FCC 47 CFR PART 27 SUBPART L
&
INDUSTRY CANADA RSS-130 & RSS-199

For

Computer

FCC Model No.: AIM8I, AIM8Ixxxxxxxxxxxxxxxx, AIM-x5ATxxxxxxxxxxx
(where "x" may be any alphanumeric character, "-" or blank for marketing purpose and no impact safety related critical components and constructions)

IC Model No.: AIM8I, AIM-25AT, AIM-35AT, AIM-55AT, AIM-65AT, AIM-75AT

Trade Name: ADVANTECH

Issued to

Advantech Co.Ltd.
No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
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Testing Laboratory
1309

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
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01		July 24, 2017		1. Added section 7.2's limit. 2. Revise section 7.6's limit 3. Revise section 7.8;s limit.	P.19, P.58, P.106	Angel Cheng

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1. TEST RESULT CERTIFICATION

Applicant: Advantech Co.Ltd.
No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.

Manufacturer: Advantech Co.Ltd.
No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.

Equipment Under Test: Computer

Trade Name: ADVANTECH

FCC Model No.: AIM8I, AIM8Ixxxxxxxxxxxxxxxx, AIM-x5ATxxxxxxxxxxx (where "x" may be any alphanumeric character, "-" or blank for marketing purpose and no impact safety related critical components and constructions)

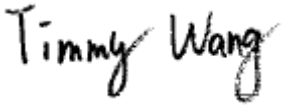
IC Model No.: AIM8I, AIM-25AT, AIM-35AT, AIM-55AT, AIM-65AT, AIM-75AT

Date of Test: April 6 ~ May 18, 2017

APPLICABLE STANDARDS	
Standard	**TEST RESULT**
FCC Part 27, Subpart C, L, FCC Part 2 & RSS-130 Issue 1 October 2013 & RSS-199 Issue 3 December 2016	No non-compliance noted

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by *Tested by*



Sam Chuang
Manager
Compliance Certification Services Inc.

Timmy Wang
Engineer
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Computer	
FCC Model No.	AIM8I, AIM8Ixxxxxxxxxxxxxxxx, AIM-x5ATxxxxxxxxxxx (where "x" may be any alphanumeric character, "-" or blank for marketing purpose and no impact safety related critical components and constructions)	
IC Model No.	AIM8I, AIM-25AT, AIM-35AT, AIM-55AT, AIM-65AT, AIM-75AT	
Model Discrepancy	All models are electrically identical, different model names are for marketing purpose	
Trade	ADVANTECH	
Received Date	March 28, 2017	
Power Supply	1. VDC from Power Adapter Chicony / A16-018N1A I/P: 100-240Vac, 1A, 50-60Hz O/P: 5.15Vdc, 3A, 9.1Vdc, 2A, 18W 2. Battery ADVANTECH / AIM-BAT-8 Rating: 3.8V, 4900, 18.62Wh	
Modulation Technology	LTE Band 13	QPSK, 16QAM
	LTE Band 7	QPSK, 16QAM
Frequency Range	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	LTE Band 7 Channel Bandwidth: 5MHz	2502.5MHz ~2567.5MHz
	LTE Band 7 Channel Bandwidth: 10MHz	2505.0MHz ~2565.0MHz
	LTE Band 7 Channel Bandwidth: 15MHz	2507.5MHz ~2562.5MHz
	LTE Band 7 Channel Bandwidth: 20MHz	2510.0MHz ~2560.0MHz
Maximum EIRP Power	LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 20.40 dBm 16QAM: 20.26 dBm
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK : 19.81 dBm 16QAM: 16.85 dBm

Maximum EIRP Power	LTE Band 7 Channel Bandwidth: 5MHz	QPSK: 28.21 dBm 16QAM: 28.36 dBm
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK: 28.56 dBm 16QAM: 28.83 dBm
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK: 27.53 dBm 16QAM: 28.08 dBm
	LTE Band 7 Channel Bandwidth: 20MHz	QPSK: 27.9 dBm 16QAM: 27.79 dBm
Antenna Specification	PIFA Antenna LTE Band 7: Gain: -4.77dBi LTE Band 13: Gain: -2.67dBi	

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.*

3. TEST METHODOLOGY

3.1 DESCRIPTION OF TEST TYPE

The EUT (model: AIM8I) had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

LTE Band 13: 777 MHz ~ 787 MHz

Three channels had been tested for each channel bandwidth.

Channel	5MHz		10MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Low CH	23205	779.5	-	-
Middle CH	23230	752.0	23230	782.0
High CH	23255	784.5	-	-

LTE Band 7: 2500 MHz ~ 2570 MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	5MHz		10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	20775	2502.5	20800	2505.0	20825	2507.5	20850	2510.0
Middle channel (M)	21100	2535.0	21100	2535.0	21100	2535.0	21100	2535.0
High channel (H)	21425	2567.5	21400	2565.0	21375	2562.5	21350	2560.0

For test mode:

The conducted power be measured in 1, 50% and 100% RB allocation, offset to upper edge, centered and lower edge of the channel bandwidth of each required channel.

	QPSK	Worst Mode	16QAM	Worst Mode
Band7	1.4M	1 RB ALLOCATED AT THE UPPER EDGE	1.4M	1 RB ALLOCATED AT THE LOWER EDGE
	5M	1 RB ALLOCATED AT THE UPPER EDGE	5M	1 RB ALLOCATED AT THE CENTERED
	10M	1 RB ALLOCATED AT THE UPPER EDGE	10M	1 RB ALLOCATED AT THE UPPER EDGE
	20M	1 RB ALLOCATED AT THE UPPER EDGE	20M	1 RB ALLOCATED AT THE LOWER EDGE
Band13	5M	1 RB ALLOCATED AT THE UPPER EDGE	1.4M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE UPPER EDGE	5M	1 RB ALLOCATED AT THE UPPER EDGE

3.2 THE WORST MODE OF MEASUREMENT

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

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Voltage/Hz	**120V/60Hz**
Test Mode	**Mode 1:EUT power by AC adapter via power cable.** **Mode 2:EUT power by Battery.**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

Remark:

1. The worst mode was record in this test report.

2. The EUT pre-scanned in three axis ,X,Y, Z for radiated measurement. The worst cases (X-Plane) were recorded in this report.

3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.

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**
Power Meter	Anritsu	ML2495A	1012009	07/04/2016	07/03/2017
Power Sensor	Anritsu	MA2411B	917072	07/04/2016	07/03/2017
Base Station	R&S	CMU 200	101245	07/29/2016	07/28/2017
Base Station	Anritsu	MT-8820C	6200938900	07/26/2016	07/25/2017
Spectrum Analyzer	R&S	FSV 40	101073	10/05/2016	10/04/2017

Wugu 966 Chamber A					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Bilog Antenna	Sunol Sciences	JB3	A030105	07/03/2016	07/02/2017
Horn Antenna	EMCO	3117	00055165	02/20/2017	02/19/2018
Pre-Amplifier	EMCI	EMC 012635	980151	06/23/2016	06/22/2017
Pre-Amplifier	EMEC	EM330	060609	06/08/2016	06/07/2017
Spectrum Analyzer	Agilent	E4446A	US42510252	12/05/2016	12/04/2017
Loop Ant	COM-POWER	AL-130	121051	03/02/2017	03/1/2018
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	EZ-EMC (CCS-3A1RE)				

4.3 MEASUREMENT UNCERTAINTY

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

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

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

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

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

☐ No.81-1, Lane 210, Bade 2nd Rd., 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
	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 13

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
13	10	23230	782.0	QPSK	1	0	0	23.4	0.21979
					1	24	0	23.2	0.20893
					1	49	0	23.1	0.20417
					25	0	1	22.5	0.17620
					25	12	1	22.2	0.16596
					25	24	1	22.1	0.16218
					50	0	1	22.4	0.17498
				16QAM	1	0	1	22.5	0.17906
					1	24	1	22.3	0.16982
					1	49	1	22.1	0.16218
					25	0	2	21.5	0.14060
					25	12	2	21.3	0.13490
					25	24	2	21.1	0.12882
					50	0	2	21.2	0.13183

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
13	5	23205	779.5	QPSK	1	0	0	23.4	0.21677
					1	12	0	23.1	0.20606
					1	24	0	23.0	0.20137
					12	0	1	22.4	0.17378
					12	6	1	22.1	0.16368
					12	11	1	22.0	0.15996
					25	0	1	22.4	0.17258
				16QAM	1	0	1	22.5	0.17660
					1	12	1	22.2	0.16749
					1	24	1	22.0	0.15996
					12	0	2	21.4	0.13868
					12	6	2	21.2	0.13305
					12	11	2	21.0	0.12706
					25	0	2	21.1	0.13002
		23230	782.0	QPSK	1	0	0	23.1	0.20512
					1	12	0	23.3	0.21577
					1	24	0	23.0	0.20045
					12	0	1	22.4	0.17298
					12	6	1	22.1	0.16293
					12	11	1	22.0	0.15922
					25	0	1	22.4	0.17179
				16QAM	1	0	1	22.5	0.17579
					1	12	1	22.2	0.16672
					1	24	1	22.0	0.15922
					12	0	2	21.4	0.13804
					12	6	2	21.2	0.13243
					12	11	2	21.0	0.12647
					25	0	2	21.1	0.12942
		23255	784.5	QPSK	1	0	0	23.4	0.21878
					1	12	0	23.2	0.20797
					1	24	0	23.1	0.20324
					12	0	1	22.4	0.17539
					12	6	1	22.2	0.16520
					12	11	1	22.1	0.16144
					25	0	1	22.4	0.17418
				16QAM	1	0	1	22.5	0.17824
					1	12	1	22.3	0.16904
					1	24	1	22.1	0.16144
					12	0	2	21.5	0.13996
					12	6	2	21.3	0.13428
					12	11	2	21.1	0.12823
					25	0	2	21.2	0.13122

LTE Band 7

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
7	20	20850	2510.0	QPSK	1	0	0	23.1	0.20417
					1	49	0	22.5	0.17783
					1	99	0	22.3	0.16982
					50	0	1	22.1	0.16218
					50	24	1	21.6	0.14454
					50	49	1	21.4	0.13804
					100	0	1	22.1	0.16218
				16QAM	1	0	1	22.1	0.16218
					1	49	1	21.5	0.14125
					1	99	1	21.4	0.13804
					50	0	2	21.2	0.13183
					50	24	2	20.5	0.11220
					50	49	2	20.4	0.10965
					100	0	2	20.3	0.10715
		21100	2535.0	QPSK	1	0	0	23.1	0.20417
					1	49	0	22.4	0.17378
					1	99	0	22.4	0.17378
					50	0	1	22.1	0.16218
					50	24	1	21.5	0.13996
					50	49	1	21.5	0.14125
					100	0	1	22.1	0.16218
				16QAM	1	0	1	22.1	0.16218
					1	49	1	21.5	0.14125
					1	99	1	21.5	0.14125
					50	0	2	21.1	0.12882
					50	24	2	20.5	0.11169
					50	49	2	20.4	0.11015
					100	0	2	20.4	0.10965
		21350	2560.0	QPSK	1	0	0	23.4	0.21878
					1	49	0	22.6	0.18197
					1	99	0	22.5	0.17783
					50	0	1	22.4	0.17378
					50	24	1	21.7	0.14791
					50	49	1	21.7	0.14791
					100	0	1	22.5	0.17783
				16QAM	1	0	1	22.4	0.17378
					1	49	1	21.7	0.14791
					1	99	1	21.5	0.14125
					50	0	2	21.4	0.13804
					50	24	2	20.7	0.11749
					50	49	2	20.6	0.11482
					100	0	2	20.5	0.11220

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
7	15	20825	2507.5	QPSK	1	0	0	23.1	0.20277
					1	37	0	22.5	0.17660
					1	74	0	22.3	0.16866
					36	0	1	22.1	0.16106
					36	18	1	21.6	0.14355
					36	35	1	21.4	0.13709
					75	0	1	22.1	0.16106
				16QAM	1	0	1	22.1	0.16106
					1	37	1	21.5	0.14028
					1	74	1	21.4	0.13709
					36	0	2	21.2	0.13092
					36	18	2	20.5	0.11143
					36	35	2	20.4	0.10889
					75	0	2	20.3	0.10641
		21100	2535.0	QPSK	1	0	0	23.0	0.20137
					1	37	0	22.3	0.17140
					1	74	0	22.3	0.17140
					36	0	1	22.0	0.15996
					36	18	1	21.4	0.13804
					36	35	1	21.4	0.13932
					75	0	1	22.0	0.15996
				16QAM	1	0	1	22.0	0.15996
					1	37	1	21.4	0.13932
					1	74	1	21.4	0.13932
					36	0	2	21.0	0.12706
					36	18	2	20.4	0.11015
					36	35	2	20.4	0.10864
					75	0	2	20.3	0.10814
		21375	2562.5	QPSK	1	0	0	23.3	0.21528
					1	37	0	22.5	0.17906
					1	74	0	22.4	0.17498
					36	0	1	22.3	0.17100
					36	18	1	21.6	0.14555
					36	35	1	21.6	0.14555
					75	0	1	22.4	0.17498
				16QAM	1	0	1	22.3	0.17100
					1	37	1	21.6	0.14555
					1	74	1	21.4	0.13900
					36	0	2	21.3	0.13583
					36	18	2	20.6	0.11561
					36	35	2	20.5	0.11298
					75	0	2	20.4	0.11041

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
7	10	20800	2505.0	QPSK	1	0	0	23.1	0.20230
					1	24	0	22.5	0.17620
					1	49	0	22.3	0.16827
					25	0	1	22.1	0.16069
					25	12	1	21.6	0.14322
					25	24	1	21.4	0.13677
					50	0	1	22.1	0.16069
				16QAM	1	0	1	22.1	0.16069
					1	24	1	21.5	0.13996
					1	49	1	21.4	0.13677
					25	0	2	21.2	0.13062
					25	12	2	20.5	0.11117
					25	24	2	20.4	0.10864
					50	0	2	20.3	0.10617
		21100	2535.0	QPSK	1	0	0	23.0	0.20091
					1	24	0	22.3	0.17100
					1	49	0	22.3	0.17100
					25	0	1	22.0	0.15959
					25	12	1	21.4	0.13772
					25	24	1	21.4	0.13900
					50	0	1	22.0	0.15959
				16QAM	1	0	1	22.0	0.15959
					1	24	1	21.4	0.13900
					1	49	1	21.4	0.13900
					25	0	2	21.0	0.12677
					25	12	2	20.4	0.10990
					25	24	2	20.4	0.10839
					50	0	2	20.3	0.10789
		21400	2565.0	QPSK	1	0	0	23.3	0.21478
					1	24	0	22.5	0.17865
					1	49	0	22.4	0.17458
					25	0	1	22.3	0.17061
					25	12	1	21.6	0.14521
					25	24	1	21.6	0.14521
					50	0	1	22.4	0.17458
				16QAM	1	0	1	22.3	0.17061
					1	24	1	21.6	0.14521
					1	49	1	21.4	0.13868
					25	0	2	21.3	0.13552
					25	12	2	20.6	0.11535
					25	24	2	20.5	0.11272
					50	0	2	20.4	0.11015

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
7	5	20775	2502.5	QPSK	1	0	0	23.0	0.20137
					1	12	0	22.4	0.17539
					1	24	0	22.2	0.16749
					12	0	1	22.0	0.15996
					12	6	1	21.5	0.14256
					12	11	1	21.3	0.13614
					25	0	1	22.0	0.15996
				16QAM	1	0	1	22.0	0.15996
					1	12	1	21.4	0.13932
					1	24	1	21.3	0.13614
					12	0	2	21.1	0.13002
					12	6	2	20.4	0.11066
					12	11	2	20.3	0.10814
					25	0	2	20.2	0.10568
		21100	2535.0	QPSK	1	0	0	23.0	0.19999
					1	12	0	22.3	0.17022
					1	24	0	22.3	0.17022
					12	0	1	22.0	0.15885
					12	6	1	21.4	0.13709
					12	11	1	21.4	0.13836
					25	0	1	22.0	0.15885
				16QAM	1	0	1	22.0	0.15885
					1	12	1	21.4	0.13836
					1	24	1	21.4	0.13836
					12	0	2	21.0	0.12618
					12	6	2	20.4	0.10940
					12	11	2	20.3	0.10789
					25	0	2	20.3	0.10740
		21425	2567.5	QPSK	1	0	0	23.3	0.21330
					1	12	0	22.5	0.17742
					1	24	0	22.4	0.17338
					12	0	1	22.3	0.16943
					12	6	1	21.6	0.14421
					12	11	1	21.6	0.14421
					25	0	1	22.4	0.17338
				16QAM	1	0	1	22.3	0.16943
					1	12	1	21.6	0.14421
					1	24	1	21.4	0.13772
					12	0	2	21.3	0.13459
					12	6	2	20.6	0.11455
					12	11	2	20.5	0.11194
					25	0	2	20.4	0.10940

7.2 ERP & EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 27.50 (b) (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 (h) (2): Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

RSS-130 (4.4)

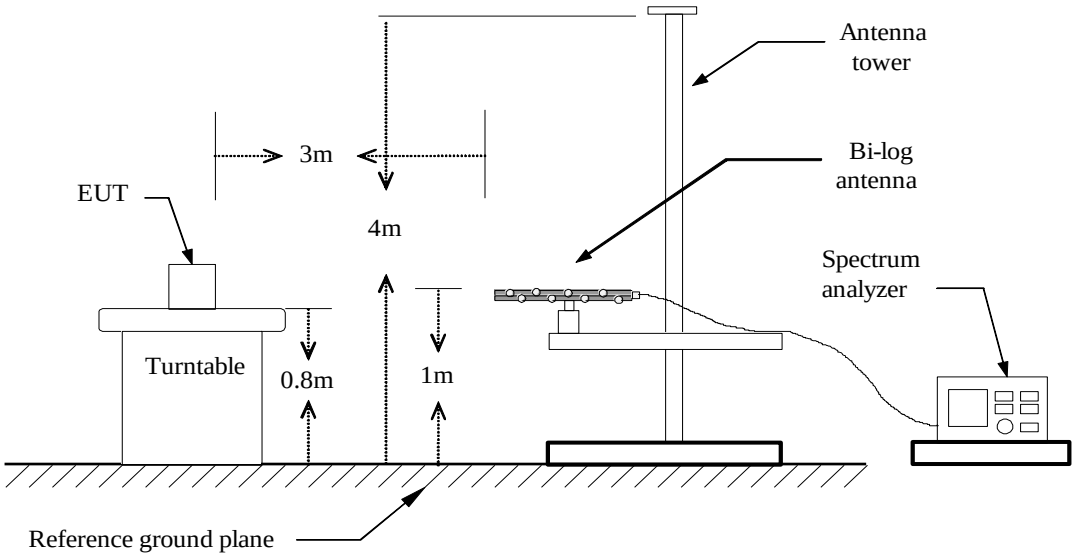
The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.

RSS-199 (4.4)

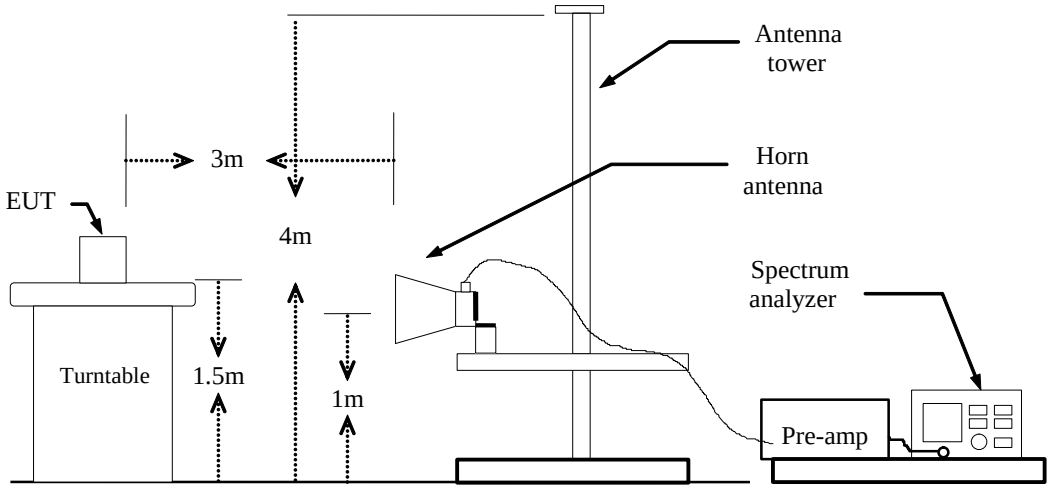
For mobile subscriber equipment, the e.i.r.p. shall not exceed 2 W. For fixed subscriber equipment, the transmitter output power shall not exceed 2 W and the e.i.r.p. shall be limited to 40 W.

Test Configuration

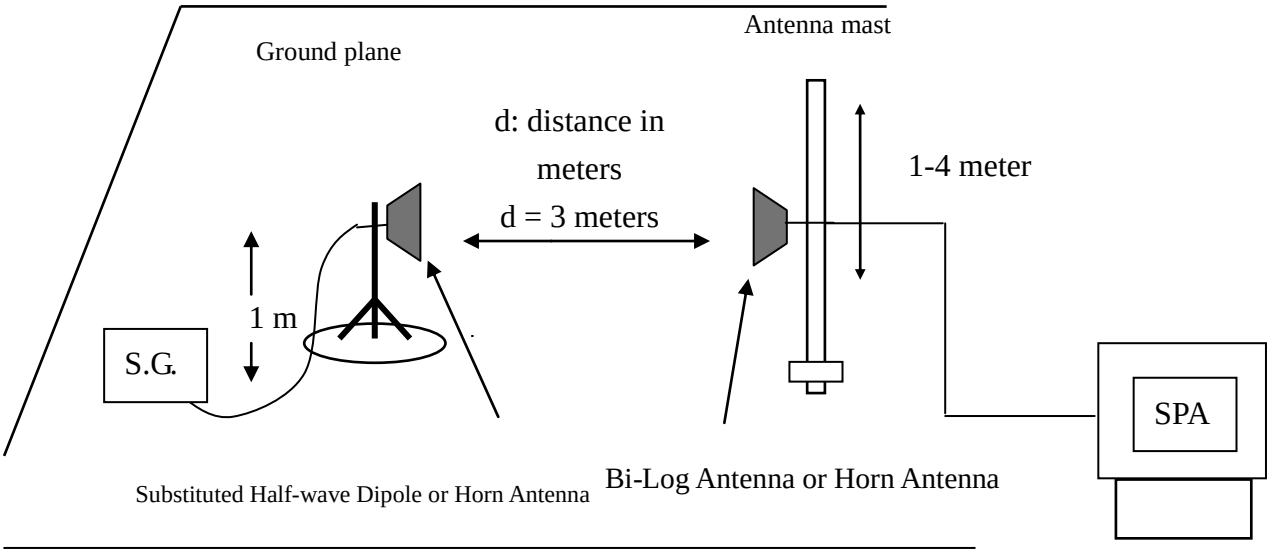
Below 1 GHz



Above 1 GHz


Antenna
tower
3m
Horn
antenna
EUT
4m
Spectrum
analyzer
Turntable
1.5m
1m
Pre-amp

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 1.5m for above 1G) in a semi-chamber. The radiated emission at the fundamental frequency was measured at 3m and SA with RMS detector per photograph 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.

ERP POWER

LTE Band 13

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)
13	5	Lowest	QPSK	1	0	20.40	0.109	16.97	0.049
		Middle		1	0	19.24	0.083	16.99	0.050
		Highest		1	0	18.81	0.076	15.80	0.038
		Lowest	16 QAM	1	0	20.26	0.106	17.36	0.054
		Middle		1	0	19.80	0.095	16.70	0.046
		Highest		1	0	19.02	0.079	16.12	0.040

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)
13	10	Middle	QPSK	1	0	19.81	0.095	16.83	0.048
		Middle	16 QAM	1	0	19.80	0.095	16.85	0.048

LTE Band 7

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)
7	5	Lowest	QPSK	1	0	22.31	0.170	26.92	0.492
		Middle		1	0	22.93	0.196	28.21	0.662
		Highest		1	0	22.13	0.163	26.76	0.474
		Lowest	16 QAM	1	0	22.08	0.161	27.17	0.521
		Middle		1	0	22.97	0.198	28.36	0.685
		Highest		1	0	22.33	0.171	26.65	0.462

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)
7	10	Lowest	QPSK	1	0	22.50	0.177	27.37	0.545
		Middle		1	0	22.99	0.199	28.56	0.717
		Highest		1	0	22.78	0.189	26.69	0.466
		Lowest	16 QAM	1	0	22.04	0.159	27.09	0.511
		Middle		1	0	22.75	0.188	28.83	0.763
		Highest		1	0	22.67	0.184	27.60	0.575

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)
7	15	Lowest	QPSK	1	0	23.50	0.233	27.45	0.555
		Middle		1	0	22.30	0.169	27.53	0.566
		Highest		1	0	20.88	0.122	26.30	0.426
		Lowest	16 QAM	1	0	23.32	0.214	27.59	0.574
		Middle		1	0	22.47	0.176	28.08	0.642
		Highest		1	0	20.72	0.118	26.58	0.454

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)
7	20	Lowest	QPSK	1	0	23.12	0.205	27.44	0.554
		Middle		1	0	22.59	0.181	27.91	0.618
		Highest		1	0	20.29	0.106	26.18	0.414
		Lowest	16 QAM	1	0	23.31	0.214	27.56	0.570
		Middle		1	0	22.59	0.181	27.79	0.601
		Highest		1	0	20.96	0.124	26.89	0.488

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 13

Reference Frequency: LTE Band 13 Max Bandwidth QPSK, 782MHz				
Limit: ± 2.5 ppm = 1955Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	50	0.06	0.000077	+/- 2.5
120	40	0.00	-0.000004	
120	30	-0.01	-0.000013	
120	20	0.01	0.000014	
120	10	0.02	0.000026	
120	0	0.01	0.000013	
120	-10	0.03	0.000038	
120	-20	0.05	0.000064	

Reference Frequency: LTE Band 13 Max Bandwidth 16QAM, 782MHz				
Limit: ± 2.5 ppm = 1955Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	50	0.05	0.000064	+/- 2.5
120	40	0.06	0.000077	
120	30	0.00	0.000006	
120	20	0.03	0.000038	
120	10	0.01	0.000013	
120	0	0.03	0.000038	
120	-10	0.02	0.000026	
120	-20	0.00	0.000000	

LTE Band 7

Reference Frequency: LTE Band 7 Max Bandwidth QPSK, 2535MHz				
Limit: ± 2.5 ppm = 6337.5Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	50	0.02	0.000008	+/- 2.5
120	40	0.03	0.000012	
120	30	-0.01	-0.000003	
120	20	0.02	0.000008	
120	10	0.03	0.000012	
120	0	0.01	0.000004	
120	-10	-0.01	-0.000004	
120	-20	-0.02	-0.000008	

Reference Frequency: LTE Band 7 Max Bandwidth 16QAM, 2535MHz				
Limit: ± 2.5 ppm = 6337.5Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	50	-0.01	-0.000004	+/- 2.5
120	40	0.02	0.000008	
120	30	0.01	0.000004	
120	20	-0.01	-0.000002	
120	10	0.01	0.000003	
120	0	0.00	0.000000	
120	-10	0.00	0.000001	
120	-20	0.03	0.000012	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

LTE Band 13

Reference Frequency: LTE Band 13 Max Bandwidth QPSK, MHz				
Limit: ± 2.5 ppm = Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.02	0.000020	+/- 2.5
120	20	0.01	0.000013	
138	20	0.01	0.000018	

Reference Frequency: LTE Band 13 Max Bandwidth 16QAM, MHz				
Limit: ± 2.5 ppm = Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.02	0.000026	+/- 2.5
120	20	0.03	0.000038	
138	20	0.03	0.000038	

LTE Band 7

Reference Frequency: LTE Band 7 Max Bandwidth QPSK, 2535MHz				
Limit: ± 2.5 ppm = 6337.5Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.01	0.000002	+/- 2.5
120	20	0.02	0.000008	
138	20	0.01	0.000002	

Reference Frequency: LTE Band 7 Max Bandwidth 16QAM, 2535MHz				
Limit: ± 2.5 ppm = 6337.5Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.00	0.000002	+/- 2.5
120	20	0.03	0.000012	
138	20	-0.01	-0.000003	

7.4 OCCUPIED BANDWIDTH MEASUREMENT

LIMITS

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

TEST PROCEDURES

KDB 971168 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 13

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	4.4717

CHANNEL BANDWIDTH: 10MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	8.9435

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	4.4718

CHANNEL BANDWIDTH: 10MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	8.9146

LTE Band 7

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
21100	2535.00	4.5151

CHANNEL BANDWIDTH: 10MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
21100	2535.00	8.9725

CHANNEL BANDWIDTH: 15MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
21100	2535.00	13.4587

CHANNEL BANDWIDTH: 20MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
21100	2535.00	18.1186

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
21100	2535.00	4.5007

CHANNEL BANDWIDTH: 10MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
21100	2535.00	8.9146

CHANNEL BANDWIDTH: 15MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
21100	2535.00	13.5021

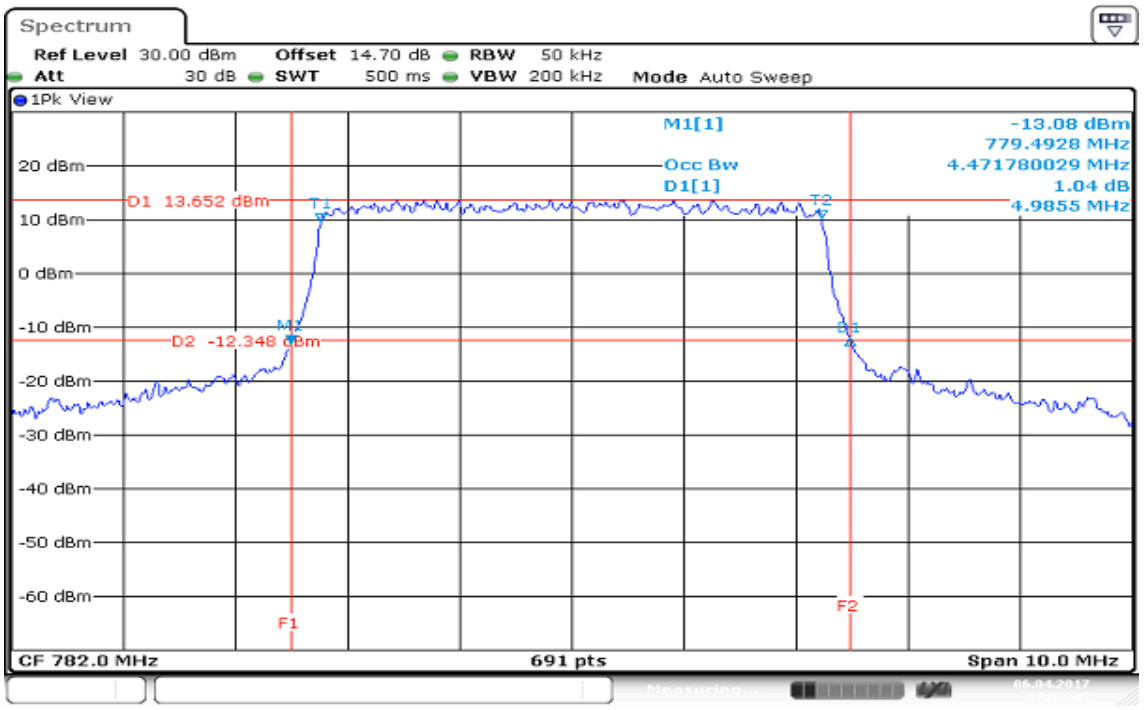
CHANNEL BANDWIDTH: 20MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
21100	2535.00	18.1186

LTE Band 13

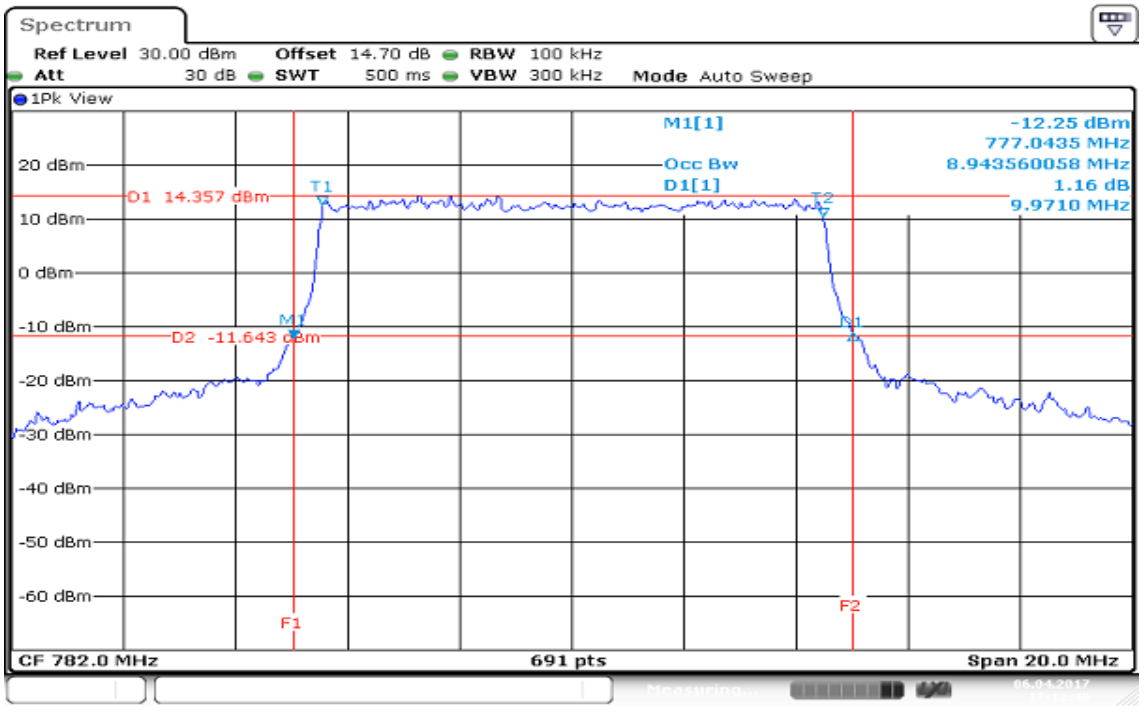
CHANNEL BANDWIDTH: 5MHz / QPSK

CH Mid



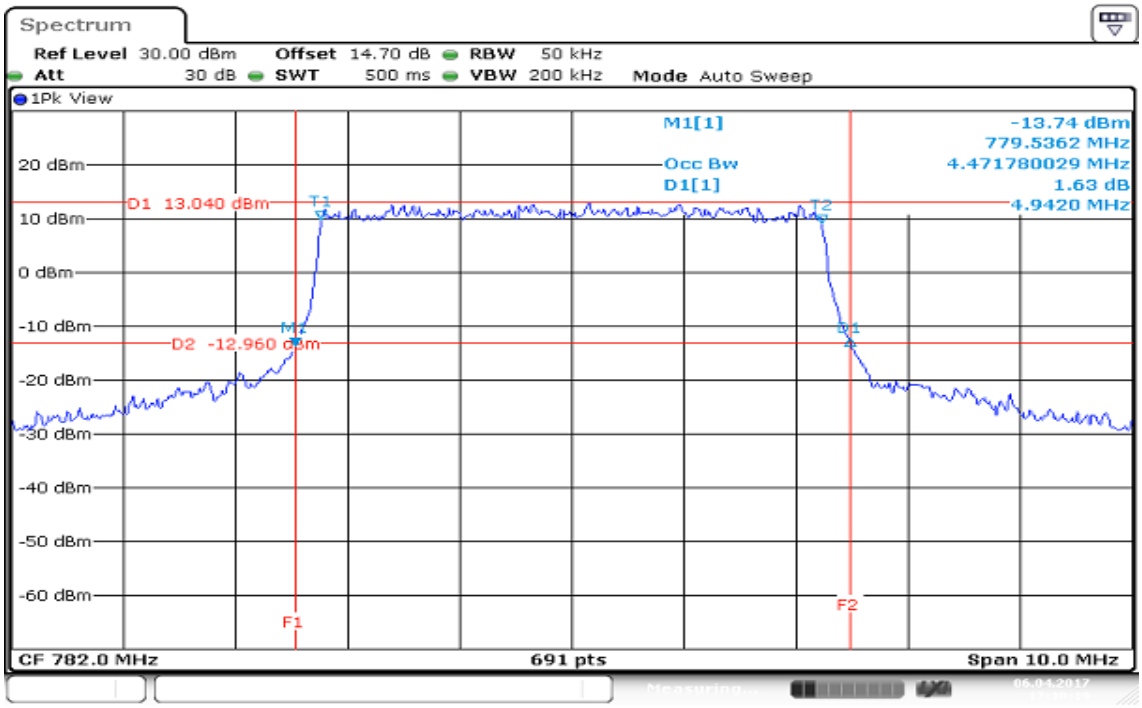
CHANNEL BANDWIDTH: 10MHz / QPSK

CH Mid



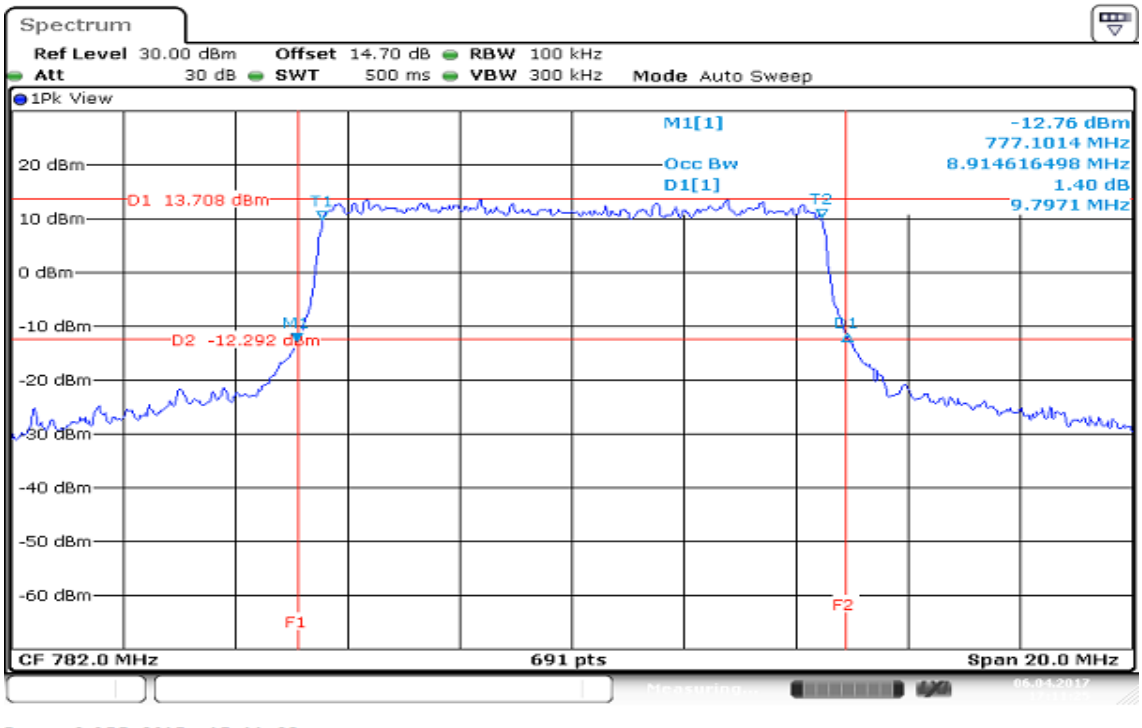
CHANNEL BANDWIDTH: 5MHz / 16QAM

CH Min



CHANNEL BANDWIDTH: 10MHz / 16QAM

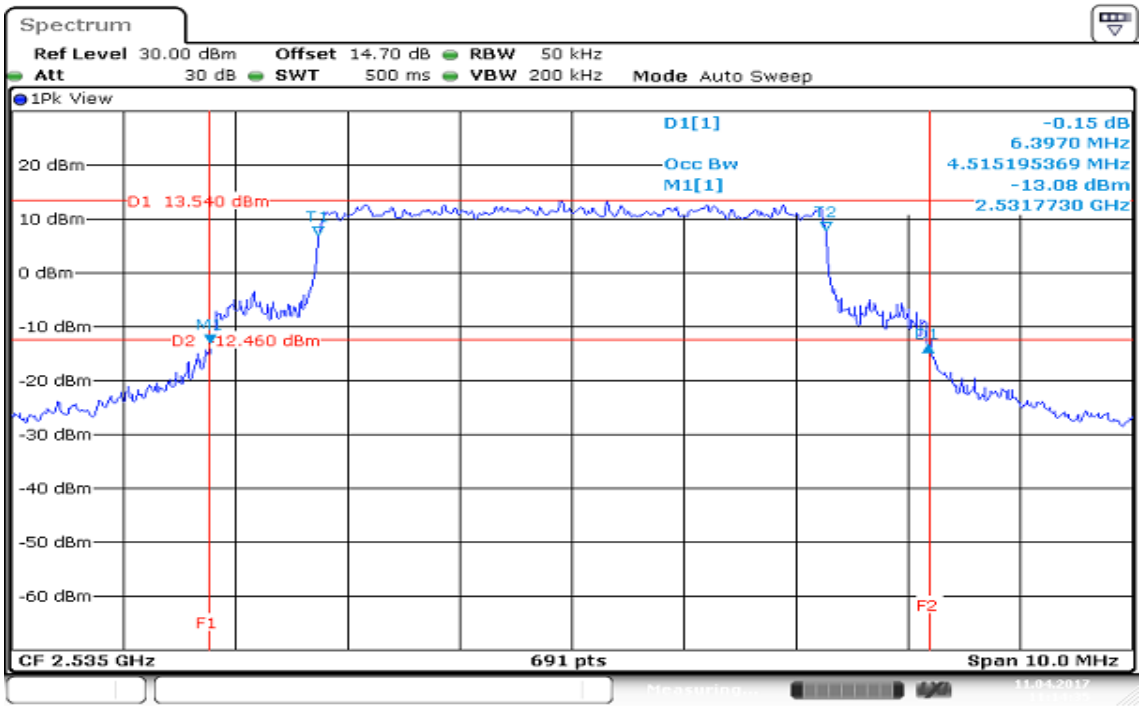
CH Min



LTE Band 7

CHANNEL BANDWIDTH: 5MHz / QPSK

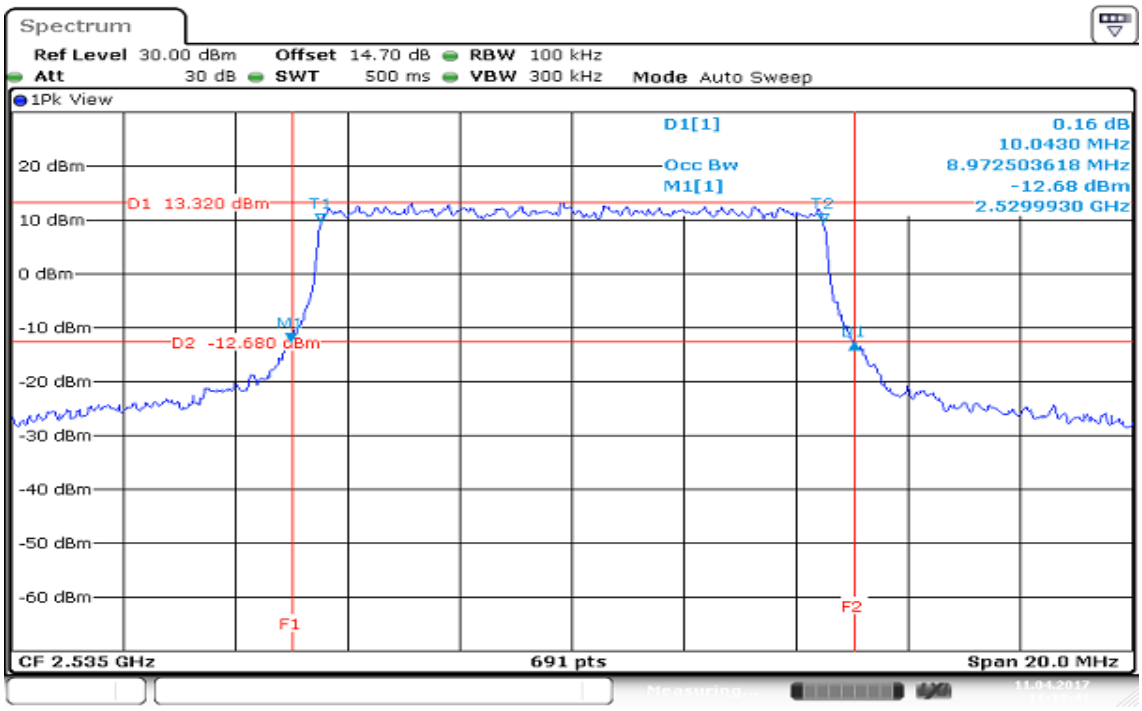
CH Min



Date: 11.APR.2017 11:14:35

CHANNEL BANDWIDTH: 10MHz / QPSK

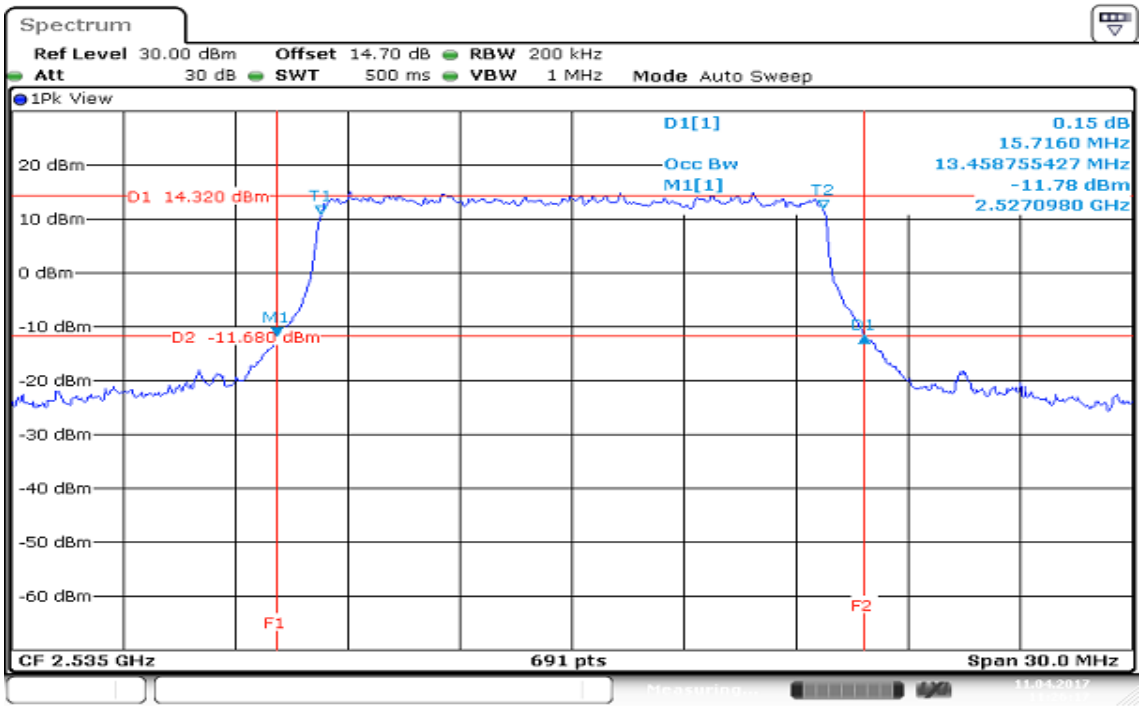
CH Min



Date: 11.APR.2017 11:19:41

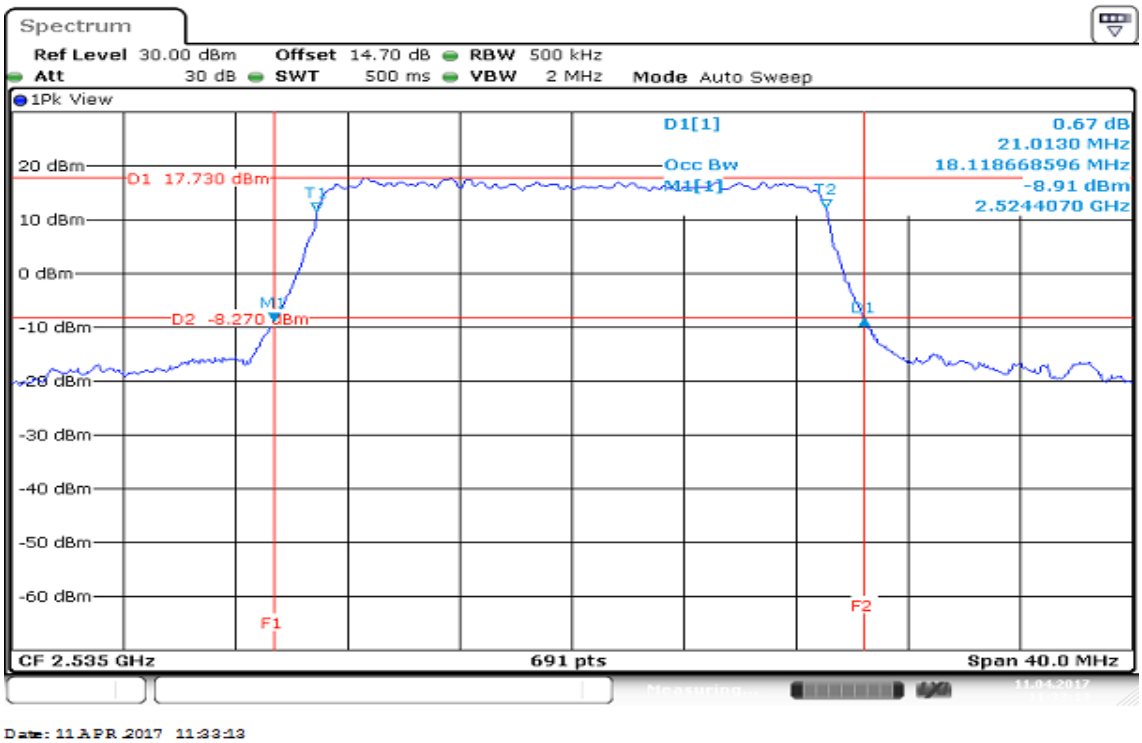
CHANNEL BANDWIDTH: 15MHz / QPSK

CH Min



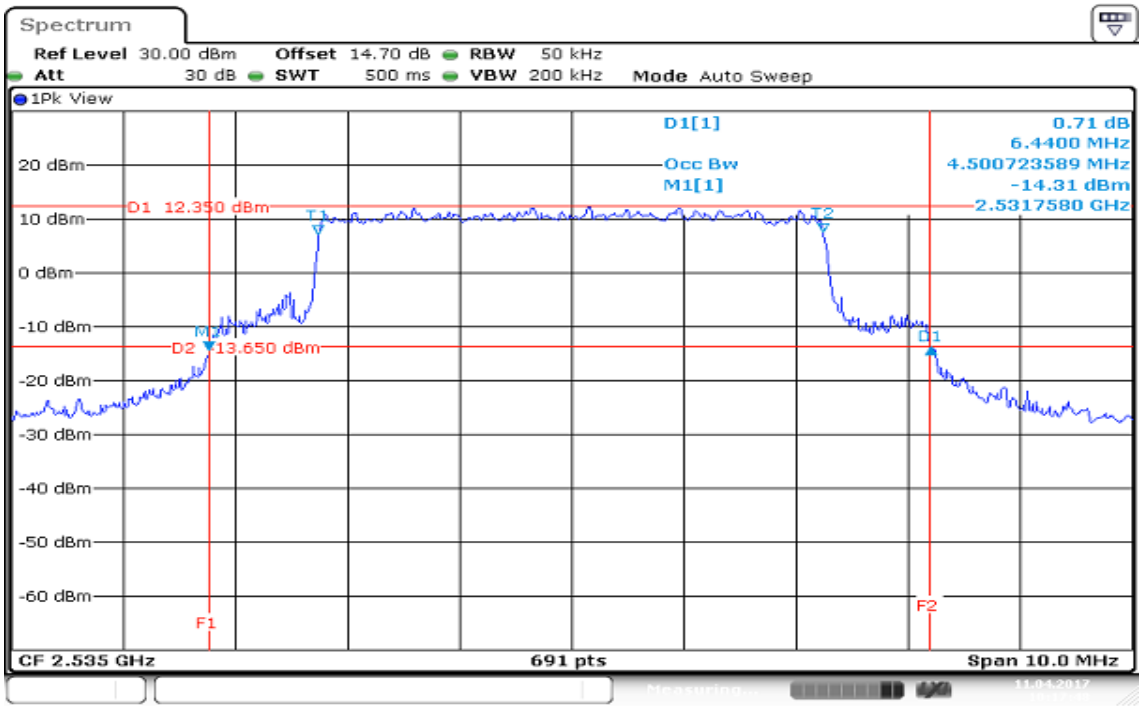
CHANNEL BANDWIDTH: 20MHz / QPSK

CH Min



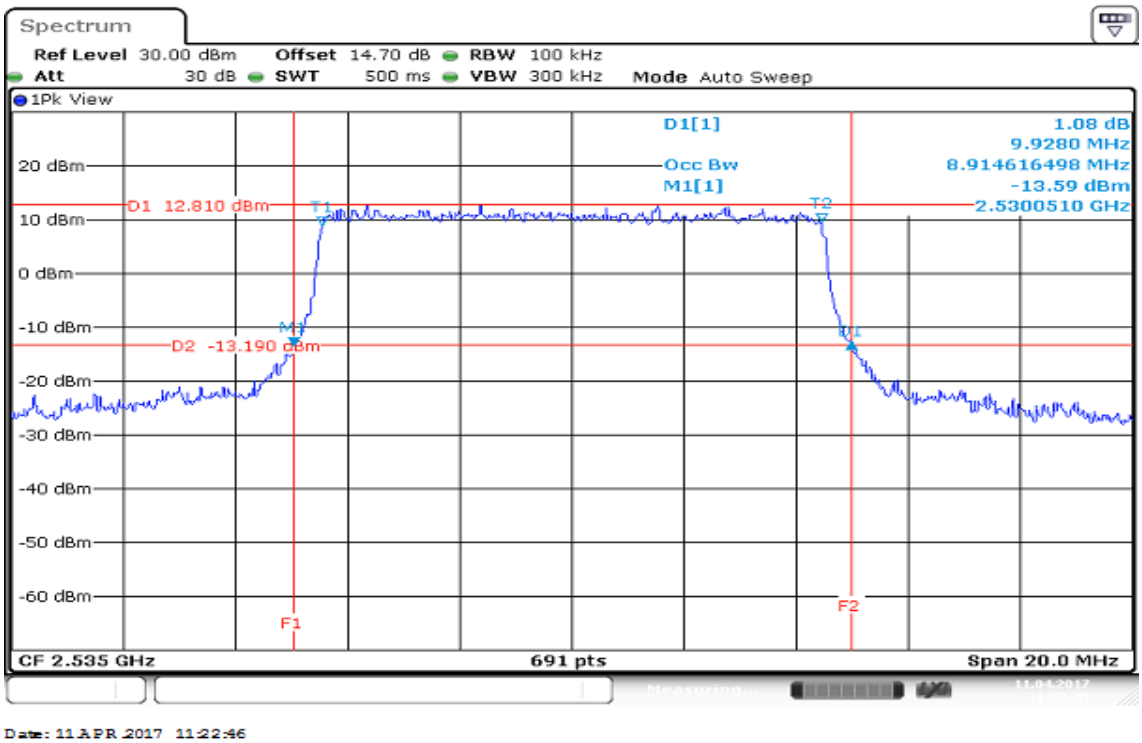
CHANNEL BANDWIDTH: 5MHz / 16QAM

CH Min



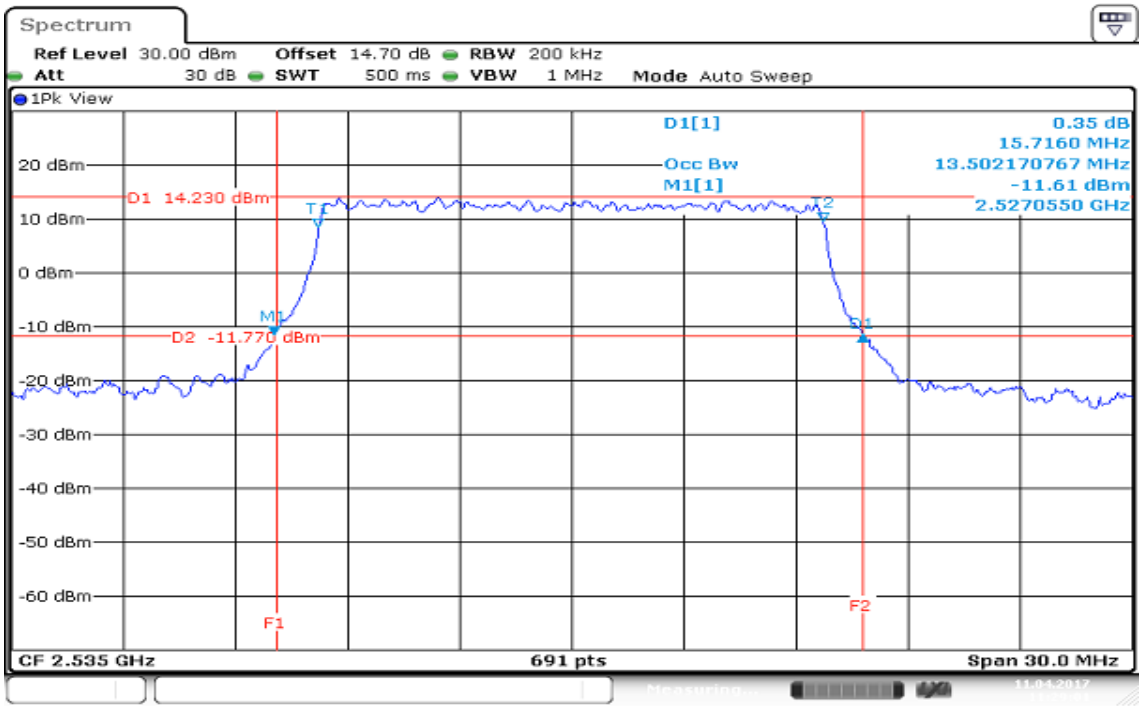
CHANNEL BANDWIDTH: 10MHz / 16QAM

CH Min



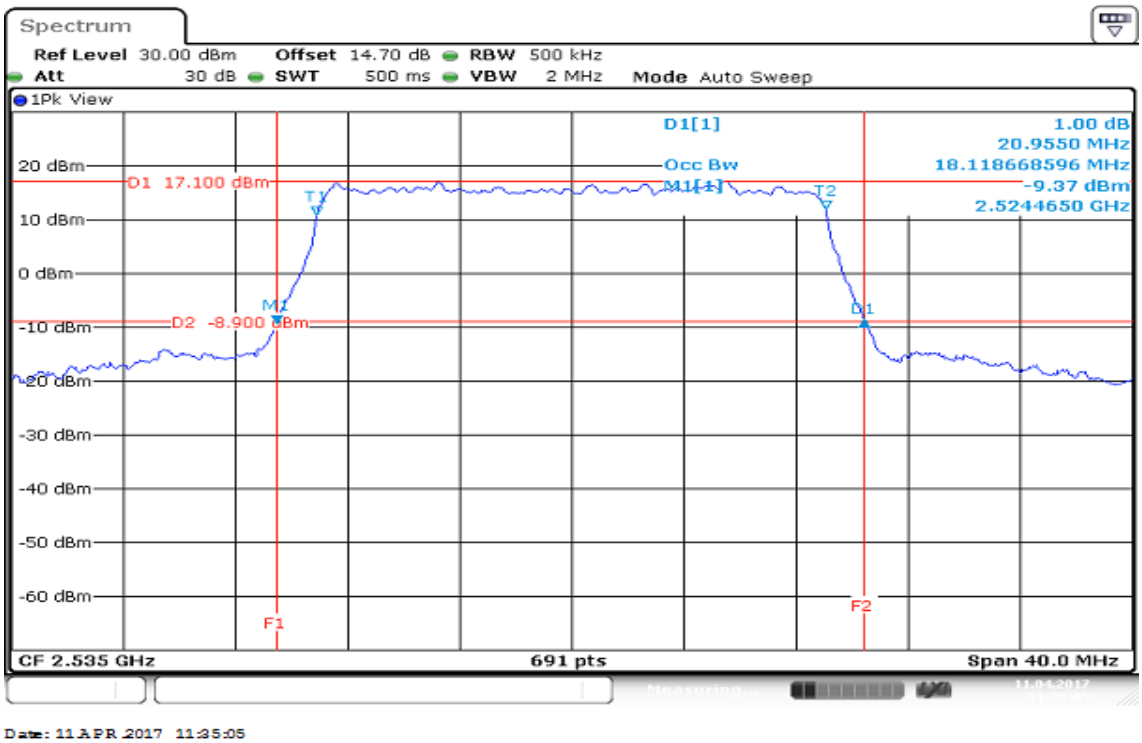
CHANNEL BANDWIDTH: 15MHz / 16QAM

CH Min



CHANNEL BANDWIDTH: 20MHz / 16QAM

CH Min



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 971168D01, photograph 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.

TEST RESULTS

LTE Band 13

CHANNEL BANDWIDTH: 5Hz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	4.29

CHANNEL BANDWIDTH: 10Hz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	4.29

CHANNEL BANDWIDTH: 5Hz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	4.70

CHANNEL BANDWIDTH: 10Hz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	4.75

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	4.70

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	5.10

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	5.59

CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	5.68

LTE Band 7

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.26

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.29

CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.06

CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.06

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.90

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.81

CHANNEL BANDWIDTH: 15MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.67

CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.64

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	5.59

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	5.07

CHANNEL BANDWIDTH: 15MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.61

CHANNEL BANDWIDTH: 20MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	4.75

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	5.80

CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	5.74

CHANNEL BANDWIDTH: 15MHz / 16QAM / 100%RB

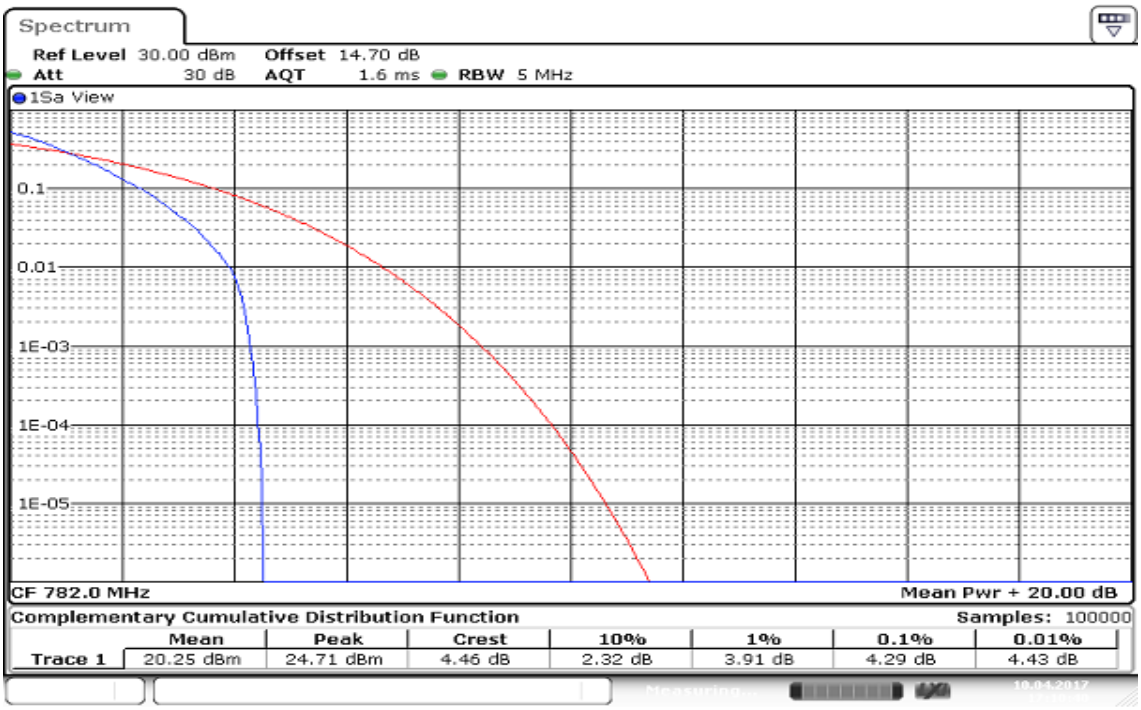
Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	5.74

CHANNEL BANDWIDTH: 20MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
21100	2535.00	5.71

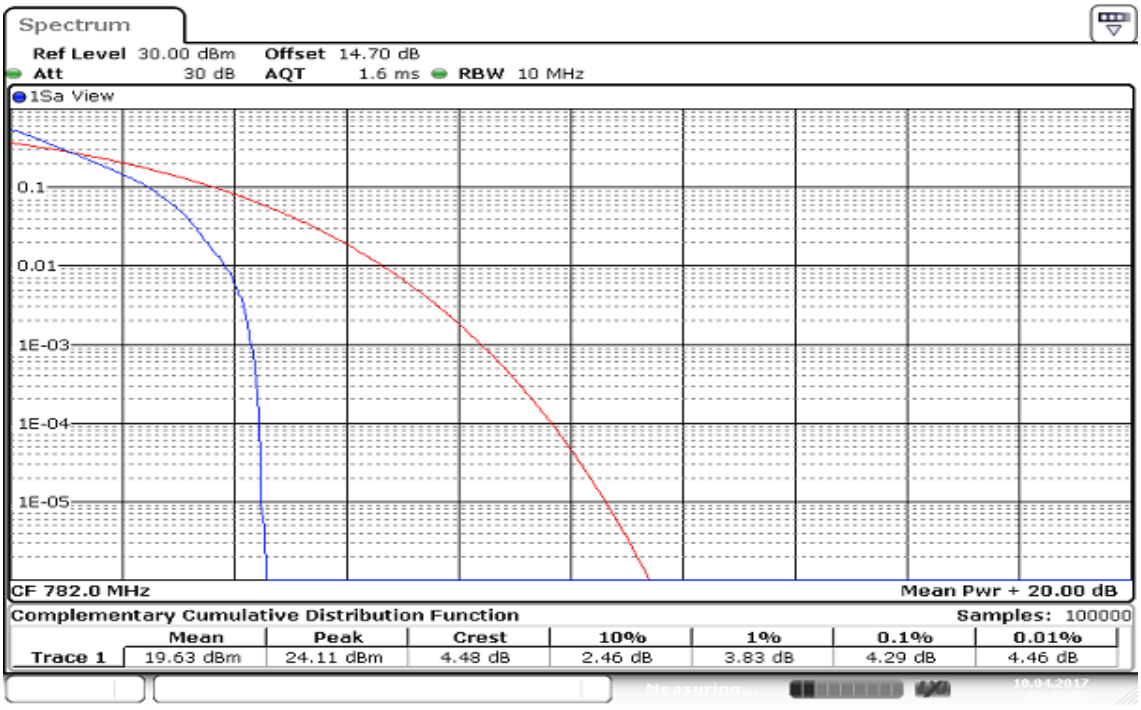
LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK/ 1RB .



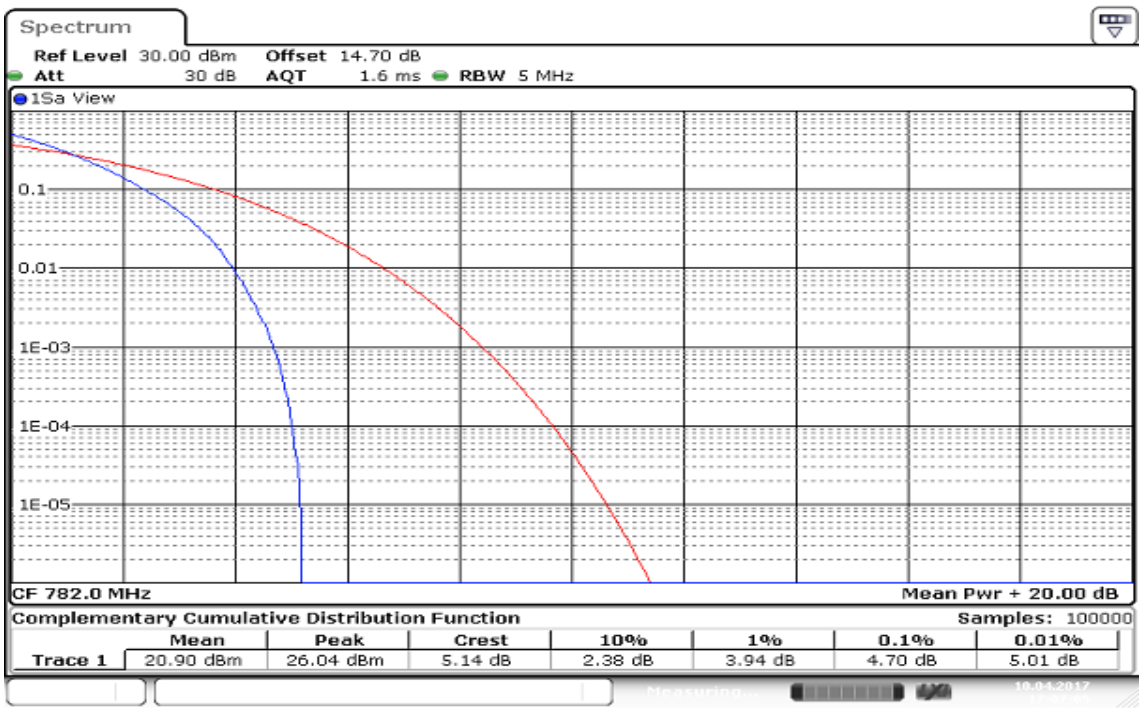
Date: 10.APR.2017 17:10:41

CHANNEL BANDWIDTH: 10MHz / QPSK/ 1RB



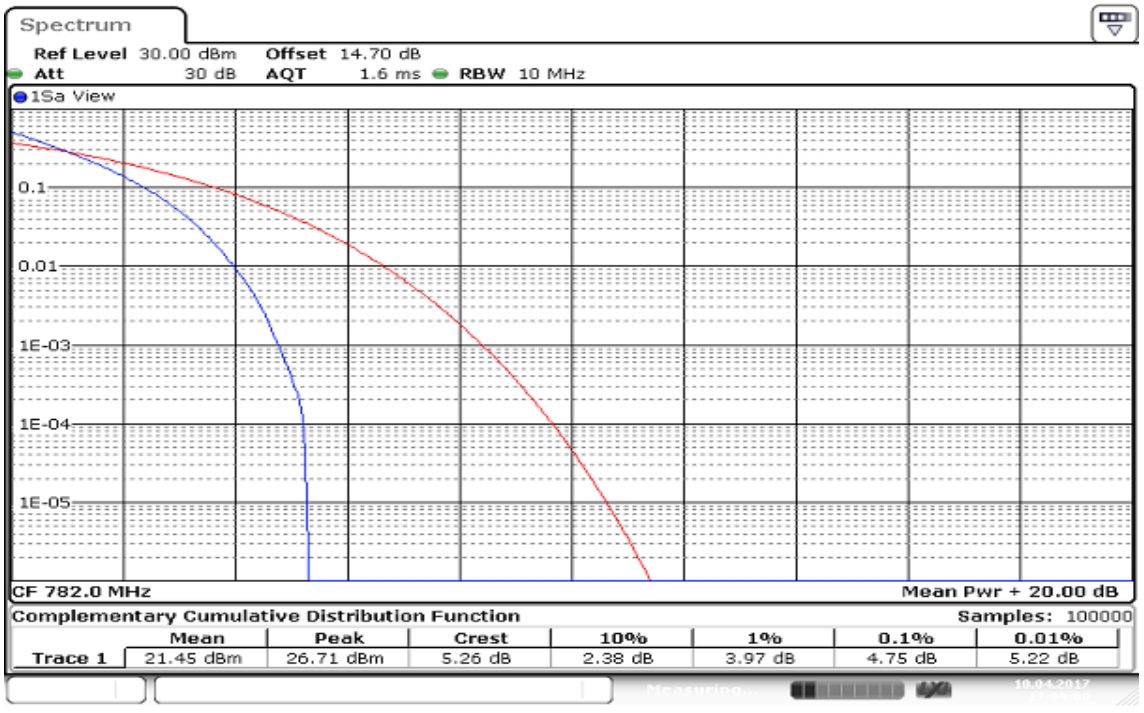
Date: 10.APR.2017 17:12:22

CHANNEL BANDWIDTH: 5MHz / QPSK/ 100%RB



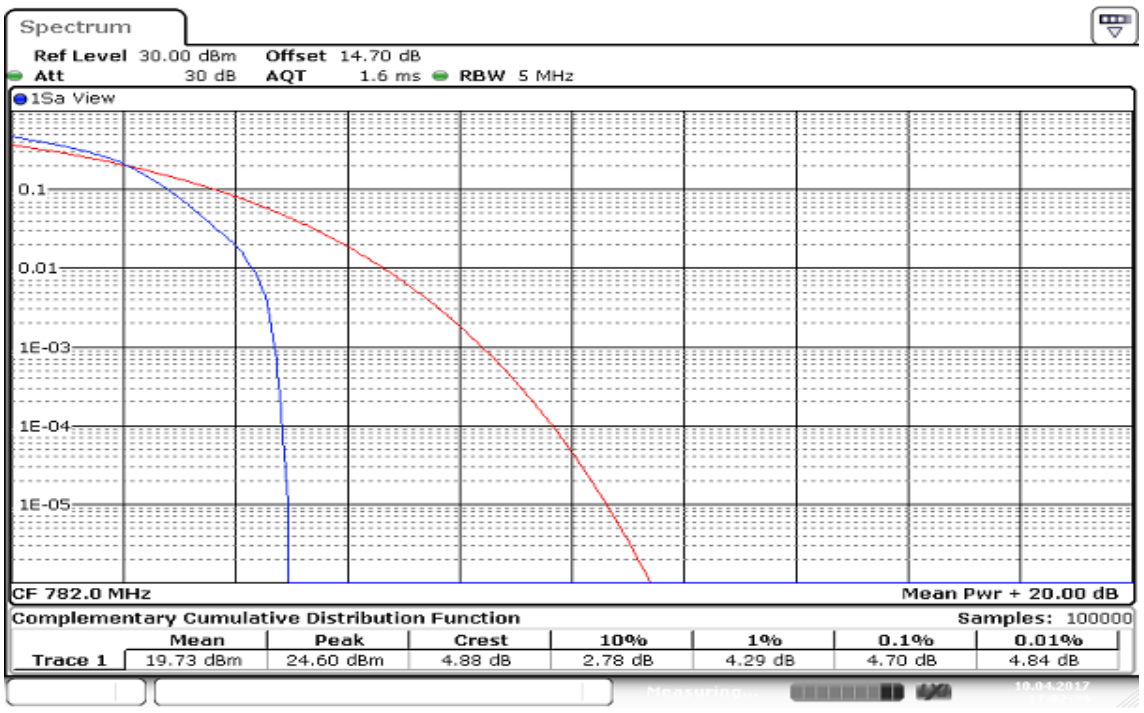
Date: 10.APR.2017 17:07:06

CHANNEL BANDWIDTH: 10MHz / QPSK/ 100%RB



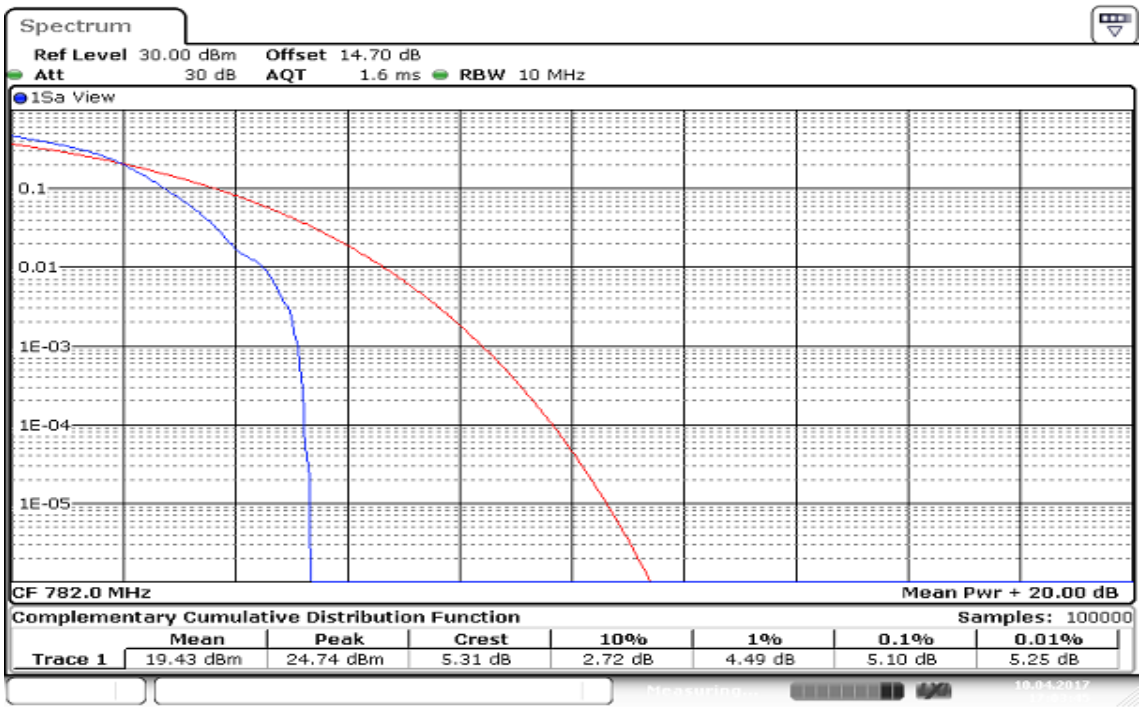
Date: 10.APR.2017 17:09:00

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB



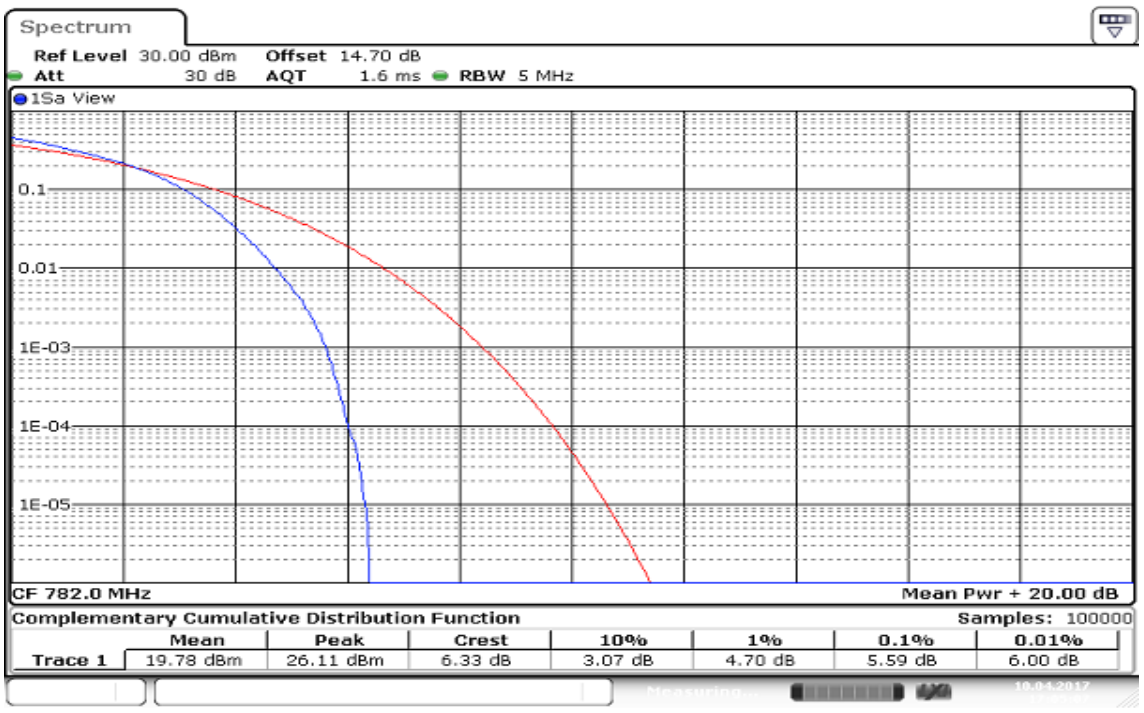
Date: 10.APR.2017 17:02:39

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB



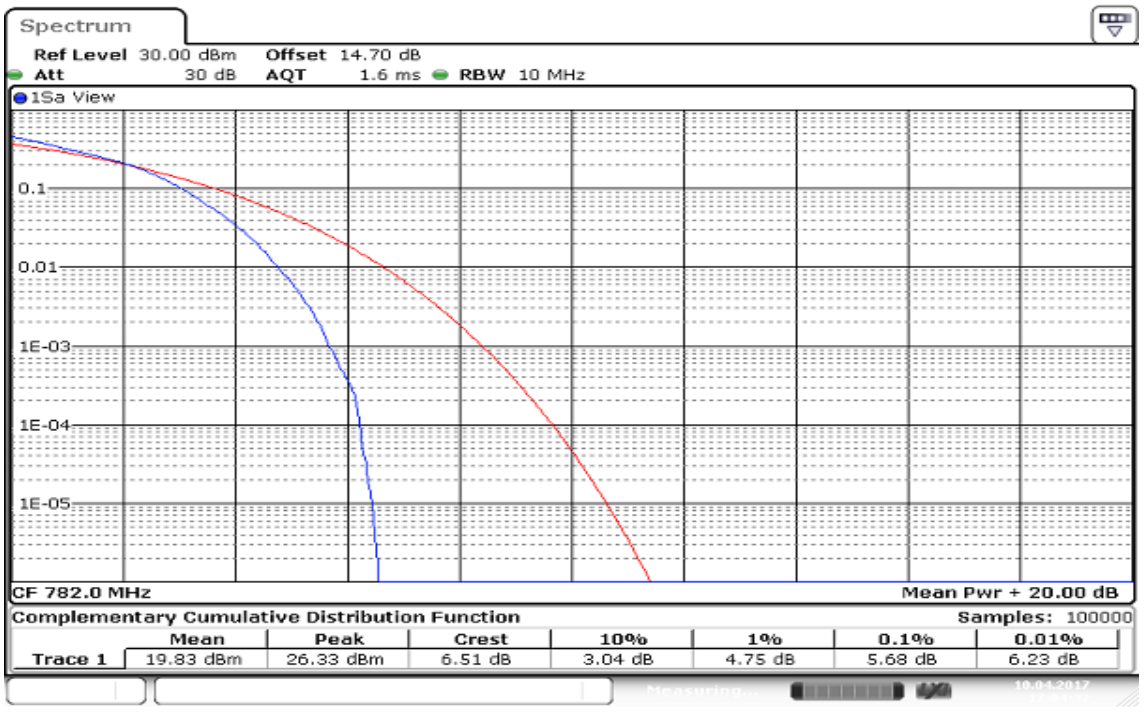
Date: 10.APR.2017 17:03:45

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB



Date: 10.APR.2017 17:05:08

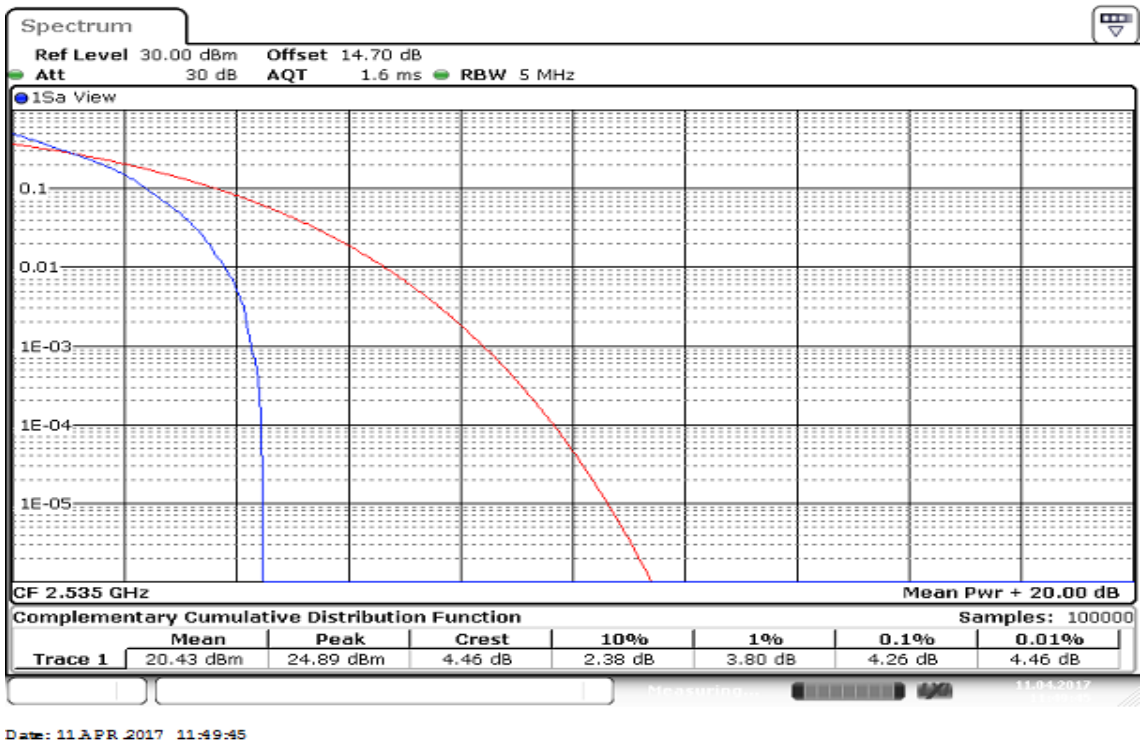
CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB



Date: 10.APR.2017 17:04:32

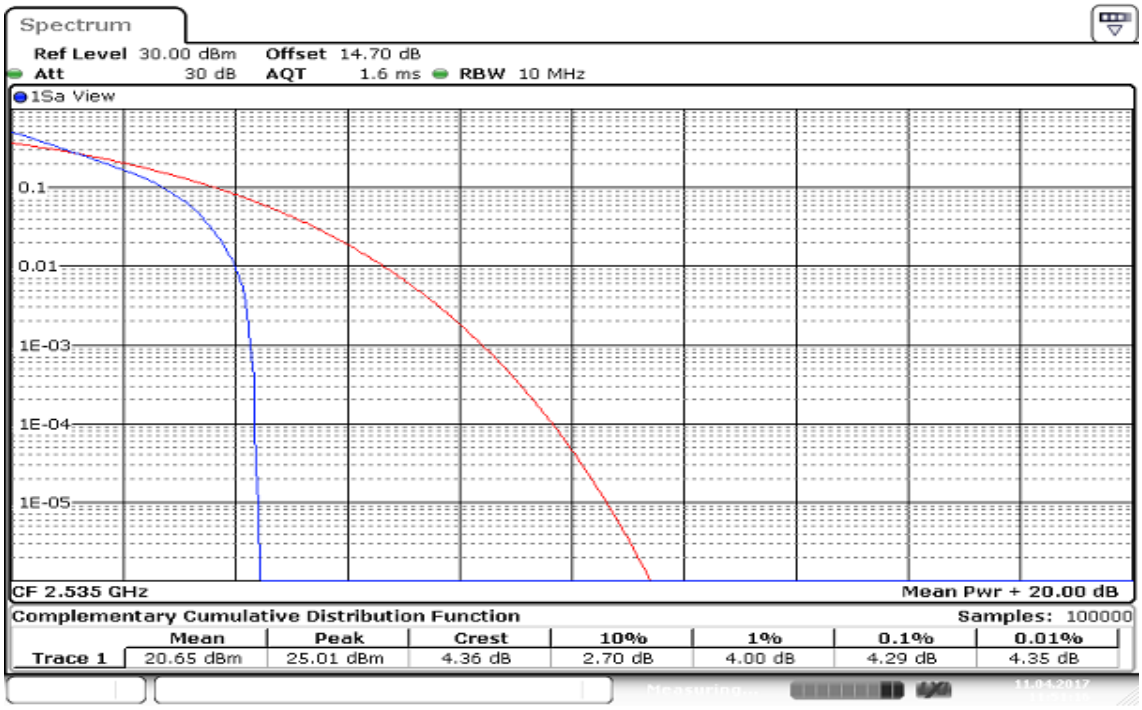
LTE Band 7

CHANNEL BANDWIDTH: 5MHz / QPSK/1RB



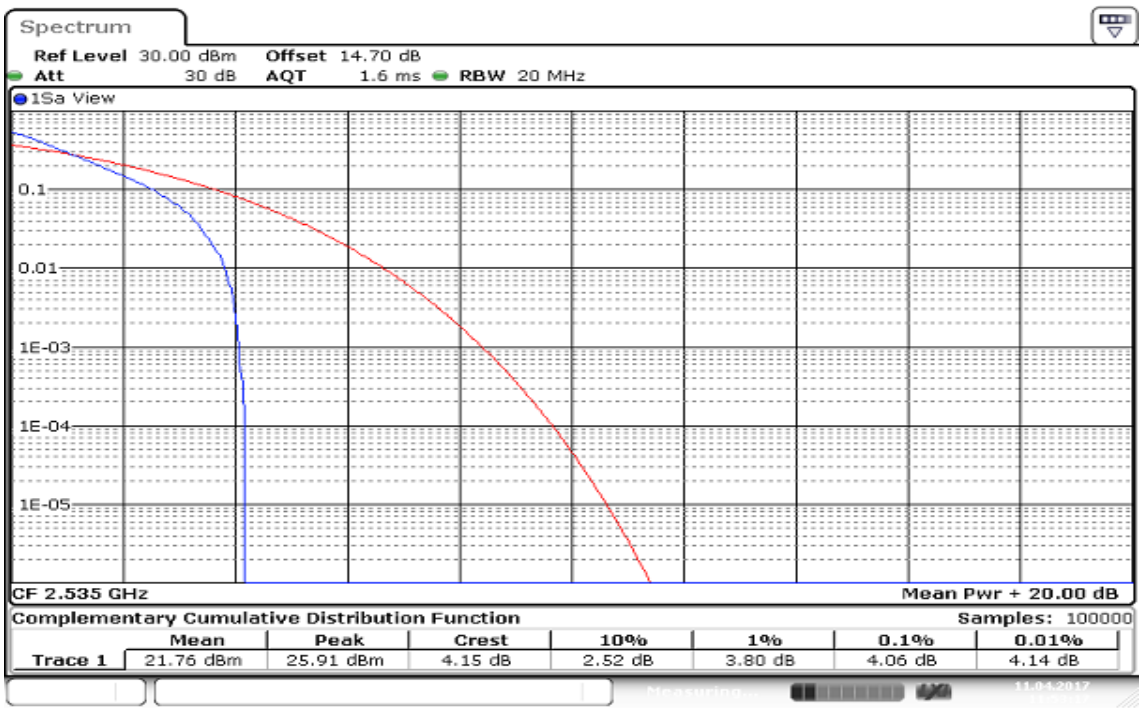
Date: 11.APR.2017 11:49:45

CHANNEL BANDWIDTH: 10MHz / QPSK /1RB



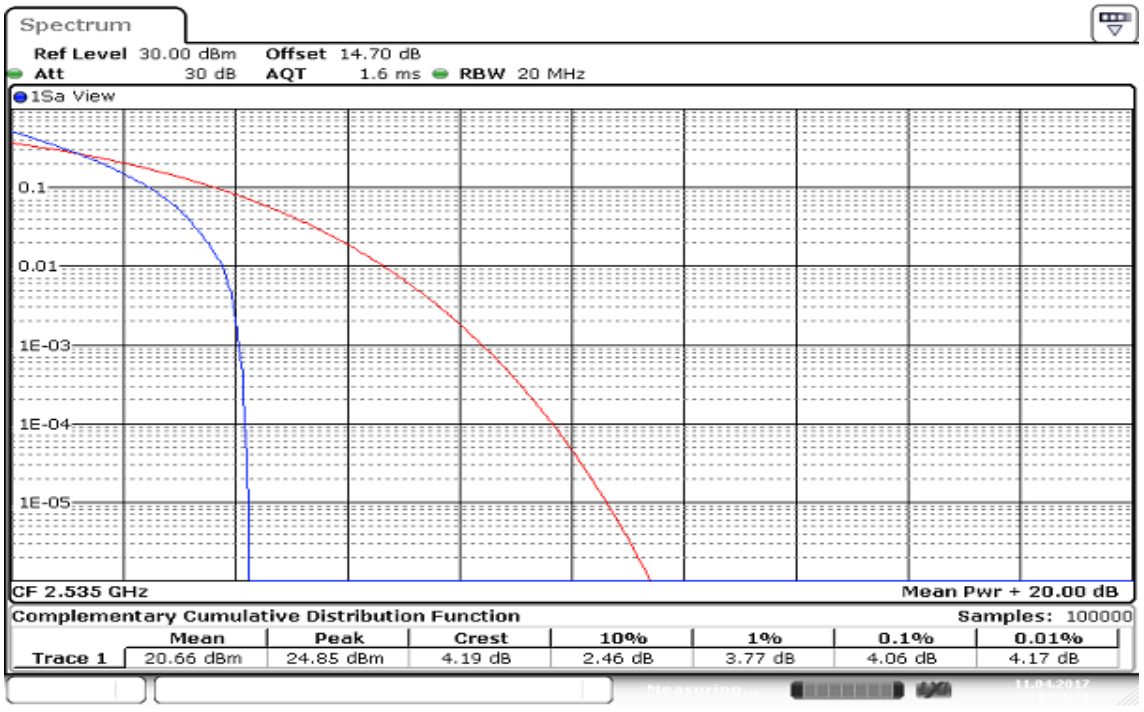
Date: 11.APR.2017 11:51:17

CHANNEL BANDWIDTH: 15MHz / QPSK/1RB



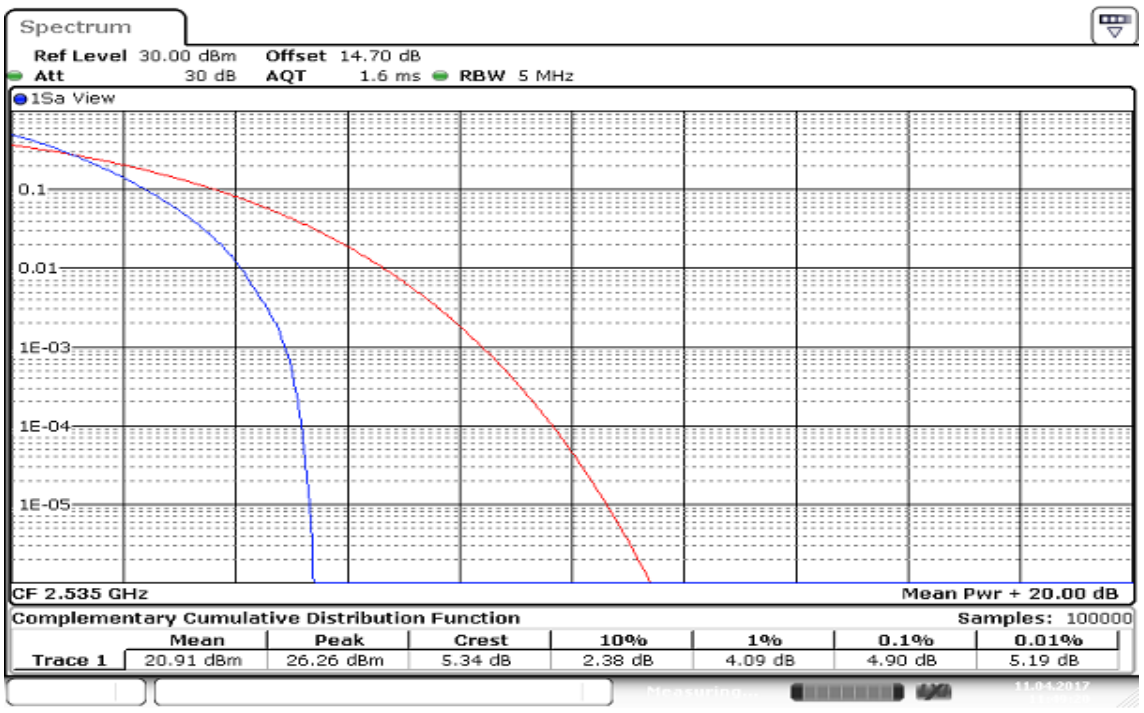
Date: 11.APR.2017 11:53:17

CHANNEL BANDWIDTH: 20MHz / QPSK /1RB



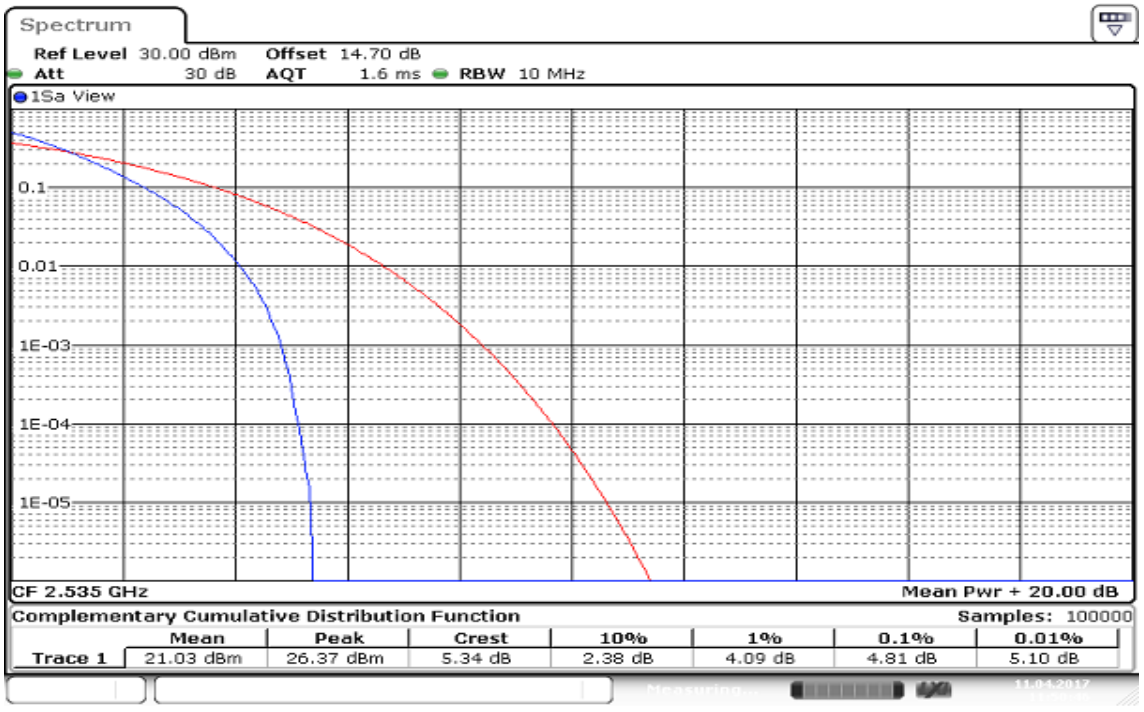
Date: 11.APR.2017 11:54:32

CHANNEL BANDWIDTH: 5MHz / QPSK/100%RB



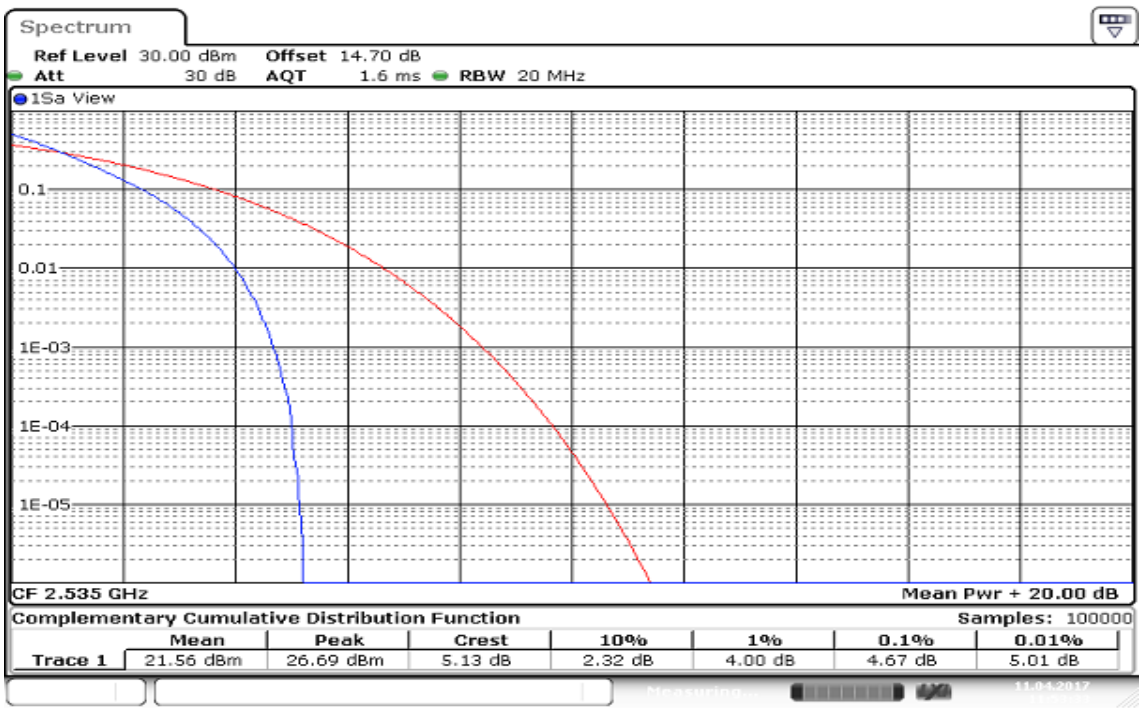
Date: 11.APR.2017 11:49:20

CHANNEL BANDWIDTH: 10MHz / QPSK /100%RB



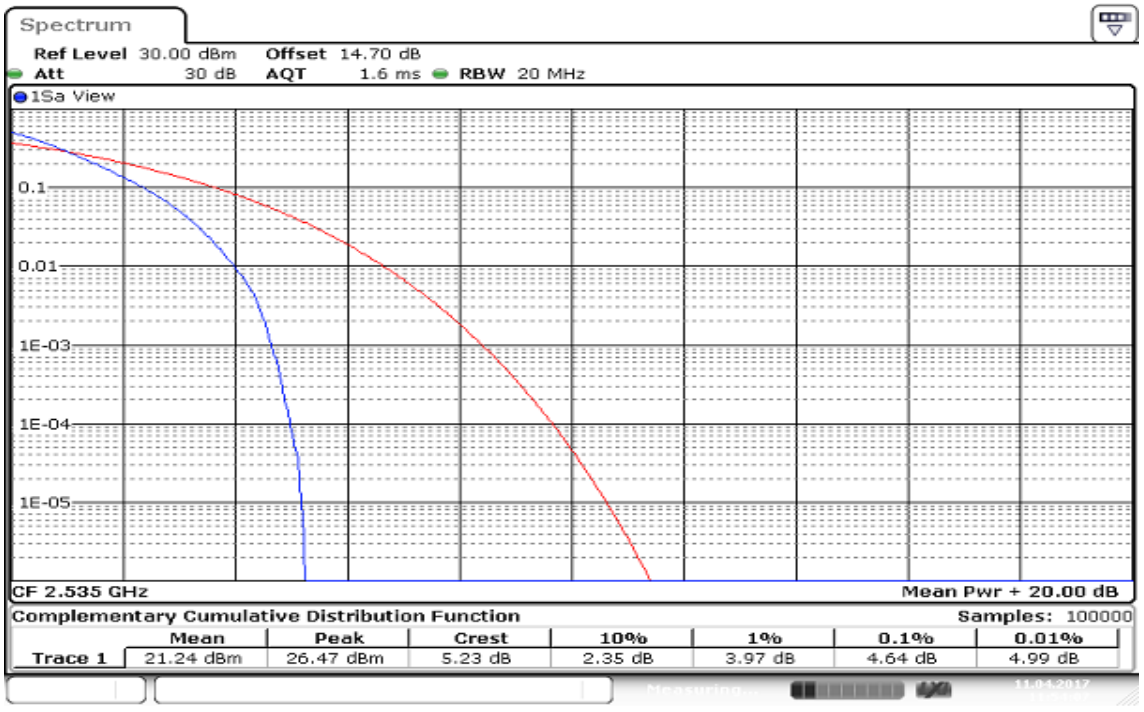
Date: 11.APR.2017 11:50:46

CHANNEL BANDWIDTH: 15MHz / QPSK/100%RB



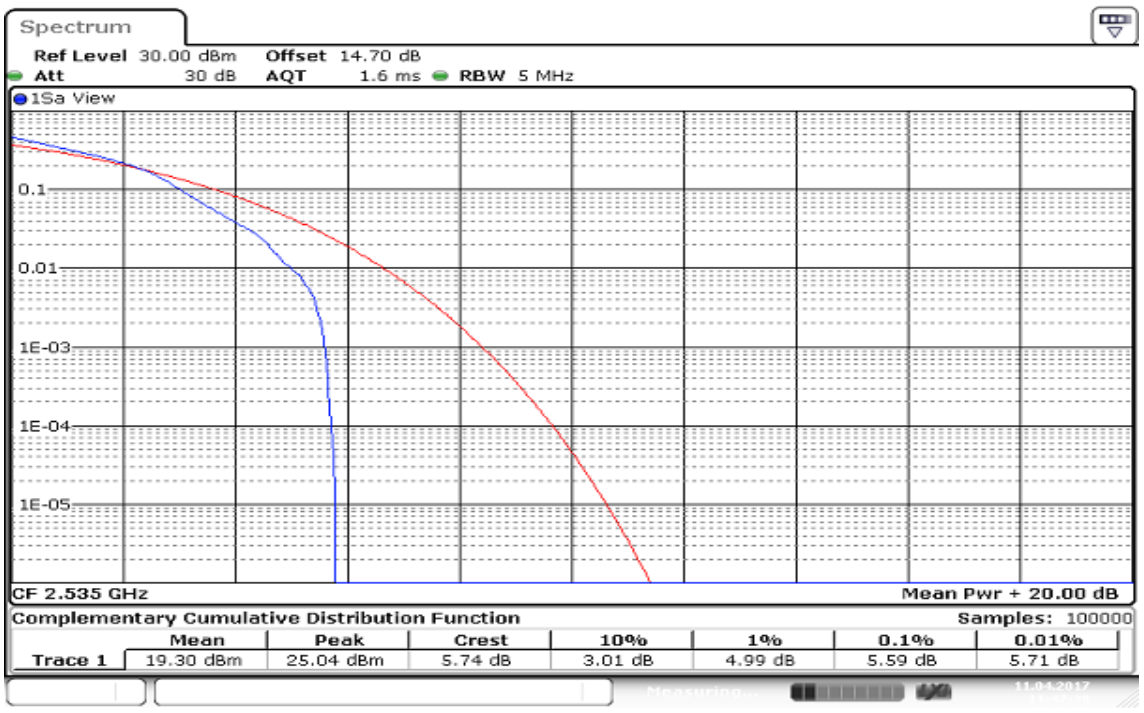
Date: 11.APR.2017 11:53:33

CHANNEL BANDWIDTH: 20MHz / QPSK /100%RB



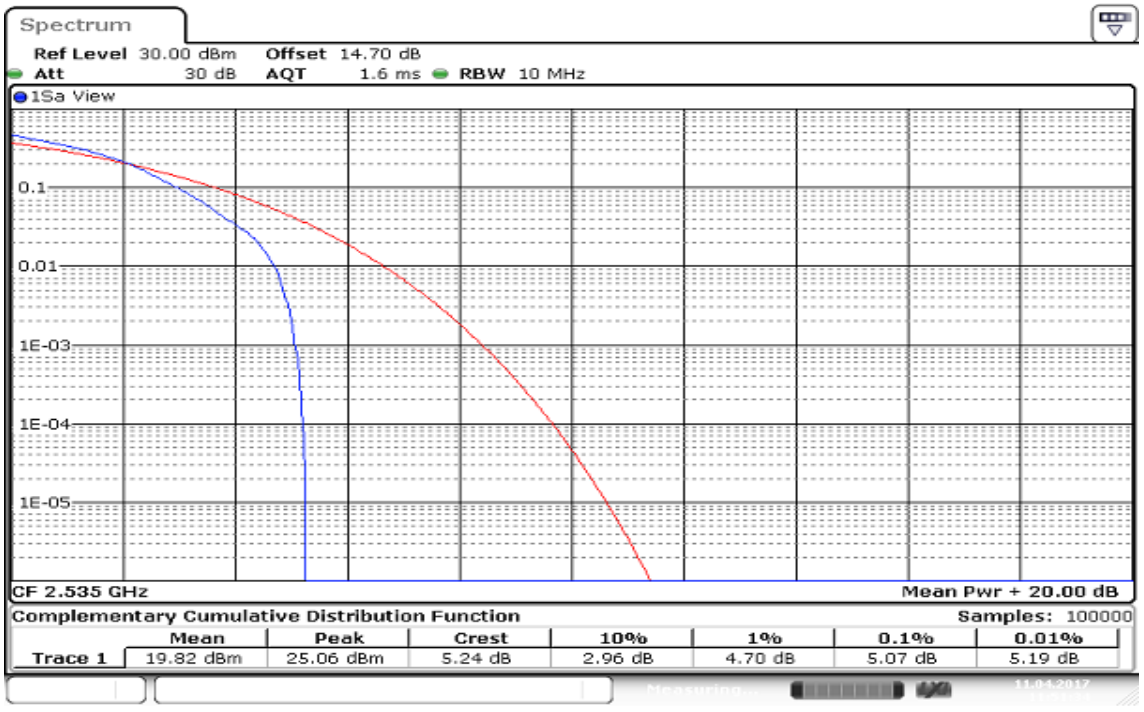
Date: 11.APR.2017 11:54:07

CHANNEL BANDWIDTH: 5MHz / 16QAM /1RB



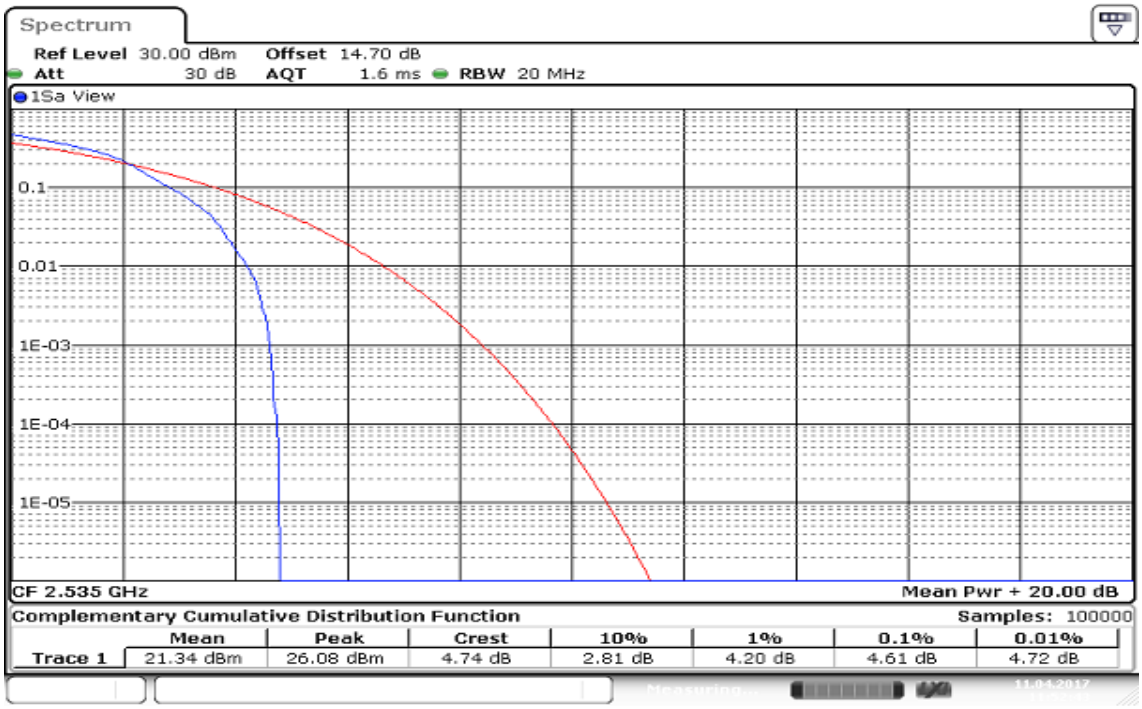
Date: 11.APR.2017 11:47:38

CHANNEL BANDWIDTH: 10MHz / 16QAM /1RB



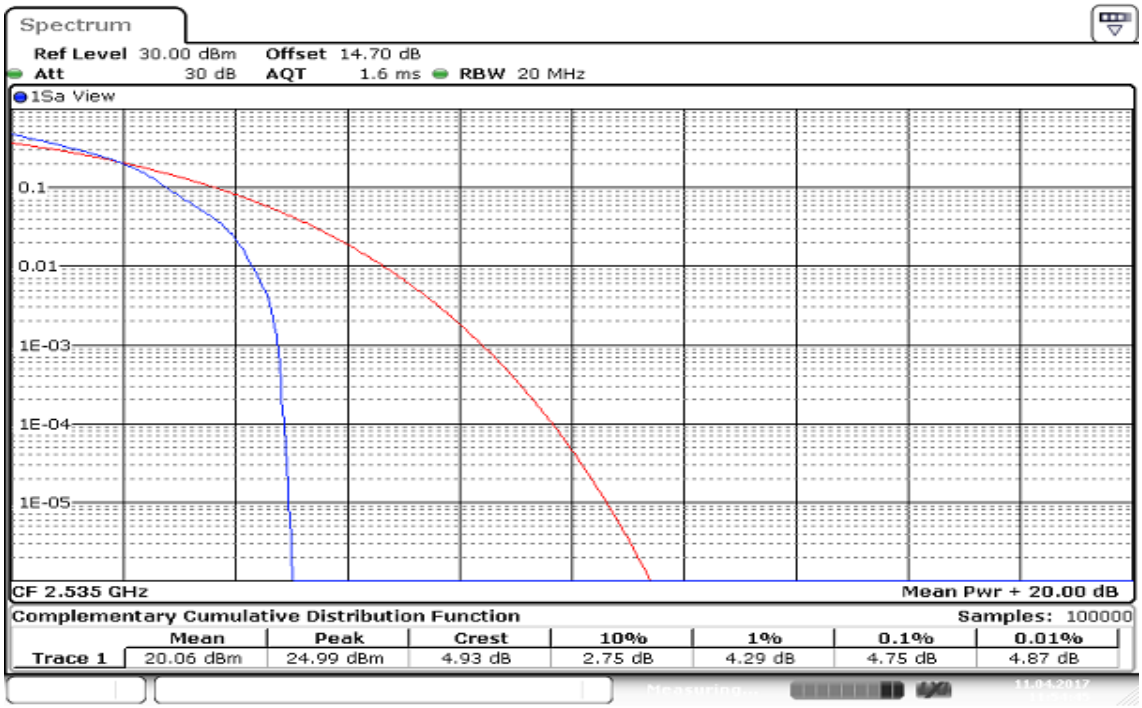
Date: 11.APR.2017 11:51:34

CHANNEL BANDWIDTH: 15MHz / 16QAM /1RB



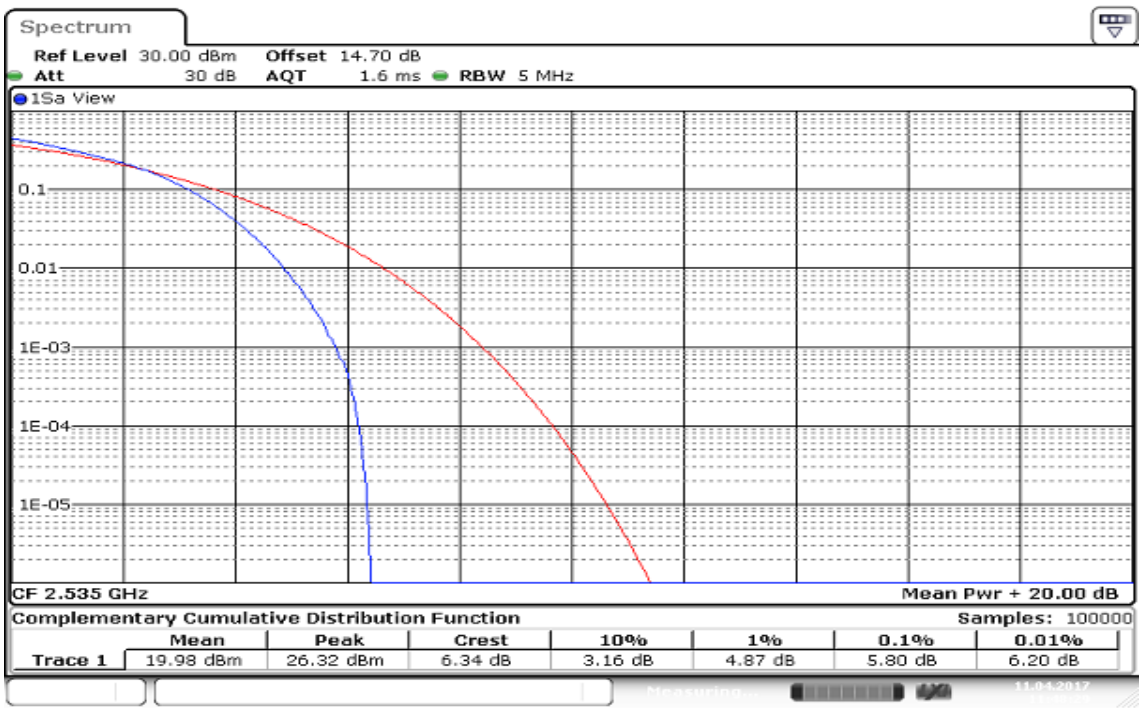
Date: 11.APR.2017 11:52:43

CHANNEL BANDWIDTH: 20MHz / 16QAM /1RB



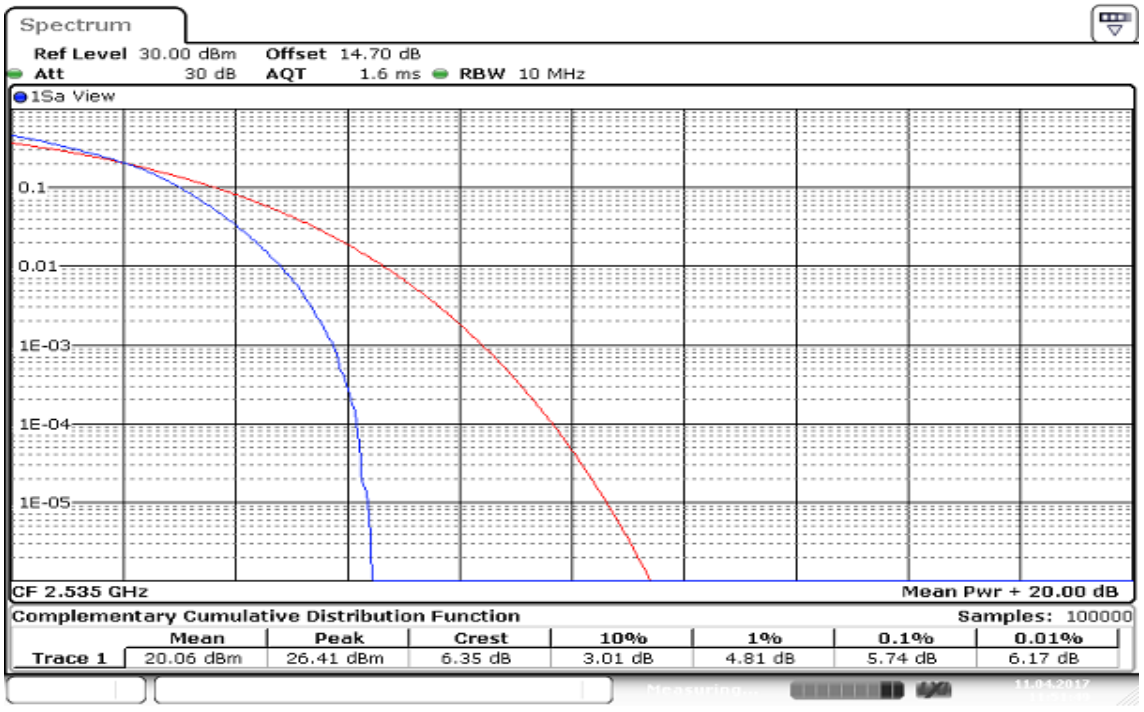
Date: 11.APR.2017 11:54:46

CHANNEL BANDWIDTH: 5MHz / 16QAM /100%RB



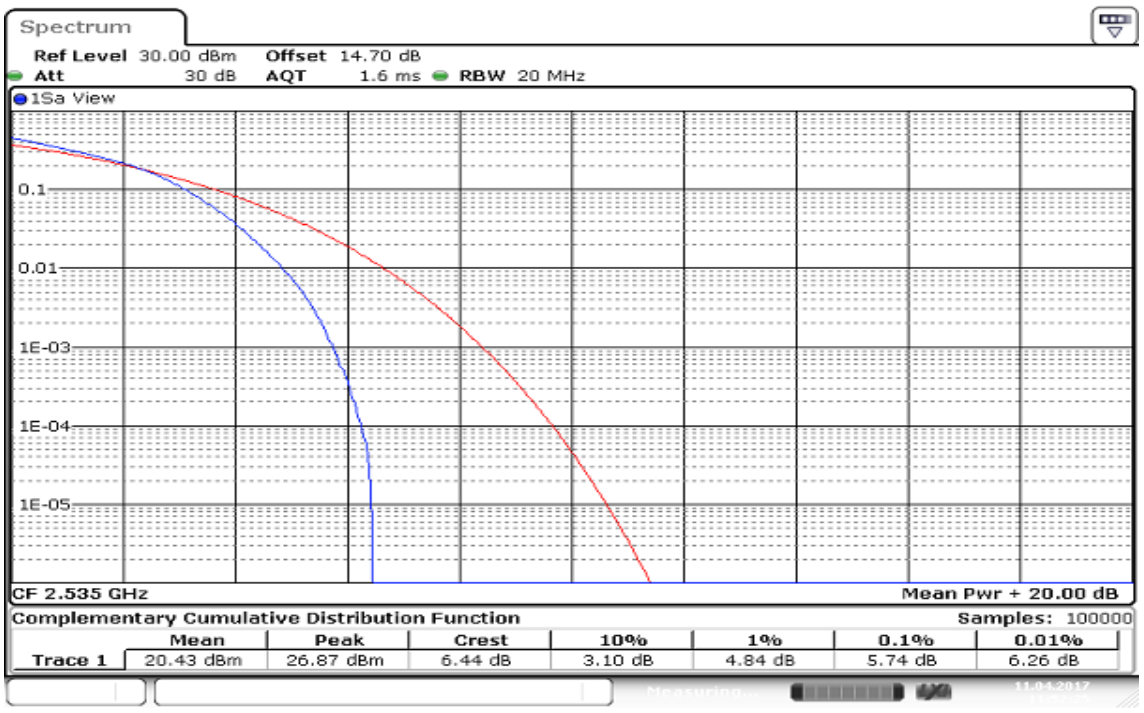
Date: 11.APR.2017 11:48:30

CHANNEL BANDWIDTH: 10MHz / 16QAM /100%RB



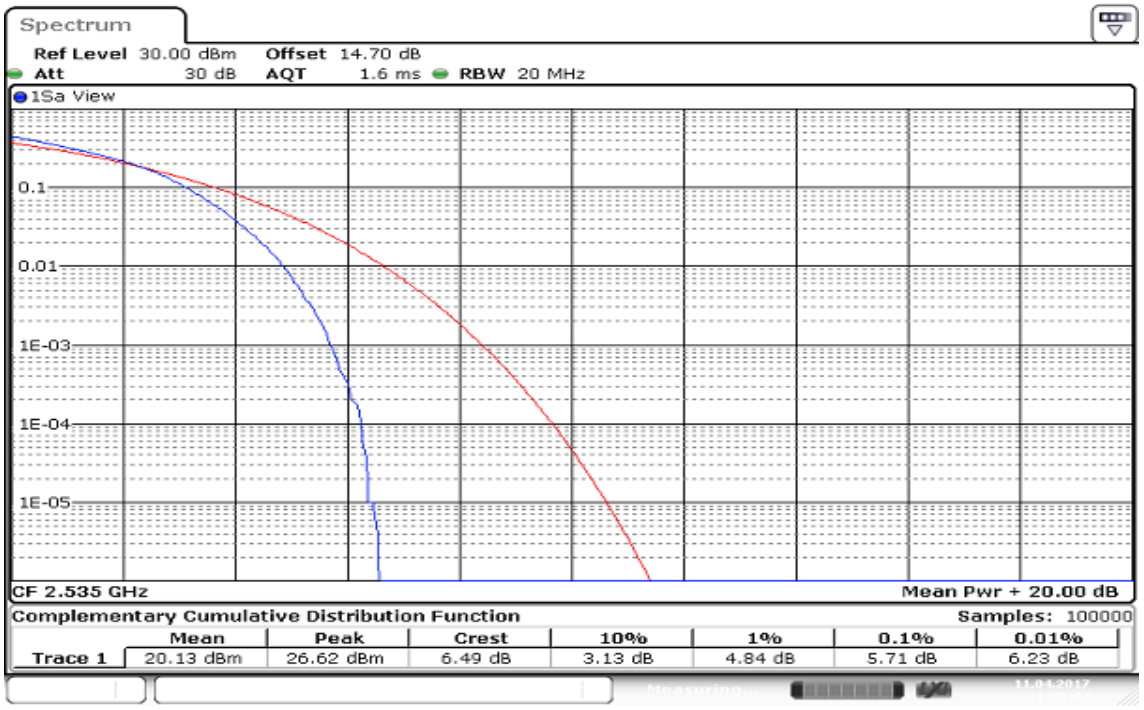
Date: 11.APR.2017 11:51:50

CHANNEL BANDWIDTH: 15MHz / 16QAM /100%RB



Date: 11.APR.2017 11:52:25

CHANNEL BANDWIDTH: 20MHz / 16QAM /100%RB



Date: 11.APR.2017 11:55:05

7.6 BAND EDGE MEASUREMENT

LIMIT

27.53c(2) Band 13
On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

Part 27.53(m) (4), Band 7
Specifies that "for BRS and EBS stations. For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

According to RSS-130, Band 13,
The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log10 p (watts), dB. However, in the100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

According to RSS-199, Band 7
For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log10 p at or below 2490.5 MHz.

p is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

TEST PROCEDURES

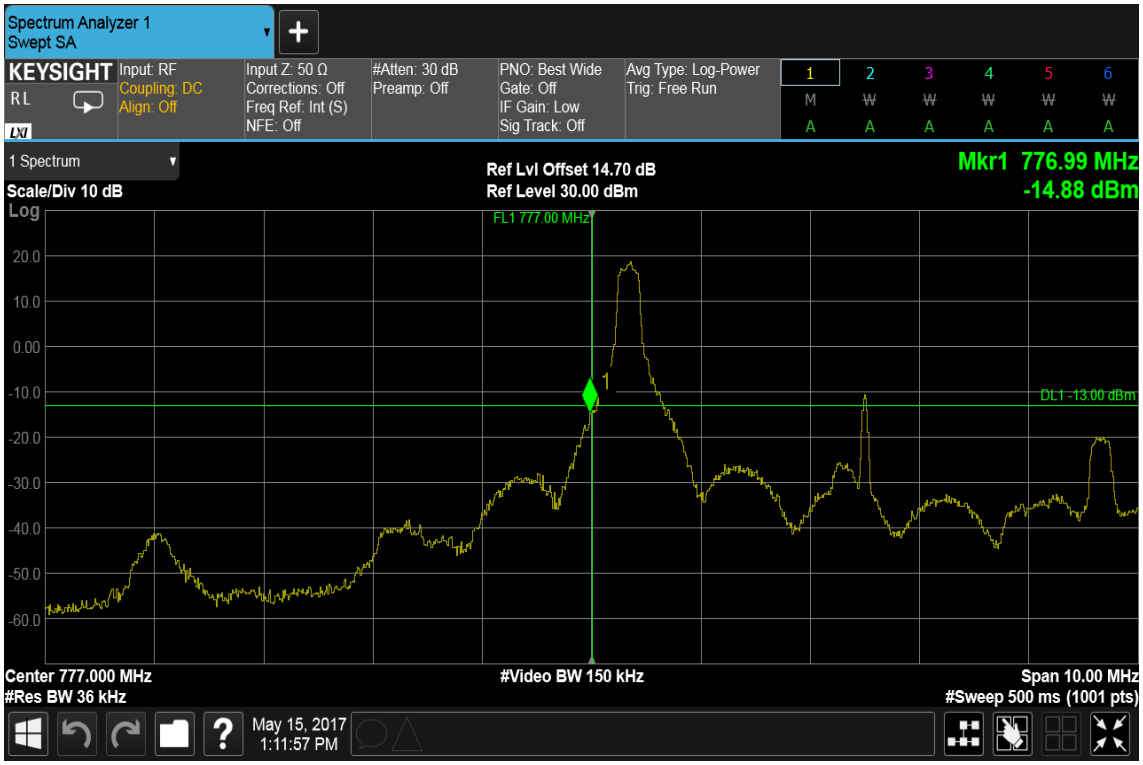
KDB 971168 v02r02 - Section 6.0
1. RBW ≥ 1% of the emission bandwidth
2. VBW ≥ 3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

TEST RESULTS:

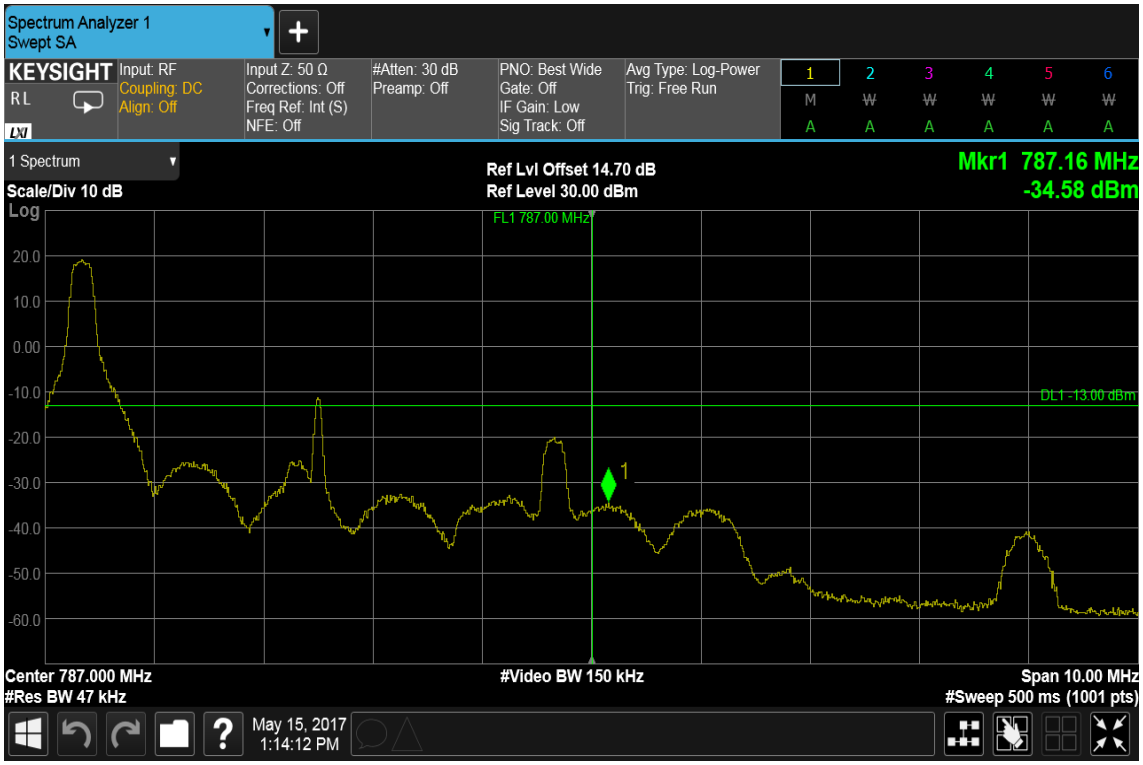
LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK / 1 RB ALLOCATED

LOWER BAND EDGE

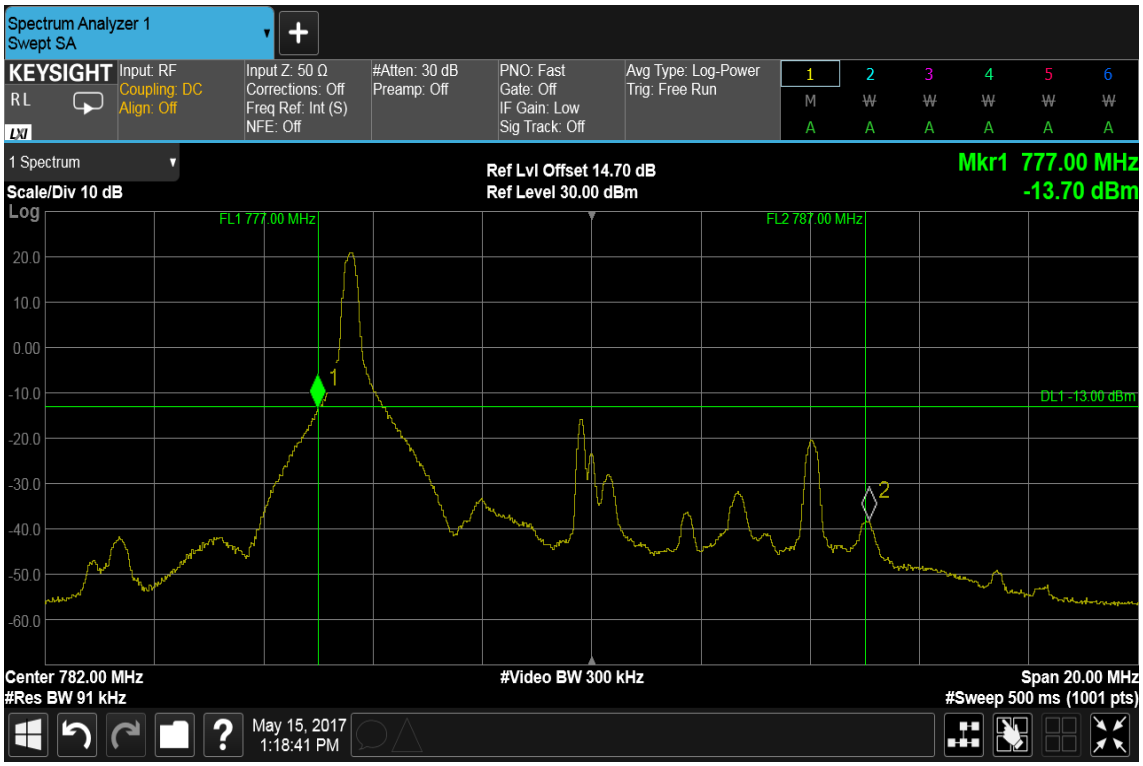


HIGHER BAND EDGE

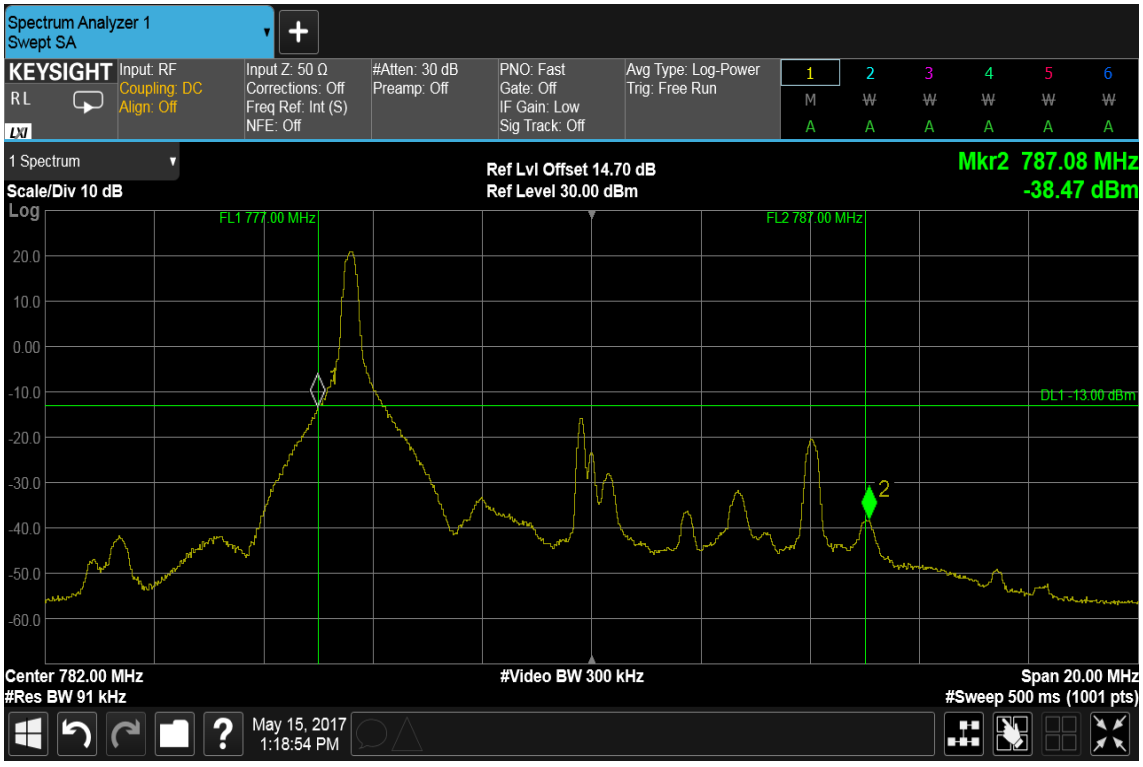


CHANNEL BANDWIDTH: 10MHz / QPSK / 1 RB ALLOCATED

LOWER BAND EDGE

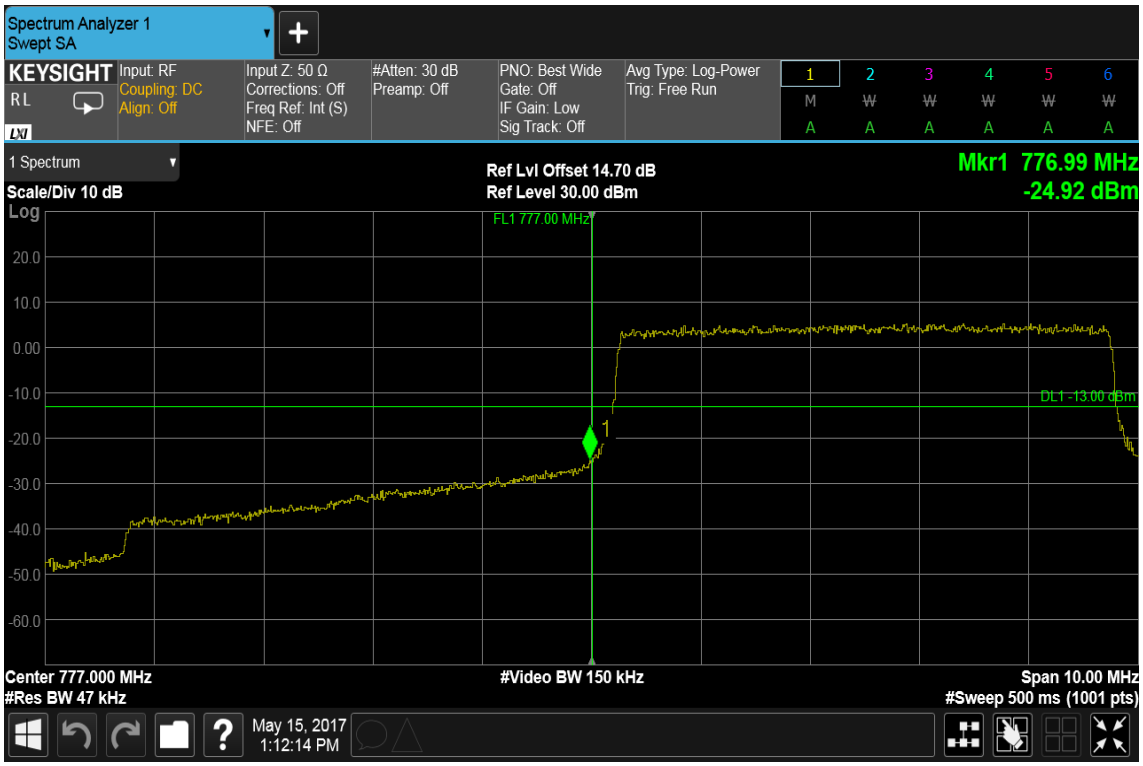


HIGHER BAND EDGE

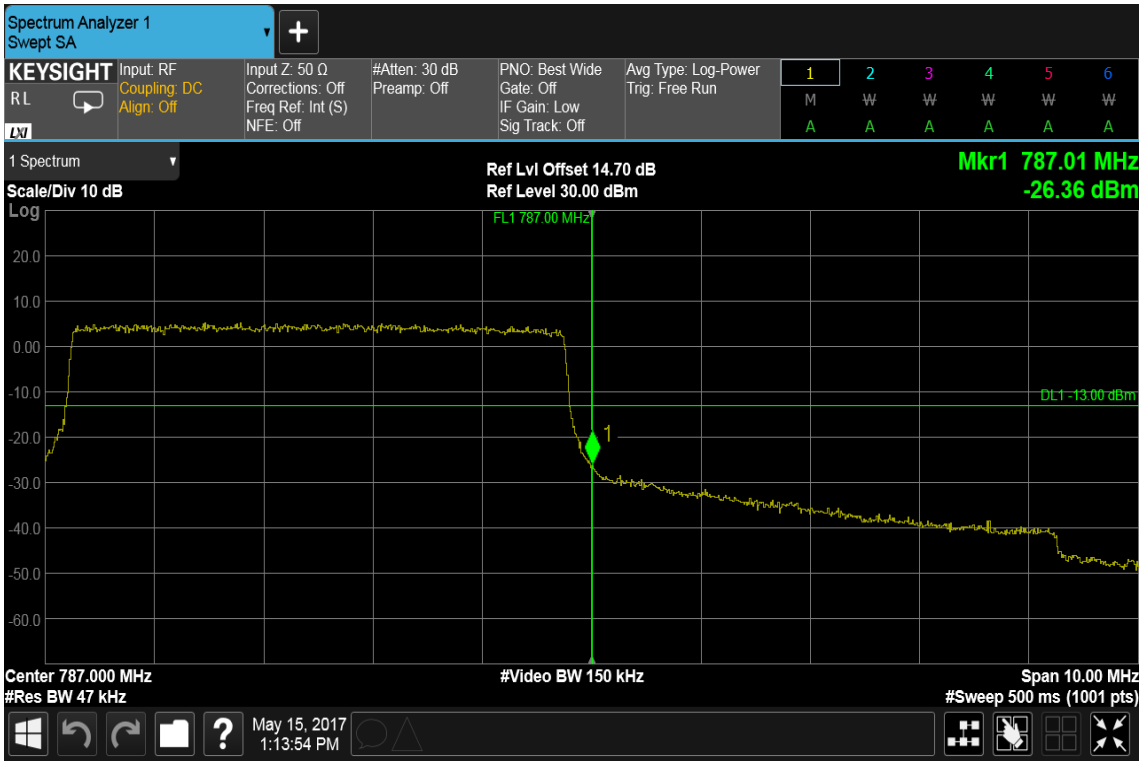


CHANNEL BANDWIDTH: 5MHz / QPSK / FULL RB ALLOCATED

LOWER BAND EDGE

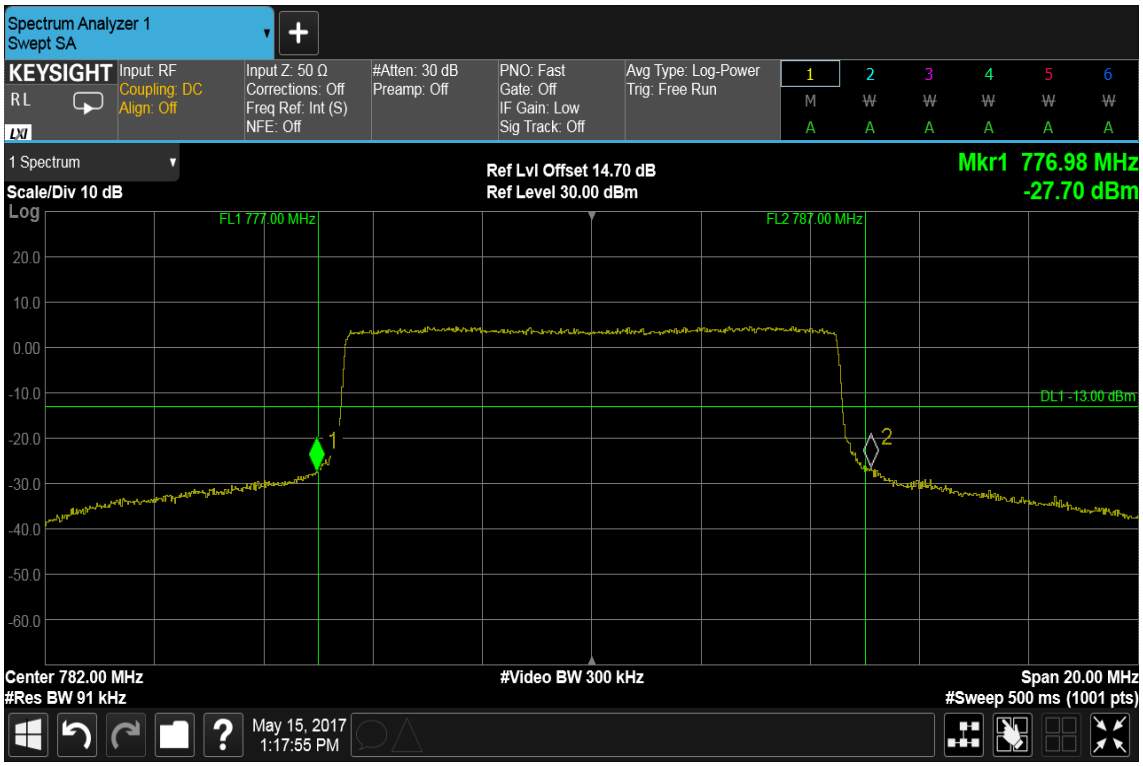


HIGHER BAND EDGE

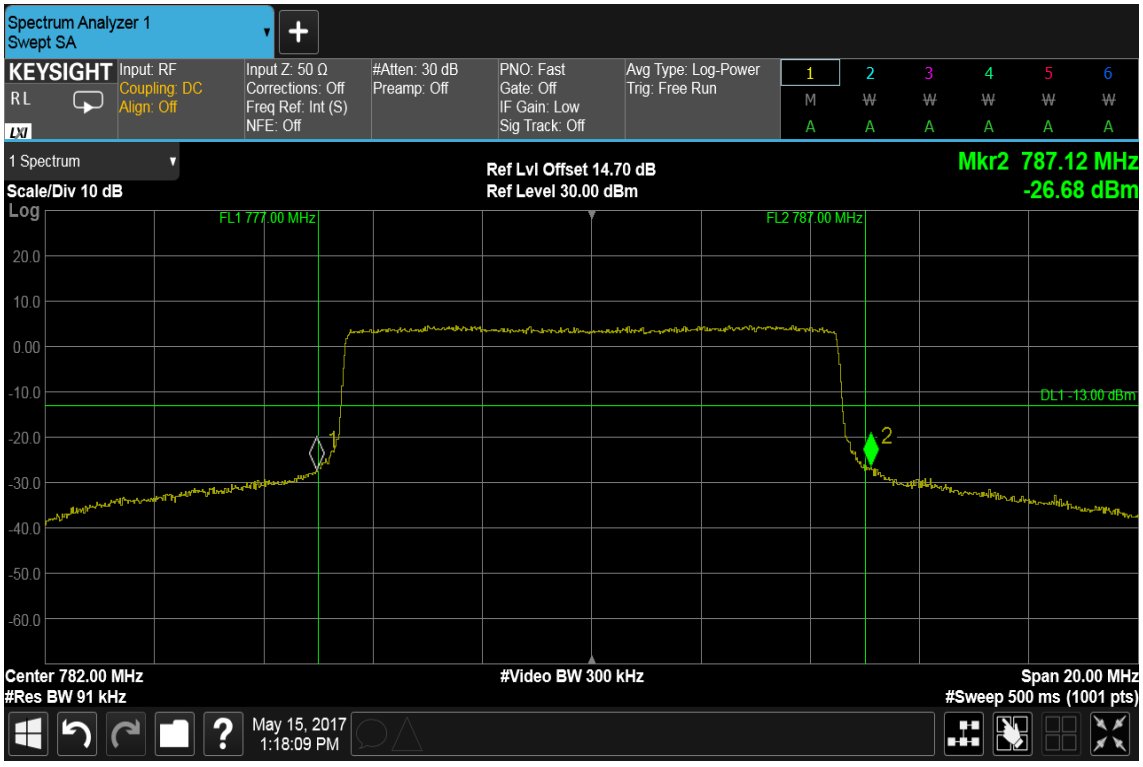


CHANNEL BANDWIDTH: 10MHz / QPSK / FULL RB ALLOCATED

LOWER BAND EDGE

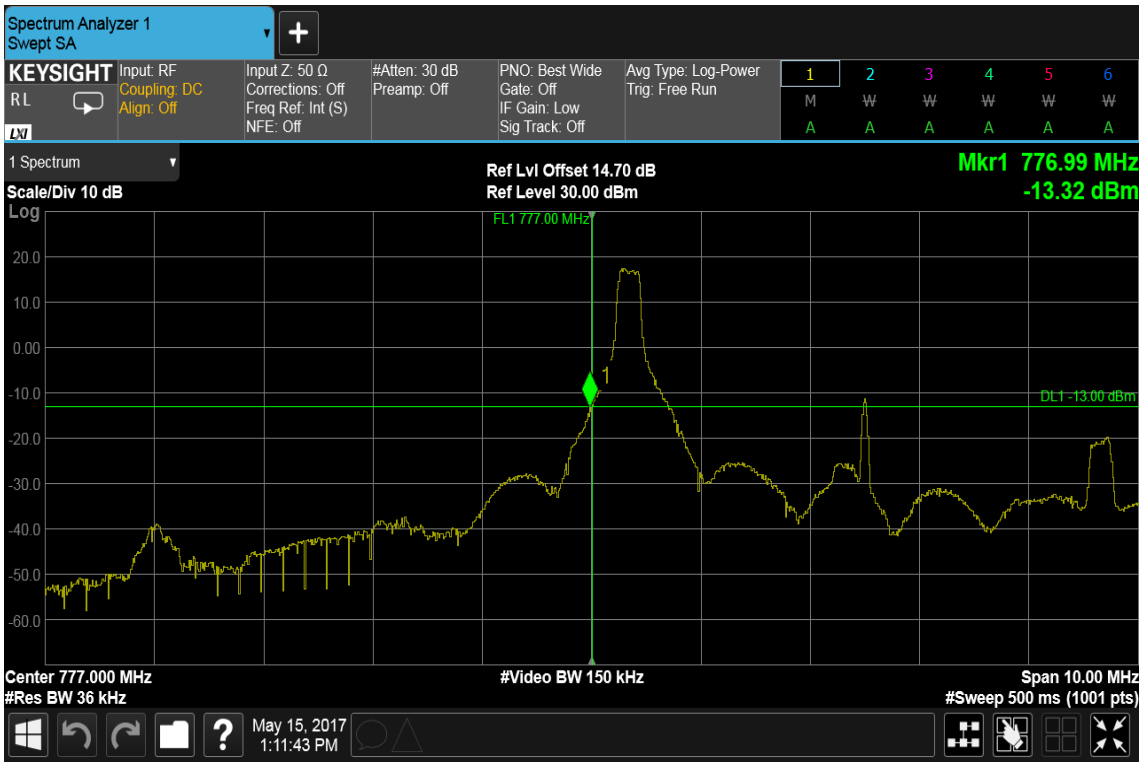


HIGHER BAND EDGE

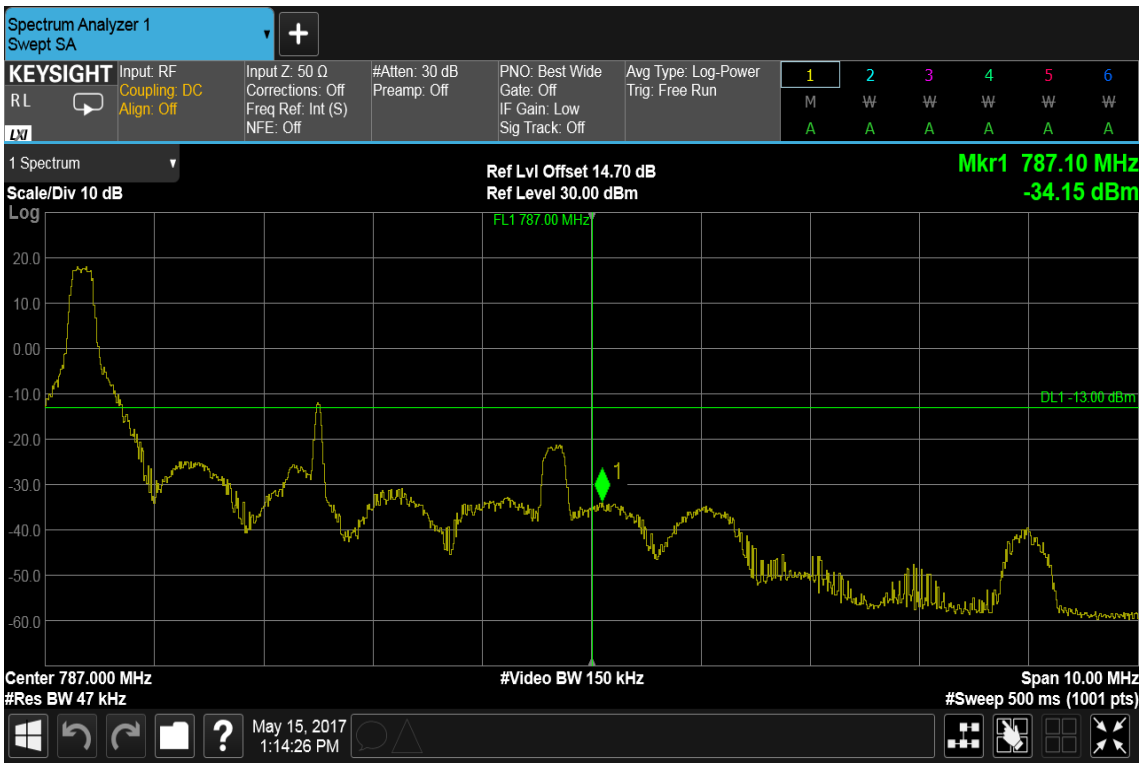


CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB ALLOCATED

LOWER BAND EDGE

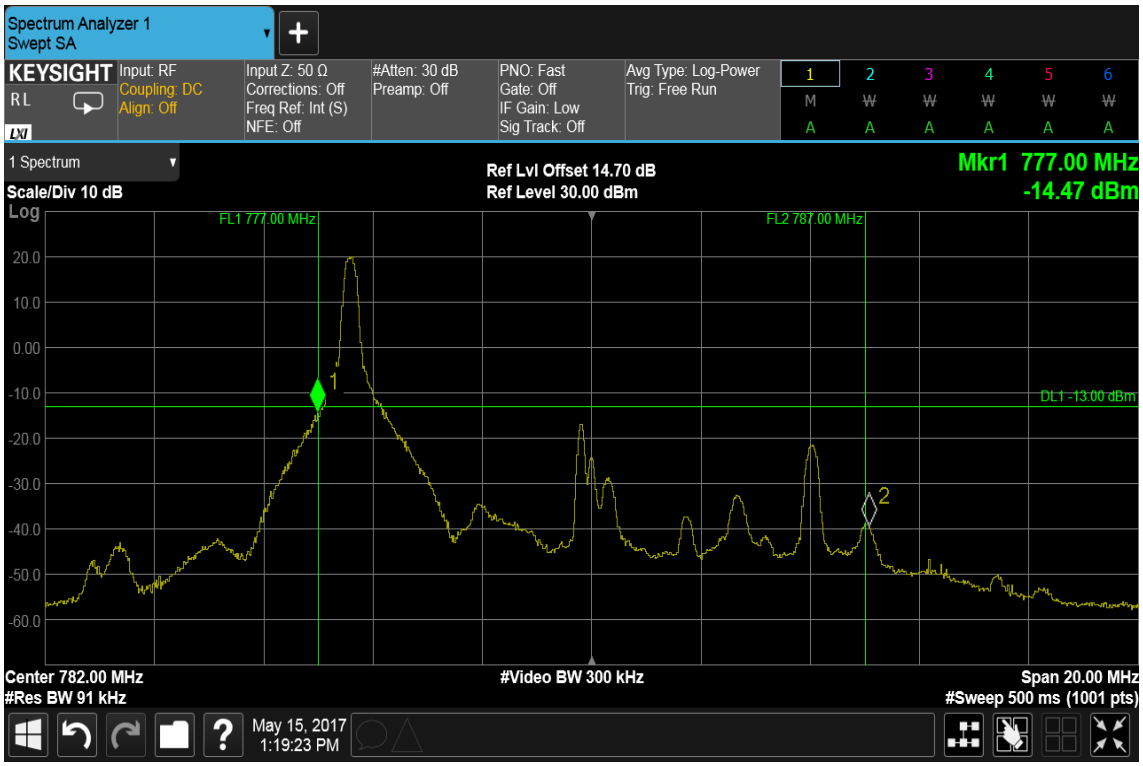


HIGHER BAND EDGE

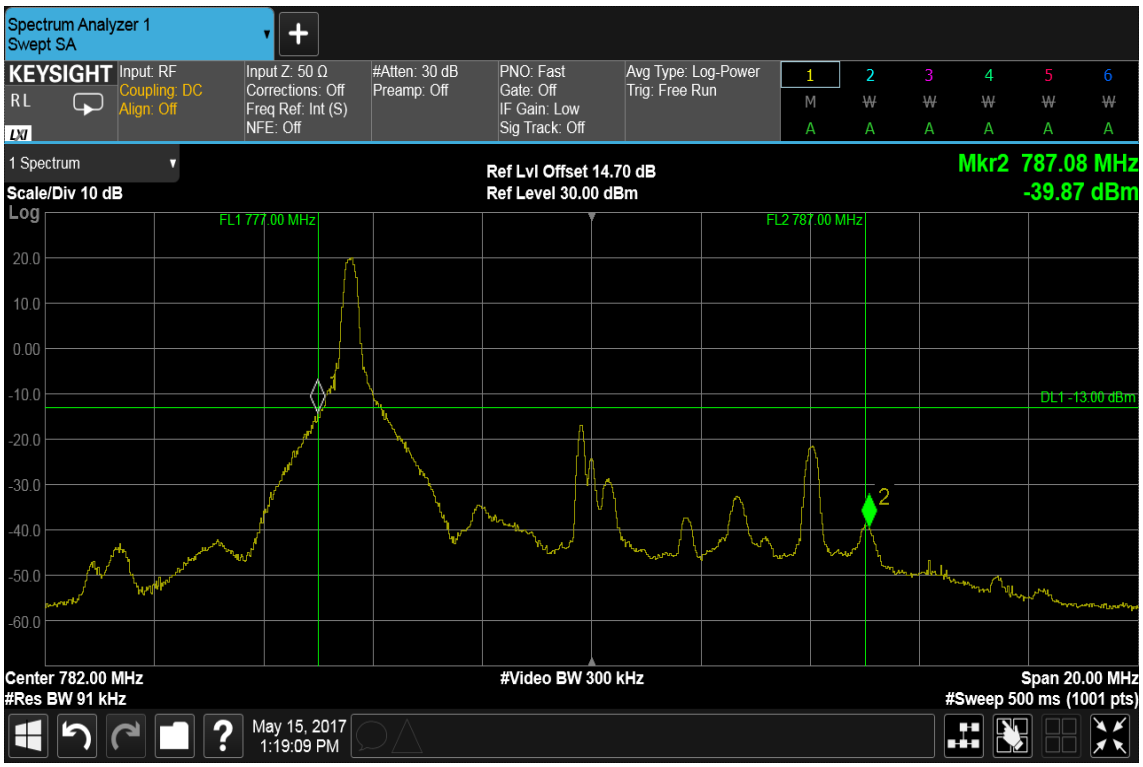


CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB ALLOCATED

LOWER BAND EDGE

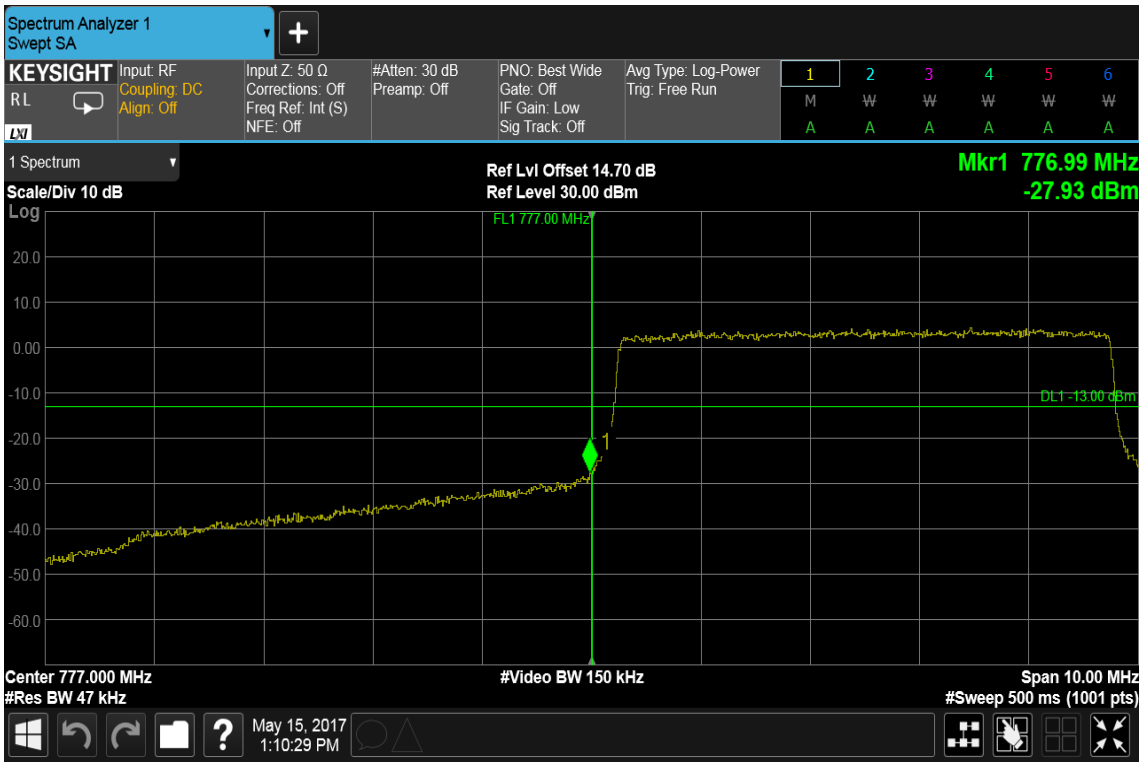


HIGHER BAND EDGE

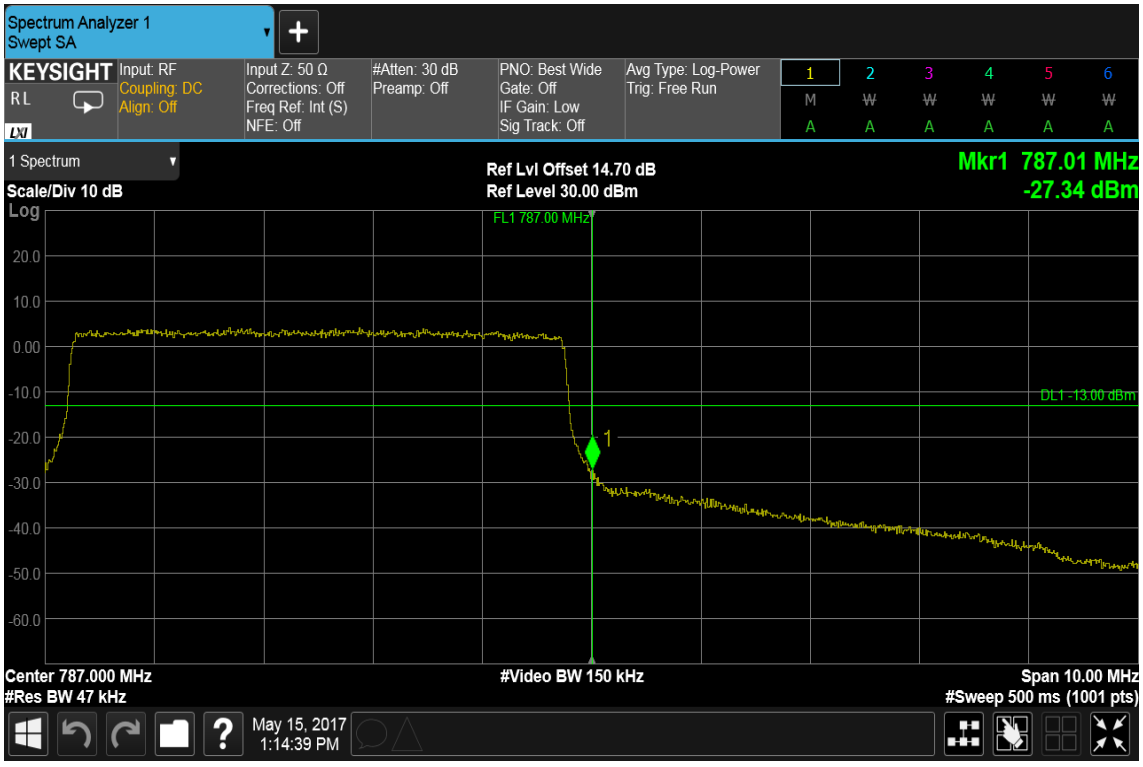


CHANNEL BANDWIDTH: 5MHz / 16QAM / FULLRB ALLOCATED

LOWER BAND EDGE

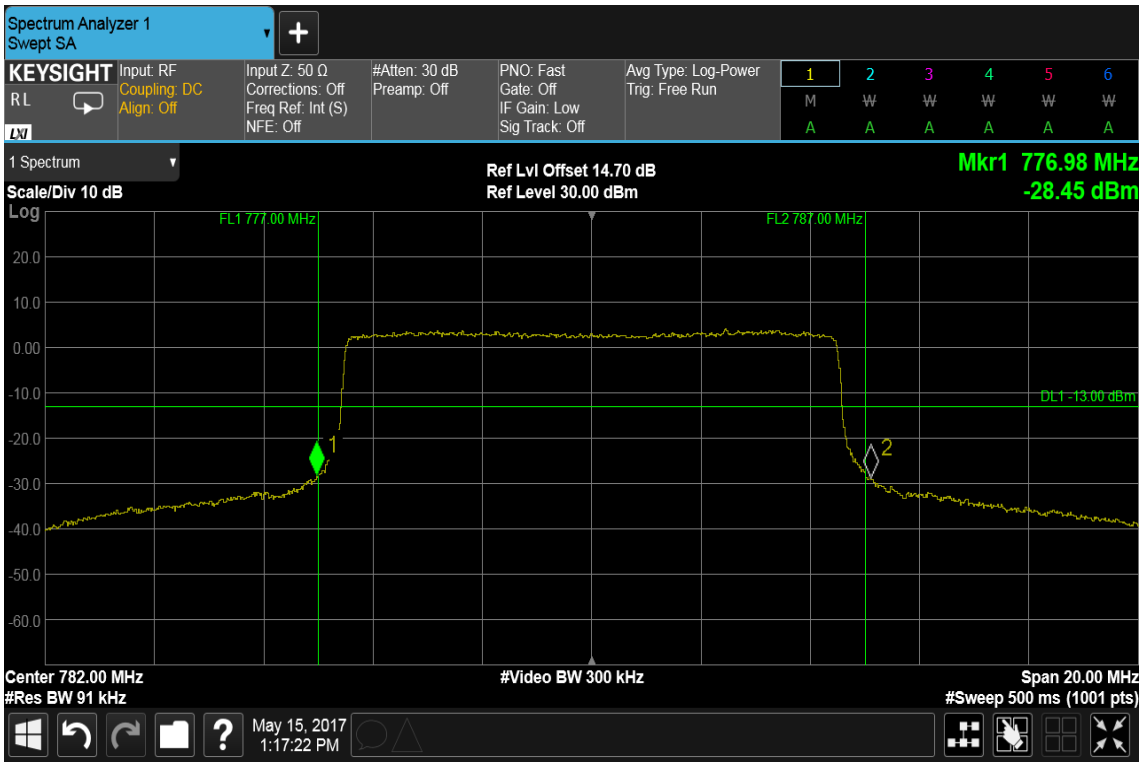


HIGHER BAND EDGE

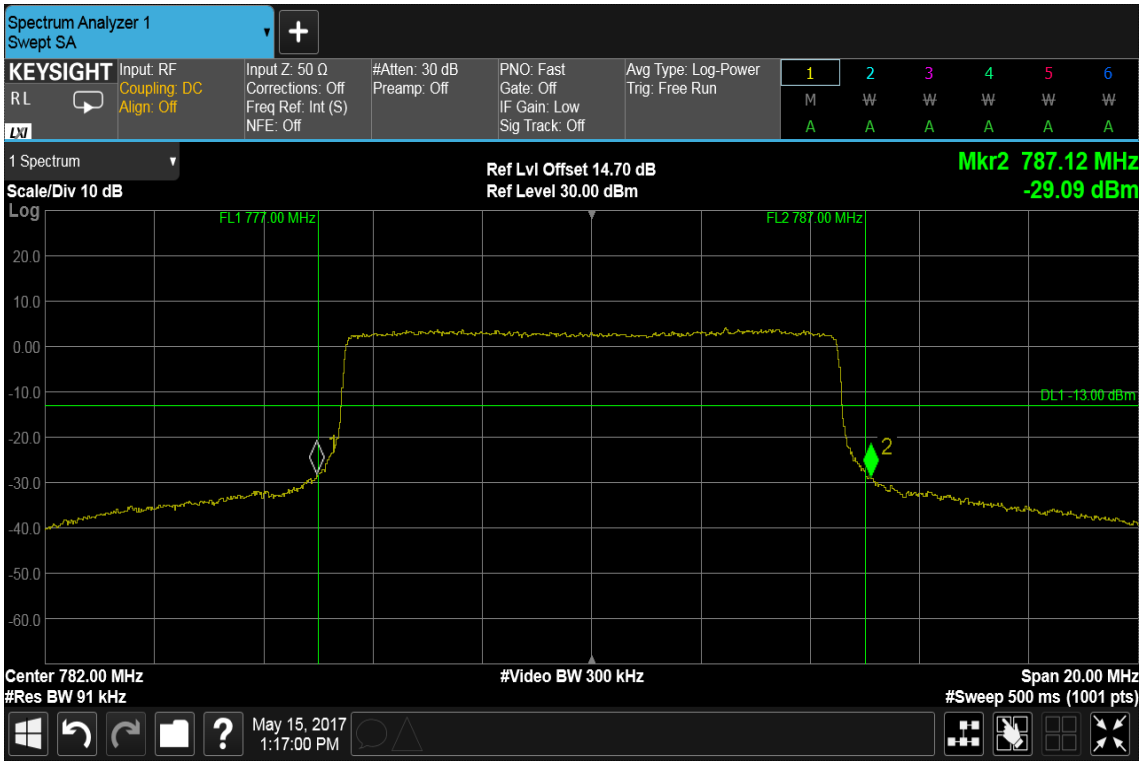


CHANNEL BANDWIDTH: 10MHz / 16QAM / FULLRB ALLOCATED

LOWER BAND EDGE



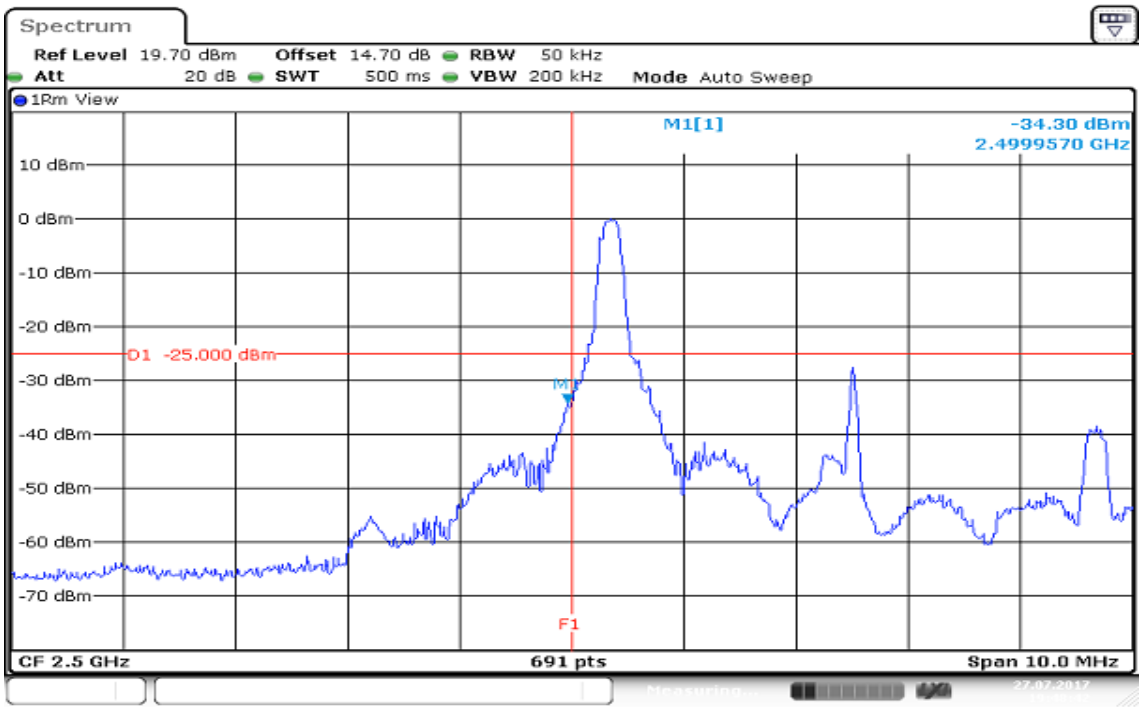
HIGHER BAND EDGE



LTE Band 7

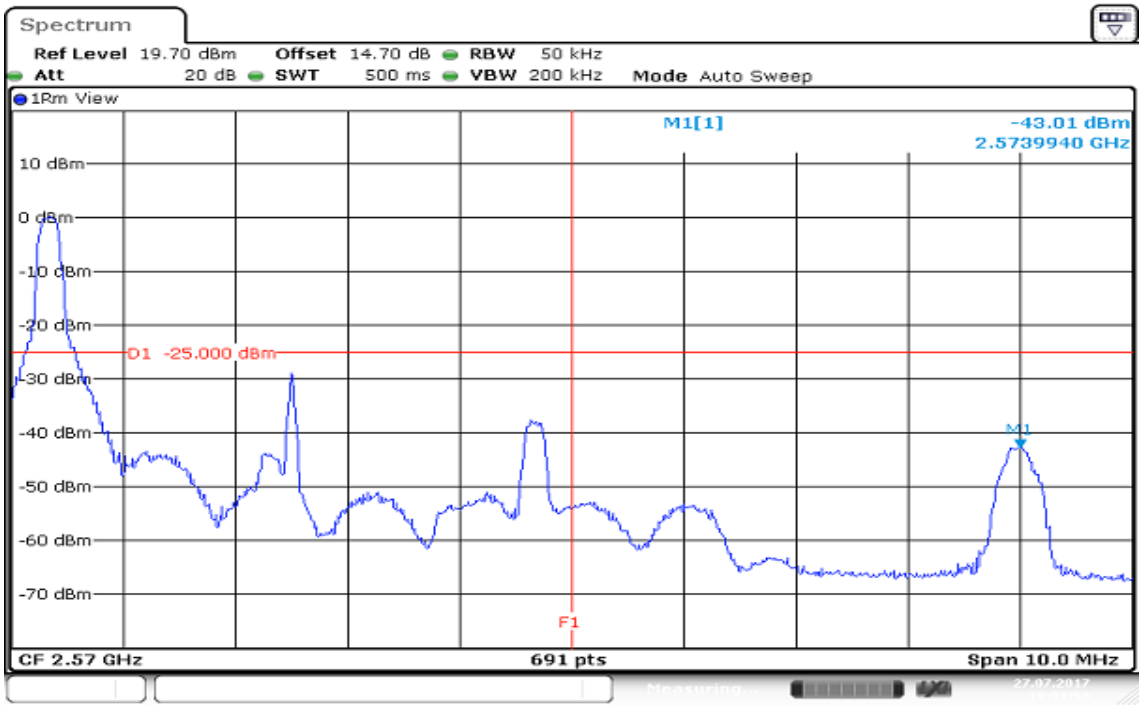
CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 19:48:42

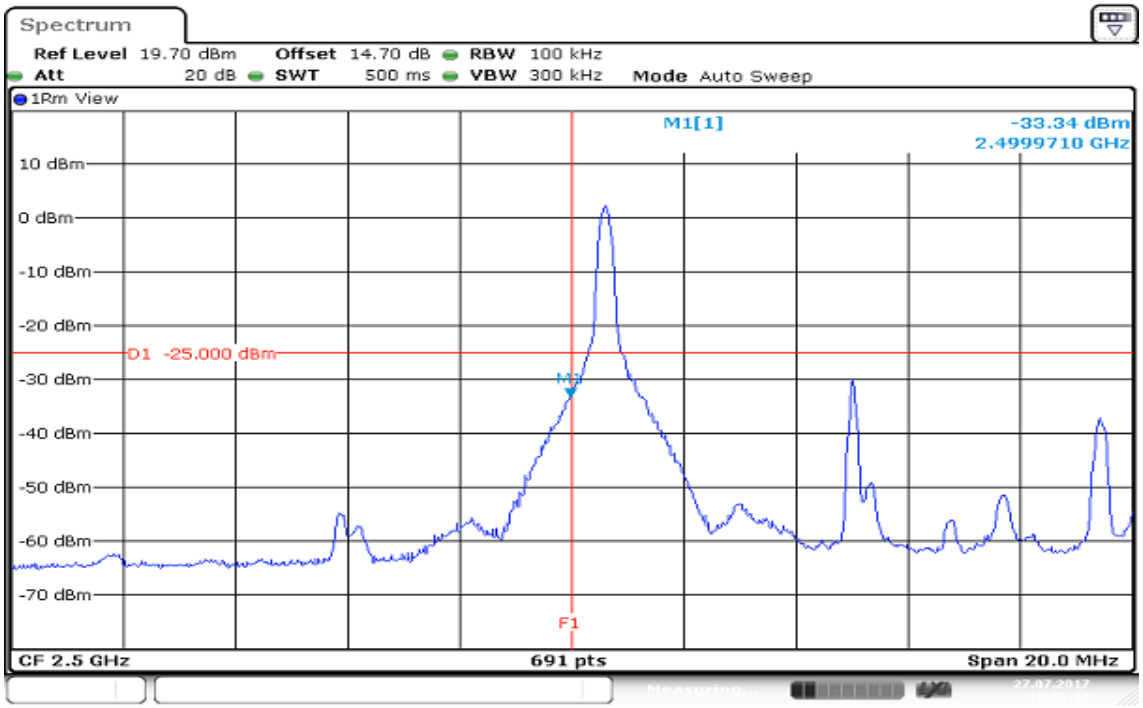
HIGHER BAND EDGE



Date: 27.JUL.2017 19:51:50

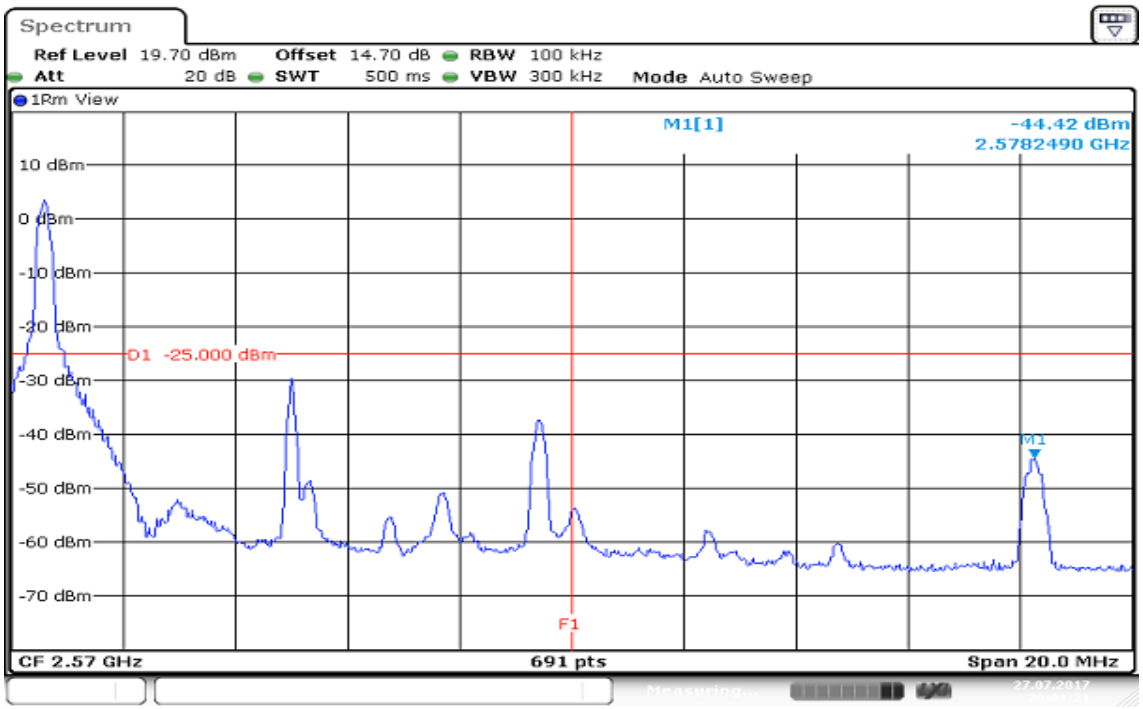
CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 19:56:17

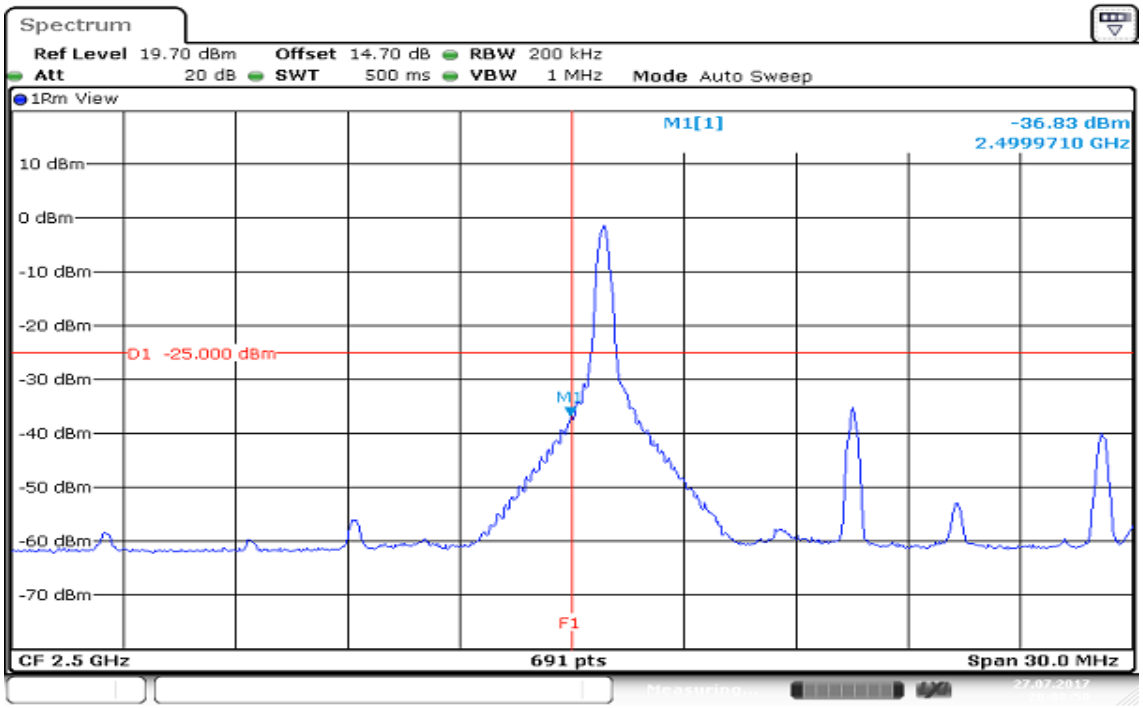
HIGHER BAND EDGE



Date: 27.JUL.2017 20:01:21

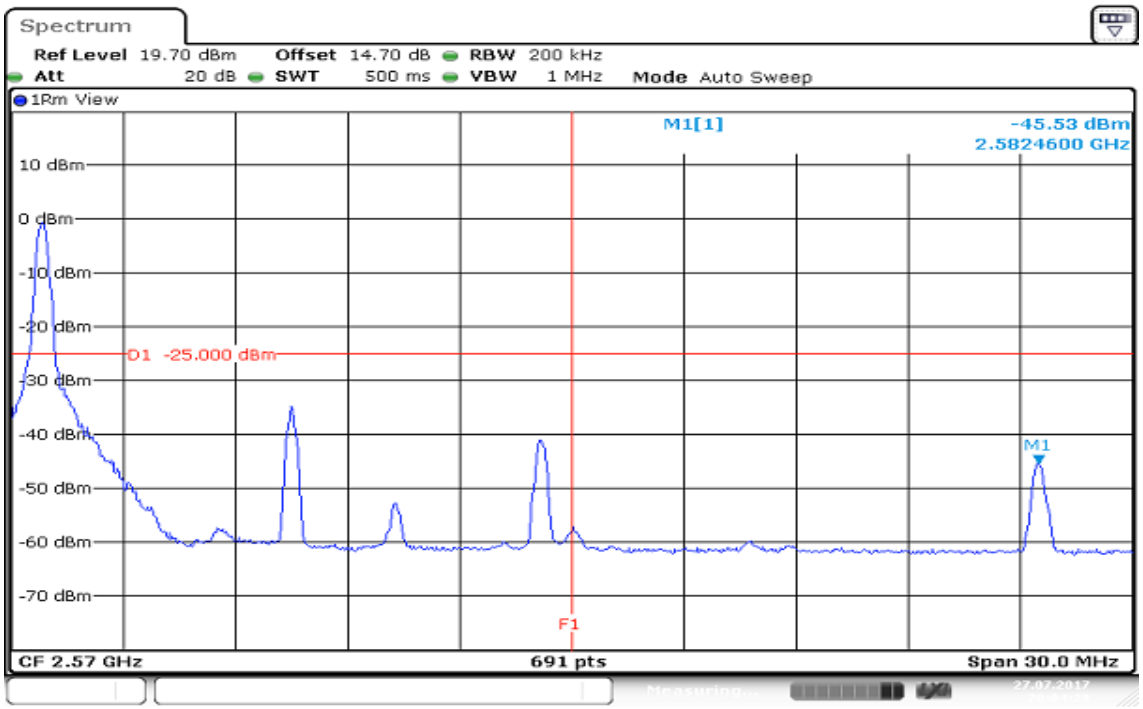
CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 20:08:50

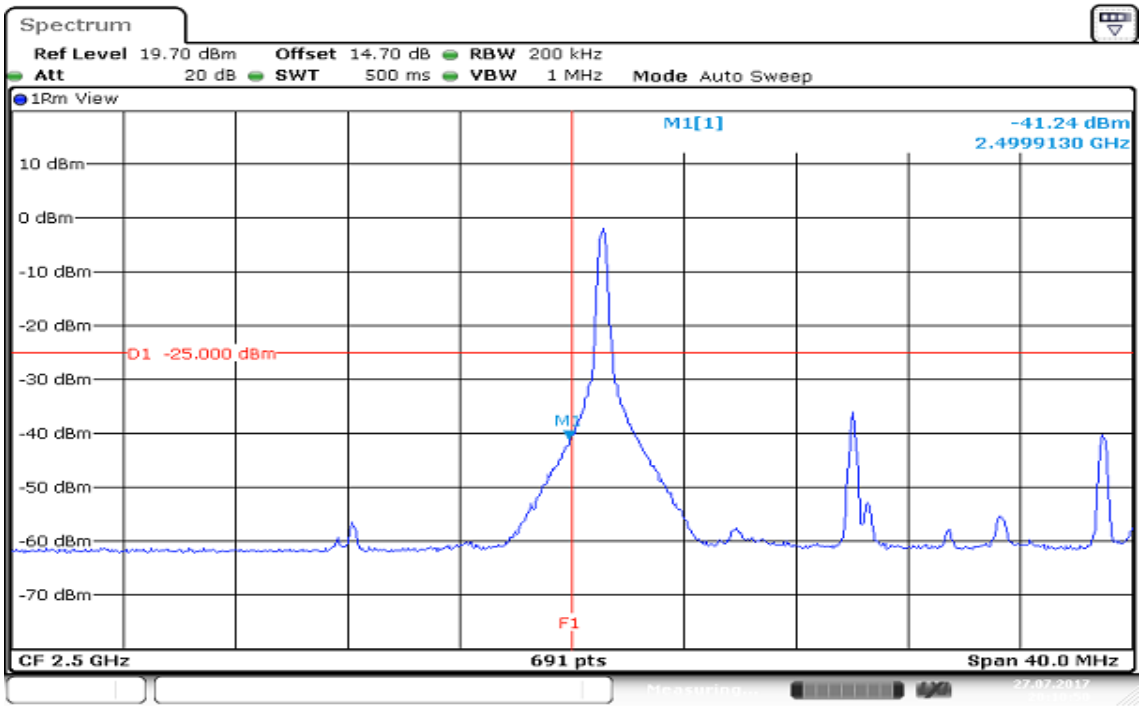
HIGHER BAND EDGE



Date: 27.JUL.2017 20:04:28

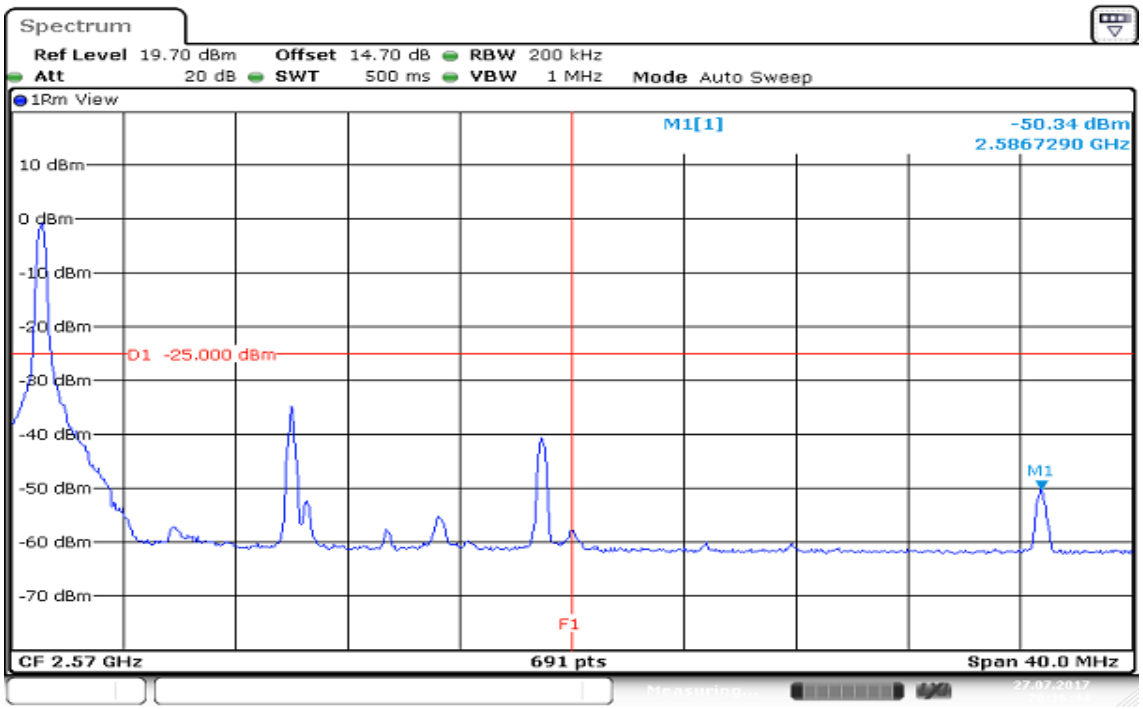
CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 20:10:50

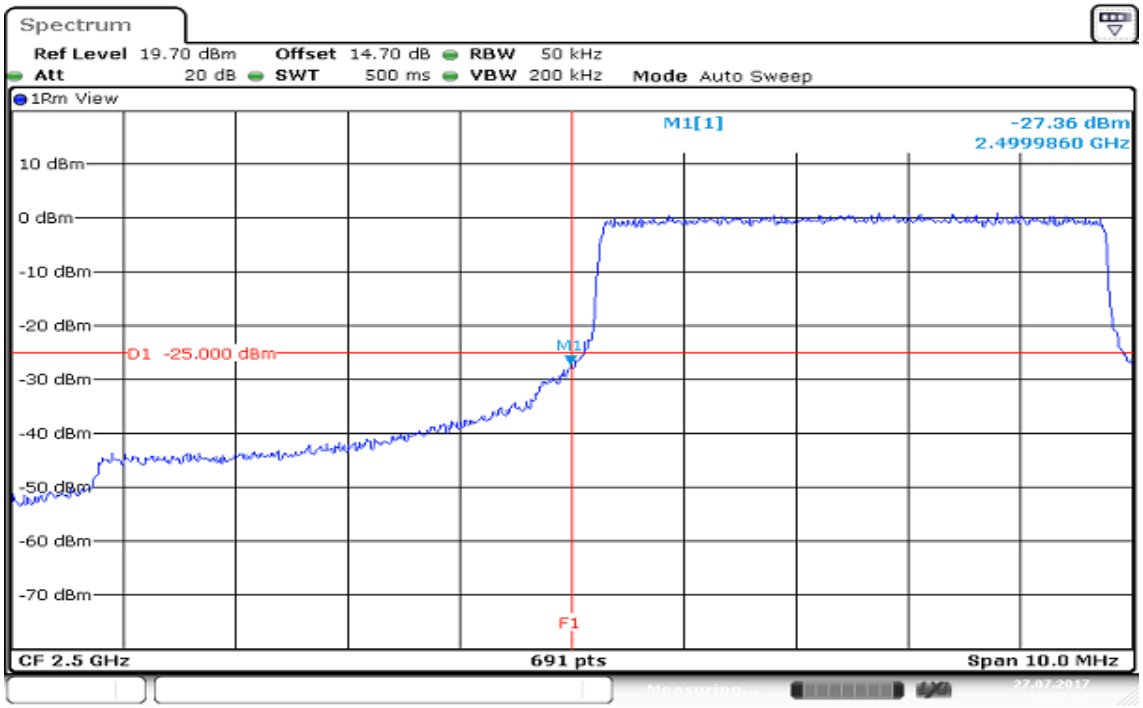
HIGHER BAND EDGE



Date: 27.JUL.2017 20:16:44

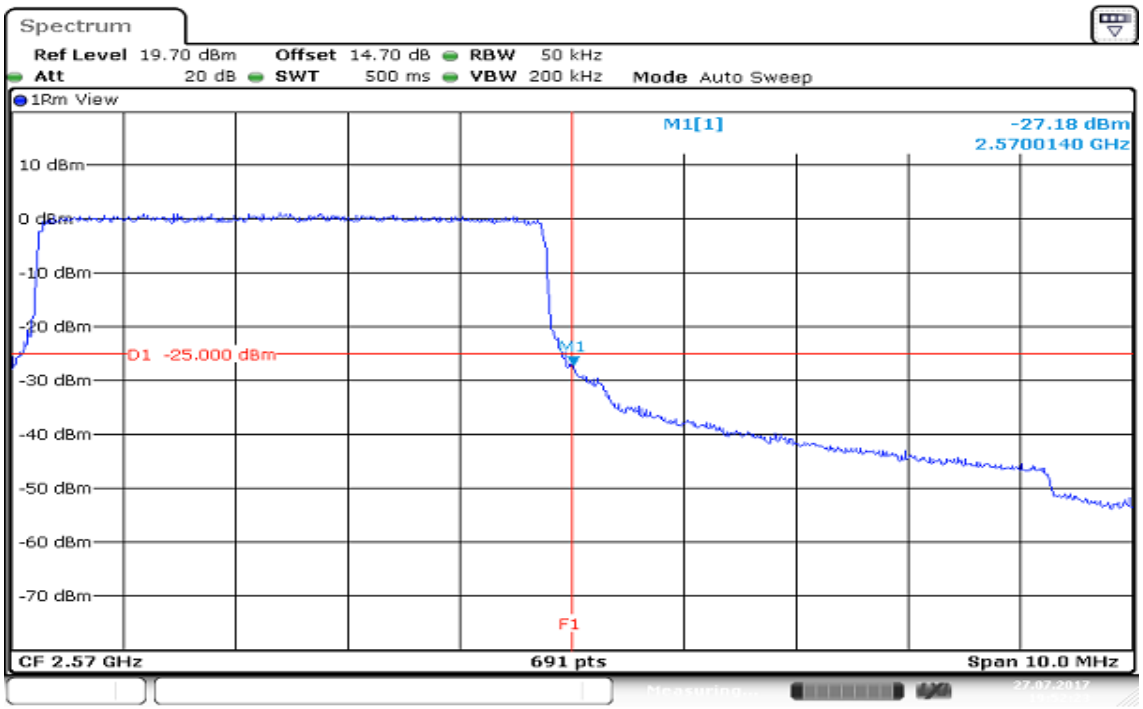
CHANNEL BANDWIDTH: 5MHz / QPSK / FULLRB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 19:47:57

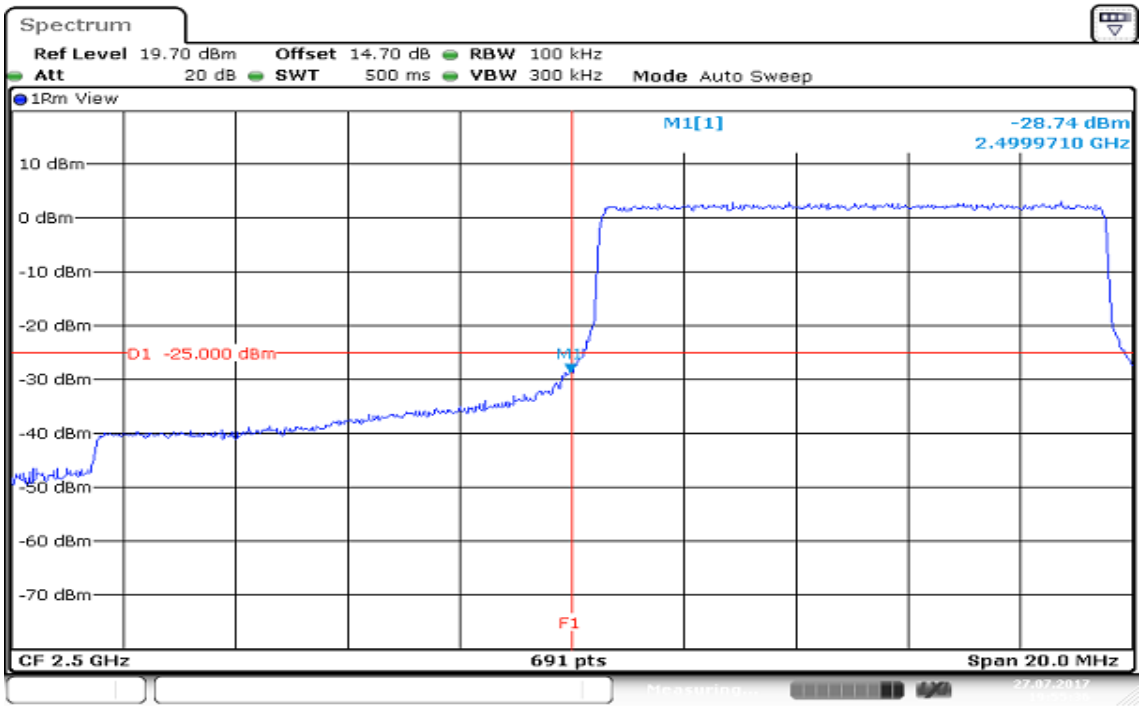
HIGHER BAND EDGE



Date: 27.JUL.2017 19:52:23

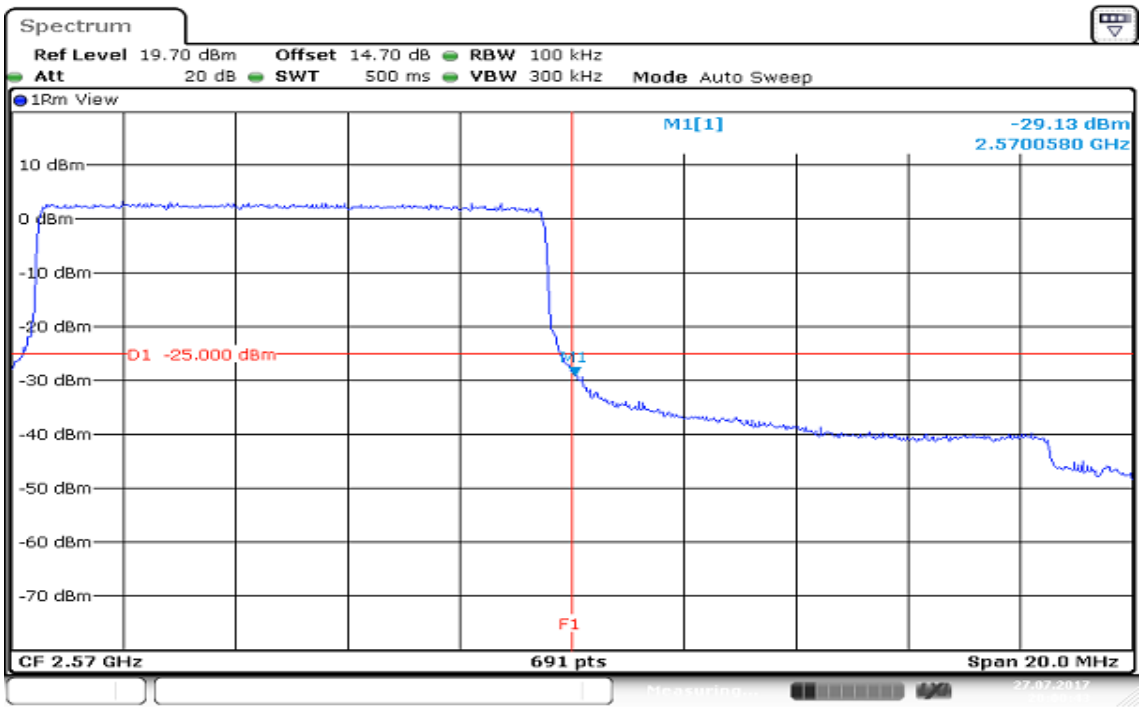
CHANNEL BANDWIDTH: 10MHz / QPSK / FULLRB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 19:55:36

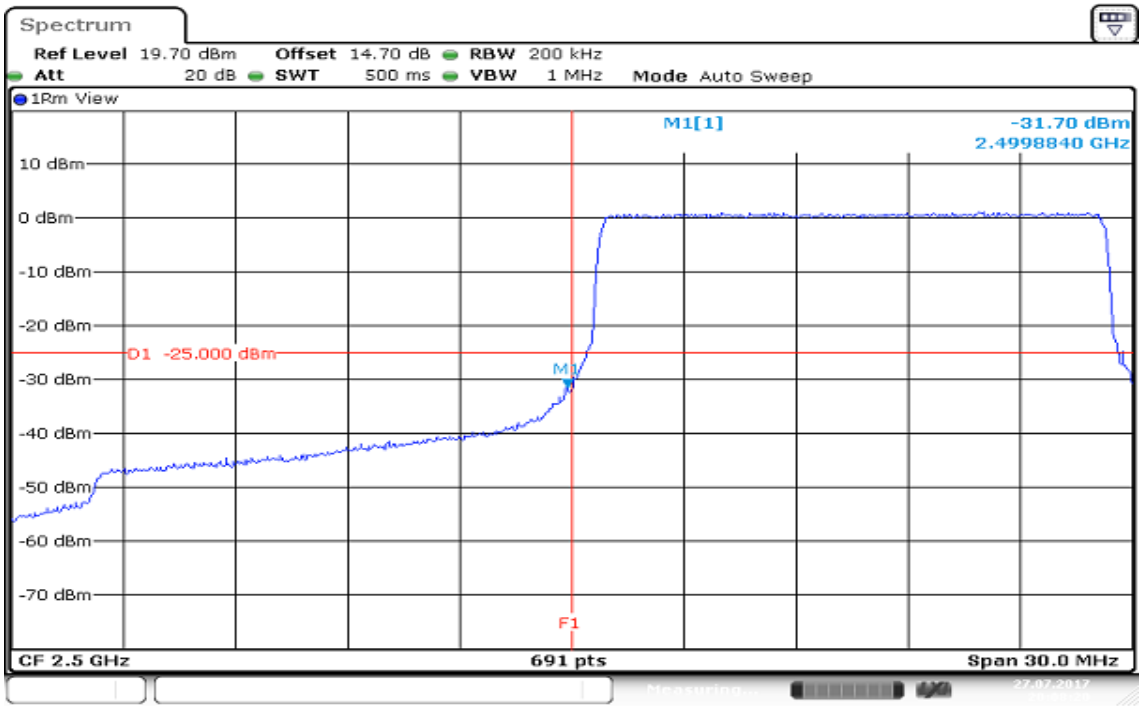
HIGHER BAND EDGE



Date: 27.JUL.2017 20:00:43

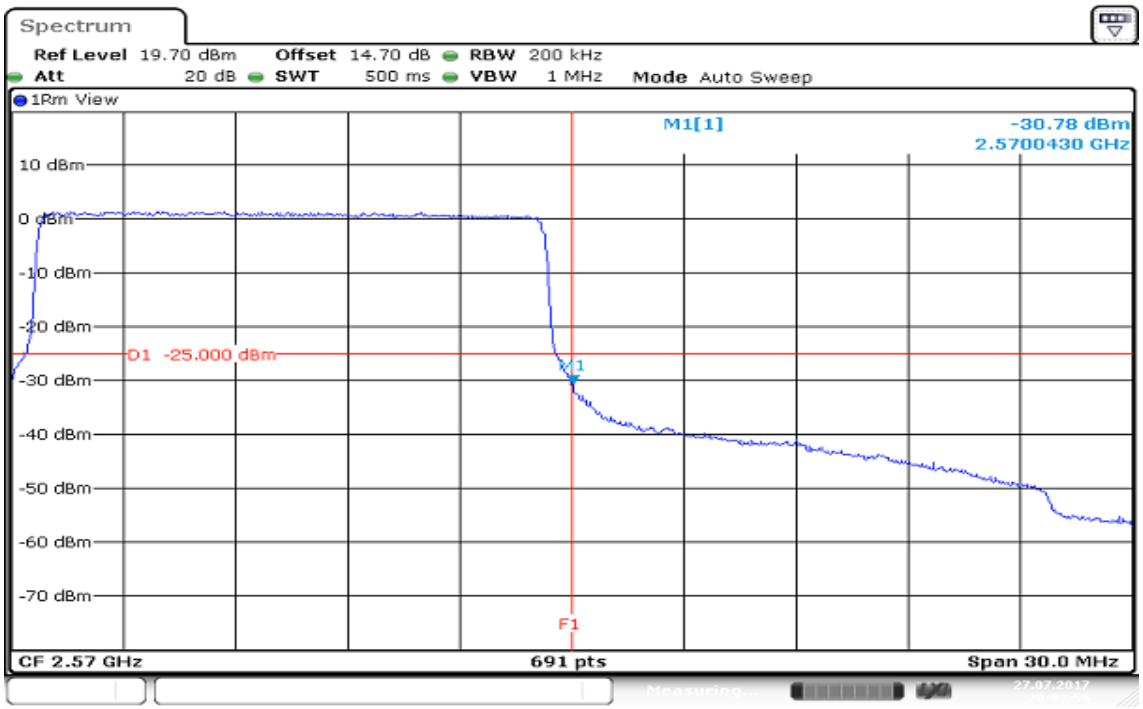
CHANNEL BANDWIDTH: 15MHz / QPSK / FULLRB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 20:08:20

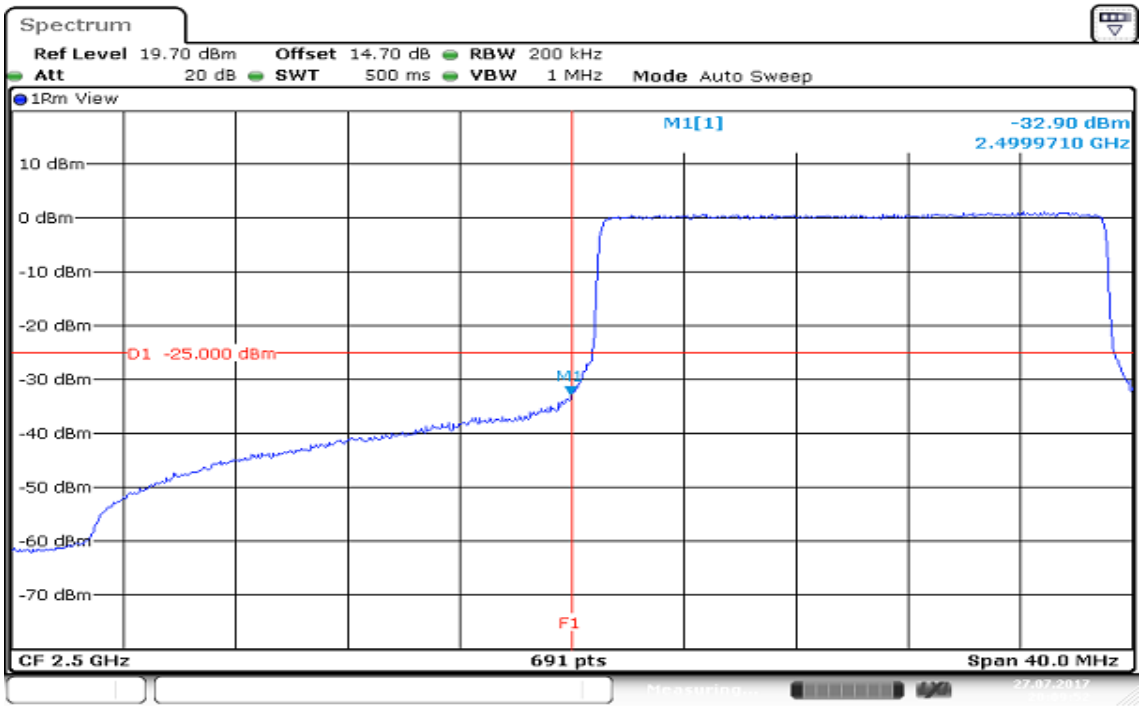
HIGHER BAND EDGE



Date: 27.JUL.2017 20:03:56

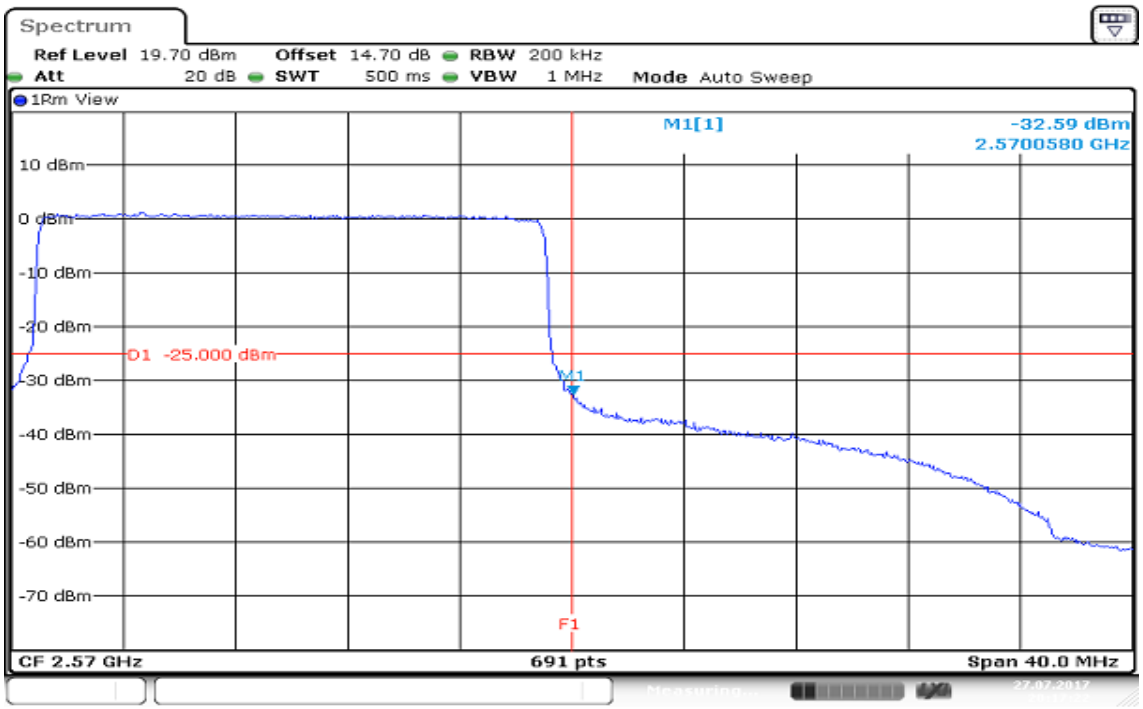
CHANNEL BANDWIDTH: 20MHz / QPSK / FULLRB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 20:09:52

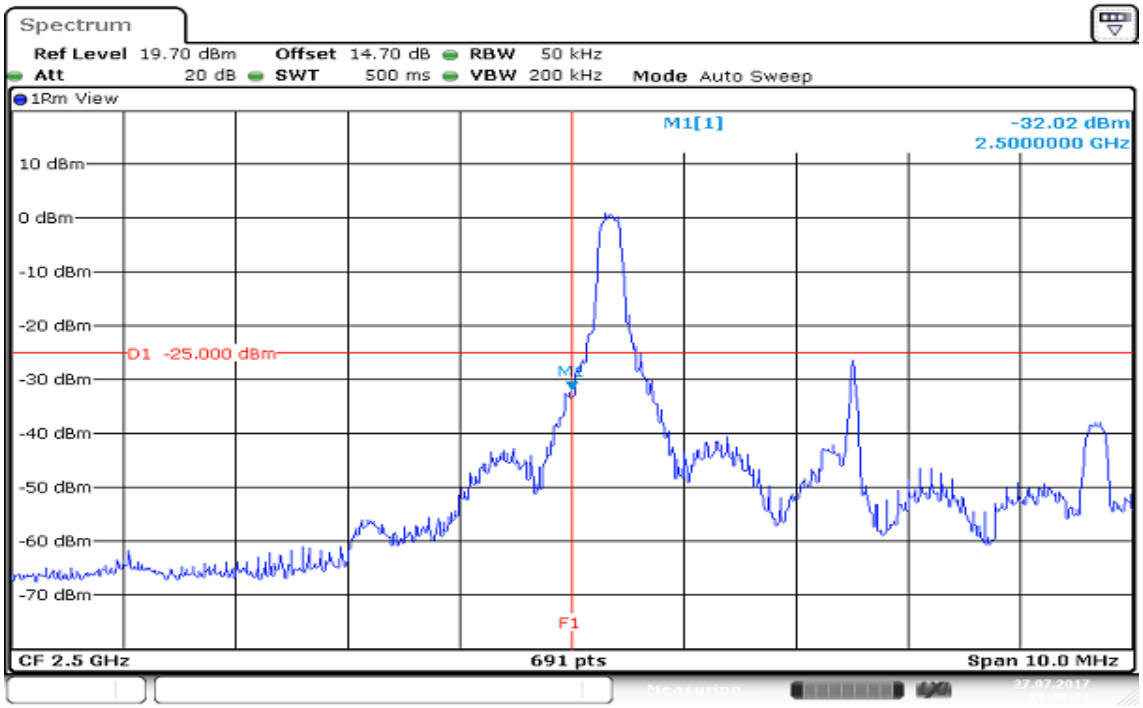
HIGHER BAND EDGE



Date: 27.JUL.2017 20:17:22

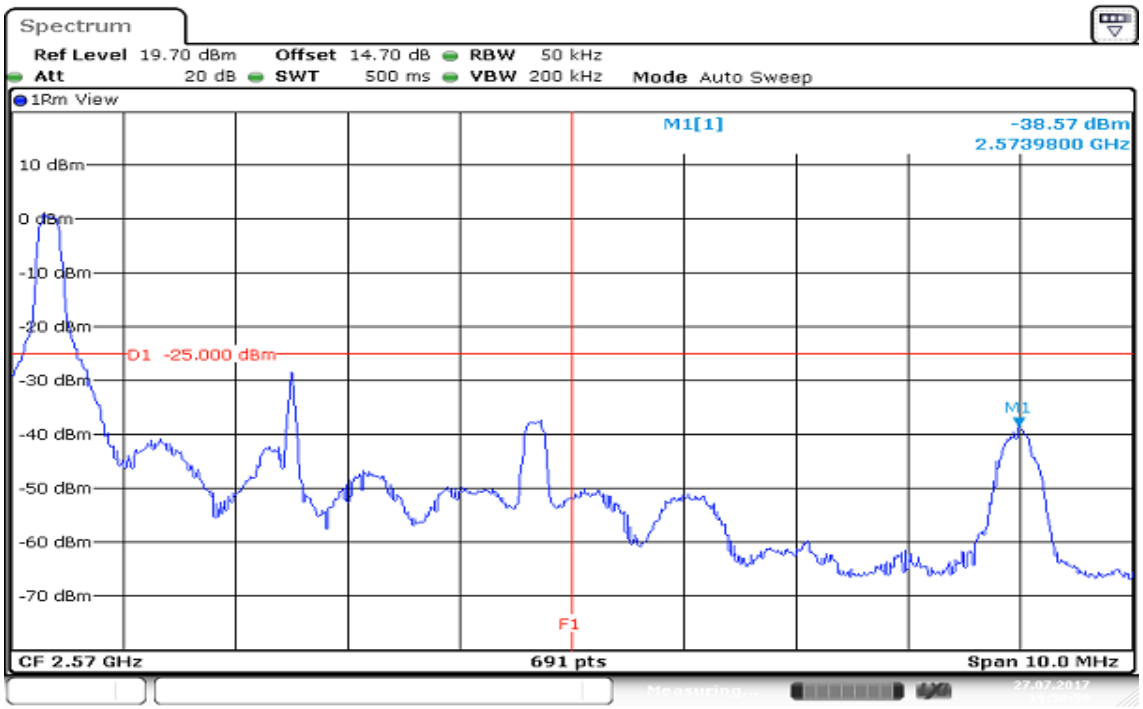
CHANNEL BANDWIDTH: 5MHz / 16QAM/ 1RB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 19:49:22

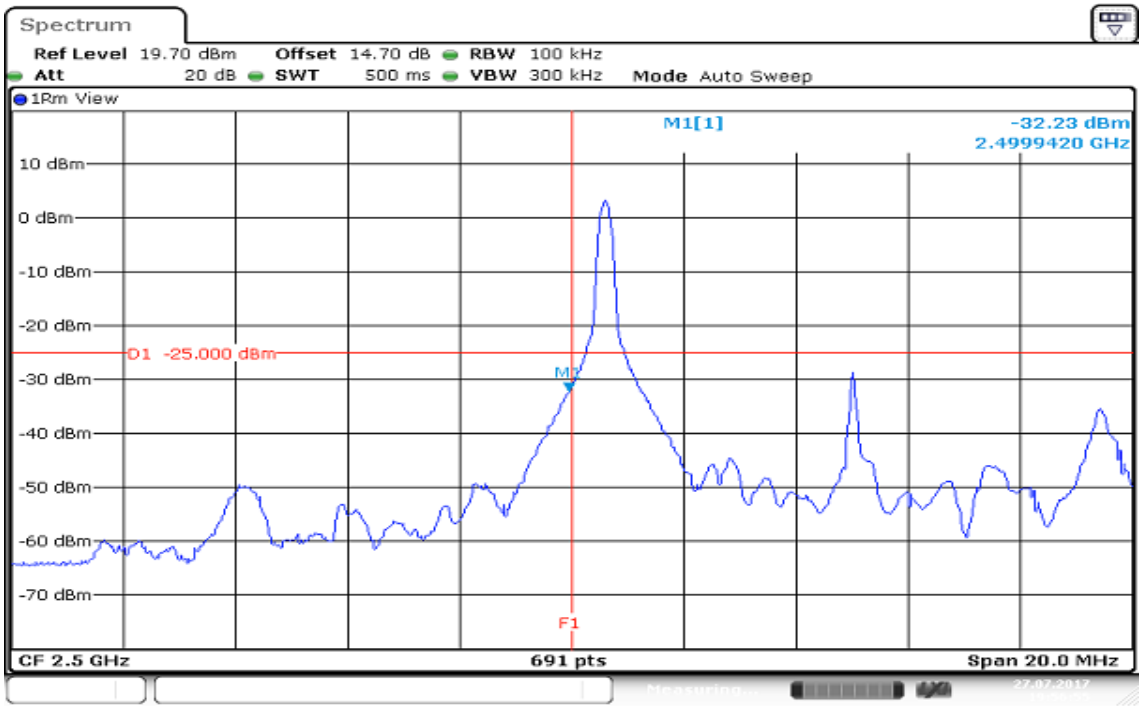
HIGHER BAND EDGE



Date: 27.JUL.2017 19:50:59

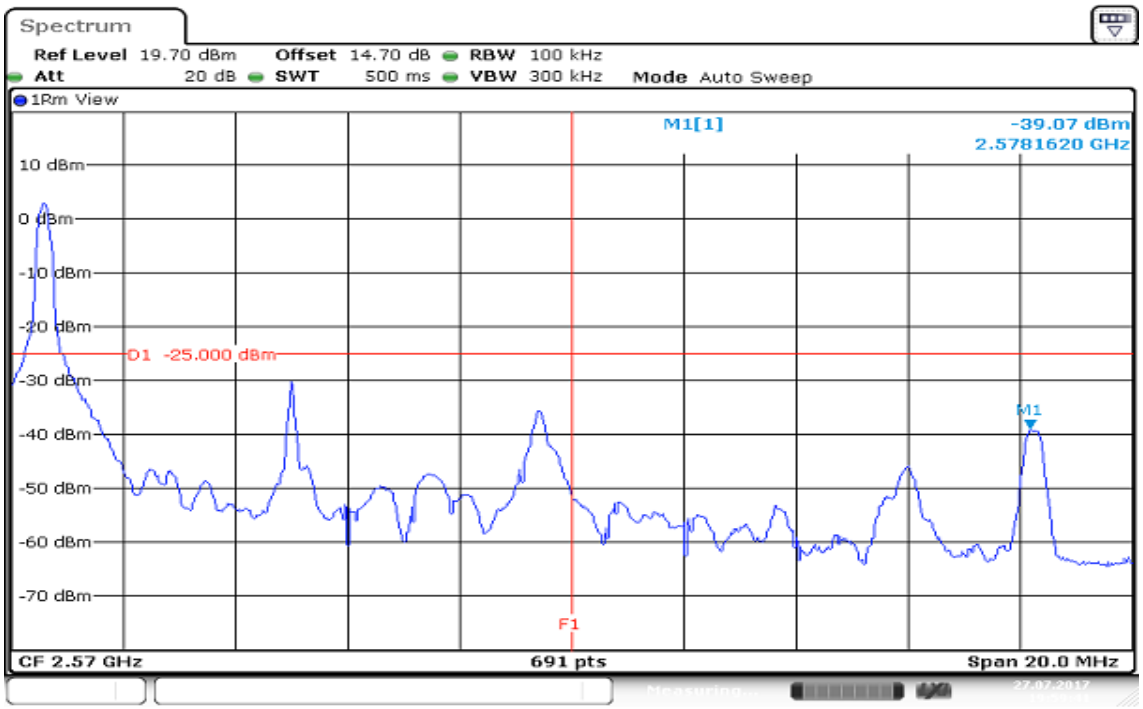
CHANNEL BANDWIDTH: 10MHz / 16QAM/ 1RB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 19:56:55

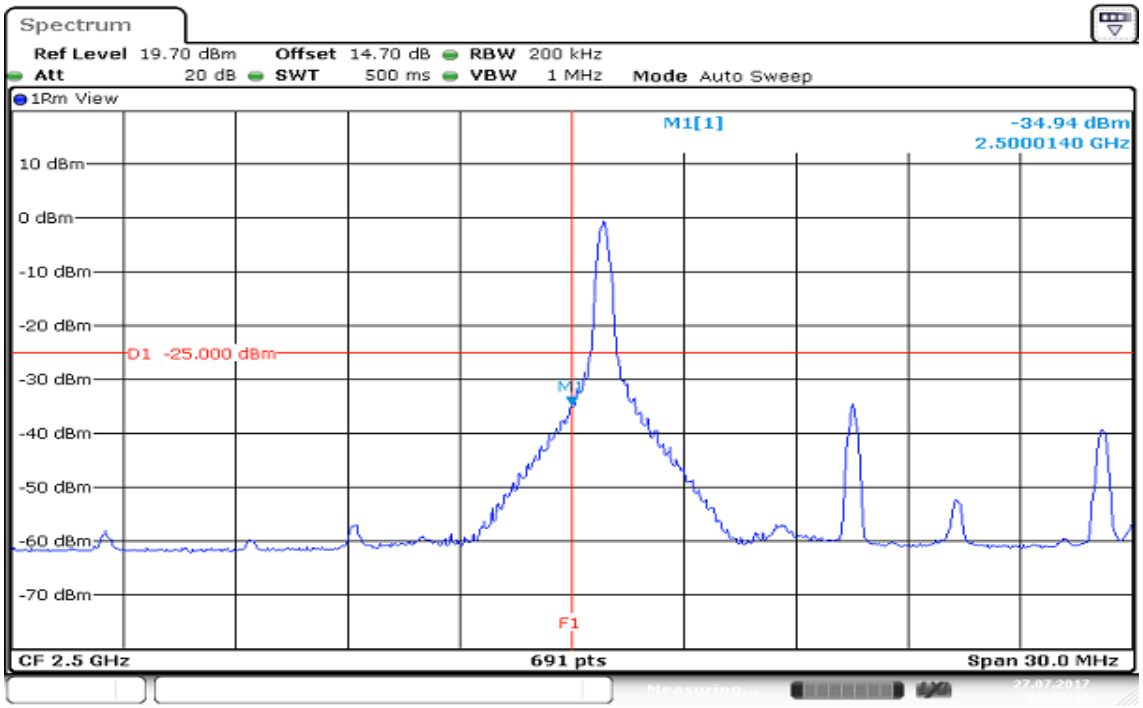
HIGHER BAND EDGE



Date: 27.JUL.2017 19:59:41

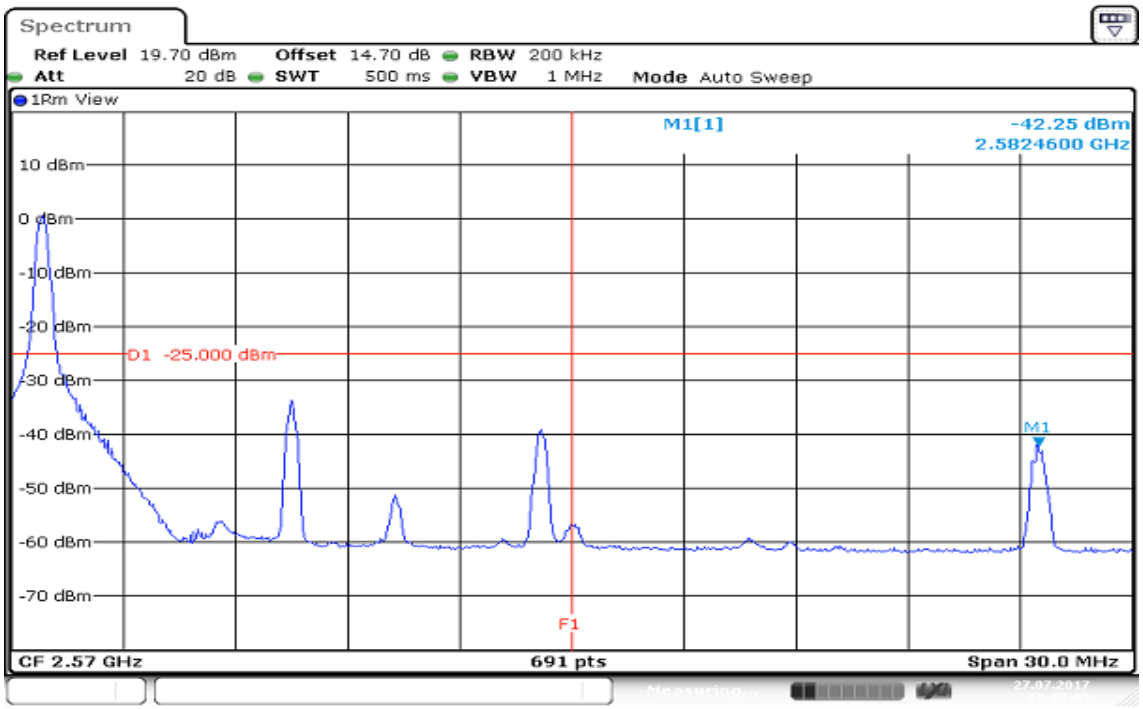
CHANNEL BANDWIDTH: 15MHz / 16QAM/ 1RB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 20:07:18

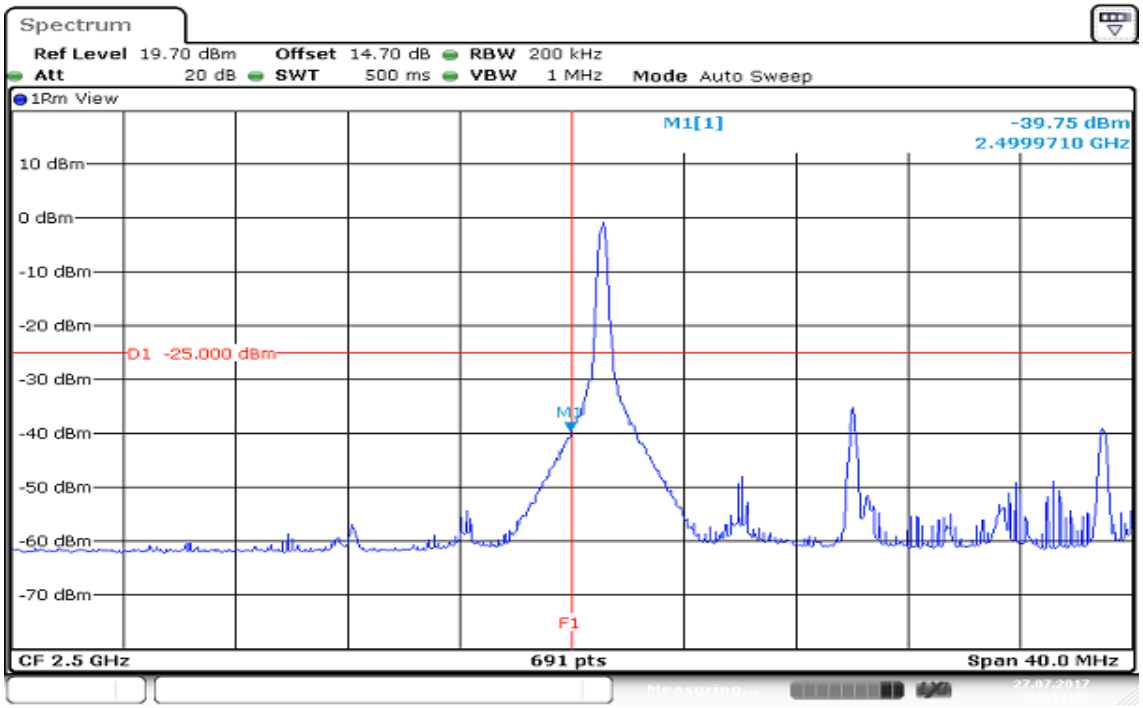
HIGHER BAND EDGE



Date: 27.JUL.2017 20:05:03

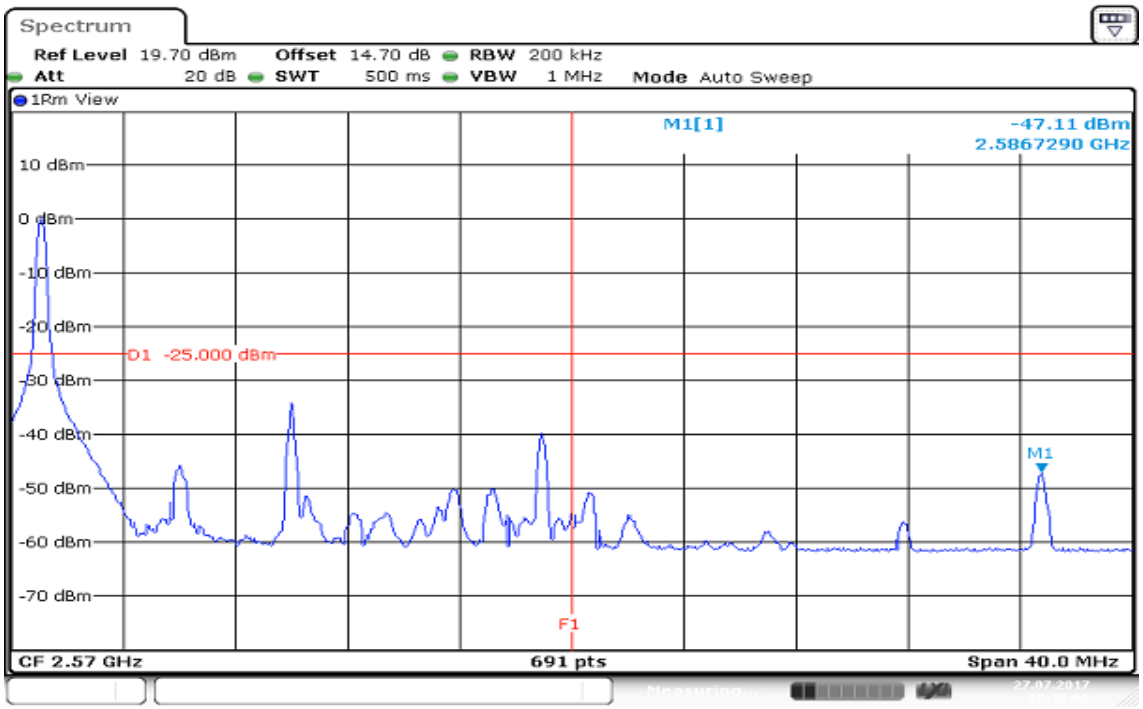
CHANNEL BANDWIDTH: 20MHz / 16QAM/ 1RB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 20:11:23

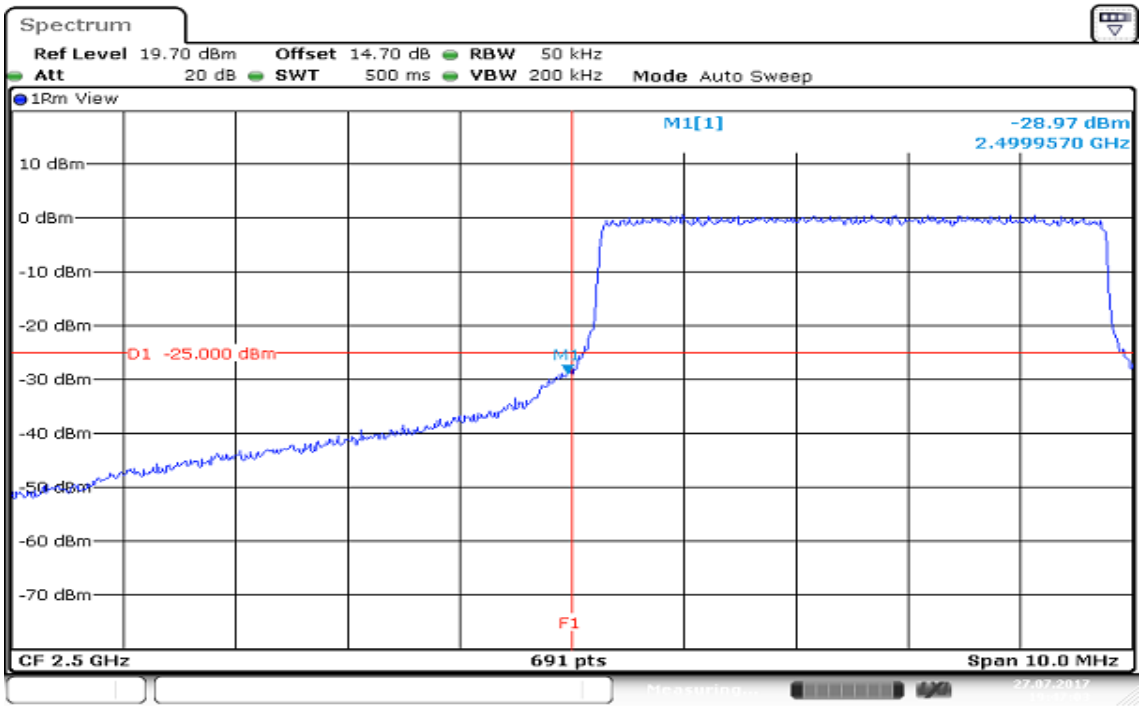
HIGHER BAND EDGE



Date: 27.JUL.2017 20:16:06

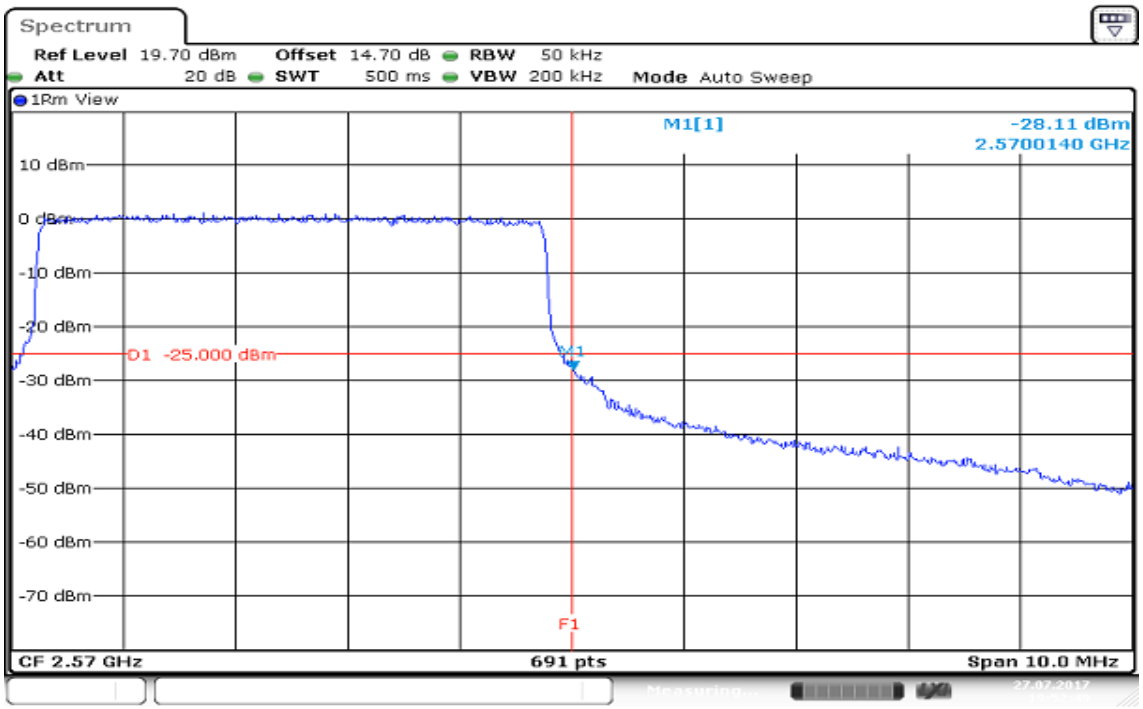
CHANNEL BANDWIDTH: 5MHz / 16QAM/ FULLRB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 19:47:03

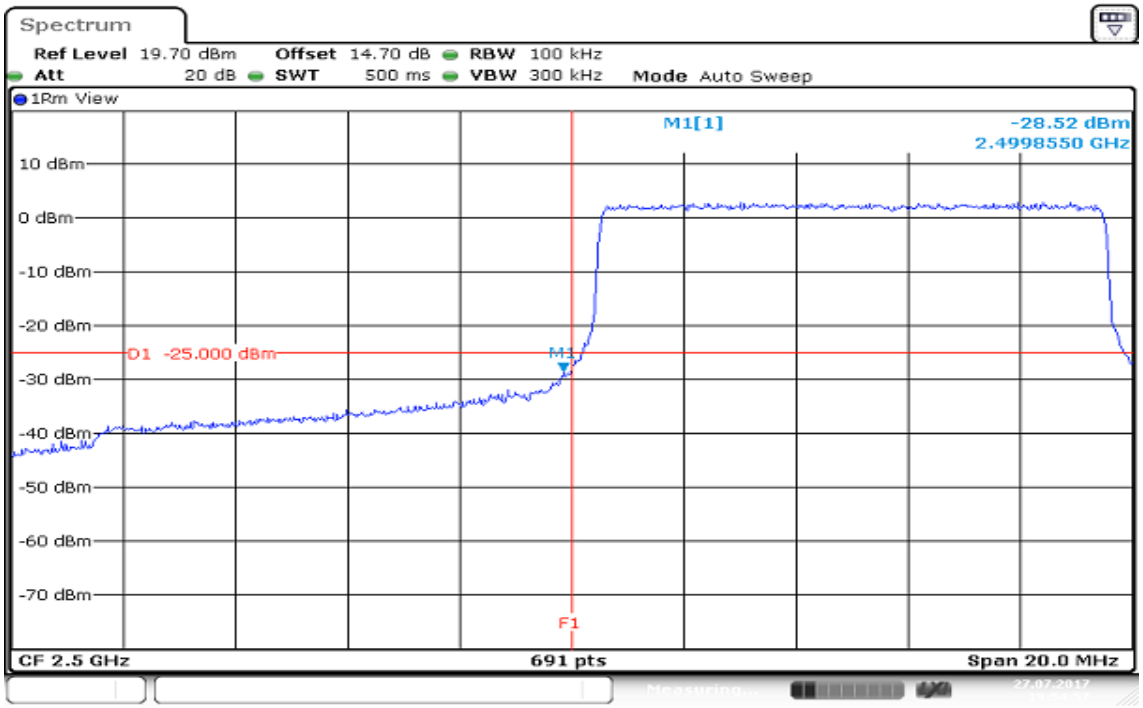
HIGHER BAND EDGE



Date: 27.JUL.2017 19:52:49

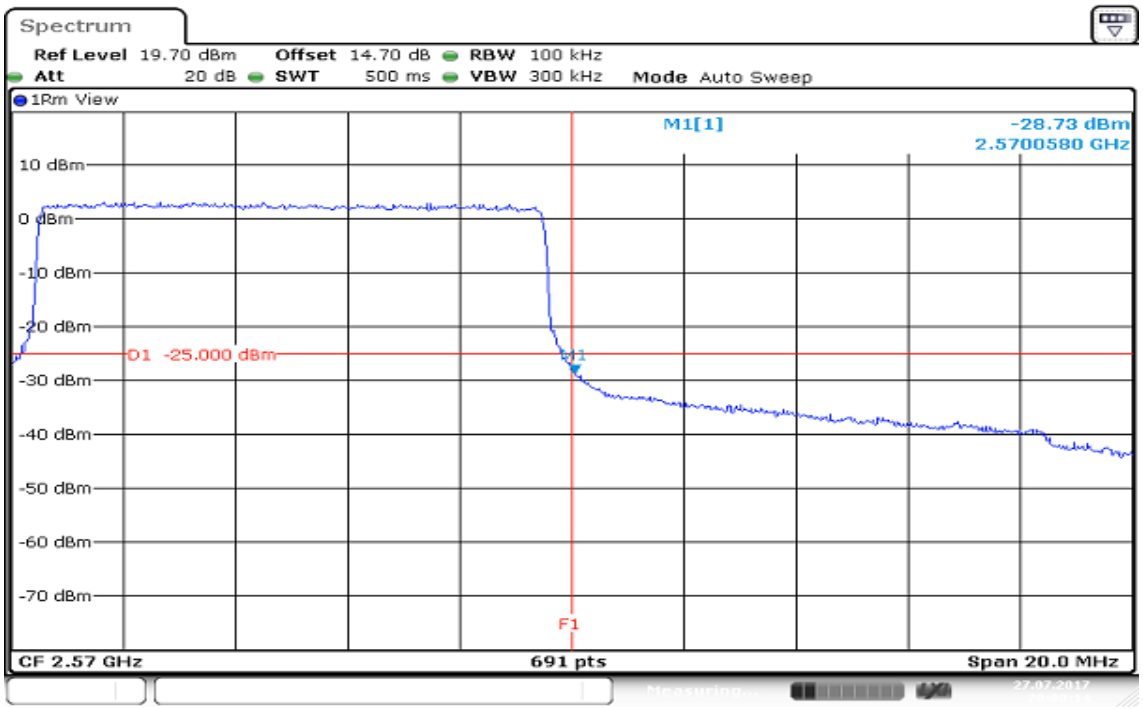
CHANNEL BANDWIDTH: 10MHz / 16QAM/ FULLRB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 19:54:57

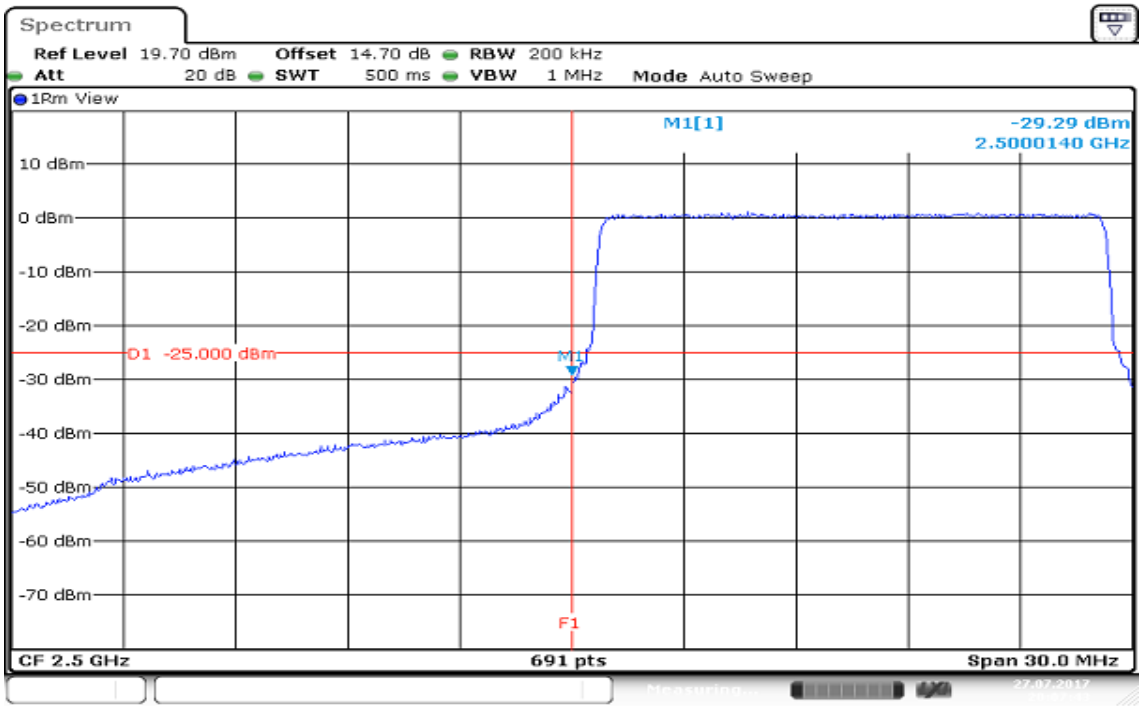
HIGHER BAND EDGE



Date: 27.JUL.2017 20:00:14

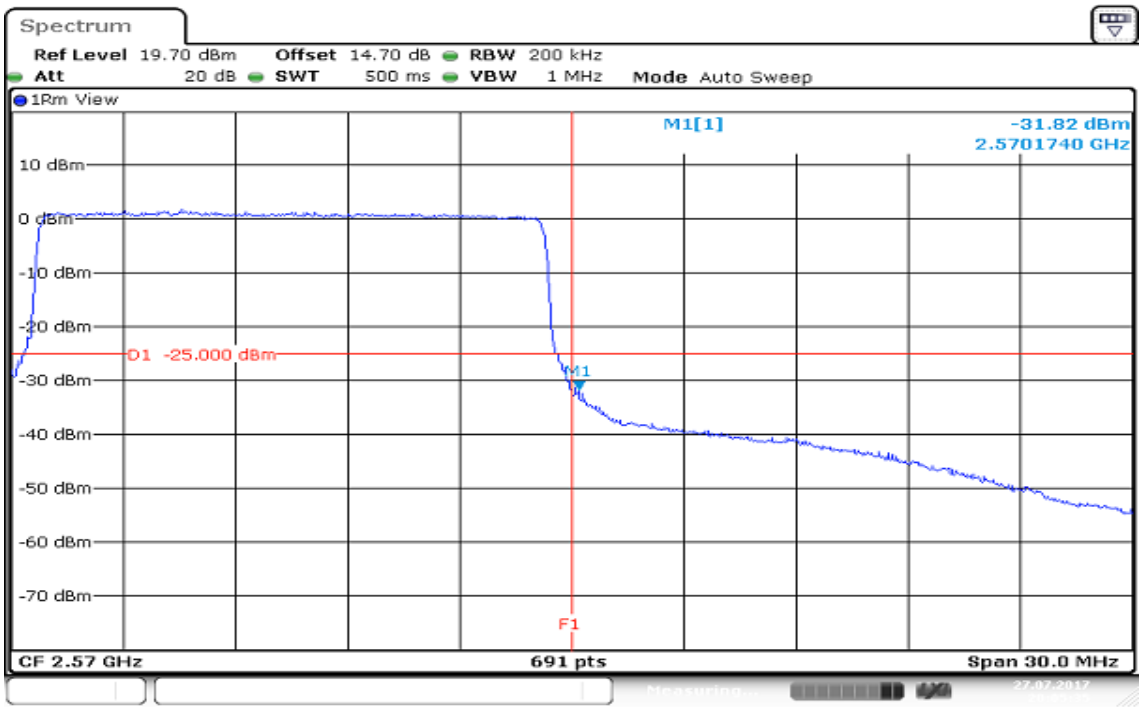
CHANNEL BANDWIDTH: 15MHz / 16QAM/ FULLRB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 20:07:43

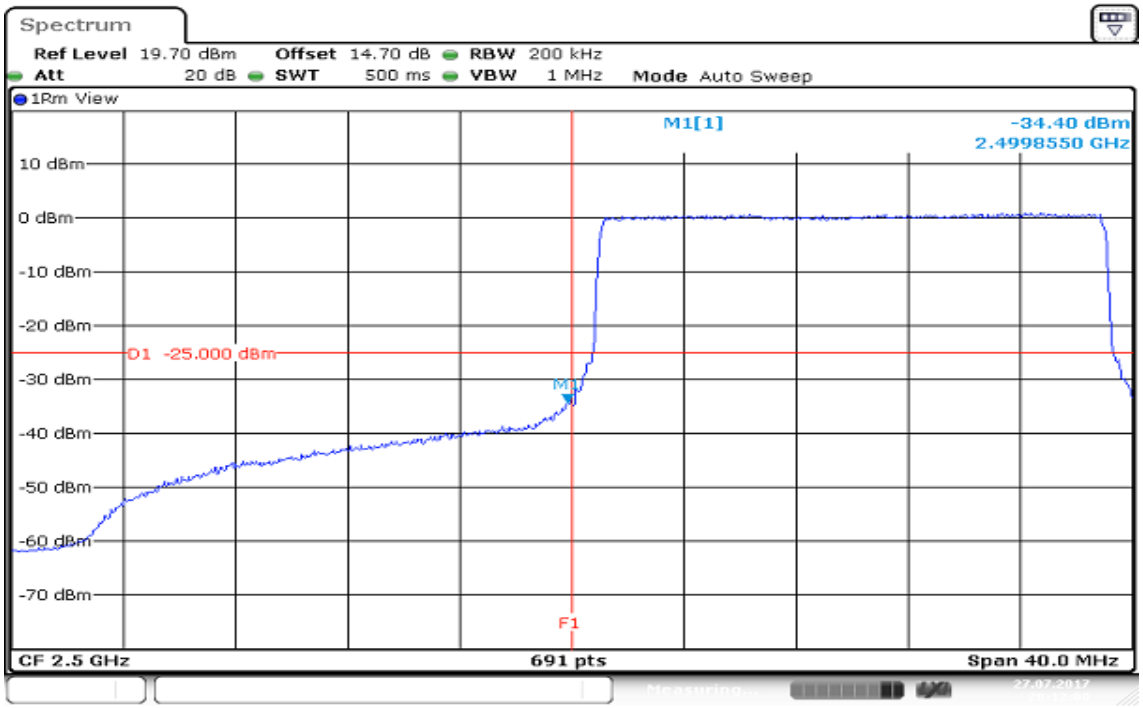
HIGHER BAND EDGE



Date: 27.JUL.2017 20:05:35

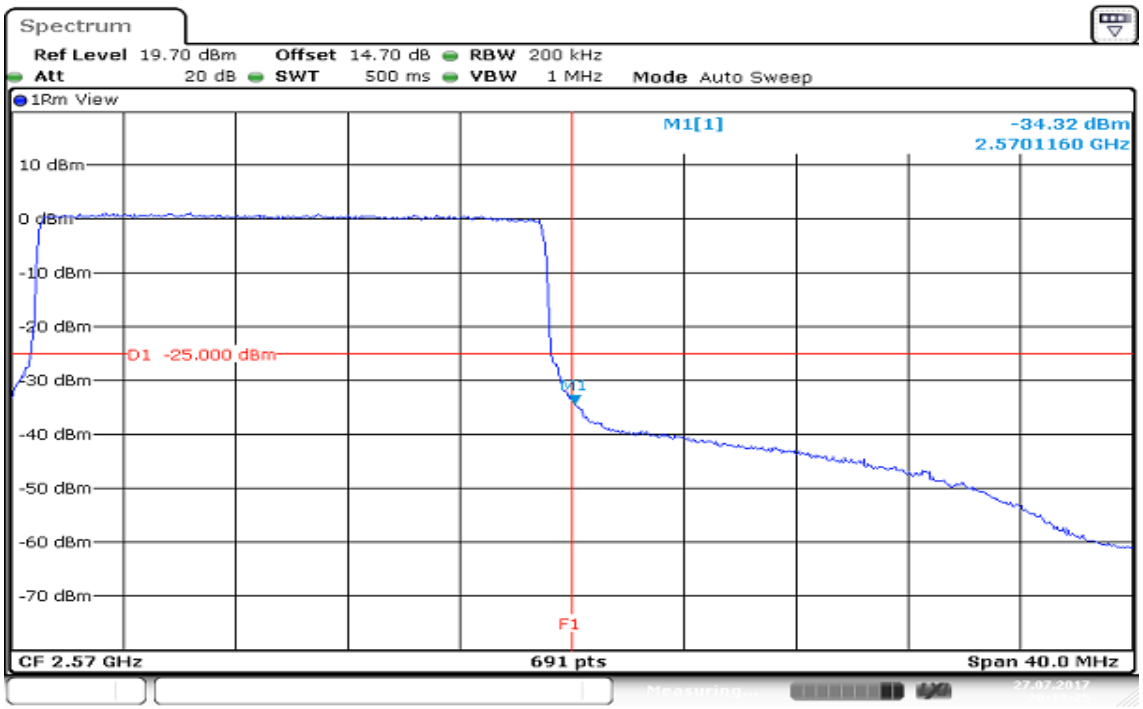
CHANNEL BANDWIDTH: 20MHz / 16QAM/ FULLRB ALLOCATION

LOWER BAND EDGE



Date: 27.JUL.2017 20:12:00

HIGHER BAND EDGE



Date: 27.JUL.2017 20:13:25