

FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E

TEST REPORT

For

Computer

Trade Name: ADVANTECH

Model: DMS-SJ03

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.
(Hsinchu Lab)**

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Revision History

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TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION.....	4
2. EUT DESCRIPTION.....	5
3. TEST METHODOLOGY.....	7
3.1 EUT CONFIGURATION.....	7
3.2 EUT EXERCISE.....	7
3.3 GENERAL TEST PROCEDURES.....	7
3.4 DESCRIPTION OF TEST MODES.....	8
3.5 THE WORST MODE OF MEASUREMENT.....	9
4. INSTRUMENT CALIBRATION.....	10
4.1 MEASURING INSTRUMENT CALIBRATION.....	10
4.2 MEASUREMENT EQUIPMENT USED.....	10
4.3 MEASUREMENT UNCERTAINTY.....	11
5. FACILITIES AND ACCREDITATIONS.....	12
5.1 FACILITIES.....	12
5.2 EQUIPMENT.....	12
6. SETUP OF EQUIPMENT UNDER TEST.....	13
6.1 SETUP CONFIGURATION OF EUT.....	13
6.2 SUPPORT EQUIPMENT.....	13
7. FCC PART 22 & 24 REQUIREMENTS.....	14
7.1 OUTPUT POWER MEASUREMENT.....	14
7.2 ERP & EIRP MEASUREMENT.....	25
7.3 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT.....	31
7.4 OCCUPIED BANDWIDTH MEASUREMENT.....	36
7.5 PEAK TO AVERAGE RATIO.....	51
7.6 BAND EDGE MEASUREMENT.....	80
7.7 CONDUCTED SPURIOUS EMISSIONS.....	121
7.8 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT.....	162
8. APPENDIX I PHOTOGRAPHS OF TEST SETUP.....	196
APPENDIX I - PHOTOGRAPHS OF EUT	

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

Model: DMS-SJ03

Date of Test: August 10 ~ 18, 2017

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E	No non-compliance noted

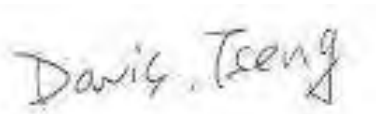
We hereby certify that:

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-C and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rule FCC PART 22 Subpart H, PART 24 Subpart E.

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

Approved by:

Tested by:




Davis Tseng
 Sr. Engineer
 Compliance Certification Services Inc.

Kevin Kuo
 Engineer
 Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Computer		
Trade Name	ADVANTECH		
Model	DMS-SJ03		
Model Discrepancy	N/A		
Received Date	May 5, 2017		
Power Supply	Powered from host device: DC 12V		
Frequency Range	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7 MHz ~ 1909.2 MHz	
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5 MHz ~ 1908.4 MHz	
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5 MHz ~ 1907.5 MHz	
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0 MHz ~1905.0 MHz	
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5 MHz ~ 1902.5 MHz	
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0 MHz ~1900.0 MHz	
	LTE Band 5 Channel Bandwidth: 1.4MHz	824.7 MHz ~ 848.2MHz	
	LTE Band 5 Channel Bandwidth: 3MHz	825.5 MHz ~ 847.4 MHz	
	LTE Band 5 Channel Bandwidth: 5MHz	826.5 MHz ~846.5 MHz	
	LTE Band 5 Channel Bandwidth: 10MHz	829 MHz ~844 MHz	
	Modulation Technique	LTE Band 2	QPSK, 16QAM
		LTE Band 5	QPSK, 16QAM

Maximum ERP Power	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 23.76 dBm 16QAM: 22.75 dBm
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK : 23.77 dBm 16QAM: 22.76 dBm
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 23.82 dBm 16QAM: 22.81 dBm
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 23.84 dBm 16QAM: 22.83 dBm
	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 23.85 dBm 16QAM: 22.84 dBm
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 23.88 dBm 16QAM: 22.87 dBm
	LTE Band 5 Channel Bandwidth: 1.4MHz	QPSK: 23.41dBm 16QAM: 22.31 dBm
	LTE Band 5 Channel Bandwidth: 3MHz	QPSK: 23.44 dBm 16QAM: 22.34 dBm
	LTE Band 5 Channel Bandwidth: 5MHz	QPSK: 23.46 dBm 16QAM: 22.36 dBm
	LTE Band 5 Channel Bandwidth: 10MHz	QPSK: 23.51 dBm 16QAM: 22.41 dBm
Antenna Specification	PIFA Antenna LTE Band 2: Gain: 3.24dBi LTE Band 5: Gain: 2.97dBi	

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

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of TIA/EIA-603-C: 2004 and FCC CFR 47, Part 2 and Part 22 Subpart H & Part 24 Subpart E.

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in ANSI C63.4: 2014.

3.4 DESCRIPTION OF TEST MODES

The EUT (Model: DMS-SJ03) had been tested under operating condition.

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

LTE Band 2: 1850 MHz ~ 1915MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	18607	1850.7	18615	1851.5	18625	1852.5
Middle channel (M)	18900	1880	18900	1880.0	18900	1880
High channel (H)	19192	1909.2	19184	1908.4	19175	1907.5
Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	18650	1855	18675	1857.5	18700	1860
Middle channel (M)	18900	1880	18900	1880.0	18900	1880
High channel (H)	19150	1905	19125	1902.5	19100	1900

LTE Band 5: 824 MHz ~ 849

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	1.4MHz		3MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	20407	824.7	20415	825.5
Middle channel (M)	20525	836.5	20525	836.5
High channel (H)	20642	848.2	20634	847.4
Channel Bandwidth	5MHz		10MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	20425	826.5	20450	829
Middle channel (M)	20525	836.5	20525	836.5
High channel (H)	20625	846.5	20600	844

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
Band2	1.4M	1 RB ALLOCATED AT THE UPPER EDGE	1.4M	1 RB ALLOCATED AT THE UPPER EDGE
	5M	1 RB ALLOCATED AT THE UPPER EDGE	5M	1 RB ALLOCATED AT THE UPPER EDGE
	10M	1 RB ALLOCATED AT THE UPPER EDGE	10M	1 RB ALLOCATED AT THE CENTERED
	20M	1 RB ALLOCATED AT THE UPPER EDGE	20M	1 RB ALLOCATED AT THE UPPER EDGE
Band5	1.4M	1 RB ALLOCATED AT THE UPPER EDGE	1.4M	1 RB ALLOCATED AT THE UPPER EDGE
	5M	1 RB ALLOCATED AT THE UPPER EDGE	5M	1 RB ALLOCATED AT THE UPPER EDGE
	10M	1 RB ALLOCATED AT THE UPPER EDGE	10M	1 RB ALLOCATED AT THE CENTERED

3.5 THE WORST MODE OF MEASUREMENT

For LTE Band II:

Radiated Emission Measurement	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Voltage/Hz	DC 12V
Test Mode	Mode 1: EUT power by DC Source via cable.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Position	<input type="checkbox"/> Placed in fixed position. <input type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input checked="" type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)

Remark:

1. The worst mode was record in this test report.
2. The EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (Y-Plane) were recorded in this report.

For LTE Band V:

Radiated Emission Measurement	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Voltage/Hz	DC 12V
Test Mode	Mode 1: EUT power by DC Source via cable.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Position	<input type="checkbox"/> Placed in fixed position. <input type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input checked="" type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)

Remark:

1. The worst mode was record in this test report.
2. The EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (Z-Plane) were recorded in this report.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

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

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once three years.

Conducted Emissions Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Base Station	Anritsu	MT-8820C	6201240043	07/11/2017	07/10/2018
Spectrum Analyzer	R&S	FSV 40	101073	10/05/2016	10/04/2017
Spectrum Analyzer	R&S	FSU 20Hz....26.5GHz	100258	07/27/2017	07/26/2018
Power Meter	Anritsu	ML2495A	1149001	12/06/2016	12/05/2017
Power Sensor	Anritsu	MA2411B	1126148	12/06/2016	12/05/2017

Wugu 966 Chamber A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Base Station	Anritsu	MT-8820C	6201240043	07/10/2017	07/11/2018
Bi-Log Antenna	TESEQ	CBL 6112D	35404	08/07/2017	08/06/2018
Double Ridged BroadBand Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-285	04/25/2017	04/24/2018
Double Ridged Guide Horn Antenna	ETS • LINDGREN	3117	00078732	07/06/2017	07/05/2018
Horn Antenna	COM-POWER	AH-840	03077	12/02/2016	12/01/2017
Pre-Amplifier	EMCI	EMC001625	980243	04/11/2017	04/10/2018
Pre-Amplifier	COM-POWER	PAM-118A	551043	04/11/2017	04/10/2018
PSA Series Spectrum Analyzer	Agilent	E4446A	MY48250064	04/20/2017	04/19/2018

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.
- No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan, R.O.C
- No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, Taiwan, R.O.C
- No.989-1, Wenshan Rd., Shangshan Village, Qionglin Township, Hsinchu County 30741, Taiwan, R.O.C

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."

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable
1	DC Power Source	Agilent	E3640A	N/A	N/A	DC Cable 1.5m shielding
2	NB(D)	ASUS	A8J	R31018	N/A	N/A

Remark:

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

7. FCC PART 22 & 24 REQUIREMENTS

7.1 OUTPUT POWER MEASUREMENT

Test Procedures

CONDUCTED POWER MEASUREMENT:

1. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
2. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

TEST RESULTS

LTE Band 2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)	
Band 2	1.4M	18607	1850.7	QPSK	1	0	0	23.76	0.2377	
					1	2	0	23.67	0.2328	
					1	5	0	23.3	0.2138	
					3	0	1	22.82	0.1914	
					3	1	1	22.79	0.1901	
					3	2	1	22.35	0.1718	
				6	0	1	22.82	0.1914		
				16QAM	1	0	1	22.75	0.1884	
					1	2	1	22.74	0.1879	
					1	5	1	22.29	0.1694	
					3	0	2	21.91	0.1552	
					3	1	2	21.84	0.1528	
		3	2		2	21.23	0.1327			
		18900	1880.0	QPSK	1880.0	1	0	0	23.46	0.2218
						1	2	0	23.37	0.2173
						1	5	0	23.37	0.2173
						3	0	1	22.55	0.1799
						3	1	1	22.43	0.1750
						3	2	1	22.47	0.1766
				6	0	1	22.5	0.1778		
				16QAM	1	0	1	22.55	0.1799	
					1	2	1	22.49	0.1774	
					1	5	1	22.43	0.1750	
					3	0	2	21.54	0.1426	
					3	1	2	21.45	0.1396	
		3	2		2	21.43	0.1390			
		19192	1909.2	QPSK	1909.2	1	0	0	23.47	0.2223
						1	2	0	23.35	0.2163
						1	5	0	23.36	0.2168
						3	0	1	22.6	0.1820
						3	1	1	22.35	0.1718
						3	2	1	22.43	0.1750
				6	0	1	22.41	0.1742		
				16QAM	1	0	1	22.47	0.1766	
					1	2	1	22.29	0.1694	
					1	5	1	22.38	0.1730	
3	0				2	21.67	0.1469			
3	1				2	21.41	0.1384			
3	2	2	21.33		0.1358					
6	0	2	21.45	0.1396						

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
Band 2	3M	18615	1851.5	QPSK	1	0	0	23.77	0.2382
					1	7	0	23.68	0.2333
					1	14	0	23.31	0.2143
					8	0	1	22.83	0.1919
					8	4	1	22.8	0.1905
					8	7	1	22.36	0.1722
					15	0	1	22.83	0.1919
				16QAM	1	0	1	22.76	0.1888
					1	7	1	22.75	0.1884
					1	14	1	22.3	0.1698
					8	0	2	21.92	0.1556
					8	4	2	21.85	0.1531
					8	7	2	21.24	0.1330
					15	0	2	21.36	0.1368
					18900	1880.0	QPSK	1	0
		1	7	0				23.38	0.2178
		1	14	0				23.38	0.2178
		8	0	1				22.56	0.1803
		8	4	1				22.44	0.1754
		8	7	1				22.48	0.1770
		15	0	1				22.51	0.1782
		16QAM	1	0			1	22.56	0.1803
			1	7			1	22.5	0.1778
			1	14			1	22.44	0.1754
			8	0			2	21.55	0.1429
			8	4			2	21.46	0.1400
			8	7			2	21.44	0.1393
			15	0			2	21.64	0.1459
			19184	1908.4			QPSK	1	0
		1			7	0		23.37	0.2173
		1			14	0		23.38	0.2178
		8			0	1		22.62	0.1828
		8			4	1		22.37	0.1726
		8			7	1		22.45	0.1758
		15			0	1		22.43	0.1750
		16QAM			1	0	1	22.49	0.1774
					1	7	1	22.31	0.1702
					1	14	1	22.4	0.1738
					8	0	2	21.69	0.1476
					8	4	2	21.43	0.1390
					8	7	2	21.35	0.1365
					15	0	2	21.47	0.1403

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
Band 2	5M	18625	1852.5	QPSK	1	0	0	23.82	0.2410
					1	12	0	23.73	0.2360
					1	24	0	23.36	0.2168
					12	0	1	22.88	0.1941
					12	6	1	22.85	0.1928
					12	11	1	22.41	0.1742
					25	0	1	22.88	0.1941
				16QAM	1	0	1	22.81	0.1910
					1	12	1	22.80	0.1905
					1	24	1	22.35	0.1718
					12	0	2	21.97	0.1574
					12	6	2	21.90	0.1549
					12	11	2	21.29	0.1346
					25	0	2	21.41	0.1384
		18900	1880.0	QPSK	1	0	0	23.51	0.2244
					1	12	0	23.42	0.2198
					1	24	0	23.42	0.2198
					12	0	1	22.60	0.1820
					12	6	1	22.48	0.1770
					12	11	1	22.52	0.1786
					25	0	1	22.55	0.1799
				16QAM	1	0	1	22.60	0.1820
					1	12	1	22.54	0.1795
					1	24	1	22.48	0.1770
					12	0	2	21.59	0.1442
					12	6	2	21.50	0.1413
					12	11	2	21.48	0.1406
					25	0	2	21.68	0.1472
		19175	1907.5	QPSK	1	0	0	23.54	0.2259
					1	12	0	23.42	0.2198
					1	24	0	23.43	0.2203
					12	0	1	22.67	0.1849
					12	6	1	22.42	0.1746
					12	11	1	22.50	0.1778
					25	0	1	22.48	0.1770
				16QAM	1	0	1	22.54	0.1795
1	12				1	22.36	0.1722		
1	24				1	22.45	0.1758		
12	0				2	21.74	0.1493		
12	6				2	21.48	0.1406		
12	11				2	21.40	0.1380		
25	0				2	21.52	0.1419		

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)	
Band 2	10M	18650	1855.0	QPSK	1	0	0	23.84	0.2421	
					1	24	0	23.75	0.2371	
					1	49	0	23.38	0.2178	
					25	0	1	22.9	0.1950	
					25	12	1	22.87	0.1936	
					25	24	1	22.43	0.1750	
				50	0	1	22.9	0.1950		
				16QAM	1	0	1	22.83	0.1919	
					1	24	1	22.82	0.1914	
					1	49	1	22.37	0.1726	
					25	0	2	21.99	0.1581	
					25	12	2	21.92	0.1556	
		25	24		2	21.31	0.1352			
		50	0	2	21.43	0.1390				
		18900	1880.0	QPSK	1880.0	1	0	0	23.53	0.2254
						1	24	0	23.44	0.2208
						1	49	0	23.44	0.2208
						25	0	1	22.62	0.1828
						25	12	1	22.5	0.1778
						25	24	1	22.54	0.1795
				50	0	1	22.57	0.1807		
				16QAM	1	0	1	22.62	0.1828	
					1	24	1	22.56	0.1803	
					1	49	1	22.5	0.1778	
					25	0	2	21.61	0.1449	
					25	12	2	21.52	0.1419	
		25	24		2	21.5	0.1413			
		50	0	2	21.7	0.1479				
		19150	1905.0	QPSK	1905.0	1	0	0	23.57	0.2275
						1	24	0	23.45	0.2213
						1	49	0	23.46	0.2218
						25	0	1	22.7	0.1862
						25	12	1	22.45	0.1758
						25	24	1	22.53	0.1791
				50	0	1	22.51	0.1782		
				16QAM	1	0	1	22.57	0.1807	
1	24				1	22.39	0.1734			
1	49				1	22.48	0.1770			
25	0				2	21.77	0.1503			
25	12				2	21.51	0.1416			
25	24	2	21.43		0.1390					
50	0	2	21.55	0.1429						

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
Band 2	15M	18675	1857.5	QPSK	1	0	0	23.85	0.2427
					1	37	0	23.76	0.2377
					1	74	0	23.39	0.2183
					36	0	1	22.91	0.1954
					36	18	1	22.88	0.1941
					36	35	1	22.44	0.1754
					75	0	1	22.91	0.1954
				16QAM	1	0	1	22.84	0.1923
					1	37	1	22.83	0.1919
					1	74	1	22.38	0.1730
					36	0	2	22	0.1585
					36	18	2	21.93	0.1560
					36	35	2	21.32	0.1355
					75	0	2	21.44	0.1393
		18900	1880.0	QPSK	1	0	0	23.54	0.2259
					1	37	0	23.45	0.2213
					1	74	0	23.45	0.2213
					36	0	1	22.63	0.1832
					36	18	1	22.51	0.1782
					36	35	1	22.55	0.1799
					75	0	1	22.58	0.1811
				16QAM	1	0	1	22.63	0.1832
					1	37	1	22.57	0.1807
					1	74	1	22.51	0.1782
					36	0	2	21.62	0.1452
					36	18	2	21.53	0.1422
					36	35	2	21.51	0.1416
					75	0	2	21.71	0.1483
		19125	1902.5	QPSK	1	0	0	23.58	0.2280
					1	37	0	23.46	0.2218
					1	74	0	23.47	0.2223
					36	0	1	22.71	0.1866
					36	18	1	22.46	0.1762
					36	35	1	22.54	0.1795
					75	0	1	22.52	0.1786
				16QAM	1	0	1	22.58	0.1811
1	37				1	22.4	0.1738		
1	74				1	22.49	0.1774		
36	0				2	21.78	0.1507		
36	18				2	21.52	0.1419		
36	35				2	21.44	0.1393		
75	0				2	21.56	0.1432		

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
Band 2	20M	18700	1860.0	QPSK	1	0	0	23.88	0.2443
					1	49	0	23.79	0.2393
					1	99	0	23.42	0.2198
					50	0	1	22.94	0.1968
					50	24	1	22.91	0.1954
					50	49	1	22.47	0.1766
				100	0	1	22.94	0.1968	
				16QAM	1	0	1	22.87	0.1936
					1	49	1	22.86	0.1932
					1	99	1	22.41	0.1742
					50	0	2	22.03	0.1596
					50	24	2	21.96	0.1570
		50	49		2	21.35	0.1365		
		100	0	2	21.47	0.1403			
		18900	1880.0	QPSK	1	0	0	23.6	0.2291
					1	49	0	23.51	0.2244
					1	99	0	23.51	0.2244
					50	0	1	22.69	0.1858
					50	24	1	22.57	0.1807
					50	49	1	22.61	0.1824
				100	0	1	22.64	0.1837	
				16QAM	1	0	1	22.69	0.1858
					1	49	1	22.63	0.1832
					1	99	1	22.57	0.1807
					50	0	2	21.68	0.1472
					50	24	2	21.59	0.1442
		50	49		2	21.57	0.1435		
		100	0	2	21.77	0.1503			
		19100	1900.0	QPSK	1	0	0	23.65	0.2317
					1	49	0	23.53	0.2254
					1	99	0	23.54	0.2259
					50	0	1	22.78	0.1897
					50	24	1	22.53	0.1791
					50	49	1	22.61	0.1824
				100	0	1	22.59	0.1816	
				16QAM	1	0	1	22.65	0.1841
1	49				1	22.47	0.1766		
1	99				1	22.56	0.1803		
50	0				2	21.85	0.1531		
50	24				2	21.59	0.1442		
50	49	2	21.51		0.1416				
100	0	2	21.63	0.1455					

LTE Band 5

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)		
Band 5	1.4M	20407	824.7	QPSK	1	0	0	23.41	0.2193		
					1	2	0	23.32	0.2148		
					1	5	0	23.15	0.2065		
					3	0	1	22.35	0.1718		
					3	1	1	22.41	0.1742		
					3	2	1	22.28	0.1690		
				16QAM	6	0	1	22.45	0.1758		
					1	0	1	22.31	0.1702		
					1	2	1	22.51	0.1782		
					1	5	1	22.21	0.1663		
					3	0	2	21.28	0.1343		
					3	1	2	21.49	0.1409		
		20525	836.5	QPSK	836.5	QPSK	3	2	2	21.26	0.1337
							6	0	2	21.23	0.1327
							1	0	0	23.38	0.2178
							1	2	0	23.19	0.2084
							1	5	0	23.08	0.2032
							3	0	1	22.51	0.1782
				16QAM	3	1	1	22.28	0.1690		
					3	2	1	22.35	0.1718		
					6	0	1	22.59	0.1816		
					1	0	1	22.45	0.1758		
					1	2	1	22.33	0.1710		
					1	5	1	22.37	0.1726		
		20642	848.2	QPSK	848.2	QPSK	3	0	2	21.48	0.1406
							3	1	2	21.28	0.1343
							3	2	2	21.28	0.1343
							6	0	2	21.35	0.1365
							1	0	0	23.24	0.2109
							1	2	0	23.10	0.2042
				16QAM	1	5	0	22.93	0.1963		
					3	0	1	22.27	0.1687		
					3	1	1	22.13	0.1633		
					3	2	1	21.96	0.1570		
					6	0	1	22.24	0.1675		
					1	0	1	22.20	0.1660		
16QAM	1	2	1	22.23	0.1671						
	1	5	1	21.93	0.1560						
	3	0	2	21.24	0.1330						
	3	1	2	21.08	0.1282						
	3	2	2	20.97	0.1250						
	6	0	2	21.08	0.1282						

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
Band 5	3M	20415	825.5	QPSK	1	0	0	23.44	0.2208
					1	7	0	23.35	0.2163
					1	14	0	23.18	0.2080
					8	0	1	22.38	0.1730
					8	4	1	22.44	0.1754
					8	7	1	22.31	0.1702
		15	0	1	22.48	0.1770			
		16QAM	1	0	1	22.34	0.1714		
			1	7	1	22.54	0.1795		
			1	14	1	22.24	0.1675		
			8	0	2	21.31	0.1352		
			8	4	2	21.52	0.1419		
			8	7	2	21.29	0.1346		
		15	0	2	21.26	0.1337			
		20525	836.5	QPSK	1	0	0	23.39	0.2183
					1	7	0	23.20	0.2089
					1	14	0	23.09	0.2037
					8	0	1	22.52	0.1786
	8				4	1	22.29	0.1694	
	8				7	1	22.36	0.1722	
	15	0	1	22.60	0.1820				
	16QAM	1	0	1	22.46	0.1762			
		1	7	1	22.34	0.1714			
		1	14	1	22.38	0.1730			
		8	0	2	21.49	0.1409			
		8	4	2	21.29	0.1346			
		8	7	2	21.29	0.1346			
	15	0	2	21.36	0.1368				
	20634	847.4	QPSK	1	0	0	23.26	0.2118	
				1	7	0	23.12	0.2051	
				1	14	0	22.95	0.1972	
				8	0	1	22.29	0.1694	
				8	4	1	22.15	0.1641	
				8	7	1	21.98	0.1578	
		15	0	1	22.26	0.1683			
		16QAM	1	0	1	22.22	0.1667		
1			7	1	22.25	0.1679			
1			14	1	21.95	0.1567			
8			0	2	21.26	0.1337			
8			4	2	21.10	0.1288			
8	7		2	20.99	0.1256				
15	0	2	21.10	0.1288					

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
Band 5	5M	20425	826.5	QPSK	1	0	0	23.46	0.2218
					1	12	0	23.37	0.2173
					1	24	0	23.20	0.2089
					12	0	1	22.40	0.1738
					12	6	1	22.46	0.1762
					12	11	1	22.33	0.1710
		25	0	1	22.50	0.1778			
		16QAM	1	0	1	22.36	0.1722		
			1	12	1	22.56	0.1803		
			1	24	1	22.26	0.1683		
			12	0	2	21.33	0.1358		
			12	6	2	21.54	0.1426		
			12	11	2	21.31	0.1352		
		25	0	2	21.28	0.1343			
		20525	836.5	QPSK	1	0	0	23.40	0.2188
					1	12	0	23.21	0.2094
					1	24	0	23.10	0.2042
					12	0	1	22.53	0.1791
	12				6	1	22.30	0.1698	
	12				11	1	22.37	0.1726	
	25	0	1	22.61	0.1824				
	16QAM	1	0	1	22.47	0.1766			
		1	12	1	22.35	0.1718			
		1	24	1	22.39	0.1734			
		12	0	2	21.50	0.1413			
		12	6	2	21.30	0.1349			
		12	11	2	21.30	0.1349			
	25	0	2	21.37	0.1371				
	20625	846.5	QPSK	1	0	0	23.28	0.2128	
				1	12	0	23.14	0.2061	
				1	24	0	22.97	0.1982	
				12	0	1	22.31	0.1702	
				12	6	1	22.17	0.1648	
				12	11	1	22.00	0.1585	
		25	0	1	22.28	0.1690			
		16QAM	1	0	1	22.24	0.1675		
1			12	1	22.27	0.1687			
1			24	1	21.97	0.1574			
12			0	2	21.28	0.1343			
12			6	2	21.12	0.1294			
12	11		2	21.01	0.1262				
25	0	2	21.12	0.1294					

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)		
Band 5	10M	20450	829.0	QPSK	1	0	0	23.51	0.2244		
					1	24	0	23.42	0.2198		
					1	49	0	23.25	0.2113		
					25	0	1	22.45	0.1758		
					25	12	1	22.51	0.1782		
					25	24	1	22.38	0.1730		
				50	0	1	22.55	0.1799			
				16QAM	1	0	1	22.41	0.1742		
					1	24	1	22.61	0.1824		
					1	49	1	22.31	0.1702		
					25	0	2	21.38	0.1374		
					25	12	2	21.59	0.1442		
		25	24		2	21.36	0.1368				
		20525	836.5	QPSK	836.5	QPSK	1	0	0	23.44	0.2208
							1	24	0	23.25	0.2113
							1	49	0	23.14	0.2061
							25	0	1	22.57	0.1807
							25	12	1	22.34	0.1714
							25	24	1	22.41	0.1742
				50	0	1	22.65	0.1841			
				16QAM	1	0	1	22.51	0.1782		
					1	24	1	22.39	0.1734		
					1	49	1	22.43	0.1750		
					25	0	2	21.54	0.1426		
					25	12	2	21.34	0.1361		
		25	24		2	21.34	0.1361				
		20600	844.0	QPSK	844.0	QPSK	1	0	0	23.35	0.2163
							1	24	0	23.21	0.2094
							1	49	0	23.04	0.2014
							25	0	1	22.38	0.1730
							25	12	1	22.24	0.1675
							25	24	1	22.07	0.1611
				50	0	1	22.35	0.1718			
				16QAM	1	0	1	22.31	0.1702		
					1	24	1	22.34	0.1714		
					1	49	1	22.04	0.1600		
25	0				2	21.35	0.1365				
25	12				2	21.19	0.1315				
25	24	2	21.08		0.1282						
50	0	2	21.19	0.1315							

7.2 ERP & EIRP MEASUREMENT

LIMIT

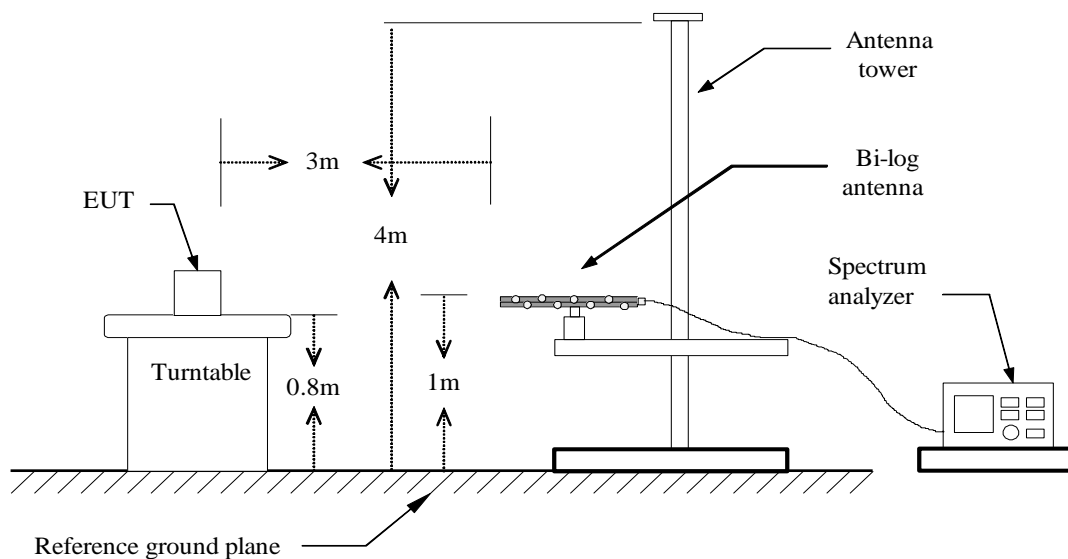
According to FCC §2.1046

FCC 22.913(a): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

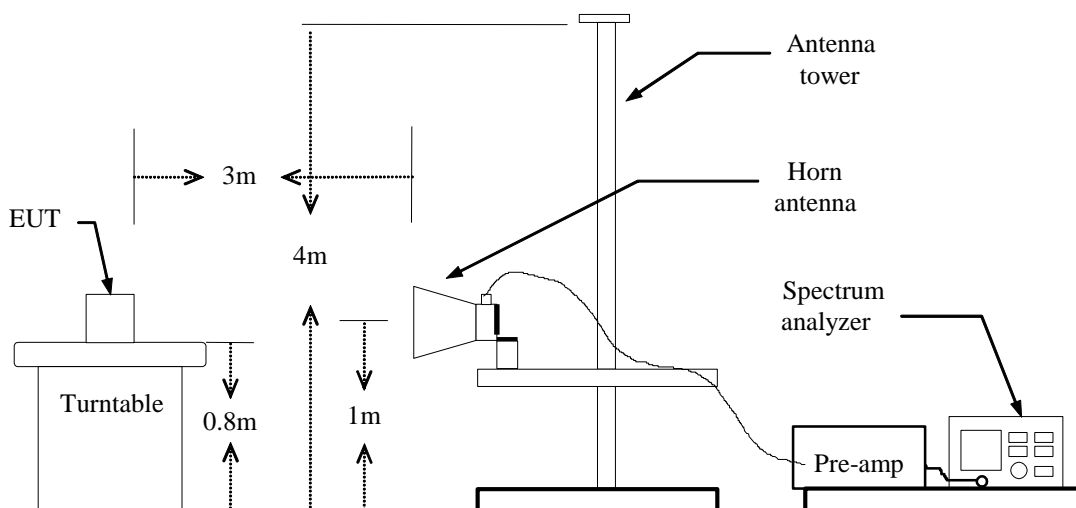
FCC 24.232(c): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

Test Configuration

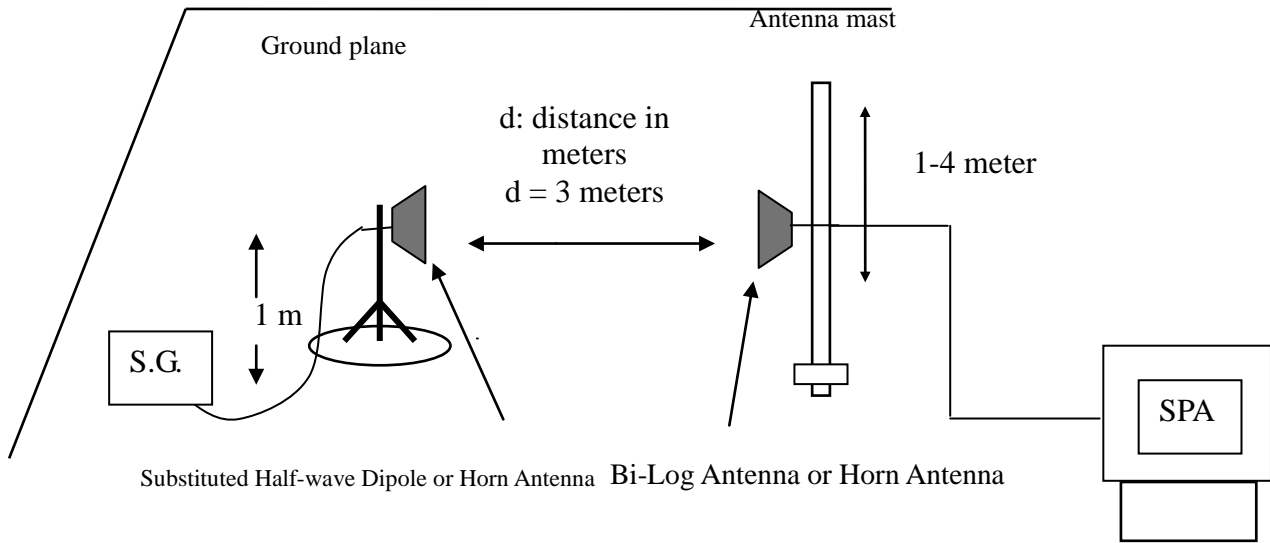
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



TEST PROCEDURE

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement of the EUT, the resolution bandwidth was set to 5MHz and the average bandwidth was set to 50MHz. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824-849MHz, and EIRP in frequency band 1851.25 –1910MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) or horn antenna (1851.25-1910MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP/EIRP was calculated as follows:

$$ERP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} - 2.15$$

$$EIRP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$$

TEST RESULTS

No non-compliance noted.

LTE Band 2

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	1.4	Lowest	QPSK	1	0	28.90	0.776	23.93	0.247
		Middle		1	0	29.74	0.941	26.15	0.412
		Highest		1	0	29.36	0.862	24.23	0.264
		Lowest	16 QAM	1	0	25.02	0.317	23.51	0.224
		Middle		1	0	27.10	0.512	25.24	0.334
		Highest		1	0	25.65	0.367	24.11	0.257

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	3	Lowest	QPSK	1	0	27.61	0.576	22.65	0.184
		Middle		1	0	28.47	0.703	23.66	0.232
		Highest		1	0	28.14	0.651	23.06	0.202
		Lowest	16 QAM	1	0	25.10	0.323	23.52	0.224
		Middle		1	0	26.27	0.423	24.91	0.309
		Highest		1	0	25.75	0.375	24.20	0.263

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	5	Lowest	QPSK	1	0	26.86	0.485	21.99	0.158
		Middle		1	0	27.54	0.567	22.87	0.193
		Highest		1	0	27.45	0.555	21.70	0.147
		Lowest	16 QAM	1	0	25.00	0.316	23.40	0.218
		Middle		1	0	25.98	0.396	25.02	0.317
		Highest		1	0	26.16	0.413	24.77	0.299

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	10	Lowest	QPSK	1	0	25.16	0.328	23.54	0.225
		Middle		1	0	26.55	0.451	24.93	0.311
		Highest		1	0	26.84	0.483	25.81	0.381
		Lowest	16 QAM	1	0	24.92	0.310	23.34	0.215
		Middle		1	0	26.19	0.415	24.84	0.304
		Highest		1	0	25.82	0.381	24.53	0.283

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	15	Lowest	QPSK	1	0	25.08	0.322	23.41	0.219
		Middle		1	0	25.70	0.371	24.34	0.271
		Highest		1	0	25.84	0.383	25.71	0.372
		Lowest	16 QAM	1	0	28.28	0.672	23.17	0.207
		Middle		1	0	29.04	0.801	24.01	0.251
		Highest		1	0	29.02	0.797	25.90	0.389

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
2	20	Lowest	QPSK	1	0	24.89	0.308	23.32	0.214
		Middle		1	0	25.37	0.344	24.18	0.261
		Highest		1	0	26.43	0.439	24.82	0.303
		Lowest	16 QAM	1	0	24.86	0.306	23.37	0.217
		Middle		1	0	25.19	0.330	23.99	0.250
		Highest		1	0	26.41	0.437	24.75	0.298

Remark:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = S.G Level + Gain of Substitution horn + TX cable loss.
3. The value in bold is the worst.

LTE Band 5

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
5	1.4	Lowest	QPSK	1	0	29.53	0.897	23.78	0.238
		Middle		1	0	29.71	0.935	28.66	0.734
		Highest		1	0	27.86	0.610	24.03	0.252
		Lowest	16 QAM	1	0	29.48	0.887	23.18	0.207
		Middle		1	0	28.16	0.654	23.17	0.207
		Highest		1	0	27.79	0.601	24.18	0.261

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
5	3	Lowest	QPSK	1	0	29.36	0.862	28.22	0.663
		Middle		1	0	28.70	0.741	23.04	0.201
		Highest		1	0	28.23	0.665	24.29	0.268
		Lowest	16 QAM	1	0	29.62	0.916	23.15	0.206
		Middle		1	0	28.49	0.706	23.07	0.202
		Highest		1	0	28.19	0.659	24.50	0.281

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
5	5	Lowest	QPSK	1	0	26.95	0.495	28.22	0.663
		Middle		1	0	26.19	0.415	28.82	0.762
		Highest		1	0	26.82	0.480	29.54	0.899
		Lowest	16 QAM	1	0	27.02	0.503	28.10	0.645
		Middle		1	0	26.30	0.426	28.80	0.758
		Highest		1	0	26.90	0.489	29.55	0.901

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
5	10	Lowest	QPSK	1	0	27.04	0.505	27.86	0.610
		Middle		1	0	25.94	0.392	27.83	0.606
		Highest		1	0	26.20	0.416	28.91	0.778
		Lowest	16 QAM	1	0	26.89	0.488	28.03	0.635
		Middle		1	0	26.73	0.470	29.16	0.824
		Highest		1	0	26.19	0.415	28.96	0.787

Remark:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = S.G Level + Gain of Substitution horn + TX cable loss.
3. The value in bold is the worst.

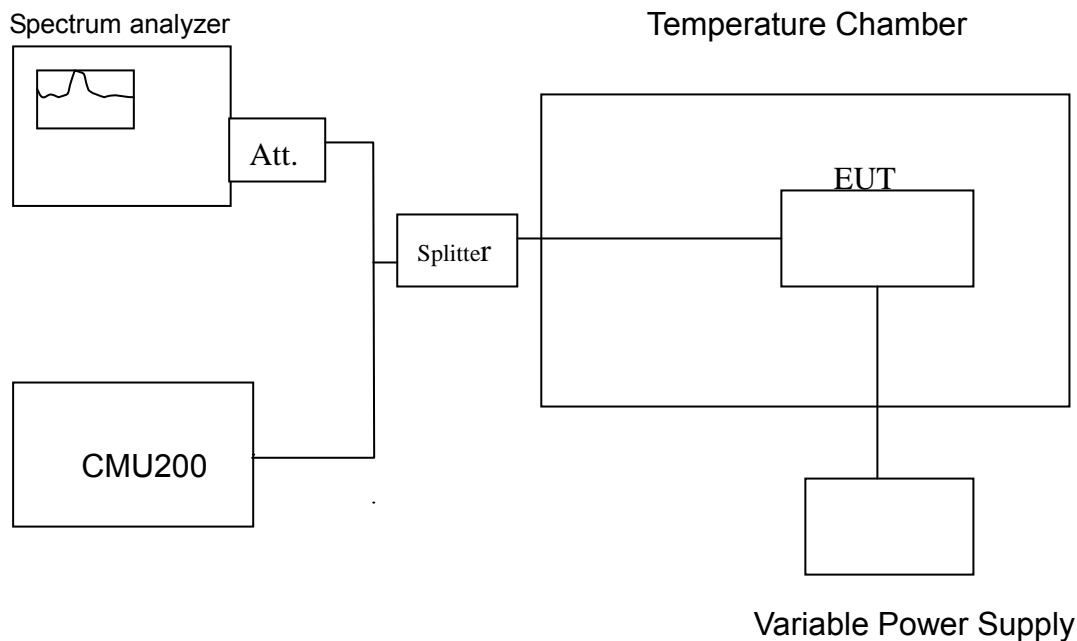
7.3 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

LIMIT

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

Frequency Tolerance: 2.5 ppm

Test Configuration



Remark: Measurement setup for testing on Antenna connector

TEST PROCEDURE

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

TEST RESULTS

No non-compliance noted.

Test Results

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

LTE Band 2

Reference Frequency: LTE Band 2 Max Bandwidth QPSK 1880 MHz				
Limit: ± 2.5 ppm = 4700Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
12	50	0.03	0.000016	+/- 2.5
12	40	0.04	0.000021	
12	30	0.03	0.000016	
12	20	0.01	0.000005	
12	10	0.04	0.000021	
12	0	0.02	0.000011	
12	-10	0.00	0.000000	
12	-20	0.01	0.000005	

Reference Frequency: LTE Band 2 Max Bandwidth 16QAM 1882.5 MHz				
Limit: ± 2.5 ppm = 4700Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
12	50	0.05	0.000027	+/- 2.5
12	40	0.03	0.000016	
12	30	0.02	0.000011	
12	20	0.03	0.000016	
12	10	0.04	0.000021	
12	0	0.01	0.000005	
12	-10	0.02	0.000011	
12	-20	0.01	0.000005	

LTE Band 5

Reference Frequency: LTE Band 5 Max Bandwidth QPSK 836.5 MHz				
Limit: ± 2.5 ppm = 2091.25Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
12	50	0.02	0.000024	+/- 2.5
12	40	0.00	0.000000	
12	30	0.03	0.000036	
12	20	0.00	0.000006	
12	10	0.01	0.000012	
12	0	0.01	0.000012	
12	-10	0.04	0.000048	
12	-20	0.02	0.000024	

Reference Frequency: LTE Band 5 Max Bandwidth 16QAM 836.5 MHz				
Limit: ± 2.5 ppm = 2091.25Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
12	50	0.01	0.000011	+/- 2.5
12	40	-0.02	-0.000023	
12	30	-0.01	-0.000012	
12	20	0.01	0.000012	
12	10	0.02	0.000024	
12	0	0.02	0.000024	
12	-10	0.01	0.000012	
12	-20	0.03	0.000036	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

LTE Band 2

Reference Frequency: LTE Band 2 Max Bandwidth QPSK 1880 MHz				
Limit: ± 2.5 ppm = 4700Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
10.2	20	0.02	0.0000	+/- 2.5
12	20	0.01	0.0000	
13.8	20	0.04	0.0000	

Reference Frequency: LTE Band 2 Max Bandwidth 16QAM 1882.5 MHz				
Limit: ± 2.5 ppm = 4700Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
10.2	20	0.01	0.0000	+/- 2.5
12	20	0.03	0.0000	
13.8	20	0.04	0.0000	

LTE Band 5

Reference Frequency: LTE Band 5 Max Bandwidth QPSK 836.5 MHz				
Limit: ± 2.5 ppm = 2091.25Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
10.2	20	0.00	0.000004	+/- 2.5
12	20	0.00	0.000006	
13.8	20	0.01	0.000008	

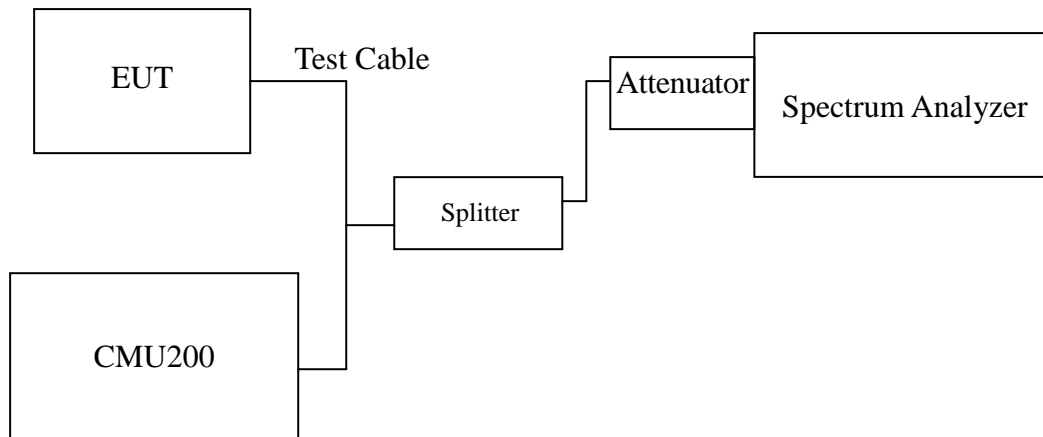
Reference Frequency: LTE Band 5 Max Bandwidth 16QAM 836.5 MHz				
Limit: ± 2.5 ppm = 2091.25Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
10.2	20	-0.01	-0.000008	+/- 2.5
12	20	0.01	0.000012	
13.8	20	0.01	0.000008	

7.4 OCCUPIED BANDWIDTH MEASUREMENT

LIMIT

According to §FCC 2.1049.

Test Configuration



Remark: Measurement setup for testing on Antenna connector

TEST PROCEDURE

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW is set to 3 times the RBW, -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

TEST RESULTS

No non-compliance noted

LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	1.0940

CHANNEL BANDWIDTH: 1.4MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	1.0940

CHANNEL BANDWIDTH: 3MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	2.6830

CHANNEL BANDWIDTH: 3MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	2.6830

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	4.4862

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	4.4862

CHANNEL BANDWIDTH: 10MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	8.9725

CHANNEL BANDWIDTH: 10MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	8.9149

CHANNEL BANDWIDTH: 15MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	13.4587

CHANNEL BANDWIDTH: 15MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	13.4587

CHANNEL BANDWIDTH: 20MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	18.0607

CHANNEL BANDWIDTH: 20MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
18900	1880.00	18.1186

LTE Band 5

CHANNEL BANDWIDTH: 1.4MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20525	836.50	1.1027

CHANNEL BANDWIDTH: 1.4MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20525	836.50	1.0946

CHANNEL BANDWIDTH: 3MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20525	836.50	2.6917

CHANNEL BANDWIDTH: 3MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20525	836.50	2.6830

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20525	836.50	4.4862

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20525	836.50	4.4717

CHANNEL BANDWIDTH: 10MHz / QPSK

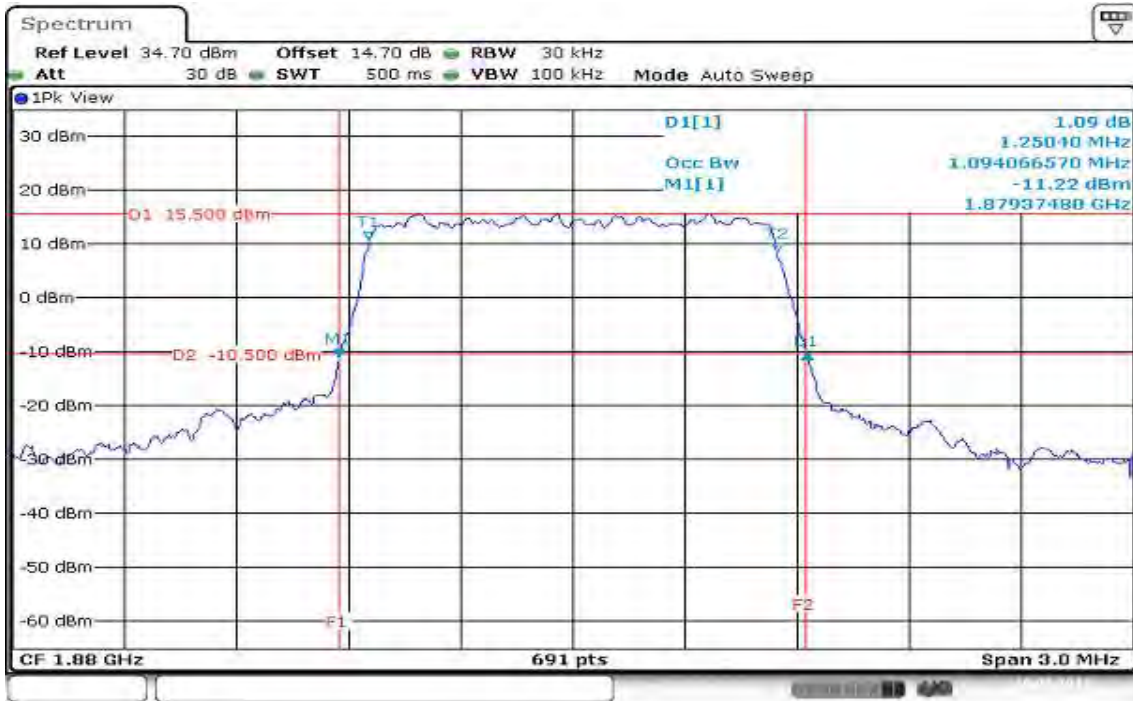
Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20525	836.50	8.9435

CHANNEL BANDWIDTH: 10MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20525	836.50	8.9146

LTE Band 2 CHANNEL BANDWIDTH: 1.4MHz / QPSK

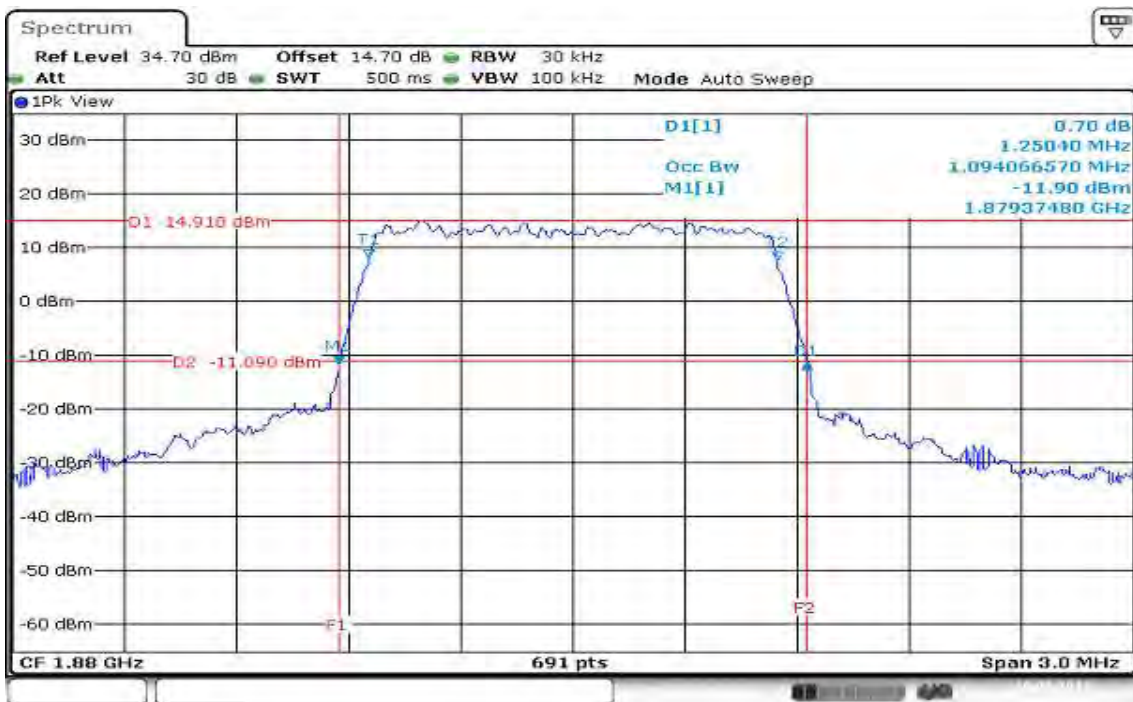
CH Mid



Date: 10 AUG 2017 14:52:21

CHANNEL BANDWIDTH: 1.4MHz / 16QAM

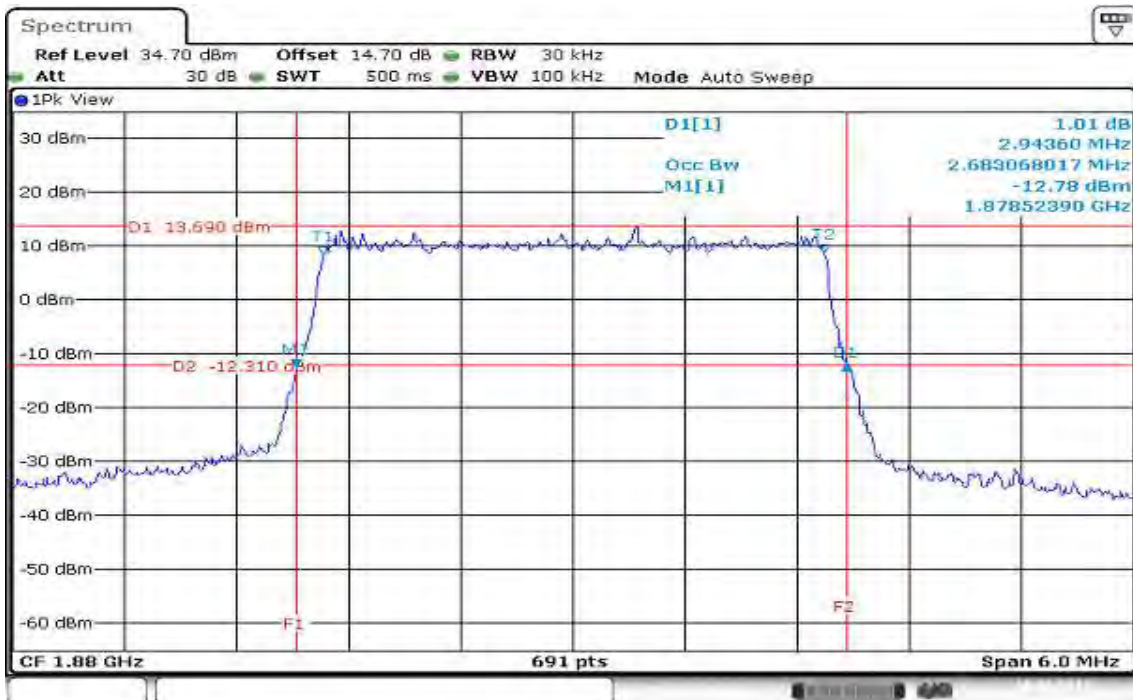
CH Mid



Date: 10 AUG 2017 14:59:26

CHANNEL BANDWIDTH:3MHz / QPSK

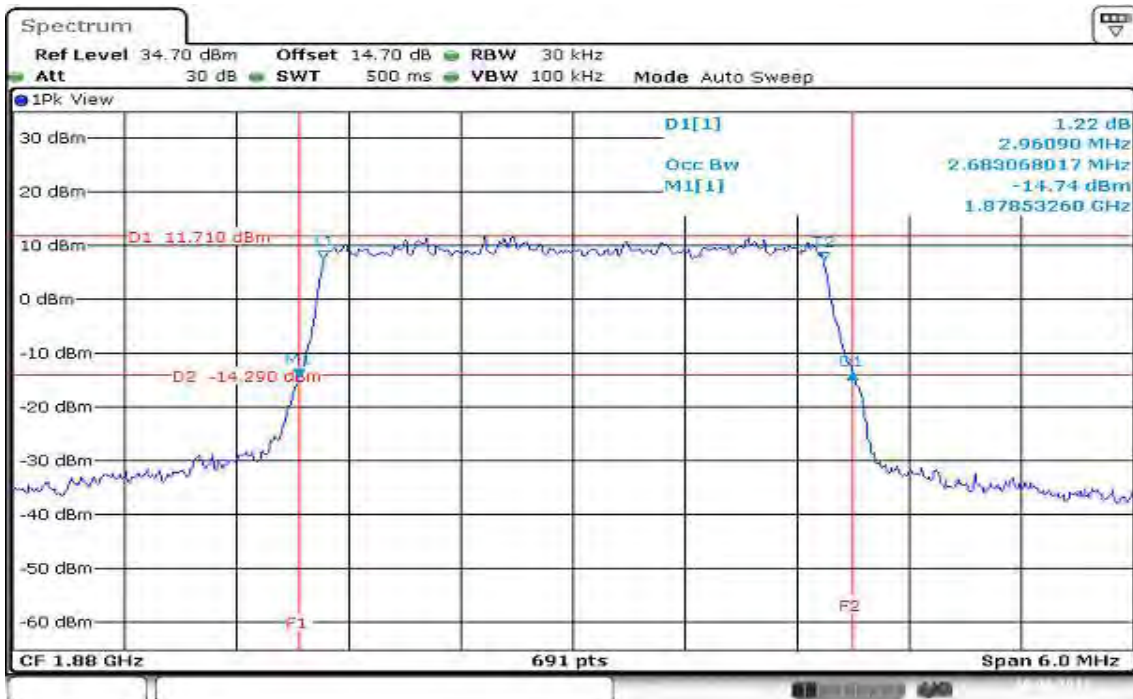
CH Mid



Date: 10 AUG 2017 15:09:40

CHANNEL BANDWIDTH: 3MHz / 16QAM

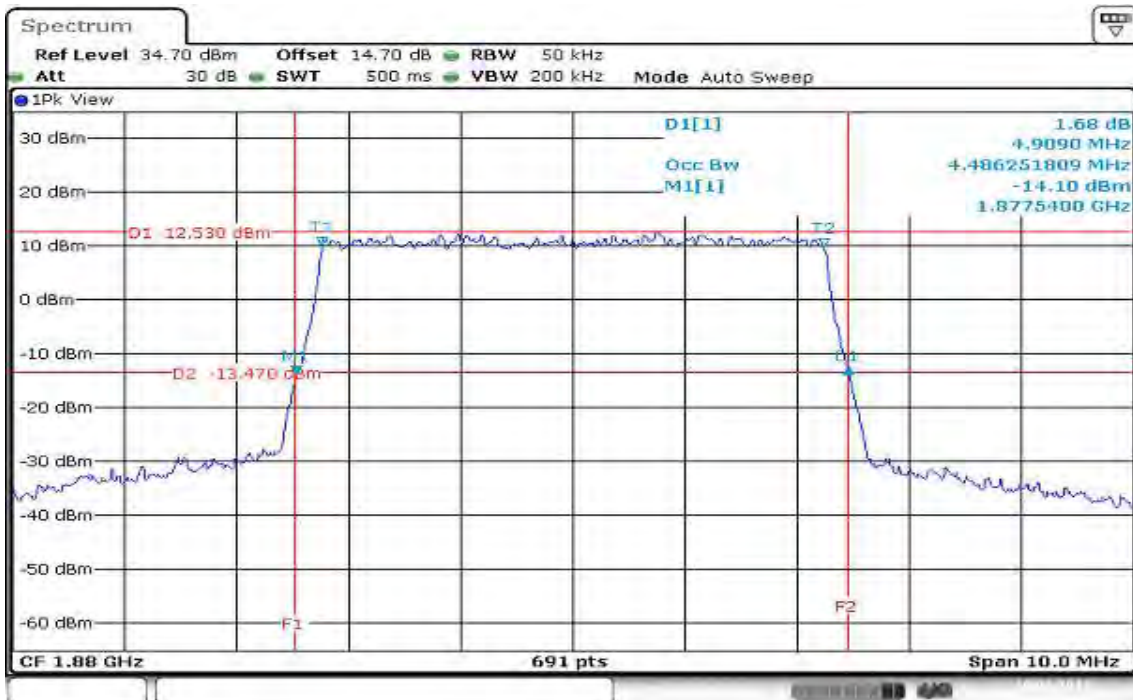
CH Mid



Date: 10 AUG 2017 15:15:24

CHANNEL BANDWIDTH: 5MHz / QPSK

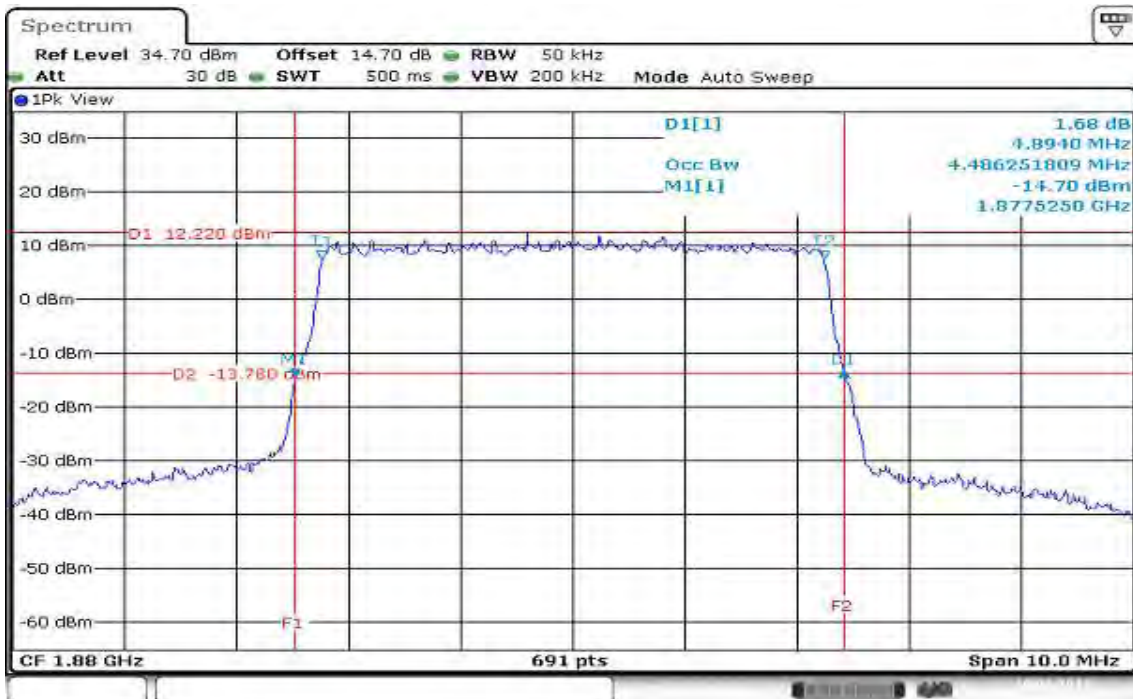
CH Mid



Date: 10 AUG 2017 15:19:08

CHANNEL BANDWIDTH: 5MHz / 16QAM

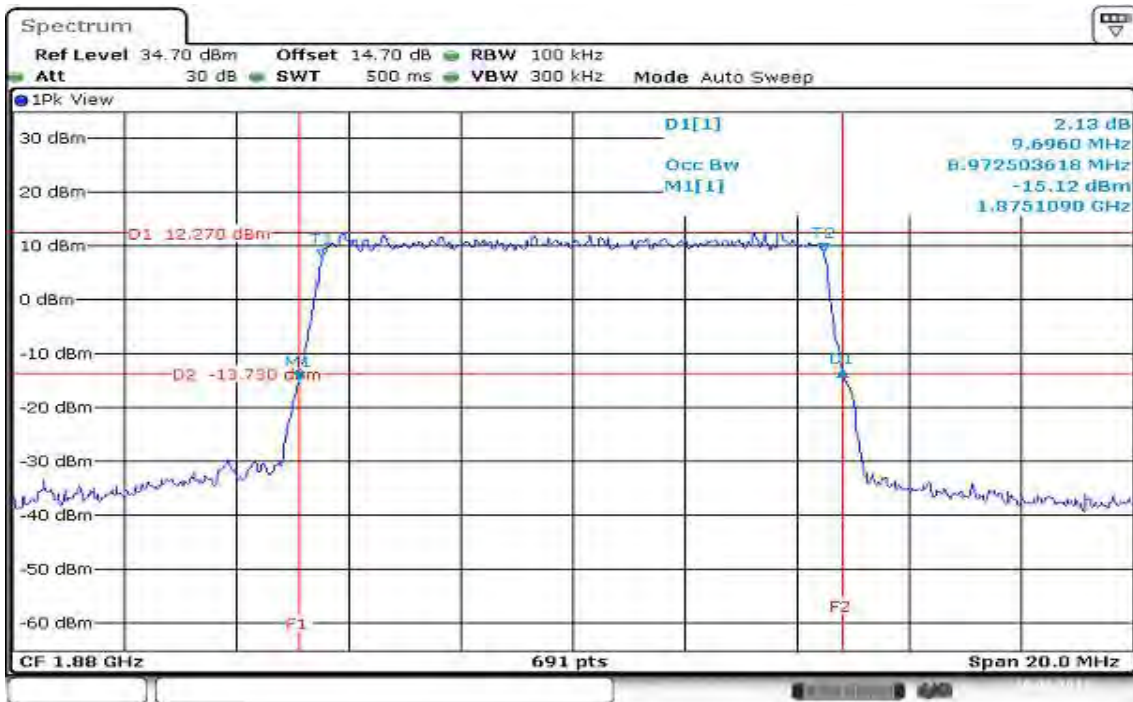
CH Mid



Date: 10 AUG 2017 15:21:29

CHANNEL BANDWIDTH: 10MHz / QPSK

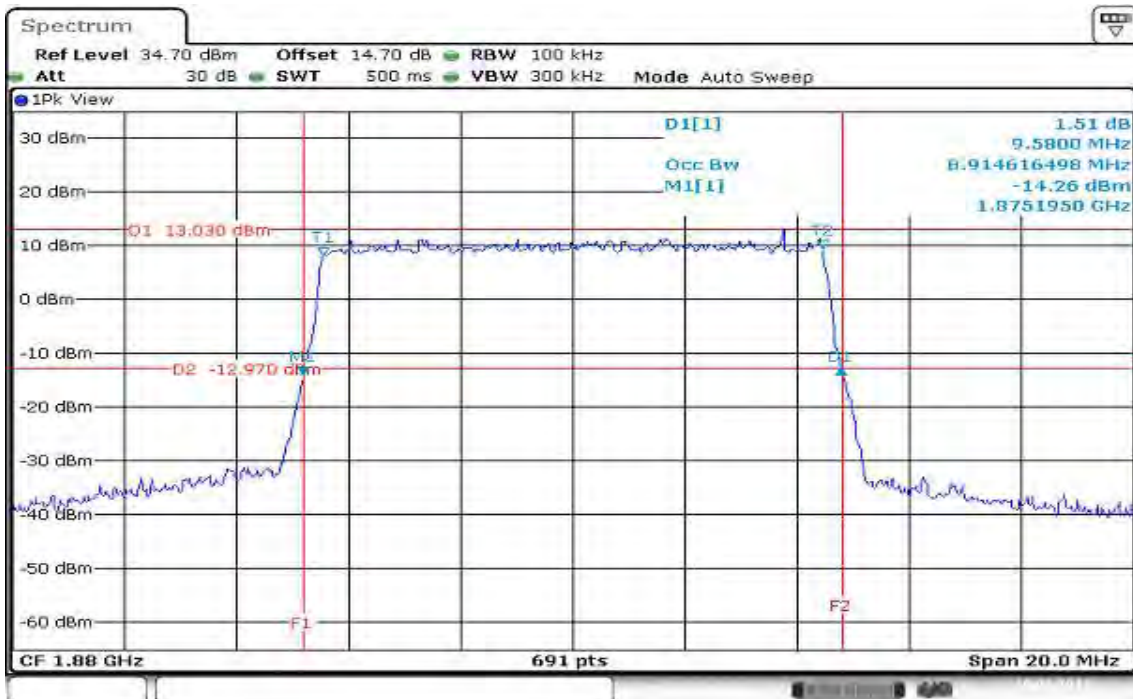
CH Mid



Date: 10 AUG 2017 15:23:26

CHANNEL BANDWIDTH: 10MHz / 16QAM

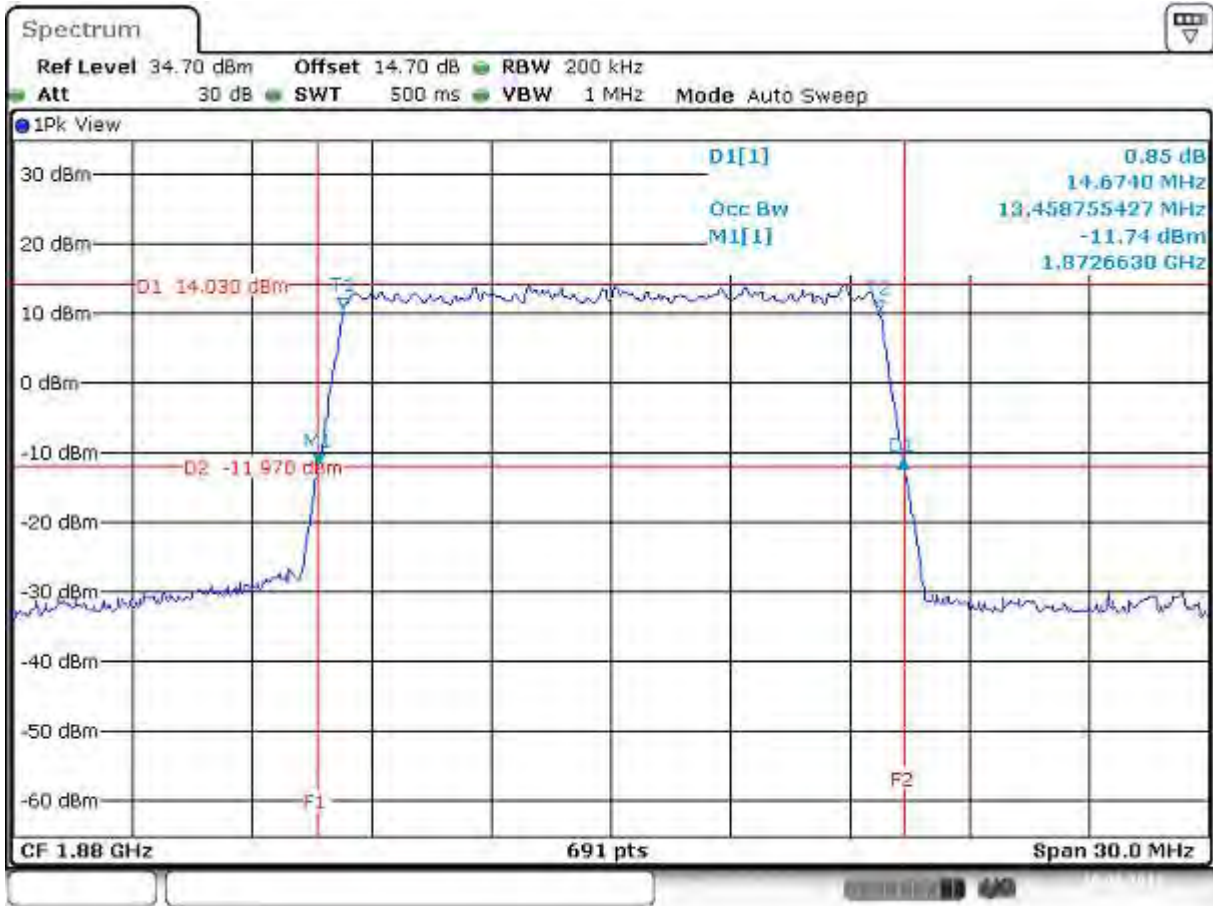
CH Mid



Date: 10 AUG 2017 15:24:29

CHANNEL BANDWIDTH: 15MHz / QPSK

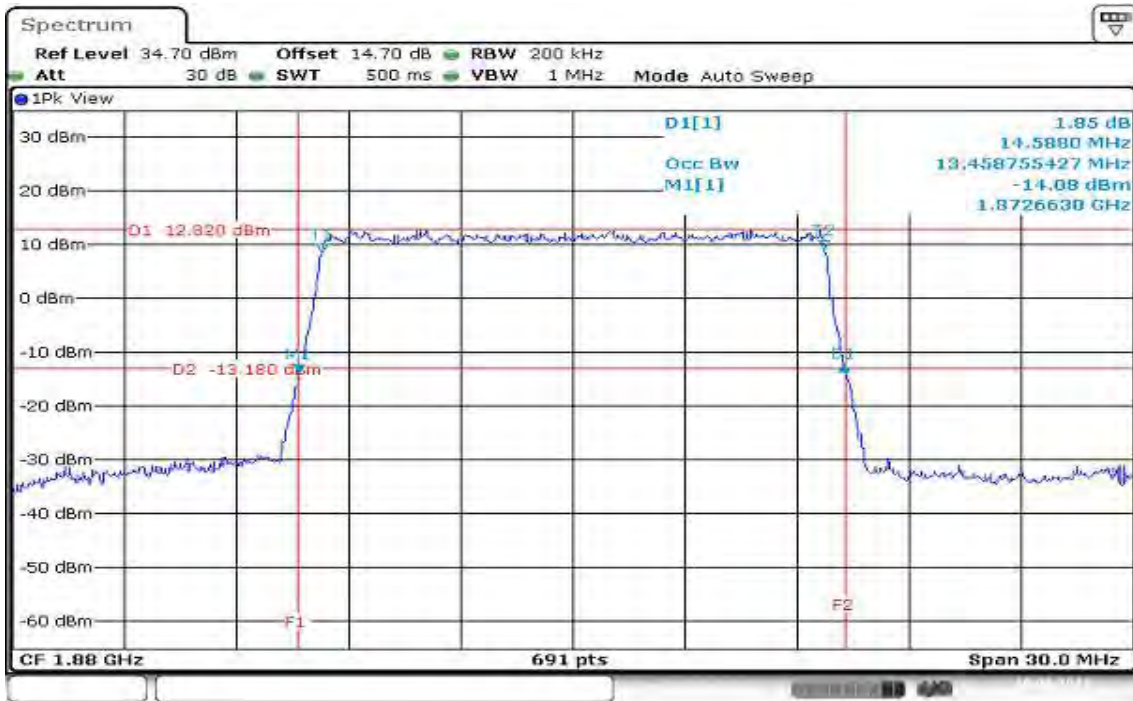
CH Mid



Date: 10 AUG 2017 15:26:20

CHANNEL BANDWIDTH: 15MHz / 16QAM

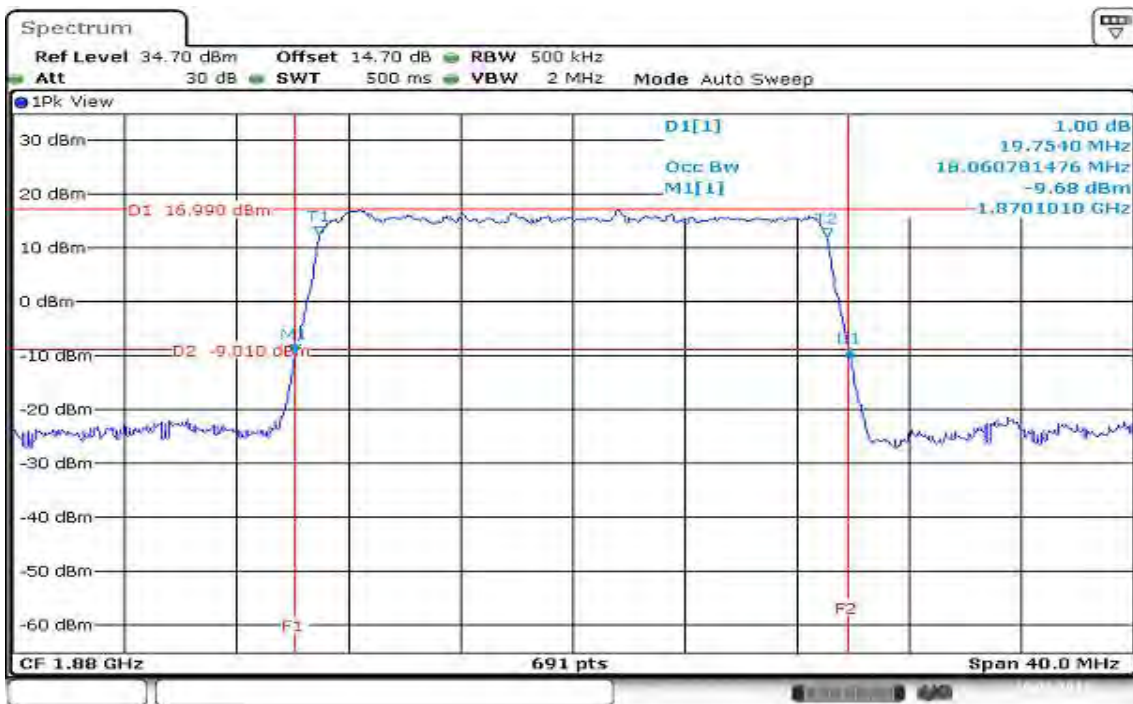
CH Mid



Date: 10 AUG 2017 15:27:42

CHANNEL BANDWIDTH: 20MHz / QPSK

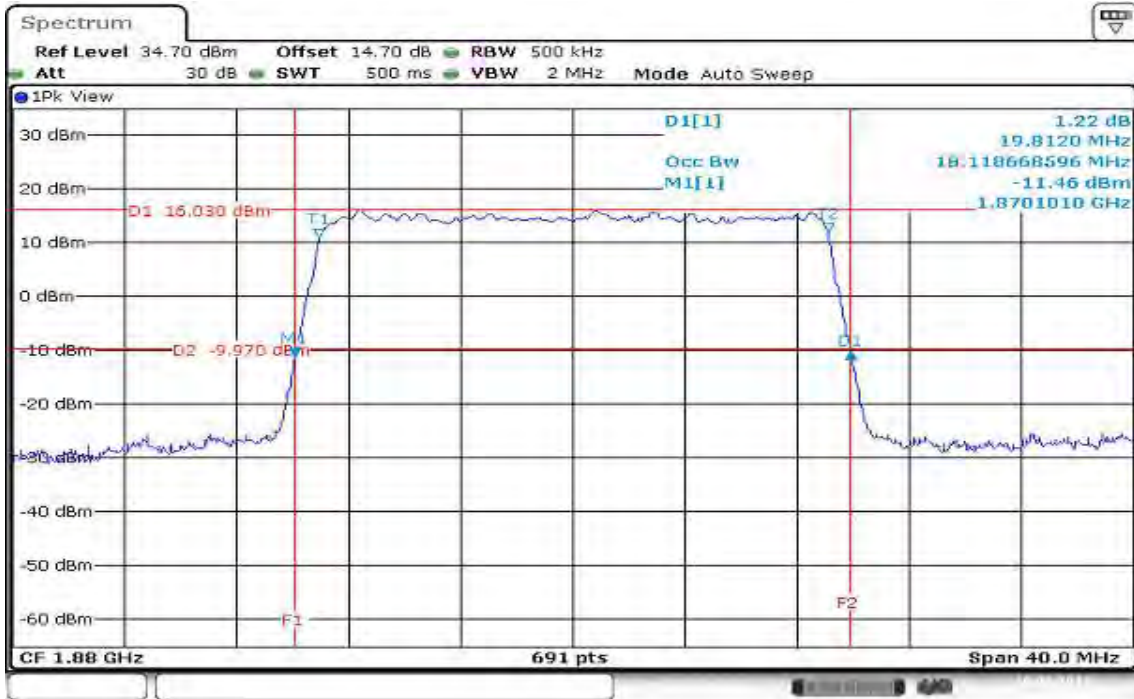
CH Mid



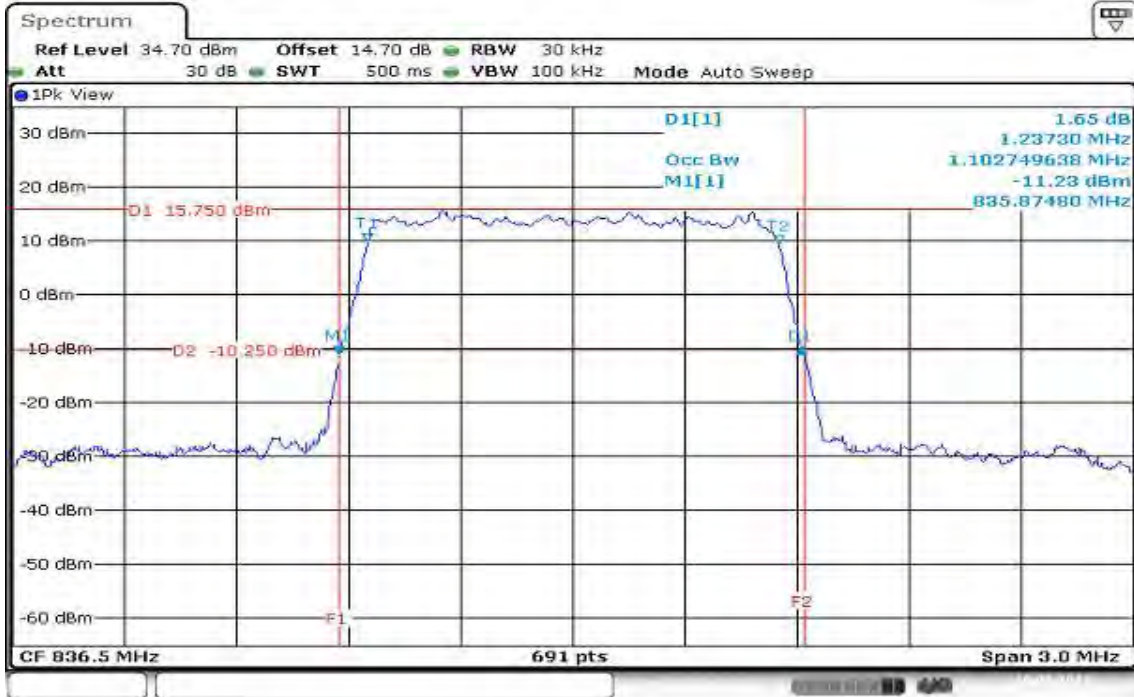
Date: 10 AUG 2017 15:29:54

CHANNEL BANDWIDTH: 20MHz / 16QAM

CH Mid

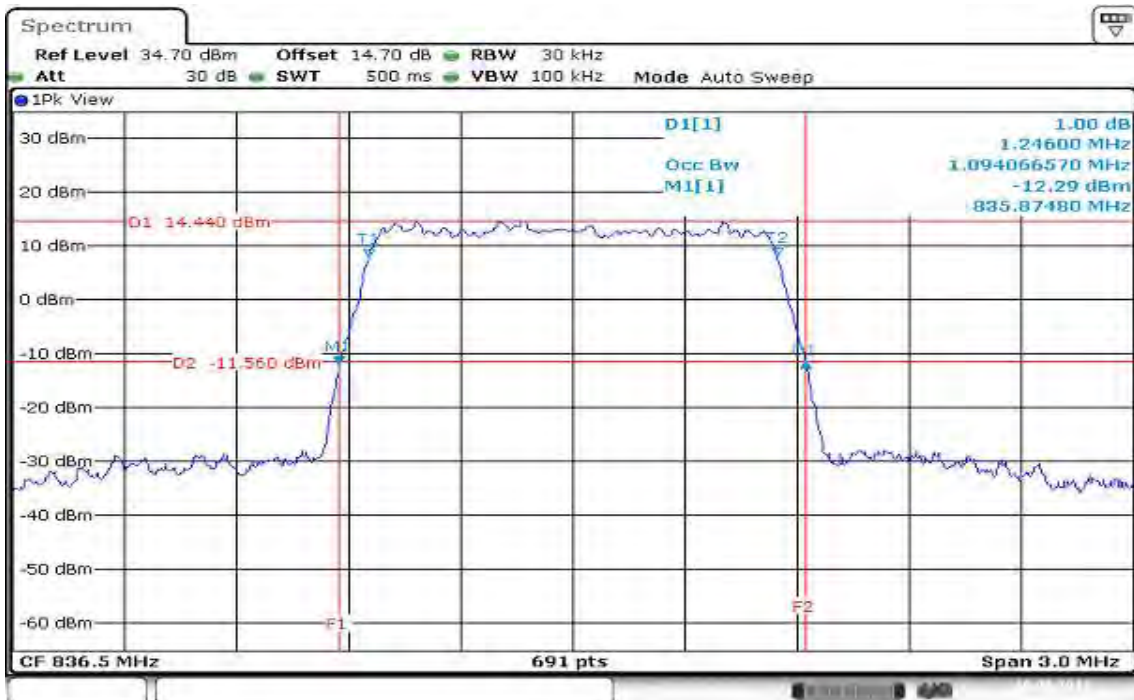


LTE Band 5
CHANNEL BANDWIDTH: 1.4MHz / QPSK
CH Mid



Date: 10 AUG 2017 16:12:45

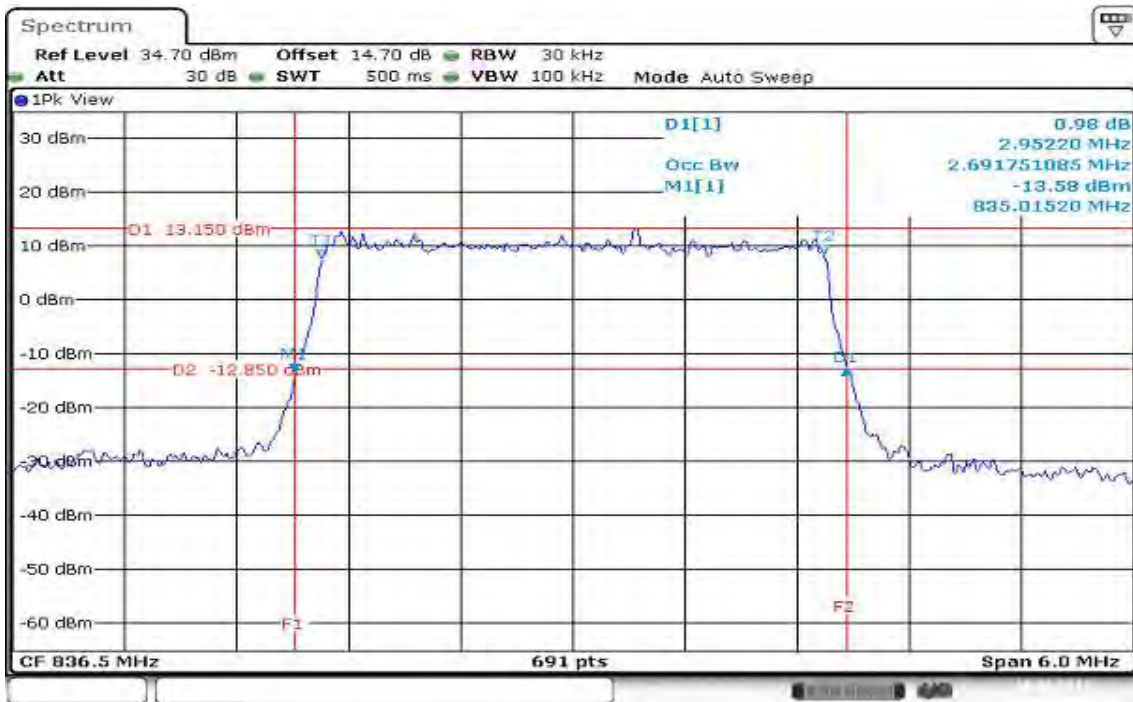
CHANNEL BANDWIDTH: 1.4MHz / 16QAM
CH Mid



Date: 10 AUG 2017 16:14:19

CHANNEL BANDWIDTH:3MHz / QPSK

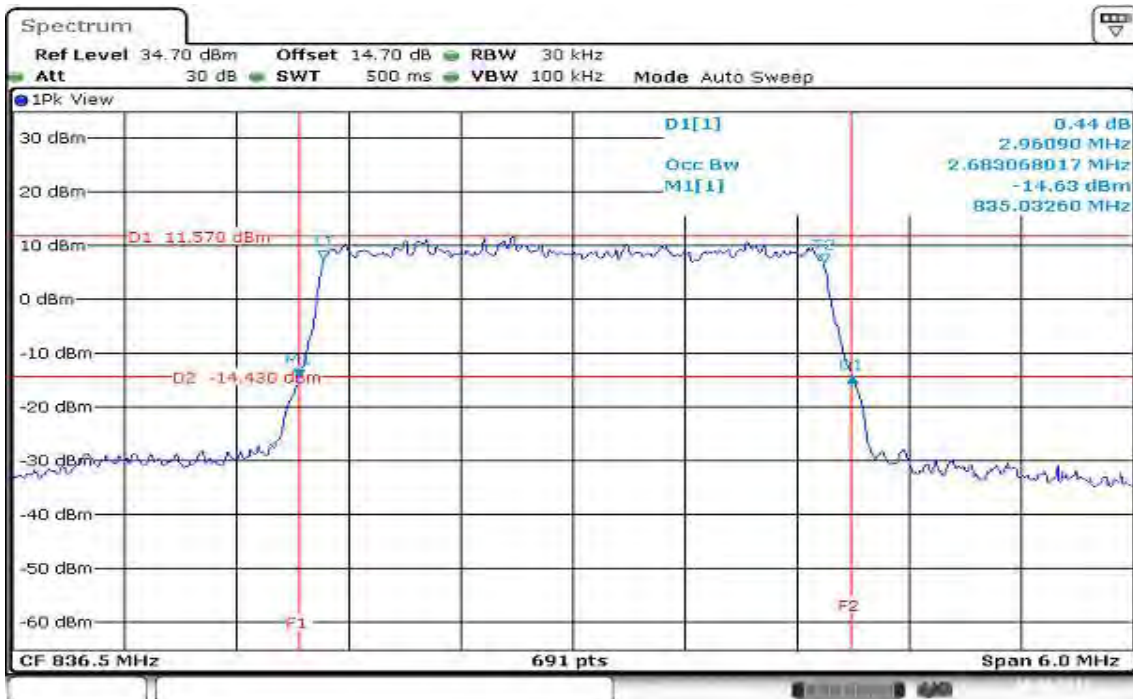
CH Mid



Date: 10 AUG 2017 16:19:07

CHANNEL BANDWIDTH: 3MHz / 16QAM

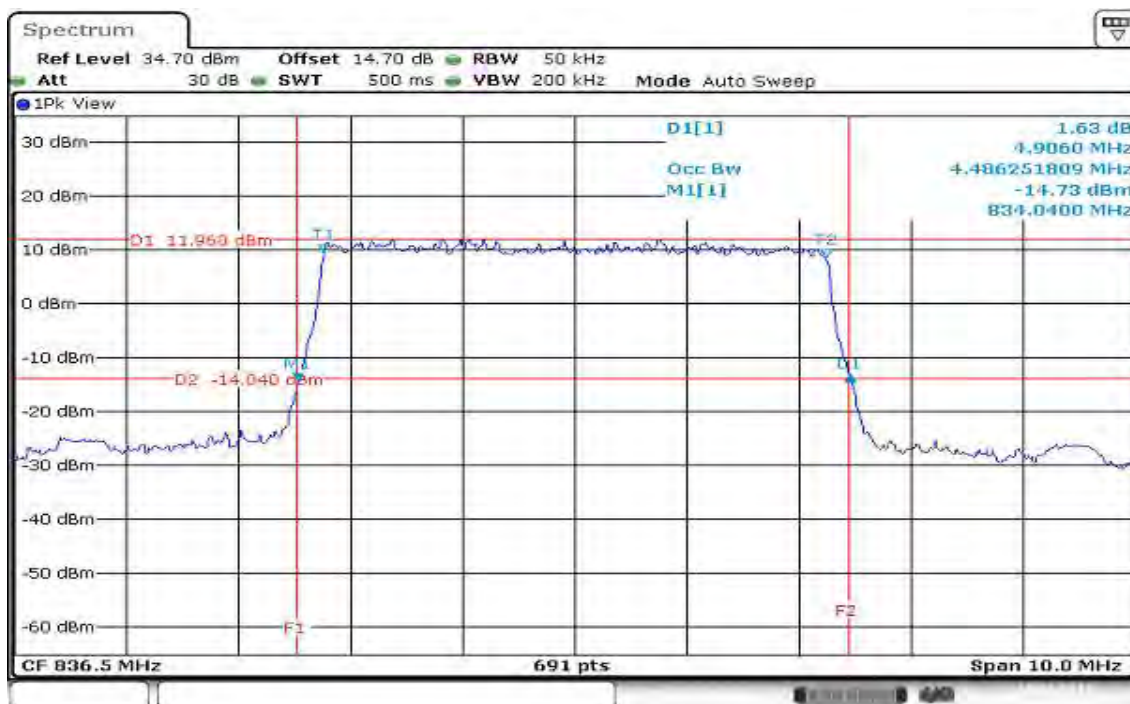
CH Mid



Date: 10 AUG 2017 16:24:24

CHANNEL BANDWIDTH: 5MHz / QPSK

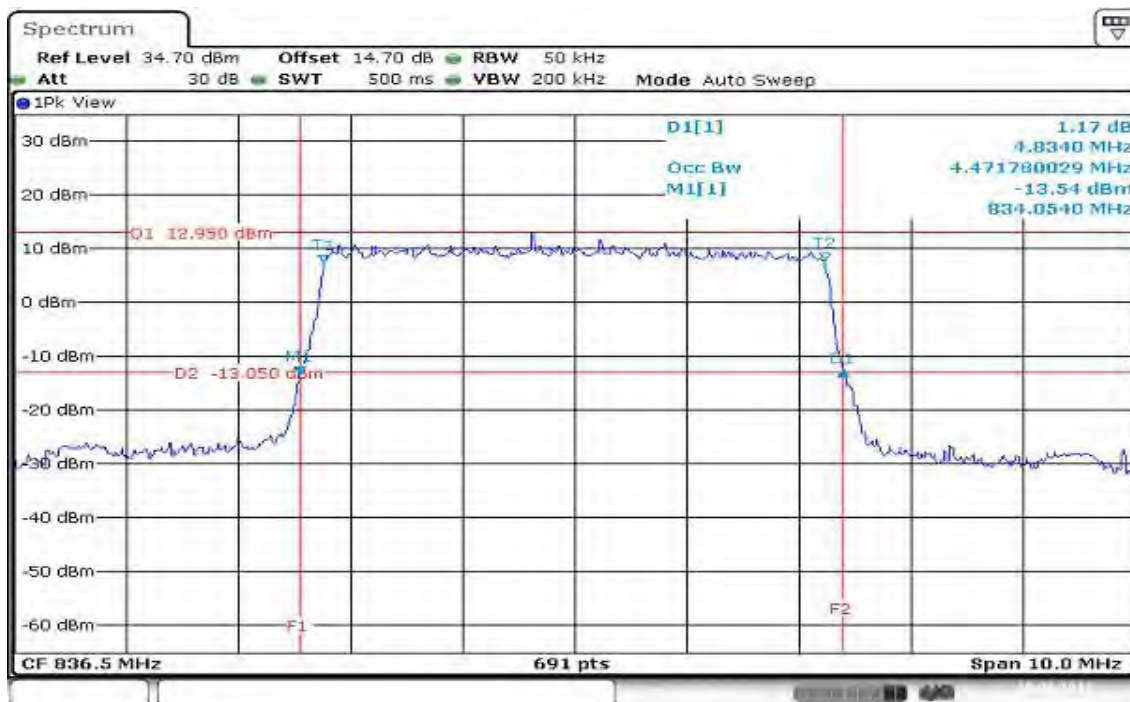
CH Mid



Date: 10 AUG 2017 16:27:22

CHANNEL BANDWIDTH: 5MHz / 16QAM

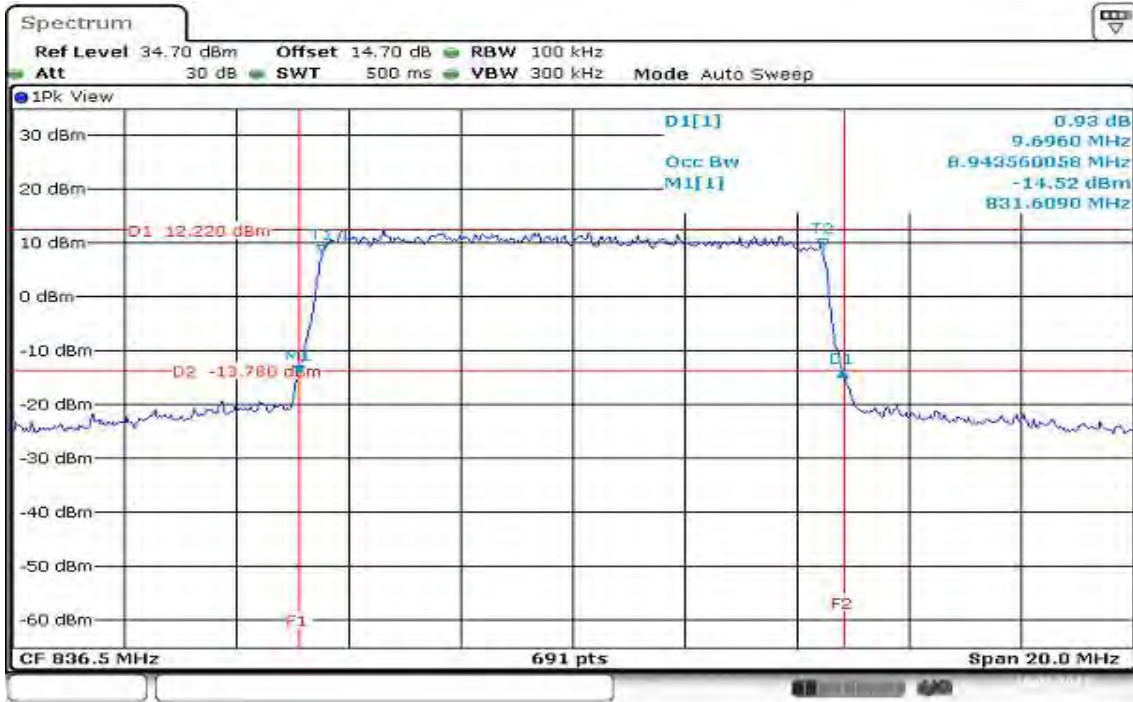
CH Mid



Date: 10 AUG 2017 16:28:26

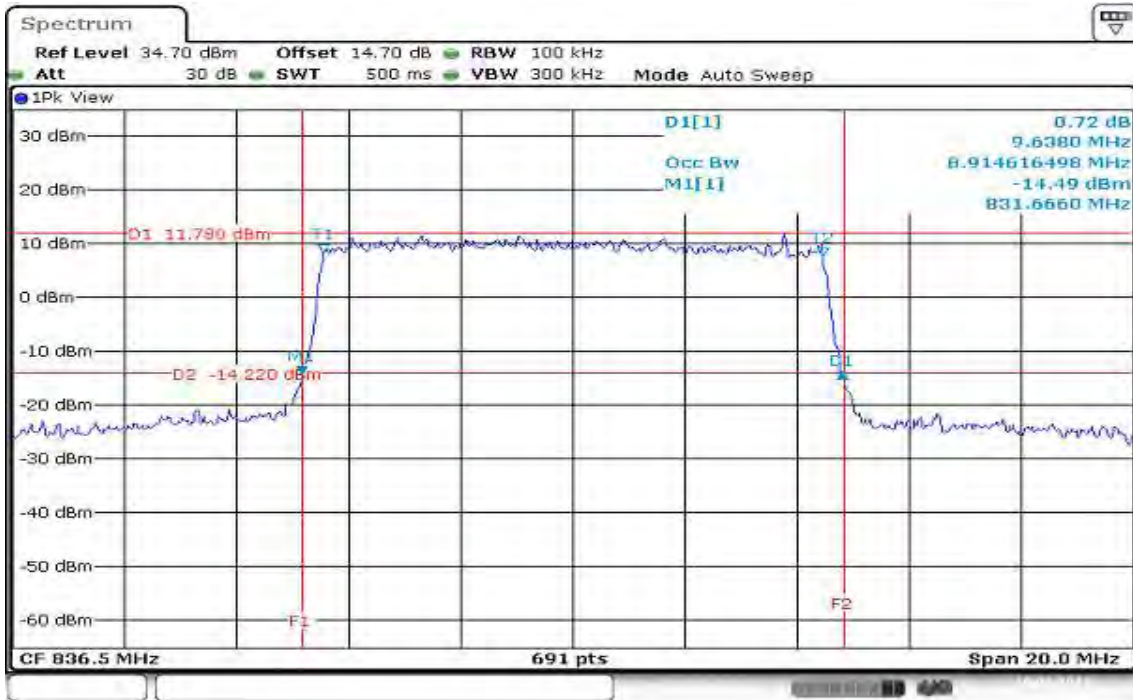
CHANNEL BANDWIDTH: 10MHz / QPSK

CH Mid



CHANNEL BANDWIDTH: 10MHz / 16QAM

CH Mid



7.5 PEAK TO AVERAGE RATIO

Limit

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

Test Procedures

1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Record the maximum PAPR level associated with a probability of 0.1%.

Test Results

LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	4.58

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.54

CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	4.61

CHANNEL BANDWIDTH: 3MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.68

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	4.67

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.25

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	4.61

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.57

CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	4.52

CHANNEL BANDWIDTH: 15MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	6.17

CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	3.54

CHANNEL BANDWIDTH: 20MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.39

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.45

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	6.23

CHANNEL BANDWIDTH: 3MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.07

CHANNEL BANDWIDTH: 3MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	6.09

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.19

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	6.09

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.13

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.57

CHANNEL BANDWIDTH: 15MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.48

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	6.12

CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	5.07

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
18900	1880.00	6.03

LTE Band 5

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	4.23

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	5.10

CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	3.36

CHANNEL BANDWIDTH: 3MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	4.87

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	4.43

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	4.96

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	3.97

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	4.99

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	5.10

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	6.12

CHANNEL BANDWIDTH: 3MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	4.87

CHANNEL BANDWIDTH: 3MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	5.77

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	4.96

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	5.77

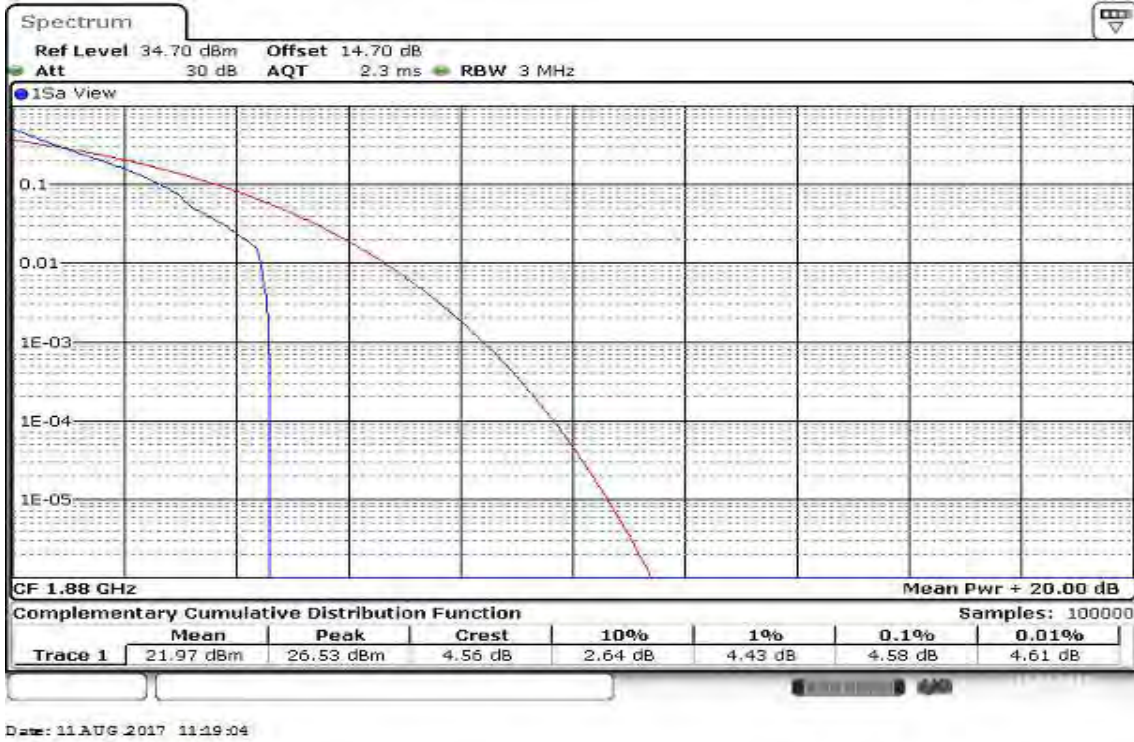
CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	4.99

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

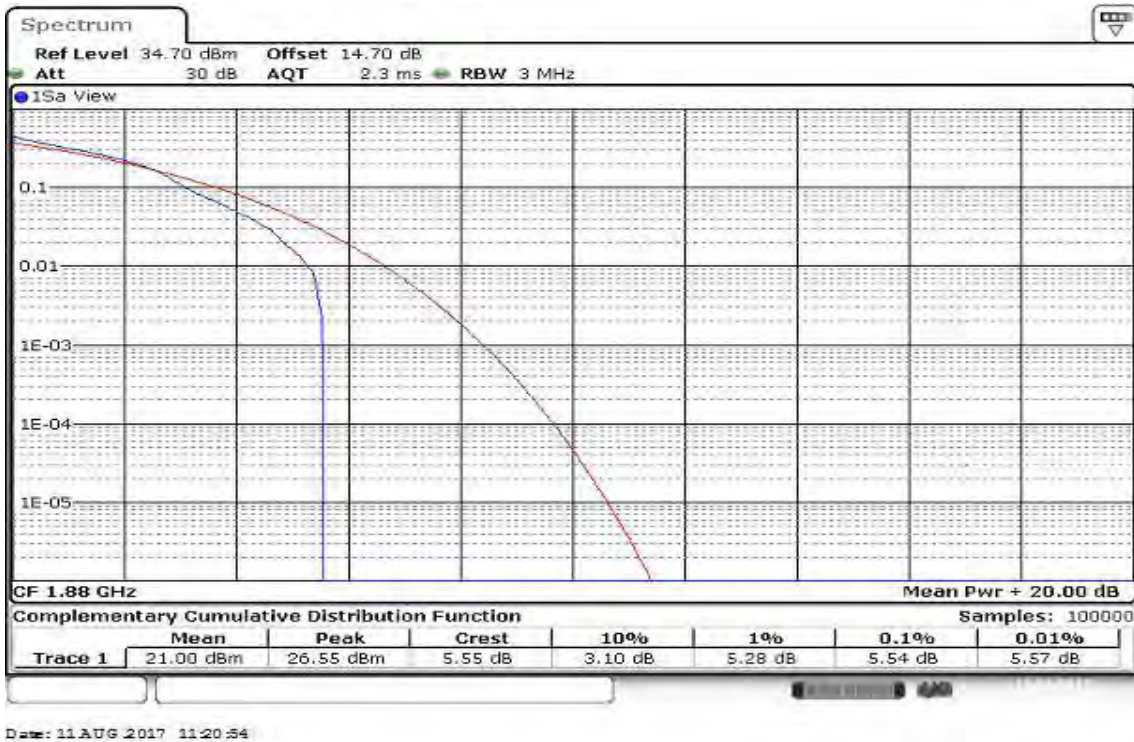
Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20525	836.5	5.91

LTE Band 2
CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB
CH Mid



Date: 11 AUG 2017 11:19:04

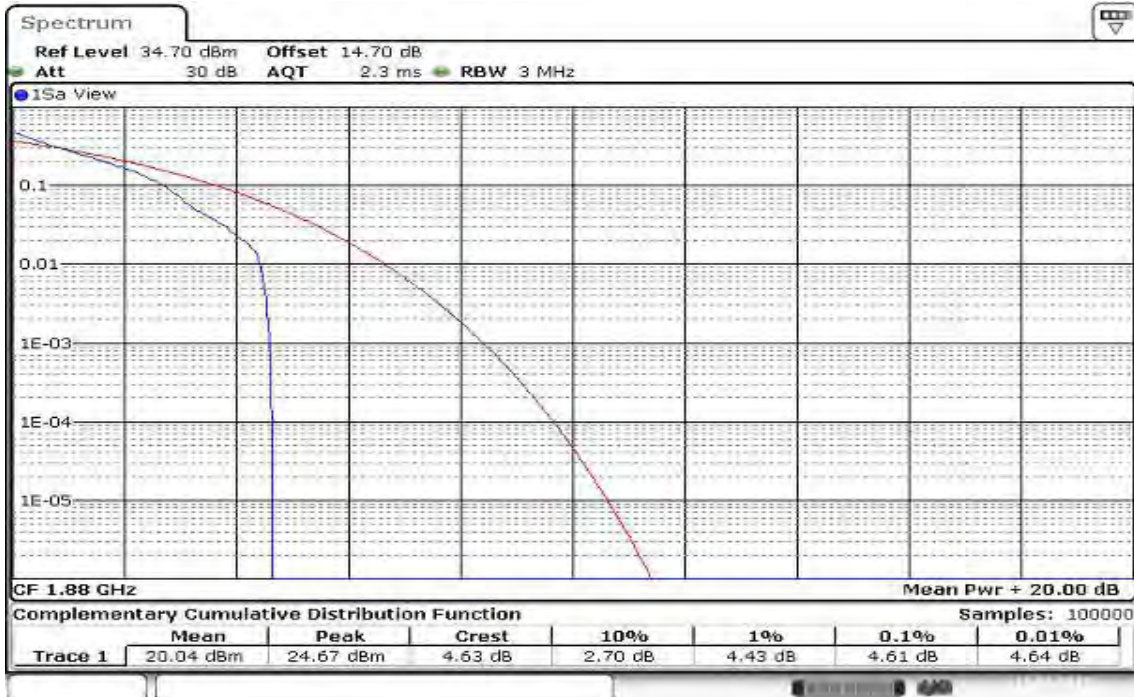
CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1RB
CH Mid



Date: 11 AUG 2017 11:20:54

CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB

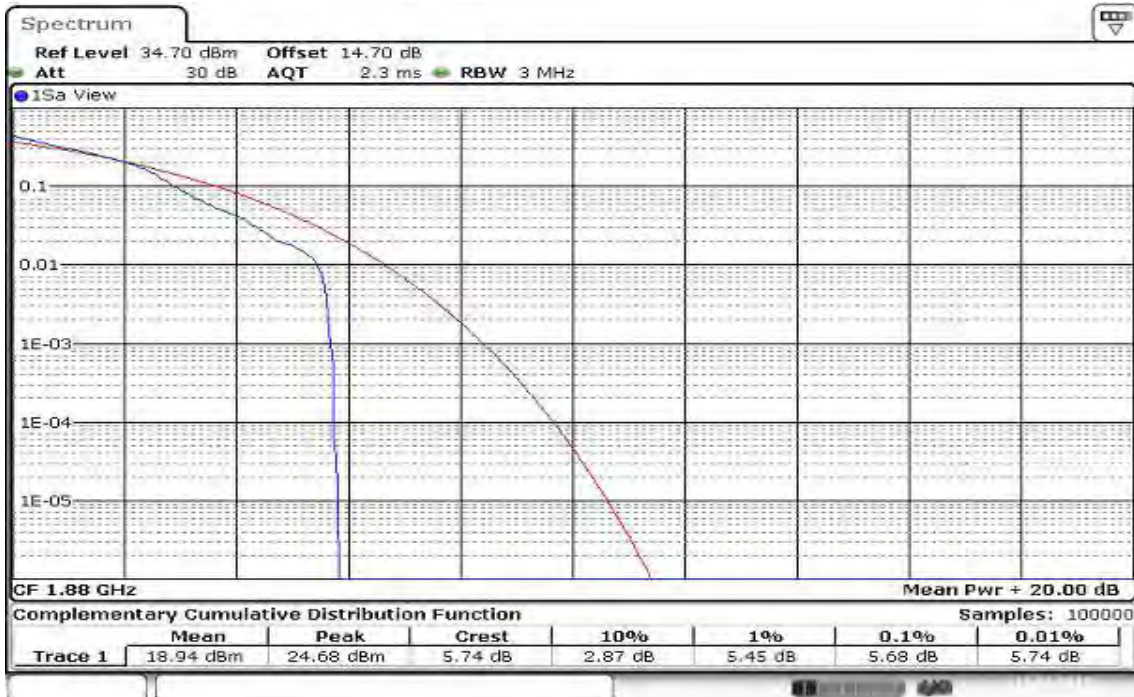
CH Mid



Date: 11 AUG 2017 11:17:29

CHANNEL BANDWIDTH: 3MHz / 16QAM / 1RB

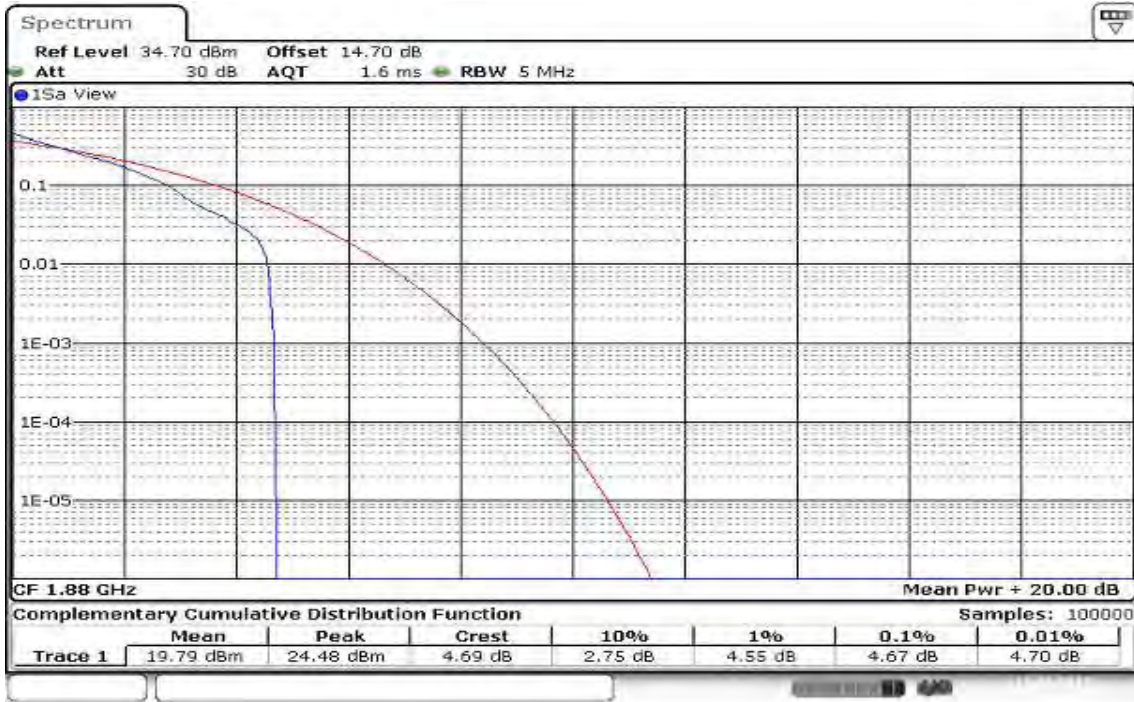
CH Mid



Date: 11 AUG 2017 11:17:57

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

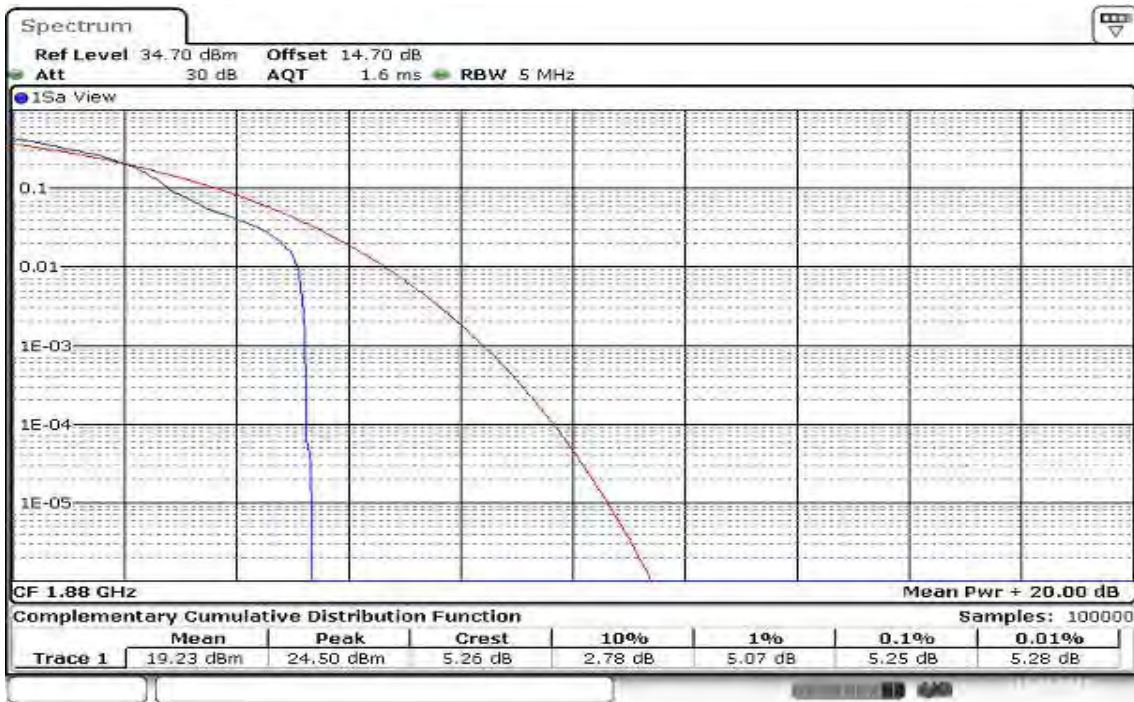
CH Mid



Date: 11 AUG 2017 11:45:23

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

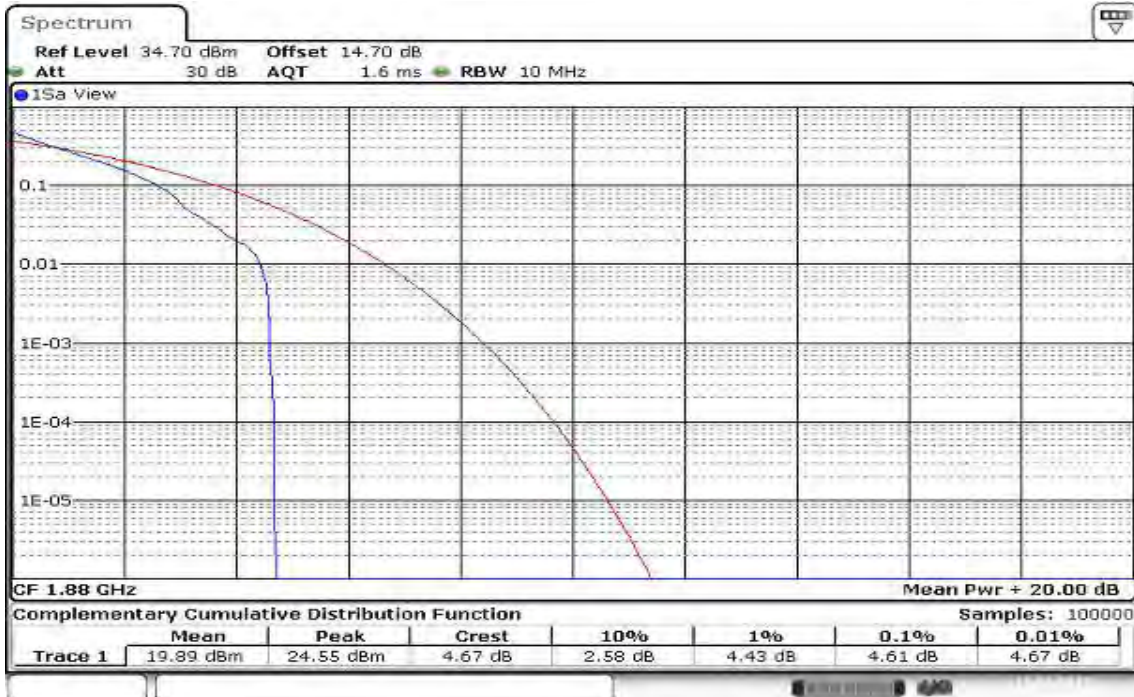
CH Mid



Date: 11 AUG 2017 11:45:50

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

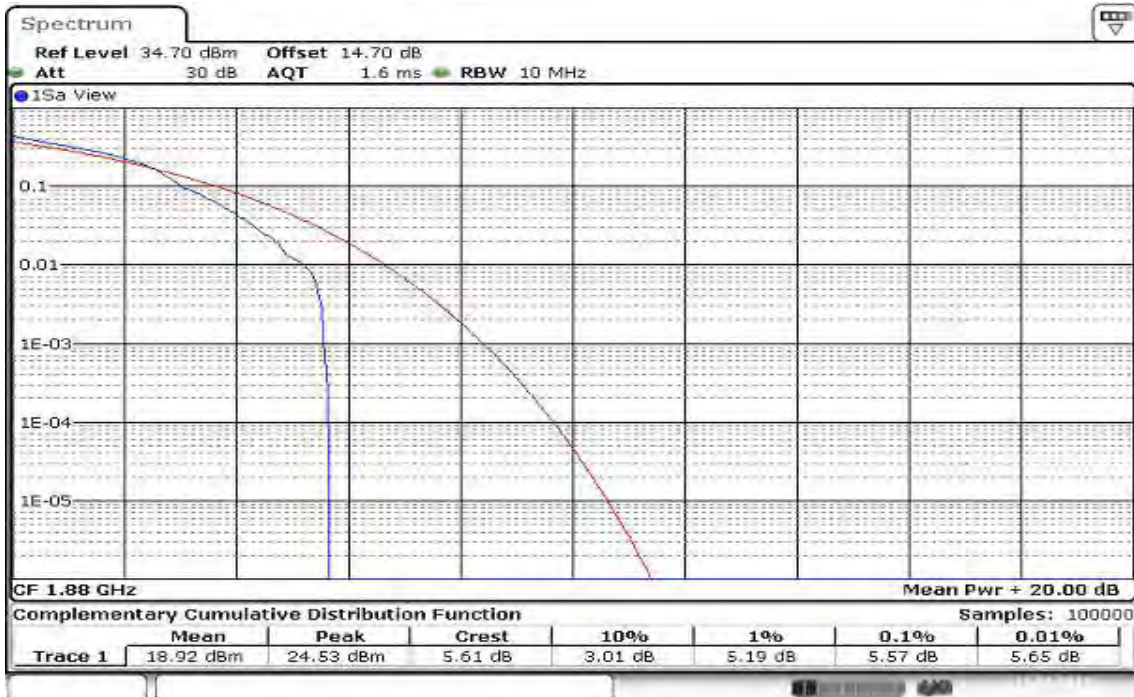
CH Mid



Date: 11 AUG 2017 11:13:24

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

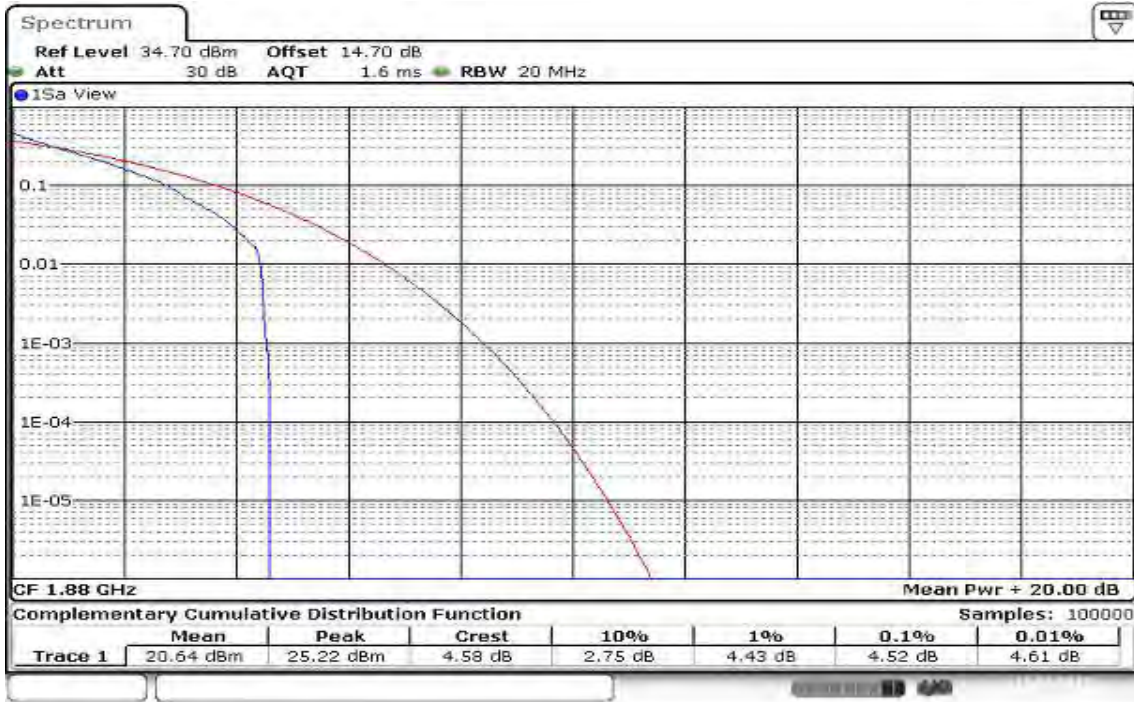
CH Mid



Date: 11 AUG 2017 11:13:52

CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB

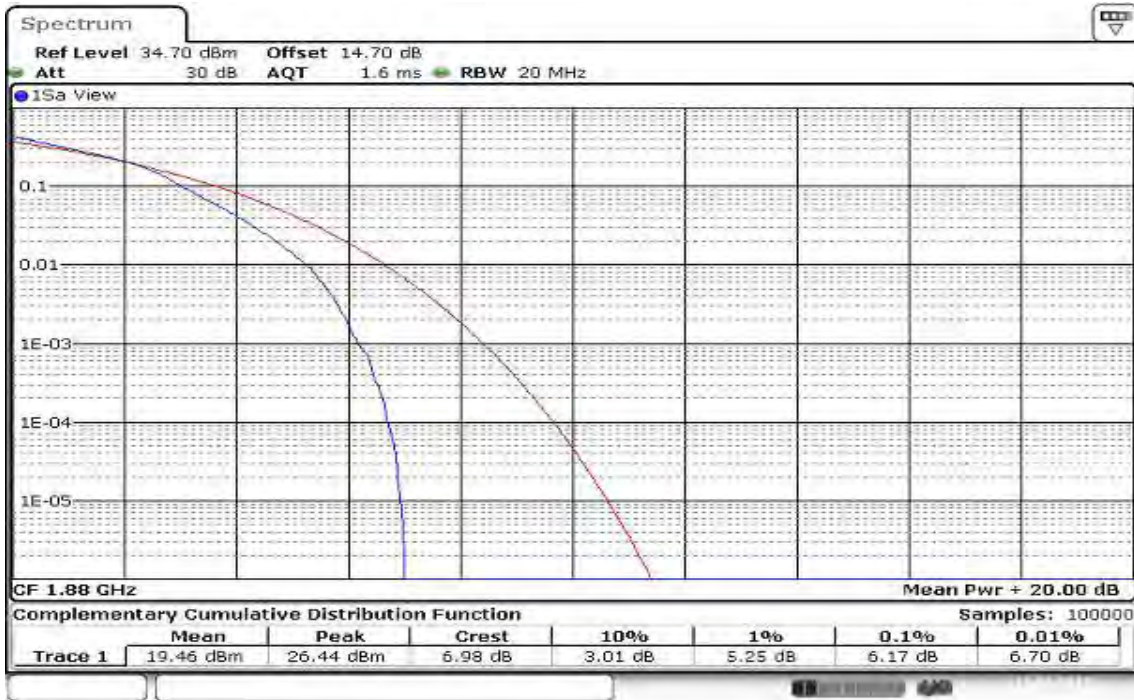
CH Mid



Date: 11 AUG 2017 11:11:25

CHANNEL BANDWIDTH: 15MHz / 16QAM / 1RB

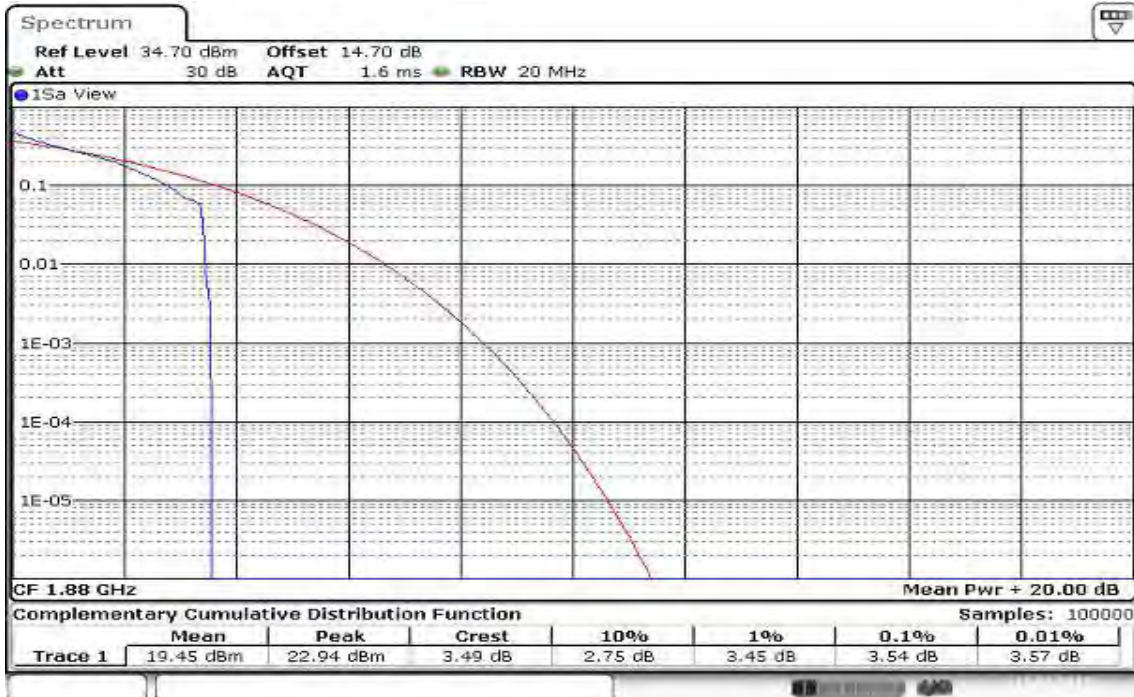
CH Mid



Date: 11 AUG 2017 11:12:46

CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB

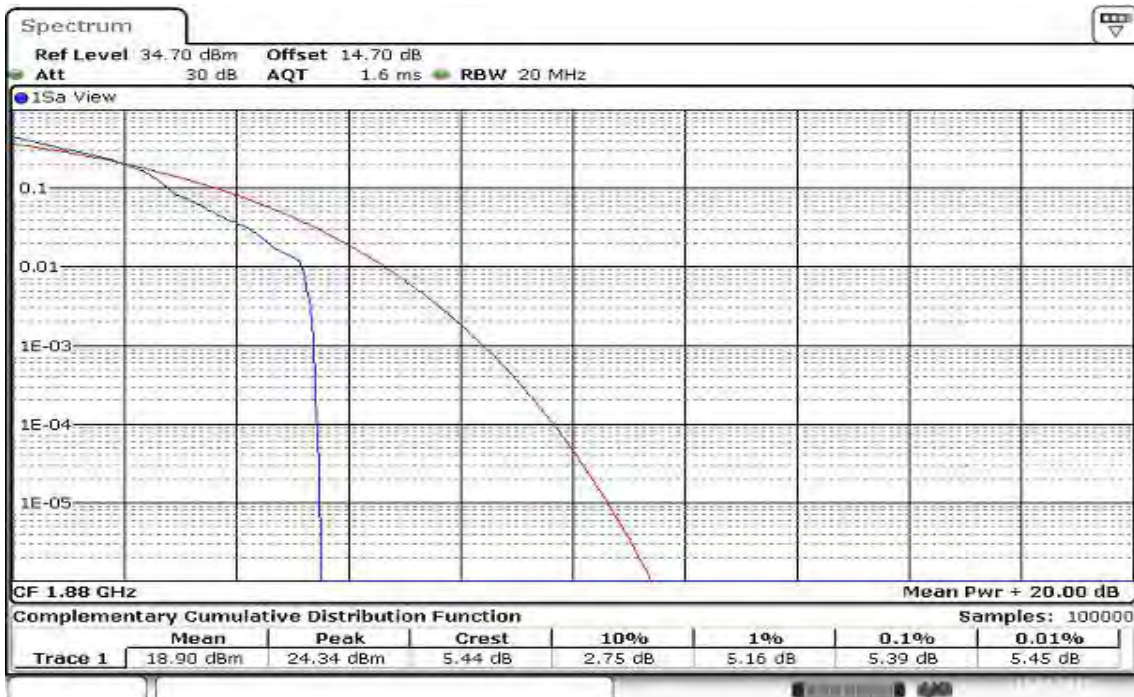
CH Mid



Date: 11 AUG 2017 11:05:21

CHANNEL BANDWIDTH: 20MHz / 16QAM / 1RB

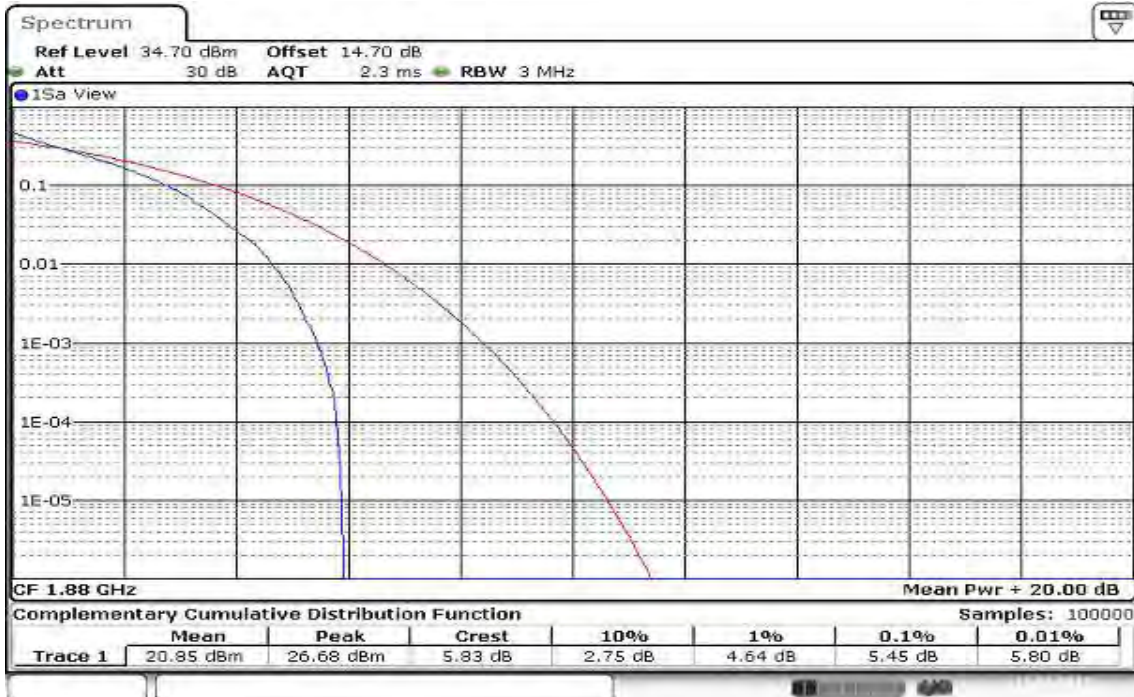
CH Mid



Date: 11 AUG 2017 11:07:20

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB

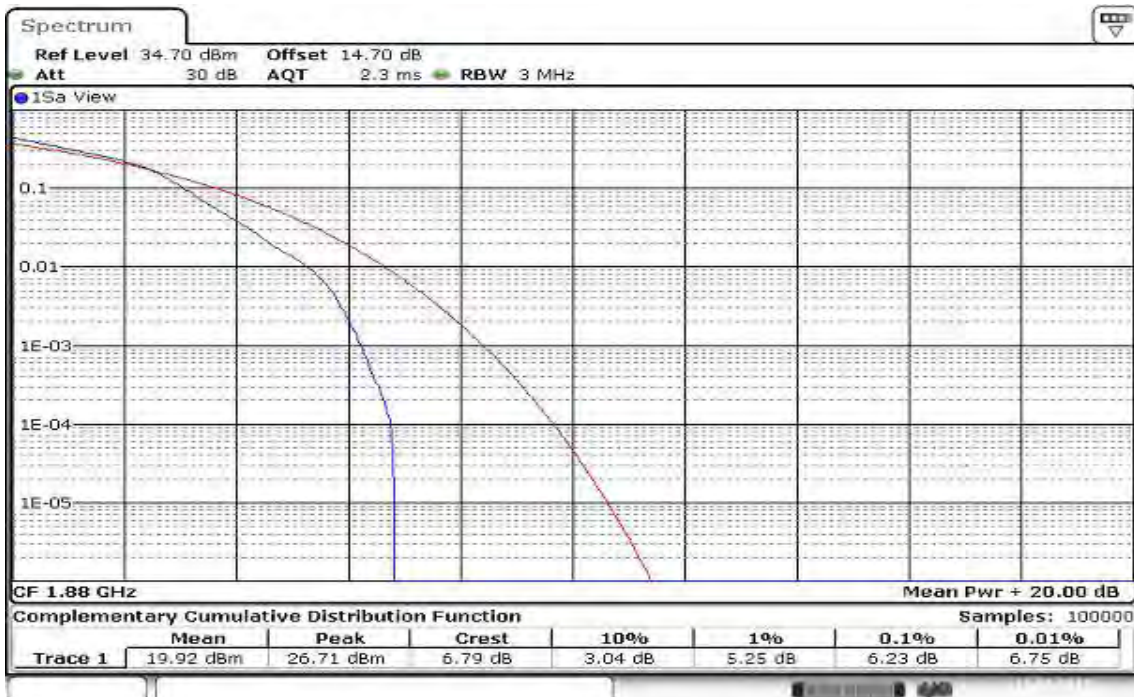
CH Mid



Date: 11 AUG 2017 11:19:26

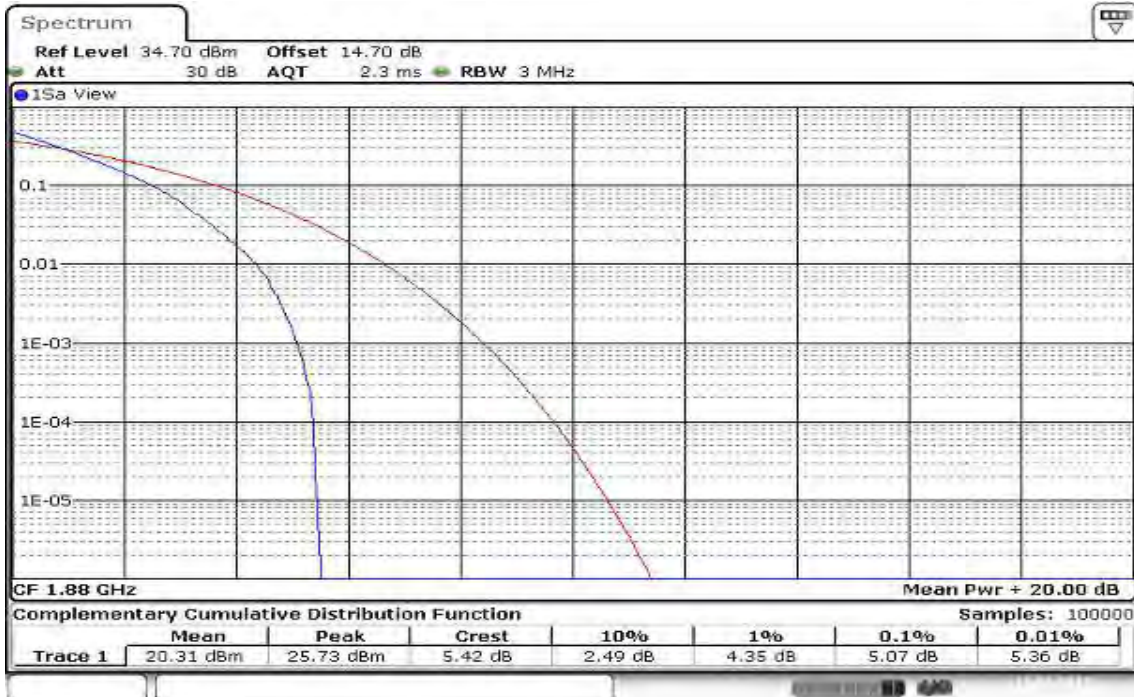
CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 100%RB

CH Mid



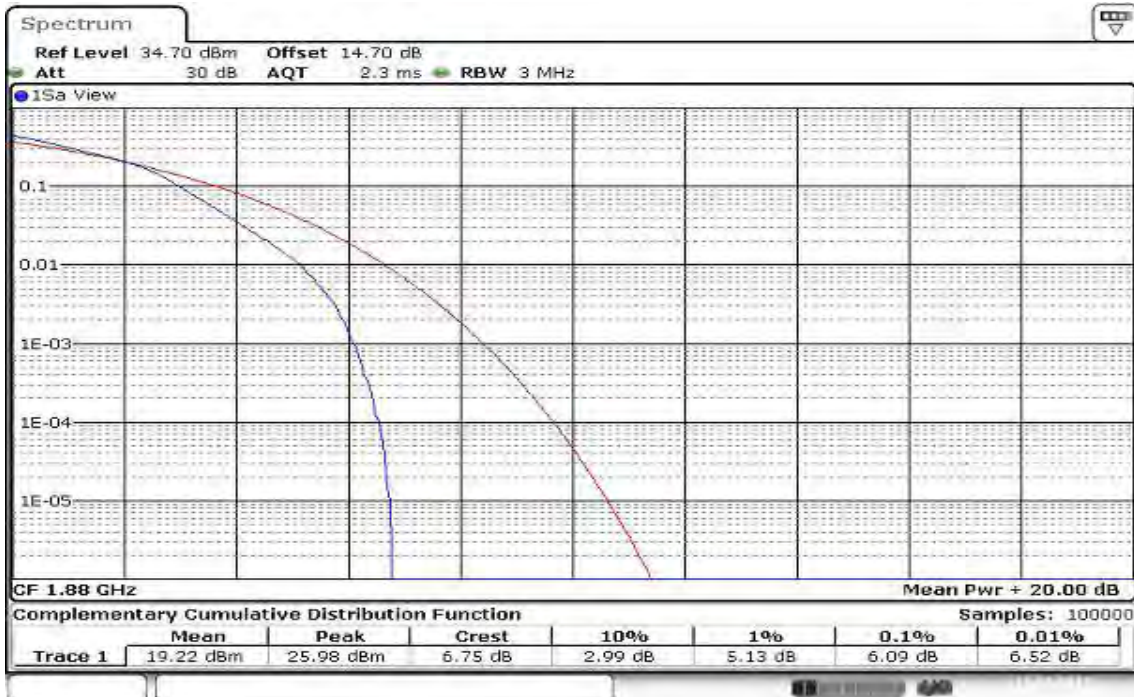
Date: 11 AUG 2017 11:20:46

CHANNEL BANDWIDTH: 3MHz / QPSK / 100%RB
CH Mid



Date: 11 AUG 2017 11:16:55

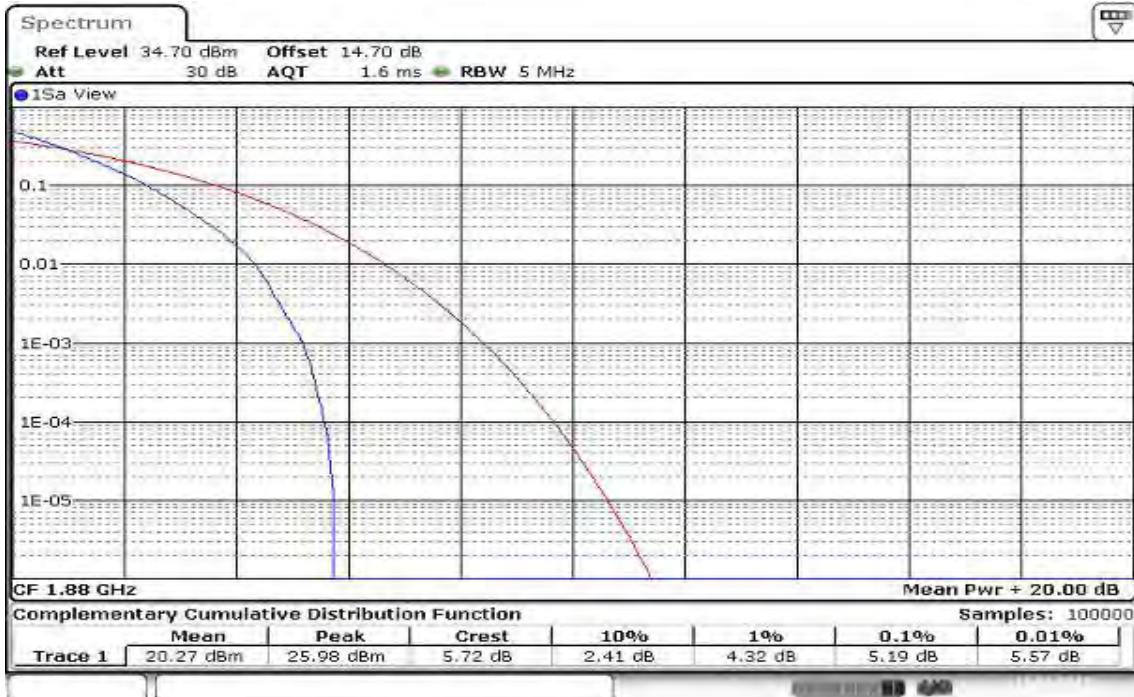
CHANNEL BANDWIDTH: 3MHz / 16QAM / 100%RB
CH Mid



Date: 11 AUG 2017 11:18:26

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

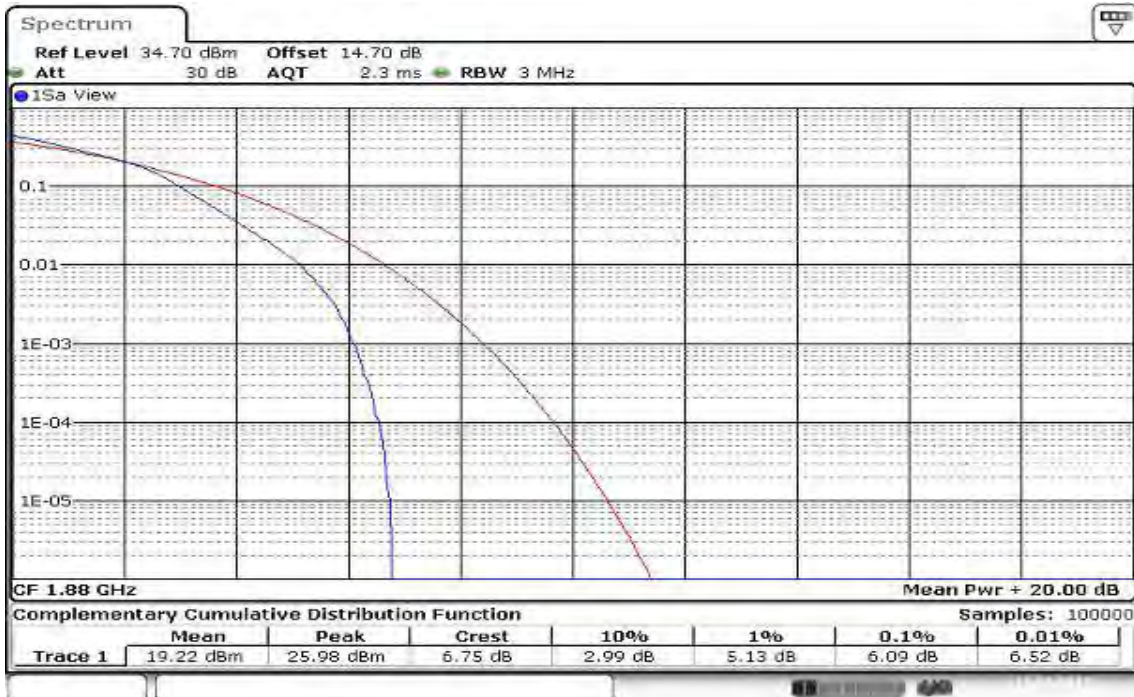
CH Mid



Date: 11 AUG 2017 11:14:50

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

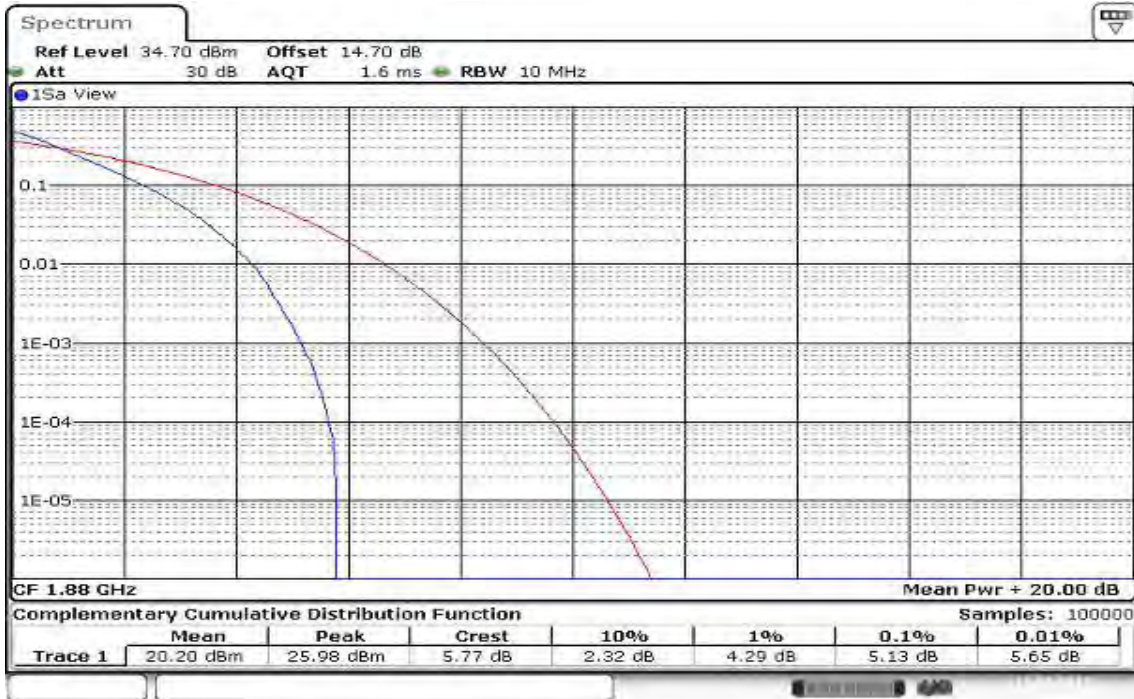
CH Mid



Date: 11 AUG 2017 11:18:26

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

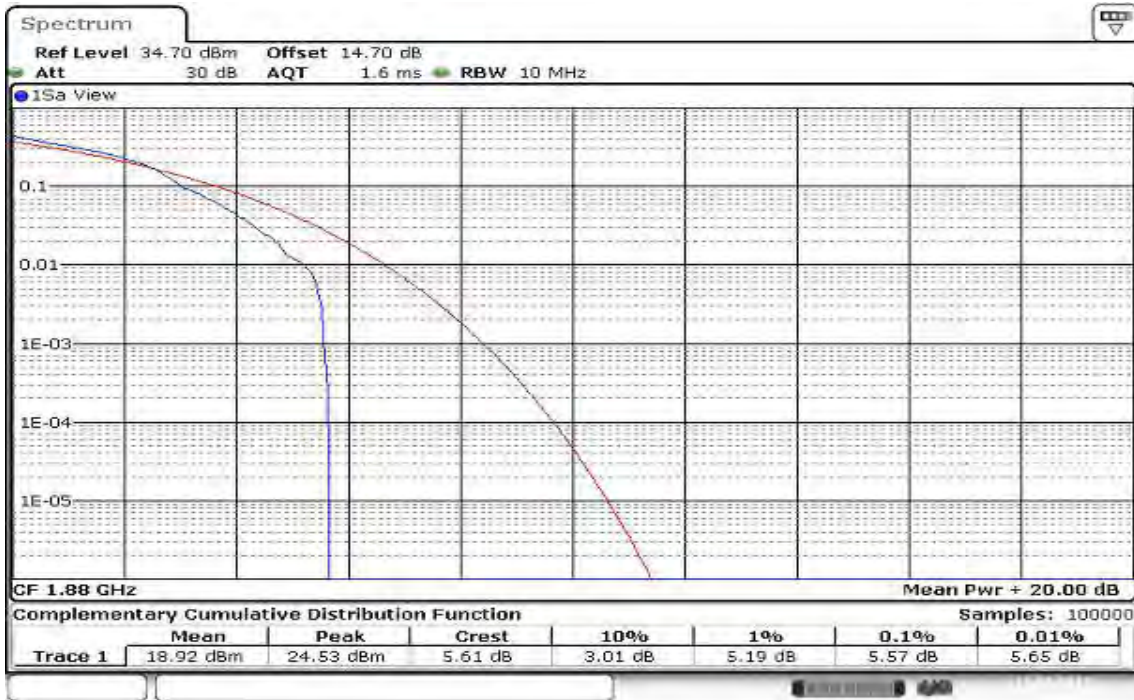
CH Mid



Date: 11 AUG 2017 11:12:56

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

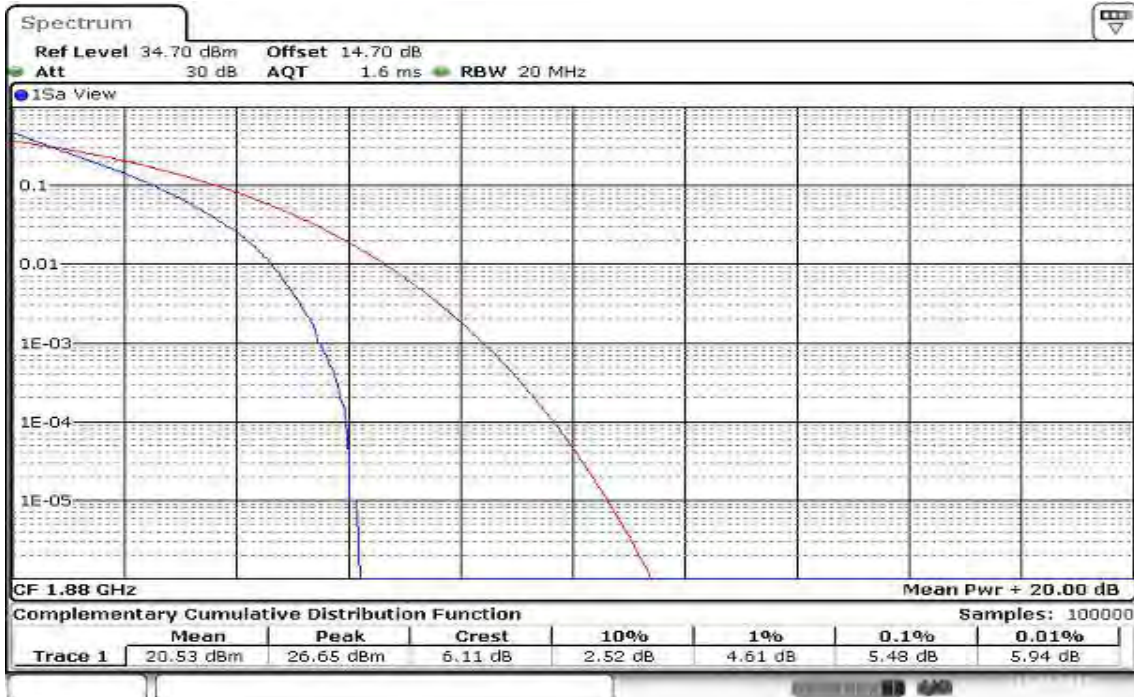
CH Mid



Date: 11 AUG 2017 11:14:18

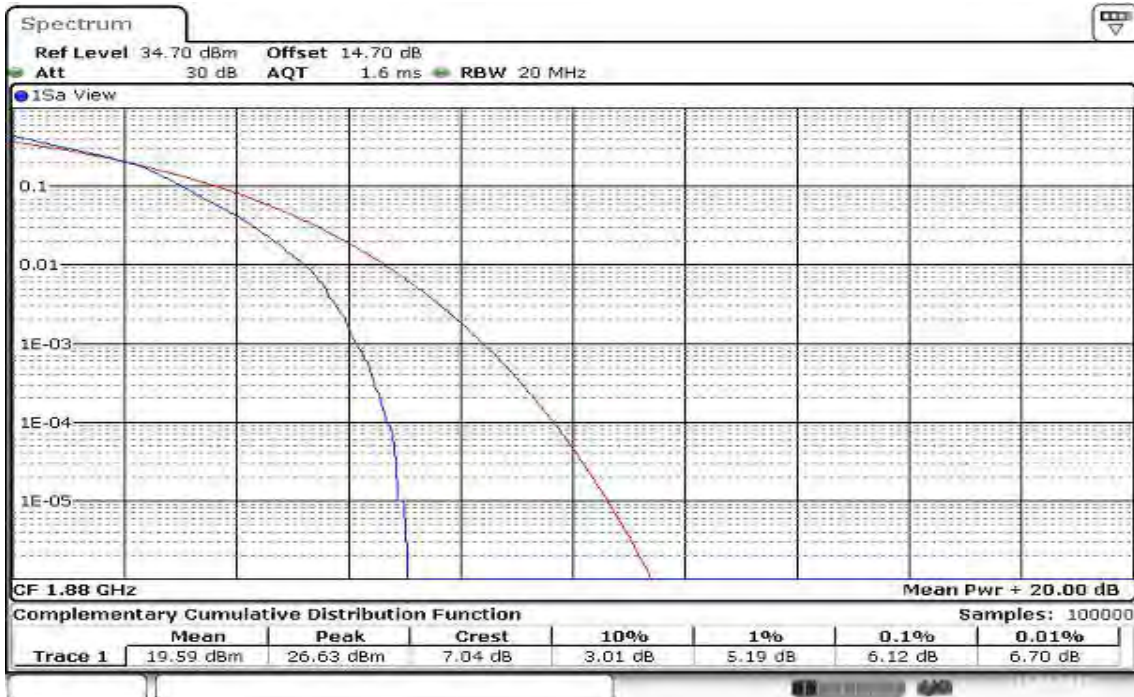
CHANNEL BANDWIDTH: 15MHz / QPSK / 100%RB

CH Mid



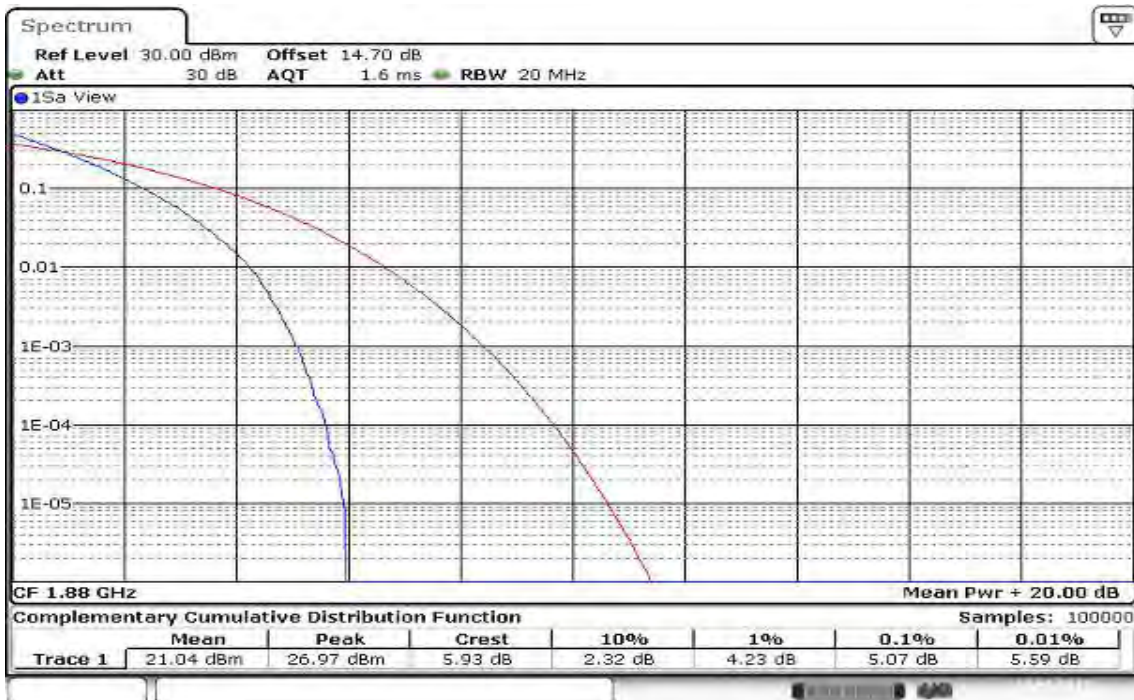
CHANNEL BANDWIDTH: 15MHz / 16QAM / 100%RB

CH Mid



CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB

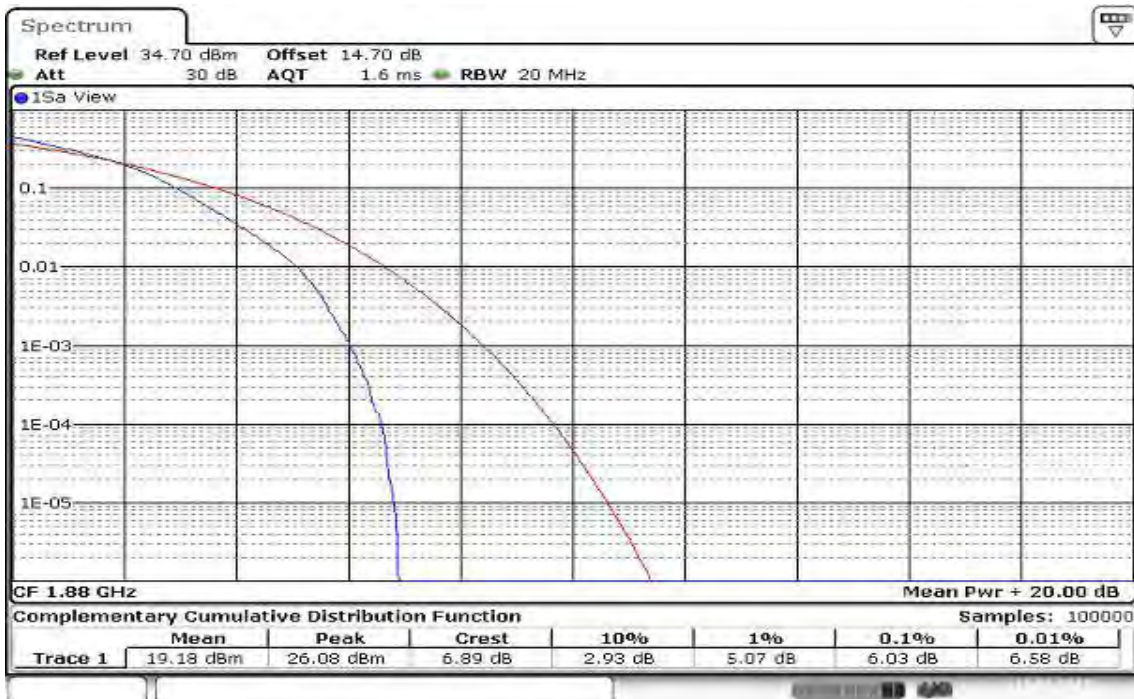
CH Mid



Date: 14 AUG 2017 11:44:59

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

CH Mid

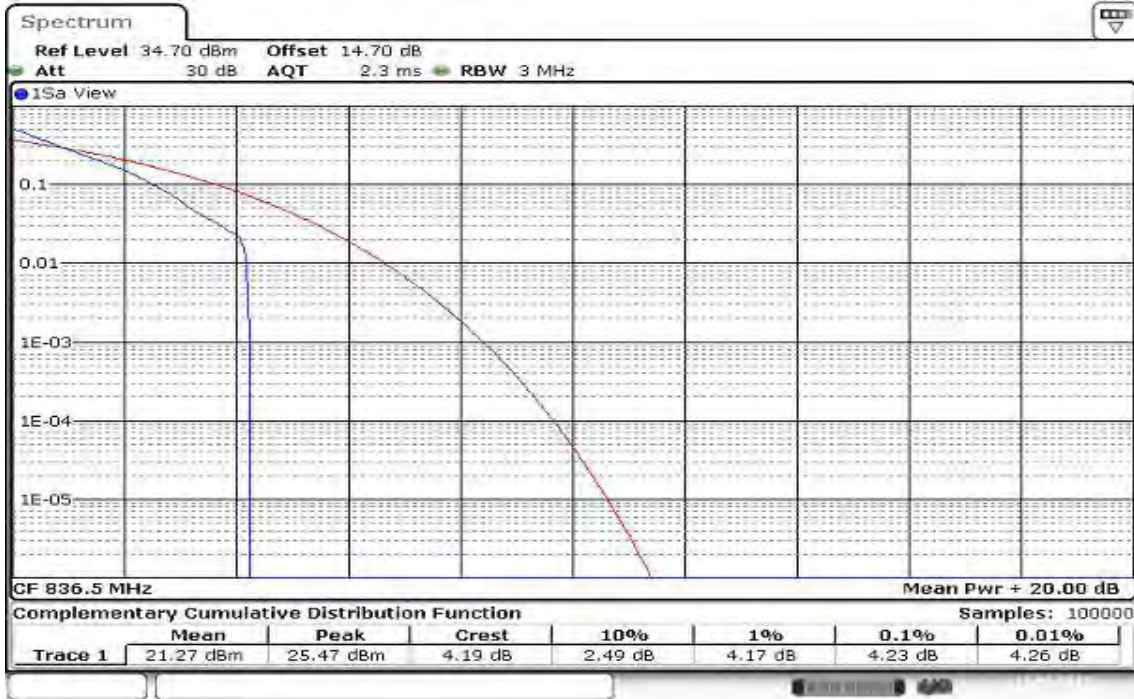


Date: 11 AUG 2017 11:07:50

LTE Band 5

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB

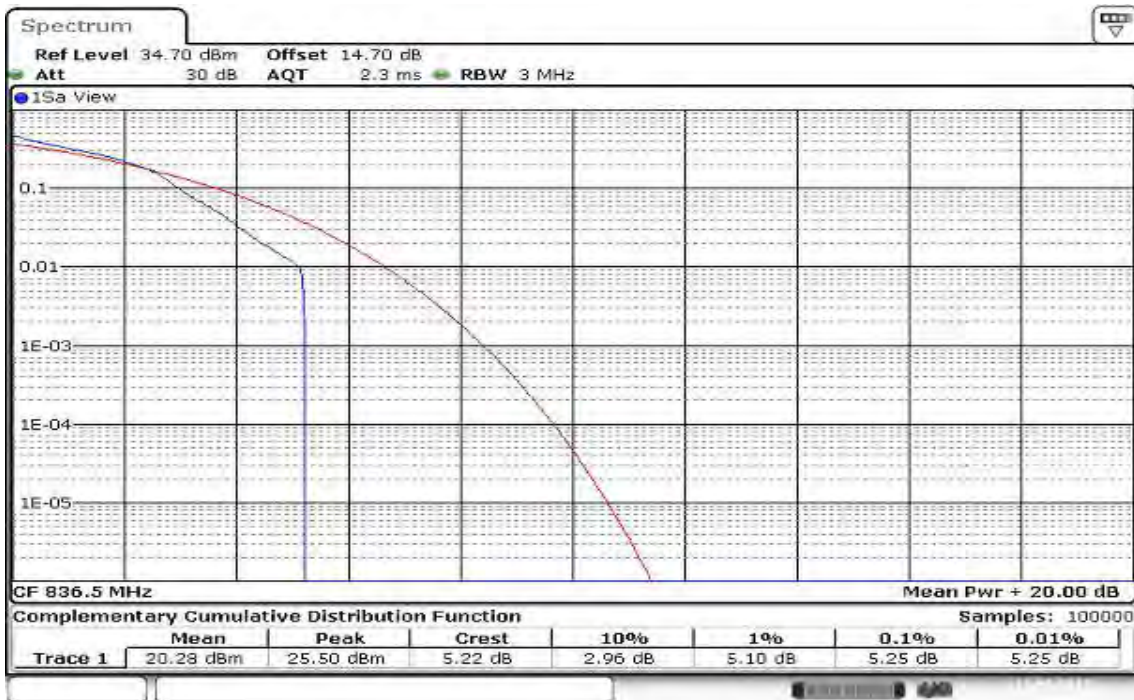
CH Mid



Date: 11 AUG 2017 10:16:20

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1RB

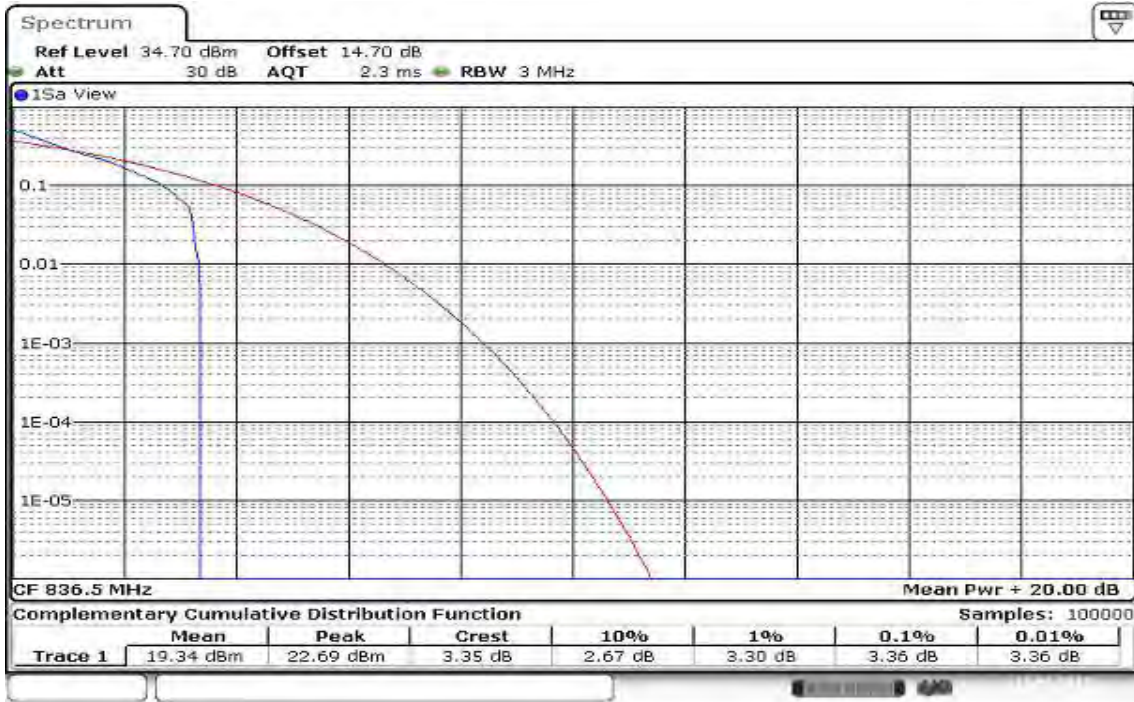
CH Mid



Date: 11 AUG 2017 10:19:03

CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB

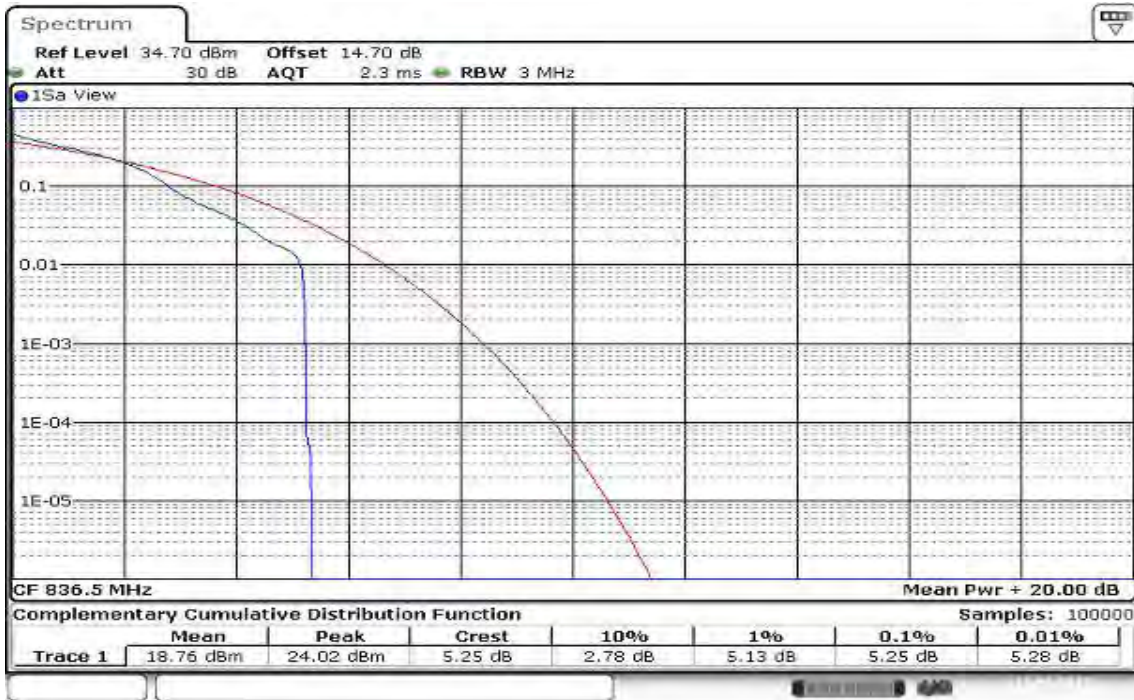
CH Mid



Date: 11 AUG 2017 10:23:01

CHANNEL BANDWIDTH: 3MHz / 16QAM / 1RB

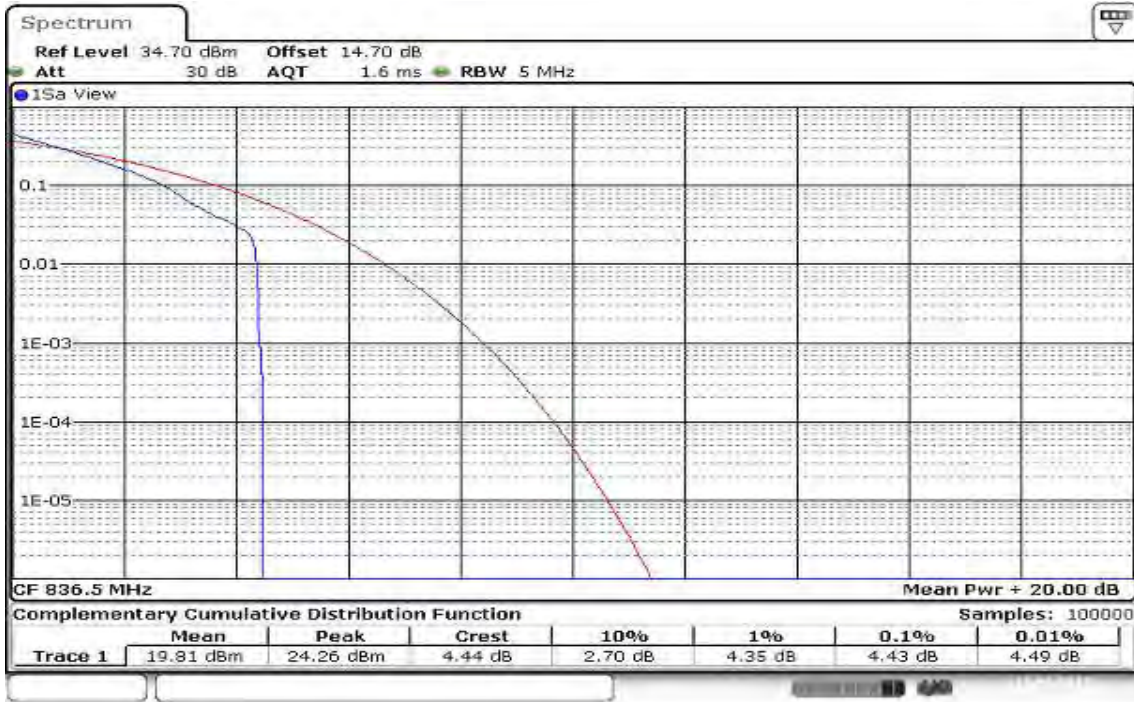
CH Mid



Date: 11 AUG 2017 10:24:27

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

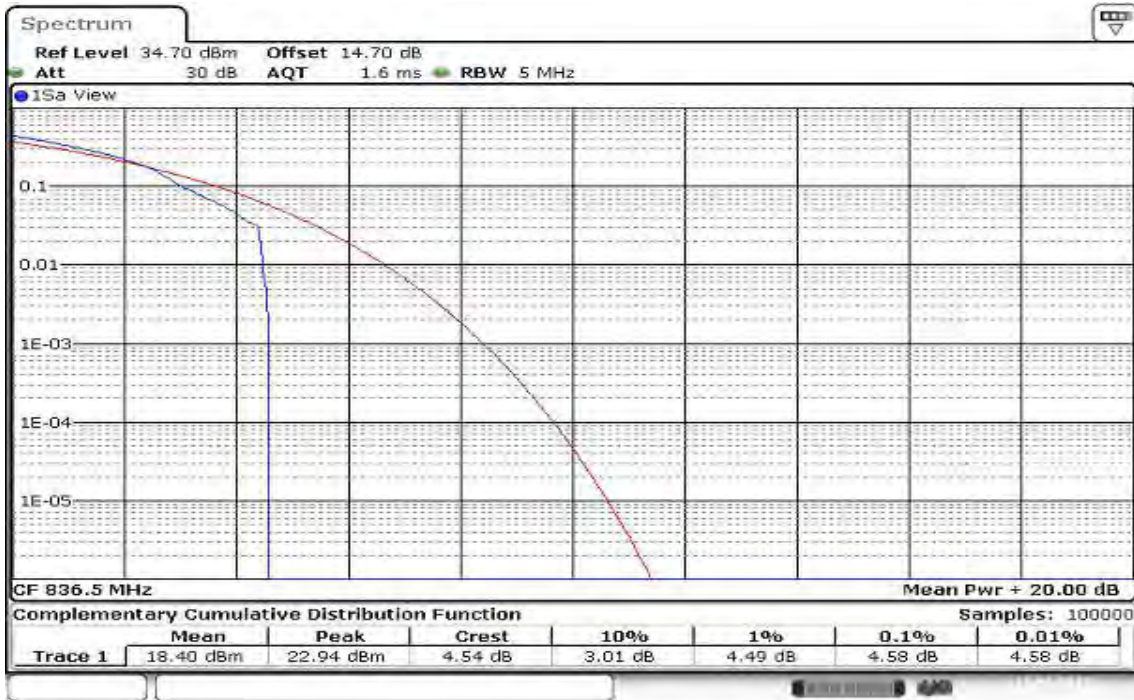
CH Mid



Date: 11 AUG 2017 10:28:03

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

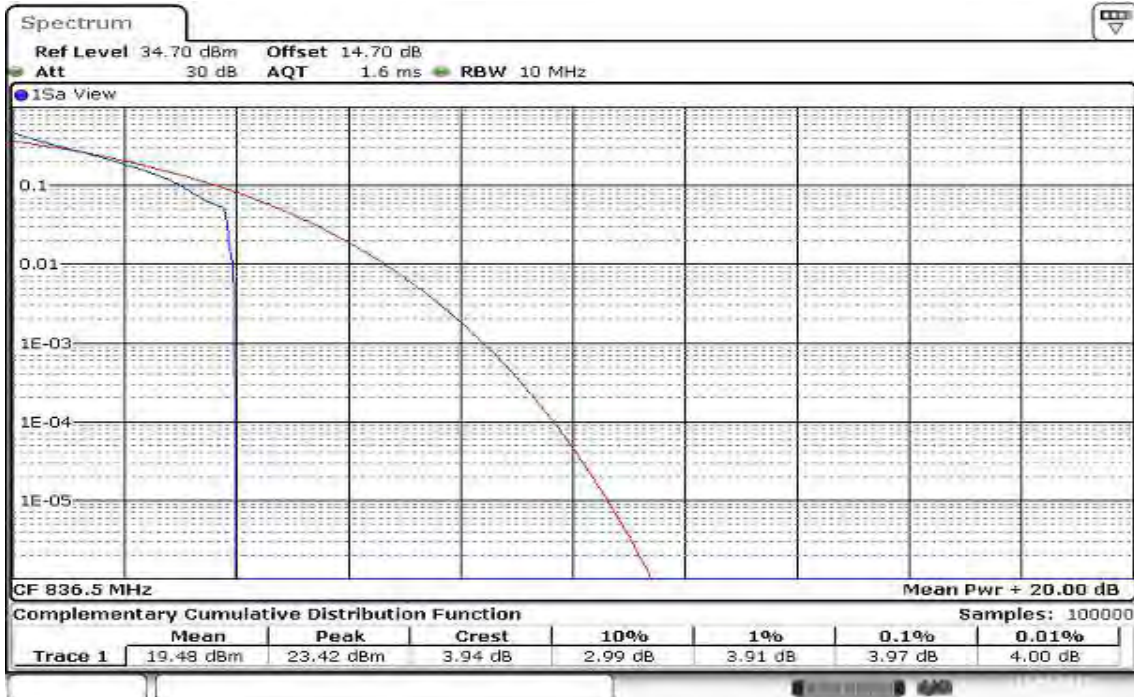
CH Mid



Date: 11 AUG 2017 10:26:11

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

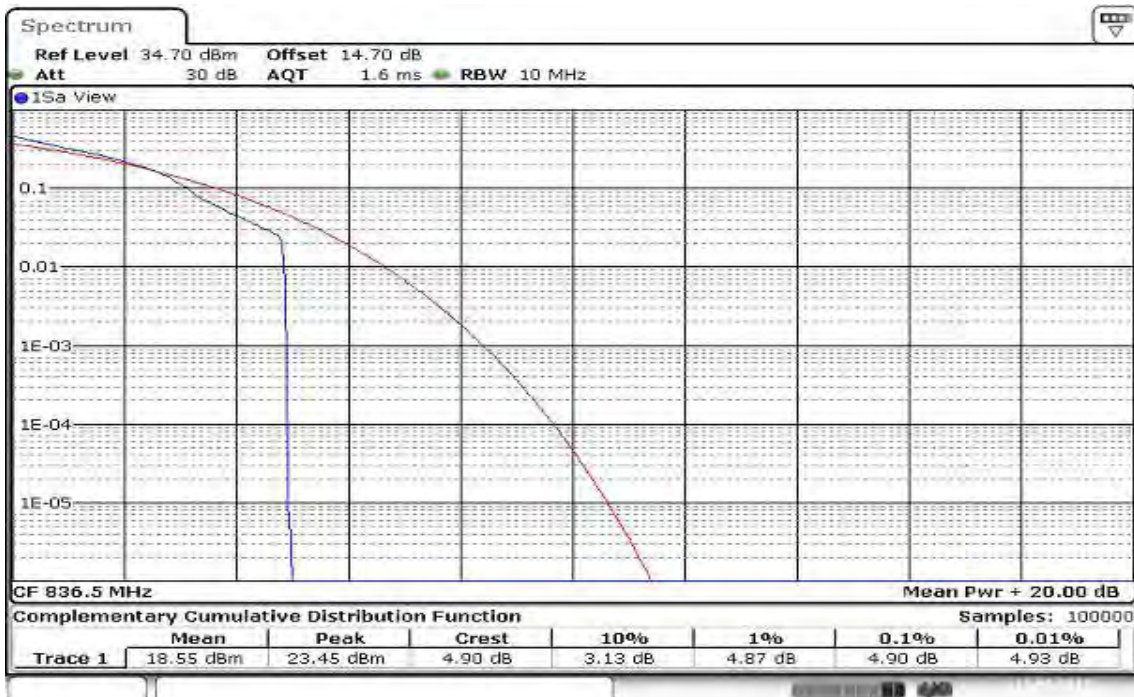
CH Mid



Date: 11 AUG 2017 10:30:40

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

CH Mid



Date: 11 AUG 2017 10:30:01

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB

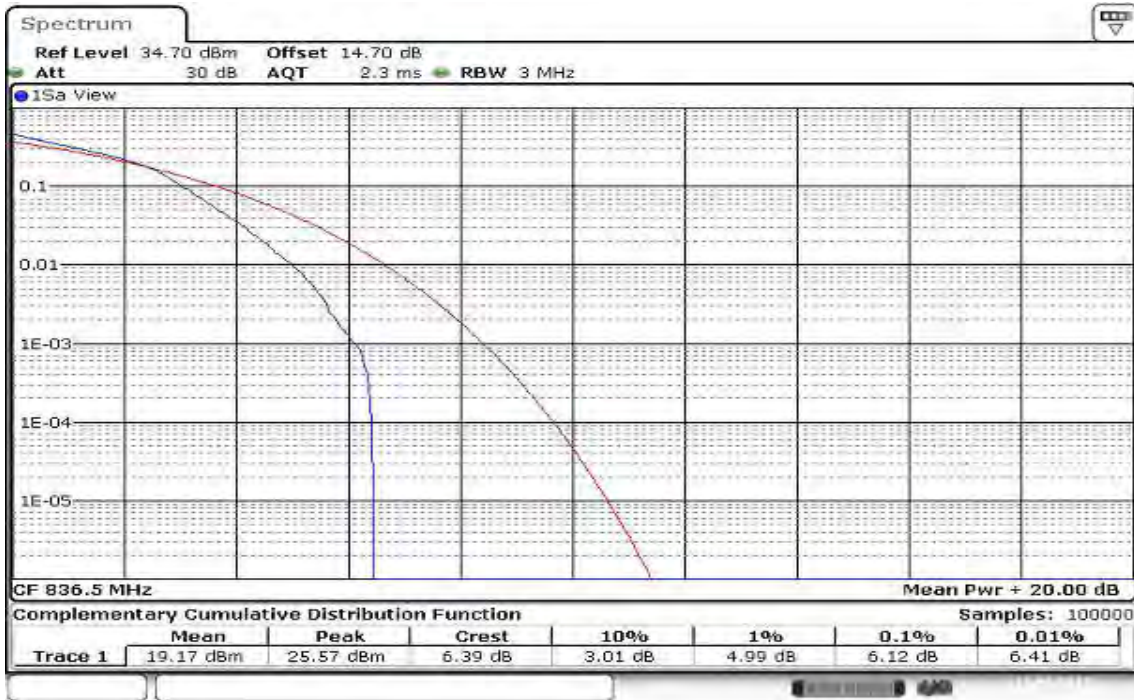
CH Mid



Date: 11 AUG 2017 10:16:07

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 100%RB

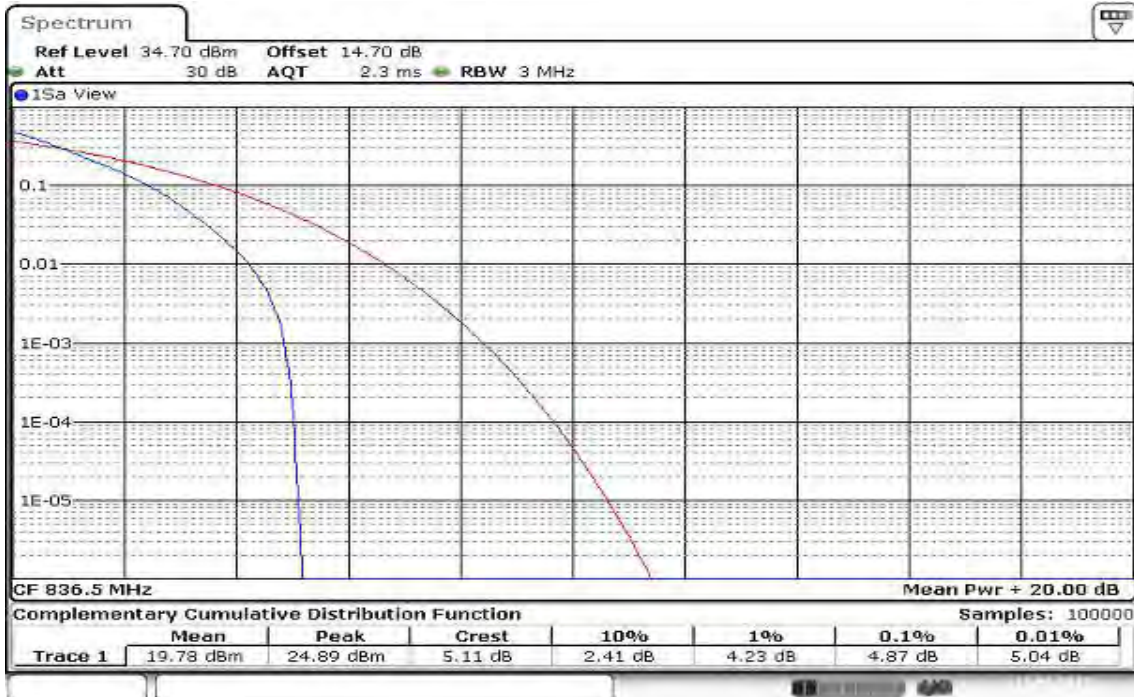
CH Mid



Date: 11 AUG 2017 10:18:28

CHANNEL BANDWIDTH: 3MHz / QPSK / 100%RB

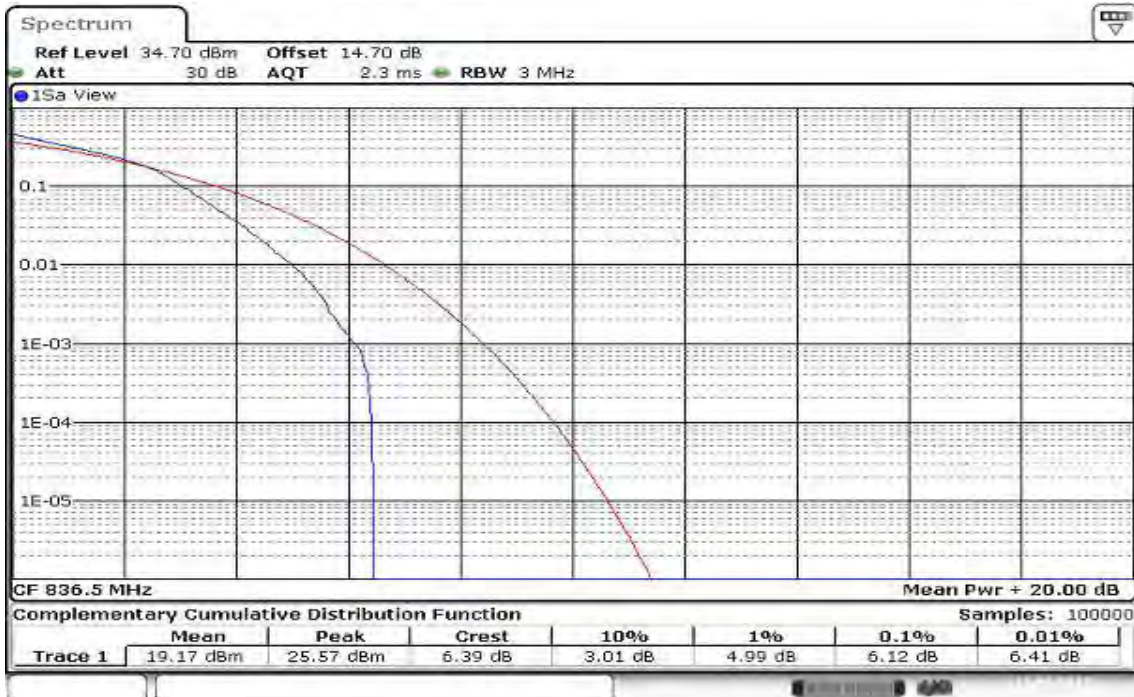
CH Mid



Date: 11 AUG 2017 10:21:46

CHANNEL BANDWIDTH: 3MHz / 16QAM / 100%RB

CH Mid



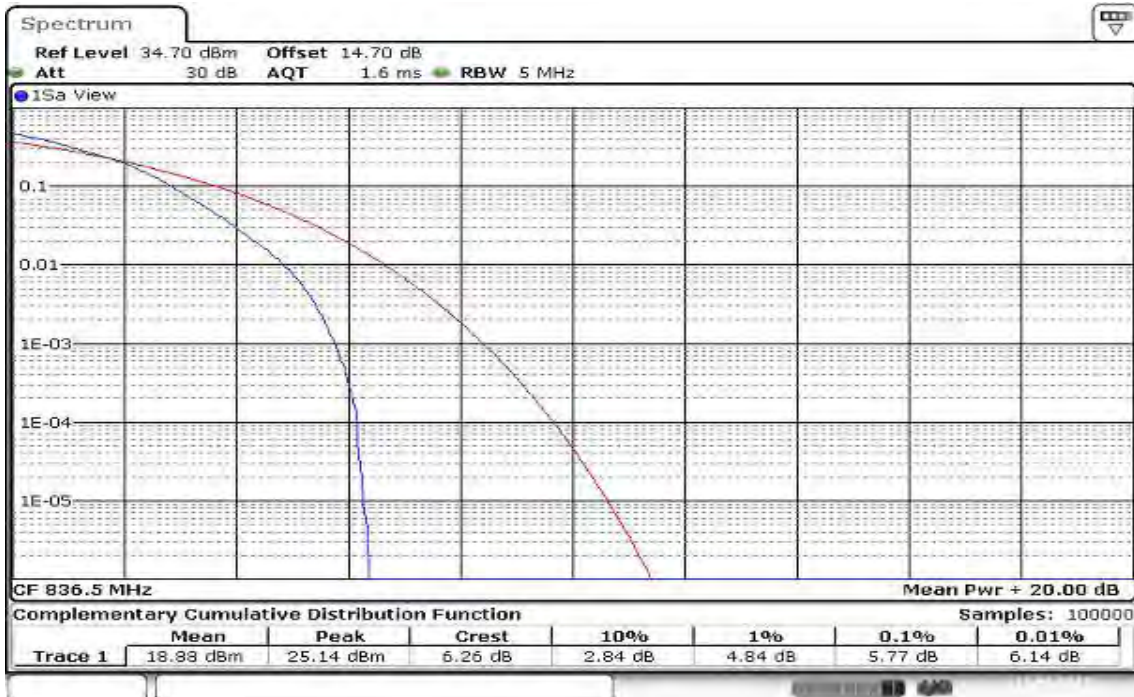
Date: 11 AUG 2017 10:18:28

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB
CH Mid



Date: 11 AUG 2017 10:27:46

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



Date: 11 AUG 2017 10:26:43

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

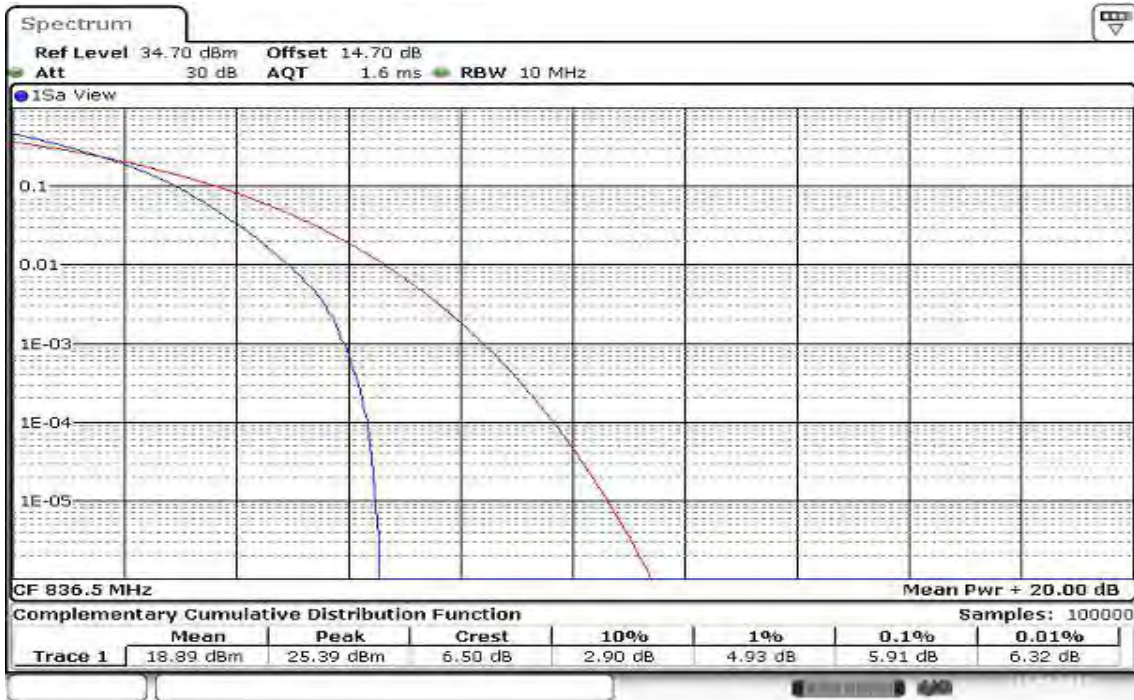
CH Mid



Date: 11 AUG 2017 10:33:49

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

CH Mid



Date: 11 AUG 2017 10:28:53

7.6 BAND EDGE MEASUREMENT

Limit

For operations in the 698–746 MHz 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. For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any

emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm . In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Test Procedures

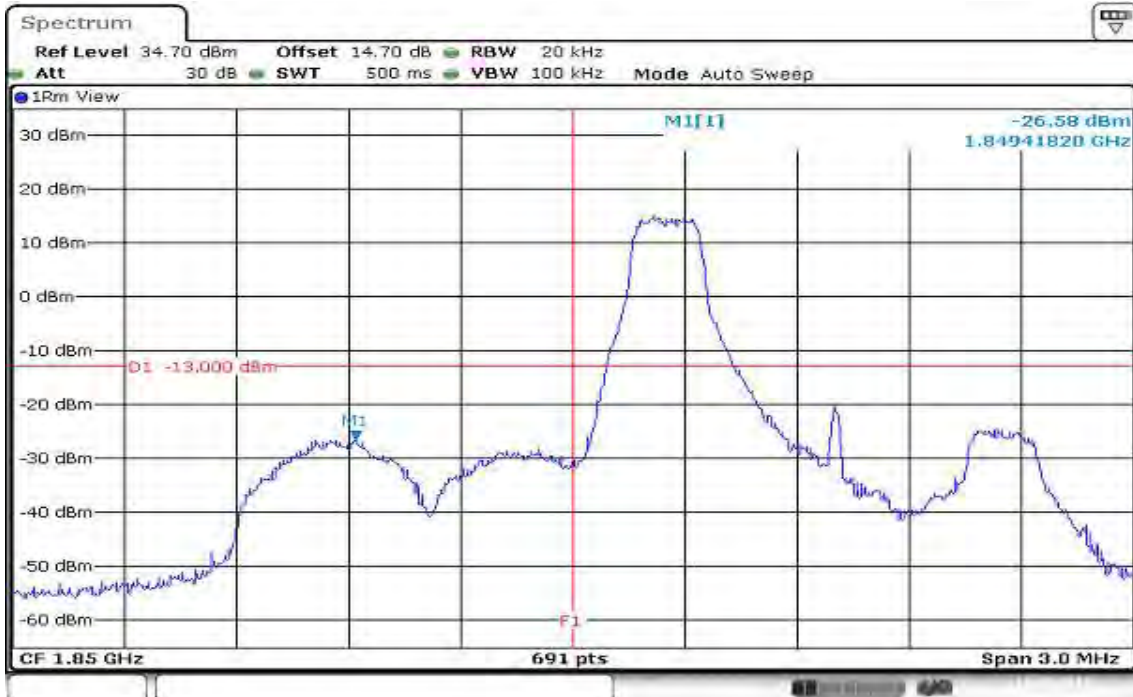
1. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
2. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. This splitter loss and cable loss are the worst loss 7.2 dB in the transmitted path track.
3. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 50kHz and VB of the spectrum is 200kHz.
4. Record the max trace plot into the test report.

Test Results:

LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1 RB ALLOCATED

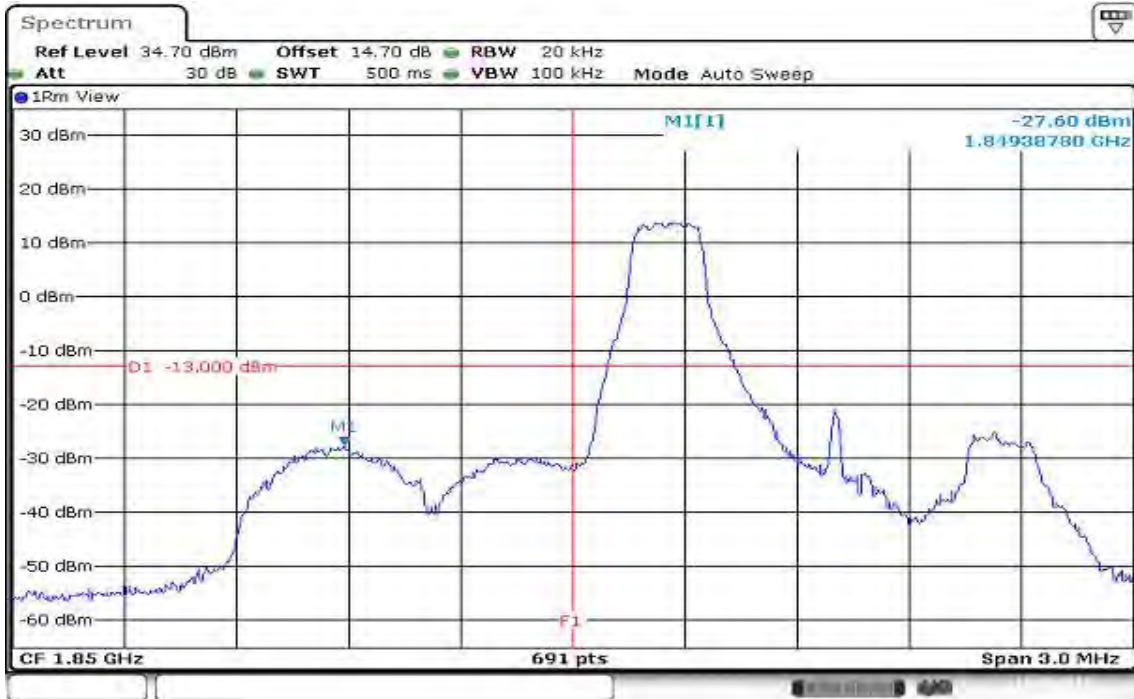
LOWER BAND EDGE



HIGHER BAND EDGE

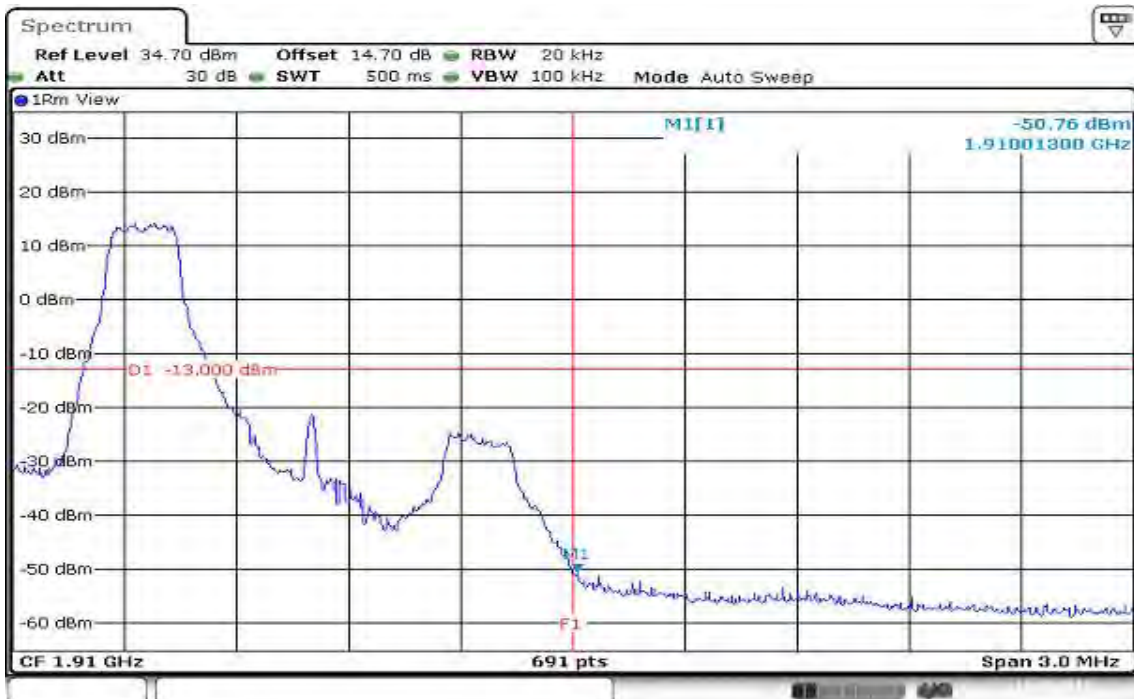


CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1 RB ALLOCATED LOWER BAND EDGE



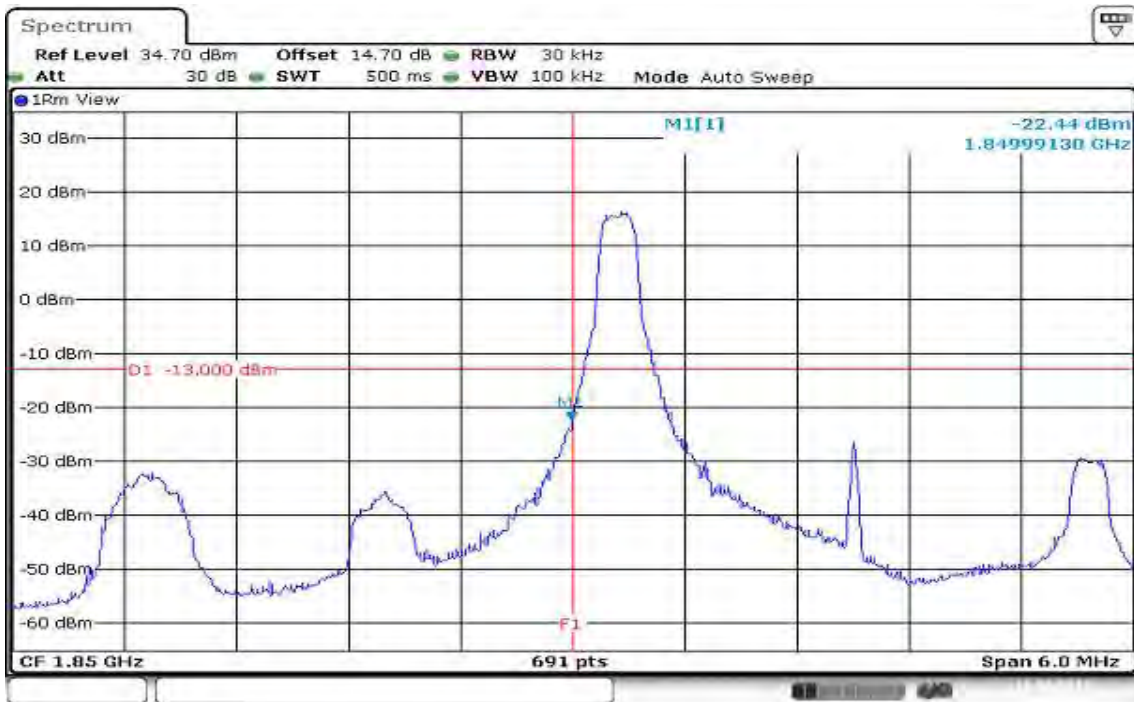
Date: 11 AUG 2017 15:48:22

HIGHER BAND EDGE



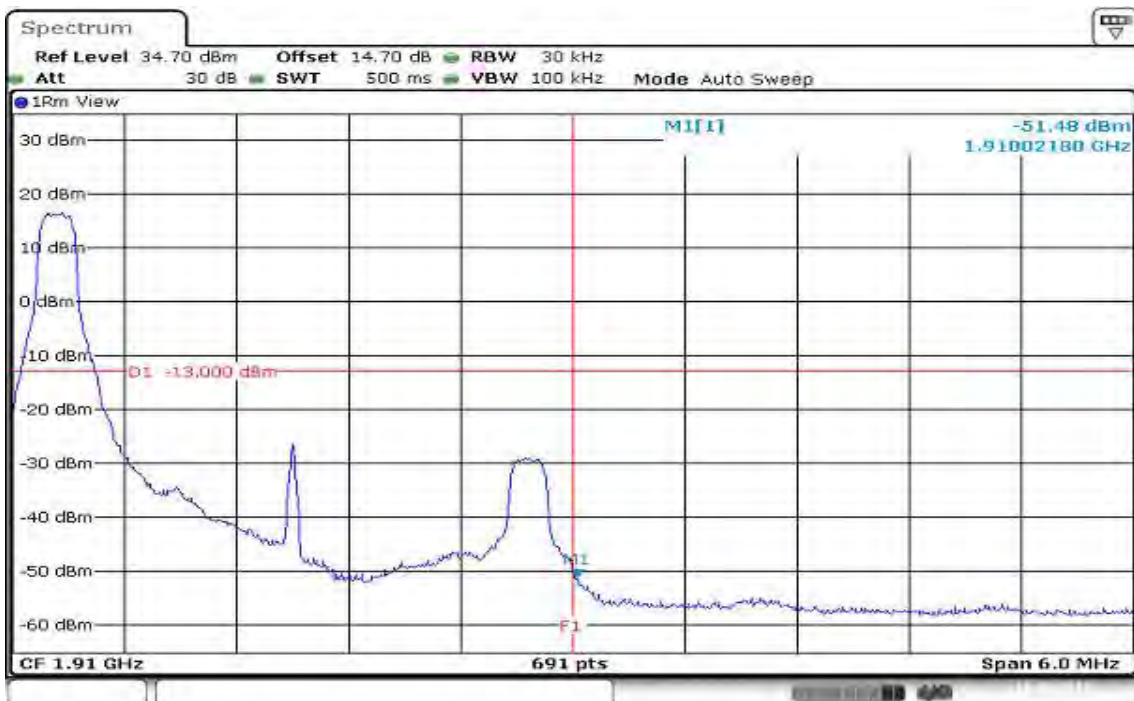
Date: 11 AUG 2017 15:49:26

CHANNEL BANDWIDTH: 3MHz / QPSK / 1 RB ALLOCATED LOWER BAND EDGE



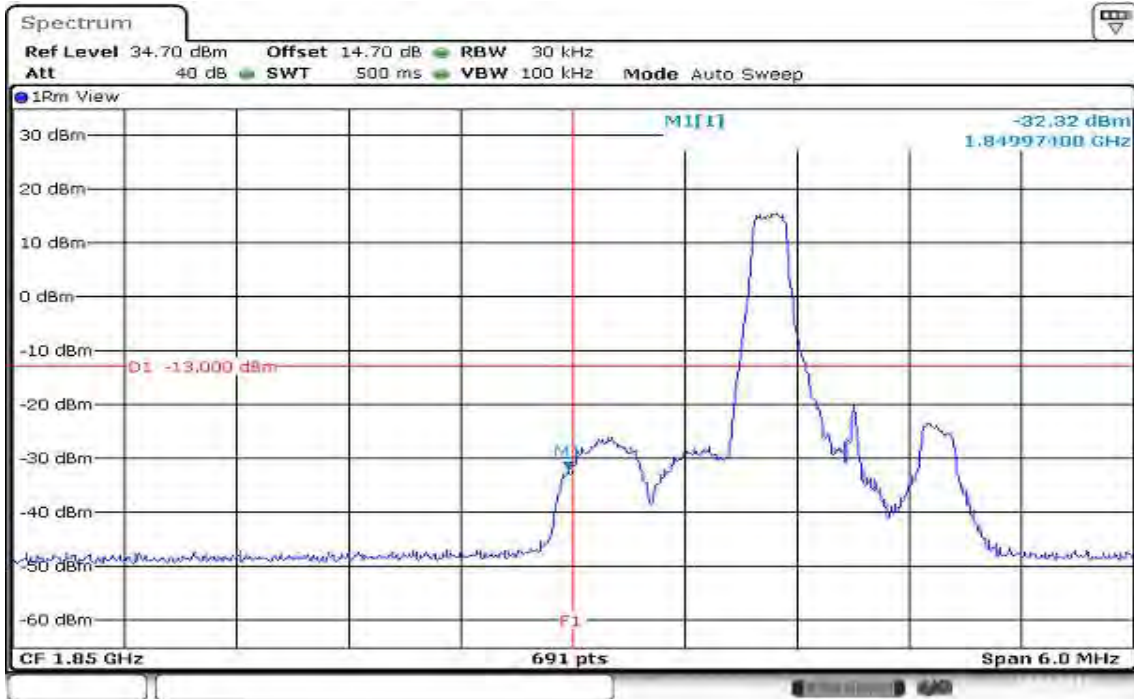
Date: 11 AUG 2017 15:23:58

HIGHER BAND EDGE



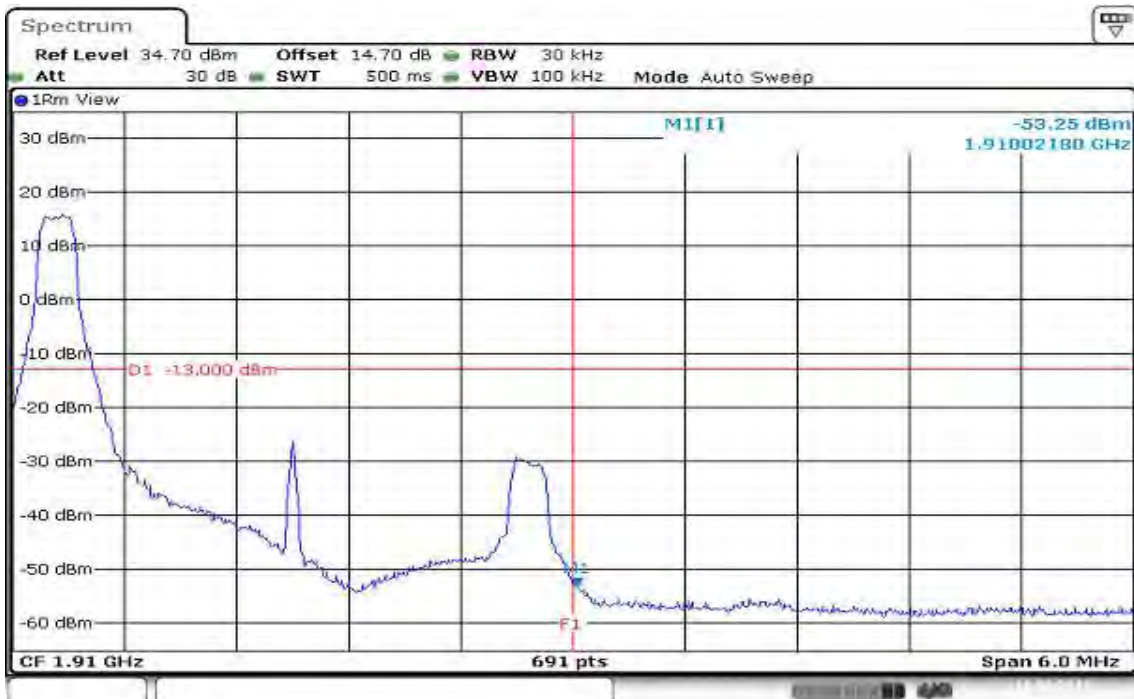
Date: 11 AUG 2017 15:51:55

CHANNEL BANDWIDTH: 3MHz / 16QAM / 1 RB ALLOCATED LOWER BAND EDGE



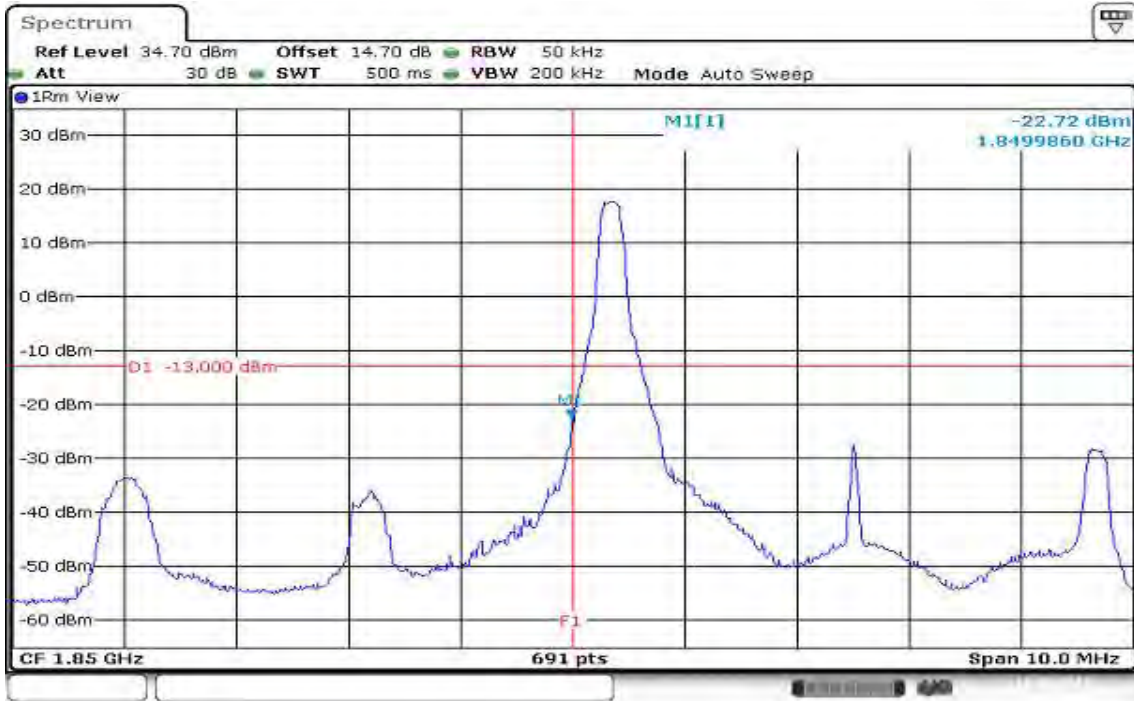
Date: 14 AUG 2017 11:16:54

HIGHER BAND EDGE



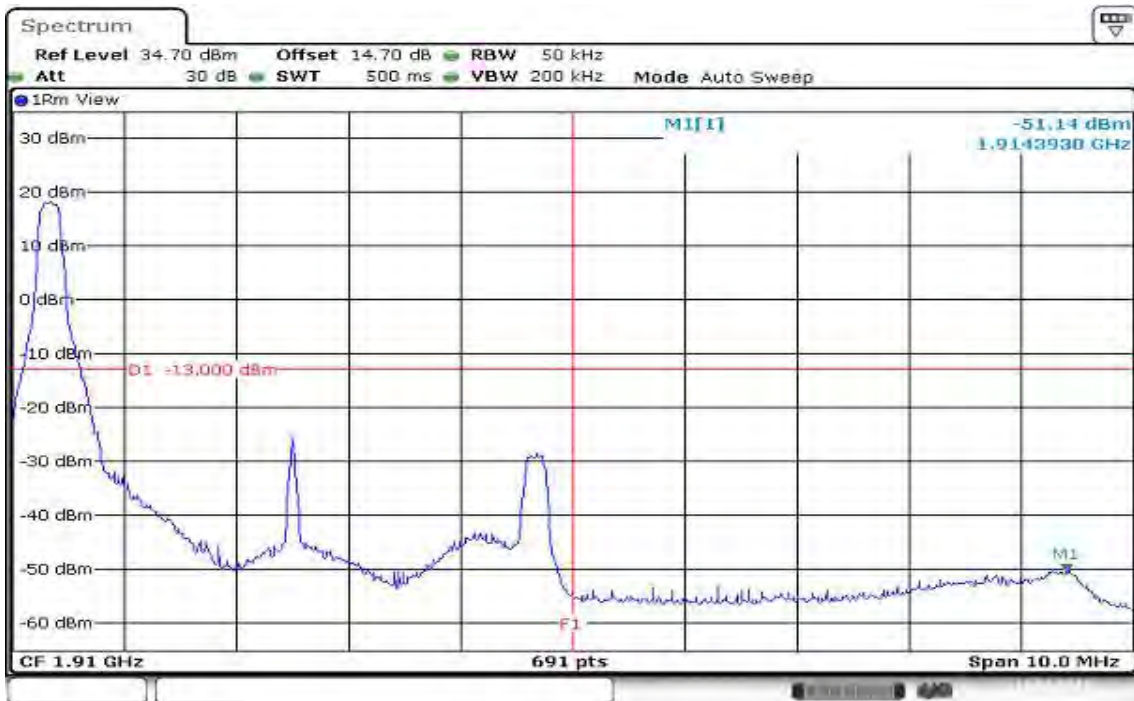
Date: 11 AUG 2017 15:54:23

CHANNEL BANDWIDTH: 5MHz / QPSK / 1 RB ALLOCATED LOWER BAND EDGE



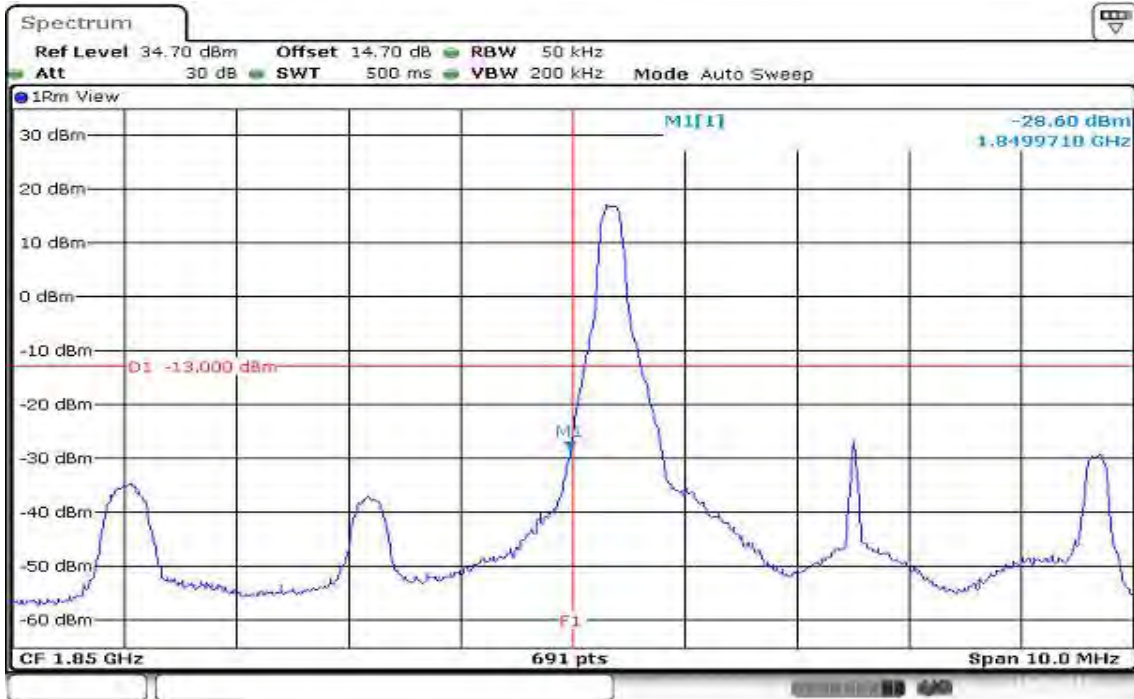
Date: 11 AUG 2017 15:25:42

HIGHER BAND EDGE



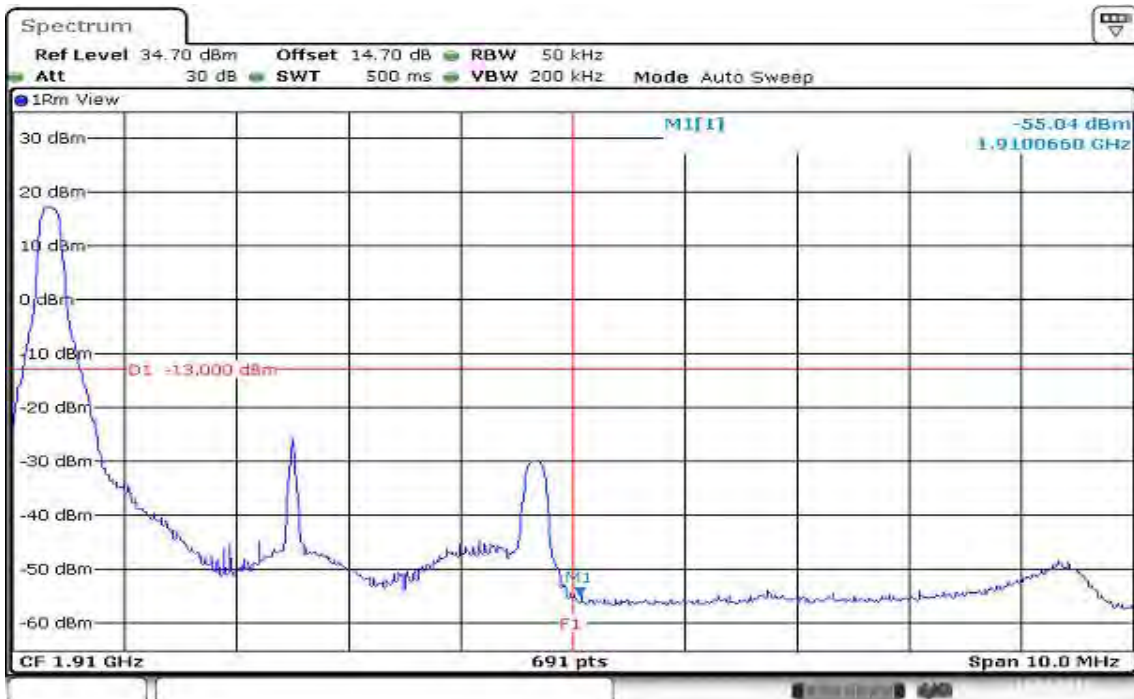
Date: 11 AUG 2017 15:58:40

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1 RB ALLOCATED LOWER BAND EDGE



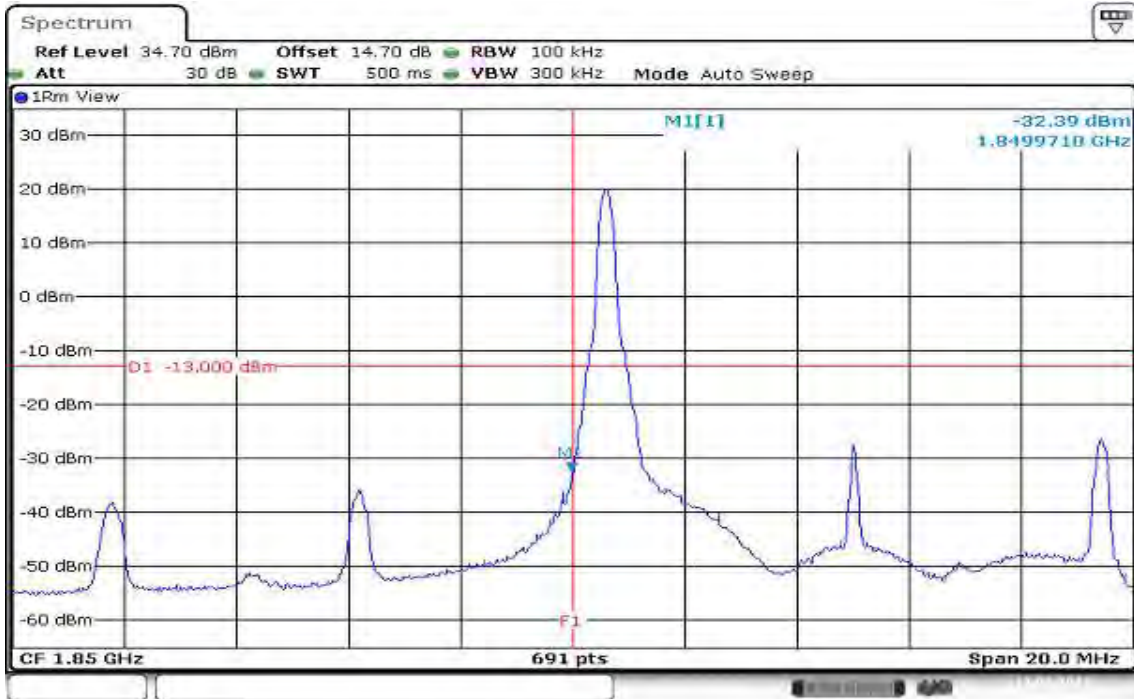
Date: 11 AUG 2017 15:29:24

HIGHER BAND EDGE



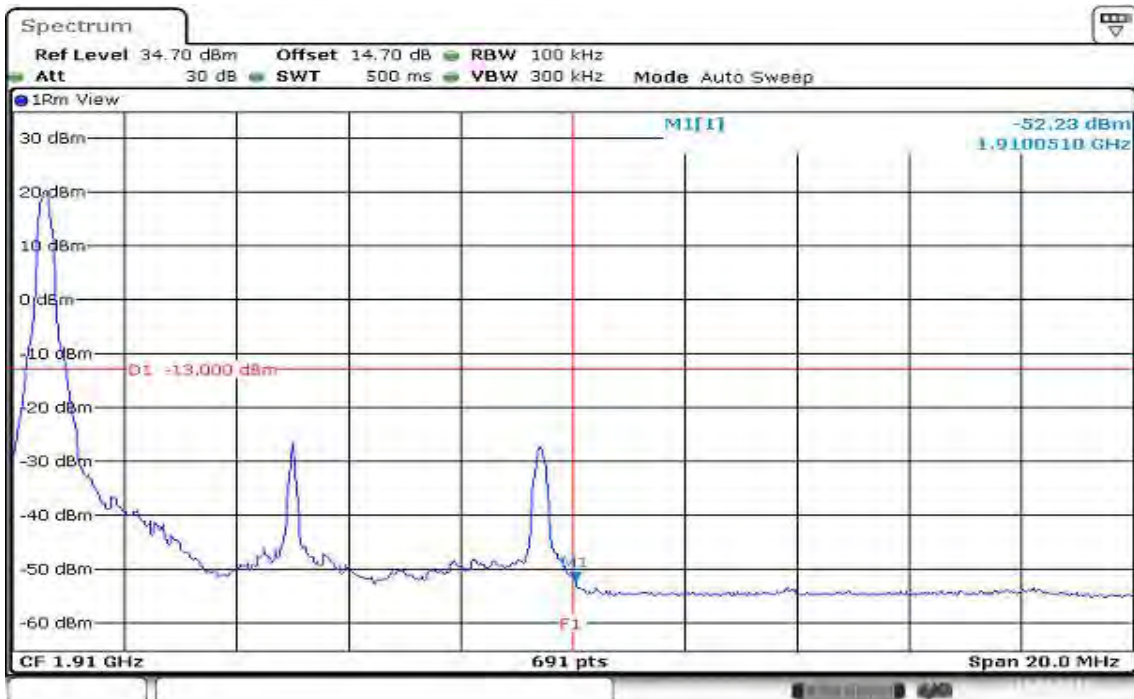
Date: 11 AUG 2017 15:56:14

CHANNEL BANDWIDTH: 10MHz / QPSK / 1 RB ALLOCATED LOWER BAND EDGE



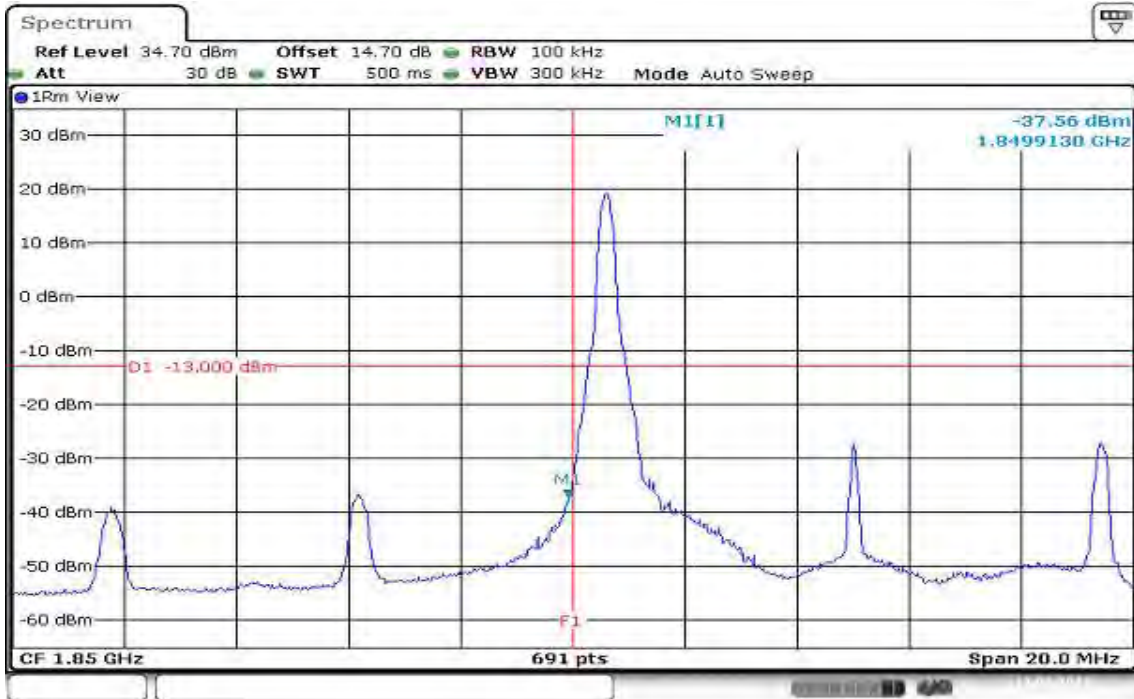
Date: 11 AUG 2017 15:33:43

HIGHER BAND EDGE



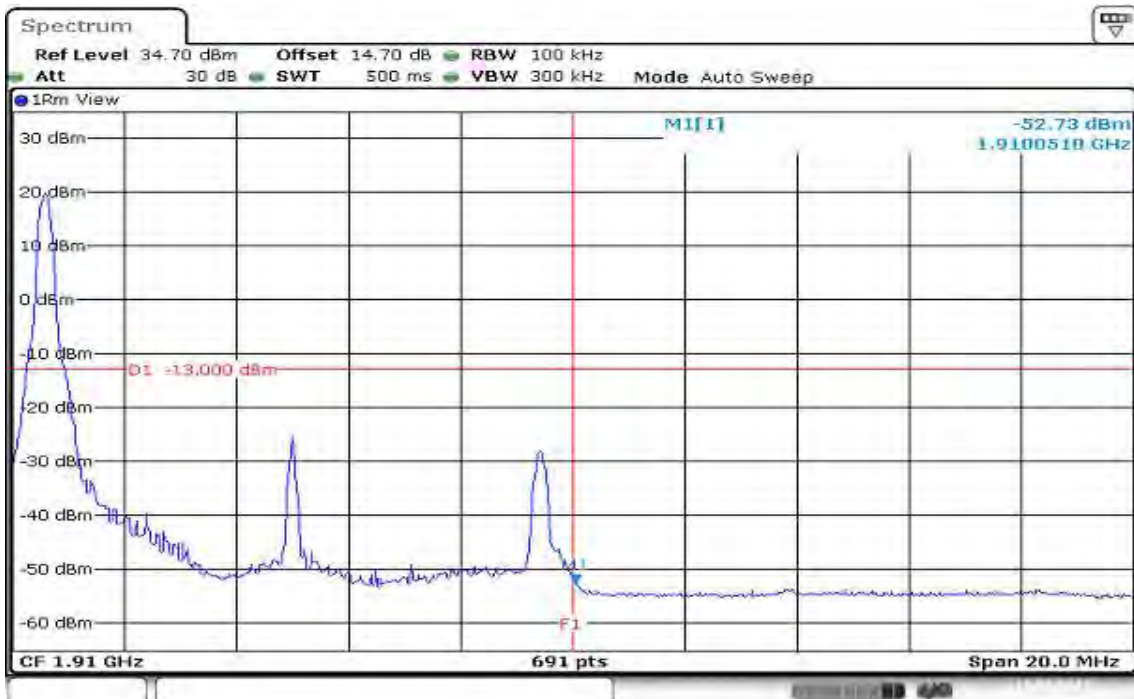
Date: 11 AUG 2017 16:00:52

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1 RB ALLOCATED LOWER BAND EDGE



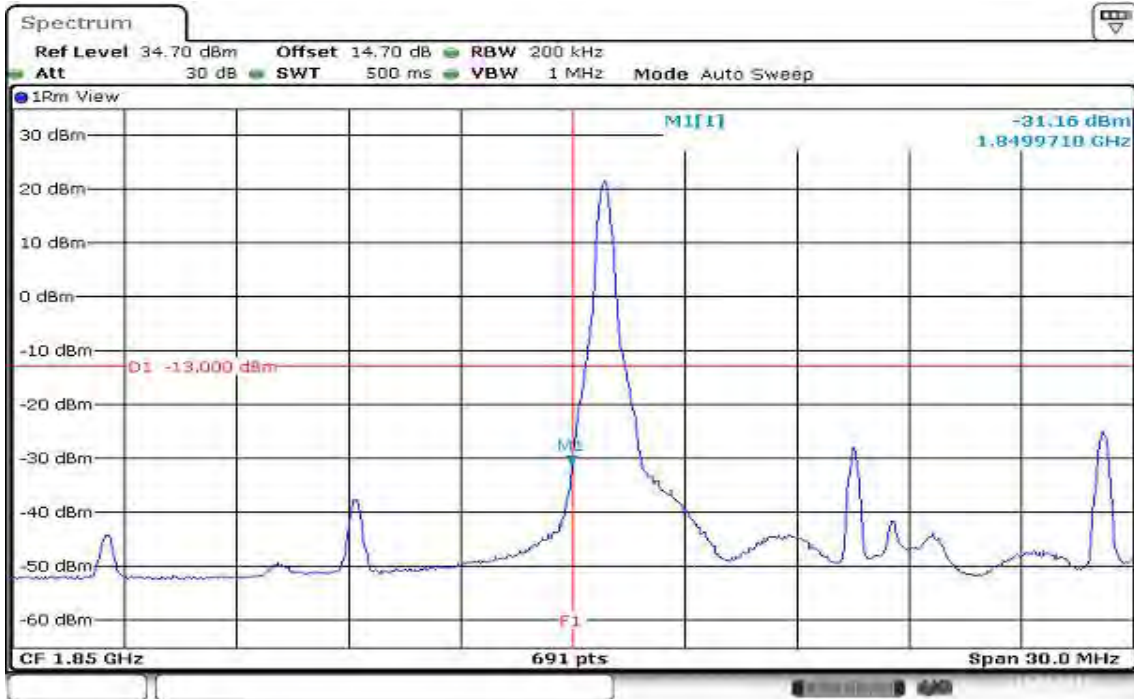
Date: 11 AUG 2017 15:32:50

HIGHER BAND EDGE



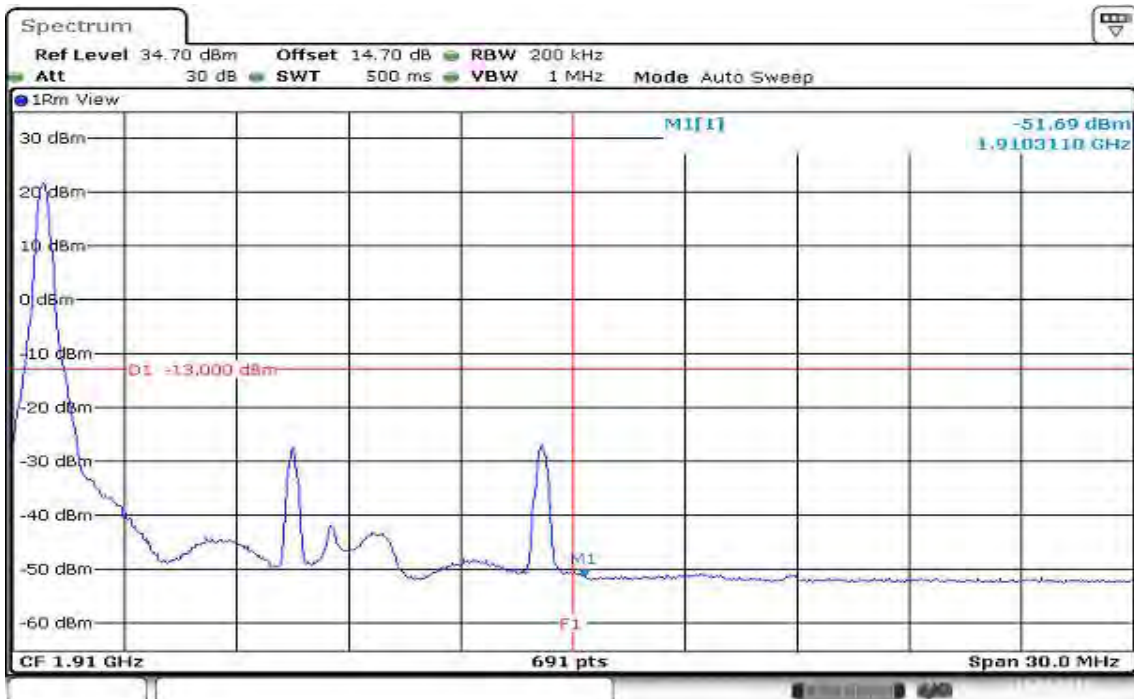
Date: 11 AUG 2017 16:01:42

CHANNEL BANDWIDTH: 15MHz / QPSK / 1 RB ALLOCATED LOWER BAND EDGE



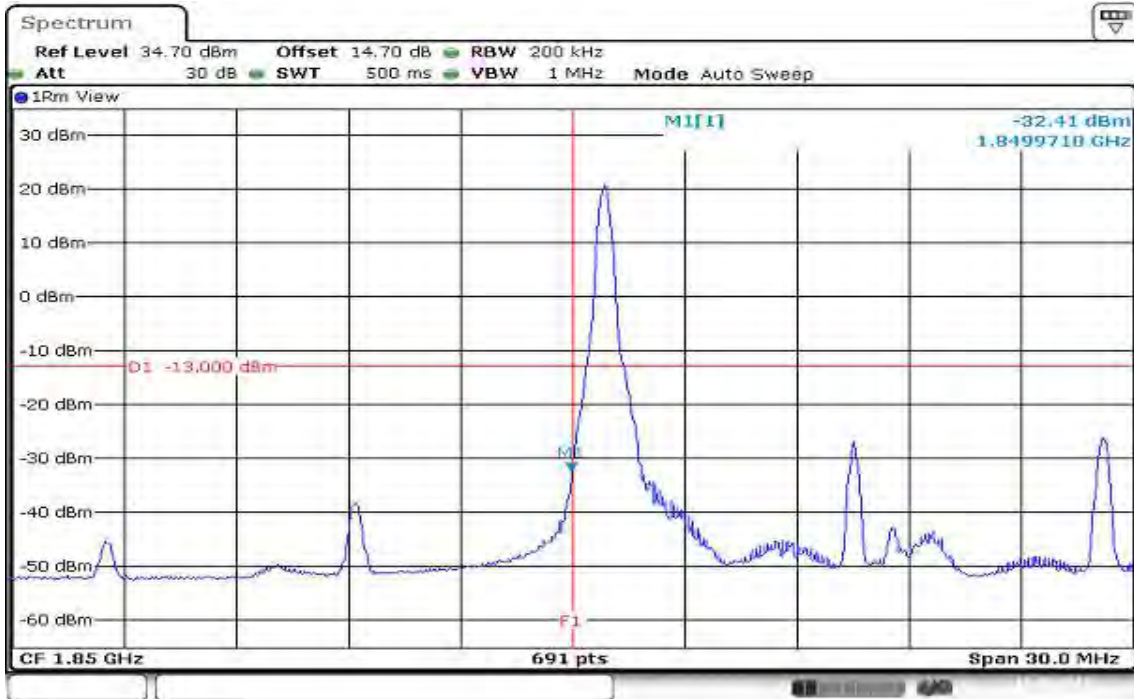
Date: 11 AUG 2017 16:27:50

HIGHER BAND EDGE



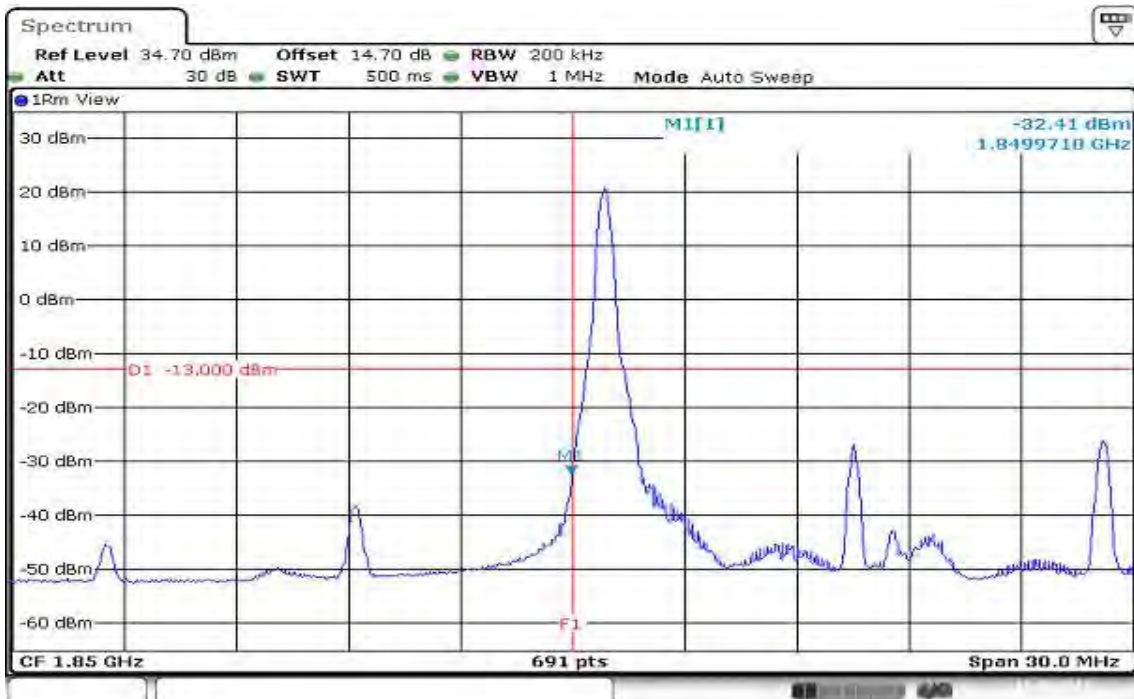
Date: 11 AUG 2017 16:06:19

CHANNEL BANDWIDTH: 15MHz / 16QAM / 1 RB ALLOCATED LOWER BAND EDGE



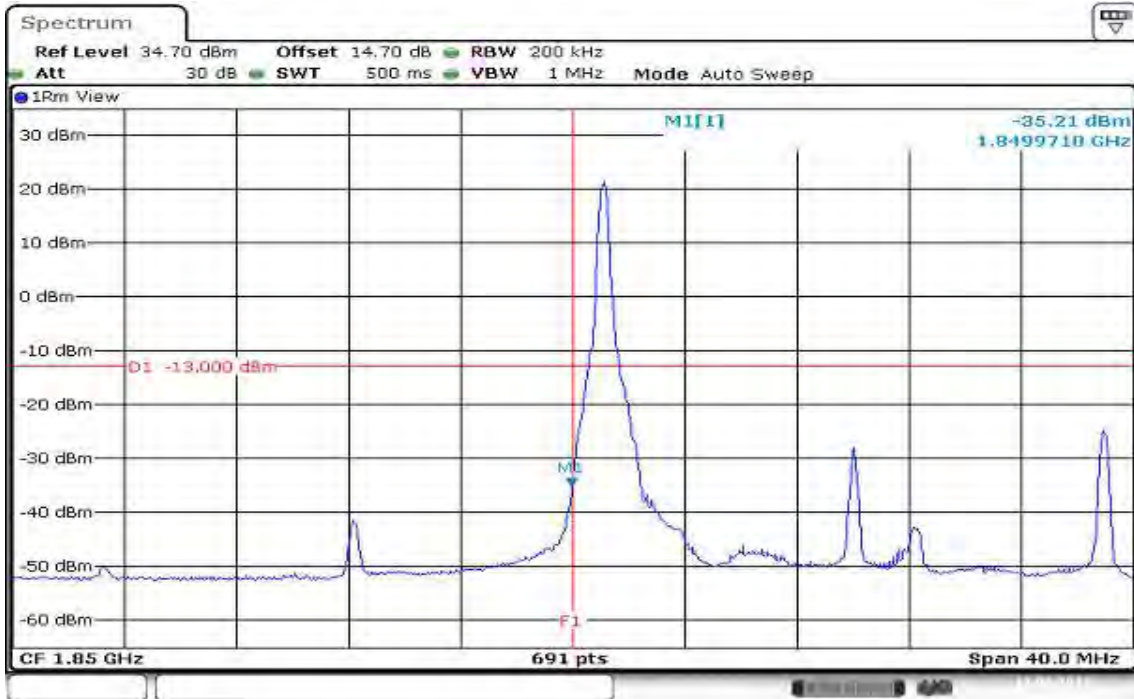
Date: 11 AUG 2017 15:38:42

HIGHER BAND EDGE



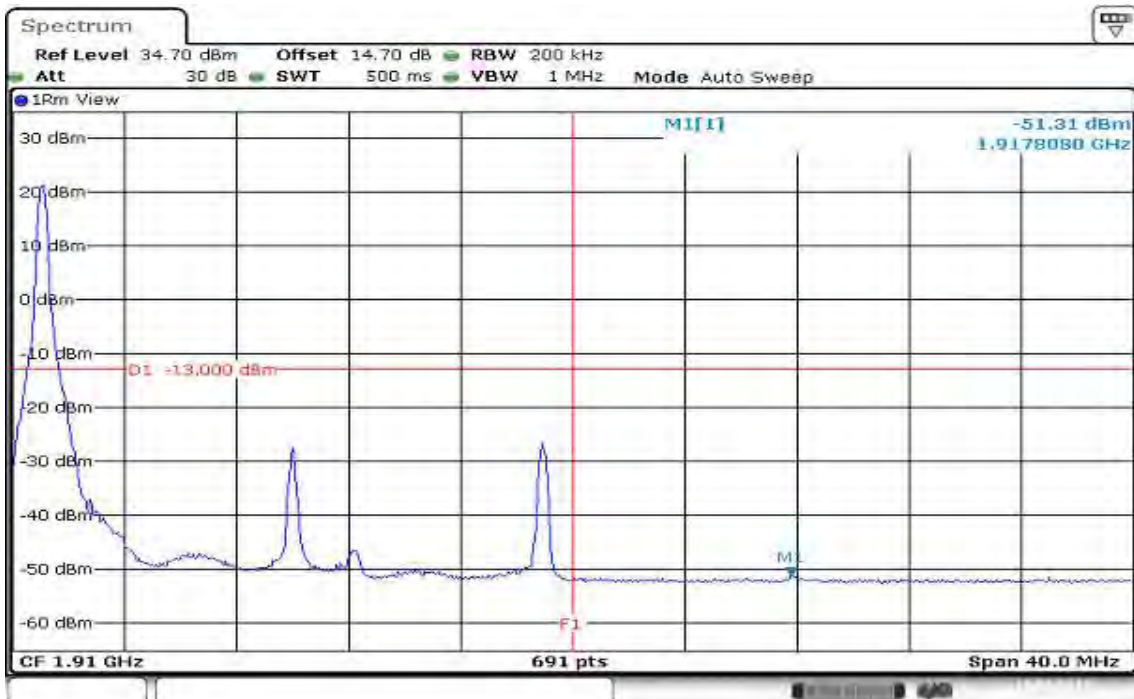
Date: 11 AUG 2017 15:38:42

CHANNEL BANDWIDTH: 20MHz / QPSK / 1 RB ALLOCATED LOWER BAND EDGE



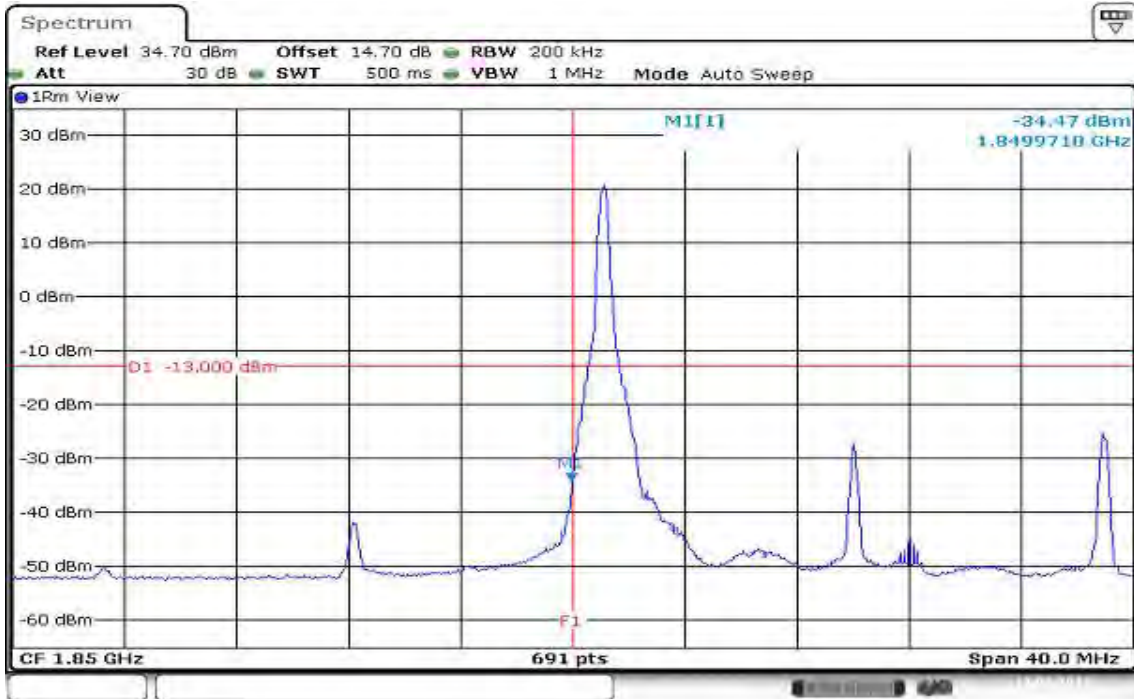
Date: 11 AUG 2017 15:42:59

HIGHER BAND EDGE



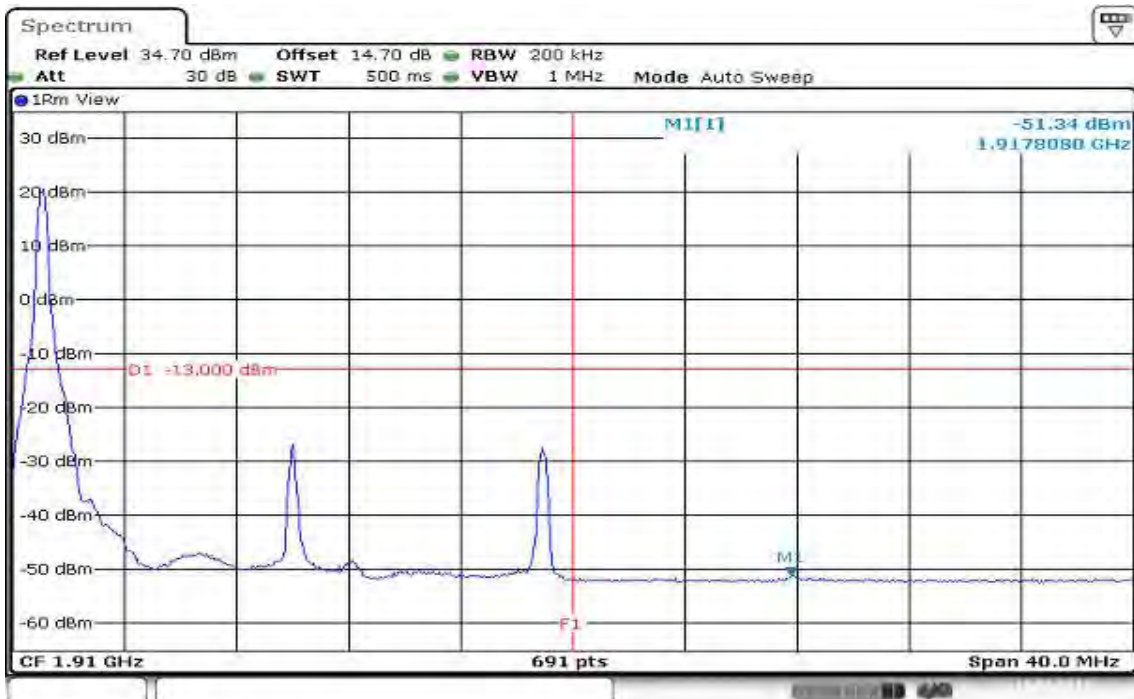
Date: 11 AUG 2017 16:09:12

CHANNEL BANDWIDTH: 20MHz / 16QAM / 1 RB ALLOCATED LOWER BAND EDGE



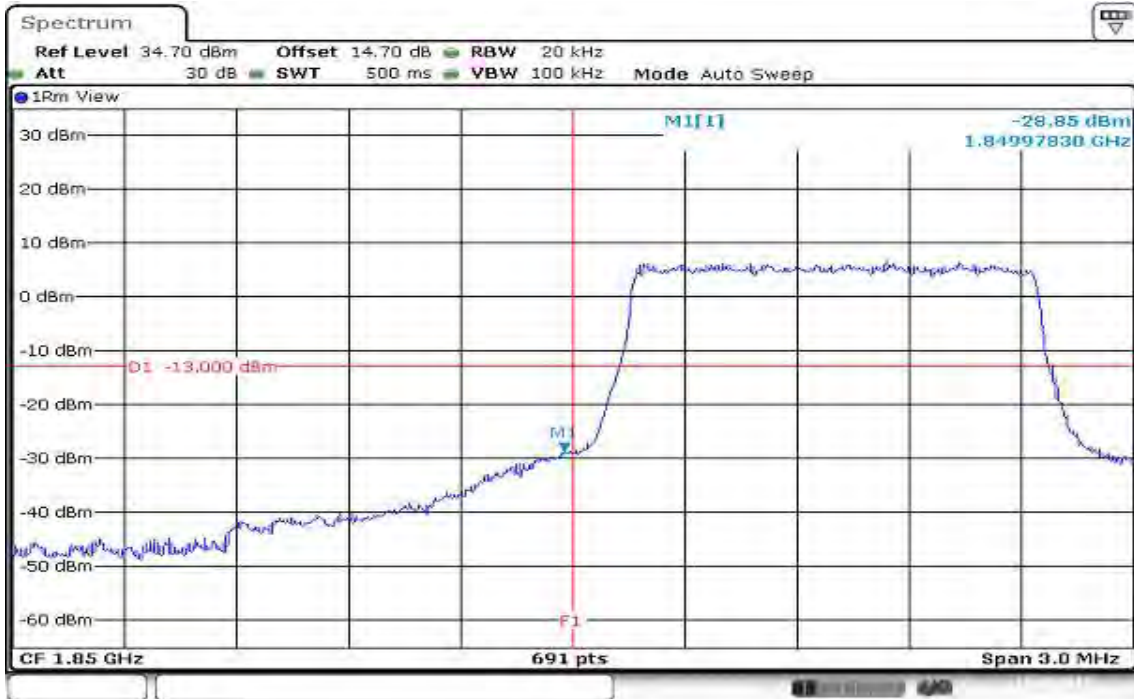
Date: 11 AUG 2017 15:43:27

HIGHER BAND EDGE



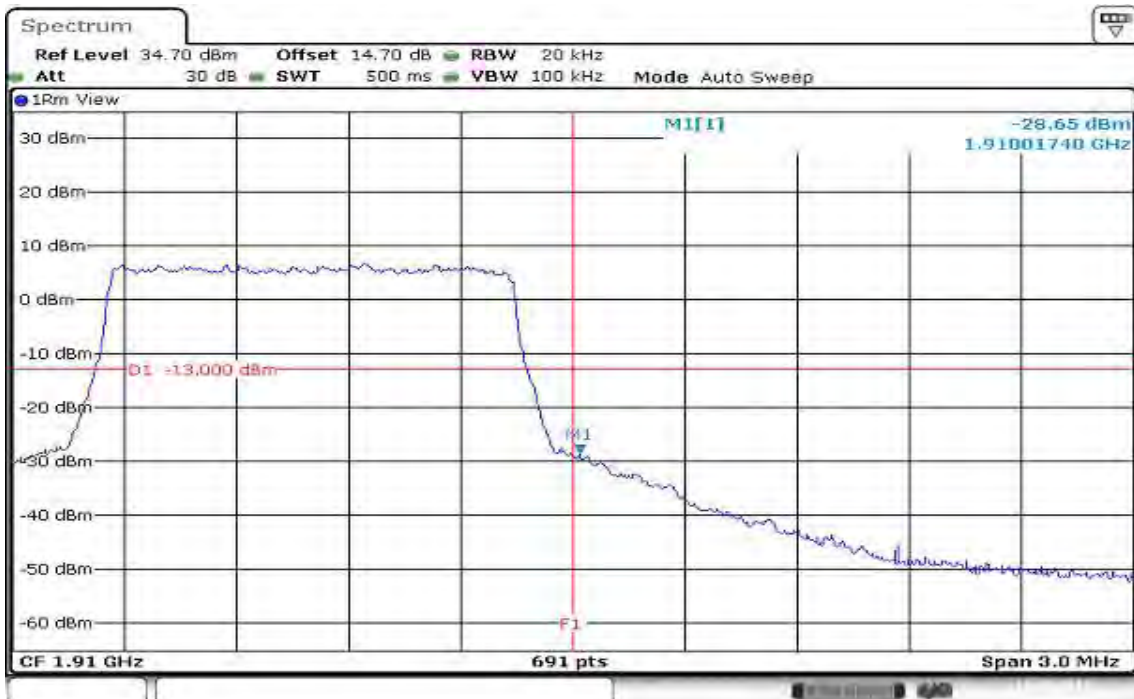
Date: 11 AUG 2017 16:07:59

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE



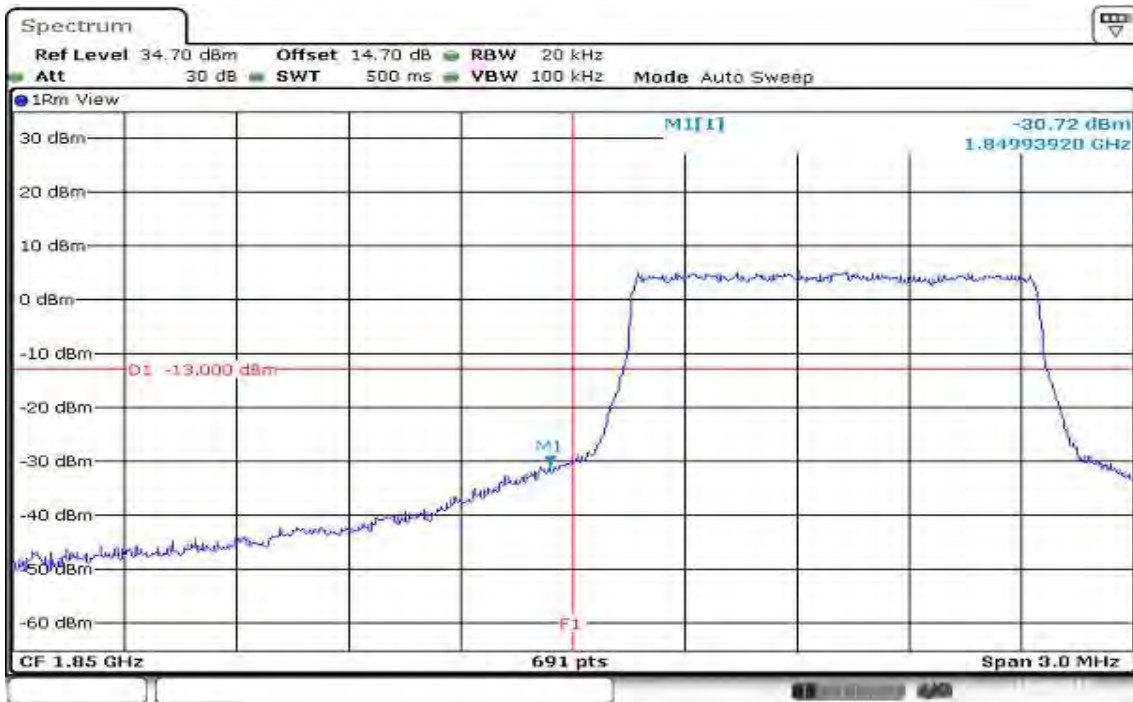
Date: 11 AUG 2017 15:20:04

HIGHER BAND EDGE

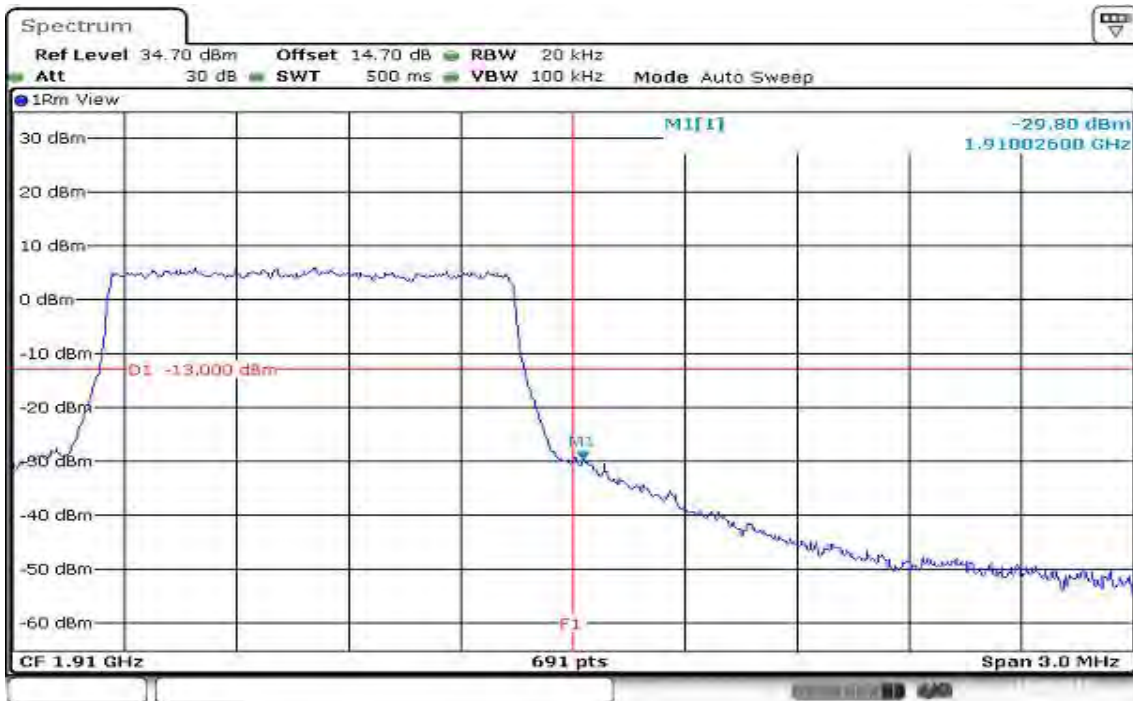


Date: 11 AUG 2017 15:47:50

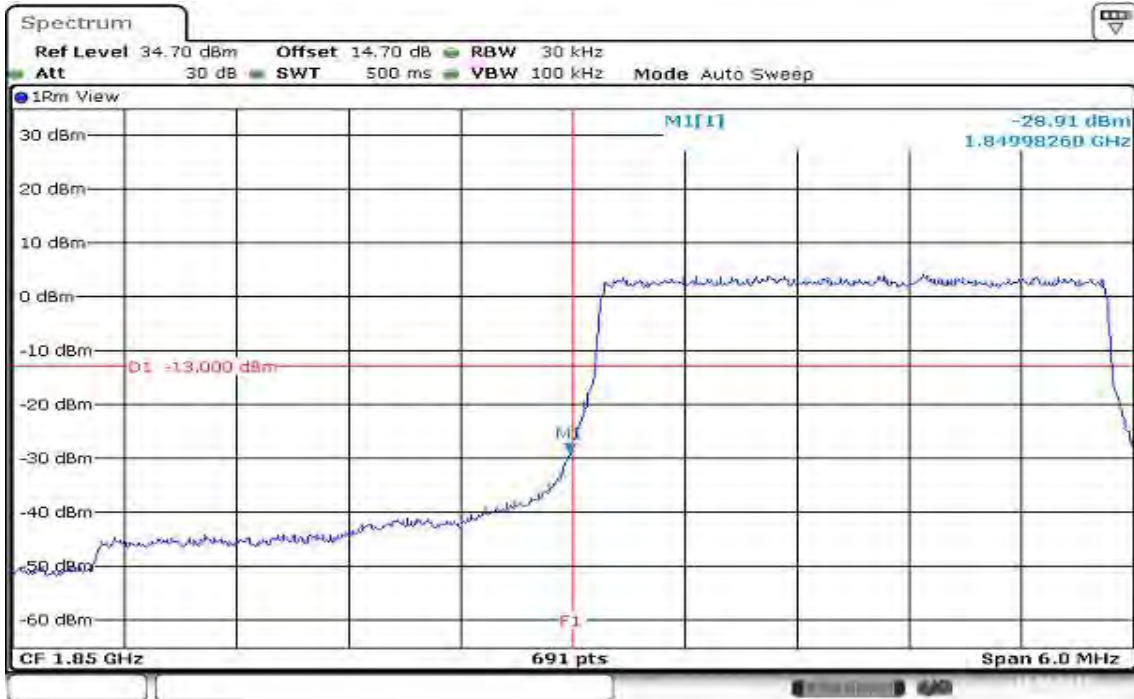
CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



HIGHER BAND EDGE

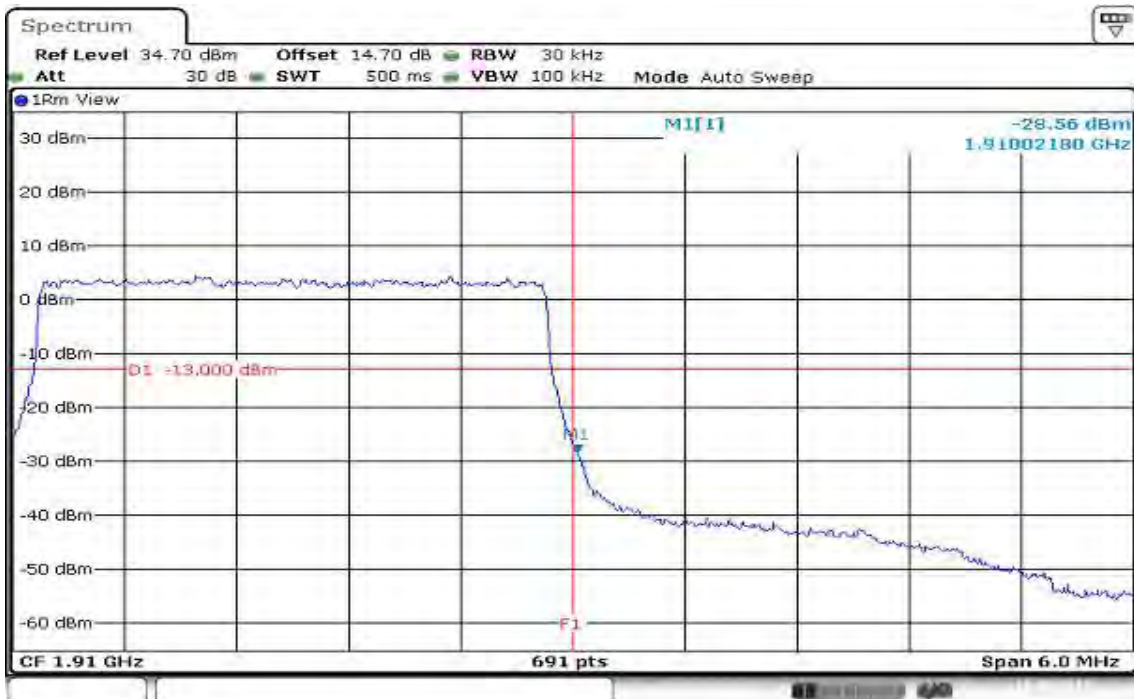


CHANNEL BANDWIDTH: 3MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE



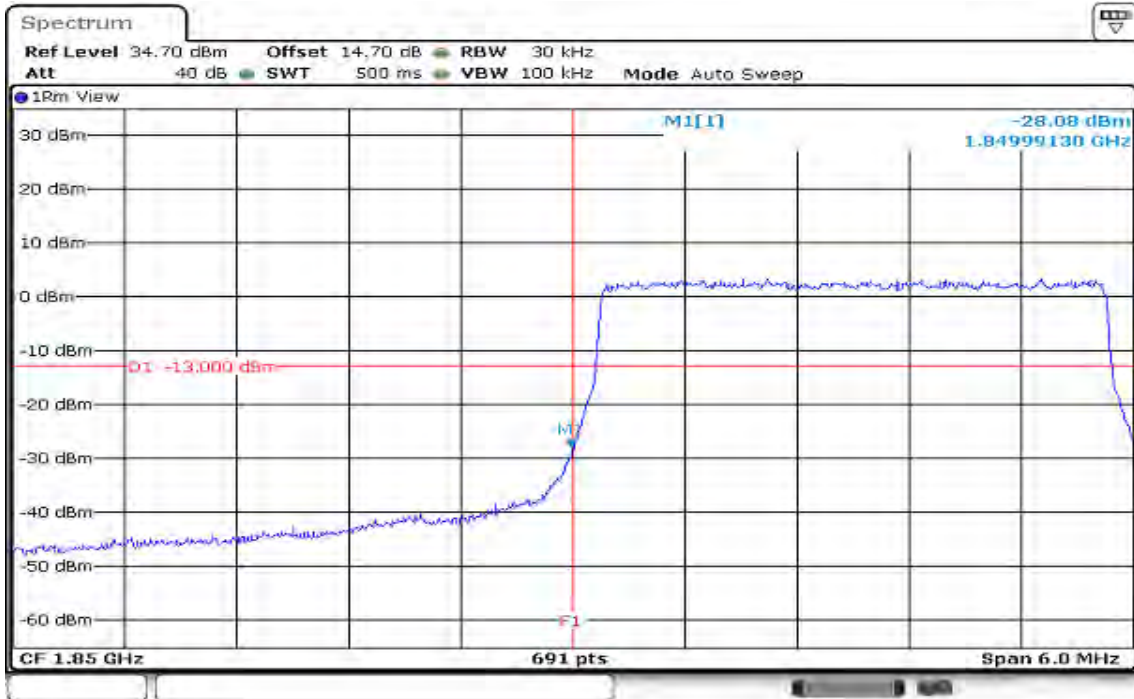
Date: 11 AUG 2017 15:23:01

HIGHER BAND EDGE



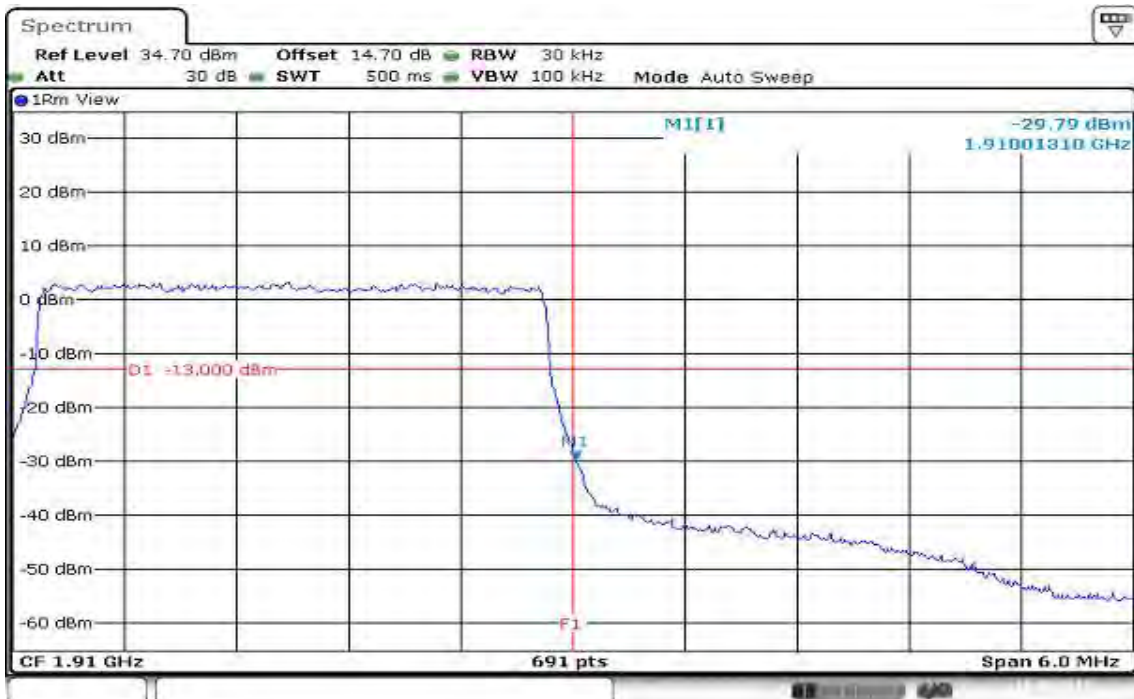
Date: 11 AUG 2017 15:52:39

CHANNEL BANDWIDTH: 3MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



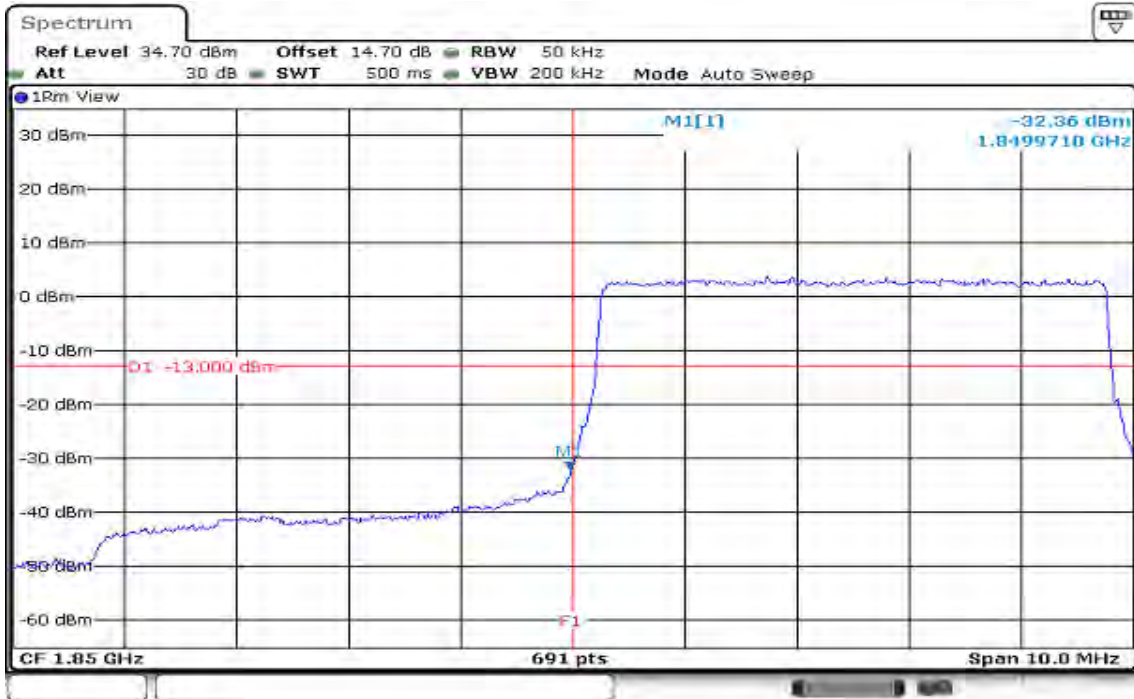
Date: 14 AUG 2017 11:20:20

HIGHER BAND EDGE



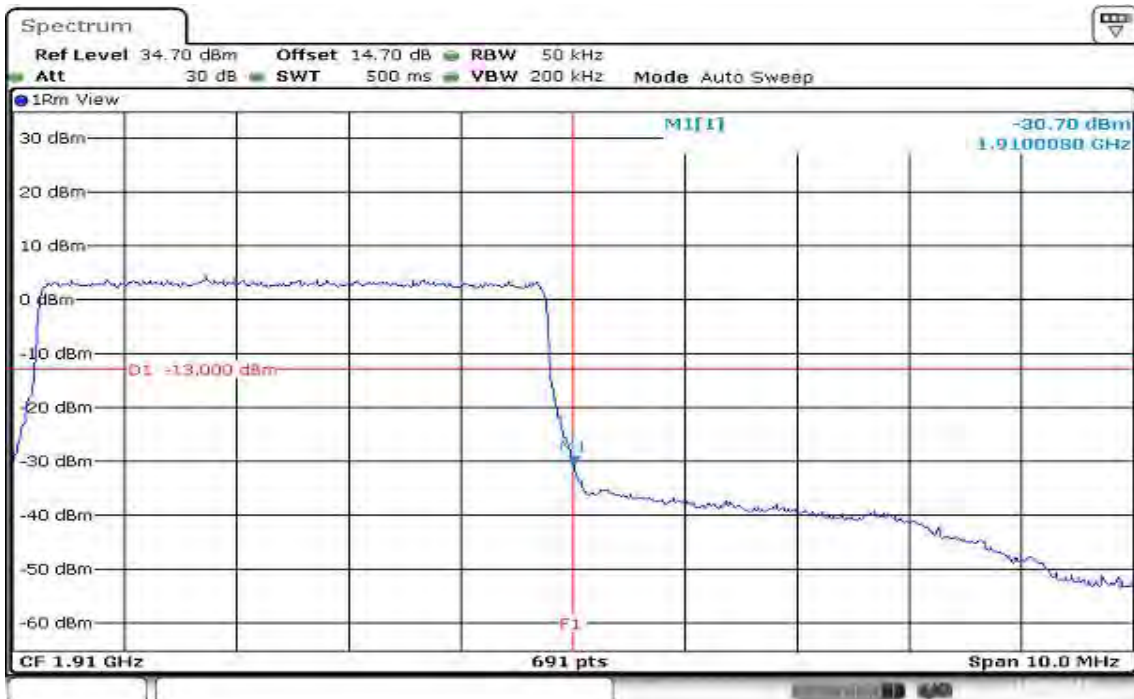
Date: 11 AUG 2017 15:53:25

CHANNEL BANDWIDTH: 5MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE



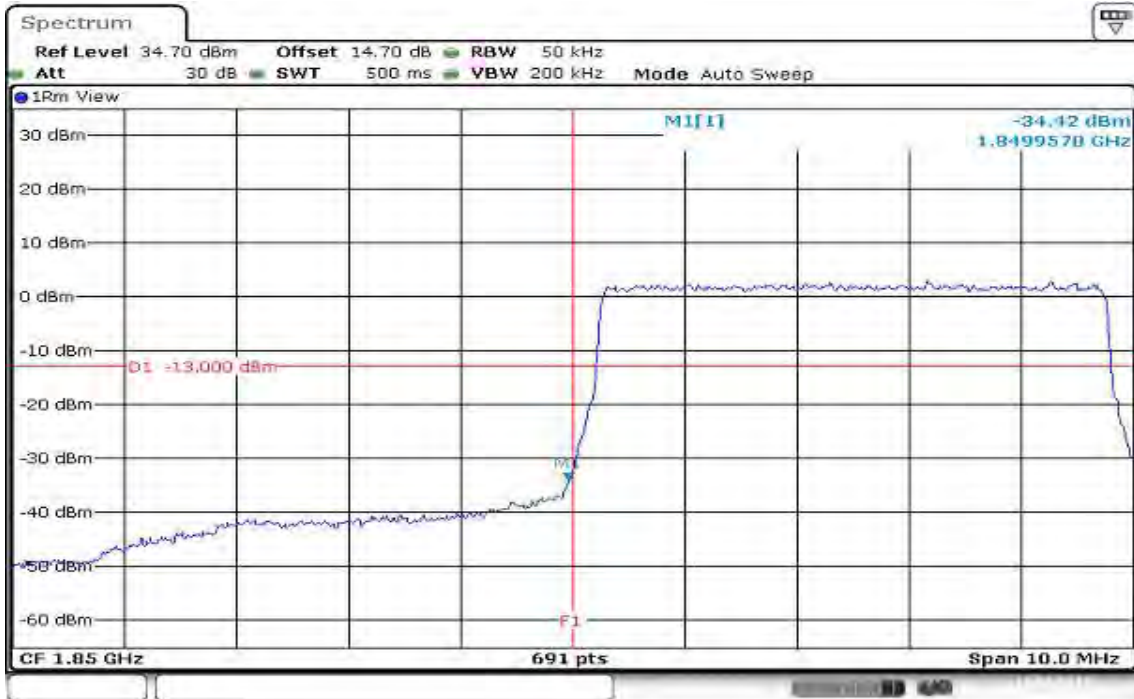
Date: 11 AUG 2017 15:26:25

HIGHER BAND EDGE



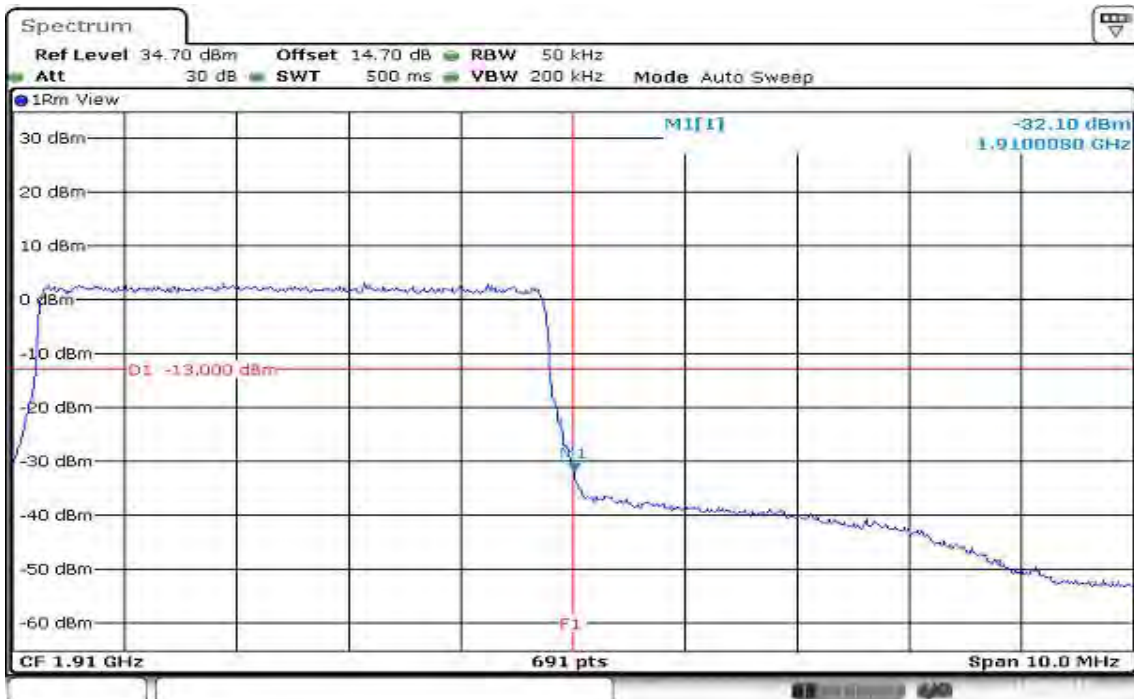
Date: 11 AUG 2017 15:57:49

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



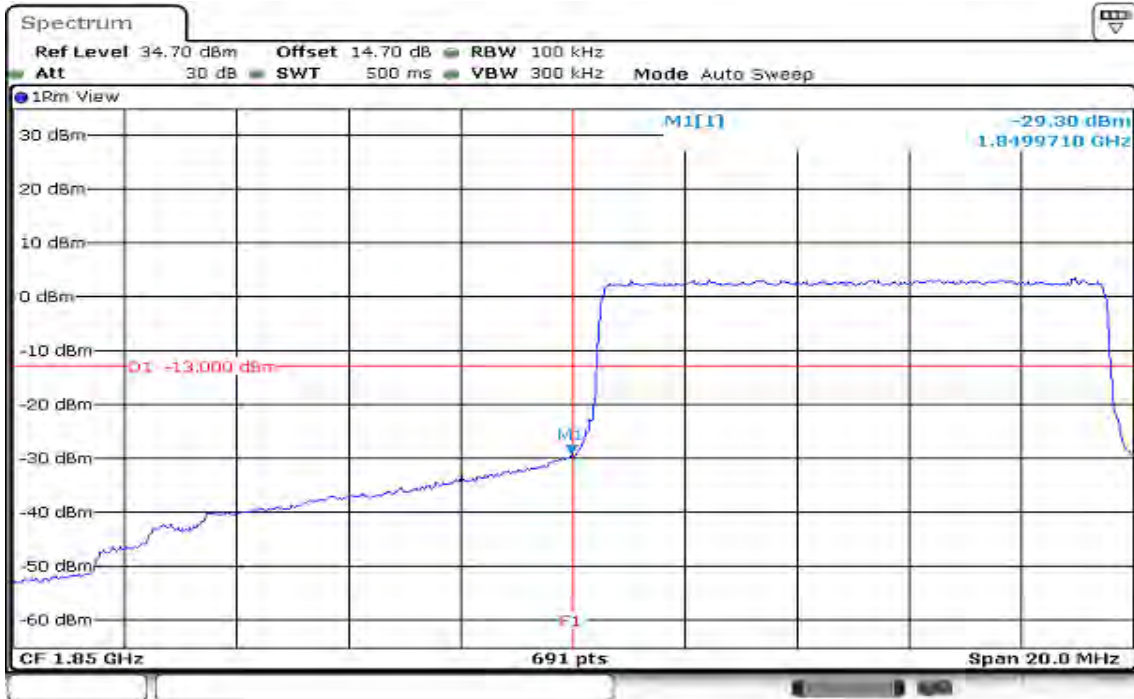
Date: 11 AUG 2017 15:27:01

HIGHER BAND EDGE



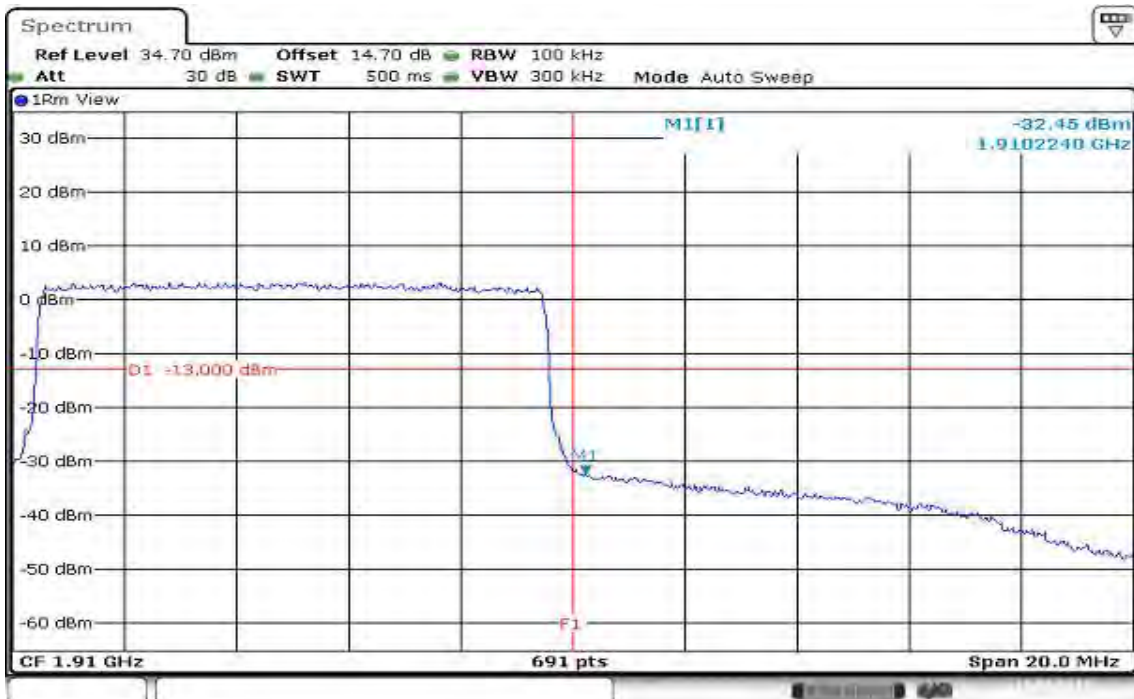
Date: 11 AUG 2017 15:56:52

CHANNEL BANDWIDTH: 10MHz / QPSK / 100% RB ALLOCATED
LOWER BAND EDGE



Date: 11 AUG 2017 15:24:41

HIGHER BAND EDGE



Date: 11 AUG 2017 15:59:54

CHANNEL BANDWIDTH: 10MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



Date: 11 AUG 2017 15:21:53

HIGHER BAND EDGE



Date: 11 AUG 2017 16:02:27