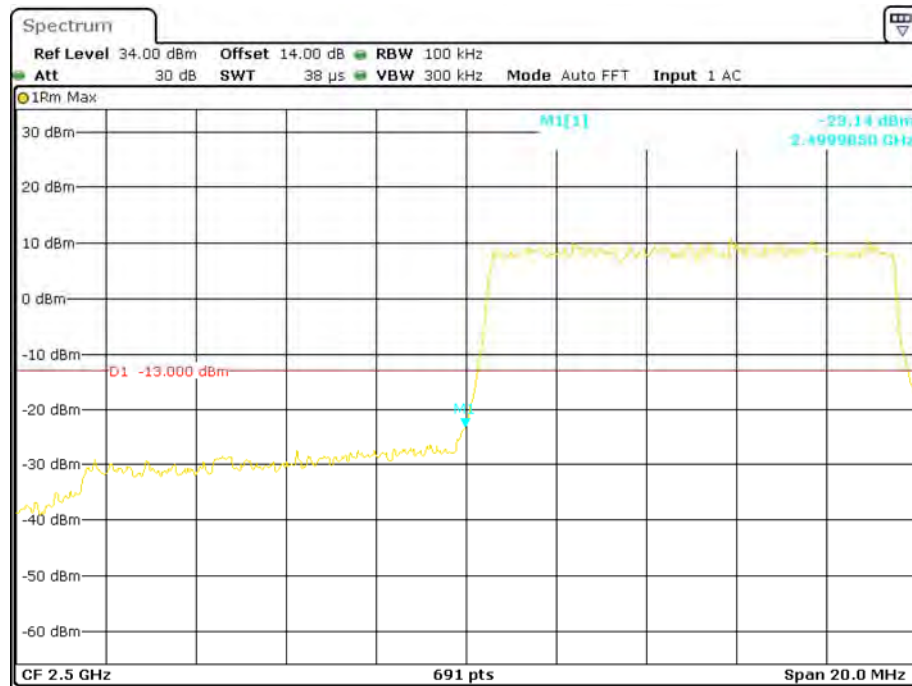
Date: 16.OCT.2017 16:08:17

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

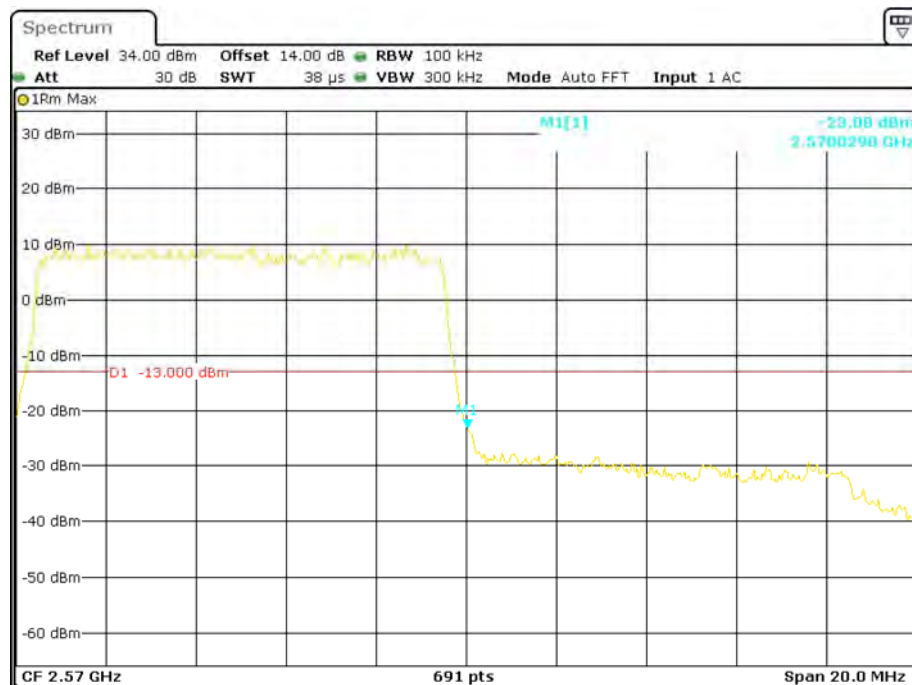
Date: 16.OCT.2017 16:13:04

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

Date: 16.OCT.2017 16:12:12

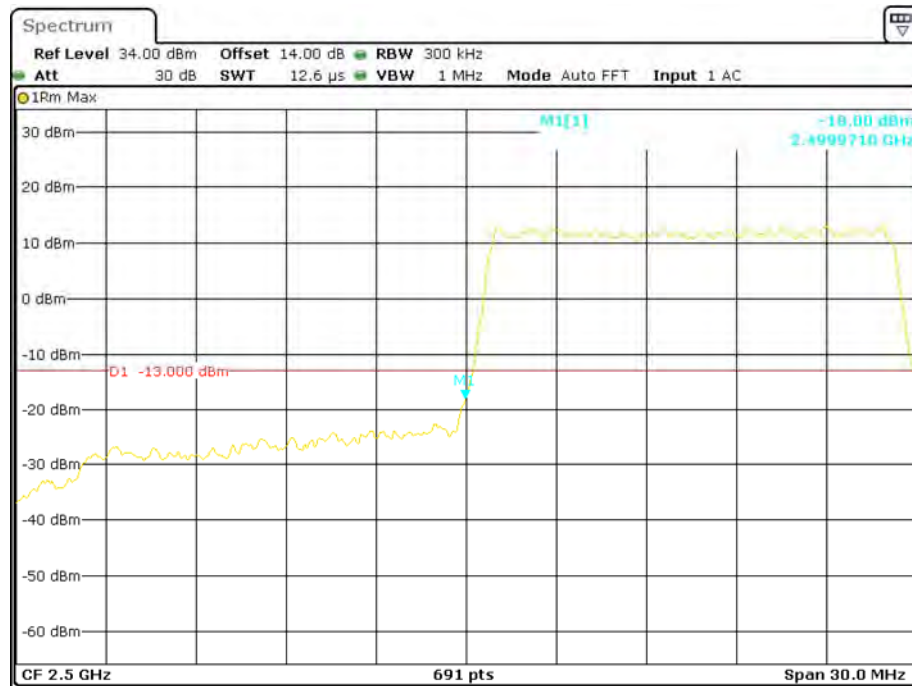
16-QAM (10.0 MHz, FULL RB) - Left Band Edge

Date: 16.OCT.2017 16:10:14

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

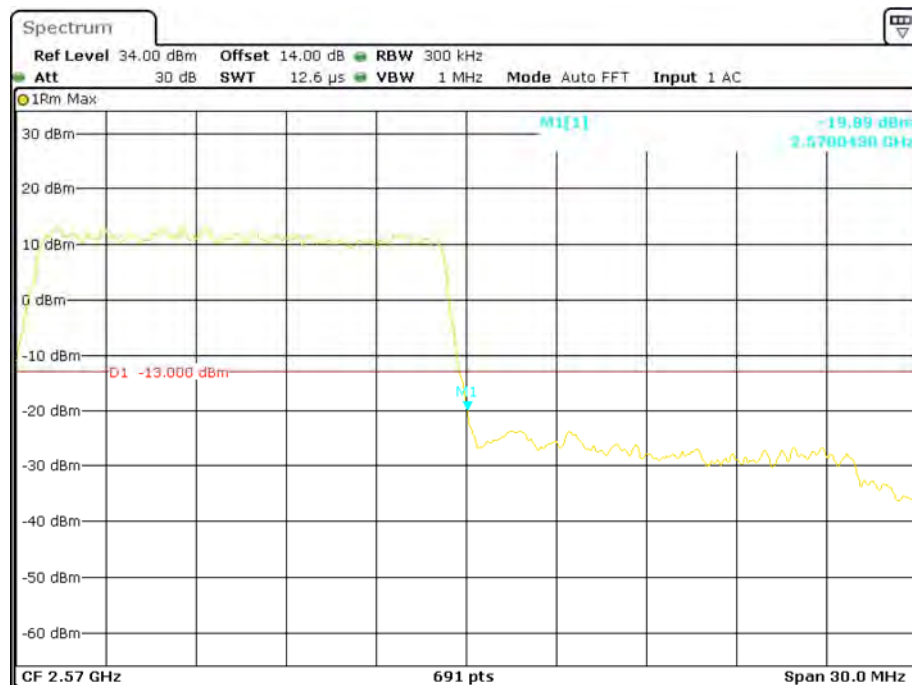
Date: 16.OCT.2017 16:11:40

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

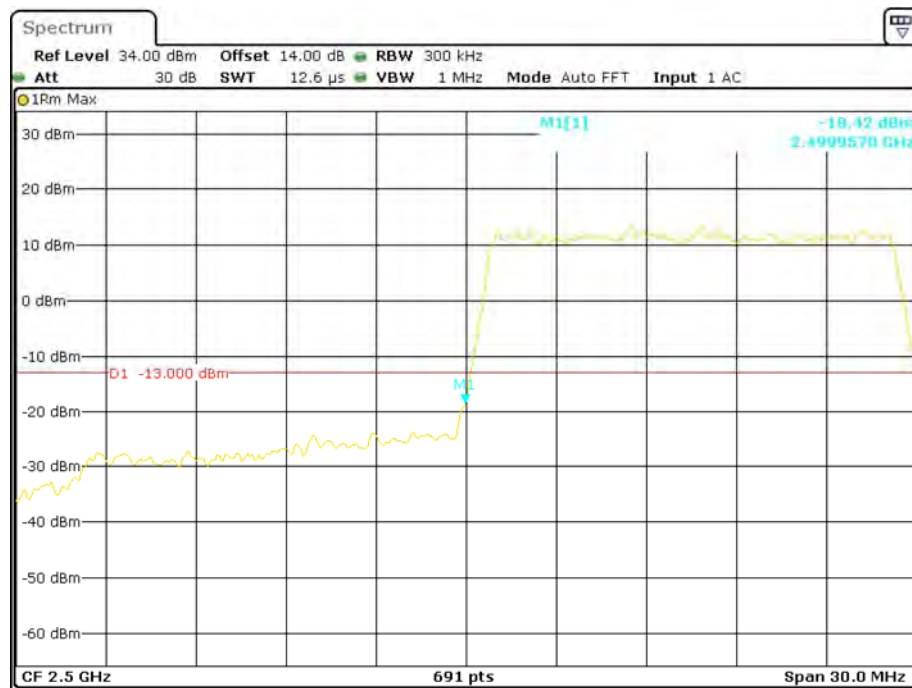


Date: 16.OCT.2017 16:14:31

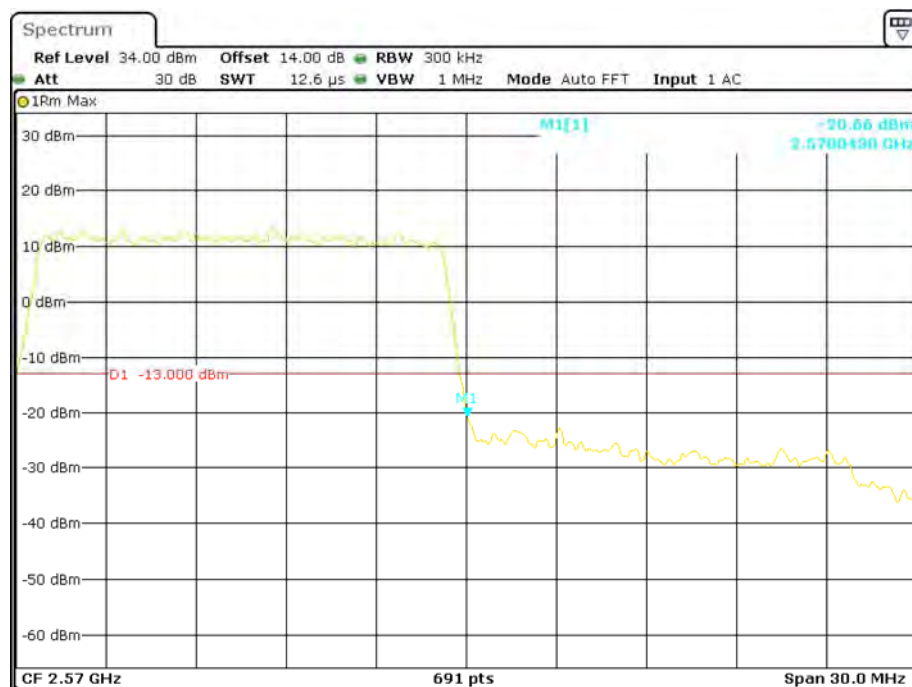
QPSK (15 MHz, FULL RB) - Right Band Edge



Date: 16.OCT.2017 16:15:23

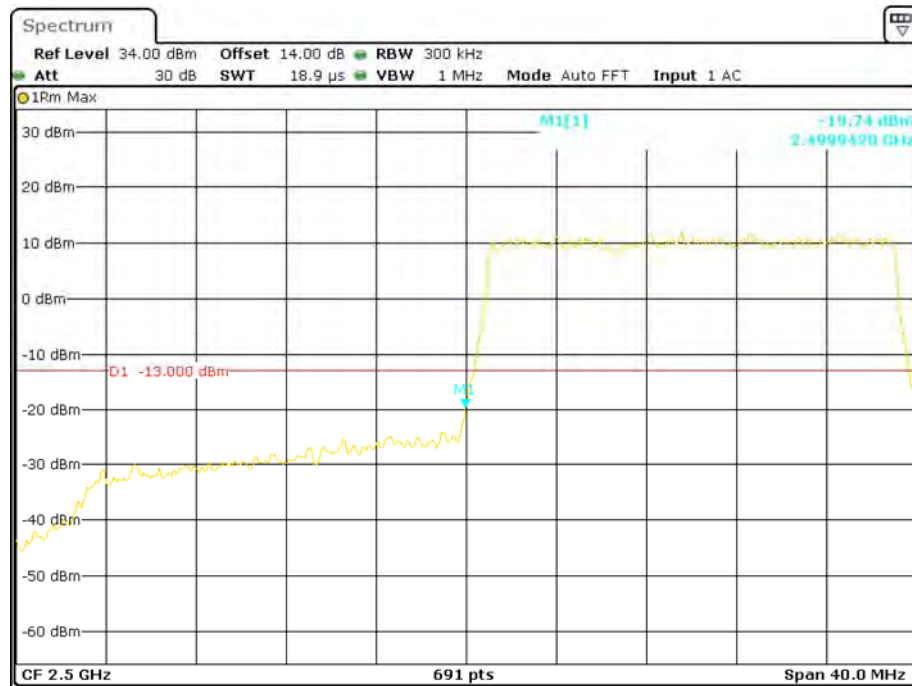
16-QAM (15 MHz, FULL RB) - Left Band Edge

Date: 16.OCT.2017 16:16:40

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

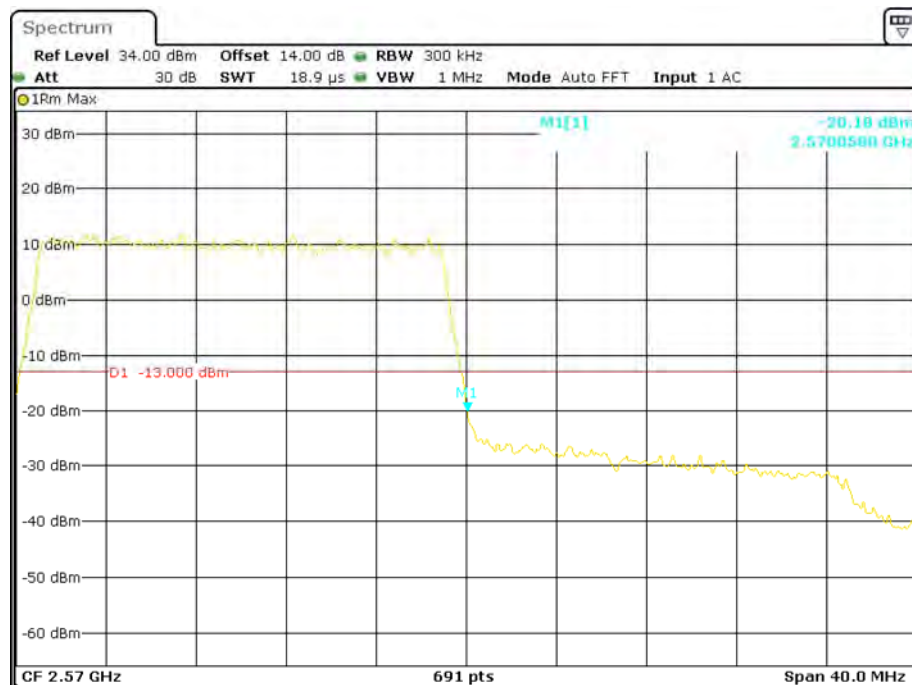
Date: 16.OCT.2017 16:15:51

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

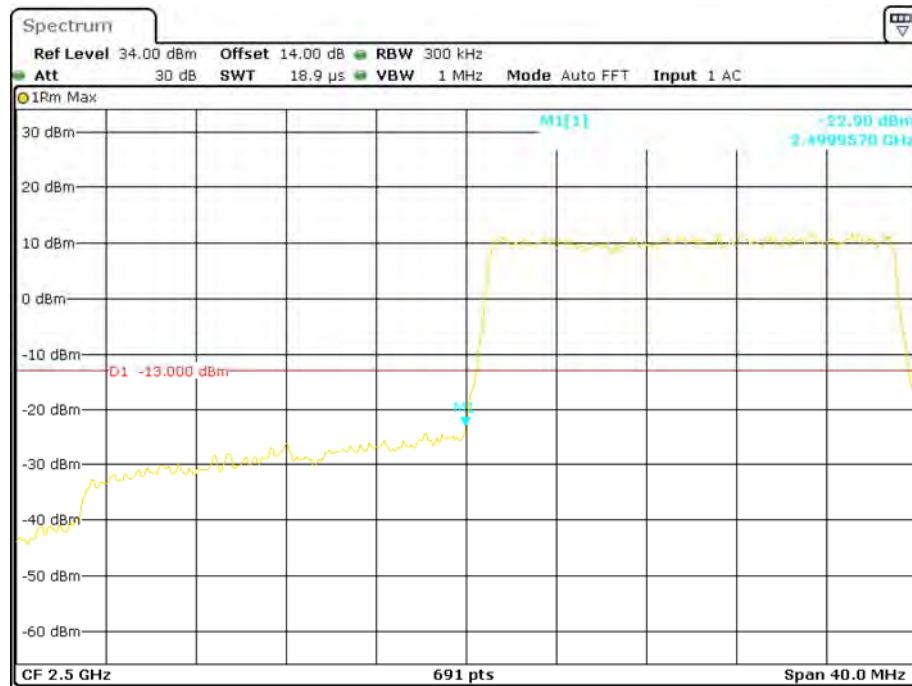


Date: 16.OCT.2017 16:20:25

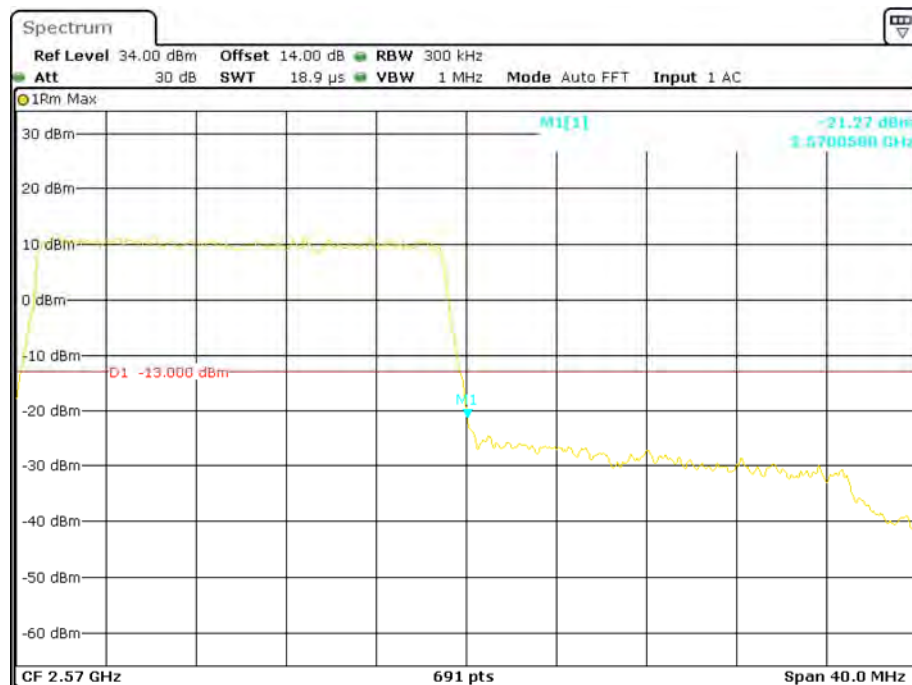
QPSK (20 MHz, FULL RB) - Right Band Edge



Date: 16.OCT.2017 16:19:37

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

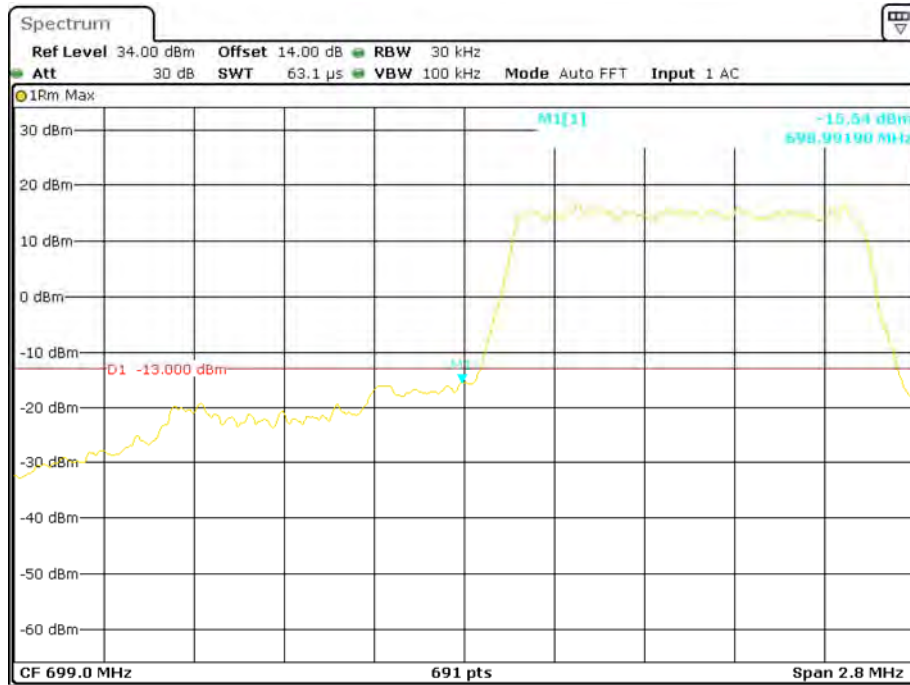
Date: 16.OCT.2017 16:17:58

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

Date: 16.OCT.2017 16:19:01

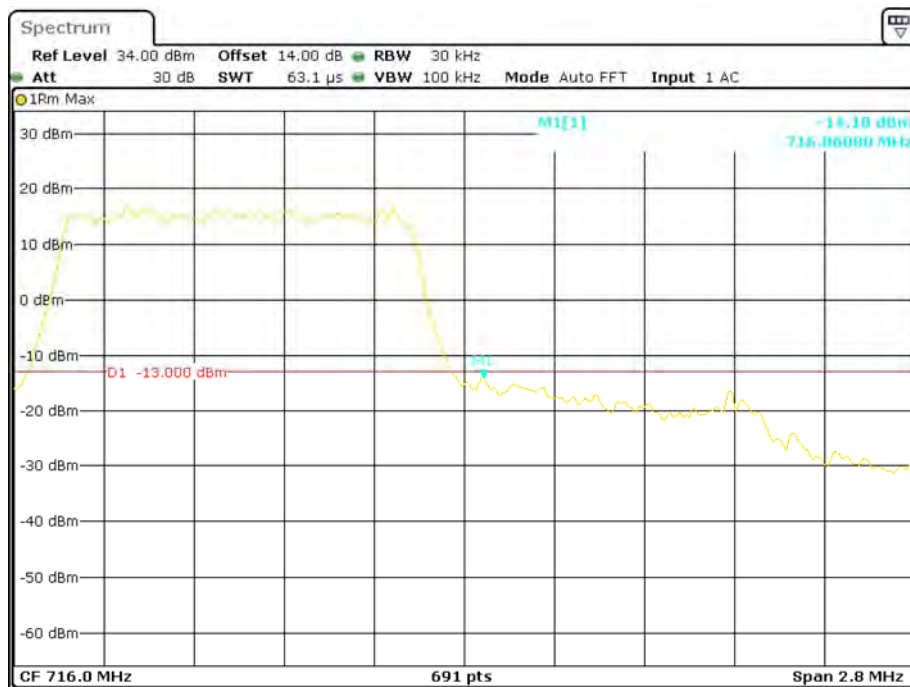
Band 12:

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

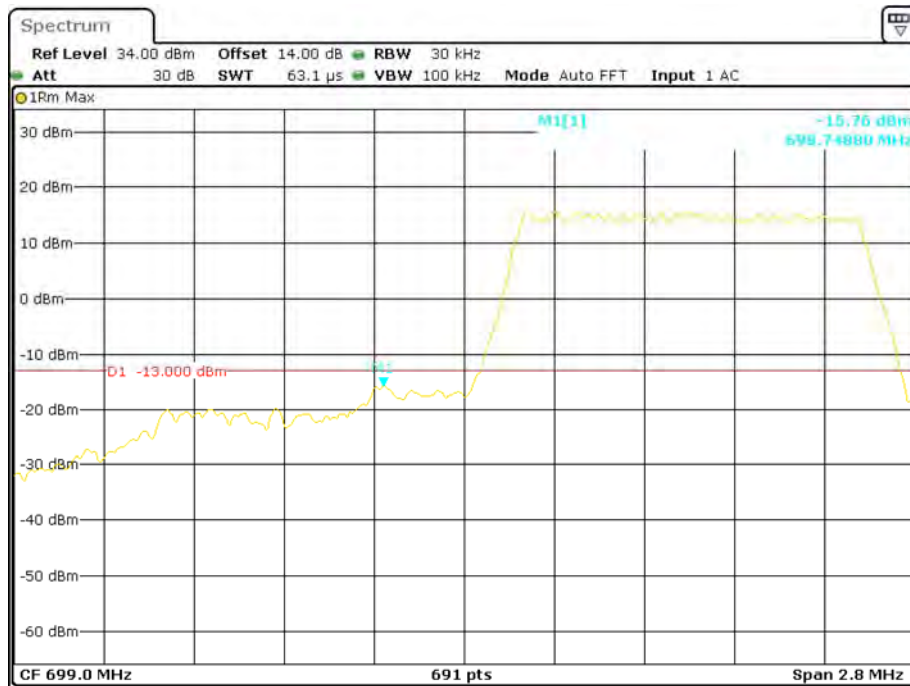


Date: 16.OCT.2017 16:25:09

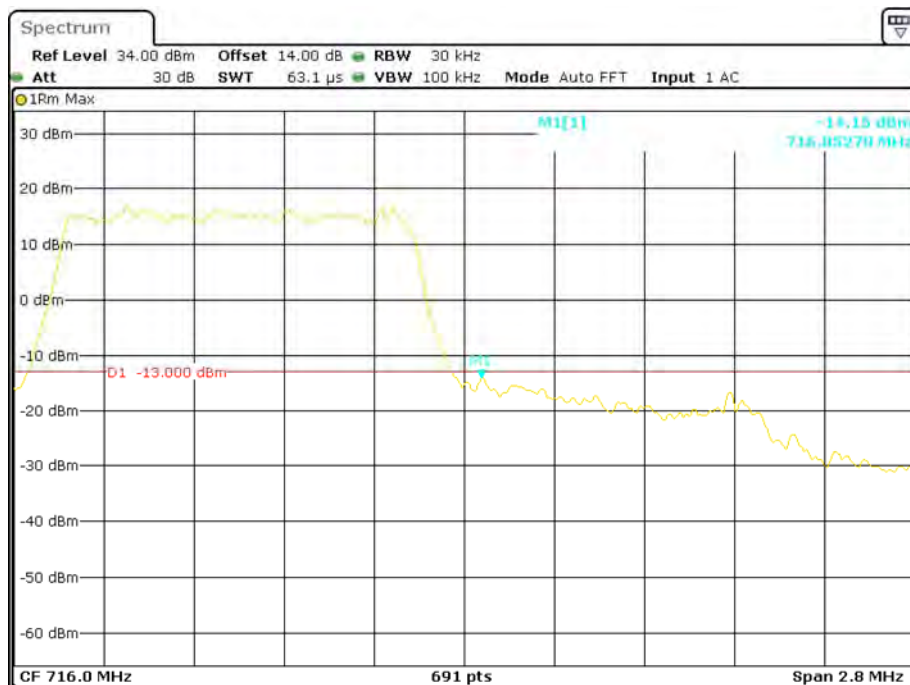
QPSK (1.4 MHz, FULL RB) - Right Band Edge



Date: 16.OCT.2017 16:28:10

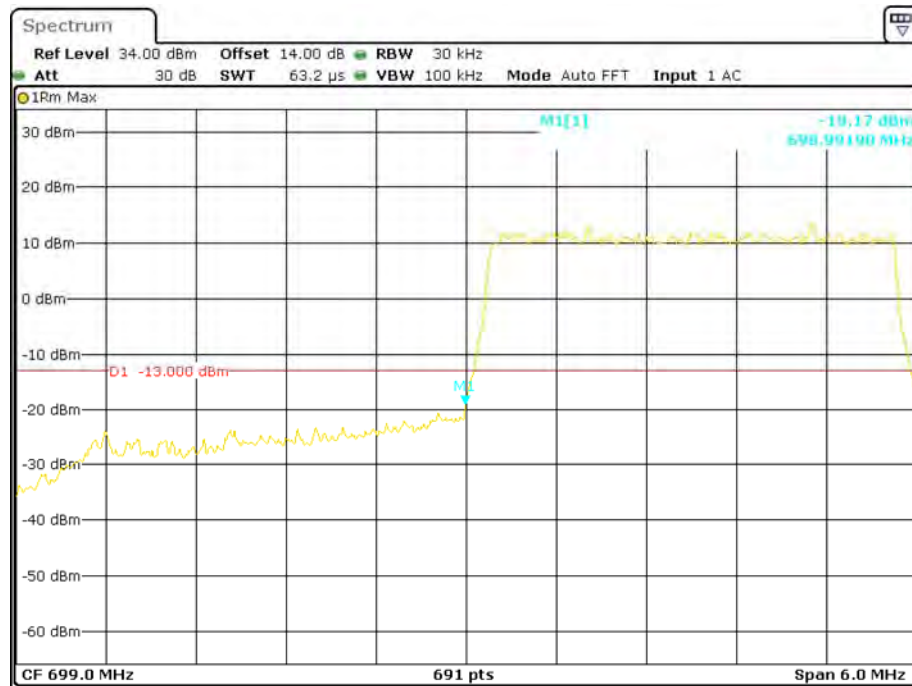
16-QAM (1.4 MHz, FULL RB) - Left Band Edge

Date: 16.OCT.2017 16:32:09

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

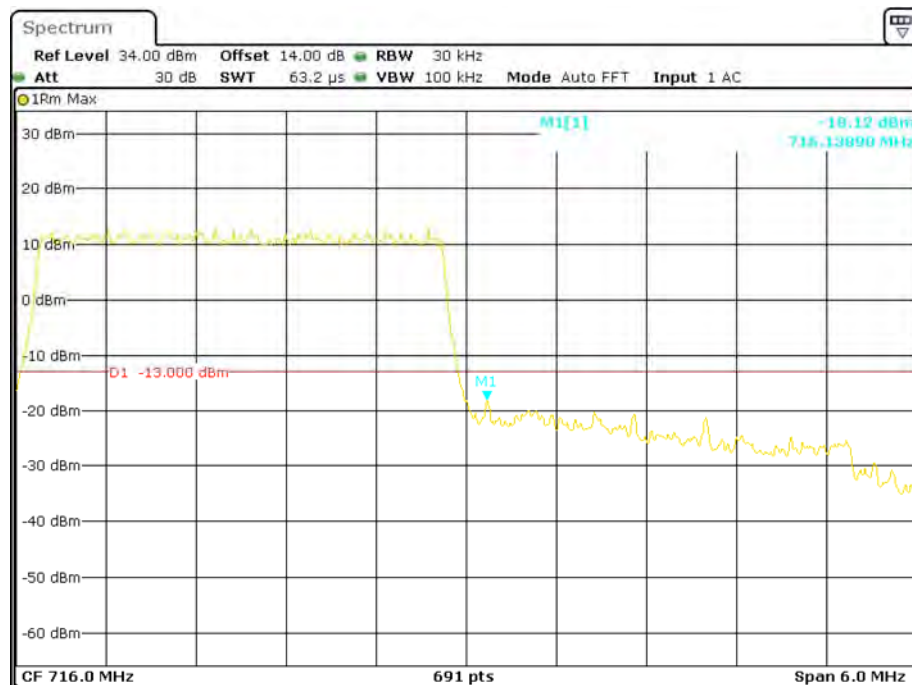
Date: 16.OCT.2017 16:29:12

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

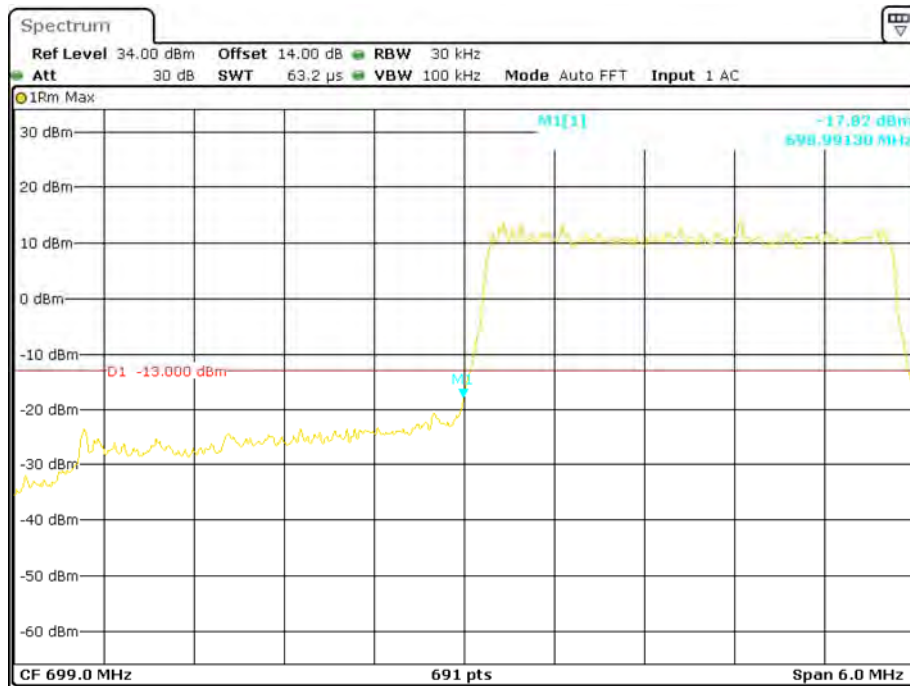


Date: 16.OCT.2017 16:34:18

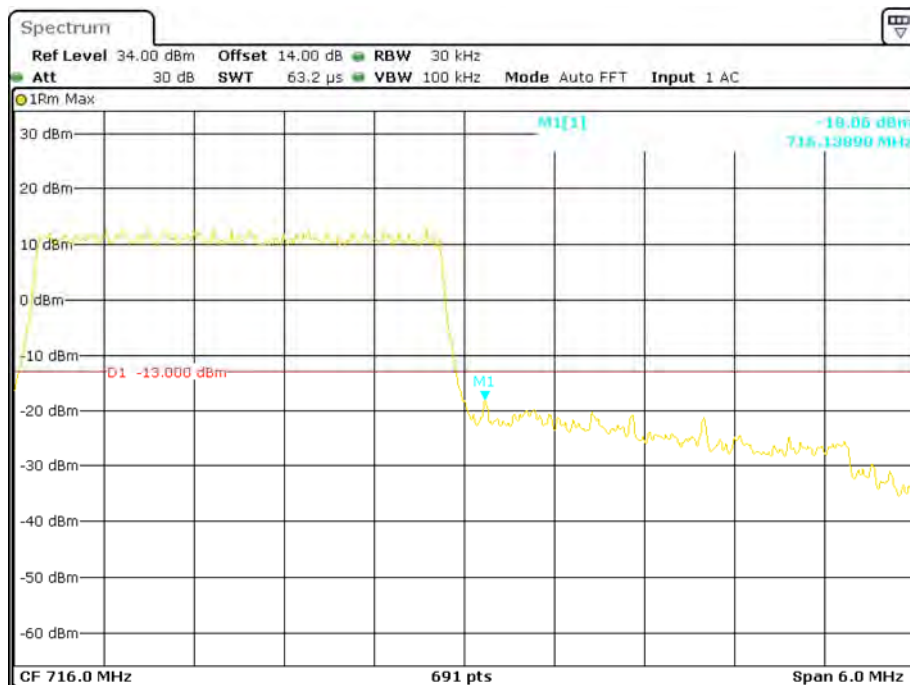
QPSK (3.0 MHz, FULL RB) - Right Band Edge



Date: 16.OCT.2017 16:35:37

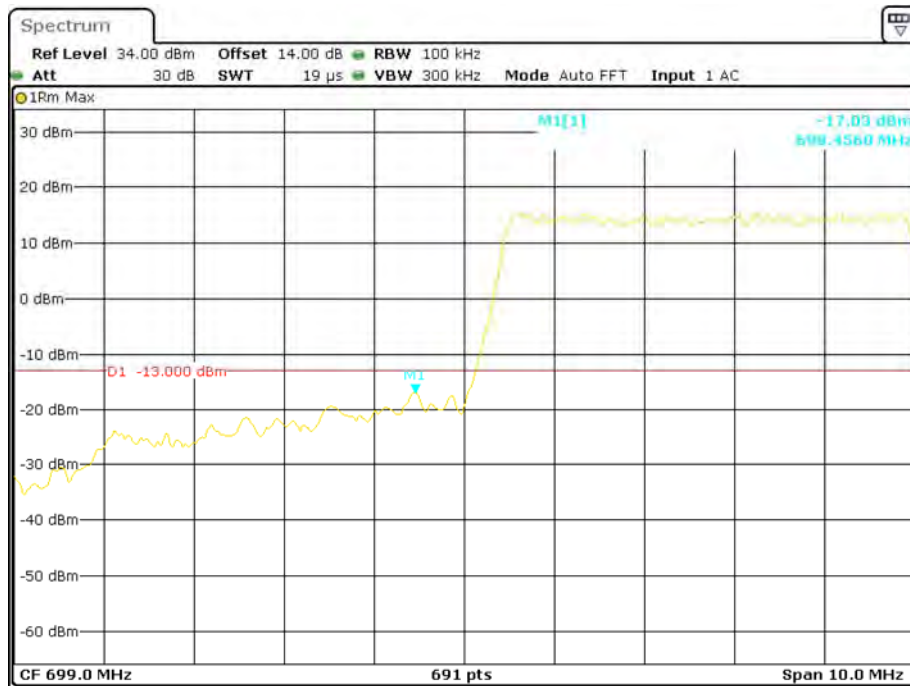
16-QAM (3.0 MHz, FULL RB) - Left Band Edge

Date: 16.OCT.2017 16:37:07

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

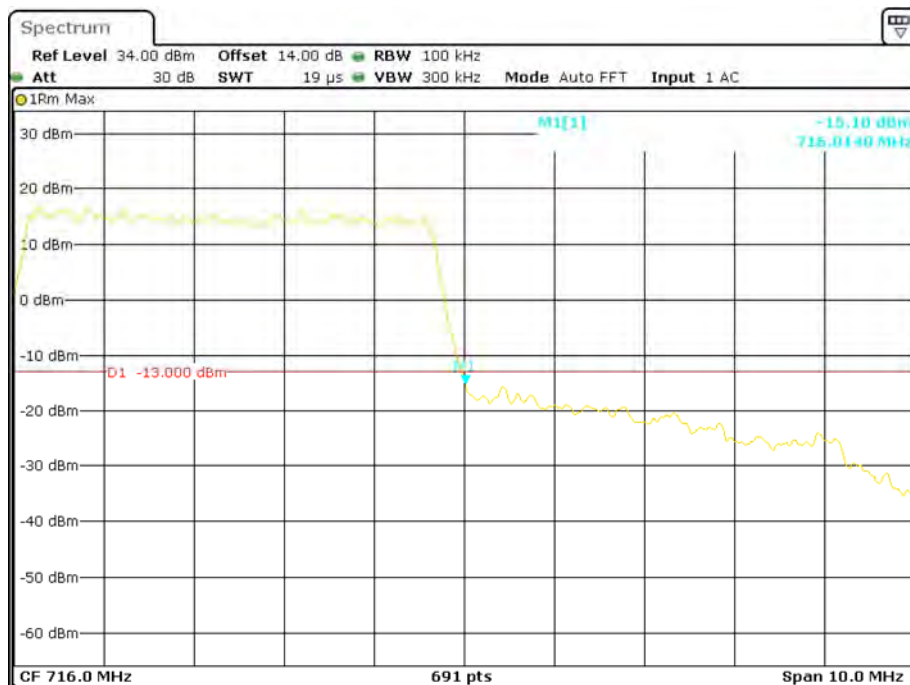
Date: 16.OCT.2017 16:36:10

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

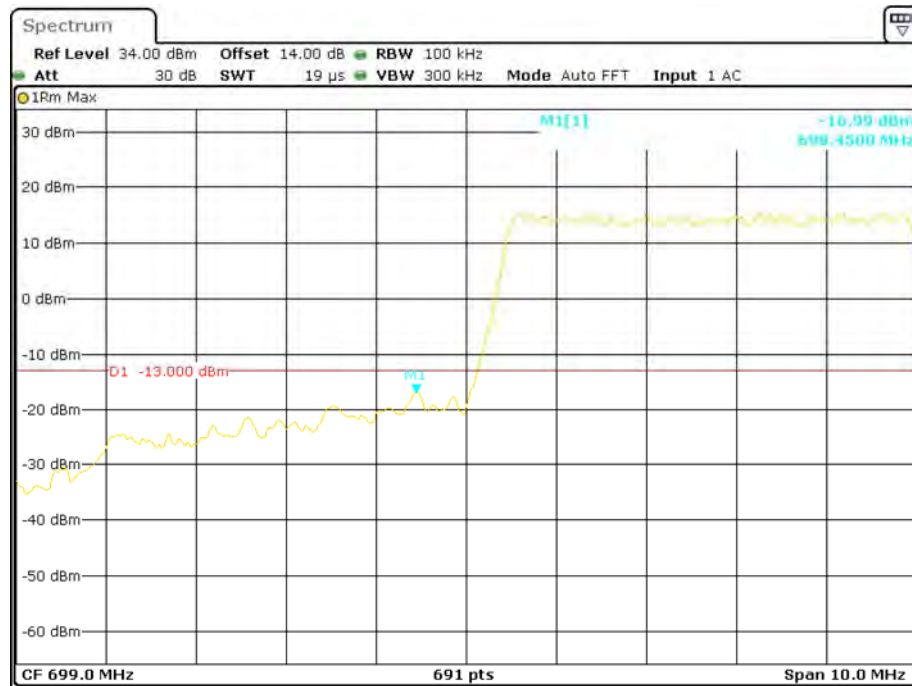


Date: 16.OCT.2017 16:39:34

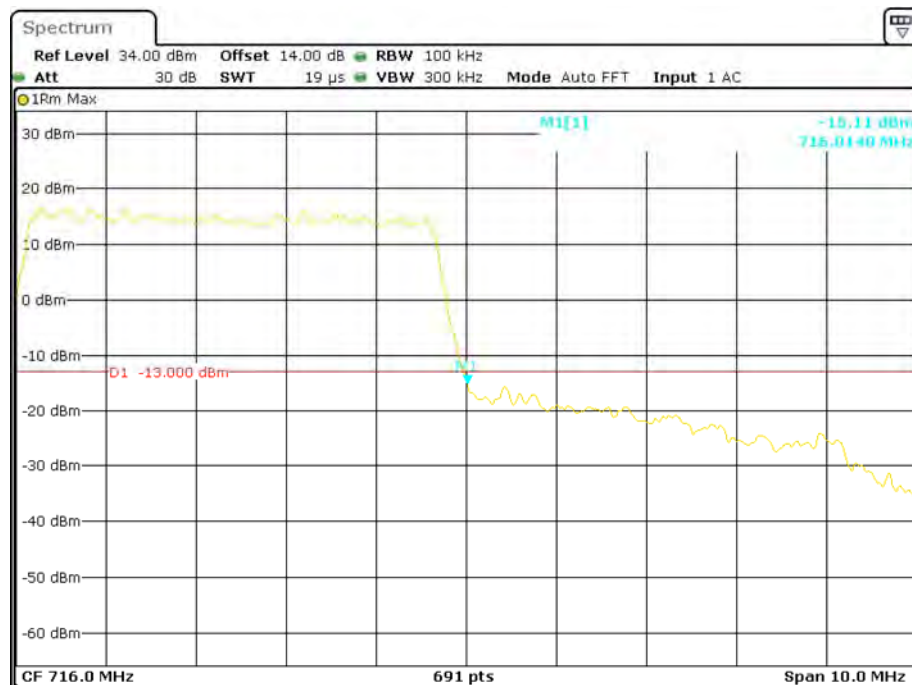
QPSK (5.0 MHz, FULL RB) - Right Band Edge



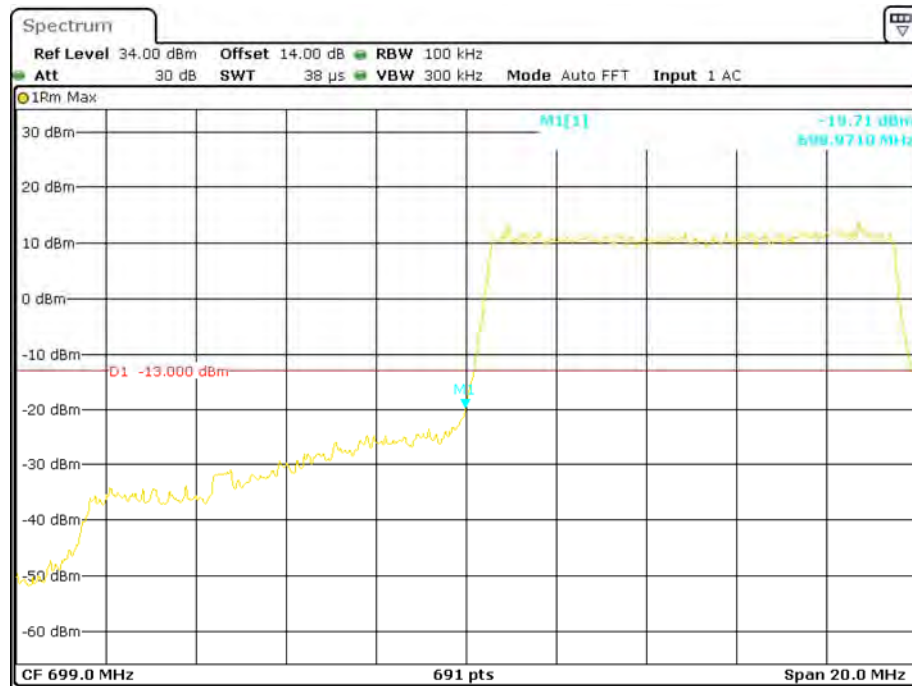
Date: 16.OCT.2017 16:40:57

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

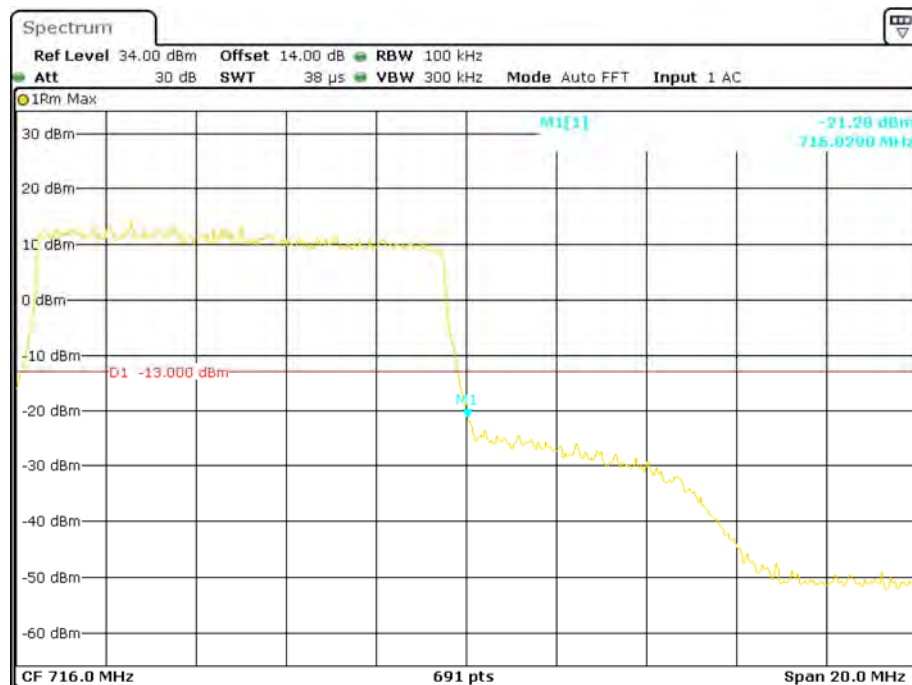
Date: 16.OCT.2017 16:43:02

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

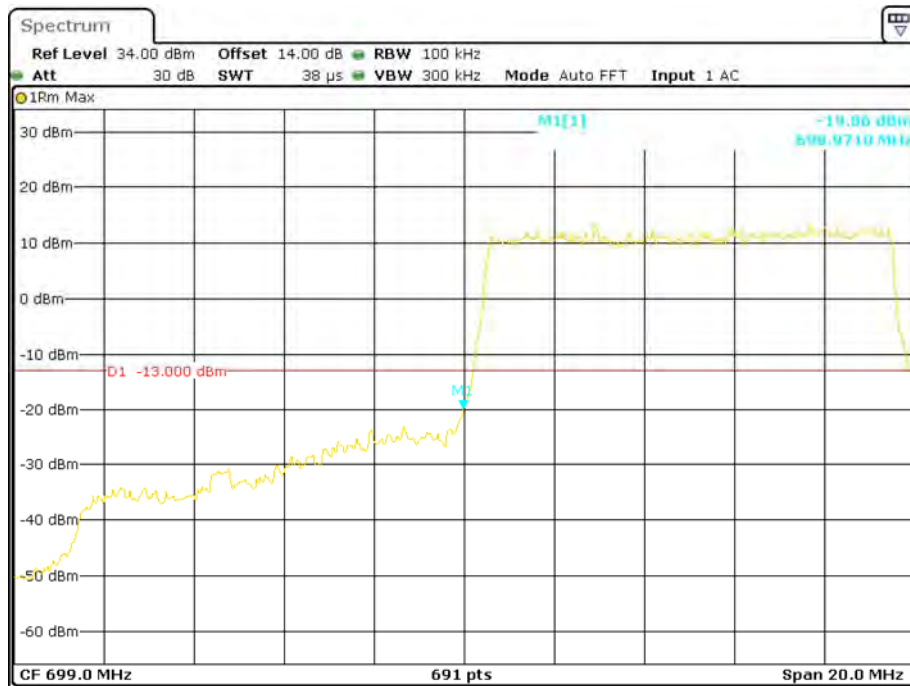
Date: 16.OCT.2017 16:41:29

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

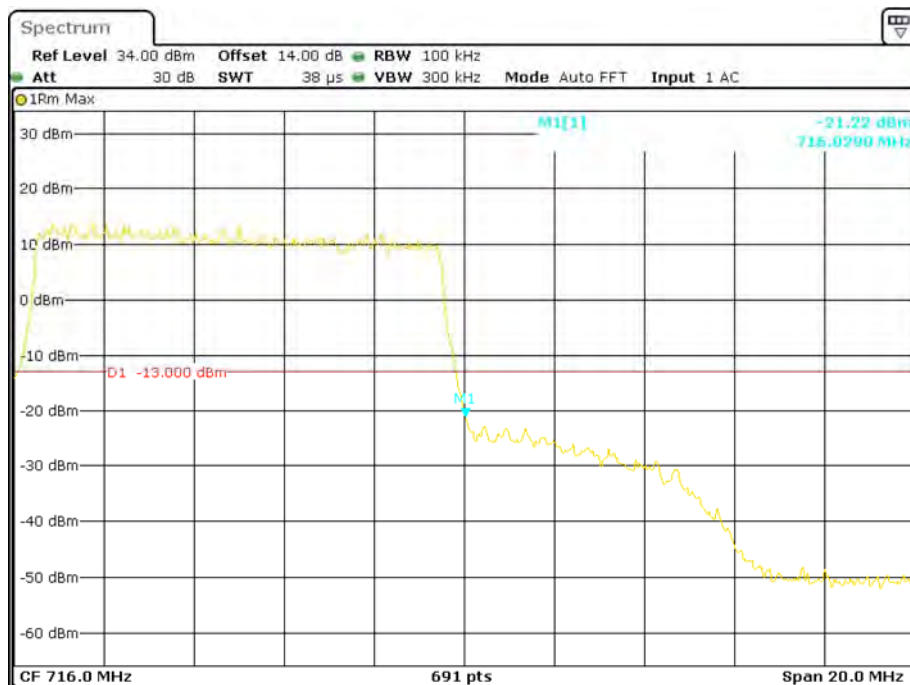
Date: 16.OCT.2017 16:50:11

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

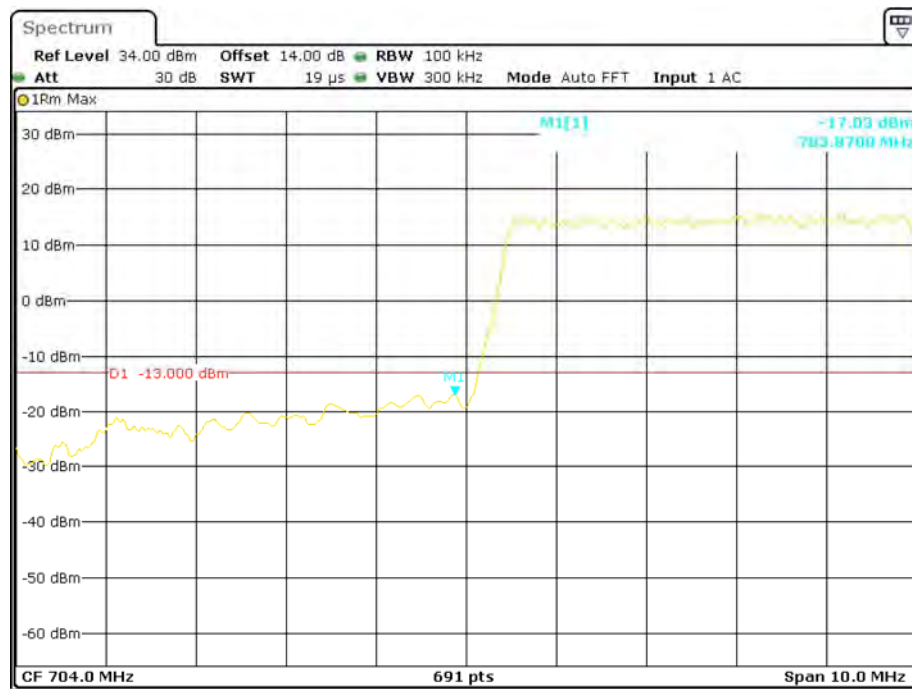
Date: 16.OCT.2017 16:49:19

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

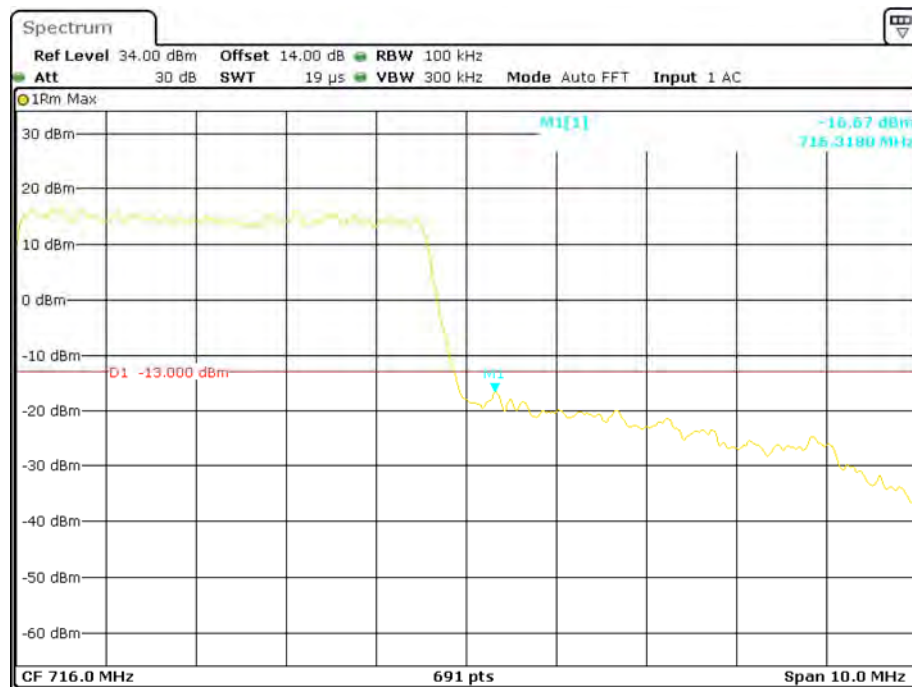
Date: 16.OCT.2017 16:47:54

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

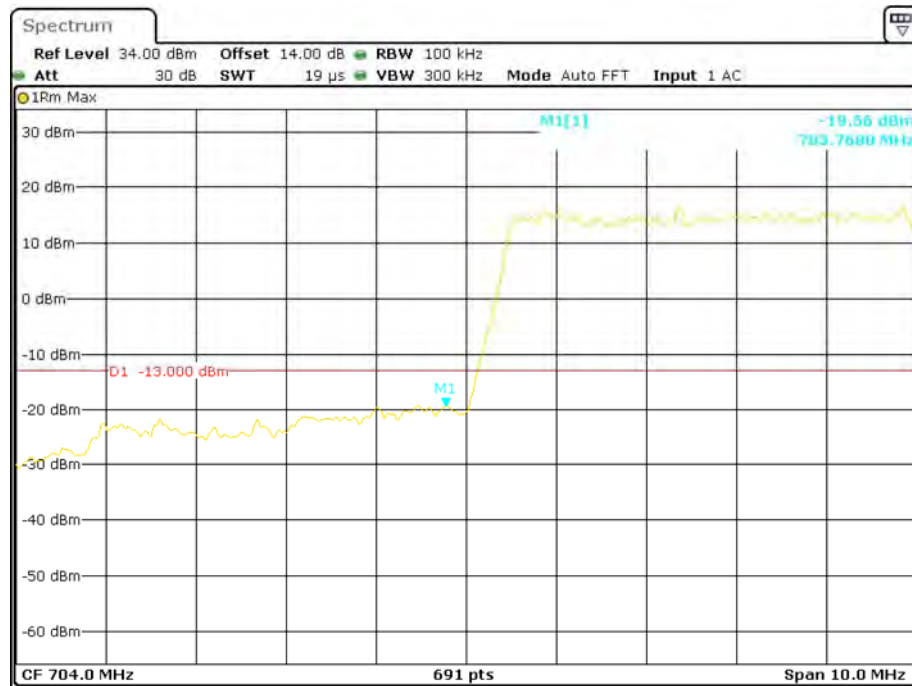
Date: 16.OCT.2017 16:48:53

Band 17:**QPSK (5.0 MHz, FULL RB) - Left Band Edge**

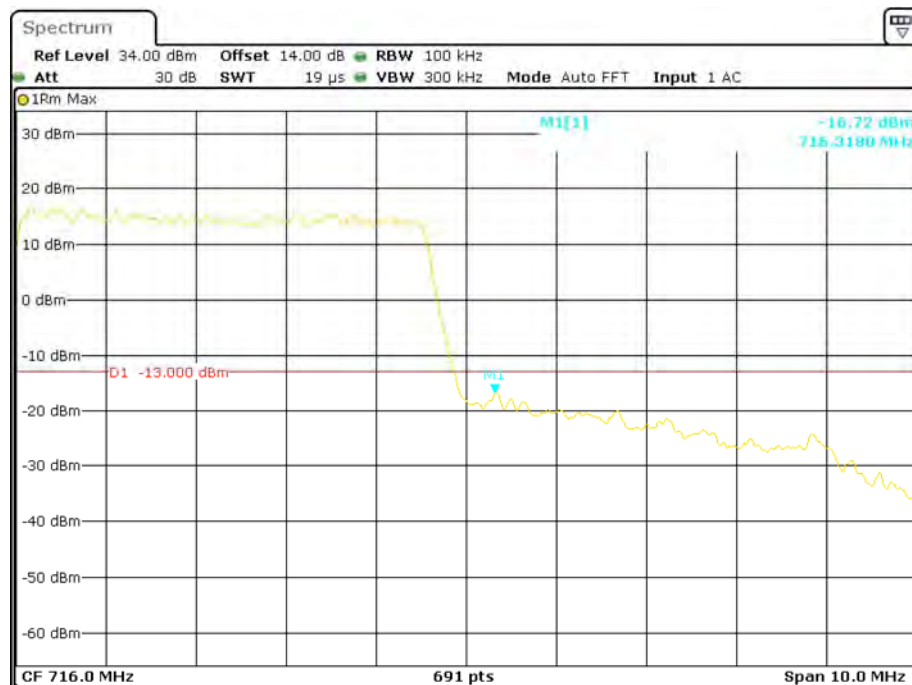
Date: 16.OCT.2017 16:53:47

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

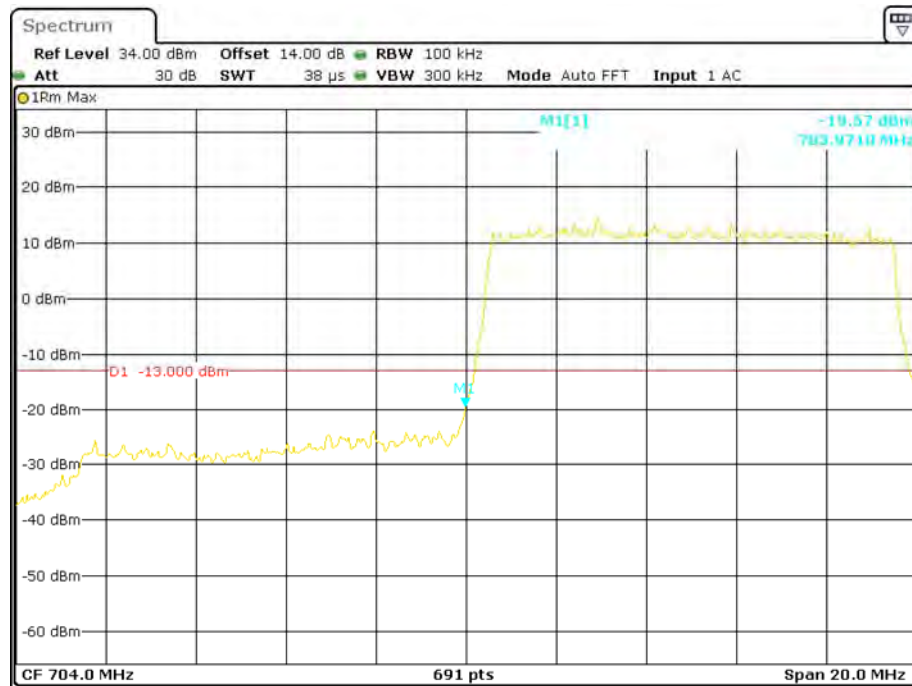
Date: 16.OCT.2017 16:54:50

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

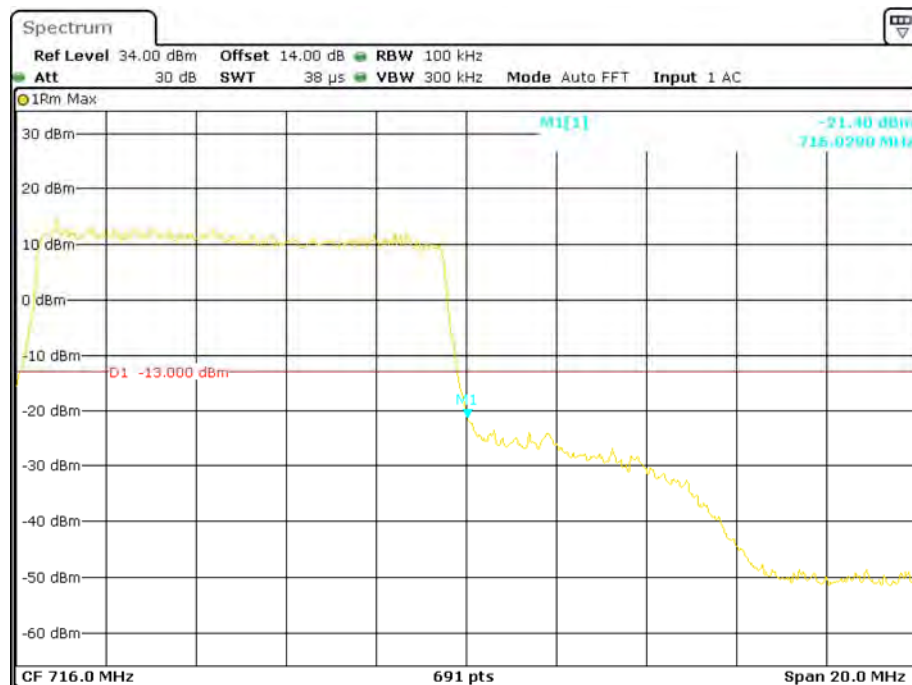
Date: 16.OCT.2017 16:56:25

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

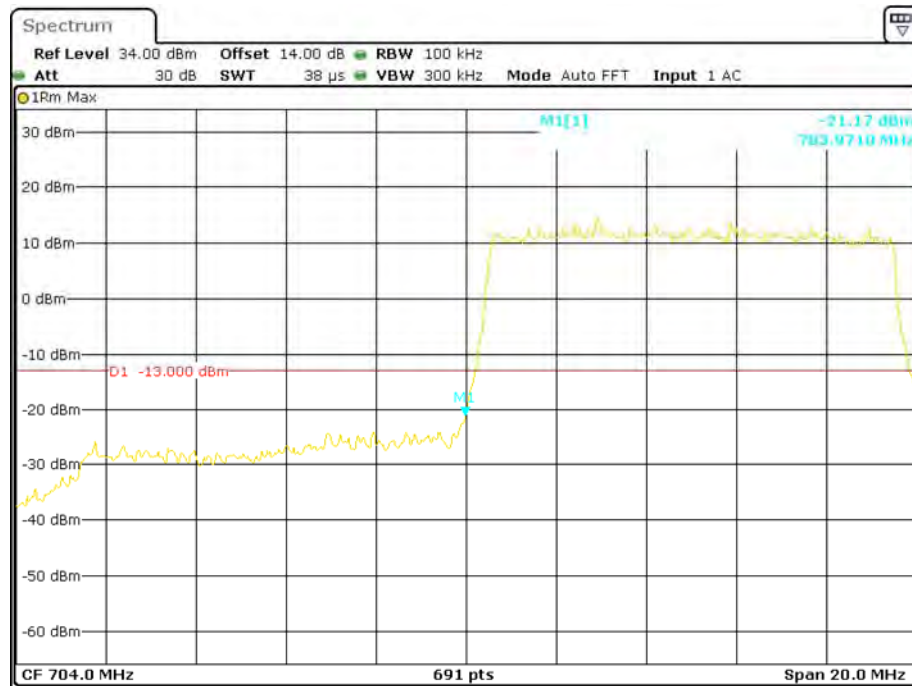
Date: 16.OCT.2017 16:55:21

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

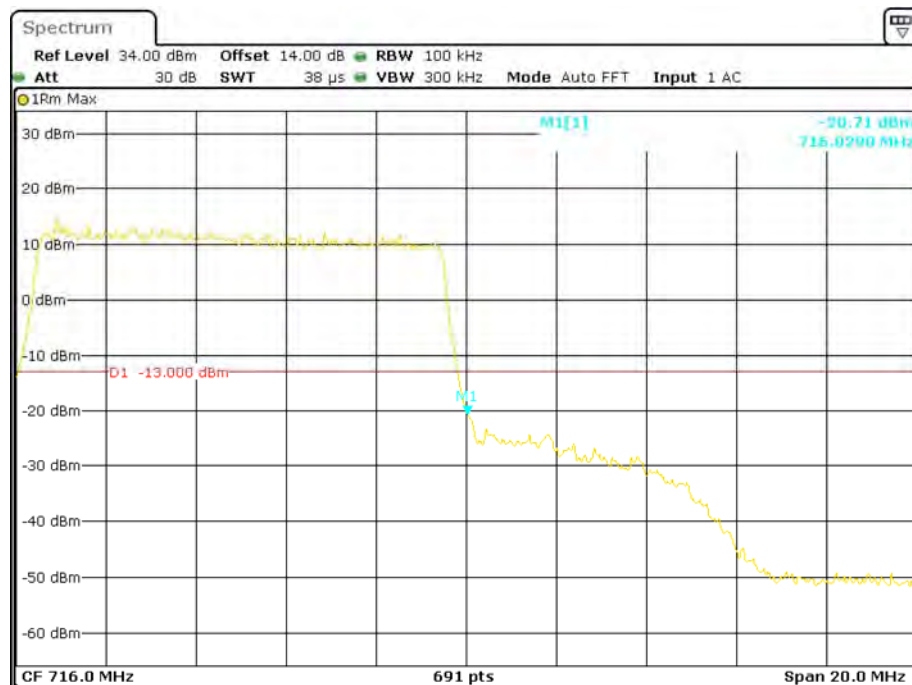
Date: 16.OCT.2017 17:01:03

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

Date: 16.OCT.2017 16:59:38

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

Date: 16.OCT.2017 16:58:13

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

Date: 16.OCT.2017 16:59:08

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

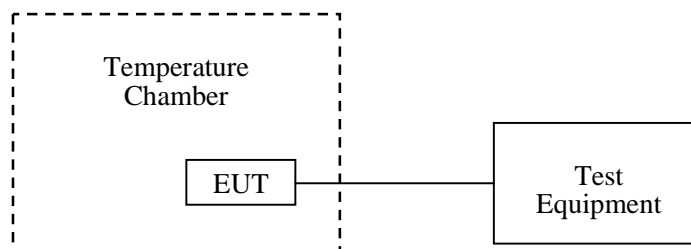
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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:	22 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2017-10-16.

EUT operation mode: Transmitting

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

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

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	6	0.0072	2.5
-20		6	0.0072	2.5
-10		4	0.0048	2.5
0		4	0.0048	2.5
10		4	0.0048	2.5
20		3	0.0036	2.5
30		4	0.0048	2.5
40		5	0.0060	2.5
50		6	0.0072	2.5
25	V min.= 3.6	8	0.0096	2.5
	V max.= 4.3	10	0.0120	2.5

EDGE Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-5	-0.0060	2.5
-20		-5	-0.0060	2.5
-10		-3	-0.0036	2.5
0		-3	-0.0036	2.5
10		-3	-0.0036	2.5
20		-1	-0.0012	2.5
30		-3	-0.0036	2.5
40		-5	-0.0060	2.5
50		-10	-0.0120	2.5
25	V min.= 3.6	-12	-0.0143	2.5
	V max.= 4.3	-15	-0.0179	2.5

WCDMA Mode

Middle Channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	3	0.00359	2.5
-20		3	0.00359	2.5
-10		2	0.00239	2.5
0		2	0.00239	2.5
10		2	0.00239	2.5
20		1	0.00120	2.5
30		2	0.00239	2.5
40		3	0.00359	2.5
50		3	0.00359	2.5
25	V min.= 3.6	4	0.00478	2.5
	V max.= 4.3	4	0.00478	2.5

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

Middle Channel, $f_0=1880.0\text{ MHz}$				
Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	12	0.0064	pass
-20		12	0.0064	pass
-10		9	0.0048	pass
0		9	0.0048	pass
10		9	0.0048	pass
20		8	0.0043	pass
30		9	0.0048	pass
40		10	0.0053	pass
50		12	0.0064	pass
25	V min.= 3.6	14	0.0074	pass
	V max.= 4.3	16	0.0085	pass

EDGE Mode

Middle Channel, $f_o=1880.0$ MHz				
Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	10	0.0053	pass
-20		10	0.0053	pass
-10		5	0.0027	pass
0		5	0.0027	pass
10		5	0.0027	pass
20		3	0.0016	pass
30		5	0.0027	pass
40		10	0.0053	pass
50		12	0.0064	pass
25	V min.= 3.6	15	0.0080	pass
	V max.= 4.3	17	0.0090	pass

WCDMA Mode

Middle Channel, $f_o=1880.0$ MHz				
Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	3	0.00160	pass
-20		3	0.00160	pass
-10		2	0.00106	pass
0		2	0.00106	pass
10		2	0.00106	pass
20		1	0.00053	pass
30		2	0.00106	pass
40		3	0.00160	pass
50		4	0.00213	pass
25	V min.= 3.6	4	0.00213	pass
	V max.= 4.3	5	0.00266	pass

AWS Band (Part 27)**WCDMA Mode**

Middle Channel, $f_0 = 1732.6$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-5	-0.00289	pass
-20		-5	-0.00289	pass
-10		-5	-0.00289	pass
0		-2	-0.00115	pass
10		-2	-0.00115	pass
20		-1	-0.00058	pass
30		-3	-0.00173	pass
40		-4	-0.00231	pass
50		-5	-0.00289	pass
25	V min.= 3.6	-6	-0.00346	pass
	V max.= 4.3	-8	-0.00462	pass

LTE:**QPSK:****Band 2:**

10.0 MHz Middle Channel, $f_0 = 1880$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-5	-0.00266	pass
-20		-5	-0.00266	pass
-10		-2	-0.00106	pass
0		-2	-0.00106	pass
10		-2	-0.00106	pass
20		-1	-0.00053	pass
30		-2	-0.00106	pass
40		-3	-0.00160	pass
50		-4	-0.00213	pass
20	V min.= 3.6	-6	-0.00319	pass
	V max.= 4.3	-7	-0.00372	pass

Band 4:

10.0 MHz Middle Channel, $f_0 = 1732.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-5	-0.00289	pass
-20		-5	-0.00289	pass
-10		-3	-0.00173	pass
0		-3	-0.00173	pass
10		-3	-0.00173	pass
20		1	0.00058	pass
30		-3	-0.00173	pass
40		-4	-0.00231	pass
50		-5	-0.00289	pass
20	V min.= 3.6	-7	-0.00404	pass
	V max.= 4.3	-9	-0.00519	pass

Band 5:

10.0 MHz Middle Channel, $f_0 = 836.6$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	4	0.00478	pass
-20		4	0.00478	pass
-10		2	0.00239	pass
0		2	0.00239	pass
10		2	0.00239	pass
20		1	0.00120	pass
30		2	0.00239	pass
40		3	0.00359	pass
50		3	0.00359	pass
20	V min.= 3.6	5	0.00598	pass
	V max.= 4.3	5	0.00598	pass

Band 7:

10.0 MHz Middle Channel, $f_o = 2535$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	5	0.00197	pass
-20		5	0.00197	pass
-10		4	0.00158	pass
0		4	0.00158	pass
10		4	0.00158	pass
20		3	0.00118	pass
30		4	0.00158	pass
40		5	0.00197	pass
50		6	0.00237	pass
20	V min.= 3.6	10	0.00394	pass
	V max.= 4.3	12	0.00473	pass

Band 12:

10.0 MHz Middle Channel, $f_o = 707.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	3	0.00424	pass
-20		3	0.00424	pass
-10		3	0.00424	pass
0		2	0.00283	pass
10		2	0.00283	pass
20		1	0.00141	pass
30		2	0.00283	pass
40		3	0.00424	pass
50		3	0.00424	pass
20	V min.= 3.6	4	0.00565	pass
	V max.= 4.3	4	0.00565	pass

Band 17:

10.0 MHz Middle Channel, $f_0 = 710$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	4	0.00563	pass
-20		4	0.00563	pass
-10		4	0.00563	pass
0		2	0.00282	pass
10		2	0.00282	pass
20		1	0.00141	pass
30		2	0.00282	pass
40		3	0.00423	pass
50		4	0.00563	pass
25	V min.= 3.6	6	0.00845	pass
	V max.= 4.3	7	0.00986	pass

16QAM:**Band 2:**

10.0 MHz Middle Channel, $f_0 = 1880$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-17	-0.009043	pass
-20		-13	-0.006915	pass
-10		-16	-0.008511	pass
0		-19	-0.010106	pass
10		-14	-0.007447	pass
20		-18	-0.009574	pass
30		-15	-0.007979	pass
40		-17	-0.009043	pass
50		5	0.002660	pass
20	V min.= 3.6	1	0.000532	pass
	V max.= 4.3	-15	-0.007979	pass

Band 4:

10.0 MHz Middle Channel, $f_o = 1732.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	5	0.002886	pass
-20		-13	-0.007504	pass
-10		6	0.003463	pass
0		-3	-0.001732	pass
10		2	0.001154	pass
20		-9	-0.005195	pass
30		1	0.000577	pass
40		3	0.001732	pass
50		-5	-0.002886	pass
20	V min.= 3.6	2	0.001154	pass
	V max.= 4.3	-6	-0.003463	pass

Band 5:

10.0 MHz Middle Channel, $f_o = 836.6$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-4	-0.004782	pass
-20		-6	-0.007173	pass
-10		-10	-0.011955	pass
0		-7	-0.008368	pass
10		-5	-0.005977	pass
20		-8	-0.009564	pass
30		-6	-0.007173	pass
40		-3	-0.003586	pass
50		-5	-0.005977	pass
20	V min.= 3.6	5	0.005977	pass
	V max.= 4.3	6	0.007173	pass

Band 7:

10.0 MHz Middle Channel, $f_o = 2535$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	4	0.001578	pass
-20		-5	-0.001972	pass
-10		6	0.002367	pass
0		2	0.000789	pass
10		-6	-0.002367	pass
20		3	0.001183	pass
30		10	0.003945	pass
40		12	0.004734	pass
50		8	0.003156	pass
20	V min.= 3.6	1	0.000394	pass
	V max.= 4.3	-9	-0.003550	pass

Band 12:

10.0 MHz Middle Channel, $f_o = 707.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	10	0.014134	pass
-20		13	0.018375	pass
-10		9	0.012721	pass
0		-6	-0.008481	pass
10		-12	-0.016961	pass
20		-2	-0.002827	pass
30		3	0.004240	pass
40		6	0.008481	pass
50		6	0.008481	pass
20	V min.= 3.6	2	0.002827	pass
	V max.= 4.3	4	0.005654	pass

Band 17:

10.0 MHz Middle Channel, $f_0 = 710$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	15	0.021127	pass
-20		3	0.004240	pass
-10		14	0.019788	pass
0		9	0.012721	pass
10		6	0.008481	pass
20		8	0.011307	pass
30		-7	-0.009894	pass
40		-1	-0.001413	pass
50		5	0.007067	pass
25	V min.= 3.6	6	0.008481	pass
25	V max.= 4.3	-9	-0.012721	pass

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