FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E
+
INDUSTRY CANADA RSS-132 & RSS-133

TEST REPORT

For

ICG

Trade Name: Intwine connect

Model: ICG-100-NA-R, ICG-100-NA-C

Issued to

Foxconn International Inc
NO 2 ZIYOU ST TUCHENG DISTRICT
NEW TAIPEI
236

Issued by

Compliance Certification Services Inc.
Wugu Laboratory
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: March 30, 2017

Testing Laboratory
1309

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		March 30, 2017		Initial Issue	ALL	Doris Chu
01		June 7, 2017		1. Modify section 7.2	P.28	Angel Cheng

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1. TEST RESULT CERTIFICATION

Applicant:	Foxconn International Inc NO 2 ZIYOU ST TUCHENG DISTRICT NEW TAIPEI 236
Manufacturer:	Foxconn International Inc NO 2 ZIYOU ST TUCHENG DISTRICT NEW TAIPEI 236
Equipment Under Test:	ICG
Trade Name:	Intwine connect
Model:	ICG-100-NA-R, ICG-100-NA-C
Date of Test:	February 9 ~ March 29, 2017

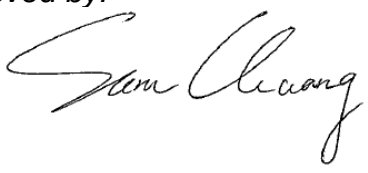
APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E + RSS-132 Issue 3 and RSS-133 Issue 6	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-D:2010 and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rule FCC PART 22 Subpart H, PART 24 Subpart E and IC RSS-132 Issue 3 and IC RSS-133 Issue 6.

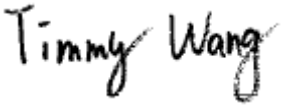
The test results of this report relate only to the tested sample identified in this report.

Approved by:



Sam Chuang
Manager
Compliance Certification Services Inc.

Tested by:



Timmy Wang
Engineer
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	ICG	
Trade Name	Intwine connect	
Model:	ICG-100-NA-R, ICG-100-NA-C	
Model Discrepancy	ICG-100-NA-R: Plastic ICG-100-NA-C: Metal	
Received Date	January 13, 2017	
Power Supply	VDC from Power Adapter For ICG-100-NA-R 1. DVE / DSA-18PFM-12FUS I/P: 100-240Vac, 0.6A, 50-60Hz O/P: 12Vdc, 1.5A 2. MEAN WELL / GST18U12 I/P: 100-240Vac, 0.5A, 50-60Hz O/P: 12Vdc, 1.5A For ICG-100-NA-C 1. DVE / DSA-18PFM-12FUS I/P: 100-240Vac, 0.6A, 50-60Hz O/P: 12Vdc, 1.5A	
Modulation Technique	LTE Band 2	QPSK, 16QAM
	LTE Band 5	QPSK, 16QAM
Antenna Specification	Dipole Antenna taoglas / Gain 3 dBi(Worse) FIT / Gain 1.59 dBi	

Remark: *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*

Emission Designator						
Band	**Frequency Range(MHz)**	**BW (MHz)**	**QPSK**		**16QAM**	
			Emission Designator (99% OBW)	**Maximum EIRP (W)**	**Emission Designator (99% OBW)**	**Maximum EIRP (W)**
2	**1850.7MHz ~1909.2MHz**	**1.4**	1M09G7D	0.9661	1M10D7W	0.8414
	1851.5MHz ~1908.4MHz	**3**	2M68G7D	0.8054	2M68D7W	0.8279
	1852.5MHz ~1907.5MHz	**5**	4M47G7D	0.7834	4M48D7W	0.8166
	1855MHz ~1905MHz	**10**	8M94G7D	0.8128	8M91D7W	0.9661
	1857.5MHz ~1902.5MHz	**15**	13M4G7D	0.9462	13M4D7W	0.9204
	1860MHz ~1900MHz	**20**	18M0G7D	0.9727	18M0D7W	0.9931
Band	**Frequency Range(MHz)**	**BW (MHz)**	**QPSK**		**16QAM**	
			Emission Designator (99% OBW)	**Maximum ERP (W)**	**Emission Designator (99% OBW)**	**Maximum ERP (W)**
5	**824.7MHz ~848.2MHz**	**1.4**	1M09G7D	1.2474	1M09D7W	0.9840
	825.5MHz~847.4MHz	**3**	2M68G7D	1.0914	2M67D7W	1.2794
	826.5MHz ~846.5MHz	**5**	4M47G7D	1.0765	4M47D7W	1.1885
	829MHz ~844MHz	**10**	8M94G7D	1.1858	8M91D7W	1.0740

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to TIA/EIA-603-D: 2010, FCC CFR 47, Part 2 and Part 22 Subpart H & Part 24 Subpart E.

The tests documented in this report were performed in accordance with IC RSS-132, SPSR503, RSS-133, SPSR510 and ANSI C63.26: 2015.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 DESCRIPTION OF TEST MODES

The EUT (Model: ICG-100-NA-R) had been tested under operating condition.
The EUT be set in maximum power transmission via call box during testing.

LTE Band 2: 1850MHz ~ 1910MHz

Three channels had been tested for each channel bandwidth.

Channel	1.4MHz		3MHz		5MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Lowest	18607	1850.7	18615	1851.5	18625	1852.5
Middle	18900	1880.0	18900	1880.0	18900	1880.0
Highest	19193	1909.2	19184	1908.4	19175	1907.5
Channel	10MHz		15MHz		20MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Lowest	18650	1855.0	18675	1857.5	18700	1860.0
Middle	18900	1880.0	18900	1880.0	18900	1880.0
Highest	19150	1905.0	19125	1902.5	19100	1900.0

LTE Band 5: 824MHz ~ 849MHz

Three channels had been tested for each channel bandwidth.

Channel	1.4MHz		3MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Lowest	20407	824.7	20415	825.5
Middle	20525	836.5	20525	836.5
Highest	20642	848.2	20634	847.4
Channel	5MHz		10MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Lowest	20425	826.5	20450	829.0
Middle	20525	836.5	20525	836.5
Highest	20625	846.5	20600	844.0

Radiated Emission Measurement Above 1G	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
Voltage/Hz	**120V/60Hz**
Test Mode	**Mode 1:EUT power by AC adapter via power cable.**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**
Worst Position	☐ **Placed in fixed position.** ☐ **Placed in fixed position at X-Plane (E2-Plane)** ☒ **Placed in fixed position at Y-Plane (E1-Plane)** ☐ **Placed in fixed position at Z-Plane (H-Plane)**

Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in ICG-100-NA-Cand ICG-100-NA-R for below 1GHz radiated measurement. The worst case ICG-100-NA-R were recorded in this report.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year.*

Conducted Emissions Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Base Station	Anritsu	MT-8820C	101245	02/18/2016	02/17/2017

Wugu Fully Chamber B					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Signal Analyzer	Agilent	E4407B	MY44212686	04/09/2016	04/08/2017
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1042473	07/06/2016	07/05/2017
Bilog Antenna	Sunol Sciences	JB3	A030105	07/03/2016	07/02/2017
Horn Antenna	EMCO	3115	9602-4659	06/01/2016	05/31/2017
Pre-Amplifier	EMEC	EM330	60609	06/08/2016	06/07/2017
Horn Antenna	ETC	MCTD 1209	DRH13M02003	09/02/2016	09/01/2017
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	EZ-EMC (CCS-3A1RE)				

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

***Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, TAIWAN, R.O.C.
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10: 2013 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	TAF Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	Canada IC 2324G-1 IC 2324G-2

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1	Notebook	Acer	Aspire 4320 series	N/A	QDS-BRCM1018	N/A	N/A

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

7. FCC PART 22 & 24 REQUIREMENTS & INDUSTRY CANADA RSS-132 & RSS-133

7.1 OUTPUT POWER MEASUREMENT

Test Procedures

CONDUCTED POWER MEASUREMENT:

1. The transmitter output power was connected to the call box.
2. Set EUT at maximum output power via call box.
3. Set Call box at lowest, middle and highest channels for each band and modulation.

TEST RESULTS

LTE Band 5

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
5	1.4	20407	824.7	QPSK	1	0	0	23.32	0.2148
					1	2	0	23.44	0.2208
					1	5	0	23.22	0.2099
					3	0	1	22.38	0.1730
					3	1	1	22.46	0.1762
					3	2	1	22.26	0.1683
					6	0	1	22.46	0.1762
				16QAM	1	0	1	22.33	0.1710
					1	2	1	22.48	0.1770
					1	5	1	22.26	0.1683
					3	0	2	21.35	0.1365
					3	1	2	21.48	0.1406
					3	2	2	21.23	0.1327
					6	0	2	21.26	0.1337
		20525	836.5	QPSK	1	0	0	23.46	0.2218
					1	2	0	23.23	0.2104
					1	5	0	23.31	0.2143
					3	0	1	22.52	0.1786
					3	1	1	22.30	0.1698
					3	2	1	22.40	0.1738
					6	0	1	22.55	0.1799
				16QAM	1	0	1	22.52	0.1786
					1	2	1	22.30	0.1698
					1	5	1	22.37	0.1726
					3	0	2	21.53	0.1422
					3	1	2	21.27	0.1340
					3	2	2	21.33	0.1358
					6	0	2	21.37	0.1371
		20642	848.2	QPSK	1	0	0	23.20	0.2089
					1	2	0	23.13	0.2056
					1	5	0	22.93	0.1963
					3	0	1	22.25	0.1679
					3	1	1	22.14	0.1637
					3	2	1	21.97	0.1574
					6	0	1	22.30	0.1698
				16QAM	1	0	1	22.23	0.1671
					1	2	1	22.25	0.1679
					1	5	1	21.98	0.1578
					3	0	2	21.25	0.1334
					3	1	2	21.14	0.1300
					3	2	2	20.98	0.1253
					6	0	2	21.04	0.1271

LTE Band 5

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
5	3	20415	825.5	QPSK	1	0	0	23.35	0.2163
					1	7	0	23.47	0.2223
					1	14	0	23.25	0.2113
					8	0	1	22.41	0.1742
					8	4	1	22.49	0.1774
					8	7	1	22.29	0.1694
					15	0	1	22.49	0.1774
				16QAM	1	0	1	22.36	0.1722
					1	7	1	22.51	0.1782
					1	14	1	22.29	0.1694
					8	0	2	21.38	0.1374
					8	4	2	21.51	0.1416
					8	7	2	21.26	0.1337
					15	0	2	21.29	0.1346
		20525	836.5	QPSK	1	0	0	23.47	0.2223
					1	7	0	23.24	0.2109
					1	14	0	23.32	0.2148
					8	0	1	22.53	0.1791
					8	4	1	22.31	0.1702
					8	7	1	22.41	0.1742
					15	0	1	22.56	0.1803
				16QAM	1	0	1	22.53	0.1791
					1	7	1	22.31	0.1702
					1	14	1	22.38	0.1730
					8	0	2	21.54	0.1426
					8	4	2	21.28	0.1343
					8	7	2	21.34	0.1361
					15	0	2	21.38	0.1374
		20634	847.4	QPSK	1	0	0	23.22	0.2099
					1	7	0	23.15	0.2065
					1	14	0	22.95	0.1972
					8	0	1	22.27	0.1687
					8	4	1	22.16	0.1644
					8	7	1	21.99	0.1581
					15	0	1	22.32	0.1706
				16QAM	1	0	1	22.25	0.1679
					1	7	1	22.27	0.1687
					1	14	1	22.00	0.1585
					8	0	2	21.27	0.1340
					8	4	2	21.16	0.1306
					8	7	2	21.00	0.1259
					15	0	2	21.06	0.1276

LTE Band 5

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
5	5	20425	826.5	QPSK	1	0	0	23.37	0.2173
					1	12	0	23.49	0.2234
					1	24	0	23.27	0.2123
					12	0	1	22.43	0.1750
					12	6	1	22.51	0.1782
					12	11	1	22.31	0.1702
					25	0	1	22.51	0.1782
				16QAM	1	0	1	22.38	0.1791
					1	12	1	22.53	0.1702
					1	24	1	22.31	0.1380
					12	0	2	21.40	0.1422
					12	6	2	21.53	0.1343
					12	11	2	21.28	0.1352
					25	0	2	21.31	0.1791
		20525	836.5	QPSK	1	0	0	23.48	0.2228
					1	12	0	23.25	0.2113
					1	24	0	23.33	0.2153
					12	0	1	22.54	0.1795
					12	6	1	22.32	0.1706
					12	11	1	22.42	0.1746
					25	0	1	22.57	0.1807
				16QAM	1	0	1	22.54	0.1795
					1	12	1	22.32	0.1706
					1	24	1	22.39	0.1734
					12	0	2	21.55	0.1429
					12	6	2	21.29	0.1346
					12	11	2	21.35	0.1365
					25	0	2	21.39	0.1377
		20625	846.5	QPSK	1	0	0	23.24	0.2109
					1	12	0	23.17	0.2075
					1	24	0	22.97	0.1982
					12	0	1	22.29	0.1694
					12	6	1	22.18	0.1652
					12	11	1	22.01	0.1589
					25	0	1	22.34	0.1714
				16QAM	1	0	1	22.27	0.1687
					1	12	1	22.29	0.1694
					1	24	1	22.02	0.1592
					12	0	2	21.29	0.1346
					12	6	2	21.18	0.1312
					12	11	2	21.02	0.1265
					25	0	2	21.08	0.1282

LTE Band 5

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
5	10	20450	829.0	QPSK	1	0	0	23.42	0.2198
					1	24	0	23.54	0.2259
					1	49	0	23.32	0.2148
					25	0	1	22.48	0.1770
					25	12	1	22.56	0.1803
					25	24	1	22.36	0.1722
					50	0	1	22.56	0.1803
				16QAM	1	0	1	22.43	0.1750
					1	24	1	22.58	0.1811
					1	49	1	22.36	0.1722
					25	0	2	21.45	0.1396
					25	12	2	21.58	0.1439
					25	24	2	21.33	0.1358
					50	0	2	21.36	0.1368
		20525	836.5	QPSK	1	0	0	23.52	0.2249
					1	24	0	23.29	0.2133
					1	49	0	23.37	0.2173
					25	0	1	22.58	0.1811
					25	12	1	22.36	0.1722
					25	24	1	22.46	0.1762
					50	0	1	22.61	0.1824
				16QAM	1	0	1	22.58	0.1811
					1	24	1	22.36	0.1722
					1	49	1	22.43	0.1750
					25	0	2	21.59	0.1442
					25	12	2	21.33	0.1358
					25	24	2	21.39	0.1377
					50	0	2	21.43	0.1390
		20600	844.0	QPSK	1	0	0	23.31	0.2143
					1	24	0	23.24	0.2109
					1	49	0	23.04	0.2014
					25	0	1	22.36	0.1722
					25	12	1	22.25	0.1679
					25	24	1	22.08	0.1614
					50	0	1	22.41	0.1742
				16QAM	1	0	1	22.34	0.1714
					1	24	1	22.36	0.1722
					1	49	1	22.09	0.1618
					25	0	2	21.36	0.1368
					25	12	2	21.25	0.1334
					25	24	2	21.09	0.1285
					50	0	2	21.15	0.1303

LTE Band 2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
2	1.4	18607	1850.7	QPSK	1	0	0	23.81	0.2404
					1	2	0	23.70	0.2344
					1	5	0	23.27	0.2123
					3	0	1	22.93	0.1963
					3	1	1	22.86	0.1932
					3	2	1	22.34	0.1714
					6	0	1	22.90	0.1950
				16QAM	1	0	1	22.81	0.1910
					1	2	1	22.71	0.1866
					1	5	1	22.30	0.1698
					3	0	2	21.83	0.1524
					3	1	2	21.74	0.1493
					3	2	2	21.29	0.1346
					6	0	2	21.31	0.1352
		18900	1880.0	QPSK	1	0	0	23.47	0.2223
					1	2	0	23.42	0.2198
					1	5	0	23.39	0.2183
					3	0	1	22.54	0.1795
					3	1	1	22.44	0.1754
					3	2	1	22.44	0.1754
					6	0	1	22.49	0.1774
				16QAM	1	0	1	22.54	0.1795
					1	2	1	22.50	0.1778
					1	5	1	22.47	0.1766
					3	0	2	21.55	0.1429
					3	1	2	21.47	0.1403
					3	2	2	21.45	0.1396
					6	0	2	21.57	0.1435
		19192	1909.2	QPSK	1	0	0	23.44	0.2208
					1	2	0	23.33	0.2153
					1	5	0	23.31	0.2143
					3	0	1	22.58	0.1811
					3	1	1	22.34	0.1714
					3	2	1	22.38	0.1730
					6	0	1	22.46	0.1762
				16QAM	1	0	1	22.56	0.1803
					1	2	1	22.36	0.1722
					1	5	1	22.41	0.1742
					3	0	2	21.53	0.1422
					3	1	2	21.41	0.1384
					3	2	2	21.40	0.1380
					6	0	2	21.43	0.1390

LTE Band 2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
2	3	18615	1851.5	QPSK	1	0	0	23.82	0.2410
					1	7	0	23.71	0.2350
					1	14	0	23.28	0.2128
					8	0	1	22.94	0.1968
					8	4	1	22.87	0.1936
					8	7	1	22.35	0.1718
					15	0	1	22.91	0.1954
				16QAM	1	0	1	22.82	0.1914
					1	7	1	22.72	0.1871
					1	14	1	22.31	0.1702
					8	0	2	21.84	0.1528
					8	4	2	21.75	0.1496
					8	7	2	21.30	0.1349
					15	0	2	21.32	0.1355
		18900	1880.0	QPSK	1	0	0	23.48	0.2228
					1	7	0	23.43	0.2203
					1	14	0	23.40	0.2188
					8	0	1	22.55	0.1799
					8	4	1	22.45	0.1758
					8	7	1	22.45	0.1758
					15	0	1	22.50	0.1778
				16QAM	1	0	1	22.55	0.1799
					1	7	1	22.51	0.1782
					1	14	1	22.48	0.1770
					8	0	2	21.56	0.1432
					8	4	2	21.48	0.1406
					8	7	2	21.46	0.1400
					15	0	2	21.58	0.1439
		19184	1908.4	QPSK	1	0	0	23.46	0.2218
					1	7	0	23.35	0.2163
					1	14	0	23.33	0.2153
					8	0	1	22.60	0.1820
					8	4	1	22.36	0.1722
					8	7	1	22.40	0.1738
					15	0	1	22.48	0.1770
				16QAM	1	0	1	22.58	0.1811
					1	7	1	22.38	0.1730
					1	14	1	22.43	0.1750
					8	0	2	21.55	0.1429
					8	4	2	21.43	0.1390
					8	7	2	21.42	0.1387
					15	0	2	21.45	0.1396

LTE Band 2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
2	5	18625	1852.5	QPSK	1	0	0	23.87	0.2438
					1	12	0	23.76	0.2377
					1	24	0	23.33	0.2153
					12	0	1	22.99	0.1991
					12	6	1	22.92	0.1959
					12	11	1	22.40	0.1738
					25	0	1	22.96	0.1977
				16QAM	1	0	1	22.87	0.1936
					1	12	1	22.77	0.1892
					1	24	1	22.36	0.1722
					12	0	2	21.89	0.1545
					12	6	2	21.80	0.1514
					12	11	2	21.35	0.1365
					25	0	2	21.37	0.1371
		18900	1880.0	QPSK	1	0	0	23.52	0.2249
					1	12	0	23.47	0.2223
					1	24	0	23.44	0.2208
					12	0	1	22.59	0.1816
					12	6	1	22.49	0.1774
					12	11	1	22.49	0.1774
					25	0	1	22.54	0.1795
				16QAM	1	0	1	22.59	0.1816
					1	12	1	22.55	0.1799
					1	24	1	22.52	0.1786
					12	0	2	21.60	0.1445
					12	6	2	21.52	0.1419
					12	11	2	21.50	0.1413
					25	0	2	21.62	0.1452
		19175	1907.5	QPSK	1	0	0	23.51	0.2244
					1	12	0	23.40	0.2188
					1	24	0	23.38	0.2178
					12	0	1	22.65	0.1841
					12	6	1	22.41	0.1742
					12	11	1	22.45	0.1758
					25	0	1	22.53	0.1791
				16QAM	1	0	1	22.63	0.1832
					1	12	1	22.43	0.1750
					1	24	1	22.48	0.1770
					12	0	2	21.60	0.1445
					12	6	2	21.48	0.1406
					12	11	2	21.47	0.1403
					25	0	2	21.50	0.1413

LTE Band 2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
2	10	18650	1855.0	QPSK	1	0	0	23.89	0.2449
					1	24	0	23.78	0.2388
					1	49	0	23.35	0.2163
					25	0	1	23.01	0.2000
					25	12	1	22.94	0.1968
					25	24	1	22.42	0.1746
					50	0	1	22.98	0.1986
				16QAM	1	0	1	22.89	0.1945
					1	24	1	22.79	0.1901
					1	49	1	22.38	0.1730
					25	0	2	21.91	0.1552
					25	12	2	21.82	0.1521
					25	24	2	21.37	0.1371
					50	0	2	21.39	0.1377
		18900	1880.0	QPSK	1	0	0	23.54	0.2259
					1	24	0	23.49	0.2234
					1	49	0	23.46	0.2218
					25	0	1	22.61	0.1824
					25	12	1	22.51	0.1782
					25	24	1	22.51	0.1782
					50	0	1	22.56	0.1803
				16QAM	1	0	1	22.61	0.1824
					1	24	1	22.57	0.1807
					1	49	1	22.54	0.1795
					25	0	2	21.62	0.1452
					25	12	2	21.54	0.1426
					25	24	2	21.52	0.1419
					50	0	2	21.64	0.1459
		19150	1905.0	QPSK	1	0	0	23.54	0.2259
					1	24	0	23.43	0.2203
					1	49	0	23.41	0.2193
					25	0	1	22.68	0.1854
					25	12	1	22.44	0.1754
					25	24	1	22.48	0.1770
					50	0	1	22.56	0.1803
				16QAM	1	0	1	22.66	0.1845
					1	24	1	22.46	0.1762
					1	49	1	22.51	0.1782
					25	0	2	21.63	0.1455
					25	12	2	21.51	0.1416
					25	24	2	21.50	0.1413
					50	0	2	21.53	0.1422

LTE Band 2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
2	15	18675	1857.5	QPSK	1	0	0	23.90	0.2455
					1	37	0	23.79	0.2393
					1	74	0	23.36	0.2168
					36	0	1	23.02	0.2004
					36	18	1	22.95	0.1972
					36	35	1	22.43	0.1750
					75	0	1	22.99	0.1991
				16QAM	1	0	1	22.90	0.1950
					1	37	1	22.80	0.1905
					1	74	1	22.39	0.1734
					36	0	2	21.92	0.1556
					36	18	2	21.83	0.1524
					36	35	2	21.38	0.1374
					75	0	2	21.40	0.1380
		18900	1880.0	QPSK	1	0	0	23.55	0.2265
					1	37	0	23.50	0.2239
					1	74	0	23.47	0.2223
					36	0	1	22.62	0.1828
					36	18	1	22.52	0.1786
					36	35	1	22.52	0.1786
					75	0	1	22.57	0.1807
				16QAM	1	0	1	22.62	0.1828
					1	37	1	22.58	0.1811
					1	74	1	22.55	0.1799
					36	0	2	21.63	0.1455
					36	18	2	21.55	0.1429
					36	35	2	21.53	0.1422
					75	0	2	21.65	0.1462
		19125	1902.5	QPSK	1	0	0	23.55	0.2265
					1	37	0	23.44	0.2208
					1	74	0	23.42	0.2198
					36	0	1	22.69	0.1858
					36	18	1	22.45	0.1758
					36	35	1	22.49	0.1774
					75	0	1	22.57	0.1807
				16QAM	1	0	1	22.67	0.1849
					1	37	1	22.47	0.1766
					1	74	1	22.52	0.1786
					36	0	2	21.64	0.1459
					36	18	2	21.52	0.1419
					36	35	2	21.51	0.1416
					75	0	2	21.54	0.1426

LTE Band 2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Average Power (W)
2	20	18700	1860.0	QPSK	1	0	0	23.93	0.2472
					1	49	0	23.82	0.2410
					1	99	0	23.39	0.2183
					50	0	1	23.05	0.2018
					50	24	1	22.98	0.1986
					50	49	1	22.46	0.1762
					100	0	1	23.02	0.2004
				16QAM	1	0	1	22.93	0.1963
					1	49	1	22.83	0.1919
					1	99	1	22.42	0.1746
					50	0	2	21.95	0.1567
					50	24	2	21.86	0.1535
					50	49	2	21.41	0.1384
					100	0	2	21.43	0.1390
		18900	1880.0	QPSK	1	0	0	23.61	0.2296
					1	49	0	23.56	0.2270
					1	99	0	23.53	0.2254
					50	0	1	22.68	0.1854
					50	24	1	22.58	0.1811
					50	49	1	22.58	0.1811
					100	0	1	22.63	0.1832
				16QAM	1	0	1	22.68	0.1854
					1	49	1	22.64	0.1837
					1	99	1	22.61	0.1824
					50	0	2	21.69	0.1476
					50	24	2	21.61	0.1449
					50	49	2	21.59	0.1442
					100	0	2	21.71	0.1483
		19100	1900.0	QPSK	1	0	0	23.62	0.2301
					1	49	0	23.51	0.2244
					1	99	0	23.49	0.2234
					50	0	1	22.76	0.1888
					50	24	1	22.52	0.1786
					50	49	1	22.56	0.1803
					100	0	1	22.64	0.1837
				16QAM	1	0	1	22.74	0.1879
					1	49	1	22.54	0.1795
					1	99	1	22.59	0.1816
					50	0	2	21.71	0.1483
					50	24	2	21.59	0.1442
					50	49	2	21.58	0.1439
					100	0	2	21.61	0.1449

7.2 ERP & EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 22.913(b):

The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

FCC 24.232(b):

The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

According to RSS-132, section 5.4

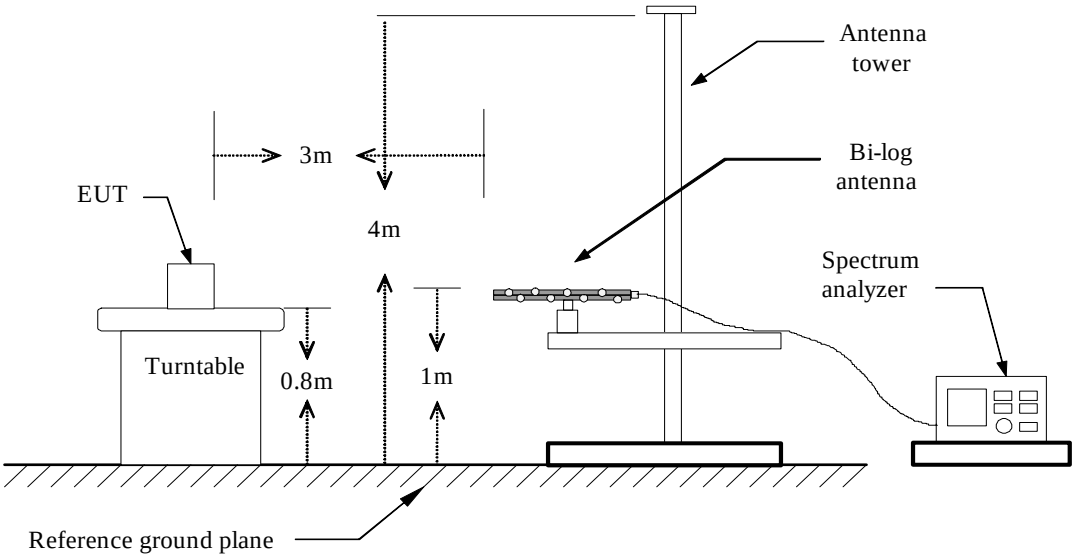
The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts. Refer to SRSP-503 for base station e.i.r.p. limits.

According to RSS-133, section 6.4

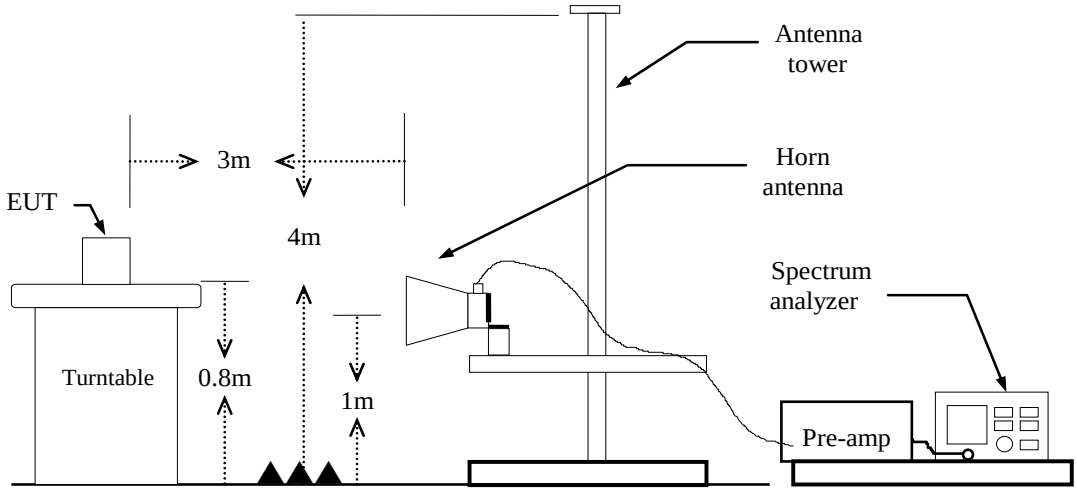
The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

Test Configuration

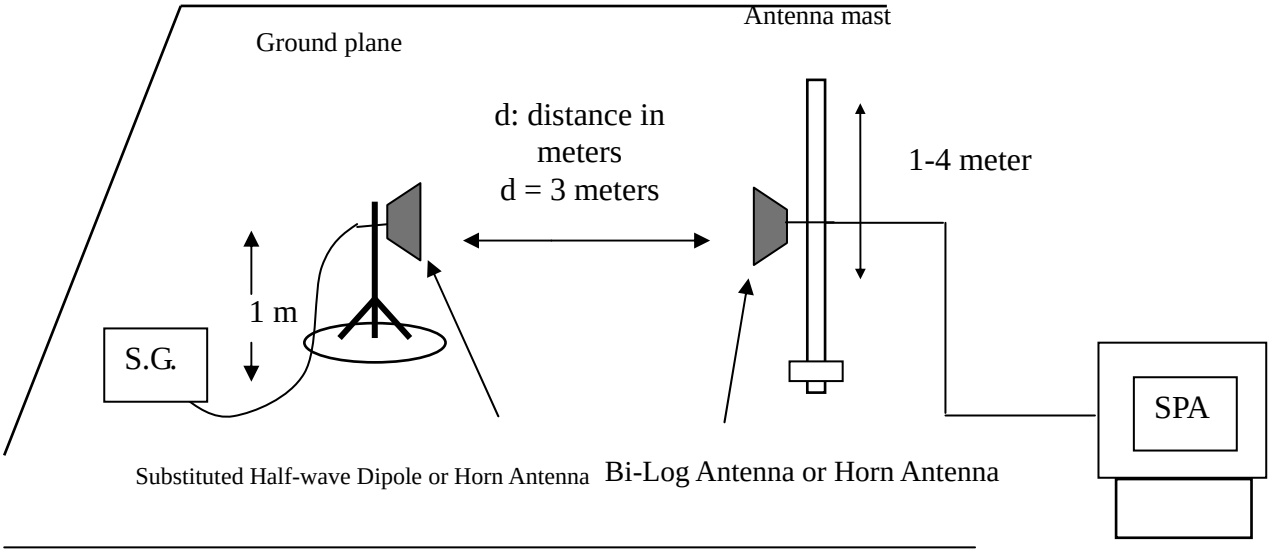
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



TEST PROCEDURE

1. The EUT was placed on a non-conductive rotating platform (0.8m for below 1G and above 1G) in a semi-chamber. The radiated emission at the fundamental frequency was measured at 3m and SA with RMS detector per section 5, KDB 971168 D01.

2. During the measurement, the call box parameters were set to get the maximum output power of the EUT. The maximum emission was recorded from spectrum analyzer power level (LVL) from 360 degrees rotation of turntable and the test antenna raised and lowered over a range from 1m to 4m in both horizontally and vertically polarized orientations.

3. EIRP was measured method according to TIA/EIA-603-D:2010. The EUT was replaced by the substitution antenna at same location, and then record the maximum Analyzer reading through raised and lowered the test antenna.

ERP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)-2.15
EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

TEST RESULTS

No non-compliance noted.

LTE Band 2

BW: 1.4MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	1.4	Lowest	QPSK	1	0	28.90	0.7762	17.41	0.0551
		Middle		1	0	***29.85**	0.9661	18.30	0.0676
		Highest		1	0	27.58	0.5728	18.24	0.0667

BW: 3MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	3	Lowest	QPSK	1	0	***29.06**	0.8054	16.86	0.0485
		Middle		1	0	28.40	0.6918	17.84	0.0608
		Highest		1	0	27.84	0.6081	18.19	0.0659
		Lowest	16 QAM	1	0	***29.18**	0.8279	16.95	0.0495
		Middle		1	0	29.00	0.7943	17.47	0.0558
		Highest		1	0	27.81	0.6039	17.91	0.0618

BW: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	5	Lowest	QPSK	1	0	***28.94**	0.7834	16.98	0.0499
		Middle		1	0	28.87	0.7709	17.86	0.0611
		Highest		1	0	27.83	0.6067	18.15	0.0653
		Lowest	16 QAM	1	0	***29.12**	0.8166	17.05	0.0507
		Middle		1	0	29.05	0.8035	17.65	0.0582
		Highest		1	0	27.97	0.6266	17.73	0.0593

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	10	Lowest	QPSK	1	0	***29.10**	0.8128	17.01	0.0502
		Middle		1	0	28.92	0.7798	17.31	0.0538
		Highest		1	0	28.90	0.7762	15.03	0.0318
		Lowest	16 QAM	1	0	***29.85**	0.9661	16.48	0.0445
		Middle		1	0	29.09	0.8110	14.79	0.0301
		Highest		1	0	28.49	0.7063	14.71	0.0296

BW: 15MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	15	Lowest	QPSK	1	0	29.45	0.8810	16.68	0.0466
		Middle		1	0	***29.76**	0.9462	15.14	0.0327
		Highest		1	0	28.15	0.6531	13.99	0.0251
		Lowest	16 QAM	1	0	***29.64**	0.9204	16.01	0.0399
		Middle		1	0	29.04	0.8017	15.43	0.0349
		Highest		1	0	28.34	0.6823	14.06	0.0255

BW: 20MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	20	Lowest	QPSK	1	0	***29.88**	0.9727	17.09	0.0512
		Middle		1	0	29.48	0.8872	15.79	0.0379
		Highest		1	0	27.96	0.6252	14.45	0.0279
		Lowest	16 QAM	1	0	***29.97**	0.9931	16.19	0.0416
		Middle		1	0	29.11	0.8147	15.76	0.0377
		Highest		1	0	27.76	0.5970	14.25	0.0266

LTE Band 5

BW: 1.4MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
5	1.4	Lowest	QPSK	1	0	29.25	0.8414	25.33	0.3412
		Middle		1	0	29.96	0.9908	26.12	0.4093
		Highest		1	0	***30.96**	1.2474	27.03	0.5047
		Lowest	16 QAM	1	0	28.95	0.7852	25.48	0.3532
		Middle		1	0	***29.93**	0.9840	27.40	0.5495
		Highest		1	0	29.93	0.9840	26.75	0.4732

BW: 3MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
5	3	Lowest	QPSK	1	0	29.40	0.8710	25.58	0.3614
		Middle		1	0	30.01	1.0023	26.53	0.4498
		Highest		1	0	***30.38**	1.0914	26.91	0.4909
		Lowest	16 QAM	1	0	29.01	0.7962	25.22	0.3327
		Middle		1	0	29.80	0.9550	27.00	0.5012
		Highest		1	0	***31.07**	1.2794	26.82	0.4808

BW: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
5	5	Lowest	QPSK	1	0	29.23	0.8375	25.62	0.3648
		Middle		1	0	30.05	1.0116	26.65	0.4624
		Highest		1	0	***30.32**	1.0765	26.49	0.4457
		Lowest	16 QAM	1	0	29.17	0.8260	25.04	0.3192
		Middle		1	0	***30.75**	1.1885	27.10	0.5129
		Highest		1	0	30.08	1.0186	26.34	0.4305

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
5	10	Lowest	QPSK	1	0	29.31	0.8531	25.74	0.3750
		Middle		1	0	***30.74**	1.1858	27.53	0.5662
		Highest		1	0	29.96	0.9908	26.34	0.4305
		Lowest	16 QAM	1	0	28.59	0.7228	24.87	0.3069
		Middle		1	0	***30.31**	1.0740	27.68	0.5861
		Highest		1	0	29.70	0.9333	26.20	0.4169

7.3 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

LIMIT

According to FCC §2.1055, FCC §22.355, .FCC §24.235.

Frequency Tolerance: +/- 2.5ppm

According to RSS-132 section 5.3 ,

The carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

According to RSS -133 section 6.3

The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations and ±1.5 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the occupied bandwidth stays within each of the sub-bands (see Section 5.1) when tested to the temperature and supply voltage variations specified in RSS-Gen.

Test Procedure

Use Anritsu 8820 with frequency Error measurement capability.
Temp = -30 to +50℃
Voltage= 85% to 115% of the nominal value for AC powered equipment.

NOTE: *The frequency error was recorded frequency error from the communication simulator.*

TEST RESULTS

No non-compliance noted.

Test Results

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

LTE Band 2 / QPSK

Reference Frequency: LTE Band 2, 1880 MHz at 20(°C)				
Limit: 2.5 ppm = 4700Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 10M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-0.02	-0.0000093	+/- 2.5
120	40	-0.03	-0.0000151	
120	30	-0.01	-0.0000074	
120	20	-0.02	-0.0000094	
120	10	-0.02	-0.0000099	
120	0	-0.03	-0.0000156	
120	-10	0.01	0.0000054	
120	-20	0.01	0.0000079	
120	50	-0.02	-0.0000093	

LTE Band 2 / 16QAM

Reference Frequency: LTE Band 2, 1880 MHz at 20(°C)				
Limit: 2.5 ppm = 4700Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 10M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-0.01	-0.0000055	+/- 2.5
120	40	0.01	0.0000038	
120	30	-0.01	-0.0000054	
120	20	-0.02	-0.0000101	
120	10	0.01	0.0000076	
120	0	-0.01	-0.0000079	
120	-10	0.01	0.0000064	
120	-20	0.00	0.0000020	
120	50	-0.01	-0.0000055	

LTE Band 5 / QPSK

Reference Frequency: LTE Band 5, 836.5 MHz at 20(°C)				
Limit: 2.5 ppm = 2091.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 10M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	0.01	0.0000063	+/- 2.5
120	40	0.00	-0.0000044	
120	30	0.01	0.0000067	
120	20	0.00	0.0000057	
120	10	0.00	0.0000047	
120	0	0.01	0.0000103	
120	-10	0.01	0.0000075	
120	-20	0.02	0.0000236	
120	50	0.01	0.0000063	

LTE Band 5 / 16QAM

Reference Frequency: LTE Band 5, 836.5 MHz at 20(°C)				
Limit: 2.5 ppm = 2091.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 10M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	0.01	0.0000108	+/- 2.5
120	40	-0.02	-0.0000233	
120	30	-0.01	-0.0000067	
120	20	-0.01	-0.0000102	
120	10	0.01	0.0000097	
120	0	0.01	0.0000100	
120	-10	0.01	0.0000127	
120	-20	0.01	0.0000098	
120	50	0.01	0.0000108	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

LTE Band 2 / QPSK

Reference Frequency: LTE Band 2, 1880 MHz at 20(°C)				
Limit: 2.5 ppm = 2091.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	-0.01	-0.0000050	+/- 2.5
120		-0.02	-0.0000094	
138		-0.02	-0.0000090	

LTE Band 2 / 16QAM

Reference Frequency: LTE Band 2, 1880 MHz at 20(°C)				
Limit: 2.5 ppm = 2091.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	-0.01	-0.0000051	+/- 2.5
120		-0.02	-0.0000101	
138		0.01	0.0000063	

LTE Band 5 / QPSK

Reference Frequency: LTE Band 5, 836.5 MHz at 20(°C)				
Limit: 2.5 ppm = 2091.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 10M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	0.00	0.0000044	+/- 2.5
120		0.00	0.0000057	
138		0.01	0.0000075	

LTE Band 5 / 16QAM

Reference Frequency: LTE Band 5, 836.5 MHz at 20(°C)				
Limit: 2.5 ppm = 2091.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 10M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	-0.01	-0.0000075	+/- 2.5
120		-0.01	-0.0000102	
138		0.01	0.0000077	

7.4 OCCUPIED BANDWIDTH MEASUREMENT

Limits

For Reporting purposes only.

TEST PROCEDURES

KDB 971168 D01 v02r02 - Section 4.2

1. The occupied bandwidth was measured with the spectrum analyzer at the lowest, middle and highest channels in each band and different modulation. The 99% and -26dB bandwidth was measured and recorded.
2. RBW = 1-5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max. hold

LTE Band 2

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	OBW(99%)(MHz)	26 dB Bandwidth(MHz)
2	1.4	Middle	QPSK	6	0	1.0984	1.3111
		Middle	16QAM	6	0	1.1027	1.3111
	3	Middle	QPSK	15	0	2.6830	2.9566
		Middle	16QAM	15	0	2.6830	2.9914
	5	Middle	QPSK	25	0	4.4717	4.9720
		Middle	16QAM	25	0	4.4862	4.9570
	10	Middle	QPSK	50	0	8.9435	9.8190
		Middle	16QAM	50	0	8.9146	9.6450
	15	Middle	QPSK	75	0	13.4153	14.6820
		Middle	16QAM	75	0	13.4153	14.8990
	20	Middle	QPSK	100	0	18.0028	20.0510
		Middle	16QAM	100	0	18.0028	19.9930

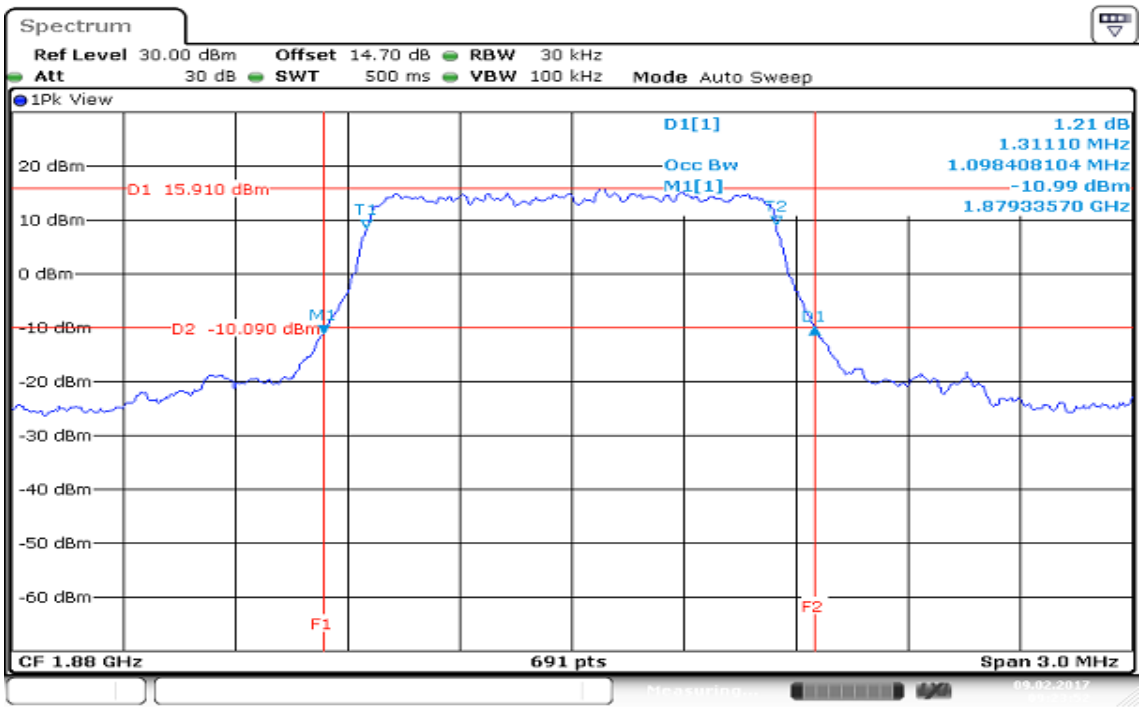
LTE Band 5

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	OBW(99%)(MHz)	26 dB Bandwidth(MHz)
5	1.4	Middle	QPSK	6	0	1.0984	1.3242
		Middle	16QAM	6	0	1.0984	1.3155
	3	Middle	QPSK	15	0	2.6830	2.9725
		Middle	16QAM	15	0	2.6743	2.9812
	5	Middle	QPSK	25	0	4.4717	4.9930
		Middle	16QAM	25	0	4.4717	4.9780
	10	Middle	QPSK	50	0	8.9435	9.6960
		Middle	16QAM	50	0	8.9146	9.6670

LTE Band 2

BW: 1.4MHz / QPSK / RB =6, RB Offset = 0

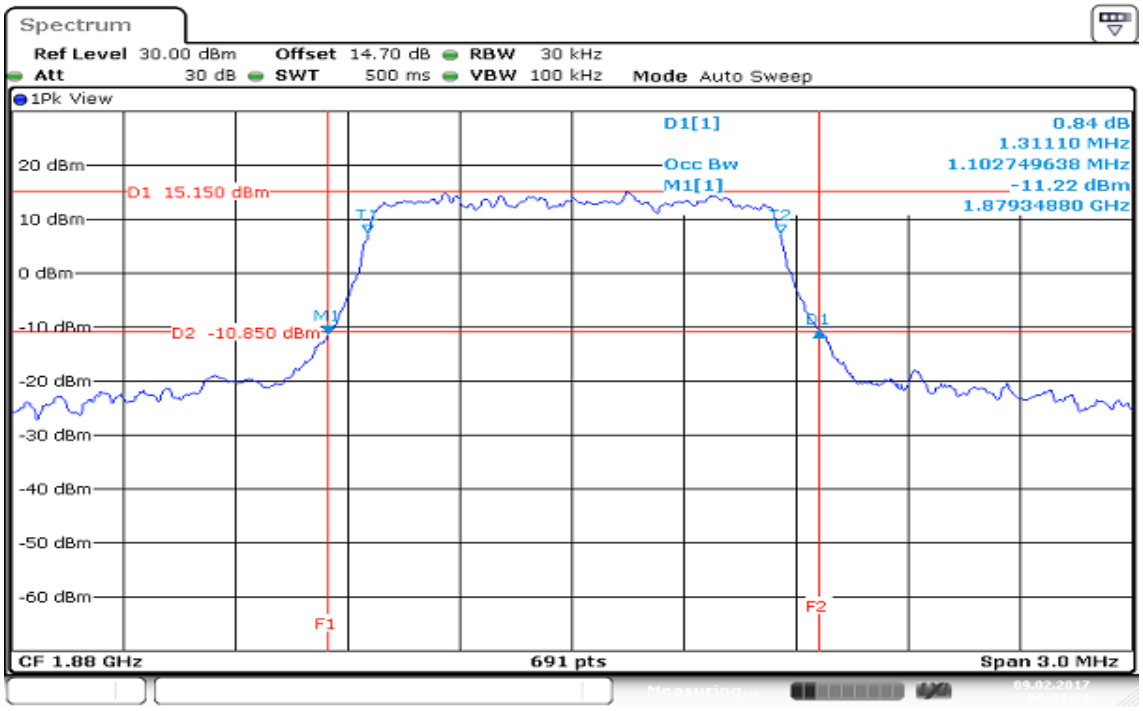
CH Mid



Date: 9.FEB.2017 09:23:52

BW: 1.4MHz / 16QAM / RB =6, RB Offset = 0

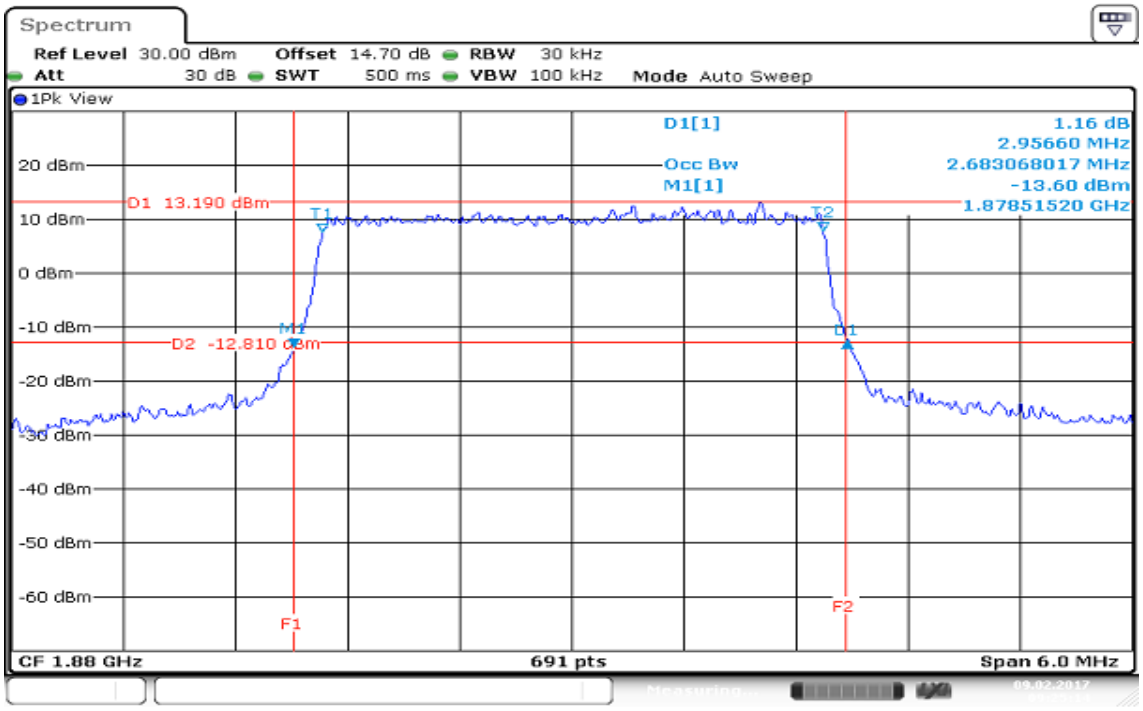
CH Mid



Date: 9.FEB.2017 09:21:35

BW: 3MHz / QPSK / RB =15, RB Offset = 0

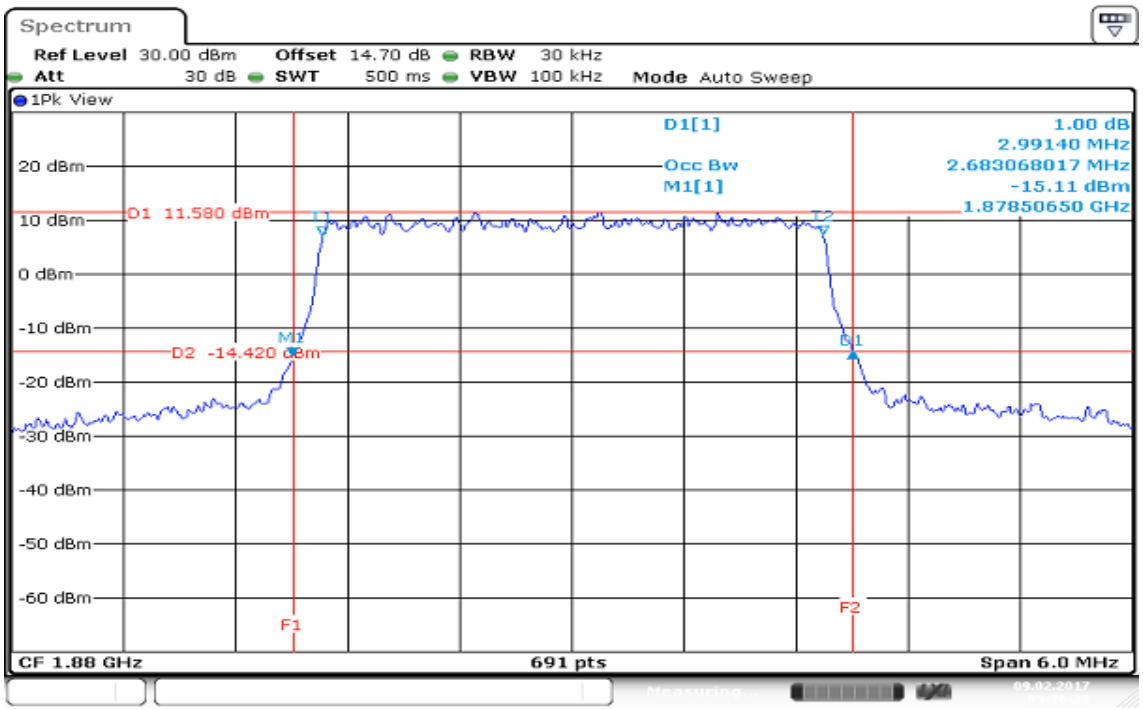
CH Mid



Date: 9.FEB.2017 09:25:14

BW: 3MHz / 16QAM / RB =15, RB Offset = 0

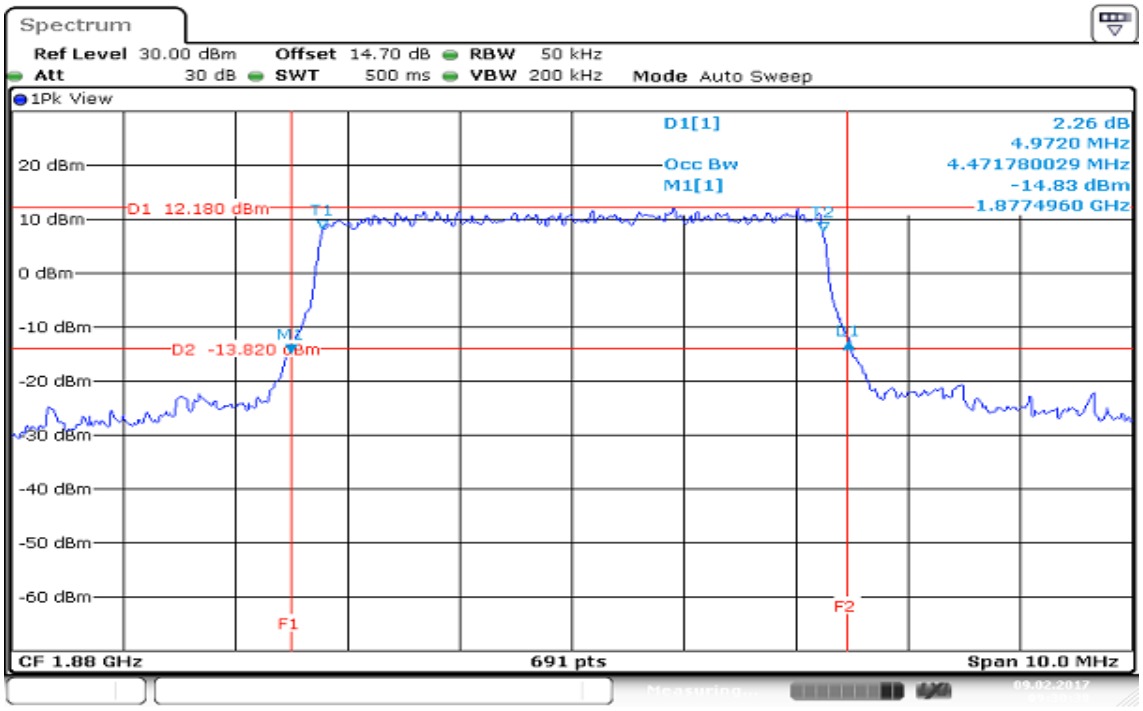
CH Mid



Date: 9.FEB.2017 09:26:29

BW: 5MHz / QPSK / RB =25, RB Offset = 0

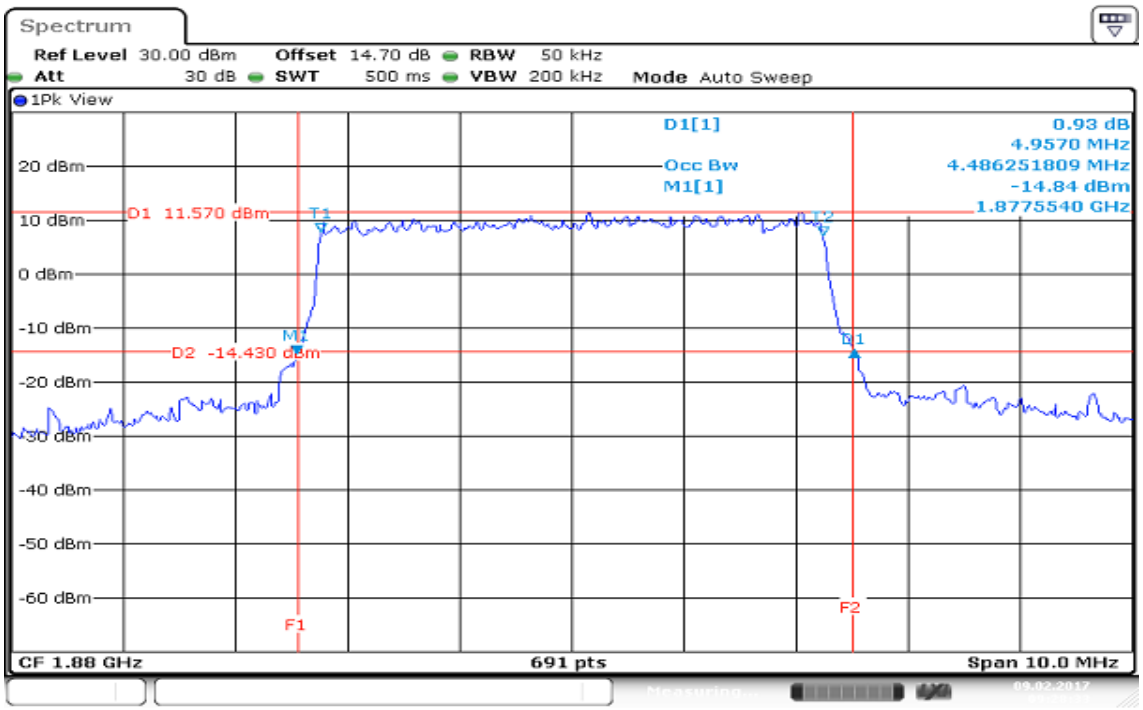
CH Mid



Date: 9.FEB.2017 09:30:38

BW: 5MHz / 16QAM / RB =25, RB Offset = 0

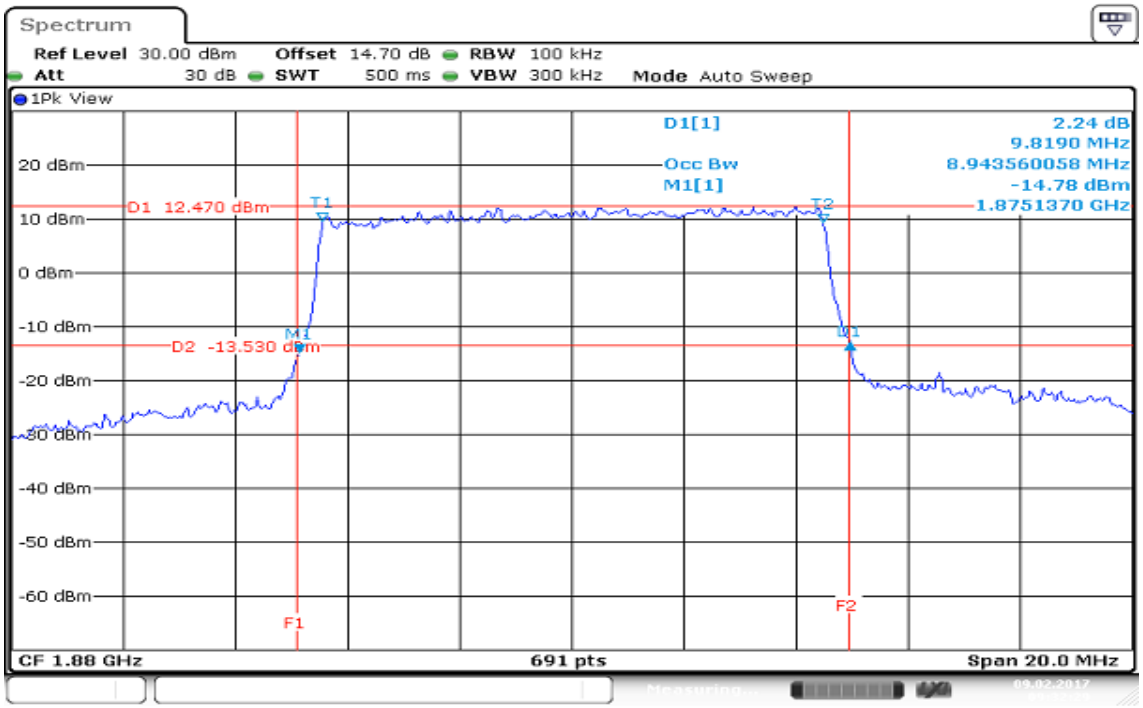
CH Mid



Date: 9.FEB.2017 09:28:33

BW: 10MHz / QPSK / RB =50, RB Offset = 0

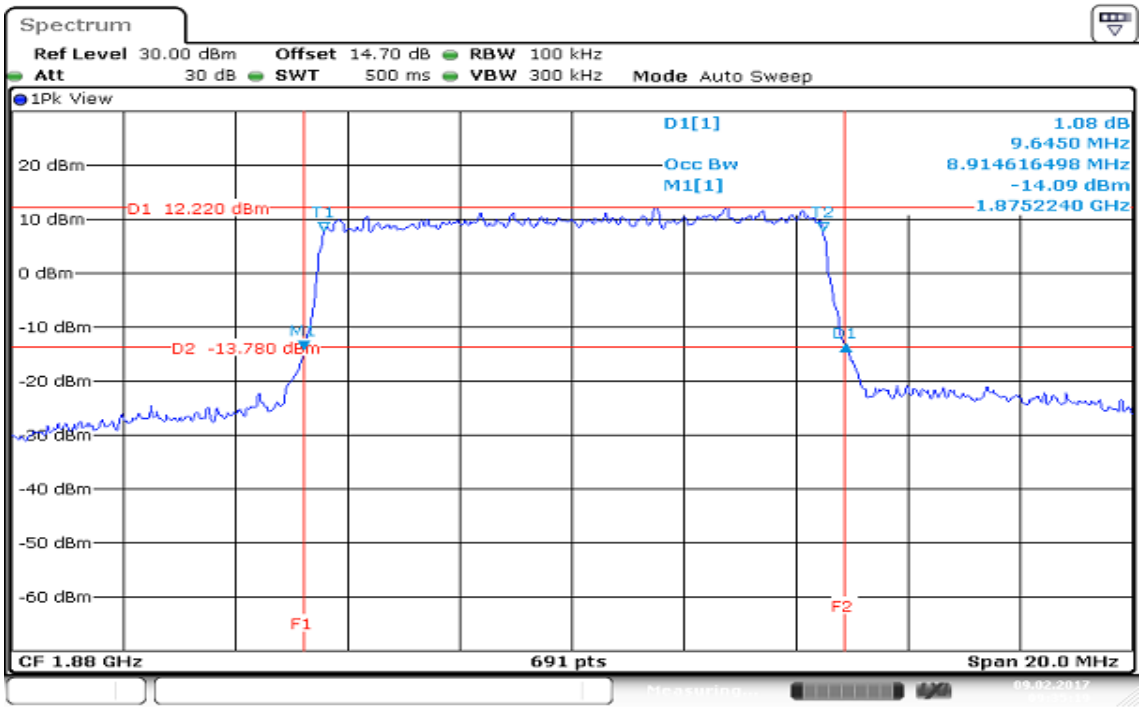
CH Mid



Date: 9.FEB.2017 09:32:29

BW: 10MHz / 16QAM / RB =50, RB Offset = 0

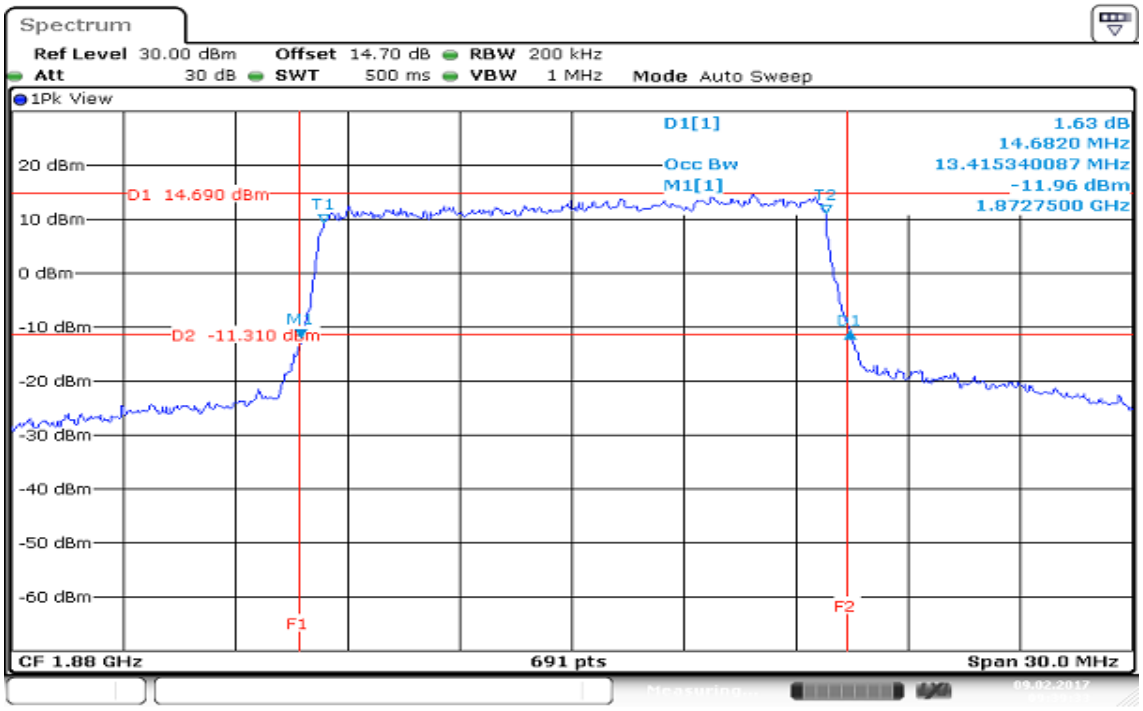
CH Mid



Date: 9.FEB.2017 09:35:19

BW: 15MHz / QPSK / RB =75, RB Offset = 0

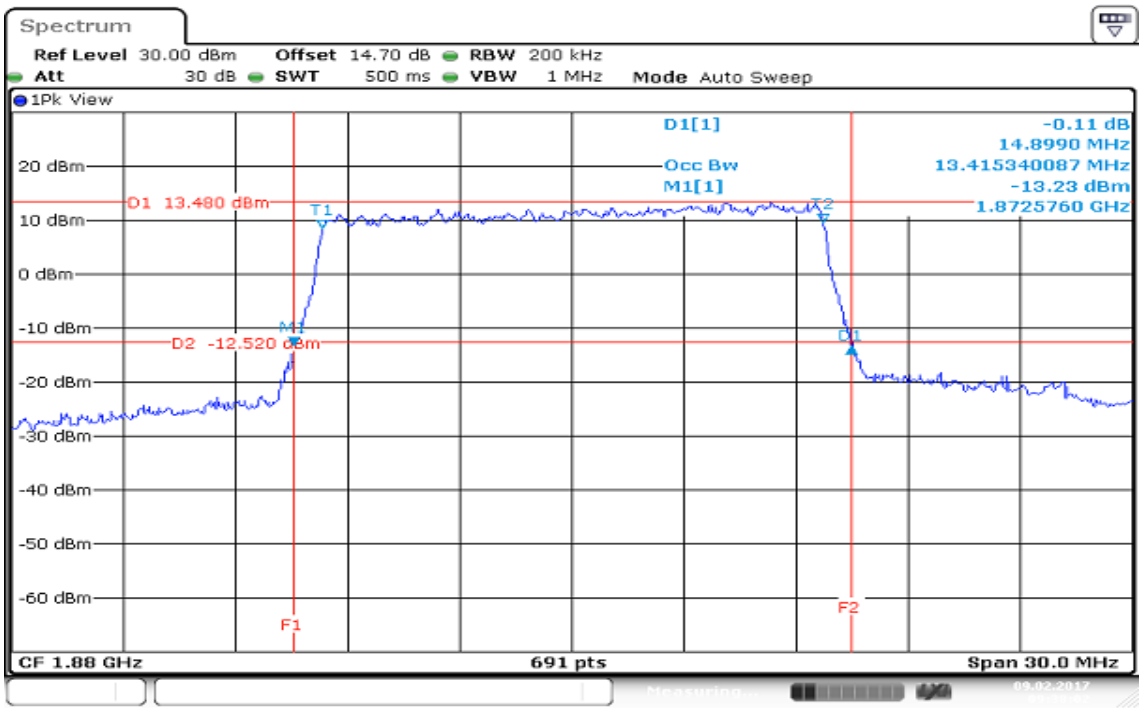
CH Mid



Date: 9.FEB.2017 09:39:33

BW: 15MHz / 16QAM / RB =75, RB Offset = 0

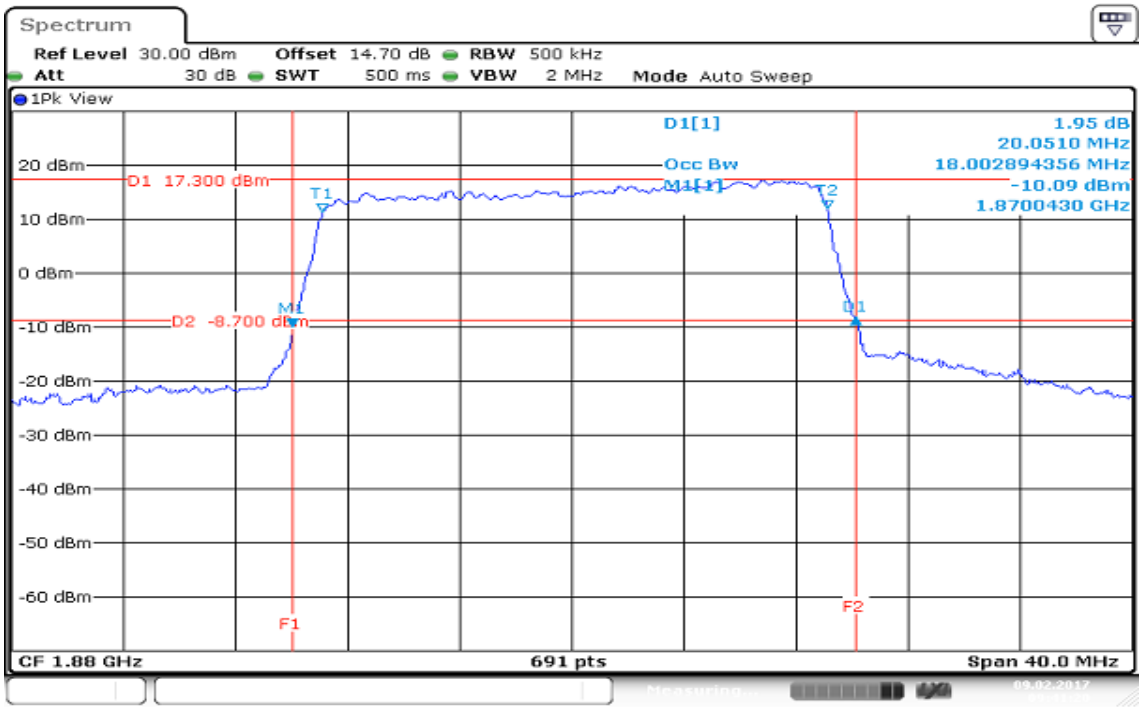
CH Mid



Date: 9.FEB.2017 09:38:02

BW: 20MHz / QPSK / RB =100, RB Offset = 0

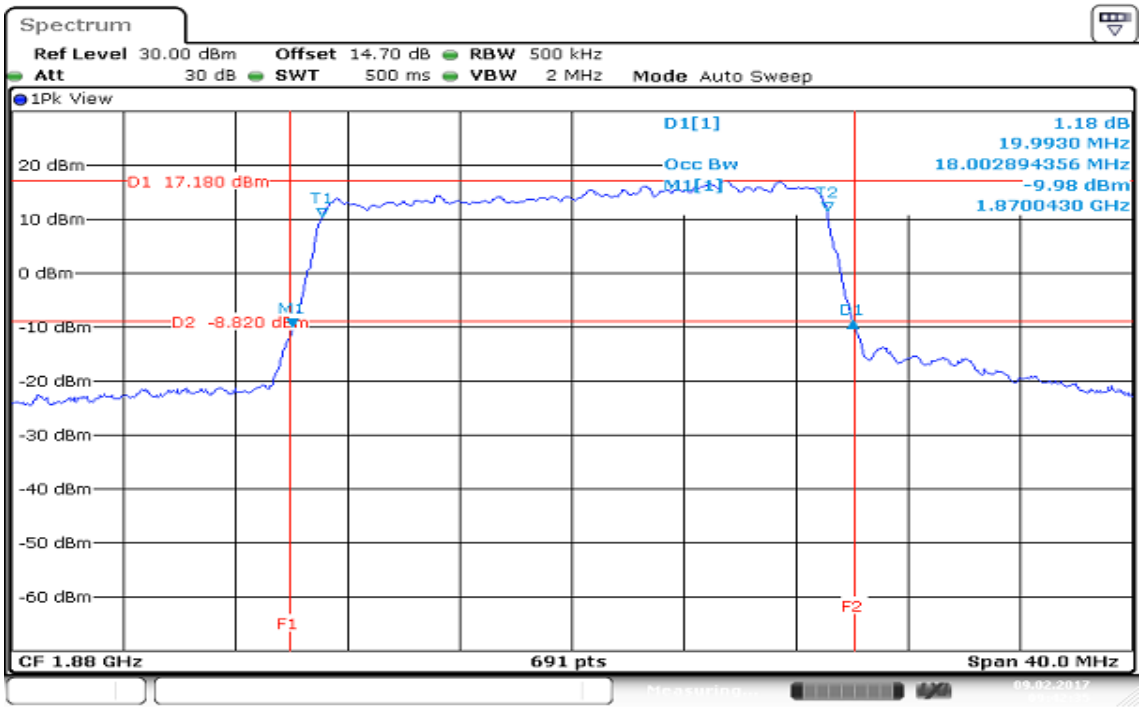
CH Mid



Date: 9.FEB.2017 09:41:20

BW: 20MHz / 16QAM / RB =100, RB Offset = 0

CH Mid

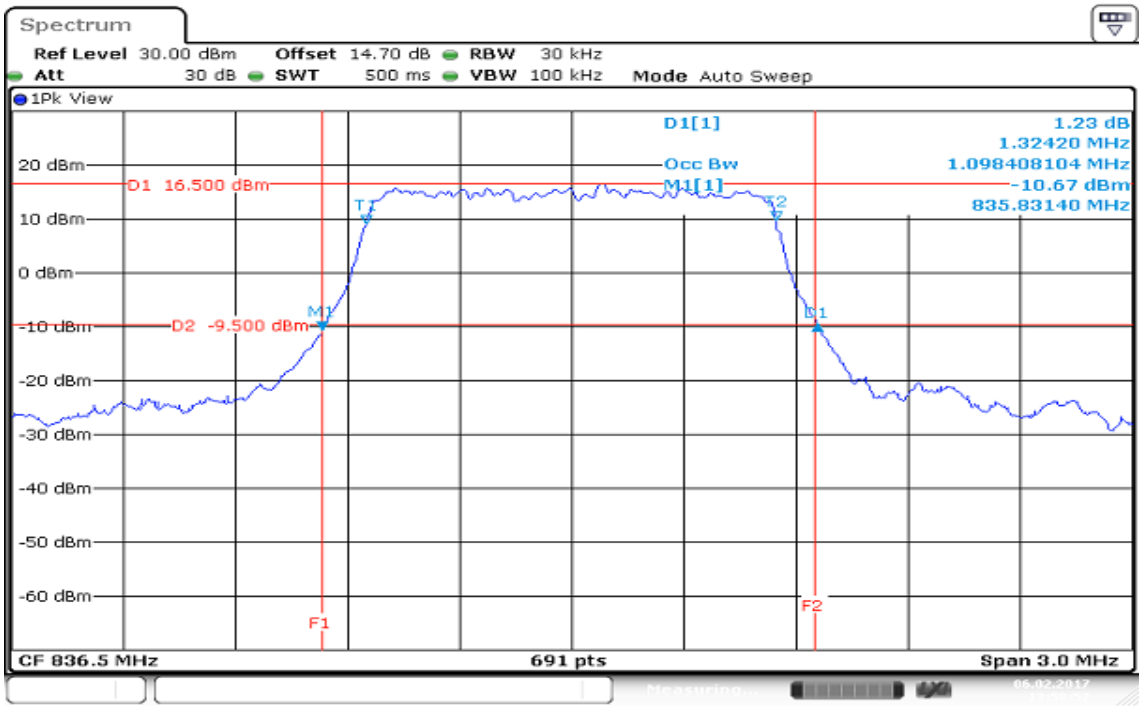


Date: 9.FEB.2017 09:42:35

LTE Band 5

BW: 1.4MHz / QPSK / RB =6, RB Offset = 0

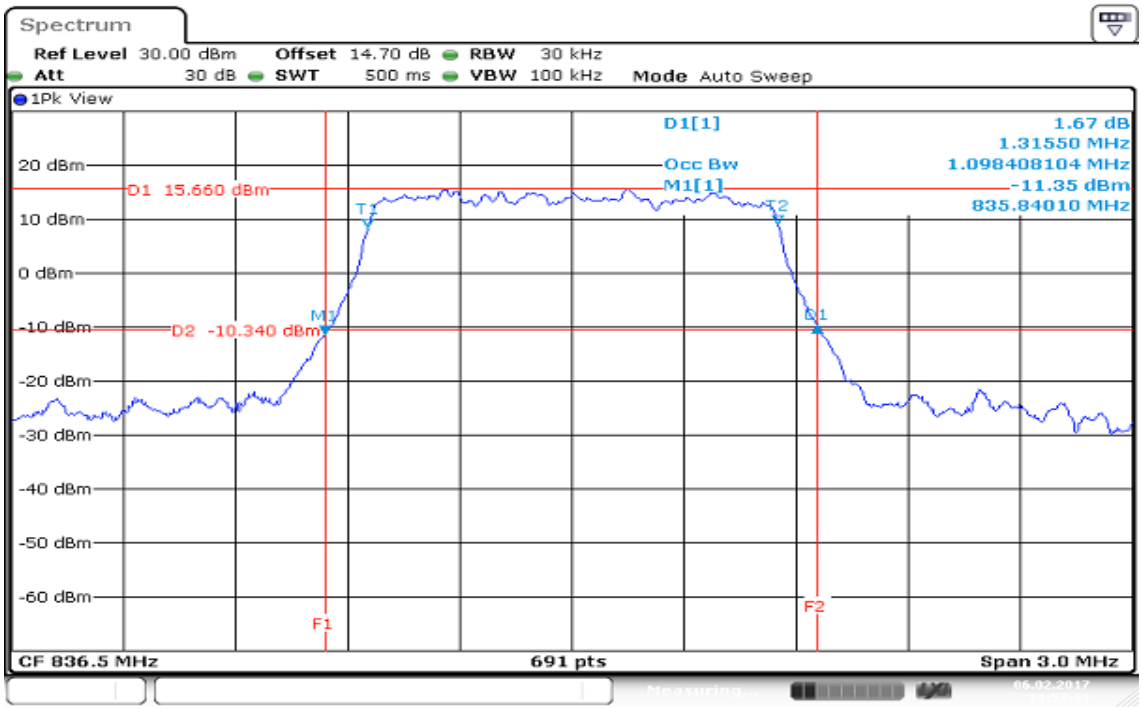
CH Mid



Date: 6.FEB.2017 13:58:52

BW: 1.4MHz / 16QAM / RB =6, RB Offset = 0

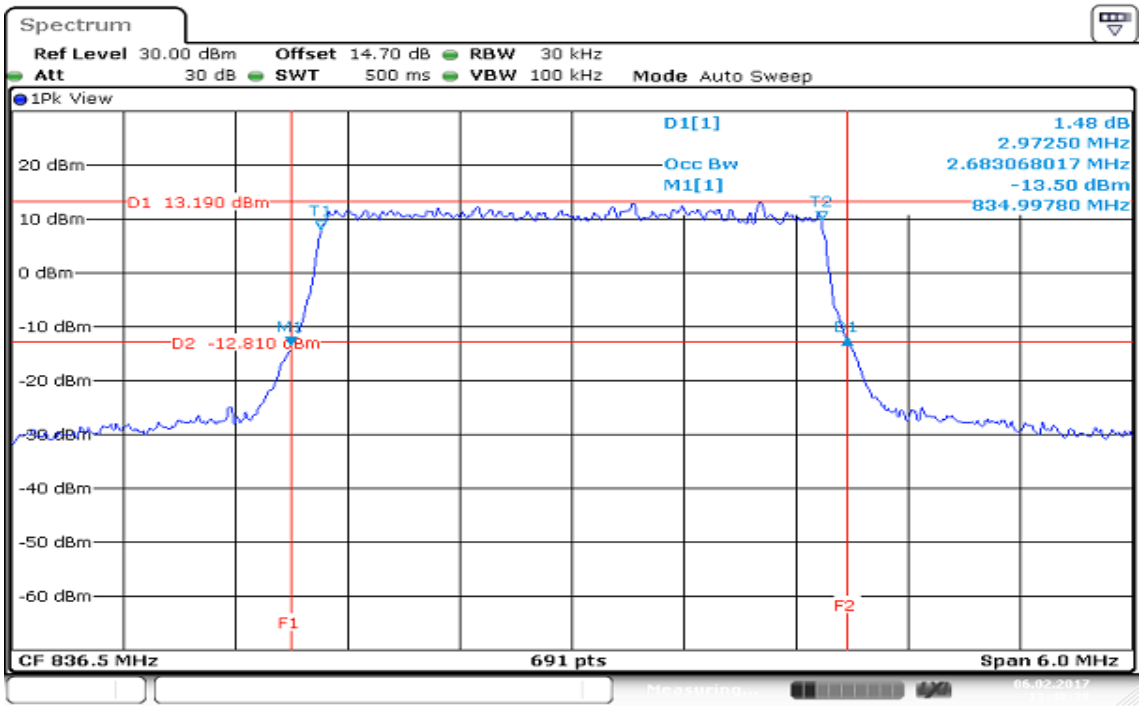
CH Mid



Date: 6.FEB.2017 13:57:13

BW: 3MHz / QPSK / RB =15, RB Offset = 0

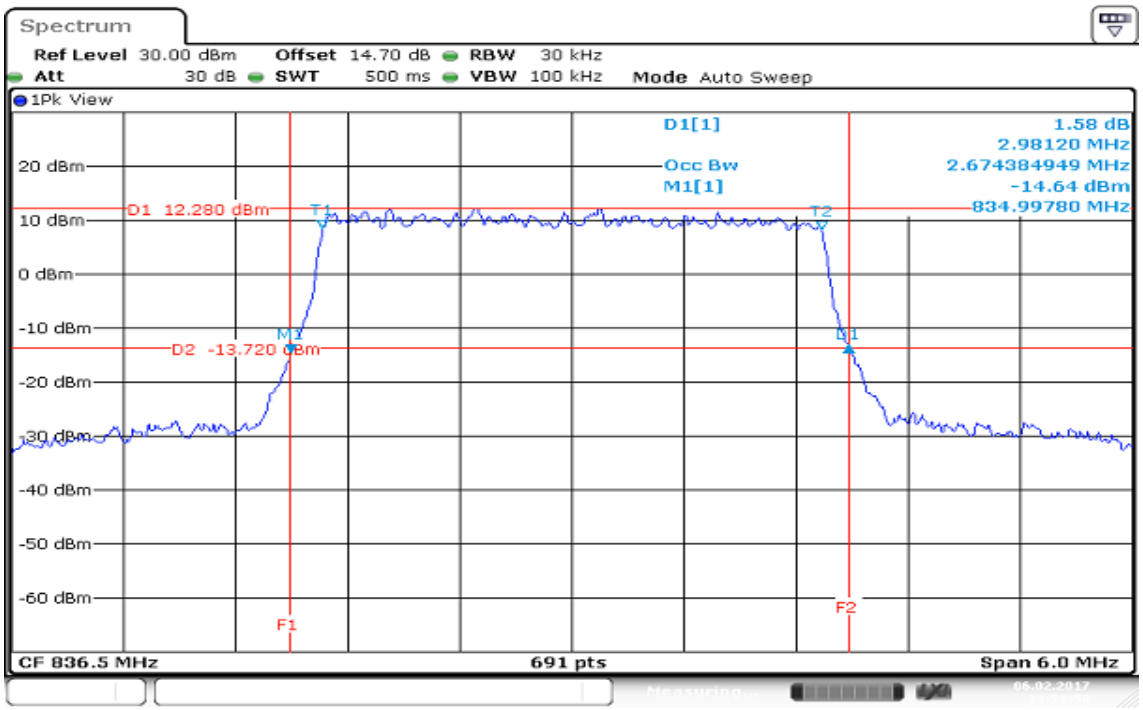
CH Mid



Date: 6.FEB.2017 13:48:39

BW: 3MHz / 16QAM / RB =15, RB Offset = 0

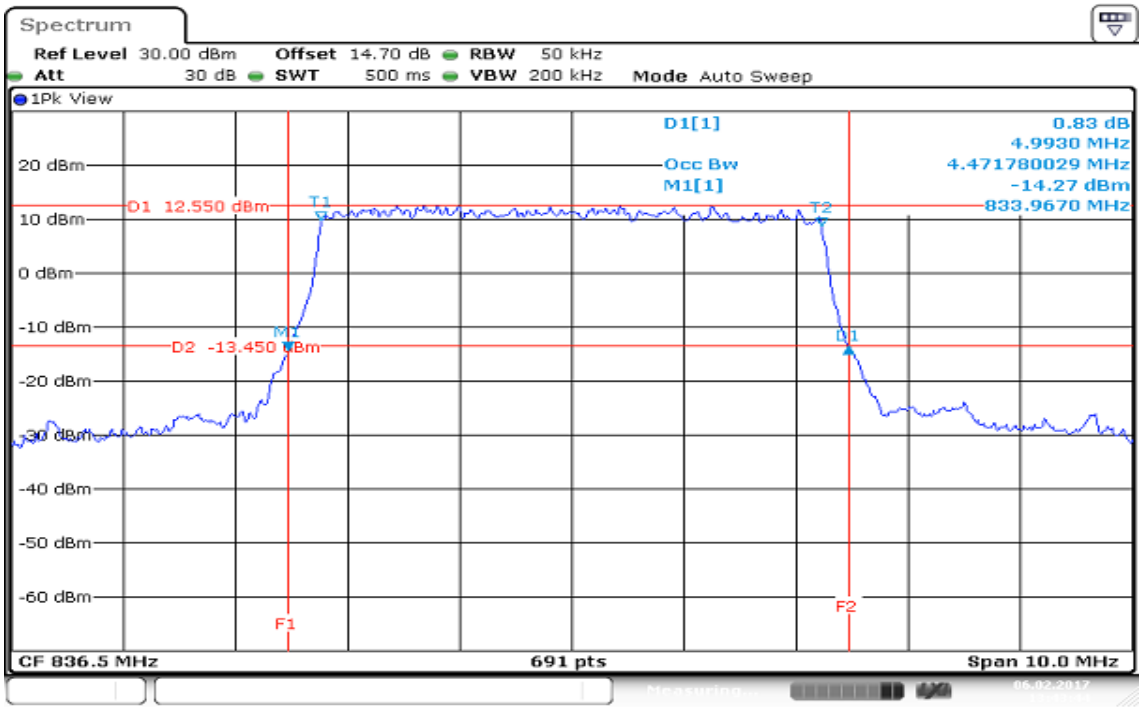
CH Mid



Date: 6.FEB.2017 13:51:50

BW: 5MHz / QPSK / RB =25, RB Offset = 0

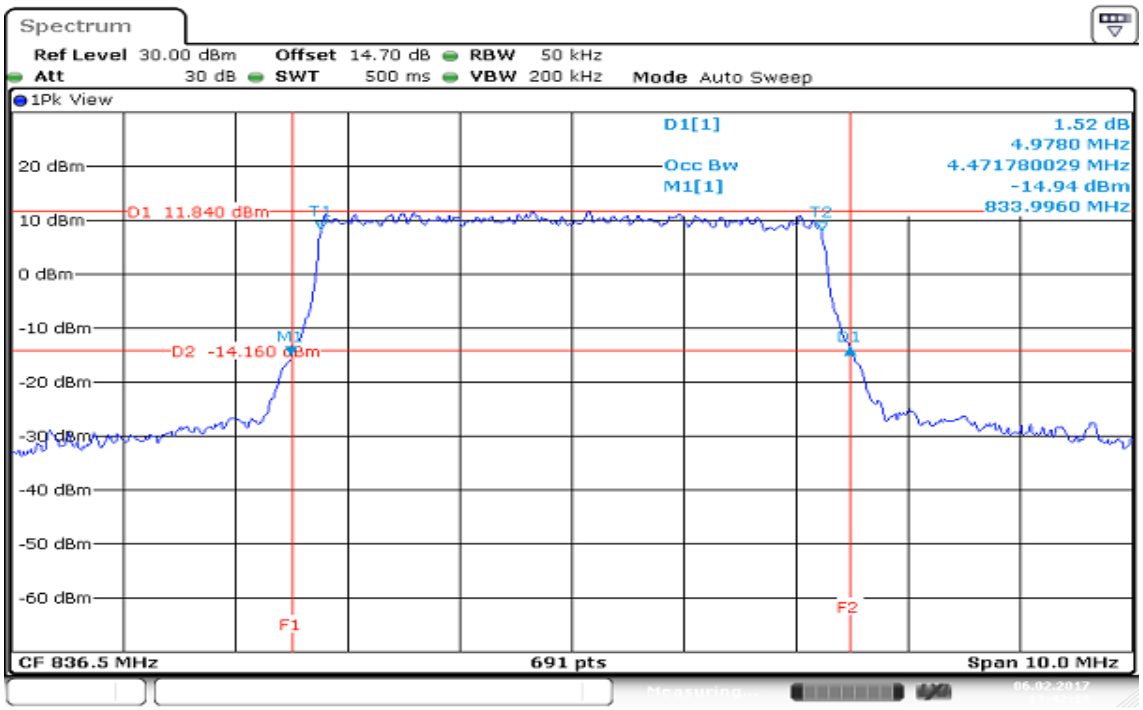
CH Mid



Date: 6.FEB.2017 13:43:45

BW: 5MHz / 16QAM / RB =25, RB Offset = 0

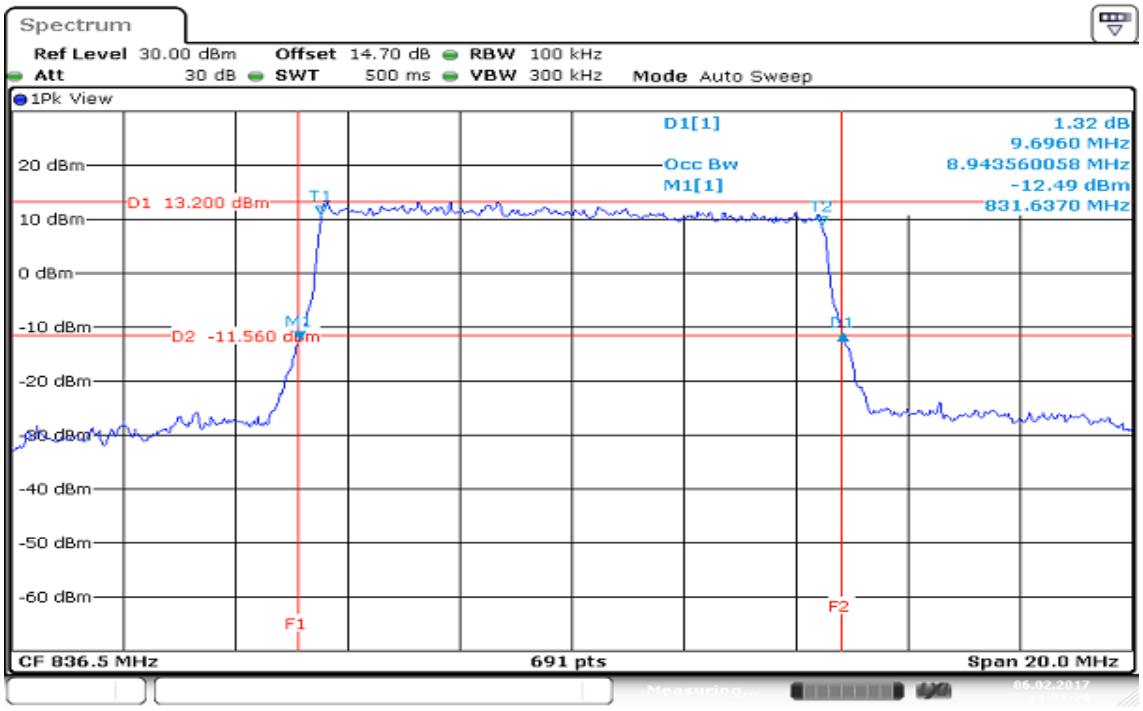
CH Mid



Date: 6.FEB.2017 13:42:18

BW: 10MHz / QPSK / RB =50, RB Offset = 0

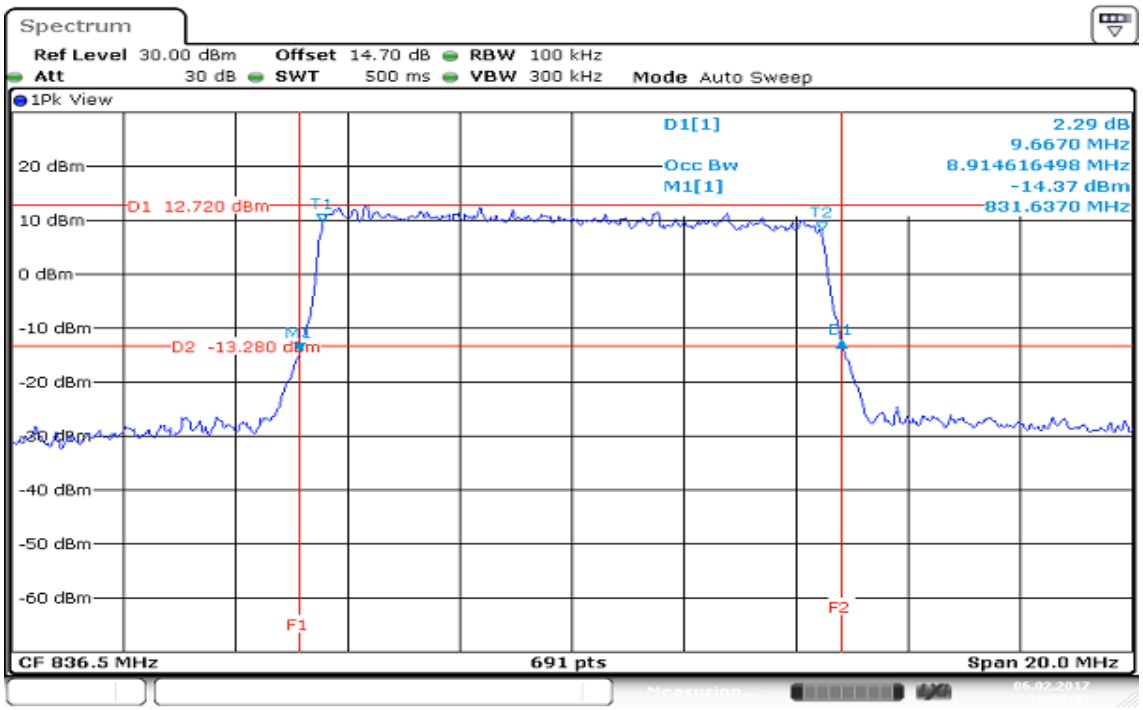
CH Mid



Date: 6.FEB.2017 13:37:30

BW: 10MHz / 16QAM / RB =50, RB Offset = 0

CH Mid



Date: 6.FEB.2017 13:39:43

7.5 PEAK TO AVERAGE POWER RATIO

Limit

In measuring transmissions in this band using an average power technique, the peak to average power ratio (PAPR) of the transmission may not exceed 13 dB.

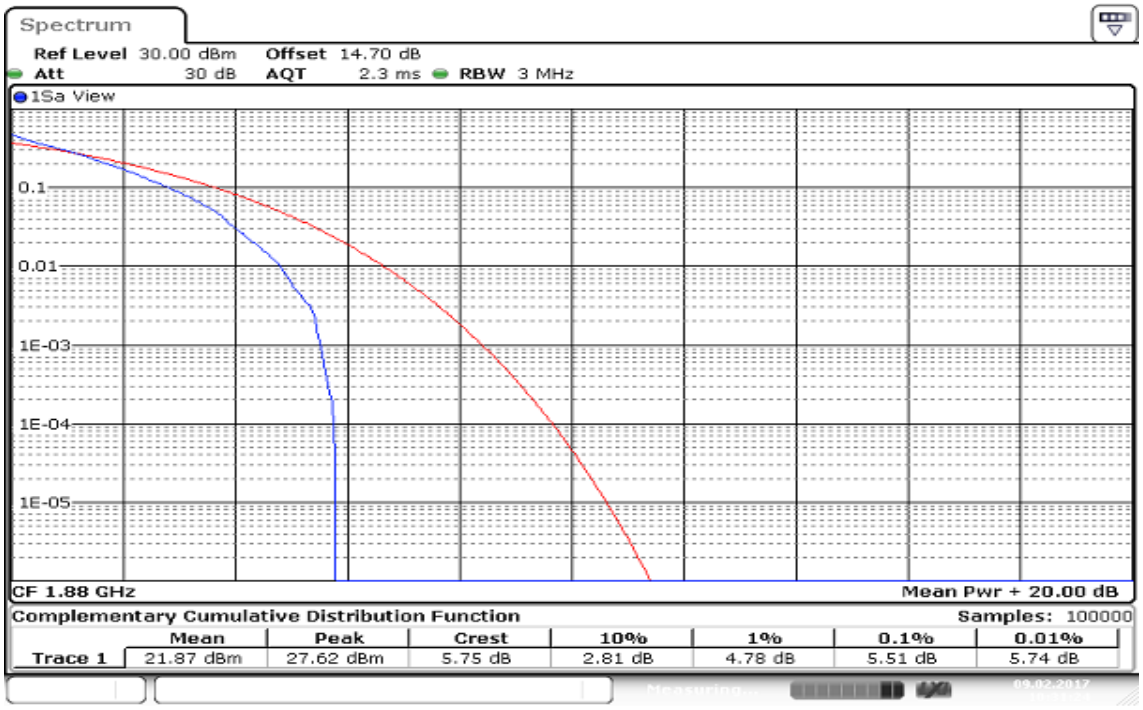
Test Procedures

1. According to KDB 971168 D01, section 5.7.1
2. The EUT was connect to spectrum analyzer and call box.
3. Set the CCDF function in spectrum analyzer.
4. The highest RF output power were measured and recorded the maximum PAPR level associated with a probability of 0.1%.
5. Record the Peak to Average Power Ratio.

LTE Band 2

BW: 1.4MHz / QPSK / RB =1, RB Offset = 0

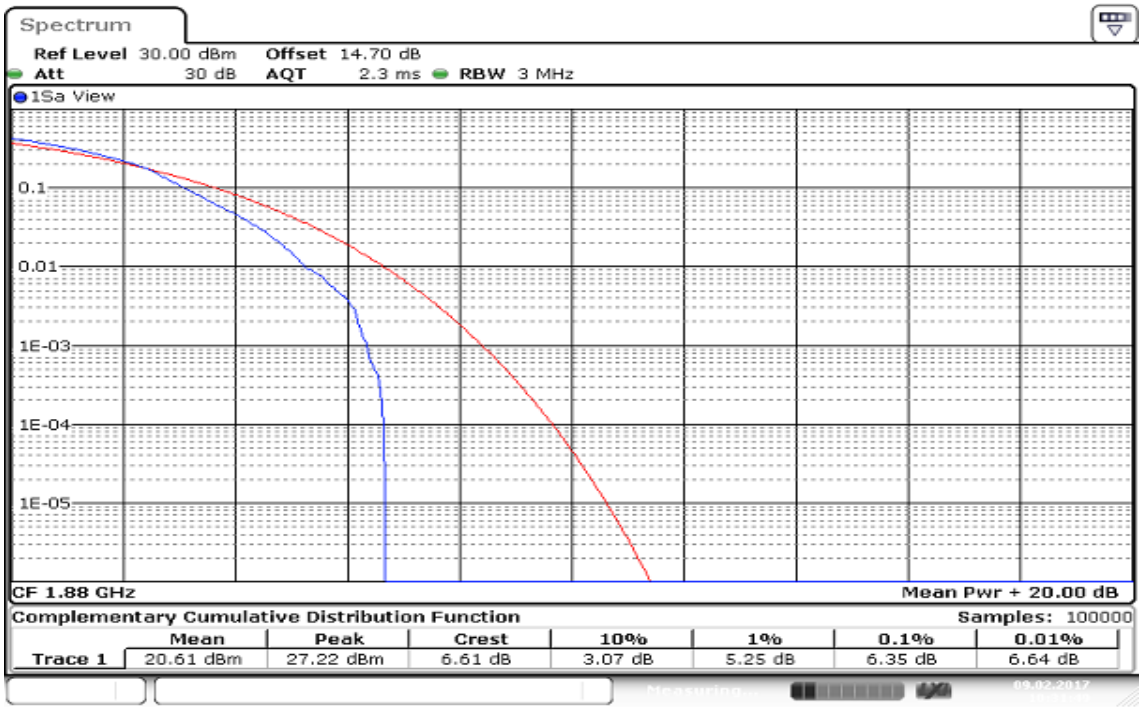
CH Mid



Date: 9.FEB.2017 10:31:25

BW: 1.4MHz / 16QAM / RB =1, RB Offset = 0

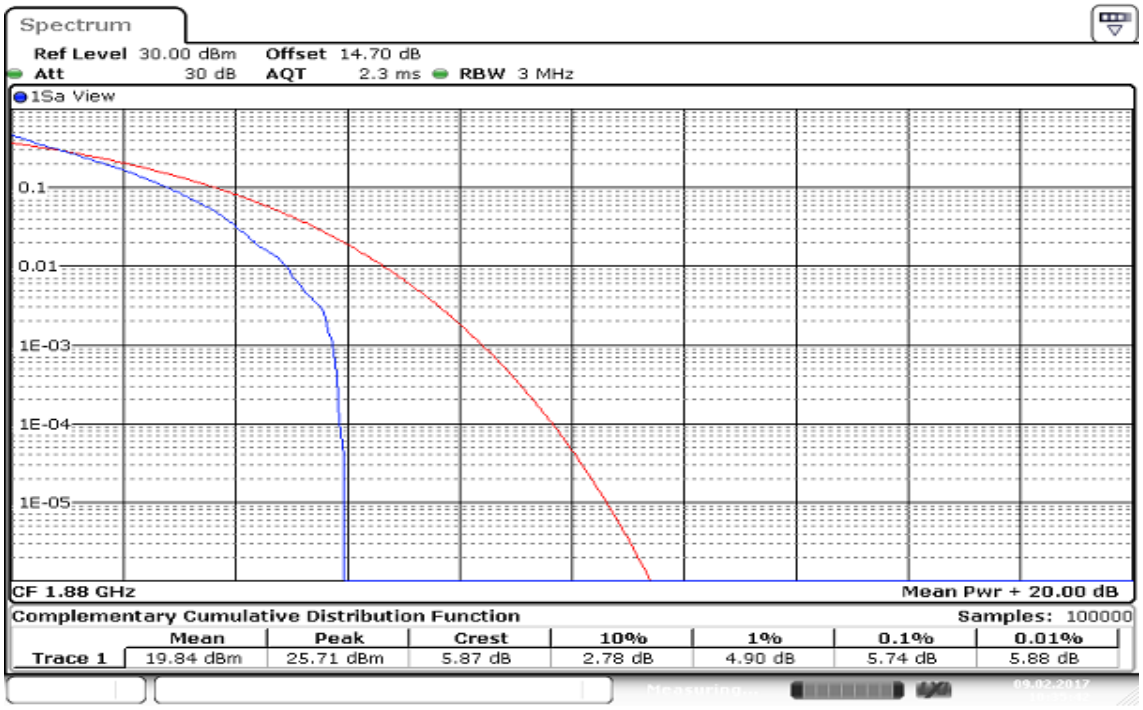
CH Mid



Date: 9.FEB.2017 10:31:50

BW: 3MHz / QPSK / RB =1, RB Offset = 0

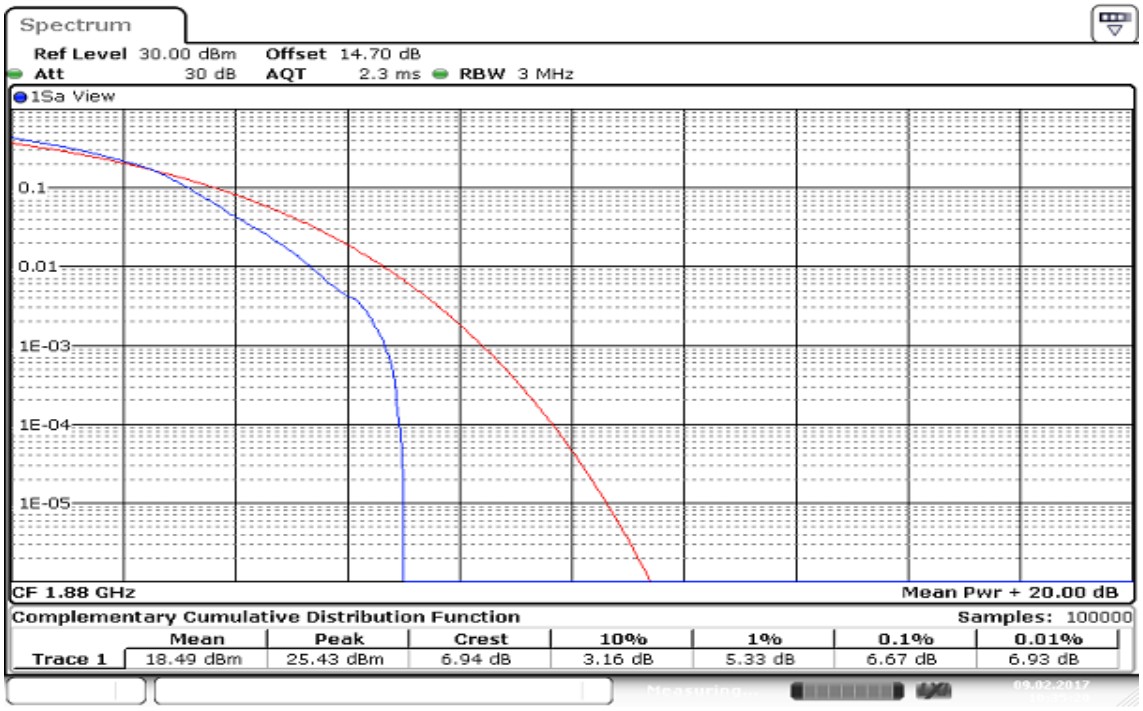
CH Mid



Date: 9.FEB.2017 10:35:42

BW: 3MHz / 16QAM / RB =1, RB Offset = 0

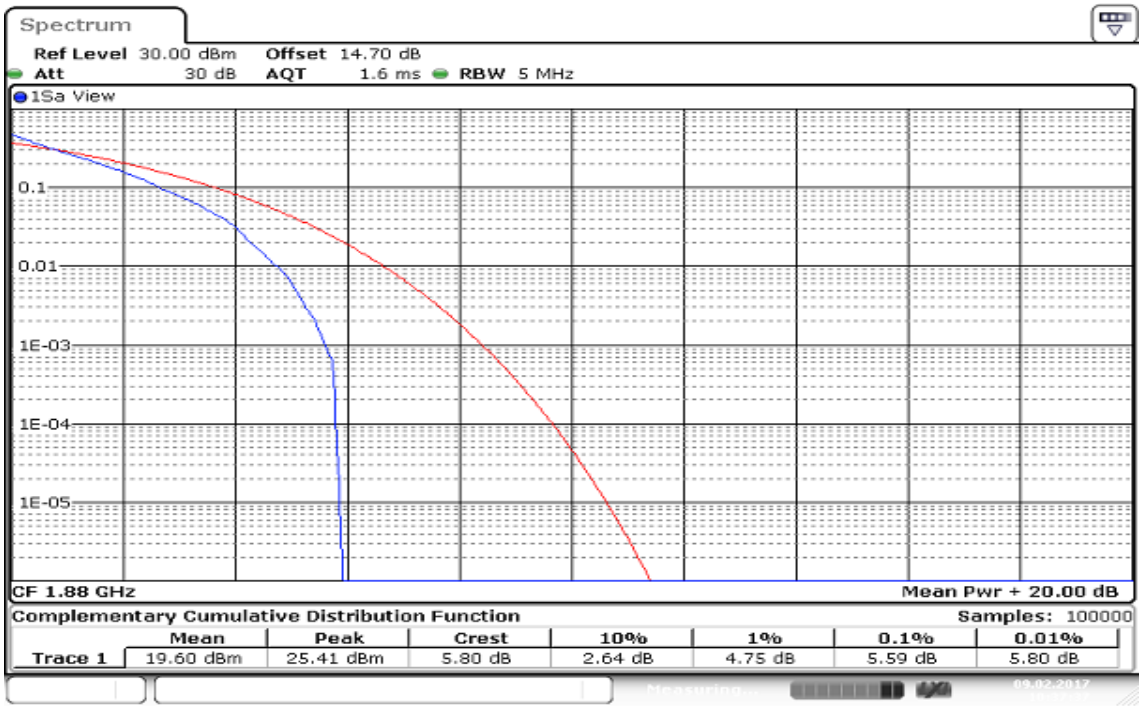
CH Mid



Date: 9.FEB.2017 10:35:20

BW: 5MHz / QPSK / RB =1, RB Offset = 0

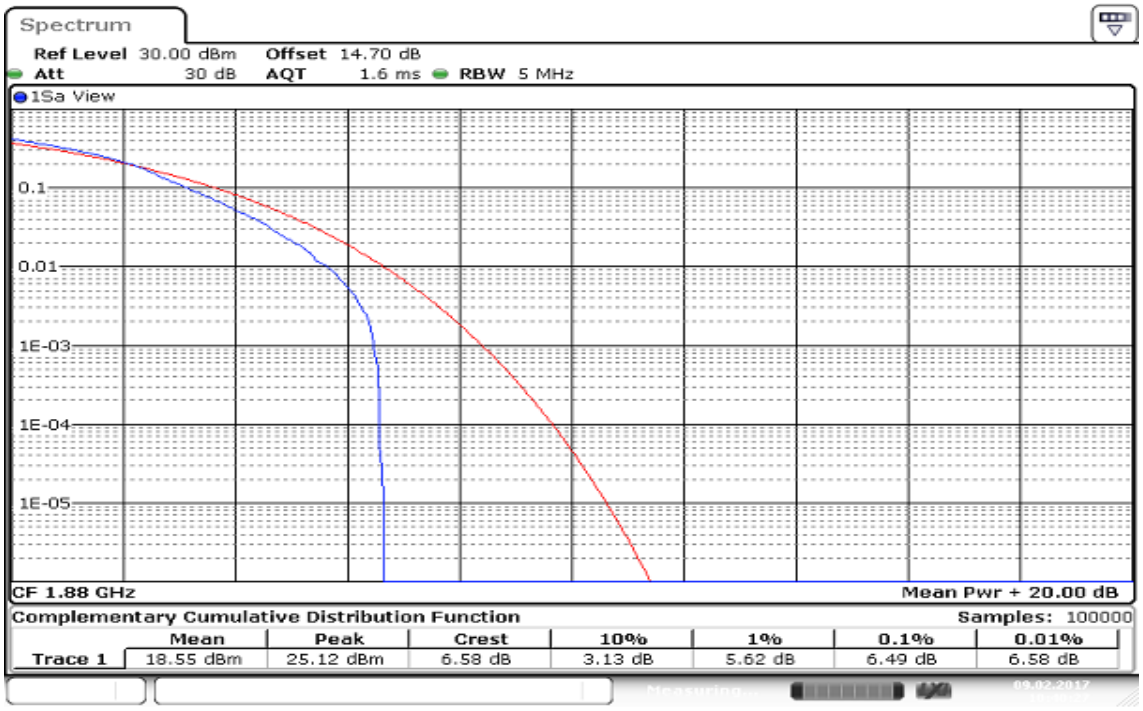
CH Mid



Date: 9.FEB.2017 10:37:38

BW: 5MHz / 16QAM / RB =1, RB Offset = 0

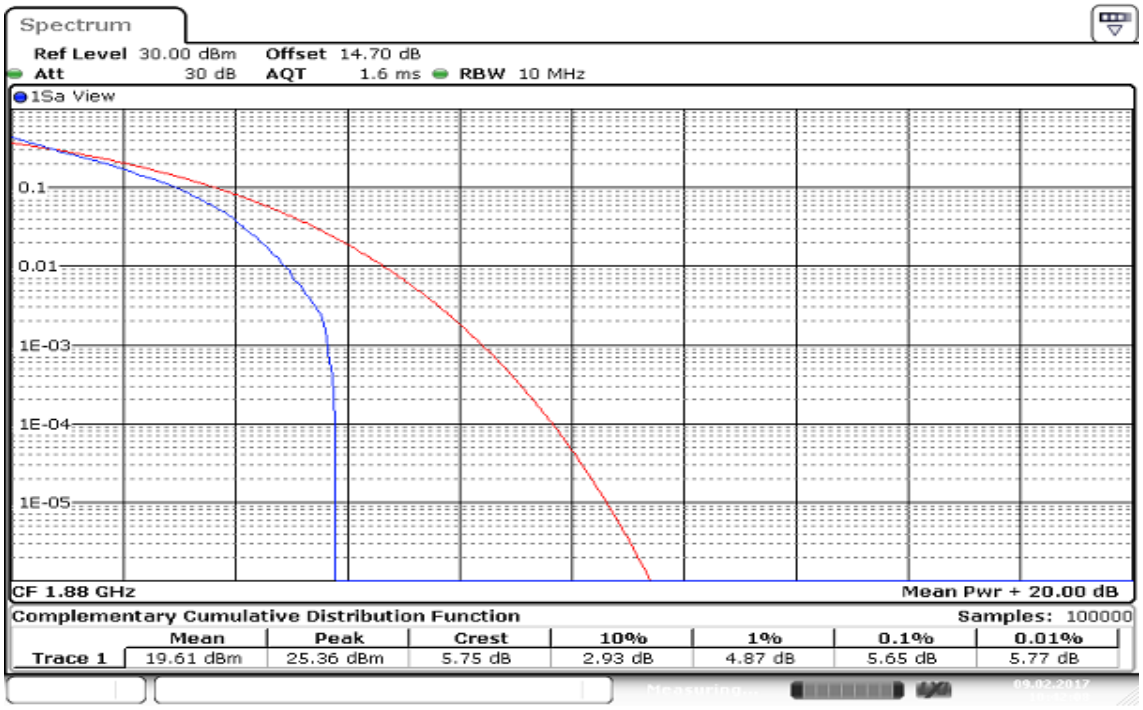
CH Mid



Date: 9.FEB.2017 10:40:27

BW: 10MHz / QPSK /RB =1, RB Offset = 0

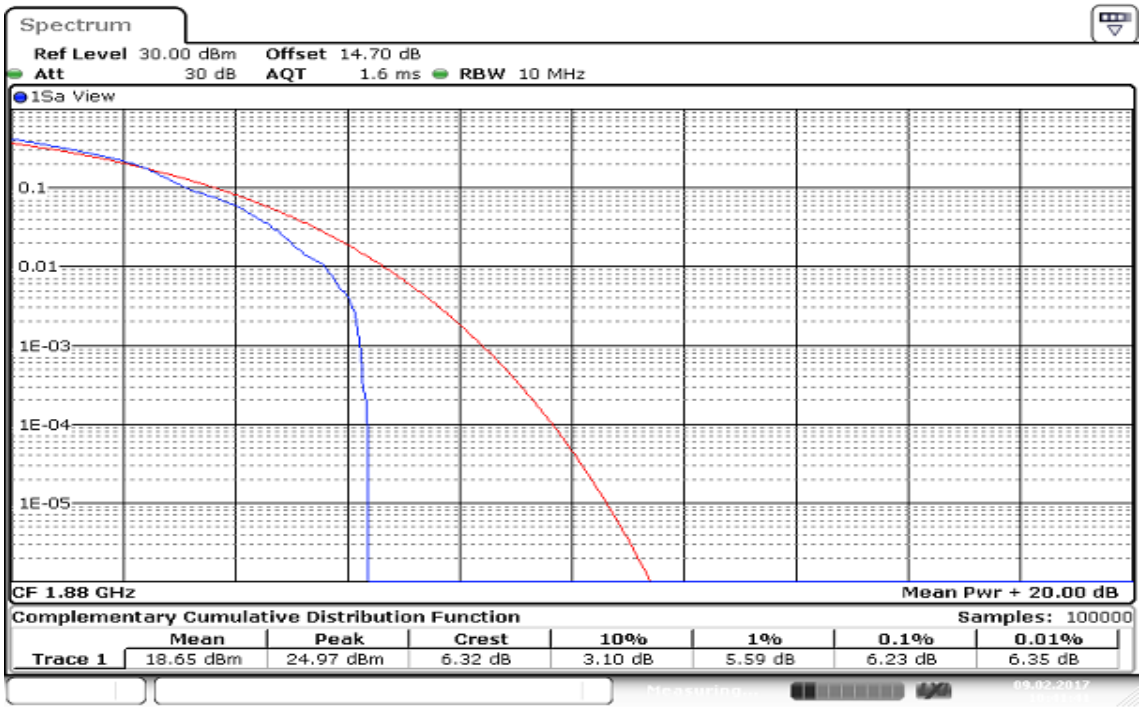
CH Mid



Date: 9.FEB.2017 10:42:08

BW: 10MHz / 16QAM /RB =1, RB Offset = 0

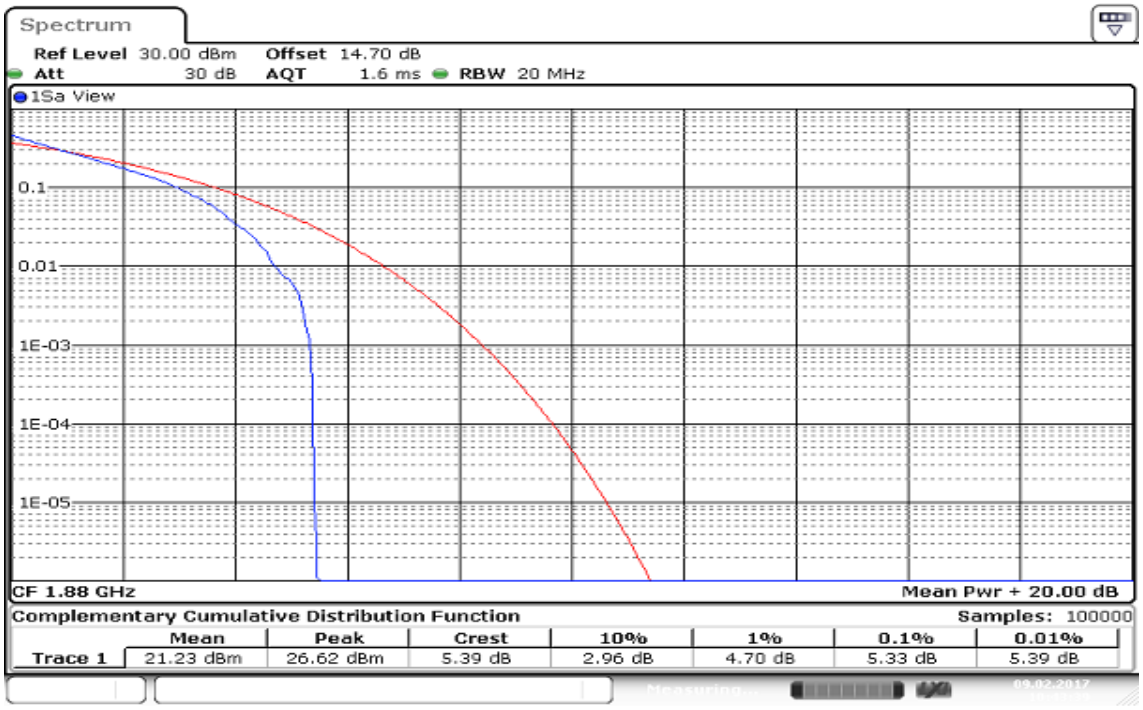
CH Mid



Date: 9.FEB.2017 10:41:41

BW: 15MHz / QPSK /RB =1, RB Offset = 0

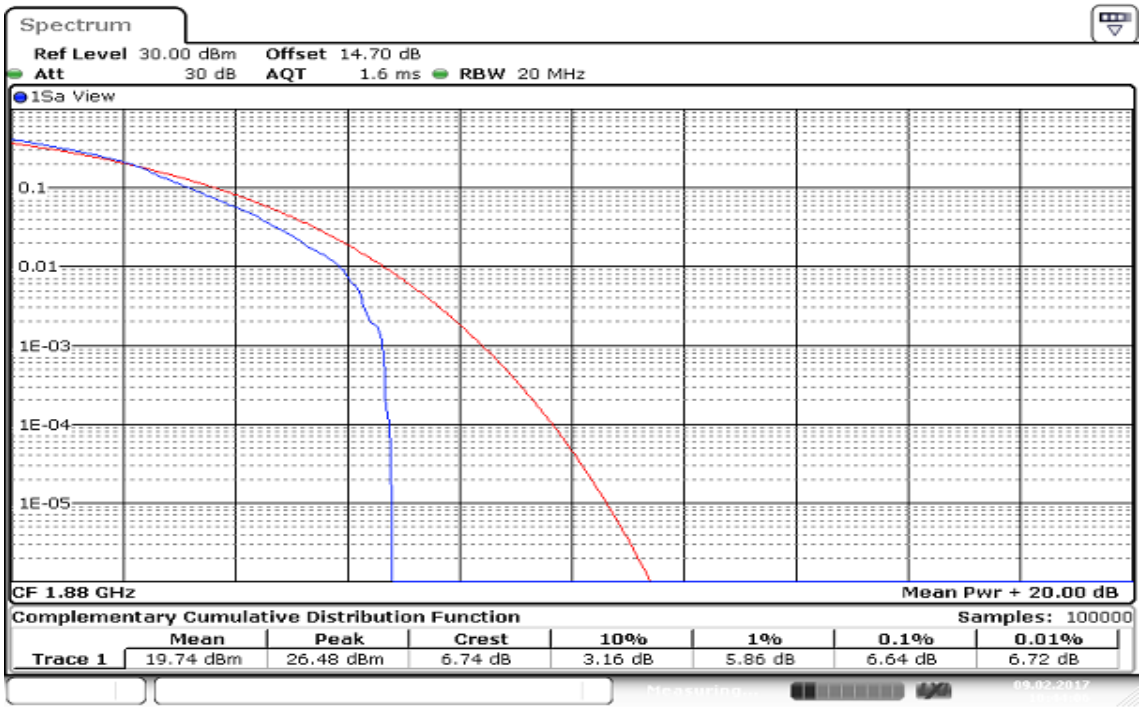
CH Mid



Date: 9.FEB.2017 10:43:39

BW: 15MHz / 16QAM /RB =1, RB Offset = 0

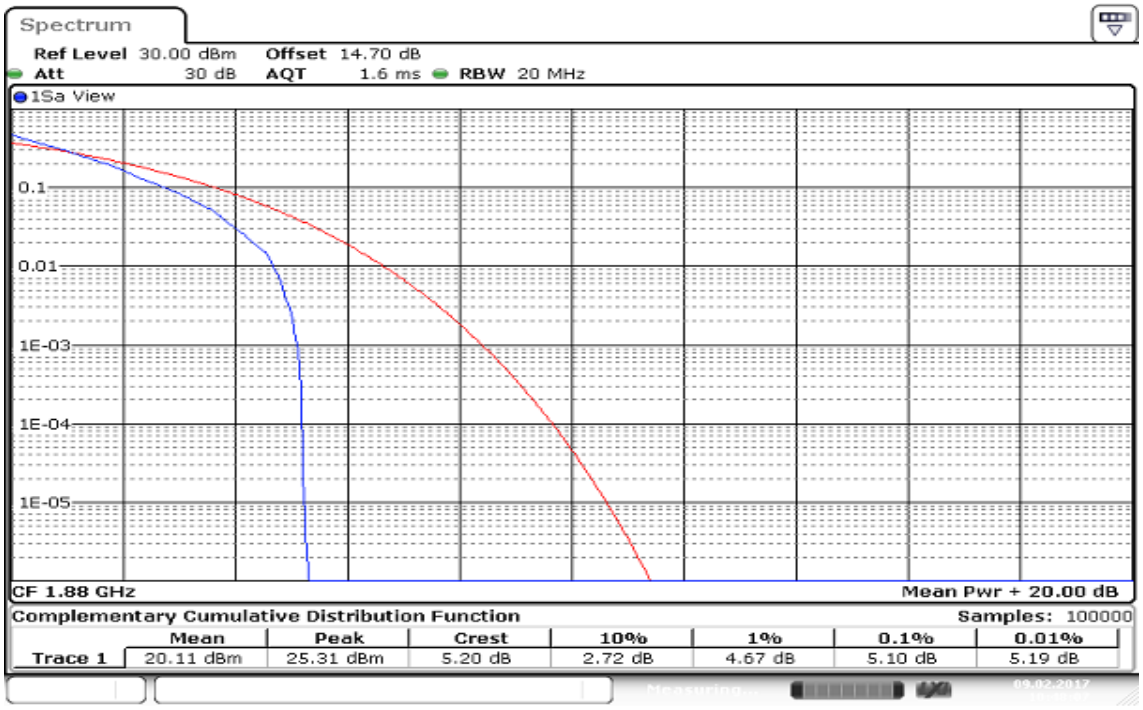
CH Mid



Date: 9.FEB.2017 10:44:06

BW: 20MHz / QPSK / 16QAM /RB =1, RB Offset = 0

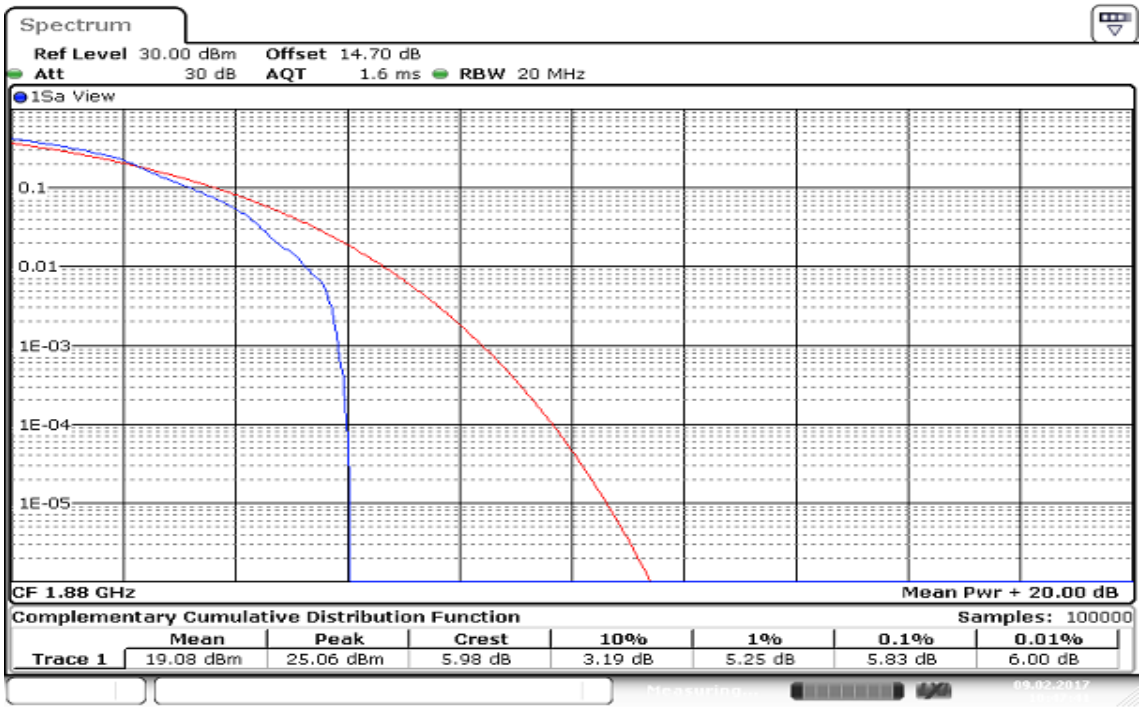
CH Mid



Date: 9.FEB.2017 10:48:07

BW: 20MHz / 16QAM / RB =1, RB Offset = 0

CH Mid

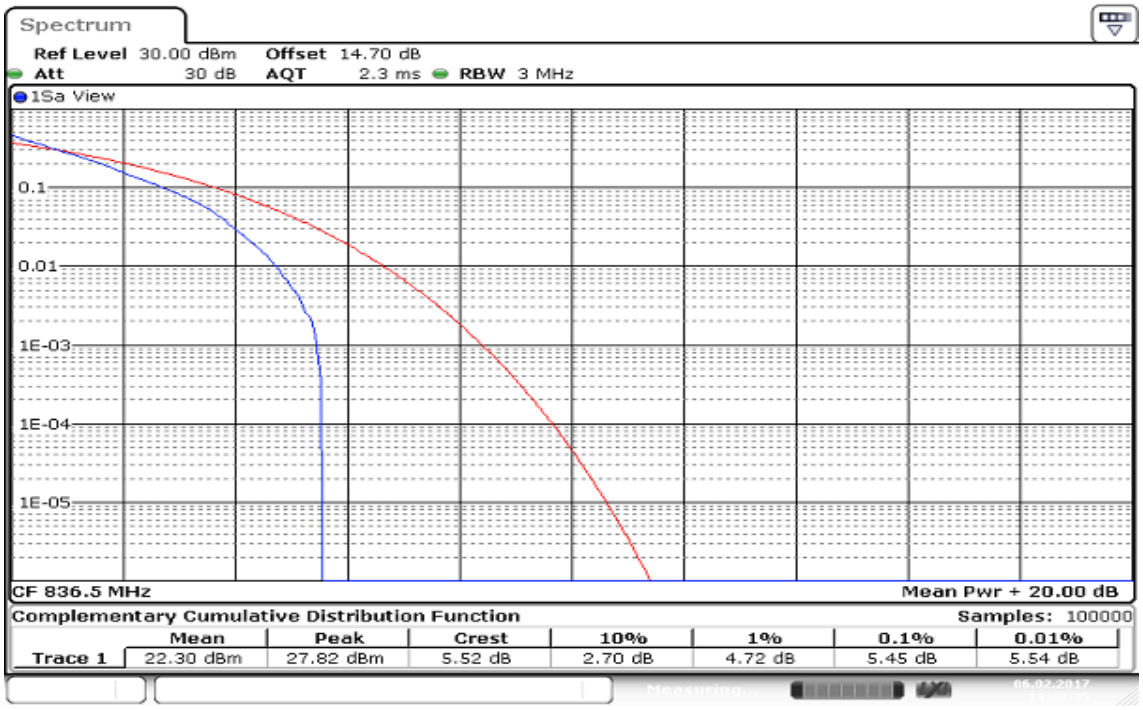


Date: 9.FEB.2017 10:47:41

LTE Band 5

BW: 1.4MHz / QPSK / RB =1, RB Offset = 0

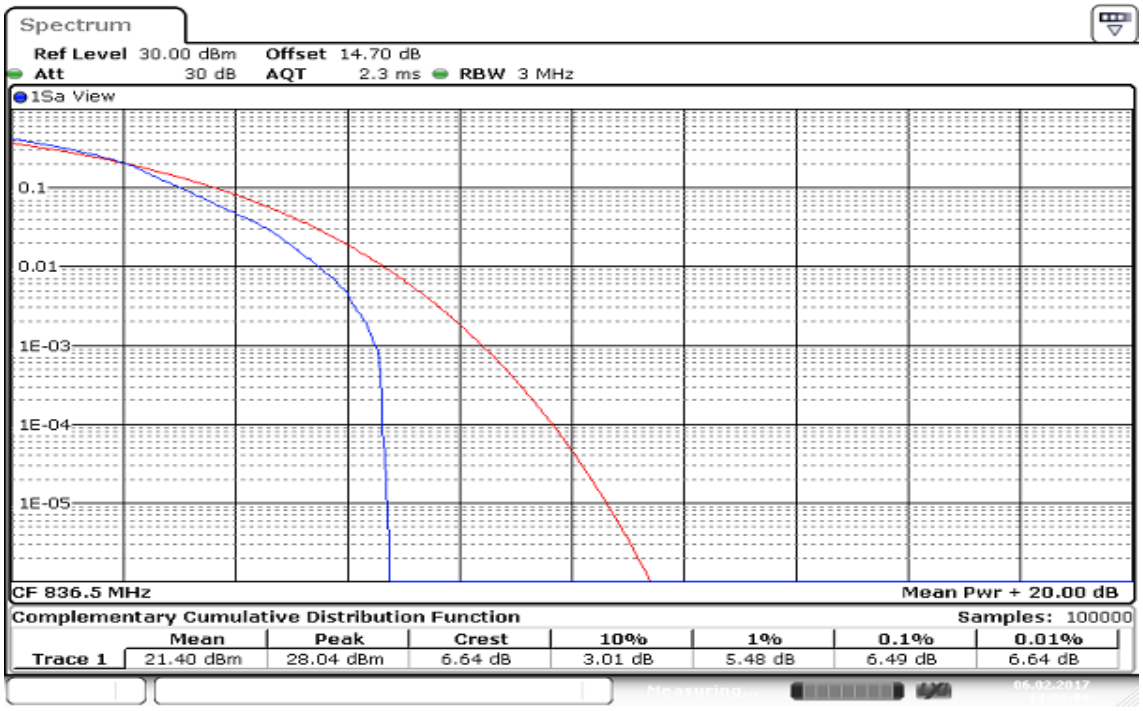
CH Mid



Date: 6.FEB.2017 14:28:35

BW: 1.4MHz / 16QAM / RB =1, RB Offset = 0

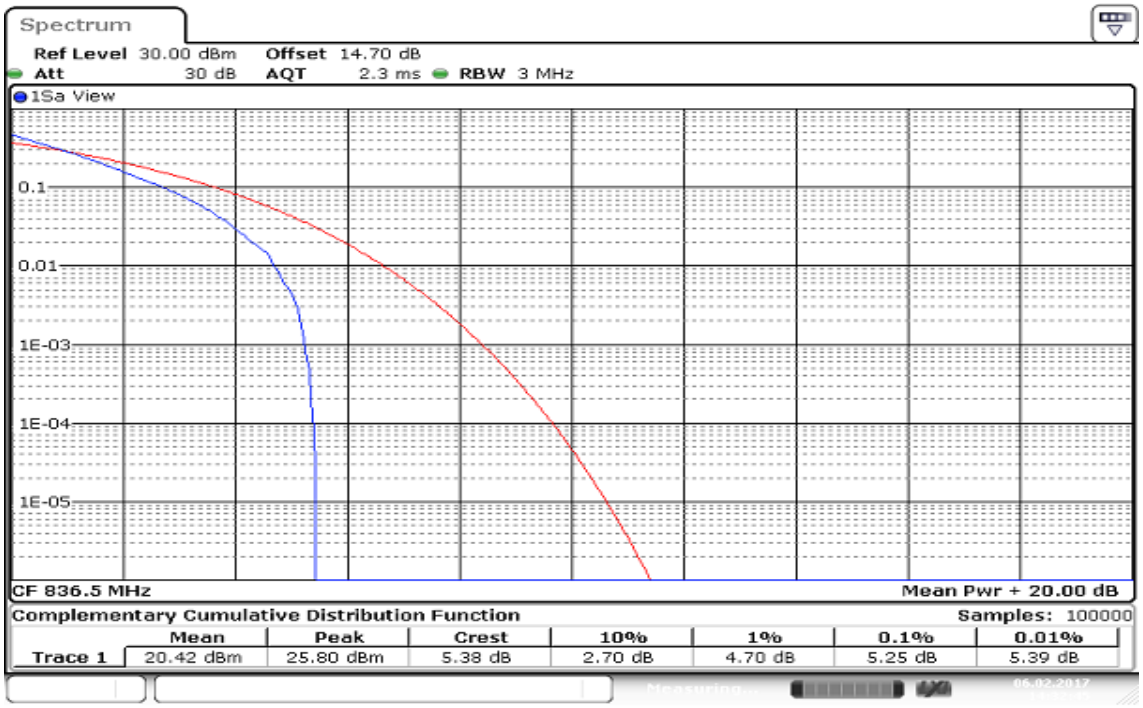
CH Mid



Date: 6.FEB.2017 14:29:08

BW: 3MHz / QPSK / RB =1, RB Offset = 0

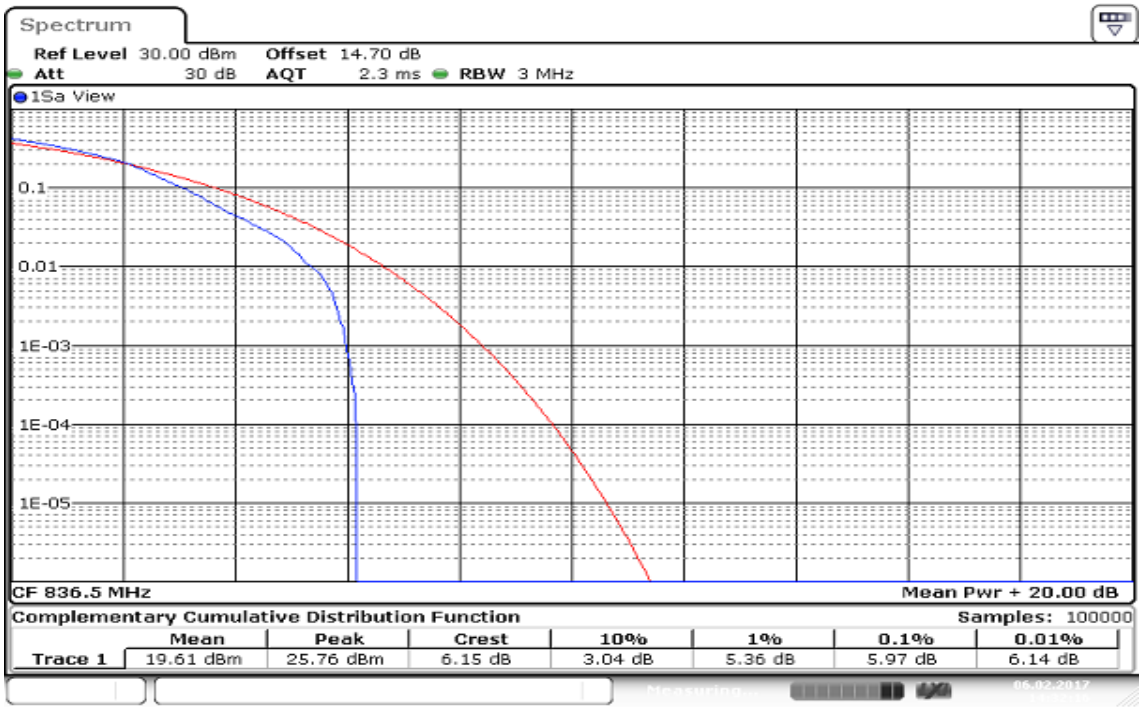
CH Mid



Date: 6.FEB.2017 14:32:46

BW: 3MHz / 16QAM / RB =1, RB Offset = 0

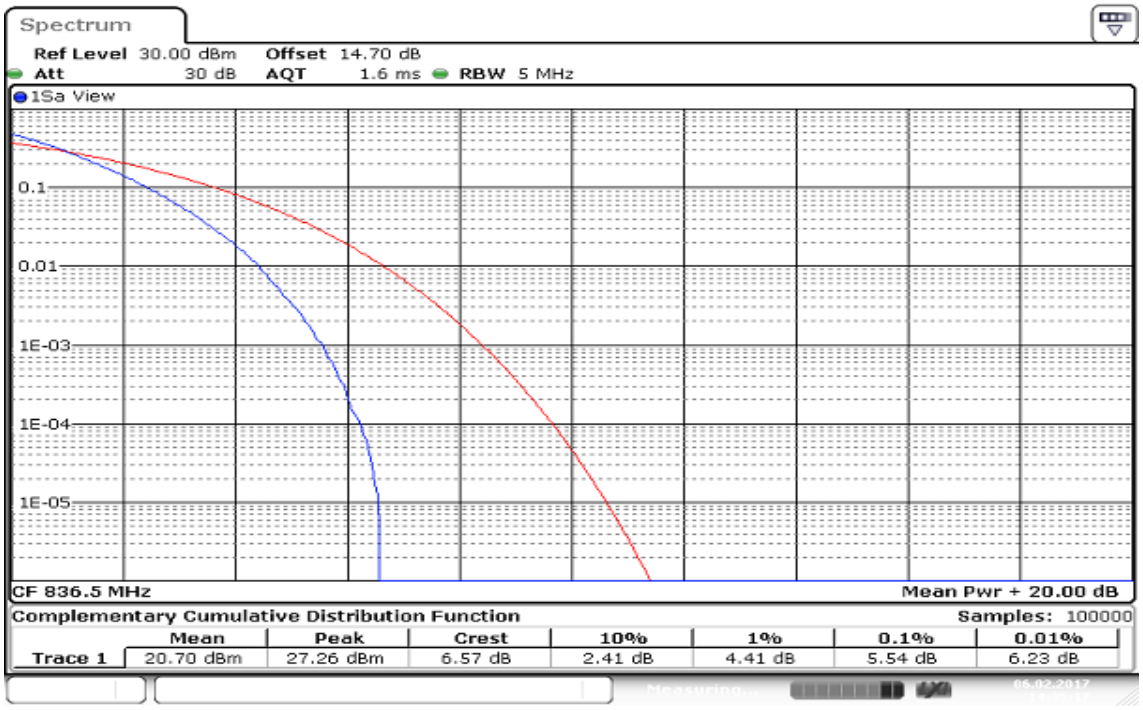
CH Mid



Date: 6.FEB.2017 14:32:16

BW: 5MHz / QPSK / RB =1, RB Offset = 0

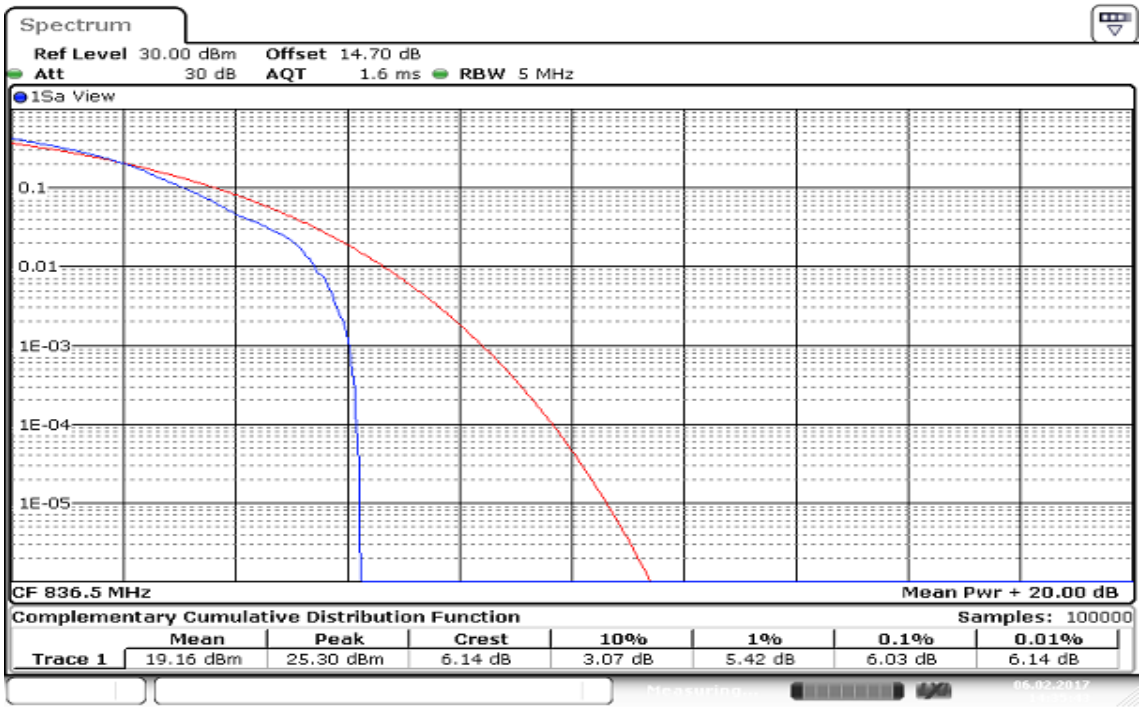
CH Mid



Date: 6.FEB.2017 14:35:18

BW: 5MHz / 16QAM / RB =1, RB Offset = 0

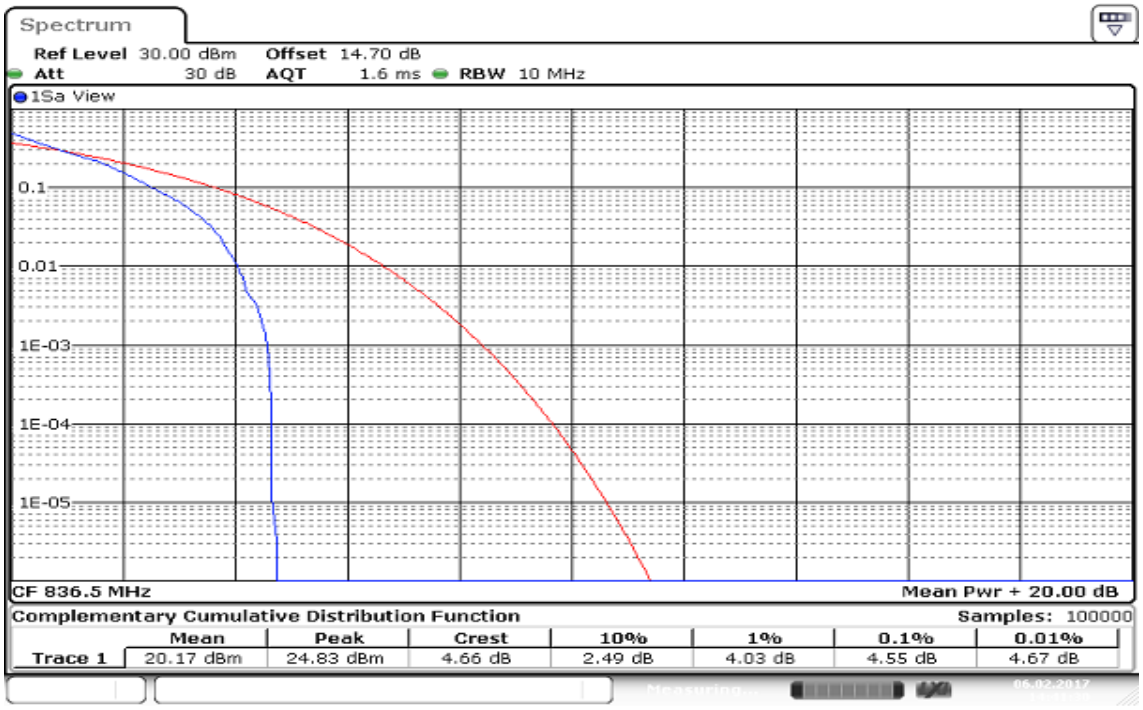
CH Mid



Date: 6.FEB.2017 14:35:44

BW: 10MHz / QPSK / RB =1, RB Offset = 0

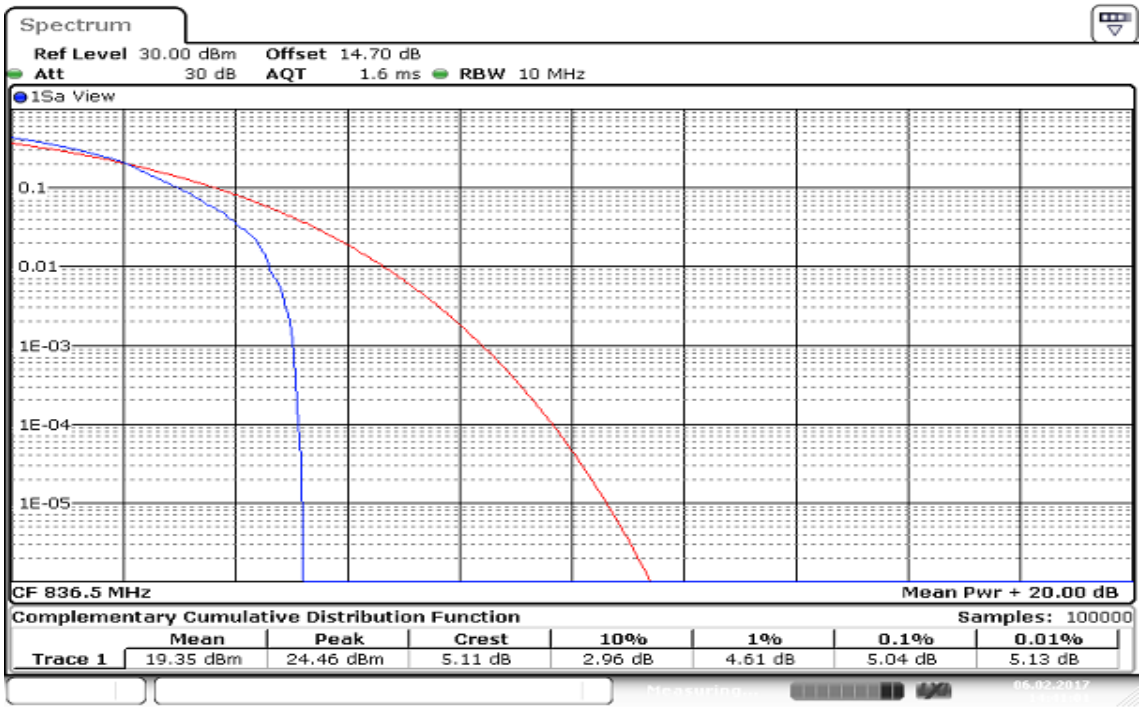
CH Mid



Date: 6.FEB.2017 14:41:30

BW: 10MHz / 16QAM / RB =1, RB Offset = 0

CH Mid



Date: 6.FEB.2017 14:41:01

7.6 CONDUCTED BAND EDGE MEASUREMENT

Limit

FCC §22.917(a), Band 5

For operations in the 824-849 MHz band ,Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

FCC §24.238(a), Band 2

For operations in the 1850-1910 and 1930-1950 MHz band , Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

RSS-132 section 5.5 and RSS-133 section 6.5

In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts).

Test Procedures

KDB 971168 D01 v02r02 - Section 6.0

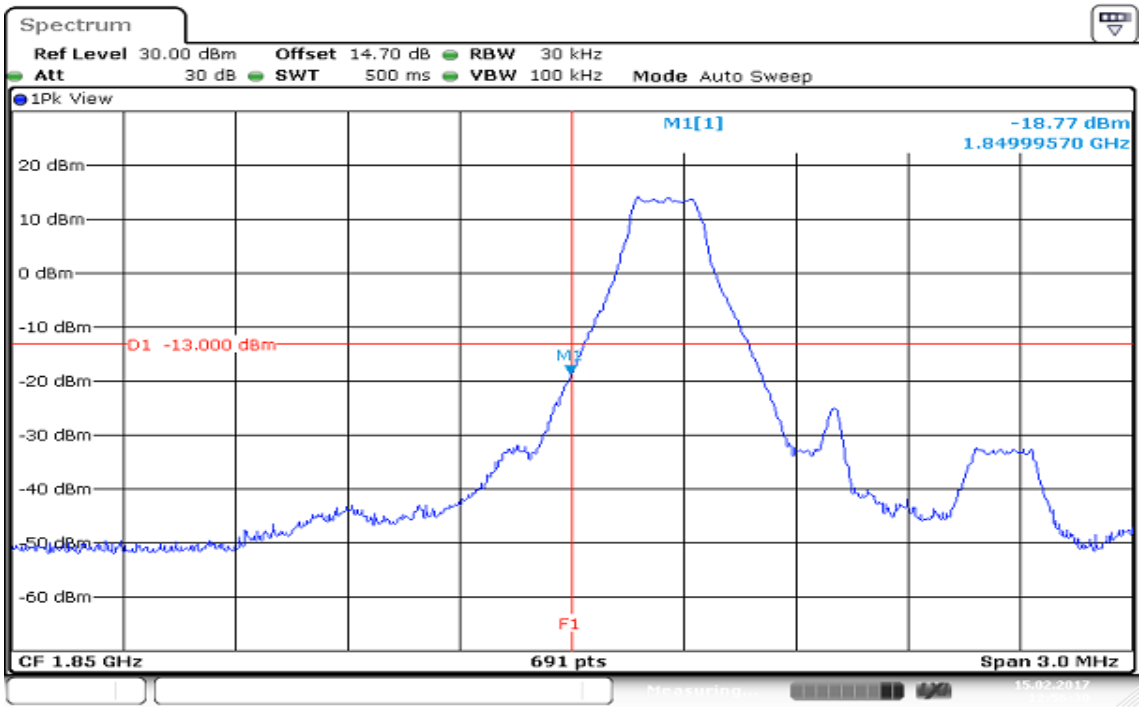
1. RBW ≥ 1% of the emission bandwidth
2. VBW ≥ 3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

Test Results:

LTE Band 2

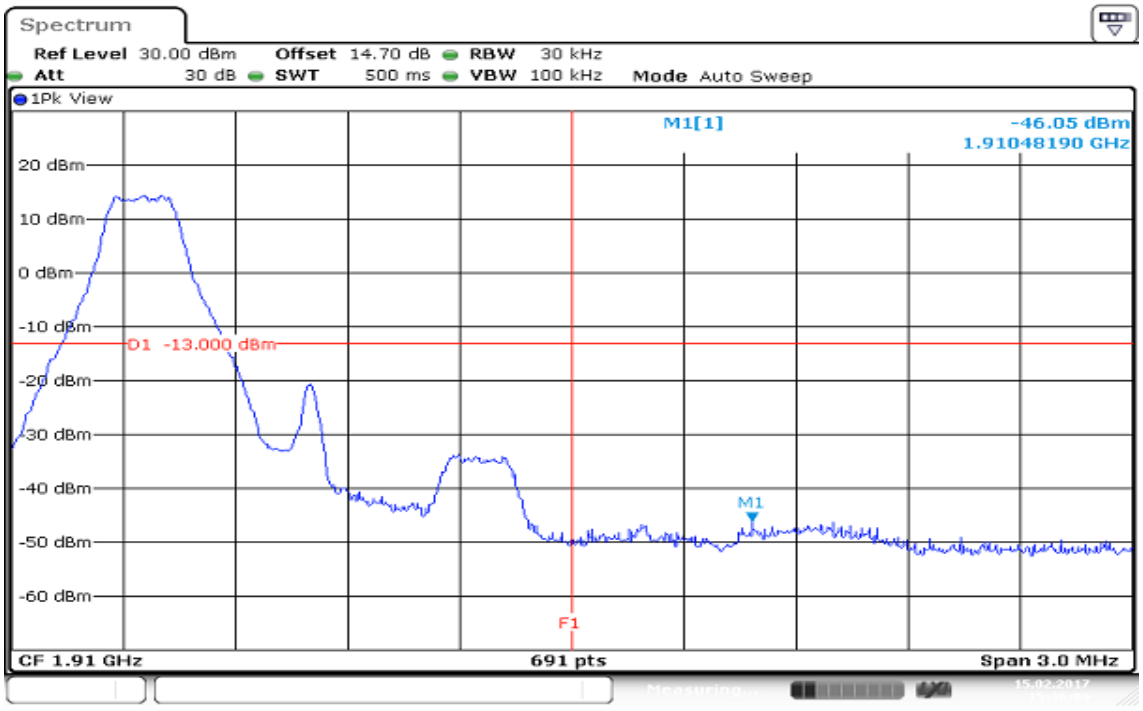
BW: 1.4MHz / QPSK / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 12:56:31

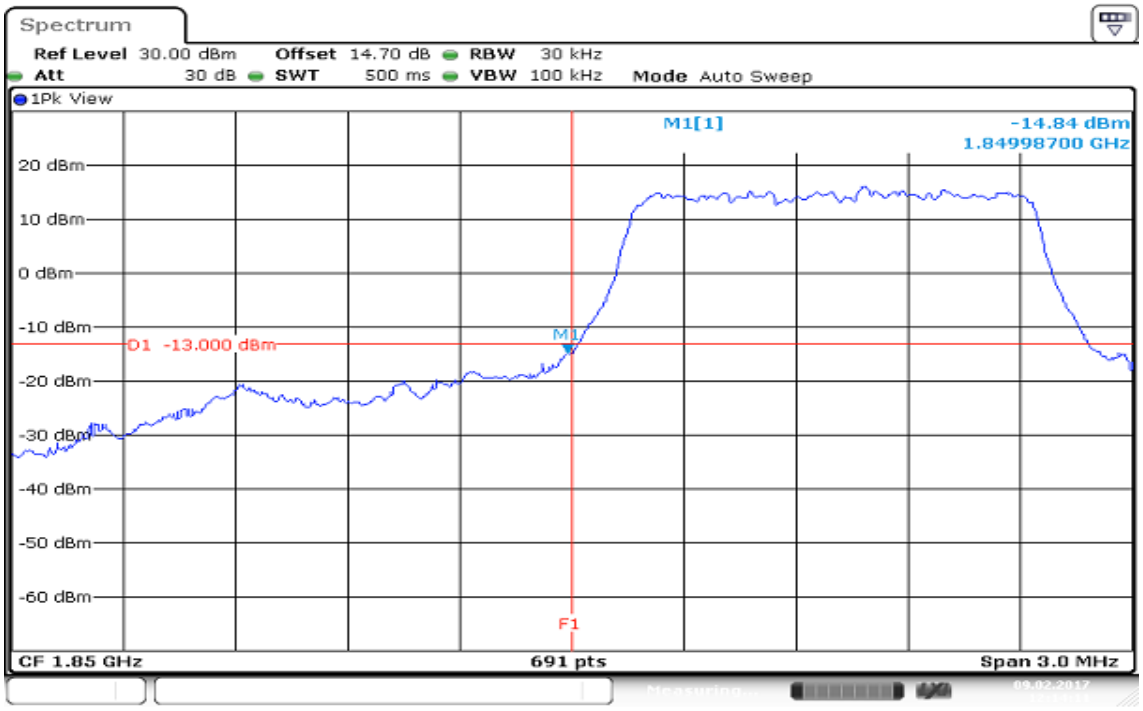
HIGHER BAND EDGE



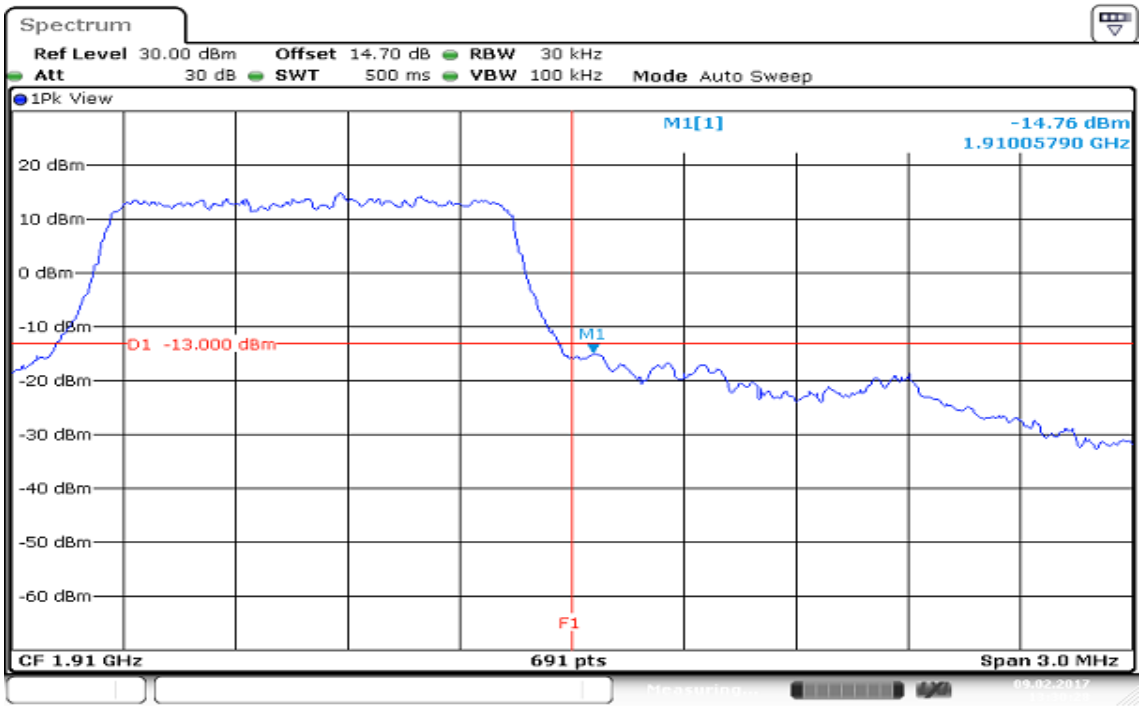
Date: 15.FEB.2017 15:36:09

BW: 1.4MHz / QPSK / RB= 6, RB Offset = 0

LOWER BAND EDGE

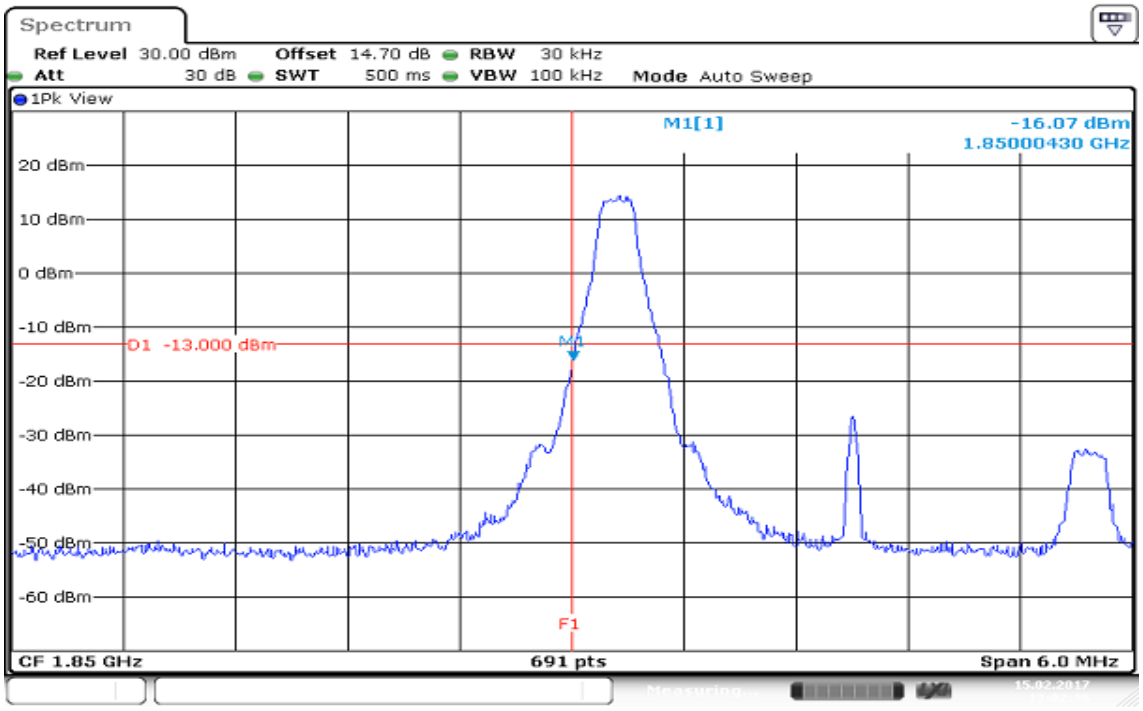


HIGHER BAND EDGE



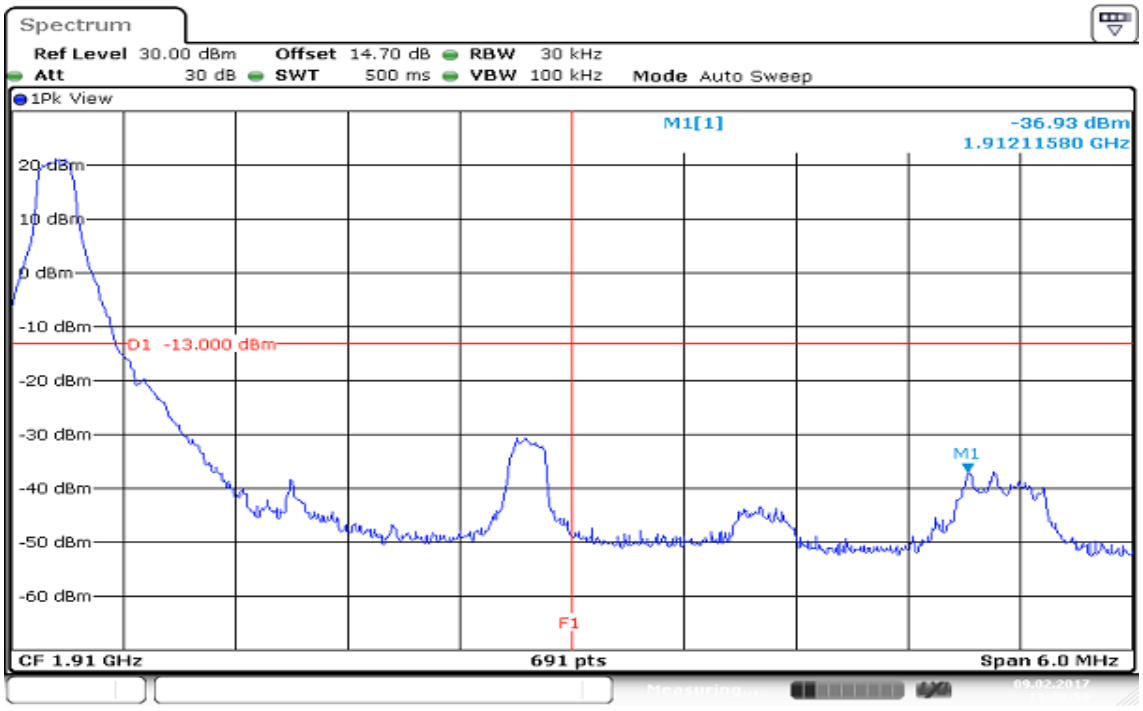
BW: 3MHz / QPSK / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:02:37

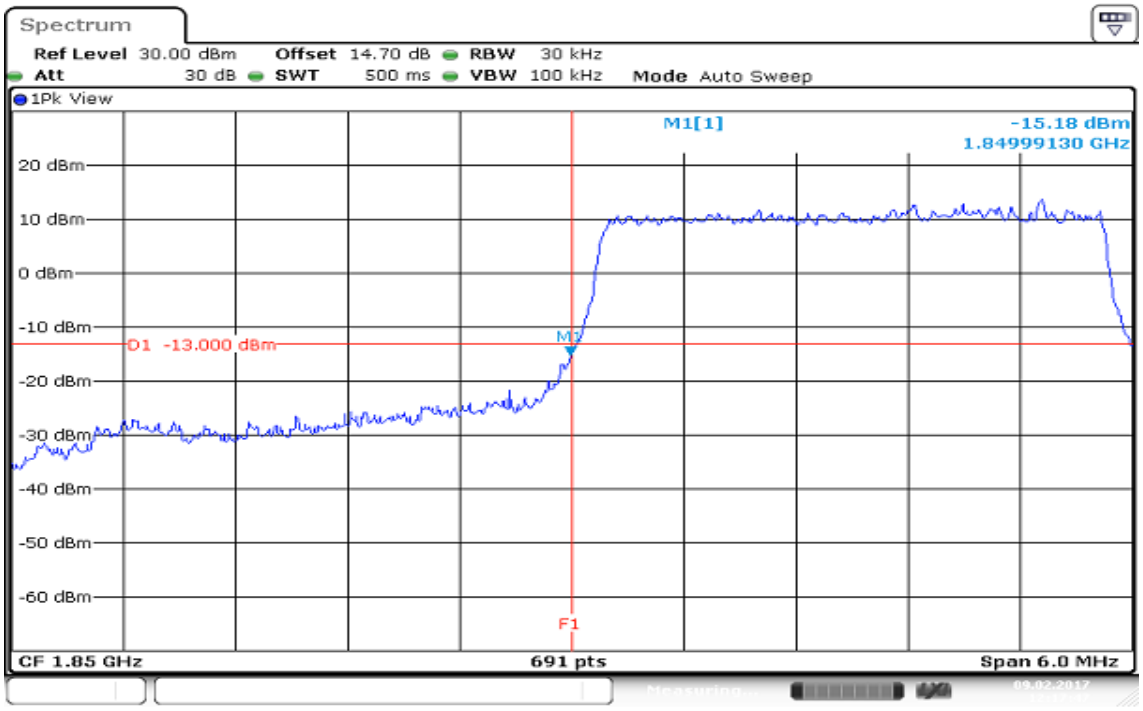
HIGHER BAND EDGE



Date: 9.FEB.2017 13:28:50

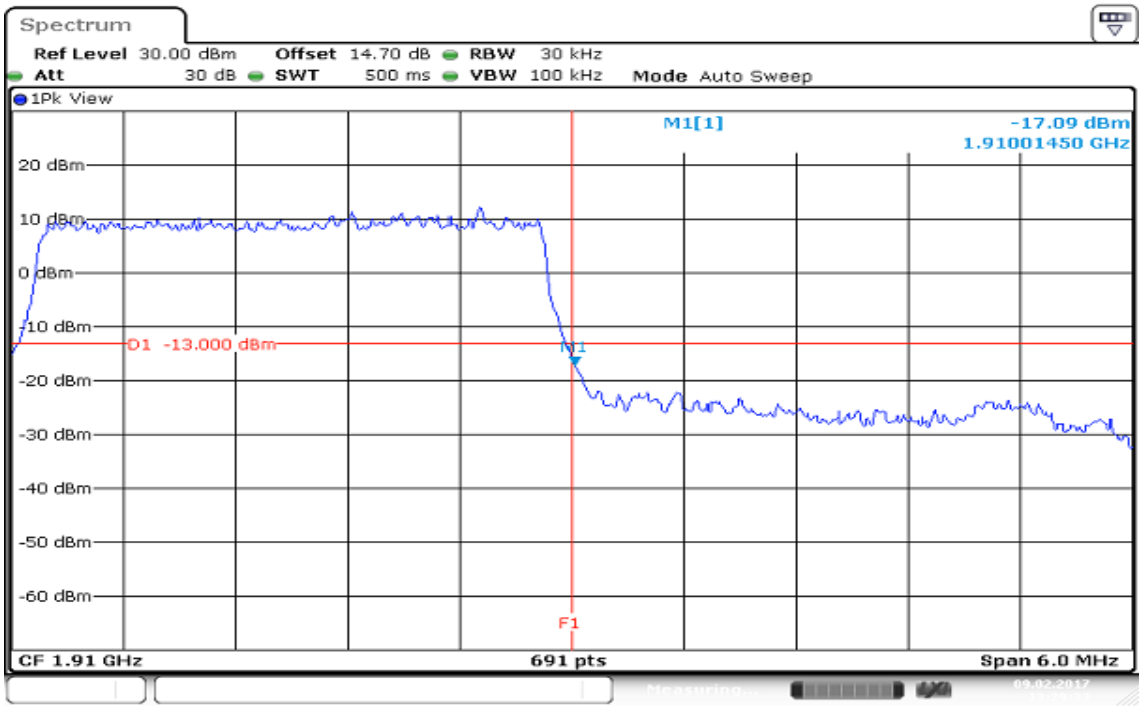
BW: 3MHz / QPSK / RB=15, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 12:17:48

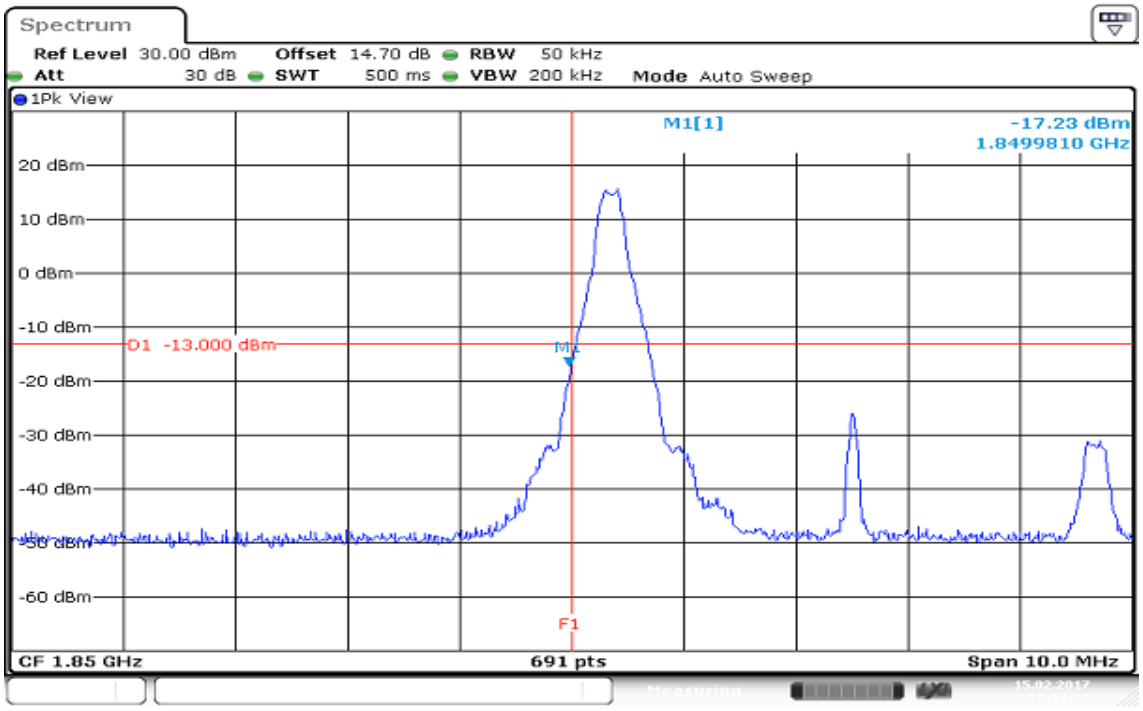
HIGHER BAND EDGE



Date: 9.FEB.2017 13:29:33

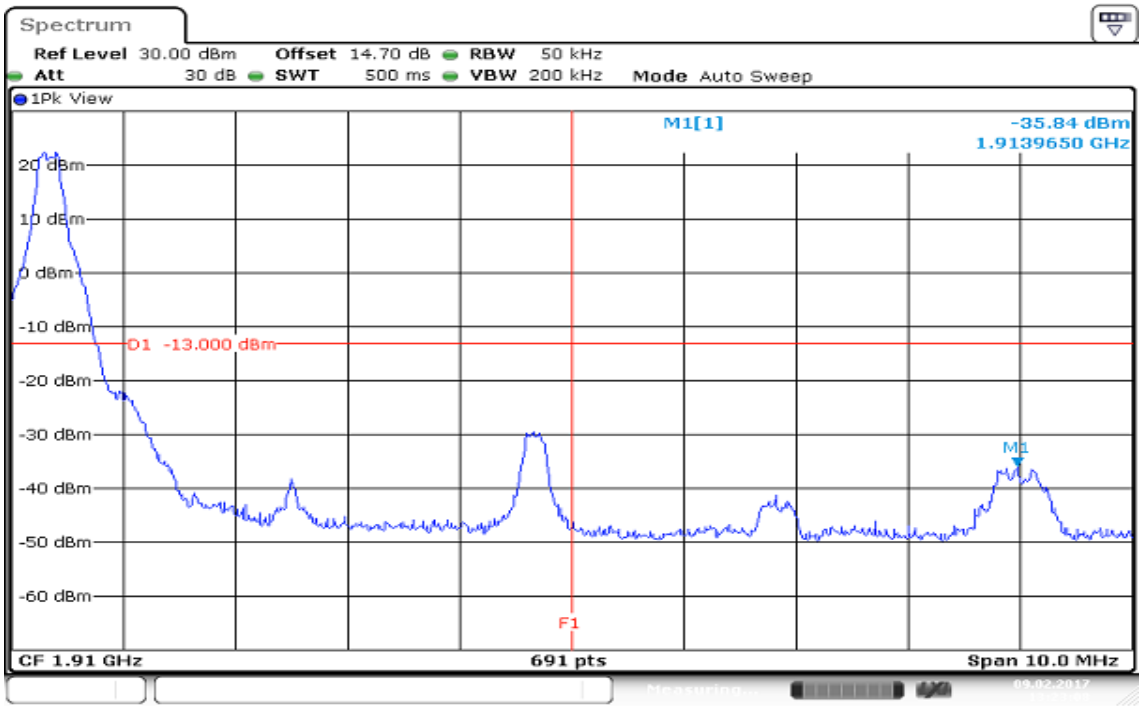
BW: 5MHz / QPSK / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:11:33

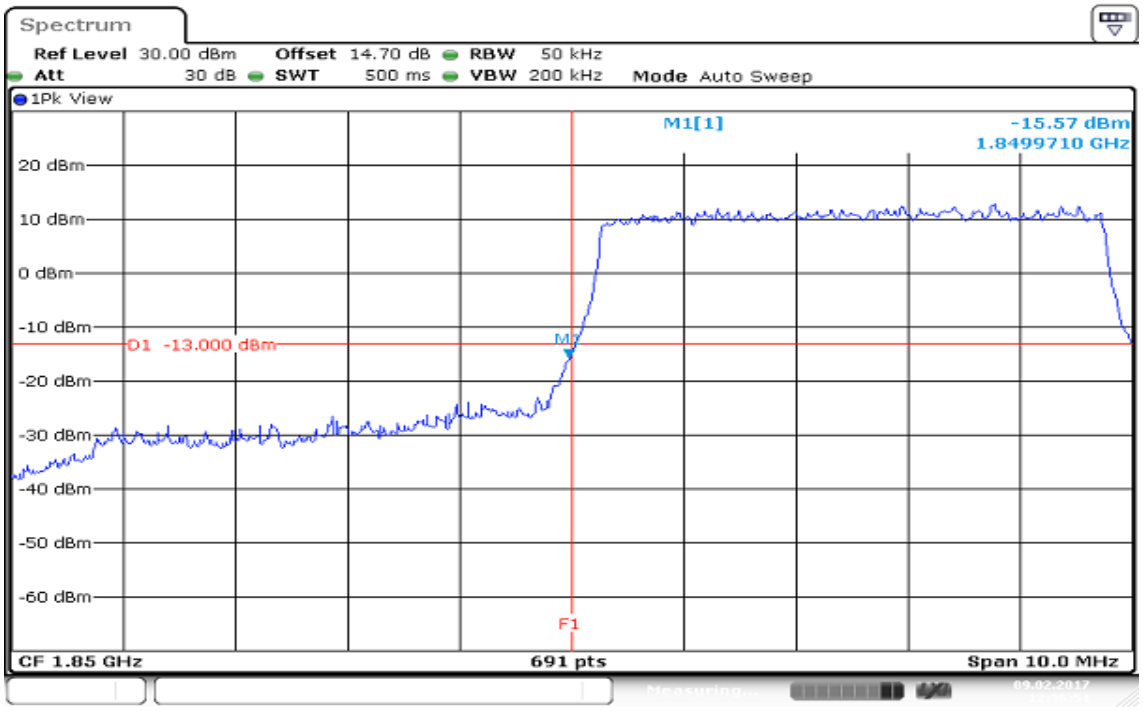
HIGHER BAND EDGE



Date: 9.FEB.2017 13:23:09

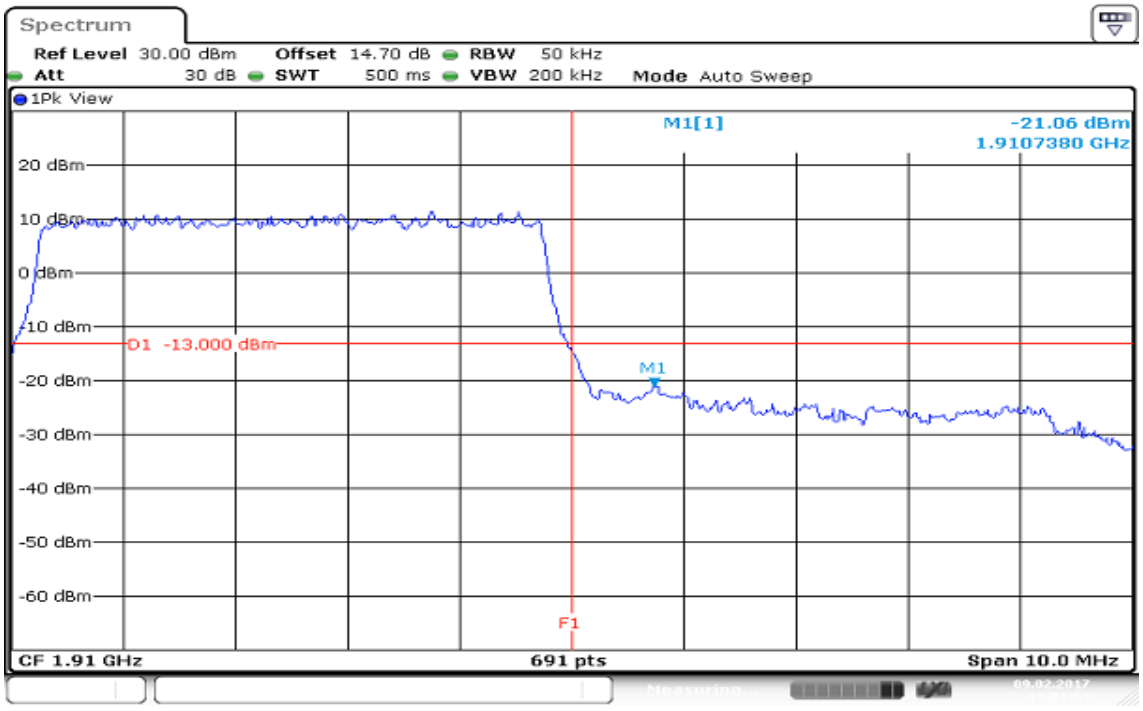
BW: 5MHz / QPSK / RB=25, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 12:36:51

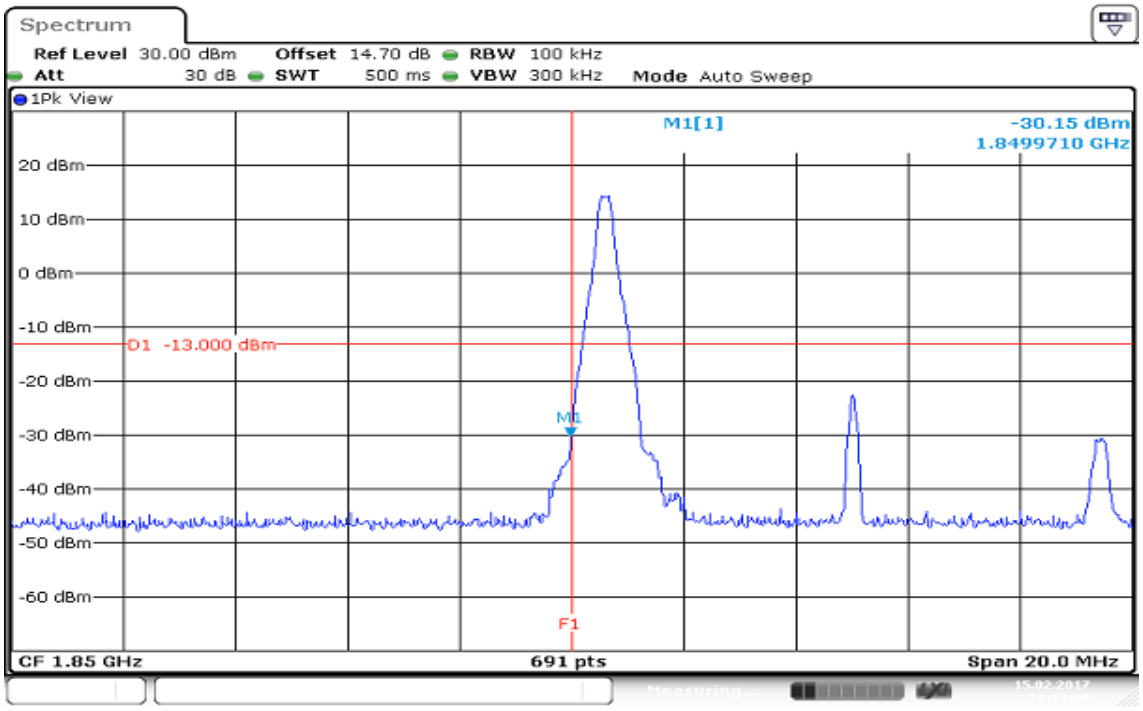
HIGHER BAND EDGE



Date: 9.FEB.2017 13:21:54

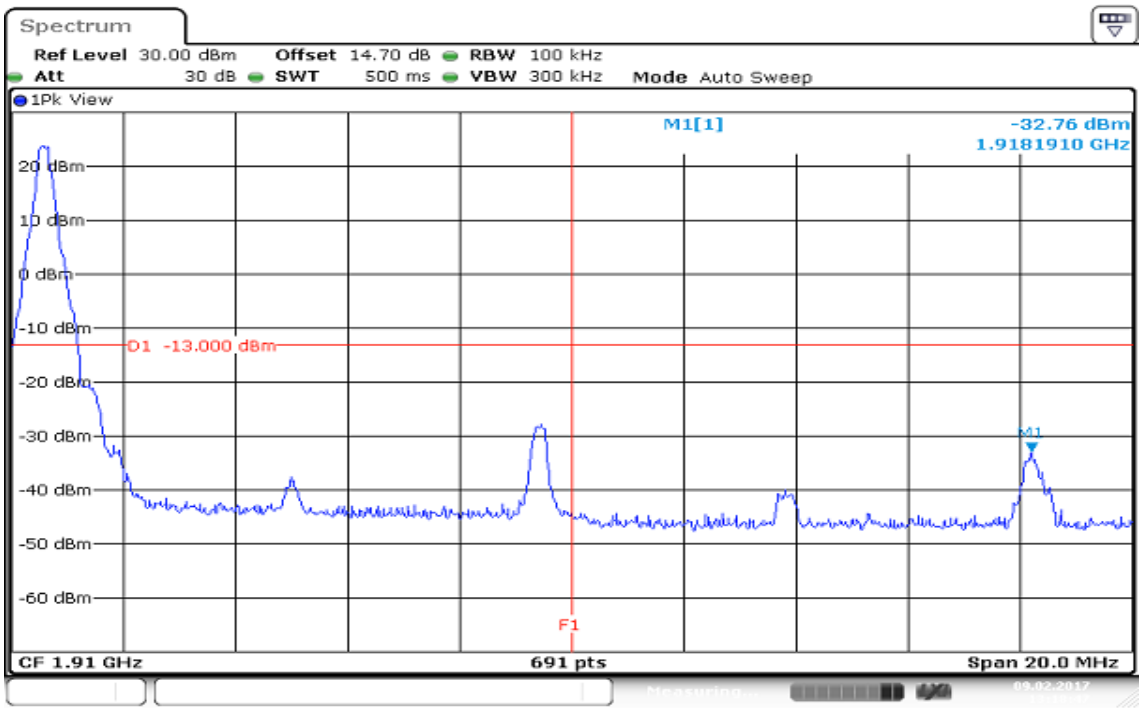
BW: 10MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:14:27

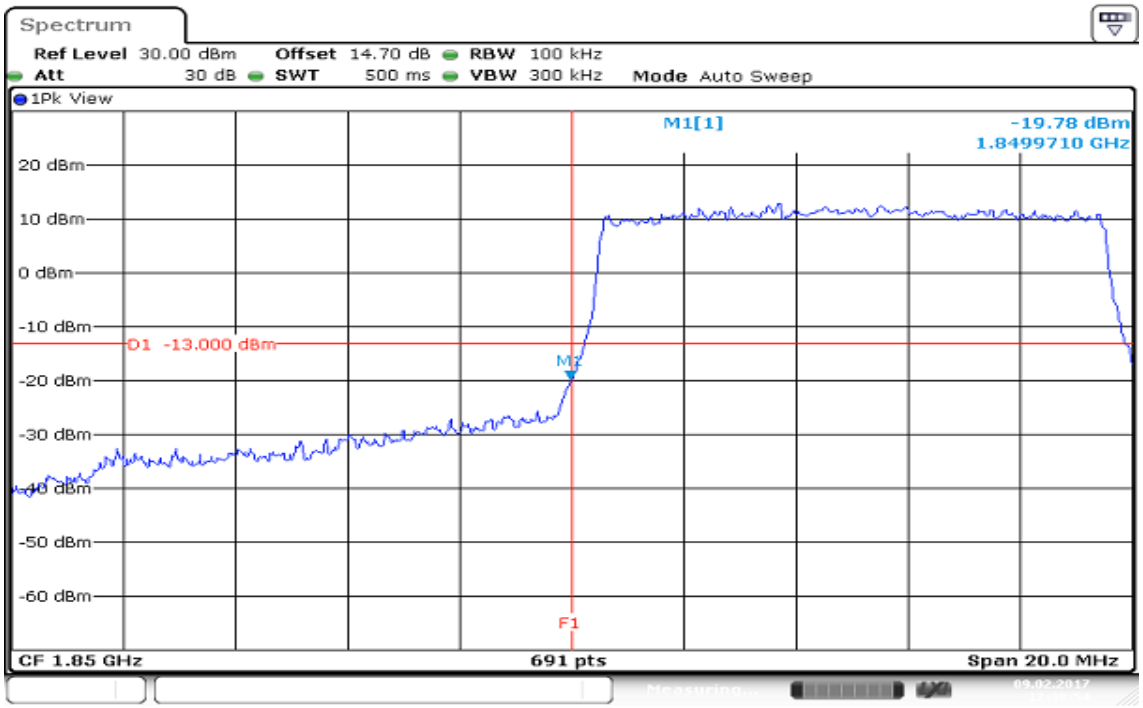
HIGHER BAND EDGE



Date: 9.FEB.2017 13:18:48

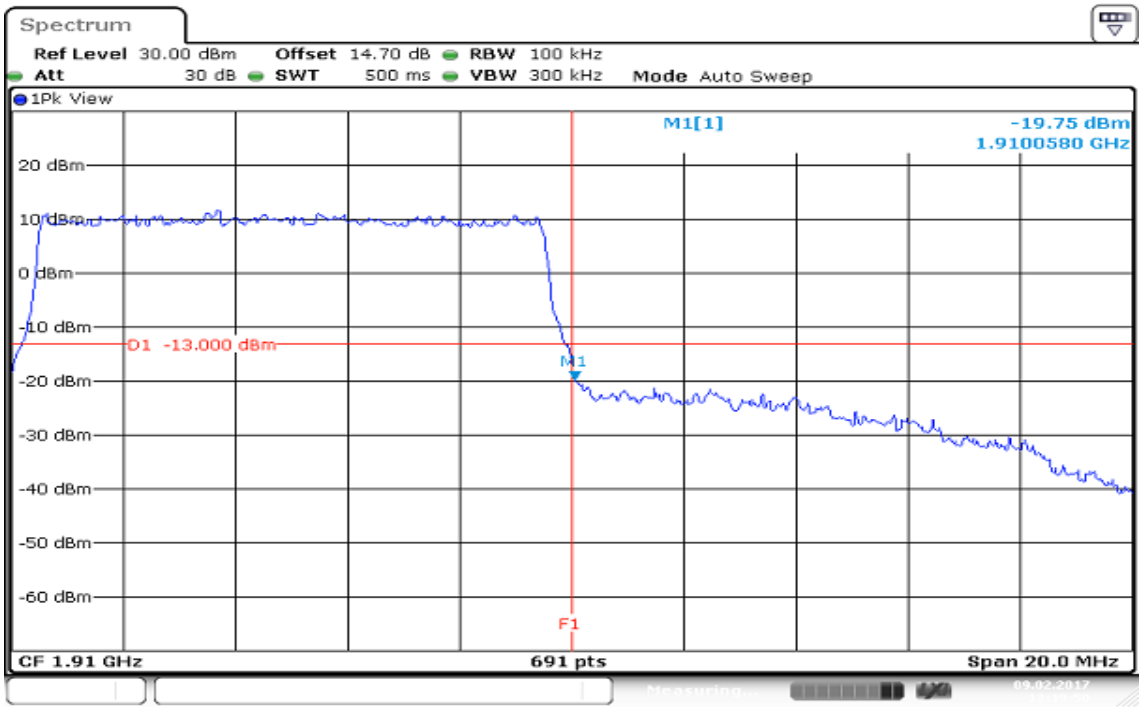
BW: 10MHz / QPSK / RB=50, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 12:38:54

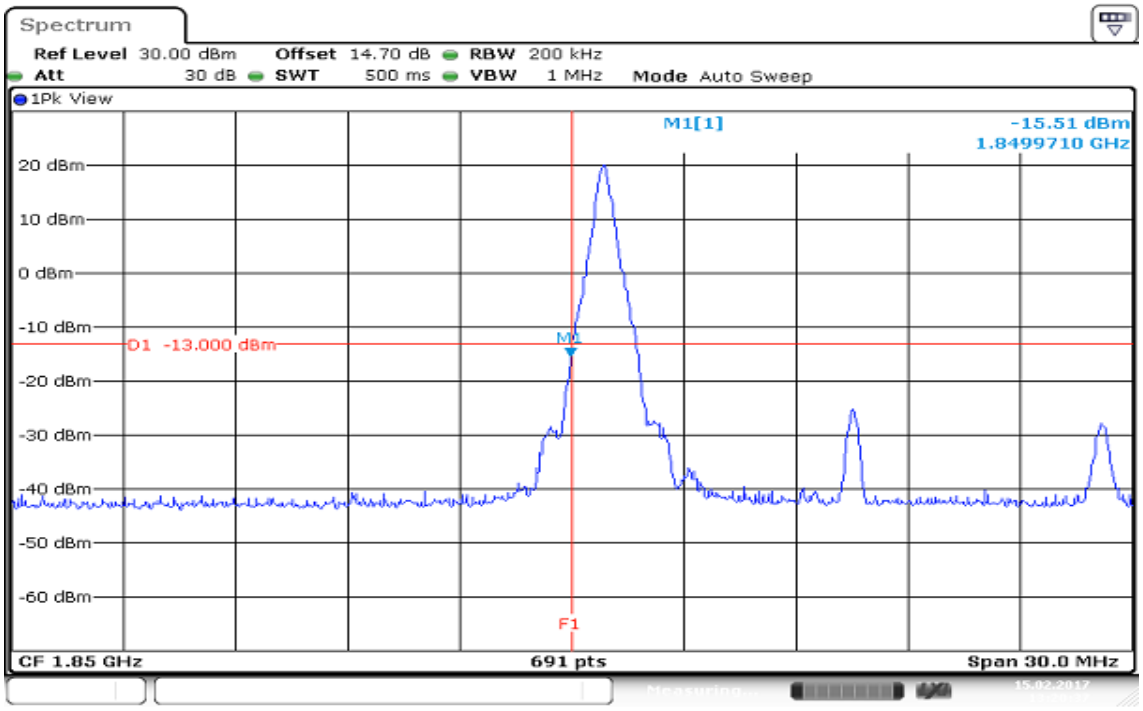
HIGHER BAND EDGE



Date: 9.FEB.2017 13:19:50

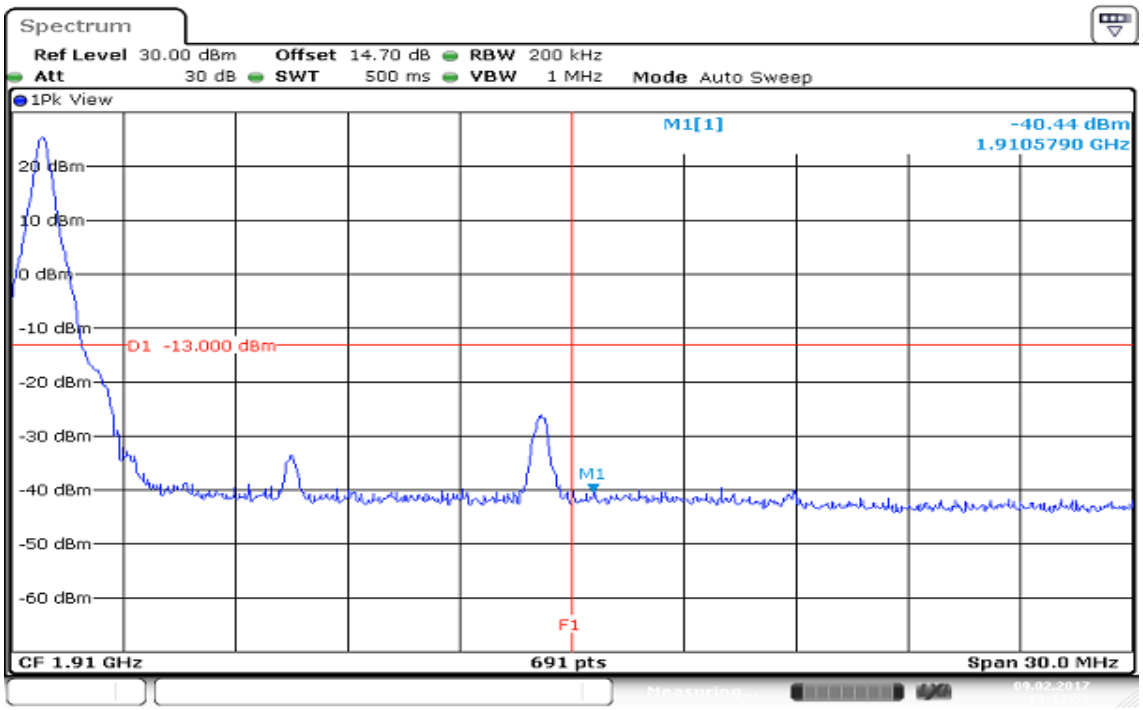
BW: 15MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:20:37

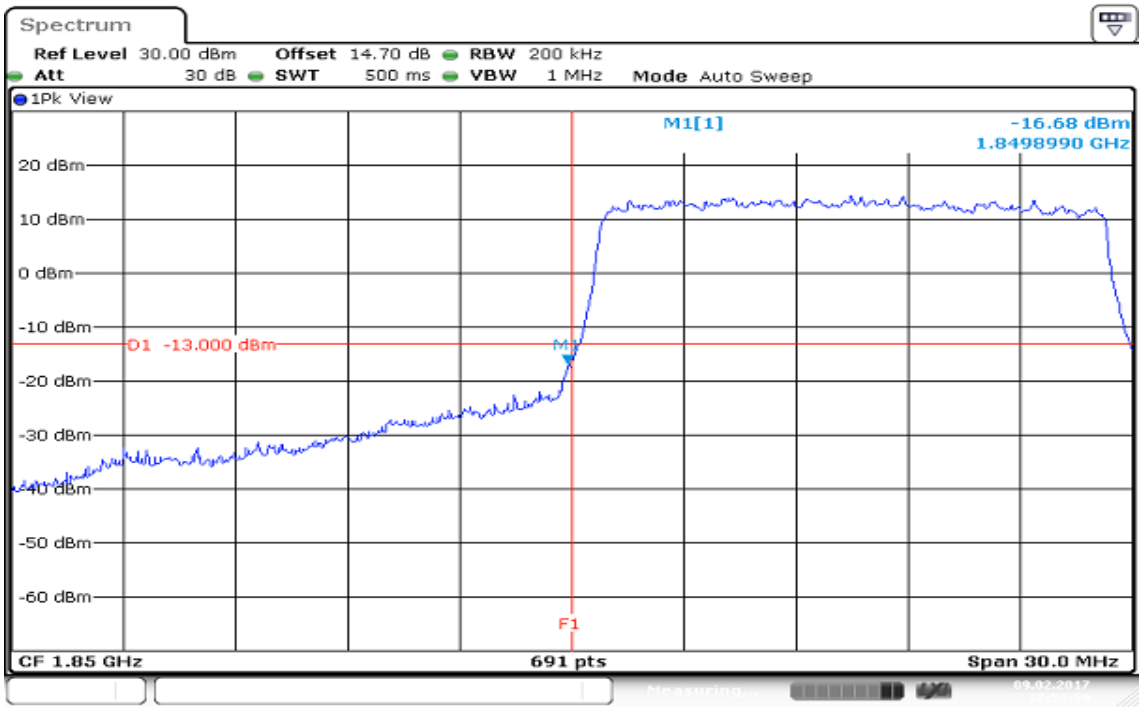
HIGHER BAND EDGE



Date: 9.FEB.2017 13:12:53

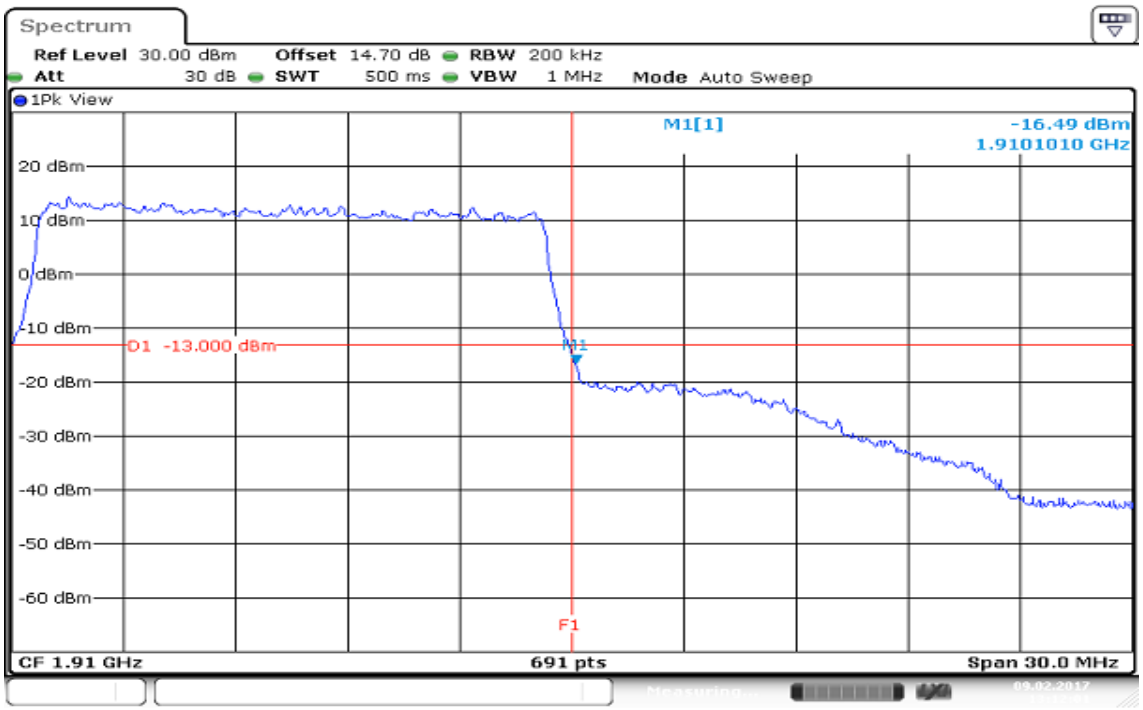
BW: 15MHz / QPSK / RB=75, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 12:59:00

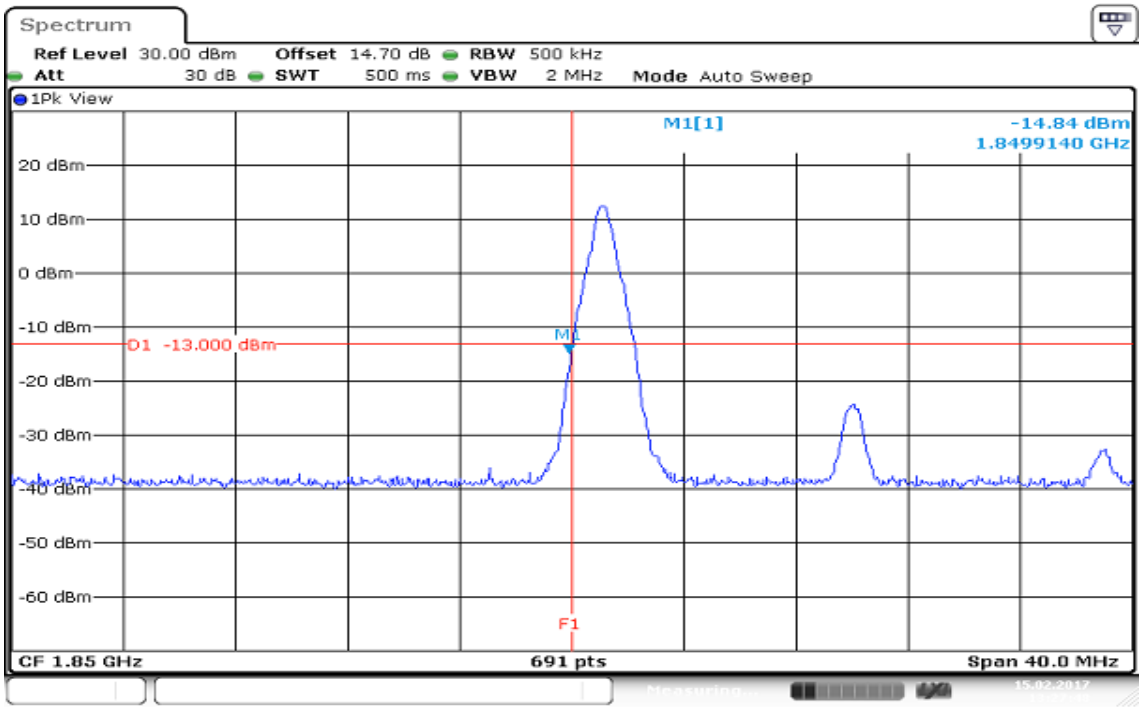
HIGHER BAND EDGE



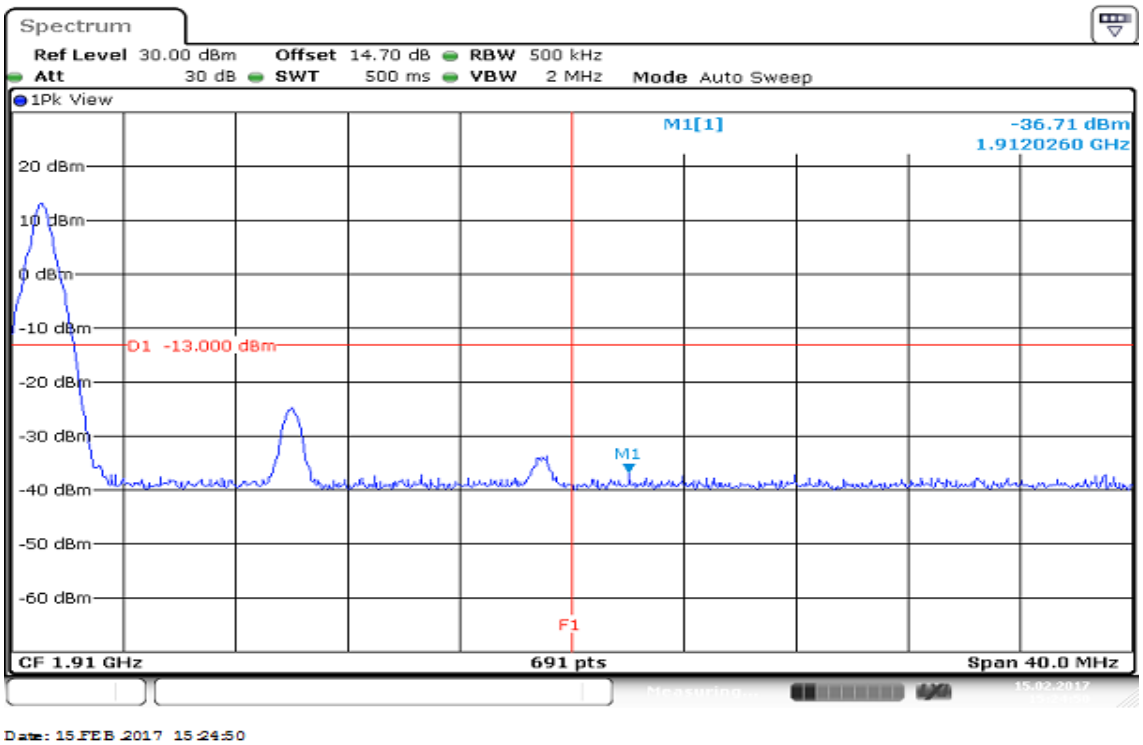
Date: 9.FEB.2017 13:12:02

BW: 20MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE

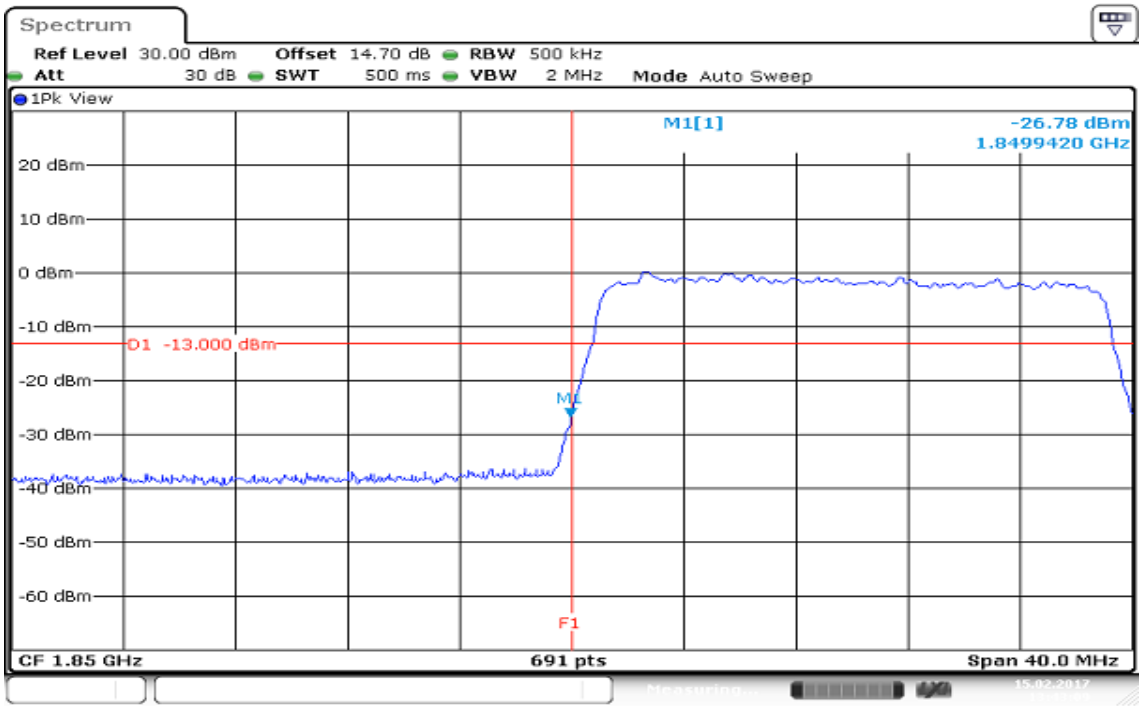


HIGHER BAND EDGE



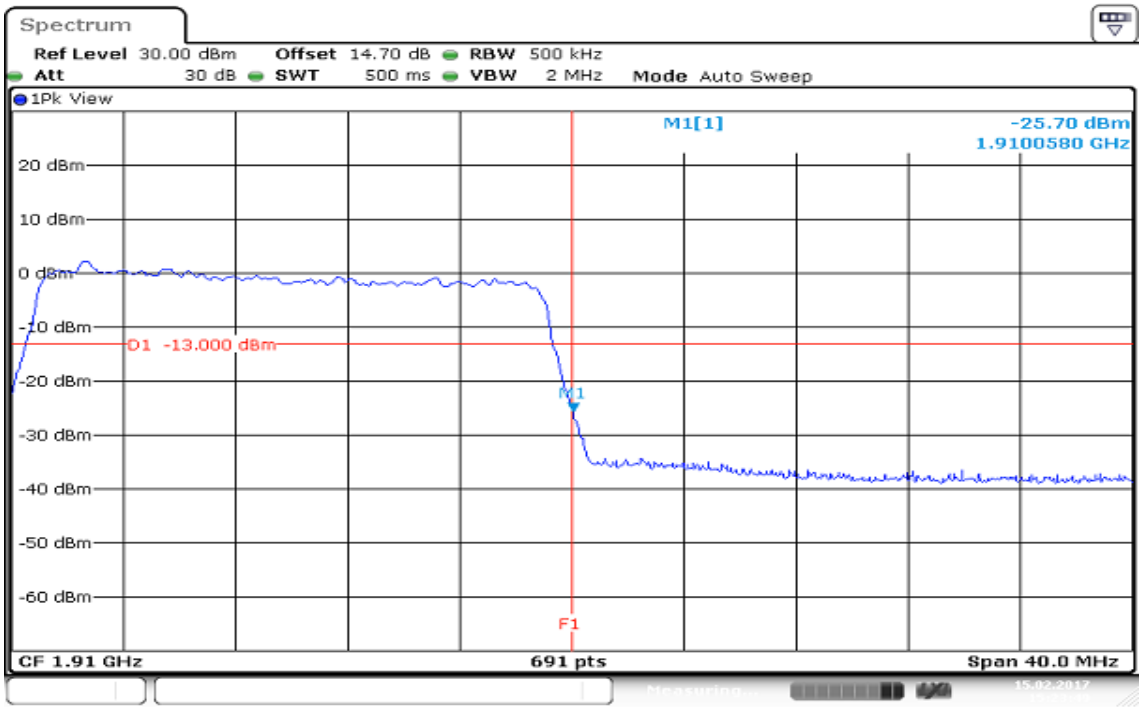
BW: 20MHz / QPSK / RB=100, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:43:09

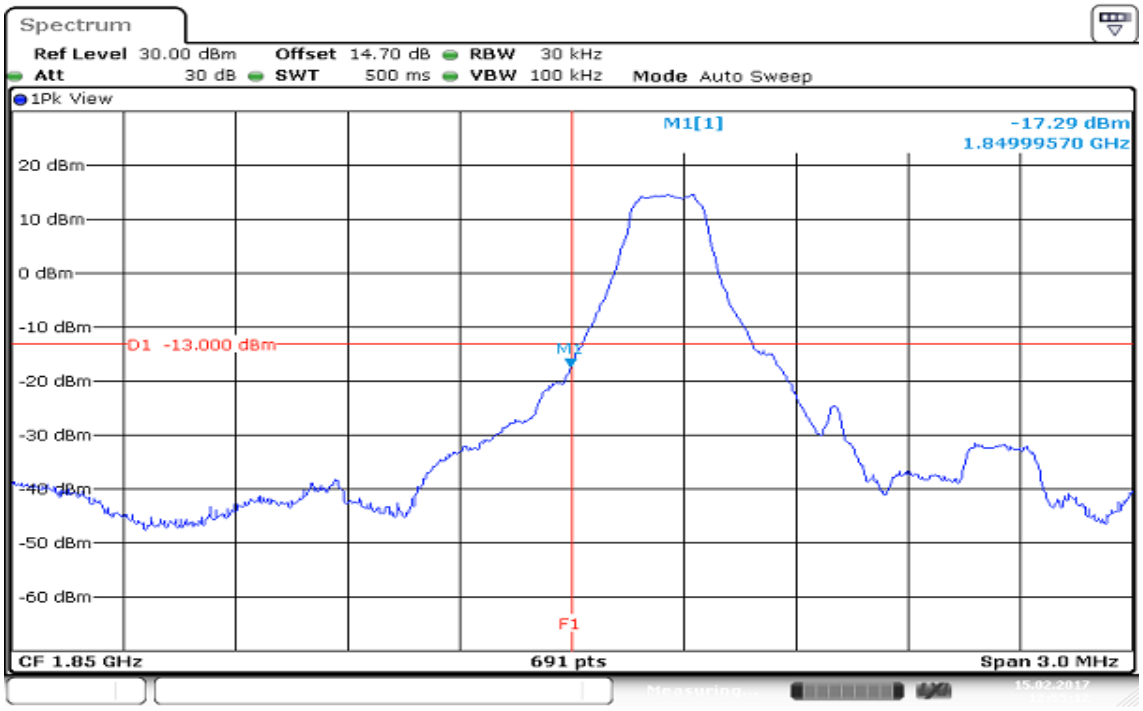
HIGHER BAND EDGE



Date: 15.FEB.2017 15:23:49

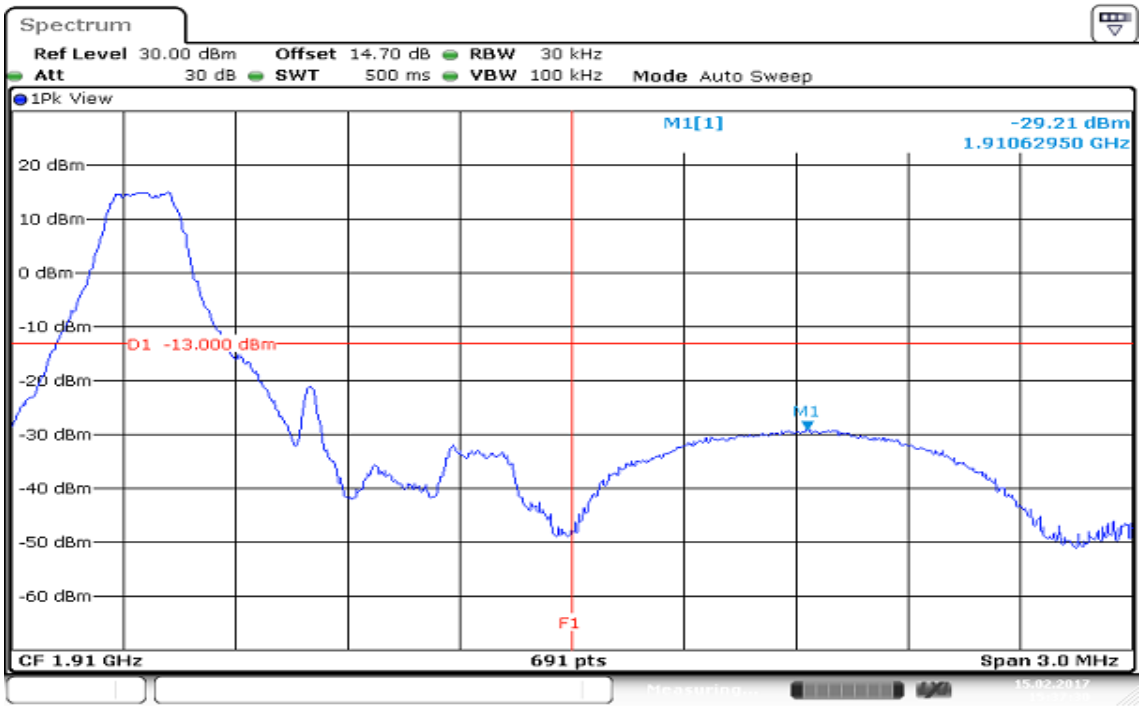
BW: 1.4MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 12:55:13

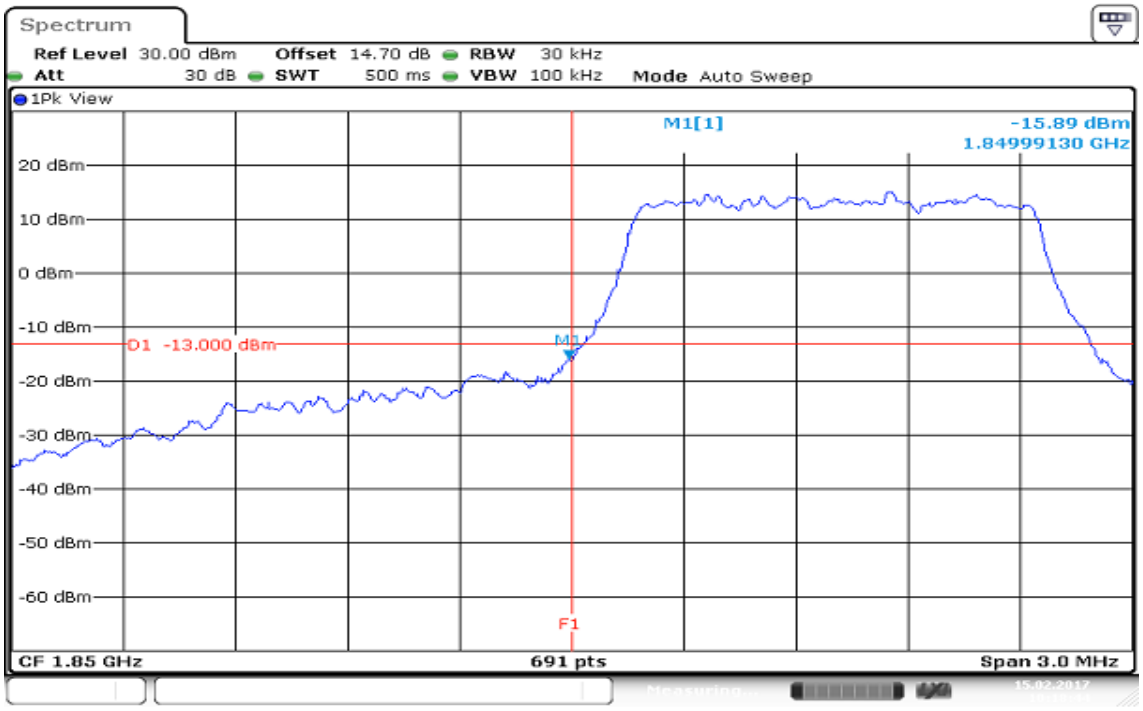
HIGHER BAND EDGE



Date: 15.FEB.2017 15:37:30

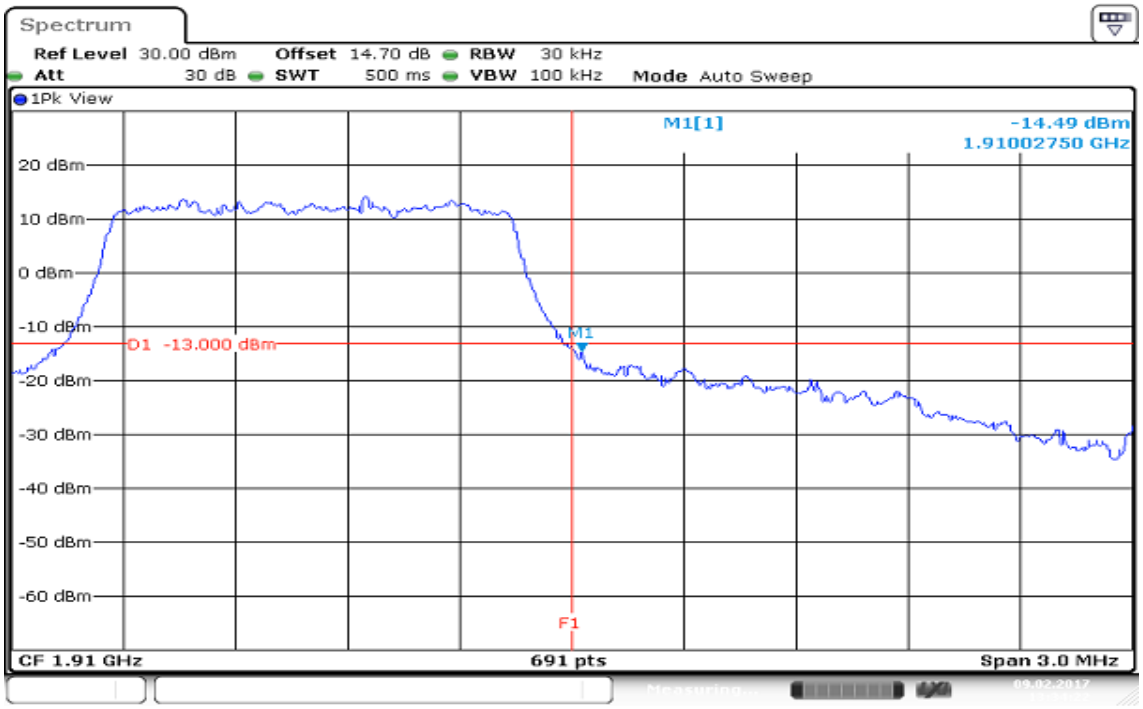
BW: 1.4MHz / 16QAM / RB= 6, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 10:18:43

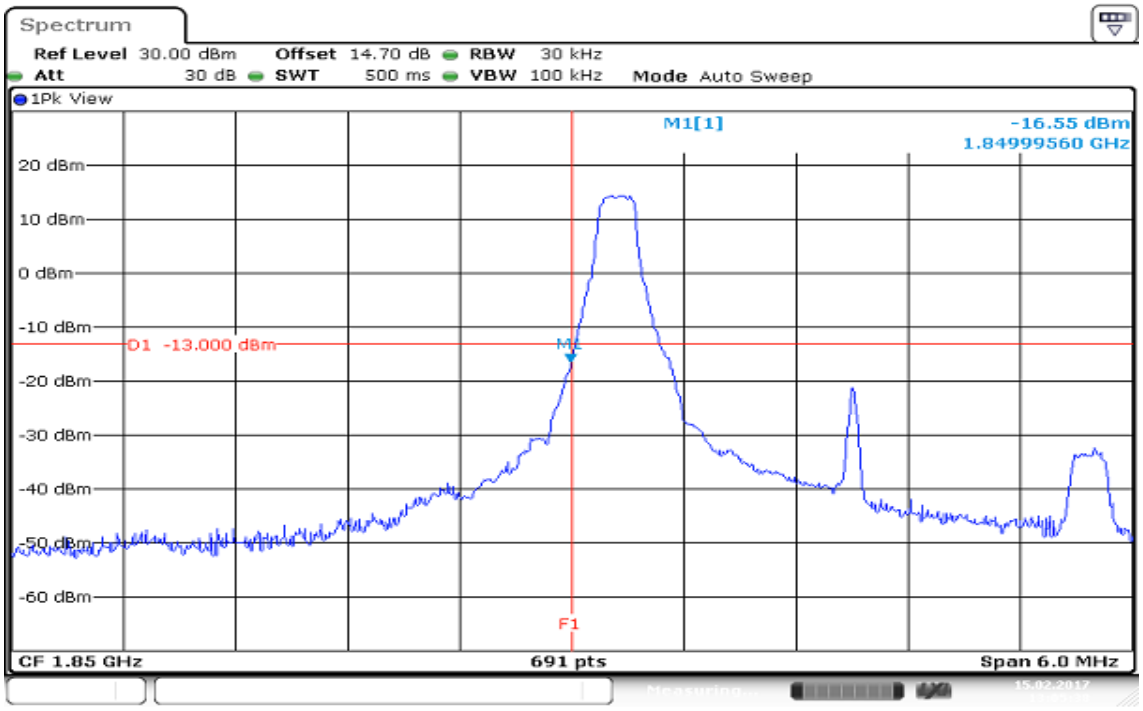
HIGHER BAND EDGE



Date: 9.FEB.2017 13:34:22

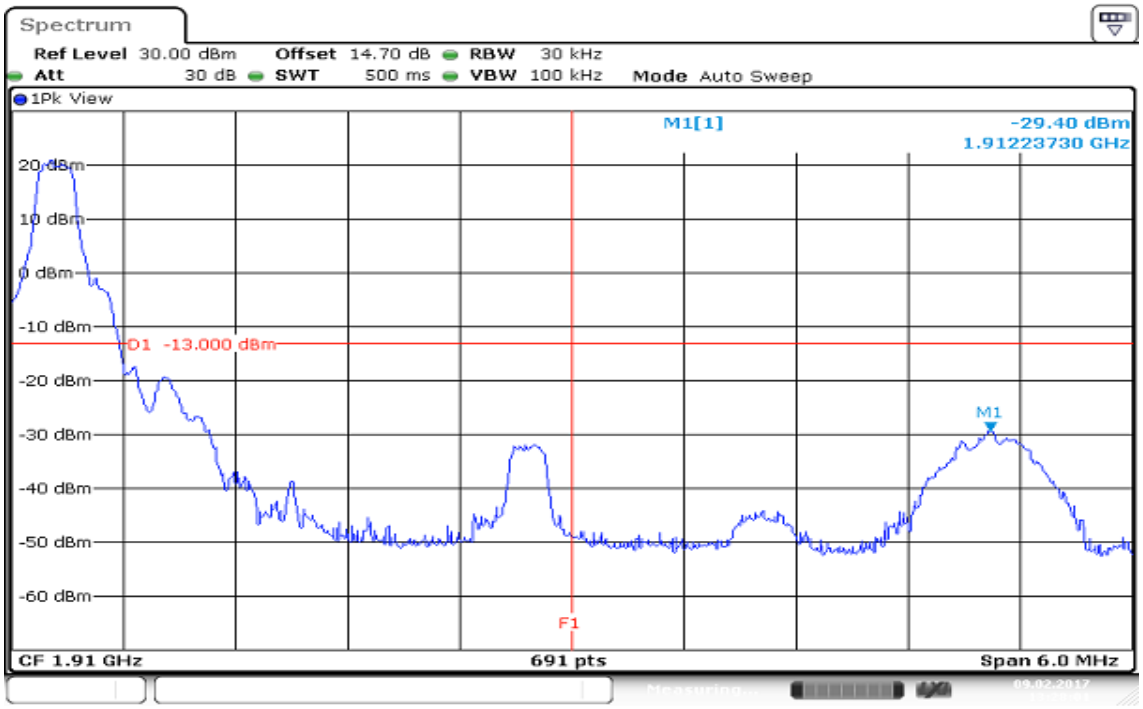
BW: 3MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:05:38

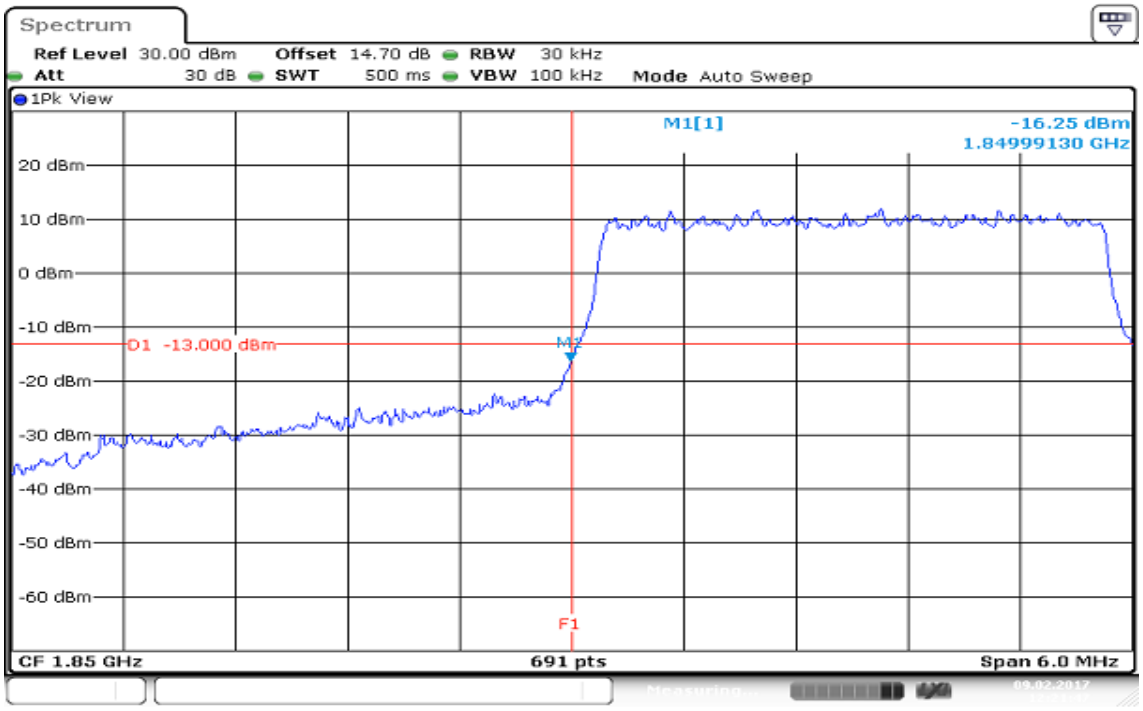
HIGHER BAND EDGE



Date: 9.FEB.2017 13:26:02

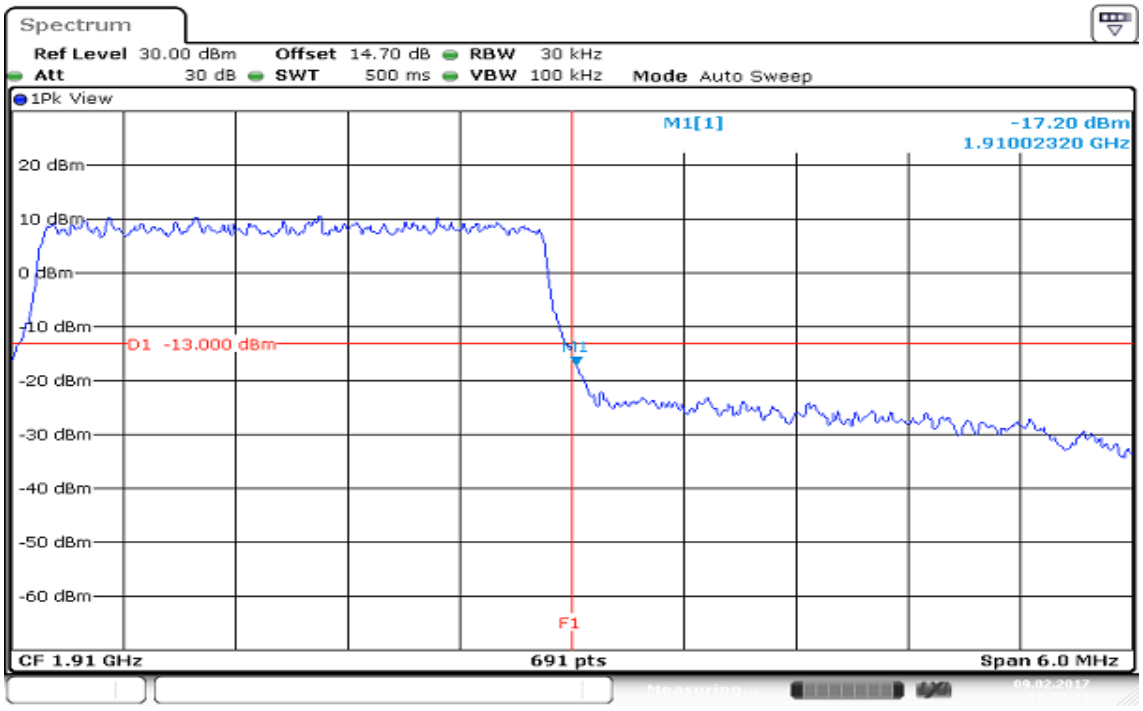
BW: 3MHz / 16QAM / RB= 15, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 12:21:47

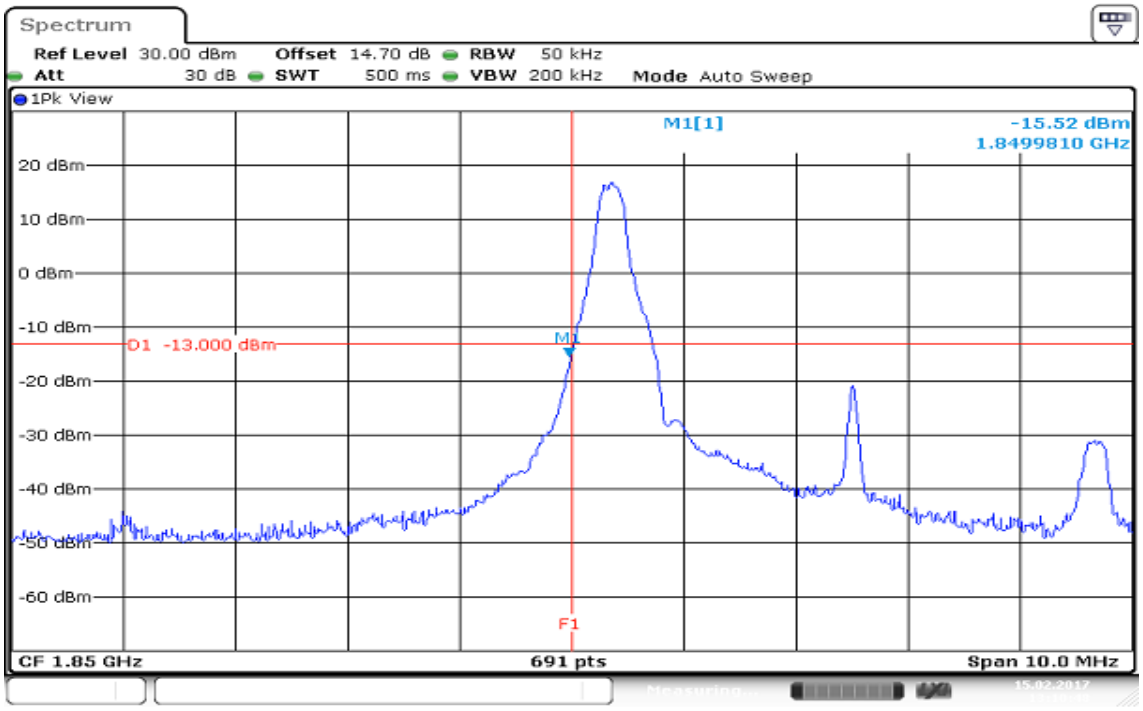
HIGHER BAND EDGE



Date: 9.FEB.2017 13:27:21

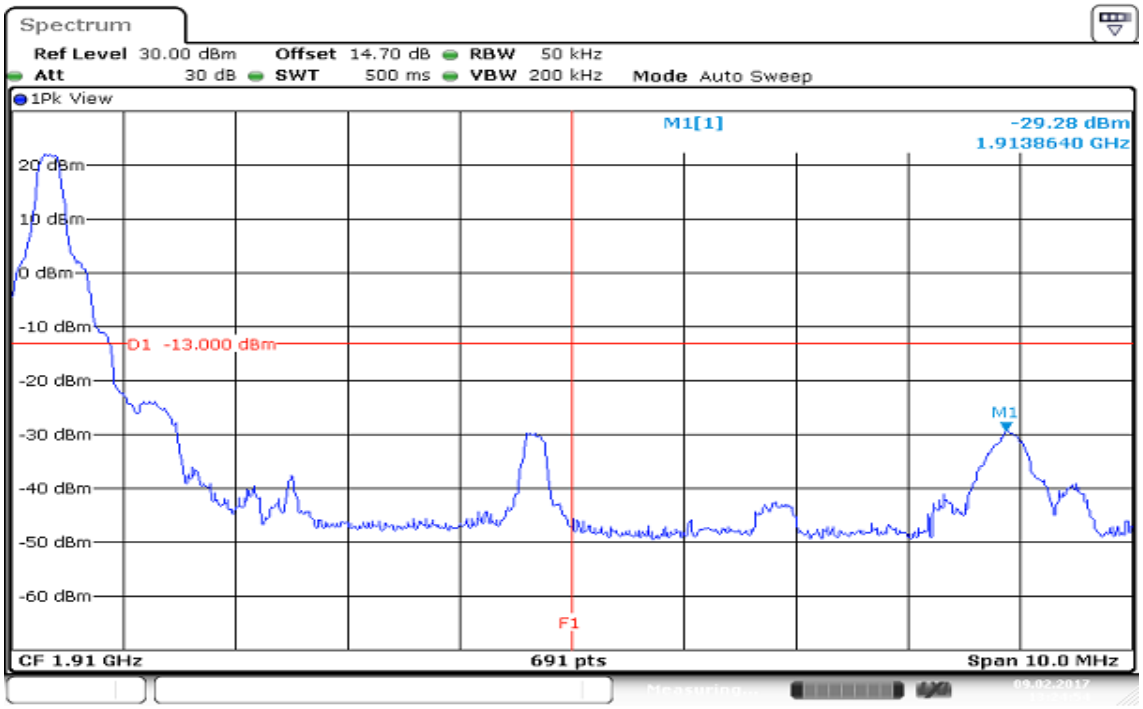
BW: 5MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:10:48

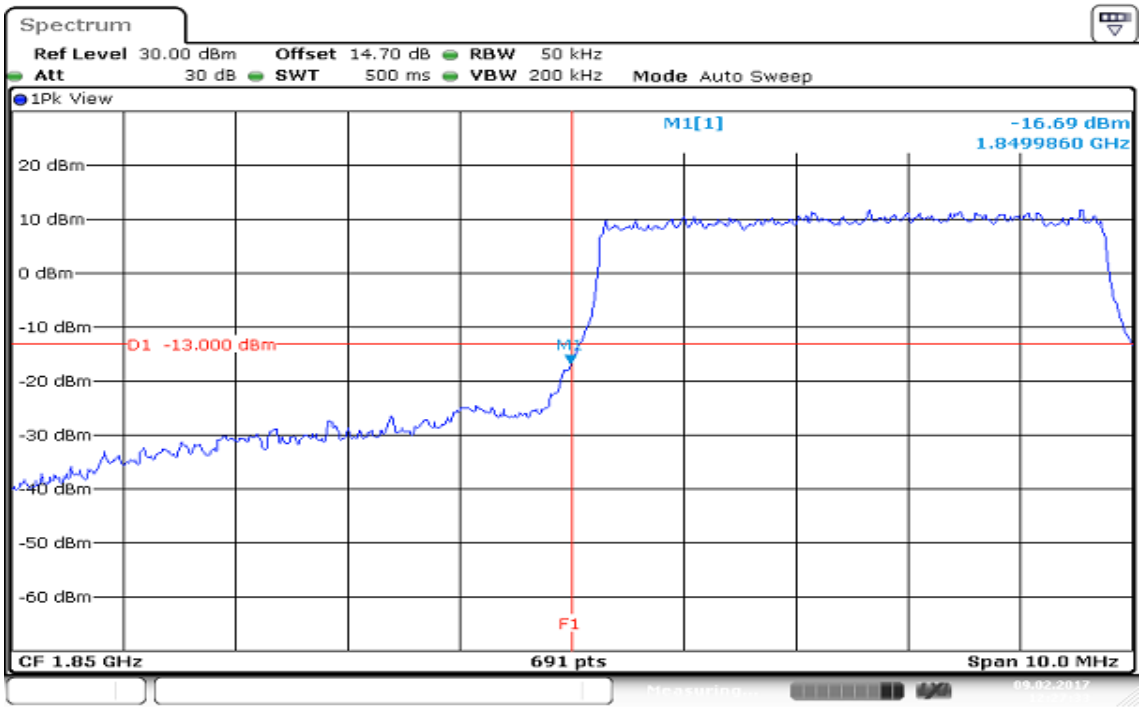
HIGHER BAND EDGE



Date: 9.FEB.2017 13:24:54

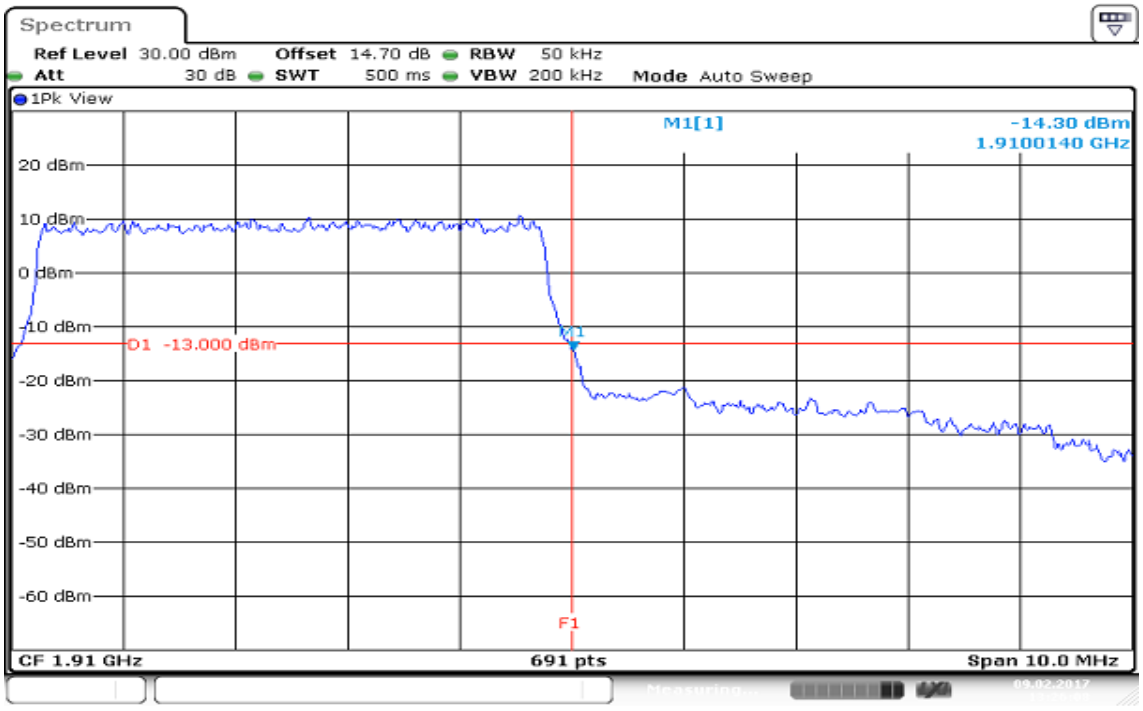
BW: 5MHz / 16QAM/ RB=25, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 12:27:34

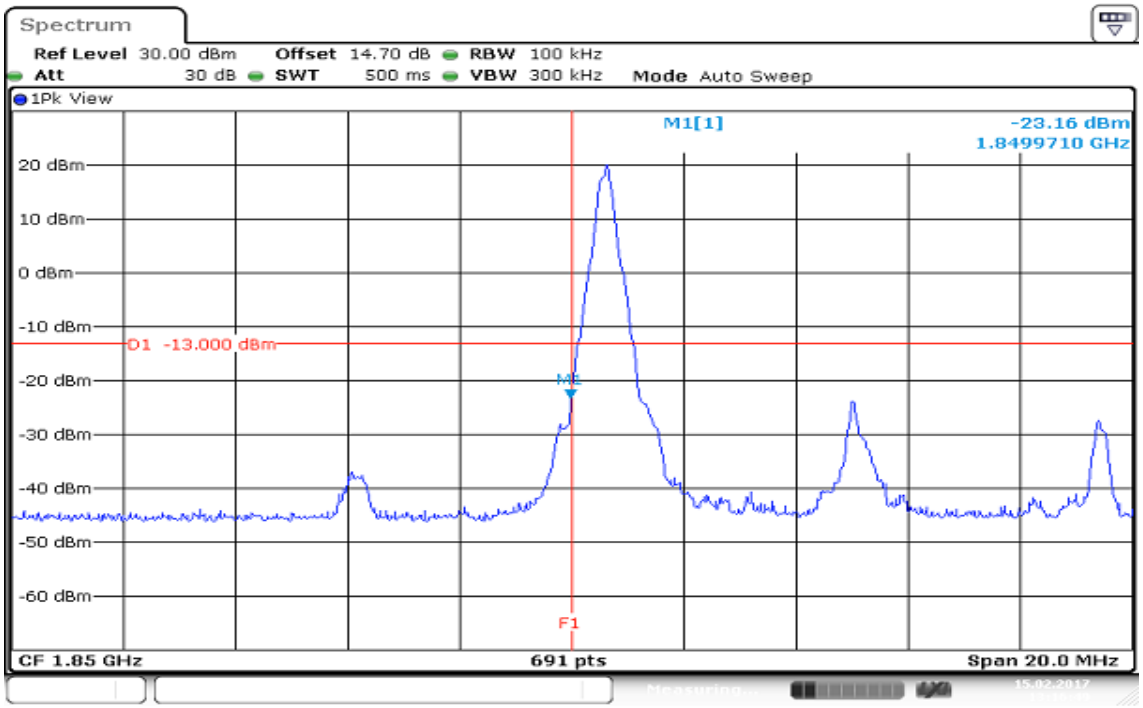
HIGHER BAND EDGE



Date: 9.FEB.2017 13:26:08

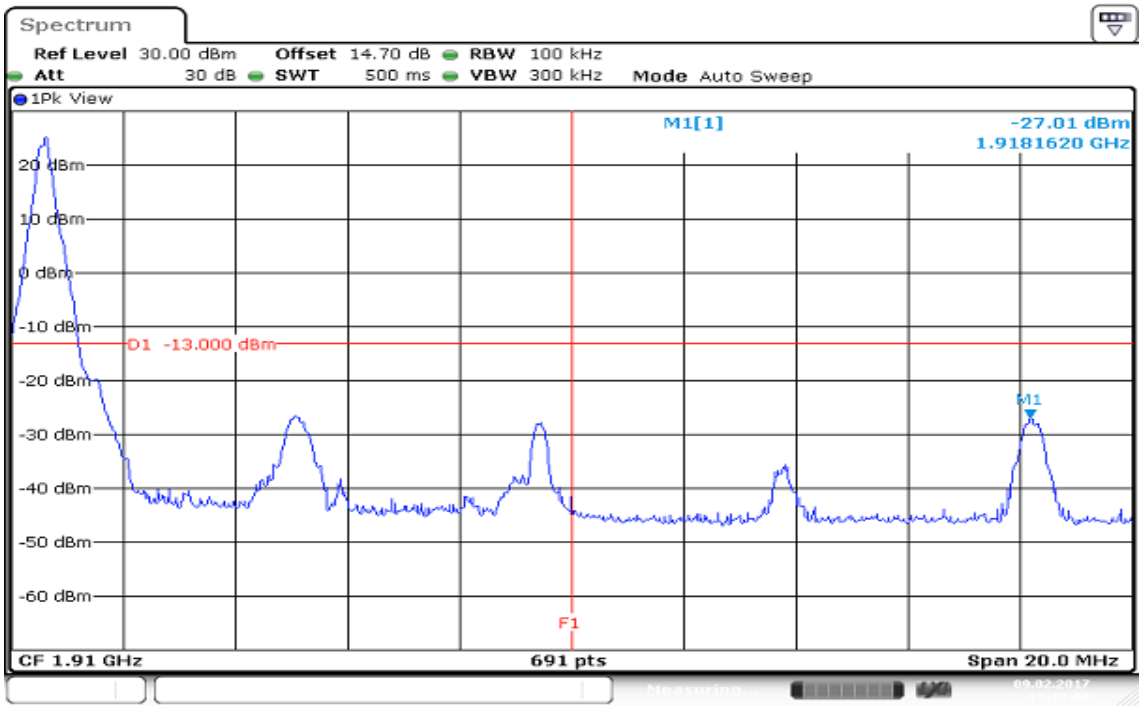
BW: 10MHz / 16QAM / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:16:50

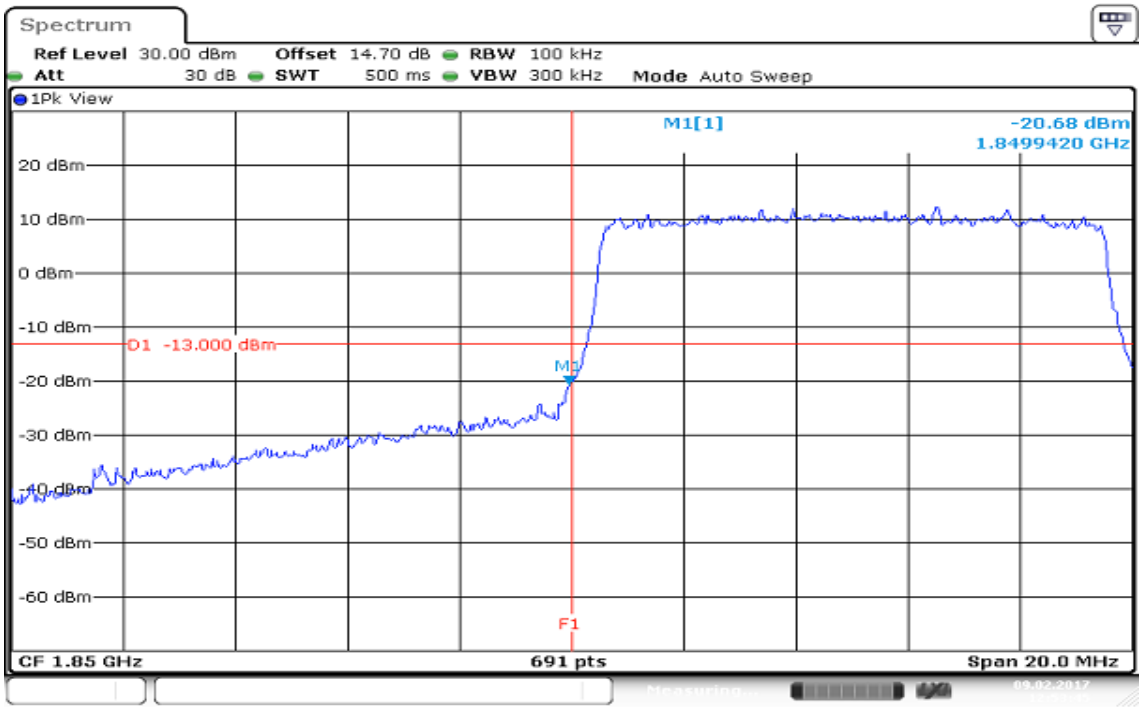
HIGHER BAND EDGE



Date: 9.FEB.2017 13:18:01

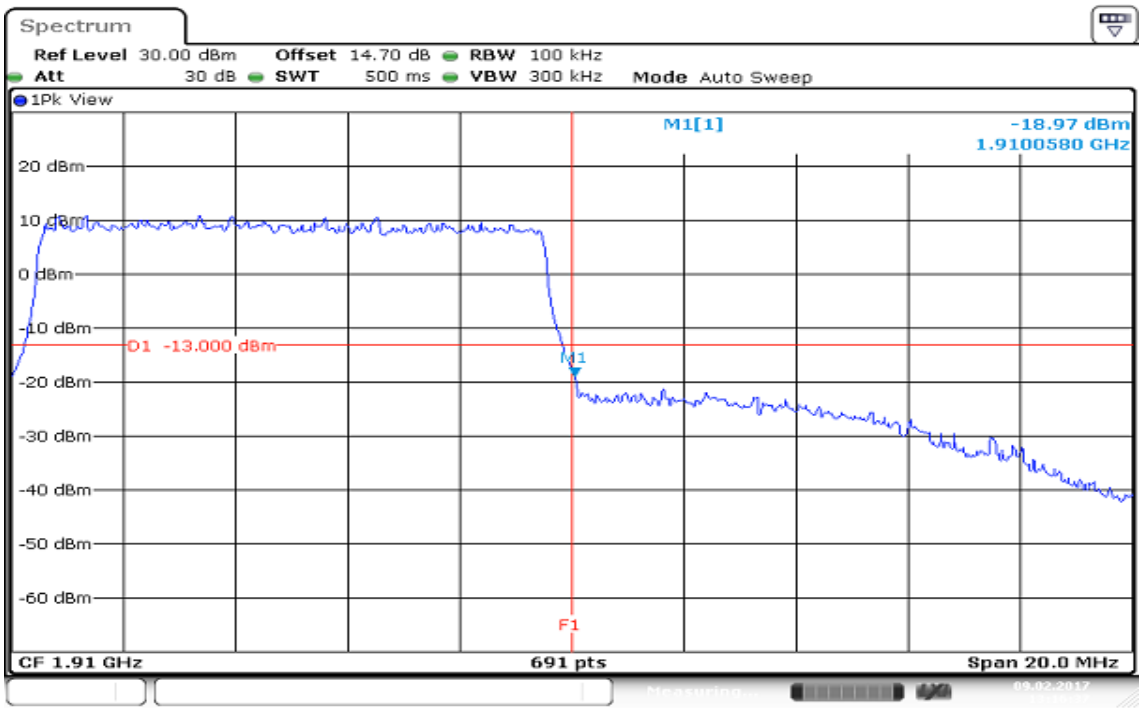
BW: 10MHz / 16QAM / RB=50, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 12:53:46

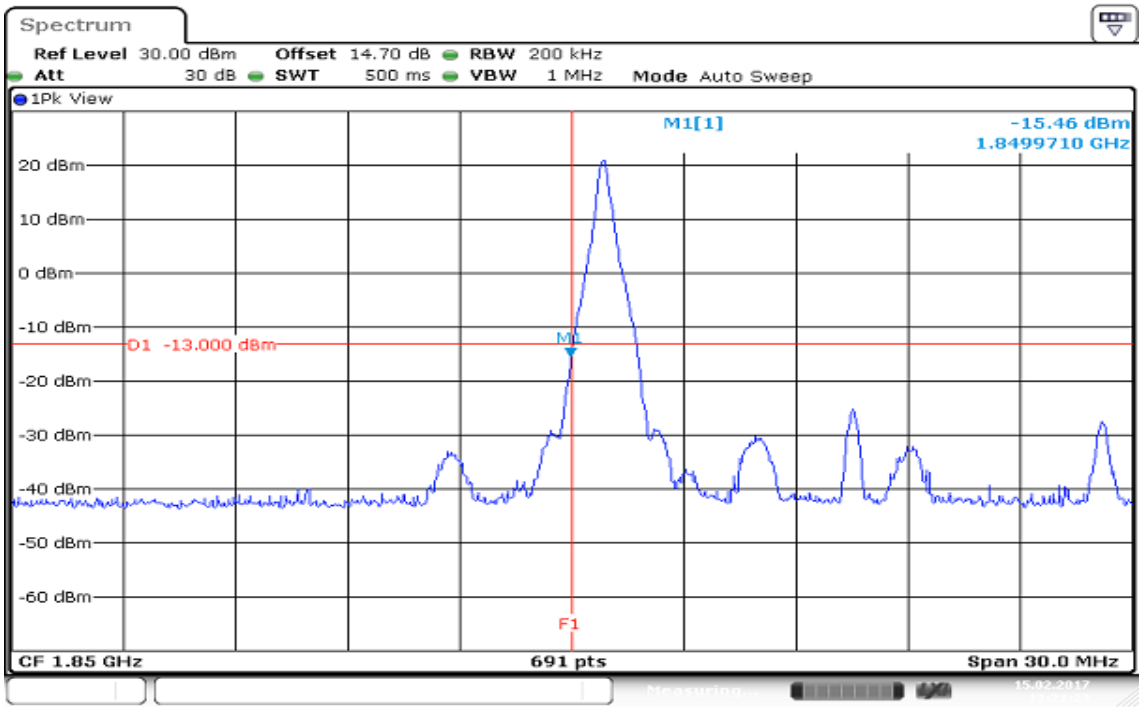
HIGHER BAND EDGE



Date: 9.FEB.2017 13:16:37

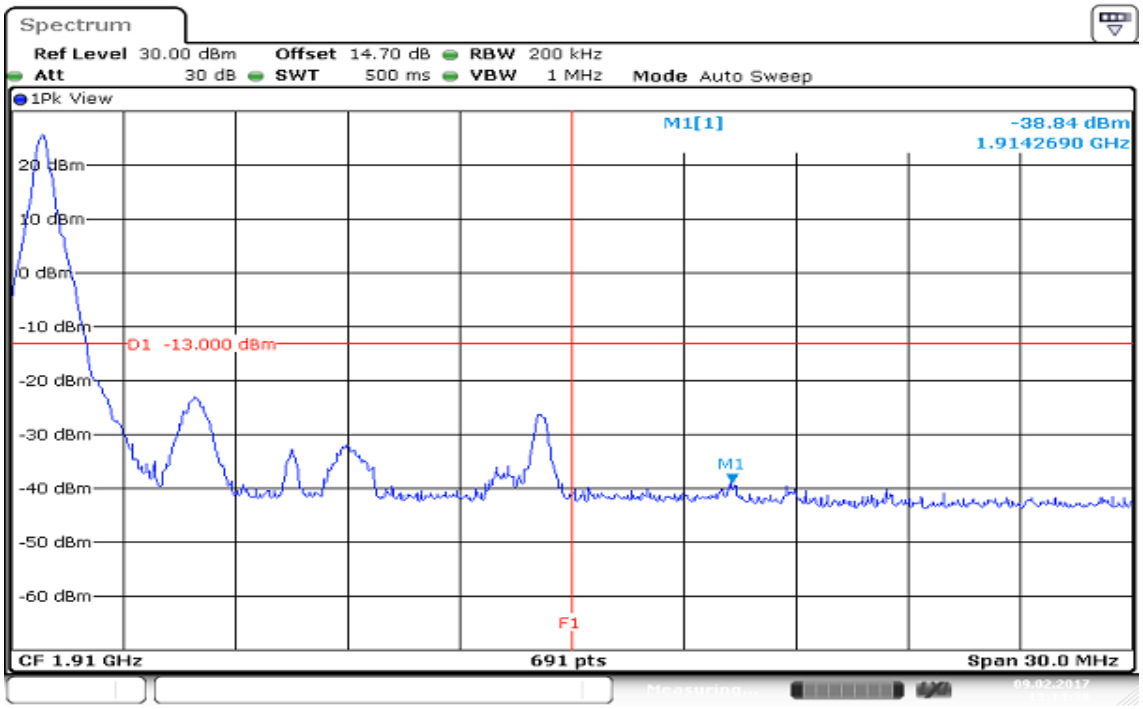
BW: 15MHz / 16QAM / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:21:23

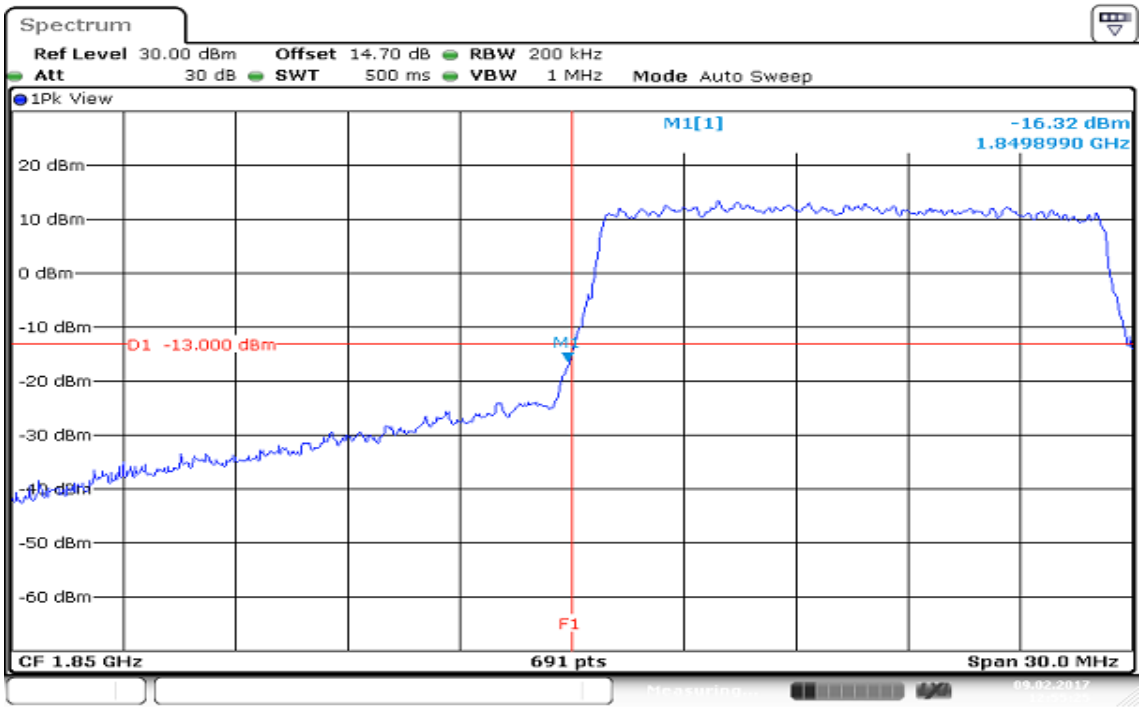
HIGHER BAND EDGE



Date: 9.FEB.2017 13:14:39

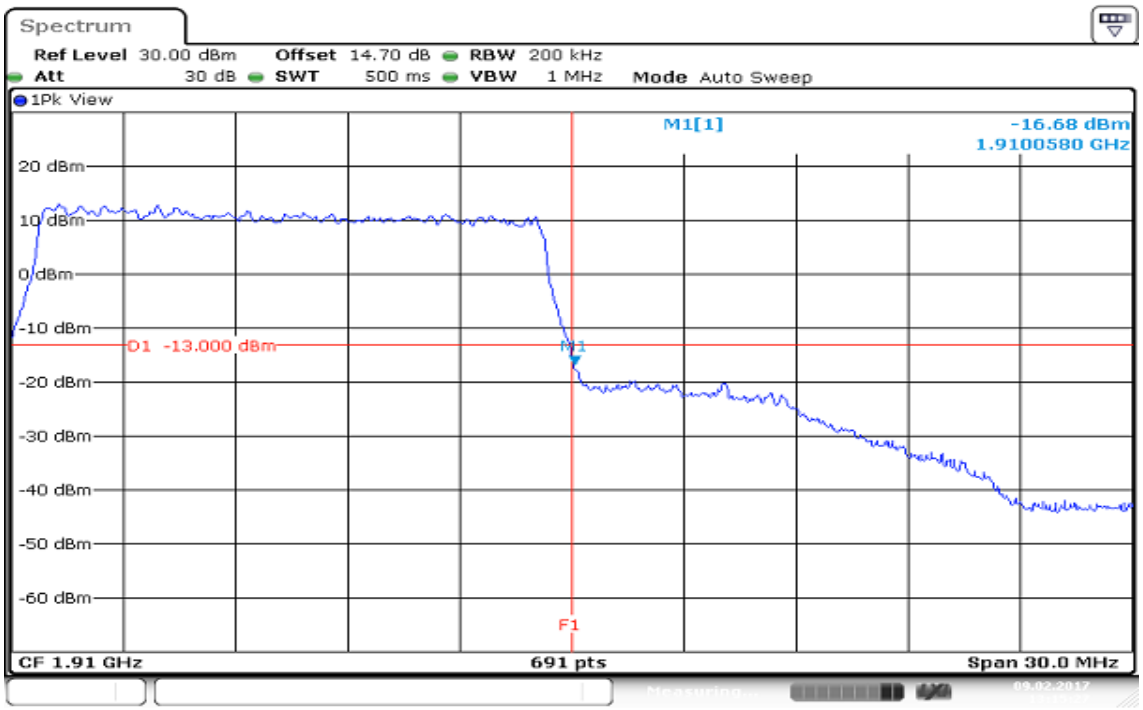
BW: 15MHz / 16QAM / RB=75, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 12:55:26

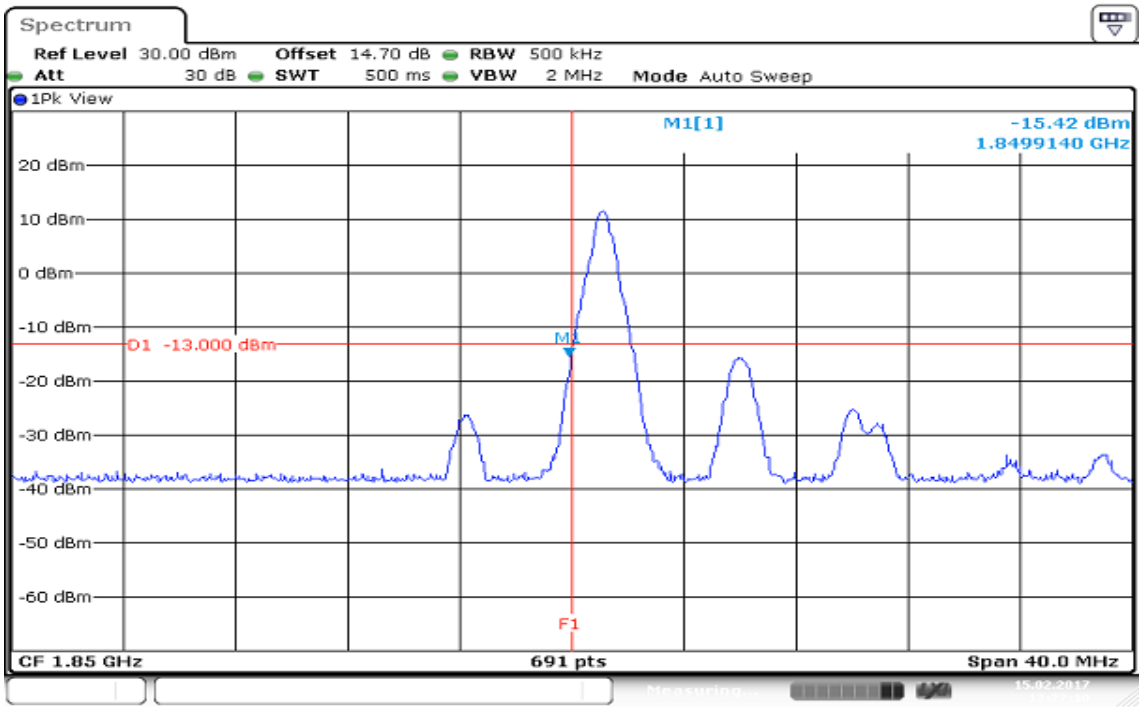
HIGHER BAND EDGE



Date: 9.FEB.2017 13:15:28

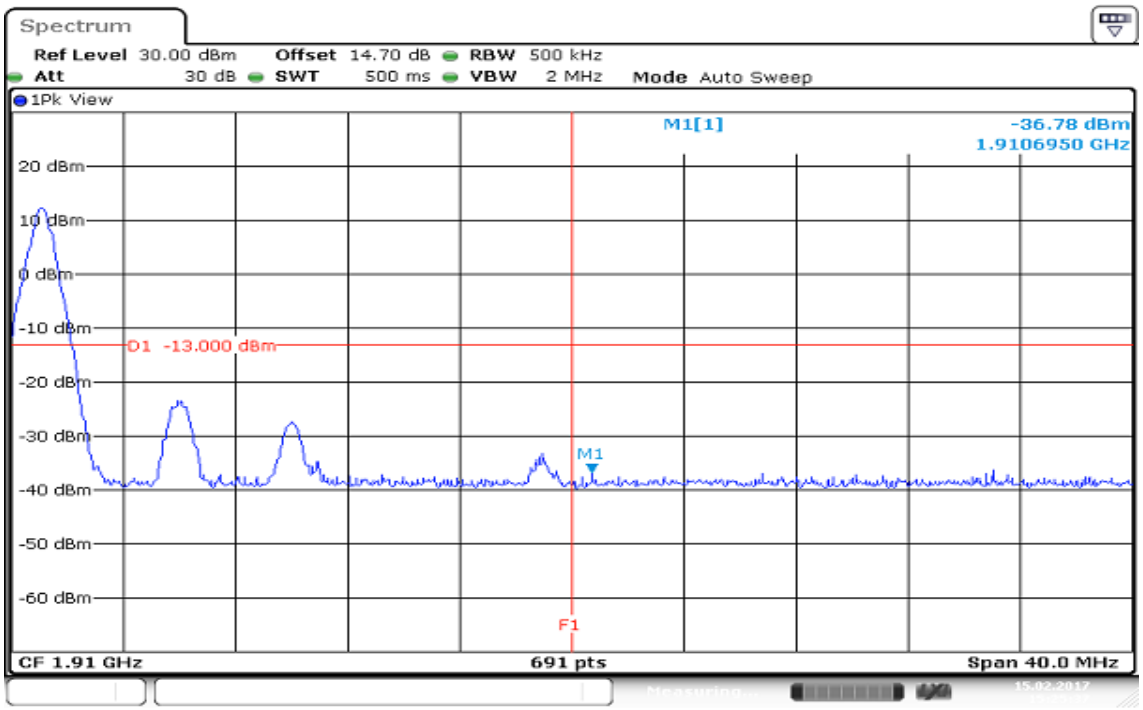
BW: 20MHz / 16QAM/ RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 13:27:10

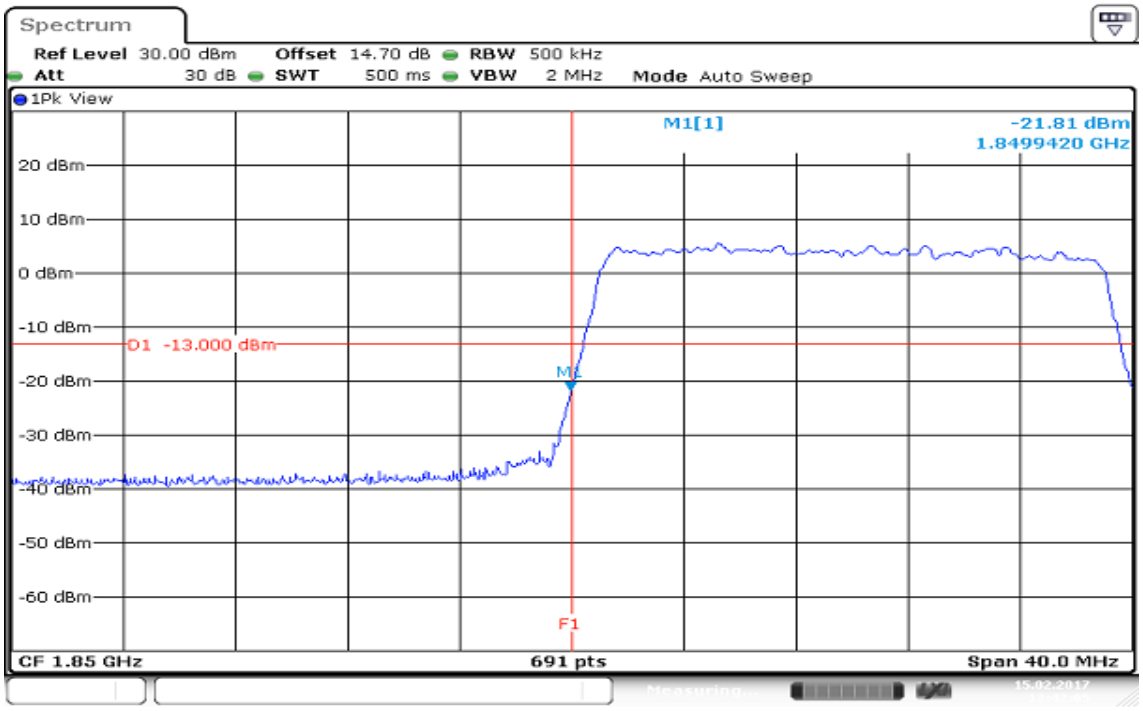
HIGHER BAND EDGE



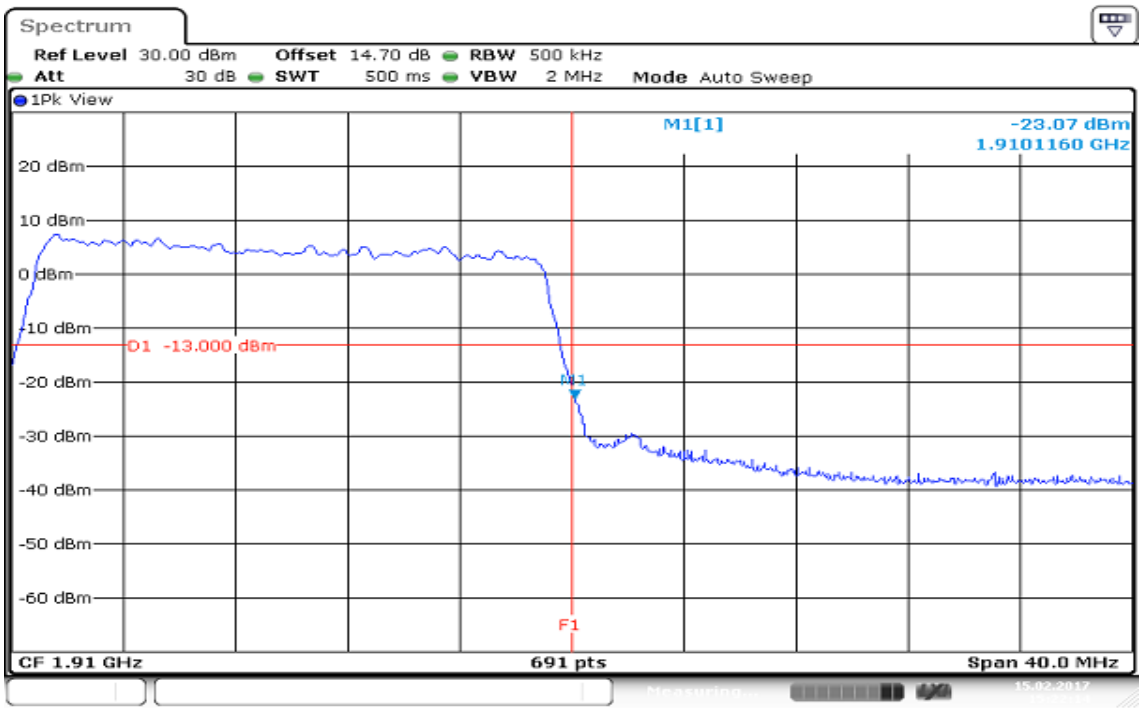
Date: 15.FEB.2017 15:25:37

BW: 20MHz / 16QAM / RB=100, RB Offset = 0

LOWER BAND EDGE



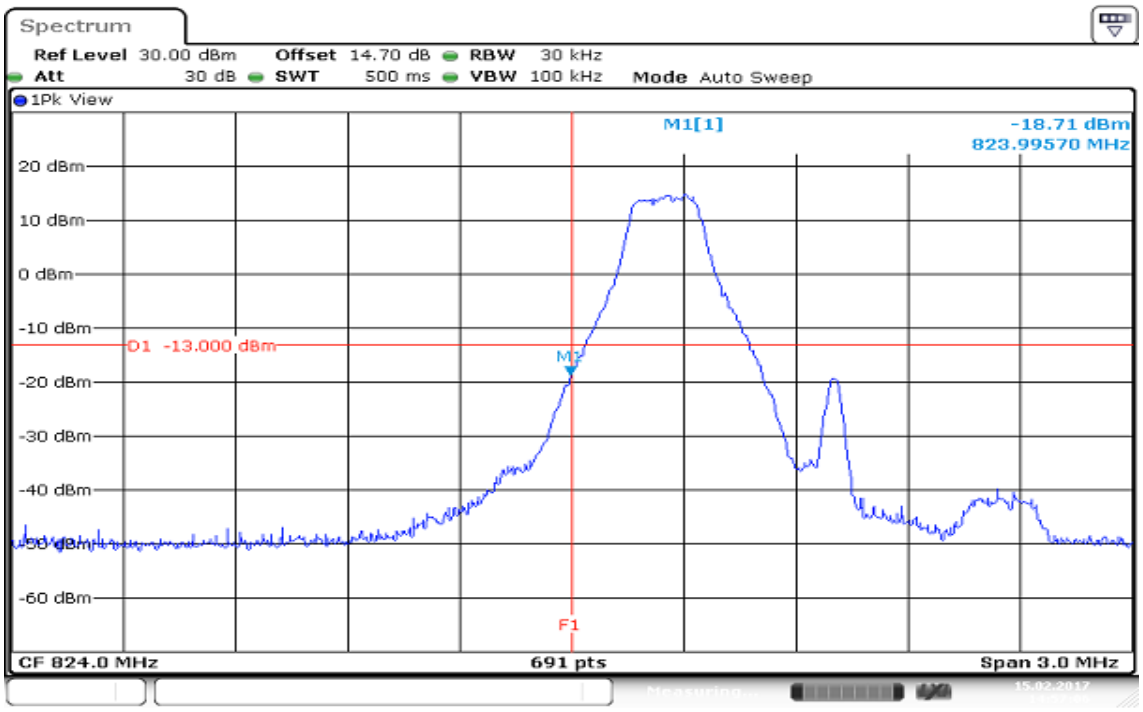
HIGHER BAND EDGE



LTE Band 5

BW: 1.4MHz / QPSK / RB= 1, RB Offset = 0

LOWER BAND EDGE



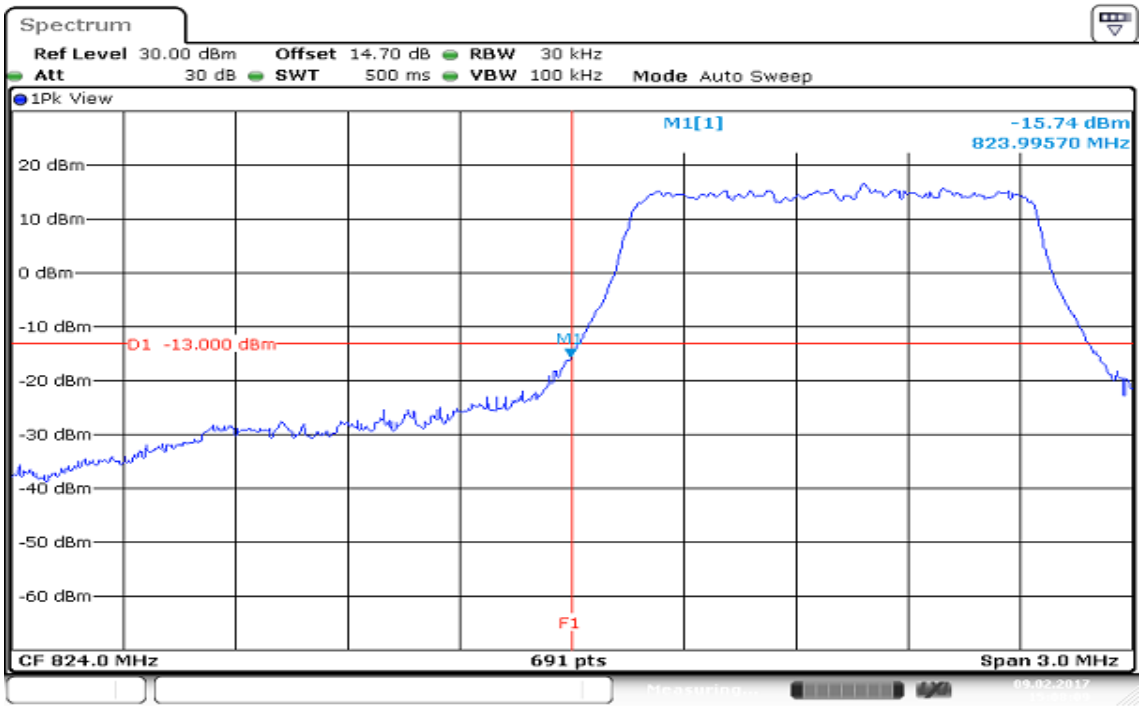
Date: 15.FEB.2017 14:57:07

HIGHER BAND EDGE

Date: 9.FEB.2017 15:42:04

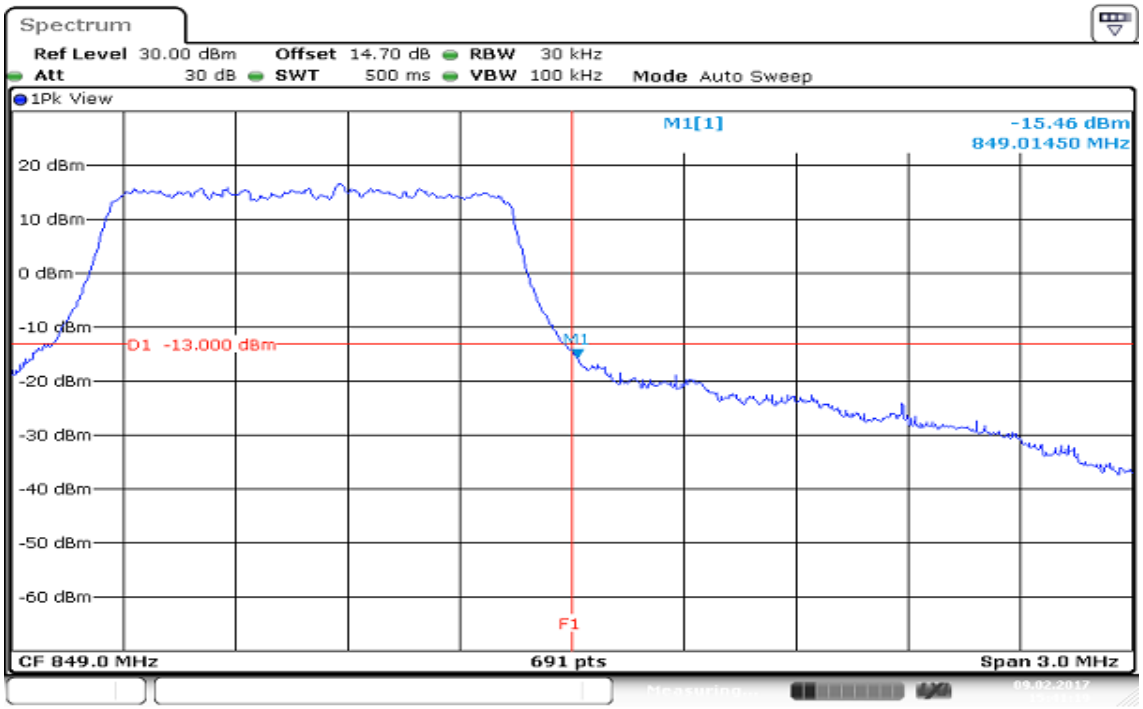
BW:1.4MHz / QPSK / RB= 6, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:08:10

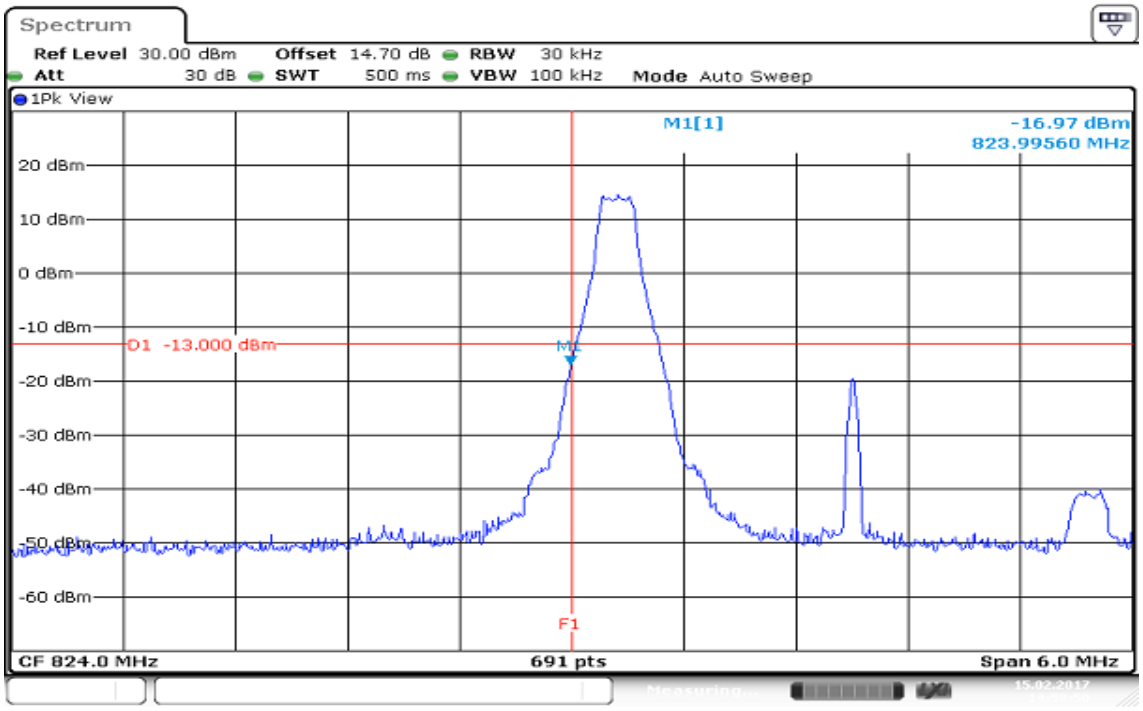
HIGHER BAND EDGE



Date: 9.FEB.2017 15:41:19

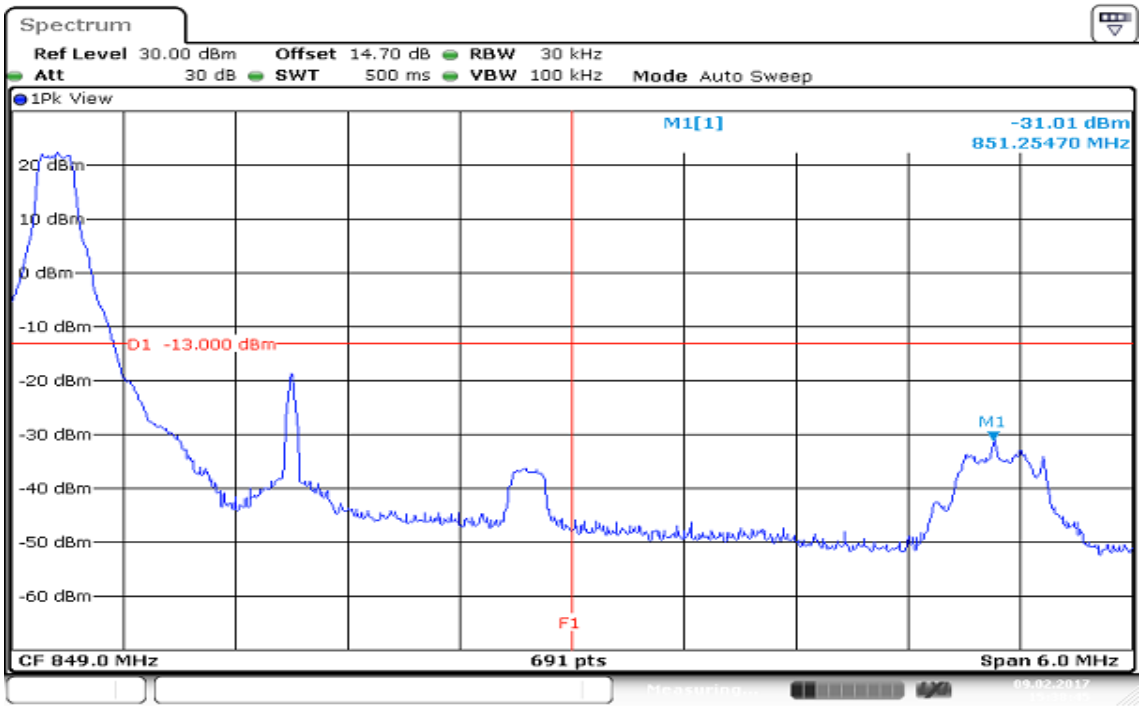
BW: 3MHz / QPSK / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 14:58:50

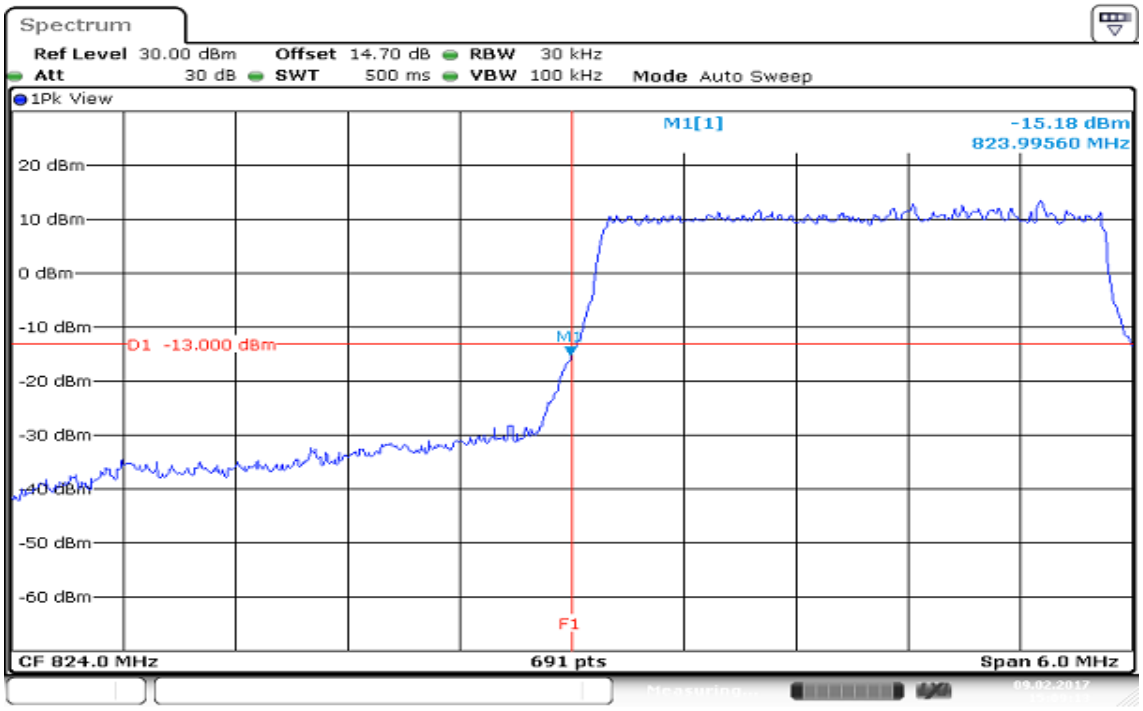
HIGHER BAND EDGE



Date: 9.FEB.2017 15:38:45

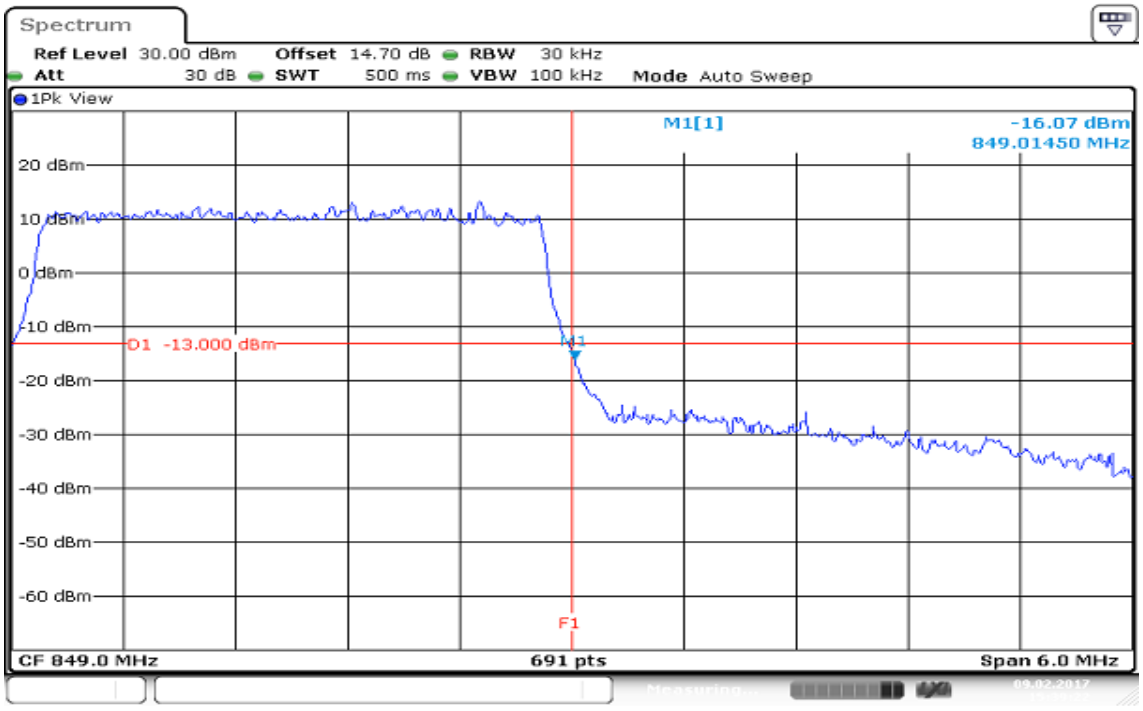
BW:3MHz / QPSK / RB= 15, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:09:14

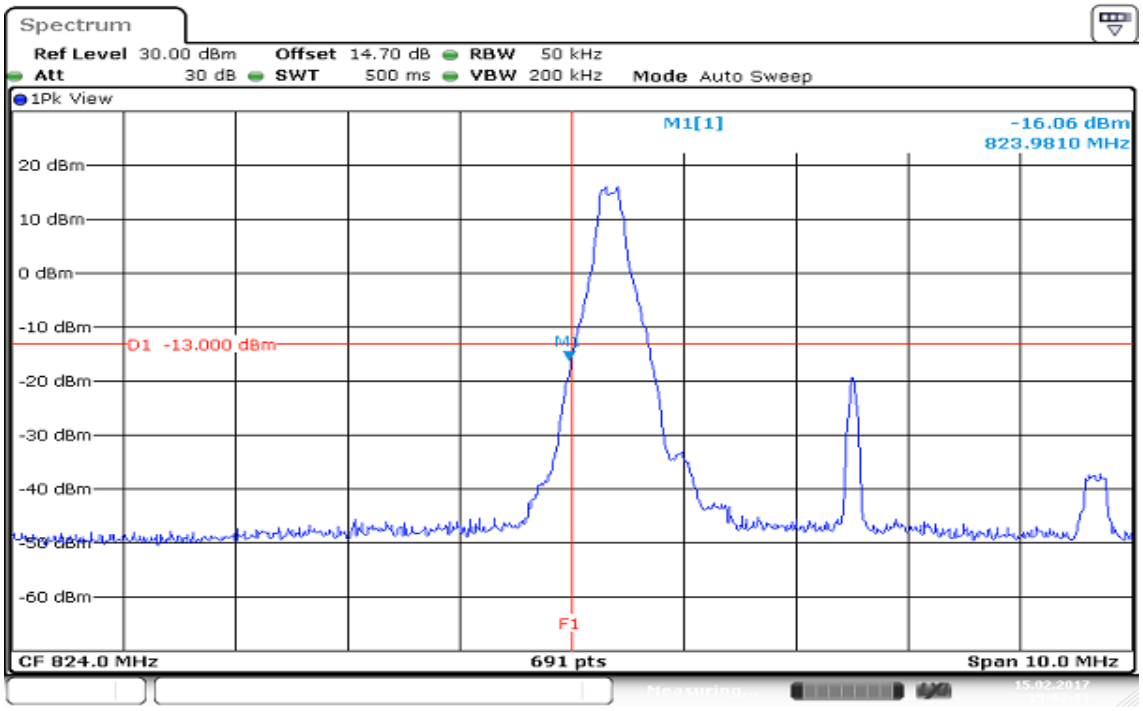
HIGHER BAND EDGE



Date: 9.FEB.2017 15:39:23

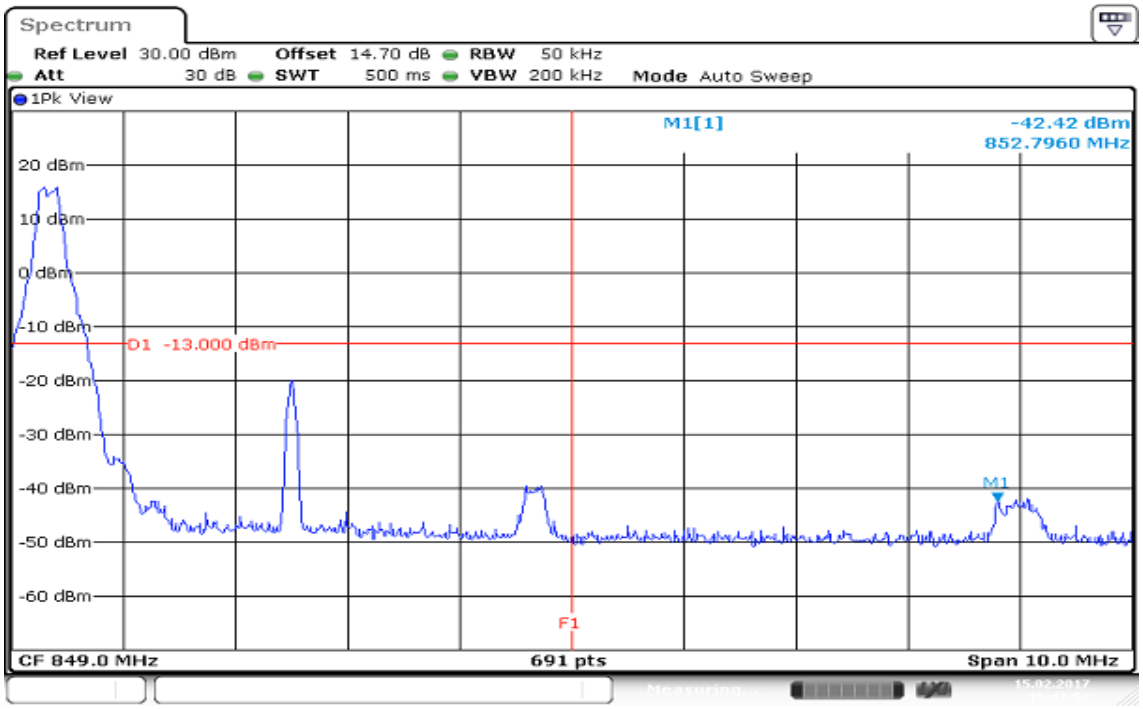
BW: 5MHz / QPSK / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 15:02:14

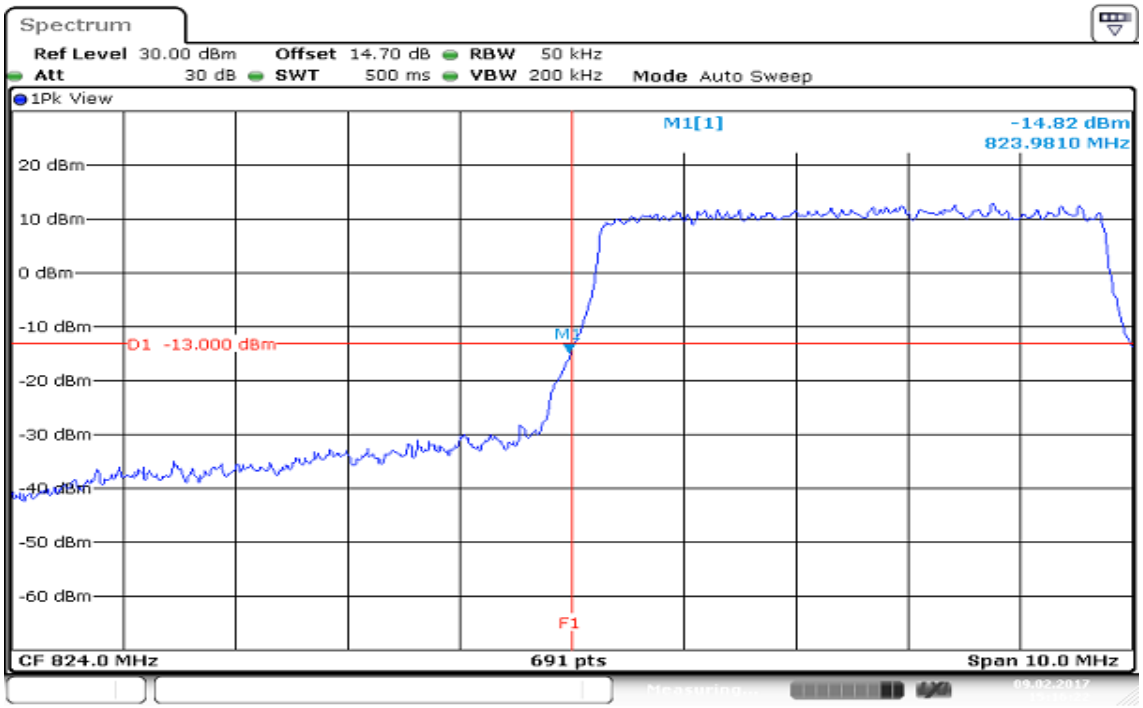
HIGHER BAND EDGE



Date: 15.FEB.2017 15:47:52

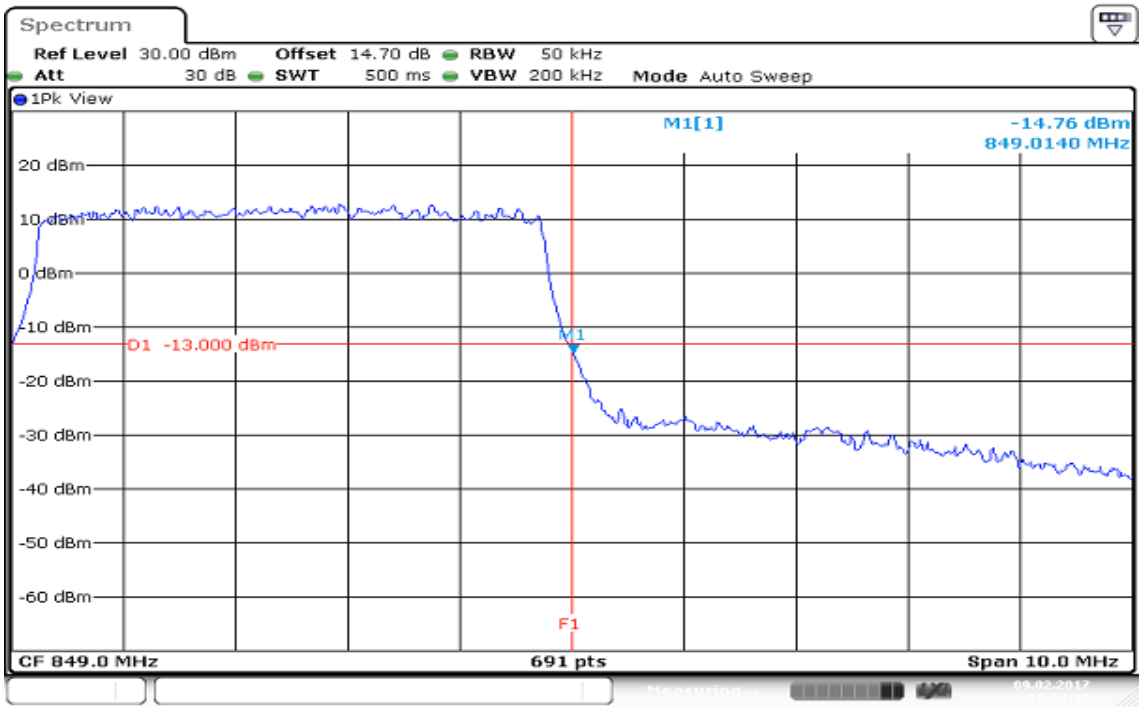
BW:5MHz / QPSK / RB= 25, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:16:22

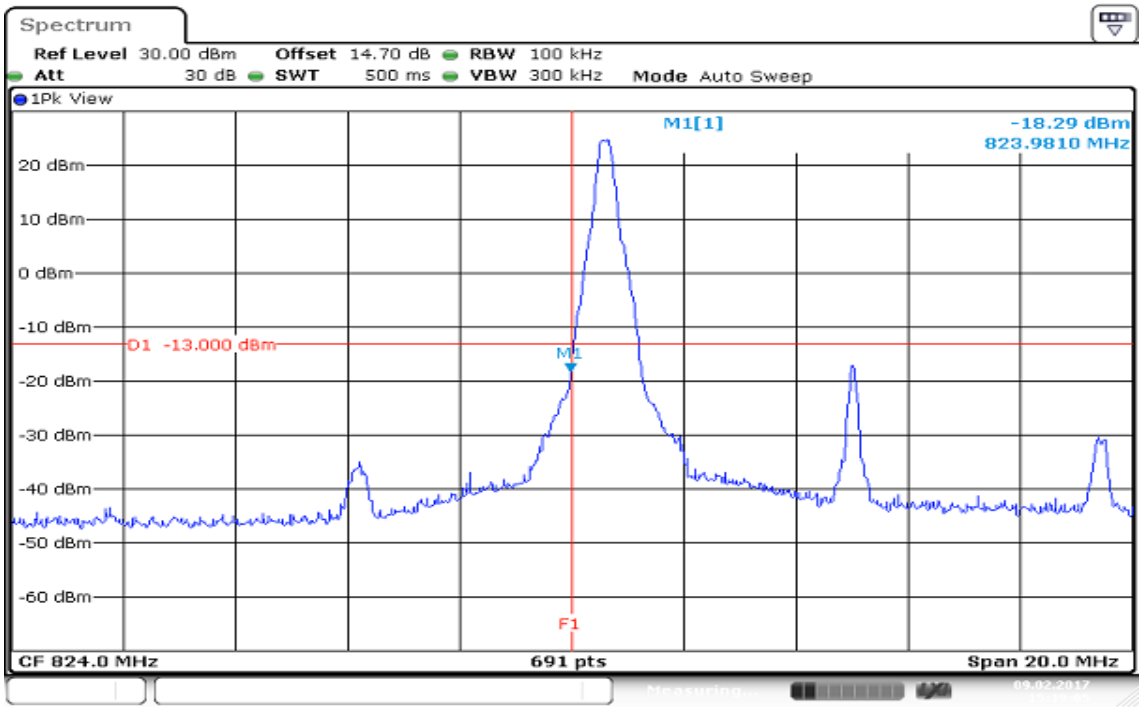
HIGHER BAND EDGE



Date: 9.FEB.2017 15:33:17

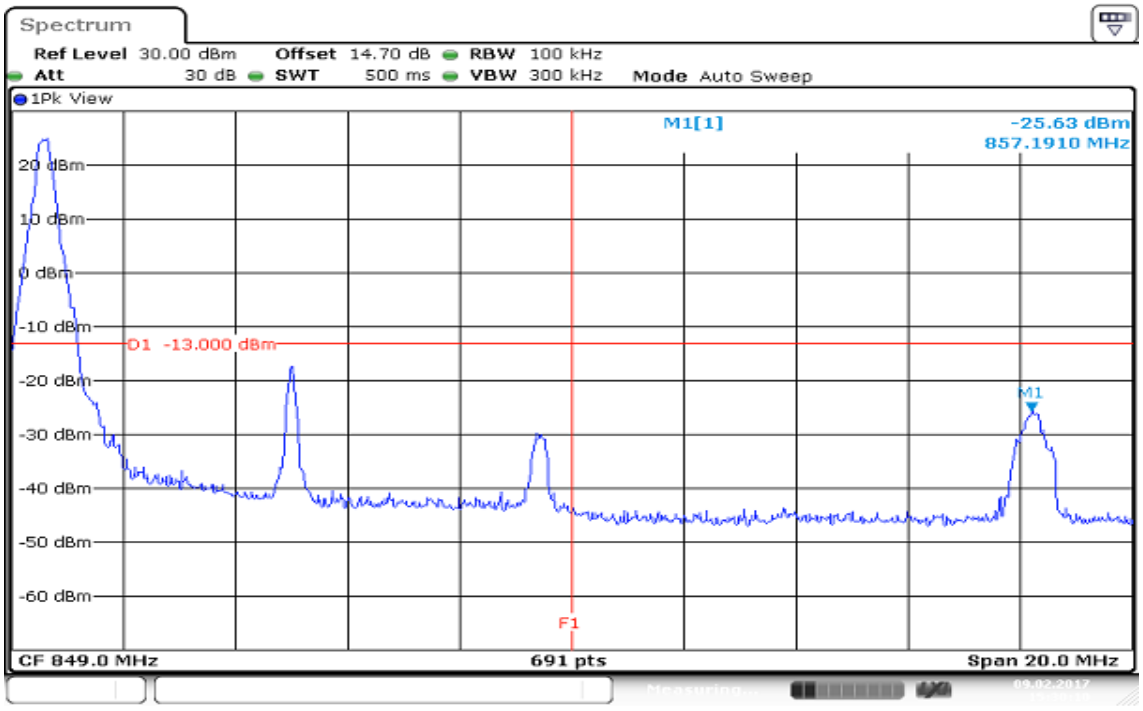
BW: 10MHz / QPSK / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:19:05

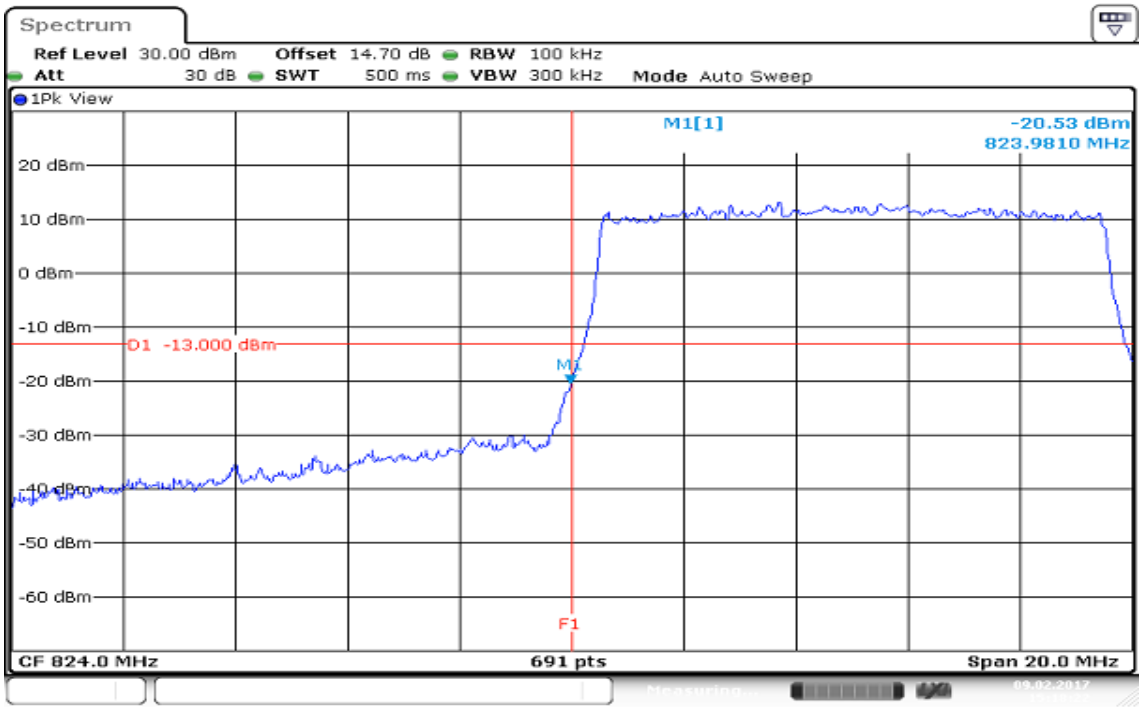
HIGHER BAND EDGE



Date: 9.FEB.2017 15:30:10

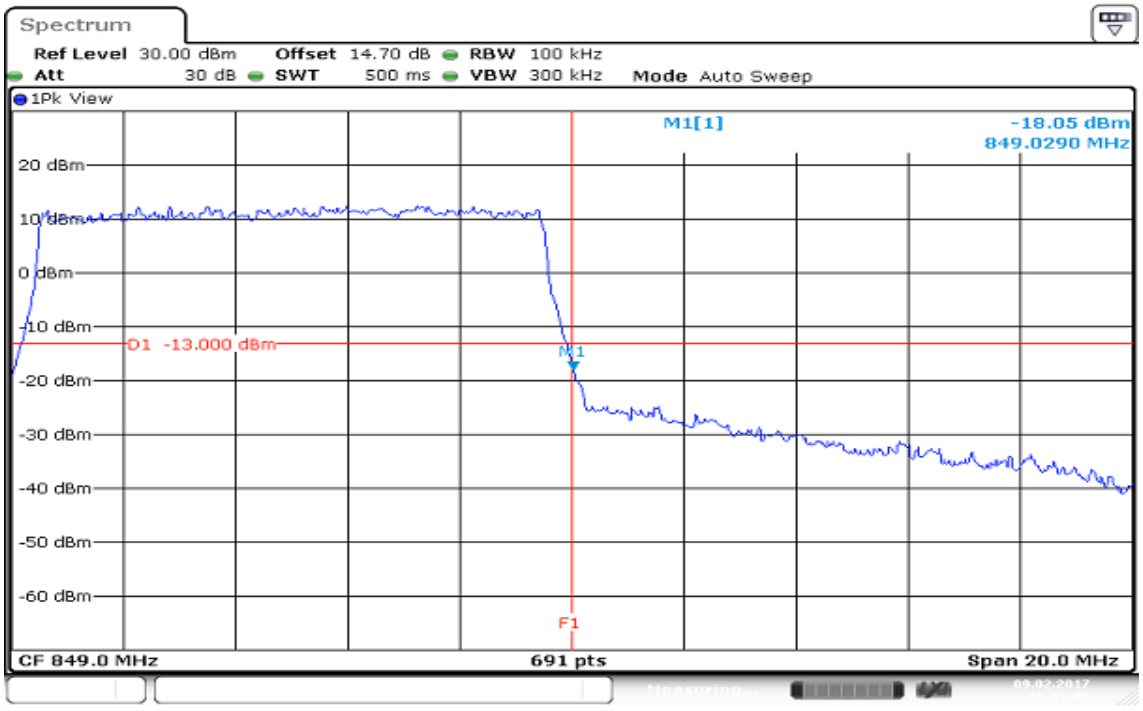
BW:10MHz / QPSK / RB= 50, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:18:22

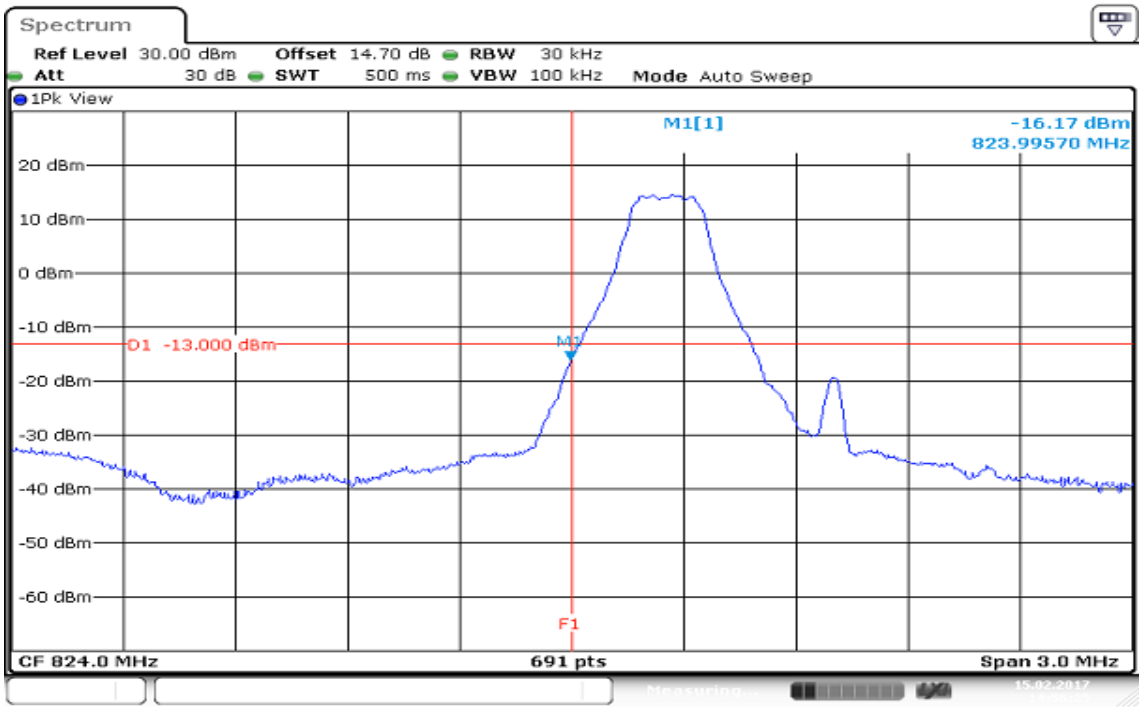
HIGHER BAND EDGE



Date: 9.FEB.2017 15:31:06

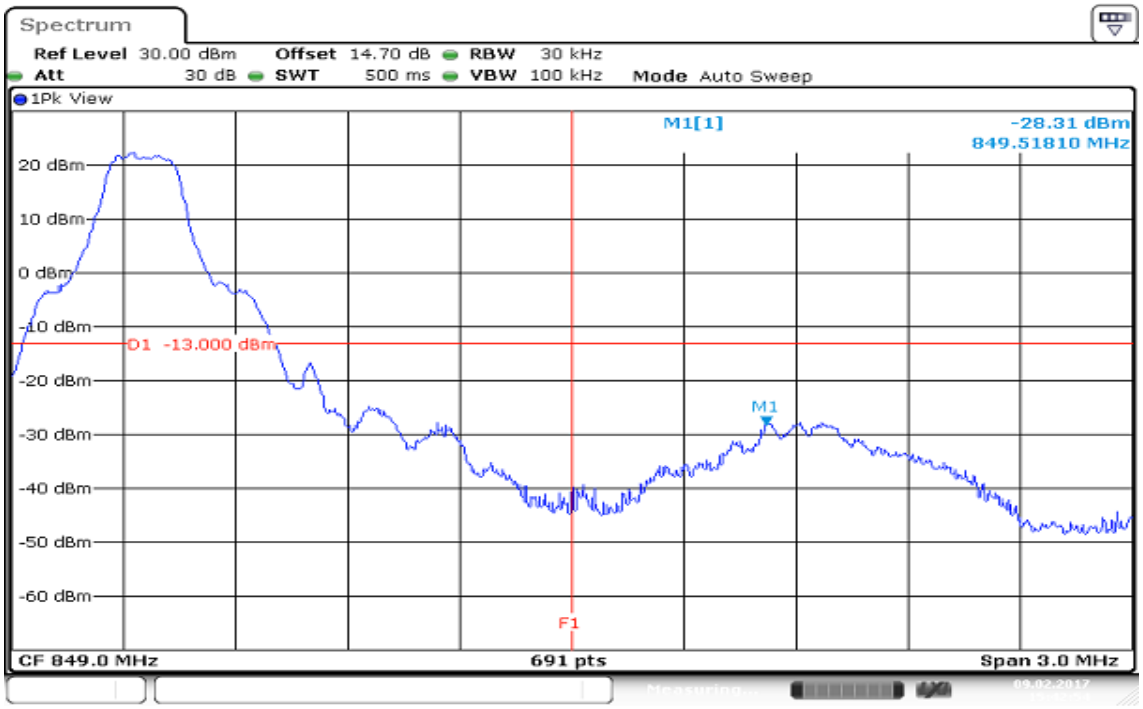
BW: 1.4MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 14:56:25

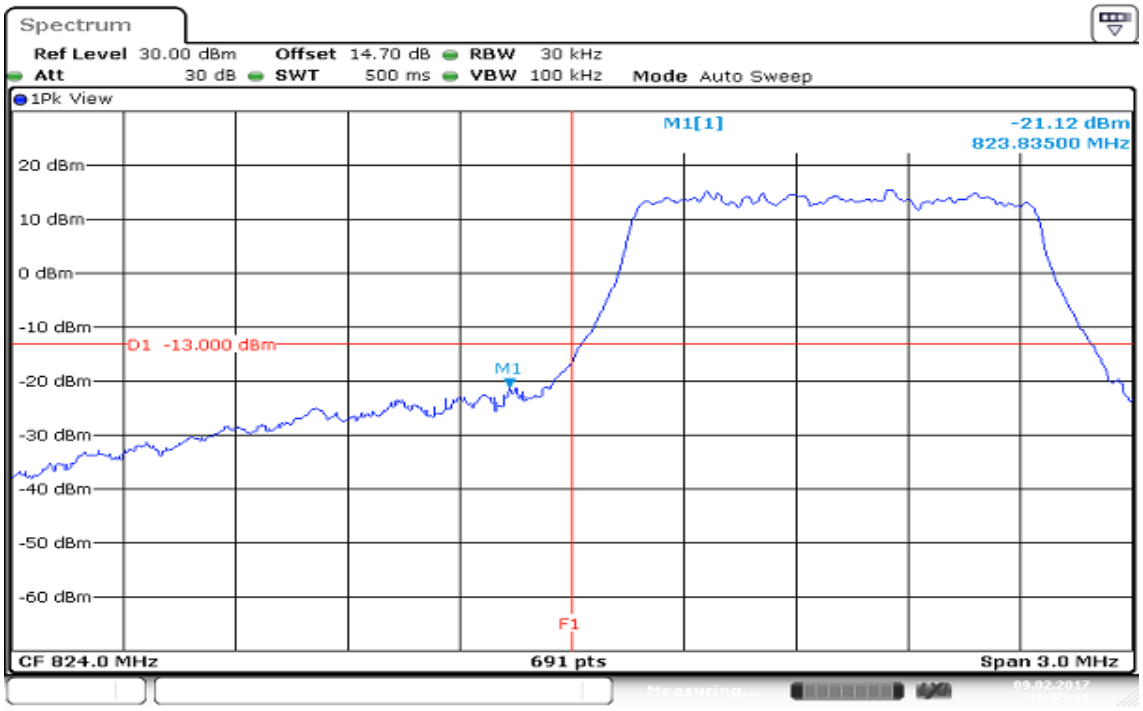
HIGHER BAND EDGE



Date: 9.FEB.2017 15:42:55

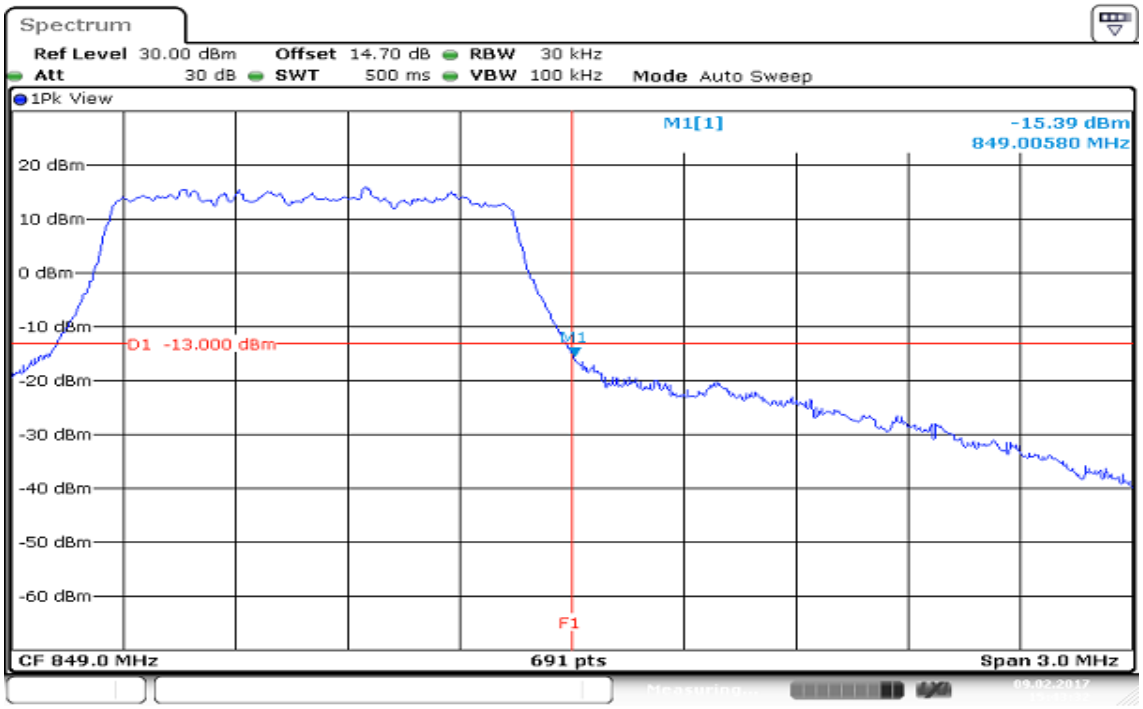
BW:1.4MHz / 16QAM / RB= 6, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:05:22

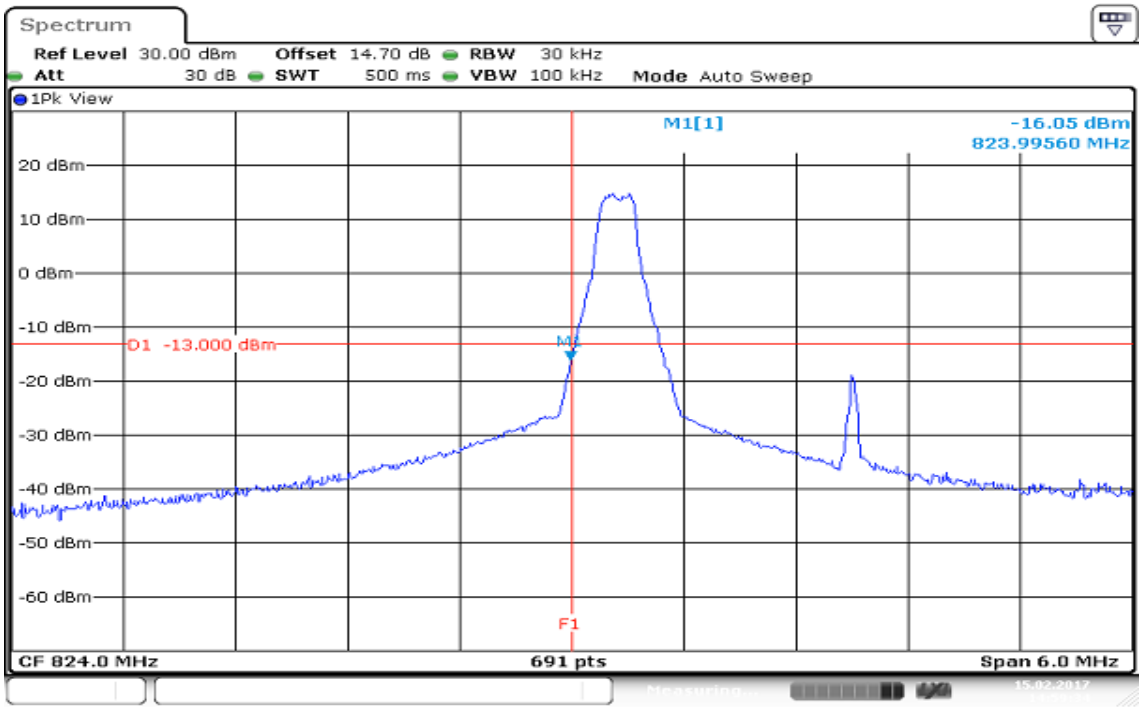
HIGHER BAND EDGE



Date: 9.FEB.2017 15:43:32

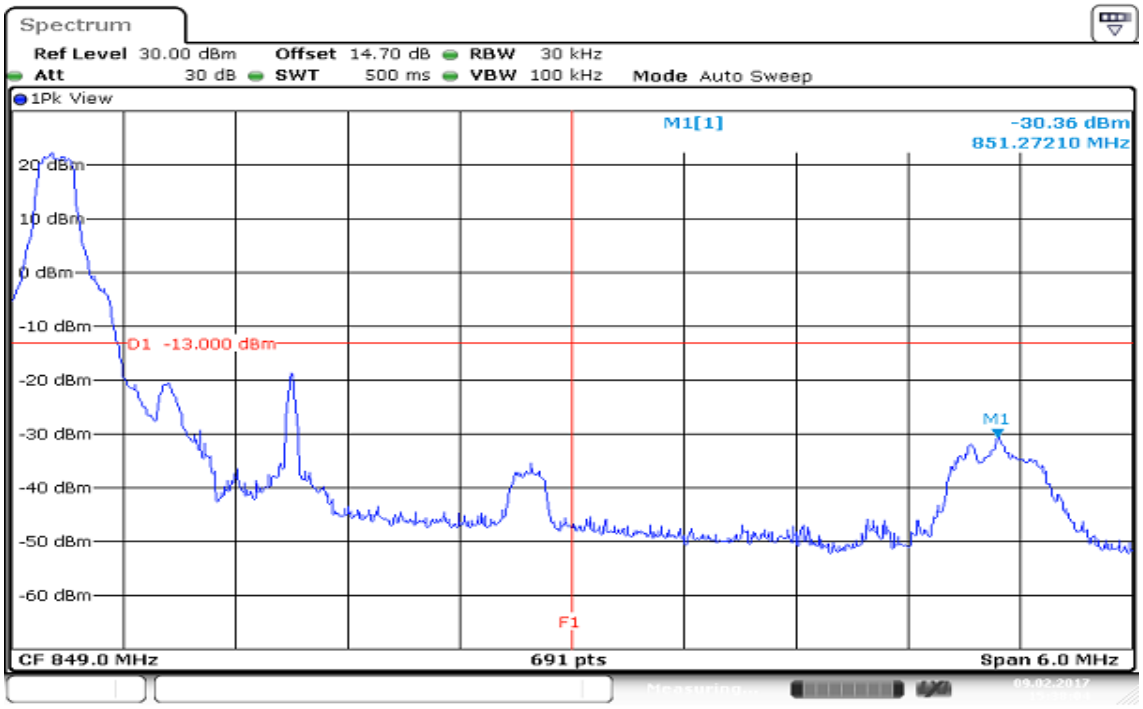
BW: 3MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 14:59:34

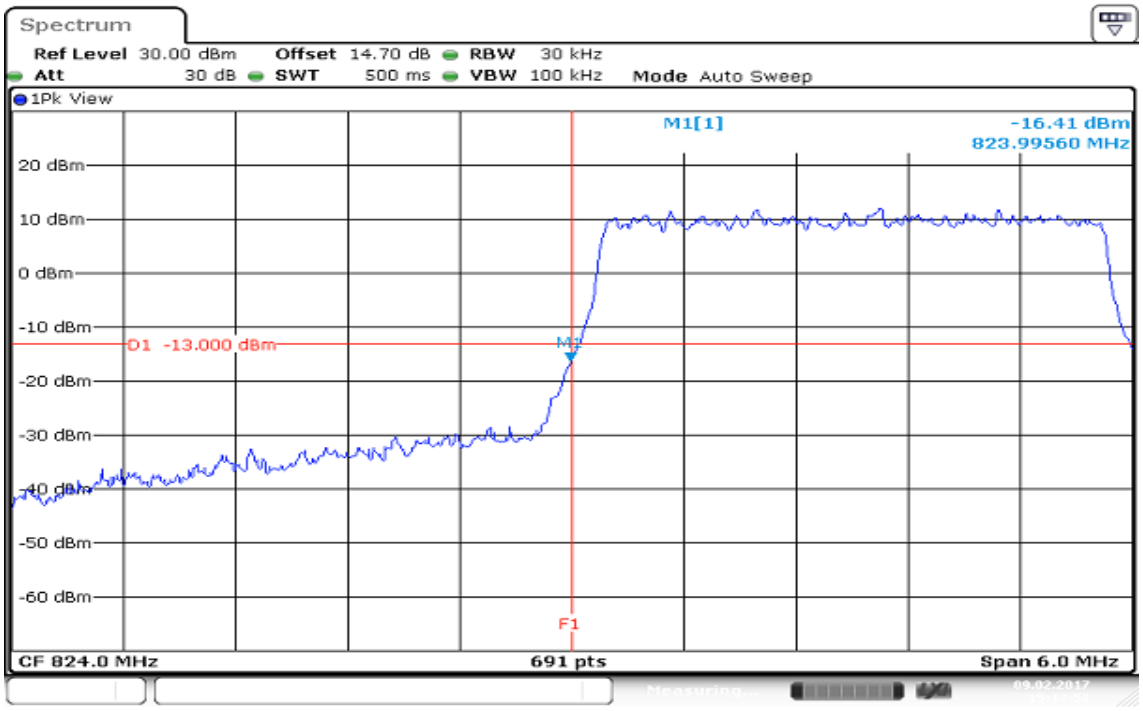
HIGHER BAND EDGE



Date: 9.FEB.2017 15:38:05

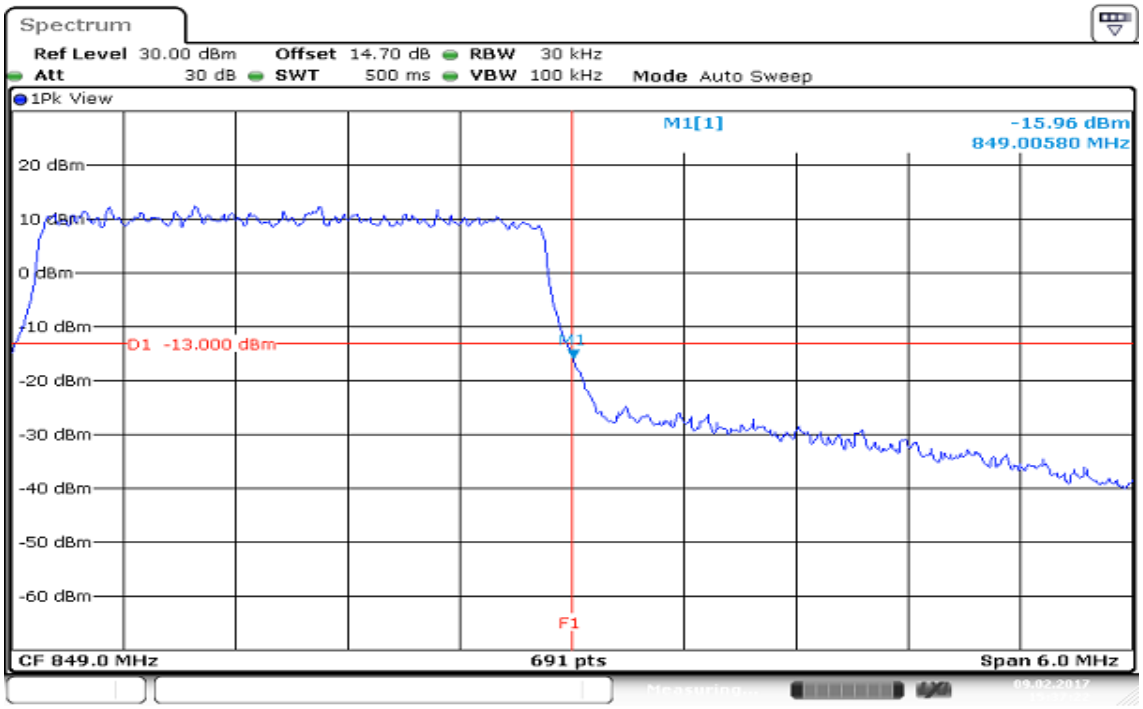
BW:3MHz / 16QAM / RB= 15, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:12:53

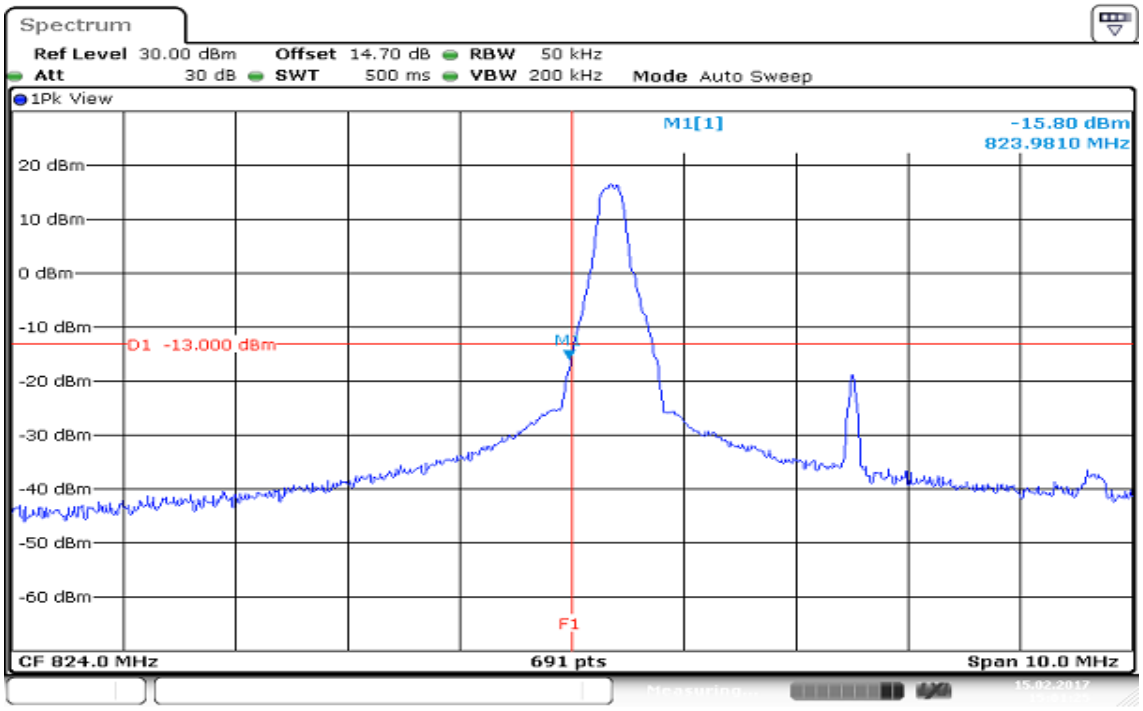
HIGHER BAND EDGE



Date: 9.FEB.2017 15:37:22

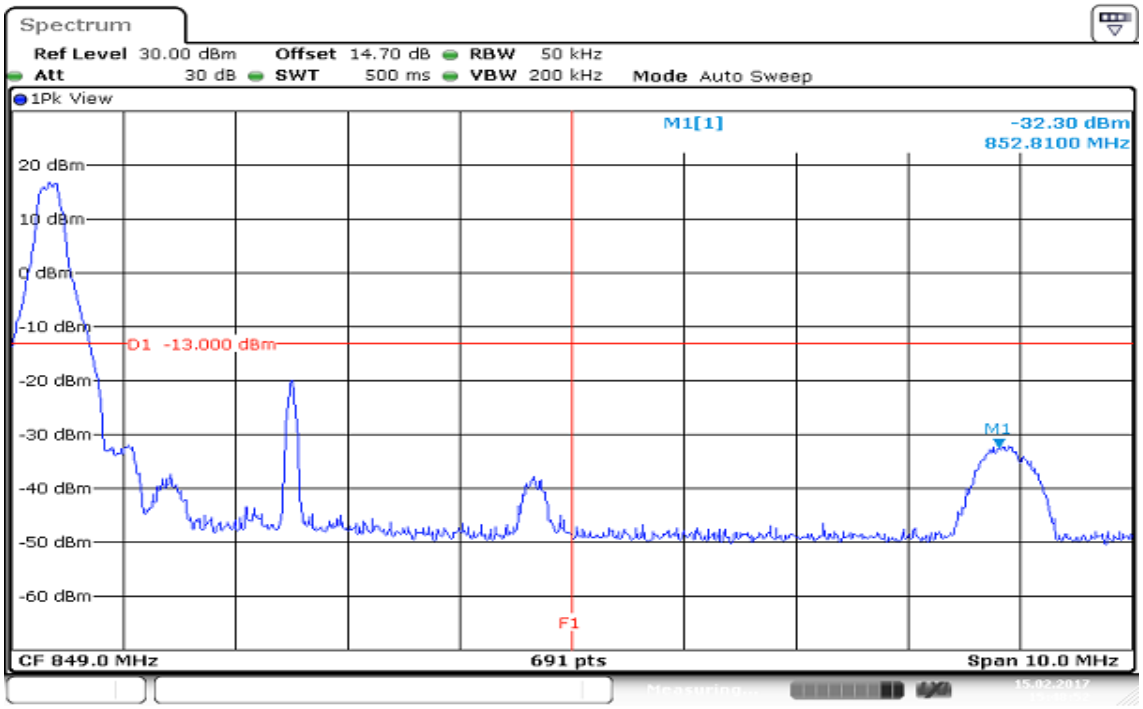
BW: 5MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 15.FEB.2017 15:01:25

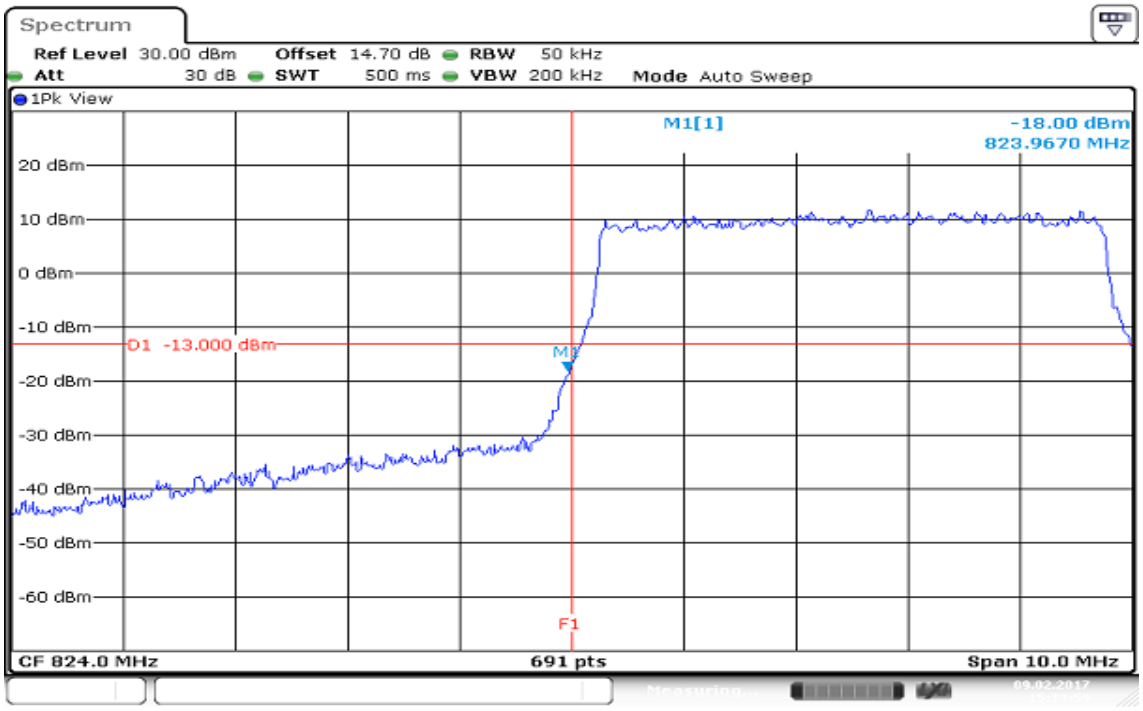
HIGHER BAND EDGE



Date: 15.FEB.2017 15:48:52

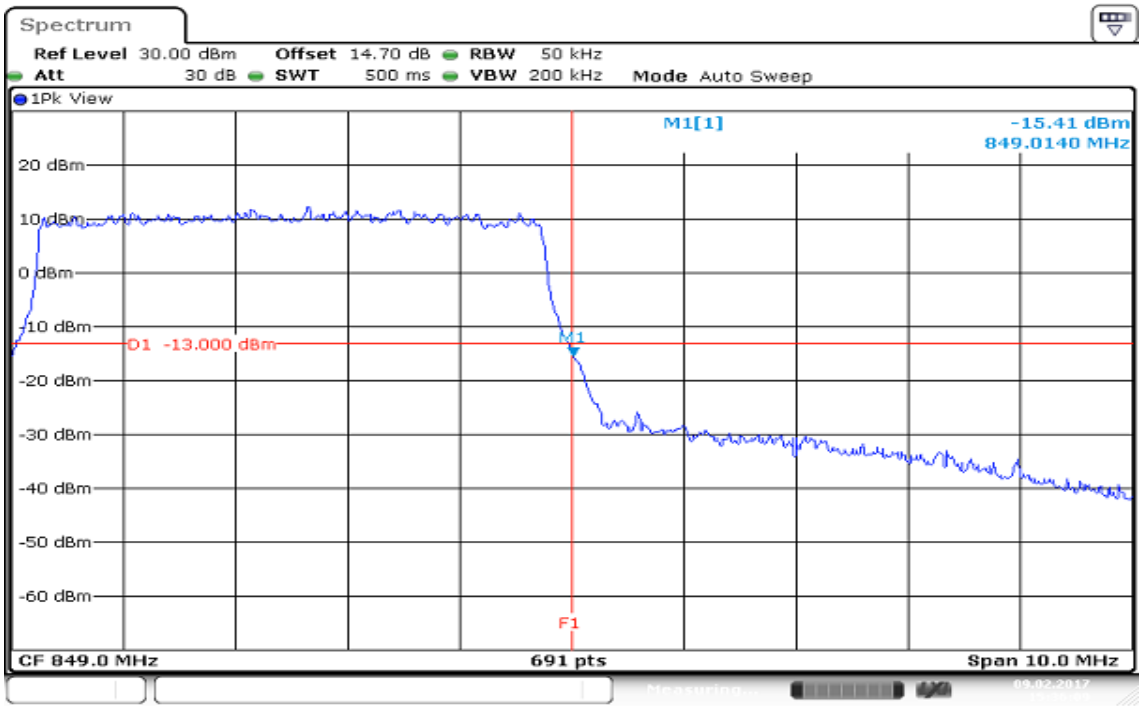
BW:5MHz / 16QAM / RB= 25, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:14:00

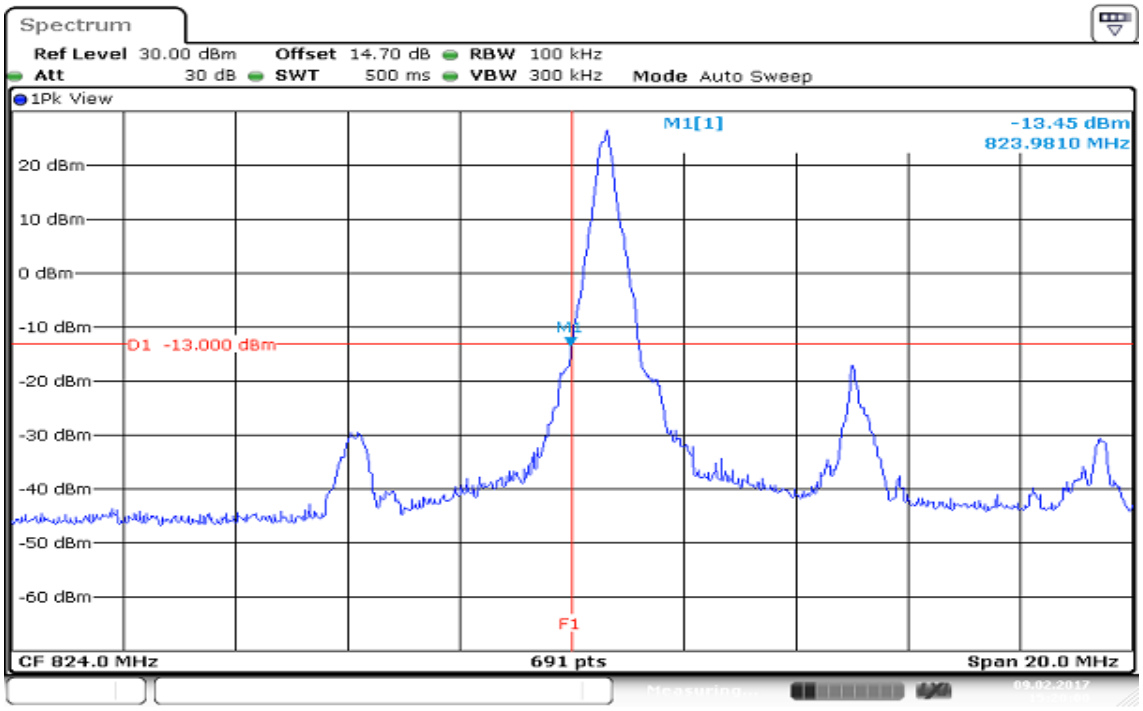
HIGHER BAND EDGE



Date: 9.FEB.2017 15:36:10

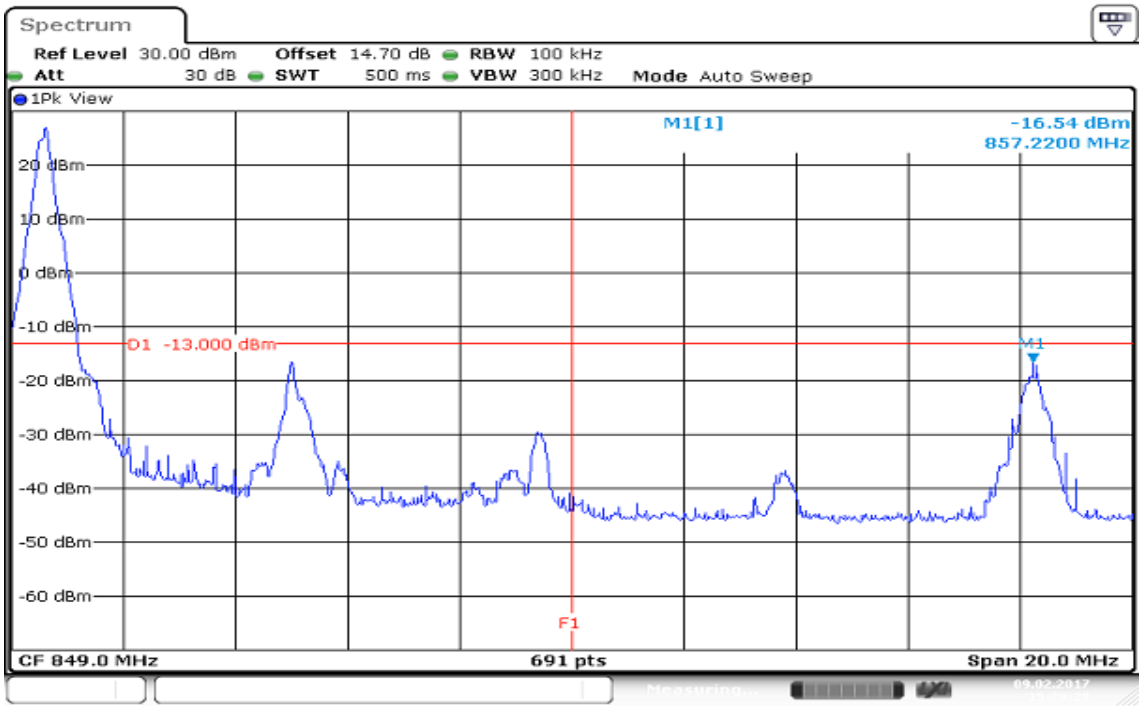
BW: 10MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:20:00

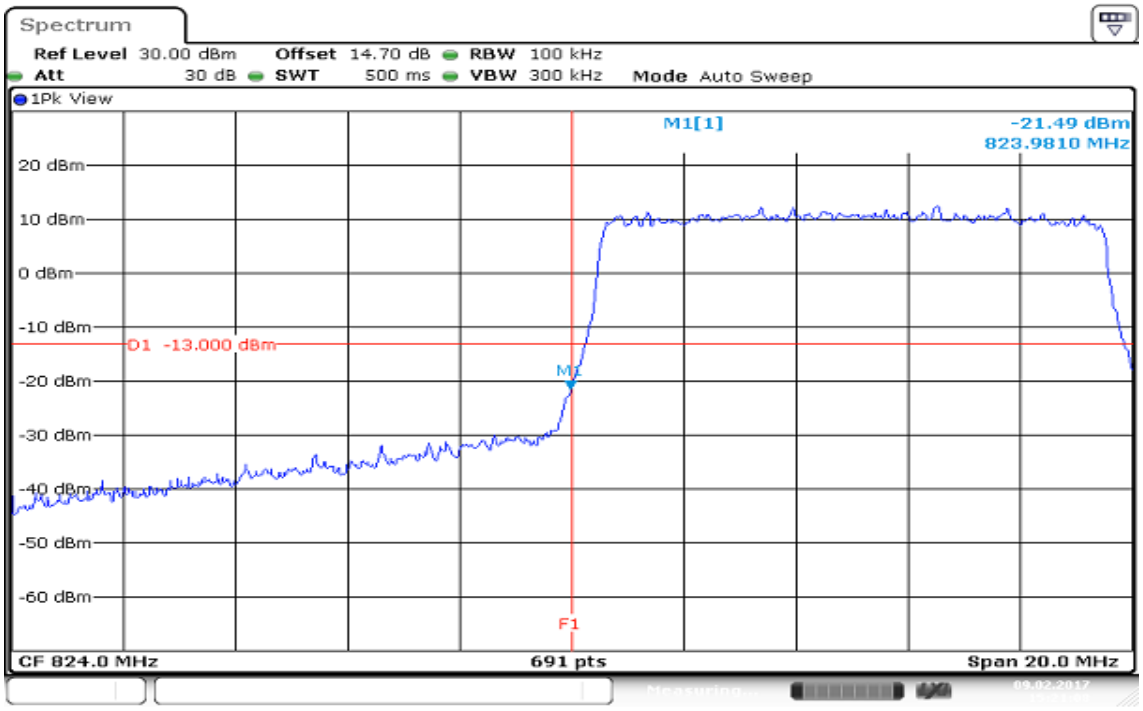
HIGHER BAND EDGE



Date: 9.FEB.2017 15:29:28

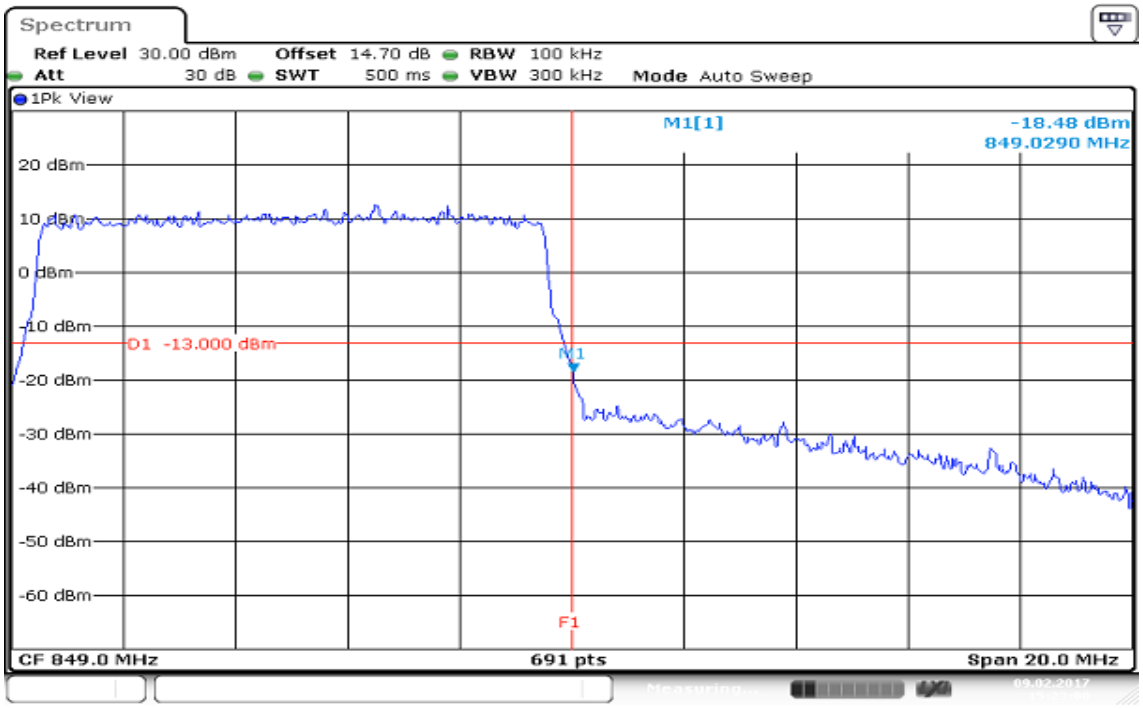
BW:10MHz / 16QAM / RB= 50, RB Offset = 0

LOWER BAND EDGE



Date: 9.FEB.2017 15:21:09

HIGHER BAND EDGE



Date: 9.FEB.2017 15:23:01