FCC 47 CFR PART 27

For

Zonar Connect

Model: 20081

Trade Name: ZONAR

Issued to

Zonar Systems Inc
18200 Cascade Ave South Suite 200
Seattle Washington United States

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: October 28, 2016

Testing Laboratory
1309

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		October 28, 2016		Initial Issue	ALL	Doris Chu

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1. TEST RESULT CERTIFICATION

Applicant:	Zonar Systems Inc 18200 Cascade Ave South Suite 200 Seattle Washington United States
Manufacturer:	First International Computer 8F, No.300, Yang Guang St., NeiHu, Taipei, Taiwan 114
Equipment Under Test:	Zonar Connect
Trade Name:	ZONAR
Model:	20081
Date of Test:	September 2 ~ November 7, 2016

APPLICABLE STANDARDS	
Standard	**TEST RESULT**
FCC Part 27, FCC Part 2	No non-compliance noted

We hereby certify that:

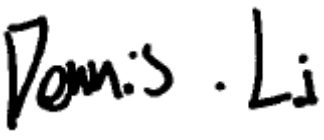
The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-D:2010 and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rule FCC PART 27.

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



Dennis Li
Engineer
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Zonar Connect	
Model Number	20081	
Trade	ZONAR	
Received Date	April 15, 2016	
Power Source	VDC from Power Adapter DARFON / B112-51(SOY-0500250US) I/P: 100-240Vac, 0.4A, 50-60Hz O/P: 5Vdc, 2.5A	
Modulation Technology	LTE Band 17	QPSK, 16QAM
	LTE Band 4	QPSK, 16QAM
Antenna Specification	Dipole Antenna LTE Band 4: Gain: -1.78dBi LTE Band 17: Gain: -1.07dBi	

Note: *1. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.*

Emission Designator						
Band	**Frequency Range(MHz)**	**BW (MHz)**	**QPSK**		**16QAM**	
			Emission Designator	**Maximum EIRP (W)**	**Emission Designator**	**Maximum EIRP (W)**
4	**1710.7MHz ~1754.2MHz**	**1.4**	1M10G7D	0.138	1M09D7W	0.133
	1711.5MHz ~1753.4MHz	**3**	2M69G7D	0.140	2M69D7W	0.139
	1712.5MHz ~1752.5MHz	**5**	4M47G7D	0.140	4M47D7W	0.136
	1715.0MHz ~1750.0MHz	**10**	8M91G7D	0.144	8M91D7W	0.136
	1715.5MHz ~1747.50MHz	**15**	13M5G7D	0.179	13M5D7W	0.136
	1720MHz ~1745MHz	**20**	17M9G7D	0.181	17M9D7W	0.138
Band	**Frequency Range(MHz)**	**BW (MHz)**	**QPSK**		**16QAM**	
			Emission Designator	**Maximum ERP (W)**	**Emission Designator**	**Maximum ERP (W)**
17	**706.5MHz ~ 713.5MHz**	**5**	4M47G7D	0.156	4M47D7W	0.152
	709MHz ~ 711MHz	**10**	8M94G7D	0.154	8M94D7W	0.152

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA-603-D:2010 and Part 27.

3.1 DESCRIPTION OF TEST TYPE

The EUT (model: 20081) had been tested under operating condition.

The EUT be set in maximum power transmission via call box during testing.

LTE Band 17: 704 MHz ~ 716 MHz

Three channels had been tested for each channel bandwidth.

Channel	5MHz		10MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Low CH	23755	706.5	23780	709.0
Middle CH	23790	710.0	23790	710.0
High CH	23825	713.5	23800	711.0

LTE Band 4: 1710MHz ~ 1755MHz

Three channels had been tested for each channel bandwidth.

Channel	1.4MHz		3MHz		5MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Low CH	19957	1710.7	19965	1711.5	19975	1712.5
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20392	1754.2	20384	1753.4	20375	1752.5
Channel	**10MHz**		**15MHz**		**20MHz**	
	Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
Low CH	20000	1715	20025	1717.5	20050	1720
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20350	1750	20325	1747.5	20300	1745

Radiated Emission Measurement	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
Voltage/Hz	**120V/60Hz**
Test Mode	**Mode 1: Adapter Mode** **Mode 2: USB Charge Mode(Link mode)**
Worst Mode	☒ **Mode 1** ☐ **Mode 2**
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: The worst mode was record in this test 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**
Spectrum Analyzer	R&S	FSV 40	101073	2015/10/04	2016/10/03
Spectrum Analyzer	R&S	FSV 40	0229	2016/05/11	2017/05/10
Communication Analyzer	Anritsu	MT-8820C	6201240043	2016/2/18	2017/2/17

Wugu 966 Chamber A					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Signal Analyzer	Agilent	E4407B	MY44212686	2016/4/9	2017/4/8
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1042473	2016/7/6	2017/7/5
Bilog Antenna	Sunol Sciences	JB1	A052609	2016/3/20	2017/3/21
Horn Antenna	SCHWARZBECK	BBHA 9120D	779	2016/3/9	2017/3/8
Pre-Amplifier	MITEQ	AMF-6F-260400-40-8P	985646	2016/1/14	2017/1/13
Horn Antenna	EMCO	3116	26370	2016/1/15	2017/1/14
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
Communication Analyzer	Anritsu	MT-8820C	6201240043	2016/2/18	2017/2/17
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., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
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 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 I 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	Zonar Connect Dock	ZONAR	20082	N/A	N/A	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. TEST PROCEDURE AND RESULT

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 17

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
17	5	23780	706.5	QPSK	1	0	0	22.5	0.178
					1	12	0	22.0	0.157
					1	24	0	22.0	0.157
					12	0	1	21.8	0.150
					12	6	1	21.4	0.136
					12	11	1	21.3	0.133
					25	0	1	21.3	0.133
				16QAM	1	0	1	21.7	0.146
					1	12	1	21.4	0.136
					1	24	1	21.3	0.133
					12	0	2	20.8	0.119
					12	6	2	20.3	0.106
					12	11	2	20.4	0.108
					25	0	2	20.3	0.106
		23790	710.0	QPSK	1	0	0	22.7	0.184
					1	12	0	22.2	0.164
					1	24	0	22.5	0.176
					12	0	1	21.9	0.153
					12	6	1	21.4	0.136
					12	11	1	21.6	0.143
					25	0	1	21.8	0.150
				16QAM	1	0	1	22.0	0.157
					1	12	1	21.5	0.140
					1	24	1	21.7	0.146
					12	0	2	20.8	0.119
					12	6	2	20.5	0.111
					12	11	2	20.7	0.116
					25	0	2	20.7	0.116
		23800	713.5	QPSK	1	0	0	22.6	0.180
					1	12	0	22.0	0.157
					1	24	0	22.0	0.157
					12	0	1	21.8	0.150
					12	6	1	21.4	0.136
					12	11	1	21.3	0.133
					25	0	1	21.3	0.133
				16QAM	1	0	1	21.7	0.146
					1	12	1	21.3	0.133
					1	24	1	21.4	0.136
					12	0	2	20.8	0.119
					12	6	2	20.4	0.108
					12	11	2	20.3	0.106
					25	0	2	20.3	0.106

LTE Band 17

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
17	10	23780	709.0	QPSK	1	0	0	22.5	0.178
					1	24	0	22.0	0.158
					1	49	0	22.0	0.158
					25	0	1	21.8	0.151
					25	12	1	21.4	0.138
					25	24	1	21.3	0.135
					50	0	1	21.3	0.135
				16QAM	1	0	1	21.7	0.148
					1	24	1	21.4	0.138
					1	49	1	21.3	0.135
					25	0	2	20.8	0.120
					25	12	2	20.3	0.107
					25	24	2	20.4	0.110
					50	0	2	20.3	0.107
		23790	710.0	QPSK	1	0	0	22.7	0.186
					1	24	0	22.2	0.166
					1	49	0	22.5	0.178
					25	0	1	21.9	0.155
					25	12	1	21.4	0.138
					25	24	1	21.6	0.145
					50	0	1	21.8	0.151
				16QAM	1	0	1	22.0	0.157
					1	24	1	21.5	0.141
					1	49	1	21.7	0.148
					25	0	2	20.8	0.120
					25	12	2	20.5	0.112
					25	24	2	20.7	0.117
					50	0	2	20.7	0.117
		23800	711.0	QPSK	1	0	0	22.6	0.182
					1	24	0	22.0	0.158
					1	49	0	22.0	0.158
					25	0	1	21.8	0.151
					25	12	1	21.4	0.138
					25	24	1	21.3	0.135
					50	0	1	21.3	0.135
				16QAM	1	0	1	21.7	0.148
					1	24	1	21.3	0.135
					1	49	1	21.4	0.138
					25	0	2	20.8	0.120
					25	12	2	20.4	0.110
					25	24	2	20.3	0.107
					50	0	2	20.3	0.107

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	1.4	19957	1710.7	QPSK	1	0	0	22.7	0.184
					1	2	0	22.4	0.172
					1	5	0	22.3	0.168
					3	0	0	22.7	0.184
					3	1	0	22.4	0.172
					3	2	0	22.3	0.168
					6	0	1	21.5	0.140
				16QAM	1	0	1	21.8	0.150
					1	2	1	21.6	0.143
					1	5	1	21.5	0.140
					3	0	1	21.8	0.150
					3	1	1	21.6	0.143
					3	2	1	21.5	0.140
					6	0	2	20.5	0.111
		20175	1732.5	QPSK	1	0	0	22.5	0.176
					1	2	0	22.3	0.168
					1	5	0	22.3	0.168
					3	0	0	22.5	0.176
					3	1	0	22.3	0.168
					3	2	0	22.3	0.168
					6	0	1	21.4	0.136
				16QAM	1	0	1	21.5	0.140
					1	2	1	21.5	0.140
					1	5	1	21.4	0.136
					3	0	1	21.5	0.140
					3	1	1	21.5	0.140
					3	2	1	21.4	0.136
					6	0	2	20.5	0.112
		20392	1754.2	QPSK	1	0	0	22.6	0.180
					1	2	0	22.4	0.172
					1	5	0	22.4	0.172
					3	0	0	22.6	0.180
					3	1	0	22.4	0.172
					3	2	0	22.4	0.172
					6	0	1	21.5	0.140
				16QAM	1	0	1	21.6	0.143
					1	2	1	21.5	0.140
					1	5	1	21.5	0.140
					3	0	1	21.6	0.143
					3	1	1	21.5	0.140
					3	2	1	21.5	0.140
					6	0	2	20.6	0.115

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	3	19965	1711.5	QPSK	1	0	0	22.7	0.186
					1	7	0	22.4	0.174
					1	14	0	22.3	0.170
					8	0	1	21.8	0.151
					8	4	1	21.6	0.145
					8	7	1	21.6	0.145
					15	0	1	21.5	0.141
				16QAM	1	0	1	21.8	0.151
					1	7	1	21.6	0.145
					1	14	1	21.5	0.141
					8	0	2	20.8	0.120
					8	4	2	20.6	0.115
					8	7	2	20.6	0.115
					15	0	2	20.5	0.112
		20175	1732.5	QPSK	1	0	0	22.5	0.178
					1	7	0	22.3	0.170
					1	14	0	22.3	0.170
					8	0	1	21.7	0.148
					8	4	1	21.5	0.141
					8	7	1	21.5	0.141
					15	0	1	21.4	0.138
				16QAM	1	0	1	21.5	0.141
					1	7	1	21.5	0.141
					1	14	1	21.4	0.138
					8	0	2	20.6	0.115
					8	4	2	20.4	0.110
					8	7	2	20.5	0.112
					15	0	2	20.4	0.110
		20384	1753.4	QPSK	1	0	0	22.6	0.182
					1	7	0	22.4	0.174
					1	14	0	22.4	0.174
					8	0	1	21.7	0.148
					8	4	1	21.6	0.145
					8	7	1	21.6	0.145
					15	0	1	21.5	0.141
				16QAM	1	0	1	21.6	0.145
					1	7	1	21.5	0.141
					1	14	1	21.5	0.141
					8	0	2	20.7	0.117
					8	4	2	20.6	0.115
					8	7	2	20.6	0.115
					15	0	2	20.5	0.112

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	5	19975	1712.5	QPSK	1	0	0	22.8	0.188
					1	12	0	22.5	0.176
					1	24	0	22.4	0.172
					12	0	1	21.9	0.153
					12	6	1	21.7	0.146
					12	11	1	21.7	0.146
					25	0	1	21.6	0.143
				16QAM	1	0	1	21.9	0.153
					1	12	1	21.7	0.146
					1	24	1	21.6	0.143
					12	0	2	20.9	0.122
					12	6	2	20.7	0.116
					12	11	2	20.7	0.116
					25	0	2	20.6	0.114
		20175	1732.5	QPSK	1	0	0	22.6	0.180
					1	12	0	22.4	0.172
					1	24	0	22.4	0.172
					12	0	1	21.8	0.150
					12	6	1	21.6	0.143
					12	11	1	21.6	0.143
					25	0	1	21.5	0.140
				16QAM	1	0	1	21.6	0.143
					1	12	1	21.6	0.143
					1	24	1	21.5	0.140
					12	0	2	20.7	0.116
					12	6	2	20.5	0.111
					12	11	2	20.6	0.114
					25	0	2	20.5	0.111
		20375	1752.5	QPSK	1	0	0	22.7	0.184
					1	12	0	22.5	0.176
					1	24	0	22.5	0.176
					12	0	1	21.8	0.150
					12	6	1	21.7	0.146
					12	11	1	21.7	0.146
					25	0	1	21.6	0.143
				16QAM	1	0	1	21.7	0.146
					1	12	1	21.6	0.143
					1	24	1	21.6	0.143
					12	0	2	20.8	0.119
					12	6	2	20.7	0.116
					12	11	2	20.7	0.116
					25	0	2	20.6	0.114

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	10	20000	1715.0	QPSK	1	0	0	22.8	0.191
					1	24	0	22.5	0.178
					1	49	0	22.4	0.174
					25	0	1	21.9	0.155
					25	12	1	21.7	0.148
					25	24	1	21.7	0.148
					50	0	1	21.6	0.145
				16QAM	1	0	1	21.9	0.155
					1	24	1	21.7	0.148
					1	49	1	21.6	0.145
					25	0	2	20.9	0.123
					25	12	2	20.7	0.117
					25	24	2	20.7	0.117
					50	0	2	20.6	0.115
		20175	1732.5	QPSK	1	0	0	22.6	0.182
					1	24	0	22.4	0.174
					1	49	0	22.4	0.174
					25	0	1	21.8	0.151
					25	12	1	21.6	0.145
					25	24	1	21.6	0.145
					50	0	1	21.5	0.141
				16QAM	1	0	1	21.6	0.145
					1	24	1	21.6	0.145
					1	49	1	21.5	0.141
					25	0	2	20.7	0.117
					25	12	2	20.5	0.112
					25	24	2	20.6	0.115
					50	0	2	20.5	0.112
		20350	1750.0	QPSK	1	0	0	22.7	0.186
					1	24	0	22.5	0.178
					1	49	0	22.5	0.178
					25	0	1	21.8	0.151
					25	12	1	21.7	0.148
					25	24	1	21.7	0.148
					50	0	1	21.6	0.145
				16QAM	1	0	1	21.7	0.148
					1	24	1	21.6	0.145
					1	49	1	21.6	0.145
					25	0	2	20.8	0.120
					25	12	2	20.7	0.117
					25	24	2	20.7	0.117
					50	0	2	20.6	0.115

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	15	20025	1717.5	QPSK	1	0	0	22.9	0.193
					1	37	0	22.6	0.180
					1	74	0	22.5	0.176
					36	0	1	22.0	0.157
					36	18	1	21.8	0.150
					36	35	1	21.8	0.150
					75	0	1	21.7	0.146
				16QAM	1	0	1	22.0	0.157
					1	37	1	21.8	0.150
					1	74	1	21.7	0.146
					36	0	2	21.0	0.124
					36	18	2	20.8	0.119
					36	35	2	20.8	0.119
					75	0	2	20.7	0.116
		20175	1732.5	QPSK	1	0	0	22.7	0.184
					1	37	0	22.5	0.176
					1	74	0	22.5	0.176
					36	0	1	21.9	0.153
					36	18	1	21.7	0.146
					36	35	1	21.7	0.146
					75	0	1	21.6	0.143
				16QAM	1	0	1	21.7	0.146
					1	37	1	21.7	0.146
					1	74	1	21.6	0.143
					36	0	2	20.8	0.119
					36	18	2	20.6	0.114
					36	35	2	20.7	0.116
					75	0	2	20.6	0.114
		20325	1747.5	QPSK	1	0	0	22.8	0.188
					1	37	0	22.6	0.180
					1	74	0	22.6	0.180
					36	0	1	21.9	0.153
					36	18	1	21.8	0.150
					36	35	1	21.8	0.150
					75	0	1	21.7	0.146
				16QAM	1	0	1	21.8	0.150
					1	37	1	21.7	0.146
					1	74	1	21.7	0.146
					36	0	2	20.9	0.122
					36	18	2	20.8	0.119
					36	35	2	20.8	0.119
					75	0	2	20.7	0.116

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	20	20050	1720.0	QPSK	1	0	0	22.9	0.195
					1	49	0	22.6	0.182
					1	99	0	22.5	0.178
					50	0	1	22.0	0.158
					50	24	1	21.8	0.151
					50	49	1	21.8	0.151
					100	0	1	21.7	0.148
				16QAM	1	0	1	22.0	0.158
					1	49	1	21.8	0.151
					1	99	1	21.7	0.148
					50	0	2	21.0	0.126
					50	24	2	20.8	0.120
					50	49	2	20.8	0.120
					100	0	2	20.7	0.117
		20175	1732.5	QPSK	1	0	0	22.7	0.186
					1	49	0	22.5	0.178
					1	99	0	22.5	0.178
					50	0	1	21.9	0.155
					50	24	1	21.7	0.148
					50	49	1	21.7	0.148
					100	0	1	21.6	0.145
				16QAM	1	0	1	21.7	0.148
					1	49	1	21.7	0.148
					1	99	1	21.6	0.145
					50	0	2	20.8	0.120
					50	24	2	20.6	0.115
					50	49	2	20.7	0.117
					100	0	2	20.6	0.115
		20300	1745.0	QPSK	1	0	0	22.8	0.191
					1	49	0	22.6	0.182
					1	99	0	22.6	0.182
					50	0	1	21.9	0.155
					50	24	1	21.8	0.151
					50	49	1	21.8	0.151
					100	0	1	21.7	0.148
				16QAM	1	0	1	21.8	0.151
					1	49	1	21.7	0.148
					1	99	1	21.7	0.148
					50	0	2	20.9	0.123
					50	24	2	20.8	0.120
					50	49	2	20.8	0.120
					100	0	2	20.7	0.117

7.2 ERP & EIRP MEASUREMENT

LIMIT

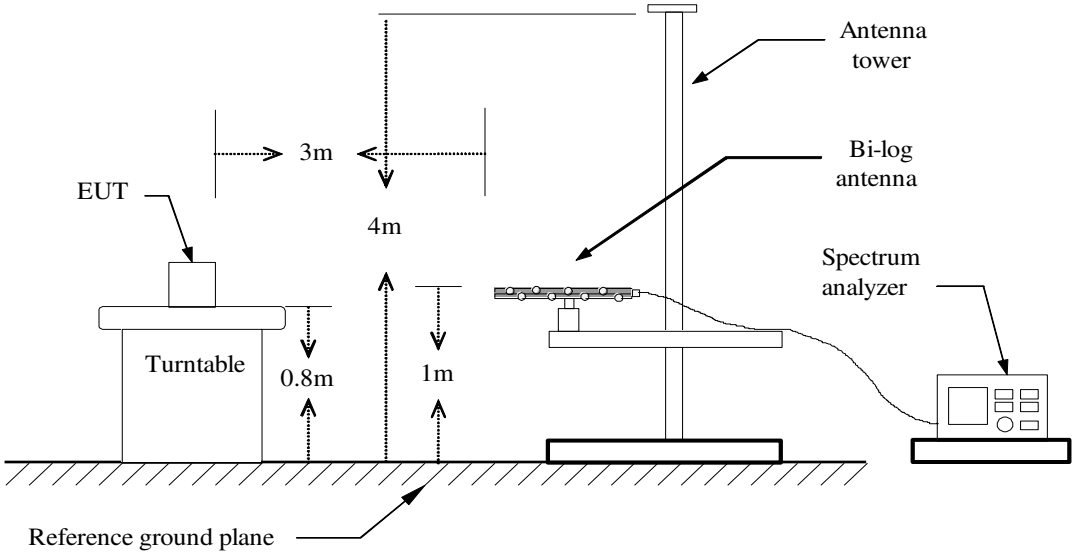
According to FCC §2.1046

FCC 27.50 (c) (10): The portable stations (hand-held devices) in the 600MHz uplink band and the 698-746MHz band, and fixed and mobile stations in the 600MHz uplink band are limited to 3 Watts ERP.

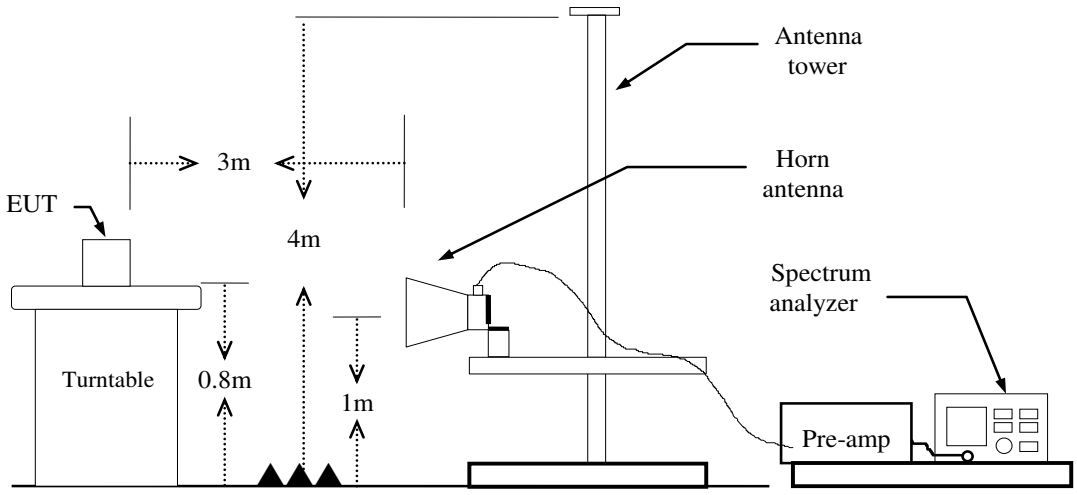
FCC 27.50 (d) (4): Fixed, mobile, and portable (handheld)stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780MHz bands are limited to 1 watt EIRP.

Test Configuration

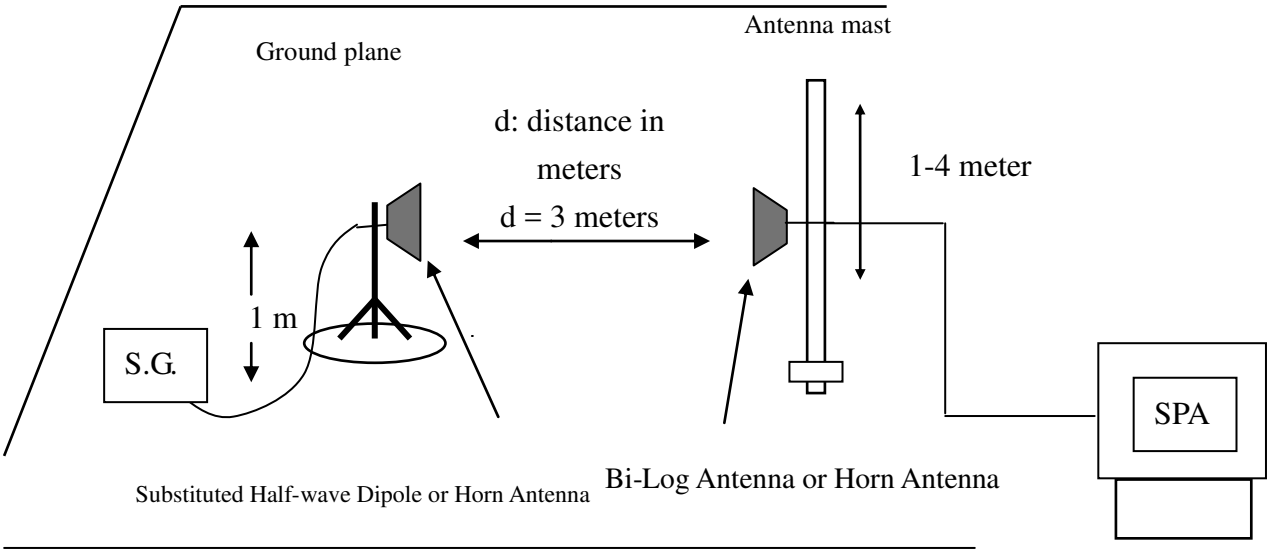
Below 1 GHz



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.

EIRP POWER

LTE Band 4

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)
4	1.4	Lowest	QPSK	1	0	19.87	0.097	18.06	0.064
		Middle		1	0	20.25	0.106	20.93	0.124
		Highest		1	0	21.41	0.138	18.06	0.064
		Lowest	16QAM	1	0	19.78	0.095	17.83	0.061
		Middle		1	0	20.25	0.106	19.70	0.093
		Highest		1	0	21.24	0.133	19.70	0.093

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)
4	3	Lowest	QPSK	1	0	19.91	0.098	18.23	0.067
		Middle		1	0	20.36	0.109	20.98	0.125
		Highest		1	0	21.47	0.140	18.12	0.065
		Lowest	16QAM	1	0	19.83	0.096	17.90	0.062
		Middle		1	0	20.31	0.107	19.74	0.094
		Highest		1	0	21.43	0.139	19.78	0.095

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)
4	5	Lowest	QPSK	1	0	19.85	0.097	17.86	0.061
		Middle		1	0	20.35	0.108	20.93	0.124
		Highest		1	0	21.46	0.140	17.86	0.061
		Lowest	16QAM	1	0	19.77	0.095	19.40	0.087
		Middle		1	0	20.23	0.105	20.63	0.116
		Highest		1	0	21.35	0.136	20.68	0.117

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)
4	10	Lowest	QPSK	1	0	19.88	0.097	20.00	0.100
		Middle		1	0	20.41	0.110	20.01	0.100
		Highest		1	0	21.57	0.144	18.49	0.071
		Lowest	16QAM	1	0	19.78	0.095	18.95	0.079
		Middle		1	0	20.32	0.108	19.40	0.087
		Highest		1	0	21.35	0.136	20.64	0.116

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)
4	15	Lowest	QPSK	1	0	20.03	0.101	19.01	0.080
		Middle		1	0	20.54	0.113	18.44	0.070
		Highest		1	0	21.48	0.141	22.53	0.179
		Lowest	16QAM	1	0	20.77	0.119	19.21	0.083
		Middle		1	0	20.62	0.115	20.39	0.109
		Highest		1	0	21.35	0.136	21.22	0.132

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)
4	20	Lowest	QPSK	1	0	20.08	0.102	19.09	0.081
		Middle		1	0	20.66	0.116	18.49	0.071
		Highest		1	0	21.52	0.142	22.58	0.181
		Lowest	16 QAM	1	0	20.87	0.122	19.27	0.085
		Middle		1	0	20.66	0.116	20.45	0.111
		Highest		1	0	21.40	0.138	21.19	0.132

ERP POWER

LTE Band 17

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)
17	5	Lowest	QPSK	1	0	20.51	0.112	17.10	0.051
		Middle		1	0	20.94	0.124	16.27	0.042
		Highest		1	0	21.94	0.156	13.70	0.023
		Lowest	16QAM	1	0	20.37	0.109	17.39	0.055
		Middle		1	0	20.91	0.123	16.31	0.043
		Highest		1	0	21.81	0.152	12.57	0.018

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)
17	10	Lowest	QPSK	1	0	20.41	0.110	14.73	0.030
		Middle		1	0	20.81	0.121	15.71	0.037
		Highest		1	0	21.87	0.154	15.30	0.034
		Lowest	16 QAM	1	0	20.24	0.106	14.73	0.030
		Middle		1	0	20.69	0.117	15.30	0.034
		Highest		1	0	21.81	0.152	15.18	0.033

7.3 FREQUENCY STABILITY MEASUREMENT

LIMIT

According to the FCC part 27.54 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

LTE Band 4

Reference Frequency: LTE Band 4, 1732.5 MHz at 20(°C)				
Limit: 2.5 ppm = 4700Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-1.09	-0.0006	+/- 2.5
120	40	-2.66	-0.0015	
120	30	-3.09	-0.0018	
120	20	0.67	0.0004	
120	10	-1.96	-0.0011	
120	0	-1.42	-0.0008	
120	-10	-1.76	-0.0010	
120	-20	-1.23	-0.0007	
120	-30	-1.09	-0.0006	

LTE Band 17

Reference Frequency: LTE Band 17, 710 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	-1.02	-0.0014	+/- 2.5
120	40	-1.42	-0.0020	
120	30	-0.76	-0.0011	
120	20	-0.39	-0.0005	
120	10	-1.03	-0.0015	
120	0	-2.6	-0.0037	
120	-10	1.54	0.0022	
120	-20	-1.07	-0.0015	
120	-30	-1.02	-0.0014	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

LTE Band 4

Reference Frequency: LTE Band 4, 1732.5 MH 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)
138	20	-5.12	-0.0030	+/- 2.5
120		0.67	0.0004	
102		-0.66	-0.0004	

LTE Band 17

Reference Frequency: LTE Band 17, 710 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)
138	20	-0.4	-0.0006	+/- 2.5
120		-0.39	-0.0005	
102		-0.8	-0.0011	

7.4 OCCUPIED BANDWIDTH MEASUREMENT

LIMITS

For Reporting purpose 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

TEST RESULTS

LTE Band 4

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	OBW(99%)(MHz)	26 dB Bandwidth(MHz)
4	1.4	Middle	QPSK	6	0	1.0984	1.5326
		Middle	16QAM	6	0	1.0940	1.5630
	3	Middle	QPSK	15	0	2.6917	3.0564
		Middle	16QAM	15	0	2.6917	3.0478
	5	Middle	QPSK	25	0	4.4717	4.8910
		Middle	16QAM	25	0	4.4717	4.9200
	10	Middle	QPSK	50	0	8.9146	9.4070
		Middle	16QAM	50	0	8.9146	9.4930
	15	Middle	QPSK	75	0	13.5021	14.6740
		Middle	16QAM	75	0	13.4587	14.8050
	20	Middle	QPSK	100	0	17.9450	19.2220
		Middle	16QAM	100	0	17.9450	19.2220

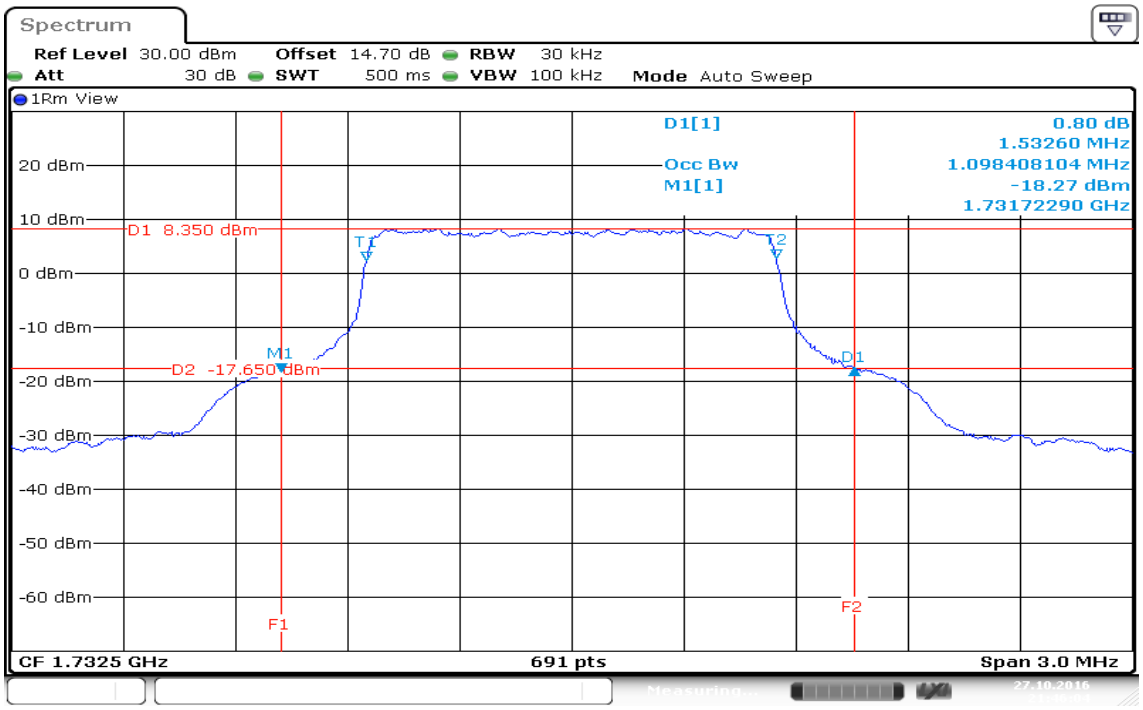
LTE Band 17

Band	BW	Channel	Mode	UL RB Allocation	UL RB offset	OBW(99%)(MHz)	26 dB Bandwidth(MHz)
17	5	Middle	QPSK	25	0	4.4717	4.8500
		Middle	16QAM	25	0	4.4717	4.8210
	10	Middle	QPSK	50	0	8.9435	9.3620
		Middle	16QAM	50	0	8.9146	9.3620

LTE Band 4

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

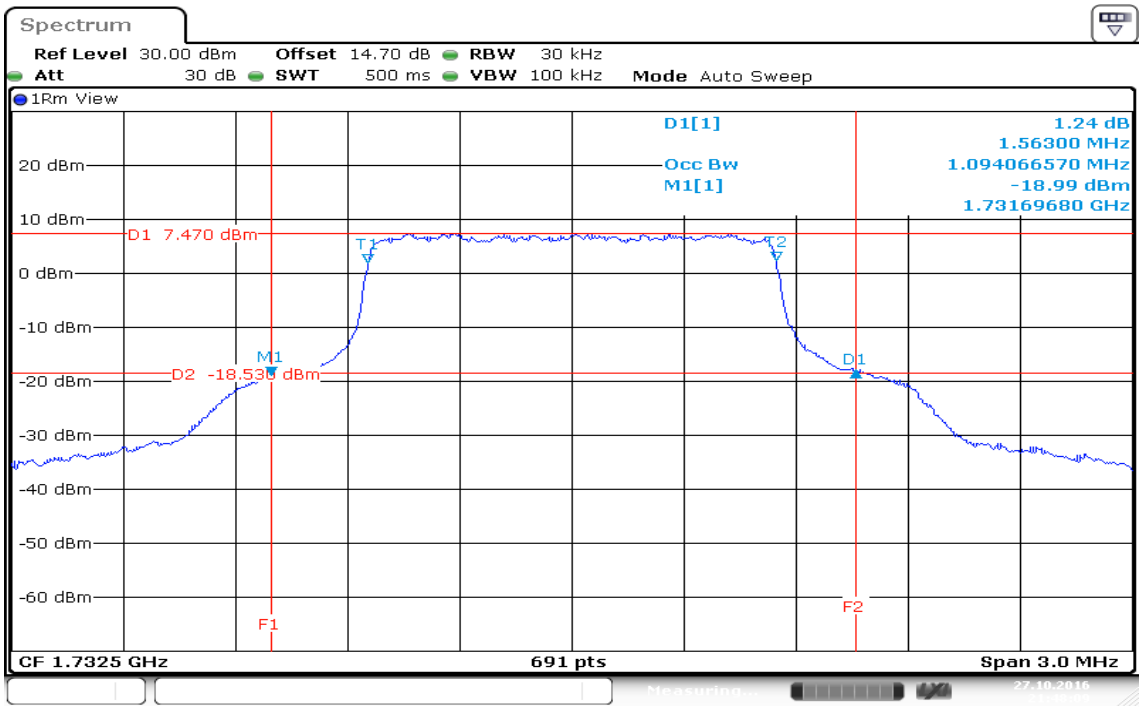
CH Mid



Date: 27.OCT.2016 21:46:04

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

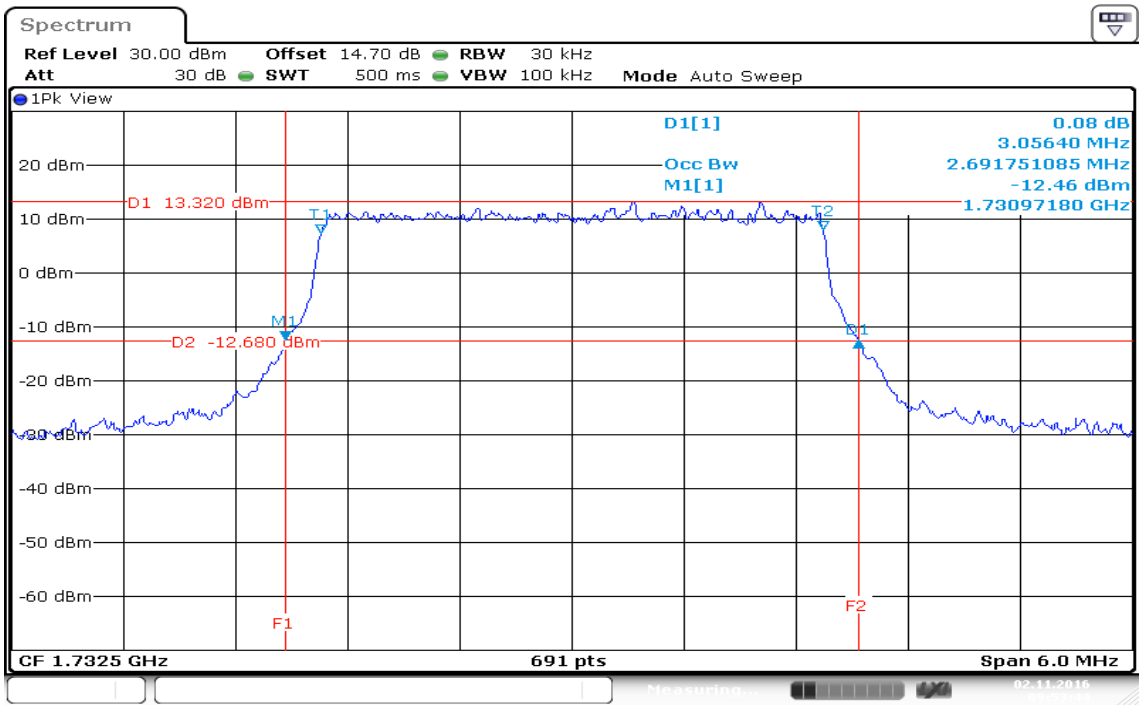
CH Mid



Date: 27.OCT.2016 21:48:10

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

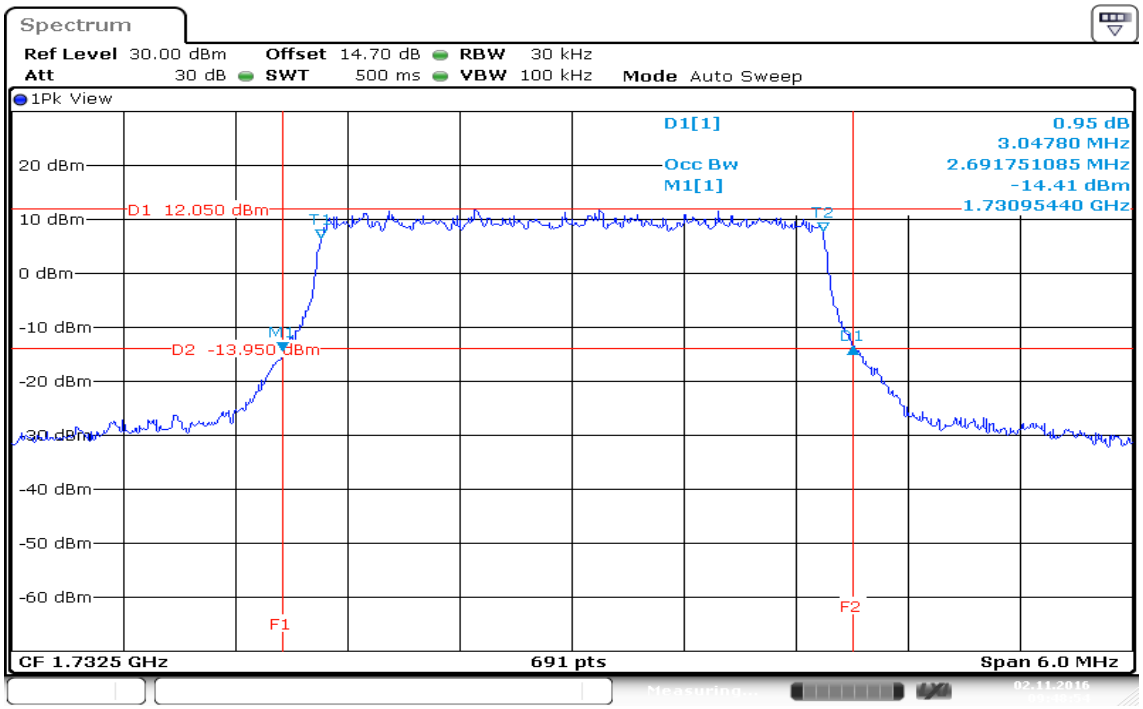
CH Mid



Date: 2.NOV.2016 09:53:44

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

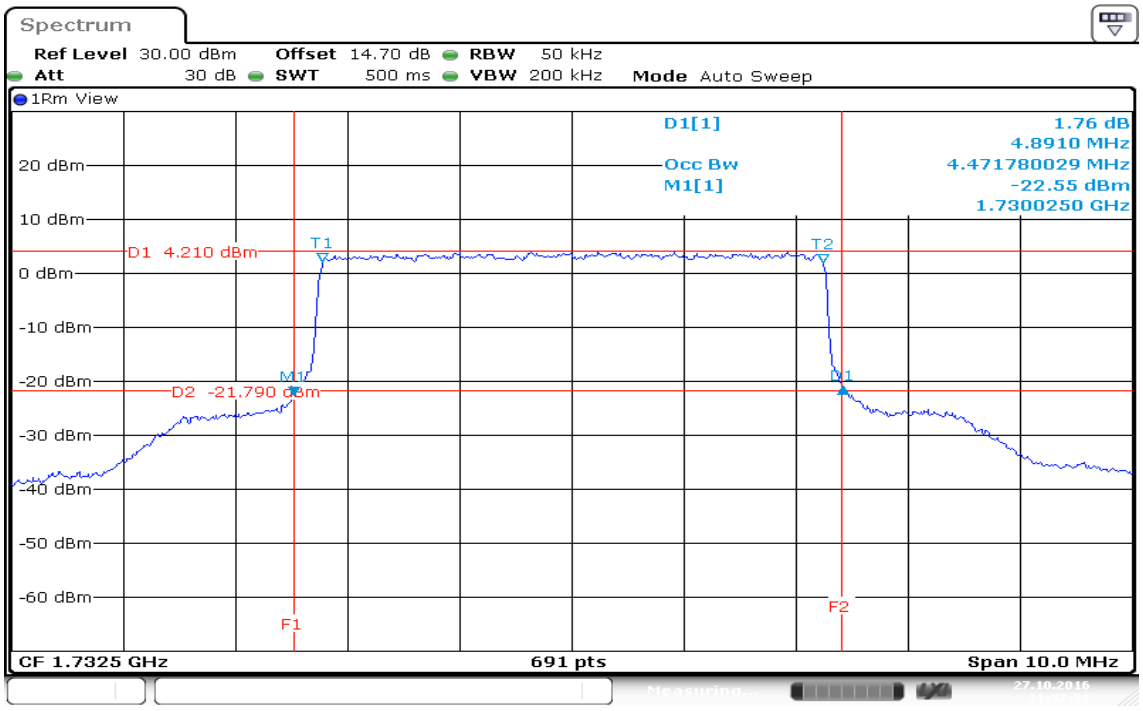
CH Mid



Date: 2.NOV.2016 09:48:54

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

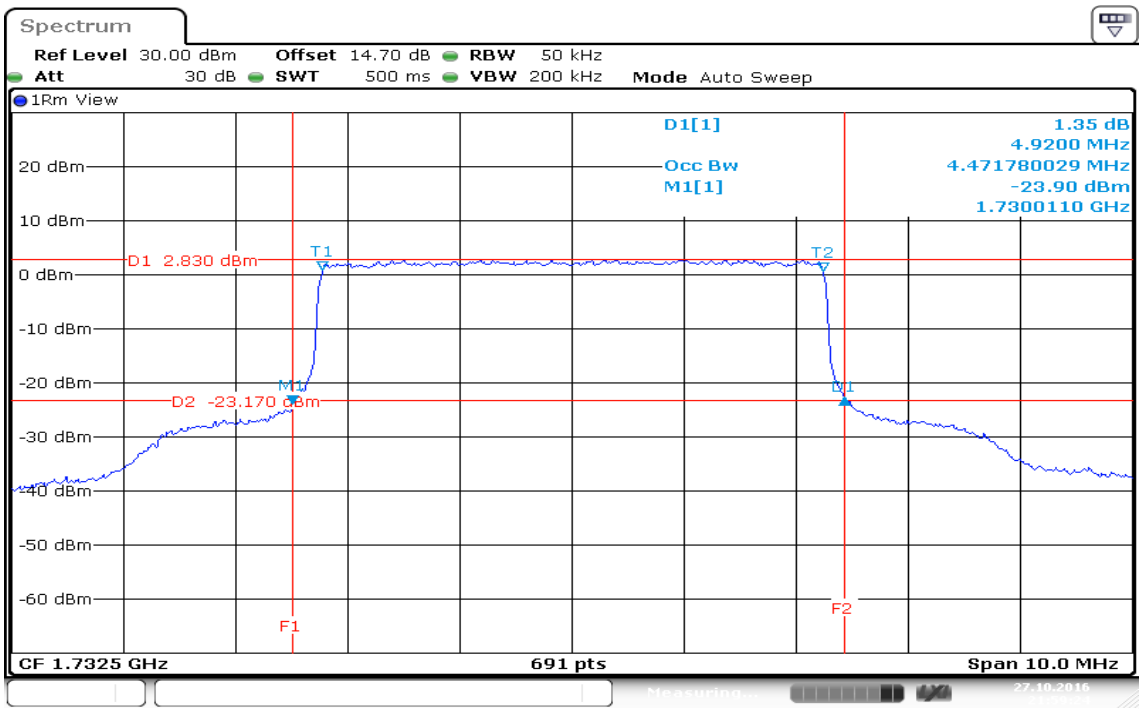
CH Mid



Date: 27.OCT.2016 21:57:53

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

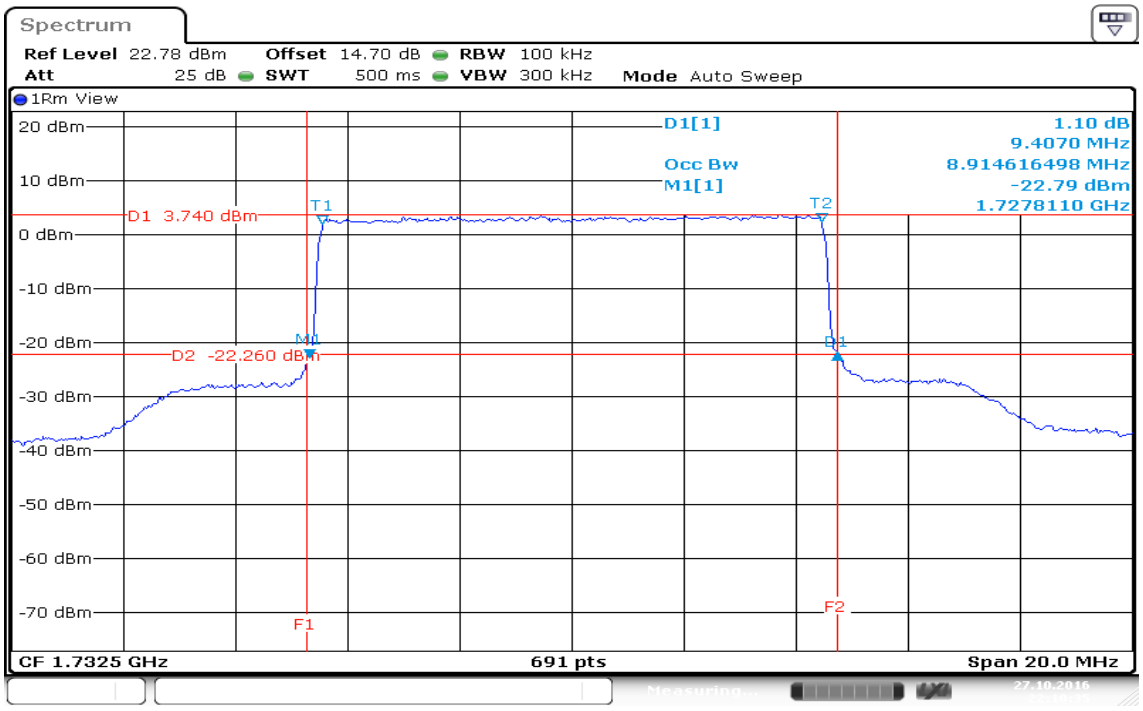
CH Mid



Date: 27.OCT.2016 21:59:24

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

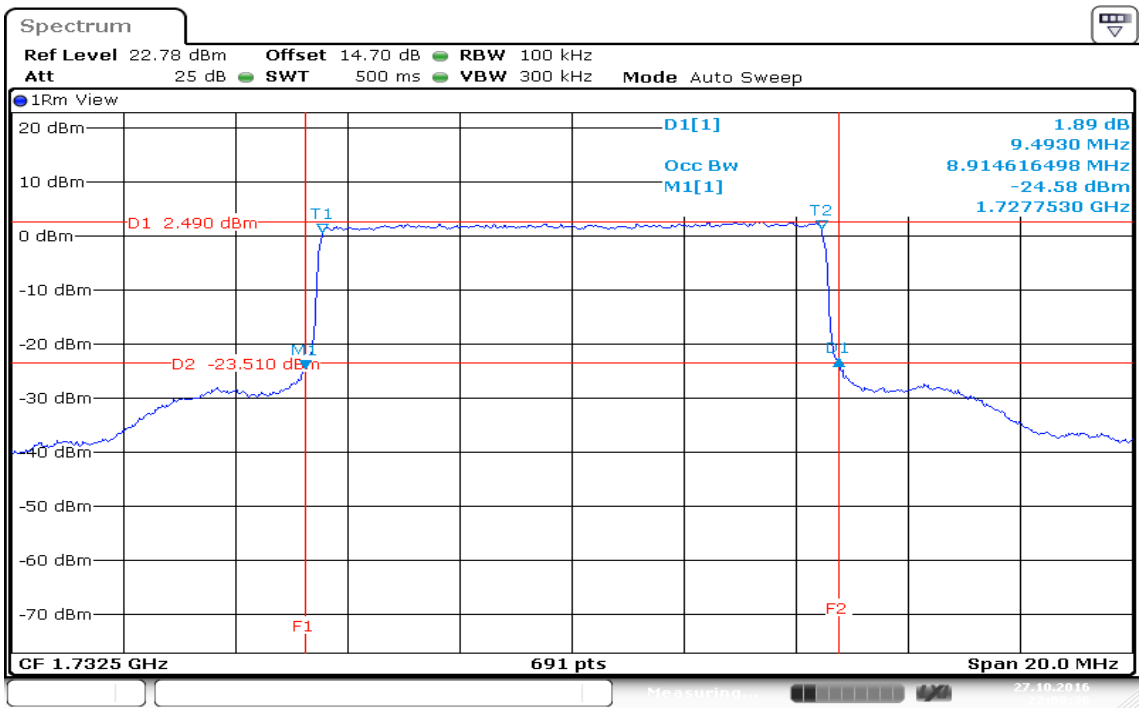
CH Mid



Date: 27.OCT.2016 22:10:35

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

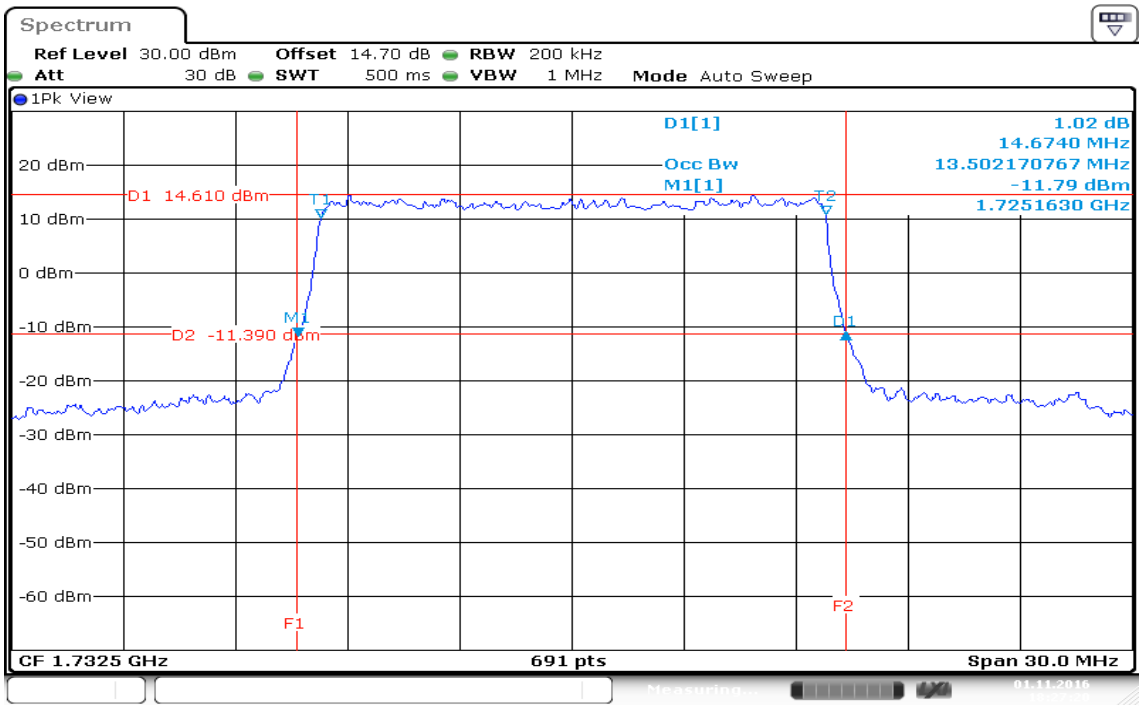
CH Mid



Date: 27.OCT.2016 22:09:37

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

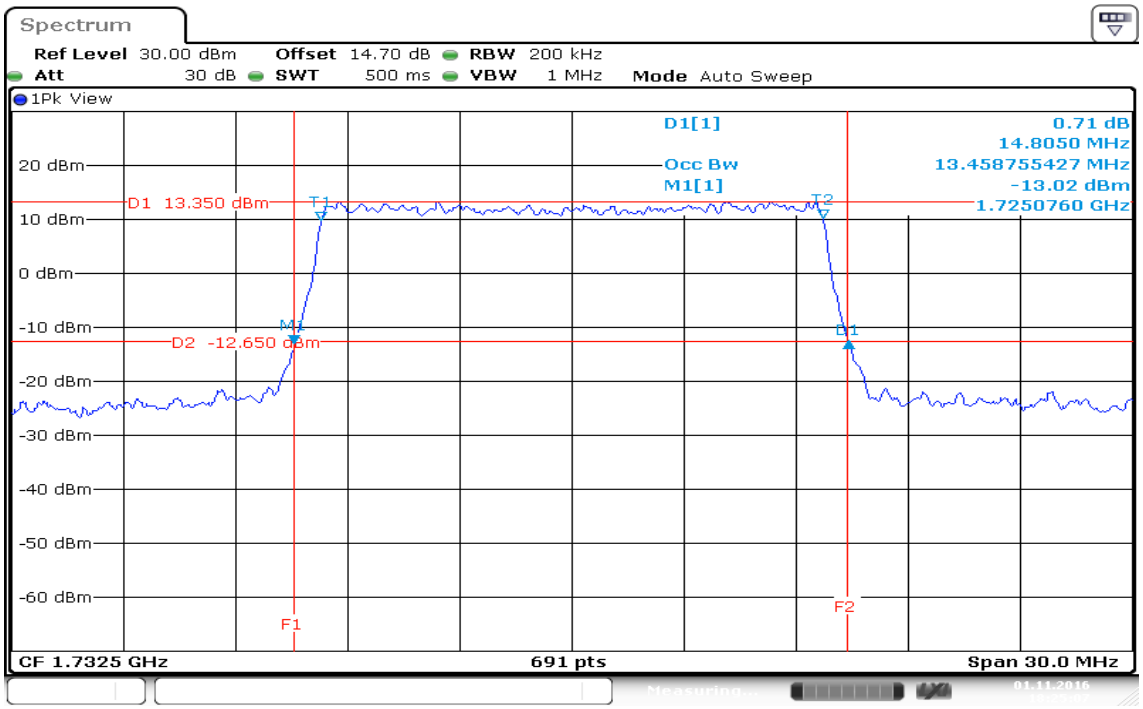
CH Mid



Date: 1.NOV.2016 18:27:21

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

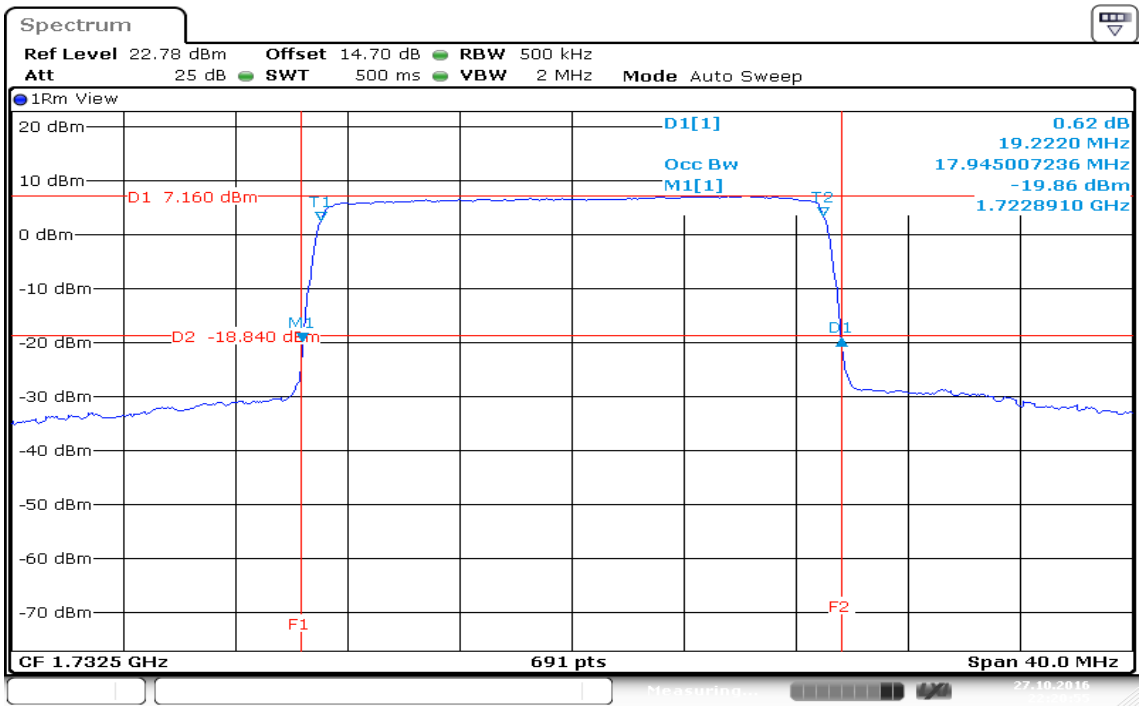
CH Mid



Date: 1.NOV.2016 18:25:07

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

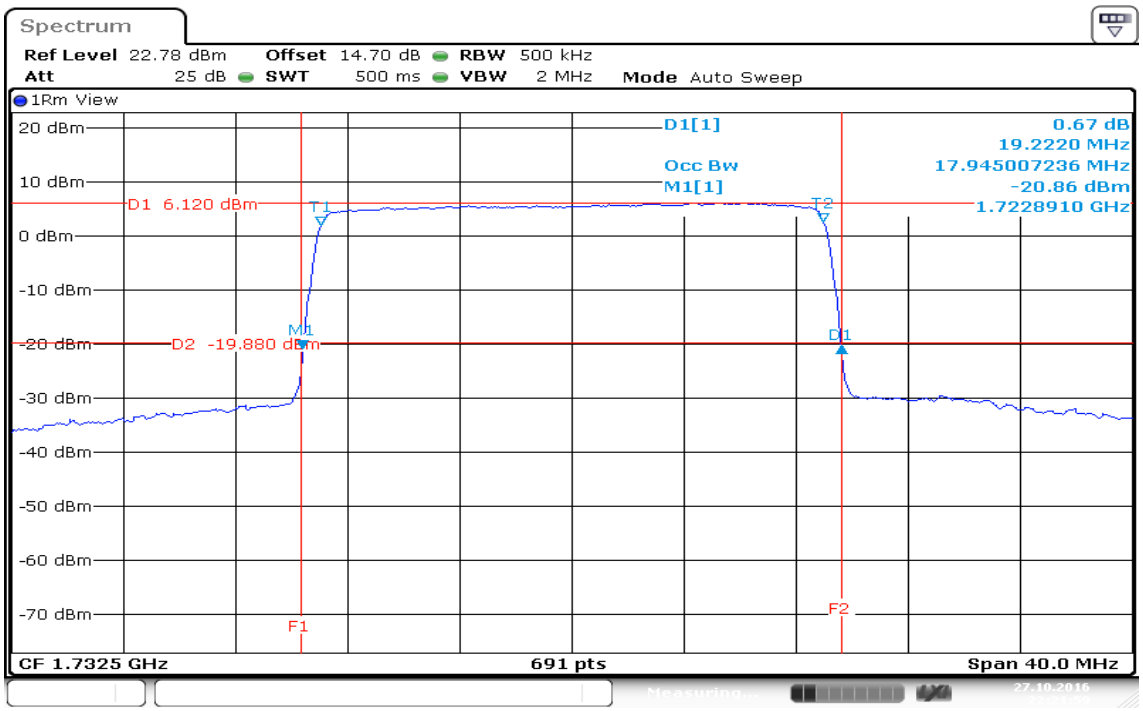
CH Mid



Date: 27.OCT.2016 22:20:55

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

CH Mid

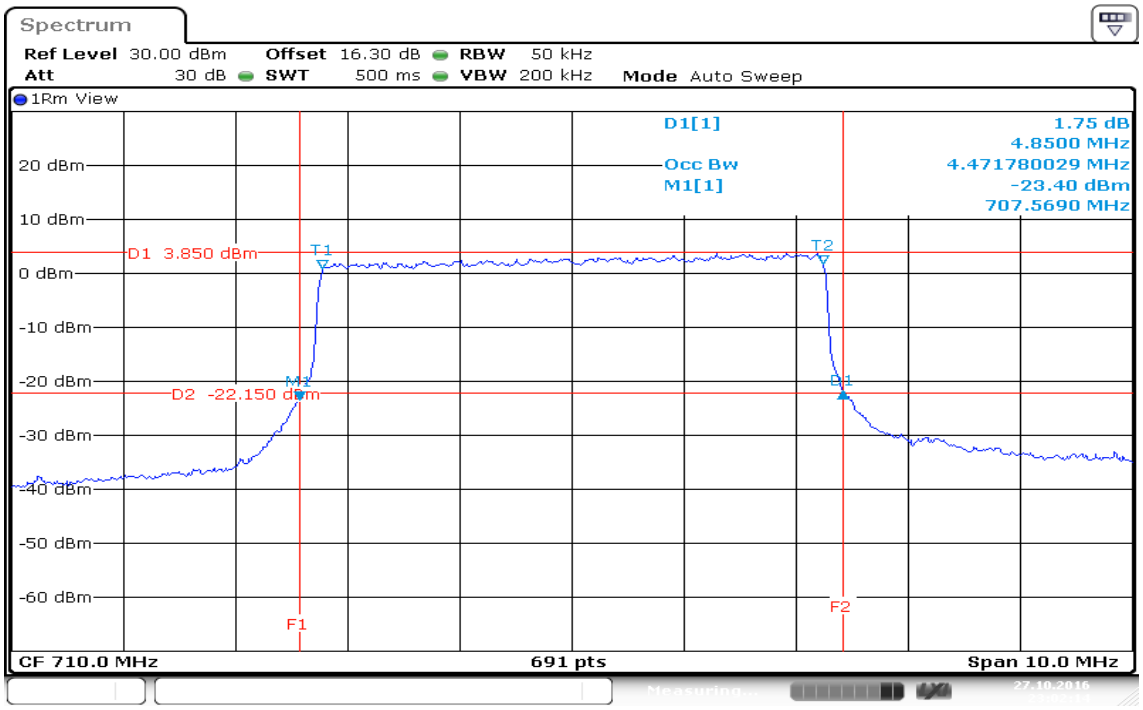


Date: 27.OCT.2016 22:21:59

LTE Band 17

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

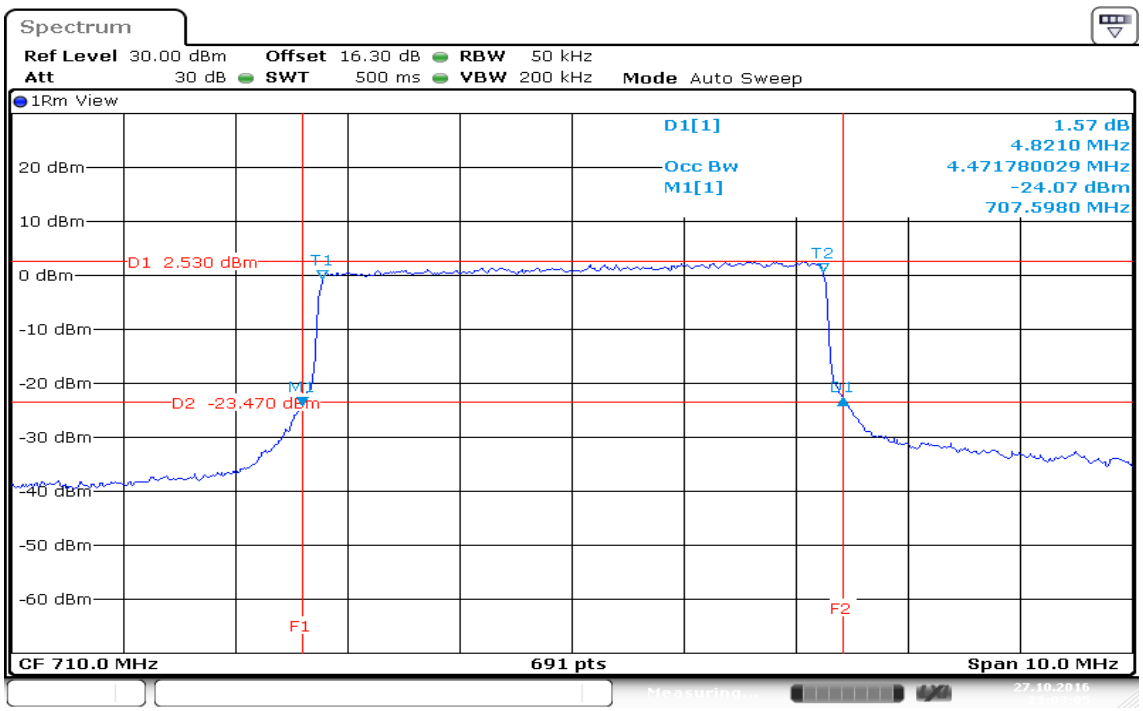
CH Mid



Date: 27.OCT.2016 23:02:15

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

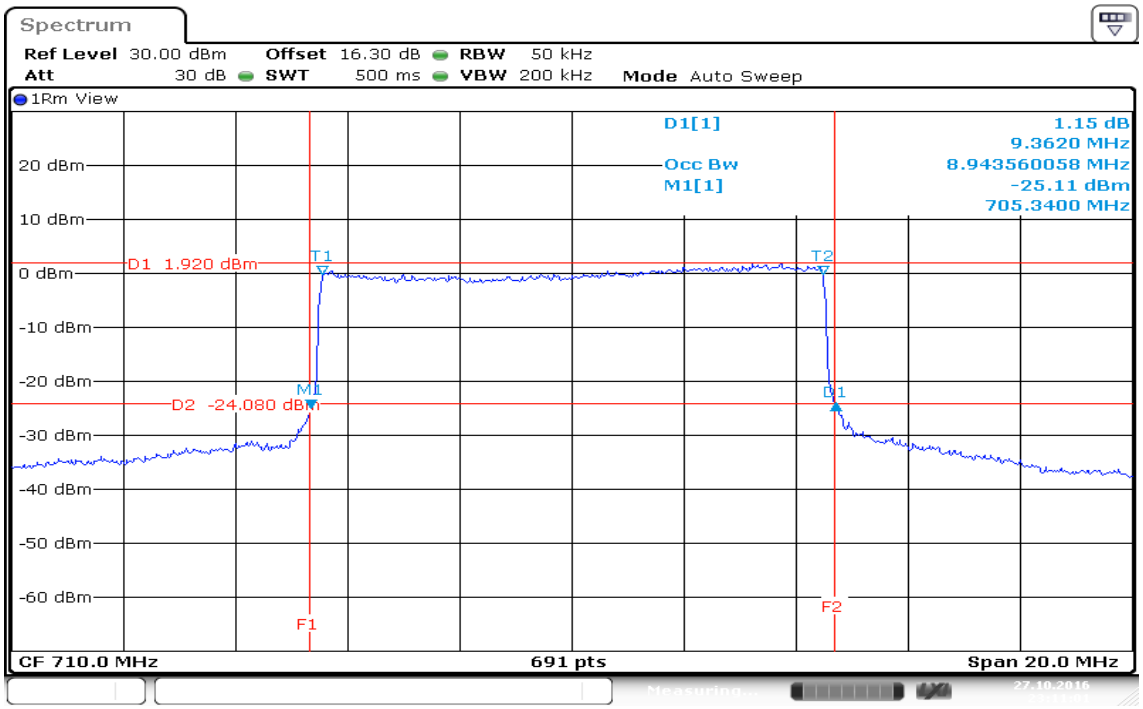
CH Mid



Date: 27.OCT.2016 23:03:05

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

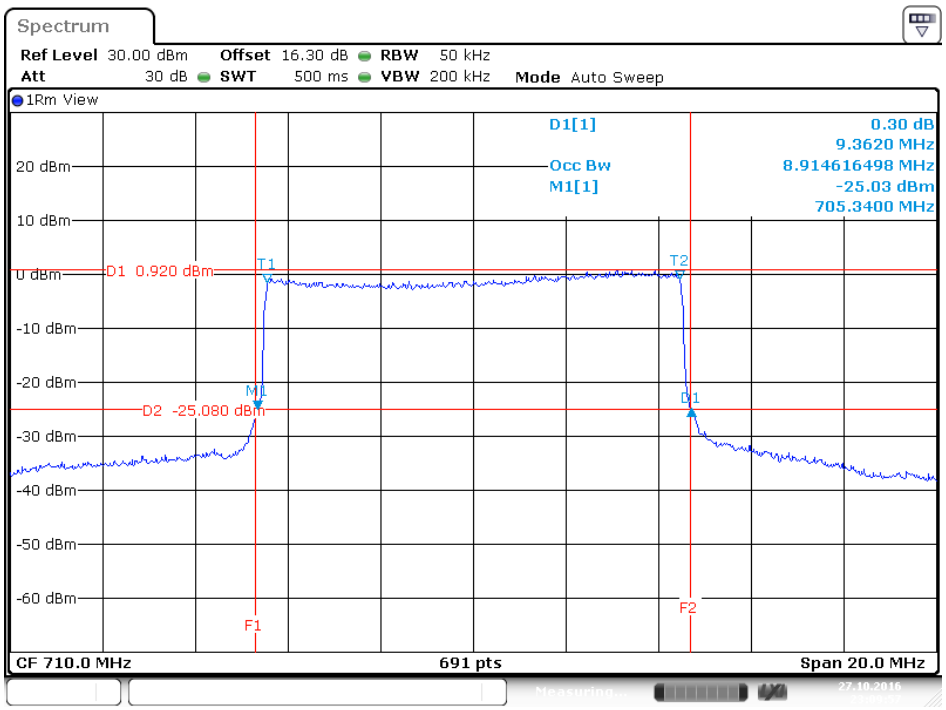
CH Mid



Date: 27.OCT.2016 23:11:01

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

CH Mid



Date: 27.OCT.2016 23:09:57

7.5 PEAK TO AVERAGE POWER RATIO

LIMIT

In measuring transmissions in this band using an average power technique, 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 4

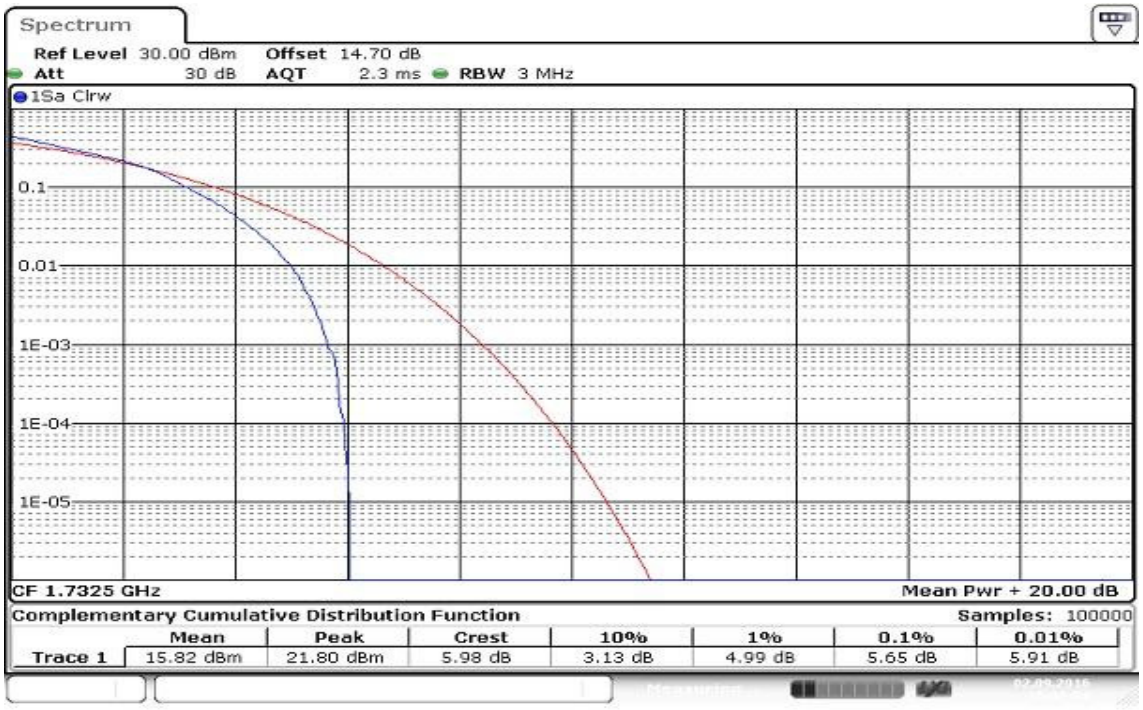
BW: 1.4MHz / QPSK / RB =1, RB Offset = 0

CH Mid

Date: 2.SEP.2016 14:54:43

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

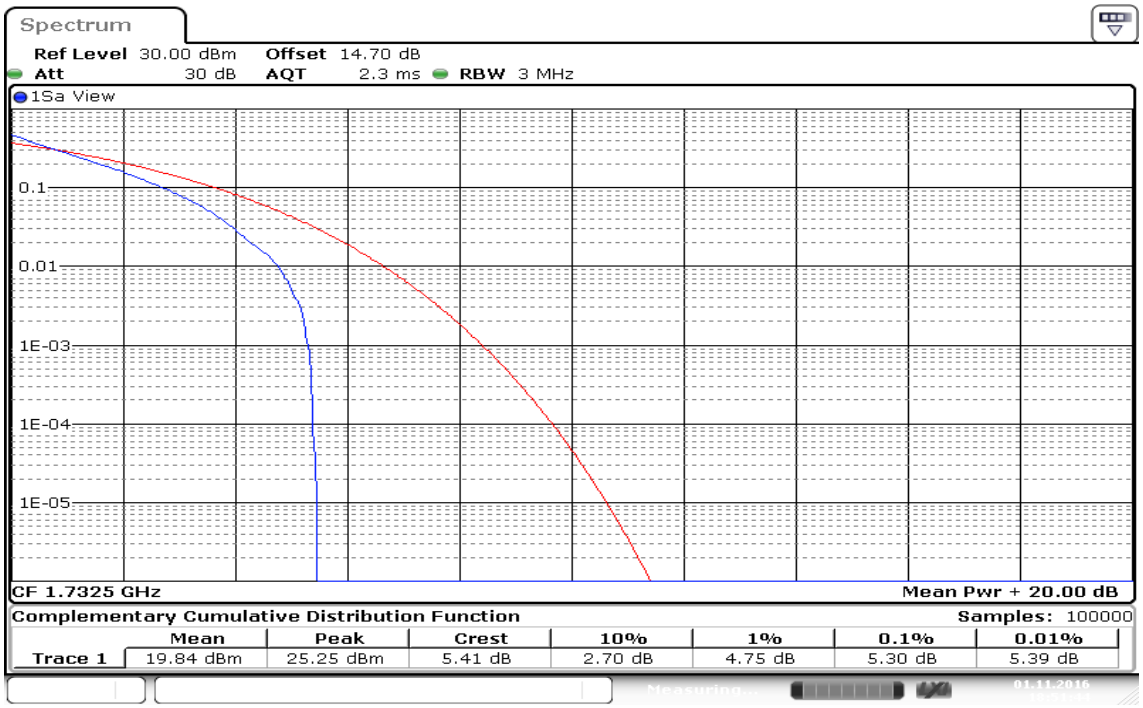
CH Mid



Date: 2.SEP.2016 16:32:31

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

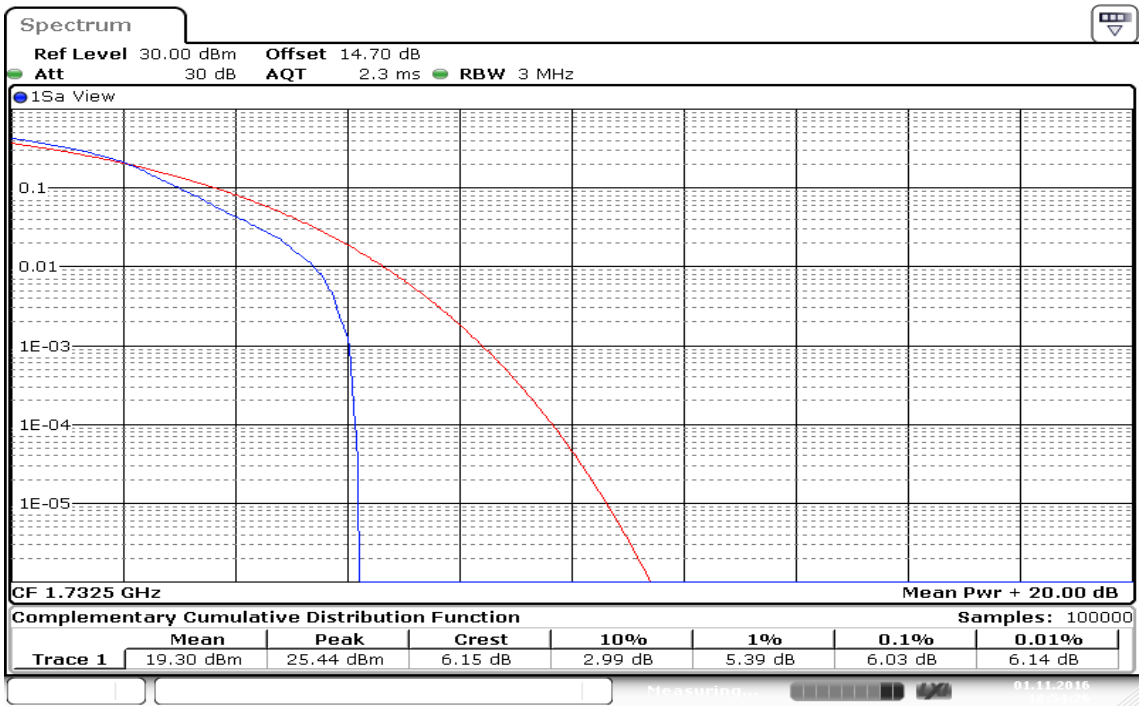
CH Mid



Date: 1.NOV.2016 18:51:45

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

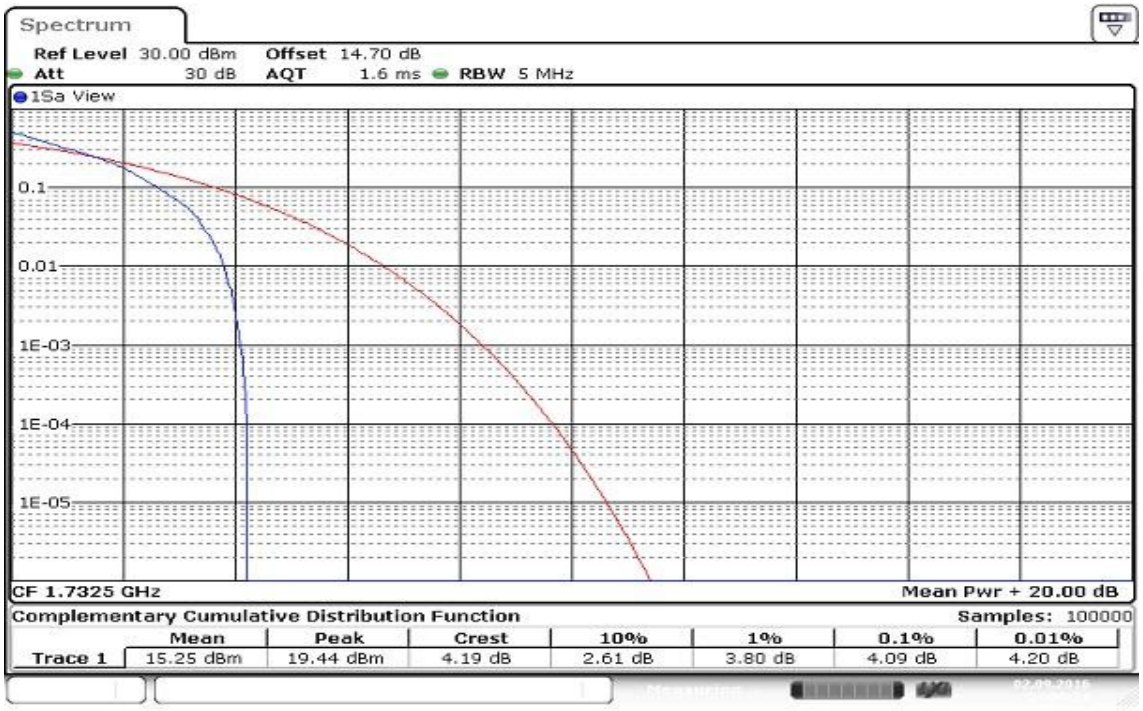
CH Mid



Date: 1.NOV.2016 18:54:26

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

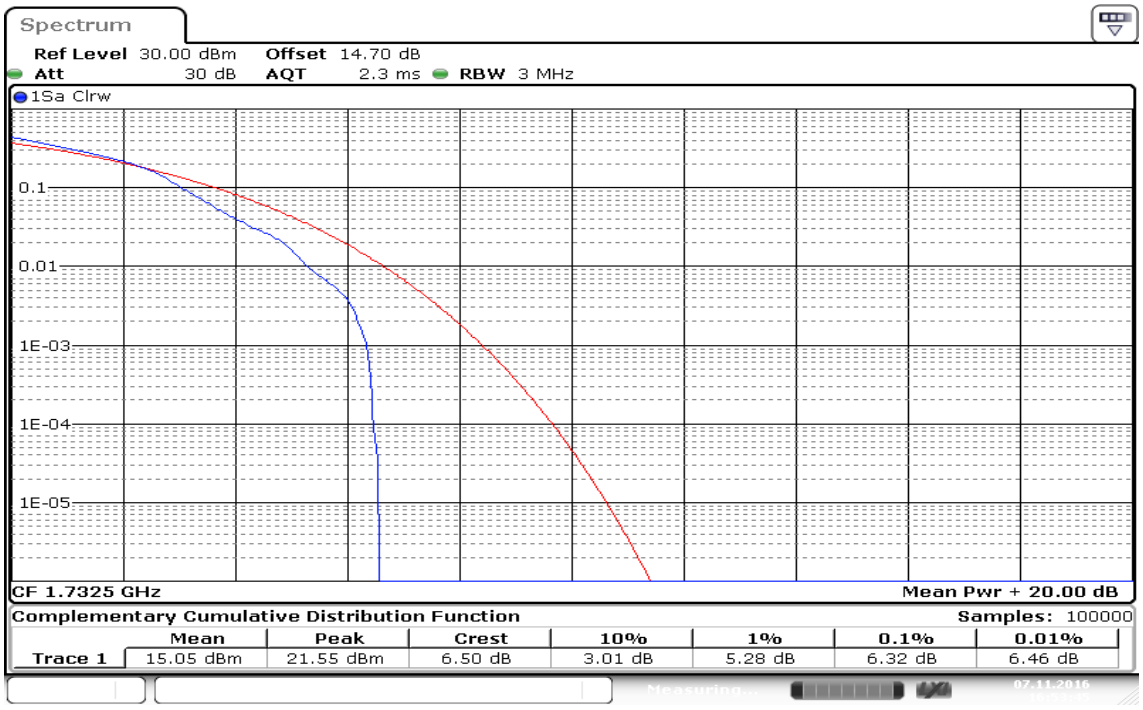
CH Mid



Date: 2.SEP.2016 14:50:21

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

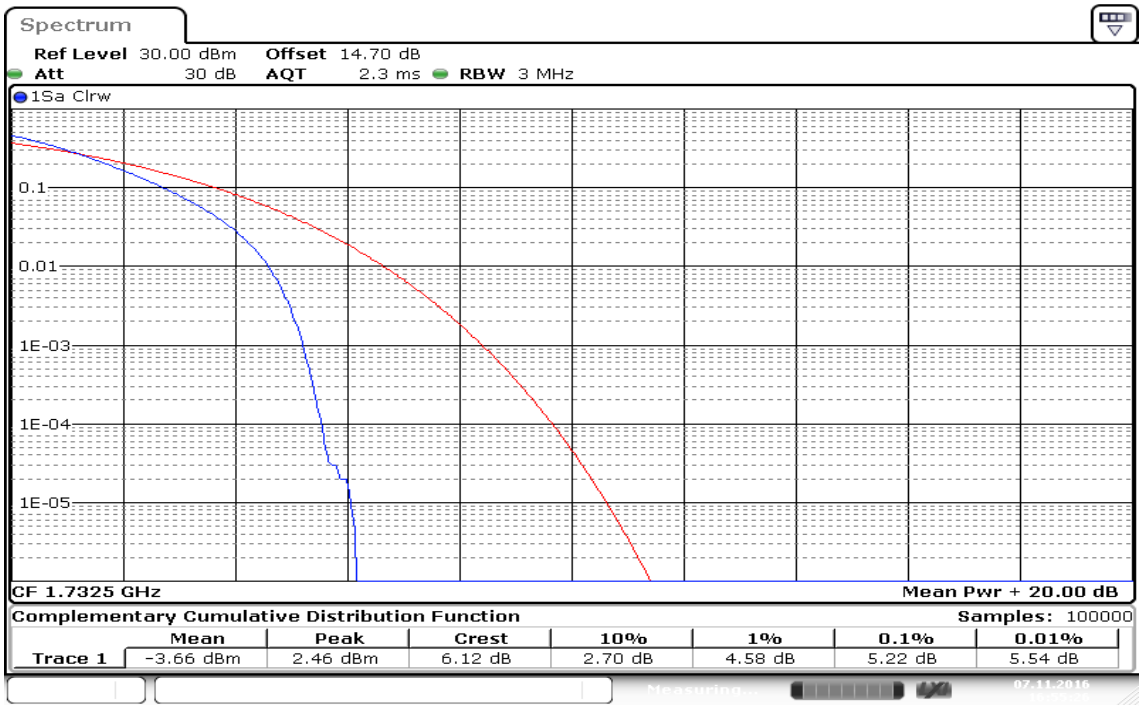
CH Mid



Date: 7.NOV.2016 16:53:46

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

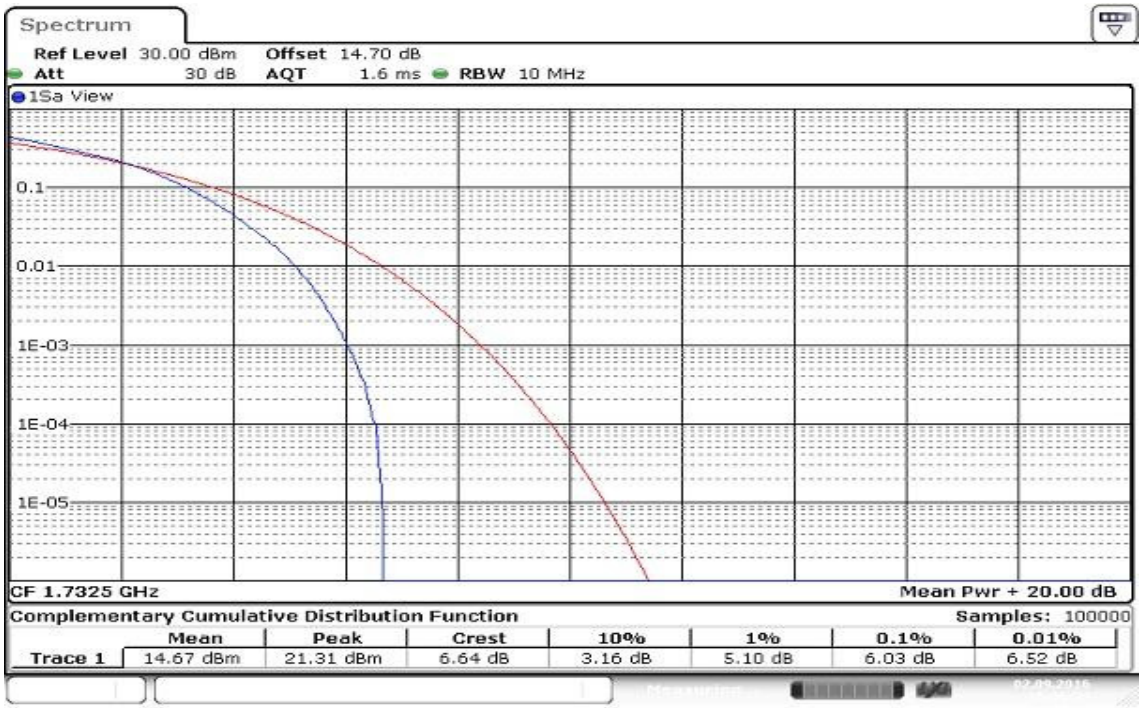
CH Mid



Date: 7.NOV.2016 16:55:26

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

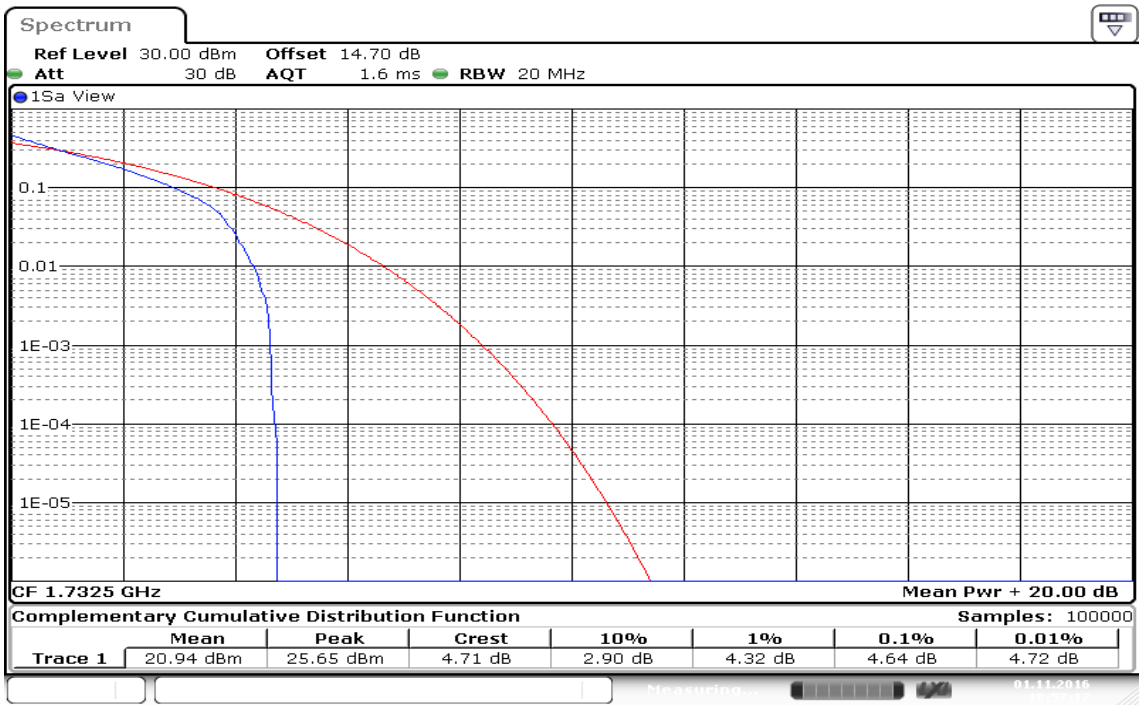
CH Mid



Date: 2.SEP.2016 16:39:32

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

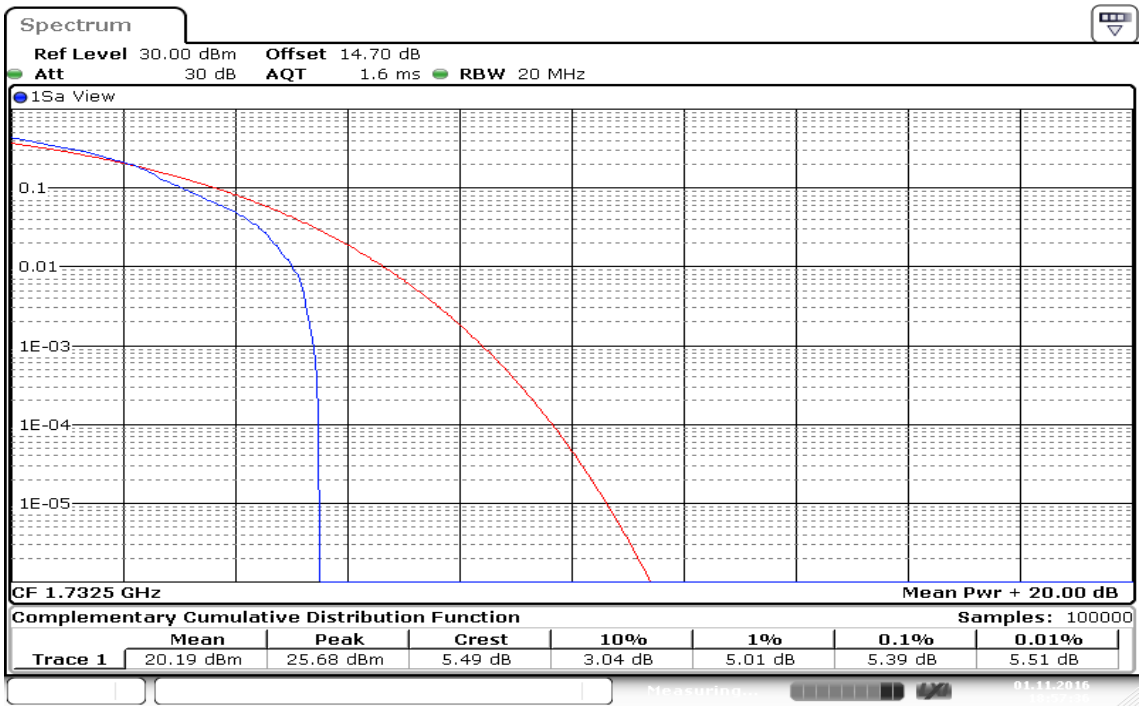
CH Mid



Date: 1.NOV.2016 18:57:17

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

CH Mid



Date: 1.NOV.2016 18:57:36

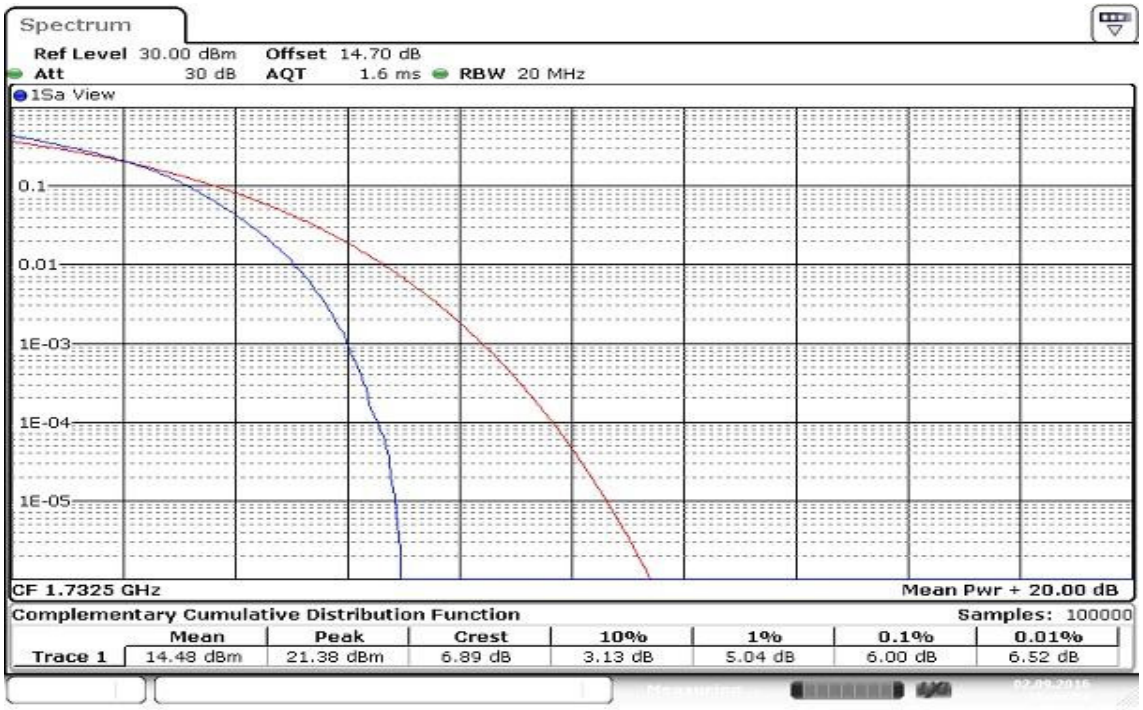
BW: 20MHz / QPSK / RB =1, RB Offset = 0

CH Mid

Date: 2.SEP.2016 14:39:24

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

CH Mid



Date: 2.SEP.2016 16:44:52

LTE Band 17

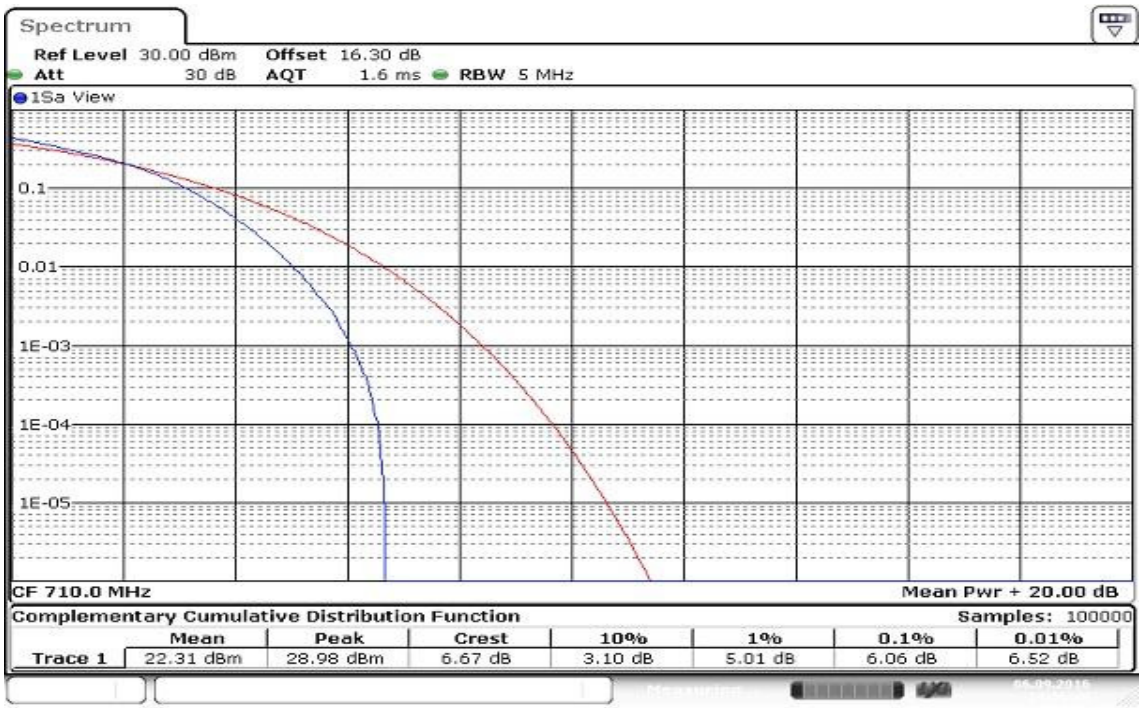
BW: 5MHz / QPSK / RB =1, RB Offset = 0

CH Mid

Date: 6.SEP.2016 14:41:49

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

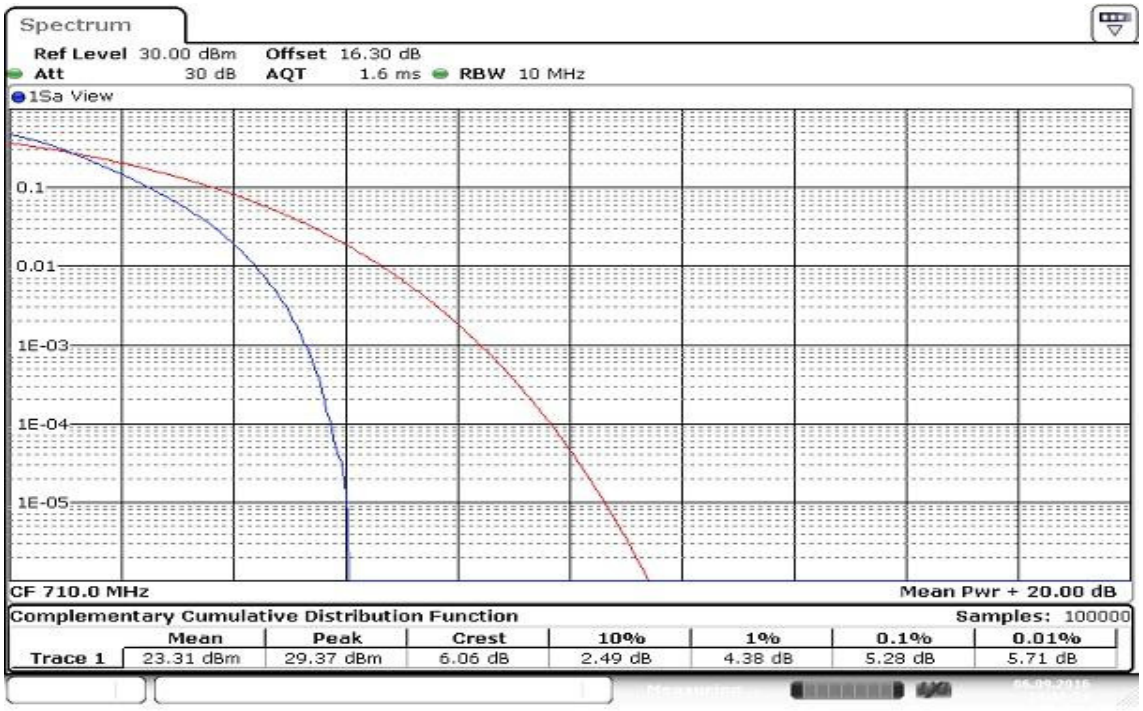
CH Mid



Date: 6.SEP.2016 14:39:49

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

CH Mid



Date: 6.SEP.2016 14:32:21

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

CH Mid

Date: 6.SEP.2016 14:36:34

7.6 BAND EDGE MEASUREMENT

LIMIT

FCC §27.53(g), Band 17

For operations in the 600 MHz band and the 698-the power of any ,MHz band746 of operation shall be attenuated below (s)s frequency band'emission outside a licensee by ,watts measured in ,of operation (s)within the licensed band (P)the transmitter power Compliance with this provision is based on the use of .dB (P)log 10 + 43at least kilohertz or 100measurement instrumentation employing a resolution bandwidth of kilohertz bands immediately outside and adjacent to a 100in the ,However .greater .kHz may be employed 30a resolution bandwidth of at least ,s frequency block'licensee

FCC §27.53(h), Band 4

for operations in the ,Except as otherwise specified below .General protection levels s frequency block 'enseethe power of any emission outside a lic ,MHz bands1755-1710 (P) 10log 10 + 43in watts by at least (P)shall be attenuated below the transmitter power .dB

TEST PROCEDURES

KDB 971168 D01 v02r02 - Section 6.0

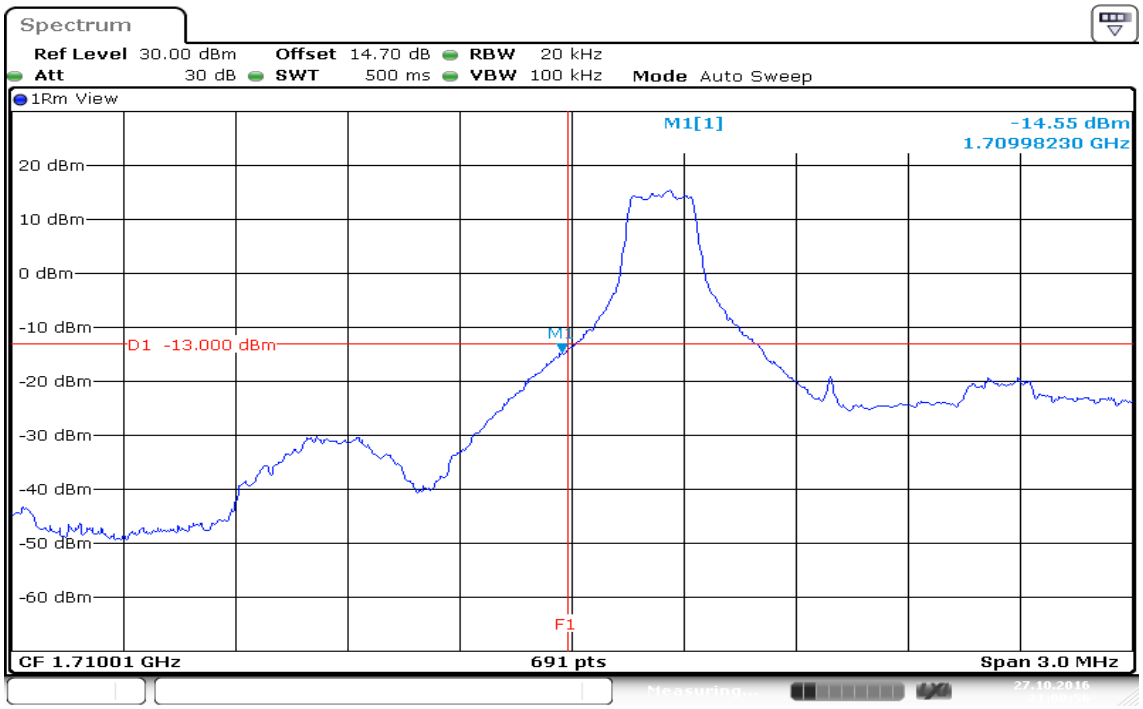
1. RBW ≥ 1% of the emission bandwidth
2. VBW ≥ 3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

TEST RESULTS:

LTE Band 4

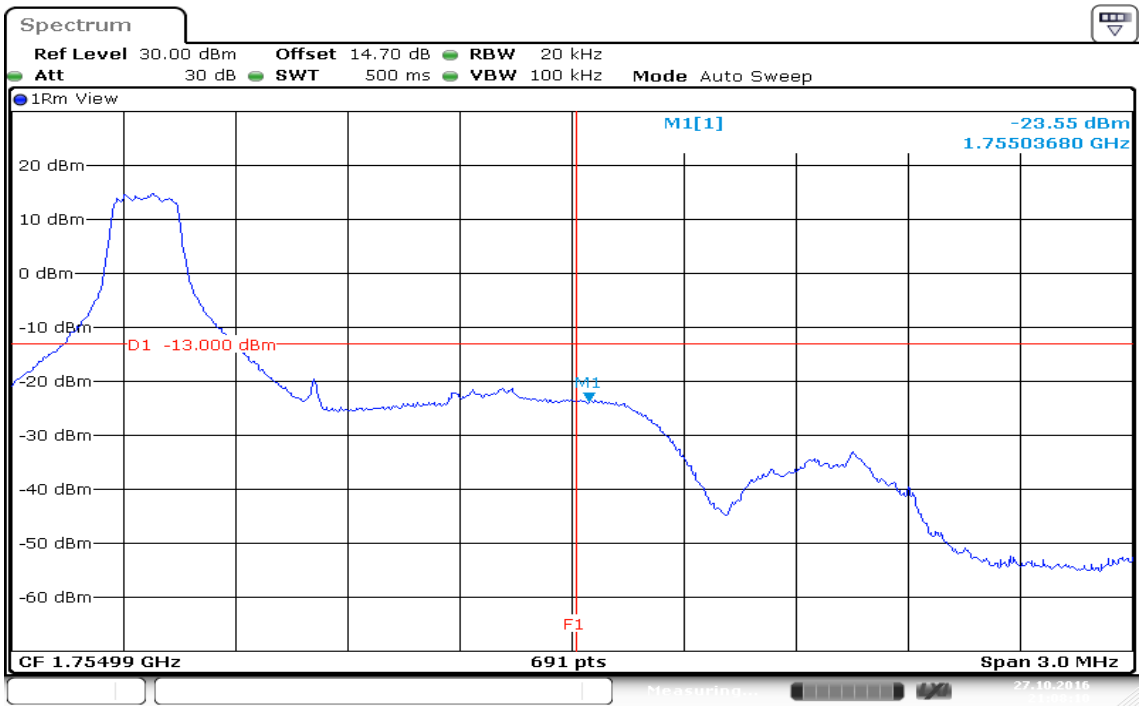
BW: 1.4MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:00:57

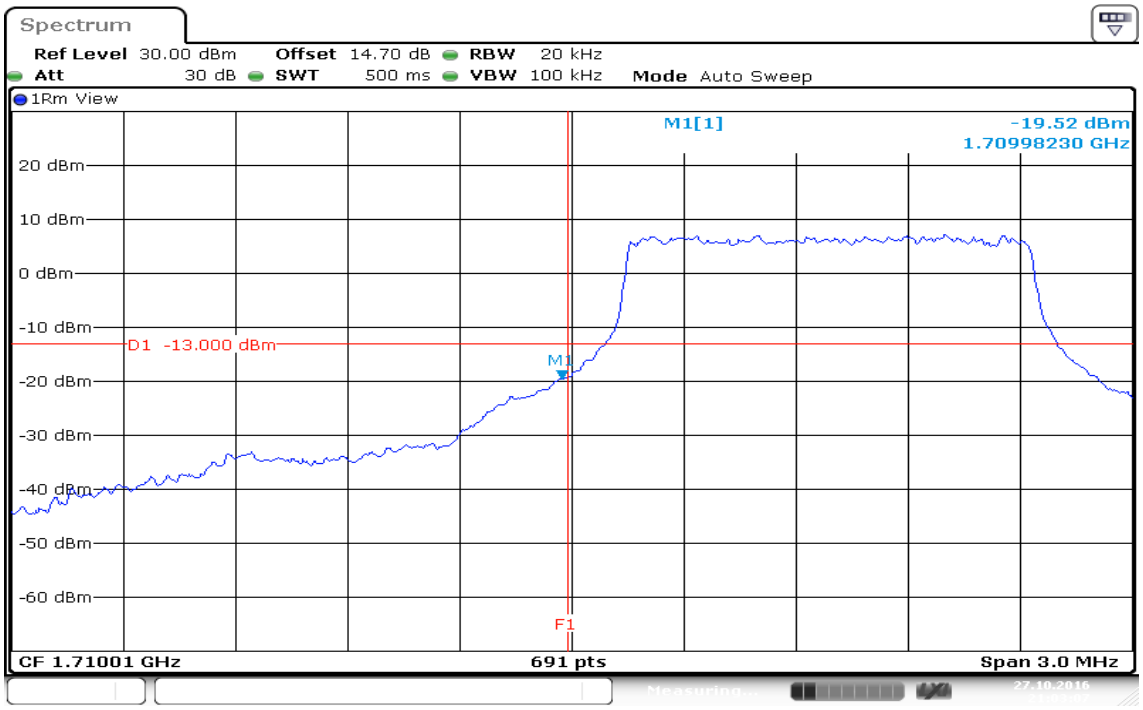
HIGHER BAND EDGE



Date: 27.OCT.2016 21:08:11

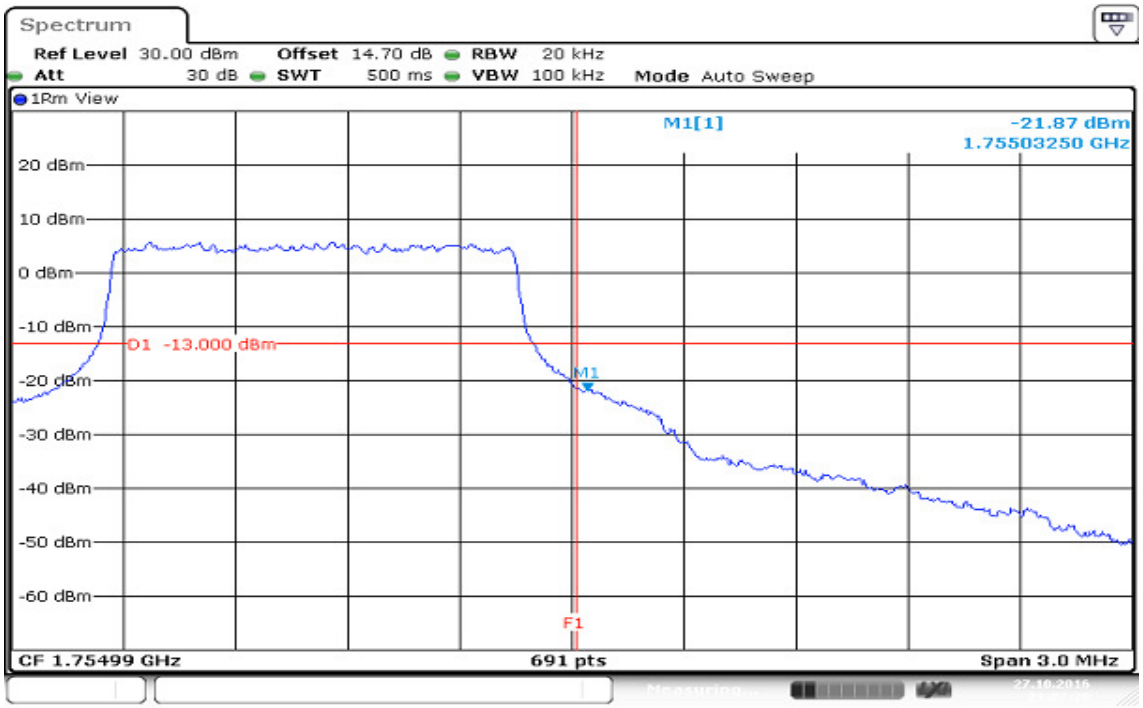
BW: 1.4MHz / QPSK / RB=6, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:03:07

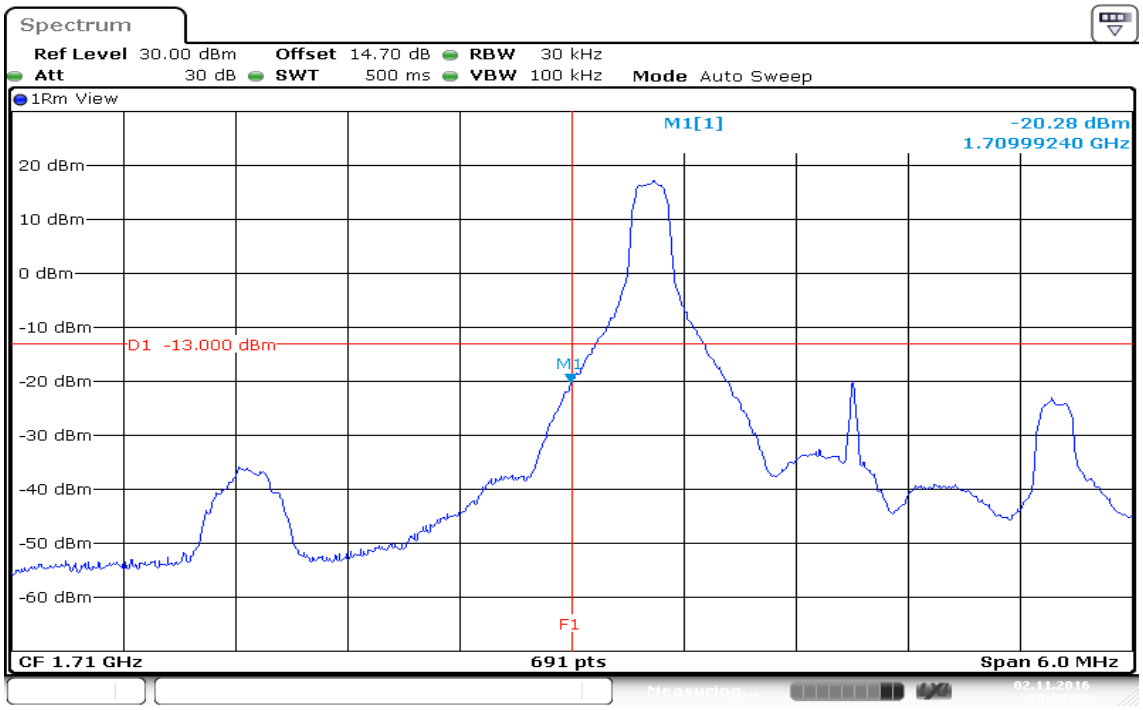
HIGHER BAND EDGE



Date: 27.OCT.2016 21:07:26

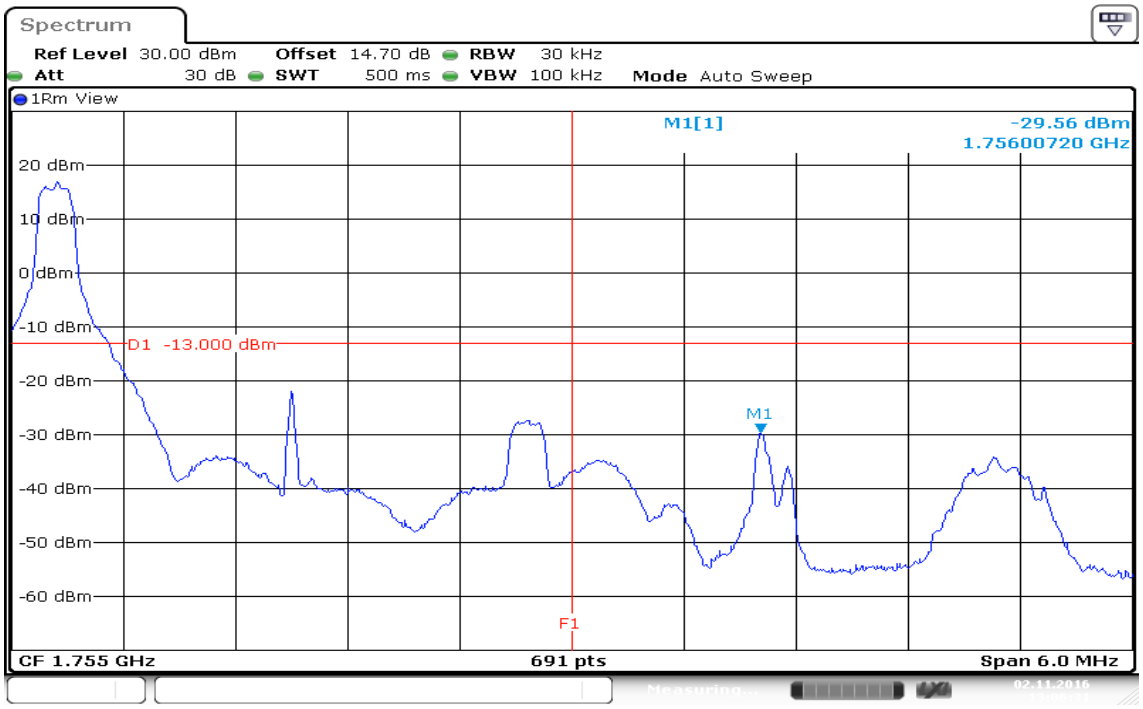
BW: 3MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 2.NOV.2016 13:00:55

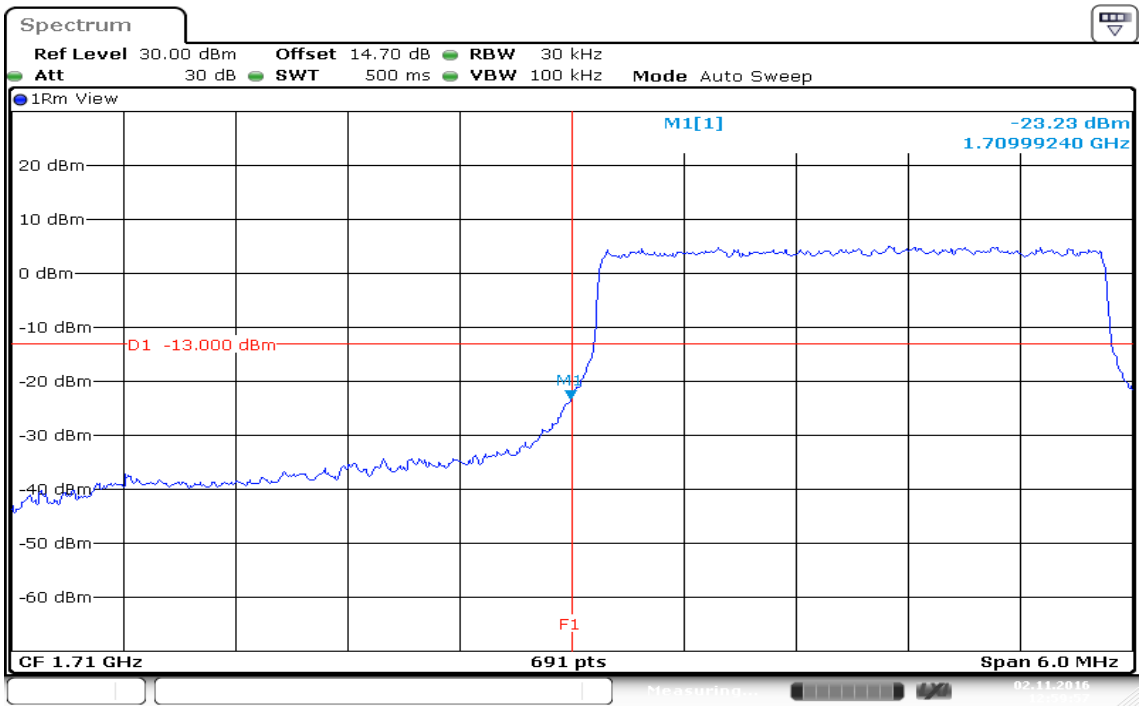
HIGHER BAND EDGE



Date: 2.NOV.2016 13:06:32

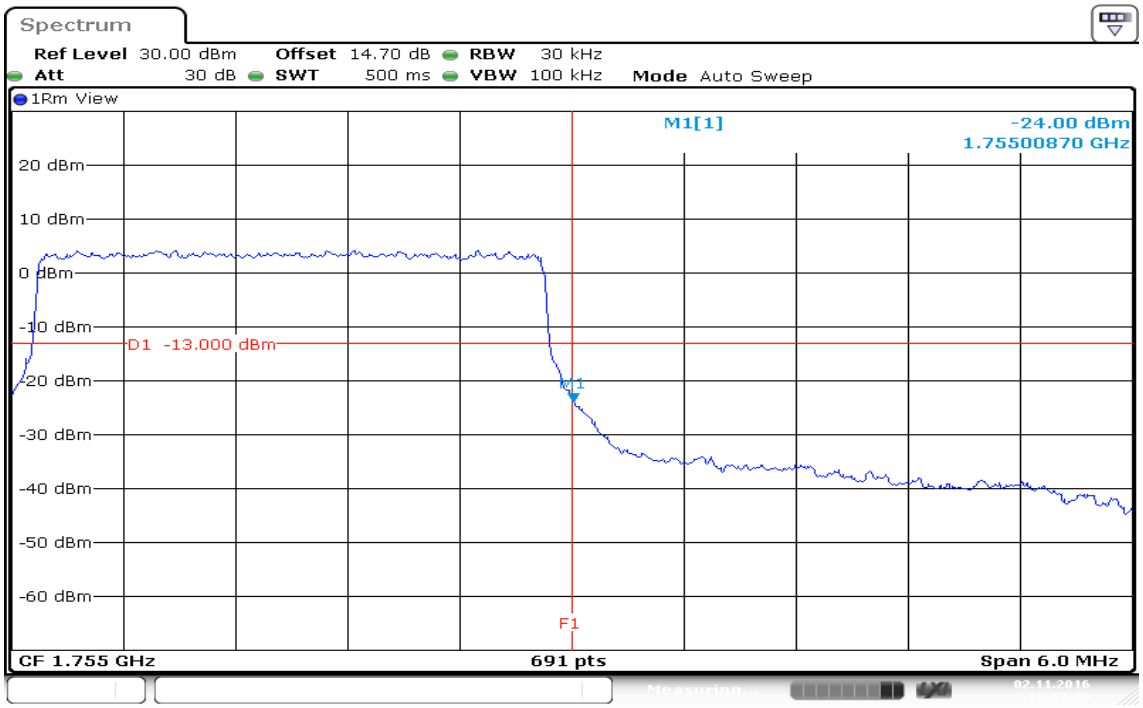
BW: 3MHz / QPSK / RB=15, RB Offset = 0

LOWER BAND EDGE



Date: 2.NOV.2016 12:59:57

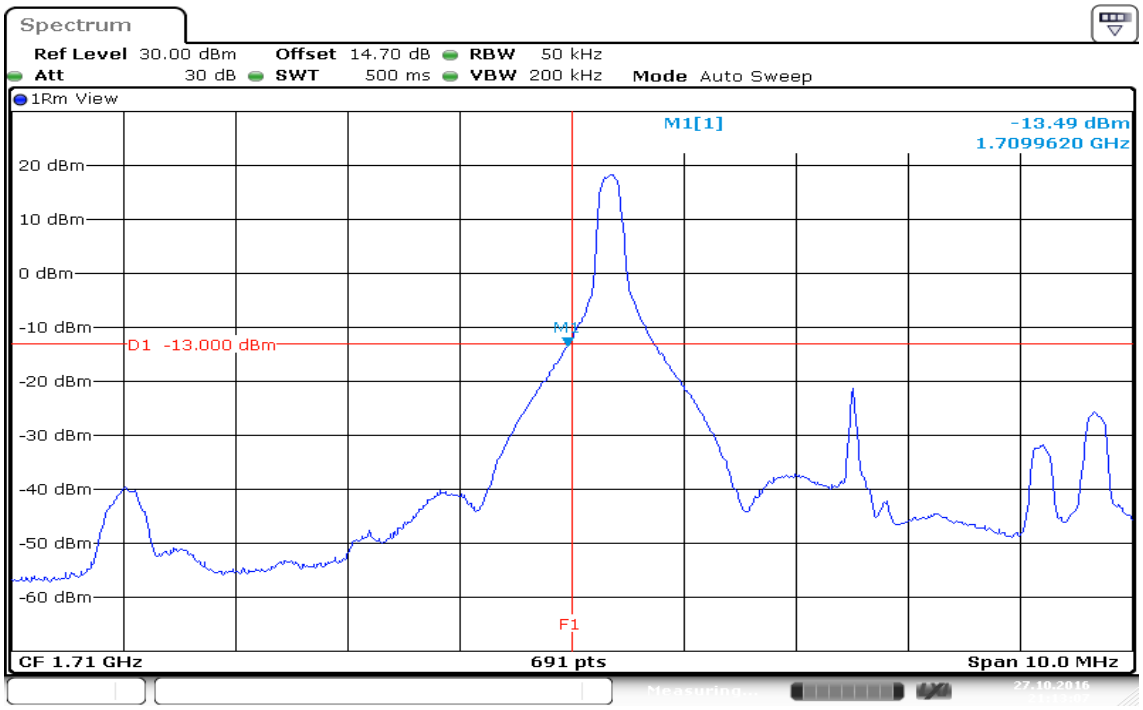
HIGHER BAND EDGE



Date: 2.NOV.2016 13:07:27

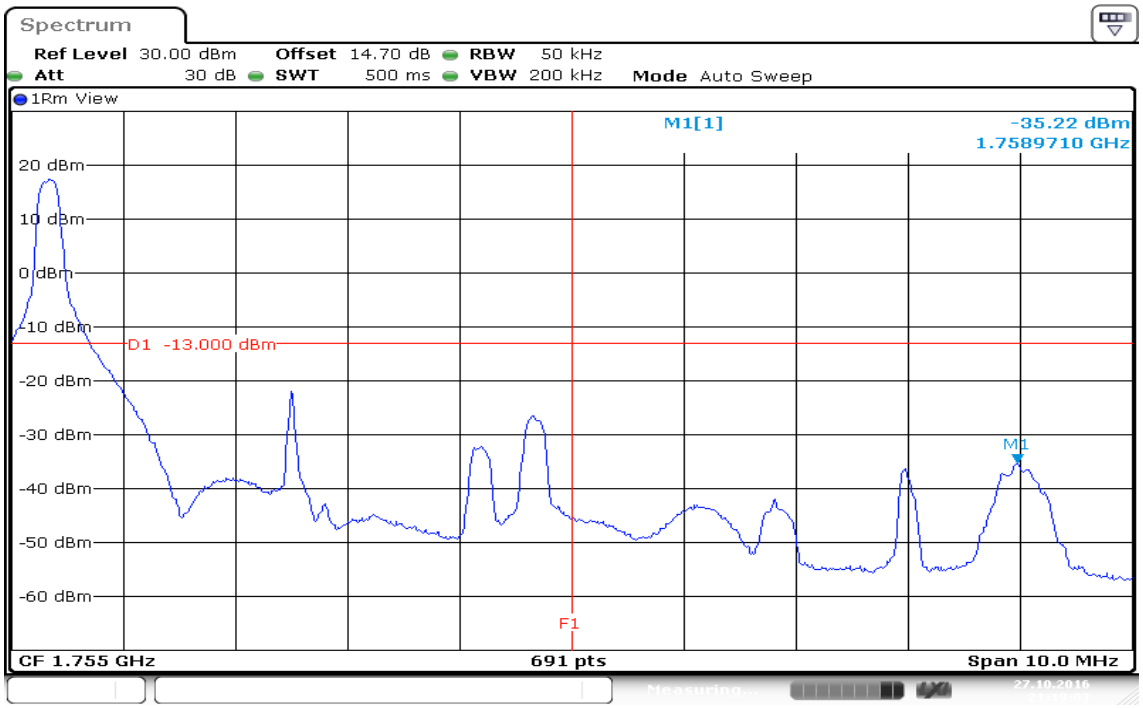
BW: 5MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:13:08

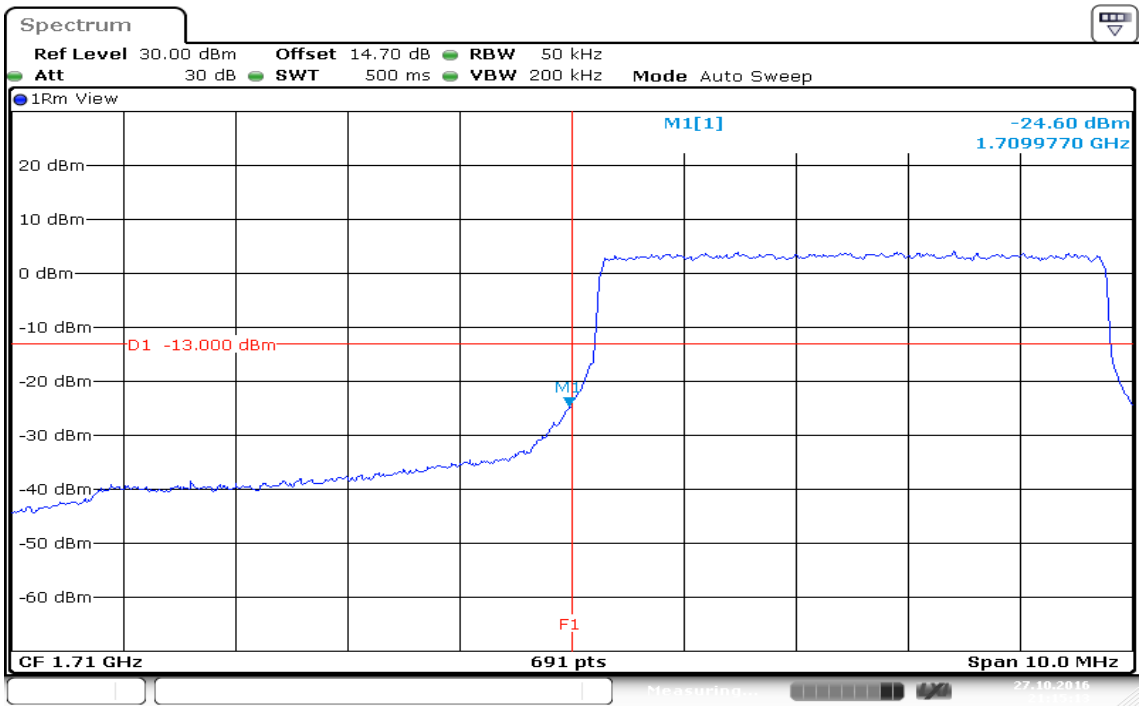
HIGHER BAND EDGE



Date: 27.OCT.2016 21:19:03

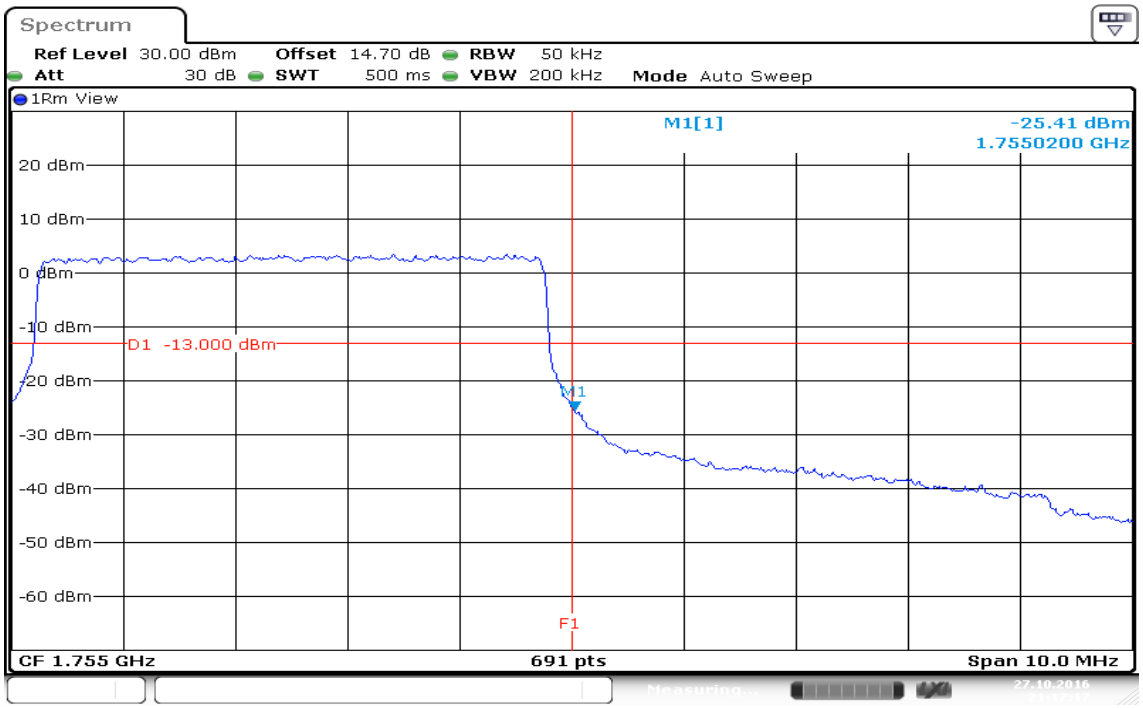
BW: 5MHz / QPSK / RB=25, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:15:14

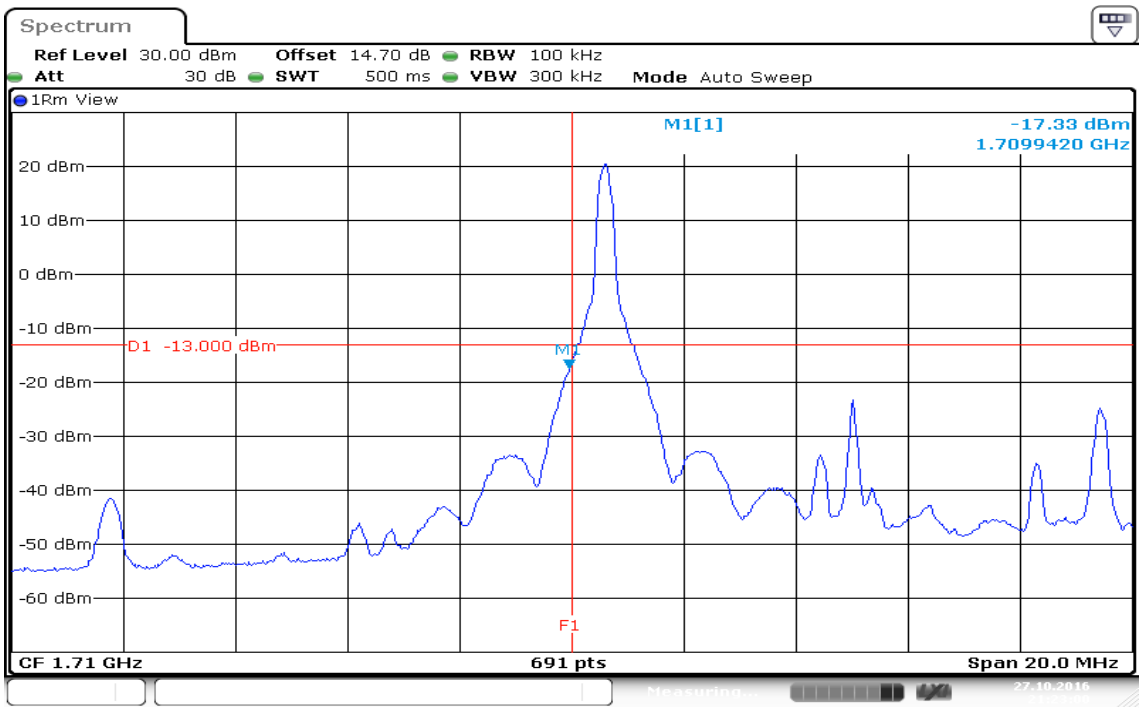
HIGHER BAND EDGE



Date: 27.OCT.2016 21:17:17

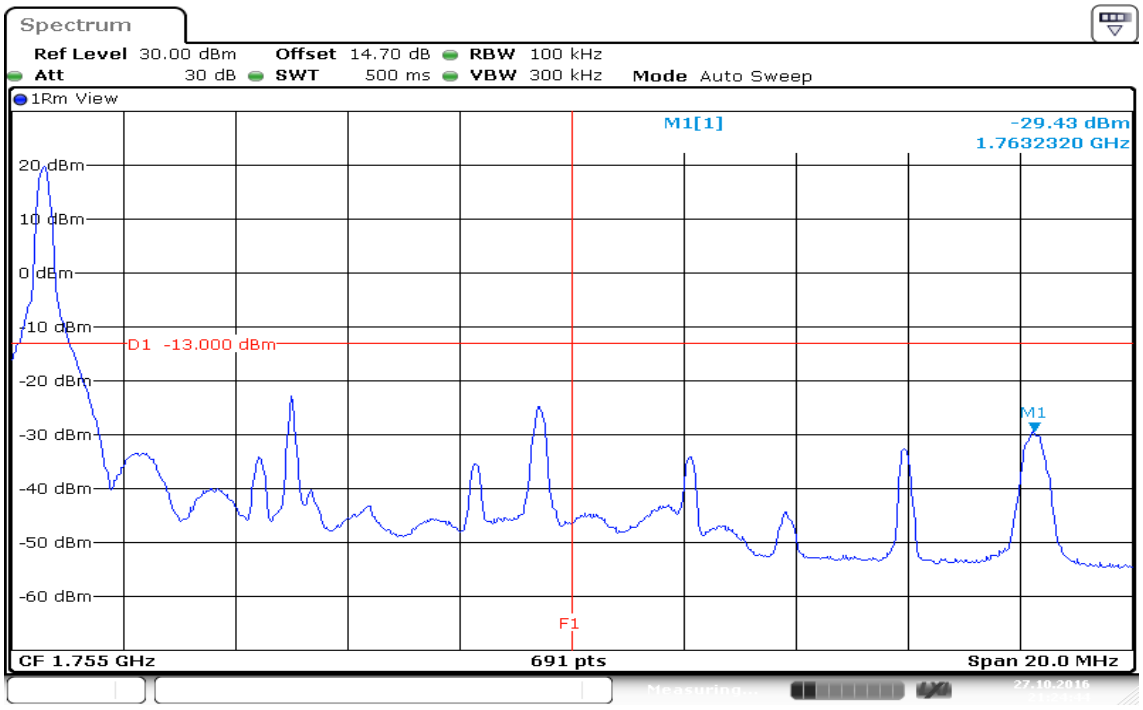
BW: 10MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:23:00

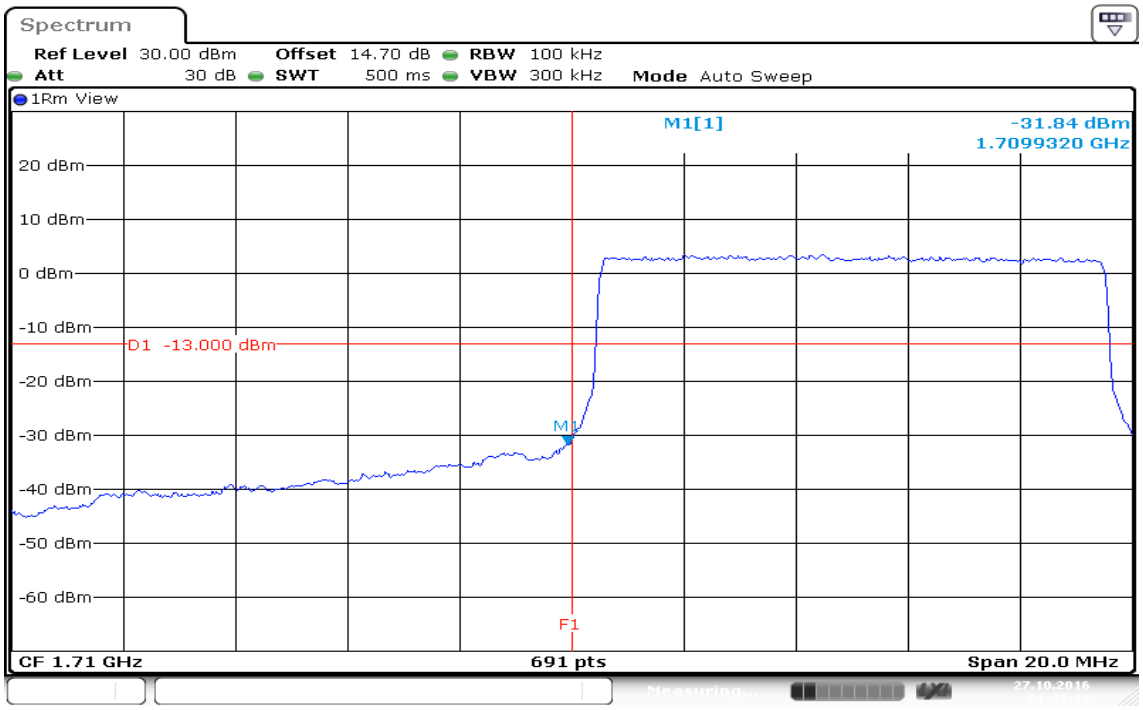
HIGHER BAND EDGE



Date: 27.OCT.2016 21:24:44

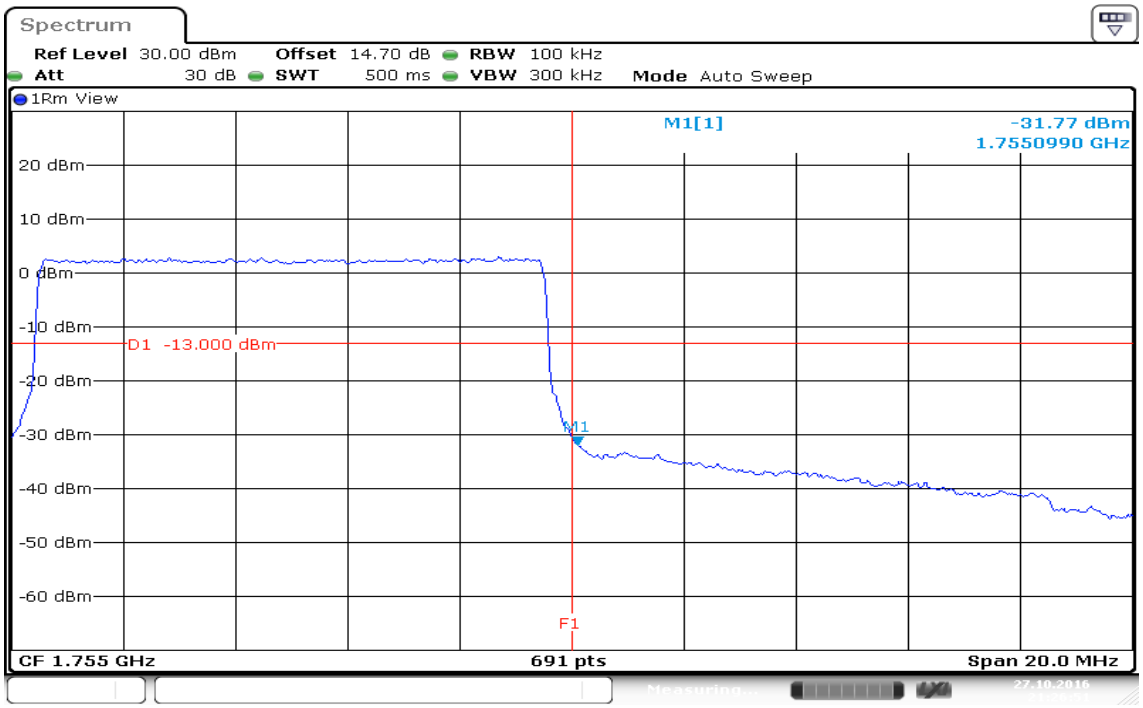
BW: 10MHz / QPSK / RB=50, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:21:16

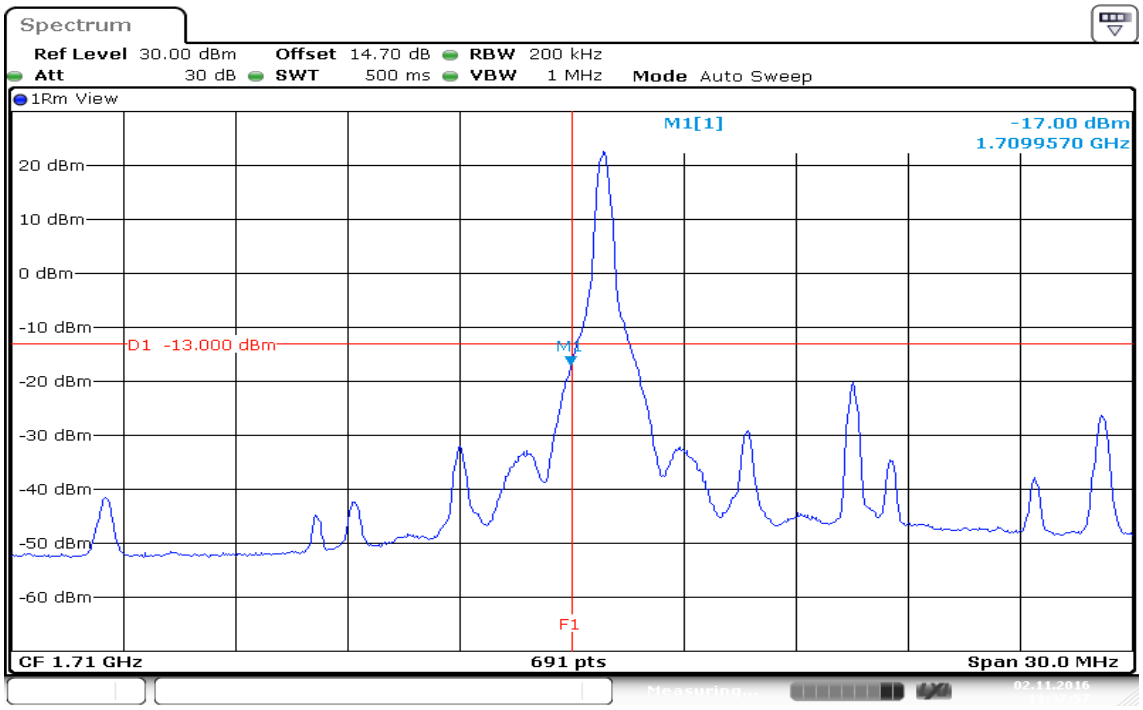
HIGHER BAND EDGE



Date: 27.OCT.2016 21:26:51

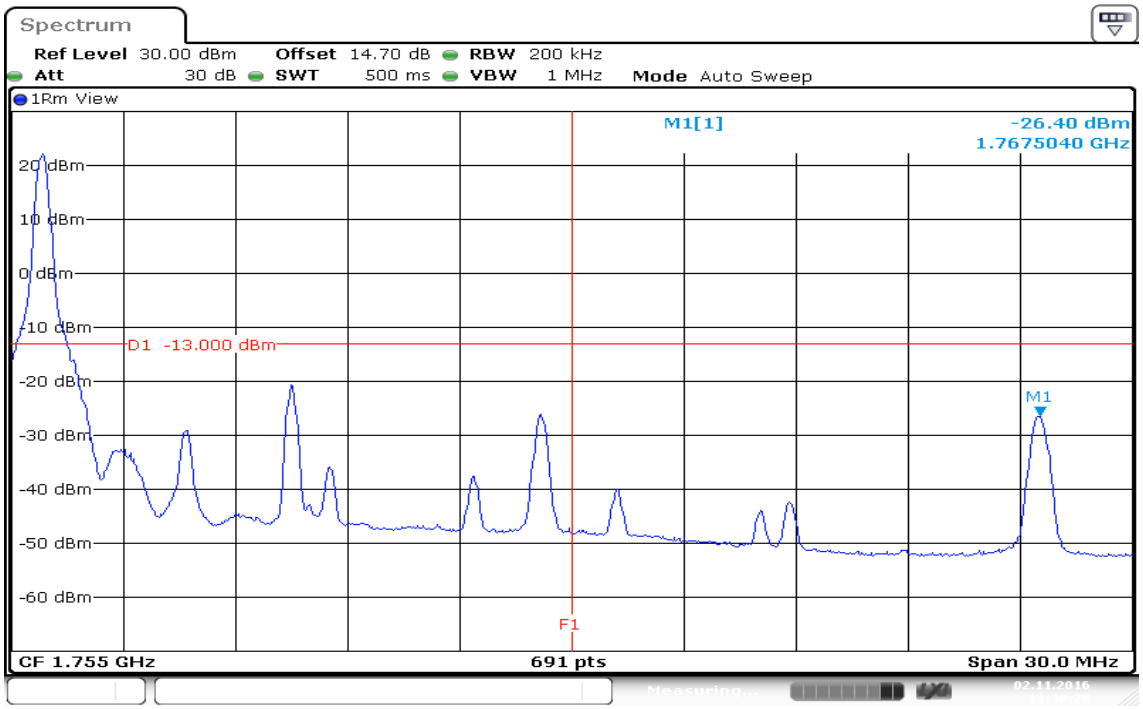
BW: 15MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 2.NOV.2016 13:37:58

HIGHER BAND EDGE

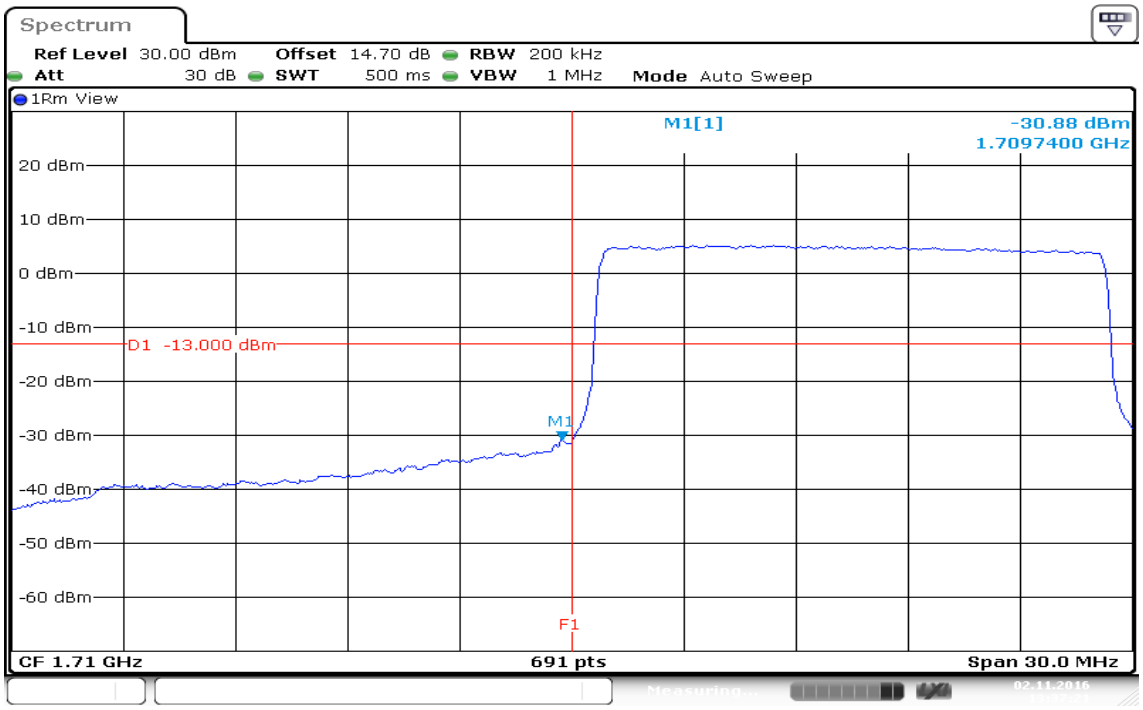


Date: 2.NOV.2016 13:40:29

BW:

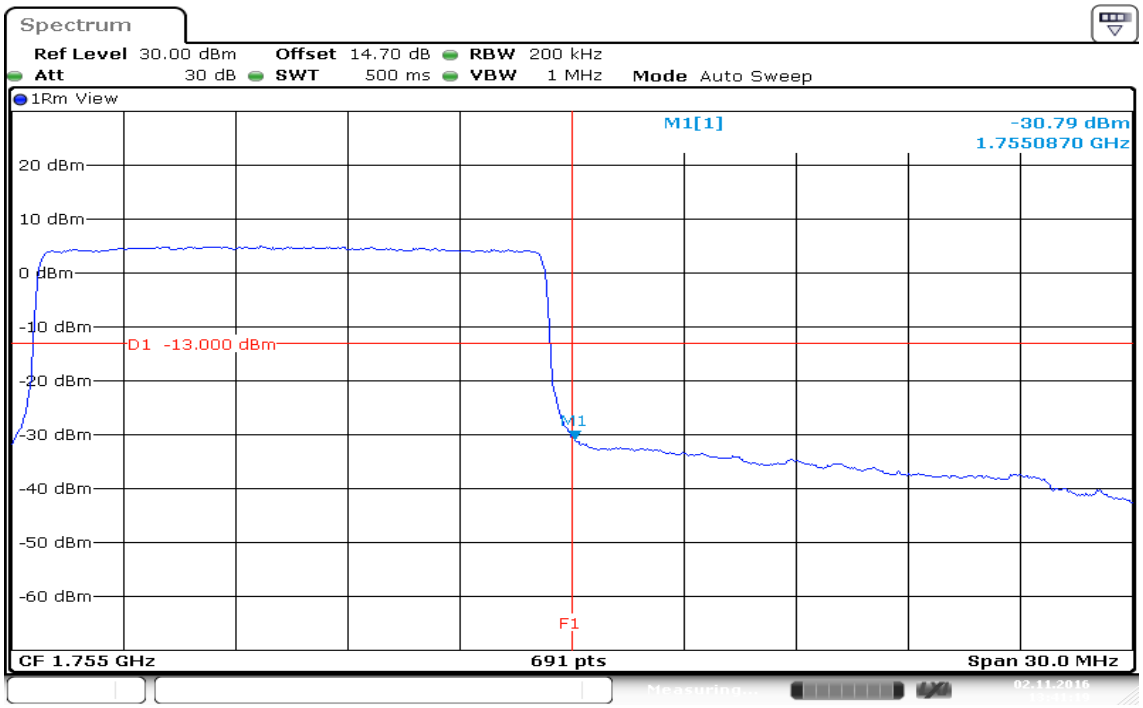
15MHz / QPSK / RB=75, RB Offset = 0

LOWER BAND EDGE



Date: 2.NOV.2016 13:37:21

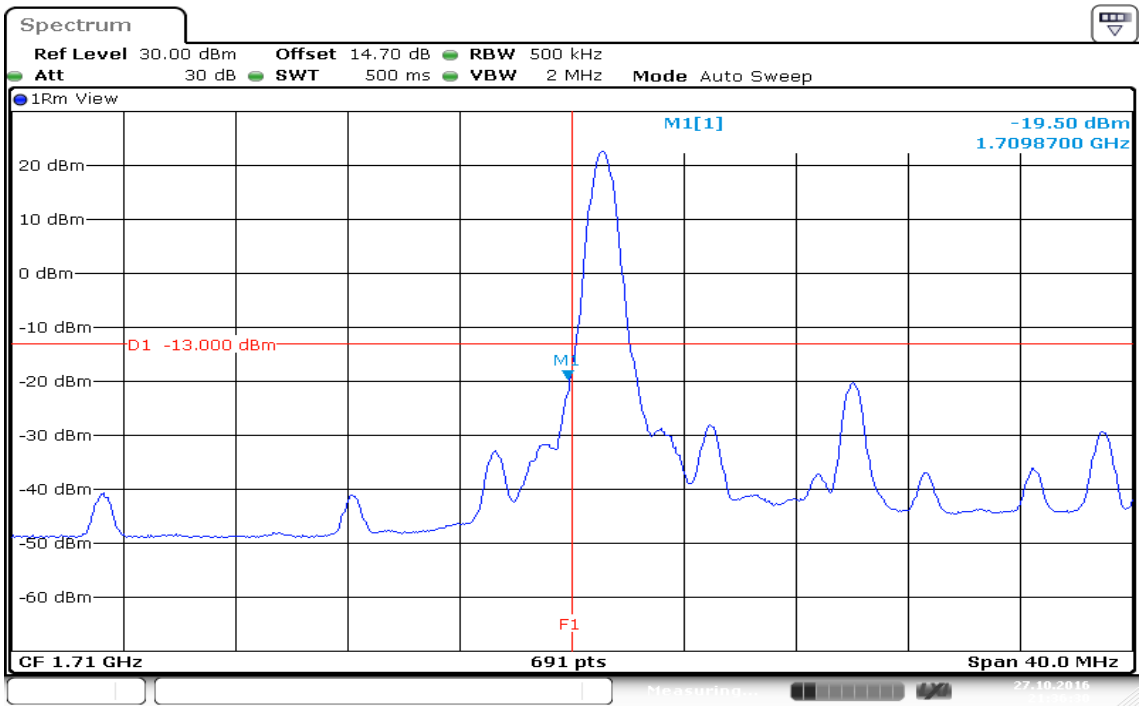
HIGHER BAND EDGE



Date: 2.NOV.2016 13:41:19

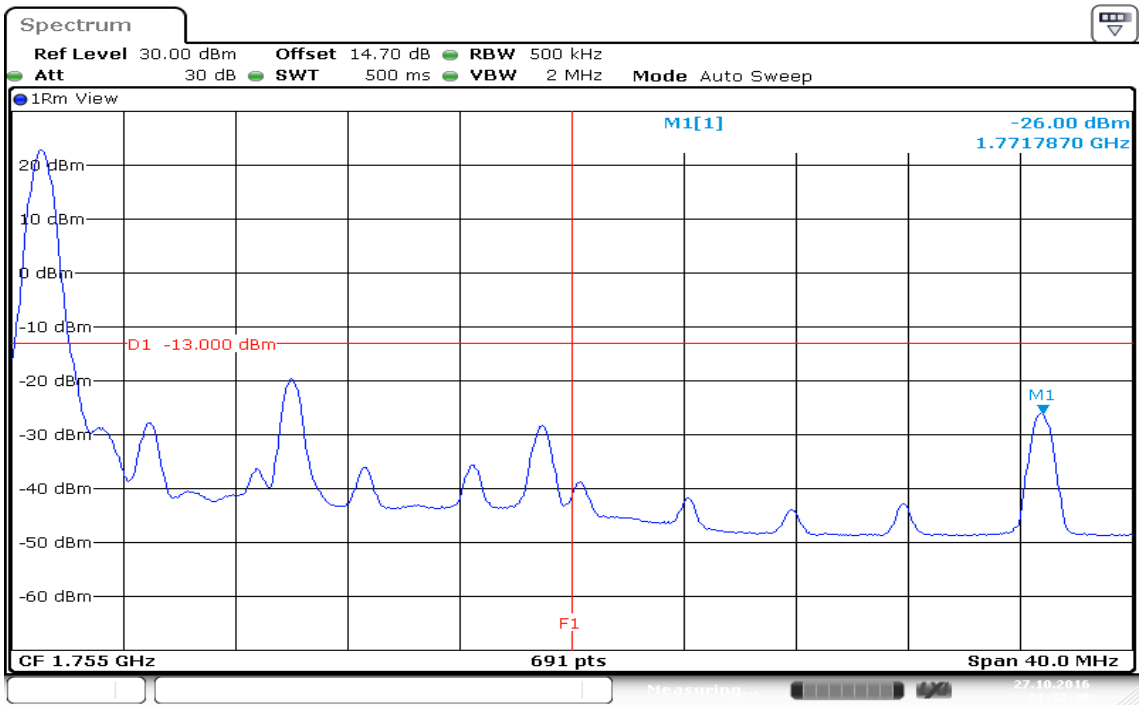
BW: 20MHz / QPSK / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:36:30

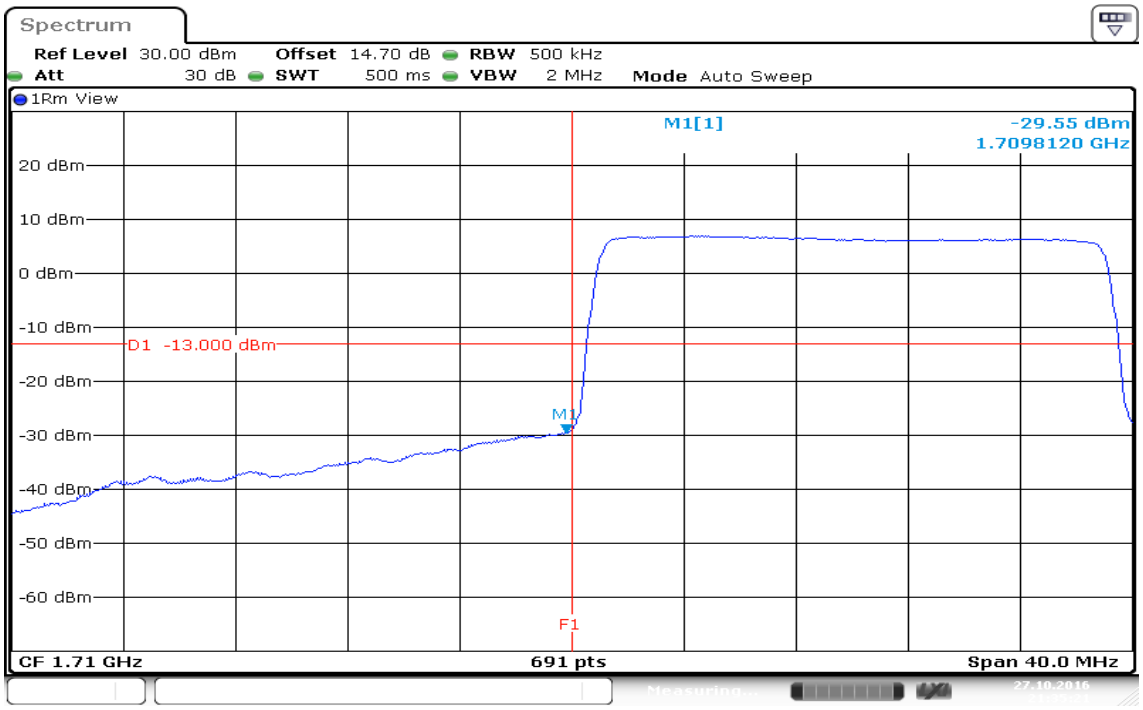
HIGHER BAND EDGE



Date: 27.OCT.2016 21:32:48

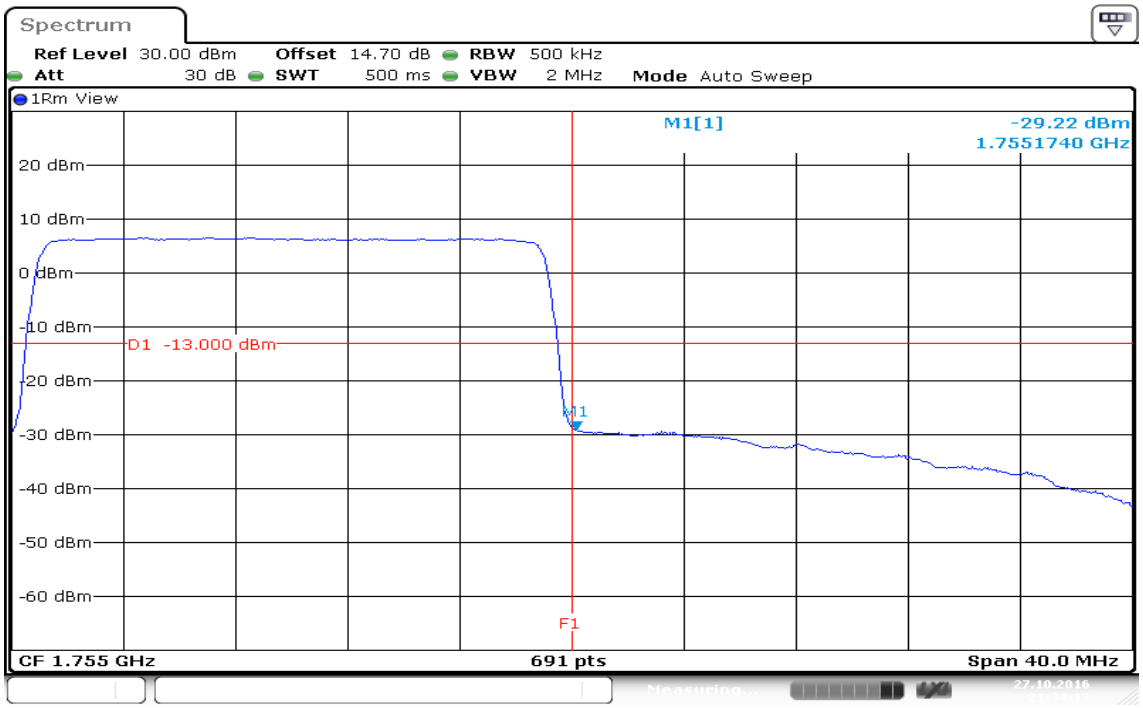
BW: 20MHz / QPSK / RB=100, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:35:22

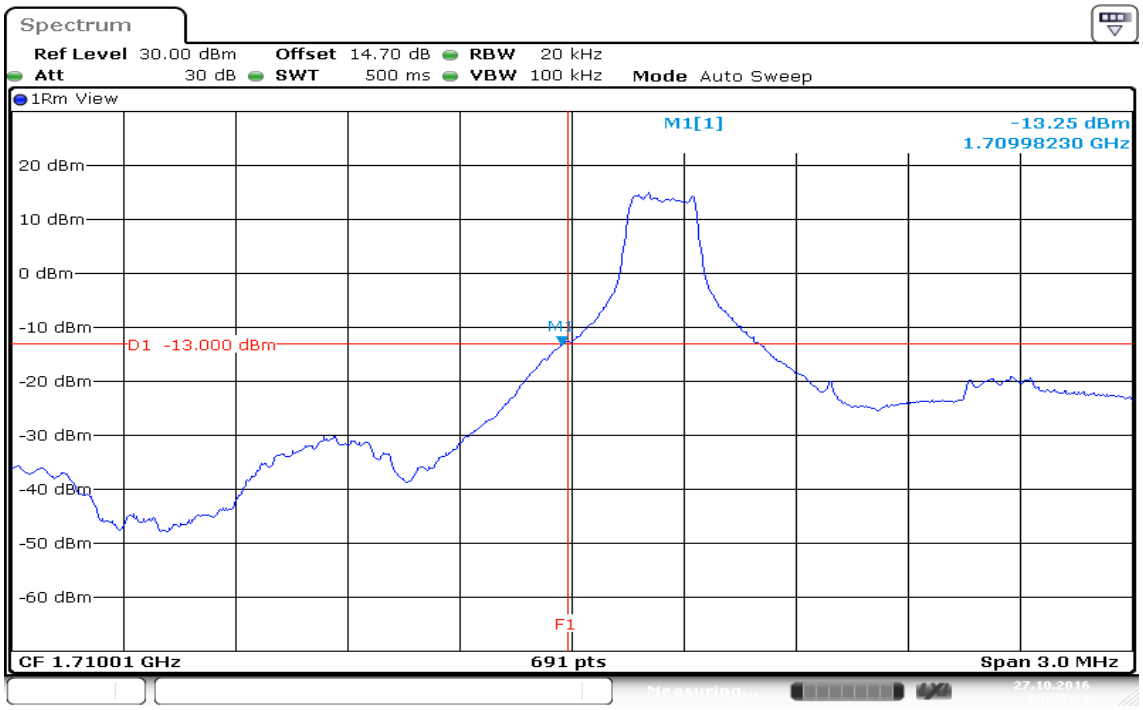
HIGHER BAND EDGE



Date: 27.OCT.2016 21:34:13

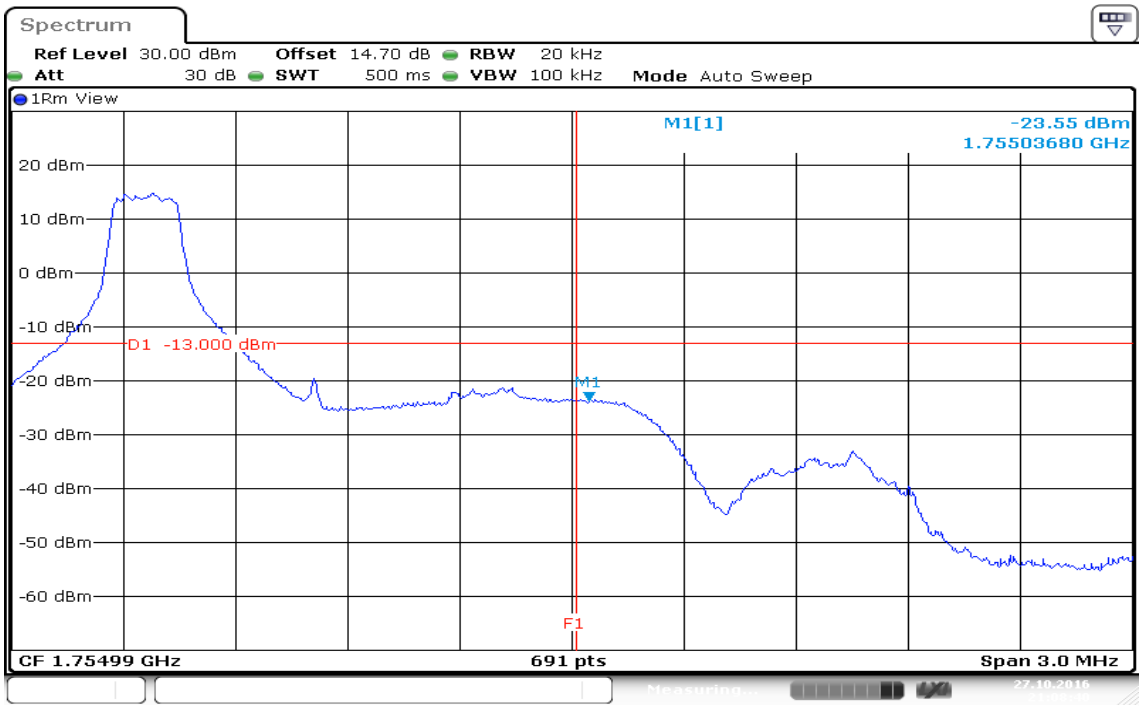
BW: 1.4MHz / 16QAM / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 20:59:30

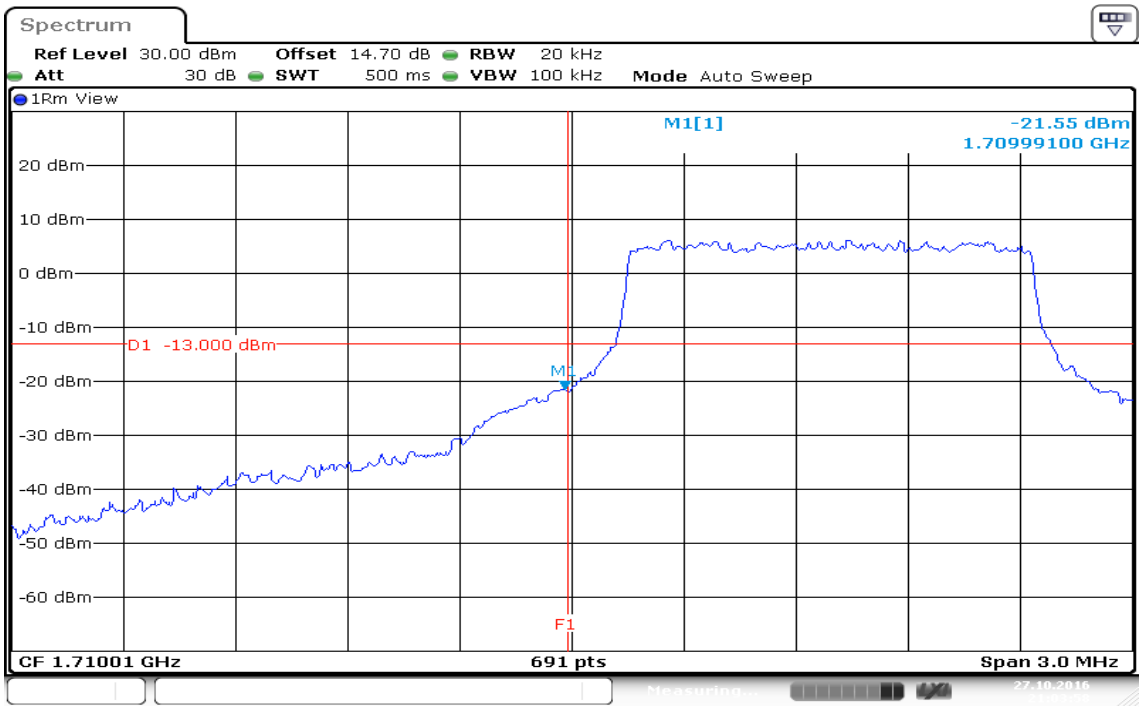
HIGHER BAND EDGE



Date: 27.OCT.2016 21:08:40

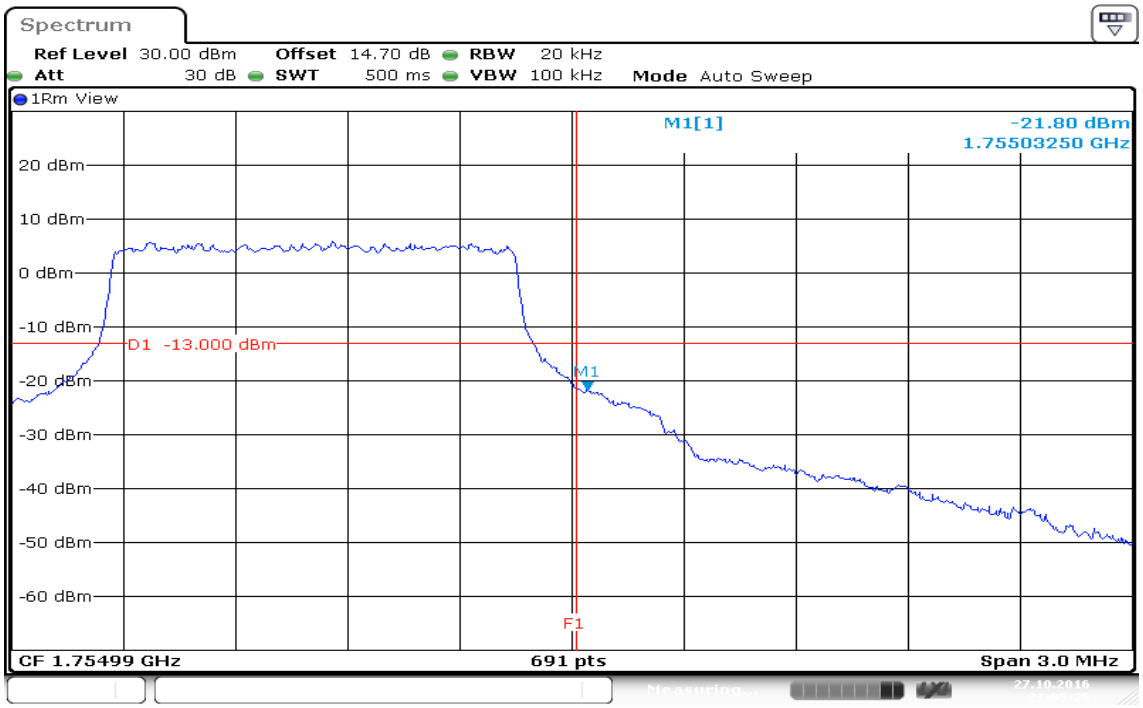
BW: 1.4MHz / 16QAM / RB=6, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:03:58

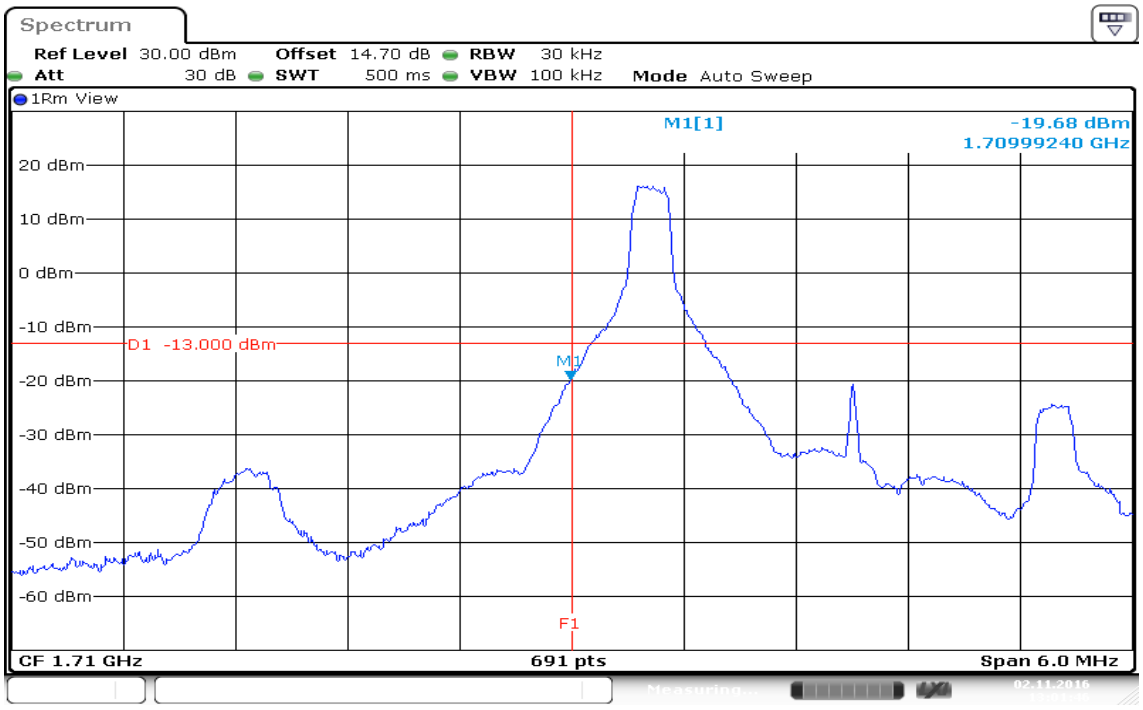
HIGHER BAND EDGE



Date: 27.OCT.2016 21:05:27

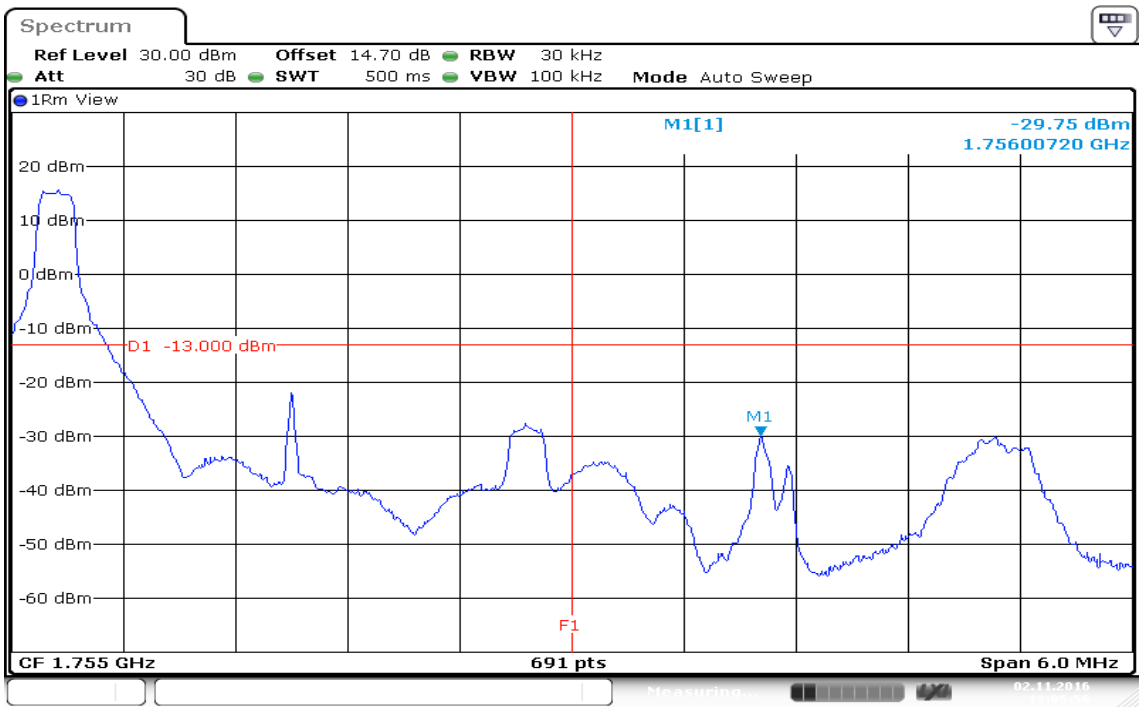
BW: 3MHz / 16QAM/ RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 2.NOV.2016 13:01:47

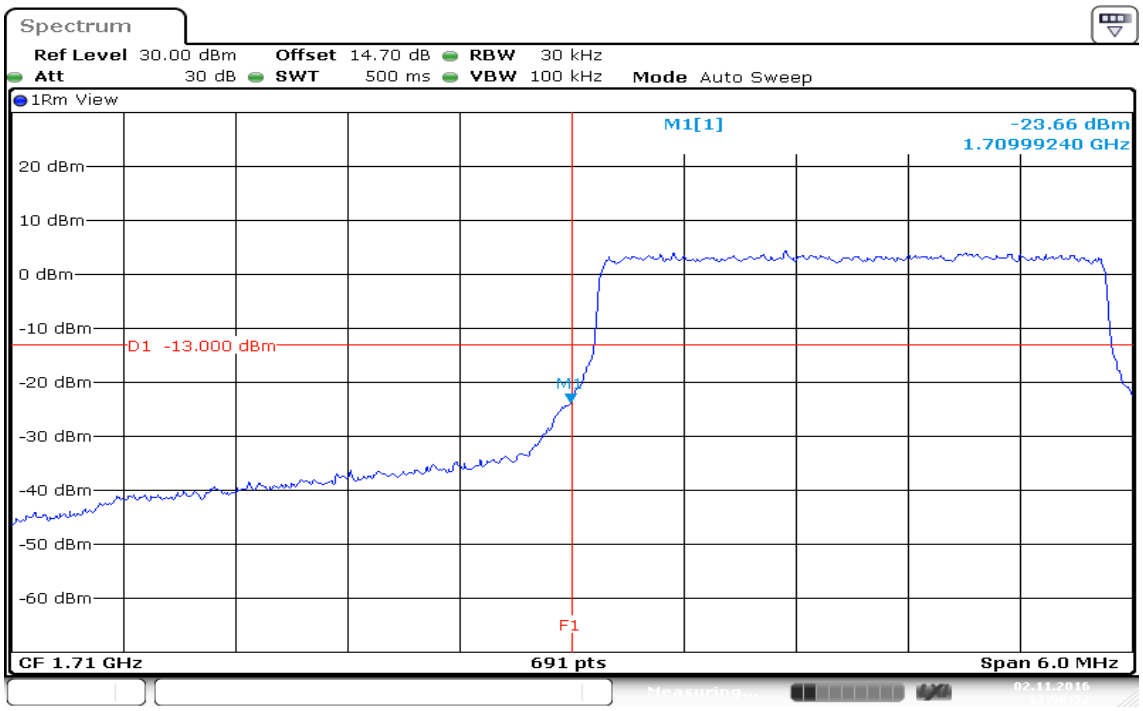
HIGHER BAND EDGE



Date: 2.NOV.2016 13:05:56

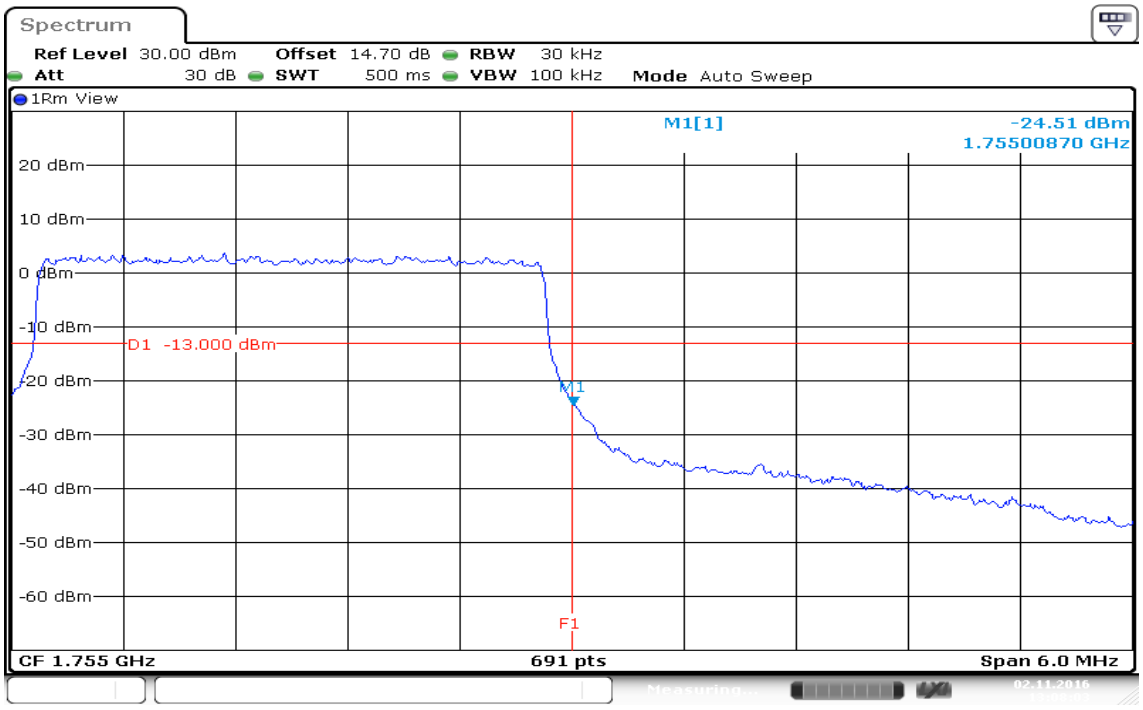
BW: 3MHz / 16QAM / RB=15, RB Offset = 0

LOWER BAND EDGE



Date: 2.NOV.2016 12:58:53

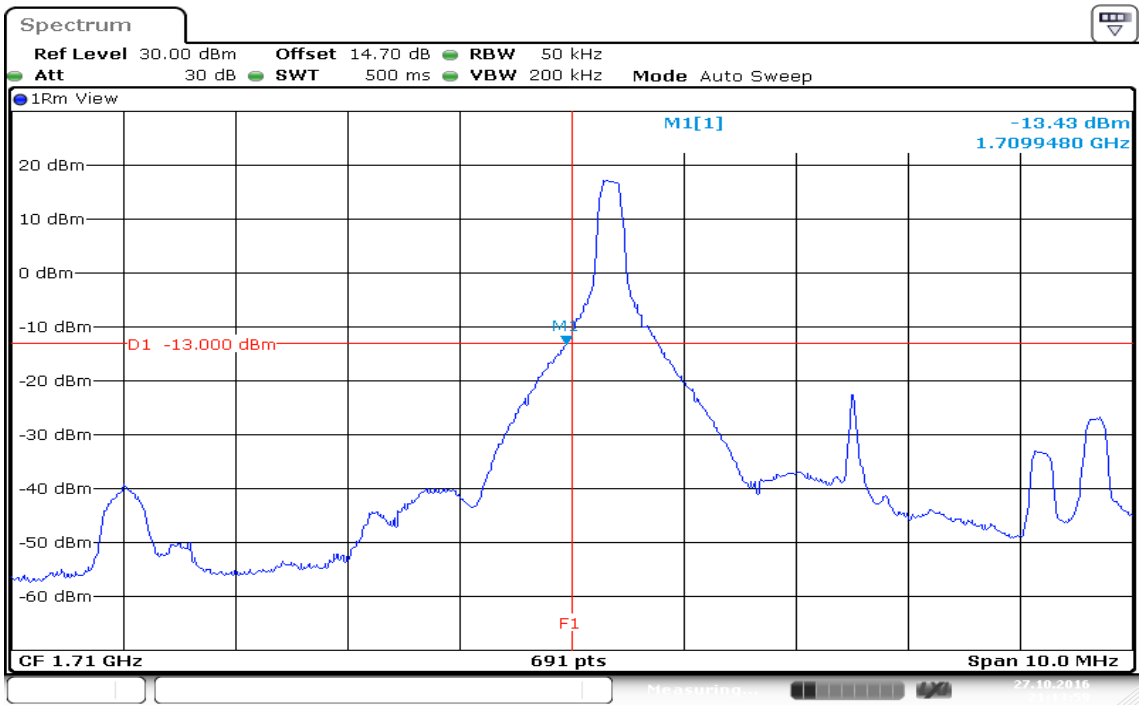
HIGHER BAND EDGE



Date: 2.NOV.2016 13:08:03

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

LOWER BAND EDGE



Date: 27.OCT.2016 21:13:59

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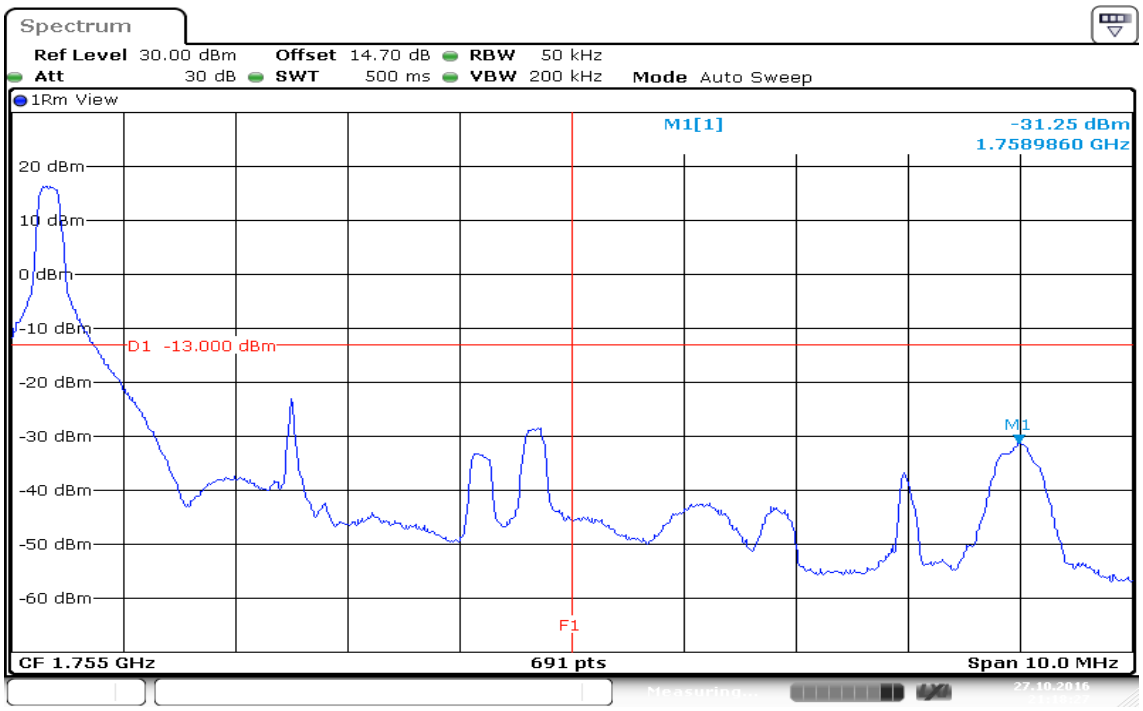
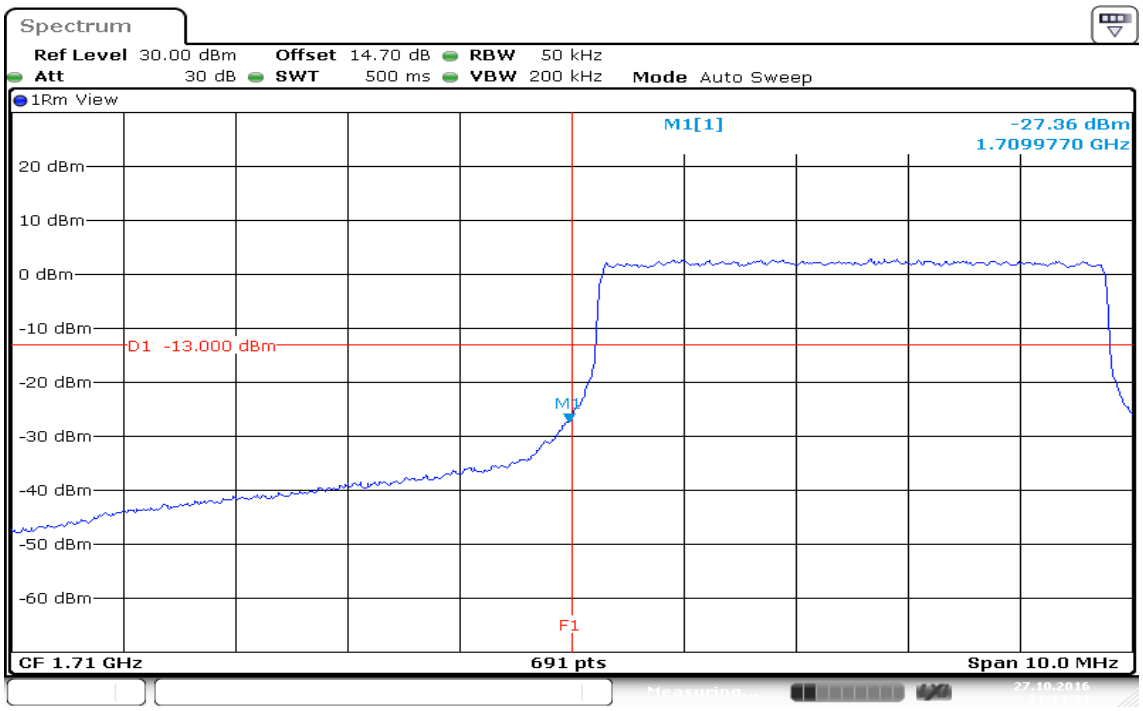


Date: 27.OCT.2016 21:18:27

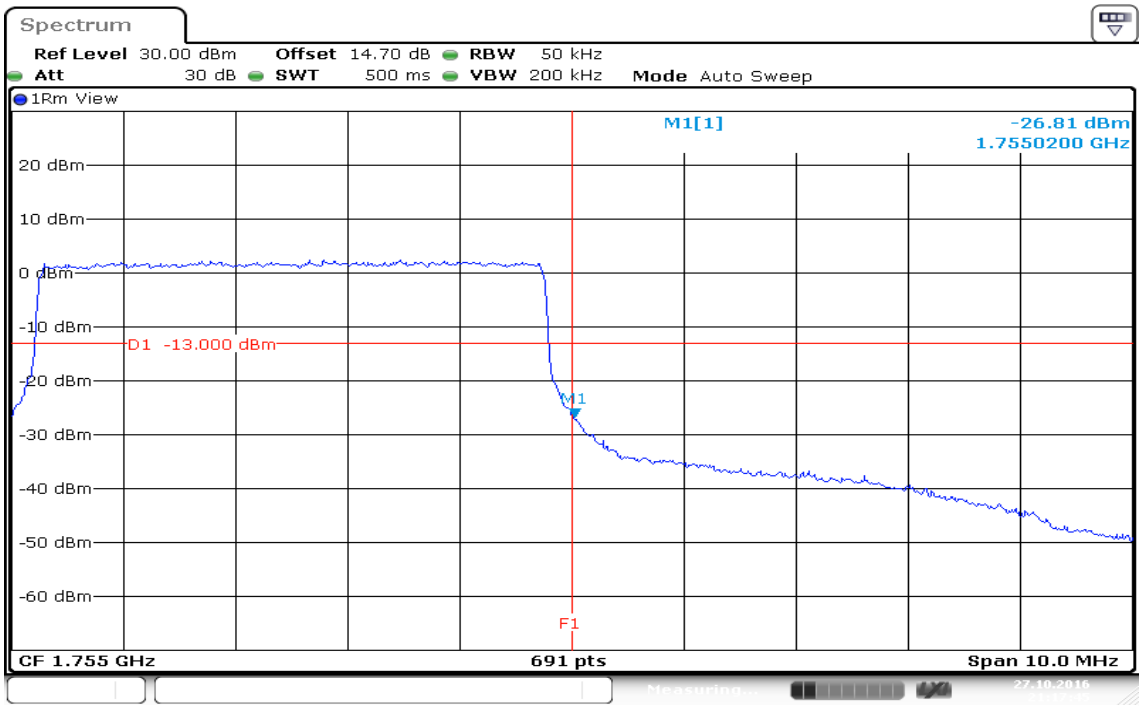
BW: 5MHz / 16QAM / RB=25, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:14:33

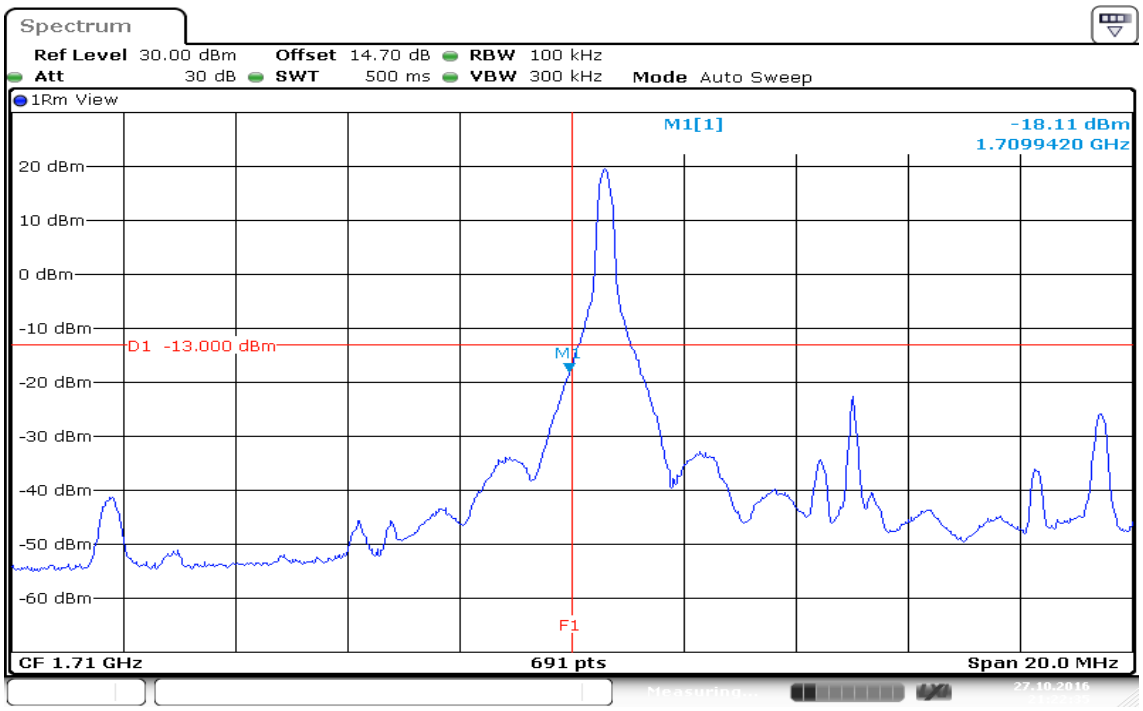
HIGHER BAND EDGE



Date: 27.OCT.2016 21:17:46

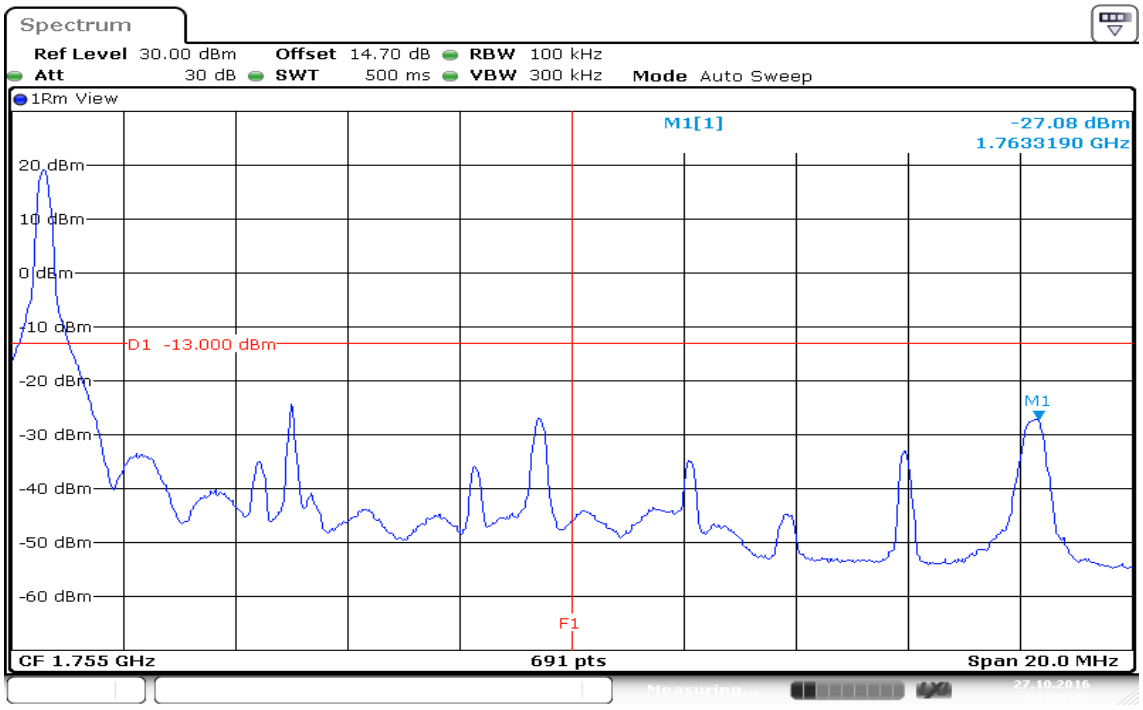
BW: 10MHz / 16QAM / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:22:35

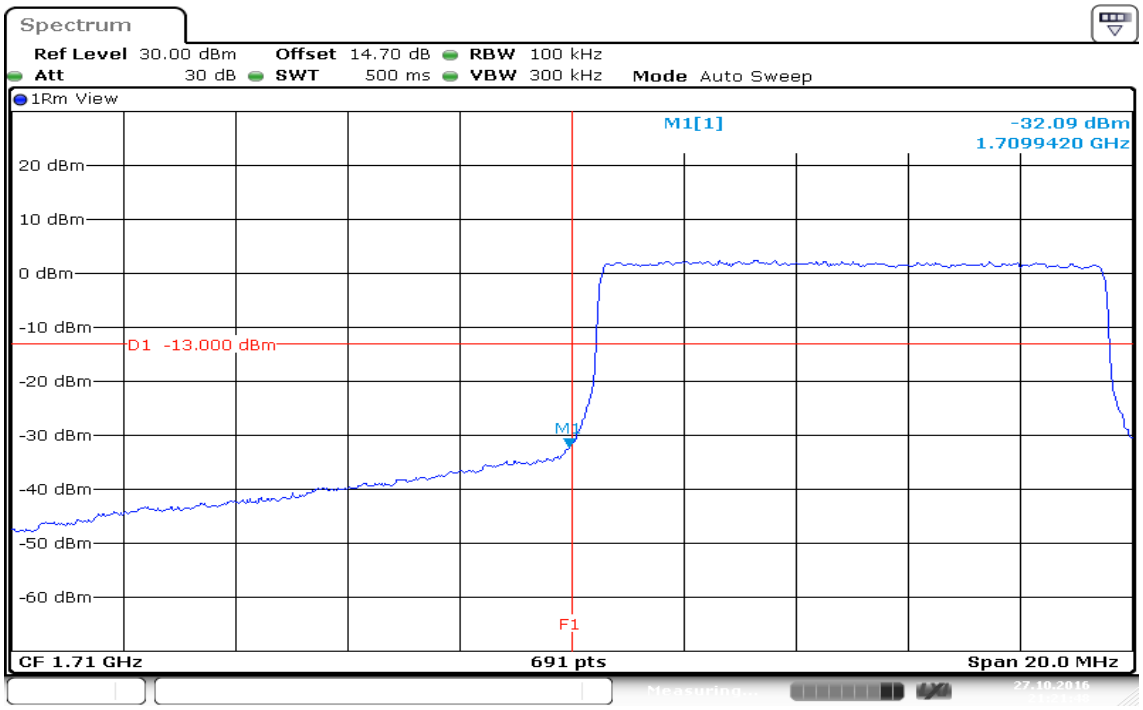
HIGHER BAND EDGE



Date: 27.OCT.2016 21:25:46

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

LOWER BAND EDGE



Date: 27.OCT.2016 21:21:48

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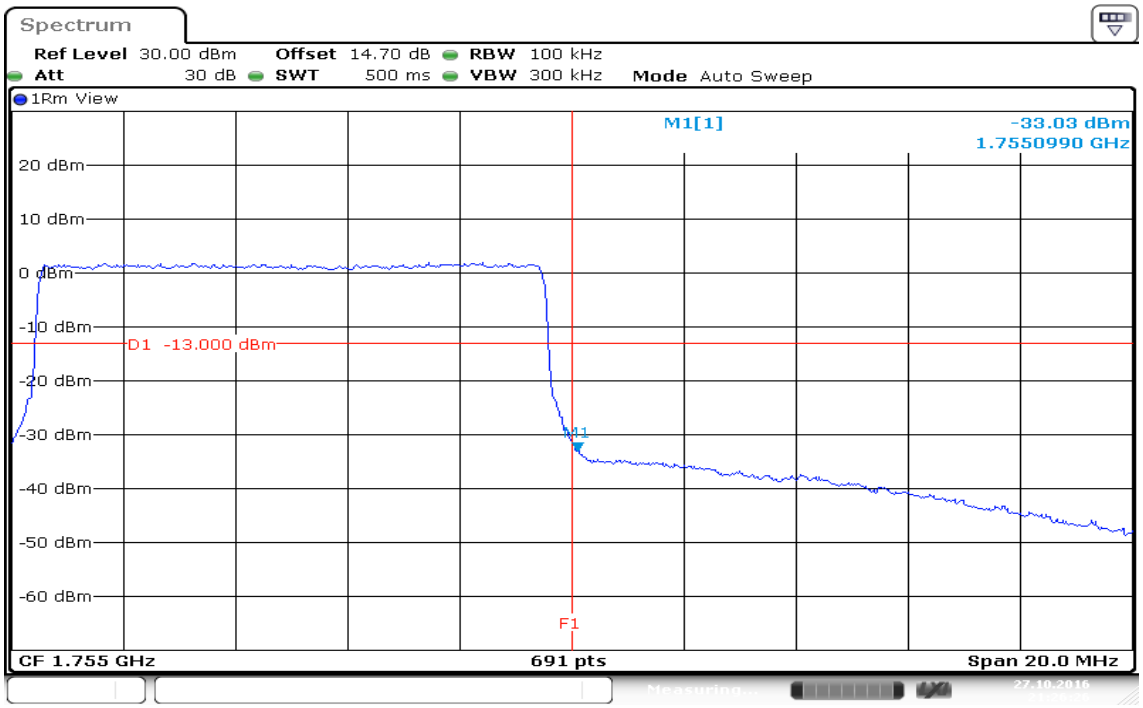
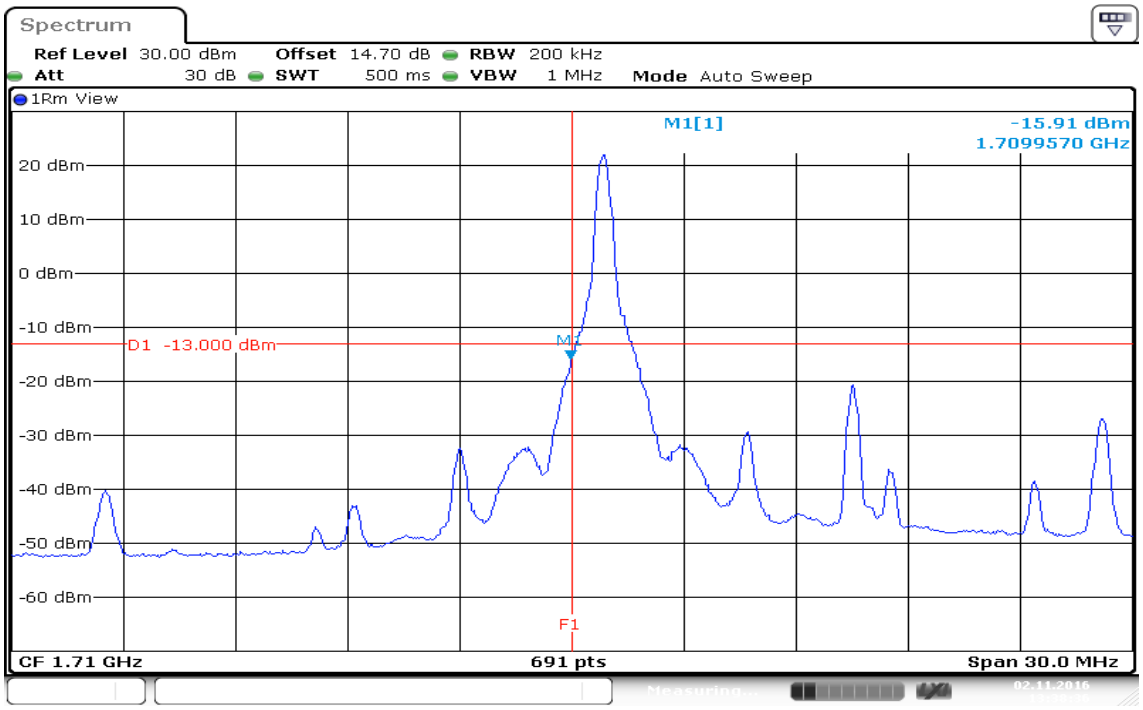


Date: 27.OCT.2016 21:26:26

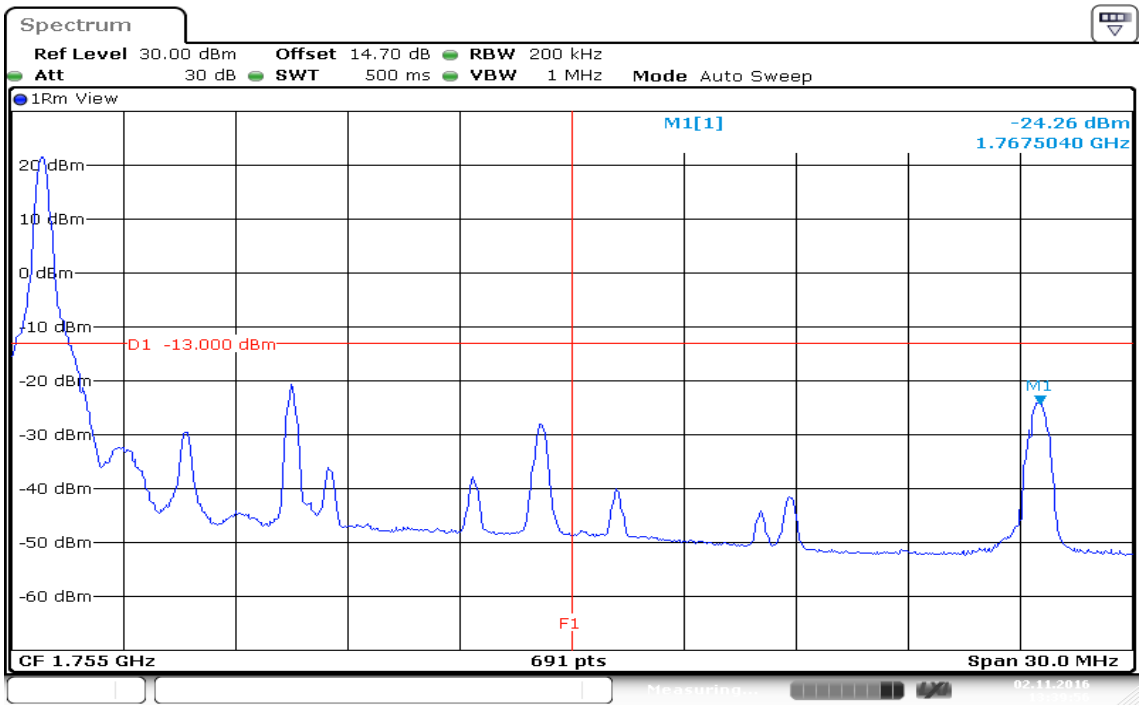
BW: 15MHz / 16QAM / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 2.NOV.2016 13:38:36

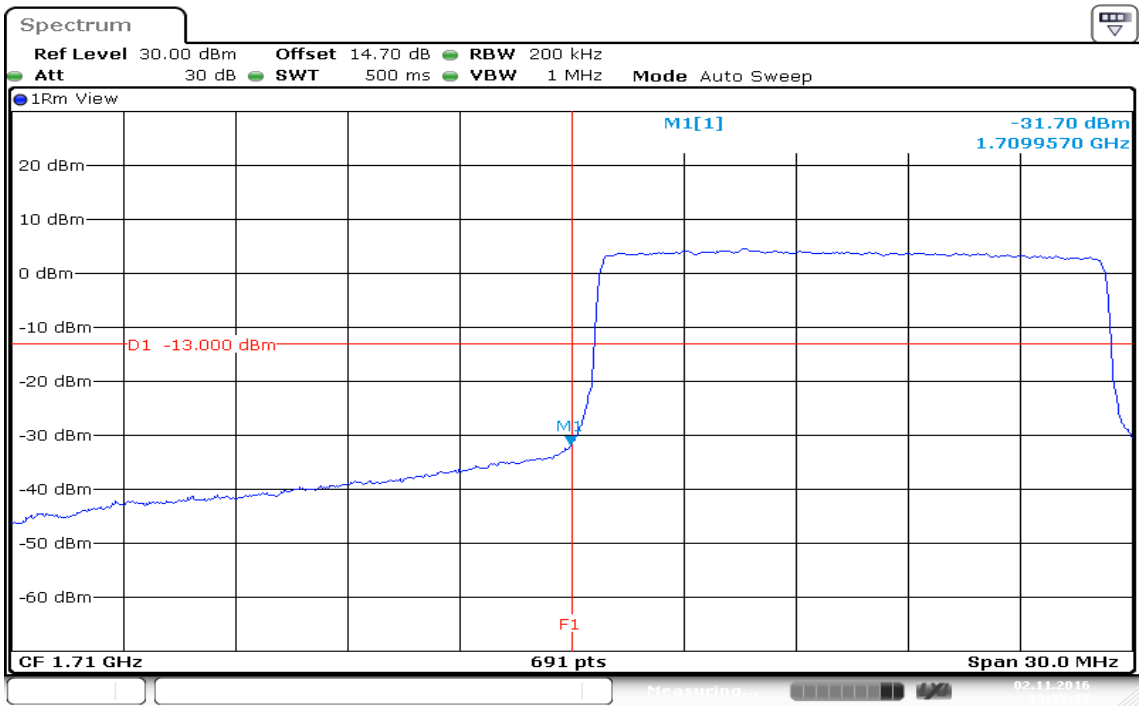
HIGHER BAND EDGE



Date: 2.NOV.2016 13:39:56

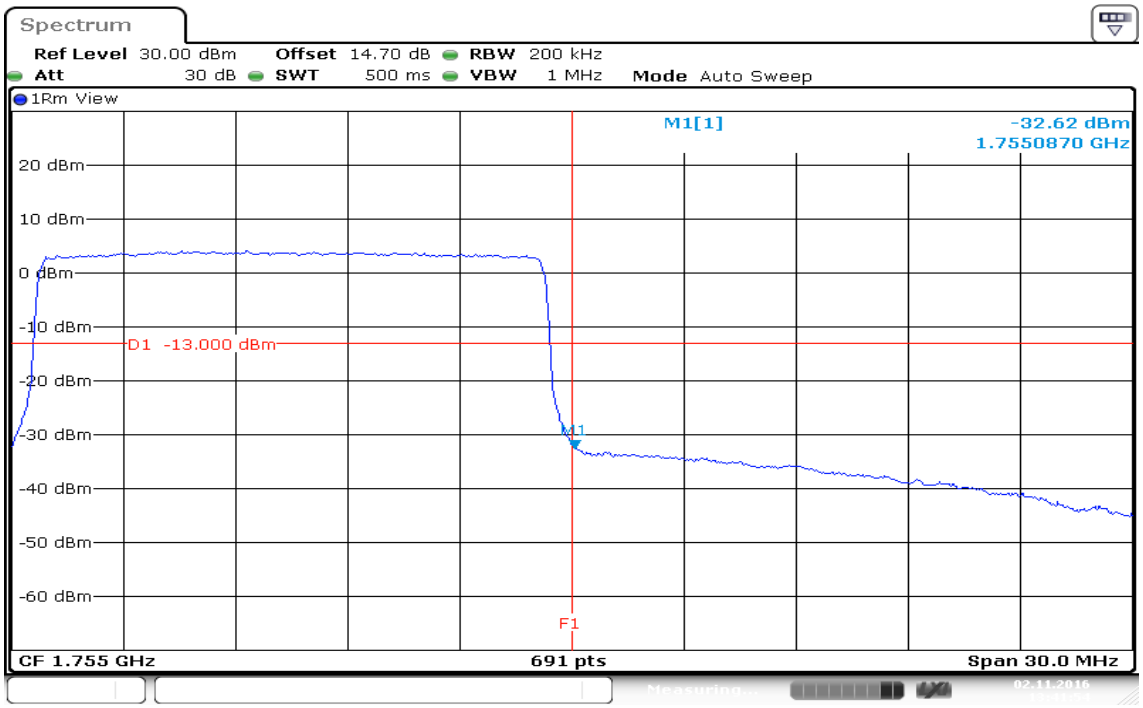
BW: 15MHz / 16QAM / RB=75, RB Offset = 0

LOWER BAND EDGE



Date: 2.NOV.2016 13:35:18

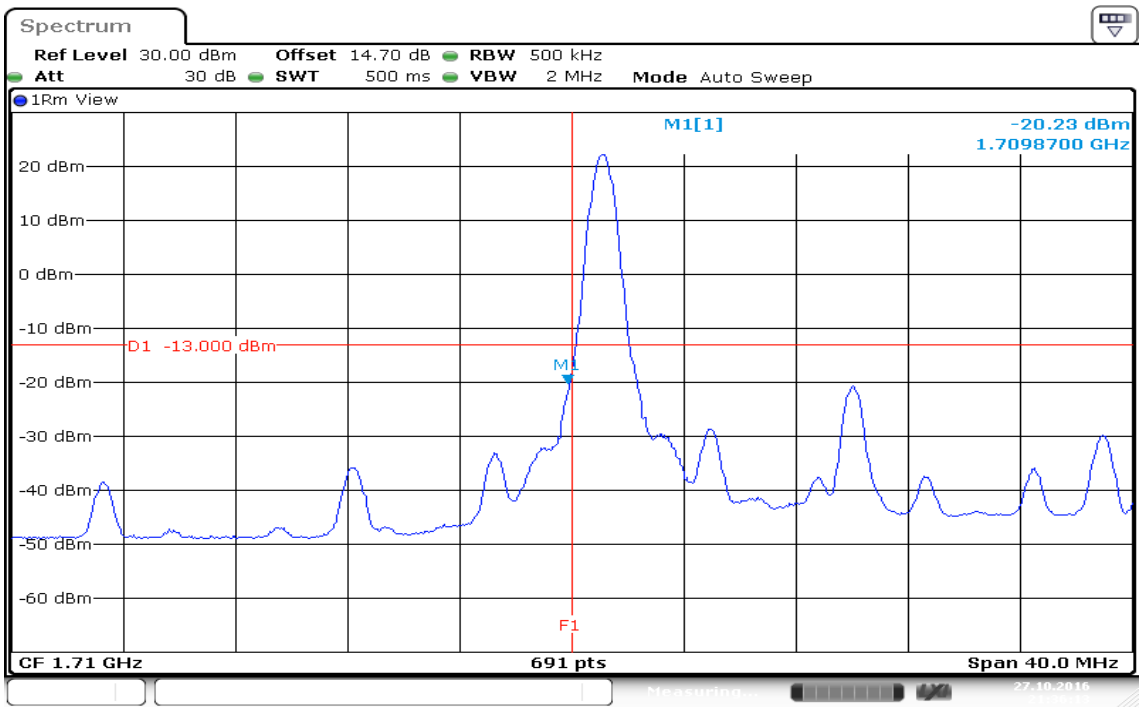
HIGHER BAND EDGE



Date: 2.NOV.2016 13:41:54

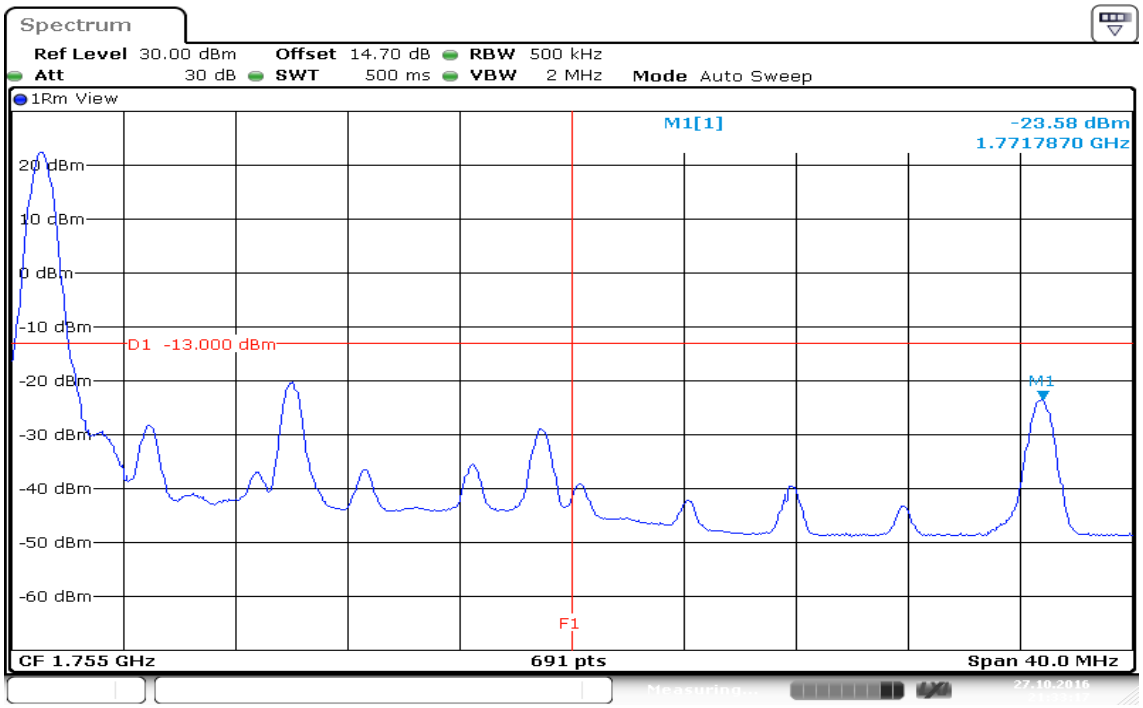
BW: 20MHz / 16QAM / RB=1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:36:13

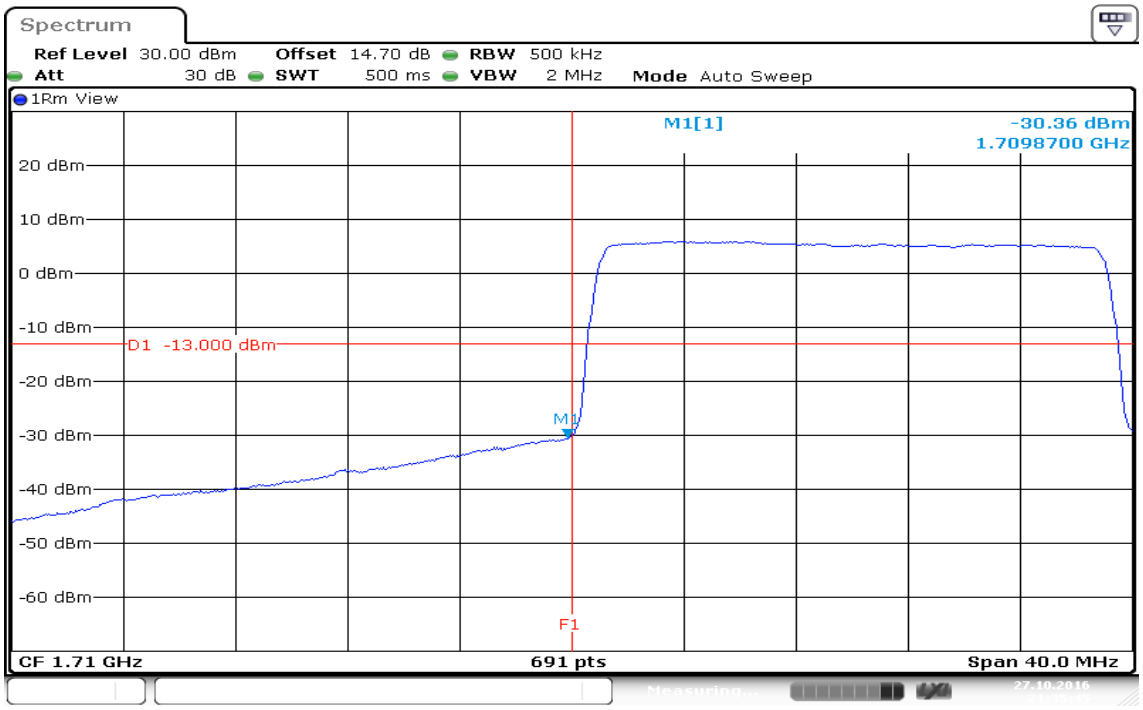
HIGHER BAND EDGE



Date: 27.OCT.2016 21:33:17

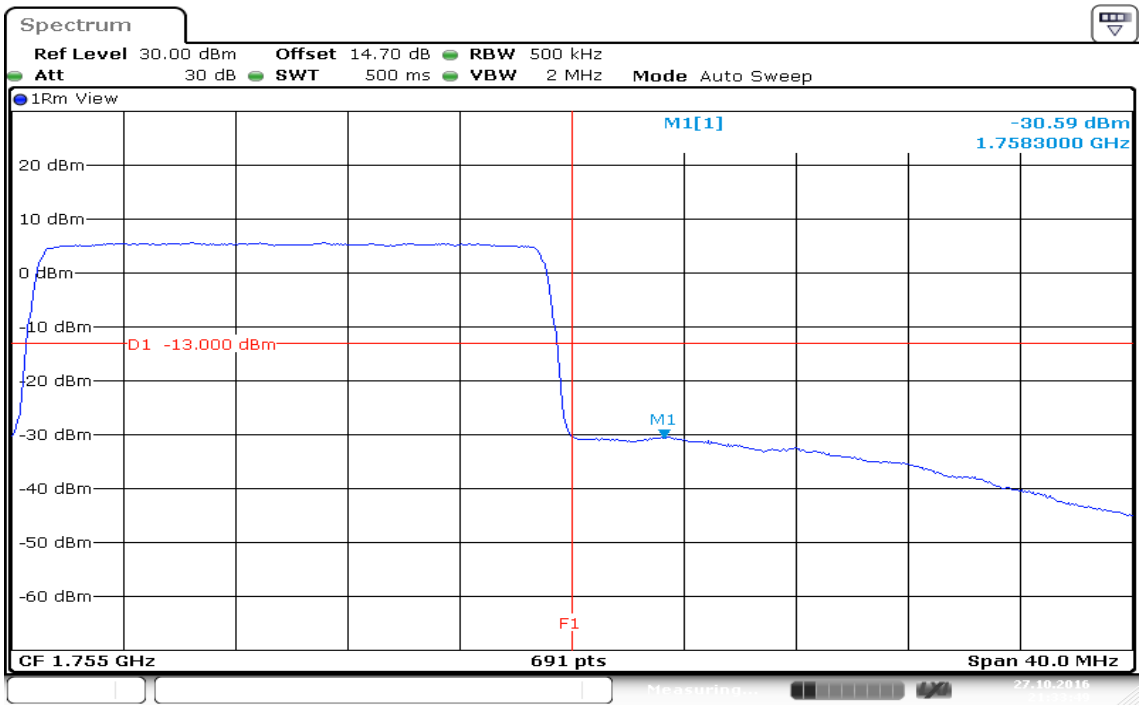
BW: 20MHz / 16QAM / RB=100, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 21:35:46

HIGHER BAND EDGE

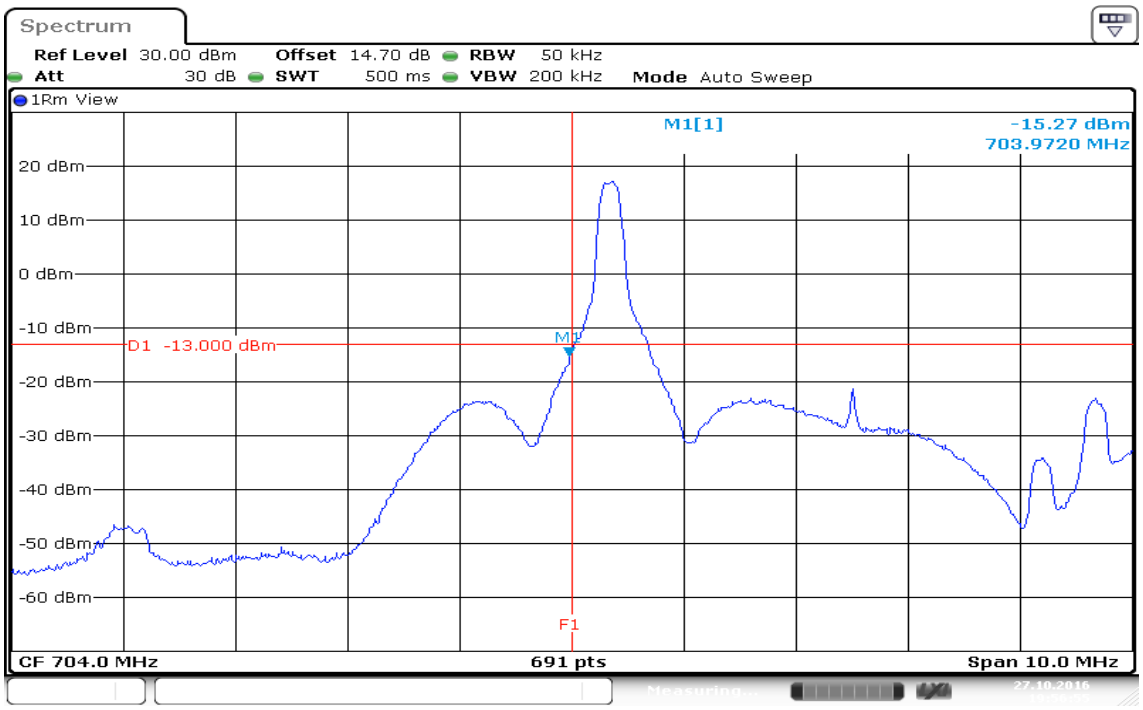


Date: 27.OCT.2016 21:33:49

LTE Band 17

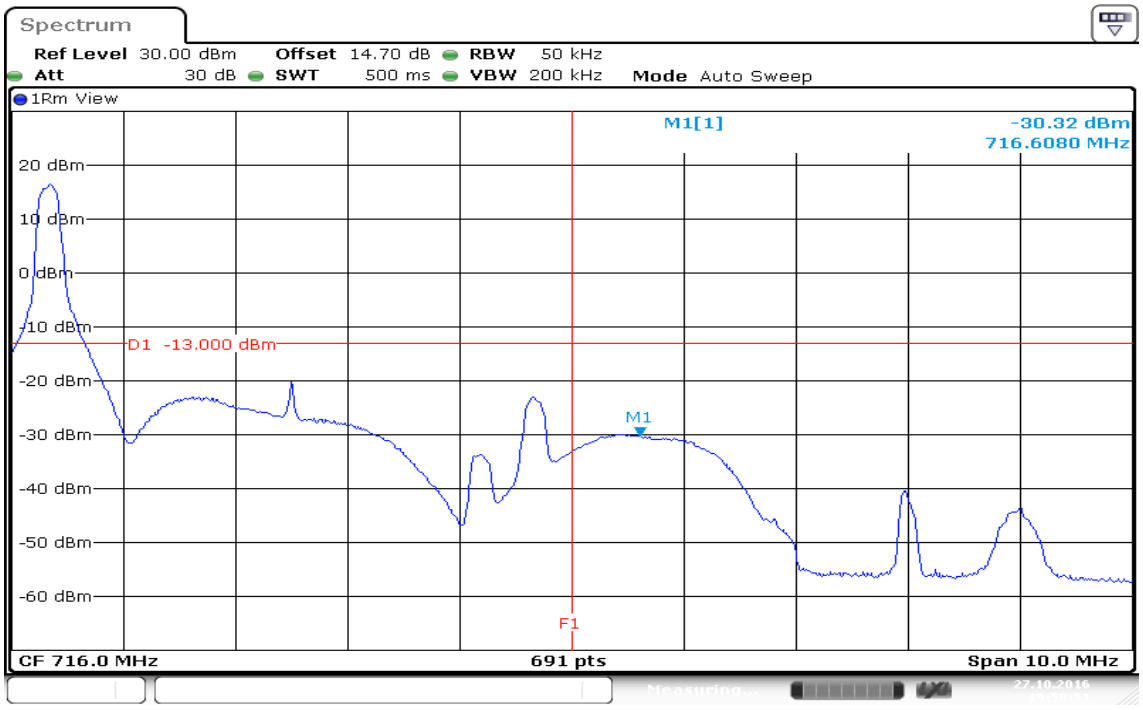
BW: 5MHz / QPSK / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 19:56:55

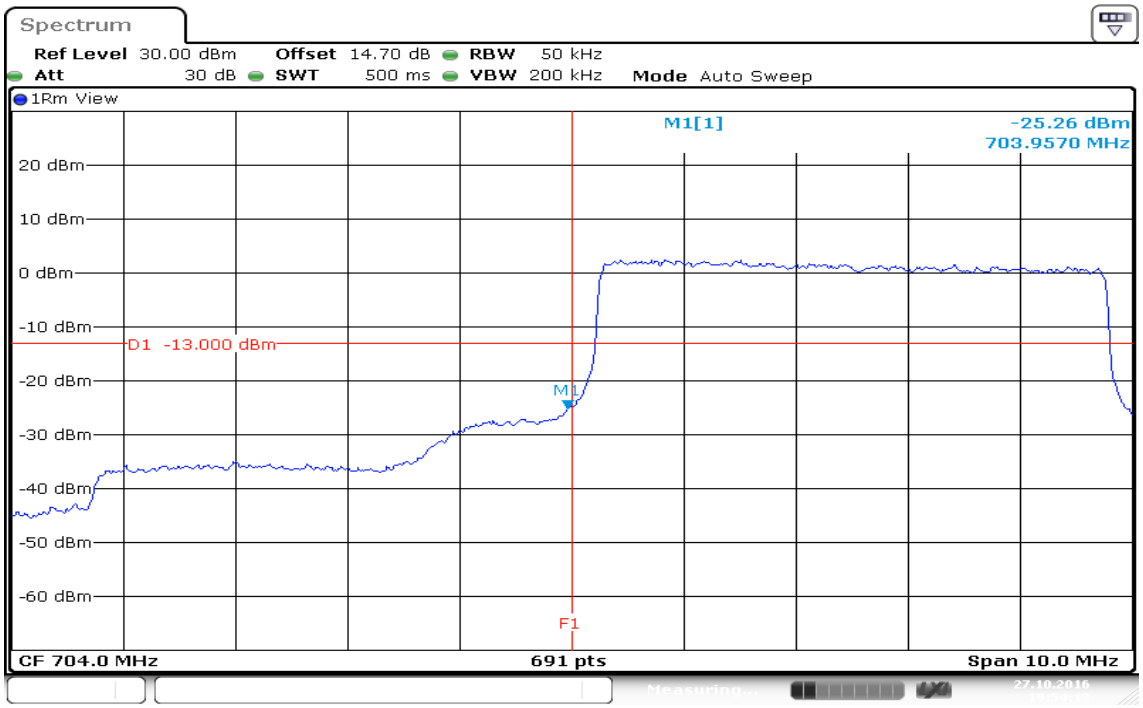
HIGHER BAND EDGE



Date: 27.OCT.2016 19:50:52

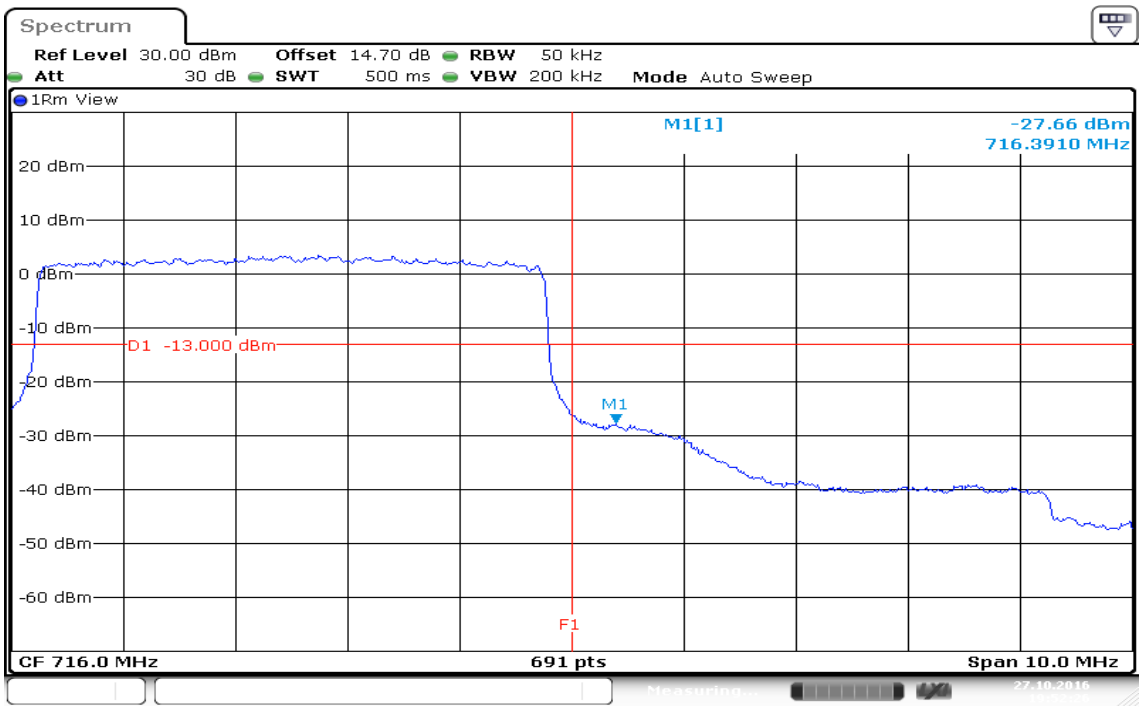
BW: 5MHz / QPSK / RB= 25, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 19:54:13

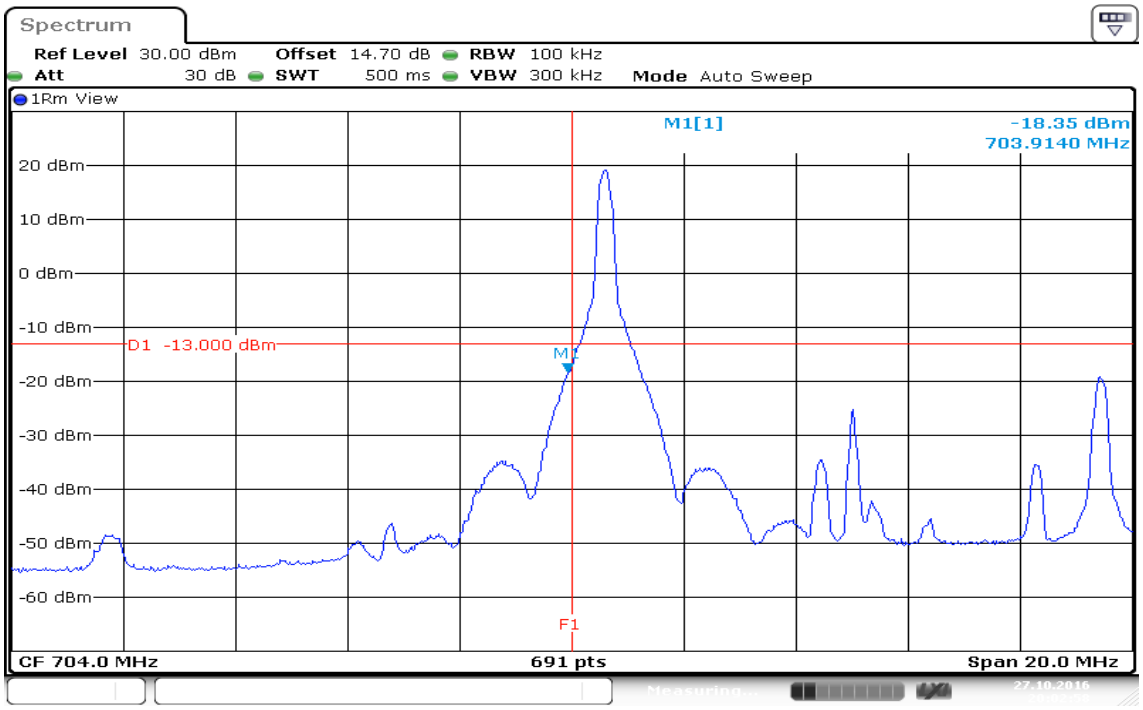
HIGHER BAND EDGE



Date: 27.OCT.2016 19:52:26

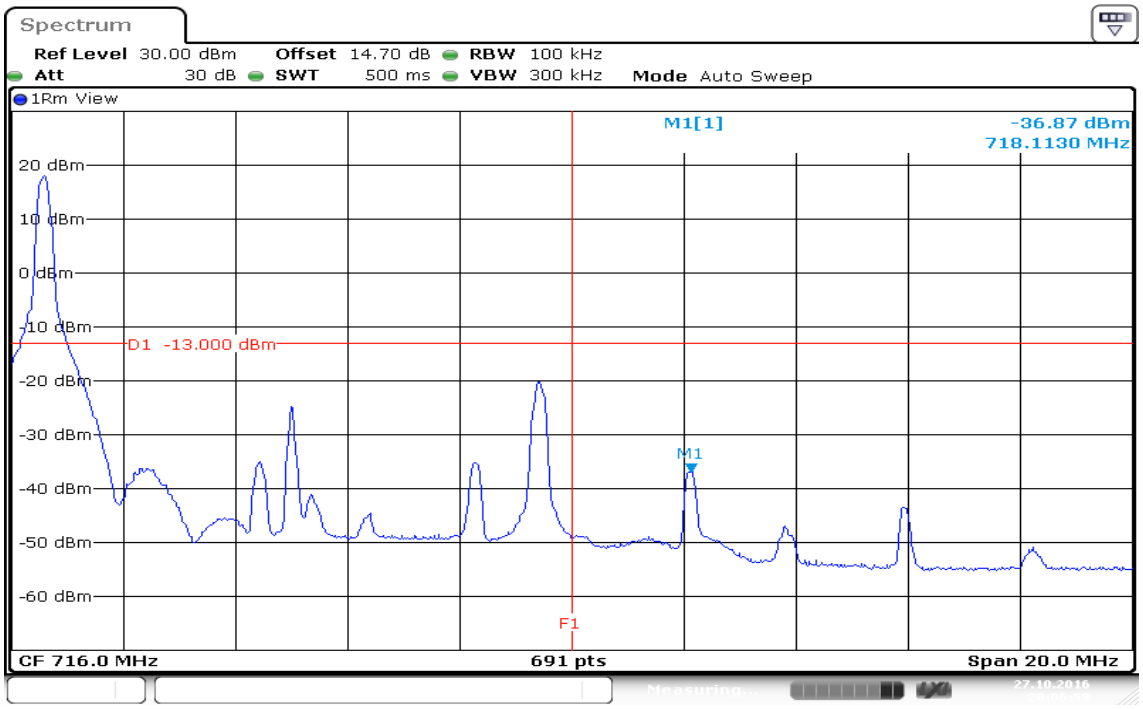
BW: 10MHz / QPSK / RB= 1, RB Offset = 0

HIGHER BAND EDGE



Date: 27.OCT.2016 20:02:58

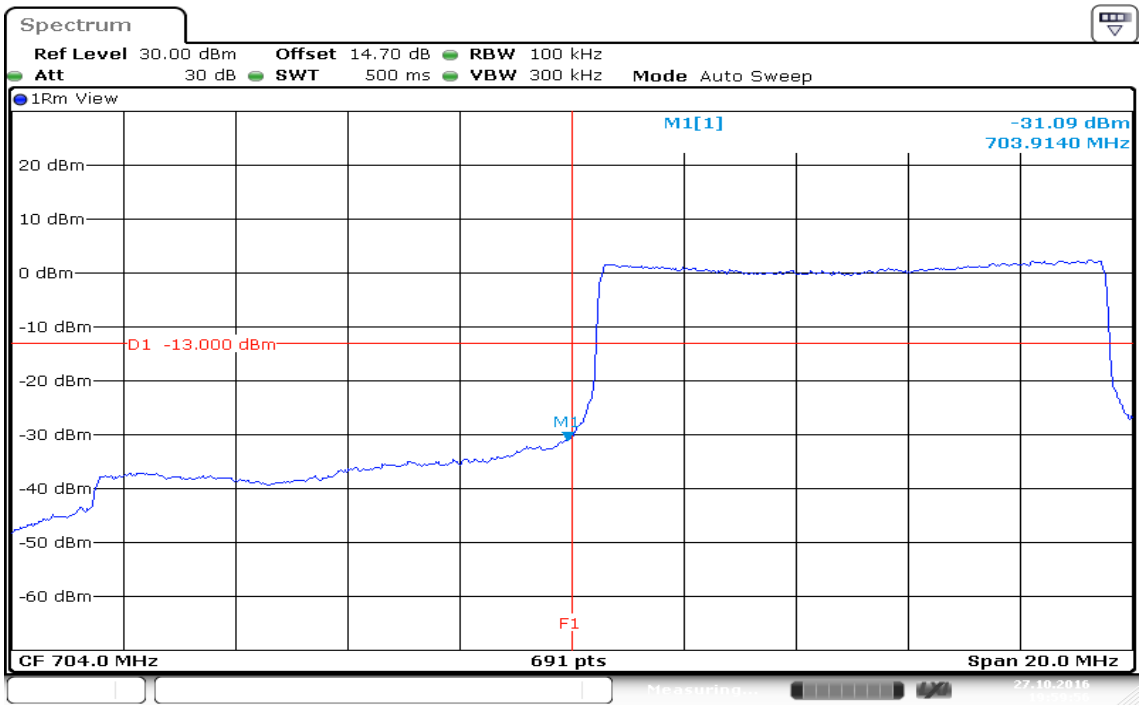
LOWER BAND EDGE



Date: 27.OCT.2016 20:06:58

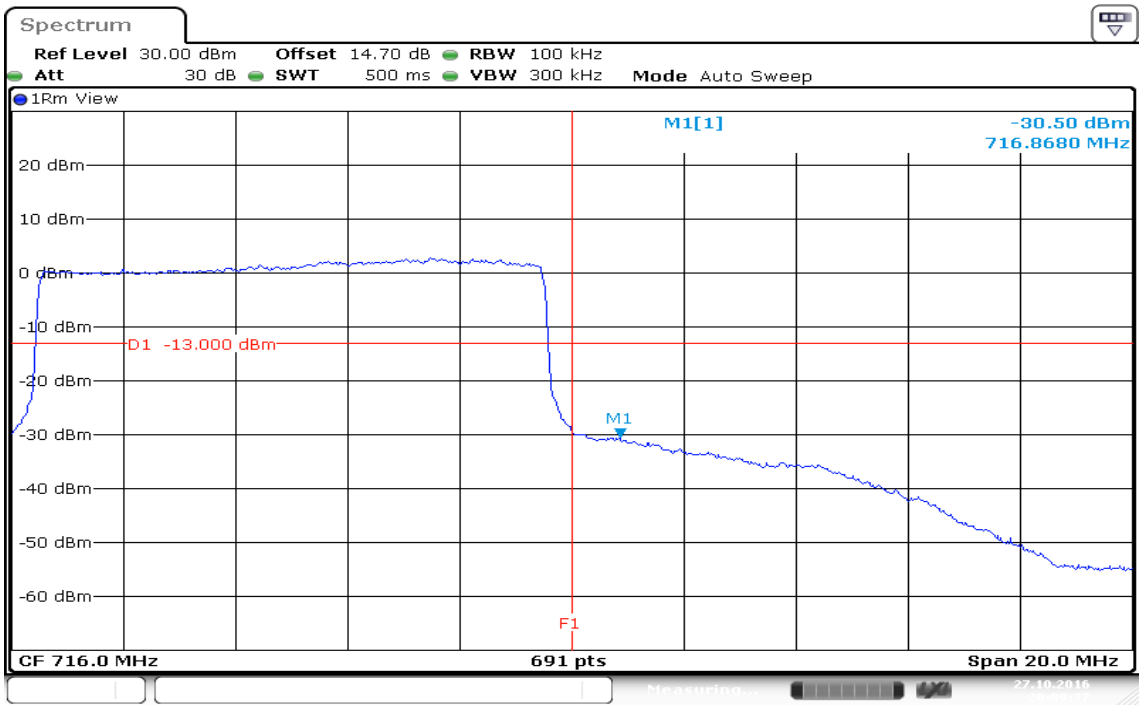
BW: 10MHz / QPSK / RB= 50, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 19:59:56

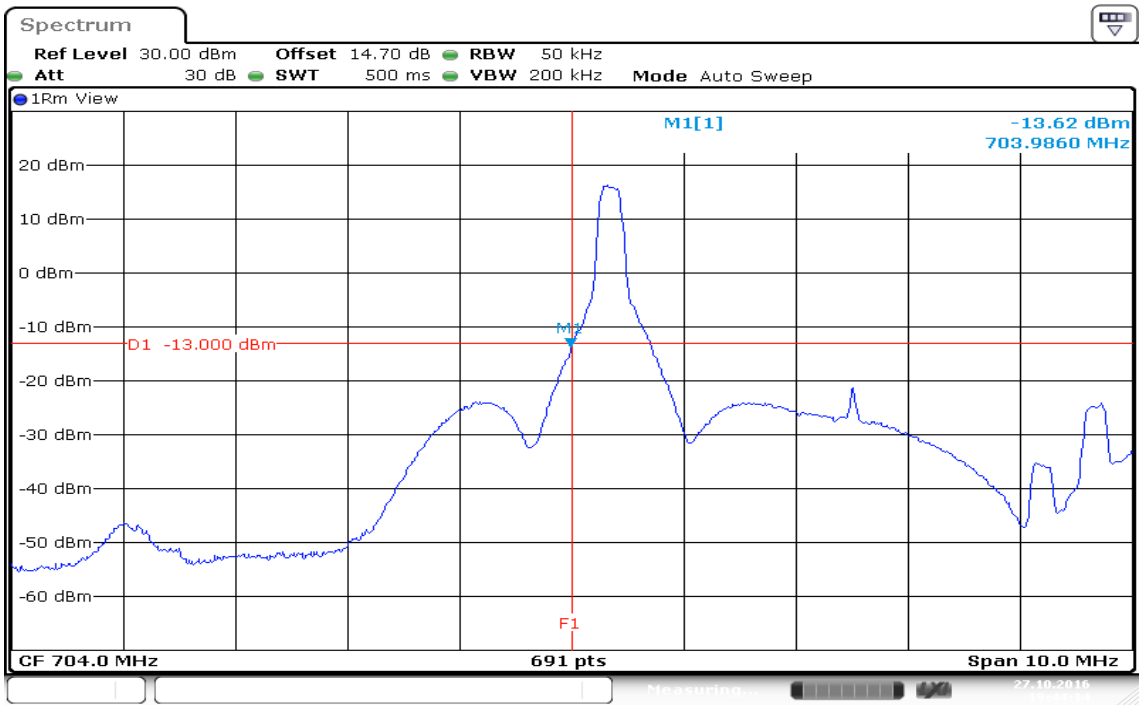
HIGHER BAND EDGE



Date: 27.OCT.2016 20:09:37

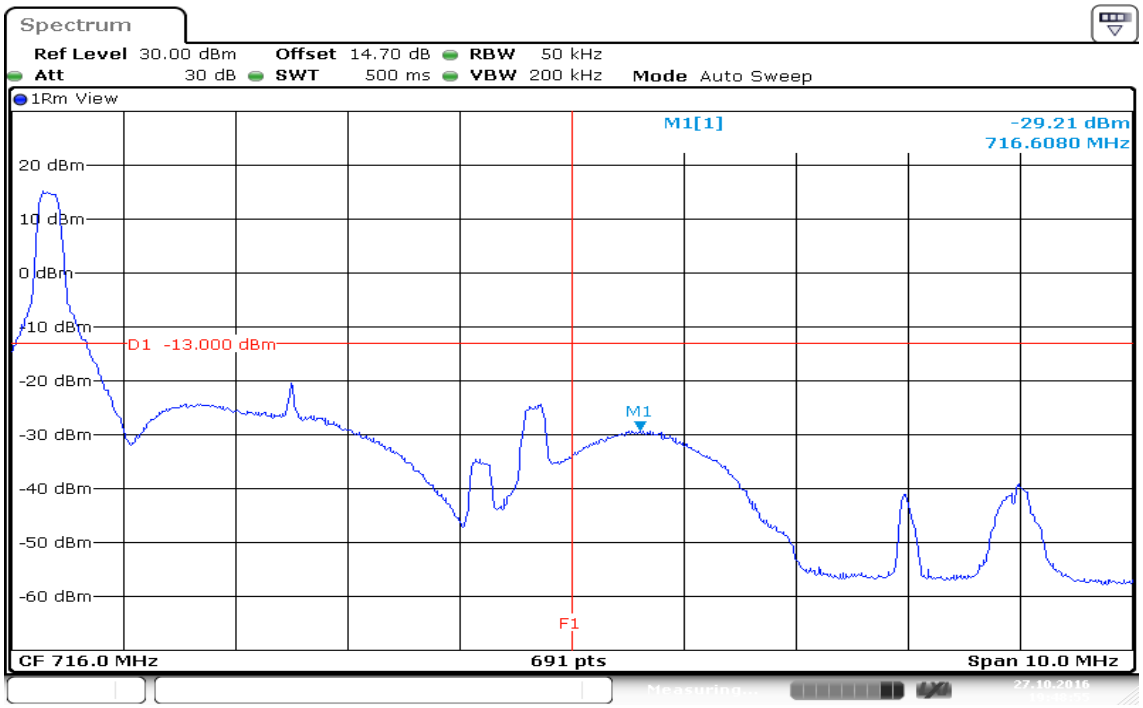
BW: 5MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 19:44:14

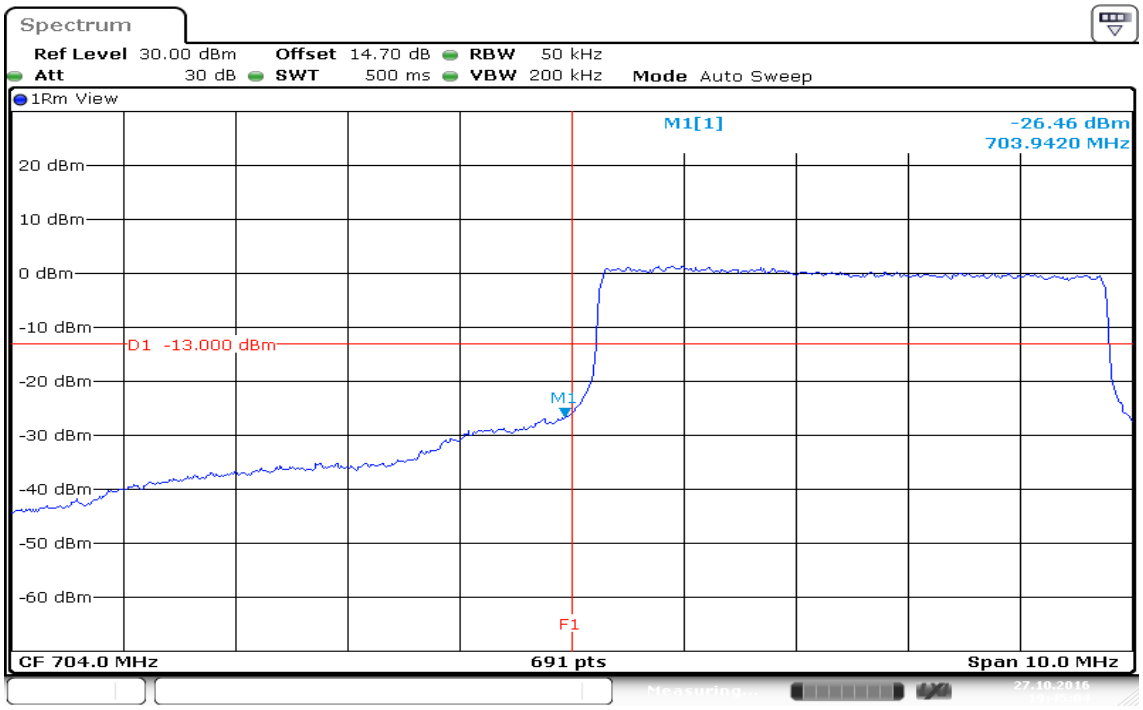
HIGHER BAND EDGE



Date: 27.OCT.2016 19:48:55

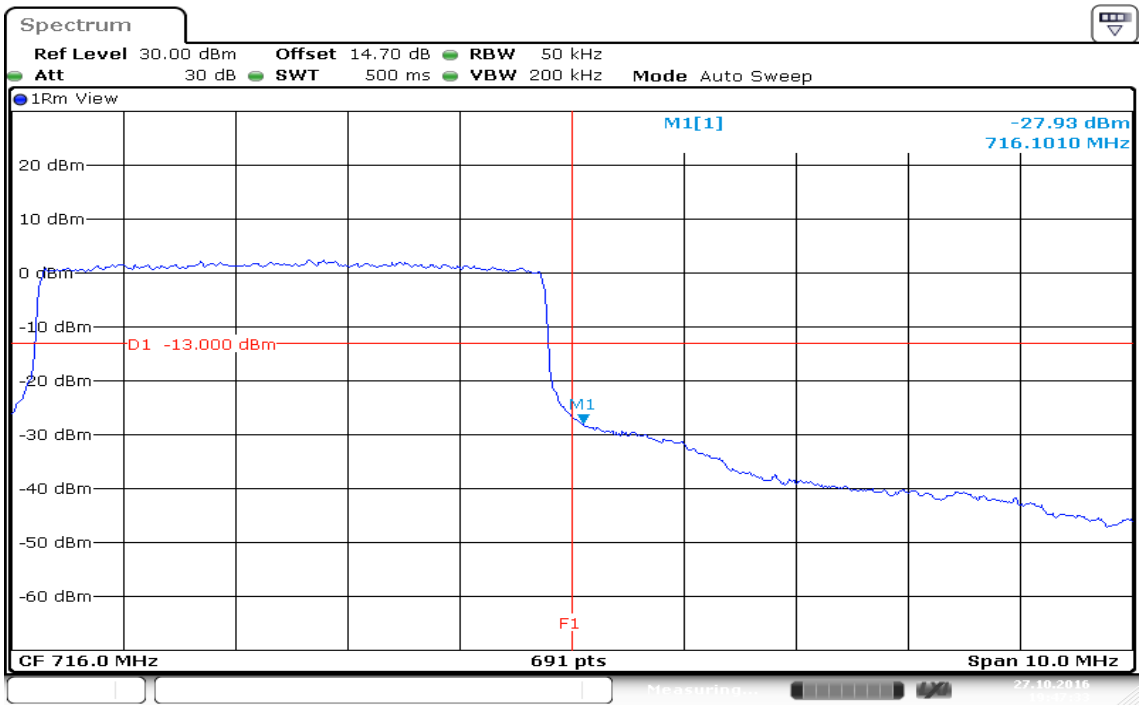
BW: 5MHz / 16QAM / RB= 25, RB Offset = 0

HIGHER BAND EDGE



Date: 27.OCT.2016 19:45:05

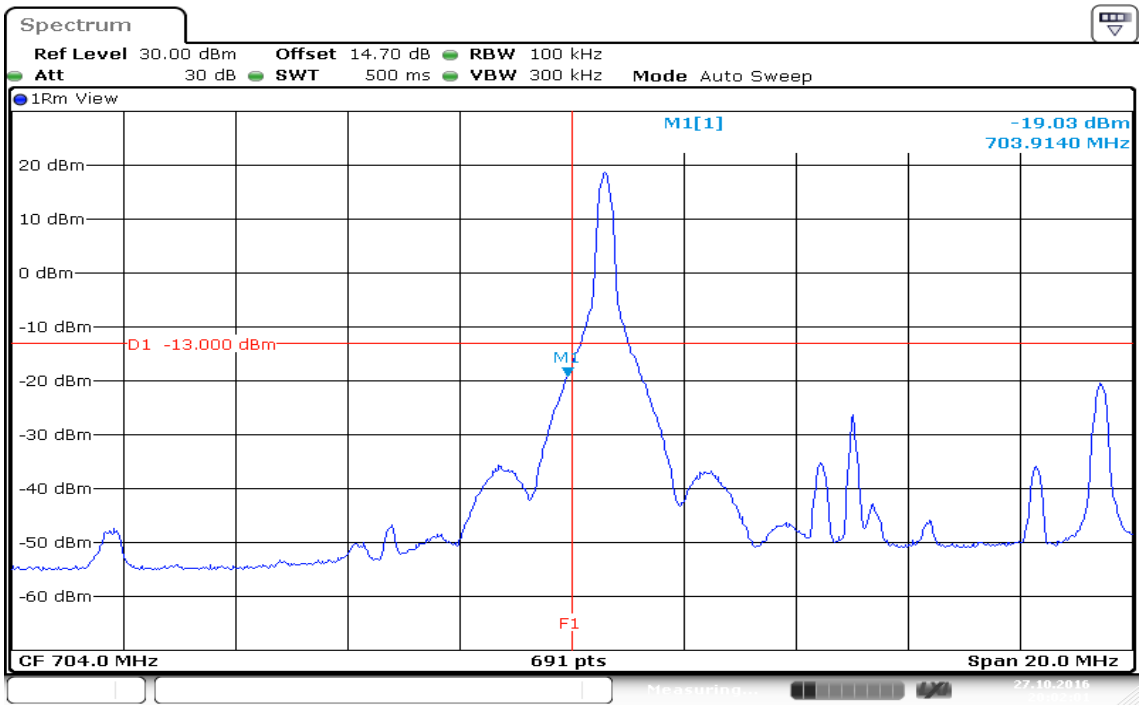
LOWER BAND EDGE



Date: 27.OCT.2016 19:47:34

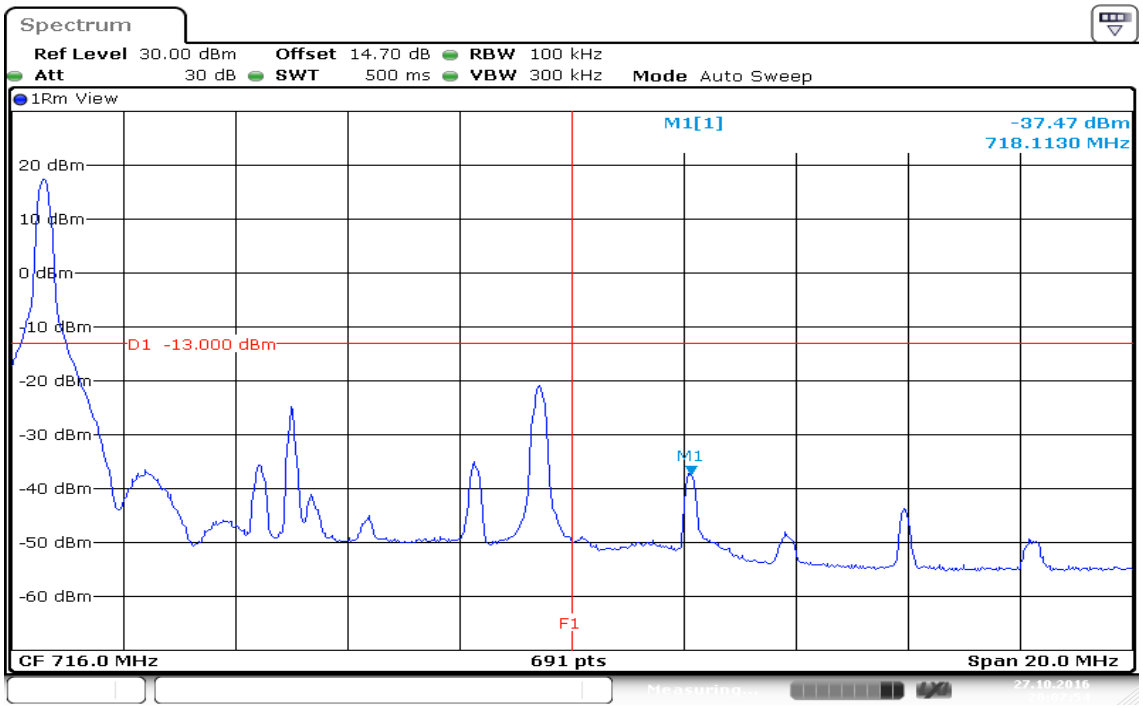
BW: 10MHz / 16QAM / RB= 1, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 20:02:02

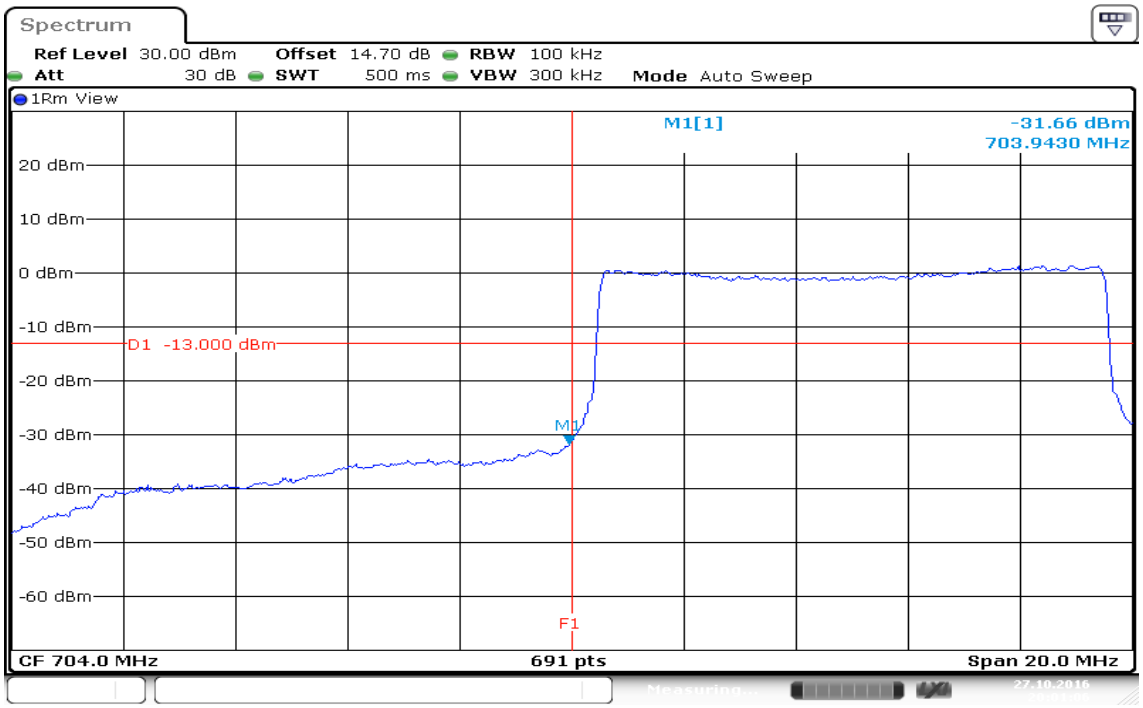
HIGHER BAND EDGE



Date: 27.OCT.2016 20:07:54

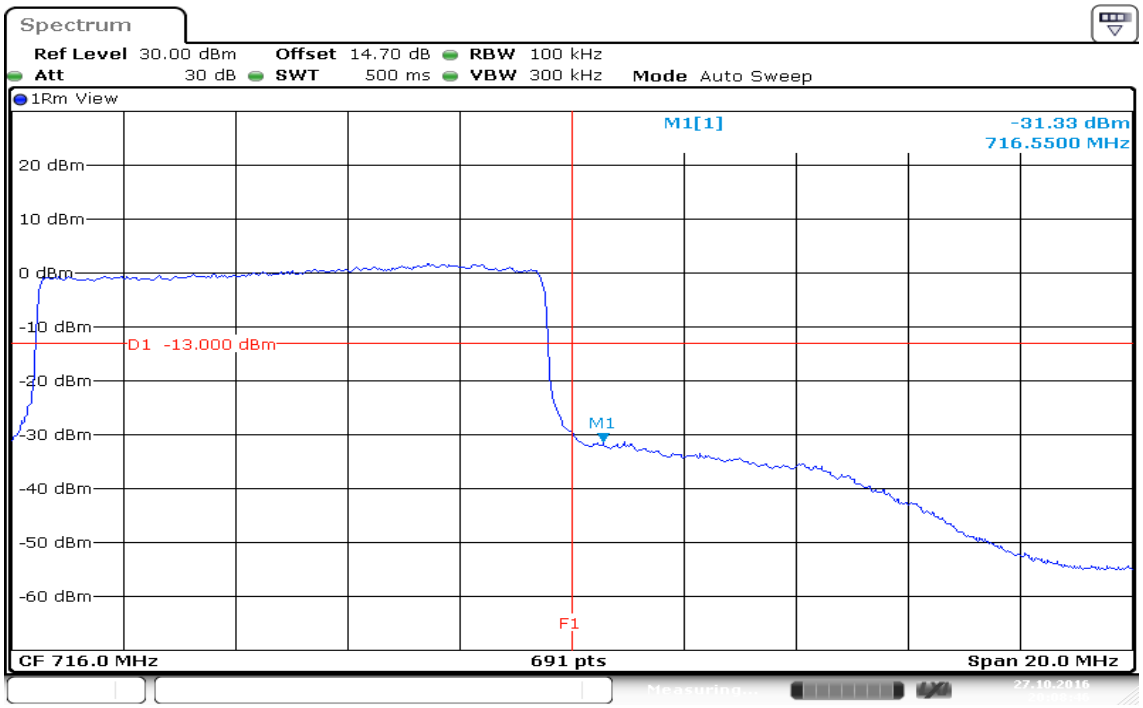
BW: 10MHz / 16QAM / RB=50, RB Offset = 0

LOWER BAND EDGE



Date: 27.OCT.2016 20:01:06

HIGHER BAND EDGE



Date: 27.OCT.2016 20:08:46

7.7 CONDUCTED SPURIOUS EMISSIONS

LIMITS

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

TEST PROCEDURES

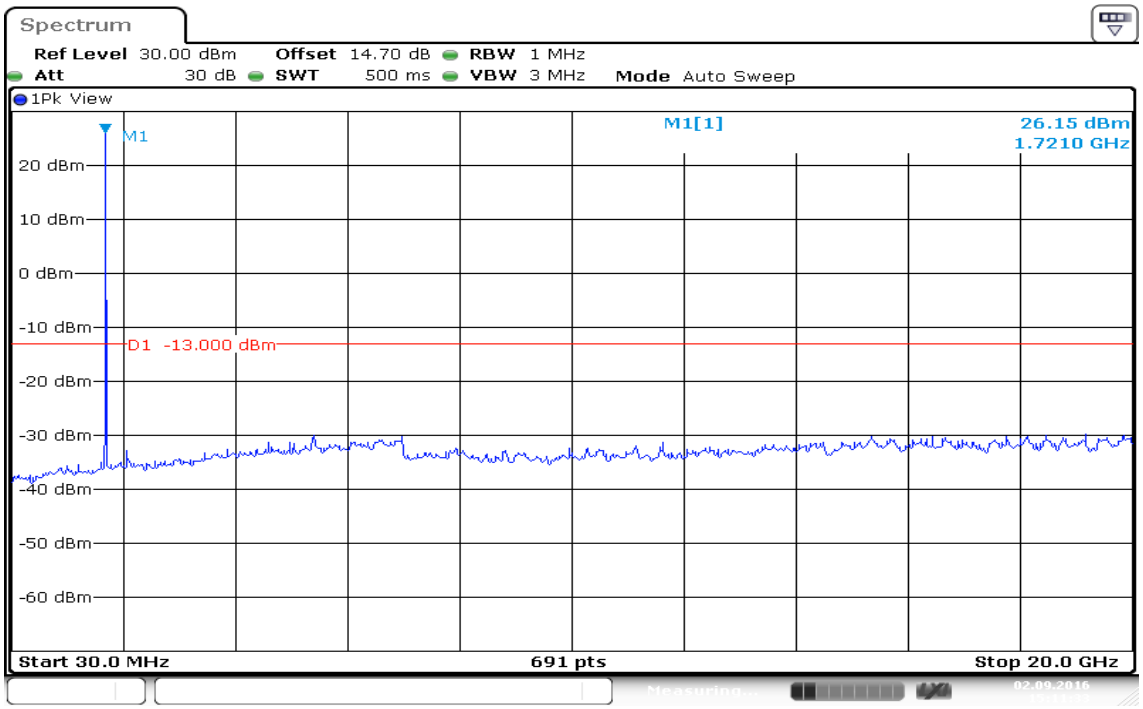
1. According to KDB 971168 D01, section 6.0
2. The EUT was connect to spectrum analyzer and call box.
3. The RF output of EUT was connected to the spectrum analyzer.
4. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
5. Record the maximum spurious emission.
6. The fundamental frequency should be excluded against the limit in operating band.

TEST RESULTS

LTE Band 4

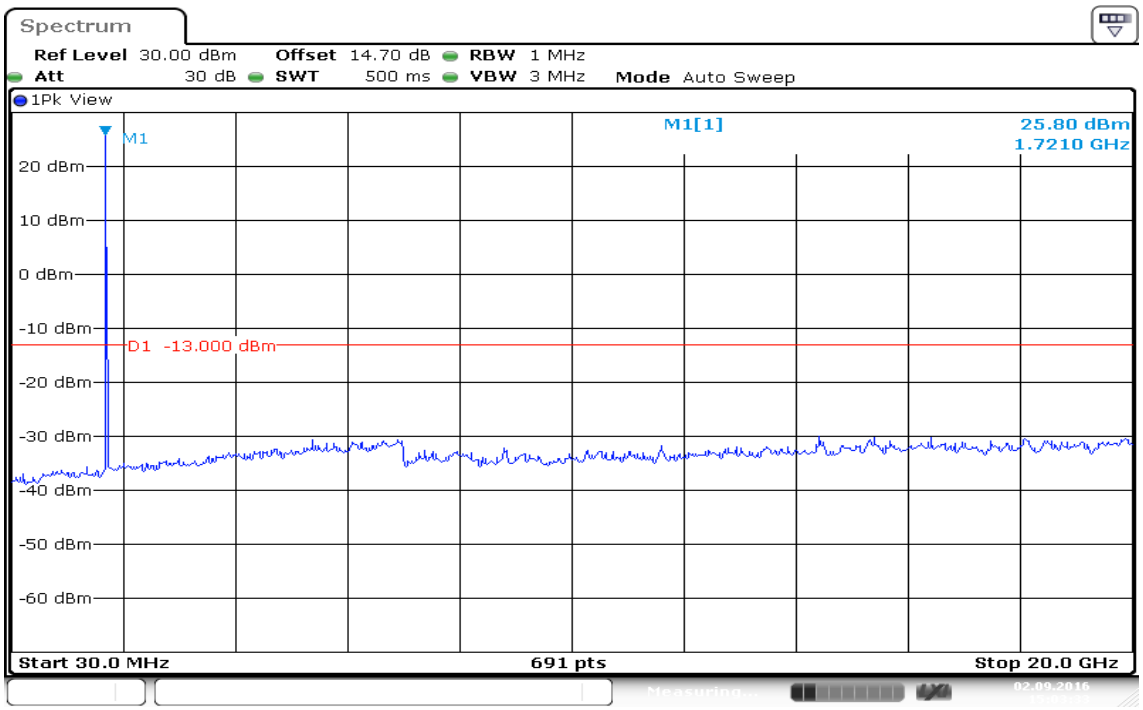
BW: 1.4MHz / QPSK / RB =1, RB Offset = 0

CH Low



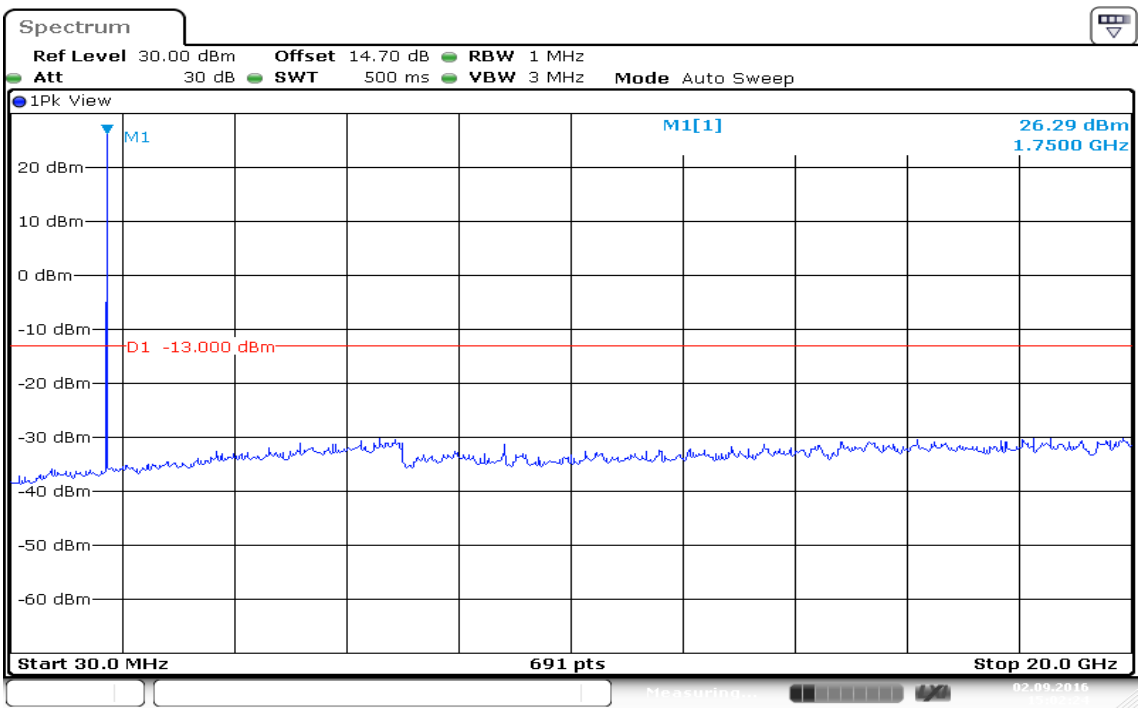
Date: 2.SEP.2016 15:11:33

CH Mid



Date: 2.SEP.2016 15:03:33

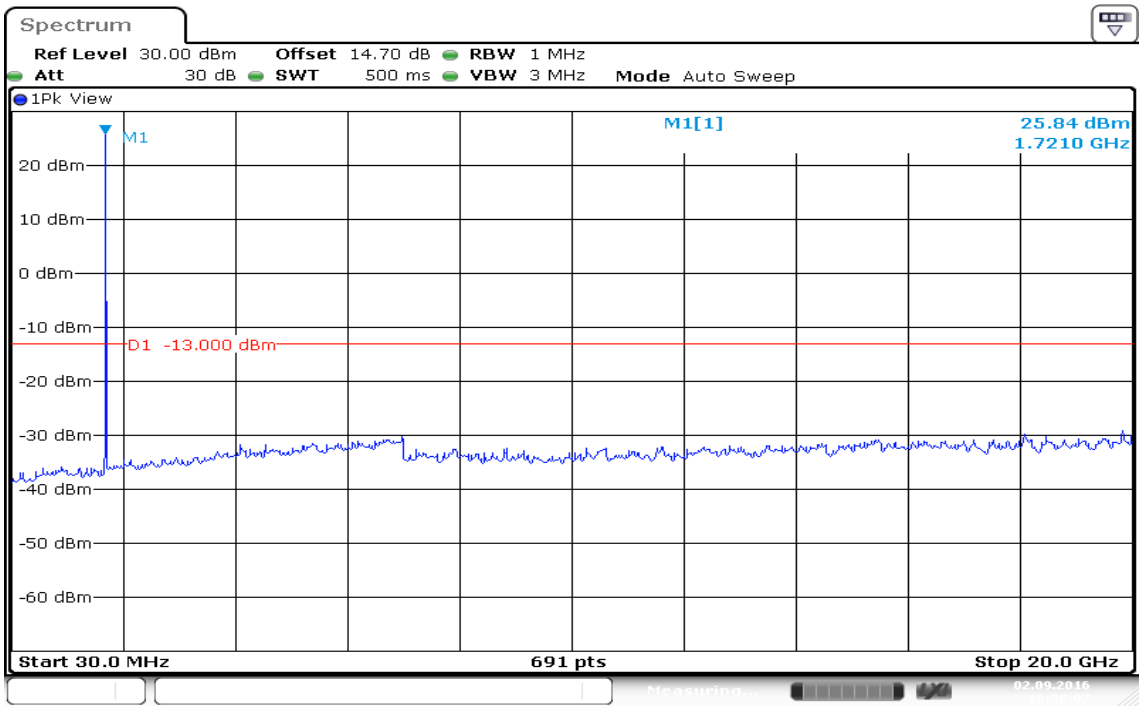
CH High



Date: 2.SEP.2016 15:02:24

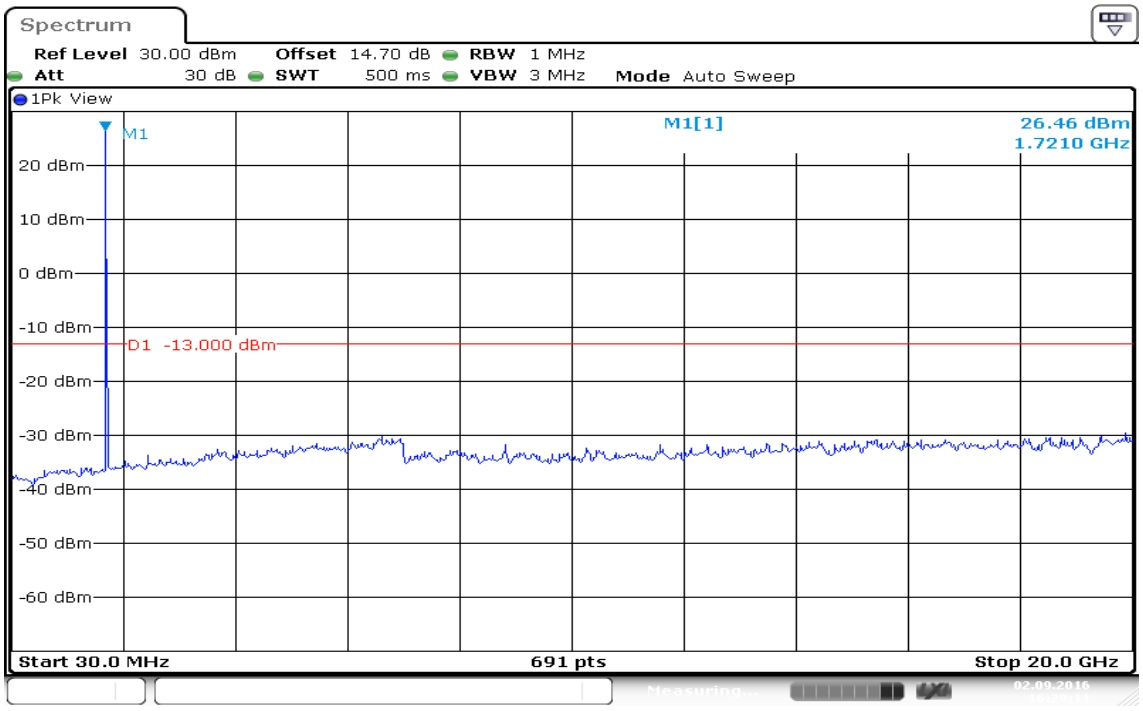
BW: 1.4MHz / 16QAM / RB =1, RB Offset = 0

CH Low



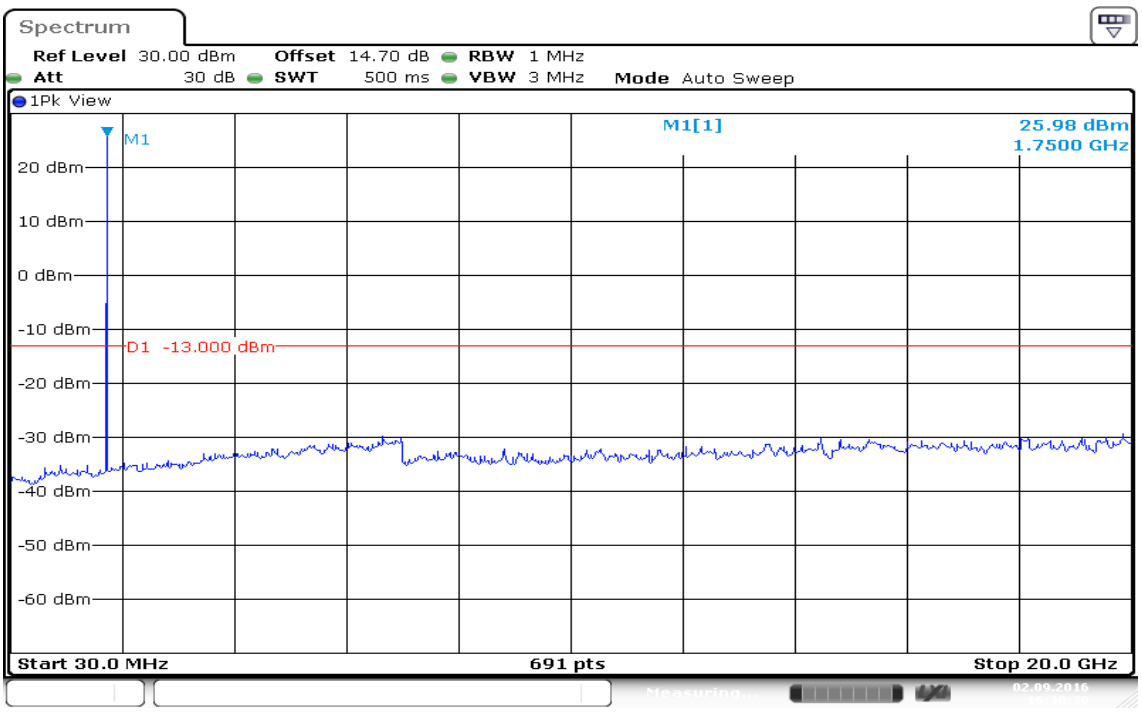
Date: 2.SEP.2016 16:28:07

CH Mid



Date: 2.SEP.2016 16:29:11

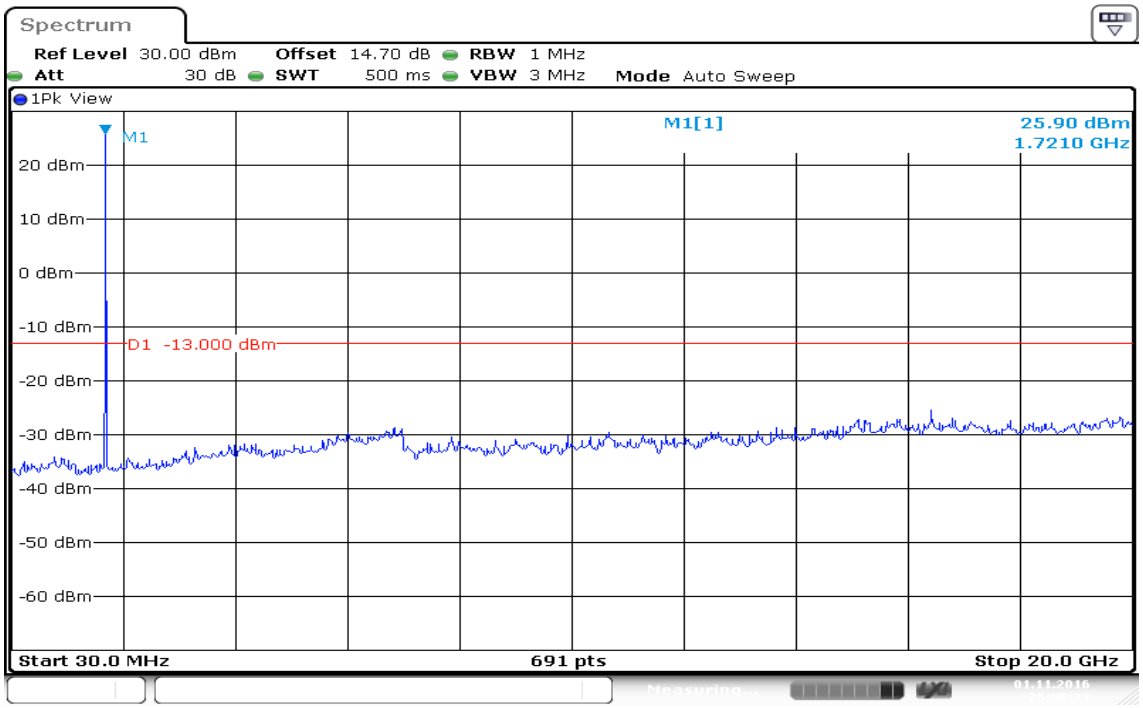
CH High



Date: 2.SEP.2016 16:30:31

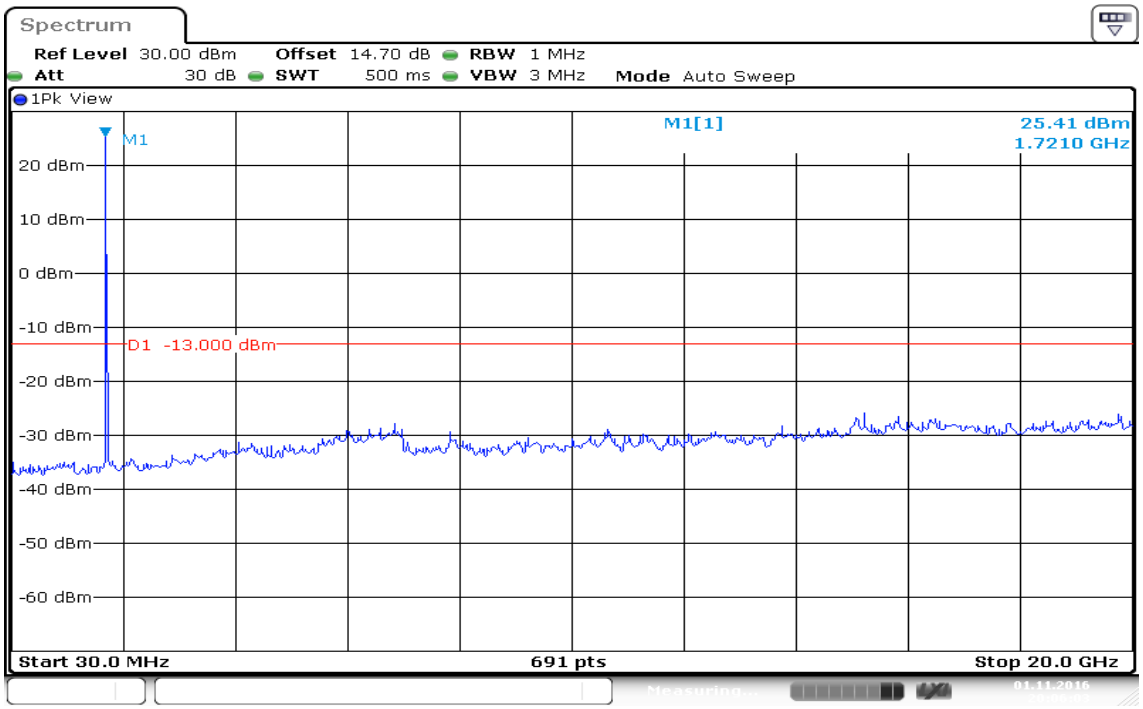
BW: 3MHz / QPSK / RB =1, RB Offset = 0

CH Low



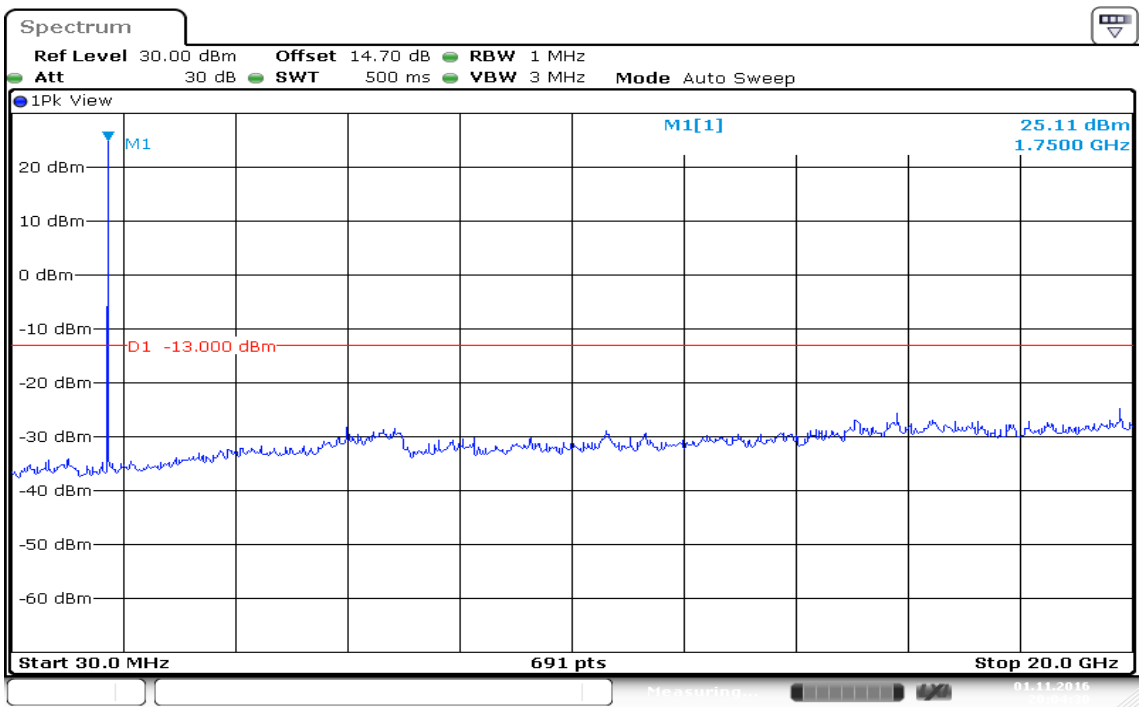
Date: 1.NOV.2016 20:06:23

CH Mid



Date: 1.NOV.2016 20:06:03

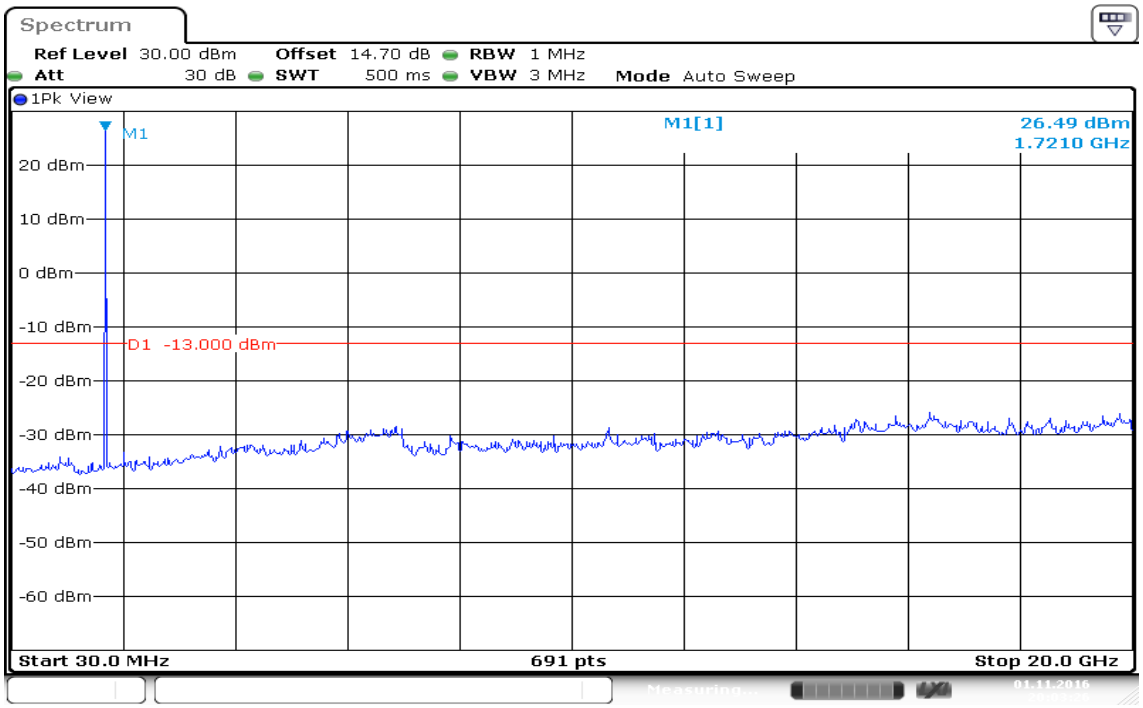
CH High



Date: 1.NOV.2016 20:04:30

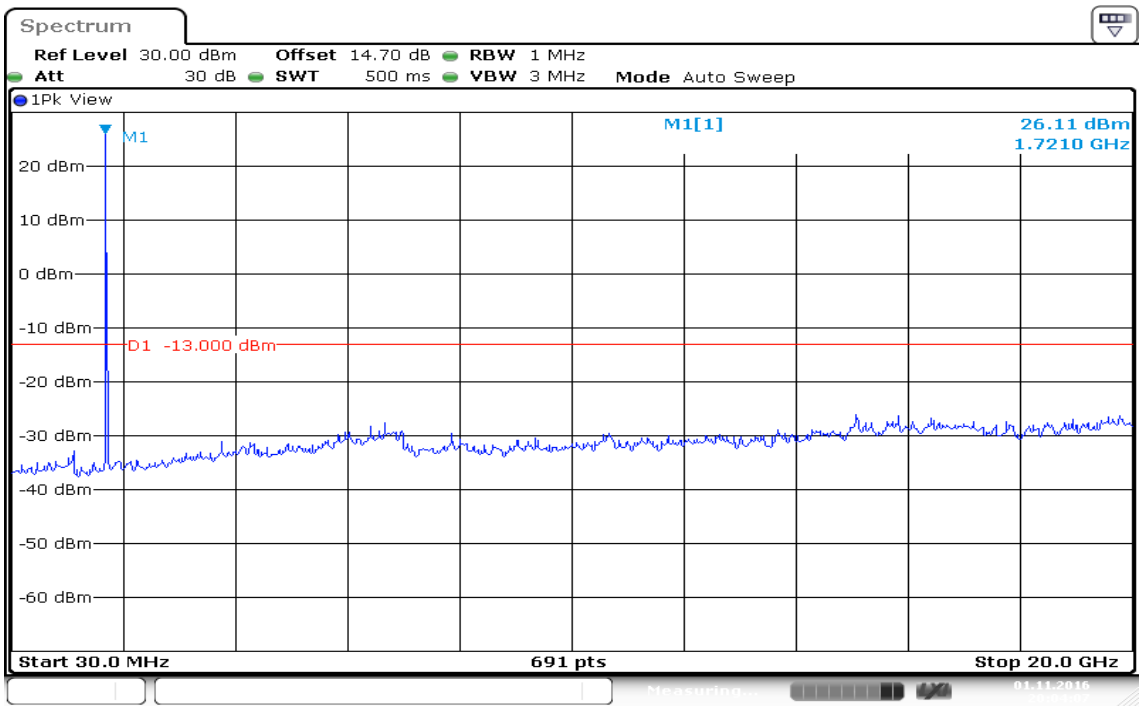
BW: 3MHz / 16QAM / RB =1, RB Offset = 0

CH Low



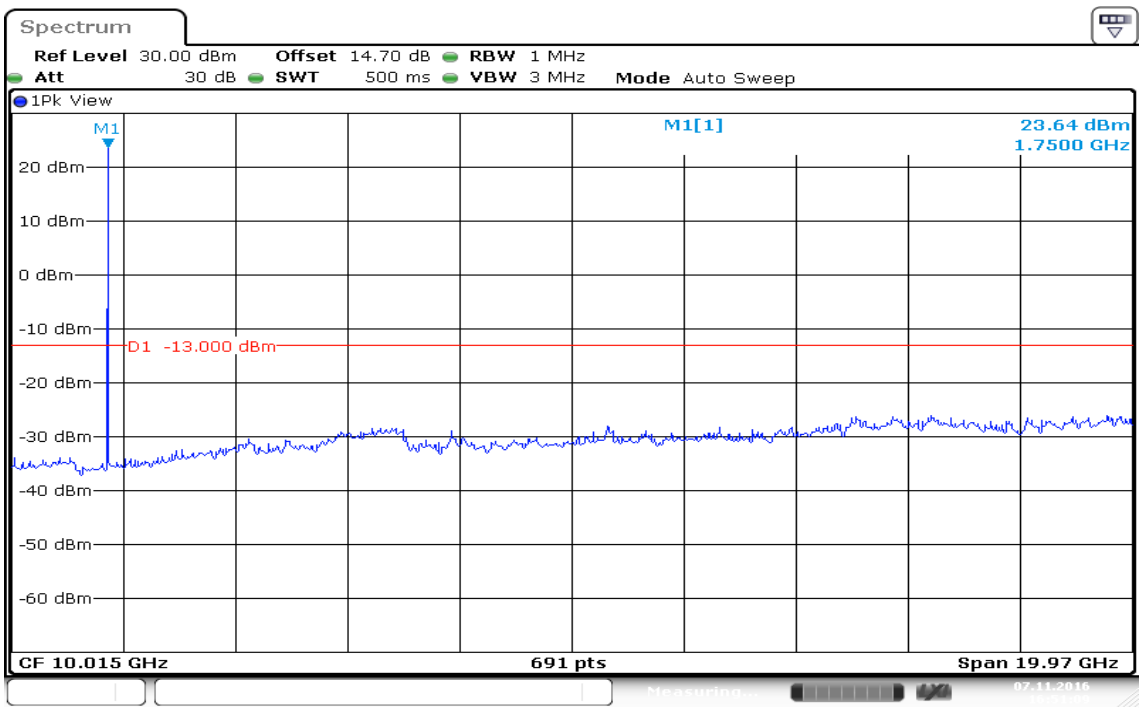
Date: 1.NOV.2016 20:03:26

CH Mid



Date: 1.NOV.2016 20:04:08

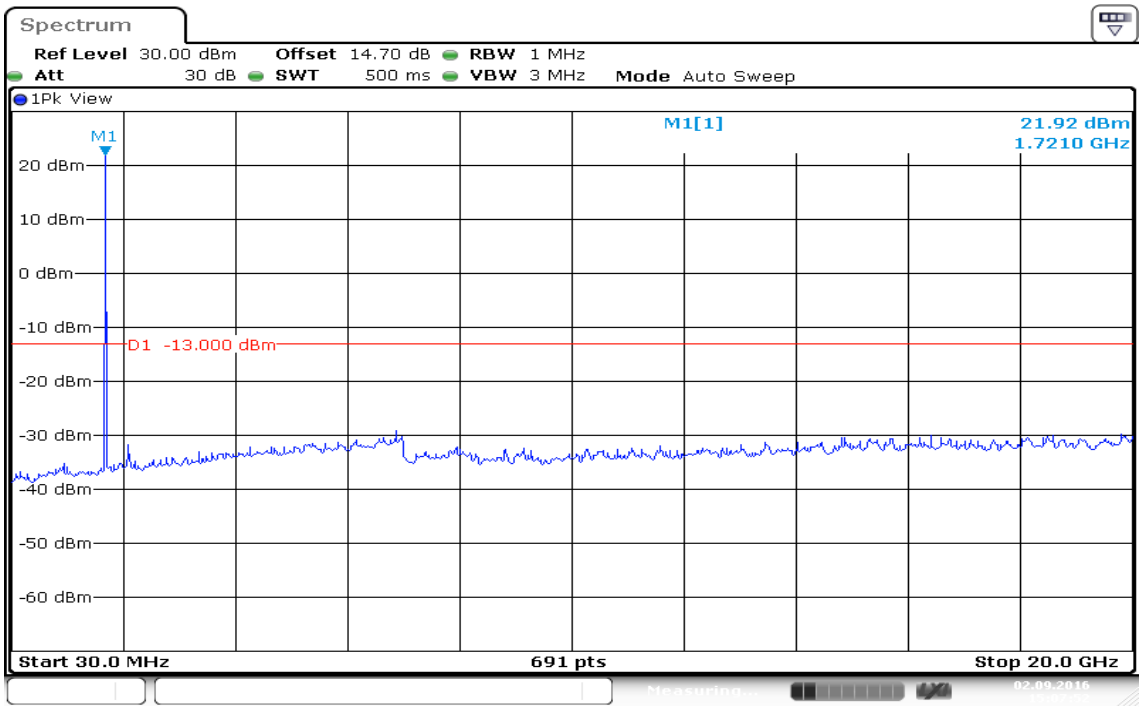
CH High



Date: 7.NOV.2016 16:51:09

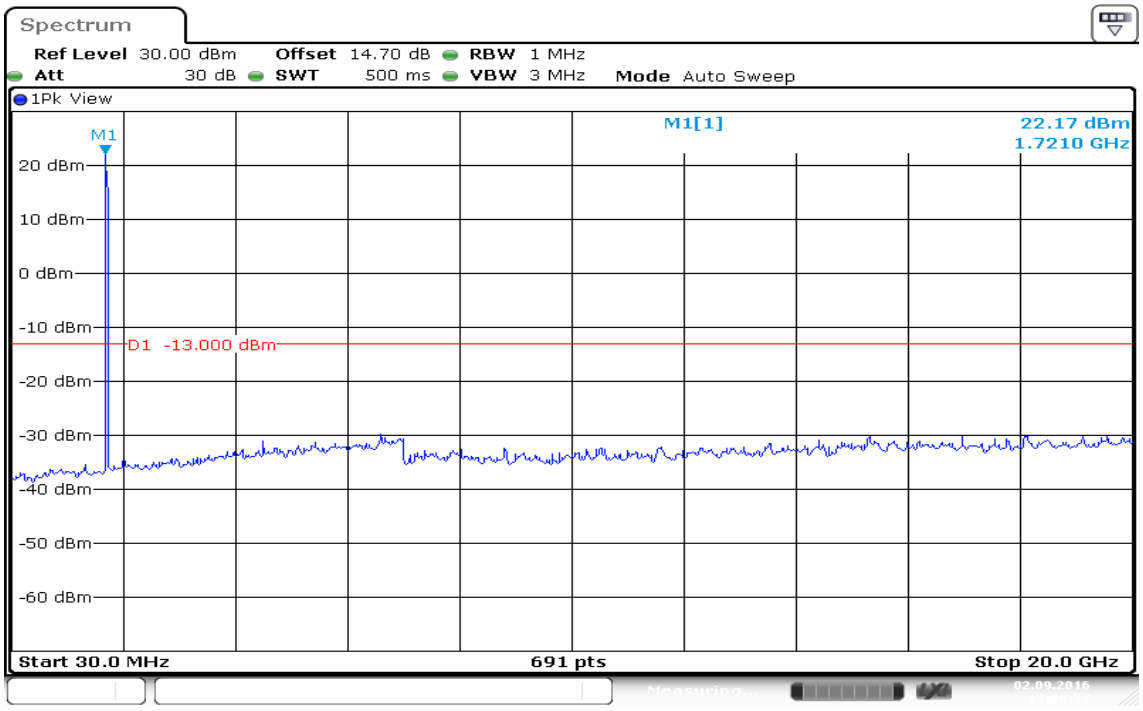
BW: 5MHz / QPSK / RB =1, RB Offset = 0

CH Low



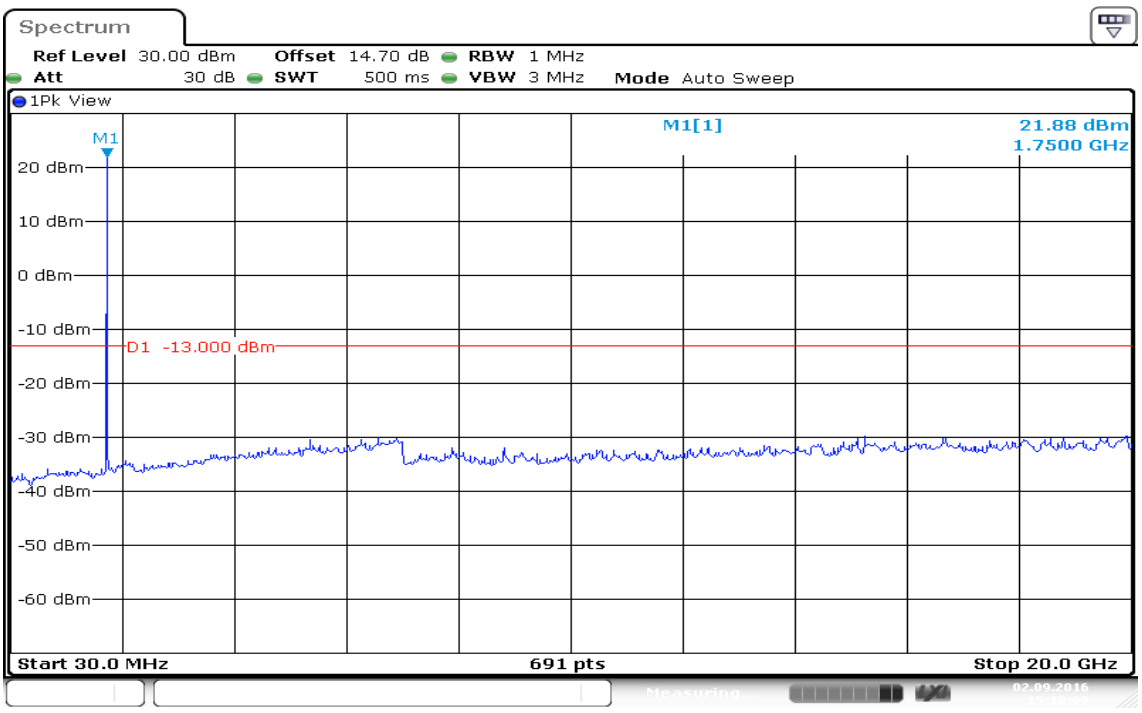
Date: 2.SEP.2016 15:07:52

CH Mid



Date: 2.SEP.2016 15:08:57

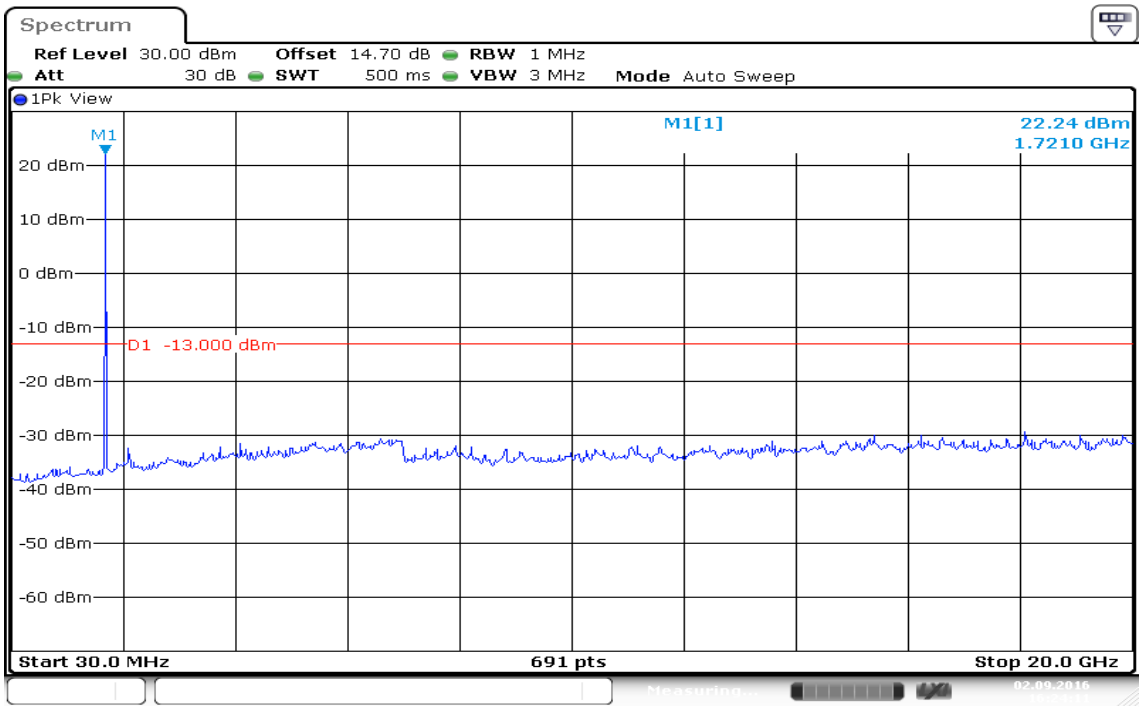
CH High



Date: 2.SEP.2016 15:10:09

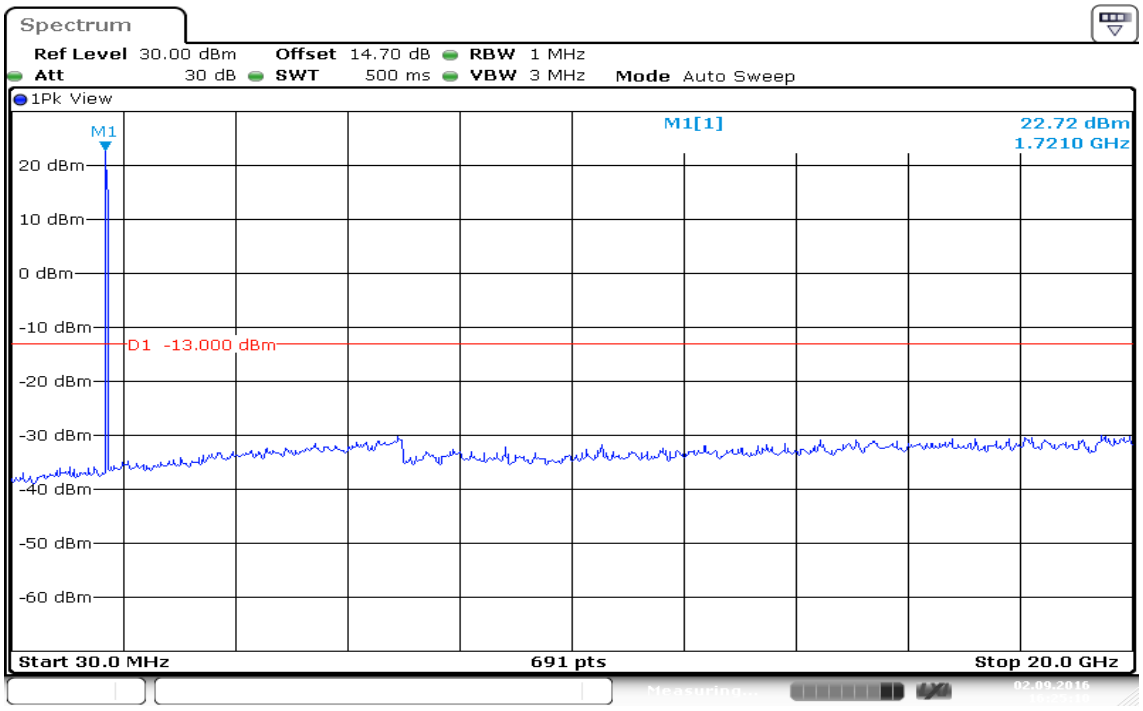
BW: 5MHz / 16QAM / RB =1, RB Offset = 0

CH Low



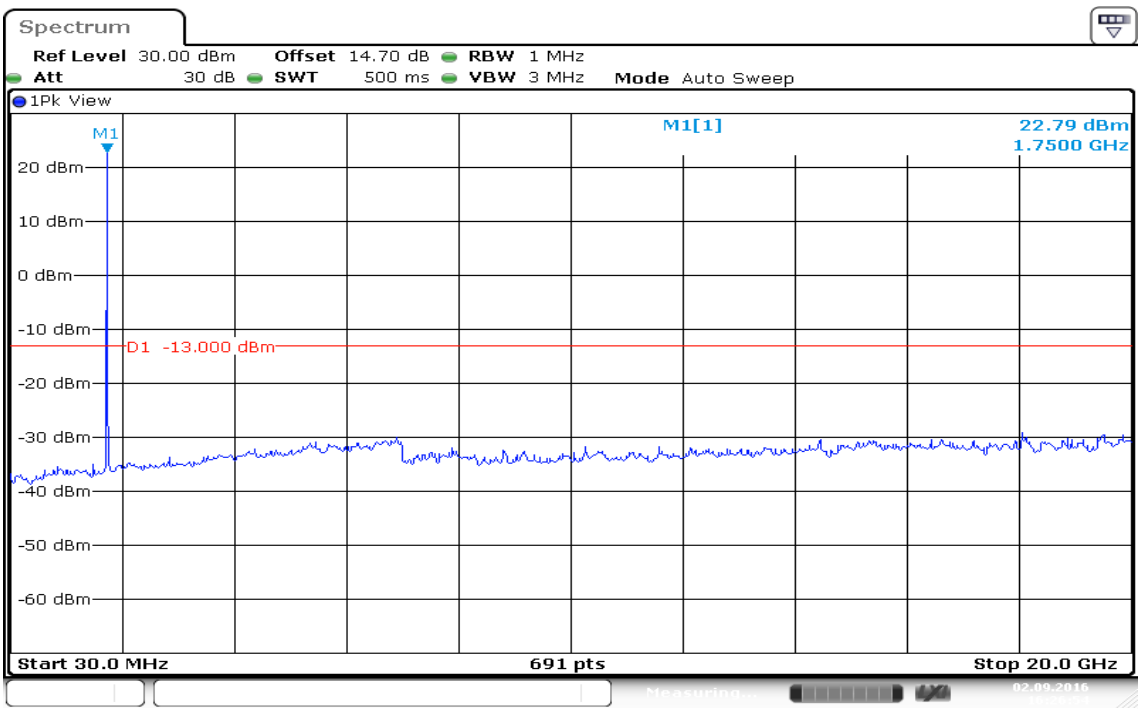
Date: 2.SEP.2016 16:24:11

CH Mid



Date: 2.SEP.2016 16:25:10

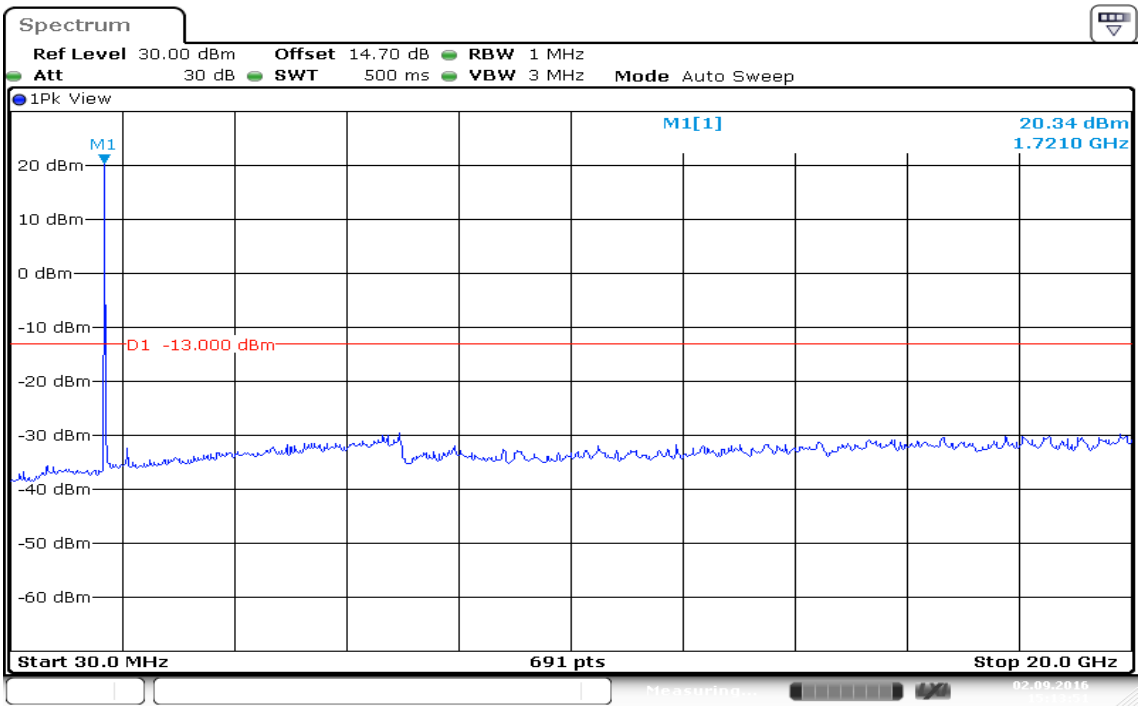
CH High



Date: 2.SEP.2016 16:26:55

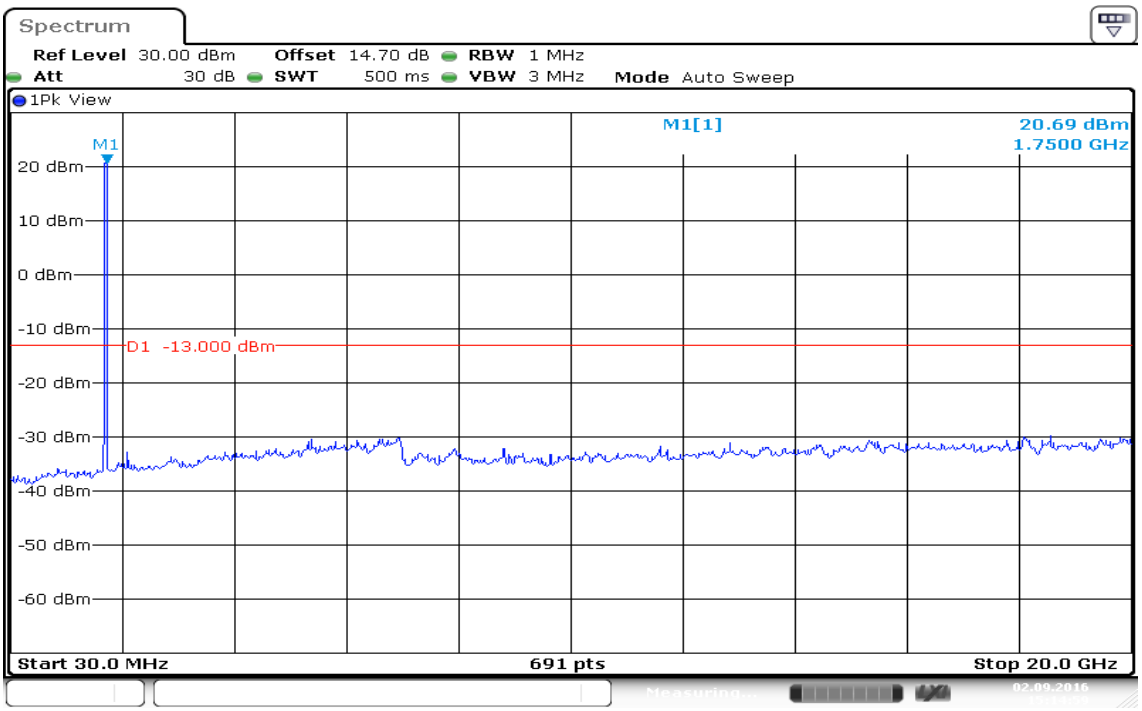
BW: 10MHz / QPSK / RB =1, RB Offset = 0

CH Low



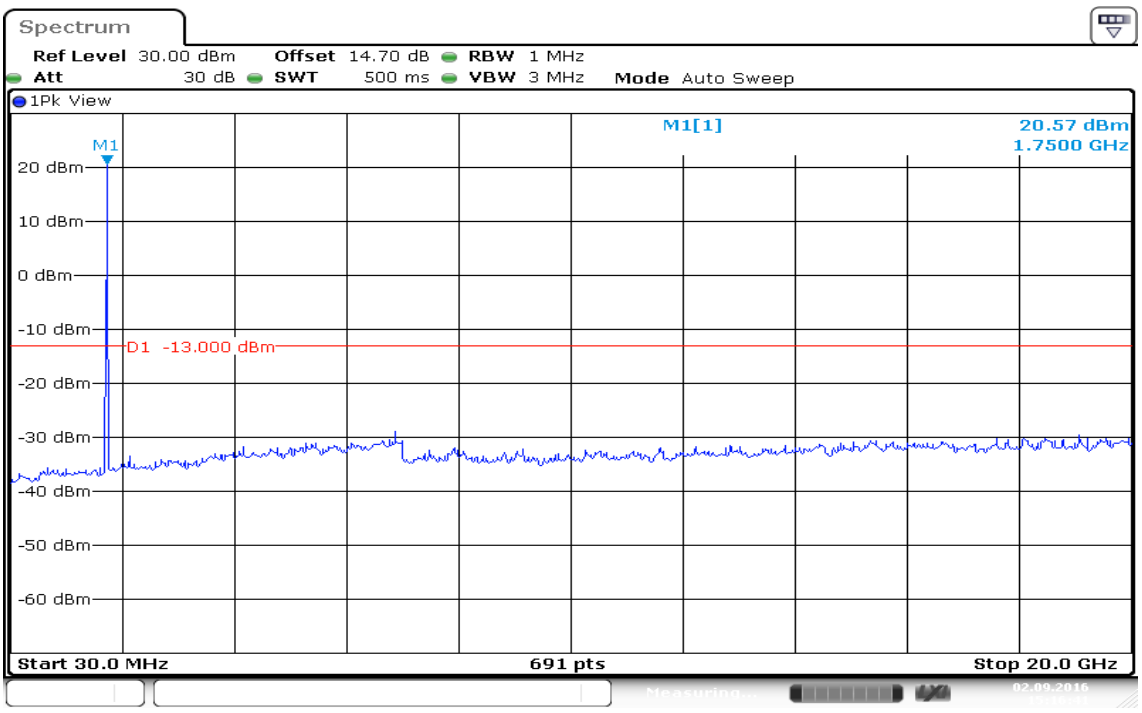
Date: 2.SEP.2016 15:13:51

CH Mid



Date: 2.SEP.2016 15:14:59

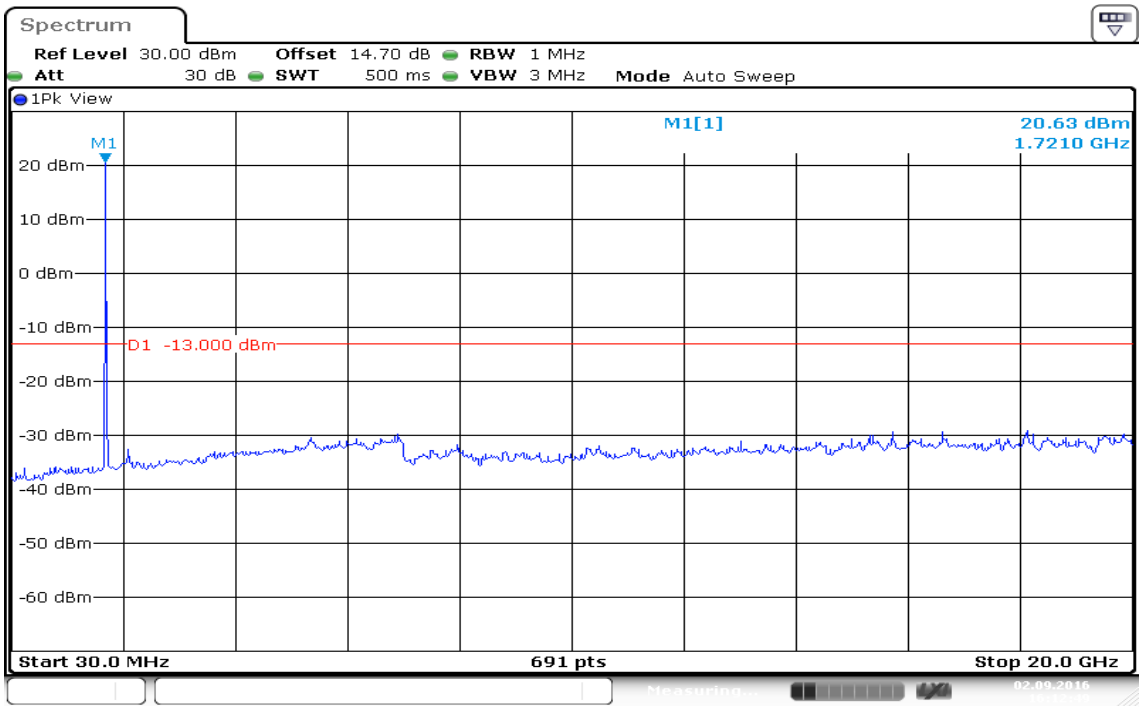
CH High



Date: 2.SEP.2016 15:16:42

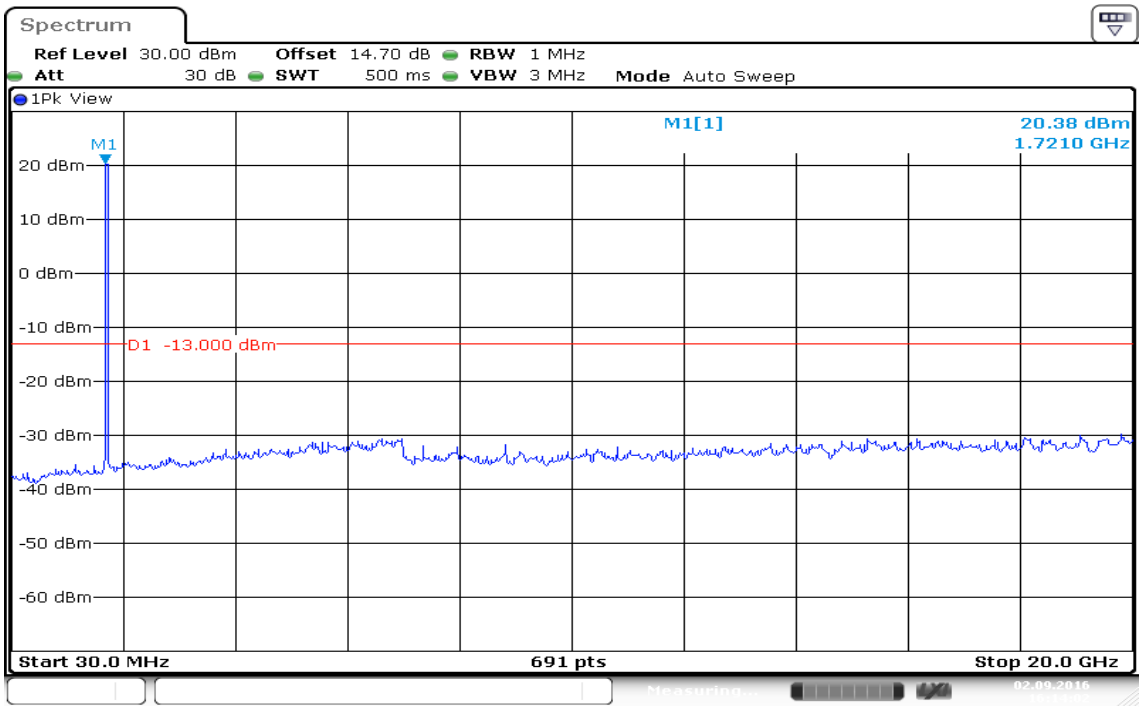
BW: 10MHz / 16QAM / RB =1, RB Offset = 0

CH Low



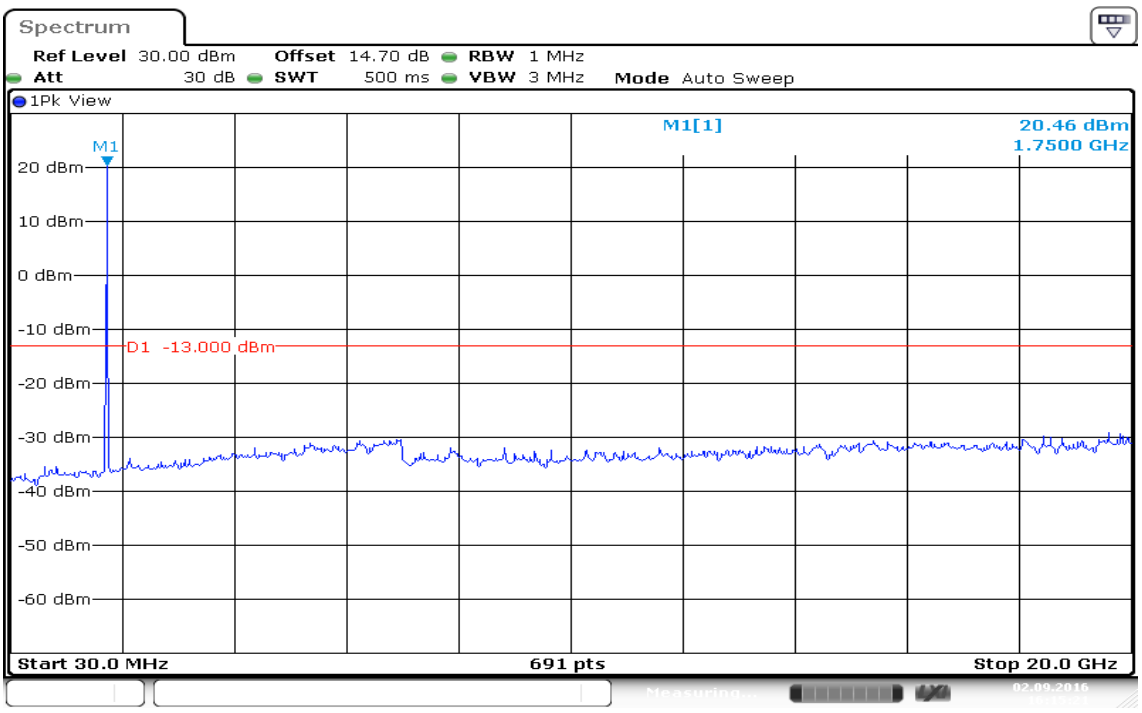
Date: 2.SEP.2016 16:12:49

CH Mid



Date: 2.SEP.2016 16:14:02

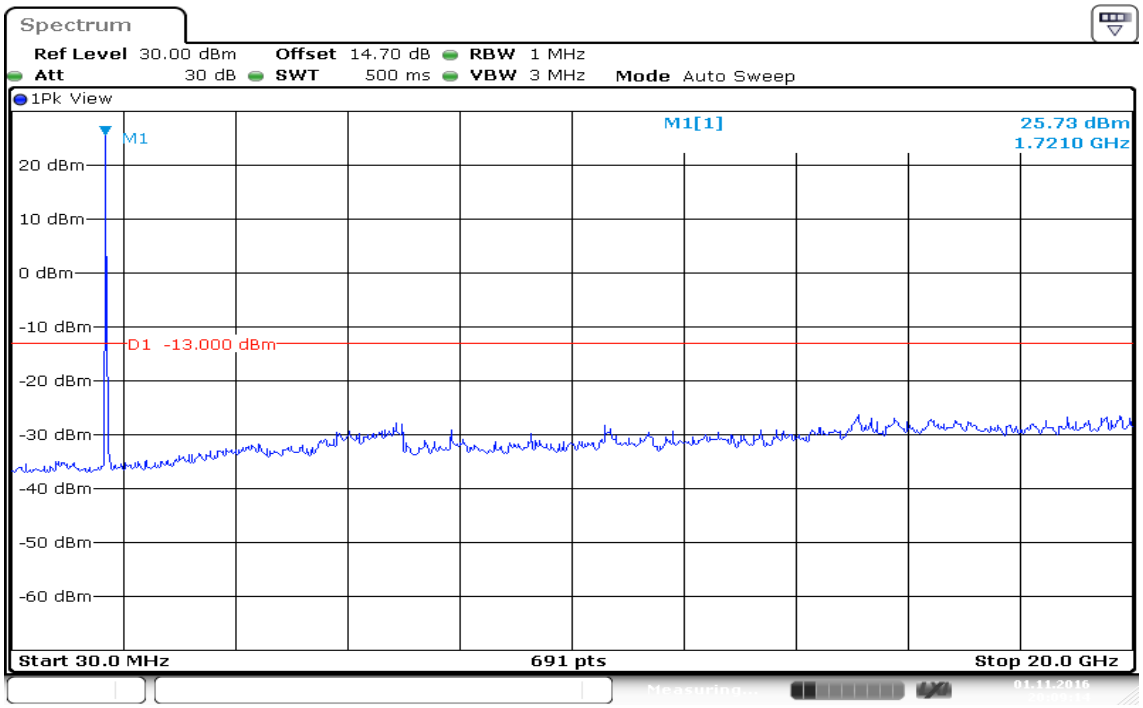
CH High



Date: 2.SEP.2016 16:15:21

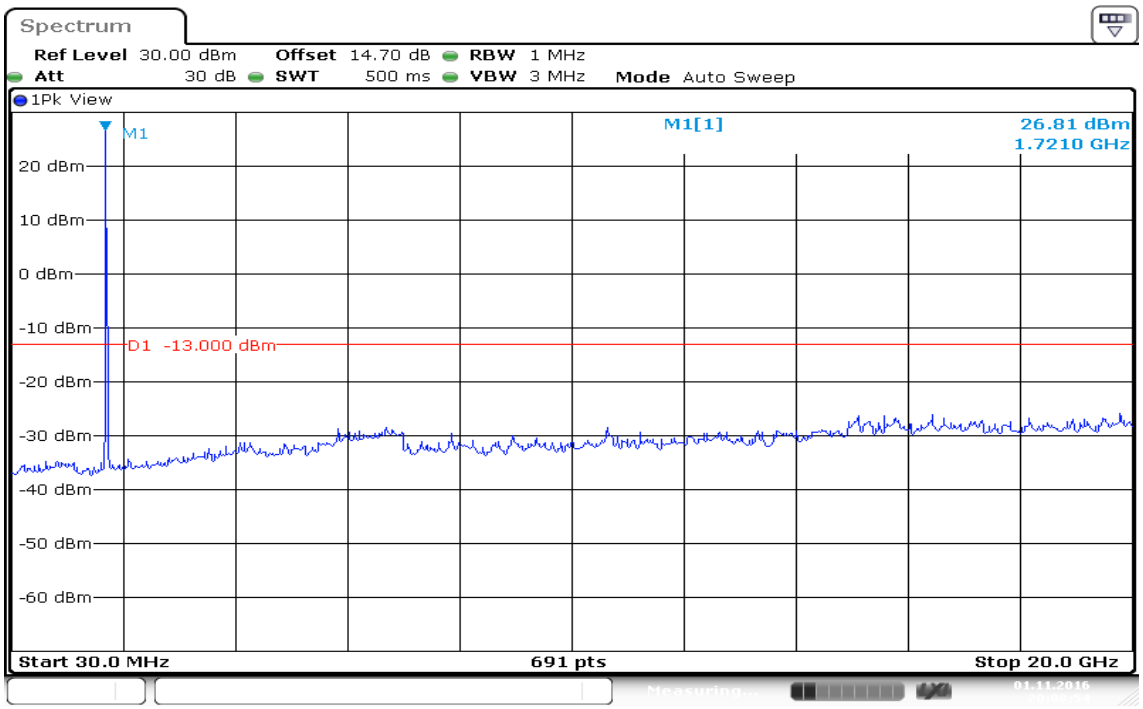
BW: 15MHz / QPSK / RB =1, RB Offset = 0

CH Low



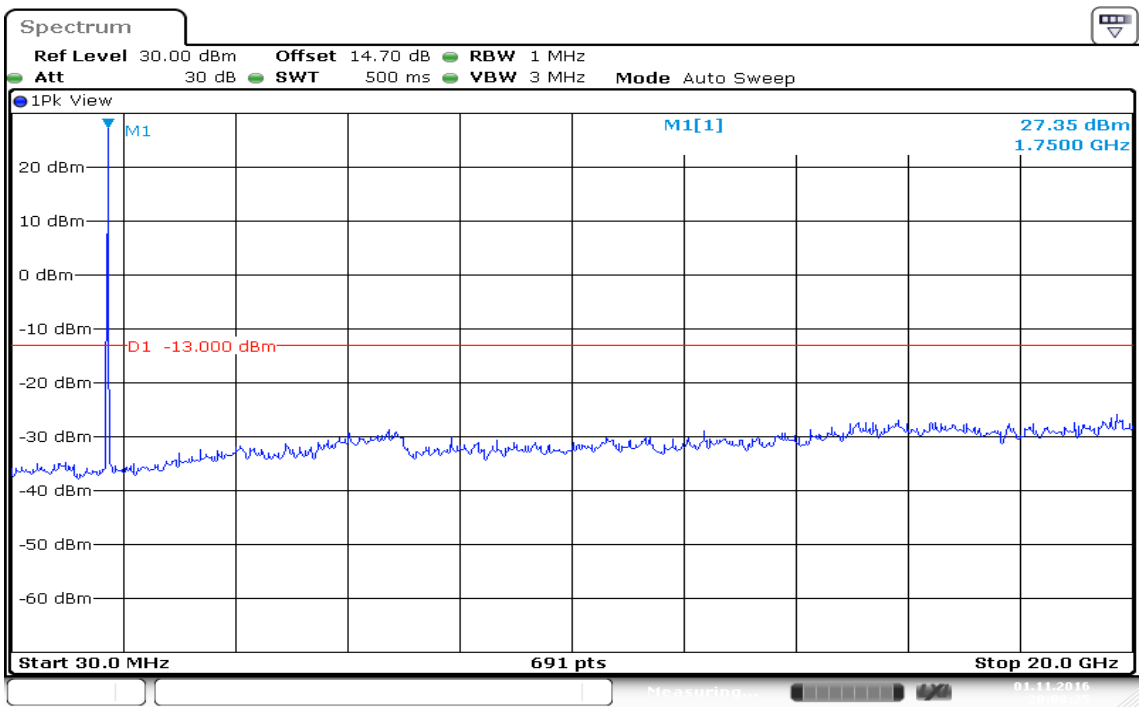
Date: 1.NOV.2016 20:09:14

CH Mid



Date: 1.NOV.2016 20:08:55

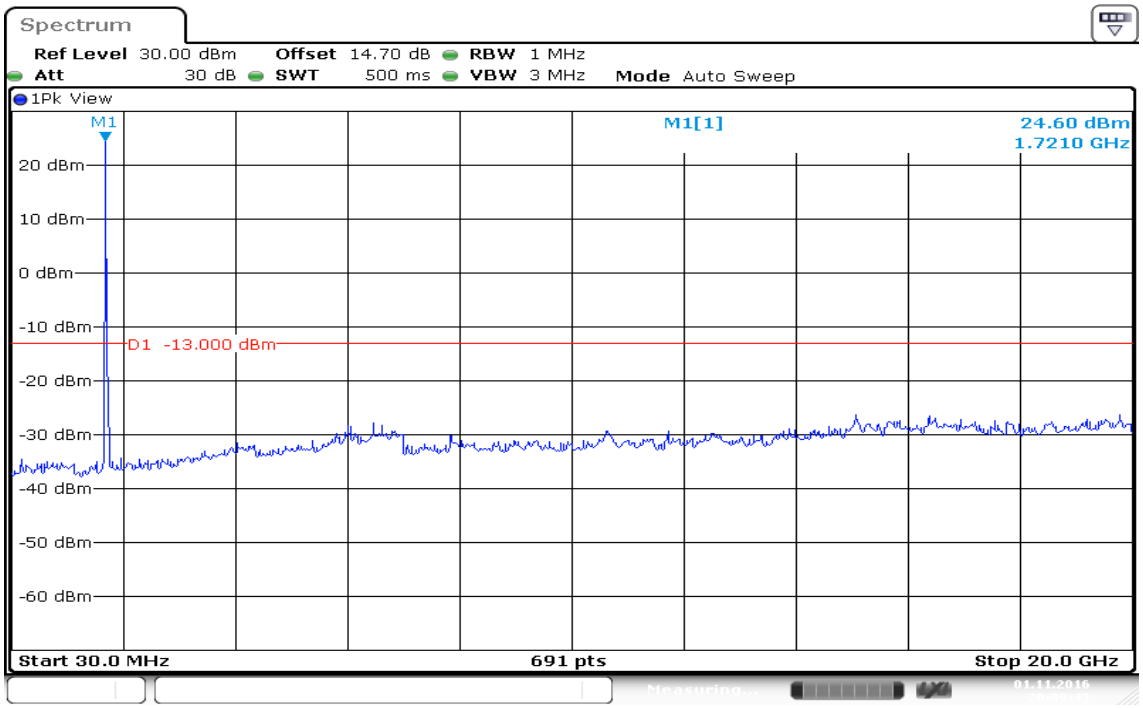
CH High



Date: 1.NOV.2016 20:08:26

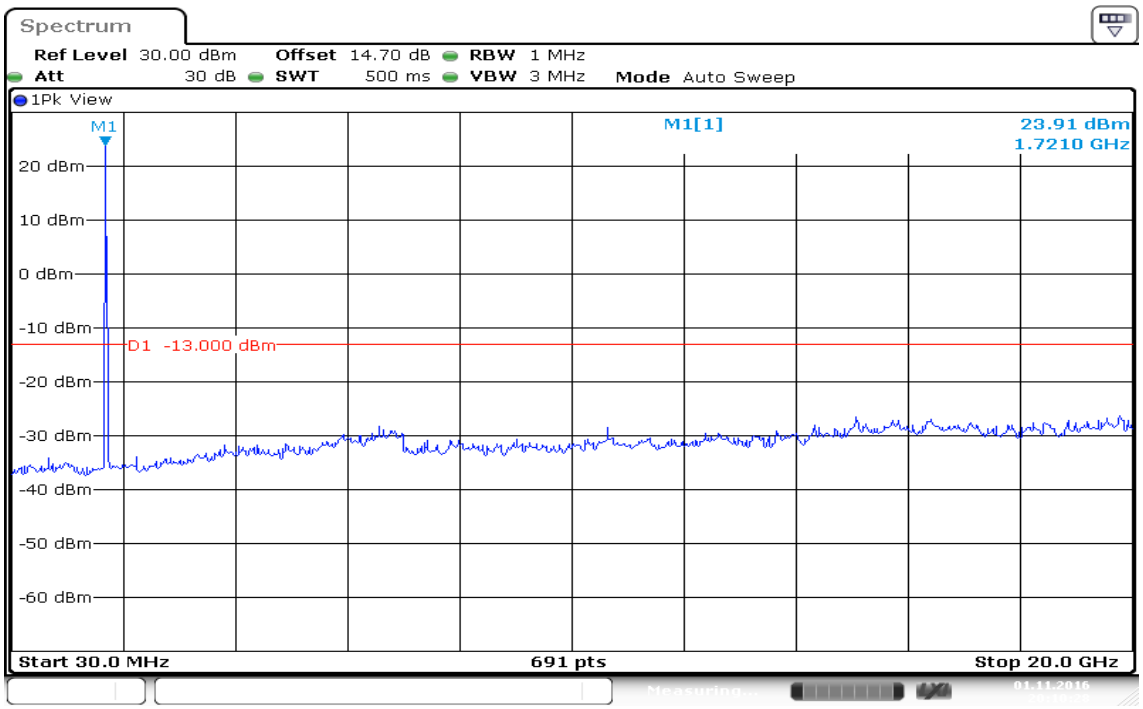
BW: 15MHz / 16QAM / RB =1, RB Offset = 0

CH Low



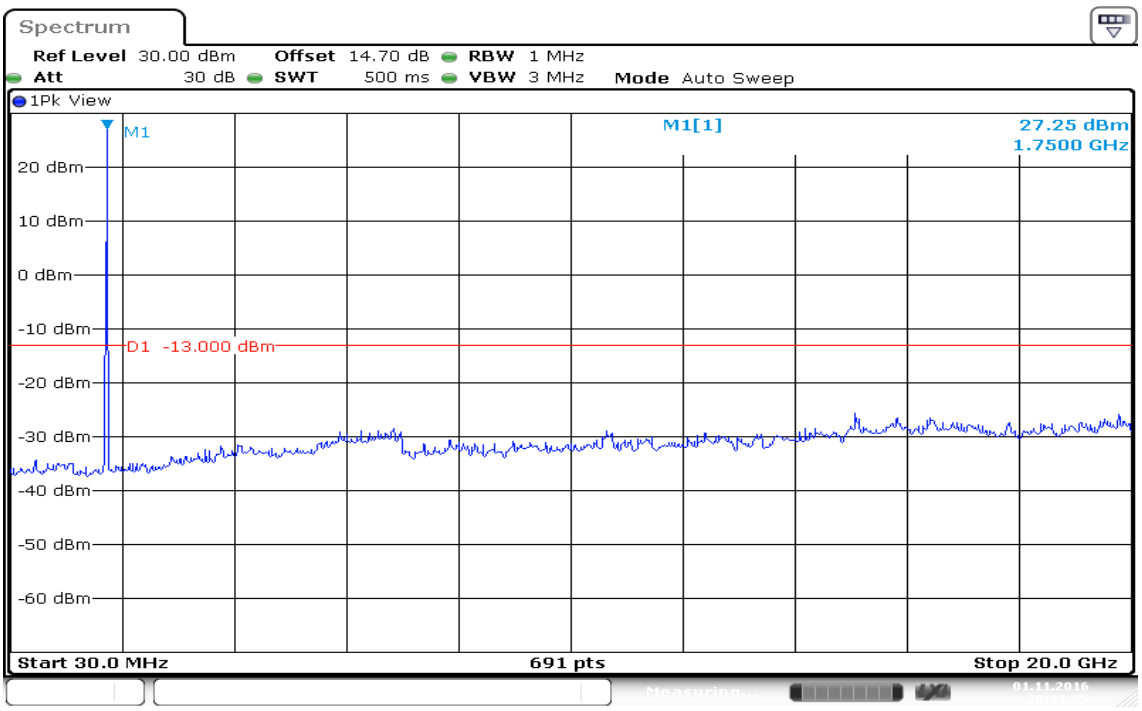
Date: 1.NOV.2016 20:09:43

CH Mid



Date: 1.NOV.2016 20:10:28

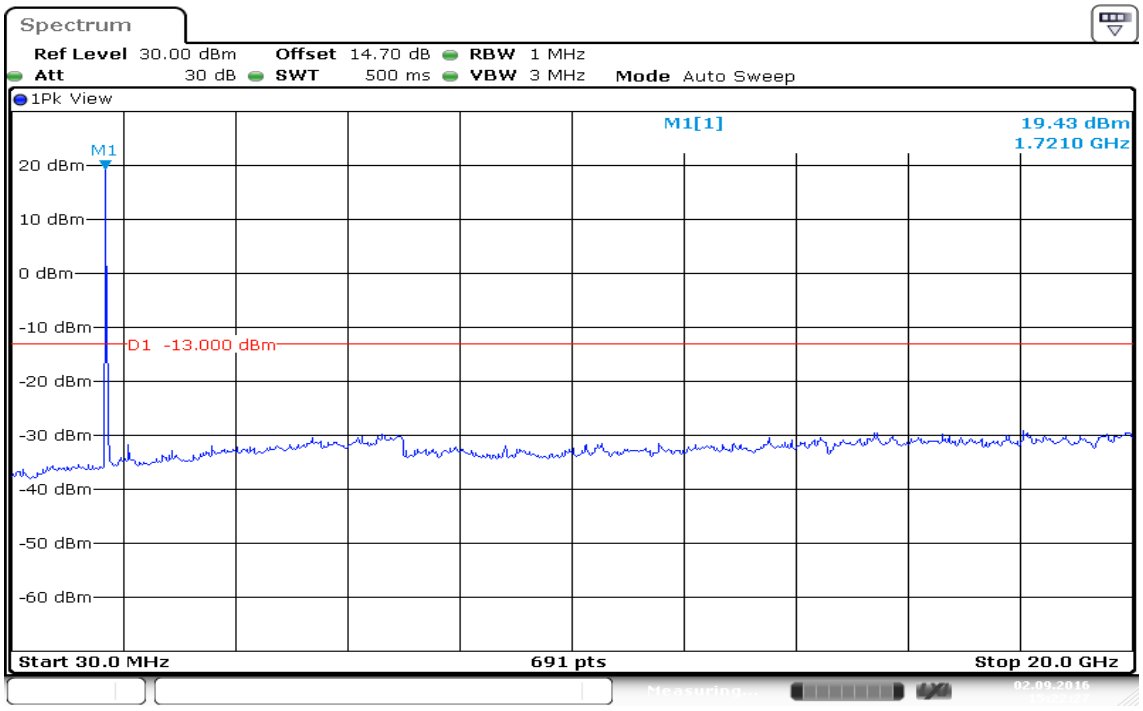
CH High



Date: 1.NOV.2016 20:11:06

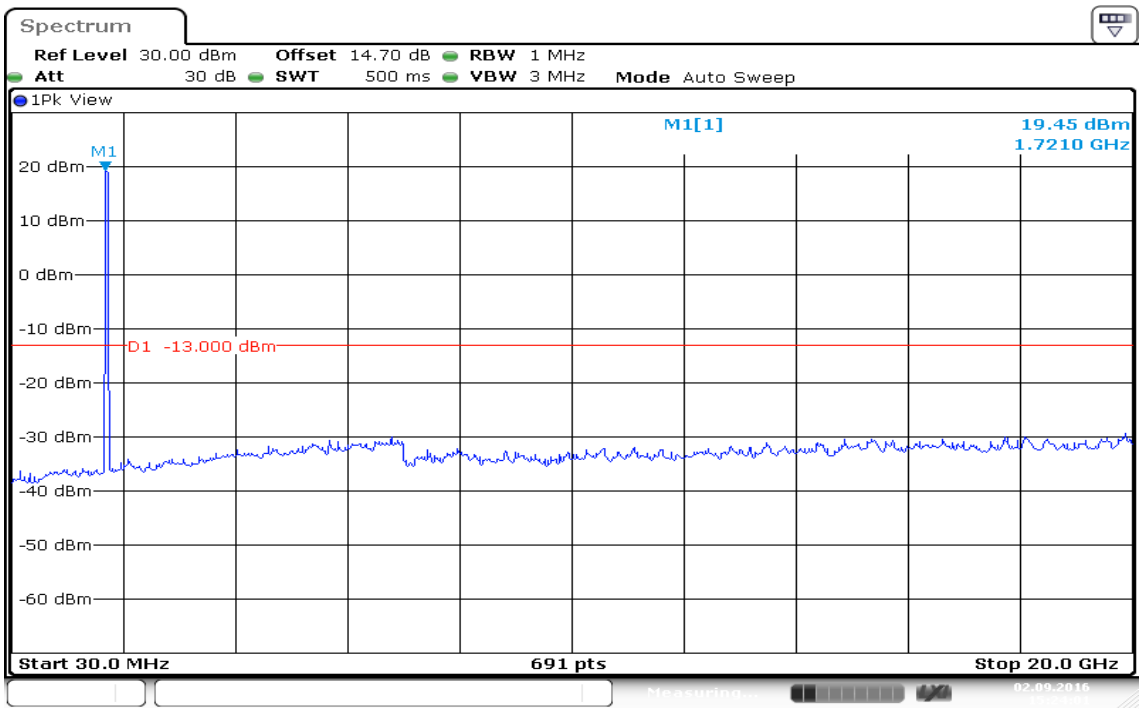
BW: 20MHz / QPSK / RB =1, RB Offset = 0

CH Low



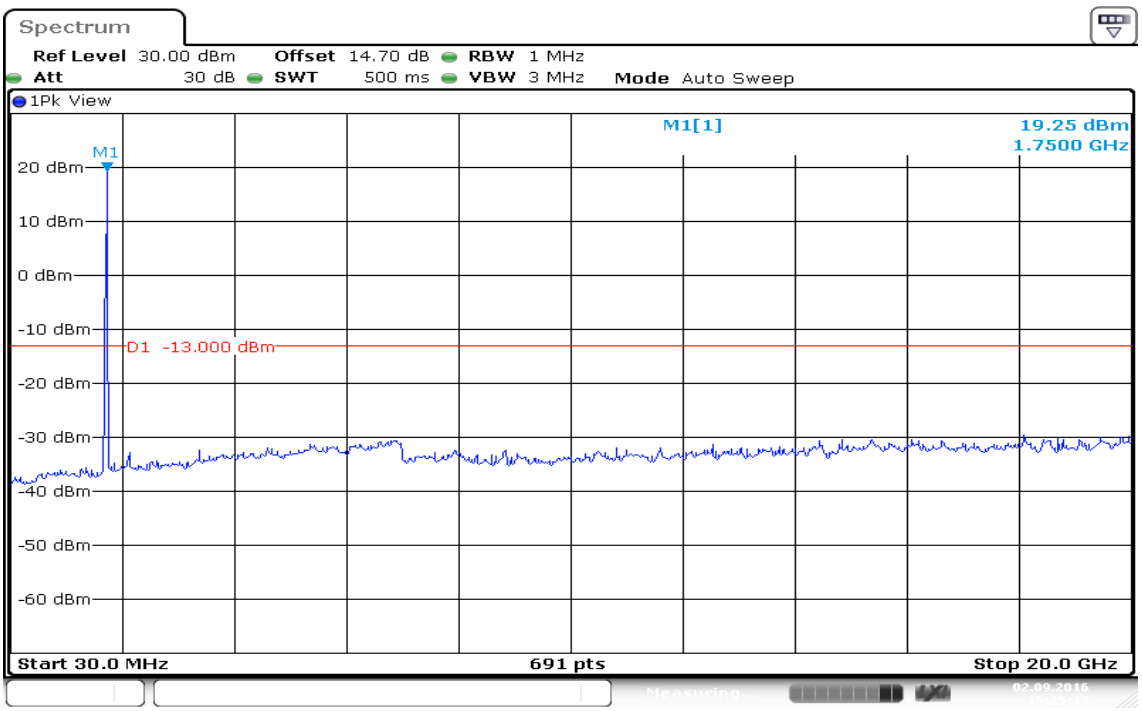
Date: 2.SEP.2016 15:22:27

CH Mid



Date: 2.SEP.2016 15:24:01

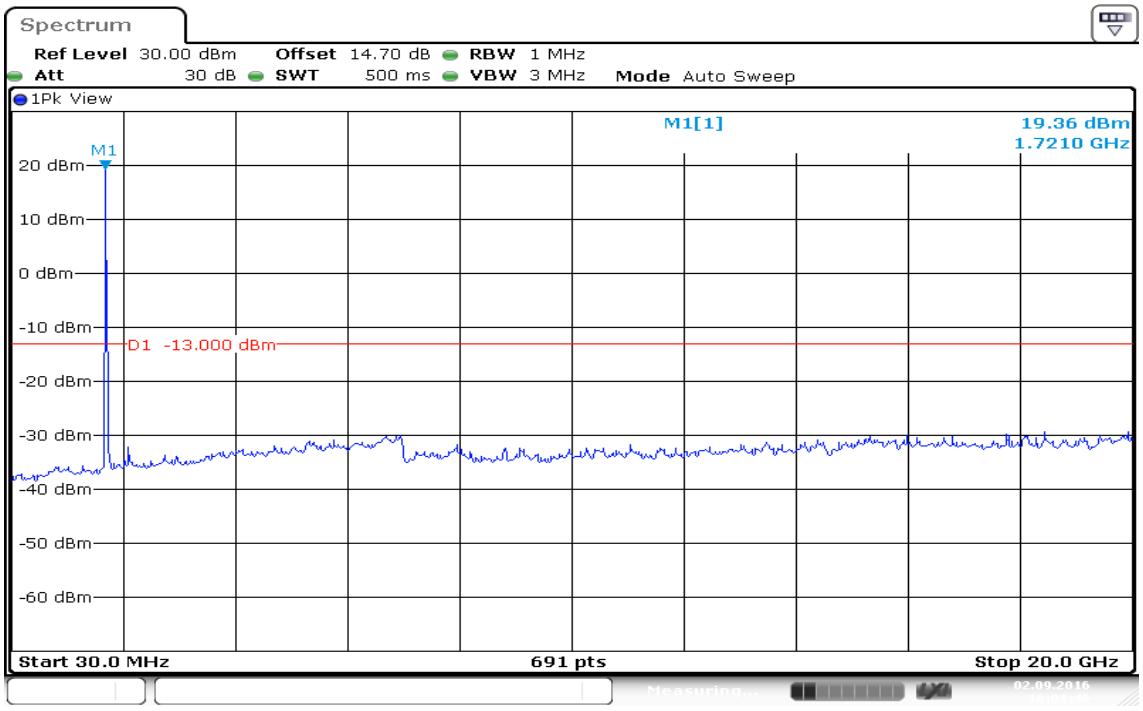
CH High



Date: 2.SEP.2016 15:25:15

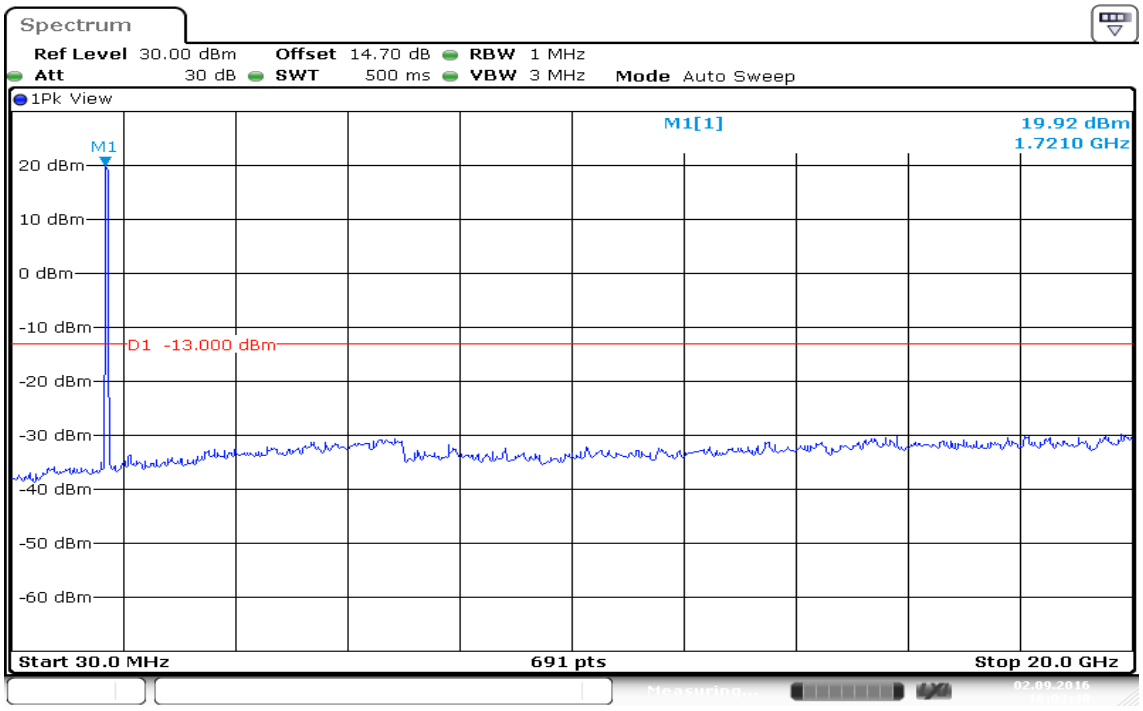
BW: 20MHz / 16QAM / RB =1, RB Offset = 0

CH Low



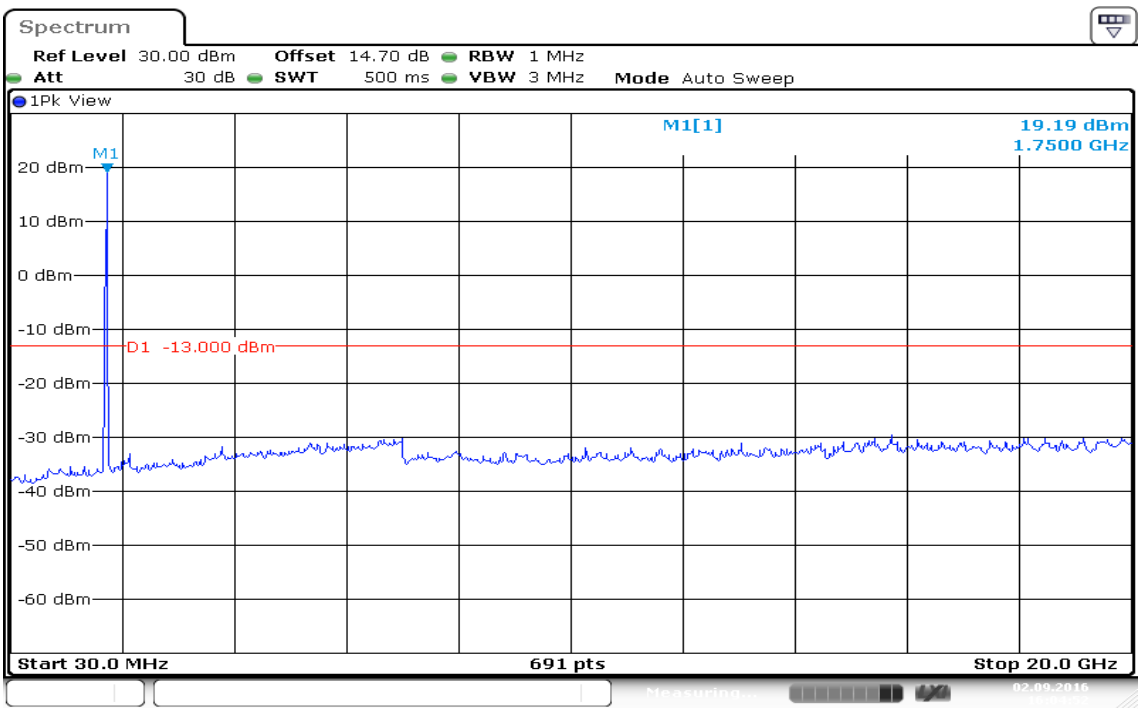
Date: 2.SEP.2016 16:01:47

CH Mid



Date: 2.SEP.2016 16:03:41

CH High

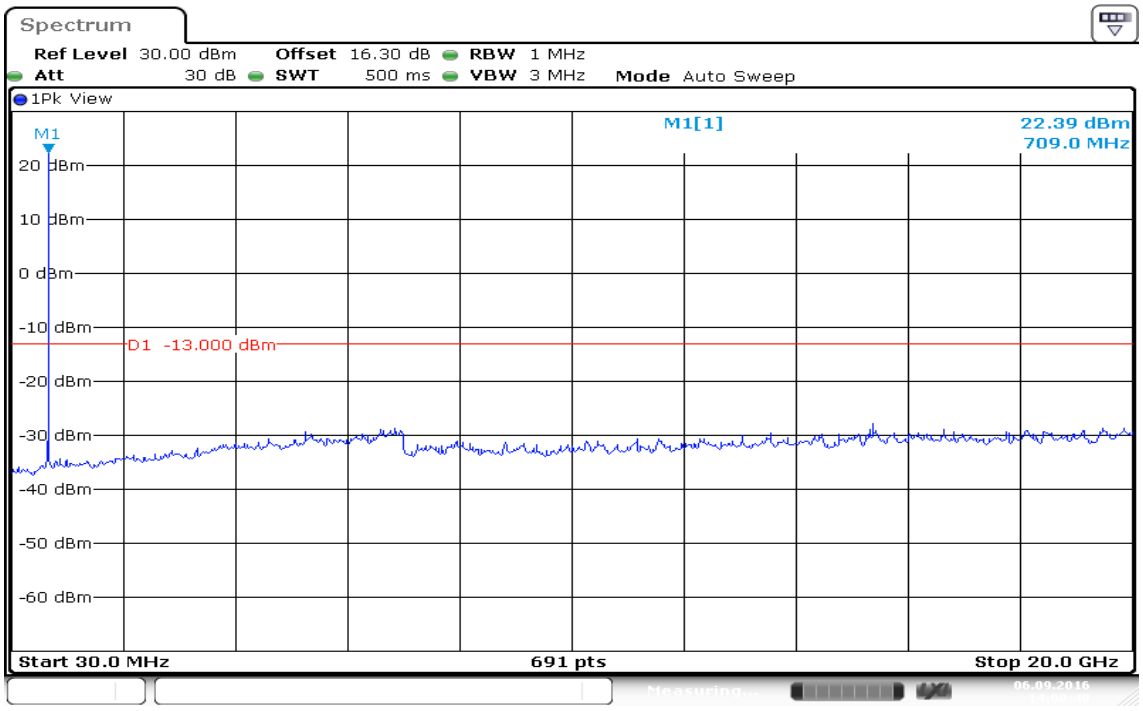


Date: 2.SEP.2016 16:04:52

LTE Band 17

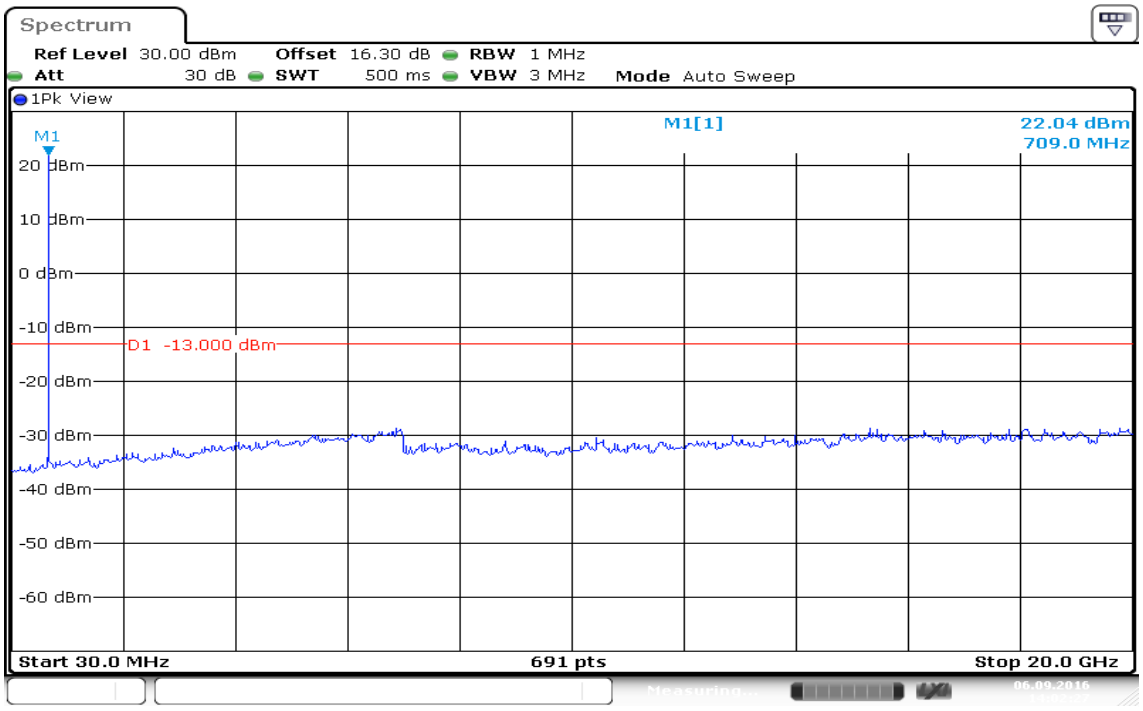
BW: 5MHz / QPSK / RB =1, RB Offset = 0

CH Low



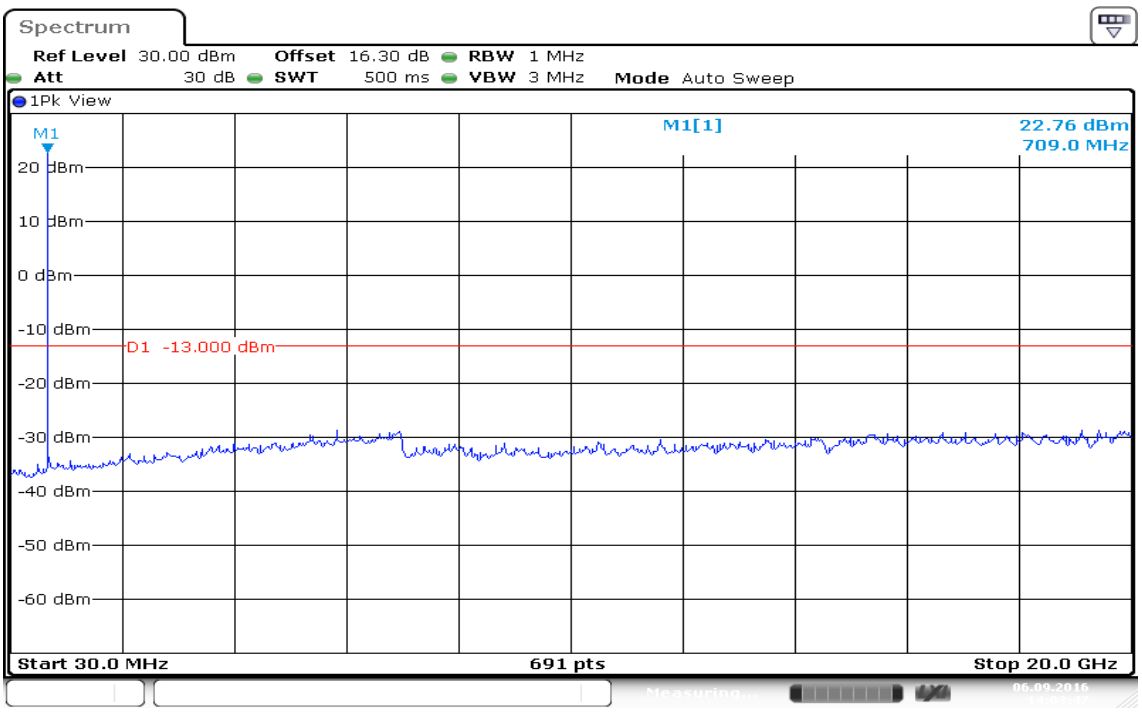
Date: 6.SEP.2016 14:00:40

CH Mid



Date: 6.SEP.2016 14:02:27

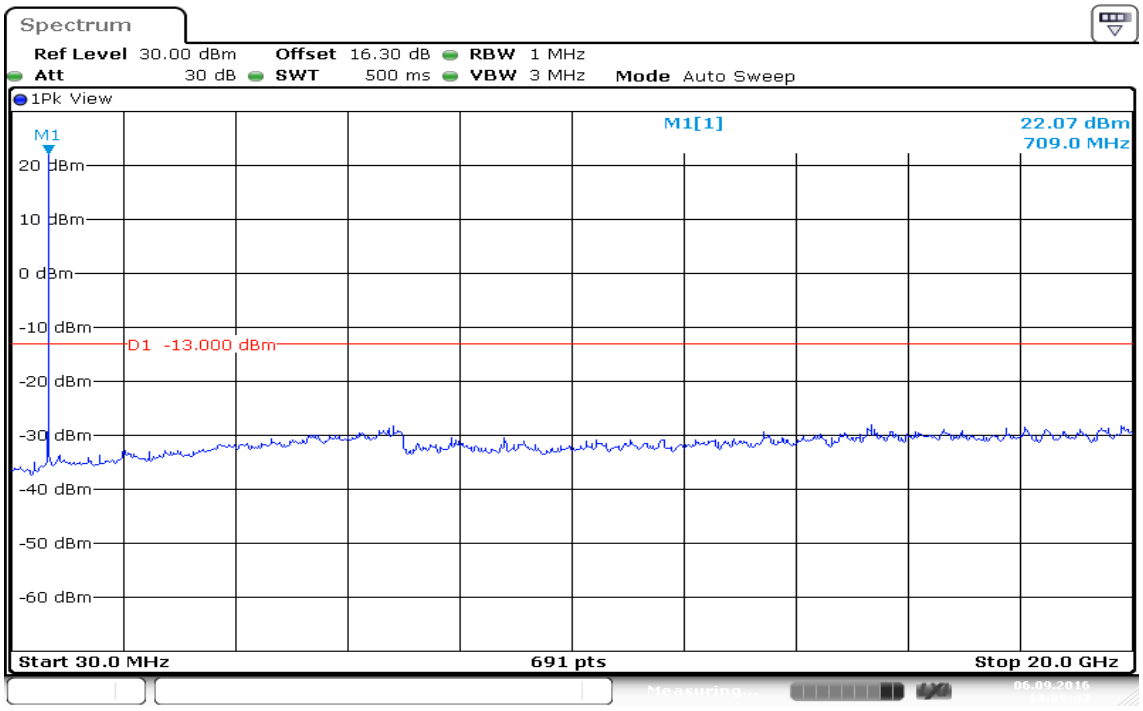
CH High



Date: 6.SEP.2016 14:03:47

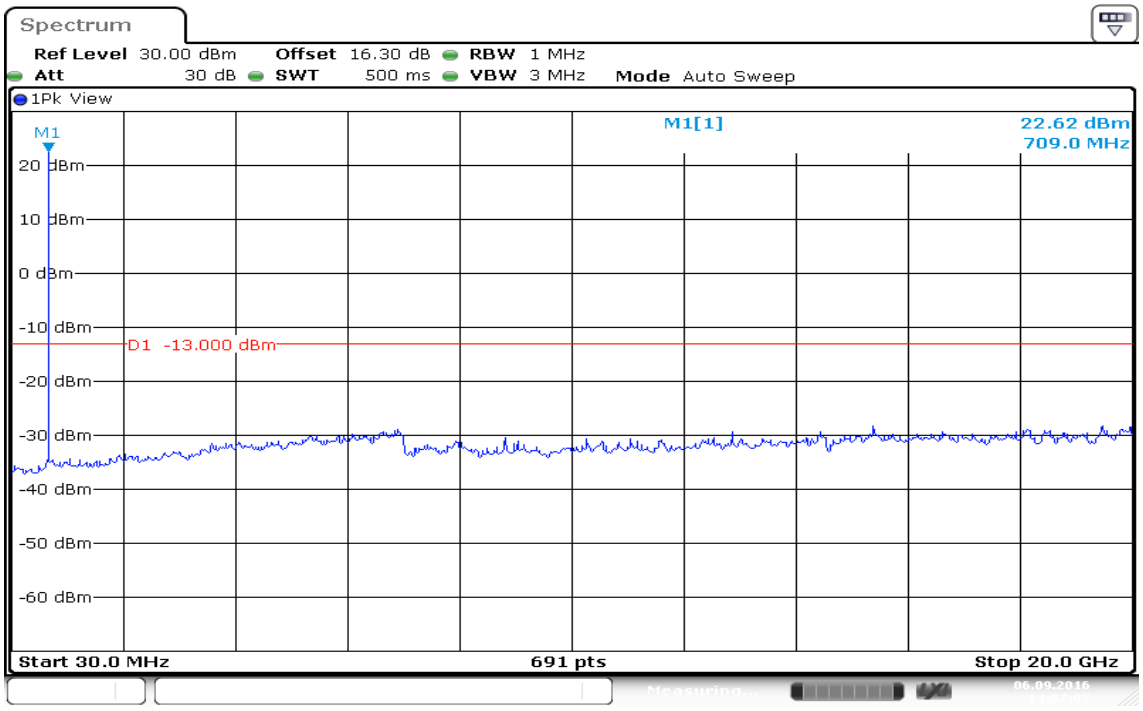
BW: 5MHz / 16QAM/ RB =1, RB Offset = 0

CH Low



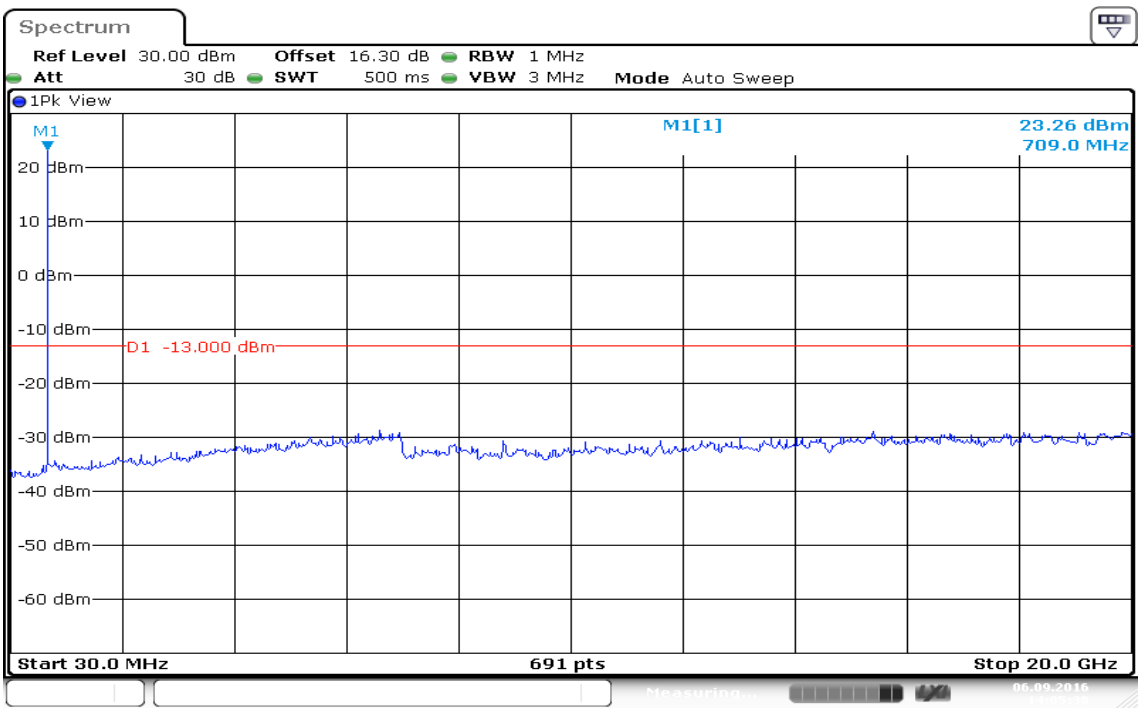
Date: 6.SEP.2016 14:09:43

CH Mid



Date: 6.SEP.2016 14:07:05

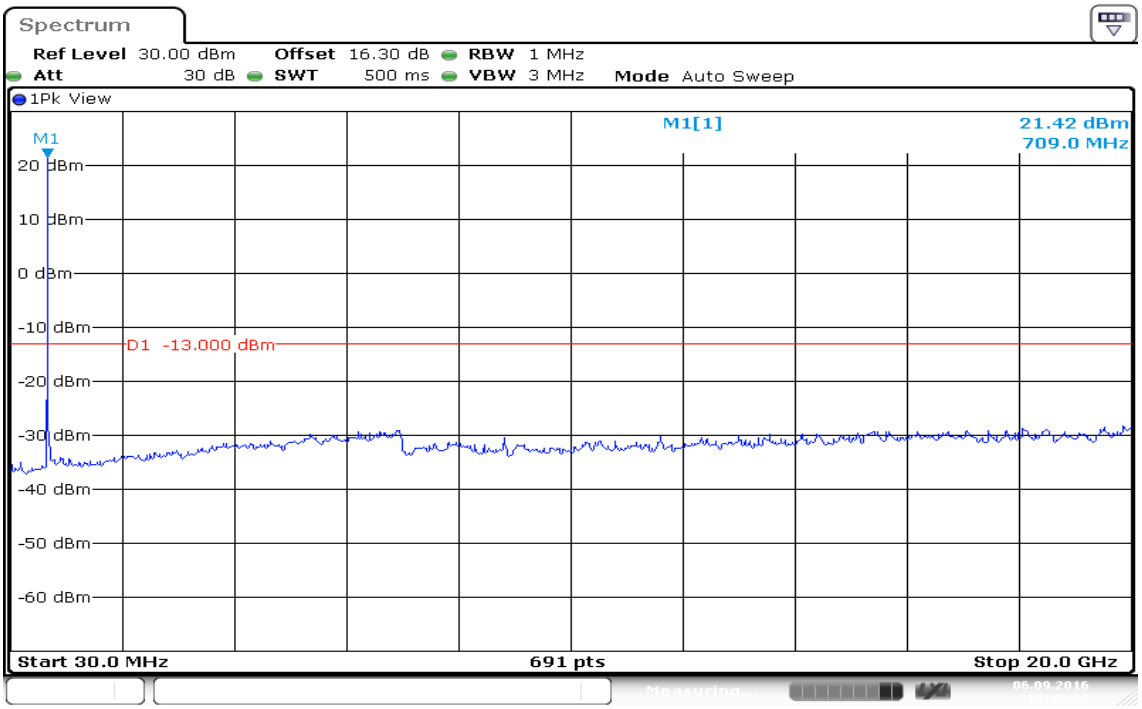
CH High



Date: 6.SEP.2016 14:05:38

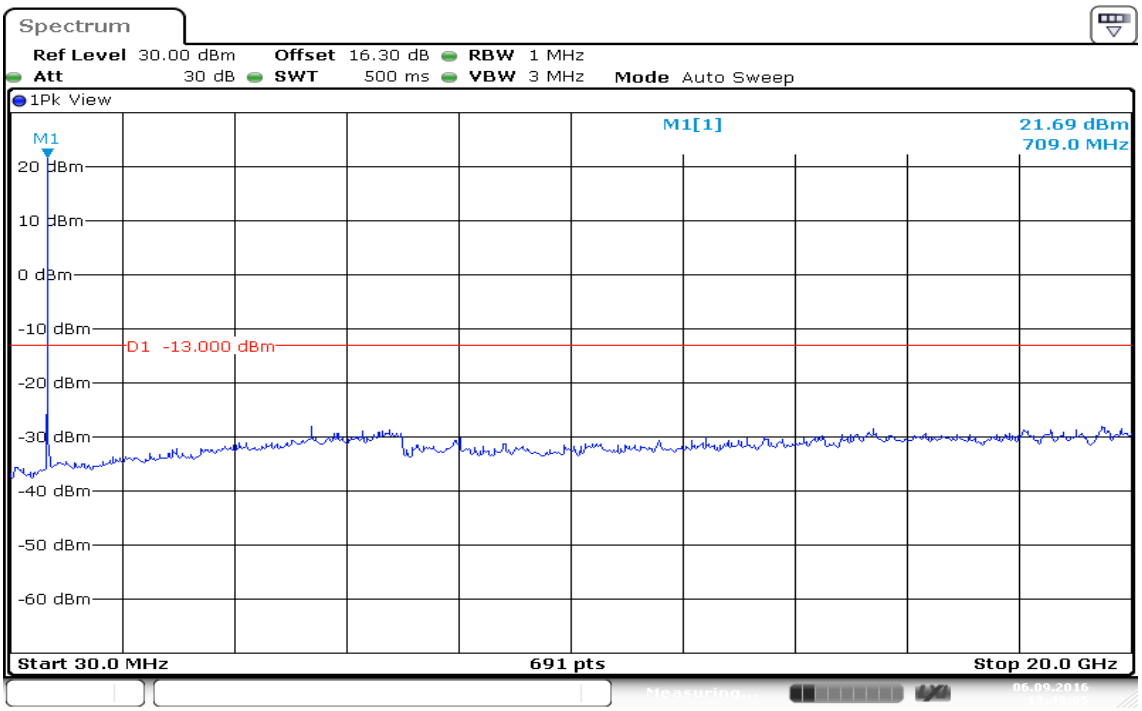
BW: 10MHz / QPSK / RB =1, RB Offset = 0

CH Low



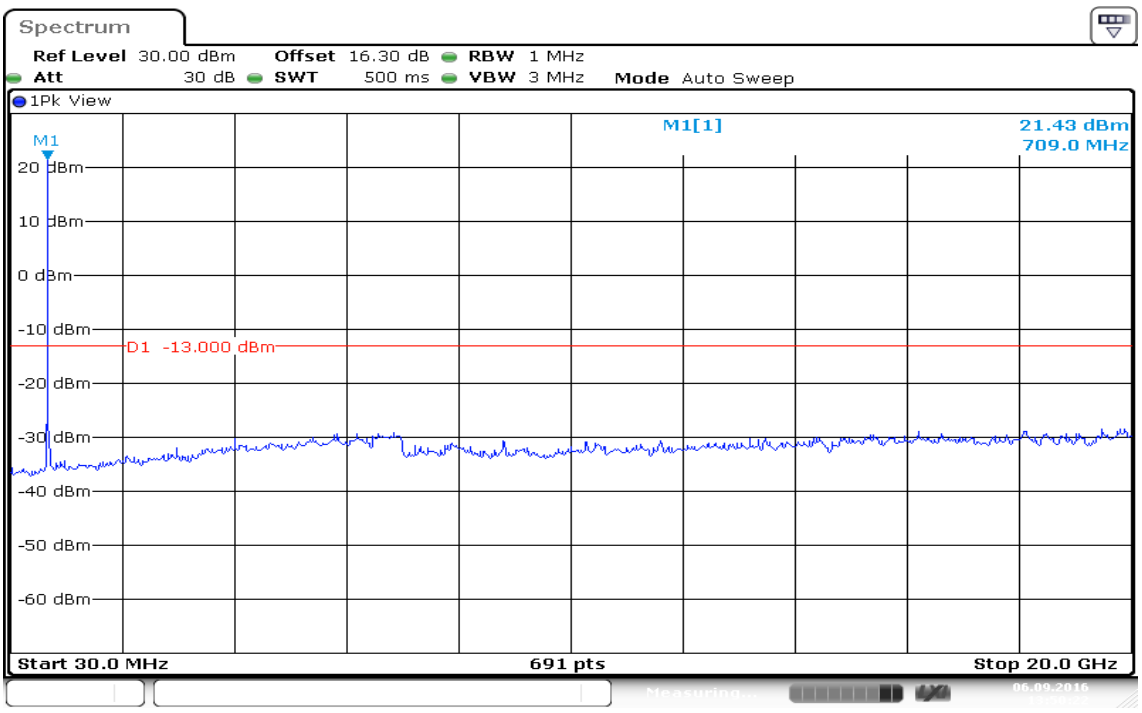
Date: 6.SEP.2016 13:46:22

CH Mid



Date: 6.SEP.2016 13:49:05

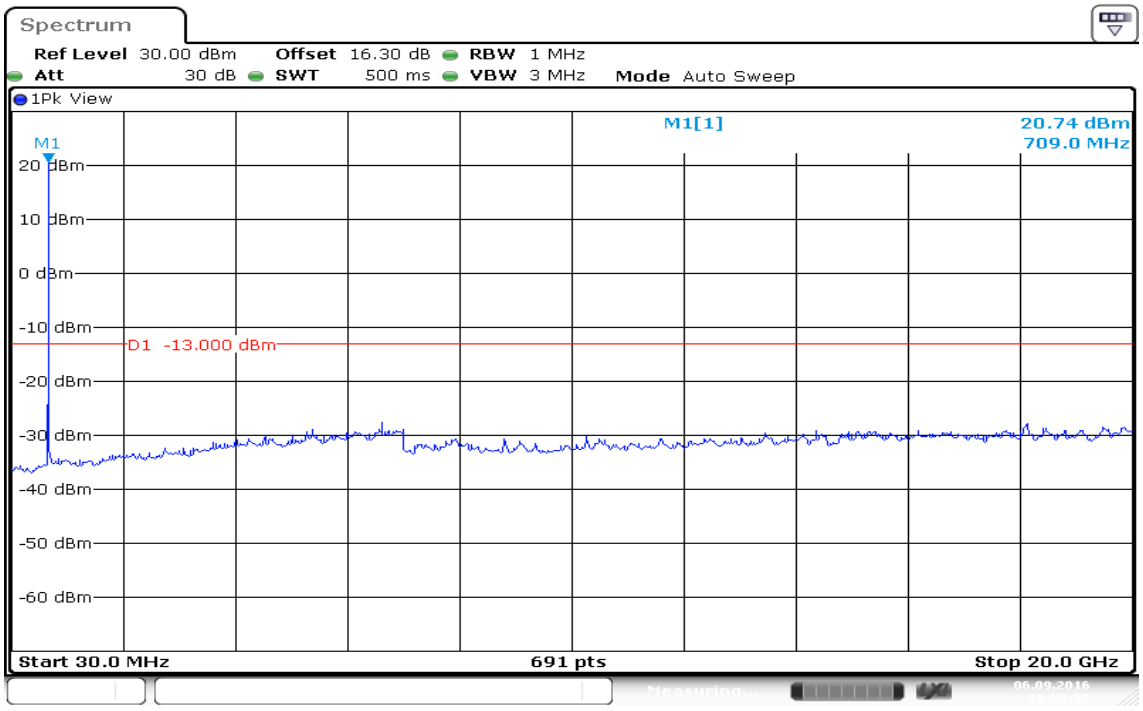
CH High



Date: 6.SEP.2016 13:50:22

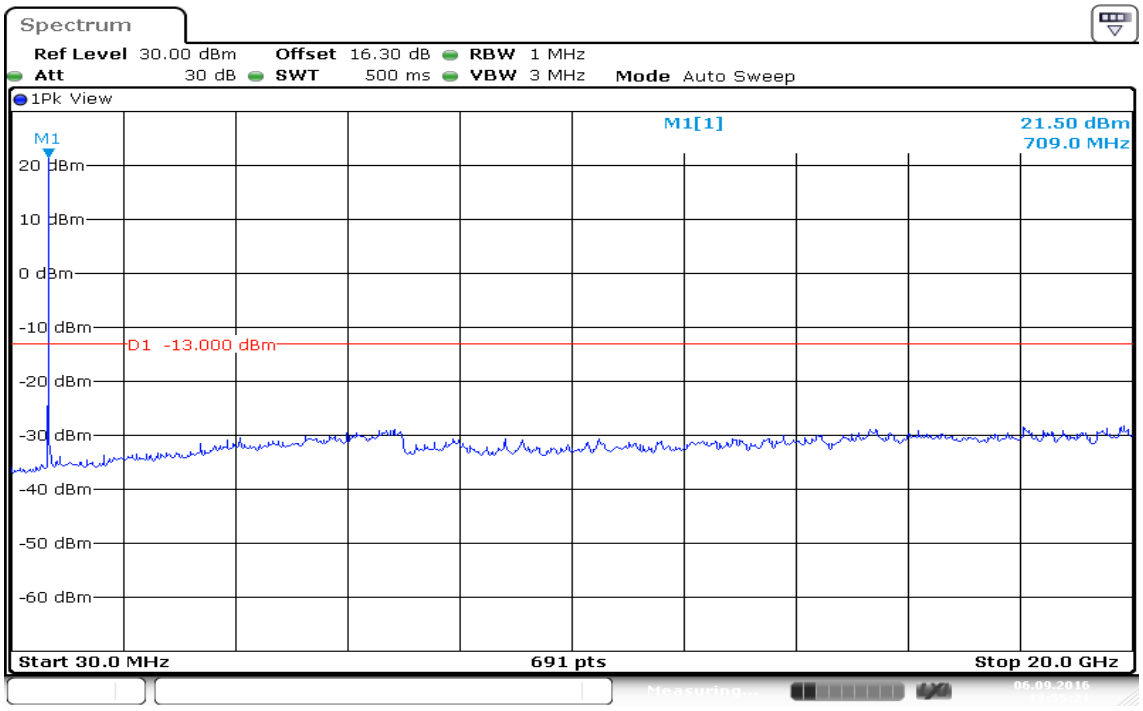
BW: 10MHz / 16QAM / RB =1, RB Offset = 0

CH Low



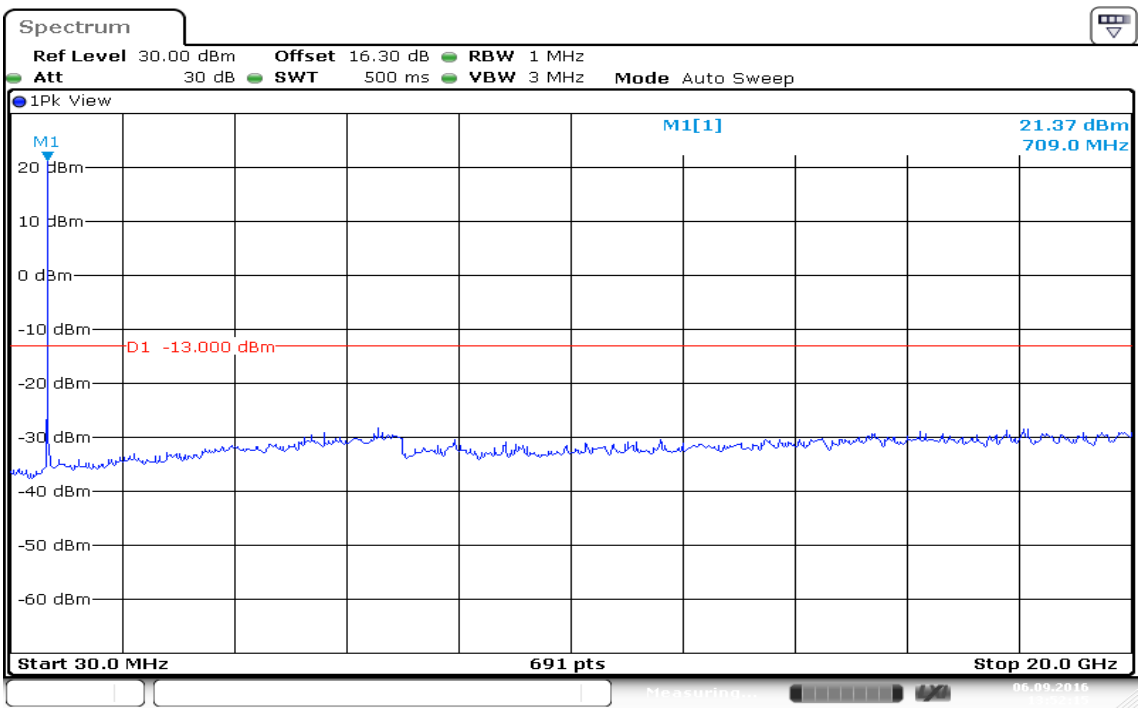
Date: 6.SEP.2016 13:58:59

CH Mid



Date: 6.SEP.2016 13:55:22

CH High



Date: 6.SEP.2016 13:52:15

7.8 RADIATED EMISSION MEASUREMENT

LIMITS

FCC §27.53(g), Band 17

For operations in the 600 MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

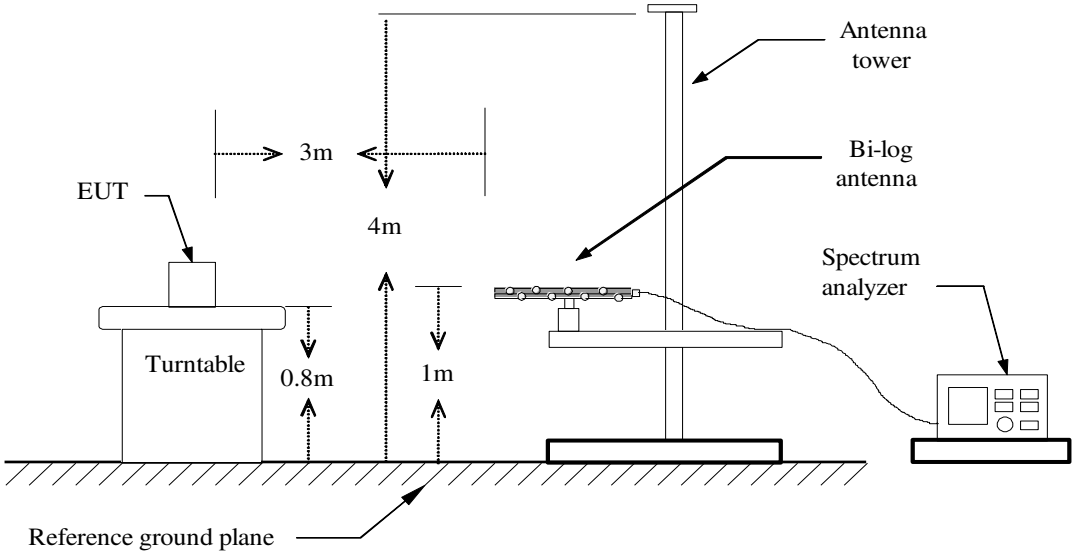
FCC §27.53(h), Band 4

General protection levels. Except as otherwise specified below, for operations in the 1710-1755MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

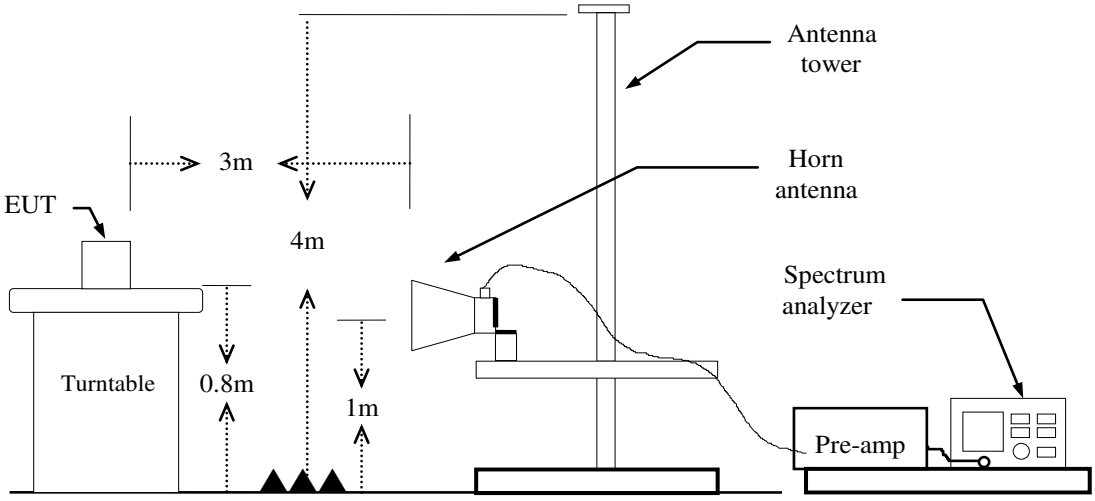
Limit Line: -13dBm

Test Configuration

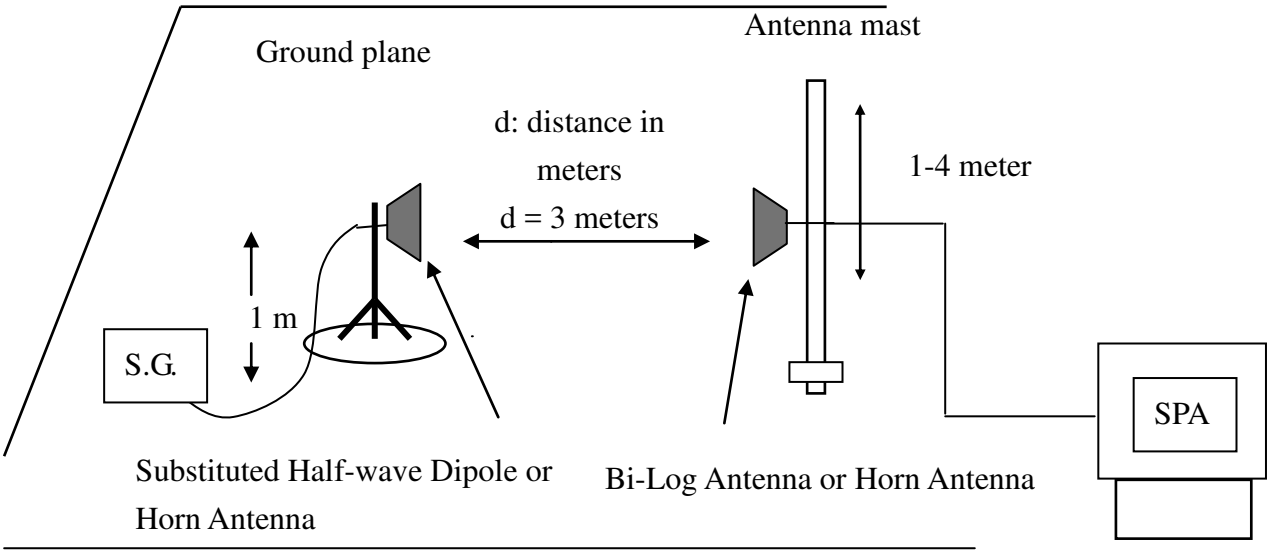
Below 1 GHz



Above 1 GHz



Substituted Method Test Set-up



TEST PROCEDURES

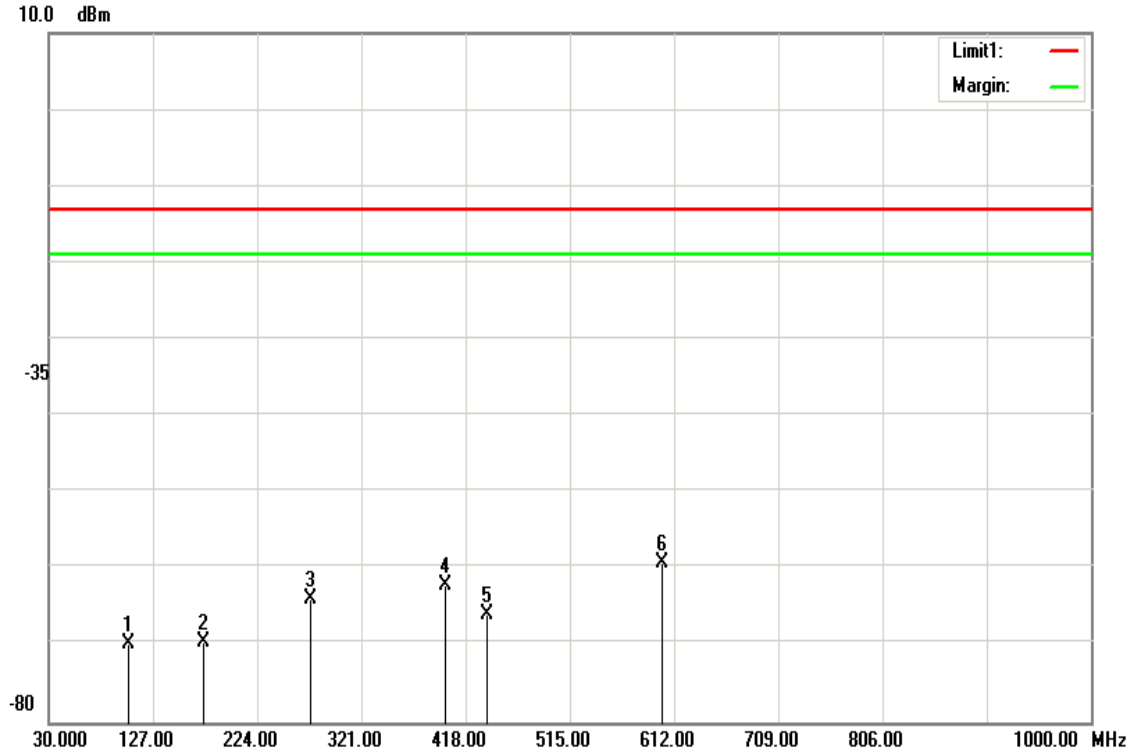
1. According to KDB 971168 D01. section 5.8 and TIA-603-D:2010 section 2.2.12.
2. The EUT was placed on a turntable
   (1) Below 1G : 0.8m
   (2) Above 1G : 0.8m
   (3) EUT set 3m from the receiving antenna
   (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

TEST RESULTS

Below 1GHz

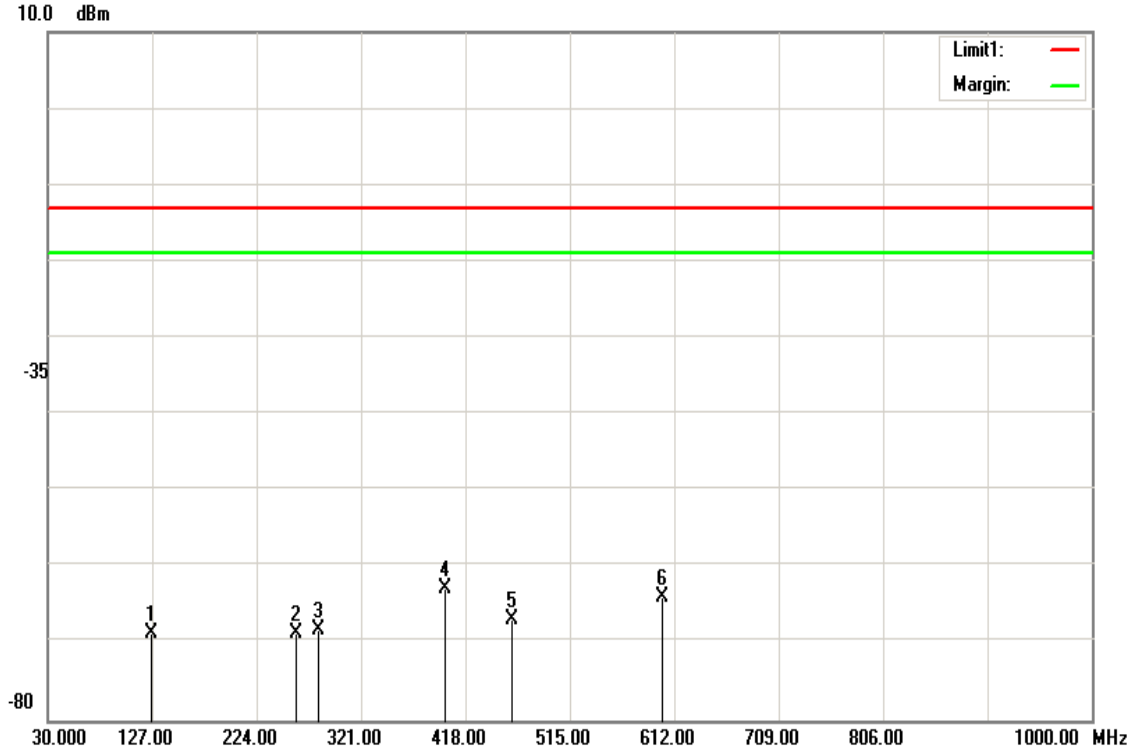
LTE Band 17 / BW: 10MHz / QPSK / RB =1, RB Offset = 0

Operation Mode:	Tx / Mid CH	**Test Date:**	September 23, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
103.7200	-85.06	1.11	16.36	-69.81	-13.00	-56.81	V
174.5300	-85.24	1.41	17.02	-69.63	-13.00	-56.63	V
273.4700	-80.99	1.75	18.87	-63.87	-13.00	-50.87	V
399.5700	-81.19	2.11	21.29	-62.01	-13.00	-49.01	V
437.4000	-85.89	2.21	22.12	-65.98	-13.00	-52.98	V
600.3600	-80.9	2.59	24.41	-59.08	-13.00	-46.08	V

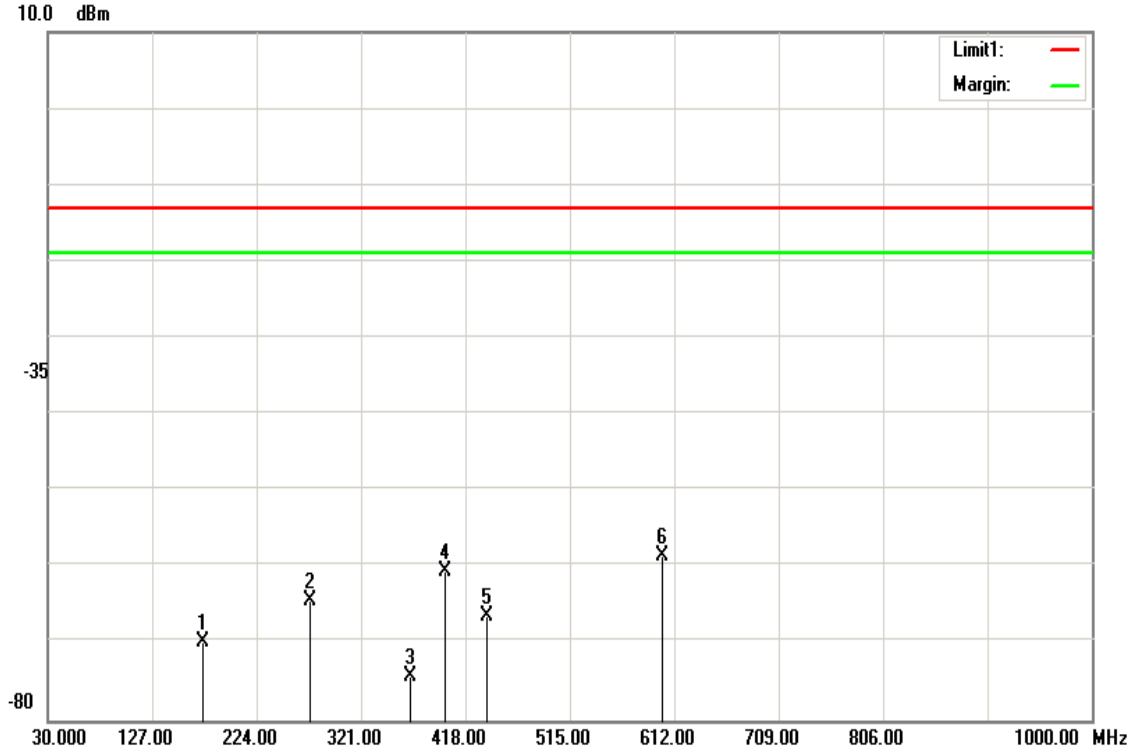
Operation Mode:	Tx / Mid CH	**Test Date:**	September 23, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
126.0300	-86.58	1.25	19.16	-68.67	-13.00	-55.67	H
260.8600	-84.82	1.71	17.89	-68.64	-13.00	-55.64	H
281.2300	-85.49	1.77	18.99	-68.27	-13.00	-55.27	H
399.5700	-81.92	2.11	21.29	-62.74	-13.00	-49.74	H
460.6800	-87.12	2.27	22.59	-66.80	-13.00	-53.80	H
600.3600	-85.74	2.59	24.41	-63.92	-13.00	-50.92	H

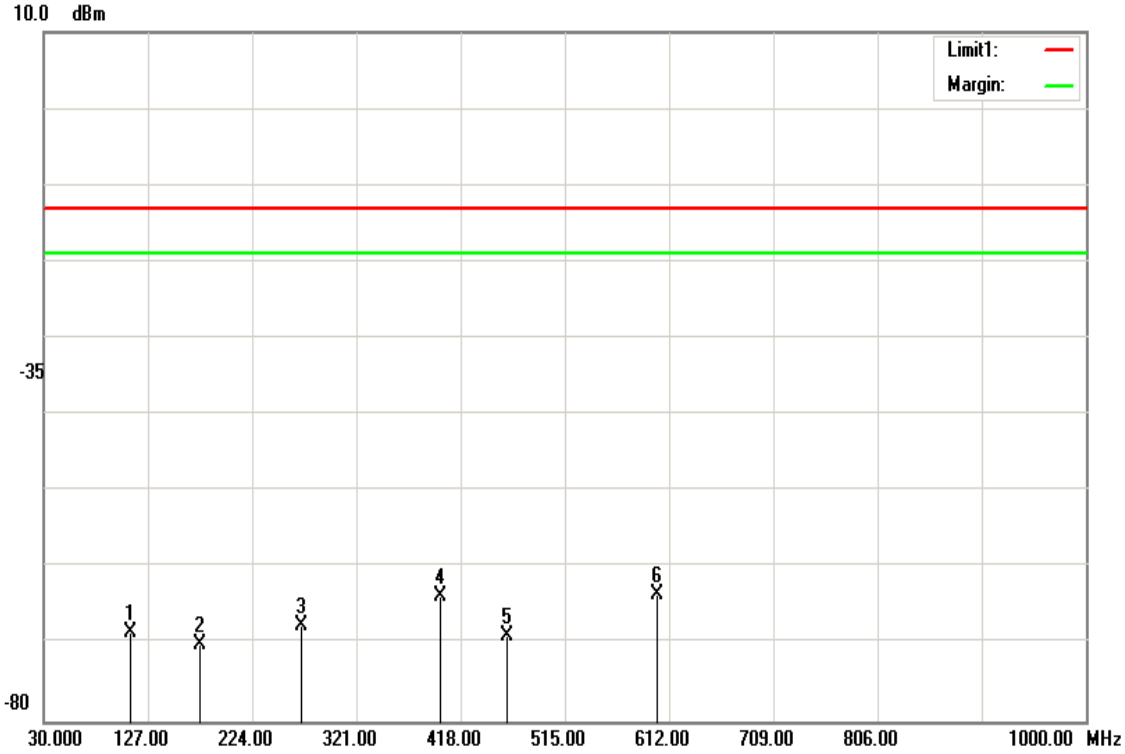
LTE Band 17 / BW: 10MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode:	Tx / Mid CH	**Test Date:**	September 23, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
174.5300	-85.28	1.41	17.02	-69.67	-13.00	-56.67	V
273.4700	-81.37	1.75	18.87	-64.25	-13.00	-51.25	V
366.5900	-92.92	2.02	20.63	-74.31	-13.00	-61.31	V
399.5700	-79.82	2.11	21.29	-60.64	-13.00	-47.64	V
437.4000	-86.38	2.21	22.12	-66.47	-13.00	-53.47	V
600.3600	-80.25	2.59	24.41	-58.43	-13.00	-45.43	V

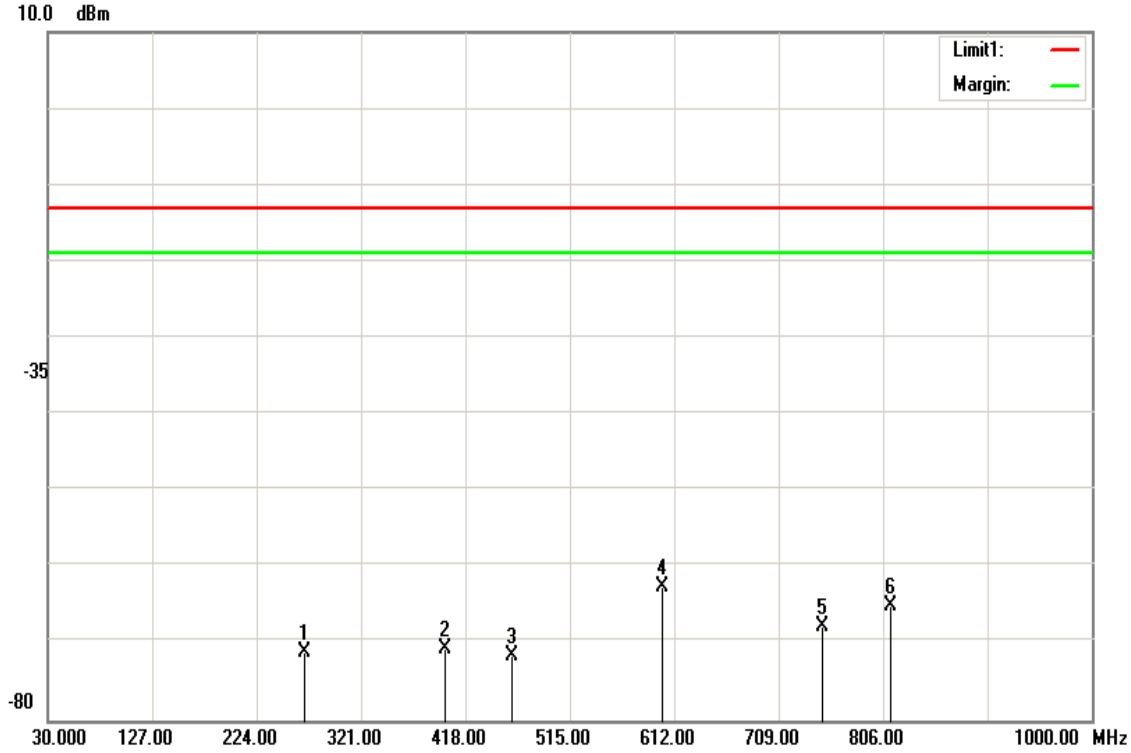
Operation Mode:	Tx / Mid CH	**Test Date:**	September 23, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
110.5100	-85.17	1.16	17.87	-68.46	-13.00	-55.46	H
175.5000	-85.64	1.41	16.98	-70.07	-13.00	-57.07	H
269.5900	-84.54	1.74	18.76	-67.52	-13.00	-54.52	H
399.5700	-82.92	2.11	21.29	-63.74	-13.00	-50.74	H
460.6800	-89.11	2.27	22.59	-68.79	-13.00	-55.79	H
600.3600	-85.25	2.59	24.41	-63.43	-13.00	-50.43	H

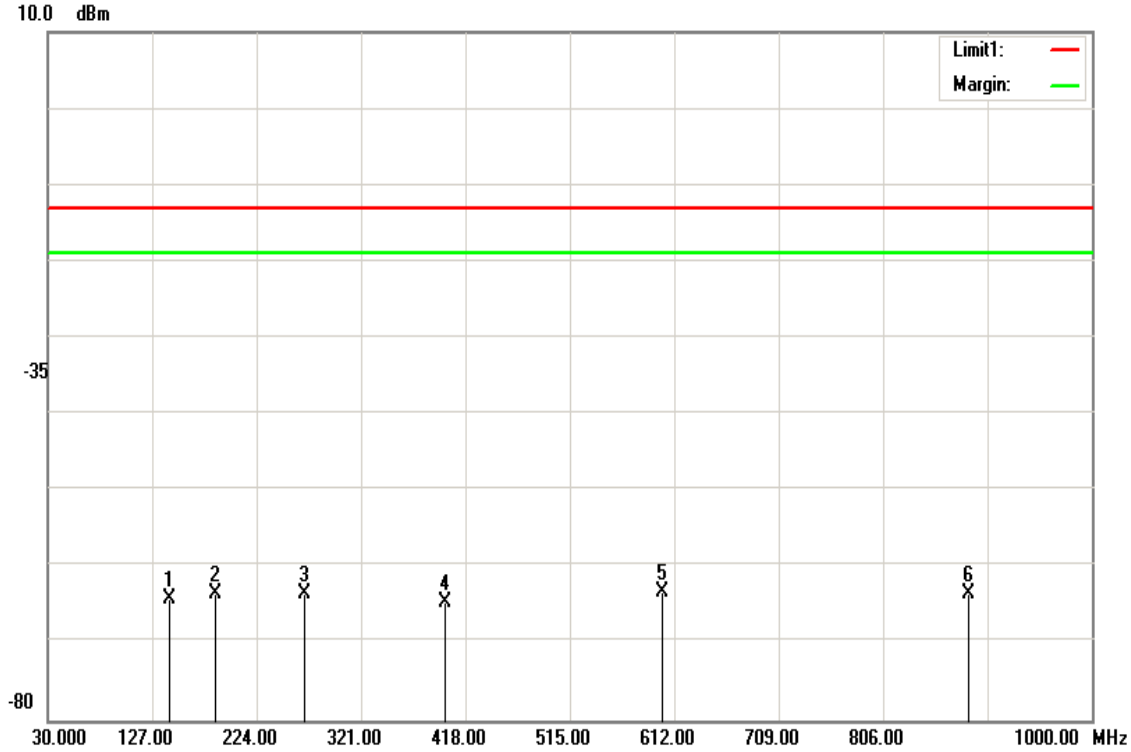
LTE Band 4 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode:	Tx / Mid CH	**Test Date:**	September 23, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
268.6200	-88.02	1.74	18.66	-71.10	-13.00	-58.10	V
399.5700	-89.8	2.11	21.29	-70.62	-13.00	-57.62	V
460.6800	-91.82	2.27	22.59	-71.50	-13.00	-58.50	V
600.3600	-84.47	2.59	24.41	-62.65	-13.00	-49.65	V
749.7400	-91.47	2.89	26.7	-67.66	-13.00	-54.66	V
812.7900	-89.3	3.01	27.33	-64.98	-13.00	-51.98	V

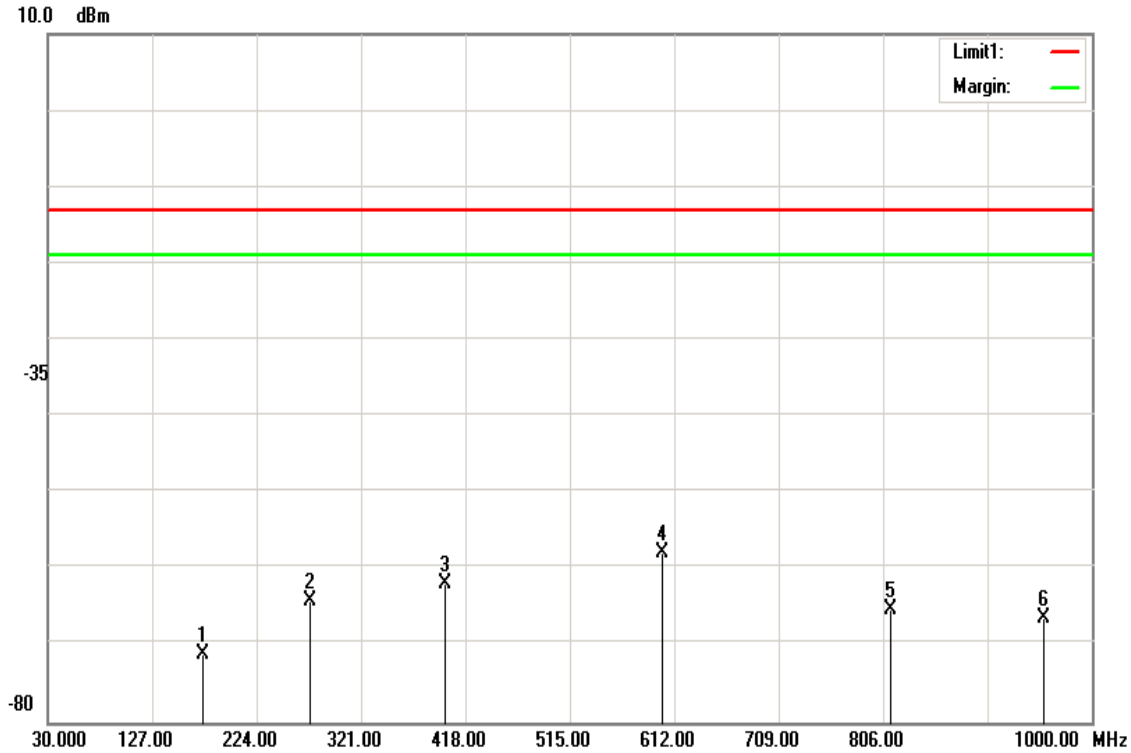
Operation Mode:	Tx / Mid CH	**Test Date:**	September 23, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
143.4900	-81.17	1.28	18.33	-64.12	-13.00	-51.12	H
186.1700	-79.12	1.45	17.11	-63.46	-13.00	-50.46	H
268.6200	-80.38	1.74	18.66	-63.46	-13.00	-50.46	H
399.5700	-83.72	2.11	21.29	-64.54	-13.00	-51.54	H
600.3600	-85.11	2.59	24.41	-63.29	-13.00	-50.29	H
885.5400	-88.35	3.14	27.98	-63.51	-13.00	-50.51	H

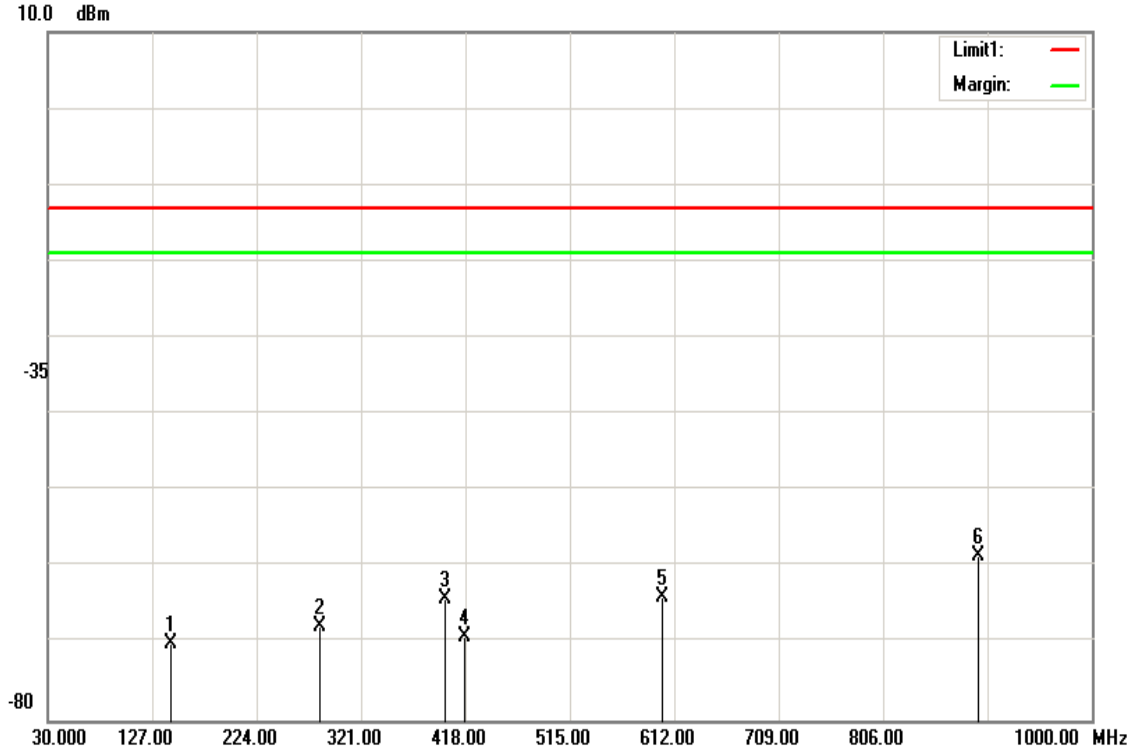
LTE Band 4 / BW 20MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode:	Tx / Mid CH	**Test Date:**	September 23, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
174.5300	-86.63	1.41	17.02	-71.02	-13.00	-58.02	V
273.4700	-81.34	1.75	18.87	-64.22	-13.00	-51.22	V
399.5700	-81.02	2.11	21.29	-61.84	-13.00	-48.84	V
600.3600	-79.74	2.59	24.41	-57.92	-13.00	-44.92	V
812.7900	-89.57	3.01	27.33	-65.25	-13.00	-52.25	V
955.3800	-91.75	3.27	28.64	-66.38	-13.00	-53.38	V

Operation Mode:	Tx / Mid CH	**Test Date:**	September 23, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

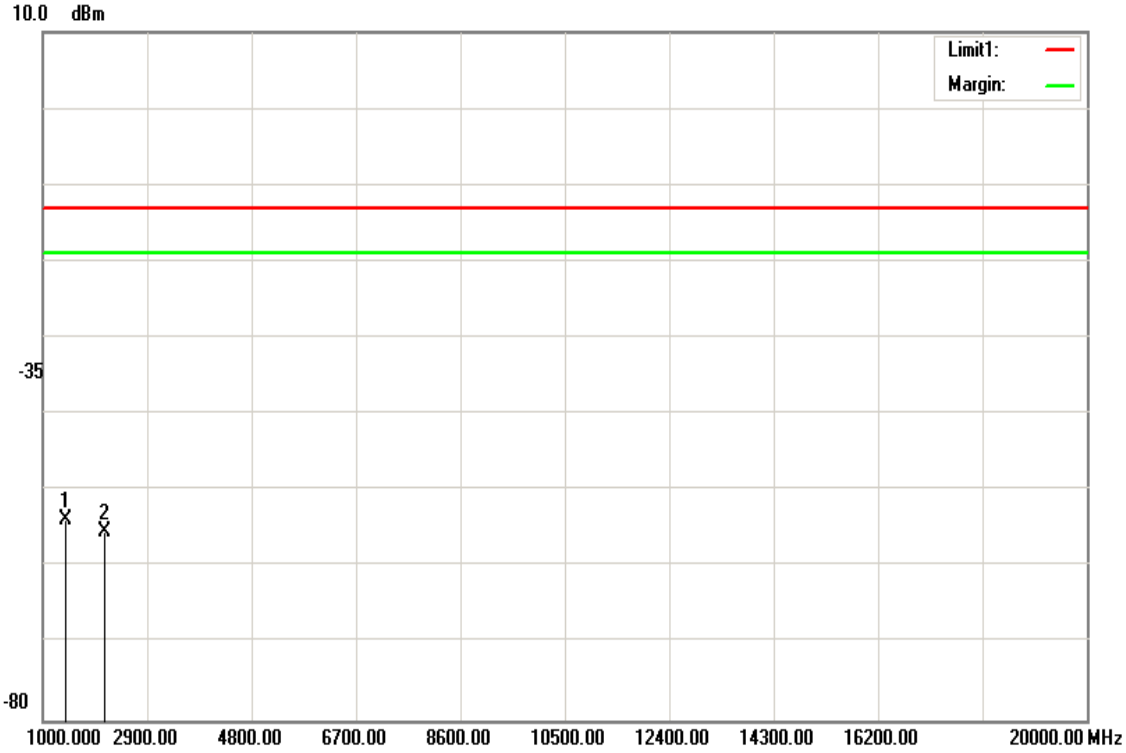


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
144.4600	-87	1.28	18.28	-70.00	-13.00	-57.00	H
282.2000	-85.01	1.78	18.98	-67.81	-13.00	-54.81	H
399.5700	-83.31	2.11	21.29	-64.13	-13.00	-51.13	H
417.0300	-88.57	2.15	21.67	-69.05	-13.00	-56.05	H
600.3600	-85.67	2.59	24.41	-63.85	-13.00	-50.85	H
894.2700	-83.35	3.16	28.05	-58.46	-13.00	-45.46	H

Above 1GHz

LTE Band 17 / BW: 10MHz / QPSK / RB =1, RB Offset = 0

Operation Mode:	Tx / Low CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

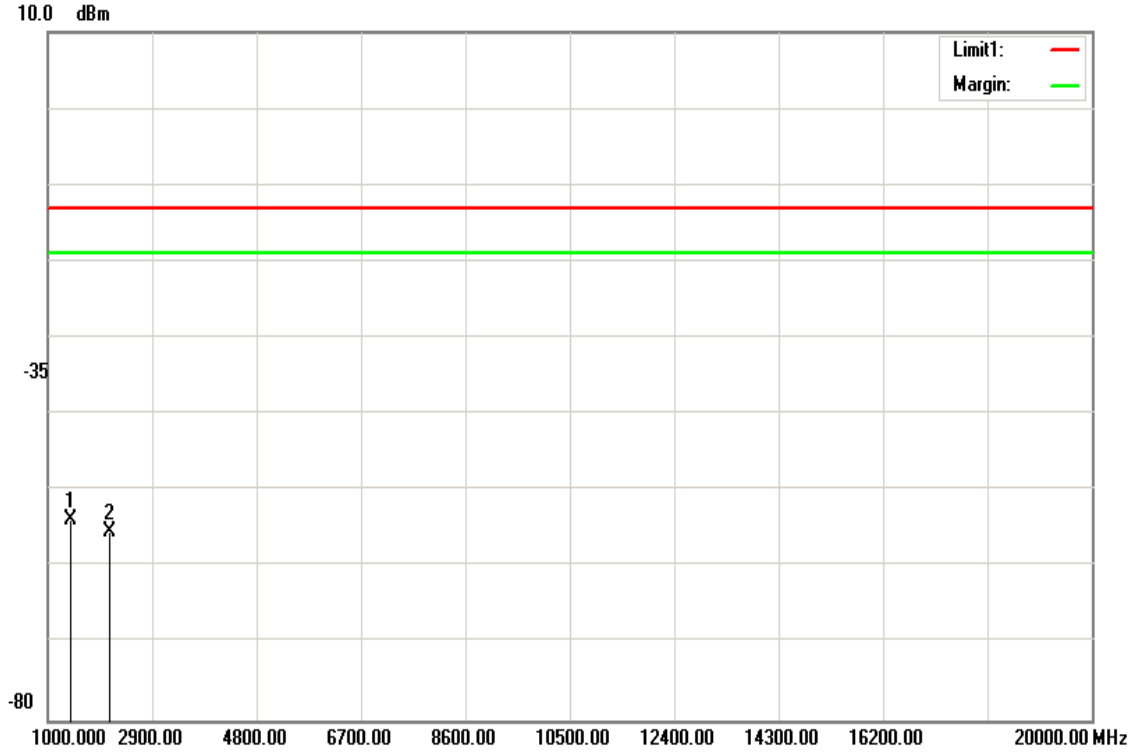


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1418.000	-58.17	4.16	8.49	-53.84	-13.00	-40.84	V
2127.000	-60.64	5.12	10.4	-55.36	-13.00	-42.36	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Low CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

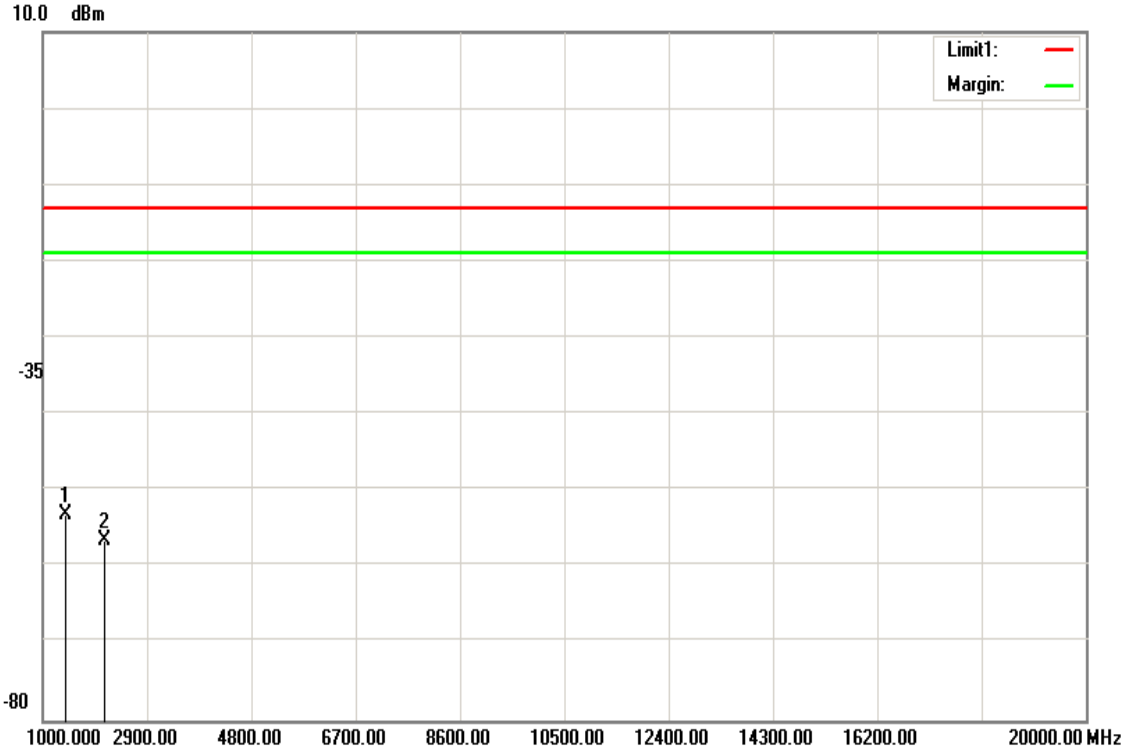


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1412.000	-57.99	4.15	8.46	-53.68	-13.00	-40.68	H
2118.000	-60.72	5.11	10.39	-55.44	-13.00	-42.44	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Mid CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

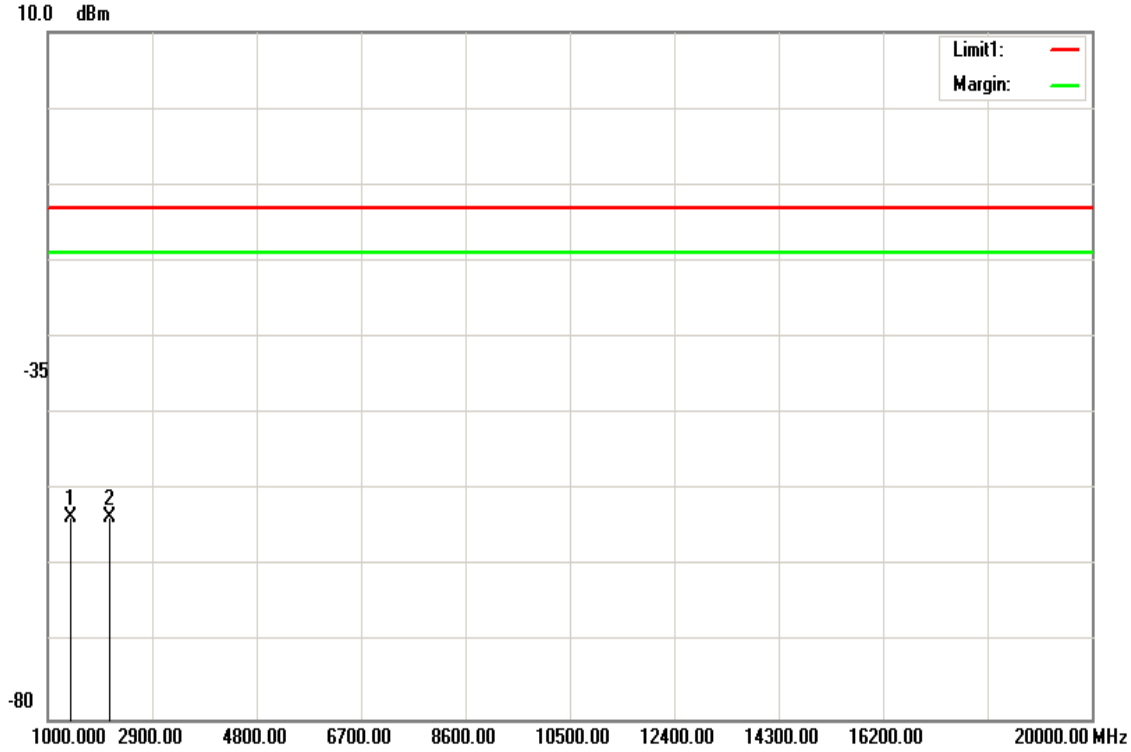


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1420.000	-57.53	4.16	8.5	-53.19	-13.00	-40.19	V
2130.000	-61.75	5.12	10.4	-56.47	-13.00	-43.47	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Mid CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

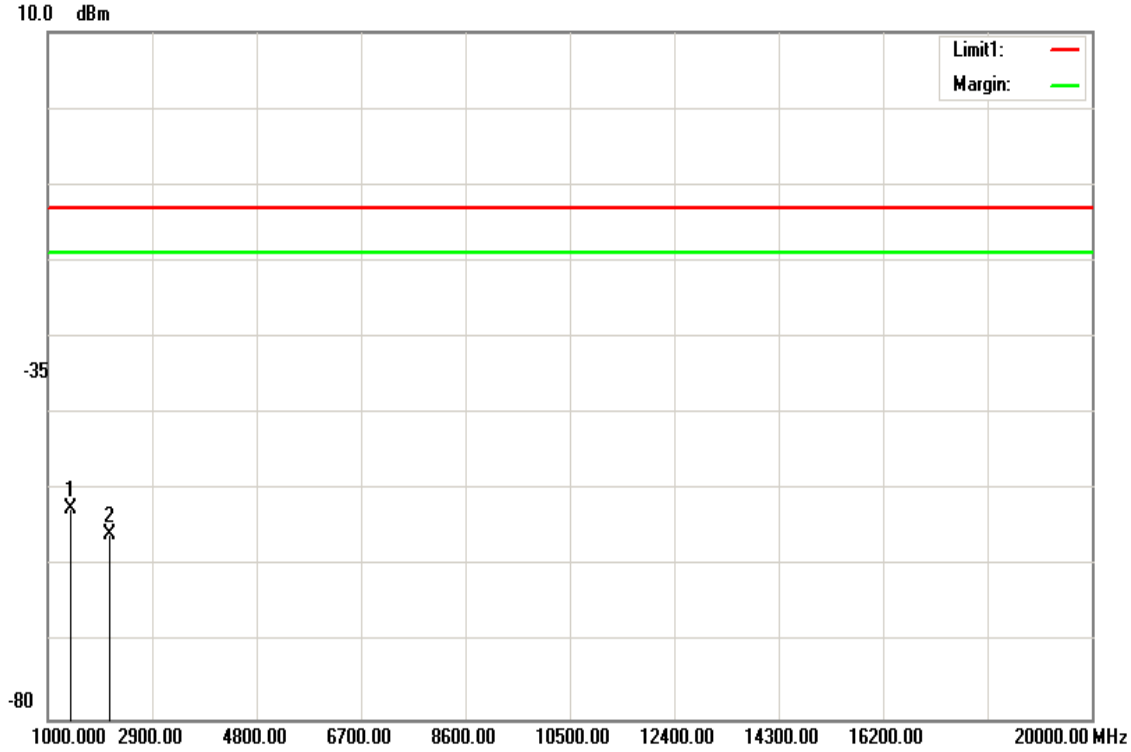


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1420.000	-57.9	4.16	8.5	-53.56	-13.00	-40.56	H
2130.000	-58.79	5.12	10.4	-53.51	-13.00	-40.51	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / High CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

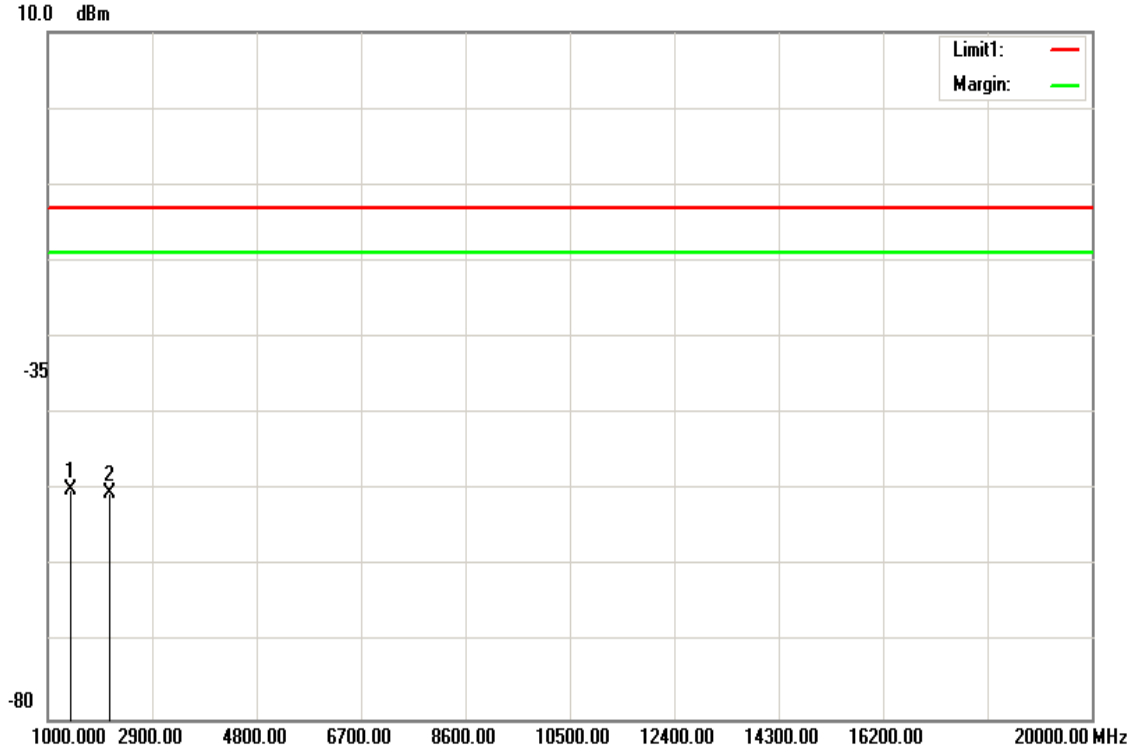


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1422.000	-56.84	4.17	8.51	-52.50	-13.00	-39.50	V
2133.000	-60.98	5.13	10.41	-55.70	-13.00	-42.70	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / High CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.



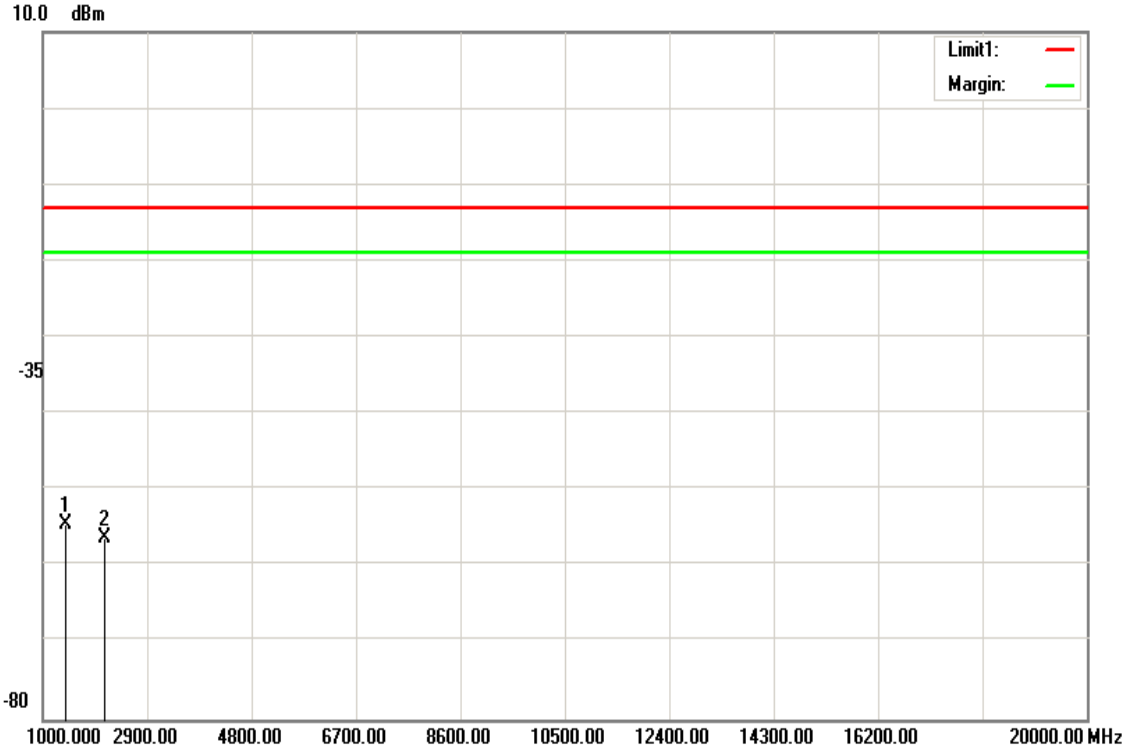
Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1422.000	-54.2	4.17	8.51	-49.86	-13.00	-36.86	H
2133.000	-55.8	5.13	10.41	-50.52	-13.00	-37.52	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

LTE Band 17 / BW: 10MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode:	Tx / Low CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

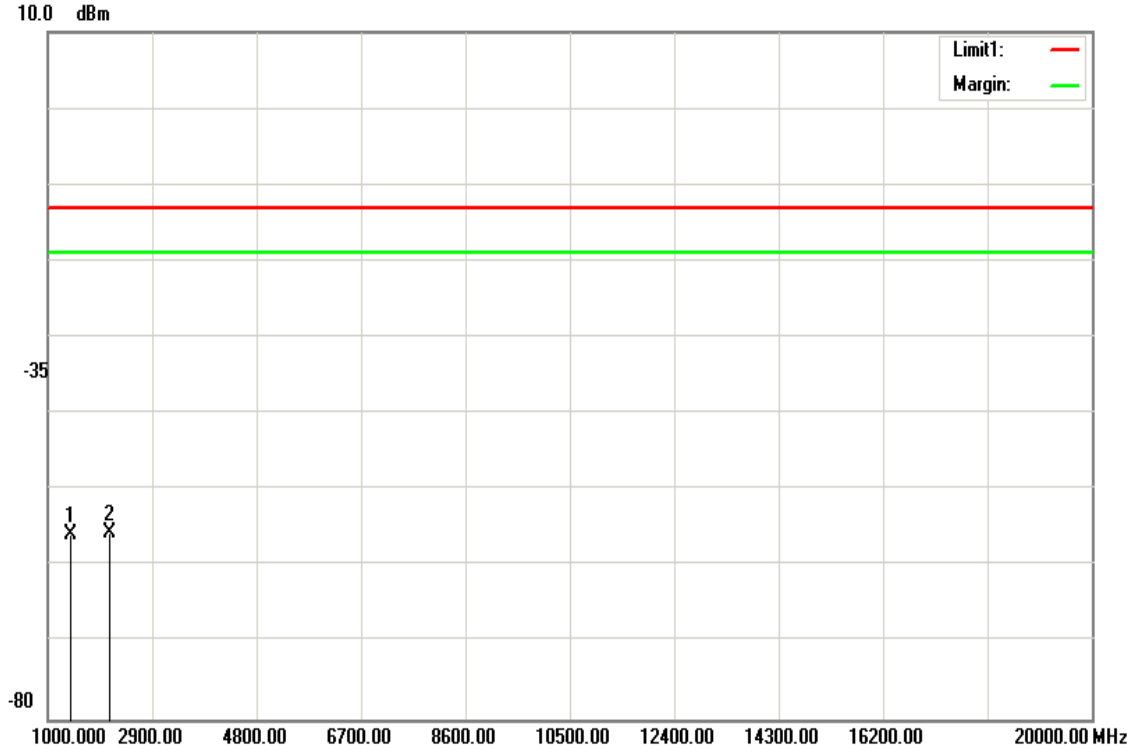


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1418.000	-58.78	4.16	8.49	-54.45	-13.00	-41.45	peak
2127.000	-61.52	5.12	10.4	-56.24	-13.00	-43.24	peak
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Low CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

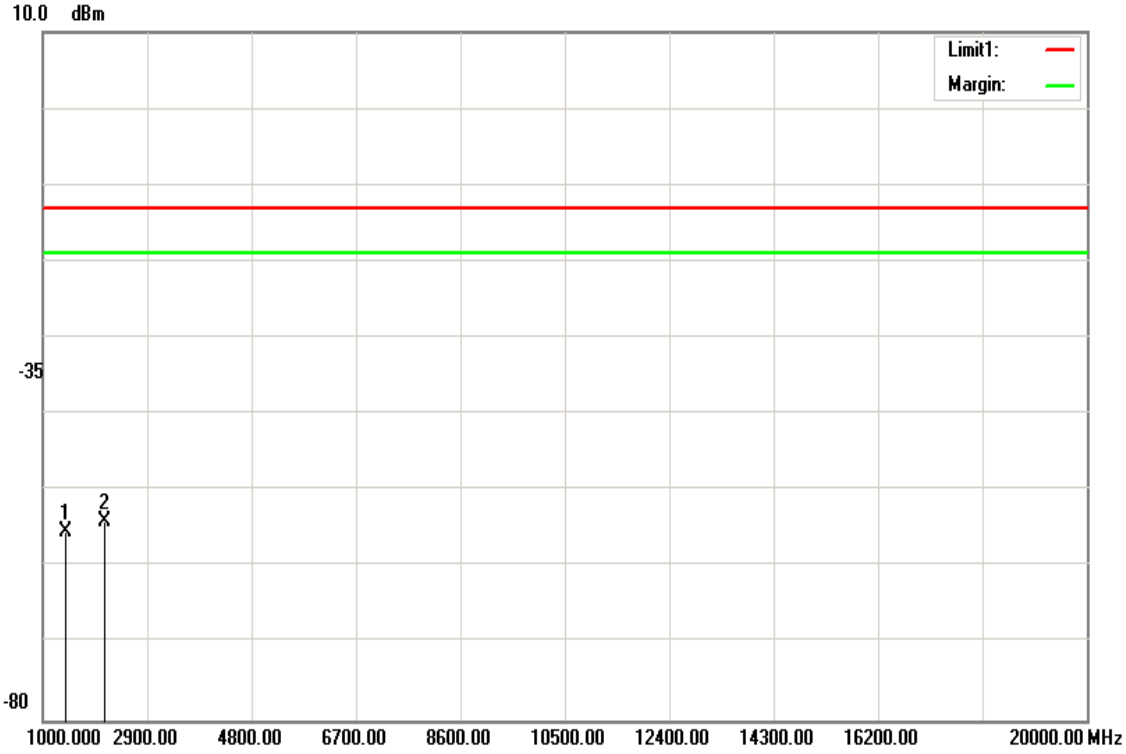


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1418.000	-60.21	4.16	8.49	-55.88	-13.00	-42.88	H
2127.000	-60.78	5.12	10.4	-55.50	-13.00	-42.50	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Mid CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

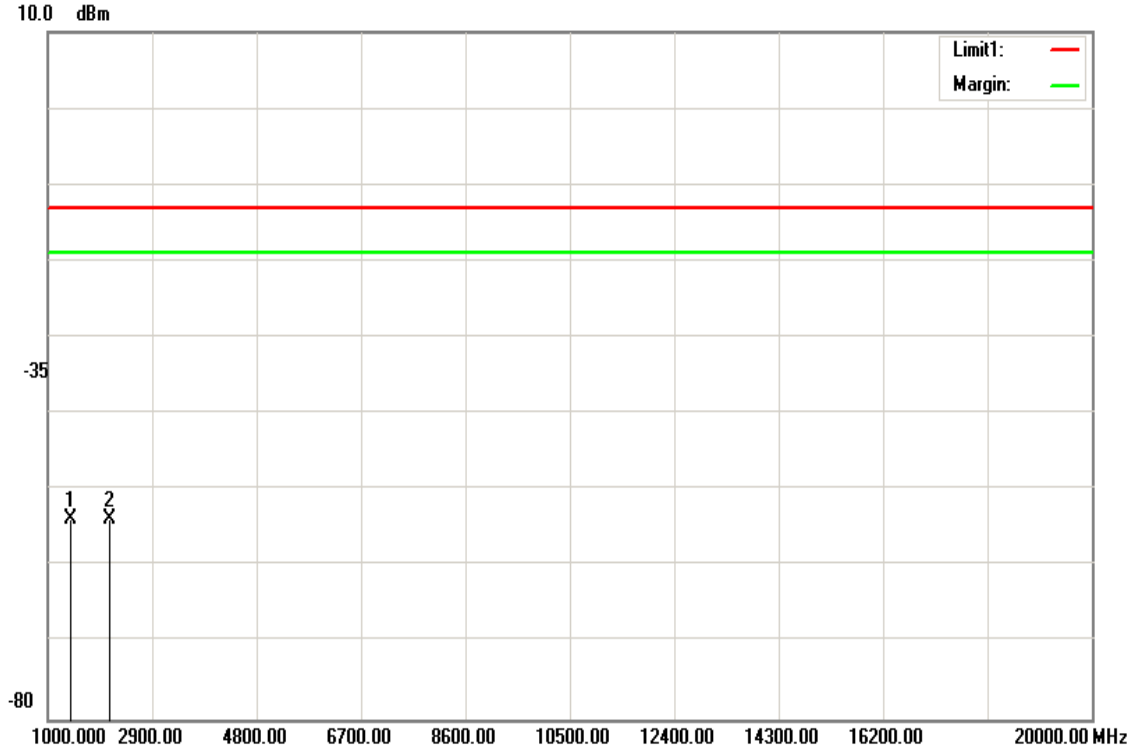


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1420.000	-59.77	4.16	8.5	-55.43	-13.00	-42.43	V
2130.000	-59.33	5.12	10.4	-54.05	-13.00	-41.05	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Mid CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

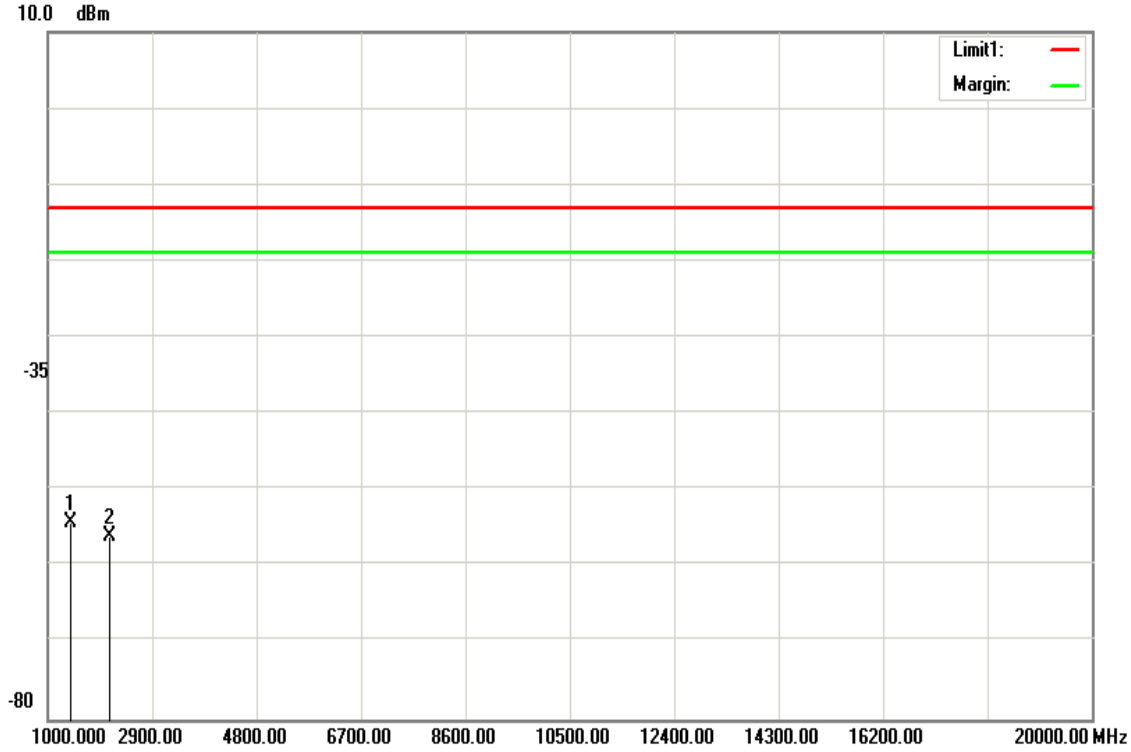


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1420.000	-58.21	4.16	8.5	-53.87	-13.00	-40.87	H
2130.000	-59.05	5.12	10.4	-53.77	-13.00	-40.77	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / High CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

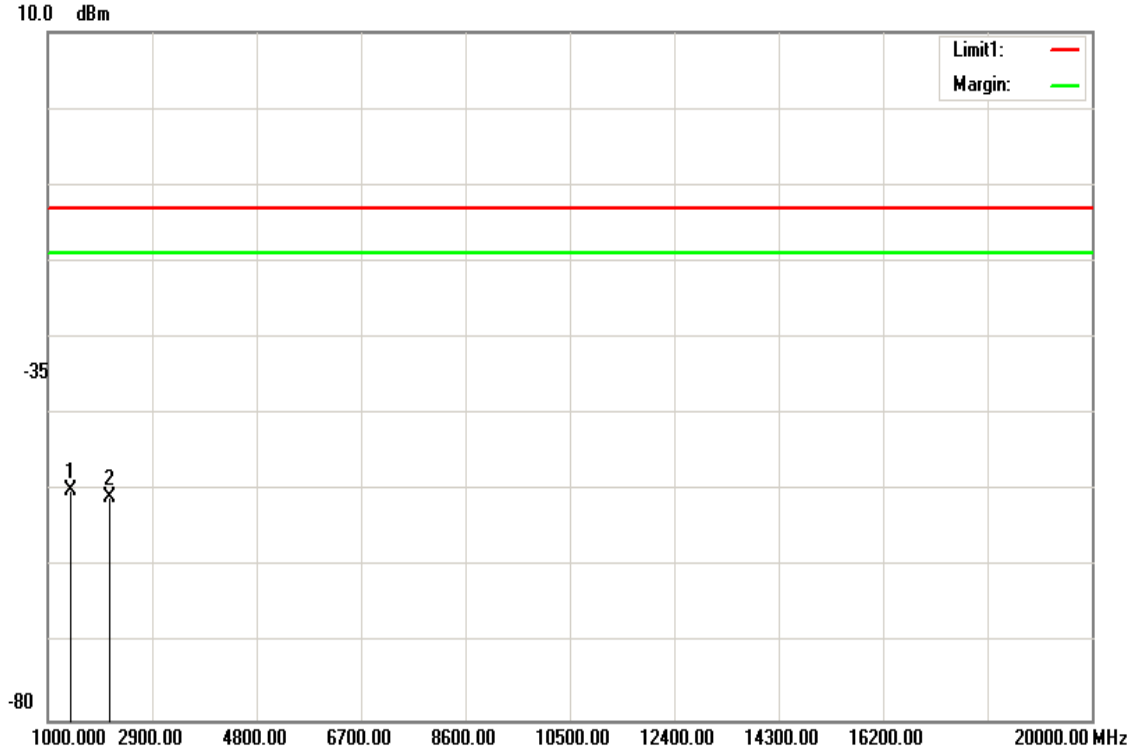


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1422.000	-58.58	4.17	8.51	-54.24	-13.00	-41.24	V
2133.000	-61.23	5.13	10.41	-55.95	-13.00	-42.95	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / High channel	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.



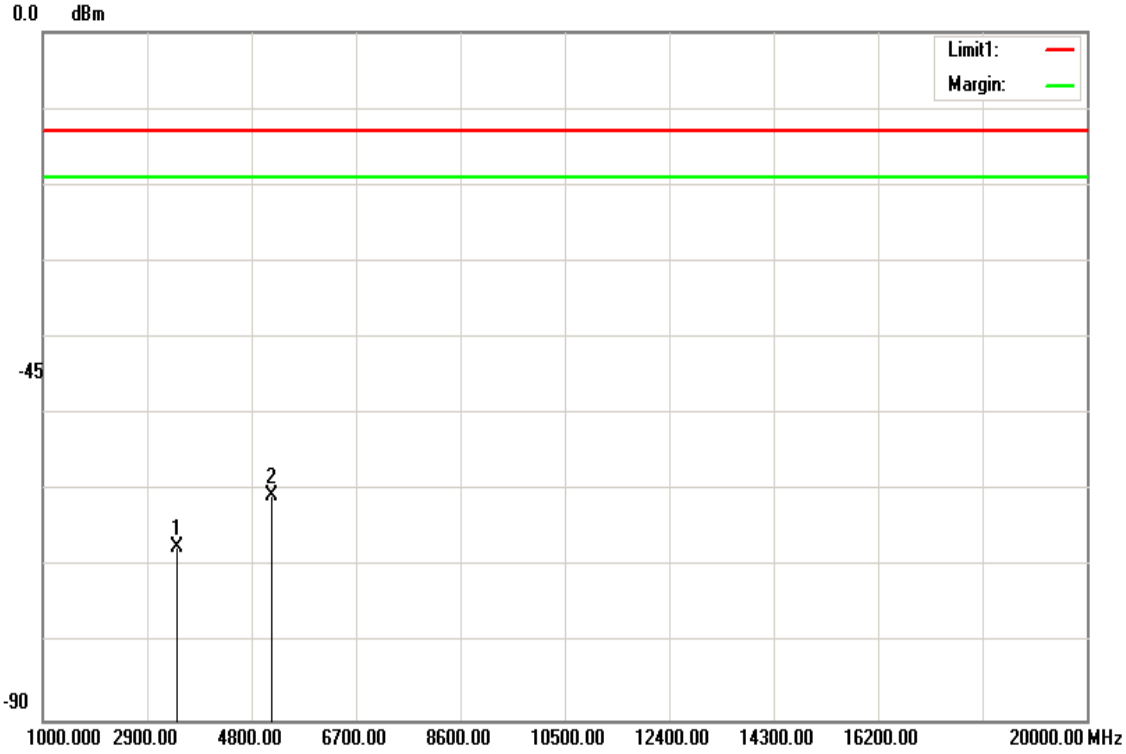
Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1422.000	-54.27	4.17	8.51	-49.93	-13.00	-36.93	H
2133.000	-56.17	5.13	10.41	-50.89	-13.00	-37.89	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

LTE Band 4 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode:	Tx / Low CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

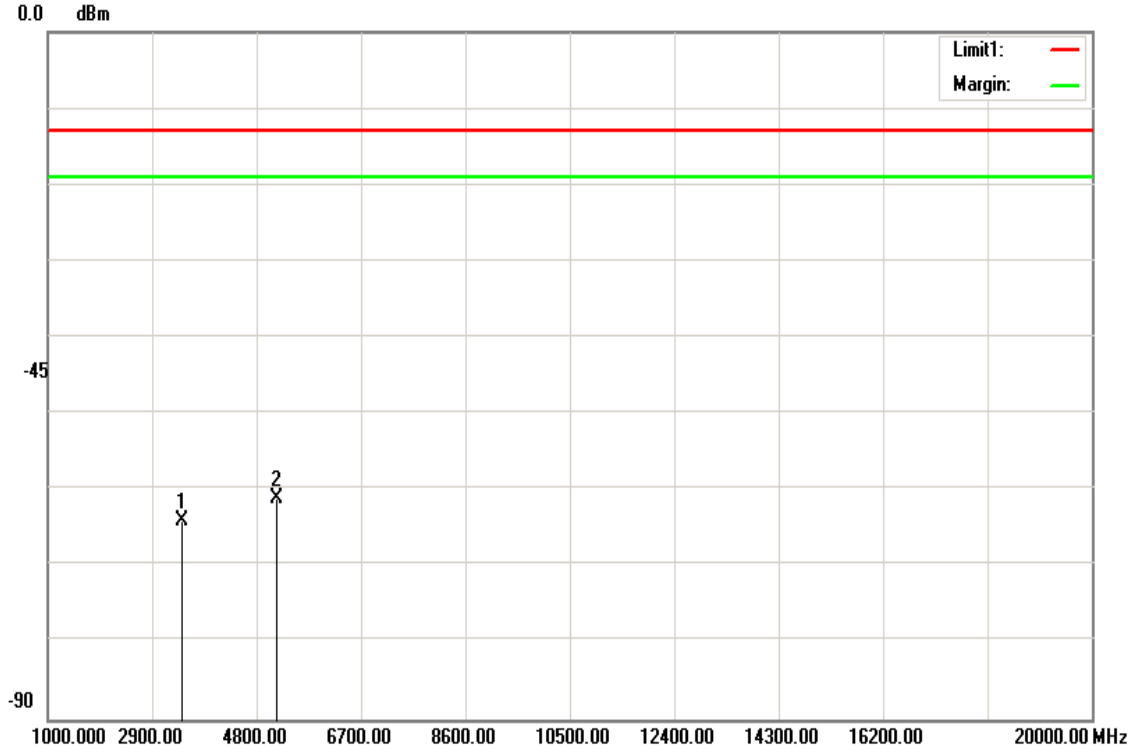


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3440.000	-58.92	6.63	12.34	-53.21	-13.00	-40.21	V
5160.000	-54.95	8.28	12.63	-50.60	-13.00	-37.60	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Low CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

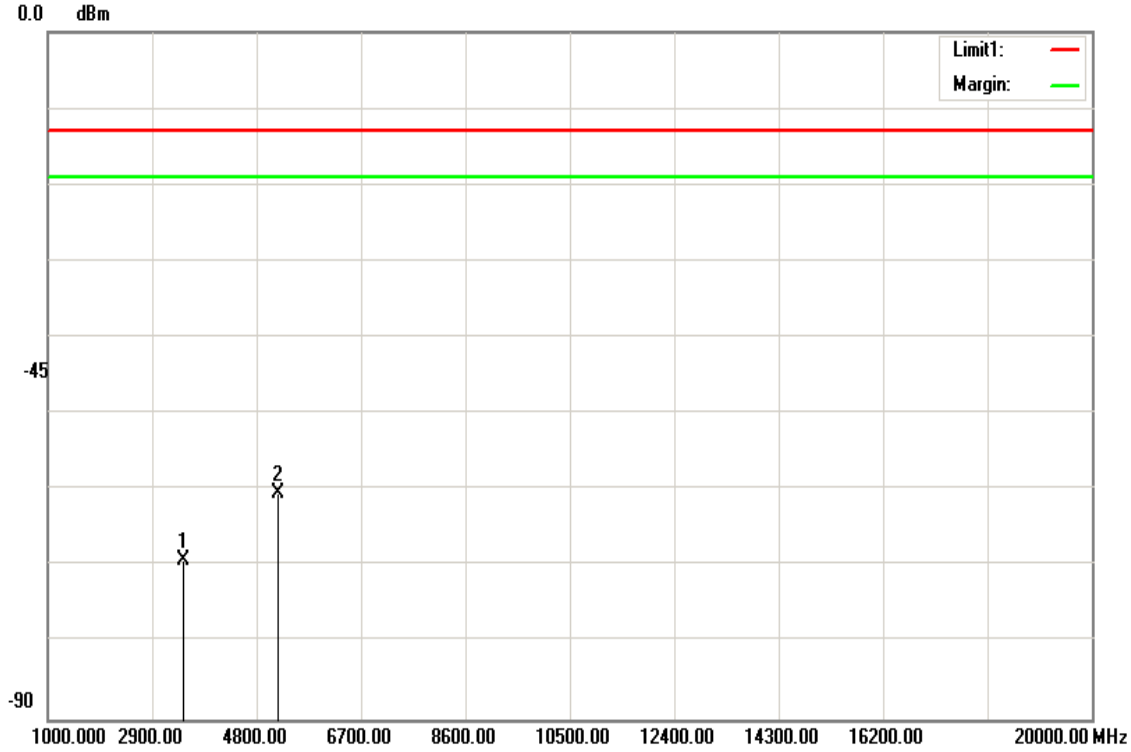


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3440.000	-59.43	6.63	12.34	-53.72	-13.00	-40.72	H
5160.000	-55.42	8.28	12.63	-51.07	-13.00	-38.07	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Mid CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

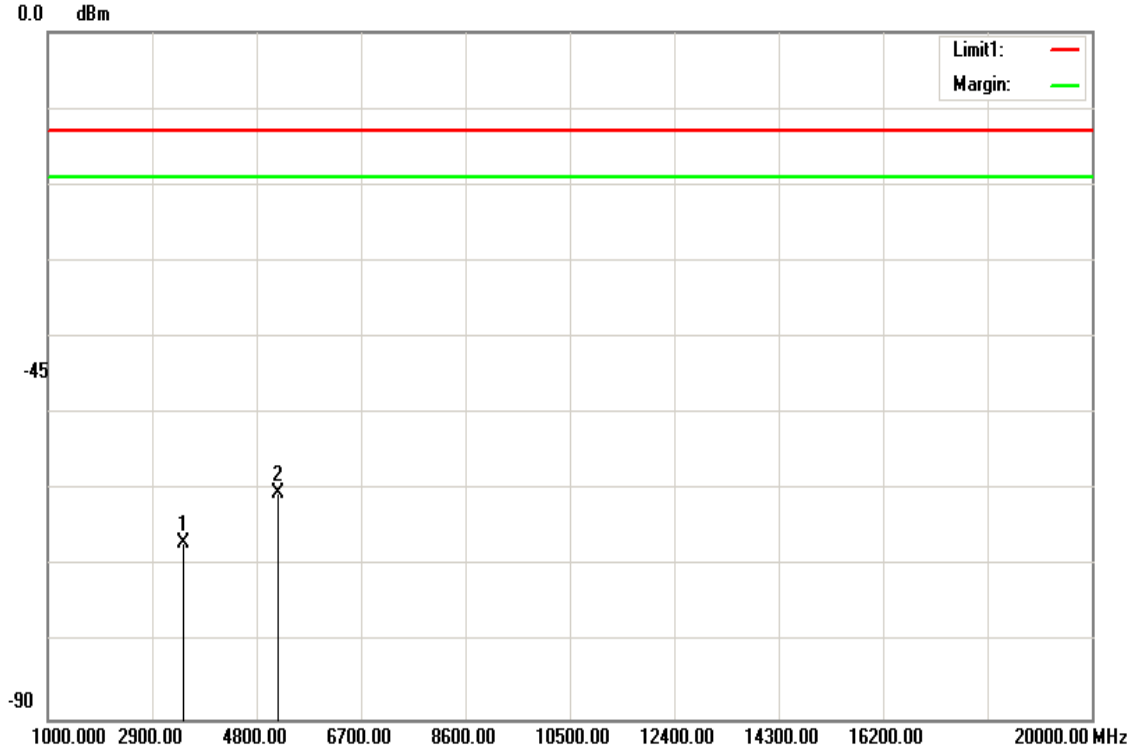


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3464.000	-60.25	6.65	12.41	-54.49	-13.00	-41.49	V
5196.000	-54.89	8.31	12.66	-50.54	-13.00	-37.54	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Mid CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

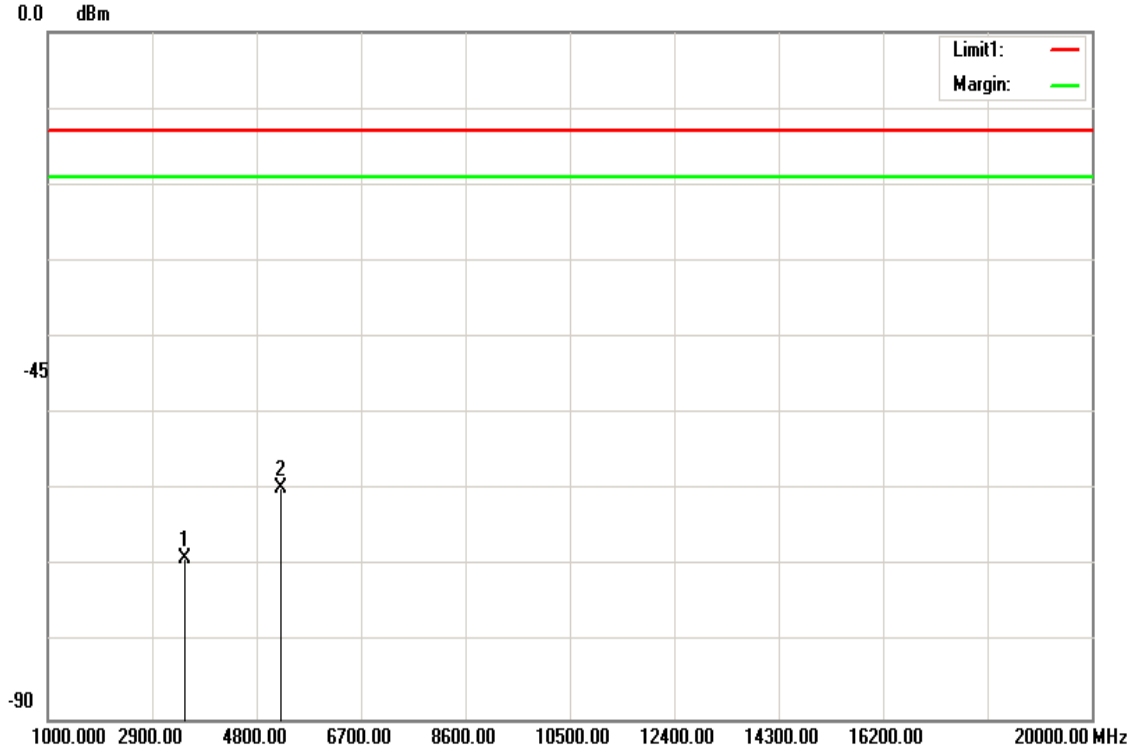


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3464.000	-58.45	6.65	12.41	-52.69	-13.00	-39.69	H
5196.000	-55.28	8.31	12.66	-50.93	-13.00	-37.93	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / High CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

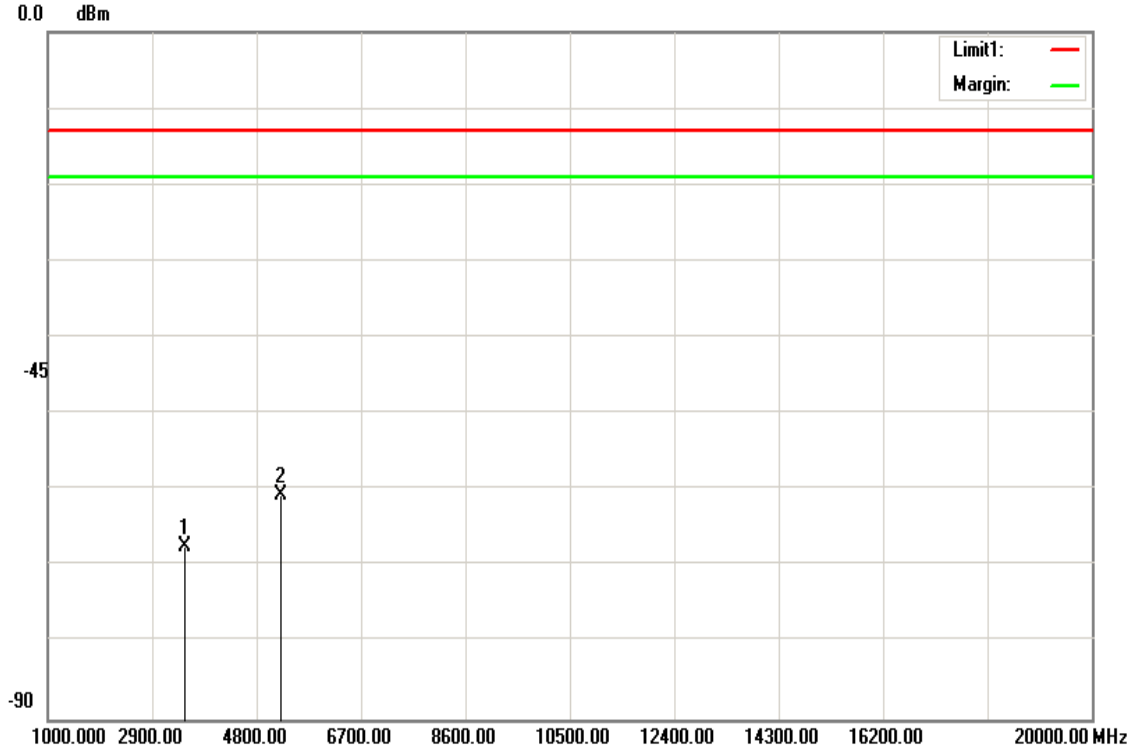


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3490.000	-57.81	6.68	12.47	-52.02	-13.00	-39.02	V
5235.000	-55.73	8.35	12.69	-51.39	-13.00	-38.39	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / High CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.



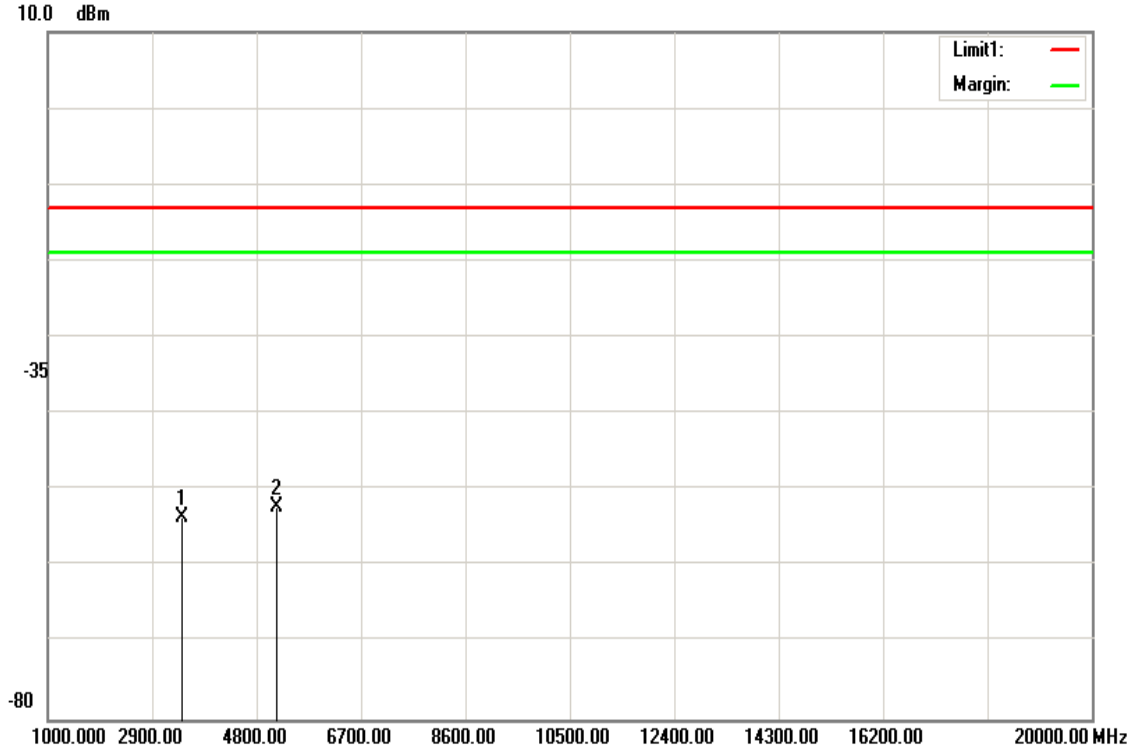
Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3490.000	-58.05	6.68	12.47	-52.26	-13.00	-39.26	H
5235.000	-55.24	8.35	12.69	-50.90	-13.00	-37.90	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

LTE Band 4 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0

Operation Mode:	Tx / Low CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

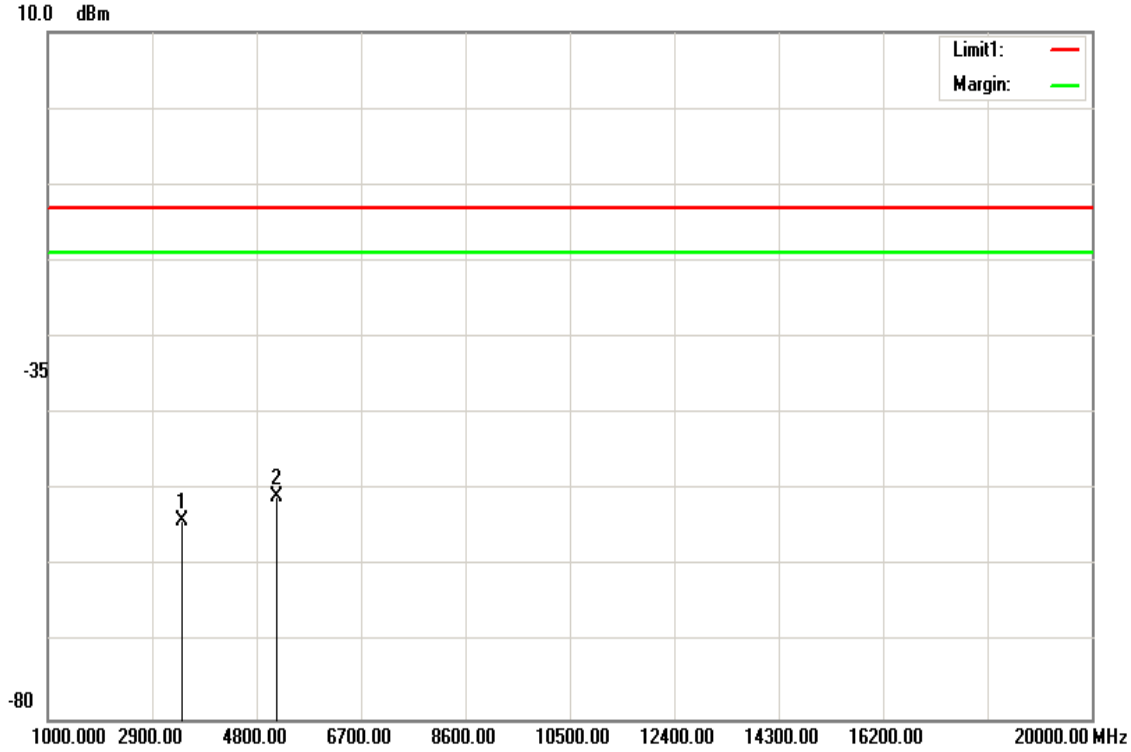


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3440.000	-59.2	6.63	12.34	-53.49	-13.00	-40.49	V
5160.000	-56.48	8.28	12.63	-52.13	-13.00	-39.13	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Low CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

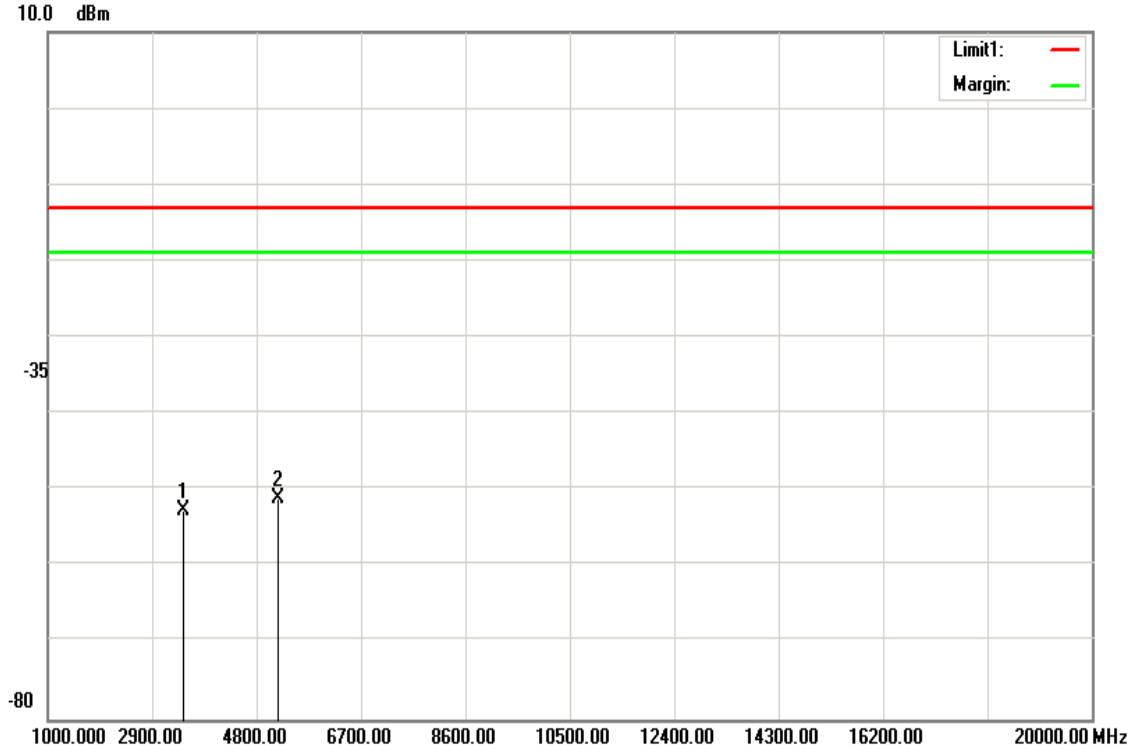


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3440.000	-59.7	6.63	12.34	-53.99	-13.00	-40.99	H
5160.000	-55.26	8.28	12.63	-50.91	-13.00	-37.91	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Mid CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

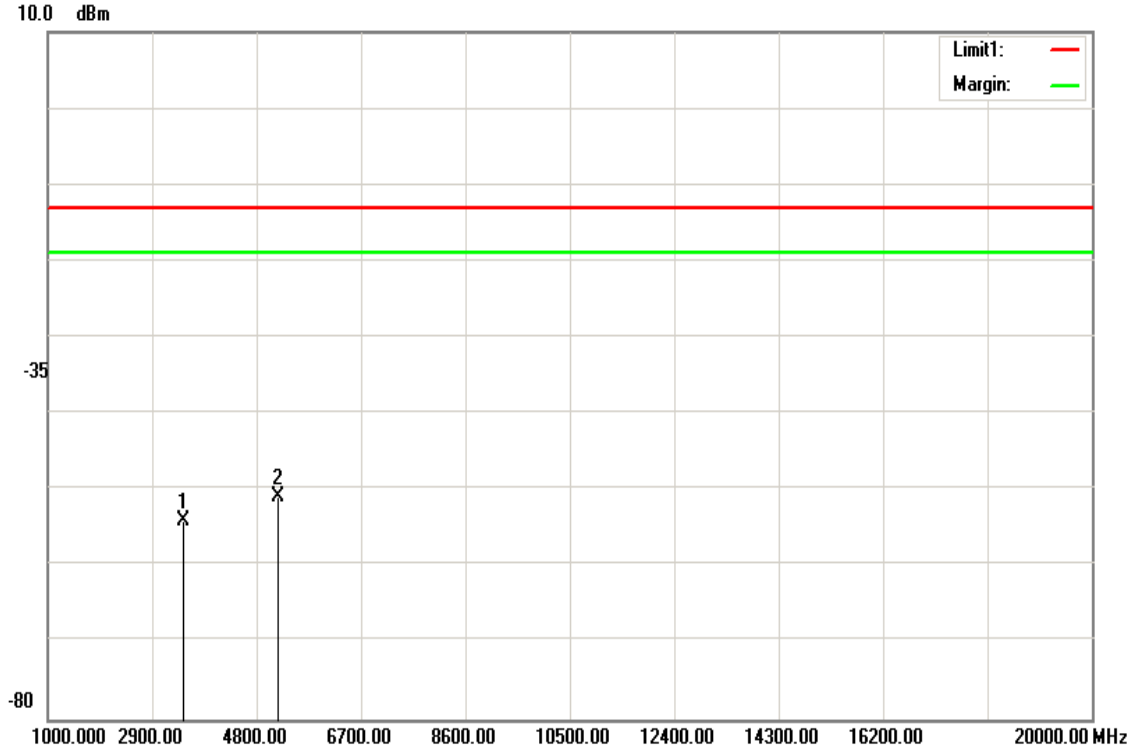


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3464.000	-58.34	6.65	12.41	-52.58	-13.00	-39.58	V
5196.000	-55.45	8.31	12.66	-51.10	-13.00	-38.10	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / Mid CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.

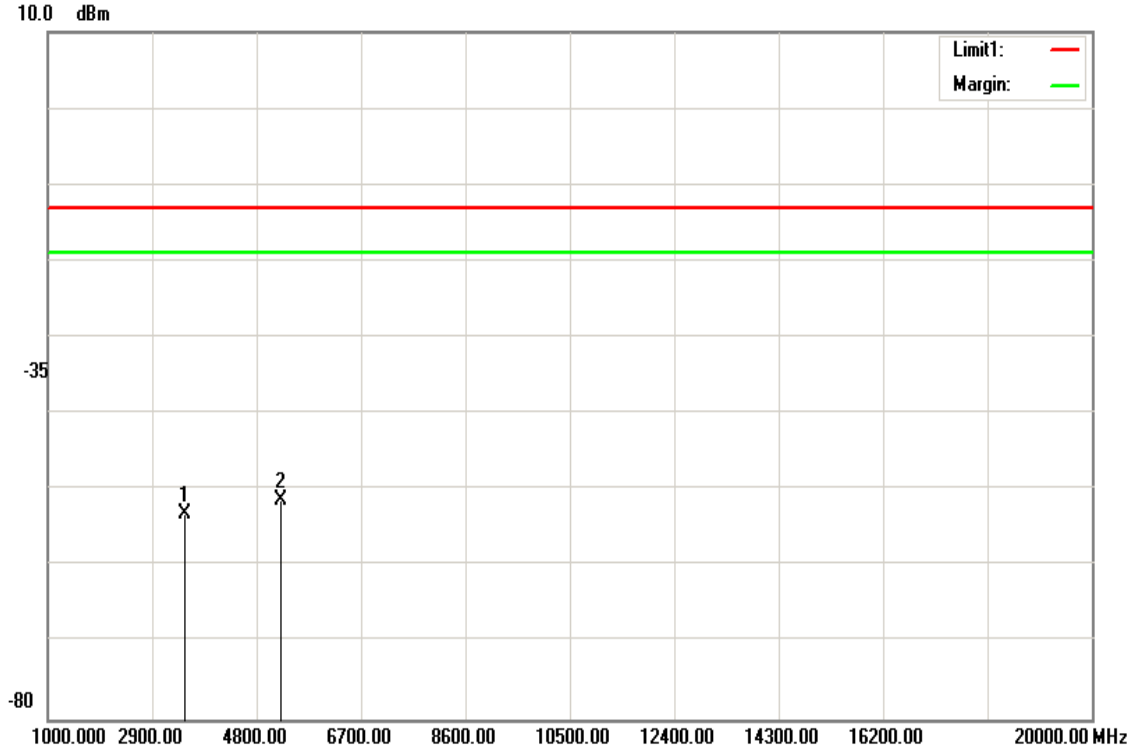


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3464.000	-59.74	6.65	12.41	-53.98	-13.00	-40.98	H
5196.000	-55.17	8.31	12.66	-50.82	-13.00	-37.82	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / High CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Ver.

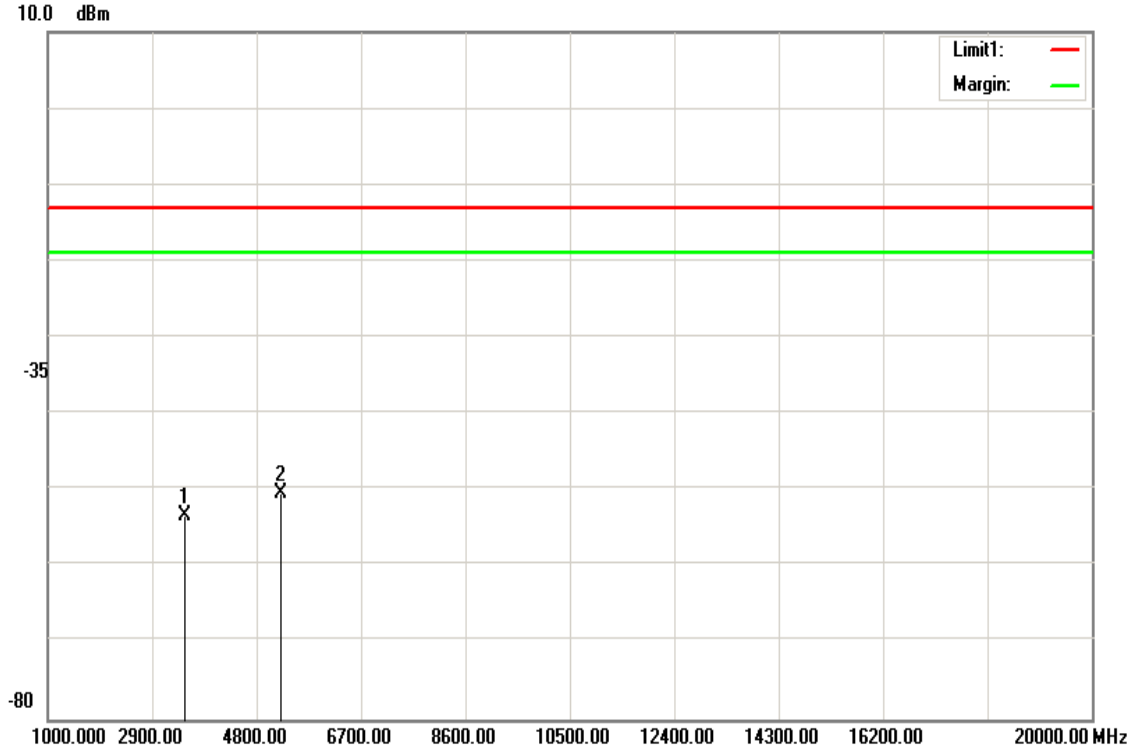


Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3490.000	-58.88	6.68	12.47	-53.09	-13.00	-40.09	V
5235.000	-55.68	8.35	12.69	-51.34	-13.00	-38.34	V
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

Operation Mode:	Tx / High CH	**Test Date:**	September 26, 2016
Temperature:	22.6°C	**Tested by:**	Dennis Li
Humidity:	57.2% RH	**Polarity:**	Hor.



Frequency (MHz)	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
3490.000	-59.09	6.68	12.47	-53.30	-13.00	-40.30	H
5235.000	-54.83	8.35	12.69	-50.49	-13.00	-37.49	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*